On-line services and data protection and the protection of privacy

Part one — Description of the general situation
Part two — Case studies

Volume I

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This publication is the first part of a study carried out for the European Commission by ARETE, a Paris-based informatics cooperative, on the data protection problems raised in the context of on-line services and the information society.

The study is composed of two major parts: the first is essentially factual. It seeks to present a global overview of the development of on-line services and to analyse the strategies of the different actors involved in the architecture of the network, in the light of data protection and privacy considerations. The second part is a collection of case studies which illustrate the various channels of data flows and the different types of personal data processing operations which are carried out in different places on the network.

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Part Two: Case studies

Introduction

During the preparatory work leading up to adoption of the proposal for a Council Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data, particular attention was given to the transfer of data within the member countries of the EEC and between the EEC and non-member countries. This directive, which has now been passed, must be transposed to the national legal systems of member States. At the same time, there has been a veritable explosion in international data exchange networks: 30 million hosts on the Internet, 159 countries represented, approximately 115 million users connected in 1998, reflecting a previously unimaginable growth rate. This has given rise to particular concerns regarding the protection of personal data, as a result of the scale involved, the highly specialized nature of the technology, which involves multimedia while at the same time being extremely interactive, the fact that the data is transmitted right into users' homes, the traceability of operations performed via such on line services and, finally, a lack of general principles relating to the dissemination of information and the protection of personal privacy.

In order to help it to perform its tasks, the Commission, and DG XV in particular, wished to receive a study of the development of on line technologies, the current and potential risks posed by the latter with regard to the infringement of privacy and the ability of member States to implement a system of regulations capable of encouraging the exploitation of synergies between the protection of individuals and the free circulation of information.

This study comprises two main parts: the first part is essentially descriptive and was drafted in early 1997; it provides an overall view of the development of on line services; analyses the strategies of operators involved at various levels in the network architecture (standardization organizations, software publishers, service designers and access providers) and the strategies of content providers; and it is concerned in particular with those operators who offer electronic commercial services to consumers at large, issues relating to the security of transactions and issues that can arise in different fields of application of Internet technology (press and magazines, medicine and pharmaceuticals, identification of individuals, games and pornography). This overview of technology and services is provided in the light of data protection and the protection of privacy, both as regards the issues raised by them and the protective provisions that are already in force.

The second part of this document comprises a set of case studies of large-scale site operators of on line networks: DoubleClick, a new kind of New York advertising agency; a large daily newspaper, the New York Times On the Web; America On Line (AOL), the main service provider whose activities have been studied both in the United States and Europe; the 2nd World, a virtual world; and a large French store, Fnac, which is diversifying its distribution techniques via a site dedicated to electronic commerce. These sites were chosen with care; the main concern was to be able to use a sample of empirical data to show the various channels for the circulation of personal data that could exist and the various forms of processing to which they could be subject at various points in a network, and this set of companies satisfies these requirements fairly well. It was necessary to provide commercial and technical data relating to Internet strategies for each of these case studies; each case study then goes on to examine the procedures for collecting and processing personal data in different contexts and in view of particular purposes. Light is finally cast on the ways in which problems relating to the protection of privacy on these Internet sites have been or are being formulated.

Part One

Description of the general situation

Section I – Technical on line network operators

I.1) - Operators involved in the technical standardization of the Internet

I.1.1) - Brief history

All the technical characteristics of today's Internet were laid down by the *"Arpanet Working Groups"*, which were set up in 1968 by "DARPA" (*Defense Advanced Research Projects Agency*) in order to determine the various communication protocols of future networks operating via packet switching (*Packets Satellite, Packets Radio*). These groups were made up of engineers and academics and formed a veritable community. As the various research programmes progressed, the *Network Working Group* became the *Internet Working Group*. At the end of the 1970s, the increase in the size of the various communities of researchers working on the development of the network made it necessary to reorganize structures in order to improve co-ordination of the activities. Vint Cerf, the Director of the Internet programme within DARPA, therefore divided the *Internet Working Group* into three distinct bodies:

- **ICB** : *International Cooperation Board.* This board was tasked with coordinating activities with European countries ("Packet Satellite" research area).
- **IRG** : *Internet Research Group.* This group was tasked with research and development.
- **ICCB** : *Internet Configuration Control Board.* This board helped Vint Cerf to manage and develop the Internet.

In 1983, Barry Leiner became the head of the Internet research programme within DARPA. Development of the network made it necessary to restructure the mechanisms for coordinating the various bodies. The ICCB was subdivided into a number of *"Task Forces"*, each of which focused on a very precisely defined area of activity (routers, *end-to-end protocol,* etc.). The directors of each of these *"Task Forces"* formed the IAB: *Internet Activities Board* (the members of the IAB were formerly members of the ICCB).

In 1985, following a significant withdrawal on the part of DARPA, the IAB became the body that was responsible for development of the Net; another restructuring occurred in 1987, when the IETF (*Internet Engineering Task Force*) was set up, actually as the result of a merger of the main *Task Forces*, which then became known as *Working Groups*. The directors of the *Working Groups* formed the IESG (*Internet Engineering Steering Group*), which was made responsible for the technical standards applicable to the Net. The *Task Forces* that were not included in the IETF formed the IRTF (*Internet Research Task Force*).

Historical summary of the development of the Internet

July 1961	1st article by *Léonard Kleinrock* (MIT) on the *"Packet Switching Theory"*.
August 1962	*JCR Licklider* (MIT) publishes a series of articles introducing the *"Galactic Network concept"*.
1967	*Lawrence J Robert* (***DARPA***) publishes *"Plan for the ARPANET"*
1968	DARPA sets up a board for defining the structures and specifications of the ARPANET, which will go on to publish the specifications developed by a number of different US university teams (MIT, UCLA) under the leadership of Robert Kleinrock and Bob Kahn.
September 1969	The first *"Hosts"* are installed (UCLA and SRI - Standford Research Institute) and the first *"host to host"* message is transmitted one month later.
End 1969	Four *"Hosts"* are connected
1970 – 1972	The number of computers connected continues to increase. In December 1970, the **NWG** *(Network Working Group* - DARPA*)* completes the specifications for the *Arpanet Host-to-Host protocol*: the NCP *(NetWork Control Protocol)*. This is implemented on network computers during 1971 and 1972. Network users start to develop applications from that date.
October 72	First public presentation of the Arpanet. Appearance of the first mailing application.
1980	TCP/IP adopted as standard by the US Department of Defense
1983	Change of protocol (NCP -> TCP/IP)
1985	The Internet starts to be used on a day-to-day basis outside the original communities (researchers, academics).
1991	Creation of the ISOC (*Internet Society*), which combines the IAB, IETF and the IRTF.
1992	Another restructuring, transforming the IAB into the *Internet Architecture Board.*
1994	Creation of W3C: The *World Wide Web Consortium*, which is tasked with overseeing the development of the various WEB protocols (independently of ISOC).
1996	The setting up of the IAHC: *Internet International ad hoc Committee* (considers the management of the main areas of the Internet)

I.1.2) - Description of the main institutions[1]

- **ISOC - *Internet Society***

  This is a non-profit-making association that was set up in 1991, to provide legal and financial support for the IETF, the IAB and the IANA[2]. The ISOC, which coordinates development of the standards of the Internet, is made up of non-commercial organizations, corporations, individuals and government agencies (solely US). The Board of Trustees of the ISOC is made up of 18 members who, according to the site presentation page of that organization[3], are *"(...) from every region of the world - most of whom were instrumental in creating and evolving different components of the Internet and the technology."*. The most recent budget of the ISOC amounted to $1.4 million (59% from organizations, 17% from individuals, 24% from the annual conference and publications). The highest annual subscription is received from business corporations, and amounts to $10,000 (executive member).

- **IAB - *Internet Architecture Board***

  Set up in 1983, the IAB provides both technical and legal advice to ISOC in general and the IETF in particular (whose directors it pays). It also functions as a court of appeal in the event of disputes or disagreement. *"(...) As a security valve, the IAB always strives to achieve a compromise"* according to Brian Carpenter, the current chairman of the IAB. It is the IAB that is responsible for publishing the RFCs *(Requests for comments)*, which form a series of official documents to which everyone involved in the Internet is obliged to conform[4]. This board also represents the ISOC within international standards organizations such as the ATM Forum, as the function of the IAB is partly to limit the field of action of the IETF by working with other standards organizations. The 13 members of the IAB are chosen by an appointments committee selected by the drawing of lots and are considered to be "wise men" who are above all suspicion and who are not to be called upon to approve individual standards or to become involved in political decisions.

- **IETF - *Internet Engineering Task Force***

  The IETF was tasked by the ISOC with all the standardization work relating to network protocols (IP, HTTP, routing, transport, security, mailing protocol - SMTP, MIME). This is first and foremost a board of engineers who are very much attached to the tradition of the Net. This was the body that worked on development of the RFC, very much at a hands-on level.

- **IESG - *Internet Engineering Steering Group***

  Operational group of the IETF.

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1) Sources : Le Monde Informatique 24-01-97 and http//:www.isoc.org
2) IANA : *Internet Assigned Number Authority* : management of the domain names.
3) Cf. http://www.isoc.org/whatis/what-is-isoc.html/
4) A list of all RFCs can be consulted at the following address: http://ds.internic.net/ds/dspg1intdoc.htm

- **W3C - *World Wide Web Consortium***

  Set up in 1994 following the withdrawal of CERN (which had been present at the birth of the World Wide Web), the W3C is the only organization that concentrates solely on development of the Web and its component that is the most important determinant of the success of the Internet throughout the world and among the general public: the HTML format. The W3C has 150 members (paying annual contributions of up to $50,000) and is governed by INRIA (Europe), MIT (USA) and the University of Keio (Asia). The W3C has links with the ISO, the OMG and CommerceNet (remote payment on the Net). The current chairman is the Frenchman JF Abramatic (Director of Development at the INRIA).

- **IANA - *Internet Assigned Numbers Authority.***

  The IANA is an authority that has been tasked with administration of IP addresses; it is directly subordinate to the US Defense Secretary and is managed by the USC (University of South California), which subcontracts administration of the names of domains to Internic (*Internet netWork Information Center*), Ripe and Asianic, which delegate in their turn to national NICs (*Network Information Centers*). The TLD[5] ".com" is not administered by a public organization, but by a private company (NSI : *Network Solution Inc.*), which has a right to that domain until March 1998. A very considerable amount of money is involved: for each new address registered, NSI, with the agreement of the *National Science Foundation* (NSF) collects $100 for registrations of between 10,000 and 20,000 per week!)[6].

  A study has revealed the existence of 828,000 domains and 16 million servers, 400,000 of which are on the Web, to date. With 3.9 million *hosts*, the domain .com is by far the biggest, as it alone accounts for 25% of the total. As is shown by the table below, growth rates are truly exponential.

Increase in Internet domains in 1996
(Sources : General Magic Inc.)

Domains	31/01/1996	31/07/1996	31/01/1997	Annual increase
com	2 430 954	3 323 647	3 965 417	1 534 463
Edu	1 793 491	2 114 851	2 654 129	860 638
Net	758 597	1 232 902	1 548 575	789 978
Mil	258 791	431 939	655 128	396 337
Gov	312 330	361 065	387 280	74 950
Org	265 327	327 148	313 204	47 877

5) TLD: *Top Level Domain* - edu / gov / net / com / mil / org + the national domains

6) **David S. Hilzenrath** : *"New system for Net Adresses Proposed"* - Washington Post - Feb. 6, 1997.

Domains	31/01/1996	31/07/1996	31/01/1997	Annual increase
Japan	269 327	496 427	734 406	465 079
USA-dom	233 912	432 727	587 175	353 263
United Kingdom	451 750	579 492	764 330*	312 580
Germany	452 997	548 168	721 847	268 850
Canada	372 891	424 356	603 325	230 434
Australia	309 562	397 460	514 760	205 198
Finland	211 900	277 207	327 689*	115 789
France	137 217	189 786	245 501	108 284
Netherlands	174 888	214 704	270 521	95 633
Norway	88 356	120 780	171 686	83 330
Sweden	149 877	186 312	232 955	83 078
Italy	73 364	113 776	149 595	76 231
Brazil	20 113	46 854	77 148	57 035
Spain	53 707	62 447	110 041	56 334
Denmark	51 827	76 955	106 476	54 649
South Africa	48 277	83 349	99 284	51 007
Switzerland	85 844	102 691	129 114	43 270
Austria	52 728	71 090	91 938	39 210
Korea	29 306	47 973	66 262	36 956
Russian Fed.	14 320	32 022	50 097	35 777
Belgium	30 535	43 311	64 607	34 072
Hong Kong	17 693	24 133	49 162	31 469
New Zealand	53 610	77 886	84 532	30 922
Poland	24 945	38 432	54 455	29 510
Czechoslovakia	16 786	32 219	41 164	24 378
Israel	29 503	39 611	53 066	23 563
Malaysia	4 194	8 541	25 200	21 006
Hungary	11 750	25 109	29 919	18 169
China	2 146	11 282	19 739	17 593
Portugal	9 359	17 573	26 077	16 718
Mexico	13 787	20 253	29 840	16 053
Ireland	15 036	21 464	27 059	12 023

- **IAHC - *Internet ad hoc Committee.***

  Set up in November 1996 by the ISOC, the IAHC is tasked with reorganizing standardization associated with the Internet. This committee is open to organizations that do not belong to the ISOC, which provoked protests within the IETF. This organization has recently been tasked with putting forward a proposal for an increase in the number of top level domains (TLD): if the proposal is accepted, a new authority would be created to administer the allocation of addresses *(Council of Operators of Registries* - CORE), together with seven new generic TLDs:

  - .firm (companies),
  - .store (commerce),
  - .web (web service providers),
  - .arts (cultural activities),
  - .rec (recreation),
  - .info (information services),
  - .nom (names of individuals)

- ***CommerceNet***

  With 200 members and an annual budget of $2 million, after having been in existence for over two years, CommerceNet is proving to be the first large consortium devoted to electronic commerce. It collaborated with W3C to launch the JEPI (*Joint Electronic Payment Initiative*) initiative. The aim of JEPI is to standardize Internet payment systems using the SET (Visa/MasterCard), PEP (extension of the HTTP protocol) and UPP (payment format introduced by the IETF) protocols.

I.1.3) - Mode of operation of these institutions and interests regarding protection of privacy issues.

Consensus seems to dominate proceedings within standard-creating organizations, and especially the relations between them[7]. Within the ISOC, for example, it has been noticed that the technical working groups of the IETF working on protocols do not vote (there is no formal concept of membership). The chairman of the IETF must decide on what is the consensus before proposing a document to the IESG, which is the only body that is permitted to formally approve any of the documents. The IAB acts as an appeals committee in the event of an objection to a decision by the IESG. There is also a body *"Board of trustees"* that has the same function for cases in which someone objects to a decision by the IAB. As far as the W3C is concerned, its chairman, J.F. Abramatic has pointed out that *(...) there is no difference between members apart from in the case of subscription. Everyone has the same importance as far as voting is concerned.* The W3C only takes account of a consensus. Value is attached to the force of a "yes" or a substantiated "no" with regard to a question of interoperability. In particu-

7) Sources : Le Monde Informatique - 24.01.97 page 29

lar, a "no" to the publication of a recommendation must be accompanied by a description of the changes that would convert the "no" into a "yes". Only CommerceNet permits preferential treatment depending on the importance of its members. *Each member receives one vote, but the 'sponsor members' (which pay $35,000 per year) are given greater attention* admits Steve Tery, International Director of CommerceNet.

It might be thought that the community spirit that gave rise to the creation of the Internet would still be present as far as the operation of these various standardization organizations is concerned. Nonetheless, they will in future have to deal with operators whose commercial objectives run counter to the "community" spirit of the network pioneers. The development of Internet protocols and standards would appear to be essential, if only to deal with the increase in the number of net- citizens. The setting up of the IAHC (including organizations outside the ISOC such as the *International Trademark Association, the World Intellectual Property Association* and the ITU (*International Telecommunication Union))* has given rise to protests within the IETF: many people refuse to participate in discussions on the standardization of the main names. The IETF and the IAB claim that their responsibilities are essentially technical. The integration of economic operators seems to be absolutely inevitable and standards organizations based on a purely technical consensus no longer seem suited for development of the network and the need for data protection. Failure to integrate these operators would mean that the ISOC runs the risk of:

- being manipulated in the long term; Fred Baker, Chairman of the IESG has publicly accused Microsoft of seeking to win over influential members of the IETF; Larry Blair of Ipsilon has complained about the alleged indulgence of the IETF towards its competitor CISCO...
- being "replicated" by the development of consortia (W3C, CommerceNet) with an openly commercial remit.

Isn't it the case that the integration has occurred too late and has been treated rather too much as an internal American affair? The international status of the consensus reached by the ISOC is disputed. All business is settled in the United States, a country that, it should be remembered, does not have any organic legislation relating to data protection and where everything is done by means of self-regulation; two thirds of the members of the IETF (the most open of the ISOC committees) are American citizens; the IANA (allocation of IP addresses) is directly subordinate to the US Department of Defense and all the members of the IAHC are American.

These organizations can have a crucial influence on matters relating to data protection and the protection of privacy, and this applies in particular to the IAB via the RFC *(Requests for comments)* which, while they deal with technical and standardization problems, may have a particular influence on current discussions. Attention may be drawn to a number of RFCs in this connection: in particular, the RFC that defined the future HTTP-NG (New Generation) protocol and included two proposals relating to security, one of which was intended to ensure user authentication and the other to preserve the resulting trail; and the RFC (2109) that was intended to regulate the use of

cookies, as discussed below[8]. It is unfortunate, however that none of these various bodies include someone to represent the problems of protecting privacy.

I.2) - Client and server software publishers

I.2.1) - A market dominated by Netscape and Microsoft

The market for the software necessary to use the Internet (client and server software) is dominated by two main publishers of US origin: **the companies Microsoft and Netscape.** The former hardly needs to be introduced, as its products are known and used throughout the world and it is very keen on communication. Netscape, on the other hand, is actually a new operator that has been specializing in this segment of the market since April 1994. It must be admitted that the competition between these two companies is unequal in terms of resources. Microsoft currently has 20,500 employees, almost 7000 of whom work in development research; its turnover stood at $8.6 billion dollars in 1996. In the same year, Netscape had a payroll of just under 2000 and achieved a turnover of $346 million. The latter company, on the other hand, has been achieving dazzling growth rates, sales, for example, being set to increase by 45% in 1997. To accommodate its new staff, a year ago Netscape needed approximately 300 m^2 extra space per day, and at the start of 1997 it was constructing one new building a month around its headquarters at Mountain View (CA)[9].

These two companies are, however, similar in that they have adopted, albeit it on different scales, the same **external growth strategy** as a way of positioning themselves on the *"on line"* networks market. In particular, both companies buy up technologies developed by *"start-up companies"* on a large scale and then integrate them in the various products marketed by them: Netscape was initially set up by poaching teams of IT experts involved in creating Mosaic, the basic technology of the first *browser*, who were working at the NCSA (*National Center for Supercomputing Applications* - University of Illinois) and other experts working for CERN; it then went on to purchase Collabra ($185 million), then in April 1996, InSoft, to assist in its developments in the areas of multimedia and videoconferencing, and then, in May 1996, Paper Software, which specialized in 3D graphics and the VRML (*"Virtual Reality Markup Language"*) and Netcode, which had created an object-oriented software engineering workshop working in Java. Netscape also helped to set up specialist subsidiaries, in particular Actra Business Systems in collaboration with GE Information Services (GEIS) for the development of electronic commerce solutions and Navio Communications Inc. for the development of applications platforms on equipment other than PCs (cable television, telephones, palmtops, etc.). For its part, in 1996, Microsoft invested $750 million in outright acquisitions or acquiring holdings in some twenty companies

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8) Cf. Section I.3.2) - page 28

9) Cf. **Robert D. Hof** : *Net speed at Netscape* - Business Week Feb 10, 1997 pp.38-44.

with Internet know-how, including in particular AT&T, America On Line and Point Cast.

Despite these obvious differences in the economic potential of to these two publishers, Netscape still held a dominant position at the start of 1997, when it accounted for 80.6% of the browsers market and Microsoft only accounted for 10.5%[10]. This situation was mainly due to the fact that Netscape was the first publisher to set sail to claim this new market; 50 million copies of Navigator have been distributed, and it is therefore the second most widely used software in the world, after Windows. Netscape has also announced that it has delivered over a million of its server platforms. These gaps have now narrowed, however: although Netscape claims to have equipped 70 million personal computers with its browser throughout the world, its market share has been nibbled away by Microsoft to such an extent that Navigator currently stands at 56% as it faces its competitor, Internet Explorer.

I.2.2) - Summary of product strategies: Netscape services

The product strategies of publishers of Internet software actually involve conquering three markets: the users, Internet servers and Intranet markets. Each company has therefore developed three ranges of software products: *"browsers"* i.e. software intended to be installed on PCs in a Windows environment or on Macs, Internet servers available in the form of a large number of different versions and functional modules and Intranet solutions.

Fierce competition is arising in the **Intranet** market. In financial terms, it has been established that the Intranet market will be worth $8.5 billion dollars in 1999[11] and it is coveted by everyone: not just by Microsoft and Netscape, but also most other organizations involved in the corporate IT sector: designers, database and network platform software houses and service companies. Netscape will certainly encounter very strong resistance from them in this area. At a technical level, competition is proving to be particularly fierce with regard to the supply of service platforms and what is termed "client suites", which are sets of modules intended to be installed on workstations in companies and which offer various functionalities, including, of course a *browser* function, but also mail and discussion group manager, HTML page editor, telephone, voice mail, remote agenda sharing, terminal emulator and remote maintenance functions. This list is not exhaustive. Competition in these areas is more open, and involves at least four companies: Netscape with *Communicator* and *Suitespot 3.0*, Microsoft with Windows NT, the 97 version of *Office, Exchange* and *BackOffice*, IBM with *Lotus Notes* and Oracle with its *InterOffice* solution. There is no indication that Netscape,

[10] Situation at 31-12-96. Sources : Bloomberg Business News Findings - these results were obtained by comparing Website audience measurements carried out by various operators.

[11] Sources : Forrester Research - Cf. Report on Netscape activities - SEC Document - 1996 (10-K405/A).

which is a new arrival on this market, will occupy a dominant position equivalent to the one it occupies on the market for *browsers* proper.

It has also been noted that there are a number of competing solutions on the market for server platforms devoted to electronic commerce: these are, in particular, the Open Market Inc., BroadVision Inc., Connect Inc. and Edify Corporation Solutions.

By way of illustration, it has been decided to provide a summary of the products offered by one software publisher, i.e. Netscape, which provides 3 main categories of products:

- **The Navigator client line :** this comprises 3 versions of the Navigator product and a bundle of complementary tools:

  - *Navigator Lan Edition* : this is a product that is intended for users that already have a local area network supporting the TCP/IP connection protocol. This product is available in a Windows, Mac Os and Unix environment.
  - *Navigator Personal Edition* : this is the *browser* proper, which enables users to access the resources of the Web, communicate in different ways (*e-mail, newsgroups, chat* and *FTP* - file transfer) with other users and perform commercial transactions. It comprises a point-to-point connection module and an automatic numbering transmitter. It makes it possible to automatically access a large range of information providers on the Internet.
  - *Navigator Gold* : this product is identical to the previous one, except for the fact it also includes a WYSIWYG editor which makes it possible, in particular, to create a proper Web page.
  - *Power Pack* : this is a suite of technical modules (*add-ons*) complementing the functionalities of Navigator, including, in particular, *bookmark, chat* and multimedia advanced services.

  In September 1996, this Navigator client line accounted for 59% of Netscape's total turnover. Developments of this line have recently been announced and are shortly to be marketed in Europe: *Communicator* in particular is to be the new generation of client products, in the form of a suite comprising Navigator version 4.0, a secure *Messenger* function in the HTML page description language giving easy access to discussion groups, an HTML page *Composer* and a module permitting audioconferencing and voice telephony on the Net.

  Netscape has also announced a module that is intended to complete the *Communicator* suite: this is *Constellation*, one of whose objectives is, apart from providing webcasting functionalities[12], to achieve independence from Micro-

[12] Webcasting is discussed in Section I.4.3) on page 40

soft's Windows format layer by creating what might be termed a meta- interface; this is no small challenge, as the problem encountered by any publisher using Windows is that Microsoft seems to be determined to significantly modify the Windows interface at regular intervals in order to oblige its competitors to rewrite their software each time this occurs.

- **Server line :** this is packaged in the Suitespot suite and comprises 8 different products:

  - *Enterprise Server* : this is a Web server that makes it possible to create, administer and distribute information via the Internet. This platform uses the Java programming language and offers full text or database information search options. The server also includes encryption and network management facilities.
  - *FastTrack Server* : this is a tool that is almost identical to the previous one, the difference being that it has been designed in such a way that end users are given the option of developing their own Web servers.
  - *Mail Server* : this software transports messages on the network
  - *News Server* : this makes it possible to set up discussion groups in a secure environment: it actually provides communications encryption and decryption functions in order to ensure that only authorized users are able to access discussion groups.
  - *Proxy Server* : the aim of this module is to optimize performance and security on TCP/IP networks, in particular via the function permitting the local storage of pages that are frequently consulted and the filtering of input/output via a *"firewall"*.
  - *Catalog Server* : this solution makes it possible to construct and automatically administer a catalogued set of resources in order to accelerate access to them by users. This is open and customizable software that can operate in various systems environments and on various Web servers.
  - *Commerce Server* : this is electronic commerce software that makes it possible to offer products and carry out commercial transactions directly on line in a secure environment using the SSL protocol, and soon the SET protocol. The software also provides various forms that commercial businesses can use to collect data on their markets and to set up databases concerning their customers.
  - *Communications Server* : this is a server that is dedicated to the publication of documents of all kinds (product information, various announcements, assistance and services for users). This server also includes functionalities permitting the collection of information by means of forms.

- **Commercial applications line :** this line is specifically intended for suppliers of information on networks on line wishing to obtain a true electronic com-

merce application; these extensions, which are four in number, are functional adjuncts to the *Commerce Server* proper:

- *Merchant System* : this product makes it possible to create an actual showcase of the products or services that the company wishes to market via the Internet. The product information is entered in a relational database in such a way that visitors to the site can perform multi-criteria interrogations. The application also provides them with an electronic basket that they can use to store selected articles until the payment stage. This is also performed by the system (*Transaction Server*) via the transmission of data to the financial organization to enable the transaction to be authorized and processed. The data generated by a transaction are entered in the system, in particular credit card numbers, articles purchased and invoicing and delivery information.
- *Publishing System* : this application is intended for companies using the Internet as a support for their publications: it has been designed to manage subscriptions on line, issue access authorizations, instantaneously produce a display made up of advertising banners based on the demographic profile of the users and quantify rates of response to the advertising messages displayed on the screen.
- *Community System* : this software is intended to enable commercial businesses to break down their customers into like-minded groups, communicate with them and offer them interactive exchange options; the customers can therefore express their opinions of the products offered by the supplier and discuss among themselves their own personal ways of using them. The application enables the supplier to collect this information indirectly.
- *LivePayment* : this enables businesses engaging in electronic commerce to customize their sites and to include financial transaction functionalities directly in Web pages; the software also offers encryption facilities and the possibility of real-time credit card transaction processing in partnership with various companies providing financial services, such as, in particular, First Data/Card Services Group or Pacific Online, which direct payment orders between credit card issuers and banking institutions.

Overall, all the server applications and the various platforms and extensions intended for electronic commerce accounted for 25% of Netscape's turnover last September.

I.2.3) - Software publishers and "privacy issues"

Producers of client or server software for the Internet are concerned with issues relating to data protection and the protection of privacy for four main reasons: first of all as designers of applications, such companies are able to decide whether the tools are to

leave navigation trails; secondly, as they are commercial enterprises, it is possible to assume that they will create and manage customer files; thirdly, as privileged websites, since the parameters within which the *browsers* operate ensure that each time a user logs in he/she automatically returns to the issuer's *homepage*; and fourthly, as software suppliers, they also have responsibilities to users with regard to security and the processing and transmission of data.

- *The traceability of browsing :*

  All software modules that are usable on the Internet, whether they be *browsers* or one of the many forms of server platforms, are designed in such a way that users leave traces of all the transactions, in the IT sense of the term, that they enter into during a session on the Net: URLs interrogated, files downloaded, paths taken, etc. This recording of traces occurs at all levels: in the cache files of client personal computers, in the *Proxy Servers* of access providers or Intranet servers of companies and in the servers of content providers.

- *The creation of client files :*

  The problem of client files must be seen in the context provided by the way in which *browsers* are marketed, which is quite unusual: it was actually based, at least to begin with, on the double principle of being free of charge and remote distribution. It should be remembered that this was the arrangement used to distribute the first *browsers*, i.e. the Mosaic software, throughout the world in the early 1990s. It was this arrangement, in particular, that enabled Netscape to achieve a figure of 6 million copies distributed between October 1994 and Spring 1995.

  Netscape abandoned this policy by charging the equivalent of about fifty Ecus in Europe for its *browser*, even though it is reasonable to suppose that a significant number of Navigator users have actually continued to use a trial copy downloaded free of charge. It is, by definition, fairly easy to obtain the information declared by Netscape customers when they complete Navigator order forms: they must actually provide their names, addresses, telephone numbers, invoicing addresses, buyer's credit card numbers and their electronic addresses.

  Microsoft and others have continued to apply a free-of-charge policy, either via downloading procedures, agreements with designers or retailers in order to enable *bundles* to be offered or by directly incorporating *browser* functionalities in operating systems. Finally, in 1998, Netscape was obliged to fall in with this free-of-charge policy, and in so doing cut itself off from some of its revenue. It must be admitted that free-of-charge distribution makes systematic identification of customers very difficult; in fact, this principle would appear to guarantee a certain degree of anonymity, but it is difficult to believe that the client files of these issuers are really empty and it is possible to wonder about the role played at this level by default access to the software publisher's website.

- *The* homepage *issue :*

  Browsers are designed in such a way that as soon as a connection is established with the Net, the first service accessed by the user is that of Netscape or Microsoft, depending on whether he/she uses Navigator or Internet Explorer. The user is therefore welcomed to what is termed a *homepage*, which is called the *Netcenter* in the case of Netscape, and this can be used to initiate an identification and information collection procedure, in particular to determine the version of the product used, the operating system of the user's PC or even, as occurred in May 1995, when a beta version of Windows 95 was launched by Microsoft, the different kinds of software contained on the hard disc of the PC, including competing products[13]; it is also technically possible to collect the *e-mail* address if a user who is not very aware of the consequences of his/her actions has indicated this personal address when configuring his/her *browser*. The aim of this operation, as Netscape officially admits, is to *"(....) create a basis for campaigns for marketing upgrades, new products or expansions"*[14].

  On the face of it, it is difficult to discover exact details about the personal data actually collected by the publishers of *browsers*, the way in which they process such data and whether they transmit such data to third parties. The fact that Internet users are proving to be sensitive about and take a critical view of protection of privacy issues is clearly causing companies responsible for publishing *browsers* to be very reticent on this subject. Should one believe small publishers of specialist software (*plug ins*) that are exploiting the niche of protection of privacy by claiming, for example, that Netscape creates named files and history databases about pages visited by users, the files they download, the discussion groups that they participate in and the messages that they consult[15]?

  In addition to being a useful tool that enables *browser* producers to remain in permanent contact with their users, the *homepage* is also an important commercial and financial facility: the *homepage* is actually an advertising medium that is highly profitable in proportion to its audience: Netscape has therefore developed a program called the *"International Banner Advertising Customers"*[16] which enables advertisers to buy advertising space on its *homepage* and in so doing to communicate with about 4 million visitors each day, although this figure has now increased to 7 million visitors per day to Netscape's *Netcenter*. Netscape charges between about 10,000 and 17,000 Ecus per month for displaying a banner at European sites. It is estimated that the total publicity revenue received by Netscape during the first 9 months of 1996 stood at $18 mil-

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13) Source : Information Week Magazine - May 22, 1995. page 88.

14) Cf. Report on Netscape activities - op.cit. page 17.

15) The functionalities of the **NSClean** software provided by Altus Software Marketing enable the user to obtain a clear view of the information that can be collected by Netscape and whether he/she wishes to change this, by the use of aliases in particular (*http://axxis.com/altus/products/altus-nsclean.html*).

16) Source : *http://home.fr.netscape.com/ads/intl/faq.html*

lion[17] and that in 1998, this revenue will account for 25% of the total income of the company. Netscape has targeted its users by arranging for a specialist organization (Griggs-Anderson Research) to perform a profile study; the study was carried out on a declarative basis in April 1996 and is based on a sample of 20,000 people in the United States. It shows that 42% of users have incomes of between $50,000 and $100,000, 84% of users are male, 57% have attended higher education, 39% work for companies with payrolls of over 1000, 77% are engaged in full-time employment and 39% have used their credit cards to make a purchase on the Web[18]. At this stage of the study, there is nothing to show that Netscape possesses more detailed data that might enable it to identify the users connected to its site more closely unless, of course, the user has actually purchased its software himself/herself and has provided the software house with a form containing his/her name and invoicing address.

- *Security issues :*

Issuers of client or server software for the Internet are concerned with security issues on at least three levels: protection of clients' personal computers, protection of servers and in particular data elements and restricted-access services and protection of confidential data circulating on the Net, in particular data relating to means of payment used for the purposes of electronic commerce.

The two basic components used in *browsers*, whether they are based on Java or ActiveX, are always prone to give rise to faults that pose a threat to the security of data and the personal files held on users' personal computers:

- a simple programming script written in Java permits a website that has been set up with malign intent to capture the e-mail addresses of Navigator users; this is an old problem, and was identified as long ago as version 2 of the product; according to some experts, it persists in version 3.0[19]. Along the same lines, a serious fault in Java also appeared in March 1996, which threatened to place the confidentiality of data and files resident on users' hardware at risk; this fault was officially recognized by Netscape and corrected in subsequent versions of the product after it had been reported to Sun Microsystems Inc., the owner of the Java language.

- ActiveX, which is an element that is specific to Internet Explorer and is owned by Microsoft, has been caught out on several occasions, in particular by the Chaos Computer Club (CCC), a group of German hackers who managed to show that an ActiveX check could initiate an unauthorized transaction involving a user's bank account from the personal ac-

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17) Source : **Robert D. Hof** op. cit.

18) Cf. Netscape Navigator Users - Demographic Profile. *(http://home.fr.netscape.com/ads/intl/demographics.html)*

19) Source : **Gordon McComb**: *"Netscape introduces new privacy bug"* - in Webmaster - *(www.javaworld.com/javaworld/jw-10-1996/jw-10jsbug.html)*

counting software Quicken[20]. A group of American students recently proved that this product contained a security flaw which might make it possible for a website set up with malicious intent to collect or destroy files on users' personal computers or to trigger a hard disc formatting command[21]. The component in question is called *Authenticode*; its function is to examine ActiveX checks and Java *applets* to determine their origins. Users who decide to ignore any warnings displayed by *Authenticode* will leave their systems wide open and will therefore make it possible for a Windows 95 command to be initiated remotely. And finally, a number of groups of students (University of Maryland, then MIT) have discovered new bugs in *Explorer*, in particular involving the re-initiation of Windows commands by users imagining that they are clicking on a hyperlink. Despite Microsoft's extremely rapid responses, some observers wonder whether the software house was right to integrate its operating system and its browser so closely[22].

The encryption of communications is the solution that was immediately imposed in order to protect data circulating between users and on line services. This problem is obviously also very important for the development of electronic commerce and access to sites that must be paid for. The issuers of software achieved this by means of various arrangements that they incorporated in *browsers* and servers under a variety of partnership arrangements, which included the banking sector. The basic software that is currently used by most of the market was *originally freeware* called *Pretty Good Privacy* (PGP), which uses the RSA algorithm and was developed by numerous institutions within the United States that were interested in network security issues (universities, research laboratories, service companies). The principle of PGP as implemented on the Web by Netscape and Microsoft is called the SSL (*Secure Socket Layer*); this enables the client station to authenticate the server, encrypt the data exchanged and check the integrity of data when it reaches the recipient. This solution poses a special problem in Europe due to American regulations, which do not at present permit the export of products with keys of over 56 bits. Numerous experiments have shown that systems limited in this way are relatively easy to crack, which means that client and server software for the Internet is generally available in two versions: a domestic version (for the American market) and an export version. Furthermore, some countries, such as France, have regulations that forbid the free marketing of data encryption systems. It must therefore be admitted that the current situation with regard to client and server software operating in Europe does not satisfy all the security conditions necessary for the development of electronic commerce on the Internet. However, it seems likely that there will very soon be changes in the regulatory and technological frameworks in this area.

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[20] Source : **Clare Haney**: "*Microsoft moves to allay ActiveX securities worries*" - TechWire - 02/20/97

[21] Source : **Nick Winfield**: "*Windows can be hacked through IE*" - C/Net - March 3, 1997 *(www.news.com/)*

[22] **Francis Pisani**: *"US students evade Microsoft security measures"* - Le Monde 15-03-97.

I.3) - Website audience and publicity communication measurement tools

1.3.1) - Description of log analysis software

The commercial use of the Internet makes it necessary to obtain an audience measurement system capable of determining, in particular, the price of the advertising space for which the advertiser is to be charged. In view of the special client/server architecture of the Internet and in particular of the fact that users are not permanently connected to a service, but send a series of requests, it seems likely that specific tools will be implemented that will be able to take account of the actual nature of transactions performed during a session. All transactions are therefore entered in a standardized file present on the server, which is called the ***Extended Common Log File Format***. This file records the following data[23]:

- the FQDN (*Fully Qualified Domain Name*) or the IP address of the user,
- the connection date,
- the type of transaction,
- the name of the file transferred to the user's *browser*,
- the protocol used,
- the code resulting from the transaction,
- the sizes of the files transferred in terms of bits,
- the *"reference field"*, i.e. the page from which the user reached the server,
- the type of *browser* used.

In order to use this information, a number of service companies have designed about fifty programs intended to be installed on website servers[24]. These programs all have the principal function of formatting *logs* data and presenting it in a way that is intelligible to site managers and also to businessmen buying or selling advertising space. They also make it possible to analyse the *hits* in detail, i.e. the Web pages that are most in demand among users, and therefore to restructure services by, for example, eliminating items that do not attract much interest. They may also be used to analyse traffic and in particular to determine the peak time on the server, in order, for example, to make better use of resources by creating a mirror site. The main products are as follows:

Main log analysis software
(Sources : Mecklermedia - 1996)

Product	Vendor	Price	Platform	Description
Analog	University of Cambridge Statistical Laboratory	Free	Dos, Unix, MAC, VMS	Free logfile analysis program for Unix, DOS, Mac and VMS
Getstats	EIT	Free	Unix	Log Analyser, written in C

23) Sources : **Luc Saint-Elie**: *"The Web under the reign of audience ratings"* - Webmaster No. 4 - February 1997 pp. 42-44

24) A fairly complete list of these products can be found under Yahoo! at the following address: http//www.yahoo.com/.

Product	Vendor	Price	Platform	Description
Hit List Pro	MarketWave	$1,995	NT	Flexible, sophisticated and user friendly website log stats analyser. Features include 14 ready-to-run reports, 130+ preconfigured calculations, comparisons, graphs and tables, query parsing, remote report generation, Word export, scheduled automatic email distribution of reports and full multiple virtual server support. Full Feature 15 day Evaluation Software available.
InterStat	Peritek SA	$1,000-$9,800	Windows	Web Statistics system for Lotus Notes with multiple views and navigators.
I/Pro	I/Pro			Independent auditing service includes I/Count, I/Audit and I/Code.
Log Analysis Tool Suite	Benjamin Franz	Free	Perl Support	Free utilities for analysing common and combined format access_logs, xferlogs, agent_logs and referer_logs. Includes RefStats, BrowserCounter and FTPWebLog programs - all written in Perl. FTPWebLog has an optional graphical report generator (also free) as well. Supports incremental report generation.
Market Focus	Interse	$695 - $6,995	Windows 95/NT	Sophisticated log analysis tool that analyses website usage patterns.
MKStats	MKStats	Free to $300	Any OS that supports Perl	Perl-based logfile analysis program. Price ranges from free for personal Web pages up to $300 for ServiceProviders.
Net Analysis	net.Genesis	Desktop ($295), Full version ($2,995)	Windows, Unix	Provides real-time or batch mode site activity reports that may be exported to various Word Processing and spreadsheet formats. Desktop version also available which is an entry level tool for analysing website usage information. A standalone solution with an embedded database, it runs on Windows NT/95. Generates dynamic graphic reports as well as static output to HTML, MS Word, and MS Excel.
NetCount	NetCount	Free-$1,395+		Independent auditing service.
NetIntellect	WebManage Technologies, Inc.	$99 - $149		32-bit Log Analysis Tool that generates reports (Tables & Graphs) that show Statistical, Geographic and Marketing trends in the performance and usage of any website. Compatible with all the HTTPD servers. Customize reports using various filters. Explore the item of interest using the Drill-Down feature. Save and View reports in HTML, MS Word, Excel, Lotus 1-2-3, and in Plain Text format. Cascade/Tile reports and log files for comparison. Supports Windows NT and Windows 95 platforms.
Pwebstats	Martin Gleeson	Free	Perl, gcc	Analyses WWW server logs in the common log format, including CERN proxy logs, producing a variety of statistics. The output is a series of HTML pages and inline GIFs.
SurfReport	Bien Logic	Free	Mac, PC, Unix	Traffic analysis software written in C++ that runs UNIX as a CGI program.

Product	Vendor	Price	Platform	Description
WebReporter	OpenMarket		UNIX	Add-on to Open Market's Web Server product line. Supports extended log format and common log format. Scripting language enables customized reports on peak demand, browser types and HTTP-referrer info.
WebTrac	Logical Technology Design Solutions	Free, $50 donation requested	Windows	Text and graphical reports of Server log activity.
Web Tracker	Cambridge Quality Management	$500	Windows	Graphical logfile analysis program. It is an interactive tool featuring rapid-drill down and access pattern exploration. Advanced sampling technology makes it possible to analyse even the busiest websites quickly and accurately.
WebTrends	e.g. Software	$149-$199	Windows	Offers configurable reports on user activity including most popular files and origin of users.
Wusage	Boutell.Com, Inc.	$25-$75+	Windows, Windows 95, Windows NT, OS/2, Unix	Offers configurable daily, weekly, or monthly reports Windows, with inline graphics. Supports both the common server log format and the Microsoft IIS log format. Reports include load by hour, popular documents, frequently visited sites, and missing documents.
WWWSTAT 2.1	Many, recent changes by Chris Lehr	Free	Any platform that supports PERL	Collection of log analysis tools including a Perl script that reads the server log files and creates an HTML formatted summary of server statistics.

A tendency is developing for the software installed at a website to be merely part of an analysis tool. **The data is actually transferred and processed by an external service provider**, i.e. the supplier of the software or a company specializing in audience measurement; the I/Pro and the Nielsen group are currently the leaders in this market. The commercial benefits for such service providers are clear, as the actual software licence fee is supplemented by a weekly or monthly charge for statistical processing.

An audience report actually breaks down as follows:

- breakdown of the number of visits per month or week according to duration (15 to 20 bands - from less than a minute to over 2 hours);
- display in the form of a list of sessions, broken down according to the date and time on which they were initiated, their duration and the *host* of origin (client *host*);
- breakdown of 50 client *hosts*: number of visits per host of origin, daily average, countries or states of origin, domains;
- breakdown according to origin (domains) and client enterprises;
- breakdown according to the countries from which logins are initiated;
- breakdown of Web pages served by the site: page name, description of its contents, number of times the page has been served, daily average for each page;

- breakdown of percentages of logins according to the *browser* used and the PC operating system.

It should be noted in addition that some of these tools are also intended for Intranet use. They therefore offer real-time ***monitoring*** functionalities that enable a network manager to find out who is consulting what at any time. This function is included as standard in Netscape's *Proxy Server* product: when an Intranet user, i.e. an employee of a company, initiates a request, the server checks whether it already has the information in its cache; if so, it serves the information immediately, and if not, it passes on the user's request to the Web, transmits the file to the user as soon as it arrives and retains a copy for itself[25].

1.3.2) - Cookies

Cookies are blocks of persistent client state information. They are embedded by a great many Web servers in a .txt format file of the *browser* on the client's personal computer. Each client browser can accept up to 300 *cookies* in principle, each with a maximum size of 4 Ko, and 20 *cookies* per domain name. When the file is full, the user must destroy the oldest *cookies*. They are intended to compensate for the relative poverty of the *Common Log File Format* and in particular the fact that a user's IP address is frequently not sufficient to locate him/her, as such addresses are frequently dynamic and are changed for each session. The format and structure of *cookies* files have been standardized by means of a whole series of RFCs (*Requests for comments*)[26]. The contents of such blocks comprise the following two components:

- data making it possible to identify the user and his/her browsing activities; they are entered in the "*Name*" field and are left at the complete disposal of servers, which may allocate all kinds of information to them, in particular a unique and permanent client identification number, the client's IP address, a password, etc.

- technical data clearly specified by means of various RFCs that make it possible to use the *cookie*: its expiry date, the name of the domain to which the server owning the *cookie* belongs (this determines the category of servers for which the *cookie* is valid), the name of the server in the domain (URL) for which the *cookie* is valid and security conditions (transmission of a *cookie* using the HTTPS protocol, i.e. subject to security of the SSL).

The principle is that a *cookie* embedded in a client station by a website may be reread on a regular basis by that site, and normally by that site alone, to enable it to identify users and recognize them when they log in again, check possible passwords, analyse

[25] Source : **Simson Garfinkel**: "*Snooping on Workers goes PC*" - Wired - 26 Feb. 97.
[26] These are RFC 822, RFC 850, RFC 1036 and RFC 1123.

their paths during a session (and in particular the site of origin) and within a particular site, record articles purchased in an electronic shopping mall (in which case, the *cookie* can perform the function of a caddie until the financial transaction state is reached), measure the audience of a site and customize a site, e.g. the homepage, on the basis of the user's identity.

The existence of such exchanges of information, which are conducted, it must be admitted, under conditions that might be described as opaque, has elicited a great deal of excitement among net-citizens and a large number of articles in the press have castigated sites that engage in such practices[27]. Various forms of response are being applied to this problem:

- technical responses: these are application-related and consist in providing users with means to agree or to refuse to accept a *cookie* on their PCs; this function is available in recent versions of Navigator and Internet Explorer; the problem, however, is that neither Netscape nor Microsoft provide their users with a simple explanation of what is meant by *cookies* and how they are used. There is also a solution used in Proxy servers, which is offered in particular by Junkbuster Inc. or by Community ConneXion in the form of *Anonymiser*[28], which consists in filtering incoming *cookies*[29] or inserting a Proxy server between the client and the server. There are also a number of external *plug-ins* intended for users' PCs, e.g. *PGPcookie cutter* or *Stronghold*.

- institutional responses: a number of measures are being taken within the Internet community to regulate the use of *cookies*, without, however, placing in doubt the existence and activities of the marketing companies that use them. A first measure was recently implemented within a working group under the leadership of a Netscape and a Bell Laboratories employee, culminating in the RFC 2109. This document proposes new detailed specifications for the contents of *cookies* based on a desire for transparency vis-à-vis the user and respect for the latter's privacy: *browser* designers are, in effect, requested to place various checking mechanisms at the disposal of users in future, enabling them to decide whether or not to send and keep *cookies*, to read their contents via a specific area (*Comment-attribute*) and to sort those that they wish to keep from those that they wish to destroy. This means that certain areas that might contain "sensitive" information must be written in plain text that can be read by someone who is not an expert.

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27) Cf. in particular the articles of **Stephen H. Wildstrom**: *"They're watching you Online"* Business Week - November 11, 1996 & *"Privacy and the cookie monster"* Business Week - December 16, 1996.

28) *http:/www.anonymiser.com.* This site also has the advantage of enabling the user to ascertain in real time what a server can collect concerning him/her: here is the reply supplied by *Anonymiser*: *"You're located in France. Your computer is a PC running Windows 95. Your Internet browser is Netscape. You are coming from asfr1-45.easynet.fr. I see you found this page using the altavista search engine and I know what you were searching for, too!"*

29) Sources : **John Gilles**: *"Junkbuster strips banners, cookies"* - Wired - 22 Feb. 97.

A second series of measures is being taken under the auspices of *The Electronic Frontier Foundation* and CommerceNet: the program is called eTrust and is intended to create a basis for respect for privacy on *on line* networks: the idea is, in particular, to label websites undertaking not to collect personal data on users other than expressly declared data and to comply with the principles of use for the specified purpose and requests for the adjustment and deletion of personal data.

It is true that there has been much exaggeration of the threat posed by *cookies* to users' privacy: it must be admitted that they do not contain data that is particularly revealing or sensitive; although some bug-ridden old versions of *browsers* actually made it possible to collect users' *e-mail* addresses[30], this is not now generally the case. However, it is impossible to dismiss the possibility that processing and exchanges of data conducted by sites might ultimately be used to establish a relationship between *cookies* and much more detailed user profile databases. There is nothing apart from ethics to prevent someone, in the United States at least, from, for example, passing on to a *cookie* the *e-mail* address voluntarily disclosed to a site by a user completing a form. Nor is it possible to exclude the possibility that sites that are separate but linked might cooperate on a technical basis in a way that makes their *cookies* interoperable.

1.3.3) - The service providers : DoubleClick and GlobalTrack

The market on which advertising space is sold on the Internet includes a number of service providers that offer their clients, typically websites, an integrated management and campaign follow-up service. The essential advantage of the interactive media over television or the printed press, for example, is that they enable advertisers to target their advertising communications to the most relevant segments of the market, on an exclusive basis. They also make it possible for advertisers to obtain a very precise knowledge of the effectiveness of their communications, of who has seen their banners, how many times, and of what additional information was searched for and even of what *on line* purchases were made as a result. Two companies in particular offer this type of service on the Internet: DoubleClick and GlobalTrack.

First of all, the service involves defining the target users, by means of a whole range of criteria, such as:

- the user's country of residence,
- the domain to which the user belongs, out of the 6 currently in service,
- the sector within which the user's company operates (using the SIC: *Standard Industrial Classification System* code), its name, and, optionally, also its size and turnover;

[30] This applies in particular to the Lynx *browser*

- the type of *browser* used and the operating system, in view of the fact, for example, that engineers, researchers and students tend to work on Unix, creative types use Mac Os, IT experts use Windows NT and professional people use Windows;
- the access provider, in view of the fact that AOL subscribers tend to belong to the general public, while Compuserve subscribers tend to be businessmen;
- the editorial content of the services that the targeted users tend to consult and within which the banner is to be placed; DoubleClick has, for example, broken down services into 7 categories: "Premium sites", i.e. the most frequently consulted websites (*Quicken Financial Network, Dielbert, Usa Today, Gamelan Java Directory, Travelocity...*), business sites, leisure, sports and travel sites, technological, information and news sites, search directories and engines); DoubleClick operates on this level with a Net of 70 websites, while GlobalTrack places banners in all the sites corresponding to the target audience that accept the insertion of advertising messages;
- the date and time at which the banner is to be displayed; this will make it possible, for example, to target an audience mainly made up of people at work or at home and to manage the problem of time differences with regard to the countries in which logins originate.

The selection of targets on the basis of these criteria requires the service providers in question to possess databases of users that are as extensive and detailed as possible. For example, DoubleClick has been able to create a file of 10 million users in a single year, and is currently adding about 100,000 new profiles per day[31].

The mechanism for displaying advertising banners requires there to be a series of tripart relationships between the website visited by the user, the user's *browser* and DoubleClick servers in New York or GlobalTrack servers in Austin. As soon as a user has logged in, the home site displays a page containing spaces reserved for the insertion of advertising banners. The *browser* sends a request to the service provider's server in order to recover the graphics file that it needs to incorporate in the Web page during loading. To determine the banner that is to be displayed, the service provider's server retrieves the persistent information from the browser (user's IP address, network address, name of user's company, etc.), analyses the contents of the Web page being visited by the user and decides which of the thousand or so banners it has in store are to be sent to the user; to be more precise, the service provider's server tells the user's *browser* which HTTP request it must send to the server; the entire process is completed in little more than 20 milliseconds, in theory. In the case of GlobalTrack, it would appear from the diagram provided below that requests for banners are actually addressed directly to the website.

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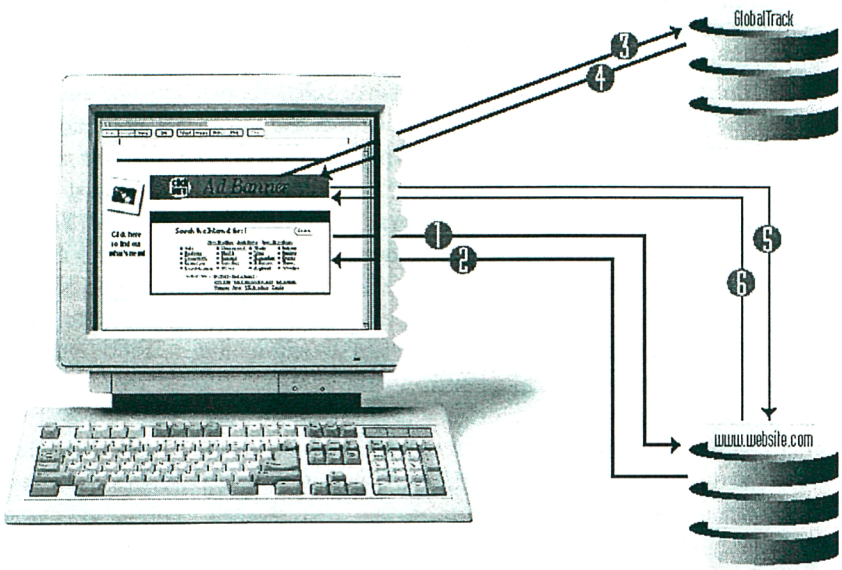
[31] Sources : **Dan Schiller**: *"Tradesmen launch assault on the Internet"* - Le Monde Diplomatique - March 1997

Diagram of exchanges of information under GlobalTrack
(Sources : http://globaltrack.com)



STEP 1: User makes request for a website page.
STEP 2: Site sends back HTML, which tells user's browser where on the Internet to find the graphic page elements.
STEP 3: User's browser makes request for ad banner from GlobalTrack.
STEP 4: GlobalTrack sends location of ad banner image to user's browser.
STEP 5: User's browser makes request for ad banner image.
STEP 6: Ad banner image is sent to user.

During this time, the servers continue to collect and assemble information: they tag the contents of the site visited by the user and in particular the pages that the user has loaded and, within these pages, they identify the key words that are to be used later to determine the relevance of the place where the banners are displayed in greater detail. **DoubleClick then allocates a specific and permanent identification number** to the user; this number is sent to the user via a *cookie* if the user's *browser* permits this: this will then make it possible to determine with certainty how many times a banner has been viewed by a particular user. It is also possible to assume that this identification number will make it possible to supplement and refine the user profile data when the user logs into the Internet on subsequent occasions with the knowledge of Double-Click.

The service providers have also taken on the role of providers of impact studies: they can calculate how many times users have been able to see banners of interest to them, knowing that, in principle, users' tendency to click on banners decreases considerably after they have been displayed 3 or 4 times. The results of these activities are reported to the advertisers *on line* within 48 hours of the launching of a campaign. If a user clicks on a banner, it will be the DoubleClick or GlobalTrack servers that will perform rerouting to the advertiser's site; during this process, the operation will be entered by

the banner server as a successfully targeted click-through. On average, these companies estimate that they achieve a hit rate of 40%. Once the advertiser's site has been reached, the service providers continue to analyse users' activities; they record in particular who makes a purchase, who leaves the site and at precisely which point this occurs.

Being aware of current discussions concerning the protection of privacy and the disputes to which they may be subject, the service providers in question claim that they do not store users' identities in the form of names or their *e-mail* addresses in their files. DoubleClick has, however, just initiated a discussion concerning the restructuring of the RFC 2109 with regard to *cookies*: one of the company's representatives has actually claimed that the adoption of these new specifications would make it very difficult for the company to continue its activities without making fairly substantial changes in order to maintain the same level of functionality[32].

I.4) - Search engines, intelligent agents and webcasting

1.4.1) - Search directories and engines[33]

There are two families of search tools on the Internet: trees/directories and engines proper. Directories offer the user a breakdown of subjects in the form of a tree structure: the user progressively orients his/her search by choosing increasingly narrowly defined subjects, until the desired sites are reached. The most comprehensive tool belonging to this category is certainly **Yahoo!** which has about 200,000 pages of URL addresses. **Magellan**, **Nomade** and **Ecila** should also be mentioned. Such directories are frequently created manually: teams browse the Net in order to classify sites by subject and produce brief summaries. This method of accessing information certainly imposes restrictions: although it seems a natural approach to adopt, the profusion of sites will bring about a situation in which certain branches are overdeveloped, whereas others are underdeveloped; furthermore, the way in which a directory is created is actually based on an editorial policy, which cannot be other than subjective, which means that the same search carried out using two different directories could have significantly different results. All this may have a fairly disorienting effect on users.

Search engines use the technique of indexing by means of key words: the user retrieves in any area one or more key words, which may or may not be linked by means of Boolean operators (and, or, except) and initiates the search. The engine then searches for the titles of the corresponding services and their URL addresses in its own index base. The results are displayed as the number of services found and in detail in the form of a list covering one or (frequently) more pages; the user then only has to scroll through them and click on the desired service in order to be automatically con-

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[32] Sources : **Kristi Coale**: *"DoubleClick Tries to Force Hand into Cookie Jar"* - Wired - Mar 17, 1997.

[33] Sources : **Remi Sussan** : *"Engines - a search"* - in Webmaster - January 1997 - pp. 52-56.

nected to it. The main search engines are **Altavista, Lycos, Worm, Hot Bot, Infoseek, Open text, Webcrawler** and **Excite**. The creation of an index base means that it is first of all necessary for the engine to have collected information on the Web: to achieve this, it uses the services of an active robot that examines the contents of the services available by means of hyperlinks: it currently takes a robot about 10 days of work to cover the entire Web. In order to limit the number of random searches, site operators provide the robots with standard files called meta-tags (*"keyword"*, *"description"*, *"robot.txt"*)[34] in which they themselves put forward the key words under which they wish to be indexed. The robots then go on to indexing proper, and some of them do not just confine their activities to the meta-tags, as they also operate on the basis of entire pages of text, while others work solely with the titles.

The selection of services in response to a request entails some fairly sophisticated techniques: some engines interrogate the base by determining whether all the terms in the request are contained in the title or in the start of the text; some weight recurrent key words, others classify responses according to whether they correspond to a single term or to all the terms of the request; and finally, other engines use an algorithm enabling them to find the required information by means of a semantic model (a particular Web page) supplied by the user.

There has been little discussion of data protection and the protection of privacy in connection with search engines. Such engines are considered to be neutral by their very nature and to process requests in an anonymous way. This question needs to be considered in greater detail, however:

- It may actually be supposed that search engines retain a trace of the requests sent to them, if only because analysis of the key words used and the *click-through* may provide information on the way the engine itself functions, its relevance and its optimization requirements. It could also be admitted that the key words and requests brought to the attention of such engines also indicate the preferences and areas of interest of users. This then automatically results in a set of information that could be very useful to those creating or refining profile bases.

- The use of search engines is currently completely free of charge; can this situation persist in the long term without the operators of such services finding a way of deriving profit from their activities? The solutions available obviously include advertising products, which would turn search engines into commercial websites just like the others; this would also require the services to implement the *cookies* technique, as is already occurring.

- One may well wonder about the extent to which the neutrality of search engines might not be compromised by the existence of commercial and economic

[34] Sources : **Cyril Dhénin** : *"How do I know I exist"* - in Le Monde Informatique - 21 February 1997 - pp. 24-25.

synergies between the engines and websites proper and whether such synergies might not result, for example, in certain sites being favoured to the detriment of others in the order in which they are displayed.

- It is finally necessary to mention the problem posed by search engines on *Usenet*, which make it possible to identify the discussion groups in which users participate by means of a request using the user's surname; any commercial use of such engines could constitute an infringement of the principle of use for the specified purpose.

I.4.2) - Intelligent agents

Agents are currently defined as *(...) programs that are capable of reacting with an environment, adapting themselves to circumstances, taking decisions or refining their own behaviour on the basis of the observations made by them*[35].

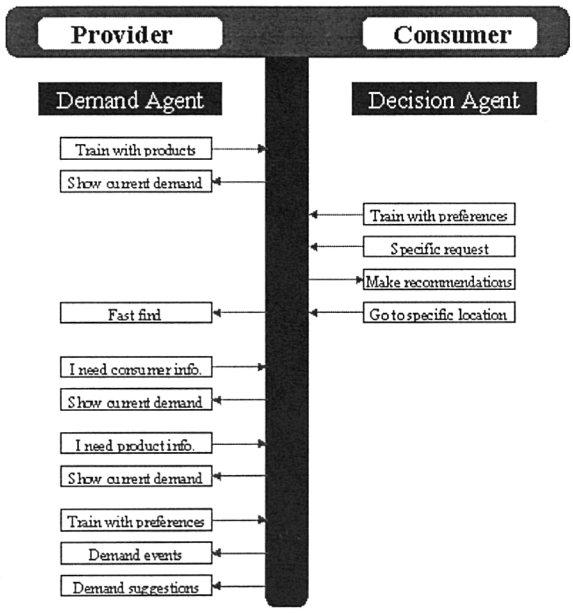
This theoretical definition is based on a technical principle of operation of an agent on the Internet, which consists in performing a search involving all the sites available in response to a request made in natural language by the user, and taking account of the personal preferences previously indicated by the latter; the agent therefore makes it unnecessary for the user to engage in repetitive and time-consuming search work. An agent operates autonomously most of the time; this means that the agent is installed on a server and is able to operate while the client's personal computer and modem are switched off. When it has finished collecting information, it sends it to the *e-mail* address that it has been given. It should be noted that there are also purely client agents, such as Quaterdeck's *Web Compass* product, for example, which is actually a *plug-in* that is activated by a *browser* during a session on the Net and that performs the search in real time.

The following diagram shows the way in which sophisticated agents (in blue) communicate and work with one another. The service provider's agent (*Demand Agent*) resides on the *host* and represents the service provider's interests; it converses with the client agent (*Decision Agent*), which is responsible for analysing all the products and services proposed by the demand agent and performs a selection on the basis of the preferences communicated to it. The red arrows in the diagram indicate exchanges of information and the agents initiating them.

[35] Sources : **Pattie Maes** : *"Intelligent Software"* - Scientific American, Vol. 273, No.3, pp. 84-86 September 1995. It is also possible to refer to the *MIT Media Laboratory* site : *http://lcs.www.media.mit.edu/groups/agents/research.html.*

The agent in action

(Sources : Personal Agents, Inc. - http://www.yourcommand.com)



A large number of experiments are being performed in connection with intelligent agents; almost a hundred university laboratories in the USA, Europe and Japan are working in this area. The main typologies in existence refer to artificial intelligence categories; if the aim is to categorize them according to the principal functionalities, and bearing in mind that the distinctions between them are not always clear, it is possible to distinguish between four main groups of agents: helpers, relationals, learners and buyers.

- ***Helper agent :***

  The principle function of these agents is to interrogate all the databases of the main search engines (which are about fifteen in number) and to provide an exhaustive list broken down according to engine or in a combined form, after having taken care to eliminate duplicate entries; the SavvySearch, Meta Crawler, IBM Infomarket and Searchbot systems belong to this category.

- ***Relational agents :***

  These agents may circulate between different sites; they are also called collaborator agents. The main agents in this category are General Magic's *Telescript*, *Similarity Engine*, *HOMR (Helpful Online Music Recommendations)*, *Webhound, SiteSeer, Yenta* and *Firefly*, a number of these tools having been produced as a result of heavy-duty research programs conducted by a team at

MIT (*The Autonomous Agent Group*). *Similarity Engine* and *HOMR* offer a "*rating*" service in the area of music: the user classifies and indicates his/her preferred musicians, and, after having analysed several thousand voluntary statements collected by the same means, the system suggests to the user names of musicians that he/she has not mentioned but who he/she might like. *Webhound* and *SiteSeer* offer an identical *rating* system regarding users' preferred Internet sites; *SiteSeer* uses bookmarked pages in particular and offers users the possibility of establishing a connection between them. *Yenta* is a dating service based on religious and other affinities; it provides an extremely long and detailed questionnaire in order to establish all the aspects of someone's personality before introducing them to a kindred spirit, and in so doing obtains what can only be described as sensitive data. *Firefly* also operates on the basis of an application form intended to determine the musical and cinematographic preferences of its clients, and also in relation to websites (*My Yahoo!*). It claims that during the last year, it responded to requests made to it by no fewer than one million users[36]. *Firefly* also offers to provide a user with a list of those other users of the service who have the same tastes as him/her.

It should be noted that the client/server architecture of *on line* networks makes it more or less impossible for such relational agents to be installed in client workstations: they actually require a *peer-to-peer* communication environment, which can be more easily established between two *hosts*.

- ***Learning agents :***

All agents are able to learn to some extent and to improve their performance as they are used. The most advanced model in this category is probably the agent *Letizia*, which acts alone and deduces and records the main areas of interest of a Web user on the basis of successive sessions; it operates on a background basis, which means that it can activate itself during a subsequent session in order to suggest results corresponding to the subjects previously searched.

- ***Buying agents :***

These are agents for commercial purposes, the main example of which is *Bargain Finder*, which was developed by Andersen Consulting; it is also necessary to mention *Kasbah, Bazaar* and *Challenger*, which were all developed by MIT as part of the *Distributed Multi-Agent Marketplace* program. They are comparative tools that can help consumers to find the desired products from the supply on offer on the Internet. The model of *Bargain Finder* that is currently available is, once again, applied to the area of music and is intended to enable users to buy compact discs on the Internet. This tool scans all the sites selling CDs on line and finally provides the user with a list of services with active links where the desired disc is available, indicating the price and the postal

36) Sources : *http://www.firefly.net/coopers_pr.htm*

charges; it also indicates the sites with which it has not been able to establish a link, and in particular those that have deliberately refused access.

Adopting a somewhat different approach, a French mail order company, the CAMIF Group[37] provides its visitors with its own intelligent agent, which then actually performs the function of a seller. The agent serves not just to select products of interest to the client (currently photographic equipment), but also to automatically configure customized pages of the electronic catalogue by collecting corresponding HTML objects in the articles base. In this case, therefore, the intelligent agents are virtually sales persons and advisors that are also able to perform linked sales of accessories (flashes, tripods, additional lenses, etc.). One is justified in wondering about the form of distribution that is going to develop in connection with this type of agent; some service companies would like to preserve a monopoly of operations and develop their services on the Internet on a paying basis, in which case the selling agent would be lent to various commercial sites and perhaps paid for in the form of a percentage of sales revenue[38].

Intelligent agents have recently been presented as an alternative to *cookies*[39] and as posing less of a threat to privacy. It is certainly possible to admit that they do not engage in the automatic collection of data that has been involuntarily generated by a user during an Internet session. This statement, however, should be considered more carefully:

- Information supplied to an agent is, by definition, a voluntary act involving a declaration whose initial contents are under the full control of the user. It should, on the other hand, be noted that both the agent's operating software and its communications with other agents are conducted according to protocols of which the user has no knowledge at all.

- Agents need detailed information about their users; some commentators maintain that agents that process and exchange bookmark files are working to create one of the best contents of the Web, i.e. communication between people, *"a network of people"* [40]. Nonetheless, one of the companies working on this type of agent, *SiteSeer*, recently announced that the new version of its product would be designed in such a way that users' approval would be required before their bookmarks file could be published on the Net. It must also be admitted that, by the very nature of the domain in which the agent is working, especially in cases involving the creation of groups of like-minded individuals and dating agencies, the information necessary to set up proper personal *homepages* may be of a fairly sensitive nature. As this information is in the possession of a *host*, one is justified in asking a number of questions about the way in which it is

[37] The site can be visited at the following address: *http://www.ilog.com/press/french/camif.html*

[38] **Erik Haehnsen** : *"CAMIF uses virtual sales persons in its on line catalogue"* - 01 Informatique - 21-02-97.

[39] Cf. in particular the contributions to the *First International Conference on Autonomous Agents* - Los Angeles - Feb. 1997 - Sources: **Kristi Coale** : *"Stars, Extras, and Other Agents on Parade"*- Wired - 7 Feb. 1997.

[40] **Michael Schrage** : *"Bookmark Your Territory"* - HotWired 1996 - http://www.hotwired.com

monitored, the purposes of processing and any disclosure to third parties to which it may be subject.

- It seems likely that operators in this technological area will gradually take note of the demands made of them with regard to respect for privacy. Recently, and probably as a way of preparing for extension of its activities on the on line networks market, Firefly Network Inc., a member of eTrust, announced that it had adopted a proper respect for privacy policy (*Network Privacy Policy*)[41]; the firm publicly made the following four undertakings:

  - not to disclose a personal e-mail address to commercial third parties without the prior express permission of the person concerned;
  - the purpose of the profiles really is to create a customized content, services and publicity for the user; Firefly reserves the right to process or arrange for the processing of data for the purposes of non-nominative statistical and commercial studies;
  - any person may at any time destroy his/her profile entered in Firefly (*opt out* procedure), which also undertakes to delete all the information derived from such a profile that might have been distributed to other files;
  - and finally, it has decided to have itself audited on a regular basis by firms such as Coopers & Lybrand or KPMG to determine the way in which it is observing these standards. This process must then be used to create referencing by means of *benchmarks*, which may be applied to other companies present on the Internet. The aim is also to enable Firefly to develop its activities in the direction of direct marketing and to move closer towards the protection levels in existence in European countries.

I.4.3) - Webcasting

For several months, a number of operators on the Internet have been working on the launch of a new type of service, which has been called *webcasting*: this is a technologically hybrid system that uses the contents of *on line* services and the principle of non-interactive broadcasting used by television. Unlike the Internet, where the user, with all the tools at his/her disposal, must actually perform complex browsing operations in order to search for information himself/herself, *webcasting* adopts the principle of *push*: this means that the information is literally pushed towards the client, who then only has to open various specific cache files in order to consult it. This technology is not without relevance to the dissemination of networks culture within modern societies, as it bypasses the pitfalls that currently beset users: mastery of tools, the saturation of networks and the proliferation of IT resources, to name but a few. *"(...) People want their computers to be as easy as television, they want just a few channels*

[41] Sources: *"Firefly Network, Inc. First Internet Company to Receive an Unqualified Opinion from Coopers & Lybrand L.L.P. for control Over Privacy Procedures"* - Feb. 18, 1997 - http://firefly.net/coopers-pr.htm

that they can turn to", explains one of the managers of Sun[42]. There is also a market for *webcasting* among institutions, as a large number of companies currently investing in the Intranet see as it an effective means of internal communication with their employees. As the current experiments of the *Wall Street Journal* are showing, some communication companies might in the future become operators of their own *webcasting* systems for their subscribers.

The pioneer of this technology was the *Pointcast* system. This company was set up in California in 1992 and its managers include the chairman of Adobe and the chairman of MCA/Universal, which effectively symbolises the fact that the system is at a technological crossroads. The user is actually offered a free subscription form on which he/she indicates his/her main personal interests; under partnership agreements with service providers (mainly CNN and about a dozen American newspapers and magazines), *Pointcast* collects information from such sites, stores it on its own servers and downloads it onto its customers' personal computers; as soon as the customer ceases to use his/her keyboard, headings appear on the screen, according to the same principle as screen savers; he/she can then click on a particular information item and obtain the desired details, and hyperlinks also enable him/her to deepen the search by sending an additional request to a research engine or directly to the site in question. *Pointcast* claims that it currently has 1.7 million subscribers.

Over a dozen competing solutions are currently appearing. Attention can be drawn to the main ones, such as AOL's *Driveway*, which enjoys the benefit of already having 8 million subscribers, *BackWeb* which, according to a recent decision by Microsoft[43], should in principle be integrated with version 4.0 of *Internet Explorer*[44], Ifusion's *Arrive*, which is very much geared towards the dissemination of multimedia documents, Marimba's *Castanet,* which gives it clients access to a "transmitter" capable of accommodating a large number of specialist channels (press, radio broadcasts, downloading of interactive games software); each provider of information manages its transmitter as it sees fit, but the whole forms an informal network, which continues to be supervised by Marimba[45].

Apart from in the particular case of *Driveway*, use of these systems has remained free of charge up to now, except, of course, for access to sites for which a payment must already be made; the systems are essentially financed by means of the advertising revenue that they generate, which is, however, shared between the *webcasting* operator and the various partner content providers. Advertisers should be interested in this technol-

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42) **Amy Cortese** : *"A Way out of the Web Maze"* - Business Week - Feb. 24, 1997 pp. 39-45.

43) **David Lindsey** : *"BackWeb Readies for Big Push"* - Wired - March 12, 1997.

44) It will be noted, however, that *webcasting* is not enclosed in a system of exclusive partnerships: *PointCast* has worked with Microsoft in order to develop an open webcasting standard (*Channel Definition Format* - CDF); Netscape's *browser* is, for its part, compatible with everything that is currently on offer on the market; the next version, *Constellation*, will also incorporate the CDF standard. Microsoft finally announced that its next version of Windows to appear in 1998 will incorporate about half a dozen channels.

45) **Yves Eudes** : *"News on the Internet: information without effort"* Le Monde - Multimedia supplement - 16-03-97.

ogy because it simplifies the targeting and space purchasing process, which is particularly complicated on the Internet. The audiences of distribution channels are known in advance and are stable, measurable and predictable[46]. It would, however, be wrong to believe that *webcasting* operators do not conduct detailed analyses of the behaviour of their subscribers. Subject to a more in-depth investigation, the issues surrounding data protection and the protection of privacy hardly differ at all from those previously discussed with regard to *cookies* or intelligent agents; it is simply necessary to provide a reminder of the following three points:

- while still using the functionalities of *browsers*, *webcasters* distribute their own log-in software at their sites; this software is designed in such a way that it can enter into communication with the master site without the user having to perform any operation at all. For example, *upgrades* and *patches* can be automatically downloaded in a background operation. These products are partly driven and are made to measure to accommodate the needs of centralized working: **following principles that are identical to those of task *workflow* software, they themselves deposit elements permitting users' activities to be traced**.

- Subscription to a *webcasting* channel means that a user will provide information on his/her tastes and main interests. As most of them are entirely financed by advertising revenue, operators are obliged to perform detailed analyses of the *"turn ins"* and *"click ons"* of visitors and to correlate them with profiles in order, in this case, too, to target the display of advertising messages as effectively as possible. Being aware of the increasing controversy surrounding the protection of privacy, *webcasters* intend nonetheless to offer a number of *"privacy options"*, which will enable subscribers to specify the nominative processing and disclosure of data to third parties authorized by him/her. Attempts to obtain information as part of this investigation did not elicit any more detailed information on these options from the *webcasters*.

- Finally, it is necessary to take account of the fact that one special feature of the *webcasting* market is that it may in future enable **advertising to enter the workstations of company employees**. An advertiser may therefore one day be able to claim to have succeeded in communicating with 3000 employees at Microsoft or General Motors. This gives rise to a number of economic and sociological questions. In the particular area of data protection and protection of privacy, one is justified in wondering about the extent to which this tool will intermesh with the electronics surveillance facilities that are already in existence in companies.

[46] Sources : **Dan Schiller** - op.cit.

I.5) - Access providers

I.5.1) - General information on the main access providers: Compuserve, AOL, Microsoft and Prodigy

Access providers form the link required by any user of the Internet. They perform the task of providing telecommunications links with the Web and its various services; all users, whether they be individuals or companies, must take out a subscription, against payment, with an access provider. In the case of individuals, access providers must, therefore, know the names of their subscribers and possess their bank details in order to enable them to collect monthly payments. There are two main families of access providers: those providing a purely technical service and those also offering a home platform that may include specific browsing tools and services on an exclusive basis; Compuserve, AOL, Microsoft and Prodigy belong to the second category.

- ***Compuserve :***

  Compuserve Information Service (CIS) is the second largest provider of on line services in the world (approximately 3.2 million CIS subscribers at 30 April 1996, not including NiftyServe subscribers and subscribers of *Compuserve's Japanese licensee*). With a local presence in 75 cities outside the United States (in 17 countries), the company has a total of 2.7 million subscribers outside the United States (including 1 million under CIS). NiftyServe is a Compuserve distributor (exclusive to Japan), which is entitled to use CIS technology in its own services. Compuserve has also concluded agreements with distributors in Australia, New Zealand, Hong Kong, Mexico, Argentina, Chile, Venezuela, Israel and South Africa.

  In March 1996, Compuserve launched WOW: a new on line service targeted at the *"home market"* which was intended for less experienced computer users. The main special feature of this service is that it is intended for families (including areas reserved for children and more specifically targeted services). At 30 April 1996, this service had a total of about 63,000 subscribers. SpryNet (a subsidiary of Compuserve) is intended for users who prefer to access the Internet directly (130,000 subscribers at 30 April 1996).

- ***AOL (America On Line) :***

  AOL is the number one on line service provider (6.2 million subscribers at 30 June 1996). In the space of three years, this company has built itself up into the world leader, leaving its main competitors far behind. It is now pursuing a policy of agreement with companies likely to provide it with local content, in particular Bertelsmann in Europe (Germany, United Kingdom, France) and also in Canada and Japan.

- ***Microsoft :***

  With only 1 million subscribers, MSP, the company offering access to *Microsoft Network* (MSN), is a long way behind AOL and Compuserve, but its strategy is more difficult to analyse. Whereas AOL and Compuserve have both adopted a communications company strategy, Microsoft cannot be placed in the same category. As far as the Internet is concerned, Microsoft actually has a finger in every pie (on-line service provider, publisher of a browser, influential and important contributor to the establishment of Web standards, producer of the most widespread PC operating system and supplier of Web servers, Intranet solutions and an electronic commerce platform); it therefore occupies a hitherto unheard of position on this market.

- ***Prodigy :***

  Created as a result of a partnership between IBM and Sears in 1984, it has only existed in its current form of "Prodigy Inc." since the purchase of *Prodigy Services Company* in 1996 by Wireless Inc. It claims to have over 1 million subscribers. This company has concluded partnership agreements mainly with telecommunications operators in Africa, Asia and Latin America.

I.5.2) - Protection of privacy policies of the main access and on line service providers.

As a result of their position on the network, access providers are very well placed for the acquisition of information about their subscribers and their behaviour as users of Internet resources: as already pointed out, any information circulating between a user and an Internet service (Web, *e-mail*, FTP, IRC or *newsgroup*) must pass through their servers. At this stage in the study, this analysis is based on the subscription contracts for the services under consideration and on a study performed by the CDT[47]. It should be pointed out right now that of the 4 contracts studied, 3 include a specific section on the companies' policy with regard to *"privacy"*, but there are no precise details of what access providers do with the information they collect nor about the length of time for which such information is retained. Only Compuserve does not devote a special section to this area, although the subject is discussed in two documents[48] specifying its *"mailing list"* policy. It is appropriate at this point to distinguish between three main categories of information collected and processed:

- ***Personal information :***

  This is information that is provided by the client when he/she registers with the provider. This first set of information therefore includes the name of the subscriber, his/her *e-mail* address, the address of his/her place of residence, sometimes his/her personal telephone number and information associated with his/her account as a customer (duration of the subscription, credit card number,

47) http://www.cdt.org/privacy/online_services/
48) CIS:FRE-275 ; CIS:FRE-279

expiry date, cardholder's name). Three out of the 4 services under consideration provide a clear indication of the way in which such information is stored and used:

- **MSP** envisages 5 situations in which personal information may be passed on to third parties:

  - if an item is purchased that cannot be delivered *on line*: information passed on to the seller, i.e. to a website engaging in electronic commerce that has entered into a financial transaction with the visitor:
  - to make a purchase or to agree to or bring about the electronic delivery of a specific content or goods or services; information transmitted to the *"Content provider"*;
  - if the subscriber reaches MSN via an independent access provider included in the MSN directory;
  - for the purposes of invoicing or recovery of charges payable under a contract;
  - personal information may also be supplied to Microsoft so that the subscriber can be informed of offers or special messages concerning Microsoft products.

  MSP does not go into details concerning the personal information that may be supplied to third parties in these 5 cases. MSP also reserves the right to engage in *host mailing*, which involves sending subscribers offers from external suppliers, the addresses of which have been selected on the basis of personal information, without this giving rise to any genuine assignment of nominative data. The subscriber is entitled to refuse to accept details of such commercial offers (Microsoft being included with such suppliers) by indicating his/her desire not to receive such material on registration (by ticking a box) or while using MSN. Users are also entitled to consult and modify information if it proves to be incorrect.[49]

- Personal information collected by **AOL** comprises the information necessary for management of the client account and the information left by any exchanges between the subscriber and the client service. The latter may not be disclosed to third parties without the subscriber's consent, which may be provided **orally or electronically**. Telephone numbers, credit card numbers and account numbers are not disclosed under any circumstances. As in the case of MSN, the user may refuse to be included in *"mailing lists"* but may also specify his/her *"marketing preferences"* and therefore filter out some of the commercial offers that may be sent to him/her[50].

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[49] MSN - The Microsoft Network Member agreement - Member Information. §1.1 / 1.2 / 1.4

[50] AOL's terms of service agreement - Privacy policy § 7.B / 7.C / 7.D

- The **Compuserve** contract does not provide any details about the type of information collected. The only explicit information is not contained in the subscription contract, but in two appended documents[51] concerning Compuserve's *"mailing list"* policy. These documents do not specify the type of information that is disclosed and confine themselves to explaining the principle and advantages of such *"mailing lists"*. The user has nonetheless an opportunity to refuse to be included in such lists.

- The **Prodigy** subscription contract is one of the most detailed with regard to the processing of personal information relating to subscribers. Although it does not (like AOL or MSP) distinguish very clearly between the various types of information collected, it is, on the other hand, very explicit concerning processing and provision of such information to third parties. Certain personal information is accessible to and modifiable by the user. Such information may also be transmitted to third parties, but in an agreed form that does not permit personal identification.

  In addition to personal information, Prodigy is the only one that admits recording descriptive information about the user's station (operating system, modem, Prodigy programs). The collection of such information on the environment of the subscriber's workstation is performed, according to the contract[52], in order to:

  - analyse the conformity of proposed or future services to the configuration of the subscriber's station;
  - test and monitor the performance of Prodigy programs;
  - provide notice of developments and offers of equipment that may be of interest to subscribers.

  Apart from certain personal information that is transmitted to "sellers" when purchases are made by subscribers (name, address, telephone number, information required for transaction, duration of the subscription, underage subscriber), Prodigy undertakes not to sell, lease out, exchange or disclose its list of members to any third party[53]. On the other hand, as in the case of all the services under consideration, *mailing lists* are managed by Prodigy *(host mailing)* and subscribers are also entitled to refuse to be included in such lists.

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51) CIS:FRE275 and CIS:FRE279 at
http://www.cdt.org/privacy/online_services/Compuserve/Compuserve.html

52) *Prodigy Service Agreement - § Information supplied to Prodigy by members.*

53) *Prodigy Service Agreement - § Prodigy's policy on protecting member privacy*

- ***Transactional information :***

  This second type of information comprises information relating to a customer's browsing activities (addresses and types of sites visited, connection times and information associated with the purchases that are made). Apart from Compuserve, which does not discuss this matter, all the services admit that they record and use transactional information. On the other hand, none of the services under consideration provide any indication of the volume of information recorded for each subscriber or about the period for which it is stored. AOL is very definite about the use that is made of such information[54] : « *(...) for example ; we use Navigational and transactional information to understand our members' reactions to menu items, content, services and merchandise offered through AOL and to customize AOL based on the interest of our members* ». Microsoft does not specify the operations that it performs on the basis of such information; it does, however, explain that such information may be disclosed to third parties in a form that does not permit the identification of individual subscribers[55].

  It is important to note that Prodigy admit to generating *mailing lists* on the basis of personal and transactional information [56]. This service provider is also the only one to define **a membership holder's status**. This status makes it possible to register and combine a group of subscribers *(membership)* in the name of the holder, which is responsible for use of the service by its members, invoicing being carried out centrally via the holder's account. The holder may also control access by its members to certain services[57]. Use of services and orders made by underage members are billed to the *membership holder*. Prodigy may also provide the *membership holder* with information on use of the service by its *membership*[10].

- ***Content of private communications :***

  This final type comprises the content of personal messages *(e-mail)* and messages exchanged on "IRCs". As in the case of transactional information, Compuserve does not discuss this matter. The policies of the three other service providers are clearly stated, on the other hand.

  Microsoft states that it inspects and monitors the content of IRCs[58] (*Chat rooms*) and discussion groups managed by a "*forum manager*"[59]; the files transmitted may also be subject to monitoring by it. Microsoft also undertakes

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54) *AOL's terms of service agreement - Privacy policy § 7.C.ii*
55) MSN - The Microsoft Network Member agreement - Member Information. § 1.2
56) Prodigy Service Agreement - § Prodigy's policy on protecting member privacy
57) Prodigy Service Agreement - § Responsability of Membership Holders.
58) MSN - The Microsoft Network Member agreement - Operation § 3
59) MSN - Member Guidelines - MSN Forum § Forum Manager & § Chat Rooms

not to intercept, attempt to intercept, open or attempt to open *e-mail* messages [60] without the authorization of the sender or recipient of the message, except for in certain exceptional cases (suspicion of illegal activities). Prodigy pursues much the same policy. Regarding the monitoring of IRCs, NewsGroup and FTP, it reserves the right to inspect all the information placed on its service with the exception of *e-mail* messages. In this connection, it also undertakes not to inspect or disclose the content of such messages[61].

AOL's policy is essentially identical to the two policies previously described. It clearly states that it is entitled to monitor IRCs and NewsGroups[62] but, adopting the same rules as Microsoft or Prodigy, it also undertakes not to consult or disclose the content of *e-mail* messages except for in three specific cases[63]:

- in connection with legal investigations;
- in order to protect the property rights of AOL Inc. ;
- in emergencies, where AOL Inc. is able to prove that its security is at risk.

It should finally be pointed out that, in view of the large number of small access providers, it is legitimate to wonder about the way in which data protection and protection of privacy principles are applied. A rapid review of this point with regard to French service providers shows that contracts do not provide any guarantee at all in this area. Nor is it certain that these operators all comply with the French law of January 1978 and that they have in particular made a prior declaration concerning the processing of nominative data.

60) MSN - Member Guidelines - E-Mail
61) Prodigy Service Agreement - § Information on the service - General / messaging.
62) AOL's terms of service agreement - § 5 - Public communication
63) AOL's terms of service agreement - § 7 - Privacy Policy - D(iii)

Section II – Overview of on line services and the protection of privacy

II.1) - Electronic commerce services

II.1.1) - The various forms of commerce on the Internet

A deluge of figures seems to promise a radiant future for electronic commerce on the Internet: some firms are predicting global turnovers of about $30 billion for the year 2000, while IDC places it within a range of between $150 and $200 billion; IBM is both more optimistic and less deterministic in its approach and prefers to count on the long term: its forecasts focus on the year 2010, when it expects a global turnover of around $1,000 billion. It must, however, be admitted that the current reality is quite different: according to the results of a study performed by the firm Forrester Research, the various on line services achieved a turnover of $700 million in 1996, which hardly exceeds the annual revenue of two supermarkets. By way of comparison, the French Minitel system alone generates transactions equivalent to between $1 and $1.5 billion dollars per year, whilst in the United States, it has been observed that teleshopping using specialist television channels generated revenue of less than $3 billion in 1996 and sales by freephone numbers (1-800) with disclosure of a credit card number were estimated by ATT to stand at about $100 billion in the same year[64].

The commercial enterprises that are attracted by on line distribution are of various kinds: they obviously include mail-order sellers of a general or specialized nature for whom the Internet is merely another medium, for use alongside paper catalogues and in some cases video catalogues and ordering by videotex or telephone. Most such US and European companies (La Redoute and les Trois Suisses in France, Otto Versand and Neckermann in Germany) are present on the Internet, but with limited configurations services that are arranged in a spirit of caution and with a concern for profitability. It has been noticed, however, that the Internet is eliciting attempts to diversify and conquer markets that are resulting in new forms of retail trading and new operators. They can be broken down into three categories:

[64] Sources : **Edouard Launet** : *"Electronic commerce: the call of the sirens"* - Webmaster - February 1997. pp. 25-33.

- *Commercial enterprises engaging in the sale of intangible goods :*

  Typically, these are software houses and communication enterprises for which the Internet is the quintessential technical support for the remote real-time distribution and sale of their products, which may comprise pages of information from a journal, software or video films. Such operators may, in the long term, find that the Internet is a source of substantial savings, in that it will enable them to cease maintaining and paying a network of retailers. This should also benefit the consumer, both as regards speed of purchase and price. This form of trading is clearly part of the long-term strategies of software houses, for example, and of Microsoft in particular. Another advantage of the Internet is that it removes the barrier to **knowledge of the final consumer** constituted by middlemen. As far as publishers of newspapers are concerned, it is also a way of obtaining precise information about subscribers' patterns of consumption. This on line commerce sector has a particular need for micropayment systems.

- *Commercial enterprises engaging in the sale of tangible goods or services :*

  This category includes many different types of companies. It includes, first of all, big companies using the Internet as a support for selling directly to the consumer: the most strongly represented sector at present is that of IT hardware manufacturers or retailers, which is easy to understand if one takes the nature of the population of Internet citizens into account. Clothing also seems set to make a breakthrough on the Internet, enabling large retail chains in particular to enter the traditional market of mail order firms; the most important example is undoubtedly that of the British Burton group, which, a few months ago, opened a commercial website that comprises no fewer than 1200 pages of articles; this is certainly one of the most significant experiments in this area. With regard to a completely different range of products, it is also possible to mention the experiments of American Airlines, US Air and Cathay Pacific in the sale of air tickets at a discount or by means of auctions in order to improve rates of occupation on their flights; this arrangement for immediately bringing together supply and demand was already practised by air carriers in the form of *"yield marketing"*, the difference being that sales can be made directly by means of *e-mail* messages on the Internet, cutting out the role of travel agents.

  The Internet gives small and medium-sized companies an opportunity to invent new commercial activities or to develop them on a scale that would have been unattainable with the traditional resources that have up to now been at their disposal. These are most frequently operators that do not have physical points of sale and that use the Web to create an electronic shop from scratch. This category of commercial operators typically comprises sellers of compact discs, which are proliferating on the Internet with the assistance of search engines and intelligent agents; as pointed out by a French observer, it is easy to see that offering 200,000 compact discs on the *on line* market will not, in terms of the initial investment, cost the same as opening a shop in a city centre to achieve

the same end[65]. These businesses of a new type are exploiting the technology fairly quickly: there are numerous examples of this. We will confine ourselves here to discussing the case of a small company of French origin that specializes in the sale of local food products. The company, French World Contact, opened its website in October last year under the name of Marché de France [French market][66] and gives its customers the opportunity to place orders electronically on the basis of a catalogue of over 200 gastronomic products (madeleines from Commercy, nougat from Montélimar, wine from Cahors, etc.) from small French food companies. **The site has an intercontinental architecture**: stock and order management activities and supplier relationship management are situated in France; the import/export organization is based in Hong Kong for tax reasons; and the Web pages are also created in Hong Kong, 4 times more cheaply than elsewhere (slightly under 3 Ecus, as against 10 Ecus in France or the United States). Finally, the site is hosted by an American server in Arizona, essentially for reasons associated with the bandwidth (3 T1 accesses at 1.2 Mbps), freedom of encryption and the securitization of card payments (Visa, Amex and MasterCard) and uses the SSL (and soon the SET) protocol; customers receive an *e-mail* confirmation within 10 minutes of placing an order, which is followed by confirmation of the debit authorization (debit at the moment of dispatch) and finally a delivery number. The orders are delivered throughout the world by UPS within guaranteed periods of 7 days on average; the delivery number enables the customer to request the UPS site to provide package delivery status details[67].

As this example shows, all the electronic commerce sites concerned with tangible goods ultimately depend on an organization that takes care of **the logistics**; these services are generally performed by companies such as Federal Express, DHL or UPS, which operate on a truly international basis. Such companies are currently investing in Internet technology themselves, especially in the Extranet for supporting EDI flows with their customers[68], to such an extent that some observers wonder whether the functions of logistical experts and distributors will gradually merge; logistical experts must have a good mastery of key information in the distribution process, i.e. collection and delivery addresses for goods. It is not impermissible to envisage the possibility of a logistical expert one day concluding a very competitive agreement with a Korean IT manufacturer, for example, to enable the latter to deliver its personal computers directly to Western markets[69].

It should finally be pointed out that one of the main problems facing such small-scale operators is that they are new to trading in general. This may mean that **they do not have the necessary mastery of the code of practice that**

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65) **Jean Marie Billaut** : *"Middlemen in trouble"* - Webmaster - February 1996 pp. 36-39.

66) *http://francecontacts.com/marche/marmain.htm*

67) Sources : **Etienne Vallée** : *"Local products tempted away by electronic commerce"* Internet Professionnel No. 3 November 1996 p. 47 and **Thierry Parizot** : *"Selling nougat in Hong Kong"* Le Monde Informatique - 1 November 1996.

68) Sources : **Pedro Pereira** : *"Instant Delivery : FedEx Opens Doors to World"* - TechWeb - 02/18/97.

69) Sources : **Jean Marie Billaut** - *op.cit.*

must be applied in most Western economies with regard to direct marketing.

- *Commercial networks and shopping malls:*

The *on line* commerce market is not necessarily closed to traditional distributors, even though they do not master modern technologies so well. Internet is now offering them a practical solution enabling them to combine their wares in the showcase of an electronic shopping mall. This arrangement is now taking off rapidly, as no less than 300 such malls can now be found on the Web. The biggest is undoubtedly the **Internet Mall** of California, which includes about 20,000 shops in a dozen or so different categories. It is actually a site that indexes free of charge shops with a catalogue of products or services in the HTML format. It finances itself mainly from the advertising revenue generated from its audience of over 12,000 visits per day. The shops are classified according to category and the visitor has an internal search engine that provides him/her with a list of the sites offering the desired product; advertising banners are targeted on the basis of key words or shops visited. Another added value of the Internet Mall is that it provides its members with a secure payment infrastructure. There is no precise information about any *network privacy policy* that such operators might undertake to comply with.

However, it cannot be denied that there is a considerable risk that the concentrations of shopping space will cease to be of any interest at all when search engine operators provide the market with equivalent tools making it possible to send a request throughout the Web: it is also possible to imagine that these product engines will include the functionalities of intelligent agents, enabling selections to be made on the basis of price ranges, for example; nothing would prevent such directories from offering their own payment security services, moreover.

The implementation of electronic shopping mall platforms is a significant form of diversification for companies that do not on the face of it have any connection with retail trading. Time Warner, ATT and MCI in the United States are currently trying to combine distributors under their own name following the same principles as Internet Mall, i.e. a common presentation environment and secure transactions. The computer giants IBM and Microsoft are also attempting to position themselves on this market. IBM has just opened **World Avenue**, which is a proper shopping mall which, although small at present, is intended to offer visitors gift idea search tools, for example, and to offer them products after they have stated their ages and their favourite pastimes. IBM also intends to use intelligent agents to establish client profiles in its mall. The services offered by IBM also, of course, include a secure transactions platform. Unlike in the case discussed above, registration with World Avenue is not free of charge: IBM is currently asking $30,000 for the installation of a shop, to which should be added a monthly rent of $2500 and a 5% cut of sales reve-

nue[70]. Microsoft follows the same logic but uses a different configuration: instead of requiring a potential *on line* trader to invest $15,000 by purchasing a *merchant server* licence, Microsoft offers to take responsibility for all engineering aspects and to arrange for the site to be hosted by a service provider, in return for which the latter pays Microsoft $3500 for its mediation services in respect of each shop installed.

Here, too, the question arises of the collection and processing of nominative data by operators who do not have any clearly defined professional code of conduct. Without casting aspersions on their intentions, one would, however, be justifiifed in wondering whether their presence in a large number of areas of activity on the Internet does not provide an opportunity for files to be linked in a way that may be detrimental to users' privacy.

II.1.2) - Integrated projects

Electronic commerce is a crossroads where a large number of operators and intermediaries meet; its development must inevitably require the definition of international standards in many areas, in particular in security and also in the architecture relating to the exchange of information between intermediaries. Such standards are currently being developed by means of large-scale integrated interprofessional and multi-dimensional programs; for example the projects conducted within the framework of the OMG, CommerceNet, the OSM and Semper. We will confine ourselves to describing the activities of the OMG (*Object Management Group*).

The OMG is an international structure whose function is to completely standardize object-oriented technology and distributed service and applications architecture. This technology is the basis for the various types of software used in the Windows and Internet environments. Within the framework provided by its *Electronic Commerce* and *Electronic Payment Facility* programs, the OMG has just launched a series of calls for tenders for identification of the basic technologies that are currently applied to the various forms of *on line* commerce and to provide an object-oriented platform capable of supporting the different kinds of payment protocols. Such a platform would have to cover the various types of means of payment provided for on the network (cards, e-cash, micropayments) and it would have to include the data access environment known as CORBA (*Common Object Request Broker Architecture*), which seems set to be tomorrow's standard means of exchanging data between client and server workstations[71]. Tenders are to be received in August 1997 and the detailed specifications are to be adopted in February 1998. Observing the work that is to be carried out in this connection from a close vantage point is not without interest, as the very principle of an object means that reusable services are to be developed for construction of the actual applications and that inter-application principles of architecture and communication must be incorporated; it is not impossible for pressure to be exerted at certain lev-

[70] Sources : **Ira Sager** : *"The New I-Way Hog : IBM"* Business Week - Sept. 16, 1996.

[71] It should be noted that there are already a number of services with the CORBA label associated with the Internet : these are in particular the *CORBA Security for authorization, authentication, delegation and non-repudiations* and the *Object Transaction Services* and *Asynchronous Messaging* for managing services.

els of discussion and technical standardization to ensure that *privacy* requirements are directly incorporated in objects and reusable services.

II.1.3) - Means of making payments on line

A substantial proportion of the issues raised in connection with electronic commerce concerns the security of transactions and the means of payment used. A large number of operators with strategies that do not always coincide are contributing to this discussion: financial institutions, and in particular central banks, which are striving to protect their monopoly on the supply of money and monitoring bodies wishing to do everything they can to ensure that the Internet does not become tomorrow's support for tax fraud and criminal transactions, and for money laundering in particular; national banking organizations aiming to forestall attempts to find new ways of interfering with financial flows; credit card operators aiming to maintain the universality of the principle of card payments by transferring a secure service to on line networks; and finally small companies providing services, typically *start-ups* using their technical knowhow to attempt to impose various patented arrangements relating to security or to *e-cash* for the purpose of making micropayments.

The SSL system is currently used in the vast majority of *on line* transactions; we have chosen not to study it in order to concentrate instead on systems in the course of gestation that will set the scene for tomorrow's means of payment on the Internet. No definite outline has yet appeared from the large number of pilot projects that are being pursued, apart from an impression of extreme confusion and fierce competition. In the retail payments sector (i.e. not including *business-to-business* systems), however, it is possible to identify three main trends that are currently coalescing around technical solutions that have been agreed upon to a greater or lesser extent; each of these solutions has its own specific implications for data protection.

- *The SET (*Secure Electronic Transaction*) protocol, which is applied to charge-cards*

  This protocol was developed at the behest of the Visa and MasterCard companies, which were joined by American Express a few months later, in collaboration with various technological partners (IBM, Microsoft, Netscape, SAIC, GTE, Terisa Systems and VeriSign). It uses RSA encryption technology under an RSA data security licence and is intended to replace the PGP and SSL encryption facilities that have been used to date. Detailed specifications of the protocol are public knowledge and are not subject to a licensing arrangement, being mainly intended for companies interested in developing compatible software; the strategic interest of Visa and MasterCard is, of course, to encourage as high a degree of interoperability of SET as possible on the various applications platforms (*browsers, merchant servers* and payment servers); there is also an indirect desire to introduce a de facto standard. The specifications were first laid down in February 1996, followed by a second version in June, incorporat-

ing some 3000 comments from 76 countries[72]. Applications components (DRI - *Draft Reference Implementation*) comprising in particular the eight main message exchanges peculiar to the SET protocol have been developed by Terisa Systems, Inc. and are available from Visa or MasterCard. Final specifications are to be developed on completion of the various experiments that are being conducted, which will probably not occur before 1998.

At a technical level, the SET protocol standardizes and scrutinizes exchanges of messages between clients' *browsers* and electronic commerce platforms against a background in which payments are made by means of a traditional card with a magnetic strip. In specific terms, the SET protocol functions as follows:

- initial registration with an agreed third party, i.e. a trusted third party, of the parties to a transaction, enabling the latter to trust one another; this is, in other words, the authentication process. For the user, this initial registration requires the user to supply his/her credit card number, its expiry date, the invoicing address or the number of the bank account to be debited and any other identifying data that may be relevant. This information is transmitted to the trusted third party, which validates it with the financial institution issuing the card; a permanent electronic certificate is returned to the user, who stores it on his/her PC; this certificate does not mention either the card number or the number of the bank account, which are present but hidden, only the issuing bank being able to reveal them. The certificate simply proves that the card is valid; it will enable the card to be reused for future purchases without having to repeat the entire process. Big card operators such as Visa, for example, have specifically stated that they each intend to introduce their own authentication arrangements[73].

- during a transaction, the parties involved communicate by means of two pairs of unique and asymmetrical encryption keys: public encryption keys for signing the documents relating to a transaction, i.e. the purchase offer, and private keys including a digital signature for the actual transaction, i.e. the payment instruction, which ensure the integrity of transmission and that the order will not be revoked. It operates in the same way as the dual signature: the two keys interact in such a way that a payment cannot be valid unless the purchase offer is accepted by the trader, while the actual order is not honoured unless the payment is approved by the financial institution. The trader has no knowledge of the payment instructions contained in the digital signature, while the bank does not have access to the contents of the order.

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[72] Cf. Visa / MasterCard : *Secure Electronic Transaction (SET) Specification - Book 3 : Formal Protocol Definition - Draft for testing - June 24, 1996 - with revisions on August 1,1996.- http://www.mastercard.com* ou *http://www.visa.com.*

[73] Cf. VISA : *"Let's Go Shopping in Cyberspace"* and *"FAQ about SET" - http://www.visa.com*

Seen from this viewpoint, the SET protocol on the Internet does not represent any major change in relation to the personal data collected by financial operators during a traditional purchase by means of a banker's card: the data necessary for computer processing of the remote authorization of transactions, i.e. mainly the identities of the parties and the amounts exchanged, is retained thanks to SET[74].

The Visa and MasterCard initiative is made all the more important by the fact that it is going to be adopted by Microsoft and Netscape, which have both announced that the next versions of their *browsers* and *merchant server* platforms will be compatible with the SET protocol. A number of experiments associated with SET are to be carried out in Europe: last October, in Amsterdam, Visa launched a project called *Secure Electronic Commerce* (SEC), with the participation of almost forty banks from 16 European countries; the pilot project is to be completed at the end of 1997 or the beginning of 1998. MasterCard is, for its part, working with Europay: an experiment was initiated at the start of the year in Denmark, with a sample of approximately a thousand card holders, PBS (Danish Payment System) and a number of Danish commercial services with a presence on the Internet (e.g. the bookshop Lademanns Forlag); the SET-compatible electronic commerce platform has been provided by IBM (*Net.Commerce Payment*).

- *The SET protocol applied to Smart cards*

Apart from in the very specific case of France, the charge cards distributed up to now have not included a microprocessor. All the big operators have carried out studies providing clear evidence of the fact that this type of card offers a high degree of security; it has been decided to migrate towards this technology in principle but the changeover plan will necessarily be long, complex and expensive. The world's three main operators have defined a common standard which is called EMV (Europay MasterCard Visa); in its current version, the standard provides overall specifications regarding the mask of the microprocessor and the functionalities of the payment terminal.

One might be justified in wondering whether the development of electronic commerce on the Internet will tend to expedite the world changeover to charge cards made secure by means of a microprocessor. It has already been announced that the final specifications of EMV will include the SET protocol for on line payments. France, with some 27 million bank chip cards, will provide a particularly significant field for large-scale experimentation during an initial

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[74] Such information is generally as follows: the date and time of the transaction, card number, expiry date, value of purchase, trader's identification number, trader's bank's identification number, category of trader in three or four positions (each trader is classified according to activity: for example jeweller, hotel, airline - a number for each major category); this code is intended to facilitate risk assessment and decision-making by the issuing bank. Cf. **Serge Gauthronet**: *"Analysis of cross-border flows of personal data"* - Study on the airline booking, credit and finance sectors. ARETE report – ETD/93/A02600MI/12 - Commission of the European Communities - DG XV. (1994-1995).

period. A number of pilot projects are currently being launched there: one of these is under the leadership of Visa, which is collaborating with two big banks, BNP and Société Générale; France Télécom and Gemplus (card manufacturer) are also involved; the experiment will last for between 12 and 18 months and will involve about fifty electronic businesses and a sample of about a thousand Internet citizens equipped with a card reader. The other pilot project is under the leadership of Europay; it is to involve about ten thousand customers of a number of different financial institutions that are members of the EuroCard-MasterCard network (Crédit Agricole, Crédit Mutuel, Banques Populaires, La Poste).

These two projects are based on a standard to ensure interoperability (C-SET : *Chip Secure Electronic Transaction*) between French cards and SET-authorized business platforms situated in France or other countries. The aim is to test interaction between the data stored in the chip and the SET protocol; the experiment must be conducted with valid cards that have their own standards, in the knowledge that compatibility between the two protocols will be ensured for the time being by a specific network server (*translator*), although French cards will migrate towards the international standard EMV in future. Technically speaking, C-SET provides for the connection of a secure reader (*pinpad*) to the series port of the PC; its cost price is currently estimated at about 50 Ecus. At the moment of the transaction, the reader into which the user has inserted his/her card and secret code issues an encrypted payment confirmation (with a key based on 1024 bits, which cannot currently be exported) to the trader; this alone is sufficient to guarantee the authenticity of the transaction and to offer a high level of security, as the authentication dialogue is conducted locally between the card and the reader. It is clear that in this scenario the confirmation process is conducted for each transaction, and it is therefore possible to envisage omission of the initial authentication stage involving a trusted third party that appears to be necessary in the case of magnetic-strip cards. The trader responds by sending an electronic invoice to the screen of its customer's PC, which also provides the customer with a guarantee that he/she is dealing with a genuine trader. Interbank settlement operations are then carried out in the traditional fashion, by providing, in this case too, the data that normally is provided for any card payment. The principle of non-revocation is in turn guaranteed by the fact that the chip in the card records each transaction, which means that the customer will therefore not be able to disclaim any transaction that he/she has entered into.

However, there is at present nothing to prove that this arrangement will be adopted for general application by Visa or MasterCard. It must be admitted that the big card operators are showing great timidity in becoming involved in microprocessor cards technology; one must imagine a scenario in which the SET system that is currently being born is imposed on the market, regardless of any problems associated with chips and readers.

- *Electronic money solutions*

These are essential for development of on line services; it is necessary to take account of the fact that only 30% of them were claimed to be profitable last year[75] and 28% of them hoped to become so during the next two years. There is nothing to suggest that advertising will be sufficient to cover the cost of producing a website in future. Many organizations have already abandoned access free of charge in favour of payment of a subscription charge, and yet most of the sites for which such a charge is payable were already selling advertising space: for example the Wall Street Journal, which aimed to have attracted 50,000 subscribers paying $175/year by the end of 1997 or sites offering video games, such as 3DO ($9.95/month), Imagination Network on AOL and TEN (*Total Entertainment Network*)[76]. It is therefore possible to provide numerous examples of websites that would certainly be clients of rapid and yet secure on line payment systems instead of the SET system, which is clearly not suitable, in economic terms at least, for large numbers of small-value transactions. The value of the strategic target of electronic money on the Internet goes without saying, and in future it could even become a factor that gives structure to the development of the Web.

A number of different solutions are currently competing with one another, whether by means of pilot experiments conducted on the Web or in more traditional contexts. The general principle of this technology on the Internet is currently based on the use of a system for downloading money onto the hard disc of a PC; it seems likely, however, that in this case too, *e-cash* will operate on a support of the smart-card type. The solution is to electronically credit a particular amount to an ad hoc directory on the disc of the PC or to an EEPROM memory area of the card; this amount is then debited to the card holder's bank account. Each time he/she makes a payment on line, the user transfers electronic money units from his/her PC or card to the account of the trader or service provider, or, in another version, the balance on the card is reduced from the prepaid amount stored on the card whenever it is used privately, along the lines of dedicated cards (telephone cards, for example). It has been decided to discuss three European technologies of particular significance: the DigiCash, Mondex and Kleline/GlobeID solutions.

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[75] These are the results of a study conducted by the firm ActivMedia. Sources : **Kathy Rebello** : *"Making Money On the Net"* - Business Week September 23, 1996 pp. 44-52.

[76] *Ibid.*

- ***The DigiCash system***

DigiCash is a company that is based in Europe, more specifically in the Netherlands. The originality of the solution put forward by this company is due to the fact that it bears the stamp of having been designed by an advocate of *privacy* (David Chaum). The principle behind the performance of transactions by means of DigiCash is to protect the anonymity of the parties by means of a secure exchange protocol that is of the same type as SET (RSA algorithm) but that also uses the concept of the *blinded signature*, which ensures complete untraceability. In broad outline, the electronic money stored in an ad hoc directory on the hard disc of a PC (or in future in the electronic card) is identified by means of a serial number. The user validates the money by concealing it in an encryption envelope and transmitting it to his/her bank for signing; the envelope is removed before the money is passed on, but the money bears a record of the bank's signature in its serial number. This number is used for two purposes:

Diagram of payments by means of DigiCash
(Sources : Digicash - *http ://www.digicash.com/publish/*)

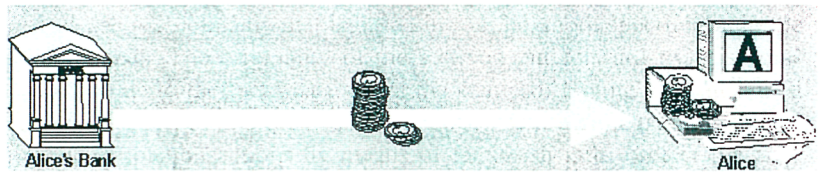

Figure No.1 : withdrawing money from a bank account

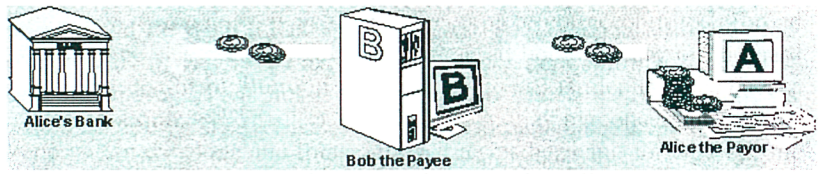

Figure No.2 : transaction between a buyer and a seller

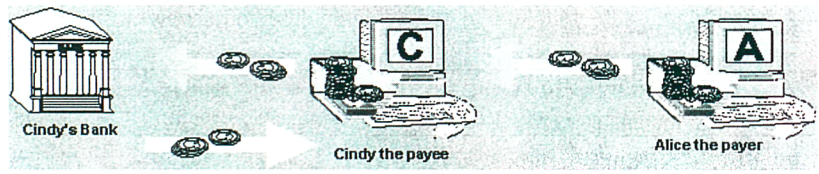

Figure No.3 : payment between individuals

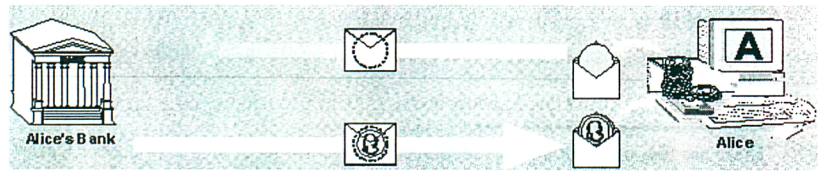

Figure No.4 : blinded signature

it is able to ensure that the token is not reusable, i.e. that the same money cannot be used twice, and also authenticates the money in such a way that, when it is used to make a payment, it is immediately accepted as valid without any bank or institution being required to authorize the transaction. This means that when the bank recovers units issued by a user during the settlement process, it is unable to determine their origin or the transaction for which they have been used[77].

The DigiCash system is currently being tried out in a large number of utilization contexts: site card (CAFE - *Conditional Access For Europe* project - in partnership with about a dozen companies, at the headquarters of the Commission of the European Communities), proximity card (Netherlands), motorway toll card and also on the Internet. Five financial institutions have, for example, decided to provide an electronic money system on the Internet under a DigiCash licence, for the time being using the arrangement by which *e-cash* is downloaded onto the hard disc of the PC; they are Mark Twain Bank, an American institution in St. Louis (Missouri) offering links with about thirty specialist electronic shops accepting the DigiCash system, Deutsche Bank in Germany, Merita Bank in Finland (43% market share) in association with the access provider EUnet and about ten national websites, the Swedish post office and Advance Bank in Australia.

- ***The Mondex system***

This is an electronic purse system, the most important trial of which commenced in July 1995 in the Swindon region of the United Kingdom in cooperation with British Telecom and two banking institutions, NatWest and Midland Bank; this specifically involved supplying about 40,000 chip charge cards (13,000 distributed by the end of February 1997) to be used in ordinary transactions with a sample of 1000 local traders. Other developments are to be expected in the United States, with the participation of AT&T and a group of top banks (Chase Manhattan, First Chicago, Michigan National Bank and Wells Fargo) in the creation of a Mondex USA subsidiary (December 1996).

Mondex does not yet have a proper electronic money testing ground on the Internet: a pilot project is to be launched in the United States under the auspices of AT&T during Summer 1997, involving a sample of electronic businesses that are hosted by AT&T and use its commercial platform (*SecureBuy*)[78]. The Mondex protocol (*Open Trading Protocols*) has been declared to be non-proprietary and to support various

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77) Sources : **David Chaum** : *"Security without Identification : Card Computers to make Big Brother Obsolete"* - DigiCash scientific publications - and: *"Digital Signatures and Smart Cards"* - Amsterdam March 1996 and *"An Introduction to e-cash". http://www.digicash.com*

78) Mondex : *"AT&T And Mondex Announce Electronic Cash For The Internet"* - 12 March, 1997 - Press release.

payment standards; it is to complement the SET standard and will be issued at the end of 1997/start of 1998. MasterCard, which has just purchased 51% of shares in the company[79], and thus provided a much bigger audience for the system, will follow the experiment with great interest; the company has also announced that the card will remain compatible with the EMV standard.

The discussion surrounding protection of privacy issues in connection with Mondex technology should not be left out of account, however. The Mondex system does not focus on the concept of anonymity to the same extent as DigiCash, or at least this conclusion can be drawn from the payment architectures that are currently being tested. Although it does permit direct payments (*peer to peer*), Mondex is still a system inspired by the banking sector, and its electronic purse functionalities are therefore not very original; they can give rise to exchanges of information with the computer systems of issuing bank institutions; moreover, the chips in Mondex cards include their own audit trail, by recording data relating to the ten most recent transactions (identification of traders, date and amount); **when Mondex talks about *privacy*, it is really referring to the confidentiality of personal banking information vis-à-vis traders**[80]; however, if one listens to certain observers, it would appear that banks are able to collect data concerning transactions by downloading it from the chip each time a card is used in one of their cash dispensers[81]. It should also be noted that each payment terminal retains data on the 500 most recent transactions that it has performed. In this respect, the Mondex system is very similar to the processing architecture implemented by the big credit card operators and, at a comparable technological level, with the large-scale chip card payment procedures within the French banking system. The difference is perhaps that Mondex does not feed huge databases that record all the card payments made by a card holder.

- ***The GlobeID payment system and the KLELine experiment in France***

The GlobeID system has been developed by GCTech and Netconsult specializing in the design of secure solutions for electronic commerce and means of payment on the Internet. This product is mainly intended to operate on the Intershop 2.0 and Intershop Mall applications platforms. A 1.5 version of GlobeID came out at the start of the year, and was claimed to be compatible with the standards laid down by the SET protocol and with the smart cards (C-SET) that are expected to be the subject of testing in the second half of 1997; this will therefore make it

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79) MasterCard : *"MasterCard International Completes 51 Per Cent Acquisition of Mondex International"* - February 24, 1997.

80) Mondex : *"How Private is a Mondex Transaction"* - FAQ *http://www.mondex.com.*

81) Source : **A. Michael Froomkin** : *"Flood control on the Information Ocean : Living With Anonymity, Digital Cash, and Distibuted Databases"* 15 Pitt. J. Law & Commerce 395 (1996).

possible for this protocol to be developed in the direction of on line payments.

The principle of this technology is that it does not operate its own transaction certification system, but instead uses those of trusted intermediaries, such as operators in the banking sector[82]; it therefore involves a three-stage process entailing authentication, certification and the legal entry of transactions (CNTM - *Certification in the Middle Transaction Model* - patent of GCTech). It is intended to permit both small-value purchases and more traditional purchases by means of charge cards.

This technology is being used for the testing of on line payments on Internet KLELine which is currently being started in France; the parties to this are Cie Bancaire and an industrial group (LVMH). This trial is being conducted with about thirty French Internet sites that have an interest in the provision of an on line payment application to their clients, in particular specialist journals and magazines. The system is based on the installation of a virtual wallet (KLEBOX) containing the cards used by a customer to make payments (cards accepted: Visa, MasterCard, American Express, Aurore) and a purse for small-value purchases that is topped up whenever necessary by one of the cards recorded. The amounts that can be paid by a customer from his/her electronic purse are limited to the equivalent of just under 100 Ecus, larger payments having to be made by means of one of the cards recorded in the wallet. The amounts debited to the purse are managed in a special bank account opened by the KLELine mediation server with a banking institution (CETELEM); KLELine is able at any time to find out the balance available in each of the purses managed by it.

Klebox is installed in three stages:

- downloading of the most recent version of the security software (a *plug-in*) that is used to open the KLEBOX wallet containing the purse proper and the credit cards normally used by the customer; the trader, for its part, must be provided with the appropriate trader's kit;

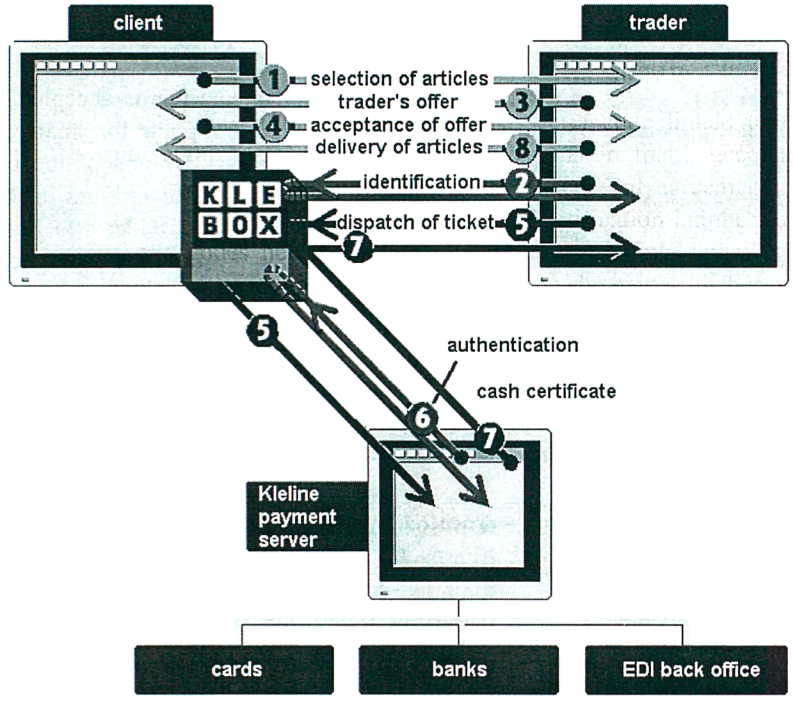
- registration with KLELine by, for example, visiting for the first time a shopping mall site affiliated to the system; completion of a KLELine registration form (identity, address, numbers of cards used for payment purposes); the KLELine payment server retains all the information contained in the registration form (the contract does, however, permit the customer to exercise his/her right of access to data in accordance with national legislation). Once this procedure has been completed, the customer is identified by the system and receives a purse number as a result;

[82] GCTech : *"Intershop 2.0 incorporates GlobeID" - http ://www.gctech.fr/actualité*

he/she must immediately retrieve a secret code linked to the purse; this code will be the electronic signature that is necessary for any subsequent purchase; in the absence of agreement between traders, the number of purses, identification numbers and secret codes held by a customer will in principle have to be equal to the number of malls in which he/she makes his/her purchases;

- confirmation of registration by KLELine via the dispatch of an *e-mail* message, which the user must answer if he/she is to activate his/her Klebox wallet

Diagram of a KLELine payment
(Source : KLELine - http ://www.kleline.com)



The payment process proper actually comprises four successive stages:

- when a purchase is made from the catalogue offered by an electronic shop, once the articles have been selected, the trader's server transmits the price it is offering, which is actually a request for payment voucher, to the KLELine server via the customer's Klebox;

- KLELine transmits a request for authentication and confirmation of the trader's offer to the customer. The KLELine server notifies the consumer of the desired purchase by providing him/her with the certified content of the voucher;

- the customer must then authenticate and confirm his/her purchase by reading his/her secret code onto the certified voucher, which is then returned to the trader; no card number is therefore transmitted on the network once the customer has been registered with KLELine;

- the trader then sends KLELine, via its customer's Klebox, a receipt establishing a link between the amount to be debited to the customer's account, the means of payment and the product purchased; it receives a green light from KLELine, i.e. a voucher providing proof of payment, by the same route, enabling it to issue a cash certificate and to perform its delivery *on line* if the service relates to access to an information bulletin, for example.

Of course, all these exchanges are made secure by the use of encryption technologies with public and private codes for the payment vouchers (RSA code).

As will have been noticed, all the exchanges are routed through the customer's Klebox; no payment results in a direct bilateral link between the trader's server and the KLELine mediation server. Exchanges between the trader's Klebox and the KLELine server may, however, occur in order to change a secret code, obtain a statement of the most recent sales, ascertain the current balance of till money, obtain a statement of the most recent transfers by its mall or by KLELine or to ascertain the exchange rate (updated every six hours).

Finally, it will be noted that this trial will place the KLELine mediation server in a good position for collecting information on customers' transactions; there is no way at present of determining whether this data is used for purposes other than recording and providing proof of transactions and of whether, in particular, it is transmitted to customers' banking institutions or used for direct marketing purposes.

II.2) - Content supplier services and *privacy* issues

II.2.1) - The press and magazines

There are no fewer than 2000 electronic editions of newspapers on the Web and an even greater number of more or less specialist magazines. The United States account for over half of them, whereas the countries of the European Union account for some 300 titles. Most such publications do not have any proper Internet strategy: they simply wish to diversify, i.e. quite simply to reproduce the contents of the paper edition in an HTML format, without really looking into the specific characteristics of this new medium in order to adapt the content accordingly, any adaptation simply taking the form of a brief selection of articles intended to establish a presence on the *Web*. Apart from in the case of a few journals whose contents render them naturally suitable for publication on the Web, such as journals containing stock market information or the results of sporting or horse riding events or fashion magazines providing huge quantities of photographs of collections classified according to season and designer, or in the case of access to newspaper archives, which is far from being possible everywhere, readers are very likely to be disappointed; you only have to surf a little to observe this for yourself or to read a few exchanges of views posted in *newsgroups* or in Netizen chronicles[83].

Number of newspapers (excluding magazines) / country (April 1997)

Country (outside Europe)	Number of newspapers	Europe	Number of newspapers
United States	1167	United Kingdom	121
Canada	184	Germany	40
Australia	41	Spain	23
Brazil	41	Italy	22
Mexico	21	Ireland	18
China	20	Sweden	15
Norway	16	Netherlands	11
India	15	Denmark	8
Argentina	13	Finland	8
South Africa	12	Belgium	7
Philippines	12	Greece	6
South Korea	9	Portugal	6
Poland	9	France	5
Bolivia	8	Austria	3
Russia	8	Luxembourg	2
Other countries	183		
TOTAL	1759	TOTAL	295

[83] Cf. *http ://netizen.com* - cf. in particular the articles of **Jon Katz**

Europe is some way ahead of the United States with regard to electronic media, in that Prestel in the United Kingdom, Bildschirmtext in Germany and Télétel in France have enabled the newspapers that participated in the various videotex pilot projects to a significant extent to discover the need for a specific content policy. This lesson has not travelled, and it appears that the same teething troubles are unfortunately being replicated. This said, however, there is a real economic problem, which must be taken into account in this critical analysis, especially as it raises questions concerning the issue of personal data protection. If a newspaper really wishes to innovate on the Internet, it must create an autonomous team of editors for this purpose, in order to truly exploit the possibilities offered by interactivity and to attract a readership. This will clearly cost more than a single production structure for different supports making it possible to send the same non-interactive content both for photocomposition by a printer and for inclusion on a Web platform by a host provider. How can the costs of producing an electronic edition of a newspaper be financed, therefore?

There are currently two main ways of making money that are open to the press on the Internet: one involves selling advertising space to advertisers, which already accounts for 50% on average of the revenue of European daily newspapers; while the other involves subscription charges. This is the main distinction between the Internet participation policies adopted by newspapers.

- *Access free of charge*

  A large number of newspapers are still available free of charge on the Web: this applies to a large number of German newspapers, such as, for example, Der Spiegel, Berliner Zeitung, Die Welt, Rheinische Post (Düsseldorf - a Bildschirmtext pioneer) and Bild; British newspapers (The Telegraph, The Times and The Sunday Times); Scandinavian newspapers (AftonBladet, Aften-Posten); and, of course, numerous American newspapers, including, for example, the daily Wired and the weekly Business Week. Some of these newspapers are provided in full, while others are edited; nationals resident abroad are frequently the target audience, for example in the case of the edition of Guardian Weekly, which is transmitted free of charge to those of its readers who request it.

  Free newspapers, and American newspapers in particular, are provided on very special terms: they explain rather matter-of-factly to their readers that they can only be provided free of charge as a result of advertising revenue, and it is therefore common to see messages displayed below banners encouraging readers to generate « *click-ons* ». The other method entails requiring the user to complete very detailed forms which make it possible to obtain a target profile of the publication's readership and to improve the content. Business Week is definitely a fairly typical example; the data collected via the registration form is as follows: name, personal address, name of company, business address, function in company, *e-mail* address, whether or not the user subscribes to the paper version of the weekly, how often the publication is read and whether or not the user agrees to receive advertising material in his/her mailbox. The Telegraph is

certainly the newspaper that asks for the most detailed information, registration being compulsory: in addition to the usual headings, the reader of this newspaper must also indicate his/her date of birth and marital status (purpose?) and choose a password. The general registration conditions mostly indicate that by completing the form, readers tacitly agree to their personal data being used for the purposes of demographic studies.

It must be admitted that under this arrangement, there is a true transaction between an electronic newspaper and its reader: personal data providing an individual profile in return for access free of charge. This type of exchange recalls the proposals made by certain defenders of *privacy*, who consider, for example, that each name and address sold for mailing purposes ought to earn the targeted addressee $2[84]. This does, however, raise a legal problem of fundamental importance, in connection with an individual's unrestricted right of ownership of data relating to his/her identity.

- *Subscription charges*

An increasing number of newspapers are demanding subscription charges or intend to impose them in the not too distant future: as indicated above, this applies to the Wall Street Journal, which now claims to have 70,000 subscribers paying approximately 150 ecus/year; paradoxically, to the readers of the New York Times resident outside the territory of the United States if they use the services of a non-American access provider; to the Spanish newspaper El Mundo which, on the *push* principle, delivers a suitable browser, which makes it possible to select the desired headings; and to the French daily Le Monde. Access to these publications may only be achieved after completion of a subscription form, which includes the usual data together with the subscriber's credit card number and expiry date.

Only Le Monde in France has installed an *e-cash* payment system using the KLELine system[85]: the charge for entering the electronic edition is the same as the price of the paper newspaper, i.e. 7 francs per edition, which is available each day from 5 p.m. onwards. A number of humorous papers posted on the Net[86] bear witness to the extent of readers' disappointment with the site: the payment software is impossible to load, no confirmation via an *e-mail* message even though this is promised and rudimentary page setting.

The subscription contract for the New York Times is certainly one of the most detailed; in addition to the usual data, the subscriber is also asked to indicate the annual income of his/her household, although this is optional; he/she is also informed that he/she can pass on his/her credit card number without fear (of

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84) This idea has been developed in particular by the US sociologist J. Rule - Cf. **Serge Gauthronet** : "Identity and identification" - ARETE report - Government Commissioner attached to the CNIL - Paris 1990 - pp. 108 to 109.

85) Cf. page 63.

86) Sources : **Matthieu Louis** *"Le Monde messes up its entry on line"* - http ://www.lancs.ac.uk/louis/edito/edito.htm

course on condition that the subscriber *browser* is SSL-compatible), as the newspaper's server is rendered secure by means of the RSA public code system. Apart from current copyright provisions, the contract reserves the right to remove defamatory or obscene documents from discussion groups organized by the newspaper; the reader is also advised that unless he/she indicates otherwise, the newspaper reserves the right to disclose the names and *e-mail* addresses of its subscribers to third parties for direct marketing purposes.

Finally, it should be noted that none of the sites visited are subject to restrictions relating to analysis of the browsing activities of readers and the sections visited by them. Experience has shown that such data can be particularly revealing not only of individuals' main interests, but also of their philosophical, political and religious opinions. Processing such information and disclosing it to third parties would undoubtedly infringe the privacy of individuals and would be quite incompatible with European data protection regulations.

II.2.2) - Medicine and pharmacies

Three main categories of retail applications are used in on line networks in the medicine sector: non-professional *newsletters*, professional communication between doctors and specialists and consultations with patients. Most discussions and regulations associated with these new forms of medical practice concern issues of professional liability. There is very little consideration of the risks of infringing medical secrecy. An examination of the sites present on the *Web* makes it possible, however, to identify two ranges of services that might pose problems with regard to the security and confidentiality of medical data concerning patients: i.e. on line medical consultation services and pharmaceutical sites marketing medicinal products. It has been decided not to discuss *newsletters*, but it goes without saying that such services are capable of collecting especially sensitive data if they insert *cookies* files.

- *On line medical consultations*

  Remote medical consultations have up to now been confined to very specific circumstances involving emergencies and cases where the patient is isolated to such an extent that it is physically impossible for him/her to consult a doctor at a surgery or a hospital: i.e. mainly sailors of vessels carrying fewer than 100 people, in which case a directive of the Council of European Communities makes a specific provision for the possibility of consultation by radio[87], sailors engaging in solitary sailing races, lighthouse keepers and teams of explorers on expeditions under extreme conditions (space flights, polar expeditions). The Internet considerably extends the range of people who are potentially eligible for remote medical consultation: a number of sites are actually starting to suggest that their visitors should try this kind of service.

[87] Directive of 31-03-92 on the *"Minimum safety and health requirements for improved medical treatment on board vessels"*.

The arrangement first of all requires registration, for which the user must provide the necessary identification details and a description of the equipment used (browser, speed of the modem etc); it is then necessary to send data concerning the user's medical background to the site. *Cyberspace Telemedical Office*[88] is an experimental site constructed on the basis of an *Intranet* application produced by Digital Med; it offers two applications: either directly at the site by means of connection to *"personal health record keeping system* " and completion of a form (which is expected to take about 30 minutes) or by sending data already entered *off line* in a computer file using the FTP protocol; transmissions of data are encrypted. An appointment is then made and a videoconferencing session with a doctor can then be held on the specified date. This service offers all kinds of facilities and links with insurance companies offering products in the health sector.

Bell Canada has actually just appointed a team that is to develop the market for remote medicine in the broad sense of the term. This company also offers an on line medical consultation service called *GlobalMédic*[89] based on an expert system. It is first of all necessary to specify, on arrival at the home page, whether the user is an adult or a child and to sign a discharge statement[90]. A list of conditions is then described and the visitor only has to click on the one corresponding to his/her symptoms; a number of questions are then asked in order to obtain further details about the patient, until a diagnosis is made. This system is anonymous and free of charge, but experience has shown that the Sympatico server hosting it does install *cookies*.

MDNet, an American company based in Pittsburgh, is developing a wide range of services on the Net intended for use in the medical sector: *e-mail*, fax, EDI, teleconferencing, discussion groups, hosting of *home pages* and medical site Intranet installation engineering. MDNet also offers an *on line* consultation application involving videoconferencing on its own secure RNIS network. *Healix*[91], which is based in the United Kingdom, offers an identical range of services on the Internet in the form of its *World Health Network.*

All these applications are presented with assurances concerning the security they offer to their subscribers; unfortunately no details are available concerning the arrangements actually made. Experience in a number of different cases has

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88) *http //www.telemedical.com*

89) *http //www.healthyyou.sympatico.ca/*

90) The text is as follows: *"The document provided in these pages of the GlobalMedic site is placed at your disposal solely for information purposes only. This document may not in any way replace a consultation with a doctor or the care of a qualified practitioner and may therefore not under any circumstances be regarded as being able to do so. The GlobalMedic site contains reference documentation and state-of-the-art resources in the medical and health sectors. The information, on line consultation function, fields offered and other resources contained in this site or provided via GlobalMedic are provided for information only and are not intended in any way to replace the services of a qualified health professional or to be substitutes for the medical advice of a doctor. GlobalMedic makes no claim and offers no guarantee with regard to the treatment of medical activities, medication or medical preparations of anyone who uses the information, on line consultation function, conclusions obtained or any other resource offered or provided by or via GlobalMedic. GlobalMedic cannot be held liable for any direct, indirect, special, sample or other loss. This agreement is governed by the laws of Quebec (CANADA) regardless of any conflict with the laws of other legal systems."*

91) *http://info.co.uk/whn/healix/Healix.htm*

shown, however, that access by the medical sector to the Internet always occurs via partnerships with third parties, mainly service companies with technical knowhow, even when it is not based purely and simply on *hosting* by private networks. The question of the confidentiality of data has therefore not been answered at all: one would be justified in wondering if the very architecture of an Internet network and the exchange protocol do not bring about a situation in which teleconferencing, for example, leaves traces within the cache files of the servers and the computers through which such a facility is routed. Is there any real confidentiality with regard to files containing images and sounds that do, after all constitute an intimate relationship between a doctor and his/her patient? To what extent will service providers and operators be truly neutral?

- *On line pharmacies*

About fifteen sites, which are mainly American, specialize in the marketing of medicinal products; at least four of them are established in Europe, i.e. in Germany, the Netherlands (*Euro Care Mailorder Pharmacy*), Zurich, Switzerland (Pharmacie Victoria Apotheke)[92] and the United Kingdom (*Inhome Health Service*)[93]. The products on offer are frequently biased towards certain kinds of hormonal treatment: slimming cures, high blood pressure (betablockers), menopause treatment, antiageing treatment (gerovital, melatonin, DHEA), treatment for Parkinson's disease, preparations for preventing Alzheimers, products for stimulating the memory (Lucidril, hydergine, piracetam-oxiracetam) and growth hormone (Genotropin, Humatrope). Preparations intended for treating depression (BuSpar, Atarax and Prozac), migraine (Imigram) or sterility (Clomid, Humegon) may also be purchased directly on the Internet. Most of these medical products are normally administered via a medical prescription and require follow-up care of the patient, where their distribution is not subject to strict national regulations or simply forbidden. It is therefore fairly disturbing to read on the *homepage* of the Victoria Apotheke pharmacy the following slogan in large characters: "*How to obtain medicines not available in your country from Victoria Pharmacy Zurich*".

The ordering systems and means of payment are as usual: completion of an *on line* order form requiring the desired quantities to be ticked for each product, recording of the name and address for delivery, *e-mail* address and the bank card number. Where necessary, doctors' prescriptions can actually be sent by fax. A text laying down the terms and conditions of sale generally accompanies the order form: this indicates the means of transport used by the pharmacies and releases them from any liability in respect of national customs checks. Any Canadian or Australian purchases of DHEA are even warned that importing this product into their countries is strictly forbidden and they are advised against arranging for delivery by giving their home address[94]. It is even re-

92) *http://www.access.ch/victoria pharmacy/welcome.html*

93) *http://ww2.smart.net/inhome/*

94) These explanations are provided at the site of the company *My Way International* Cf. *http://www.dhea.com/nworder.html*

ported that some companies actually suggest sending a number of successive consignments to their customers at different addresses in order to avoid arousing suspicion[95].

In view of the clear public health problem posed by this business, the health authorities of European countries are starting to pay closer attention to these Internet sites. Without making any assumptions about the legitimacy of the legal action that will be taken by governments to fight against this type of international traffic, it will be interesting to see what technical means are used and whether national customs authorities will attempt in particular to identify the transactions concerned and to intercept flows of orders on the Net in order to increase the effectiveness with which flows of goods are blocked when they enter the territories of the countries in question.

II.2.3) - Identifying and searching for persons on the Internet

The Internet is a very powerful tool for identifying and searching for individuals. The general public is actually offered request tools and databases by a wide range of sites. The Americans call such tools « *Look-up Services* » and the FTC (*Federal Trade Commission*) in the U.S. has just decided to deal with the resulting protection of privacy issues by initiating a study of these matters in order to determine what might be regarded as sensitive information and the risk to the public that this represents; the results are to be discussed at a workshop that is to be held next June[96].

- *Search engines*

  All that is required to obtain a list of the sites where a particular person is mentioned is to read the name of that person into a search engine: such a list may include lists of members of discussion groups (classified according to subject), associations that are present on the *Web* and have placed a list of its members on line, bibliographical references, participation in conferences, etc. The *DejaNews* site already contains a search engine that makes it possible to identify all the members of *newsgroups* present on the Internet, simply by entering a request for individual surnames. This may be sufficient to build up a fairly detailed file on someone, as Christopher Kantzes, an American citizen, chosen at random, found out recently. In an article intended to show that anonymity on the Internet was illusory, the *Minneapolis Star Tribune* actually published his whole life story by using every possible content of all the discussion groups with which this rash person happened to have been in contact at some time or other. These revealed that Kantzes was born in Salisbury, Maryland, studied at the universities of Delaware and Syracuse, worked for Magnavox in Fort Wayne, Indiana and then became an engineer with Fisher-Rosemount Systems; that he engages in amateur dramatics in Minneapolis and that he likes Garrison Keillor beer, good restaurants and Macintosh. He hates Bill Gates and

[95] Source : **Pascale Krémer** : *"Miracle products in an unlimited quantity"* - Le Monde 04-10-96.
[96] Source : *http ://www.ftc.gov./opa/9703/conspriv.htm*

the State of Indiana, which he describes as being "socially repressive" (sic); he went to Paris and Rome for his holidays in 1985[97]. Some time after the publication of this article, Christopher Kantzes moved, but in less than two weeks, an electronic directory had already passed on his new address and telephone number.

- *Directories*

A number of directories make it possible to search for the *email* address of a person simply by reading in his/her first name and surname, in the knowledge that the individuals in question must have previously registered with the service and therefore tacitly consent to it; this is certainly not always the case, however, and many people find that they are included in directories without ever having registered, and frequently the information is out of date. The *Whowhere* and *Bigfoot* sites offer such a service. Bigfoot also supplies the postal address of the individuals to whom the search relates and a link with the *Vicinity.com* site, which provides a detailed map of the district within which the individual resides, with a cross indicating the exact place of residence. It should be noted that the Bigfoot service is operational for a certain number of European countries. Contractual provisions lay down the conditions applicable to the use of such directories, and in particular prohibit their use for commercial or malicious purposes. Such services install *cookies* when the site is entered.

- *Social security files*

At the start of March 1997, the US Social Security Administration (SSA) opened a site on the Internet that enabled anyone to obtain a summary of all his/her income throughout his/her career simply by entering his/her SS number and date and place of birth and the maiden name of his/her mother[98]. Although the SSA warned the public that any fraudulent access was punishable by 10 years imprisonment and a fine of $10,000 and that it had the (unspecified) technical means to detect such fraudulent use, there was a wave of protest against this placing on line of an IT system that had up to that point been for internal and professional use only. There was actually a considerable risk of use by third parties for purposes that did not correspond to the intended purpose of the US authorities. This site was provisionally closed on 8 April, to give the SSA time to organize public workshops and to take a final decision. It is still possible, however, to make a request by *e-mail*, even though the results are sent by post *(snail mail)*[99].

Some observers have not failed to note that the closure of this site will probably benefit private agencies that are also operators of *Look-up Services* that do

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97) Source : **Jeffrey Rothfeder** : *"No Privacy on The Net"* - PC World - February 1997.
98) Source : **Adam L. Pennenberg** : *"Social Insecurity on the Web"* - Wired - April 1997
99) Source : **Rebecca Vesely** : *"Social Security Shut Down"* - Wired - 9 April 1997

not have to observe any particular restrictions[100]. The existence of an on line database that was not yet available on the Internet, but that also used the Social Security number as an entry code was also noted; this was the P-Track (*Person Locator File*) system which is provided by Lexis-Nexis and has over 740,000 corporate subscribers (especially legal partnerships) paying a basic charge of $125/month. P-Track responds by providing the 3 most recent addresses of the individual concerned. Lexis-Nexis defends itself by pointing out that a large number of federal authorities use its system; some observers are surprised at the existence of such services that are used by third parties, in view of the fact that, in principle, such authorities actually have free access to the SSA files themselves[101].

- *Search agencies*

Shadow Trackers and *Deep Data*[102] are two information agencies of a new type, based in Idaho and California respectively, that are striving to develop their activities on the Internet partly as a way of marketing their services but also as a working tool enabling them to collect information and pass it on to their customers; they openly target the general public. *Shadow Trackers* offers an impressive range of investigations: "*Pre-Employment Screening, Background Checks, Criminal Records, Civil Records, Locate Missing Persons, Skip Tracing, Drivers' History Records, Workers' Compensation Claims, Education Certificate, Employment Verification, Credit Reports, Aircraft License Verification, Aircraft Ownership/Pilot License, Voters Registration Records, Watercraft Ownership Search, Business/ Corporate Searches, Marriage/Divorce Records, Bankruptcy Search, Surveillance*". *Deep Data* offers a more limited range of services, but is more highly automated: searches for legal proceedings in which an individual might have been involved ($15 per search throughout the State of California), searches for fake companies and searches for data contained in real estate files; for a fee of $20, it also offers a service called *TRACE* (*The Ultimate PeopleFinder*), which simply involves entering an individual's social security number in order to obtain confirmation of his/her identity and of his/her current address and four previous addresses within 24 hours by *e-mail*. This arrangement is very well packaged on the *Deep Data* Internet site; payment is made *on line* via First Virtual or via the electronic cheque service Checkit when the instruction is issued.

- *Credit bureau databases*

Almost 100 *Credit Reference agencies* are present on the Internet, about 20 in the United States and the rest spread out throughout the world. Almost all such agencies are oriented towards business. Traditional *Credit Bureaux* of the type found in the United States are not present on the Internet, or at least not in an interactive form. Although it is certainly true that the 3 main credit bureaux,

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[100] Source : **Rebecca Vesely** : *"Social Security Riple : A Privacy CDA"* - Wired - 11 April 1997

[101] Source : **Rose Aguilar** : *"Research Service Raises Privacy Fears"* - C/NET - June 10, 1996.

[102] *http://idibbs.com/bus/shadowtr/main.htm* et *http://www.deepdata.com*

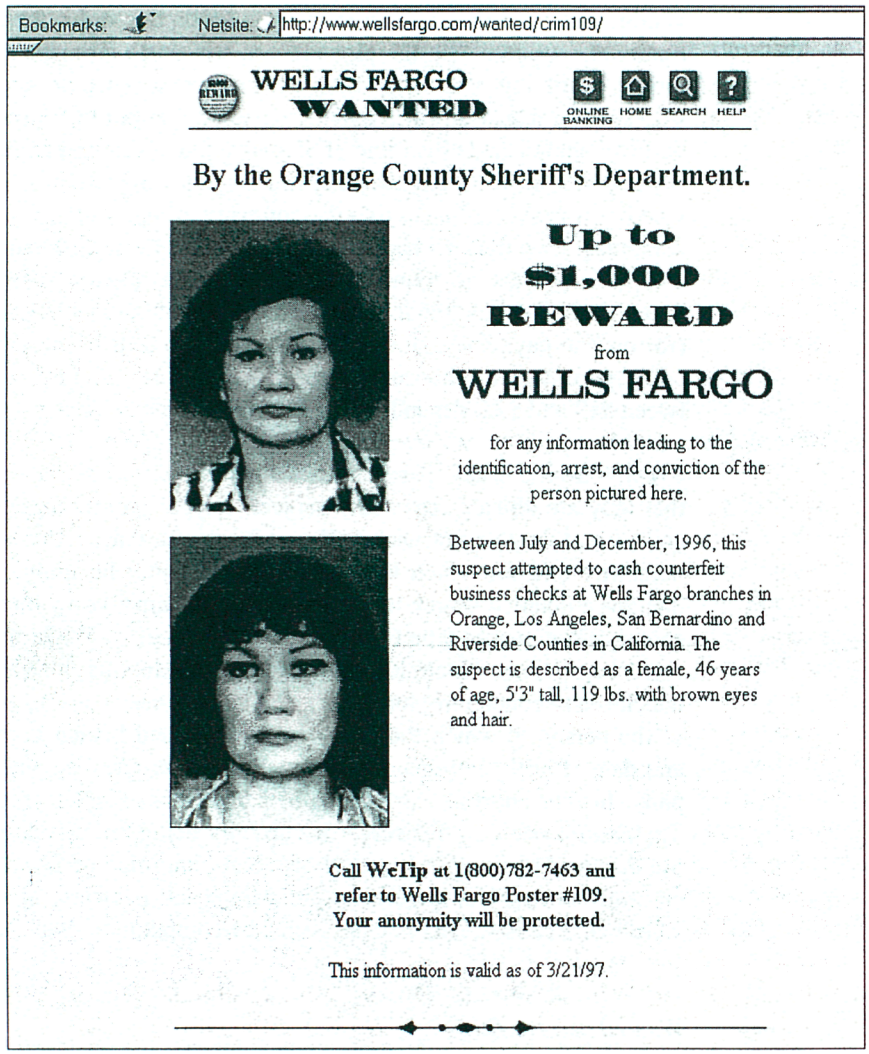
Equifax, Experian (formerly TRW) and Transunion all have sites, they do not offer much scope, as they are simply intended to provide those consulting them, via institutional communication pages, with information about the policies of these companies, the range of services offered by them and their *privacy guidelines*, but no kind of proper access to *credit reports* via the Internet for their traditional customers (banks and traders). Equifax does, however, permit visitors from the general public to issue an on line order for their own *credit report* at a price of $8; the procedure is subject to stringent security arrangements (involving SSL with 128 bits), or at least it would appear so; Equifax warns visitors that any fraudulent access (for example by unauthorized third parties) is punishable by a fine of $5,000 and one year in prison; the order form is extremely detailed, to such an extent that one might be justified in wondering whether it might not also give the company an opportunity to update the data contained in its files: surname, first name, sex, date of birth, address, time spent at current address, SS number, telephone number, *e-mail* address, previous address, time spent at previous address and credit card number and expiry date (for on line payment). The *credit report* is also sent by post, with individuals being permitted to choose between a number of different arrangements (between $12 and $22, depending on the arrangement selected).

Credit Bureaux' lack of enthusiasm for the Internet might be due to the fact that they are already repeatedly subject to legal proceedings before American courts, and they do not wish to do anything else that might increase their vulnerability and for which they might subsequently be impugned. Those conducting a detailed search might, however, be surprised to find in a New York server of the *yuppie* type (Nycool.com), a normal TRW form for requesting a *credit report*, i.e. which does not involve an individual's right of access to financial data concerning him/her: it is therefore necessary to provide the name of the person to which the search is to relate and his/her address, SS number and date of birth, and then the name of the requester, the name of his/her company, his/her address, his/her *e-mail* address and his/her credit card number. The *credit report* on this server is currently being promoted, as it is offered at the discount price of $19 instead of the normal price of $29. The procedure is currently not subject to security procedures and is clearly at odds with all the warnings on this subject that are issued by competing *Credit Bureaux*.

- *Wanted persons files*

Will tomorrow's Internet become a tool in the hands of police forces and the world's *law enforcement agencies* as they search for criminals? Even now it is possible to be surprised, for example, by photographs posted on the Net by the Wells Fargo bank, showing criminals who have used forged means of payment (especially forged cheques) at its counters; some of the photographs are actu-

ally stills from films taken by video surveillance cameras at the bank's branches. They are generally associated with calls for witnesses merely in order to determine the identities of such individuals, sometimes in return for a reward that may be as much as $1,000 and a guarantee of anonymity for persons providing crucial clues.



Police forces proper are actually present at a great many sites (probably in excess of 1000) which include impressive lists of wanted persons, together with other information; in addition to the FBI, all the State police forces of the United States and also the Icelandic police and the municipal police force of a small town in the south of France are represented: each file contains portraits (unaltered photographs and photographs that have been retouched to take account of ageing), a description of the physical characteristics of the person (weight, height, colour of eyes, distinctive marks, scars etc), an extract from his/her convictions record, his/her criminal record and, in certain cases, even

prints taken from both thumbs and both index fingers that can be enlarged by 30% on a high resolution printer. There is usually abundant advice about the action to be taken and there is also an indication of whether the person is dangerous or might be armed. The name and telephone number of the policeman or policewoman in charge of the investigation are also given. A field at the FBI site indicates the *"Top Ten"*, i.e. the 10 most wanted criminals, with rewards that may be as much as $4 million for a terrorist suspected to have been involved in the Lockerbie disaster. At a more modest level, State police or sheriffs' departments provide fields headed *"cash for clues"*.

II.2.4) - Games and pornography on the Internet

These are currently the only two types of commercial site that are truly profitable beyond any shadow of doubt. They offer intangible goods that are well adapted to the Internet from the outset, as they do not require any delivery logistics apart from computer equipment and arrangements for monitoring access and certifying payments. This type of content also makes it possible to exploit synergies with other media, such as video or CD Rom.

- *Games*

  1800 games can currently be found on the Internet; these are interactive games, role-playing games, multiuser games and games based on the use of *e-mail* messages; just over 130 games are played in virtual worlds. The market is currently valued at $127 million by Forrester and is set to really take off in 2001, when it is expected to reach $1.6 billion. Significant investments and mergers are currently under way between specialist publishing groups such as Hasbro Interactive, which was the original issuer of CR Rom *("Monopoly", "Risk", "Battleship", "Yahtzee", "Scrabble"*) and has just signed an agreement with Microsoft in order to open a mall devoted to games on the Internet this summer (*Microsoft Gaming Zone*)[103]; mention should also be made of the Berkeley Systems *(You Don't Know Jack, the Netshow*), Electronic Arts and Nintendo groups. Total Entertainment Network (TEN), the producer of *Duke Nukem 3D, Terminal Velocity, Dark Sun Online* and *Confirmed Kill,* invested over $12 million last year in order to launch a multi-player game; this company has no fewer than 30 servers and 2 data processing centres[104].

  The population of players on the Internet is situated within the 18 to 35 age range, and is mainly male. It forms a commercial target that is of some interest to advertisers such as 7Up, Apple or Plymouth, whose banners are incorporated in the games themselves. This also applies to games played within virtual worlds, which contain advertising relating to the real one. It should also be remembered that games sites create communities of players who come to know

[103] Source : **Aaron Ricadela** : *"Internet Game revenue Expected To Swell"* - TechWeb - 04/01/97
[104] *Total Entertainment Network - Game Integration tester* - HotWired - August 23, 1996.

one another via *chats* or tournaments. Finally, a number of sites specializing in electronic games are currently turning themselves into fully fledged access providers: TEN, for example, offers an arrangement for $30/month that includes full access to the Internet, in addition to the use of its own services. All these factors, in addition to the fact that, since the games have to be paid for, the sites must know the identities of their visitors, mean that the providers of games on the *Web* have very precise tracing elements at their disposal that enable them to identify players and analyse their behaviour. A rapid examination of the sites shows that there are no provisions guaranteeing the confidentiality of personal data.

This apparent lack of awareness of the need to protect privacy on the part of game site operators is particularly disturbing in the case of virtual worlds, where players take on the identities of the characters they have chosen. It should, perhaps, be pointed out that virtual worlds use the same principle as *"chat rooms"*, which in their most simple form are discussion groups that are held in two-dimensional or three-dimensional settings in which the "avatars" (the adopted identities) represent the users connected. There are currently over 100 of these and they are expected to increase in number over the next few years. A European project of particular interest is currently being run by Canal Plus, the private television operator of French origin, and Cryo; the game is called "Le Deuxième Monde" [The second world] and was to commence at the end of April 1997:

- in the Second World, the cybernauts does not move around in an imaginary setting, but within a real city whose image has been digitized (currently a number of districts of Paris that have been digitized);
- the avatars may be produced by digitizing genuine photographs from 20 June onwards (date of the second update);
- communication may occur in the traditional manner (via the keyboard) but also orally (cybernauts will have to be situated less than 10 metres from their PC and be equipped with appropriate peripheral devices: full-duplex sound card, microphone, speakers;
- virtual shops will be available (Peugeot, Banque Société Générale and Virgin, for example);
- this alternative Paris will have its own newspaper and constitution (the first elections of 80 deputies on a basis of universal suffrage are to be held on 27 April); new players will be welcomed and have the operating rules explained to them at an inauguration that is to be held in a marquee close to Les Invalides.

All the aspects of this game have actually been designed to be as close to reality as possible. This project combines various types of on line service: games areas (basements), communication spaces, work places and places for socializing and leisure activities (the activities offered at Place de la Bourse will be different from those offered at Pigalle) and business (virtual shops, art galleries and newspaper kiosks). Companies will be able to buy virtual advertising space and premises that will be under their management.

Subscription to the Second World is free of charge, but advance registration of users is obligatory, users being obliged to supply their credit card numbers (and therefore to be aged over 18) and to acquire a CD ROM disc containing the *frames* of the city. Genuine purchases may be made by means of a credit card without Net citizens being obliged to resend their credit card numbers. This virtual space will be regulated and monitored by a team of about 10 organizers. According to one of the two project designers, "*(...) analysis of the files should make it possible to anticipate the future. That is where the real political and financial power will lie*"[105]. What analyses will be undertaken and what data will be disclosed to third parties? For what purposes? There is a need for more detailed consideration of all these issues, and in particular of the links that may be established between an avatar's behaviour in the Second World and a player's true identity: experience has clearly shown that such games can reveal hidden sides of a player's personality, sensibilities and imagination, but also what a player has repressed; avatars may, for example, be made to behave in ways that would be foreign to users in the real world and that may be reprehensible. As is currently the case with regard to role-playing games, the basic issue concerns the risk of a crossover of identities and situations between the two worlds.

- *Pornography*

Pornography is one of the main markets on the Internet, into which big publishers with a world reputation such as Playboy or Penthouse have diversified, but which also contains a large number of sites offering their visitors series of very explicit photographs, the possibility of downloading video films, *chat rooms, on line* striptease sessions and all kinds of gadgets to be ordered. The great debate that is currently shaking the Internet in its present form concerns freedom of expression, which inevitably conflicts with public decency and the protection of children. A law applying to US territory, the *Communications Decency Act*, (CDA) is in the course of preparation and certain observers consider that it threatens the very existence of the Internet[106].

The sites that are most concerned to retain their customers and to avoid being subject to coercive measures offer Internet users the possibility of inhibiting access to their services; access providers offer similar facilities to be activated on their own servers; and finally, specialist sites, such as *Net Nanny* or *Surf Watch* also make it possible to install filters that will block access by children to X-rated sites. Most of these require their visitors to confirm their ages and accept clauses releasing such sites from liability; if the visitor refuses, he/she is rerouted to the Disney website. Such sites must be paid for, but generally attempt to attract customers by providing a showcase free of charge.

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[105] Sources : **Le Monde** : "*Le cauchemar c'est la réalité*" [Nightmare has become a reality], multimedia supplement - 26-09-96.

[106] Cf. **Center For Democracy and Technology** (CDT) : *CDT's Analysis of the latest Communications Decency Act - http ://www.cdt.org/policy/freespeech/*

The right to enter pornographic sites is therefore acquired by completing a form specifying payment by means of a Visa or MasterCard credit card or American Express with the usual data. Electronic payments are processed within an hour and the visitor receives confirmation of his/her password in his/her *e-mail* box. A number of unusual practices can, however, be observed, such as, for example, in the case of the *Playgirl* site, which is free of charge but requires visitors desiring a *"free tour"* first of all to disclose their credit card numbers as proof that they are of age; or the case of *Free Pics*, which displays the IP address of its visitor on the registration form in order to discourage any attempts at fraud. The most surprising case was recently brought to light in connection with an action brought before the American courts concerning the *SexyGirls.com* and *1adult.com* sites which, without users' knowledge, downloaded a program called david.exe whose function was to disconnect them from their normal access provider and automatically reconnect them to a site in Moldavia, which itself rerouted accesses to the files to a server situated in Canada. The visitors were therefore charged for long-distance calls at $3 per minute, and the operators of this site naturally had an interest in the revenue obtained from charging for these calls[107]. These types of practices are on their own sufficient to make anyone very suspicious about the use that might be made by pornographic sites of the personal data held by them.

All pornographic sites claim that they do not use models aged below 18, although it is still possible, for example, to find on a contact server situated in Sydney (Australia), girls aged between 13 and 15 from the Philippines who would be *"very happy to meet men aged between 25 and 38"* (sic)[108]. We should point out that this is not a pornographic server. Interested visitors must define their own profiles (*bio-data*), with or without photographs, disclosing their own identities or using a pseudonym, before the desired contacts are offered to them. They are provided with a subscription, registration and electronic payment form, in which they must indicate their names and addresses, their *e-mail* addresses, their telephone numbers and their credit card numbers. It is possible to pay *cash* anonymously by sending the necessary amount in banknotes in a double envelope.

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[107] Source : **Jean Field** : *"FTC Shuts Smut Shysters"* - Wired - Feb.23, 1997.

[108] Cf. Filipina Ladies - *http//www.tmx.com.au/webads/asian/group15a.html*

Part Two

Case studies

Section III – DoubleClick – The case of a *"Rep Agency"*

III.1) - General discussion of the market and advertising techniques on the Internet

III.1.1) - Some key figures

There is an unbreakable link between the media and advertising; the Internet is no exception to this rule; the real issue is to discover when equilibrium is reached, i.e. the point at which advertising becomes a true source of financing that covers the cost of producing websites' content to a significant extent. The most recent known figures indicate total Internet advertising revenue of $264 million in the United States in 1996; this amount is very small in comparison with other media:

Media advertising revenue in the United States in 1996 ($ millions) *(Sources : Veronis, Suhler Associates, Paul Kagan Associates, Jupiter Communications)*	
Daily written press	37,650
RF television	34,860
Magazines	15,700
Radio	11,990
Cable television	6,180
Internet	264

Seen in terms of the total number of Internet users, this gives an advertising expenditure of $9 per user; if one assumes that there will be 157 million users by the year 2000, total advertising revenue on the Internet will therefore reach $1,400 million; however, observers of this market also consider that there will be a fairly rapid increase in advertising investment: if one makes what appears to be a reasonable assumption, that advertising expenditure will be somewhere around $50 per user[109], total revenue on this market will therefore reach $7,850 million in the year 2000, beating the current total for cable television. There is, of course, good reason to suppose that this phenomenon will be partly due to a redistribution of investment to the detriment

[109] In 1995, average advertising expenditure stood at $281 per household in the United States for all media combined (sources : Advertising Revenue - McCann-Erikson). According to another source, total advertising expenditure has reached $150 billion per year in the United States and $350 billion in the world.

of existing media. A certain amount of caution is called for in this area, however: it is not as yet possible to obtain a clear view of whether the Internet will finance itself from advertising; the managers of many publications, for example, still consider that the advertising revenue contributed by their Internet site will not exceed 10% of total advertising revenue during the next 10 years[110]. Some observers also draw attention to the example of television advertising, which, in the United States, took over 40 years to reach a situation in which it could siphon off $34 billion from advertising budgets each year.

III.1.2) – Advantages and limits of advertising on the Internet

Advertising on the Internet has occurred since 1994[111]; advertising and messages take the form of banners in a standard format that are displayed on the screen at the same time as the content provided in response to the request sent by the *browser*. Such banners generally contain a hyperlink enabling the user to click on them in order to obtain direct access to the advertiser's Website; this process is termed *"click-through"*, and provides an unparalleled opportunity for development of a *"one-to-one"* marketing relationship, which no other medium has offered with such ease up to now. Another significant advantage of advertising on the Internet is that the distribution costs are low and in proportion to effectiveness: unlike advertising in the mass media, where advertisers are always charged a flat rate for a specific number of screenings, advertising communication on the Internet has the advantage of being capable of being charged for according to the number of impressions, i.e. the exact number of times the banner is displayed on a user's screen. Furthermore, advertisers can, in principle, be satisfied that their messages are only delivered in principle to the target audience narrowly defined by the advertiser, which is far from being the case for radio or television. As for the disadvantages, these are mainly due to the youthfulness of this medium: the fact that the audience is still small and that measurement and impact study tools are still in their infancy.

III.1.3) - Advertisers and support sites

The big companies that are potential advertisers on the Internet are not yet showing much enthusiasm for this medium: according to the *Advertising Age* journal, only 46% of the main American advertisers have purchased advertising space on the Internet to date[112]. In 1996, the 20 leading advertisers on the Internet broke down as follows:

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[110] Cf. Advertising Age : *"Internet blacklash et New York's Magazines Day"* - October 1996.

[111] The first Internet site to include banners within its pages of text was the HotWired site in October 1994 - Cf. **Robert H. Reid** : *"Architects of the Web - 1000 Days that Built the Future of Business"* - John Wiley & Sons, Inc. New York 1997 - page 280

[112] Quoted by : **Mary Meeker** : *"The Internet Advertising Report"* - Morgan Stanley - Harper Business - New York 1997 Cf. Page V.

Estimated advertising expenditure of the 20 leading advertisers on the Internet *(sources : Jupiter Communications)*	
Advertisers	**Expenditure in 1996 *(in thousand $)***
Microsoft	5,819
Netscape	4,052
AT&T	3,823
IBM	3,571
Excite	3,390
Infoseek	3,285
McKinley Group	2,849
Nynex	2,790
Lycos	2,595
Yahoo!	2,590
CNET	2,146
Digital Equipment Corporation	1,636
Toyota	1,471
SportsLine USA	1,463
NewsPage (Individual)	1,332
Sprint	1,162
Amazon.com	986
Procter & Gamble	969
Travelocity	941
Ziff-Davis	877

This list clearly shows that the Internet is still very turned in on itself, as most of its advertisers are in some way connected to the Net, or even heavily committed to it, either as companies operating in the computer sector or simply as producers of websites providing their own marketing[113]. It is strange to note that this list also shows that there are a great many products and activities that give rise to very little expenditure on advertising on the Internet. The following statistics illustrate this situation fairly well:

Breakdown of advertising expenditure on the Internet by sector in 1996 *(sources : Jupiter Communications)*	
Sector	**%**
Websites and Web technology	32%
Computer industries and services	22%
Staple goods	13%
Telecommunications	9%
Other services	6%
Publishers and the media	6%
Cars and accessories	5%
Financial services, insurance and real estate	5%
Tourism and travel	2%

[113] *Ibid.* Pages 2-8

The support sites, i.e. those selling advertising space, are also fairly tightly focused: it is actually estimated that at the end of 1996, 900 Websites (out of 500,000) accepted advertising banners and, as the following figures show, 70% of total revenue from this activity was concentrated at 6 sites (5 search engines and the *"home site"* of the publisher of the Netscape *browser*):

Estimated revenue of the top 10 advertising sites on the Internet *(sources : Jupiter Communications)*	
Advertiser	**Revenue in 1996** ***(in thousand $)***
Netscape	17,857
Yahoo!	11,351
Infoseek	10,694
Lycos	7,548
Excite	7,271
CNET	6,221
ZD Net	5,418
ESPNET SportsZone	4,148
PathFinder	3,613
NewsPage (Individual)	3,492

It should first of all be noted that many such support sites are also at the top of the range with regard to advertising expenditure; it seems likely, however, that this situation will change as Net support sites (*"ad networks"*) are organized under the auspices of agencies of the *"RepFirm"* type, such as Burst!Media, Commonwealth Network, Internet Link, Softbank Interactive Marketing or DoubleClick, which is the subject of this case study. The principle is that such sites join networks and market their advertising space via agencies representing them on the *media planners* market. On the other hand, there are sites that retain the function of selling advertising space internally, considering that they are best placed to acquire a knowledge of their networks: this applies to Fox Broadcasting Co, Pathfinder, Hearst Home Arts, Conde Nast Publications, Time Inc. and Yahoo, the latter organization employing about 40 marketing staff who perform this function.

III.2) - Description of DoubleClick

DoubleClick was set up in Atlanta in February 1996 by combining two sets of skills: the normal commercial know-how of an advertising agency (Poppe Tyson) and software engineering for Internet and audience measurement purposes that had initially been developed within IAN (*Internet Advertising Network*)[114].

[114] IAN originated the Internet Address Finder *e-mail* addresses directory

DoubleClick performs the function of a *RepAgency*, by offering advertisers an all-in integrated service with regard to advertising on the Internet: media planning, *"one to one"* targeting, monitoring, impact studies and customer reporting. In other words, the agency completed agreements with about 70 Websites, including the AltaVista Search search engine, that are willing to sell their space to permit the display of advertising banners on behalf of various advertisers, which might have nothing to do with the site on which their banner is displayed. The special feature of this service is that the content of the banners can be targeted fairly precisely on the basis of the individual site visitor profile; this presupposes that DoubleClick is able to prepare such individual user profiles on a large scale and to ensure that a connection is established with a particular message in a few seconds; DoubleClick uses the *cookies* technique for this purpose[115]. The advantage to advertisers is on the one hand that there is less wastage in advertising communication, as only tightly focused target audiences read it in principle, and on the other hand that they are able to determine the number of times their banners have been displayed and how many *click-throughs* occurred as a result, to a very high degree of accuracy.

DoubleClick is a *startup* company that is expanding rapidly. At the end of March 1997, it announced that in less than a year, it had served over one and a half billion advertising banners on the Web to 26 million Internet users included in its databases. The number of sites belonging to the DoubleClick network should reach about 100 between now and the end of the year. To date, over 60 different advertisers have entrusted their advertising campaigns to DoubleClick. In less than 18 months, the company's payroll has increased from 8 to its current level of about 100; it has offices in most of the big American conurbations. DoubleClick's headquarters are situated in a district of New York whose name, Silicon Alley, alludes to the well-known region of California and whose symbol is the *Flatiron* building; this district is situated at the level of 28th avenue and comprises a group of 6 blocks to the east and west of Broadway; it provides a home for no fewer than 700 young companies, which are all involved in the new media and the Internet in particular. According to a study by Coopers & Lybrand that was completed last year, at that time these companies had about 18,000 employees, including computer experts, designers, marketing experts and Website publishers; almost half of them have annual turnovers of less than $500,000, which is yet more evidence of their relatively small size[116]. All these companies are on the look out for *venture capital* and last June, DoubleClick pulled off a fairly spectacular deal that brought in about $40 million in the form of a package put together in collaboration with six investment partners[117]; this financial operation is one of the largest of its type ever to have been seen in connection with activities involving the Internet[118]. Thanks to this investment, DoubleClick hopes to maintain its position as the leader in Web marketing and to pursue a policy of development in four areas: the capture of international markets, improving existing technology, designing new products and external growth by means of acquisitions or mergers.

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115) Cf. Part One of this report, pages 28 to 30.

116) **Annie Kahn** : *"Les médias de demain s'inventent à New York"* [Tomorrow's media are being invented in New York] - Le Monde 22-06-97.

117) These investors are : Bain Capital; ABS Capital; Canaan Partners; Weiss, Peck & Geer Venture Partners and Venrock Associates.

118) According to a recent study by **Price Waterhouse**, 93 companies specializing in the Internet market received a total of $309 million in investments during the first quarter of 1997; this means that the average investment per company stood at $3.32 million.

III.3) - DoubleClick products and services

DoubleClick's activities are based on supplying advertising space on the Net and making it easy for advertisers to choose the space that will provide a suitable support for their communication activities in the confusion of today's Internet. The DoubleClick network currently comprises about 60 affiliated sites, which break down into seven categories: *"Premium Sites"* (10 sites including the AltaVista search engine, which serves about 24 million requests per day), *"Business & Finance"* (11 sites including the SEC site for the Edgar Online database and Quicken, the well-known producer of personal accounting software), *"Technology & The Internet"* (10 sites including Win95 magazine, Inquiry.com, Price Watch, etc.), eight search directories or engines (Ecola, Internet Address Finder, Lycos People Find, etc.), 10 sports, travel and leisure sites (including Travelocity, The Sporting News Online and Fashion Mall), about 15 *"Entertainment"* sites and, finally, 12 cultural and information sites, including USA Today Online in particular. All these sites are selected on the basis of their volumes of traffic (minimum of one million impressions/month, continuous promotion policy, well targeted editorial content).

The other key element in DoubleClick's success is the information processing technology that makes it possible to isolate identification criteria and to offer advertisers tools permitting the individual targeting of internet users. Over 10 targeting criteria are currently available to advertisers, that have opted to contact the public via the DoubleClick network: on the basis of affinities (corresponding to the categories of sites that are most frequently visited by Internet users), place in which the access provider is established (country, State, postcode) Internet domain (.com, .edu, .gov, .org, etc.), sector within which a company operates (use of the SIC - *(Standard Industrial Classification)* nomenclature), names of companies and institutions, company size and turnover, network (AOL, Compuserve or Prodigy), the operating system of the user's PC, the type of *browser* and the time and day of the week.

DoubleClick offers its customers a total of five solutions based on this network of affiliated sites and this targeting technology.

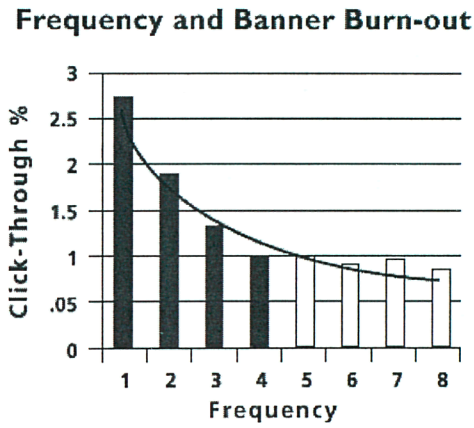
III.3.1) - DART (Dynamic Advertising Reporting and Targeting)

DART is DoubleClick's basic product, which enables it to establish an immediate and dynamic connection between a user's *browser*, his/her profile and current advertising campaigns, in such a way that only an advertiser's exact target audience will receive a particular banner; this arrangement is described in greater detail in a subsequent part of the report. In addition, as the system is based on the unique identification of each user, it is possible to monitor frequency, i.e. to keep track of how many times an individual has received a particular banner and to avoid the risk of *"burn-out"*, which occurs when repetition of a message that did not have any effect the first or second time it was shown becomes useless and expensive and might give rise to the undesirable psychological state of saturation. As the graph opposite shows, DoubleClick has actually es-

tablished that the *click-through* rate falls from 2.7% to below 1% after the fourth impression.

Finally, *DART* provides advertisers with reports that are updated on a daily basis and are available *on line* under Acrobat. These provide a very detailed account of the results of their campaigns: the number of banners distributed, number of *click-throughs* broken down according to day and time of day, domain, ISP, SIC code, operating system and *browser*, State (United States) and country; the report also indicates the *click-through* rate based on the frequency with which a banner is displayed (from the 1st to the 25th time) and in terms of the site at which a banner has been seen by users.

The cost of *DART* to an advertiser is calculated on a standard basis of "cost per thousand" or of the CPM (*"Cost per thousand impressions"*): the basic charge varies from $25 (CPM) to $70 depending on the support chosen; an additional amount of $1 is charged for *click-throughs* (*"cost per click"*). Microtargets, such as Internet users belonging to specific companies or colleges of education, are charged at a CPM of $120.

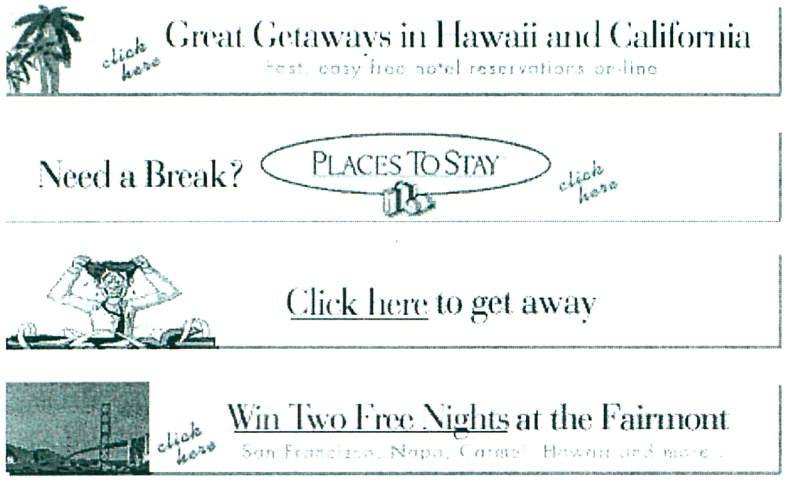


Source: DoubleClick, 7/96.

III.3.2) - TestIt!

The *TestIt!* service is one of the added values of the DoubleClick *"business model"*. It enables advertisers to test the effectiveness of a campaign conducted on a full-scale basis for 24 or 48 hours, even though such tests are normally expensive and very difficult to mount. Various elements of a campaign can be tried out: the graphics and the attractiveness of a sample of banners, the various Websites of the support network and the pages contained in these sites at the top of which the banners are placed.

The four examples of banners provided below from a DoubleClick trial show four different graphics for the same product that have very different levels of effectiveness: banner 1 generated a *click-through* rate of 0.93%, banner 2 2.83%, banner 4 2.46%, while banner 3 generated the highest rate, of 5.29%.



The DoubleClick experiment makes it possible to draw a number of important conclusions concerning the design of advertising banners on the Internet: for example that it is preferable for them to include a question that encourages the user to select them to find out more, which is described in technical advertising terms as *"teasing"*; bright colours, in particular blue, green and yellow, are more effective; the *"home page"* is not necessarily the most appropriate place to display a banner, as certain pages within support sites may perform much better; on the other hand, inclusion at the top of the page provides greater encouragement for a user to click on it. Animation within a banner attracts attention and can increase the click-through rate by 25%. Finally, messages such as *"Click Here"* or "*Visit Now"* have a fairly positive impact, especially if they are located in the right-hand portion of the banner, a banner where the eyes naturally end up.

III.3.3) - Spotlight

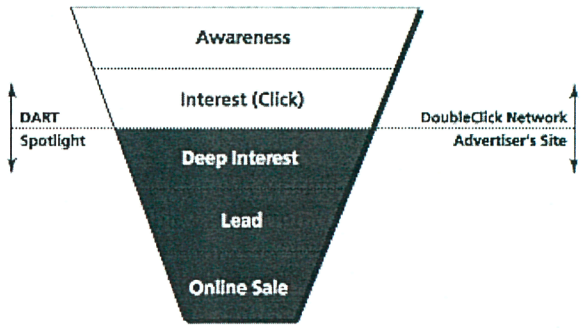
Spotlight makes it possible to find out, without a break, what happens when a user clicks on a banner and how exactly he/she behaves when visiting the advertiser's site (*"measurement beyond the click-through"*); it establishes a relationship between an advertising message and the behaviour of the recipient in real time, which has always been a major requirement in the marketing sector. *Spotlight* is actually a reporting system that is installed at the advertiser's site and that makes it possible for the DoubleClick computers to record various kinds of valuable feedback:

- the target audience to which the visitors to the advertiser's site actually belong
- the particular subsector involved
- the pages of the advertiser's site that seem to elicit most action from the visitor
- if the site offers *on line* sales, whether or not purchases are made by the visitors
- if not, the route they follow and the precise point at which they terminate their visit to the advertiser's site

III.3.4) - ClickBoosters

ClickBoosters is an advertising application based on intelligent agent technology that makes it possible to determine the most high-performing location within a support site. The experience gained by DoubleClick actually shows that it would be wrong to assume that advertising banners always perform best on the *home page* of a site. As soon as a campaign has started, *ClickBoosters* continuously evaluates the performance of the advertiser's banners on the various sites and the various pages in which they are inserted; the best locations, i.e. those that generate the highest *click-through* rates, can therefore be identified, and the advertiser can then ask for its banners to be automatically moved as a result. It is not unusual for the effectiveness of a campaign to increase from 10% to 40% thanks to *ClickBoosters*.

III.3.5) - Editorial Targeting



This application, too, is based on intelligent agents, and enables DoubleClick to provide advertisers with the service of targeting the display of advertising banners according to the editorial context of the Website visited. Marketing personnel are very well aware that certain rules need to be respected concerning the relationship between the products being promoted and the choice of support: they are aware, for example, that the impact of a campaign to promote cognac will be greater in specialist lifestyle magazines (food, jazz etc.) than in general-interest supports or supports devoted to cars or the economy. It has therefore been established that consumers are more receptive to an advertising message when it is delivered in an editorial space that is associated with a state of mind that is compatible with the product in question. This question takes on a particular form on the Internet, where page content can fluctuate considerably. The *Editorial Targeting* system operates via key-word indexing: a travel agency may, for example, decide to confine the display of its banners to web pages containing the words travel, holidays, Florida, Hawaii etc. Application of the *Editorial Targeting* functionality has recently been extended to search engines, which means that a visitor entering the term *"fitness"* in AltaVista , for example, has a good chance of seeing at the top of his/her screen a banner introducing a commercial site for the sale of sports clothing and equipment. A special charging rate of $60 per thousand (CPM) has been introduced for this type of service on AltaVista.

III.4) - The personal data processing procedure

DoubleClick has developed a specific technology that has recourse to a database containing several million Internet users, which provides advertisers with assurance that only the desired target audience will be contacted by their advertising campaigns (IPD - *Internet Profiles Database*). To achieve this, DoubleClick collects and processes personal data that makes it possible to identify users, describe them and determine, in real time, those elements of the population that are likely to meet the targeting criteria of current advertising campaigns.

The display process occurs in the following manner: a user's *browser* sends a request to a Website belonging to the DoubleClick network and receives and loads the page requested. Overlain on the page, frequently at the top, there is a rectangular space that is reserved for the display of an advertising banner (*"Image tag"*), which automatically links the *browser* to the DoubleClick servers in New York. When it receives this page, the *browser* automatically initiates a second HTTP request (*"HTTP get request"*) to a DoubleClick server; an HTML graphics file, i.e. the banner, is then searched for in the current campaigns base; DoubleClick declared that it had between 2000 and 4000 banners in store at the end of June 1997.

A banner is selected via the processing of data relating to the user's characteristics as indicated in the following table. It will be noted that the basic data making it possible to identify an unknown user who has never visited a DoubleClick network before is initialized on the first such visit; DoubleClick does this by using standard basic data transmitted by the *browser* in a header file accompanying each request (*HTTP header*); it is then permanently recorded in the central bases and processed each time a site belonging to the network is visited by means of a unique identification number allocated by DoubleClick; this identification number is inserted in a *cookie* file that is returned to the user's station and is automatically reread by DoubleClick each time a graphics file is requested; it is this number that makes it possible to access the user's profile, which the system uses to determine the banner to be sent to the user; this process is supposed to take less than 20 milliseconds. The data concerning the user's browsing activities is then updated regularly and logged in order to obtain a more detailed profile of the user. DoubleClick claims that it has installed about 17 million *cookies* files to date.

Content of the DoubleClick database
(Sources : interviews and documentation of DoubleClick - New York - June 1997)

Personal data	Comments
- **IP address**	Although dynamic, the IP address is composed of permanent data that is standardized and indexed at an international level and makes it possible to identify the network to which the user belongs, i.e. it is the Net address. DoubleClick's databases contain about 400,000 Net addresses. If the Net address cannot be found in DoubleClick's tables, the central system is set to send an automatic request to Internic[119]

[119] Internic is a centralized world register containing the identities of everyone on the Internet. It also supplies the domain name and the information collected at the time when membership of the Net was recorded

Personal data	Comments
- **Domain (e.g: at&t.net, microsoft.com. etc.)** - **Country** - **State (United States)** - **Postcode** - **SIC code (United States)**	These five information items are revealed by the Net address. The domain name identifies the user's occupation (student, civil servant, etc.); the SIC code identifies the sector in which the company operates; it is collected from a third organization, is matched with the domain name and becomes a basic element of the DoubleClick data; e.g.: code 7372 = software package engineering
- **Job title and function within the company**	This data is not yet available, but DoubleClick has announced that it will be in the near future.
- **Size and turnover of the company**	This is data concerning a business user; the information is collected by DoubleClick from external sources and stored in the database
- **Type of *browser* used** - **Operating system** - **Version number** - **Service provider**	These four information items are contained in the header of an HTTP request. They are collected once and for all the first time a user is identified and recorded in the DoubleClick databases
- **Identification number**	This number is unique and is assigned by the DoubleClick databases as soon as a user who visits one of the Websites of the DoubleClick network and accepts a *cookie* is identified
- **Referencing of browsing activities**	Collection and analysis of the sites visited by the user: information, sports, weather forecasts, finance etc. Determination of the keywords contained in the pages displayed if relevant; session times and days of the week on which they occur

The management of *click-throughs* also gives rise to specific forms of data processing: in technical terms, a *click-through* is actually a request by the user's *browser*, which is received by DoubleClick's computers and redirected to the URL of the site of the advertiser that has placed the banner. The site then commences a session with its new visitor and DoubleClick records this *click-through* as a successful targeting operation. If the contract so provides, the session with the visitor may be monitored by DoubleClick up to any *on line* sale that may occur. Users' profiles may therefore be refined in this way and contain **accurate and confirmed data** about users' interests and purchasing behaviour.

III.5) - DoubleClick and the issue of data protection

The three components of DoubleClick's policy with regard to the protection of privacy are anonymity, opt-out and the disclosure of policies.

III.5.1) - Anonymity

DoubleClick claims that it does not know the names, *e-mail* addresses, telephone numbers or postal addresses of Internet users who visit sites belonging to the network and to whom it transmits advertising banners. All users remain completely anonymous in the company's databases. DoubleClick therefore declares that it does not assign nominative lists of prospects to third parties, e.g. advertisers, as occurs at other sites; if advertisers wish to collect nominative information, they must in principle do so at their site by means of an electronic form to be completed by visitors on a voluntary basis. DoubleClick has taken up a leadership position with regard to anonymity at the hearings recently organized in this area by the US authorities (FTC). Certain advertisers have sometimes asked them to go further when identifying users. Double-

Click states that it has always refused to comply with such requests and explains that its technology does not include any mechanism that might make it possible to capture users' e-mail addresses, for example.

This means that DoubleClick is developing an activity on the Internet that is quite different from the activity of *"spammers"*, i.e. direct marketing operators whose aim in life is to inundate users' personal electronic mailboxes with advertising messages of a very simple nature, i.e. *"spams"*, which are generally made up of text without graphics and are frequently accompanied by order forms. *"Spammers"* are companies such as Cyberpromotions, which are able to send over 50,000 *"spams"* per hour from a single PC. Such companies also claim to engage in targeting, the difference being that instead of displaying banners, they provide a direct and nominative communication service, somewhat along the lines of *"host mailing"*. They identify prospects by name by means of a whole range of data collection techniques in every nook and cranny of the Net: directories, *"newsgroups"*, and various databases; certain operators even offer specialist forms of software that are termed *e-mail* address collectors or sinks[120]. As might be supposed, the information collected in this way is not always completely accurate, and the operators responsible are facing an increasing amount of opposition; some major providers of on line services, such as AOL, CompuServe and Prodigy have taken legal proceedings and some States are starting to forbid such practices on their territory (in particular the State of Nevada).

By coming out strongly in favour of anonymity, DoubleClick has developed a position that would leave it relatively unaffected by the restrictive and disciplinary measures that certain members of the US congress would like to adopt[121]. However, there is nothing to technically prevent an advertiser who is a DoubleClick customer from matching data files concerning the targeting of populations of Internet users as provided by DoubleClick with data of a more directly nominative type obtained by means of address collection techniques. However sincere DoubleClick might be when it undertakes not to identify its users, there is no way of being absolutely certain that none of its advertisers' sites benefiting from *"click-throughs"* will not be tempted to process, match or assign personal data built up on the basis of information supplied by DoubleClick.

III.5.2) - The "opt-out" and "cookies"

As already explained, part of the technology developed by DoubleClick is based on the use of *cookies*. Officially, the *cookies* installed by DoubleClick have the function of monitoring the frequency with which banners are displayed in order to ensure that users are not bombarded by advertising of no interest to them. At least this is the line of argument developed by the company's representatives. However, to take account of points raised by protesters in the discussion that is shaking the community of Internet users, **DoubleClick has felt obliged to install at its own site an *opt-out* procedure**

[120] **Yves Eudes** : *"La pub sauvage envahit Internet"* [Uncontrolled marketing invades the Internet] - Le Monde 1st June 1997.

[121] In particular the proposals put forward by Chris Smith, a Republican representative from New Jersey, Frank Murkowski, a Republican senator from Alaska and Dianne Feinstein, a senator from California.

that prevents the servers from reading the *cookie*. DoubleClick explains that it has been compelled to do this, as similar procedures within *browsers* or on advertisers' Websites are not very effective. It also makes it possible to eliminate a category of users who might be described as being averse to advertising, or at least as being not very responsive, and who are not very likely to make *on line* purchases. DoubleClick claims that it records 5 to 10 applications for the *opt-out* procedure every day.

Activating the procedure specifically requires connection to the DoubleClick site and selection of the *"privacy"* field: the user can then read a general declaration by the company concerning its protection of privacy procedures and select *opt out*. From that point on, the specific DoubleClick identification number contained in the *cookie* is deleted and replaced by the term ID = OPT_OUT.

However, the claims made by representatives of the company on the nub of the problem are still contradictory: recent news, first of all in March concerning the RFC 2109, then in June of this year concerning the OPS (*Open Profile Standard*) makes it reasonable to fear that *cookies* are immortal as a basic functionality incorporated into *browsers*. It will be remembered that, in March, a technical committee of the IETF (*Internet Engineering Task Force*) suggested new detailed specifications for the content of *cookies* based on a desire for transparency, control by the user and respect for the user's privacy[122]. At that time, the Technical Manager of DoubleClick, Dwight Merriman, stated that *"(...) if this specification becomes standard, I think it makes our life more difficult; (...) We have to do a significant amount of work to maintain the same functionality"*; it seems likely that the alternative solution would be *"thunking"*, a method that involves embedding identification numbers in the URLs themselves; *"(...) we'd have to distribute software to all our ad sites", he added. "It would create programming problems"*([123]). It is curious that DoubleClick's position is now more subtle: at the end of last June, those speaking for the company confined themselves to stating that limiting the use of *cookies* would make it impossible to monitor the frequency with which banners were displayed, implying that Internet users who would actually suffer from this measure, as they would then run the risk of being inundated with repetitive and irrelevant advertising messages. It is impossible not to see this as the expression of a communication strategy on the part of a company and it goes without saying that a part of DoubleClick's technical arrangements would be placed in doubt if the functional specifications relating to *"cookies"* were revised. It should be remembered that the *"cookies"* installed by DoubleClick contain the user's unique identification number and that it is this number that forms what is technically known as a pointer permitting access to the user profile data recorded in DoubleClick's databases. It is therefore difficult to see how *"one to one"* targeting, which is the centre around which Internet advertising revolves, could be performed if it becomes impossible by any means, even in a non-nominative fashion, to determine which users visit which site and then to draw up their profiles.

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[122] The designers of *browsers* are actually requested to start providing users with various monitoring mechansims that will enable them to decide whether or not to send and save *cookies*, read their content via a specific area (*Comment-attribute*) and distinguish between those that they wish to retain and those that they wish to destroy. This means that certain areas that might contain "sensitive" information must be written in plain text that can be read by someone who is not an expert.

[123] Sources : **Kristi Coale** : *"DoubleClick Tries to Force Hand into Cookie Jar"* - Wired - Mar 17, 1997.

Last June, DoubleClick declared itself in favour of the OPS and is one of the approximately 60 Internet sites supporting this initiative. This attitude is ultimately consistent with a search for an alternative solution that, while protecting personal data and users' privacy, would not make it impossible for DoubleClick to identify visitors to sites belonging to its network.

III.5.3) - Transparency

A full set of information about DoubleClick's policy of computer ethics and respect for privacy can be found at its Internet site, in the same field as the *"opt-out"* service for *cookies*. The real problem is still, however, to find the extent to which Internet users, apart from a few *"privacy"* campaigners, are actually aware of the existence of DoubleClick and its activities on the one hand and of the opportunities available to them with regard to identification and targeting for publicity purposes on the other.

DoubleClick is also developing its line of argument with regard to transparency, by drawing attention to the fact that it submits itself to audits under the E Trust program but does not wish to disclose information about this. It also participates in a number of different initiatives that have been introduced at a professional level by the IAB (*Internet Advertising Bureau*), the *New York Media Association* and the American Advertising Federation. It also accepts the protection of privacy principles laid down by the DMA (*Direct Marketing Association*) with regard to on line marketing.

III.5.4) – International activities involving cross-border flows

As in the case of many Internet sites, DoubleClick's activities pose a particular problem with regard to **cross-border flows of personal data**. DoubleClick claims to be a company operating at an international level (*International Web marketing solutions company*), as 30% of the 435 million banner impressions per month involve users living outside the United States, Apple Computer being one of the first American advertisers to request DoubleClick to develop a campaign at an international level. After having opened a branch in Canada last November, DoubleClick is now extending its network of support sites to cover European content providers, in the United Kingdom, Germany and Scandinavia in particular, in order to create what it calls *"an international satellite network"* (it should be noted that it does not have any specific intentions with regard to France at the moment, as use of the Internet has not taken off there to any significant extent). DoubleClick has chosen the partnership model in Europe in order to facilitate its access to the market and to take account of the special features of national regulations, especially as regards data protection. Such partnerships are to be created not with advertising agencies, with which DoubleClick competes in one way or another, but rather with companies specializing in media planning and the sale of advertising space (*"media sales companies"*). Nor does DoubleClick exclude the possibility of working with telecommunications operators.

It should be remembered that the entire procedure of collecting and processing data continues to be centralized on American territory, and in New York in particular. These are therefore clearly cross-border flows; for technical reasons, in particular to improve the flow of traffic and response times, DoubleClick intends to decentralize its servers; there is no question of installing servers in Europe at present, however.

Section IV - The New York Times Electronic Media Company (NYTEMC)

IV.1) - General information about on line newspapers

There are currently about 3,622 newspapers with an *"on line"* edition[124]; over half of these sites, including the sites of 700 weeklies, are still of North American origin, but this predominance is gradually being eroded: over the past year, the number of sites originating from other parts of the world, namely Europe, and then Australia, Brazil and Japan in particular, has virtually doubled, to a current total of 1,563.

These figures, which clearly reflect an undeniable increase in volume, conceal a much more varied reality that is determined by complex forms of competition, questions, survival strategies and sometimes failure in the case of the weakest publications. The Internet would appear to be a world that the press and the traditional media have not mastered very well; they rushed into it in a desire to appear modern, propelled by an irresistible compulsion to appear on the *Web* and to contain the explosion of new operators in the communications sector, spurred on by the convincing commercial strategies of manufacturers of a technology that has been described by an American observer as a *"(...) virulent spore that infected the entire media industry"*[125].

The situation, as represented in a number of international professional meetings this year[126], is first of all characterized by the persistence of a state of considerable disequilibrium, in other words the Websites of newspaper publishers and media operators continue to cost more than they earn. Many observers confirm the estimate that barely a third of *on line* newspapers make a profit[127]. There are four or five main recipes for success:

- certain *on line* publications have acquired a genuine status on the Internet and have therefore succeeded in attracting an audience and bringing in advertising revenue; they are generally supported by big groups: Microsoft's *Sidewalk*, which is now present in Seattle, New York, Minneapolis and Boston, CNN and Time Warner are the big sites that correspond most closely to this type.

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[124] Cf. the site of AJR NewsLink : www.newslink.org

[125]) Cf. **Denise Caruso** - Columbia Journalism Review ; quoted by Dan Mitchell: *Online Newspapers Jilted by Advertisers* - Wired 21 Jul. 97

[126] Cf. in particular the statements at the recent conference of the IFRA in Amsterdam (16 & 17/10/97 - *Beyond the Printed Word Conference*) and at *"Connections '97"* organized last July in San Francisco.

[127] Cf. discussion by **Eric K. Meyer**, University of Illinois, quoted by Martha L. Stone: *Online Newspapers starting to feel the crunch* - ZD Net News - Aug. 13, 1997.

- some publications consistently use the Internet as a medium for breaking hot news; the example of this that is familiar to everyone concerns the *Dallas Morning News*, which astonished users a few months ago by deciding to use its Website to announce a scoop concerning the Oklahoma City bombings. At a rather different level, which still involves *"teasing"*, albeit of a more morbid kind, *The Chicago Tribune* attracts a very large audience by providing interactive fields about murders that have recently been committed in the city. Finally, some publications are very successful in the area of local information by sometimes attracting an audience from a worldwide diaspora[128].

- Paradoxically, there is a category of sites whose success is inversely proportional to the funds that have been available for investment in a venture on the Internet. Such newspapers are characterized by considerable creativity, both as regards presentation and content; they are written by small, highly motivated teams that are able to create real added value. This arrangement is now agreed to be the best by many of those working in the sector, even though most newspapers have remained at the stage of cloning their paper editions on an electronic support.

- Finally, certain newspapers have managed to achieve equilibrium by adopting a strategy that is normal in the industry, i.e. by arranging for their marketing department to offer site hosting services intended for advertisers in particular; *"(...) it uses 35% of our resources,* explains the head of a press group in Maine in the United States, *but generates 95% of our revenue"*[129]. Certain analysts estimate that in 2002, American newspapers will earn about $400 million from this activity, which is known as *hosting.*

Apart from these exceptions, the press has not really fared very well on the Internet: within the top 100 Internet sites to be visited and appreciated throughout the world, the highest ranking electronic newspaper only reaches 47th place[130]. This means that newspapers are not very well positioned to attract sufficient advertising revenue; only those with the highest profiles actually do this, but many observers think that a large proportion of the space reserved by publishers for respective advertisers actually remains unsold.

Overall, therefore, the press does not currently derive from the Internet the revenue that would enable it to develop and in particular to cope with competition that poses a threat to its small advertisements market, which is coveted by a number of the big sites that are best placed on the Net, and in particular by the operators of search engines such as Yahoo. The only solution was to unite and this is what the big newspapers have just done by founding *Careerpath.com*, which is a site devoted to small advertisements.[131]

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[128] Cf. **Alain Salles**: *La presse ralentit ses investissements dans les médias électroniques* [The press is investing less in the electronic media] Le Monde 21-10-97

[129] Quoted by Dan Mitchell - op.cit.

[130] This observation was made by David Morgan, chairman of *Real Media* - quoted by Dan Mitchell - op. cit.

[131] This is a site specializing in job advertisements whose existence is guaranteed by almost 50 newspapers with an electronic edition; it was set up in October 1995 at the behest of the six main American newspapers, The Boston Globe, Chicago Tribune, Los Angeles Times, New York Times, San José Mercury News and the Washington Post, which all contribute their job advertisements to it. This system is offered free of charge and enables employers and job seekers to be matched in a sophisticated way according to geographical criteria, by employer or newspaper, by type of job or by means of free interrogation based on key words. After having completed a formal registration procedure, a candidate may post his/her curriculum vitae, anonymously at first if he/she so wishes. *CareerPath* then performs matching using a *push* technique; it only

IV.2) - Positioning of the New York Times on the Internet

The New York Times opened an Internet site as part of its diversification strategy, which involved extending the content of the newspaper as *"a premium source of information"* in the words of its manager, Mr. Martin Nisenholtz, via the new media: apart from the Internet, these include television[132], radio, CD ROMs and DVD. To date, *The New York Times Electronic Media Company* (NYTEMC) has concentrated its efforts on *on line* activities and distribution via AOL. The attention given to television only counts for barely 1% of diversification activity

IV.2.1) - Description of the services of the New York Times on the Internet

The New York Times offers three main services that are accessible via the Web:

- ***The New York Times on the Web***:

  This is the main product: it is really a kind of electronic version of the newspaper; quite typically, the slogan that is to be found on the home page of this electronic edition, *"All the News That's Fit to Print"*, is the slogan that was invented exactly a century ago. It should, however, be emphasized that specific resources are devoted to selecting subjects and reformatting or rewriting articles in a suitable style; NYTEMC actually has 50 employees, about 15 of whom make up the editorial team that is devoted to the *Web* support. The home page contains what is termed "the main article", which comprises one or two headlines and a photograph illustrating an event of the day. The left-hand side of the page provides a list of contents: 15 sections and five shortcuts giving access to the main fields: news by category, news flashes (supplied by *Associated Press* agency), classifieds, discussion groups, services and an internal search engine. It is also noted that the newspaper gives a high priority to photographic content. The classifieds field contains classified advertisements published by the newspaper and a hyperlink giving direct access to each specialist *CareerPath* site. It should finally be noted that all the menu pages contain advertising banners: generally one full banner (468 × 60) or two half-banners on the main display and three smaller-format banners on field menus. A reproduction of the main page of a daily edition of the *New York Times on the Web* is provided below.

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transmits nominative data to an interested employer when advised to do so by the candidate. Employers have the same facility to enable them to present themselves, in particular by providing links with their own sites.

[132] At the end of last year, The New York Times had eight television channels: WHSNT-TV (Huntsville, Alabama), KFSM-TV (Fort Smith, Arkansas), WREG-TV (Memphis, Tennessee), QQAD (Moline, Illinois), WNEP-TV (Moosic - Scranton - Pennsylvania), WTKR-TV (Norfolk, Virginia), KFOR-TV (Oklahoma City, OK), WHO-TV (Des Moines, IA).

- ***The New York Times Direct Service***:

  This is a customized information service that is delivered by means of the *push* technique to the electronic mailboxes of readers equipped with the Netscape browser. Access to the direct service is subject to the same conditions, which may or may not involve charges, as the *New York Times on the* Website. When registering for this service, readers are invited to define their interests, i.e. what are termed preferences, by ticking one or more fields (*Front Page, Business, Travel, Editorials, Real Estate, CyberTimes, Politics, Arts and Leisure, Op-Ed, Job Market*) and by freely choosing keywords. When opening the daily graphics page that has been sent to his/her e-mail box, a user only has to click on the *"Personal Search"* button in order to obtain the headlines and articles covered by the content initially defined by means of his/her keywords. It should finally be noted that, next year, NYTEMC will offer an à la carte *front page* system that will be defined according to the user's preferences and will be directly accessible at The New York Times Website, not via *e-mail* boxes as is currently the case for owners of the Netscape *browser*.

- ***The New York Times on Pointcast***:

  Finally, The New York Times is distributed by *PointCast*, a *webcasting* operator that also distributes CNN, CNNfn, Time, People and Money Magazines, Reuters, PR Newswire, BusinessWire and a number of local titles of a general nature, such as LA Times, Boston Globe and San Jose Mercury News. In this case too, regardless of whether he/she is equipped with Navigator or Internet Explorer, a user may select a certain number of fields of a newspaper's content that are of interest to him/her. This service is still totally free of charge at present, both within the United States and for readers resident in Europe. As we shall see below, this is not entirely in keeping with the newspaper's charging policy. When asked about this, the spokesperson interviewed admitted that they were planning to give up this system because of the small amount of revenue it brought in.

*IV.2.2) - Registration, invoicing ("*pricing plan*") and payment rules*

Registration with The New York Times on the Web requires the provision of a certain amount of personal data on an on line form comprising almost 20 fields identifying the user and his/her password, e-mail address, country of origin and sex, the income of his/her household, his/her *e-mail* box *mailing* preferences and whether he/she subscribes to the paper edition of the newspaper or purchases it at a newsstand.

In its pricing policy, The New York Times distinguishes between domestic and foreign readers, i.e. those visiting the newspaper site from a point outside the United States. American readers are able to access the entire electronic edition of the newspaper free of charge, while foreigners have to pay a monthly subscription fee of $35. This distinction in the commercial treatment of readers actually corresponds to a distribution policy: the paper edition of The New York Times is not distributed outside the United States, except, of course, to subscribers, and the managers of the NYTEMC see no reason for providing its electronic version free of charge when the same readers in their respective countries would pay the equivalent of over $1 to purchase a national daily newspaper.

This pricing policy has been made very easy to apply by the fact that the standardization of protocols for logins to Internet sites means that the identification code of an access provider must be disclosed each time a user *logs in*. It is therefore fairly easy to automate access control, using the access provider's identifier to determine a user's point of origin.

Payments are made solely by credit card, with disclosure of the type of card, the holder's name, the number and the expiry date. NYTEMC uses the standard payment security facility (RSA encryption) of Netscape's electronic commerce platform. NYTEMC does not plan to accept micropayments, nor does it accept arrangements to pay by cheque or *on line* certifications of the *First Virtual* type or any other type.

IV.2.3) - The audience

The audience of the *New York Times on the Web* currently stands at 1.7 million registered users, about 800,000 of whom are AOL subscribers and 4000 are foreign users who are obliged to pay a monthly subscription fee. The word "user" is used in a very precise way here: registered users must be regarded as Internet subscribers who have logged in at least once to the newspaper site since it came into existence, which means that they cannot be regarded as a regular readership that logs in frequently; it is estimated that there are about 50,000 to 60,000 regular readers; this figure is increased to 100,000 if one includes readers who log in at least once a week. The 800,000 AOL subscribers that are counted log in once a month on average. All these figures are small in comparison with the circulation of the daily paper version, which stands at one million copies per day.

The revenue earned by NYMTEC from advertisers is not disclosed. It is possible to work out, on the other hand, that 4000 paying subscribers abroad will together contribute annual revenue of $1,680 million, i.e. hardly sufficient to finance a small organization with a team of about 12. One would be justified in thinking that the electronic edition of the newspaper is not yet a very profitable operation. Even if there was an active information campaign, which has never been the case up to now, it seems likely that distribution to paying subscribers will reach a ceiling, especially if the current charging level is retained; NYTEMC must therefore increase its circulation (a distribution agreement was being negotiated with a Japanese ISP this summer, for example) and at the same time increase its advertising revenue; if it is to do this, it must be able to attract advertisers, and apart from having a big audience, there is no better way of achieving this than being able to offer sophisticated targeting programs of a *one to one* type for marketing purposes, which enable site operators to charge more for their advertising space (25% more in the case of The Times). One would therefore be justified in thinking that any improvement in the newspaper's situation that will enable it to break even will depend more than ever on the processing of personal data in the final analysis.

IV.3) - Technical and political aspects of data protection

IV.3.1) - A Netscape - I/pro - Real Media platform permitting log analysis and targeting for advertising purposes

The technical platform of the *New York Times On the Web* is made up of Netscape Publishing Services, SGBD Oracle and SUN stations under Unix. When it decided to build its Website on the Netscape platform, NYTEMC joined Time Warner, Mobil, Bank of America, MasterCard, Johnson & Johnson and AT&T on the list of blue chip companies that have made the same choice. This platform is operated by the company's technical staff. Logs are analysed by means of an I/Pro software package that only stores a "*user ID*", except for in the case of European customers, whose names are also recorded during the payment procedure.

The I/pro software package, like the *cookies*, as we shall see below, makes it possible to analyse users' browsing activities in particular, and, for example, to show that there are three fields that are visited particularly frequently: classifieds (job offers and real estate for sale), national news and international news. The various studies performed by means of these tools also show that the typical reader of the *New York Times On the Web* is a man of between 35 and 55 with an income of approximately $60,000 per year. I/Pro also makes it possible to measure the audience by means of techniques that are more or less well received by advertisers[133]; at the same time, NYMTEC belongs

[133] Traffic measurement tools are not very well received by advertisers at present. Many studies show that, on the contrary, advertising investment on the Internet is limited for three reasons: there is no proof that there will be any return on the investment, a lack of reliable measurement tools and an insufficiency of socio-demographic data on users. The IAB (*Internet Advertising Bureau*) seems likely to succeed in having a standard audience measurement system accepted in the next few months.

to a *"good housekeeping"* program which is certified by a third organization, i.e. *TRUSTe.*

NYTEMC also uses a targeting software package (*"ad targeting software"*) produced by *Real Media*[134]. This specialist company supplies a *plug-in* (a supplementary program) for the Netscape Publishing Server that makes it possible to target users according to a number of simple broad demographic parameters, such as: user who is male or female, resident on the east or west coast, type of *browser* used etc.).

NYTEMC admits that it has had little experience in the area of targeting for advertising purposes. No targeting activity based on content is performed, nor is any such activity performed on the basis of narrow categories of users (*"business"* or *"residential reader"*, for example). However, interviews with the managers of NYTEMC show that they very much intend to provide narrower targets for advertisers requesting them in future.

IV.3.2) - Cookies

The New York Times server site uses the *cookies* technique, even though it is not regarded as indispensable by the site managers; the main reason for the use of this function is that it is provided as standard on the Netscape platform used by The New York Times, according to a spokesperson. This said, however, it is possible, more specifically, to break down use of *cookies* into three levels:

- identification of the user and his/her right to access the newspaper's site. When a subscriber first logs in, a temporary *cookie* is sent to the hard disc of the user's PC; this *cookie*, which is called *"NPLCNYT"* contains the identifier and the password; these two data items are encrypted. This temporary *cookie* disappears after 6 hours or when the user logs out. A second *cookie* called *"NPACLcacheNYT"* is sent at the same time; this contains reference data concerning the site areas that the user is authorized to visit.
- If a user agrees to the retention of his/her identification details as requested, the items are retained in the *cookie* after he/she logs out and the *cookie* becomes permanent until 1999, unless the user decides to terminate his/her registration with the site or to destroy the *cookie* in question in the corresponding .txt file of his/her *browser*. This is purely a question of convenience as it automatically identifies a user without him/her having to identify himself/herself each time he/she visits the site.

[134] **Real Media Inc** was set up in 1995 and specializes in advertising communication for on line newspapers; it is based in New York. On the same principle as DoubleClick, Real Media manages a network of support sites on the Internet (250 electronic newspapers including, apart from The New York Times, The Washington Post, The Chicago Sun-Times and New Jersey Online) that it places at the disposal of advertisers. Last June, this company announced that it was establishing itself in Europe by means of a partnership with the Swiss Publicitas group, which specializes in the purchase of space. Real Media Europe will offer European Websites its *"Open AdStream"* system, which makes it possible both to develop advertising campaigns and to *report* on audiences; Real Media's European subsidiary will have establishments in Paris, London, Frankfurt and Lausanne.

- The *cookies* also enable the newspaper to analyse use of its site, without ever analysing the browsing activities of individual users. Such data may be passed on to third parties, mainly advertisers, in an aggregated form (*"high level informations"*): number of readers who have seen an advertising banner, number of *click-throughs*, average number of visits to a particular section in the electronic newspaper, readers' loyalty to particular items and a breakdown of behaviour (types of items consulted) and loyalty patterns of frequent and occasional users.

However, The New York Times has no way of preventing advertisers who purchase advertising space on its Website from installing *cookies* when users click on a banner. The main advertisers are Microsoft, IBM, Delta Airlines, Visa, Amazone, Barnes and Nobles, and even the Wall Street Journal, which uses the services of FocaLink for this purpose; it should be noted that as well as belonging to the *Real Media Network*, NYTEMC also sells its advertising space directly, and employs for this purpose three sales representatives whose function is to canvas potential advertisers.

IV.3.3) - Users' rights

The rights of users registered with The New York Times Website are guaranteed in the subscription agreement, and are repeated at a number of points in the facility, in particular in the *Help Center* field; a distinction is made between four main subject areas:

- ***Information management guidelines***

  NYTEMC recently adopted a set of broad guidelines concerning protection of privacy; this coincided with the appearance this year of its chairman before the Federal Trade Commission (FTC), which regulates the protection of personal data. This means, first and foremost, that when they first become registered with the site, users are able to specify whether or not they wish to receive advertising information from the newspaper or its advertisers. The newspaper also certifies that it reserves the right to perform statistical analyses of behaviour in order to measure the audiences of the various items contained in the site, solely in order to improve their contents. Where information is actually passed on to third parties, as specifically laid down in the subscription agreement, NYTEMC undertakes that it will only be disclosed in an authorized and anonymous form: no personal information will be passed on to third parties.

  This self-restraint also, of course, covers the credit card numbers that non-American users are obliged to place at the site's disposal in order to enable them to be charged on a monthly basis. This is a fairly sensitive issue, and there are examples of electronic newspapers whose practices are not as clearly defined as this: the most important example is provided by the editorial and financial links between the Wall Street Journal and Dow Jones; a reader of the WSJ *on line* who decides to consult articles at the Dow Jones site by means of a hyperlink is apparently charged $2.95 for each article consulted, and his/her

credit card number is automatically passed on to this site so that the reader's bank account can be debited; the problem is that the information about this procedure is not very obvious, and users are left with a definite feeling of having been made to accept a fait accompli. The authors' contacts are aware of this practice and have explained how they think its negative effects could be overcome. The New York Times Website has actually made arrangements for a list of articles stored on line to be provided; the plan is to charge for each article consulted. To achieve this, consumers will be kept informed in the clearest possible way, will be notified of the size of an article (in kilobytes or number of words) and will also be given the opportunity to preview the first few paragraphs.

- ***Information about cookies***

The New York Times site is one of the few sites to provide a detailed explanation of its policy with regard to the use of *cookies*. This information was inserted in the FAQ field of the site *Help Center* in July this year. It specifies what is meant by the term *cookies*, how the *New York Times on the Web* uses them and the various ways of preventing their installation on the hard disc of the user's PC. This item also explains that no other Website can read the *cookie* installed by The New York Times; however, any user logging on via the PC of the user registered with the newspaper will have access to the service if the *cookie*, and therefore the identification data it contains, have been saved.

- ***Right of access***

Readers of the *New York Times On the Web* can exercise their right to access the data held about them by the newspaper. This right is exercised by *e-mail* via the Consumer Department. In reply, the user is informed of the data concerning him/her that is recorded in the database: an identification number that is unique to the server, the user's identity, e-mail address and country, the date of registration, whether or not the user subscribes to the paper version of the newspaper, e-mail preferences (acceptance or refusal of advertising material), the user's sex and the annual income of the user's household. As will be realized, all this information corresponds to the data provided in the on line registration form.

In order to make it easier to exercise this right of access, NYTEMC spokespersons have specified that it will soon be possible to have direct (*on line*) access to personal data managed by the site.

Finally, it should be noted that until this summer, the right of access field of The New York Times' site included a sentence implying that the newspaper was prepared to provide a detailed explanation of its *privacy* policy to anyone requesting such an explanation. In actual fact, there was no special information and all the details available were already provided on the site. Surprised by this,

the spokespersons consulted by the authors informed us that they intended to omit this sentence, which has now actually occurred.

- ***Opt-out procedure***

  An *on line opt-out* procedure is also offered to readers; it can be accessed from the *Help Center* and relates to two areas: the acceptance of advertising material and the acceptance of editorial material in mailboxes. NYTEMC claims that it has only received 12 *opt-out* requests since it went on line[135].

IV.3.4) - NYMTEC and protection of privacy standards

The managers of NYMTEC show a genuine interest in issues relating to the protection of privacy on the Internet. First of all, the company has received certification from the TRUSTe program, which is supported in particular by the EFF (*Electronic Frontier Foundation*). This program labels sites either that do not use personal data or, if they do, provide their visitors with a clear explanation of how the data is processed and for what purposes and identify any third parties to which it is disclosed.

It is also noted that The New York Times was one of the 60 initial signatories of the OPS (*Open Profile Standard*). Although this system does not prohibit the use of cookies, it gives Internet users an opportunity to check for themselves the level of personal information shared with the Websites visited. In the case of The New York Times, the OPS is regarded as a standard that, according to one of its managers *(...) will make it easier to exchange data with the reader and will make it possible to provide a precise definition of the levels of information required*; it is a system that will make it possible to do away with the visitor registration procedure in the long term, as it will be possible to preload all the data contained in the form in the user's *browser* once and for all and to transmit it altogether, at the user's request, when a site requires it.

[135] These 12 requests include one sent by ARETE for test purposes as part of this study.

Section V - America On Line: a service provider in the United States and Europe

V.1) – General description of AOL: an access and service provider

Realizing that they would never be able to match the rapid growth rate achieved by the supply of content on the Internet, the big commercial on line services, such as AOL, Compuserve and Prodigy, soon came to the conclusion that they needed to leave behind the compartmentalized system that was threatening to enclose them and to join the Internet in order to give their subscribers direct access to Websites and *Newsgroups* via their proprietary services. From the end of 1996 onwards, this also led these three companies to abandon their network architectures, which up to then had been their own special preserves and had cost them a great deal, in order to join the worldwide architecture of the Internet.

With over 11 million subscribers to its on line service, i.e. between 15 and 20% of all Net citizens, at the start of 1998, *America On Line* is now the world's leading provider both of access and of on line services; it has a presence in the United States, Canada and Europe (France, Germany and the United Kingdom) and has announced that it intends to establish itself in Japan on 15 April this year[136]. AOL does not distinguish between access to its proprietary service and access to the Internet proper when offering its services; these two facilities are intimately linked and the subscriber is unable to choose between them, but must accept them both together. Certain other providers, such as Compuserve, have, by contrast, set up or purchased structures dedicated to "dry" Internet access[137]; AOL, however, has up to now continued to pursue a monolithic supply policy based on its own technology.

V.1.1) – Organization of AOL

AOL commenced operations in 1985, essentially by launching its *on line* games. In 1992, AOL became the first Internet operator to issue a *"browser"* with a Windows graphical user interface. The company's headquarters are situated in Dulles, Virginia, USA. AOL's activities include providing its customers both with telecommunications access to the Net and with a packaged content of information and varied services. To enable it to achieve this, the company is divided into three main specialist entities:

[136] The Japanese partnership has been arranged with an international business corporation (Mitsui & Co.) and a big newspaper publisher (Nihon Keizai Shimbun, Inc. - Nikkei). AOL is expected to have as many as 100,000 subscribers in Japan by the end of this year.

[137] Compuserve actually acquired Internet access technology when it purchased Sprynet.

- ***AOL Networks***

  This entity uses the AOL service and its various contents; it is responsible for marketing subscriptions and searching for new sources of revenue by means of an interactive marketing program, the sale of advertising space and the development of electronic commerce.

- ***AOL Studios***

  AOL Studios is the entity that designs and implements specific contents reserved for subscribers to the service, in particular chat rooms (iChatco), games (INN) and local contents (*Digital City*). Its technical teams are also working on broadband communication systems in order to extend the supply of services to include other media, such as television and radio.

- ***ANS (AOL's Advanced Networks and Services)***

  This is the Net operator that provides access for AOL's general public customers and to high added value technical solutions for professional users. ANS was originally set up in order to construct and use the US network of the *National Science Foundation*, which rapidly became one of the biggest TCP/IP data transmission networks in the world. Last September, AOL announced a complicated merger (*"a three way deal"*) of its network with that of CompuServe via WorldCom Inc., which operates the UUnet network[138]. Towards the end of 1997, this culminated in the setting up of the first worldwide network for accessing the Internet, with no fewer than 650,000 modems on line, i.e. three times more than in January of the same year. There was, however, reason to fear objections from the Antitrust Division of the US Justice Department, although no such objection was made, as last November, the green light was given to the realization of this merger, which actually occurred during the first quarter of 1998. This action seems likely to bring about a considerable reduction in the log-in problems that have been continually encountered by AOL subscribers during peak periods; it will also enable AOL to penetrate more deeply into European markets.

Since April 1995, AOL's European activities have been pursued on the basis of a 50% partnership with Bertelsmann, the multimedia publishing group of German origin (2nd biggest group in the world in the communications sector). Three separate national departments were created for this purpose in Germany (November 1995), the United Kingdom (January 1996) and France (March 1996); the partnership with Bertelsmann was considered suitable because Bertelsmann was able to provide AOL with the financial support necessary for its development (Bertelsmann acquired a 5% holding in

[138] WorldCom is America's fourth biggest operator of long-distance telephone links, after AT&T, MCI and Sprint. This company is pursuing a large-scale strategy of establishing itself within Europe; this summer, it purchased the Nlnet network, which was the main Internet access provider for the Netherlands.

AOL at a price of $50 million); Bertelsmann is also very well acquainted with the European market and it is frequently noticed that North American companies are reluctant to go it alone on markets of which they have had no previous experience.

V.1.2) – Human resources

AOL and its subsidiaries have 7,371 employees worldwide. The total European payroll amounted to 600 in June 1997. 65 employees work at AOL UK, performing two main functions: the development of a specific content for the UK market and marketing the service. The European subsidiaries of AOL do not perform any technical activities in the narrow sense of the term, as all content is hosted on servers based in the United States, mainly in Dulles, Virginia. A spokesperson explained that such centralization has the advantage of permitting conversations between subscribers at an international level. The French and German payrolls are 20 and 160 respectively. There are also what are termed *"cross operations"*, which are conducted in Dublin, Ireland (270 employees).

V.1.3) – Financial position of the company

It is fairly easy to obtain data about AOL's financial position, as the company is listed on the New York stock exchange (NYSE); reports by the SEC (*Stock Exchange Commission*)[139] are a valuable source of information and are widely commented on by all observers interested in the development of the Internet.

It is impossible to deny that AOL has experienced extremely rapid growth in the past few years: its overall turnover stood at $1.1 billion in the financial year 1996, which represents an increase of 188% over the previous year; profits stood at almost $30 million. As already pointed out, it is claimed that the number of worldwide subscribers had reached 10 million by the end of 1997, from only 5 million at the start of 1996. The favourable results in 1996 were essentially due to the increase in the number of subscribers. The position deteriorated somewhat in 1997: although the turnover remained high ($1.6 billion), the group reported a loss of $499 million at the end of its financial year in June 1997. A number of explanations have been put forward, the main one being that in October 1996, AOL substantially reduced its monthly subscription charge, which then remained at $19.95 for an unlimited connection period (whereas the same amount had previously been charged for a connection period of only 20 hours) and at $4.95 a month for the first three hours ($2.95/hour beyond this)[140]. AOL therefore recorded a considerable physical increase in the traffic on its network, but at the same time was forced to come to terms with a considerable reduction in the amount it was receiving from charges, as a significant proportion of revenue

[139] http://www.sec.gov/Archives/edgar/data/883780/000883780-97-000017.txt

[140] It should be noted that AOL has recently tested the commercial viability of a number of different monthly charges in Germany: one at DM 69.90 ($37.75), another at DM 49.90 ($26.95) and a third one at DM 29.90 ($16.15) for a set period of 10 hours per month, each additional hour costing DM 6 ($3.25). A special student rate of DM 9.90 ($5.35) was also tried out. AOL declared during the summer that there would be no preferential rate in Germany, and the reasons for this have never become known.

from *on line* services had up to then been obtained in the form of amounts charged to subscribers exceeding their set number of hours per month. This inevitably forced AOL to diversify its sources of income and in particular to orient its commercial policy more strongly towards outside partners (advertisers and electronic commerce operators). Turnover changed as follows over the past five years:

Changes in and breakdown of AOL's turnover and important financial data
(Sources : http://www.aol.com/corp/inv/reports/1996/financial.html)

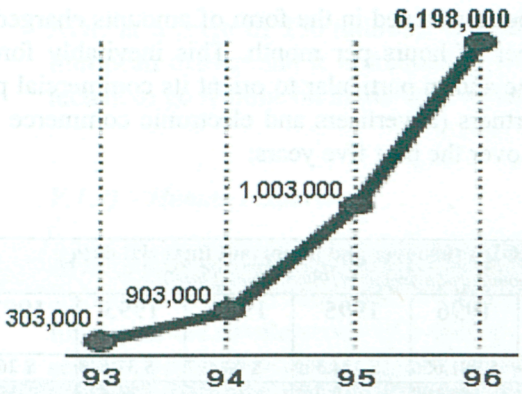
Statement of Operations Data (Amounts in thousands, except per share data)	**1996**	**1995**	**1994**	**1993**	**1992**
Online Service Revenues	$ 991.656	$ 334.309	$ 98.497	$ 37.648	$ 26.095
Other revenues	102.198	49.981	17.225	14.336	12.658
Total revenues	1.093.854	394.290	115.722	51.984	38.753
Income (loss) from operations	65.243	21.449	4.176	1.702	3.685
Income (loss) before extraordinary item	29.816	(35.751)	2.154	246	2.344
Net income (loss)	29.816	(35.751)	2.154	1.379	3.768
Income (loss) per common share:					
Income (loss) before extraordinary item	$ 0.28	$ (0.51)	$ 0.03		$ 0.05
Net income (loss)	$ 0.28	$ (0.51)	$ 0.03	$ 0.02	$ 0.08
Weighted average shares outstanding	108.097	69.550	69.035	58.572	45.656

The above figures show that AOL's income from associated activities (*"other revenues"*) has amounted to between 10 and 13% of turnover in the past two years. The most recent figures available, which relate to the first quarter of the current financial year (from July to September 1997) show that AOL received $87 million in various charges (i.e. almost 17% of turnover during the quarter), mainly as a result of selling advertising space ($43.7 million), by levying charges on transactions performed directly by business partners present on its site and by collecting fees in connection with a card that is *cobranded* with VISA. As far as the current financial year (1997-1998) is concerned, some analysts expect AOL to receive about $510 million under *"other revenues"*[141]. It will be noticed that, for reasons that will be explained below, **this policy is not a neutral one as far as use of the service and the marketing of personal data are concerned.**

V.1.4) - Increase in the number of subscribers

At the start of 1993, AOL had 100,000 subscribers, and this figure had increased to 700,000 a year later. The figure of a million subscribers was reached in August 1994. In 1996, AOL announced that it had just over 5 million subscribers, which had increased to 8 million by the end of the same year. It should be noted that the increase in the number of subscribers, which had up to then been exponential, slowed down in the first part of 1997, mainly as a result of network overflow, which affected AOL users and was widely reported in the press, and may also have helped to discourage potential new subscribers and encourage customer volatility. In 1997, after the slack period during the summer, AOL estimated that it would have 10 million subscribers by the

[141] Cf. **David Lazarus** : *"AOL Red Ink: A Trickle Not a Gush"* - Wired 7 Aug. ?97.



end of the year, including one million in Europe, in view of the fact that it then had just over 200,000 subscribers in the United Kingdom, almost 400,000 subscribers in Germany and about 100,000 subscribers in France. By March 1998, it had almost 14 million subscribers, including those acquired when Compuserve was purchased.

A demographic breakdown of subscribers produces the following percentages:

Demographic breakdown of US households subscribing to AOL *(Sources: AOL – Report on activities for 1996)*	
Groups	**Percentages**
- Male users	59 %
- Female users	41 %
- Additional users within the household	56 %
- Spouses using the service	42 %
- Households including children	46 % *
- Users living with children aged between 6 and 17	54 %
- Users who have completed higher education	63 % **
- Mixed use of the service (residential and professional)	41 %

* : as against 35% of the entire US population (census data)
** : as against 23% of the entire US population (census data)

V.2) – AOL services

V.2.1) - Content services

AOL's services are made up of over 10 subject networks whose content can vary somewhat according to the country of establishment in question. Some services offer direct links with *Web* servers, for example that of *The Economist* in the United Kingdom; other services are stored on AOL's *proxy* servers, which means that AOL's partner Websites do not have to invest in systems to receive traffic. The following lines are to be found, in particular:

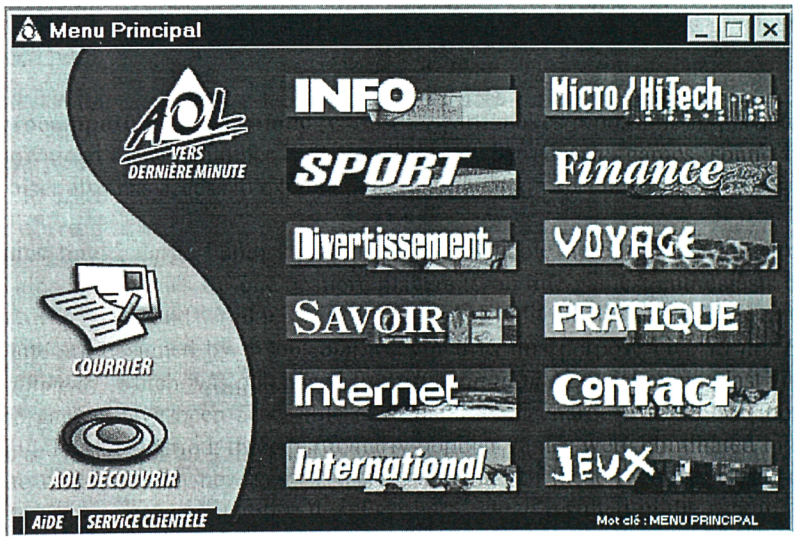
- **Information**: this network contains a fairly wide range of national and world information in all areas; the service is generally provided with the support of a press agency (Reuters); it is supplemented by photographic material, stock market rates from the world's main financial markets and specific files pro-

duced by teams of editors working for AOL. Furthermore, a number of newspapers cooperate within each national service: the *New York Times* and *Newsweek* in the United States, and *Le Nouvel Observateur* and *La Tribune* in France, for example. AOL also provides access to regular on line discussions, interviews directly with personalities from the world of culture, politics, science and religion and a large number of messaging facilities that enable users to make their own comments on current affairs.

- **Sports network**: AOL supplies in particular the results of numerous national and international sporting events of all kinds, from football to Formula I; this area is also a forum for discussions and exchanges and enables users to take the floor.

- **Microcomputing and technology**: this network makes it possible in particular to download a large number of items: libraries of *freeware*, games, sound etc. The user also has access to expert advice and the main specialist journals.

- **Games line**: a large number of games are available here, all the way from downloadable games for one or more players to on line games; enthusiasts can also swap tricks and wrinkles with like-minded individuals. The games at the US site are designed by a subsidiary devoted to this purpose (*WordPlay Entertainment)*, which was purchased from *Imagination Network*. Since last July, some games have been accessible at an additional charge of $1.99 per hour; during the same period, three particularly popular games were eliminated in order to make way for new games; the combination of these two events did not fail to arouse protest among AOL subscribers, which resulted in the sending of hundreds of messages to the electronic mailbox of Steve Case, AOL's president[142].



AOL France's home page

[142] Cf. **Andrew Ross Sorkin**: *"AOL'S Shift on Games Stirs Protest"* – CyberTimes – July 7, 1997.

- **Finance**: this network makes it possible to follow movements on financial markets and obtain advise from experts in order to increase one's own standing and invest one's money more effectively. The financial line also provides direct access to economic and financial news, financial press releases by agencies, financial newspapers, rates and prices on the main financial markets and company share prices.

- **Knowledge and culture**: this network offers a whole range of items relating to science, books, art, education, encyclopaedias etc. It includes forums that enable users to share their experiences with other subscribers.

- **Practical network**: this caters to a very wide range of needs, such as a desire to buy a car, care for pets, find a job or carry out a swap. It also permits direct contact with experts in order to find solutions to practical problems. It is here, too, that subscribers can make on line purchases. The American site has about 45 traders, including in particular: 1-800 FLOWERS, Barnes & Noble, Lands' End, JC Penny, The Body Shop, Starbucks Coffee, Omaha Steaks, Eddie Bauer, Hickory Farms, FAO Schwarz, Godiva, Hallmark, Sharper Image and American Greetings. GAP clothing stores have recently opened a remote sale facility on AOL (*Gap Online*).

- **Entertainment**: this network provides a range of information about what is on at the theatre, shows, television programmes, concerts and festivals. It is also the place to express oneself about all kind of hobbies and passions, all the way from kite flying to *body piercing* and *mangas*.

- **Travel**: this network offers a full range of tourist and practical information on all the countries and regions of the world; it includes links with about 40 airlines and hotel reservation facilities. Subscribers can also use it to post their photographic reports and descriptions of their travels.

- **Digital cities**: each national AOL service provides a local content covering a number of the country's big cities: 12 cities in the United States; London, Edinburgh and Glasgow in the United Kingdom; and Lyons, Marseilles and soon Paris and Lille in France. This involves the setting aside of areas reserved for inhabitants of and visitors to these cities, in order to provide access to practical and cultural information. A personal ads service enables users to make local contacts.

V.2.2) - AOL's relationship with Website operators

AOL has a number of different ways of permitting its subscribers to access Websites:

- Contracting the content field of the AOL service proper out to external site operators;

- *"Hosting"*: this simply means that an operator's *website* is hosted on AOL's proxy servers; this arrangement has the advantage of minimizing telecommunications charges and expediting access by the user;
- A hyperlink permitting the direct rerouting of a request from an AOL service content field to a *website* that is linked by content;
- Direct and deliberate access by the user to the site of his/her choice.

The first arrangement, and to a lesser extent the second, were historically necessary in the early 1990s, i.e. when the Internet was still a small community involving the cohabitation of proprietary networks that were not interconnected, in which AOL had to rely on external partners if it was to produce specialist content to be offered via its service. At the same time, as far as site operators were concerned, partnership with AOL offered prospective audiences that were particularly enticing. There were two pitfalls, however:

- First of all that of exclusivity: as far as the user was concerned, this arrangement meant, for example, that he/she had to subscribe to AOL to have access to *USA Today*, to Compuserve to have access to *Newsweek* and to Prodigy to have access to *Home and Garden;*
- The pitfall of mediating for site operators: some operators have had a bad experience of this: attention might be drawn, for example, to the example of the magazine *Wired*, whose founder, Andrew Anker, has explained that *"(...) that however was a really negative experience for a content provider; because we couldn't directly control the look and feel of our space; (...) it could take weeks for things to get changed on our side. It was like operating by remote control, with gloves, in China"*[143]. This does not mean that this arrangement has become obsolete, however, since a very recent agreement with *Intuit*, the designer of the *Quicken* software, made the latter service provider responsible for providing content for the *Personal Finance and Workplace* field of the AOL service. An agreement of the same type (*"anchor tenant deal"*) has just been signed with *E! Entertainment Television* (*E Online*) relating to the provision of content for AOL's Entertainment Channel service.

Whatever arrangement is adopted, the relationship between AOL and its business partners, which are Internet site operators anyway, is truly paradoxical. It would actually appear that, on the whole, suppliers of content are not so much service providers as AOL customers; this is shown by the fact that partnership agreements with AOL require the payment of an "entrance fee", which is substantial to say the least ($30 million for 3 years in the case of the agreement with *Intuit*, to take only this recent example). In other words, AOL uses the audience created by subscribers to its service to obtain revenue from Internet content providers. This explains the thinking behind the words of Jeremy Verba, President of *E! Online*, when he stated a few days ago that *"(...) AOL delivers massive traffic, and they have the right demographics for our target audience. (...) We want E! Online to be in front of people wherever they are accessing content"*[144].

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[143] Cf. **Robert H. Reid** : *"Architects of the Web - 1000 Days that Built the Future of Business"* - John Wiley & Sons, Inc. New York 1997 - page 290

[144] **Steven Vonder Haar** : *"AOL inks deals with Intuit, E !"* - ZDNet News – Feb 17, 1998.

It should now be clearly understood that all these operations are made possible by the advertising revenue that they make it possible to obtain from service providers. Unfortunately, the exact content of the *cobranding* agreements between AOL and its business partners remains highly confidential; it is, however, possible to assume that the financial and commercial structure on which they are based involves the provision by AOL of target data concerning the traffic of its subscribers on the *Web* proper.

Content providers that have entered into a partnership agreement with AOL are remunerated on the basis of a fee that is proportional to the traffic that they attract to their own pages; this is not without influence on the processing of data, as it is therefore necessary to implement precise measures regarding the number and duration of connections to the various zones of the service. The introduction of the new scale of charges (*"flat rate pricing"*) has resulted in a proportional decrease in the remuneration of information providers, as the arrangements that are now being applied are based on a percentage (between 10 and 20%, although some information providers have managed to negotiate 30 or 40%) of the remuneration corresponding to the duration of visits).

V.2.3) - Contact services

The various national platforms of AOL include a range of contact services permitting communications between like-minded individuals or groups: these are essentially systems such as *AOL Instant Messenger, Buddy List*, e-mail, auditoriums and chat rooms:

- ***Instant Messenger*** makes it possible to determine, in real time, which of one's circle of acquaintances, for example a member of one's family or a colleague, is currently logged on; the user then has the option of sending the person concerned an immediate message (IM) that is announced on that individual's *browser*;

- The ***Buddy List*** system operates in the same way, except that the user has the additional option of forming his/her own list of correspondents; as soon as one of them logs on to AOL, the user is informed of this in a window and may communicate with the person who has just logged on. In order to protect log-on confidentiality and a user's peace of mind, anyone can have their name removed from one or more specific *Buddy Lists*;

- **Chat forums** are *on line* meetings organized on a daily basis for subscribers by AOL coordinators: high-profile guests such as Bill Clinton or Michael Jackson have been interviewed in them. Each subscriber has an opportunity to ask questions and to express his/her opinion on various matters;

- The ***chat-rooms***: these form the basis of the electronic community of AOL subscribers. They break down into three broad categories: those that are public, organized by AOL and are listed by subject (SeniorNet, Moms Online, ACLU Forum, Women's Network, Christian Chat room, Kids Only, etc.); *chat-rooms*

that are public but are the responsibility of AOL members and finally *private chat-rooms* that are installed at the behest of an individual or a group of subscribers.

V.3) – Essential technical data on AOL

V.3.1) – The browser

AOL commenced its activities on the Internet by developing a *browser*; in actual fact, such development was made possible by the purchase of external technology initially developed by Booklink; this strategy of external growth, which has been pursued vigorously by Microsoft and Netscape, has enabled AOL to outstrip all its potential competitors. Access to AOL is *"browser neutral"*, however, and Microsoft's Internet Explorer is the default *browser*; users who so wish can also use Netscape's Navigator. AOL also admits that it has recently reined in its marketing campaigns, which were vigorously relaunched this autumn when AOL announced a 4.0 version of its browser, which is to include 3 main categories of innovations: integration of multimedia, the possibility of embedding photographic material in electronic mail and a redesigned browsing interface (same design for the AOL services / *Web* toolbars).

V.3.2) – Networks and the server platform

AOL is centred around servers that have up to now been based in Vienna and Reston, Virginia. AOL recently announced the construction of a third server centre of 20,000 m^2 in Dulles, which is to commence operations this winter and is intended to make it possible to double service capacities. There are hundreds of servers, produced by Stratus, Hewlett-Packard, Sun and Tandem; in June 1997, these servers processed about 13 million log-ins a day and served 30 million *Web* pages on average a day. The servers are redundant systems under Unix that are able to support one another and guarantee a continuous service. Some servers are dedicated to mailing and *chat rooms* (15 million messages to be routed a day). A small number of services are provided by servers situated outside Northern Virginia; subscribers' logins using these servers are transparent; they are implemented by means of routers but are still centralized by the main platform in Vienna and Reston.

It is from this server centre that AOL establishes links with various national networks of operators and access providers in the United States, Canada, United Kingdom, Germany, Austria, Switzerland, Sweden, France and Japan. The access networks in all these countries were already in existence when AOL was established. In addition, thanks to GlobalNet, AOL offers its subscribers access from 90 other countries. AOL's network in Europe is actually based on lines rented from British Telecom which also, together with MCI, provides the transatlantic link. Each national access network is centred around a single node within the country in question, which is responsible for transatlantic transmission to the servers in Virginia. The Japanese access network is

centred around Tokyo; log-ins are routed across the Pacific Ocean by means of lines connected to a network node in California; a US operator with a large-capacity land-based link ("backbone") transfers messages to Virginia.

Overall, this June, AOL needed to be able to process 335,000 users simultaneously, and this figure was almost the same as the number of modems at the disposal of AOL at that time; the traffic therefore only had to increase slightly for subscribers to receive the engaged tone and to be unable to log-in, as has occurred repeatedly over the past few months[145]. As a result of the merger with WorldCom and Compuserve, AOL will soon have 650,000 modems on line at its disposal.

The applications platform of the servers is made up of a set of proprietary subsystems developed by teams of AOL computer experts (450 computer experts specializing in the development of applications): log monitoring, file recording, supplying *Web* pages with a special cache technology and the design and implementation of games on line. It is this team that developed the contact functionalities of the AOL platform in particular: *chat, buddy-list, e-mail.*

V.3.3) – Technical architecture of Internet access via AOL

The Internet access by AOL subscribers is by means of the same lines and the same telecommunication nodes as access to AOL's own services; transfer to Internet sites is managed via a *gateway* by server centres based in Virginia, USA. There are now, however, no technical constraints that compel AOL to preserve this type of centralized architecture for managing traffic to Websites; one would be justified in surmising that the recent agreement with WorldCom (the leading Internet infrastructure provider - 500,000 access points in almost 200 countries) will permit the direct transfer of subscribers to the Internet network or to Newsgroups via UUnet backbones.

AOL nevertheless retains the principle of centralizing traffic in Northern Virginia. It is possible to put forward two reasons for this: one concerns quality of service, as AOL actually has its own cache servers that make it possible to rationalize and expedite the distribution of Web pages. The other is rather of a commercial nature: by carrying out the transfer of the Internet requests of its subscribers itself, AOL is preserving its monopoly position as a distributor in relation to the Web, both as regards the actual traffic that it redirects to the Net and as regards the quantitative and qualitative knowledge of the browsing behaviour of its subscribers that it is able to obtain (and market) as a result, which are both elements that AOL tends to regard as its property.

[145] The occurrence of this has triggered an increasing number of claims of a consumerist type by subscribers; some subscriptions to AOL have even been cancelled and legal proceedings have been initiated. AOL has admitted the facts and has been fined. This was probably the thing that was easiest to put right, even though it has been noted that some areas are still overloaded between 8 p.m. and 11 p.m.

V.3.4) – Electronic payments technology

AOL participates in a number of different projects relating to **security of payments;** discussions were initiated with the four main operators in this area last May:

- CyberCash : this system is to be integrated into subsequent versions of AOL's *browser*; it has been available since January on the electronic commercial host platform (Storefront Solution) at a flat charge to traders of $100 per month;
- IBM InfoMarket : this system uses the technique of encrypted envelopes ("cryptolopes") and is particularly well suited for the micropayments desired by some content editors present on AOL;
- Terisa Systems : AOL essentially uses this system to avail itself of the SET card payment protocol laid down by Visa and Mastercard ;
- VeriSign : this is AOL's business partner with regard to the process of authentication in connection with *on line* commercial transactions.

In the face of shilly-shallying by national authorities with regard to the distribution of RSA encryption codes, AOL considers that the problem of data protection will remain as long as such resistance persists.

AOL is not, however, greatly concerned by problems of authentication and payment order encryption techniques as such, *"(...) it is not core"*, in the words of our contact: the service actually manages its customers' payments in a very simple way and without the dissemination of sensitive information on the Net. Purchases made *on line* are actually charged for when the monthly subscription fee is collected. To enable it to do this, AOL has privileged access to the Visa network, thanks in particular to the issue of a "cobranded" card, and transmits files in batches. However, the geographical extent of AOL's activities and the diversity of its customers will compel it to adopt any form of payment that succeeds in imposing itself on the market. AOL UK is already offering some services that are accessible via CyberCash.

V.4) – AOL and protection of privacy issues

AOL is a service provider that is very much aware of protection of privacy issues. A definite policy has been worked out and included in the general terms of service (TOS). These terms specify the various categories of data, the processing to which they can be subject and the rights and obligations of third parties. There are general terms of service in each country in which AOL has a presence. According to our AOL contacts, there are no major differences between the US TOS and the TOS relating to European services, any differences being minor and essentially relating to vocabulary. This view requires detailed verification; it is already possible, however, to claim that the US TOS are much more comprehensive and detailed than the French CGU (conditions générales d'utilisation) for example.

All the problems relating to AOL and protection of privacy issues at AOL are due to the fact that the TOS to some extent legitimize the collection of personal data and the marketing of

such data to third parties; subscribers are informed of this in the following terms: *"AOL periodically places its subscriber file at the disposal of carefully selected companies. In order to enable us to meet your expectations precisely, we are giving you an opportunity to select the areas in which you wish to receive offers of services. You may also indicate that you do not wish to receive any advertising mail or product information at all* (opt in or opt out procedure specified for each AOL national site). *(...) We do not under any circumstances disclose telephone numbers or credit card numbers or bank references of our members"*[146].

V.4.1) – Collection of personal data

AOL collects three main categories of personal data: data declared by subscribers for identification, registration and charging purposes; the personal identification data that subscribers are asked to provide when creating an electronic calling card, or a *home page*; and the server technology implemented by AOL is also a poweful tool for collecting information on individual browsing behaviour.

- ***Identification and charging data***

  The compulsory identification data that is declared by subscribers to AOL on registration for the service includes the subscriber's name, address and telephone number (work and home numbers), his/her registration date and information for charging purposes: credit card number and banking details. In addition, AOL also reserves the right to record historical data about the subscriber's account (history of the account, record of communications with Customer Services). As certain on line services and certain electronic purchases can be paid for at the same time as the monthly subscription fee is paid, it may happen that AOL, on its monthly charging dates, collects data that does not relate to its own services but that it manages for third parties, i.e. business partners taking the form of content providers or on line businesses. It was also noted that AOL creates a permanent link between a subscriber's account recorded under his/her civil status and the screen name that he/she has chosen in order to browse through services and communicate with other members of the community. It was finally noted that subscribers are requested to specify the areas in which they agree to accept commercial material (computer equipment, software, books, records) in the *opt in* procedure.

- ***Calling card***

  Each subscriber has an opportunity to complete a personal form that will be his/her public calling card on AOL and will be recorded in a profile database; all AOL subscribers can access this database and initiate requests. As well as containing identification data (real name or pseudonym, sex, address, date of

[146] Sources: AOL France site - November 1997

birth, marital status), this card may also include information about main interests, the microcomputer hardware at the subscriber's disposal, profession and any data that a subscriber considers could usefully be disclosed to the community of AOL users. AOL does not use such information for its own purposes, as each user is completely free to adopt a fantasy or completely fictional identity.

- ***Browsing data***

A number of different systems cohabit on the AOL platform. It was first of all noticed that there is a tool that makes it possible to **list the times and the durations of logins to various services**: this tool may, for example, indicate how long the user X or Y spent on the pages of the *New York Times* or in the *AOL Travel Channel* field. This system was initially used to calculate the fee that AOL has to pay to its business partners, i.e. content providers. Now that a flat rate pricing system has been adopted (calculated on the basis of totals of 20,000, 30,000 and 50,000 hours), this system can only be used to measure audiences on an item by item basis. The data is used in a combined form, although it is essentially nominative and it would in theory be possible to trace the entire browsing behaviour of each individual. An AOL representative has stated that such data is only retained for a few weeks. The unprocessed data is subsequently combined and anonymized in reports that confine themselves to analysing visiting rates, the length of time which the various information fields are consulted and breakdowns of logins according to country of origin.

Another system makes it possible to **trace the browsing activities of subscribers on the *Web***, although the behaviour recorded does not include identifiers that make it possible to establish a link with the names of the individuals behind such behaviour. This mechanism is typically used to create cache files; each time a user accesses a *web* page, the file in question is informed; it then performs one-way encryption in order to convey the user's name (or screen name) to the corresponding cache file and transfers data that is useful for analysing browsing activities to a separate permanent file. Specific names of users are removed at this point and each cache file is associated with overall demographic data from AOL's information system. This arrangement, like the preceding one, is mainly used for *reporting* on use of the *Web* by AOL's subscribers and to identify forms of behaviour associated with broad categories of profiles.

V.4.2) – Advertising on AOL sites: "one to one" and monitoring of impressions

AOL has pointed out that its charges are insufficiently high and that it has been compelled to derive revenue from alternative sources, in particular by selling advertising space. Advertising on AOL takes the form of large-format banners, or *"PopUps"*, which are displayed as soon as a subscriber logs on to the service. They are found everywhere, on AOL's own pages, in *chat rooms* and on the pages of content providers. The advertising potential of AOL is huge in relative terms; in a recent interview, the

president of *AOL Networks* pointed out that if all the *chat room* hours were sold to advertisers, AOL would collect about $2 billion in advertising revenue per year[147]; the company is currently aiming for $50 or 60 million, while at the same time installing the canvassing structures that are necessary, in Europe, too, of course[148]. In the competition to attract advertisers, AOL has a number of trump cards to play: it has a large and stable population of subscribers that has, in particular, been clearly analysed in the light of socio-demographic criteria. The true value added by AOL, from the point of view of advertisers, is due to this fact and it is easy to understand why the company has a financial and commercial interest in acquiring all the data processing engineering necessary for total control over file processing.

Not all *"PopUps"* are currently targeted on the basis of user profiles, although they are in some cases, e.g. when rapid modems are on offer, in which case AOL is able to break down its customers on the basis of their hardware, which is very well known to AOL from the outset. This shows that AOL is able to offer its advertisers *one to one* targeting campaigns, in which target populations are probably identified with a greater degree of accuracy than *cookies* are able to provide (it is relevant to emphasize at this point that AOL does not use the *cookies* technique in its service). AOL also sells its supports while insisting on its ability to provide advertisers with serious and verifiable reporting of impressions. This inevitably makes it necessary to follow the browsing activities and *click-throughs* of subscribers.

AOL defends itself against any criticisms that may be made of it essentially by putting forward two arguments: first of all the fact that *"reporting"* to advertisers only contains data in a combined form, and secondly that subscribers have access to a *"marketing preferences"* field in the customer services areas of the various national AOL sites enabling them, at their convenience, to specify their main interests or to exercise an *"optout"* with regard to the display of *"PopUps"* or mailings. One is actually justified in wondering, together with certain observers[149] whether these arguments are really ways of legitimizing AOL's practices.

V.4.3) – Personal data processing and assignment to third parties

AOL processes personal data in a way that is quite acceptable and in accordance with collection purposes as it manages subscribers' accounts and charges for its services. Processing is also applied to samples of navigational and transactional data in order to analyse browsing behaviour and the use of services; the aim in this case is to determine which of the fields in question are most highly regarded by users (crosswords, *"chat rooms"*, *"live symposiums"*) and to improve both the content that is under the editorial responsibility of AOL teams and the content that is provided by its business partners. It also became apparent that AOL performs the *matching* of data in order to perform proper analyses characterizing behaviour, which culminates in the creation of broad classes of subscribers (*"early adapters, young professionals etc"*, for example) on the basis of parameters that include socio-demographic data on households and the use of

[147] **Victoria Shannon** : *"Interview With Robert W. Pittman, President of AOL Networks"* - Washington Post
[148] Cf. **Advertising Age** : *"AOL launches ad sales in Europe"* - Feb. 21, 1997
[149] Cf. **Will Rodger** *"Critics: AOL Invades User Privacy"* - Interactive Week – June 9, 1997.

services. However, where the results of such processing are passed on to third parties, in particular to AOL's business partners, they are only disclosed in a combined and anonymous form. AOL's legal experts and its managers are continually confirming this policy in public[150], which is also very evident in the terms of service (TOS).

However, it would appear that AOL actually markets nominative data concerning its subscribers, essentially in the form of nominative lists that are targeted to a greater or lesser extent. AOL defends itself in relation to the latter activity by pointing out that this is a widespread practice in the media sector, in particular among cable TV operators. The recipients of such lists are privileged partners of AOL; they include in particular CUC International Inc., a giant of the telemarketing sector, and Tel-Save Holdings Inc. (a long-distance telephone operator in the United States) which alone have contributed $150 million to AOL's turnover; recipients of AOL data also include 1-800-Flowers, SportsLine USA, Auto-By-Tel and Amazon.com. The lists are in principle compiled under the control of AOL and are essentially intended to provide AOL's business partners with nominative lists of subscribers who are selected on the basis of predefined criteria. Contrary to what has been claimed by the company, it would appear that these criteria include the file targeting of populations of subscribers making *on line* purchases, which makes it possible to assume that the transactional data generated by users' browsers are fully utilized. It would actually appear that AOL recently sold a list of 1.4 million subscribers who had purchased books, CD ROMs or games software via AOL stores; the average profile of such purchasers shows them to be married and living in a household with children; they have an average income of $55,000 and 90% of them pay by credit card.

Matching may be carried out in order to supplement AOL's file with additional data which is not in its possession; AOL uses specialist companies such as Donnelley Marketing for this purpose; at the end of the process, the raw data concerning subscribers is supplemented by, for example, the household income, the number of years of residence at the main address, the presence of children, average age and newspaper reading habits. Lists supplemented in this way contain genuine profiles and are sold at a rate of $110 per thousand; they are marketed by *List Services Corp.*, a broker specializing in the sale of data to telemarketing companies. Last year, the journal *Privacy Times* revealed that AOL has sold commercial lists targeted on populations of children[151].

These practices are giving rise to opposition of a fairly open kind, which is continually found in the press and serves to further tarnish AOL's brand image[152]. The most re-

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150) Cf. in particular **Jill Lesser & David W. Phillips**: *"AOL's Perspective On protecting Personal Privacy In the Interactive World"*.

151) The list included 248,000 children aged between 0 and 5, 354,000 between 6 and 11 and 1,084,000 between 12 and 17. Cf. http://www.techweb.com:80/investor/newsroom/tinews/june/069aol.html

152) AOL is not particularly highly regarded in the Internet community. There are two reasons for this. The older of the two reasons is connected to the fact that AOL markets Internet services, which is actually the accusation made of it. *"Techies"*, or what is called the *"digital elite"* that developed from the Californian group *The Well* do not like the fact that AOL distorts the spirit of the *Web*, which was founded on a basis of free of charge provision. If AOL was to succeed and reach a critical mass, it had to develop very rapidly, and this made it necessary to adopt the principle of charging for services; Compuserve and Prodigy, which fail to understand the logic

cent event occurred this summer: AOL actually intended to disclose a list of subscribers including home phone numbers to direct marketing companies, and probably also to CUC International, although this was not explicitly confirmed. This project was unfortunate for two serious reasons:

- first of all it represented a diversion of purpose, as subscribers disclose their telephone numbers in principle solely to permit management of their accounts and so that they can receive rapid warning of any fraudulent user of their access to AOL and their means of payment;

- a failure to inform the persons concerned directly and fairly; in actual fact AOL simply discretely and unilaterally amended its terms of service (*Revised AOL Privacy Policy – TOS effective July 31, 1997*) by adding telephone numbers to the list of data that it reserves the right to disclose to third parties for commercial canvassing purposes.

Attacked on all sides, AOL's managers retreated and very quickly announced that they were not going to implement this plan[153], admitting that they had shown insufficient proactivity in providing subscribers with advance information. AOL does, however, retain the principle of using personal data for telephone marketing campaigns, although the latter are to be conducted by its own staff on behalf of advertisers, which will therefore not have direct access to the information.

It is finally important to note that the new version of the **terms of service does not exclude the processing of navigational and transactional data** or the matching of such data with other data which is at AOL's disposal or that might be acquired from third parties. Such navigational data could clearly be used in a commercial context, as AOL takes the trouble to specify in the TOS that it will not disclose to any third party, including the list of recipients, which profile information has been used to select subscribers and to develop the list in question[154].

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behind this and retained a high-minded charging policy are now in a very difficult position. AOL explains that the service was not provided for *"techies"*. The second line of criticism originates among privacy advocates, in particular Marc Rotenberg and David Banisar, leading members of EPIC, who accuse AOL of a certain lack of ethics in the way in which it disposes of information concerning subscribers.

[153] Cf. **Rajiv Chandrasekaran**: *"AOL cancels Plan for Telemarketing"* - Washington Post - Jul. 30. 1997

[154] Cf. Section C of the TOS : ***NAVIGATIONAL AND TRANSACTIONAL INFORMATION***

(i) Collection. We may collect and store certain navigational and transactional information, such as data on the choices you make from the range of available services or merchandise, and the times and ways you use AOL and the Internet.

(ii) (ii) Use. AOL, Inc. uses navigational and transactional information to personalize AOL, for programming and editorial research and to offer special opportunities to our Members. For example, we use this information to understand our Members' reactions to menu items, Content, services and merchandise offered through AOL and to customize AOL based on our Members interests. AOL, Inc. may use publicly available third-party data (demographic information, areas of interest, etc.) to assist us in our programming, editorial research and to offer special opportunities to our Members.

(iii) *Disclosure. AOL, Inc. will not disclose to third parties navigational or transactional information (e.g., where you go or what you buy on or through AOL), except to comply with applicable law or valid legal process (e.g., search warrant or court order). While AOL, Inc. may use such information as criteria for developing Member lists for companies with which AOL, Inc. has a contractual marketing and online relationship (referenced in Section B(iii) above), AOL, Inc. does not disclose to any third-party, including the list recipient, which profiling information was used to develop the list.*

V.4.4) – Monitoring of discussion groups

As far as monitoring the content of messages exchanged by users is concerned, AOL admits that some *"chat rooms"* are monitored for different reasons, e.g. the promotion of pirated software, and this applies in particular to what AOL calls *"whereas rooms"*; being well aware that certain police authorities and probably Microsoft are also interested in certain *"chat rooms"*, AOL is very much afraid that it will one day be accused by a software house of encouraging the dissemination of pirated software, and so the *"chat rooms"* are continuously monitored and users are warned by the display of a panel (*"warning illegal heading of software"*). Members persisting in dealing in such software may be removed from the list of members.

Another reason for monitoring concerns messages of a threatening, violent, defamatory, racist, obscene, pornographic or other nature: about 100 keywords have therefore been listed and are prohibited both in the names of *"chat rooms"* and in the content of the messages exchanged; this monitoring is carried out by a *"Chat Room Patrol"* under the authority of a *"Shift Coordinator"* that covers the Net around the clock. It continually intervenes in public discussion groups and groups created at the behest of subscribers; matters may be submitted to it by other subscribers, including identified members acting on a voluntary basis. This patrol also traces all kinds of commercial and advertising activities and the chains and pyramids that can develop via *chat rooms*. It is responsible for ensuring that the TOS are applied and has at its disposal sophisticated technology enabling it to detect infringements of them and to take action against infringing subscribers: a number of disciplinary measures may be imposed, from intervention in the discussion to simple expulsion of the subscriber; a so-called *"gag"* command also makes it possible to block the dissemination of contentious messages without the originator or the members of the group being aware of this; in cases where intervention is a matter of urgency it is, of course, possible for the chat room patrol to bring about the immediate disconnection of a user whose messages constitute an infringement.

Monitoring by means of keywords can, incidentally, lead to unfair censorship, and there are a large number of examples of this: one might mention, for example, a case that gave rise to complaints in the press[155], involving a group of women who were interested in problems associated with breast cancer; it would appear that the profiles of these individuals were indiscriminately eliminated in an authoritarian way, simply because they contained the word *"breast"*, which is included in AOL's list of rude words. AOL admitted its error and decided to offer 5 free hours on line to individuals who had suffered from this incorrect decision.

[155] Cf. **Richard A. Knox** : *"Breast Cancer Patients Thrown Off-line by List"* - Boston Globe.

V.4.5) - AOL and the traceability of Internet access: monitoring and application of the "common carrier" *principle*

As an access provider, AOL is unusual in that it openly pursues a policy of collecting data and monitoring the activities of its subscribers on the Internet: this is explicitly mentioned in the subscription agreements (TOS – *Terms Of Service*); recent cases also provide proof of this. To be more precise, it is clear that:

- AOL collects, retains and processes personal data resulting from the browsing activities and any transactions entered into by its subscribers on the Internet: this is clearly stated in section 5 of the US subscription agreement, which outlines privacy provisions[156];
- AOL monitors the behaviour of its subscribers on the Internet: subscribers contractually undertake to respect what is termed *"netiquette"*, which excludes involvement with chain letters, commercial communication, the disclosure of inappropriate material in discussion groups, *"spamming"*, failure to respect copyright and the creation of links with Internet sites that might create excessive traffic at particular points. These restrictions have been developed in the general provisions of the US agreement, in particular in section E of the Rules of the Road[157]. In other words, AOL requires its subscribers to behave on the Internet in much the same way as the way in which they are required to behave on its own on line service. The penalties imposed are the same: i.e. cancellation of the subscription. The means of investigation used by AOL are also the same, but also include the investigation of any personal websites that its members

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[156] *(i) Collection. We may collect and store certain navigational and transactional information, such as data on the choices you make from the range of available services or merchandise, and the times and ways you use AOL and the Internet.*

[157] *Although AOL Inc. does not control the Internet, your conduct on the Internet when using your AOL account is subject to the AOL Rules. Because AOL Inc. wants to be a good Internet citizen, it prohibits Members from engaging in certain conduct on the Internet through or by means of AOL including the following:*

(i) Chain Letters. Chain letters are prohibited on AOL and are inappropriate on the Internet. Posting a chain letter to an Internet newsgroup (or via email on the Internet) may result in your AOL account being terminated.

(ii) Commercial Communication. The vast majority of newsgroups and mailing lists on the Internet are not commercial in nature and participants in such groups may object strongly to commercial postings, solicitations, or advertisements.

(iii) Other Inappropriate Posts. Each newsgroup and mailing list on the Internet focuses on a particular set of topics and posts not related to these topics are not welcomed by the participants. We suggest that all Members become familiar with the guidelines, themes, and culture of the specific newsgroups and mailing list in which they wish to participate. Posting or distributing patently inappropriate material on the Internet (i.e. spamming or mail bombing) may result in suspension or termination of your AOL Master Account and Sub-Accounts.

(iv) Copyright and Proprietary Materials. Transmitting to the Internet copyright or other material of any kind which is subject to the Rights of any person or entity without the express permission of the Rights holder is prohibited and will result in termination of your Membership and possible civil and/or criminal liability.

(v) Use of Personal Publishing Tools. AOL Inc. provides Members with personal publishing tools to enable Members to create personal homepages (Keyword: Personal Publisher) and use of such publishing tools will be subject to these ROR and TOS. AOL Inc. reserves the right to suspend or terminate at its discretion Members AOL Master Accounts and Sub-Accounts or to require the removal of links or other content on or through Members homepages or personal Internet sites if providing such content or links causes undue strain on any AOL server either through excessive hits or by excessive bandwidth.

might have created, even if access to such sites is protected by passwords, in order to check that they comply with the TOS[158].

It will also be noted that many of the what might be termed blunders that have repeatedly occurred over the past few years have arisen as a result of attempts to insure compliance with this etiquette and with the monitoring policy pursued by AOL: in a recent case in the news, the identity of a user who was a young homosexual officer in the marines was disclosed by telephone to an enquirer who had no right to demand such information, with all the unfortunate consequences that this might have had for the career of the person concerned; this was virtually a textbook case; it was covered extensively in the US and European press and once again publicly cast doubts on AOL's attitude to the privacy of its subscribers[159].

As far as these provisions and their practical implementation by AOL are concerned, the provisions contained in access providers' agreements seem on the whole to be much less precise on matters relating to the collection, processing and protection of data. **Numerous access providers have commenced such activities without having any intentions with regard to personal data.** Such agreements mainly comprise a number of clauses exempting the access provider from any moral, technical or financial liability for anything that might occur to any of its customers as a result of use of the Internet. Provisions frequently refer to the behaviour to be adopted on the Internet and access providers reserve the right to cancel a subscription as of right if they are informed by Internet users that one of their customers is failing to respect the code of behaviour. Traditional access providers do not therefore appear to pursue the same pro-active policy as AOL in this matter; no access provider automatically monitors discussion groups, for example. And finally, apart from in the special case of AOL, no one has at present had experience of the large-scale marketing of data originating from navigational analyses by an access provider. Generally speaking, what ultimately distinguishes AOL from other Internet access providers is the way in which it positions itself in relation to the important concepts of neutrality and of being a *"common carrier"* on which the telecommunications sector is also based.

AOL does not, as an Internet access provider, apply the rules of a *"common carrier"* and there is nothing to compel it to do so at present. It is easy to imagine, however, that the provisions applying to the telecommunications sector might be transferred to this activity, which has both technological and service aspects. It should be noted, for example, that in 1996, the US Telecommunications Act introduced a fairly high level

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158) *Your use of the Internet is subject to all applicable local, state, national and international laws and regulations. Without limiting the other rights available to AOL Inc. under the AOL Rules, AOL Inc. retains the right, but not the obligation, in its sole discretion and without prior notice or liability, to restrict and/or terminate your access to the Internet and AOL if your use of the Internet violates any such laws or regulations, any prohibitions upon your conduct in connection with the Internet raised in this Section E or otherwise restricts or inhibits any other user from enjoying the Internet or AOL.*

159) This was the affair of Timothy R, McVEIGH, which is still subject to legal proceedings. It is defended in particular by solicitors of the Electronic Privacy Center – Cf. **Rajiv Chandrasekaran** : *"Navy Targets Sailor's Use of Gay on AOL"* - Washington Post – January 12, 1998. Cf. also the complaint filed with the Department of Defence, 15 January last year: http://www.epic.org/privacy/internet/aol/navy_complaint.html.

of protection of privacy, including in particular confirmation of the principle of restriction of purpose with regard to the collection, processing and marketing of individual traffic data (destinations called, frequency and duration of calls, subscription details); the US FCC is about to add an additional provision making it necessary for explicit prior consent to be given to any use or assignment of this type of data to third parties[160]. The current sensitivity of US citizens to these matters makes it seem quite possible that these various principles will be applied to the provision of Internet access; there would then be a danger of AOL being directly involved, at least as far as its activities relating to the provision of Internet access are concerned, which would almost certainly place the entire *business model* of the company in doubt.

V.4.6) – Collaboration by AOL with the legal authorities

AOL is subject to legal obligations that require it to inform European and US police forces, and the FBI in particular, of any information that may be useful for their enquiries; this has repeatedly occurred in relation to proceedings involving child pornography and paedophilia. AOL distinguishes between three levels of request:

- requests based on a subpoena: in such a case, AOL supplies the name, address and screen name of the user in question; no navigational information is provided in this connection; the subpoena is the minimum level at which information may be requested from AOL, as no data is in principle disclosed below this level. Some intellectuals involved with the Internet generally tend to reproach AOL for its deliberate attitude of cooperation with the US police forces. It should be remembered in this connection that in 1995, AOL reported about 3000 cases in which subscribers were suspected of having violated US Federal legislation on child pornography. It is unfortunate that a member of the company's staff, a legal expert, who had, moreover, used the system to enter into a relationship with a minor, was recently actually detected by AOL, his employer, and arrested the next day at his office. After having been published in the Washington Post, this case gave rise to a great deal of comment at the time it occurred and left behind it a feeling of uneasiness, which still persists[161].

- requests based on a *"search warrant"*; in the United States, such requests must be made by a Federal magistrate and may result in the opening of electronic mailboxes and the handing over of copies of the messages that have been exchanged, or at least those that have not yet been deleted (retained for: less than 2 days; 29 days in the case of unread messages);

- requests based on a *"free search warrant"*, which require the most extensive measures to obtain information: such procedures may permit the real-time interception of the traffic of a browser and in particular *"e-mail scroll offs"*; they are equally well suited for cases involving paedophilia, drug trafficking or terrorism.

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[160] **CDT (Center for Democracy and Technology)**: *"Federal Communications Commission rejects Opt-out approach to protecting privacy"*

[161] Cf. **David Cassel**: *"The AOL List: Faces of Evil"* - http:www.aolsucks.org

It should, finally, be noted that this April, AOL tightened up the terms of the version of its agreement applying to the United Kingdom, which was supplemented by a provision specifying that the company undertakes to fully cooperate with the authorities in the event of illegal activity on the part of any of its subscribers, and such cooperation may involve installing a system for listening in on private communications on the Net. This has been spotted by a number of British observers who are concerned with issues of *privacy*[162]. It has also been noted that the new agreement restricts the right to download software, especially encryption software. This is all, of course, due to AOL's fear that it will one day be held liable for actions or statements within its on line service. All AOL agreements and, more generally, its willingness to cooperate with the police and legal authorities, are intended to show that AOL is actually a *"common carrier"*, which is not responsible for the use made of its technology. **Its highly proactive approach to the detection of deviant behaviour on the part of its subscribers** is therefore paradoxical. After all, a telephone operator, which is a true *"common carrier"* does not take it upon itself to listen in on individual subscribers on its own initiative. When considering this issue, it should certainly not be forgotten that AOL also has a commercial interest in protecting morals in its service, as its commercial strategy is still to provide a package intended for family use of the Internet.

V.4.7) – AOL's fears concerning the risk of regulation in the area of "privacy"

AOL's representatives expressed four fears relating to the development of its activities in Europe and the dangers of an increase in the stringency of data protection regulations:

- concerning the **explicit consent of individuals**: AOL does not see how it can apply the requirement to obtain the explicit consent of a user whenever navigational information is recorded. AOL fears that it will one day have to respect this obligation and points out that this would make the service much more expensive: the recording of navigational information is actually a part of the basic technology used for the distribution of information on the Internet, via *log-in* files, *proxy* servers, *caches* and, of course, *cookies*; how would it actually be possible to administer the continuous consent of users and *opt-out* procedures in particular if they, too, ever became equally necessary, i.e. obligatory? It must be admitted that this would lead to a very fundamental restructuring of the architecture of data transmission on the *Web*.

  AOL's representatives put forward an argument to explain why the company considers that it would be exempt from any obligation to apply such a measure if it became compulsory in a particular country: on registration, subscribers are actually requested on an additional screen to specify their *"privacy"* preferences and are warned that they must satisfy the relevant legal age requirements if they are to take out the subscription. This is a voluntary transaction that, in the view of the company, is, by its very nature, **an *opt-in* action that is permanently valid**.

[162] Cf. **Richard Bagueley** : *"AOL Tightens British User Rules"* – Wired – 29 Apr. 97

- Concerning the **individual right of access to data**: AOL considers that it will be difficult to apply the right of access and the right of correction in relation to navigational information, admittedly with some justification: how and when can information that is so fleeting and so enveloped in huge flows be taken hold of? Our AOL contact jokingly said that boxfulls of listings would have to be supplied in such a case. It should be noted in this connection that AOL did not wish to disclose statistics that would make it possible to find out how many people in the United States and Europe have up to then exercised their right of access to personal data and their right to correct "billing information".

- Concerning **crossborder flows**: it is now clear that all the data flows of the AOL network are stored and processed in computer systems situated within the United States. The AOL contacts fear the blocking effects that application of Article 25 of the European Directive on data protection might have: these cross-border flows of personal data are towards a country that might be considered by one or other of the Member States not to apply a sufficient level of protection. This is why AOL is considering requesting exemption from application of Article 26 of the Directive.

- Concerning **anonymity** in general: in Europe and the United States, there is a movement in favour of complete anonymity on the Internet. AOL considers that this would lead to disaster and would even result in the disappearance of the medium that is currently being born; the power of the system could actually become very threatening, especially with regard to the copyright questions that would arise; it would also become impossible to deal fairly; the principle of anonymity would finally create a risk of uncontrollable deviancy, accusations, denunciations and defamation. All this supports AOL in its demand for there to be a minimal amount of individual traceability of browsing activities, transactions and messages.

Section VI - The 2nd World

VI.1) - Virtual reality and the 2nd World

In 1985, LucasFilm studios created "Habitat - Club Caribe", which was the first virtual on line community to use a graphical user interface made up of multiple scenes, in which each visitor is represented by an "avatar". Although the 2D graphics are still very basic this is already a long way from the first virtual communities, which were born in the 1970s and were transferred to the Internet via IRC. The project was an ambitious one and already contained a number of highly innovative concepts[163].

The Internet has had its own language for describing objects and 3D spaces since 1994. This is the VRML[164], whose format was directly inspired by *Open Inventor* developed by Silicon Graphics. There are now over 100 sites developed with the assistance of this language, offering the facility of virtual "walks" in completely imaginary or very "real" spaces. AlphaWorld was the first virtual community to exploit the capacities of the VRML[165]. It is now the community with the largest number of "citizens", of which it now has almost 100,000. As soon as he/she has received his/her "immigration permit", each citizen is invited to create his/her own world (scenery, environment, objects).

The appearance of very powerful "3D" engines[166] from the world of video games also led to the development of *"on line"* games spaces that can easily be described as fully fledged "virtual communities". Most such games are based on fairly simple concepts (the aim is generally to leave a hostile place alive by firing at everything that moves), but some of them have a surprisingly high quality of rendition.

All these changes, whether they were of a purely technical nature or related to social practices, resulted in Alain le Diberder and Philippe Ulrich (Director of new programs of the pay television channel Canal+ and cofounder of the company Cryo respectively) designing the 2nd World project which now, thanks to all the activity of the operators and designers involved in the rapid expansion of the Net, would appear to have the resources necessary for its development and to enable the ambitions of its designers to be realized.

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163) An article devoted to this project that was read at the first "Annual International Conference on Cyberspace" in 1990 can be found at http ://www.communities.com/company/papers/lessons.html

164) VRML: *Virtual Reality Modeling Language.*

165) http ://www.activeworld.com

166) A "3D" engine is a program that is able to translate a spatial description into three dimensions. The screen displays what the user sees in real time and changes in accordance with the players' movements.

VI.1.1) - The 2nd World - Canal+ Multimédia and its partners

The 2nd World is the first European on line virtual world. The project was designed, implemented and monitored under the supervision of Canal+ Multimédia, which drew on the skills of three companies specializing in different aspects and stages of the project.

- **Canal+ Multimédia**

  Canal+ Multimédia was set up in April 1995 as a 100%-owned subsidiary of the Canal+ group in order to design, produce or coproduce and publish multimedia titles. The 2nd World is fully in keeping with the strategy of the group, one of whose express aims is to achieve a fusion between television and IT.

- **Cap Gemini**

  The Cap Gemini group is one of the world's foremost groups in the areas of IT consultancy and services. With a presence in 15 European countries, the United States and Asia, the group achieved a turnover of 15 billion francs in 1995. The group donates 5% of its turnover to applied research activities via Cap Gemini Innovation, which is also responsible for assessing and validating new technologies. In the 2nd World project, Cap Gemini was the provider and manager of the technical platform via its Inforoute service.

- **Cryo Interactive Entertainment**

  Set up in January 1992, Cryo Interactive Entertainment is now the biggest independent games creation studio in Europe; it is a French company that achieves three quarters of its turnover by means of exports. Cryo has a wide variety of games on its books, including some that have achieved international success (Dune, Dragon Lore or, more recently, Versailles). With over 1600 m^2 office space in Paris, Cryo has over 150 employees working on design, scale modelling, graphics, 2D and 3D animation, audiovisual creative and production activities, programming and musical composition. Cryo took on responsibility for developing the 3D engine and the scenery of the 2nd World.

- **Numériland**

  Numériland is a company specializing in the analysis, formation and development of the multimedia applications. It also engages in "advertising agency" activities, which was the area in which it made its contribution to the 2nd World.

VI.1.2) -Description and operating principles of the 2nd World.

- ***Registration***

To become a citizen of the 2nd World, it is first of all necessary to obtain the CD ROM containing the programs necessary for the production of an avatar, the server connection program and all the scenery (streets, buildings, monuments, shops etc.). The CD ROM also contains an adventure/action game that is played off line and is set in the catacombs of Paris.

Users subscribe on the Internet via the 2nd World Website, which redirects the request to a Cap Gemini server. Users register by completing a form for the entry of personal data[167]. Once this information has been disclosed, the user is given a password.

The information requested in the form is necessary to enable the product to be updated. In the first version of the 2nd World, all the scenery is contained on the CD ROM; a CD ROM update is sent out each time a new version is issued. It should also be noted that subscribers are given an *e-mail* address of the type nom@2nd-world.fr.

- ***Customization***

Once a user's subscription has been recorded, he/she goes on to define his/her avatar. To do this, he/she can use a set of tools that enable him/her to define the avatar's physical appearance (sex, type, age, skin colour, hair, etc.). He/she also has a visiting card including a free text area. It is not obligatory to enter such information. In the 2nd World, this text can be consulted by all the other subscribers. To access the visiting card of a subscriber, one only has to click on his/her avatar (the text of the visiting card appears in a window).

Once a character has been determined (or selected, as the user can set up a library of avatars and change them each time he/she logs in), the "citizen" starts the communication program that establishes a connection with the server. After having entered his/her name and password, the subscriber arrives directly in his/her apartment.

The screen is divided into three sections. The biggest section, which occupies two thirds of the screen both in terms of height and breadth, represents the space seen by the subscriber; the right-hand section is reserved for menus (communication, movement, list of objects); and the lower section is reserved for messages (sent and received). Each 2nd World subscriber is offered a set of objects when he/she first logs in: the key to his/her apartment, a bottle, a bunch of flowers and ecus (which do not have any real commercial value and are not

[167] Details of the information passed on during registration are provided in § IV.2.1 - information collected, on page 141.

accepted by traders); the latter are used as a currency for transactions between subscribers. The 400 m^2 apartment is fully customizable. It is sufficient to click on a wall, chair or carpet to modify its texture and style. It is possible to access libraries of suggested textures and to modify them using an elementary image editor. The advantage of performing such operations is still limited. The modified texture is actually located on the hard disc of the user performing the operation. He/she is therefore the only one to "see" anything that adds a touch of personality to the interior of his/her apartment. A number of astute subscribers have also managed to access libraries of wardrobes offered by the avatar production program and offer their services as "couturiers". Here, too, any modification that is made is purely local and is not shared.

The 3D engine is activated and the subscriber can take a walk by moving with the assistance of arrows on his/her keyboard (left, right, up and down). He/she may, if he/she so desires, move by "flying". The big apartment also has a personal computer that enables the citizen to navigate the Internet. Clicking on the screen automatically loads Internet Explorer (supplied with the CD ROM).

- ***Navigation in the 2nd World***

A subscriber can move his/her avatar in several ways. The simplest way is to use the keyboard. This can be used to leave the apartment, take the lift and wander "on foot" to the desired point. But this is not the quickest way of getting from the Place de l'Opéra to the Eiffel tower, for example. The subscriber is provided with a "movement" menu that offers him/her a number of "teleportation" options. The first option enables him/her to choose his/her destination on the map of Paris. It is then sufficient to click on the chosen location (among the digitized districts) to get there. The second option offers a list of districts and landmarks (not including shops). The third and final option offers a list of shops.

When an avatar enters a public place, the system starts by displaying in the bottom section of the screen (reserved for messages) a list of the subscribers present, for example taking the form of "Mc Gyver is in your sector". The service coordinators are clearly identified by their screen names, which include the word "accueil" [reception]. When a user has entered a sector, he/she sees all the "public" messages exchanged in that sector scrolled before him/her. All the public conversations held in a particular sector are received by all the subscribers currently in the sector. To hold a private conversation with another subscriber, it is first necessary to identify the subscriber in question. This may be done by sight (if the conversation partner's avatar can be recognized) or by clicking on the avatars present with the right-hand button of the mouse in order to display their visiting cards (the fact that a visiting card has been consulted is not indicated). Once the desired conversation partner has been found, it is sufficient to click once again on his/her avatar with the left-hand button in order to request a private conversation. The avatar to whom the request is made then receives a message and may accept or refuse a conversation. Messages ex-

changed during private discussions cannot be read by other subscribers who are present in the same sector.

- ***Advertising and commercial spaces***

Advertising and commercial spaces clearly have a place in the 2nd World, but, paradoxically, they keep a relatively low profile. The four advertising panels in each of the 48 cells (districts) that currently make up the 2nd World are placed very high up (at about 10 metres) and in the middle of the street. Clicking with the mouse on a panel redirects the subscriber to the advertiser's Website or to the advertising pages contained on the CD ROM. No commercial transaction can be entered into directly in either case.

The 12 commercial spaces (shops) that are available do not at present offer any facility for performing a commercial transaction. It is possible to go to and visit the Virgin Megastore on the Champs Elysées, for example, but its shelves are still depressingly bare and its hardly worth visiting. It is, however, possible in some shops, to access the advertiser's Website or advertising pages, as in the case of the advertising panels, by clicking on an item of scenery or a computer screen.

The pilot committee of the project explains this reluctance to permit electronic commerce by drawing attention to the many highly innovative features of the system on offer and its numerous unknowns. Although the commercial platform is sufficiently technically operational to permit the performance of transactions right now, those responsible for the project have preferred to wait for version 2 before installing it. This may really be due to the fact that the 2nd World is mainly trying to establish itself as a community. It is therefore necessary to start by creating links, ensuring subscriber loyalty and installing a large number of systems that will enable them to obtain information about and participate in the various developments experienced by this community. A "citizen" may, for example, help to take certain political decisions, such as amendment of the constitution and election of the council of "elders", and participate in a large number of activities that are organized and suggested by the subscribers themselves (special interest clubs). Visitors may also consult an on line newspaper[168] on the *Web* that is exclusively devoted to the activities and lives of subscribers (interviews, gossip, wrinkles).

The introduction of electronic commerce from version 1 onwards would create a risk of the 2nd World coming to resemble a very highly developed shopping mall and would make it lose its originality very quickly, as service companies offering services relating to the 3D development of virtual commercial space are already to be found on the *Web*[169].

[168] http ://www.2nd-world.fr/journal/unes1997/unes/une.htm
[169] http://www.burotec.fr/chat3d/f/thc.htm.

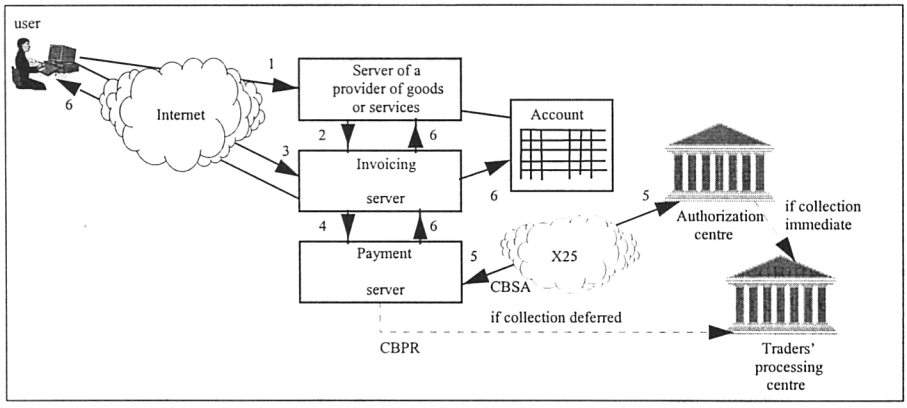
- ***Means of payment offered by the 2nd World via Inforoute***

The first means of payment to become operational will be Cap Gemini's electronic wallet: the PMEV (Porte-Monnaie Electronique Virtuel: virtual electronic wallet). Each avatar will have its own electronic wallet that it can use to pay for the services on offer (the first service to use the PMEV will be the sending of messages by TOM TOM). Use of the PMEV will be protected by means of a password.

It will be possible to replenish the wallet (containing between 100 and 500 francs) from the subscriber's bank account via his/her Visa or MasterCard credit card. The disclosure of bank account numbers on line will be safeguarded (SSL protocol or SET when it comes into force). It will be possible to use this means of payment for amounts up to and including 1,000 F.

The Inforoute service used by Canal+ Multimédia is confined to this single means of payment at present. The selection of means of payment for greater amounts has not yet been completely finalized, but it is already planned to introduce a bank card payment facility to permit payment for medium-value or high-value services. Other systems, such as the electronic payment certificate based on the initial provision of banking details by subscribers, are being examined.

In order to handle payments by bank card, each service provider will be able to use its own payment server that will offer a link to the service provider's bank. Such payment servers will include gateways to the authorization and remote collection centres of service providers' banks. To facilitate interconnection, the gateway will mimic the operation of an electronic payment terminal.



- ***Statistics on subscribers***

  The site is currently claimed to have 700 visitors per day, and this number increases to 1000 during the weekend. Average connection time is just over one hour (1 hour 8 minutes to be precise) and traffic is at its peak between 10 p.m. and 2 a.m.

VI.1.3) - Changes and development projects

- ***Version 2***

  Version 2, which was initially announced for June 1997 has been available since 15 November. It includes a number of striking improvements and functionalities:

  - introduction of new settings (theatre, swimming pool, street stalls, the possibility of visiting the Louvre);
  - certain objects become "active" (access cards, portable telephone);
  - automatic downloading; settings and programs can be downloaded automatically without a request from the user;
  - the sending of Tom Tom messages (pager);
  - the introduction of an electronic wallet;
  - the introduction of automatic avatars (sales persons, guides etc.).

  Although some of these improvements are of a fundamental nature (in particular the electronic wallet), version 3 (planned for the first quarter of 1998) is to bring about a really profound change in the relationship between subscribers and the service providers.

- ***Version 3***

  In functional terms, version 3 is intended to make it possible to:

  - adjust the position of the avatar's body;
  - integrate sound and images;
  - model an avatar's appearance on the basis of a digitized photograph;
  - offer the subscriber a proper 3D *home page* (his/her apartment) whose constituent parts will no longer be localized on his/her hard disc, but will be held on a dedicated server.

  Technically speaking, the application is to be completely rewritten. It is currently a fully proprietary system. Any modification of the scenery or the program can only be carried out by Cryo. Canal+ Multimédia wishes to develop the product into a more open system by using the standards that are emerging. The real change will occur in the form of subscription. Up to version 2 of the

program, subscription to the 2nd World has been free of charge. Version 3 will no longer be so. The project is actually financed from four sources:

- sale of the CD ROM (350 F);
- the sale of advertising space and shops (200,000 francs for entry rights);
- the sale of licences to other countries (Belgium, Switzerland, United States and Japan in particular, where Canal+ Multimédia has just opened an office);
- subscriptions; three options are being considered: if the number of subscribers reaches 50,000, subscription will continue to be free of charge; between 20,000 and 50,000 subscribers, coupled subscriptions will be proposed (in particular with the Havas-on-Line *provider*); and a charge will be levied for subscription if there are fewer than 20,000 subscribers.

In view of the fact that the number of subscribers had reached 6,000 by mid September 1997 (slightly ahead of what had been predicted), it seems highly likely that a charge will shortly be made for subscription.

VI.2) - Data and processing architecture

The data and processing architecture is based on the Cap Gemini Inforoute multimedia platform. It is the best way of connecting terminals of all kinds with on line information services, via all networks. Inforoute operates like a shopping mall in which consumers (users) and producers (service providers) meet.[170]

From the point of view of subscribers, Inforoute is therefore a true on line service offering secure access, an individual reception, notional 2D navigation around the Inforoute "village", an *e-mail* address, discussion groups and also a single and global system for paying for the postage services that are offered for sale.

As far as suppliers with a presence on the platform are concerned, a very comprehensive and wide range of services is on offer. The Inforoute platform is actually a veritable tool box based on standard technologies that Cap Gemini assembles from elements already in existence or develops where necessary on the basis of services requested by providers (such as, for example, an electronic voting server in the case of the 2nd World). Cap Gemini can therefore make an input into the entire process of design, implementation, technical realization, operation, administration, monitoring and analysis of service.

The platform allocated to the 2nd World can currently accommodate 20,000 subscribers and 1,000 logins simultaneously. The server is to be developed until it has sufficient capacity to manage 100,000 subscribers and 5,000 logins simultaneously by version 3.

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[170] http://www.inforoute.cgs.fr/docs/Plaquette.htm

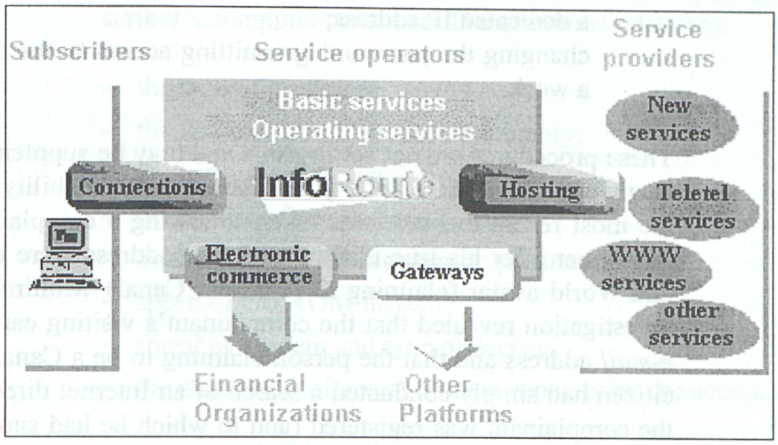


Figure 1 - The Inforoute platform

VI.2.1) - Collected data

The observations that can be made as a result of this experiment show that there is a need to distinguish between four main categories of collected data: data that is declared by subscribers, navigational data, transactional data and the content of messages exchanged between visitors.

- ***Data collected as a result of declarations made by subscribers***

  - ***Subscription:*** the first exchange of information between the subscriber and Canal+ Multimédia occurs when a subscriber becomes registered on line from the 2nd World Website. The following information is contained in the form: surname, first name, address, country, telephone number, fax and banking details[171]. The various 2nd World servers are hosted by Cap Gemini, which is responsible for their operation. Personal information about subscribers is therefore recorded on a server that is implemented and operated by a third company on its own premises.

    Access to such data by Canal+ Multimédia is subject to rules and restrictions that have been introduced to ensure the security and confidentiality of such information. These arrangements are determined by the project pilot committee, which is made up of one representative of each of the partners involved (Canal+ Multimédia, Cap Gemini, Cryo and Numériland) and meets once a week. The security of such information is ensured by:

    - the installation of a special dedicated link between Canal+ Multimédia and Cap Gemini;

[171] It is not possible to convey banking information at present.

- a restricted number of authorized users (four persons);
- a dedicated IP address;
- changing the password (permitting access to the database) once a week.

These procedures are not set in stone and may be supplemented if there is any doubt or if there are any fears about their reliability. For example, the most recent measure was taken following a complaint to C+ by a subscriber after his true identity and true address were disclosed by a 2nd World avatar (claiming to represent Canal+ Multimédia). A rapid investigation revealed that the complainant's visiting card included his *e-mail* address and that the person claiming to be a Canal+ Multimédia citizen had simply conducted a search of an Internet directory in which the complainant was registered (and to which he had supplied personal information). Although the procedures for accessing the customer base have not been placed in question, the pilot committee decided to reinforce them.

- ***The questionnaire:*** three months after the 2nd World was opened (in May 1997), the citizen-subscribers received an *e-mail* invitation to complete a very detailed "2nd World questionnaire". The purpose of this questionnaire was clearly indicated: to get to know subscribers better and to obtain information on their expectations. As access to this form was only possible after identification of the subscriber (user's name and password), the replies could not be other than nominative and identifiable. The first section of the questionnaire was headed: *"Some personal details"*. These were as follows (in order):

  – sex;
  – age range;
  – level of education of the main user;
  – his/her profession and links to the IT sector;
  – size of household;
  – region of residence;
  – type of built-up area;
  – how long the subscriber has been using a PC and an Internet connection;
  – activities pursued on the Internet (a scale from "frequently" to "never" for each of these activities);
  – whether the subscriber obtained an Internet connection because of the 2nd World;
  – the name of the subscriber's service provider.

The second section of the questionnaire was solely devoted to the subscriber's computer hardware. The questions related to:

- the type of processor;
- the amount of random access memory;
- the capacity of the hard disc;
- ownership of a sound card;
- ownership of a 3D accelerator graphics board;
- speed of CD ROM drive;
- speed of modem and type of access;
- the possibility of use of modem capacity by the access provider.

The third and final section of the questionnaire was headed "You and the 2nd World". It differed from the two preceding sections in a number of ways. First of all, the answers were no longer always provided in the form of multiple choice questions. The third part contained numerous fields for the entry of free text. Finally, the range of questions asked was very broad and much less structured than in the previous sections. To make it easier to summarize them, we have grouped them into three categories:

- *Quality of the program and services*: installation procedure, hot line, quality of the graphics and the services on offer; functional expectations; use of mail; ambience; expectations regarding electronic commerce; questions concerning development into a service that must be paid for (subscriptions and arrangements intended); product rating; knowledge of other virtual communities; ideas for development.

- *Information on means of payment*: ownership of a credit card (if so, which); name of the subscriber's main bank; types of purchase that the subscriber would like to make in the 2nd World.

- *Information on use of the Internet and the 2nd World*: place of connection (even down to the room in which the PC is installed if the system used is at home); total duration and frequency of logins into the Internet and the 2nd World per week.

- ***Navigational data***

This category includes all information obtained from locating and monitoring the browsing activities of subscribers in the 2nd World. Although Canal+ Multimédia claims not to store such data, the author's contacts admitted that statistics on numbers of visits were collected "from time to time" for each district at the request of advertisers or for internal analysis purposes.

- ***Transactional data***

  Although no transactions are performed at present, the rules associated with the recording and transmission of such information associated with future commercial transactions have already been decided upon and depend on the form of payment used. Performance of an operation using the means of payment offered by Inforoute, the host site, showed that the service provider, **CAP GEMINI, would be aware of the amount of the transaction and the contents of the basket.** Canal+ Multimédia will only be aware of the amount of the transaction. And advertisers can install their own means of payment independently of the Inforoute platform. In such a case, transactional information will only be known to the advertiser.

- ***Public and private communication and messaging***

  All messages exchanged in public places can be described as public communications. All such public conversations are stored and there is not at present any policy regarding the storage life of such information. All messages exchanged during private communication between avatars and discussions within a subscriber's apartment can be described as private discussions. Such information is not stored. Messages sent by electronic mail are obviously stored and are retained for one month.

VI.2.2) - Processing

Canal+ Multimédia told us that it does not apply any processing operations to personal information passed on by subscribers when they register. The questionnaire is, however, used to obtain statistics in order to enable them to push forward development of the 2nd World (functional developments, taking into account the hardware available) and also to supply advertisers with statistics on the make-up of subscribers. There is no possibility of passing on nominative information based on the questionnaire.

Although Canal+ Multimédia claims that it does not store navigational data, its representatives admit that they do from time to time collect statistics relating to the number of visits to each district for the purposes of internal analysis or at the request of an advertiser. They claim that they do not in any way analyse the navigational habits of subscribers.

As there are no commercial transactions, they cannot at present be processed for statistical purposes or analysed for marketing purposes. One is justified, however, in wondering **what will happen to such personal information when commercial activities become operational in the 2nd World.** An inquiry into this matter must take account of three factors: first of all declarations of intent, then the changes envisaged by the Numériland advertising agency regarding the services offered to advertisers and

finally the range of Inforoute services relating to the management of subscribers and the processing of data as currently packaged.

- ***Declarations of intent by the project designers***

  One of the designers of the 2nd World project showed a certain (or high) degree of awareness of issues relating to the protection of data and privacy just over a year ago, when he made a public declaration clearly showing that the intentions of the operators of the game were not neutral: *"There certainly are some things that are frightening (keeping files on people, policing, infringement of privacy) and some that are marvellous (in communication or medicine). We are in the thick of it, exploring new areas of leisure and study. (...) Up to now, collections of IT data have provided a snapshot of the present.* ***From now on, analysis of files should make it possible to anticipate the future. This is the true source of the political and financial power that will help to form the future of our societies***"[172]

- ***The services offered to advertisers by the advertising agency***

  Numériland's projects concerning the feedback of information to advertisers have not yet been fully determined, although their general outlines have already been drawn in principle. Up to now, the only feedback passed on to the advertisers present in version 1 of the 2nd World has taken the form of selected statistics on numbers of visits to districts. Numériland is currently drawing up a contractual document, whose broad outline has been described to us. Information on subscribers is divided into three types:

  - Type 1 : Personal information (collected on registration and supplemented by the questionnaire);
  - Type 2 : Information on user profiles obtained from the questionnaire;
  - Type 3 : Commercial/marketing information associated with browsing habits of subscribers.

  It would appear from the outset that no nominative information will be disclosed to advertisers. Information will only be supplied in a combined form, as non-nominative statistics (no list). Such statistics may be obtained from profile and marketing information (parts 2 and 3). Personal information (part 1) will never be disclosed to advertisers and will not be processed in any way.

  Numériland's commercial services offer three ways of setting up a commercial space (apart from advertising panels): a display, i.e. a simple shop window that cannot be visited and offers a local information page or a link to a Website, an

[172] From this multimedia supplement of Le Monde - week of 26 August 1996. *"The nightmare has become a reality"*. The full text of this interview can be consulted at the following address: http ://www.lemonde.fr/multimedia/sem3596/textes/enq35962.html

"information" shop that does not permit commercial transactions and an "advanced" shop that permits electronic commerce and may contain "advisers/sales staff". The advisers/sales staff who are only present in the third arrangement and take the form of avatars may be automatons dedicated to very precise functions (recording a request for information, selling) or even natural persons who are on line and are able to hold a conversation on the same footing as a subscriber. Numériland also offers advertisers interested in the third arrangement training in 2nd World communication for their future on line sales staff. In such a case, there is nothing to prevent an advertiser or a commercial site operator from creating a customer file on the basis of information exchanged with the subscriber on line.

- ***Services offered to advertisers as a result of site management***

CAP GEMINI currently supplies a clearly defined range of services relating to the analysis and processing of subscriber information on the Inforoute platform. The services offered are at the disposal of advertisers using the platform, but this does not necessarily mean that they are operational on the 2nd World client site. A distinction must be made between these services, depending on whether they relate to the current management of subscribers or to statistical processing. Both cases have far-reaching implications with regard to the processing of personal data:

- *Subscriber management:* subscriber management allows complete administration of customer files for hosted services. It includes as standard the addition or deletion of subscribers, updating subscribers' files, the production of lists and statistics on access to services, the management of special subscriber authorizations (list of services to which access is authorized), the listing of various ways of contacting subscribers and the installation of gateways to customer management software.

- *Statistics:* an initial level of statistical results consolidated in a chart provides general data on traffic to an advertiser's service; consumption statistics make it possible to obtain a more detailed identification of the resources consumed by visitors, which enables the service provider to measure customer satisfaction. Finally, the log makes it possible to record all events relating to the use of services. It is essential when trying out a service; it also makes it possible to track hits (connect, disconnect, date, user, etc.), to store information necessary for billing (duration, specific information for order billing, fixed-fee connection etc.) and to store data for service usage statistics.

VI.3) - Data protection

VI.3.1) - Contractual provisions.

The disclosure of personal information and the protection of data and privacy are explicitly discussed in Articles 7.4, 7.5 and 7.7 of the terms of subscription[173].

7.4 - Protection of privacy

The server permits the exchange of electronic mail between two identified persons.

Canal+ Multimédia does not perform any monitoring of this type of mail, subject to any instructions from legal and/or administrative authorities concerning a subscriber and to the provisions of Article 10.4[174] below.

The subscriber is solely responsible for this type of electronic mail, both with regard to Canal+ Multimédia and any third party.

7.5 - Communication of personal details.

The subscriber authorizes Canal+ Multimédia to disclose his/her personal details to commercial undertakings for information purposes and to enable them to promote their products and services.

The subscriber can withdraw his/her authorization by means of a simple request on subscription or subsequently by means of a letter sent to Canal+ Multimédia.

Apart from in the above case, Canal+ Multimédia undertakes not to disclose the subscriber's personal details and not to disclose any item that might make it possible to establish a link between the subscriber's identity and his/her *login,* subject to any instructions from legal or administrative authorities concerning the subscriber in respect of his/her actions on the server and/or the Internet.

7.7 - Amendment of nominative information.

In accordance with Law No. 78-17 on Computing and Freedom of 6 January 1978, the subscriber is entitled to demand the disclosure and correction of nominative information concerning him/her simply by submitting a corresponding request to Canal+ Multimédia.

[173] http ://www.2nd-world.fr/conditions.htm

[174] Article 10.4 specifies the limits on Canal+ Multimédia's responsibility for services and data available on the Internet outside the server.

A number of comments are suggested. First of all, the Terms of Subscription are fairly precise regarding the roles and responsibilities of the subscriber and Canal+ Multimédia. A number of points are not discussed, however, in particular:

- Problems associated with access to and the confidentiality of messages exchanged either in public discussions or private conversations. As we shall see in the following paragraph (internal monitoring operations), there are procedures that make it possible to monitor messages exchanged (public or private).

- The storage and processing of navigational and transactional information, the length of time for which they are stored, possible disclosure to third parties; although Canal+ Multimédia does not in principle disclose personal information to third parties, there is nothing to prevent it from doing so in the terms of subscription (apart from the *optout* option).

It should finally be noted that as at September 1997, Canal+ Multimédia had not yet made any processing declaration to the CNIL [French National IT and Freedom Committee] in accordance with the obligation placed on it by the law of January1978. It is possible that this delay is due to the as yet experimental nature of the application.

VI.3.2) - Internal monitoring measures.

Public discussions are monitored (systematically in certain sectors) by the 10 coordinators of Canal+ Multimédia that are present and are identifiable by the term "accueil" in their screen names. It has been known for coordinators to monitor some sectors while using an atypical screen name after a complaint from a subscriber, but only on an exceptional basis according to one of the managers of the project. If there is a problem with a subscriber, relating in particular to the content of the messages disseminated by him/her, a fairly simple procedure is available, comprising a hierarchy of penalties; this arrangement seems to have worked satisfactorily up to now.

When a problem arises, a coordinator enters into a private discussion and tries to reason with the offending avatar. If the problem recurs, it is possible to silence him/her for a particular period. This occurs from time to time according to the project manager, and this simple penalty seems to be a sufficient deterrent. If a subscriber does not heed warnings, he/she is disconnected from the server and a personalized *e-mail* is sent to him/her with a warning that his/her subscription might be cancelled. Finally, if the behaviour is considered serious or harmful to the 2nd World, the subscription is cancelled. This has only occurred once, in connection with a subscriber who disclosed the true name and address of another subscriber and who posed as a Canal+ Multimédia coordinator.

Private discussions (private conversations between two avatars or conversations inside an apartment) are not monitored. There is, however, a "tapping" mechanism that can be activated at the request of a legal or administrative authority and, when activated, records private conversations. Subscribers and apartments have this lock. It was decided to develop this lock after informal discussions with representatives of the police

and legal authorities. There has not up to now been any such request from the police or legal authorities.

VI.4) - 1998: the break-up between Canal+ and Cryo and a new 2nd World

On 12 April 1998, the break-up between the two main partners in the project - Canal+ Multimédia and Cryo - finally sealed the fate of this on line service in the form in which it had been offered up to then.

The 2nd World site has totally changed: the graphics board, sound and speech have all changed. The most obvious changes concern the user interface (3D engine), although they are perhaps due to the application of a new and much more open marketing strategy that probably meets the expectations of advertisers more effectively. By giving up its partnership with Cryo, Canal+ Multimédia has taken a determined step towards tools using the standard that is currently most widespread in this area on the Net: the VRML (*"Virtual Reality Markup Language"*). In future, to log in to the 2nd World, a citizen must start by downloading a *plug-in* (Blaxxun CCPRO from Blaxxun Interractive), which adds an extension to the browser that turns it into a VRML 3D engine. A citizen wishing to create an avatar is invited to visit specialist sites offering *on line* catalogues of avatars that are ready for use. It is also possible to access various sites offering boxes of tools for customizing an avatar or to create one from scratch if one is the patient type. The site http://www.avatara.com now offers a list of virtual worlds that are compatible with the models available[175].

The range of services offered to members of the community is very similar to the range offered in previous versions. The same innovations are announced and it is possible to suppose that in the long term, the final version of this new 2nd World will achieve and exceed the goals initially laid down for version 3. There is, however, a fundamental difference between the two communities. It is now no longer necessary to purchase a CD ROM and any Net user can become a member of the 2nd World as soon as he/she has downloaded the necessary *Plug-in*. The registration procedure, which is still optional, is now to become obligatory; but here, too, the registration form is confined to information that is limited in comparison with the information requested during registration in previous versions. The only obligatory information is now the subscriber's surname, first name, chosen screen name, password and *e-mail* address. Although the subscriber's postal address (which was obligatory in the previous form) is no longer requested, this is still a form for collecting personal data. It is currently difficult to determine who officially owns such information and the forms of processing to which it may be subject. It seems strange that the licensing agreement, which initially contained a paragraph on data protection in particular, has now disappeared and none of the screens that are accessible contain an explicit reference to French national legislation concerning data protection.

It is obvious that Canal+ Multimédia has everything to gain from opening the 2nd World up to as many people as possible. However, the problems raised by the development of a complex virtual world in VRML will not be properly resolved until the Net is able to provide ac-

[175] A list of sites compatible with the Blaxxun *plug-in* can also be found at http://www.hci.net/~after5/blaxxun/

cess with much more throughput than at present. Becoming a citizen of the new 2nd World requires a very high-range personal computer and a lot of patience. It cannot be denied that rewriting the 2nd World in VRML has brought about a deterioration in quality, as a result of the current state of the art of PC technology and network throughput.

Section VII – Fnac Direct

VII.1) – FNAC's electronic commerce strategy

FNAC is developing its cultural product distribution activity[176] which has hitherto been based essentially on a chain of shops: after the very recent opening of Fnac Champs-Elysées in Paris, Fnac now has 50 shops in France. It has 12 million customers per year, i.e. 50% of potential national customers for the type of products and services sold by it; its total sales amounted to 10.625 billion francs exclusive of taxes in 1996. Fnac is also established in Belgium, where it has 5 shops, in addition to 3 in Spain and 1 in Portugal (to be opened in March 1998). It has plans to establish itself in Asia, Latin America and southern and eastern Europe.

The firm continues to mainly target the French-speaking cultural market, which offers considerable potential throughout the world, in the Far East, Quebec, Africa and wherever colonies of French expartriots are to be found; however, the managers of the Group are very well aware that it cannot be physically present everywhere. The Internet would appear to be the best possible way of attracting its target customers. The Website opened by Fnac this March is intended to achieve two aims: both to act as a means of communiction for the company and as a means of electronic commerce.

This policy is part of a broader strategy developed by the Pinault-Printemps-Redoute (PPR) group, to which Fnac has belonged since 1994: all the businesses of the group are required to diversify their distribution structures; companies that have traditionally based their activities on mail order are opening shops, while companies that have already established themselves in bricks and mortar are becoming involved in electronic commerce: for example, La Redoute and its subsidiaries (Vert-Baudet, Cyrilus, Somewhere) are opening shops, while Rexel will shortly open an Internet site dedicated to the business-to-business trading in electrical equipment. Each company remains free, however, to choose the forms of organization and the technological solutions that it implements.

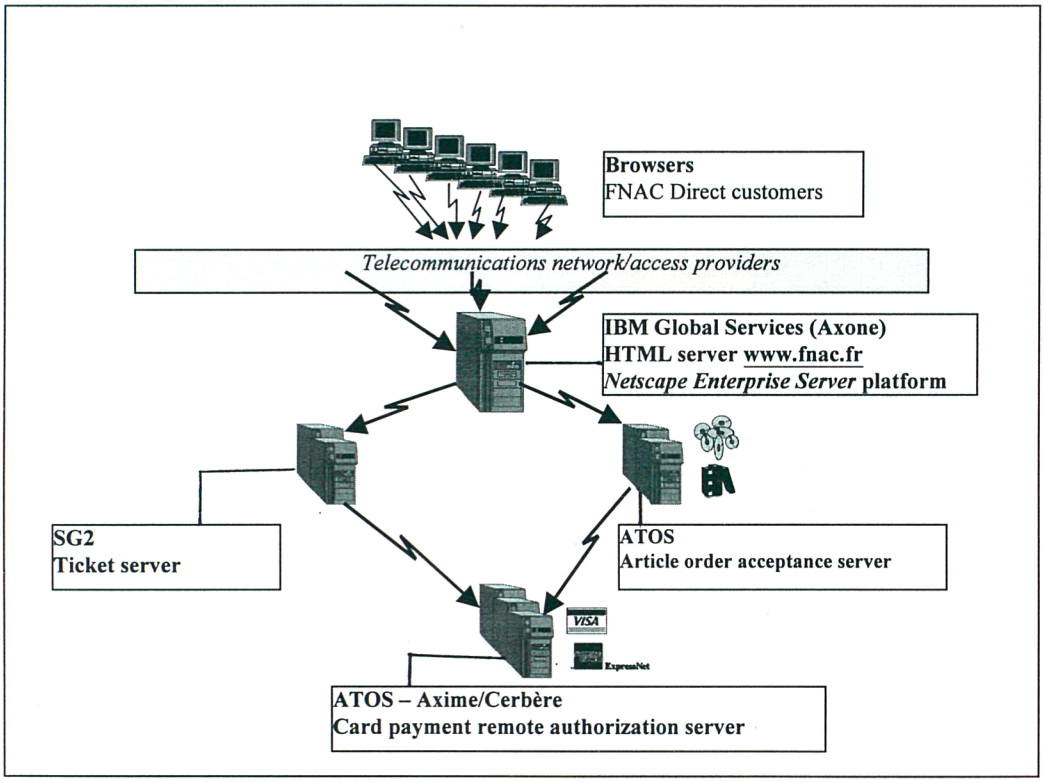
The Fnac Internet site is organized by Fnac Direct, a limited company that is 100% owned by Fnac; it is responsible for implementing and managing four sales media: videotex (35 15 Fnac), the Internet (www.fnac.fr), a calling platform (Indigo telephone number) and a catalogue sent to customers by post.

[176] Fnac stores sell the following products and services: telecommunications and office automation, photography, photographic processing, video recorders and camcorders, televisions, portable audio equipment, hi-fis, discs and imported discs, professional video equipment, books, tickets and travel.

VII.2) –Technical architecture and electronic commerce platform

FNAC's electronic commerce platform is farily complicated and includes a large number of external service providers:

- The Kernel is an **IBM Global Services** HTML server managed by Axone, a subsidiary of the designer that specializes in *facilities management*. This server receives the visitors and is the showcase of the group. This is an RS 6000 server under Unix (AIX) that supports the *Netscape Enterprise Server* platform and a *Proxy Server*. This server also hosts DB2, IBM's DBMS for part of the work involved in managing theatre tickets.



- The ticket function is managed by a SEQUENT server operated by SG2 (computer service and consultancy company originally from the banking sector, subsidiary of Société Générale); the application is also a prorprietary development by SG2; it has a number of guises and front ends capable of managing different kinds of ordering media: the Internet, the Ticket Plus service (telephone booking platform in cooperation with Canal+), 36 15 Billetel (videotex) and bookings over shop counters. Managing a ticket service using TCP/IP network technology poses particular problems due to the fact that a single booking session may include a number of different IT transactions; after all, a theatre ticket is not an ordinary item, but a numbered document that is allocated to a specific purchaser: it is therefore necessary to locate the calling party each

time a connection is made via the Internet and to provide a contextual backup in order to ensure continuity of the booking process; this explains the presence of DB2 in the central Kernel described above.

- The sale of compact discs, videos, CD ROMs and books, which amount to about 400,000 articles in total, is managed on a server belonging to the service company ATOS[177] based on Hewlett-Packard systems and by means of a frontal HTML and a specific user-oriented package (RDoc); the *on line* database of articles is formed on the basis of a compilation of trade catalogues that is updated on a daily basis (Novalis for CDs, Planète Livre for books) and by means of *matching* with the unified goods management system used in Fnac shops. Enquiries from *browsers* of visitors to the site are actually SQL requests that are sent to the central database.

- Payments, too, are hosted by ATOS, but on a separate remote authorization platform: this is the Cerbère system, which is part of the national remote authorization network for Cartes Bleues debits; it should be noted that the shops use the same service provider for the authorization and remote collection of card payments at their counters. Each commercial transaction on the Internet gives rise to a connection to the national GIE bank card system (interrogation of the OPPOPOTA file - file of lost or stolen cards); Fnac then receives the authorization number in return. According to the rules in force, interbank clearing occurs when delivery to the customer is initiated; if delivery is divided up into a number of different consignments, clearing occurs in the same number of instalments, although the delivery charges are only collected once. It is important to emphasize that the ATOS division involved in payment authorization never has any knowledge of the contents of the basket; the two types of information, i.e. articles ordered and card number + authorization number, are kept strictly separate.

As far as security is concerned, data flows exchanged between the customer, the IBM Global Services reception platform and ATOS Cerbère are operated under the SSL3 standard and the VeriSign certificate, i.e. the most powerful level currently in operation in France (40 bits per key). This is the same system as is applied in the case of remote payments for theatre bookings.

VII.3) –Traffic at Fnac Direct Internet site

Fnac's Internet site has about 4,500 visits per day; experience has shown that this traffic varies considerably over time; the volume of logins falls at the weekend, for example, providing clear proof of the specific situation in France, where relatively few households have personal computers to communicate with, while the peak period tends to be Monday morning; the volume of traffic is also sensitive to the weather, as traffic falls when the sun is shining.

[177] ATOS is a computer service company that originally specialized in the banking and financial sector; it is the result of a merger between Sligos (the computer service subsidiary of Crédit Lyonnais) and Axime, one of the four main French operators in the remote collection and and remote authorization of card payments sector.

Analysis of *logs* by access providers shows that the population of French visitors to Fnac's Website clearly mirrors the national distribution of Internet subscribers: Wanadoo (France Telecom) comes first, followed by Club Internet, AOL and CompuServe. This situation seems likely to change in the near future, as a result of the partnerships that Fnac is currently setting up with certain access providers, which are going to provide special adverstising for its site. To date, Fnac has not carried out any advertising for its site, although it has been approached several times by the main US sites selling advertising space, such as Yahoo!, Lycos and Excite.

The two items at the Fnac site that receive the most visitors are product catalogues and group publications (stored comparative studies, miscellaneous special offers, subject catalogues etc.). The products that are most frequently consulted are first of all books, then compact discs which comprise 35,000 excerpts (actually 3 excerpts for 12,000 discs after the conclusion of hard-won agreements with recording studios), CD ROMs and videos.

The number of orders placed at the Fnac-Direct site is still considered to be strategic and confidential data; the authors' contacts were unwilling to disclose this figure. It is simply possible to say that it reflects the fact that the site has been in existence for less than 10 months and that equilibrium will not be reached for three or four years; it also reflects the slowness with which French households are adopting Internet technology. However, **the success rate**, i.e. the proportion of visitors to the site who place an order, is fairly high, and higher, it is said, than in the case of Amazon.com, one of the two or three main standards of comparison for electronic commerce on the Internet. It is possible to put forward the view that the French must have acquired a considerable amount of experience of browsing in databases after 15 years of telematics and in view of the widespread possession of Minitel terminals; from the outset, therefore, they are adopting a utilitarian attitude to the Internet, which they see as a tool. It should be noted that between 10 and 15% of orders comes from other countries: Japan, Europe and Singapore; these mainly concern purchases of books[178].

One might suppose that Fnac would attempt to increase its *Web* audience by developing advertising campaigns or registering with virtual shopping malls. It does actually receive commercial offers encouraging it to move in one or other of these directions; these two possibilities have now been fairly clearly rejected:

- as an advertiser, Fnac has been approached several times by search engine operators; the technique of advertising banners does not attract the site manager, who actually thinks that the cost per thousand is much too high. It is also the case that the way of calculating impressions is unreliable, to say the least.

- shopping malls in France and other countries would, of course, like to host Fnac; not without reason, the site manager has little faith in this way of organizing commerce on the Internet. In the current state of affairs, it would not be in keeping with the desire to

[178] For the purposes of indirect taxes, Fnac sends its goods to other countries inclusive of tax, which enables it to offset its losses on carriage expenses that are not wholely passed on to the customer. As far as Europe is concerned, a complicated calculation is currently being performed now that the financial year has been completed in order to determine the amount of VAT that needs to be repaid to the various countries of destination.

promote the image and identity of the company; in addition, as far as they are aware, registration with a virtual shopping mall does have disadvantages: high participation charges, 15% commission on the turnover, limitation on the number of articles shown. This form of participation in electronic commerce on the Internet is surely directed rather towards commercial structures that wish to experiment with the technology or quite simply do not have the capacity to master it internally.

VII.4) –Personal data processing and protection of privacy

The Fnac-Direct site collects fairly standard personal data in connection with orders and transactions:

- surname, first name,
- customer's address,
- telephone number,
- *e-mail* address,
- member's number,
- delivery address (if not the same as the billing address)
- dedication (free text area enabling the customer to enter a message to accompany a present to be delivered to a third party)
- number and expiry date of the card used for payment (Visa, Mastercard).

All transactions are stored, with the exception of dedications, which are not stored. Although not obligatory, telephone numbers and e-mail addresses are collected for practical reasons so that a customer can be informed if there is a problem with the order; it is also intended to install a facility to permit the automatic transmission of confirmation of receipt of an order to a customer's electronic mailbox. The e-mail address is also intended to create a file that can be used for direct marketing campaigns. The idea is actually to be able to send advertising messages that are specific to Fnac to the electronic mailboxes of customers who have placed at least one order. A campaign was recently carried out involving 2,800 customers: 60 addresses were incorrect and 10 *optout* requests were received and processed by the site. The site does not exclude the long term possibility of mailing messages that are targeted in line with users' preferences, in view of the fact that, in the absence of *cookies*, such preferences can only be identified as a result of deliberate action by customers, such as completion of a questionnaire, or voluntary subscription to a distribution list, which would inherently constitute an *opt-in* action.

No *cookie* is installed on the customer's personal computer during visits or while his/her order is being handled; the site manager does not have a very high opinion of them, especially as the log analysis software currently on the market does not meet his requirements. One particular development is currently under way that may enable Fnac site operators to precisely track certain navigational parameters: analysis of traffic at certain clearly defined pages on certain days and at certain times of day. Orders can actually be analysed by means of a remote-selling software tool administered by Fnac-Direct on a Windows NT server; this tool also manages all the logistical functionalities associated with processing an order: stock management, re-

stocking and monitoring delivery. The profile processing that has been possible to date shows that purchases are highly fragmented, and although some trends are starting to reveal themselves, Fnac is waiting until it has more historical data. The main analyses currently being conducted by Fnac are intended to determine whether its strategy is well founded: this is why orders are used as a basis for processing intended to establish a link between the customer's place of residence and the distance between it and the nearest Fnac shop. Another analysis is intended to measure the impact of shop communication campaigns: orders placed via the site are matched with prior mailings by Fnac to potential customers in order to enable them to benefit from special offers.

Anonymous means of payment are of no interest to Fnac-Direct: in actual fact, the average value of a basket of orders (several hundred francs) is hardly suitable for this. The French KleLine system is not actually satisfactory, because of the charges that are made for each order. The site manager explained that he places more faith in C-SET technology. Fraud currently stands at 1%, and is essentially due to orders placed by visitors with the numbers of payment cards of which they are not the holders; fraud of this type would appear to be virtually unstoppable in cases where the cards have not been included in the national file of stopped cards (Oppopota file). An algorithm permits nonexistent numbers to be detected instantaneously at Fnac's site itself, before any link is established with the remote- authorization service.

The processing of nominative data by Fnac-Direct is partly in accordance with the French law on IT and freedom: it is declared to the CNIL (single Fnac declaration for all its remote selling activities); the obligatory wording is included in the home page, which specifies that the customer has a right of access to information concerning him/her and a right to correct it; he/she is also informed that he/she may receive information from other companies, which means that Fnac reserves the right to sell or rent out distribution lists to third parties. The site does not at present include an *optout* box that the visitor may tick, which is now becoming a standard minimum feature to protect privacy at Internet sites.

European Commission

On-line services and data protection and the protection of privacy — Description of the general situation and case studies

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