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A.2 Overview of business models for Web 2.0 communities

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1. Introduction

A new type of communities is gaining momentum on the web and is reshaping online communication and collaboration patterns and the way how information is consumed and produced [Gros04, Kolb06]. Examples of such communities are Wikipedia, MySpace, OpenBC, YouTube, Folksonomies, numerous Weblogs and others. In literature different terms can be found to denote the emerging and growing new phenomenon: social software [Bäch06] or peer production [Scho05]. In the year 2005, Tim O'Reilly popularized the term Web 2.0 [O'Reil05]. While the first two terms can be applied also to earlier, already established forms of online communities (for an overview see [Stan02]), the term Web 2.0 is mostly applied to emphasize the differences of emerging communities compared to earlier forms of online communities, encompassing various perspectives - technology, attitude, philosophy.

While, recently the mass media have picked up broadly the term Web 2.0 and the related phenomenon of emerging online communities (see [Schm06] [Rühl06] [Ohne06]), there has been less attention in the scientific community. First papers are available that try to define the phenomenon and to relate it to existing developments [Scho05, O'Reil05, Mill05, Bäch06]. Other papers categorize Web 2.0 communities and provide a first detailed description of the various kind of communities [Gros04, O'Mar04, Bäch06, Kori06, Kolb06]. There are also first papers that focus on a certain type of Web 2.0 communities as for example: social networking communities [O'Mar04], Online Encyclopedias [Kolb05], Folksonomies [Math04]. The most widely researched phenomenon are Web logs [Kuma04, Baoi04, Gill04, Lloy05, Zerf05. Bach05, Naka05].

Web 2.0 communities have gained an increasing impact on businesses and should therefore not be neglected from an academic perspective. New business models arise and existing business models are highly affected by Web 2.0 communities. The objective of this paper is to describe the phenomenon of Web 2.0 communities and to provide a systematic overview of current and emerging business models. Specifically, the paper addresses the following questions:

- What are the fundamentals of Web 2.0 communities?
- What are existing business models of Web 2.0 communities?
- Based on the answers of the two questions, the paper tries to provide a more profound definition of Web 2.0 and of Web 2.0 communities.

In order to answer these questions, forty Web 2.0 communities have been analyzed and described in the form of case studies. Each case was analyzed according to the mcm business model framework, which is explained in chapter 2. The results are then clustered and interpreted. Based on this extensive market overview, the similarities and differences of the applications are identified. Utilizing this information, a definition and classification of Web 2.0 communities is developed and the fundamental concepts of Web 2.0 are elaborated.

The content of the paper is structured as follows: In section 2 the research approach is described. Section 3 provides a summary of the aggregated results with respect to components of business models of Web 2.0 communities resulting from the case analysis. Section 4 provides an aggregated discussion on the phenomenon of Web 2.0 communities. Section 5 provides a conclusion and an outlook on further research.

2. Research Approach

In order to identify the different components and common elements of business models, short descriptive case studies [Yin94] of a selection of 40 active Web 2.0 communities have been performed. Each selected community has been analyzed according the mcm business model analysis framework.

2.1 Case Selection

When choosing the Web 2.0 example communities, the following approach was applied: First based on classifications available in the literature (see for example [Kolb05]) potential categories of Web 2.0 communities have been identified. Then, in a next step a list of potentially popular Web 2.0 services was adopted from the website of the Web 2.0 awards[1] from which the nominated websites were chosen. In a third step these sites were examined according to their success based on the numbers of back-links on Google.com. The following Web 2.0 applications (in alphabetical order) were considered:

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[1] http://web2.0awards.org/

	Name	Description	URL
1	43things	Sharing resolutions	http://www.43things.com/
2	Bloglines	Blog Guide	http://bloglines.com/
3	Blogniscient	Blog Guide	http://blogniscient.com/
4	Blummy	Bookmarking Tool	http://blummy.com/
5	Brainreactions	Idea Generation Platform	http://brainreactions.net/
6	BubbleShare	Photo Stories	http://www.bubbleshare.com/
7	Consumating	Community	http://consumating.com/
8	Dailymotion	Videos	http://dailymotion.com/
9	Digg	News Site	http://digg.com/
10	Facebook	Community	http://facebook.com/
11	Frappr	Community Mapping	http://frappr.com/
12	Furl	Bookmarking	http://furl.net/
13	Gabbr	News Site	http://gabbr.com/
14	GiveMeaning	Charity Platform	http://givemeaning.com/
15	Google Maps	Maps	http://maps.google.com/
16	HousingMaps	Property Mapping	http://housingmaps.com/
17	iRows	Spreadsheet Application	http://irows.com/
18	Last.fm	Music Platform	http://last.fm/
19	Lazybase	Database	http://lazybase.com/
20	Loomia	Podcasting	http://loomia.com/
21	Metacafe	Videos	http://metacafe.com/
22	MusicStrands	Music Platform	http://musicstrands.com/
23	MySpace	Community	http://myspace.com/
24	Newsvine	News Site	http://newsvine.com/
25	Odeo	Podcasting	http://odeo.com/
26	Pageflakes	Personal startpage	http://www.pageflakes.com/
27	Podomatic	Podcasting	http://podomatic.com/
28	Riya	Face Recognition	http://www.riya.com/
29	Rollyo	Individual Search	http://rollyo.com/
30	Seconds11	Podcast-Teasers	http://www.seconds11.com/
31	Skobee	Calendar	http://skobee.com/
32	Spurl	Bookmarking	http://spurl.net/
33	Swicki	Search Results Wiki	http://swicki.com/
34	Technorati	Blog Guide	http://technorati.com/
35	Truveo	Video Search Engine	http://truveo.com/
36	UpTo11	Music Platform	http://upto11.net/
37	Voo2do	Todo-List	http://voo2do.com/
38	Wayfaring	Community Mapping	http://wayfaring.com/
39	Wetpaint	Wiki Platform	http://wetpaint.com/
40	YouTube	Videos	http://youtube.com/

Table 1: Overview of observed Web 2.0 applications

2.2 The mcm Business Model Framework

The mcm Business Model Framework provides a generic overview of components of business models. It has been used successfully for structuring the analysis of business models of online services [Hoeg05].

The generic components of business models have been synthesized based on an in-depth analysis of the body of literature about business models. The definitions of business models range from very broad ones as for example the definitions proposed by [Rapp05] or [Afua01] to very specific ones (see for example [Oste04] or [Stae02]). [Rapp05] for instance defines business models in a basic sense "*as the method of doing business by which a company can sustain itself - that is, generate revenue*". While such definitions try to delimit the scope of the meaning of the concept business models, they do not provide insights into the components of business models and thus do not provide a foundation for a systematical analysis of the activities of a company. In order to structure the analysis of business models, the mcm business model framework was developed. The starting point for the development of the framework was the most cited specific definition proposed by Timmers. According to Timmers, a business model is "… *an architecture for the products, services and information flows, including a description of various business actors and their roles, a description of the potential benefits for the various business actor, and a description of the sources of revenues."* [Timm03]. The components denoted by Timmer's definition were extracted and enhanced with further aspects affecting business models (for example "Social Environment"). The resulting mcm business model framework is presented in figure 1:
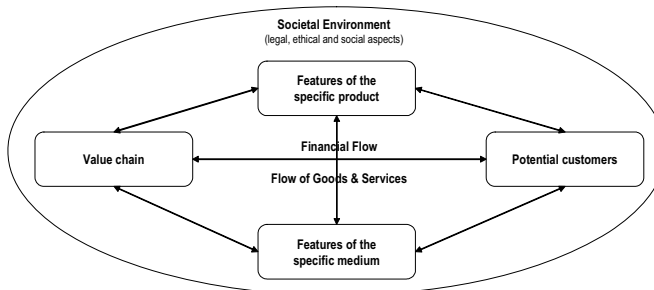

Figure 1: MCM Business Model Framework

These elements of the framework are explained in more detail below:

- The **social environment** component of a business model reflects all outside influences on the business models, such as the legal and ethical aspects as well as

the competitive situation of the market. It refers to the social and regulatory context in which a business model is developed and implemented.

- The component **features of the medium** expresses the possibilities for transaction and interaction over a specific medium. For example different applications are possible online and on the mobile medium.

- The component of **potential customer** covers all aspects of target group and customers as well as the expected added value. The different business models certainly address different target groups, and do address different needs of the customer.

- The component **value chain** reflects the directly involved players necessary for the production and delivery of the offered product or service and their interrelationships. A typical portal value chain consists for example of a content owner, content aggregator, content provider, the portal owner and of course the user.

- The component **specific features of the product** express the exact design and the way the service is experienced by its customers. It also explains what the specific benefits are, and how the customer might be contributing.

- The component **financial flows** explains the earning logic of the business model and makes it clear which elements of the value chain contribute from a financial perspective.

- The component **flow of good and services** identifies all the processes within the company and the value chain necessary for the creation of the product or service.

Based on the identified generic components of business models, the Web 2.0 communities have been analyzed using the same structure. This approach enabled high compatibility of the achieved results.

3. Components of Business Models of Web 2.0 communities

In this section the aggregated findings of the case analysis will be presented. For each of the identified generic components of business model the prevailing typical applied solutions in practice have been identified.

3.1 Features of the specific medium

The emergence of Web 2.0 communities does not correlate with a specific technical innovation. From a technical point of view, Web 2.0 communities simply combine existing protocols and computer languages in a unique way [Kolb06]. The TCP/IP protocol stack as well as the protocols on the application layer are not changed.

Nevertheless, technologically Web 2.0 community are enabled by maturing basic technologies as peer-to-peer technologies, web services and semantic web as well as new script languages as AJAX. Peer-To-Peer technologies enable building of communities related to file sharing [Best 2006]. Web Services [Alt et al. 2003] and semantic web enable a seamless integration of different services and application as well as bundling of basic services to complex applications. This can be illustrated on the example of social networking communities: one critical success factor for them is the ability to seamlessly connect and re-connect to existing services as Microsoft outlook and prevailing e-mail systems and content.

AJAX allows for the design of bandwidth efficient applications. The core idea is to reduce the data which is exchanged between the client and server. Instead of re-transferring the complete page again (even if the page has only slightly changed), only the modifications are re-transferred. The result is a significant improvement of the user experience.

The application of the above technologies in general result in user-friendly application that hide technical details and mark-up languages and empowers even non-technical users to create and edit content [Kolb06]. As a result the current version of Internet technologies enable a bottom-up, user centered content creation by the user.
During the analysis of the selected Web 2.0 communities, it could not be observed that any Web 2.0 service could gain any advantage using a superior technology. Contrariwise, open standards and an open source philosophy are the fundament of Web 2.0 [O'Rail05] and foster the paradigm of user-generated content.

3.2 Features of the specific product

The basic Web 2.0 technologies, which were mentioned in the previous section can be applied for development and offering of different Web 2.0 platforms and services that can be used (consumed) by users and usually evolve to virtual homes of various kind of Web 2.0 communities.

The services offered can be classified according to different categories: Depending on the type of content on which the offered services focus as well as the functionalities they offer, the resulting communities can be classified as follows [Bäch06, Kolb06]:

- Blogs and Blogspheres (example: Technorati)
- Wikis (example: Wikipedia)
- Podcasts (example: Loomia)

- Social networks (example: OpenBC or Friendster)
- Social Bookmarking or Folksonomies (example: del.icio.us).

However, from a business model perspective, not the resulting community but the service is of importance that has the potential to result into a community. In order to enable community-building, the services provided for Web 2.0 communities consist in general of three components:

- The main focus lies on content and services for collaborative creating, management, updating and sharing of content. The specific form of the services can vary depending on the type of content: text, links, videos or pictures.
- Services and automatical update procedures that evaluate each user input and create always a new common state of knowledge and content, or as some authors explain it, mechanisms for creating after each input the newest stage of collective intelligence.
- Trust building services as ratings, voting and similar, which are also the foundation for the collective intelligence services.

The services are offered furthermore in three different forms:

- Firstly, in form of a **platforms** or **tools** that can be used by users to initiate communities. They offer the means for users to express themselves by using the platform, to create new content or tools, and to find persons interested in the same content or (in principal) get noticed. This means that platforms provide tools that enable users to create, store, manage and share content. Examples of platforms or tools are the various blog or mobile blog platforms. Depending on the specific type of content, that is supported by the platform we can distinguish two major groups: Services which facilitate navigation tasks are labeled as directory services, while services that empower users to create their own content are named "technology centric" services.
- Secondly, in form of **online collaboration tools** that are offered as online applications (in contrast to local application) or in form of workflows that map a **process** to an online environment. The objective of these services is to improve the process efficiency by making necessary information as agendas, to do lists and similar accessible from everywhere and through any device. These services offer functions for online collaboration (e.g. time schedule), management of online process flows (e.g. online brainstorming), or provide online applications (e.g. online text processing).

- Last but not least, **community services**. Communities unify users through a common objective. The common goal can be something like "finding new friends", "finding relevant information" or simply "killing time". Community platforms offer complex services for social creation of content of various kind.

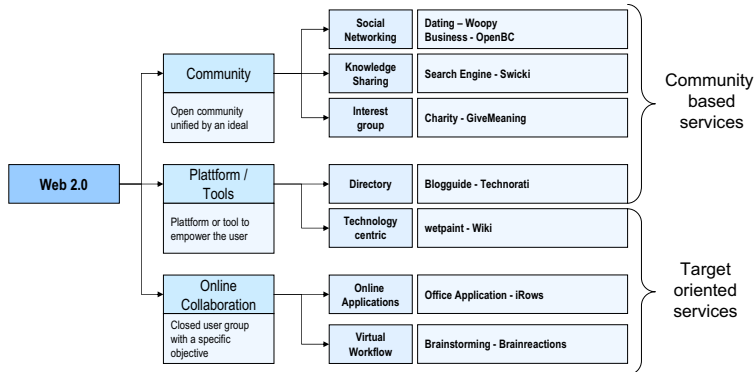The following figure summarizes these results.

Figure 2: Clustered overview of Web 2.0 applications

The various kind of services offer different participation possibilities for users. While the group of services belonging to platform / tools and online collaboration have a clear and obvious communication flow, the community focused services utilize different combinations of communication methods and offer different ways of possible participation within the new community. The quality and the size of the community knowledge pool are depending on the number of active users and their participation intensity. In addition, the form of participation not only drives the culture of the community, but also the user acceptance and loyalty. The general principle for participation could be, that the easier the participation, the higher the probability of participation. On the other hand, the lower the entry barrier, the more likely is the occurrence of low quality content. From a user perspective, the decision is based on the perceived effort of participation and the expected benefit from participation. The following figure shows what methods of participation have been observed.
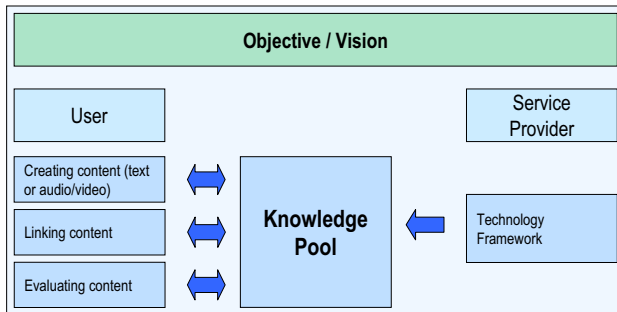
Figure 3: Participation model of a Web 2.0 service

Content is the most common form of Web 2.0 service contribution. It can be Audio (Podcasts), Text (Blogs), Video (YouTube) or any other format. The user invests time and effort to prepare and publish the content. The users' benefit is to establish reputation and in more concrete cases even to initiate a profitable discussion or exchange of thoughts. The user can contribute by **evaluating** or **recommending** any kind of 3rd party content, for instance music, books or links. The quality of the services is mainly determined by the quality of the evaluation. Depending on the implementation of the mechanism this kind of services is highly reliant on network effects. The most famous example of this mechanism is Amazon and the buyer/seller evaluation system of eBay. Other important forms of participation are **linking** and **meta tagging** of existing contents.

The service provider has to provide the technology platform as well as to facilitate the knowledge exchange by a set of formalized guidelines (manifested in IT processes) and to cultivating the community culture.

From a business model perspective a general feature of the offered services is versioning - for example many services are offered in two versions: a simple free version with lower quality and at least one premium version with some quality guarantees and additional functionality.

3.3 Potential Customers

Potential customers of Web 2.0 communities are basically any Web users, who get interested in the specific content, collaboration and communication around which the community evolves. In his paper "A theory of Human Motivation" Abraham Maslow described the levels of motivation of humans [Masl43]: The triggers of motivation he

described are still valid today and even gained importance in the context of the Internet. Internet users have the choice of accessing contents as well as actively participating. Web 2.0 services facilitate this active participation and are the response to the top 3 needs of Maslow's need hierarchy. Web 2.0 services allow users to obtain the feeling of belonging, gain prestige or to fulfill themselves. Every Web 2.0 service analyzed in the course of this paper can be matched to one of these levels of the need hierarchy.

Most of the offered platforms and services are open for any Internet user, others are dedicated to a specific user group. One major distinction of potential customers is in professional and private users (example: Business social network services as OpenBC and private social networking services as Friendster)

3.4 Value chain

Web 2.0 services generate new value chains with new players. Instead of having a traditional content owner, aggregator and so on, the functions are no more clearly identified. The focal points of the services are user generated content, links to internal content and content from other sites, and the evaluation of the content. Web 2.0 also facilitates some ideals of the free community, which is based on free access to information and open source software. Traditional player have difficulties to become an accepted player, since they do incorporate all the ideas the active community is shying away from. It is obvious that many Web 2.0 services have their roots in idea of competing against the incumbent internet players - which can be reduced to the analogy of David fighting against Goliath.

Nevertheless, parts of the value chain will not really be affected by the development of Web 2.0. The ISPs and gatekeepers will continue to regulate the access to Web 2.0 services.

3.5 Financial Flow

Web 2.0 services are based on the principles of "free economy". The participants are investing time and knowledge for the sake of the community. In return, they earn respects (e.g. positive feedback from the peer group) as well as taking knowledge out of the community. The role of the service provider is defined as the platform operator. There are only very few examples of Web 2.0 services, which have commercialized their service. Partly due to the ideal and vision of the providers, but also because it is simply not possible for them to develop a suitable business model. Web 2.0 services are based on network effects. Thus, it is one of the main objectives, to motivate as many

users as possible to participate in the community. Artificially limiting the amount of users by introducing a fee, automatically reduces the value that is generated for all other participating users. The users might look for another platform, which does not charge anything.

Booming Web 2.0 services such as MySpace.com are facing challenges to monetize the success. Even though MySpace.com was in March 2006 the second-most-views website [Hans06], the revenue for 2006 is expected to be only 3% of Google's expected revenue. According to a Forbes article the Web 2.0 service YouTube.com is even burning money. With 12.9 million unique visitors per day and bandwidth costs approaching 1 million USD per month, the company has just recently started to investigate earning models. They start in March 2006 to sell ads on the web site [From06].

However, there are some commercially successful services, in particular in the area of social networking service. Examples of existing commercially successful paid services are LinkedIn or OpenBC.

3.6 Flow of Goods and Services

In the Web 2.0 environment the decisive factor is the disintegration of the value chain. Instead of clear content owner and content consumer, the users cover both roles. The users are creating content, and then at the same time consume the content. Furthermore the content is continuously enriched and adapted to the changing environment.

3.7 Social environment

A detailed description of the social environment of Web 2.0 services would exceed the focus of this paper. Nevertheless, two recent events can demonstrate the impact of Web 2.0 to the real life and vice versa.

The German publisher and provider of a online community (www.heise.de) lost a case at the Landgericht Hamburg (Az. 324 O 721/05). The publisher took legal actions against the legal obligation to review every user contribution to their online community. If this obligation would be adhered or even endorsed by the European Union, the provider of community services would need to set up centralized reviewing mechanisms to protect themselves against law suites. This would impose additional costs for providers of services and would become a major obstacle for the open and free culture of Web 2.0 communities.

Censorship of articles at Wikipedia have widely been discussed. For example the Internet site www.wikitruth.info recovers Wikipedia articles which have been deleted against the formalized community rules. Another example is that the operator of the Wikipedia platform have blocked the access from all IPs associated with the US house and US Senate [Nguy06].

Both examples demonstrate what influence and attention Web 2.0 has gained to the social environment, and which legal and ethical issues can come to light.

4. Web 2.0 definition

Currently there is no scientific definition of Web 2.0. Tim O'Reilly, who has popularized Web 2.0, explained the term in the year 2005 as a platform, which is far more than a collection of web sites [O'Reil05]. One year later he described the same phenomena from different perspectives [O'Reil06].

There is a lively discussion within the Web 2.0 community, how to define Web 2.0. However, the definitions are mainly describing symptoms of Web 2.0. They reduce Web 2.0 to one principle, that does not rationalize the core philosophy of Web 2.0. Certainly, it is not the intention to doubt that Web 2.0 is a platform, a web services [Bezo03], based on micro-content [MacM05], leveraged the principles of meta content [Guha97], or built upon the architecture of a meta web [Bäch06]. Research on Social Software cover aspects of Web 2.0, but set a focus on the implementation of the technical platform for Web 2.0 services [Spiv04]. All these definitions are not wrong, but insufficient to explain the momentous of Web 2.0.

Web 2.0 is a **philosophy** and not a specific technology. (for instance AJAX - Asynchronous JavaScript and XML) to which it can be reduced. Even though a great percentage of Web 2.0 services are based on these technologies. Web 2.0 is based on a common vision of its user community. The objective of all Web 2.0 services is to **mutually maximize** the **collective intelligence** of the participants. The collective intelligence can be defined as the knowledge that is distributed within a group. It reflects the knowledge of all participants and continuously adapts to changes in the environment or opinion leadership. It is comparable to the stock market. The stock quotation too, in the optimal case, represents the entire knowledge the stakeholders possess of a company. At each point of time this knowledge can be quantified by the stock quotation. New knowledge or a new valuation of the knowledge leads to a modified stock quotation. Web 2.0 is based on the same principles, except for the fact

that the information itself is the object and not the valuation of the knowledge. Web 2.0 can be also characterized by the fact that the interaction between the users are **formalized**. The provider of a Web 2.0 service offers a platform for the users to interact and thereby also determines the form of interaction. Web 2.0 services are highly **dynamic**, which is why this context has to be understood as an interactive development process. Rating, annotations and other forms of information enrichment have their impact on the service. **Information** is considered in the broadest possible form. It can be video, data or text content, as well as enriching this content through metadata, annotations or history. Web 2.0 is based on the transparent and sustainable provision of information. The format of information is determined by the provider of the application. The **creation** and **sharing** relates to the fundamentals of Web 2.0 service. The basic idea is that information is created and then shared amongst the greatest possible user group. However, creation and sharing of information is one of the main distinguishing factors between Web 2.0 services.

Subsequently the result of this research is that Web 2.0 is defined **as the philosophy of mutually maximizing collective intelligence and added value for each participant by formalized and dynamic information sharing and creation**.

5. The Fundament of Web 2.0

The fundament of Web 2.0, which is already reflected in the definition of Web 2.0 services, is the concept of **maximizing the collective intelligence**. The **interactive exchange of information** and the **continuous development and maintenance of a group opinion** is described as the process of collective intelligence. The result of collective intelligence can be a **commonly accepted opinion or commonly accepted content** (that is not modified or criticized) but it can also occur indirectly as a presented selection of information.

Maximizing the collective intelligence requires a **self-regulating community**. Since there are now specific regulations regarding the selection of contributions, Web 2.0 services have embedded quality assurance mechanisms or alternatively a formalized reviewing process. The value of a Web 2.0 application is the source of significant value, for instance eBay`s user recommendation system is a crucial success factor - similar to Amazon`s reviewing system [Bunz06].

Another characteristic of collective intelligence is the **transparency of the information creation and sharing process**. Users can observe the historical development of the

information (e.g. Web-Blogs) and can also see how the information is distributed (e.g. via bittorrents). Based on linking of content, the original content is enriched and the transparency of the process is supported.

All the above described fundamentals are highly **depending on the size of the supporting community**. Web 2.0 services are in many cases a classic example for **network effects**. The intrinsic value of Web 2.0 communities itself is very limited. The benefits for the users are evolving over time and the number of interactions. Content or in other words value generated through the supporting community can be internalized and represents the value of the community itself.
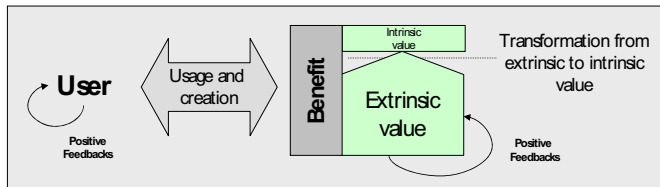

Figure 4: Information transformation process

The more users participate, the more users are attracted. Therefore the quality of the content improves and the service gains more relevance.

A remarkable fact is that the above described mechanisms are **not initially formulated**, but they do **emerge over time**. All the provider of a Web 2.0 can do is to facilitate the development process.

6. Conclusions

Web 2.0 is more than a temporary buzzword. Web 2.0 has to been seen as a new philosophy of information management. A group of people is collaborating to create and share information. The result of the cooperation is the creation of collective intelligence by a common self-regulation quality assurance process.

However, commercialization has not been reached in the majority of Web 2.0 services. It is even doubtable, if many Web 2.0 services will ever be transformed into commercial services. Further research will have to show, whether Web 2.0 is successful because it is free and not limited or because it addresses the hidden needs of the Internet users.

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