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On Building a Trans-European Network

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Abstract

This paper explores the social shaping of network-based information systems, drawing on the author's experience as a participant in a major networking project of the European Commission. The project was undertaken in conjunction with the establishment of a European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). A key function of the EMCDDA is to integrate activities and sources of information (e.g., specialized libraries, documentation centres, statistical databases, etc.) dealing with drug abuse, i.e., possession or use of, or trafficking in illicit drugs. The social and technological complexities of building a trans-European network make it an especially interesting and revealing case to study. This paper examines in the ways in which the EMCDDA project has confronted and resolved the technological and social issues of network design and development.

Introduction

This paper explores the social shaping of network-based information systems. The observations reported here are based primarily on the author's participation in a major networking project of the European Commission from 1991 to 1995. This project was undertaken in conjunction with the establishment of a European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). The idea of the EMCDDA was first raised in a 1989 letter from then President Mitterand of France directed to the Heads of State and Government of the European Community and to the President of the European Commission. Mitterand called for action on the problem of drugs, and proposed as a first step to "take stock jointly of the situation as regards drug addiction and in due course set up a Monitoring Centre." The European Commission responded by setting up a Committee to Combat Drugs which soon after its establishment in late 1989 undertook a study of the feasibility of creating a Monitoring Centre. Some three years later (February 1993), the Council of the European Communities adopted the Regulation establishing the EMCDDA.

A key function of the EMCDDA is to integrate activities and sources of information (e.g., specialized libraries, documentation centres, statistical databases, etc.) dealing with drug abuse, i.e., possession or use of, or trafficking in illicit drugs. To this end a network (known by its French acronym REITOX) has been developed to promote closer cooperation between selected institutions and individuals, and provide ready access to drug-related information that is currently dispersed throughout the European Union.

REITOX is conceived as a network with nodes administered by designated national centres (governmental or quasi-governmental institutions) within each of the Member States, the EMCDDA, and possibly other European Union institutions. The aims of the network are to:

- facilitate exchange of information (such as statistical data, and reports of programs and activities) concerning drug abuse;
- ensure wide dissemination of information on health-related drug issues;
- improve coordination of initiatives designed to curb the use of illicit drugs;
- make scientific documentation resources within the Member States readily available throughout the European Union.

The social and technological complexities of the REITOX network make it an especially interesting case to study. Virtually every aspect of network design is involved. The EMCDDA itself is a European Agency, serving the fifteen Member States, and thus the network must satisfy a set of political constraints. Differences in technological sophistication (as revealed in installed systems and staff capabilities) between the participating institutions in the Member States, and variations in telecommunications infrastructure posed major challenges in designing the technological component of the network. Moreover, differences in language, culture, and modes of organization added to the complexity of the designer's task.

It is far from trivial to design databases that can be queried in several different languages. One could develop a multi-lingual thesaurus, but that too is difficult, because a subject category in one language may have no clear correspondent in another. What is more individuals with different cultural backgrounds may ask rather different kinds of questions. An English language thesaurus for an English language database was developed by the Institute for the Study of Drug Dependence (ISDD) in London and subsequently translated into Portuguese. This enables Portuguese speakers to query ISDD's database, but it is not clear that the same thesaurus could be used successfully for document collections in other languages or whether it would be acceptable to users of other systems.

Even seemingly simple definitions of events used to collect statistical data vary from country to country and sometimes from one region to another within the same country. For example, "drug-related deaths" and "first treatment demand" are defined differently across the European Union. Differences of this nature make for non-comparable statistics. Since networks make it

easier to obtain data from a variety of sources, it is incumbent on the designer to make sure users are made aware of possible differences in the nature and quality of data available from different sources.

In short, the experience of building the REITOX network offers a rich source of insight to the would-be designer.

Analytical Framework

The network-design experience may be differentiated into a technological and a social component. These complementary elements reflect the two main features of a network. On the one hand, there is the technological infrastructure which supports online access to databases, and electronic communication between network participants. On the other hand, there is the social infrastructure which allows a community of interest to form and makes it possible for participants to work together and pursue common goals. Despite the interpenetration of the technological and social components, there is a natural division of labor in the building of a network. Once a strategic plan has been devised, decisions concerning hardware, software, and telecommunications protocols may be made more-or-less independently of those concerning, for example, the choice of network participants.

The technological component may be subdivided into three subcomponents. These are: telecommunications, network management, and local support (hardware, software and training). The EMCDDA has opted for a distributed network using public, packet-switched communications. Ideally, this means the network should be able to accommodate any device anywhere in the European Union. Practically speaking - for reasons of cost, inadequate telephone service, lack of common standards, or unavailability of the appropriate hardware and software - this is not possible; so judicious compromises have had to be made. We will examine these compromises and discuss how they were reached in the context of the project.

The social component is subdivided into political and organizational subcomponents. Political questions are further subdivided into those affecting the European Union as a whole, and those affecting only individual Member States; organizational issues are resolved into network participants, modes of interaction, and management. The political dimension bears on the governance and competence of the EMCDDA, the definition of members and participants, and the Agency's location (Lisbon).

A major organizational issue is the identification and choice of network participants. Compared with establishing working social links between institutions, individuals and resources, installing and connecting the technological infrastructure is quite straightforward. Because of the diversity of the actors in the drug abuse arena, the different social and political contexts in which they operate, and the need to capture this diversity among the participants in the network, an approach known as the "snowball technique" was adopted. As the name suggests, this technique involves asking a group of respondents to identify related organizations or individuals who are in turn asked to identify others, and so on, until the number of new 'hits' is below some pre-determined threshold. Questionnaires were distributed to key organizations and individuals, identified as such in the course of the feasibility study. Only one level of the snowball exercise was actually executed.

The subcomponent "modes of interaction" is primarily organizational in nature, but cannot be divorced from supporting technological infrastructure. Face-to-face meetings, postal correspondence, telephone conversations, email exchanges, and related modes all testify to this fact. It is a common observation that email has altered the range (if not the kind) of cooperative activities that network subscribers can undertake. REITOX is no exception.

Like "modes of interaction," the management subcomponent lies on a boundary, i.e., between the political and organizational dimensions. Although the EMCDDA has some autonomy in devising programs and activities, management will ultimately be responsible to the political authorities of the European Union.

Critical Design Steps and Issues

The first step in building the EMCDDA's network was a preliminary study designed to ascertain the general needs and desires of the Member States for information on drug-related issues. This resulted in a set of guidelines for conducting an in-depth study of the specific capabilities of each of the Member States, and their respective requirements for participating in a network. A set of drug-related issues, identified in the preliminary study, served as a point of departure for discussions with Member States concerning what the EMCDDA would and would not cover. The in-depth study was conceived as an investigation into the feasibility of a monitoring centre and an associated network.

The feasibility study revealed the importance of the political dimension of network design. A task force was appointed by the Secretariat of the European Commission and charged with the task of interviewing the key actors in the drugs arena within each of the Member States. Typically the key actors were identified as government agencies or departments in Ministries of Health, Justice, or Interior. The responsibilities of these Ministries in the area of drug abuse may be disjoint in theory, but they often overlap in practice. This overlap sometimes causes jurisdictional disputes, thus demanding considerable tact and sensitivity on the part of the investigating team. Attention to the political relationships of the actors is essential to effective information gathering.

A major result of the feasibility study was a set of design considerations for the technological infrastructure of the REITOX network. Based on the discussions held in the Member States, four major considerations were identified. These are: information sharing, openness, cost-effectiveness, and security. Information sharing consists of three elements, namely, awareness, access, and interpretability. The last is especially important in the drugs arena because of the need to harmonize the definitions of terms

in the different Member States. Openness refers to both technical and material aspects of network design, i.e., any two processes should be able to exchange information, and the network should be able to accommodate new resources as the need arises. Inevitable budgetary constraints demand that the design take account of costs, and thus explore the need for specific network functions and to consider alternative ways of implementing them. Security is an important issue in part because most of the systems to be linked together in the network are under the jurisdiction of government agencies.

Critical social issues were also highlighted in the feasibility study. Differences in drug policy between Member States are reflected in negotiations over the structure, governance, and competence of the EMCDDA. For example, most countries in the European Union have an uncompromising view of drug-addiction, i.e., it is viewed as an evil to be eradicated at all costs. Countries with a more pragmatic attitude (mainly The Netherlands and Denmark) fear that the network could be used by the majority to promote the dominant view. As a result the EMCDDA and the network will inevitably be shaped by the need to forge a compromise between the contending parties.

Other social issues concern the definition, identification and selection of participants, i.e., individuals, institutions, and information sources (including databases). As noted above, the so-called snowball technique was used to identify potential participants. The exercise was intended to yield a "covering set" of institutions and individuals, one distributed throughout the European Union whose contacts with others span all or most of the activities relevant to the network.

A second objective of the snowball exercise was to provide a basis for assessing the potential contributions to the network by organizations and individual. Once the organizational and individual participants were identified, these populations were analyzed with the aid of clustering algorithms. Correspondence analysis was used to identify clusters.

Conclusion

If the REITOX network were being planned today, some aspects of the technological design might very well differ as a result of ready and inexpensive access to the Internet. However, the REITOX experience of building a network of individuals and organizations making effective use of a technological infrastructure remains an instructive example of network design and development. The political, cultural, linguistic and organizational differences that have to be bridged in a trans-European network pose greater challenges than would be encountered in building a network in a homogeneous environment, and thus highlight the human and social issues facing all network designers.

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