Information Superhighways in the Nordic countries

by Tomas Ohlin
Ministry of Education and Science
Stockholm, Sweden
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Contents

Swedish Ministry of Education and Science
Tomas Ohlin
tomaso@sics.se
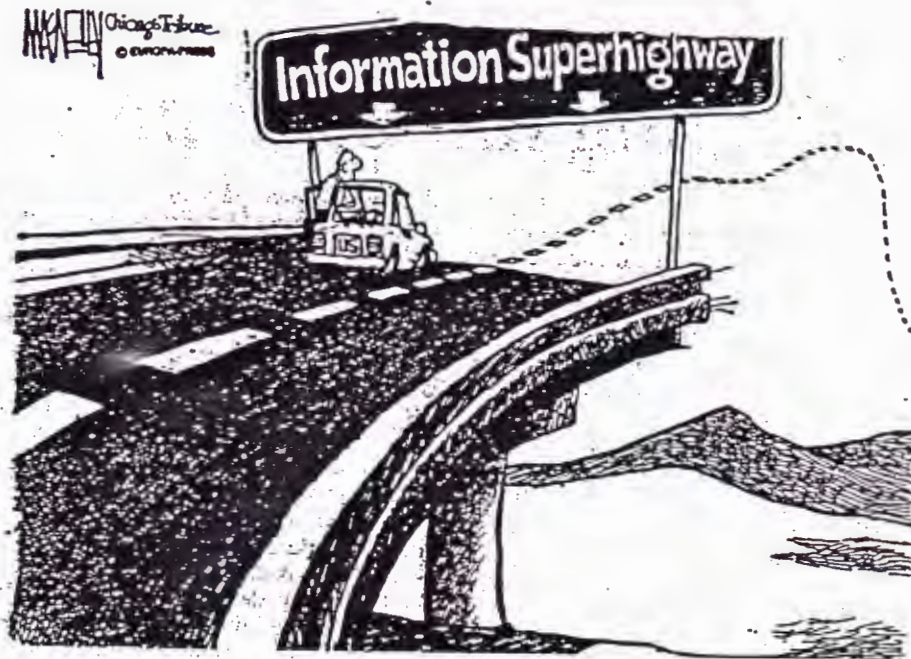
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The views presented reflect the opinions of the author solely.

Abstract

An overview over IT policy making in the Nordic countries in the middle of the 1990s is given. Resemblances exist in organizational forms for IT policy making. It is argued that current organizational IT policy specialization will be replaced by an integration into general policy making forms. This will probably support an active participatory influence from users. It is also argued that, relatively seen, interest for IT technological planning may be complemented with increased concerns for general social and economical IT matters. A policy example concerns the role for telecommunications planning, where it at present is observed a supply overweight over demand for telecommunication capacity.

Policy background

The 1980s showed a preparation for different types of information technology planning in many countries. Explicite as well as implicit analysis of different types of national policy making was taking place. Certain parts of this policy thinking was sorted along traditional general policy lines, principally building on measures for better education, increased employment, more research, new legislation etc.

The occurance of the NII initiative in the US did not introduce any functionally new IT policy thinking in Europe, but it had an impact as a catalyst on IT policy making. Now it became legitimate for generally interested politicians to articulate IT policies more clearly, to make statements to be mentioned together with traditionally established policies for education and research, social services, furthering of new employment, etc. A number of countries found it both relevant and desirable to collect different types of IT measures in "IT packages", to be used as political pointers.

The character of some of these IT policies is worth discussing, and it may be interesting to analyze resemblances and differencies, seen in a user perspective.

This discussion often concerns the concept of "Information Superhighways". When this concept was used by Al Gore before and in his vice presidential campain, it originally was named "Electronic Superhighways". The switch to "Information" is here more than syntactical, it points at an increasing interest in the content of the services that are supposed to fill the networks that are being expanded in many countries at present.

What types of services are concerned? Many of these already exist in conventional "videotex" form. The Information Superhighway is little more than a technologically faster version of service networks that already exist or are being built.

Often the Information Superhighway is referred to as a continuation, a further developed version, of the Internet. The Internet, however, is essentially a globally standardized videotex network. What could not be done with pure standards like ASCII, or with the European Télétel, or Bildschirmtext, or Prestel or CEPT, was coordinated by defence and university forces in the US into a network built on one common standard, TCP/IP. A strong hand brought the children together.

The Information Superhighway can be looked on as a standardized continuation of a group of national videotex networks. Policies for expansion of the use of the Superhighway contain measures that concern general policy making in the information technology (IT) field.

The Information Superhighway is a two-dimensional instance of A Toffler´s three-dimensional Third Wave.

The role for telecommunications

The road into information society builds on many types of policies. Among these, quite naturally, policies for planning of telecommunication activities today have played an important role. But things are changing.

In the early time, computers were not equipped with communication facilities at all, and policies to support general use of IT concentrated on industrial, educational and, to some extent, legislative efforts. What was considered important was who develops and who manufactures the computer hardware, with its additional software systems, as it was then looked at. Complementing this was a concern for education of users. An interest in computer privacy also developed

As the nature of the computing systems more and more shifted from centralized computing towards communications, the focus in IT policy making subsequently was moved towards increased concern for the activities of the PTTs. During the 1980s much IT policy concern has focused on the conditions and rules for the telecommunication networks. Regulatory authorities of type FCC and Oftel found counterparts in many countries.

The information systems of the 1990s show an increased concern for local and decentralized structures. The PC is the central tool. Naturally exchange of data over distances on the telecommunication networks are important, but it turns out that many information problems can be solved locally. Local memory and local networks are important, often simply because many human concerns and activities are local by nature, and subsequently their reflected information structures are local. Communication expands, but from a local platform. This is reflected in policy making.

Historically, problems related to telecommunication systems have been treated as technological more than social. The telecommunication networks have been handled by engineers. User influence into the telecommunication network decision making often has been low. As today´s information systems turn more principally distributed and local in nature, e-mail type telecommunications expands more than videoconferences.

Focus in planning of the information or knowledge society is getting less directly related to telecommunications. Social, economic and educational policies are moving into focus.

The discussion below analyzes this. We will look at the type of "IT policy making" that is applied during the middle of the 1990s in a part of northern Europe.

IT policy making in the Nordic countries

The discussion here concerns an analysis of IT policies in Denmark, Finland, Iceland, Norway and Sweden. These countries are close cultural and geographical neighbours, and possibly resembling structures in IT policies can be noted.

The analysis below is seen in a Bangemann report perspective.

This Nordic overview may also be interesting due to the fact that these countries (with the exception of Iceland) in spring 1995 all in principle are governed by socialdemocratic regimes. Historically seen, this is a quite unusual political situation.

There is reason to note that ideological differences hardly yet have generated sharp IT policy arguements in the Nordic countries. Change of political majority, seen in an IT perspective, has taken place fairly smoothly. It is possible that this will be less smooth in the future. The electronic pencils are being sharpened.

Very briefly, the current IT policymaking background in these Nordic countries can be summarized as follows. It is worth noting that the legislative situation, which calls for specialized analysis, is not treated to depth here.

Denmark

In Denmark, a parliamentary IT committee (The Committee for "Informationssamfundet år 2000") was appointed in March 1994. The committee had only two members, but rested on a broad secretariate and a large number of experts. The committee presented a report in October 1994, entitled "Info-samfundet år 2000", where a number of proposals for action was presented. These proposals were given the form of 25 "principles for entrance" into the Danish information society. These priciples concerned:

- Furthering of a global use of IT
- The development of a Danish IT strategy
- Development of a public electronic service network, including a personal citizen´s smart card
- Simplification of legislation, among other areas concerning the use of personal data
- Increased efficiency with use of IT in health care
- Global contacts in research
- New methods for education of all ages
- Increased use of IT in libraries and for mass media
- Cleaner and more efficient road traffic
- Rationalizing of commercial contacts through EDI
- Lowering of tariffs for high capacity telecommunications nationally and inside the European Union
- Support for creation of a public citizen network
- Use of IT for the disabled and the elderly
- Creation of a public IT action implementation plan

Certain admininistrative reorganizations were also introduced in the Danish government.

The report invited to public debate. This also found place in the media. The Danish Minister for Research half a year later continued by presenting proposals for political action. This was done in March 1995, in an activity plan directed to Parliament, entitled "Fra vision till handling" ("From vision to activity"). This plan contained explicite "IT policies" in the following areas:

* A public electronic service network (including introduction of a personal citizen´s smart card)
* Efficiency and care concerning use of personal data * Security
* More efficient health care
* A global village for research
* New methods in education
* A Dansih cultural network
* Increased use of electronic mass media
* IT reforms for the handicapped
* Better efficiency for road traffic
* Support for network communications for industry
* Achievement of increased telecommunications efficiency through deregulation before Jan 1, 1988
* Creation of an "open public IT network"

This public activity plan was directed to Parliament, but since several of the proposals, it was said, were meant to be implemented without need for new and added financial aid, and since many of the proposals are built on public understanding, it was said that most of the proposals actually would be implemented without political problems.

This was questioned by public debate, argueing that few public reforms in reality are cost free. Representatives of the Danish government in spring 1995 have indicated that lower public budgets would be available for IT than was planned earlier.

Finland

In Finland, IT planning builds on an unusual background of extensive telecommunications plurality that has existed for a long time in the country. Close to 60 local ´telephony companies´ have for decades aswered for basic telephony services. The central PTT has played a role that, compared to the situation in the other Nordic countries, can be looked upon as limited in scope. The telecommunication development in Finland´s IT development has started from a truly decentralized platform.

The Ministry of Education in Finland in September 1994 appointed an IT expert group with the aim to prepare a knowledge strategy for education and research. The group had a dozen members, and it presented a report to government in February 1995.

The report covers a broader perspective than just school education plus university research. Several wide aspects on education are treated, and the report stresses the fundamental importance of spreading knowledge on many levels in information society.

A number of other Finish Ministries are working on documents of the same type, to be ready by summer, 1995. Especially concerned are the Ministry for Transport and Communications, and the Ministry for Industry and Commerce.

It can be said that the Finish public IT policy in the middle of the 1990s builds on reform propositions from a number of separate ministries, with collections to be made during 1995.

A stimulating regional initiative comes from northern Finland. There it has been introduced a citizen oriented "Driver´s license for Information Highway", in the form of a diploma showing ability to use the Internet, how to input material etc. The license has become quite popular.

Iceland

In Iceland much concern for the IT development is concentrated around its Icelandic Educational Network (ISMENNT). The creation of this network emanates from a spontaneous initiative taken by a teacher in northern Iceland in 1988. In his village (of 100 inhabitants) he built his own educational centre, and successevely interest increased and regional schools connected. In 1992, the regional ISMENNT was established with support from various educational institutions, and later public grants were added.

In 1995, over 90% of all schools in Iceland are connected to this Internet based network. The Ministry of Culture and Education has connected certain parts of its administration.

For the educational and communicative system in a country situated as far away as Iceland, regional educational databases plus access to Internet may be considered as a fundamental knowledge resource.

Norway

In Norway, interest for IT policy making has increased during the beginning of the 1990s. The telecommunications background has been said to call for specific measures, since the main Norwegian telecommunication network has continued to be regulated. Calls for deregulation have increased from industry. Here, calls for activity have contained many different types of action.

A telecommunications legislation has been prepared, but this has been considered inadequate by those interested in full service deregulation. It has been pointed at other countries where IT policy making has been especially active.

In March, 1995, a committee of Under Secretaries of State was formed. The time scope for its work is not limited. Eight ministries are represented in the committee. Also, the non-specialized approach is mirrored in the secretariate, which is broad. The terms of reference for the committee are general:

- to coordinate the use of IT in public administra-
  tion, to assess the IT role for the Norwegian
  state, and especially note need for activities that
  not evidently belong to well-defined institutions

- to coordinate the needs for legal action of concern
  to the information society

- to further the efficient and non-discrimatory use
  of IT in different sectors of the Norwegian
  society: industry, schools, homes etc.

The first committee meetings have concerned international overviews over IT policy making.

Different Norwegian voices have reacted positively to the forming of the committee, although even stronger organisational representation had been looked forward to by some. It has been asked for broad political and legislative actions, with examples mentioned from geographical neighbours..

Sweden

The Swedish IT policy making showed low activity for parts of the 1980s. As early as 1973 a national personal integrity legislation had been defined, the worlds first. In the 1980s, administrative and telecommunicative reforms were introduced, although slowly. In 1993, full telecommunications deregulation was implemented.

Increasing interest for use of IT motivated the government to appoint a high level committee, the Swedish Information Technology Commission, in March 1994. This Commission contained seven Ministers as members, with the Prime Minister as chairman. This was an unusual construction, mirroring a strong and broad public IT will. Its form was inspired by the Delors White Paper, and the coming Bangemann report. There were no explicite terms of reference, simply "to present reforms that by the year 2010 will place Sweden among the leading IT nations".

In August 1994, a Commission report named "IT - Wings to human ability" was published. Its content was broad. Suggested reforms were presented in the following areas:

- Education and research
- The legal system
- Public administration
- Health services and medical care
- Communications networks
- Industry and commerce
- IT research

A number of complementing activities were suggested, for environment protection, for the handicapped, and others. Sources for financing was presented in a number of private funds, with specific aims.

After the general election in Sept 1994, the new Swedish government chose to wait until Feb 1995 with the creation of a new commission. This was less politically explicit in its form, with the Minister for Coordination as member (chairman). The terms of reference for the new commission are broad. The chairman has presented the work as a "follower-up" to the thinking of the former commission, with the aim to present more precise activities, and to implement them.

The new Swedish IT Commission has defined four working areas:

* education and knowledge, culture and media
* public and private producing and consumtion
* working life development
* analysis of IT consequences

The situation for the new commission differs from the former in that it has declared that is has very limited financial sources available. The funds from the first commission have been privatized, and their administrations act separated from the commission.

User contacts

Participation from users in society in general is inclined to increase as new and more efficient communication links are taken into practise. The wide spreading use of e-mail is a first step. The Nordic countries have comparatively well distributed and capable telecommunication facilities, among the world´s best. Therefore, prerequisites for user participation using new electronic media are exceptionally good.

Country	Main lines per 100 inhabitants	Mobile Connections per 1000 inhabitants
Germany	46	21
France	53	10
UK	48	34
Italy	42	21
Spain	36	7
Austria	45	28
Belgium/Luxembourg	45	7
Denmark	59	61
Finland	55	95
Greece	46	2
Ireland	33	16
Netherlands	50	14
Norway	54	86
Portugal	31	10
Sweden	69	97
Switzerland	62	39

Communication penetration per country 1993.
Source: European Information Technology Observatory 95, ref to ITU, OECD, ECTEL

Organizationally, Nordic users are well experienced. The understanding from unions for offensive IT policies is clear. An example here is a wide acceptance of telecommuting and work-at-home, a phenomenon that is looked upon as important especially in countries that are as geographically large as the Nordic countries. Legislative and organizational reforms are being constructively discusssed.

For citizens, new organisational development is tried. So called ´citizen offices´, expanded libraries with good communication facilities, are used in several Nordic countries. In these offices, public dialogues are taking place.

Local radio and TV are accessable for more or less spontaneous groups and organizations, at comparatively low cost. Special legislation exists in certain Nordic countries. Concerning these communication forms, it has been noted that the use of electronic mass media often demand more from the participator than was thought when trials started. It is somewhat of a creativity challenge for non-experts to produce interesting radio and TV programs of public interest.

Then it is so much easier simply to log on to the PC and get in contact with the closest bulletin board, the local politician, or the closest member of Parliament. Also, electronic opinion polls are beginning to be used. New forms of contacts in different Nordic formats are expanding at present. Establishment of local interest groups is refreshingly easy online.

This is for those of today´s users that have the adequate knowledge to master the equipment. It must be remembered that here is a fundamental educational challenge for our Nordic societies, to make IT equally accessible for all citizens.

Electronic contacts through the PCs are also good examples of the statement that participatory democracy perhaps can be helped by, but certainly does not need, Superhighways.

"IT Commissions" - for the stage only?

Looking at the contents of the proposed actions that the different Nordic IT planning parties have put forward, it is interesting to note that relatively little concerns planning of the telecommunications systems. These parts usually have been taken care for in erlier planning. In most situations the main network is, or is to be, deregulated and some regulatory body has been created. As a concequence, suggested reforms touch more social, educational and economic concerns. Naturally, also democratic arguements are referred to in proposing IT actions.

Thus, IT planning is becoming less technological.

Organizationally, the existance of parliamentory bodies, like special IT Commissions or other highly placed analysis institutions, can be said to represent both symbolic and factual values. High governmental constructions do point at the degree of importance that is connected to the area of concern. In the US, Al Gore is an example of this. His will and direction setting was interpreted as important for government´s desires, and it thus played an early role. Later it was noted that this will was accompanied by less factual reform actions than expected, and much of the desires were left to industry to implement, the federal IT budget showing itself to be thinner than expected. But still, the Gore approach is considered important.

As can be seen above, similar organizational approaches have been taken in Nordic countries. In Denmark we have had the ministerial commissions, in Norway the commission of under secretaries of state recently has been formed, in Finland several ministries are collecting their IT plans, in Sweden there has been the IT Commission with the prime minister as chairman.

Quite another thing is what factual reforms that are implemented. Here, strength is measured in results from economic and organizational actions. Such results differ from country to country, quite independently of the administrative commission formats. It can be argued that the visual effects from highly placed IT Commissions are important since they show directions into the new society that otherwise would be less sharply defined.

However, as information concerns get more and more integrated in general planning in our societies, we shall probably see fewer IT Commissions.

It can be added that user influence on IT policy making perhaps may have been less direct during the times of the IT commis-sions. Such administrative constructions often build their own networks of contact, supplementing ordinary channels. But then, in the e-mail and bulletin board era, voices of users are heard over bridges. And increased user participation characterizes clearly today´s steps into the knowledge and communication societies.

Superhighways with infrequent travellors

The existing superhighways in the Nordic countries show telecommunication possibilities that, relatively seen, are unusually potent and capable. The networks allow high capacity traffic, and these facilities are widely available geographically. As an example, in Sweden broadband capacity very soon is available over major parts of the country.


Telia SDH broadband network
(155 Mbps) in Sweden 1997.
Source: Telia Corp 1994

This situation reflects a service development that stems from the time when "maximum capacity" was the leading star, defining the pace and speed of network expansion. For main parts of the 1980s, the Swedish PTT (Televerket, now Telia) was Sweden's number one investor. As a consequence, today's main national network is quite able.

Similar situations exist in other Nordic countries.

A problem is that the demand for telecommunications capacity has not developed up to expectations. Users seem to be satisfied with much lower speeds than can technically be provided. Naturally, this reflects costs, the tariffs for high telecommunications capacities are still high.

This also characterized the situation in many other western countries. Although the PTTs, and their more or less privatized counterparts, plus new competitors, very actively are searching for applications that will fill the broadband fibers with traffic, this has so far been rewarded with only limited success. Existing and known demand seems to be satisfied with narrowband capacity (up to 2 Mbps) to a large extent . The types of applications that might demand broadband capacity, such as education, video-on-demand, entertainment etc, turn out to be more difficult to organize than was expected. Costs for content is increasing. An example of assumed markets for video-on-demand in the figure below shows limited expectations.
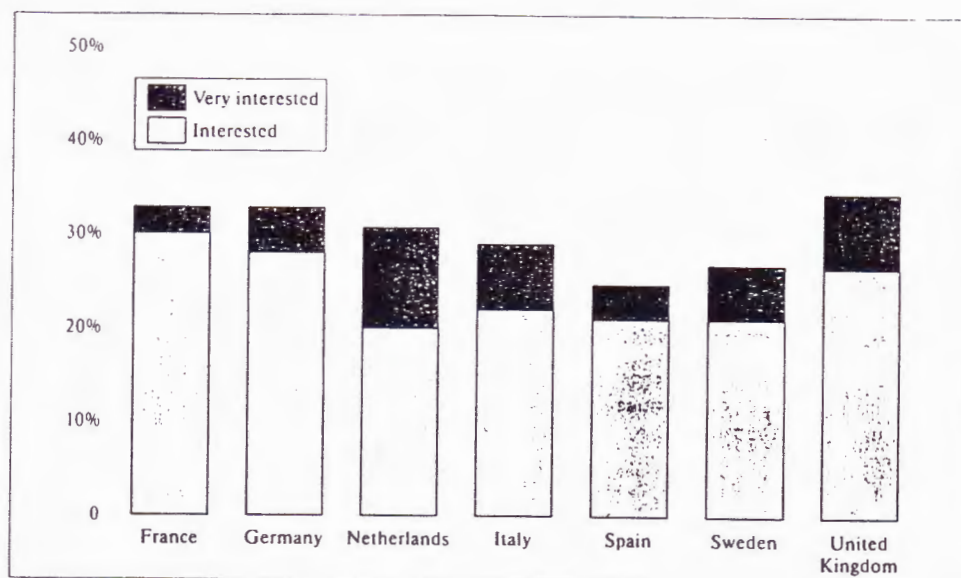
Interest for video-on-demand programs at home, from a survey over 2100 european households. Source: European Information Technology Overview 95.

Furthermore, the technological development continues to introduce increasing transmission efficiency. It turns out to be technically possible to transmit much richer signals on today's existing copper cables than was considered possible earlier. As an example, today video with quite acceptable sound can be transmitted over ordinary telephone lines, using modern transmission methods (up to 6 Mbps, ADSL). A decade ago, this was considered impossible.

This does not make it easier for operators who are looking for opportunities to fill the broadband networks with traffic. Increasingly, attention has to be put on applications that need capacity, and marketing stresses multimedia in different forms.

Against this background, it is interesting to discuss wether the gap between telecommunication capacity supply and demand will continue to exist as wide as today, or if it even will broaden?

A method for operators naturally is to lower high speed tariffs until the market appears. But then, the investments already made in today´s networks may show bad pay-off. New and more efficient transmission technology is developed successively, and old lines have to be filled with traffic before their transmission technology is outdated. Investments must bear their cost in time, and empty superhighways can be looked upon as a misuse of "road" investment.

Therefore, countries with well developed superhighways are especially interesting as study objects. Traffic development in these countries show interesting possibilities for analysis. More detailed studies of this "telecommunications application gap" certainly could be motivated in the Nordic countries. A hypothesis may be that such studies could show principal unbalances between supply and demand, and that consequences might be interesting.

Naturally it is not up to theoretical analysers to try to predict what should and what should not happen on the telecommunication market. The market certainly decides this by itself. But is should be valueable for coming network investors to note experiences from the first generation of telecommunications users. It is possible that there might exist maximum telecommunications application gaps even in a principally seen strongly expanding telecommunication society.

Regional concerns

Several Nordic countries show certain similar geographical characteristics - they are wide and in large areas scaresly populated. Commercial markets seldom solve the delivery of basic services to full satisfaction for all concerned in such situations. This is natural, market prosperity is seldom smoothly distributed, and specifically it usually is more urban than rural.

Satisfactory access to basic telecommunication services for citizens in geographically distant areas in the Nordic region calls for political activity. This is naturally also the case for satsifactory telecommunication service delivery to certain groups in society: the handicapped, the elderly.

In a deregulated market oriented environment, this is difficult. Who is to pay for the special deliveries?

We often refer to the possibility to cross borders when we apply IT in society. The technology can be programmed, adjusted, to solve many problems. It is a challenge not only for the Nordic communities to define policies that solve the equal-distribution problem. So far, in the Nordic countries, this problem is solved only partially, and with time-limited solutions. Common activity would be preferable, but this collides to some extent with national policy differencies. The problem waits for its solution. The cost for the solution will be successively get lower as telecommunication tariffs decrease, but the problem will still exist until someone invents the completely no-cost service.

Cultural unification?

On the Internet, similarity in social as well as cultural behaviour has the potential to spread over the physical as well as the virtual borders.

The Nordic countries constitute interesting examples here. Nordic cultures and thinking, their languages and common historical background, certainly wants to continue to bloom, in own forms, virtual as well as real.

In an international perspective, the Nordic community is small. When we talk about knowledge access for all, the Nordic countries may constitute good examples. The opinion is widely held in Nordic countries that not only the information rich should have access to the new fruits. Information technology can help spread the word, the opportunity to participate, to large groups of people, especially if the initiative originates from geographically small participators.

In Nordic IT policies it is repeated that IT should be accessable for all citizens, not just a few. In this it can be a democratic tool. Therefore, measures to support better education in schools, as well as in working life, are given priority.

Measures are being taken in Nordic countries to support a healthy life for Nordic culture. This is especially inspiring and challenging on electronic networks without borders. Nordic initiatives point at measures where increased use of IT can play an important role for increased participation and to preserve plurality.

Cultural environments, that are accessable independent of geography, may also constitute exciting new employment possibilities through creative organization of knowledge in networks where there are no evident superhighway structures.

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