

Authors' copy - for citation, please use the original: Sotarauta, M. 2001. Network Management and Information Systems in Promotion of Urban Economic Development: Some Reflections from CityWeb of Tampere. *European Planning Studies*. 6, 693-706.

Markku Sotarauta

Network Management and Information Systems in Promotion of Urban Economic Development

Some Reflections from CityWeb of Tampere

Abstract

Partnership relations have become more important in promotion of urban economic development. Efforts have been made to create such networks by which to strive for new markets or political arenas and so to extend the resource base of the urban region. The objective in the creation of networks is the most efficient mobilisation possible of the knowhow and resources in the urban region and external to it. These observations inevitably prompt the following questions: How can the quality of cooperative processes be improved and how can networks and various development projects be managed? It seems evident that information and its conscious management play a crucial role in seeking answers to these questions. Simultaneously such questions emerge as to how network management can respond to the increasing amount of information and the demands for rapid learning. How can the vast flood of information and knowledge in the networks be managed, how can essential features be extracted, i.e. how can a sustainable basis for perceptions be created? One possible answer, among others, to these questions is information systems utilising modern information technology. This paper focus on the urban development networks and especially at how their efficiency can be promoted by network management and by modern information systems. The case described and tentatively analysed is the information system CityWeb of Tampere urban region, Finland.

1. Introduction

When in many European cities there has been a search for new directions, the common denominators have frequently been the feeling of crisis, a certain degree of will and consensus to take a step forward both physically, economically, socially and culturally and the emergence of various partnership relationsⁱ (Borja & Castells 197, 98). Partnership relations have become more important in Finland too and for example promotion of urban economic development is nowadays very commonly based on a networklike mode of operation (see Sotarauta & Linnamaa 1997 and 1998). Efforts have been made to create such networks by which to strive for new markets or political arenas or then to extend the resource base of the urban region. The objective in the creation of networks is the most

efficient mobilisation possible of the knowhow and resources in the urban region and external to it. (E.g. Judd & Parkinson 1990a; Borja & Castells 1997, 98.)

It would moreover appear obvious that networks geared to the promotion of urban economic development are not managed by any external third party, any actor exerting influence from above or beyond, but rather management is the effect of different actors on themselves and each other. In this case management is a balance between the various actors. It is a communicative process, or, according to Hoppe...

“the capacity to define the nature of shared meanings; it is a never ending series of communications and strategic moves by which various actors in loosely coupled forums of public deliberation construct intersubjective meanings. These meanings are continually translated into collective projects, plans, actions, and artefacts, which become the issues in the next cycle of political judgement and meaning constructions and so on.” (Hoppe 1993, 77.)

Despite the emphasis placed on the networks the thought patterns of the actors involved in the promotion of urban economic development have not kept pace with the change in modes of operation. In an earlier studyⁱⁱ we presented the tentative conclusion that the thought patterns behind the networks in certain Finnish urban regions are still, more or less, based on hierarchical models, use of language and ways of presenting issues. Thought patterns and modes of operation based on the narrow development view of hierarchy may thus inhibit the identification of new opportunities. At the same time in some other Finnish urban regions co-operation between many partners is flexible, effective and based on mutual trust and reciprocity. We therefore stated that the quality of cooperative policy processes are becoming an important element of competitive advantage as it creates scope for the efficient utilisation of the resources of an urban region. The good quality of the processes can thus create a real competitive advantage for the urban region. Conversely poor quality in processes may lead to a situation in which strengths are not utilised. (see Sotarauta & Linnamaa 1997 and 1998.) One of the general conclusions we have made is that leadership and good management are of utmost importance in improving quality of processes..

Networklike activity has become more widespread, quality of cooperation has become a competitive advantage but thought patterns are lagging behind. These comments inevitably prompt the following questions: How can the quality of cooperative processes be improved, how can networks and various development projects be managed?

This paper focus on the urban development networks and especially at how their efficiency can be promoted by network management and by modern information systems. The case described and analysed is the information system CityWeb of Tampere urban region.

2. Network management in the promotion of urban economic development

The urban development network and its bottlenecks

The first step in the direction of network management is taken by defining *network* as the social relations at different degrees and organised in different ways between mutually

dependent actors, organised around common interests. The emergence of network relations demands the recognition and acceptance of mutual dependence. As Stoker (1997, 59) states, a community does not in this case rest on hierarchical relations but on ties characterised by loyalty, solidarity, trust and reciprocal support.

When the concept of network is applied to the promotion of urban economic development the concept *urban development network* may be used to outline the entity of actors involved in the promotion of urban economic development. Linnamaa (1998) refers by urban development network to those key actors who by their own actions and mutual cooperation have an effect on the development of the urban region. Municipalities, key enterprises, business lobbies, educational and research institutions, financial institutions, state's regional administration, citizens' organisations etc. may be members of such a network. There may be considerable regional variation in the tightness and networklike characteristics of the urban development network.

The urban development network may be interpreted as a loosely organised strategic network. It is rendered strategic by the effort to influence the development of the urban region in the long term. Here it must be pointed out that only part of the actors of the development network have been assigned the task of promoting urban development. Some of the actors of the network participate in its activities via their own interests, simultaneously having an indirect effect on the development of the urban region. The network is rendered loose by the fact that it does not necessarily have an established organisational form or permanent forums created for its purposes (even though it often has). Moreover, the urban development network is generally organised in different combinations around different projects.

Even though city governments play an important role in urban development, they are in no position to direct or control the strategies of enterprises, organisations, families etc. The management of the urban regions cannot be described as "top-down" or "direct and control" models, nor is strategic management able to easily define and implement "objectives to serve the common good". Strategy preferences must be formed and reformed by balancing different interests and seeking third solutions. Often they emerge from dynamic processes and are thus also dependent on the logic of the situation and political judgement as to what is feasible and what is not. (see Healey et al 1995.)

There are thus many objectives and endeavours in the networks of the urban regions. Even the question "What is development?" may prove hard to answer. Moreover, such questions as "What are we aiming at?", "How are we acting together?", "How are resources to be channelled?" may be very difficult to answer as each of the various organisations contemplates development from its own perspective. In the promotion of economic development there is generally no single strategic management to set goals single-handed and formulate the strategies. In this case management of the networks is essentially a question of the ability to utilise local, national and international resources in the promotion of development of one's own region, to mobilise local actors for development, i.e. the ability to get people moving. In this case what is essential in management is not

formal position or management of resources, the emphasis is rather on skills in negotiation, communication, persuasion, “wheeling and dealing”, intermediating and envisioning.

The strategy processes of the urban region are thus not the straightforward implementation of goals set in advance, but rather interactive processes with many reasons, which are molded and realised in a network of mutually dependent actors. In the networks, however, the danger exists that development activities will become fragmented, that there will be lack of coordination. In a study focusing on regional strategic planning (see Sotarauta & Linnamaa forthcoming), we made a conclusion that it may be that diversity of the urban region ceases to be a strength in development and it may become a weakness, if the many development activities are not managed so that it supports both creative differences of opinion and coordination. The networks need management in order to seek directions, to plan and carry out complex projects, to manage conflicts and aberrations and to acquire information, create it and disseminate it in the networks.

For the development network to be an element of competitiveness, it must be possible to bypass many of the bottlenecks in the networks. The series of studies, carried out in University of Tampere focusing on networks in regional and urban development policies suggests, that the many bottlenecks in the networks can be summarised as follows:

- *Artificiality* - the development network exhibits a tendency to be artificial, if cooperation is defined by the administrative sectors and institutional structures. Thus cooperation may become an end in itself.
- *Incompatibility* - organisations and their key personnel do not get on together.
- *Isolationism* - organisations concentrate on internal matters and do not actively orientate externally seeking new partnerships and joint projects.
- *Withholding of information* - organisations do not actively share information with one another.
- *Lack of trust* - networklike relations are based on trust. If trust is lost, time and energy are needed to restore it.
- *Lack of discipline* - some of the actors do not respect the ‘rules of play’ and primacy of partnership, thereby jeopardizing relationships of trust.
- *Lack of understanding* - key actors do not understand each other’s points of departure, objectives and strategies. They may also use their own professional jargon, thus people may end up talking at cross purposes.
- *Lack of commitment* - actors are assumed to commit to the common good without seeking commitment from the perspective of actor’s own points of departure and without accepting different ways of making a commitment.
- *Lack of resources* - operating within networklike relations each party ought to contribute some value added to the network, lack of time is generally regarded as one of the most valued resources now lacking.
- *Failure to learn* - actors belonging to the network cannot learn from their own and other actors’ experiences nor incorporate anything new into their activities.
- *Shortage or inactivity of forums* - successful cooperation presupposes a sufficient number of forums to enable cooperation to be broken down into details and to support the actors’ opportunity for dialogue.

- *Unclear division of labour* - the debate simply goes round and round getting nowhere if tasks cannot be divided up and responsibility for actions cannot be apportioned. (Sotarauta & Linnamaa 1997; Sotarauta & Linnamaa 1998; Sotarauta 1999; Sotarauta et al. 1999; Cooke 1996)

Network management

The above listed bottlenecks are quite general, but in the networks where there are no distinct leader or management responsible for collaborative activities, they are extremely difficult to eliminate. Network management refers to activity, which endeavours to promote interactive processes, serving as an intermediary in interaction between actors and steering activities towards seeking for goals and enabling co-operation. In practice network management is about dealing with above listed bottlenecks and what ever reflections they have in respective case.

Network management may be seen as the effect of actors on one another and it may be that the network has several managers. In theory every actor in the network may be a network manager. (Kickert et al. 1997.) Thus in principle no actor in the network ranks any higher than any other. However, this does not mean that all actors have the same amount of power on the network. In practice some participants may carry more weight and dominate more than others due to possession of important resources, crucial information, networking skills, and so on. Although the network manager may be any one of those participating in the development process, it is still probable that certain functions of network management (such as changing the urban development network and reducing the number of anomalies of the development networks and actions towards removal) fall frequently to public sector actors. On the other hand visionary characteristics may be the province of representatives of educational and research institutions or enterprises. Different actors may have different roles and tasks in network management. Some actor may even manage the network without being aware of it.

Network management may address perceptions, actors, and institutions and the relations between them (Klijn & Teisman 1997).

Perceptions refers to differences and similarities in actors' values, goals and perspectives on a given issue. Including perceptions as a focal point in network management is based on the fact that actors do not react directly to reality but to internally constructed perceptions of reality. (van der Heijden 1996.)

Actors generally have different perceptions of problems, other actors, dependency relations and the benefits and drawbacks of working together. Such perceptions are hard to change, but in joint activity they gradually reform and are reconstructed. Actors are not even always willing or able to modify their perceptions. In such situations there is a risk that the development process will become a "dialogue of the deaf", with the same arguments reiterated ritualistically with nobody willing to have his/her view put in an unfavorable light. Management of perceptions seeks to prevent such deadlocks or to resolve

them by maintaining/creating conditions for open debate. In such discussions an effort should be made to accept that there is no “best” perception as such, and that for successful cooperation the existence of differing perceptions is more use than the elimination of differences in interpretations (Termeer & Koppenjan 1997.)

Management by perceptions does not therefore aim at consensus but at creating a common base for joint decisions while accepting and respecting the positions and perceptions of other actors.

Urban development networks are frequently built up on numerous different *actors* and their reciprocal interaction. Actor-oriented management seeks to influence the individual games and combinations of actors of the entire network (who are included and who not) and also the interaction between actors. As Klijn (1997, 32) states, the strategy processes realised in development networks are complex and unpredictable. They include many actors with their respective goals. Moreover, actors’ goals and preferences may change in the course of the process. Thus it is difficult for actors to know in advance what goals will be achieved in the process and what the results of the strategy process will be. Actors must be able to learn from their own and other actors’ goals and strategies in the course of the process.

Institutions refers to the relatively permanent modes of operation, rules and resources and the organisational field which give the network its form. Institution-oriented network management has an indirect effect on all present and future actions as the “architecture” of the network changes (Klijn & Teisman 1997.)

TABLE 1. Foci of network management (adapted and elaborated especially from Klijn & Teisman 1997 and also from Linnamaa 1998)

	<i>Perceptions</i>	<i>Actors</i>	<i>Institutions</i>
<i>Game management</i>	<ul style="list-style-type: none"> • seeking differences and similarities in actors’ interpretations, acting in order to synthesize different interpretations and goals derived from them 	<ul style="list-style-type: none"> • activation of actors with important resources • activation/passivation of opponents, problem and marginal groups 	<ul style="list-style-type: none"> • prediction of opportunities and limits set by institutions • Developing institutions so that interaction of actors can be arranged to ensure optimal success of games
<i>Network constitution</i>	<ul style="list-style-type: none"> • changing and/or unifying actors’ interpretations of the network: why does the network exist, what is the role of the various actors as part of the network etc. 	<ul style="list-style-type: none"> • bringing new actors into the network or modifying the position of existing ones 	<ul style="list-style-type: none"> • changing institutions defining the nature of the network

I now embark on a rather more detailed examination of perception-oriented network management, in which information and its conscious management plays a crucial role. Simultaneously the question emerges as to how network management can respond to the increasing amount of information and the demands for rapid learning. How can the vast information and flood of knowledge in the networks be managed, how can essential features be extracted, i.e. how can a sustainable basis for perceptions be created? One possible answer, among others, to these questions is information systems utilising modern information technology.

I start seeking answers to the questions posed above by first examining the development view of perceptions as a “filter of information system”, as a filter making sense of a network as a whole, the roles of various actors and the strategies and the objectives to be pursued. Then I present some basic thoughts on the information system CityWeb, which operates in the Internet. It was created in the Tampere urban region for utilising information in network management.

3. The information systems and development view

In a certain sense we live in a world of mental models made up of thoughts, ethics, ideas, concepts, images, memories, plans, knowledge etc. We all have a development view of some kind. Niiniluoto (1989) states, that the development view may be seen to be a more or less detailed system of beliefs and values. Its parts are world view (what the world is like) and knowledge (how knowledge of the world is acquired and justified) and values (what the world ought to be like).

The development view does not therefore refer directly to the nature of the development as an absolute phenomenon, but emerges from experiences, education and expectations. The development view directs an actor’s way of comprehending the course of development, the general forces and actors influencing this. It leads an individual to see some things and not to see others.

In the urban development networks the development view may have a major influence in practical work, as it is not necessarily the same for all actors. This may cause perceptions of the urban development network itself and the roles of its members and also the objectives and strategies to be very different from each other. In such a case how knowledge is generated (or what is even paid attention to) may have a major influence not only from the viewpoint of content of UED-policies but also from the viewpoint of network management (e.g. unifying perceptions). In the same way the unifying of the actions and thinking of different organisations cannot generally be very simply planned; the *leitmotiv* of development emerges from the processes as the actors discuss strategy, perceptions, points of view and their own observations. Information transfer is in a pivotal position here. In the networks information is passed along both through undesigned and through designed information systems. (See Figure 1.)

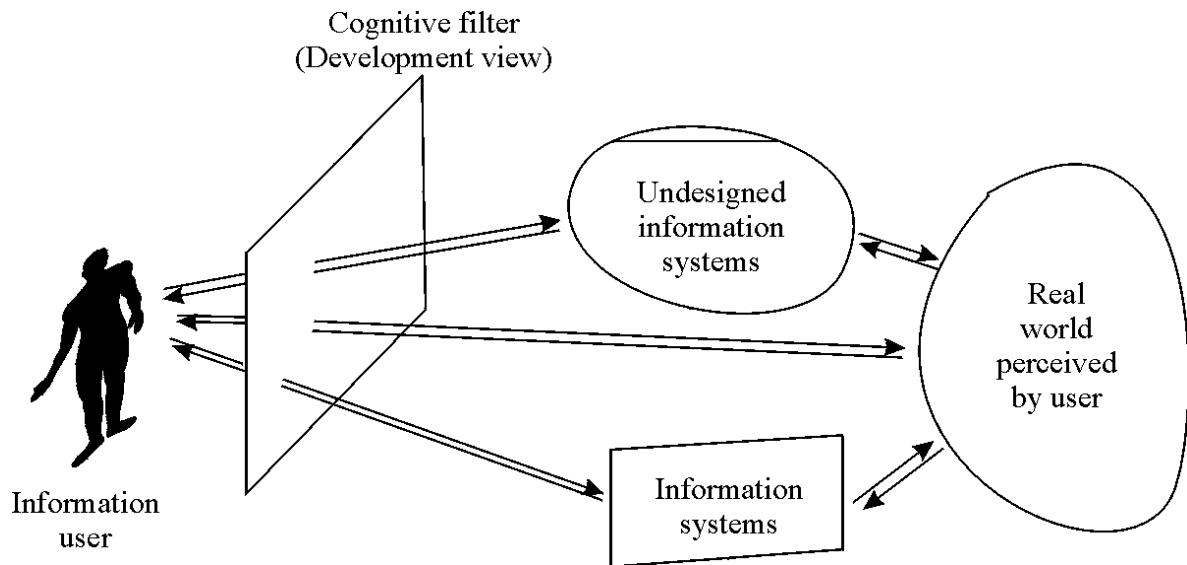


FIGURE 1. The context of the concept “information system (Land quoted in Checkland & Holwell 1998, 99)

By the aid of information system it is possible to store, disseminate and create information. The basic function of information system is to create data based on internal and external sources for the urban development network, the ultimate goal being the creation of new knowledge.

One of the most important properties of information systems operating on the information networks is the option for “Asynchronic interaction”, namely that an actor may choose when to participate in discussion and an actor may select what theme to participate in

An information system operating on the information network may be closed or open, depending on needs and situation. Likewise the discussion in the system may be anonymous or involve participants’ names. An anonymous discussion enables actors to evince new and surprising views - indeed sharp ones - without fear of loss of face. Here the objective is to address issues without their becoming personalised at too early a point. The justifications for anonymous discussion are:

- *No one need to make a commitment “for the sake of principle” to his/her original view if this proves incompatible*
 - If an idea turns out to be a bad one the individual originally evincing it saves face and therefore retains the courage to evince new and unusual ideas in the future
 - Individuals in high positions are generally disinclined to present their views or evince unconventional ideas
 - If some new idea is instantly linked to some individual, this idea becomes personalised too soon and may meet with resistance or support solely because of the person who evinced it
 - It is easier to change one’s mind in the course of the discussion on the basis of new arguments if it has not been necessary to take a stand at an earlier point in time

- *When some issue or project is linked to an individual it easily becomes biased or one-sided*
 - When a new idea is evinced in a groups in which there are already conflict or different values, the discussion easily flounders on old contentions and the new idea is left behind
 - the high position of the individual evincing the idea may influence the discussion and decision-making
 - People in lower positions may not evince their ideas fearing that they will be rejected in any case because of their low position
(Turoff & Hitz 1996)

The literature on information systems is frequently dominated by the assumption that organisations are goal-oriented and systematic entities. Thus the main mission of the organisation may be seen to be implement goals, objectives and/or missions in the long term. Such a view of organisations is basically “scientific”, and emphasises explicit knowledge, or as Walshinghamⁱⁱⁱ states, faith is here placed in the rational interpretation of organisational processes and in a methodology which is based on the belief that objective cause-effect relations can at least in part be revealed by systematic observation. However, according to Checkland and Howell (1998, 40) the development, use and research of information systems require a different kind of approach. In this way of thinking the individual is rather part of a “tribe” than a part of a rational machine. In such a situation the social reality is continually recreated in interactive processes.

The approach equating the information system with a machine may be described as hard (the objective positivistic approach) while the comparison with a “tribe” is described as soft (subjective/interpretative approach).

Hard system thinking is based on the assumption that there are systems, which can be “scientifically” adjusted and programmed to achieve objectives. Here the manager is seen fairly straightforwardly as the one who determines the direction, solves the problems and makes the decisions. Decision-making for its part is perceived as a linear process in which problems and then alternative solutions are identified, then the selected alternative is implemented. In hard system thinking it is assumed that organisations are systems with “information needs” which can be met through information technology and systems. In soft system thinking the world is perceived as more problematic than in hard thinking, but it is still assumed that the processes of inquiry can be organised as systems. Soft system thinking is based on process thinking and considers how in interactive processes people can make sense on complex events and on that basis discuss what information is significant and what is not. (Checkland & Howell 1998, 41- 46.)

TABLE 2. Hard and soft system approaches to information systems (Checkland & Howell 1998, 48)

	<i>The 'hard' tradition</i>	<i>The 'soft' tradition</i>
<i>Concept of organisation</i>	Social entities which set up and seek to achieve goals	Social entities which seek to manage relationships
<i>Concept of information system</i>	An aid to decision making in pursuit of goals	A part of interpreting the world, sense making with respect to it, in relation to managing relationships
<i>Underlying systems thinking</i>	'Hard' systems thinking: the world assumed to be systemic	'Soft' systems thinking: the process of inquiry into the world assumed to be capable of being organised as a systems
<i>Process of research and inquiry</i>	Predicated upon hypothesis testing: quantitative if possible	Predicated upon gaining insight and understanding: qualitative
<i>Social theory</i>	Functionalism	Interpretative
<i>Philosophy</i>	Positivism	Phenomenology

The soft approach supports the basic ideas on network management of the urban region and on the other hand network management may be seen to be based on the soft approach. Here the point of departure is that organisations are never static systems but are dynamic processes constantly reacting to internal and external pressures for change, a good manager sees to it that problems are noted, framed and approached from different points of view. The omnipresent nature of solving problems simultaneously creates new knowledge to support network management.

5. CityWeb - the information system of the Tampere urban region

Description of the initial objectives

The spread of networklike activity and the tightening of competition give rise to new modes of operation but also present new problems. These problems result from haste and the rounds of meetings and palavers occasioned by networks. This combination may lead to a situation in which there is insufficient time to prepare meetings thoroughly while on the other hand there is no time in the round of meeting after meeting to pursue matters through to a conclusion. Simultaneously information management and network management are easily sacrificed to daily routines. Tampere urban region has encountered these same problems. The problems identified in Tampere are:

- Insufficient time to take care of matters efficiently
- Promoting projects between meetings has been problematic
- Meetings become complex and drag out
- Information on the development of the urban region has not always been available or its acquisition has been time-consuming
- Projects "have been forgotten" for lack of a common source of information
- Evaluation of projects has been insufficient

- Managing a wide set of projects has been problematic due to material being fragmented (Sotarauta & Linnamaa 1997; Sotarauta et al 1999; CityWeb Workshop 1998)

The problems of networks emerged also in research addressing the quality of policy processes of the urban regions (see Sotarauta & Linnamaa 1998). In the course of discussions in connection with that study the idea emerged of supporting the overall efficiency of the networks by creating an information system on the Internet. The idea was brought to fruition and in spring 1998 the CityWeb concept^{iv} was created in cooperation between the Research Unit for Urban and Regional Development Studies of the University of Tampere and the City of Tampere. In autumn 1998 the seven municipalities in the Tampere urban region (including city of Tampere) began to implement the concept in collaboration with ICL and it was introduced in May 1999 (the Regional Council of Tampere Region also bore some of the costs).

In order to tackle the problems of the network and to otherwise improve the efficiency of the urban development network the *task* of CityWeb was formulated as the breakdown of information, knowledge and discussions in the promotion of the economic development of the Tampere urban region; the creation of new knowledge to support that development and supporting network management. Thus CityWeb may be interpreted as being a common information base for the unifying perceptions and as a discussion forum. With these tasks set, the *main objective* of CityWeb was defined as supporting the activities of the urban development network by rendering more efficient the preparation of meetings, by reducing the need for meetings and by breaking down the content of the continuing discussion on the development. The background to CityWeb is the idea of interaction and the preparation of projects and meetings regardless of time and place and also the more efficient utilisation of feedback and information.

CityWeb is a tool for the urban development network and thus not an open system. It is built up of the regular users of the system and of actors invited onto it. At the CityWeb Workshop the users were outlined as follows: Economic development departments of the seven municipalities in the Tampere urban region; the Employment and Economic Development Centre for Pirkanmaa (the state's regional administration unit responsible for regional development); the Regional Council of Tampere region (organisation responsible for regional development formed by the municipalities); Tampere Region Centre of Expertise and two technology parks; various project leaders of development projects; enterprises and their representatives and representatives of educational and research institutions.

CityWeb is expected to be more than a store of existing information; it can also be used to gather new information by means of net questionnaires aimed at different target groups. Existing information inside and outside the urban development network is combined and also with information already existing on CityWeb. Thus the subareas of CityWeb are:

- *Breakdown of information*
 - Statistics by municipality, region, field of operation etc.
 - Descriptions of projects targeted at promotion of development of the Tampere urban region.
 - Connections of projects with other projects and with development strategies for the urban region
 - Invitations to meetings, memos and other material
 - Evaluations, results of anticipations and ideations
- *Information gathering*
 - Net questionnaires on the CityWeb (gathering of both qualitative and quantitative information)
 - Project evaluation at the end of a project - the interest groups for the respective projects evaluate the productivity of the project and its quality (either anonymously or with a name appended)
 - Partnership evaluations^v - evaluations carried out at regular intervals on the functionality of the development network (with or without name)
 - Evaluation of development programmes (with or without name)
 - Evaluation of development strategies (with or without name)
- *Interaction*
 - Discussion forum of the urban development network
- *Preparation and decision-making*
 - Meetings are held in CityWeb
 - Because the option exists with CityWeb for a secret ballot it enables actors to rethink their own positions after the first round of argumentation in the light of various justifications. Thus when actors get together for a first face to face meeting it is possible to begin by examining the arguments evinced for and against in advance on CityWeb. Decision-making may therefore proceed from a situation in which all concerned are aware of the arguments for and against without anyone having to take a stand too early without knowing the various justifications.
- *Anticipation* - the **delfoi** method is included to support anticipation
 - In CityWeb it is possible to develop expert barometers which monitor and predict the development of the entire urban region and also, for example, barometers for specific clusters
- *Ideation*
 - Creating new thoughts and pursuing ideas on-line

The permanent core of CityWeb is formed by the *information database*, i.e. a database based on explicit knowledge. Its task is to create continually new and easily accessible information for the urban development network, a common factual base. Stored information and the gathering of new information entails discussions from the urban development network on the significance of information and knowledge, the interpretations attached to them and the conclusions drawn from them. From the perspective of practical development work it is essential to make sense of information and various interpretations from the perspective of the development of the Tampere urban region, to create new knowledge from the data. The discussions on CityWeb moreover make it possible, with the help of analogies and metaphors, to externalise the tacit knowledge of various actors in order to elucidate new issues.

Interaction on CityWeb falls into four levels:

- *Continual discussion on the development and development efforts of the urban region*
 - extensive participation by registered actors in CityWeb
- *Discussion on development and development efforts of the clusters*
 - limited participation. External experts are invited to participate in the CityWeb discussion. Their participation is limited to cluster in question
- *Discussion project by project*
 - limited participation. Confined to those involved in the project in question
- *Ideation*
 - CityWeb enables “virtual ideation”, a kind of getting people’s heads together online at which an expert group agreed in advance produces ideas for new strategies, projects and means.

Appraisal of the experiences so far

After approximately 22 months experiences it is evident that CityWeb has not been able to meet all the expectations set for it.

As was mentioned above, the sense of mutual dependency and trust are key prerequisites of networks. CityWeb is based on idea that network behind it would produce new information and knowledge into it in an interactive process, and that there is no single individual responsible for that endeavour. Even though UED-policy of the urban region of Tampere is planned and implemented in a network, development view of the key actors is more or less still based on “hard tradition”, some parts of the urban development network could be called a tribe. Most of the actors still see it as a compulsory aid to make decisions in order to make more effective projects. Therefore many actors approach CityWeb from the hard traditions’ point of view and they are see themselves as “consumers” or users of information. It is expected that CityWeb would support in producing new knowledge, but the key-actors have nor yet learned how to utilise it in an inquiry into the world and making sense of events and thus renewing development views of various actors. It is not used in gaining insight and understanding. It has remained as information storage and a tool in project management. Key-actors do not see themselves, at least not yet, as parts of the interactive process creating new information and knowledge. CityWeb has fallen somewhere between hard and soft tradition.

However, many actors have recognised the need of softer thinking and there are many conscious efforts to create a “development tribe” in Tampere. It could also be stated that because most of the key-actors meet and communicate with each other weekly, there has not been as great a need as expected for a new forum in the Internet.

Even though having significant and even unique information in CityWeb it is also competing with other sources of information that are plentiful in Finland. There is no shortage of information. In practice undesigned information systems and very versatile usage of various designed information sources dominates the search of information for urban development policy. It also seems that undesigned information systems are stronger than designed ones.

CityWeb is not seen as a tool in network management but as information storage and tool in project management. It has not been used in continual discussion on the development and development efforts of the urban region and neither it has been used in discussions on development of various clusters, but it has been used in gathering and storing information concerning various development projects. Therefore, CityWeb has not become a tool in network management, but it has become a tool in project management. In addition to that, there have been some experiments in using it in virtual ideations and in carrying out evaluations. A questionnaire for self-evaluation of Tampere centre of Expertise Programme was carried out in CityWeb. All in all, there is lot more potential in CityWeb than what is utilised so far. CityWeb has not yet become an intersection of many processes. There are many other intersections that are more attractive than CityWeb, they are usually based on face-to-face discussions.

6. Conclusion

The networklike nature of the development efforts may lead to conflicts of interests in which different interest groups contemplate the development of the urban region only from their own perspective and frequently through their own short-term objectives. Here the overall perspective may be lost in the jungle of differences of opinion, frequently locked in past development paths. The networks need management, which is creative and seeks directions so that the networks can rise above the interests and goals of individual organisations. This is important in the mobilisation of actors, in efficient utilisation of resources and in the discussion on different perceptions and their unification. Here what is essential is the ability to include the right actors and the ability to combine their resources, knowhow and objectives into a long-term strategic alliance. Here actors should be able to function in a field formed by both shared and individual objectives. Such a network and/or partnership, however, is more problematic as a mode of operation than is frequently supposed. The critical analysis of the functionality of the networks, better understanding of their logic and the development of new modes of operation assumes an equally important position as new intended strategies.

The quality of networks is partly defined on the basis of their achieveability. Only a sufficiently open, transparent and achievable network can ensure that various actors involved in it do not turn inwards and set about playing their own games apart from the issues and challenges of the urban region. But network management is never free from restrictions; its forms and practical construction are governed by factors both inside and outside the urban region. These factors include the overall economic trend, legislation, the relation between state and municipality, local institutional structures, various networks and coalitions, certain challenges and phenomena felt at certain times to be strategic, "critical events" and the personal qualities of managers. Creating new knowledge and managing information are therefore essential elements of network management.

The Tampere CityWeb is one example of an information system as a tool in network management. However, even though the information systems are based on sophisticated information technology, they are essentially social systems. It is impossible to create a functional and effective information system without comprehending its nature as a social community composed of humans. Thus the information system should not be perceived as a structure, but as a point at which interlocking processes meet, an arena of network management. This has not happened in Tampere yet. However, it is obvious that various processes do not have only single point on which to meet, there are always many of them and they should be seen and analysed as a whole.

If the social network behind the information system is functional, it enables different actors to justify their own stand, assess it in relation to other people's views and assess their own level of expertise in relation to the theme addressed. The information system is to a large extent based on the collection of expert knowledge, its breakdown and use in the formulation of development strategies and project management. The lines for development presented by experts and conceptions of the future are not, however, approved as such; different conceptions are always accompanied by justifications in the light of the most recent knowledge. The point of departure is not so much the quest for consensus as the refining of diverging expert opinions and so the support for development work and management, sense making.

The present paper evinced an information system operating in Internet as one tool for network management. The information system is one tool among others in developing the necessary information and breaking down the operation of the urban development network. The information system, however, is always essentially a crossroads of the many processes of a social community where it possible to present many perceptions, unify them, if possible, and offer actors a united basis of information.

References

- BORJA, J. & CASTELLS, M. 1996. *Local & Global. Management of cities in the information age.* Earthscan Publications Ltd, London.
- CAMAGNI, 1991. (eds.) *Innovation networks: spatial perspectives.* Belhaven Press. London.
- CHECKLAND, P. & HOLWELL, S. 1998. *Information, Systems and Information Systems: Making Sense of the Field.* John Wiley & Sons.
- CityWeb-workshop. 26 - 27.8.1998 Tampere.
- COOKE, P. 1998. Introduction. Origins of the concept. In Braszyk, H-J. & Cooke, P. & Heidenreich, M. (eds.) *Regional Innovation Systems.* pp. 2-25. UCL Press.
- HEALEY, P. 1992. Planning Through Debate: the Communicative Turn in Planning Theory. *Town Planning Review*, vol. 63, No 2 (April), pp. 143-162.
- HEALEY, P & CAMERON, S. & DAVOUDI, S. & GRAHAM, S & MADANI-POUR, A. 1995. Introduction: The City - Crisis, Change and Invention. Teoksessa Healey, P & Cameron, S. & Davoudi, S. & Graham, S. & Madani-Pour, A. (eds.) *Managing Cities.* s. 1-20. John Wiley & Sons, Bath.
- HEJDEN van der, K. 1996. *Scenarios: The Art of Strategic Conversation.* John Wiley & Sons.
- HOPPE, R. 1993. Political Judgement and the Policy Cycle: The Case of Ethnicity Policy Arguments in the Netherlands. In Fischer, F. & Forester, J. (eds.) *The Argumentative Turn in Policy Analysis and Planning*, pp. 77-100. UCL Press Ltd.

- JUDD, D. & PARKINSON, M. (eds.) 1990. *Urban Leadership and Regeneration. Urban Affairs Annual Reviews*, vol 37. Sage Publications.
- KICKERT, W. & KLIJN, E-H. & KOPPENJAN, J. 1997. *Managing Complex Networks. Strategies for the Public Sector*. Sage Publications Ltd. London.
- KLIJN, E-H. & TEISMAN, G. R. 1997. Strategies and Games in Networks. In Kickert, W. & Klijn, E-H. & Koppenjan, J. (eds.) *Managing Complex Networks. Strategies for the Public Sector*. pp. 98 - 118. Sage Publications Ltd. London.
- KLIJN, E-H. 1997. Policy Networks: An Overview. In Kickert, W. & Klijn, E-H. & Koppenjan, J. (eds.) *Managing Complex Networks. Strategies for the Public Sector*. pp. 14-34. Sage Publications Ltd. London.
- LINNAMAA, R. 1998. *Paikallinen elinkeinopolitiikka ja verkostojen haaste*. [Local Economic Development Policy and the Issue of the Networks]. Tampereen yliopisto, Aluetieteen ja ympäristöpolitiikan laitos. Julkaisematon lisensiaatin työ.
- LINNAMAA, R. 1999. Kaupunkiseudun kilpailukyvyn rakenteelliset ja dynaamiset elementit. [Structural and dynamic elements of urban competitiveness]. In Sotarauta, M. (eds.) *Kaupunkiseutujen kilpailukyky ja johtaminen tietoyhteiskunnassa*. [Urban competitiveness and management in information society]. Suomen Kuntaliitto, Acta-sarja 106. Helsinki.
- MORGAN, K. 1997. The Learning Region: Institutions, Innovation and Regional Renewal. *Regional Studies*, Vol 31, pp. 491-503.
- NIINILUOTO, I. 1989. *Informaatio, tieto ja yhteiskunta: filosofinen analyysi*. [Information, knowledge and society: philosophical analysis]. Valtion painatuskeskus. Helsinki.
- OATLEY, N. 1998. Cities, Economic Competition and Urban Policy. In Oatley, N (eds.) *Cities, Economic Competition and Urban Policy*, pp. 3-20. Paul Chapman Publishing Ltd, London.
- PORTER, M. 1991. *Kansakuntien kilpailuetu*. [Competitive Advantage of Nations]. Otava.
- PYKE, F. & SENGENBERGER, W. 1992. (eds.) *Industrial districts and local economic regeneration*. International Institute of Labour Studies. Geneva.
- ROBSON, W. 1997. *Strategic Management & Information Systems*. Pitman Publishing. 2. Ed.
- SAXENIAN, A. 1996. *Regional Advantage. Culture and Competition in Silicon Valley and Route 128*. Harvard University Press. 4th printing.
- SOTARAUTA, M. 1996. *Kohti epaselvyyden hallintaa: Pehmeä strategia 2000-luvun alun suunnittelun lähtökohtana*. [Towards governance of ambiguity: soft strategy as a starting point for planning in the beginning of 2000]. Acta Futura Fennica 6. Finnpublishers. Jyväskylä.
- SOTARAUTA, M. 1998. *CityWeb –konsepti*. [CityWeb concept] Tampereen yliopisto, Alueellisen johtamisen tutkimusyksikkö. Julkaisematon raportti.
- SOTARAUTA, M. 1999 (eds.). *Kaupunkiseutujen kilpailukyky ja johtaminen tietoyhteiskunnassa* [Urban competitiveness and management in information society]. Suomen Kuntaliitto, Acta-sarja 106. Helsinki.
- SOTARAUTA, M. & LINNAMAA, R. 1997. *Kaupunkiseudun elinkeinopolitiikka ja prosessien laatu: Tampere, Turku, Oulu, Seinäjoki, Vammala ja Parkano Benchmarking-vertailussa*. [Urban economic development policy in urban regions and the quality of policy process: Benchmarking Tampere, Turku, Oulu, Seinäjoki, Vammala and Parkano]. Tampereen yliopisto, Aluetieteen ja ympäristöpolitiikan laitos, sarja A 19. Tampere.
- SOTARAUTA, M. & LINNAMAA, R. 1998. The Finnish Multi-Level Policy-Making and the Quality of Local Development Policy Process: The Cases of Oulu and Seinanaapurit Sub-regions. *European Planning Studies*. Vol. 6, No 5. Pp. 505-524.
- SOTARAUTA, M. & LINNAMAA, R. (eds.) 1999. *Etelä-Pohjanmaan strategioita ja kehittämismallia etsimässä: pehmeä strategia maakuntasuunnittelussa* [In search of strategies and development model for South-Ostrobothnia: Soft strategy in regional development planning]. Tampereen yliopisto, Alueellisen johtamisen tutkimusyksikkö. Sente-julkaisuja 2/1999. Tampere.
- SOTARAUTA, M. & LINNAMAA, R. & VILJAMAA, K. 1999. *Kumppanit peilinä. Elinkeinopoliittisen seutuyhteistyön profiilit Tampereen, Turun ja Imatran seuduilla sekä Ouluseudulla ja Seinänaapureissa* [Partners in the mirror: The profiles of sub-regional co-operation in LED-policy in sub-regions of Tampere, Oulu, Seinäjoki and Imatra] Tampereen yliopisto. Alueellisen johtamisen tutkimusyksikkö. Sente-julkaisuja 1/1999. Tampere.

- STOKER, G. 1997. Regime Theory and Urban Politics. In Judge, D. & Stoker, G. & Wolman, H. (eds.) *Theories of Urban Politics*. pp. 54-71. Sage Publications.
- TERMEER, C.J.A.M. & KOPPENJAN, J.F.M. 1997. Managing Perceptions in Networks. In Kickert, W.J.M. & Klijn, E-H. & Koppenjan, J.F.M. (eds.) *Managing Complex Networks: Strategies for Public Sector*. s. 79-97. Sage Publications.
- TUROFF, M. & HILTZ, S. R. 1996. Computer-Based Delphi Processes. In Adler, M. & Ziglio, E. (eds.) *Gazing into the Oracle: The Delphi Method and its Application to Social Policy and Public Health*. Jessica Kingsley Publishers.

ⁱ Partnership is a result of two or more actors combining their efforts to achieve a certain goal or accomplish a certain task or combination of tasks. Thus a partner may be defined as an actor who shares a certain task or group of tasks with other actor(s). (Sotarauta & Linnamaa 1997.)

ⁱⁱ See Sotarauta & Linnamaa (1997 and 1998)

ⁱⁱⁱ Quoted in Checkland & Howell (1998,40)

^{iv} Sotarauta (1998)

^v e.g. Sotarauta et al 1999