EVASERVE

Module:
Information Service Networks

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Revision history

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CONTENTS

1. INTRODUCTION

The development, design, realization and maintenance of information services is based on the technology, know-how and co-operation of several different firms and organisations. The appropiate composition of the realization participants may vary significantly due to the nature and life span phase of the service. At the development and design phase started after the recognition of the service need the participants include in addition to authorities and financiers also firms that specialize in the key technologies connected to the service. After this, at the realization, use and maintenance phases, there may be need for complementary know-how and new partners in order to make the service work in practice.

This evaluation module presents the service network evaluation basis and methods behind realization of an information service. The evalaution should consider the needs and requirements of the service at each phase of its life span, questions about the depth of the co-operation and the different interests of the partners.

2. EVALUATION OBJECTIVE

The objective of the evaluation module is to help conceptualize the aggregate of consortiums required by the different phases of the development and realization of an information service from the optimal co-operation and network point of view of a service network. The implementation method, extent and depth of the evalaution depend on the phase of the life span of the service and on the available resources.

3. THE MANY FACES OF NETWORKS

Operation in different business networks is an essential part of business operations of today. The focus of networking is concentration on ones own core competence area. The reverse side is acquiring operations and services from co-operation partners and building diferent actor and service networks. Business networks are used in order to answer to the clients requirements for speed, flexibility, quality know-how and cost effectiveness better than as a single firm. In addition to deliveries to the clients the network can also create new client contacts and tighten co-operation for the creation of new business. Network-like operation can promote the generation of innovations as the actors combine their different know-how. Networking is, as a whole, stiil quite a new phenomenon. The concepts of the phenomenon are new and somewhat differing interpretations for a concept can be given in different contexts. Table 1 presents the essential concepts of the field.

Table 1. The basic concepts of networking

Concept	Definition
Business partnership	Business partnership means collaboration between legally independent companies. The co-operation can be based on voluntariness, agreements or business arrangements e.g. establishing a joint enterprise. Business partnership can be horizontal, vertical, bilateral or multilateral.
Horizontal collaboration	Horizontal network functions, as the name implies, horizontally. Units at the same level collaborate. A horizontal network aims for combining similar resources for greater volume even though the partners may be rivals at another part of the value chain.
Vertical collaboration	A vertical network is comprised of companies operating at different levels of the same value chain. The basis of the mutual collaboration is often connected to a service or product owned by the end producer. Vertical productive networks are common in the fields of e.g. electronics industry and machine and equipment manufacture.
Bilateral collaboration	Bilateral collaboration means collaboration between two businesses. Bilateral collaboration can take place between two small and medium-sized enterprises or between a large and small one.
Multilateral collaboration	Multilateral collaboration means co-operation between more than two enterprises.
Company network	A company network means a collaboration group of companies. The network has common goals toward which all the members of the network strive.
Strategic network	A strategic network means strategically important long-term collaboration in which the partners aim to secure, maintain and improve their competitive position.
Joint venture	Joint venture is a separate business company fuonded and owned jointly by the partners used in carrying out joint business by the members. The partners can own the joint venture either as individuals or through their companies.
Partnership	Partnership means long-term and systematic activity between the partners. The partnership is based on openness, trust, interactivity, commitment and mutually beneficial collaboration between the partners. The partners develop the product, production process and collaboration on a long-term basis.
Core competence	The core competence of a company means the know-how that the company is especially good at and that is hard to copy by other companies. The core competence of a company is based on the companys resources and know-how and is strategically important for the company.
Outsourcing	Outsourcing means the process where the company farms the functions outside its core competance out to be produced by outside firms. The purpose of outsourcing is to enable the company to focus better on the area of core competence and its development in order to make the organisation more efficient and achieve operational cost savings.
Subcontracting	In subcontracting the subcontractor produces components and bigger ensembles for the client (so-called system deliveries and service functions e.g. packing)
Virtual network	Virtual network usually means a partnership formed for a specific project (e.g. a building project) which is dissolved after the project. Virtual networks also include service consortiums of public organisations (e.g. adult education virtual network) or a network of individual top researchers of a certain branch. The use of a developed information and communication technology is often essential for the operation of virtual networks.
Cluster	A cluster means a know-how concentration of companies and organisations in close or not so close co-operation with e.g. the co-operating production and service businesses, universities, schools and authorities forming a co-operation cluster. A cluster can include also competing organisations (e.g. forest and glass industry clusters).
Public Private Partnership	Public private partnership means e.g. the outsourcing of functions and processes formerly performed by the own organisation of a city or municipality partly or totally to an outside organisation with a service procurement contract.

The base of networking is that resources are allocated to the development of the recognized core competence of the company or organisation. It is usually not viable to keep all functions and operations, one has to concentrate on the essential. Ones own operations need to be complemented by know-how,

resources and service procured from outside. Networking means the development of the know-how and production procurred from the outside trough co-operation between companies. Networking is a complex phenomenon and it cannot concern just one or the other partner. Networking demands examining fuctions within and between organisations.

Co-operation between companies has probably existed as long as business. Companies are a part of the company network, value network, startegic network and business network. VTT has participated significantly in the development of research and development networks, production networks and service networks of sevaral different branches of industry. Practical instruments have been created for the development of the function of strategic company networks as a result of the VTT network research and company porjects. Most of the instruments presented in the work book " Strategic devopment of company networks" are applicable also in the development of different information service networks /6/.

Operatiivinen yhteistyö	Taktinen yhteistyö	Strateginen yhteistyö
• Tavoitteena yleensä kustannusten alentaminen • Ei suuria tulevaisuuden tuotto-odotuksia • Hyötyjen odotetaan realisoituvan tässä ja nyt • Yhteistyöryhmä ei esiinny ulospäin yhtenäisenä	• Tavoitteena synergia-hyödyt • Yhdistetään kumppaneiden osaamista, resursseja ja prosesseja • Yhteistyöryhmä tarjoaa asiakkaalle Avaimet Käteen -projekteja • Tuotto-odotukset muutaman vuoden tähtäimellä • Yhteistyöryhmä esiintyy projektikohtaisesti yhtenäisenä ulospäin	• Tavoitteena merkittävät pitkän tähtäimen hyödyt (esim. uusien liiketoimintojen luominen yhteistyössä) • Tuotto-odotukset yleensä vasta viiden vuoden tai sitä pidemmällä tähtäimellä • Yhteistyösuhteet intensiivisiä, paljon luottamusta vaativia • Yleensä myös riskit suuria • Suurten panostusten ja riskien vuoksi yhteistyöryhmä voi perustaa erillisen yhteisyrityksen

Figure 1. Collaboration levels between companies.

The studied information services are developed, designed, realized amd maintained in development and service networks comprising of several separate companies and organisations. With the development of information services one can with good reason speak about startegic company networks. It is obvious that the generation of information services requires very profound and intensive collaboration and significant amount of mutual trust between all participants. The goal of the kay actors of the service network is deriving significant long-term profits. The provision to the strategic collaboration and cevelopment of the network is that the different participants of the network internalize the meaning of co-operation and see networking as an important competition factor. Co-operation must be seen as attractive and the companies have to have both the will and the ability to participate in the activities of the network and the its strategic level negotiations and development work (Figure 1).

The consortiums of the actors needed in the design and realization of information services can also be called virtual networks. The strategic development, design and realization of a service can be realized as a project with a certain group of participating companies. After the service system is built the activities of the group can end and the same group may never again activate in the same composition. The actions

required during the running and maintenance of the service can be based on the mutual operations model of a relatively permanent group of companies. This activity can go on as long as the service exists.

4.   EVALUATION LEVELS AND EVALUATION PROCESS

4.1   Evaluation levels

The service networks required for the realization of information services can be evaluated from the points of view of collaborating single actors, service users, interest groups participating in the realization of the service and also from the societys viewpoint. The basis in the evaluation from the service network viewpoint is the scope of the evaluation. The evaluation is challenging because of the interdependencies of the different studied levels as the results from one point of view depend significantly on the different study levels impacting the whole.

The evaluation should cover at least the following viewpoints:

- effectiveness from the society point of view (effectiveness of authority actions and public services …)

- effectiveness from the network point of view (experiences and benefits of service end-user, benefits of service developer and realization participants…)

- effectiveness from the single network actor point of view (single companies taking part in providing the service, , authorities, financiers, producers…)
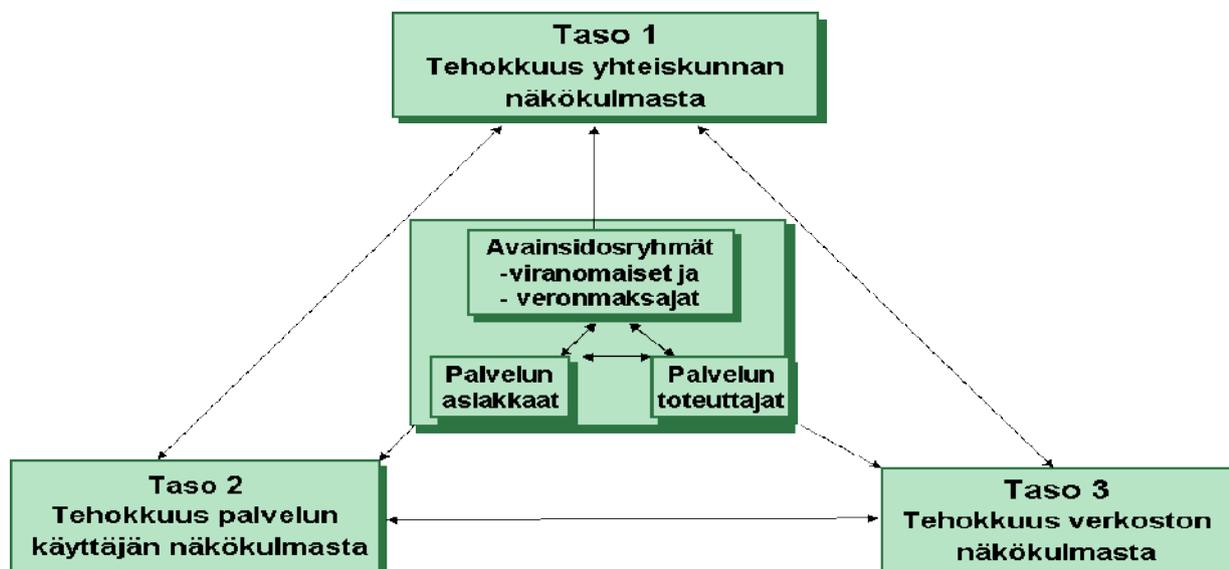

Figure 2. The levels and interdependencies of information service evaluation from the service network viewpoint /5 adaption/.

4.2 Society

The efficient use of publicly financed services requires that it is established that the development, design, realization, use and maintaining of the services has been implemented well and efficiently and that the real costs of the operation can be monitored. This requirement naturally applies to the providing of all public services. The challenge is often whether the benefits of a service are greater than the sacrificed stakes?

The popularity and spreading of information services can generate new growth opportunities for the technology and service companies participating in the design and realization of services. The centralization, more common standard service description based operation models, development of tendering and purchase models and the management and development of service networks are in this case the premises of the effective procurement of services. There is a separate module for the evaluation of the social impacts of information services.

4.3 Network level

There are many tough questions involved in the networking of companies. The measurement of the long run benefits of networking is a special challenge. Companies invariably expect or at least presume getting networking benefits in some timespan for making the joining and participating in networking beneficial. There is a need for developing instruments for the evaluation of the expected benefits for the companies considering networking. A similar instrument could be utilized by the financiers considering investing into networks. The instrument should answer at least two questions: what are the presumed calculable benefits and in what timespan will they realize.

The financial anticipations can realize only if all the participants can genuinely trust each other and their best know-how into the common development already at the start of the co-operation. Co-operation relatioships usually have an exploration phase during which the trust to other partners is considered. In a good case the first practical realization projects of an information service can lay a foundation for the formation of co-operation networks based on trust. During the first projects the partners can "find each other". A common idea of the vision, goal, distribution of work, roles, network structure and lifespan of the service network is born. In the best case also a common vision of business growth is born.

The development of functional and also financially successful co-operation relationships usually requires the realization of the following principles:

- the partners have something valuable to contribute to the business partnership

- the relationship is important to the partners in reaching their long-term strategic goals

- the resources and know-how of the partners complement each other so that the parners depend on one another in the realization of the business

- the partners invest their resources in the co-operation and show their will toward permanent commitment

- the partners communicate quite openly about e.g. goals, technological questions, conflict causes, problem areas and situation changes

- the partners develop their mutual integration based on common working methods and many human relationships

- an official status and form is made for the business partnership with clear responsibilities and decision-making customs institutionalizing the partnership beyond personal relations

- the partners treat each other with mutual respect and trust without abusing their knowledge about each other and impairing the status of the other.

In the worst case the network partners do not reach the basis of trust required by a developing network. This can be caused by several reasons and on a general level the relations between companies can break down due to e.g. the following reasons:

- the trust is lost once and for all

- chicanery and exploitation of the other partners vulnerability

- uneven distribution of benefits compared to investements

- lack of common goals and vision

- key persons communication and interaction skills, inability to trust others, share visions , positive attitude…

- lack of commitment, fictitious development and wanting only the best parts which can be caused by shallow business bond.

- unrealistic expectations of the risk carrying capacity and growth of the business

- wrong work partners, impeding competition, too different companies

- unequal authority relationship and too much dependency

- different cultural issues in connection with global networks

- adaptation to renewing earnings models

The network can be evaluated based on network types, bonds, goals and tasks. The network between companies can be classified e.g. in the following manner /2/:

- horizontal learning and development networks of companies in different value chains – possibly at the same value chain phase

- vertical production and supplier networks of companies in the same value chain; the common operational basis is typically connected to an existing end producer owned service or product

- innovation networks for the development of new products, services and technologies.

At first all the participants required in the development of services have to meet. It is important for the creation of a network that the partners find a common language and vision on what are the needs the service to be developed should fulfill, what are the customers expectations of the service and how the benefits the enduser really gains could be measured. It is vital for network level evaluation that all the partners required by the service, technology developers, content builders, authorities and information technology experts share a common vision about the service to be developed and the network behind it.

Information services are about developing new service solutions that have probably not existed before. The required network models are by nature strategic level innovation networks. Such networks contain a lot of uncertainties. As the information services become more common it is of course possible that essentially the same group of companies would specialize in realization of information services for several different purposes. This would mean multiplicating information services for different purposes and applications. In this case service production would be based on the operation of a business network specialising in information services.

In net level evaluation it is usually appropriate to try to identify the chain participating in the production of the service and value. This usually means defining the relations between partners and the network oraganisation in the form of e.g. a network map. It is also beneficial to describe all the phases of partner participation and tasks using e.g. process description techniques. Other modules present good examples of this.

Service network organization should also be studied during the realization of information services. An important phase from the organization viewpoint is the development, design and implementation phase of a new information service. A decision has to be made whether to have one company take total responsibility for the production and maintenance of the service or if the service can be realized in some other way. A responsible company is often required as an uniting force in the activities based on a common refining and value chain. A study should be made to find the partner most suitable for the role of operations and development leader of information services. If none of the partners think themselves as a possible leader partner the challenge may be the continuity of the operation of the network. Commitment to long-term co-operation may be a challenge for democratic networks consisting of nearly similar actors. Operation in such networks may be opportunistic just waiting to exploit emerging interesting opportunities. A leader is required to control and develop the operation of the network in order to obtain continuity through partner co-operation.

Information services are not born without contracts. Contracts are required e.g. between the main contracting party realizing the service and the party in charge of financing. E.g. in project business the customer often wishes to make the contracts with the partner responsible for the greater total deliveries i.e. with the leader partner. The leader partner coordinates communications with the suppliers of other necessary parts of a whole, is responsible for the project, total timetable, collection of collateral and the necessary delivery contracts with other partners. The network leader can in principle be any member of the consortium. The leader can often not be a small company because the financial premises of a small or medium sized company are not sufficient for e.g. collateral. There are corresponding requirements of bringing together diferent partners in the realization of information services. The network leader model can be one model for implementing the subprojects of a service. For the part of e.g. the road transport information services the Finnish Road Administration could act as the network leader of service development and realization. During the use and maintenance of the service the network leadership can be handed over to another actor. Service core companies are required in addition ot the leader company. The question here is the required core competencies of the partners. There may also be a need for other partners whose competence is not very critical but are brought into the realization of the service if the case requires.

From the network viewpoint the evaluation process has to be able to identify to what degree the service users have been satisfied with the service used. Acquiring the experiences of clients and users requires the gathering of systematic feedback information about the use. Asiakkaiden ja käyttäjien kokemusten saaminen edellyttää että menetelmä käytöstä kerätään systemaattista palautetta. Criteria suitable for the evaluation of widely usable services has been defined e.g. in the EU PROMISE project /4/. In order for information technology to benefit all users as extensively as possible it has to fulfill five criteria. First the products, services and information must be available. Second the information must be available in a format allowing unrestricted access for as many as possible. Third the costs of the services should be at a level that the users can financially afford to buy and use. Fourth the users, their relatives and organizations and decision makers, the industry, professionals, education and research systems and employers should be aware of the peoples needs and the possibilities of the information society. Fifth the information technology products should be appropriate for the purpose and circumstance. The products should also be attractive, adaptable, useful and practical and compatible /4/.

4.4 Company level

For the independent company participating in the development and realization of an information service the evaluation can be made from very different viewpoints. From the economic viewpoint the independent company wants to find out how much of the turnover comes from these services, has the turnover increased and does the activity have favourable growth potential. It is more challenging to establish whether the business activity has been economically profitable. From a broader point of view the state and realized economic profit of a company is the result of the companys ability to serve its customers and other interest groups (owners, personel, partners, subcontractors etc) qualitatively, profitably and dependably.

A rather common instrument used in the study of the efficiency of companies, public organisations and also entire production and service networks is the so-called balanced scorecard. The balanced scorecard studies the performance service ability from four complementary viewpoints /1/:

- customer viewpoint

- economic viewpoint

- process viewpoint

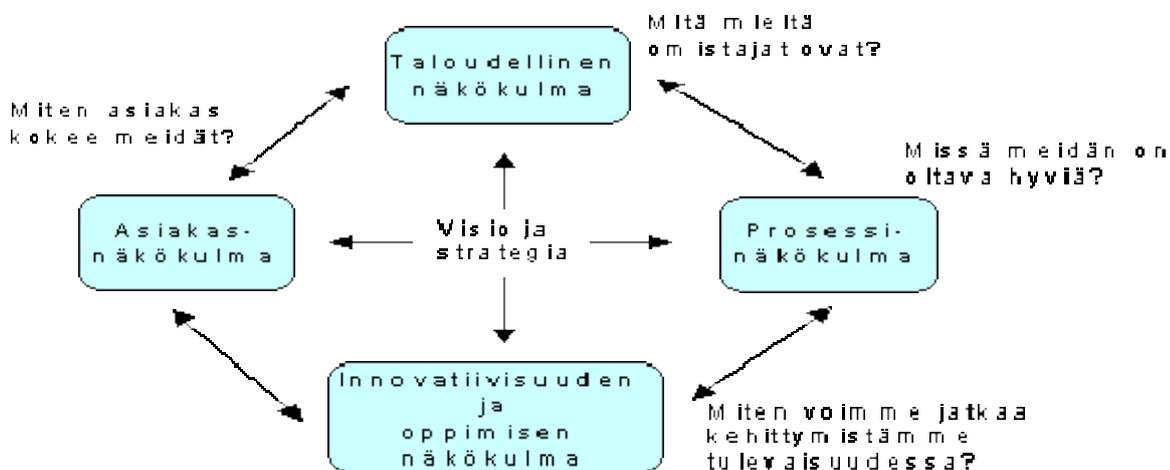- innovation and learning viewpoint

Figure 2. The balanced scorecard

From the client i.e. service end-user point of view the most important thing is what has been promised to the clients and how well the promises have been fulfilled. The keeper of the scorecard has to consider here what the promises to the end-users have been and how to reliably identify e.g. the experienced benefits and quality of the service.

From the economic viewpoint the company is interested in how the participation in the production of information services has produced turnover, how it has developed and how it is expected to develop. The company is also interested in how profitable the information service production business has been. If the business is unprofitable the company probably considers if the participation in the network is worth it. Also all the economic parameters of interest to the company owners are useful in this context.

In the effectuation of information services each company has its own chain of interlocking functions and actions composing the value of the service. From the process point of view it is important to identify the right things that should be done in the service production process (effectiveness). After the right things have been identified the next step is to identify the most economical way to do them without wasting the resources in the information service production process (efficiency). From the company viewpoint the question is about the ability to generate results and use of resources i.e. how well and effectively we participate in the production of information services. Efficiency is making things smarter not harder.

From the innovativeness and learning viewpoint participation in the production of information services is expected to bring new know-how and knowledge to the company. If only such know-how that has been identified as secondary is used in the production of information services the company should seriously consider whether it should take part in the network any longer.

The meaning of the creation of the instrument is to create a compact entity supporting the development of the service and decision making. The instrument is a tool for converting the vision and strategy of the service network into concrete instruments and goals of the process. The instrument itself should cover all the essential viewpoints from the decision making point of view. The terms and concepts of the instrument should be established and the concepts should be foundations for discussing the benefits, impacts, cost effectiveness, public opinion and development goals of the service without conflict. The instrument should recreate the past, present and future of the service and should contain the both the long and short term monitoring of the service.

A good instrument contains both cause and effect instruments i.e. the instrument can be used to identify the factors affecting results and what has been accomplished. The instrument should focus on the things essential for the service. It has to be simple, understandable, logical and preferably numerical. The instrument should be important to the owners and users and they should be able to utilize the data. The instrument should show the direction of development, be defined consistently and data gathering should not take too long. Economic instruments should not be too predominant but at most 20-30% of all instruments.

The key issue in the instruments for measuring the network service ability is measuring the network as a whole not from the viewpoint of a single company. Extensive overall evaluation of an information service is practicable based on the basic principles of the balance scorecard presented briefly above. Directing the final evaluation toward such a information service score card evaluation would in practise mean that it should be contemplated whether the current evaluation modules can be utilized in the formation of an evaluation packet covering all four viewpoints of a balanced scorecard. E.g. which modules are about the customer viewpoint, which are about the process viewpoint and are some modules maybe such that they cannot be placed in any of the four viewpoints of the balanced scorecard. This processing can lead to joining modules, adding new ones etc. The scope of the evaluation can be ensured using the basic structure of the balanced scorecard.

4.5   Evaluation process

The starting points and implementation of an information service evaluation depend on at which state of the life span of the service the evaluation is to be implemented. In practise this means that at the development stage of the service it can be reasonable to keep to evaluating the social impacts and efficiency of the service. The network structure required by the implementation of the service may not be shaped at all. If the network exists the evalaution may of course be implemented as a proactive evaluation. If respectively the information services are developed and served without public presence the

evaluation is focused on the levels which are active partners in the development of the service i.e. the implementing network, single actors and service users.

Based on the above the evaluation process of a service network can be perceived as an entity so that the object of the evaluation, used methods and instruments are tailored according to the stage of the life span of the service .

5 EVALUATION METHODS AND INSTRUMENTS

The development, design, production and use of information services can be evaluated from several different viewpoints. Evaluation is possible at least from the society, network and single service user viewpoint. It is possible to use only part of the evaluation package depending on the nature and life span of the service. Table 2 shows the evaluation levels, main interest groups to be considered in the evaluation and the possible instrument concepts suitable for the setup of an instrument system.

Table 2. The levels, main interest groups and basic instrument concepts of information service evaluation.

Information service evaluation levels	Main interest groups	Basic instrument concepts
Society level	Authorities, service monitoring and users • political decision making, legislation (parliament) • authorities • third partners (general public, users and user businesses, e.g. transport and marine traffic	• the promotion of political and social goals and impacts on the phenomenon object of the service • cost effective production and maintenance of public services • social know-how capital produced by the service • general public opinion and acceptance of the service • availability and business scope of service (e.g. transport) • total evaluation of information service service level
Network level	Service networks and interest groups along the service life span • authorities and financiers (as network) • network leaders and key actors at network life span phases • all participating networks at service life span phases	• network classification and network models • number and development of partners at service life span phases • number and scope of services • depth of co-operation relationships (e.g. operative, tactical, strategic) • level of commitment to common service goals and efficiency instruments • economic development (e.g. growth of service network total revenue)
Single actor level	Single actors • customers and information service end users • single network actors (companies…) • public organisations • private persons and consumers	• fulfilment of service requirements • experienced and measured customer benefits • customer satisfaction instruments and spontaneus feedback • information service economic parameters (increased revenue, profitability, market share, global scope) • continuity of information service business

The resources used in the analysis are hard to define exactly. The resources are affected by the phase of the life span of the studied system, the number of actors and the amount of descriptions and other information of the service process at the companies participating in the production of the service.

6 EVALUATION RESULTS AND REPORTING

The results of the evaluation can be presented as written reports. The report presents the life span phase, evaluation viewpoint, used methods and possible instruments. The evaluation results probably differ somewhat according to the life span phase of the evaluated service. At the ideation and development phase of a service the evalaution can be a part of a social impressiveness analysis studying the investement reasons, received benefits and impressiveness of the service. At the later phases of the life span the evalaution results can also serve the underlying network and its single members.

7 CONNECTION TO OTHER MODULES AND TOOLS

The service network evaluation module is connected to several other evalauation modules. There are identified connections at least to the following modules:

- revenue and finance

- organisation

- profitability

- user needs

- political goals

- social impressiveness

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