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TOWARDS CO-CREATION OF SERVICE RESEARCH PROJECTS – A METHOD FOR LEARNING IN THE NETWORK

1) Purpose

How to combine research knowledge across disciplines is a big question when studying and developing services in industry and public organizations. This paper presents a new kind of workshop process aiming at co-creation in a research network. We piloted the process at VTT Technical Research Centre of Finland during January – May 2009.

2) Design/methodology/approach

We combined foresight and organisational learning methods, namely roadmapping and developmental impact evaluation. During the workshops VTT researchers and the management were enabled to create a shared understanding of service research strategy at VTT. The workshops were designed to facilitate dialogue between the users of the research, potential collaborators such as universities, funding agencies and societal actors in the field of service science.

3) Findings

Although, the need for such a way of acting is often stated, it is rarely achieved in practice. Thus our method is a concrete way for managing future-oriented networking across organisational borders as a basis for continuous learning and innovation.

4) Practical implications

The process is a potential embryo for a new kind of research culture towards learning in the network, shared and transparent planning of project proposals.

5) Originality/value

For the first time the methods of foresight and learning organisations are combined. Furthermore, the process builds up a network and its research strategy from below, from above and together with customers and collaborators.

Keywords: Service research, co-creation, networking, workshops, foresight, organisational learning, roadmapping, developmental impact analysis, methods

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1. INTRODUCTION: THE CHALLENGES OF VTT AS A SERVICE RESEARCH ORGANIZATION

Services, both as a business and as a science, are a rapidly growing sector, and they have a remarkable influence on processes and operations in companies and other organisations. This change does not touch only the industry but the society as a whole influencing the everyday life of ordinary people. In fact services now represent over 70 percent of the economy in OECD countries, in the U.S. over 80 percent.

Last decades have been successful for Finnish technology companies headed by Nokia. However, the latest UN E-participation index 2008 positions Finland at the 45th place between Arab Emirates and Honduras (cited in Kosonen 2009). Although new service business opportunities are facilitated by ICT and other rapidly developing technologies, the elaboration and implementation of services take place at a slower pace. In order to innovate and develop successful services for global markets, we need future-oriented and multi-disciplinary approach, which combines technological knowledge e.g. to behavioral, social and design sciences.

Technical Research Centre of Finland (VTT) has traditionally focused on the development and application of technology. However, over the past couple of years VTT's interests have extended to technology-based services, service business and service innovation research. Besides a variety of customer funded service-oriented research projects, VTT has invested on service research e.g. by establishing a three-year research programme on services.

This *Service Beyond* Theme was launched in 2005 with the aim of integrating enabling technologies and concepts for service business. At the end of the research programme an external evaluation was conducted by three international experts. They stated their general view as follows: "...*Service Beyond Theme has compiled a good and diverse portfolio of projects and demonstrated good progress regarding new business ventures, scientific results, and external relationship building. Service research is a new area of research for VTT, and the work presented thus breaks new ground internally. Some projects also appear to do so externally, within their fields of research.*" (Leiponen et al. 2008).

They also pointed out some bottlenecks on VTT's way to a service-oriented research organisation and suggested actions for improvement:

"VTT needs to further crystallize and articulate ... project goals and objectives. These goals can include commercially successful innovations, but opportunities to engage in contract R&D for the industry or development of further research and capability within VTT and in external research networks are also valid strategic goals. VTT's service science and innovation activities could target some additional high growth areas ... All projects should be built on an analysis and an explicit (articulated) view of the future of the market, technology, and players in question. This should lead to an understanding of what VTT's role may be in this landscape. What can VTT contribute, and why should it do it? VTT should strive to be more strategic and more explicit about strategic theme project selection and goal setting." (ibid)

Finally the evaluators suggested enhancing VTT's innovation potential *"by moving to more open, transparent, and collaborative research and innovation practices, both internally and with lead users and customers. There appears to be a need to improve knowledge flows within VTT among*

experts in different projects. Similarly, lead users could be fruitfully engaged more intensively and at an earlier stage in ongoing innovation projects. Community-based work practices that utilize emerging social software and web 2.0 technologies would facilitate the “bottom-up” creation of new links among relevant experts. Ultimately, collective insights gained in this way could lead to new service business opportunities.” (ibid)

The above mentioned findings and suggestions have, on one hand, explicitly inspired the creation of VTT’s Service Science and Business (SSB) network and, on the other hand, made it possible by creating a fruitful ground among both managers and researchers of the institute. The necessity to transcend organisational and mental silos and to start instead sharing the knowledge was evident in the research community.

In order to create VTT’s SSB network we combined foresight and organisational learning methods, namely roadmapping and developmental impact evaluation, in a workshop process. During the workshops circa 30 VTT researchers and the management representatives were enabled to create a shared understanding of service research strategy at VTT. The workshops were designed to facilitate dialogue between the users of the research, potential collaborators such as universities, funding agencies, and the societal actors in the field of service science.

This paper presents a process called learning by foresighting and evaluating (LIFE). LIFE enables the management of future-oriented networking across organisational borders as a basis for continuous learning and innovation. The process is a potential embryo for a new kind of research culture towards learning in the network, shared and transparent planning of project proposals. Participants (researchers, customer managers and strategic research managers) have the opportunity to dialogue across hierarchy. Furthermore, the process builds up a network and its research strategy from below, from above and together with customers and collaborators.

The workshops of the LIFE process were designed to help the participants of the SSB network to move forward in their zone of proximal development. (Engeström 1999). This term refers to a situation and terrain of constant ambivalence, struggle and surprise, when the participants are about to create the next actions for the future. In this terrain, the possibility of *expansive transformations* (Engeström 2001) or as we call *creative shifts* may take place. The workshops aimed at creating a learning situation, in which the participants were able to see their research in a wider perspective than before. This expanded horizon meant seeing research projects e.g. from the management’s, from the customer’s or from the research collaborator’s point of view. In this paper, we analyze an example of creating a terrain for one such creative shift. We describe how we facilitated the dialogue between the management and the researchers about the preliminary vision of service research at VTT.

We, as authors of this paper have complementary knowledge and expertise. The first author works currently in the field of technology foresight, managing and facilitating roadmapping projects. The second author has expertise on management and organizations, and has experience on developmental impact evaluation. The third author has studied the dynamics and development of research groups, and has conducted developmental impact evaluation process in two research communities. In the LIFE process all three of us were involved as facilitators and co-constructors of the workshops.

2. A NEW COMBINATION OF ORGANIZATIONAL LEARNING, IMPACT EVALUATION AND FORESIGHTING

Learning by foresighting and evaluating -process (LIFE²) derives from the methods called the Change Laboratory, Developmental Impact Evaluation and Roadmapping. In the following, we describe the basic theoretical and methodological principles of each approach.

Change laboratory is developed from the basic ideas of expansive learning and the cultural-historical theory of activity (Engeström 1987; Engeström et al. 1996). The method used in Change Laboratory is based on the notions of re-mediation and dual stimulation (Vygostky 1978). In the method the practioners collect data about their own work and it is interpreted with the help of conceptual models and tools.

Engeström (2001) has pointed out that standard theories of learning in the context of school education have concentrated on an individual acquiring knowledge or skills in such a way that a change in the behavior of the subject may be observed. This conception presupposes the involvement of a teacher who knows what is to be learned. Engeström (1987) introduces an approach to learning in organizational and workplace contexts, which he calls learning by expanding or expansive learning.

Expansive learning emphasizes the social nature of learning. Learning is not taking place only inside individual's mind, but is embedded in the development of activity. The expansive learning approach is a reciprocal theory to sociocultural learning approach (e.g. Lave & Wenger 1991; Gherardini et al. 1998), which considers learning taking place between people and in the working environment, in its situations, actions, negotiations and using of material artefacts. The theory of expansive learning is especially interested in how the entire activity system is constantly in a transformation process. Expansion refers to the phenomenon of exceeding the initially given context of specific problems and refocusing on the wider context that generates those problems. "An expansive transformation is accomplished when the object and motive of the activity are reconceptualized to embrace a radically wider horizon of possibilities than in the previous mode of the activity" (Engeström 2001, 137). In the case of a research activity, this means perceiving the object of the research not merely as an opportunity to expand scientific knowledge, but as an integral part of the customer's activity or as a part of a solution to a societal problem.

According to Engeström (2001, 137), expansive transformation may be understood as a collective journey through the zone of proximal development. More specifically, the zone of proximal development has been formulated as follows:

"It is the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions." (Engeström 1987, 174).

This definition emphasizes questioning old activity as a starting point to finding new solutions and forming new kind of activity. In the case of learning by foresighting and evaluating -process, the analysis of two past research projects is used in this phase of questioning. As in the Change Laboratory, we gathered the entire network of actors involved in the activity to analyze their work and ways of working for the workshops, in order to create a situation for collective learning. In the

² Abreviation LIFE characterizes also the vivid and interactive process between different stakeholders during the workshops. The process enhances new face-to-face contacts inside and across organizations and hierarchical positions. It creates new "life" for the research area, which is dispersed in the organization.

developmental impact evaluation, we combined the idea of an expansive learning cycle and used the concepts of impact assessment of research organizations as tools. The process resembles participatory evaluation approaches (e.g. Fetterman 2001; Friedman 2001; Torres & Preskill 2001), which contend that learning from evaluations is not possible if it involves only directors and owners of the organization. However, participatory evaluation processes do not describe how the new learning actions for the future should be concretely taken after the evaluation.

Foresight, or synonymously futures studies, explores alternative futures which can be possible, probable, desirable or plausible. It is used to improve decision making with long-term consequences, offering a framework to better understand the present and expand mental horizons. Various methods, both qualitative and quantitative, are used to systematically explore, create and test plausible forthcoming developments, and to evaluate their desirability, importance and acceptability. (e.g. Masini 1993; Bell 1997; The Millennium Project 2003; Koivisto at al. forthcoming)

Roadmapping presents one practical and largely used foresight method. It refers to a flexible and structured technique for exploring and communicating the relationships between markets, products and technologies over time (Phaal et al 2004). Roadmapping is a method for mapping alternative futures. It links the future to the present and helps the elaboration of a vision of the future. Roadmapping is also about strategy visualisation and communication. It is a participatory process where process itself is often more important than the result i.e. a roadmap, which presents the graphical output of a roadmapping process.

Roadmapping has been widely used within industry since 1970s, especially in the form of technology-oriented roadmapping. It has been less utilised in the field of research. However, VTT Technical Research Centre of Finland has applied roadmapping methodology in several foresight research projects and with different scopes. In fact our roadmap concept is based on the diversification of the rationale behind the roadmapping exercise. The traditional technology and product roadmaps present just one, and relatively narrow, application of the method. We have applied roadmapping to scan not only emerging technologies but also the changing societal contexts and operational environments. Strategic roadmaps addressed to action planning have been developed. Innovations systems level roadmaps present the widest application of the method.

Furthermore, in our LIFE process we have combined roadmapping to organisational learning methods to foster organisational development and the creation of horizontal networks. In this context roadmapping has been utilised as a method for triggering participatorial, future-oriented thinking within the LIFE process with less importance given to the roadmaps themselves.

3. THE PHASES OF LEARNING BY FORESIGHTING AND EVALUATING (LIFE) PROCESS

In the following, we open up the phases of learning by foresighting and evaluating step by step. The phases are introduced as they took place in the context of SSB network at VTT from January to May 2009. Methodological principles, such as how impact evaluation, organizational learning and foresighting complemented each other, are described in each phase. Figure 1 describes the method as a learning process.

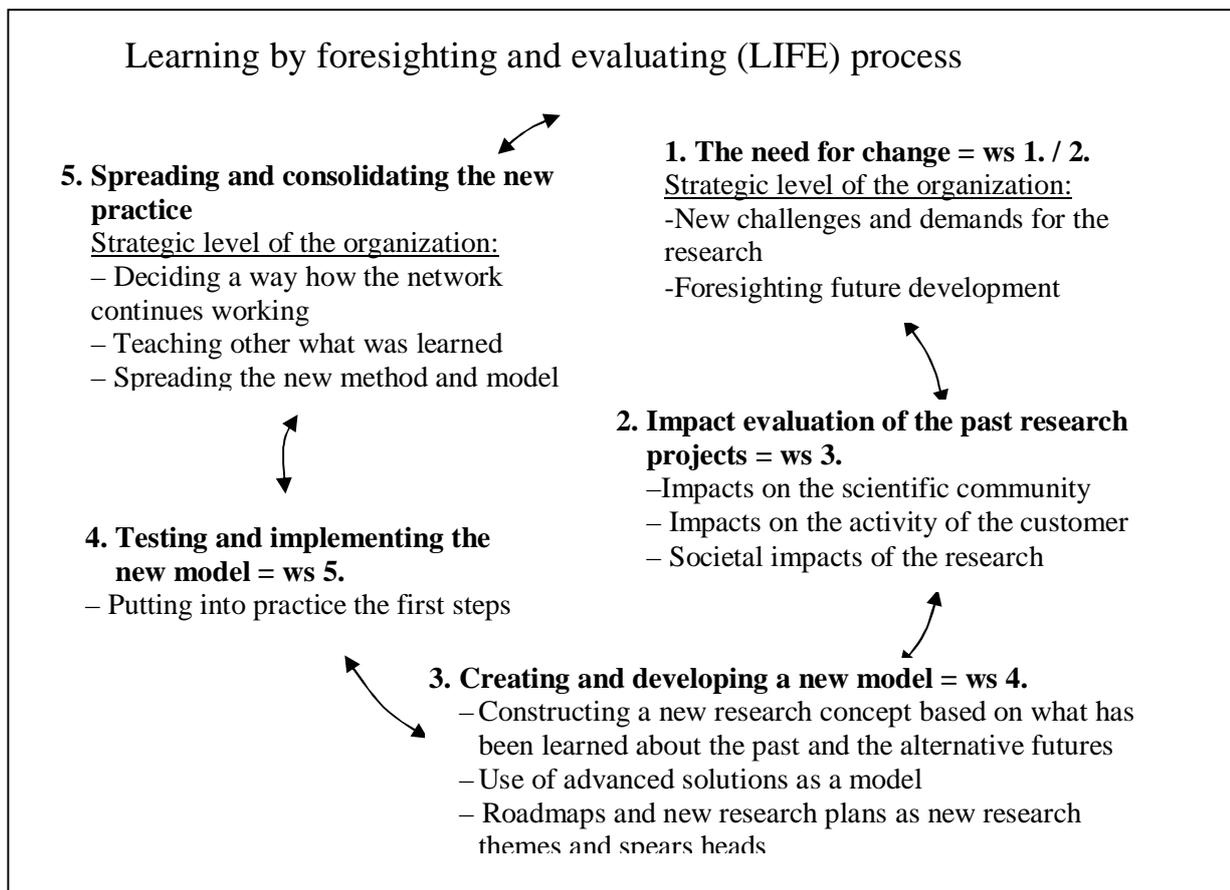


Figure 1 The phases of LIFE process

3.1 The need for change – The strategic challenges of the service science and business research in Finland (workshops 1 and 2)

In the *first workshop* the participants were gathered together to initiate the networking between them. The participants consisted of managers (from strategic research unit), customer managers and both senior and younger researchers from eleven knowledge centers of VTT. The purpose of the workshop was to become acquainted with each other and launch the process for learning by foresighting and evaluating for the participants. The participants realized, that only one workshop was not enough for creating new insightful projects. The discussion revealed the need for a long-term process for co-constructing a new direction for service science and business research at VTT.

We described the phases of the LIFE process as a draft. We explained that this was the first effort also for us as facilitators to combine foresighting and developmental impact evaluation. However, we had conducted these methods and processes separately in different research communities with

promising results (e.g. Saari & al. 2008, Ahlqvist et al. 2008). We called the participants for piloting this potential organizational innovation together with us. Our invitation to co-create was received with enthusiasm and we agreed on conducting four workshops during four subsequent months.

The purpose of the *second workshop* was to create a dialogue between managers' vision of service research and concerns of the researchers involved in field. This session is analyzed in detail later on in this paper. For every workshop we brought an outsider's view to inspire the future research directions and alliances of VTT. The first visitor was the head of Service Factory from the recently established Aalto University. We imposed participants to six different teams, in which we mixed up their organizational positions and gave each group a new identity. In order to bring people "outside of their boxes" the teams were named after different art schools: symbolistists, concretistists, surrealistists, cubistists, naturalistists and futuristists. This measure turned out to be a good ice-breaker between researchers with different expertises. The fresh identity of team from totally different context from science was received playfully.

In the second workshop we developed a service research landscape roadmap 2009-2025 in two bigger groups. Through the first roadmapping exercise we explored opportunities and identified challenges, drawing 'the big picture' of the service research in the future. The aim was to expand mental horizons and acquaint the participants with the method. The output i.e. graphical roadmaps were less important though they would be used later as the basis for an ulterior, more detailed roadmapping exercise.

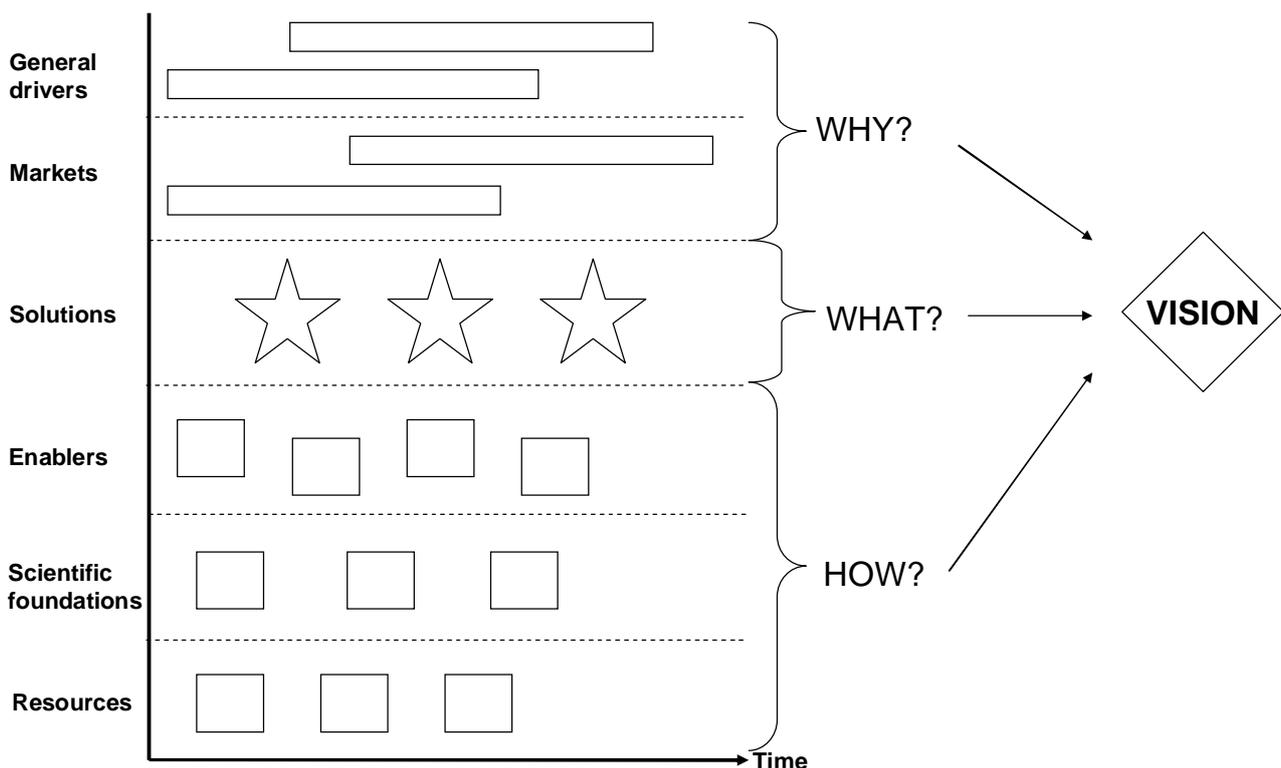


Figure 2 The roadmapping framework adopted in the process.

Following the basic roadmapping framework presented in the figure, we charted the pull for services coming from the society and markets (WHY) and the push coming form technological development, legislation etc (HOW). Finally we brainstormed about how to meet future demand of services emerging from WHY and HOW levels of the roadmap (WHAT). Directions and ideas for

the future research were drafted and discussed against this service research landscape roadmap

In the end of the second workshop we chose together with the participants which research projects would represent the past service research at VTT. These were to be used as objects for developmental impact evaluation.

3.2 The impact evaluation of two service science research projects (workshop 3)

In the *third workshop*, two past service science research projects were evaluated from three complementary perspectives: scientific, societal and the customer's. The project examples were intentionally chosen to be different from each other. The first project example concerned a service evaluation tool (EVASERVE), which had originally been developed for the information services of the traffic systems and meteorological services, but had potential to be extended to other public services as well. The second project example concerned business models in services (BESEL 1) in the context of industry.

In the workshop three perspectives to both project examples were illuminated. We had beforehand interviewed the customers, the research collaborators and funding agencies and asked them to evaluate the impacts of the projects from their perspective. They were invited to the workshop to present their views to the researchers. If they were not able to come, we videorecorded their speeches and used it in the workshop.

In the workshop, the researchers observed the speakers, and group discussions were aid in interpreting the main messages. The participants were given a conceptual tool for analyzing the different perspectives. This tool helped them to see the societal relevance, the accumulation of the knowledge, benefits for the customer and new ways of operating for the organization itself, which the project had produced (Van de Ven 2000). This method is called in the psychological learning theories dual stimulation (Vygostky 1978). The main purpose of the evaluation of the two projects was to question the old way of conducting research. As a whole, the qualitative impact evaluation of the two projects made their strengths and weaknesses visible. The evaluation made it clear that there are challenges in how to best utilize the multidisciplinary expertise of the researchers.

In the end of the workshop, the groups created new research themes based on what they had learned from the impact evaluation (the past) and roadmapping (the future) of the service research so far. We called the result as "the top ten" list of VTT's service research. Before the following workshop, the participants voted the five most promising themes, which they wanted to develop further.

3.3 Creating and developing a new model – new research plans as spear heads (workshop 4)

In the *fourth workshop*, which we named Back to the Future, we started with a conclusive interpretation what were the lessons learnt from the project evaluations. The following table describes what kinds of challenges the evaluation raised up.

These were supposed to be taken into account, when the participants divided into the five themes in order to develop them further. These five themes were: 1) Service laboratory as a space to integrate different expertises in the area of service science, 2) Business to customer, 3) Productization of services, 4) The challenges of public- private interface and service innovations and 5) Services in global environment. The participants were supposed to generate new project proposals and action

plans. The roadmaps (service research landscapes) produced in the second workshop were utilised as a basis for the brainstorming session. In this second roadmapping phase we had smaller groups and more focused themes compared to the first roadmapping exercise. The aim was to scan deeper into the future of service research by refining the knowledge and organising, designing and planning the real life actions.

Table 1 The interpretation of the project evaluations

What was typical and general for the service science projects at VTT?	What are the elements in the zone of proximal development (next phase of development) of service research?
<ul style="list-style-type: none"> • Evaluation of already existing services • Projects used only one or two research approaches or expertise as resources. • The first projects formed common concepts and language with the customers. • Developing existing service business concepts • There was no vision about on which line of business the service research should focus on. • Finnish context as research object 	<ul style="list-style-type: none"> ➤ Co-producing service business with public and private organizations ➤ Combining of different knowledge (technological, business management, social sciences) in the same research projects ➤ Systematic creation of methods and concepts for service research ➤ Developing and spreading of new service innovations ➤ Should the vision focus on certain lines of business in service research? ➤ Global service business as a research object

In the end of the workshop each team presented their project embryos and plans. They were asked to continue the writing of these plans, which can be characterized as spear heads of the new direction of service research. The plans were expected to be presented in a more developed form in the last workshop.

3.4 Testing and implementing the new research plans and new mode of activity and consolidating the new method (workshop 5)

In the *fifth workshop*, the new research proposals, which represented the spearheads of the strategic focus areas, will be introduced and analyzed. When this paper was written the last workshop was not yet organized. However, we as facilitators had been involved in several project proposal meetings. A large group of participants developed the idea of the service science laboratory further on and it will be presented as a new research strategy derived from below and from this workshop process. The proposals will be commented by experts of service science from other organizations and from the management. In this way the cycle is kind of closing up, the dialogue between the researchers and managers, and between collaborators and customers becomes actual again.

4. AN EXAMPLE OF A CREATIVE TRANSITION: FACILITATING DIALOGUE BETWEEN THE MANAGER AND RESEARCHERS

4.1 The idea of creative transformations and group work

The bearing idea of the LIFE process is to create a multivoiced learning process into the organisation. In the previous studies of research organizations, it has been noticed that the dialogue between the top managers and researchers has been insufficient (Saari & Talja 2009). In order to open the discussion between these actors, in the second workshop the manager was asked to present his vision about the future of VTT's service science and business.

In the second workshop, the task of the researchers was to listen the message at the management level and then ponder and compare their own ideas about the future developments and concerns relating to its implementation to their daily work. The discussion was facilitated by "a fish bone" team exercise in order to make participants' viewpoints and concerns visible.

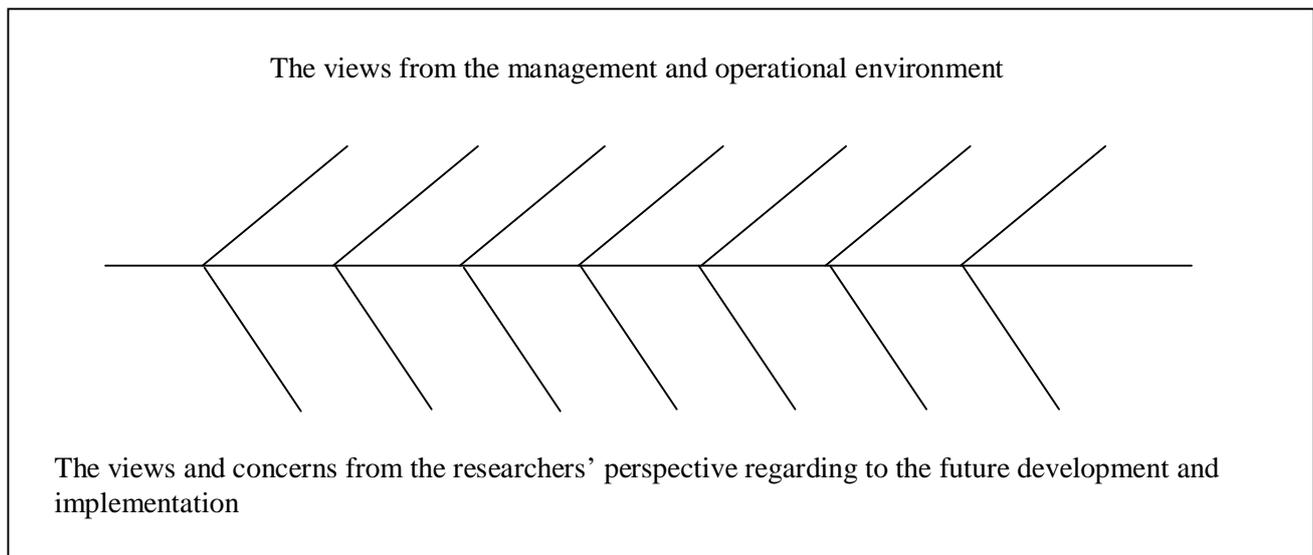


Figure 3 The fish bone -exercise facilitating dialogue between the management and researchers

To the upper part of the fish bones participants were asked to write down the most important points they picked from the manager's vision statement and the state of the operational environment. To the lower part, they were asked to write down their own views and concerns.

Next, we analyze this part of the dialogue process as an example how a participatory process breaks up the routine borders. The videos³ were used as a source of data for the analysis: they were replayed and the dialogue was transcribed from the videos.

³ All of the workshops were videorecorded by the facilitators of the process.

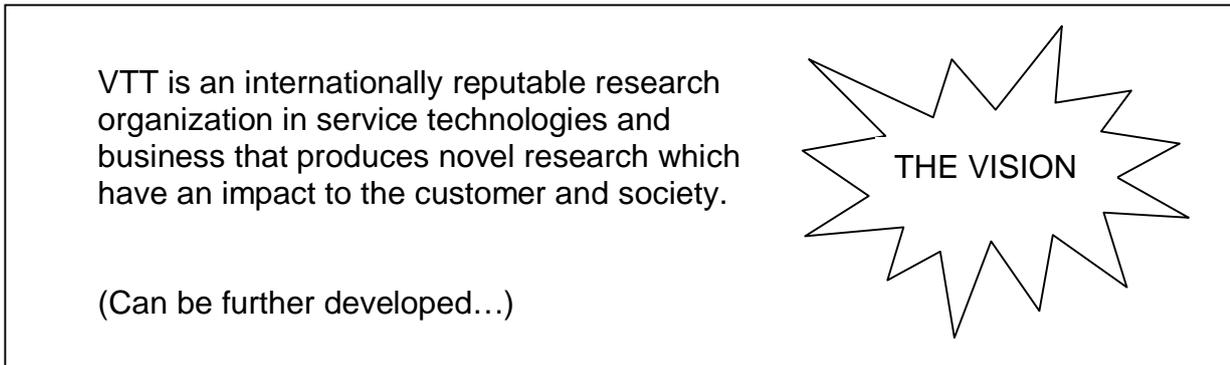


Figure 4 The manager's vision statement from the second workshop (a power point slide)

4.2 The manager's speech before the vision

At the workshop, the manager initialized the vision statement (figure 3) by saying a smile on his face:

“Let's catch up the schedule, so here it is, the vision that has been on hand for a moment now and was shown briefly at the first workshop too. This is on a very generic level. This is what the upper management has given as an agenda how to continue... At the moment, on a national level we are living in a transformation phase when it comes to innovation and technology policy. We are renewing our system and different actors are seeking for new roles...I'm convinced that even in national level there is none who knows exactly where we are goin to. The direction is there though. Universities are more and more getting closer to innovation work, markets and organizations, beside VTT. In the future, the exploitation will be based on strong academic background. We must unlearn the old roles and way of acting...”

So, this is the vision and it is free for everyone to develop further on This is not officially approved by VTT's board of directors, so in this case it is very alterable.”

4.3 The manager's speech after the vision

The manager continued, showed another slide and explained how we know we have been successful in implementing the vision. He said that after a year we should:

- have a functional research network in the field of services inside of our organization and researchers are bonded together no matter how (e.g. developing technology or immaterial services) or where they work
- create a research portfolio that constitutes both ends of the innovation process, meaning scientifically qualified projects and projects that will lead to development of new business
- get invitations as Invited Speakers to international conferences
- create a financial structure mainly based on customer finance
- succeed well in Finnish research calls
- be able to influence to the European research policy

“After a year to two, if we have an evidence of these, we know we are going to the right direction.”

He continued explaining that the ones who are persistent enough are always able to have an effect to the strategy formation and he encouraged people to be active in bringing their thoughts to the management level. He continued:

“Here we are and this is the big goal (vision) we should aim at. Pushing each others forward. “

He ended his presentation with a kindly request:

“So HE-ELP, please.”

After the presentation there was time for questions. Only one question was made. It concerned about the formality of the vision: *“How official is it and how can we influence on it?”*

The manager explained that during spring the strategy process will go on and that is why we as a group are here today. He asked that: *“For real, what do you want?”* Obviously he was open for ideas and “offered his hand” to the group.

4.4 The fish bone -group work and the discussions

To help the discussion to arise the researcher were divided beforehand by the facilitators into groups of five. These groups were named after different art schools, namely 1) Symbolists, 2) Surrealists, 3) Concretists, 4) Cubists, 5) Futurists, and 6) Naturalists. The groups were given 10 minutes time to draft their version of the fishbone. The bones were presented by each group at time and were attached to the wall side by side. The main messages from each group are collected to the table 1 which is in the Appendix 1. In the following, we present four examples of how the groups concluded their discussions about the management’s vision.

Symbolists: *“I don’t know if this fish of ours is a flounder or a bream. The bones are so dispersed (humming). The question was what we should do in order to implement the vision. The vision says internationally known, that’s why we need brand management which should be based on strong knowledge and substance. This calls for adequate number of researchers and ability to combine the knowledge. The development of our own expertise is crucially important. For this we need strong collaboration and networking with partners and customers. We have to have some kind of mental map where we stand in this service science. We also should be easy to approach and VTT should be seen as a service research organization.”*

Symbolists emphasized that in order to be an internationally known research organization we need brand management, combining of different expertises and networking inside and outside organization.

Concretists: *“We started to process this based on the management’s view from the vision. At the moment the vision seems quite technological. The challenge in everyday life is how to concretize it. It also seems that developing this service science and business has to be really extensive. Now it appears that there is an aspiration to work in all sectors. We saw that it might be suitable to acknowledge our core competencies and based on those maybe we should focus more. In addition, we pondered how to involve users’ voices to this vision work and thought about the societal impacts and the challenges of internationalization.”*

What comes to the reality, we see that our strength and ability to distinguish from the competitors comes from the possibility of combining our knowledge from different perspectives and in this way create new kind of interaction.”

Concretists yearned more comments from the management how to implement the vision. They pointed out that the vision seemed quite technological as such. They noticed that the vision does not speak out on which sectors service research should be focused. They also emphasized the ability to combine knowledge between different sectors and disciplines.

Cubists: *“If it is hard to read our fishbone, because we tried to be cubistic when drawing it (humming). // We would have liked this fishbone to be thinner, which means better communication between management and researchers. A good way of developing knowledge, networks and broader understanding would be job rotation between researchers from different units inside of our organization. We have had some good experiences from this already. And then there is this collaboration with outsiders. We are doing intense development work with companies, and have noticed that if possible, working physically in the company’s premises is a good method for better communication and mutual understanding. What comes to the working methods inside our organization, we don’t need any service business ERP-system or such, instead are hoping for flexible and agile ways of working. So we mean shared methods and tools, also a question for best practices should be taken into account. We are lacking a shared vision, but these workshops are aiming to that.”*

Cubists demanded better communication between the management and researchers. They mentioned job rotation as a means to develop new knowledge and networks. Again flexibility of the organization was seen as an asset.

Naturalists: *“Should I take my shirt off because we are naturalists (laughing)? We started to think about the implementation of the vision in a quite technological way. We see that firstly we should elevate the profile of service science and business at VTT. There are lot of service projects in our organization, but it seems that those haven’t been recognised as ones. But if we want to raise the profile, secondly we should form an organizational strategy and indentify where and in what ways we are already doing service related projects. It seems that our management is looking for some input from us to the strategy. Should we then somehow identify the potential that is related to this field? What we are doing and how it could be positioned in relation to the bigger picture in VTT, operational environment and of course scientifically. Thirdly, we thought that how then motivate people towards more service oriented way of working. This could be supported with new steering mechanisms and allocating funding that would at the same time support the networked way of working.”*

Naturalists emphasized the need to elevate the profile of service science and business at VTT. They pointed out that the service research projects have not been even recognized yet in the organization. This reflects how dispersed the service research projects are currently conducted in the different knowledge centers. A network inside the organization was warmly welcomed.

After the groups had presented their thoughts the management was asked to comment on them and present a brief summary. This was an effort to further develop the dialogue. The manager presented his comments:

“We had been listening quite well each other (humming). You had the same thoughts than I had. But what stuck to my mind, what would I like to emphasize? First of all, I see that we are dealing with a typical brand management situation here. How to highlight and make visible all the knowledge and amount of work, we are actually already doing, in a way that is beneficial when communicating to the outsiders. That is the added value of brands and it brings credibility. I’m not sure but what comes to the funding programs, I have understood that there are some new programs and collaboration for services pending. The possibilities are emerging and we have the ability to

form international companionships and we should be active in these.

Actually I'm a little bit surprised that it wasn't emphasised further was the question of specializing. It was here somewhere but not in all. It is a big question. We cannot or should not compete with other major organizations in this field, rather specialize and collaborate. This is also my job to promote this.

Finally, the facilitator gave an option again for the researchers to comment on the manager's perspective. A vivid conversation was aroused. The question of where should VTT focus on in service research was raised up. It was considered important that the network would continue to deal with these questions. Also the suitable organizational form and funding of research was talked about.

4.5 The fish-bone exercise as the trigger of the dialogue

This was the first warming up group work in the beginning of the LIFE process. Its purpose was to introduce the participants to the participatory group work method and for having equal communication with the management. Interestingly enough, it raised up issues, which seemed to be crucial starting points for the future service science and research strategy, such as the need to combine different expertises, the need for networking internally and externally, and the need for having this kind of dialogue about the vision and strategy.

The fish-bone exercise made it visible how general the management' vision was so far, while the researchers called for guidelines where to focus or where to specialize on in service research. The dialogue raised this matter- whether to focus on certain service development in the air and to be co-constructed later on in SSB network.

The exercise showed the significance of a simple tool and facilitating in creating the dialogue. If the vision had only been presented, and then asked participants to comment it, only the most courageous ones would have said their views. Before the fish-bone exercise there was some time for comments, but only one person used the opportunity. However, the simple tool in the form of a fish bone gave the participants a structure how to discuss.

The idea of using the art metaphor in naming the groups created an open, positive and joyful feeling to the development work. People referred with a smile on their faces to their "art schools". For example questions such as "*What kind of art form this cubism is after all?*" were made in the groups. They were joking together "*That is obvious for you, you are a futurist after all*". They were also referring to pieces of art, when illustrating their group work and feeling was playful. For example a naturalist said on his way to present the group work: "*We are the naturalists, does it mean I should take my clothes off?*". The art school identity helped perhaps people to move out from their silos and from conventional thinking (see Coyne & al. 2007).

5. DISCUSSION

This paper introduced learning by foresighting and evaluating (LIFE) process, which was piloted at VTT to create a network in service science and business research. In the process, five workshops were organized in which the current state of service research was first analyzed. Two past projects were used as mirrors and samples to identify the strengths of the pioneer research projects and to question the monodisciplinary way of researching. Every workshop was an effort “to cross a border” and help the participants see their research in a new context and in a wider horizon than before. Theoretically, this idea is based on learning by expanding theory (e.g. Engeström 1987, 2001).

In the paper, we described one of these creative cross overs, namely how we facilitated initiating the dialogue between the manager and the researchers. The manager’s vision about the service research at VTT was challenged with the help of a fish-bone exercise. The questions raised in the dialogue such as the need to combine different expertises, the need for better communication between managers and researchers, where to focus on in studying and developing services were crucial starting point for the entire process. In the following workshops, we started to work on these more deeply.

This process developed the service research network and produced new project initiatives as a result. In order to continue this way of learning in the networks, it needs to be adopted as a continuous way of planning and organizing research. Our previous intervention processes (Saari & al. 2008) have proved how important the middle managers’ role is in continuing and spreading this way of operating. For VTT the LIFE process itself, is also a promising service concept, which we may market as a service for recently established internal research networks.

The first pilot has proved how fruitful it is to combine the analysis of the past to the construction of the future in the same process. Typically, the impact evaluations only identify the strengths, problems and hindrances which should be improved in the organization. They do not give tools or construct the first learning actions for the future activity. Likewise, the roadmapping and foresighting methods help participants think and plan their future vision and actions without using lessons learnt from the past as a starting point. By combining these methods we create an opportunity for people to learn and move between these horizons – from past to the future.

REFERENCES

- Ahlqvist, T., Bäck, A., Halonen, M. and Heinonen, S. (2008) Social Media Roadmaps. Exploring the futures triggered by social media. VTT Tiedotteita - Research Notes : 2454. VTT, Espoo. 78 p. + app. 1 p.
- Bell, W. (2003) Foundations of Futures Studies. Vol. 1-2. Transaction Publishers, New Brunswick, New Jersey.
- Coyne K., Gorman Clifford P. and Dye R. (2007) Breakthrough Thinking from Inside the Box. Harvard Business Review (Dec.) pp. 71–78.
- Engeström, Y. (2001) Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization. *Journal of Education and Work*, vol. 14 no. 1, pp. 133–156.
- Engeström, Y. (1999) Expansive Visibilization of Work: An Activity- Theoretical Perspective. *Computer Supported Cooperative Work* 8: 63-93.
- Engeström, Y. (1987) *Learning by Expanding: An Activity Theoretical Approach to Developmental Research*. Orienta-konsultit, Jyväskylä.
- Engeström, Y., Virkkunen, J., Helle, M., Pihlaja, J. and Poikela, R. (1996) The Change Laboratory as a Tool for Transforming Work. *Lifelong learning in Europe*, 2, 10–17.
- Fetterman, D. (2001) The Transformation of Evaluation into a Collaboration: A Vision of Evaluation in the 21st Century. *American Journal of Evaluation*, vol. 22 no 3, pp. 381–385.
- Friedman, V. J. (2001) Designed Blindness: An Action Science Perspective on Program Theory Evaluation. *American Journal of Evaluation*, vol. 22 no. 2, pp. 161–181.
- Gherardini, S., Nicolini, D. and Odella, F. (1998) Toward a Social Understanding of How People Learn in Organizations: The Notion of Situated Curriculum. *Management Learning*, vol. 29 no 3, pp. 273–297.
- Koivisto, R., Wessberg, N., Eerola, A., Ahlqvist, T., Kivisaari, S., Myllyoja, J., and Halonen, M. Integrating Future-Oriented Technology Analysis and Risk Assessment Methodologies. *Technological Forecasting and Social Change* (forthcoming)
- Kosonen, M. (2009) Sähköiset palvelut – Suomen kilpailukyvyn uusi veturi? [E-services – the new locomotive of Finland’s competitiveness]. A presentation at Kasvufoorumi seminar on April 24th 2009. Helsinki, Finland. [in Finnish]
- Lave, J. and Wenger, E. (1991) *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press: Cambridge.
- Leiponen, A., Pyötsiä J and Spohrer, J. (2008) VTT Strategic Technology Theme – Service Beyond. Evaluation Report. Espoo. (Confidential)
- Masini, E. (2003) Why Futures Studies? Grey Seal, London. 144 p.

The Millennium Project (2003) Futures Research Methodology - V2.0. American Council for The United Nations University (CD-rom.)

Phaal, R., Farrukh, C.J.P. and Probert, D.R. (2003) Technology roadmapping—A planning framework for evolution and revolution. *Technological Forecasting & Social Change* no.71 pp. 5–26.

Saari, E., Kallio, K. & Hyytinen, K. (2008) Learning from the users of research: Defences, insights and fragile endeavors as manifestations of expansive learning. Paper presented in Organizational Learning and capabilities (OLKC) conference 28.4.-30.4.2008. Copenhagen.

Saari S. and Talja H. (2009) Towards Communication and Learning Based Leadership. Observations in Finnish Public Research Organizations.. *The Learning Organization*. Vol. 16 No. 3, 2009, pp. 251-260

Torres, R. and Preskill, H. (2001) Evaluation and Organizational Learning: Past, Present and Future. *American Journal of Evaluation*, vol. 22 no. 3, pp. 387–395.

Van den Ven, A. (2000) Professional Science for a Professional School. Action Science and Normal Science. In Michael Beer & Nitin Nohria (eds.) *Breaking the Code of Change*, Harvard Business School Press, Boston, Massachusetts 2000, s. 393- 413.

Vygotsky, L. S. (1978) *Mind in Society*. Harvard University Press, Cambridge.

Appendix 1

Table 1 Group's interpretation about the vision and the questions it raised

Groups / Viewpoints	Group 1.	2.	3.	4.	5.	6.
From the management's speech	Internationally known	Stronger internalization	Vision is quite technological	A general view	Vision is technological and international	Elevation of service science profile
		More clients	A need for systemic way of acting	Mutual methods and tools, communication, facilitation	One major national non technology centered funding program	Having a strategy at VTT level
			The challenges of internationalization and an aspiration to work in all sectors	A strategic view of the direction	Own internal and horizontal programme to the organization	Renewed steering and finance methods
Own views and concerns	Requires <u>brand</u> management	Concentrate the focus to the markets, how we are seen outside? <u>focusing, co-operation</u>	How to <u>concretise</u> the vision	A need for better <u>communication</u> between the management and researchers	How to organize and support the development in the future, management's support	Structurizing VTT's service science and <u>identifying</u> potentials
	<u>Development</u> of own competencies and knowledge building	Internal <u>flexibility</u> and networking	Acknowledgement of <u>core competences</u> and focus based on those	<u>Networking</u> , co-operation. New ways of working like internal job rotation among researchers	Should take part to international <u>funding</u> programs	<u>Positioning</u> internally / externally / scientifically
	<u>Networking</u> inside and outside from organization	In order to develop competencies would be beneficial to work in service companies, <u>job rotation</u>	<u>Combining</u> knowledge from different perspectives (strengths from the points of interaction) and differentiate from the competitors	Mutual methods and tools, best practices, <u>shared</u> vision		<u>Finance</u> allocation and <u>networked</u> way of working