

ProAktori: A Management Tool for ICT Strategy Processes in Universities

Kari Liukkunen
Campus Futurus
University of Oulu
Finland

kari.liukkunen@oulu.fi

Juha Pohjonen
Open University
University of Oulu
Finland

juha.pohjonen@oulu.fi

Janne Sariola
Educational Centre for ICT
University of Helsinki
Finland

janne.sariola@helsinki.fi

Abstract: During the period 2002–2004 Finnish universities developed and implemented their own strategies for the use of information and communication technologies in teaching as part of Finland's National Strategy for Education, Training and Research in the Information Society. Reports made on these strategies reveal that they were often rather weak on implementation and monitoring. A key problem was bridging the gap between strategic objectives and their implementation. In response to this, the Finnish universities' joint ICT Strategy Service has developed the ProAktori model and database tool. This paper presents the model, the theories supporting it, the main features of the metrics involved and the first user experiences. The emphasis is on the importance of measurability and communication in effective strategy processes.

Introduction

The progress made in the use of information and communication technologies (ICT) in teaching in Finnish universities can be divided into four phases: the equipment phase, the competence phase, the strategy phase and the network phase. During the equipment phase (1995–1999) the Ministry of Education and the universities invested in computer hardware and software and in building networks. This was followed by the competence phase (2000–2001), in which the focus was on extensive online pedagogy for university teachers, and then the strategy phase (2002–2004), during which the universities drew up strategies for ICT use in teaching. The network period (2005–2009) will be one in which the consortium of Finnish universities known as the Finnish Virtual University will become an established part of the collaboration carried out between universities (Pohjonen & Sariola, 2003; cf. Tammelin M., 2005).

In 2004, the Finnish Virtual University and some of the universities themselves began to update their ICT strategies. The universities' joint ICT Strategy Service also prepared a survey of university ICT strategies. This revealed the strategies to be rather weak especially in regard to implementation and monitoring (Sariola & Söderlund, 2004). In response to this problem, the ICT Strategy Service developed the ProAktori model and database web tool for supporting the management of strategy processes in universities. These were piloted in the strategy work carried out at the Universities of Oulu and Helsinki.

ProAktori's Theoretical Framework

In recent years, strategic planning and management have played an increasingly important role in Finnish university management systems. The universities have actively drawn up general and sector-specific strategies for use in developing their activities and revising their structures. With ICT becoming an ever more important factor in university activities, the universities have also prepared strategies on ICT.

The main stages of the strategy process are the preparation and implementation of the strategy (Figure 1). Too often, the process of preparing a strategy is not followed by systematic implementation. Instead, there remains a gap between planning and realisation. Making sure that the strategy process is measurable will help to define and communicate more precisely the aims and direction of the strategy, thus enabling a bridge to be built between plans and their implementation.

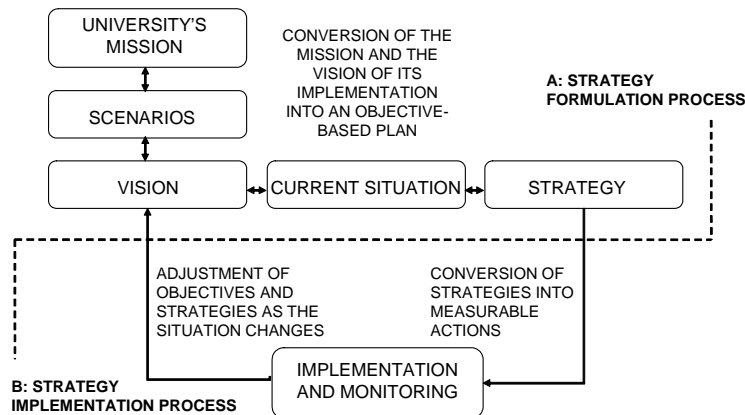


Figure 1: General description of the strategy process (Pohjonen & Sariola, 2003)

The main features of the Balanced Scorecard and its Finnish application, the Balanced Success Strategy, are presented below. These models were used by the ICT Strategy Service as a basis for developing the ProAktori model.

The Balanced Scorecard (BSC) was developed by David Norton and Robert Kaplan in the early 1990s as a strategic control tool. Further development of the BSC has shifted its focus from being a monitoring system towards being a strategic management tool. It has been used to improve organisational performance and to ensure that a strategy functions well and is objective-oriented, and that progress with it is measurable. In the basic model, a strategy is examined from a number of perspectives: financial, customer, internal process, innovation and learning. These perspectives, for which a set of success factors and metrics important to the vision and strategy are chosen, can vary from one organisation to the next according to the strategic emphases and operating policies. The perspectives reflect those areas of the activities to which special attention is given. Later Norton and Kaplan presented the concept of strategic mapping, whereby the relationships between strategic and operational factors are described with the aid of a strategy map. This provides a brief description of how a strategy is implemented. Strategy maps and the BSC together constitute a measurement technique and a strategic management tool (e.g. Kaplan & Norton, 1996, 2002).

A public-sector application of the BSC has been developed in Finland and is known as the Balanced Success Strategy (Määttä & Ojala, 1999). The development of this application was considered necessary because it was felt that there is a clear difference between the private and public sectors. In state non-profit organisations, such as universities, the main metric is not financial but the efficiency with which the organisation discharges its functions. The criteria for success in a company are profitability and return on capital. In the public sector, however, success can be evaluated according to performance, impact, financial efficiency and productivity. A non-profit operating environment brings a number of value-based viewpoints to the strategy process and the related decision-making. As with the BSC, the Balanced Success Strategy also has four strategic perspectives: political decision-maker and citizen, resource management, organisational performance capability and functioning, and the work community and employees. The framework for the Balanced Success Strategy is constructed on the basis of the organisation's mission and vision. The critical success factors determine what is required for achievement of the mission and vision from the different perspectives. The critical success factors should be both strategically important and the kind of factors that the organisation can influence through its actions. Evaluation criteria describing the extent to which the critical success factors are realised are, in turn,

defined for each of these factors. Short-term objectives are set for the criteria, and these can be either quantitative or qualitative (Määttä & Ojala, 1999; Määttä, 2000).

ProAktori – A Strategic Management Model

The ProAktori model has been developed especially for supporting the formulation, implementation and evaluation of strategies for ICT use in teaching at universities. The basic ideas of the models presented above have been applied in the development of ProAktori. The purpose of the model is to promote the formation of a common view on the strategic objectives and the means to achieve them and to provide the tools for management the process.

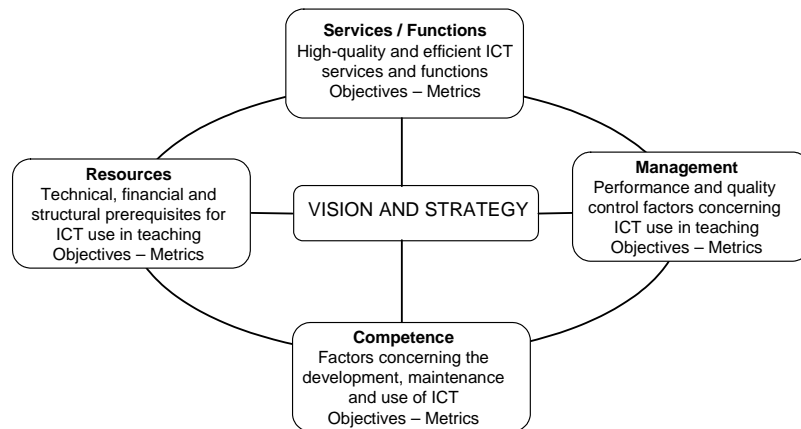


Figure 2: Example of the structure of an ICT strategy produced using ProAktori (Pohjonen, 2003)

The ProAktori model takes into account the special features and circumstances of each organisation. Its content, structure and methods can be altered according to the organisation in question. ProAktori allows a comprehensive picture to be formed of the important strategic issues for ICT use in teaching and for the implementation of that strategy.

The ProAktori model can be used as an assistive tool in evaluating the formulation of a strategy and the implementation of a completed strategy. The ProAktori perspectives (e.g. competence) must be derived from the organisation’s mission and the vision for the ICT strategy. It is recommended that between three and six perspectives be used, and their relationship to each other must be logical, forming a balanced whole (see Figure 2). Critical success factors must be chosen in the case of each perspective; these will be factors from each perspective which have the greatest influence on the achievement of the vision (e.g. ICT skills). It is recommended that there be a total of 6–12 success factors. Following this, the objectives and the actions to implement them should be determined. Finally, metrics are selected for monitoring the activities. These stages are presented in Figure 3.

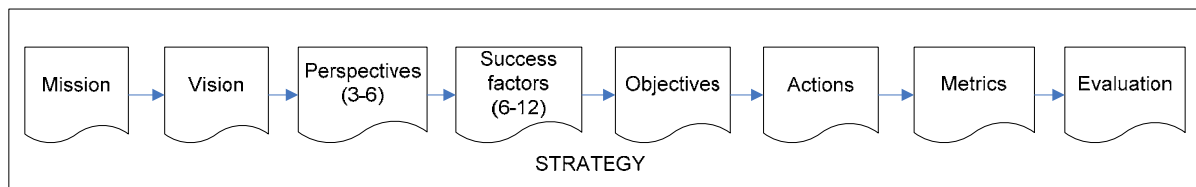


Figure 3: Stages in the ProAktori model (Liukkunen, Pohjonen & Sariola, 2005)

The chosen metrics must be valid, reliable, relevant and practical, and there must not be too many of them. The metrics can be quantitative or qualitative in character and they must have a clear connection with the strategic objectives and practical actions. The metrics can be used to guide and evaluate the realisation of the strategy. The set of metrics can be altered if there are changes in the organisation's strategy or its operating environment. A strategy prepared with the aid of the ProAktori model can be incorporated into an annual action plan. The basic ProAktori model (Figure 3) has been applied in, for example, the strategy processes for ICT use in teaching at the Universities of Helsinki and Oulu.

ProAktori – A Web Tool

A database web tool that guides the user step-by-step through the strategy process has been developed to support the model. In developing the tool, the aim was convenience and flexibility for the user. The idea was also to create a systematic and unambiguous tool to assist in strategy formulation and management. The tool can be used by a single user or as a team-working tool. Following the instructions given, the user answers the questions presented in the web tool and is at the same time encouraged to think about the main components of the strategy process. The system records the answers in its database, and the user may go back and add to any of these answers at any stage during the process. If the user wishes to check a block of answers, the system will retrieve them from the database in the form of a strategy document. The user can record this document separately or publish it on the ICT Strategy Service web pages at <http://www.virtuaaliyliopisto.fi/strategiapalvelu/>. The stages in the use of the ProAktori web tool are shown in Figure 4.

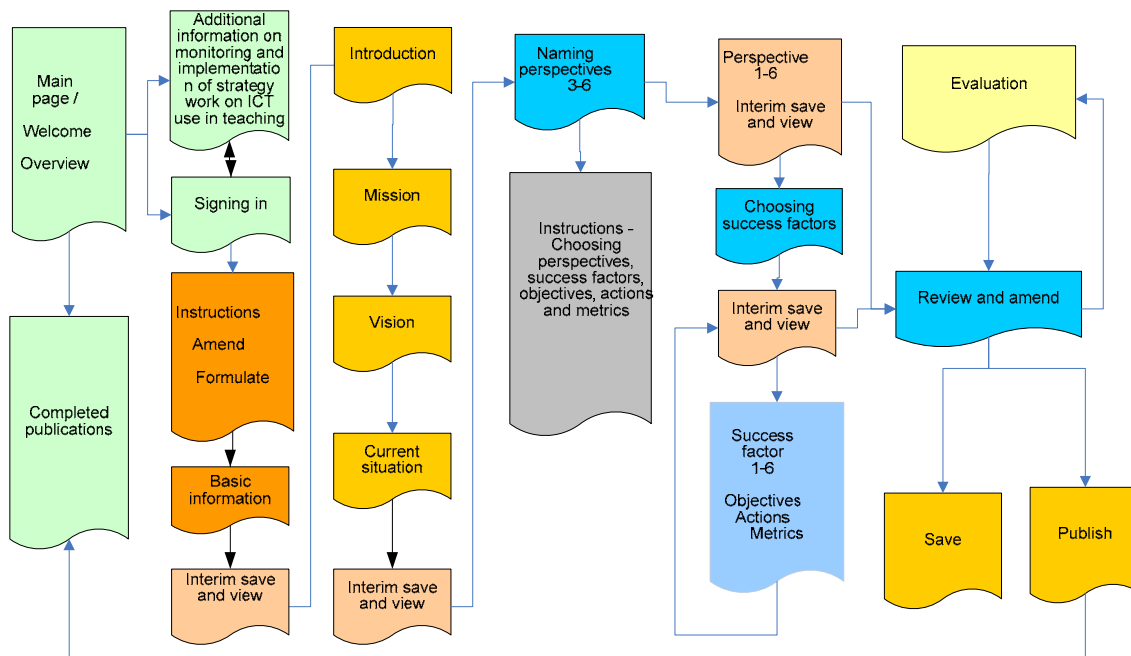


Figure 4: Stages in the use of the ProAktori web tool

Practical Application of ProAktori: Experiences of the Universities of Oulu and Helsinki

The experiences of the Universities of Oulu and Helsinki in using ProAktori in their strategy work on ICT use in teaching are described briefly below. The universities worked closely with each other during formulation of their strategies and they benchmarked each other's best practices. Although the strategy work of both universities was very similar as a process, there were clear differences in the chosen content and priorities and in the implementation. At the University of Oulu, ProAktori was used in formulating a new strategy, while at the University of Helsinki it was used in evaluating an existing strategy.

The process of producing a new strategy at the University of Oulu was begun in 2004, before the end of the previous strategy period. The job of preparing the strategy was given to Campus Futurus, a network organisation at the university that supports and promotes research, development, training and related services for

learning environments that utilise ICT. Implementation of the 2002–2005 strategy followed the model given in Figure 5.

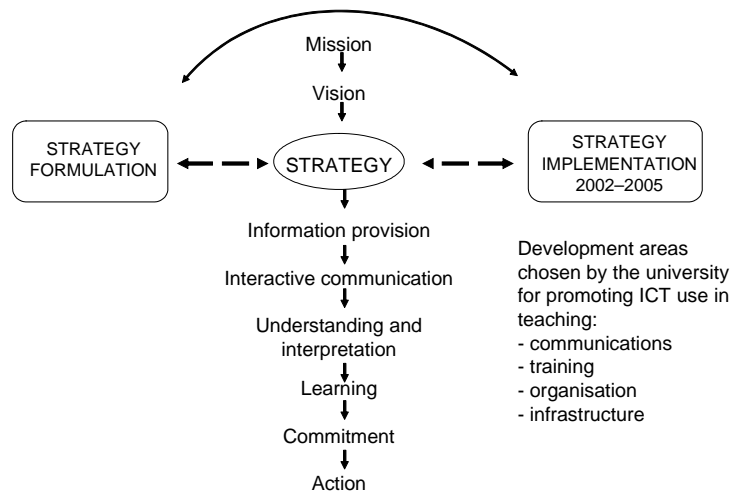


Figure 5: Implementation of the strategy process (see Aaltonen *et al.*, 2002; Pohjonen, 2004)

Preparation of the new strategy was aided by the careful study of scenarios made during the previous period and the successful definition of the vision. In updating the previous strategy it was possible to focus more on the evaluation of the current situation and on defining the new objectives and actions. The perspectives chosen for examining the strategy were:

- resources
- services
- competence
- management

Each perspective was broken down into success factors, a description of these and the specific objective to be achieved. At the same time evaluation criteria were established for the objectives. The choice of metrics to monitor the activities of the university became the most challenging task of the strategy process. It would have been tempting to choose quantitative metrics, but the objectives concerning ICT use in teaching were such that the most suitable metrics were qualitative in character. Furthermore, the use of quantitative metrics requires data collection systems that the university did not have at its disposal. As an example, the ‘resources’ strategy perspective and its critical success factor ‘staff’ were presented as follows:

Resources

Critical success factors

- Staff (competence, motivation, adequacy of staff resources)

Description

- The work duties and the nature of the work of teachers and other staff are constantly changing. Hence, competence must be developed continuously. As activities, work duties and the nature of the work change, staff resources should be redirected to meet the new needs.

Specific objective

- Main teaching and support functions covered by the university’s basic funding will be managed by full-time staff.

Evaluation criteria

- Extent to which ICT use in teaching is incorporated as part of personal development reviews and selection processes.
- Extent to which the basic services are covered by basic funding instead of still being project-funded activities.

The University of Helsinki's virtual university strategy was completed in 2002 and the interim evaluation of its implementation was begun in autumn 2004. To ensure that the impact can be charted across a sufficiently broad front, various different perspectives on ICT use in teaching were chosen for evaluation. The choice of metrics and the analysis of the results were particular challenging in the evaluation. The perspectives chosen for examining the strategy evaluation at the University of Helsinki were as follows:

- competence
- management
- teaching and support services
- resources and infrastructure

Each perspective was further broken down into objectives, metrics, description of current situation, and conclusions. As an example, the competence perspective was examined in the interim evaluation report on the University of Helsinki's virtual university strategy with respect to teachers as follows (2005, p.4):

Competence / Teachers

Objective

- More than half of the teachers will have a good level of competence in ICT use in teaching by the end of 2004

Metrics

- Training for teachers / total number of teachers
- Number of diverse network courses / total number of teachers
- Number of credits taken in teaching-technology training / number of teachers

Current situation

- The University of Helsinki has 3,000 teachers. In the years 2003–2004, a total of 829 teachers received training on ICT use in teaching. It would appear that the extent of training has been adequate, though it has fallen somewhat during the past couple of years (2002: 840 credits). At the same time, however, there has been an increase in tailored workshops and consultations, and the online teaching support units of the faculties and campuses have provided wide-ranging support. Twenty per cent of teachers have run online courses using the WebCT and BSCW closed online learning environments. 900 WebCT courses have been held in support of blended learning. The following objectives are set for the end of 2009:
 - All teachers will know how to plan, implement and evaluate a diverse online teaching unit (Ope.fi II) (100%)
 - Resources will be allocated for training those staff who are in instructor and specialist positions, so that the university will have 300 staff who are experts in online pedagogy (10%)

Both universities' first experiences of using the ProAktori model have been encouraging. In the example of the formulation of a new strategy, the use of ProAktori

- helped in understanding the impact of ICT use on the university's activities as a whole
- helped to focus on the main success factors
- directed attention to specific metrics and objectives
- provided a clear method of presentation that combines strategic goals, their implementation and monitoring in a very concrete way

In the example of the evaluation of an existing strategy, the use of ProAktori

- helped in understanding strategy implementation as a whole
- helped in responding to changes in the operating environment and in reorienting the strategy
- helped in evaluating the necessary number of chosen objectives and metrics and their adequacy for successful implementation

In the strategy process at both universities it was found that the most important factor was not the strategy document itself but the process by which the document was produced. The ProAktori model provided the working group members with the tools for communication and for organising the work.

Conclusions

The main elements of any strategy are as follows: a strategic approach, the strategic planning process and strategic management skills. Tools for planning and monitoring are essential in all of these. Universities are special kinds of organisations both in terms of their purpose and their structure, which means that strategy tools developed in the corporate world cannot be applied directly (cf. e.g. Birnbaum, 2000). The universities need models that are adapted to their own operating environment, such as ProAktori.

ProAktori offers universities a particular framework for formulating, implementing and monitoring their strategies on ICT use in teaching. It allows the formation of a common view concerning the objective, the means and the monitoring methods. An organisation can only achieve its vision if it has a common view of the objective, how this is to be achieved and the current situation.

The first experiences of the Universities of Helsinki and Oulu concerning the use of the ProAktori model as part of the strategy work on ICT use in teaching have been encouraging. In both universities, the model provided a means for the practical specification and organisation of what in universities is often a typically abstract method of preparing action programmes. The fact that a tool to support the model was not available at this stage was considered a drawback. A network-based tool would have helped the strategy groups with their internal communication and activities. On the basis of the experiences gained, the universities' joint ICT Strategy Service began to develop a database web tool and consultation service to support the ProAktori model. These establish a foundation for benchmarking between universities. Further development of the model and metrics will in future allow them to be used as a tool in auditing the ICT strategy work of universities. The use of the ProAktori model and web tool provides the following advantages in the strategy processes of universities:

- helps the strategy group complete its work more easily and quickly using the guided strategy formulation process
- helps in organising the main themes of the strategy
- specifies in concrete terms how the completed strategy should be implemented and clarifies the objectives and metrics
- helps in updating the content of the strategy
- directs attention to those aspects of monitoring and evaluation which are of greatest importance for the realisation of the strategy objectives
- helps to focus attention on the strategy's logical content and the connection between the strategic objectives and implementation
- promotes the formation of a common understanding of the strategic objectives and the means to achieve them
- supports the success of strategic management through monitoring and the use of unambiguous metrics

A strategy involves choosing objectives and the means to achieve them. With good strategic planning and an implementation mechanism, a university can control and adjust its activities and the direction, strength and pace of its development. The main elements of any strategy are a strategic approach, the strategic planning process and strategic management skills (Pohjonen, 2001). The ProAktori model and web tool provide an excellent way for universities to manage their strategy work concerning ICT use in teaching.

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