ICT Strategy of Universities

Neven Pintarić
University of Zadar
Department of Economy
Mihovila Pavlinovića 2, 23000 Zadar, Croatia

neven.pintaric@unizd.hr

Abstract. *The strategy of an organization defines how the organization will achieve its goals over the long term, which are the main activities and which resources are needed for achieveing the goals in order to ensure their position on the market. ICT is a strategic resource which is included in creating new values (knowledge, products, processes and material), ICT shows a constant technological progress, creates dynamic changes and influences the business.*

The aim of this paper is to analyse how ICT is strategic positioned at universities. The analysis will be made by comparing the online available ICT strategies of universities in Europe, USA and Australia. The role and goals of the strategy, the architecture and infrastructure will be analyzed as well as including the financial budgeting within the strategy.

Keywords: ICT, Strategy, University.

1 Introduction

Universities implement ICT[1] in a wide range in order to achieve the mission and objectives related to the education process (learning and teaching), research and business so that they can transfer knowledge and ensure their position on the market. ICT has been closely related to universities from the start.

Constant technological development of ICT enables the implementation of new ICT devices and services which influence and change the teaching and learning process, research and business.

The University of Zadar has been implementing the ICT in the education process (teaching material, access to Internet from the student dorm, classrooms, library), research and business (monitoring the studying process, students' jobs) since it was founded. In order to support these processes different systems are being applied which differ according to users, purpose, technological base, procurement, servicing.

The research by Pirani, Salway [7, 23] shows that universities have, besides the core function (education), also bussines (student dorms, food services, retail stores) and cultural enterprises (sports, arts,). Students, researchers and employees are the core users, who acess the services - library, web, public kiosk, public computer labs – in different ways (on site, remote).

This diversity also results in a different technological surrounding.

According to the Lisabon Declaration ICT is supposed to take an active part in creating the society of knowledge, in transforming the process from teaching to learning, as well as in enabling the students to access information and learning materials; ICT becomes the resource with a strategic significance.

The most common objectives for organizations adopting an ICT strategy process are [11; 118]:

- aligment of ICT with the business to identify where ICT contribute most, and the determination of priorities for investment;
- gaining competitive advantage from bussiness opportunities created by using ICT;
- building a cost-effective, yet flexible technology infrastructure for the future
- developing the appropriate resource and competences to deploy ICT succesfully in the organization.

Universities aim at the education and research; thus it is very important to plan and define the role of ICT in the education process and research but also to predict how this role will changes in time.

The aim of this paper is to analyze how ICT is strategically positioned at universities. The following

[1] In this paper we understand ICT as information technology (IT), information system (IS) and communication technology, which are applied in higher education.

questions will be answered in the analysis: what is the procedure in making a decision; what are the objectives; how are the architecture and infrastructure included in the strategy and whether budgeting has been anticipated. Publically available ICT strategies of universities from Europe, USA and Australia will be analyzed.

2 Data Collection

Publically available ICT strategies published on web sites of the universities from Europe, USA and Australia are being analyzed in this paper (N = 18 strategies - see the list of universities in Table 1.)
ICT strategies which refer to the time span from 2005 on, including 2007 or 2008 are taken into consideration.

Table 1. University

No.	University
1	Borders College (UK)
2	University of Bradford (UK)
3	University of Oxford (UK)
4	University of Tasmania (AU)
5	Monash University (AU)
6	University of Auckland (NZ)
7	University of Wales (UK)
8	McMaster University (CA)
9	UCD Dublin (IE)
10	Qeensland University of Technology (AU)
11	Brock University (CA)
12	Metropolitan State University (USA)
13	University of Wollongong (AU)
14	Miami University (USA)
15	University of Memphis (USA)
16	Carnegie Mellon (USA)
17	Medical University of SC (USA)
18	University of Western Australia (AU)

ICT strategies which are shared and include more universities (strategy for high education in Spain) or campus (California state University) are also considered.

There are no publically available ICT strategies in Croatia, except the strategies for e-learning (University of Zagreb and University of Rijeka).

3 ICT Position

Universities aplly ICT in a different way in the education process, business or research; some merely for basic operations like monitoring students records or payroles, while the others use ICT actively in the teaching process (access to information, materials) and e-laerning. If we consider McFarlan and McKanny's „strategic grid“ [3, 6] for positioning we can expect the following position of ICT at universities:

- support (ICT is support for activities and has little relevance in the next period)
- turnaround (ICT has little relevance at the moment but a greater one in the future)
- factory (ICT is important for current operations, it has less significance in the future and is not a strategic direction),
- strategic (ICT is a strategic base, contribution in creating knowledge is expected).

According to the analysis of the university strategies, it is obvious that they have the following guidelines:

- developing and usage of e-learning system and usage of ICT in the classroom N = 14 (77%)
- development and usage of managmet information system N = 12 (66%)
- developing, implementation or improving the information systems for student records N = 10 (55 %)
- active support of scientific research N = 9 (50%)
- development of the system for the library in order to access information N = 5 (27%)

No university has only one guidelines.

Since the strategies are aimed at e-learning and research and are expected to be bearers in creating the society of knowledge, we can decide that ICT will be positioned as turnaround or strategic in the next period.

4 ICT Strategy

According to John Voloudakis [10] ICT strategic planning started in the 1970s with focus on long-term planning with detailed planning, large documents, little attention to action and Separate business and ICT planning. He called this period „Big Planning“. In the 1980s the focus was on Medium-term planning, with set vision, less specificity, project-based execution and aligment of business and ICT planning. He called the period Strategic Direction.

In the 1990s the focus was on short-time planning characterized with set direction, built infrastruture, small components delivered quickly, joint business and ICT planning. The period is called Iterative Planning.

The period after 2000 focuses on Just-in-time planning with the following characteristics: the focus is not on planning but on sensing and responding to changing enivironment in as close to real time as possible, modular infrastructure, rapid execution and close business and ICT coperation. This peroid is called Adaptive Organization.

According to J. McCredie [5, 15] a well organized process of ICT planning can:

- reval the fundamental direction in wich an organization should move,

- identify key strategies for energizing this moveoment,
- clarify the actions needed to help departments and the college or university achive their broader mission and goals and
- articulare what leadership and services the campus can expect from ICT organization

Bart Strong [8, 50] points to the significance of the process of creative thinking and involving all levels in creating the strategy.

4.1 Framework

Universities create strategies in different frameworks. During the analysis of strategies and articles connected to strategies of universities, two main frameworks have been noticed:

- single (e.g. UC Berkeley, Monash University)
- shared (e.g. California State University, Spanish Higer Education)

4.1.1 Single

At the UC Barkley [3, 15] the methodology for organizing their planning framework has been developed Fig. 1

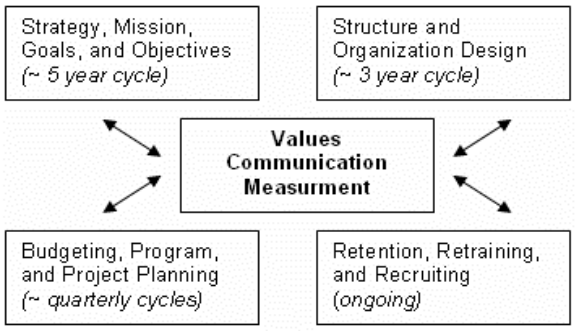

Figure 1. UC Berkeley's Cyclic Planning Methodology

The base of this approach are the values of ICT as internal and external communication processes. Values should be the most constant part of the culture, they stay stable even when the strategy, projects or personnel change. Measurment refers to tools (formal organizational climate survey every 3 years, and self assesment every year) which are developed and used in the assessment of the values on a day-to-day basis.

Monash University has the planning pyramid [6; 2], which is connected to the main strategy. ICT strategy is focused on applications and infrastructure, and is related to the last two levels of the university strategy. ICT Strategic Plan is at the top of the pyramid which is structured for support of identified priorities from the main strategy (education, research). Underneath are Operational Plans and Departmental Plans, and finally, the plans with the shortest terms are individual performance plans.

4.1.2 Shared

California State University (CSU) has developed the framework for the needs of planning the ICT strategy which can be described as the pyramid that consists of outcomes at apex, technology infrastructure prerequites at its base, and a series of enabling priority initiatives and projects linking them in the middle [2; 12]. ICT is directed to achieving results, not to the technological development.

For the needs of Spanish Higer Education (SHE) the ICT group from the Spanish Association of University Rectors has been formed. The group made the global strategic plan for spanish universities which would help them in creating separate strategic plans.

4.2 Objectives

Objectives are general guidelines that enable universities to focus on rational and expected results. When defining objectives we decide what we want to achieve. Objectives must be SMART.

Acccording to Upendra Kachru there are two kinds of objectives [4, 65]:

- Result oriented (focus on output)
- Activity oriented (general description).

According to the analysis of ICT strategies N = 8 (44 %) are focused on the result (outcomes), whereas N = 10 (56%) of universities focused their ICT strategy on activities.

In order to decide whether objectives have been achieved, it is necessary to set up the way of measuring the achievements. Within ICT strategy N = 9 (50 %) predicted measures (indicators) for objectives; N = 5 (56 %) for ICT strategies aimed at result and N = 4 (44 %) ICT strategies aimed at activity objects.

4.3 Architecture

The current way of university business is very dynamic. In order to realize education, research and business successfully the universities must decide which ICT technology to implement in the realiziation of their bussines objectives set in the strategy.

It is necessary to have the appropriate architecture (Enterprise Architecture).

Monash University takes bussines architecture, information architecture, application architecture and technical infrastructure architecture into account when defining their strategy. The expected advantages of the architecture are following [6, 4]:

- Reducing work of ICT personnel through moving double systems
- Generate incresed use of technology through improved communication and collaboration

- Quick changes in university information requirments

University of Auckland prepared the Enterprise Architeture (Fig. 2) [9] for the needs of the ICT strategic plan in order to recognize the ICT environment, the services that exist and how these serve bussiness needs.

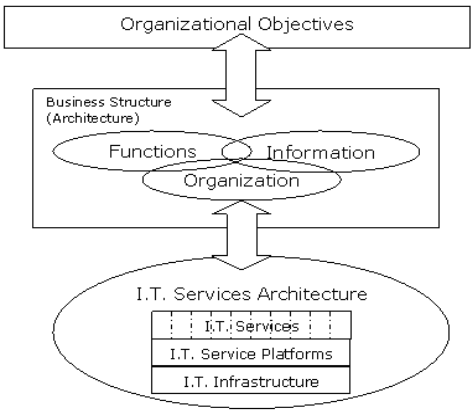

Figure 2. University of Auckland Enterprise Archiceture Framework

The University of Auckland describes the services necessary for business support through the IT Service Architecture.

4.4 Infrastructure

The infrastructure is also important in achieving the business objectives. As business requirements grow, the infrastructure can become the limiting factor. Two main problems are related to the infrastructure [11, 551]:

- It has to be developed as the basis for the future (taking in account the future needs)
- It is hard to express the given value of the infrastructure.

The investments in the infrastructure can be very high, without accomplishing the expected objects. Universities' finances do not primarily depend on the results achieved on the market. They have support form other institutions in establishing the infrastructure for creating knowledge.

The analysis of the ICT strategies shows that the universities define the infrastructure N = 12 (66 %) generally as the means for enabling services, whereas only N = 6 (34 %) universities recognize expenses connected to the infrastructure.

4.5 Budget

When establishing the objectives and guidelines as part of the ICT strategy, it is necessary to take into account the budget needed for their completion.

There are two different types of budget in a strategy [1; 395]: annual and capital budget. These budgets differ in terms of time period. The annual budget is the basic one and is made for the period of one year. The capital budget is made for a longer period of time (mostly 5 years and longer).

The analysis of 18 university ICT strategies shows that only N = 5 strategies (27 %) have the budget as well as aligning their goals and activities with the budget. The budget in these strategies covers a longer time span.

The University of Oxford has an elaborated system of budgeting ICT through the strategy, and together with it a priority plan. The Monash University has an assessment of investments and funding shema within the budget whereas the Brock University's budget follows the „technology life cyle“.

5 Conclusion

This paper gives an overview of ICT strategies of universities. According to the expected contribution of ICT in creating the society of knowledge the ICT has a strategic position.

Universities use framework for creating the ICT strategy. The framework can be single or shared.

The objectives are focused on the result and activity. It is easier to set up the indicators of measuring the achievemnt of objectives for the objectives focused on the result.

In order to create the right strategy, universities align ICT and business objectives by using the Enterprise Architecture. However, little attention is given to the infrastructure (cost) and ensuring the budget for ICT within the strategy.

References

[1] Buble M., et. al.: **Strategijski management**, Ekonomski fakultet, Split, 1997.

[2] California State University: **Integrated Technology Strategy**; available at http://its.calstate.edu/systemwide_ICT_resources/its_report.pdf, Accessed: 3th June 2008.

[3] Earl M. J.: **Management Strategies for Information Technology**, Prentice Hall, 1989.

[4] Kachru U.: **Strategic management**, Excel Books, New Delhi, 2005.

[5] McCredie J. W.: **Planinig for ICT in Higher Education: ICT's Not an Oxymoron**, Educase Quarterly, Number 4, 2000., pp. 14 -21.

[6] Monash University: **ICT Strategic Plan 2006 – 2010**, available at: http://www.monash.edu.au/about/itsp/2006/ICT-Infrastructure-Strategic-Plan-2006-2010-v13.pdf, Accessed, 2nd June 2008.

[7] Pirani J. A., Salaway G.: **Information Technology Networking in Higher Education: Campus Commodity and Competitive Differentiator**. available at http://connect.educause.edu/Library/ECAR/InformationTechnologyNetw/37608 , Accessed: 2th May 2008.

[8] Strong B.: **Strategic Planning for Technological Change**, EDUCAUSE Quarterly, Number 3, 2007, pp. 48 – 51.

[9] University of Auckland (EAO): **UoA Technology Standard**, available at: http://www.auckland.ac.nz/security/UoAITTechnologyStandardsv1.htm#_Toc89676299 , Accessed: 14th, June 2008.

[10] Voloudakis J.: **Hitting a Moving Target**: **ICT Strategy in Real-Time World**; EDUCASE Review, vol. 40, no. 2., 44-55.

[11] Ward J., Peppard J.: **Strategic Planning for Information Systems 3ed**; John Wiley & Sons LTD, 2002, Baffins Lane, Chicester, England