

Business and ICT Strategies of SAGW Solid Base for Inter Institutional Integration and Data Sharing

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Abstract. Business strategic plan of the State Authority for Geodetic Works (SAGW) followed by three sub strategies aims to trace the safety and sustainable path for better future of the institution, which means improvement of its geodetic, cartographic and cadastral services. Achievement of main business strategic goals of SAGW were supported by preparing of ICT strategic plan based on MIT strategic alignment model, where the future of institution was mapped as organization with fully implemented modern ICT systems related to its responsibilities.

Business and ICT strategic plans were prepared based on real user requirements, contemporary trends and current situation within the institution, scientific trends and market. Six strategic goals followed by twelve ICT projects would transform SAGW in to a modern governmental institution providing digital geospatial information according to international standards ISO, INSPIRE, CADASTRE 2014, OGC ect. This could be observed as solid bases for a future inter institutional data sharing.

Keywords: ICT, business strategic plan, ICT strategic plan, MIT strategic alignment model, SAGW.

1 Introduction

Increasing market needs and the accelerating development of the Information and Communication Technologies (ICT) are pushing geodetic, cartographic and cadastral organisations towards organisational changes so they can meet challenging user requirements. In order to achieve their statutory duties, usually given by the law, and be a competitive player on the market field, these organisations should develop and implement adequate business and ICT strategies.

Initially organisational set up should be tailored for doing business in these modern times and with a vision for the future. Applicable model could be: “The MIT Strategic Alignment Model”. Identifying and satisfying user requirements are recognised as a critical success factor, specific attention to this issue has to be dedicated when developing strategies, this can be accomplished by executing appropriate analyses of the ‘user requirements’ - both internal and external users.

Business and ICT strategies should be developed in alignment, based on the results of the analyses of the user requirements. Vision and mission statements, within the strategies, should be clearly stated. The strategies should include actors, factors, and actions chosen to reach a long-term goal, presented in a logical sequence of steps.

Recognising the need for improvement in its performance, State Authority for Geodetic Works (SAGW) - now called Agency for real estate cadastre - approached in development of Business and ICT strategies which would lead to a sustainable organisational development, standardised product and services, and all this will facilitate future data sharing and exchange with other relevant institutions, e-Justice ICT system as well.

2 Improve Organisations Based on MIT Strategic Alignment Model

Like in many other industries, geodetic, cartographic and cadastral organizations search for various methods, models or techniques of doing business to improve their performance. Intensive and efficient use of ICT in every day working activities facilitates organizations to ease and improve their performance in order to meet more demanding user requirements and to facilitate their way towards cost recovery. ICT is more seen as a driver for a change of the today’s businesses and a tool for creating new businesses. One of the models where business and ICT are in alignment and supporting each other in harmony, on strategic and on operational level is the Strategic Alignment Model.

Strategic Alignment Model was originally presented in 1992 at Massachusetts Institute of Technology (MIT) by J. Henderson, J. Thomas and N. Venkatraman. Since 1992 the MIT model was accepted by many different domains ICT depended.

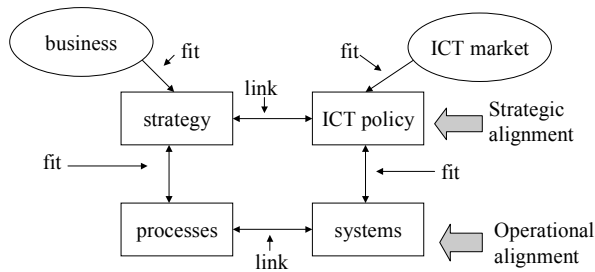


Fig. 1. The MIT model adopted by prof. Molen [1]

The model, termed the Strategic Alignment Model, is defined in terms of four fundamental domains of strategic choice: business strategy, information technology strategy, organizational infrastructure and processes, information technology infrastructure and processes-each with its own underlying dimensions [1].

This model implies that effective and efficient utilization of information technology requires the alignment of IT strategies with business strategies, and reflects the view that business success depends on the linkage of business strategy, information technology strategy, organizational infrastructure and processes, as well as IT infrastructure and processes [2].

The strength of this model lies in its ability to establish a relationship between the strategic and operational aspects of the organization's objectives and its ICT policy [3]. The model gives a good basics and shows on very simple way how a modern organizations business should be set up.

Since 1992 when the MIT model was originally presented, markets become more demanding and expansion of technological and ICT development occurs. Many examples in the different industries but also geodetic, cartographic and cadastral organizations shows that as soon as they recognize the need for aligning their business strategy with ICT strategy both on strategic and operational level sooner they could realize the value and the benefits of investments in adequate ICT domain. Acceptance of this model would provide organizations flexibility to change business strategies where ICT domain would follow, in order to meet more demanding user requirements, in their transition towards cost effective and for achieving efficient solutions [4].

3 Analyses of User Requirements

Efficient and effective performance or doing business of one organization lies down in optimal use of skilled human resources and availability of the well organized and institutionalized technology in order to best identify and meet system and user requirements. Meeting these requirements is becoming a critical success factor and it is more recognized as such by different businesses. Well performing geodetic cartographic and cadastral organizations, worldwide, also consider achieving user requirements as a critical success factor and analyses of these requirements becomes a regular practice in their every day working activities. Dutch Kadaster is very good example regarding this issue. Last survey conduct by Dutch Kadaster, examining user's wishes on information, showed that customers would like: digital, up to date, reliable and legal certainty, complete, rapidly accessible, tailor made and quality assured information [5].

A land administration system is in part an administrative system that must meet the needs of good government. It must also address the requirements of non-governmental institutions and the general public. Before altering an existing system or introducing a new one, it is essential that the requirements of those who will use or benefit from the system are clearly identified [6].

Recognized accomplishment of the ‘user requirements’ as a critical success factor, it is one of the main elements of this study too. Specific attention should be put on analyzing user requirements in the period of development of business and ICT strategies and in regular working activities of particular geodetic, cartographic and cadastral organizations. Internal and external users should be analyzed with respected relevance within their own domain.

Results from the analyses of user requirements - current and possible future requirements - should be used as an important input while practically developing business and ICT strategy for a geodetic, cartographic and cadastral organization. In the paper [7] more details about the methodology, technique, interviews, template questionnaires and practical analyses of the user requirements could be found.

Meeting user requirements - a critical success factor - is becoming a bigger challenge for all business. Organizations which succeed in this are more efficient in their performance, their products and services are increasingly demanded which gives them opportunities for improvements and further development. Follow the motto: *Learn from the users what to do and how to do it* [7].

4 Developing Business and ICT Strategies

One of the definitions for the term strategy in the literature is: Strategy, it is a course of actions involving logical combination of actors, factors, and action chosen to reach a long-term goal or vision. Strategy incorporates a logical sequence of steps [8].

A strategy can also be defined as description of the path from the ‘As-Is’ situation where particular organization or domain currently is, to the ‘To-Be’ situation or desired improved future state.

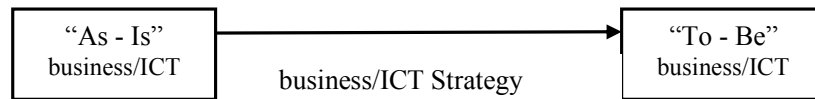


Fig. 2. Strategy – description of the path from “As-Is” to the “To-Be” situation

It is required to have a clear picture of the ‘To-Be’ situation – business/ICT situation – for better determining the directions and the way how to accomplish the desired future. It would determine in which direction improvements and development of business and ICT within the organization should go. Defining the ‘To-Be’ situation should be based on the good overview of the “As-IS” business/ICT situation and knowing the possibilities that technology and standards are offering nowadays and future developments in this domains. Another important input would be the results from the analyses of the user requirements, both internal and external. Also lessons learned or ‘Good Practices’ from similar organizations from other countries could be helpful while formulating vision statements [9].

Business and ICT strategies should be developed in alignment, based on the results of the analyses of the user requirements. A strategy has to contain and start with a vision and mission statements. It is recommended that these statements are clearly

stated, short but sharp with carefully chosen words. After these statements, a logical sequence of steps should follow including actors, factors, and actions required reaching a long-term goal, the desired improved future state. The steps should cover all important issues for the particular stage but not going to much in details. Described steps like this could be used afterwards for more detailed project for accomplishment of particular stage of the strategy. It is recommended that the steps in the strategy are divided in short-, mid-, and long term priorities and scheduled in a time table with expected date when each step would start and finish.

After a strategy document is finished and accepted as official strategy of an organization, a task force with team leader should be appointed which would be responsible for its implementation. The team leader with his team should develop implementation strategy and very important: monitoring, reporting mechanism.

5 Business Strategic Planning of SAGW

The registration of real estate rights, as well as the development of modern land administration systems are widely accepted and recognized as essential factors necessary for the development of the real estate market (land, business buildings, residential buildings etc). They are at the same time very important factors for the achievement of a sustainable economical development that will appropriately meet the needs and demands of the public and the private sector, as well as the citizen at large.

As a result of contemporary society, scientific and practical requirements from the national organization responsible for geodetic, cartographic and cadastral information, SAGW in March 2007 has approached the development of a strategic business plan followed by three documents: human resources, ICT, and market and financing strategic plans, as a midterm documents.

This business plan is focused on the demands on different stakeholders, especially the clients with a perspective on all of the processes 'outside-in' and has a 'top-down' view. Based on an analysis of the requirements of the various stakeholders and the current situation within SAGW it defines the vision, strategies and long- and short term objectives and the activities required to meet these objectives.

The Strategic Business plan of the SAGW is prepared so that it poses as a comprehensive strategic document that, in essence, traces the path for the future development of the organization, as well as the quality of official geospatial data in national and sub-national level. Plan of SAGW will be a tool for SAGW management for governing the development of the organization.

An internal use of the strategic plan is to make the step from the strategic to the tactical level. In other words, it is a step from a policy document to a business plan. The transforming of strategic issues and their conditions into business goals provides a practical framework for the business plan. The external use of the strategic plan is to communicate with the Government of the Republic of Macedonia (RM) and other key stakeholders and to get the required formal agreement from the Government of RM.

Through SWOT analyze, mapping of the real situation within the SAGW, detecting of trends, then surveying of market, government and science requirements, as well occasion for implementing of modern technology in whole working process in

SAGW, first the vision, mission and business idea have been defined as a framework of the future of SAGW. In order to realize them, within the strategic business plan were adopted five main strategies-programs [10]:

- Coverage of the entire territory of RM with a real estate cadastre, active GPS and gravimetric network, with mapping products and developing the geospatial database (strategy for the establishment of REC which is described in the Project Implementation Plan of the World Bank);
- Increasing market orientation and increasing the cost recovery (level of self-funding) through better informing about the demands on the market and developing new products and services in order to fulfill these needs;
- Proactive relation towards its stakeholders in the land policy creation process and in the development of the real estate market;
- Providing competence in the cadastre, cartography, geodetic works, providing products and services on the market in way which is suitable to the needs of the users; and
- Using modern information technology and digital products in order to satisfy the needs of the clients (and other stakeholders) and for improving internal efficiency and work conditions – at the same time focusing on preserving safety, security and reliability of its data - *the last program is one of the main goals of the ICT strategy.*

6 ICT Strategy of SAGW

The objective of the SAGW's ICT strategy was to improve the efficiency and effectiveness of SAGW ICT systems, assess the current ICT infrastructure, existing data models and propose future ICT projects. It was developed mainly as “review” of all existing developments and documents relevant for the future developments of ICT in SAGW and “fresh” contribution of group of experts from SAGW, Sida project and an external consultant-strategy workshop facilitator. It means that approach was to assure the achievements and best practices of ICT systems developed in SAGW.

In completing of strategic planning process, SAGW will have a consistent framework for articulating its ICT Strategy purpose, values, roles, objectives, strengths, and weaknesses. This effort is intended to provide a roadmap to a geo enabled future where the needs of the organization and its constituents are better served. Of course all “e-Government” guidelines have been incorporated into specific ICT Strategic projects.

SWOT and analyses of user requirements determined that SAGW needs to develop a system capable for integration and continuous extension with new functionalities, in which the following of trends for ‘cost recovery’, costs and revenues will be in balance and in near future the revenues from dissemination of geo-information to cover the costs for maintenance of the system.

SAGW's users, customers and stakeholders based on their requirements, from its ICT system, can be divided in to internal (sectors and departments within the SAGW) and external (citizens, government, private sector, science, ext). The internal users has a requirements for analyses of business processes operation and business process re-engineering, then automation of business processes within SAGW, reporting

generation activities and establishing communication links between central and branch offices, as well in the other hand the external users requirements are the possibilities for access to real time real estate cadastre data, on-line quicker services, one stop shop system, and public private partnership.

Based on upper data, ICT vision and mission statements of SAGW have been articulated as: **ICT vision of SAGW is:** *Establishment of integrated electronic geocadastral information system, unique in the Republic of Macedonia that enables managing, updating, distribution and access to updated data from the Real Estate Cadastre, the registry of spatial units, the registry of state owned immovable property, basic geodetic works, network of geodetic points and state topographic maps, and* **ICT mission of SAGW is:** *ICT Mission of SAGW has function to provide effective and user oriented support. It means that ICT has to deliver data and services required by SAGW business processes. The services include analysis, planning and delivery of ICT services. The end users of ICT services are internal (SAGW business units) and external (Citizens, Governmental bodies, Private business sector etc). The ICT Business model includes own resources, external contractors, partnership with other institutions (PPP) and international institutions (World Bank, Sida, UNDP, EAR etc.)* [11].

ICT vision and mission statements goes in alignment with the strategic business plan, and their implementation is followed by the *twelve strategic projects*: analyses of business processes operation and business process reengineering for SAGW, assessment of SAGW readiness for e-Government, business plan for urgent IT projects, automation of supportive business processes, development of integrated REC registration system, Data sharing with partnering institutions, Establishment of IT Department, Implementing IT Service Management, Implementing relevant IT standards, Training and education, capacity building and increasing of ICT awareness, Development of integrated ERP system, and Establishing Referent Network based on GNSS Technology [11].

With aim to reconciliation of the standards which needs to be used in a work processes in the SAGW in a field of implementing of ICT systems, in ICT strategic plan are pointed general international ICT standards, i.e. ISO 19115 for standardization of geographic information metadata, ISO 19119 for geographic information services, ISO 10006 for quality in project management, ISO 10015 for quality in training process, ISO 9000 for quality management systems, ISO 90003 for quality in software development, ISO 20000 for quality in IT service management, ISO 27001 for quality in information security management systems, INSPIRE for building of National Spatial Data Infrastructure of Macedonia, CADASTRE 2014 for real estate cadastre, as well as the standards provided by OGC (Open GIS Consortium), and other internationally available standards.

7 Conclusions

Developing of Business and ICT strategic plan of the SAGW shows very clear the orientation of its management, which aims to transform organization in to modern provider of geospatial information with focus in to geodetic, cartographic and cadastral data, by maximum using of advanced ICT systems.

SAGW is the responsible governmental institution for collecting, ownership, providing, archiving and updating of geodetic, cartographic and cadastral data in RM, improving of ICT systems within the institution will have directly impact on improvement of the data quality, as well to the methodologies and standards for their collecting and structured organizing in to digital databases.

Having developed ICT system as described in the ICT strategy of SAGW providing standardized products and services to its end users, provides an opportunity for data sharing and exchange with other relevant governmental institutions. The inter institutional integration is more feasible when having available structured ICT system as described. The e-Justice system could also benefit from integration and using the available system accessing the valuable data and information about the owners of the real estate, its location, mortgages and restrictions over a certain real estate.

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