

# Modeling agricultural information system

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## Abstract

Modeling, creation and implementation of an information system in an agricultural society means modernization of agriculture, i.e. timely and rapid access to data for various purposes, which implies monitoring of the daily growth and development of information and communication technologies for fast accessibility to information. The paper includes a conceptual part for modeling and construction of agricultural information system. The purpose of the paper is to show the necessary steps for modeling and construction of information system. It's presents the process modeling of agricultural information system that includes the steps: analysis of the current situation, preparation for modeling, and create of model.

**Keywords:** Information, Agricultural Information System.

## 1. Introduction

The need for modeling, creating and implementation an agricultural information system is a branch who is indispensable for the growth and development of the agricultural sector in countries around the world. The information systems enable collection, recording, storage, processing and transmission of information, who is of big importance in the part of the agricultural sector. In this sense, information systems are a place where information can be found to solve problems. The quality and success of the information system depends of modeling of the part intended for data transmission. In the process of modeling the system, there are different parts that are modeling for enable the implementation and functionality of information system. The model of information system development is a theoretical representation of the development process. Each model is a process of a special and unique way that contains information only for itself. The models for the development of information systems differ according to the total number of phases and activities that need to be implemented for the system to function. The model for the development of the information system is selected

depending on the nature of the task, the technical orientation, and the tools that are selected during the development of the information system.

## 2. Analysis of the situation

When creating the information system, it is necessary to provide a part for information management. The components of this section are shown in Figure 1. In fact, the information management section is a component that provides support and derives information for each subsequent operational service. IT support when creating the information system can be local or remote support. Identity and identity management, data warehousing solutions, ICT infrastructure and system and data security are fully underpinned by the IT sector. The information management section needs to be prepared for efficient and highly optimized processes as well as continuous operation of the system.

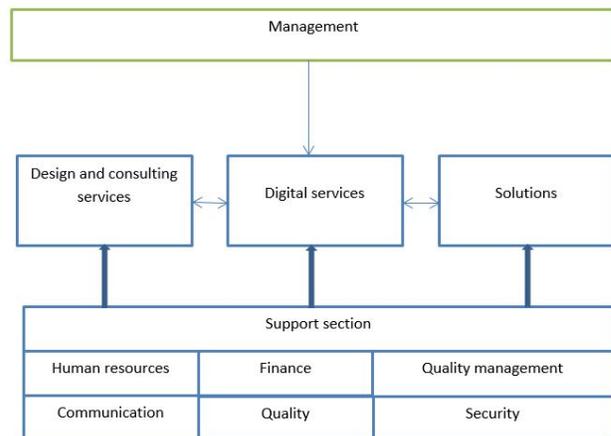


Fig. 1 Information management.

### 3. Preparation for modeling information system

The creation and implementation of the information system is a complex process that takes place in several stages. At the outset, it is necessary to conduct a case study in order to gather the necessary information that is necessary for starting with the modeling of the information system. The most common principle that starts with the creation and modeling of the information system is the so-called waterfall principle consisting of the phase of specification, planning and implementation. But, before starting with the specification phase, we are introducing a phase of the examination of the requirements or a preliminary analysis. Also, depending on the nature of the real problem and the development of the model, can the integration phase and the development and support phase are introduced.

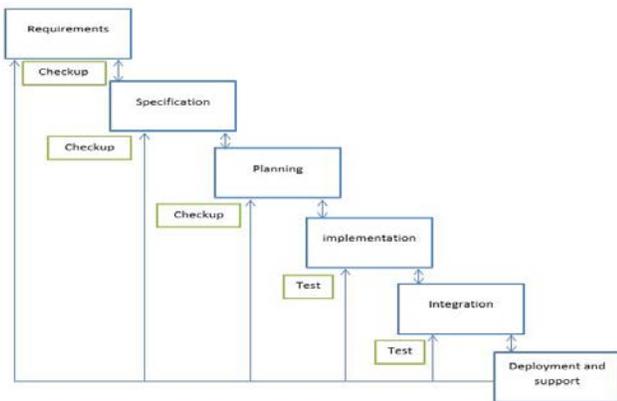


Fig. 2 Model of the information system according to the process of the waterfall.

With the waterfall model all phases of the information system include measures for quality assurance checks and tests. Each of the stages of activity consists of input, processing and realized output. The result of each development phase has its own results, which are verified as input for the next phase. If the previous stage does not show the desired results, i.e. it is not successfully completed, the next phase cannot start. Accordingly, the next phase can only begin if the previous phase is completed with success. However, the practical realization of the information system cannot always be fully developed only from the theoretical point of the requirements detected during testing tend to change over time of implementation.

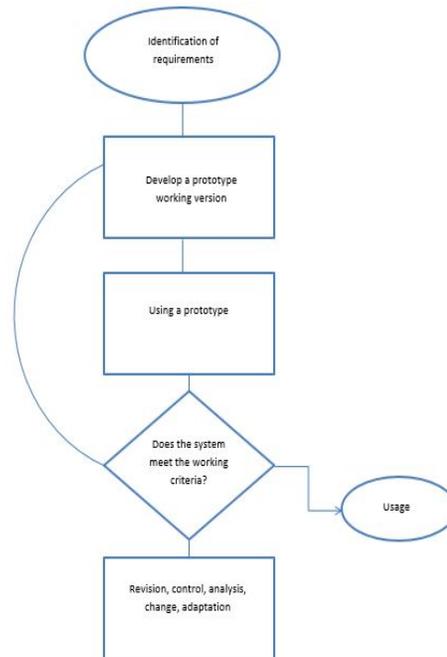


Fig. 3 Conceptual model for information system.

Figure 3 shows the conceptual prototype of the model, i.e. the working part where the system is tested together with its characteristics before it is officially used. The features of the prototype are suitable for testing services and solutions that are required by users. Prototypes of information systems make it possible to perform performance analysis by testing the system with stimulated loads.

### 4. Model of the information system

As shown in Figure 4, the model begins with the identification of the basic requirements where the project objectives are set and defined. The model continues to create a working prototype, in which conditions for its testing are created. There are two sub processes that enable the creation of incentives in order to retrieve users for using the system to perform its testing before being put into service before end users. The third and fourth processes using the prototype of the model refer to the collection of information and their feedback in order to obtain essential information on the way of functioning before being officially put into use.

Figure 4 shows the model of the information system created according to the model of Felix Suominen<sup>1</sup>. A clear position is displayed for all relevant stakeholders involved in the creation and implementation of the information system and the responsibilities to bear. There are groups in the model such as: Change management team, technical support, test user and deployment team.

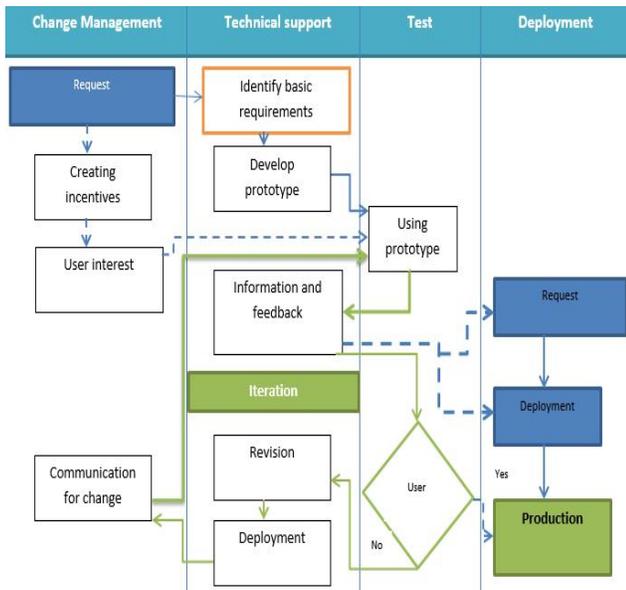


Fig. 4 Model for information system.

The Change management is responsible for managerial processes such as communication with users, information gathering and planning. The technical support section is responsible for technical aspects such as development, determination and improvement of the information system. The test section is intended for testing and providing feedback on the information system. The deployment part is in charge of managing processes when the system is put into use. As part of the model, the three parts of the model include the management team for management and the technical support section to be included in the testing section in order to see all the problems that users cannot see during the testing. The green arrows in the model represent the interactive circle where the functioning passes through the key processes and what is most important is that the course of work in those processes is in continuous mode.

## 5. Conclusion

In order to perform different actions in the agriculture it is necessary to have access to its information. However, in some rural areas in the country where the population is engaged in agriculture there is a lack of appropriate access to information, and because of that agricultural information systems are of great importance for access to information and practical application. For improving the agricultural information systems it is advisable to use communication between farmers, coordinators, agricultural experts<sup>2</sup>. The paper presents theoretical procedures for modeling the information system, so that their application can create a system that will be accessible and user-friendly.

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