# Pál Michelberger:

# Selection and introduction of information system elements for purposes of national defence

## Summary of PhD Thesis

## Formulation of academic goals

Numerous elements of information systems have become a marketed product supplemented with services. Due to the lack of own resources organization try to make the optimal choice rationally and select from ready-made hardver- and software components and the services liked, which they join later to information system-elements already acquired in the course of some adaptation. These IT solution are rather complex and their development can take tens of years of an engineer's work time.

The Hungarian Defence Forces will have to carry out numerous developments in the field of informatics. Their own capacity to develop has decreased in recent years and the acknowledged informatics strategy will necessity the procurement of many elements of the above kind. Selection and acquisition is difficult since it is impossible to learn the range of offered products within the time available. In business numerous resources (methodology projects, recommendations, standards, models of decision theory and management resources) are available to aid this process, but none of them handles the problem in a conform fashion.

However, it is not sufficient to make the correct selection. In order to enable the organization to form the most suitable information system, the old and new elements must be linked. In the course of the selection process the possibility of introduction and adaptation support by the deliverer are dealt with as a separate aspect.

## Research goals

The main objective of my research is to substantiate a methodology which will enable the Ministry of Defence and the linked organizations to compare, classify, select and introduce system elements offered on the market.

To reach the main goal I have formulated the following sub goals:

1. Analyzing and evaluating the acquisition practice and expenditure for informatics means of the Ministry of Defence.

2. Substantiation and compilation of a multi-level evaluation system for acquisition of informatics equipment for the Ministry of Defence.

3. Determination of the sequence of steps to be followed when evaluating and selecting information system elements.

4. Elaboration of a methodology recommendation for introduction of information systems for the Ministry of Defence considering the peculiarities of the task and business experiences.

**Short description of the accomplished task**

In order to reach the research goals I divided my dissertation into five chapters.

Following the introduction; the first chapter deals with some business experiences in connection with acquisition. I have considered the acquisition practice and the regulations backing it of the Ministry of Defence and the peculiarities of acquisition due to the demands of development.

In the second chapter I compiled the system for evaluating acquired system elements on the basis of software quality models, civil standards and recommendations dealing with the security and operation of information systems and NATO standards regarding software development and software quality.

In the third chapter I analyzed the methods of comparison of information systems and possibilities of their application on the basis of literature on questions of decision theory and practice. I considered the multi-level evaluation systems of the Ministry of Defence applied for other fields and the possibilities of applying the value analysis recommended in the Hungarian Law of Public Procurement.

The fourth chapter deals with the introduction following selection on the basis of project methodology experiences from the business sector and the peculiarities of acquisition of information system elements of the Ministry of Defence. I compiled the tasks connected with the project management of IT projects and the requirements of organizing temporary projects in a system.

The fifth chapter summarizes the consequences of the research and recommendations for acquisition of information system elements and their adaptation to the whole system for the Ministry of Defence.


**I regard the following as new scientific results of my dissertation:**


1.  Compilation of a hierarchic system of aspect on the basis of which the Hungarian Defence Forces can objectively evaluate the offers when organizing informatics type of acquisitions.

2.  Selection of multi-aspect decision theory model, which can be easily used by the Hungarian Defence Forces when comparing and evaluating complex systems and which fulfils the requirements set by the Hungarian Law of Public Procurement.

3.  Formulation of a recommendation to take over elements of system dependent and – independent methodologies for military applications.

4.  Formulation of a recommendation to set up a project organization that will carry out the whole process of an informatics type of acquisition and adaptation for the Hungarian Defence Forces.