Chapter 4

Building an IT System for Logistics in MS Excel Supported by 4TG Methodology

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ABSTRACT

This chapter includes the example of a fragment of the model implementation to the logistics in Ms Excel supported by 4TG methodology. 4TG methodology is principles of construction of such solutions in a spreadsheet that are secure, clear and flexible (these are features compatible with those that have been presented in the International Standard ISO 9126 concerning the quality of the software). The main objectives of the chapter are: presentation of ideas and elements 4TG methodology, paying attention to the quality of solutions created in Ms Excel and supported by 4TG methodology, provide examples of the methodology use in order to obtain solutions of appropriate quality, show the effects of the methodology use (implementation step by step the examples of supporting production planning), extrapolation of the examples to different areas of application in management.

INTRODUCTION

Above all, the practical aspect of 4TG methodology was presented. In turn, the selected items of the methodology are shown in the examples. Among other things, the experiment was presented, which shows that in Ms Excel are elements carrying out similar functionality. According to the methodology you should select those that allow you to maintain adequate quality of solutions. The attached model concerns to production planning. The particular structure, used sub-models, and code written in Visual Basic for Excel, support the functioning of the model.

Applied methods of work accelerate the implementation of the system and allow you to achieve the proper quality of solution.

Chapter conclusion - the use of the principles of 4TG methodology enables the work of different quality in relation to the one used in the vast majority by designers and users of Ms Excel.
1. DEFINITION AND THE ELEMENTS OF 4TG METHODOLOGY

Working in MS Excel may take different forms, such as:

- **Manual or Half-Automatic Work**: Here, in order to create a report we copy data pressing Ctrl C, Ctrl V, correct formulas when the need arises, manually delete or add rows or columns, do ad hoc operations in the sheet.

- **Automatically Working Models**: In this case data is obtained automatically, copying and other operations take place automatically, depending on the realization of a given functionality,

- **Automatically Working Models of Appropriate Quality**: Here, work is intuitional and the implementation of changes in the model is easy and safe – *4TG methodology deals with creating and developing such solutions.*

People using MS Excel are expecting more and more from this tool. They are creating increasingly successful formulas, they more and more often want to understand the information flow and control it. Understanding the information flow and knowing the tools used for algorithm notations bring you very close to developing solutions on your own. The scale of the solved problems in MS Excel increases as well – they are much more complicated than the simple ex post reports. Developing large-scale solutions require new procedures. 4TG methodology offers procedures suitable for creating such solutions. The ISO 9126 (International Organization for Standardization, 2001, 2003) international standard defines the quality of software, i.e. defines the qualitative features of software (functionality, reliability, usability, efficiency, maintainability and portability). The aim of 4TG methodology is to create and develop solutions which show similar qualitative features: security, clarity and flexibility.

*4TG methodology of building and using spreadsheet models includes ways, techniques and methods of using a sheet which will make it possible to design and build secure, legible and flexible models/applications (i.e. easily modifiable). It is at the same time a way of organizing the design of data and algorithm structures in the form of formulas and with the help of Visual Basic for Excel, as well as a set of methods of transmission, tools for data input control, processing and storing, and methods (rules) of creating reports and user panels. The methodology also means standardization, i.e. applying specific ways, methods and techniques, as well as using standard solutions in specific cases. It also makes it possible to use those elements of a spreadsheet which are suitable for building models and avoid those which, for various reasons, are not suitable for this purpose. (Głuszkowski, 2013, p. 48)*

In order to support the construction of models in MS Excel, 4TG methodology supplies procedure schemas, rules and standard solutions. This means that the methodology takes advantage of ready-made elements, so creating a solution has the form of assembly from ready-made elements.

4TG methodology is applied in all functions of computer science, i.e.:

- Data input,
- Data transmission,
- Data storage,
- Data processing,
- Reporting.