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## INTRODUCTION

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A modern IT company is an enterprise that stands out among all other types of enterprises. The main goal of an IT company is to provide services for the development, implementation, support, maintenance and development of IT products for various purposes on behalf of various stakeholders. Therefore, an IT company is forced to combine the best practices of planned management of IT services and project adaptation of these IT services to the requirements of individual customers during its own activities. Such a combination requires, in turn, the creation and development of an appropriate methodology, models, methods, systems and technologies for managing an IT company and its individual processes.

Unfortunately, the current state of science allows to describe in detail the methodological issues of creating and using an IT company management system and its processes mainly at the conceptual level. A significant number of scientific studies in recent years are aimed at solving only individual issues of managing the activities of an IT company. This can be explained by the complexity of the problem of building a methodological and formal basis for such a management system. Such a lag is also observed in the field of development and use of specialized information systems and technologies for managing an IT company. The vast majority of modern IT products used to manage an IT company and its processes are focused on the concept of exclusively project management and do not take into account the peculiarities of planned practices of modern service management. Some work on the creation of information systems and technologies for multi-level management of IT services was started in the early 2010s. But still the main results of these works are too large IT products, the cost and complexity of which significantly limits their distribution.

Solving the considered problems of managing a modern IT company requires a large amount of scientific and applied work that cannot be performed by a single team of researchers. But the gradual solution of scientific and applied issues, coordinated with the modern concept of IT company management and with the results obtained by individual research groups, can provide the governing bodies of IT companies with results that have significant applied value. Therefore, conducting research in this area is relevant from a theoretical and applied point of view.

The monograph offered to your attention contains the results of research by employees of the Department of Information Control Systems of the Kharkiv National University of Radio Electronics, the Department of Computer Systems Software of the National Technical University "Dnipro Polytechnic" and individual

independent researchers working in the field of management of IT companies and individual IT projects. This monograph considers the solution of theoretical and theoretical-applied issues related to the formulation and resolution of important problems and tasks of managing the general activities of an IT company and its individual processes, namely:

- problems of effective management of the operation of web-based information systems (Chapter 1);
- problems of managing the costs of an IT project of an information system in conditions of incomplete information about its elements (Chapter 2);
- tasks of assigning tasks to IT project performers (Chapter 3);
- tasks of assessing the complexity of an IT project for video game localization (Chapter 4);
- tasks of quantitative assessment of changes in the long-term IT project management system (Chapter 5).

During the research described in the chapters of the monograph, mathematical tools of category theory and set theory, models and methods of statistical analysis and Data Mining, as well as existing models and methods for estimating the costs of efforts and resources in IT projects were used.

The main theoretical results of the research presented in this monograph are:

- the concept of the problem of effective management of the life cycle of an operated information system as an IT service system;
- a set of models for effective management of the operation of a web-based information system;
- a formal description of the problem of effective management of the life cycle of an operated information system;
- a theoretical and categorical model of the properties of an information system;
- detailed models of losses in the activities of an IT company due to the lack of information;
- a method for solving the problem of assigning IT project tasks to its performers;
- a new method for assessing the complexity of IT projects for video game localization;
- an improved method based on the Beckhard and Harris model for quantitative assessment of changes in a long-term IT project.

The obtained theoretical results were verified during the implementation of relevant IT projects or on data from IT projects implemented using other methods and techniques. The results of the tests confirm that the application of the models and methods proposed by the authors of the monograph is better than the use of existing models, methods and tools for solving similar problems of IT company management.

## Introduction

This monograph may be useful to researchers, teachers, postgraduate students and higher education students in the field of computer science, information management systems and IT project management.

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