

SOFTWARE SOLUTIONS FOR MANAGING PROJECTS CO-FINANCED UNDER THE EUROPEAN UNION'S OPERATIONAL PROGRAMMES

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Abstract: This article is dedicated to the problems of software solutions used for managing projects. A task like this one is full of many challenges because, on one hand, on the market there are many versions of software platforms developed for managing projects. On the other hand, the projects co-financed by the Operational Programmes of the European Union are very specific. These peculiarities are related mainly to the complexity of the documentation combined with the need of serious financial planning of the interim and final reports. Adhering to task schedules is a key moment in planning and returning of funds. The development of the research topic includes a description and an analysis of software solutions that are often used for managing projects. The article also provides a comparative analysis of project management software features based on a defined number of criteria and indicators. The findings of this analysis permit the formulation of recommendations for the development of new systems, which will allow users to manage the funds received under EU projects adequately, and according to schedules.

Key words: information technologies, project management software, comparative analysis

JEL: C8, L86.

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Introduction

The modern Bulgarian economy is facing many social, economic and demographic challenges. The principles of effective market economy have been developed for more than three decades. This is accompanied by problems in the legal system, demographic problems and poverty, problems in competitiveness and efforts for laying the foundations of intelligent growth. In addition, despite the fact that during the current programme period the government has allocated considerable funds for solving these problems (for example, the funds under the Operational Programme “Science and education for smart growth”), their utilization is still a complex and difficult process.

The main purpose of this article is to outline the possibilities for implementing specialized software for managing projects under the EU Operational Programmes with the idea that the more effectively they are managed, the better is the utilization of funds.

1. Comparative analysis of the project management software

For the purposes of the analysis, we will compare the characteristics of 10 software applications used for managing projects². The main emphasis will be put on the purpose of the software solutions, their architecture and way of use. In addition, we will discuss the opportunities for training users and the support options provided by the manufacturing companies.

1.1. Microsoft Project software for project management

One of the most widely used software applications for project management is Microsoft Project. Based on descriptions from the website of the company, which developed the software, and experiments with a working copy of the product, we can outline the following characteristics that are systematized in Table 1.

² See <http://www.capterra.com/project-management-software/#infographic>

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Table 1.
Main features of Microsoft Project

Features	Description
Web site	http://www.microsoft.com
Purpose	It is designed for project and portfolio management; it can be used by project managers, project teams and people making decisions.
Architecture and use	Desktop application
Free distribution	No
Training	Documentation
Support	Online, during working hours, 24/7 (Live Rep)

The software product is distributed through licensed copies and is offered in a desktop version. The software has detailed documentation, which can be used as a tool for training beginner specialists. The software can be used to set parameters for the overall management of multiple projects. It has intuitive interface and a wide range of functions for managing schedules and tasks performed by separate project participants as well as monitoring the activities of the entire project team.

1.2. Basecamp software for project management

This software is a web - based platform where project participants can collaborate and communicate. It supports many languages and can also be used as a mobile application. Its main characteristics are presented in Table 2.

Table 2.
Main features of Basecamp

Features	Description
Web site	http://www.basecamp.com
Purpose	It can be used by entrepreneurs, free lancers, small enterprises or groups within the structure of big enterprises.
Architecture and use	Web - based application, mobile application
Free distribution	No
Training	Documentation
Support	Online, during working hours

According to data from the website of the company, which developed Basecamp, the application offers the following functions:

- Boards for messages and comments on specified topics. The software product permits users to take part in discussions on topics, which are determined in advance, and in context so that all the discussion history remains intact on one physical place. In this way, project participants can perform searches in the discussion comments. The comments themselves are designed in a manner, which permits participants to reach to problems that arise with time;
- Real - time chat between the administrator of the system and its users. This allows for quick and timely reaction in case of problem situations;
- Maintaining task lists. This software application permits the large scale organization of lists with tasks and activities;
- Storage of documents and files. The software enables users to organize visually PDF files, Google documents, images or other files in folders so that every project participant can easily find what they need.

1.3. JIRA software for project management

The main characteristics of the software are outlined in Table 3.

Table 3.
Main features of JIRA

Features	Description
Web site	http://www.atlassian.com
Purpose	
Architecture and use	Desktop application, web - based application
Free distribution	Yes
Training	Documentation, web resources
Support	Online , 24/7 (Live Rep)

The software is offered in a desktop and a web – based version and can be characterised through the following main parameters:

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- “Scrum boards” functionality, which permits the work teams to get easily informed about their tasks and to focus on the achievement of particular results;
- “Kanban boards” functionality – these boards give full “visibility” into the project work and ensure “immediate proximity” to the work of each member of the project team.
 - Real - time reports of the project implementation;
 - Planning of the project portfolio. This functionality allows users to manage the project resources and track the over project progress.

1.4. Wrike software for project management

Wrike is software that permits the overall management of projects and support of teamwork. It provides a good combination of opportunities for project management and social cooperation. This helps team members to be more productive and focused on achieving the project objectives. The main characteristics of the software are presented in Table 4.

Table 4.

Main features of Wrike

Features	Description
Web site	http://www.wrike.com
Purpose	It is designed for entrepreneurs and managers who manage many distributed teams working on distributed tasks.
Architecture and use	Web –based application, mobile application
Free distribution	Yes
Training	Documentation, web resources, Live Online
Support	Online, 24/7 (Live Rep)

This software is aimed at managing a multitude of distributed teams who perform distributed tasks. Its main features are as follows:

- Core building blocks of work. This feature permits the easy tracking of the overall progress of the projects as well as the individual contribution of each team member;

- Editing functionality that allows users to modify task contents in real time. For this purpose each task has a description field, which permits collaborative work and tracking of changes in real time;
- File management module. It supports various file formats such as PDF, JPG, PNG, Google Docs, Box, Dropbox, etc.;
- Gantt charts;
- Management of the overall project resources;
- Budget tracking, etc.

1.5. Podio software for project management

Podio allows users to achieve efficient organization of every project combined with communication between the team members. According to data, more than 500,000 organizations use Podio to manage their projects. The main characteristics of the software are outlined in Table 5.

Table 5.
Main features of Podio

Features	Description
Web site	http://www.podio.com
Purpose	It is designed to facilitate the flexible management of multiple tasks and people. Special emphasis is put on start – up companies.
Architecture and use	Web – based application, mobile application
Free distribution	No
Training	Documentation, web resources, Live Online
Support	Online, 24/7 (Live Rep)

The analysed software differs from the other applications because the role of its users is clearly defined. It also has a functionality, which improves time utilization, increases the overall effectiveness of the project management processes and facilitates the interaction and communication within project teams.

Podio offers expanded capabilities for reporting financial flows and improves the provision of data necessary for making managerial decisions.

1.6. Smartsheet software for project management

Smartsheet is an intuitive instrument for online collaboration, which allows team members to work together on separate tasks. The main characteristics of the software are shown in Table 6.

Table 6.
Main features of Smartsheet

Features	Description
Web site	http://www.smartsheet.com
Purpose	It is designed to ensure easy and intuitive management of a wide range of projects involving a complex set of tasks and activities.
Architecture and use	Web - based application, mobile application
Free distribution	Yes
Training	Documentation, web resources, In person
Support	During working hours

The analysed software possesses functionality in the following fields:

- Sharing files, related to the management of the project;
- A module for reminders, which helps users to stay informed about important meetings and events during the implementation of the project;
- Gantt charts of the performed tasks;
- Calendars and sharing of calendar events;
- Mobile version of the application;
- Web forms for filling in data and tracking reports, etc.

1.7. Teamwork Project Manager software for project management

Teamwork Project Manager has a considerable number of users worldwide. It offers intuitive navigation, easy search and many other functions, which guarantee the timely completion of any project. The

application is offered in two versions for Android and iPhone. Its main characteristics are outlined in Table 7.

Table 7.
Main features of Teamwork Project Manager

Feature	Description
Web site	http://www.teamwork.com
Purpose	It is designed for companies that manage various projects with complex coordination and communication between them.
Architecture and use	Web – based application, mobile application
Free distribution	Yes
Training	Web resources
Support	24/7 (Live Rep)

Teamwork Project Manager is distributed freely. It is offered as a desktop and web – based application. The main emphasis in the application functionality is the managing of projects with complex communication between them. This enables the management of multiple projects and guarantees strict control of their parameters achieved through Gantt charts, instruments for time management and Dashboards for the visualization of results.

1.8. VersionOne software for project management

Another example of a software instrument for project management is VersionOne. Its main characteristics are presented in Table 8.

Table 8.
Main features of VersionOne

Feature	Description
Web site	http://www.versionone.com
Purpose	It can be used by teams who work in the field of managing different – scale projects.
Architecture and use	Web – based application
Free distribution	No
Training	Documentation
Support	Online, within the working hours

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VersionOne is a modern platform of Agile ALM. It allows users to track the entire lifecycle of projects – from the formulation of their strategy to the achievement of results according to defined indicators. VersionOne enables the coordination of collaborative teamwork, tracking priorities and progress with the help of Scrum, Kanban and hybrid methods. VersionOne adapts comparatively easy to other software applications. It is distributed as a web – based application.

1.9. Mavenlink software for project management

The main characteristics of the software are presented in Table 9.

Table 9.
Main features of Mavenlink

Feature	Description
Web site	http://www.mavenlink.com
Purpose	It is designed for use by business organisations that specialize in the provision of services, marketing, public relations, architectural design, engineering design, IT services, managerial consulting and education.
Architecture and use	Web – based application
Free distribution	Yes
Training	Documentation, web resources, online, in person
Support	During working hours, 24/7 (Live Rep)

Mavenlink is one of the leaders in online project management. It offers a good combination of management technologies and cloud computing services. According to data from the company, which developed the software, Mavenlink is the most installed application for project management in Google Apps' Marketplace. It allows problem – free connection with Google Apps for project work files within the common working environment. The application also ensures a high level of integration with various API for managing the other aspects of the business. Mavenlink can be integrated with leading cloud solutions, which are based on CRM (Customer Relationship Management), ERP (Enterprise

Resource Planning) and other programmes for collaborative sharing of documents.

1.10. Assembla software for project management

The main characteristics of the software are presented in Table 10.

Table 10.
Main features of Assembla

Feature	Description
Website	www.assembla.com
Purpose	The software enables project teams to manage tasks and report the completion of activities.
Architecture and use	Web - based application
Free distribution	No
Training	Documentation
Support	During working hours

Assembla permits visualization and prioritization of tasks within the management of a particular project. It also enables users to focus on the actual performance of their tasks with the help of a visual card wall and ad hoc reporting. The designed functionality is used to track the progress of both individual team members and the overall project activities.

Other types of project management software with similar characteristics include: Freedcamp, Project Manager, Asana, Zoho Projects, Central Desktop, Redbooth, Trello, Intervals, TeamPulse, Planbox, etc.

2. Comparative analysis of the outlined software solutions

To perform the comparative analysis it is necessary to approach it from two perspectives:

- From the point of view of the practical applicability of the analysed software solutions, which includes their use by clients;

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- From the point of view of a number of characteristics that will be used to perform the analysis.

Table 11 presents a comparison according to the number of clients and number of users³.

*Table 11.
Comparison according to the number of clients and customers*

Nº	Software name	Number of clients	Number of users	Followers in Twitter	Likes in Facebook	Followers in LinkedIn
1	Microsoft Project	880000	22000000	11446	121208	1941117
2	Basecamp	285000	15000000	109824	2795	3744
3	JIRA	23000	30000000	9964	27870	20622
4	Wrike	330000	947000	3259	6975	2275
5	Podio	200000	1000000	16467	17841	110235
6	Smartsheet	100000	1500000	3902	5290	2478
7	Teamwork Project Manager	102000	667000	3901	13044	302
8	VersionOne	50000	1250000	5600	3357	1721
9	Mavenlink	50000	750000	7091	19037	1163
10	Assembla	66000	801000	4183	9017	444
11	Freedcamp	192345	396155	1023	1376	49
12	Project Manager	72841	341277	20244	32445	2239
13	Asana	40000	400000	37376	74198	4228
14	Zoho Projects	20000	1200000	1102	53	18611
15	Central Desktop	2200	650000	8316	2580	1695
16	Redbooth	2700	600000	10090	106	1175
17	Trello	3000	300000	48419	1039	1433
18	Intervals	30000	200000	243	36570	24
19	TeamPulse	6700	10000	1121	105686	9848
20	Planbox	400	75000	2479	423	163

Figure 1 presents a graphic distribution of the analysed software applications according to the number of their clients. It is obvious from it that Microsoft Project is the absolute leader.

³ Source: <http://www.capterra.com/project-management-software>

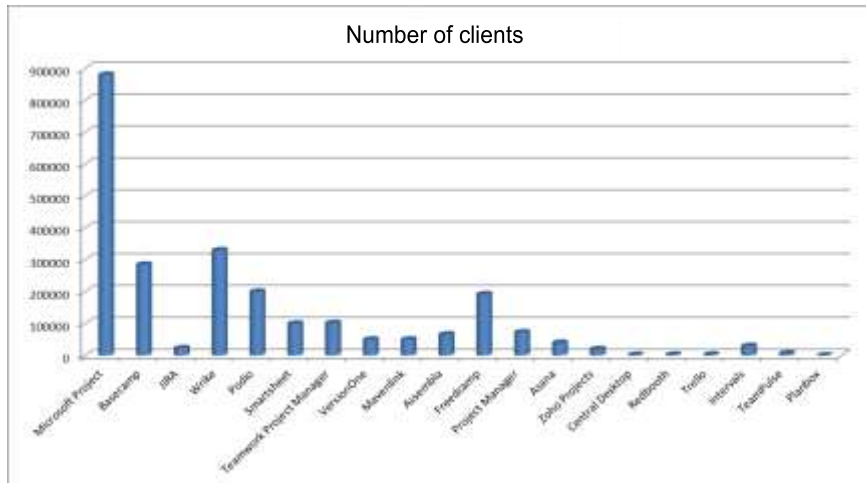


Figure 1. Distribution of the analysed types of software according to number of clients

Figure 2 shows the graphical distribution of the analysed software applications according to the number of their users. It is clear that JIRA is the absolute leader, followed by Microsoft Project and Basecamp.

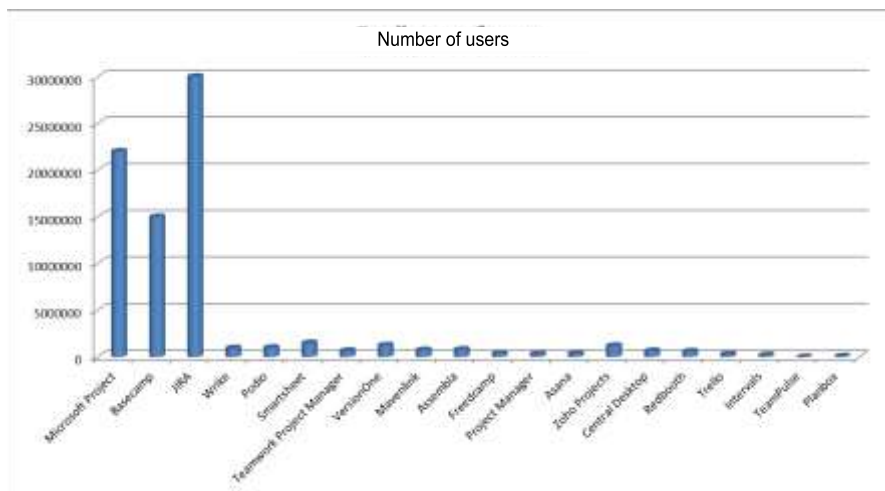


Figure 2. Distribution of the analysed types of software according to number of users

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In order to compare the analysed software solutions, it is necessary to define a number of characteristics. This is a complicated and complex problem. Therefore, it should be discussed only in the context of the set objectives of the current study, namely searching for specialized solutions for the management of projects co-financed by the EU with all the specific characteristics of these processes. For this reason, the main features used for the comparative analysis are as follows:

- budget management;
- issues tracking and management;
- collaboration;
- email integration;
- file sharing;
- options for creating Gantt charts;
- management of project ideas;
- management of project reporting;
- portfolio management;
- project planning;
- management of defined requirements;
- resources management;
- status management;
- tasks management;
- quality management.

Table 12 presents a comparison of the features of the 10 analysed software applications for project management.

All conclusions from the comparative analysis permit us to determine the combination of characteristics, which will be necessary for the effective management of projects co-financed under the EU funds. These features are as follows:

- budget management;
- collaboration;
- email integration;
- file sharing;
- option for creating Gantt charts;

- management of project reporting;
- project planning;
- management of defined requirements;
- resources management;
- status management;
- task management.

Table 12.
Comparison of the features of the 10 software applications

	Budget management	Issues tracking and management Collaboration	Email integration	File sharing	Option for creating Gantt charts	Management of project ideas	Management of project reporting	Portfolio management	Project planning	Management of defined requirements	Resources management	Status management	Tasks management	Quality management
Microsoft Project	Yes		Yes			Yes								
Basecamp			Yes	Yes									Yes	
JIRA				Yes	Yes			Yes		Yes	Yes			Yes
Wrike		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Podio		Yes	Yes		Yes		Yes	Yes	Yes			Yes	Yes	
Smartsheet	Yes		Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	
Teamwork Project Manager	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VersionOne			Yes	Yes	Yes			Yes	Yes	Yes	Yes		Yes	
Mavenlink	Yes		Yes	Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes	
Assembla			Yes					Yes	Yes				Yes	

Of all the 10 analysed software products there are only three applications whose characteristics are similar to the defined requirements. Only one of the applications has features that fully coincide with the above-mentioned list. This information is presented in Table 13.

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Table 13.
Project management software whose features are the closest to the predetermined requirements

	Budget management	Collaboration	Email integration	File sharing	Options for creating Gantt charts	Management of project reporting	Project planning	Management of defined requirements	Resources management	Status management	Tasks management
Smartsheet	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Teamwork Project Manager	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Project Manager	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes

The information in the table shows that three of the analysed software applications, namely Smartsheet, Teamwork Project Manager and Project Manager, have features whose combination is the closest to the defined set of characteristics.

Conclusion

In conclusion, we must emphasise that a software solution used for managing projects co-financed under the Operational Programmes of the European Union must have the following additional features:

- synchronizing the project management software databases of the beneficiary and the partners;
- setting the business logic of the software instruments on a project management mode;

- supporting a feature for scenario – based risk management.

The combination of feature that already exist in the analysed software applications and the determined new ones that are defined as necessary should be taken into consideration in the development of prototypes of software applications for managing projects co – financed under the Operational Programmes of the European Union.

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