

LEDIB CLUSTER HOUSE ESTABLISHING PROJECT MANAGEMENT THROUGH MS PROJECT SOFTWARE APPLICATION

M.Sc. Danka Milojković¹, Nevena Stanisavljević², Miloš Jovanović³, Ph.D. Nebojša Stojković⁴

Abstract: Establishing of LEDIB Cluster House Project is a business development project consisting of the small-scale construction works, interior design and staff recruitment. The project management was enabled through application of the basic concept implemented in 6 stages: Project Objective and Description; Identification of the Project Manager and Team; Project Implementation Timeline Planning; Identification of the Required Resources and Finances; Implementation Monitoring and Necessary Interventions and Project Closeout. The basic objective of the Project is the closeout (completion) in the shortest period of time and with the lowest expenses. Planning, monitoring and control of the project implementation rely on the software support of the Microsoft Project – the standard program for project management.

Key words: cluster, project management, MS Project, planning, monitoring and control.

UPRAVLJANJE PROJEKTOM USPOSTAVLJANJA LEDIB KUĆE KLASTERA PRIMENOM SOFTVERA MS PROJECT

Rezime: Projekat „Uspostavljanje LEDIB Kuće klastera“ je poslovno razvojni projekat koji obuhvata građevinske radove manjeg obima, uređenje enterijera i kadrovanje. Upravljanje projektom ostvareno je primenom osnovnog koncepta projektnog menadžmenta realizovanog u 6 faza: cilj i opis projekta; određivanje projektnog menadžera i tima; planiranje vremena realizacije projekta; utvrđivanje potrebnih resursa i finansijskih sredstava; praćenje realizacije i potrebne intervencije i zatvaranje projekta. Osnovni cilj projekta je završetak projekta u najkraćem vremenu i sa najnižim troškovima. Planiranje, praćenje i kontrola realizacije projekta oslanja se na računarsku podršku standardnog programa za upravljanje projektima Microsoft Project-a.

Ključne reči : klaster, upravljanje projektom, MS Project, planiranje, praćenje i kontrola.

¹ LEDIB Cluster House, director

² LEDIB Cluster House Training Center, coordinator

³ Doktoral student of Faculty of Economy in Nis

⁴ Faculty of Economy in Nis, proffesor

1 INTRODUCTION

LEDIB Cluster House is an innovative business organization established upon the initiative of the seven clusters from South-East Serbia, with professional and financial support of LEDIB⁵, the Danish Programme for Local Economic Development in the Balkans. Formally and legally, it represents a union of clusters of construction, textile, agro, service and medical sectors, supported by the Serbian Chamber of Commerce and University of Nis. LEDIB Cluster House Mission is to provide technical support to Serbian clusters with the Vision to develop into the National Centre for Cluster Development.

Prerequisites for fulfilling the Mission and Vision of LEDIB Cluster House are provision of *logistic and staff capacities*.

Agreement on cooperation on the LEDIB Cluster House Project between LEDIB Programme and Regional Chamber of Commerce Nis created the opportunity for implementation of logistic support. Office space of 100 m² was provided along with access to electric, telecommunication and internet networks. Apart from offices, LEDIB Cluster House can use RCC Nis Meeting Rooms. The office space is at the LEDIB Cluster House's disposal for the period of 5 years, till the end of 2015, so that an innovative and unique business organization for cluster development in Serbia can be established and developed.

The results of the office space assessment revealed a need for *small-scale construction works*. The proposed *interior design* was made according to the needs of the organization, through LEDIB Cluster House concept analysis. The *staff recruitment* was performed according to the defined organizational structure.

Deadline for the completion of the abovementioned activities was *28 days*.

MS Project software application was used in order to manage the Project more efficiently and effectively. Application was designed to assist project managers in *development of plans, allocation of resources required for the implementation of the activity, monitoring of the project implementation by stages, budget monitoring and management, load analysis, organization of activities and work force*, all in order to complete the project within the planned deadline.

⁵ www.ledib.org

2 MICROSOFT PROJECT ROLE

The Project Manager needs to work within *time, cost, scope and quality limits*.

Microsoft Project assists with the accomplishment of objectives on time and within budget. Computer software can significantly contribute to project management as a tool for recording, calculation, analysis and preparation of presentation in order to assemble all the project details. However, the Microsoft Project cannot produce or guarantee the successful Project Plan. Still, in many ways, the Microsoft Project can be valuable in planning and managing of a project:

2.1 MICROSOFT PROJECT ASSISTS IN DEVELOPMENT OF A BETTER PLAN.

Since the software requires precise identification of tasks necessary for completion of the project objective, the project details need to be carefully considered. Discipline, as a result of understanding these details, helps with organizing a good plan. Screen presentations offer organized presentations of plan details, facilitating visualization, organization and development of the Plan.

2.2 MICROSOFT PROJECT MAKES THE CALCULATED PROJECTIONS EASIER AND MORE RELIABLE.

Based on the input data, the Project calculates the schedule, presenting the beginning and ending of each task as well as when the certain resources (meaning personnel, equipment, plants, etc.) are supposed to perform certain tasks. If all the required data are provided, this schedule also presents the probable expenses of the Project.

2.3 MICROSOFT PROJECT ENABLES EASY TESTING OF "WHAT-IF" SCENARIO.

In order to find the optimal project plan, the Project enables experimenting with various elements of the plan until the best plan for organization is reached. This is an especially powerful feature of the Microsoft Project Professional.

2.4 MICROSOFT PROJECT ASSISTS WITH DETECTION OF INCONSISTENCIES AND PROBLEMS IN THE PLAN.

The Project detects whenever resources are used for a longer period than they are actually available, or when the final deadlines cannot be achieved with input limitations. It also aids with identifying and resolving of resources overload as well as problems with time deadlines.

2.5 MICROSOFT PROJECT ASSISTS WITH EXPLAINING THE PLAN TO OTHERS.

The Project provides printed Reports and Internet html reviews that facilitate approval of the Plan by the clients or top management. In a similar way, the Project makes explaining the Plan to supervisors and workers easier, simplifying the process of their approvals and cooperation. It is very easy to create useful Reports, which has been one of the top selling advantages of the Microsoft Project over the years

2.6 MICROSOFT PROJECT ASSISTS WITH MONITORING THE PROGRESS AND DETECTION OF POTENTIAL DIFFICULTIES.

After the start of the Project, and as the activities begin and end, anticipated dates for tasks from the schedule are replaced by the real dates. The software revises the schedule, so that actual dates are imported and new dates of the Project's completion and its expenses are projected. Those new projections provide valuable warnings on potential delays or cost overruns in order to undertake corrective measures, if necessary.

2.7 IF THE EXTERNAL CIRCUMSTANCES CHANGE AFTER THE START OF A PROJECT, THE MS PROJECT ASSISTS WITH ADJUSTMENTS OF THE PLAN AND OVERVIEW OF CONSEQUENCES

The following situations can be used as examples: when new amounts of salaries take effect or an organization is exposed to new regulations, etc.

However, the Project Management Software, as any other software, is useful only if inputs are reliable and complete.

3 MICROSOFT PROJECT APPLICATION IN A PARTICULAR PROJECT MANAGEMENT

Management of the business development projects consists of implementing the basic stages of a project life cycle, which are:

- Preparation and approval of a project proposal
- Project implementation planning
- Project implementation monitoring
- Project completion

In the first stage of a project life cycle, a project should be described from the qualitative and quantitative points of view by using appropriate forms or making a specific form for project proposal preparation. The project proposal form should include the following data: project name, information about an author of project proposal, short description of project proposal's compliance with investor's mission and vision; project description regarding general and specific objectives, areas of project activity, requested results and methodology; description of service providers; location and lasting of project in the sense of setting the time of project initiation, time planning of key activities, location at which the project will be implemented and locations included in the project if requested by the project implementation; budget for implementation of planned activities. A project proposal made in this way and supported by MS Project Reports for explaining the plan to the investor simplifies the process of obtaining the approval.

In the project implementation planning stage, based on the approved project proposal, and supported by WBS technique, detailed activities for the project implementation are identified, along with timeline for their implementation. Then there is the precise identification of the resources – equipment, material and staff required for implementation of the defined project activities. Required finances, i.e. the budget for the project implementation, should also be specified. This stage includes preparations for the start of the project implementation, like collecting bids from service providers in compliance with the detailed needs of the project and selection according to criteria

set by investor (price, quality, deadline, reliability, references.)

After preparation of the detailed Activity Plan, engaging the resources and expected expenses, implementation and monitoring of a project begin. The unplanned activities, and therefore expenses, might occur during this phase. Project Manager and Project Team then consider the newly occurred circumstances and make decisions to ensure the project implementation according to the plan.

After completion of all the planned activities, the final report is prepared, including the corresponding documentation confirming the implementation and effects of the planned activities.

During the business development Project, Establishing of the LEDIB Cluster House, the preparation and approval of project proposal were initiated according to the project life cycle stages. Preparation was done by the LEDIB Programme Component Coordinator, who filled in a corresponding form. It was based on the previously performed assessment of needs of the Project's beneficiaries, support of partners and market survey. Project proposal was presented to LEDIB Programme management, and after completion of the official Program procedure for the project approval, it was decided that the implementation could start.

Program Component Coordinator, as a Project Manager, forms the Project Team, initiating detailed planning of activities and resources. As this is a small-scale project, the Project Team consists of three persons: Project Manager, Project Assistant and Financial Associate.

The objective of the Project is reconstruction and equipping of the LEDIB Cluster House premises and selection and preparation of staff for its operations.

Three key activities are defined by the Project:

- *Small-scale construction works,*
- *Interior design according to the LEDIB Cluster House needs,*
- *Recruitment of staff.*

The Project is located at the premises of the Regional Chamber of Commerce Nis, first floor. Access, corridor and office space were supposed to be rearranged and adjusted to the demands of a modern business.

A shorter list of service providers was made according to key activities, and requests for bids and interior design proposals were sent to them.

The following tables contain specification and value of the planned investments regarding the LEDIB Cluster House Establishing Project implementation.

Table 1: Planned value of key activities⁶

DESCRIPTION	Total
Small-scale construction works	
Painting, locksmith works, electric installation works (entrance, staircase, corridor, 4 offices)	150
Interior design	
Equipping with furniture, carpets, curtains, floral decorations, chandeliers, paintings (entrance, staircase, corridor, 4 offices)	1.400
Telecommunication and IT equipment (switchboard, video surveillance system, IT equipment, networking)	830
Small inventory items and office supplies	60
Staff recruitment	
Selection and training of staff for day-to-day operations. Hiring an architect.	358
TOTAL	2.798

nn⁷

⁶ Amounts in tables do not match the real project values.

⁷ 'no name'

Table 2: Value of planned investments

Type of investment	Investments in 2011 in rsd
Small-scale construction works	150
Interior design	2.290
Staff recruitment	358
TOTAL	2.798

a) Defining the project structure (project WBS)

The Project needs to be broken down into certain activity stages and tasks.

Project Manager and Team defined the following stages and activities in the detailed project plan:

1. Small-scale construction works

1.1 Painting works

- 1.1.1 Selection of the service provider
- 1.1.2 Painting works at the entrance
- 1.1.3 Painting works at the staircase
- 1.1.4 Painting works at the corridor
- 1.1.5 Painting works at the offices
- 1.1.6 Monitoring of works
- 1.1.7 Activity implementation report

1.2 Locksmithing works

- 1.2.1 Selection of the service provider
- 1.2.2 Locksmithing works at the offices
- 1.2.3 Monitoring of works
- 1.2.4 Activity implementation report

1.3 Electric installation works

- 1.3.1 Selection of the service provider
- 1.3.2 Electric works at the entrance
- 1.3.3 Electric works at the corridor
- 1.3.4 Electric works at the offices
- 1.3.5 Monitoring of works
- 1.3.6 Activity implementation report

2. Interior design

2.1 Equipping with furniture

- 2.1.1 Shorter list of service providers
- 2.1.2 Submission of bids
- 2.1.3 Selection of the best bid
- 2.1.4 Payment
- 2.1.5 Preparation and assembling
- 2.1.6 Monitoring
- 2.1.7 Activity implementation report

2.2 Setting up of chandeliers, curtains, paintings, floral decorations, carpets

- 2.2.1 Shorter list of service providers
- 2.2.2 Submission of bids
- 2.2.3 Selection of the best bid
- 2.2.4 Payment
- 2.2.5 Preparation and assembling
- 2.2.6 Monitoring
- 2.2.7 Activity implementation report

2.3 Telecommunication and IT equipment

- 2.3.1 Shorter list of service providers
- 2.3.2 Submission of bids
- 2.3.3 Selection of the best bid
- 2.3.4 Payment
- 2.3.5 Preparation and installation
- 2.3.6 Networking
- 2.3.7 Monitoring
- 2.3.8 Activity implementation report

2.4 Small inventory items and office supplies

- 2.4.1 Shorter list of service providers
- 2.4.2 Submission of bids
- 2.4.3 Selection of the best bid
- 2.4.4 Payment
- 2.4.5 Receipt of goods
- 2.4.6 Monitoring
- 2.4.7 Activity implementation report

3. Recruitment of staff

- 3.1 Short list of candidates
- 3.2 Selection of candidates
- 3.3 Training
- 3.4 Monitoring
- 3.5 Activity implementation report

4. Probationary period (trial work)

Table 3 Defining the key events (milestones) of the project

Nr	Milestones	Target date
1.	Project approval and project team forming	01.02.2011.
2.	Defining the detailed activity plan	02.02.2011.
3.	Beginning of an architect's services	02.02.2011.
4.	Ending of an architect's services	22.02.2011.
5.	Beginning of activity plan implementation monitoring	03.02.2011.
6.	Ending of activity plan implementation monitoring	28.02.2011.
7.	Beginning of the stage of selection of service provider for small-scale construction works and interior design	03.02.2011
8.	Ending of the stage of selection of service provider for small-scale construction works and interior design	07.02.2011
9.	Beginning of stage – electric works	08.02.2011.
10.	Ending of stage - electric works	10.02.2011.
11.	Beginning of stage – painting works	10.02.2011.
12.	Ending of stage - painting works	17.02.2011.
13.	Beginning of stage – locksmithing works	21.02.2011
14.	Ending of stage - locksmithing works	22.02.2011.
15.	Beginning of stage – equipping with furniture	08.02.2011.
16.	Ending of stage - equipping with furniture	20.02.2011.
17.	Beginning of stage – chandeliers setting up	18.02.2011
18.	Ending of stage – chandeliers setting up	19.02.2011.
19.	Beginning of stage – curtains setting up	20.02.2011.
20.	Ending of stage – curtains setting up	21.02.2011.
21.	Beginning of stage – paintings setting up	22.02.2011.
22.	Ending of stage – paintings setting up	22.02.2011.
23.	Beginning of stage – floral arrangements setting up	22.02.2011.
24.	Ending of stage – floral arrangements setting up	22.02.2011.
25.	Beginning of stage – carpets setting up	22.02.2011.
26.	Ending of stage – carpets setting up	22.02.2011.
27.	Beginning of stage – staff recruitment	01.02.2011.
28.	Ending of stage - staff recruitment	22.02.2011.
29.	Beginning of telecom. and IT equipment installing	22.02.2011.
30.	Ending of telecom. and IT equipment installing	22.02.2011.
31.	Beginning of probationary work	23.02.2011.
32.	Ending of probationary work	28.02.2011.

Table 3 contains data that are the base for MS Project operations.

b) Forming the activity list with required time, resources and price of resources

Table 4 Activities, duration of activities and resources required for their implementation

Nr.	Activity	Next	Duration of activity	Resources	Quantity of resources
1	Project Team forming	2	1	LT ⁸	1
2	Recruitment of staff	3	23	LT	3
3	Detailed activity plan defining	4	1	LT, architect	4
4	Hiring an architect	5	21	Architect	1
5	Selection of service provider	6	5	LT, architect	4
6	Activity plan implementation monitoring	7	26	LT	2
7	Electric works	8	3	Subcontractor1	1
8	Furniture	9	13	Subcontractor2	1
9	Painting works	10	8	Subcontractor3	1
10	Chandeliers setting up	11	2	Subcontractor4	1
11	Curtains setting up	12	2	Subcontractor5	1
12	Locksmithing	13	2	Subcontractor6	1
13	Paintings setting up	14	1	Subcontractor7	1
14	Floral decorations setting up	15	1	Subcontractor8	1
15	Carpets setting up	16	1	Subcontractor9	1
16	Telecomm.and IT equipment installing	17	1	Subcontractor10	1
17	Probationary period	18	6	LCH ⁹ staff	8

LEDIB Cluster House staff was recruited in compliance with the organizational structure in the stage of initiation of innovative business development organization LEDIB Cluster House concept:

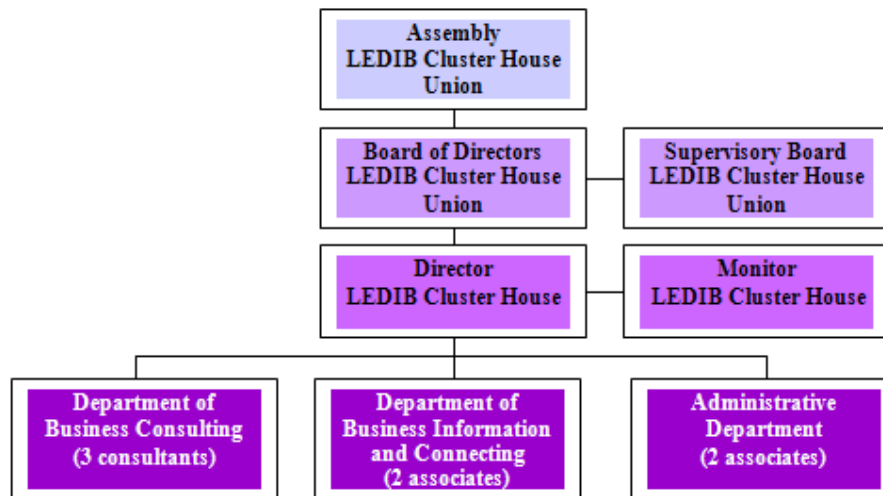


Figure 1 Organizational scheme of the LEDIB Cluster House in initial stage

⁸ Short for LEDIB Team

⁹ Short for LEDIB Cluster House

c) Project activities implementation expenditures

Human and material resources are needed for the implementation of this project.

Material resources - materials and equipment needed for small-scale construction works and interior design are provided by the subcontractors, so these expenditures will be treated as expenditures of subcontractors.

Table 5 Expenditures necessary for the project implementation

Nr.	Resource	Availability	Price
1.	Staff	9	358 nn/month
2.	Subcontractor 1	1	25 nn/work
3.	Subcontractor 2	1	935 nn/work
4.	Subcontractor 3	1	120 nn/work
5.	Subcontractor 4	1	95 nn/work
6.	Subcontractor 5	1	65 nn/work
7.	Subcontractor 6	1	5 nn/work
8.	Subcontractor 7	1	70 nn/work
9.	Subcontractor 8	1	55 nn/work
10.	Subcontractor 9	1	180 nn/work
11.	Subcontractor 10	1	830 nn/work
12.	Small invent. items & office supplies	1	60 nn/order

d) Defining the interdependence of projects

MS Project enables defining four types of relations between activities:

- finish-to-start (FS),
- start-to-start (SS),
- finish-to-finish (FF) and
- start-to-finish.

The order of activities and their mutual relations need to be defined so that the program could function well and perform certain calculations automatically (see Table 4, Columns 1-3)

e) Directions for MS Project plan making

The basic project parameters are set through *Tools Options*. Within this option, the basic data on the project are defined: project name, project manager, beginning date; calendar settings: working hours, days off, number of working hours within one week, winter and summer working hours; defining location on the disc for project recording; which monetary units to use, number of decimals, etc.

Entry of activities and their duration is done through *View Gantt Chart* menu option. The screen is divided into two parts – tables and Gantt charts. The part with tables has more than 250 fields. When a certain field is selected, a detailed window *Task Information* is opened, and then all the data for an actual activity are entered: name, duration, resources used, types of connections between activities, etc.

MS Project differentiates two basic types of activities: standard and macro activities on several levels. Activities can be grouped by levels, so that the whole Project can be presented by a macro activity or a group of activities through stages.

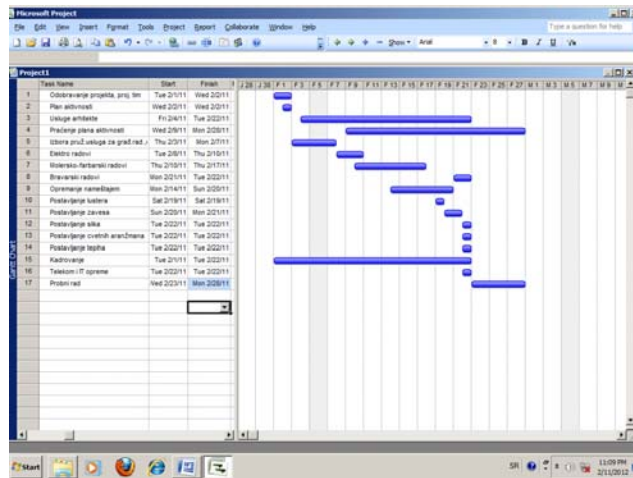


Figure 2 MS Project Tables and Gantt charts of activities

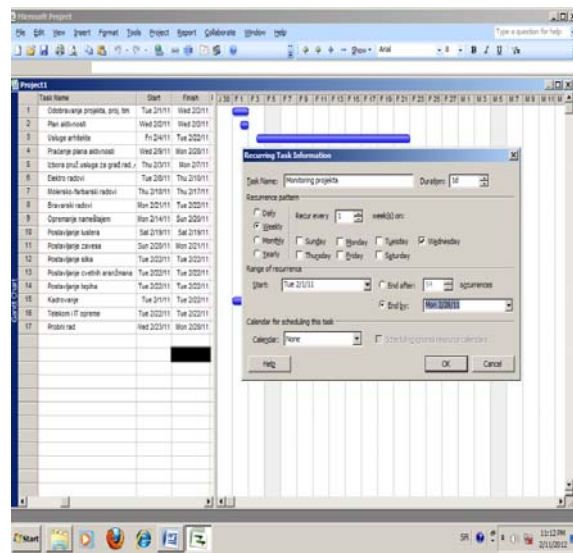
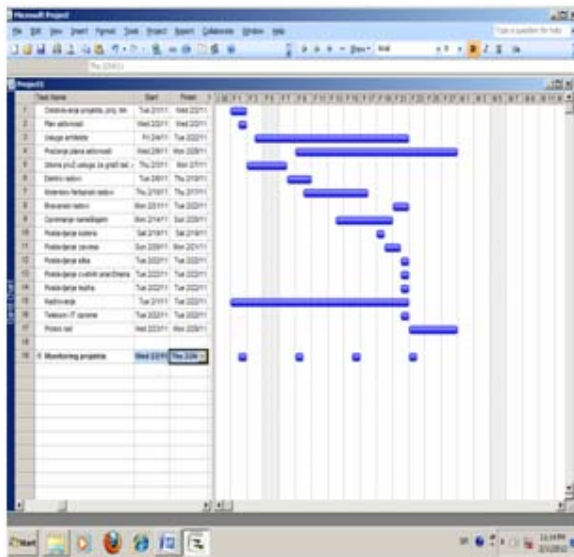


Figure 3 MS Project entry procedure and cyclic activity

MS Project enables entry of cyclic activities repeated in a certain time interval. Cyclic activity entry is done through *Insert/Recurring Task Information* Menu option.

The milestones are beginnings and endings of stages defined by the WBS structure. It is important to mention that the milestones are entered with time duration 0 and they have special appearance at the Gantt chart.

The project structuring is carried out through entry of a cumulative activity, for example detailed activity

plan preparation and defining of all activities, like assessment of the needs of all the users of the project, partners support, market survey, evaluation of competitors, SWOT analysis. The project structure in the Project is made through *Indent* function.

Table of interdependence of activities (connecting of activities) is used for the input of data into the Project.

There are three types of resources in the MS Project: material, working resource (workers and machines) and subcontractors (costs of their services).

Resources entry is done through *View/Resource Sheet* Menu option, and the resource table consists of numerous fields for entry of: available quantity of resources, price, price in case of overtime, etc.

f) Project implementation monitoring

Once the project plan is defined, the baseline plan is recoded and the stage of project implementation is entered by using *Tools / Tracking / Save Baseline* options. The level of completion is inputted for each activity. Based on the completion of certain stages and activities, MS Project offers projection for the completion of the remaining activities, present

expenditures, outstanding budget resources and possible differences with the planned expenses by every separate activity. These projections assist to project managers in making corrections on time, in order for the project implementation dynamics to remain within the planned framework.

g) Available MS Project Reports

MS Project offers a large number of different reports on the project's progress presented by graphs and tables. Menu option *Report* is used for reporting. Reports consists of complete project data, project cash flow and the level of completion of activities.

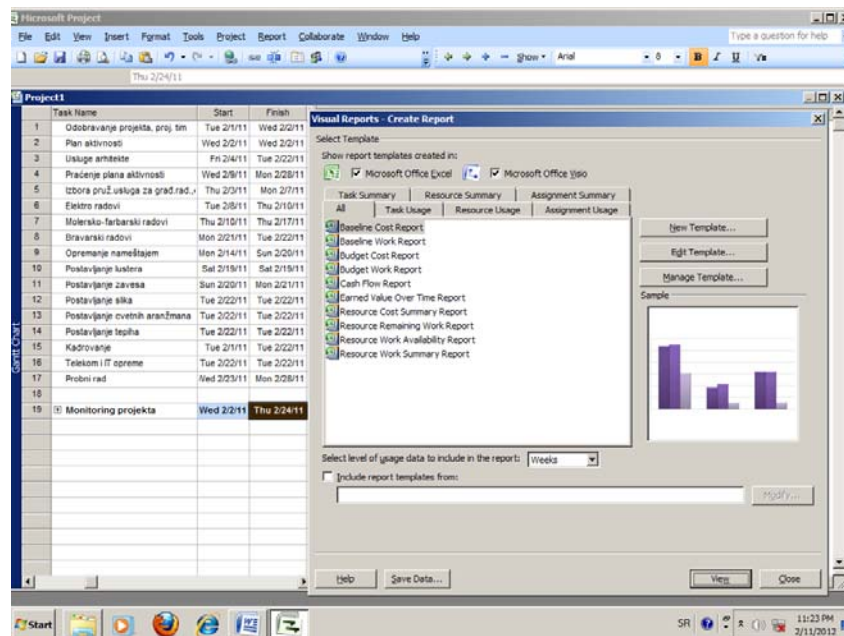


Figure 4 MS Project Report

4 CONCLUSION

The standard program for project management, Microsoft Project, is offering important assistance with the procedure of planning, monitoring and control of the project implementation. The reporting system that is a part of MS Project contributes to promotion of time management process, as well as the

management of technical and human resources, expenditures and risks during the project. Due to trend of frequent changes of business parameters during the implementation of business development projects, management is of the utmost importance.

MS Project provides a complete and updated overview of the project concept, comprehending all the resources used and indicating optimal time of the project completion. Efficiency of MS Project use is

directly related to frequency of updating of data in the program. Continuous entry of actual and valid data on the implementation of the project activities contributes to accurate information on the quality and time of the project implementation.

REFERENCES

- [1] *Mrežno planiranje i MS Project*, Stanimirović, P, Jovanović, I., Prirodno-matematički fakultet u Nišu, 2008.
- [2] *Upravljanje projektom*, Jovanović, P., Grafoslog, Beograd, 2002.
- [3] *Upravljanje investicijama*, Jovanović, P., 6. izdanje: Fakultet organizacionih nauka, Beograd, 2006.
- [4] *Brzi vodič MS Project 2003*, Petronijević, P, Građevinski fakultete Univerziteta u Beogradu, Katedra za menadžment, tehnologiju i informatiku u građevinarstvu, Beograd, maj 2006.
- [5] *Uspostavljanje i razvoj LEDIB Kuće klastera*“ LEDIB program, Nišavski okrug, Srbija, podkomponenta Razvoj poslovnih organizacija, poslovno razvojni projekat, 2010.

