

**Tribhuvan University
Institute of Science and Technology
Patan Multiple Campus**



**LAB REPORT ON
SOFTWARE PROJECT MANAGEMENT(BIT402)**

A partial fulfilment of the requirements for Bachelors in Information Technology(BIT)

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Lab Sheet-1: Explain following common methods for comparing projects on the basis of their cash flow forecasts.

- Net profit
- Payback period
- Return on investment
- Net present value
- Internal rate of return

- a) Calculate the Net Profit, Payback period, Return on investment (ROI) and Internal rate of return (IRR) for each of the other projects shown in Table below and decide which, on the basis of this criterion, is the most worthwhile.

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000.00	1,000,000.00	-100,000.00	-120,000.00
1	10,000.00	200,000.00	30,000.00	30,000.00
2	10,000.00	200,000.00	30,000.00	30,000.00
3	10,000.00	200,000.00	30,000.00	30,000.00
4	20,000.00	200,000.00	30,000.00	30,000.00
5	100,000.00	300,000.00	30,000.00	75,000.00
Net profit	50,000.00	100,000.00	50,000.00	75,000.00
Payback Period				
Return on Investment (%)				
NPV	620.92	-179,750.5	13,723.6	21,665.1
Internal rate of return	10.166%	3.073%	15.238%	15.893%

- b) Calculate the Net Present Value(NPV) for each of the projects A, B and C shown in Table belwo using each of the discount rates 8%, 10% and 12%.

Year	Project A (Rs)	Project BA (Rs)	Project C (Rs)
0	-8,000	-8,000	-10,000
1	4,000	1,000	2,000
2	4,000	2,000	2,000
3	2,000	4,000	6,000
4	1,000	3,000	2,000
5	500	9,000	2,000
6	500	-6,000	2,000
Net profit	4,000	5,000	6,000
Net Present Value(NPV) 8%			
Net Present Value(NPV) 10%			
Net Present Value(NPV) 12%			

Lab Sheet-2: Software Effort Estimation Techniques

- a) Explain Albrecht Function Point Analysis
- b) Explain Function Points Mark II
- c) Explain COSMIC Full Function Points

What is Functional Point in software engineering?

- a) **Albrecht Function Point Analysis** – Given the following values, calculate the Functional Point when complexity adjustment factors are significantly complex product and weighting factors are high.

User input	55
User Output	35
User Enquires	40
User Files	8
External Interfaces	5

Note : See the slides.

- b) **COCOMO (COnstructive COst MOdel)** – Consider a software project using semi-detached mode with 30,000 lines of code. Calculate the Effort estimation , Duration estimation and Person estimation of the project.

Software Projects	a ₁	a ₂	b ₁	b ₂
Organic	2.4	1.05	2.5	0.38
Semi-Detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

$$\text{Effort} = a_1 \times (\text{KLOC})^{a_2} \text{ PM}$$

$$\text{Duration (T}_{\text{dev}}\text{)} = b_1 \times (\text{Effort})^{b_2} \text{ Months}$$

Where

- KLOC is the estimated number of delivered lines (expressed in thousands) of code for project, estimated size of software product
- The coefficients a₁, a, b₁ and b₂ are constants for each category of software products.
- T_{dev} is the estimated time to develop the software, in months.
- Effort is the total efforts required to develop the software product, expressed in person months(PM)

Lab Sheet-5: Introduction to MS Project (Alternate Gantt Project is used).

Since MS project isn't free we will be instead working with GanttProject as a project management software. To get started we visit: <https://www.ganttpoint.biz/>

The screenshot shows the GanttProject website homepage. At the top, there's a navigation bar with links for 'Download', 'Support and Contacts', and 'About'. Below the header, there's a section titled 'Free desktop project management software' with three bullet points: 'Easy to use', 'Trusted by customers', and 'Free and open-source'. Each point has a downward arrow icon. To the right of these points, there's information about the latest release, 'GanttProject 3.3', released on 15 Jan, 2024, with a yellow 'Download' button. Below this, there's a section titled 'GanttProject is easy to use' with a sub-section 'Easy to start' and a note that it's available for Windows, macOS, and Linux.

and we get the latest release which is the 3.3 version:

The screenshot shows the 'Download GanttProject' page. It features a yellow banner at the top with cookie consent information and a 'I Agree' button. Below the banner, there's a section for 'GanttProject 3.3' (released on 15 Jan, 2024) with a 'License' link. There are two tabs: 'Download Options' (which is selected) and 'Release Highlights'. Under 'Download Options', there are two sections: 'Option 1' (buy for \$5+) which offers Windows, macOS, Linux, and ZIP file downloads, and 'Option 2' (free download) which states that GanttProject is free software. A 'Free Download' button is located at the bottom of this section.

ganttpoint.biz/download/free

Gmail YouTube Maps Develop blockchain...

GanttProject

Download GanttProject 3.3

This is the Release build of GanttProject 3.3.

[Windows](#) Both EXE and MSI installers are executable programs and both are bundled with Java Runtime. You don't need to download anything else.

[macOS](#) We recommend using the EXE installer, however, system administrators may want to choose the MSI installer to automate bulk installation job.

[Linux](#)

[ZIP](#) GanttProject 3.3.3309 for Windows
Built on 28 May, 2024

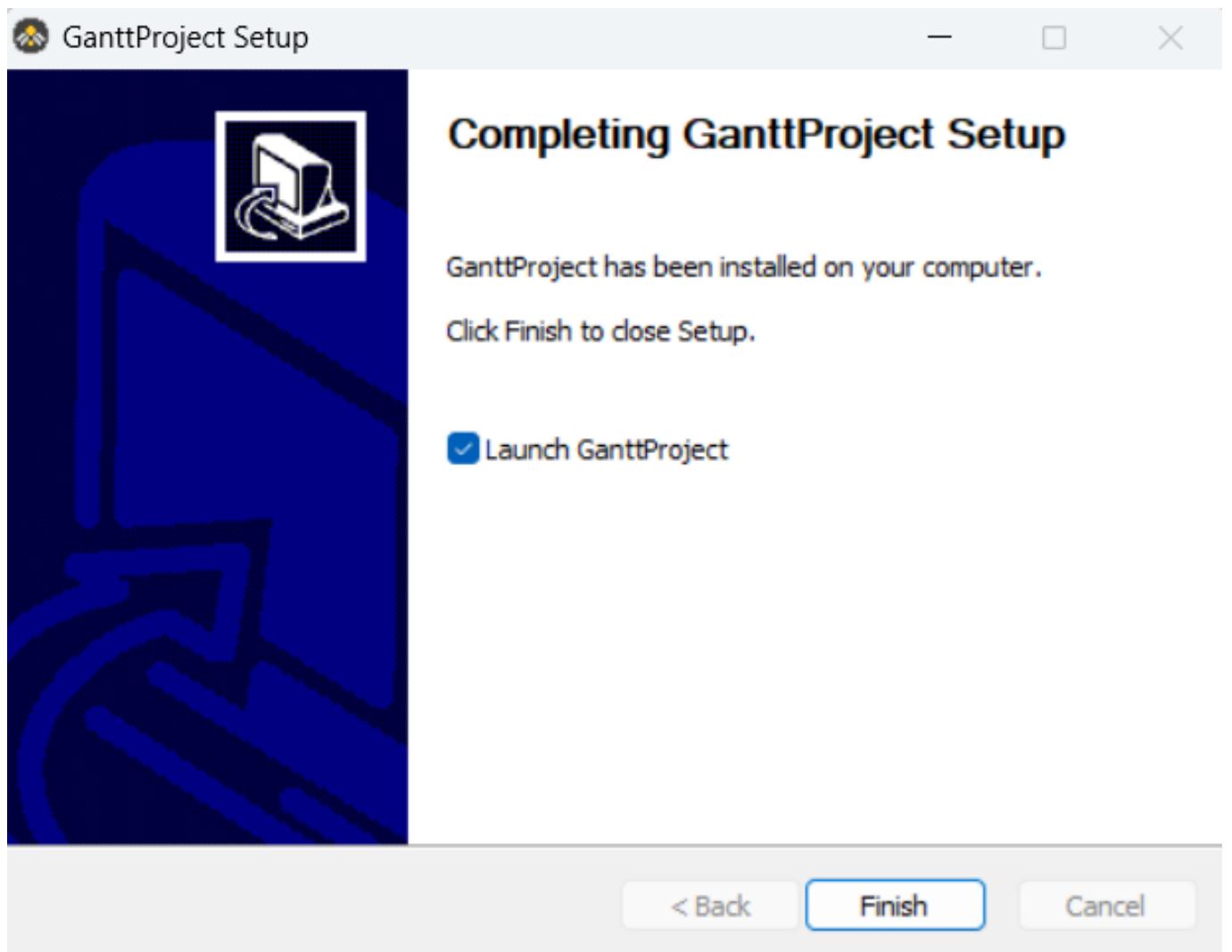
[License](#)

[Download EXE installer \[130 Mb\]](#)

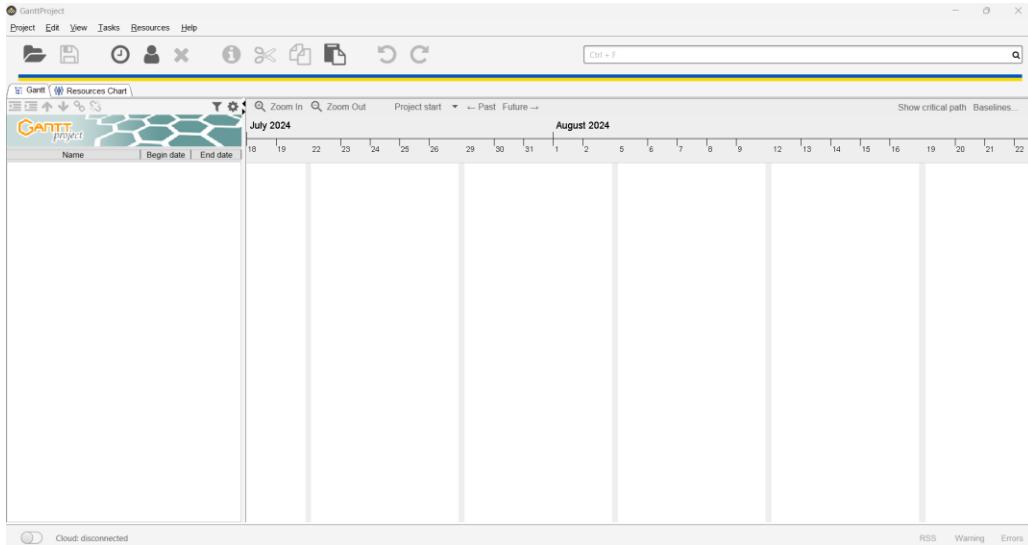
GanttProject Cloud

[Try GanttProject Cloud](#)

after setting it up :



We are greeted by this window:



On the title navbar, we can choose the Project tab to create a new project it's a 3 step process:

The dialog box is titled "Create new project". It is divided into sections: "Create new project (Step 1 of 3)", "Name" (with input field "Suprabha'sSPMProject"), "Organization" (with empty input field), "Web Link" (with input field "http://"), and "Description" (with large empty text area). At the bottom are buttons for "< Back", "Next >" (highlighted in orange), "Ok", and "Cancel".

Create new project

Select your project domain (Step 2 of 3)

Choose role sets

4 Default

6 Software Development

Create new project

Configure weekends and public holidays (Step 3 of 3)

Choose weekend Mon Tue Wed Thu Fri Sat Sun

On weekends no tasks can run

Holiday calendar none

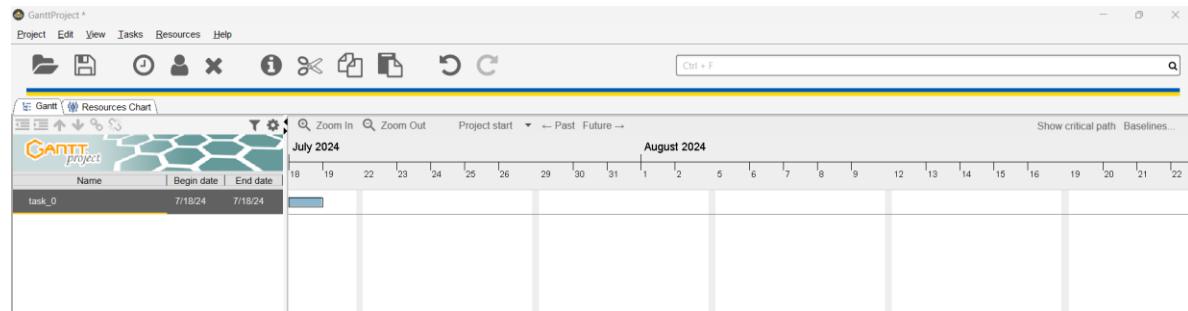
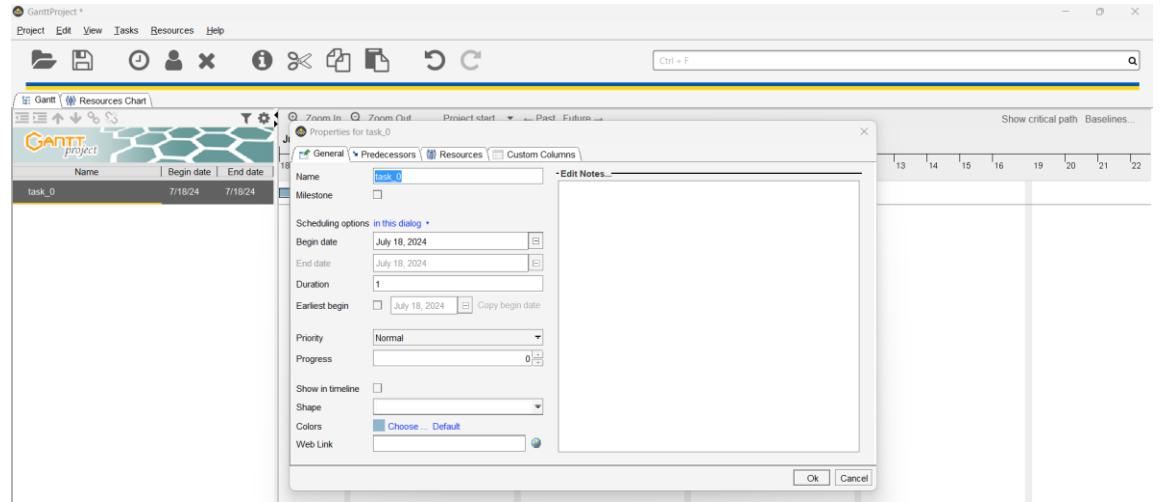
One-off Recurring

Add Delete

Dates	Summary	Type	Color

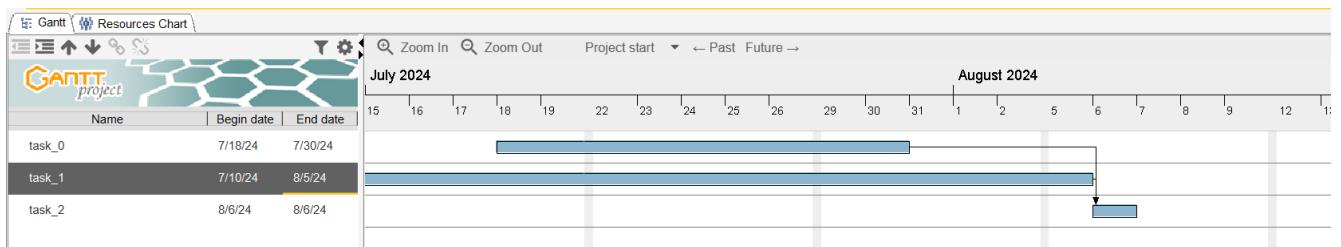
< Back Next > Ok Cancel

We can create new tasks by accessing the Tasks tab or keyboard shortcut Ctrl + T and configure it :

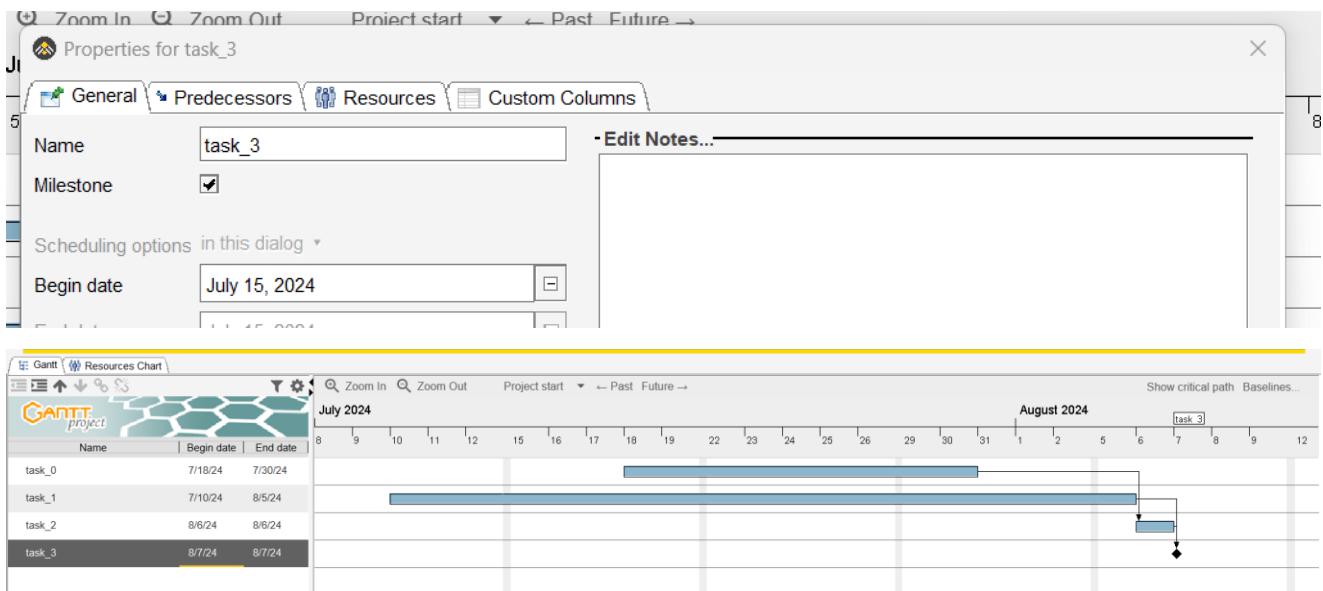


We can configure the more tasks to be predecessor task for a following task, such as here we can configure task_0 and task_1 to be predecessor to task_2 and require completion before moving to task_2:

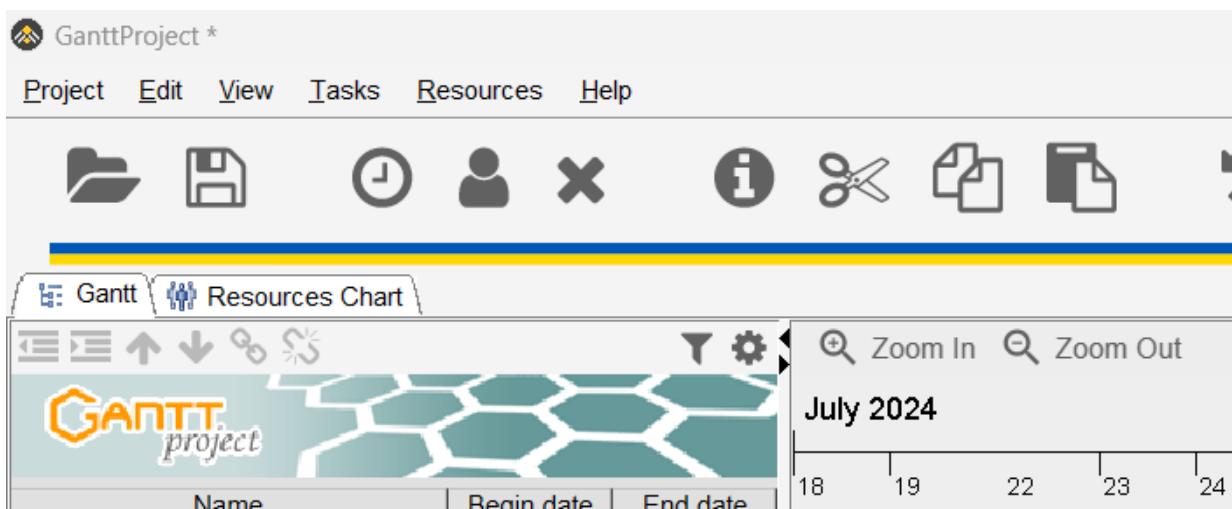
Properties for task_2				
General		Predecessors	Resources	Custom Columns
Add	Delete			
ID	Task name	Type	Delay	Link hardness
0	task_0	Finish-Start	0	Strong
1	task_1	Finish-Start	0	Strong



We can also create a milestone at the end of all 3 tasks to mark a major point in the system development.



Resources can be added to the tasks to like manpower to be assigned to each task this can be accessed by clicking on the resources chart tab:



New resource is created by Ctrl + H shortcut:

Resources

General Days off Custom Columns Assignments

Name	Suprabha
Phone	
Mail	
Default role	undefined

- Resource payment rate

Standard rate	0
Total Cost	0
Total Load	0.0

Ok Cancel

Then we can go back to the Gantt chart to assign these resources to each task:

Properties for task_0

General Predecessors Resources Custom Columns

Add Delete

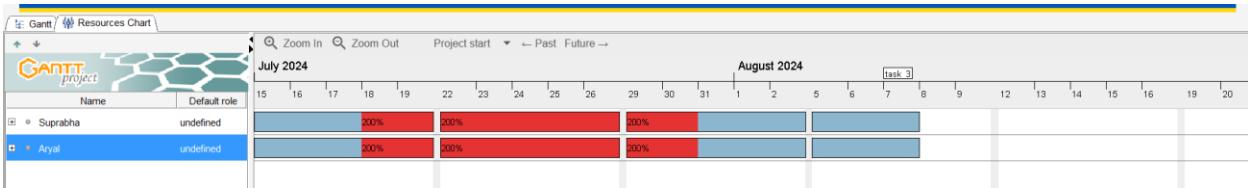
ID	Resource Name	Unit	Coordinator	Role
0	Suprabha	100.0	<input checked="" type="checkbox"/>	undefined
1	Aryal	100.0	<input type="checkbox"/>	undefined

- Task cost

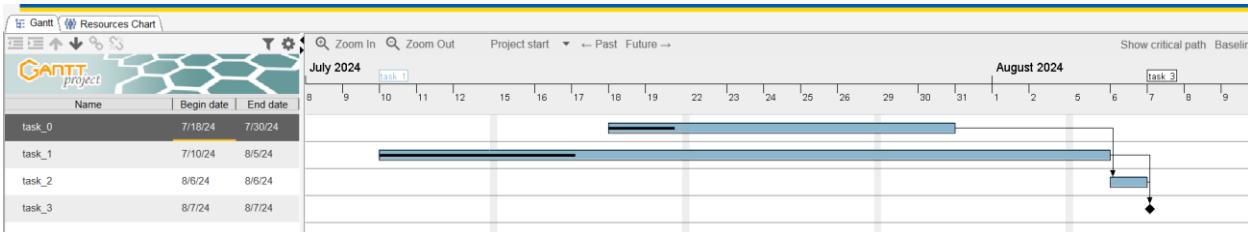
Calculated: 0
 Set explicitly: 0.0

Ok Cancel

These changes are reflected in the resources chart:



We can also show the progress of the task by entering the progress percent by going to the task bar and then task properties and enter the value in progress, it will show the progress:



The final project can be exported in array of different formats such a .mpx file for MS project or Html report and so on tailored to your needs.