



L24.02b

ProjectLibre Example



Open Source Alternative to MS Project



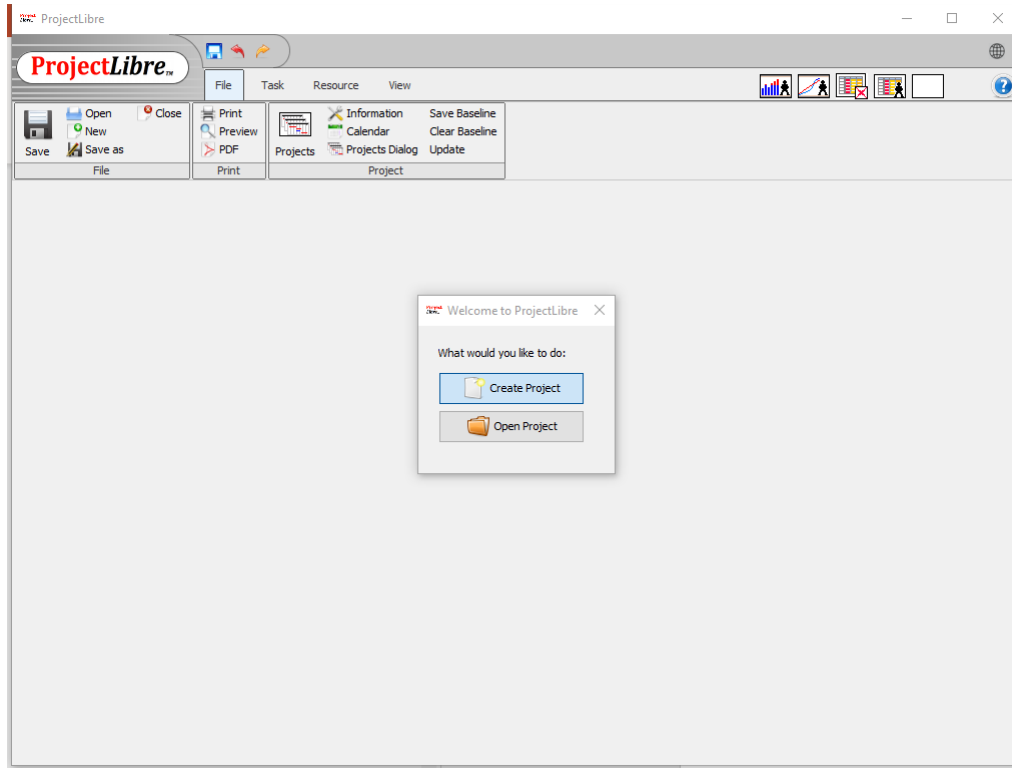
- MS Project is not part of the standard Office Suite
- Free Alternatives are available but vary widely in quality and capabilities
- One alternative that LaACES have discovered is the open-source software ProjectLibre
- Installer available via the download link here <https://www.projectlibre.com/>
- Will send you to a SourceForge page to download



New Project



- On starting LibreProject a dialog box asking we want to open an existing project or create a new project
- Select create new project





Basic Project Information



- Next we will get a dialog box for basic project info like project name, who the project manager is, and the start date for the project
- Note the forward scheduled box indicates we are scheduling forward from a start date, we could uncheck that to schedule backwards from a completion date

ProjectLibre New Project

Project Name: LaACES Sample Project

Manager: Project Manager

Start Date: 2/1/21 Forward scheduled

Notes:

OK Cancel Help

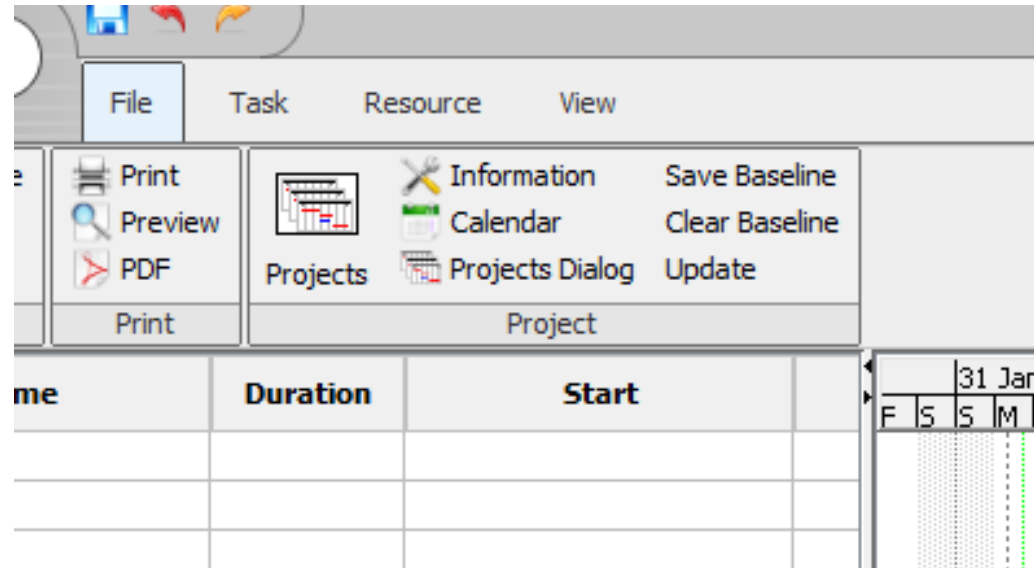


Setting the Working Hours



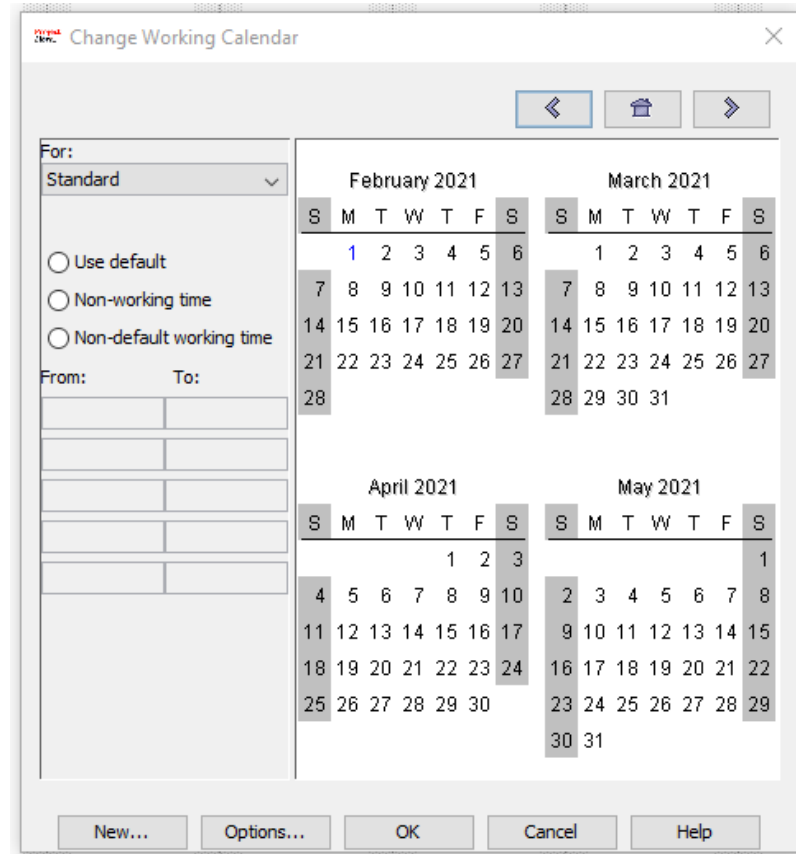
- Before we schedule any tasks we want to change the working hours for the project
- Otherwise, will assume everyone is able to work standard 8 hour days
- We want to schedule tasks based on realistic working hours

- Hit the calendar button inside the project box when the file tab is selected from the menu



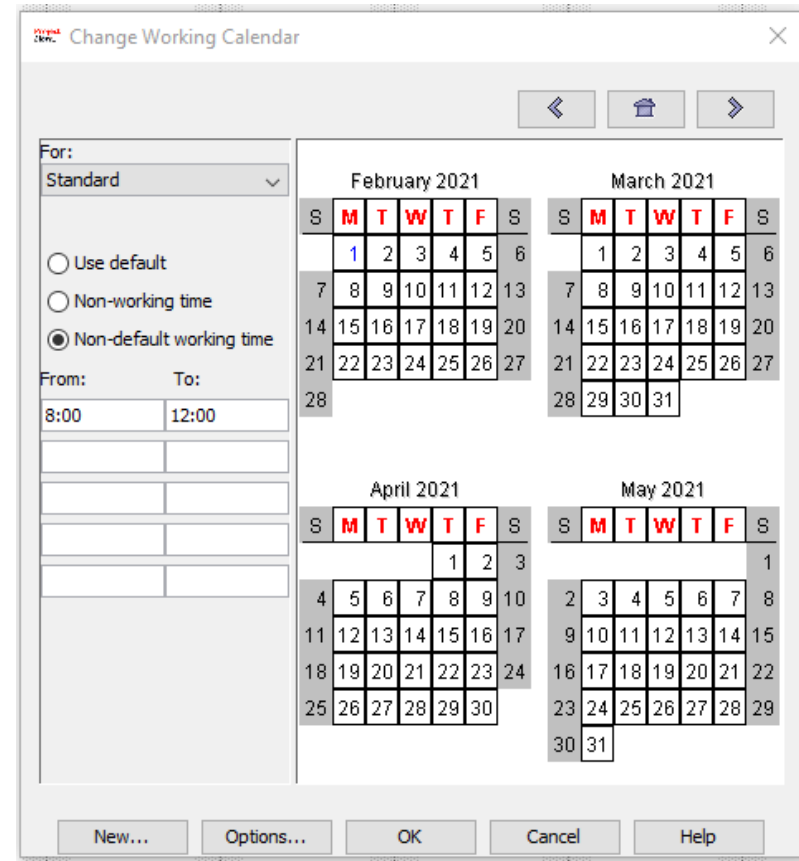
Setting the Working Hours (2)

- This will bring up a window allowing us to change the working time on calendar
- While we could set specific times or days off for now we just want set the working time to a more realistic 20 hours (hours a day)
- With the standard calendar selected from the drop down select MTWTF by shift clicking on all the days



Setting the Working Hours (3)

- Next click the “Non-default working time” option to allow us to change the time
- In the time field we could select specific working hours but all we really care about is having a 4 hour workday
- So delete the afternoon 13:00 to 17:00 blocks, then click ok
- Afterwards reopen the calendar and click on the days to be sure that change was applied
- Now tasks will be scheduled assuming 4 hours of work is what can be accomplished in a day





Enter the subunit task names

- Type in the name of the subunit task in the “Task Name” field
- Subunits are “indented” with the indent button with the right arrow next to the insert and delete buttons
- When subunits are so “indented” the major unit will become bold and the Gantt chart bar will change shape

LaACES Sample Project *

ProjectLibre™

File Task Resource View

Gantt Network Zoom In Zoom Out Zoom Out
 WBS Task Usage
 Task Usage

Paste Copy Cut Insert Delete Indent Outdent Link Unlink Information Calendar Notes
 Assign Resources Save Baseline Clear Baseline Find Scroll To Task Update

| | Name | Duration | Start | Finish | Pred |
|----|-----------------------------|----------|----------------|-----------------|------|
| 1 | Power System | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 2 | Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 3 | FCU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 4 | DAU HD Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 5 | DAU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 6 | CubeSat Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 7 | Integrate and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 8 | Flight Control Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 9 | Data Archive Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 10 | Data Archive Disc | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 11 | Auxiliary Transmitter | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 12 | Mechanical Structure | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 13 | Thermal Control | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 14 | System Integration and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 15 | Management | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |

31 Jan 21 7 Feb

F S M T W T F S S M



Complete entering WBS



- Repeat the process of inserting rows, typing in the task name and indenting the subunit continues until all tasks in the WBS are entered

| | Name | Duration | Start | Finish |
|----|---|----------|----------------|-----------------|
| 1 | <input type="checkbox"/> Power System | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 2 | Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 3 | FCU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 4 | DAU HD Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 5 | DAU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 6 | <input type="checkbox"/> CubeSat Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 7 | Interface to Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 8 | <input type="checkbox"/> FCU Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 9 | Establish Control Requirements | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 10 | Design Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 11 | Prototype and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 12 | Complete Design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 13 | Implement and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 14 | DC/DC converters | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 15 | FCU Monitoring Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 16 | Integrate and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 17 | Flight Control Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 18 | Data Archive Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 19 | Data Archive Disc | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 20 | Auxiliary Transmitter | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 21 | Mechanical Structure | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 22 | Thermal Control | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 23 | System Integration and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 24 | Management | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |



Display the WBS code

- Right click on any of the column headers such as “Name”
- Select “Insert Column”
- Choose “WBS” from the “Field” dropdown and hit ok

| | Name | Duration | S |
|----|--------------------------------|-----------------------|---|
| 1 | Power System | 1 day? 2/1/21 8:00 | |
| 2 | Power Source | 1 day? 2/1/21 8:00 AM | |
| 3 | FCU Supply | 1 day? 2/1/21 8:00 AM | |
| 4 | DAU HD Supply | 1 day? 2/1/21 8:00 AM | |
| 5 | DAU Supply | 1 day? 2/1/21 8:00 AM | |
| 6 | CubeSat Supply | 1 day? 2/1/21 8:00 | |
| 7 | Interface to Power Source | 1 day? 2/1/21 8:00 AM | |
| 8 | FCU Control Interface | 1 day? 2/1/21 8:00 | |
| 9 | Establish Control Requirements | 1 day? 2/1/21 8:00 AM | |
| 10 | Design Control Interface | 1 day? 2/1/21 8:00 AM | |
| 11 | Prototype and test design | 1 day? 2/1/21 8:00 AM | |
| 12 | Complete Design | 1 day? 2/1/21 8:00 AM | |
| 13 | Implement and test design | 1 day? 2/1/21 8:00 AM | |
| 14 | DC/DC converters | 1 day? 2/1/21 8:00 AM | |
| 15 | FCU Monitoring Interface | 1 day? 2/1/21 8:00 AM | |
| 16 | Integrate and Test | 1 day? 2/1/21 8:00 AM | |
| 17 | Flight Control Unit | 1 day? 2/1/21 8:00 AM | |
| 18 | Data Archive Unit | 1 day? 2/1/21 8:00 AM | |
| 19 | Data Archive Disc | 1 day? 2/1/21 8:00 AM | |
| 20 | Auxiliary Transmitter | 1 day? 2/1/21 8:00 AM | |
| 21 | Mechanical Structure | 1 day? 2/1/21 8:00 AM | |

| | Name | Duration | Start | Finish |
|----|--------------------------------|----------|----------------|-----------------|
| 1 | Power System | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 2 | Power Source | | 2/1 8:00 AM | 2/2/21 12:00 PM |
| 3 | FCU Supply | | 2/1 8:00 AM | 2/2/21 12:00 PM |
| 4 | DAU HD Supply | | 2/1 8:00 AM | 2/2/21 12:00 PM |
| 5 | DAU Supply | | 2/1 8:00 AM | 2/2/21 12:00 PM |
| 6 | CubeSat Supply | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 7 | Interface to Power Source | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 8 | FCU Control Interface | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 9 | Establish Control Requirements | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 10 | Design Control Interface | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 11 | Prototype and test design | | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 12 | Complete Design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 13 | Implement and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 14 | DC/DC converters | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 15 | FCU Monitoring Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 16 | Integrate and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 17 | Flight Control Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 18 | Data Archive Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 19 | Data Archive Disc | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 20 | Auxiliary Transmitter | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |
| 21 | Mechanical Structure | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM |



Entering the WBS code



- Any empty WBS column should now be visible
- You will have to manually enter the appropriate WBS code (1, 1.2, 1.2.1, etc.) for the tasks

| Views | | Clipboard | | Task | | |
|-------|--------------|---|----------|-----------------------|------------------------|--|
| ID | WBS | Name | Duration | Start | Finish | |
| 1 | 1 | <input type="checkbox"/> Power System | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 2 | 1.1 | Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 3 | 1.2 | FCU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 4 | 1.3 | DAU HD Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 5 | 1.4 | DAU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 6 | 1.5 | <input type="checkbox"/> CubeSat Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 7 | 1.5.1 | Interface to Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 8 | 1.5.2 | <input type="checkbox"/> FCU Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 9 | 1.5.2.1 | Establish Control Requirements | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 10 | | Design Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 11 | | Prototype and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 12 | | Complete Design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 13 | | Implement and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 14 | | DC/DC converters | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 15 | | FCU Monitoring Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 16 | | Integrate and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 17 | | Flight Control Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 18 | | Data Archive Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 19 | | Data Archive Disc | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 20 | | Auxiliary Transmitter | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 21 | | Mechanical Structure | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 22 | | Thermal Control | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 23 | | System Integration and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 24 | | Management | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |



Task bars

- With all subunits inserted the lowest level will be red rectangles and higher levels will be black bars with points on the ends.

| Views | | Clipboard | | Task | | |
|-------|--------------|---|----------|-----------------------|------------------------|--|
| | WBS | Name | Duration | Start | Finish | |
| 1 | 1 | <input type="checkbox"/> Power System | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 2 | 1.1 | Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 3 | 1.2 | FCU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 4 | 1.3 | DAU HD Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 5 | 1.4 | DAU Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 6 | 1.5 | <input type="checkbox"/> CubeSat Supply | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 7 | 1.5.1 | Interface to Power Source | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 8 | 1.5.2 | <input type="checkbox"/> FCU Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 9 | 1.5.2.1 | Establish Control Requirements | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 10 | 1.5.2.2 | Design Control Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 11 | 1.5.2.3 | Prototype and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 12 | 1.5.2.4 | Complete Design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 13 | 1.5.2.5 | Implement and test design | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 14 | 1.5.3 | DC/DC converters | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 15 | 1.5.4 | FCU Monitoring Interface | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 16 | 1.6 | Integrate and Test | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 17 | 2 | <input checked="" type="checkbox"/> Flight Control Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 19 | 3 | <input checked="" type="checkbox"/> Data Archive Unit | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 21 | 4 | <input checked="" type="checkbox"/> Data Archive Disc | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 23 | 5 | <input checked="" type="checkbox"/> Auxiliary Transmitter | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 25 | 6 | <input checked="" type="checkbox"/> Mechanical Structure | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 27 | 7 | <input checked="" type="checkbox"/> Thermal Control | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |
| 29 | 9 | <input checked="" type="checkbox"/> System Integration and | 1 day? | 2/1/21 8:00 AM | 2/2/21 12:00 PM | |



Set the task durations

- Now enter the time associated with each task in the “Duration” field.
- Set durations for the lowest level tasks and the total time will be summarized or rolled-up to the next highest level.

| Views | | Clipboard | | Task | | | | | | | | | |
|-------|---------|-------------------------|----------|----------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------|--|
| | WBS | Name | Duration | Start | Finish | Mon 1 Feb | Tue 2 Feb | Wed 3 Feb | Thu 4 Feb | Fri 5 Feb | Sat 6 Feb | Sun 7 | |
| 1 | 1 | Power System | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 2 | 1.1 | Power Source | 5 days | 2/1/21 8:00 AM | 2/5/21 12:00 PM | | | | | | | | |
| 4 | 1.2 | FCU Supply | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 6 | 1.3 | DAU HD Supply | 5 days | 2/1/21 8:00 AM | 2/5/21 12:00 PM | | | | | | | | |
| 8 | 1.4 | DAU Supply | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 10 | 1.5 | CubeSat Supply | 4 days | 2/1/21 8:00 AM | 2/4/21 12:00 PM | | | | | | | | |
| 11 | 1.5.1 | Interface to Power S | 2 days | 2/1/21 8:00 AM | 2/2/21 12:00 PM | | | | | | | | |
| 13 | 1.5.2 | FCU Control Interface | 4 days | 2/1/21 8:00 AM | 2/4/21 12:00 PM | | | | | | | | |
| 14 | 1.5.2.1 | Establish Control Requi | 1 day | 2/1/21 8:00 AM | 2/1/21 12:00 PM | | | | | | | | |
| 15 | 1.5.2.2 | Design Control Interfac | 2 days | 2/1/21 8:00 AM | 2/2/21 12:00 PM | | | | | | | | |
| 16 | 1.5.2.3 | Prototype and test des | 4 days | 2/1/21 8:00 AM | 2/4/21 12:00 PM | | | | | | | | |
| 17 | 1.5.2.4 | Complete Design | 1 day | 2/1/21 8:00 AM | 2/1/21 12:00 PM | | | | | | | | |
| 18 | 1.5.2.5 | Implement and test des | 2 days | 2/1/21 8:00 AM | 2/2/21 12:00 PM | | | | | | | | |
| 19 | 1.5.3 | DC/DC converters | 3 days | 2/1/21 8:00 AM | 2/3/21 12:00 PM | | | | | | | | |
| 21 | 1.5.4 | FCU Monitoring Interf | 3 days | 2/1/21 8:00 AM | 2/3/21 12:00 PM | | | | | | | | |
| 23 | 1.6 | Integrate and Test | 3 days | 2/1/21 8:00 AM | 2/3/21 12:00 PM | | | | | | | | |
| 25 | 2 | Flight Control Unit | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 27 | 3 | Data Archive Unit | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 29 | 4 | Data Archive Disc | 3 days | 2/1/21 8:00 AM | 2/3/21 12:00 PM | | | | | | | | |
| 31 | 5 | Auxiliary Transmitter | 5 days | 2/1/21 8:00 AM | 2/5/21 12:00 PM | | | | | | | | |
| 33 | 6 | Mechanical Structure | 10 days | 2/1/21 8:00 AM | 2/12/21 12:00 PM | | | | | | | | |
| 35 | 7 | Thermal Control | 5 days | 2/1/21 8:00 AM | 2/5/21 12:00 PM | | | | | | | | |
| 37 | 9 | System Integration and | 50 days | 2/1/21 8:00 AM | 4/9/21 12:00 PM | | | | | | | | |

Set the task durations (2)

- Smaller time units such as hours can be set but duration will always be displayed in decimal days
- Durations can also be set by double clicking on a task and changing either the “duration” (displayed in days) or “work” (displayed in hours) under the general tab.

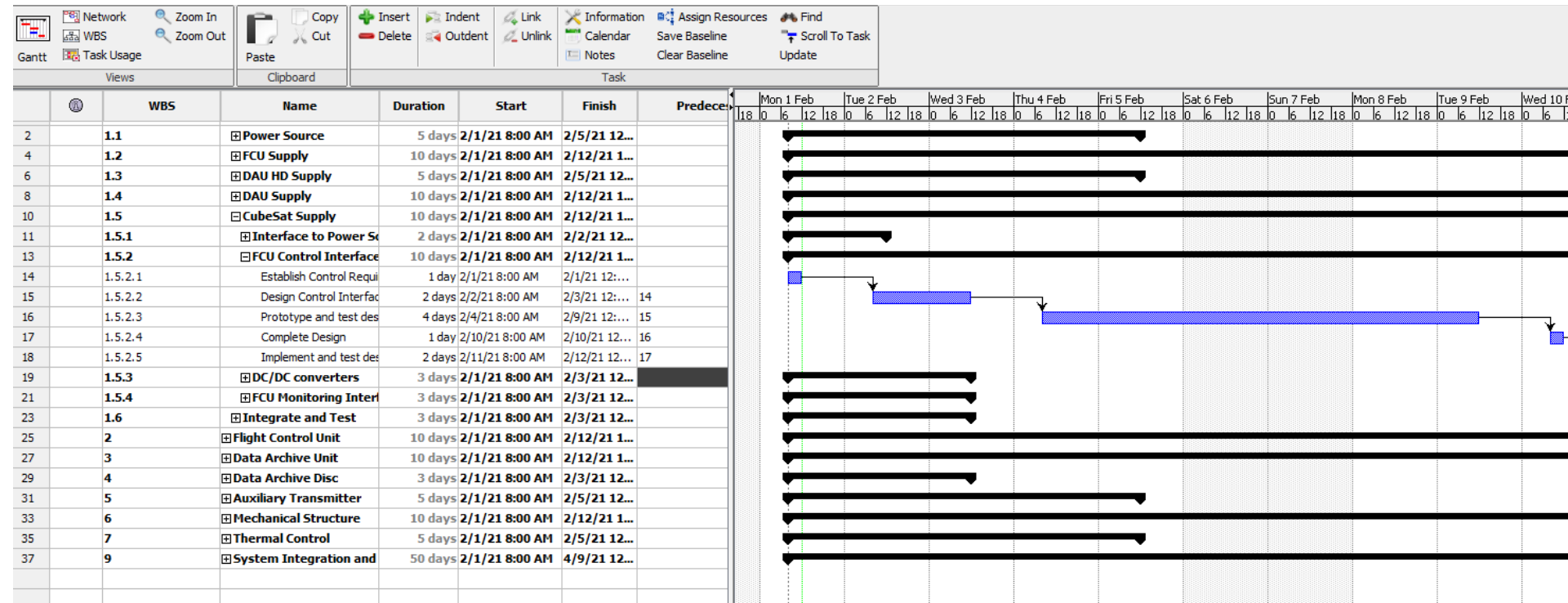
Note: Here we can see that our 8 hours of work will take 2 days, as per our 4 hour daily schedule



Set the task predecessors



- Enter the task dependence (i.e. which tasks must be complete prior to starting the next task) in the “Predecessors” field.
- You need to use the row number, not the WBS code.



Set the timescale of the chart

- Changing timescale of the chart is accomplished via zooming in and out with the appropriate buttons

Project Libre
LaACES Sample Project *

The screenshot shows the Project Libre software interface. The 'Task' menu is open, displaying options for 'Zoom In' and 'Zoom Out'. Below the menu, a table displays task details.

| | WBS | Name | Duration | Start |
|---|-----|---------------|----------|------------|
| 2 | 1.1 | Power Source | 5 days | 2/1/21 8:0 |
| 4 | 1.2 | FCU Supply | 10 days | 2/1/21 8:0 |
| 6 | 1.3 | DAU HD Supply | 5 days | 2/1/21 8:0 |
| 8 | 1.4 | DAU Supply | 10 days | 2/1/21 8:0 |

Make an image for documents

- Unfortunately, ProjectLibre does not have export option
- The best option seems to be adjust the Gantt chart and task list windows until they display what you want to show
- Then either take a screenshot and crop and example is shown below

