

# Welcome to Orbital 2021!



# Outline

---

- General information
- The people factor
- Resources
- Level of achievements
- Timeline of events
- Lift-off
- Mission control
- Milestones
- Splashdown

# General Information

---

## **CP2106: Independent Software Development Project**

- Teams of 2: Good teamwork and communication required.
- Workload: 140 in total or ~11 hours per week (per student)
- Compulsory events: Liftoff, 3 Milestones and Splashdown
- CS/CU grading

...you should have known all these by now since you have already applied and be accepted into the programme. ^\_^

# The People Factor: Facilitator

---

Dr. Zhao Jin

- [zhaojin@comp.nus.edu.sg](mailto:zhaojin@comp.nus.edu.sg)
- Zhao Jin on MS Teams



# The People Factor: Advisers

---

**Advisers** (**one per team**) are senior students with software development experience

- Serve 3 roles:



Evaluator



Project Manager



Cheerleader

# The People Factor: Mentors

---

**Mentors** (*Artemis teams only*) are senior students, faculty members and industry experts who want to pitch in and help guide student teams

- Provide more insights, resources and opportunities.

# The People Factor: Tutors

---

**Tutors** are senior students, faculty members and industry experts with technical and project expertise

- Conduct workshops
- Provide technical and project support to teams

# The People Factor: Peers

---

Other **teams** under the same adviser

- Meet up during group meetings, communicate via the Slack channel, etc.
- Discuss about ideas, share resources, give comments and feedback directly, etc.
- Give comments and feedback via Peer Evaluation



# Resources / Tools

---

## 1. Email

- Announcements / Reminders

## 2. MS Teams

- Orbital 2021
- Join with the code: p4mkd5v (Choose Join or Create Team on the upper right corner of the Teams page.)
- Announcements and reminders
- Quick chat and discussions

## 3. Orbital website

- <https://orbital.comp.nus.edu.sg/>
- General information and schedule

## 4. Skylab

- <https://nusskylab-dev.comp.nus.edu.sg/>
- Team information management
- Milestone submissions / Peer evaluation
- Project gallery
- Mentorship matching (via the forum)
- Choose Login -> “sign-in with NUS” with your NUSNET id (e0...)

# Resources / Tools

---

## 5. Mega list of software development resources

- <https://bit.ly/orbital21-resource>
- Compiled by the teaching team based on the areas of interest in your applications

## 6. Git + Github

- All teams are required to use Github for source code version control and submit the repo link at the end of the programme.
- The use of Git / Github will be covered in Mission Control #1

## 7. Entrepreneurship Support

- For teams who intend to commercialize their Orbital project (via a startup, App / Play Store, etc.)
- 
- Information about the process (e.g., how to obtain the Intellectual Property from NUS/ get funding...) and the resources available will be provided by **NUS Enterprise**.

# Levels of Achievement

---



- **Web** application with a **database** backend
- A **small** set of **core** **features**.
- **Basic** testing



- **Any type** of application
- A **good** set of **core** **features** and a **small** set of **extensions**.
- **Basic** System Testing
- **Basic** documentation

# Levels of Achievement

---



- **Any type** of application
- A **good** set of **core features** and **extensions**.
- **Proper System Testing + Some User Testing**
- **Good** documentation
- **Evidence** of Software Engineering



- **Any type** of application
- A **rich** set of **core features** and **extensions**
- **Extensive System Testing + User Testing**
- **High-quality** documentation
- **Strong evidence** of Software Engineering

# Levels of Achievement

---

- Discuss with your adviser for details and check for samples on Skylab → Gallery.
- Submit a request for change (e.g., upgrade / downgrade) to your adviser before the Milestone deadlines.
- Your adviser will update your Level of achievement accordingly based on the Milestone evaluations.
- Note: Most projects can be done to any level of achievement.

# Timeline of events

---

## **Mandatory** events:

10-17 May - Liftoff

31 May - Evaluation Milestone 1 - Ideation

28 June - Evaluation Milestone 2 - Prototyping

26 July - Evaluation Milestone 3 - Extension

25 August - Splashdown - Refinement

## **Optional** events:

15/22/29 May, 5/12 June (Sat) - Mission Control Workshops



## Objective

- Get started with the project!

## Activities

- (Compulsory) Programme overview
- (Optional) Live Q&A sessions
- (Compulsory) Meet-your-adviser
- (Compulsory) Poster & video submission
- (Compulsory for Artemis Teams) Mentor matching

# Lift-off

---

## **Programme overview and live Q&A sessions**

- Read this set of slides carefully ^\_^
- Attend the live Q&A sessions for clarifications
  - 11/13 May (7pm, via Zoom)
  - <http://bit.ly/orbital21-qa>

# Lift-off

---

## **Meet-your-adviser**

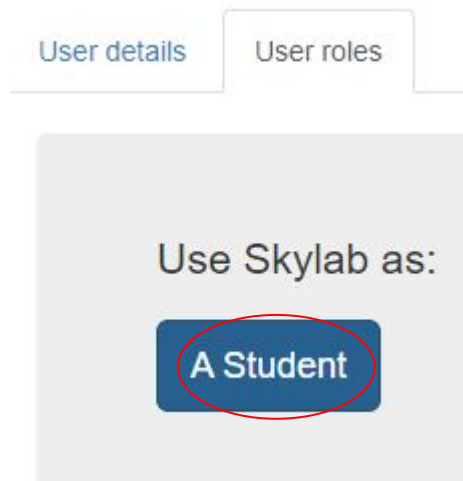
- Have an online meeting with your adviser

## Poster & Video submission

- A one-slide poster (<Team ID>.jpg or .png)
- A one-minute presentation video (<Team ID>.mp4)
- Must be succinct and persuasive
- Google “elevator pitch”, or “one minute madness” for more information
- Samples: <https://bit.ly/orbital18ignition>
- Submit **by the end of 17 May**
  - Submit Google Drive file links to Skylab
  - Check announcements for submission instructions

## Poster & Video submission (Instructions)

- After logging into Skylab, click “A Student” under the “User roles” tab
- Then click on your team name



## Poster & Video submission (Instructions)

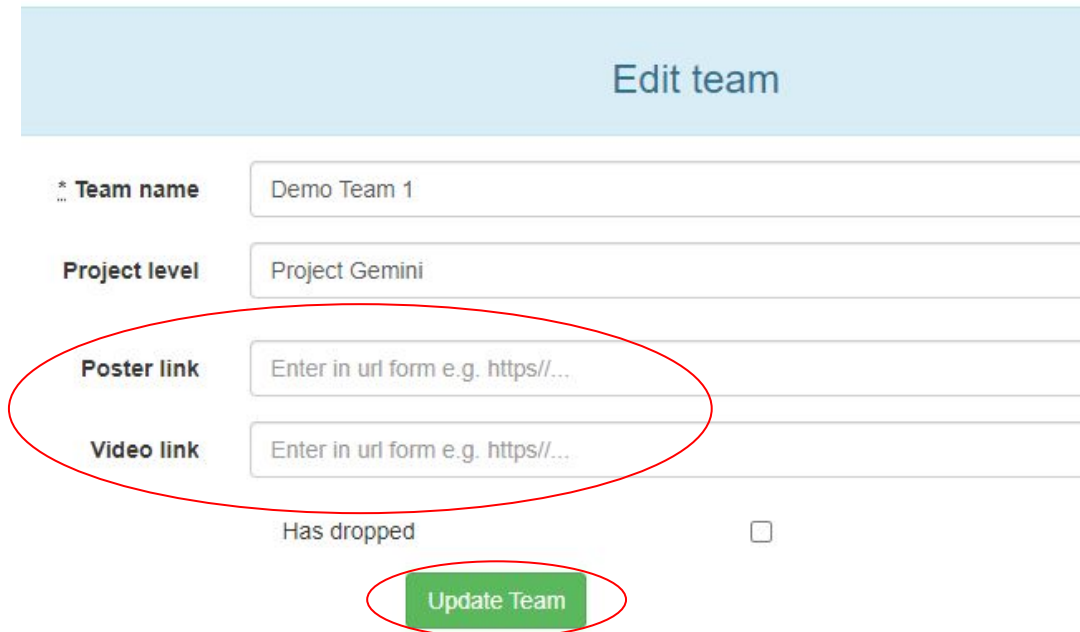
- Take note of your team ID (i.e., the 4 digit number at the end of the URL.)
- Click on “Edit Team”

The basic information (e.g., level of achievement / adviser) can be found on this page.



## Poster & Video submission (Instructions)

- Copy and paste the links into the corresponding fields, and then click “Update Team”



**Edit team**

\* Team name

Project level

Poster link

Video link

Has dropped ☐

**Update Team**

# Lift-off

---

## **(Artemis Teams only) Mentor matching**

- Prepare the materials (updated proposal, poster and video) by 13 May
- Share the materials with the mentors via the forum in Skylab
- Communicate with the mentors to reach an agreement
- Email Jin to confirm the allocation by 21 May



# Mission Control

---

## **Objective**

- Get some technical help and project advice!

## **Activities**

- Technical help sessions
- Project consultations

# Mission Control

---

## Technical help sessions

- Get walkthroughs, tips and Q&A on specific technologies (e.g., Git, HTML/CSS, Unity) from the tutors
- Read the materials and follow the instructions beforehand
- Sign-up required
  - Check email / MS Teams for details

# Mission Control

---

## Project Consultations

- 20 minutes per session
- Get comments and advice specific to your project from a tutor / adviser
- Sign-up required
  - Check email / MS Teams for details

# Milestones

---

## Objective

- Give a progress update and get feedback.

## Activities

- Project work
- Milestone submission
- Milestone evaluation

# Milestones

---

## **Project work by 31 May - Milestone 1 (Ideation)**

- Formulate your project idea clearly
- Identify the features for your system
- Design your system
- Create a development plan
- Pick up the necessary technologies
- Build a **technical proof of concept** (e.g., an integrated frontend+backend with the login/register feature)
- Document your system

# Milestones

---

## **Project work by 28 June - Milestone 2 (Prototype)**

- Implement the prototype of your system, which should contain the most essential features
- Perform system testing
- Document your system

# Milestones

---

## **Project work by 26 July - Milestone 3 (Extensions)**

- Extend your system by adding more useful features
- Perform system / user testing
- Document your system

# Milestone Submission

---

Milestone X



- Teams use Skylab to file their Milestone reports.
- Submission deadlines:
  - Milestone 1: 31 May, 11:59pm (SGT)
  - Milestone 2: 28 June, 11:59pm (SGT)
  - Milestone 3: 26 July, 11:59pm (SGT)



# Milestone Submission

---

Milestone X



- Submissions consist of:
  - README
  - Project Log
  - Project Poster
  - Project Video

(Note: You may prepare the documents in Google Docs and copy the content over / save the link into Skylab.)

# What should be included in README?

---

- Your level of achievement, project scope (one sentence version and a longer descriptive version), as well as
- Milestone 1 (Ideation): include problem motivation, proposed core features / user stories, design and plan
- Milestone 2 (Prototype): include core features developed, problems encountered
- Milestone 3 (Extension): include bugs squashed, edge features developed, problems encountered, and user testing

# What should be included in Project Log?

---

- What were the tasks performed by each member?
- When were the task performed?
- How many hours were spent in completing each task?

(Note: The total number of hours spent for **each member** should be at least 140 hours at the end of the programme.)

# A Very Bad Example of README and Project Log

---

- We are planning to build a website for selling secondhand textbooks.
- Project Log
  - Team Meeting: 40 hours.

# A (Slightly) Better Example

---

<https://goo.gl/fiLf1o>

Note: This is the bare minimum for Vostok and insufficient for Project Gemini.

# A Good Example

---

<https://goo.gl/aYYWoz>

Note: This is sufficient for Apollo 11.

# Project Poster & Video

---

- Milestone 1: Showcase your formulated project idea and technical proof of concept
- Milestone 2 & 3: Showcase your prototype / complete system

# What will be asked in the evaluation form?

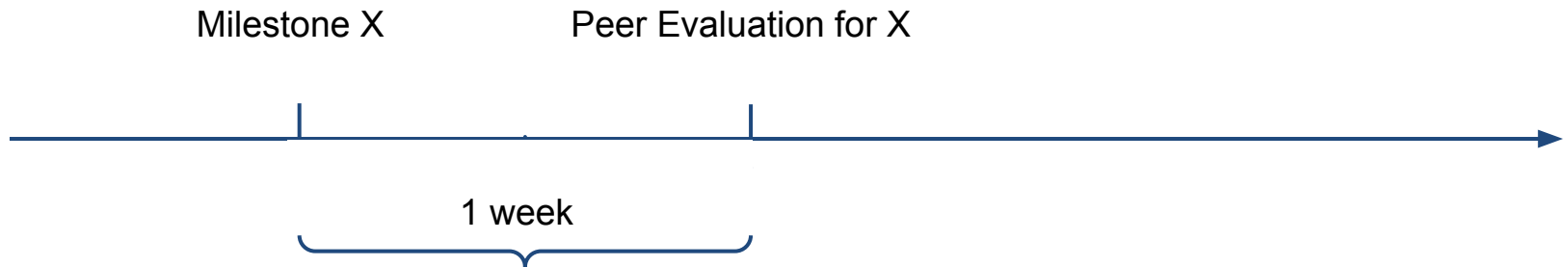
---

- Is the problem well defined? Is it clear what need the system is trying to satisfy? Is there a real need to solve the problem?
- Are the features of the system clearly specified?
- Is there a draft plan for next development cycle?
- Sample Evaluation Forms
  - Milestone 1: <https://goo.gl/cBDaPX>
  - Milestone 2: <https://goo.gl/zW6JGx>
  - Milestone 3: <https://goo.gl/yuLauy>



# Peer / Adviser Evaluation

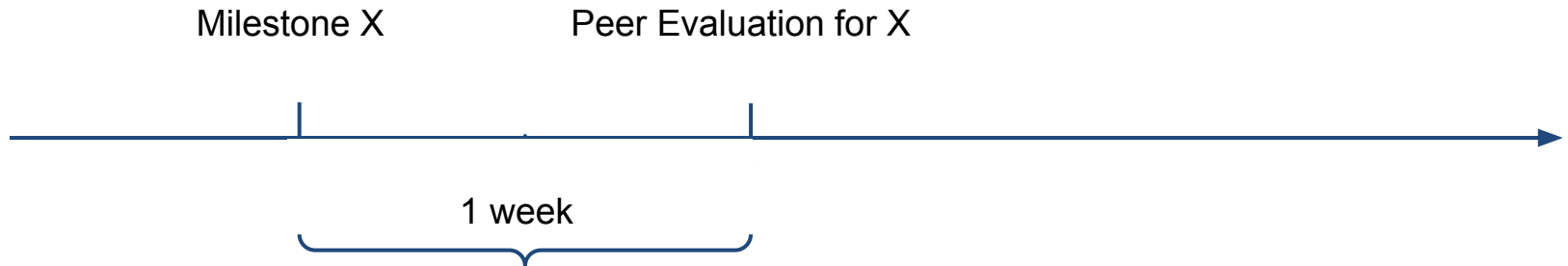
---



Teams also evaluate their peers (3 other teams)

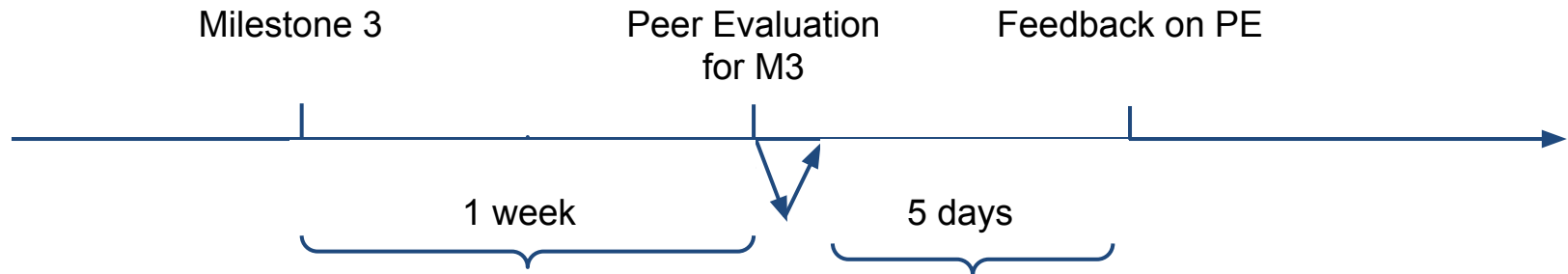
- Fill out the evaluation form on Skylab based on the materials presented by each team.
- Helpful and critical constructive comments required for higher levels of achievement.

# Negative Feedback




- Constructive (negative) feedback is also part of the form, and is source-anonymized for the receiving team.
  - Advisers and other staff can see identity of anonymous contributors.

# Feedback on Peer Evaluation



- Final milestone has additional feedback cycle; i.e., evaluate the peer evaluators.
- Obtaining good peer feedback scores is also part of the higher levels of achievement.
- Most teams will evaluate the same peer teams throughout Orbital.

# Submission page on Skylab

[Home](#) [Staff](#) [Projects](#) [Forum](#) Welcome, Demo student 1  [Logout](#)

## Demo student 1 in Demo Team 1

[Submit project log](#) [Evaluate other teams](#) [View peer evaluations](#) [Submit feedback](#) [Preview Forms](#)

### Submissions

Submit Submission Instruction

Milestone Name	Last updated at	Actions
Milestone 1	2017-05-29 11:55 PM	<a href="#">Create</a>
Milestone 2	2017-06-26 11:55 PM	<a href="#">Create</a>
Milestone 3	2017-07-24 11:55 PM	<a href="#">Create</a>

# Splashdown

---

## Objective

- Showcase your project, win awards and get ready for the next stage!

## Activities

- System refinement
- Presentation workshop
- Poster presentation
- Award ceremony
- Invited talks
- Application for NOC (<https://bit.ly/orbital21-noc>)

# FAQs

---

- Level of achievement / mentorship
  - Can we upgrade to Artemis later without any mentor guiding us?
    - Yes.
  - For artemis teams, is it one team to one mentor or can one mentor have multiple teams?
    - Most mentors would only take one team so please do make effort in persuading them .
  - Can an Artemis team with mentorship drop to Apollo 11 before milestone 3?
    - No. An Artemis team with mentorship is required to persist through and be evaluated at Artemis level.

- Level of achievement / mentorship
  - What is considered evidence of software engineering for Apollo 11 and Artemis?
    - Software engineering is the systematic application of engineering approaches to the development of software. Please check out the [CS2103 website](#) for the core concepts and recommended practices. You should provide details in your Milestone submission showing that you understand the concepts and have applied the recommended practices.
  - Will advisers recommend the suitable level of achievement for our project?
    - Yes. Please discuss with your adviser.

# FAQs

---

- Poster & Video submission for Lift-off
  - What is the required format / content for the poster and video?
    - The general guidelines are as mentioned in [Slide 19: Lift-off](#). However, it is ok to use any method that you prefer. Just make sure that your poster and video are succinct and persuasive.
  - How to make the submission?
    - Make your poster and video available online and paste the link into your Team Information Page on Skylab -> Home -> [Your Team Name] -> Edit Team.
    - You are required to submit BOTH the poster and video.



# FAQs

---

- Project Log for Milestone submission
  - Do we have to specify how many hours each member has spent on a particular task?
    - Yes. The workload requirement of 140 hours is for each student in the team.
  - Can anything related to the project be recorded in the log?
    - Yes. Anything related to the project / Orbital can be recorded in the log. But please make sure that a substantial portion of the time is on project work (e.g., it does not make sense to claim that you have self-studied for 135 hours but only done 5 hours of project work).

- Project Work
  - How do I get started with the project work?
    - You can start by figuring out as many details about your project as possible. For example: What are the key features of your system? What is the design of each feature in terms of the frontend (how it looks) and the backend (how the data are stored in the database)? How to plan the development so that you have a working system all the time?
  - How do I identify the most suitable tech stack for my project?
    - For most Orbital projects, any tech stack should be sufficient. But do take note that some might be more difficult to learn.

# All the best!

---