Space Engineering Seminar
Space System Engineering
"Local BIRDS Program"

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LaSEINE 4th Floor Seminar Room

Laboratory of Spacecraft Environment Interaction Engineering (LaSEINE)
Kyushu Institute of Technology

What is Local BIRDS Program?

- *Local BIRDS Program* is a localized version of the kyutech's BIRDS Project.

- The same lean concept of cubesat development will apply which aims to lay down the foundation of space program in home countries by building, training and accumulating human resources in local universities in order to promote space research education that will lead to a flight model satellite launching.

Objectives

- To Provide the opportunity of learning the entire process of satellite development from mission planning to disposal.

- To lay down the foundation of sustainable space program by accumulating human resources in universities and establishing electives and develop curriculum for space education as a course.

- To create networks of space enthusiast that will reach out the other universities and colleges to High School help them engaged exploring ideas and mission in space as means of solution to society's problem.
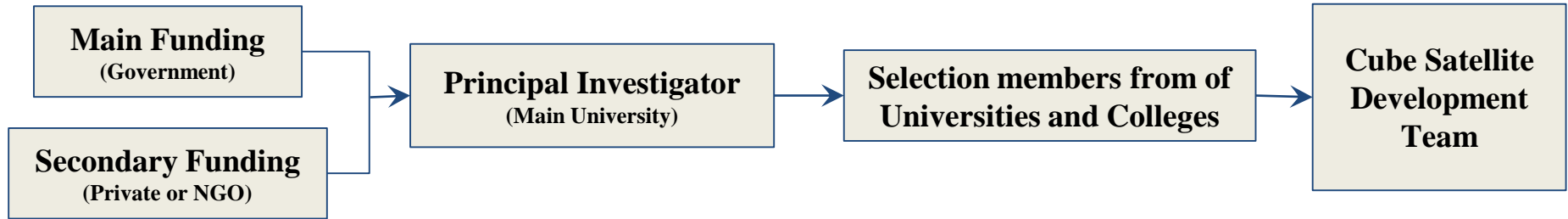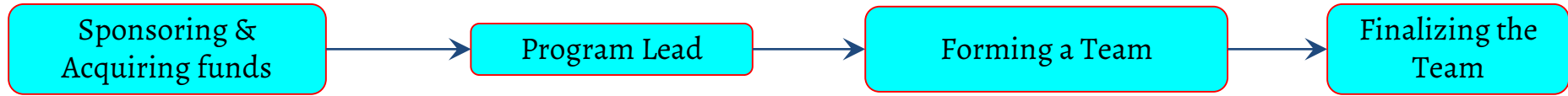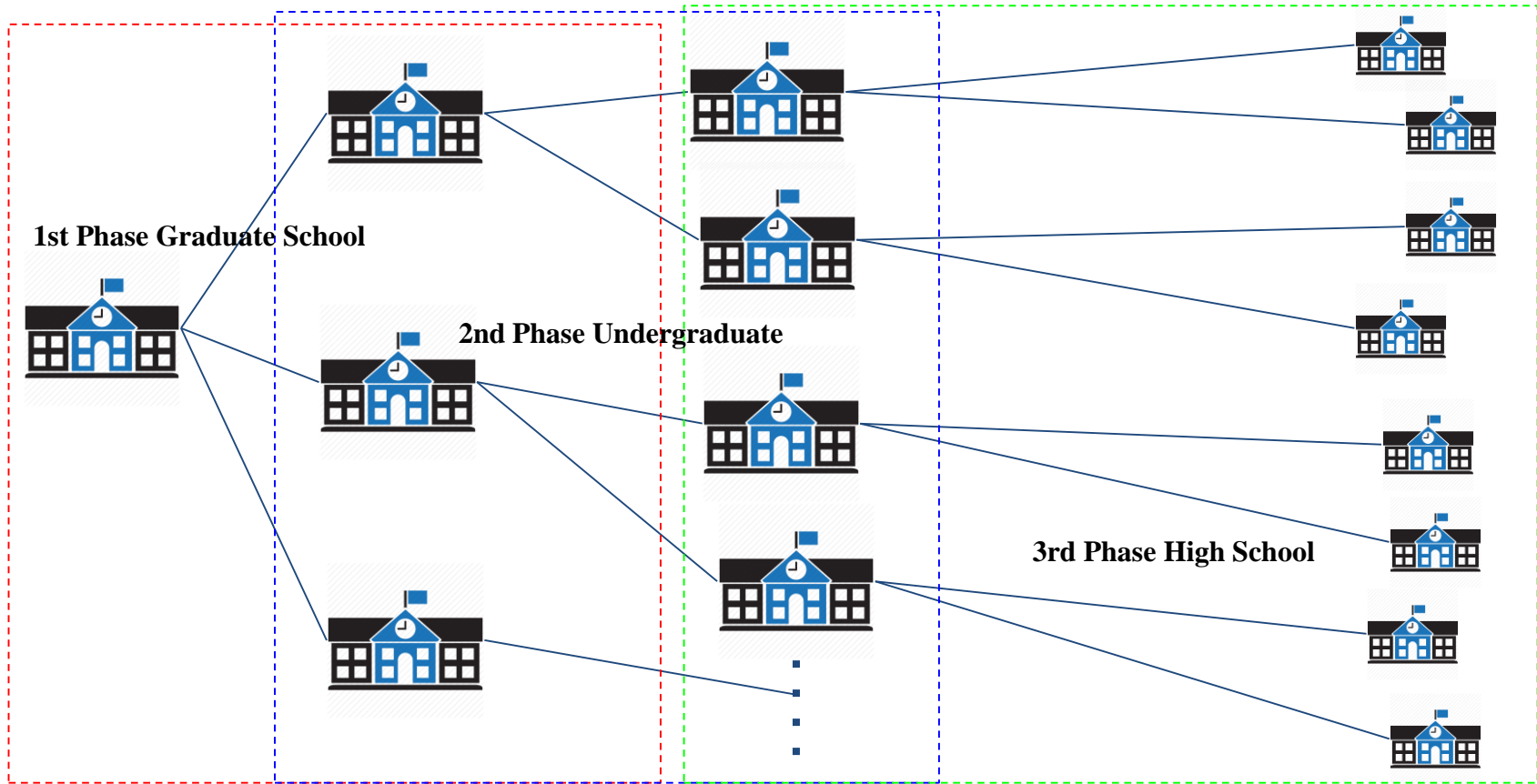
BIRDS Program localized Structure

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│  Sponsoring &   │ ───► │  Program Lead   │ ───► │  Forming a Team │ ───► │ Finalizing the  │
│ Acquiring funds │      │                 │      │                 │      │      Team       │
└─────────────────┘      └─────────────────┘      └─────────────────┘      └─────────────────┘
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┌─────────────────┐
│  Main Funding   │
│  (Government)   │ ──┐
└─────────────────┘   │   ┌─────────────────────┐     ┌──────────────────────────┐     ┌─────────────────┐
                      ├──►│ Principal Investigator │ ──►│ Selection members from of │ ──►│ Cube Satellite  │
┌─────────────────┐   │   │   (Main University)    │    │  Universities and Colleges │    │  Development     │
│ Secondary Funding │ ─┘   └─────────────────────┘     └──────────────────────────┘     │     Team        │
│  (Private or NGO) │                                                                    └─────────────────┘
└─────────────────┘
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BIRDS Program localized Structure

1st Phase Graduate School

2nd Phase Undergraduate

3rd Phase High School

Sponsoring and Acquiring Funds

- Source of Program Funds
- Government
- Private Sector or NGO (Non-Government Organization)
- International Organization

- For Government Funding there is a council that will monitor the progress and stages of deliberation will be conducted to assure that the projects is still on track of the road map

A Clear Program for Project Proposal must be well defined and explains which includes;

a. Objectives and Targets
b. How you will do it?
c. Timeline
d. How much is the Budget you need and how will you spend that budget?
e. How will you assure that your program will succeed?

Deliberation Stages for Funding

- ## Technical Panel

    Composed of Technically knowledgeable people about the subject matter which are invited by the council to examine if the program is feasible and progressive.

- ## Governing Council

    Composed of Non-Technical people.Usually it is the stakeholders who will ask question to you on how things will go during the project implementation.
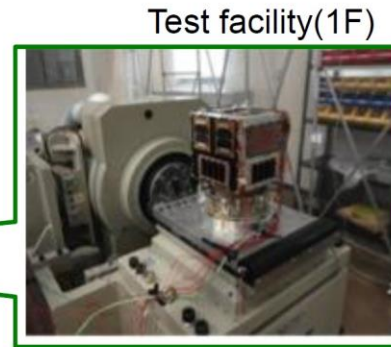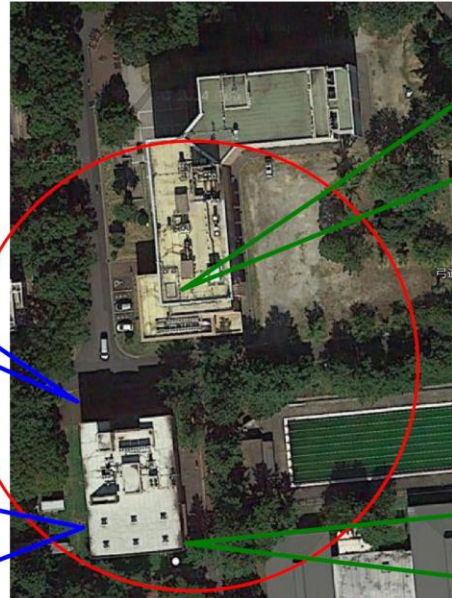
- ## Executive Commission

    Composed of Higher Officials who will scrutinize the program everything from the top .

Program lead

- Principal Investigator or Project Leader
      The one will overall sees the project and will responsible for the program progress.

- Assistant Project Lead and Faculty members
   Research Associate and Assistant Professors from the University.

- Secretariat and Project Management Staff
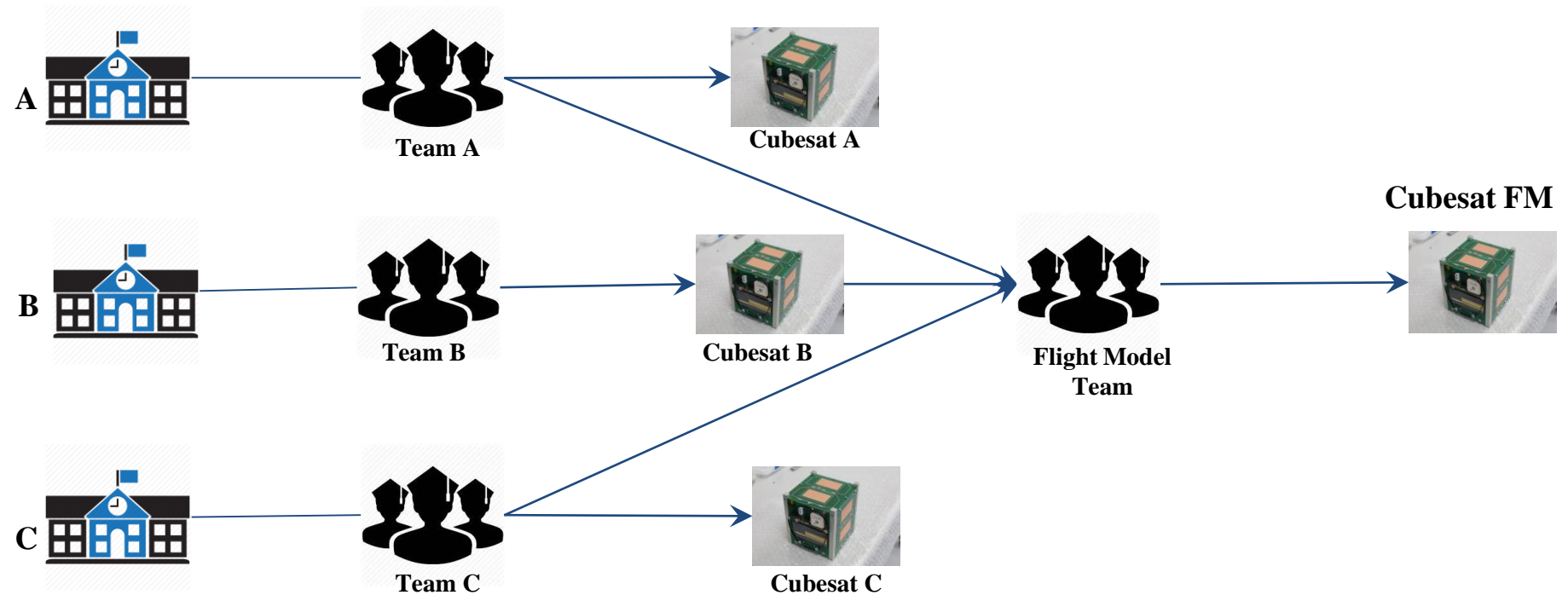   Will handle documentation, Procurement and other Budgetary matters

Office & work room (3F)

GS

Clean room 3F)

Test facility(1F)

Radius 30m

Idea of Forming a Team and its Process

Universities

Selected Students

Engineering Model

（Cubesat A,B & C has unique Mission)

A

Team A

Cubesat A

Cubesat FM

B

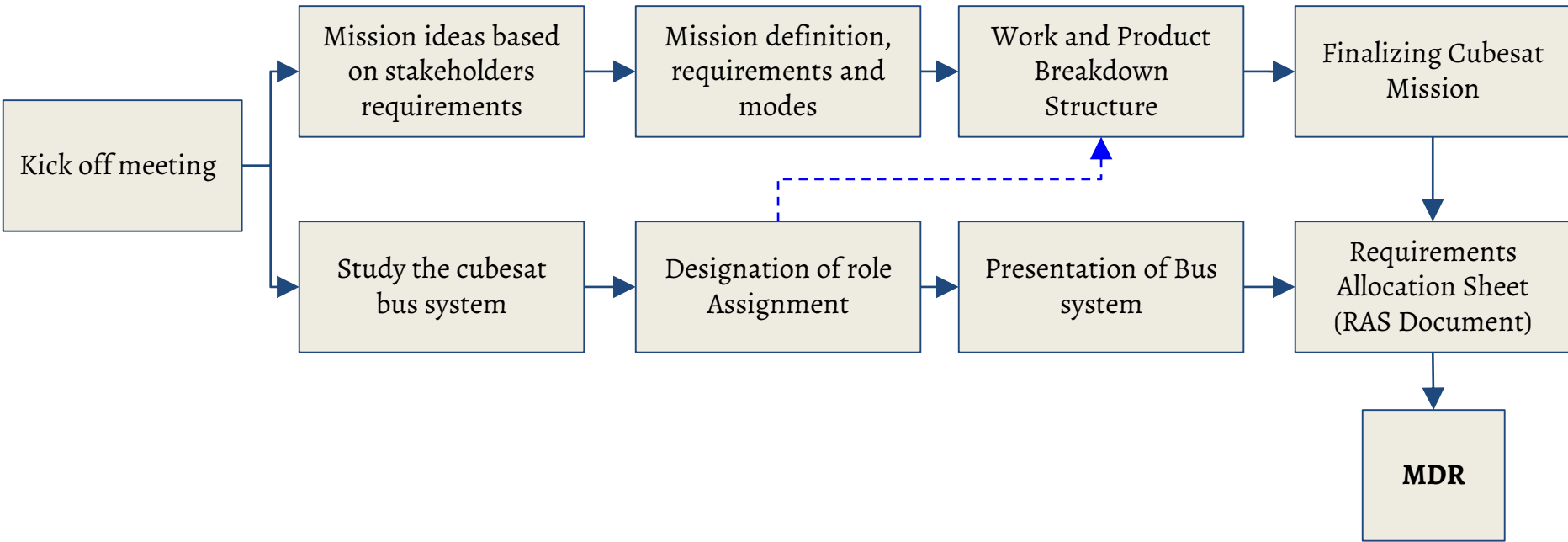Team B

Cubesat B

Flight Model
Team

C

Team C

Cubesat C

Icons: https://www.google.co.jp/search?tbm=isch&q=university+icon&chips=q:university+icon,g_2:campus&sa=X&ved=0ahUKEwjV9YDCh5HWAhVEerwKHY9uDKUQ4lYIKygA&biw=1600&bih=834&dpr=2#imgrc=An0JZTdReVBEGM:
https://www.google.co.jp/search?biw=1600&bih=785&tbm=isch&sa=1&q=project+manager+icon&oq=Project+&gs_l=psy-ab.1.0.0i67k1l4.47398.50504.0.53037.8.8.0.0.0.0.123.840.3j5.8.0....0...1.1.64.psy-ab..0.8.836.gCZRO4l38yo#imgrc=IHI-M-klAcL3pM:
https://www.google.co.jp/search?biw=1600&bih=834&tbm=isch&sa=1&q=boss+icon&oq=boss+&gs_l=psy-ab.1.0.0i67k1j0j0i67k1j0.10418.13349.0.15329.32.14.0.0.0.0.127.1328.6j7.13.0....0...1.1.64.psy-ab..25.5.557.0.NKm3Eb2T73s#imgrc=lmvjjDLdcz81BM:
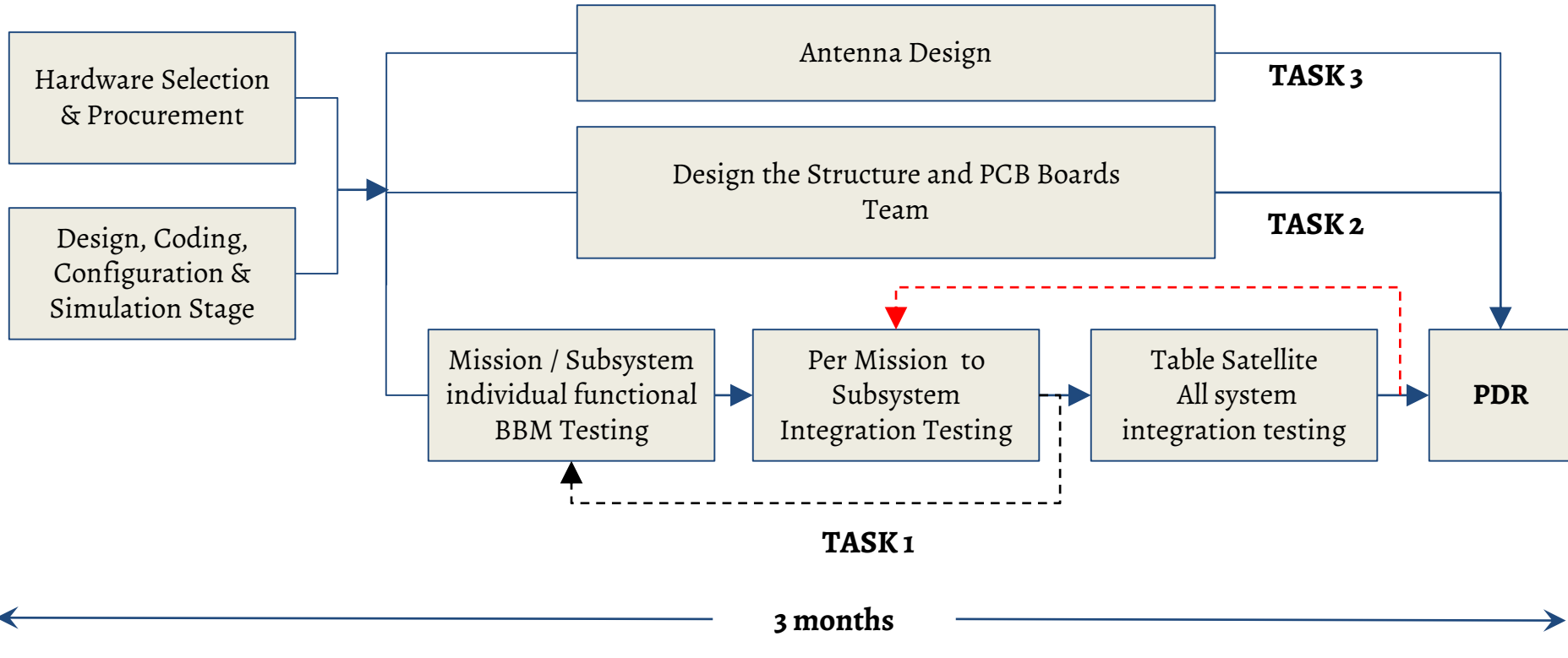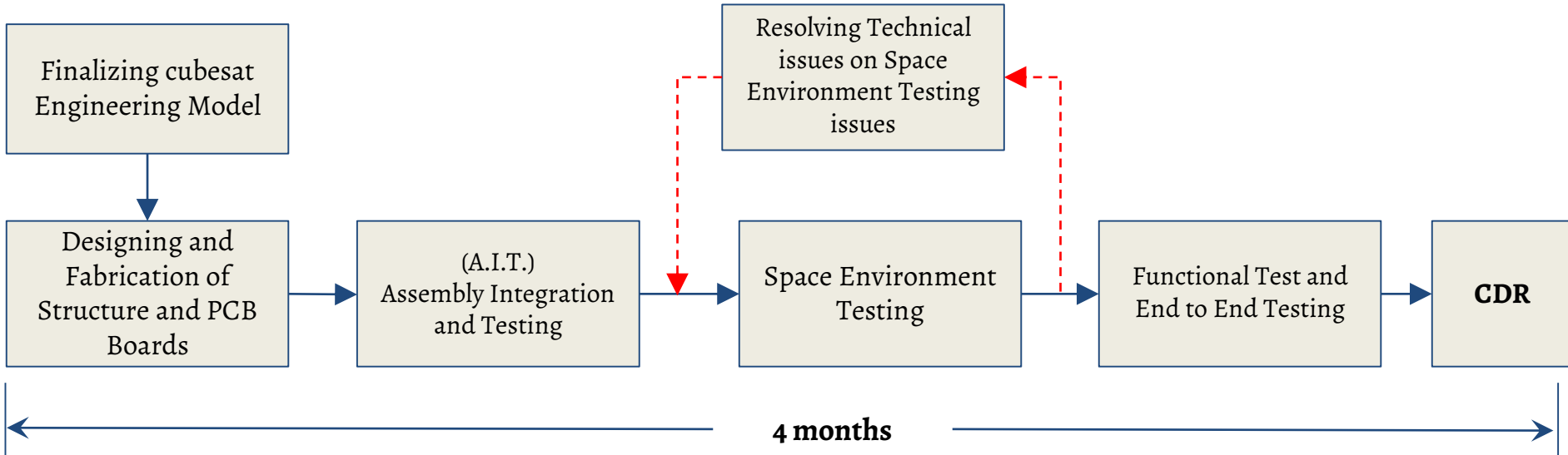
Cube Satellite Development - MDR

2 months

Kick off meeting →

- Mission ideas based on stakeholders requirements → Mission definition, requirements and modes → Work and Product Breakdown Structure → Finalizing Cubesat Mission
- Study the cubesat bus system → Designation of role Assignment → Presentation of Bus system → Requirements Allocation Sheet (RAS Document)

Requirements Allocation Sheet (RAS Document) → **MDR**

Cube Satellite Development - PDR

Cube Satellite Development - CDR

Cube Satellite Development - CDR


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Safety Review
     │
     ▼
Finalizing the Flight    →    (A.I.T.)    →    Space Environment    →    Functional Test and    →    FM
Model Design and              Assembly Integration    Testing              End to End Testing         Ready
Ordering                      and Testing             Vibration & TVT
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← ———————————————————— 3 months ———————————————————— →
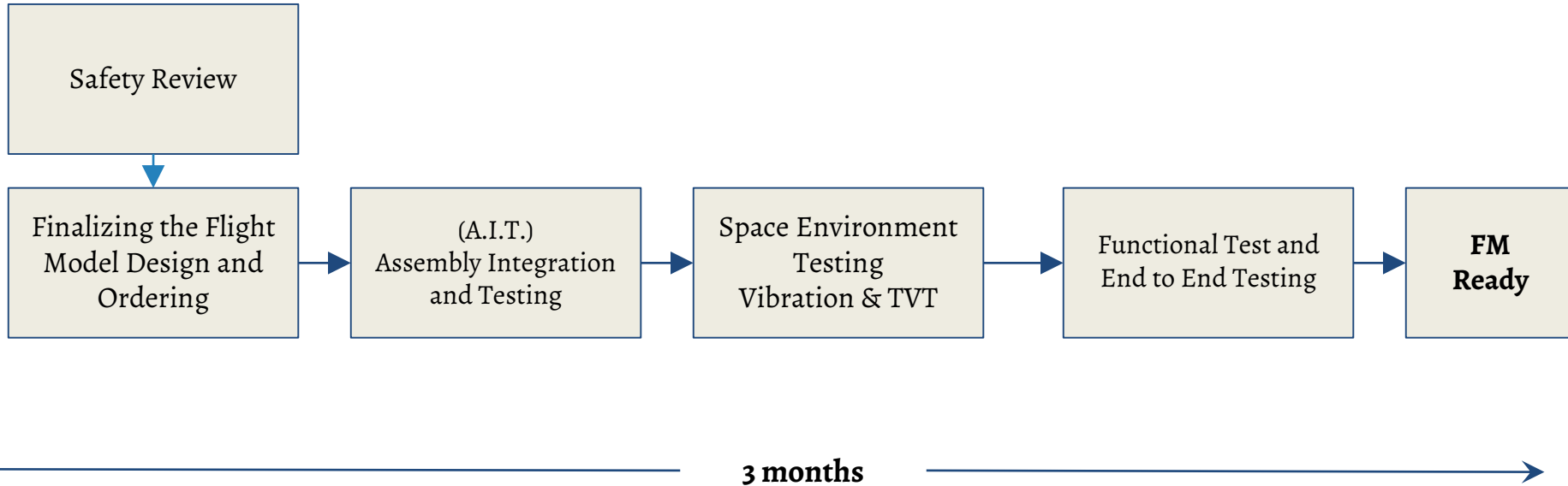
- This Program is in the infant stage of idea but its possible and feasible to implement because kyutech did it already

- Funding may one of the hardest part in the beginning

- The Product of this Program is to sustain the space program in the country either by establishing a National Space Agency or Establishing a Space Industry by making business or proposing some potential business to existing big private company in your home country

Thank You

\- End of Presentation -

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