15 April 2023

ESPITA Kibocube Project_TUN-SAT1

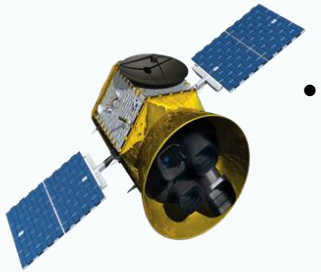
Dr Aouinet Hana
Director General ESPITA
Project Manager TUNSAT1

ESPITA
Ecole d'Ingénieurs

Who are we ?

OUR DIPLOMAS

- Engineering diploma in Mechanical Engineering
- Engineering diploma in Electromechanical Engineering
- Engineering diploma in Electrical Engineering
- Engineering diploma in Computer Engineering
- Engineering diploma in Telecommunication Engineering
- Professional Master in Software Engineering, Embedded Systems and IoT, Data science,



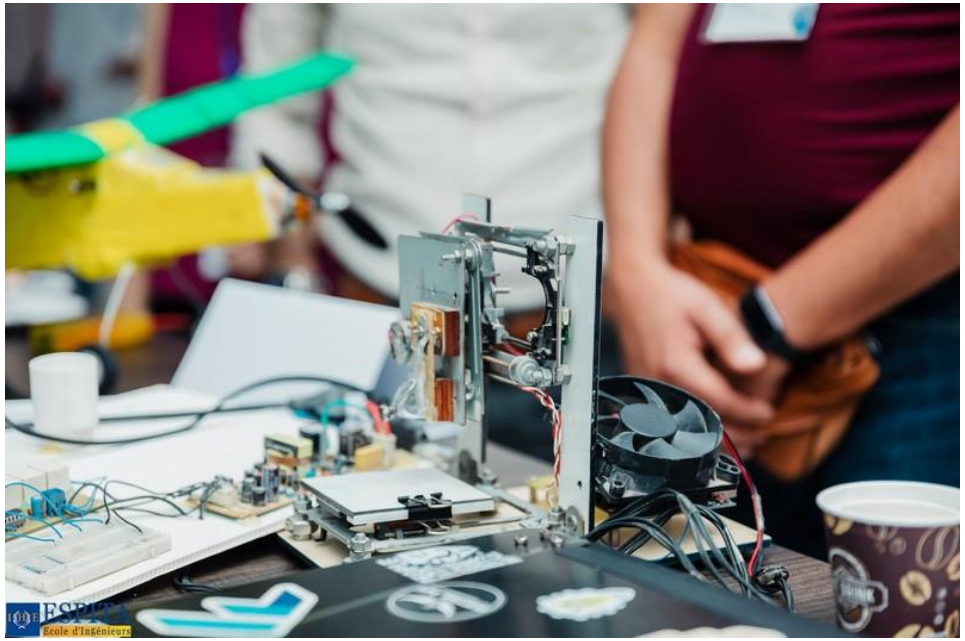
• OUR MISSION

- To prepare engineers in the scientific and technical fields
- of innovation, opened to the businesscworld and international cooperation as well as research and development.
- In Espita future graduates acquirethe technical and managerial skills that will allow them to lead changes.

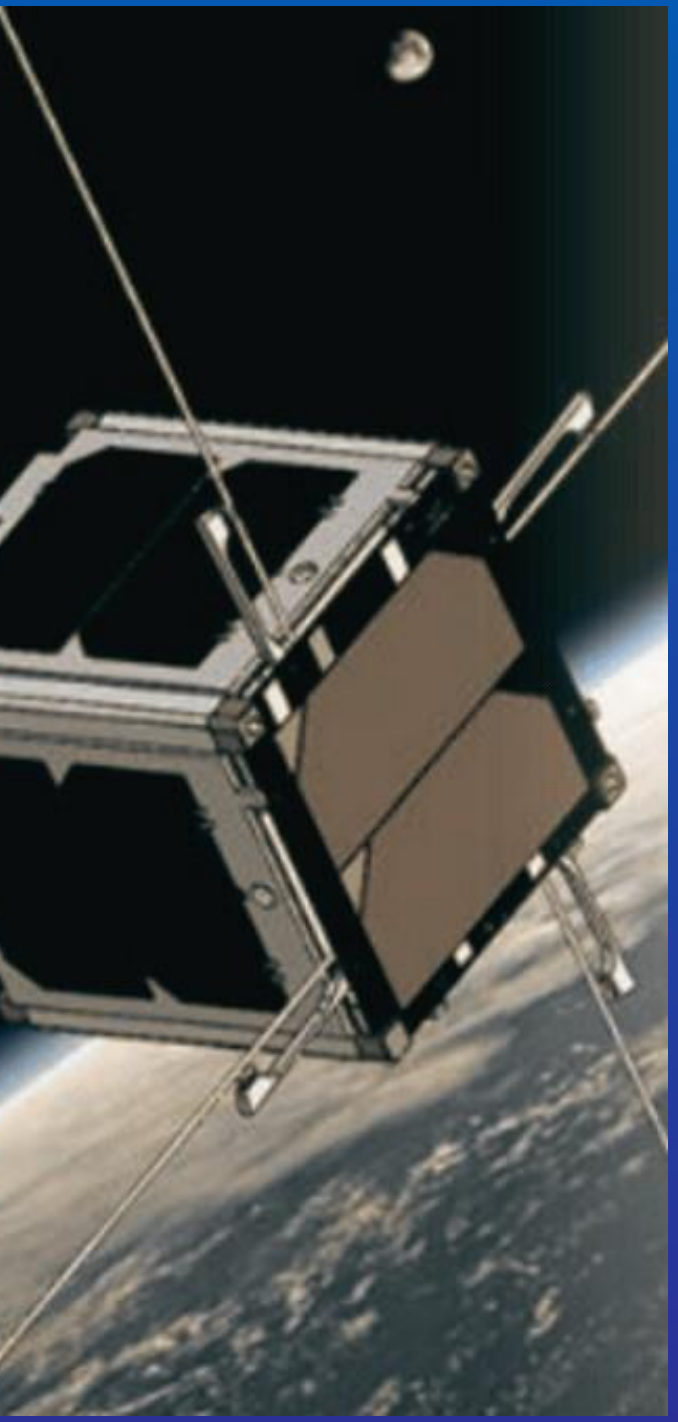
SPACE SECTORS HAS BEEN THE CENTRAL ASPECT

ESPITA
Ecole d'Ingénieurs

courses program, trainings, Graduation projects , national and international Events, follow-up of international activities , especially, those dedicated to education and research



Tunisian Space Activities for students Environnement



General Context

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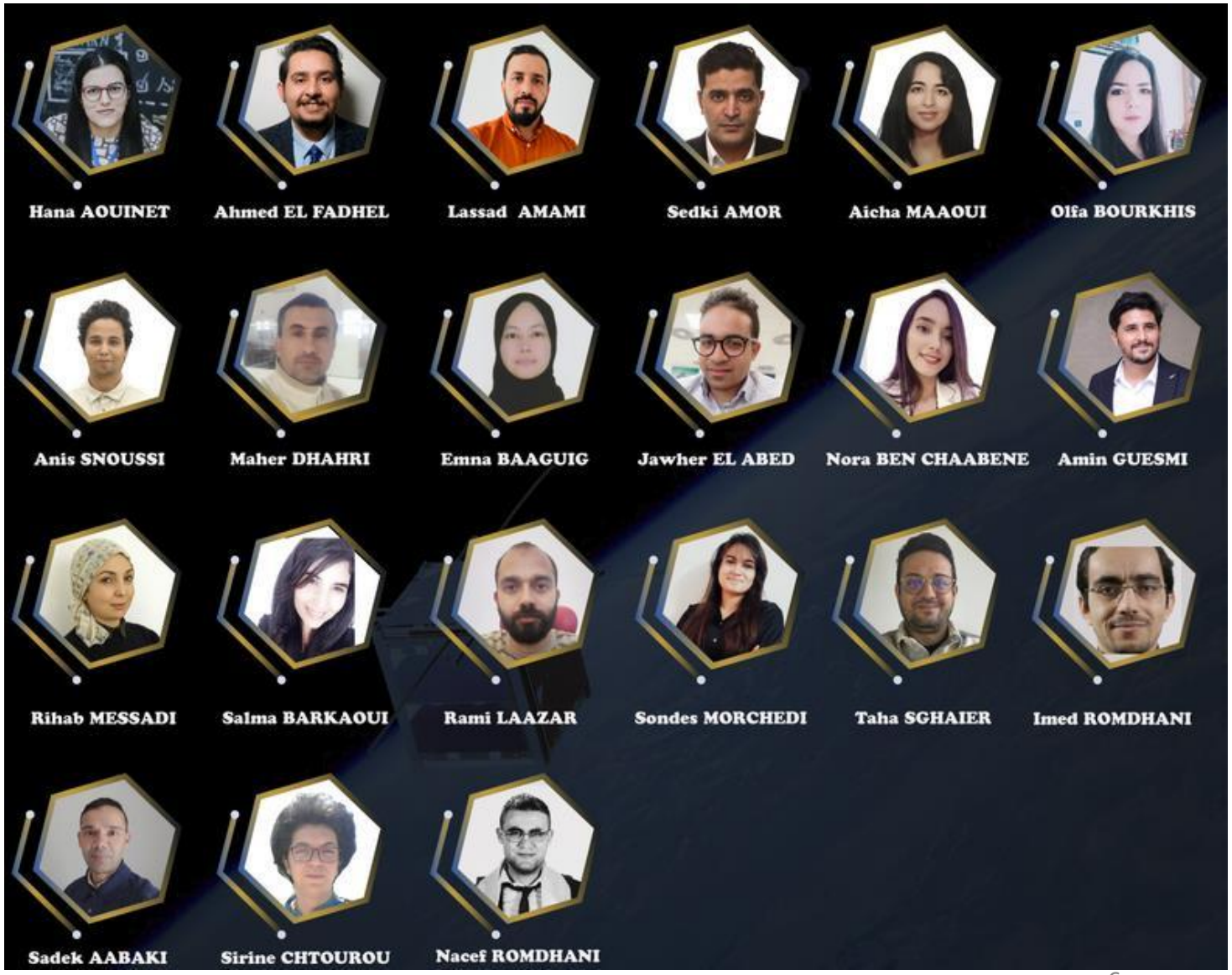
United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) Japanese Experiment Module "KiboCUBE"

KiboCUBE in partnership with Japan Aerospace Exploration Agency provides the opportunity to develop a cube satellite (CubeSat) and have it deployed from the International Space Station Japanese module “Kibo”.

KiboCUBE enables access to space promoting the sustainability of future space activities.

Our TEAM

Twenty experts worked on the design of the satellite and the preparation of the Tunisian proposal for the program Kibokube



Our TEAM and Collaboration

Ceremony

16 February

Thank you Japan ! Thank you UNOOSA !

UNITED NATIONS
Office for Outer Space Affairs

About Us · Our Work · Space4SDGs · Information for... · Events · Space Object Register · Documents

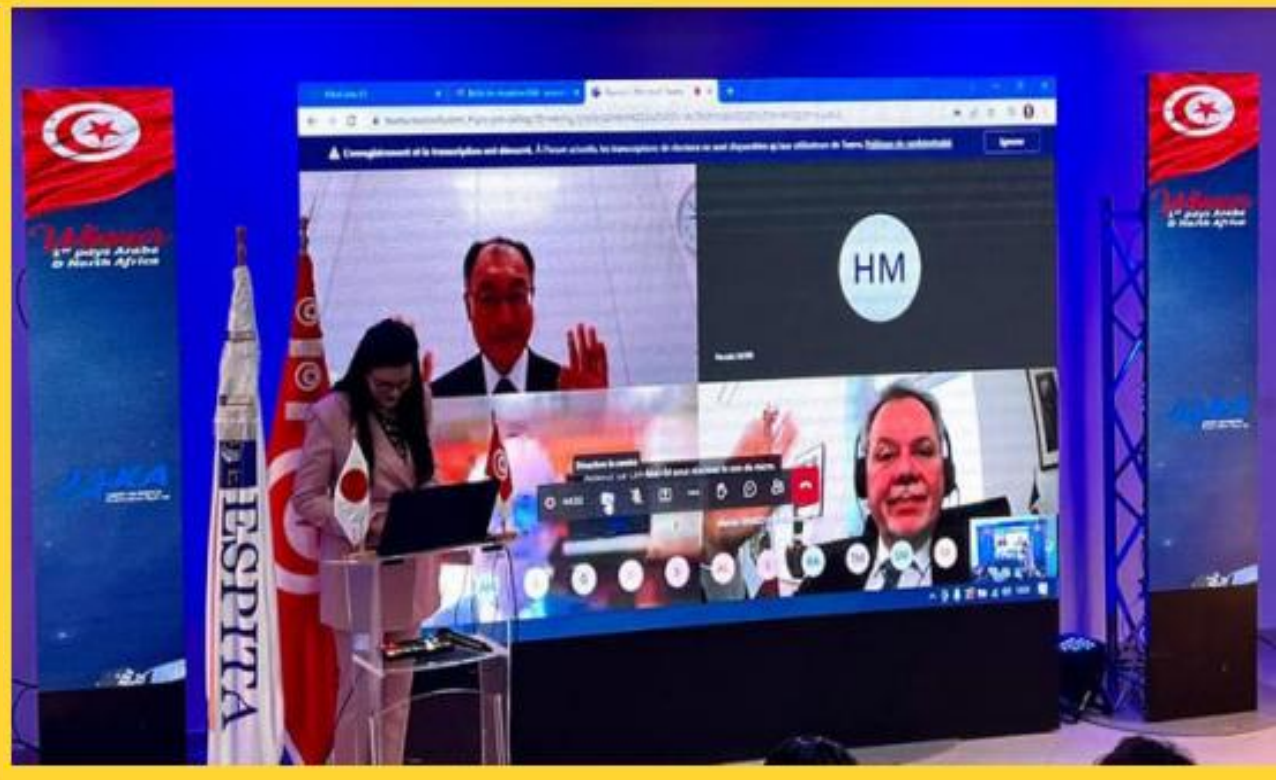
Our Work > Access to Space for All > Awardees

ACCESS TO SPACE FOR ALL
AWARDEE PAGE

École Supérieure Privée d'Ingénierie et de Technologie Appliquée, ESPITA

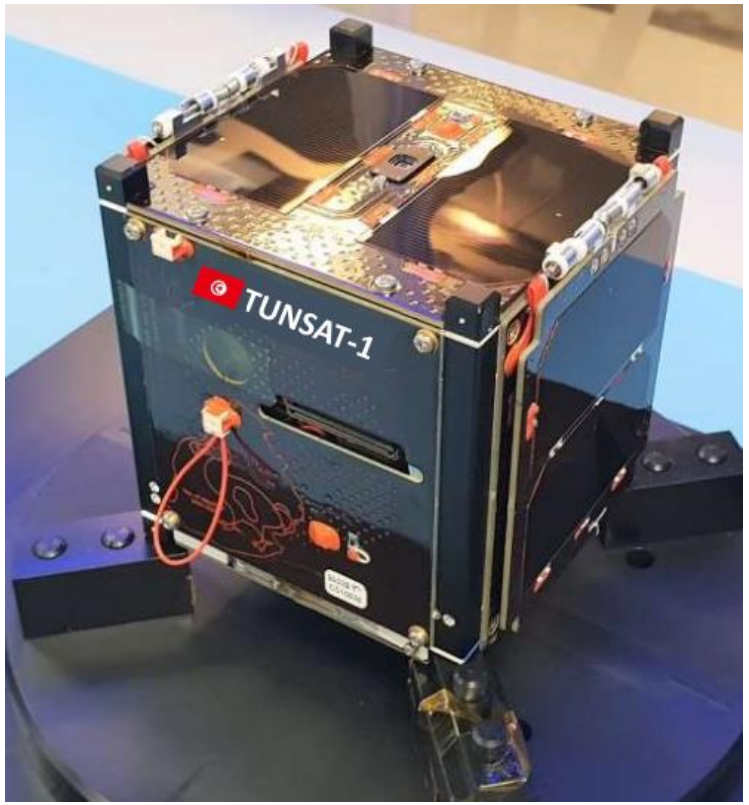
"This is an opportunity for Tunisian students and researchers to contribute to the enhancement of Tunisia's position as an emerging nation in the global space industry. Our goal is to make ESPITA engineering school one of the best African universities for the most brilliant and elite students in the field of space science and engineering, and to provide high world-class level training to qualify the next generation of engineers that will develop the local African space industry." - **Aouinet Hana, Project Coordinator, Director of ESPITA**

Team Photo ©ESPITA



Objective

* 30% of the satellite components will be manufactured locally in Tunisia and operational in orbit



* Take an image of Tunisia from the sky and successfully send it to the ground station (Tunisia take a selfie)

* Use this mission as an example to teach at least young Tunisians the different stages of an aerospace project

* Support the development of the Tunisian legal framework for space activities

Our satellite specifications

7- Solar panel system sub-assembly

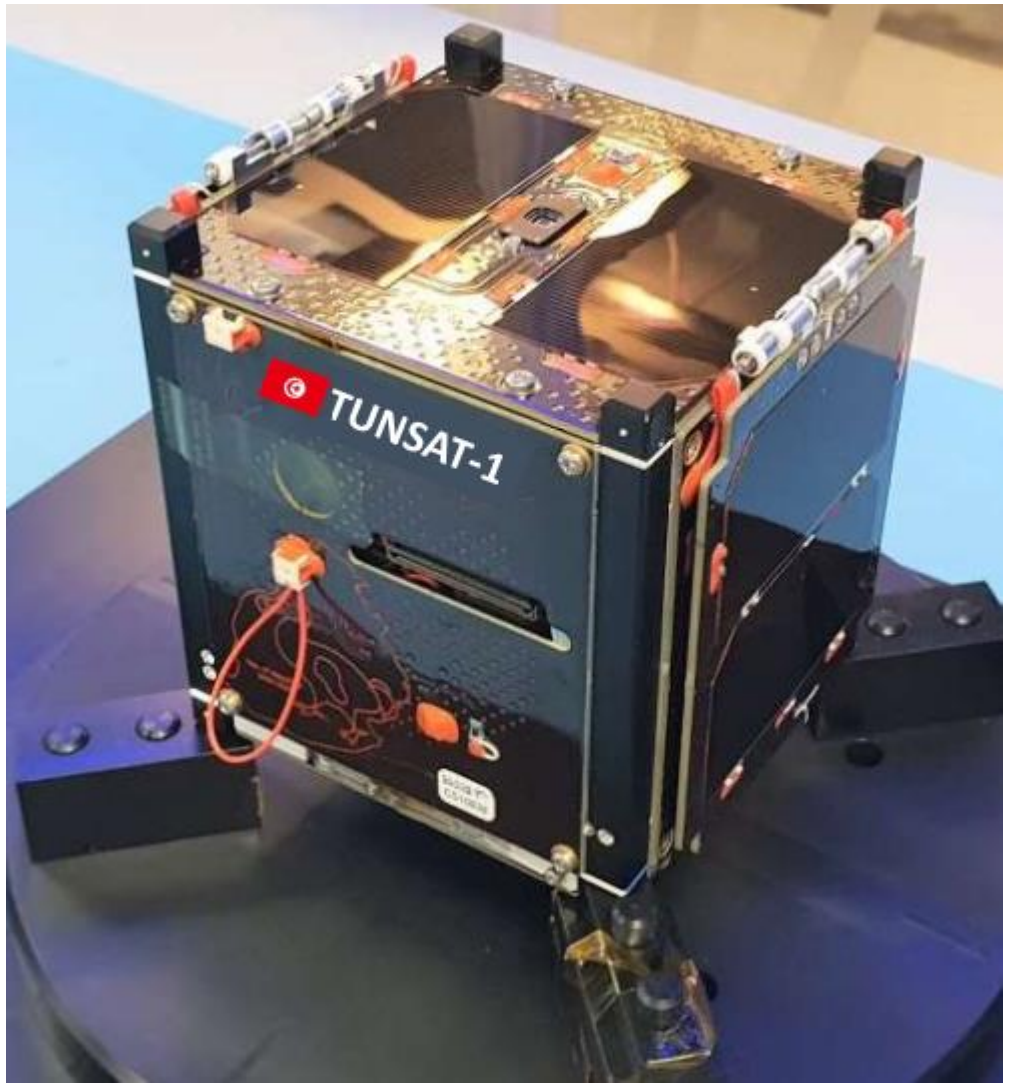
5- Antenna system sub-assembly

9- Payload sub-assembly

3- Attitude determination and control system sub-assembly

6- Communication system subassembly

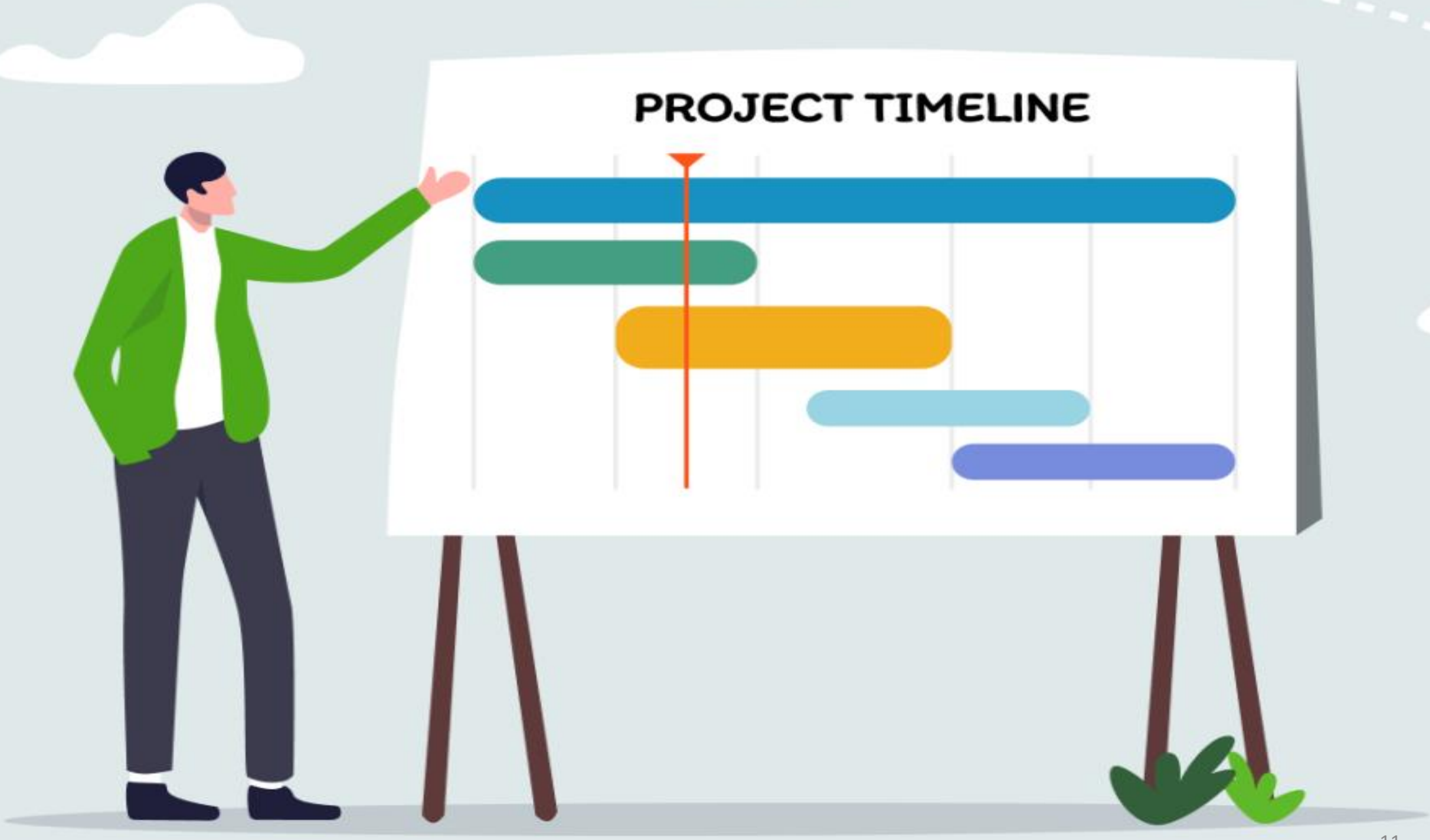
4- Ground stations sub-assembly



8- Command and data handling systems sub-assembly

2- Power System Sub-Assembly

1- CubeSat structure sub-assembly

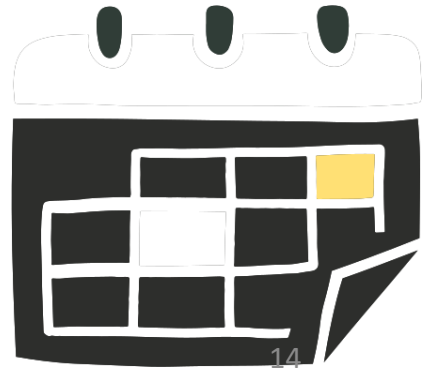

PROJECT TIMELINE

Impact of TUN-SAT1 on Tunisia and Africa

Aerospace, AI and Digital Centre

ESPITA was able to grow ,to expand by inauguration **AEROSPACE, AI AND DIGITAL CENTER** on July 2022

Our Participation to speak about TUNSAT1 in the International aerospace events



speaker
23 Juin 2022

Tunisia Digital Summit,IA in the aerospace sector.

speaker
25 April 2022

Newspace Africa Conference under the theme "Making Africa the New Hotspot for space business"

NEWSPACE AFRICA CONFERENCE

Nairobi, Kenya

Theme: Making Africa the New Hotspot for Space Business

25 - 27 April 2022

www.events.spaceinafrica.com

Day 1 25 April 2022

07:00 - 09:00
Registration

09:00 - 09:10
Welcome Address - Space in Africa
By **Temidayo Oniosun** Managing Director, Space in Africa

09:10 - 09:25
Welcome Address: Kenyan Space Agency & Minister of Defence
By **Hon Eugene. L Wamalwa** Cabinet Secretary of Defence, Government of Kenya, **Colonel Hillary Biwott Kipkosgey** DG/CEO Kenya Space Agency

09:25 - 09:40
Keynote
By **Dr Tidiane Ouattara** African Union Commission Space Science Expert, GMES & Africa Program Coordinator

09:40 - 10:45
Exhibition Opening & Coffee

Day 2 26 April 2022

07:00 - 09:00
Registration

09:15 - 09:45
Keynote & Colloquy
By **Dr Val Munsami** Chancellor, International Space University; Former CEO, South African National Space Agency (SANSA)

09:45 - 11:00
Heads of Space Agencies Panel
By **Dr Hana Aouinet** Director General of ESPITA Tunisia; Coordinator of TUNSAT-1, **Dr Gayane Faye** Coordinator of Senegal Space Program/Professor and Director of Applied Remote Sensing Laboratory at Cheikh Anta DIOP University, **Dr Doreen Agaba** Technical lead of the Department of Aeronautics and Space Science, at the Science Technology and Innovation Secretariat, Uganda., **Col Francis Ngabo** Chief Executive Officer, Rwanda Space Agency, **Fernand Bale** Director, Côte d'Ivoire Geographic and Digital Information Center (CIGN)

26 August 2022

THE WORKSHOP ON AFRICA-JAPAN CUBESAT COOPERATION

26 August 2022

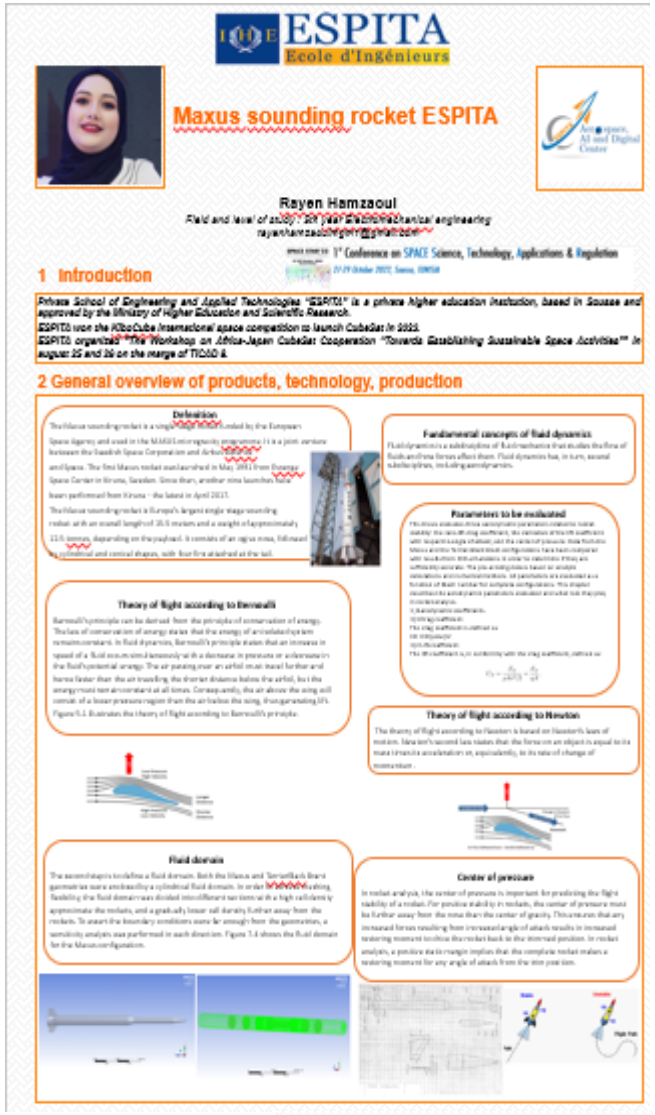
THE WORKSHOP ON AFRICA-JAPAN CUBESAT COOPERATION

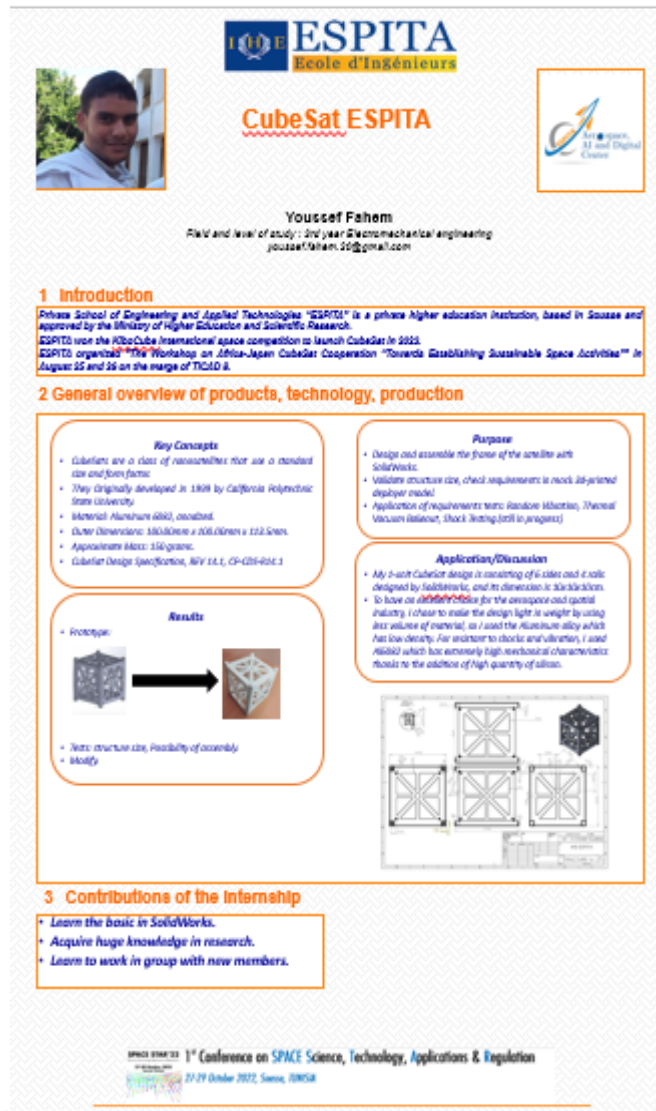
17 September 2022

International Aerospace and defense exhibition

14 October 2022

Our Students Projects





SPACE STAR'22 1st Conference on SPACE Science, Technology, Applications & Regulation
27-29 October 2022, Sousse, TUNISIA

Scientific Research

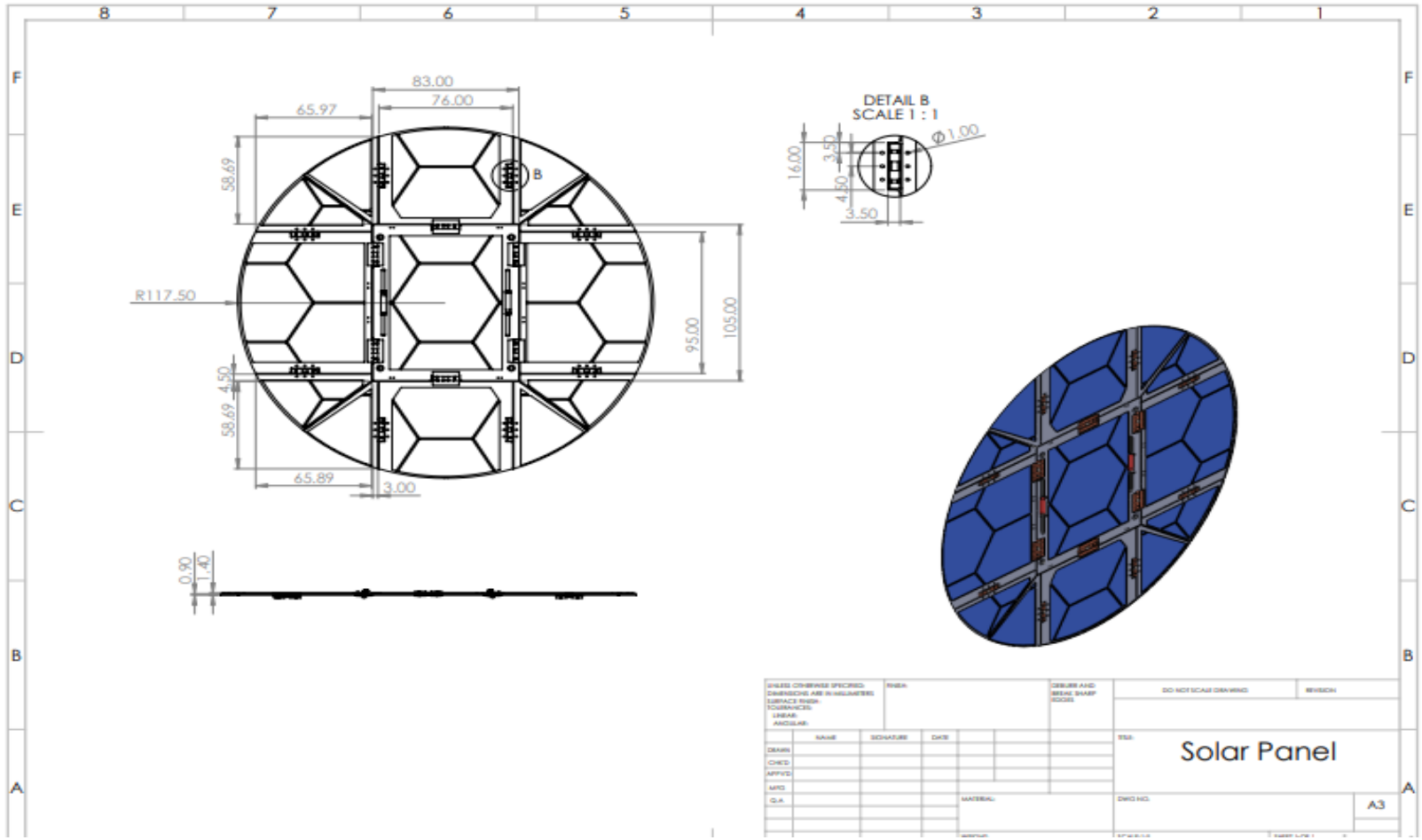
Modeling and Numerical Engineering Laboratory

Objective and Missions

Collaboration with technical centers, institutes and universities both Tunisian and foreign for the development of aerospace industry and the application of the results obtained by scientific research.

More details about our Scientific publications in space field

Aptical payloads and An innovative deployable hexagonal shape solar panel system for 1U Cubesat



James webb solar panel system

The process of choosing the best payload (in this case camera (fig3)) for a cubesat follows through a section of decision-making: What operations should the camera be able to perform and what should the camera do to reach the goals of the project. Our solution it offers 3 sub-cards of size 5x7cm each which are arranged as follows (fig2):

* EspCam board with the Ra-02 transceiver (Lora 433 Mhz + wifi)
* Nano receiver board with nRF95 transceiver (866 Mhz frequency)
* Esp32 reception/transmission card with the nRF95 transceiver (866 Mhz frequency + wifi)

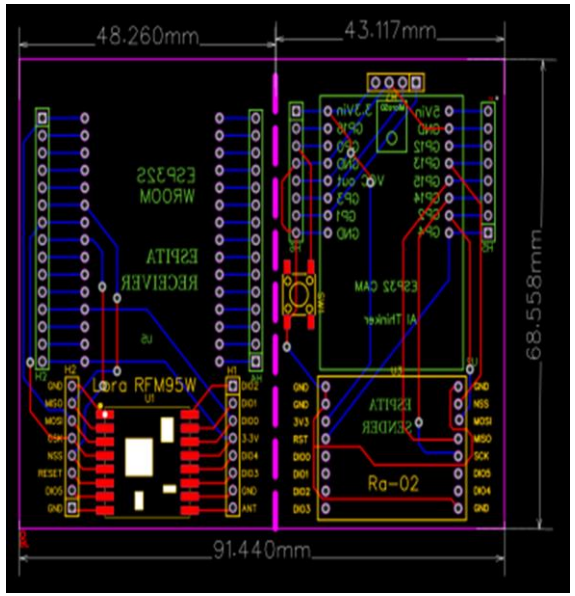


Fig : 3D color PCB

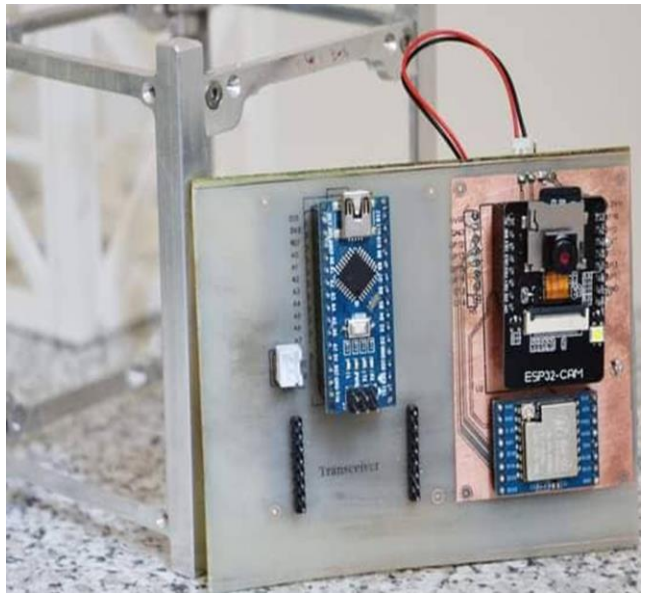
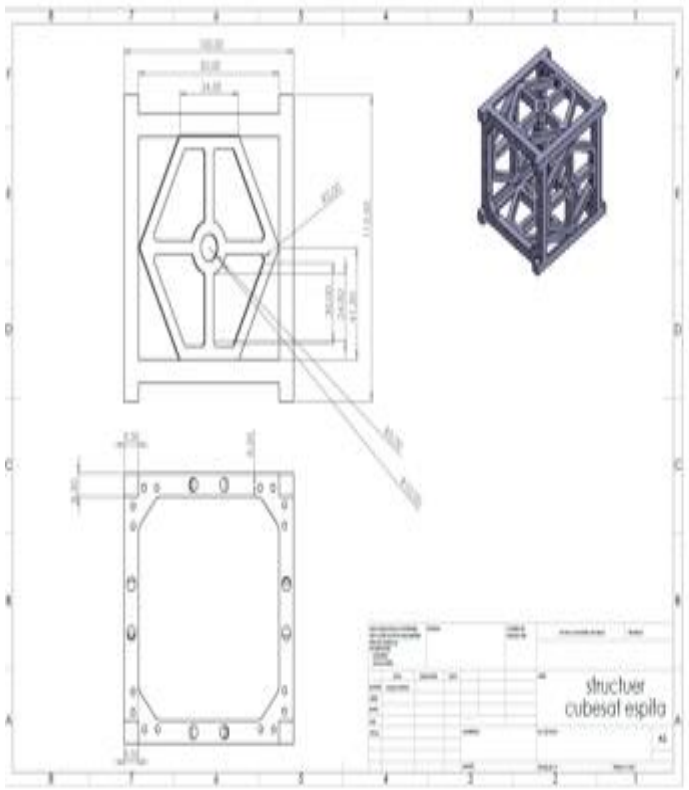
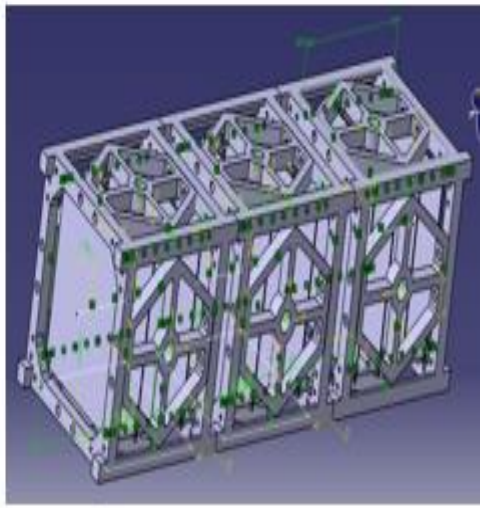


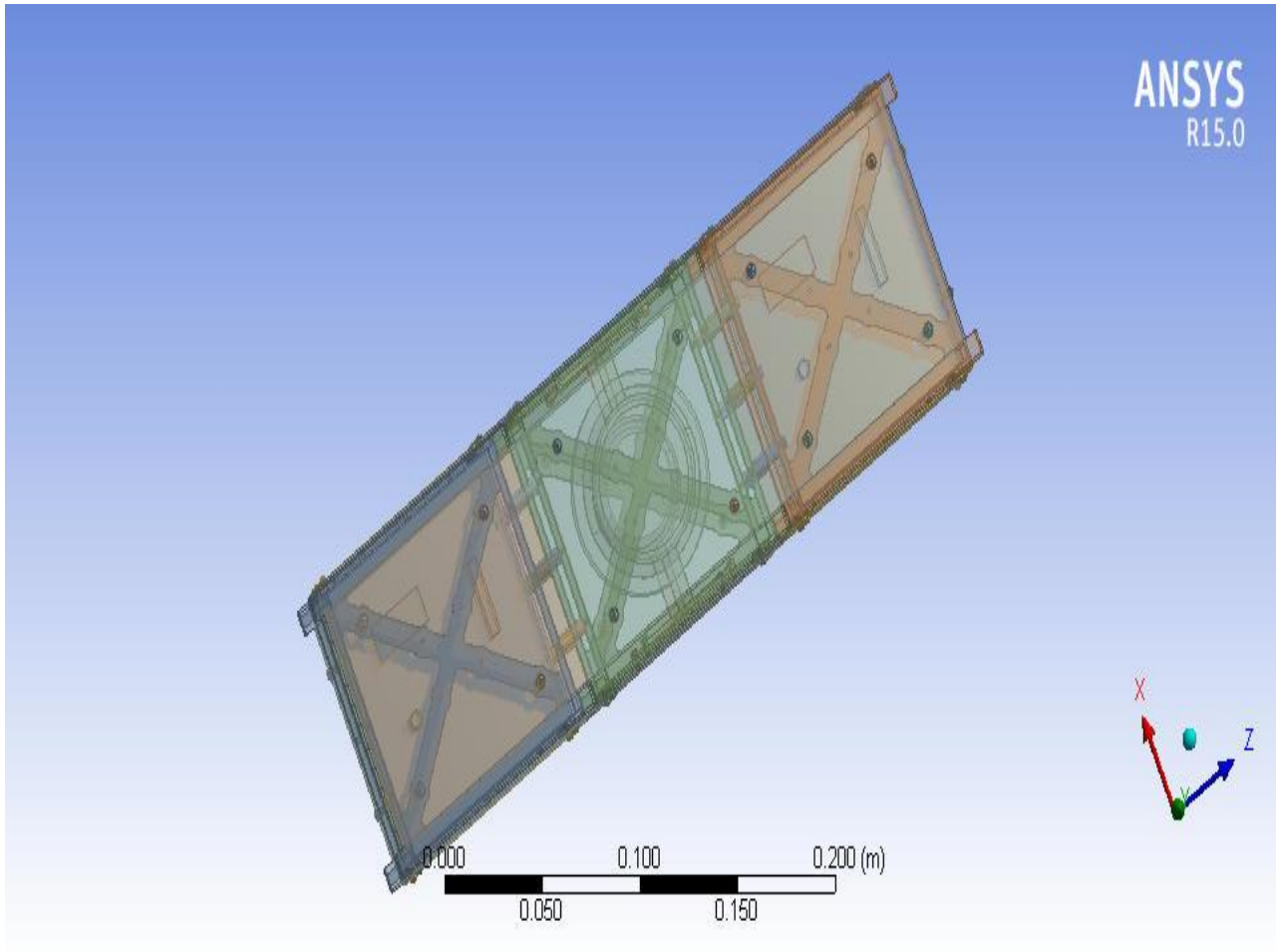
Fig : Camera Module

2/ NEW DESIGN, VALIDATION AND VERIFICATION OF

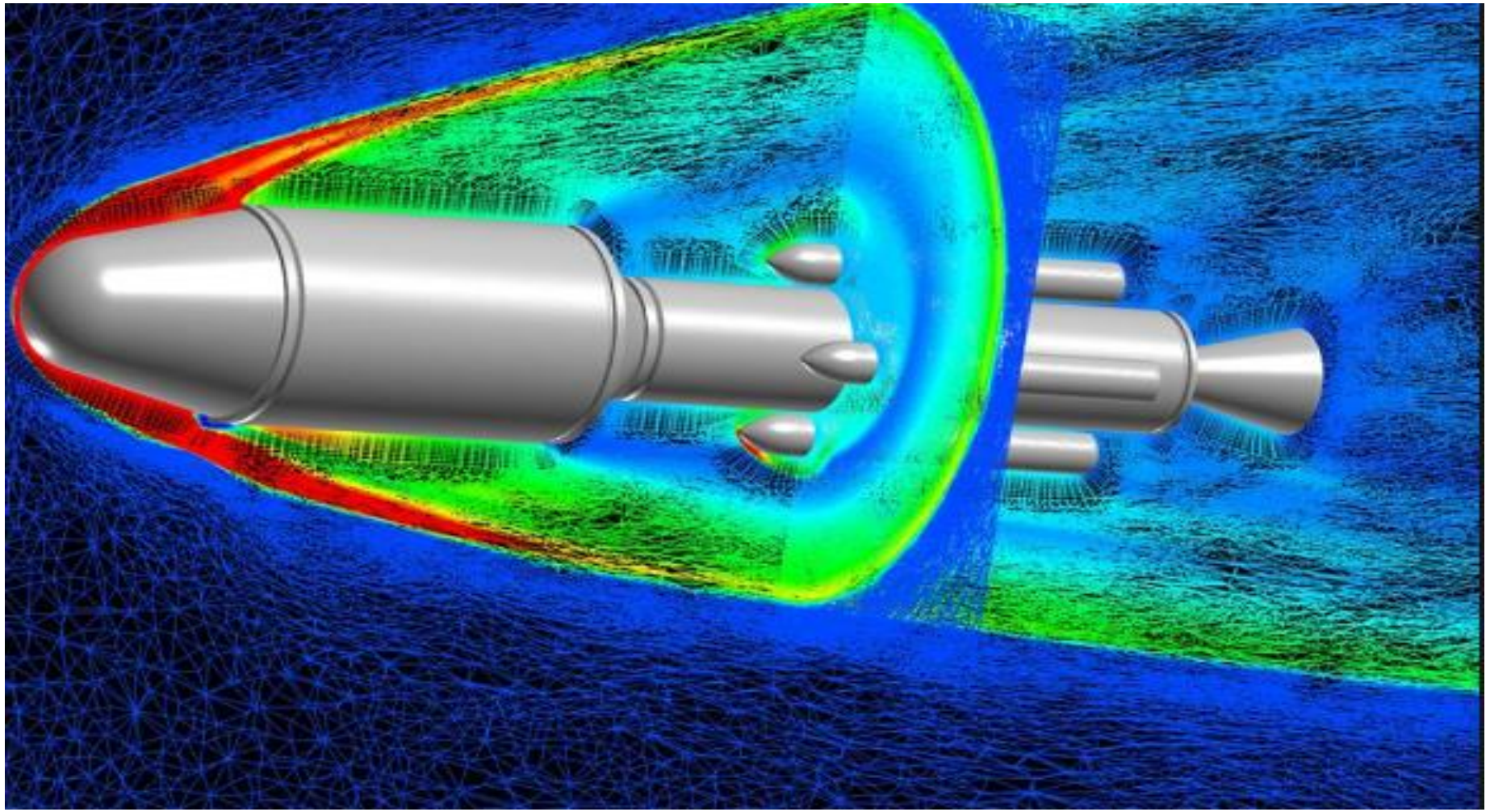
A 3U CUBESAT







3/Aerodynamic Analysis of a Subsonic Missile design using Computational Fluid Dynamics



Our Future project with Jaxa_Kyutech_La Seine

- Winner of PHASE1

APRS PAYLOAD Competition

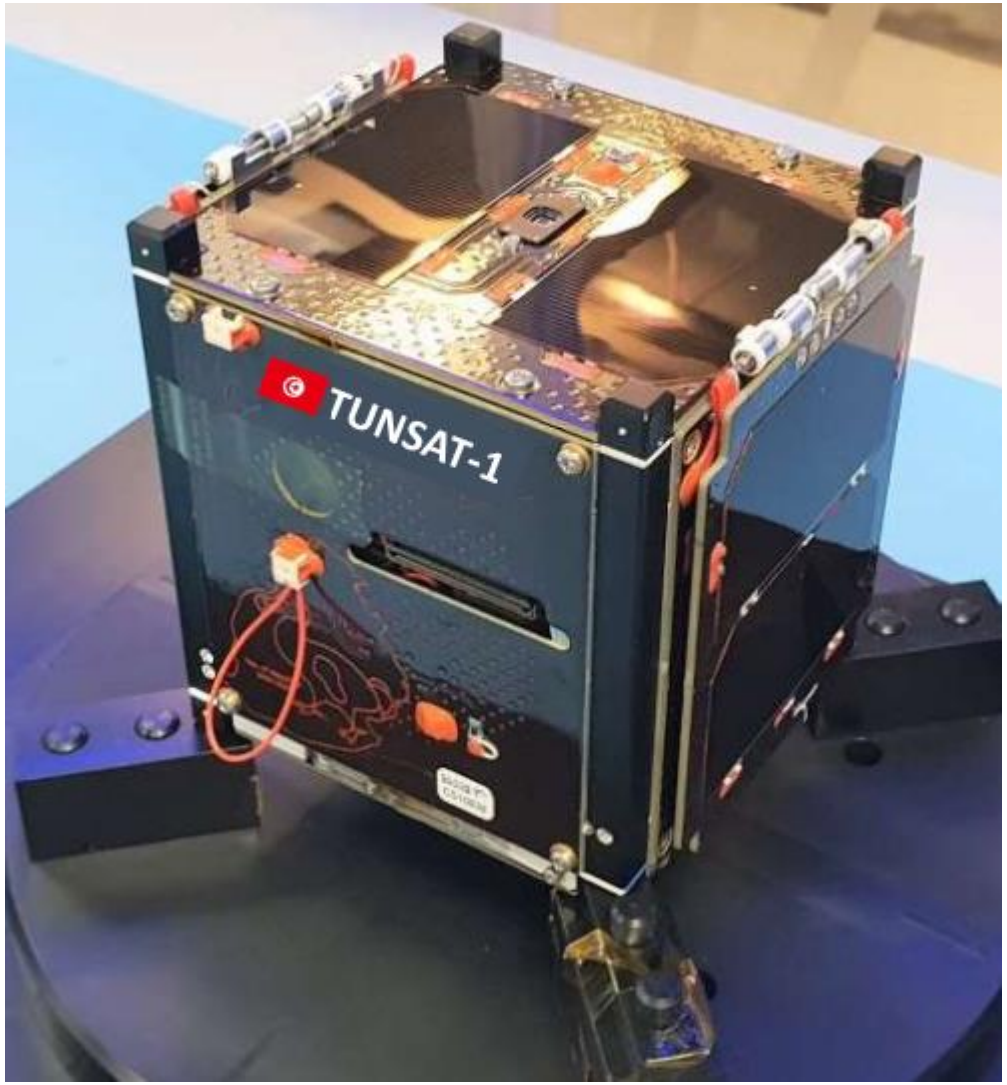
“

Tell me and I forget, teach me

and I may remember, involve me

and **I learn.**”

Benjamin Franklin



15 April 2023

Thank you for your attention

Dr Aouinet Hana
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Project Manager TUNSAT1