FACT,

A Project for Small Sat building capacity

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Tomorrow's society will be more closely linked to space activities.

**African and MENA** countries have to catch-up faster their technological backward.

They have their **specific challenges**: Water, Desertification, navigation, agriculture, illegal immigration, security of country borders..

For that, our activities in recent years revolve around:

- Promotion, collaboration and development of **education and research activities** in space technology and mainly in small satellite fields.

As scientists, we have to inform society and **help train future socio-economic actors** in the challenges of the 21st century....,
HIGHER INSTANCE OF COORDINATION

INTERNATIONAL CENTRES & ONG INSTALLED IN TUNISIA

MHESR: Ministry of Higher Education & Scientific Research (President)
MDN: Ministry of Defense (Secretary)
MA: Ministry of Agriculture
MT: Ministry of Transport

Gov. Ministries

CNEEA
National Commission for Outer Space Affairs.

Agencies & Offices

INM: National Institute of Meteorology

Universities Research Centres

CNCT: National Mapping and Remote Sensing Centre

CERT: Research and Studies Communication Centre
CRMN: Centre for Research on Microelectronics and Nanotechnology
Universities, Labs and Scientific Associations

AICTO: Arab ICT Organisation
(All arab countries: Arab League)
BEIDOU training Centre

CRTEAN: North African Center for Remote Sensing
(Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan)
Regional collaboration (north Africa)

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African Association for Geospatial Development

Tunisian Association for Communication and spatial sciences

ATUCOM
AERO & SPACE INDUSTRIES IN TUNISIA

- Grouping of Tunisian Aeronautics and Space Industries (GITAS)
- ZODIAC,
- LATELEC
- SABENA TECHNICS
- STELIA AEROSPACE
- MECAHERS AEROSPACE
- ......

Evolution of the number of companies in aeronautics

TUNISIAN UNIVERSITIES

- 1st Rank African Research Production per capita
- 3rd World Country for Women in Science
- 11.5 millions population
- 13 universities/37 Centres for research
- 320 000 students
- 1/3 in Fundamental sciences, engineering, Informatics, multimedia,...

- Open to new opportunities
- Space technology is attractive when it becomes available
Objectives:

- Promotion of National and International projects:
- Working on Fundraising and Project Support:
- Promotion of the alliance
- Organization of events
- Communication and dissemination
- Promotion of International Cooperation:
COURSES ON SPACE TECHNOLOGY

We introduce courses in different levels for Basic approaches:

- Astrophysics ...
- Based knowledge in space physics and technologies
- Satellite Telecommunication
- GNSS
- Signal and image processing
- Small satellite design
- Mecatronics & Microelectronics
- Computer Technology (Space & Ground Segments)
- Space System Engineering (based on NASA model)
- Msc and PhD Thesis related to space applications
EVENTS AND CONFERENCES

1st and 2nd Maghreb International Courses in Spatial Technology (Nano-Satellites)
UNIVERSITY OF MONASTIR, APRIL 2012 & MARS 2014

Pr Schilling, Pr Aguelet, Pr Aslan, Pr Alimi, Pr Besbes, Mr Hmaied

Towards a Tunisian National Space Strategy
22, 23, and 24 March 2018 Hammamet, Tunisia

National Conference on Strategies for Development Space Technologies
CRMN SOUSSE, 22 DEC 2016

1st Tunisia-China Space Tech Workshop
Mission design for remote sensing
CRMN, Sousse, Tunisia, 7-11 October 2018
INTERNATIONAL COLLABORATION

Skills development and Benchmarking

- Bilateral collaboration
- Conference organization
- Visiting Professor
- Internship for Young Researchers
- Workgroup and networking
- Participation on Cansat...
  - ISRO, ESA, DLR, CNES, ISA, JAXA, NASA, ROSCOSMOS, ..
WHAT IS FACT

- **FACT means:** Fabrication and Application of CubeSats in Tunisia, 2018-2021
- Help us building local capacity on nanosatellite design assembly and integration
- Implement of CubeSat integration and testing facilities
- **Conducted by 4 partners:** Research Centre, Academic Research Lab., Robotic Compagny and National Centre for Earth Observation,
- Funded by Tunisian Program for Quality Development (PAQ Collabora, MESRS)
- Managed between consortium members as principal networking group
- Periodically evaluated with the presented indicators
- **Contribute to reinforce national Research and Innovation activities** related to space technologies in accordance with recommendation of (UN, UNOOSA, ESCWA, OCDE, BERD, …)
WHY FACT PROJECT

- **Develop local autonomy**: materials, know how, team of young scientist
- **Upgrade the technical levels** by introduction of space technologies, internship, seminars,...
- **Training on the “System Approach”** and quality control used in space mission developing
- **Developing hands-on activities**
- **R&D on new ideas and specific applications** related to space missions and space use (water control)
- **Looking for flight opportunity** for first Tunisian nanosatellite,
- **Access to more important international programs** and collaboration on bigger projects. (H2020,...)
- **Implementation** of Spinoff, startup and new compagnies
HOW FACT WORK

• The project FACT is presented in 5 Work-Packages

• Each member of the consortium will be responsible to accomplish the different missions and work packages assigned to him.

• In accordance to the budget allocated to the project, each partner will provide all human resources and technical equipment necessary to the achievement.

• Workshops and seminars would be organized regularly to enhance the skills of team members and interested parties.

• The communication and dissemination of the results of the project will be done based on the respect of intellectual property,

• Facilities for nanosatellite integration
  • Small clean booth

• Facilities for test:
  • Thermal vacuum test
  • Vibration test
## 10 GOALS IN BUILDING FUTURE SPACE TUNISIAN STRATEGY

<table>
<thead>
<tr>
<th>Space economy</th>
<th>Space society</th>
<th>Space diplomacy</th>
<th>Space accessibility</th>
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<tbody>
<tr>
<td>Space is beneficiary</td>
<td>space is amazing</td>
<td>peace and humanitarian applications</td>
<td>Demystify Space technology</td>
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<td><strong>Develop a national strategy</strong></td>
<td><strong>Present opportunities of Space Tech. in media and social medias</strong></td>
<td><strong>International collaborative network (Tokyo Univ.- Wursburg Univ.- Istanbul Univ., Vigo Univ, Samara Univ..)</strong></td>
<td><strong>Introduce of new curricula in undergraduate and graduate levels</strong></td>
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<td><strong>Collaborative programs with official and private institution for economic benefits</strong></td>
<td><strong>Encourage Young curiosity about space activities</strong></td>
<td><strong>Associated member in H2020 with SPACE NCP since 2016</strong></td>
<td><strong>Organize Workshops about accessibility and strategies for space capacity building</strong></td>
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<td>Ministries of Higher Education, research, Agriculture, Transport, Environment, Defense</td>
<td><strong>Encourage university networking (UNISEC_Tunisia)</strong></td>
<td><strong>Declaration of Intent between Chinese Academy of Space and Technology / MESRS Tunisia</strong></td>
<td><strong>Build real capacities in technology and applications (ex: CUBESAT developments and Tests)</strong></td>
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<td>Work on local priorities: EO, Water management, Climate change</td>
<td><strong>Explain how space can be a driver for socio-economic sustainable development</strong></td>
<td><strong>Participating in UNOOSA Activities ..more and more</strong></td>
<td><strong>Collaborate to exchange international expirences</strong></td>
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First crossing of the Mediterranean
23 September 1913, Roland Garros
From South of France to Bizerte - Tunisia
780KM in 13 h 40

Many Thanks to Government of Brazil and UNOOSA for this opportunity