

Building Space Capacity through University CubeSat Projects: The Moroccan Experience

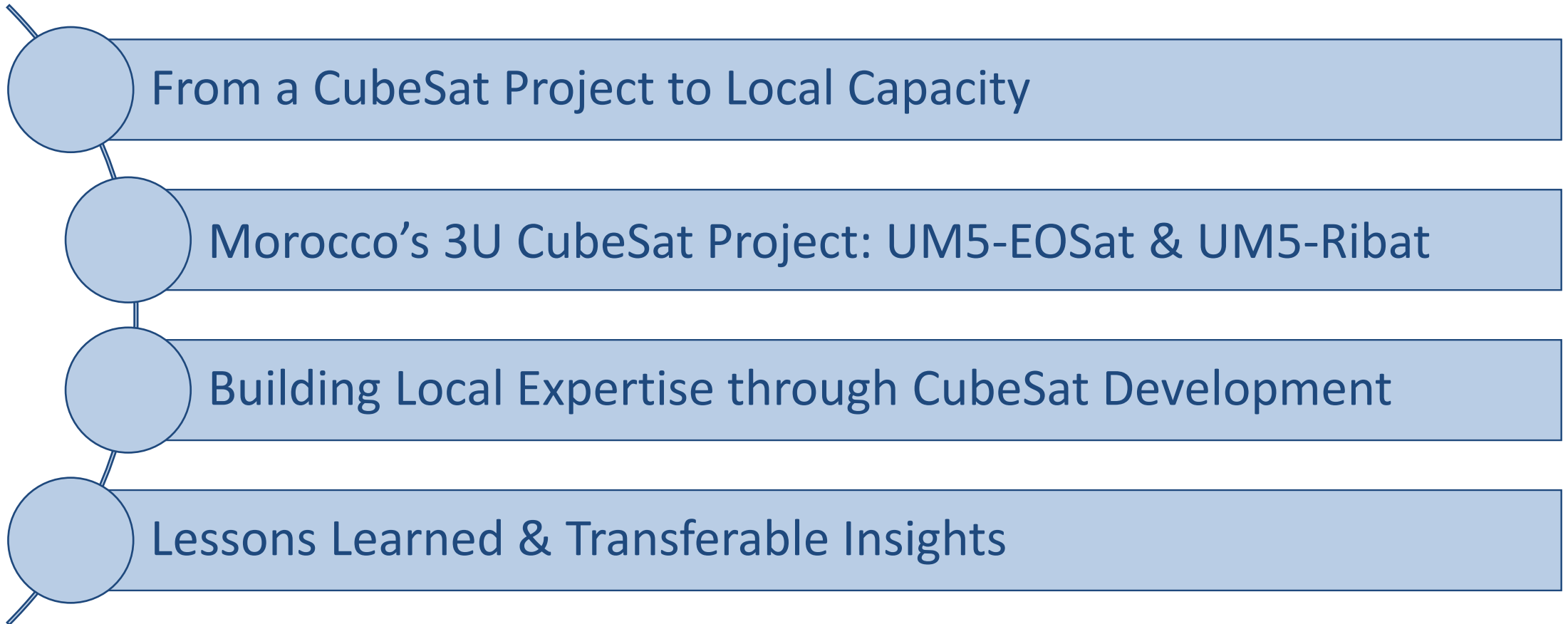
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University Center for Research in Space Technologies (CURTS)

UN/IAF workshop (2-5 October 2026), Antalya, Türkiye
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Outline

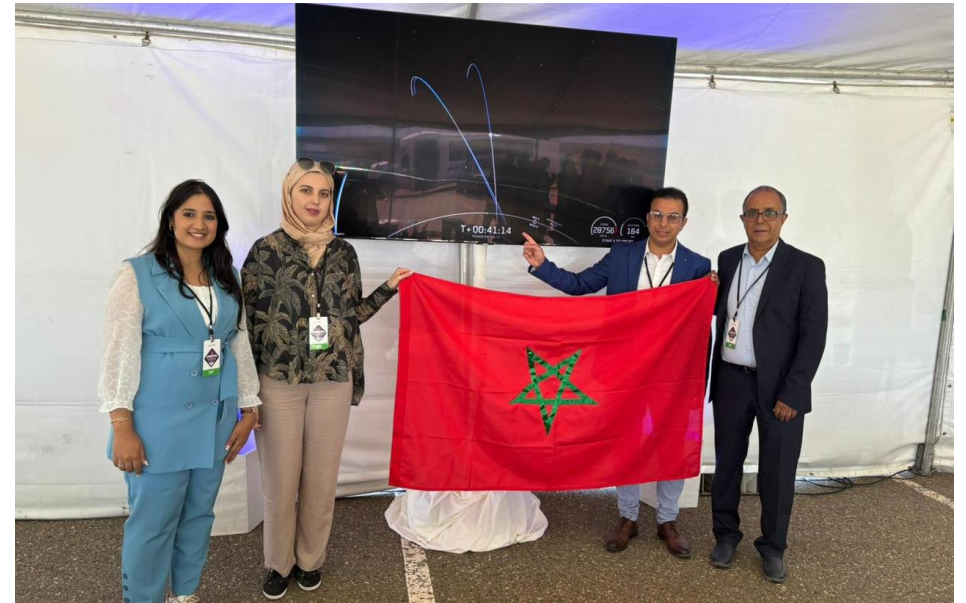


From a CubeSat Project to Local Capacity

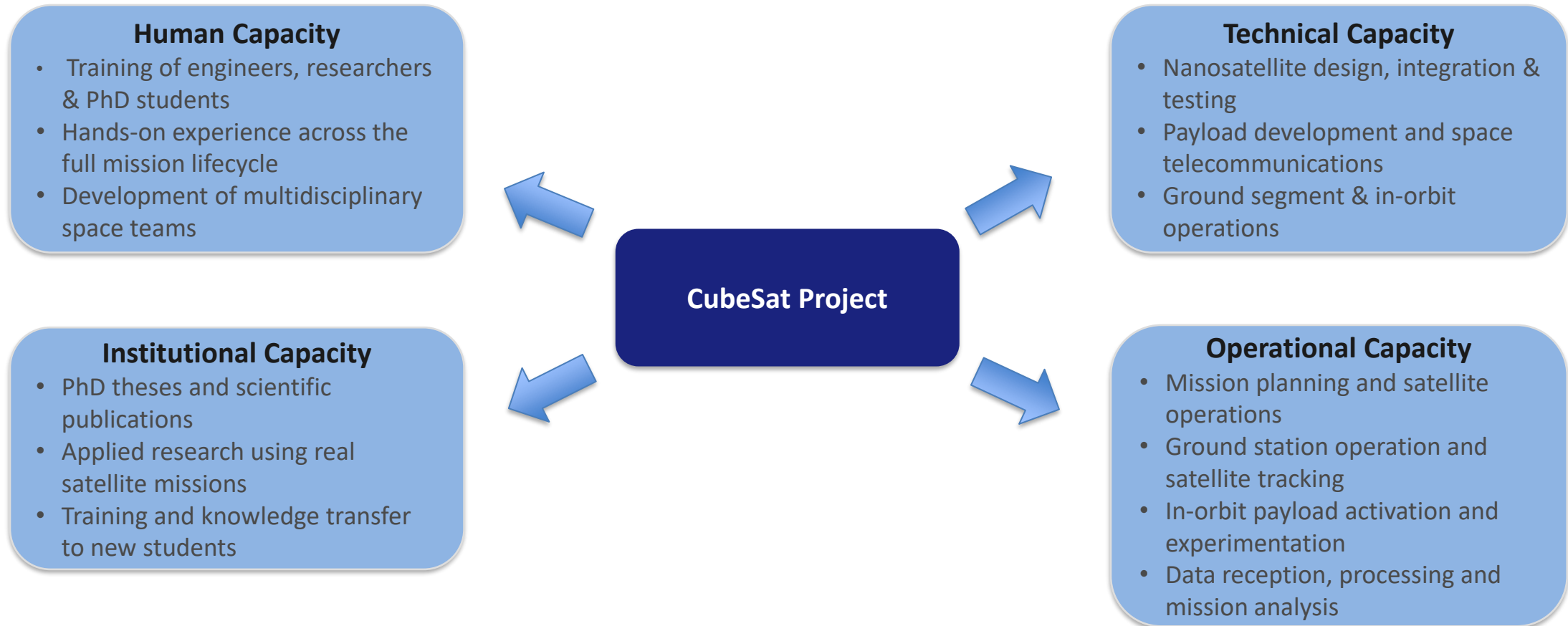
- ✓ Morocco's university CubeSat journey led to the development and launch of two 3U nanosatellites, UM5-EOSat and UM5-Ribat, on 16 August 2024 aboard Falcon 9 from Vandenberg Space Force Base, California, USA.



Building multidisciplinary teams and local expertise



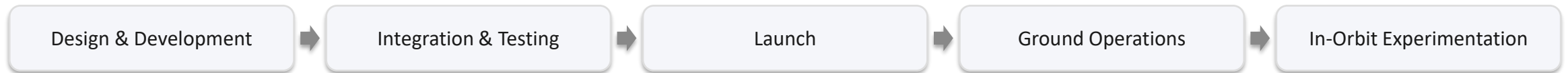
From a CubeSat Project to Local Capacity



The main outcome of a CubeSat project is not only the satellite in orbit, but the people, knowledge and infrastructure that remain on the ground.

Morocco's 3U CubeSat Project: UM5-EOSat & UM5-Ribat

The projects enabled Moroccan teams to gain experience across the complete mission lifecycle:



UM5-EOSat & UM5-Ribat Missions

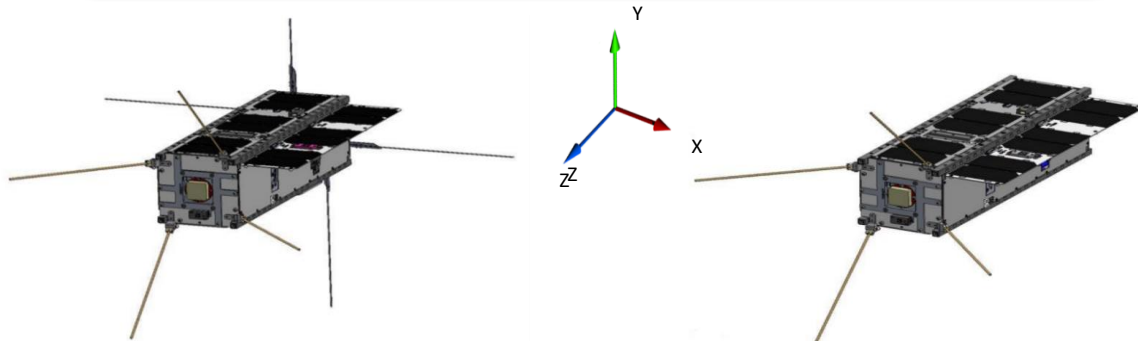
UM5-EOSat

- *Earth observation and imaging*
- *Development of local expertise in satellite image acquisition and processing*

UM5-Ribat

- *Software-Defined Radio payload*
- *Space-based telecommunications experiments*
- *ADS-B, AIS and IoT signal reception*
- *In-orbit validation of reconfigurable communication technologies*

"In our case, the value went far beyond having two satellites in orbit. The projects created opportunities for engineers, researchers and students to work on real flight hardware and experience the complete space mission lifecycle."

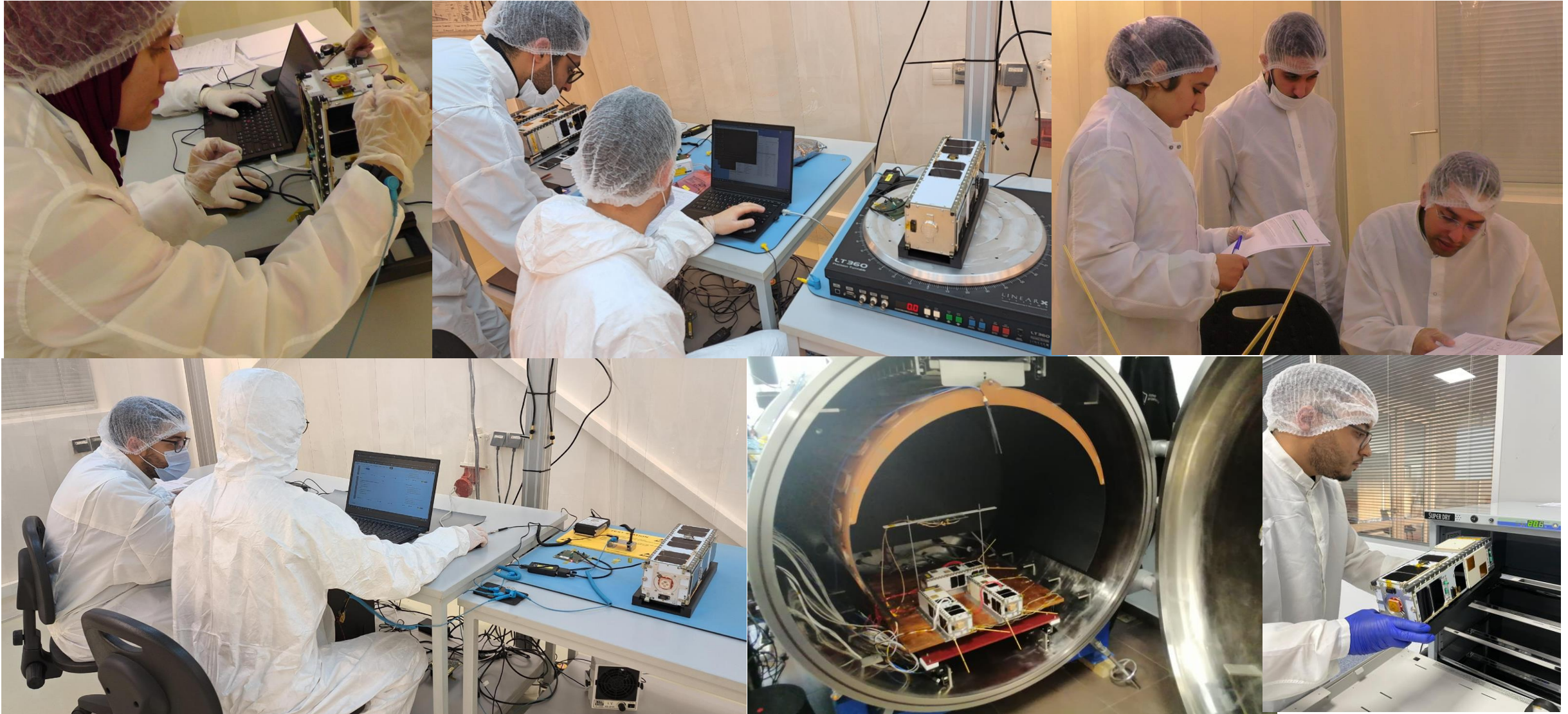


Building Local Expertise through CubeSat Development



A CubeSat project creates multidisciplinary expertise across the complete satellite lifecycle

Building Local Expertise through CubeSat Development



Hands-on CubeSat development transforms technical activities into sustainable local expertise

What We Learned

What CubeSats Enable

- ✓ Affordable entry into space activities
- ✓ Hands-on training
- ✓ Multidisciplinary teams
- ✓ University–government cooperation
- ✓ Development of local expertise
- ✓ International collaboration
- ✓ Inspiration for students and young engineers

Challenges

- Limited access to advanced testing facilities
- Dependence on imported space-qualified components
- Sustaining funding and institutional support
- Retaining trained expertise for future missions
- Moving from a first CubeSat to a sustainable national program

"Launching the first CubeSat is an achievement. But the real challenge is ensuring that the expertise developed during that project remains in the country and contributes to the next mission."

Three Transferable Lessons for Emerging Nations

1

Start small, but design for continuity

The first CubeSat should be the beginning of a program, not an isolated demonstration.

2

Put people before hardware

The most valuable outcome is not necessarily the satellite itself, but the engineers, researchers and students trained through it.

3

Build partnerships

Combine universities, government institutions, industry and international partners.

"For emerging space nations, CubeSats can transform access to space into access to knowledge, skills and long-term technological sovereignty."

THANK YOU

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