SakSat‑1 — Georgia’s First CubeSat Mission

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*This briefing package summarises SakSat‑1, a 1U CubeSat programme led by Kutaisi International University (KIU) to place Georgia’s inaugural satellite in Low‑Earth Orbit via the UNOOSA–JAXA KiboCUBE initiative. It is intended for university leadership, national agencies, and potential sponsors to demonstrate the project’s strategic value, feasibility, and investment readiness.*

# 1. Vision & Strategic Value

• Position Georgia as an emerging space nation by achieving an orbital first within a \$20 k hardware budget.

• Deliver actionable environmental intelligence for forestry, agriculture and climate resilience with onboard AI.

• Cultivate a national talent pipeline in aerospace, RF, data science and AI through hands‑on student projects.

• Align with UN Sustainable Development Goals (SDG 4, 9, 13) and strengthen Georgia’s international profile.

# 2. Mission Snapshot

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| Parameter | Baseline |
| Form factor / Mass | 1U CubeSat (10×10×10 cm) / 1.2 kg |
| Orbit & Launch | 400 km circular, 51.6° inc. via ISS deploy (UNOOSA KiboCUBE) — launch cost €0 |
| Primary Payload | 5 MP visible‑light camera + NVIDIA Jetson Nano (edge‑AI image analytics) |
| Comm Link | UHF 437 MHz downlink (9 600 bps) / VHF 145 MHz uplink (1 200 bps) — amateur bands |
| Ground Segment | New SatNOGS station on KIU roof (DIY rotator + SDR) + global SatNOGS network |
| Mission Duration | 24 months (natural re‑entry < 3 yrs) |
| Total Hardware Budget | < US$20 000 (satellite \$13k + ground \$1.5 k + tests \$3 k buffer) |

# 3. Innovation Highlights

• \*\*AI at the Edge\*\* – First Caucasus‑region satellite running on‑board convolutional neural networks to detect vegetation and cloud cover; down‑links compressed insights rather than bulky imagery.

• \*\*Ultra‑low‑cost Architecture\*\* – Entire spacecraft built from commercial off‑the‑shelf (COTS) parts; leverages proven CubeSat heritage while slashing cost 10× versus traditional smallsats.

• \*\*Open‑Source Ground Segment\*\* – Integrates SatNOGS, GPredict and GNU Radio; station becomes a permanent research asset and national STEM showcase.

• \*\*Hands‑on Workforce Development\*\* – 40+ KIU students across CS, EE and Physics will earn direct flight‑hardware experience; curriculum modules feed into long‑term aerospace degree pathways.

# 4. Technical & Programmatic Readiness

\*\*Heritage Parts:\*\* 1U structure, EnduroSat EPS, CC1120‑based radio, Jetson Nano have prior space use.

\*\*Mentor Network:\*\* Turkish TÜBİTAK UZAY (TVAC/vibe labs), Libre Space Foundation (ground comms), Kyutech BIRDS alumni (CubeSat integration).

\*\*Schedule Confidence:\*\* 24‑month Gantt built; long‑lead items (structure, EPS) ordered in Month 1.

\*\*Risk Mitigation:\*\* Dual watchdogs, passive thermal, redundancy in comm beacon, battery heater.)

# 5. Budget & Co‑Funding Opportunity

Baseline hardware funds (~US$15 k); seeking \*\*US$25 k supplementary support\*\* for environmental testing, student stipends, and outreach. Sponsors receive logo on flight hardware, data access, and speaking slots at Georgia Space Day.

# 6. Call to Action

We invite KIU leadership, the Georgian Innovation & Technology Agency (GITA), and international partners to endorse and co‑finance SakSat‑1. A memorandum of understanding template is ready. With your support we will assemble flight hardware by Q2‑2026 and launch in 2027, making Georgia the region’s next space‑faring nation.