

How Rwanda is establishing itself as a host for cutting-edge ground stations

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In the rapidly advancing realm of space technology, Rwanda is emerging as a significant player in the global space value chain. Spanning satellite upstream operations, satellite ground station (midstream), and space applications & services, the Rwanda Space Agency (RSA) leads the country's efforts and guides the nation's progress in the sector. This initiative underscores Rwanda's commitment to leverage space technologies for socio-economic development and positions it as a key player in the evolving African space landscape.

Strategic decision-making in RSA investments initiatives

RSA has made informed decisions to invest in ground-based space infrastructure, an initiative aligning with Rwanda's vision to spearhead inclusive and sustainable growth in strategic sectors. Additionally, it addresses the needs of the burgeoning African space industry. In 2024, Euroconsult estimates that the revenues from the Earth Observation data segment and Value-Added Services (VAS) alone will reach \$5.6 billion. Additionally, significant revenues are anticipated from operating space missions (Telemetry, Tracking, and Control) and hosting private ground stations (teleport services). As of January 2024, the World Teleport Association (WTA) lists only three WTA member teleports and one WTA certified teleport in Africa, with none certified in Sub-Saharan Africa, underscoring the opportunity for Rwanda.

Groundbreaking Teleport facility

RSA is planning to unveil its cutting-edge teleport facility, equipped with multiple ground stations.

Among its features is a substantial 9.3-meter diameter antenna, specially designed for optimal performance: In the S-band, the gain-to-noise (G/T) ratio is 21.5 dB/K, reaching an even higher 36.0 dB/K in the X-band. This ratio signifies the antenna's efficiency in receiving signals while minimizing background noise, ensuring optimal performance across frequencies. Additionally, the Effective Isotropic Radiated Power (EIRP) measures 60 dBW, highlighting the antenna's unique ability to transmit signals with extensive power.

These metrics demonstrate how RSA's antenna allows for a strong and reliable command link for lunar missions and enables the fast download of critical data to support priority sectors such as agriculture, urban

planning, disaster management, and climate change.



The 9.3m diameter ground station installed at the Teleport Site

The Eastern Province's unique positioning

Situated in the Equatorial zone, RSA Teleport enjoys a strategic advantage in direct satellite communication. This geographical positioning is unique for specific Space missions such as lunar

missions due to its proximity to the Equator. Moreover, the Eastern province is ideal due to its relatively low level of precipitations, thus enhancing efficiency and responsiveness in space-based activities, offering strategic locations with a clear line of sight for satellite communications and other space missions.

Rwanda's contribution to advance space technology and global goals

An increasing number of entities have expressed strong interest in utilizing Rwanda's infrastructure to support their space missions and hosting their satellite ground stations at RSA's teleport. This trend emphasizes Rwanda's emergence as an ideal host for space-based projects with significant global impact potential.

This development reflects the nation's dedication to scientific and technological progress and a commitment to advancing innovation to address Rwanda's challenges. It also aims to contribute to Sustainable Development Goals (SDGs) and other global objectives, such as mitigating global warming and space sustainability.

End.

About Rwanda Space Agency: RSA was established with the mission of developing Rwanda's space sector towards social-economic development. RSA actively formulates and implements comprehensive space policies and strategies with main goal of fostering an environment that optimally harnesses the potential of space capabilities to realize both national and global objectives. This includes contributing to the sustainability of space activities and providing downstream support for socio-economic clusters while tackling pressing challenges such as climate change.

This is accomplished through collaboration with various stakeholders

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