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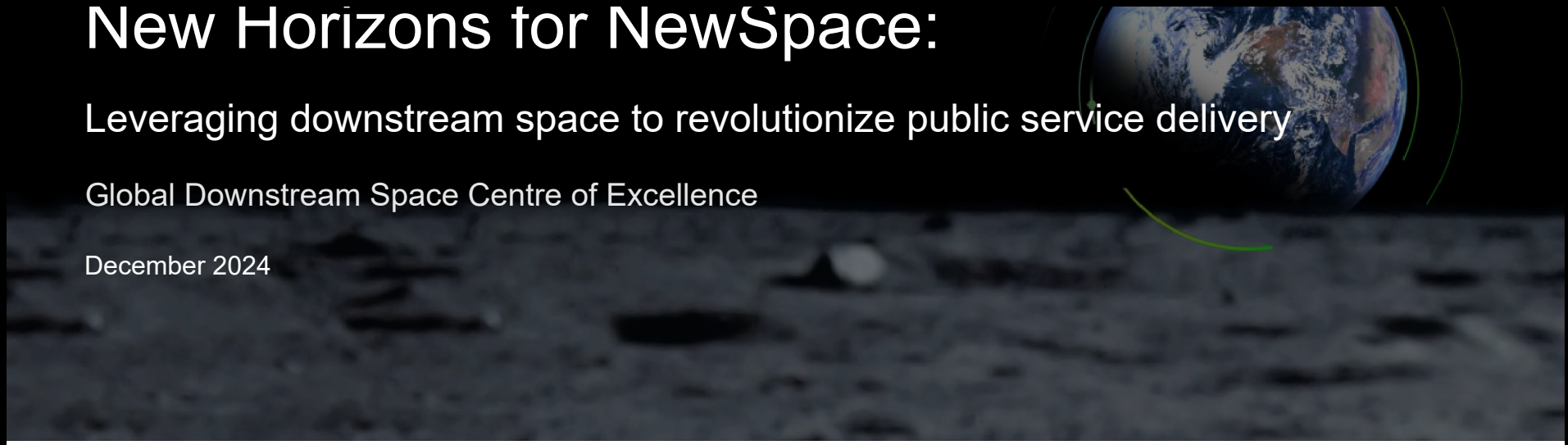
New Horizons for NewSpace:

Leveraging downstream space to revolutionize public service delivery

Global Downstream Space Centre of Excellence

December 2024



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Introduction

Satellite technology is no longer the domain of large government agencies niche scientific missions. Over the past two decades, it has evolved into a cornerstone of modern governance, providing

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The New Frontier for Public Services

In the 2000s, satellite capabilities were limited. Earth Observation (EO) satellites offered only basic imagery, GPS accuracy was in the tens of meters, and Satcom bandwidth was narrow and inconsistent. The costs of satellite services were prohibitively high, with few players dominating the industry.

Complex infrastructure and specialized expertise were required to process the data, creating significant barriers to entry for many public bodies.

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imagery (enough to count the players on a cricket field), precise positioning better than 1 meter, and reliable global coverage. Large constellations ensure continuous monitoring and connectivity, enabling governments to access real-time data for critical applications. Costs have also fallen dramatically, making satellite services accessible to a broader range of users. Cloud-based systems and automated platforms have further simplified data processing, unlocking the potential for seamless integration into public sector operations.

The shift from a government-dominated space sector to one that incorporates private innovation is driving this transformation. "Space Data-as-a-Service" models are now enabling governments to access satellite data that is affordable, customizable, and regular. The space economy is expected to grow to $1.8 trillion by 2035, and private companies are delivering high-quality data directly to their customers, ensuring that even smaller nations and sectors can benefit.

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With these advancements, satellite technology has become the backbone of modern governance—enabling global connectivity, precise positioning, and reliable observation. It empowers public bodies to make informed decisions, deliver essential services, and transform their operations for the benefit of citizens worldwide.

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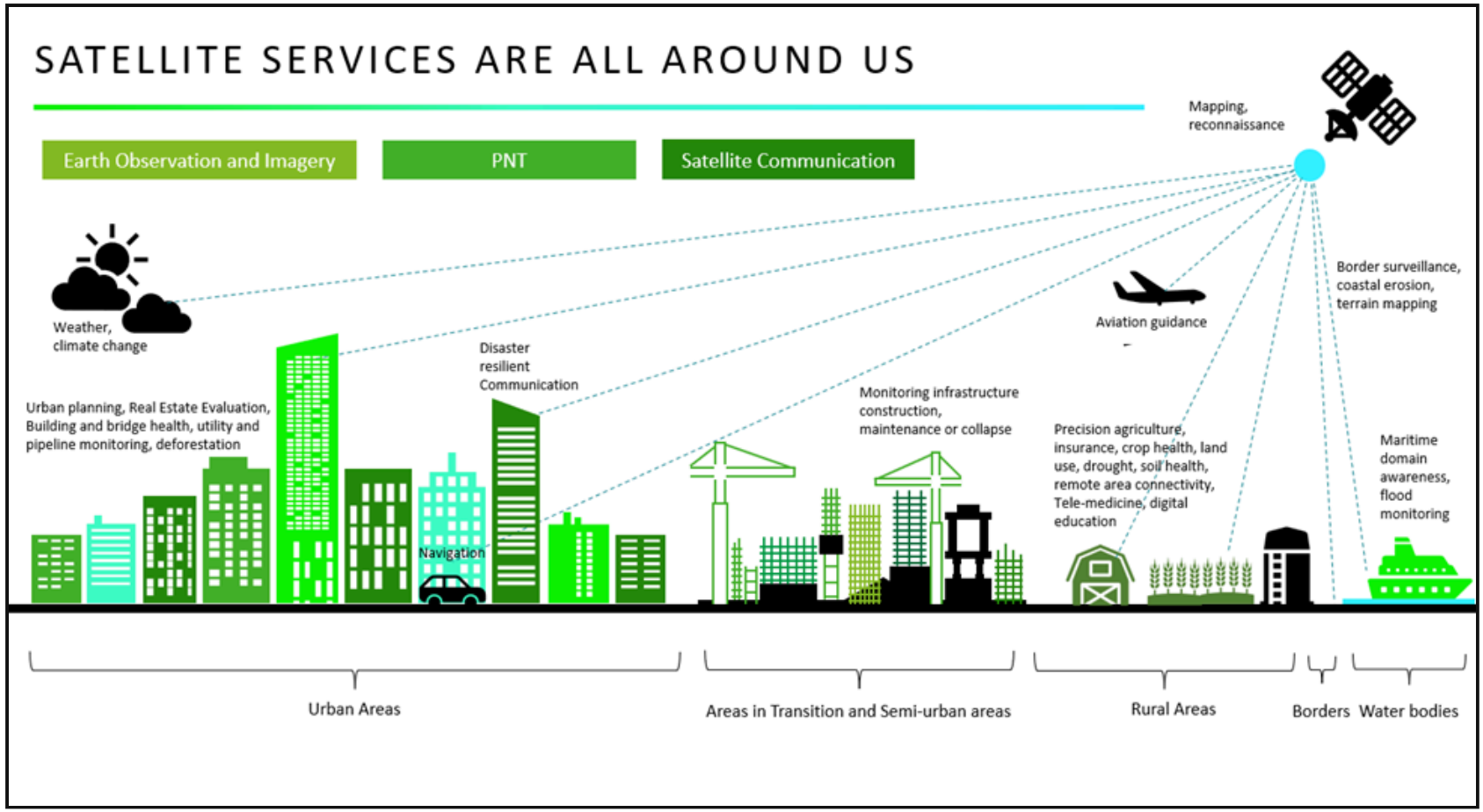
transformation across public services.



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land encroachments and monitoring deforestation to enhancing urban planning, satellite-enabled systems ensure compliance and efficiency in public administration. In public safety, automated anomaly detection and geospatial tools help secure critical infrastructure and respond rapidly to emerging threats.

Resilience Against Emerging Threats

Satellite technology helps to ensure preparedness for natural disasters, supply chain disruptions, and health crises. By amalgamating weather monitoring, environmental analysis, and AI, governments can predict vulnerabilities such as flooding, disease outbreaks, and resource scarcity. During emergencies, satellite communication ensures connectivity in remote or disaster-prone areas, enabling rapid response and recovery efforts.

Fostering Balance

Governments can leverage satellite data to harmonize economic growth with environmental sustainability. Advanced systems provide precision analytics for supply chain optimization, sustainable agriculture, and resource management. By monitoring crop health, identifying irrigation needs, and tracking environmental impacts, governments can ensure the equitable use of resources while protecting ecosystems and meeting climate goals.

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commodity prices, and accelerate insurance claims after disasters. For environmental protection, customized monitoring helps detect illegal activities like deforestation or unregulated mining, ensuring regulatory compliance and ecosystem preservation. In border and maritime security, persistent satellite surveillance prevents unauthorized activities like smuggling and illegal fishing, even under adverse conditions.

Driving Transformation

Satellite technology is at the heart of transformative governance, offering innovative solutions across taxation, logistics, and public services. By utilizing satellite imagery, governments can maintain accurate property records, streamline tax collection, and minimize revenue losses due to evasion. In transportation, satellites optimize traffic flow, reduce congestion, and enable efficient freight movement, significantly improving mobility in urban areas. In healthcare, satellite connectivity supports telemedicine, bridging gaps in remote and underserved regions. For instance, doctors in urban centers can provide real-time consultations and diagnostics to remote patients, ensuring equitable access to quality healthcare.

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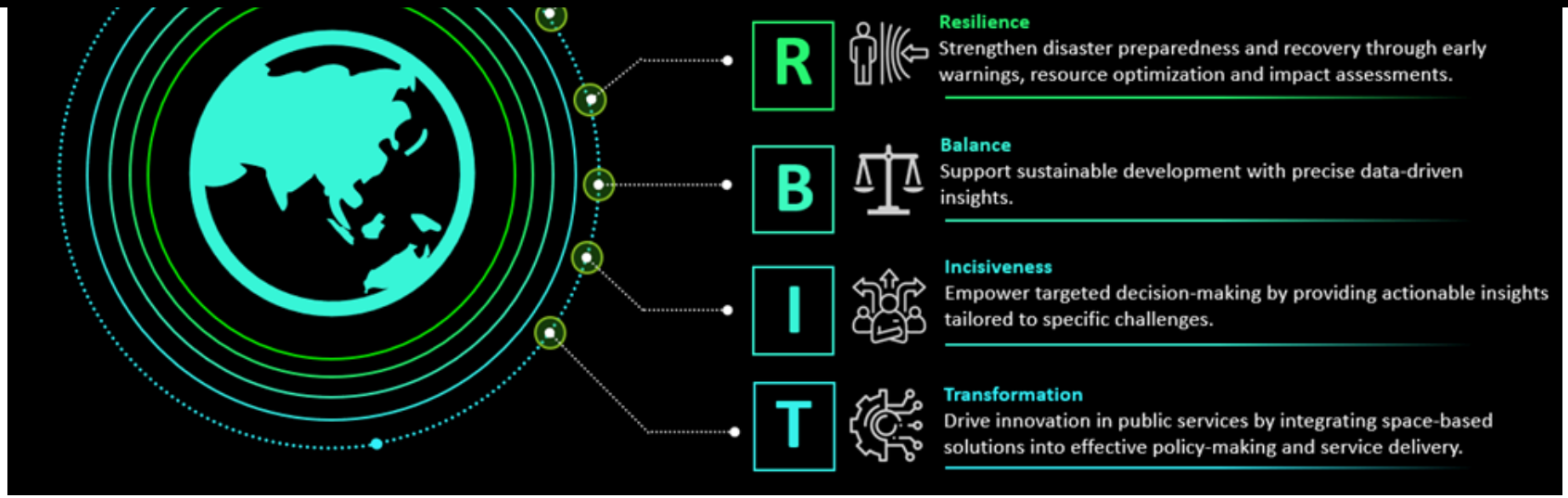

Adoption Pathways: Unlocking the Potential of Satellite Services

Following a structured pathway that balances technological readiness, economic feasibility, and policy alignment can help governments and public sector organisations to meaningfully integrate satellite technology into their operations. This pathway progresses from leveraging basic data services to achieving self-sufficiency with advanced satellite constellations.

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Utilization	supports value creation by enhancing data access, catalyzing innovation, and driving infrastructure investments. Governments typically follow three stages of adoption:	enabling access to satellite data for foundational use cases like monitoring and visualization. Partnerships are crucial at this stage to manage data acquisition and analysis. • **Medium to High Adoption:** Transition to “Space Insights as a Service,” where data is transformed into actionable insights for decision-making. Governments integrate satellite data into existing systems, often co-creating solutions with startups and enterprises. • **High Adoption:** Achieve “Space Constellation as a Service,” establishing indigenous capabilities for satellite development, data generation, and long-term sustainability. This stage reflects a shift toward self-sufficiency.

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strategies across multiple levels of governance to maximize impact:

local upskilling initiatives.

- **Technology:** Invest in national satellite constellations, integrate tools like GIS platforms to strengthen decision-making capabilities, and explore best practices in the processing and sharing of open-data and insights to all stakeholders.
- **Finance:** Allocate budgets to satellite technology, establish R&D partnerships, and explore innovative financing models.
- **Process:** Embed satellite solutions into existing workflows and track their impact through sector-specific KPIs.
- **Partnerships:** Foster collaborations with industries, academic institutions, and international space organizations to co-create scalable solutions.

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Source: Deloitte WEF report