

GSOA CITELE Technical Notebooks

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The CEO-driven association representing the entire satellite industry



GSOA provides a platform for collaboration between member companies involved in the satellite ecosystem globally and a unified voice for the sector

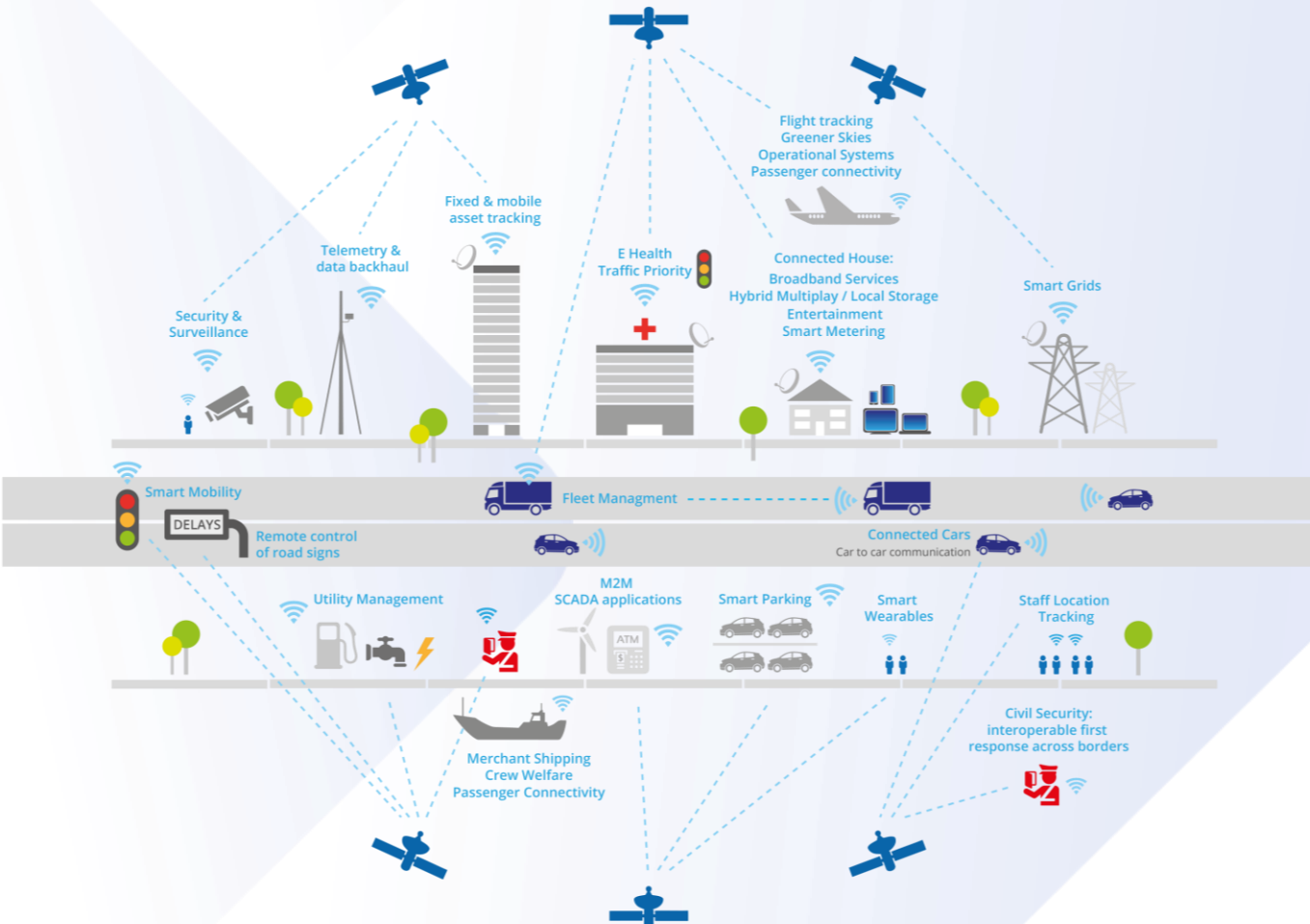
Prior work: Roundtables and workshops in satellite innovation:

- ITU-D: Study Group 1 (Q1/1, Q3/1, Q5/1)
- CITEL 44th Meeting of PCC.I in May 2024 (Panama)
- CTU in May 2024 (Jamaica)

ADMINISTRATIONS SHOWED INCREASING INTEREST IN DEEPENING THEIR KNOWLEDGE ON SATELLITE TECHNOLOGY, SOLUTIONS AND POLICIES.

- 45th PCC.I Meeting in João Pessoa, Brazil: Approval of resolutions that designated GSOA to lead the development of two Technical Notebooks:
 - “From core principles to cutting-edge solutions advances in satellite connectivity technology & operations”
 - “Satellite regulatory frameworks and best practices”
- 46th PCC.I Meeting in Asunción, Paraguay: GSOA presents the first draft of this documents.

“From core principles to cutting-edge solutions: Advances in satellite connectivity technology & operations”



SCOPE:

- Gather information from existing & future services, aiming at informing administrations of the core principles of satellite as well as the cutting-edge innovations happening in the industry and together with other technologies.
- Leverage all satellite capabilities in all orbits, to help connect the unconnected and deliver universal connectivity around the globe.

- 1. Introduction:** History of the satellite industry and technology
- 2. Fundamentals of Satellite**
 - a. Mechanics of Satellites
 - b. Orbits
 - c. Launching a Satellite
 - d. Ground Segment
 - e. End of life
- 3. Spectrum**
- 4. Broadcasting**
 - a. TVRO
 - b. Terminals and associated technology for BSS
- 5. Connectivity**
 - a. Broadband
 - b. Mobile Backhaul
 - i. Open Radio Access Networks
 - c. Community Internet and Shared Infrastructure
 - d. Earth Stations in Motion (ESIM)
- 6. Other satellite applications**
 - a. Position, Navigation, Timing
 - b. Earth Observation (weather, radar, imagery)
 - c. Scientific Applications

7. New Technologies

- a. Non-terrestrial Networks – NTN
 - i. Multi-orbit Satellites networks
- b. Software-defined Satellites
- c. Advances in Ground Segment
 - i. Small form factor terminals
 - ii. Phased array electronically steered antennae
- d. Inter-satellite Links
- e. Life Extension and In-orbit Servicing
- f. Artificial Intelligence / Machine Learning
- g. Quantum Technologies

8. Services & Use Cases (Case Studies)

- a. Mobility
- b. Education
- c. Health
- d. Financial Inclusion
- e. Agriculture & Farming
- f. Fisheries & Aquaculture
- g. Oil, Gas & Mining
- h. Early Warning, Environmental Monitoring & Climate Change
- i. Emergency Response Services

9. Conclusion

Title: Broadband Hotspots Across Mexico

Country: Mexico

Band: Ka-Band

The Challenge: According to the National Statistics and Geography Institute of Mexico (INEGI), only 66.4% of the households in the country had access to broadband in 2021, and in states like Chiapas only 32.6% of the rural population had internet access.

The Solution: The Mexican federal agency CFE Telecomunicaciones e Internet para Todos (CFE TEIT) have selected different satellite operators to deploy broadband hotspots as part of the Federal Government initiative “Internet para todos” (Internet for everyone). Proposed a fully managed solution to the CFE TEIT, which allows the federal agency to flexibly optimize bandwidth needs as demand changes while reducing the cost and complexity of delivering satellite connectivity.

The Impact: Just one operator has enabled more than 2.000 hotspots to benefit communities across the entire Mexican territory by providing free Internet access in public areas. These Wi-Fi hotspots are installed in strategic places such as public squares, community spaces, schools and hospitals throughout the country to guarantee reliable Internet access for the entire population, especially for the most remote regions and underserved communities.



“Satellite regulatory frameworks and best practices”

Scope:



- Support administrations with the update of their frameworks and gathering and sharing information between administrations & industry.
- Importance that exchanging information between administrations & industry and sharing best practices is for administrations to be informed and updated with all the solutions & services that can serve the needs of the countries, their citizens and geographies.

1. Introduction

2. Public policy principles

- 2.1 Promote innovation and competition
- 2.2 Increase meaningful connectivity and close the digital divide

3. General guidelines

- 3.1 Best practices
- 3.2 Implementation guidelines
- 3.3 Rationale and benefits

4. Domestic satellite regulations

- 4.1 Overview
- 4.2 Satellite operators versus satellite service providers
- 4.3 Regulatory framework diagram

5. Satellite authorizations

- 5.1 Overview
- 5.2 ITU coordination and registrations
- 5.3 Satellite-level licensing
- 5.4 License duration and renewal

6. Service licensing

- 6.1 Satellite services licensing
- 6.2 Internet connectivity: general public vs enterprise
- 6.3 IoT
- 6.4 D2D
- 6.5 GMPCs MSS
- 6.6 New technology

7. Earth station gateways

- 7.1 GSO & NGSO

8. User terminals

- 8.1 Individual or site-specific license
- 8.3 Earth station in motion (esim)
- 8.4 Foreign-registered visiting/transiting terminals (esim)

9. Spectrum licensing

- 9.1 Guiding principle
- 9.2 Mechanism of spectrum assignment for satellite
- 9.3 Spectrum fees and taxes

10. Others

- 10.1 Equipment type approval (homologation)
- 10.2 Ground infrastructure and lawful intercept
- 10.3 Satellite for disaster relief and mitigation
- 10.4 Cyber security for satellite operators
- 10.5 Universal Service Funds

11. Country case studies

- 11.1 Canada

Annex I Glossary

Title: Canada Case Study: Generic Earth Station Licensing (Submitted by ISED)

This case study examines recent policy developments with regards to Canada's licensing of generic earth stations.

Country Context

Innovation, Science and Economic Development (ISED) is the Canadian federal government department responsible for spectrum management. In 2022, ISED updated its space station and earth station licensing and fee framework making a range of broad changes including the adoption of generic earth station spectrum licensing and implementing annual licence fees for all space services.

Policy Objective

The licensing framework updates announced in 2022 Decision sought to provide regulatory certainty following a period of transformation in the space industry; and to facilitate the deployment of modern satellite services for Canadians, such as broadband connectivity in rural and remote areas, and new service availability (e.g., satellite-enabled internet of things).

Regulatory Framework

ISED's licensing framework for generic Earth Station licensing derives from the [Radiocommunication Act](#) and its corresponding [regulations](#). ISED issues three types of satellite-related spectrum licences: generic earth station spectrum licences, site-approved earth station spectrum licences, and space station spectrum licences.

Benefits

Generic earth station licences reduce the regulatory burden for both the department and licensees and facilitates the deployment of modern satellite services. Rather than licensing user terminals and other generic-type earth stations individually, only a single licence is now required for numerous earth stations. Licensees pay one annual fee for all captured

Next Steps

ISED continues to monitor the industry and consult with its stakeholders on licensing updates as needed. In 2024, ISED released its [Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite](#)

Virtual Calls to gather input and use cases on both notebooks:

- **Wednesday, May 21, 2025, from 10:00 a.m. to 11:00 a.m. (EST, Washington, D.C. time):** “Satellite regulatory frameworks and best practices”
- **Thursday, May 22, 2025, from 10:00 to 11:00 a.m. (EST, Washington, D.C. time):** “From core principles to cutting-edge solutions advances in satellite connectivity technology & operations”
- **Second call:** June
- **Final Call:** July
- **Presentation Final Technical Notebooks:** August 47 Meeting of PCC.I, Chile
+ GSOA Workshop on “EXPANDING SATELLITE CONNECTIVITY TO BRIDGE THE DIGITAL DIVIDE IN THE AMERICAS”



THANK YOU!

