SATELLITE COMMUNICATIONS AND THE ASIA-PACIFIC INFORMATION SUPERHIGHWAY

Presentation to the Asia-Pacific Information Superhighway Steering Group Meeting

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United Nations and Outer Space
United Nations and Outer Space

- Beginning of the Space Age with the launch of Sputnik in 1957
- **Question:** How can we assure that all humankind will benefit from peaceful uses of outer space?
- Establishment of the **United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)** in 1958
United Nations and Outer Space

UNCOPUOS

UNISPACE Conferences

United Nations Treaties and Principles on Outer Space and related General Assembly resolutions

Space solutions for the world's problems

Space Objects Register

United Nations Programme on Space Applications

Space Law

UN-Space

Programme on Space Applications

12 December 2017

Asia-Pacific Information Superhighway Steering Group Meeting
Regional Space Applications Programme for Sustainable Development for Asia and the Pacific (RESAP)
Space Benefits

Global Communications

Satellite TV

Positioning and Navigation

Weather Forecasts

Environmental Observation

Technology Development

Science

Research

Exploration
Areas of Work

- Macroeconomic Policy, Poverty Reduction and Financing for Development
- Trade, Investment and Innovation
- Transport
- Environment and Development
- Information and Communications Technology and Disaster Risk Reduction
- Social Development
- Statistics
- Subregional activities for development
- Energy
RESAP Activities (2012-2017)

Asia-Pacific Plan of Action for Space Applications (2018-2030)
2030 Agenda for Sustainable Development

See https://sustainabledevelopment.un.org
Regional Road Map / SDG Reports
Asia-Pacific Plan of Action for Space Applications (2018-2030)

By 2030, all countries in the Asia-Pacific region can access and use space science, technology and their applications to the fullest extent to meet their individual and regional needs for achieving the goals set out in the 2030 Agenda for Sustainable Development.
Mission

ESCAP, together with its member countries and the RESAP network, will work towards this vision by implementing the **Regional Space Applications Programme for Sustainable Development (RESAP)** as the Asia-Pacific region’s central framework for the coordination and strengthening of regional space cooperation in support of the Regional Roadmap for Implementing the 2030 Agenda for Sustainable Development.
Implementation

- Through the concerted efforts of the RESAP network
- Policy and technical advice through annual sessions of the Intergovernmental Consultative Committee (ICC)
- Endorsement through annual sessions of the ESCAP Commission
- Review and mandate for the overall strategy and for a set of staggered four-year work/implementation plans through Ministerial Conferences on Space Applications for Sustainable Development in Asia and the Pacific to be held in 2018, 2022, 2026 and 2030
Satellite Communications
Satellite Communications - GEO

- Geostationary Orbit (GEO) - 35786 km
- Global coverage possible with 3 satellites
- High bandwidth

Thuraya – Boeing Geostationary Satellite Platform for Mobile Communications
Satellite Communications - LEO

- Constellations
- Low Earth Orbit (LEO) – up to 1200 km
- Low latency
- Small user terminals
- High bandwidth
Satellite Communications - Economy

INTRODUCTION TO THE SATELLITE VALUE CHAIN
OVERVIEW OF THE COMMERCIAL SATELLITE VALUE CHAIN IN 2016

UPSTREAM
≈ 30 COMPANIES
MANUFACTURING: $4.9B
5Y CAGR: +8.6% EBITDA: <10%

≈ 10 COMPANIES
LAUNCH: $2.5B
5Y CAGR: +10.4% EBITDA: <10%

DOWNSTREAM
≈ 50 COMPANIES
OPERATIONS: $14B
5Y CAGR: +0.7% EBITDA: 50-80%

≈ 5,000 COMPANIES
SERVICE: $228B
5Y CAGR: +7.0% EBITDA: 5-30%

$250 BILLION
Cumulated turnover
7% 5-year CAGR

EO 2%
SATELLITE COMMUNICATIONS 60%
SATELLITE NAVIGATION 38%

3% UPSTREAM
97% DOWNSTREAM

Figures include commercially-active companies with at least 1 satellite in operation or under construction; satellites equal to or greater than 50kg.

THE SATELLITE VALUE CHAIN
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Latest Developments

- **High Throughput Satellite (HTS) Technology**
  - Reducing cost per bit through frequency re-use and spot beams
  - >100 Gbit/s, >1.34 TBps of capacity by 2020
  - Provide broadband Internet access service (point-to-point)

- **Upcoming High-bandwidth LEO Constellations**
  - One Web, 900 satellites, presently under construction, launch 2020
  - StarLink (SpaceX), 7500 satellites, presently under construction, launch 2020
Examples

See http://www.oneweb.world
Satcom Considerations

- Satcom complements land-based terrestrial fibre and sea-based submarine cable
  - 375 telecommunication satellites launched 2007-2016
  - 1000s to be launched in the coming years
- Attractive solution for unserved and underserved areas, including in landlocked countries and small island states
- Satcom enhances network resilience and provide alternative means for emergency communications
Satcom and AP-IS

- Role of satcom for Asia and the Pacific region and the convergence of ICT and space technologies was considered in
  - Information, communication and space technology applications for the achievement of the Millennium Development Goals and the goals of major World Summits: trends, challenges and issues (E/ESCAPMCSA(3)/SO/2), 17 November 2006

- No reference to the role of satcom in
  - Master Plan for the Asia-Pacific Information Superhighway (E/ESCAP/CICTSTI(1)/2)
  - Asia-Pacific Information Superhighway Regional Cooperation Framework Document (E/ESCAP/CICTSTI(1)/3)
Proposal

- To consider the complementary role of satellite communications for the Asia-Pacific Information Superhighway

- To review
  - State of the art
  - Synergies with land- and sea-based solutions
  - Role of the private sector
  - Regulatory aspects

THANK YOU!

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