

Trends in satellite communication development and challenges for spectrum managers

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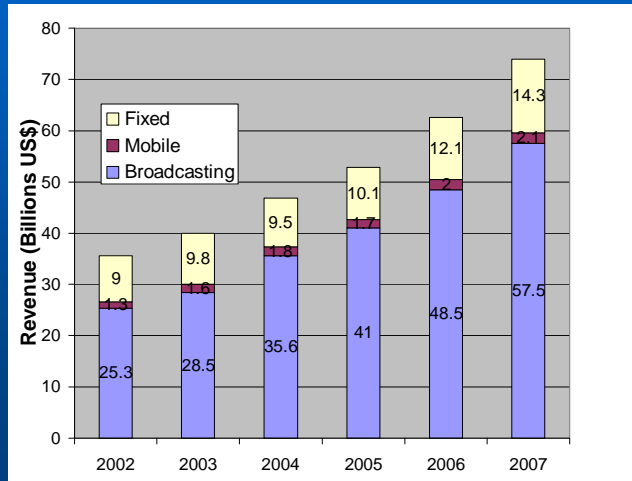
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Introduction

- Current state and
- trends in satellite services development
- International spectrum management for satellite services
- BR activity

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Current state



2007

73.9 billions US\$
250 satellites
Around 22 new satellites
each year (FAA)

Futron Corporation, SIA

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Current state

● Mobile satellite service (MSS)

System name	Service area	Constellation	Services
Orbcomm	Global	30 non-GSO	Data, remote control
Inmarsat		4 GSO	Voice, data
Globalstar		40 non-GSO	
Iridium		79 non-GSO	
Thuraya	Reg 1&3	3 GSO	

2007

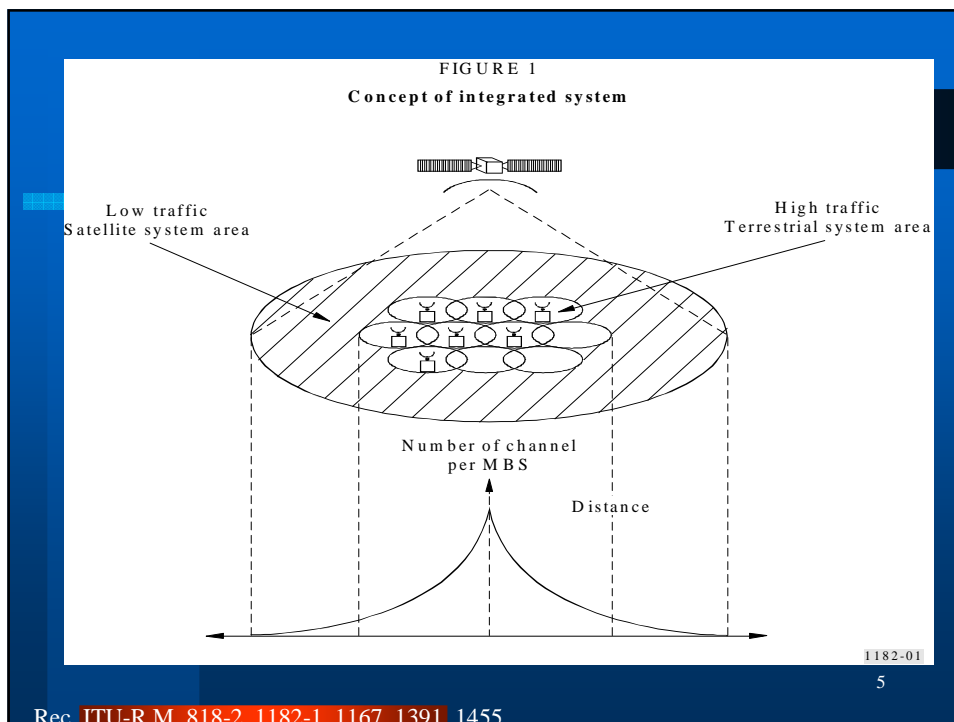
1.8 millions
users (SIA)

Maritime

Aeronautical

Land (niche)

Inmarsat-47% of
market



Trends

● MSS

- **May 2009: EC selected Inmarsat Ventures Limited and Solaris Mobile Limited to provide mobile satellite services across Europe**
- **USA- TerreStar is scheduled to launch on June 24th aboard the Ariane 5 from Launch Facility in Kourou, French Guiana**

Current state

Trends

- Ancillary terrestrial segment
- EUROPE – ONDAS, WORLD RADIO, Viatis Satellite Radio project

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ITU-R Rec. BS. 1547, BS. 774, BO.789, 1130, DSB Handbook

Current state

- Direct BSS (TV)
 - More than 120 millions of users
 - Thousands of digital TV Programs
 - Worldwide available
 - Strong competition to cable TV

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Trends

- **Direct BSS (TV)**
 - **High Definition TV (1300 channels in 2008, 350% grow by 2013)**
 - **Market Forecast (Euroconsult)- 40% of Europe in 2015**
 - **New standards: UHDTV, IP TV, three-dimensional TV (3DTV)**

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ITU-R Rec. BO. 1724, 1516, Rep. BO.2008, 2101

Current state

- **Fixed satellite service (FSS)**
 - **around 6000 transponders, 10 major operators with more than 170 satellites fleet**
 - **International trunking**
 - **TV distribution to cable TV operators (up to 52% of total capacity)**
 - **VSAT**

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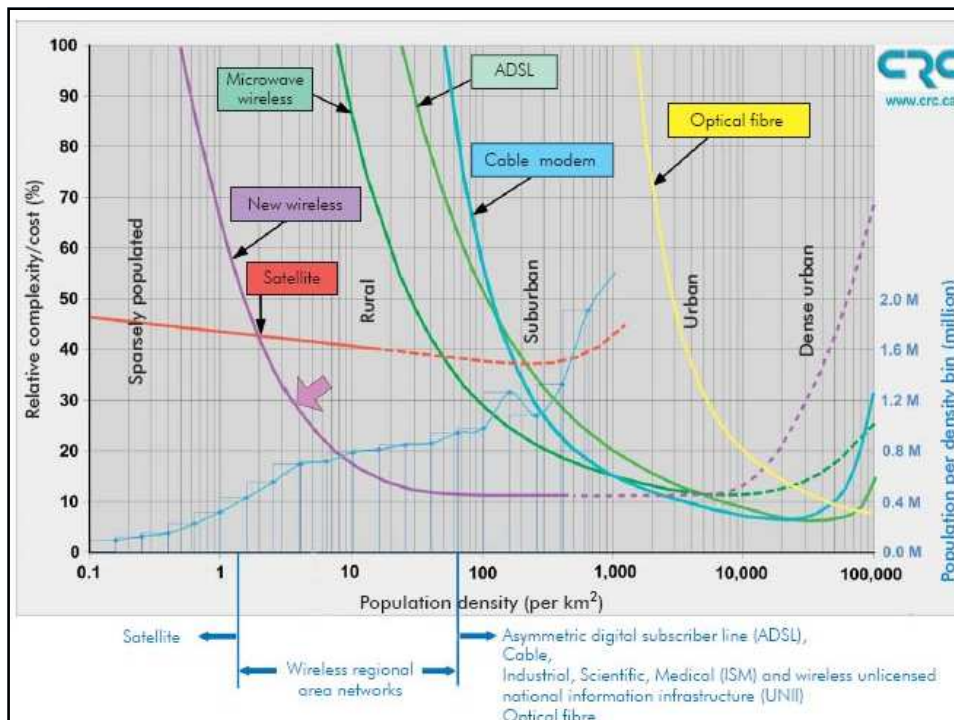
Trends

- **FSS**

- International trunking- strong competition with terrestrial (optic)
- VSAT for medium and small enterprises
- IP trunking for Internet providers
- TV distribution for cable TV operators
- IMT and WiMax Backhaul

Rec. ITU-R S.1709

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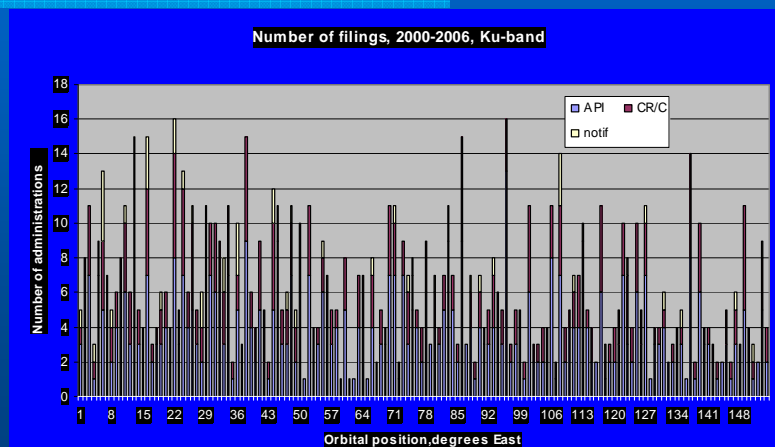


International spectrum management system

- **Current situation:**
 - Spectrum/orbit demand is growing
 - Problem of resource scarcity has arisen
 - Spectrum access is limited and complicated
 - Plan approach- national coverage limits

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International spectrum management system



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International spectrum management system

- **Non-planned bands:**
 - Example: coordination request 01.06.07, 34.5 East, C-Ku, Europe, coordination is required with 36 administrations (300 networks)
 - Coordination requirements are calculated based upon SRS date base.
 - “paper” satellites, “paper” parameters
 - ⇒ Database is not true reflection of spectrum-orbit utilisation

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International spectrum management system

- **Operational/Investment risk:**
 - uncertainty of access to spectrum under required conditions,
 - probability of interference,
 - limitations imposed on power,
 - service area etc.

Measures to improve efficiency of spectrum/orbit use!!!

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BR activity

- **EMC Symposium 2008 in Wroclaw, Poland:**
 - to update technical EMC principles which would foster orbit/spectrum sharing,
 - to adopt regulatory measures against paper satellites,
 - to improve international radiomonitoring system,

<http://www.itu.int/ITU-R/space/support/symposium/index.html>¹⁷

BR activity

- **BR seminar, Geneva, 6 May 2009**

“the international regulatory framework for registering satellite networks must be improved, and that the improved framework be operative or ready to be operative by the next WRC if ITU is to maintain its credibility and to remain fully relevant to the satellite community”

<http://groups.itu.int/Default.aspx?alias=groups.itu.int/br-ssd>¹⁸

WRC-11

- **Agenda for the Future:**
 - **1.2. ...enhancing the international regulatory framework (Res. 951),**
 - **1.13 spectrum usage of the 21.4-22 GHz for BSS,**
 - **7. ... possible changes ... recording procedures for frequencies assignments pertaining to satellite networks**

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Conclusions

- 1) SatCom prospects remain good and optimistic**
- 2) Spectrum/orbit demand grows but real/paper scarcity prevails**
- 3) Existing system for international spectrum management needs to be looked at**
- 4) Administrations have to participate actively in WRC-11 preparation**

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Questions?

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