First

Views and Interest from ISI

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Future Internet Assembly (FIA)

European Commission
Information Society and Media

SEVENTH FRAMEWORK
PROGRAMME

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European Commission
Information Society and Media
SEVENTH FRAMEWORK PROGRAMME

ISI Overview

ISI (Integral Satcom Initiative): FP7 ICT ETP for Satellite Communications

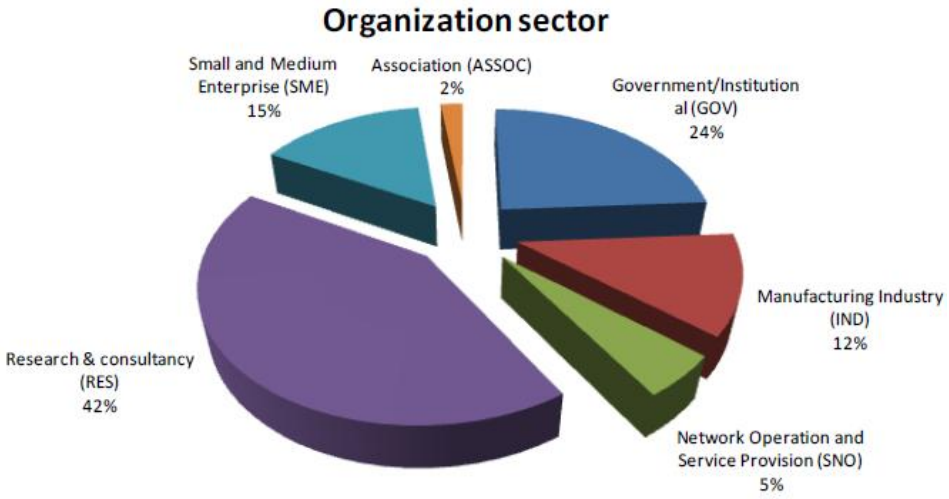
- To define the required European framework which will
  - Pave the way for development of future SatCom solutions adapted to EU needs
  - Reinforce the European SatCom industry competitiveness

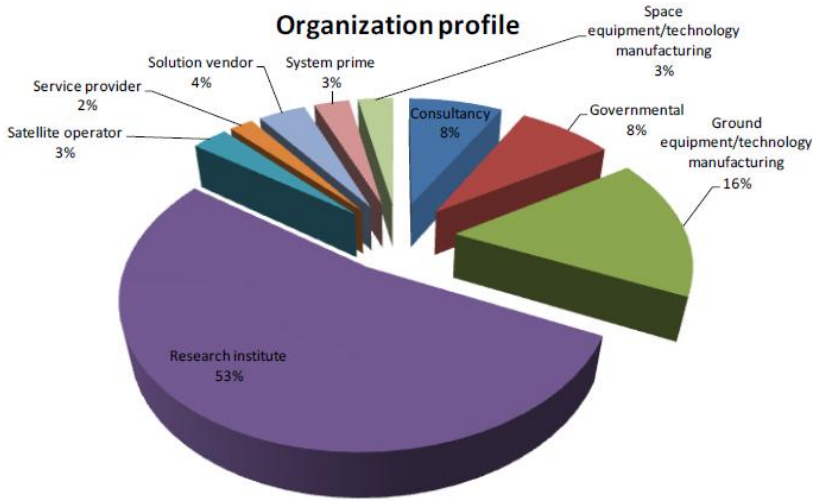
European SatCom industry: Key to sustain the whole European space industry and its strategic independent access to space

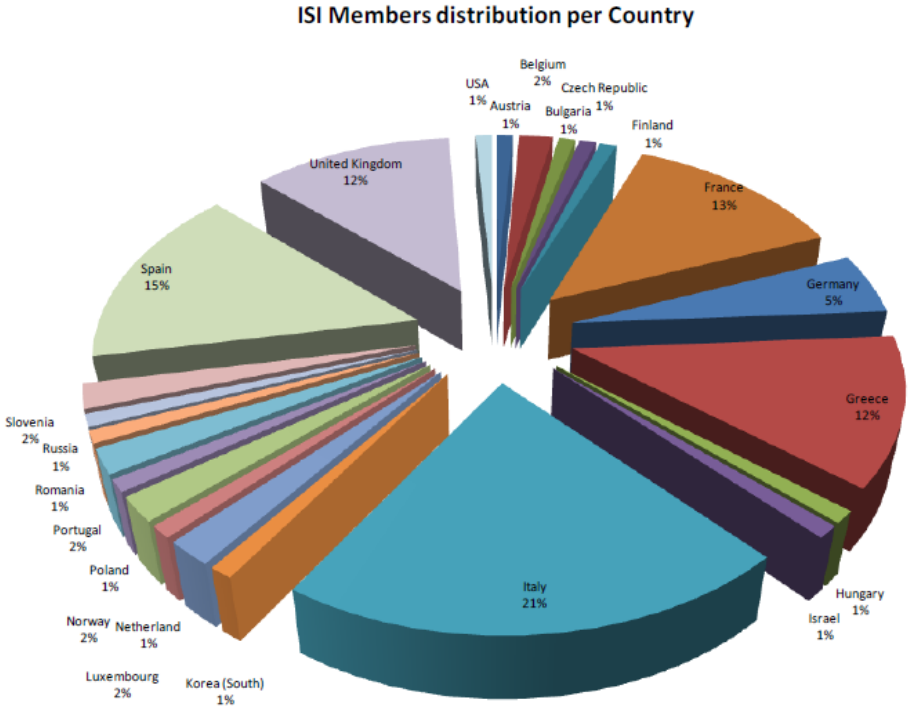
- 65% of the European satellite manufacturing industry turnover (up and down stream revenues) and employment (30000 Highly skilled jobs)
- Essential element of any global networks
  - Digital inclusion (Broadband access), Security and Defense, Network electronic media (> 77 Million Households in Europe)
- Driving force for technologies development, applicable to all industrial sectors
- Satellite industry is a worldwide high technology market

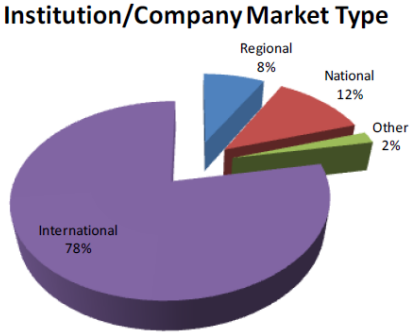
ISI Membership Composition

- **200+** members representing **all** the European SatCom industry stakeholders

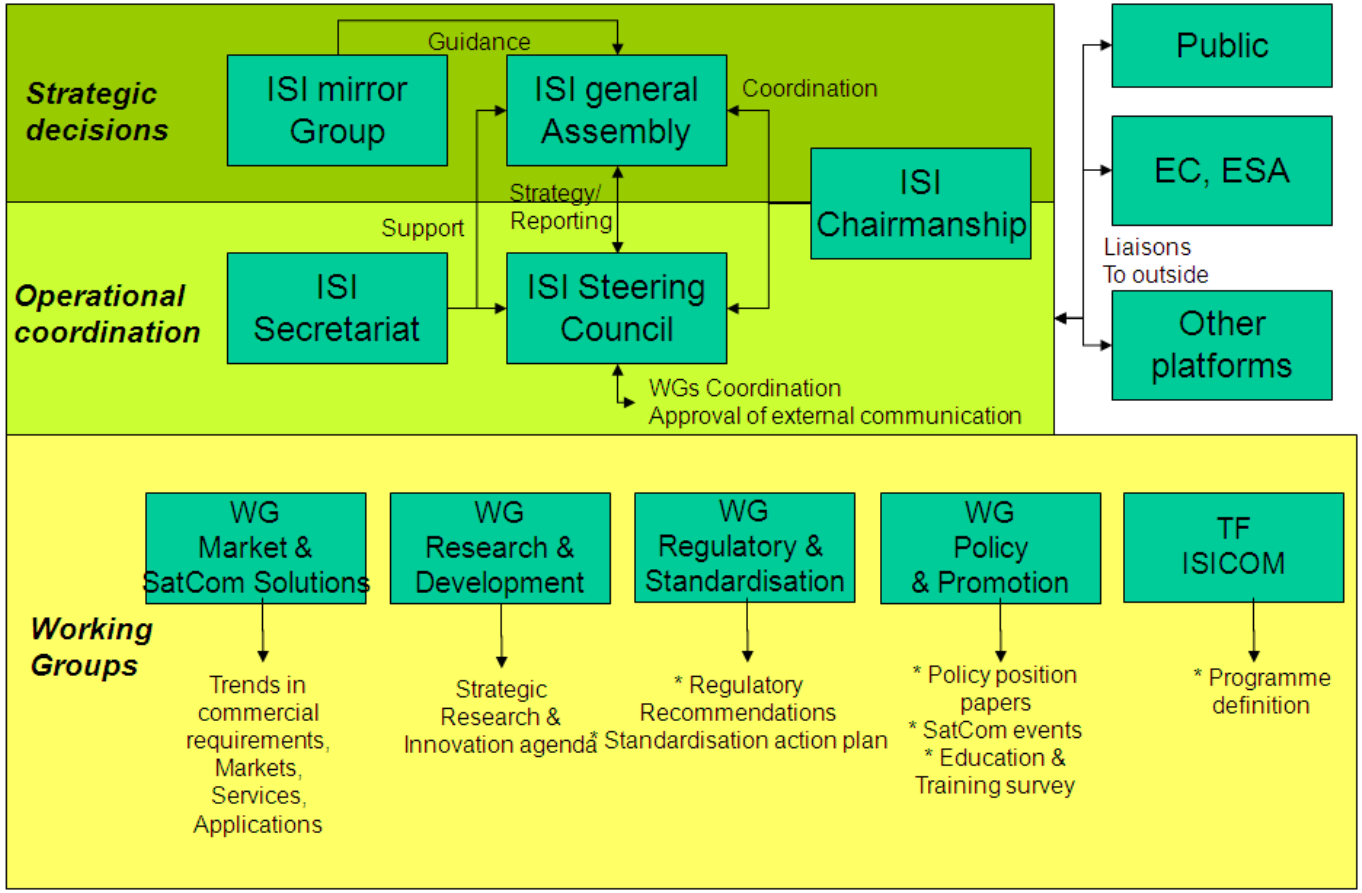








ISI Governance and Structure



ISI Chairman

Nicolas Chuberre

Thales Alenia Space

ISI Vice Chairman

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EADS Astrium

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  - ROSE Vision
  - Space Hellas
- Research Institutions and Academia (RES) Sector
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  - University of Bologna
  - University of Surrey

ISI R&D&I Capabilities & Priorities

European policy	SatCom added value	SatCom emerging solutions
Digital Agenda	Overcome the Digital/Speed divide when targeting ubiquitous broadband coverage objectives with internet speeds gradually increasing up to 30 Mbps	Powerful multi beam satellite networks, for cost optimised Very high speed broadband access in un/under-served areas
Security and Defence Policy	Improve Europe's capacity to prevent and respond to crisis or disaster situations wherever they may occur	Flexible satellite networks for global, secured and resilient communications (ISICOM initiative)
More sustainable and efficient economy	Cost effective space and time service availability for smart FI-enabled infrastructures in Content Distribution, Energy, Transport and Healthcare domains	Advanced interactive broadcast, mobile satellite systems, hybrid systems

ISI Technological Challenges & Enablers

Challenges

- **Performance**: to accommodate a larger number of users as well as higher sustainable service rate
- **Quality of Experience**: mask as much as possible the long transit delay. Simplify terminals set-up and operation
- **Cost optimization**: cost per bit, network management process, space and ground equipment production
- Satellite **Network integration** with terrestrial ICT systems
- **Flexibility**: reconfiguration of the satellite coverage, spectrum, polarization, Tx power, capacity => a way to better mitigate business risks over satellite lifetime
- **Integration with navigation and observation systems**: open the door to new services and applications enlarging the SatCom market
- **Resilience and Security** with respect to possible failure

Main Enablers

- **Space Segment**: High-Throughput, Flexibility and Reconfigurability
- **Ground Infrastructure**: Distributed Processing
- **Radio Interfaces**: Efficiency and Robustness, Innovative spectrum usage
- **Networking**: Integration and Convergence
- **Terminals**: User-Friendliness and Reconfigurability
- **Services and Applications**: Ubiquity and Dependability

SatCom in FI-enabled Smart Infrastructures (1/2)

Smart Content Distribution systems: Social inclusion

- SatCom role
  - Broadcasting and media delivery services, incl. 3D Media and Ultra HDTV, in simultaneous broadcast to large and low density populated areas
- Added value
  - Optimize Quality of Experience with services based on high resolution content format

Smart health-care systems: Public health

- SatCom role
  - Broadband connectivity provisioning in low density populated areas
- Added value
  - Assistance to patients in their homes and interconnection to hospitals and medical teams in low density populated areas

Smart systems for transport and mobility: Sustainable transport

- SatCom role
  - Alert & guidance services as well as asset monitoring
  - Broadband connectivity to trains, buses, vessels and aircafts
- Added value
  - Optimize traffic information to the public and private transport stakeholders
  - Infotainment services to railway and bus passengers

SatCom: Efficient one to many infrastructure for high quality at low cost

SatCom: complementary w.r.t. coverage gaps & terrestrial infrastructure dependability

SatCom in FI-enabled Smart Infrastructures (2/2)

Smart energy grids: Climate change and clean energy

- SatCom role
  - Monitoring from remote and/or critical remote nodes
  - Back-up critical links of the communication network
- Added value
  - Optimize the efficiency of the global monitoring and black-out management

Smart environmental information systems: Climate change and clean energy

- SatCom role
  - Data gathering from sensors deployed over a wide area (regional, national or continental), on board observation satellites or on board Unmanned Aerial Vehicles (UAV)
  - Data relay to relevant stakeholders, Alert and guidance services provisioning
- Added value
  - Real time environmental monitoring for early decision

Smart broadband access systems: Social inclusion

- SatCom role
  - Very High Speed Broadband access in low density populated areas
- Added value
  - Provide Next Generation Access service grade to all Europeans

SatCom: essential access technology for FI communication enablers to be global, reliable, resilient, trusted and secure

FI Research Priorities relevant to SatCom

- **Information-Centric Networking (ICN)** (or **Content Centric Networking, CCN**):
  - Rather than interconnecting pair of end hosts, FI networks will evolve as a substrate for information dissemination and shall be based on named data identifiers instead of end hosts addresses.
  - Key role of SatCom broadcast/multicast nature
- **Network Virtualization**:
  - FI networks will support concurrent operation of different networks instances, Virtual Networks, over a single, shared infrastructure to enable rapid development of new architectural solutions and protocols and provide interworking facilities.
  - Key SatCom ability for overlay networking (e.g. overlay for signaling in ad-hoc network)
- **Polymorphism:**
  - FI will consist of interconnection of different networks with a large degree of architectural and technological diversity, encompassing both evolutionary and disruptive solutions.
  - Use of SatCom networks in complement of terrestrial networks makes sense
- **Networks and Services Composition:**
  - FI networks will dynamically compose to answer to specific services & applications reqs
  - Opportunity of SatCom service offers to provide a set of future composed applications (e.g., video and TV services but also data broadcasting or signaling overlay)
- **Network, Services and Context Awareness:**
  - In FI, the consumer/end user and the resources services/applications are aware of the properties, requirements, and state of the network environment, which enables self-adaptation of services/applications according to changes in network environment
  - SatCom opportunity to provide a way of load balancing between networks for stringent applications such as video

ISI Potential Cooperation with LATPs

- ISI is willing to identify what are the research priorities and market interest of Latin America in SatCom and to establish with interested LATPs joint working groups on SatCom technologies
- ISI offers to LATPs the opportunity to participate in the ISI General Assemblies and ISI SatCom Day events to brief on collaboration opportunities between EU-Latin America in SatCom research field
- ISI is willing to get involved in LATPs General Assemblies in order to brief on the ongoing research agenda topics and networking towards future collaborative research projects with participation of Latin American organizations
- ISI offers to National Representatives of LATPs dealing with SatCom technologies the opportunity to participate in the ISI Mirror Group constituency and operations

Thanks for your attention!

www.isi-initiative.org

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