



Information Society  
Technologies

**Satellite Communications Network of Excellence Phase II**

## **SatNEX-II**

**International Workshop on IP Networking over  
Next-generation Satellite Systems**

**Budapest, Hungary**

**Anton Donner, Executive Project Manager**



# Mission and Key Objectives



- ❑ **Overcoming fragmentation in European SatCom research through closer networking of people and organisations.**
- ❑ **Advancing European research and knowledge in satellite communications.**
- ❑ **Establishing durable integration of European research in satellite communications.**

# SatNEx-II Consortium

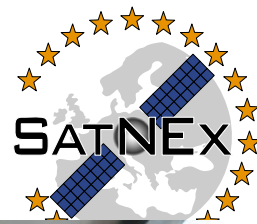


24 Partners

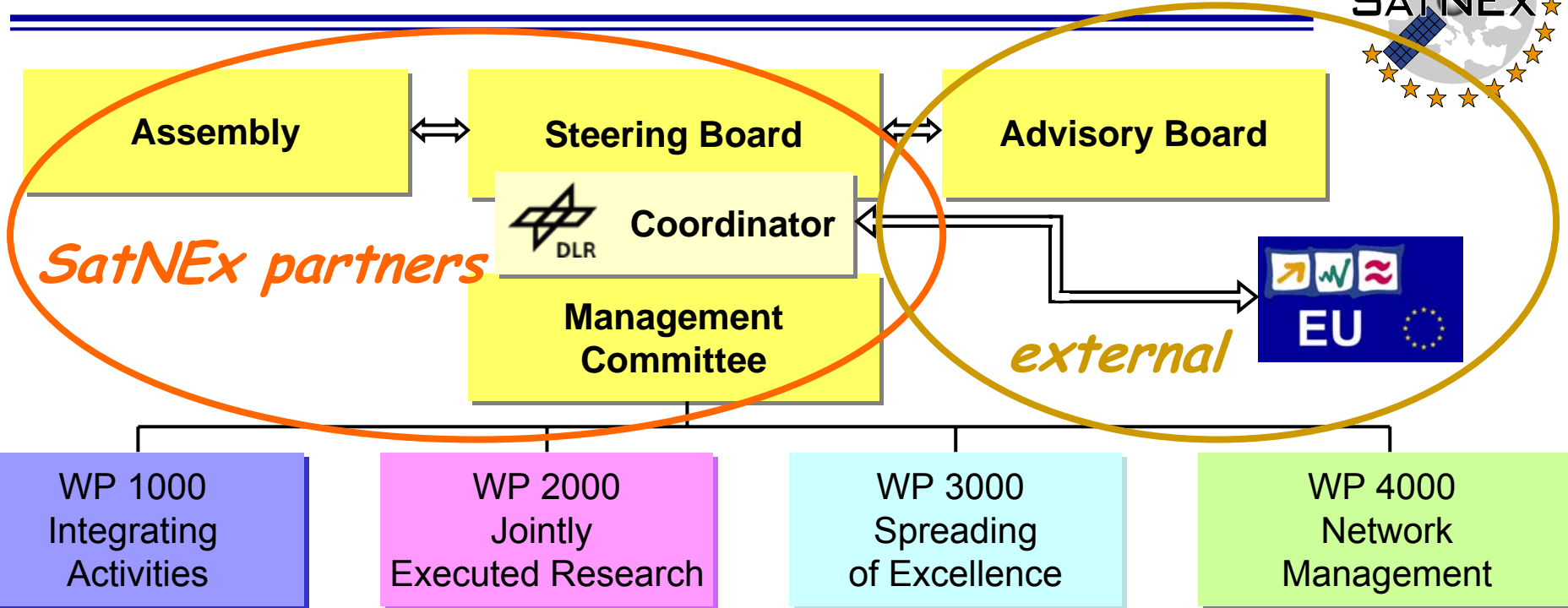
10 Countries



# People



# Management Structure

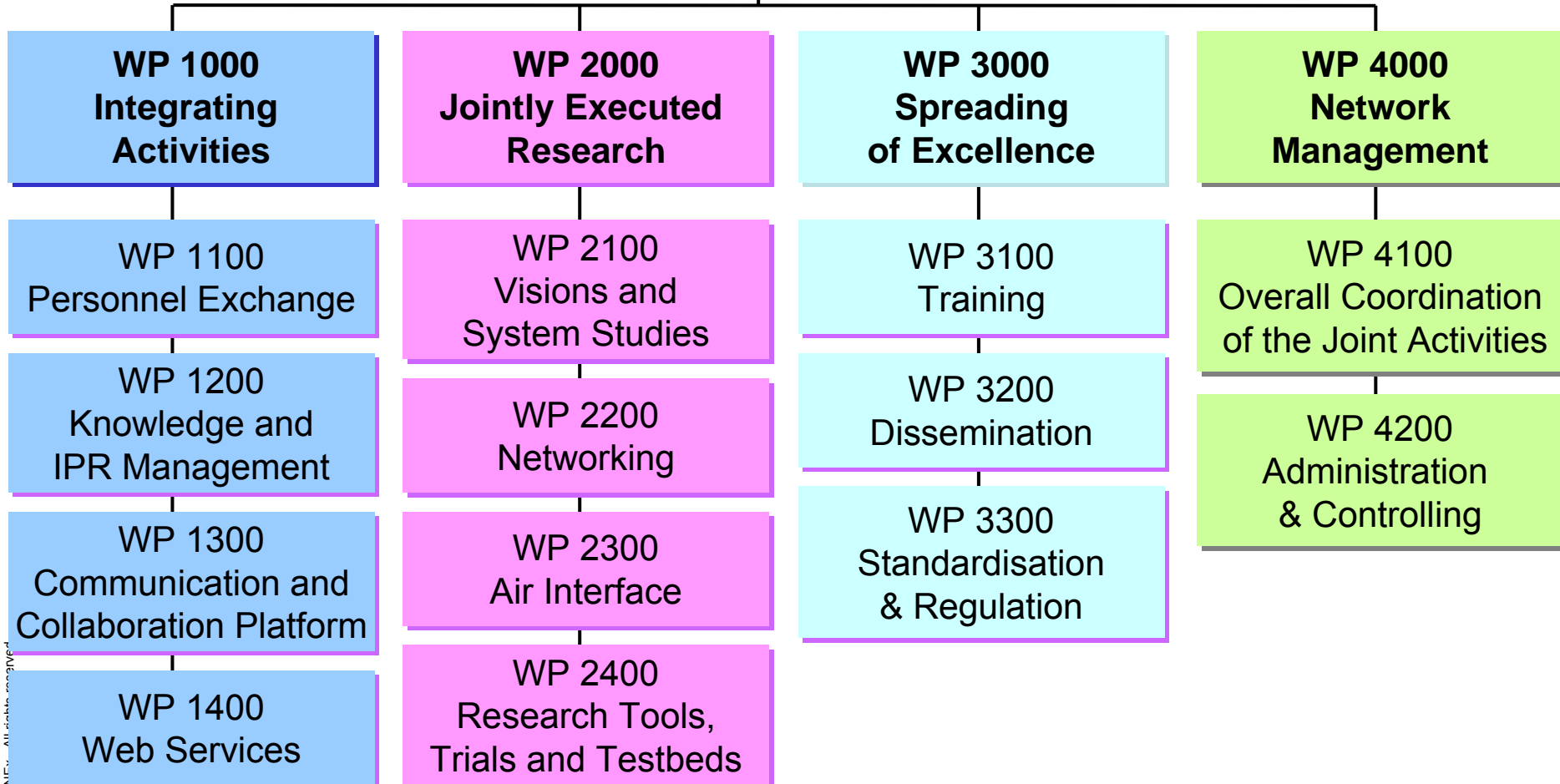


- ❑ **Steering Board:** Responsible for overall coordination of Network activities
- ❑ **Management Committee:** Composed of the leaders of the major WP streams (WP 1000, 2000, 3000, 4000)
- ❑ **Assembly:** representation from all Network partners
- ❑ **Advisory Board:** representatives from industry, operators, and standards/regulatory bodies

# Joint Programme of Activities (JPA)



## Joint Programme of Activities (JPA)



# Focussed Work: *Joint Activities (JAs)*

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- ❑ The **WPs** basically **cover the broad area** of the SatNEx field of interest: satellite communications.
- ❑ Within this field, the **concrete research** carried out in SatNEx is defined by a number of **focussed activities** – **Joint Activities (JAs)**.
- ❑ The Joint Activities (JAs) are the fundamental unit in the implementation of the SatNEx Work Programme. JAs are **horizontal lines**, generally **covering Integration, Joint Research (JER), and Spreading of Excellence**.
- ❑ A SatNEx JA is defined as a set of coherent activities and objectives. JAs are defined **flexibly and dynamically** during project lifetime.
- ❑ Joint Activities are performed by **Joint Activity Teams** established by a group of SatNEx partners.
- ❑ JAs are the **new way of cooperation** introduced into FP6 by SatNEx.

# Current Joint Activities (JAs)

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- JA-2110      **Research Strategy and Visions**
  - JA-2120      **Satellites in 3G and Beyond**
  - JA-2130      **Broadband Access Networks**
- 
- JA-2210      **Satellite Networking in Challenging Environments (EGGS)**
  - JA-2220      **Integrated Multi-Platform Systems (IMPS)**
  - JA-2230      **Cross-Layer Protocol Design**
  - JA-2240      **Network Security**
  - JA-2250      **IP-Networking Optimization**
- 
- JA-2310      **Channel Modelling and Propagation Impairments Simulation**
  - JA-2320      **Physical Layer**
  - JA-2330      **Radio Resource Allocation and Adaptation**
- 
- JA-2410      **Access, Network and Transport Layer Trials**
  - JA-2420      **Application Layer Trials**

**WP 2100**

**WP 2200**

**WP 2300**

**WP 2400**



# SatNEx Key Elements

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- ❑ **Jointly executed research (JER) by means of **Joint Activities (JAs)****
  - ▶ **Close contact to industry via regular meetings with **Advisory Board**** (representatives from industry, operators, and standards/regulatory bodies)
- ❑ **Meetings and personnel exchange**
- ❑ **Common books and publications**
- ❑ **Workshops, training activities and yearly Summer School**
- ❑ **Contribution to standardisation bodies**
- ❑ **Satellite-based communication and collaboration platform**



# WP 1300

## Communication and Collaboration Platform



- ❑ **Pan-European satellite communications platform for interconnecting SatNEX partners across Europe**
  - ▶ **Day-to-day communications**
  - ▶ **Research collaboration**
  - ▶ **Dissemination of results**
  - ▶ **Distributed distance e-learning, training**
  - ▶ **Promotion of SatCom for broadband services**
  
- ❑ **Two key scenarios:**
  - ▶ **Remote master lecture**
  - ▶ **Interactive meeting**

# SatNEx Platform Scenarios



## I - Remote master lecture



- ❑ Speaker addresses a group
- ❑ Remote attendees  
Low interactivity

Suited to broadcast

## II - Interactive meeting

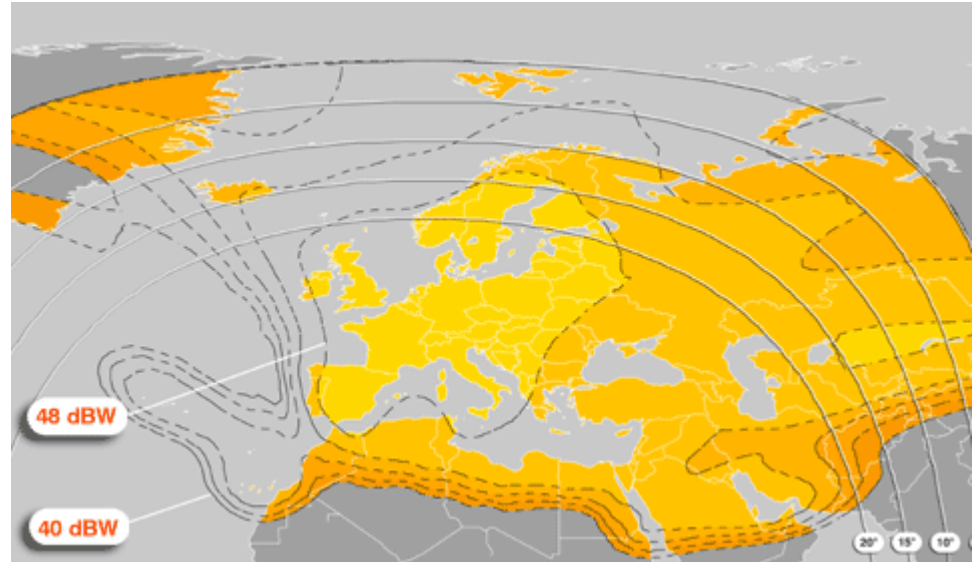


- ❑ Group presents/discusses a topic
- ❑ Foreground attendees  
Controlled changes of speaker  
Multi-point bi-directional
- ❑ Background attendees  
Low interactivity

# Platform Links



## Downlink



Source: Eutelsat

Eutelsat W3A satellite 7° East

## Uplink

- ❑ Central hub operated by Fraunhofer FOKUS
- ❑ DVB-S uplink hub (3.4m)
- ❑ IPv4 MPE gateway

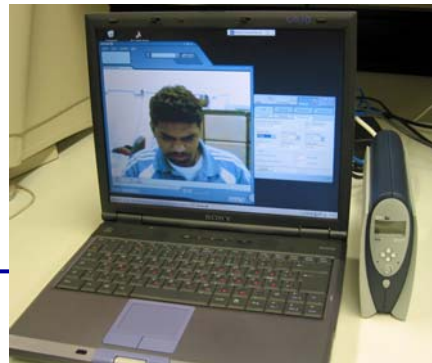
# User Terminal & Applications



1.2 m Rx antenna + LNB  
IPricot DVB-S router  
Polycom VSX 7000s terminal



VCON vPoint HD  
MacTV / Quicktime / VLC  
IP multicast streaming  
H.261, H.262, H.263, H.264  
MCU for Scenario II



# Scenario I: Remote Master Lecture



SatNEX Summer School 2006:  
Live transmission from Salzburg

MulticastVNC 224.50.50.51:8002:1062

Disconnect Options Clipboard Send Ctrl-Alt-Del

## TCP-aware resource allocation (high DBP nets)

- When a group of data sources, using TCP as transport protocol, are connected with a *master* station (NCC), a capacity allocation strategy which doesn't take into account the TCP window trend may lead to an inefficient and unfair sharing of resources.
- In DAMA, it is important to synchronize the resource requests made by the data sources on the basis of the trend of their TCP windows, in order to reduce the queuing delay and assign/remove dynamically capacity on the basis of the actual transmission state of each data source.

The diagram illustrates the DVB-RCS architecture. A satellite is at the top, connected to a Network Control Center (NCC) on the right. Below the satellite, there are two groups of Remote Call Stations (RCSTs): 'RCSTs Consumer' and 'RCST Corporate'. Blue arrows represent the 'Forward Channel' from the RCSTs to the satellite and then to the NCC. Red dashed arrows represent the 'Reverse Channel' from the NCC back to the satellite and then to the RCSTs.

**DVB-RCS architecture**

SatNEX Summerschool SimpleChat

VLC media player

Datei Ansicht Einstellungen Audio Video Navigation Hilfe

x1.00 rtp://@224.50.50.50:8004

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# WP 3000

## Dissemination

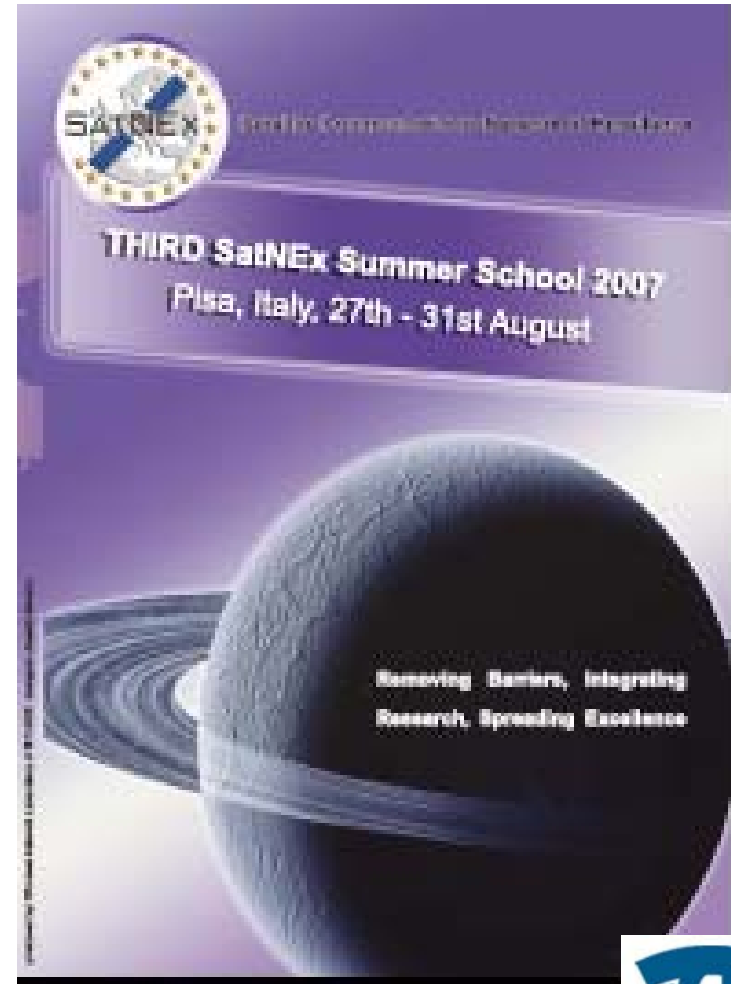


- ❑ **Giovanni E. Corazza (Ed.). Digital Satellite Communications. Series: Information Technology: Transmission, Processing and Storage. Springer, 2007, ISBN: 978-0-387-25634-4.**
- ❑ **Giovanni Giambene (Ed.). Resource Management in Satellite Networks: Optimization and Cross-Layer Design. Springer, 2007, ISBN: 978-0-387-36897-9.**
- ❑ **Laurent Castanet (Ed.). E-book: Influence of the Variability of the Propagation Channel on Mobile, Fixed Multimedia and Optical Satellite Communications.**  
**Download.**

# 3<sup>rd</sup> SatNEx Summer School 2007



- ❑ Free of charge event
- ❑ Information via a dedicated web site accessible via a link from the SatNEx Web Front Page:
  - ▶ <http://satnexschool.isti.cnr.it/>
- ❑ To be hosted by CNR Research
  - ▶ Pisa, Italy, August 27-31, 2007
- ❑ A certificate of attendance valid for 1 ECTS point will be provided to those attendees who take each daily test
- ❑ Each 6-hour day is devoted to a specific topic



# Summer School 2007 Daily Programme

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- ❑ **State of the Art and New Trends in the Physical Layer of Digital Satellite Communications**
  - ▶ Prof. G. E. Corazza (UoB)
- ❑ **Satellite Networking and Time Series Analysis**
  - ▶ Prof. Z. Sun (UniS)
- ❑ **Propagation and Packet Error Models for Mobile Wireless Channels**
  - ▶ Mr S. Scalise (DLR) & Prof. V Degli Esposti (UoB)
- ❑ **Control and Optimisation Techniques applied to Satellite Communications**
  - ▶ Prof. F. Davoli (CNIT)
- ❑ **Scheduling Technique, Access Schemes and Mobile Internet Protocols for Wireless Communication Systems**
  - ▶ Prof. G. Giambene (CNIT)



IEEE  
COMMUNICATIONS  
SOCIETY

Approval is pending



## IWSSC 2007

2007 International Workshop on Satellite and Space  
Communications

<http://iwssc2007.sbg.ac.at/>

12<sup>th</sup> - 14<sup>th</sup> September 2007, University of Salzburg,  
Austria

 UNIVERSITÄT  
SALZBURG



 **IEEE**  
AUSTRIA SECTION

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# IWSSC 2007 Conference, September 13-14, 2007, Salzburg, Austria



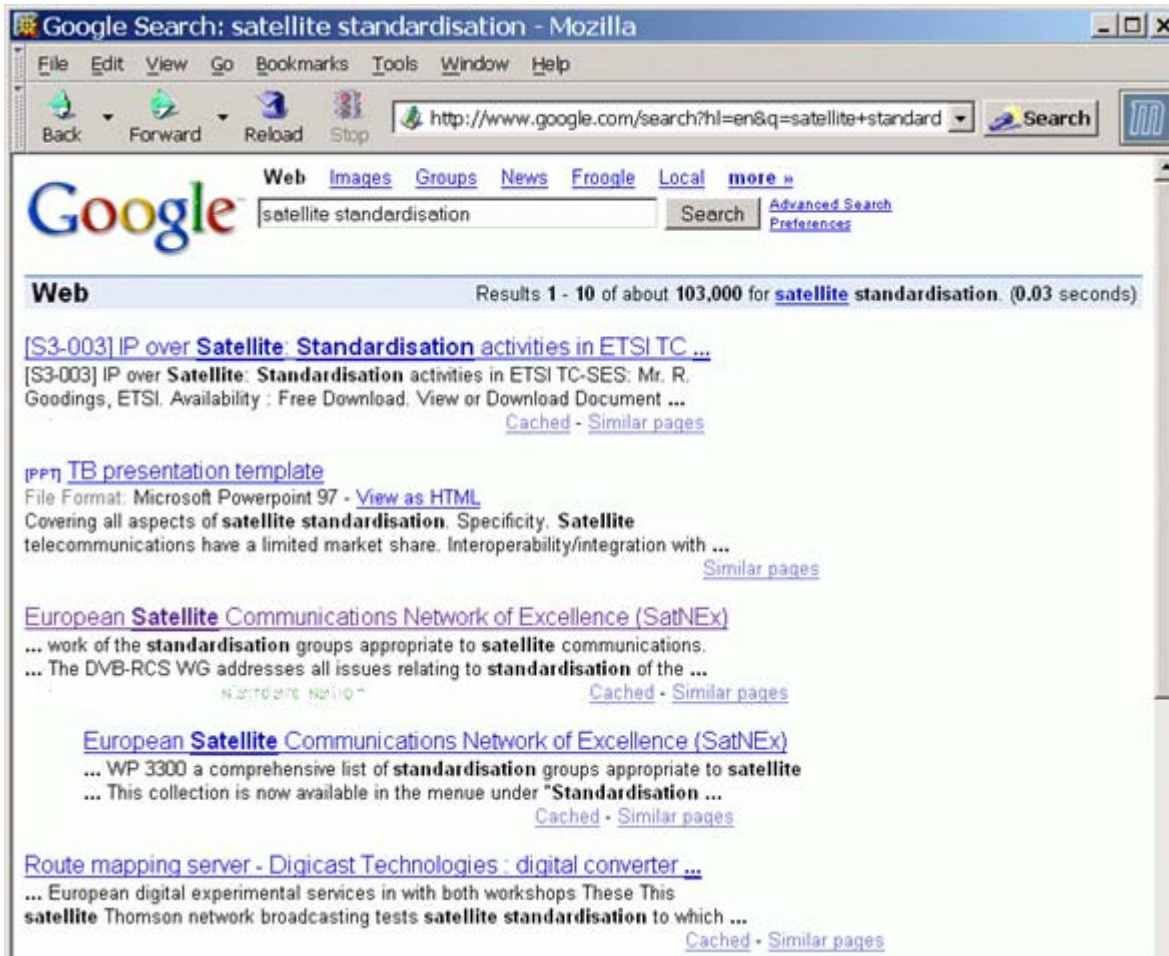
- The IWSSC 2007 conference is organized by the University of Salzburg from **12** to 14 September 2007.
  - ▶ IWSSC 2007 is technically supported by the IEEE Communications Society and the SSC and TPCP committees.
  - ▶ Technical Program Chair is William W. Wu (Advanced Technology Mechanization, USA), with co-Chairs Laurent Franck (ENST Bretagne, France) and Hajime Nakamura (KDDI R&D Labs., Japan).
  - ▶ Tutorials will be organized in the afternoon of September 12, 2007.
  - ▶ For more information: <http://iwssc2007.sbg.ac.at/>
  - ▶ We are now in the review phase with results to be provided by June 15, 2007.
  - ▶ Statistics of submissions:



Region	%
Europe, Middle East, Africa	80
Asia/Pacific	13
North America	7

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## Visibility of SatNEX standardisation work



Google Search: satellite standardisation - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop <http://www.google.com/search?hl=en&q=satellite+standard> Search

Google  Search [Advanced Search](#) [Preferences](#)

Web Images Groups News Froogle Local more »

Web Results 1 - 10 of about 103,000 for **satellite standardisation**. (0.03 seconds)

[S3-003] IP over **Satellite Standardisation** activities in ETSI TC ...  
[S3-003] IP over **Satellite Standardisation** activities in ETSI TC-SES: Mr. R. Goodings, ETSI. Availability : Free Download. View or Download Document ...  
[Cached](#) - [Similar pages](#)

[PPT] [TB presentation template](#)  
File Format: Microsoft Powerpoint 97 - [View as HTML](#)  
Covering all aspects of **satellite standardisation**. Specificity. **Satellite** telecommunications have a limited market share. Interoperability/integration with ...  
[Similar pages](#)

[European Satellite Communications Network of Excellence \(SatNEX\)](#)  
... work of the **standardisation** groups appropriate to **satellite** communications.  
... The DVB-RCS WG addresses all issues relating to **standardisation** of the ...  
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... WP 3300 a comprehensive list of **standardisation** groups appropriate to **satellite**  
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**satellite** Thomson network broadcasting tests **satellite standardisation** to which ...  
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Google with search terms „satellite standardisation“ shows SatNEX on rank 3 of 103000 hits directly after ITU and ETSI; similar results for search terms „satellite standardization“



# SatNEx and ISI





- ❑ **Note: ISI Chair Giovanni E. Corazza is SatNEx Steering Board member**
- ❑ **SatNEx applies for ISI endorsement**
- ❑ **Plan 1: SatNEx to develop jointly with ISI a strategic research agenda**
- ❑ **Plan 2: SatNEx makes regular presentations to ISI on most recent achievements**





**Thanks for your attention!**