



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



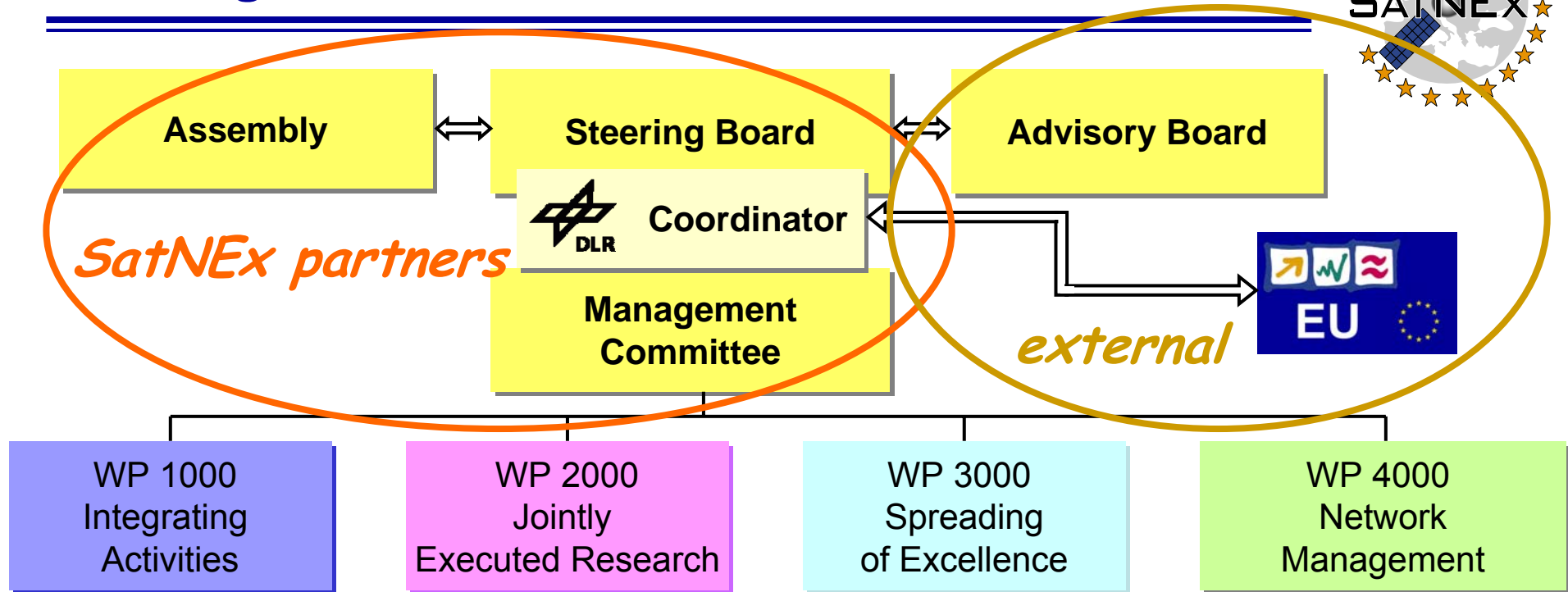
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People

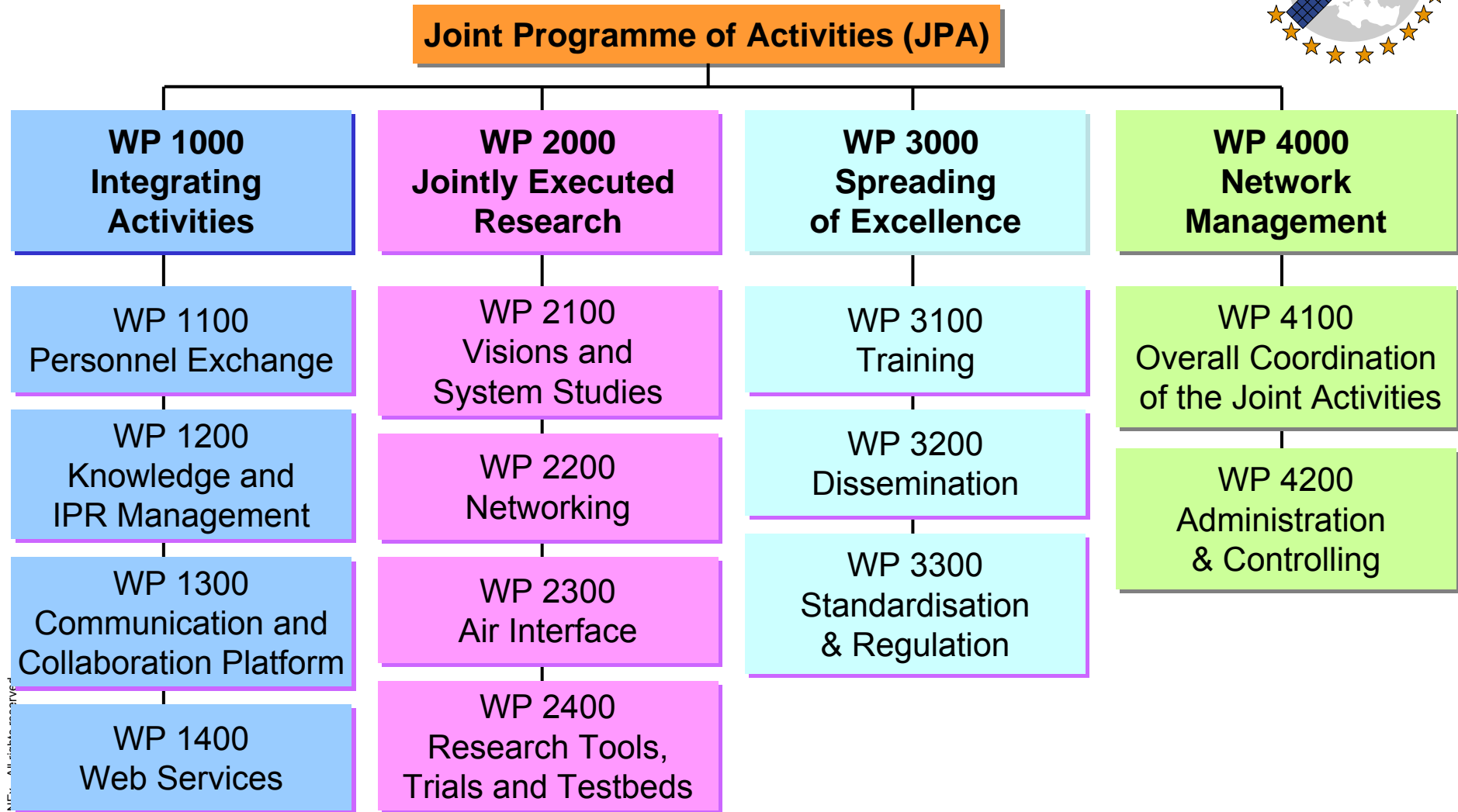


Management Structure



- ❑ **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)



Focussed Work: *Joint Activities (JAs)*



- ❑ 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)



- 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



- ❑ **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



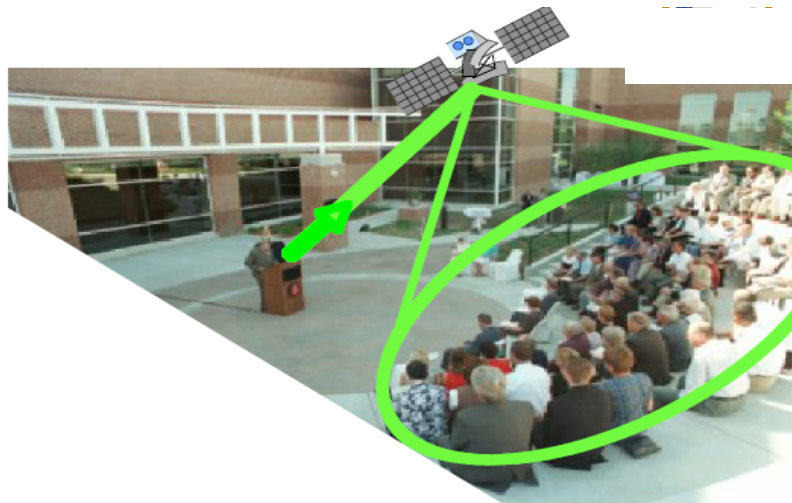
- ❑ **Pan-European satellite communications platform for interconnecting SatNEX partners across Europe**
 - ▶ **Day-to-day communications**
 - ▶ **Research collaboration**
 - ▶ **Dissemination of results**
 - ▶ **Distributed distance e-learning, training**
 - ▶ **Promotion of SatCom for broadband services**

- ❑ **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

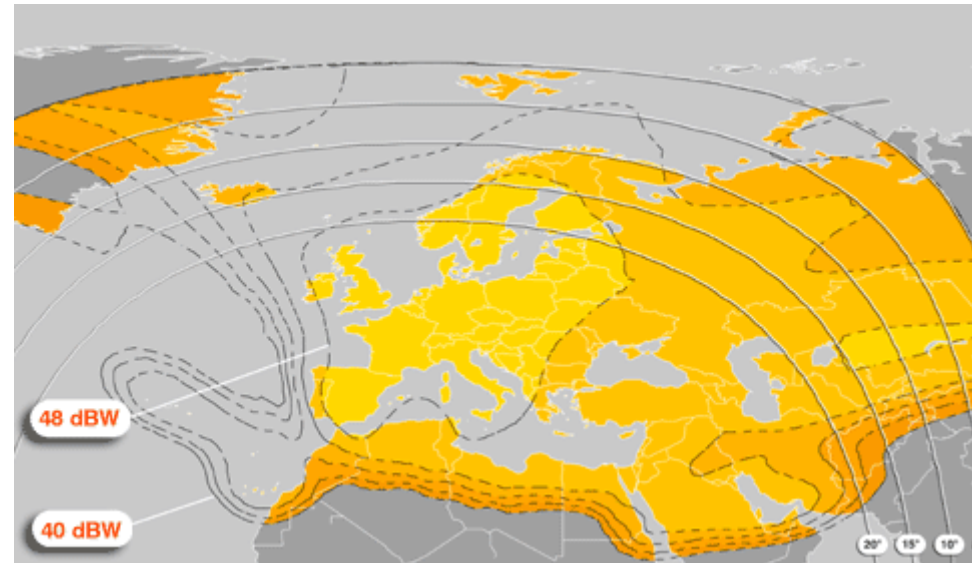


- ❑ Group presents/discusses a topic
- ❑ Foreground attendees
Controlled changes of speaker
Multi-point bi-directional
- ❑ Background attendees
Low interactivity

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

SatNEX Summerschool SimpleChat

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.

DVB-RCS architecture

SatNEX, Summer School 2006, University of Salzburg, August 25, 2006

cnit

WMC media player

cnit

x1.00 rtp://@224.50.50.50:8004



WP 3000

Dissemination

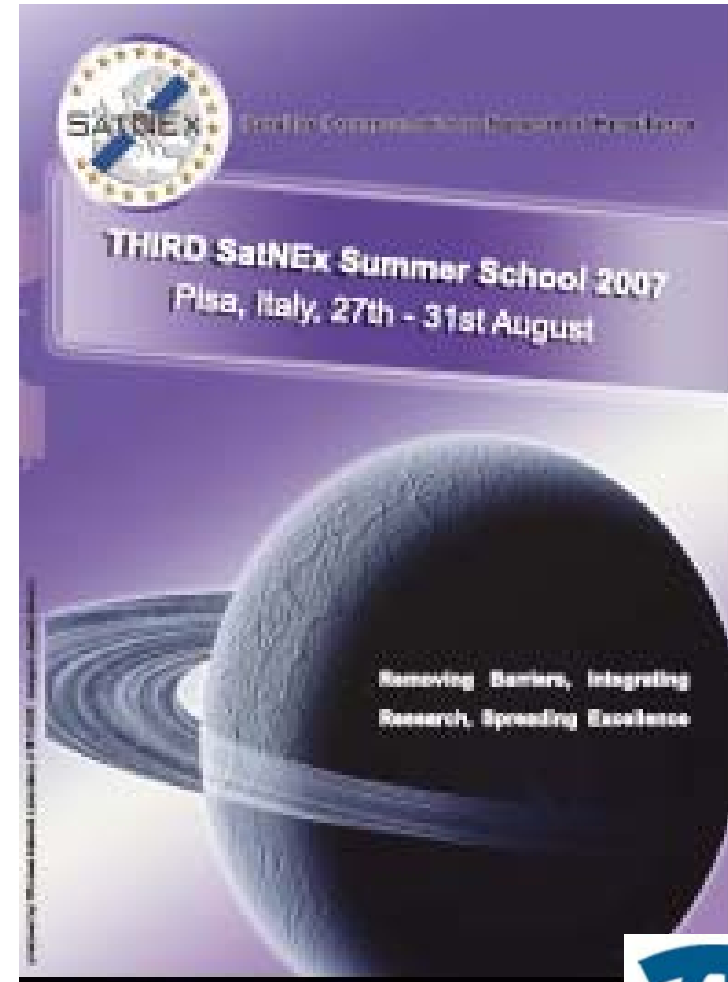


- ❑ Giovanni E. Corazza (Ed.). Digital Satellite Communications. Series: Information Technology: Transmission, Processing and Storage. Springer, 2007, ISBN: 978-0-387-25634-4.
- ❑ Giovanni Giambene (Ed.). Resource Management in Satellite Networks: Optimization and Cross-Layer Design. Springer, 2007, 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.](#)

3rd 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



- ❑ **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/>

12th - 14th September 2007, University of Salzburg,
Austria



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:

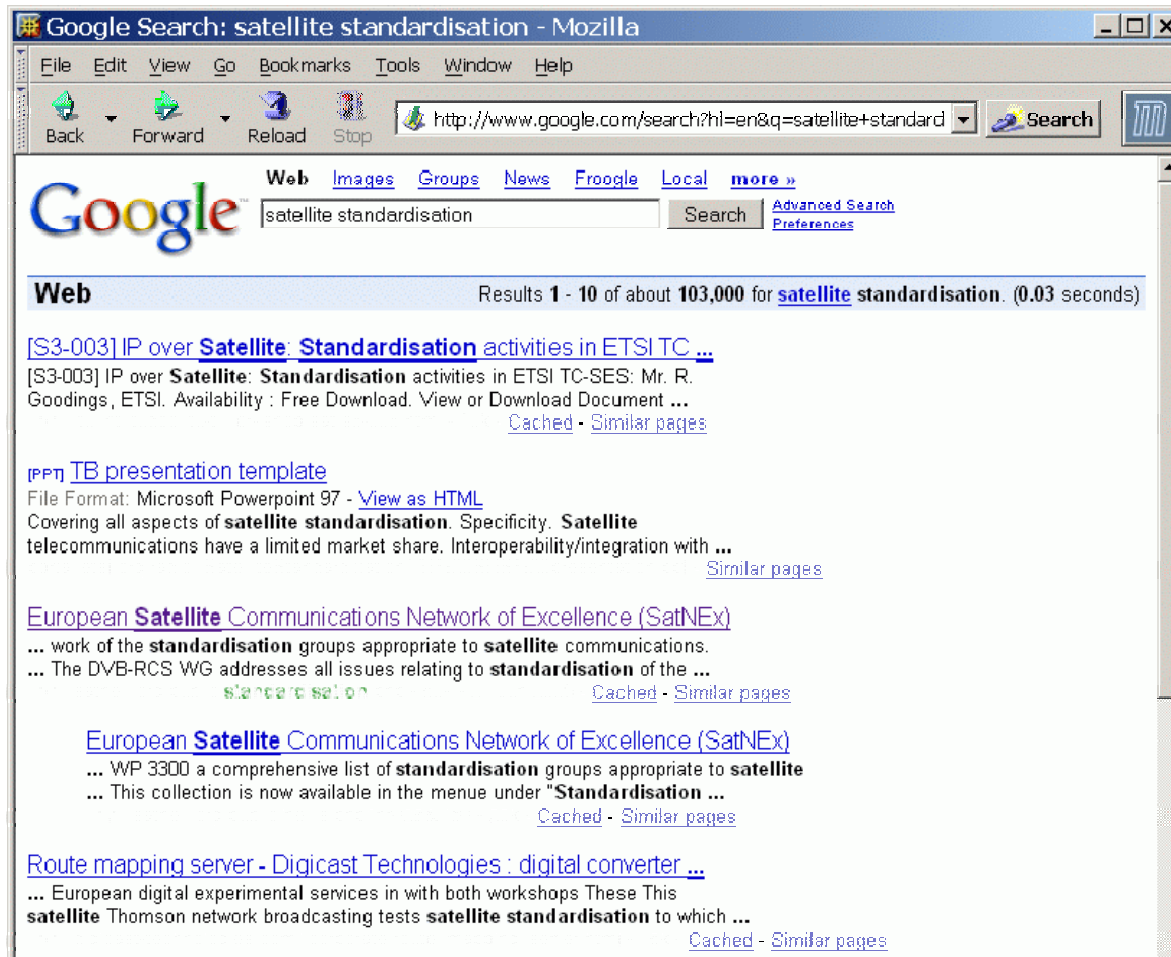


Region	%
Europe, Middle East, Africa	80
Asia/Pacific	13
North America	7





Visibility of SatNEX standardisation work



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



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!