



International Telecommunication Union

Opening Session

ITU-T overview

Facilitating object networking: 1906-2006

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ITU-T Workshop "Networked RFID: Systems and Services"
Geneva, 14-15 February 2006



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Object networking innovation in 1906

- Rapidly-scaling, radio-based, open, digital network infrastructure as emerging
- Developed first global legal instrument and standards stipulating interoperability, protocols, intercarrier compensation, infrastructure protection, object namespace, and worldwide name resolver and directory platform
 - Berlin Convention, 3 Nov 1906
- Objects consisted of “wireless telegraph stations open to public service”
- Established the essential requirements for open digital network infrastructure for the next 100 years and beyond



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Object networking innovation in the 1980s

- Legendary Jim White led IFIP WG 6.5 from 1981-84 to develop a universal hierarchical name space for users and resources in a public network
 - Stemmed from lifelong passion for distributed object computing and mobile agents
 - input to the CCITT's work on ASN.1, Object Identifier (OID) namespace, and X.500
 - White headed ASN.1 development
 - Doug Steedman was X.500 special rapporteur
 - Used for developing DARPA DNS namespace on BIND
- OID remains today the most prevalent object namespace in both legacy telecom and IP networking
 - Unfortunately without a fast resolution mechanism
 - Except for repudiation (Online Certificate Status Protocol)
 - Recent SG17 efforts to implement Object Hierarchical Names (OHN) could provide the capability



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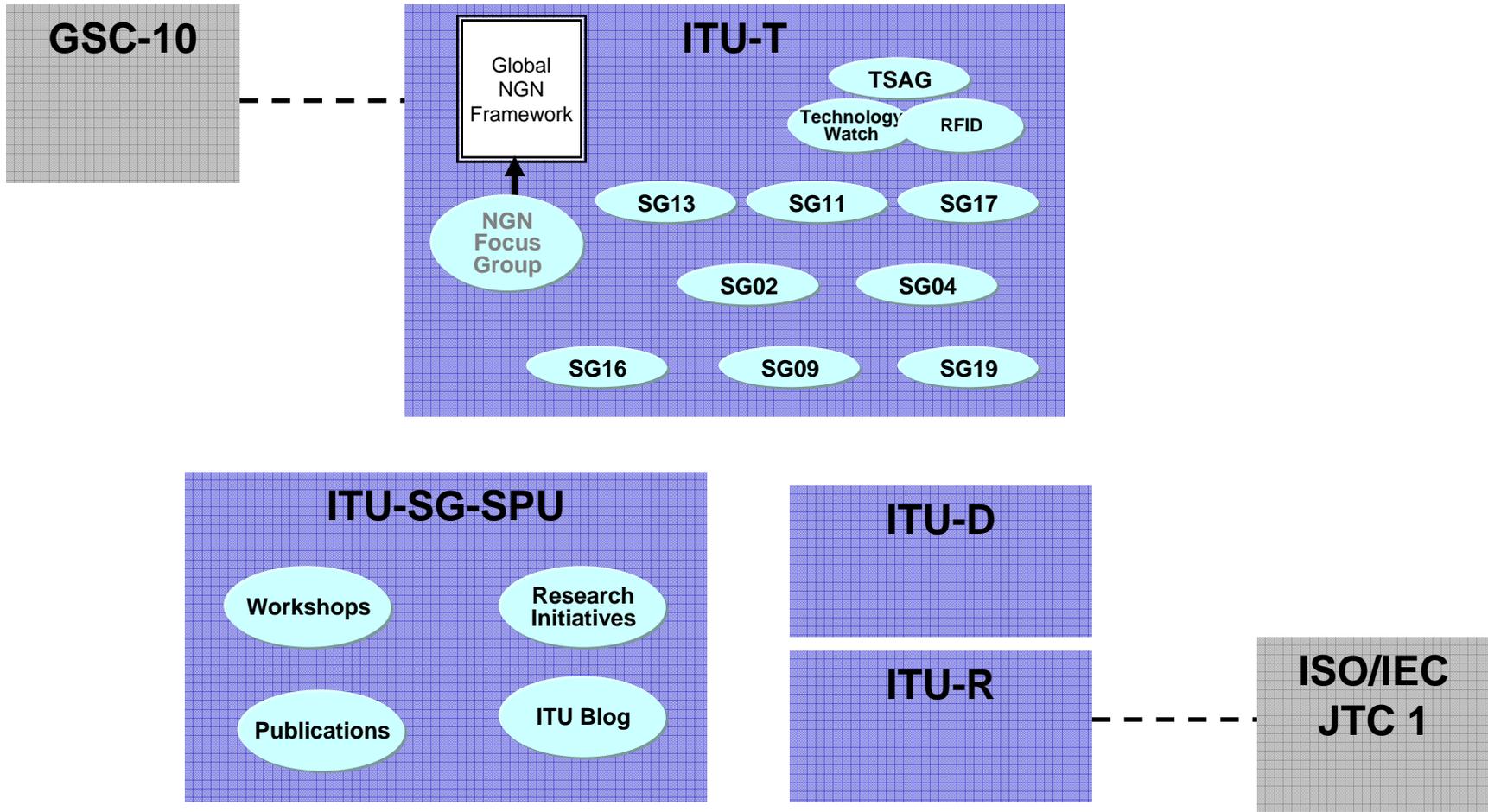
Object networking innovation today

- Studies in Asia-Pacific forums and the Auto-ID Labs together with RFID technology helped catalyze “next generation” object networking
 - Pervasive computing
 - Ubiquitous Networking
- Resulted in supply chain innovations
 - EPCglobal Object Name System
- Resulted in ITU-T becoming global home for Networked RFID and other NGN ID-based services collaboration
- Google finds 17,500 links for RFID at ITU.INT



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ITU Object networking ecosystem



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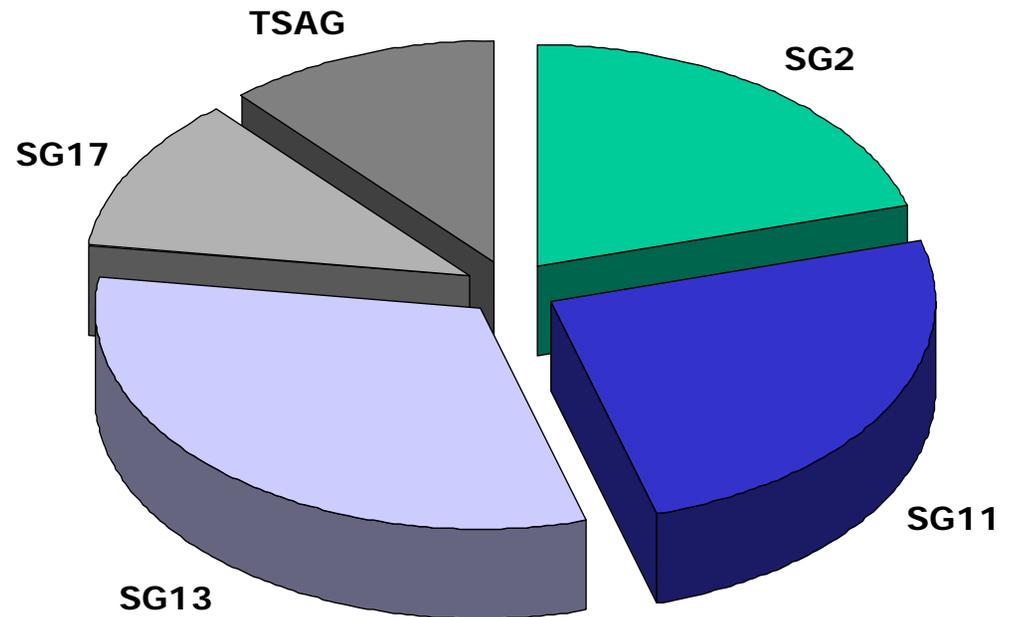
Object networking innovation in ITU-T 2005-06: current contributions

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45 RFID Related Contributions

T05-SG02-051206-TD-GEN-0072
T05-SG02-051206-TD-GEN-0097R3
T05-SG02-051206-TD-GEN-0111
T05-SG02-051206-TD-GEN-0113
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T05-SG19-060123-TD-GEN-0289
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T05-TSAG-051107-D-0036
T05-TSAG-051107-D-0039
T06-TSAG-D-ahnjy-060206
T06-TSAG-D-cbh-060204





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Object networking innovation: vision and challenges

- Most of the world's communication in a few years may be ID-based object-object and human-object traffic
- Will require
 - Coherent, scaleable, trusted, rapid resolution of identifiers
 - Identifier ubiquity is valuable
 - NGN intelligent infrastructure resource capabilities
 - Specific to objects and ubiquitous/pervasive computing
 - Secure coherent, extensible request-response services
 - Standard architecture combined with ability to discover specific schema types
 - Requires well-known, persistent global XML schema namespace
 - New signalling and control protocols
 - Object communication gives rise to needed new intelligent infrastructure services including infrastructure protection and prioritisation
 - Autonomous management of resources to protect infrastructure
 - Potentially significant use of trusted third parties to manage diverse user community domains
- Increasing emulation of mobile intelligent agents
 - Allows importation of significant R&D knowledge base



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New Policy and Market Choices: What human directory capability sets apply to objects?

Categories	Requirement
basic capability	Identifier identity
supplementary capability	Number Portability Priority Access Roaming Quality of Service Directory Assistance Disability Assistance Language Preference Personal emergency (E112/911) Law Enforcement Assistance Emergency messages DoNotCall CallerID Payment Methods Service Specification Application Interworking Profile Management Presence Availability Location Push Management Device Management Intercarrier Compensation Authentication Credentials
protocol feature	Authentication Auditing Multiple Protocol Support Multiple Language Support Information authentication level Extensibility and Localisation Mechanisms



Thank you!
Any questions?