The ITU-T: Cybersecurity and Standards

Regional Workshop on Frameworks for Cybersecurity and Critical Information Infrastructure Protection
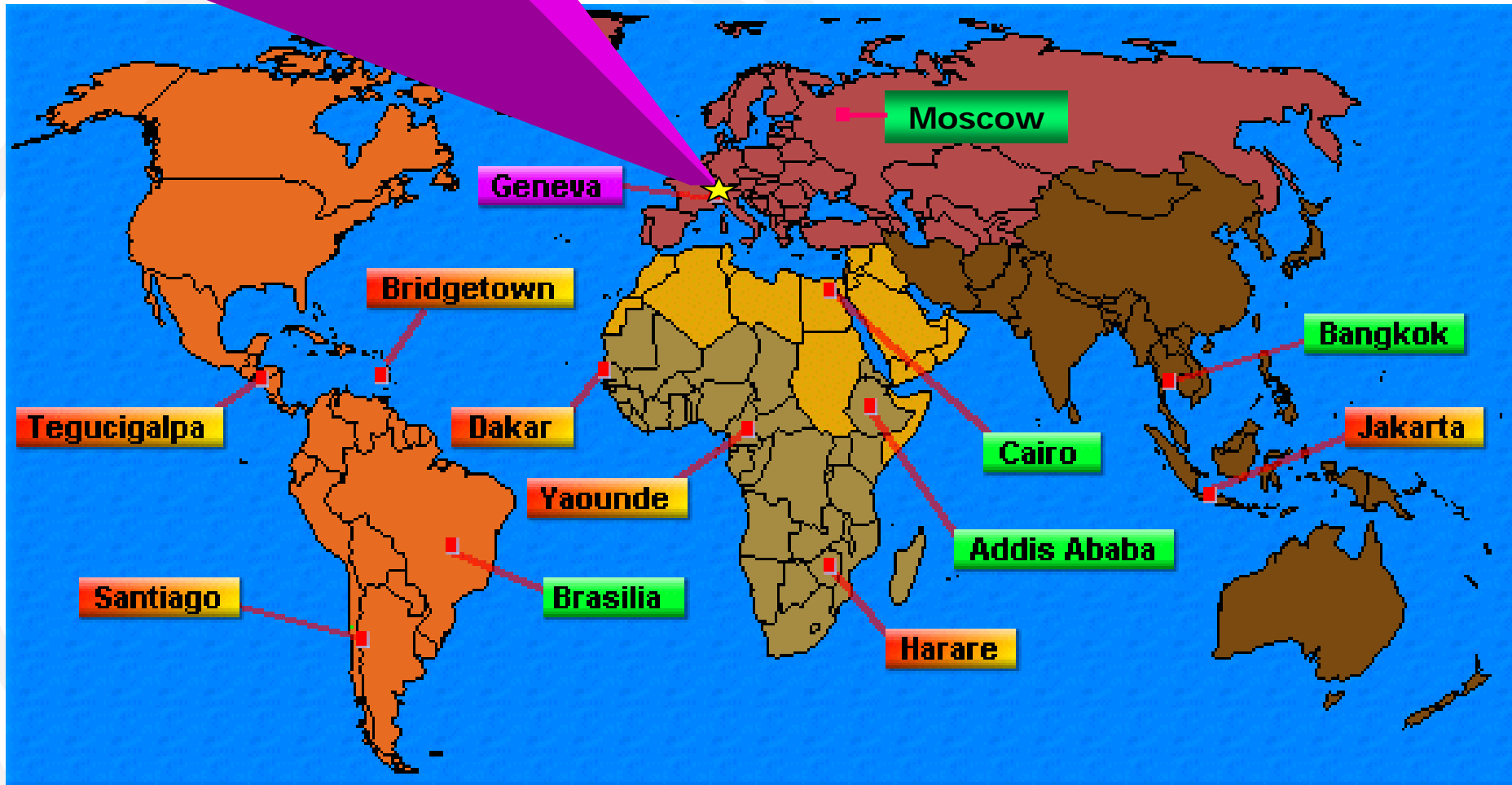
Paolo ROSA

Head, Workshops and Promotion Division, ITU - Telecommunication Standardization Bureau
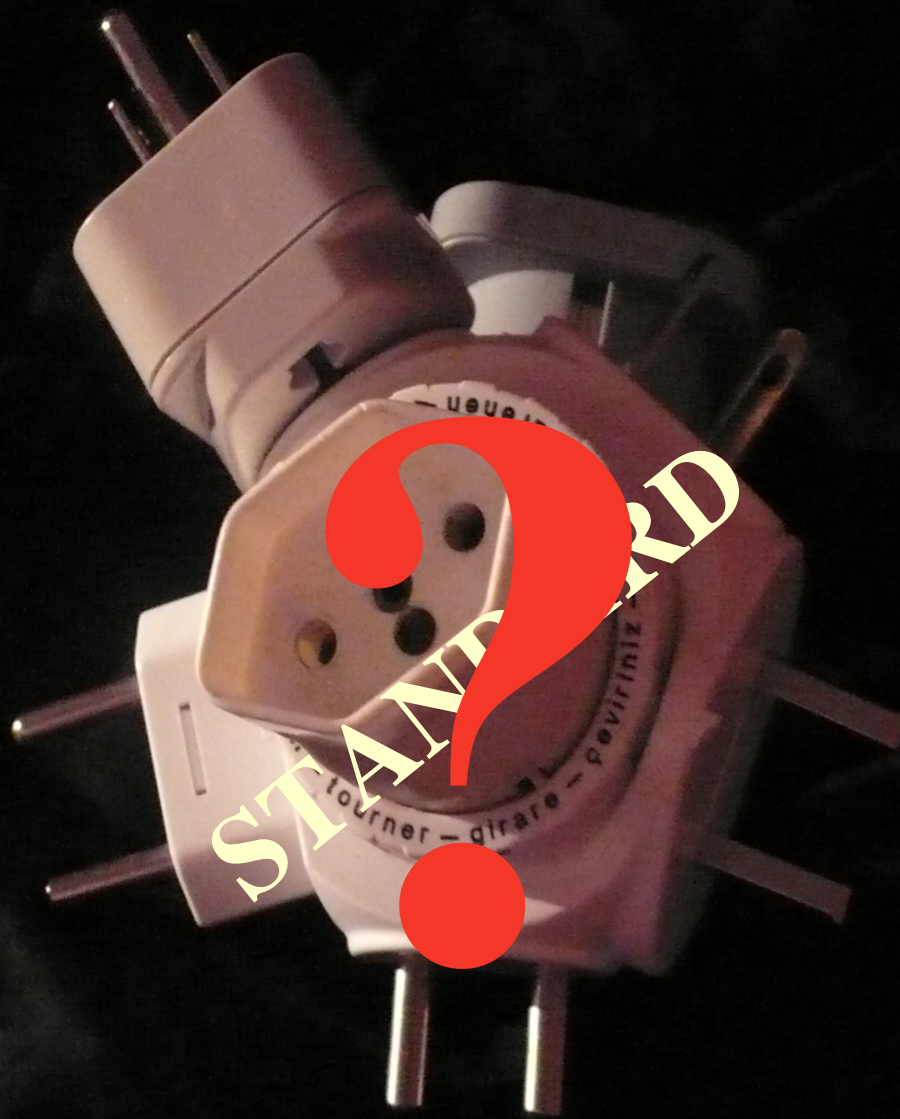
ITU in the world
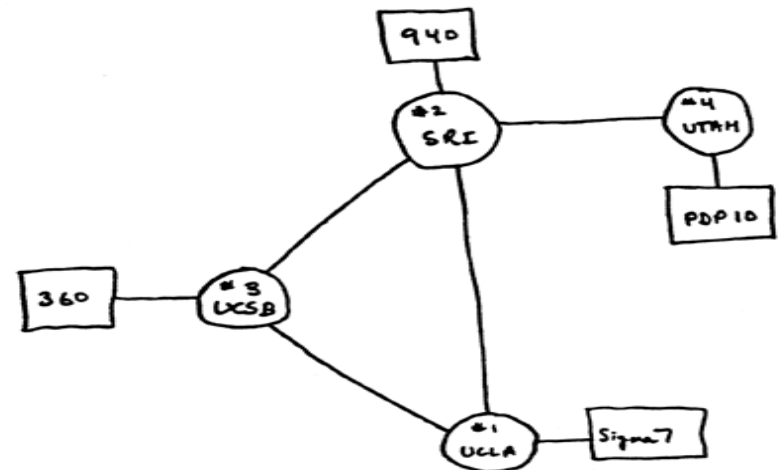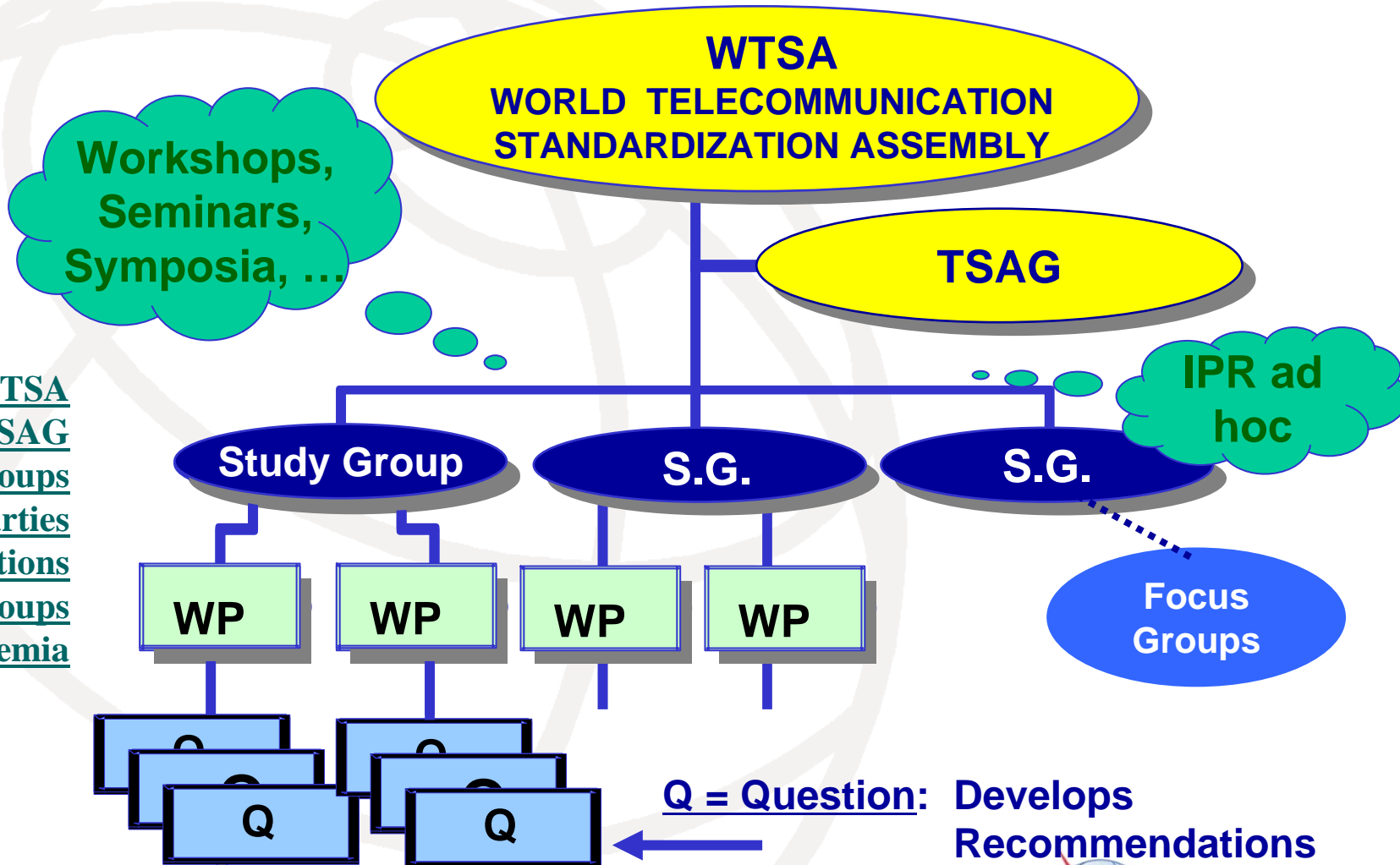
Revolution started 1989

- Tim Berners-Lee at CERN in Geneva addresses issue of dynamic change in information and turn-over of people on projects

- Proposes hypertext system that will run across the Internet on different operating systems.

- This becomes the **World Wide Web…**

ITU-T Structure (SG)

ITU-T Study Groups

World Telecommunication Standardization Assembly (WTSA)

Telecommunication Standardization Advisory Group (TSAG)

Technical/regulatory work
- SG2: Operational aspects of service provision, networks & performance
- SG3: Tariff and accounting principles including related
- telecommunications economic and policy issues
- SG4: Telecommunication management
- SG5: Protection against electromagnetic environment effects
- SG6: Outside plant and related indoor installations
- SG9: Integrated broadband cable networks, TV & sound transmission
- SG11: Signaling requirements and protocols
- SG12: Performance and quality of service
- SG13: Next Generation Networks
- SG15: Optical and other transport network infrastructures
- SG16: Multimedia terminals, systems and applications
- SG17: Security, languages and telecommunications software
- SG19: Mobile telecommunication networks

Characteristics of ITU-T

- Main ITU-T Product: Recommendations (= "standards")
- Unique partnership of private sector & government
- Truly global
- Consensus decisions
- Very flexible
- Fast procedures, transparent procedures
- Brand name
- IPR Policy and copyright

<u>fast</u> to:

- **<u>Start</u>** new work: 1 day / few weeks
- **<u>Develop</u>** work: from weeks to 2-3 yrs
- **<u>Approve</u>** standards: 2 months (95% of Recs)
- **<u>Publish</u>** standards: couple of days after approval

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Some of the "hot" topics

- Security & Identity Management
- NGN
- JCA-NID (from RFID studies) and Ubiquitous Sensor Networks (USN)
- Disaster Relief, Emergency, Access and Accessibility
- Multimedia
- IPTV

Investigation of new technologies: Technology Watch & engaging with Universities & R&D centers

The future: Academia
first Kaleidoscope event
"Innovation in NGN"
Geneva, 12-13 May 2008

Aim:

- Bring together all the new and visionary ideas on the future of NGN

- A place where the pre-standard environment can find an opportunity to mix up and share different opinions, experiences and views

- Professors, scientists, engineers, students, journalists, writers, science fiction visionaries should be invited

- Creation of a yearly ITU-T/Academia "Innovation in Telecommunications" prize

http://itu.int/ITU-T/uni/kaleidoscope)
Deadline mid November

Workshops activities

Number of Workshop Participants per year

http://itu.int/ITU-T/worksem

"Ladder of development" for ICT Standardization

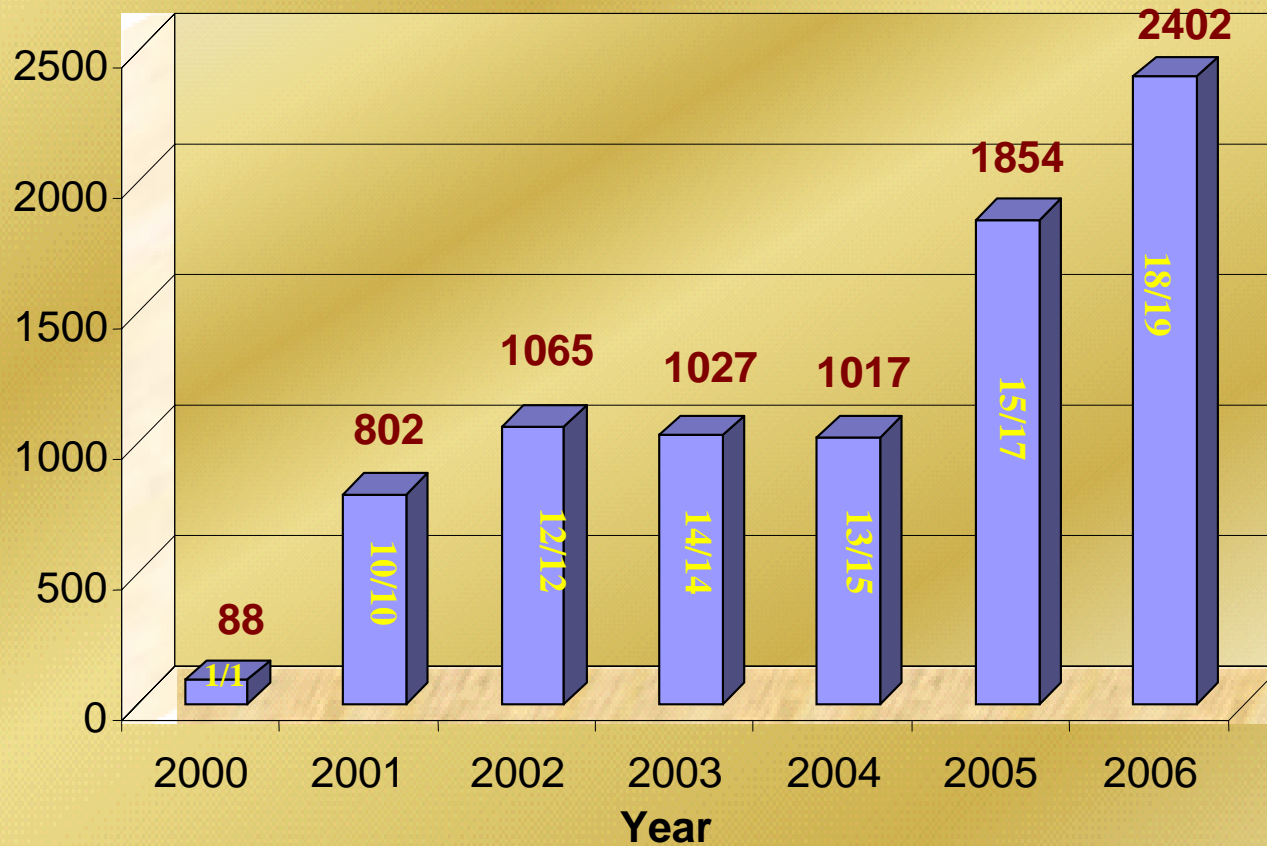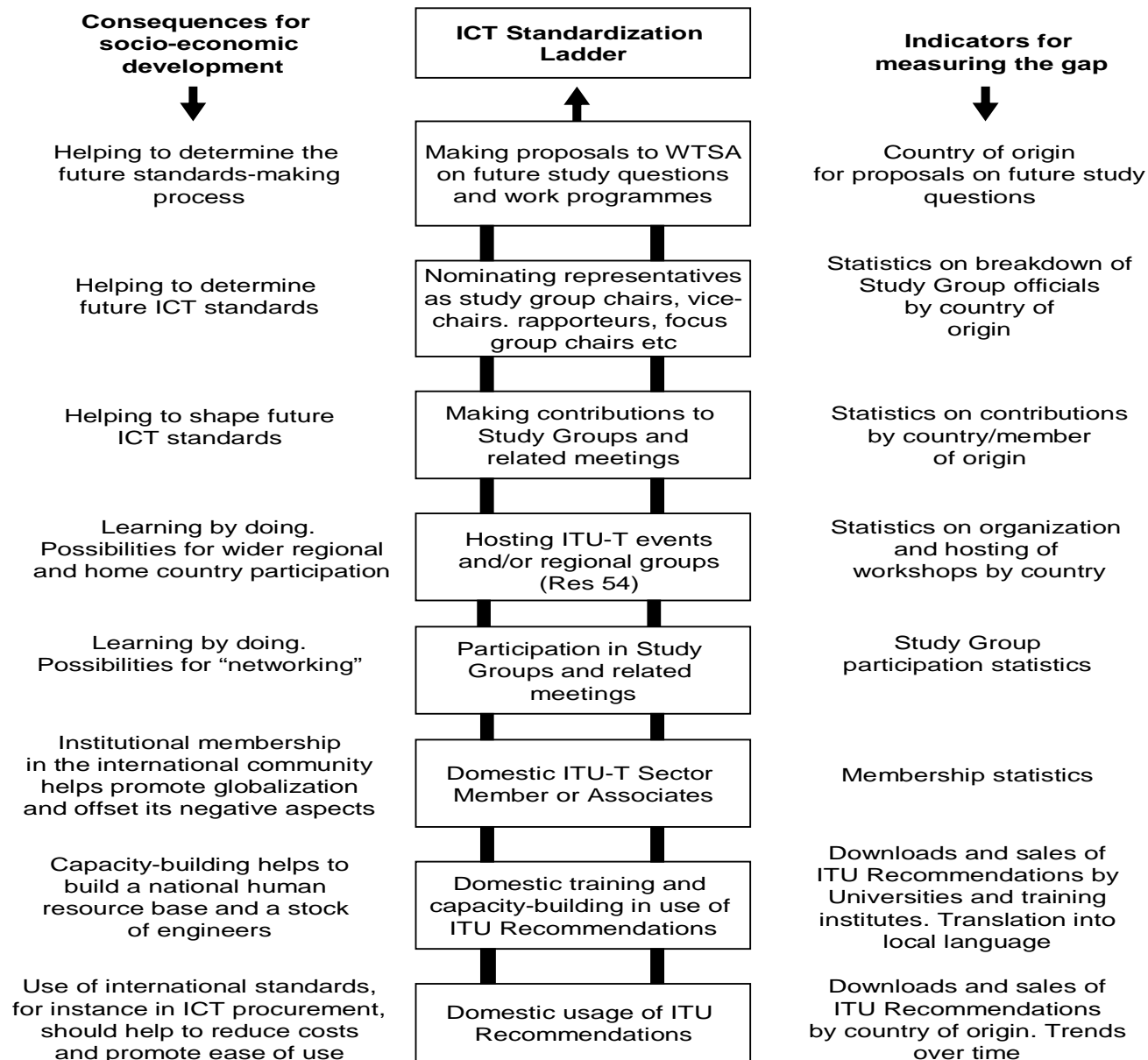| Consequences for socio-economic development	ICT Standardization Ladder	Indicators for measuring the gap
Helping to determine the future standards-making process	Making proposals to WTSA on future study questions and work programmes	Country of origin for proposals on future study questions
Helping to determine future ICT standards	Nominating representatives as study group chairs, vice-chairs. rapporteurs, focus group chairs etc	Statistics on breakdown of Study Group officials by country of origin
Helping to shape future ICT standards	Making contributions to Study Groups and related meetings	Statistics on contributions by country/member of origin
Learning by doing. Possibilities for wider regional and home country participation	Hosting ITU-T events and/or regional groups (Res 54)	Statistics on organization and hosting of workshops by country
Learning by doing. Possibilities for "networking"	Participation in Study Groups and related meetings	Study Group participation statistics
Institutional membership in the international community helps promote globalization and offset its negative aspects	Domestic ITU-T Sector Member or Associates	Membership statistics
Capacity-building helps to build a national human resource base and a stock of engineers	Domestic training and capacity-building in use of ITU Recommendations	Downloads and sales of ITU Recommendations by Universities and training institutes. Translation into local language
Use of international standards, for instance in ICT procurement, should help to reduce costs and promote ease of use	Domestic usage of ITU Recommendations	Downloads and sales of ITU Recommendations by country of origin. Trends over time

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ITU-T's Focus Group Concept:

- Create forum-like entities as an "arms-length" organization under ITU-T Study Group
- Work on a well-defined topic, scheduled for completion at a specific time
- Goal: encourage participation of non-members / members of other organizations (fora)
- Focus group has lots of freedom to establish its own rules
  - can keep own brand name and at the same time benefit from ITU's branding
  - Non-ITU members can participate

Recent examples:
  - IPTV Focus Group
  - IdM Focus Group
  - NGN Focus Group
  - NGN Management Focus Group
  - OCAF Focus Group = Open Communications Architecture Forum

Security:
# The network was built without thinking about security needs

Definitions
(from draft new Rec. X.1205)

Cybersecurity: collection of tools, policies, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the **cyberspace** against relevant security risks such as unauthorized access, modification, theft, disruption, or other threats

Cyberspace: the cyber environment including software, connected computing devices, computing users, applications/services, communications systems, multimedia communication, and the totality of transmitted and/or stored information connected directly or indirectly to the Internet. It includes hosting infrastructures and isolated devices

Applying the security architecture to security programs
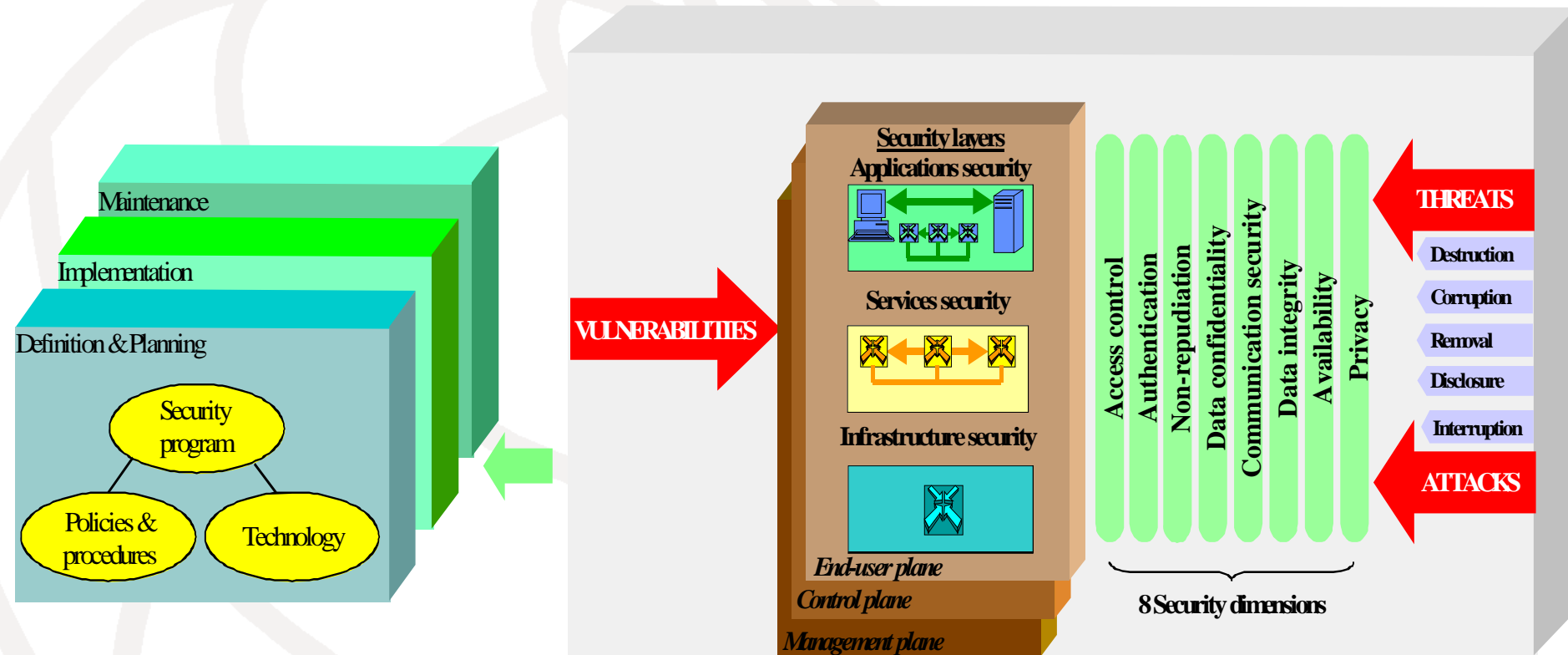
X.805_F4

Identity Management

THE PROBLEM:

Identity theft... security breaches... malware attacks...insider threats... synthetic identities... phishing...data leakage... Whatever label is attached to the problem, identity management and information protection are huge issues with which all of society must grapple. And no one is exempt-- from government, law enforcement, business, health care, academe, non profit to citizens. The problem is ubiquitous.
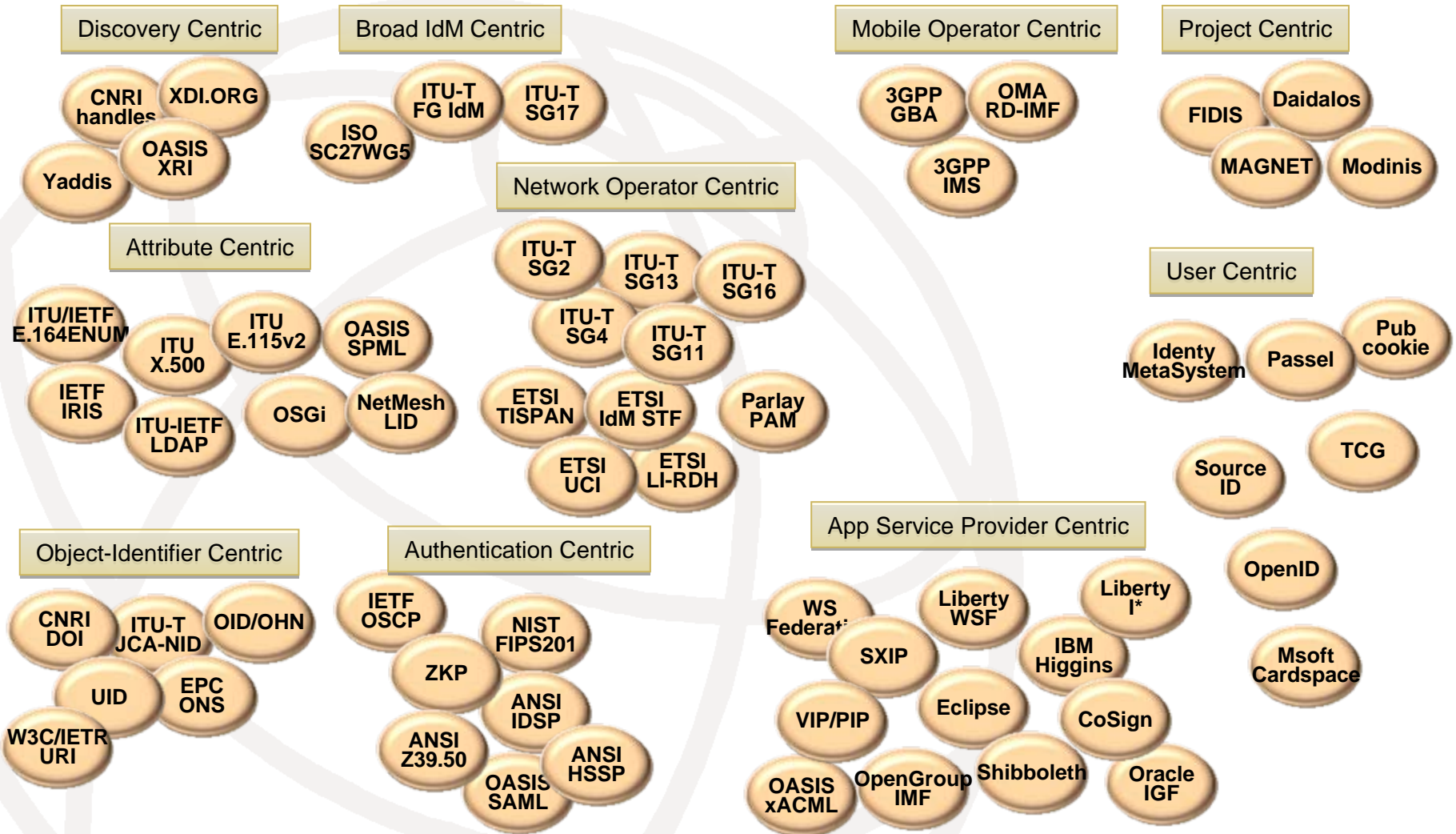
ADDRESSED TO:

Fraud investigators...information officers...security officers...fraud managers...law enforcement...corporate security...internal auditors...information managers...management consultants...standards organizations

FOR:

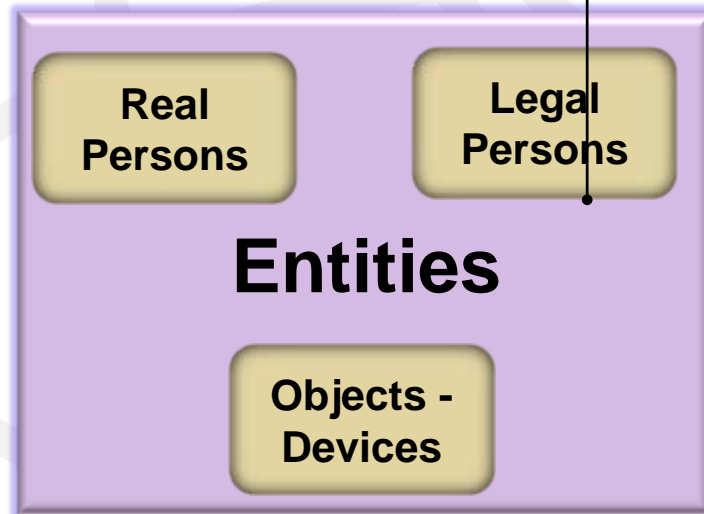Managing data, storage, register, authorize, individuate,...

Expansive ecosystem

Discovery Centric
- CNRI handles
- XDI.ORG
- OASIS XRI
- Yaddis

Broad IdM Centric
- ITU-T FG IdM
- ITU-T SG17
- ISO SC27WG5

Mobile Operator Centric
- 3GPP GBA
- OMA RD-IMF
- 3GPP IMS

Project Centric
- FIDIS
- Daidalos
- MAGNET
- Modinis

Attribute Centric
- ITU/IETF E.164ENUM
- ITU X.500
- ITU E.115v2
- OASIS SPML
- IETF IRIS
- ITU-IETF LDAP
- OSGi
- NetMesh LID

Network Operator Centric
- ITU-T SG2
- ITU-T SG13
- ITU-T SG16
- ITU-T SG4
- ITU-T SG11
- ETSI TISPAN
- ETSI IdM STF
- Parlay PAM
- ETSI UCI
- ETSI LI-RDH

User Centric
- Identy MetaSystem
- Passel
- Pub cookie
- Source ID
- TCG
- OpenID
- Msoft Cardspace

Object-Identifier Centric
- CNRI DOI
- ITU-T JCA-NID
- OID/OHN
- UID
- EPC ONS
- W3C/IETR URI

Authentication Centric
- IETF OSCP
- NIST FIPS201
- ZKP
- ANSI IDSP
- ANSI Z39.50
- ANSI HSSP
- OASIS SAML

App Service Provider Centric
- WS Federation
- Liberty WSF
- Liberty I*
- SXIP
- IBM Higgins
- VIP/PIP
- Eclipse
- CoSign
- OASIS xACML
- OpenGroup IMF
- Shibboleth
- Oracle IGF

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Id(entity)M begins with *entities*

Capabilities by which an entity is described, recognized or known

Especially public Network Operators, and Service Providers including Identity Providers

Entities

Real Persons

Legal Persons

Objects - Devices

Includes terminals, network elements, cards, intellectual property, agents, RFIDs, sensors, control devices (are emerging as dominant network end-users)

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Current requirements for IdM

Critical Infrastructure protection; ETS, DTR, EW
+ Public network infrastructure protection
+ Incident Response
+ Priority access during emergencies
+ Services restoration after emergencies

Public Safety
+ Citizen emergency calls/messages
+ Authority emergency alert messages

Assistance to lawful authority
+ Lawful Interception
+ Retained Data
+ Cybercrime forensics
+ Anonymity

Identifier resource management
+ Identifier/numbering allocation
+ Administrative requirements
+ Number portability; unbundling

Digital rights management

Legal liability; discovery; evidence

Consumer needs
+ Universal service; social good funding
+ Preventing unwanted intrusions
| + DoNotCall
| + CallerID
| + Prevention of spam
| + Anti-CyberStalking
| + Anti-CyberPredators
+ Customer records protection and privacy
| + Transparency
| + Use controls
| + Notice
+ Anonymity
+ Prevention of identity theft; repudiation
+ Disability assistance

Business needs
+ Network interoperability
+ Roaming
+ Fraud , identity theft, and distribution management
+ Intercarrier compensation

ITU-T Focus Group on Identity Management

Established December 2006 by ITU-T SG 17

- To Ensure interoperability between existing IdM solutions to provide significant benefits such as:
    - increased trust by users of on-line services
    - reduced cybercrime, SPAM, and
    - seamless "nomadic" roaming between services worldwide.

- To Analyze a set of IdM use cases scenarios to derive generic IdM requirements.

- To Identify and address gaps between existing IdM frameworks
    now being developed by industry fora and consortiums before the interworking and interoperability between the various solutions can be achieved.

- The results also to identify requirements for any additional functionality for next generation networks (NGN)

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FG IdM Timing
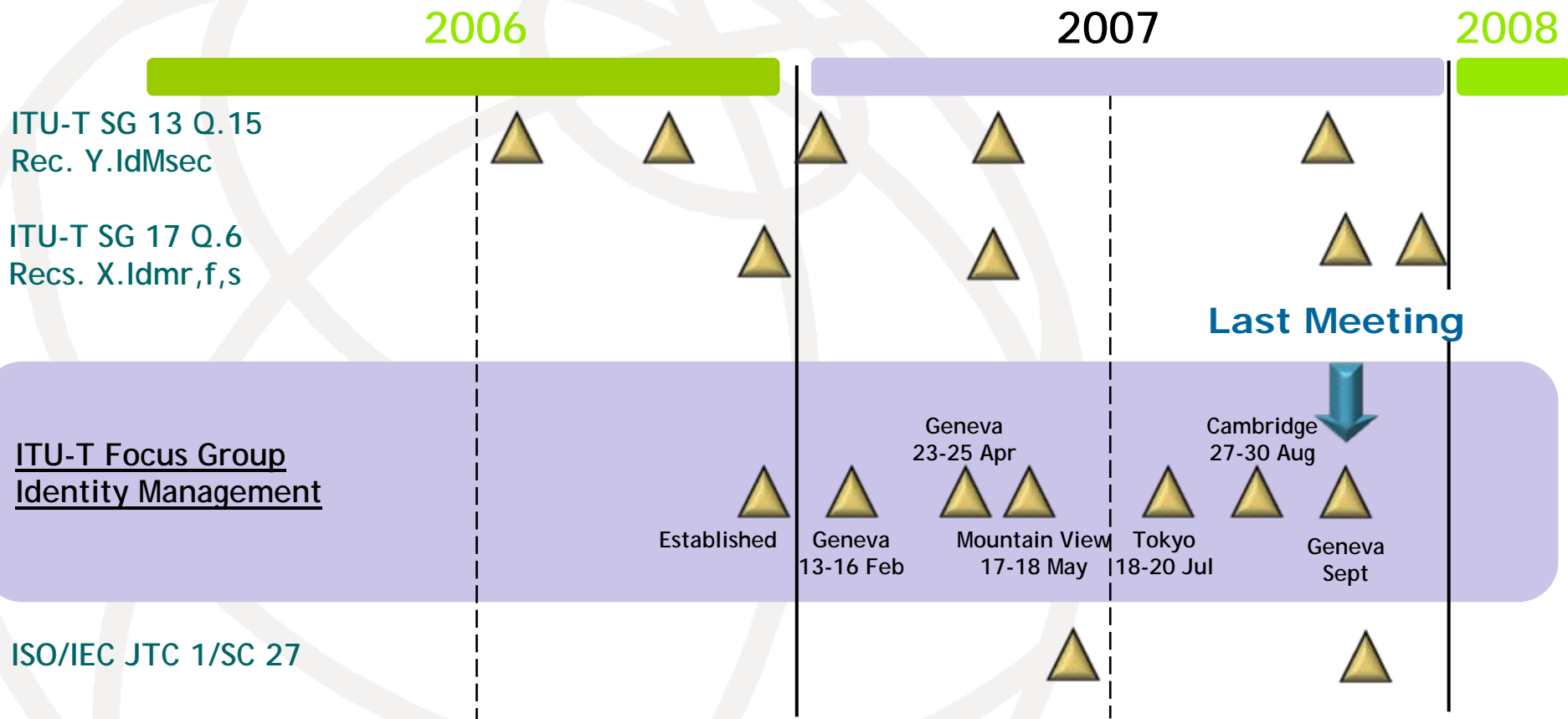
FG IdM: last meeting results

Consensus based decision: FG IdM developed four Reports analyzed at the September 2007 Study Group 17 meeting:

1) Identify requirements analysis based on uses case scenarios

2) Identify generic IdM framework components

3) Complete a standards gap analysis and identify new standards work that ITU-T SGs and other SDOs should undertake

4) Develop a Living List of relevant bodies dealing with Identity Management
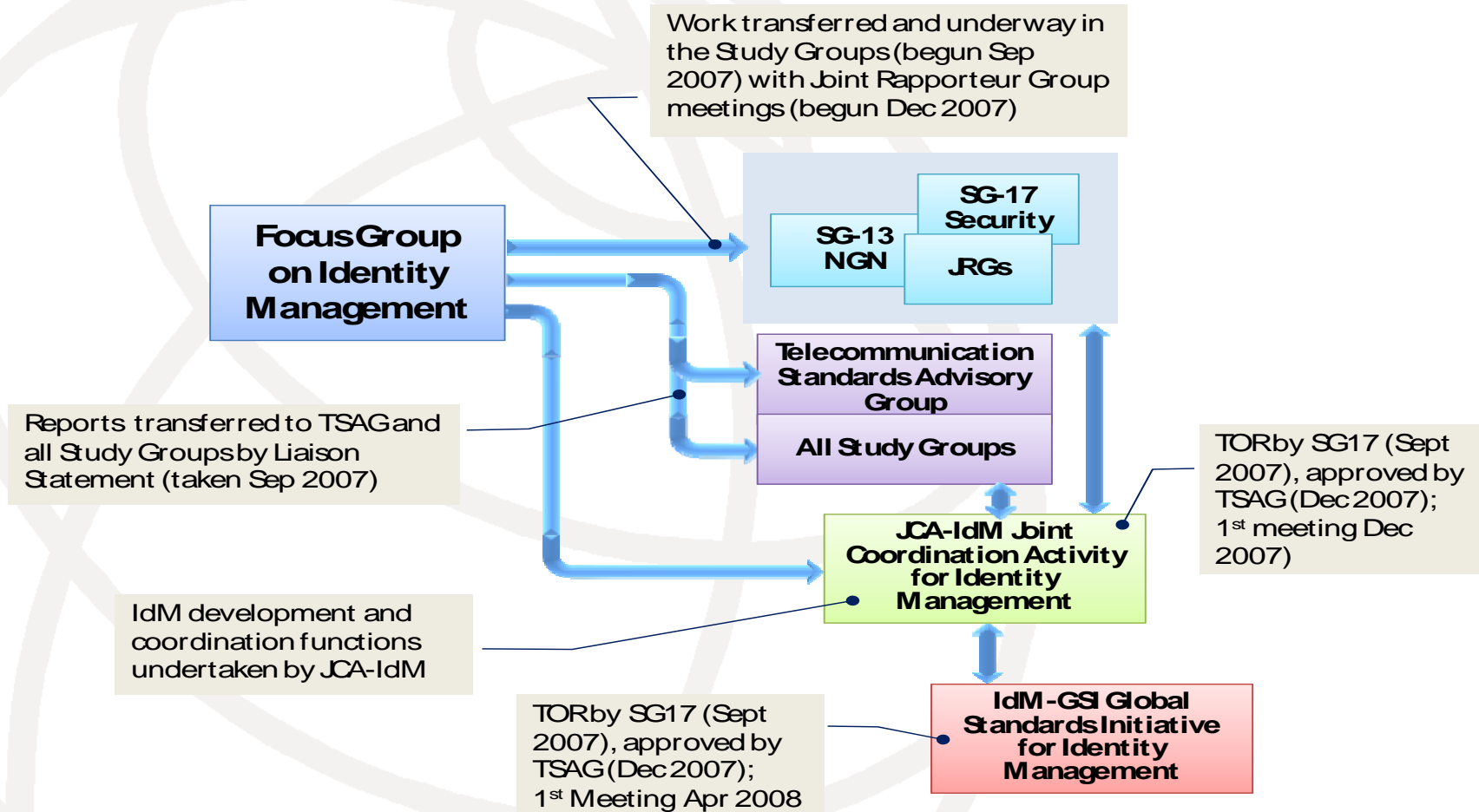
FG – IdM Deliverables
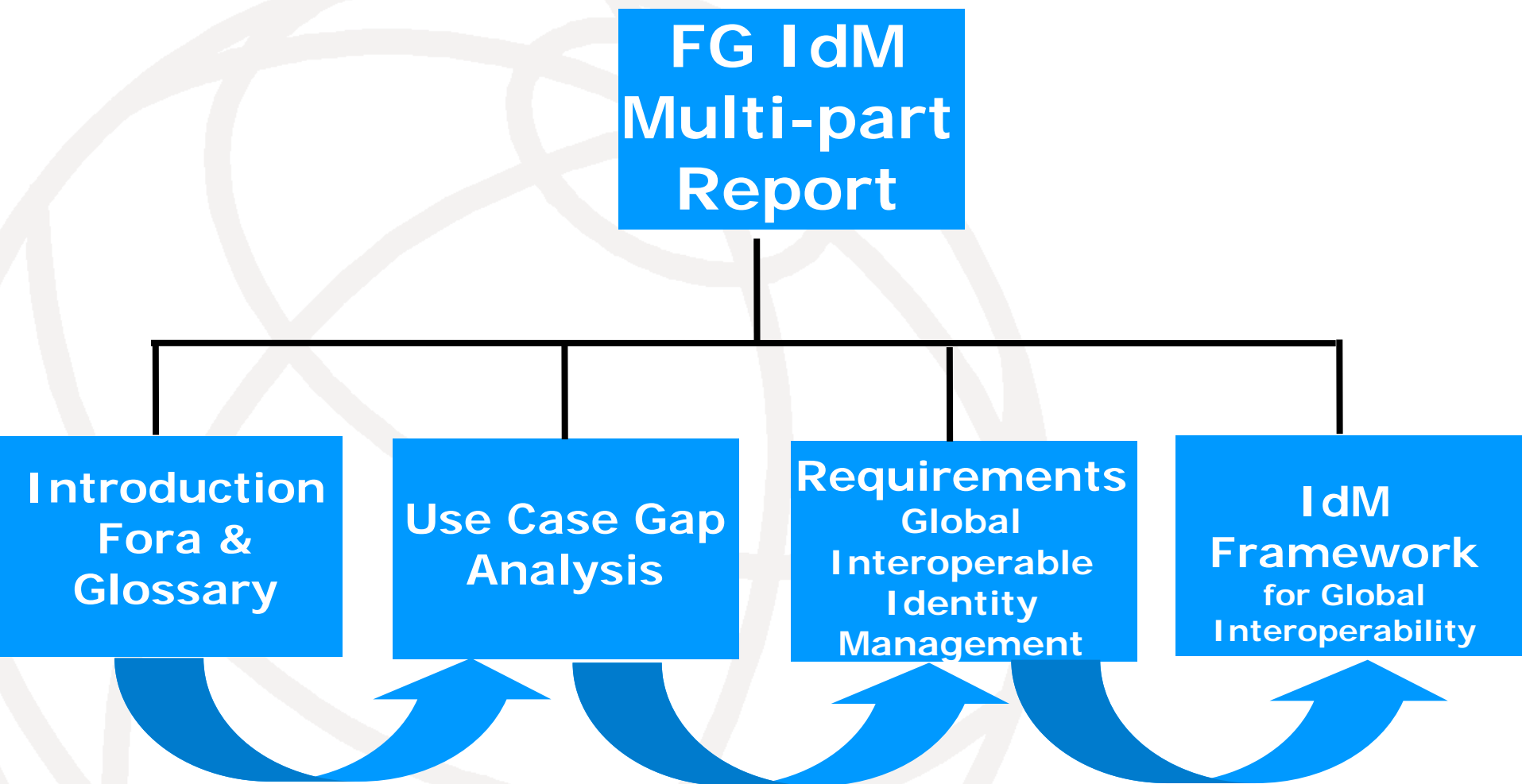
Going forward

Implementation and evolution by industry of capabilities

Recognition and closing of IdM "regulatory gaps" through any necessary requirements at national and international levels, especially:

- Discovery and trust/accuracy are essential
- National critical infrastructure protection, (ETS, DTR, EW), and cybersecurity requirements
- Implementation of new treaty instruments like Cybercrime Convention and ITU Plenipotentiary resolutions

Proposal for comprehensive transition of FG IdM work

Work transferred and underway in the Study Groups (begun Sep 2007) with Joint Rapporteur Group meetings (begun Dec 2007)

Focus Group on Identity Management

SG-13 NGN

SG-17 Security

JRGs

Telecommunication Standards Advisory Group

All Study Groups

Reports transferred to TSAG and all Study Groups by Liaison Statement (taken Sep 2007)

TOR by SG17 (Sept 2007), approved by TSAG (Dec 2007); 1st meeting Dec 2007)

JCA-IdM Joint Coordination Activity for Identity Management

IdM development and coordination functions undertaken by JCA-IdM

TOR by SG17 (Sept 2007), approved by TSAG (Dec 2007); 1st Meeting Apr 2008

IdM-GSI Global Standards Initiative for Identity Management

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JCA-IdM: Objectives

Objectives

- To examine and comment of the FG IdM deliverables from the membership, and ITU-T SGs and JCAs, ITU-D WGs, and other SDOs and forums.

- To develop and analyze Identity Management standardization items and develop an associated roadmap

- To provide for coordination and convening of the IdM-GSI as a successor mechanism to the Focus Group on Identity Management

- To ensure that the IdM-GSI work is progressed in a well-coordinated way paying attention to strategic/planning issues, work assignment needs. Act as a focal point on Identity Management in order to avoid duplication/overlapping of work.

**1st meeting 10-11 Dec 2007** (proposal)

GSI-IdM: Objectives

Objectives

•To Provide a publicly recognizable forum for attracting and marketing new concepts and for developing and harmonizing standards for IdM deployment to give service providers the means to offer a wide range of Identity services.

•To bring together interested participants from the ITU-T/D Study Groups and SDOs and regional organizations whenever justified.

•The IdM-GSI work is coordinated by the JCA-IdM, including strategic and planning issues and work assignments.

**1st meeting April 2008** (SG17 and 16 - proposal).

The revolution of 1989

The proposal concerns the management of general information about accelerators and experiments at CERN. It discusses the problems of loss of information about complex evolving systems and derives a solution based on a distributed hypertext system.
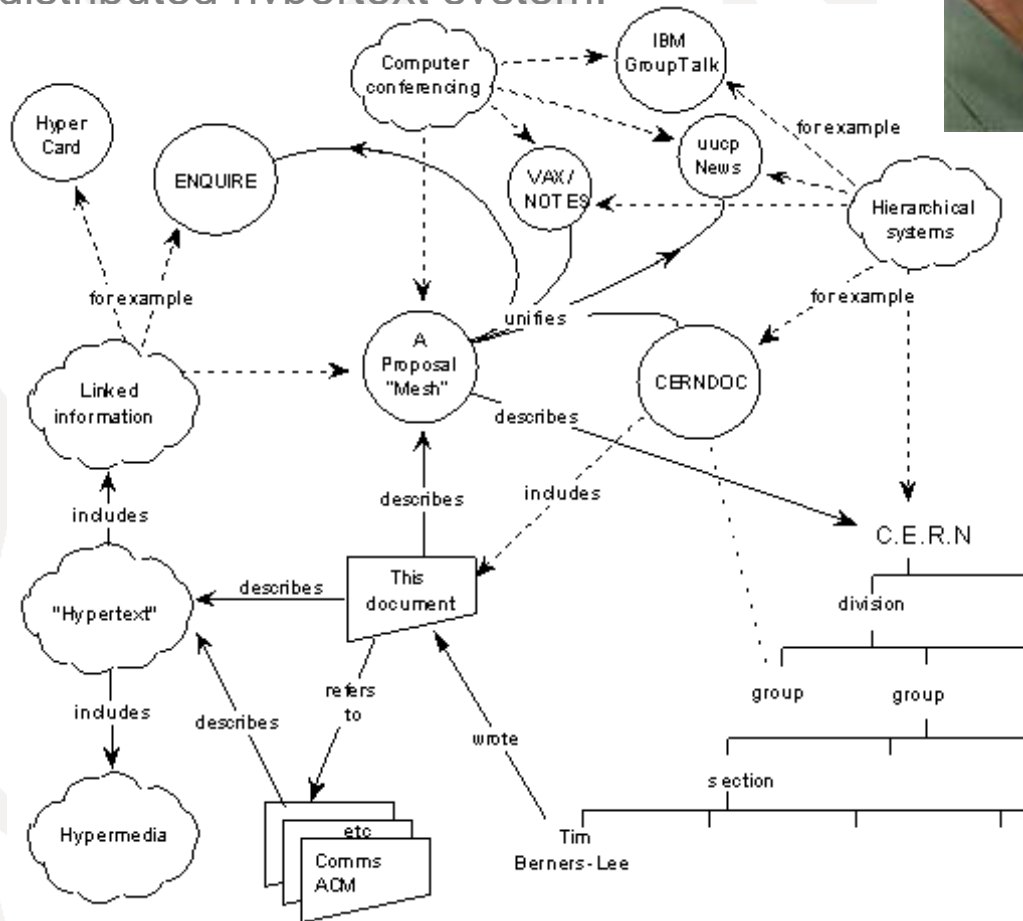
Source:
Information Management:
A Proposal
Tim Berners-Lee, CERN
March 1989, May 1990

Muchisimas Gracias

HTML

WWW

Robert Cailliau

Tim Berners-Lee

International Telecommunication Union
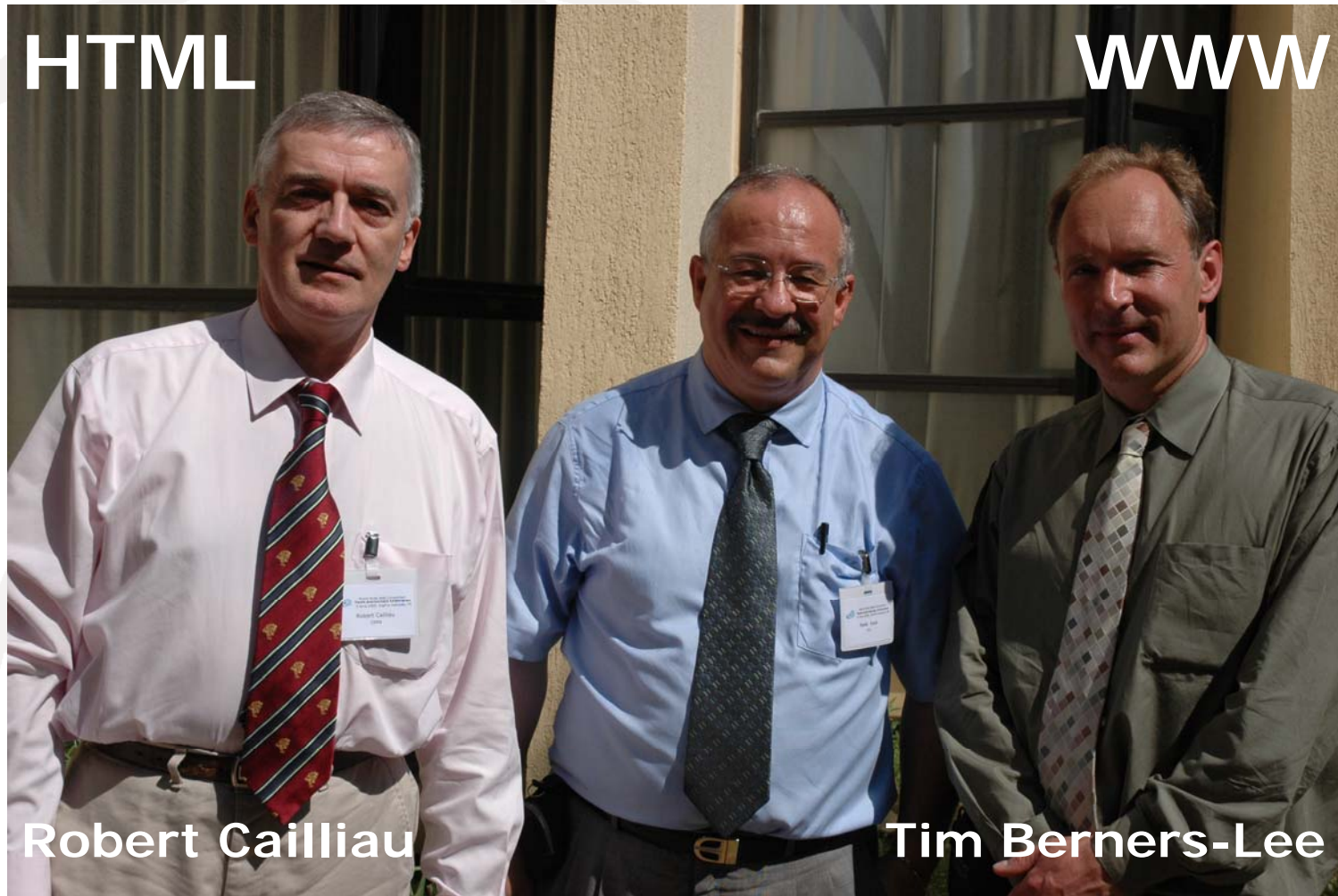
Additional Slides

ITU: connecting the world

Every time someone, somewhere, picks up a telephone and dials a number, answers a call on a mobile phone, sends a fax or receives an e-mail, takes a plane or a ship, listens to the radio, watches a favorite television programme, helps a small child master the latest radio-controlled toy, access the services of the network, or is alerted about emergencies he benefits from the work of the International Telecommunication Union.

What is IdM

Identity Management (IdM) is treated quite differently among the many different "stovepiped" communities of network operators, service providers, and users

ITU-T initiatives to implement trusted means to bridge the gaps among different platforms (the framework)
- by encouraging collaboration and a common global framework of capabilities
- especially discovery and trusted interoperability

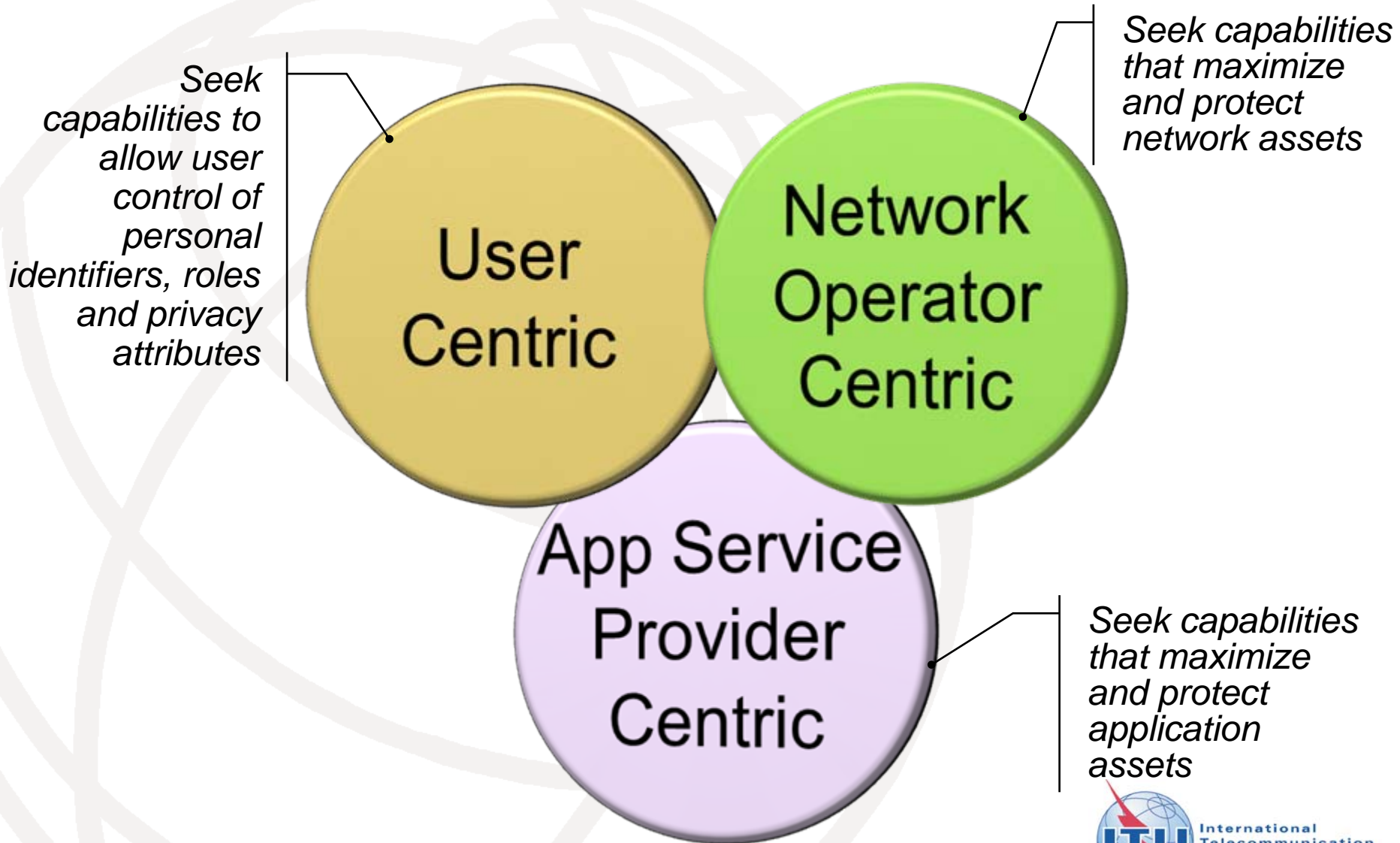This global framework is increasingly essential for an array of government, industry, and consumers needs

Initial success is being achieved with an Identity Provider oriented model and open identity protocols

OpenSpace Agenda Creation

Diverse ecosystem

Seek capabilities to allow user control of personal identifiers, roles and privacy attributes

User Centric

Seek capabilities that maximize and protect network assets

Network Operator Centric

App Service Provider Centric

Seek capabilities that maximize and protect application assets

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IdM basic capabilities

Physical: passport
Network: digital cert

Credentials

Physical: passport #
Network: email address

Identifiers

Entities

Physical: passport stamps
Network: web search, logs, blacklists

Identity patterns and reputation

Physical: name, place/ date of birth, visas...
Network: contact info, location, permissions..

Identifier information attributes and bindings

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Initial results: an identity provider model and open protocols