ITU-T Project on Telecommunications for Disaster Relief (TDR)

P.A.Probst

Senior Telecommunication Adviser, Swisscom

Chairman SG16/ITU-T

swisscom

Summary

o Scope

o Trends

o Role of standards

o Study Groups Responsibilities and Work-programme

o Conclusions

TDR scope (1)

o During natural and manmade disasters, rapid organization and co-ordination of recovery operations is essential to save lives and restore the community infrastructure

o Recovery operations depend upon ready availability and access to telecommunication resources to support urgent communications

o Telecommunication networks often experience severe stress due to damaged infrastructure and very high traffic loads
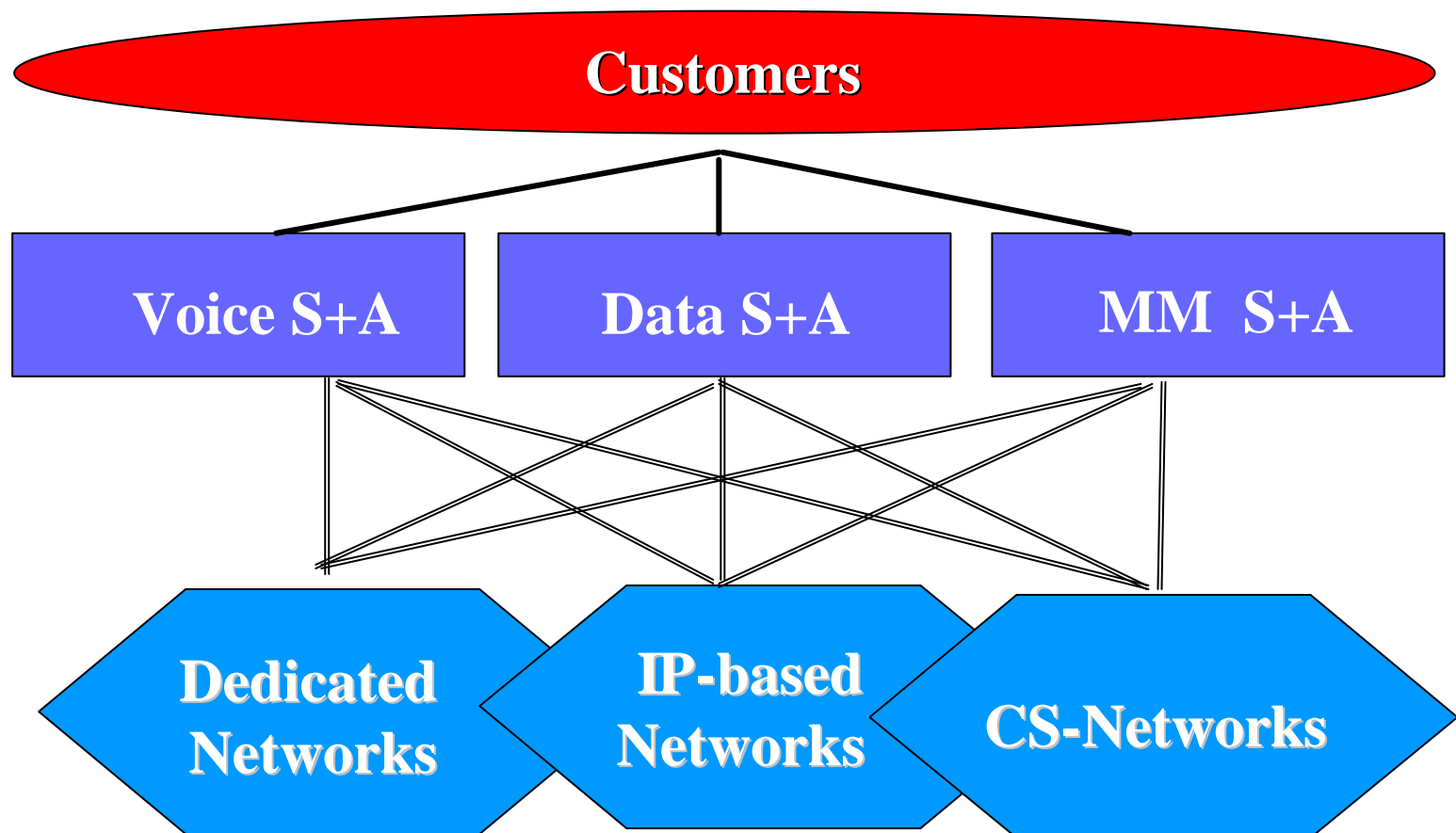
TDR scope (2)

o   There is a need to provide specific resources for authorized users (e.g. governments, fire brigades, police, medical services, etc...)

o   The development and standardization of Emergency Telecommunication Service (ETS) capabilities provides the means for disaster recovery activities to effectively communicate

o   Specific standardization activities are therefore required to efficiently support ETS requirements

o   ITU-T can take advantage of its unique industry-government environment to produce relevant Recommendations
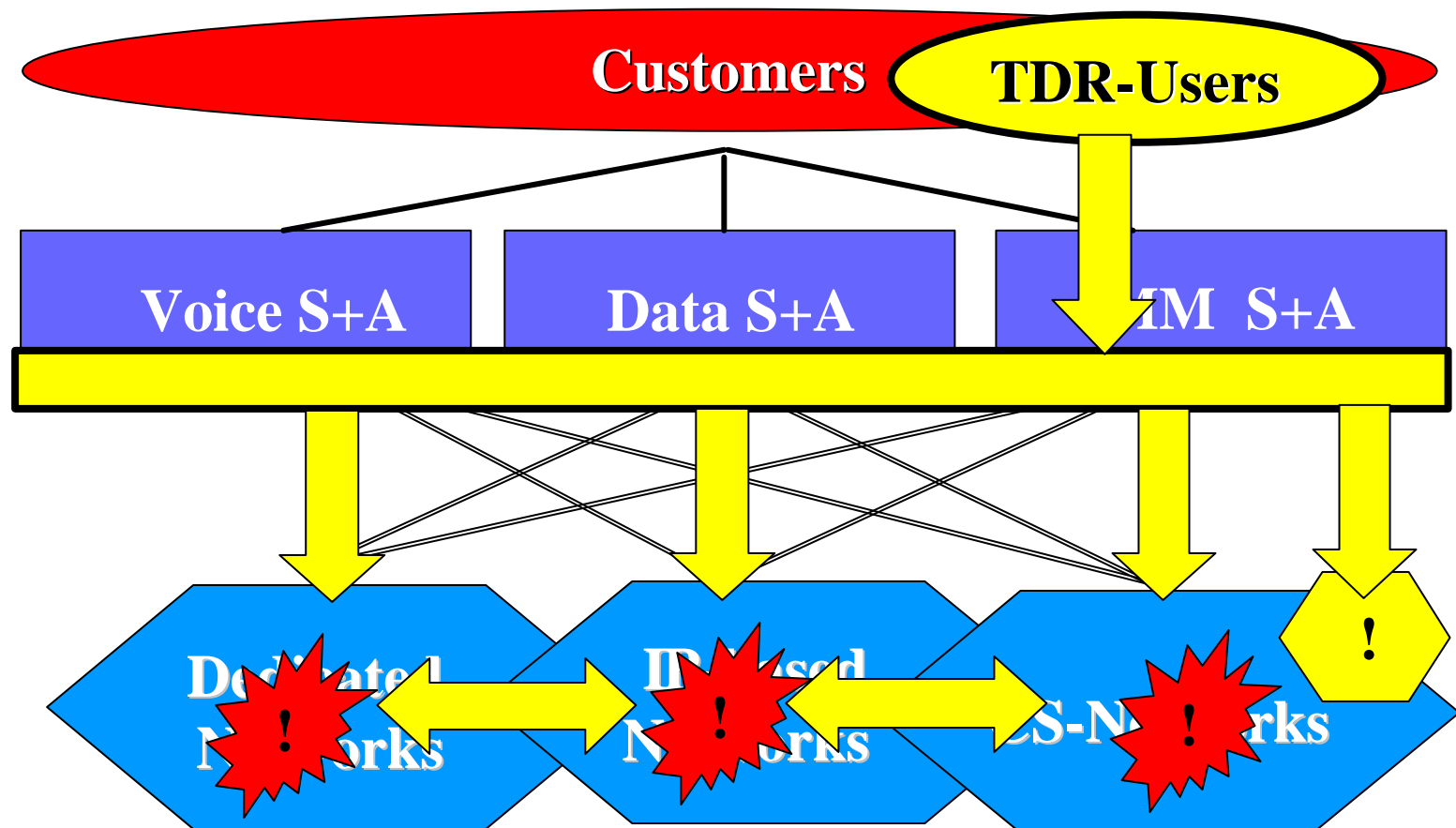
Telecommunication networks: normal operating conditions

Customers

| Voice S+A | Data S+A | MM S+A |

Dedicated Networks **IP-based Networks** **CS-Networks**

Telecommunication networks: operations in crisis situation

TDR scope (3)

o   TDR addresses the need of authorized users in terms of facilities established on public network infrastructure, including the inter-working aspects with dedicated/private networks

o   TDR work does not specifically address systems for the use of the public in general (Emergency numbers 112/911, broadcasting network to forward emergency relevant information to the public,...)

o   Since ETS is more generic, TDR is the preferred term in order to avoid the confusion with the systems described above

Key issues for TDR standardization

o **_Customers:_**
  - segmentation
  - requirements

o **_Services and applications (incl QoS)_**
  - use of existing facilities
  - extension (new needs?)

o **_Network capabilities for TDR support_**

o **_Inter-working at_**
  - Service and application level
  - Network level

o **_Regulatory framework_**

TDR trends

o **Situation in the past:**
  - TDR are/were based on PSTN, ISDN, PLMN, 2G-mobile
  - Circuit switched technology
  - Voice centric applications
  - National solutions
  - Limited inter-working

o **Present trends:**
  - Use the possibility of multimedia (video)
  - New applications/services based on mobility, location-based information,...
  - Evolution to IP-based platforms
  - Needs for global solutions (international)
  - Improve inter-working between platforms (public/private)

The role of standards for TDR

o   Inter-working, compatibility, evolution, economy of scale, ... are the main drivers for the development of a

Family of standards to ensure global interoperability of emergency communications...
- maintaining foundation of existing national capabilities,
- enabling new national capabilities to be established,
- expanding communications internationally on priority basis,
- mapping ETS indicators code at national gateways,
- facilitating orderly evolution to advancing technologies and enhanced capabilities.

First steps towards TDR standardization in ITU-T

o   Contributions submitted to several Study Groups to develop Recs on ETS/TDR (2001)

o   Development of first Recs (E.106, draft Rec. F.706)

o   The need for improved coordination and liaison with other SDOs was recognized

o   Experiences made during the events in 2001/2002

o   Projects on Security (SG17) and NGN (SG13)

o   Needs expressed by the ITU-T membership, to develop a global and harmonized set of standards for ETS/TDR capabilities in close co-operation with other SDOs

o   Questionnaire on the use of public telecom services for emergency and disaster relief operations (TSB-Circular 132/15-11-2002)

TDR Standardization Framework(1)

o **<u>Framework Question I/16</u>:**
  - first draft prepared in February 2002
  - endorsed by TSAG in June 2002 with the request to SG2 and SG16 to define their respective responsibilities
  - further development in co-operation with SG2
  - approved by SG16 in October 2002

o **<u>QI/16 Study items</u>:**
  - develop and maintain a data-base of involved organizations
  - identify user requirements (SG2)
  - define ETS/TDR capabilities based on user requirements
  - define security aspects in conjunction with SG17
  - define the terminology associated with ETS capabilities

TDR: Standardization Framework(2)

o   **<u>QI/16 Deliverables:</u>**
- Develop and maintain a table of work items related to ETS being addressed by SDOs and other relevant organizations [live-list]

- Develop an emergency telecommunication requirements Recommendation (SG2) [June 2003]

- Concept of ETS capabilities needed to fulfill the requirements [January 2004]

- Develop a System framework Rec identifying the components needed to support the ETS capabilities [2005]

- Implement a project oriented organization to perform the co-ordination and harmonization of the development of standards [2003]

ITU-T Areas of responsibilities (1): Study Group 2

o   *Mandate:*
 **Operational Aspects of service provision, networks
 and performances**

o   ***ETS/TDR issues addressed:***
   - Service and operational requirements/definition

o   ***Key Recs on ETS/TDR:***
   - E.106 - Description of an international emergency
     preference scheme (IEPS):
   → IEPS allows authorized users to have access to the
      International Telephone Service as
      described in E.105
   → E.106 describes functional requirements, features,
     access and operational management

   - Draft Rec E.TDR – "Use of telecommunications
     during emergencies"

ITU-T Areas of responsibilities (2): Study Group 3

o   *Mandate:*
   Tariff and accounting principles including related telecommunications economic and policy issues

o   *ETS/TDR issues addressed:*
   → policy and regulatory aspects

ITU-T Areas of responsibilities (3): Study Group 4

o *Mandate:*
Telecommunication management, including TMN

o *ETS/TDR issues addressed:*
- network management aspects

o *Key Recs on ETS/TDR:*
-Draft Rec M.3350 – Service Management
 Requirements for Information Interchange
 across the TMN X-interface for the international ETS

-Draft Rec M.3341 – Requirements for QoS/SLA management over the TMN X-Interface for IP-based service

ITU-T Areas of responsibilities (4): Study Group 9

o *Mandate:*
Integrated broadband cable networks and television and sound transmission

o *ETS/TDR issues addressed:*
- Capabilities over CATV networks

o *Key Recs on ETS/TDR:*
-Supplement to J.160 - Architectural Framework for the delivery of time-critical services over CATV networks using cable modems
- Draft Rec J.et - Emergency Telecommunication

ITU-T Areas of responsibilities (5): Study Group 11

o *Mandate:*
   Signalling requirements and protocols

o ***ETS/TDR issues addressed:***
   - Signalling requirements to support TDR/ETS capabilities

o ***Key Recs on ETS/TDR:***
   -Amendments to existing Recs on ...

   → SS7/ISDN/ISUP (G.760 series)
   → BICC (Q.1900 series)
   → B-ISDN (Q.2700 series)

   ... for the support of IEPS

   -Draft Rec TRQ.IEPS Signalling requirements to support the IEPS and ETS

ITU-T Areas of responsibilities (6): Study Group 12

o   *Mandate:*
End-to-end transmission performances of networks and terminals

o   *ETS/TDR issues addressed:*
- QoS and performance aspects of TDR/ETS capabilities

o   *Key Recs on ETS/TDR:*
- Recs of G.100 series (in force):
→G.107 - Computational model for use in transmission planning
→G.109 – Definition of categories of speech transmission quality
→G.1010 – MM QoS/Performance Requirements
   (G.MMPERF)
- Recs of P.560 series (in force):
→P.561- In service non-intrusive measurement device
   (INMD) – Voice service measurements
→P.562 – Analysis and interpretation of INMD voice-service
   measurements

ITU-T Areas of responsibilities (7): Study Group 13

o   *Mandate:*
Multi-protocol and IP-based networks and their interworking

o   ***ETS/TDR issues addressed:***
- network architecture and interworking

o   ***Key Recs on ETS/TDR:***
-NGN-2004 Project

-Rec Y.1541 – Network performance objectives for IP-based services

-Draft Rec Y.roec Network requirements and capabilities to support ETS

ITU-T Areas of responsibilities (8): Study Group 15

o   *Mandate:*
    Optical and other transport networks

o   *ETS/TDR issues addressed:*
    Impact of the transport layer performances and availability on ETS/TDR capabilities

o   *Key Recs on ETS/TDR:*
    → ETS aspects addressed under the security work of SG15 (G.784, G.874, G.7712/Y.1703,...)

ITU-T Areas of responsibilities (9): Study Group 16

o   *Mandate:*
    Multimedia services, systems and terminals

o   *ETS/TDR issues addressed:*
    - MM service architecture and protocols
     for TDR/ETS capabilities
    - MEDIACOM-2004 Project (Q A/16)
    - ETS Framework (Q I/16)

o   *Key Recs on ETS/TDR:*
    - Rec H.460.4 – Call priority designation for
     H.323 calls
    - Draft Rec F.ETS - System framework, Requirements
     and System concept
    - Draft Rec H.priority – Quality/priority classes
    - Draft Rec H.SETS Security for ETS (H.235)
    - Draft Rec F.706: Service description for an
     international Emergency Multimedia service
      → F.706 aims to extend IEPS (E.106) towards a
       variety of Multimedia Applications over any
       transport technology

ITU-T Areas of responsibilities (10): Study Group 17

o *Mandate:*
Data networks and telecommunication software

o *ETS/TDR issues addressed:*
- Security Project is relevant to TDR/ETS
- Authentication of users and prevention of interference (e.g. spoofing, changing content, denial of services, eavesdropping for ETS traffic

o *Key Recs on ETS/TDR:*
- Relevant Recs of the X-800 series

ITU-T Areas of responsibilities (11): Special Study Group (SSG)

o **Mandate:**
IMT-2000 and beyond

o **ETS/TDR issues addressed:**
- Specific characteristics of 3G mobile networks to support TDR/ETS capabilities and their interworking aspects with other networks

o **Key Recs on ETS/TDR:**
Reference to ETS/TDR capabilities of GSM and ANSI-41/cdma2000 networks:
- Q.1741.1 – IMT-2000 references to Release 1999 of GSM evolved UMTS core network with UTRAN access network
- Q.1741.2 - IMT-2000 references to Release 4 of GSM evolved UMTS core network with UTRAN access network
-Q.1742.1 - IMT-2000 references to ANSI-41 evolved core network with cdma2000 access network

Development of TDR technical standards in close co-operation with ITU-R, ITU-D and other SDOs:

o ITU-R: RF spectrum related aspects, Inter-working with BC- and satellites networks

o ITU-D: Requirements of developing countries

o ETSI (EMTEL,...)

o ISO/IEC

o IETF (WG iprep,..)

o T1/TIA

o 3GPP, 3GPP2,...

o ....

Conclusions: Key factors for success and challenges

o   Understand users requirements

o   Identify the regulatory framework

o   Develop a set of global and compatible Standards

o   Cost aspects

o   Evolutionary approach

o   National sovereignty

o   Partnership between Member States, private sector, GOs and NGOs