
PLENARY MEETING

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PROPOSALS FOR THE WORK OF THE CONFERENCE

Part 1 – Proposed amendments to Resolution 136 (Rev. Guadalajara, 2010)

The use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief

1 Introduction

1.1 Public Protection and Disaster Relief (PPDR) safety networks provide communications for various public safety services like police, fire, ambulance, and other first response services. These requirements are designed, developed and built considering requirement of highly robustness, providing coverage also in remote areas, features like group call for coordination, direct mode operations for communication in case of non-availability of network etc. These PPDR networks are primarily intended for mission critical voice communications for PPDR such as work of rescue & relief agencies. Many of these features which were available in public safety networks e.g. TETRA, P25, DMR etc. were not available in commercial mobile networks. Over a time, networks based on TETRA, P25, DMR etc. have also been deployed in areas where operations related activities requiring group coordination like at airports, transport hubs, relief camps etc. is required.

1.2 Presently, commercial mobile networks and dedicated networks for PPDR are distinct networks. Typically, commercial mobile networks are operated and maintained by Telecom Service Providers (TSPs) for providing communication among all population in a service area while dedicated public safety networks are usually operated and maintained by state or local government agencies and provide communication among smaller community dealing with public safety, agencies dealing with rescue & relief operations.

1.3 Over last decade, there has been phenomenal growth in coverage by commercial mobile networks and in turn there was advantage in price and availability of end user devices and

network equipment because of economy of scale. User needs and competitive environment has also brought broadband wireless access, multi-media communications, richness in features and services along-with significant improvements in data rate capabilities (Multi-megabits per second) on radio interface. Core Networks have also evolved to be more flexible with flat architecture and to support multi-media communication with orchestration.

1.4 Now-a-days, need is being felt to include citizens, residents in disaster affected areas in rescue & relief operations, information gathering via crowdsourcing, training on disaster management via digital tools (simulators) for public, rescue & relief agencies.

1.5 Many systems related to the PPDR efforts and essential infrastructure will be users of commercial mobile networks which will be required to utilized for coordination with disaster management systems, rescue & relief agencies e.g. smart grid, intelligent transport systems, e-health, railways' communication etc.

1.6 In view of above, integration of two systems namely PPDR networks and commercial mobile networks will be required for efficient and effective management of disaster by involving citizens/residents in disaster affected area and minimizing impact also by warning/ alerting, training using digital tools via broadband wireless networks. This will provide quick response, wider & deeper coverage for training to take suitable safety measures during disaster.

1.7 Moreover, many public safety features, mission critical communication aspects are also being considered as a feature of commercial networks e.g. LTE. Some of these public safety features have been standardized in latest releases of LTE and some more features are under standardization in subsequent releases. These features for public safety requirement include Device-to-Device communication (Proximity based services), Group Call (voice, data, video), High Power Devices etc.

1.8 Many international or regional entities are working on standardization for developing these or similar features e.g. 3GPP on public safety features in LTE, OMA (Open Mobile Alliance) on "Device Management, Presence and Group Management and Push-to-Talk over Cellular (PoC) and TIA/ ATIS are working on interworking of LMR and LTE systems.

1.9 IMT networks with public safety features may not have immediate ubiquitous coverage. Therefore there will be requirement of roaming between PPDR networks and IMT networks. Public safety devices will also need to be able to roam on a commercial operator's IMT network to exploit broadband capabilities & rich features. Inter-working between public safety networks and IMT networks need to be kept in mind for standardization efforts.

1.10 There will also be need to have a framework to provide guaranteed access and treat traffic related to Public safety on priority and end-to-end guaranteed manner in commercial packet switched networks.

2 Proposal

2.1 In this regard, modifications to Resolution 136 of PP-10 are suggested to encourage study and standardization activities on inter-working between IMT and Public safety networks, roaming arrangements for public safety network users to roam in commercial IMT networks, requirements of capabilities in IMT devices for public safety network users. There is a need to also develop detailed guidelines for priority access and treatment of traffic related to public safety network users in IMT packet switched radio and core networks.

2.2 There is a need to take measures to encourage use cases of PPDR by involving citizens/residents via commercial IMT networks in disaster-affected area in coordination with rescue & relief agencies.

MOD IND/85/1

RESOLUTION 136 (REV. ~~GUADALAJARA, 2010~~BUSAN, 2014)

The use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief

The Plenipotentiary Conference of the International Telecommunication Union
(~~Guadalajara, 2010~~Busan, 2014),

recalling

- a) Resolution 36 (Rev. Guadalajara, 2010) of this conference, on telecommunications/information and communication technology (ICT) in the service of humanitarian assistance;
- b) Resolution 182 (Guadalajara, 2010) of this conference, on the role of telecommunications/ICTs in regard to climate change and the protection of the environment;
- c) Resolution 34 (Rev. Hyderabad, 2010) of the World Telecommunication Development Conference (WTDC), on the role of telecommunications/information and communication technology in disaster preparedness, early warning, rescue, mitigation, relief and response;
- d) Resolution 48 (Rev. Hyderabad, 2010) of WTDC, on strengthening cooperation among telecommunication regulators;
- e) Resolution 644 (Rev. WRC-07) of the World Radiocommunication Conference (WRC), on telecommunication resources for disaster mitigation and relief operations;
- f) Resolution 646 (WRC-03) of WRC, on public protection and disaster relief;
- g) Resolution 673 (WRC-07) of WRC, on radiocommunication use for Earth observation applications;
- h) the emergency telecommunication/ICT coordination mechanisms established by the United Nations Office for the Coordination of Humanitarian Affairs,

taking into account

Resolution 60/125, on international cooperation on humanitarian assistance in the field of natural disasters, from relief to development, adopted by the United Nations General Assembly in March 2006,

noting

- a) § 51 of the Geneva Declaration of Principles adopted by the World Summit on the Information Society (WSIS), on the use of ICT applications for disaster prevention;
- b) § 20 (c) of the Geneva Plan of Action adopted by WSIS, on e-environment, which calls for the establishment of monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, least developed countries and small economies;
- c) § 30 of the Tunis Commitment adopted by WSIS, on disaster mitigation;
- d) § 91 of the Tunis Agenda for the Information Society adopted by WSIS, on disaster reduction;
- e) the effective coordination work of the Partnership Coordination Panel for Telecommunication for Disaster Relief and Mitigation, led by the ITU Telecommunication Standardization Sector,

considering

- a) the devastation suffered from disasters around the world, particularly in developing countries that may suffer disproportionately due to a lack of infrastructure and, therefore, have the most to gain from information on the subject of disaster prevention, mitigation and relief efforts;
- b) the potential of modern telecommunications/ICTs to facilitate disaster prevention, mitigation and relief efforts;
- c) that broadband networks will play important role for public safety by providing multi-media communication capabilities;
- d) that Smart grid for power, intelligent transports systems, e-health etc. will be users of commercial mobile networks and will play critical role in PPDR; the type of traffic generated by these will also require resilience, restoration, recovery of communication network or services during disaster management;
- ee) the ongoing cooperation between ITU study groups and other standards development organizations dealing with emergency telecommunications, alert and warning systems,

recognizing

- a) the activities being undertaken at the international and regional levels within ITU and other relevant organizations to establish internationally agreed means for the operation of systems for public protection and disaster relief on a harmonized and coordinated basis;
- b) the ongoing development by ITU, in coordination with the United Nations and other United Nations specialized agencies, of guidelines for applying the international content standard for all-media public warning in all disaster and emergency situations;
- c) the contribution of the private sector, in the prevention, mitigation and relief of emergency and disaster situations, which is proving to be effective;
- d) the need for a common understanding of the network infrastructure components required to provide rapidly installed, interoperable, robust telecommunication capabilities in humanitarian assistance and disaster relief operations;

e) the importance of working towards the establishment of standards-based monitoring and worldwide early-warning systems, based on telecommunications/ICTs, that are linked to national and regional networks and that facilitate emergency disaster response all over the world, particularly in high-risk regions;

f) the role that the ITU Telecommunication Development Sector can play, through such means as the Global Symposium for Regulators, in collecting and disseminating a set of national regulatory best practices for telecommunication/ICT facilities for disaster prevention, mitigation and relief;

g) that standardization of many public safety features like Proximity Service, Group Call, in IMT networks (e.g. LTE) have been finalized and many more public safety network or devices features are being considered in later releases e.g. High power in specific bands for better coverage etc.;

h) the need of interworking between IMT networks and PPDR networks e.g. TETRA, P25, DMR etc.;

i) IMT network with public safety features will provided voice, video and data capabilities like high definition video surveillance, social media platforms,

convinced

a) that an international standard for communication of alert and warning information can assist in the provision of effective and appropriate humanitarian assistance and in mitigating the consequences of disasters, in particular in developing countries;

b) that crowdsourcing will be an important source of information for rescue & relief agencies for PPDR and disaster management;

c) that rescue and relief agencies would involve citizens/ residents in disaster affected area who will play an important role in managing disaster;

d) that digital tools will be more effective and efficient in training not only rescue & relief agencies but also common public at the time of need (including pre-disaster phase) to follow safety measures,

resolves to instruct the Directors of the Bureaux

1 to continue their technical studies and to develop recommendations, through the ITU study groups, concerning technical and operational implementation, as necessary, of advanced solutions to meet the needs of public-protection and disaster-relief telecommunications/ICTs, taking into account the capabilities, evolution and any resulting transition requirements of existing systems, particularly those of many developing countries, for national and international operations;

2 to support the development of robust, comprehensive, all-hazards emergency and disaster early-warning, mitigation and relief systems, at national, regional and international levels, including monitoring and management systems involving the use of telecommunications/ICTs (e.g. remote sensing), in collaboration with other international agencies, in order to support coordination at the global and regional level;

3 to promote implementation by appropriate alerting authorities of the international content standard for all-media public warning, in concert with ongoing development of guidelines by all ITU Sectors for application to all disaster and emergency situations;

4 to continue to collaborate with organizations that are working in the area of standards for emergency telecommunications/ICTs and for communication of alert and warning information, in order to study the appropriate inclusion of such standards in ITU's work and their dissemination, in particular in developing countries,

resolves to instruct the Telecommunication Standardization Bureau (TSB) and the Radiocommunication Bureau (BR)

a) to collaborate with international or regional entities, standardization bodies related to public safety networks to foster work on inter-working between PPDR networks and IMT networks,

b) to prioritize efforts on standardization of public safety features in IMT networks and IMT devices;

c) to take actions to standardize requirements of roaming PPDR agency users in IMT networks;

d) to develop guidelines for end to end priority treatment and guaranteed access for traffic from PPDR users while roaming on commercial IMT networks and packet switched networks;

e) to develop suitable reports and recommendations regarding PPDR spectrum requirements, use of frequency bands identified under WRC Resolution 646 and cross border movement of PPDR terminals,

resolves to instruct the Telecommunication Development Bureau (BDT)

a) to conduct workshops for role of ICT in disaster management, utilizing capabilities of broadband networks during disaster;

b) capacity building at strategic vision level and operation level for utilizing capabilities of IMT networks and public safety features for disaster management, digital/ ICT tools combined with IMT networks for trainings to rescue & relief agencies, public for taking necessary safety measures etc.;

c) to conduct "PPDR Drills" with an aim to enhance readiness and capabilities of regional members to better respond to PPDR requirements, monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief as well as to strengthen regional networking, communication, and cooperation procedures for a successful and continuous collaboration,

encourages Member States

1 in emergency and disaster relief situations, to satisfy temporary needs for spectrum in addition to what may be normally provided for in agreements with the administrations concerned, while seeking international assistance for spectrum coordination and management, in accordance with the legal framework in force in each country;

2 to work in close collaboration with the Secretary-General, the Directors of the Bureaux, as well as emergency telecommunication/ICT coordination mechanisms of the United Nations, in the development and dissemination of tools, procedures and best practices for the effective coordination and operation of telecommunications/ICTs in disaster situations;

3 to facilitate the use by emergency organizations of both existing and new technologies and solutions (satellite and terrestrial), to the extent practicable, in order to satisfy interoperability requirements and to further the goals of public protection and disaster relief;

4 to develop and support national and regional centres of excellence for research, pre-planning, equipment pre-positioning and deployment of telecommunication/ICT resources for humanitarian assistance and disaster relief coordination,

invites the Secretary-General

to inform the United Nations and, in particular the United Nations Office for the Coordination of Humanitarian Affairs, of this resolution.

Part 2 – Draft New Resolution to promote efforts for early adoption of Software Defined Networking (SDN) in developing countries

1 Introduction

1.1 Software Defined Networking (SDN) is recently gaining importance for evolving a flexible, agile and programmable network. Existing deployed network architectures have limitations due to discrete multiple protocols specific to various applications. Management of applications is done on device level and needs manual configurations of provisioning or QoS. Static nature of existing network, limit dynamic adaptation to changes in traffic, demand of users & applications.

1.2 The explosion of mobile devices and content, server virtualization, and advent of cloud services needs reexamination of traditional network architectures. Many existing applications were designed with client-server computing scenario, but this needs to be evolved for dynamic computing and storage needs of today's enterprise data centers, campuses, and carrier environments. There is need to evolve networking protocols to deliver higher performance and reliability, broader connectivity, and more stringent security.

1.3 SDN will help to realize network virtualization, which will give network operators the ability to establish and manage new virtualized resources and networks without deploying new hardware technologies. SDN & Network Function Virtualization (NFV) will provide capabilities to manage the network complexity and management in dynamic & agile manner. SDN will provide better control of network infrastructure and will help to reduce capital & operational costs for introducing new services or technologies.

1.4 SDN, by decoupling of control & data planes, programmable control plane and abstractions of network layer, will lead to higher speed and flexible network with better security & energy management of network equipment. This will help in customized control & on-demand delivery of network resources. This will lead the way to employ large-scale parallel processing algorithms and associated datasets across their entire computing pools and thereby lead to develop hyper scale and agile networks.

1.5 Software Defined Networking (SDN) was assigned strategic priority by the World Telecommunication Standardization Assembly (WTSA-12), which adopted Resolution 77 – Standardization work in ITU-T for software defined networking.

1.6 Recently, Telecommunication Standardization Advisory Group (TSAG) has approved establishment of Joint Co-ordination Activity on Software Defined Networking (JCA-SDN). JCA-SDN is charged with coordinating ITU-T's standardization work on SDN and related technical topics and one of main responsibility is to ensure the alignment of SG13 work on SDN's functional

requirements and architectures with that of SG11 on its signalling requirements and protocols. The JCA will take into consideration the SDN work of other standards development organizations (SDOs), forums and consortia, and will act as the first point of contact for organizations interested in contributing to ITU-T's SDN standardization programme.

2 Proposal

2.1 This is to help bridge the gap in adopting SDN based networks in developing countries by taking early actions on requirements of developing countries and minimizing impact while migrating to SDN in future. Early actions may also be required for bringing awareness and capacity building in SDN for developing countries.

2.2 Developing countries specific use cases, energy requirements, compatibilities to existing networks, role of lower-end manufacturers from developing countries etc. need to be considered for reaping benefits of SDN by developing countries.

ADD IND/85/2

DRAFT NEW RESOLUTION [IND-1]

To promote efforts for early adoption of Software Defined Networking (SDN) in developing countries

The Plenipotentiary Conference of the International Telecommunication Union (Busan, 2014),
recalling

- a) Resolution 77 (Dubai, 2012) of World Telecom Standardization Assembly, on Standardization work in ITU-T for software-defined networking;
- b) Resolution 123 (Rev. Guadalajara, 2010) on Bridging the standardization gap between developing and developed countries;
- c) Resolution 135 (Rev. Guadalajara, 2010) on ITU's role in the development of telecommunications/information and communication technologies, in providing technical assistance and advice to developing countries, and in implementing relevant national, regional and interregional projects;
- d) Resolution 137 (Rev. Guadalajara, 2010) on Next-generation network deployment in developing countries;
- e) Resolution 139 (Rev. Guadalajara, 2010) on Telecommunications/information and communication technologies to bridge the digital divide and build an inclusive information society,

recalling further

- a) Resolution 44 (Rev. Dubai, 2012) of World Telecommunication Standardization Assembly on Bridging the standardization gap between developing and developed countries;
- b) Resolution 59 (Rev. Dubai, 2012) of World Telecommunication Standardization Assembly on Enhancing participation of telecommunication operators from developing countries;

- c) Resolution 73 (Rev. Dubai, 2012) of World Telecommunication Standardization Assembly on Information and communication technologies, environment and climate change;
- d) JCA on SDN under ITU-T TASG (JCA-SDN) established in June 2013 to coordinate the work carried out by ITU-T SG11, SG13 and other involved expert groups,

considering

- a) that SDN is most promising technology for network virtualization, network abstraction and network programmability;
- b) that the SDN technology will provide operators with several advantages including increased flexibility, agility and performance along with simplified operations;
- c) that the SDN concept will give network operators greater and better control of their infrastructure, allowing optimization and customization, improved resource utilization, ease of deployment and thereby reducing the operational and capital costs;
- d) that the SDN will provide capability of gradual scaling-up of network, centrally managed, multi-tenant network with open standards to source equipment, functionality, services, network capacity etc. from multiple sources & cloud capacities thereby reducing operational costs especially in developing countries.

further considering

- a) that SDN will bring new services at reduced operational and capital expenditure which is more useful for developing countries;
- b) that SDN will help in energy saving which is more critical requirement in developing countries;
- c) that developing countries will require migration plan from existing networks to SDN based networks at early stage to protect its current investments in network & services deployment so that benefits of SDN may be reaped by developing countries without much delay with respect to deployments in developed countries;
- d) that capacity building for SDN in developing countries will also be needed to be planned from beginning to create awareness of benefits of SDN;
- e) that approaches/ strategies for developing countries will be required to be developed at early stage for making readiness of new network elements being deployed or under plan to be reutilized in future to migrate to SDN based networks;
- f) that greater involvement & participation of developing countries in formulating standardization of SDN will help bridge standardization gap,

bearing in mind

that SDN will provide new opportunities for manufacturers of network elements in developing countries,

instructs the Director of the Telecommunication Standardization Bureau (TSB)

to organize workshops on SDN in different countries with focus on developing countries and building capacity in developing countries in order to promote their participation in SDN standardization work.

instructs the Director of the Telecommunication Development Bureau (BDT)

- 1 to conduct workshops for capacity building on SDN so that gap in technology adoption in developing countries may be bridged at early stages of implementation of SDN based networks;
 - 2 to develop approaches for integrating, and migrating from legacy networks to SDN based networks in developing countries.
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