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# BUSINESS PLAN for JTC1/SC6

## Telecommunications and Information Exchange between Systems

**PERIOD COVERED: March 2016 – January 2017**

### **1.0 Executive summary**

Since SC6 was established in 1964, SC6 has worked on standardization in the field of telecommunications dealing with the exchange of information between open systems, including system functions, procedures, parameters as well as the conditions for their use. This standardization encompasses protocols and services of lower layers including physical, data link, network, and transport as well as those of upper layers including but not limited to Directory and ASN.1: MFAN, NFC, PLC, Future Networks and OID. A considerable part of the work also has been done in effective cooperation with ITU-T SG's and other standardization bodies, including IEEE 802, ECMA International, and NFC Forum. SC6 is responsible for 353 published International Standards and 35 open project items.

Recently SC6 approved new work items on Future Network Architecture and its Protocols and Mechanisms which would support emerging services and applications beyond the limitations of the current networks.

### **2.0 Chairman's Remarks**

#### **2.1 Market Requirements, Innovation**

NFC standards (ISO/IEC 18092 NFCIP-1, ISO/IEC 21481 NFCIP-2) are becoming a significant success in the market. Many vendors including Google, Nokia, and Samsung are incorporating NFC technology in their smart phones. NXP, Sony, NFC Forum, and ECMA International have contributed significantly to the development of the NFC standards. SC 17 has been a close partner in developing the standards in SC 6. SC6 would follow the need for advanced NFC applications.

The current network has become an essential communication infrastructure not only for data transfer but also social applications. Even though the current network is such an essential infrastructure, SC6 notice that there are many concerns: scalability, ubiquity, security, robustness, mobility, heterogeneity, Quality of Service (QoS), re-configurability, context-awareness, manageability, economics, etc. Since 2010, SC6 has studied and published nine parts of ISO/IEC TR 29181 Future Networks-Problem statement and requirements: General aspects, Naming and addressing, Switching and routing, Mobility, Security, Media transport, Service composition, Quality of service and Networking of everything. Driven by the requirements of emerging applications, described in ISO/IEC TR 29181-series, the current network has become an architectural patchwork of ever growing complexity; SC6 believes that new network architectures are required.

Directory standards have been designed to permit deployment of large directory databases distributed in many systems with a very efficient, flexible and reliable replication mechanism. It constitutes a very good solution for enterprise directory particularly if it is completed with LDAP protocol (Directory servers can be accessed with DAP or LDAP protocols) and requests can be chained between X.500 Directory servers and LDAP servers. Directory standard is continuously improved to be usable by emerging applications like tag-based or cloud computing. Public-key and attribute certificates which are also part of X.500 standard are now widely used for security in

transactions. A new edition is planned for 2016. In this edition, the part 8 (equivalent to Rec. ITU-T X.509) will contain only features related to public-key infrastructure and privilege management infrastructure and will support new features like validation of certificates in a very short time, needed by environments like Smart Grid.

ASN.1 standard is used in many protocols (directory, network management, security) and permits usage of multiple encoding rules particularly PER for narrow bandwidth, XER for communications with XML applications, OER for fast and efficient encoding (particularly for financial applications). New encoding rules (for example for compatibility with JSON applications) will be considered.

## **2.2 Accomplishments**

SC 6 is responsible for 353 published International Standards and 34 open project items. Since established, SC6 has recognized new types of service request as they arose, and have standardized the protocols and services for telecommunications and information exchange between systems timely and appropriately. As new applications emerge over the network through diverse communication technologies, more new work times have been proposed and standardized in SC6 in effective cooperation with ITU-T and other standardization bodies, including IEEE802, ECMA international and NFC forum.

## **2.3 Resources**

At present, there are 19 P-members and 30 O-members in SC6. Especially SC6 has the characteristics that experts with new technologies lead the standardization activities of hot issues like NFC, PLC and Future Networks, while dozens of experts with a long past continue to maintain and revise the existing standards like X.500 and ASN.1 at each regular and interim working group meeting. As many services emerge, more expert groups with diverse backgrounds are needed; more close collaborations with global SDO's and local SDO's are essential for successful global standardization.

## **2.4 Competition and Cooperation (including consortia)**

The main role of SC6 has been standardizing the protocols for various networks using diverse technologies. However as conventional services or devices which were traditionally not related to the communication facilities like home appliances or car have come to integrate with ICT technologies and consequently each group develops its own standards, it caused unnecessary competition between groups. From the past lesson, SC6 tries to collaborate in close liaison with groups, especially Category C liaison, based on detailed topic.

In February 2016, SC6 collocated its plenary meeting with ECMA international in Xian, China on NFC matters in SC6/WG1. SC6 plans to collocate meetings with other groups based on the topics even regularly.

## **3.0 Working Groups**

### **3.1 WG 1 – Services and Protocols in the Physical and Data Link Layers**

The main role of SC6/WG1 is to deliver the standards on services and protocols in the physical and data link layers. As the new types of the communication technologies are emerged, it extends the working boundary and delivers standards the market requires.

### **3.1.1 WG 1 Accomplishments**

WG1 successfully completed following works:

- NFC-series: ISO/IEC 18092, 21481, 22536, 23917, 28361, 19369, 13157-series, 16353
- MFAN-series: ISO/IEC 15149-1, 15149-2, 15149-3, 15149-9
- PLC: ISO/IEC 12139-1,

Also there were some standards submitted by IEEE which are discussed in WG1 prior to submission as fast track:

- ISO/IEC/IEEE 18880, 18881, 18883 on Ubiquitous green community control network

### **3.1.2 WG 1 Deliverables**

WG1 is developing a standard on coexistence mechanism for broad powered line communication technologies. It is not only to improve the ISO/IEC 12139-1:2009, but to achieve the harmonized coexistence between ISO/IEC 12139-1, IEEE 1901, and ITU-T G.9960: ISO/IEC 21228.

Also, WG1 anticipates and responds to the new services such as body area communication and low power wide area network.

### **3.1.3 WG 1 Strategies/risks/opportunities/lessons learned (if any)**

Since the work of WG1 is closely related to the all sorts of physical communication technologies, it is highly recommended to work closely with other SDO's or fora.

## **3.2 WG 7 – Network, Transport, and Future Network**

WG 7 was established by merging WG2 for network layers and WG4 for transport layer and applications. Since Internet was globally accepted as de facto standards, WG 7 has focused on to Enhanced Communications Functions and Facilities, aka ECFE, proposed by US and Belgium in 1992, to prepare for the next generation of internet.

### **3.2.1 WG 7 Accomplishments**

WG7 has studied to figure out a new network architecture to support newly emerging network services for a long time since the issues of internet next generation were raised. Collaborating with ITU-T then-SG7, SC6 published some standards from 1999 to 2010;

- ISO/IEC 13252:1999 – Enhanced communications transport service(ECTS) definition
- ISO/IEC 14476-series - Enhanced communications transport protocol (ECTP): specifications, QoS.

Then based on the lessons, a series of TR documents, ISO/IEC TR 29181-series, have been developed to specify problem statement and requirements for the various issues of Future Network; Part 1(2012) - General Aspects, Part 2(2014) - Naming and Addressing, Part 3(2013) - Switching and Routing, Part 4(2013) - Mobility, Part 5(2014) - Security, Part 6(2013) - Media Transport, Part 7(2013) - Service Composition, Part 8(2017)- Quality of Service, and Part 9(2017) - Networking of Everything

### **3.2.2 WG 7 Deliverables**

From the long study and analysis of the problem statement and requirements of the future network, WG7 started to develop an international standards on future network architecture and protocols;

- ISO/IEC 21588 Future Network – Architecture
- ISO/IEC 21589 Future Network – Protocols and mechanism

Now WG7 studies next projects to be initiated, following ISO/IEC 21588 and 21590;

- PWI – Architecture and Intelligent Proxy Model for promoting the QoS in Future Network
- PWI - Architecture of Future Network Naming and Addressing
- PWI – Switching and routing architecture

### **3.2.3 WG 7 Strategies/risks/opportunities/lessons learned (if any)**

Due to the new idea and expertise are required for future network project, WG7 plans to invite experts from liaison organizations to participate in the meeting, as well as contributions to be submitted from 'in-active' P-member national bodies, using Twinning system.

### **3.3 WG 10 – Directory, ASN.1 and Registration**

Experts with a long experience on Directory, ASN.1, and Registration in WG 9 have worked to provide and update standards since 1990, and still continue to assist other groups with use of ASN.1-related texts and use of object identifiers and respond to their needs

#### **3.3.1 WG 10 Accomplishments**

The 7<sup>th</sup> edition of ISO/IEC 9594 incorporates the technical corrigenda on Edition 6 and three amendments. This edition can use encoding rules other than Basic Encoding Rules (BER). The interworking with LDAP has been improved and the part 8 of the standard (Public-key and attribute certificates) has been adapted for Identity Management.

New edition of ISO/IEC 8824 all parts and ISO/IEC 8825 all parts were published. A new set of encoding rules set (Octet Encoding Rules) of ISO/IEC 8825-7, which is faster than Packed Encoding Rules but less compact is now available which has been designed for real time applications like high speed trading.

New Edition of ISO/IEC 9834-8 (Generation of Universally Unique Identifiers (UUIDs) and their use in object identifiers) is also available.

#### **3.3.2 WG 10 Deliverables**

Directory:

- Maintenance of Edition 7 (2014): progression of technical corrigenda.
- Progression of two amendments:
- Amendment 1: Communications Support Enhancements: improvement of interworking between X.500 directory and LDAP servers.
- Amendment 2: IDM support: improvement of part 8 of the standard related to public-key and attribute certificates.

PKI and PMI:

- Restructuration of several parts for the future Edition 8 to have part 8 only related to public key infrastructure (PKI) and privilege management infrastructure (PMI). Addition of new functionalities for specific usages like Smart Grid. The new Edition (Edition 8) will be ready by end of 2016.

ASN.1:

- New Edition of ASN.1 and its encoding rules incorporating Technical Corrigenda into the base texts.
- Continue to assist other groups with use of ASN.1-related texts and use of object identifiers and respond to their needs.
- Resolution of current defects.
- Creation of new encoding rules for compatibility with JSON applications.

Registration:

- Extension of the scope of ISO/IEC 9834-9 to include network sensors.
- New usage of object identifiers for resolution of heterogeneous identifiers and locators in network.
- Usage of object identifiers for Internet of Things

**3.3.3 WG 10 Strategies/risks/opportunities/lessons learned (if any)**

None