
ISO/IEC JTC 1 "Information technology"

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SC 6 Business Plan 2020

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Description

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BUSINESS PLAN for JTC1/SC 6

Telecommunications and Information Exchange between Systems

PERIOD COVERED: February 2020 – October 2020

1.0 Executive summary

Since SC 6 was established in 1964, SC 6 has worked on standardization in the field of telecommunications dealing with the exchange of information between open systems, including system architectures, 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. SC 6 is responsible for 396 published International Standards and 37 open project items.

Recently SC 6 is working on (1) Future Network Architecture and its Protocols and Mechanisms which would support emerging services and applications beyond the limitations of the current networks, (2) revisions of NFCIP-2 to be harmonized with NFC Forum specifications, and ISO/IEC 17982 on CCCC PHY to improve the interoperability of the International Standard. (3) New standards in communication protocols of Low Altitude Drone Area Network (LADAN).

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. SC 6 following the need for advanced NFC applications, SC 6 is now in the process of revision of ISO/IEC 21481 on NFCIP-2 to be harmonized with NFC Forum specifications widely deployed in the market

The current network has become an essential communication infrastructure not only for data transfer but also for social applications. Even though the current network is such an essential infrastructure, SC 6 notice that there are many concerns such as scalability, security, robustness, mobility, Quality of Service (QoS), reconfigurability, context-awareness, etc. Since 2010, SC 6 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, SC 6 is now working on ways to develop international standards on architectures and protocols and mechanisms for future networks: ISO/IEC 21558 and 21559 on future network architecture and protocols, respectively. Especially ISO/IEC 4396 on RINA which is based on the IPC. It is assumed to be implemented over quantum repeaters, providing secure and short-delay service. 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 396 published International Standards and 41 open project items. Since established, SC 6 has recognized new types of service request as they arose, and have standardized the protocols and services or 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 SC 6 in effective cooperation with related TCs/SCs of ISO and IEC, ITU-T Study Groups, and other standardization bodies, including IEEE802, ECMA international and NFC forum.

2.3 Resources

At present, there are 18 P-members and 33 O-members in SC 6. Especially SC 6 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 SC 6 has been standardizing the communication protocols and applications for telecommunications and information exchange among systems for various networks environments 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, SC 6 tries to collaborate in close liaison with other SDOs, especially Category C liaison, based on detailed topic.

In February 2016, SC 6 collocated its plenary meeting with ECMA international in Xian, China on NFC matters in SC 6/WG1. SC 6 plans to collocate meetings with other relevant organizations based on the topics even regularly.

3.0 Working Groups

3.1 WG 1 – Physical and data link layers

The main role of SC 6/WG 1 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 has successfully completed following works:

- NFC-series: ISO/IEC 18092, 21481, 22536, 23917, 28361, 19369, 13157-series, 113158, 16353
- MFAN-series: ISO/IEC 15149-1, 15149-2, 15149-3, 15149-4
- PLC: ISO/IEC 12139-1, ISO/IEC 21228IS published on May 24th, 2019

ISO/IEC 21228 on coexistence mechanism for broad powered line communication technologies was published on May 24th, 2019. This standard 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.

3.1.2 WG 1 Deliverables

WG1 is developing a revision of ISO/IEC 21481 on NFCIP-2 to be harmonized with NFC Forum specifications

widely deployed in the market. WG 1 is also working on a revision of ISO/IEC 17982 on CCCC PHY to improve the interoperability of the International Standard by integrating the International Technical Report ISO/IEC TR 22512. Recently, WG 1 starts to work on new project about communication protocols of Low Altitude Drone Area Network (LADAN).

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

Since the work of WG1 is closely related to all sorts of physical communication technologies, it is highly recommended to work closely with other SDO's or fora. WG 1 will take advantages of the current liaison relationship with other SDOs.

Recent years, WG 1 has made effort on seeking more opportunities for improving its standardization work through diverse mechanisms of standardization activities under frame work guided by ISO/IEC consolidated Directives JTC 1 supplement. WG 1 has encouraged establishment of ad hoc groups like ad hoc Group on security (AHGS), study group on wearable devices. WG 1 and WG 7 also have a joint ad hoc group on Networking for Blockchain. The outputs of these ad hoc groups strengthened vitality of WG 1.

WG 1 also encourages more flexible means such as organizing interim meetings/E-meetings and drafting liaison reports for experts to adequately discuss issues relevant to standard development.

3.2 WG 7 – Network, Transport, and Future Network

WG 7 was established by merging WG 2 for network layers and WG 4 for transport layer and applications. Since WG 7 had developed lots of protocols on OSI network and transport by early 1990s, WG 7 has focused on Enhanced Communications Functions and Facilities, aka ECFF, supported by many national bodies and organizations in 1990s to provide enhanced communication protocols that solve many well-known problems of existing transport protocols. Currently, WG 7 has been working on Future Network including other emerging networking issues to prepare the future of the networks since 1998.

3.2.1 WG 7 Accomplishments

WG 7 has studied to figure out new network architecture to support newly emerging applications and services for a long time since the issues of next generation internet were raised. Collaborating with ITU-T SG17 (formerly SG7) and SG11, SC 6 published many relevant standards by 2010;

- ISO/IEC 13252 – Enhanced communications transport service (ECTS) definition
- ISO/IEC 14476-series - Enhanced communications transport protocol (ECTP): Protocol specifications, support multicast and enhanced QoS.
- ISO/IEC 16512-series – Relayed Multicast Protocol (RMCP) specifications
- ISO/IEC 24793-series – Mobile Multicast Communications (MMC) specifications

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 - General Aspects, Part 2 - Naming and Addressing, Part 3 - Switching and Routing, Part 4 - Mobility, Part 5 - Security, Part 6 - Media Transport, Part 7 - Service Composition, Part 8 - Quality of Service, and Part 9 - Networking of Everything.

Also, WG 7 studied and developed a framework for managed peer-to-peer communications, ISO/IEC TR 20002 in 2012. ISO/IEC TR 20002 has been used as a reference standard by ITU-T SG11 for development of lots of ITU-T X.609-series Recommendations, architecture and protocols for managed P2P communications. ISO/IEC 17811-series standards on architecture and protocols for device control and management are other achievements of WG7 for networking and control of home devices over network. ISO/IEC 17821 standard on low power wireless mesh network over channel-hopped TDMA Links is another achievement of WG 7.

3.2.2 WG 7 Deliverables

Based on ISO/IEC TR 29181-series standards “FN problem statement and requirements”, WG 7 has been developing international standards on protocols and mechanisms as well as architectures for future network;

- ISO/IEC 21588-series: Future Network – Architecture
- ISO/IEC 21589-series: Future Network – Protocols and mechanisms

WG 7 is developing ISO/IEC 21588 and ISO/IEC 21589 as multi-part standards, considering various issues described in ISO/IEC TR 29181-series documents. Currently, SC 6/WG 7 has developed several CD text of ISO/IEC

21588 and ISO/IEC 21559 on switching and routing, QoS, networking of everything. Also, new CD text of ISO/IEC 4396-series has been recently developed on reference model, common application connection establishment, common distributed application, flow allocator, and error and flow control protocol for Recursive Inter-Network Architecture (RINA). It is planned to progress to the FDIS stage within this year.

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, WG 7 plans to invite experts from liaison organizations to participate in the relevant WG 7 activities, as well as contributions to be submitted from 'in-active' P-member national bodies, using Twinning system. For the successful achievement of WG 7 work on Future Network related subjects, close collaboration with other SDOs, especially ITU-T SG11 (protocols) and SG13 (requirements and architectures) on Future Networks and IMT-2020 network, should be strengthen. Also, considering recent market requirements and activities of other SDOs on 5G/IMT-2020 network technologies, WG 7 needs to challenge this important technical area as well as future networking technologies to support emerging new applications and services such as Blockchain.

3.3 WG 10 – Directory, ASN.1 and Registration

Experts with a long experience on Directory, ASN.1, and Registration in WG 10 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 8th edition of ISO/IEC 9594 incorporates the technical corrigenda on Edition 7 and one amendment. 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. X.509 certificates and certificate lists have been updated to include usage of quantum resistant algorithms. A new part of ISO/IEC 9594 related to certificate protocols will be ready in 2020.

Some corrigenda on various parts of ISO/IEC 8824 and ISO/IEC 8825 have been created to clarify in response to requests of ASN.1 users.

3.3.2 WG 10 Deliverables

Directory:

- Maintenance of Edition 8 (2017): progression of technical corrigenda.

PKI and PMI:

- Restructuration of part 8 of Edition 8 to separate public key infrastructure (PKI) and privilege management infrastructure (PMI) from protocols related to public key certificates and privilege management certificates. Creation of a new part related to certificate protocols.

ASN.1:

- Continue to assist other groups with use of ASN.1-related texts and use of object identifiers and respond to their needs. Development of new Encoding rules for ASN.1 to permit usage of ASN.1 in new domains like JavaScript object notation encoding rules (ISO/IEC 8825-8).
- Resolution of current defects.
- New edition of ISO/IEC 8824 and ISO/IEC 8825 which integrate amendments and technical corrigenda on 2015 edition.

Registration:

- 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)

Directory, particularly part 8 of ISO/IEC 9594, are largely used for security in Public Key Infrastructure (PKI) and Privilege Management Infrastructure (PMI). X509 certificates have been updated to include usage of quantum

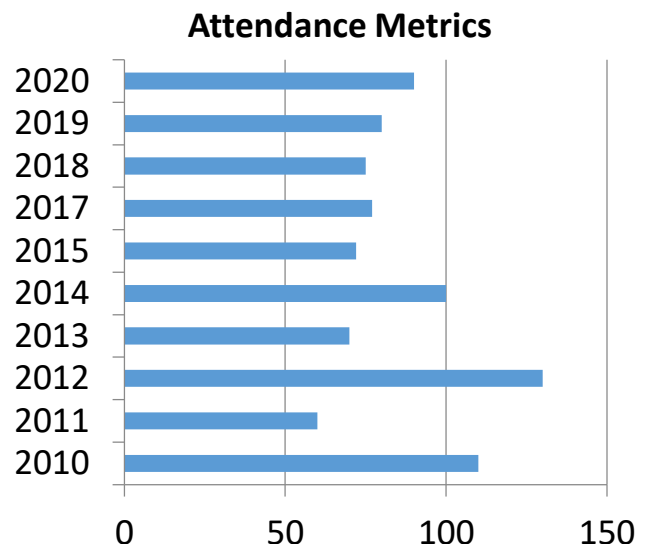
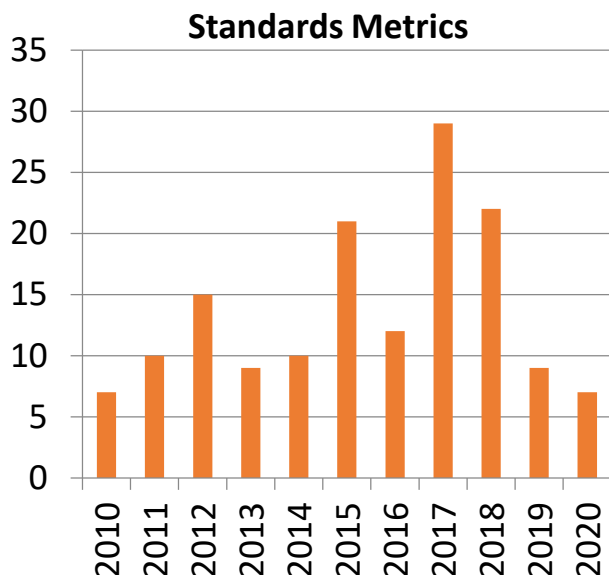
resistant algorithms. A new part of ISO/IEC 9594 related to protocols to manage certificates in under development are will be included in Edition 9 of the standard. A decentralized PKI architecture, using blockchains is under development.

ASN.1 is used in many applications. The standardized encoding rules have an extension mechanism to permit interworking of successive versions of a protocol. Some of them, like PER or OER, give very compact encoding for narrow bandwidth networks.

Object identifiers are used in many places like network management, Directory and LDAP object classes and attributes, cryptographic methods (to identify algorithms). In the future, object identifiers will also be used to identify various kinds of object, including IoT. Since object identifiers have a hierarchical structure with a delegation mechanism, it is easy to allocate object identifiers to new objects without any risk of clash. Resolver defined in Object Resolution System standard (ISO/IEC 29168) provides a method to retrieve automatically information about a given object identifier.

JTC 1/SC 6 Dashboard 2019 - 2020

Systematic Reviews				Publication Standards			
Year of SR ballots closure	Total Closed	Closed On time	% on time	Number Published	Average time to Publish	# within timeframe	% within timeframe
2019	16	16	100%	9	13.36	9	100%
2020	52	52	100%	7	14.78	7	100%



New & Current Work Items

- ISO/IEC WD 4005, Low altitude drone area network (LADAN)
- ISO/IEC WD 29168-2, Procedures for the object identifier resolution system operational agency
- ISO/IEC DIS 17982, Close Capacitive Coupling Communication Physical Layer (CCCC PHY)
- ISO/IEC CD 21558 & 21559, Future Network – Architecture & Protocols and mechanisms
- ISO/IEC DIS 21481, Near Field Communication Interface and Protocol – 2 (NFCIP-2)