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Interoperability Guidelines: ICT Infrastructure for Cross-border Flows of Electronic Documents

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Interoperable ICT: semantic, linguistic and other aspects.
Report from Russia-organized Workshop on interoperability with proposed relevance to electronic document flows

16 September 2013, Honolulu, USA

Information and Communications Technologies (ICT) have become ubiquitous, touching all parts of the economy, and this offers opportunities to learn and apply lessons from one field to other areas of commerce. One example derives from interoperability, the array of standards and protocols that allow users and applications on different networks to talk with each other.

In the Asia-Pacific region, APEC Leaders outlined this challenge in the 2012 Vladivostok Declaration: “We recognize the importance of information and communication technologies (ICT) as a crucial driver for further integration in the APEC region. We believe it is possible and necessary to be more active in promoting confidence and trust in electronic environments globally by encouraging secure cross border flows of information, including electronic documents. We reaffirm the necessity of multi-stakeholder cooperation to continue efforts to expand and strengthen the Asia-Pacific Information Infrastructure and to build confidence and security in the use of ICT."

To advance discussion of these issues, Russia organized an expert “Workshop on Interoperable ICT: Semantic, Linguistic and Other Aspects”, which was held 16 September 2013 on the margins of TEL 48. The outcomes of this workshop can be grouped in two main areas, outlined below: features of technical interoperability, and suggested fields where application of these ideas might be facilitating.

Features of ICT Technical Interoperability

The workshop convened experts on ICT Interoperability to try to draw the experience of engineers to frame some general lessons but not a complete view of interoperability, which could be further developed by one group of experts in other fields.

1. Technical Standards and Specifications: The Internet is made possible by widespread and voluntary adoption of a range of technical standards, specifications, and agreed use of Internet protocols. Interoperability, therefore, refers to the ability to have seamless bi-directional data flows across defined interfaces.

2. Decentralized and Scalable Architecture and Administration: The Internet consists of a network of interconnected networks that operates independent of a centralized structure or administration. This framework permits the Internet to grow by easily interconnecting new systems and users which adapt to local conditions and user needs.

3. Technology Neutrality: Users and applications on different networks can communicate across different technologies, systems and languages.

4. Client-friendly Architecture: allows interconnection of systems and services, which enables innovation and continuing improvement.

5. Infrastructure Reliability: we observe interoperable but separate systems may contribute to overall resilience and reliability, in part because failure of component parts does not generally threaten failure of the entire network.

The above approach is based on a predominantly liberal model, aimed at interoperability of ICT.

Another group of experts in technical and other related areas, particularly legal and organizational issues considers it necessary to use mainly regulatory organizational, legal and technological mechanisms to ensure a greater level of mutual confidence and security. This approach is based on the application of the following set of principles:

Features of ICT technical, organizational and legal interoperability

1. Unification. Interoperable ICT use unified organizational and technical infrastructures enabling cross-border electronic document interchange.

2. Scalability. Interoperable organizational and technical infrastructures should maintain the capacity to enroll new participants enabling them to quickly start operating resp. using the system. These infrastructures should also enable their users to choose a set of services matching user's needs.

3. Equal reliability of the infrastructure, which applies common minimal security requirements to all of its participants.

4. Legalization of electronic documents, ensuring that issued e-documents are equally recognized by respective jurisdictions.

5. Client-friendly architecture, which includes simple, clear, and handy user interfaces and unified system of accesses to the services of electronic documents interchange.

6. Systematization , which includes following components:

- consistency of organizational, legal and technical arrangements;
- consistency in reliability structures and infrastructure systems;
- moving from bilateral interoperability arrangements towards multi-vectored ones, where appropriate;
- agreed linguistic algorithms and technologies for information systems.

This approach has definite reflection proposed by Russia within the framework of WSIS+10 Vision for WSIS Beyond 2015, C5. Building confidence and security in the use of ICTs, para f. «Promote research and cooperation enabling effective use of data and software in particular electronic documents and transactions including electronic means of authentication and improve security methods».

We can assume that both approaches and their combination can be used in the construction of bilateral or multilateral international information systems of cross-border electronic document interchange in the Asia-Pacific region, depending on the functionality and appropriate requirements to ensure trust and security.

It is noted that both approaches develop the fundamental principles of the UNCITRAL on non-discrimination, functional equivalence and technological neutrality regarding systems of electronic document interchange.

Interoperability, e-Commerce and Electronic Documents
A Case for Facilitating Electronic Documentation

Workshop participants discussed how applying ideas of interoperability could help facilitate cross-border flows, for example, access to services for telemedicine, remote education, or participation in e-auctions. Important across these examples is the need for confidence in transactions and transfer of electronic documents. Participants raised a range of jurisdictional and legal questions, as well as public policy and consumer questions such as security and privacy, which require the involvement of a greater range of experts.

We offer the above observations about interoperability to facilitate e-commerce and call on other competent authorities to examine how we might apply principles of interoperability to questions concerns cross-border flows, authentication and acceptance of electronic documents.