INTEROPERABILITY AS A MATTER OF DEVELOPMENT

Position Paper
Submitted for Consultations of the Internet Governance Forum[1]
February 2007

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Issue

This paper argues that interoperability in information and communication technology (ICT) is a development issue that deserves substantial treatment in the Internet Governance Forum (IGF). The issue is one that the IGF might suitably address under its mandate because (i) the issue is horizontal in nature, cutting across several international organizations, and (ii) there is a need for coherence in different organizations' policy approaches.

Framing the Issue

As defined in Wikipedia, "Interoperability is the ability of products, systems, or business processes to work together to accomplish a common task...."[2] For simplicity, this paper uses the short-form "products" to refer to products, systems, or business processes, though in practice these three different forms can be quite complex and layered. "Components" are here construed as being the parts that work together to make up the whole.

The paper very briefly sets out how interoperability has a direct impact on access to ICT and as such affects development. The focus then shifts to why this subject rightly warrants IGF attention.

The Development Dimension in a Nutshell

At the heart of the development dimension of interoperability is the notion that there are serious economic differentials between systems that are interoperable and systems that are not. These differentials arise in large part because interoperability allows discreet components of products to be substituted or added on, whereas a lack of interoperability results in a sort of pre-packaged, lock-in of components.

To help understand these dynamics, it is useful to think of comparative economic systems, wherein one entails a market economy with efficient clearing of supply and demand, and the other entails a command economy that tries to dictate the allocation of resources. The clearing mechanism of the market economy affords flexibility and spurs competition and exchanges, whereas the top-down structure of the command economy shields preferred players from competition, and so results in less activity and innovation.

The same sorts of dynamics apply to the structure of ICT products: Where products are interoperable, the consumer enjoys competitive and efficient options as components can be tested

[1] An earlier version of this paper was circulated for comment at a meeting entitled, "Internet Governance for Development: Clarifying the Issues," convened by the Oxford Internet Institute (OII) and Harvard's Berkman Center for Internet and Society, held at OII on September 1, 2006.
[2] http://en.wikipedia.org/wiki/Interoperability as viewed on 25 August 2006.

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and selected for effectiveness, and mixed and matched according to specific purposes. By contrast, where products lack interoperability, the consumer wields much less choice in the selection of components.

So, for example, if electronic commerce (e-commerce) required an electronic signature (e-signature), interoperable systems might allow parties to complete a transaction regardless of the device and system that the purchaser was using: The buyer could use his web-enabled mobile phone to provide his signature and make the purchase, or he could use a desk-top computer connected to the Internet to do so. By allowing different choices, interoperability has augmented this particular consumer's access. Aside from benefiting just the individual, this interoperability carries other positive effects economically: As individual cases add up, consumer demand spurs further development of devices that work together, thereby boosting available ICT resources; in turn, the additional avenues for e-commerce offer more means for buyers and sellers to transact, with an added boon to the overall economy.

Despite this logic, there may be obstacles to interoperability. Although theoretically less attractive, non-interoperable products can sometimes withstand competition by new entrants if they boast of an already sizeable market share whose players are committed through previous investments. In this situation, competing components will not be cost-effective substitutes because switching will entail a discarding or setting aside of the rest of the product that is not compatible with the new component, and a new investment in enough other components to complete the new, interoperable product. Having already paid out the cost of initial investment in the non-interoperable package, the customer is not likely to opt to incur the expense of change just for the sake of one new component. Hence, the restrictiveness of products that lack interoperability may prevent competitors from entering the market. The direct effect is dampened innovation in the ICT sector, and the indirect effect, given the importance of ICT for the general economic infrastructure, is a weighted-down economy with missed opportunities.[3]

In terms of development, then, a lack of interoperability causes costs for ICT products to be unnecessarily high and not as useful as interoperable versions might otherwise be. People who are unable to afford these pricier products become further marginalized – with people in developing countries arguably hurt the most.

On the flip side, by spurring competition among components, interoperability offers the hope of lower costs for ICT. By offering cheaper access, it helps open up participation in the economy and in the Information Society as a whole.

Interoperability as a Horizontal Policy Issue

Though sometimes overlooked, interoperability is a serious matter for world policymakers. It affects the market structure for ICT products and directly influences whether inputs for the information infrastructure are economical. Because these products are fundamental to a country's ability to participate in the global economy, policies that make them affordable are crucial for development.

[3] Interoperability is said to be linked to open standards. In open standards processes, any interested party may participate and contribute to standards development. Such openness can help guard against large technology companies' pushing the adoption of their own "standards" in a way that reinforces their market dominance and limits choice for others. For a discussion of these issues, see *Roadmap for Open ICT Ecosystems*, produced by the Open ePolicy Group (2005), available at http://cyber.law.harvard.edu/epolicy/roadmap.pdf (as viewed on August 31, 2006).

With development a central issue for the IGF, it is fitting that attention should turn to interoperability. Still, there is the basic question as to whether the IGF has authority to treat this issue according to the mandate it received in the *Tunis Agenda for the Information Society* (*Tunis Agenda*). Among other things, the IGF has been tasked to "[f]acilitate discourse between bodies dealing with different cross-cutting international public policies regarding the Internet and discuss issues that do not fall within the scope of any existing body".[4]

As examples below demonstrate, ICT interoperability constitutes a horizontal issue with development aspects spanning across several intergovernmental organizations. To name a few that are not typically thought of as dealing with technical standards:

- The World Trade Organization (WTO) – The WTO's *Annex on Telecommunications* states that "conditions for access to and use of public telecommunications transport networks and services may include ... requirements, where necessary, for the inter-operability of such services."[5] Speaking to the overlapping competencies of different organizations to deal with this area, the *Annex* continues: "Members recognize the importance of international standards for global compatibility in inter-operability of telecommunication networks and services and undertake to promote such standards through the work of relevant international bodies, including the International Telecommunication Union and the International Organization for Standardization."[6]

  The WTO's *Declaration on Global Electronic Commerce* subsequently called for an examination of all trade-related issues pertaining to global electronic commerce, with this work to "take into account the economic, financial, and development needs of developing countries..." The scope of this work includes the telecommunications interoperability provisions.[7]

- The World Intellectual Property Organization (WIPO) – In WIPO issues of interoperability arise in connection with intellectual property rights (IP rights, or IPR). As explained in An Overview of WIPO's Information and Communication Technology (ICT) Strategic Planning Process,[8] "WIPO is building an ICT capacity that will focus on the business needs and requirements of the IP community; capitalize on Internet-based technologies and open standards; and recognize the importance of system inter-operability and electronic data exchange between Member States and users of the IP system."[9]

  In describing the supporting infrastructure, the document notes: "Although the application of a Strategic Plan based on principles of interoperability and system flexibility is expected to bring some economies of scale, the dynamic nature of the global IP and technology environment may require an ongoing investment to ensure that the

[4] *Tunis Agenda for the Information Society*, given at the Tunis Phase of the World Summit on the Information Society, 15 November 2005, Document: WSIS-05/TUNIS/DOC/6(Rev.1)-E, para. 72(b).
[5] Agreement Establishing the World Trade Organization, Annex 1B: General Agreement on Trade in Services, Annex on Telecommunications (1994), para. 5(f)(iii).
[6] *Id.*, para. 7(a).
[7] Work Programme on Electronic Commerce, adopted by the General Council on 25 September 1998.
[8] World Intellectual Property Organization, Standing Committee on Information Technologies, Plenary, Seventh Session, Geneva, June 10-14, 2002, Document SCIT/7/11, prepared by the Secretariat.
[9] *Id.*, para. 8.

underlying infrastructure is able to perform at the expected levels in all respects. However, any investments in ICT systems and infrastructure will need to be justified in the context of the Strategic Plan and be based on clear and justified business requirements. These requirements will be led by industry when existing technologies are no longer supported and by WIPO when new requirements emerge."[10]

- The United Nations Conference on Trade and Development (UNCTAD) – In looking at interoperability as a trade and development issue, the background paper for UNCTAD's 2004 meeting noted: "The digital divide, characterized by highly unequal access to and use of ICT, manifests itself both at the international and domestic levels and therefore needs to be addressed by national policy makers as well as the international community. The adoption of ICT by companies requires a business environment encouraging open competition, trust and security, interoperability and standardization, and the availability of finance for ICT. This requires the implementation of sustainable measures to improve access to the Internet and telecommunications and increase IT literacy at large, as well as development of local Internet content."[11]

  Interoperability was a major theme in a report on Competition Policy and the Exercise of Intellectual Property Rights, prepared for a meeting of UNCTAD's Intergovernmental Group of Experts on Competition Law and Policy.[12] As noted in the Executive Summary: "There is concern about cartel-like restraints, exclusionary conduct and monopoly leveraging by dominant firms, refusals to license IPRs or to sell IPR-protected products, practices or mergers which may chill technological innovation (including those relevant to proprietary de facto standards, interoperability, access to essential facilities and network effects) and the effects of over-broad grants of IPRs."

- The Organisation for Economic Co-operation and Development (OECD) – The OECD has also underscored interoperability as a priority. In its contribution[13] to the United Nations Working Group on Internet Governance, whose work fed into the Tunis Phase of the World Summit on the Information Society, the OECD touted interoperability. Commenting on the success of the Internet (and, specifically, the decentralized and collaborative process of underlying technological development and core resource management), the report notes: "Co-ordination and co-operation across a broad range of stake-holders has enabled the current open network in which different components of the Internet can interoperate."[14] The report also acclaims the open, non-proprietary nature of the core Internet standards, explaining: "Most of the protocols at the core of the Internet are protocols based on open standards that are efficient, trusted, and open to global implementation with little or no licensing restrictions. The protocol specifications are available to anyone, at no cost, thus considerably reducing barriers to entry, and enabling

[10] *Id.*, para. 14.
[11] "ICT as an Enabler for Growth, Competitiveness and Development: Implications for National and International Policies and Actions," Interactive Thematic Session, Summary prepared by the UNCTAD Secretariat, June 2004, Document TD/L.388, para. 3.
[12] Trade and Development Board - Commission on Investment, Technology and Related Financial Issues - Intergovernmental Group of Experts on Competition Law and Policy, Geneva, July 3-5, 2002, Document TD/B/COM.2/CLP/22/Rev.1.
[13] Directorate For Science, Technology and Industry - Committee for Information, Computer and Communications Policy, "OECD Input to the United Nations Working Group on the Information Society (WGIG)," Document DSTI/ICCP(2005)4/FINAL.
[14] *Id.*, p. 6.

interoperability…"[15] The report then elaborates these points and calls for appropriate respect for interoperability in policymaking for the Internet.

This simple listing points to just a small collection of the intergovernmental organizations that are not primarily engaged in setting standards but that nonetheless assert a connection between their work and interoperability. As such, the listing illustrates the overlapping competencies of organizations whose work has a nexus to this horizontal issue. While by no means exhaustive, the presentation here highlights the need for policy coherence among the different bodies – and the key role that the IGF has to play here in studying interoperability as a horizontal issue with a strong development dimension.

Conclusion

The sampling of work by the international organizations noted above suggests that the international system is treating interoperability not just as a matter for technical standards bodies. Rather, the issue is understood as directly relating to user access to ICT, e-commerce, intellectual property rights, the digital divide, competition policy, and more. With so many bodies dealing with different aspects of the same core issue, the possibility for conflicting policies is real.

Given its multi-stakeholder approach, the IGF is well situated to shed light on these overlapping relationships and to help policymakers see which aspects are most appropriately handled by intergovernmental bodies, and which might better be left to the private sector and civil society to influence. In particular, for those areas warranting treatment by governments, an IGF examination could study the appropriateness of action to coordinate on standards, consider IPR provisions permitting reverse engineering, subsidize the development of open standards, require disclosure of certain technology, and influence market structure through procurement requirements.

In sum, the IGF arguably has an imperative to raise awareness about the importance of interoperability for development and to serve as a multi-stakeholder forum for exploring policy options in this area.

[15] *Id.*, p. 7.