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## **The Complex ICT Challenge – Economics, Access and Acceptance (EAA)**

### **Abstract**

*Economics, access, and acceptance (EAA) are the keys to digital inclusion. Economics require that providers earn a return on investment, but users need affordable access. Lack of access is the primary physical cause of the digital divide. Acceptance includes cultural factors, education, and the availability of appropriate content. The Information Society's expansion must be planned and engineered by world leaders, together with business and society, to ensure that all segments of the global society are included and no one left behind.*

Three simple words, when combined, yield a complex set of requirements for successful global migration from the Industrial 20th century to the Information Age of the 21st. The Information and Communications Technology (ICT) sector's ability to achieve a global Information Society is under fire. Divergent economies, generally limited access to real time networks, and social disparity on a global basis, all inhibit the emergence of a global Information Society.

Technologically speaking, the global Information Society knows no boundaries and senses no limits. It is man who builds it, and only man can inhibit its reach. By establishing unnatural geo-political and social boundaries, unfriendly regulatory climates, and given the severe lack of physical access by those on the other side of the Digital Divide, man can slow the pace of progress.

The global Information Society must be physically accessible to the masses, must be local in content and pure in its recognition of social diversity. At the same time, it must be affordable to the mass of human citizenry. In developed countries, the convergence of telecoms, multi-media and data is driving the migration to the Information Society at light speed. Demand for basic communications service in less developed countries is having a similar effect. Successful development of a global Information Society in response to such demand will yield improvement in education, health care, economic growth, and quality of life. Failure to do so will cause increased social division, poor health care, and greater global poverty.

A successful global Information Society requires a public / private partnership, carefully structured to enable free flow of information across all of society's segments. In less developed countries the challenge is greater than in the developed world. There, Economics are more difficult, Access is often limited or non-existent, and Acceptance must be nurtured in advance of the achievement of other basic needs. At stake in developing countries are improved education and health care, social change and strong economies. At stake in developed countries are competitive advantage and improved quality of life.

EAA signifies a complex set of inter-mingled requirements, and represents the greatest challenge to the achievement of a global Information Society.

## **Economics**

The Economics of a successful global Information Society require return on investment for producers of ICTs and real value at affordable prices for consumers. While these business principles are basic and generally applicable to any business, the commerce of electronically distributing information across networks enters previously untested areas of intellectual property, anti-trust, cross border tariffs, taxes and fees. The business of commercially moving information, products and services using unbounded, potentially not secure, electronic media raises concerns regarding potential for fraud, and privacy and security violations. Governance of these areas must be measured to achieve the needed protection without inhibiting commercial usability.

Regulatory authorities, in both developed and developing countries, are being challenged to ensure provision of a regulatory climate which encourages investment in infrastructure and applications, and protects producers and consumers alike. Getting a return on investment for the producers of access and applications while satisfying the thirst of a robust and distributed global Information Society has proven to be quite challenging. The regulated telecommunications network, widely recognized as the backbone of the global Information Society, serves as the primary access for information flow. It, as well as competing networks, must be free to select both disruptive and non-disruptive technologies, governed by technical performance and business principles. Regulations imposed by civil authorities, and commercialization by network owners, must converge in common cause, to ensure fairness, economic feasibility and betterment of the society they serve.

## **Access**

Network Access is the greatest limiter of global information flow to end-users. The danger of failure for those who manage network expansion to a global Information Society lies principally in the area of access. Lack of access on a global basis is one of the main causes of the digital divide; lack of access can be expected to lead to increased social disruption, poverty and disease. Information flow, health care services, education, economic and social growth are all at risk without basic access to information. Physical access is the key ingredient required for any individual's participation in the Information Society. Information and communication technologies (ICT) provide the access infrastructure, the technical ability to participate, to grow socially and economically, and to improve quality of life, health and education.

Access infrastructure requires low cost, flexible solutions. Disruptive technologies such as WiFi may provide best-case solutions in sub-Saharan Africa, and yet may not be applicable in Sao Paulo, Brazil. Fiber access solutions may apply in Tokyo, Japan, and may not in rural Indonesia. These statements provide neither indictment nor endorsement of specific technologies or geographic applications, but rather state the need for flexible technology availability and selection, fostered by a regulatory and business environment, enabled to permit such choice. This requires partnership between the governing civil authority, the commercial sector, and the citizenry alike.

Access must be provided through efficient deployment of ICT enabled infrastructure, regardless of the technology employed. Whether the backbone is wireline, circuit switched, or data driven network elements, access is considered a minimal requirement of the global Information Society. Wireless or wireline, centralized on an all-village-shared basis or individually provided to each user, good access is the best enabler and encourager of Internet use.

The challenge of ICTs is to enable expansion of the Information Society on a global and generally equal basis. The concept of EAA requires global cooperation at unprecedented levels. Underlying economic principles of profitable deployment of base infrastructure and network elements are the first order of business. The telecommunications network serves as the primary backbone of information exchange to the end user. Expansion of the network, both to reach beyond its current footprint and to broaden the bandwidth of its existing access capacity, is paramount to achievement of the global Information Society. Through good economics, sound regulatory policy and flexible technology choice, the network must be encouraged to deliver more robust information flow to its end users. An umbrella of good regulatory governance is required to encourage, rather than limit, infrastructure expansion. An environment that further encourages broadband investment in access infrastructure offers even greater opportunity for success.

Access infrastructure, currently, is the factor that most limits global information flow; it can rightly be called the Master of the Digital Divide. To close the gap, public private partnership between regulators, investors, operators and non-government organizations (NGOs) will be needed to successfully guide global infrastructure deployment.

### **Acceptance**

Acceptance by the end user is encouraged by awareness, affordability, ease of use, and recognized benefit. Information Age Literacy (IAL) is a key element of acceptance both in developed and developing countries. IAL refers to the combined ability and willingness to understand and use ICTs for productive purposes. IAL is both educational and social in nature and captures elements of education, society and personal preference. Global information begins and ends at a local level and its packaging, transmission and presentation must be sensitive to cultural and linguistic needs of the end user. End user acceptance also requires that access be affordable. If the end user cannot afford to pay for the access, or the use of data the access provides, the system will fail. Access must be provided economically both in terms of infrastructure, devices and applications. Achievement of this goal requires cooperation between all involved parties to ensure end user affordability without compromising investor return. In developing countries, external and perhaps non-profit funding sources will be required. In both developed and developing countries, a regulatory environment that encourages public and private investment is considered a minimal requirement for success.

Ease of use is necessary for end user acceptance. This is sometimes measured by the speed at which data is transmitted or, also, by the use and applicability of specific tools. Participants in the ICT sector are driven to this by market conditions, demand and competition. Applications tailored to the end-users need for social, economic or cultural benefit are essential elements of success in the ICT sector.

The challenges of EAA are complex and not easily conquered. They require cooperation by global leaders of industry, government, and financial institutions. Organizations such as the United Nations, the International Telecommunications Union (ITU), the Electronics Industry Association (EIA), the Telecommunications Industry Association (TIA), the European Technical Standards Institute (ETSI), among others, have taken leadership positions in addressing the challenges being faced by the ICT sector. The World Summit on the Information Society (WSIS), conducted by the United Nations Information Communications & Communications

Technology Task Force in December 2003, is an example of such leadership. Under the guidance of the ITU, this summit brought together 800 world leaders from 133 countries representing governments, the private sector, and civil society, to examine stakeholder issues and set strategy for global advancement of the global Information Society.

Acceptance by end users will be market driven in response to local needs for cultural and linguistic satisfaction, as well as end user recognition of affordability and value.

### **Conclusion**

The transition from the Industrial Society to the Information Society is changing the way we live, function, and communicate with one another. Its success is anchored in the principle of EAA: Economics, Access, and Acceptance. Information expansion must be planned and carefully engineered by world leaders to ensure that all segments of the global society are included and no one is left behind.

The transformation has begun. Success stories, social improvements brought to the world by ICTs, can already be seen. An on-line volunteer in Turkey, working with the UN, helped build a HIV/AIDS library in Nigeria. His on-line efforts raised funds and educational materials to supply a remote sub-Saharan village health library in Nigeria. In Somalia, use of the Internet by local residents has followed the introduction of phone service. The Internet, now with more than 20,000 users in Somalia, is bringing new enterprise to the area and has enabled the formation of the Somali Telecom Association, which is headquartered in Dubai. Afghanistan, also, has established an Internet address. Although other basic infrastructure elements are still lacking, access to external information via the net is bringing new technology and a wealth of information otherwise denied to the citizenry of Afghanistan.

As we begin the 4th year of the new Millennium, world leaders must usher its citizens into the Information Revolution with passion, care and diligence, as well as with speed. The Information Revolution cannot afford to leave behind large segments of the world's citizenry. The social impact of such neglect is too great. Information is pervasive. It is enlightening and it is powerful. Information is the food of man's quest for a world society, characterized by prosperity, order and peace. While the challenge of progress is daunting, potential results are unlimited. Diligent expansion of infrastructure, managed governance, and better technology, bring the promise of worldwide order and social improvement in the 21st century. We must remain committed to its success.