

## DIGITAL DIVIDE

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### Abstract :

Currently, one of major priorities of the international communities is bridging the digital divide. The digital divide refers to the gap between Information and Communication Technologies (ICTs) "have" and "have-nots". Obviously, it is setting between developed and developing countries, but also between Western and Eastern countries or even among the regional localities of a country. This new form of inequality is due, in large part, to the localised nature of the services supplied by terrestrial technologies and to the commercial motivations of the operators. Possible ways to correct this gap exist. There are two kind of access technologies : wireless technologies and wired technologies. Wireless technologies are better able to bridge the digital divide because they are more flexible and rapid to deploy. Satellite appears as a good candidate technology if satellite complements the well established terrestrial systems to deliver universal broadband access. Reducing the digital divide is a new challenge for international cooperation. That is the reason why the International Telecommunications Union (ITU) or the European Union (UE) jointly by European Space Agency (ESA) are setting up action plans.

### Definition of the digital divide

The term "digital divide" describes the fact that the world can be divided into people who have and people who don't have access to Information and Communication Technologies (ICTs), such as the telephone, television, or the Internet. It is a new form of inequality.

An international divide exists among countries. The digital divide not only exists between developed and developing countries, but also between Western and Eastern Europe or even among the regional localities of a country. Other divides

arising from differences in income, age, education etc.

### Measure and factors relating to the digital divide

Concerning the International Telecommunication Union (ITU), the digital divide is measured by *Infostate* criteria, as the combination of *infodensity* and *info-use*.

*Infodensity* refers to the Information and Communications Technologies capital and labour stocks and their role in the productive capacity of the economy. *Info-use* refers to the uptake of various ICTs by households, businesses and governments and the intensity of their actual use.

There are two mains factors explaining the digital divide:

- the localised nature of the services supplied by terrestrial technologies

- the commercial motivations of the operators.

That is the reason why areas of high population density get priority access.

Therefore, the digital divide is not the result of a deliberate policy but originates from the interaction of the main players. Thus it is possible to reduce the digital divide by establishing relations among the main players (the space industry, operators, international organisations, national authorities).

For example, the European Union and ESA have jointly made an action plan. The aim of this plan is to reduce the gap between Eastern and Western Europe.

### **Legal sources for bridging the digital divide**

The first principle is the Freedom of information that is to say "everyone has the right to seek, receive and impart information and ideas through any media regardless of frontiers" (1948 UDHR, Article 19)

The second principle is the Universal service<sup>1</sup>, which means an obligation imposed on one or more operators of electronic communications networks and/or services to provide a minimum set of services to all users, regardless of their geographical location within the national territory, at an affordable price.

The objective of Universal Service is to ensure the availability of a minimum set of high-quality services which are available to all end-users at an affordable price, without distortion of competition.

Concerning affordability of tariffs, States shall ensure that consumers with low incomes have access to special tariff arrangements. Concerning quality of service, the national regulatory authorities

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<sup>1</sup> 1996 WTO reference paper on basic telecommunications – right to keep US obligations / 2002 EU Universal service Directive establishing US in Europe.

must set performance targets for undertakings with universal service obligations.

### **Competitiveness of the satellite among broadband access technologies<sup>2</sup>**

There are two categories of Internet access technology, which are grouped in wired :

- ADSL (Asymmetric Digital Subscriber Loop),
- Cable
- Fiber To The Home (FTTH)<sup>3</sup>
- PowerLine Communication (PLC)<sup>4</sup>

And wireless :

- Wireless Local Group Loop (WLL)<sup>5</sup>
- Universal Mobile Telecommunications System (UMTS)<sup>6</sup>
- Wireless Local Area Network (WLAN)
- Satellite

Wired technologies can hardly cope with the geographical digital divide in a short period of time, as it is too costly to achieve a full coverage of large territories.

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<sup>2</sup> Report by Alta Advisers for ESA : " reducing the digital divide in Europe", October 2003.

<sup>3</sup> FTTH is a network technology that deploys fiber optic cable directly to the home or business to deliver voice, video and data services. By leveraging the extremely high bandwidth capacity of fiber, FTTH can deliver more bandwidth capacity than competing copper-based technologies such as twisted pair, HFC and xDSL.

<sup>4</sup> PLC is wireline method of communication using the existing electric power transmission and electricity distribution lines. The carrier can communicate voice and data by superimposing an analogue signal over the standard 50 or 60 Hz voltage frequency.

<sup>5</sup> WLL is a system that connects subscribers to the public switched telephone network (PSTN) using radio signals as a substitute for copper for all or part of the connection between the subscriber and the switch. This includes cordless access systems, proprietary fixed radio access, and fixed cellular systems.

<sup>6</sup> Universal Mobile Telecommunications System, a 3G mobile technology that will deliver broadband information at speeds up to 2Mbit s/sec. Besides voice and data, UMTS will deliver audio and video to wireless devices anywhere in the world through fixed, wireless and satellite systems.

Wireless technologies are better able to bridge the digital divide because they are more flexible and rapid to deploy.

Satellites have an inherent ability to assure access to all parts of a region. The satellite can provide immediate solutions to respond to the urgent needs in areas<sup>7</sup>.

Even if the satellite can be a technical alternative wireless solution, it is not cost-effective enough for a mass-market deployment. Satellite systems should be considered as an complementary solution to terrestrial systems and not as a substitute.

One of the major barriers to satellite services development is the ITU backlog of so-called "paper-satellite"<sup>8</sup>. ITU upholds the right of all countries –rich or poor- to equal affordable access to satellite orbit space. However, there is an avalanche of applications for satellite "slots", many for systems that will never leave the Earth. These is a speculative system.

Another weak point for the broadband satellite systems is the issue of the price, specifically with the high cost of terrestrial terminals, which could be bring down by mass production.

The international community should "encourage the establishment and development of a global broadband satellite infrastructure that would provide universal, two-ways, high speed Internet access through individual or community low-cost, small-dish platforms"<sup>9</sup>. The international community should consider the relevance of having a world-wide market for broadband products and services through a universal technical standard. Such a standard is necessary to

foster mass production with regard to equipment manufacturing, especially with regard to the user terminals. Lower equipments costs would benefit all users, particularly in developing countries.

### **Cooperation for bridging the digital divide**

At the international level, the World Summit on Information Society (WSIS) was initiated by a resolution<sup>10</sup> of the ITU and endorsed by a resolution of the United Nations General Assembly in January 2002.

There are two phases : the first phase in Geneva (10-12 December 2003) and the second in Tunis (16 au 18 November 2005) Member States of ITU, assembled in Geneva, set up the Declaration of Principles : "Building the Information Society : a global challenge in the new Millennium"<sup>11</sup>. They declare their desire to build a people-centred, inclusive and developpement-oreinted Information Society, where everyone can create, access, utilize and share information and knowledge.

This Declaration of principles is materialized by the Plan of Action<sup>12</sup>, which seeks concrete actions (funding mechanisms, identification of areas for possible improvements, etc.). The Preparatory Committee (PrepCom) meetings are the main events where discussions on the preparation of the WSIS take place between stakeholders : governments, private sector, civil societies. It is an important platform for launching a win-win partnership between the public and private sector. Indeed, affordable access to ICTs and the needed infrastructure should be realized through the development of an enabling

<sup>7</sup> ITSO document for the WSIS, WSISI/PC-2/CONTR:42-E, 7 December 2002.

<sup>8</sup> UN/OOSA submission to the Secretariat of the WSIS on contribution of the satellite Communications technology to bridge the digital divide, WSIS/PC-3/CONTR/182-E, 31 October 2003.

<sup>9</sup> WSISI/PC-2/CONTR:42-E, 7 December 2002, p.2.

<sup>10</sup> Resolution 73 adopted during the ITU Plenipotentiary Conference, Minneapolis, 1998.

<sup>11</sup> WSIS-03/GENEVA/DOC/4-E, 12 December 2003.

<sup>12</sup> Document WSIS-03/GENEVA/DOC/5-E, 12 December 2003.

environment that promotes competition and private-sector investment.

At the European level, Member States of the European Union (EU) share common values and cultures, but they have very different realities between countries.

The EU leaders agreed on an ambitious goal for Europe : to become the world's most competitive and dynamic knowledge-based economy, with more and better jobs and greater social cohesion. To reach this goal, the European Commission devised a comprehensive strategy : the *eEurope 2005 Action Plan*, which develop modern public services through widespread availability of broadband access at competitive prices and secure information infrastructure. This action plan will succeed the *eEurope 2002* action plan endorsed by the Feira European Council in June 2000. The *eEurope* is part of the Lisbon strategy to make the European Union the most competitive and dynamic knowledge-based economy with improved employment and social cohesion by 2010.

European Community (EC) is initialising, together with European Space Agency (ESA), a cost-benefit study on the space based solution compared to the ones based on ground infrastructures. It is essential to maintain coherence between among various initiatives in order to provide the service to a wider geographical area, using more efficiently common space resources (orbital slots, frequencies, satellites, launch).

#### Conclusion :

Bridging digital divide has one main objective : to provide high quality services at low prices to citizens. However, there is another important challenge, which is to ensure to citizens a certain quality of contents. And in this context, Governments are main players.

#### Acronyms :

ADSL : Asymmetric Digital Subscriber Loop

EC : European Community

ESA : European Space Agency

EU : European Union

ICT : Information and Communication Technology

ITU : international Telecommunication Union

FTTH : Fiber To The Home

PLC : PowerLine Communication

UMTS: Universal Mobile Telecommunications System

WLAN : Wireless Local Area Network

WLL : Wireless Local Group Loop

WSIS : World Summit on Information Society

#### Bibliography :

Document WSIS-03/GENEVA/DOC/5-E, 12 December 2003.

ITSO document for the WSIS, WSISI/PC-2/CONTR:42-E, 7 December 2002.

Report by Alta Advisers for ESA : "reducing the digital divide in Europe", October 2003.

Resolution 73 adopted during the ITU Plenipotentiary Conference, Minneapolis, 1998.

UN/OOSA submission to the Secretariat of the WSIS on contribution of the satellite

Communications technology to bridge the digital divide, WSIS/PC-3/CONTR/182-E, 31 October 2003.

WSISI/PC-2/CONTR:42-E, 7 December 2002, p.2.

WSIS-03/GENEVA/DOC/4-E, 12 December 2003.