INTERNATIONAL TELECOMMUNICATION UNION
TELECOMMUNICATION DEVELOPMENT BUREAU

WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE (WTDC-98)

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Agenda item: 2.0 **PLENARY MEETING**

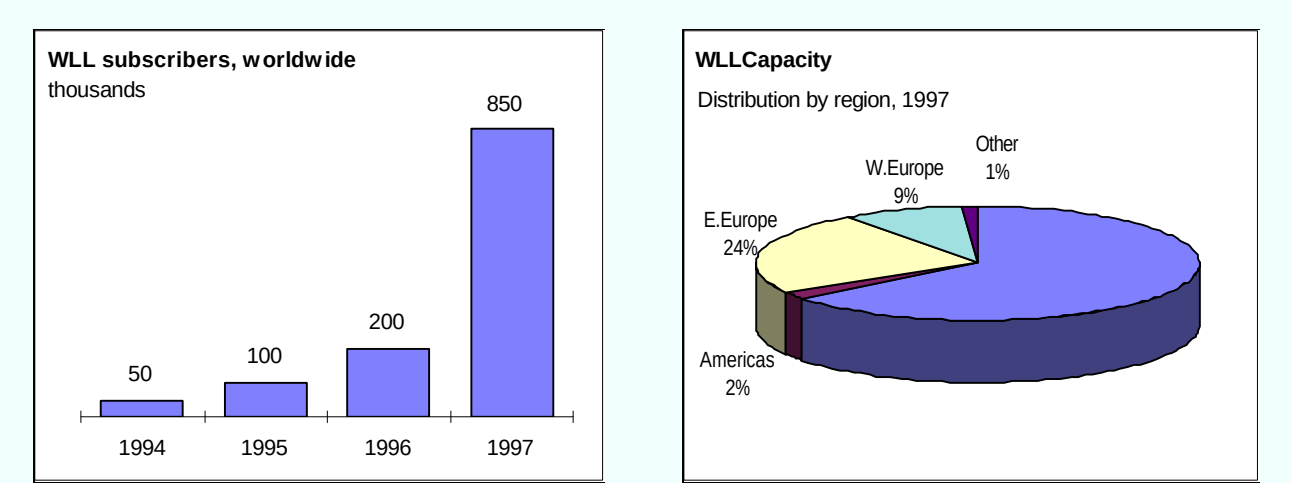
Telecommunication Development Bureau

GLOBAL TELECOMMUNICATION DEVELOPMENT TRENDS

Replace pages 13, 14 and 15 by the attached pages.

telephone network. A substantial proportion of the total costs of traditional fixed-line telephony is located in the last few hundred metres of the local loop, comprising not only the cost of the fixed capital, but also right of way costs, labour costs, and the costs of digging up and relaying busy urban streets. The prospect of simply locating a base station and then being able to add new subscribers, rapidly and at relatively low cost, is therefore extremely appealing - particularly to new operators who can minimize their infrastructure costs and emerging economies which can shorten the time of build-out and provide telephone access much faster.

WLL subscribers worldwide, 1994-1997, and by region, 1997



Source: ITU

FIGURE 6

WLL begins to connect

Furthermore, as a critical mass of users is reached, the cost of WLL systems are expected to fall even faster. With this expectancy in mind, orders for and deployment of WLL systems have begun to accelerate worldwide. The ITU estimates that around 50 systems were being trialed or in operation at the end of 1997 in some 25 countries. Installed capacity is over one million lines, of which about 85 per cent is connected to subscribers and it is forecast that there will be around 5 million WLL subscribers by the year 2000.

Global Mobile Personal Communications by Satellite (GMPCS)

A new generation of non-geostationary and geostationary satellite systems is being developed to complement terrestrial infrastructure and thus to provide global communications coverage. Global Mobile Personal Communications by Satellite (GMPCS) systems promise to enable users to make and receive calls via mobile handsets or transportable terminals from virtually anywhere in the world. Some GMPCS systems employ a constellation of comparatively small satellites orbiting close to Earth as the basic network infrastructure for delivering services. The satellites used are known in the industry as Low-Earth Orbit satellites (LEOs), Medium-Earth Orbit satellites (MEOs), or Geosynchronous-Earth Orbit satellites (GEOs). The new GMPCS systems will operate at very high (e.g. Ku and Ka band) radio frequencies.

TABLE 2

GMPCS System types

Characteristics	Data-only GMPCS	Narrowband GMPCS	GEO-MSS	Broadband GMPCS
Known as…	Little LEO	Big LEO	Narrow/Broadband	Broadband
Services available	Data only	Voice and data	Voice, video, data	Multimedia
Terrestrial counterpart	Messaging services such as paging and mobile data	Cellular telephone	Cellular ISDN	Fibre
Bit rate	2.4-4.8 Kbit/s	About 9.6 Kbit/s	2.4-14.4 Kbit/s	Up to 155 Mbit/s 2 Mbps and greater
Frequency range	Below 1 GHz	1 to 3 GHz	1.5-1.6 GHz and around 2 GHz	Above 10 GHz
Type of service	Store-and-forward	Real-time	Store-and-forward; real-time	Real-time
Source: ITU				

LEOs include "big" LEOs - operating above 1 GHz and intended primarily for the delivery of voice and other Internet services - and "little" LEOs - operating below 1 GHz and designed for the delivery of text and data, and broadband LEOs, operating above 10 GHz and designed for the delivery of broadband voice, video and data systems offer the possibility of reaching anybody, anywhere, with high-quality transmissions, and are not as vulnerable to natural disasters as terrestrial networks.

GMPCS has emerged to satisfy a need to which neither traditional satellite systems nor conventional terrestrial mobile networks have been able to adequately respond. The traditional satellite terminal equipment is too large for a person to be able to carry around with ease. Conventional terrestrial mobile networks offer a user-friendly handheld terminal, but still suffer from limited roaming capabilities and do not enjoy global coverage. Compatibility between networks has also emerged as a major barrier to international or even regional service coverage. (GMPCS systems will provide global coverage of mobile telecommunication services viable through end user terminals.)

However, GMPCS is a high-risk venture. Challenges facing the GMPCS systems include: 1) the relatively high cost of infrastructure deployment and maintenance (ranging from $US2.2 to 9 billion, according to the system); 2) the limited lifespan of the satellites, approximately 5 to 15 years; 3) terminals costs ranging between $US700 and $US 2 500; and 4) tariffs, which range between $US1 and $US 3 per minute. In addition, the viability of the GMPCS systems depends upon at least 80 to 100 governments granting GMPCS operators authorization to provide service locally. A number of countries are wary of private-sector participation in the telecommunication sector and others are worried that GMPCS services could bypass the public network and harm the operations of their national carrier. These are not insurmountable obstacles, but for GMPCS operators dealing with countries on a bilateral basis, overcoming them would be a costly and cumbersome task. Diverging national regulations could continue to make it difficult for systems to operate smoothly. On the other hand, while GMPCS systems were initially designed to serve international businessmen, their flexibility, rapid deployment and wide coverage, has continued to fuel interest in their potential adaptation as an attractive means for reaching remote and isolated communities.

A further type of proposed system to have emerged are known as "stratospheric platforms". Proposed separately by the US company SkyStation and the Japanese Ministry of Posts and Telecommunications, "stratospheric platforms" are 140-metre long balloons (or "helium-filled aerostats, to give them their correct name) which will "hang" about 25 kilometres above the Earth's surface, and transmitting in the 47 GHz waveband to a footprint of some 750000 square kilometres. Like some GMPCS, stratospheric platforms will be looking to provide broadband multimedia services.