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THIRD UNITED NATIONS CONFERENCE ON THE EXPLORATION AND PEACEFUL USES OF OUTER SPACE

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Draft report of Committee II

Vice-Chairman/Rapporteur: Carlos José **Prazeres Campelo** (Brazil)

Addendum

Note by the Secretariat

1. The present addendum contains changes proposed by Committee II of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) to the text of the draft report of the Conference (see A/CONF.184/3 and Corr.1 and 2).

2. The relevant paragraphs of document A/CONF.184/3/Corr.2 are reproduced here, with subsequent changes proposed by Committee II, if any, also indicated. The symbol of that document appears in parentheses at the end of the paragraph concerned. Changes to paragraphs that appeared in document A/CONF.184/3 are also shown; paragraphs from that document for which no changes have been proposed are not reproduced here.

3. Text added to the draft report is shown in boldface; deleted text is scored through. An ellipsis [...] indicates that the remaining text of the paragraph is unchanged.

254. The commercialization of **some** space activities has been a highly positive development. Through numerous joint ventures, commercial systems and services are creating, for example, expanding constellations of communications satellites. Those constellations of satellites have relied successfully on the international private sector to provide financial investment and to manufacture, operate and market satellites and services. Remote sensing and other areas have also depended on, and received, private sector investment in some cases. (A/CONF.184/3/Corr.2)

255. Satellite telecommunications constitute the most mature segment of the space market. ~~According to some studies, from 262 to 313 communications satellites are to be placed in geostationary orbit between 1996 and 2006, with an estimated market value of $24 billion to $29 billion.~~ **According to some studies, for the period 1996-2006, approximately 262-313 communications satellites with a market value of $24 billion to $29 billion will be placed in geostationary orbit.** To estimate the full potential market, the corresponding figures for ~~low- and middle-Earth-~~ **non-geostationary** orbit satellite constellations for mobile telephony and multimedia applications would have to be added.

256. The development of a launch vehicle [...] New applications, such as digital television, **multi-media,** rural telephony, digital audio broadcasting, mobile services and high-bit-rate data delivery services will be provided by larger satellites and will continue to drive market growth.

257. While space agencies [...] Another trend in launch requirements to all orbits is less costly launch **prices, with expendable launchers as well as reusable launchers and other launch technology expected to contribute to that outcome.**

258. Next to telecommunications, remote sensing and geographic information systems **as well as satellite multi-media** may be among the most significant commercial applications.

259. GIS will become an essential tool for analysing data as well as presenting information for market and geopolitical analysis and for diverse applications such as environmental studies and disaster management planning. It is projected that the GIS market could reach approximately $5 billion in sales by the year 2000. (A/CONF.184/3/Corr.2)

262. Since 1993 [...] Civil ground applications, already at almost 90 per cent of the total market, will keep increasing (automotive navigation systems, geodesy, GIS, precision engineering and emerging fields such as precision agriculture).[...] The success is due to the dramatic increase in the accuracy of GPS and to the steep drop in prices of equipment. GPS is thus becoming an enabling technology fuelling the market by offering accurate, real-time positioning data to be integrated with other types of information.

263. The use of GPS [...] In fact, GPS services are expected to complete the transition from a stand-alone ~~device~~ **system** to a standard feature integrated into a variety of multifunctional products such as wireless personal communication devices, leading to a **drastic reduction in prices**. ~~mass consumer market with an average selling price per receiving unit of about $100.~~

264 *bis*. Clearly, prospects for the practical utilization of outer space and space technology will depend to a great extent on the advancement of life sciences, including the entire range of disciplines such as space medicine, physiology, psychology and biology. For example, the system of medical support developed by Russian specialists to provide for manned space flights has made it possible to increase to one and a half

[...] **The practice of using high-resolution remote sensing imagery, GNSS and geographic information systems to improve agricultural productivity at the level of individual fields.**

years the length of time that crews can remain in space with no damage to health and with their fitness for work remaining at a satisfactory level. Research conducted over many years on a variety of issues by the State Research Centre-Institute for Biomedical Problems of the Russian Federation, *inter alia,* within the framework of broad-based international cooperation, on board the Salyut and Mir orbital stations, during flights of specialized non-manned biosatellites under the Bion programme and in ground-based simulation experiments has made it possible to enhance substantially knowledge of a range of fundamental problems relating to medicine, physiology and biology such as, for example, mechanisms by which the human body adapts to various environmental factors, the general mechanisms at work in the regulation of physiological functions, the problem of radiobiology and the principles underlying the concept of "physiological norms" and "transitional state" (pre-latent stage of pathology), as also to develop on that basis effective methods and means for optimization of the physiological and psychological condition of the human organism. Data of this kind are of exceptional interest for practical health-care purposes.

269. The simultaneous acquisition, adaptation and assimilation of high-technology knowledge, while perhaps desirable, are not always feasible. Many countries have to overcome constraints in their efforts by adopting strategies that differ according to their political and socio-economic environment and stage of economic development. Scenarios for technology development and exchange vary from questions of "What kind?" and "Where?" to "How much?" Accordingly, many countries are developing strategies not only for applying foreign technologies, but also for initiating the necessary process of securing technological training and self-reliance. Developing countries in particular face constraints in their efforts to move ahead in the high-technology area of space, mainly because of the limited financial resources available, lack of access to basic facilities, lack of knowledge about the technology and limited educational training facilities. (A/CONF.184/3/Corr.2)

270. The transfer of technology encompasses all activities that culminate in the ~~permanent adoption~~ **acquisition** of new ~~techniques~~ **knowledge as well as its adaptation and further development** by the recipient. [...] Notable among the priority development and application areas for developing countries are the provision of health, ~~and~~ education **and environmental** services and support for agriculture.

271. Another priority area [...] In addition, mini-satellite programmes develop advanced technologies, which, when transferred to industry, result in tangible benefits to States and to the international community. **Furthermore, small and mini-satellite programmes offer good opportunities for international cooperation.**

273. While space provides a whole new realm of opportunity and a vast potential market for industry and business, it is still perceived by many as a final frontier rather than an economic market ripe for expansion. However, a fundamental requirement for the above and many other innovative spin-offs to become reality is the reduction and minimization of development costs, thus making economy and efficiency a primary concern. For instance, in order to stimulate the commercialization of the potential market for manufacturing in space, the cost of developing the basic space infrastructure must be reduced dramatically. Governments would also have to play a role in promotion, giving incentives and aiding the development of a private sector presence in space. (A/CONF.182/3/Corr.2)

276. Technology transfer from "space-faring" countries to developing countries could be promoted by providing more training opportunities for scientists and engineers of developing countries in utilizing ~~off-the-shelf~~ **existing** technologies. Such opportunities would ~~be sufficient for~~ **assist** the scientists and engineers from developing countries to understand **and**

contribute to the direction of civil space technology development, which would facilitate the decision-making process in their countries, in particular with regard to prioritizing the space-related research and development activities to be pursued.

277. Favourable international and national environments need to be created to allow the transfer of technology to become permanent. Such an environment includes trained human resources in sufficient numbers, appropriate infrastructure and institutional arrangements, a suitable policy framework, long-term financial support and opportunities for the involvement of the private sector in technology transfer initiatives. That would enable space technology applications in developing countries to become truly operational and fully integrated into development activities. (A/CONF.184/3/Corr.2)

279. Although several cooperative, mainly bilateral, programmes exist between developing countries for the transfer of space technology, current mechanisms for fostering South-South cooperation in technology development and transfer are insufficient. Mechanisms through which donor organizations may finance technology transfer projects at the regional level, such as regional information networks, are not sufficient because of policy constraints that heavily favour bilateral agreements. (A/CONF.184/3/Corr.2)

280. Problems experienced by developing countries in the area of space technology exchange and spin-offs may be summarized as follows: (a) limited access to information; (b) low number of specialized training centres; (c) less efficient national technology transfer infrastructures; (d) lack of qualified suppliers; (e) insufficient funding and investment opportunities; (f) incompatibility of national legislation on transfer of technology between recipients and donors; and (g) insufficient effective international cooperation and collaboration. These problems could be solved in part or minimized through effective international cooperation mechanisms. (A/CONF.184/3/Corr.2)

281 *bis*. In preparing a space plan, each country may consider small satellites one of the most valuable tools to initiate and develop indigenous space capability. As small satellite programmes also offer an ideal possibility for training, countries are encouraged to include training programmes based on small satellites in their space plans and in plans for international cooperative programmes.

283. Taking into account [...] In that connection, the proper legal frameworks and international agreements being developed by United Nations bodies and agencies, covering such issues as intellectual property rights, trade marks, copyright and foreign licensing, are essential to fostering international cooperation in the area of space technology and spin-offs. **Such cooperation will benefit from public/private partnerships, in appropriate circumstances, with suitable arrangements being made for risk-sharing and for developing operational systems that build on successful research and development activities.**

284. Apart from ~~training of~~ developing human resources at the basic level of science and technology and fostering South-South cooperation, the regional centres for space science and technology education **and relevant existing national institutions** should organize specific training **programmes** to contribute to the building of **regional and** local expertise and ultimately to the success of **know-how and** technology transfer ~~programmes~~.

285. In order to attract the investments that are vital for the success of **the development of space-related activities and** technology transfer projects, **it is essential that each country create conditions conducive for such investments where they do not exist ; . t T**he political will and commitment of national leaders as regards the introduction of new technology and the development of appropriate infrastructure should be apparent. Incentives

to encourage both foreign and local investors should be given in order to stimulate the adaptation of technologies acquired from abroad to meet local needs. (A/CONF.184/3/Corr.2)

286. The Office for Outer Space Affairs ~~could initiate a~~ **should expand the** technology outreach programme on space for university educators (TOPS) aimed at the promotion of the successful transfer of space-related technologies by enhancing the ability of university educators in developing countries, in particular the least developed countries, to incorporate relevant aspects of space technology into the curricula of their institutions. Through its multiplier effect on students, TOPS would lead to a broader local awareness of the benefits of space technology in addressing local concerns in the medium to long term, thus contributing to the creation of ~~a local~~ **an** environment that is more conducive to the **acquisition, adaptation and further development associated with the** ~~permanent~~ transfer of space technology.

288. TOPS would be aimed initially at the network of university educators from ~~least developed~~ **developing** countries in all regions who have participated in specialized space technology training courses (such as the United Nations international training course on remote sensing education for educators) or from the regional centres for space science and technology education. [...]

289. The Office for Outer Space Affairs [...] ~~The costs involved for the United Nations could be covered within the existing resources of the Office.~~ **The Office for Outer Space Affairs will use its existing resources to assist interested member States to prepare such proposals and to seek the necessary funding resources.**