

### **Report on the 2006 ECSL Practitioners' Forum**

The 2006 ECSL Practitioners Forum was organised on 17 March at ESA Headquarters, by the ECSL Executive Secretary, **Mr. A. Marchini**, in cooperation with the Coordinator of the Practitioners' Forum, **Dr. F.G. von der Dunk** (International Institute of Air and Space Law, Leiden University). The theme was "Space tourism: legal and institutional issues". The forum was attended by some 100 participants from various institutional, commercial and academic professions as well as from a host of countries (including non-European such as the United States, Mexico, Canada, India and Thailand). Most notably, they included the Director-General of ESA, Mr. J.J. Dordain, and the French Minister for Research and New Technologies, Mrs. C. Haigueré, during the key-note speech.

After some welcoming words on behalf of ECSL by **Dr. G. Lafferranderie** (Chairman of ECSL and Chairman of the morning session), **Dr. Von der Dunk** introduced the theme. He noted that as recently as five years ago, space tourism essentially was still theory. He referred to the three orbital space tourists that have flown so far to the International Space Station, as well as to the Ansari X-Prize won in 2004 by SpaceShipOne that led to Virgin Galactic's plans to use the licensed technology for sub-orbital tourism within three years from now. Considering this rapid take-off, it was necessary to start addressing at a fundamental level the major legal and policy issues involved. Whilst recognising that for obvious reasons the current legislative developments almost exclusively focused on the United States, he pointed out that there were a number of international elements to space tourism even as it looks now which needed to be taken into account: the international character of outer space as an area, the fundamentally international basis of space law, the fact that Virgin Galactic was a UK company, the facts that Space Adventures (another player in the field) envisaged launchings from the United Arab Emirates and Singapore, as well as using a Russian aircraft as launch facility, and finally the proposals of the US Federal Aviation Administration to establish an International Space Flight Organisation (ISFO) along the lines of ICAO.

The second speaker was **Mr. A. Farand** (ESA Legal Department, Paris), on "...". He offered an extensive overview of the way in which the legal framework for the International Space Station (ISS), as the 'destination' for the first few proper space tourists Tito, Shuttleworth and Olsen, had dealt with those special visits. The analysis focused firstly on the general framework as provided by the Intergovernmental Agreement of 1998, after which the Crew Code of Conduct (CCOC) passed scrutiny. The CCOC was the key document dealing with space tourists, by incorporating them in the phrase 'space flight participants'.

Then Mr. Farand dwelt on some specific issues, such as liability issues, where he made a comparison of the space law liability regime as principally arising under the Liability Convention and the air law liability regime. The latter offered, in addition to third-party liability, also a system for dealing with passenger liability (from the 1929 Warsaw Convention to the 1999 Montreal Convention); and the speaker concluded therefore that the latter regime would be much more appropriate, and possibly even amenable, for purposes of space tourism. Finally, he briefly touched upon the regime dealing with criminal law issues on board the ISS, as one of the special areas of particular importance for space tourism on board the ISS.

The third speaker was **S. Boehinger**, ... with Euroconsult (Paris), who spoke on "...". He noted that going to space now starts to constitute a market in itself, requiring a paradigm change in combining two different worlds in terms of revenues, market and market players – those of tourism and of space respectively. Furthermore, he pointed out that one should clearly distinguish orbital and sub-orbital tourism. With regard to the first, the technology is available and reliable – that is, only the Russian one, as far as the current market is concerned, which is moreover a very limited market. In addition, since infrastructure costs are enormous and unlikely to come down at short notice, operations basically consist of piggy-backing.

Sub-orbital tourism on the other hand constitutes an altogether different market, requiring relatively light structures. In profile it comes close to the (risky) entertainment market, such as theme parks, adventure diving and near-space flights (some of which markets are actually being addressed by the same Space Adventures that also sent three tourists to the ISS). It is difficult to predict the market here, but the speaker warns for experiences such as with LEO satellite and micro-gravity flights where the envisaged markets did not really take off.

The fourth speaker was **C. Dubreuil**, ... with EADS (...), on "...". She started her presentation by pointing out that so far almost 500 persons have actually been in outer space, and that some 99% of those should be considered professional astronauts. From the perspective of the overall manufacturing industry, this was certainly an important qualification, although it would of course be very interesting to follow how the 'industry' of space tourism would evolve in the near future.

From a manufacturing perspective, she assumed that orbital tourism will continue to require special and very expensive vehicles (still). The quality of the 'service' as perceived by the 'customers' would depend highly on the comfort and the accommodation of the spacecraft concerned; certainly sub-orbital tourism would meet most tourist expectations merely by earth vision and weightlessness. Thus, the market was essentially one of an entertainment-nature – it certainly is not transportation, as it is not essentially about going from A to B!

The speaker then briefly touched upon certification constraints as these might severely negatively impact upon the development of tourism. Whilst the United States seemed to be quite advanced in dealing with this issue, Europe would need to take it up as well. Finally, it was obvious that product liability would be scrutinised in detail by manufacturers interested in addressing the space tourism market.

Then, the keynote speaker, **Mr. W. Whitehorn**, took the floor. Mr. Whitehorn is President of Virgin Galactic, the London-based company within the Virgin Group (headed by Sir Richard Branson) that is currently developing the first proper sub-orbital tourist vehicle. For that purpose, Virgin Galactic essentially used the technology used for the SpaceShipOne (SS-1) vehicle which had won the Ansari X-prize, of 10 million US\$, in October 2004. That technology, developed by Scaled Composites of the United States, had already been licensed to Virgin Galactic for the purpose.

Thus, whilst he showed a film with extensive coverage of the winning SS-1 flight, Mr. Whitehorn addressed the issues involved. First, he explained the revolutionary design of the White Knight-*cum*-SS-1, which was based on three key premises. The first was a design as simple as possible: SS-1 itself had a total of only 30 moving parts, with some

redundancy throughout – whereas the US shuttle has some 365,000 moving parts, with no redundancy. The second was air launch as opposed to ground-based launch, thus avoiding the need to deal with the tremendous power necessary for vertical lift-off and the attendant vibrations and consequent risks involved – the carrier aircraft White Knight flew to an altitude of 55,000 ft, before SS-1 separated to launch itself towards its ultimate altitude of 110 km. The third was re-entry not in a controlled mode, but – through the appropriate design of the SS-1 – as a sycamore leaf floating down until back at 55,000 ft altitude finally transforming (back) into a glider, descending pilot-controlled from there – thus avoiding the problems usually connected to re-entry into the denser parts of the atmosphere.

The speaker proceeded to highlight some further facts regarding SS-1. Thus, the whole mission from development of the system to completion of flight cost a mere 27.5 million US\$. Both White Knight and the SS-1 were registered as experimental aircraft. The SS-1 was adorned with the FAA registration number N 328 K, where 328 k referred to the 328,000 ft that was the intended altitude for the Ansari X-prize.

Mr. Whitehorn then moved on to the plans of Virgin Galactic for SS-2, Scaled Composites through a special company owning the intellectual property rights, then licensing the technology to Virgin Galactic. The special company was majority-owned by Virgin Galactic, whilst Scaled Composites also was shareholder. This construction was chosen, in order in the long term neither to monopolise the technology for Virgin Galactic purposes, nor to monopolise Virgin Galactic's access to the technology.

As for the SS-2, of which a fleet of five was to be built, some 43,000 bookings had already been done, with many down-payments adding up to a total of 13 million US\$ deposited. The costs of the overall operation were estimated to amount to some 200 million US\$, of which the design phase would take up some 20 million US\$. The main aim was to achieve a risk of accidents happening of better than 1 in 50,000 flights, that is roughly equivalent to current civil aviation in the United States. As a matter of fact, individual medical risks now constituted the highest ones, not those of equipment or vehicle failure.

Virgin Galactic in the end was targeting three flights per day; with additional passengers also in the carrier – a Boeing 757-like aircraft – just for witnessing the launch proper. The average cost for the first five years was estimated to be 120,000 US\$; the current price was 200,000 US\$. The combination of carrier and SS-2 would be formally defined as a spacecraft under authority of the Office of the Administrator for Space Transportation with the US FAA, even as the carrier is a more or less normal aircraft and SS-2, like SS-1, in its return phase will operate as a glider and will be registered under N 400 K, 400,000 ft being the intended altitude for SS-2. Virgin Galactic moreover is looking for Part 25 certification for aircraft in the United States, without however intending to go through all the testing normally required for that purpose.

Finally, it was noted that the investment for the SS-2 operations would be totally taken care of by the Virgin Group. The responsible Board was to release the necessary funds upon the fulfilment of two essential conditions: 1. proof of technical viability of the system; and 2. proof of the market by notably having 10 million US\$ in down-payments by the end of the design phase. The general strategic idea for Virgin Galactic of SS-2 was not so much to undertake space tourism, but to prove technology – and *then* draw in the

required external financing for the next generation of private spaceflight vehicles, SS-3, which was intended to go orbital.

After the lunch, under the Chairmanship of **Dr. von der Dunk**, the afternoon session on was opened by **Mr. M. Stanford** (UNIDROIT, Rome), speaking on “Supervision of privatised former telecommunication organisations”. Dr. Sagar pointed out that in the old International Satellite Organisations (ISO’s) the concept of ‘public service’ was right there up front, and referred also to UN Resolution 1721 in this context. Thus, e.g. INMARSAT had been subject to five types of obligations under the old, intergovernmental structure which could be qualified as ‘public service’: to provide the Global Maritime Distress and Safety System (GMDSS) established by the International Maritime Organisation (IMO); to provide all its services without discrimination in particular on the basis of nationality; to act exclusively for peaceful purposes; to seek to serve all areas where there is a need for mobile satellite communications; and to operate in conformity with the principles of fair competition.

With the privatisation of INMARSAT in the time-frame 1999-2001 and the ensuing creation of the private operator Inmarsat, great care was taken to ensure that these ‘public service’ type of obligations would be maintained. This was taken care of by means of clear-cut obligations resting upon the private operator as laid down in a Public Service Agreement, monitored and supervised by the International Mobile Satellite Organisation (IMSO), a transformed version of the old intergovernmental INMARSAT. Since 2003/4 however, the majority of shares in Inmarsat was no longer held by the ‘old’ (P)TO’s, but by venture capitalists with little inherent sympathy for maintaining the public service obligations (with the exception of GMDSS); as a consequence, the system was coming under growing strains.

Similar to INMARSAT, in the case of INTELSAT there had been two ‘public service’-like obligations secured in the Agreements. This concerned the Lifeline Connectivity Obligation (LCO), i.e. the obligation to continue to provide services at an essentially unchanged levels to those dozens of states which depended exclusively upon INTELSAT for their international telecom links – for a period of 12 years from the moment of privatisation onwards – and of global connectivity and coverage.

Analysing recent developments, he concluded that the burden for public service obligations was now shifted away largely from the companies to the supervisory intergovernmental organisations.

As a second speaker, **Mr. C. Janvier** (Legal Adviser with Eutelsat) provided an “Update on the evolution of Eutelsat S.A. in a post-privatisation context”. He briefly introduced Eutelsat, as the current #3 of satcom operators worldwide, with 23 satellites in orbit and annual revenues at a level of 760 M €. Eutelsat services were strongly focused on TV and video, using a distributor network for reselling satellite capacity to PayTV operators or TV channels.

Mr. Janvier then discussed the process of privatisation which had more or less been finalised as of July 2001, with a Convention amended as of May 1999 finally entering into force in November 2002, a Transfer Agreement, and an Arrangement for the relationship between the ‘old’ EUTELSAT (which did not cease to exist directly) and the newly privatised Eutelsat. As of 31 December 2004, more than 85% of Eutelsat share capital was owned by financial investors, thus corroborating the evaluation by the

previous speaker. Finally, he focused on the regulatory changes having come about since 2001 and some resulting problems for Eutelsat; such as a 1986 French law on the freedom of communications as to content; and the four basic principles to be guaranteed by EUTELSAT which could be considered 'public service' obligations: the provision of universal service for telephony and broadcasting; the provision of its services with a pan-European coverage; non-discriminatory treatment and compliance with applicable rules of fair competition.

The third afternoon speaker was **Mr. J. Purvis** (Vice President Corporate and Legal Affairs, SES Global), on the question "Is European law preferring technologies alternative to satellite?". Mr. Purvis started by pointing at the long and very beneficial track record of the European Commission in promoting space and satellite policies, running from the Green Paper in 1990 through the 1994 Satellite Directive to the current Space Strategy, Galileo, GMES and other initiatives. He specifically mentioned the 2003 White Paper on European Space Policy and the December 2004 speech by Commissioner Verheugen.

Discussing current developments in the market next, he turned to the issue of the 'digital switchover', i.e. the transition from analogue to digital television where multiple and sometimes competing technological solutions remained available. He pointed at the policy of technology neutrality which was key to EU policy and law in this respect, promoting and encouraging the establishment and development of trans-European networks, the interoperability of pan-European services and end-to-end connectivity.

Moving from the legal theory to the practice of implementation, he dealt with two state aid cases currently under investigation in this respect. As of July 2004, in state aid cases NN 35/04 and NN 36/04 the Commission initiated formal investigation procedures against Germany and Sweden for not being technology-neutral and effectively favouring terrestrial operators over cable and satellite systems. In the German case this concerned the state-supported roll-out of DVB-T in the state of Berlin-Brandenburg, resulting in distortion of competition between the various providers of transmission services. In the case of Sweden, the state-owned company Teracom/Boxer is providing the relevant transmission service, whereas part of the network is financed by and the public broadcaster SVT. Further, similar cases in Austria and Italy were also mentioned.

The final speaker was **Dr. M.H. Pichler** (Ortner Pöch Foramitti Law Offices, Vienna), who discussed the topic of "Running a satellite telecommunications legal service: opportunities and problems". She pointed in particular to the need of clarity of laws and policies, a key to any effort at enhancing the regulatory environment for satellite operators, which have increasingly become privatised and commercialised. Otherwise, sponsors and financiers of satellite projects would face such detrimental prospects as unforeseen delays for regulatory reasons, lack of adequate financing for lack of adequate securities for the financiers, and significant operational risks as a result. This concerns both international telecommunication regulations and national licenses and concessions.

The speaker further noted that telecom regulations were essentially of two kinds: technical and economic. Here, the International Telecommunication Union (ITU) was the main body at the international level regulating for technical purposes; whereas the World Trade Organisation (WTO) took the lead when it came to international economical regulation. At the European level in addition there were a set of satcom related Directives, but even so member states still maintained their sovereign rights to license,

and certain states even started to apply spectrum use tariffs (e.g. leading to auctioning of spectrum).

As to the financing issue finally speaker dealt briefly with the UNIDROIT efforts to arrive at a space assets protocol, including an international register for securities in satellites – which had to deal in that context also with the issue of ‘public services’ and the risks posed to such services by operators going bankrupt and the relevant assets being taken over by the financiers.

Since the last speaker briefly touched upon the issue of auctioning telecom frequencies, the **discussion** largely focused upon that issue as well. Various potential risks respectively benefits of somehow pricing satellite frequencies were posited, as well as the legal complications in view of satellite frequencies being co-ordinated but not being given in ‘ownership’ at the international level by the ITU, and the ensuing ‘downstream’ duties of ITU member states to respect that international system in their national frequency policies.

As a result of these discussions, the debate then turned to a discussion of other possible ways to economically value frequency spectrum for the purpose of making commercial operators somehow pay for their entitlement to use of something generally considered to be a limited resource of great public value. For example, it was proposed to levy a charge depending upon how successful the spectrum/business performs, instead of applying auctioning up front. One main problem with auctioning which would thus be circumvented was the snapshot character of it, as a consequence of which it was in reality not really technology-neutral and not a very efficient way of valuing scarce resources.

Finally the Chairmen offered some concluding remarks. Most fundamentally, in the context of the dichotomy of public/universal services versus commercial interests a shift from the ‘left’ side to the ‘right’ side was detected. Also, it had become clear that commercial services as such will *not* likely fulfil the aim of providing public services through the force of the market alone (with reference in particular to the US example). Perhaps then one would need to go back to the public financing of an infrastructure for digital divide purposes, like the old INTELSAT and INMARSAT constructs, or like nowadays Galileo and GMES were at least partially envisaged (reference was had here also to the ESA applications programme).

As a consequence of privatisation and their becoming private, relevant operators now found themselves naturally running up against more ‘classical’ regulatory obstructions, which might not have much to do with convergence, digitalisation or public/universal services. The discussion on the regulatory issues Eutelsat is facing was a clear example of this phenomenon. Further to that, privatisation also meant that governments will (tend to) again individually assert their authority, e.g. in areas such as licensing – the example of service provision for Bulgaria requiring a French license to use Eutelsat capacity being a particularly prominent one, but also the competition law issues proper which e.g. SES was now facing. In sum: the future, revised – or should one say reinstated – role of regulatory authorities *vis-à-vis* private enterprise was becoming of crucial importance again; the “auctioning issue” perhaps representing the most topical subject matter to be dealt with currently...

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