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Business innovation symposium 'At what price? IP-related thoughts on new business models for space information' ☆

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ABSTRACT

Spatial data and imagery generators are set to become tomorrow's key players in the information society. This is why satellite owners and operators are examining new revenue-producing models for developing space-related products and services. The use and availability of broadband internet width and satellite data-based services will continue to increase in the future. With the capacity to deliver real time precision downstream data, space agencies and the satellite industry can respond to the demand for high resolution digital space information which, with the appropriate technology, can be integrated into a variety of web-based applications.[1]

At a time when the traditional roles of space agencies are becoming more hybrid, largely as a result of the greater drive towards commercial markets, new value-added markets for space-related information products are continuing to attract attention.

This paper discusses whether traditional data policies on space data access and IP licensing schemes stand to remain the feasible prototype for distributing and marketing space data, and how this growth market might benefit from looking at an 'up and running' global IP management system already operating to manage end user digital demand.

Preface: The terminology describing the various types of spatial data and space-based information is not uniformly used within the various principles, laws and policies that govern space data. For convenience only this paper refers to primary or raw data gathered by the space-based industry as spatial or raw data, and the data as processed and sold on or distributed by ground-based companies as space information products and services. In practise, spatial data range from generic to specific data sets, digital topography, through to pictures and imagery services at various resolutions, with 3-D perspectives underway.[2] The paper addresses general IP considerations relating to spatial data, with some reference to remote sensing itself.[3]

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[1] Some space data information products and services such as digital cartography, crop monitoring systems, through to oil exploration support and more are already available, see OECD Futures Project, The Commercialisation of Space and Space Infrastructure, 2003, available at 〈http://www.oecd.org/document/20/0,3343,en_2649_34815_1837844_1_1_1_1,00.html〉.

[2] Principle I, UN Principles on Remote Sensing, UN Doc A/Res/41/65 (1986), distinguishes between primary data, processed data and analysed information. Others rely on generic terms, e.g. the European Union makes reference to 'spatial data' in its INSPIRE Directive, 2007/2/EC of 14 March establishing an infrastructure for spatial information in the European Community, OJ L 108/1 of 25 April 2007.

[3] Exact IP details will depend at all times on the final product and service in question.

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1. Introduction

Studies using variable methods of assessing the return on investment show that investment in the space sector has been consistently beneficial.[4] The advantages deriving from space applications in specific industry sectors were noted as early on as the 1980s.[5] Interestingly, the actual volume of investment does not appear to be an issue itself; the level of per capita investment in space programmes is not as high as is popularly conceived.[6] Nevertheless, it is a factor to consider when the subject of commercial space data markets for space information products and services is discussed.

Today, the cost factor of space is being addressed again, with interest developing in new space applications and tools to serve a variety of public and private uses.[7] These range from weather forecasting tools to transport (air, road and rail) and energy and environmental monitoring, to name a few.

Product development in this field ranges from integrated and web-based 'aides' that deliver secure communication and navigation functions, which are accessible from equipment such as GPS enabled gadgets, to advanced secure systems for tailored-made end products.[8] The advanced professional smart phone is an 'intelligent' prototype of the tools to come. The scope for such products and services has already been the focus of workshops and studies carried out by space experts and agencies, eager to encourage development by the industry.[9] These will one day be able to target users through personally linked or institutionally profiled marketing and advertising technology.[10]

However, the uptake on commercial development for space data business models is slow, despite predictions that this is a growth sector.[11]

2. Balancing rights and interests in commercial space information markets

Finding the 'best' business model to meet the demand for greater use of spatial information, including earth observation (EO) data in the secondary sectors of navigation, communication and monitoring, is inevitably complex. Most space-related work continues to involve some form of public or government funding.[12] This explains why space agencies and governments continue to provide incentives for investment in space projects, and more recently in spin-offs for downstream space services.[13] Governments and regions are also highly dependent on the availability of reliable (geo)-data to respond to the growing challenges caused by demographic alterations, climate change and the lack of reliable infrastructures in some countries. The need for space information to react to catastrophes is only part of a long list of dependencies on satellite services that are becoming essential in the management of society at large.[14]

If the market for commercial downstream applications is to become attractive, a balance needs to be drawn between the ownership or title to spatial data, copyright, exercise of IP-derived rights over this information and the permitted use of processed data in the final product towards the end user.[15] This means defining markets for the types of data available, and assessing what data is already obtainable at a low fee or COFUR.[16]

3. Exploitation

IP law has developed historically with a view to protecting the particular interests of inventors, owners and authors. It was devised to support the exploitation of the final products, whether art works, music, inventions, industrial designs and trademarks. By nature, it applies to the results of value-added data processing. However, it should be noted that the major investment required to launch and operate satellites alone gives rise to the (economic) copyright claims of agencies and owners on the raw data products gained from remote sensing. In some jurisdictions the data thereafter generated and stored in databases may benefit from the simpler and shorter term, but renewable, *sui generis* database copyright.[17]

[4] C. Jolly and P.-A. Schaub, Asssessing the Socio-economic contribution from space technologies, in: AIAA Proceedings of the 60th International Aeronautics Federation Congress, IAC-09-E3.4.5, with reference to the observations made relating to the impact of space applications on the maritime sector.

[5] OECD, Space 2030: Tackling Society's Challenges, OECD, Paris 2005, with particular reference to the maritime sector.

[6] Walter Peeters, From suborbital space tourism to commercial personal spaceflight, Acta Astronautica, 66 (2010) 1625.

[7] Governments and administrations are increasingly using spatial data in developing their geo-information services; for the EU, see the INSPIRE Directive, No. 2 above, and the Public Sector Information Directive, EC 2003/98/EC of 17 November 2003, OJ L 345/90 of 31.12.2003.

[8] See Report of the Panel of Experts on Space and Security, March 2005, Capabilities and Capability Gaps, at p. 29 ff.

[9] Space downstream services, held in Tallinn, Estonia, May 2010, programme available at 〈http://www.satfuturis.com/programme〉.

[10] For details of the French initiative to develop a spin-off commercial space data and imagery service that developed out of an agency R+D project, see 〈http://www.midenews.com/innovations/2133-blue-planet-des-photos-satellites-de-la-terre-en-temps-quasi-reel.html〉.

[11] Euroconsult, Earth Observation, Defence and Security, World Prospects, 2019, see 〈http://www.euroconsult-ec.com/research-reports/space-industry-reports/earth-observation-defense-security-29-39.html〉.

[12] For a discussion of the effect of government funding on procurement in the space market see, L.J. Smith, EU Competition Law and issues of national authorisation of private space activities, in: F.v.d. Dunk, S. Marchisio (Eds.), National Space Legislation in Europe, Issues of Authorisation of Private Space Activities in the Light of Developments in European Space Cooperation, Leiden, Brill, 2011. ISBN: 978-90-04-20486-7.

[13] For details of the ESA business incubator scheme, see 〈http://www.esa.int/esaMI/TTP2/SEM9UNRMTWE_0.html〉.

[14] A good example of creating EU-wide information sharing platforms on geo-information that include spatial data is the INSPIRE Directive that enables inter-operability and access to different categories of information accessible to all Member States, see no. 2, above.

[15] The revised ESA Data Policy for ERS, Envisat and Earth Explorers missions, ESA/PB-EO (2010) 54, already demonstrates a greater openness towards data sharing and access.

[16] Cost of user request. The concept of 'affordable products' under the US Landsat7 Programme appears to create similar cost-covering mechanisms for the provision of data.

[17] This is a purely European Union form of protection, introduced to ensure that national differences in copyright law would not prejudice the protection of the 'sweat of the brow' work and 'substantial investment' associated with developing databases. It is governed by the Database Directive 96/9/ EC on the legal protection of databases, Official Journal EC L 077/20 of 27 March 1996. This confers 15 years database