



“Measuring Value, Defining Benefit”

Michael Simpson, *Secure World Foundation*

In cooperation with Ian Christensen

Breakout Session #1 - Space Economy

Monday, November 21, 2016

United Nations/United Arab Emirates High Level Forum

“Space as a Driver for Socio-Economic Sustainable Development”

20-24 November 2016

Dubai, United Arab Emirates



Measuring Value, Defining Benefit

Michael Simpson

Secure World Foundation

In cooperation with Ian Christensen



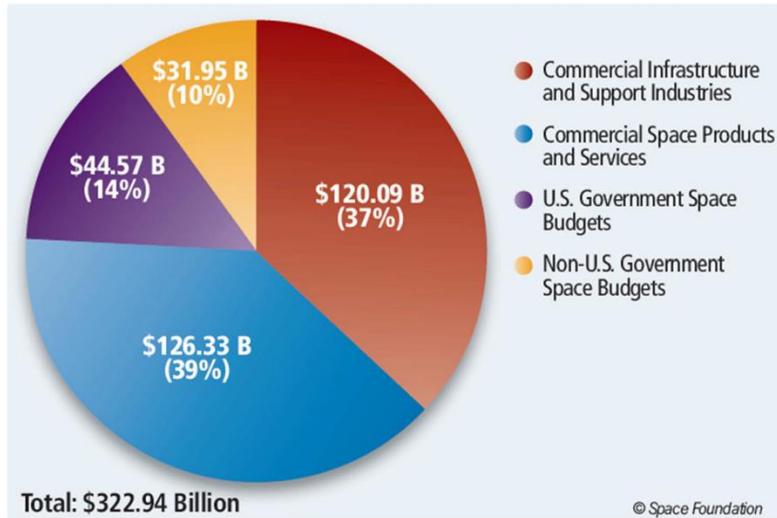
It is the nature of our work here in this high level forum that law, economics, and politics will necessarily be interwoven in our deliberations and decisions. As part of their legal foundation, Article I of the 1967 Outer Space Treaty requires that “[t]he exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.”

As the conjunction of economics and technology allows state and non-state actors to bring forth increasing numbers of ideas for using space systems and applications, there is a growing need to bring clarity to the expressed desire of the signatories to the Outer Space Treaty that such use be for “the benefit and in the interests of all countries.” In pursuing this clarity, legal and economic discussions will not be sufficient. And technology will not wait for discussions to advance. The deeply thoughtful POLICY deliberations contemplated for UNISPACE +50 and its preparation will be essential.

Recent activities of the Secure World Foundation have focused considerable attention on the how to extend the economic value of space resource development to provide benefits broadly advancing the interests of the world’s peoples. We have undertaken these activities knowing that the space economy is large and getting larger.

The Space Economy is Sizable

Economic Value: in 2015 the global space economy represented \$322.94 Billion of activity; apx. 76% of which represented private sector activity

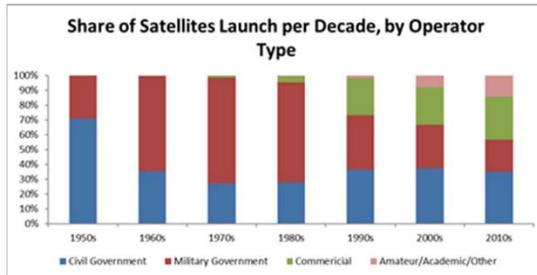


Source: The Space Foundation, *The Space Report 2016 Overview*

Our activities have included participation in the Hague Space Resources Working Group organized in the Netherlands, the organization of a roundtable on value creation in commercial space activity, and presentation of a panel on Asteroids, Mining, and Policy: Practical Consideration of Space Resource Rights. This activity will continue in early December with a panel on Space Commerce Opportunities in Multilateral Cooperation. With so many states and non-State actors involved in space activity, these events reflect an increasing and dynamic diversity.

Delivered Through A Diverse Set of Actors

Both in sector...



Source: Jonathan McDowell, *Jonathan's Space Report*

And in location...



Source: Union of Concerned Scientists, *Satellite Database*
swfound.org

UNISPACE+50 - High Level Forum
November 20-22, 2016

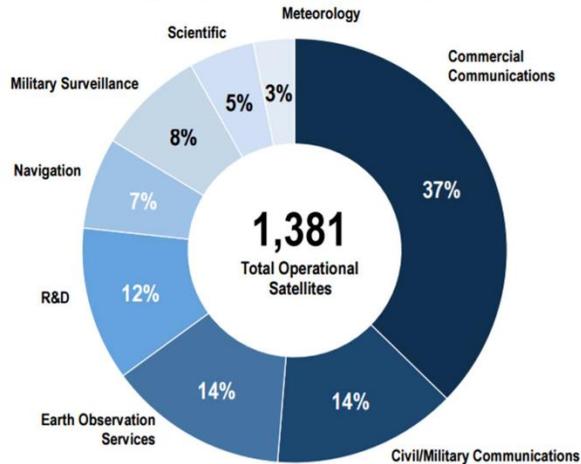
3

Throughout these activities, we have also found that the concepts of value and benefit are closely intertwined. Increasingly, we see that space applications have both economic and social value.

This is true for both established and emerging space activities. For example, as remote sensing companies expand markets served and services offered, they are increasingly partnering with multilateral bodies to apply imagery solutions to societal challenges. Examples of this kind of initiative are Digital Globe's partnership with UNOOSA, Planet Labs' commitment to partnership with the UN in pursuit of the SDG's and GEO's increasing engagement with the commercial sector. Public initiatives such as the free distribution of Landsat data, the opening of the SPOT-1 Archive, and the online availability of SRTM-2 data are further examples.

Enabling A Variety of Applications

Operational Satellites by Function (as of December 31, 2015)



Satellite Communications Services:

2015 revenue of \$127.4B (SIA)

Earth Observation Services:

2015 revenue of \$1.4B (SIA)

Navigation (GNSS) Equipment

2015 revenue of \$1.4B (SIA)

Source: Satellite Industry Association, *2016 State of the Satellite Industry Report*

UNISPACE+50 - High Level Forum
November 20-22, 2016

4

swfound.org

This leads us to conclude that social and economic values and benefits are intrinsic in many space ventures.

Elsewhere, the better the community gets at identifying and articulating the value to be expected from efforts to develop space resources, both tangible and intangible, the clearer is the pathway to determining how that value can be beneficial to participants and nonparticipants alike. This is especially true since recent multilateral agreements on Sustainable Development Goals, Climate Change, and Disaster Management give us tangible objectives against which we can measure whether value created in a space activity advances broadly adopted goals.

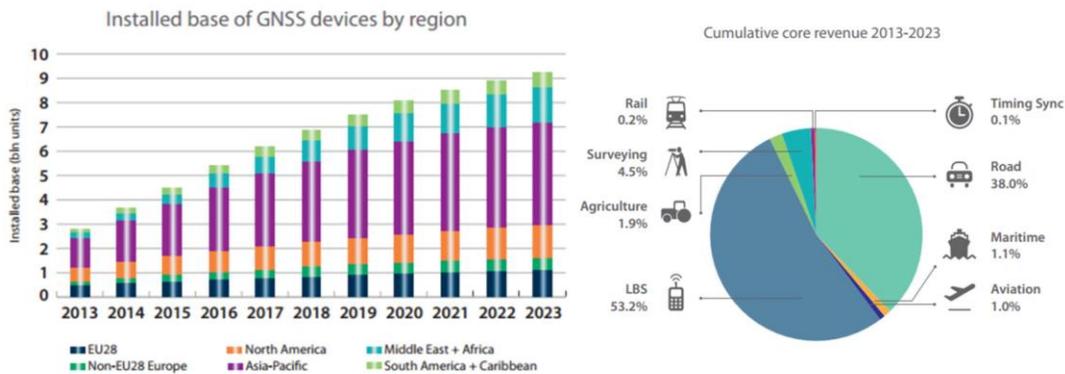


In such an environment, value created in space that benefits only its investors and the state that authorized its missions would be easy to criticize. Meanwhile, value that benefitted absolutely everyone equally would be easy to applaud. Inevitably, we will face more subtle developments that will call for more nuanced judgments.

One family of widely applauded space applications is the broadly useful array of tools provided by GNSS technology.



Case Study: GNSS Services and Use Cases



Source: European GNSS Agency, 2015 GNSS Market Report



Pioneered by the United States and now supported by global systems of four countries and regional systems of two more, access has spread world wide favorably impacting many sectors of economic activity. There is much support for the argument that GNSS is a use of space for the benefit and in the interest of all countries. We need to be prepared to evaluate harder cases, however because in a competitive world it is likely that some space applications that can deliver substantial benefit might not be perceived to be in the interest of all countries.

Suppose, for example, that in pursuing Sustainable Development Goal #2, an economically accessible satellite technology that “advanced food security” is developed and implemented. This would certainly be seen as a benefit by countries for whom it increased production and reduced hunger. But it might also reduce long standing trade advantages some countries may have enjoyed with some trading partners. In such a context the new space application might be seen as not having been fully in the interest of the country that previously held the economic advantage. A space policy that enables us to live in the spirit of the Outer Space Treaty, while continuing to develop innovative space-facilitated applications that advance our goals on Earth, will thus need to be flexible, well-informed, and able to adapt to very rapid growth in technological capability. It will also need to be pragmatic in pursuing as much benefit as possible.

A policy rooted in assessing the extent to which the value created by any given space activity makes a contribution to meeting a beneficial goal that is greater than its negative externalities or opportunity costs will necessarily be one involving nearly constant conversation between states on their various perspectives of the benefits to be expected.



Searching for a structural model to support such a conversation, groups like the IADC or IAWN would seem to be too restricted in membership. Even COPUOS, with less than 50% of the General Assembly members represented, risks missing critical input. Perhaps a solution would be a new COPUOS agenda item on the “Benefit and Interests of Space Activities” advanced by a working group open to representation from any UNGA member and supported by expert groups drawing analysis and insight from non-State actors as well.

One of the paramount outcomes of UNISPACE III in 1999 was the creation of a dynamic foundation for the UN Space Agenda since then. Now as we seek to renew and update that agenda, I hope that we will seize every opportunity to link the rapidly increasing technical capabilities of space activity to the policy objectives we have adopted on development, climate, disaster management and so many other fields in the context of the Outer Space Treaty, whose 50th anniversary we will so soon celebrate.



Thank you. Questions?

msimpson@swfound.org

UNISPACE+50 - High Level Forum
November 20-22, 2016

swfound.org

Mr. Chairman, I thank you for the privilege of addressing this session.