



Innovative Strategies for Space Competitiveness: Assessing the Spacelsle's Policy and Results

2012 Update

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THE ISLE OF MAN IN SPACE

and the

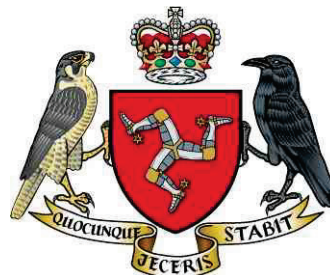




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1. EXECUTIVE SUMMARY: OVERVIEW AND OBJECTIVES

1.1. OVERVIEW

The pace of development of the Isle of Man's space sector has been rapid since the creation of the ManSat Public Private Partnership for orbital filing in 2000, followed by the establishment of a formal office for developing space commerce in 2005. The Isle has twice been named as one of the top five nations most likely to return to the Moon.ⁱ A 2012 report by Oxford Economics, commissioned by the Government of Guernsey, singled out the Manx success in stimulating the space economy as example to be followed by other similar jurisdictions.ⁱⁱ Similarly, in arguing for a United Kingdom investment in a spaceport, a 2012 study by the Institute of Directors identified the Isle of Man's space sector successes as evidence of the economic benefits a targeted investment in the space sector can deliver.ⁱⁱⁱ

Against this background Futron, working in conjunction with the Isle of Man Government and ManSat Ltd., has undertaken an update of our February 2011 study, *Innovative Strategies for Space Competitiveness: Assessing the SpaceIsle's Policy and Results*.^{iv} We aim to identify the success factors inherent in the Isle of Man's approach to the space development – and how the Island is positioned compared to its peers. Since our 2011 study – which identified the Isle of Man as a leader in development of a non-traditional space sector- a number of notable developments have occurred in the Manx space sector:

- In October of 2011 ViaSat-1, the first satellite to use a Manx-licensed orbital slot, was successfully launched and brought into use serving the North American market.
- During summer 2012 NASA and the U.S National Oceanic and Atmospheric Administration (NOAA) joined the Isle of Man-based Space Data Association – the cooperative organization of satellite operators aiming to reduce the risk of orbital collision and interference between satellites.
- Laser optics components manufactured by a Manx company landed on Mars as a key component of the scientific instrument package on the *Curiosity* rover.
- An additional seven space-related companies established registrations in the Isle of Man.
- Isle of Man based Odyssey Moon announced a partnership with NSL Satellites and Nanoracks to place experiments on the International Space Station, and followed through with the current operation of those experiments on the ISS.

1.2. KEY FINDINGS

The first edition of this study identified that, compared with its peers (Bermuda, Gibraltar, Hong Kong, Singapore, and the United Kingdom), the Isle of Man consistently “punches above its weight” in the impact of its space sector activities. Our October 2012 findings indicate the Isle of Man has maintained – and strengthened – its competitive position in the space sector vis-à-vis its peer jurisdictions. In fact, of the eight jurisdictions reviewed in this study, the Isle of Man is only one for which no negative changes in competitiveness were observed across the nine quantitative indicators which form the central framework of this study. The SpaceIsle continues to drive forward as a niche innovator in the global space sector.

1.3. A UNIQUE BUSINESS MODEL

The competitive advantage the Isle of Man enjoys against its peers derives from a unique business model the Manx government has adopted in developing the space sector in the Island. The Isle of Man has developed a distinctive approach to involvement in the space industry. Rather than operating a government space program, the Manx government focuses on providing a regulatory level playing field while cooperating with industry to provide financial, legal, and orbital slot filing assistance as well as strategic support services for telecommunications, aerospace, banking, and manufacturing companies

within the international space industry. This approach is operationalized through a Public-Private Partnership (PPP) with a private company – ManSat, Ltd and complemented by a tax regime that provides for a zero corporate income tax rate for space companies. The PPP operates in two primary areas: orbital slot preparation and marketing and industry development.

Results of interviews conducted during this study reinforce the finding that the Isle benefits from a unique government-industry relationship.

1.4. KEY PERFORMANCE INDICATORS

In evaluating the status of the Isle of Man's business model for space activities three key performance metrics were identified. These metrics provide a sampling of performance in the key areas of emphasis which define success in the execution of the Isle's space strategy.

Number of Satellite Operators Making ITU Filings Through the Jurisdiction

The Isle of Man has made attracting satellite operators to file their orbital slots through the Island a key tenet of the development of its space sector. This is a highly competitive area of activity and a relatively small number of satellite operators make ITU applications through jurisdictions other than their home jurisdiction.

Exhibit 1: Number of Companies Making ITU Applications Through the Jurisdiction

Bermuda	Gibraltar	Guernsey	Hong Kong	Isle of Man	Jersey	Singapore	U.K.
2	1	0	2	4	1	1	11

With no satellite operators headquartered in the jurisdiction, the Isle of Man's ability to attract four operators to make filings through the Island suggests that Isle is viewed a neutral jurisdiction. Companies are comfortable making filings through the Island despite the presence of competitors doing the same.

Number of Space Objects Registered Through the Jurisdictions

The number of space objects registered through companies operating in the jurisdiction gives an indication of the relative level of activity of companies registered in the jurisdiction. Several of the Isle of Man's peer jurisdictions register objects through the U.K, so a comparison based on the U.K Space Registry is made.

Exhibit 2: Space Objects Registered Through the Jurisdiction as a Percent of the Total Space Objects on the U.K. Registry of Space Objects as of March 2011

Bermuda	Gibraltar	Guernsey	Isle of Man	Jersey	U.K.
2.3%	0.0%	0.0%	22.7%	0.0	75.0%

Note: 44 Total Objects.

The Isle of Man claims a large share of the total space objects registered through the United Kingdom.

Space-related employment

The total number of persons employed in space-related jobs provides an indicator of the degree to which space has become a demonstrable agent of economic activity within a jurisdiction. A recent analysis undertaken on behalf of the Isle of Man government indicates 76 jobs in the Isle include space related activities as part of daily duties. This represents approximately .09% of the Isle's July 2012 population. By comparison, in the U.K. an estimated 28,943 people worked in the space industry in 2011, representing 0.05% of the population.

2. STUDY PURPOSE AND METHODOLOGY

2.1. PURPOSE

This study benchmarks the Isle of Man against other jurisdictions based on statistics and indicators aligned to government, human capital, and industry. To provide this comparison, the study employs nine quantitative indicators of space competitiveness developed expressly for this study, coupled with structured qualitative evaluation, in order to benchmark the Isle of Man against the comparator jurisdictions. Where appropriate, the quantitative indicators are normalized by population or economy size. The study also includes qualitative analysis to complement the quantitative information.

2.2. PEER JURISDICTIONS

In prior edition of this study Bermuda, Gibraltar, Hong Kong, Singapore, and the United Kingdom were selected as the comparator jurisdictions; in 2012 we have expanded the analysis to include the Channel Islands of Guernsey and Jersey. The majority of these jurisdictions possess financial, regulatory and policy structures similar to Isle of Man that may position them to pursue a similar approach to space investment focused on niche activities in space-related finance and business. The United Kingdom, although a nation that has followed a more traditional approach to space, is included in this group of “peer” jurisdictions due to its geographic proximity and close political ties to the Isle of Man.

2.3. QUANTITATIVE DATA

The quantitative element of the analysis is based on nine indicators across three categories:

Exhibit 3: Indicators Used in Analysis

IND: Private Sector and Industry Activity
(IND-1) Companies: The number of space-related companies registered in the jurisdiction.
(IND-2) Orbital-Slot Filing Activity Level: The level of currently active ITU orbital slot filings of all types (including coordination and advance notification) filed through the comparator jurisdictions.
(IND-3) Commercial Communications Satellites Registered: The number of active, commercial, geostationary, communications satellites registered on official space object registries to companies based in the jurisdiction. Expressed as a share of total operating communications satellites.
HC: Human Capital Development
(HC-1) Nonprofit Organizations, Trade Associations, And Civil Society Organizations: The number of non-profit organizations involved in space-related activities in the jurisdiction as a proxy measure of civil society interest
(HC-2) Space-Related University Degree Programs: The number of university-level space-related degree programs in the jurisdiction.
(HC-3) Number Of International Space University Alumni: The number of International Space University (ISU) alumni from the jurisdiction
HC: Global Visibility and Participation
(VIS-1) Conference Sponsorship The percent of 20 global space conferences for which the jurisdiction participated as a financial sponsor. Based on a list of 20 international, annual, space-related conferences, representing a cross-section of industry segments and global locations.
(VIS-2) Participatory Exploration The number of teams from the compared jurisdictions' participation in international prizes and contests related to space technology or application development. The prizes included in this indicator are: the Ansari X PRIZE, the Google Lunar X PRIZE, the N-Prize (the "N" stands for "Nanosatellite" or "Negligible Resources"), current NASA Centennial Challenges, and the European Galileo Masters Competition.
(VIS-3) Presence On Social-Networking Sites: As an indirect indicator of space-related activity levels in informal environments and networks, this indicator counts space-related groups tied to the jurisdiction on four social networking websites: Facebook, Google+, LinkedIn and Twitter.

Data collected on these indicators is used to benchmark – quantitatively compare the jurisdictions and identify year-over-year changes in competitive positioning.

2.4. QUALITATIVE DATA

In addition to collecting quantitative data on the eight comparator jurisdictions Futron conducted a series of in-person interviews with members of the space sector active on the Isle. These interviews, which covered a cross-section of industry segments, focused on qualitative aspects of the space business environment on the Isle of Man, as shown in Exhibit 4, below.

Exhibit 4: Interviews Conducted

- | | |
|---|--|
| ➤ Law Firm – Space and Telecommunications Practice | ➤ Isle of Man Government – Department of Economic Development |
| ➤ Satellite Operator | ➤ Corporate Services Provision (CSP) firm |
| ➤ Education Sector | ➤ Space-Related Manufacturer |
| ➤ ManSat, Ltd | ➤ Industry Association |

Interviews were intended to provide a qualitative companion to the indicator-based data. Information resulting from interviews was used to produce a Strengths, Weakness, Opportunities, and Threats (SWOT) analysis of the Isle of Man space industry. This SWOT is included as the conclusion to this report.

3. FINDINGS: BENCHMARKING THE ISLE OF MAN AGAINST PEER JURISDICTIONS

The following sections of this document review findings in each of the indicator categories; highlighting key changes observed since the previous study. The results from our current 2012 analysis (which reflected data from October 2012) are compared side by side with the results from the February 2011 publication (which reflected data from October 2010). The area of Government is assessed qualitatively. At the aggregate level – looking across all indicators – the results reconfirm our prior analysis that the Isle of Man punches above its weight in the impact and distribution of its space activities. At the individual indicator level several interesting year over year changes are noted. While the Isle of Man remains a niche focus space player; that focus has resulted in a global identity associated with the Isle's space sector that has in turned helped to reinforce and build the space sector in the jurisdiction.

3.1. PRIVATE SECTOR AND INDUSTRY

Exhibit 5: Private Sector and Industry Results

	As of October 2010				As of October 2012				
IND 1: Count of Companies Operating in the Jurisdiction									
Jurisdiction	Count of Companies	Rank by Count	Normalized by GDP (PPP)	Rank By Normalized	Count of Companies	Rank by Count	Normalized by GDP (PPP)	Rank By Normalized	Change
Bermuda	7	5	4.23	3	11	5	6.65	2	+
Gibraltar	2	6	4.92	2	2	6	4.92	3	-
Guernsey	-	-	-	-	1	7	0.99	4	
Hong Kong	27	2	0.24	6	27	4	0.21	8	-
Isle of Man	25	4	25.00	1	33	2	33.00	1	+
Jersey	-	-	-	-	1	7	0.53	5	
Singapore	27	2	0.30	5	26	3	0.22	7	-
United Kingdom	302	1	0.39	4	293	1	0.35	6	-
IND 2: Orbital Slot Application Activity									
Jurisdiction	Count of Companies	Count of Slot Filings	Rank by Count of Filings		Count of Companies	Count of Slot Filings	Rank by Count of Filings		Change
Bermuda	2	5	5		1	2	5		-
Gibraltar	1	19	4		1	13	4		-
Guernsey					0	0	6		
Hong Kong	2	35	2		2	21	3		-
Isle of Man	1	35	2		1	37	2		+
Jersey					0	0	6		
Singapore	1	5	5		1	7	5		-
United Kingdom	7	108	1		11	128	1		-
IND 3: Number of Commercial ComSats Registered									
Jurisdiction	Percent of World Total		Rank		Percent of World Total		Rank		Change
Bermuda	0.00%		5		0.00%		5.00		-
Gibraltar	0.22%		4		0.22%		4.00		/
Guernsey					0.00%		5.00		
Hong Kong	1.11%		2		1.30%		2.00		+
Isle of Man	0.89%		3		2.17%		2.00		+
Jersey					0.00%		5.00		
Singapore	0.22%		4		0.43%		3.00		+
United Kingdom	4.45%		1		3.47%		1.00		-

Results in the Private Sector and Industry Category reveal a growing amount of space industry activity in the Isle of Man:

- The number of space-related companies increased in the Isle of Man between 2010 and 2012, one of only two compared jurisdictions where this occurred.
- The Isle of Man was the only compared jurisdiction to increase its orbital slot filing activity with the International Telecommunications Union.
- Of the compared jurisdictions the Isle of Man trails only the United Kingdom in terms of the number of commercial communications satellites registered. Communications satellites for which the launch was registered through the Isle of Man represent 22.7% of the satellites carried on the official U.K. Registry of Space Objects.

3.2. HUMAN CAPITAL

Exhibit 6: Human Capital Results

	As of October 2010				As of October 2012				
HC 1: Number of Nonprofit Organizations and Trade Associations									
Jurisdiction	Count of Organizations	Rank	Normalized by Population	Rank By Normalized	Count of Organizations	Rank	Normalized by Population	Rank By Normalized	Change
Bermuda	1	5	1.13	3	1	5	1.24	4	+
Gibraltar	1	5	2.66	2	1	5	2.94	2	+
Guernsey					1	5	1.31	3	
Hong Kong	3	3	0.03	5	3	3	0.04	7	+
Isle of Man	7	2	7.00	1	8	2	8.00	1	+
Jersey					1	5	0.90	5	
Singapore	3	3	0.05	4	3	3	0.05	6	/
United Kingdom	18	1	0.02	6	18	1	0.02	8	/
HC 2: Number of Space-Related University-Level Degree Programs									
Jurisdiction	Count of Universities	Rank	Normalized by Population	Rank By Normalized	Count of Universities	Rank	Normalized by Population	Rank By Normalized	Change
Bermuda	0	5	0.00	5	0	4	0.00	5	/
Gibraltar	0	5	0.00	5	0	4	0.00	5	/
Guernsey					0	4	0.00	5	
Hong Kong	3	2	0.03	3	3	2	0.04	3	+
Isle of Man	2	3	2.00	1	2	3	2.00	1	/
Jersey					0	4	0.00	5	
Singapore	1	4	0.02	4	2	3	0.03	4	+
United Kingdom	31	1	0.04	2	30	1	0.04	2	-
HC 3: ISU Alumni per 10,000 population									
Jurisdiction	Count of Participation	Rank	Count Per 10,000 Population	Rank By Per Capita	Count of Participation	Rank	Count Per 10,000 Population	Rank By Per Capita	Change
Bermuda	5	3	0.7371	2	5	3	0.7238	2	-
Gibraltar	0	4	0.0000	6	0	6	0.0000	6	/
Guernsey					0	6	0.0000	6	
Hong Kong	1	6	0.0014	5	2	5	0.0028	5	+
Isle of Man	24	2	3.1368	1	33	2	3.8632	1	+
Jersey					0	6	0.0000	6	
Singapore	3	5	0.0064	4	3	4	0.0056	4	-
United Kingdom	135	1	0.0221	3	153	1	0.0243	3	+

The space-related human capital base in the Isle of Man remains small and concentrated, yet growing. On a per capita basis space-related human capital in the Isle is the greatest amongst the compared jurisdictions. Notable changes include:

- The establishment of the Isle of Man Chapter of the Society of Satellite Professionals International (SSPI) which is intended to serve as a more formalized replacement for the prior Space Industry Group on the Island. SSPI's presence on the Island is expected to provide structured networking and international connections to the Island's space companies.
- The transfer of headquarters of the *Satellite Interference Reduction Group* (sIRG) from Florida to the Isle of Man, demonstrating confidence in the Isle's neutrality.
- An increase in the number of Manx alumni of the International Space University, mainly attributable to graduates of the Executive MBA and Executive Space Course (short course) programs. These alumni are directly involved in Manx government and industry.

3.3. GLOBAL VISIBILITY AND PARTICIPATION

Exhibit 7: Global Visibility and Participation Results

	As of October 2010				As of October 2012				
VIS 1: Conference Sponsorship									
Jurisdiction	Count of Participation	Share		Rank	Count of Participation	Share		Rank	Change
Bermuda	0	0.00%		5	0	0.00%		6	/
Gibraltar	0	0.00%		5	0	0.00%		6	/
Guernsey					0	0.00%		6	
Hong Kong	2	10.00%		3	4	20.00%		4	+
Isle of Man	6	30.00%		2	8	40.00%		2	+
Jersey					7	35.00%		3	
Singapore	2	10.00%		3	1	5.00%		5	-
United Kingdom	16	80.00%		1	17	85.00%		1	+
VIS 2: Participatory Exploration									
Jurisdiction	Count of Participation	Rank By Count	Normalized by Population	Rank by Normalized	Count of Participation	Rank By Count	Normalized by Population	Rank by Normalized	Change
Bermuda	0	4	0.00	4	0	3	0.00	3	/
Gibraltar	0	4	0.00	4	0	3	0.00	3	/
Guernsey					0	3	0.00	3	
Hong Kong	0	4	0.00	4	0	3	0.00	3	/
Isle of Man	1	2	1.00	1	1	2	1.00	1	/
Jersey					0	3	0.00	3	
Singapore	1	3	0.02	3	0	3	0.00	3	-
United Kingdom	61	1	0.08	2	7	1	0.01	2	-
VIS 3: Presence on Social-Networking Sites									
Jurisdiction	Count of Presence		Normalized by Population	Rank By Normalized	Count of Presence		Normalized by Population	Rank By Normalized	Change
Bermuda	2		2.26	2	3		3.71	3	+
Gibraltar	1		2.66	3	5		14.71	1	+
Guernsey					1		1.31	4	
Hong Kong	11		0.12	4	9		0.11	6	-
Isle of Man	4		4.00	1	8		8.00	2	+
Jersey					1		0.90	7	
Singapore	4		0.07	5	12		0.19	5	+
United Kingdom	12		0.02	6	47		0.06	8	+

The marketing activity conducted under the SpaceIsle initiative is clearly visibility in this category, where the Isle of Man is second only to the United Kingdom in conference sponsorship, and second to Gibraltar in the per-capita presence on space-related social media sites. Notable points include:

- The presence of O3B Networks in Jersey explains that jurisdiction’s relatively high count of conference participation.
- The SpaceIsle established an official Twitter account between the 2011 study and the current one
- For all jurisdictions participation in global participatory exploration activities is low. However, even a low-level participation can result in tangible outcomes, such as the recently announced partnership between Isle of Man-based Odyssey Moon, Israel based NSL Satellites, and U.S.-based Nanoracks. This partnership will see all three companies support student experiments flown on the International Space Station.

3.4. GOVERNMENT INVESTMENT AND STRUCTURE

Exhibit 8 presents an overview of government structures related to space in the comparator jurisdiction used in this study. Due both to the limited scope of space activities in most of these jurisdictions, and alignment with the primary focus of the Isle of Man government in the telecommunications segment of the space industry, most of the government agencies reviewed herein are primarily telecommunications regulators. The utility of the comparison is somewhat limited as many of the included agencies have a less expansive mandate than does the Isle of Man government—and many also lack an explicit business or industry development focus. However, in general, the agencies covered in Exhibit 8 are the closest analogues with respect to the Isle's government approach to space.

Exhibit 8: Government Overview

Government Overview	
 <p style="text-align: center;"><u>BERMUDA</u></p> <p>Political Status: Overseas territory of the UK</p> <p>Primary Government Agency Responsible for Space-related Activities: Ministry of Energy, Telecommunications and E-Commerce, Telecommunications Division</p> <p>Agency Budget: \$67,000 allocated for development of orbital slots in FY2011/2012</p> <p>Notable Changes Since Prior Study: Establishment of Telecommunications Regulator Authority Plan to reduce expenditure on development of orbital slots</p>	 <p style="text-align: center;"><u>GIBRALTAR</u></p> <p>Political Status: Overseas territory of the UK</p> <p>Primary Government Agency Responsible for Space-related Activities: Gibraltar Regulatory Authority (GRA), Satellite Division</p> <p>Agency Budget: £183,667.3 (Fiscal Year 10/11) [Satellite Division budget]</p> <p>Notable Changes Since Prior Study: None</p>
 <p style="text-align: center;"><u>HONG KONG</u></p> <p>Political Status: Special administrative region of China</p> <p>Primary Government Agency Responsible for Space-related Activities: Government Secretariat: Commerce and Economic Development Bureau (Communications and Technology Branch),</p> <ol style="list-style-type: none"> 1) Office of the Telecommunications Authority (OFTA) 2) Office of the Communications Authority <p>Agency Budget [total budget for agency]: OFTA: HK\$249,400,000 (Fiscal Year 10/11)</p> <p>Notable Changes Since Prior Study: OFTA dissolved in 2012 and functions assumed by the Office of the Communications Authority.</p>	 <p style="text-align: center;"><u>ISLE OF MAN</u></p> <p>Political Status: British Crown Dependency</p> <p>Primary Government Agency Responsible for Space-related Activities:</p> <ol style="list-style-type: none"> 1) Department of Economic Development, Business Development Agency (Spacelsie) 2) Communications Commission (Orbital Slots) <p>Agency Budget:</p> <ol style="list-style-type: none"> 1) apx. £500,000 [for space-related activities] 2) £440,053 (Fiscal Year 11/12 est. operating expenses, self-funded through license fees) <p>Notable Changes Since Prior Study: None</p>
 <p style="text-align: center;"><u>SINGAPORE</u></p> <p>Political Status: Parliamentary republic</p> <p>Primary Government Agency Responsible for Space-related Activities:</p> <ol style="list-style-type: none"> 1) Infocomm Development Authority of Singapore (IDA) (Fiscal Year 09/10) <p>Agency Budget [total budget for agency]: SGD 34,000,000 (2011)</p> <p>Notable Changes Since Prior Study: None</p>	 <p style="text-align: center;"><u>UNITED KINGDOM</u></p> <p>Political Status: Constitutional monarchy</p> <p>Primary Government Agency Responsible for Space-related Activities:</p> <ol style="list-style-type: none"> 1) United Kingdom Space Agency / British National Space Center 2) OFCOM, the independent regulator for UK communications industries <p>Agency Budget [total budget for agency]:</p> <ol style="list-style-type: none"> 1) UKSA: £256,000,000 (Fiscal Year 11/12) 2) Ofcom: £121,400,000 (Fiscal Year 12/13) <p>Notable Changes Since Prior Study: Notable reductions in Ofcom budgets.</p>
<p style="text-align: center;"><u>JERSEY and GUERNSEY</u></p>	
 <p>Political Status: British Crown Dependency</p> <p>Primary Government Agency Responsible for Space-related Activities: The Channel Islands Competition and Regulatory Authorities</p> <p>Agency Budget [total budget for agency]: Jersey Competition Regulatory Authority: £1,415,046 (2011); Guernsey Regulatory Authority: £949,118 (2010). Both self-funded through fees and other income.</p>	

4. SWOT ANALYSIS OF THE ISLE OF MAN'S SPACE SECTOR

To complement the quantitative indicators Futron developed an updated analysis of the Strengths, Weaknesses, Opportunities, and Threats (SWOT) presented by the Isle of Man's approach to space. The following analytical points were developed through structured interviews with a cross-section of stakeholders in the Isle of Man space community, including government, non-profit and industry organizations.

	Helpful	Harmful
Internal Origin	<p style="text-align: center;"><u>STRENGTH</u></p> <ul style="list-style-type: none"> • The Isle of Man has an international reputation as a neutral jurisdiction. (Noted by Government, Industry and Non-profit Interviewees) • Government is accessible and helpful – helps when needed, but does not interfere. (Noted by 4 Industry Interviewees) • There is a clearly defined strategy for what the government seeks to get out of the space sector. (Noted by 1 Industry Interviewees) • The ManSat-Manx Government PPP has successfully brought business to the Island based on marketing and networking. Represents a strategic approach. (Noted by 2 Industry Interviewees). • The ManSat-Manx Government PPP enables ManSat to do work that the government could not effectively do (requiring specialized personal networks) (Noted by 1 Industry Interviewee). • Space has helped the Island sell into other domains. (Noted by 1 Industry interviewee) 	<p style="text-align: center;"><u>WEAKNESS</u></p> <ul style="list-style-type: none"> • Government efforts in space development has not yet resulted in enough direct jobs (Noted by 3 Industry and 1 Government Interviewees) • At times better communication from government would help industry to better understand the government's objectives and how activities might align with those objectives. (Noted by 1 Industry Interviewee) • There is an over-reliance on individuals – in particular those at ManSat, but also in the government, to drive the further development of the space sector on the Island. (Noted by 3 Industry Interviewees) • There may not be enough targeted one-on-one follow-up with companies following marketing of the Isle of Man at space conferences. (Noted by 2 Industry Interviewees).
External Origin	<p style="text-align: center;"><u>OPPORTUNITY</u></p> <ul style="list-style-type: none"> • Further development of on-Island manufacturing capabilities would support the growing perception that the Isle is about more than just financial services. (Noted by 1 Industry interviewee) • Development of an Aerospace Manufacturing Cluster has been successful, there are opportunities to share lessons learned with space sector (Noted by 1 Industry Interviewee and 1 Government Interviewee) • There is opportunity to better leverage the insurance community present on the Island. (Noted by 1 Industry Interviewee) • Target development of other space related manufacturing activities, including VSAT manufacturers (link to natural customer base in aircraft and ship registries); precision manufacturing. (Noted by 3 Industry Interviewees) • There is some discussion on the Island of establishing an ICT college. The space industry might potentially see some benefit from that. (Noted by 1 Industry Interviewee) • This is opportunity to more effectively leverage the Manx diaspora in communicating the activities of the Isle of Man space sector. (Noted by 1 Industry Interviewee) 	<p style="text-align: center;"><u>THREAT</u></p> <ul style="list-style-type: none"> • Lack of reliable off-Island transport for large shipments is a threat to future development of manufacturing. (Noted by 1 Industry interviewee) • Continuing international misinformation that the Isle of Man is a tax haven, rather than a low-tax jurisdiction. Need to communicate the difference. (Noted by 1 Government Interviewee) • The risk of budget cuts threatens the ManSat PPP and the success it has brought. (Noted by 1 Industry Interviewee) • External focused marketing often gets reflected internally on the Island, and the Manx public, and can lead to skepticism and a lack of credibility. (Noted by 1 Industry Interviewee) • There is a continuing need to make sure the U.K understands the Isle's position in space – and that it is complementary to the U.K. The success of the space sector in the Isle depends on the U.K. not viewing it as a threat. (Noted by 1 Industry Interviewee)

5. CONCLUSION AND IMPLICATIONS

Results from the nine quantitative indicators indicate a branching out and maturation of activities in the Island's space sector. There is a demonstrated stability in the space sector activities existing on the Isle of Man and the jurisdiction has continued to attract new activities and business – including activities beyond the core function of orbital slot administration. A theme which emerged from the interviews conducted during this study is the Isle of Man's sector benefits from the attributes of a being a small community – including ease of access to decision makers, responsiveness and communicability on the part of the government, and adaptability on the part of industry. The interview results support our prior year finding that impacts of space activities are amplified in a small jurisdiction such as the Isle of Man. While this “small town” function has undoubtedly contributed to the Isle's successes to date – it also implies vulnerability. That is to say that just as positive developments have amplified impacts, so too do negative developments. The challenge that the Isle of Man faces as it strives to develop a critical mass in the space industry is that the sector's leaders must maintain momentum and diversification whilst maintain the focused approach that has characterized their success thus far. They must do this while attracting increasing attention from competitors and peers alike – such as those evaluated in this study.

ⁱ ASCEND / FlightGlobal. “Analysis: Isle of Man Rises To Fourth Favourite In Manned Race Back To The Moon (Updated)” <http://www.flightglobal.com/blogs/hyperbola/2012/08/analysis-isle-of-man-rises-to.html>

ⁱⁱ Oxford Economics. “Review of Guernsey's Economic Profile and Assessment of Future Opportunities.” <http://www.gov.gg/CHttpHandler.ashx?id=28431&p=0>

ⁱⁱⁱ Institute of Directors. “The UK's Booming Space Industry, and the Case for a UK Spaceport.” <http://www.iod.com/mainwebsite/resources/document/space-britains-new-infrastructure-frontier-may12.pdf>

^{iv} Futron. “Innovative Strategies for Space Competitiveness: Assessing the SpaceIsle's Policy and Results.” http://www.futron.com/upload/wysiwyg/Resources/Whitepapers/Innovative_Strategies_for_Space_Competitiveness_0111.pdf