



# SHAPING THE NATION'S SPACE AGENDA

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# SPACE SECTOR

- Like the Internet, space technology has become a critical component of the global information infrastructure
  - Scalable applications enabling broad new capabilities
  - Facilitating innovations in efficiency, safety, environmental, public safety/crisis and disaster management, and science



- Over the past decade, SPACE TECHNOLOGY/APPLICATION has grown into a global utility providing space-based positioning, global connection and eyes from “heaven”
  - Consistent, predictable, dependable policy and performance

# Conclusions

## The emergence of new space players is a challenge....

- ✓ For newcomers countries: high tech and complex sector, long term programs and return of investment, need to identify requirements and priorities...
- ✓ For established players: more difficult to follow the sector, multiplication of bilateral programs, need for coordination between initiatives

## .... and an opportunity

- ✓ Opens new partnerships at industry and institutional level: eg DMC
- ✓ Bring new capabilities and competencies for space programs
- ✓ For populations, with unique solutions for better accessing information, communicate and share scientific knowledge

### Space Industries of Emerging Space Nations in the Global Market Place



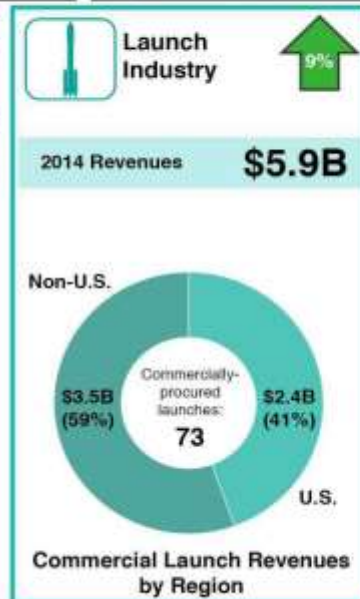
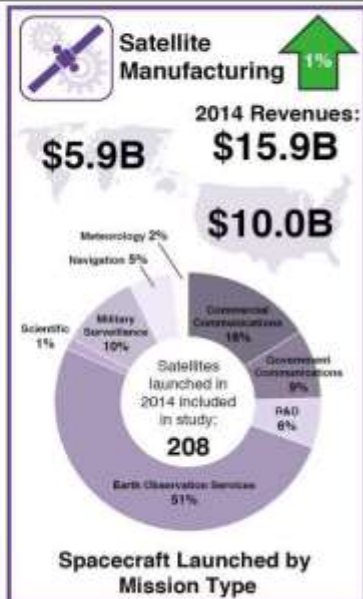
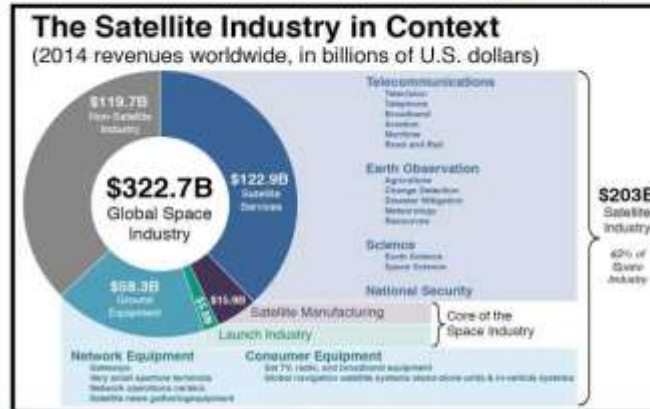
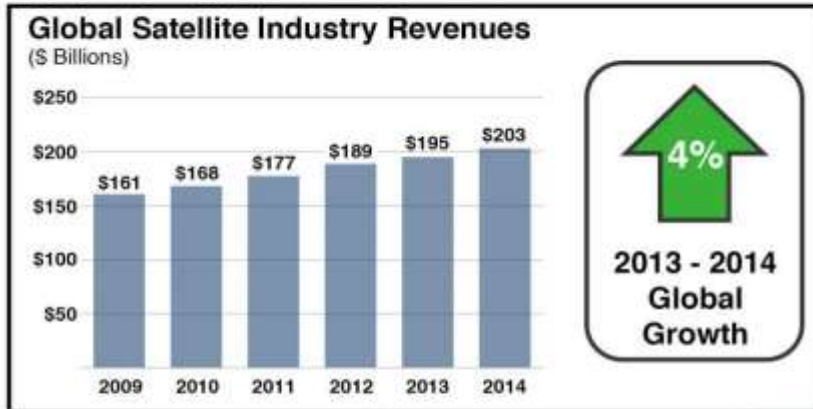
Steve Boehinger,  
Director Institutional Affairs,  
Euroconsult

This first part intend to provide the overall background and the state of space (economic) development and utilization.



**BACKGROUND**

# 2014 State of the Satellite Industry



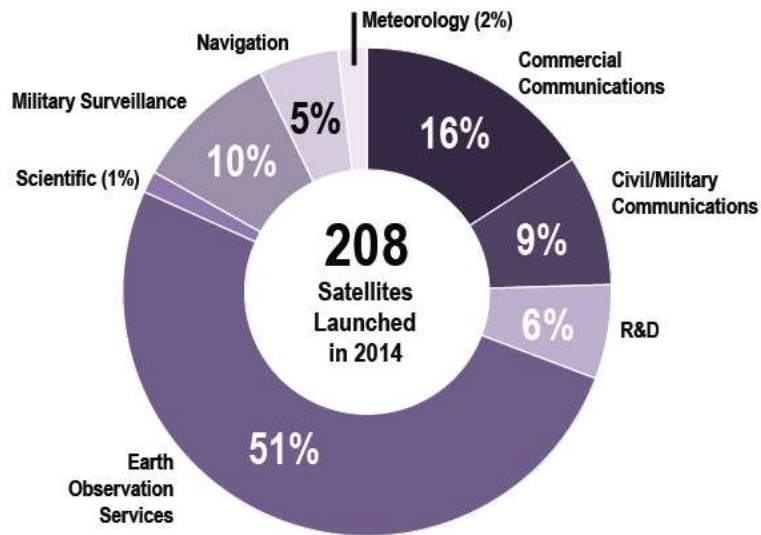




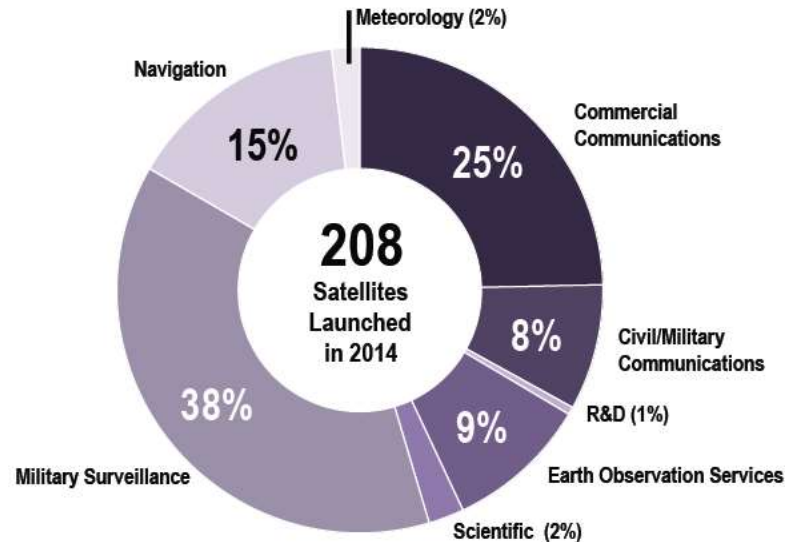
# Satellite Manufacturing Findings



- 208 satellites launched in 2014, almost double the 107 launched in 2013
- 130 CubeSats launched represented 63% of total
- Most CubeSats were used for Earth observation
- Communications satellites represented 33% of total revenues generated
- Military surveillance satellites accounted for 38% of total revenues generated in 2014, compared to 30% in 2013
- CubeSats represented less than 1% of total value



Number of Spacecraft Launched by Mission Type (2014)



Value of Spacecraft Launched by Mission Type (2014)

# Satellite

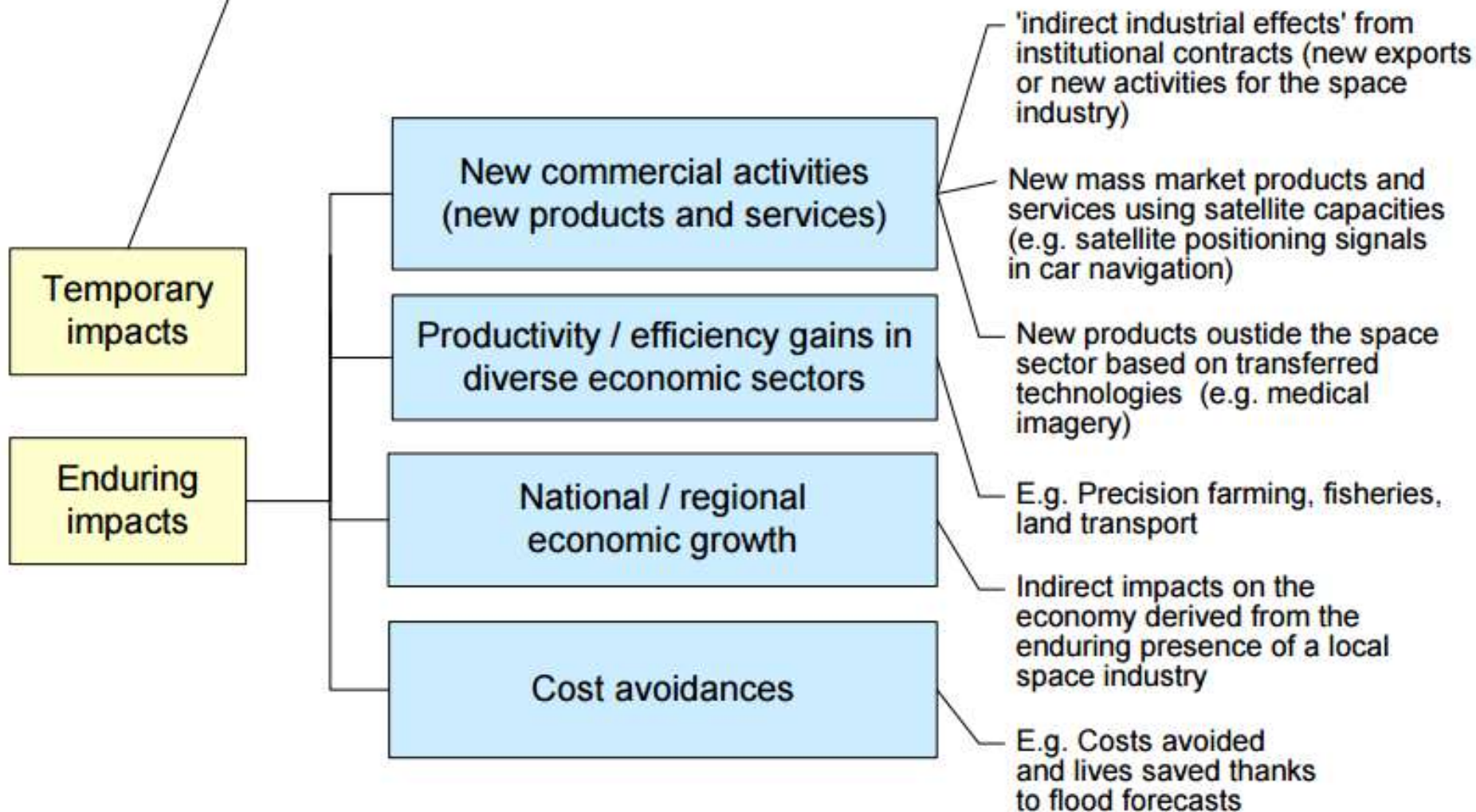
Segments macro	Navigation	Communication	Earth Observation
	5 segments macro	6 segments macro	5 segments macro
	<b>Government</b>	<b>Consumer broadband</b>	<b>Oceanography</b>
	<b>Roads</b>	<b>Mobile communication</b>	<b>Meteorology</b>
	<b>Professional</b>	<b>Satellite networks</b>	<b>Land monitoring</b>
	<b>Consumer</b>	<b>Video Distribution</b>	<b>Security and defense</b>
	<b>Transport</b>	<b>Video Contribution</b> <b>Mobile Entertainment</b>	<b>Natural Resource Management</b>

Market segments	17 market segments	16 market segments	15 market segments
	<b>Defense</b>	<b>IP Direct access</b>	<b>Weather forecast</b>
	<b>Public Safety</b>	<b>Professional Mobile Communication</b>	<b>Professional</b>
	<b>Fleet Management</b>	<b>Asset Tracking Messaging</b>	<b>Coastal / Engineering</b>
	<b>Telematics</b>	<b>Satellite Networks</b>	<b>Transport</b>
	<b>Traffic Management</b>	<b>Defence &amp; security</b>	<b>Customer Service</b>
	<b>Scientific</b>	<b>Rural communications</b>	<b>Cartography</b>
	<b>Agriculture / fishing</b>	<b>Telemedicine</b>	<b>Land Use / Cover</b>
	<b>Asset Management</b>	<b>Contextual selection of topics</b>	<b>Homeland Security / Law Enforcement</b>
	<b>Surveying</b>	<b>Direct to home (DTH)</b>	<b>Humanitarian</b>
	<b>Time and Frequency Dissemination</b>	<b>Satellite News Gathering (SNG)</b>	<b>Disaster management</b>
	<b>Leisure Vessel</b>	<b>Digital Cinema</b>	<b>Environmental monitoring</b>
	<b>General Aviation</b>	<b>TV business</b>	<b>Agriculture</b>
	<b>Outdoor Recreation</b>	<b>Educational TV</b>	<b>Forest</b>
	<b>Location Based Personal Systems</b>	<b>Content Management</b>	<b>Energy</b>
	<b>Commercial aviation</b>	<b>In flight</b>	<b>Water</b>
	<b>Railway routes</b>	<b>Digital audio broadcasting (DAB) / Digital multimedia broadcasting (DMB)</b>	
<b>Maritime</b>			



## Review of possible impacts derived from investments in space programme

Impacts limited in their duration and taking place mainly during the development phases of a programme / an infrastructure: e.g., a new space launch site = multiplier for investments in transport infrastructure in a given region





## **THE HIGH GROWTH POTENTIAL OF AUSTRALIA'S SPACE ECONOMY**

Indeed, *Australia's Satellite Utilisation Policy (2013)*<sup>1</sup> identifies Earth Observation from Space (EOS), Satellite Communications (SATCOMM) and Position, Navigation and Timing (PNT) as critical space-based technologies for our economic, societal and strategic well-being. The Policy also describes the need for Australia to participate in ensuring safe and secure access to these technologies, through provision of indigenous capability in Space Situational Awareness.

the downstream benefit to the Australian economy will be around AU\$12-18B enhanced GDP by 2020. Space-derived data makes a significant, and growing, contribution to the Australian economy. The opportunity for Australia to play a major role in the development and use of downstream applications, further enhance GDP, and access a larger share of the global space economy, is significant.



# APEC GIT Terms of Reference

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## ▪ TERMS OF REFERENCE:

- Facilitate GNSS applications to support seamless intermodal transportation to enhance safety, security, and sustainability.
- Identify actions to facilitate and collaborate on implementation of GNSS applications for transportation in the APEC region, complementing the work of international organizations.
- Provide a public/industry forum to address GNSS technologies related to transportation issues that will benefit the APEC region.

## PROGRESS OF THE PROJECTS/ACTIVITIES

Performance-Based Navigation Regulatory Review and Evaluation Program (PBNRREVP) – United States

Malaysia and the Philippines will be the 1<sup>st</sup> and the 2<sup>nd</sup> economies to have site visits, respectively.

# CHALLENGES TO ESTABLISHING A SPACE SECTOR IN MALAYSIA

1. Malaysia is still an industrially developing nation. Space technology is treated as prohibitively untenable domain; **disconnected from the apparent grass-root level developmental objectives**. Consequently, space technology is hardly explored nor prioritized as a crucial component of the solution to problems confronting the national developmental agenda.
2. Space technology requires **huge financial investments, has long gestation periods** and is exposed to risk of failure. Whilst Malaysia is characterized by very meagre financial resources and a vast array of developmental needs space technology implementation will have to compete with other deserving needs for these limited funds.
3. At present, Malaysia substantially **lacks the necessary knowledge and expertise** required to establish and efficiently run a prosperous domestic space sector. It is hence a critical for Malaysia to institute measures that will nurture a competent domestic space technology capacity.

# CHALLENGES TO ESTABLISHING A SPACE SECTOR IN MALAYSIA - cont

4. Most countries with established space programs are likely to be **reluctant to transfer space technology**. Because of the copious investments involved, national security fears and apprehensions about encouraging competition against its own space industry; no country is envisioned to be philanthropic with space technology. Fostering multiple stronger bilateral ties and acquiring strategic diplomatic leverage may help Malaysia mitigate this issue.
5. Malaysia **lacks an established domestic hi-tech sector with dual use** or that can be easily scaled or converted to space technology application. An existing (and propose) dual use or closely related technological infrastructure would hence bootstrap the proposed space sector onto the desired trajectory.



# VISION

**Space sector as a strategic contributor towards Malaysia's sovereignty and competitiveness**



# MISSION

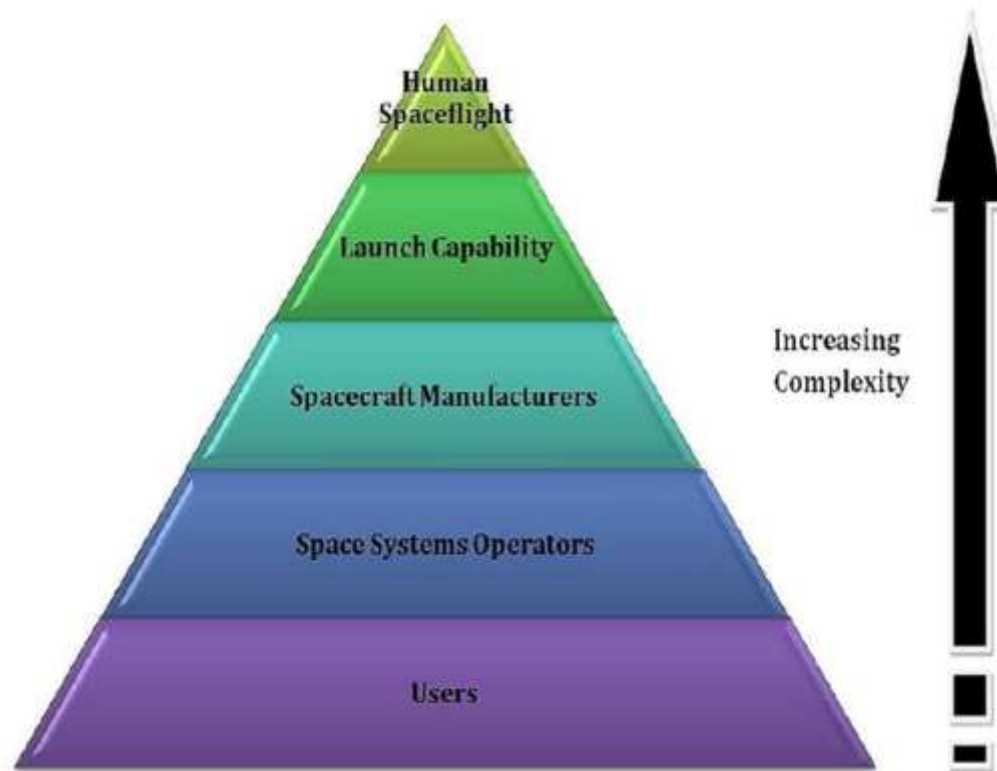
**To develop the country's potential in the space sector to support the development of the new economy, capture opportunities and manage risk.**





# MALAYSIA SPACE SECTOR FORMULATION

The definitive road-map that Malaysia needs to follow in order to establish a domestic space sector from scratch will essentially entail ascending the **space technology capability hierarchy pyramid**.



# SURGING SECTORS

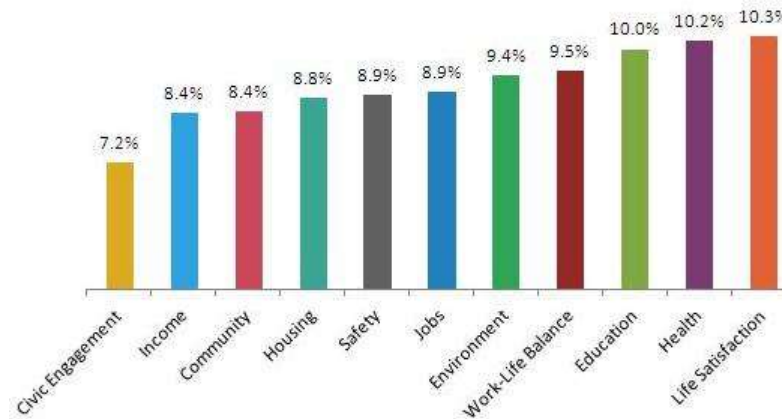
Security  
and  
Defense



Education  
(knowledge  
generation)



International  
Relations



Better life  
(good living)

# MALAYSIA SPACE SECTOR FORMULATION

## Phase 1 (2016-2020)

### Structuring the space sector

This phase is primarily tasked with **establishing the prerequisite foundational structures** upon which the domestic space sector will be established. The obligatory sensitization campaign, political groundwork, legal framework and fiscal rationalization will be conducted during this phase. Activities here are principally focused on **creating the requisite enabling environment** to commence the formation of the Malaysia space sector.

- **Establish Malaysia's space policy** to
  - guide the country in defining the space sector objectives.
  - guide the legislature in enacting the relevant legal framework.

# **MALAYSIA SPACE SECTOR FORMULATION**

## **Phase 2 (2021-2030)**

### **Maturation of the space sector**

- **Further** capacity and capability expansion.
- **Maturation** of technical capacity and capabilities.
- **Full operation** of space infrastructure
- **Setting** space based industry
- **Dual purpose operation**
- **Strategic engagement** and collaboration on relevant space technologies so as to build capacity from technology recipient to a technology developer



**THANK YOU**