Exploring Insights from Emerging Space Agencies

Here is a summary of the webinar:

Executive Summary
Since the dawn of the century, technological innovation and reduced launch costs have lowered many conventional barriers of entry to space, giving rise to a more diverse space-faring community, from commercial companies and non-space organizations to military space programs and partnerships between all three. Many nations are benefiting from the use of outer space than ever before. In the past 20 years alone, seven new national civil space agencies for the first time. While there are benefits to establishing a new space agency in this more expansive outer space age, developing space nations face new and unique challenges associated with a more congested, competitive, and contested space environment. With the goal of providing practical knowledge for emerging space nations to develop successful strategies, this research explored the best practices and lessons learned in the development of new national civil space agencies established between 2004 and 2015. The research featured two new sections: an updated assessment of national space agencies and a strategic assessment of comprehensive literature reviews that provide data-defining characteristics and indicators for understanding the evolution of new national civil space agencies.

Speakers: Renata Knittel Kommel, Ashley Peter, and Luc Riesbeck
Secure World Foundation (SWF) is a private operating foundation that promotes cooperative solutions for space sustainability.

Our vision: The secure, sustainable, and peaceful uses of outer space that contribute to global stability on Earth.

Our mission: Secure World Foundation works with governments, industry, international organizations, and civil society to develop and promote ideas and actions to achieve the secure, sustainable, and peaceful uses of outer space benefiting Earth and all its people.

Secure World Foundation is dedicated to the establishment of effective and efficient systems of governance for outer space and for improving the safety of operations in Earth orbit.
3. How to Ask Questions

Step 1: Find the Q&A button and click it.

Step 2: Look at other people's questions and select the ones you want to see answered.

Step 3: If you don't see your question already asked, type it in the space provided. Keep it short and simple!
How to Show Closed Captions

Step 1: Find the CC button and click it

Step 2: Click "Show Subtitle"
Webinar:
Exploring Insights from Emerging Space Agencies

October 21, 2020

Moderator: Victoria Samson
Speakers: Renata Knittel Koeppel, Ashley Peter, Mackenzie Pugh Hall, and Luc Riesbeck
Introduction

- Today, over sixty years after the establishment of the first space agency, the space sector has seen rapid commercialization.

- Particularly in the last decade, technological development and reduced costs have lowered the barriers of entry to space for non-traditional actors. Mission architectures, teams, and uses of space are diversifying widely and rapidly.

- Nations no longer need a space agency to participate in space activities and benefit from space-based data. But despite this, over 15 new agencies have been established in the last 5 years.

Research Questions
Research Questions

Why and how are emerging space nations establishing space agencies?

1. What are the motivations for standing up and investing in a national civil space agency in the past 5 years?
   - What are the benefits and challenges of doing so now?
   - How do new entrants characterize the space industry/economy?

2. What plans, programs, missions, and goals do emerging space nations see as necessitating a national space agency in order to do?
Methodology

General Assessment (Why?)
- Identified nations that have established space agencies during or since 2014
- Comprehensive literature review
- Examination of trends

Case Studies (Why and How?)
- Formation of criteria & selection of case study nations
- Literature review & question formulation, IRB approval
- Interviews and follow-up
General Assessment

Why are nations creating civil space agencies today?

Findings

Conclusion
GENERAL ASSESSMENT
16 space agencies were formed between 2014 and 2019

2014
- Bahrain
- Paraguay
- Poland
- UAE

2016
- New Zealand

2017
- Kenya

2018
- African Union
- Australia
- Greece
- Luxembourg
- Saudi Arabia
- Zimbabwe

2019
- Egypt
- Philippines
- Portugal
- Turkey

Main rationale: Promote economic development and harness the benefits of space.
<table>
<thead>
<tr>
<th>Nation</th>
<th>Year Est.</th>
<th>Main Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>2019</td>
<td>Socioeconomic, Centralization, Geopolitical</td>
</tr>
<tr>
<td>Philippines</td>
<td>2019</td>
<td>Centralization, Geopolitical</td>
</tr>
<tr>
<td>Portugal</td>
<td>2019</td>
<td>Economic</td>
</tr>
<tr>
<td>Turkey</td>
<td>2019</td>
<td>Coordination, Geopolitical</td>
</tr>
<tr>
<td>African Union</td>
<td>2018</td>
<td>Socioeconomic</td>
</tr>
<tr>
<td>Australia</td>
<td>2018</td>
<td>Economic, Coordination, Regulatory</td>
</tr>
<tr>
<td>Greece</td>
<td>2018</td>
<td>Economic</td>
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<td>2018</td>
<td>Economic</td>
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<td>Saudi Arabia</td>
<td>2018</td>
<td>Economic, Socioeconomic, Coordination</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2018</td>
<td>Socioeconomic</td>
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<td>2017</td>
<td>Socioeconomic, Regulatory</td>
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<td>Economic, Regulatory</td>
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<td>2014</td>
<td>Socioeconomic</td>
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<td>Poland</td>
<td>2014</td>
<td>Economic, Coordination</td>
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<td>UAE</td>
<td>2014</td>
<td>Economic, Coordination, Centralization, Geopolitical, Regulatory</td>
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</tbody>
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**Main Rationales for Establishment of Space Agencies Between 2014 and 2019**

- Economic
- Socioeconomic (14)
- Coordination
- Centralization
- Geopolitical (5)
- Regulatory
Roles

Centered around the management of space activities rather than their execution

- Strategies and policies
- Regulatory frameworks
- Coordination mechanisms
- International representation
- Cooperation with other space nations
GENERAL ASSESSMENT'S CONCLUSION

"Emerging space agencies have been more commercially driven in both their rationales and roles."

""
Case Studies

We selected two nations, the UAE and Luxembourg, for our in-depth case studies.
Case Study #1: Luxembourg
The Luxembourg Space Agency (LSA) was established in September 2018.

- **Main goal**: Promoting the development of the national space industry

- Housed under the Ministry of the Economy

- Foster an environment that’s attractive for new space businesses
  - Workforce development
  - Regulatory guidance
  - Financing mechanisms
Rationale

What led them to create a space agency?

Economic Diversification

- Over-reliance on one sector at a time;
- Find the next “big thing” to expand the national portfolio of economic activities in Luxembourg
  - A new innovative niche

2016: Space Resources Initiative

2017: Law on the Exploration of Space Resources

- Pioneer, second only to the US
- Attracted New Space companies
Important Factors

- Previous involvement in the space sector (ESA & SES)
  - Wealthy nation
  - Small, little bureaucracy

Until 2018, the SRI was being led by the Ministry of Economy’s Department of Space Affairs

Why a Space Agency?

- Coordination
- Flexibility
- Visibility
- Commitment
Lessons Learned

- The purpose of the agency was determined before its creation

- Found a gap to fill
  - Emerging niche
  - Specialize and cooperate
  - Competitive advantage
  - Not only space resources

- Risk tolerance
  - Investing in early stage companies in a still unproven segment of the space economy
Case Study #2: United Arab Emirates (UAE)
The UAE Space Agency (UAESA) was established in August 2014.

- Federal government authority that oversees and facilitates the UAE’s space sector

- Main goals:
  - Develop the national space sector
  - Promote scientific research & innovation
  - Attract and promote young STEM talent
  - Build international cooperation
Rationale
What led them to create a space agency?

**Timing:** Established when there was a clear need

**Reasons:**
1. Economic diversification
2. Geopolitical impact
3. Consolidation and regulation of space activities
4. Contribution to the global community
Regulatory Approach

How did they formulate their regulations?

**Method:** "Benchmarked" frameworks of other established agencies

An **agile** and **technology neutral** regulatory model works best for the UAE.
Important Factors

- Well-developed space sector prior to establishment of UAESA
- Seven emirates with autonomous local governments
- Strong federal political will and financial support for space activities
Lessons Learned

- Identified a **clear need** for creating the UAE space agency

- Implemented **agile, scalable, and technology neutral** regulations

- Filled gaps and opportunities in the international space sector

- Gained **strong federal support** and interest for space activities
For Emerging Space Nations

1. Determine the purpose of your space agency before developing a regulatory framework.

2. Design regulatory frameworks to be agile and technologically neutral.

3. Find gaps in the space sector and specialize to fill them.

4. Follow international best practices related to space.

5. Take advice from more established space agencies, but avoid becoming risk averse.

6. Collaborate (i.e., internationally, domestically, cross-sector) and share best practices.
For Established Space Nations

1. Engage in capacity-building with emerging space nations, for regulatory frameworks—but keep an open mind

2. Ensure a level playing field by acting as a good role model for emerging space nations, by prioritizing sustainable uses of space and best practices for safety and transparency
THANK YOU

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EXPLORING INSIGHTS FROM EMERGING SPACE AGENCIES
Renata Knittel Kommel, Ashley Peter, Mackenzie Pug-Hall, and Luc Riesbeck

EXECUTIVE SUMMARY
Since the turn of the century, technological innovation and reduced launch costs have transformed the conventional paradigm of entry into space, giving way to a more diversified space using community. From commercial companies and new space organizations to military space programs and partnerships, all these new actors are benefiting from the use of new space in ways never before seen. In just a few years, the United States established national civil space agencies for the first time. While there are benefits to establishing a new space agency in this new era of space age, developing new space territories is not without its challenges. New actors and partnerships in space have brought a more complex environment with service and operational demands that have never been seen before. The goal of this webinar is to explore the best practices and successes learned in the development of these new space agencies and experiences. This webinar will provide opportunities to explore the challenges, successes, and future directions of these new actors in space. The webinar features three new actors: a government assessment of comprehensive literature review that defines the characteristics and opportunities for advancing space exploration.