Annex 3A. Use Cases

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Use Case 6. Drivers for a space program from a Philippine perspective

When the Philippine government evaluated its space needs, the main drivers to develop a space capability were identified as security and emergency communications, centered on the following significant experiences:

- The planning team found that, owing to a lack of domestic space knowledge, the Philippine government had, in hindsight, previously overestimated the risk of North Korean rocket bodies crashing into the Philippine Sea. This overestimate resulted in an unnecessary and economically damaging ban on all fishing activities on the eastern seaboard. Second, the Philippine government found it was unable to adequately patrol the large West Philippine and South China seas with the country's current number of aircraft and patrol ships. Subscription to commercial remote sensing data offered a more cost-effective option than buying, operating, and maintaining additional aircraft and ships. Thus the planning team determined that the development of sovereign space capabilities for defense and security is a priority need for the Philippines.
- In 2013, a super typhoon resulted in thousands of casualties and billions of US dollars in damages, and also destroyed the cellular transmissions towers in several provinces. In the words of Dr. Rogel Mari Sesi, "In the aftermath of the Typhoon, emergency responders, who mainly relied on cellular communications, lacked the capability to effectively assess the extent of damage on the ground. At that time, satellite phones were the only means of communications in the affected areas and the Office of Civil Defense (OCD). In the aftermath of [Typhoon] Haiyan, commercial satellite companies deployed mobile VSAT terminals, creating an ad-hoc communications network that enabled local government units, emergency responders and the military to coordinate their activities. This highlighted the need for a regular and emergency space-based communications capability, one that is not affected by weather and is constantly available" (Verspieren et al. 2022).

Use Case 7. The development and initial implementation of South Africa's national space policy

South Africa began its process to develop a space policy in 2003 with just a few dedicated individuals. South Africa's planning team weathered numerous challenges but eventually built a wide base of support in government for the space policy initiative, resulting in South Africa adopting its first space policy in 2009. Peter Martinez, drawing upon his time serving in the South African government, described the following development goals in rough chronological order.

- Raise the attention of policy makers to the fact that space is a policy issue.
- Find a champion for space in government.
- Identify or create a platform for space policy dialogue.
- Define a set of common goals to promote cooperation.
- Build a critical base of support in government.
- Make space a government-wide agenda.
- Build policy...coalitions.
- Build momentum and capacity in the space arena.

- Take stock of strengths, weaknesses, threats, and opportunities to inform policy development.
- Put it all together to formulate the policy.

"The process … took some six years to run its course. It took that long because the process was, in a way, almost as important [as] the content of the policy. Through that process, we now have a well-grounded space programme that is modest, but which enjoys the support of a wide number of government Departments and also multi-party political support and is therefore likely to be sustained, unlike the previous military space programme. One of the central pillars of the National Space Policy is a cooperative governance approach to space activities. This has required (and will continue to require) concerted efforts on the part of civil servants to work across Departmental boundaries." (Martinez, 2016)

Use Case 8. The African Space Strategy's 2019 SWOT Analysis.

STRENGTHS	WEAKNESSES
▶ Political support for the growth and development of high-technology sectors, including the space sector. ▶ Significant government support for the establishment of national and regional space programs. ▶ A significant number of space professionals committed to leveraging space for socio-economic development. ▶ Intra-continental partnerships fostering space science collaboration ▶ Africa's strategic and geographic locations that are suitable for astronomical and space physics facilities. ▶ Exiting nodes of space expertise and in-situ capabilities. ▶ Established satellite assembly, integration, and testing facilities. ▶ Existing knowledge base and expertise in space engineering. ▶ Experience in the manufacture and/or operation of small satellites. ▶ Space physics capability that leverages its proximity to the Southern Ocean islands, the South Atlantic Anomaly, and the study of the Equatorial Electrojets. ▶ Existing and established centers focused on the exploitation of geospatial data.	▶ Disparities in space expertise and capabilities across the continent. ▶ Wide range of African Challenges and societal needs. ▶ African user needs are not well quantified and documented. ▶ No governance structure to coordinate and manage continental-level space activities. ▶ Inadequate core skills in several areas of space science. ▶ Limited number of space initiatives, so skills are lost. ▶ Duplication of efforts and suboptimal coordination. ▶ Suboptimal investments in the space sector. ▶ Disjointed continental efforts because there are no data management or data sharing policies. ▶ Limited access to libraries, journals and scientific and technical databases. ▶ Uncoordinated regulatory environments on matters such as immigration, and cross-border taxes and tariffs. ▶ Fragmented space activities, not aligned with continental goals. ▶ Limited funding on a continental scale that is allocated for space science and technology.

OPPORTUNITIES	THREATS
▶ Large rural communities whose needs can be supported by space products and services. ▶ A young population that could be trained to serve the requirements of an indigenous space sector. ▶ Maturing public awareness and knowledge of the societal benefits of space applications. ▶ Servicing the sustainable development needs of a population of 900 million people spread over 30.3 million km2. ▶ Natural resources that provide a significant socio-economic growth potential. ▶ Contribution of space products and services to the challenges of global change. ▶ Leveraging the skills and expertise of the African Diaspora. ▶ International partnerships for the co-development of space platforms, products and services. ▶ Potential to share infrastructure and other capacities among various African countries. ▶ Learning from existing satellite programs to strengthen continental capacity.	▶ Lack of a coordinated approach to international treaties and conventions. ▶ Political will for continental-level space initiatives not universally shared, amid other pressing national socio-economic priorities. ▶ Over-reliance on financial and technical support from outside the continent. ▶ Political instability. ▶ A weak financial base. ▶ Brian drain of core skills. ▶ Competition for radio frequencies allocated to Africa that could limit the future usage of such resources. ▶ National space programs not able to assimilate and adopt rapid technological advancements. ▶ Lack of a focus on user needs and innovation in delivering relevant space services and products. ▶ Limited collaboration and coordination owning to an exclusive focus on national priorities. ▶ Lack of a coordinated continental approach to multilateral space agreements and guidelines.

Source: African Union 2019, 11.

Use Case 9. SWOT analysis of the use of geospatial information in the United Nations system

STRENGTHS	WEAKNESSES
▶ Existing geospatial expertise and resources in many entities at headquarters, regional and country offices. ▶ Standards and policies to improve geospatial data management exist and are enforced in some entities. ▶ Existing geospatial capacity development programs (though limited and poorly funded).	▶ Senior management often lacks understanding of the specialized skill set required for geospatial experts ▶ External stakeholders do not conduct business with UN entities as one. ▶ Existing coordination mechanism is informal and on a voluntary, best-effort basis. ▶ Perception of geospatial information systems as just a tool for ad-hoc use and not viewed as a core asset to be integrated in decision-making. ▶ Not all agencies at same level of geospatial capacity, knowledge and resources. ▶ Limited awareness of the potential of geospatial application at all levels. ▶ Lack of corporate understanding on inefficiencies caused by the lack of a better use of geospatial information.
OPPORTUNITIES	**THREATS**
▶ Determination of respective entities to enhance coordination and collaboration through the Network ▶ Reporting to relevant and expert intergovernmental mechanism (UN-GGIM). ▶ Industry is providing more and more solutions, including innovative technologies. ▶ Leveraging existing UN-GGIM networks, working groups and frameworks such as for the integration of Statistical and Geospatial Information, Global Statistical Geospatial Framework, etc. ▶ Leveraging geospatial information and data with Member States for use/benefit of the Organization, through UN-GGIM. ▶ Emerging technologies (Big Data, AI and machine learning, etc.) can enhance conventional analysis.	▶ Difficulties to obtain or absorb costs related to infrastructure, software and environment. ▶ Poor recognition or unsustainable resources makes retention of expertise difficult. ▶ Lack of sustained or limited funding and resources (e.g. project-based approach). ▶ Lack of coordination leads to redundancy in initiatives and programs among entities. ▶ Lack of awareness, availability, and accessibility to existing geospatial services. ▶ Limited "bandwidth" in certain member States to access resources (data, tools, applications) ▶ Activities of the Network should not negatively affect United Nations entities with geospatial capabilities in the fulfilling of their mandates.

Source: United Nations Geospatial Network 2020, 10.