

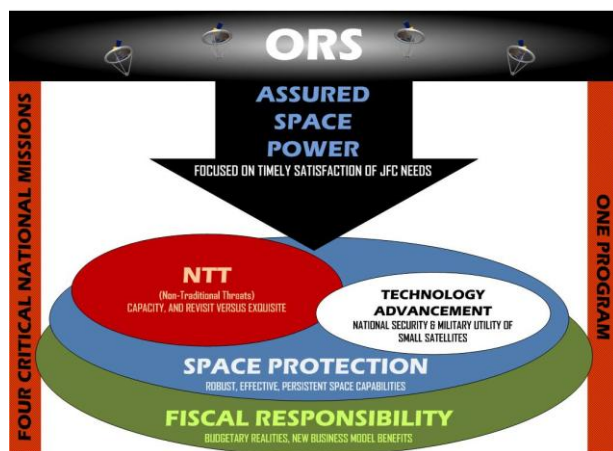
Information Paper On Operationally Responsive Space

1.0 BACKGROUND. Why ORS?

Since the Cold War, the world transitioned from a balance of power with two superpowers, to a unipolar world with one superpower, to a volatile world with many actors and rouge states. This changed security posture has led to the emergence of non-traditional, disruptive, and unconventional threats attempting to balance or establish power. There is a rise of legitimate regional dominators, and there is an ever-increasing threat from rouge states. The face of conflict has changed and it is necessary to adapt to globalization and move space into the information age.

To move in this direction, the Operationally Responsive Space (ORS) Office was established in May 2007 by the Deputy Secretary of Defense and Executive Agent for Space as a proactive step to adapt space capabilities to changing national security requirements, and to be an agent for change across the community. Additionally, advancements in small satellite technologies and the opportunity to invigorate the United States industrial base (by shortening development timelines) made ORS an attractive part of the solution set to respond quickly to emerging threats and unanticipated needs.

ORS is taking a new approach to risk and mission assurance to rapidly deploy capabilities that are 'good enough' to satisfy warfighter needs across the entire spectrum of operations, through peace, conflict, and all levels of crisis. To achieve the desired end state of responding to Joint Force Commanders' needs in days to weeks, ORS is implementing a new business model that embraces open innovation, and focusing on material as well as non-material solutions.



FOUR CRITICAL REASONS:

Non-Traditional Threats

Technology Advancements

Robust Space Protection

**New Business Model:
Faster/Cost Effective**

2.0 What is ORS?

2.1 Defining ORS. A significant effort was dedicated to defining ORS by OSD Space Policy and the community to ensure the definition of ORS is clear. ORS is “assured space power focused on the timely satisfaction of Joint Force Commanders’ needs.” The Deputy Secretary of Defense definition is specifically derived from Joint Doctrine and defined to mean the following:

- *Assured:* Sufficiently robust, timely, agile, adaptive, and resilient to achieve desired outcomes with a high degree of certainty.
- *Space Power:* The total strength of the nation’s capabilities to conduct and influence activities to, in, through, and from space to reach its objectives.
- *Timely Satisfaction:* Address needs and deliver solutions within operationally relevant timelines.
- *Joint Force Commanders’ Needs:* Establish, expand, and secure operational reach; acquire, refine, and share operational knowledge; identify, create and exploit effects to create the desired operational outcomes; and link tactical forces to strategic objectives.

2.2 Overarching Goals. To achieve this vision, ORS is essentially “building a spacecraft while it’s being flown.” ORS is demonstrating incremental capability by accepting JCF needs from the Commander of US Strategic Command, and building an equivalent to a U2 Reconnaissance Wing for Space simultaneously. The ConOps requires that assets can be “EMPLOYED” in minutes to days; “DEPLOYED” in days to weeks; and “DEVELOPED” in months.

ORS Mission Essential Tasks

1. **Develop End-to-End enablers for USSTRATCOM’s 2015 CONOPS**
2. **Respond to JFC Needs from USSTRATCOM**
 - **Simultaneous submission to JUONS process required to obtain funding**

2.3 Policy Threads. ORS is also tightly linked to the current National Security Presidential Directive 03 (Jun, 2010) and the National Defense Authorization Act Section 913, (2007). The threads are also the communication themes for the ORS community.

4.3.1 NSPD (03)

- Foundational Activities: “Improve timely acquisition and deployment of space systems through enhancements in...technological risk and maturity, and industrial base capabilities;” (pg.6)
 - ORS is using *open innovation* and employing a modular open systems architecture (MOSA), and government provided hardware and software libraries to allow for cost effective development of capabilities in relevant timelines. (Goal: \$60M for spacecraft & launch)
- International Cooperations: “Departments and agencies shall identify potential areas for international cooperation...” (pg.7)
 - ORS is a means to foster international collaboration and act as a deterrent by affording the opportunity to participate in multi-national constellations using technology that is “*good enough*” *without compromising exquisite, state-of-the-art technology.*
 - ORS can serve as a tool of foreign diplomacy for military operations, humanitarian relief, economic growth, and political strength.
- Assurance and Resilience of Mission-Essential Functions: “Develop and exercise capabilities and plans for operating in and through a degraded, disrupted, or denied space environment for the purposes of maintaining mission-essential tasks.” (pg. 9)

- ORS is a means to support in all levels of conflict by potentially having assets *on-orbit, in development, and ready to rapidly deploy to the Area of Responsibility*.
- ORS is establishing the framework for standardized operations through routine and repeatable processes for training and exercising (to include commercial, industry, and international assets).
- **NSS Guideline:** “Reinvigorate US leadership by promoting technology development, improving industrial capacity, and maintaining a robust supplier base necessary to support national security interests .” (pg. 13, bullet 3)
 - ORS is a means to invigorate the industrial base by *increasing transaction rates*, component production, and the overall supply chain.
 - ORS can provide an environment for innovation and means to streamline design, development, and deployment of emerging technologies.
- **NSS Guidelines:** “Develop and implement plans, procedures, techniques, and capabilities necessary to assure national security space-enabled missions...may include rapid restoration of space assets...” (pg. 13. bullet 4)
 - ORS is assured space focused on *timely* satisfaction of JFCs’ needs.
 - ORS enables a complementary architecture that delivers *rapid reaction* space capabilities tailorable to emerging threats.

2.3.2 NDAA Section 913. Policy of the United States to demonstrate, acquire, and deploy an effective capability for operationally responsive space to support military users and operations from space, which shall consist of—

- Responsive satellite payloads and busses built to common technical standards;
 - Goal: \$40M for satellite and bus
 - Use modular, open systems architecture to transform the industrial base
- Low-cost space launch vehicles and supporting range operations that facilitate the timely launch and on-orbit operations of satellites;
 - Goals: \$20M for small launch
 - transform range – more autonomous and space-based assets
- Responsive command and control capabilities; and
 - Interoperable and complementary to existing architectures
- Concepts of operations, tactics, techniques, and procedures that permit the use of responsive space assets for combat and military operations other than war.

3.0 SUMMARY of KEY MESSAGES. The ORS Concept is firmly established in the US National Space Policy, law, and USSTRATCOM Concept of Operations. The results are:

- ORS delivers warfighter capabilities that are “good enough” in operationally relevant time frames and is complementary to the existing space architecture.
- The ORS End State provides the ability to address emerging or unanticipated needs through timely augmentation and reconstitution of minimum space capabilities.
- ORS is about doing business differently -- ORS enables rapid call up to launch in days and new development in > 1 year by using Open Innovation – “Building a U2 Recon Wing for Space”
- ORS engages the entire space community through collaboration and coalition opportunities.
- ORS invigorates the industrial and skill bases through increased transaction rates and frequent demonstration and deployment of capabilities.