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License Challenges for Current RS Law & Policy

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Challenges to U.S. Privately-Operated RS Satellite Policy

2014 - 2024

- **Space is increasingly “congested, contested, and competitive”**
 - *The U.S. is no longer the space hegemon, yet it seeks to maintain a large differential advantage over foreign space-faring nations*
 - *Initiatives to support the U.S. space industrial base will increase in importance if domestic defense and intelligence spending decline*
- **Regulatory structures from the late ‘90s are becoming outdated by...**
 - *Small satellites and constellations thereof*
 - *Hybrid activities between governments, private entities and academia*
 - *Requests for “non-traditional” sensing methodologies*
 - *Revision of remote sensing technology export controls (CCL vice USML)*
 - *Level of foreign competition*
- **Criteria for U.S. space technology & information protection/cooperation**
 - *Policy must balance the equities of hardware and information providers*
 - *It must distinguish true foreign competition from foreign rhetoric*
 - *It must rigorously evaluate technology sensitivity in U.S. license requests*
 - *Regulations should be transparent, effective and enforceable*



Land Remote Sensing

Definition in U.S. Law

- **Title 51 – National and Commercial Space Programs 2010 (Pub. L. 111-314, 3, Dec. 18, 2010, 124 Stat. 3328) 60101. Definitions)**

(4) LAND REMOTE SENSING.—The term “land remote sensing” means the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites, other than an operational United State Government weather satellite (emphasis added)

➡ **Implications (interpreted in part under 15 CFR 960)**

- *Applies to “land” and “bodies of water” on the Earth*
- *Excludes imagery of the Earth taken by “operational” USG weather satellites*
 - Presumably does not exclude USG “experimental” weather sensors, but...
 - **Would it exclude data collection by “hosted” sensors whose data become part of NOAA’s weather prediction models?**
- *Applies to spatially-unresolved data if multiple points can be **processed** into imagery of the Earth*
 - Example 1: Synthetic Aperture Radar
 - Example 2: Most sounders, possibly excluding limb sounders



Interagency Challenges

Hardware Export vice U.S. Private Operator Licensing

- **Panchromatic (PAN) spatial resolution thresholds**
 - *Metrics for turnkey system export*
 - *Licensing and regulation of U.S. CRS imagery providers*
- **Small satellites, constellations, and hosted payload issues**
 - *What constitutes “small” (picosats, cubesats, nanosats, microsats...)?*
 - *Regulatory differences: USG, university, commercial, hybrid,...*
 - *Hosted payload issues: e.g., U.S. payloads on non-USG platforms*
- **Authorities for licensing “non-traditional” modes**
 - *Remote sensing of the Earth’s surface (clearly with DoC/NOAA under P.L. 111-314)*
 - *Other functions performed by private remote sensing satellites?*
- **“Non-traditional” commercial remote sensing methodology assessment**
 - *CDP license metrics for Thermal IR, SAR, HSI, LIDAR/LADAR, etc.*
 - *Metrics for “non-traditional” export controls*



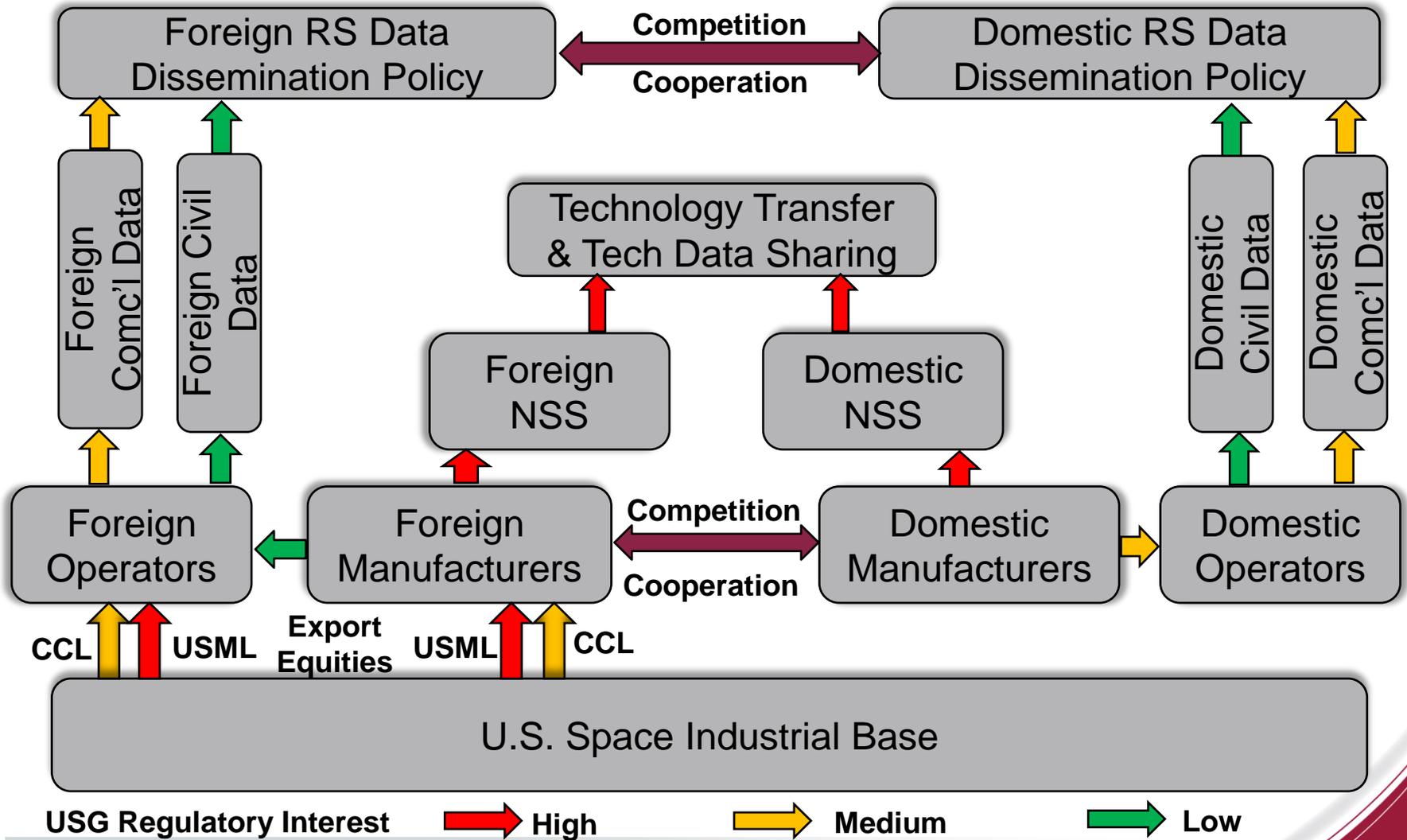
A Notional “9-Cell” for USG Licensing Controls

Private RS Operating Licenses and RS Exports

Sensor		Minimal Capability	Moderate Capability	Advanced Capability
Application		Sensitive Data	Sensitive Data	Sensitive Data
		Minimal Capability Semi-Sensitive Data	Moderate Capability Semi-Sensitive Data	Advanced Capability Semi-Sensitive Data
		Minimal Capability Non-Sensitive Data	Moderate Capability Non-Sensitive Data	Advanced Capability Non-Sensitive Data



Satellite Remote Sensing: Tech Transfer/Data Policy



In Summary

- **NOAA and its USG partners need a common framework for examining emerging law and policy issues on satellite remote sensing**
 - *Hardware/software versus data/information*
- **License applications for “non-traditional” privately-operated systems are appearing with some regularity**
 - *Thermal infrared*
 - *Novel hyperspectral*
 - *Small satellite constellations*
- **The future of licensing will be like the past, only more so!**
 - *As the issues become more complex, ...*
 - *The processes for adjudication need to be simpler and more transparent*

