



Promoting Cooperative Solutions for Space Sustainability

Panel Remarks: Multilateral Governance Architecture

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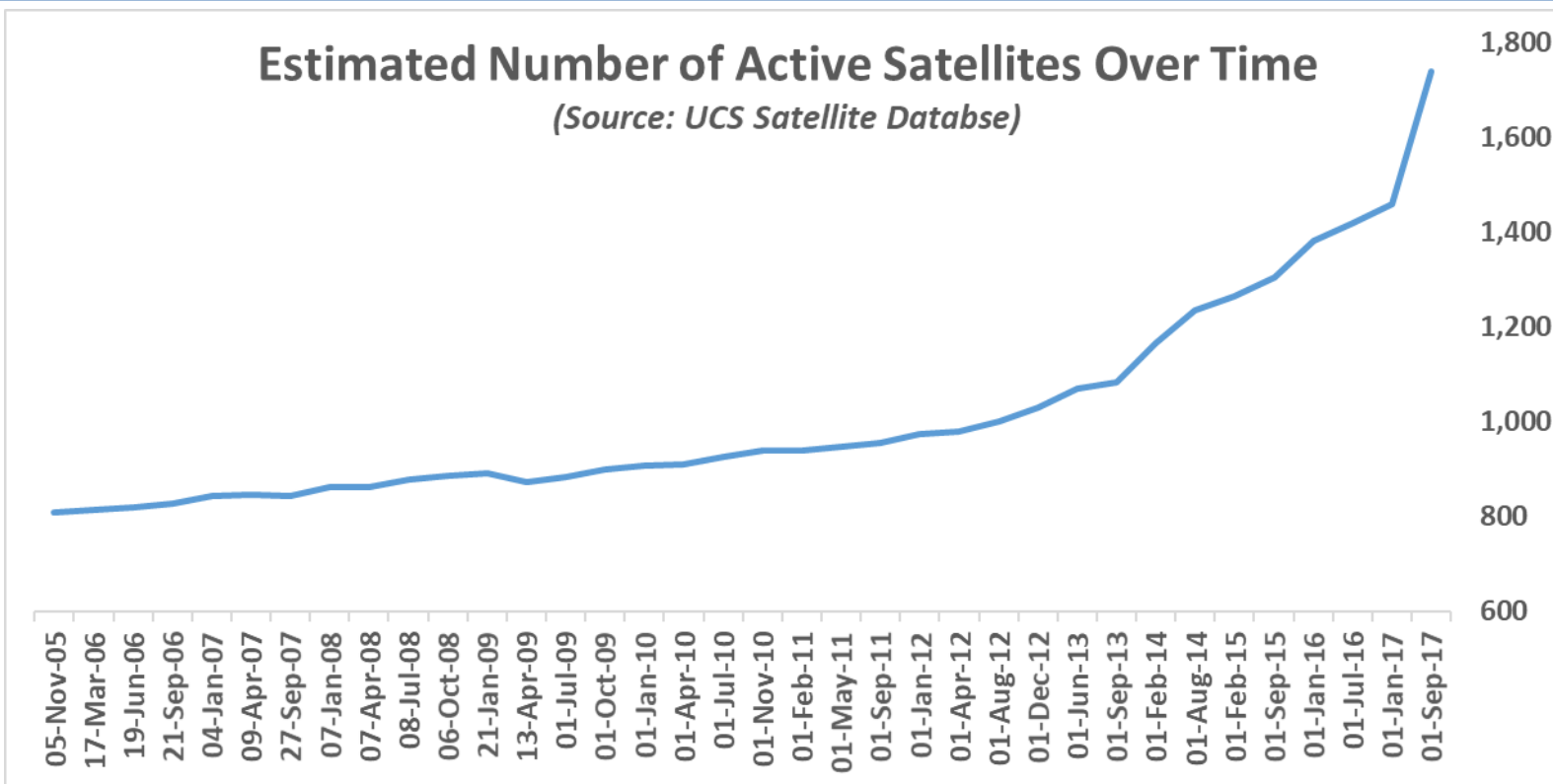
THE CHANGING NATURE OF SPACE ACTORS

A growing, diversifying, and rapidly innovating community.

A Fundamental Change?

Estimated Number of Active Satellites Over Time

(Source: UCS Satellite Database)



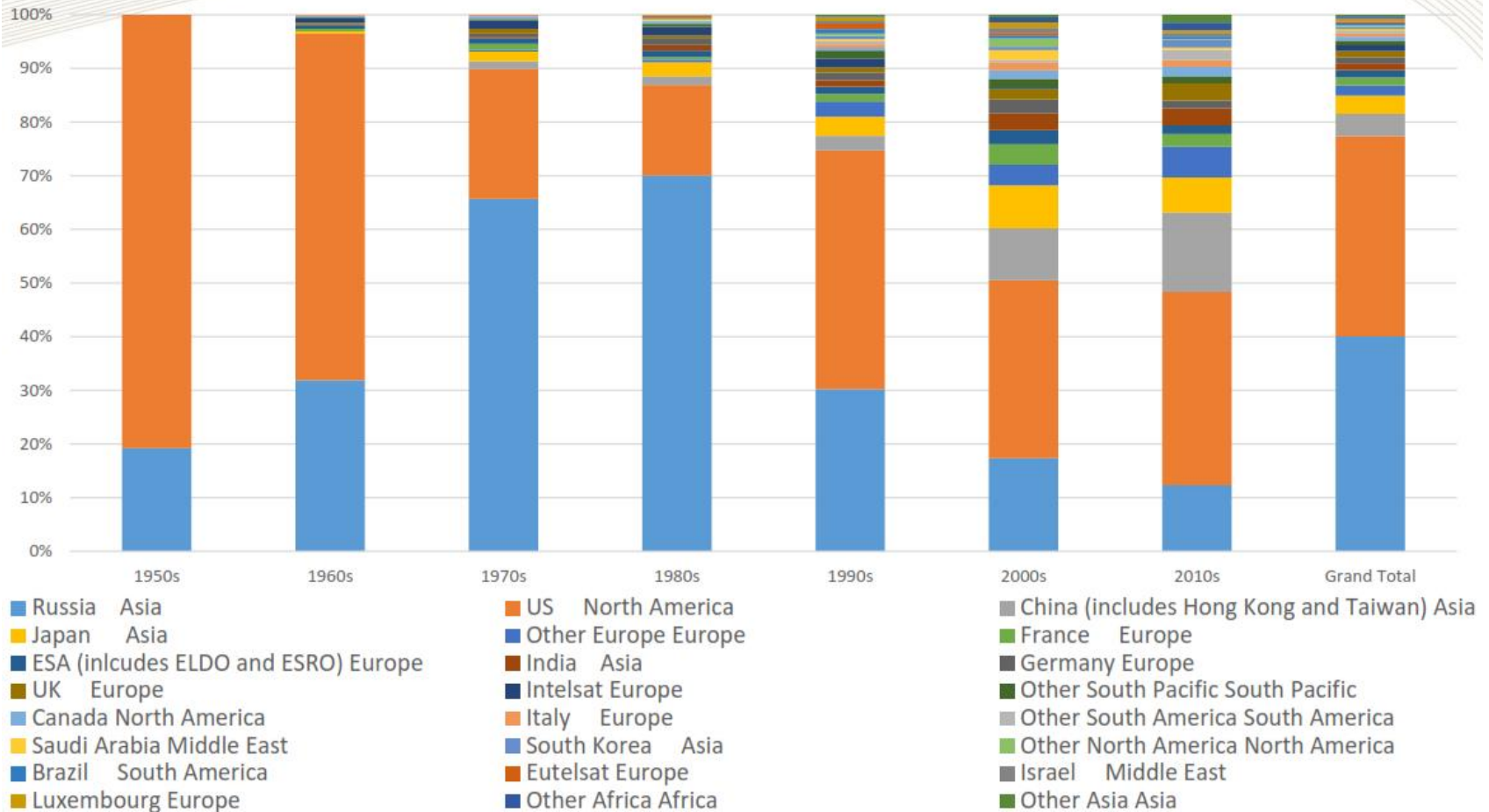
As of September 1, 2017: Estimated total number of operating satellites: 1,738

1-50 kg Forecast: Up to 2400 micro/nanosatellites to launch by 2023 (Spaceworks)

NGSO Constellations: 16,000+ planned satellites – based on US filings alone

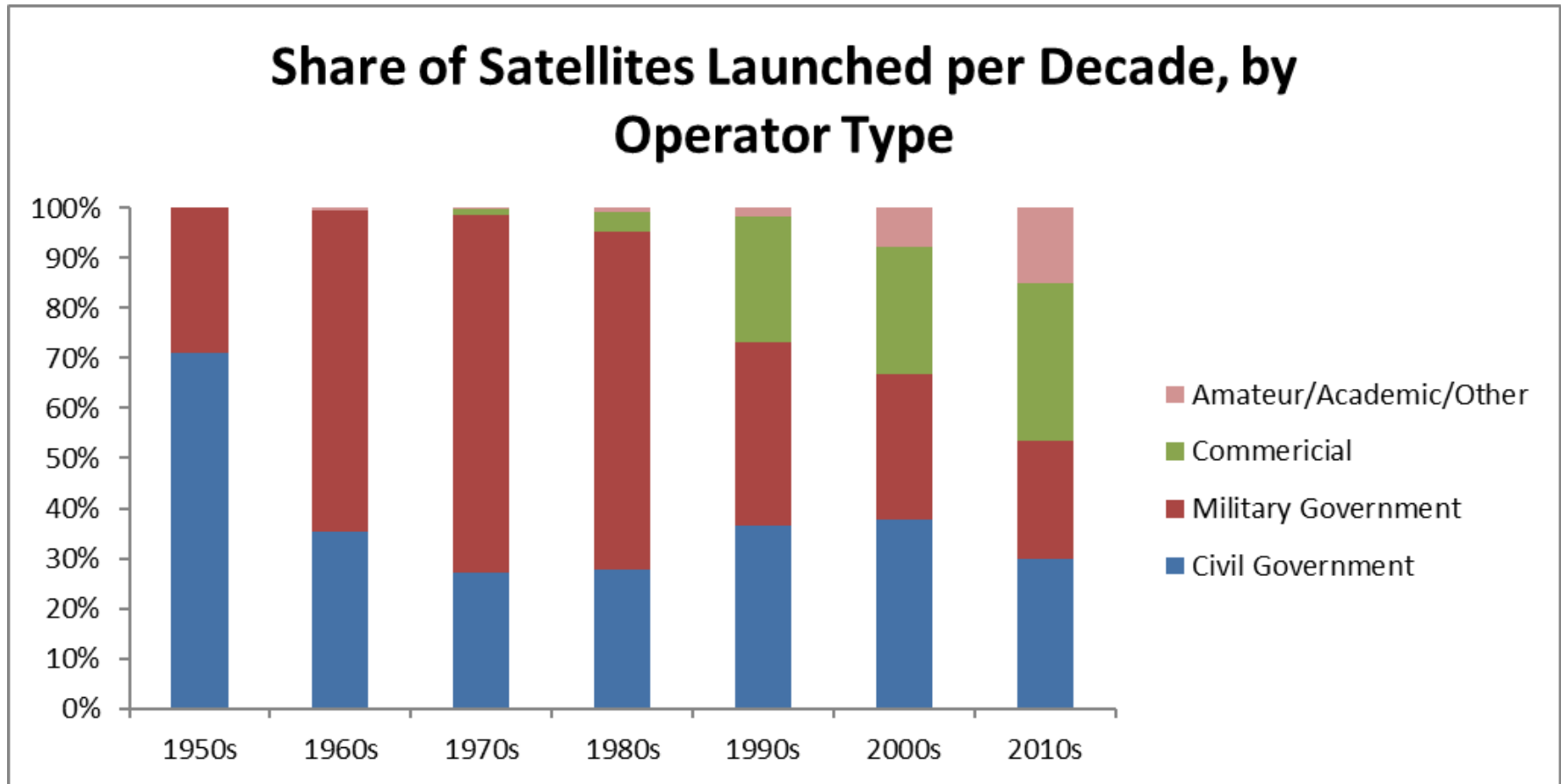
Space is Becoming More International

Satellites by Owner Country -1950s-today



Adapted from [IDA Global Trends in Civil and Commercial Space Study](#)

Space is Becoming More Commercial



Source: McDowell, Jonathan C, 2017—*Satellite Statistics*
http://www.planet4589.org/space/log/stats2/own_categ.txt

Opportunities

- Lower costs of access to space technology
- Lower technical and scientific barriers
- Broaden and diversify actors and users
- Enable new (and innovative?) applications and services
- Provide increased societal benefit

Challenges

- Regulatory fit, efficiency, and scale
- Diverse, heterogeneous set of actors
- Few standards for operations
- Spectrum, SSA, and potential space debris implications



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BEST PRACTICES & NORMS OF BEHAVIOR

How can governments and the private sector work together to ensure sustainability of the space domain?

What are “Norms”?

- **Sociology:** informal understandings that govern the behavior of members of a society
- **International relations:** Standard of appropriate behavior for actors with a given identity

Osaka



Historically –
stand on right,
walk on left

Tokyo



Historically –
stand on left,
walk on right

Impetus for Norms in the Private Sector

- Over the next decade, the private sector will become the dominant player in space (16,000+ satellites planned for launch)
- Incentives for satellite operators to set norms/behaviors w/out waiting for governments to act
 - Increase the sustainability of their own business models
 - Allay concerns that “darkening the skies” will create havoc for existing users
 - Preempt the need for government regulation (or at least inform it)
- Ties into broader Corporate Social Responsibility movement
 - Businesses value in social good beyond just bottom line
 - Socially responsible practices that reinforce business models

Principles for Responsible Space Actors

In an increasingly competitive orbital domain, how can operators cooperate on responsible operations principles?

How can the private sector & government(s) work together to develop norms of behavior to ensure the sustainability of the domain for all users?



*** Satellites not to scale**

- Satellite tracking capabilities
- Constellation separation
- Satellite reliability and end-of-life passivation commitments
- Adequacy of space debris guidelines
- Spectrum management & coordination
- Policy context for novel commercial applications





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Thank You

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