Regulatory Aspects on Earth Observation: A Brief Survey of Remote Sensing Law and Policy Around the World

Prof. Joanne Irene Gabrynowicz
Editor-in-Chief Emerita, Journal of Space Law
Visiting Professor, BIT School of Law
Professor Emerita, University of Mississippi

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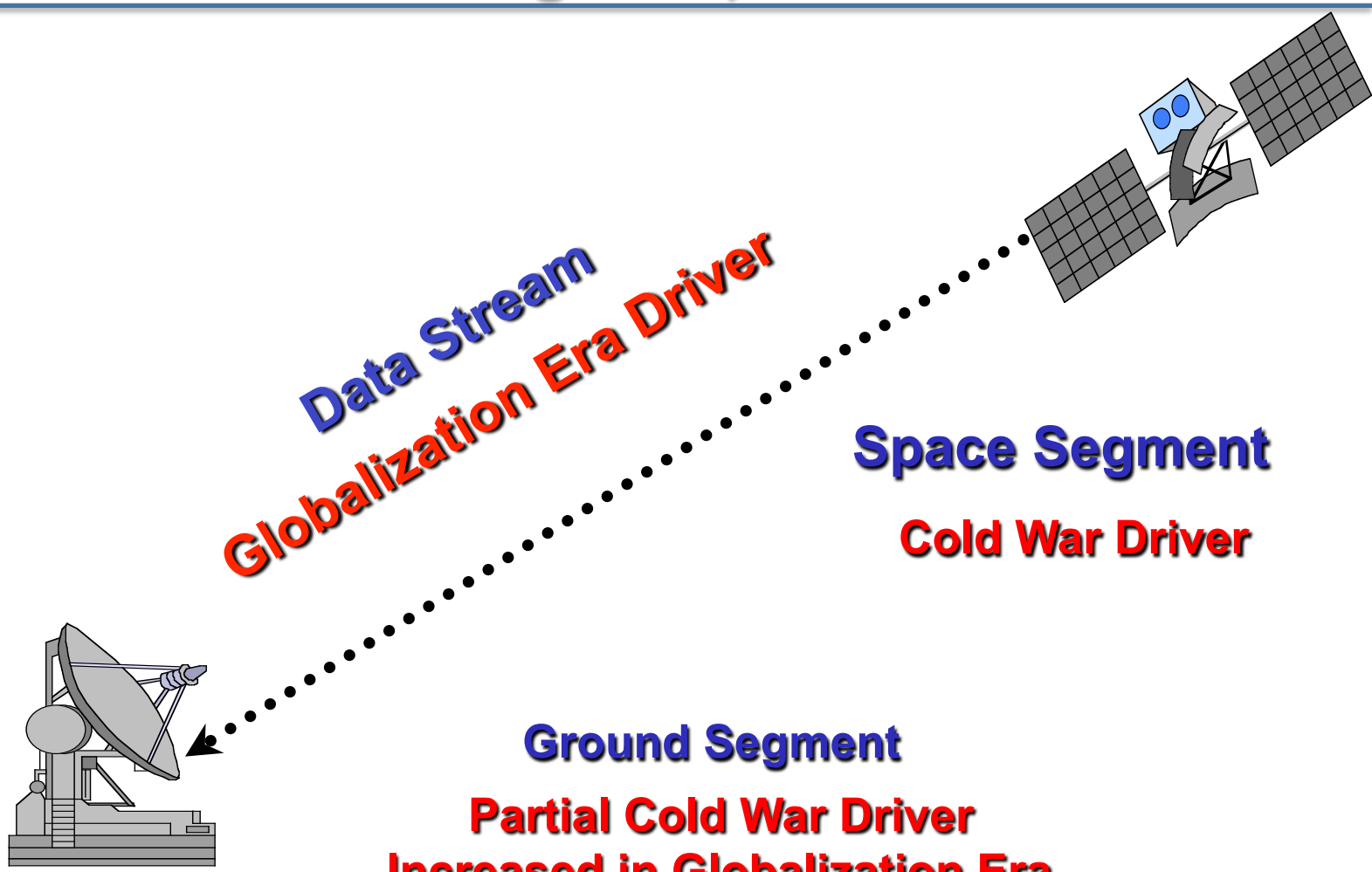
Background: Participants and License Types

- Different kinds of licenses
  - Satellite operations
  - Ground stations
  - Data use
- Space farers and emerging spacefarers
  - Shifting dichotomy
    - Spacefarers/Developed Nations and Nonspacefarers/Developing Nations
    - Some developing nations are now spacefarers
      - Algeria, Brazil, Nigeria, e.g.

Different "Drivers": Space Segment, Ground Segment, Data Stream



Background: Kinds of Remote Sensing Law and Policy

- General, global observations
  - Disasters Charter, e.g.
- Major remote sensing nations
  - Space segment focused
    - Canada, Europe, France, India, Japan, Russian Federation, e.g.
- Non-remote sensing nations
  - Ground segment focused law
    - UK, e.g.

The Big Picture: Land Data Distribution Policies

	1972 - 1984	1984 - 1992	1992 ~ 2004
Why	Foreign policy	Commercial policy	"Commercial" and environmental policy
To	Allies and nonaligned nations	Commercial market	National security and environmental users
By	Government	Quasi-private	"Private" and Government

The Big Picture: Distribution Policies and Rationales

Why

To

By

~ 2004 - Present

Survival of, and economic justification for, space systems

As expanded a user base as possible within growing national security restrictions. Low to medium resolution data = open access and free of cost. High resolution data = restricted and at commercial prices.

By whomever can succeed, but increasing tendency to be some form of government world-wide.

General Observations

- Driving force of legislation is compliance with treaties and international obligations
- U.S. law is apparent standard
  - Not to the "letter" but with due consideration
- Hybrid public - private environment
  - Law will not change this
- Space segment vs. ground segment
  - Satellite vs. data focus
    - U.S. vs. Europe, for example
- Growing major trend
  - medium to low res data open access and free of cost
  - hi-res data restricted and at commercial prices

Brazil and China

- Chinese Brazilian Earth Resources Satellites (CBERS)
- Serial Protocols and MOU
  - Wide ranging provisions for implementation, operations, IP, ground stations, data commercialization criteria, training specialists, applications, dispute resolution, international cooperation, etc.
- Data policy
  - Governed by contract, consultations, commercial agreements, etc.
  - Can agree to distribute data free of charge
  - Timely data sharing for natural disasters

Canada

- Data Access Control Policy
  - “transactional”
- Operations license: public, private, hybrid
- Case-by-case review
  - "shutter control”
  - tasking records
  - notify re: substantial foreign agreements and change in operational characteristics
  - need permission to transfer ownership, etc.
- Very similar to U.S. law

Europe

- Operations and data inextricably intertwined
  - No private systems or licensing, per se
  - "commercial" means what is done, not who does it
  - Hybrid public - commercial systems
    - Government systems operate commercially
- Data driven, but growing focus on space segment
- Multilateral agreements on satellite-by-satellite basis, e.g., Envisat, ERS-1, ERS-2, etc.
- Maastrict Treaty, agriculture and remote sensing

Europe

Joint Principles Sentinel Data Policy

- Objective: maximize beneficial use of EO data and information
- Anybody can access
  - no difference between public, commercial, scientific, European or non-European users
- Free data licenses
- Available free via a "generic" online access
  - subject to user registration, accepting terms and conditions
- Additional tailored access modes and conditions

Europe

- Regulation (EU) No 911/2010 of the European Parliament and of the Council of 22 September 2010
  - on the European Earth monitoring programme (GMES) and its initial operations
  - GMES objective: provide data and information services for environmental and security applications tailored to user requirements

Europe

- Data Availability Directives:
  - Infrastructure for Spatial Information in the EC, “INSPIRE Directive” (2007/2)
    - Continues to evolve, draft guidelines (2012)
  - “PSI Directive” (2003/98)
  - “Aarhus Directive” (2003/4)
- Directives on IPR and data protection:
  - “Copyright Directive” (2001/29)
  - “Database Directive” (96/9)
  - “Protection of Privacy Directive” (2002/58)

France

- Data driven
  - Focus: return on investment of public funds
  - Open civil regime
- *SPOT* considered "privatized" not "commercialized”
- LOI no. 2008-518 du 3 juin 2008 relative aux opérations spatiales

France

- "primary space-based data" must be declared to the administrative authority
  - Determination is made that data does not harm foreign policy or defense interests
  - Measures may be prescribed to safeguard these interests
  - 200,000€ fine for noncompliance
- Provisions do not apply to
  - Ministry of Defense activities
  - Satellite operations
  - Data reception

Germany

- Three kinds of licenses
  - satellite operation
  - general data distribution
  - specific data transactions
- Two-tiered "security data policy" analogous U.S.
- National security; commercial secondary
  - Data distribution mechanism creates system in which operator ("Betreiber"), distributor ("Datenanbieter") or operator/distributor ("Betreiber zugleich Datanbieter") will be licensed
  - Required to implement a "geomatrix" provided by government
    - includes check list to determine transaction sensitivity
    - potential liability if a distribution mistake is made
      - Penalties may include incarceration.

India

2011 Revised Remote Sensing Data Policy (RSDP)

- Comprehensive; space and ground segment driven; catalyzed by availability of hi-res imagery on-line
- Low resolution data 1 meter and coarser is unrestricted
  - Distributed on “non-discriminatory” and “as requested” basis
- High resolution data 1 meter and finer is restricted
  - Still screened and cleared by appropriate agency
- No longer need clearance to use data
  - Government ministries, departments, R&D institutions, educational and academic institutions
  - public sector, autonomous bodies
- Private sector agencies supporting development
  - Need recommendation of a government agency

Japan

- 2008 Japan's Basic Space Law
  - establish data use system in 1 - 2 years
    - Still pending; impacted by frequent political changes and natural disasters
    - Collect User Opinions
      - User and supplier coordination committee
    - More User-Friendly Satellite Data Use System
      - make the most of private sector current assets and know-how
    - Make Standardized Data Policy
      - balance limits on distributable resolution and price with publicly funded data as widely as possible
    - "analyzed information" policy
    - "Guardian of the Environment" concept
- 2010 Important Measures in Space Activities: Strategic Space Policy to Promote Japan's Growth
  - Promotes
    - use of remote sensing satellites to enhance economy and environment
    - increased utilization of data

Japan

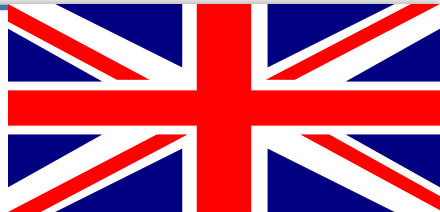
- Proposal for standalone remote sensing law not accepted until recently
- 3rd Basic Plan for Space Activities to be adopted in December 2014
  - Provisions
    - Data Policy Act
      - Catalyzed by successful launch of commercial high resolution satellite
    - Space Activities Act
- Space Activities Act will go to the Japanese Diet in 2016 at the earliest
- All subject to if and when a general election occurs

Russian Federation (CIS)

- Resolution higher than 2m per pixel images of Russian territory in process of being legalized
  - "restricted areas" specially designated by military and Federal Security Service will remain classified
- Sale of high resolution satellite imagery
  - Historical conflicts between intelligence and commerce
  - Requests for lists of available images and image orders have been denied, delayed and canceled due to national secrecy
    - Particularly pre - 1992
- Operations
  - Broad federal legislation
  - Licensing, certification, liability, safety, insurance and government control
  - License required, few specifics: insurance
  - Protects IP and commercial secrets of foreign entities operating under Federation's jurisdiction
  - RS includes environmental monitoring and meteorology
- Different rules over time, e.g., *SPIN*, *ALMAZ*, etc.

United Kingdom

- Ground-segment focus
  - Space segment focus follows later
- House of Lords
  - "Main effort should be ground and user segment"
  - Specialize in radar
  - National data distribution network
  - Support postgraduate education in remote sensing and digital cartography
- National legislation: Space Act
  - No specific mention of remote sensing
  - Authorizes government to require licenses



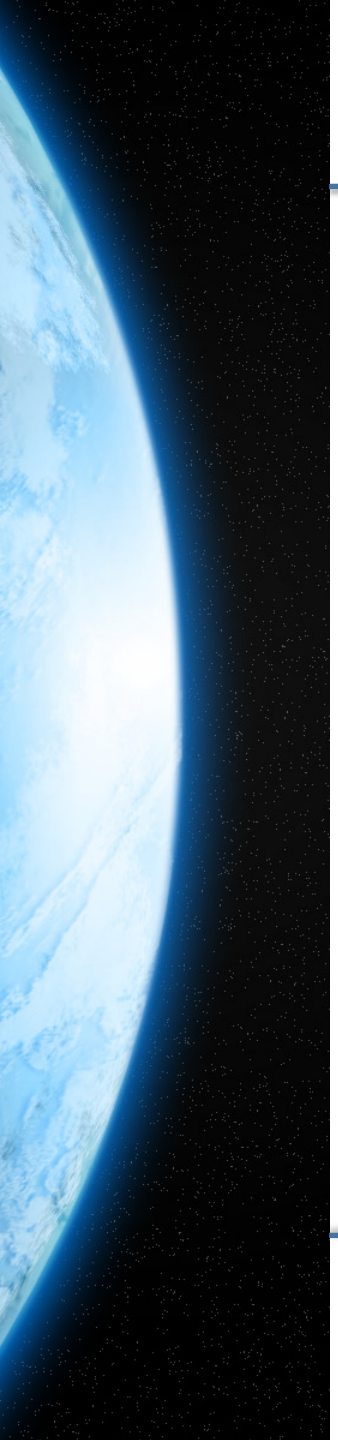
United States

- 1992 Land Remote Sensing Policy Act
  - Public sector and environmental focus
  - Public and private distinction
  - Commerce Department licenses and regulates private systems
    - Company must disclose amount of government resources that went into launch or operation of the system
      - Fully government funded: all raw data available on nondiscriminatory basis
      - Entirely privately funded: data provided according to reasonable commercial terms and conditions. Data must be made available to a "sensed state”
      - Partial government support: some access to raw data on nondiscriminatory basis
        - » Case by case basis with provisions included in license

U.S. Remote Sensing Data Policy

The Public-Private Spectrum for Data Access Policy

Public	Hybrid	Private
All Tax Money	Public and Private Money	All Private Money
Full nondiscriminatory access at cost of reproduction/free	Case-by-case determination	Access to sensed states only on commercial terms



Thank you.

Questions?
Comments?