

# Approaching **Big Data** from the perspective of law

Alexander Soucek, European Space Agency  
with Pablo Corrales

ESPI Conference on Big Data  
15 April 2015, ESPI, Vienna

## Data

“a reinterpretable representation of information in a formalized manner, suitable for communication, interpretation or processing”

ISO/IEC 2382-1:  
Information Technology - Vocabulary

## Big Data

“refers to large amounts of different types of data produced with high velocity from a high number of various types of sources”

COM(2014) 442 final:  
Towards a thriving data-driven economy

## Information

gathered through the interpretation and contextualisation of data, i.e. through a cognitive process

- access to exponentially increasing volumes of more accurate data, which means that:
- decisions which were once made largely on the basis of expertise and educated guesses
- will be able to be made on the basis of raw data analysis

(Fuller 2014)

# Some legal aspects surrounding Big Data



Privacy rights

Data protection  
rights

Legal aspects of  
the global data  
economy

**Data gathering**

**Data arrangement**

# BIG

# DATA

**Data mining**

**Data monetization**

Database  
protection

Cybercrime

Cyber warfare

**TV5MONDE**

## Privacy *versus* Data Protection

Protection against intrusion into an individual's **private** space



Protection against unauthorised use of **personal** information (-> restriction of PD processing)

- Univ. Declaration of HR
- ICCPR
- European Convention

*Art.8 ECHR includes DP*

- CoE Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data



European Space Agency

## Article 5 – Quality of data

Personal data undergoing automatic processing shall be:

- a. obtained and processed **fairly and lawfully**
- b. stored for **specified and legitimate purposes** (...);
- c. adequate, relevant and **not excessive** in relation to the purposes for which they are stored
- d. **accurate** and, where necessary, kept up to date;
- e. preserved in a form which permits identification of the data subjects **for no longer than is required** for the purpose for which those data are stored.

## Data Protection under public international law

- An emerging but not yet fully developed or recognised principle
- Call for an additional protocol to Art. 17 ICCPR to
- “create globally applicable standards for data protection”

## Data Protection in domestic and regional legal regimes

- Germany: “right of informational self-determination” (German Federal Constitutional Court, 15Dec1983)
- EU: Member States enact own laws based on the
- 1995 EU Data Protection Directive
- unified EU **General Data Protection Regulation** (GDPR) / conclusion of legislative work end 2015?



## Regulation through contractual arrangement

- Instruments of private law are important for the regulation of rights & obligations w.r.t data:
- **Purposes** and scope of data usage
- **Accessibility and transferability** of data
- **Ownership** of data and IPR to derived data (“added value data”)
- **Warranties** for compliance with laws and regulations
- Risk allocation and **liability** distribution
- Suspension and termination of data **supply**

## Database Protection

DB are a central element in the world of Big Data

Compilations of data [...] which by reason of the selection or **arrangement** of their contents constitute intellectual creations, are protected as such.

Art. 5, **WIPO Copyright Treaty** (1996/2002)

collection of [...] data [...] **arranged**  
in a systematic or methodical way

▶ Art. 1.2, **Directive 96/9/EC**

... one of the legal tools to protect satellite-derived data organised  
in and extracted from databases

## Big Data *and* international law

- ▶ “Structuring Big Data to Facilitate Participation in International Law”  
(Fuller 2014)
- Big Data don’t only negatively affect rights but can **positively affect rights**
- international law-making filtered through a small circle of intermediaries (representatives, experts)
- Big Data could open the participation in decision-making, including the creation of international law
- requires: **access** to information, **accessibility** of that information, **ability** to take action based on that information

# A different perspective (II)

- **Access:** sources of law and law-making available online in unprecedented quantities

BIG DATA



PARADOXON

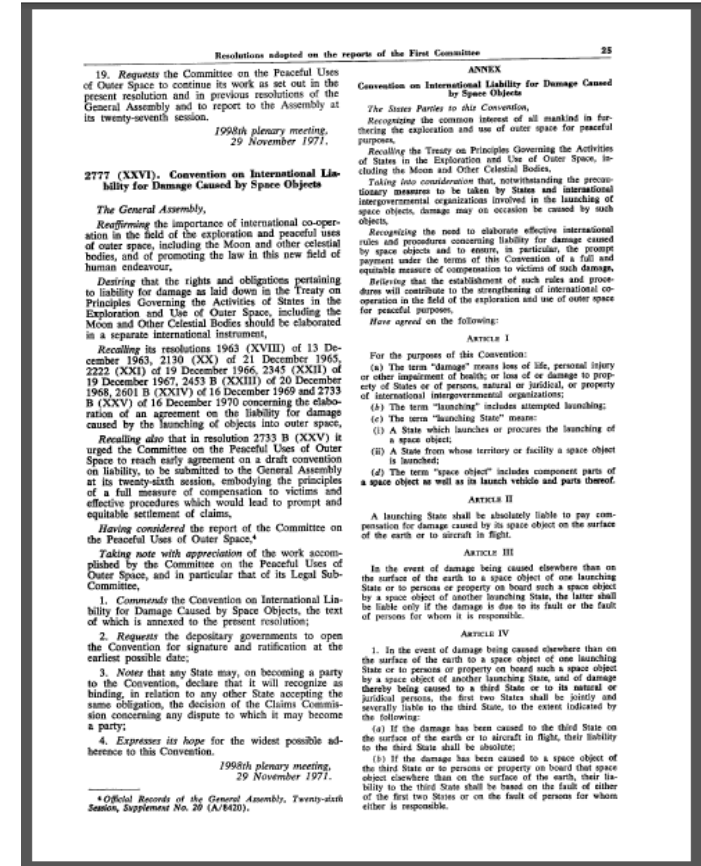
- **Accessibility:** creating functionality to extract information
- = data mining, data fishing

BIG DATA



PARADOXON

- **Action:** informed action based on the processed and provided data



## The UN Global Pulse Initiative

- Flagship initiative of the UNSG
- “harnessing big data for development and humanitarian action”
- Context: UN High-Level Panel on the Post-2015 Development Agenda => call for a ‘data revolution’



Global Pulse logo © UN

“Big data represents a **new, renewable natural resource** with the potential to revolutionize sustainable development and humanitarian practice.”

## Environmental treaties need Big Data (from space)

UNFCCC

UNCCD

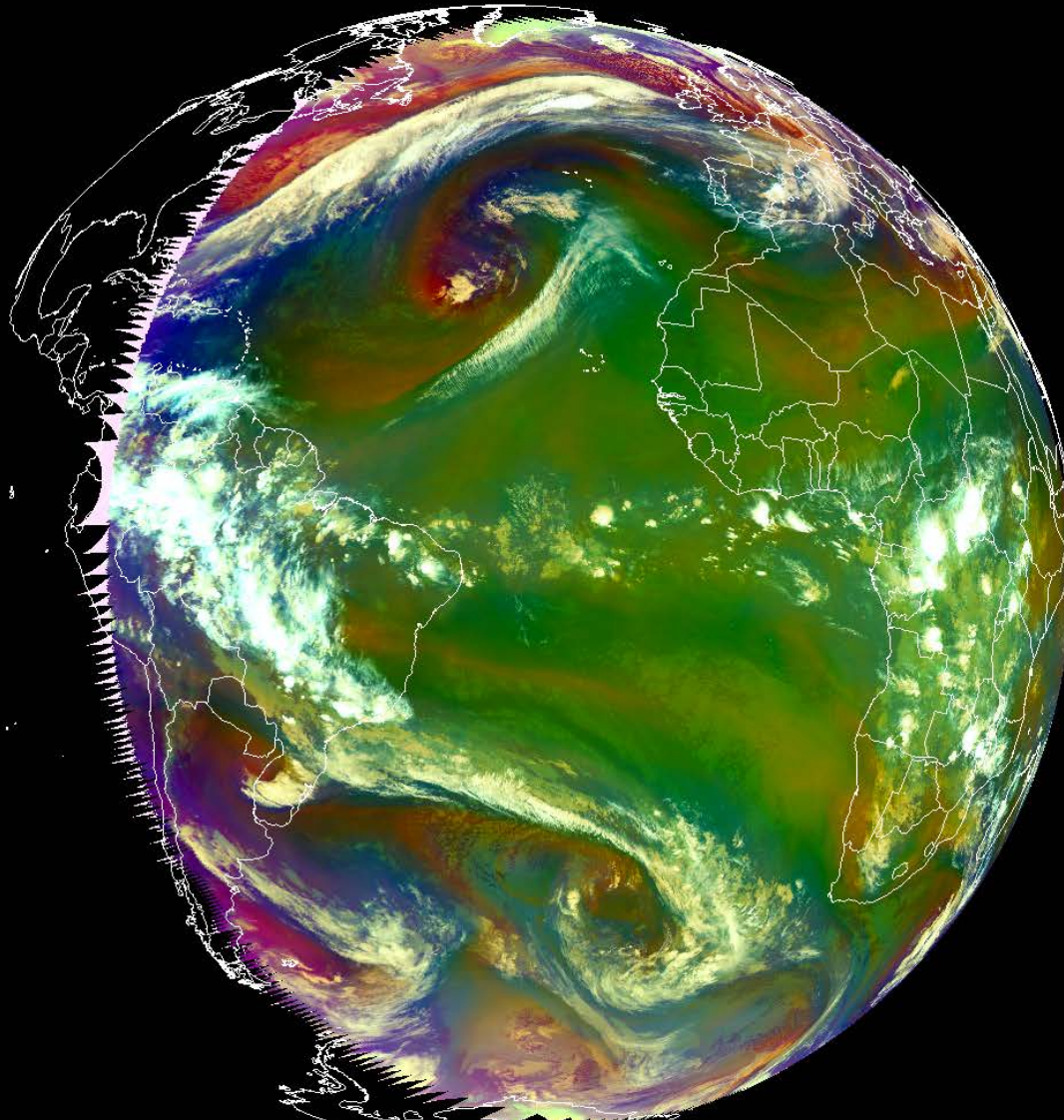
Ramsar

UNCBD

CITES

- States Parties to the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) list protected animal and plant species.
- This is based on species distribution modelling (SDM).
- SDM is carried out by software calculating presence/absence algorithms.

# Big data and the exploration and use of outer space for peaceful purposes





- Data as **return of investment** of space activities
- level of initial investment is a **societal decision**
- Data Policies regulate the distribution and use of payload “Big” data
- Crucial importance for data exploitation
- Varying levels of regulation: from licensing contracts to international “soft law”



**Data rights**



**Access conditions**



**Distribution rights**



ESA EO  
mission data

Third party  
mission data

Campaigns  
data

ESA AO  
products

## ESA EO mission data

Revised ESA EO Data Policy 2010

- **ESA data:** *ERS-1, ERS-2, Envisat, GOCE, SMOS, CryoSat, Swarm* and future *Earth Explorer* missions
- **full and open** access
- 2 classes of datasets (DS):
  - **free** DS available on-line upon registration
  - **restrained** DS, i.e. on demand products, on-demand data acquisition, some archived data – mostly free of charge and upon submission of a Project Proposal
- **TPM DS** distributed under specific agreements with owners or operators

## Copernicus

Regulation (EU) 377/2014 of 03Apr14

- User-driven (“continuous, effective involvement of users”)
- Consistent with personal data protection
- data and information should be available **freely and openly**
- to promote their use and sharing

## EUMETSAT

Council Res. EUM/C/98/Res.IV

- All Met Services of Member States receive data and products at no cost
- **“Essential data and products”** available **free and unrestricted**

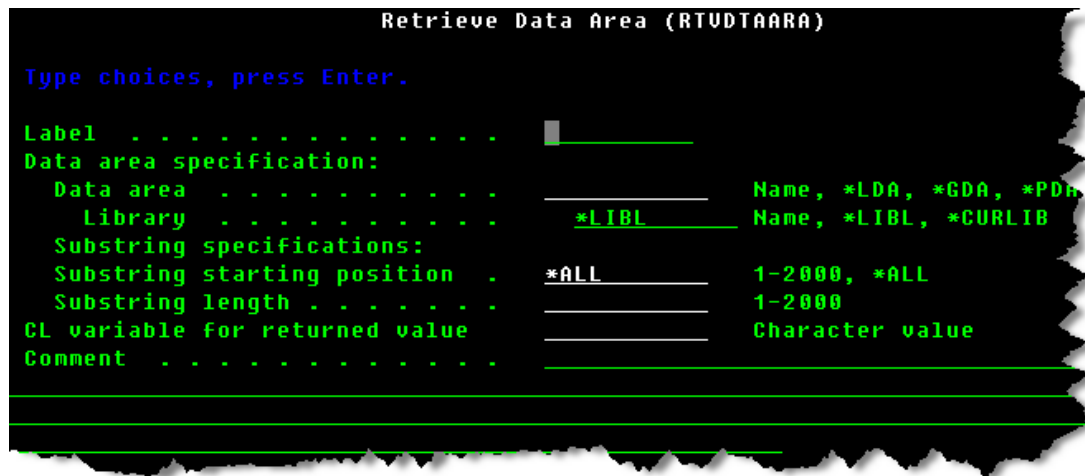
## UN Remote Sensing Principles

Open & non-discriminatory access

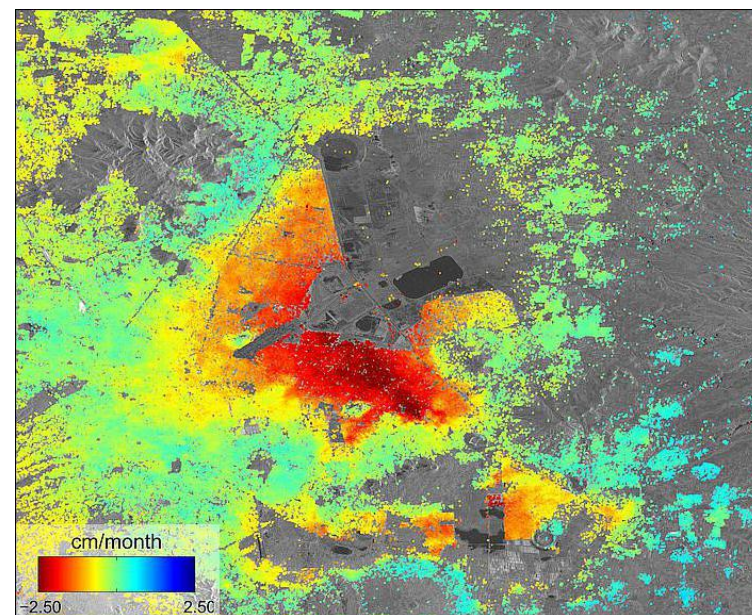
## WMO Res. 40 (Cg-XIII)

“necessary for ... protection of life and property and the well-being of all nations ...”

- To a large extent, no individual data subjects identifiable in most scientific and space application data
- Database protection primary over data protection from a space agency's perspective



ESA Gaia mission data log (2014)



Sentinel-1A (2015)

- Distinguish from data: IPRs in scientific results
- Raw satellite data are binary digits (0-1)
- “creation of the mind” necessary to process (big) data and transform them into **data products**

## ESA Terms and Conditions of data use:

- ESA data = originated by ESA satellites & owned by ESA
- PI must indemnify ESA for liability resulting from data utilisation for which ESA might be held responsible
- ESA's title and copyright of data shall not prevent recognition of copyright in favour of the PI which may arise as a result of the latter's own interpretation of ESA processed data
- In such a case, the PI grants ESA, free of charge, an irrevocable and non-exclusive license to use such IPR



# Big data as space activity?



Finally, some food for thought:

- How does space law affect Big Data?
- Is Big Data management a space activity?