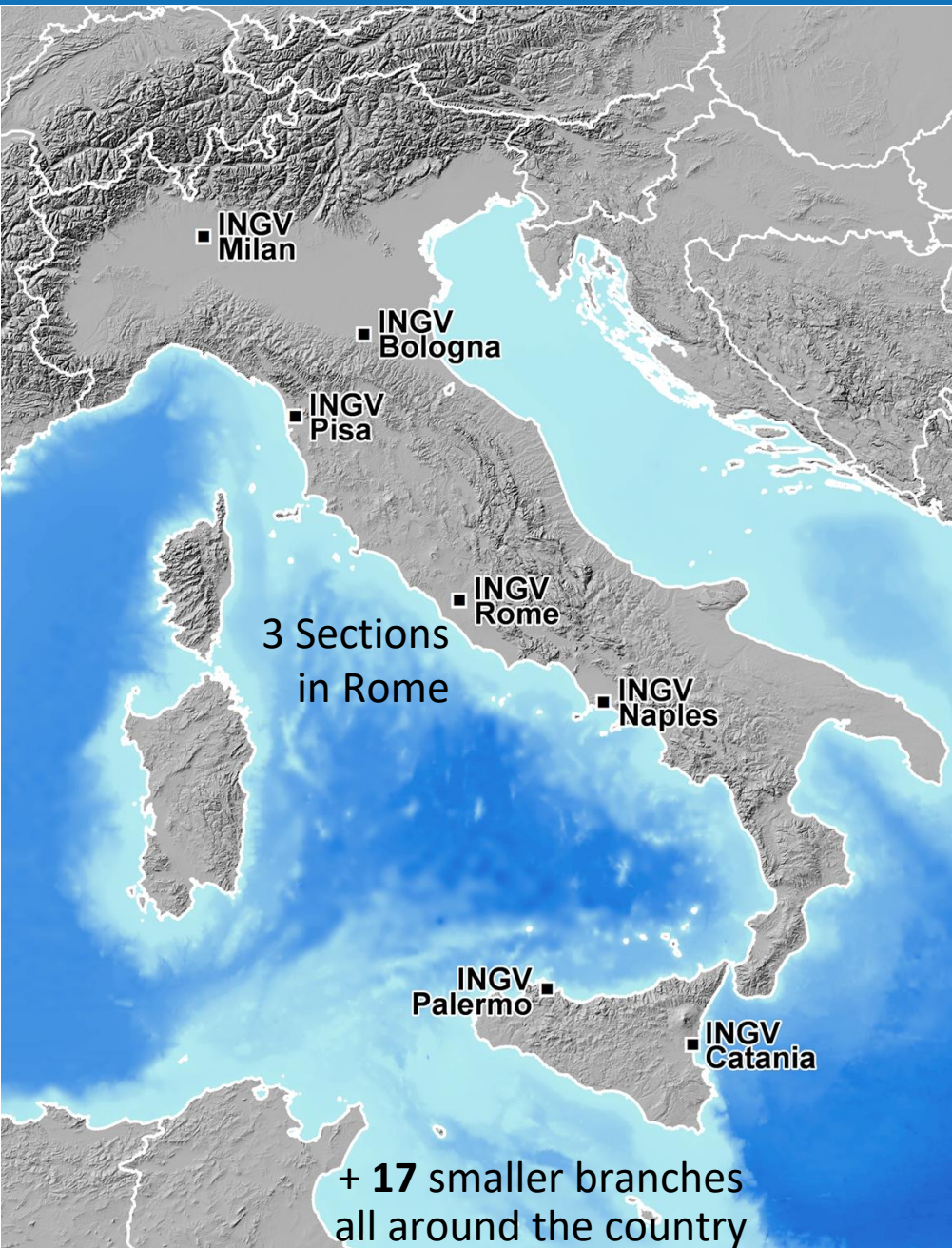




# Putting the INGV data policy into practice: considerations after the first-year experience

**Mario Locati**, F. M. Mele, V. Romano, P. Montalto, V. Lauciani, R. Vallone, G. Puglisi,  
R. Basili, A. G. Chiodetti, A. Cianchi, M. Drudi, C. Freda, M. Pignone, A. Sangianantoni





Established in 2000 by merging pre-existing institutions, INGV is a Public Research Institute supervised by the Italian Ministry of Education, Universities and Research.

## 3 Departments

### Environment



### Volcanoes



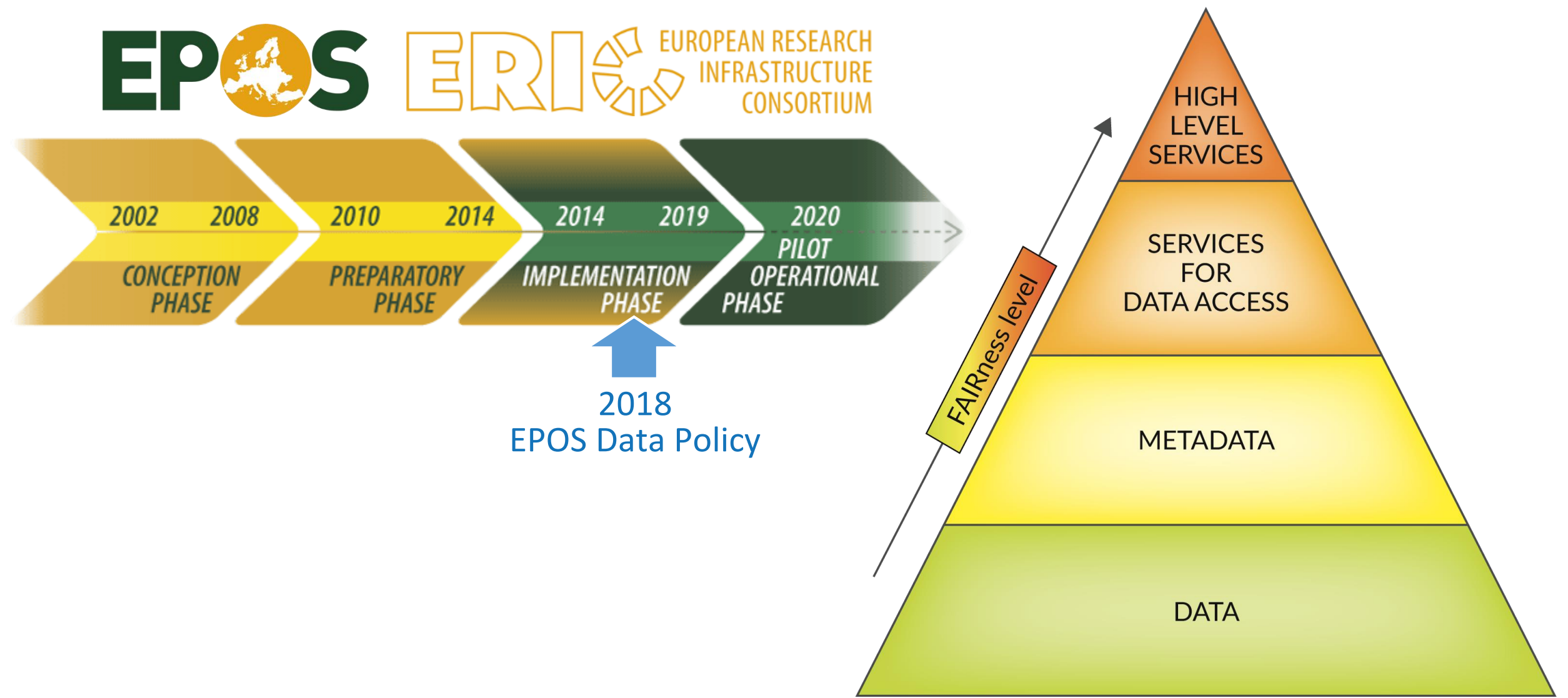
### Earthquakes



- Seismic, GNSS, gravity, magnetic, geochemical networks
- Experimental laboratories for rocks and fluids
- Computational resources
- 3 surveillance centers 24/7 for the seismic, volcanic and tsunami monitoring in cooperation with the Civil Protection
- ~ 800 researchers & technicians

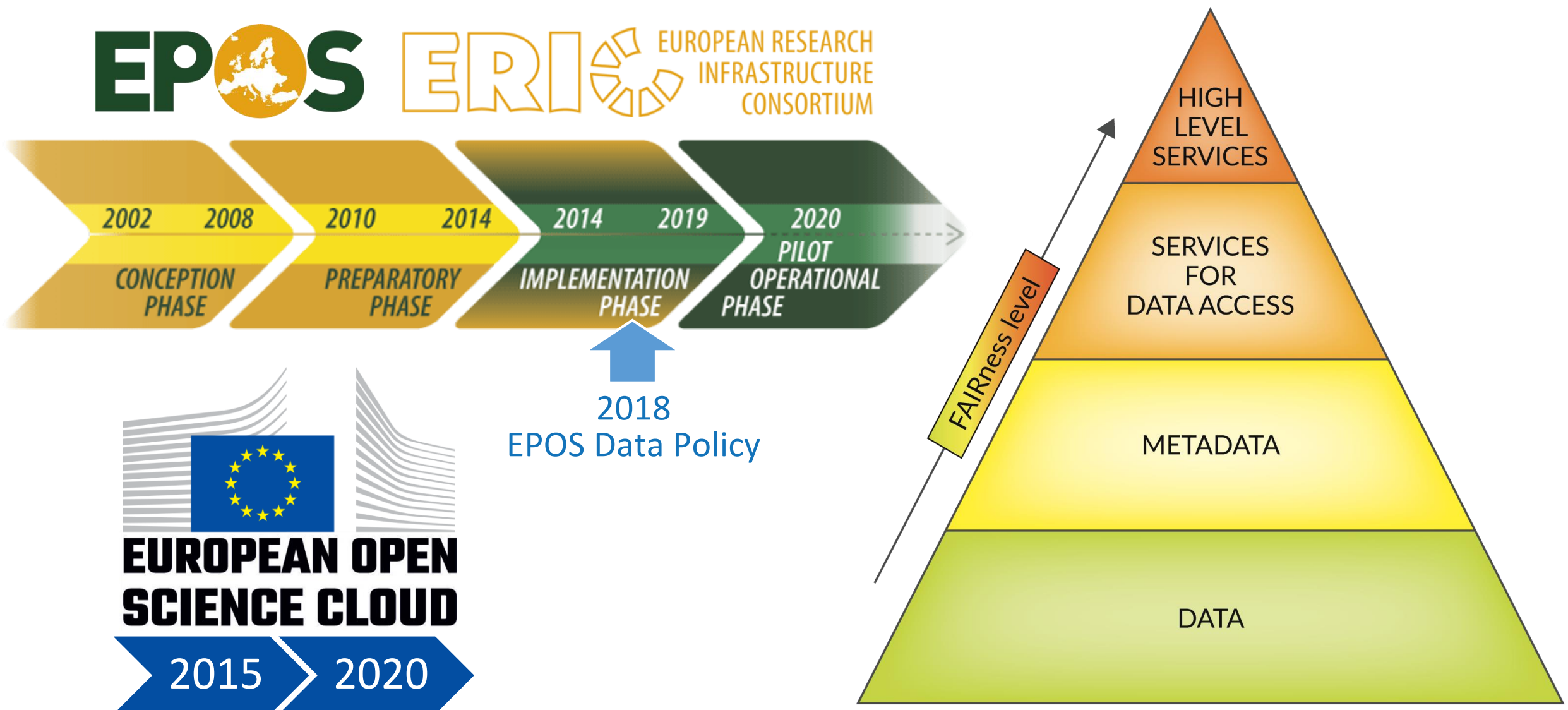


Since 2005 <https://www.earth-prints.org/> is the INGV Open Access repository used to collect all publications.





# Extensive re-use of Data in the European Research Area (ERA)



European legislation on open data and the re-use of public sector information



National Laws | **AGID** | Agenzia per l'Italia Digitale



The INGV Data Policy is made of 3 documents

## 1. **Data Policy Principles** (2016)

- Define the area of competence, the legal framework and the main principles inspiring the Data Policy

## 2. **Open Access Policy on published papers** (2017)

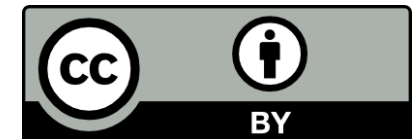
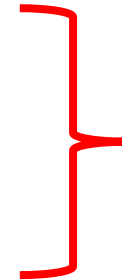
- Establish a Commission supervising the adoption of the Open Access principles
- Enforce employees to deposit their works in the Institutional repository (green road) established since 2005, and encourage the publication on the Open Access compliant scientific journal (gold road) run by INGV

## 3. **Detailed implementation plan for data management** (2018)

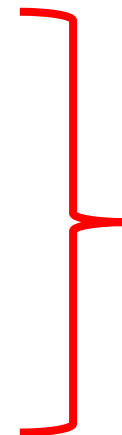
- Provides precise definitions and procedures on how to manage published data
- Establish the Data Registry and Data Management Office to look after it

In coordination with the EPOS & EMSO ERICs, INGV selected the **Creative Commons** licenses. The type of license depends on the **level of intellectual contribution** to the data creation.

- 0 Raw or basic data (e.g. environmental measurements)
- 1 Data products coming from (nearly) automated procedures
- 2 Data products resulting from scientific investigations
- 3 Integrated data products resulting from complex analysis



Preferred license



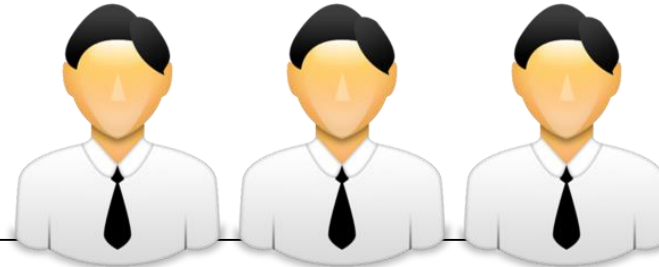
Authors can suggest another license but must provide a valid reason for it. An evaluation panel approves each suggestion.

*\*Part-time involvement*

- Promotes the adoption of Open Science
- Implements and manages the (Meta)Data Registry
- Revises agreements dealing with data in coordination with the legal office



**Office  
Coordinator\***

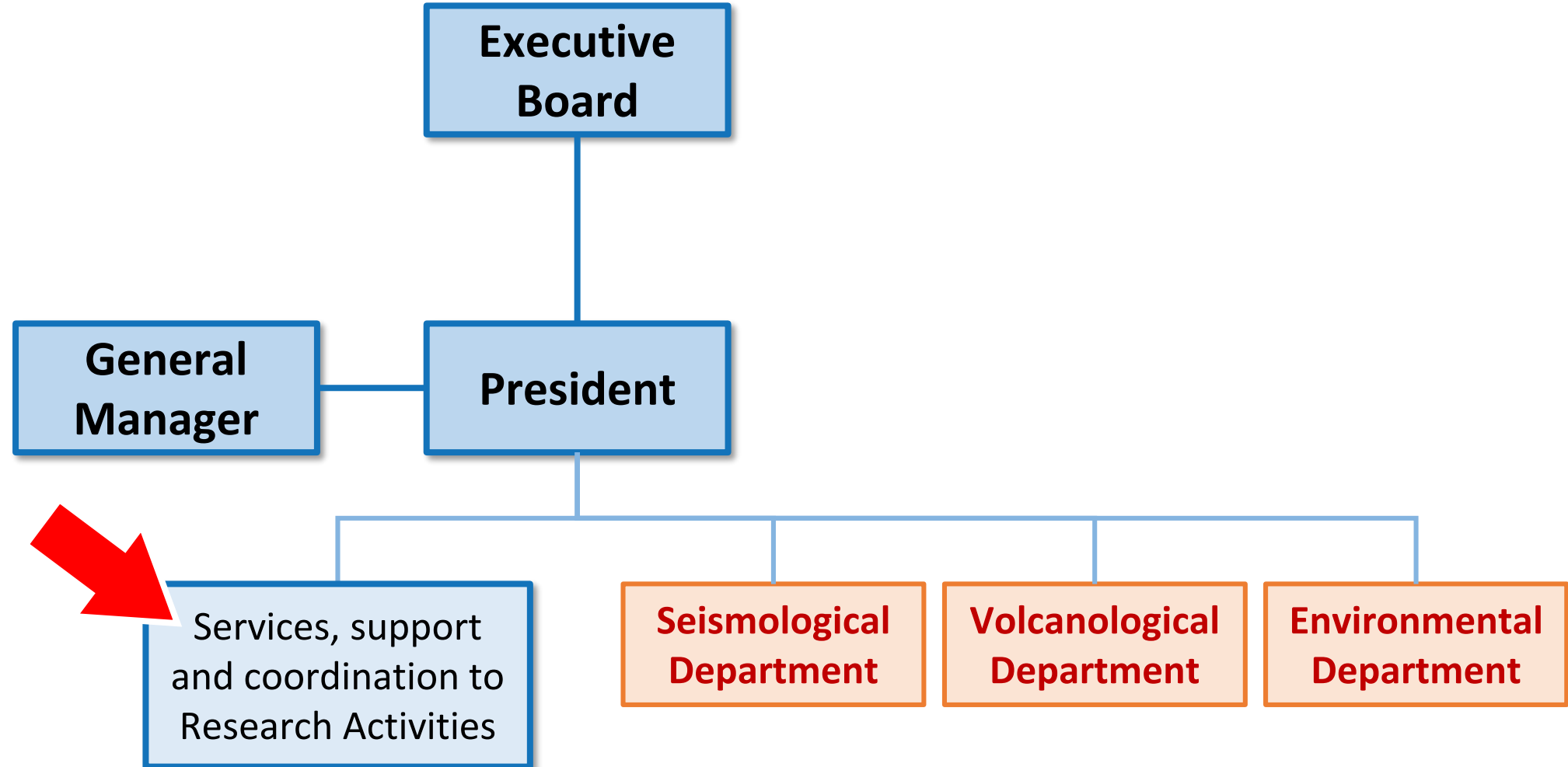


**Seismic, Volcanic, Environmental  
Data Experts\***



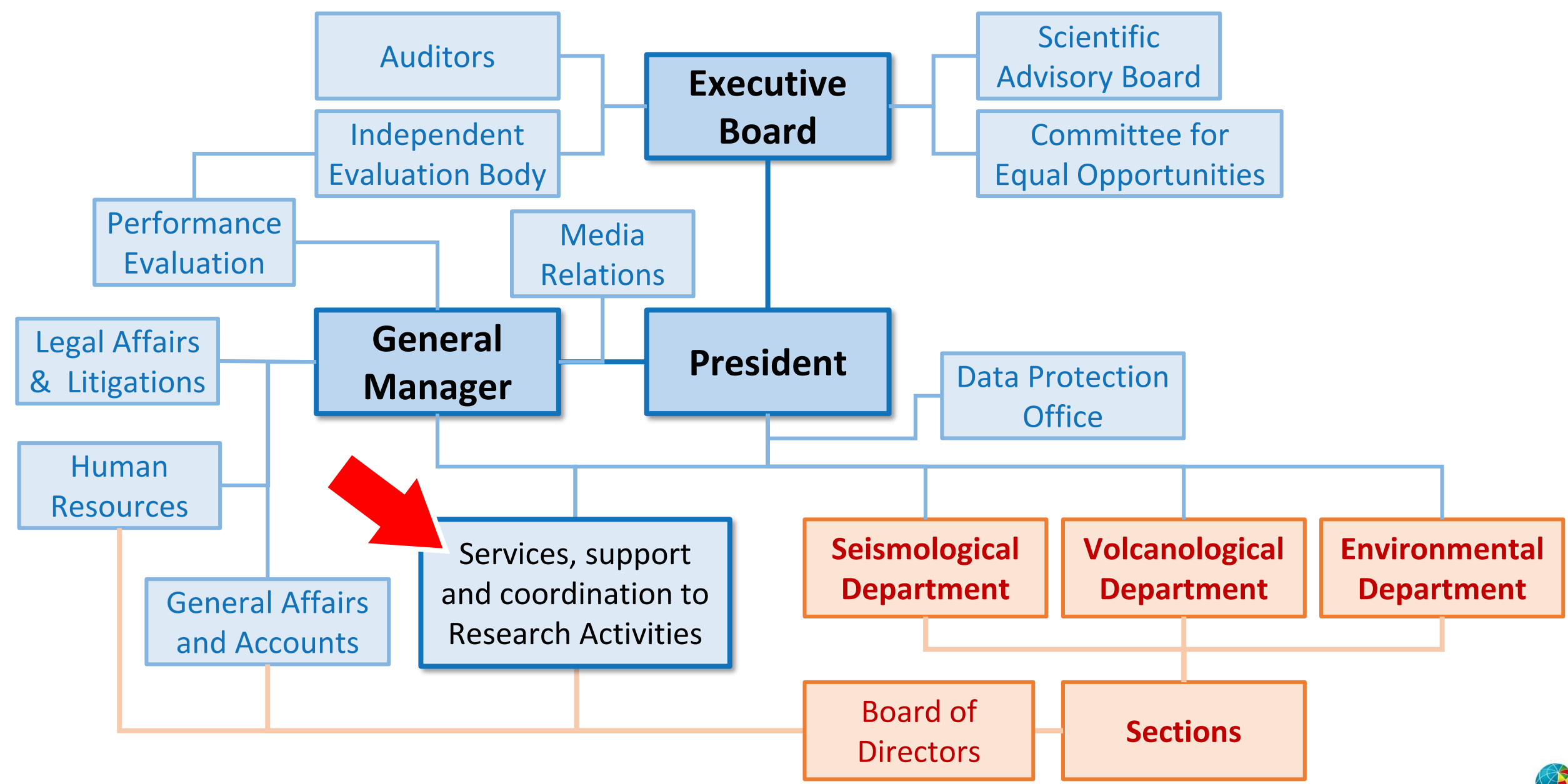
**IT Experts\***

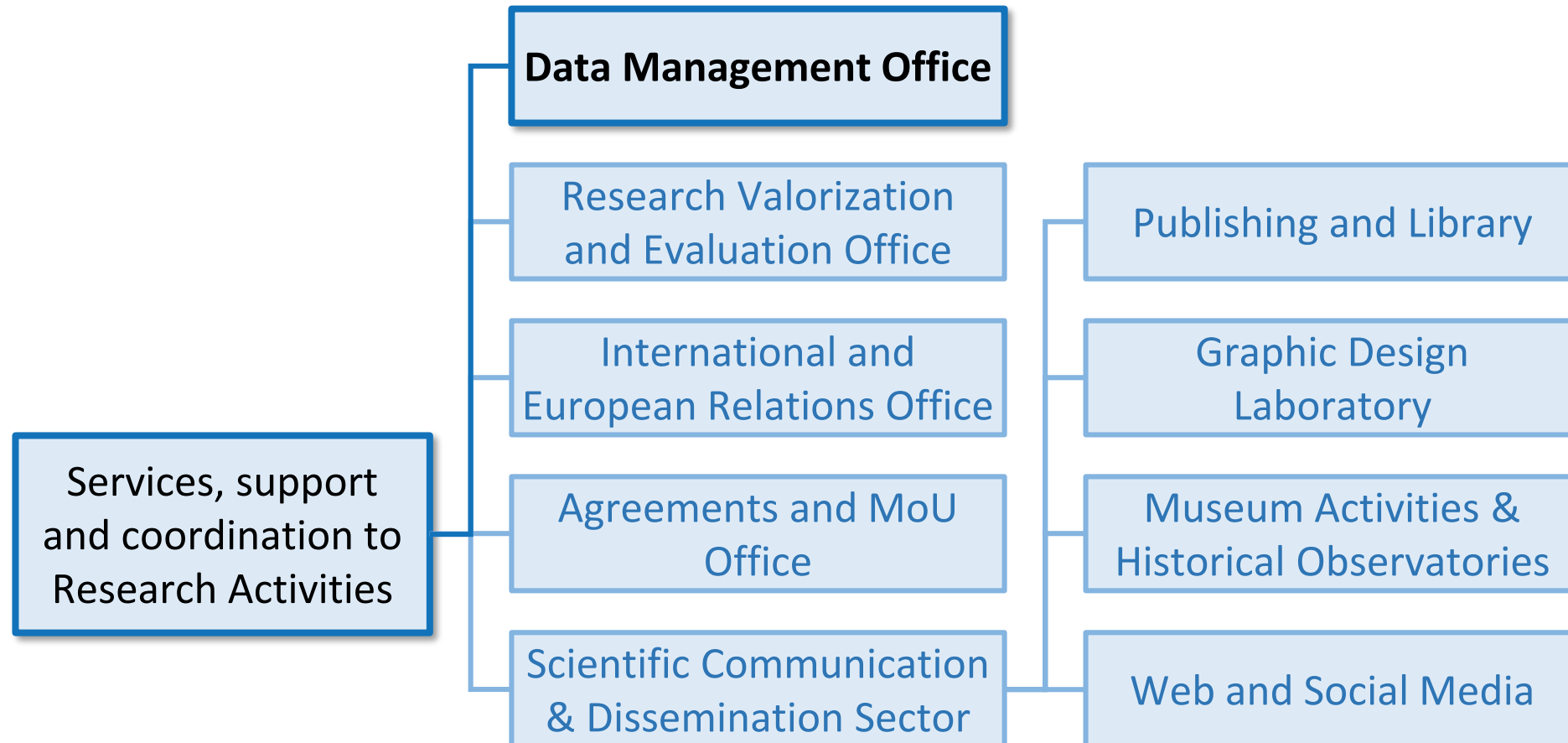
- Plans the activity
  - Interacts with scientific and administrative managers
  - Interacts with the legal office
  - Interacts with the transparency manager
- Deals with disciplinary specific issues
  - Supervises the Data Registry scientific content
  - Suggests the most suitable standards for harmonizing and optimizing data
- Supports the coordinator in selecting IT solutions
  - Supervises the various existing databases hosting the data
  - Interacts with the IT management office





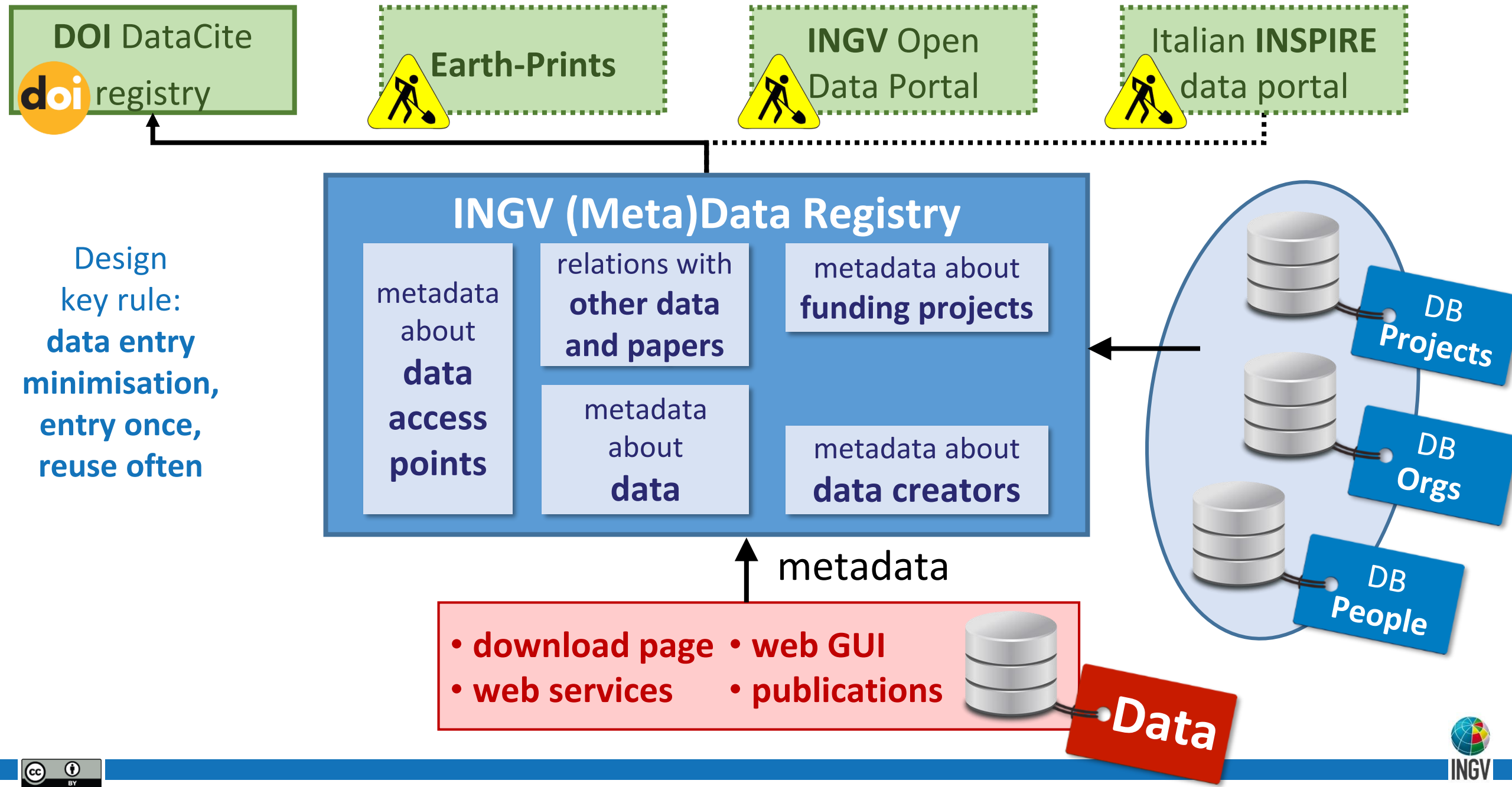
# Data Management Office and its role in the administration





38	Zonesismiche - Pericolosità sismica di riferimento per il territorio nazionale	MP504	Dati Sismologici e infrasonici	3	<a href="http://zonesismiche.mi.ingv.it">http://zonesismiche.mi.ingv.it</a>	PI	carlo.meletti@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
39	Engineering Strong-Motion database	ESM	Dati Sismologici e infrasonici	0	<a href="http://esm.mi.ingv.it">http://esm.mi.ingv.it</a>	MI	lucia.luzi@ingv.it	rodolfo.puglia@ingv.it maria.damico@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
40	Engineering Strong-Motion database	ESM	Dati Sismologici e infrasonici	1	<a href="http://esm.mi.ingv.it">http://esm.mi.ingv.it</a>	MI	lucia.luzi@ingv.it	rodolfo.puglia@ingv.it maria.damico@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
41	Engineering Strong-Motion database	ESM	Dati Sismologici e infrasonici	2	<a href="http://esm.mi.ingv.it">http://esm.mi.ingv.it</a>	MI	lucia.luzi@ingv.it	rodolfo.puglia@ingv.it maria.damico@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
42	European Archive of Historical Earthquake Data	REWARD	Dati Sismologici e infrasonici	1	<a href="http://reward.mi.ingv.it">http://reward.mi.ingv.it</a>	MI	mario.locati@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
43	SHARE European Earthquake Catalogue	SHEEC	Dati Sismologici e infrasonici	3	<a href="https://www.emidius.eu/SHEEC/sheec_2006_1899.html">https://www.emidius.eu/SHEEC/sheec_2006_1899.html</a>	MI	andrea.rovida@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
44	Basic European Earthquake Catalogue and a Database for the evaluation of long-term seismicity and seismic hazard	BEEDCO	Dati Sismologici e infrasonici	3	<a href="https://emidius.mi.ingv.it/BEEDCO">https://emidius.mi.ingv.it/BEEDCO</a>	MI	paola.albini@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
45	Review of Historical Seismicity in Europe	RHSE	Dati Sismologici e infrasonici	2	<a href="https://emidius.mi.ingv.it/RHSE">https://emidius.mi.ingv.it/RHSE</a>	MI	paola.albini@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
46	Global Historical Earthquake Catalogue	REWARD	Dati Sismologici e infrasonici	1	<a href="http://reward.mi.ingv.it">http://reward.mi.ingv.it</a>	MI	paola.albini@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
47	Global Historical Earthquake Catalogue	REWARD	Dati Sismologici e infrasonici	1	<a href="http://reward.mi.ingv.it">http://reward.mi.ingv.it</a>	MI	paola.albini@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
48	Refraction/Wide-Angle Reflections Database	REWARD	Dati Sismologici e infrasonici	1	<a href="http://reward.mi.ingv.it">http://reward.mi.ingv.it</a>	MI	paola.albini@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
49	Distributed Archive of Historical Earthquake Data	NERIES NA4	Dati Sismologici e infrasonici	3	<a href="https://emidius.mi.ingv.it/neries_NA4">https://emidius.mi.ingv.it/neries_NA4</a>	MI	andrea.rovida@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
50	Gruppo Nazionale per la Difesa dai Terremoti	GNOT	Dati Sismologici e infrasonici	2	<a href="https://emidius.mi.ingv.it/GNOT">https://emidius.mi.ingv.it/GNOT</a>	MI	andrea.rovida@ingv.it	mario.locati@ingv.it	2016-11-24 DIR MI	2017-01-13 DIR MI	si
51	Campagne di monitoraggio per gli effetti di sito durante le emergenze sismiche	EMERSITO	Dati Sismologici e infrasonici	0		MI RM1	giovanna.cultreus@ingv.it	gaetano.riccio@ingv.it rocco.cogliano@ingv.it fabrizio.cara@ingv.it	2016-11-24 DIR MI	2017-01-13; 2017-01-23 DIR MI; DIR RM1	si
52	Campagne di monitoraggio per gli effetti di sito durante le emergenze sismiche	EMERSITO	Dati Sismologici e infrasonici	1		MI RM1 ONT	giovanna.cultreus@ingv.it	rocco.cogliano@ingv.it fabrizio.cara@ingv.it giuseppe.digulio@ingv.it	2016-11-24 DIR MI	2017-01-13; 2017-01-23 DIR MI; DIR RM1	si
53	Campagne di monitoraggio per gli effetti di sito durante le emergenze sismiche	EMERSITO	Dati Sismologici e infrasonici	2		MI RM1	giovanna.cultreus@ingv.it	gaetano.riccio@ingv.it rocco.cogliano@ingv.it fabrizio.cara@ingv.it giuseppe.digulio@ingv.it	2016-11-24 DIR MI	2017-01-13; 2017-01-23 DIR MI; DIR RM1	si
54	Quick Earthquake Survey Team	QUEST	Dati Sismologici e infrasonici	2	<a href="http://quest.ingv.it">http://quest.ingv.it</a>	RM1 BO MI OE PI	andrea.tertulliani@ingv.it raffaele.azzaro@ingv.it	mario.locati@ingv.it laura.graziani@ingv.it	2016-12-12 DIR MI	2017-01-13 DIR MI	si
55	banca dati annuali osservatori geomagnetici	Geo_yearbook	Dati Geofisici terrestri e marini	1	<a href="http://mio.ingv.it">http://mio.ingv.it</a>	RM2	guido.dominici@ingv.it	sabina.spadoni@ingv.it	2016-11-24 DIR RM2	2017-01-17 DIR RM2	si
56	banca dati annuali osservatori geomagnetici	Geo_yearbook	Dati Geofisici terrestri e marini	1	<a href="http://mio.ingv.it">http://mio.ingv.it</a>	RM2	stefania.lepidi@ingv.it	domenico.dimauro@ingv.it	2016-11-24 DIR RM2	2017-01-17 DIR RM2	si
57	banca dati bollettini osservatori geomagnetici italiani	lono_bulletin	Dati di Geofisica atmosferica e Aeronomia	1	<a href="http://www.eswua.ingv.it/ingv/ita.php">http://www.eswua.ingv.it/ingv/ita.php</a>	RM2	lucia.santarelli@ingv.it	domenico.dimauro@ingv.it	2016-11-24 DIR RM2	2017-01-17 DIR RM2	si
58	banca dati bollettini osservatori ionosferici italiani	lono_bulletin	Dati di Geofisica atmosferica e Aeronomia	1	<a href="http://www.eswua.ingv.it/ingv/ita.php">http://www.eswua.ingv.it/ingv/ita.php</a>	RM2	enrico.zuccheretti@ingv.it	enrico.zuccheretti@ingv.it	2016-11-24 DIR RM2	2017-01-17 DIR RM2	si
59	Stations	Pnet	Non assegnata	0	<a href="http://sowebserver.TSDSystem/index.php">http://sowebserver.TSDSystem/index.php</a>	OE	enrico.zuccheretti@ingv.it	marco.alotta@ingv.it	2016-11-25 DIR CT		si
60	Volcanic Observatory Reserved Access Database	VORAD	Non assegnata		<a href="http://sowebdpc.ct.ingv.it/dpc/so/">http://sowebdpc.ct.ingv.it/dpc/so/</a>	OE	piacido.montalto@ingv.it	piacido.montalto@ingv.it carmelo.cassisi@ingv.it	2016-11-25 DIR CT		si
61	DB_EQ_Analisti	TSDSystemEq	Dati Sismologici e infrasonici	2	<a href="http://soweb.ct.ingv.it/maps/eq_maps.html?index">http://soweb.ct.ingv.it/maps/eq_maps.html?index</a>	OE	andrea.ursino@ingv.it	marco.alotta@ingv.it	2016-11-25 DIR CT		si
62	DB_SismoVolcan	TSDSystemEq	Dati Sismologici e infrasonici	2	<a href="http://soweb.ct.ingv.it/maps/eq_maps.html?index">http://soweb.ct.ingv.it/maps/eq_maps.html?index</a>	OE	andrea.ursino@ingv.it	marco.alotta@ingv.it	2016-11-25 DIR CT		si
63	Analisti Catalogo2000_2010	TSDSystemCatalogue	Dati Sismologici e infrasonici	2	<a href="http://soweb.ct.ingv.it/Catalog_2000-2010/index.php">http://soweb.ct.ingv.it/Catalog_2000-2010/index.php</a>	OE	andrea.ursino@ingv.it	marco.alotta@ingv.it carmelo.cassisi@ingv.it	2016-11-25 DIR CT		si
64	SeismicWaveform		Dati Sismologici e infrasonici	0		OE	luciano.zuccarello@ingv.it	marco.alotta@ingv.it carmelo.cassisi@ingv.it	2016-11-25 DIR CT		si
65	InfravWaveform		Dati Sismologici e infrasonici	0		OE	luciano.zuccarello@ingv.it	marco.alotta@ingv.it carmelo.cassisi@ingv.it	2016-11-25 DIR CT		si
66	Clinometric		Dati Sismologici e infrasonici	0		OE	luciano.zuccarello@ingv.it	marco.alotta@ingv.it carmelo.cassisi@ingv.it	2016-11-25 DIR CT		si

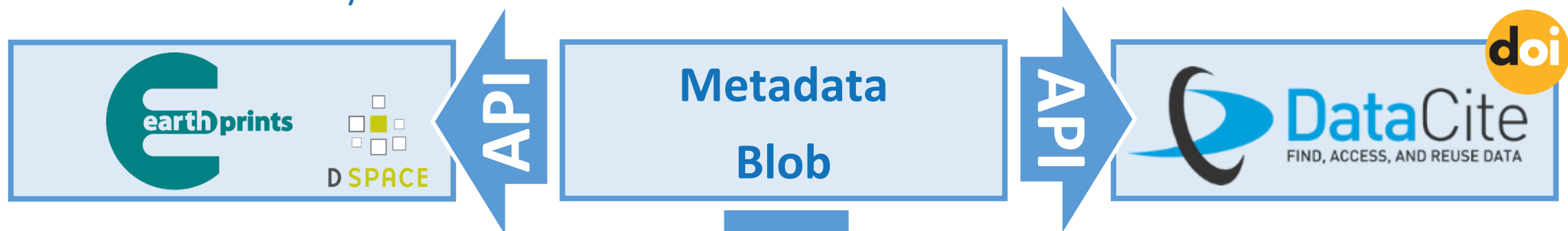
- Lasted 2 months, started in 2016-11-24, ended in 2017-01-23
- Launched by a temporary Working Group in charge of drafting the Data Policy
- Supervised and validated by 9 Section Directors, 3 Departments Directors
- Massive involvement of individuals Researchers
- 275 different types of data identified
- Allowed for getting a better picture of the data generated
- Allowed for establishing an effective classification of available data



# Data Registry as a central hub for publishing metadata on various platforms

 National Laws | **AGID** | Agenzia per l'Italia Digitale

↳ Guidelines on web accessibility, metadata standards, data sharing valid for any Public Administrations



**Open Data Portal**



Browse content by

- Dataset
- Author

Advanced search engine  
CKAN API Support

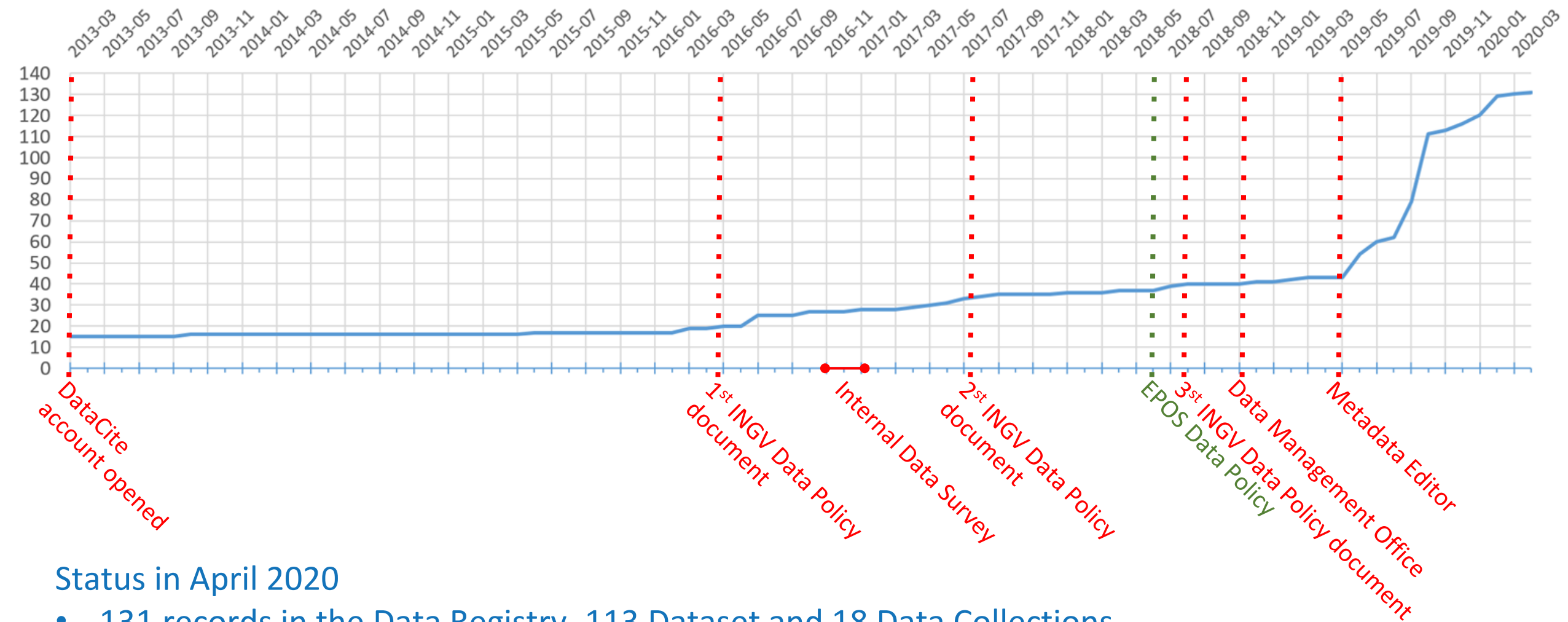
Supported metadata standards

- DataCite
- BibTex
- Citation Style Language (CSL)
- Schema.org
- DCAT-AP

In preparation

- GeoDCAT-AP
- ISO 19115/19139 (INSPIRE)
- NASA DIF

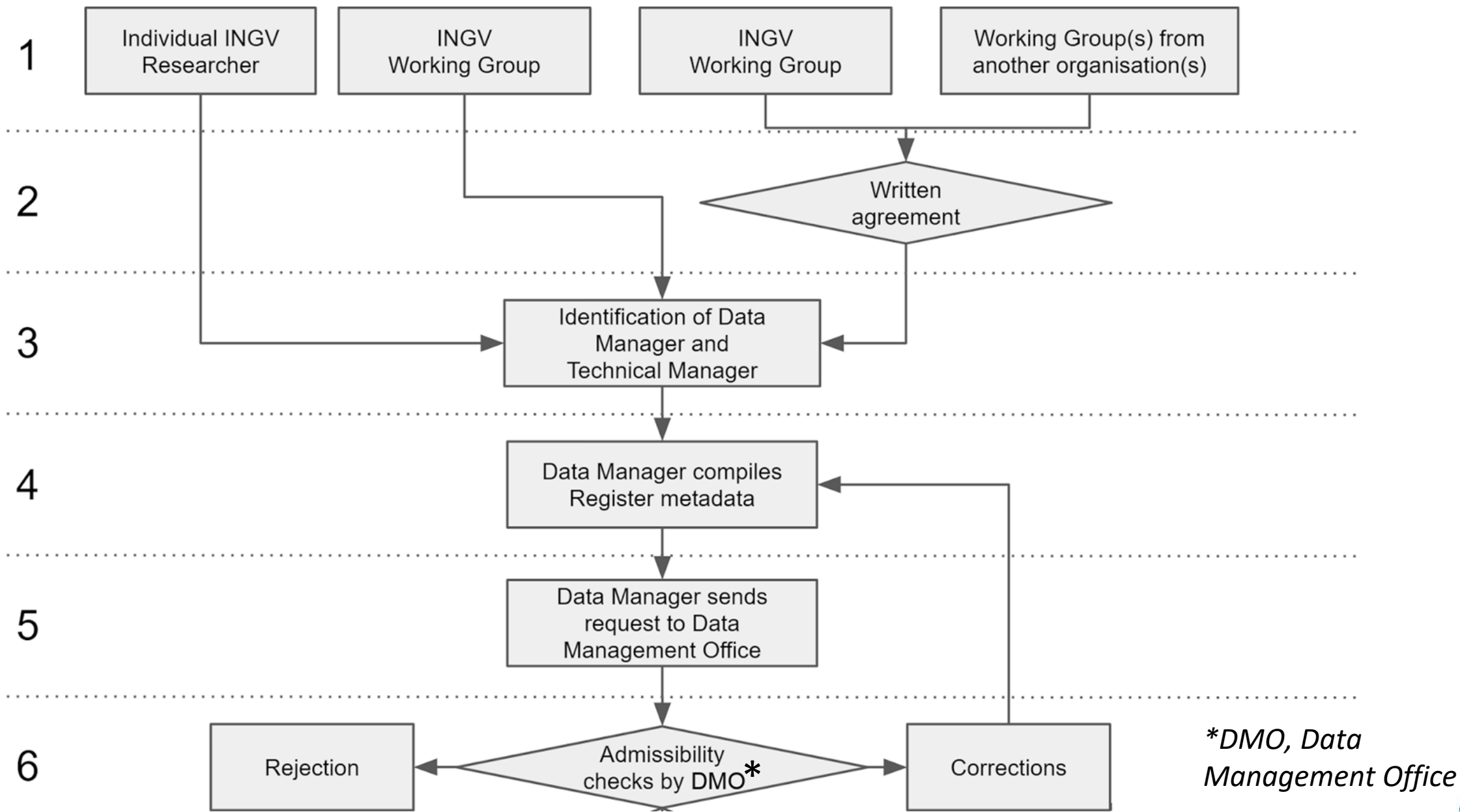




## Status in April 2020

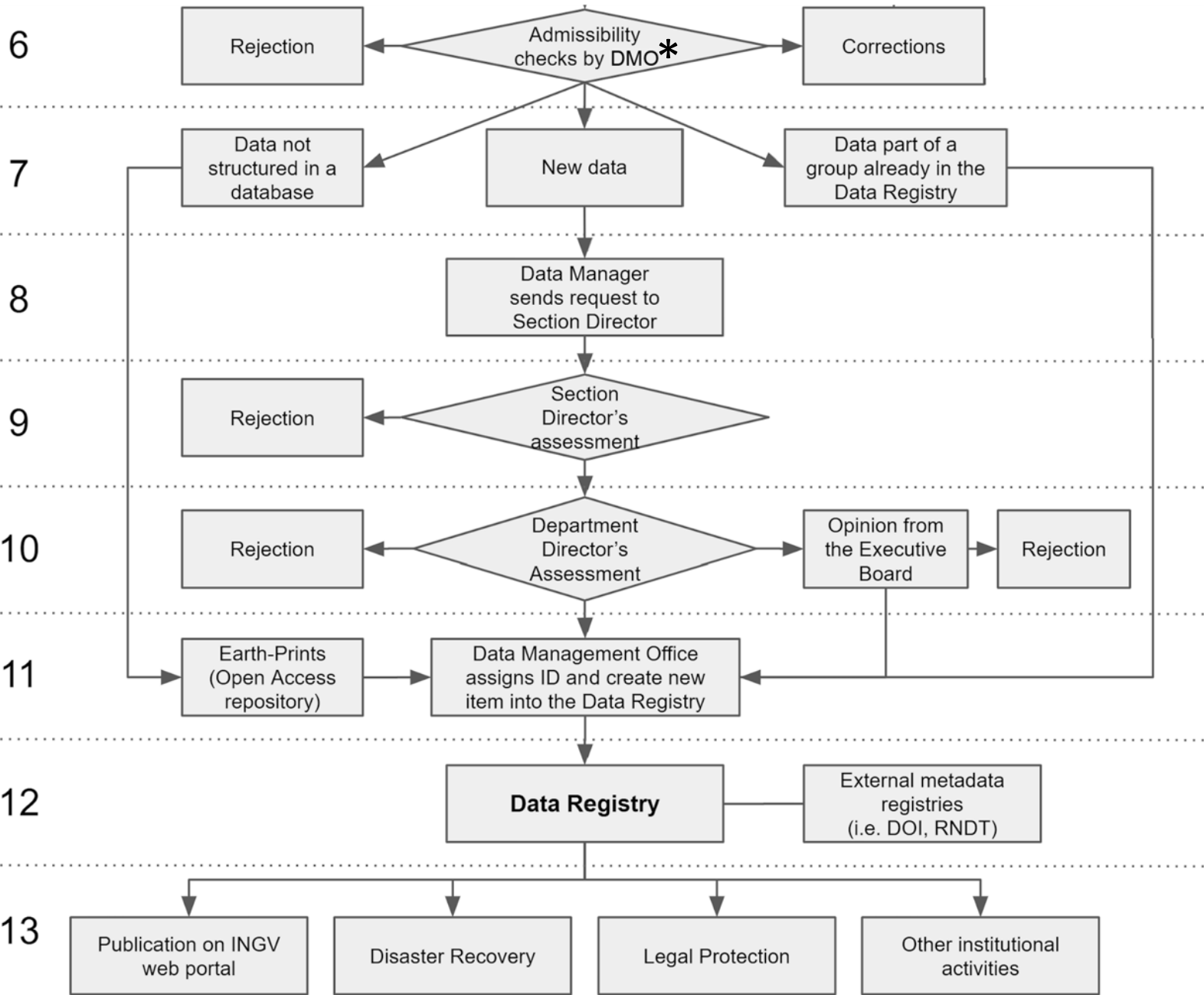
- 131 records in the Data Registry, 113 Dataset and 18 Data Collections
- 405 contributing people identified, 71.4% males, 28.6% females, 77% with ORCID
- 66% of people affiliated to INGV, 34% affiliated to 61 other orgs
- 20 related orgs in Italy, 31 in EU, 5 in the Middle East, 2 in North America, 2 in Africa, 1 in Asia

# Procedure for entering new data (1 of 2)

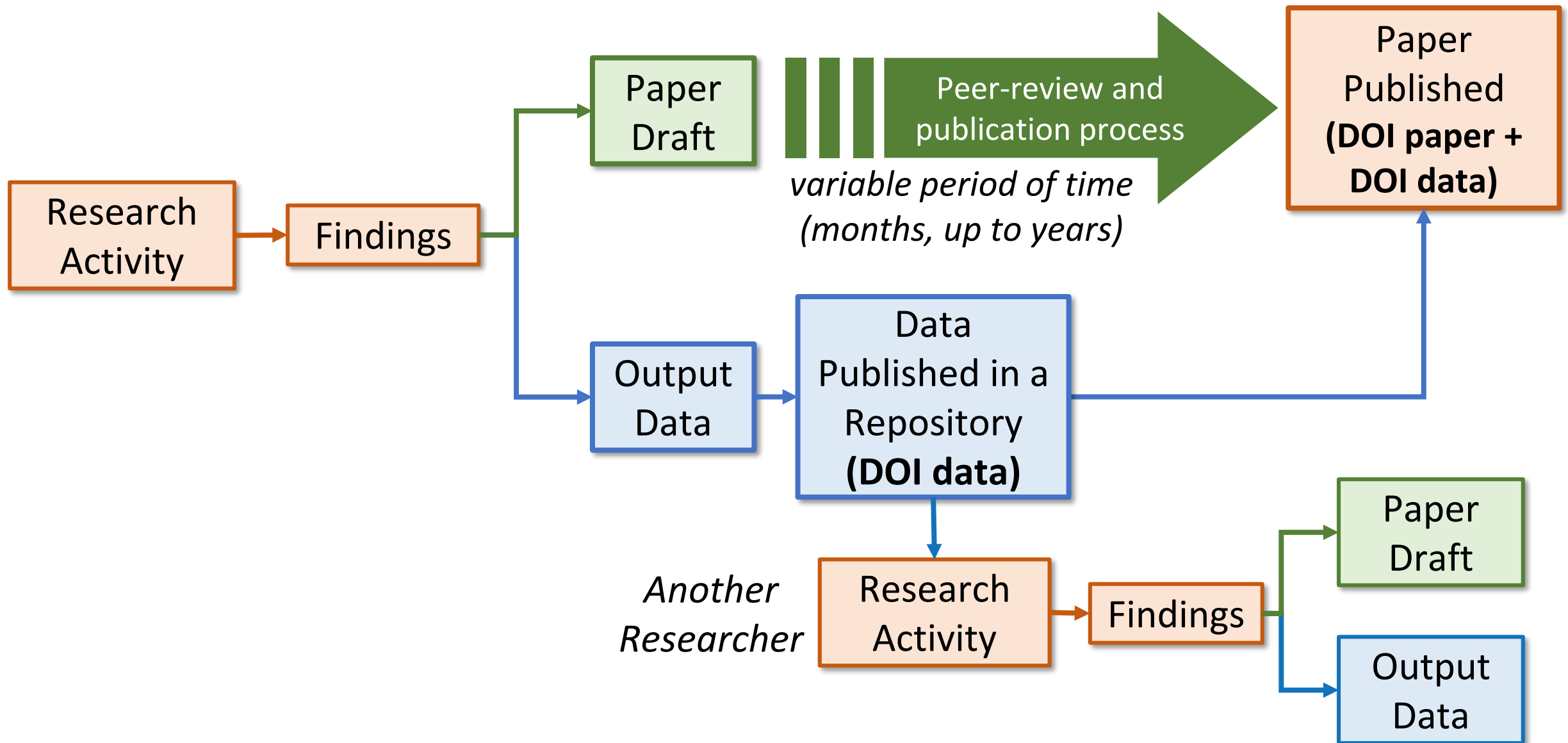


# Procedure for entering new data (2 of 2)

*\*DMO, Data Management Office*



# Faster data publication will enable Open Science practices



### **Amount of data shared**

- Hundreds of datasets emerged from the internal survey, smaller datasets still not traced
- Only a fraction of produced data is publicly accessible, mostly seismological data
- Not -yet- published data is used internally or made accessible to the Civil Protection only

### **Data encoding and web services**

- Delays in publication due to missing data encoding and/or suitable web services standards
- Lack of skills and expertise for investigating OGC standards (i.e. Sensor Web Enablement)

### **Colleagues response**

- Some people still reluctant in openly sharing data
- Overall, data authorship recognition via DOI metadata very well perceived
- Willing to see a tangible recognition during job evaluation processes, inside & outside INGV

### **Data management**

- INGV hosts archives only for specific data, relies on external platforms for data publication
- Building an institutional data repository is under investigation



**Thank you  
for your attention!**

[datamanagementoffice@ingv.it](mailto:datamanagementoffice@ingv.it)