



Ministry of  
Education and Science  
Republic of Latvia

OPEN ACCESS

FAIR DATA

CITIZEN SCIENCE

REPRODUCIBILITY

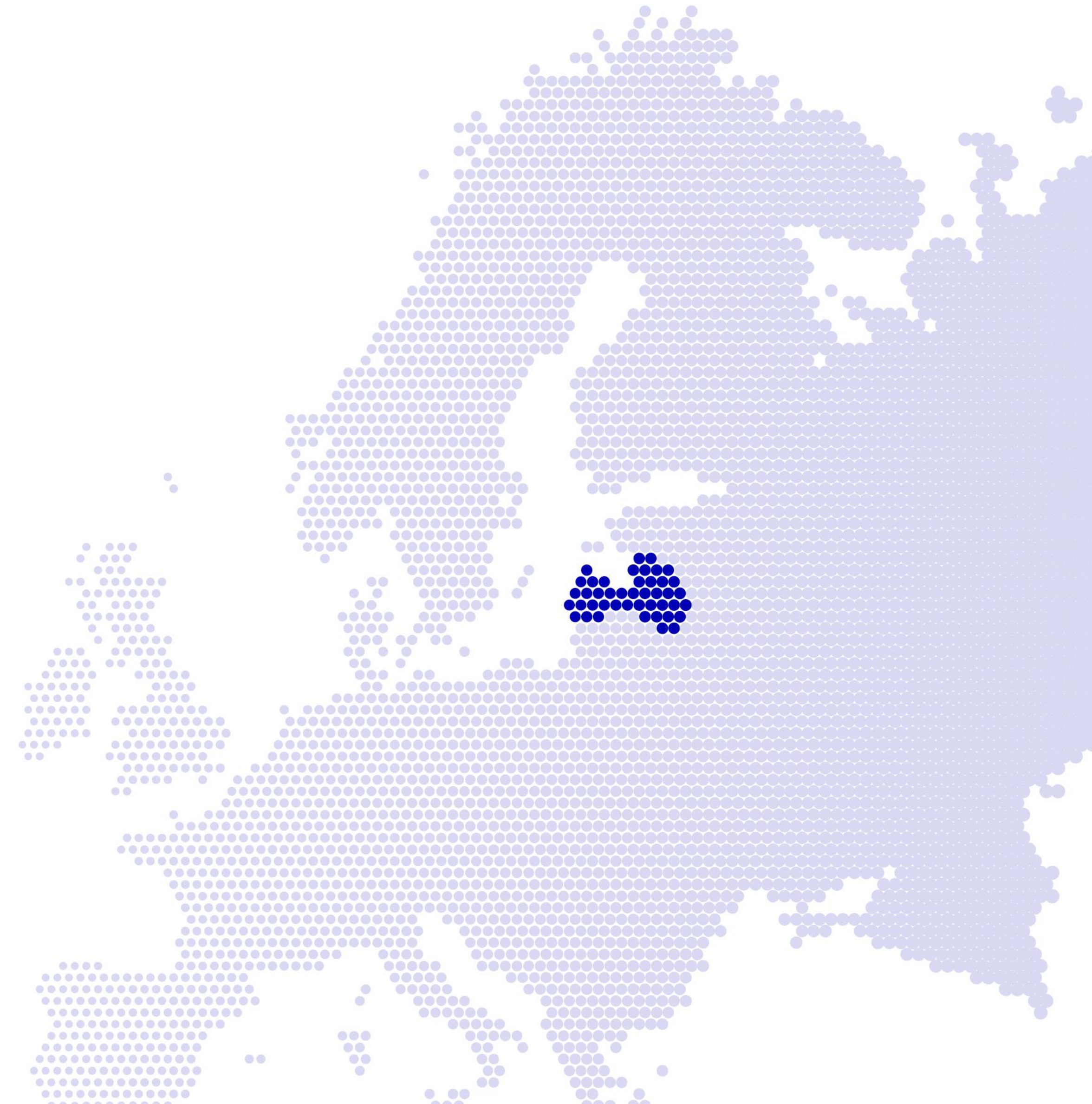
OPEN SCIENCE

Aleksandrs Mārtiņš Blūms

RIS3 Expert

Aleksandrs.Blums@izm.gov.lv

researchLatvia<sup>★</sup>  
Value Through Knowledge





# WHAT IS OPEN SCIENCE?

**Open  
Access**

**FAIR  
Data**

**Citizen Science**

**Reproducibility**

**Evaluation**

**Incentives**

**Tools**

...



“Open Science represents a **new approach** to the scientific process based on **cooperative work** and new ways of **diffusing knowledge** by using digital technologies and new collaborative tools. The idea captures a systemic change to the way science and research have been carried out for the last fifty years: shifting from the standard practices of publishing research results in scientific publications towards **sharing** and using all available knowledge at an earlier stage in the research process”.



“the practice of making research publications and data freely available”

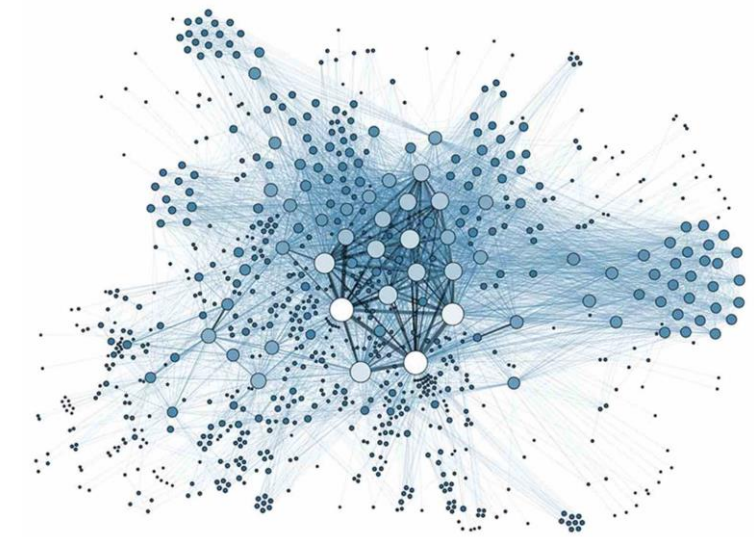
# WHY OPEN SCIENCE?



- Efficiency
- Quality and integrity
- Economic benefits
- Innovation and knowledge transfer
- Public disclosure and engagement
- Global benefits

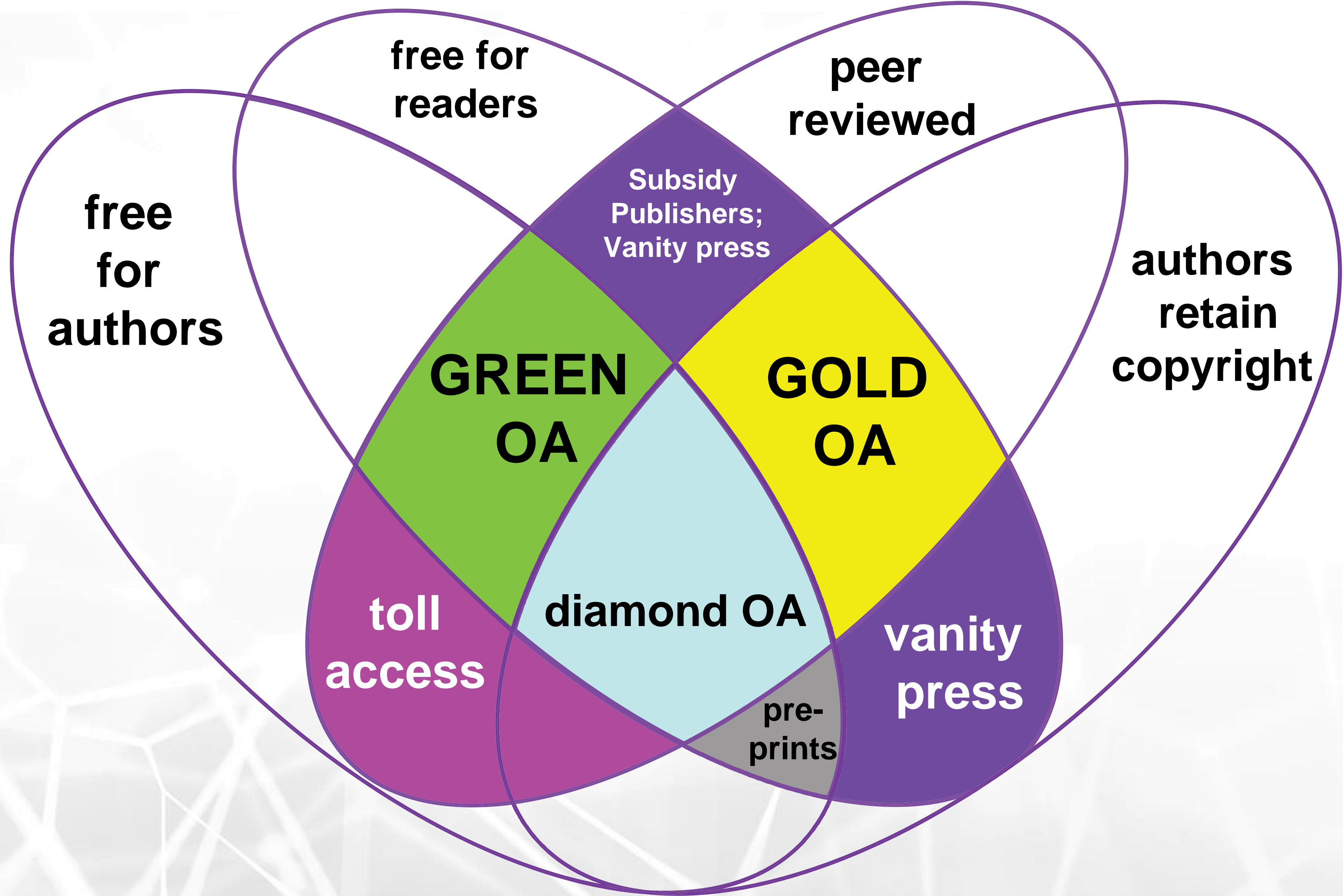
## Why do we need Open Science?

- *Open Science has the potential to increase:*
  - **Quality** and **efficiency** of R&I, if all the produced results are shared, made reusable, and if their reproducibility is improved;
  - **Creativity**, through collective intelligence and cross-disciplinary research that does not require laborious data wrangling;
  - **Trust** in the science system, engaging both researchers and citizens.



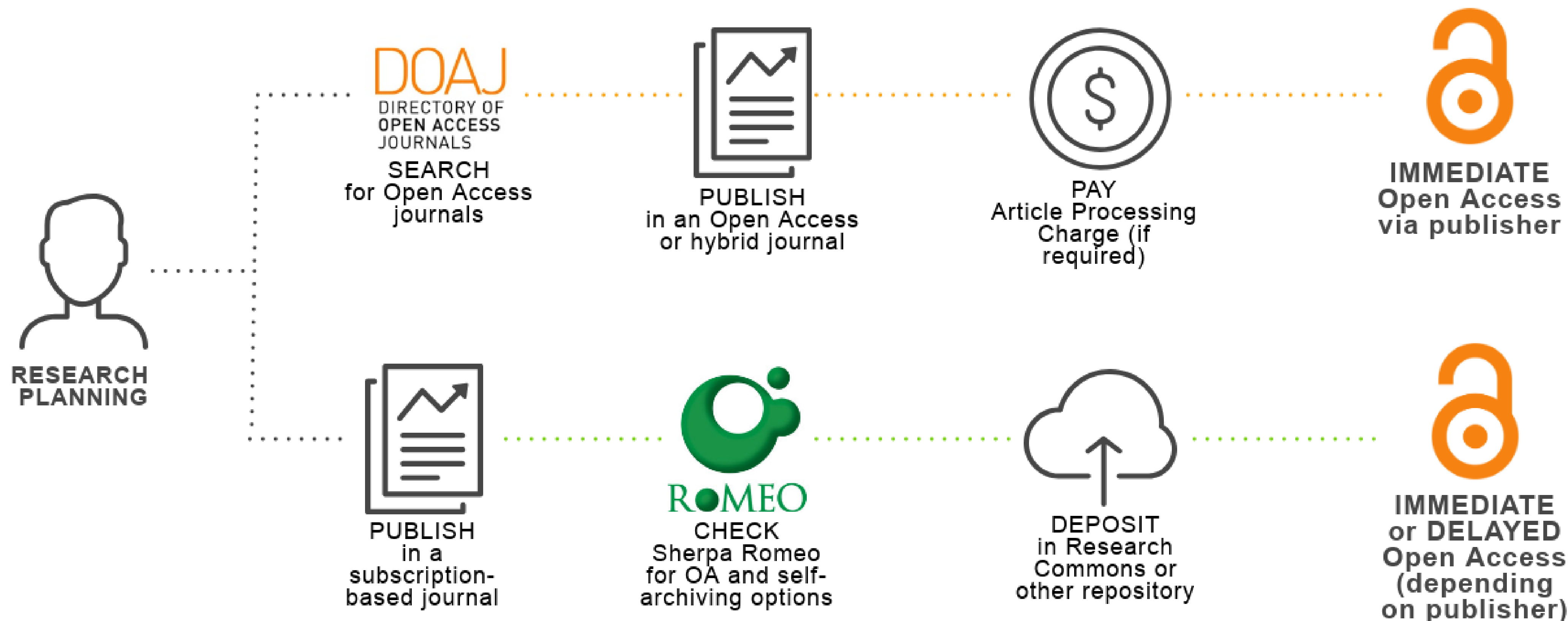


# OPEN ACCESS



# OPEN ACCESS

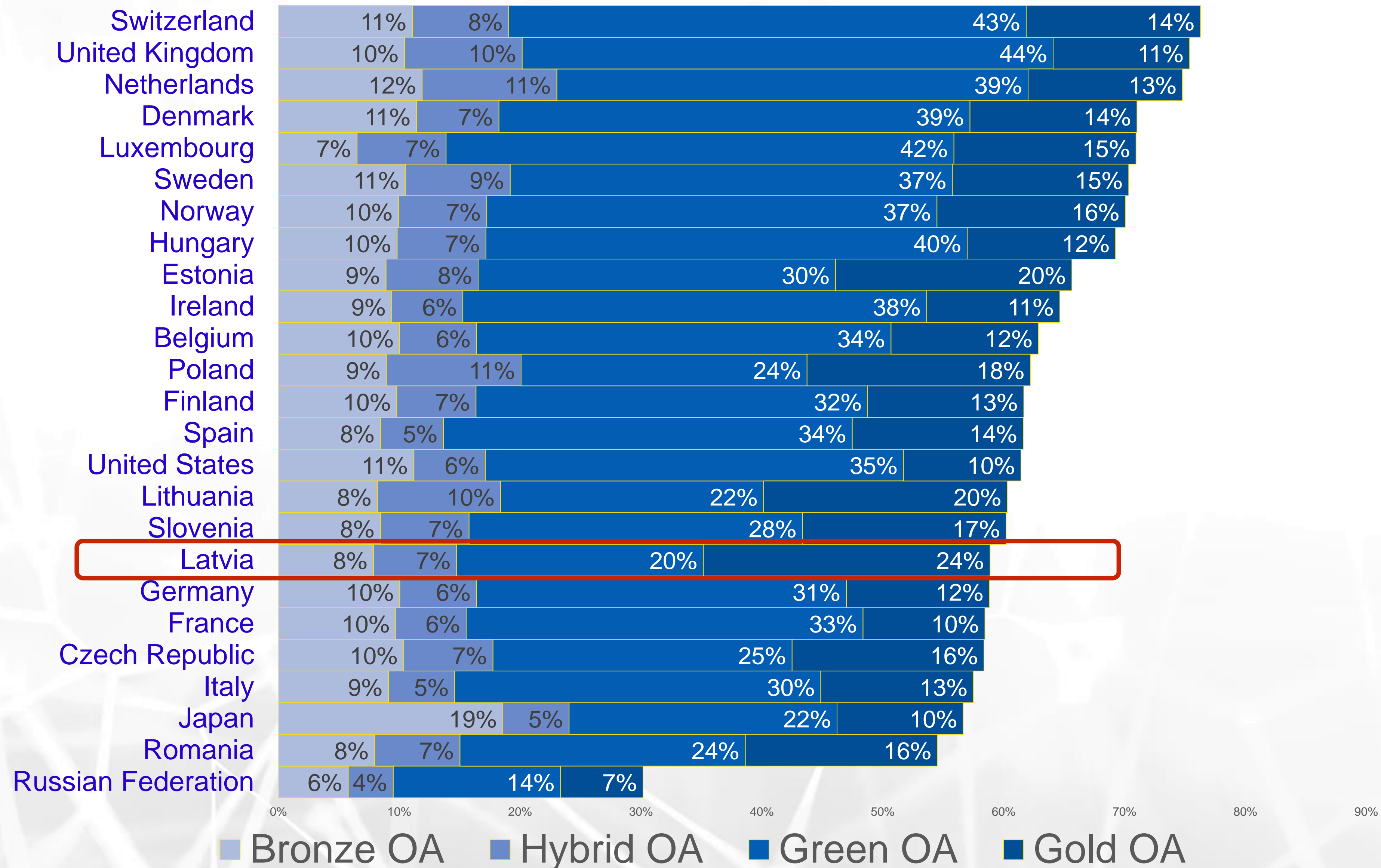
## GOLD ROUTE



## GREEN ROUTE

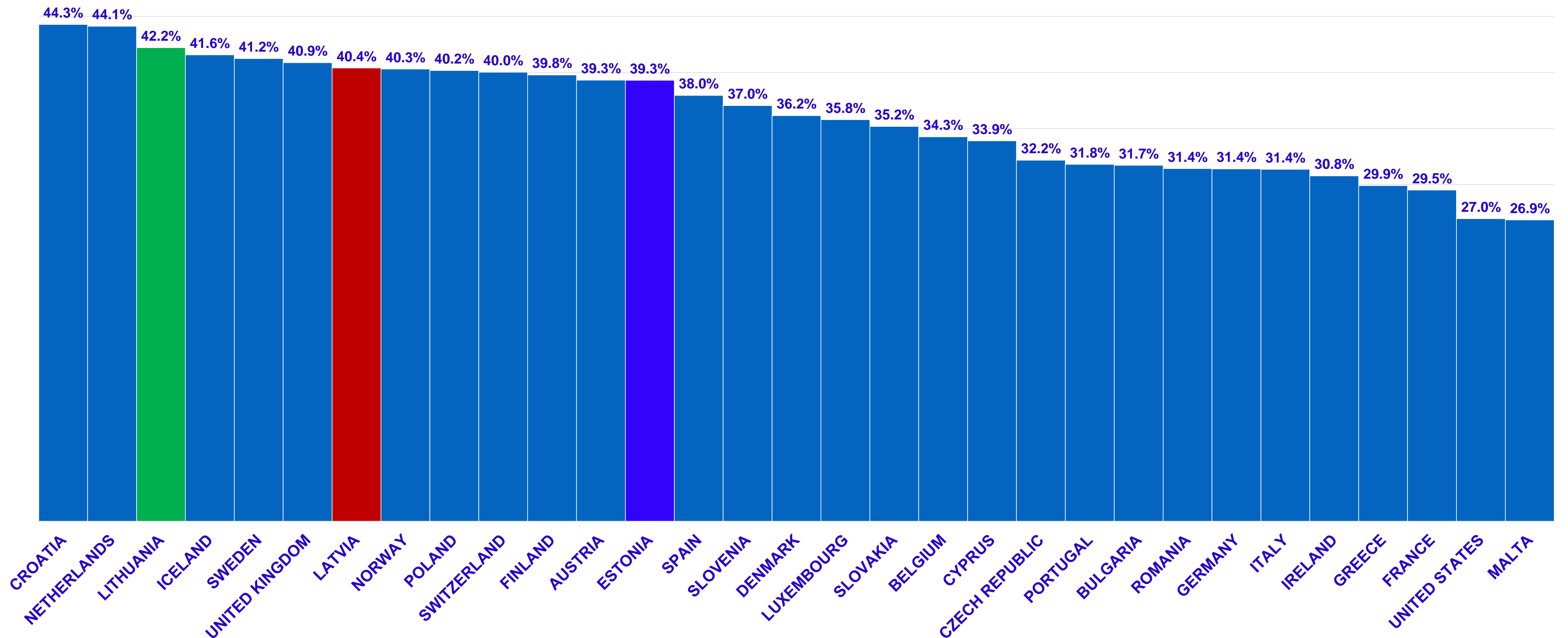
# OPEN ACCESS

## Percentage of Open Access publications in total publications



# OPEN ACCESS

## Percentage of Open Access publications in total publications (2018)

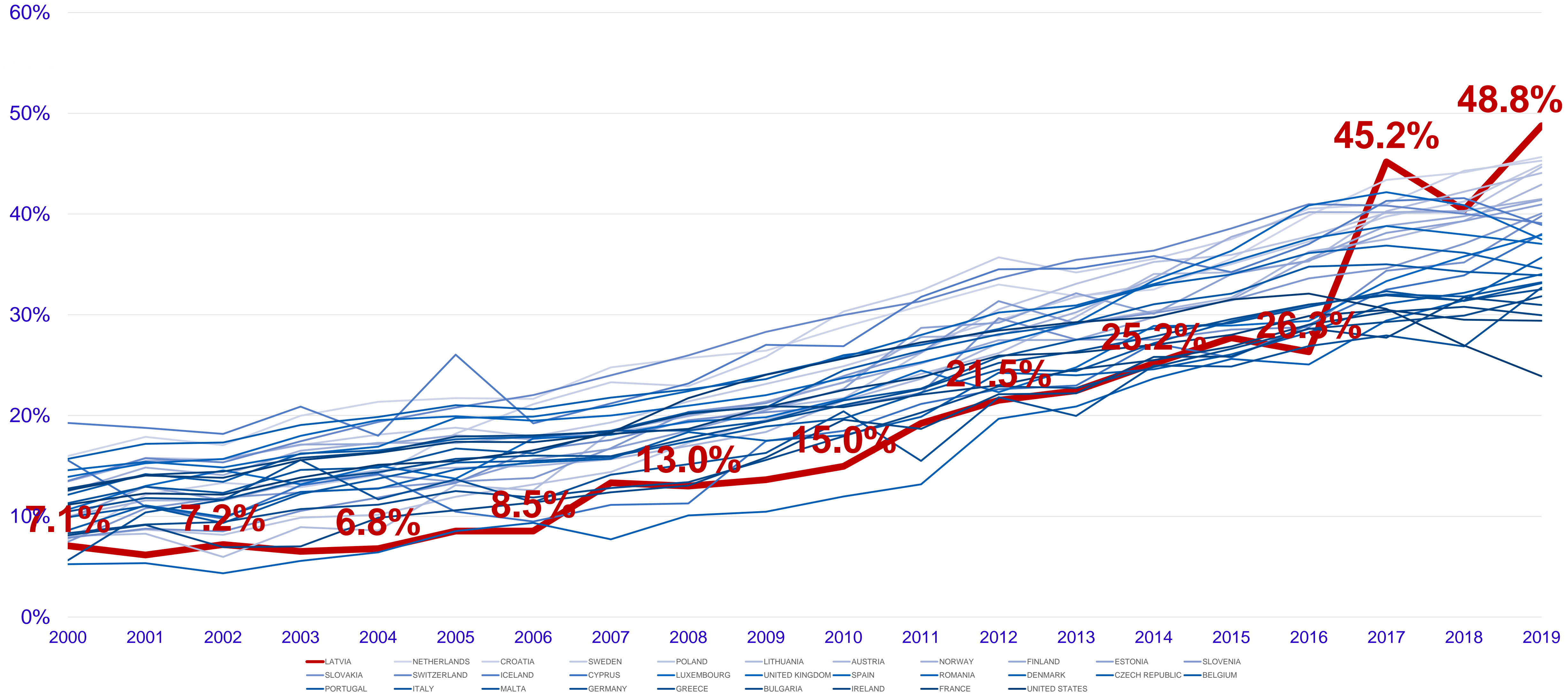


Source: Web of Science, InCites Dataset + ESCI



# OPEN ACCESS

## Percentage of Open Access publications in total publications

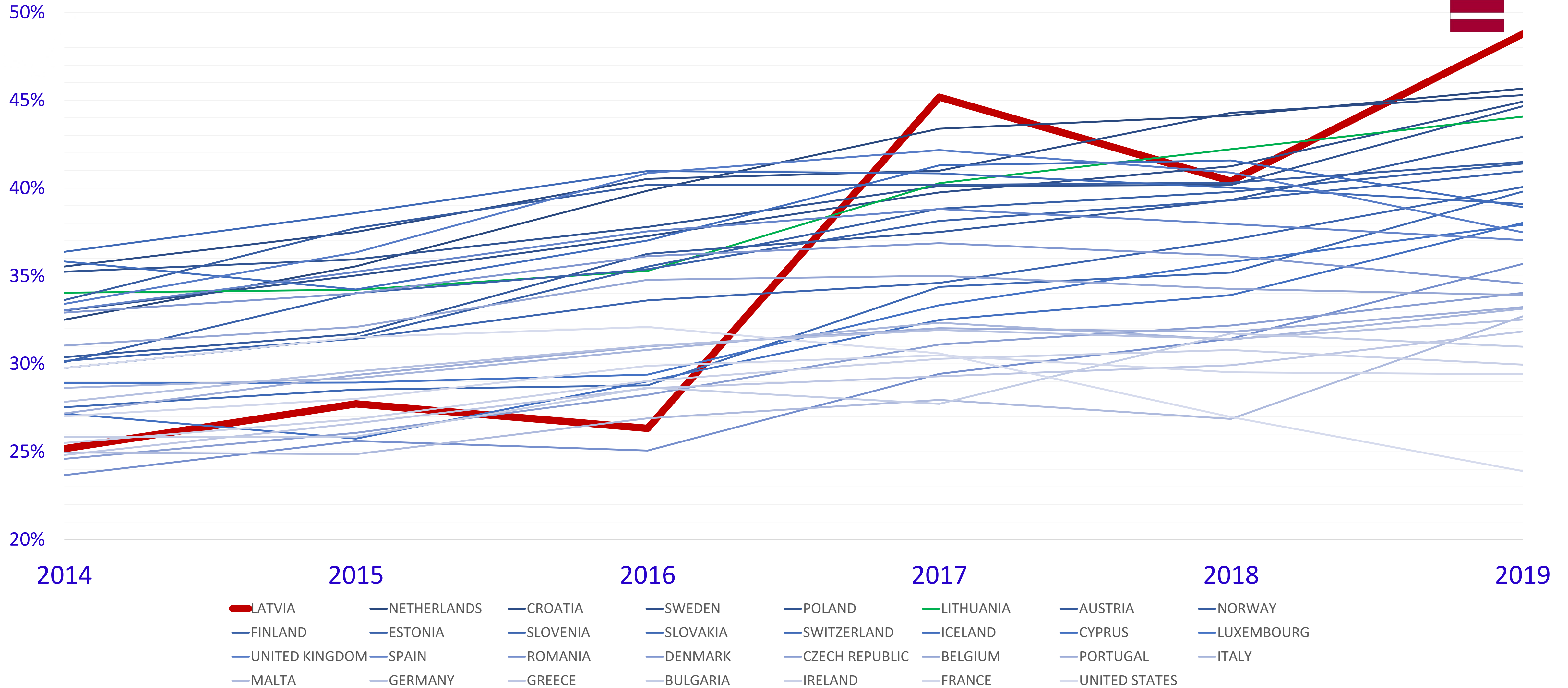


Source: Web of Science, InCites Dataset + ESCI



# OPEN ACCESS

## Percentage of Open Access publications in total publications



F<sub>indable</sub> A<sub>ccessible</sub> I<sub>nteroperable</sub> R<sub>eusable</sub>



FAIR does not  
equal "Open"!



In practice...



EUROPEAN OPEN  
SCIENCE CLOUD

# REPOSITORIES



# FAIR DATA



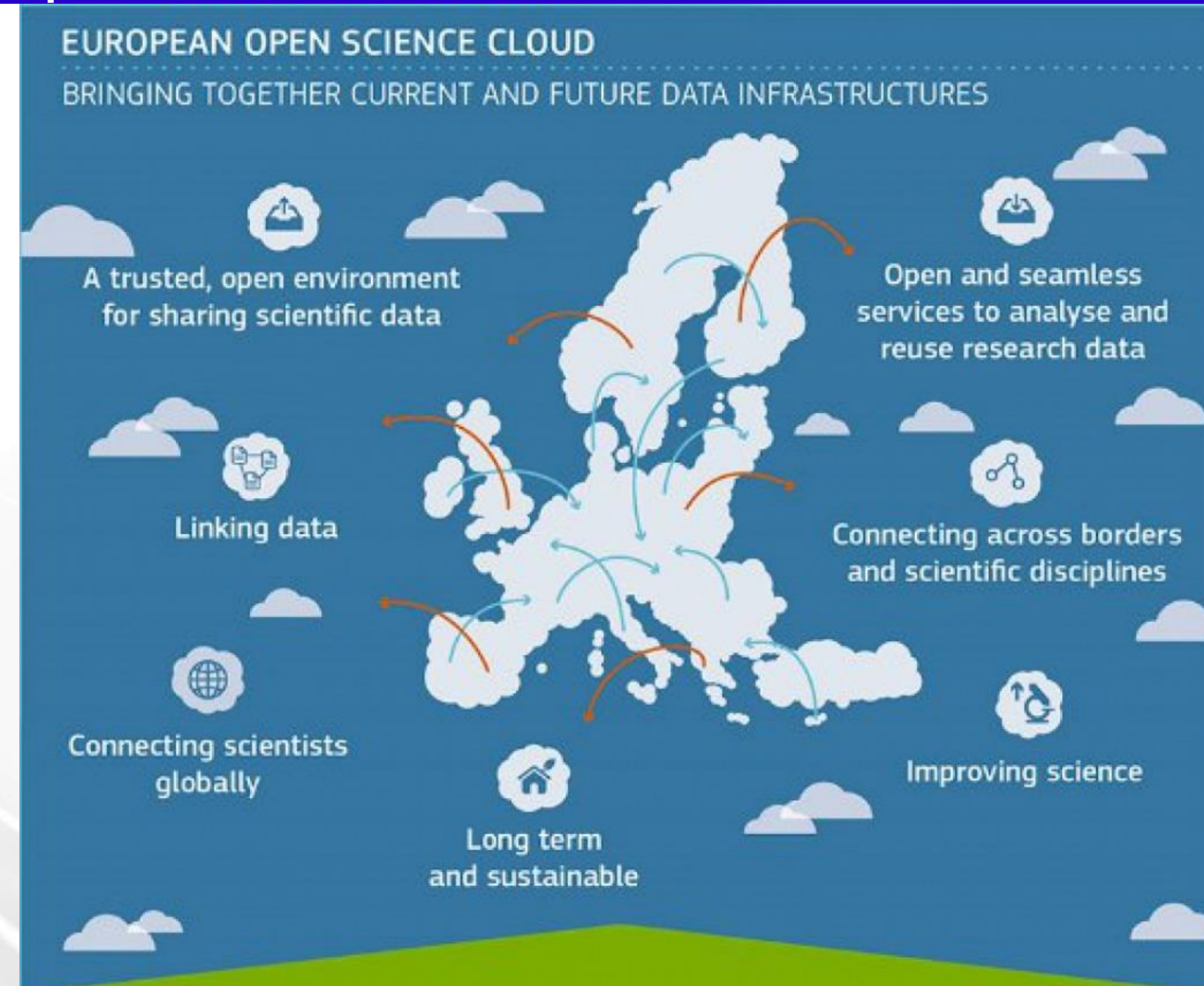
## EUROPEAN OPEN SCIENCE CLOUD

researchLatvia<sup>\*</sup>  
Value Through Knowledge



Enabling the digital transformation of research: data-intensive, collaborative and cross-discipline

*EOSC will provide 2 million EU researchers and innovators an environment with services for data management, analysis and re-use across disciplines, increasing the creativity, productivity and reproducibility of research*





# Research data repository models for Latvia

researchLatvia<sup>★</sup>  
Value Through Knowledge





# FAIR DATA

**HARVARD**  
Dataverse

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[Research Group \(36\)](#)

[Organization or Institution \(31\)](#)

[Journal \(9\)](#)

[More...](#)

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**Metadata Source**

[Harvard Dataverse \(1,452\)](#)

[Harvested \(455\)](#)

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**Publication Year**

[2019 \(337\)](#)

[2018 \(289\)](#)

[2016 \(260\)](#)

[2017 \(252\)](#)

[2015 \(242\)](#)

[More...](#)

[Subject: Earth and Environmental Sciences](#) ✕

**1 to 10 of 1,907 Results** ↕ Sort ▾

[Physico-Chemical Classification of Soil through fatawa Razvia: A Chemical Approach](#) 📄

Nov 3, 2019

Kanzuliman foundation, KAIJOR; Er. Kashif Raza; Er. Farhan Khan, 2019, "Physico-Chemical Classification of Soil through fatawa Razvia: A Chemical Approach", <https://doi.org/10.7910/DVN/IIVS3P>, Harvard Dataverse, V2

The natural environment was clean, but due to multifarious activities of human, it gets polluted resulting environmental pollution. In this study it was preferred to investigate the soil samples for some parameters through physico-chemical analysis. 25 samples were obtained to te...

[Flood Tweet IDs \(multilingual\)](#) 📄

Nov 1, 2019

de, Jens, 2019, "Flood Tweet IDs (multilingual)", <https://doi.org/10.7910/DVN/T3ZFMR>, Harvard Dataverse, V2

This dataset contains the tweet IDs of 87,641,357 tweets related to floods in 11 languages collected between July 29, 2014 and November 20, 2018. All tweets mention one or more keywords in one of the respective languages: English: flood, floods, flooding, flooded, inundation, inu...

[Model-Measurement Consistency and Limits of Bioaerosol Abundance Over the Continental United States](#) 📄

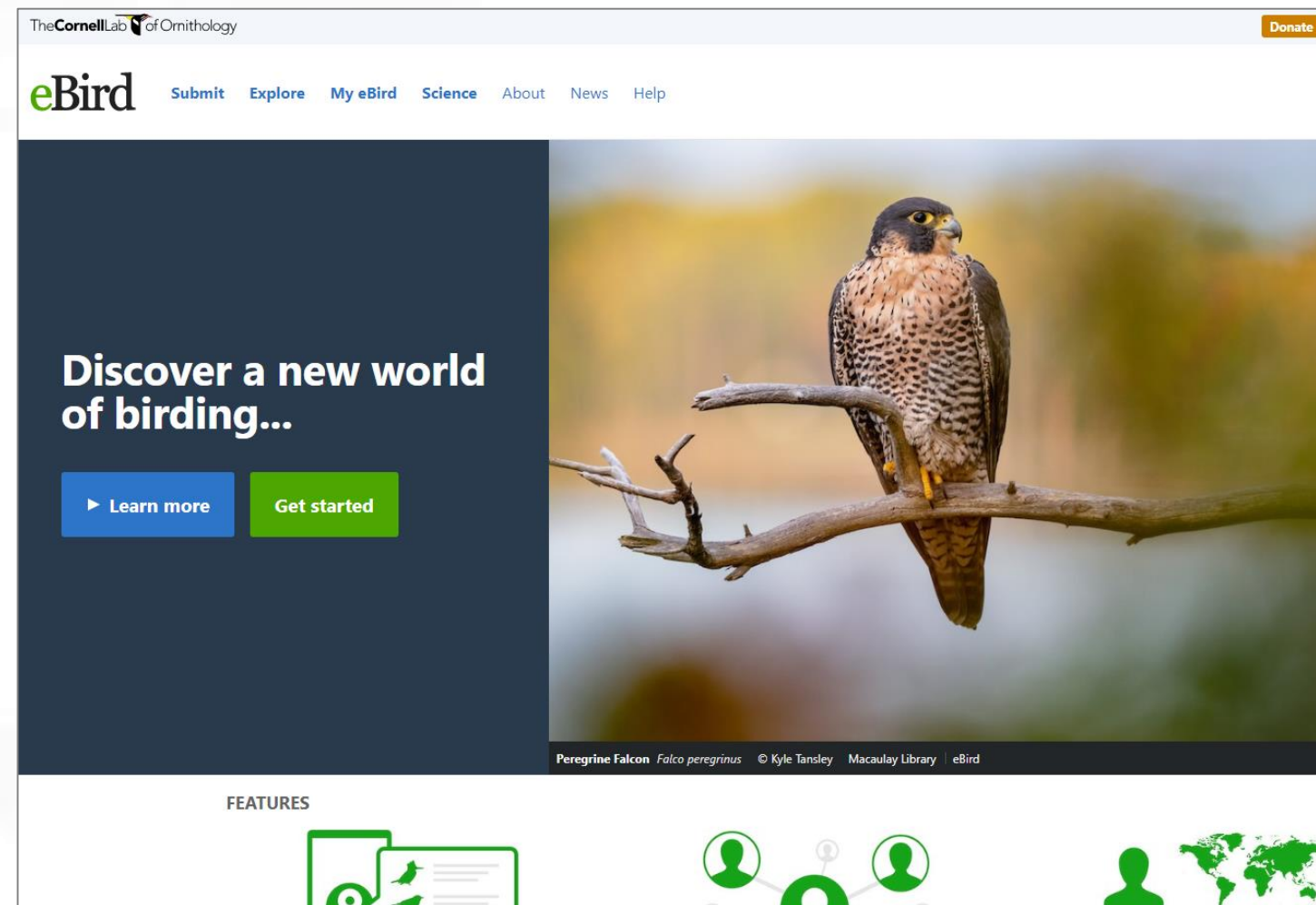
Oct 31, 2019 - Cziczo Group at MIT Dataverse

Zawadowicz, Maria, 2019, "Model-Measurement Consistency and Limits of Bioaerosol Abundance Over the Continental United States", <https://doi.org/10.7910/DVN/75VVNV>, Harvard Dataverse, V1, UNF:6:3cU3XSUqyc37+9WUrMLNZA== [fileUNF]

This dataset contains data used to generate figures in the journal article "Model-Measurement Consistency and Limits of Bioaerosol Abundance Over the Continental United States" published in Atmospheric Chemistry and Physics. Data is provided in .csv format with column headers as...



# CITIZEN SCIENCE



<https://ebird.org/>

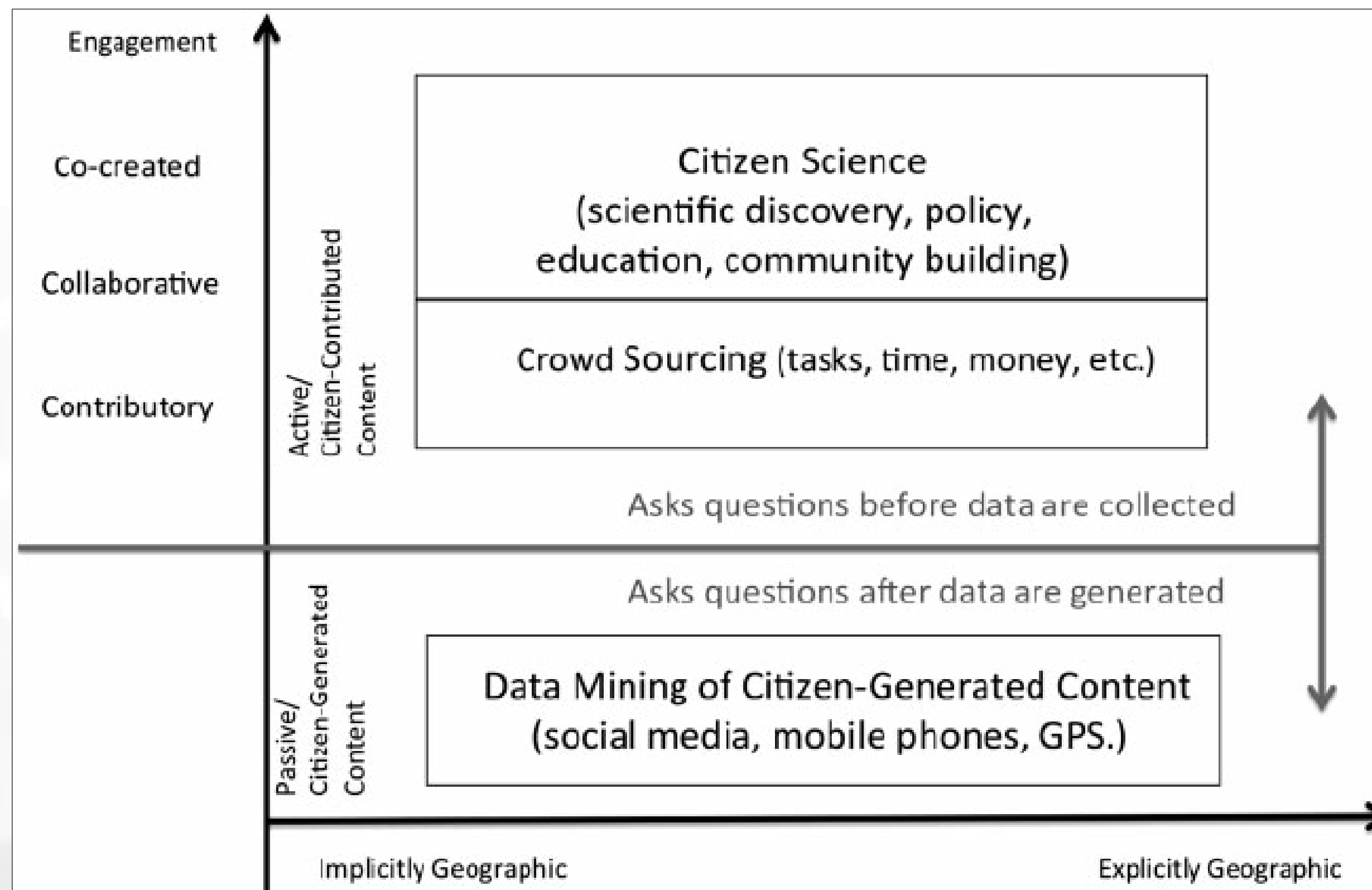


<https://www.zooniverse.org/>

<http://iesaisties.lv/>



# CITIZEN SCIENCE



Craglia, Max, and Lea Shanley. "Data democracy—increased supply of geospatial information and expanded participatory processes in the production of data." *International Journal of Digital Earth* 8, no. 9 (2015): 679-693.

	Cooper et al.	Wilderman	Bonney et al.	Contributory	Collaborative	Co-created
<b>Stage of Inquiry</b>						
Define question	✓	✓	✓			X
Gather information			✓			X
Develop hypotheses			✓			X
Design study	✓	✓	✓		(X)	X
Data collection	✓	✓	✓	X	X	X
Analyze samples		✓	✓		X	X
Analyze data	✓		✓	(X)	X	X
Interpret data	✓	✓	✓		(X)	X
Draw conclusions	✓		✓		(X)	X
Disseminate results			✓	(X)	(X)	X
Discuss results & ask new questions			✓			X

TABLE I

VOLUNTEER INVOLVEMENT IN ENVIRONMENTAL SCIENCE TYPOLOGIES, WITH DEFINITIONS OF PARTICIPATORY SCIENCE MODELS. ✓ = INCLUDED IN MODEL; X = PUBLIC INCLUDED; (X) = PUBLIC SOMETIMES INCLUDED.

Wiggins, Andrea and Kevin Crowston. "From Conservation to Crowdsourcing: A Typology of Citizen Science." 2011 44th Hawaii International Conference on System Sciences (2011): 1-10.

# STUDY / ROADMAP FOR OPEN SCIENCE

- **Will provide the analytical basis for national open science policy**
- **Mapping OS stakeholders**
- **Mapping research data repositories**
- **Recommendations for national OA policy, San Francisco declaration, cost estimates**
- **Recommendations for optimal research data repository model**
- **Ideas for promoting citizen science**
- **Completion by April, 2020**



# TO DO LIST

- **Study/Roadmap for Open Science**
- **Updating Re3data**
- **Connecting OS to RIS3**
- **Supporting national RI compatibility with EOSC**
- **Continued investigation about research data repository models**
- **Contributions to new ERA priorities**

# INTERNATIONAL CONTEXT



**EUROPEAN OPEN  
SCIENCE CLOUD**



**Open Science Coordination in Europe**



**ERAC SWG OSI**



# LEARN MORE

The screenshot shows a web browser window with the URL `opensciencemooc.eu/#`. The page features the 'OPEN SCIENCE MOOC' logo with the tagline 'FREE | OPEN | LEARNING'. A navigation menu includes 'Home', 'Blog', 'Modules', 'People', and 'Ab'. A dropdown menu is open under 'Modules', listing various open science topics. The main content area has a background image of a stack of books and a central text box.

opensciencemooc.eu/#

OPEN SCIENCE MOOC  
FREE | OPEN | LEARNING

Home Blog Modules ▾ People Ab

- Open principles
- Open collaboration
- Reproducible research and data analysis
- Open research data
- Open research software and Open Source
- Open access to research papers
- Open evaluation
- Public engagement with science
- Open educational resources
- Open advocacy

We want to help make **open** the default setting for all global research.



# Thank You!

Aleksandrs Mārtiņš Blūms  
RIS3 Expert  
Aleksandrs.Blums@izm.gov.lv



researchLatvia

