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Analysis of the State of the Art, Barriers, Needs and Opportunities for Setting up a Transport Research Cloud study's findings

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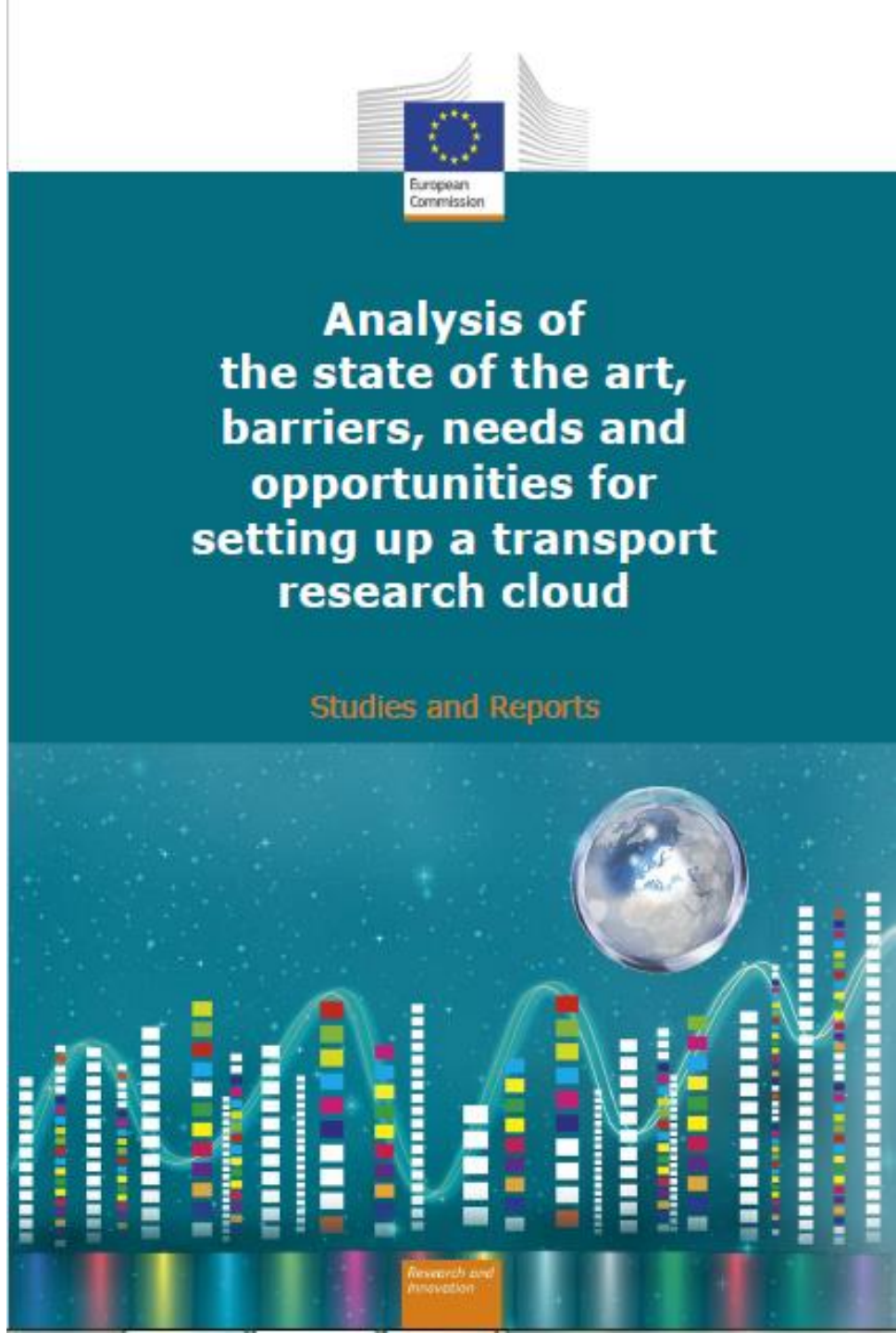
Overview

- "Analysis of the State of the Art, Barriers, Needs and Opportunities for Setting up a Transport Research Cloud"

- A report prepared for the European Commission in October 2018 by:
  - Martin Böhm, AustriaTech
  - J. Rod Franklin, Kühne Logistics University – Chairperson
  - Sarah Jones, Digital Curation Centre
  - Tatiana Kovacikova, University of Žilina
  - Katarzyna Nowicka, SGH Warsaw School of Economics – Rapporteur
  - George Yannis, National Technical University of Athens



Objectives and Methodology

Objective:

- To examine the potential of a Transport Research Cloud (TRC) as subset of the European Union's European Open Science Cloud (EOSC) initiative.

Methodological Approach:

- Leverage knowledge and networks of expert group to form a baseline of understanding on the topic.
- Detailed literature review to understand the general background and specific issues related to the transport domain
- Conduct a survey of transport researchers to obtain a first hand understanding of current understanding, issues, and requirements

State of the Art

- Transport research data is diverse in content, structure, use, and degree of openness.
- Transport domains differ significantly in the data they collect, how they refer to the data, the analyses they perform, and in their views on open data.
- All transport researchers surveyed understood the value of open data, but only 5% currently openly share data.
- Issues with sharing involved privacy, trust, lack of mechanisms or incentives to share and a lack of understanding.
- Open data platforms should make it easier for the researcher to find and use data in research and this should be done at minimal cost.

Opportunities for Transport Research

- Open and easily accessible data will facilitate research across communities and countries.
- Promote more public-private partnership, with commercial companies being encouraged to make their data available.
- Examples of opportunities generated by sharing data:
  - Reuse of large datasets from Field Operational Tests and Naturalistic Driving Studies facilitates researchers' work with reduced funding and effort.
  - Advanced mobility solutions such as journey planners and control systems can benefit by saving businesses money, increasing safety and reducing congestion.
  - The integration of cross modal, multi-modal and synchro-modal transport operations in order to develop more realistic transport models across Europe.

Barriers to Sharing Transport Data

- Fragmentation of data ownership and a lack of interoperability between datasets and platforms.
- Different interests of the various stakeholders in transport data creating differing requirements for data access.
- Data ownership varies by who generates and collects the data and they may be not willing to share data due to privacy, legal liability, IP, competition, or cost related issues.
- Transport data is often ethically or commercially sensitive requiring tight controls concerning access to the data.
- The diversity of data sources affecting data quality.
- Variations in hardware and software used for collecting the data.
- Lack of expertise in machine learning, data mining, and data management.

Needs for Transport Research Cloud

- The needs of researchers are:
  - access to datasets,
  - search tools,
  - data analysis,
  - storage,
  - data sharing,
  - preservation.
- Policy issues are needed to be tackled, concerning the conditions in which the data are provided, curated, maintained and accessed and funding of the service.
- Significant infrastructure is required to ensure the proper management of data.
- Management, support, operations, storage, marketing, education, engineering, integration, and other ongoing costs will need to be foreseen, as well as sources of revenue for the TRC.

Recommendations (1/5)

Reusable Research Data

- The Commission should bring together researchers, research data users and data generators to define what constitutes **transport research data**.

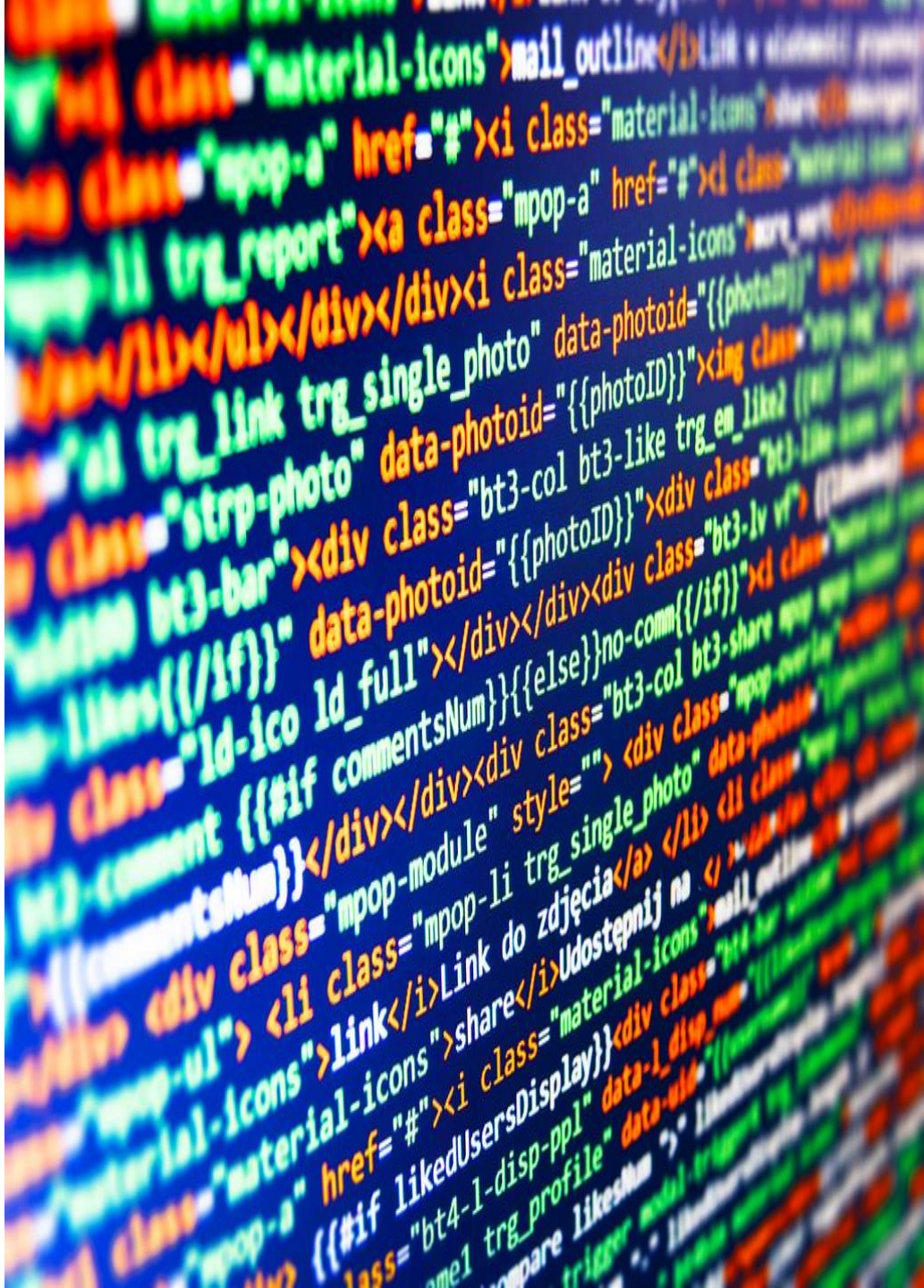
- The Commission should conduct a detailed study among transport researchers in order to identify the **objections behind limited use of data collected by others** and develop recommendations on how to overcome these objections.

Recommendations (2/5)

Data as a public good

- Any and all data collected under contracts paid for by tax payer funds by default should be classified as public data.

- All data collected under a publically funded project should include a clear demarcation between the Intellectual Property created by the individual researchers in analyzing the data and the data itself.



Recommendations (3/5)

Standards

- The Commission should **bring together members of the transport research community**, governmental entities generating transport data used in research, infrastructure operators and commercial consumers of transport research and transport research data to define:
  - the standards that will be necessary for the collection of transport data by public institutions,
  - the data formats these data should adhere to,
  - the metadata that must be used to describe the data,
  - and formats of this metadata so that automated search engines can easily find and characterize the data.

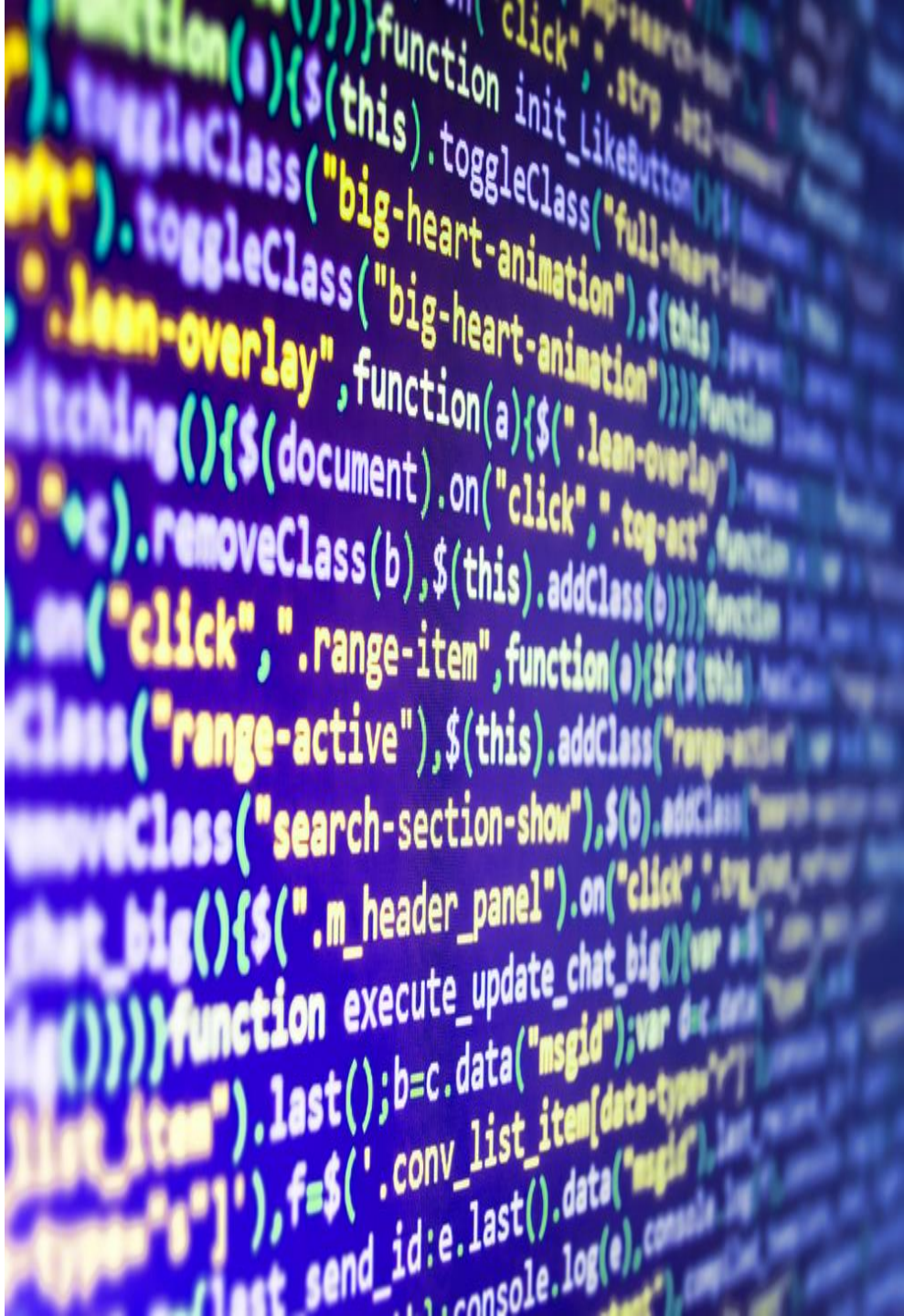
Recommendations (4/5)

Infrastructure

- The Commission should conduct a detailed study on the infrastructure and operating requirements for a TRC to ensure that an appropriate level of service can be provided at a cost that is understood by all stakeholders.

- The Commission should conduct a detailed study of what the potential user and stakeholder communities would require from a TRC in order to make it the "go to" place for doing cutting edge transport research.

- The TRC should be modelled after the EOSC and governed in a manner similar to the EOSC taking into account the particularities of the transport domain.

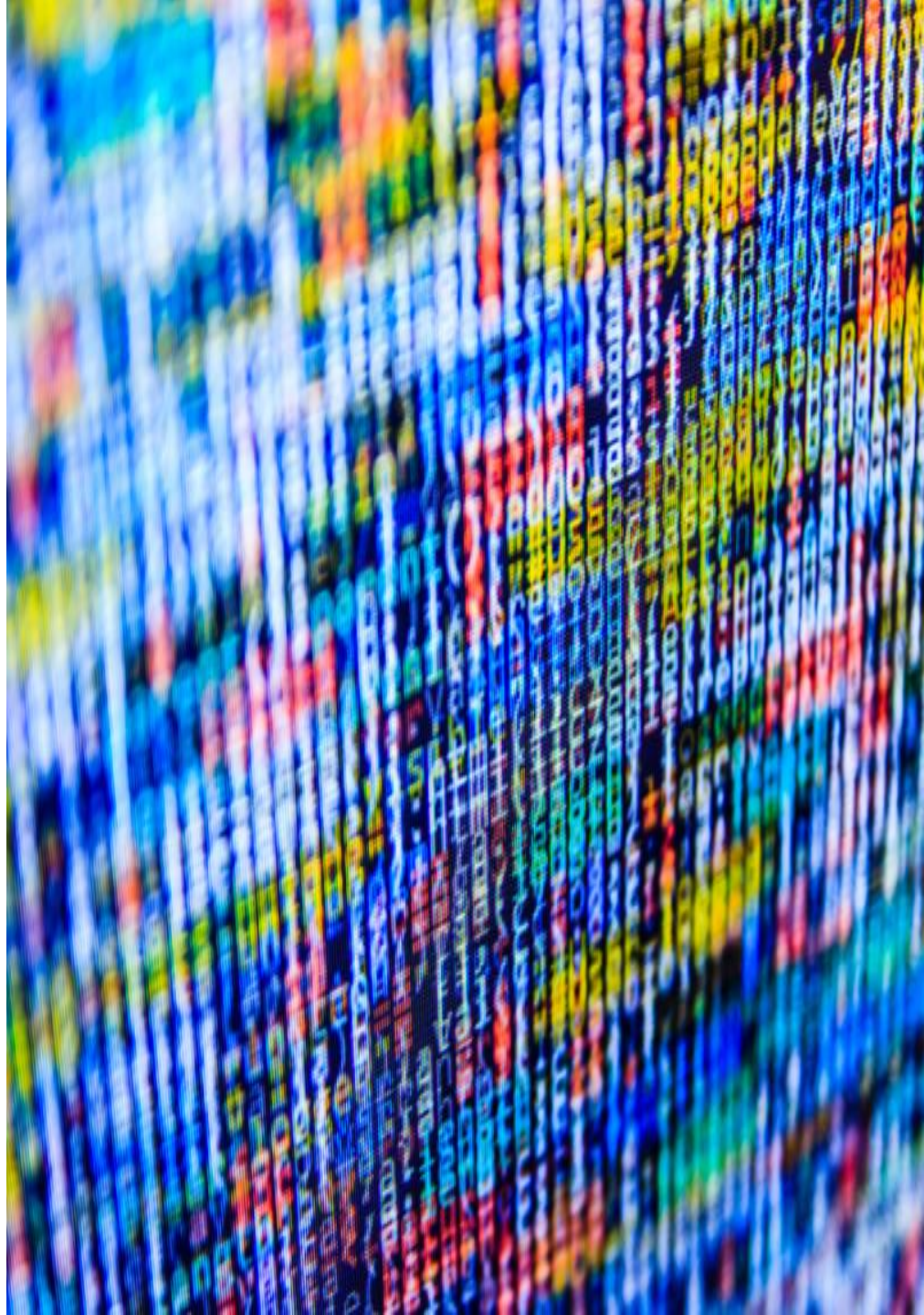


Recommendations (5/5)

Incentives, training, and education:

- EU policies for academic promotion, training, publication, and knowledge generation at public universities to ensure that:
  - researchers are uniformly trained in the process of placing their research data into the EOSC
  - universities provide incentives to their faculty and researchers, so that their research data is placed into the EOSC, and to ensure that proper credit for the generation of the reused data is given to the individuals who originally collected the data.

- An analysis of training requirements should be conducted by the Commission and formal training/education programs should be developed for researchers, libraries, data curators, and other individuals who will be needed to carry out the development of a mind-set of open data by default.



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