REACT Group – Interaction Systems

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Towards Open Data in Digital Education Platforms

Context

- Rise of **big data** and **learning analytics** in education.
- **Open data** used for evidence-based research.
- **Ethical** and **legal concerns** associated with handling data in education, addressed by regulations (e.g., **EU GDPR**).

Problem

- **Limited support** for researchers to generate, access, and share experimental data using openly-available digital **education platforms**.

Solution

Learning + Research Platform

Study how to **enhance educational platforms** with features that would allow **researchers** to:

- run **studies** within typical **learning environments**;
- adhere to **legal** and **ethical frameworks** when handling sensitive data;
- **share** their data sets confidently with a wider audience.

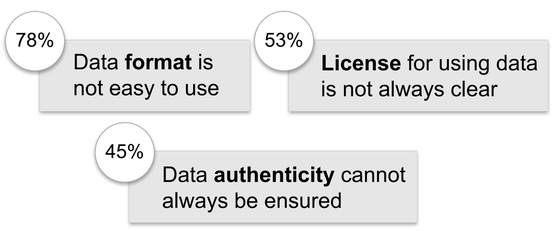
- **Methodology:**

- **Requirements Elicitation:**
  - Online Survey: http://bit.ly/2PcKH4G.
  - Participants: 40 researchers in technology-enhanced learning from European institutions.

Survey Results

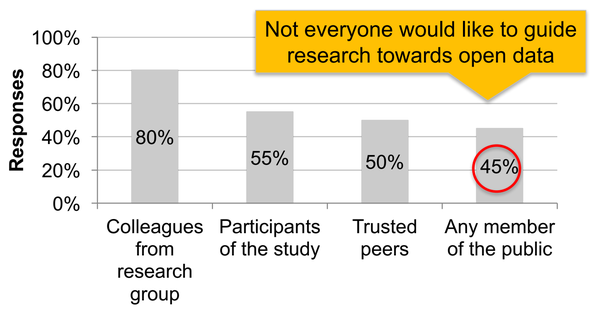
Usage of Open Data in Research

- The majority of participants (53%) used open data in their research.
- Related **concerns**:



Platforms should support interoperable data formats, clear licensing, and data authenticity certificates.

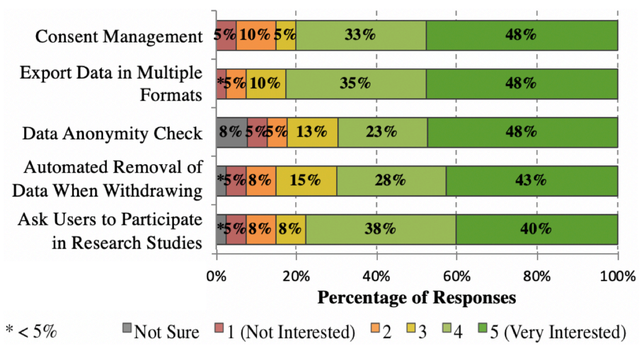
Sharing Research Data



- Reasons for not sharing research data:
  - Ethical and legal constraints (67%).
  - Lack of **standards** / data **infrastructure**.
  - **Cost** of preparing data / documentation.
  - Lack of **training** to manage data.

Data Management and Sharing Features

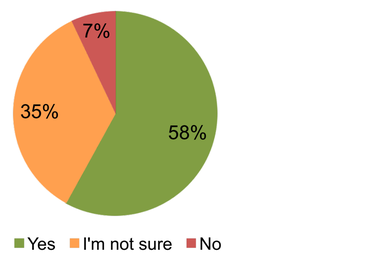
- **73%** of participants are more inclined to share their research data if platforms provide **guidelines** and **tools** for **data management** and **sharing**.



Platforms are in a suitable position to bootstrap research studies and help researchers comply with existing ethical and legal regulations.

Ethics and Data Privacy

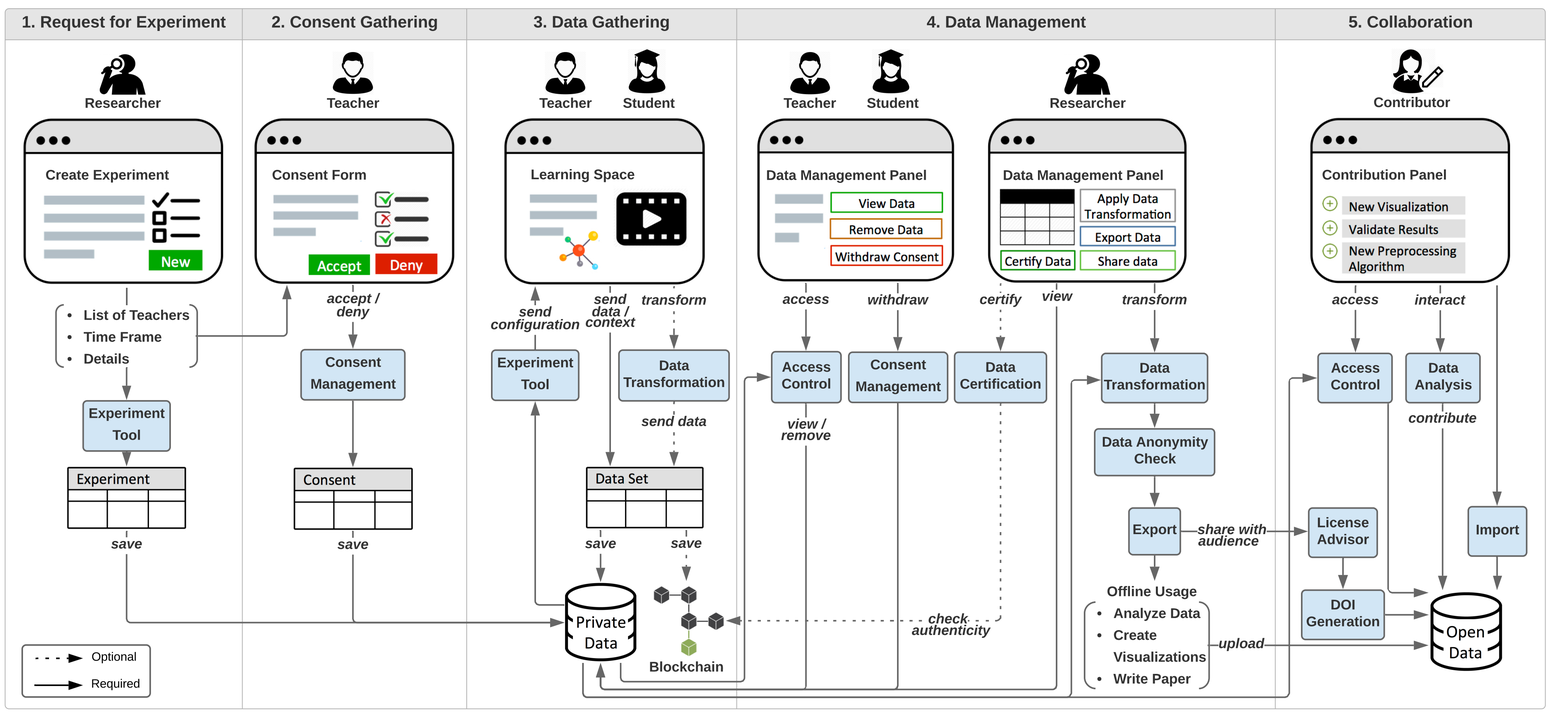
- Follow Code of Conduct:



- Only 40% had **strategies** or methods in place to handle data privacy-related processes in a **reproducible** way.
- Need to store experiment data in custom **locations** (40%).

Architecture

- We present a **user flow** in order to address the requirements that emerged from our survey.
- Our blueprint is conceived to be compliant with **ethical** and **privacy regulations** and to **empower all stakeholders**.
- Our aim is to relieve researchers of the **burdens** of conducting data-sensitive experiments, support the adoption of **best practices**, and pave the way for **open data policies** in digital education.



Future Work

- **Vision:**
  - Open Science: FAIR services for Scientific Information at Swiss Universities. The aim is to improve the reproducibility and impact of research, as well as facilitate the participation of citizens in the scientific progress through Open Data.
  - Exploratory projects regarding infrastructure, platforms and services to support Open Education.
- **Next steps:**
  - Evaluation of data anonymization techniques in education data.
  - Standards for interoperability for data management and publications.
  - Usability study with a prototype of the blueprint
  - Consent forms for education.
  - Distributed storage with blockchain.

J. S. Machado, J. C. Farah*, M. J. Rodríguez-Triana, D. Gillet, in *IEEE ICALT 2019*, Maceió, Brazil, July 2019.

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