WP7: FEDERATED RESEARCH INFRASTRUCTURE FOR A RAPID POLICY RESPONSE

PHIRI, the Population Health Information Research Infrastructure, aims to create, implement and deploy a **federated research infrastructure** that leverages the reuse of real-world data to answer relevant research questions of direct and indirect effects of the COVID-19 pandemic. The PHIRI infrastructure delivered will play a key role in the European Health Data Space (EHDS) as well as in the European Open Science Cloud (EOSC).

This WP will develop on five main objectives:

1. Showing the potential of the infrastructure for a rapid cycle analysis using a **demonstration pilot case**.
2. Testing alternative options for a final implementation of the federated research infrastructure.
3. Developing an advanced version of the federated research infrastructure, including: a) the development of a **common data model** for a COVID-19 rapid response; b) the design and deployment of the required **data extraction, transformation and loading (ETL) processes**; and, c) the implementation of the **distributed analytical solutions**.
4. Implementing solutions for an upgraded version of the federated research infrastructure.
5. Building an **IT developers network** whose aim is building capacity in the nodes composing the federated research infrastructure while assuring continuity.

THE ARCHITECTURE

The PHIRI architecture consists of several **(national) data hubs** and a **central hub**. Data hubs curate and host data (or operate as a gateway to data). The central hub develops and implements the analytical pipeline and provides support to the federated research infrastructure for its implementation ①. No individual data ② is shared across the federation of data hubs. Only scripts, models and aggregated outputs ③ are shared.
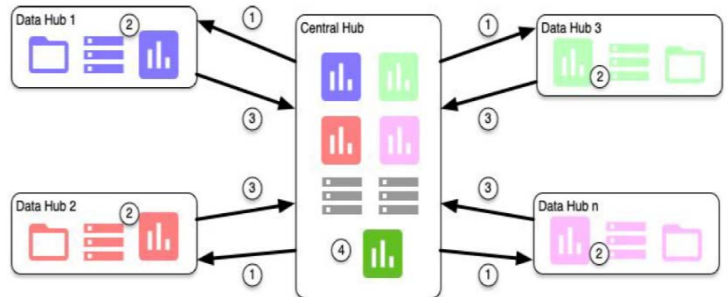
PROTOTYPING THE ORCHESTRATION OF A USE CASE

PHIRI developed a stepwise approach to build the federation, from specifying the research question, building the common data model up to the actual deployment of the analytical pipeline, collecting the output to perform meta-analyses and produce a deliverable.

Research Question → Common Data Model → Synthetic dataset → Quality Analysis (scripts) → Analysis (scripts) → Use Case Deployment → Outputs recollection & synthesis → Use Case Deliverable production

ELEMENTS IN PLACE & NEXT STEPS

PHIRI's 20+ data hubs have provided an overview of their access to the required data and their technical capabilities to achieve semantic interoperability and harmonise data differences across data sources and data hubs in order to build the common data model. The synthetic datasets based on the data requirements are being build. The open-source codes of common data models will be published.

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