Data Interoperability and FAIRification: a key technology in the context of the European Paediatric Translational Research Infrastructure-EPTRI

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Background

EPTRI aims to propose developmental models for a **future research infrastructure** focused on paediatric medicines, integrating technology-driven aspects with clinical trials

The Feasibility phase foresaw Feasibility Stidies aimed to test at different level the acceptability, feasibility and sustainability of future EPTRI

Founds

Funds: Horizon 2020 EU Research and Innovation programme (INFRADEV-1-2017)

Coordinator

Consorzio per Valutazioni Biologiche e Farmacologiche

Start date

1 January 2018

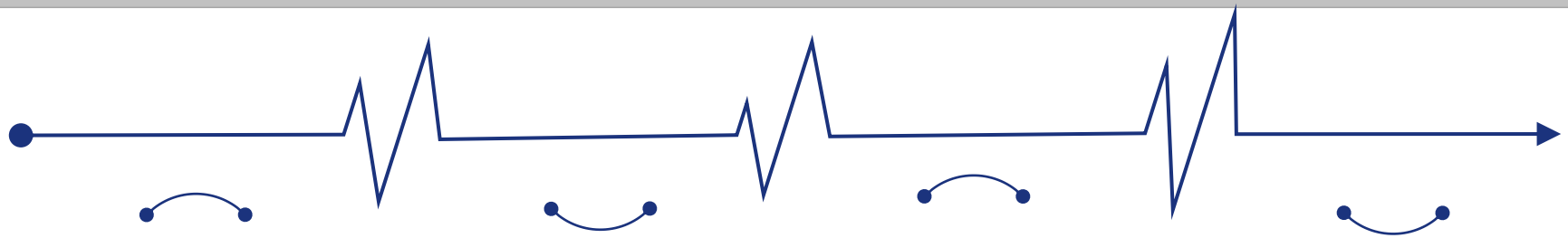
Network

259 research units from 29 EU/non EU countries

Methodology: Feasibility Studies (FSs) Process

Step 1 : FS application and Advisory Board assessment of the proposal

A provisional procedure has been created in order to assess the FSs.
It includes the **setting up of an AB** to evaluate the appropriateness of feasibility studies.



1. The Users send the study proposal (including all the services requested) to the EPTRI Hub Coordinator.

2. The AB chair engages a rapporteur and a co-rapporteur, within the AB members, to be involved in the assessment based on the competencies required

3. AB assessment released:

a. the proposal meets EPTRI mission,

b. the proposal meets EPTRI capacities and resources,

c. the scientific contents are valuable

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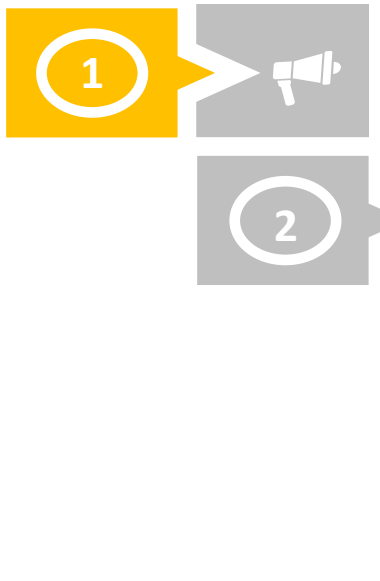
Methodology: Feasibility Studies (FSs) Process

Step 2: FS Report and assessment of the Report

After receiving the **AB assessment of the FSs**, the Coordinator set up an Expert group (anticipating the future Access Management Committee).

Feasibility Study preparation expert group in charge of:



Collect completed information on the study

Check services available in EPTRI

Collect opinion from Thematic Research Platforms

Prepare the FS report

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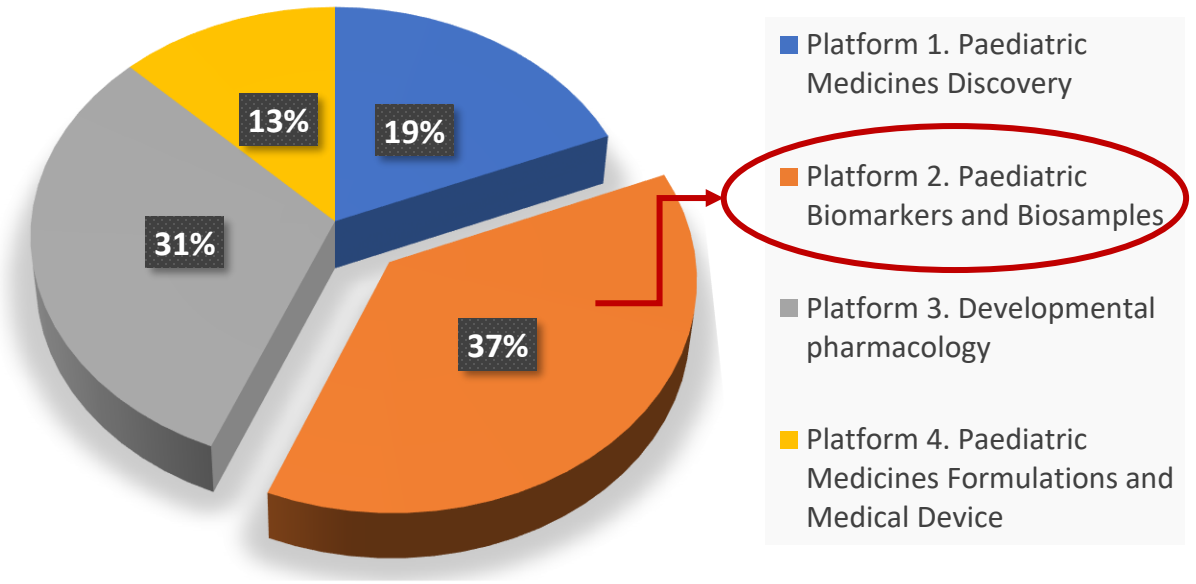
FSs Global Results

10 FS proposals were received from 6 internal and 4 external users

Services required:

- ✓ **Identification and validation of biomarkers**
- ✓ **Omics**
- ✓ **Biobanking**
- ✓ **IT tools and data interoperability**



Six proposals (37%) were included in Paediatric Biomarkers and Biosamples Platform

4/10 proposals were focused on data Interoperability

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Four Case studies

MoSe2

Secondary use of therapeutic drug monitoring data in children with suspected sepsis treated with antibiotics

Precision Personalized Paediatric neuroPsychiatry

Data sharing and integration

Mitochondrial regulation of functional pathways

Bioinformatics analyses and omics data integration

Paediatric beta thalasseamia patients responding to drug Hydroxyurea

Omics data integration to understand how the differentially expressed proteins, metabolites and RNAs interact

For each proposal, a preliminary study phase was concluded with the identification of available clinical/preclinical setting including data to be **shared** and **interoperability model**

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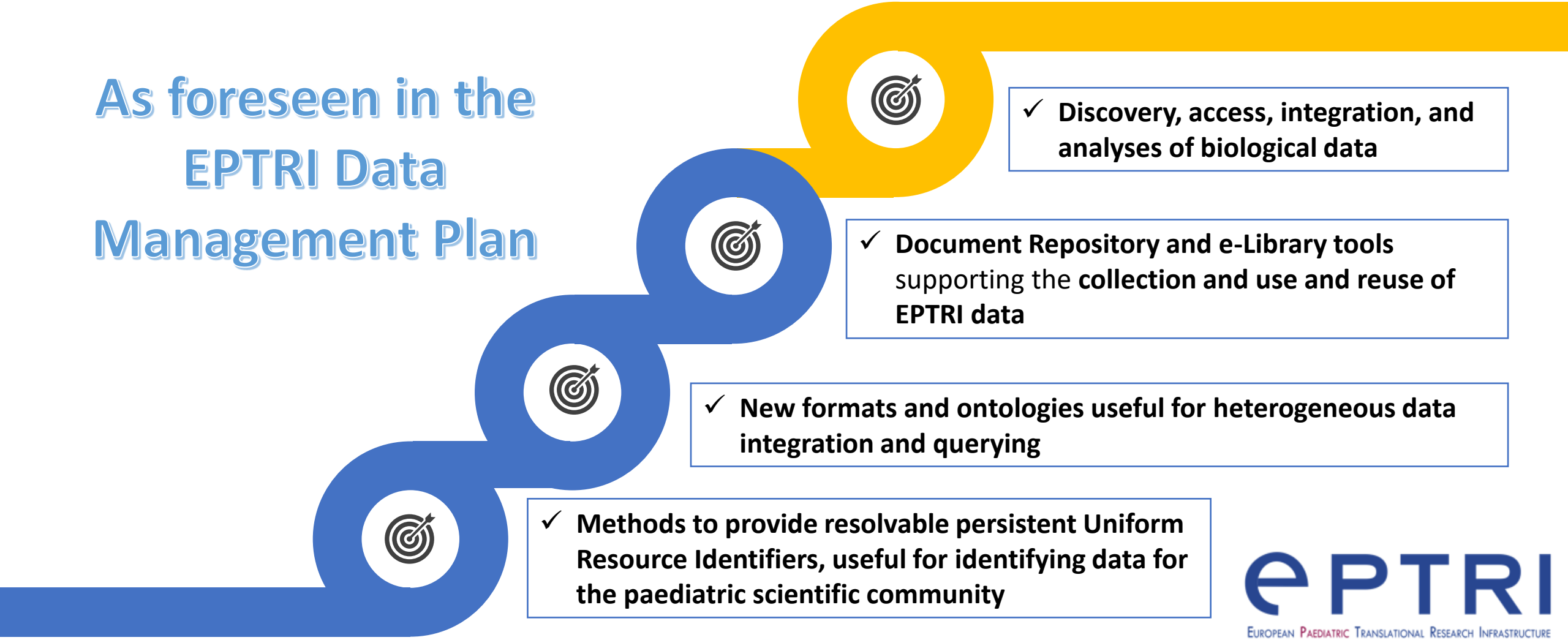
Ongoing steps to make data INTEROPERABLE

As foreseen in the EPTRI Data Management Plan



- ✓ **Discovery, access, integration, and analyses of biological data**
- ✓ **Document Repository and e-Library tools** supporting the **collection and use and reuse of EPTRI data**
- ✓ **New formats and ontologies useful for heterogeneous data integration and querying**
- ✓ **Methods to provide resolvable persistent Uniform Resource Identifiers, useful for identifying data for the paediatric scientific community**

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Paediatric data interoperability service

In collaboration with ELIXIR development of:

- ✓ Standard formats, metadata, ontologies (**FAIR sharing**).
- ✓ New **formats** and **ontologies** dedicated to specific domains.
- ✓ Best practices in database building and interoperable cross-reference (**Identifiers**).
- ✓ Annotation of existing and new resources to make them findable (**Bioschemas**).

FAIRsharing.org
standards, databases, policies

Bioschemas

Beacon

research object.org

COMMON WORKFLOW LANGUAGE

Identifiers.org
Resolution service

elixir bio.tools

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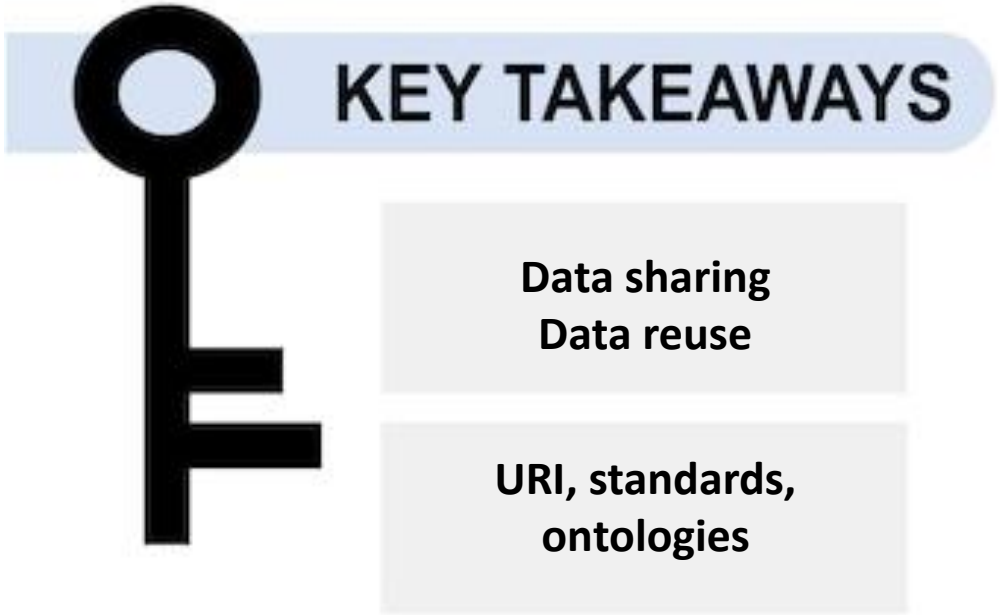
Conclusion

Data interoperability is fundamental to support data **sharing** and **re-use** for research purposes, and the repeated requests demonstrate the need of a **paediatric data interoperability service**. This requirement is included in the proposed collaboration **between EPTRI and ELIXIR**, the distributed infrastructure for life-science information.



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…thanks for your attention

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