DiSSCo

Distributed System of Scientific Collections

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Biodiversity Information Standards Organisation (TDWG)
Chair

Research Data Alliance (RDA) – Technical Advisory Board
Member

Natural Science Collections

Leading Scientific facilities (research infrastructures)

Represent, through a well documented way, over 400 years of the planet's species diversity

Planetary library of genomic and chemical information & Reference material for all world's species

Unparalleled resource for current and future biodiversity discovery


JLG LIFTLUX 153-12

Europe: the global leader

55% of the world's assets with rich historical and global distribution

European Collections:

> **1.5 billion** specimens

> **80%** of world's species

> **5,000** scientists employed

> **16,000** scientific visitors pa

> **10 million** public visitors pa

> **25 million** web visitors pa

DiSSCo

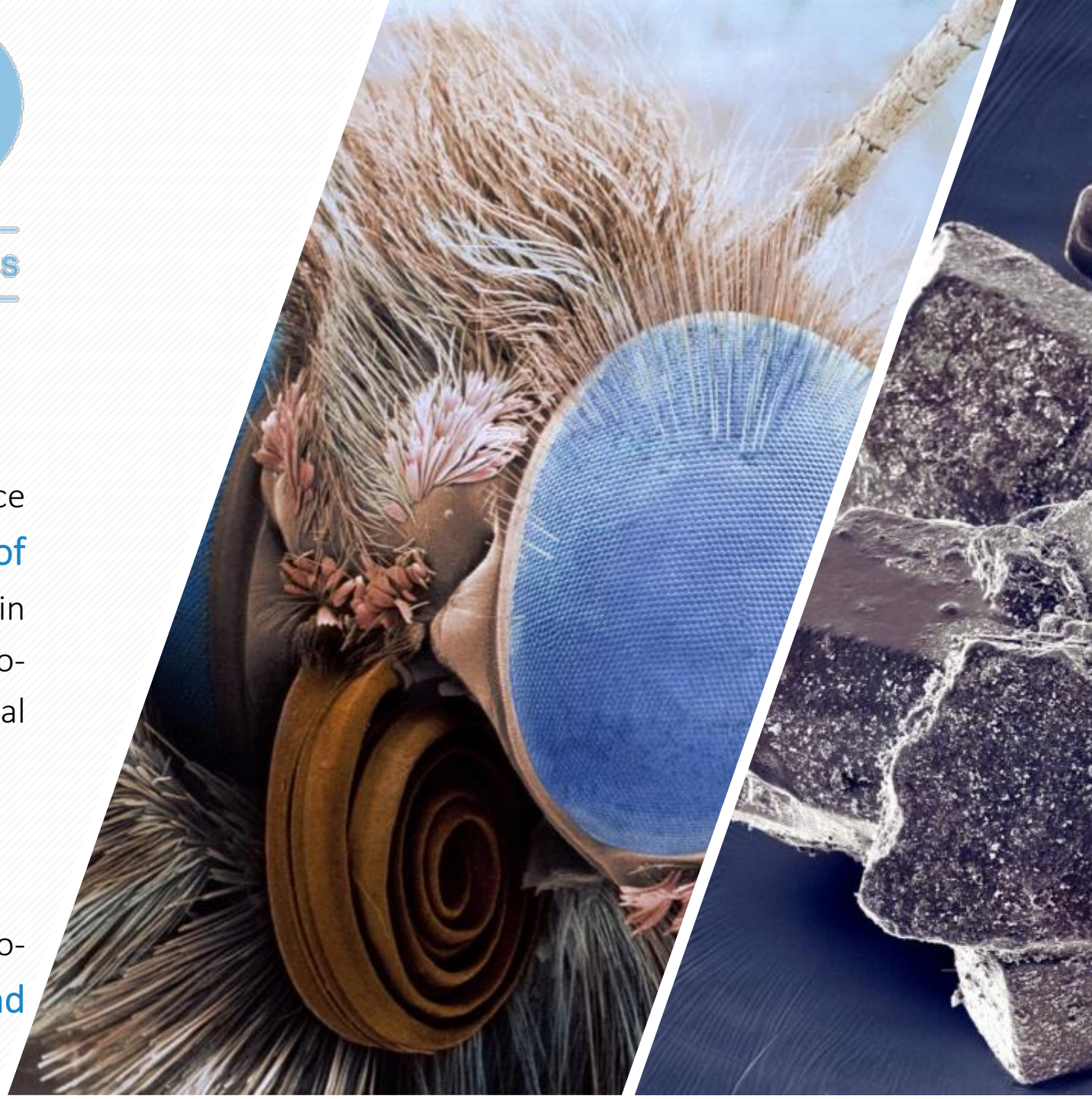
Distributed System of Scientific Collections

Vision

Unlock the full potential of natural science collection-derived information as a pillar of scientific innovation and excellence in climate change, food security, health, bio-economy and other key areas of societal interest.

Mission

Mobilise, unify and deliver bio- and geo-diversity information at the scale, form and precision required

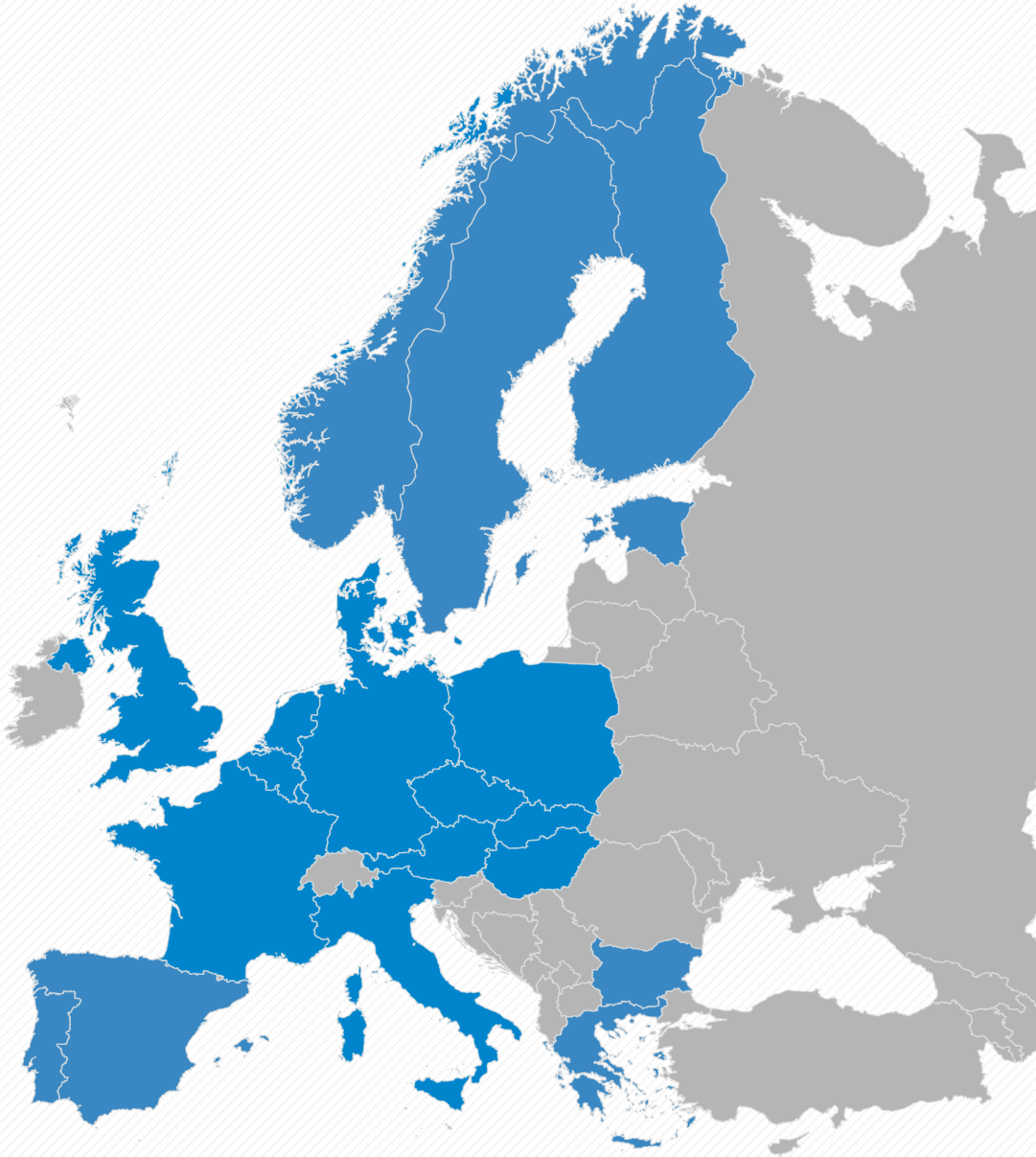


DiSSCo: A new European infrastructure

114 National Facilities

21 Countries

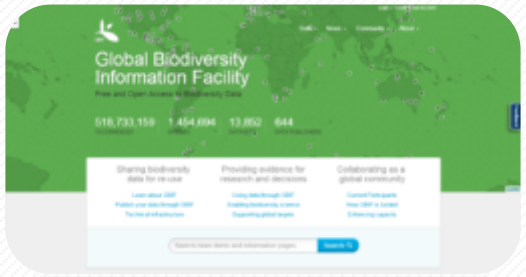
- **Largest ever** formal agreement between natural science collection facilities
- **Centralised governance** model already in place
- **Synchronisation** of facilities at access, data and policy level




Policies
Access
Data
Taxonomic skills
Data skills
Analytical skills
Skills
Data
Labels
Imaging
Traits
Molecular data
Chemical data

Collections-related Data classes

GBIF

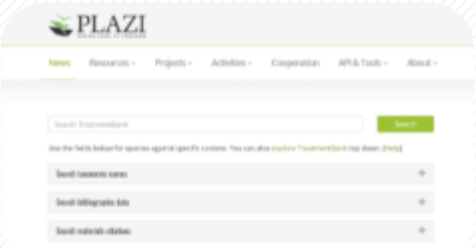


Catalogue of LIfe

GloBI

Genbank

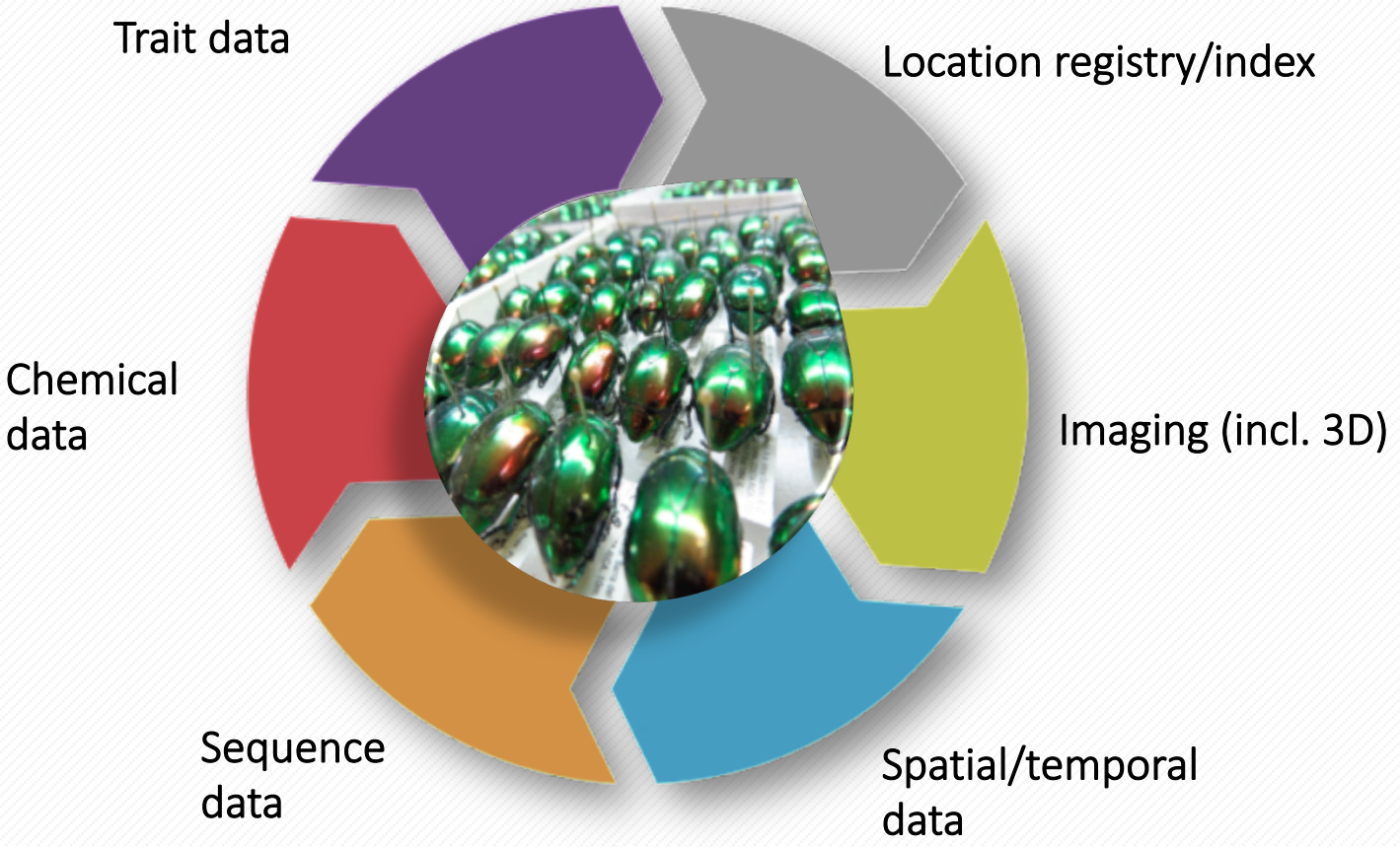
Plazi – TreatmentBank



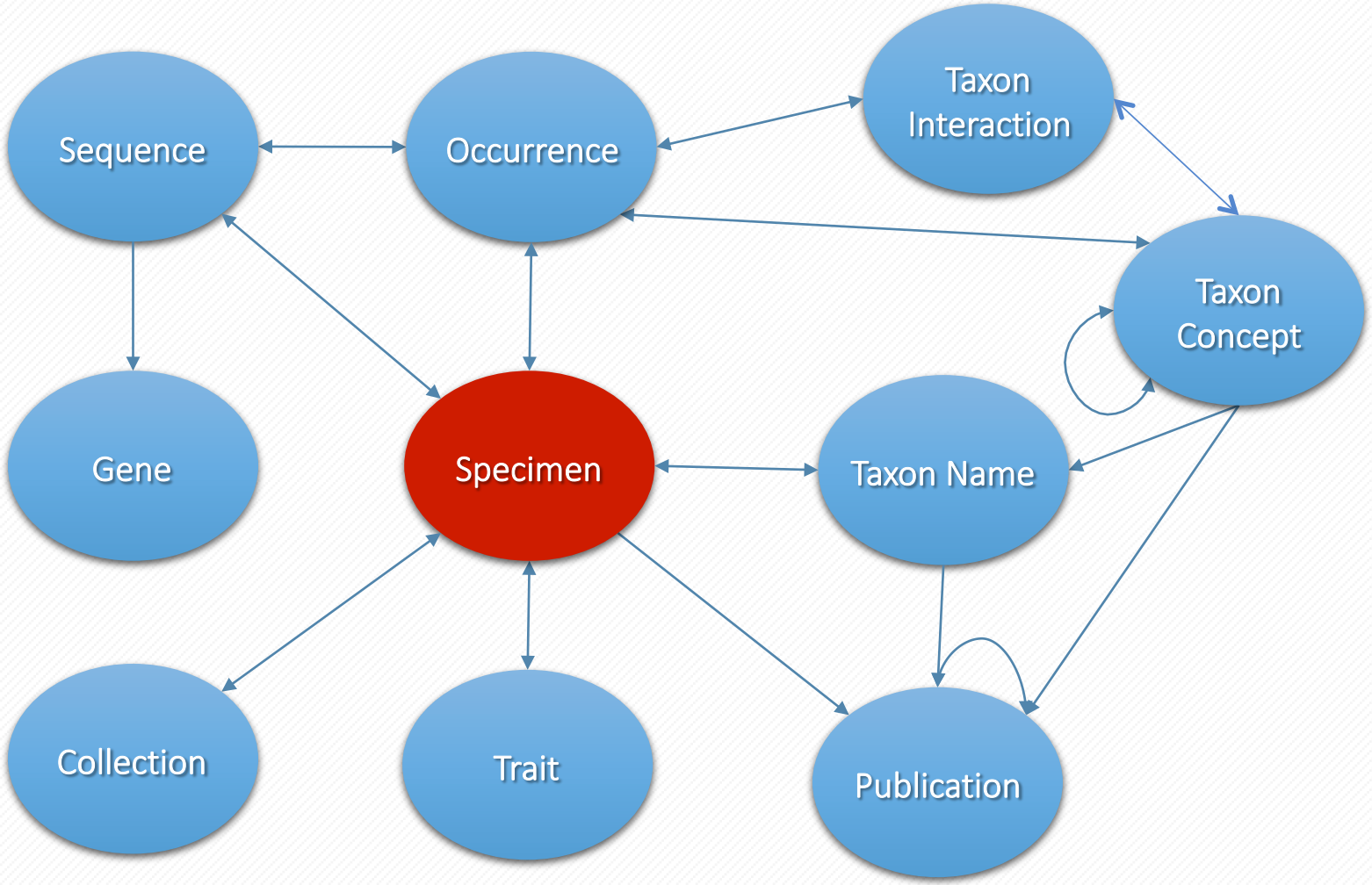
EoL - TraitBank

IPNI / Zoobank

Linking the linkable



All data classes **unambiguously linked** to the **physical objects** they derive from



DiSSCo science services

1 e-Science services

A one-stop shop for services providing unified discovery, access, interpretation and analysis of complex linked data

2 Physical and remote access services

A universal harmonised physical access service and digitisation on demand service

3 Support & Training services

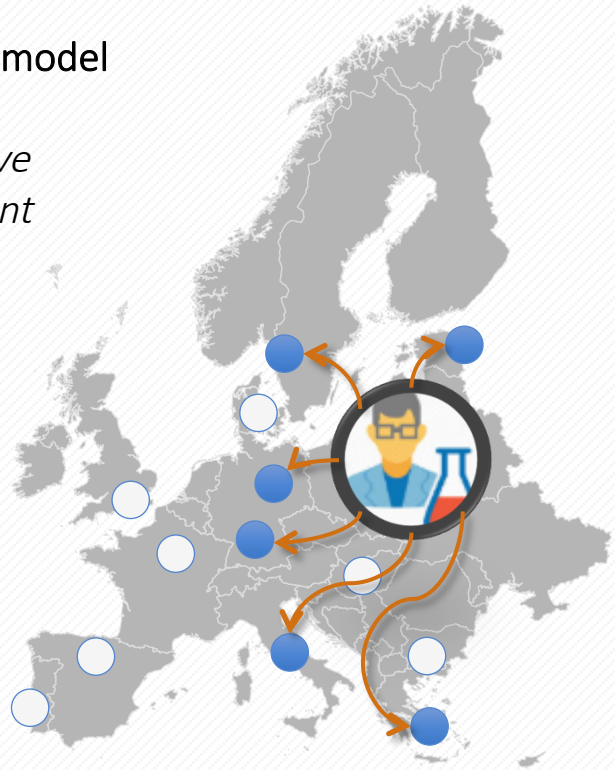
Integrated user support desk and implementation of multi-modal training programmes to enhance data skills

A new **business model** for Institutions

16,000 researchers *travel every year to physically access scientific collections and* ***800k objects*** *are packed and shipped (at an annual public cost of more than €70M)*

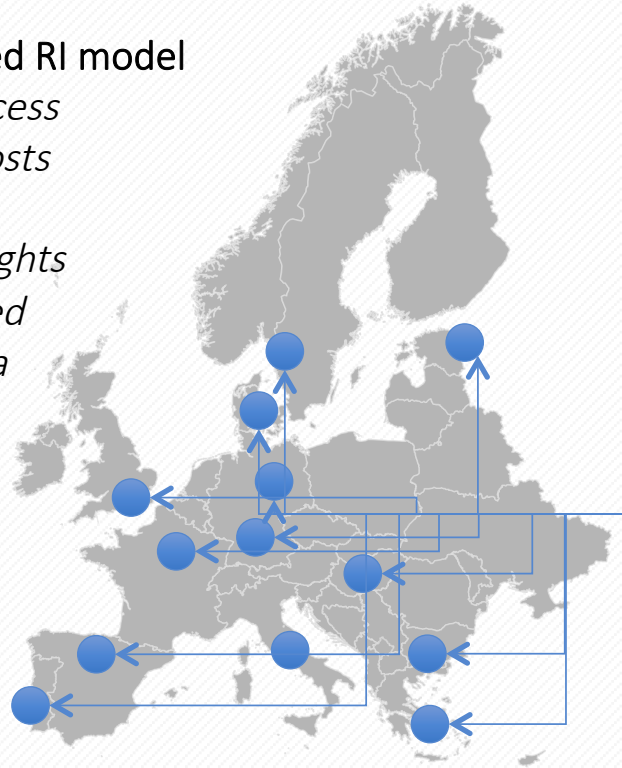
Current model

Slow
Expensive
Inefficient
limited



Integrated RI model

Wide access
Lower costs
Faster
New insights
Optimised
FAIR data



User services

DiSSCo
Distributed System of Scientific Collections

ESFRI

RIs

- DiSSCo provides a one stop shop for users, wth a relevant service portfolio with unified access
- DiSSCo Supports international collaborative data lifecycles and FAIR principles

Added value of DiSSCo in 7 points

Without DiSSCo	With DiSSCo
Disconnected information sources	**Linked and open information** with semantic annotation
Slow and fragmented access	**Coordinated physical and virtual access** through a single entry point
Bio- and geo-diversity data invisible to other RIs	**Cross-disciplinarity** facilitated through RI systems interoperability
Provenance and quality difficult to ensure	**Provenance and quality assurance** embedded in services/processes
Big data science questions unresolvable	Bio- and geo-diversity **data brought to the big data pool**
Institutional based digitisation activities	**Coordinated digitisation** programmes: One EU collection
Disconnected efforts	**Coordinated investments** - Economies of Scale

Case study – Invasive Alien Species

UN Sustainable Development Goals (Target 15.8)

EXAMPLE: Alligator Weed
(Alternanthera philoxeroides)
Negative impact on native species, ecosystem services and infrastructure

Economic costs of IAS for EU

€20 Billion / year

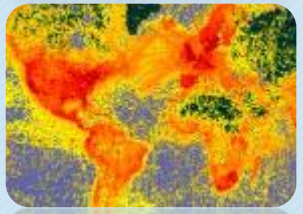
Kettunen et al. 2009

DiSCO
Distributed System of Scientific Collections

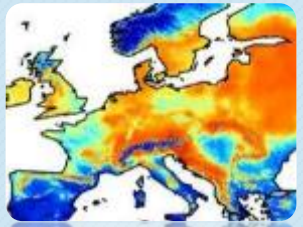
Urgent challenge

Institutional **collections**

Species **distribution & genomics**



Modelling / Prevention / Early detection



Facilities & information

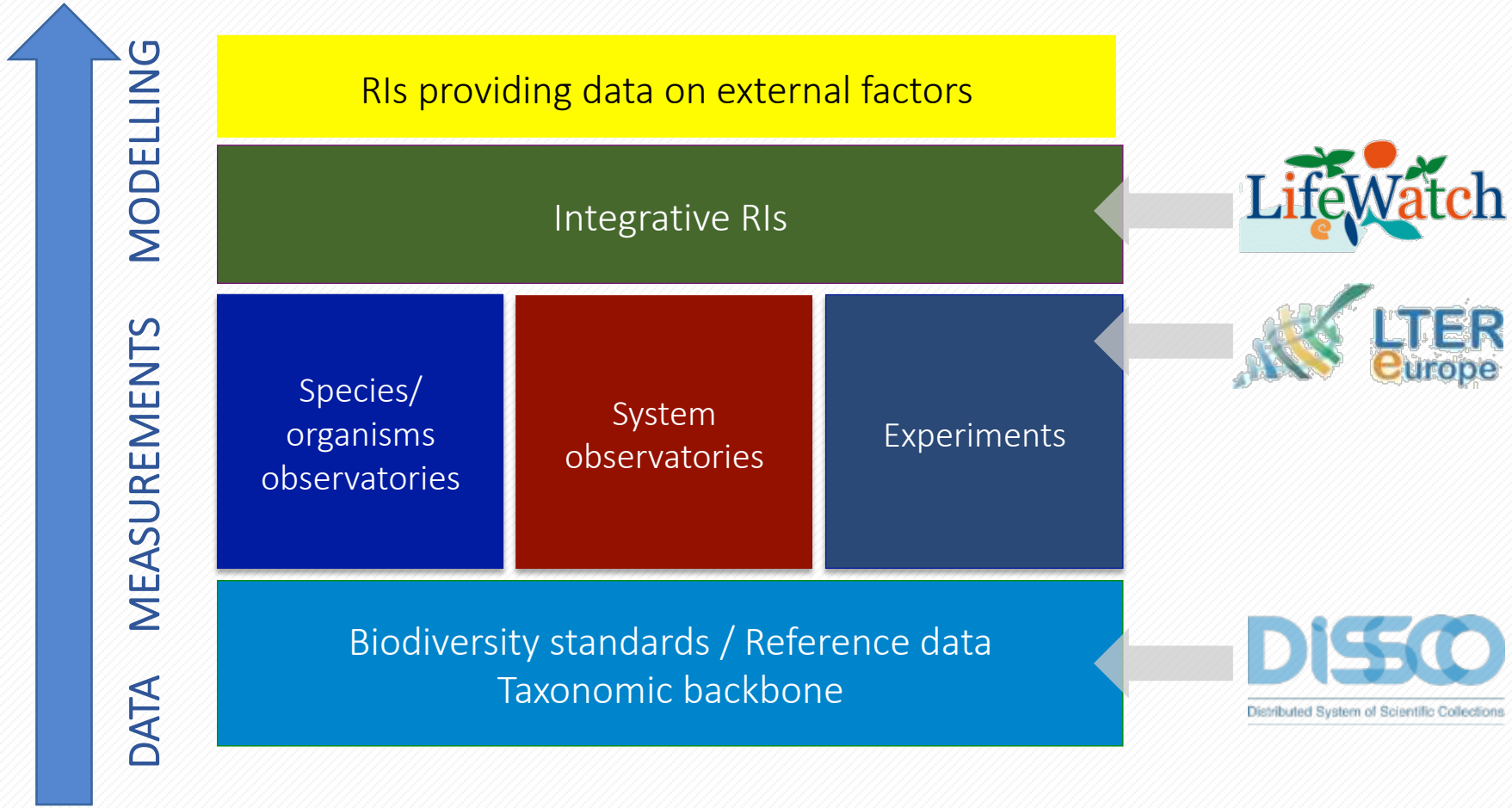
Linked Data

Analysis / Interpretation Services

- *Climate data*
- *Ecological monitoring data*
- *Genomic information*

Other Research Infrastructures

DiSSCo fills an identified gap in the RI landscape



Financial Resourcing: Sources of support

European Investment Bank The EU bank

European Level	Additional funding / financing through FPs and European Investment Bank
National Level	Industrial scale digitisation funded through national digitisation programmes and supported by national data infrastructure
Institutional Level	Curation, collection management and expertise for data enrichment, on-demand digitisation

Financial Resourcing: Aligned Projects

SAP
Strategic Alignment of Projects

ICEDIG
€3M | 2018-2020

CoL+
€0.8M | 2017 - 2020

DiSSCo Design Study
€10M | 2014 - 2017

SYNTHESYS+
€12M | 2019 - 2021

DiSSCo Deploy
€2M | 2024 - 2025

MOBILISE
€0.5M | 2018 - 2022

DiSSCo Construct
€53M | 2021 - 2024

DiSSCo Prepare
€20M | 2019 - 2023

Optimising Collaborations

Global level

GBIF Global Biodiversity Information Facility

Catalogue of Life

BHL

PLAZI

European level

DiSSCo Distributed System of Scientific Collections

LifeWatch

Close collaboration / Clustering

National level

GBIF EU nodes

DiSSCo NTFs (nodes)

Lifewatch nodes

National-level coordination / Unified funding streams

Institutional level

Museums

Universities

Research centres

A mature and urgently needed initiative

- Europe has the opportunity for scientific leadership at a global level
- Direct response to identified needs in the European and international RI landscape
- Lowers the barrier for big, open science practices across tens of thousands of users
- A super-mature community with 114 self-sustainable facilities (nodes) across 21 countries
- Agreed transfer of authority to a central Hub – governance agreed for all phases

A key missing Research Infrastructure for national and global sustainable development goals

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www.dissco.eu