# Coordination Centre

## Data Analysis and Real World Interrogation Network (DARWIN EU®):

## A paradigm shift for the use of real-world health data for regulatory purpose in the EU

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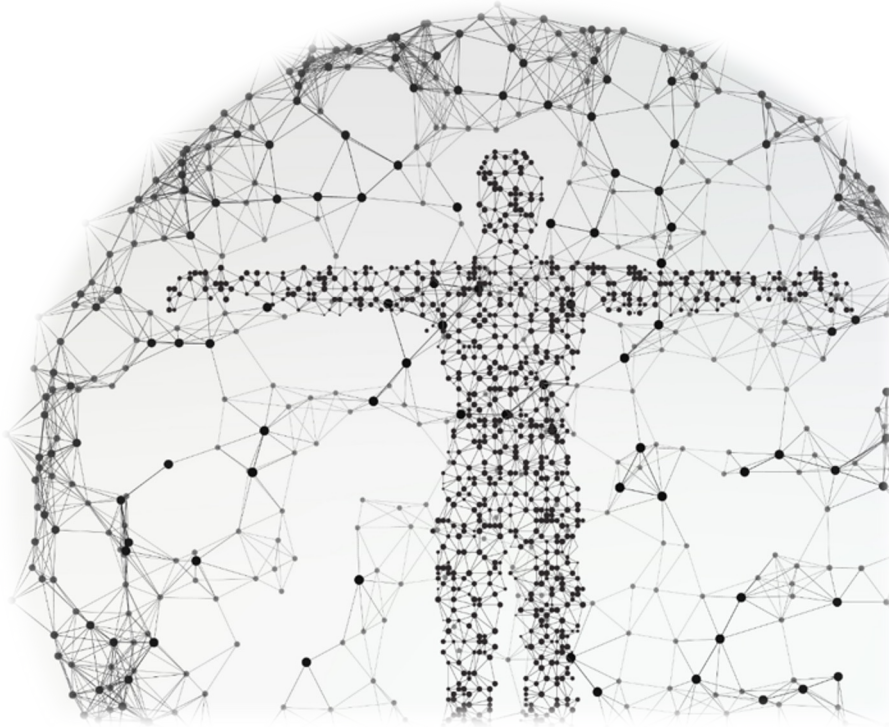
OHDSI Symposium 2022-10-14



# Disclosure

This presentation represents the views of the DARWIN EU® Coordination Centre only and cannot be interpreted as reflecting those of the European Medicines Agency or the European Medicines Regulatory Network.

DARWIN EU

EUROPEAN MEDICINES AGENCY

By 2025 the use of Real-World Evidence will have been enabled and the value will have been established across the spectrum of regulatory use cases

- European Medicines Regulatory Network (EMRN) strategy to 2025 -

# Emer Cooke

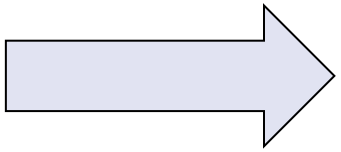
Executive Director EMA,

Co-chair of the DARWIN EU advisory board

# Problem definition

The European Union (EU) has a rich and diverse healthcare data landscape. However, this diversity brings challenges in terms of a common data structure, terminology, and governance.

There is limit access to data, and the processes for accessing and analysing data for regulatory purposes are slow and complex.



Data Analysis and Real World Interrogation Network (DARWIN EU®)

# DARWIN EU® Vision

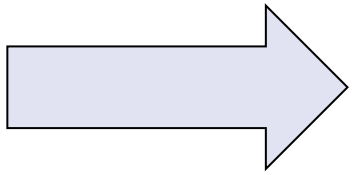
To establish and maintain a framework supporting better decisionmaking throughout the lifecycle of medicinal products with timely, valid and reliable evidence from real world healthcare.

Objectives:

1) To establish and maintain a  continually enlarging network of accessible observational data sources
2) To execute all steps of high quality non-interventional studies with the network
3) To make the study results available to the EU Regulatory network to support decision-making

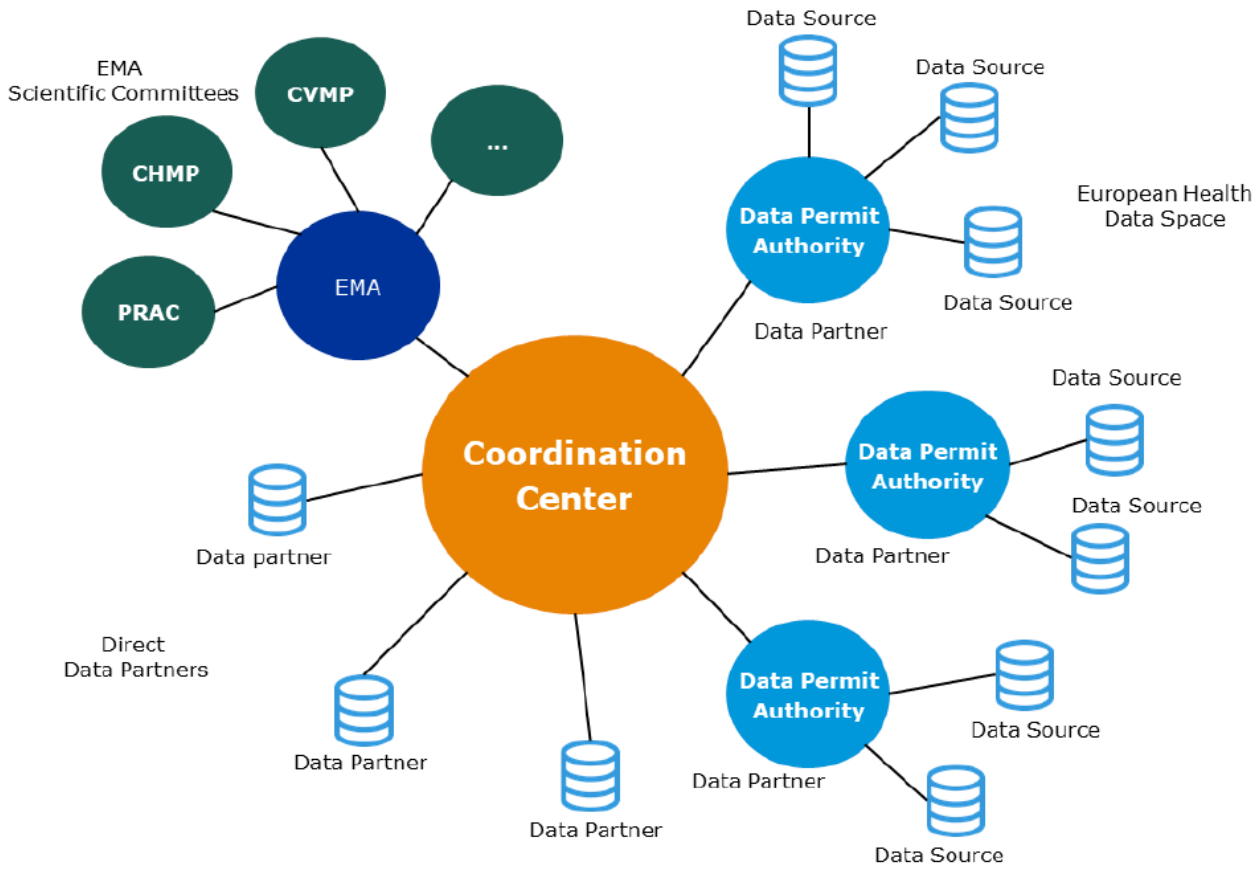
# DARWIN EU® Implementing a paradigm shift

- A highly needed paradigm shift for the fast delivery of reliable evidence for regulatory decision-making on the utilisation, safety and effectiveness of medicinal products throughout their lifecycle
- A long-term investment needed to significantly scale up the number of studies on more databases and improve public health.



Not possible by simply scaling up the traditional approaches.

DARWIN EU® is a federated **network** of **data**, **expertise** and **services** that supports better decision-making throughout the product lifecycle by generating reliable **evidence from real world healthcare data**




**FEDERATED NETWORK PRINCIPLES**

- Data stays **local**
- **Use of Common Data Model** to perform studies in a timely manner and increase consistency of results

# Setting up the DARWIN EU® Coordination Centre

# DARWIN EU® Coordination Centre

Executive Director
Prof. Peter Rijnbeek
Head of the Department of Medical Informatics
Erasmus MC

*Deputy Director*
*Prof. Daniel Prieto Alhambra*
*Erasmus MC, Oxford University*

*Deputy Director*
*Associate Prof. Katia Verhamme*
*Erasmus MC*

**Contractor**

Erasmus MC
Universitair Medisch Centrum Rotterdam

**Sub-contractors**

University of Oxford

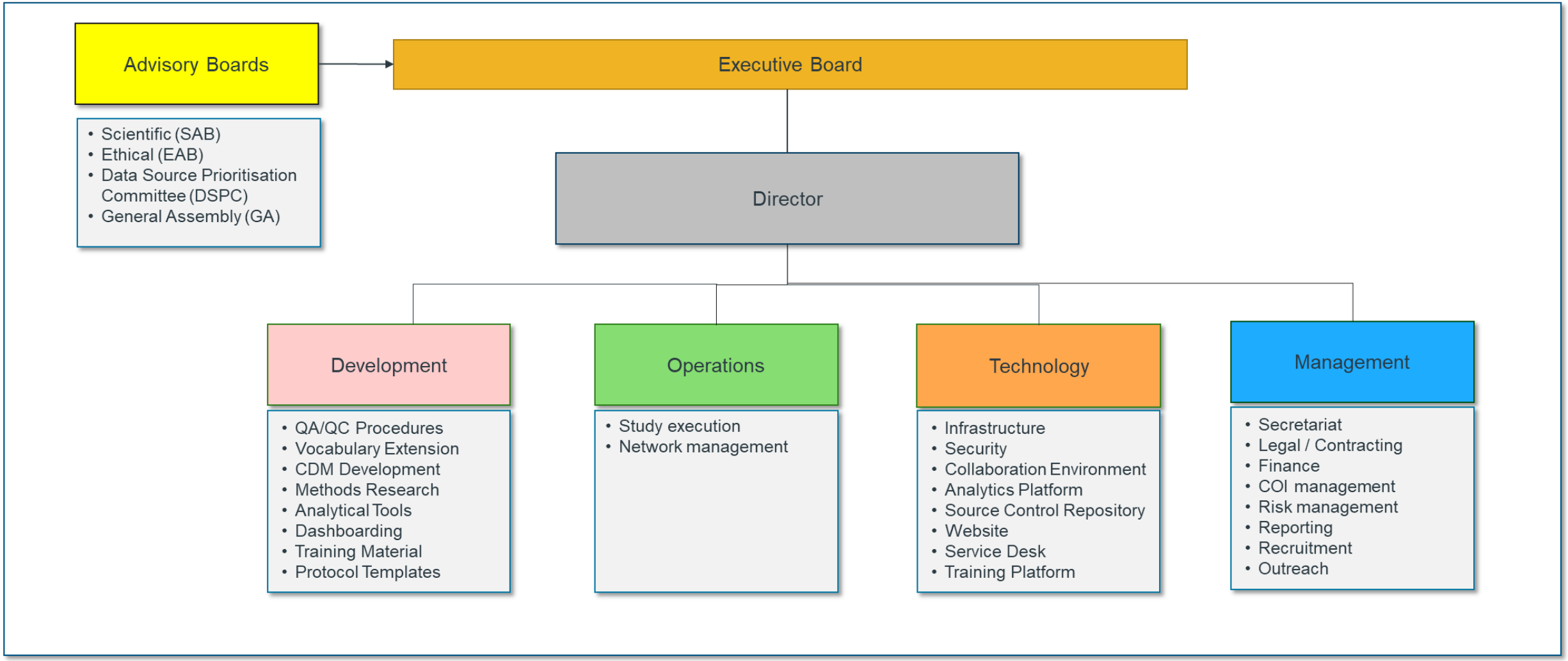
SYNAPSE
RESEARCH MANAGEMENT PARTNERS

IQVIA

The Hyve

ODYSSEUS
DATA SERVICES INC

# Establishment and Evolution of the Coordination Centre



# EMA’s Role

EMA will be a principal user of DARWIN EU, by requesting studies to support its **scientific evaluations** and regulatory decision-making.

EMA will also play a central role in developing, launching and maintaining DARWIN EU, by:

- providing strategic direction and setting standards;
- overseeing the coordination centre and monitoring its performance;
- ensuring close links to European Commission policy initiatives, particularly the EDHS, and delivering pilots;
- reporting to EMA's Management Board, the HMA and European Commission.

A service provider will act as the **DARWIN EU Coordination Centre** and be responsible for setting up the network and managing its day-to-day operations.

# Which data sources will DARWIN EU® use?

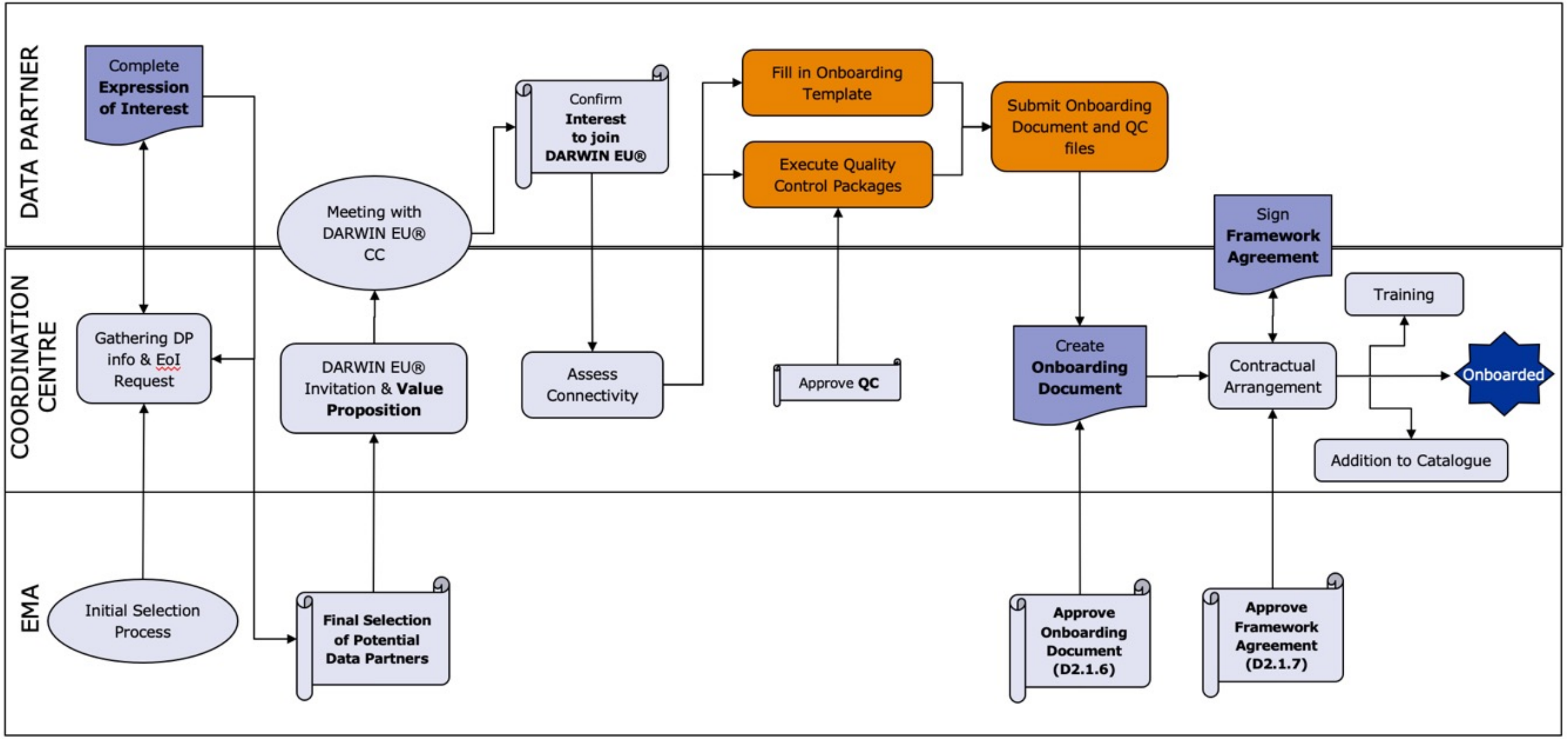
Data sources will be onboarded over time taking into account the following criteria:

- Data sources collecting health data routinely and representative of the different types of real-world data in terms of data elements, setting (primary & secondary care), population, origin (e.g. electronic health care records, claims)
- Data sources which collectively provide a broad geographical cover
- Data sources containing patient-level data with a unique patient identifier linking all records relating to a given patient
- Medicines prescribed or dispensed identifiable with quantities (e.g. doses, package size) and dates allowing to calculate cumulative doses and duration of use and linked to individual but unidentifiable patients
- Clinical events formally coded, with accurate dates and linked to individual but unidentifiable patients
- Data already converted or planned to be converted into the common data model

# Establishment of Data Network

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Data Partners On-Boarded | up to 10 additional | up to 10 additional | up to 10 additional | up to 10 additional | . |
| Data Partners Connected & to be Maintained | | Up to 10 following the ones already on-boarded in Year 1 | Up to 20 following the ones already on-boarded in Years 1 and 2 | Up to 40 following the ones already on-boarded in Years 1, 2 and 3 (i.e 30), plus 10 estimated to be on-boarded the same year | 40 following the ones already on-boarded in Years 1, 2, 3 and 4. |

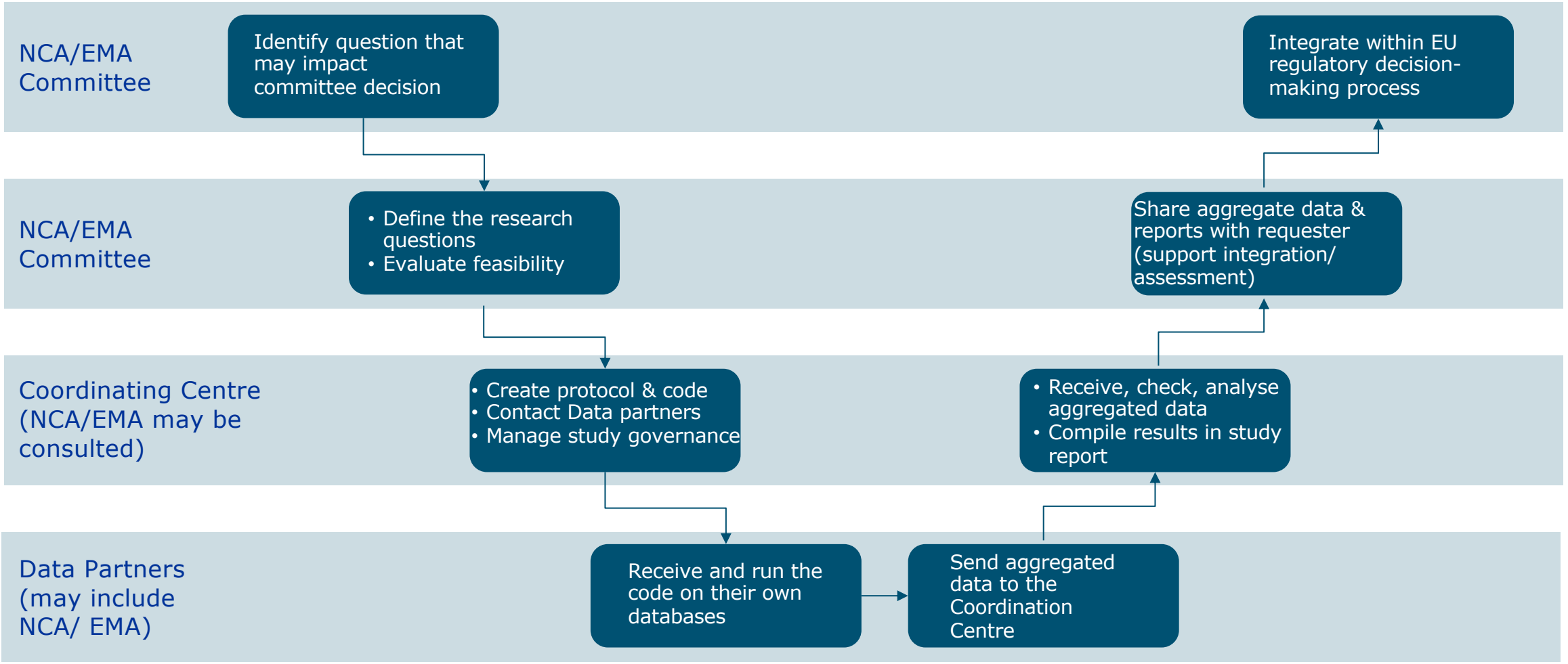
# Onboarding Process for already converted Data Source



# What analyses and studies will DARWIN EU® deliver?

| Category of observational analyses and studies | Description |
|---|---|
| **Off-the-shelf studies** | Studies for which a generic protocol is adapted to a research question |
| **Complex Studies** | Studies requiring development or customisation of specific study designs, protocols, phenotypes, or Statistical Analysis Plans (SAPs) |
| **Routine repeated analyses** | Routine analyses based on Off-The-Shelf or Complex Studies (see above), repeated periodically with a pre-specified regularity (e.g. yearly) |
| **Very Complex Studies** | Studies which cannot rely only on electronic health care databases, or which would require complex and/or novel methodological work |

# What is the DARWIN EU® process for conducting studies?



# Budget and expected number of studies

PHASE I Establishment – 1st year → PHASE II Establishment – 2nd year → PHASE III Operation – 1st year → Operation 2nd year → Operation 3rd year

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| Phases/Options | Phase I | Phase II | Phase III | Option 1 | Option2 |
| **Estimated budget (in million EURO)** | **4M** | **8M** | **8M** | **16M** | **16M** |
| Routine repeated Analysis | At least 1 study | At least 6 studies | At least 30 studies | At least 60 studies | At least 60 studies |
| Off-the-shelf Study | At least 2 studies | At least 6 studies | At least 30 studies | At least 60 studies | At least 60 studies |
| Complex Study | 1 | 4 | At least 12 studies | At least 24 studies | At least 24 studies |
| Very complex Study | 0 | 0 | 0 | At least 1 study | At least 1 study |

# Standardising the analytics

- A catalogue of open source standardised analytics is needed to support ”all” regulatory decision-making on the utilisation, safety and effectiveness of medicinal products

Will require alignment on the priority and choice of the analytical methods, and the standardised output!

# Draft Catalogue of Standard Analyses:
## Off-the-shelf studies and examples

| Standard Analysis | Regulatory example |
|---|---|
| Population-level disease epidemiology | • Prevalence of rare disease/s<br>• Background rates of AESI or DMEs |
| Patient-level disease epidemiology | • Natural history/prognosis<br>• Current practice/treatment patterns |
| Population-level DUS | • Incidence and prevalence of use of medicine/s over time |
| Patient-level DUS | • Describing indication/s for drug/s<br>• Treatment duration, cumulative use |

# Draft Catalogue of Standard Analyses:
## Complex studies and examples

| Standard Analysis | Regulatory example |
|---|---|
| RMM Effectiveness | • Incidence of drug/s use before and after a regulatory action<br>• Medicine/s user/s profile after new indication or contraindication |
| New user, active comparator, cohort studies | • Post-authorisation safety study<br>• Comparative effectiveness |
| Self-controlled case series | • Vaccine safety surveillance |

# PROGRESS TO DATE AND NEXT STEPS

## DEVELOPMENT

- New pipeline for population-level disease epidemiology
- Process for DP onboarding and quality control
- Other tools in pipeline e.g. DUS

## OPERATIONS

- Year 1 (n=10) DPs shortlisted and going through the onboarding process
- 3 studies requested and ongoing

## TECHNOLOGY

- Digital Research Environment
- Project Management tools
- Website being finalised
- Service Desk, etc..

## MANAGEMENT

- Very large number of deliverables submitted and approved
- Progress to Phase 2

# More Information

[Data Analysis and Real World Interrogation Network (DARWIN EU) | European Medicines Agency (europa.eu)]

Coordination Centre website – coming soon in 2022!

- For questions to the Coordination Centre, please contact: enquiries@darwin-eu.org

For regular updates on DARWIN EU® Subscribe to the Big Data Highlights newsletter by sending an email to: bigdata@ema.europa.eu