



EHDEN

EUROPEAN HEALTH DATA & EVIDENCE NETWORK

Enabling Large-Scale Analysis of Electronic Health Records in Europe by standardizing to a Common Data Model

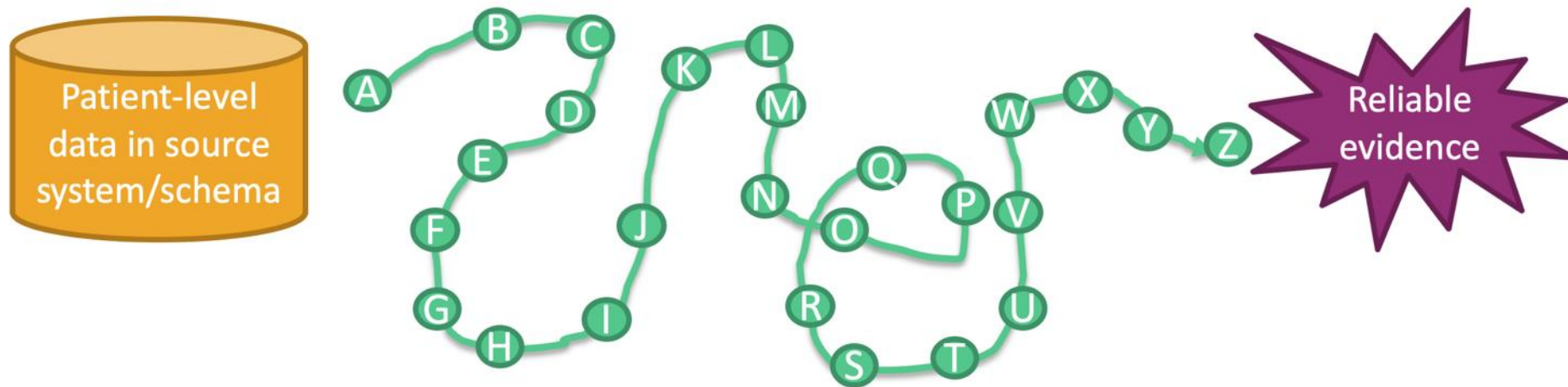
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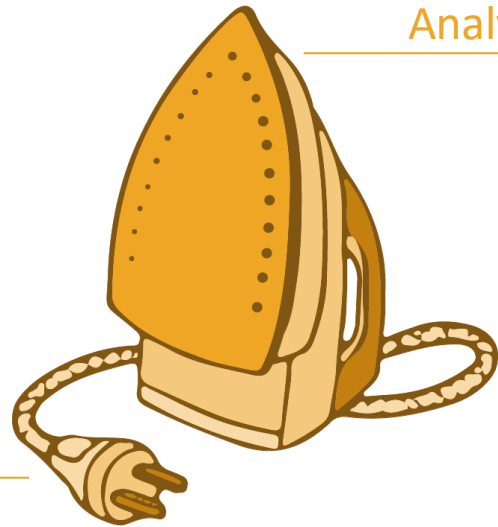
GENERATING RELIABLE EVIDENCE AT SCALE



How can we generate reliable evidence at a large scale, i.e. on many data sources in Europe for many research questions?



NEED TO IMPROVE INTEROPERABILITY OF HEALTH DATA



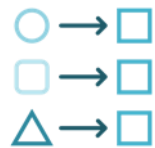
Analytical method

Link to data

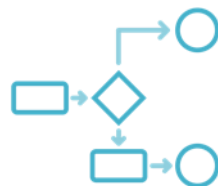
The data...



What will it require?



Data interoperability



Standardised analytics



Data network



Strong community



EHDEN: VISION AND MISSION



Vision

The European Health Data & Evidence Network (EHDEN) aspires to be the trusted observational research ecosystem to enable better health decisions, outcomes and care

Mission

Our mission is to provide a new paradigm for the discovery and analysis of health data in Europe, by building a large-scale, federated network of data sources standardised to a common data model



EHDEN CONSORTIUM

Innovative Medicines Initiative Project



Start date: 1 Nov 2018
End date: 30 Apr 2024
Duration: 66 months



22 partners



Almost €29 million

Universities, public bodies and research organisations



Academic coordinator



Small to medium-sized companies



ODYSSEUS DATA SERVICES INC

Non-for-profit organisations



EFPIA & Associated partners

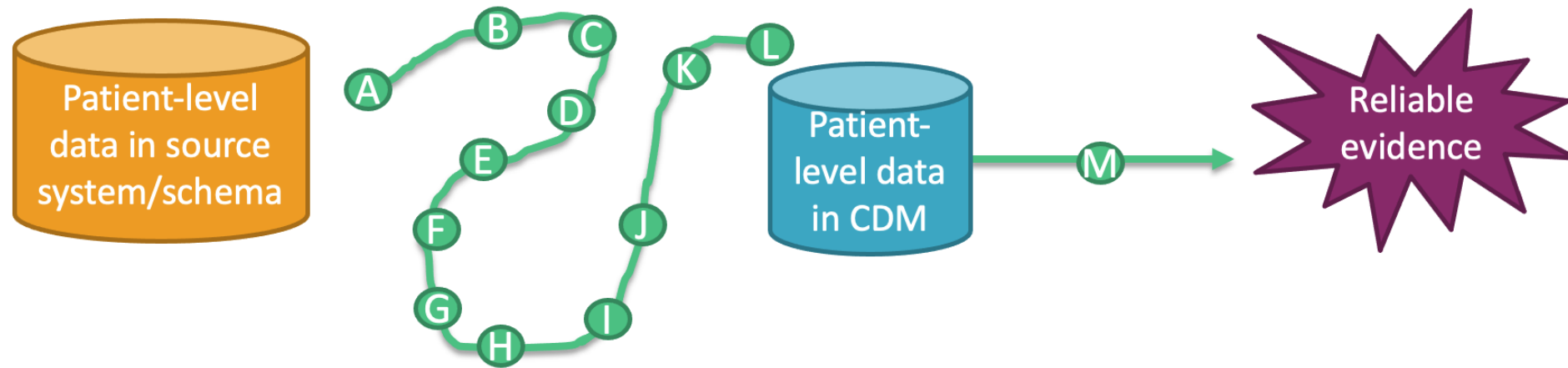


EFPIA Lead





GENERATING RELIABLE EVIDENCE USING THE OMOP CDM



The OMOP Common Data Model enables standardised analytics to generate reliable evidence



www.ohdsi.org



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DESIRED ATTRIBUTES FOR RELIABLE EVIDENCE



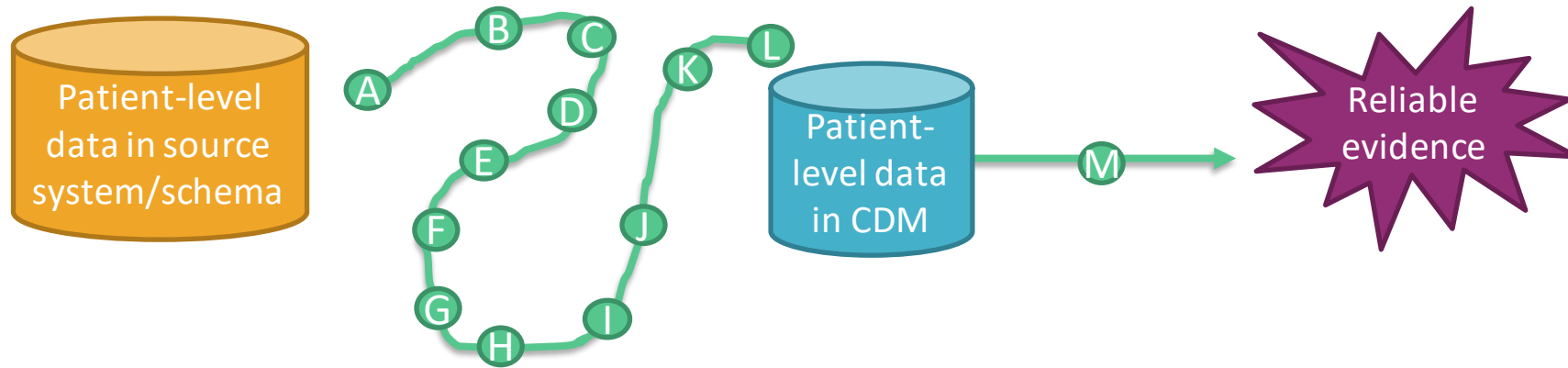
Desired attribute	Question	Researcher	Data	Analysis	Result
Repeatable	Identical	Identical	Identical	Identical	= Identical
Reproducible	Identical	Different	Identical	Identical	= Identical
Replicable	Identical	Same or different	Similar	Identical	= Similar
Generalizable	Identical	Same or different	Different	Identical	= Similar
Robust	Identical	Same or different	Same or different	Different	= Similar



HOW A CDM + COMMON ANALYTICS CAN SUPPORT REPRODUCIBILITY



Desired attribute	Question	Researcher	Data	Analysis	Result
Reproducible	Identical	Different	Identical	Identical	Identical



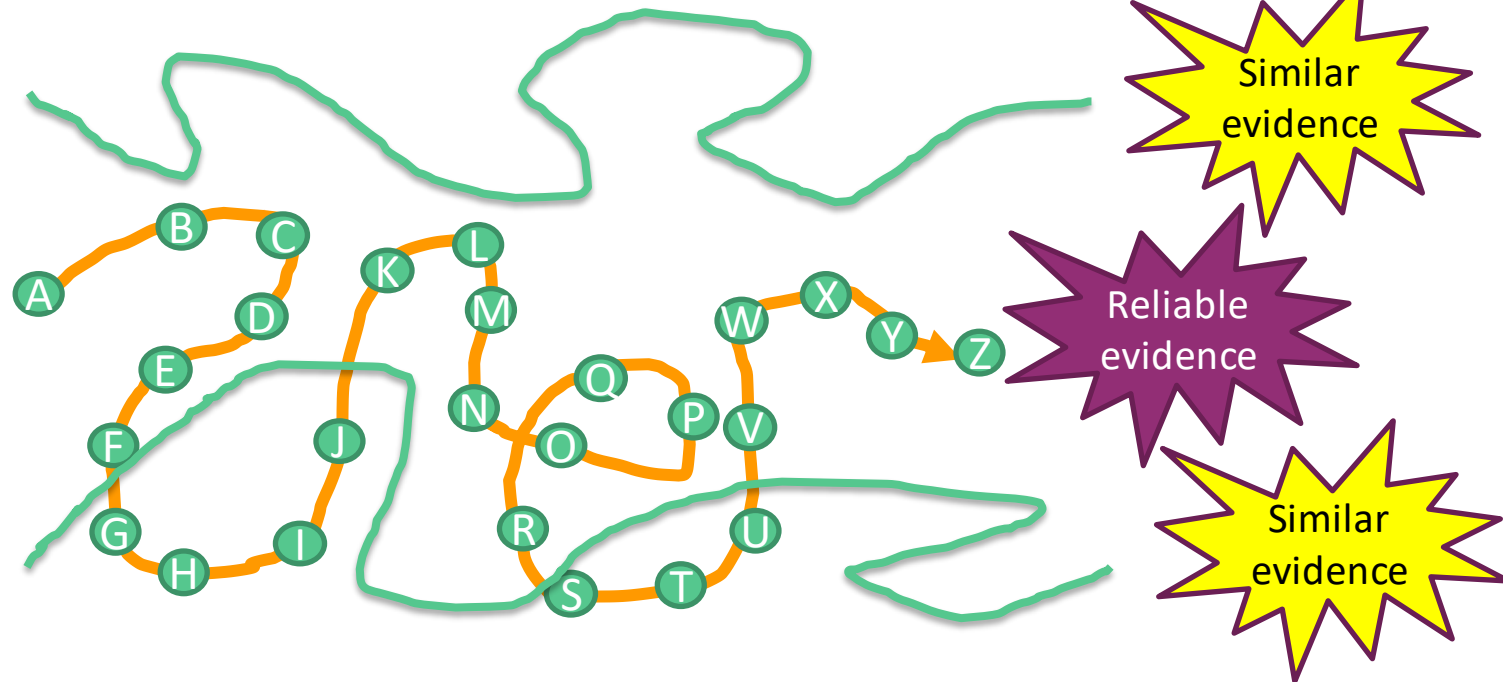
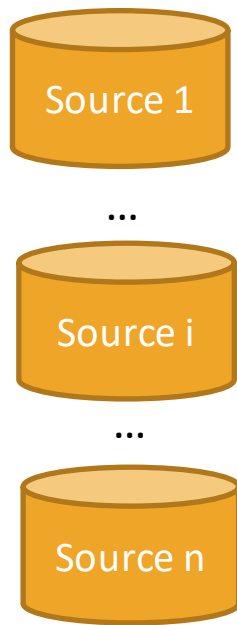
- Use of common data model splits the journey into two segments: 1) data standardization, 2) analysis execution
- ETL specification and source code can be developed and evaluated separately from analysis design
- CDM creates opportunity for re-use of data step and analysis step



CHALLENGES TO ACHIEVE REPLICATION



Desired attribute	Question	Researcher	Data	Analysis	Result
Replicable	Identical	Same or different	Similar	Identical	= Similar



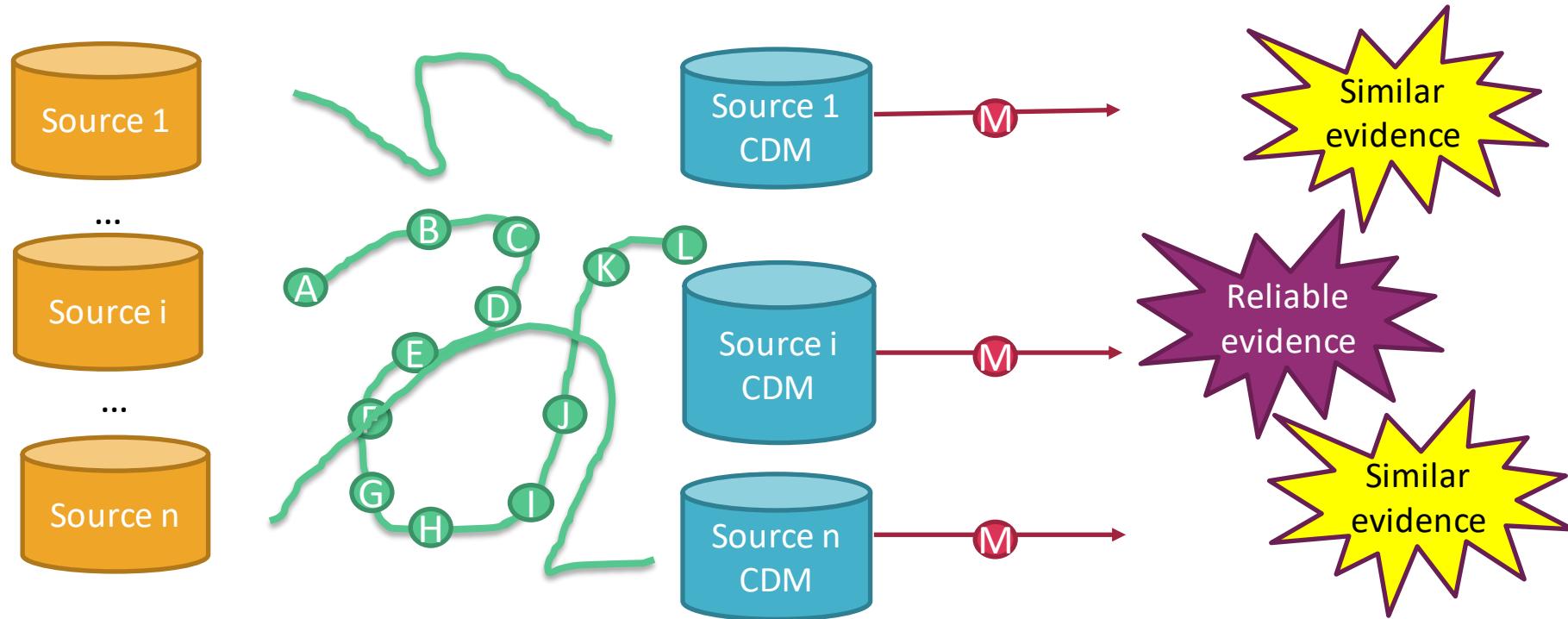
- If analysis procedure is not identical across sources, how do you determine if any differences observed are due to data vs. analysis?



HOW A COMMON DATA MODEL + COMMON ANALYTICS CAN SUPPORT REPLICATION



Desired attribute	Question	Researcher	Data	Analysis	Result
Replicable	Identical	Same or different	Similar	Identical	Similar

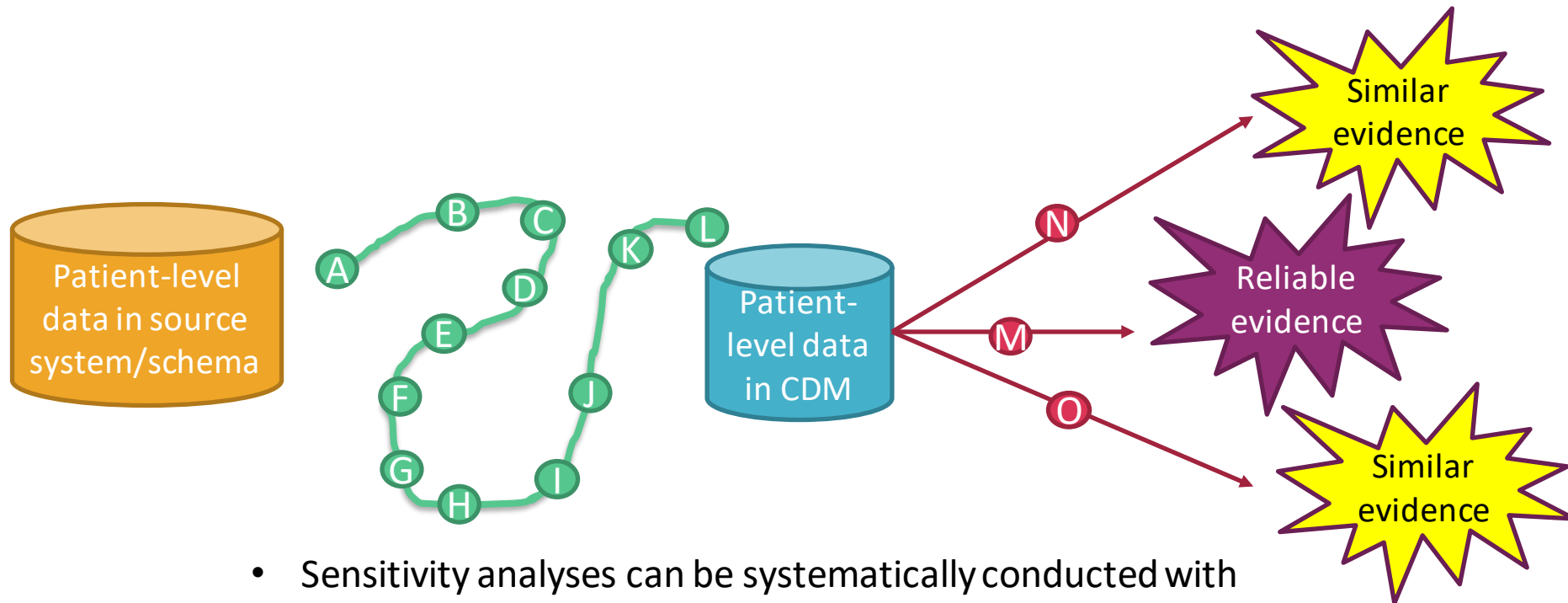




HOW A COMMON DATA MODEL + COMMON ANALYTICS CAN SUPPORT ROBUSTNESS



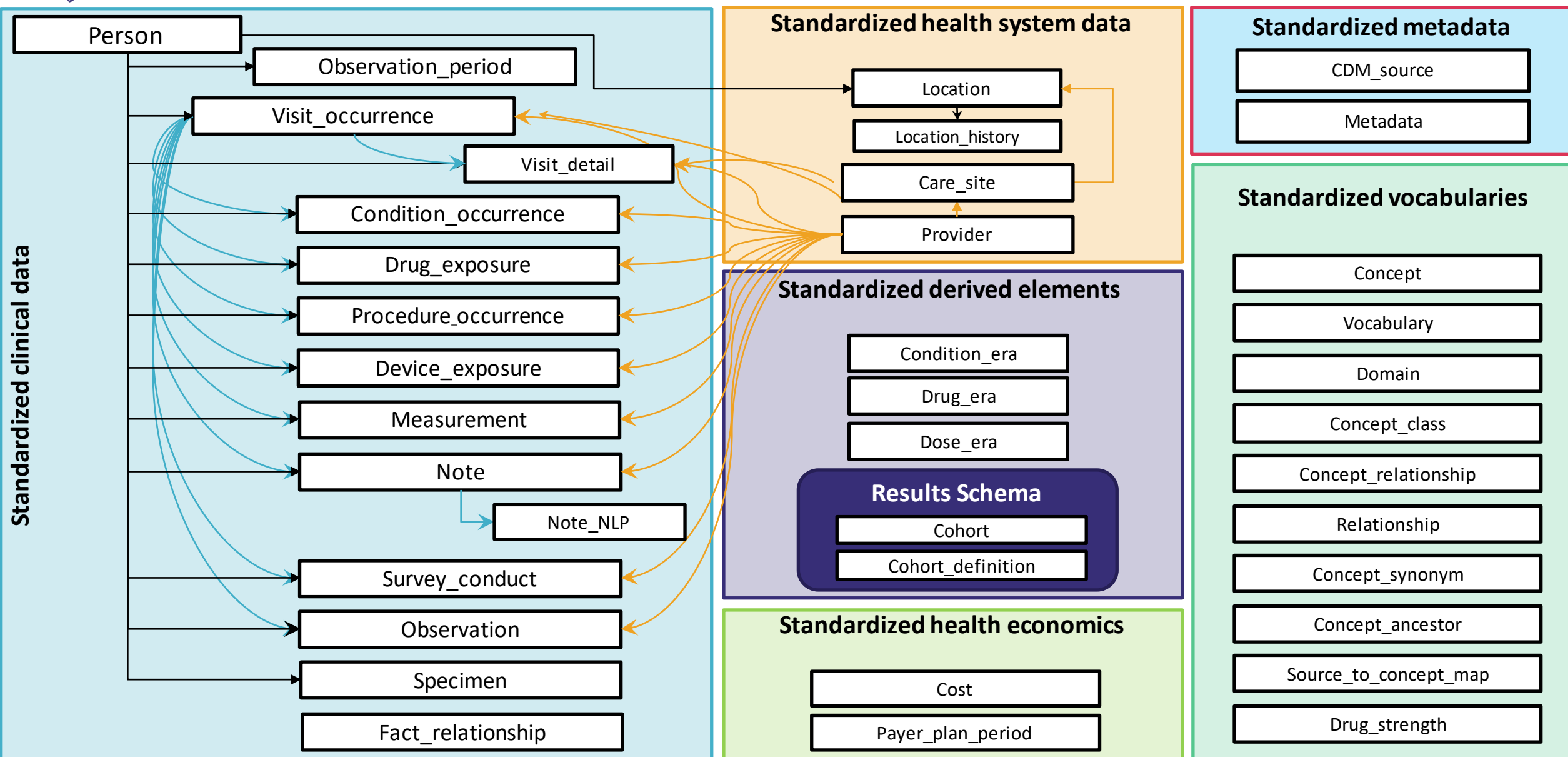
Desired attribute	Question	Researcher	Data	Analysis	Result
Robust	Identical	Same or different	Same or different	Different	Similar



- Sensitivity analyses can be systematically conducted with parameterized analysis procedures using a common input

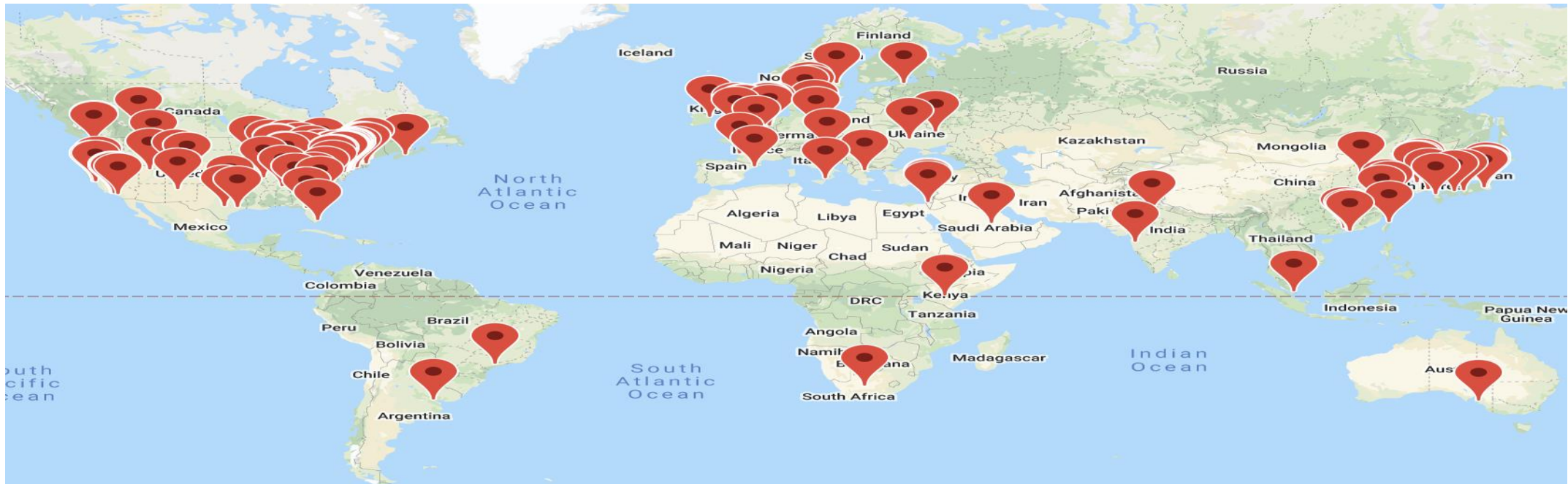


DEEP INFORMATION MODEL: OMOP CDM





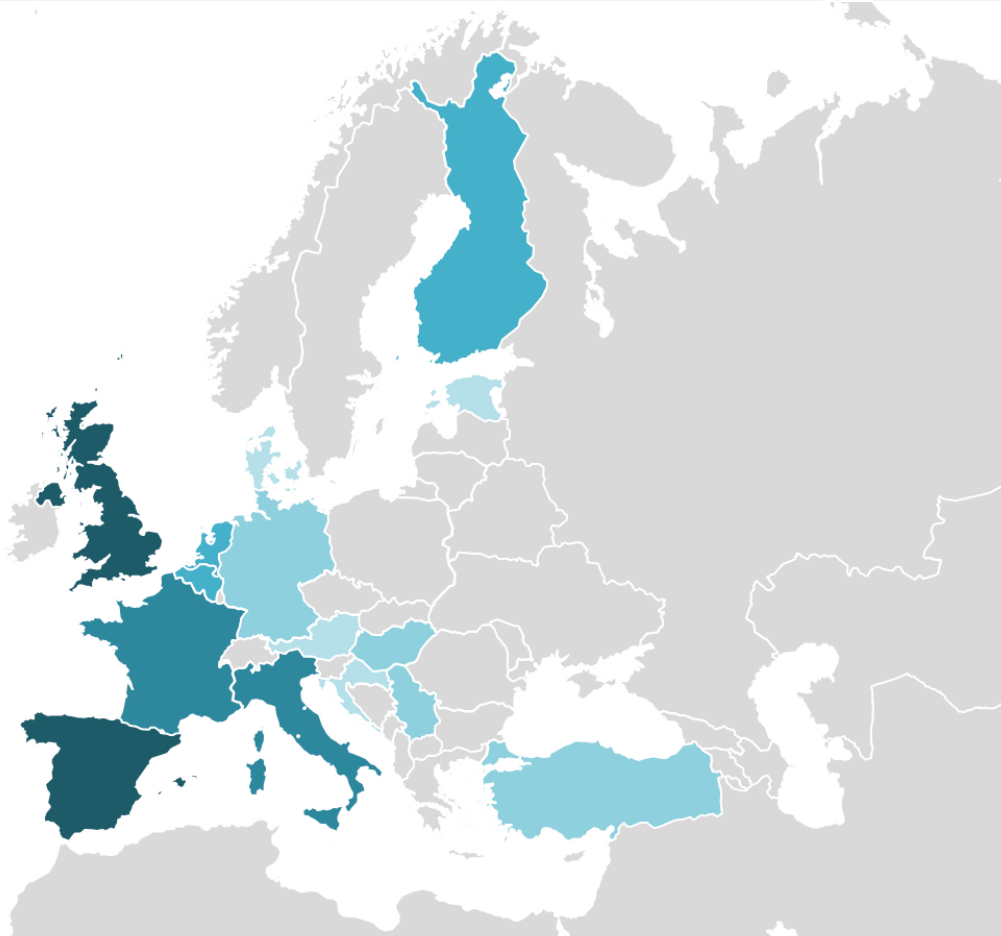
OHDSI'S GLOBAL RESEARCH COMMUNITY



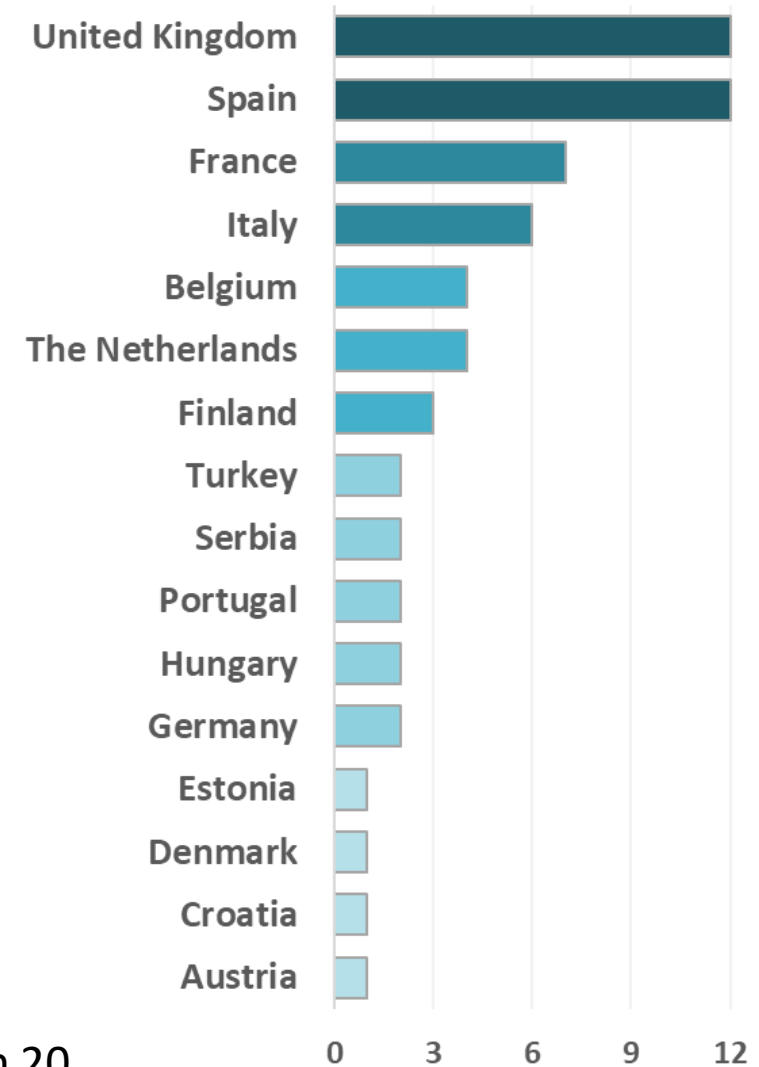
- *More than 2,100 collaborators across six continents.*
- *There are currently 166 databases in the network, spread out over 23 different nations, with 578 million distinct patients and 2.7 billion deidentified patient records across all databases who reported to be part of the network.*
- *The community developed and manages 20 open-source applications to aid in observational research, and*
- *has 25 workgroups engaged in research around various healthcare topics.*



AFTER THREE CALLS WE INCLUDED 61 DATA PARTNERS FROM 16 COUNTRIES



Geographic spread of data partners. The shade of blue indicates the # of data partners in that country (darker = more)

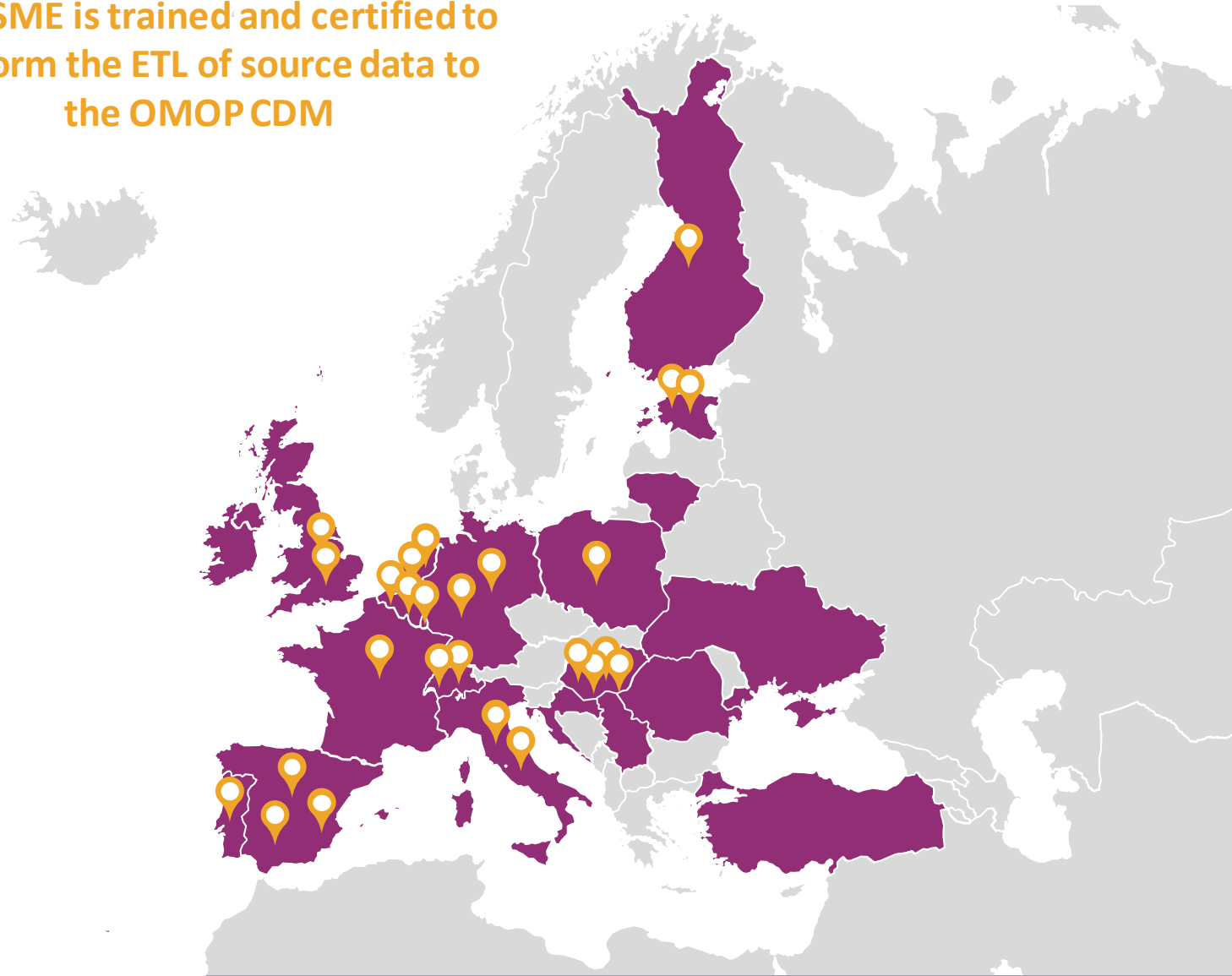


Large interest in recent call (budget 5 million Euro) with 55 applications from 20 countries (not shown in image above).



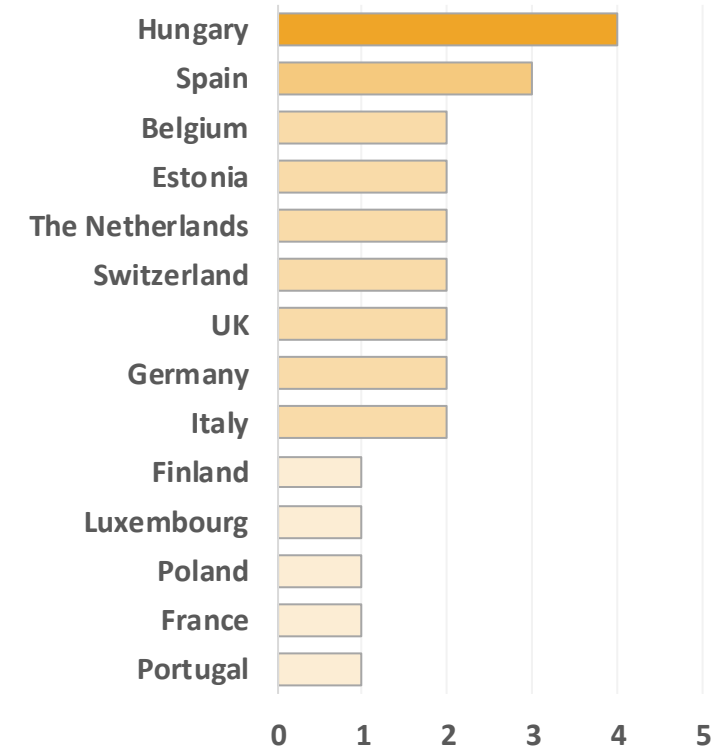
AFTER TWO CALLS EHDEN HAS CERTIFIED 26 SMEs IN 14 COUNTRIES

Each SME is trained and certified to perform the ETL of source data to the OMOP CDM



 Certified SMEs (n=26)

 Applications (n=63)



Will grow to approximately 50 SMEs in 2021



PERFECT STORM

- FDA awarded a \$10 million contract to OHDSI in 2020 to provide support to the BEST program around vaccine surveillance.
- Multiple studies for EMA using OMOP-CDM.
- Multiple European projects build on OMOP-CDM.
- Global uptake with regional chapters (US, Europe, Australia, China, Japan, South Korea, Singapore, etc.)
- Large body of scientific output generated by OHDSI community, e.g. on COVID-19.



We demonstrated that a collective effort to improve the interoperability of health data works and has impact!



NEED MORE INFORMATION?



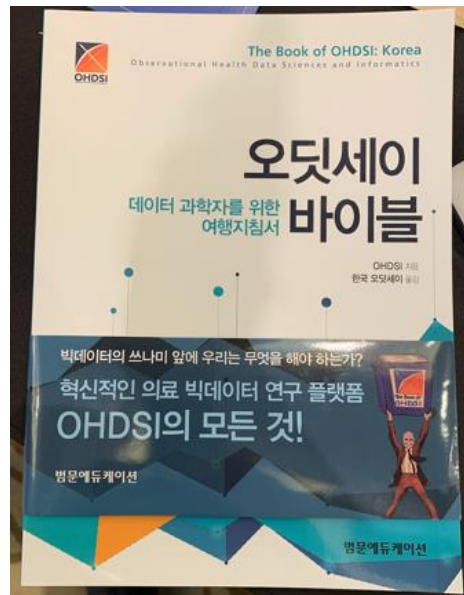
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@IMI_EHDEN



IMI_EHDEN



github.com/EHDEN



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