Martijn Schuemie

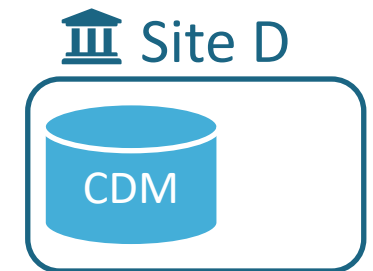Observational Health Data Analytics - Johnson & Johnson
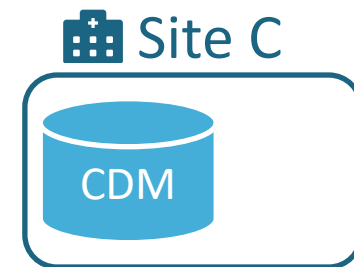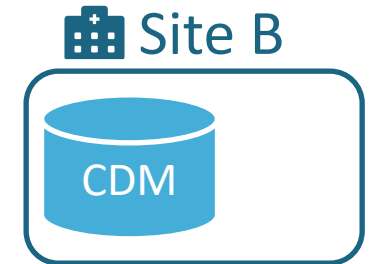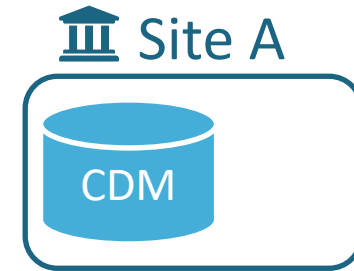
Biostatistics - UCLA

Benefit of standardizing the data

- Federated research networks
- Shared software tools

Federated Research Network

- Multiple sites with data
  - Hospital EHRs
  - Administrative Claims
- Patient-level data cannot be shared

Site A

CDM

Site B

CDM

Site C

CDM

Site D

CDM

Federated Research Network

- Any site can lead a study

Study lead
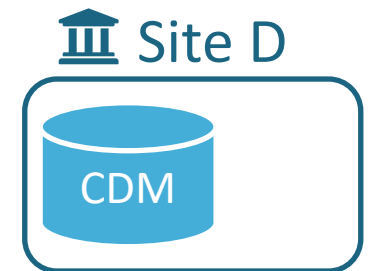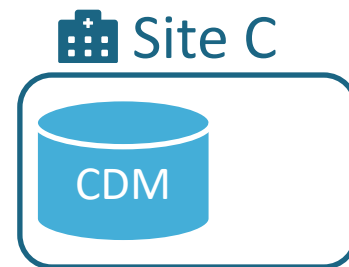
🏛 Site A

CDM

🏥 Site B

CDM

🏥 Site C

CDM

🏛 Site D

CDM

Federated Research Network

- Any site can lead a study
- Analysis code is developed locally

Federated Research Network

- Any site can lead a study
- Analysis code is developed locally
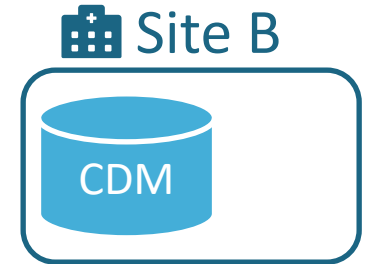- Code is distributed to study participants

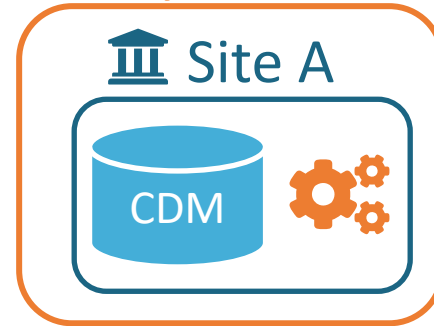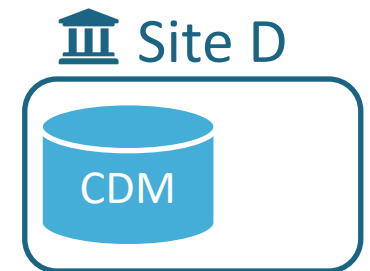# Federated Research Network

- Any site can lead a study
- Analysis code is developed locally
- Code is distributed to study participants
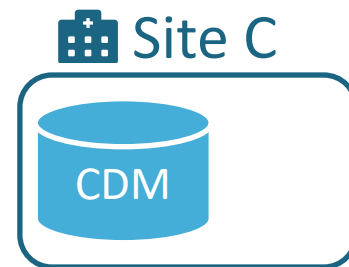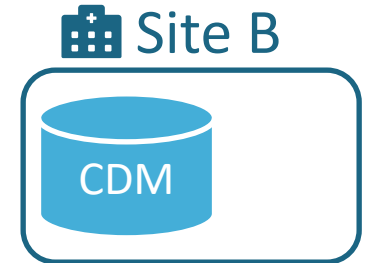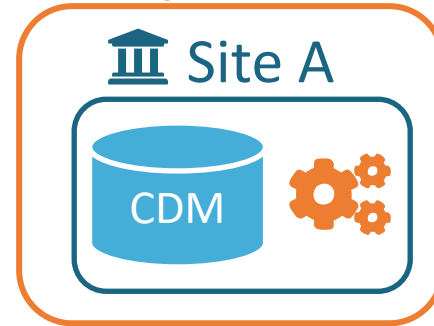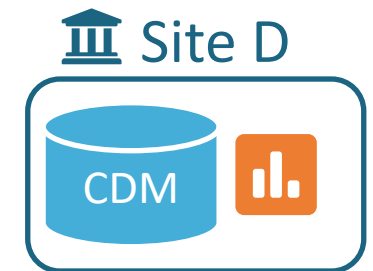- Results are generated (aggregated statistics)
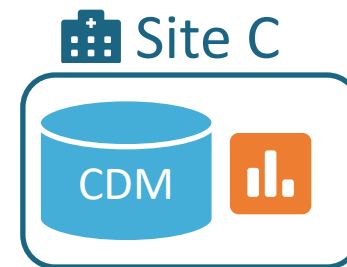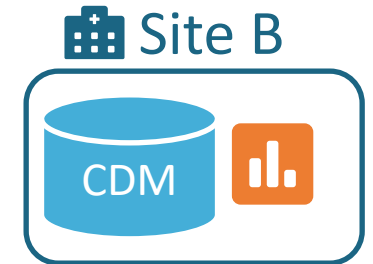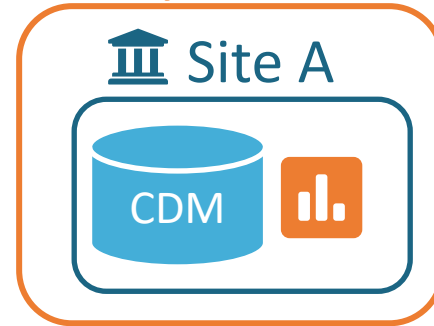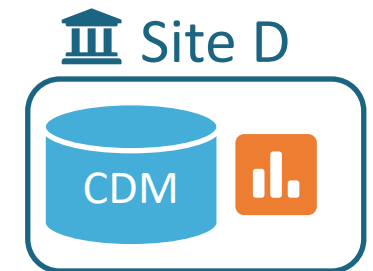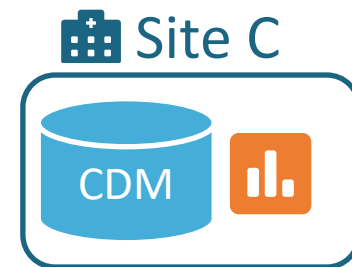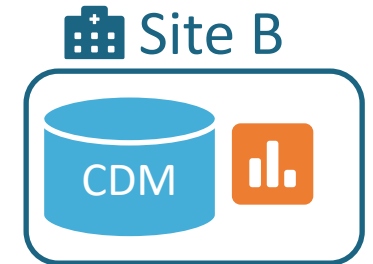
Federated Research Network

- Any site can lead a study
- Analysis code is developed locally
- Code is distributed to study participants
- Results are generated (aggregated statistics)
- Results are send back to site

Study lead
Site A — CDM

Site B — CDM

Site C — CDM

Site D — CDM
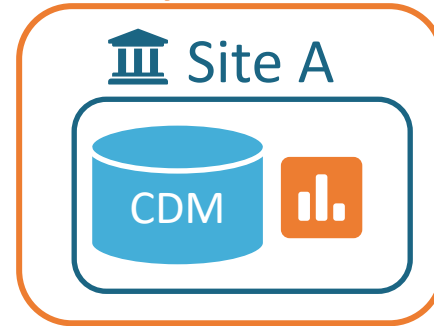
Shared software tools

What is HADES?

- A set of 26 R packages (and counting)
  - PatientLevelPrediction
  - CohortMethod
  - Cyclops
  - SqlRender
  - …
- Implementing analytics based on the CDM
- Meeting some minimum quality requirements
  - Continuous integration (including unit testing)
  - Validated
  - Documented
  - Cross-database-platform
- Used in pretty much all OHDSI studies

Standardization of analytics

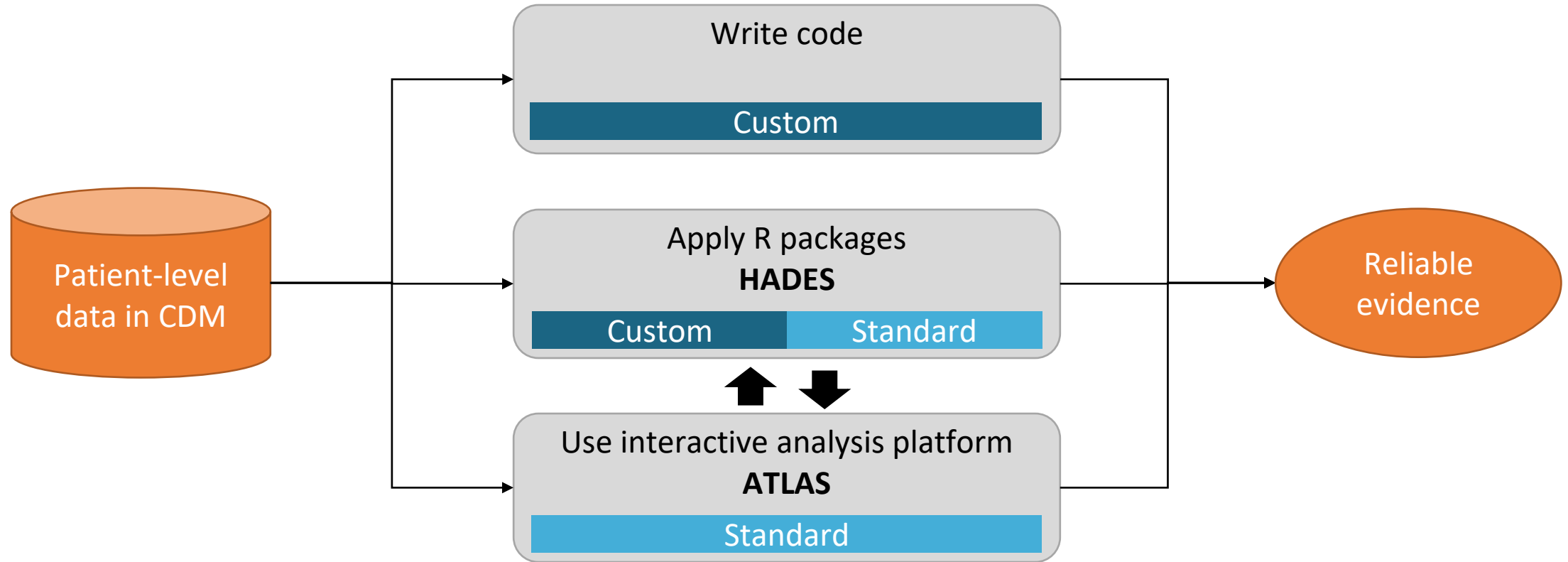- Key building blocks are **cohorts**.
  - Same cohorts can be used in different analyses.
- Each analysis has a '**template**' of cohorts:
  - Prediction: **target** and **outcome** cohort
  - Comparative cohort study: **target**, **comparator**, and **outcome** cohorts
- Each analysis has predefined s
  - Menu of covariates to include i
  - Definition of time-at-risk
- Each analysis has predefined s
  - Calibration for prediction mode
  - Covariate balance for comparat

Instead of starting a study design from scratch, we can now choose from a menu.

This helps
- Promote best practices
- Increases transparency
- Increases efficiency

Visit the HADES website

https://ohdsi.github.io/Hades