ROMOPomics

NCBI Codeathon, Pittsburgh 2020

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Patient data & OMOP

- Observational Medical Outcomes Partnership to transform patient data

- **Goal:** learning, evidence-based healthcare systems.

- **Problem:** patient data is separate, unharmonised within Hospitals, Medicare claims, Clinical registries, etc.

- **Solution:** OMOP CDM
 - An established, patient-centric common data model already in clinical use.
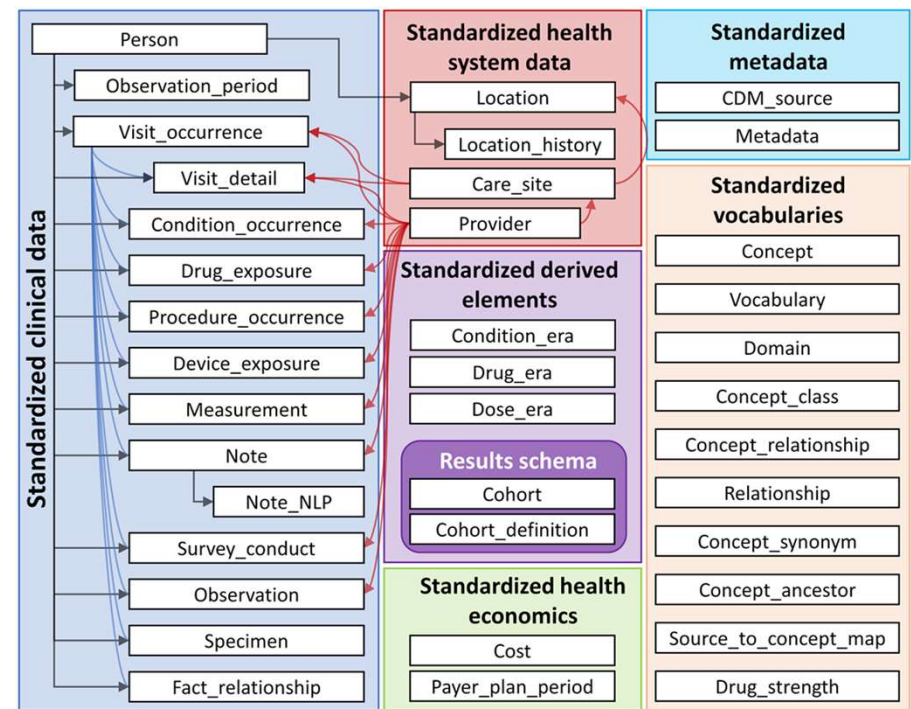
The book of OHDSI

OMOP with precision medicine and research.

- Precision medicine increasingly uses 'Omics' data (sequencing, etc.).

- Large amounts of 'omics data available (TCGA, GEO, clinics, etc.).

- **Goal:** Integrate 'omics data into patient clinical data.

- **Problem:** 'omics data is…
    - Detached from the patient.
    - Analyzed as a sample.
    - Difficult to retrieve and integrate.

- **Solution:** Use the OMOP common data model.

The ROMOPomics R package
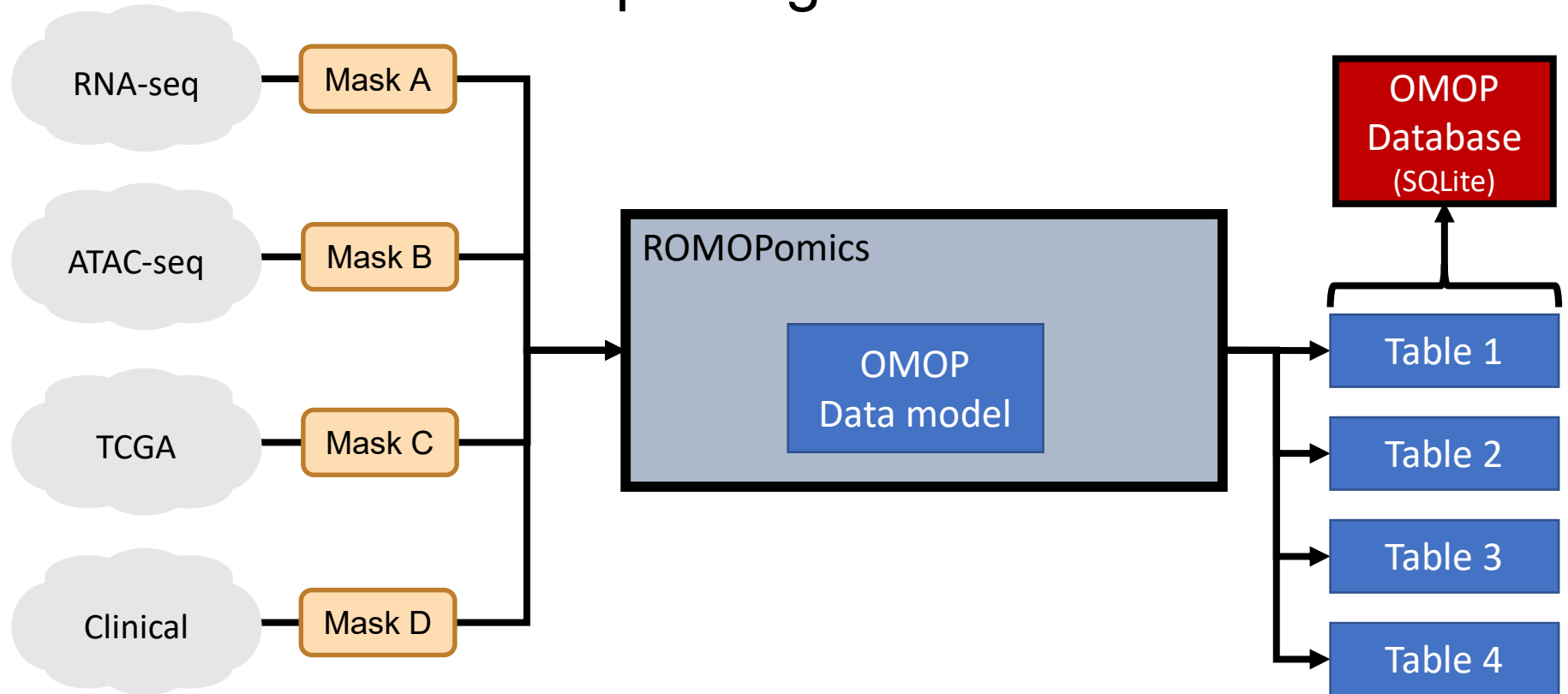
Full integration into SQLite databases.

- The ROMOPomics R package combines sample-centric datasets from various sources

- Administrators build and implement the database, users interface via SQL.

- *Example:* Incorporate TCGA data, users can now query samples and treatments from patients of a certain age, sex, name, etc.

```
SELECT person_source_value, person.person_id, file_remote_repo_id, file_remote_repo_value
FROM person INNER JOIN sequencing
WHERE file_remote_repo_id IS NOT NULL
AND person_source_value IS "tcga-3c-aaau"
ORDER BY file_remote_repo_id
```

ROMOPomics

Dev. version available on GitHub:
install_github("andrewc160/ROMOPomics")

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