Conquering Micro-services with GraphQL

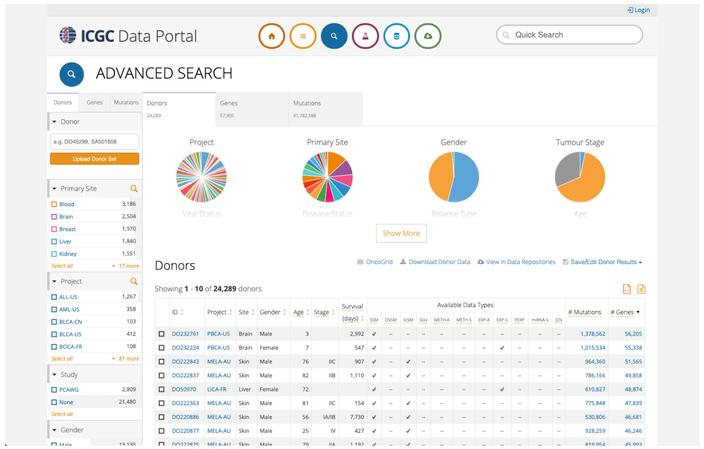
Our plan for ARGO

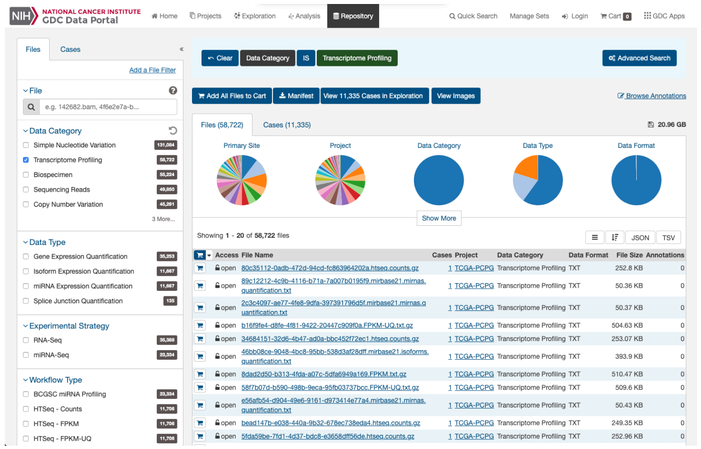
from OICR Ontario Institute for Cancer Research softeng with ❤️ ☕

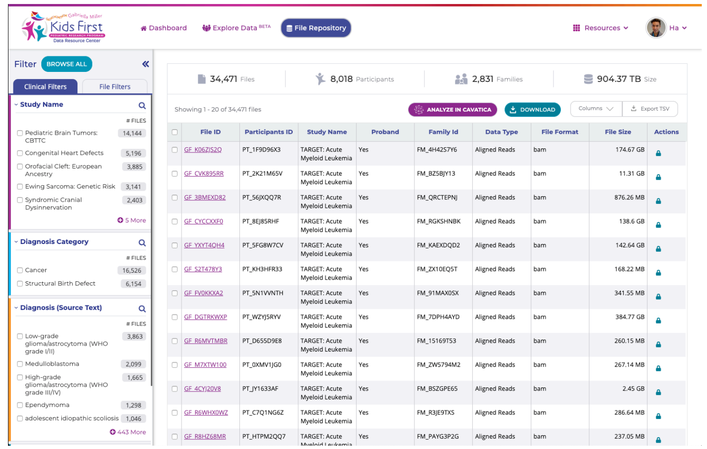
ICGC

NIH NATIONAL CANCER INSTITUTE GDC Data Portal

Gabriella Miller Kids First PEDIATRIC RESEARCH PROGRAM Data Resource Center

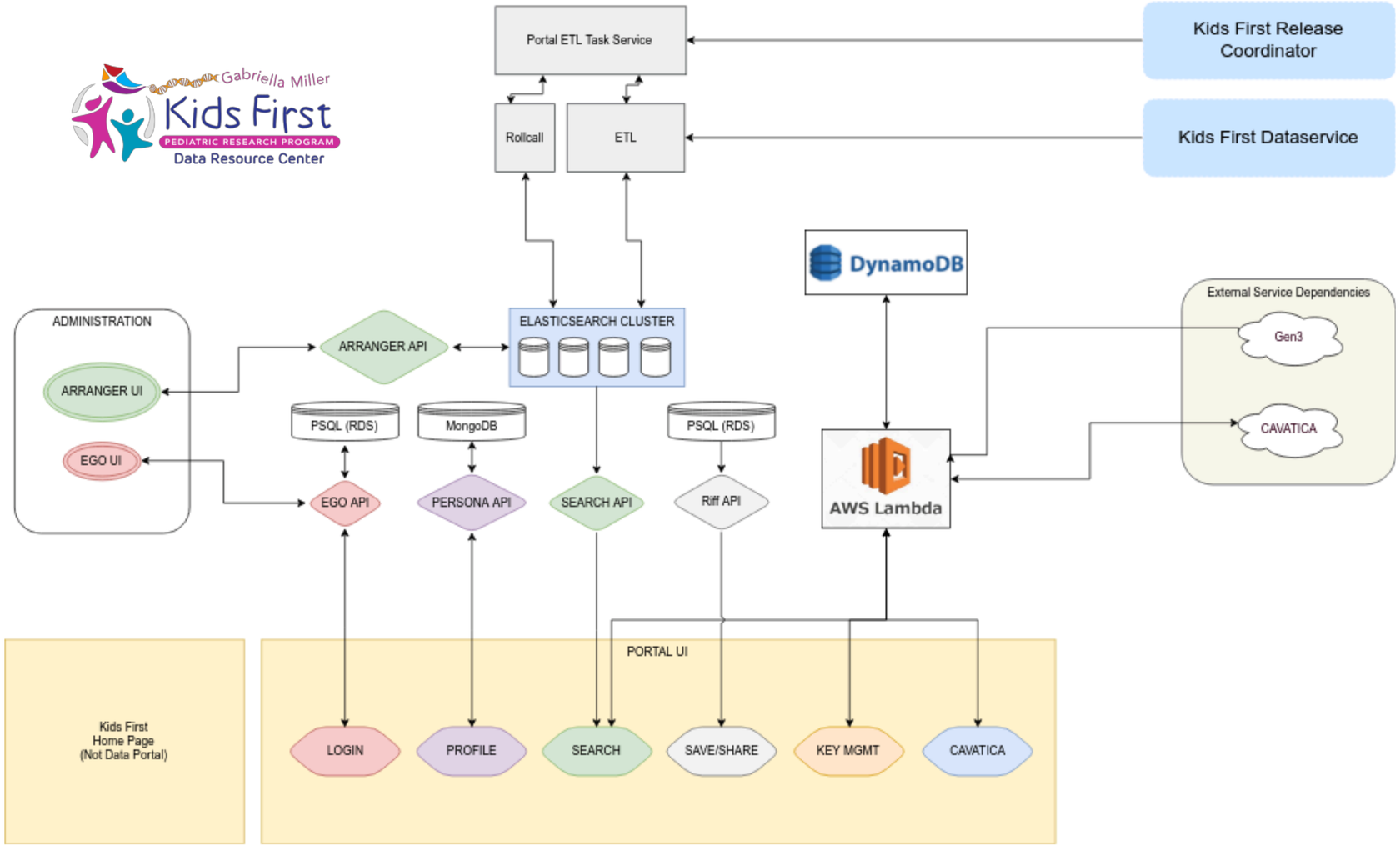




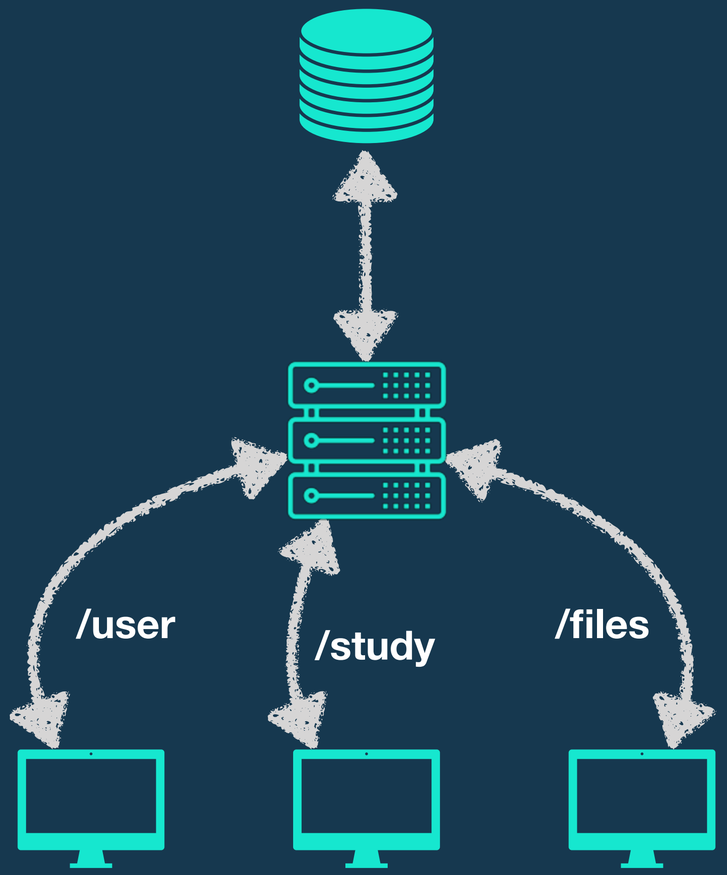


and more...

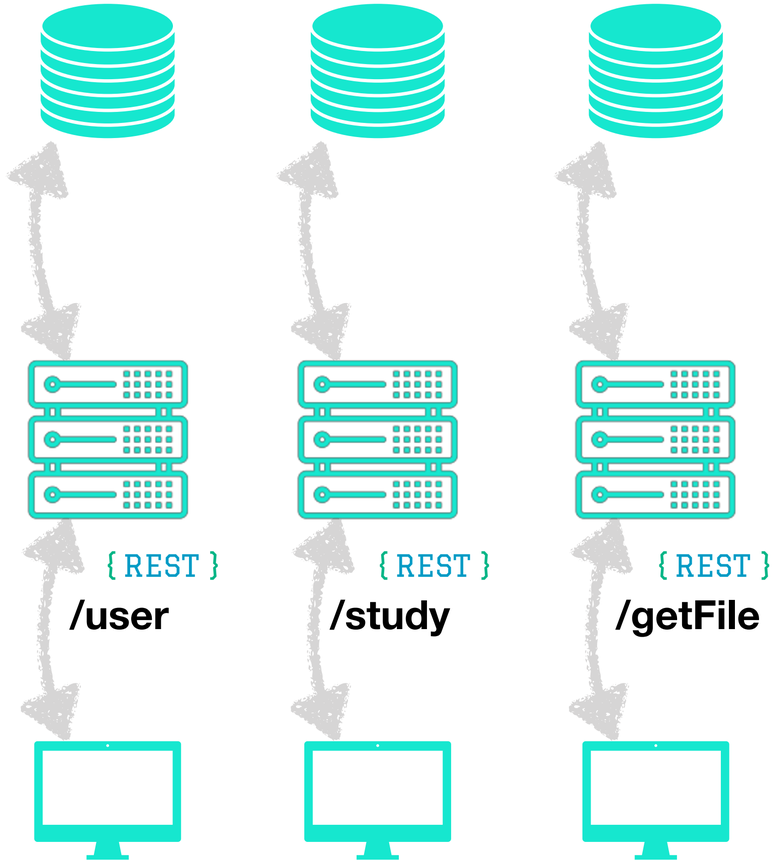
Behind the scene



Monolithic System



Micro-…what?

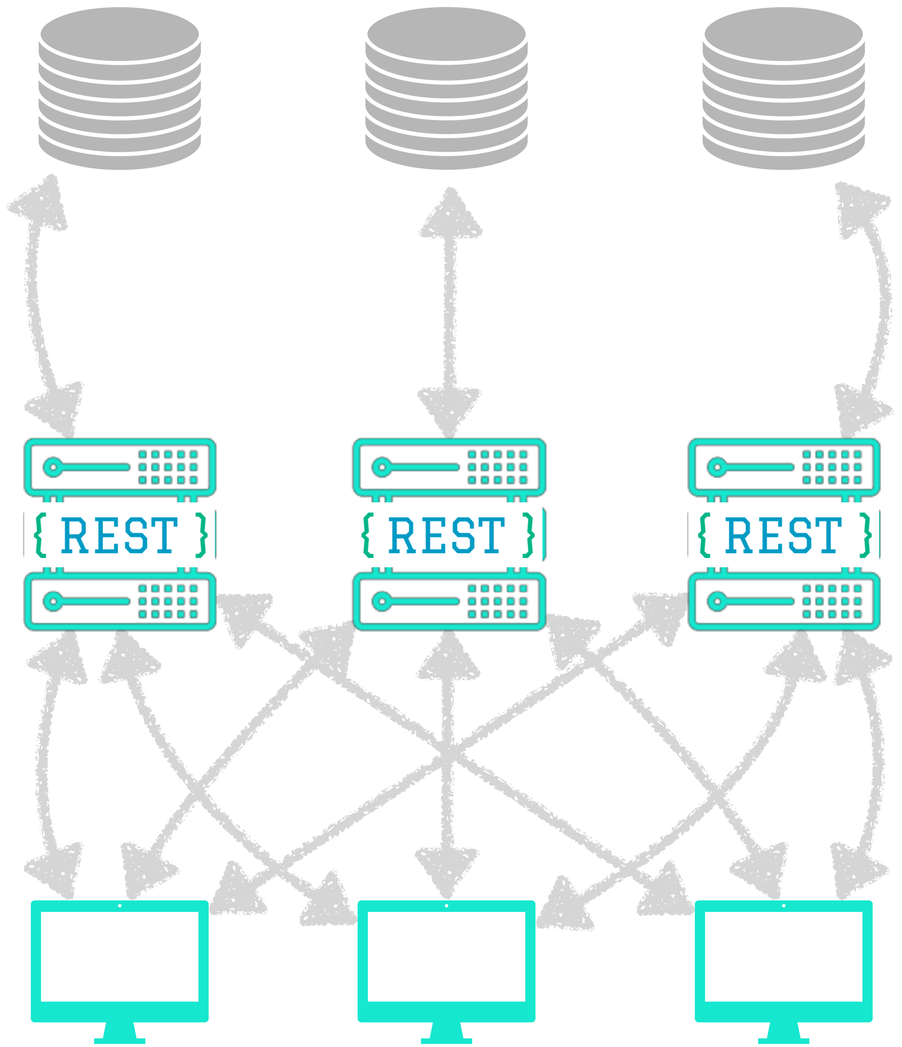


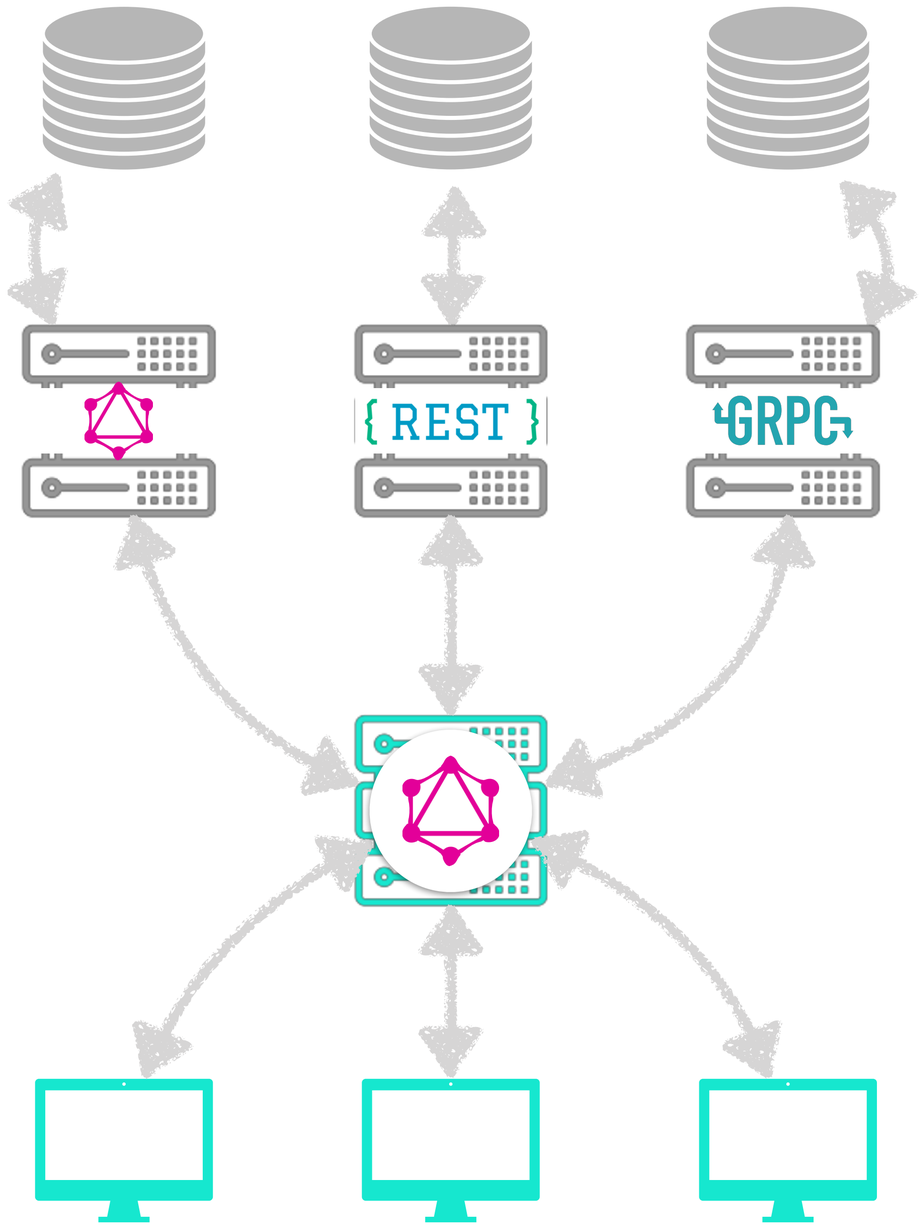
Micro-services System

- Functionally decoupled
- Independently deployable
- Independently scalable

Some challenge

- No place to handle cross-cutting concerns
- Front-end handles heavy business logic
- Inefficiencies with **REST**:
  - Over & under-fetching
  - Lack of API schema -> manual documentation





The GraphQL Solution

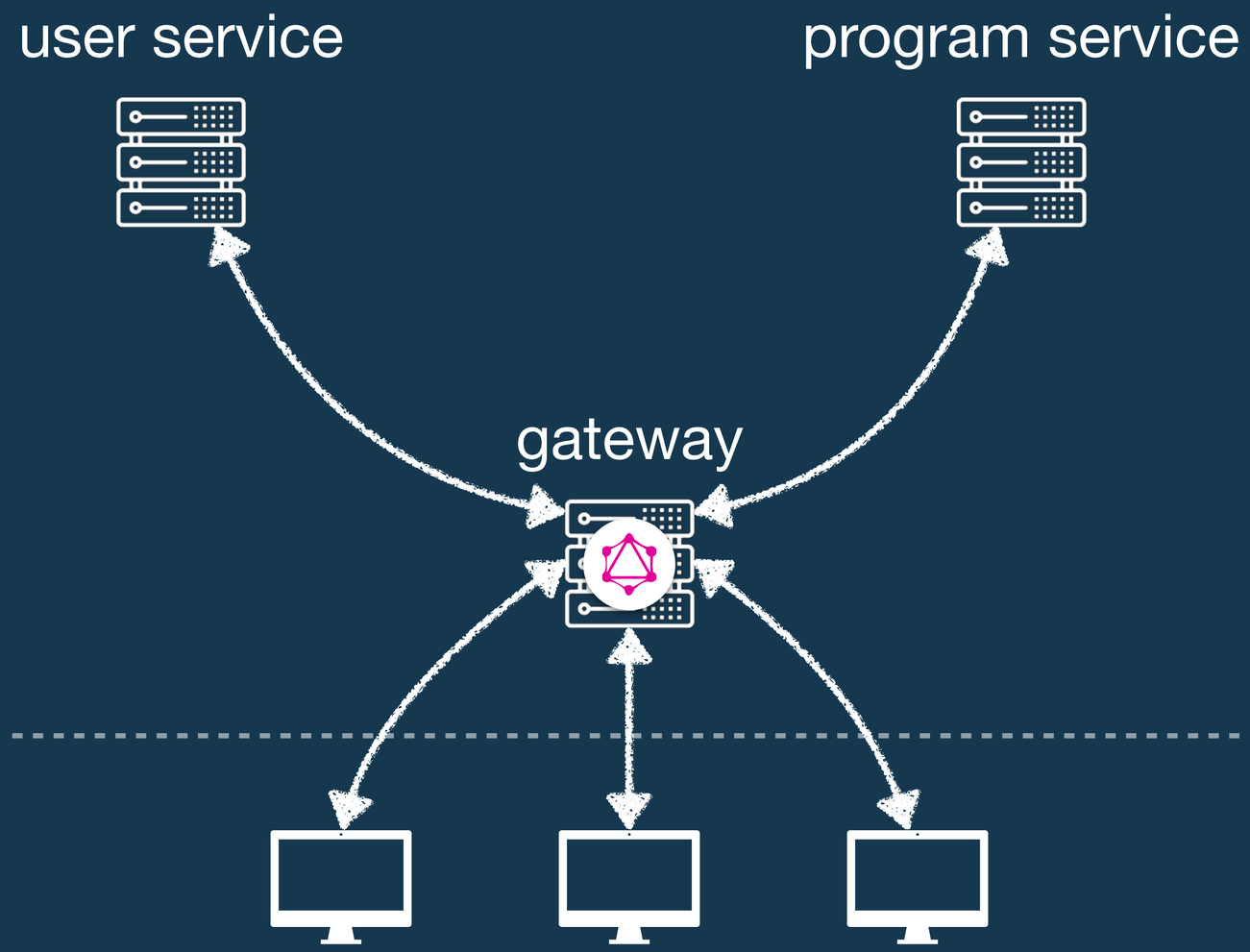
- An **aggregation layer** to handle cross-cutting concern

- **Why GraphQL?**
  - Explorable schema —> self-documenting

  - Schema Stitching:
    - Modelling underlying services as an independent schemas
    - “Stitch” the schemas together as nodes in a graph
    - Network advantage: batched request

BRACE YOURSELF
BACKEND
MIDDLE WARE
FRONTEND - ARGO SITE
SONG
SCORE
CDC
RDPCs
R1
R2
RDPC Datastore
RDPC Datastore
SONG-R1
SCORE-R1
Workflow System
SONG-R2
SCORE-R2
Workflow System
Submission System
Validation System
Data Dictionary
Clinical SONG
Big Data Store
(clinical / workflow file results, annotation files)
DCC
Indexer
ETL
Program Database
Data Backend
ElasticSearch ?
Arranger
Variant Database
Jupyter Hub
R API
Centralized Services
ID Service
Location Policy Engine
GENOMIC DATA
CLINCAL DATA
Authorization, Authentication and Identity
Data Access Control (DACO)
Identity Management (EGO)
User Profile Management (Persona)
SUBMITTERS
Submission Portal Pages
Submission Dashboard
Harmonization Dashboard
Programme Dashboard
RDPC MEMBER
Manifest and Transfer Dashboard
Queue Manager
Workflow Management Dashboard
DCC ADMIN
Programme Administratio n Area
All Roles
Explore/ Cohort Builder
Analysis
File Repository
ARGO IS COMING

demo



The wins

- Explorability:
  - Better developer on-boarding
  - Collaboration with non-technical team members
- Central place for integration test —> higher quality software
- Network performance

thank you