



PAROMA-MED

Privacy Aware and Privacy Preserving
Distributed and Robust Machine Learning

EASiNet

2nd Scientific Remote Meeting

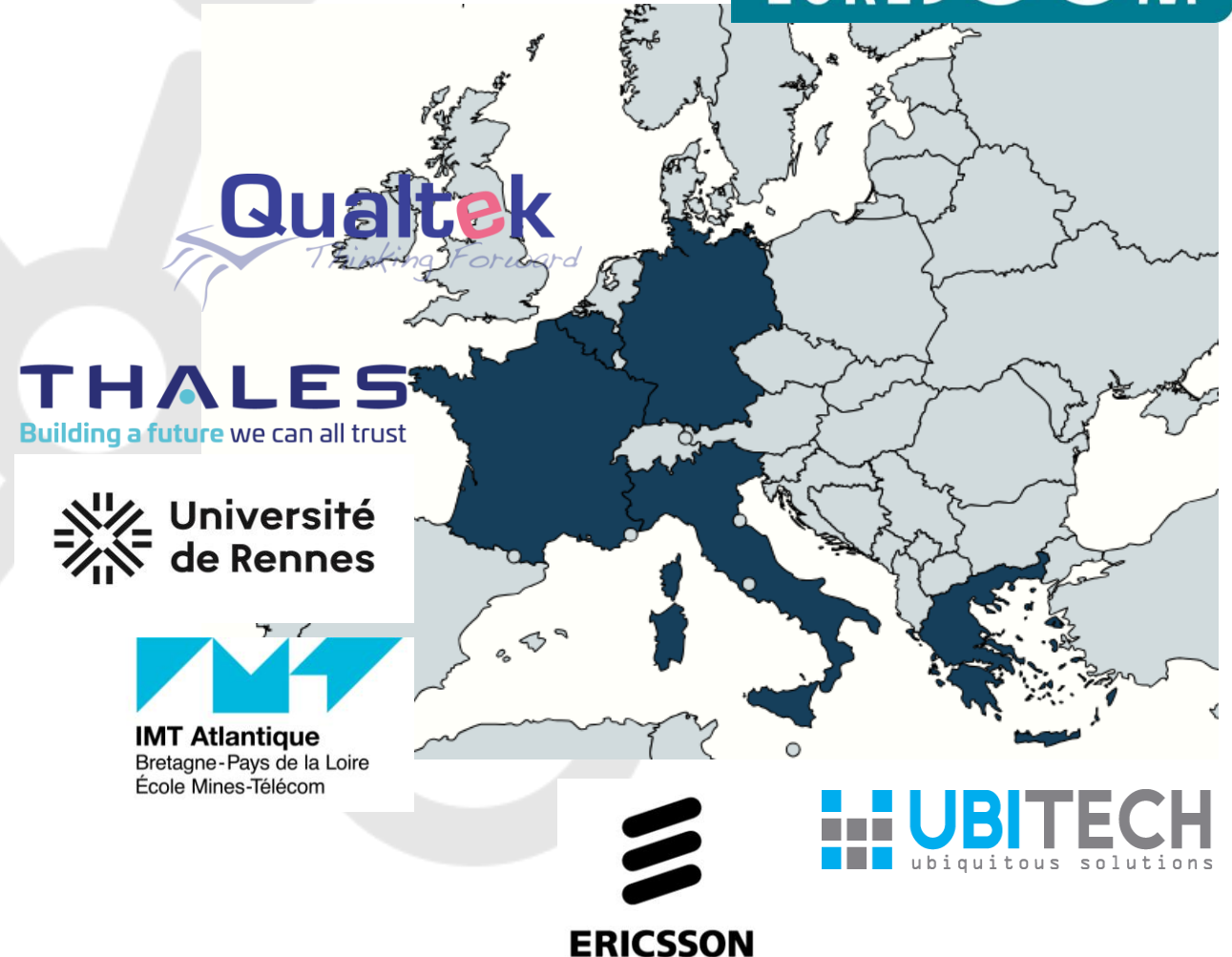
PAROMA-MED

Konstantinos Koutsopoulos, Qualtek Srl

10/03/2025

Project Identity

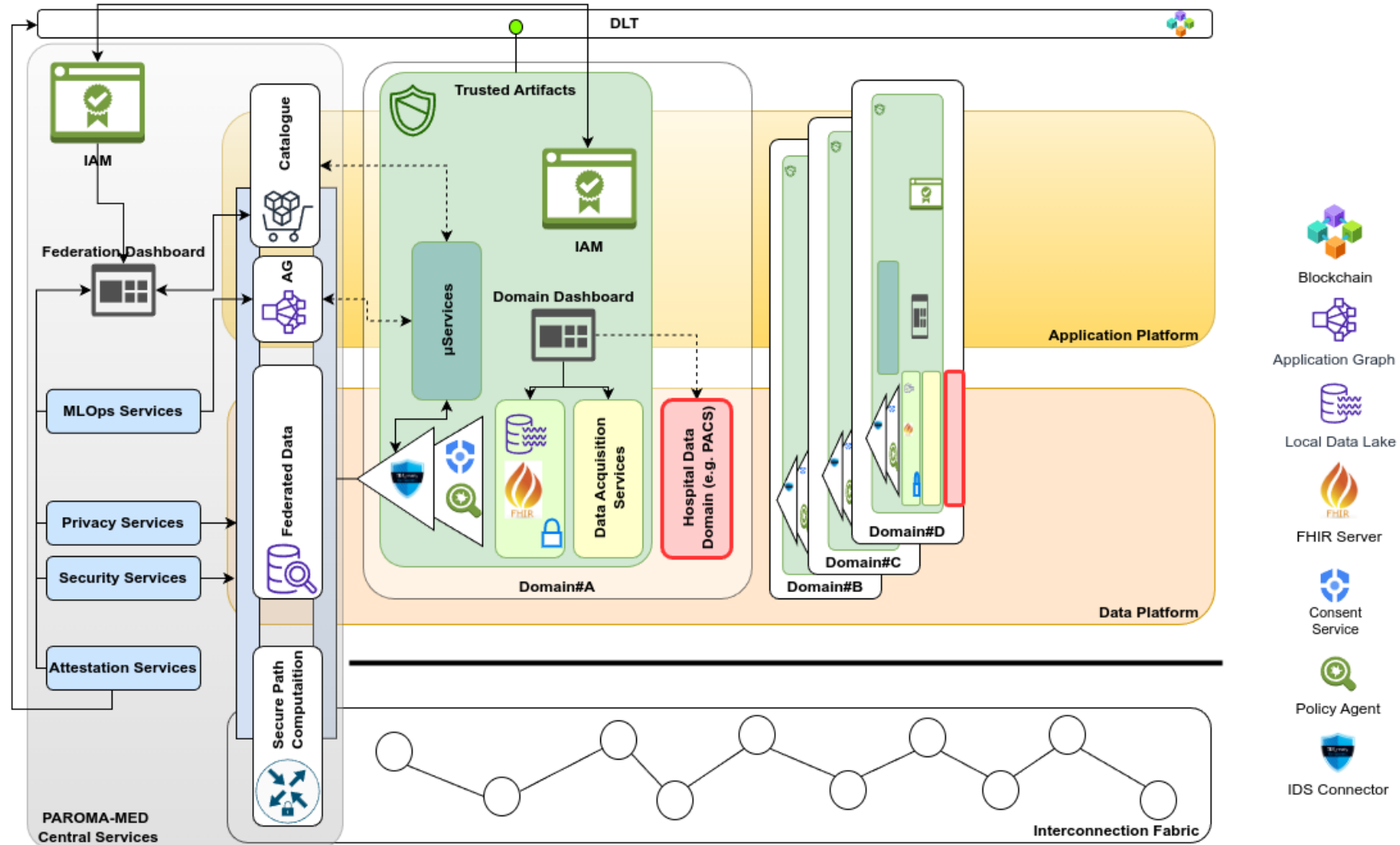
- Privacy Aware and Privacy Preserving Distributed and Robust Machine Learning for Medical Applications
- <https://paroma-med.eu>
- 36 Months
 - 7/2022->6/2025
- Funding: ~4M€
- 5 Countries (DE, IT, BE, EL, FR)
- 9 Partners



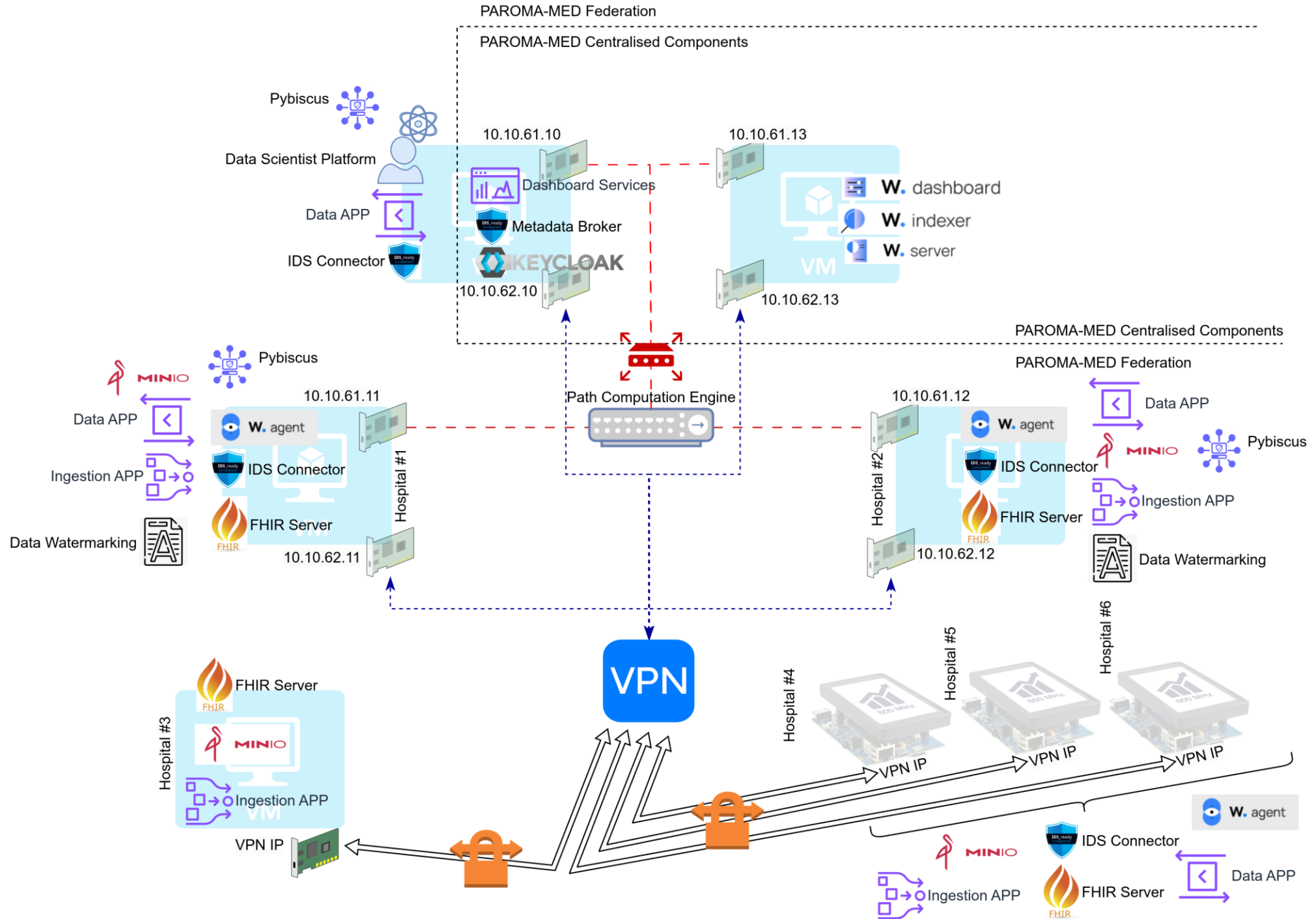
What we have done in a few words

- Consent management
- Data Space Compliance
- Data watermarking solutions
- A federated ML framework with PSI and model watermarking
- A path computation engine (patent)
- Two medical use cases (Cardiac computed tomography segmentation, Chest radiography classification)
- Code to data orchestration (both training and inference)

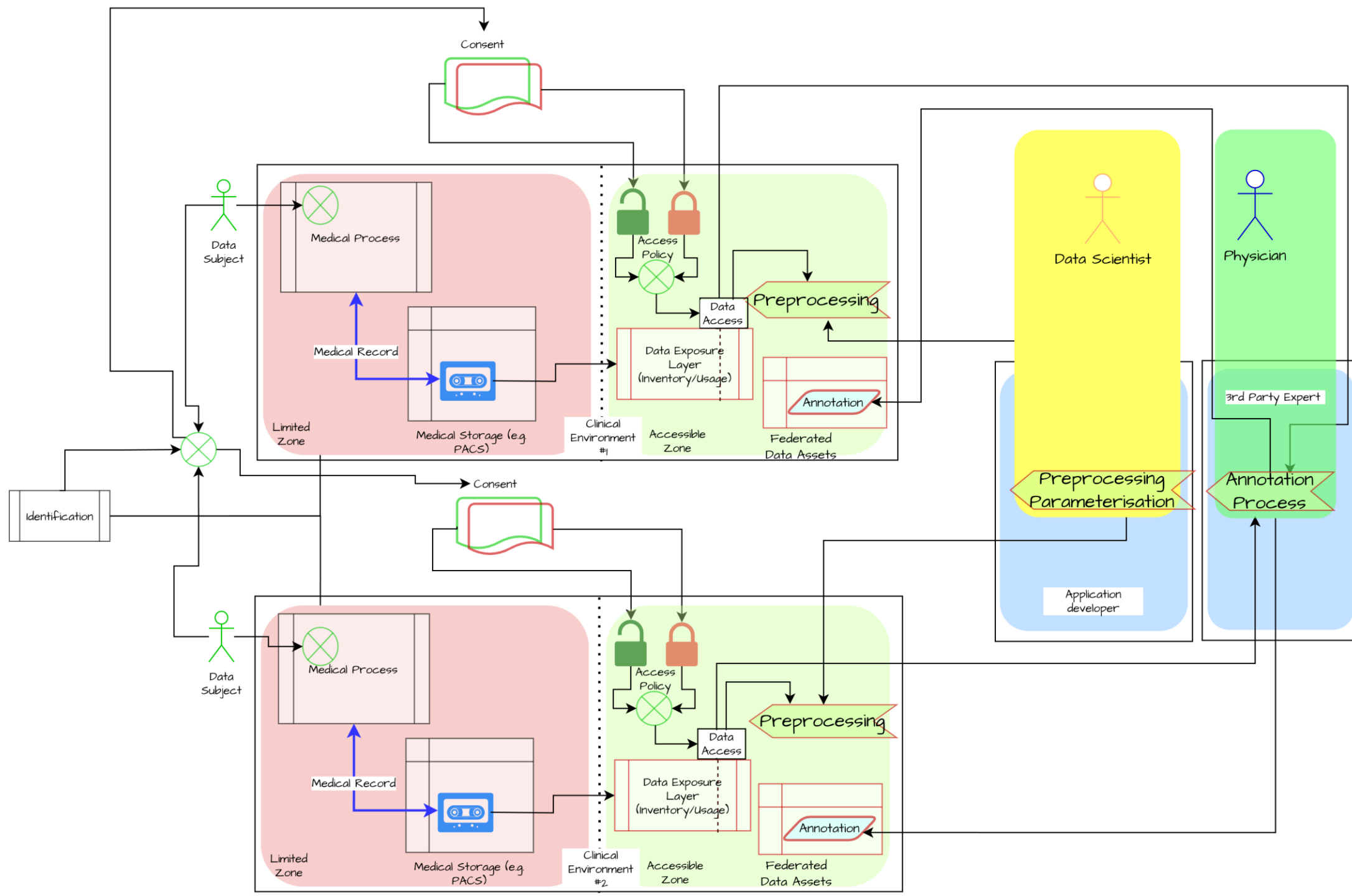
Architecture



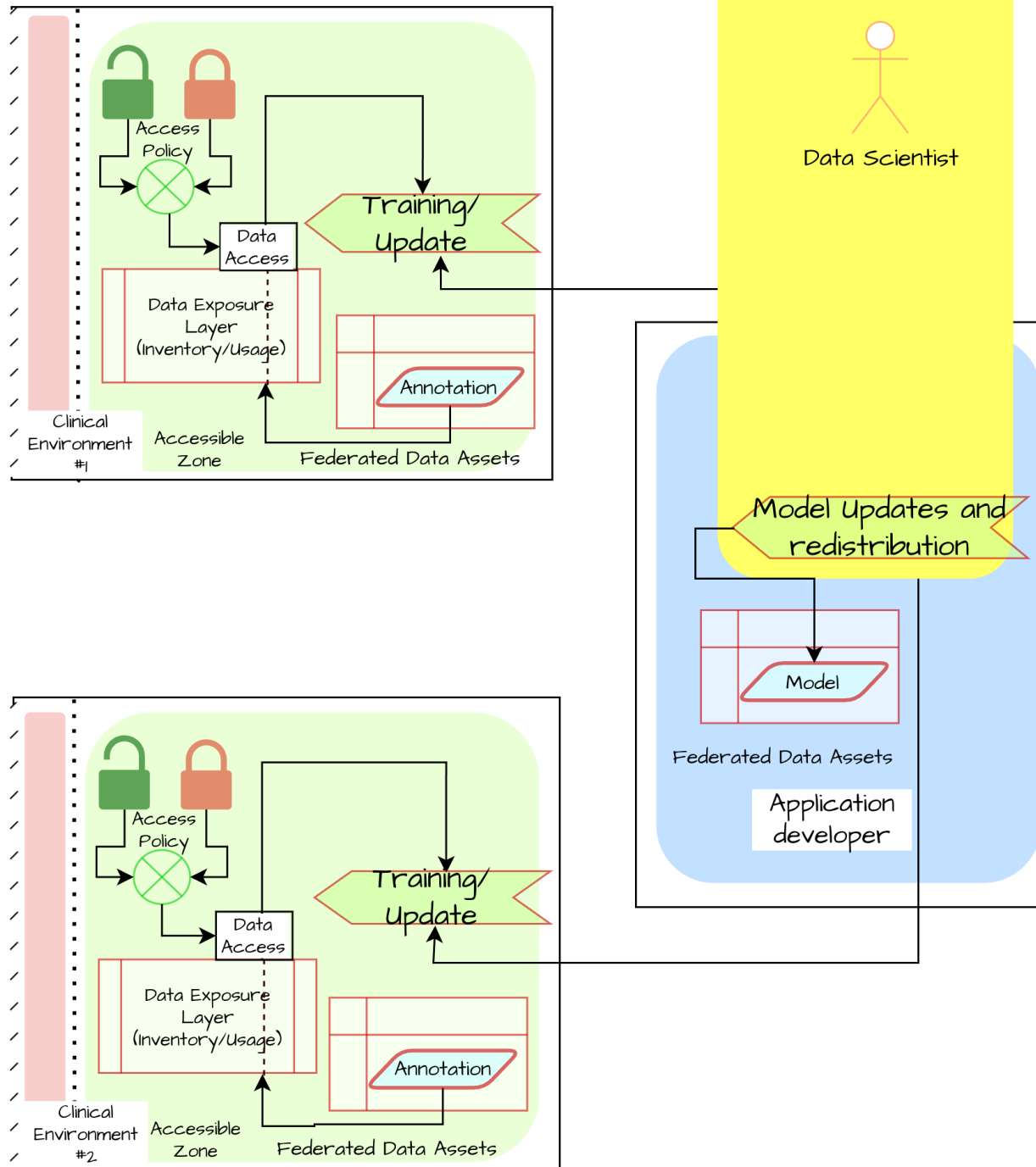
Testbed



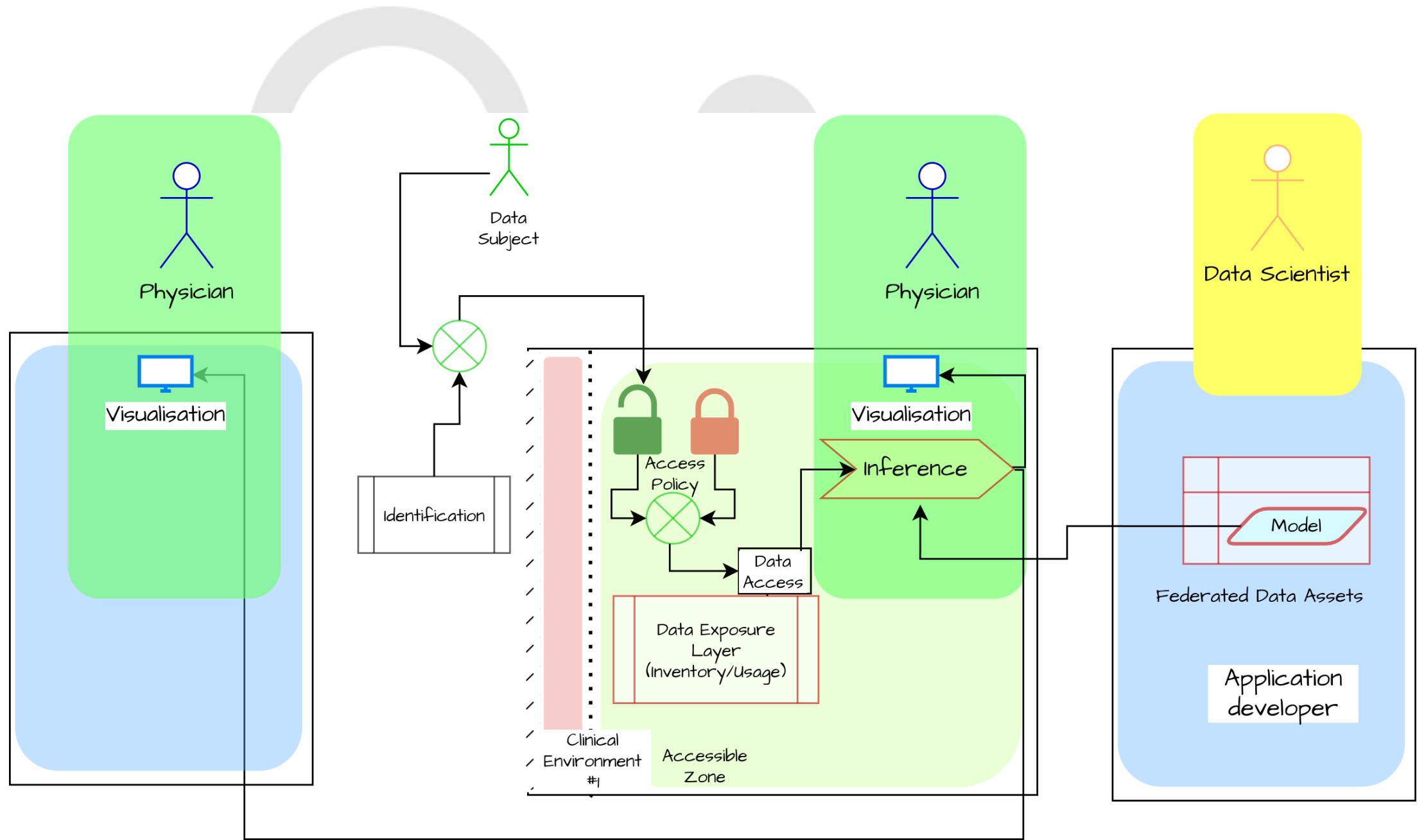
Use Case - Annotation



Use Case - Training

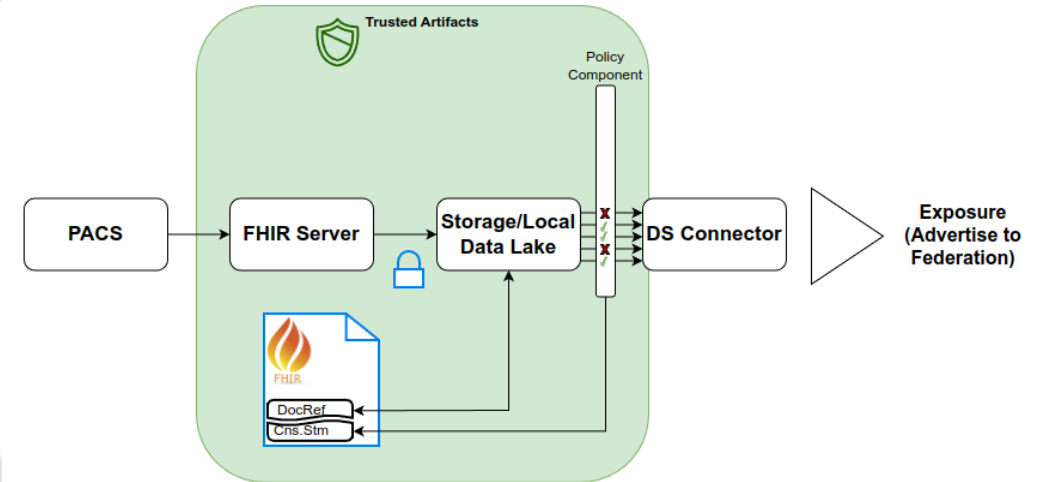


Use Case - Inference



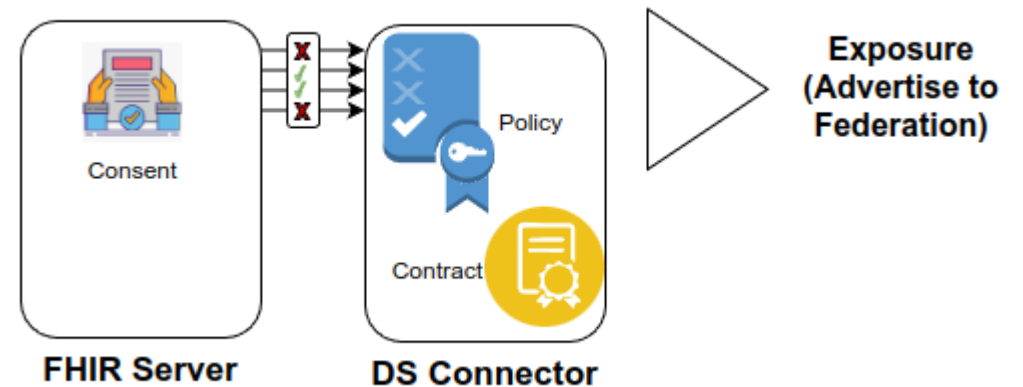
Medical Domain Integration

- Medical domain compliance: FHIR
- Data set onboarding solutions
 - Hospital admin dashboard
 - DICOM/Orthanc to FHIR and Min.IO
 - Data watermarking
 - PSI preprocessing
- User dashboard for consent management
 - Personal and medical exam overview
 - Allow/deny options
 - Explicit consent to requesting organisations

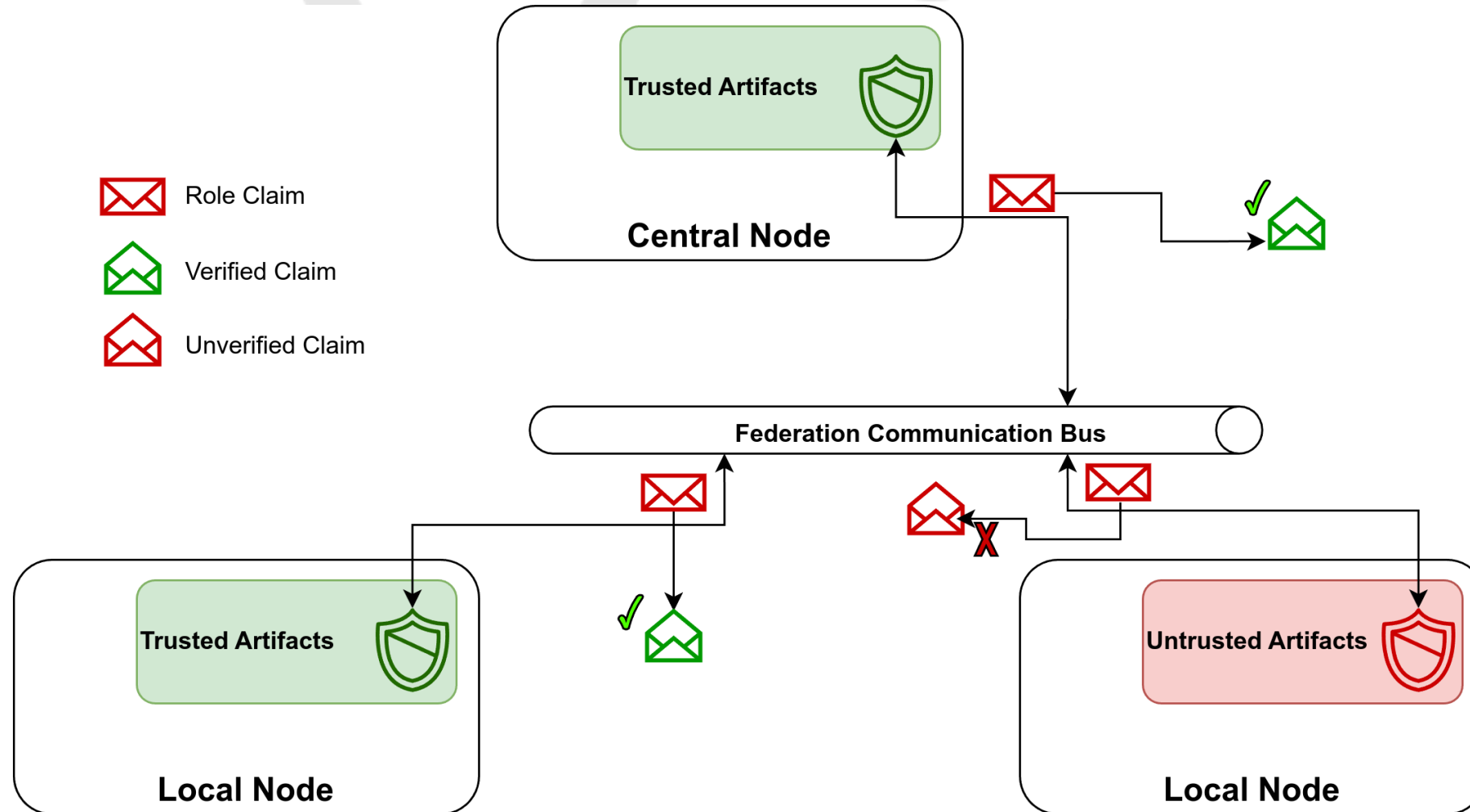


Data Spaces Frontend

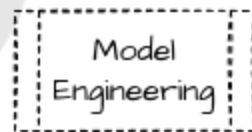
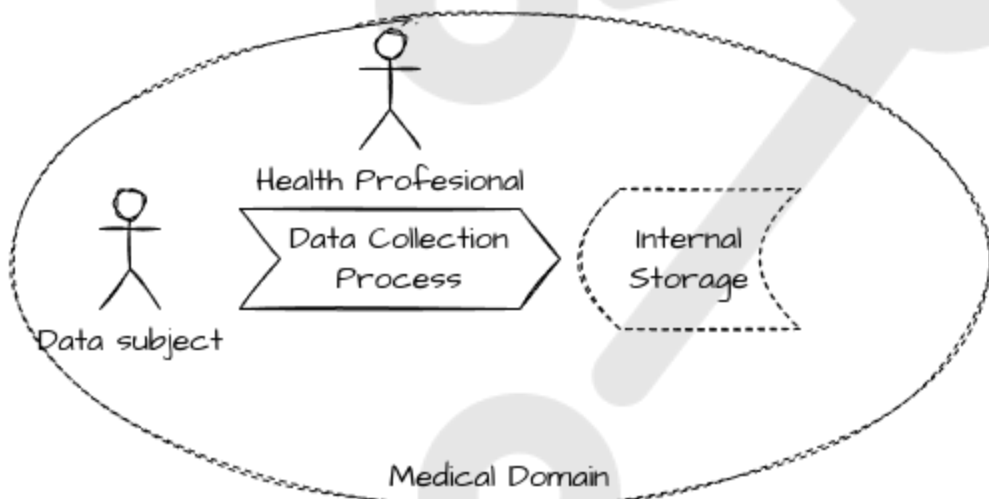
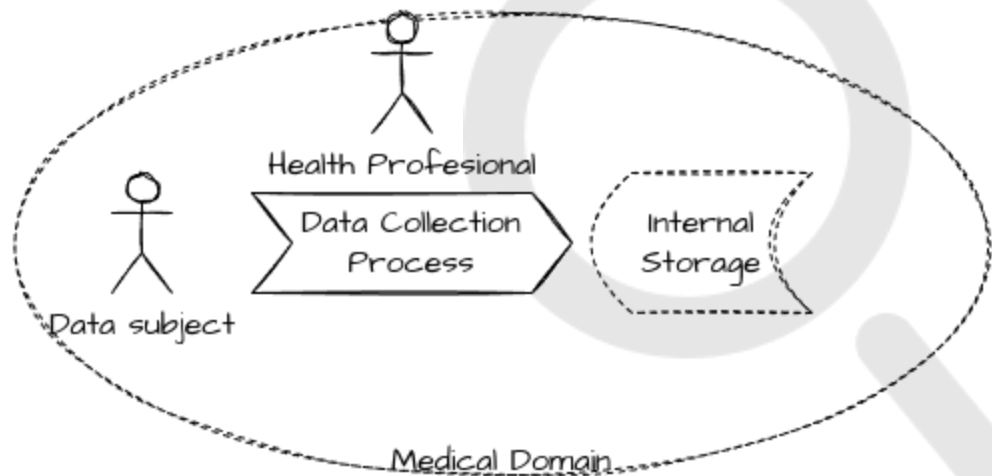
- OS Community projects from Sovity GmbH (based on EDC)
 - Dataspace Connector
 - Metadata broker
 - Dynamic Attribute Provisioning Service (DAPS)
- Adapted data transfer to code to data approach
- DS negotiations (policies and contracts) governed by user consent in FHIR
- A Consent Processing Engine as integration logic between FHIR and DSC



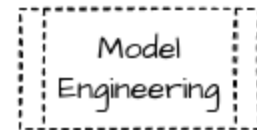
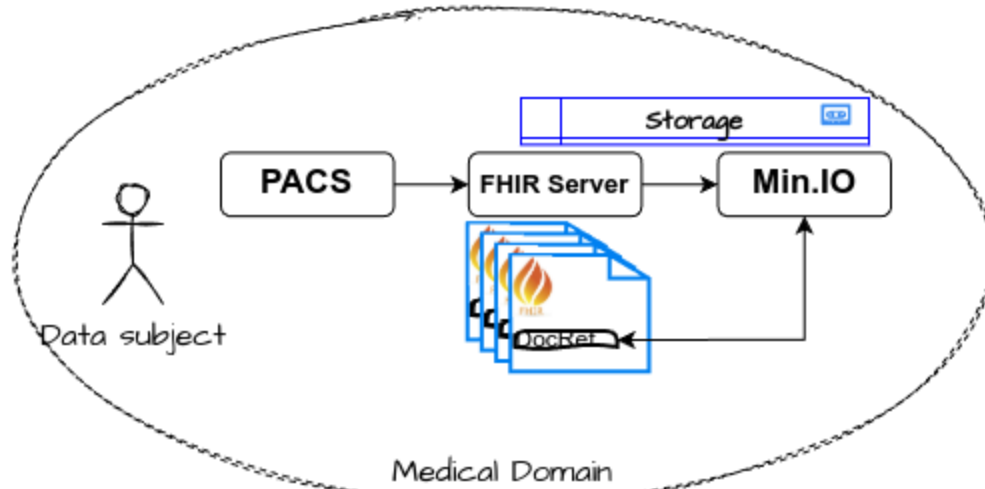
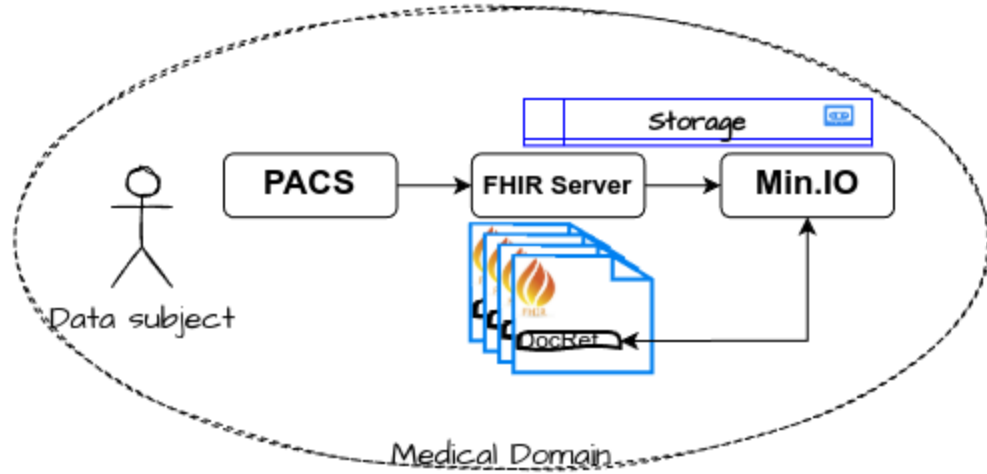
Trust Establishment



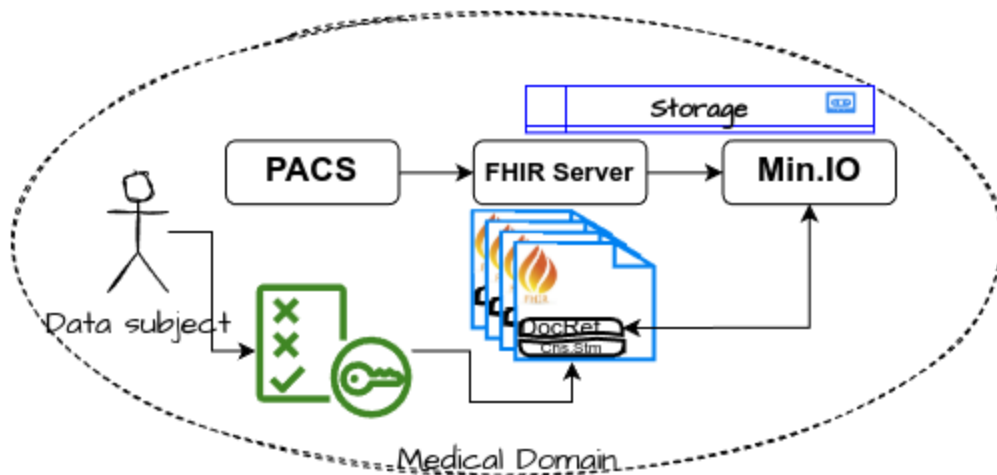
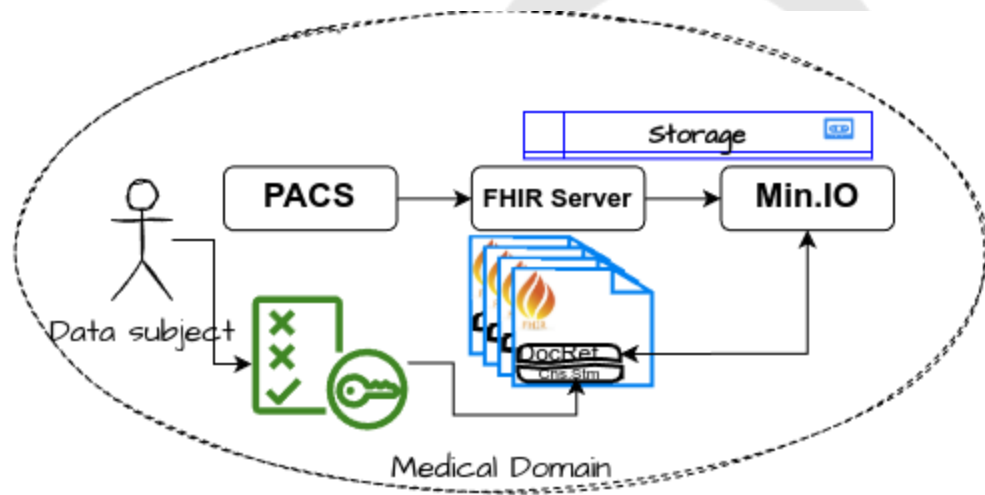
Current Landscape



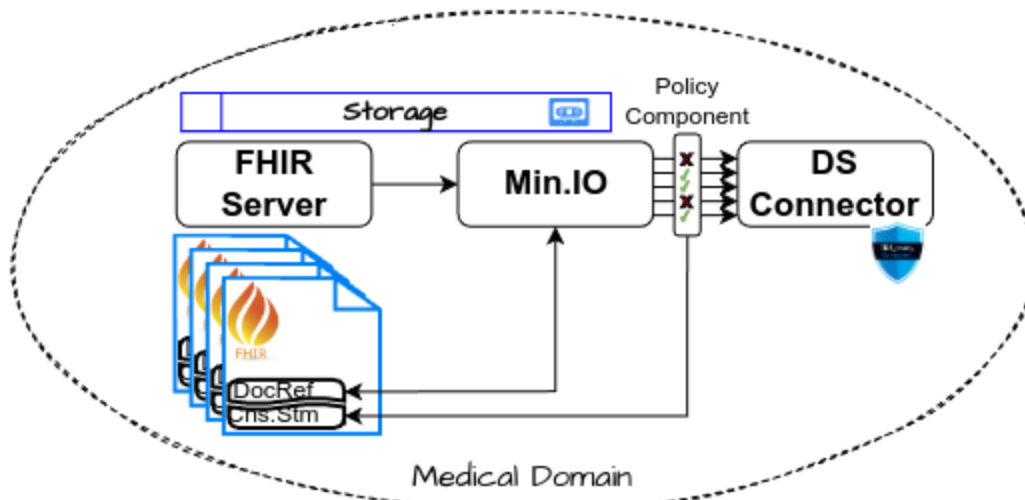
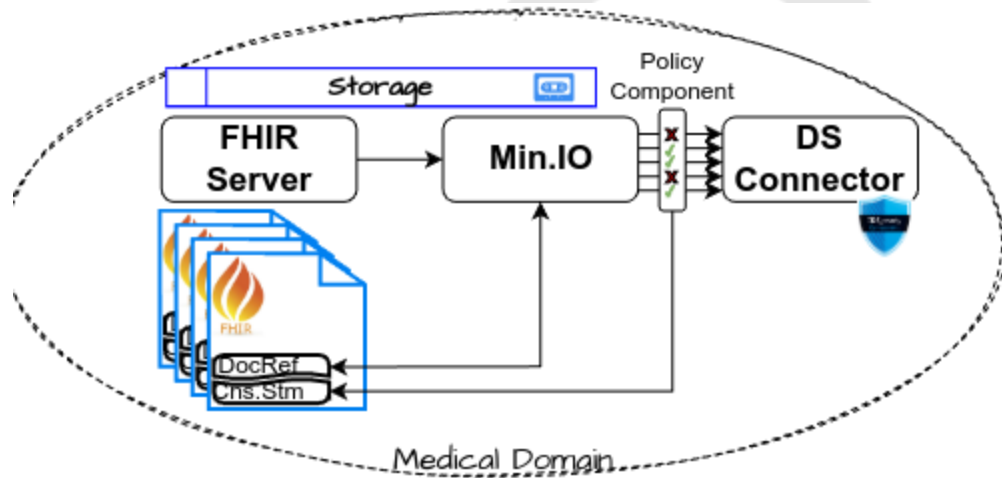
Medical Domain Integration



Consent in the Loop



Data Space Support

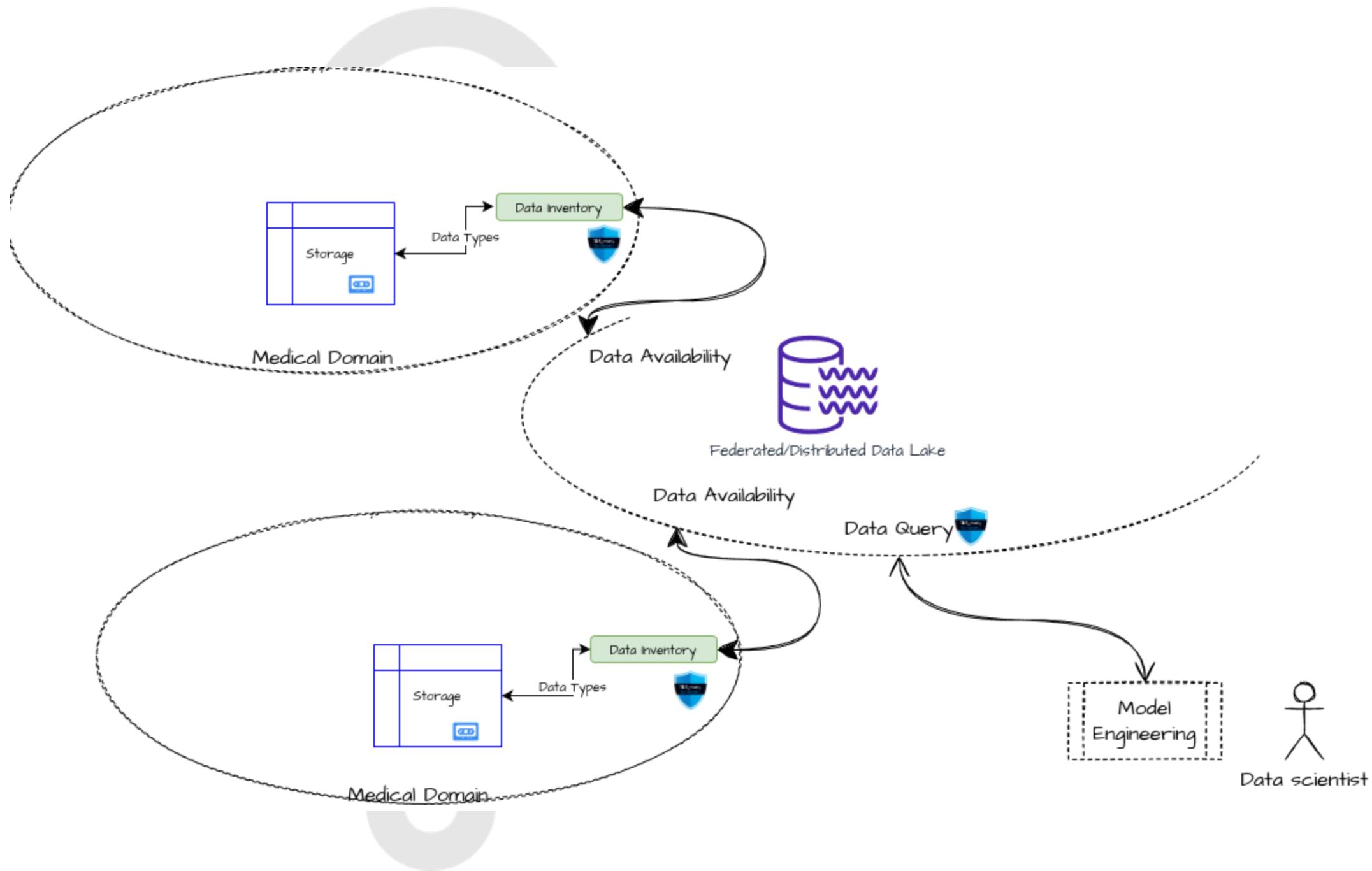


Model
Engineering

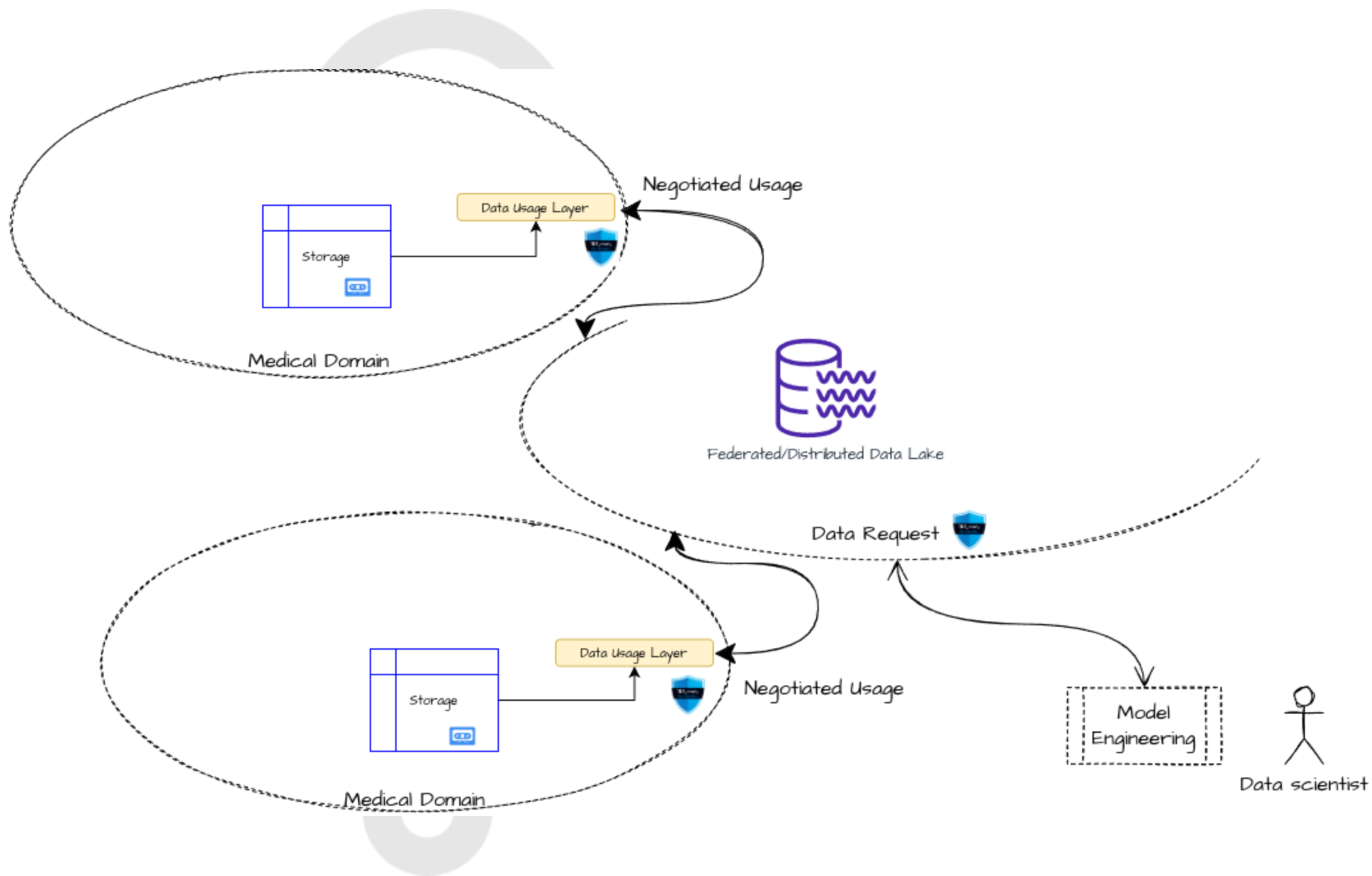


Data scientist

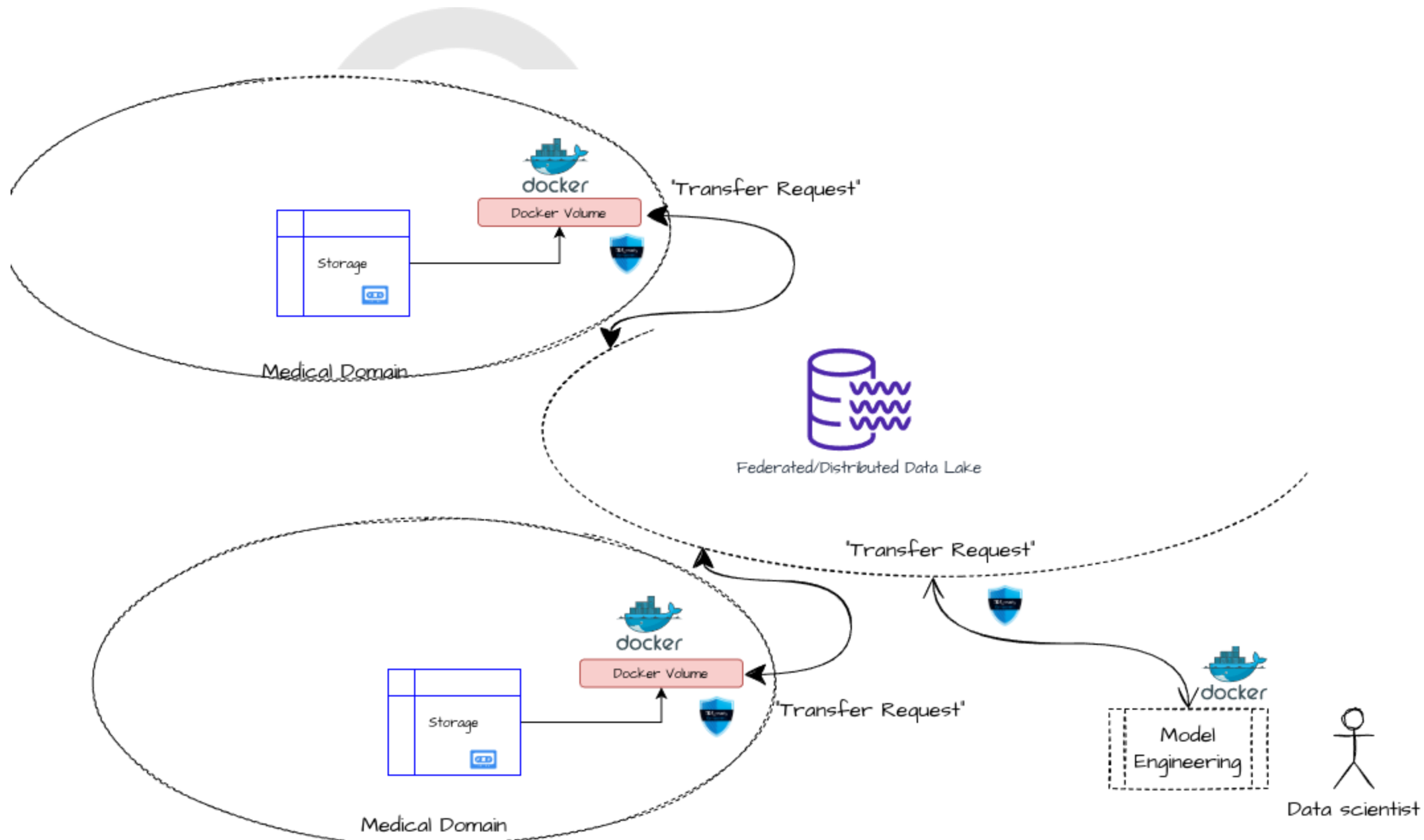
Federation



Usage Negotiation



PAOMA-MED "Transfer Request"





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**Thank you for your
interest and attention!!!**