

Breakout Session 1: Track B

MUST Data Science Research Hub (MUDSReH) - Democratized Trusted Research Environment (dTRE)

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MBARARA UNIVERSITY DATA
SCIENCE RESEARCH HUB

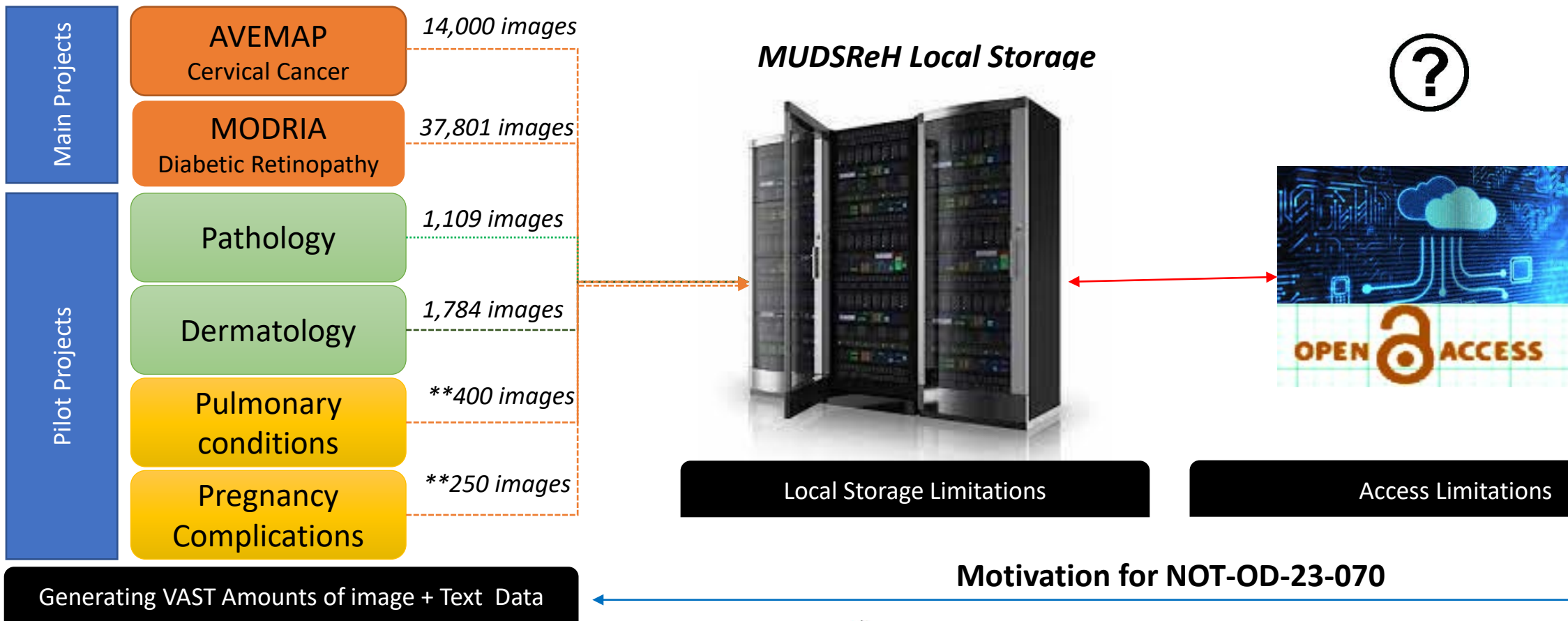
MUST Data Science Research Hub (MUDSReH) – Democratized Trusted Research Environment (dTRE)

17 - 18 Jan 2024:



Grant No. U54TW012043

Democratized Trusted Research Environment (dTRE) - Motivation

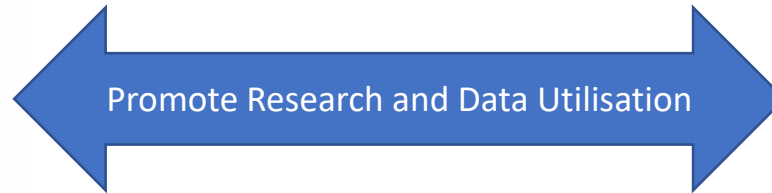


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Democratized Trusted Research Environment (dTRE) - Motivation

- Images + Bio data
- De-identified Data
- Normalised Datasets

MUDSReH Local storage



- Images + Bio data
- De-identified Data
- Normalised Datasets

Data availed to Public

Local Storage Limitations

- Power Instability
- Network Instability
- Internet Access
- Storage capacity
- Compute()

dTRE



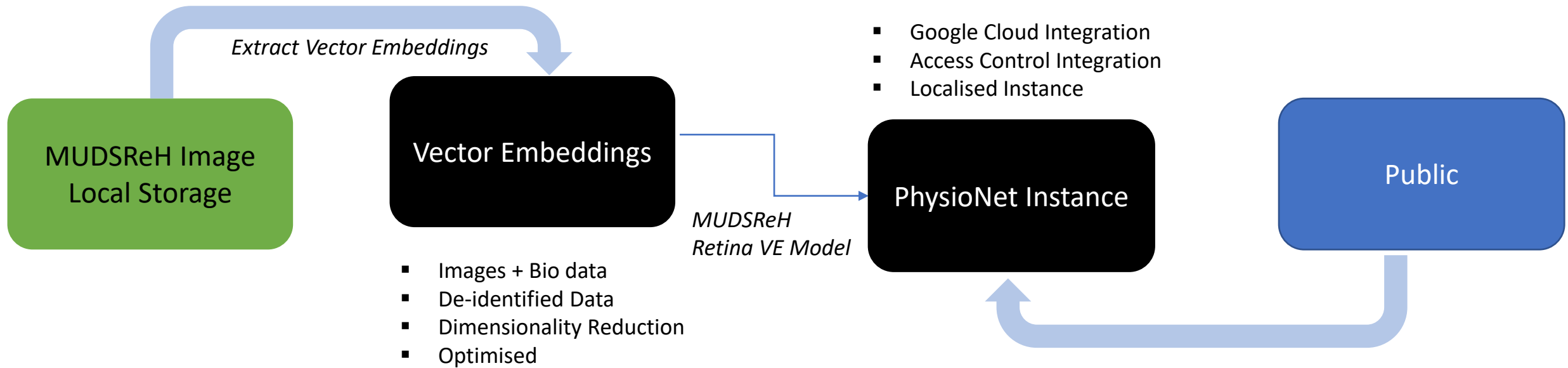
Access Limitations

- | | |
|--|--|
| <ul style="list-style-type: none"> ▪ Save storage space ▪ Reduced memory req. ▪ Efficient processing ▪ Faster data retrieval ▪ Improved privacy ▪ Reduced pre-processing ▪ Reduced bandwidth req. | <ul style="list-style-type: none"> ▪ Safe Data ▪ Safe Projects ▪ Safe People ▪ Safe Settings ▪ Safe Outputs ▪ FAIR Data principles |
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Democratized Trusted Research Environment (dTRE) - Design

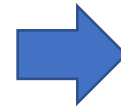


Democratized Trusted Research Environment (dTRE) - Design



MUDSReH Retinal
Images + Metadata

MUDSReH DMAC + MIT Vector Embeddings Team



- ✓ Develop a robust vector embedding model for retina images - Completed
- ✓ Test the Vector embedding Model on Brazilian Dataset - Completed
- ✓ Train the Vector Embedding on MUDSReH Retinal Images – Ongoing – expected to be completed by end of February

- ✓ Create a demonstrator environment using publicly available PhysioNet Data in Google Cloud with novel access control – On Going
 - ✓ Creating MUDSReH project on PhysioNet - Completed
 - ✓ GCP Integration – On Going
 - ✓ Access control integration – On Going
- ✓ Transfer the PhysioNet dTRE infrastructure to the MUDSReH data ecosystem – On Going



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Democratized Trusted Research Environment (dTRE) – Expected Outcomes

1) An Optimized Vector Embedding Model for Retinal Images for an African Population

- ✓ Increase Knowledge about Vector Embeddings in Retinal Images – Through a manuscript
- ✓ Increased Utilisation of Retinal Images – Through a datathon

2) A secure African Based PhysioNet Instance

- ✓ Increase Knowledge about Trusted Research Environments – Through a manuscript
- ✓ Increased Utilisation of MUDSReH Images – Through a datathon
- ✓ Increased development of ML Models using MUDSReH Datasets – Through Access to GCP Compute infrastructure



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THANK
YOU

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