RAPS

Pittsburgh Regional Autonomous Patient Safety

Autonomous Patient Safety

Pittsburgh

Patient Safety R&D Salon
June 29, 2023

1

Patient Safety R&D Salons

Stimulating a pipeline of patient safety R&D

- ✓ Learn about the patient safety priorities and needs of providers, patients, and payers
- ✓ Explore the applications of technologies
- ✓ Discover Salon participants' strengths
- ✓ Establish connections
- ✓ Identify opportunities to jointly apply for grants

SAVE THE DATES

Patient Safety R&D Salons

RAPS

AUG 23
11 AM **- 12** PM

OCT 11
12 PM **- 1** PM

DEC 6
12 PM **- 1** PM

José-Alain Sahel, MD
The Digital Twin Project to Inform Safe, Optimal Treatment Decisions

Discussion: Applications of Digital Twins to Patient Safety & Pittsburgh's Potential to Become a Leader

Pitt MEARS Study, Data Sharing Collaboration with CMU IPSR, & ARPA-H

Medication Error Avoidance at Regional Scale (MEARS) Update and Opportunities

Department of Biomedical Informatics Team Leads
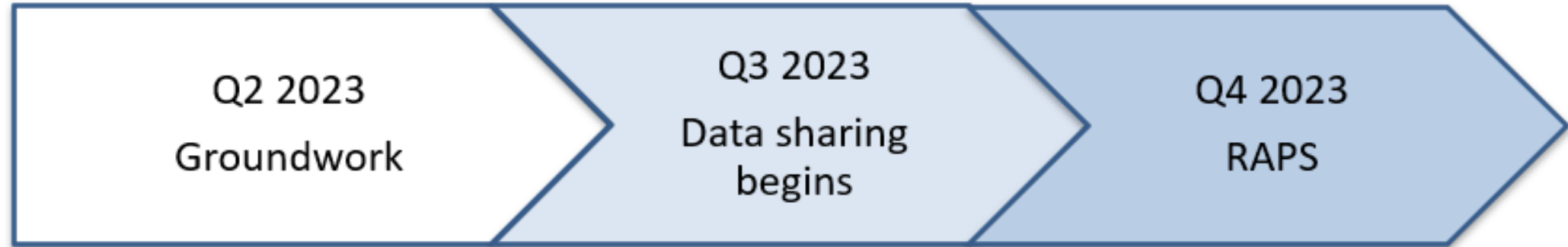
Richard Boyce, PhD – rdb45@pitt.edu

Eugene Sadhu, MD – eugene.sadhu@pitt.edu

Nickie Cappella – nkc7@pitt.edu

Update on the MEARS-Pitt & IPSR-CMU study collaboration

Progress - MEARS (Pitt) – IPSR (CMU) Collaboration

Q2 2023
Groundwork

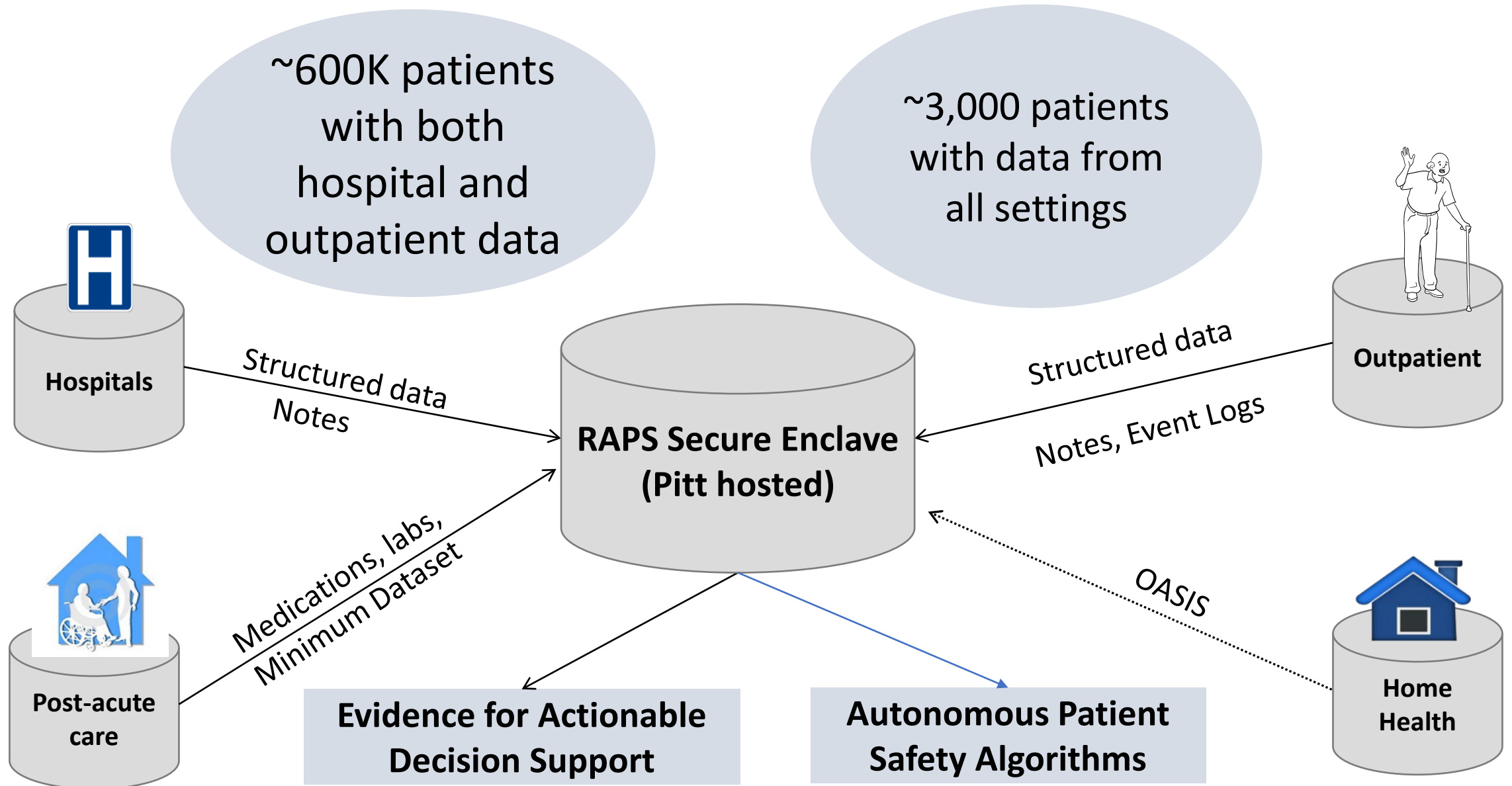**Q3 2023**
Data sharing begins

Q4 2023
RAPS

- Data requirements gathering (data domains, use cases)

- Regulatory requirements (DRU and IRB)

- Submission of a failure modes manuscript to JAMDA

- Implementation of secure data enclave

- Approval of first RAPS data projects

- Establish the dataset as a benchmark

- ARPA-H LOI

- Develop and test predictive and analytic models

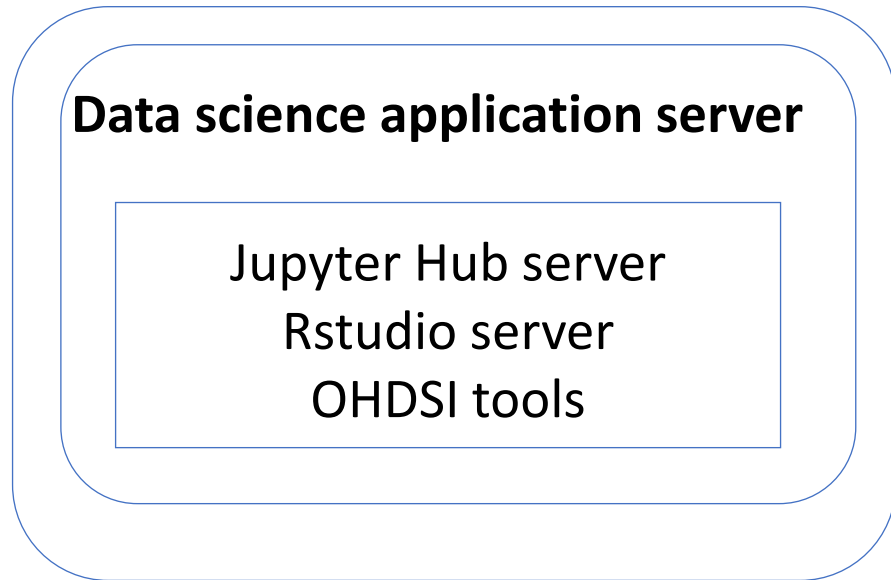- Design of RAPS intervention to be the Y2 focus

- ARPA-H Grant writing

Update on the data sharing infrastructure and how this will equip the CMU IPSR team with Pitt/R3 data and secure computing infrastructure

Initial Data Sharing Infrastructure

~600K patients with both hospital and outpatient data

~3,000 patients with data from all settings

Hospitals

Structured data
Notes

RAPS Secure Enclave (Pitt hosted)

Structured data

Notes, Event Logs

Outpatient

Post-acute care

Medications, labs, Minimum Dataset

OASIS

Home Health

Evidence for Actionable Decision Support

Autonomous Patient Safety Algorithms

Technical Overview

Pitt Secure Server Zone 1

Data science application server

Jupyter Hub server
Rstudio server
OHDSI tools

Pitt Secure Server Zone 2

Dataset server

Structured data
Clinical notes
MDS and OASIS
Event logs (outpatient)

Secure programmatic
connection (JDBC)
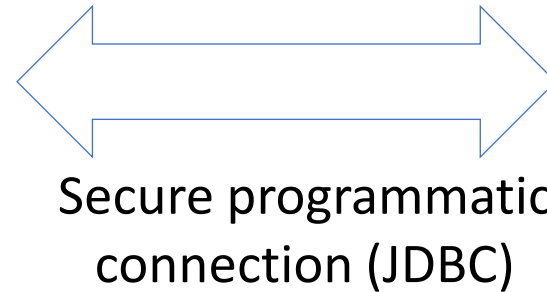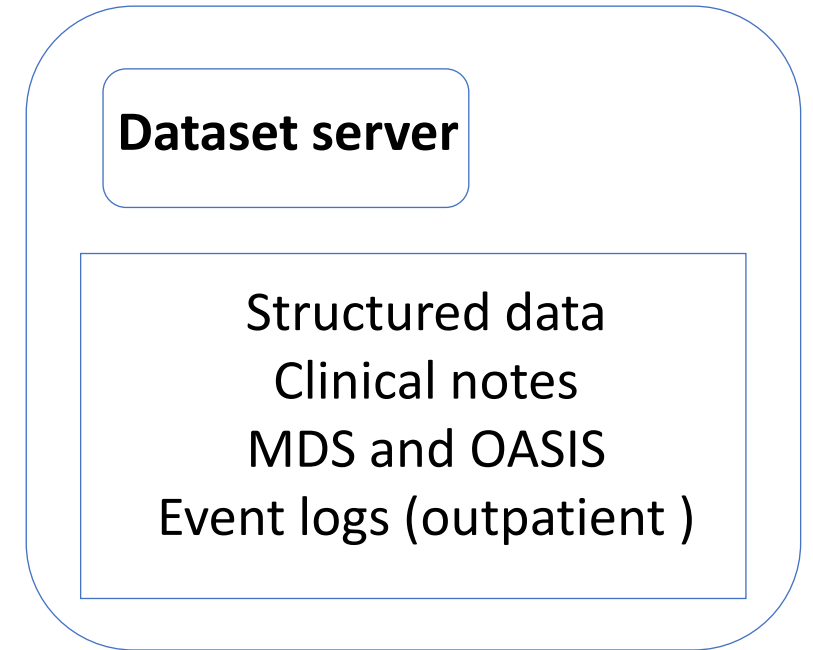
Access using guest Pitt accounts
through Global Protect VPN

CMU™

Hardware & Software

Hardware supports (CPU and GPU):
- Machine Learning (ML)
- Artificial Intelligence (AI)
- Data Exploration

Software, data structure, tools (OHDSI / OMOP):
- Data organized and standardized to facilitate analysis for clinical informatics
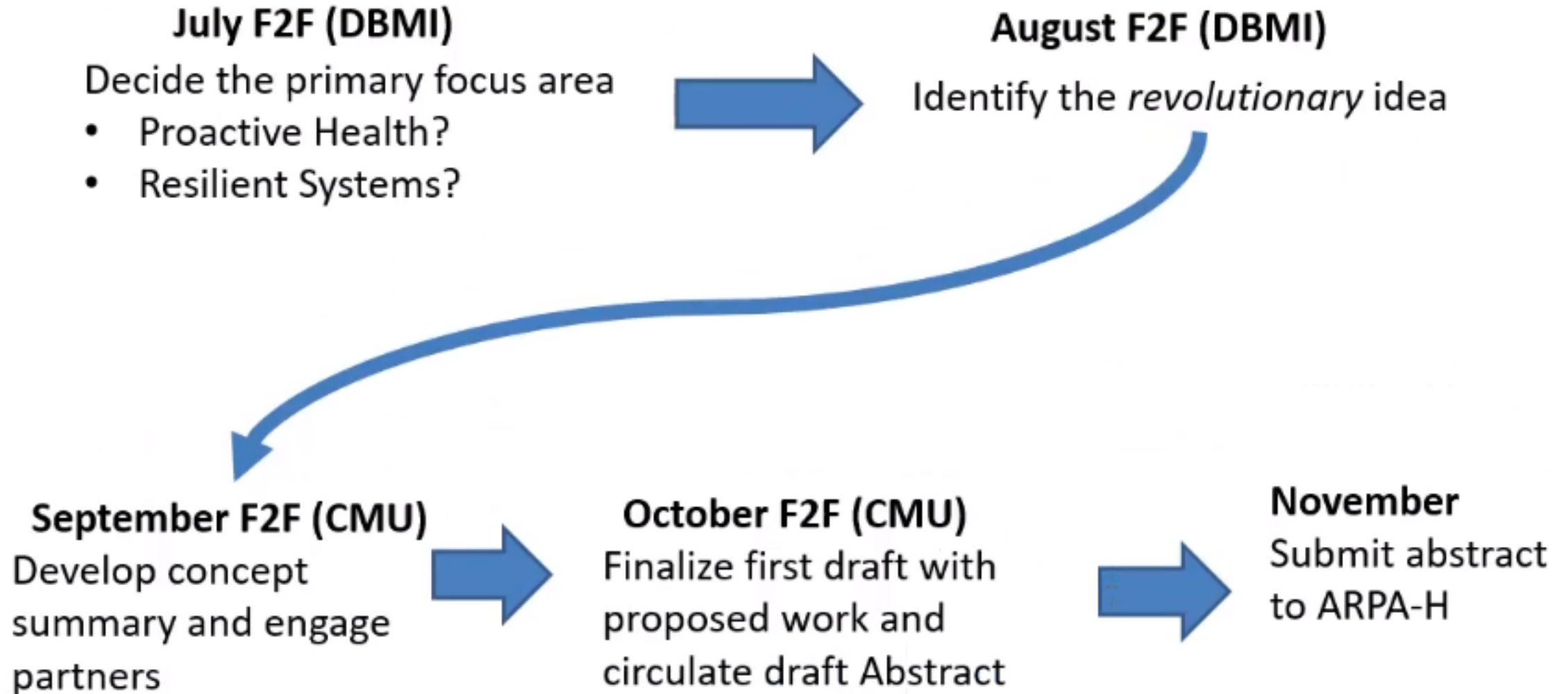- Provide clinical context-aware analysis

Central Processing Unit (CPU) handles main functions of a software analysis for computers, whereas Graphics Processing Units (GPU) is a specialized component that excels at running many complex tasks at once.

Observational Medical Outcomes Partnership (OMOP) Common Data Model allows for the systematic analysis of disparate observational databases. OHDSI - Observational Health Data Sciences and Informatics organization is the home for OMOP Common Data Model.

Collaboration plan which leads to a RAPS Pitt CMU Patient Safety ARPA-H proposal

July F2F (DBMI)
Decide the primary focus area
- Proactive Health?
- Resilient Systems?

August F2F (DBMI)
Identify the *revolutionary* idea

September F2F (CMU)
Develop concept summary and engage partners

October F2F (CMU)
Finalize first draft with proposed work and circulate draft Abstract

November
Submit abstract to ARPA-H

Acknowledgments

MEARS Team

- **Dr. Richard Boyce**, Associate Professor, Department of Biomedical Informatics
- **Dr. Eugene Sadhu**, Senior Research Scientist, Department of Biomedical Informatics
- **Dr. Steven Albert**, Professor, Department of Behavioral and Community Health Sciences
- **Dr. Sandra Kane-Gil**, Associate Professor, Pharmacy and Therapeutics, Biomedical Informatics, Critical Care Medicine and CTSI
- **Brian Mclay**, Lead Datawarehouse Architect, Department of Biomedical Informatics
- **Nickie Cappella**, Director – Research Informatics, Department of Biomedical Informatics
- **John Milnes**, Chief Systems Architect, Department of Biomedical Informatics

SAVE THE DATES

Patient Safety R&D Salons

RAPS

AUG 23
11 AM - 12 PM

OCT 11
12 PM - 1 PM

DEC 6
12 PM - 1 PM

RAPS Seed Grant Program:
Request for Proposals

Establishing Pittsburgh as a Tech Hub for Developing Autonomous Patient Safety Solutions

Awards up to $50K available

JEWISH HEALTHCARE FOUNDATION

RAPS
Pittsburgh Regional Autonomous Patient Safety

PITTSBURGH REGIONAL HEALTH INITIATIVE