

**ARA**

# IARPA REASON Lightning Talk

Applied Research Associates, Inc

[www.ara.com](http://www.ara.com)

Lance E. Besaw, Ph.D., [lbesaw@ara.com](mailto:lbesaw@ara.com), 802.999.6573

© 2022 Applied Research Associates, Inc. • ARA Proprietary



NATIONAL SECURITY



INFRASTRUCTURE



ENERGY & ENVIRONMENT



HEALTH SOLUTIONS



# Applied Research Associates Overview

- Founded 1979, Albuquerque, New Mexico
- 1,708 employee owners at locations in the U.S. and Canada
- FY22 sales of \$486 million



## National Security

ARA delivers innovative solutions to assess, detect, deter, defeat, and respond to threats facing us at home and abroad.



## Infrastructure

ARA leads in technologies and services to improve performance and sustainability of infrastructure for transportation, buildings, and energy systems.



## Energy & Environment

ARA provides innovative engineering services and products for alternative fuels, and the power and utility services market.



## Health Solutions

ARA provides specialized research and technology services, testing and product development in health science and engineering.





# Expertise and Experience

AI / ML

Deep Learning

NLP

Behavior Analytics

Decision Support Analysis

Data to Decision (D2D)

Graph Analysis

DevOps & CI/CD

Cloud Engineering

System Integration

## IC R&D and Transition:

- IARPA
  - ACE
  - FINDER
  - LEGO
  - SMART
- NGA
  - FINDER
  - HDNN
  - JASSM
- NSA ArchDev2
- USAF TE-RECCS



I A R P A



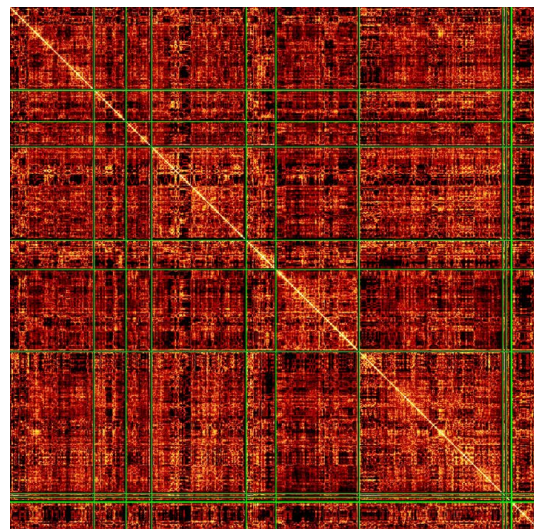


# Proven Capabilities

## NLP & Decision Support Analysis

- Medical Decision Support
- Analyzed patient full medical records
- Built a care plan recommender system
- Identify a cohort of historical patients that a clinician can review to inform their decisions

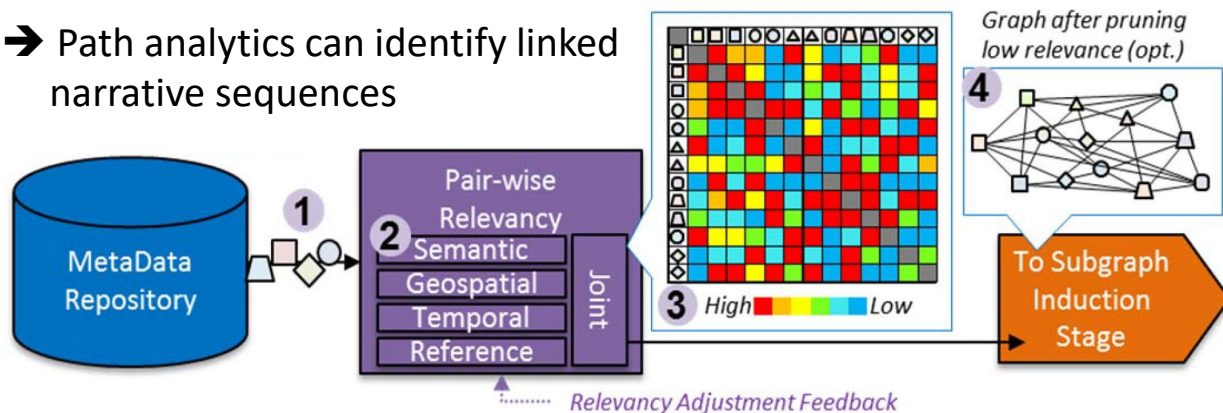
➔ Improved decision-making speed and patient care outcome



## NLP & Decision Support Analysis

- Pair-wise document relevancy between events informs situational understanding and is represented as a weighted graph

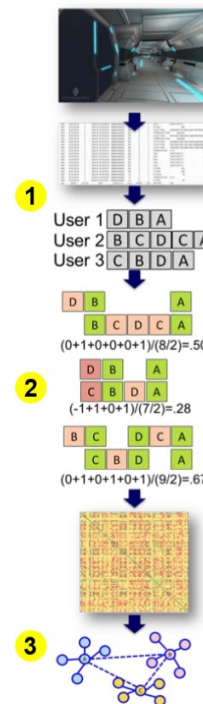
➔ Path analytics can identify linked narrative sequences



## Behavior Analytics

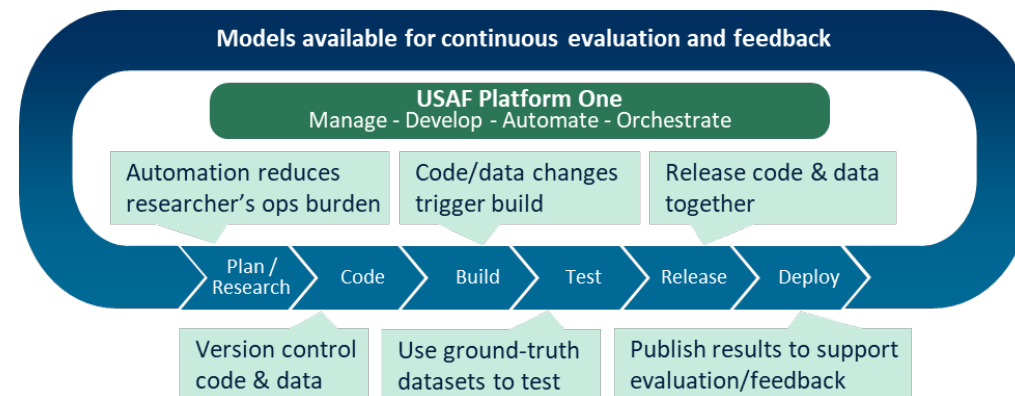
- Organize temporal sequences into groups based on similar events
- Detect similarity over time
- Event Sequence Alignment and Clustering
  - AI automatically identifies temporal patterns and sequences

➔ Automated reasoning over large data sets – reduce errors, alleviate tedious tasks



## IARPA DevOps

➔ Our integrated process for DevOps and DataOps automates test cases and result reporting, accelerating research and transition.





# Teaming and Contact Information

Looking for academic and industry partners to round out our team with expertise in:

- Applied epistemology
- Information logic
- Natural language processing
- Automated argumentation analysis and reasoning

Planning to Prime

Please Contact:

Lance E. Besaw, PhD., [lbesaw@ara.com](mailto:lbesaw@ara.com), 802.999.6573