

The Knowledge Graph

Power of an Information Network driving
Biometric workflows

Nekzad Shroff and **Jaya Inampudi**



US Connect 2024

Clinical Trial Programming Today

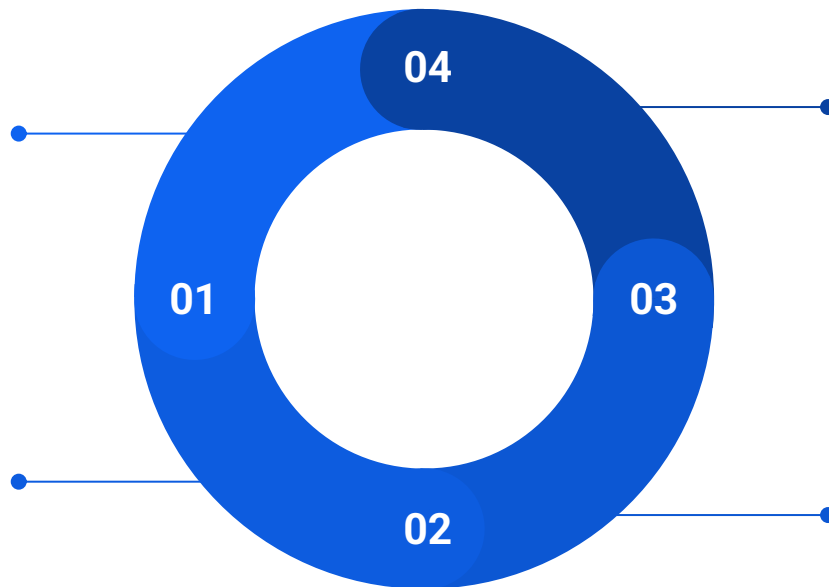


Complexity

Managing code and specification lineage, dependencies, and traceability among various components is a complex task.

Inefficient traditional methods

Traditional methods often involve the use of spreadsheets, flat text files, and XML files, which lack the ability to effectively manage traceability and dependencies



Compliance with regulatory standards

The inability to effectively manage traceability and dependencies also impacts compliance with regulatory standards.

Operational efficiency

The lack of effective management of traceability and dependencies impacts operational efficiency.

Knowledge Graphs

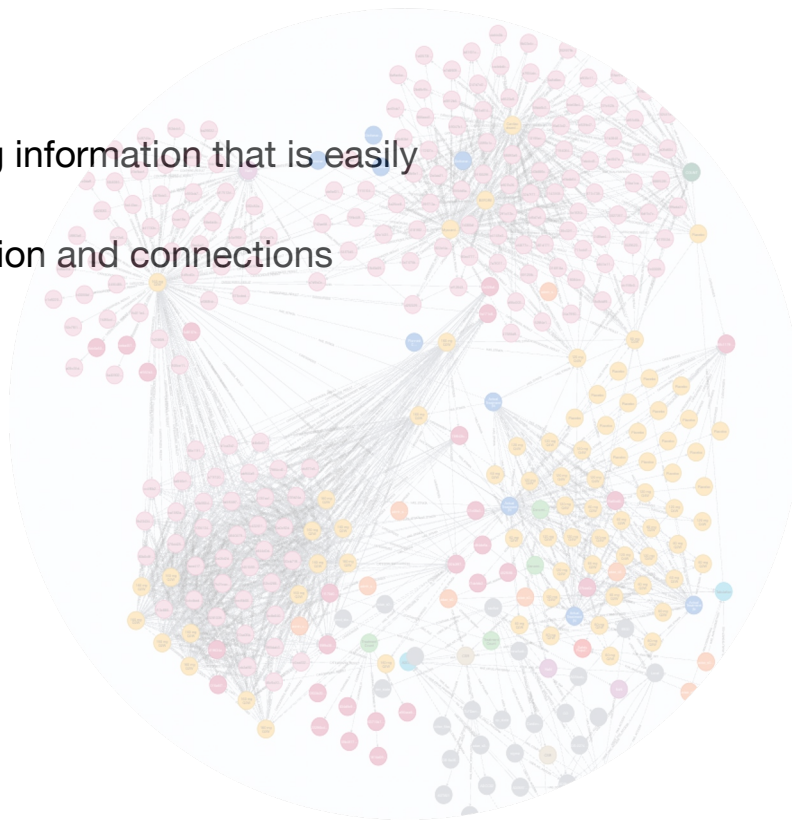


Overview

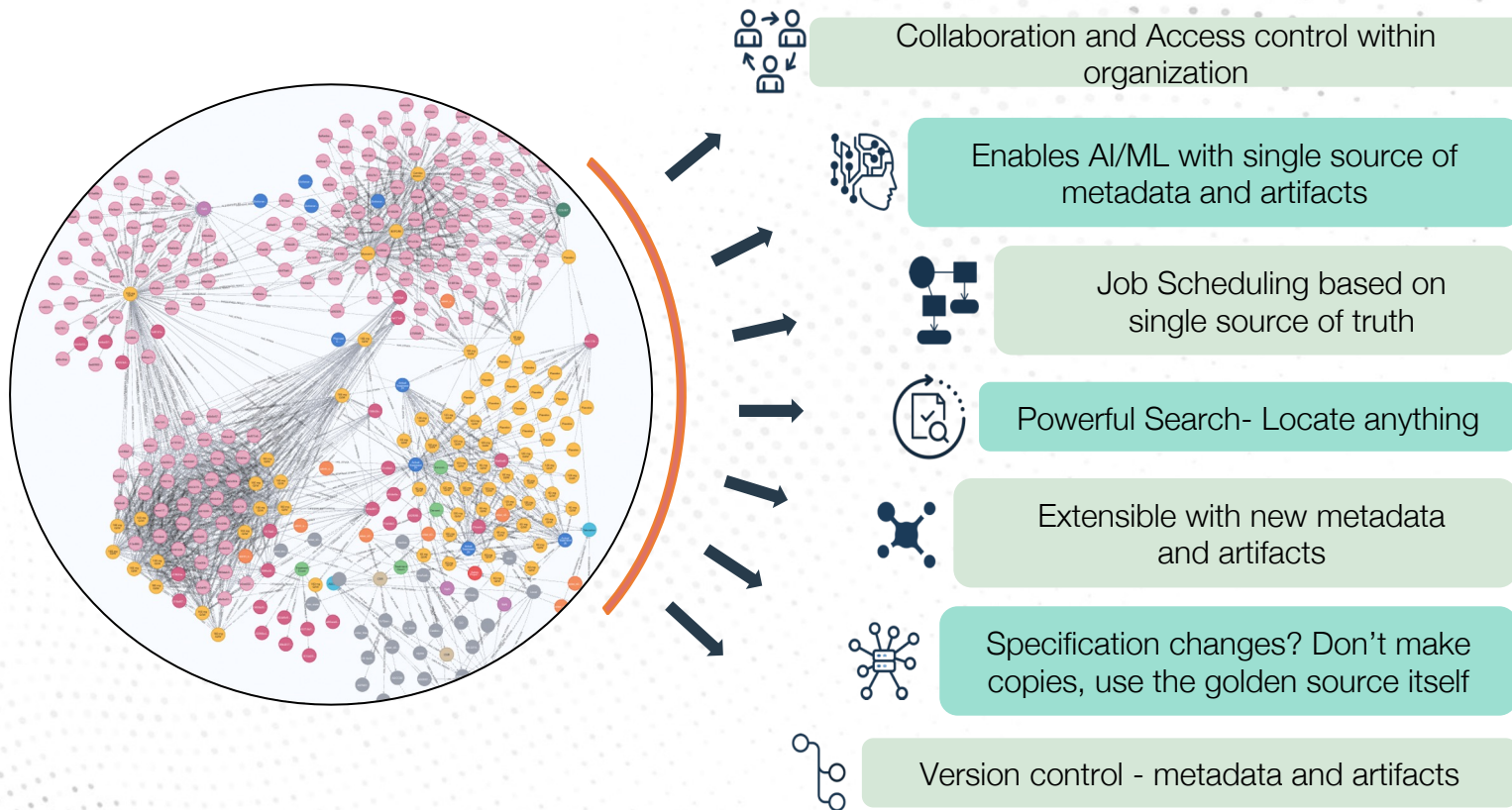
- Knowledge Graphs are a way of storing and representing information that is easily understandable by both humans and machines.
- It uses “nodes” and “relationships” to represent information and connections between different pieces of information.

Key Capabilities

- Multi-dimensional Relationships
- Flexibility in Representation
- Enhanced Navigation and Reusability



Knowledge Graph Applications in Biometrics





Case Study: Knowledge Graphs - Analysis and Reporting Environment

Challenges Faced:

- **Complex Ecosystem:** Submission deliverables include programs, specifications, documents, datasets and logs which have an interlinked lifecycle
- **Traceability and Integrity:** Tracking changes and maintaining the integrity of code and specification lineage is a challenging task

Role of Knowledge Graphs:

1. Intuitive Data and Relationships Management:

Knowledge Graphs map relationships, lineage, and dependencies among various components, providing a visual, graph-based representation of data.

1. Visual Traceability:

Knowledge Graphs enable clear tracking of transformations, providing a clear and accurate record of code and specification lineage.

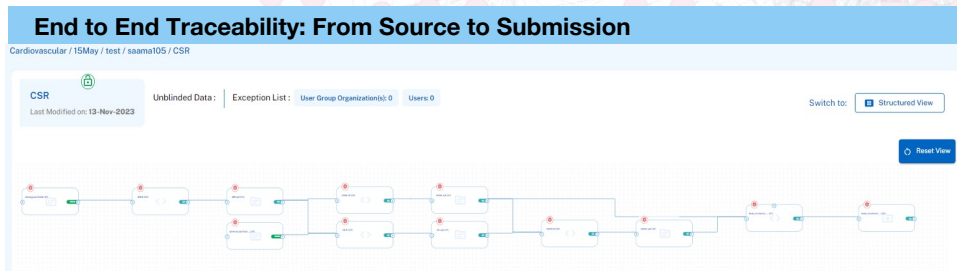
1. Operational Efficiency:

Knowledge Graphs allow for efficient reuse of code and specifications, reducing redundancy and saving valuable time and resources.

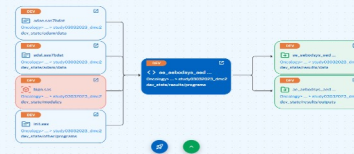
1. Future Automation:

Digitized relationship metadata in the Knowledge Graph enables future automation and streamlining of manual steps in the submission lifecycle.

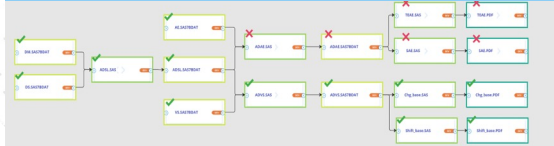
The Power of Knowledge Graphs



Dependencies: How are the files related ?



Program Run-time dependencies: Is my run out of sync ?

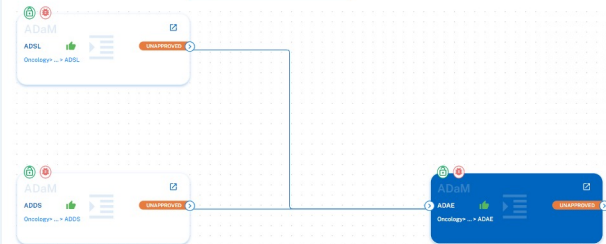


Specs : Easily rendered for human interpretation

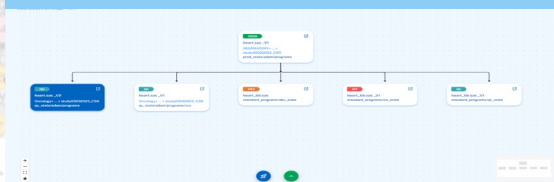
Ontology / BLP25 / EMR6325 / saama103 / CSR

Dependency View

Downstream: ☒ ADaM ☐ Analysis Definition ☐ Select Variable



Lineage: Track Copies Clones and versions





The Future of Knowledge Graphs

Automating Conversions

- Automate Raw Data -> SDTM -> ADaM -> TFLs
- Reduced human interference, improved operational efficiency, improved quality of deliverables

Machine Learning Algorithms

- Leverage connected data to predict and perform impact analysis
- Improves the development and testing process

Streamlining the Submissions Lifecycle

- Streamline manual steps in submission lifecycle
- Drive enhanced operational efficiency

Data Visualization Tools

- Develop interactive and intuitive visualization tools
- Visualize multidimensional patient information
- Trace subject information from source to Submission



Nekzad Shroff
VP, Head of Clinical Solutions
Saama
nekzad.shroff@saama.com



Jaya Inampudi
Sr Director, Clinical Solutions
Saama
jaya.inampudi@saama.com

