

# NIA KNOWLEDGE



## About Nia Knowledge

Nia Knowledge provides capabilities to build, consume and reuse enterprise knowledge across various business domains and functions within an organization. It provides capabilities to build solutions related with creation of business context

specific knowledge graphs and subsequent consumption with set of business user level queries such as graph traversal queries, guided question answering, graph search, browse and visualization of knowledge graphs. It is specifically targeted for use

cases that required knowledge capture as machine-understandable knowledge and re-use it across similar business contexts to draw context specific inferences by applying reasoning on the captured domain knowledge.

## The Advantage



Enhance productivity by efficiently retrieving relevant interconnected information from the knowledge base.



Helps automation of knowledge intensive business processes by turning expert knowledge into a machine-understandable knowledge.



Improve the effectiveness of interactions between business functions within the enterprise through common, consistent, and shared semantics related with business domain.

## Key Features

- Re-use of domain knowledge across multiple contexts
- Modular approach of knowledge modeling
- Visualization of knowledge graphs with business user level graph traversal type queries.
- Interactive question answering to explore the knowledge graph in a guided navigational style.
- Business user intuitive and GUI based end to end workflow

## How Nia Knowledge can help?

- Organize information into a knowledge graph by defining the concepts, relationships and run business user level semantic queries involving multiple levels of relationships.
- Represent domain knowledge as axioms or rules in the knowledge graph
- and apply this domain knowledge on context specific data to draw additional inferences.
- Visualize, browse, and search the knowledge graph.
- Navigate the knowledge graph through interactive question answering interface.



## The features of Nia Knowledge:

### Workflow to manage knowledge domains and models

Provides business friendly, GUI and role-based workflow for managing knowledge domains and models in a modular approach.

- **GUI based business intuitive workbench** – Provides GUI based workflow for all the modules and features by abstracting technical intricacies; thus, helping faster onboarding.
- **Enable re-use of domain knowledge across models within the domain**
  - Supports modular approach of knowledge modeling to enable re-use of domain knowledge and configurations across all knowledge models within the domain.
- **Role based workflow with dashboards**
  - Support pre-configured roles with role-based dashboards for knowledge domains and models.

### Knowledge domain configuration

Provides capabilities to define meta-model or structure to organize information into knowledge model within a knowledge domain.

- **Export domain definition** - Export domain definition data as JSON, EXCEL format.
- **Import domain definition** - Import sub-domain definition data through an EXCEL format.

### Manage Data Ingestion

Enables automation in extracting and parsing the input data into a format (i.e. triple data format) which can be ingested into the model as ontology/graph data, adhering to knowledge domain definition.

- **Data adapters:** Supports custom data adapters to enable extraction or parsing of domain specific data set from a data file as per knowledge domain definition. Data adapters can also be used to extract data file from an external system.
  - **Manage data adapter configurations:** Manage (add, view, edit, delete) knowledge domain specific data adapters and their configurations. These pre-configured data adapters are made available for all the models created within the knowledge domain.
  - **Ingest Data to Model:** Create data ingestion activities using pre- configured and populated data adapters of the knowledge domain by specifying input data source.
- Clone and save the graph query output as diagram for editing.
  - o **Object Browser** – Manage (create, view, edit, delete) objects.
  - o **Object Editor** –Manage (create, view, edit, delete) object data relations and attribute values.
- **Model Graph Data Import/ Export** – Supports import and export of model data in various formats.
    - o **Export of model data** - Export Model data into JSON, EXCEL formats.
    - o **Import of model data** – Import data into the model as JSON, EXCEL.

### Manage Editing of Model Graph Data

Provides capability to generate knowledge domain specific GUI based model editor views to create, edit or modify the graph data (i.e. triple data) at the model level. This is generated based on model editor configurations at the domain level.

- **Model Editor Configurations:** Provides capability to configure model editor views, diagram types and display settings based on object types and relations.
- **GUI based Model Editor:** Supports the editing of the model data (objects, relations, and attributes) using Diagram Browser, Object Browser, Diagram Editor and Object Editor within Model Editor Views.
  - o **Diagram Browser:** Organize model data into various diagrams for editing.
  - o **Diagram Editor**
    - View model diagram and manage (create, view, edit, delete) objects and object relations.
    - Manage (reset view, zoom in/out, apply filter) graphical display of model diagram.

### Knowledge model consumption

Supports various means of consuming the knowledge model i.e. search, browse, or graph query output. The graph traversal type query output can be viewed as textual description and/or graphical visualization.

- **Graph Search and Browse Interface**
  - o Search for objects in the knowledge model based on various criteria and filters.
  - o Browse through the knowledge model based on objects types, relationships and attributes.
  - o Configurable to use either Elastic Search or Solr search engine
- **Graph Traversal Query and Visualization Interface**
  - o Ability to configure business user level graph traversal type queries with various graph visualization layouts (tree, flow etc.)
  - o View graph query results as textual description and/or graphical visualization.
  - o Manage visualization of knowledge graph (reset view, zoom in/out, apply filter etc.)

## Integration with external systems

Supports integration with external applications to enable updating and consumption of knowledge model by external application. Enables accessing or ingesting data sources from external systems.

- Provides access to all core features through REST API's.
- Enables linking external data sources to the knowledge model entities.
- Enables connecting to external data sources to ingest and parse the data into knowledge model

## User and Access Management

Central authentication service that can work with various authentications. User and role administration capabilities to configure application and data access for different roles.

- User and Roles – Pre-configured set of role definitions, mapping to usernames.
- Authentication - User authentication for access to the product.
- Authorization - Enabling authorization driven access to the data and application modules.

## Ontology based Knowledge Domain Configuration

Capability to create ontology-based knowledge domain definition using

various ontology modeling constructs such as axioms and rules.

- **GUI based ontology editor:** Intuitive and GUI based management (create, edit, view, delete) of knowledge domain specific axioms and rules.
- **OWL based ontology modeling constructs:** Support various OWL modeling constructs to create domain specific axioms and rules.
  - o **Object Types and Object Type Expressions**
  - o **Data Types/Data Ranges and Data Range Expressions**
  - o **Object Relations and Data Relations:**
  - o **Axioms:** Supports various types of axioms such as object relation based, data relation based, assertion based, declaration based.
  - o **Object Attributes**
  - o **SWRL based Rules**

## Import / Export of ontologies

Supports import and export of OWL ontologies.

- Supports import of external OWL ontologies and extend it for specific applications
- Supports export of knowledge model as OWL ontology

## Capability to infer additional insights

Ontology based reasoning to infer additional insights on the data in the knowledge model based on the axioms and rules of the domain.

## Capability to support ontology-based queries

Configure and execute DL based queries.

## Built-in interactive question answering on knowledge model

Supports interactive question answering to explore the knowledge model. Supports answering queries in a guided navigational style with auto generated queries from the knowledge model.

- **Manage Domain level QnA configurations** – Configure general settings to enable question answering applicable for all the knowledge models of a domain.
- **Contextualize model QnA configurations** – Provides capability to override generic domain level configurations and customize question answering query responses at the model level.

## Integration with external systems

Supports the integration with external systems to build custom applications based on knowledge models.

For more information, contact [askus@infosys.com](mailto:askus@infosys.com)



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