Sets (Quads):

Sets (Resources, Subjects, Predicates, Objects, SubjectKinds, PredicateKinds, ObjectKinds, Statements: Mappings / Transforms) abstraction for representing Augmented RDF Graphs.

Augmentations:

Inference mechanisms for obtaining metadata from input statements and augmenting, for example, type information and models schema and transforms.

Data (Activation), Schema (Aggregation), Behavior (Alignment):

Data Activation

Schema Aggregation

Behavior Alignment

Functional Sets Relations:

Classes (Sets) domain hierarchy:

OntResource

Subject : OntResource

Predicate : OntResource

Object : OntResource

Kind : OntResource

SubjectKind : Kind

PredicateKind : Kind

ObjectKind : Kind

Statement : Kind

Mapping : Statement

Transform : Mapping

Functor / Category: Resource Monad (of OntResource hierarchy). Dynamic typing DOM / DTOs Kinds members.

OntResource: Uniform Resource domain category interface:

getSet

getKind

getOntResource

getResource (this)

getContext

getOccurrence

getAttribute

getValue

getQuadContext

getQuadSubject

getQuadPredicate

getQuadObject

Class, Metaclass, Instance, Context, Occurrence, Role. Encoding: Functional Mappings / Transforms. Order. Relations, Data Flow Roles.

OntResource model Quads hierarchy:

OntResources: Universe Set.

(Context : Resource, Occurrence : Resource, Attribute : Resource, Value : Resource); Normal Form.

Resources: Universe Set.

(Context : Resource, Occurrence : Resource, Attribute : Resource, Value : Resource); Normal Form.

Subjects : OntResource

(SubjectKind, Subject, Attribute : Predicate, Value : Object);

Subjects:

(Subject, Occurrence : SubjectKind, Attribute : Resource P, Value : Resource O);

Predicates : Resource

(PredicateKind, Attribute : Resource Subject, Predicate, Value : Object);

Predicates:

(Predicate, Occurrence: PredicateKind, Attribute : Resource S, Value : Resource O);

Objects : Resource

(ObjectKind, Attribute : Resource Predicate, Value : Resource Subject, Object);

Objects: (Object, Occurrence : ObjectKind, Attribute : Resource P,  Value : Resource S);

SubjectKind (SK) : Subject. Predicate / Object Intersection.

(Statement, SubjectKind, Attribute : Predicate, Value : Object);

SubjectKind (SK) : Subject. Predicate / Object Intersection. Occurrence:

(Context : SubjectKind, Occurrence : Statement, Attribute : Predicate, Value : Object);

PredicateKind (PK) : Predicate. Subject / Object intersection:

(Statement, Attribute : Subject, PredicateKind, Value : Object);

PredicateKind (PK) : Predicate. Subject / Object intersection:

(Context : PredicateKind, Occurrence : Statement, Attribute : Subject, Value : Object);

ObjectKind (OK) : Object. Predicate / Subject intersection. Occurring.

(Statement, Attribute : Predicate, Value : Subject, ObjectKind);

ObjectKind (OK) : Object. Predicate / Subject intersection. Occurring.

(Context : ObjectKind, Occurrence : Statement, Attribute : Subject, Value : Predicate);

Statement / Mapping / Transform: Subject / Predicate / Object intersection:

Dual Occurrence of Transform (Mapping) / Occurring of Mapping (Transform) for Statements. Templates: apply Transform Matching Mapping Statements.

Transforms : Mappings

(Context : Mapping, Occurrence : Resource, Attribute : Resource, Value : Resource);

Transforms : Mapping.

(Context : Transform, Occurrence : Mapping, Attribute : Resource T, Value : Resource : U);

Mappings : Statement.

(Context : Mapping, Occurrence : Transform, Attribute : Resource T, Value : Resource U);

Mappings : Statements

(Context : Transform, Occurrence : Resource, Attribute : Resource, Value : Resource);

Statements : Kinds

(Context : Mapping, Occurrence : Resource, Attribute : Resource, Value : Resource);

Statements : Kinds

(Context : Statement, Occurrence : Mapping, Attribute : Resource, Value : Resource);

Domain Type Hierarchy: Reification, Resource Functor Transforms Domains: subtypes transforms wrapped compatible with results wrapped types by inheritance.

Type Inference: Kinds (Classes):

Aggregate same Attributes occurrences for sets of Resources sharing same Attributes. Activate Context Transforms Kinds. Activate Kinds Resources Statements.

Wrapped Types (Kinds) Inputs Inference / Matching. Wrappers contains Wrapped CSPO Role Resources. Functional Flow into Occurrences, Attributes, Values.

Encodings. Representations: Instances / Literals Encoding. URNs. Resolution: sameAs Mappings / Parsing. Occurrence / Occurring domainOf / rangeOf Type Inference.

Model Kinds: Model Reified.

Domains Kinds: From inputs.

Reified Model Resource Kinds.

Functional: Monads (wrappers types / wrapped types inference). Kinds Domain Flow (Mappings):

DOM Resources: dynamic object model / kinds.

Sample Statements:

(Dimension, Measure, Unit, Value);

(Relationship, Relation, Role, Player);

(Time, 1h, mins, 60m);

(Working, 1h, USD, 40);

(Working, 160h, USD, ?);

Model API:

Inputs / API:

I/O Normal Form: Statement

Service Facade. Functional Data Flow: Matching Mapping Transform: Statements. REST HATEOAS URNs:

I/O Statement:

(Context / Class, Instance, Attribute, Value);

Data Flow: Service Facade API:

REST Data Flow: Services Facade URN request / response HATEOAS flow.

Transform::Mapping::Statement::Kind::Resource;

Resource::Kind::Statement::Mapping::Transform;

Sets Resources REST HATEOAS / Data Flow IO Model Statements:

(Transform, Mapping, Statement, Kind);

Functional Data Flow:

Transform::Mapping::Statement::Kind::Resource;

Resource::Kind::Statement::Mapping::Transform;

Encoding.

Augmentations:

RDF Backend. Event sourcing (bus) saga pattern. Publish / Subscribe. Connectors.

Data Matching: Activation.

Schema Matching: Aggregation.

Behavior Matching: Alignment.

Activation (Data Matching):

RDF Quads Parsing from events sourcing events bus:

(Class, Instance, Attribute, Value);

Populate SPOs / Statements / Kinds / Mappings / Transforms Quads Wrappers Sets Objects for Aggregation.

Ontology Matching: Resources Kinds Matching. Merge same URNs.

Aggregation (Schema Matching):

Aggregation. Quads CSPOs / Attributes / Values. Handle recursion. Functional Transforms Context: subjectKind::subject::subjectKind (same subjectKind).

Schema Matching: Aggregation Kinds Matching.

Resources aggregate into Kinds. Kinds aggregate into Statements, Statements aggregate into Mappings. Mappings aggregate into Transforms. Hierarchy aligns Wrapper types reification.

Quad Wrappers (Resource hierarchy) wraps aggregated occurrence of wrapped Quad Type. Wrapped Quad Type: Kind. Wrapped: DOM / DTO of Kind members.

Alignment (Behavior Matching):

Resources Reification: Kinds, Statements, Mappings, Transforms reified. Reified Resources aggregates aligned into Transform Wrapped Quads:

(Kind, Statement, Mappings, Transform);

HATEOAS Functional Browsing. RDF Model Serialization.

Behavior Matching: Transform Quad Kinds Matching.

Template Transforms (Mapping Roles): TODO:

* Aggregation: Statements for each Context Occurrence Attribute / Value. Mapping: for each matching Attribute / Value apply Transform, render Statement apply Attribute / Value Transform. Context: Transform / Class. Occurrence: Subject. Normal Form. Transform wrapped: Context / Class, Occurrence wrapped: Subject.
* Augmentations: Activation (Schema), Alignment (Data), Aggregation (Behavior) Matching (Mapping Function) results: Template Transforms (noop, merge, add); Transforms Flow State: listening for Matching Inputs.
* Aggregation: Statements for each Context Occurrence Attribute / Value. Mapping: for each matching Attribute / Value apply Transform, render Statement apply Attribute / Value Transform. Context: Transform / Class. Occurrence: Subject. Normal Form. Transform wrapped: Context / Class, Occurrence wrapped: Subject.
* Aggregation: Statements for each Context Occurrence Attribute / Value. Mapping: for each matching Attribute / Value apply Transform, render Statement apply Attribute / Value Transform. Context: Transform / Class. Occurrence: Subject. Normal Form. Transform wrapped: Context / Class, Occurrence wrapped: Subject.
* Alignment: Aggregate Resources Context Occurrences, Attributes, Values for Resource, Kinds, Statements, Mapings, Transforms Resources from Statement, Mapping, Transforms occurrences / occurring. Positional Roles: Functional Resources Roles Reification. Wrapper Types. Aggregation: Matching.
* Occurrence Object Member of Subject as Transform / Function Role.
* Occurring Subject Member of Object as Mapping / Function Role.
* Model Aggregation / Expansion (Augmentations match / apply) of Mappings / Transforms Core Statements
* Subscriptions: domain / range.
* Aggregation: Transforms Reified in Layers Contexts. Pattern Matching Template Layeresolved.ed
* (Wrapper, Wrapped, Mapping, Transform);
* Notes:
* URN : Resource (alignments). Primitives.
* Resource : Root Category. URN : Source / Surrogate Key / Crafted. Naming / Encodings (below).
* Ontology alignments: Data / Schema / Behavior Augmentations. Model / Schema / Upper / Domains: purposes / gestures (MVC / DCI Mappings / Transforms) layers. Example:
* Occurring / Context (Statements / Kinds)
* Roles (Metaclass, Class, Occurrence, Context, Role)
* MVC / DCI Mappings / Transforms. Example: Forms, Purpose, Gestures, Actors, Roles. Data / Schema / Behavior alignment.
* ESB: Endpoints, Features, Interfaces, Service Process Description / Discovery. Reactive Events Subscriptions. HATEOAS Endpoints "autowiring".
* BPM: Process, Steps, Flows, etc.
* Augmented Actionable (Process Flows, Items Activation) CMS. Browser: HATEOAS Protocol / APIs / Augmentations. Inferred / Reified / Resolvable Data Flows. Designer: Model Pallete. Declarative core / domains types / instances browsing / discovery "wiring".
* Graph Reified Grammars (upper). Terminal / Non Terminal. Rules / Productions. Mappings / Transform: browse grammar, rules, productions:
* (Rule, Context, lhs, rhs)
* Naming: Kinds / URNs Addressable Encodings. Parsing: URNs Encoded Functional Distributed Resource Resolution. Data Flow Transform / Mappings: Embedded Productions: Augmentations. NLP / NER. Ontology Matching: URN Class Transforms.
* Graph Embeddings: ML Backend Services (ML Predictions Augments Mappings / Transforms). Encodings (Naming).
* Encoding: Deep ML Embeddings. Data: classification, Schema: clustering, Behavior: regression.
* Naming: Auto Encoders. Semantic Hashing. Resources Mappings / Transforms Reified Maps / Tables. Keys / Values Resource Hashing / Resolution Functions: Contextual to Functional Environment State: Mappings Flows / Wrapped State.
* Naming: Augmentations. Contextual Hash Enabled: Functional Mapping Flows Map / Table Encoded / Resolved. Functional Relations: Ontology Matching / Aggregation / Inferences by Hash Encoded Metadata / Transforms Resolutions.
* Clients / Browsers: Peers. Protocol: Reactive Dialogs Prompts. Events. Distributed Data, Schema, Behavior Core Model Statements Encoded I/O: Layers Sync / Augmentation of Knowledge requested from each Peer(s) as Model inputs given resolution of Dialog (Subscriptions) event sourcing state. MVC / DCI Distributed State Transforms / Mappings. Augmented Peer(s) Models: updated View State (flows) / Mappings / Transforms. Rendezvous Peer Role. Local Peer: APIs for local / remote views (MVC / DCI) views (Web, REST) Rendering.
* (...)