* ResourceURNs: Uniform identifiers across occurrences. DID URN. Endpoint. ResourceURN Statements: uniform functional metadata (contextual type / name, relations / aggregated occurrences). IDs Encodings.
* Templates / Monads / Sets Interfaces. Graph layout. Traversal (Quads Monads). Set Membership Function: Interfaces CSPOs Types Matching Signatures.
* Interface types differentiate in their CSPOs return value types (CSPOs type signatures: sets membership function).
* ResourceURN : (ResourceURN, Resource, Occurrence, Kind);
* ResourceURN aggregates Resource Occurrences Kind. Encodings.
* KindURN : (ResourceURN, Kind, Occurrence, Resource);
* ResourceURN aggregates Kind Occurrences Resources. Encodings.
* OccurrenceURN : (ResourceURN, Occurrence, Kind, Resource);
* ResourceURN aggregates Occurrences Kinds Resources. Encodings.
* SubjectResourceURN : (ResourceURN, Resource, Occurrence, SubjectKind);
* Functional APIs:
* Resource::getOccurrences
* Resource::getKinds
* Occurrence::getResources
* Occurrence::getKinds
* Kind::getResources
* Kind::getOccurrences
* Input / Canonical: Match Interfaces / Signatures: (Context, Occurrence, Attribute, Value);
* Attribute / Value Roles in matching interface context. Order / hierarchy encoding: functions (sorted wrapped functional collections: wrappers set comparators / aggregation in axis).
* Interface Quads Matching determine Sets (intersections) membership.
* Hashing: IResourceURN, IOccurrence, IKind, IResource. Nested recursive URNs aggregations. Aggregations / Order / Mappings / Traversal APIs.
* ResourceURN Occurrence, Kind, Resource Bindings Augmentation Service APIs:
* Naming Service:
* Input IRIs Encoding / Hashing. Input IRIs Matching. Endpoints (Messages Signatures). Semantic Hashing: DIDs. HATEOAS: Workflow states / referrers.
* Registry Service:
* ResourceURNs Statements bindings:
* Registry::resolve(ResourceURN) : dispatch to matching signatures:
* Registry::resolve(ResourceURN) : Resource
* Registry::resolve(ResourceURN) : Kind
* Registry::resolve(ResourceURN) : Occurrence
* Registry::resolveResourceURN(Resource, Occurrence, Kind) : Resource ResourceURN
* Registry::resolveResourceURN(Kind, Occurrence, Resource) : Kind ResourceURN
* Registry::resolveResourceURN(Occurrence, Kind, Resource) : Occurrence ResourceURN
* Index Service / Logs:
* Query Graphs of ResourceURN Nodes / Messages. Events driven Persistence.
* Functional Data Flow. ResourceURN Events. Message Logs Streams / Traversal (Index Persistence Events Graph Interfaces):
* (Occurrence, Kind, Resource)
* (Occurrence, Resource, Kind)
* (Kind, Occurrence, Resource)
* (Kind, Resource, Occurrence)
* (Resource, Occurrence, Kind)
* (Resource, Kind, Occurrence)
* Monads:
* ResourceURNMonad<ResourceClass : IResourceURN, etc.>
* ResourceMonad<ResourceClass : ISubjectResource, etc.>
* KindMonad<KindClass : ISubjectKind, etc.> Monad
* OccurrenceMonad<OccurrenceClass : ISubjectOccurrence, etc.> Monad
* Interfaces (Sets / CSPOs Roles). Kinds aggregate Resources, Resources aggregate Occurrences, Occurrences aggregate Kinds.
* IContext : measurement contexts. Statement (data / state), Mapping (schema), Transform (behavior) contexts.
* Reification: members of Kinds / Occurrences implements super sets types. Kinds of type implements that type. ToDo: resource or occurrence interfaces in statements signatures. Class patterns (multiple interfaces).
* Abstract interfaces: ISubject, etc. Align interfaces to CSPO roles (traversal / graph layout)
* Resource<Sets>
* Subject<Resource> : Resource<Subject> : Resource
* (S, C, SK, S)
* Predicate<Resource> : Resource<Predicate>
* (P, C, PK, P)
* Object<Resource> : Resource<Object>
* (O, C, OK, O)
* Kind<Sets> : Resource
* Kind<Subject> : Subject<Kind>
* (SK, C, P, O)
* Kind<Predicate> : Predicate<Kind>
* (PK, C, S, O)
* Kind<Object> : Object<Kind>
* (OK, C, P, S)
* Context<Sets> : Kind
* Context<Subject> : Subject<Context>
* (C, S, P, O)
* Context<Predicate> : Predicate<Context>
* (C, P, S, O)
* Context<Object> : Object<Context>
* (C, O, P, S)
* CSPO Inputs. Hierarchy (classes) populate aggregations.
* Kind<Kind<Subject<Context>>> : StatementKind: Resource. Kind of Kind: SK(PK, OK). Contexts Kinds
* IQuad : (IContext, ISubject, IPredicate, IObject)
* IResource : IQuad
* IKind : IQuad
* IContext : IQuad
* Interfaces (Sets):
* IContext : ISubject, IPredicate, IObject
* ISubject : IResource
* IPredicate : IResource
* IObject : IResource
* ISubjectKind : IKind, IPredicateResource, IObjectResource
* IPredicateKind : IKind, ISubjectResource, IObjectResource
* IObjectKind : IKind, IPredicateResource, ISubjectResource
* Resources:
* ISubjectResource : IResource, ISubject
* (ISubjectKind, ISubjectOccurrence, IPredicateKind, IObjectKind)
* IPredicateResource : IResource, IPredicate
* (IPredicateKind, IPredicateOccurrence, ISubjectKind, IObjectKind)
* IObjectResource : IResource, IObject
* (IObjectKind, IObjectOccurrence, IPredicateKind, ISubjectKind)
* IStatementResource : IResource, IStatement
* (IStatementKind, IStatementOccurrence, IPredicateKind, IObjectKind)
* IMappingResource : IResource, IMapping
* (IMappingKind, IMappingOccurrence, ISubjectKind, IObjectKind)
* ITransformResource : IResource, ITransform
* (ITransformKind, ITransformOccurrence, IPredicateKind, ISubjectKind)
* Kinds:
* ISubjectKind
* (ISubjectOccurrence, ISubjectKind, IPredicateResource, IObjectResource)
* IPredicateKind
* (IPredicateOccurrence, IPredicateKind, ISubjectResource, IObjectResource)
* IObjectKind
* (IObjectOccurrence, IObjectKind, IPredicateResource, ISubjectResource)
* IStatementKind
* (IStatementOccurrence, SK of PK/OK: Relation, PK, OK)
* IMappingKind
* (IMappingOccurrence, PK of SK/OK: Schema, SK, OK)
* ITransformKind
* (ITransformOccurrence, OK of SK/PK: Behavior, SK, PK);
* Occurrences:
* ISubjectOccurrence : IContext, ISubject
* (ISubjectResource, ISubjectKind, IPredicateOccurrence, IObjectOccurrence)
* IPredicateOccurrence : IContext, IPredicate
* (IPredicateResource, IPredicateKind, ISubjectOccurrence, IObjectOccurrence)
* IObjectOccurrence : IContext, IObject
* (IObjectResource, IObjectKind, ISubjectOccurrence, IPredicateOccurrence)
* IStatementOccurrence : IContext, IStatement
* (IStatementResource, IStatementKind, IPredicateKind, IObjectKind)
* IMappingOccurrence : IContext, IMapping
* (IMappingResource, IMappingKind, ISubjectKind, IObjectKind)
* ITransformOccurrence : IContext, ITransform
* (ITransformResource, ITransformKind, IPredicateKind, ISubjectKind)
* Augmentations:
* Incremental / Feedback.
* Aggregations: ResourceURNs Source IRIs Sets / Layers streams / events (Resources, Occurrences, Kinds) parse / Occurrences population.
* Alignments: Aggregation traversal: ResourceURN URN IDs Model population. Merge / Matching, order / relations / contexts. Encoding (methods).
* Activations: Relationship Models I/O (DCI Layers / expanded SPO Aggregations feedback). DIDs URN hashing / generation (HATEOAS Endpoints). Data Flow.
* Encoding:
* IDs: Resource, Occurrence, Kind. ResourceURNs aggregation / order encoding.
* Graph / Tree List Parent / Child hierarchical encoding / hashing.
* Functional Data Flow. ResourceURN Events. Message Logs Streams / Traversal (Index Persistence Events Graph Interfaces):
* (Occurrence, Kind, Resource)
* (Occurrence, Resource, Kind)
* (Kind, Occurrence, Resource)
* (Kind, Resource, Occurrence)
* (Resource, Occurrence, Kind)
* (Resource, Kind, Occurrence)
* Quads / SPOs hierarchical list encoding.
* (C (S (P (O).
* Dataflow (value expressions). Signatures (events subscriptions: domain / range). Encode Order.
* Hashing: IResourceURN, IOccurrence, IKind, IResource. Nested recursive URNs aggregations. Order / Mappings / Traversal.
* Input / Canonical: Match Interfaces / Signatures: (Context, Occurrence, Attribute, Value); Attribute / Value Roles in matching interface context. Order / hierarchy encoding / functions (sorted wrapped functional collections: wrappers set comparators / aggregation axis).
* Order:
* StatementKind: PK(SK, OK). Relationship(Roles). Context, State, Mapping, Transform Kinds.
* SK(PK, OK)?
* OK(PK, SK)?
* Statement: abstract assertions (parsed / inferred). Mapping: abstract schema. Transform: abstract behavior. Relationships (dimensional / discrete): core model / ontology, Statement, Mapping, Transform synchronized (input / inferred Statement Events are fully parsed from CSPO Sets Layer).
* Order. States (Statements), Flows (Mappings), Events (Transforms). Kinds hierarchy tree / lattice (FCA). Action / Passion / State order. Kinds / Mappings domain / range Aggregation, Activation, Alignment. Comparisons. DCI / MVC / Relationships / Dimensional Aggregated upper onto matching gestures / flows.
* Input / Canonical: Match Interfaces / Signatures: (Context, Occurrence, Attribute, Value); Attribute / Value Roles in matching interface context. Order / hierarchy encoding / functions (sorted wrapped functional collections: wrappers set comparators / aggregation axis).
* ResourceURNs DIDs:
* URN: DIDs. Endpoint APIs: Statements types / sets (Resource, Kind, Statement, Mapping, Transform OntResources hierarchy) content types / classes: Functional APIs. OntResource (DOM DTOs) quads representations references other DIDs, handle resolution, interactions, etc. via other DIDs endpoints and Resource Monad API.
* Method: did:ont:[ID]
* ID : OntClassName (Sets) ":" [HashedQuad];
* HashedQuad : [HashedURN] ":" [HashedURN] ":" [HashedURN] ":" [HashedURN];
* HashedURN : "[" HashedQuad "]" | HashedCSPOString;
* HashedCSPOString : Context ":" Subject ":" Predicate ":" Object;
* URN::ontResource (traversal parsed representation).
* OntResource::URN.
* Encoding: methods
* Hashing: four segments identifiers. Sets, binary octal digit order operable hashing (4 bit per segment). Aggregation: Statements graph layout. Occurrences. S-Expressions, MonParsec, CoSQL, map-reduce.
* URN: Encoded quad. Hashing: traversal, discovery, resolution. Merkle tree (DLT / Events). Encode typing / naming in context, about DID State Statements (hashing metadata):
* Occurrence ResourceURN : (ResourceURN, Occurrence, Kind, Resource);
* Kinds: Aggregate Attributes.
* State: Aggregate Kinds Resources Attributes / Values.
* Hierarchy: Kinds Attributes set (super) subset (sub) Kinds relationship.
* Order. Aggregation: Kinds / States lattice / tree. Populate / encode ResourceURNs order in contexts.
* DCI Context Model:
* DCI Relationship Contexts: Data / Schema / Behavior Model. DCI / MVC / Relationships Upper onto matching: gestures / flows.
* Metaclasses: PredicateKind SubjectKinds / ObjectKinds.
* Relationship: (Relationship, SubjectKind, PredicateKind, ObjectKind);
* PredicateKind of SK / OK. Employment(Employer, Employee); Employment (Employee, Position);
* Relation : (Relationship, Statements / Context, Role, Occurrence);
* Role : (Relation, Resource, Occurrence, Metaclass : Kinds);
* Occurrence : (Role, Relation, Context / Relation Statements, Resource);
* Discrete N-ary Relationship Aggregated Statements:
* Aggregated Statements traversal: expanded SPO form.
* Context: (Relationship : Predicate Kind, Relation : Statements, Role : Kind, Player : Resource);
* Predicate Kind of Reified S SK, O OK. (Relationship: Employment, Roles: Employee SK, Employer OK). Employment PK aggregated by Subjects and Objects Kinds. Relation Statements: Aggregated SK, PK, OK by Contexts Statement Kinds.
* (Working, workingRelationStmt, employer, IBM);
* (Working, workingRelationStmt, employee, John);
* Dimensional Relationships:
* (Dimension : Relationship, Measure : Relation, Unit : Kind, Value : Resource);
* (Time, oneHourStmt, minutes, 60);
* Distance Dimension: PK of Time SK / Meters OK. Define Dimension in terms of Relationship Kinds.
* Dimension Measure Statements: Domain PK Statements. Kind interface for Functional Transforms.
* Unit: PK Measure SK / OK Statement Kinds (SK / OK Members).
* Value: Dimension Measure Statement Kind Resource.
* Dimensional Order / Comparison: OrderKinds. Templates (populate).
* Order: Comparisons.
* Proof of Concept: Achieve REST Facade (synchronized) of Relationships given inputs from a system backend:
* Inputs: Aggregate SPO into CSPO: Aggregates Contexts Type / Table / Class Kinds. Aggregate PK Cols, Cols : Occurrence, Val : Resources.
* Inputs (Rel / Graph): (Type / Table / Class, PK : Resource, Col : Occurrence, Val : Resource).
* Inputs (Rel / Graph) FKs: Val : Resource equivalent PKs.
* Input / Canonical: Match Interfaces / Signatures: (Context, Occurrence, Attribute, Value);
* Encoding / Matching:
* Functional Context:
* Metaclass
* Class
* Instance
* Context
* Occurrence
* Role
* Hierarchy: Roles / Primitives (upper / aggregated hierarchy).
* Input / Canonical: Match Interfaces / Signatures: (Context, Occurrence, Attribute, Value); Attribute / Value Roles in matching interface context. Order / hierarchy encoding.
* Upper Ontology: Need, Product, Good, Purpose. Goal.
* Upper Ontologies: From Primitives to Forms / UI Gestures.
* Units of Measurement (continuos) APIs /  Ontology.
* Discrete (events) APIs / Ontology. Relationships.
* Cube Statements:
* (Fact, Axis, Measure, Value);