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Introduction to the DTS API

Objective

- Show the relationships between the DTS Data Model and API.
- Demonstrate the overall structure of the API.
- Provide an "index" for where to look for various features during development.

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Agenda

- Relate DTS Architecture to API

- Overview of DTS Package Structure

- Overview of DTS Objects
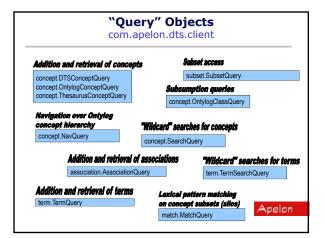
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Three Perspectives on Objects in the DTS API

- Where do they reside in the <u>package structure</u>?

- Where do they reside in the <u>class hierarchy</u>?

- What is their main <u>purpose</u>?
  - "Terminology" objects
  - "Query" objects
  - "Utility" or "helper" objects

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"Terminology" Objects
com.apelon.dts.client

Namespaces and Authorities

```
namespace.Namespace
namespace.Authority
```

Concepts and Terms

```
concept.DTSConcept
concept.OntylogConcept
term.Term
```

Roles and Associations

```
attribute.DTSRoleType
attribute.DTSRole
association.AssociationType
association.ConceptAssociation
association.QualifiedAssociation
association.Synonym
association.TermAssociation
```

Properties and Qualifiers

```
attribute.DTSPropertyType
attribute.DTSProperty
attribute.DTSQualifierType
attribute.DTSQualifier
```

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"Query" Objects
com.apelon.dts.client

Addition and retrieval of concepts

```
concept.DTSConceptQuery
concept.OntylogConceptQuery
concept.ThesaurusConceptQuery
```

Subset access

```
subset.SubsetQuery
```

Subsumption queries

```
concept.OntylogClassQuery
```

Navigation over Ontylog concept hierarchy

```
concept.NavQuery
```

"Wildcard" searches for concepts

```
concept.SearchQuery
```

Addition and retrieval of associations

```
association.AssociationQuery
```

"Wildcard" searches for terms

```
term.TermSearchQuery
```

Addition and retrieval of terms

```
term.TermQuery
```

Lexical pattern matching on concept subsets (silos)

```
match.MatchQuery
```

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"Utility" or "Helper" Objects
com.apelon.dts.client

Connections to DTS Server or underlying database

com.apelon.apelonserver.client.ServerConnection
com.apelon.apelonserver.client.ServerConnectionSocket
com.apelon.apelonserver.client.ServerConnectionSecureSocket
com.apelon.apelonserver.client.ServerConncectionJDBC

Navigation and tree-building

concept.OntylogNavContext
concept.NavChildContext
concept.NavParentContext
concept.ConceptChild
concept.ConceptParent

match

Primary DTS Objects

- Namespace
- DTSConcept
- OntylogConcept
- Term
- DTSPropertyType
- AssociationType
- QualifierType
- ConceptAttributeSetDescriptor
- TermAttributeSetDescriptor

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Namespaces

- Namespaces can contain Thesaurus, Ontylog or Ontylog Extension terminology data
- Ontylog data:
  - Derived from Description-Logic Modeled sources
  - Contain Parent/Children and Roles from DL Classification
  - Contained in Subscription Namespaces
- Thesaurus data:
  - Derived from non-DL sources, e.g., UMLS Metathesaurus
  - Do not contain Roles
  - Can be in Subscription (read-only) or Local Namespaces

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Namespace Objects
com.apelon.dts.client.namespace

- Namespace
- NamespaceQuery
- NamespaceType
- Getters and setters for:
  - Name, Code, Id
  - Authority (Namespace owner)
  - IsLocal
  - isWritable

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Concept Objects
com.apelon.dts.client.concept

- Thesaurus Namespace Concepts are represented by the DTSConcept object.
- Ontylog Namespace Concepts are represented by the OntylogConcept object.
  - OntylogConcept extends DTSConcept
  - Adds support for Roles, Superconcepts, and Subconcepts
- Some methods, for example search results, may apply to both types

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Concept Objects
com.apelon.dts.client.concept

- The basic element of the Knowledgebase
- Each Concept object (DTSConcept/OntylogConcept) contains:
  - Name, Code, Id (unique in Namespace)
  - Namespace
  - Properties
  - Associations
  - Roles (OntylogConcept)
  - SuperConcepts/Subconcepts (OntylogConcept)

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Concept Objects
com.apelon.dts.client.concept

- Concept
  - DTSConcept
    - Base concept class
  - OntylogConcept
    - Extends DTSConcept

- AttributeSetDescriptor
  - ConceptAttributeSetDescriptor
    - Properties, Associations, Synonyms, Roles
    - Superconcepts and Subconcepts – Use NavQuery
  - TermAttributeSetDescriptor
    - Properties & Associations

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Property Objects
com.apelon.dts.client.attribute

- DTSProperty
  - Can attach to Concepts and Terms
- DTSPropertyType
  - Includes PropertyValueSize
    - Concepts
      - Index – Up to 749 Bytes
      - Searchable – Up to 4000 Bytes
      - Big – BLOB
    - Terms
      - Up to 749 Bytes

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Association Objects
com.apelon.dts.client.association

- Association
- AssociationType
- AssociationQuery
- QualifiedAssociation
  - Base class to ConceptAssociation/TermAssociation
- Purpose
  - Can be used to map concepts to each other
  - Can be used to represent historical information
  - Can be used to represent some arbitrary relationship

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Term Objects
com.apelon.dts.client.term

- Term
- TermQuery
- TermSearchQuery

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Attribute Objects
com.apelon.dts.client.attribute

- Qualifiers
  - May qualify an Association or Property
- QualifierType
  - Name, ID, Namespace
- QualifiesItemType
  - Association
  - Property
- QualifierTypeQuery
  - Base class for Concept/Term Queries

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Major DTS Query Objects

- NamespaceQuery
- DTSConceptQuery
- OntylogConceptQuery
- ThesaurusConceptQuery
- SearchQuery
- NavQuery
- SubsetQuery
- MatchQuery
- OntylogClassQuery

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Concept Queries

- concept.DTSConceptQuery
  - Common to Ontylog and Thesaurus concepts
  - Add & Delete Properties/Synonyms
- concept.ThesaurusConceptQuery
  - Includes add and delete concept methods
  - Returns DTSConcepts
- concept.OntylogConceptQuery
  - Includes findByRole methods
  - Only Ontylog namespace have subs and sups
    - concept.OntylogClassQuery

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Navigation Queries

– concept.NavQuery

- Distinguishes between Child context and Parent context
- Includes NavChildContext and NavParentContext objects
- Children and Parents represented via ConceptChild and ConceptParent objects
- Supports both Thesuarus and Ontylog Concepts
- Provides access to Namespace Roots   *Apelon*

Search Queries

– concept.SearchQuery

- Performs Association matching
- Performs Synonym matching
- Uses DTSSearchOptions class
  - Search against single namespace id or ALL_NAMESPACES
  - Allows specifying limit on number of returns
    » Significant performance gains when using limits   *Apelon*

Match Queries

– match.MatchQuery

- Performs matching based on defined criteria
- Provides access to silos and pattern matching searches within silos
- Also match criteria and spell checking

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Additional Query Classes

- NamespaceQuery
  - Methods for maintaining Namespaces
- AssociationQuery
  - Methods for maintaining Associations
- Ontylog ClassQuery
  - Methods for subsumption tests
- TermQuery
  - Create, delete, edit
- TermSearchQuery
  - Search for Terms/Synonyms

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API Tips

- Concept Names are not unique across Namespaces

- Term names are not unique within a Namespace

- A Synonym Type is actually an Association

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Code

- Samples Directory
  - Tutorial
  - Browser
- DTS plugin Directory
  - Code and Id Generators
    - Add your own
    - Implement common.CodeAndIdGenerator

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Questions?