

Solving the Data Problem

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Model Driven Solutions

Where Business Meets Technology

A Division of Data Access Technologies, Inc.

Fundamental questions for solving the data problem

What does the information mean?

Who do I want to, and not want to, share and collaborate with?

How is information for sharing and collaboration structured?

What technologies enable secure sharing and collaboration?

Where do I vest my community and institutional knowledge?

Scope of Applicability &
Stakeholder Relevance

User
Needs

Shared Concepts
(e.g. Vocabularies)

Ontological
(e.g. Common Logic)

Model Based Structures
(e.g. NIEM UML)

Reusable Data Structures
(e.g. NIEM XML)

Exchange Data Structures
(e.g. XML Schema)

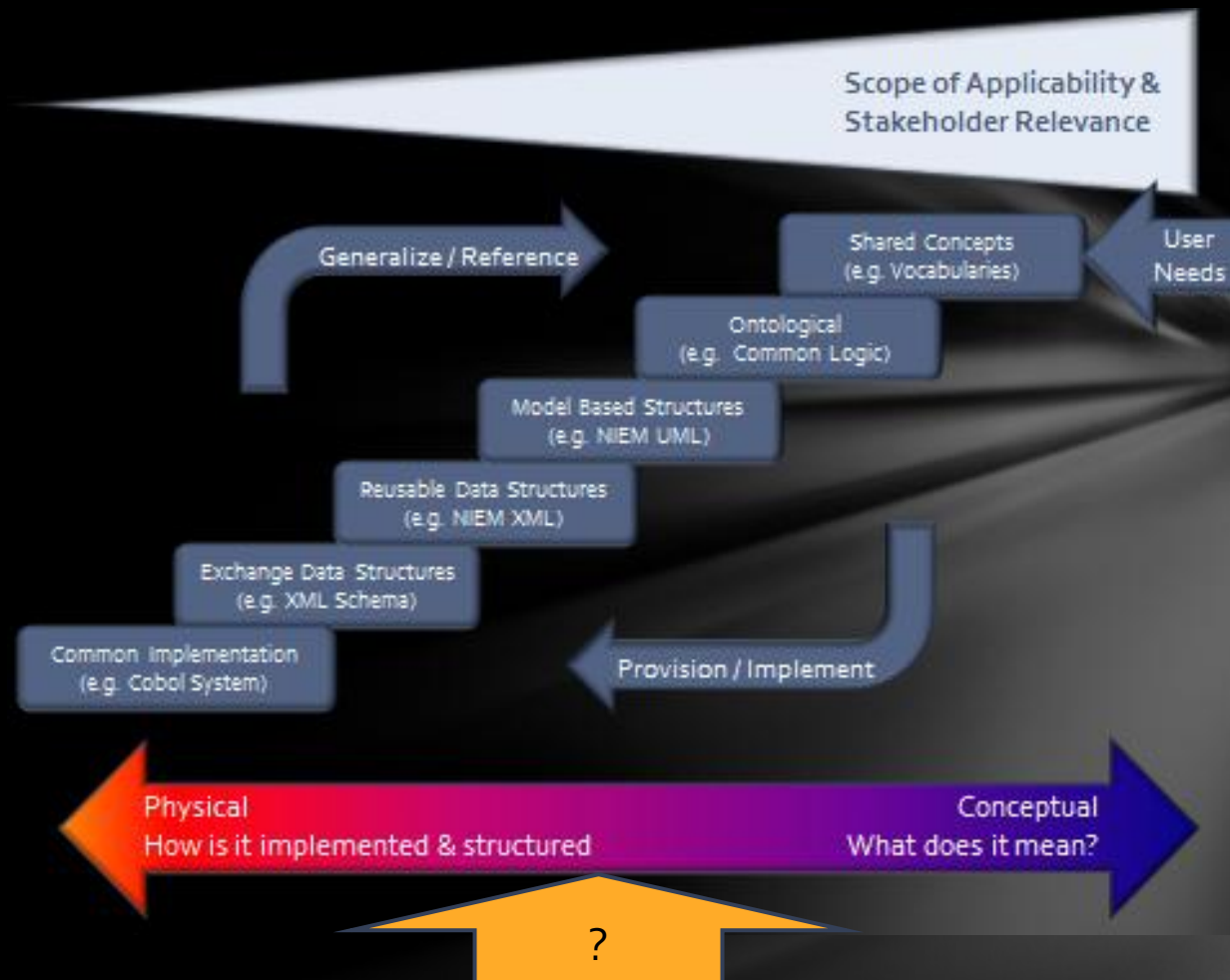
Common Implementation
(e.g. Cobol System)

Generalize / Reference

Provision / Implement

Physical
How is it implemented & structured

Conceptual
What does it mean?



Where do I vest my community and institutional knowledge?
e.g. What is the canonical representation?

- Have a wide scope, so I can collaborate easily
- Be applicable across a wide range of usage profiles
- Be applicable across a wide range of technologies
- Be easy to understand for stakeholders
- Be easy to implement in systems and exchange protocols

NIEM Conformant XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:Q1="http://www.modeldriven.org/niem/examples/PetAdoptionExtension" xmlns:i="http://niem.gov/niem/appinfo/2.0"
  <xsd:import namespace="http://niem.gov/niem/appinfo/2.1" schemaLocation="../../../../niem/appinfo/2.1/appinfo.xsd"/>
  <xsd:import namespace="http://niem.gov/niem/structures/2.0" schemaLocation="../../../../niem/structures/2.0/structures.xsd"/>
  <xsd:import namespace="http://www.modeldriven.org/niem/examples/PetAdoptionExtension" schemaLocation="../../../../XMLschemas
  <xsd:import namespace="http://www.modeldriven.org/niem/examples/PetAdoptionExchange" schemaLocation="../../../../XMLschemas
  <xsd:import namespace="http://niem.gov/niem/appinfo/2.0" schemaLocation="../../../../niem/appinfo/2.0/appinfo.xsd"/>
  <xsd:import namespace="http://niem.gov/niem/proxy/xsd/2.0" schemaLocation="../../../../niem/proxy/xsd/2.0/xsd.xsd"/>
  <xsd:import namespace="http://niem.gov/niem/niem-core/2.0" schemaLocation="../../../../XMLschemas/niem/niem-core/2.0/niem-core
  <xsd:complexType abstract="false" name="PetAdoptionExchangeType">
    <xsd:annotation>
      <xsd:appinfo>
        <i:Base i:name="Object" i:namespace="http://niem.gov/niem/structures/2.0"/>
      </xsd:appinfo>
    </xsd:annotation>
    <xsd:complexContent>
      <xsd:extension base="s:ComplexObjectType">
        <xsd:sequence>
          <xsd:element maxOccurs="unbounded" minOccurs="1" ref="tns:People"/>
          <xsd:element maxOccurs="unbounded" minOccurs="1" ref="tns:Pets"/>
          <xsd:element maxOccurs="unbounded" minOccurs="1" ref="tns:PetAdoptions"/>
          <xsd:element maxOccurs="unbounded" minOccurs="1" ref="tns:ContactInformation"/>
          <xsd:element maxOccurs="unbounded" minOccurs="0" ref="tns:PersonContactInformationAssociations"/>
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:element abstract="false" name="People" nillable="false" type="nc:PersonType"/>
  <xsd:element abstract="false" name="Pets" nillable="false" type="Q1:PetType"/>
  <xsd:element abstract="false" name="PetAdoptions" nillable="false" type="Q1:PetAdoptionType"/>
  <xsd:element abstract="false" name="PetAdoptionExchangeType" nillable="false" type="Q1:PetAdoptionExchangeType"/>
```

Not Intended to Be
Read

Very automatable but overly technology focused and tied to a specific application's purpose

Vocabularies

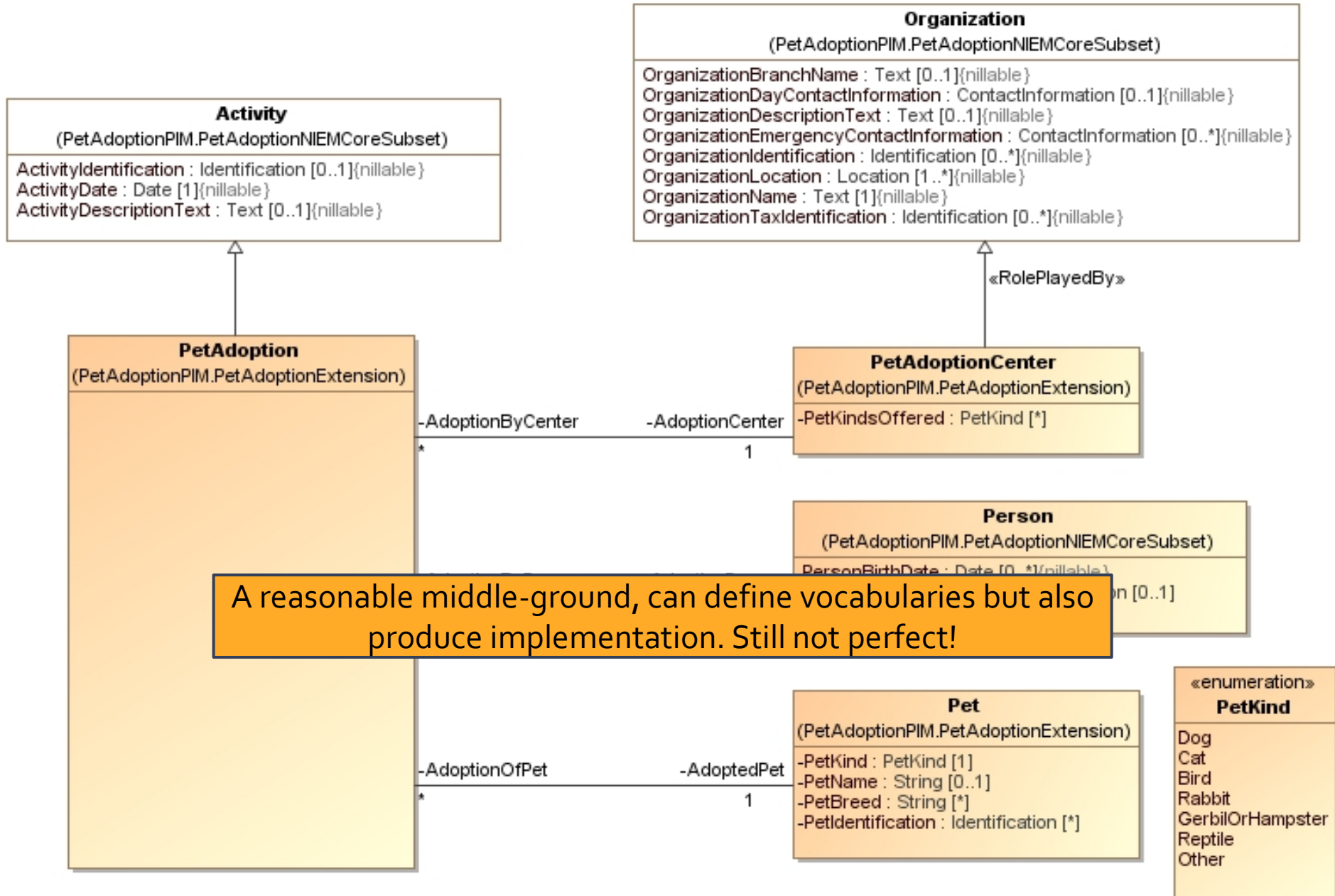
Person

noun

A human being regarded as an individual.
"the porter was the last person to see her"

Very reusable but not sufficiently precise and formalized to
enable automated collaboration

NIEM UML Model



The NIEM connection

NIEM-XML includes

- A vocabulary for information to be shared: 7000+ concepts

- An XML based technical architecture, 300+ design rules

- Reusable XML data structures – the reference schema

- Specific XML structures (IEPDs) for specific exchanges

NIEM-UML adds standards based

- A higher level of abstraction for all of the above, separation of concerns

- A user-friendly diagrammatic representation

- Ability to map to implementation as well as ontologies [not standardized]

NIEM as an asset

- The current asset is applied to XML sharing of specific data structures

- The vocabulary can be used and reused across a wide community and other technologies