

Justice XML Structure Task Force

Justice XML Data Dictionary, Schema, and Registry/Repository

Overview and Status

**John Wandelt
Mark Kindl**

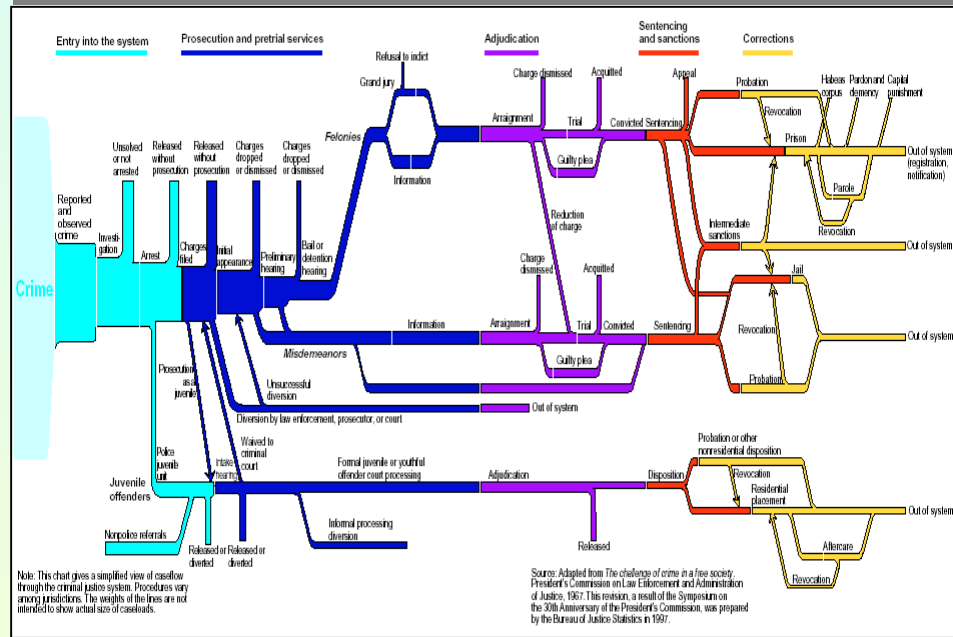
**JIEM Steering Committee
14 January 2003**

The Need for an Integrated Justice Reference Model

1967

Facilitate information sharing and integrated justice by removing impediments (interoperability, cost, time, etc.)

Sequence of Events in the Criminal Justice System



Today

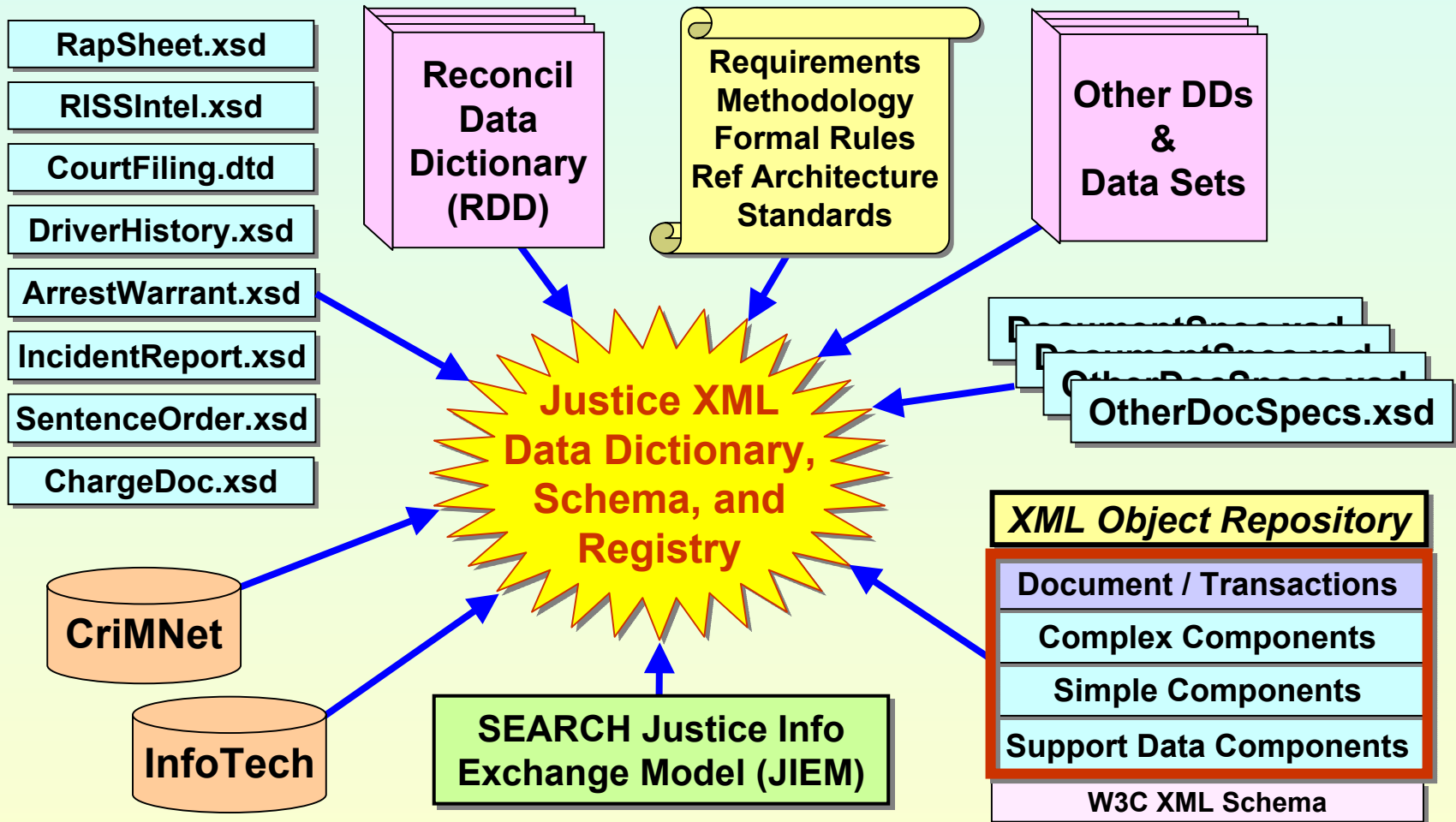
Justice Information Exchange Model (JIEM)

Justice XML Data Dictionary (JXDD), Schema (JXDDS) and Registry

Justice XML Structure Task Force

“I love it when a plan comes together!”

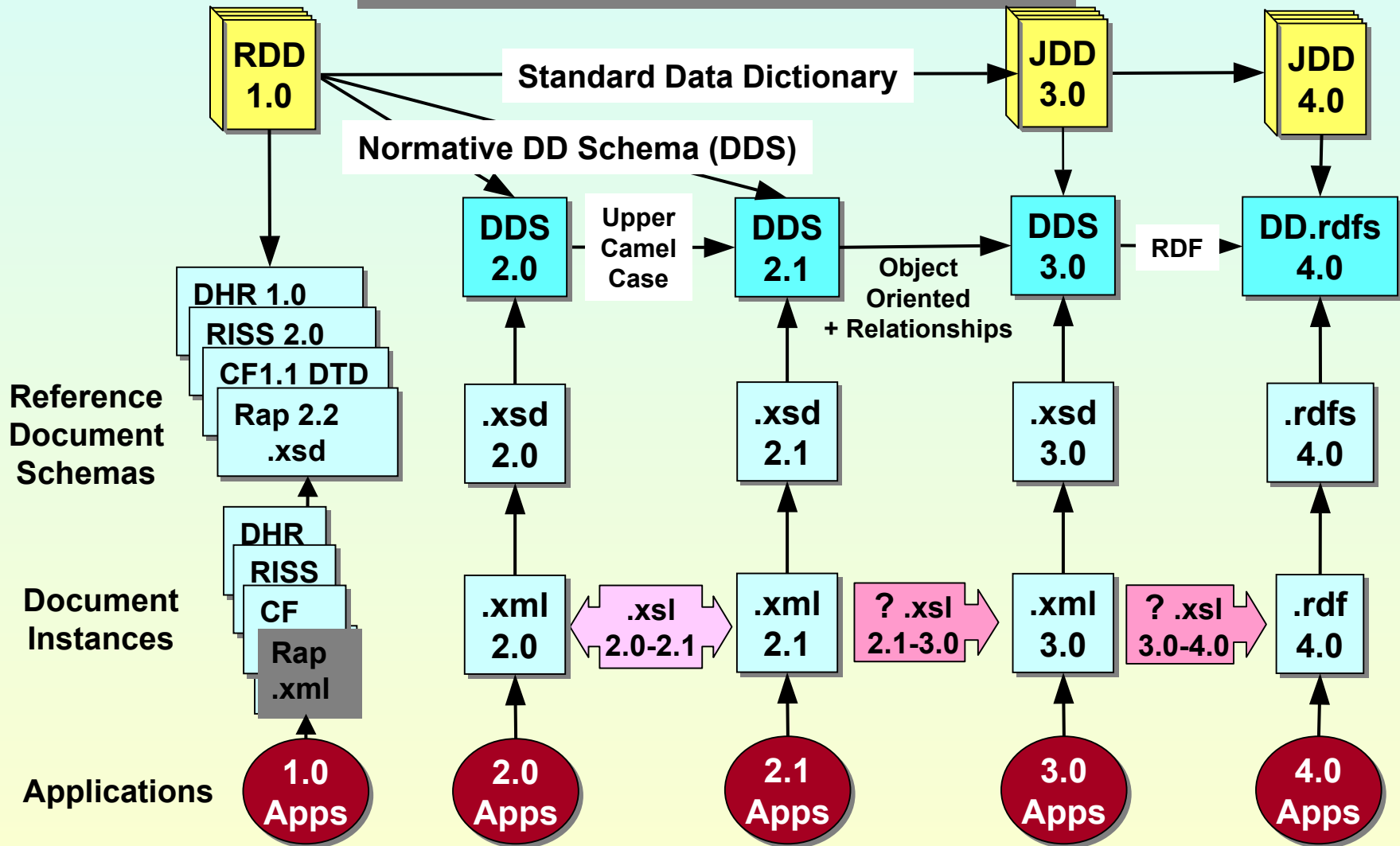
– COL Hannibal Smith, *The A-Team*



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January 2003

Justice XML Data Dictionary Schema Evolution



Why JXDD Version 3.0?

- Aligned with standards (some were not available to RDD)
- Model-based → consistent
- Requirements-based – data elements, processes, documents
- Object-oriented → efficient extension and reuse
- Expanded domain (courts, corrections, juvenile, etc.)
- Extensions to activity objects / processes
- Relationships (to improve exchange information context)
- Can evolve / advance with emerging technology (RDF/OWL)
- Basis for an XML component registry that can provide
 - Searching / browsing components and metadata
 - Assistance for schema development / generation
 - Reference / cache XML schemas for validation
 - Interface (via std specs) to external XML registries

What Sources of Requirements Are Being Used?

SPONSOR

Global ISWG
JTF for ICHTS
RISS
LegalXML
AAMVA

NIJ
LA County CA

SEARCH
LegalXML
LegalXML
LegalXML
Minnesota

NCSC
Maricopa Co AZ
CISA
FBI
NIBRS

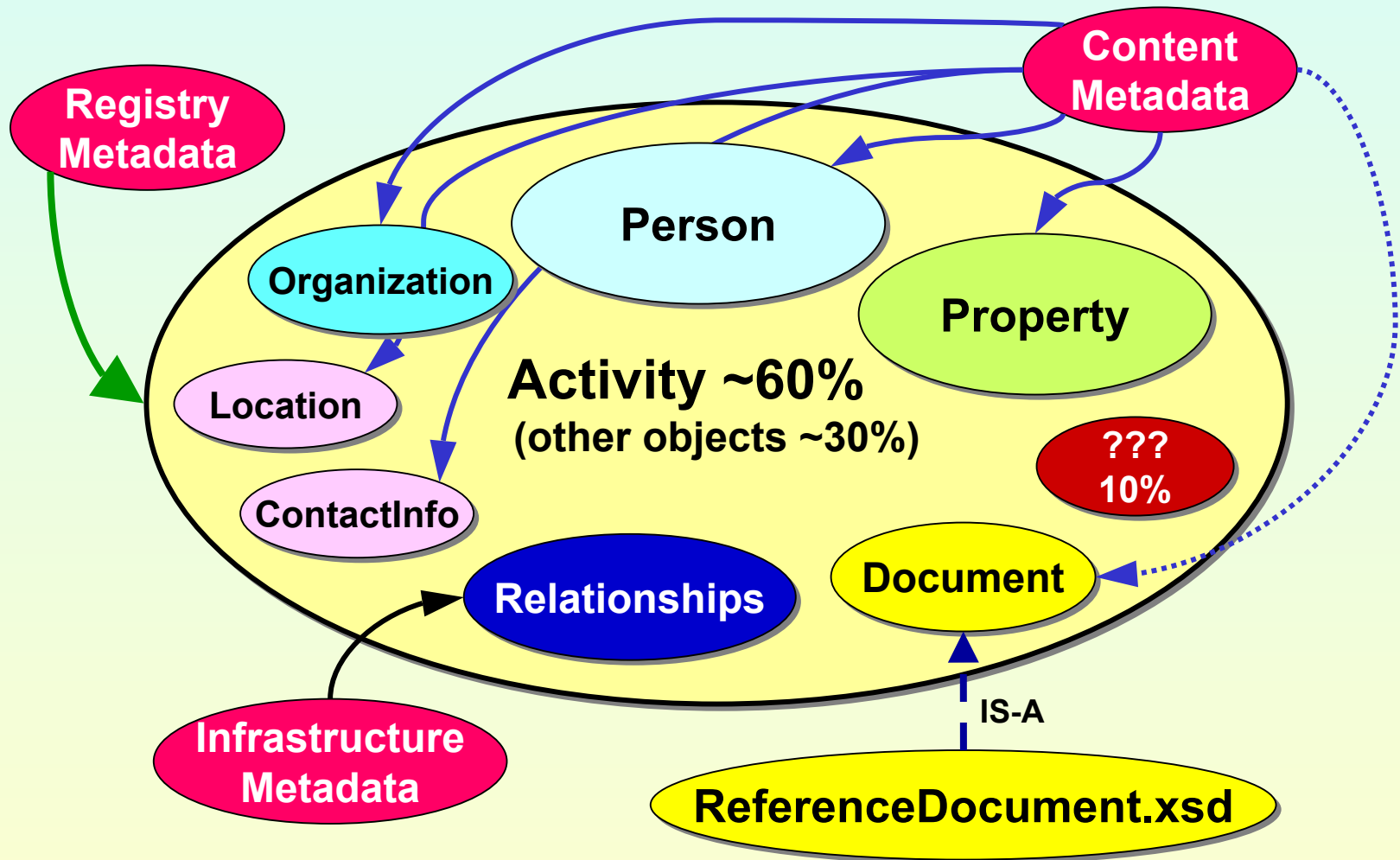
SOURCE DOCUMENTS / SPECIFICATIONS

Reconciliation Data Dictionary (RDD) v1.0.0
Rap Sheet v2.2 schema
RISSIntel v2.0 schema
CourtFiling v1.1 DTD
Driver History v1.02 schema
InfoTech v2.0 Data Dictionary and schema
Incident Report schema
Justice Info Exchange Model (JIEM) data sets
Arrest Warrant schema
Charging Document schema
Sentencing Order schema
CrimNet v1.0 Data Dictionary and schema
Data element spreadsheets (civil, criminal, juvenile)
ICJIS Data Dictionary v1.3
Southwest Border States DD (TX, AZ, NM)
NCIC 2000 Data Dictionary and Code Tables
Incident Report schema

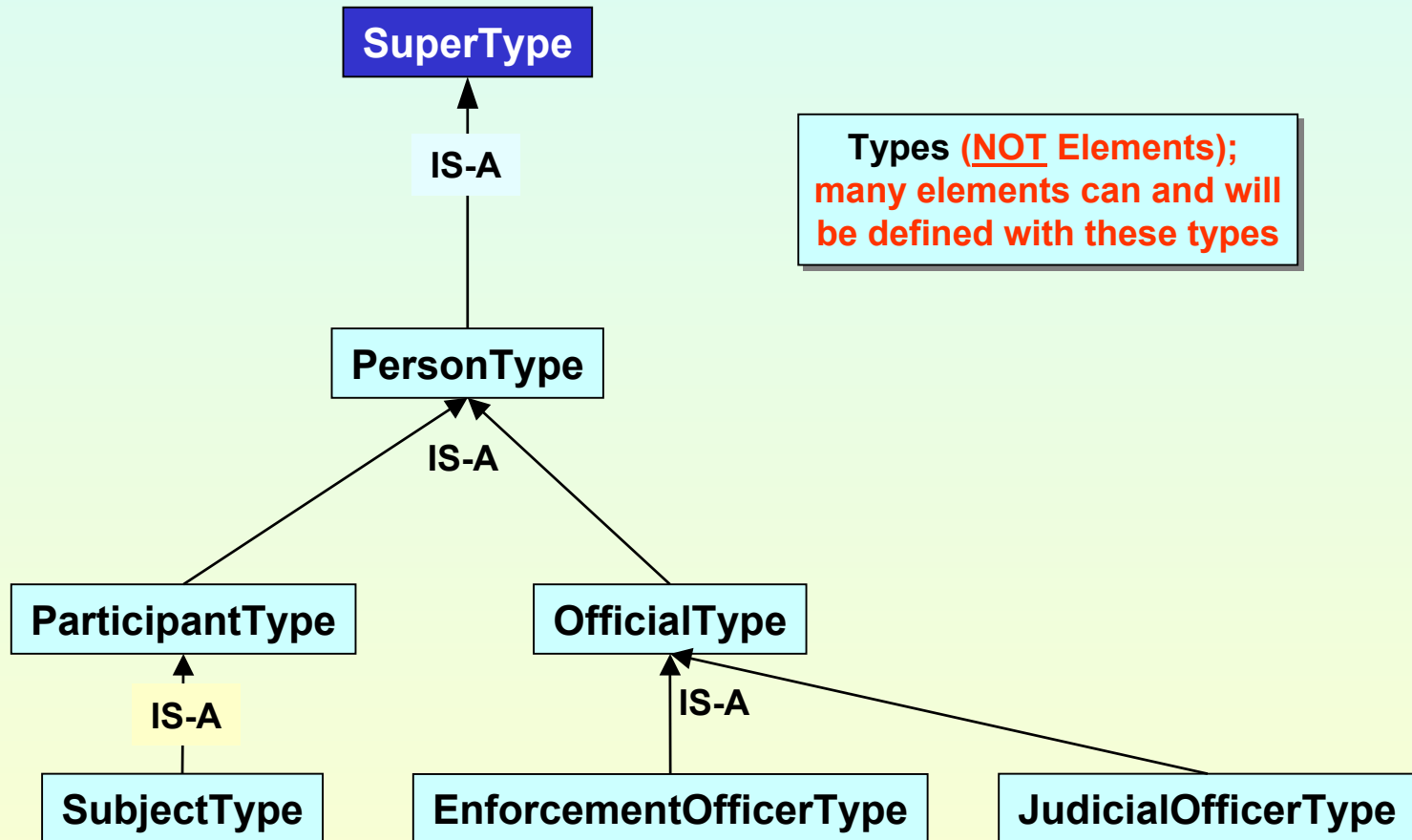
What Standards Are Being Applied?

XML.gov	Draft Federal XML Schema Developer's Guide (04/02)
ISO / IEC	11179 Specification & Standardization of Data Elements
ASC X12	Reference Model for XML Design (10/02)
UN / CEFACT	ebXML Core Components Technical Spec 1.85 (09/02)
FBI	Electronic Fingerprint Transmission Spec v7 (01/99)
ANSI / NIST	Data Format for Interchange of Fingerprint, Facial, & SMT
OASIS	XML Common Biometrics Format Committee (09/02)
Dept of Navy	Draft XML Registry Requirements (09/02)
DoD	DoD 5015.2-STD Design Criteria Std for E-RMS Apps (06/02)
W3C	XML Schema Specification (05/01)
W3C	RDF and RDF Schema Specification (02/99)

Justice Data Dictionary View



Person Object Subclasses



What is the XSTF Process for Building Objects?

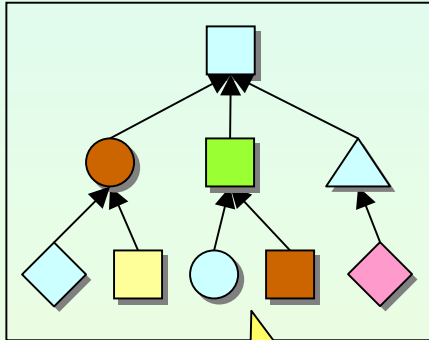
For each core object (persons, places, things):

- Begin with the RDD definition & structure for this object.
- Study CriMNet & InfoTech for similarities / differences.
- Identify appropriate keywords (terms) that stand for typical general classes, specific classes, and key properties.
- Search the Justice DD database on keywords for components of source requirements that represent similar objects and properties.
- Incorporate all properties and types into an spreadsheet.
- Sort on various keys to identify and eliminate obvious duplicates.
- Organize the properties and types into logical groups.
- Identify appropriate subclasses based on properties.
- Organize and document spreadsheet for analysis as a *strawman*.
- Walkthrough and vet *strawman* with XSTF domain experts.

Primary & Secondary Relationships

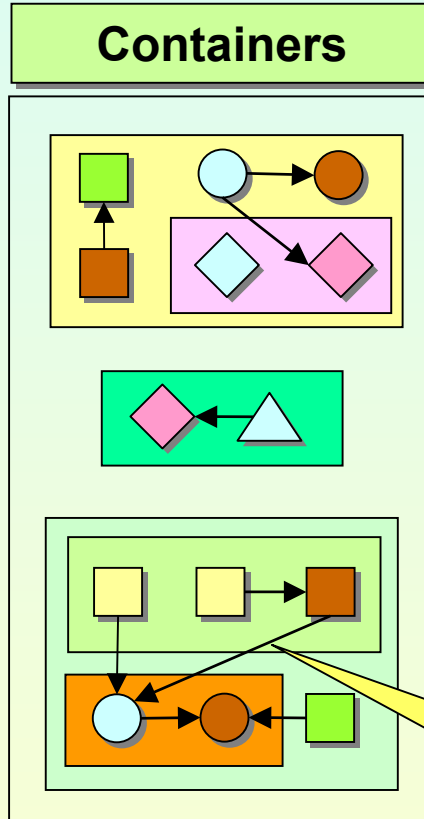
Primary Relationships in

Data Objects



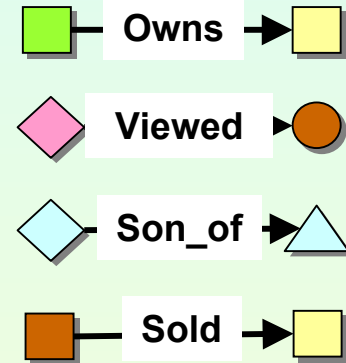
Object class hierarchy built from "is-a" and "has-a" primary relationships

Containers



Secondary Relationships

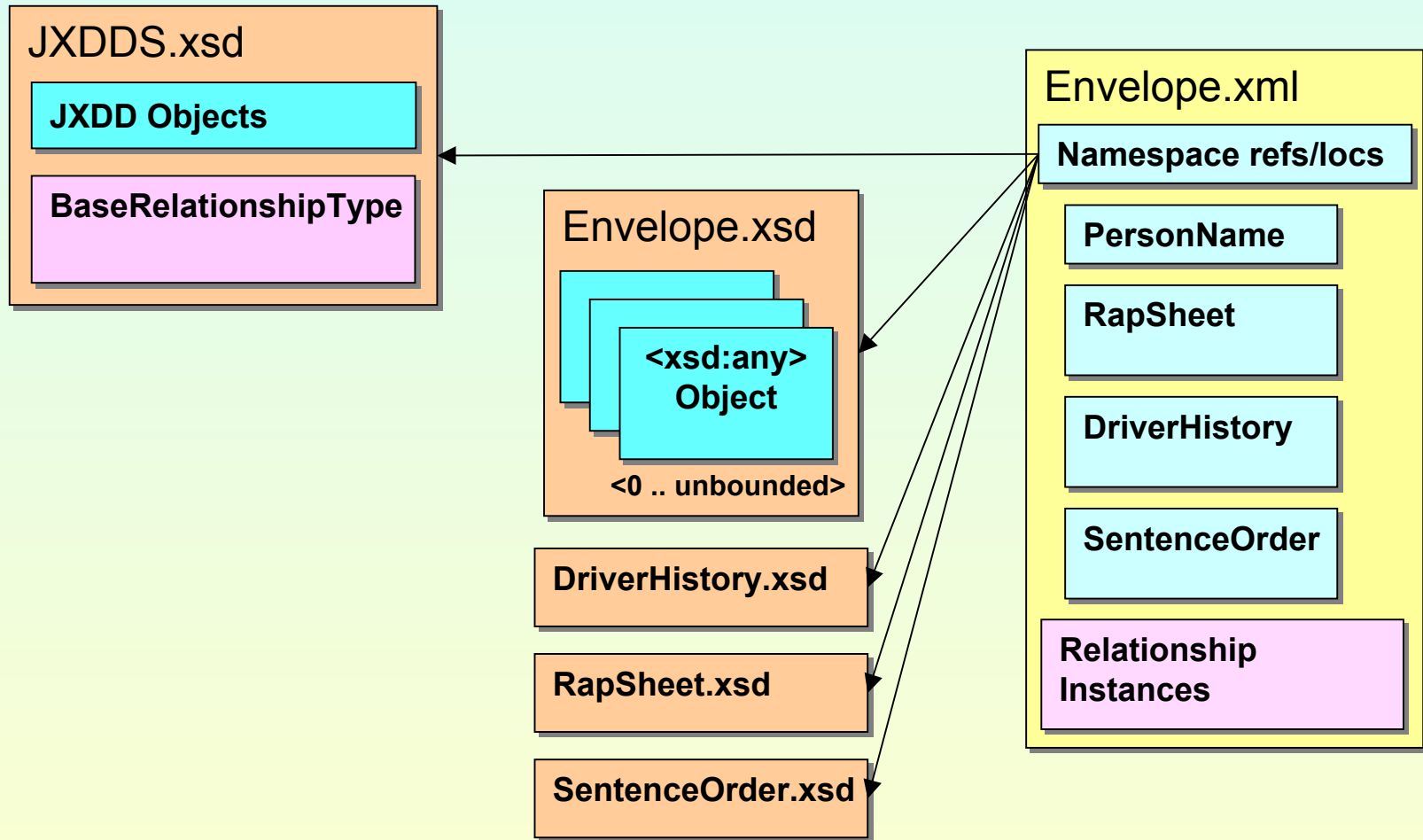
Relationships



Explicitly defined; globally understood

Documents & transactions create local relationships

Why Secondary Relationships?

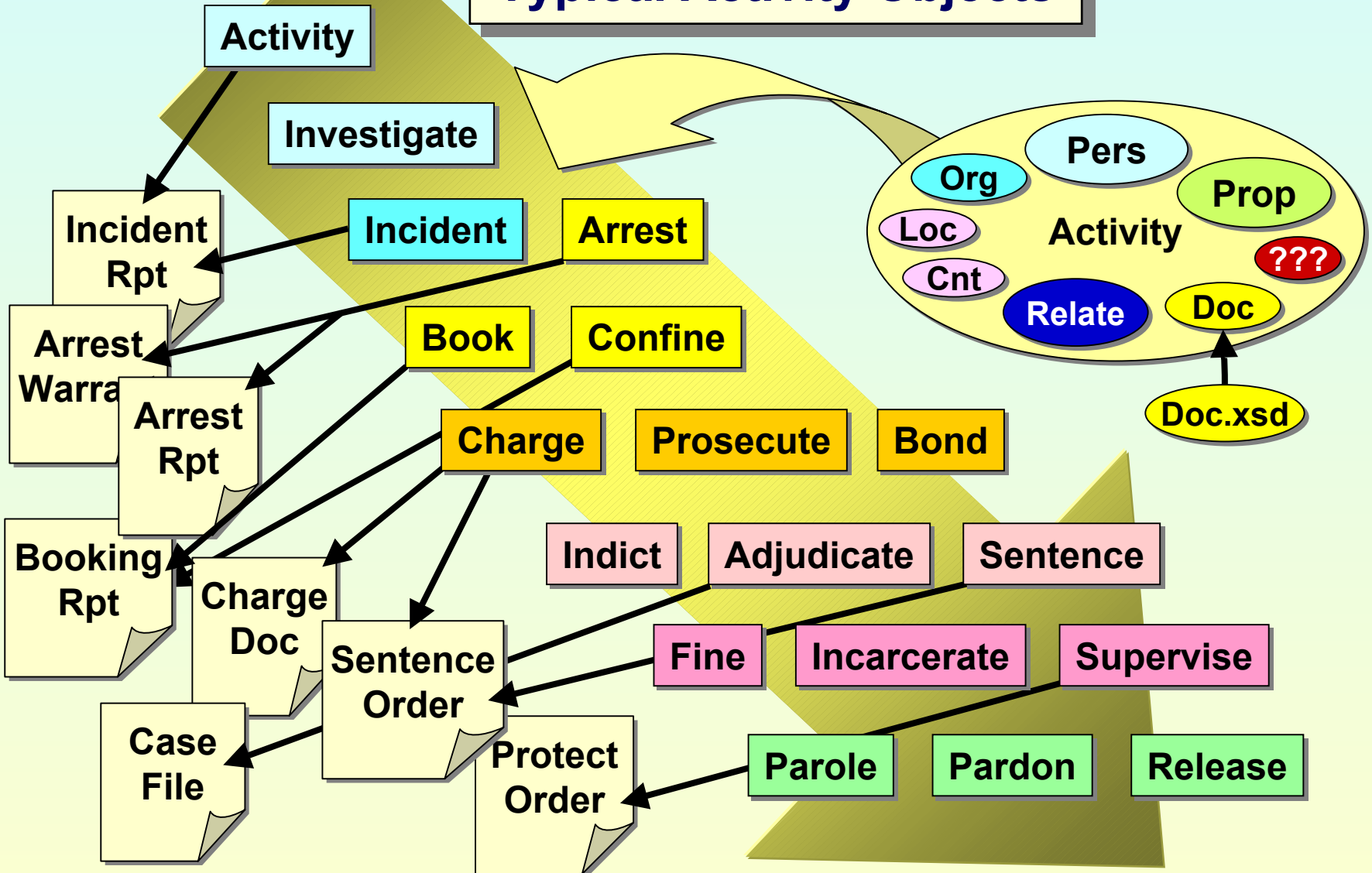


Five Dimensions of the SEARCH Justice Information Exchange Model (JIEM)

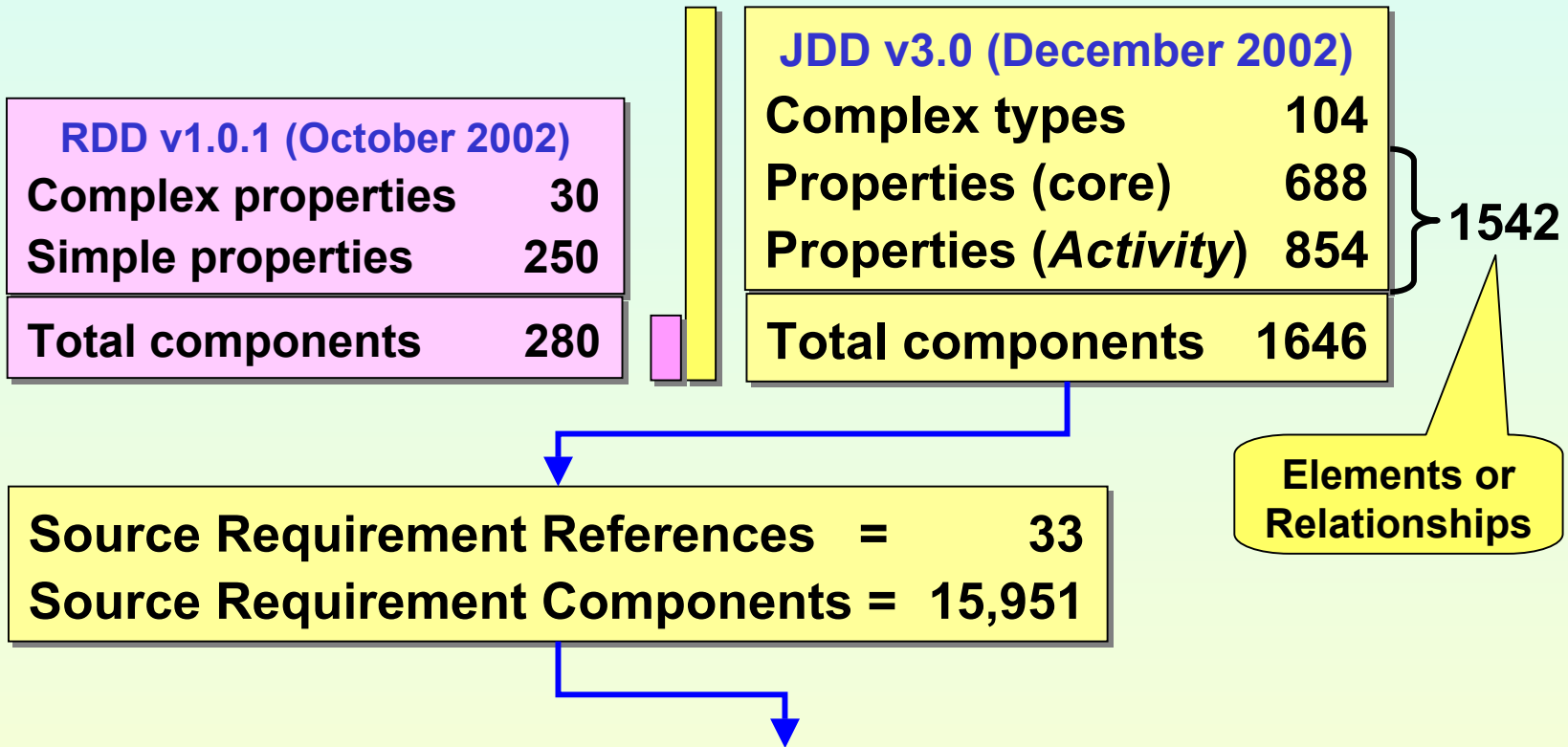
The starting point for *Activity* objects ...

1. **Processes** in action (state)
2. **Events** that trigger exchange
3. **Agencies** exchanging
4. **Conditions** of exchange
5. **Information** exchanged:
 - Documents
 - Data Sets
 - Data Elements

Typical Activity Objects



Justice Data Dictionary v3.0 Database Statistics

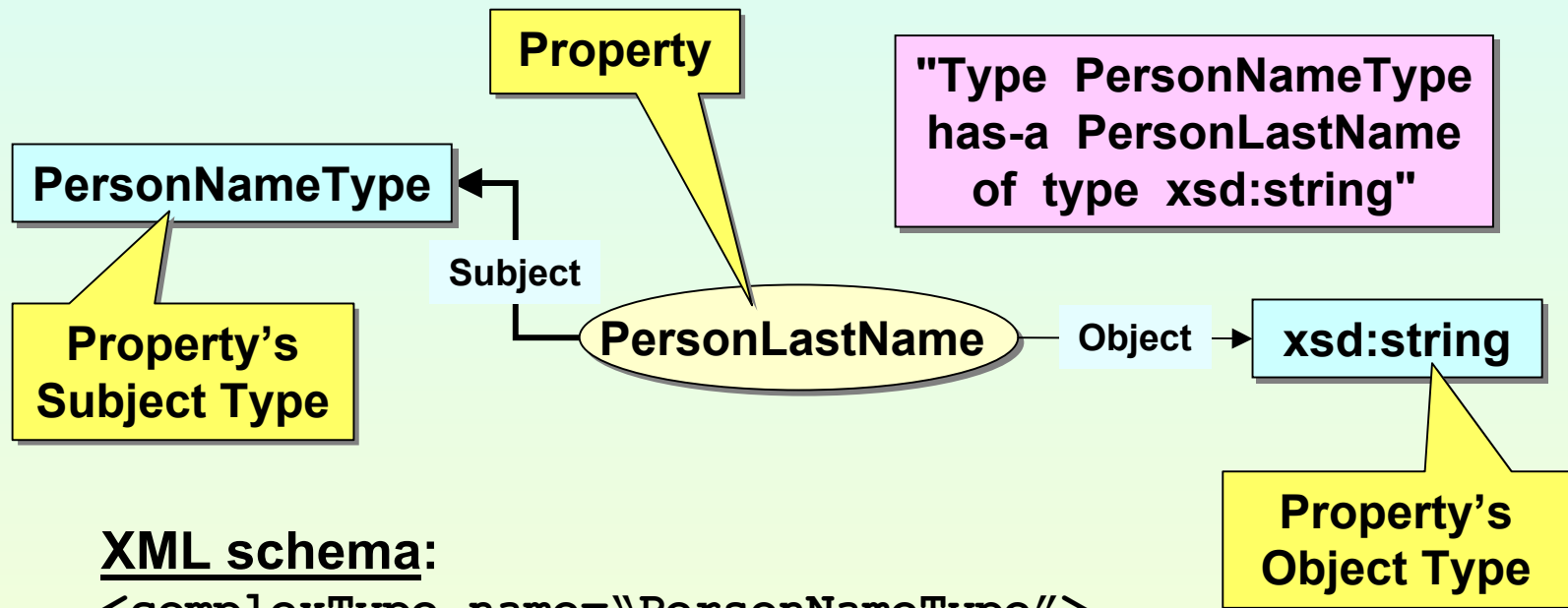


According to one Government data consultant, all branches and departments of a typical State Government use about 20,000 unique data elements.

Justice XML Data Dictionary Database Functions and Capabilities

- Represents **object-oriented XML data dictionary (JXDD v3.0)**.
- Enables forms-based **maintenance / reconfiguration**.
- Automatically **generates XML Schema** for the JXDDS.
- Will automatically **generate equivalent RDF Schema**.
- Stores and maps **data element requirements**; this enables
 - **Tracing and tracking** to source data components.
 - **Measurement** by source data requirements.
- Maintains **metadata for XML data dictionary registry**.
- Provides **search filters, maintenance forms, and tools**.

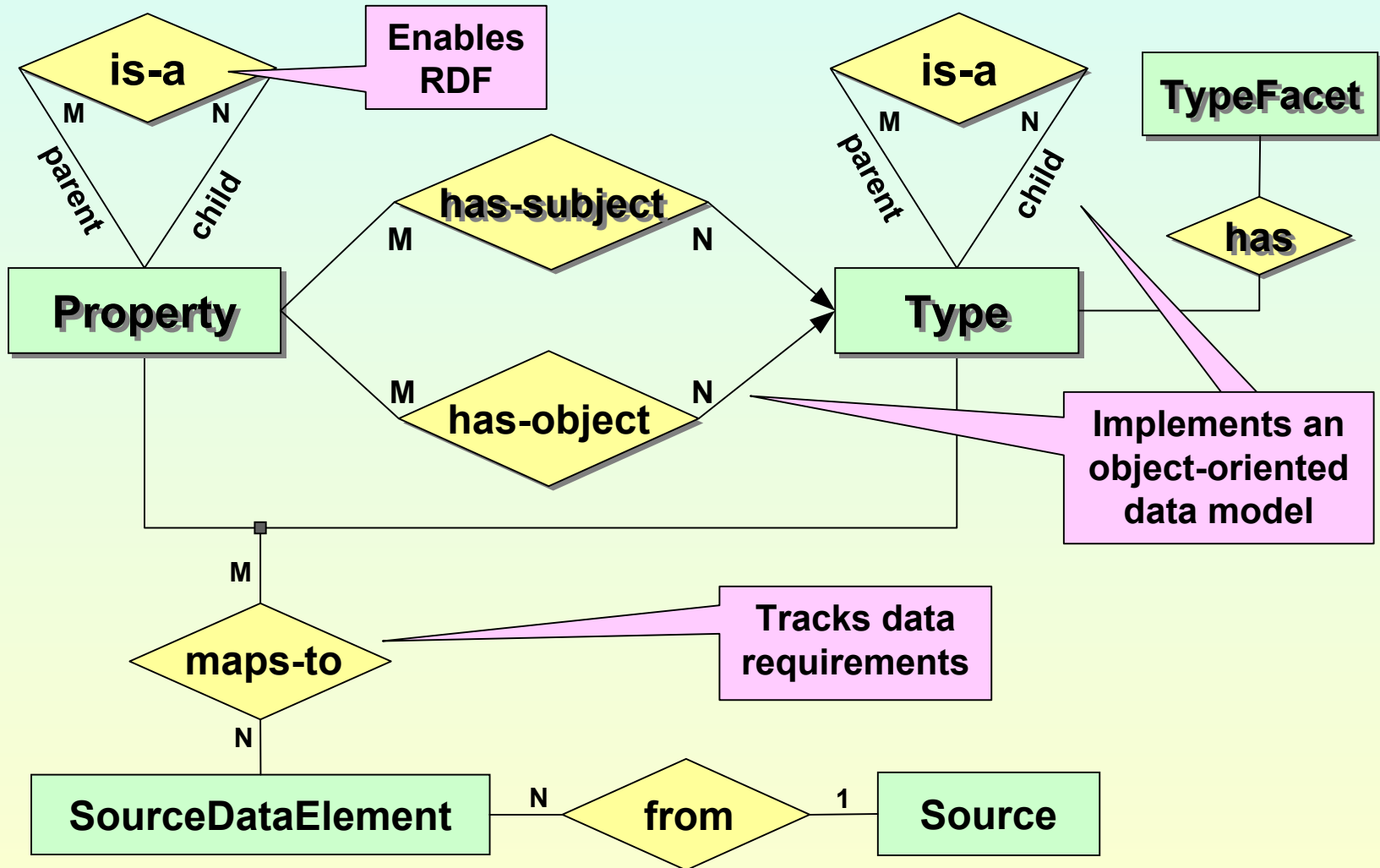
Conceptual Data Model Represented by Justice Data Dictionary Database



XML schema:

```
<complexType name="PersonNameType">  
  <sequence>  
    <element name="PersonLastName" type="string"/>  
  </sequence>  
</complexType>
```

E-R Diagram for Justice Data Dictionary Database



Validation of JXDDS V3.0 RFC

December 2002

Complete *Person*
Organization
Location
ContactInformation
(personal)Property
and enough *Activity* objects to build ...

Rap Sheet	RDD / NLETS
Sentence Order	CourtFiling
Incident Report	InfoTech
Driver History	RDD / AAMVA

Where Is the XSTF JXDD v3.0 Work? What Can You Review?

XML Structure Task Force (XSTF) Website:

<http://justicexml.gtri.gatech.edu/xstf/>

Login: xstfuser / Password: opensesame

or

<http://xstfuser:opensesame@justicexml.gtri.gatech.edu/xstf/>

- Justice XML Data Dictionary Schema v3.0 (RFC)
- Example reference document schemas
- Justice Data Dictionary Database content (HTML)
- Working spreadsheets: objects and metadata
- Technical papers: concepts, techniques, examples
- Briefing slides, graphics, demos, references, etc.

Where Is the XSTF JXDD v2.x Work?

JusticeXML Website:

<http://justicexml.gtri.gatech.edu/>

Login: justicexml / Password: justicegtri

or

<http://justicexml:justicegtri@justicexml.gtri.gatech.edu/>

- Justice XML Data Dictionary Schema v2.x
- Example reference document schemas
- LCC to UCC / UCC to LCC style sheets
- Briefing slides, demos, references, etc.

What Work Remains To Be Done?

- Implement objects: *Activity, property, other*
- Map source data requirements
- Define data components (definitions)
- Identify / install internal enumerations
- Define / implement special constraints (e.g. partial values, nulls, etc.)
- Implement metadata (content, registry, infrastructure)
- Develop reference documents and relationships
- Implement or refine user tools for database
- Document user interface, design, etc.
- Implement interface to an ebXML registry
- Designate namespaces (naming policy)
- Define policies, procedures, CONOPS

**Where Are We Going and Why?
How Does It All Fit Together?**

*The Big Picture – An Integrated Justice
Infrastructure and Registry/Repository*

Semantic Web

The 3rd Generation Internet

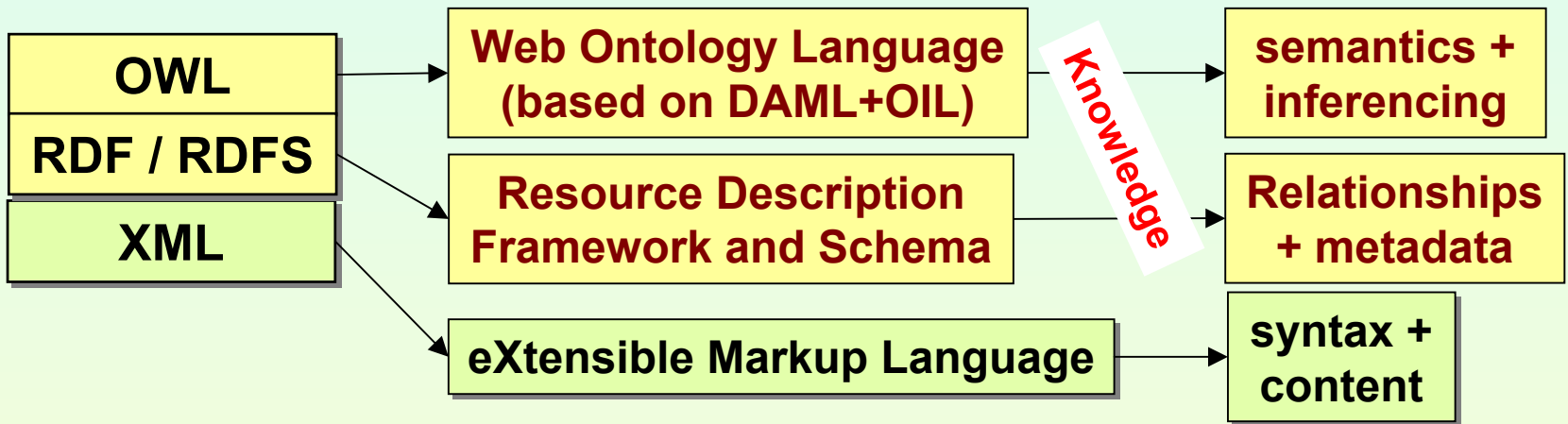


Agent Smith ("The Matrix" ©1999 Warner Bros)

Intelligent Software Agents

decision + action

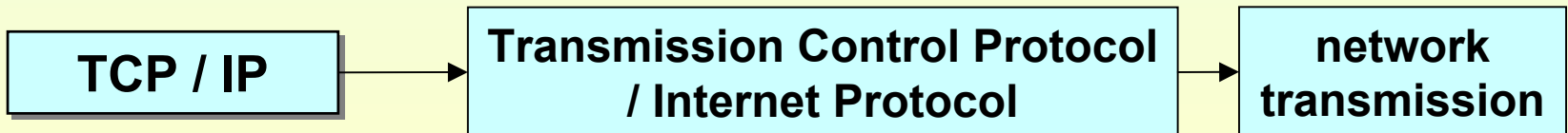
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January 2003

Service Web (Interoperability Stack)

Web Services

WSCL/WSDL

UDDI

SOAP

XML

Web Services Conversation / Definition Language

Universal Description, Discovery, & Integration

- white pages – general lookup
- yellow pages – lookup by service or function
- green pages – detailed definition of services

Simple Object Access Protocol –

- transaction invocation mechanism
- content envelope

eXtensible Markup Language – syntax + content

HTML

HyperText Markup Language – presentation

HTTP

HyperText Transfer Protocol – presentation

TCP/IP

Transmission Control Protocol
/ Internet Protocol – network transmission

Components and their Content

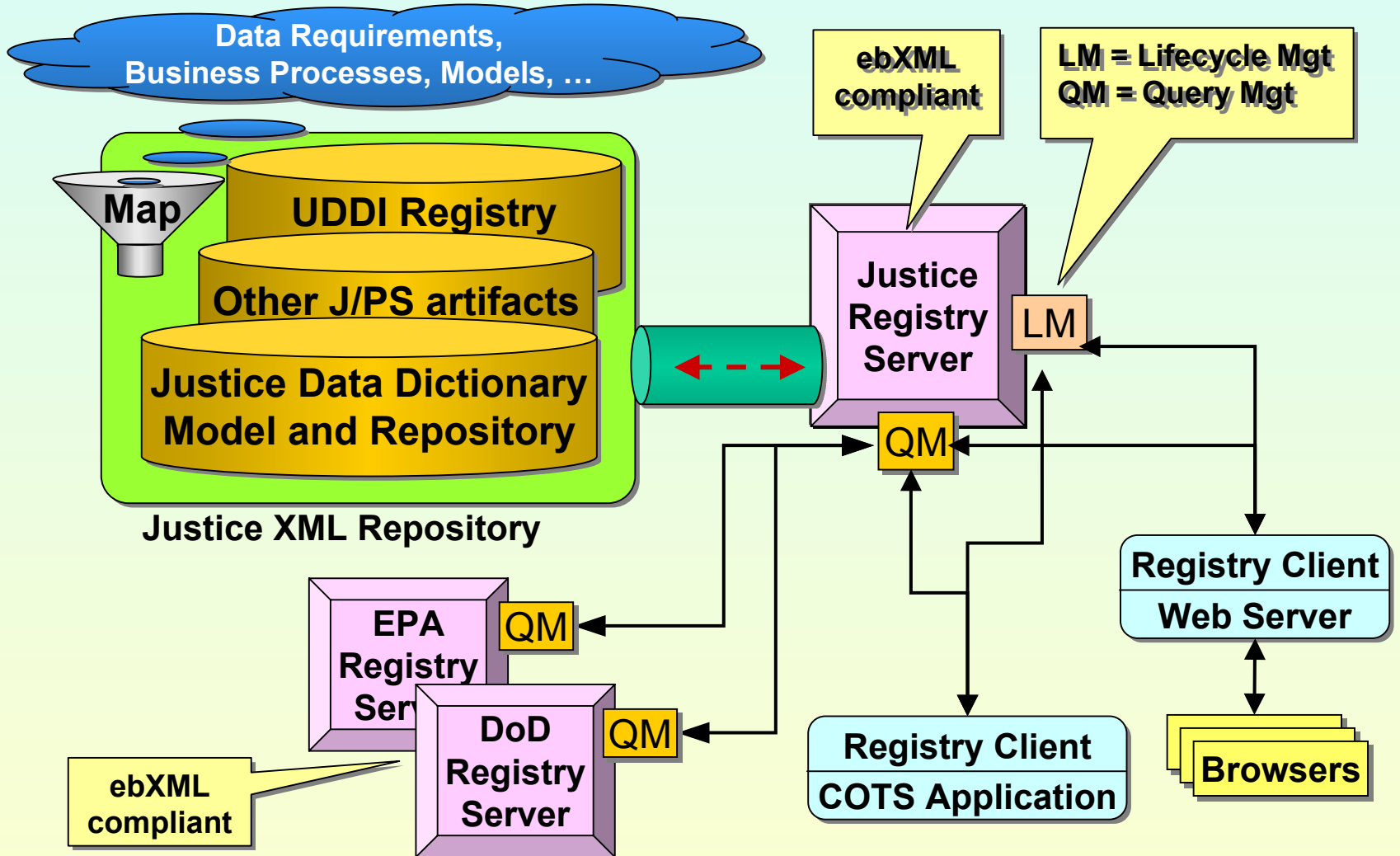
Reference Data Model	Data Dictionary (DD) Schema	Justice XML Registry
<p>Types Properties Definitions Enumerations Relationships Data requirements</p>	<p>xsd type definitions xsd element defns xsd attribute defns Enumerations Relationship infrastructure</p>	<p>User & external interfaces XML component metadata Software tools: search/browse components develop/generate schemas reference/cache schemas data life cycle maintenance</p>

Conceptual model of DD data objects implemented in a relational database; the DD **repository**.

XML DD Schema, generated from the data model (i.e. the database).

The **interface** to the data model that provides various views into and tools to use the DD (ebXML compliant).

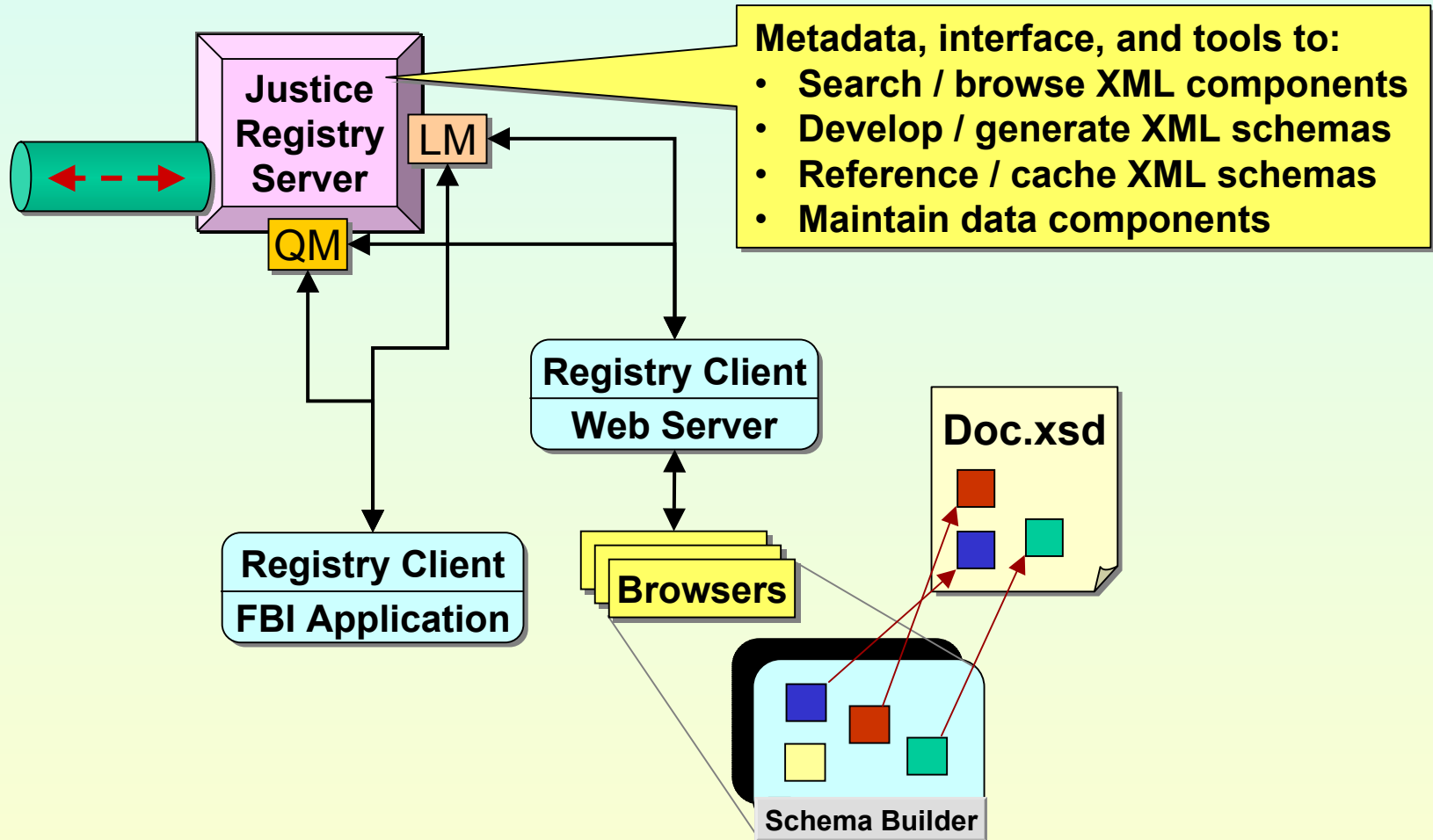
Justice XML Data Dictionary Registry/Repository Model



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An Example Registry Client



XML Development Using the Registry

