



Governance and Reuse of XML Schema Using an ebXML Registry & Repository

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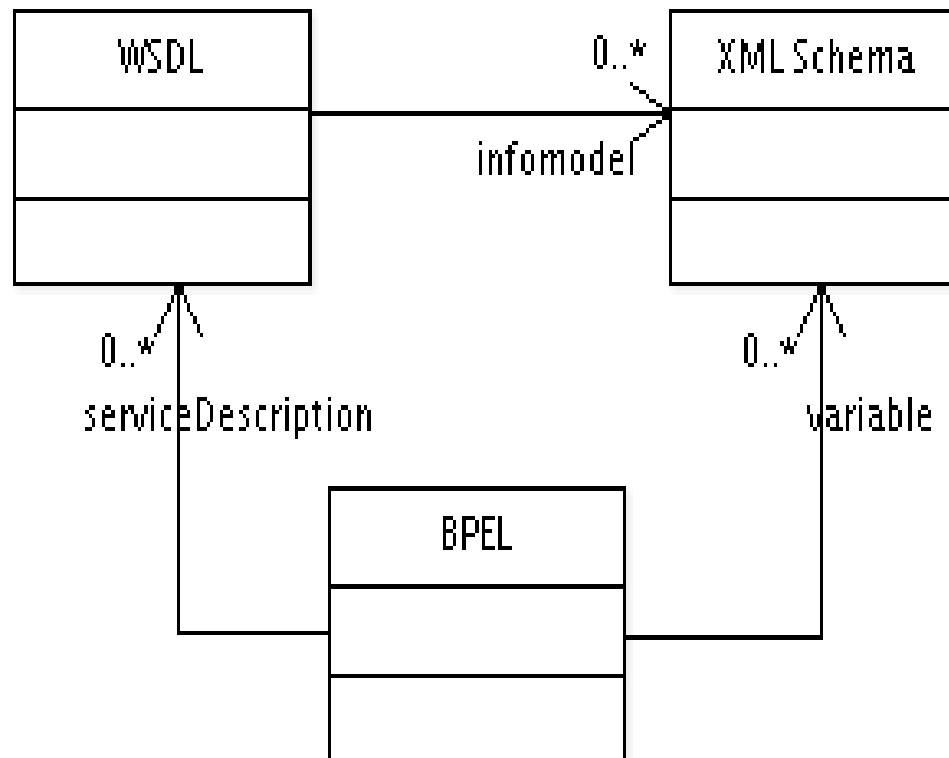
Agenda

- Role of XML Schema in SOA
- Challenges in use of XML Schema
- ebXML Registry as an XML Schema Repository
- IRS Pilot XML Schema Repository
- Future direction
- Summary



Role of XML Schema in SOA

- Defines the Information Model for Services
 - > Data type of parameters in WSDL operations
 - > Data type of variables in BPEL descriptions





Role of XML Schema in SOA (2)

- Provides the grammar for most XML standards Used in SOA
 - > Service Communication: SOAP, ebXML Msg
 - > Service Description: WSDL
 - > Service Behavior: BPEL, ebXML BPSS
 - > Service Policy: WS-Policy, XACML
 - > Service Contract: ebXML CPPA
 - > Service Registration and Discovery
UDDI, ebXML Registry
- Enables information exchange and interoperability within SOA



Challenges in Use of XML Schema

- SOA deployments are now more complex
 - > More services, more service dependencies, more service artifacts
 - > more complex service information models
- Lack of coordination across services
 - > Proliferation of similar or overlapping schemas
 - > Low levels of reuse
 - > Lost productivity, high maintenance cost
- Leads to loss of semantic interoperability within and across SOA deployments



Root Cause of Schema Challenges

- Lack of tools to facilitate proper management and governance of XML Schema
 - > No searchable catalog of published Schemas
 - > No enforcement of policies when schema is published
 - > No access control for actions on schema
 - > No staged roll-out of published schemas
 - > No notification of changes to schemas
 - > No audit trail of actions on schemas
- We need a governance solution to bring method to the madness



What is ebXML Registry Repository

- A web service that provides a governance solution for all types of content
- A cross between relational databases and content management systems
- Provides an integrated registry & repository
 - > Repository: Manages all types of electronic information
 - > Registry: Manages metadata to describe information in repository
- Has many diverse use cases
- One such use case is XML Schema Repository



ebXML Registry & Repository as an XML Schema Repository

- Stores and manages lifecycle of schemas
- Provides a searchable catalog of schemas, types, elements and relationships between them
- Catalogs and manages namespaces
- Ensures schemas conform to organizational policies
 - > Uses Schematron for declarative policies
 - > Examples:
 - > Annotations are present and comply with organizational standards
 - > No substitution groups, no local declarations

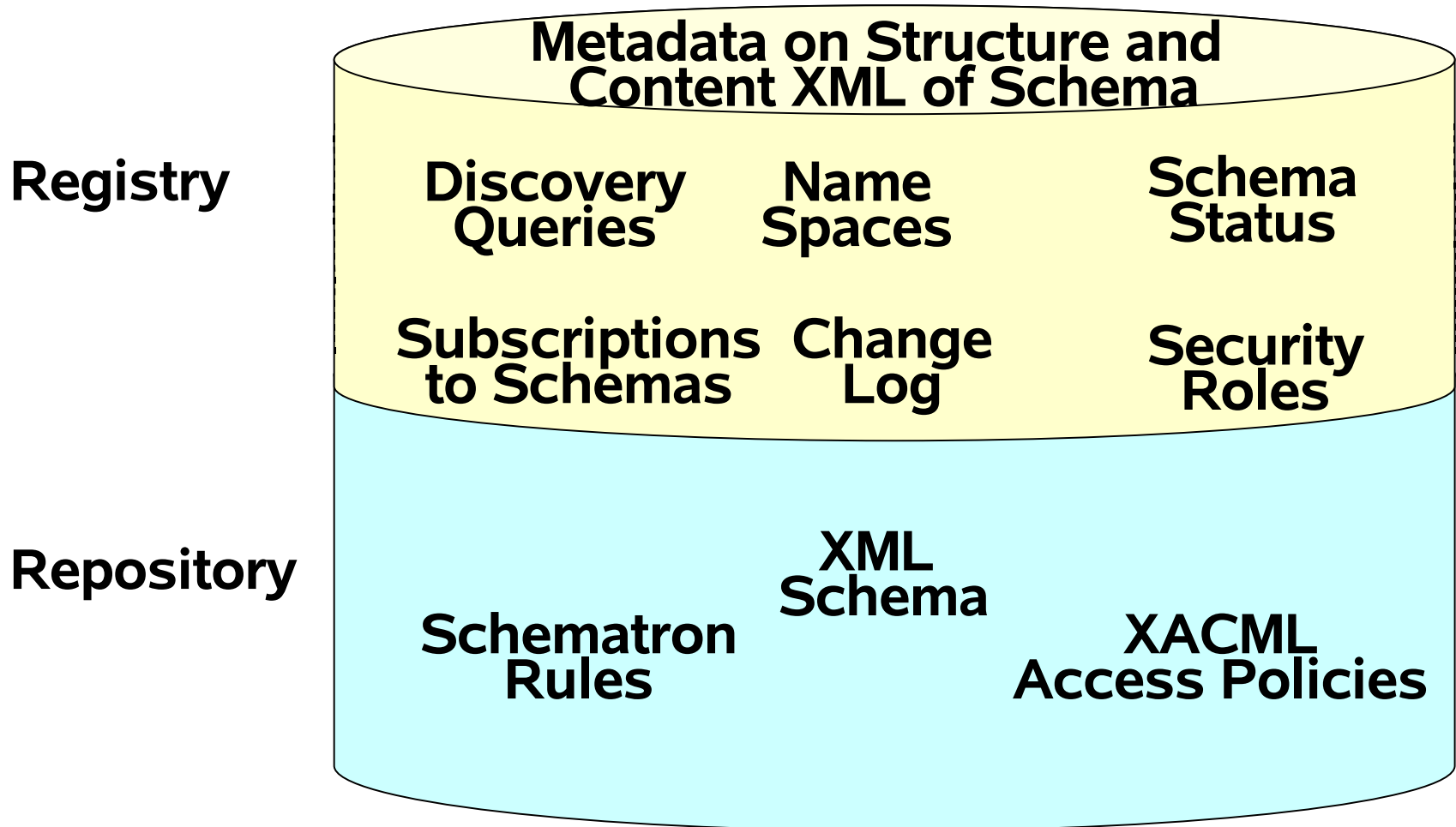


ebXML Registry & Repository as an XML Schema Repository

- Prevents unauthorized access to schema
 - > Role-based access control using XACML
- Allows staged roll-out of schema
- Supports versioning of schemas
- Notifies interested parties when schema changes and triggers associated workflow
 - > Subscriptions, notify via email or web service
- Keeps audit trail of changes to schema
- Provides web based shared folders for organizing available schemas



ebXML Registry & Repository as an XML Schema Repository (2)





The Secret Sauce in ebXML Registry

- Nearly every feature is extensible
 - > “Profile” specs define how to extend “core” specs for specific domains or applications
- The “ebXML Registry Profile for XML Schema” specifies how to use extensions for managing XML Schema
 - > Draft OASIS regrep TC specification
- Validation and Cataloging features extended for XML Schema
- Extensible parameterized query features extended for XML Schema discovery



IRS Pilot XML Schema Repository

- Based upon freebXML Registry 3.0
- Defined four use cases
 - > Admin customizes registry for XML Schema Profile and loads XML Schemas
 - > Developer searches for a schema type, browses its relationships to other types, analyzes all usages of the type and exports it
 - > Admin promotes a service to deployed status notifying a Deployer who exports & deploys it
 - > Manager or developer generates reports on XML Schema assets

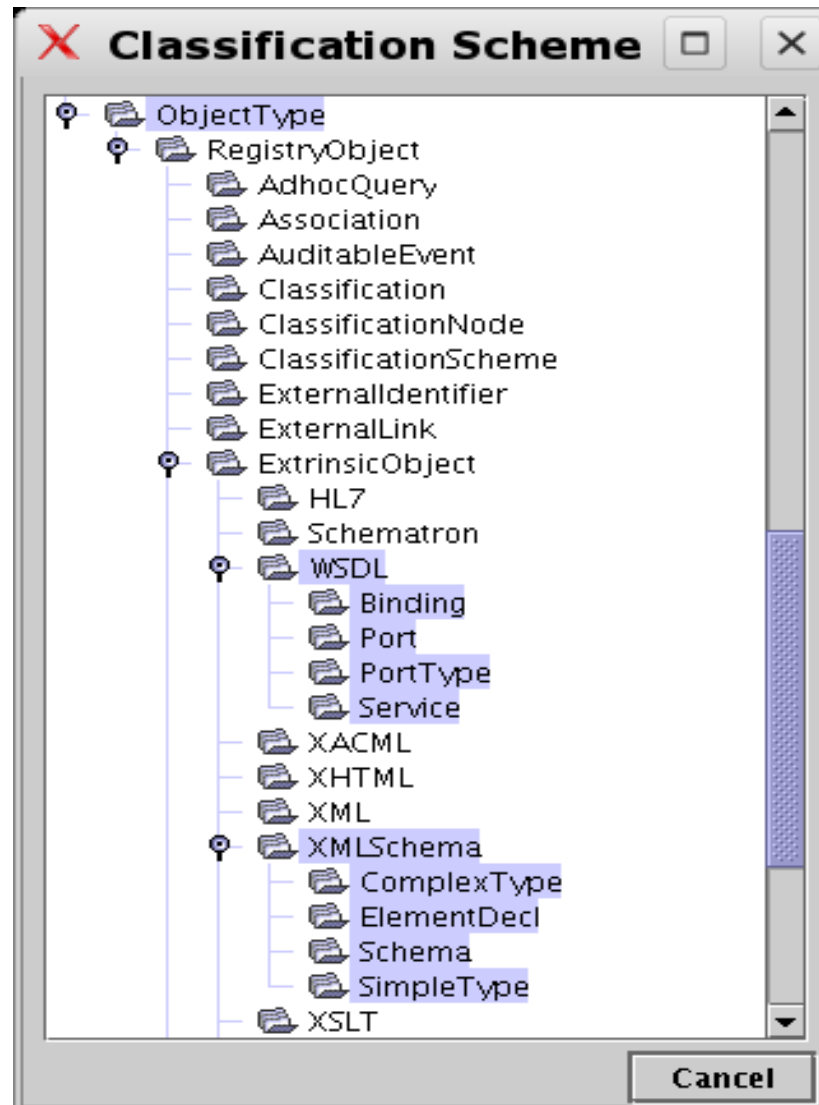


Customize Registry for XML Schema

- Import XML Schema Profile canonical data
 - > Extend ObjectType for XML Schema
 - > e.g. ComplexType, SimpleType, ElementDecl
 - > Extend AssociationType for XML Schema
 - > e.g. Imports, Includes
- Import IRS specific configuration
 - > Extend SubjectRole with IRS specific roles
 - > e.g. EDMOAdministrator, EDMODeveloper
 - > Extend StatusType with IRS specific status
 - > e.g. Approved, Deployed, Rejected...
- Publish IRS schemas and WSDL into registry

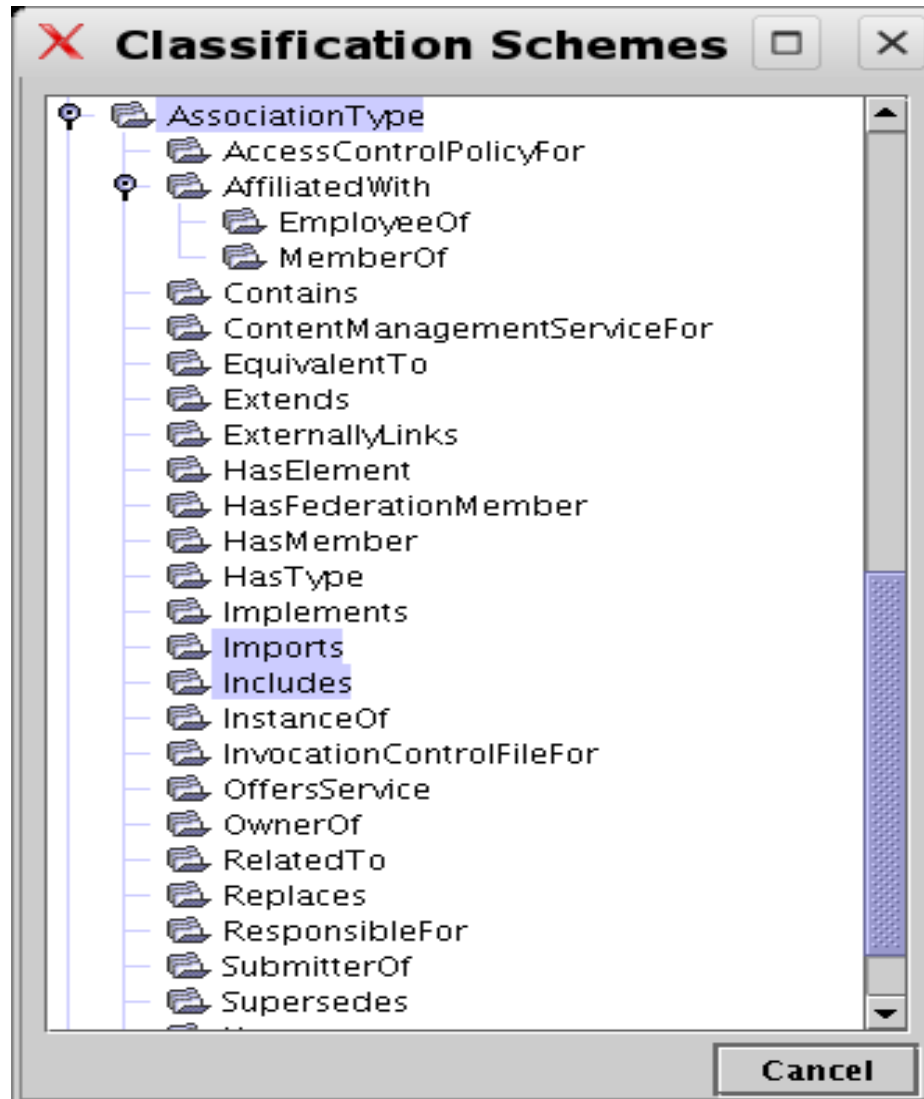


ObjectType ClassificationScheme



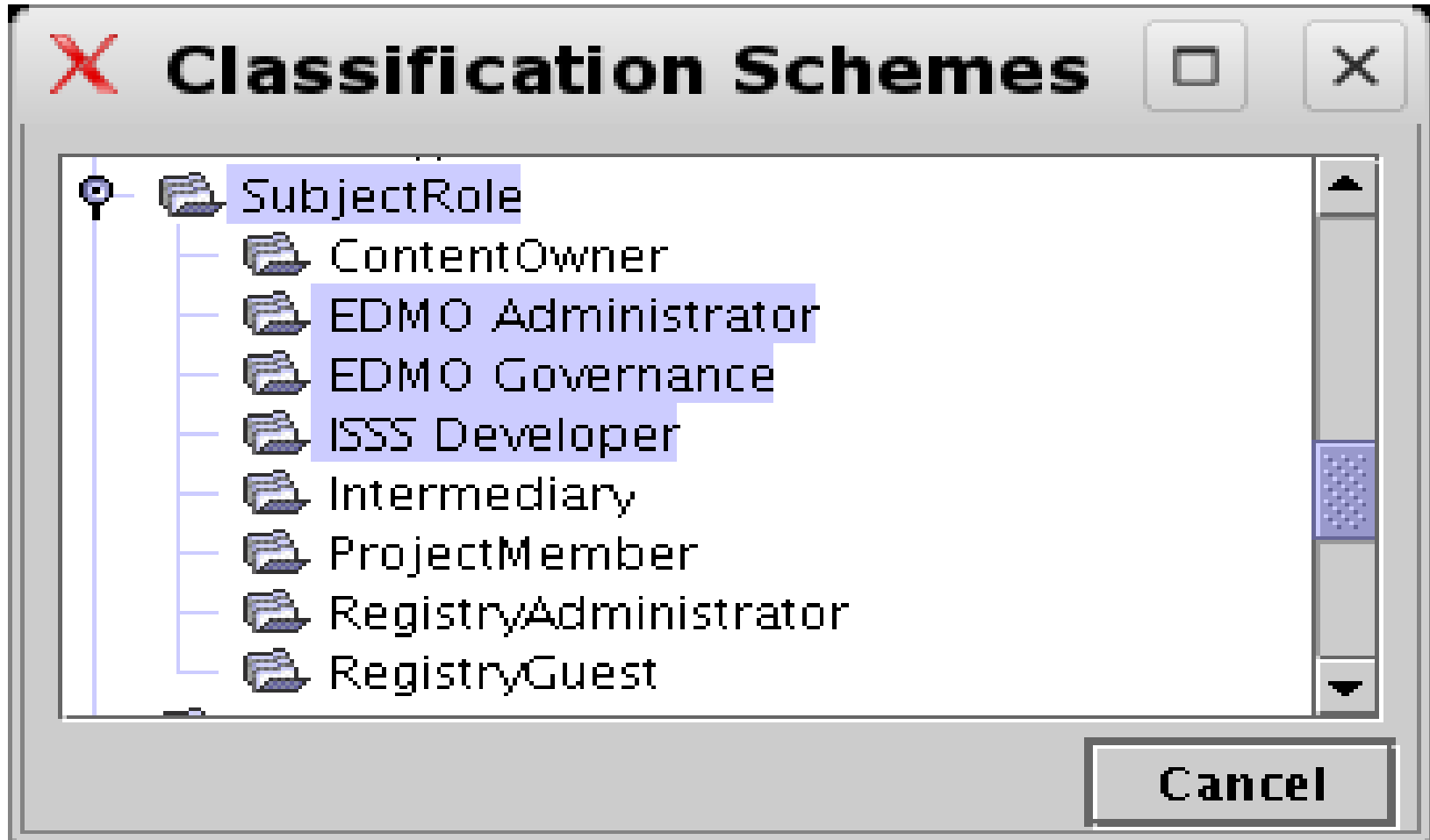


AssociationType ClassificationScheme



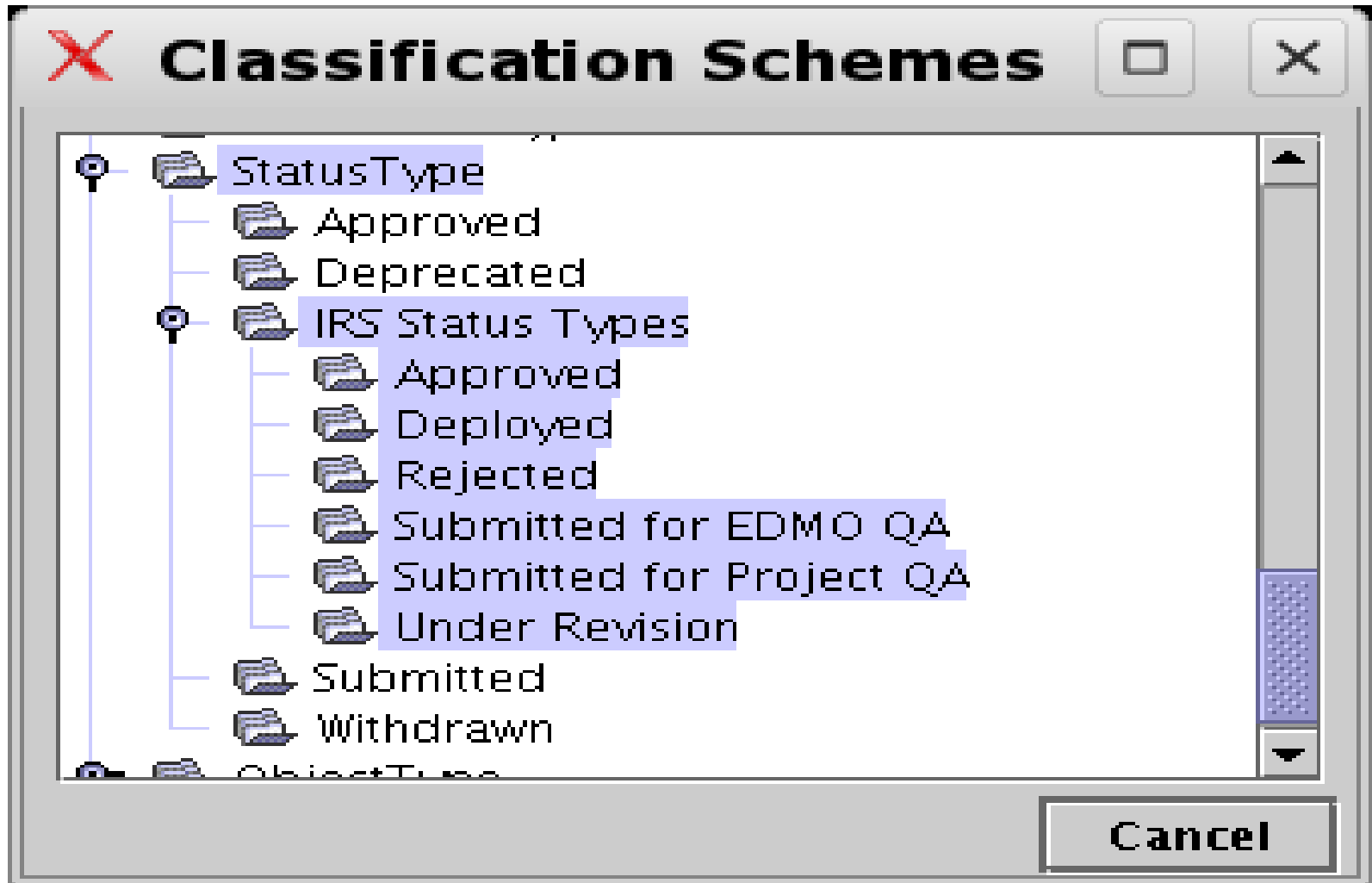


SubjectRole ClassificationScheme





StatusType ClassificationScheme





Search, Browse, Analyze, Export

- Find a ComplexType by name, description
 - > Uses wild card pattern matching
- Graphically browse a matched type
- Use “Show Related Objects” on type to see all its relationships
 - > Which XSD file contains it
 - > What types does it extend
 - > Which elements use it as its type
- Analyze what other types depend upon this type. Who's impacted if it changes?
- Export type and all its dependencies to zip



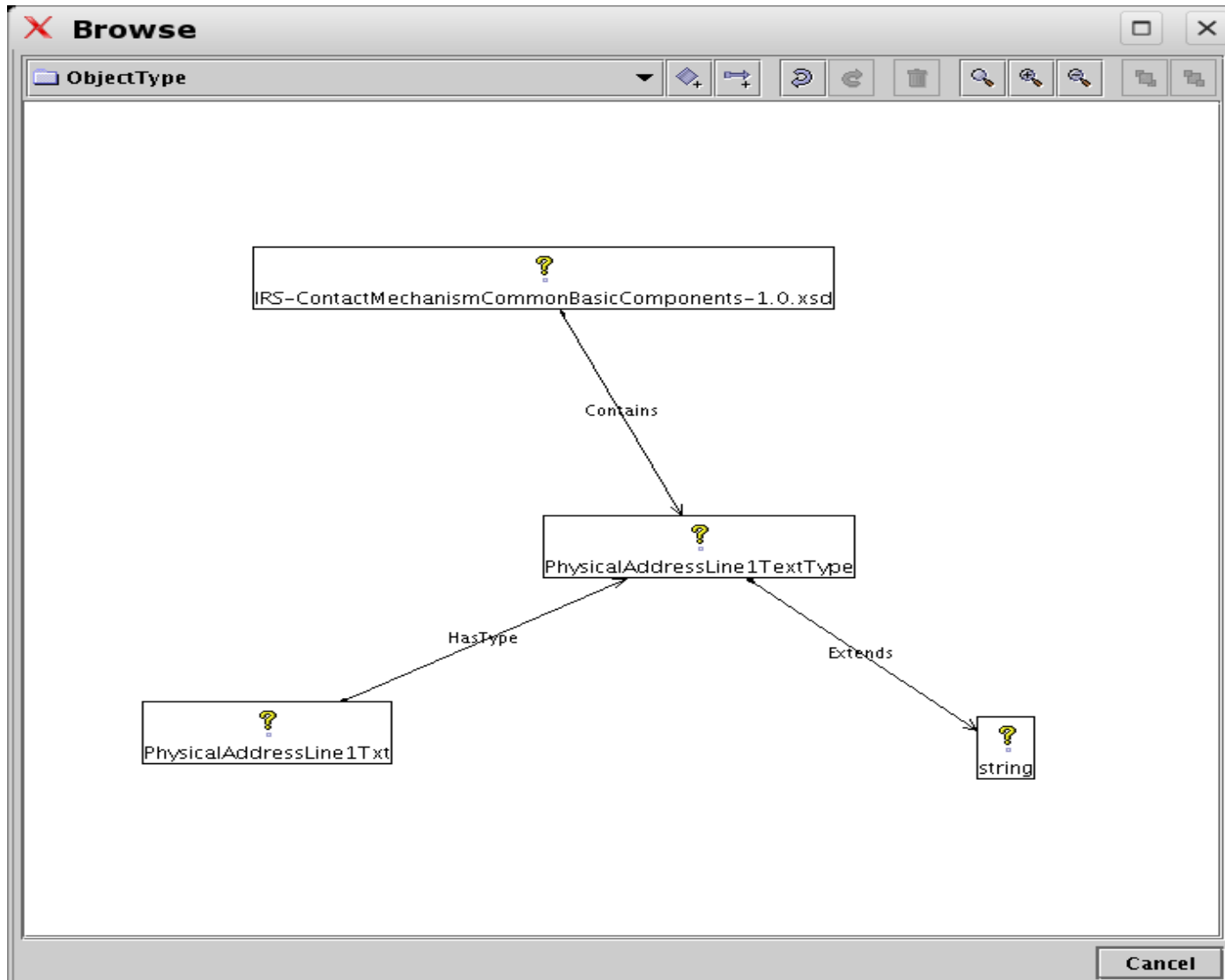
Find ComplexType By Name

The screenshot shows the 'Registry Browser Java UI' application window. The title bar reads 'Registry Browser Java UI'. The menu bar includes 'File', 'View', and 'Help'. The toolbar contains icons for home, search, key, lock, key with plus, and globe. The 'Registry Location' field is set to 'http://localhost:8080/omar/registry/soap'. The 'Discovery' tab is active, showing 'Search' and 'Clear Form' buttons. Under 'Search Criteria', 'Business Query' is selected, and 'Object Type' is set to 'ComplexType'. The search criteria fields are: Name: '%AddressLine%', Description: (empty), Classifications: (empty), External Identifiers: (empty), and External Links: (empty). The 'Search Results' table displays the following data:

Object Type	Name	Description	Version	Version Comment
ComplexType	PhysicalAddressLine1TextType		1.1	
ComplexType	PhysicalAddressLine2TextType		1.1	
ComplexType	PhysicalAddressLine3TextType		1.1	

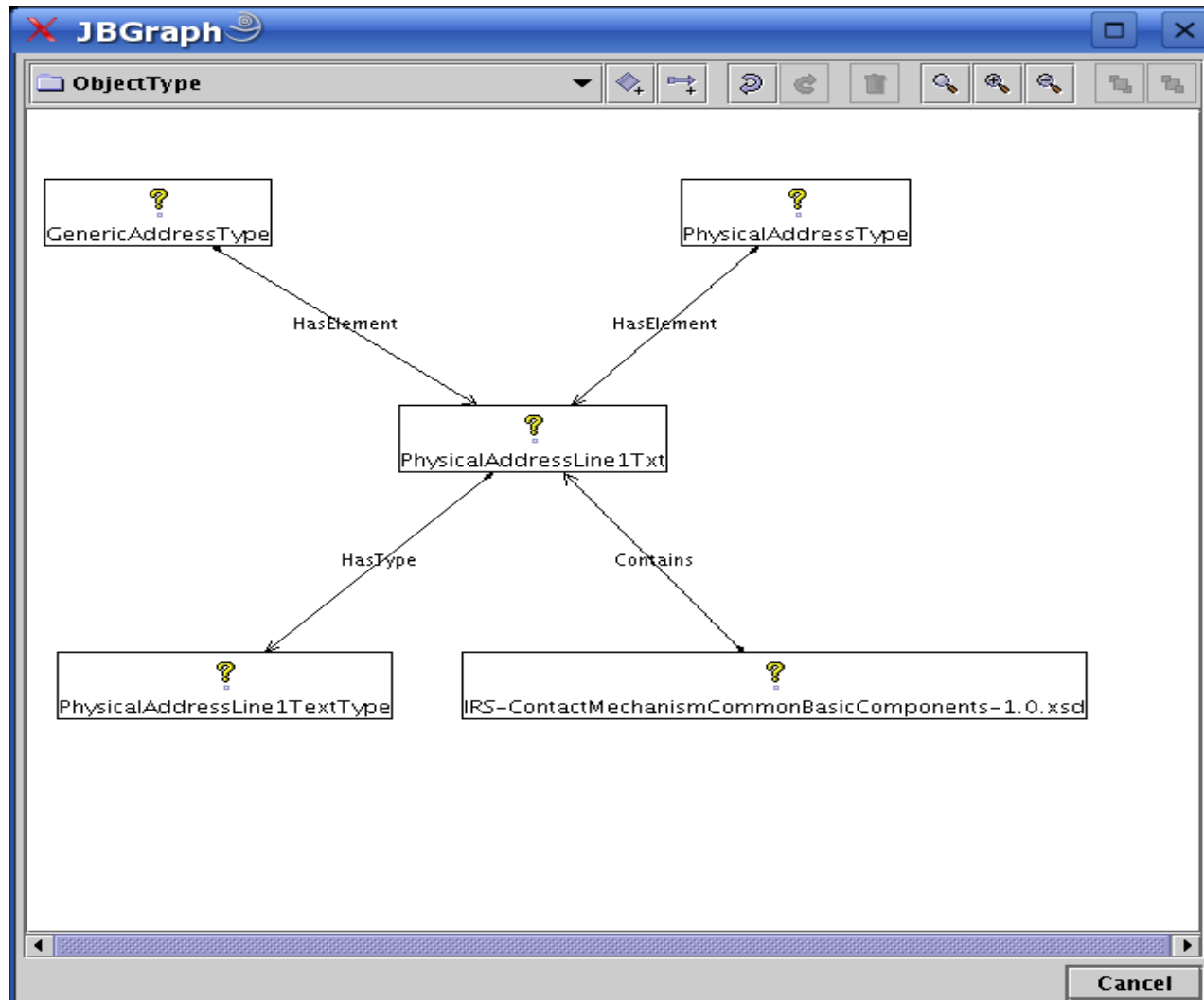


Browse ComplexType





Impact Analysis: Changing Type





Export ComplexType to ZIP

The screenshot shows the 'Registry Browser Java UI' application window. The title bar reads 'Registry Browser Java UI'. The menu bar includes 'File', 'View', and 'Help'. The toolbar contains icons for home, search, key, delete, add, and refresh. The 'Registry Location' field is set to 'http://localhost:8080/omar/registry/soap'. The 'Discovery' tab is active, showing search criteria and search results.

Search Criteria:

- Search: [] Clear Form: []
- Business Query Ad hoc Query
- Object Type: XMLSchema
- Case Sensitive Search: []
- Name: %AddressLine%
- Description: []
- Classifications: []
- External Identifiers: []
- External Links: []

Search Results Table:

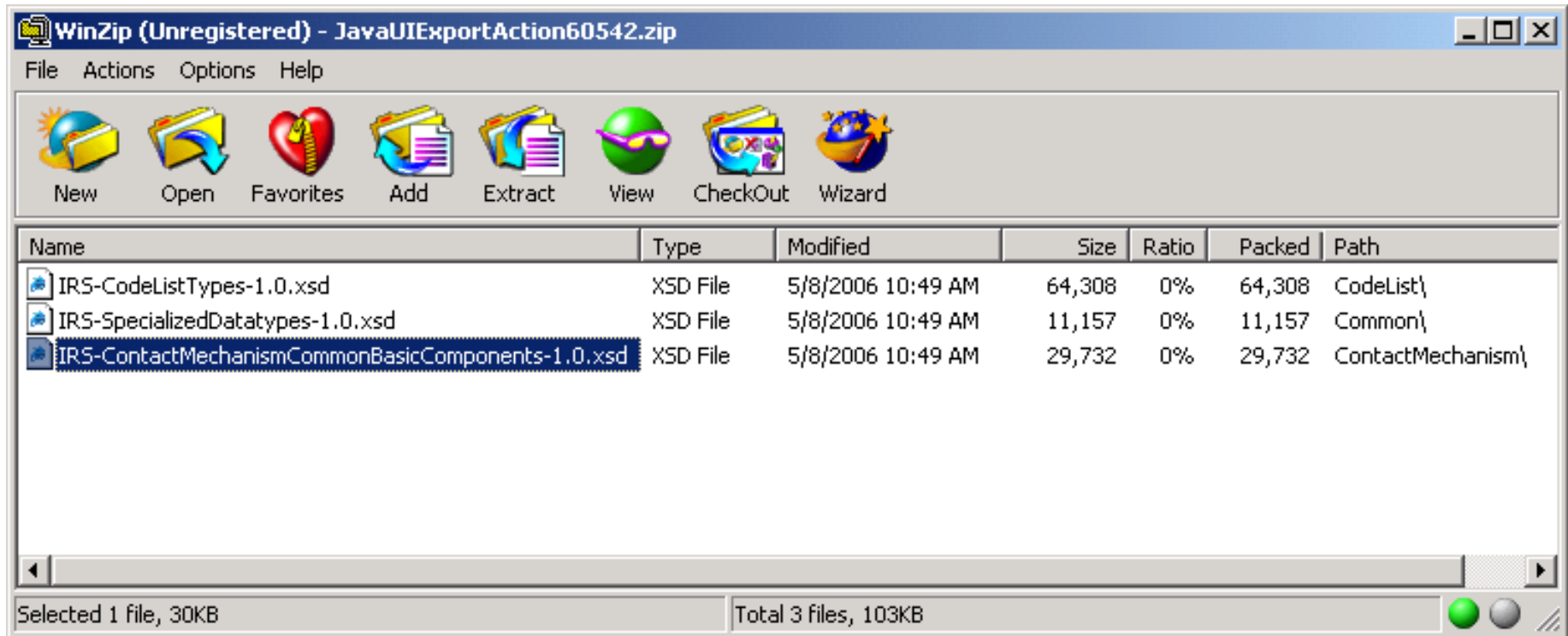
Object Type	Name	Version	Version Comment
ComplexType	PhysicalAddressLine1TextType	1.1	
ElementDecl	PhysicalAddressLine1Txt	1.1	
ComplexType	PhysicalAddressLine2TextType	1.1	
ElementDecl	PhysicalAddressLine2Txt	1.1	
ComplexType	PhysicalAddressLine3TextType	1.1	
ElementDecl	PhysicalAddressLine3Txt	1.1	

A context menu is open over the first row of the table, showing the following options:

- Show Details
- Browse
- Export**
- Show Audit Trail
- Show RegistryObject
- Show RepositoryItem



Content of Exported ZIP File



- Contains the XSD file for exported type
- Contains transitive closure of all other file dependencies



Future direction for XSD Profile

- Finalize mapping from schema to ebXML Registry
- Align with WSDL, namespace, zip profiles
- Specify schema versioning features
- Achieve “Approved OASIS standard” status
- Implement in freebXML Registry open source project



Future Directions for ebXML Registry

- More profiles
 - > WSDL, Zip, Namespace, BPEL, BPSS, CPPA...
- More protocol bindings
 - > MTOM, WebDAV, SMTP, RM, ebMS...
- First class type extensibility
- Full text indexing and search
- Feed support via ATOM binding
- Conformance specification and compatibility testing



Summary

- XML Schema a foundation for SOA
- Explosive growth in XML Schema usage
- Ad hoc, file-based systems for XML Schema is inadequate - need governance
- ebXML Registry enables governance for XML Schema
- ebXML Registry also enables governance for WSDL, BPEL and other SOA artifacts
- freebXML Registry, a royalty-free open source implementation is available now
- Schema repository use case is being reality-tested at Internal Revenue Service



Related Links

- ebXML Registry Overview Wiki
 - > <http://ebxmlrr.sourceforge.net/wiki/Overview>
- freebXML Registry
 - > <http://ebxmlrr.sourceforge.net>
- Sun Service Registry
 - > <http://www.sun.com/products/soa/registry>
- Wellfleet Software Corporation
 - > <http://www.wellfleetsoftware.com>



Finish

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