DURASPACE™

Fedora Architecture & Overview

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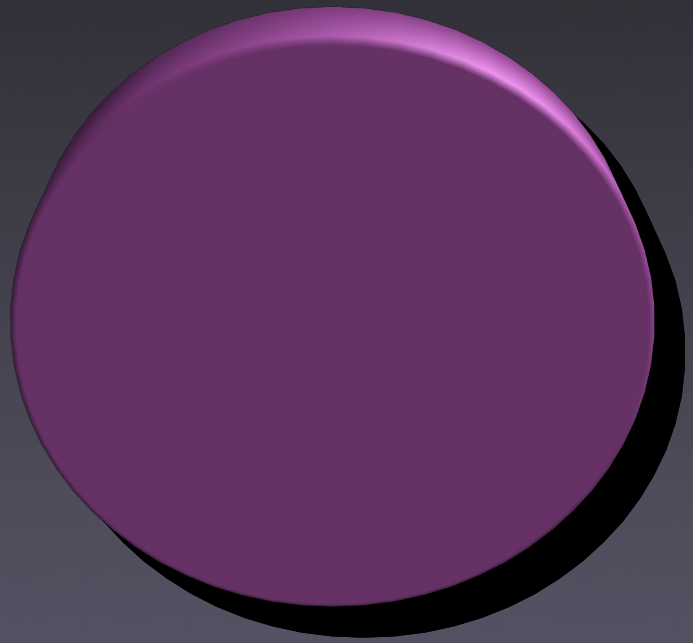
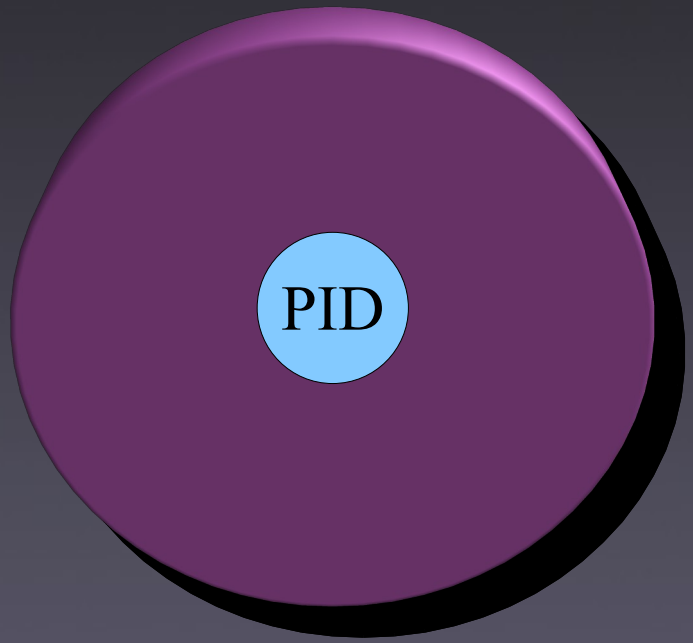
What is a Fedora Object?



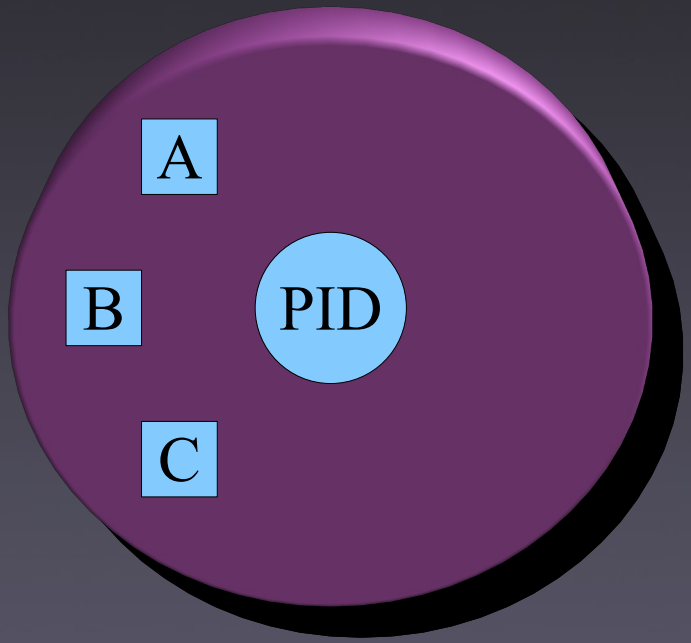
What is a Fedora Object?

A persistently identified information resource



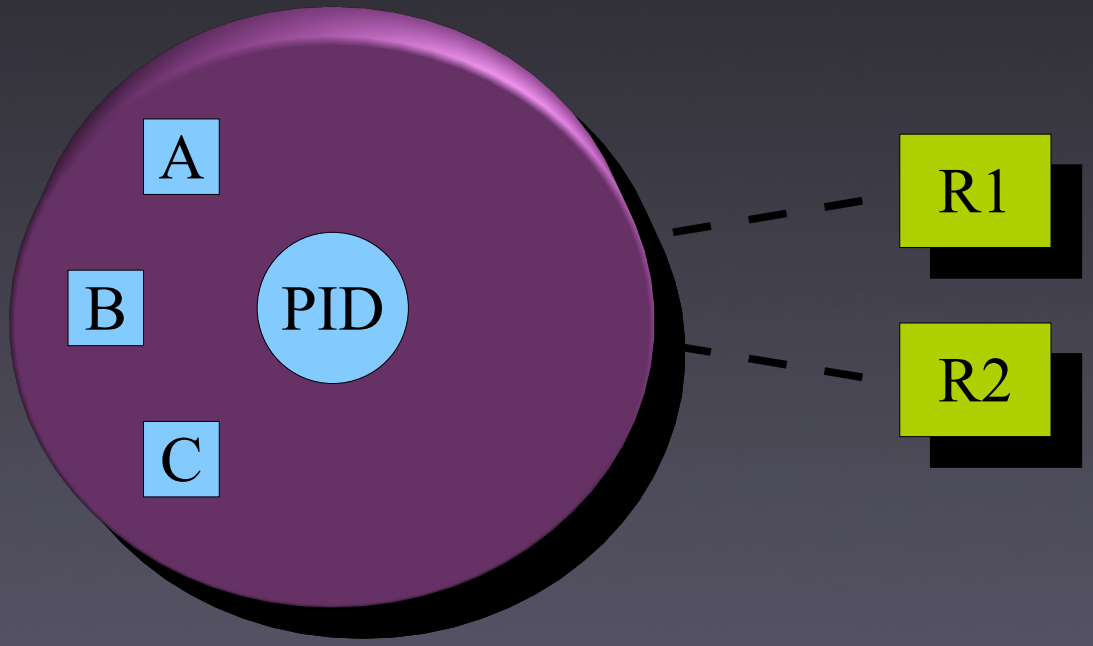
What is a Fedora Object?

A persistently identified information resource
that contains typed bytestreams



What is a Fedora Object?

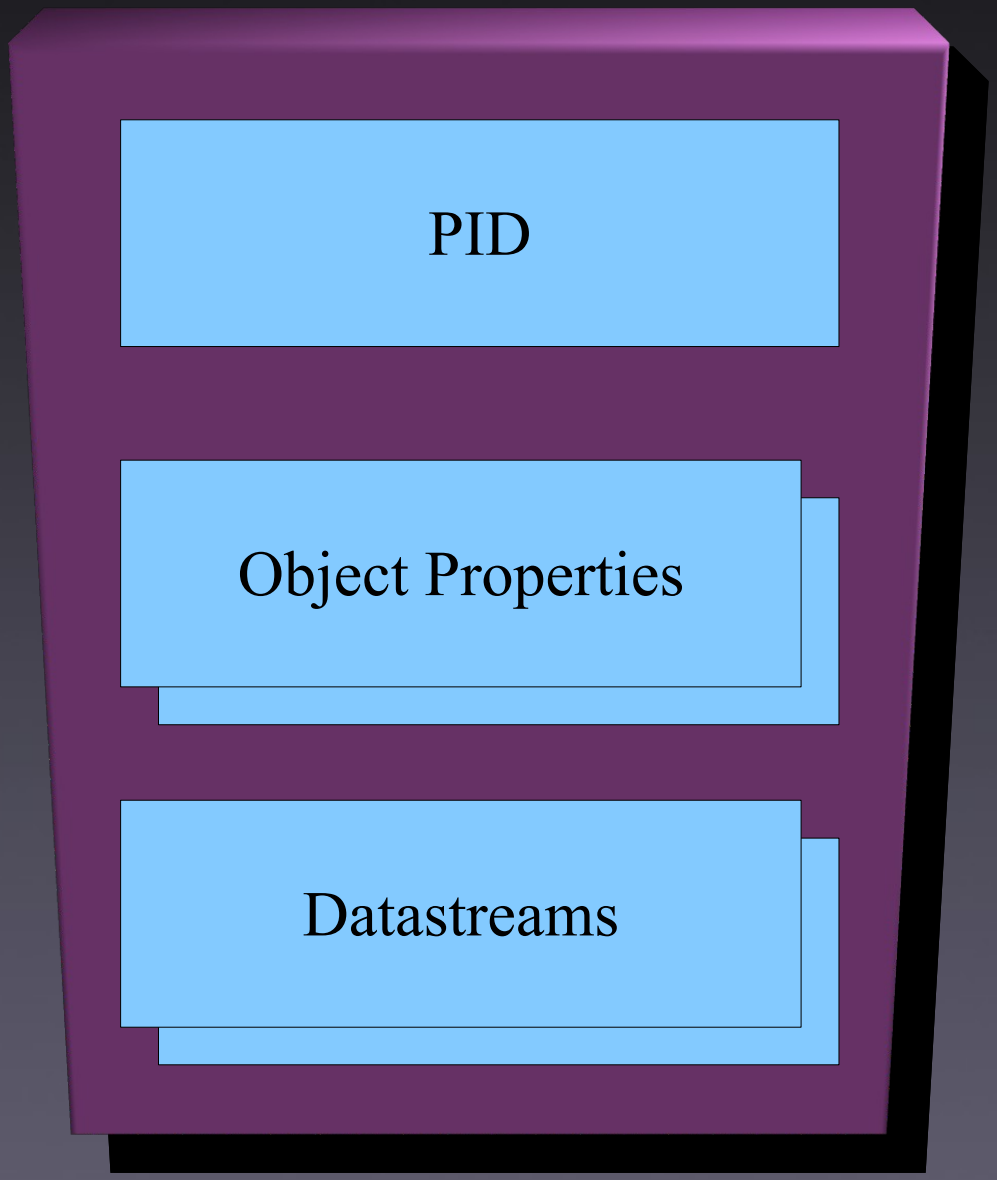
A persistently identified information resource
that contains typed bytestreams
and has named representations.



How are they Encoded?

- Fedora Object XML (FOXML)
  - Designed for Fedora; encoding is obvious
  - Most often used
- Fedora METS Extension
  - “Standard”, but mapping is difficult
- Atom ZIP
  - Manifest + bitstreams in one package

Object Components



Persistent identifier

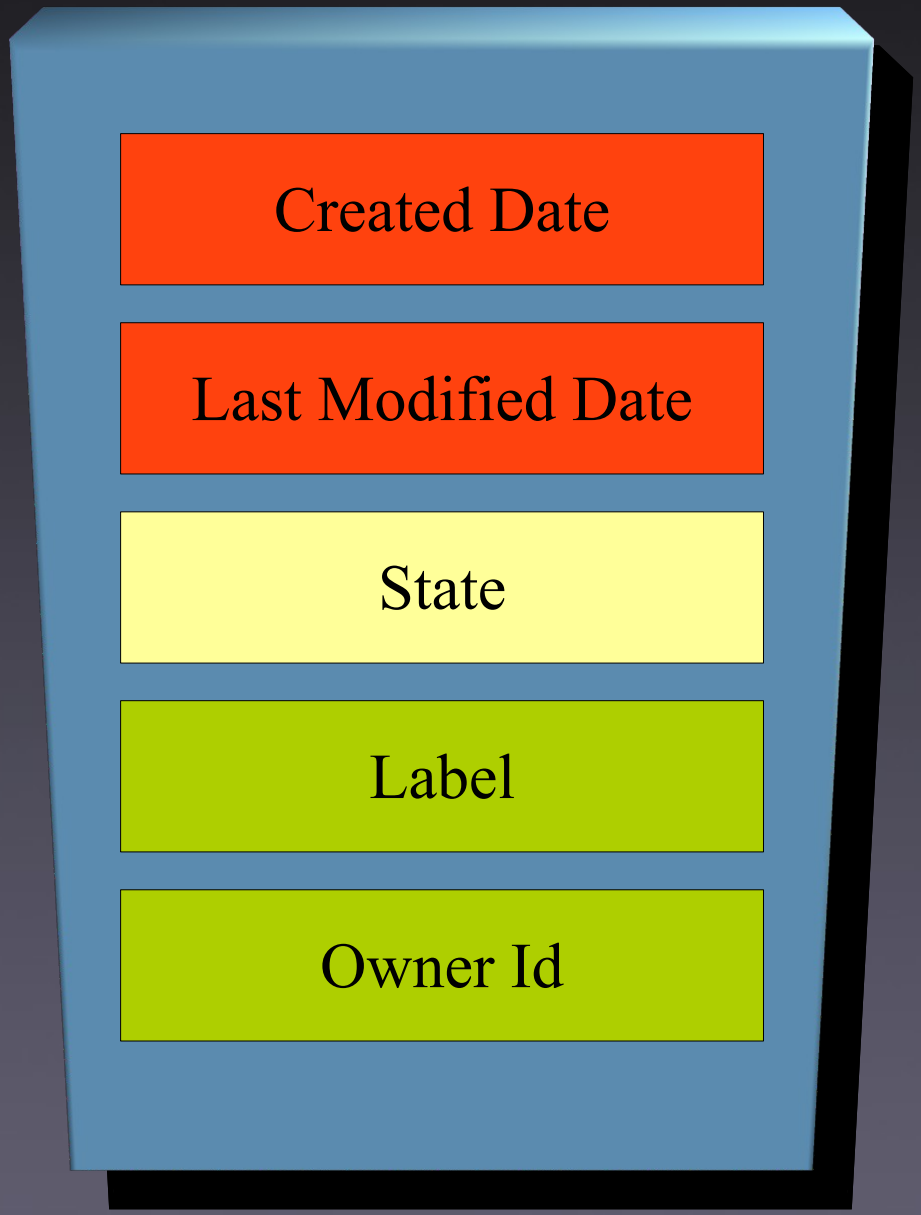
Built-in attributes

Content/metadata

What is a PID?

- Persistent IDentifier
- Globally Unique
- Syntax
  - namespace:name
  - https://wiki.duraspace.org/x/IwGcAQ
- Examples
  - demo:42
  - example.org:ExampleObject

Object Properties



“2010-09-10T19:59:03.000Z” (UTC)

“2010-09-10T19:59:03.000Z” (UTC)

[“Active”], “Inactive”, or “Deleted”

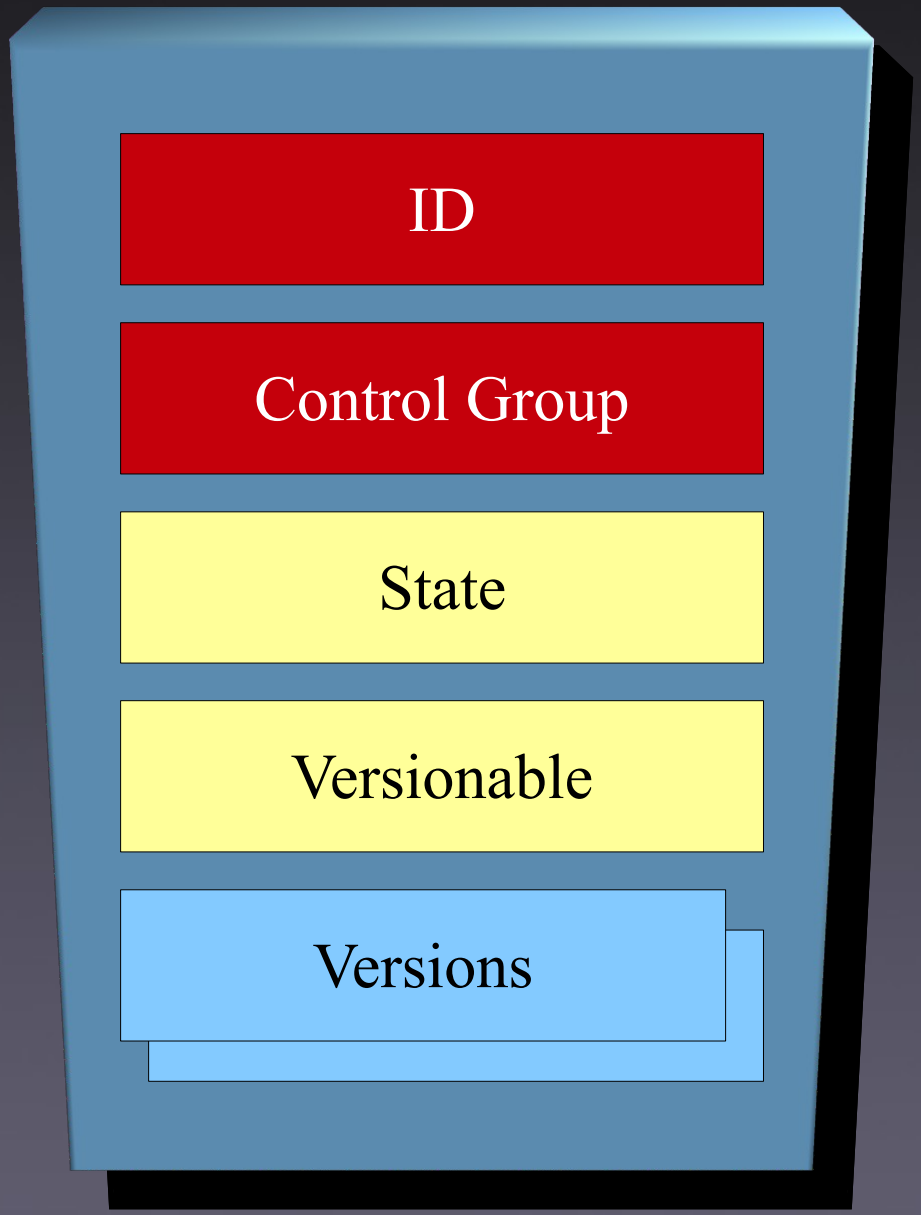
“Any string”

“Any string”

What is a Datastream?

- A typed sequence of bytes in an object
- “Content” or “Metadata”
- Payload can be stored:
  - Inside Fedora
    - Inline XML
    - Managed Content
  - Outside Fedora
    - Externally Referenced
    - Redirected

Each Datastream has..



XML “NCName” (unique in object)

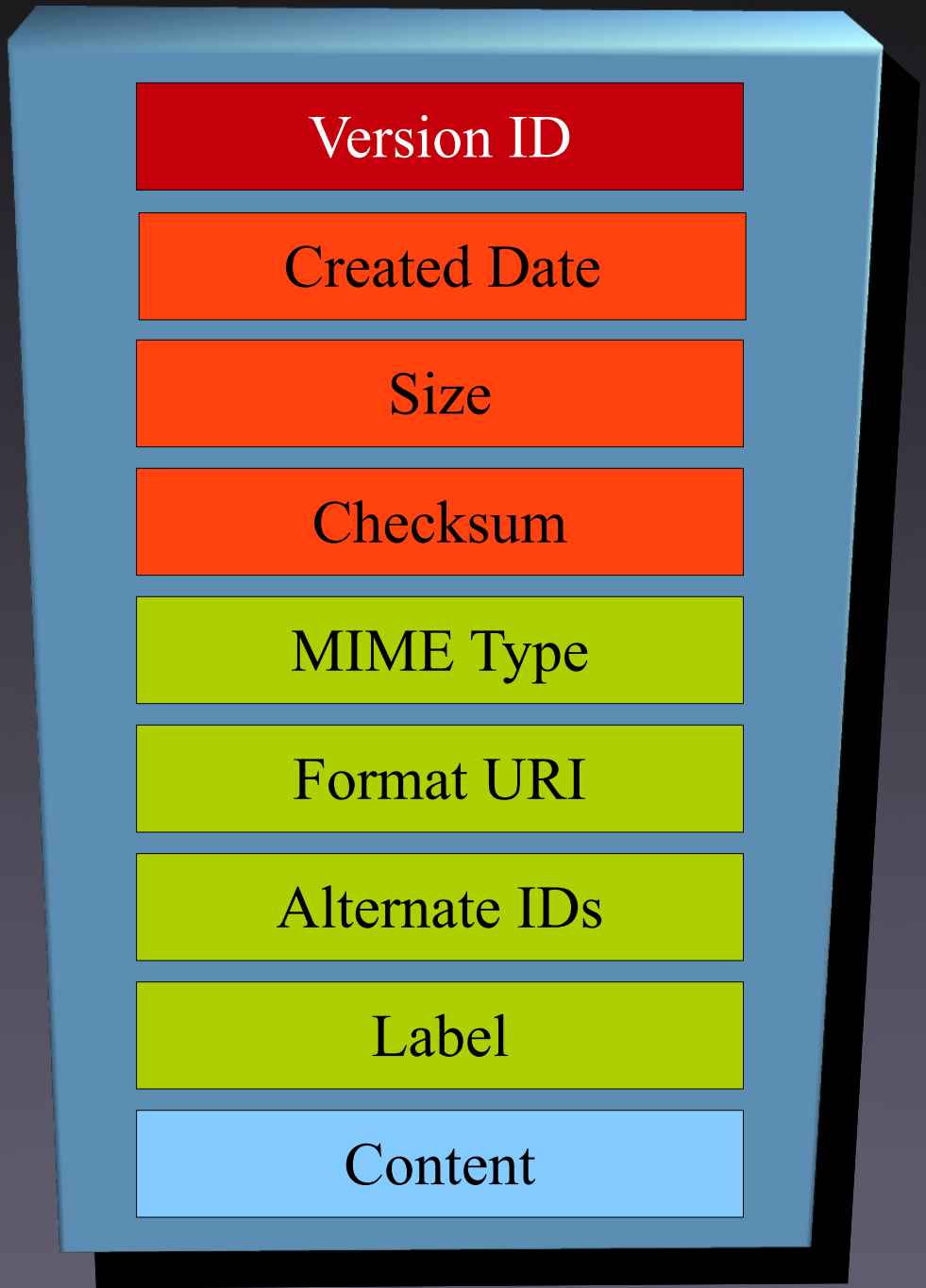
“X”, “M”, “E”, or “R”

[“A”], “I”, or “D”

[true] or false

1 or more

Each Datastream Version has..



XML “NCName” (unique in object)

“2010-09-10T19:59:03.000Z” (UTC)

Number of bytes

MD5, SHA-1/256/384/512

Any “type/subtype”

Any URI

Any set of URIs

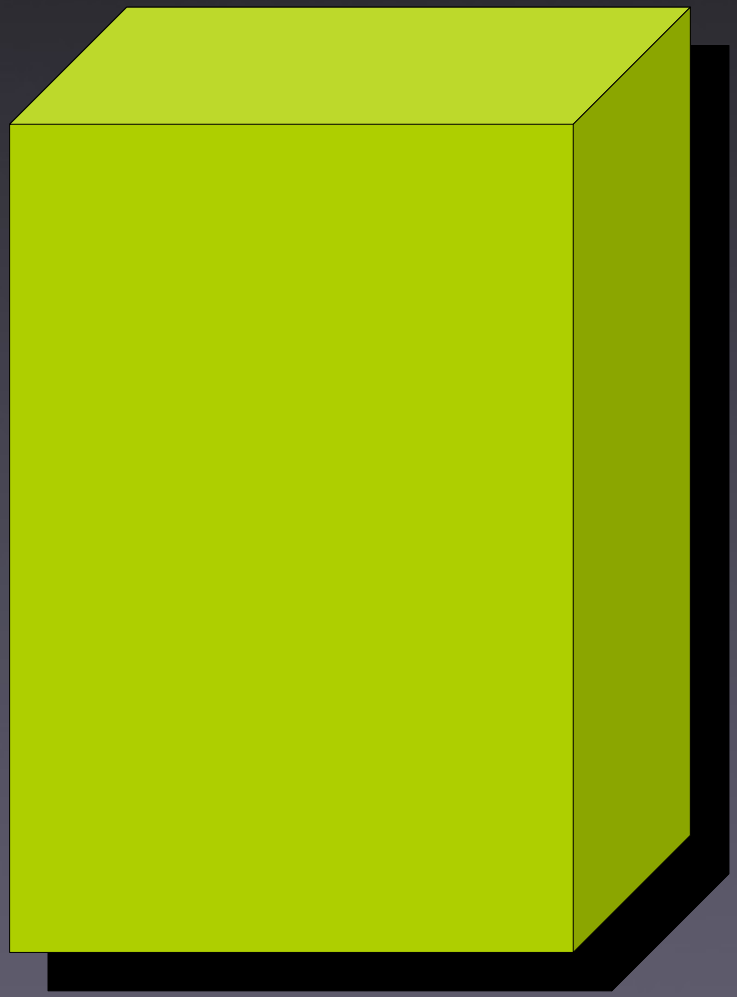
“Any string”

Any sequence of bytes

FOXML Example

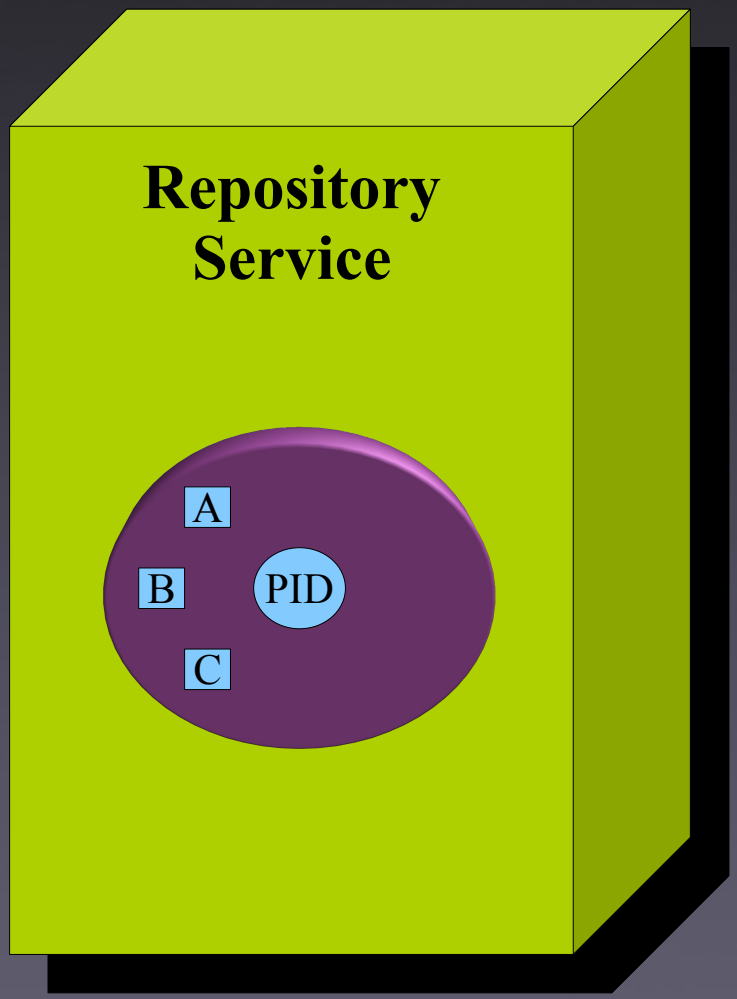
```
<digitalObject xmlns="info:fedora/fedora-system:def/foxml#"
    VERSION="1.1"
    PID="demo:ExampleObject">

  <objectProperties>
    <property NAME="info:fedora/fedora-system:def/model#label"
              VALUE="Hello World"/>
  </objectProperties>

  <datastream ID="DS1" CONTROL_GROUP="E" STATE="A">
    <datastreamVersion ID="DS1.0"
                       CREATED="2011-09-10T20:33:28.832Z"
                       MIMETYPE="text/html">
      <contentLocation REF="http://example.org/index.html"
                       TYPE="URL"/>
    </datastreamVersion>
  </datastream>

</digitalObject>
```

What is a Fedora Repository?



What is a Fedora Repository?

A service that holds Fedora objects,



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A service that holds Fedora objects,
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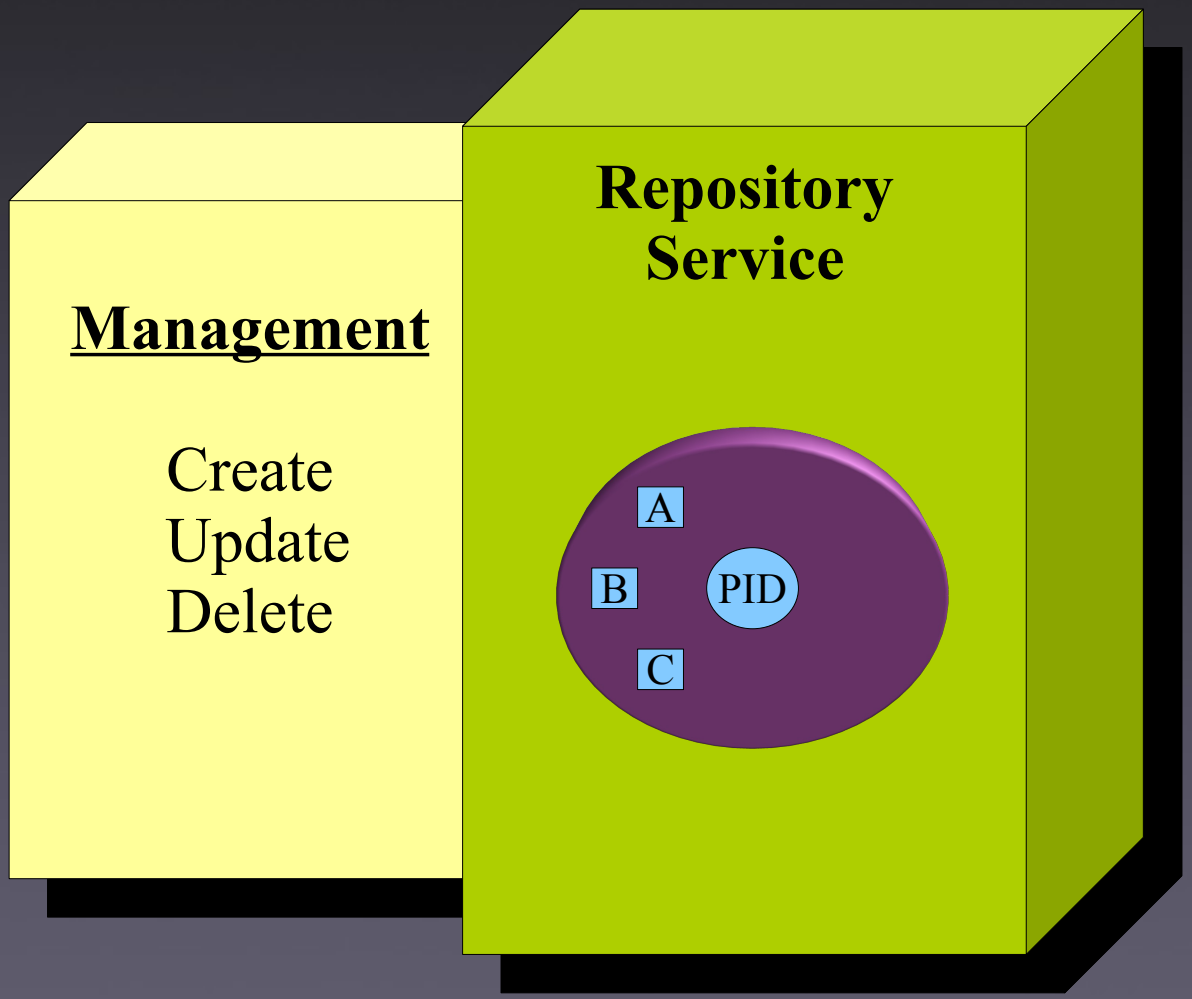
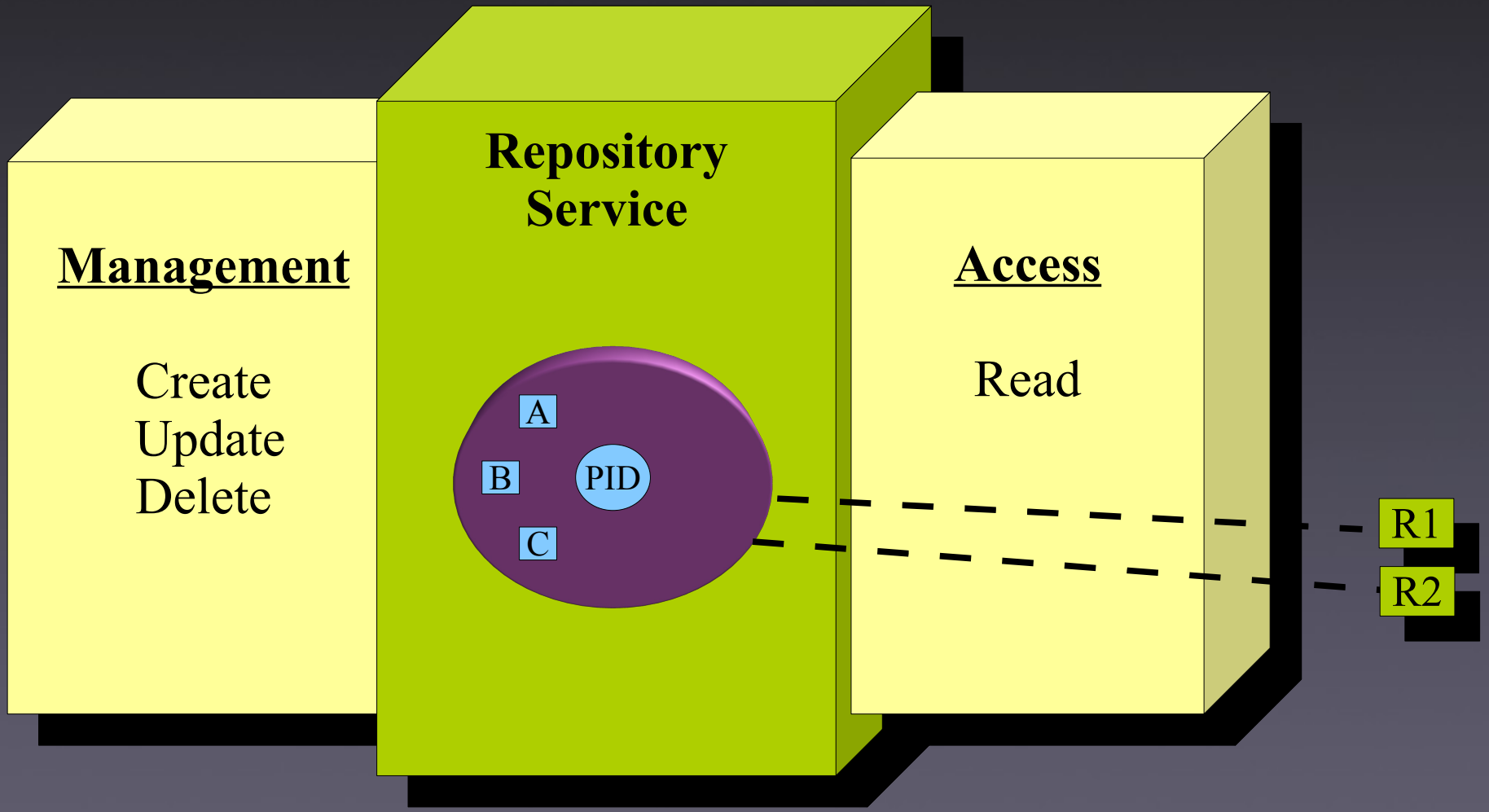
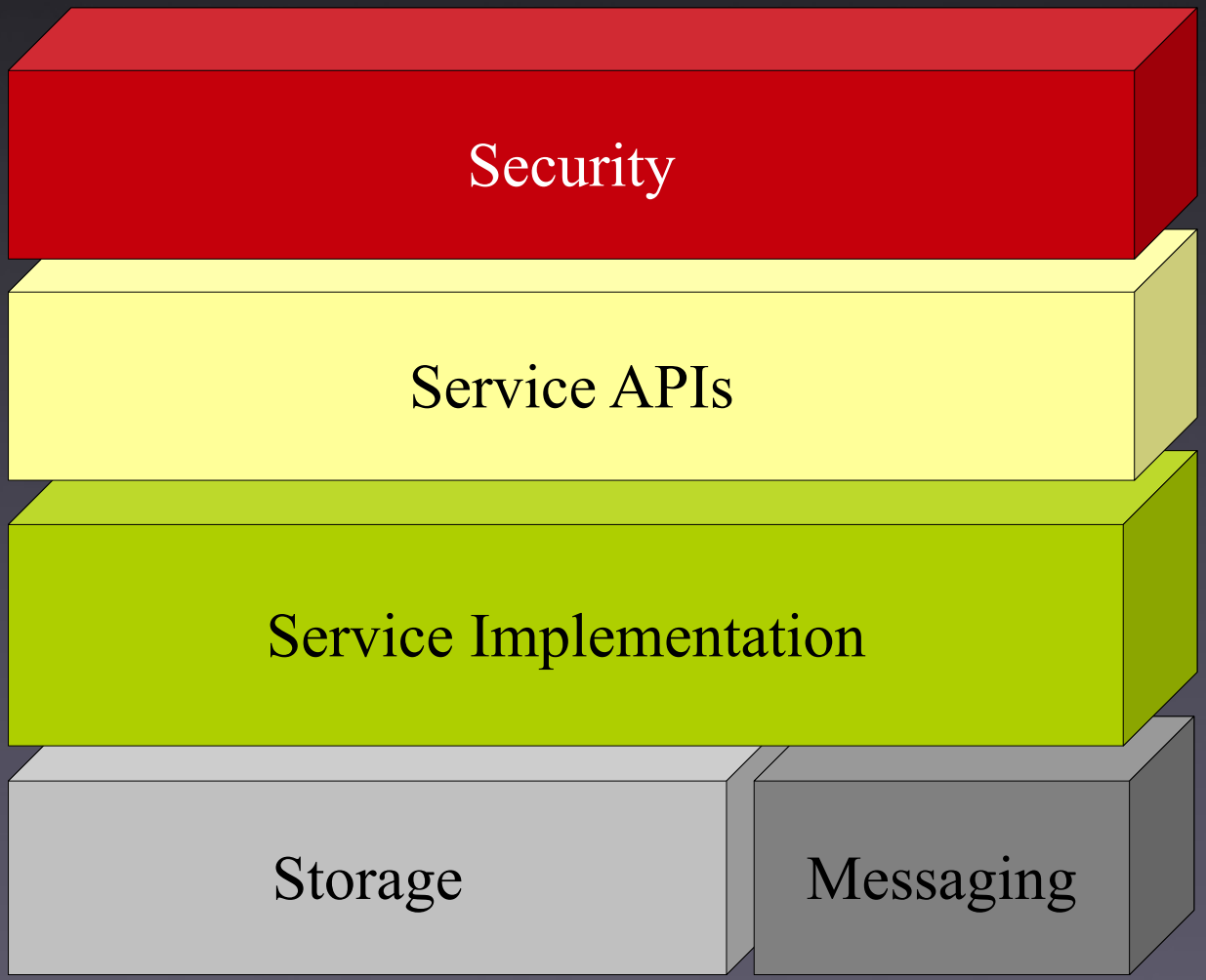


What is a Fedora Repository?

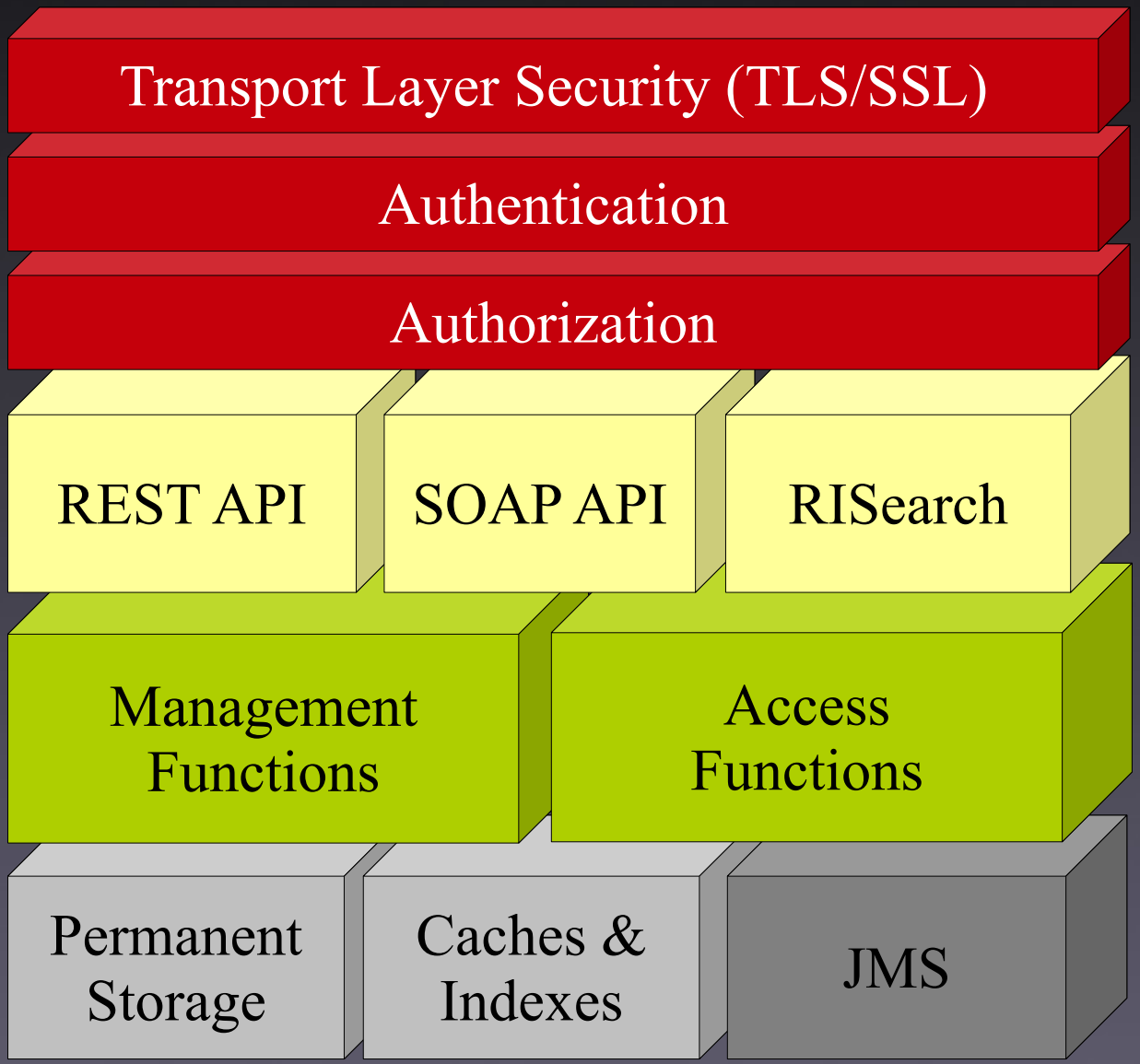
A service that holds Fedora objects,
provides management functions for composing them,
and access functions for finding them and getting their representations.



Typical Service Architecture



Fedora Architecture



Security Overview

Transport Layer Security (TLS/SSL)

- Optional
- Can use servlet container (e.g. Tomcat) or web server (e.g. Apache) facilities

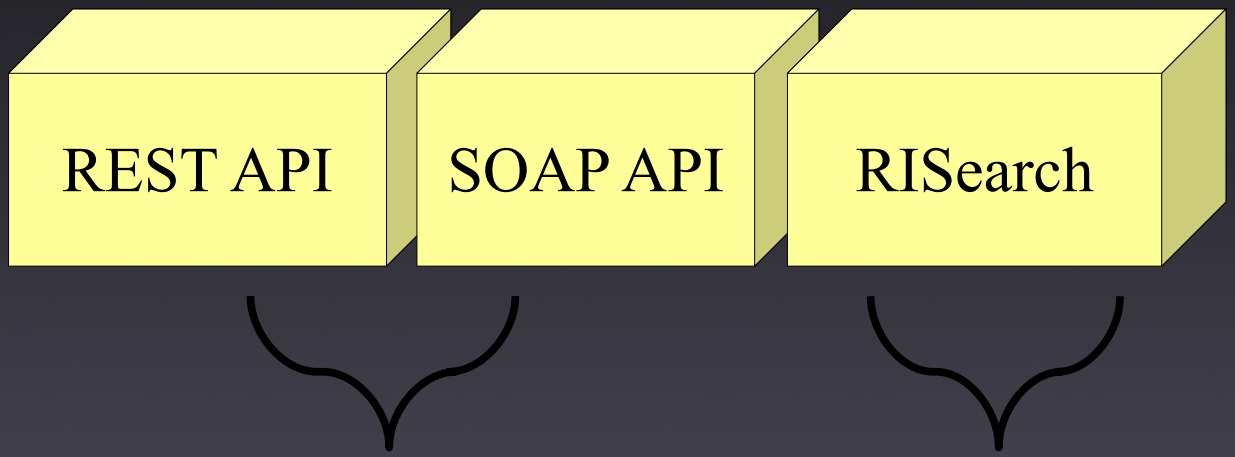
Authentication

- HTTP Basic
- User/Group DB: XML file or LDAP

Authorization

- XACML Policies
- Very flexible, but difficult to write

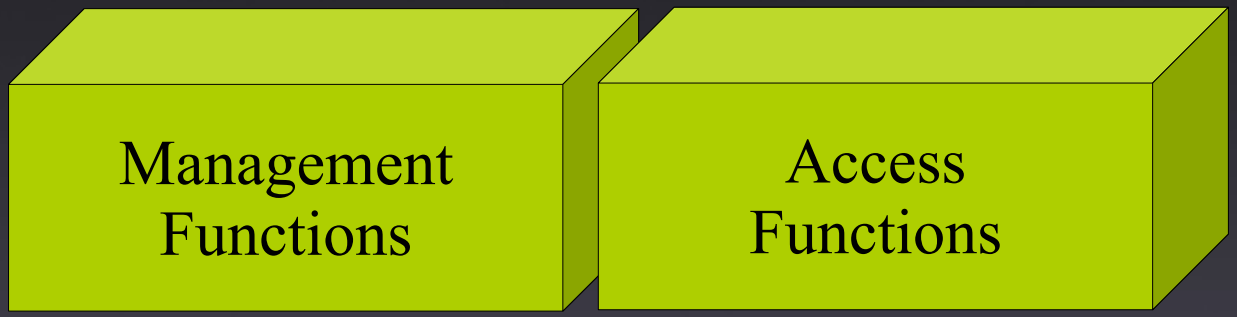
Service API Overview



Create
Read + Basic
Update Search
Delete

Resource Index
RDF Search
(SPARQL, iTQL, SPO)

Service Implementation Overview



- Translate object-level requests to storage operations
- On successful write, send change notification

Storage Overview

Includes

- Serialized objects
- Inline XML
- Managed datastreams

Pluggable

- Default: Local files
- Others via Akubra API

Relational Database

- Fast lookups for CRUD operations
- Basic Search
- Bundled: Derby
- Others: Postgres, MySQL, Oracle, MSSQL

Triplestore (Optional)

- Mulgara (SPARQL & iTQL)
- MPTStore (SPO only)

Messaging Overview

- Optional
- Fedora API-level messages for other services
- Topics or Queues
- Default: ActiveMQ embedded broker
- Can use external broker for higher availability
- More info:
  https://wiki.duraspace.org/x/-wCcAQ