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Federation in a Web Services World: CMDB Federation Specification

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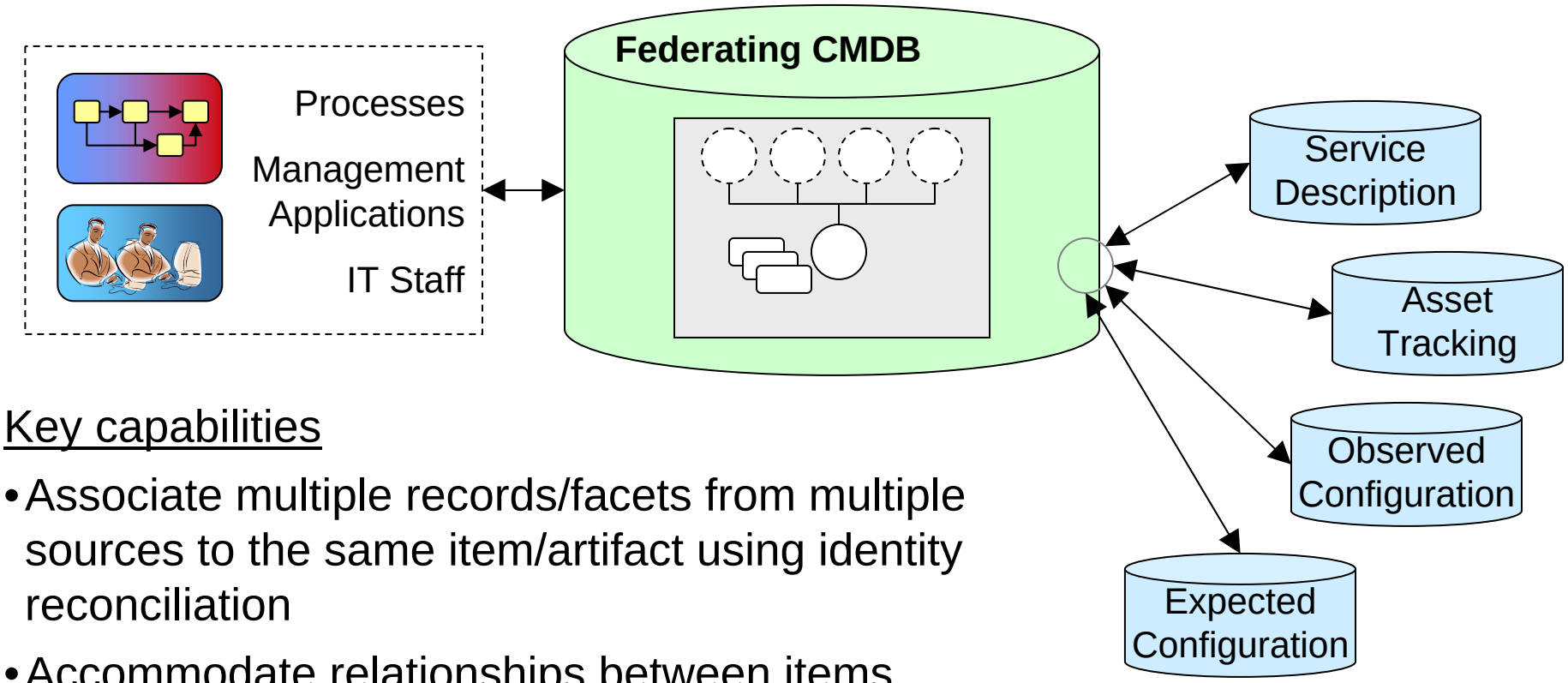
CMDB Federation Specification

- Developed by a six-company consortium
  - BMC Software, CA, Fujitsu, HP, IBM, Microsoft
- Published on cmdbf.org October 2007
- Accepted as a draft by the DMTF
  - (See November 27, 2007 press release)
- Working group in the DMTF being formed

CMDB Federation Overview



Key capabilities

- Associate multiple records/facets from multiple sources to the same item/artifact using identity reconciliation
- Accommodate relationships between items
- Accommodate different data models
- Common interface to locate and access the data

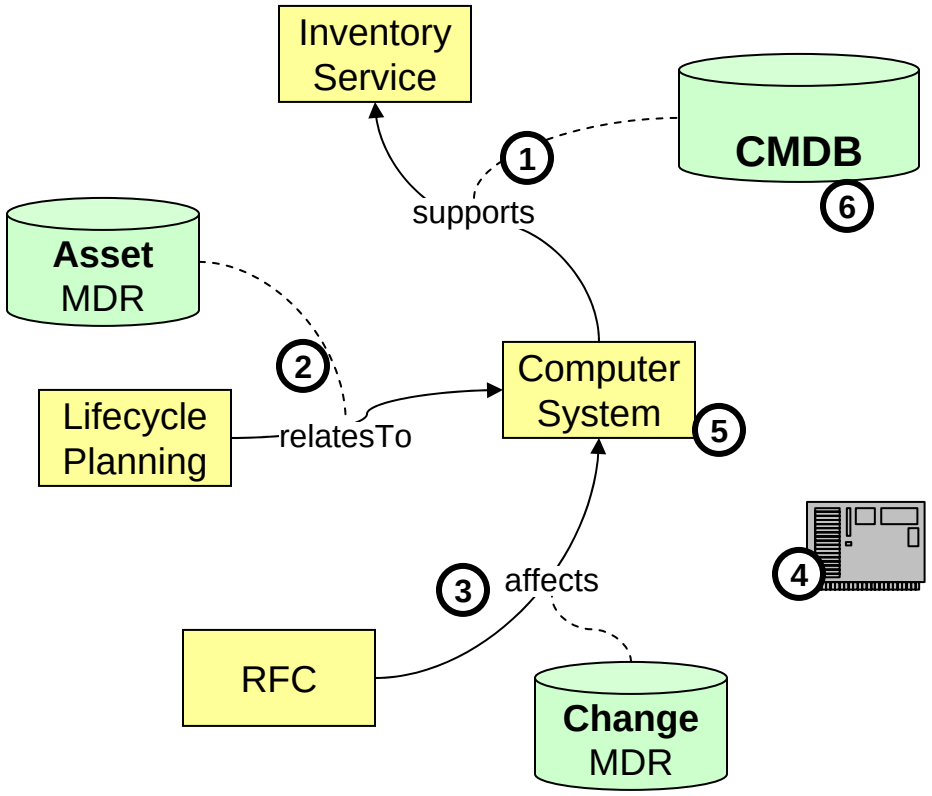
Example Usage Scenarios

- Discover and relate resources to each other across multiple domains and tools
- Keep configuration data current when changes implemented
- Insure compatibility of related changes (function & schedule)
- Maintain best practice control & governance
  - Audit expected vs. actual configuration
  - Compare asset vs. configuration for financial and license management
- Analyze relationships/impacts between business services (and service levels) and supporting resources
- Analyze incidents/problems in context
- Manage asset end of life

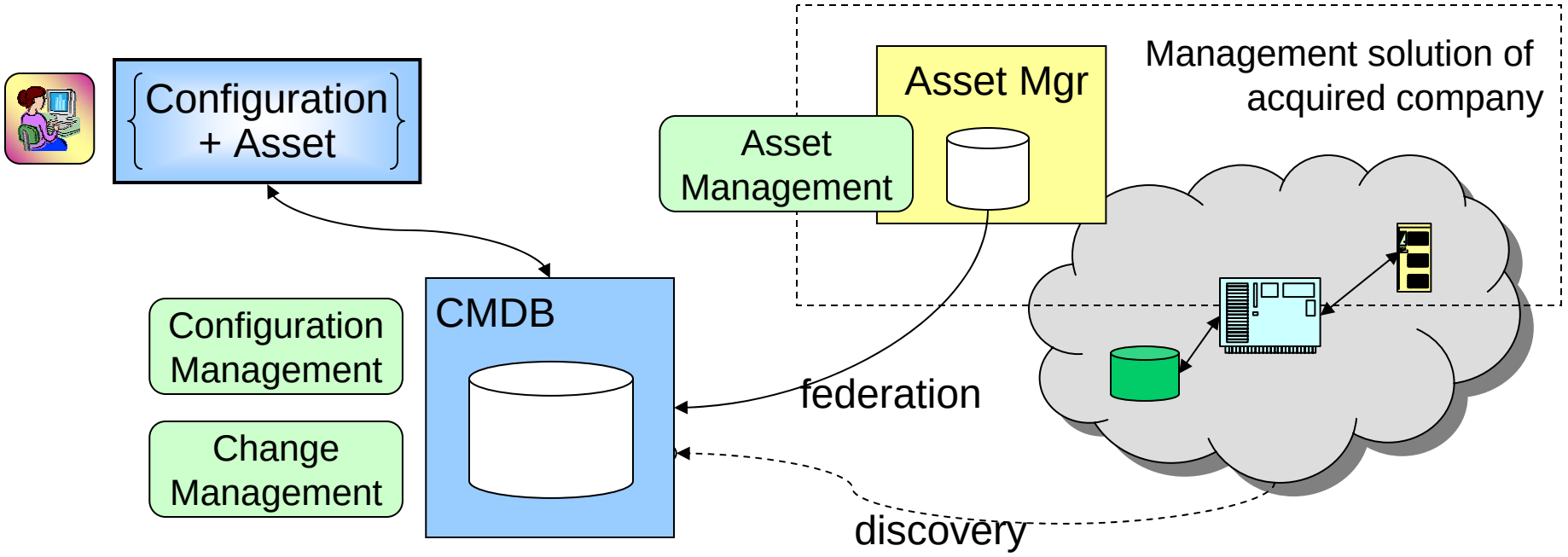
IT Process Scenario

1. Query CMDB for systems that:
   - Support the Inventory Service
   - Run AIX at level before x.y
2. Query Asset MDR for systems phased out in the next 60 days
3. Provide list of systems to update in an RFC
4. Process the change/release
5. Update the CMDB to reflect the state after implementing the RFC
6. Run a compliance audit to verify compliance to policy

Compliance Policy:
- Upgrade all AIX servers supporting the Inventory Service to AIX x.y if the server will be in production at least 60 more days

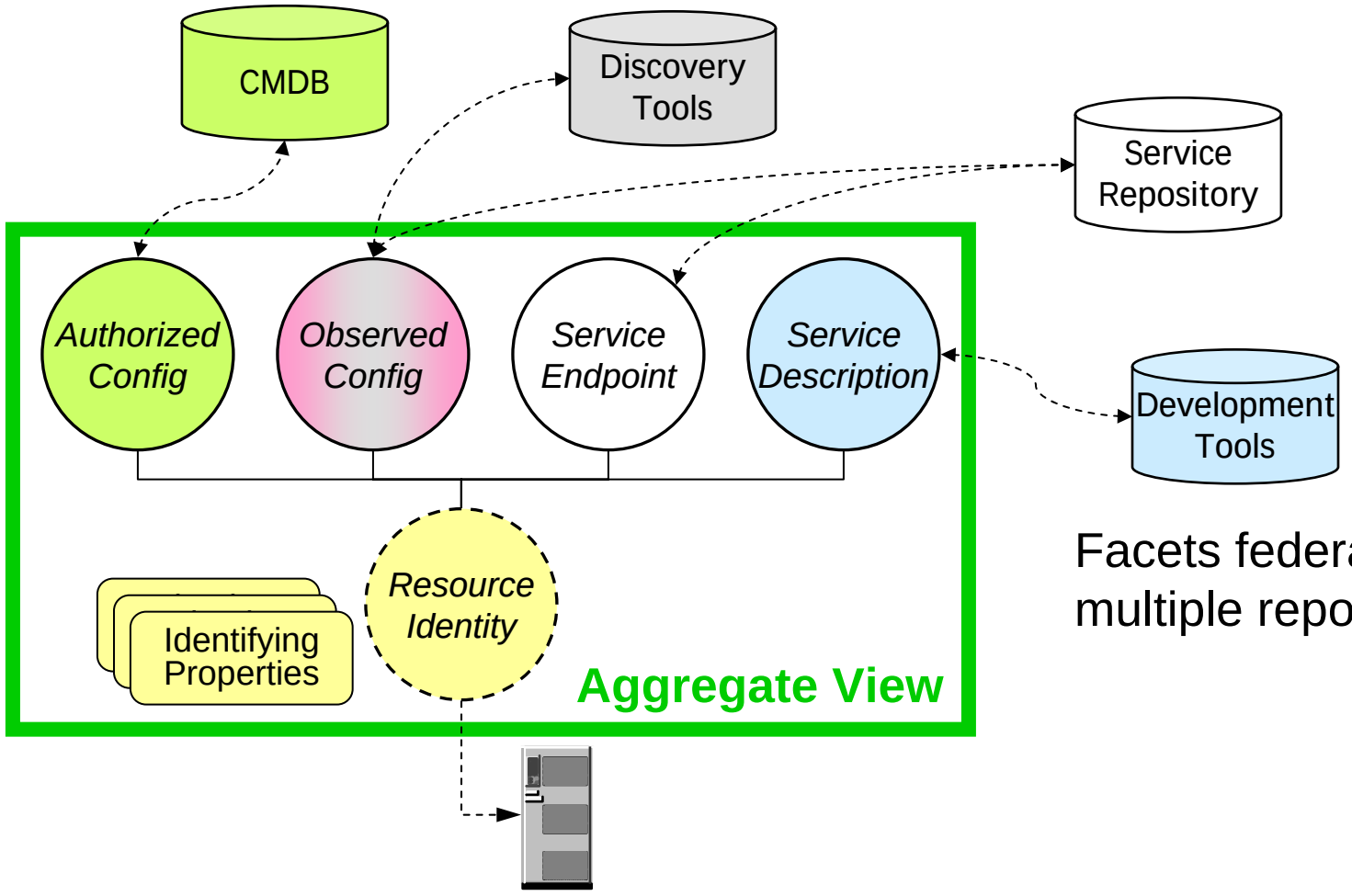


Example Scenario – acquisition



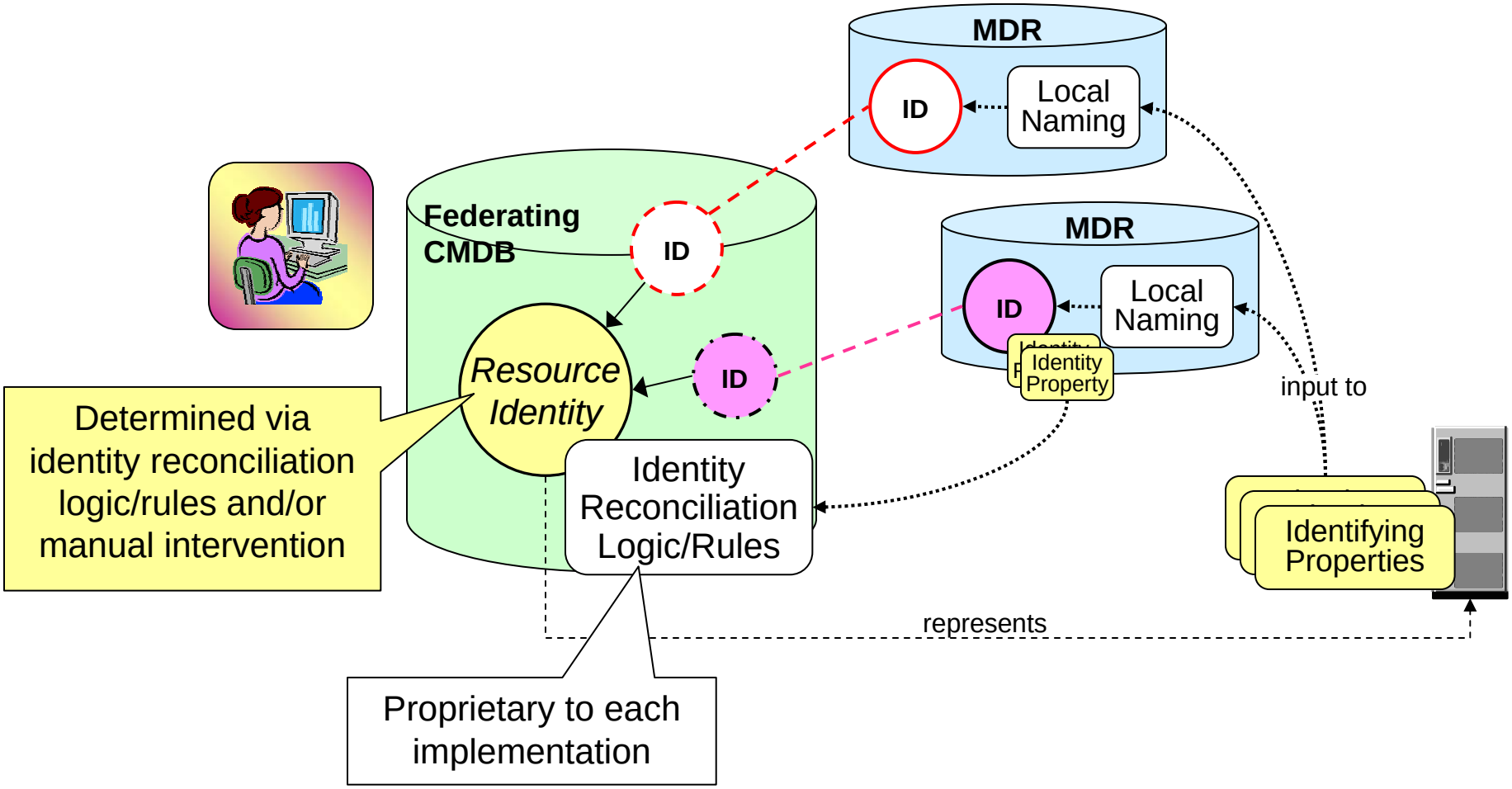
- Continue use of asset management tool
- Federate asset data into CMDB – not a full replication
- Intersecting CMDB & asset data models
  - Some common attributes, some unique attributes
  - Some computers in asset tool can't be discovered
- Desire to see reconciled view of computers

Aggregate view of a resource: several linked facets

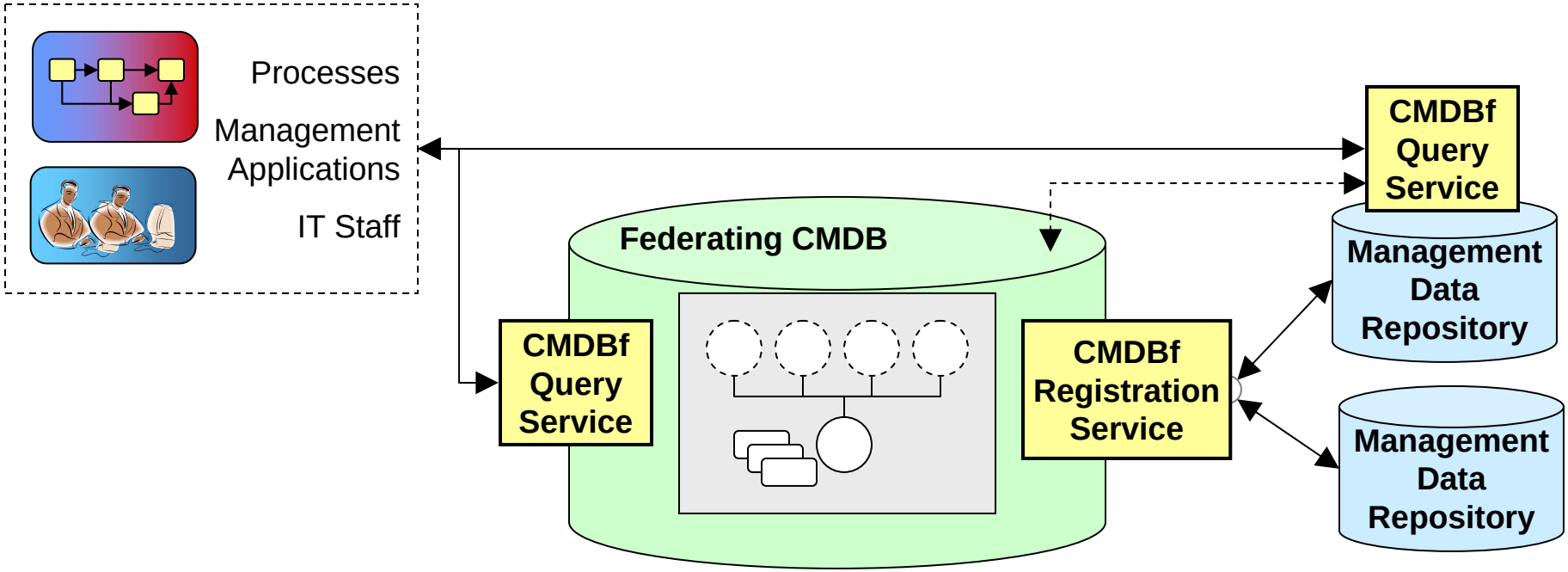


Facets federated across multiple repositories

Identity Reconciliation



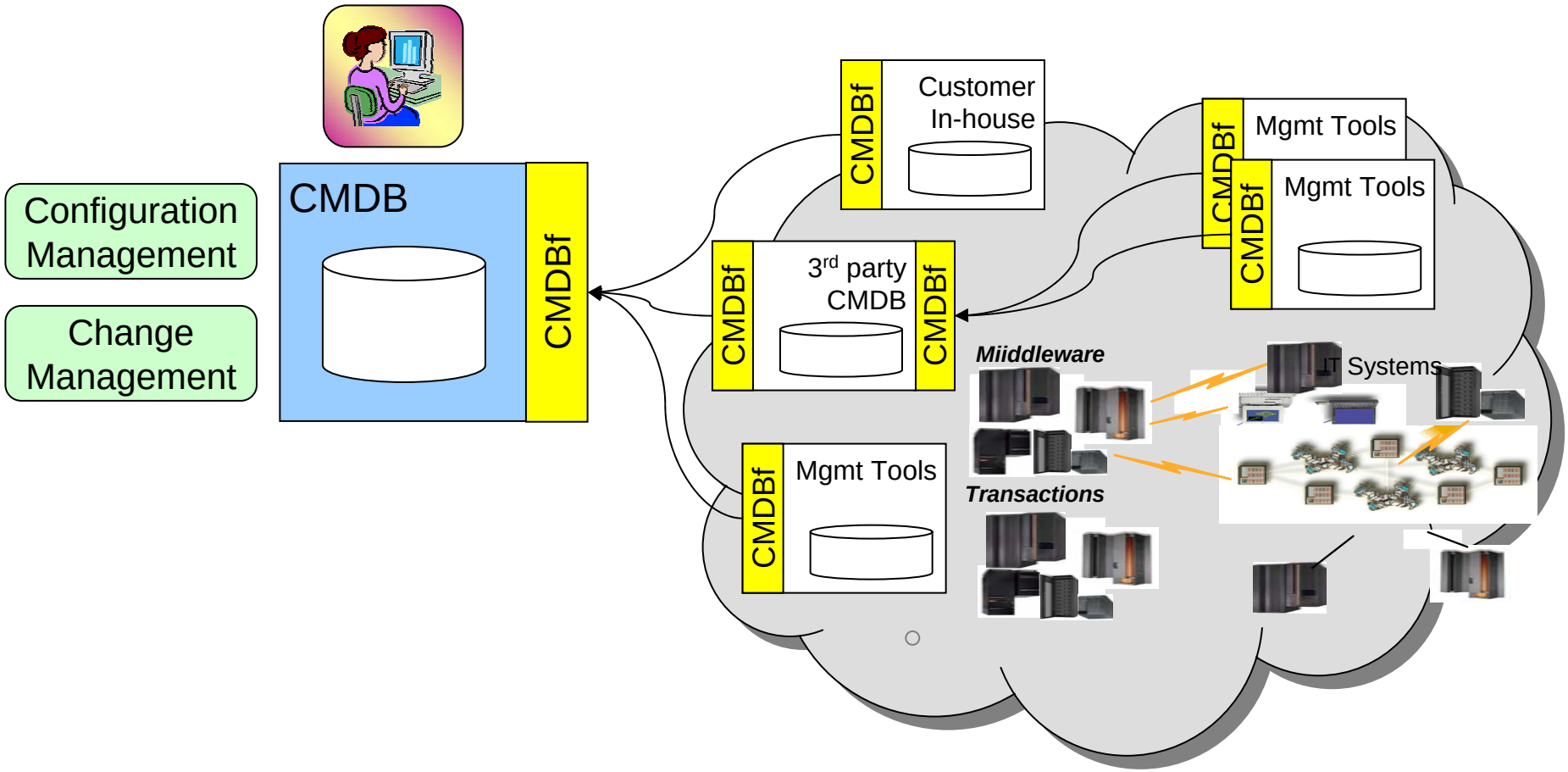
CMDB Federation specification



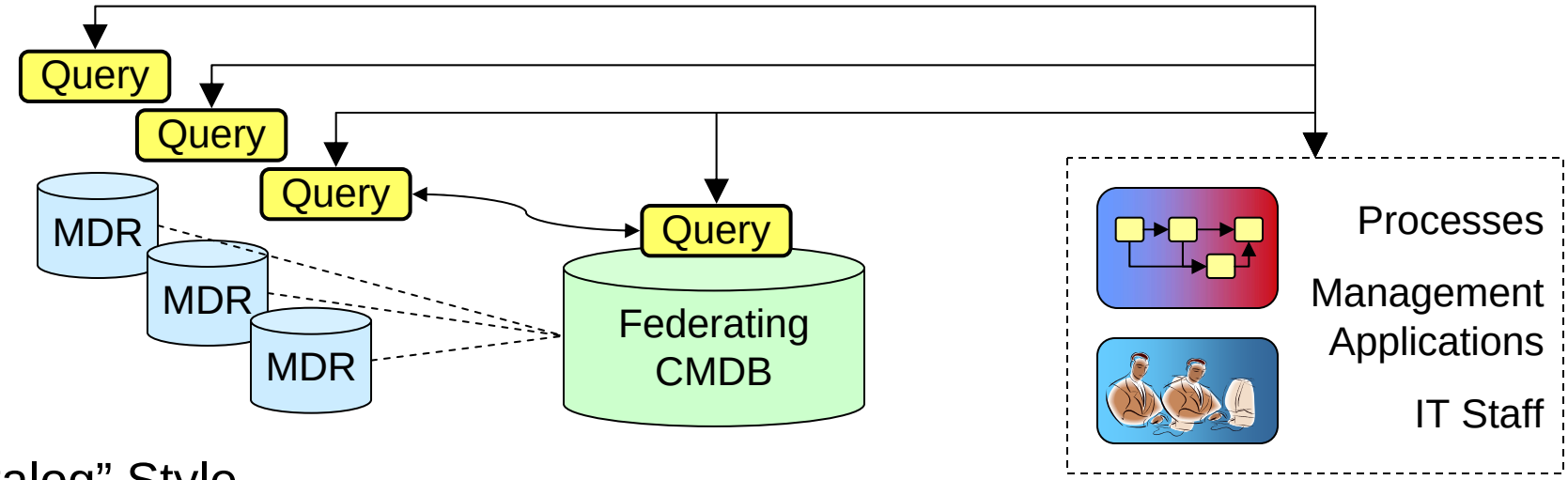
CMDBf components

- **Query service, notable for support of graph queries**
- **Registration service used by MDRs to federate data (optional – Federating CMDB could simply query for data of interest)**
- **XML data wrappers**

Example Configurations



Query Styles



"Catalog" Style

1. Query CMDB to find which MDRs have data about resource(s)
2. Query MDRs for the data

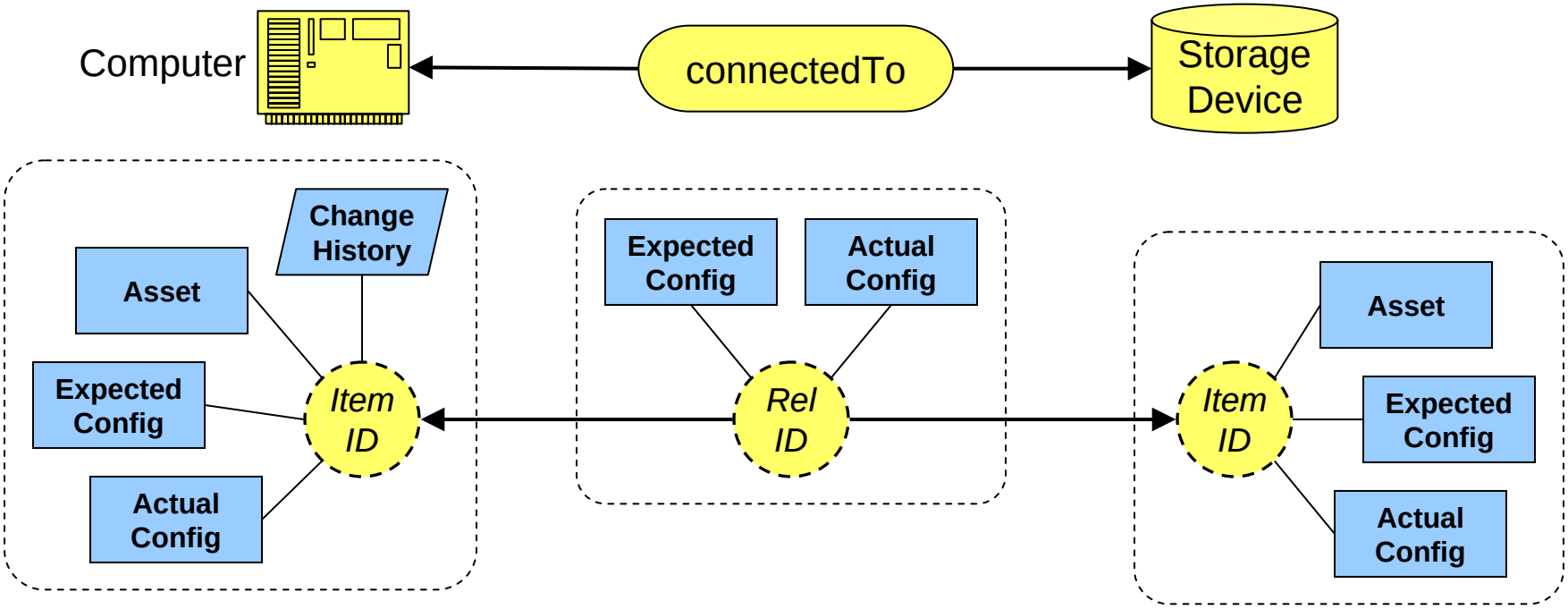
"Hybrid" Style

1. Query CMDB to find some attributes (shallow object) and optionally which MDRs have more data
2. Query MDRs for additional data if needed

"Virtual Database" Style (if implemented in Federating CMDB)

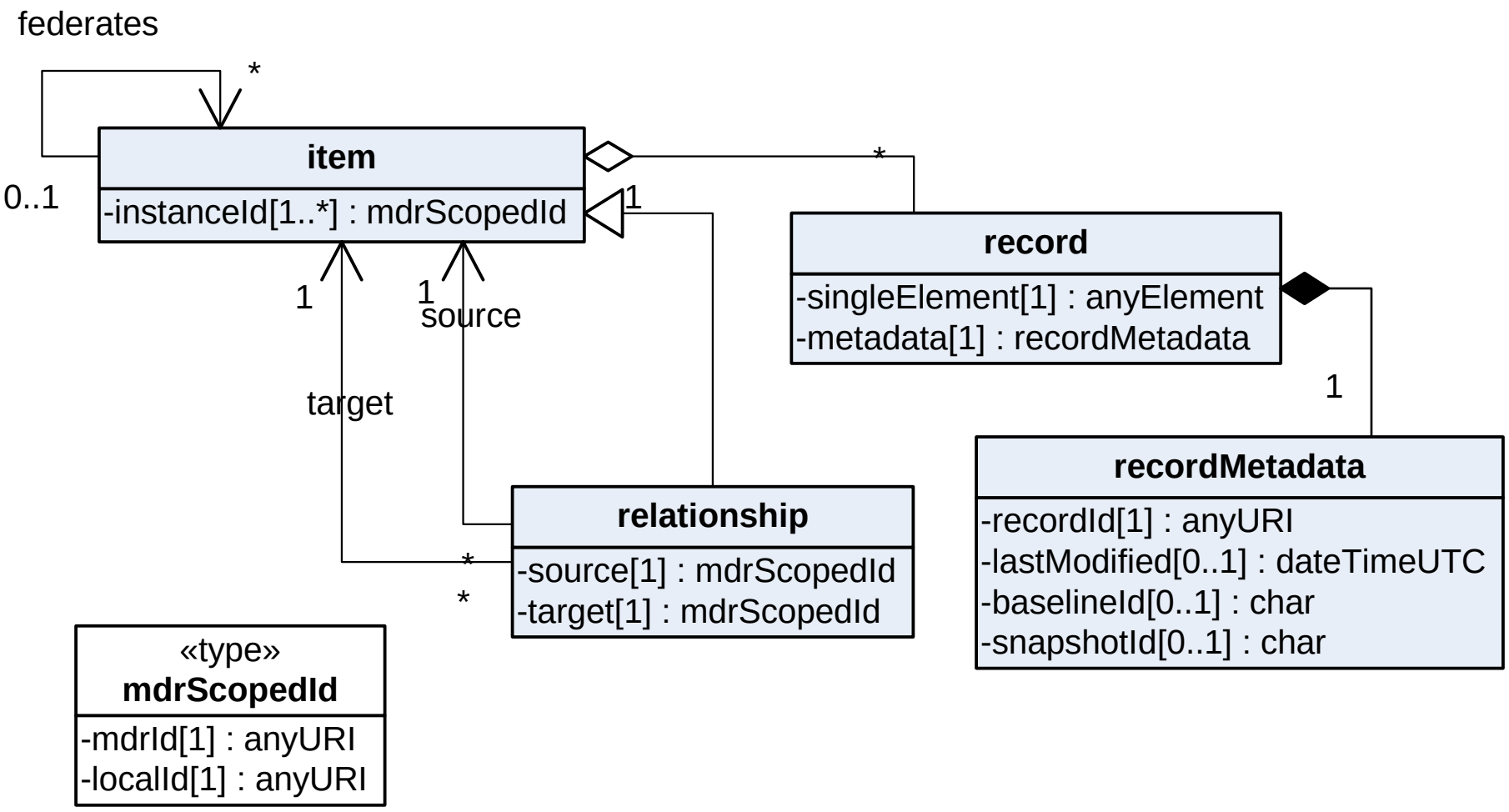
1. Query CMDB, which in turn delegates query, marshals the responses, & sends one response

XML Data Wrappers



- Three XML data wrappers: Item, Relationship, Record
  - Item examples: computer, application, service, building, incident record, …
- A Relationship is an Item that associates two Items
- An Item aggregates n Records
- A Record contains the resource element (e.g., a class with properties)

Data Wrapper Detail



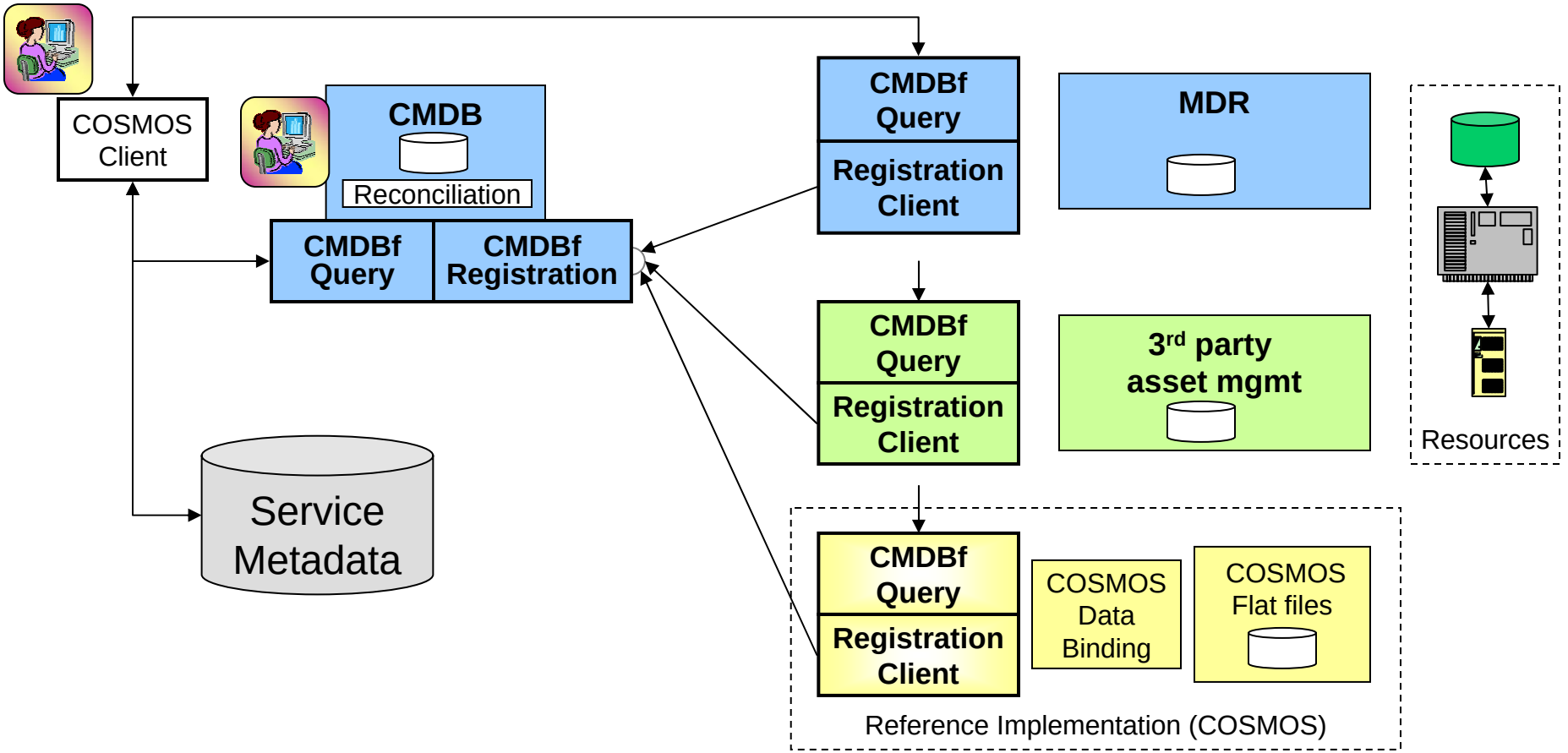
Query Overview

- Returns an instance, a set of instances, or graph(s) of instances
- Query Selectors (may support some or all):
  - Instance ID (a simple Get for clients who know the ID of the desired instance)
  - Record types and property values
  - XPath1
  - Relationship source & target
- Control what data is returned
  - Record types and property values
  - Depth of graph traversals

Sample Query

```
<query>

  <itemTemplate id="user">
    <recordConstraint>
      <recordType namespace="http://example.com/people" localName="person"/>
      <propertyValue namespace="http://example.com/people" localName="state">
        <equal>CA</equal>
      </propertyValue>
    </recordConstraint>
  </itemTemplate>

  <itemTemplate id="computer">
    <recordConstraint>
      <recordType namespace="http://example.com/computer" localName="computer"/>
    </recordConstraint>
  </itemTemplate>

  <relationshipTemplate id="usage">
    <recordConstraint>
      <recordType namespace="http://example.com/computer" localName="uses"/>
    </recordConstraint>
    <sourceTemplate ref="user"/>
    <targetTemplate ref="computer"/>
  </relationshipTemplate>

</query>
```

Example CMDBf Interop



Contacts

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- CMDBf specification & related files (WSDL & XML schema) are available at cmdbf.org

- DMTF press release:
- http://www.dmtf.org/newsroom/pr/view?item_key=70a4918082fe4f24892b8c939f6e512e2976a56c

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