



CMDB Federation

DMTF Standards for Federating
CMDBs and other Management Data Repositories



Synopsis

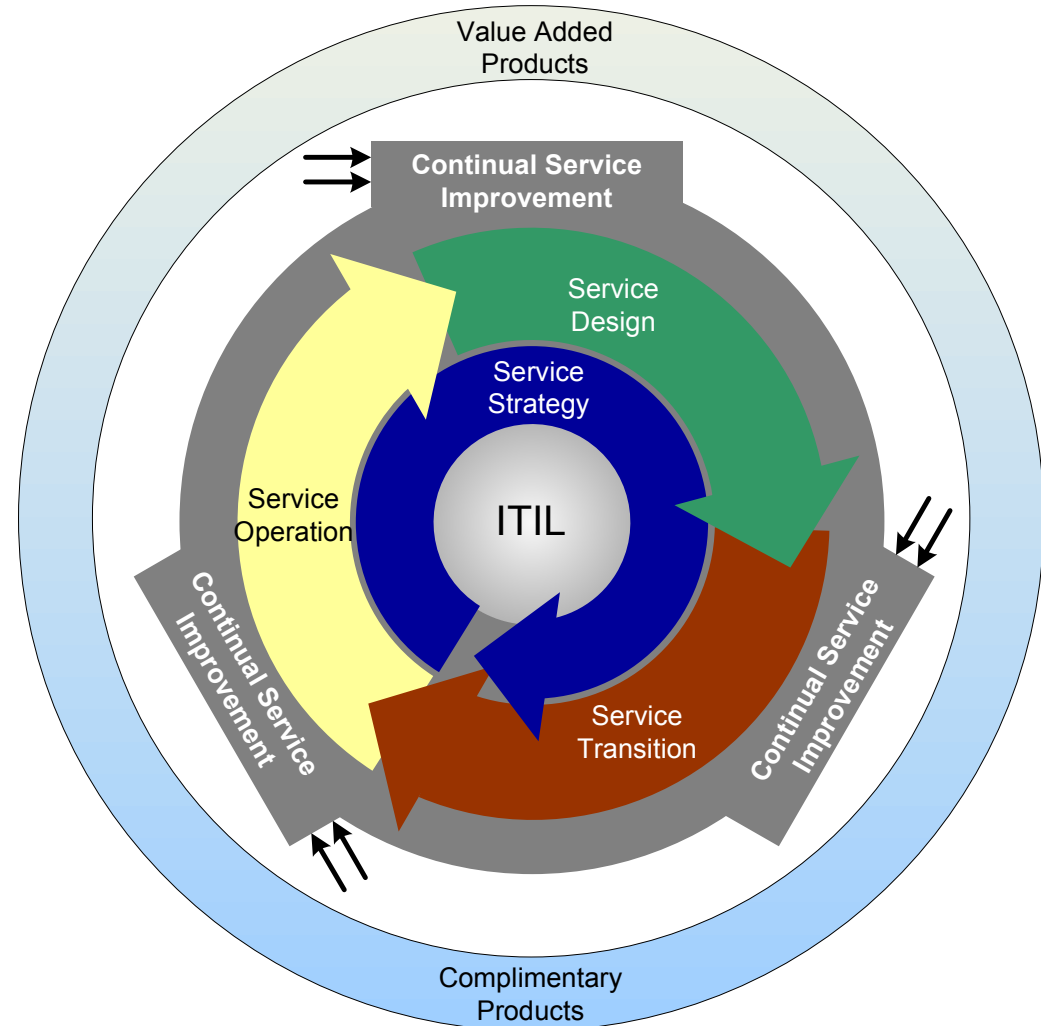
Many organizations base IT management on a configuration management system consisting of a configuration management database (CMDB), other management data repositories, and configuration and change management processes to plan and govern changes in the IT environment. Federation technology may be used to balance the need to integrate data from the various data repositories with a need to manage the data in each repository separately.

The **DMTF CMDB Federation (CMDBf) Standard** simplifies the process of managing related configuration data and provides IT personnel with a more complete picture of their IT environment by providing a vendor-neutral solution for sharing information across multiple CMDBs and management data repositories (MDRs). This presentation describes the business and technical challenges facing IT organizations considering federation, the scenarios that motivate its use, and the benefits of implementing the CMDBf standard to efficiently and effectively manage CMDBs and other MDRs.



ITIL Refresh or ITIL v3

- Major rewrite and reorganization of ITIL documents
- Clarify, enhance, and add new processes where necessary
- Organize processes into a lifecycle approach
 - Service Strategy
 - Service Design
 - **Service Transition**
 - Service Operation
 - Continual Service Improvement





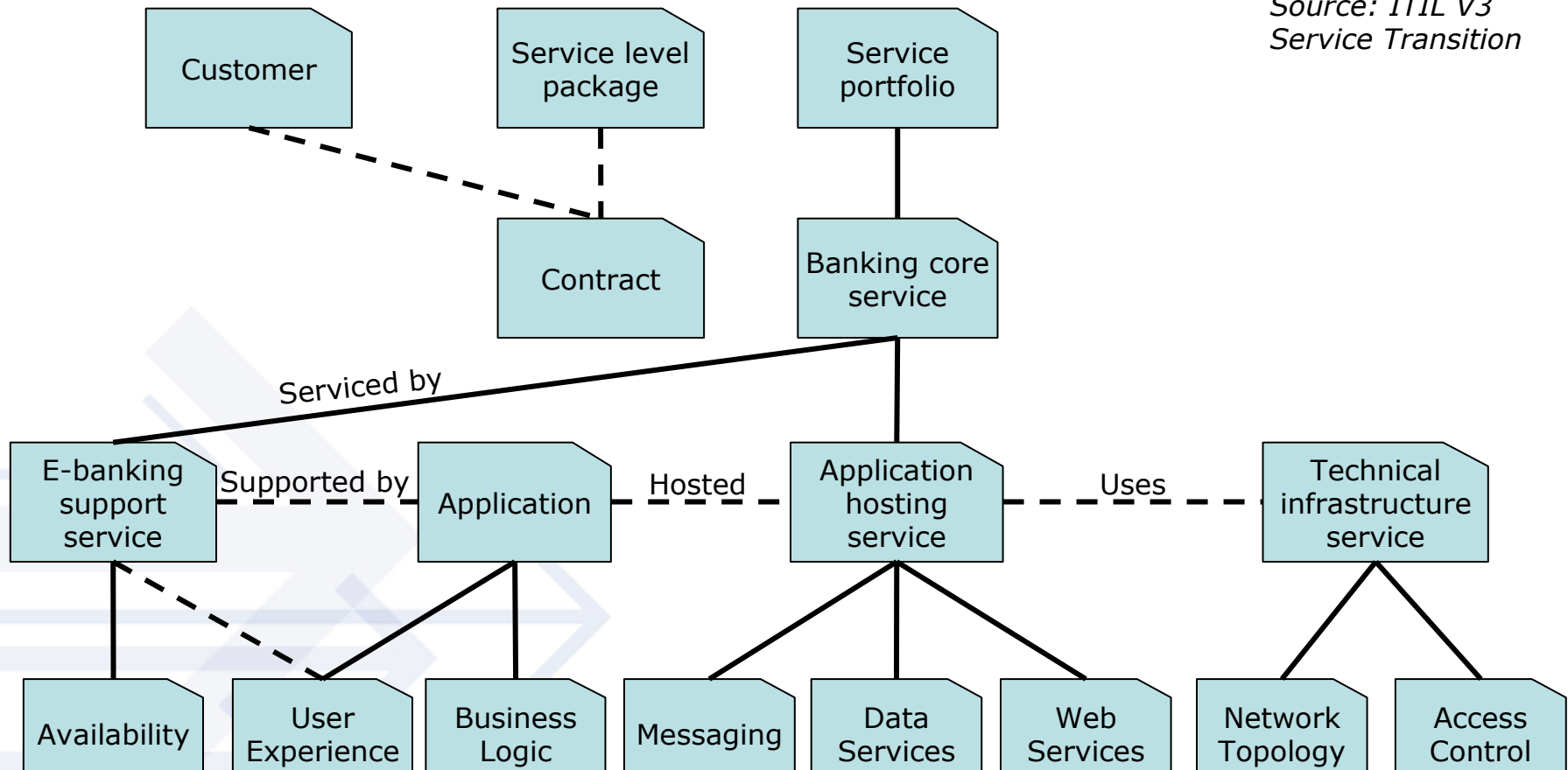
Service Asset & Configuration Management

- One of the ITIL Service Transition processes
- Manage service assets across service lifecycle
- Provide a configuration model of the services, assets, and infrastructure by recording the relationships between service assets, configuration items, and process artifacts (e.g., incidents, problems, change records, etc.)
- Ensure the integrity of assets & configurations by establishing and maintaining an accurate and complete **Configuration Management System (CMS)**
- The CMS is the single common representation used by all parts of IT Service Management



Example of a configuration model

Source: ITIL V3
Service Transition





Why federate CMDBs and other repositories?

Excerpt from ITIL Service Transition:

7.3 CONFIGURATION MANAGEMENT SYSTEM [CMS]

" ... For large and complex infrastructures, Configuration Management will operate more effectively when supported by a software tool that is capable of maintaining a CMS. The CMS contains details about the attributes and the history of each CI [Configuration Item] and details of the important relationships between CIs. Ideally, any CMDB should be linked to the DML [Definitive Media Library]. **Often, several tools need to be integrated to provide the fully automated solution across platforms, e.g. federated CMDB.**"



Why are there multiple tools and repositories?

- Different tools for different processes
- Different tools for different domains (e.g., computing, network, storage, applications, etc.)
 - Recent trends add new domain types for smart infrastructure: cooling systems, power generators and monitors, smart grids, cell phone towers, instrumented pipelines, manufacturing automation, etc.
- Different tools for different geographies or organizations
- Mergers and in-house consolidation
- Legacy in-house repositories
- Some elements internal and some outsourced
- Different service providers



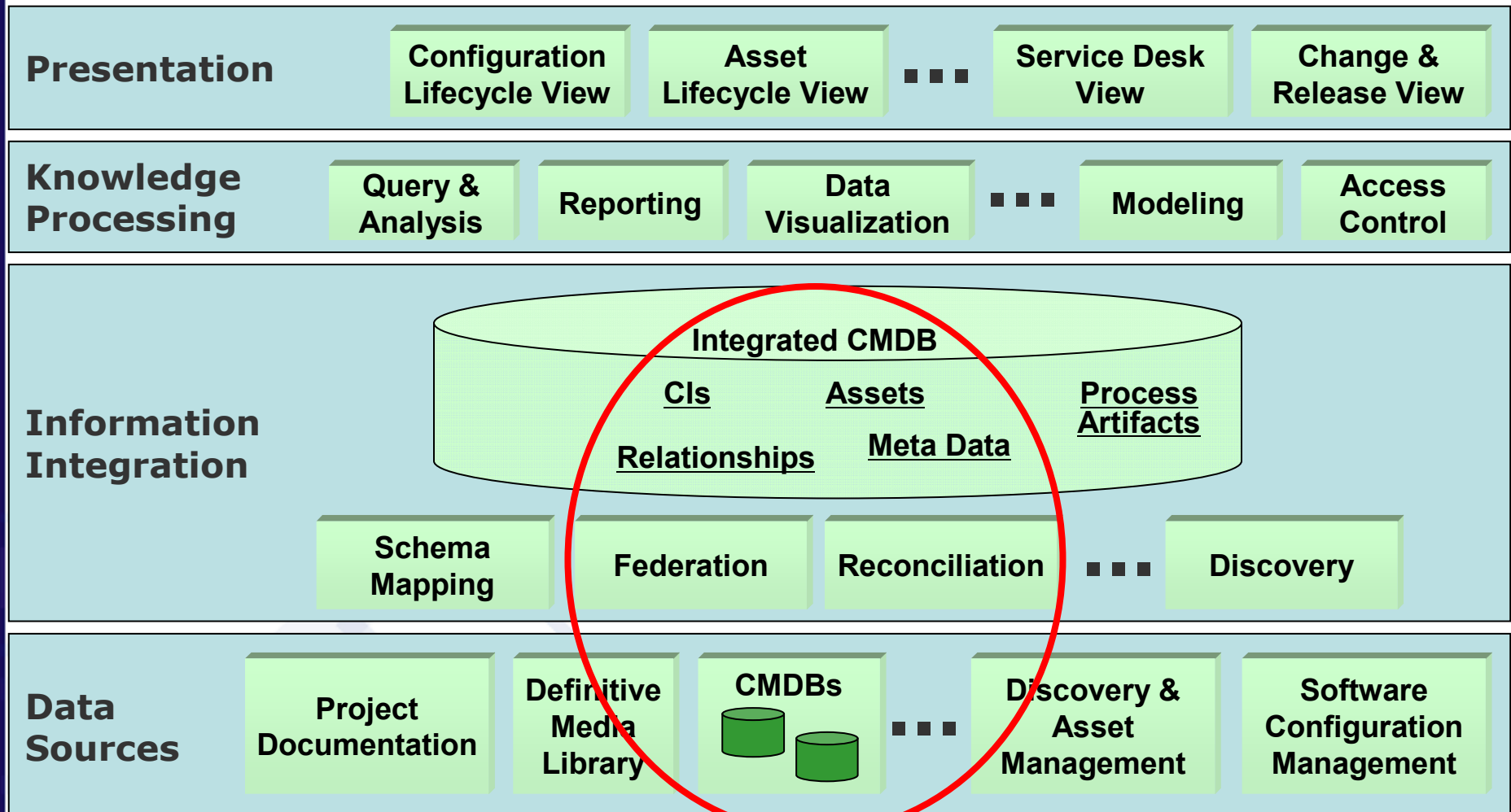
Example CMDB integration scenarios

- Integrate data from different vendor asset manager, service desk, and CMDB/configuration manager
- Integrate an in-house CMDB with vendor tools
- Company outsources its IT division (predominantly one vendor architecture) to a service bureau with a different predominant vendor architecture. For economic reasons, will not rip & replace; needs two-way integration
- Company has established configuration & change management tools. Wants to acquire a 3rd party service catalog & link CIs in the service catalog to the CIs in the CMDB



Source: Adapted
from ITIL V3
Service Transition

Configuration Management System example





What is data federation?

- Data federation allows applications to access diverse and distributed data as if it were a single source, regardless of the location, format, and access language
- Different from a data consolidation approach, federation does not physically move data into a central repository
- Federation supports
 - Data transparency
 - Accessing data no matter where it is located
 - Heterogeneity
 - Mixing data from two or more sources
 - Data source agnostic
 - Consumer does not need to understand format of the source data
- Federation is an important part of building a CMDB / CMS



Advantages of working with federated data

- No time-consuming data movement, data transfer or data latency issues, the federated data is not transferred into the CMDB (only metadata and resource identity is registered)
- When federated data is needed, it is fetched real-time from the appropriate federating sources
- Changes to federated data at the source are immediately available and do not need to be synchronized to the CMDB
- Provides access to data stored about an object in any number of external repositories enabling an aggregate view of the object
- Supports integration of data models, allowing inclusion of additional information about an object from a different data model



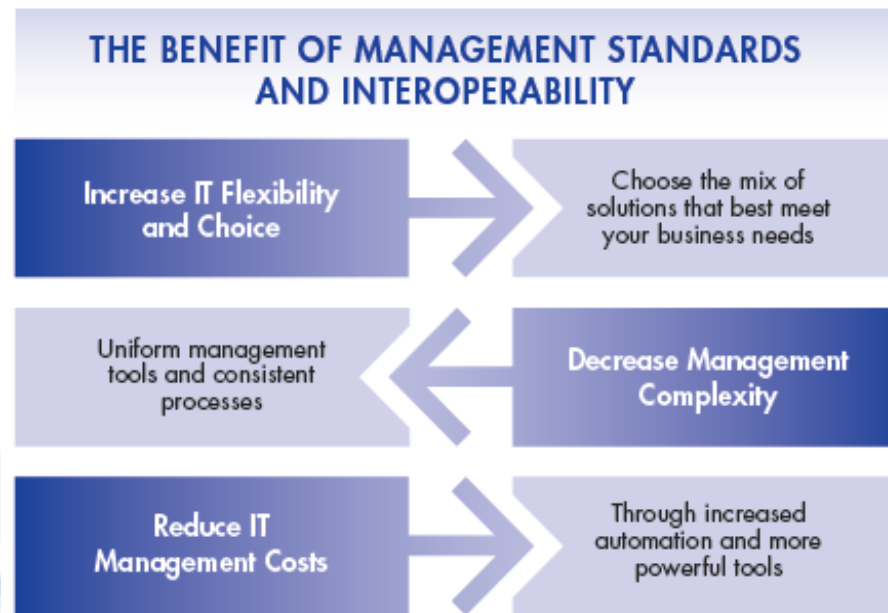
IT pain points for integrating configuration data

- Many Configuration Repositories
 - Creates long complex migration paths to full service management solution
 - Complexity in utilizing current tooling to achieve a single configuration view
 - Migrations to new configuration management solutions made difficult
- No way to map relationships across configuration repositories
 - Loss of business perspective
- No way of linking other data sources (asset info) to IT configuration info
- Current tooling leaves it up to the user in many ways
 - No standards for representing data models
 - No single way to query for associated attributes
- No standardized tools to know who is utilizing federated data



The growing importance of IT standards

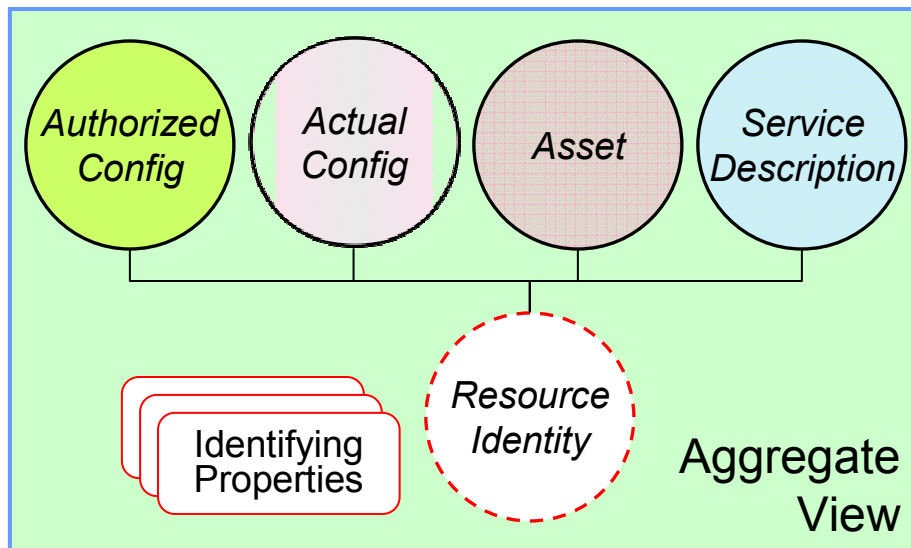
With the ever-increasing need for flexibility, availability and performance in today's distributed enterprises, management standards for IT professionals are now more important than ever.



Deploying systems, tools and solutions that support management standards helps reduce system management complexity and lower overall IT costs.

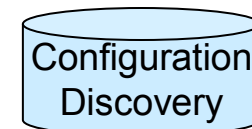
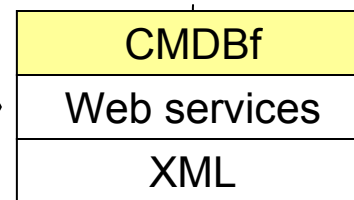
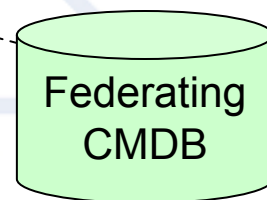


CMDBf (CMDB Federation) overview



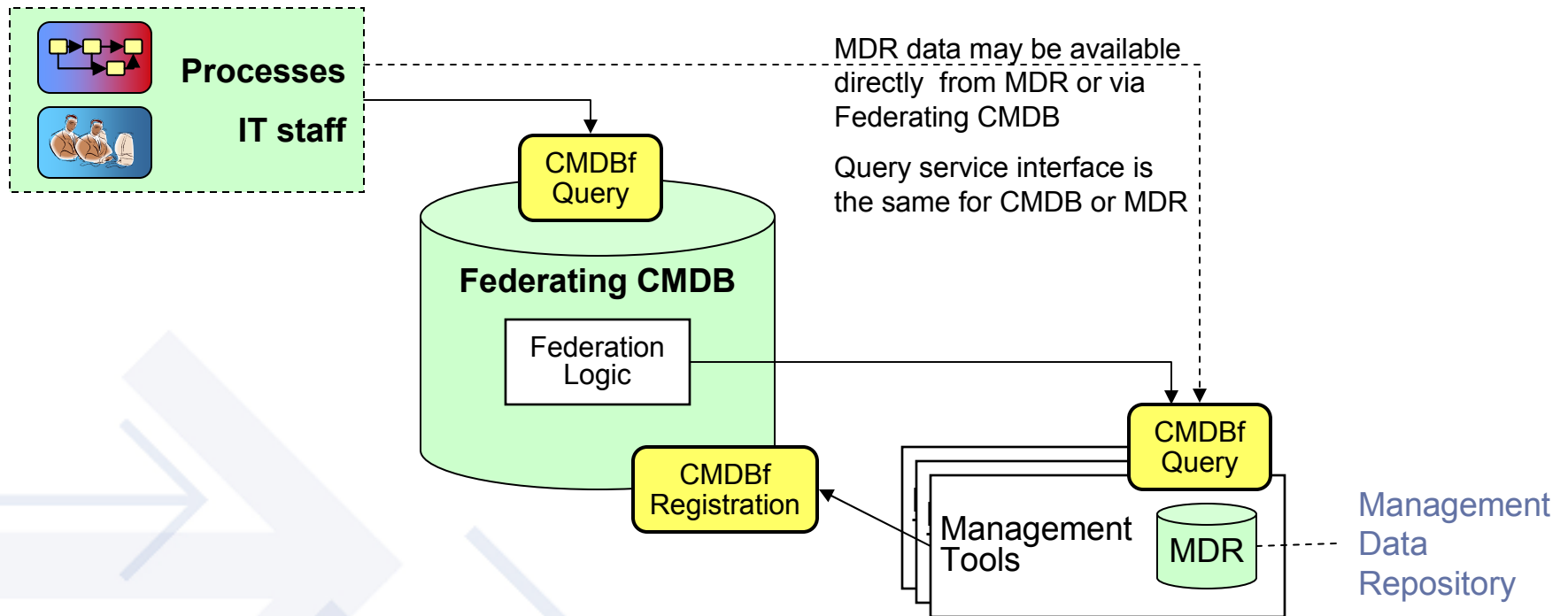
CMDBf (CMDB Federation)

- Federates both items & relationships
- Associate facets of the same item
- Accommodate different data models
- Common interface to access the data





CMDBf architecture

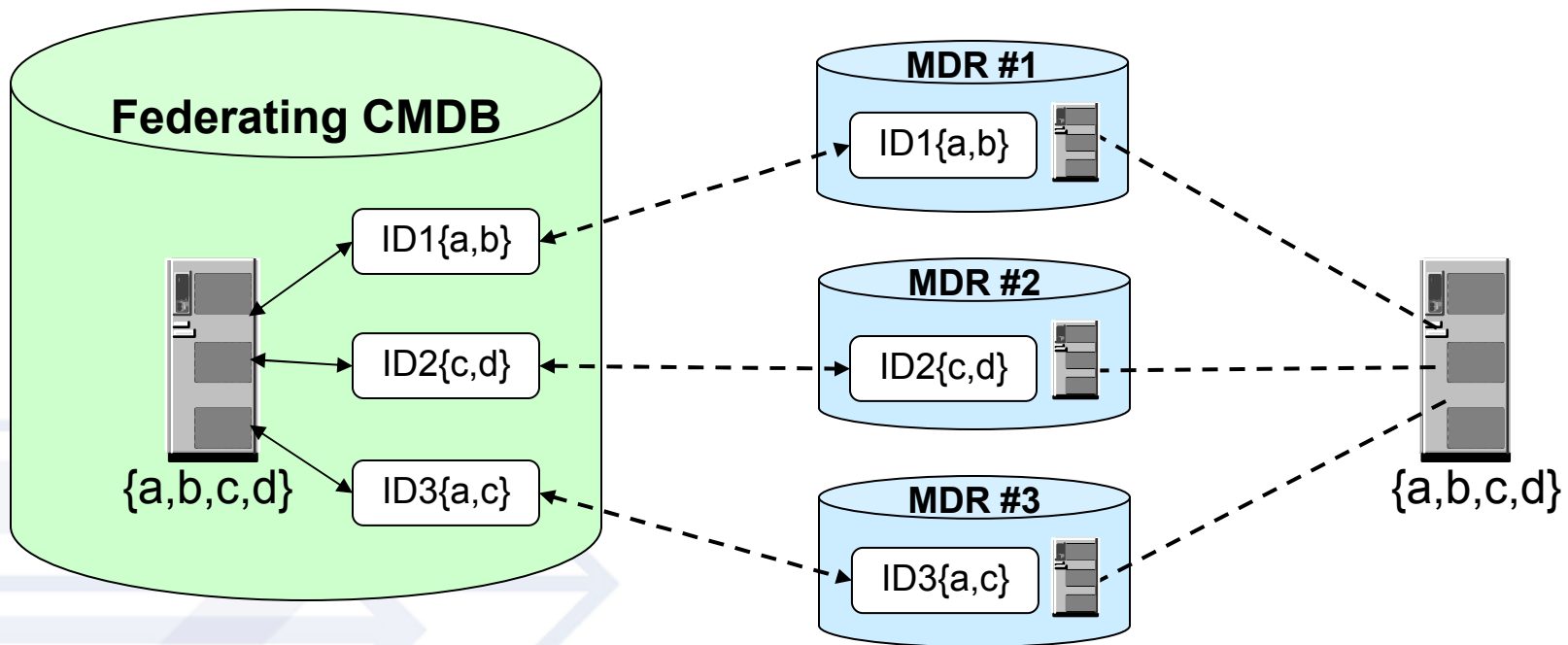


Assets and Infrastructure

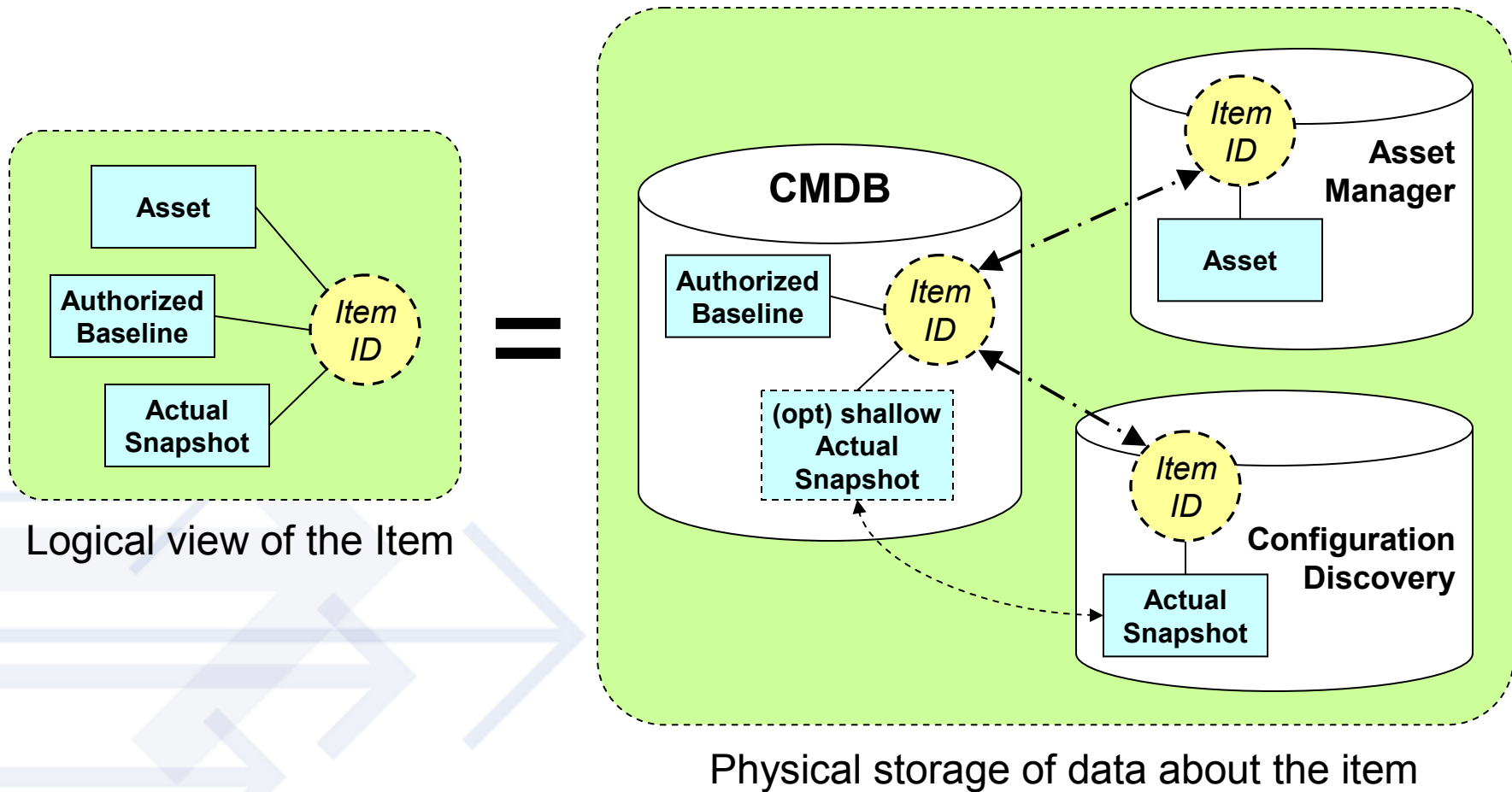
Diverse Assets					Virtualized & Heterogeneous Infrastructure					
Production	Distribution	Transportation	People	Facilities	Technology	Applications	Systems	Storage	Network	Security



Federating CMDB reconciles different views together

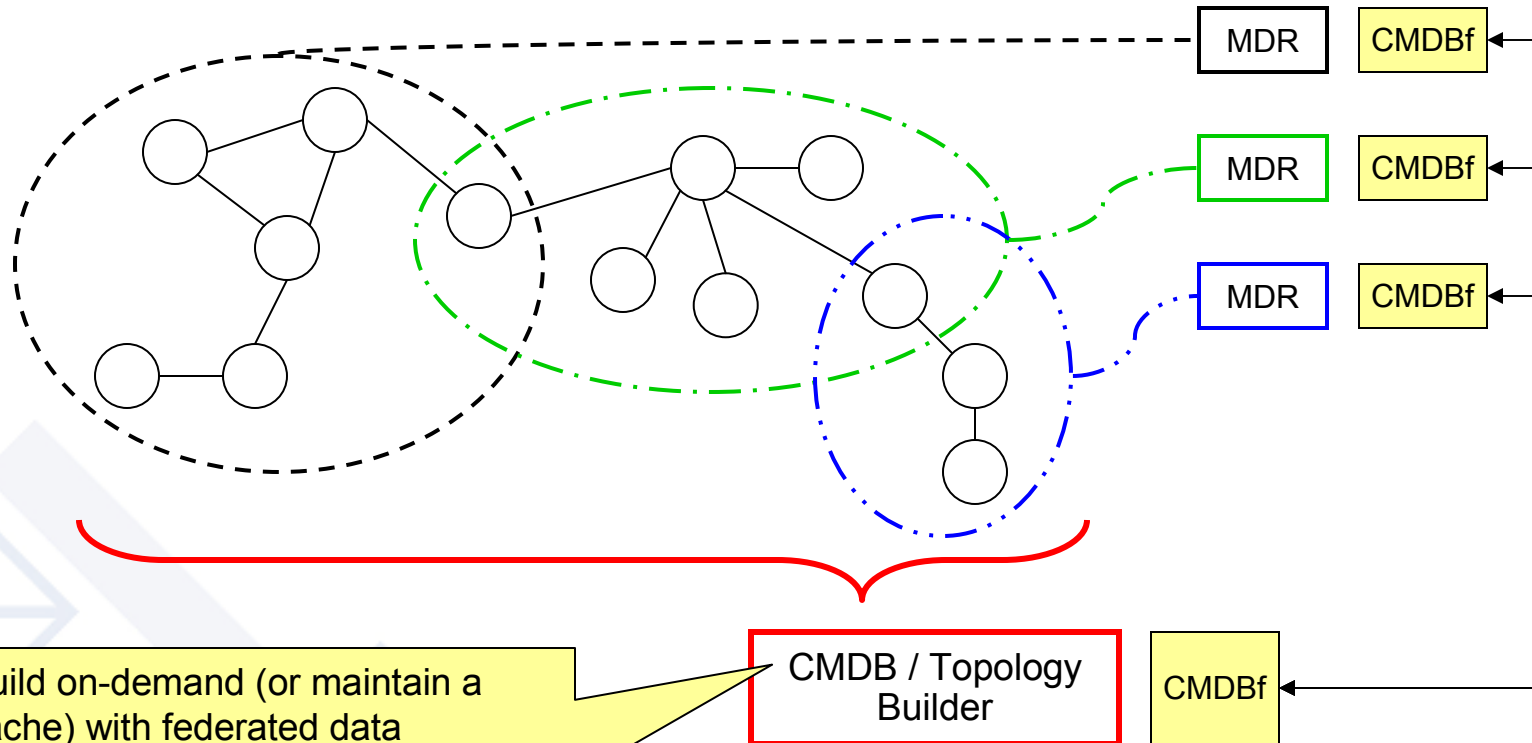


Single logical view of physically distributed data





CMDB Scenario: Construct a topology from distributed federated data



- Build on-demand (or maintain a cache) with federated data
- Leverage common interface to access federated data
- Leverage common item + relationship model across MDRs

Example usage scenarios

- Discover and relate resources to each other across multiple domains and tools
- Keep configuration data current when changes are implemented
- Insure compatibility of related changes (function and 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 (configuration, change history)
- Manage asset end of life without disrupting business services



DMTF

Distributed Management Task Force

Developing Standards that Enable Interoperable IT Management

DMTF collaborates to develop IT management standards that promote multi-vendor interoperability worldwide. DMTF is at the center of the systems-management industry, developing standards that are continually improving the IT management landscape.

DMTF standards primarily serve:

- **IT Personnel** – DMTF provides increased choice, reduced cost and improved interoperability for heterogeneous IT management infrastructures.
- **IT Solutions Vendors** – DMTF standards reduce development and design costs by enabling companies to dedicate resources to growing their own business.



DMTF Board Companies



DMTF Leadership Companies

- BMC Software
- Brocade Communications
- Cisco
- ETRI
- Rackspace
- Red Hat
- Savvis
- SunGard Availability Services
- WBEM Solutions



CMDBf timeline

April 2006	CMDB Federation consortium created (BMC, CA, Fujitsu, Hewlett-Packard, IBM, Microsoft)
October 2007	Specification published
November 2007	Specification submitted to DMTF
September 2008 November 2008	Public demonstrations
February 2009	Work in Progress published
July 2009	DMTF standard (version 1.0) published
TBD	DMTF standard (version 1.1/2.0) published



Summary

Value of Federation

- Access diverse and distributed data as if it were a single source, regardless of the location, format, and access language
- Minimize data movement and related synchronization challenges
- Supports integration with external management systems and integration of disparate data models
- Helps simplify many real business scenarios (company acquisition, data consolidation, etc)

Value of CMDB Federation standard

- Facilitate integration across vendor and in-house implementations
- Minimize cost to participate in a federated CMDB / CMS



Contact information

Mark W Johnson

IBM

11501 Burnet Road

Austin, TX 78758

mwj@us.ibm.com

Office: 512-286-6859

admin@dmtof.org