# Interoperability Standards for Managing Clouds

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**Co-Chair, DMTF Cloud Management Working Group**

# Agenda

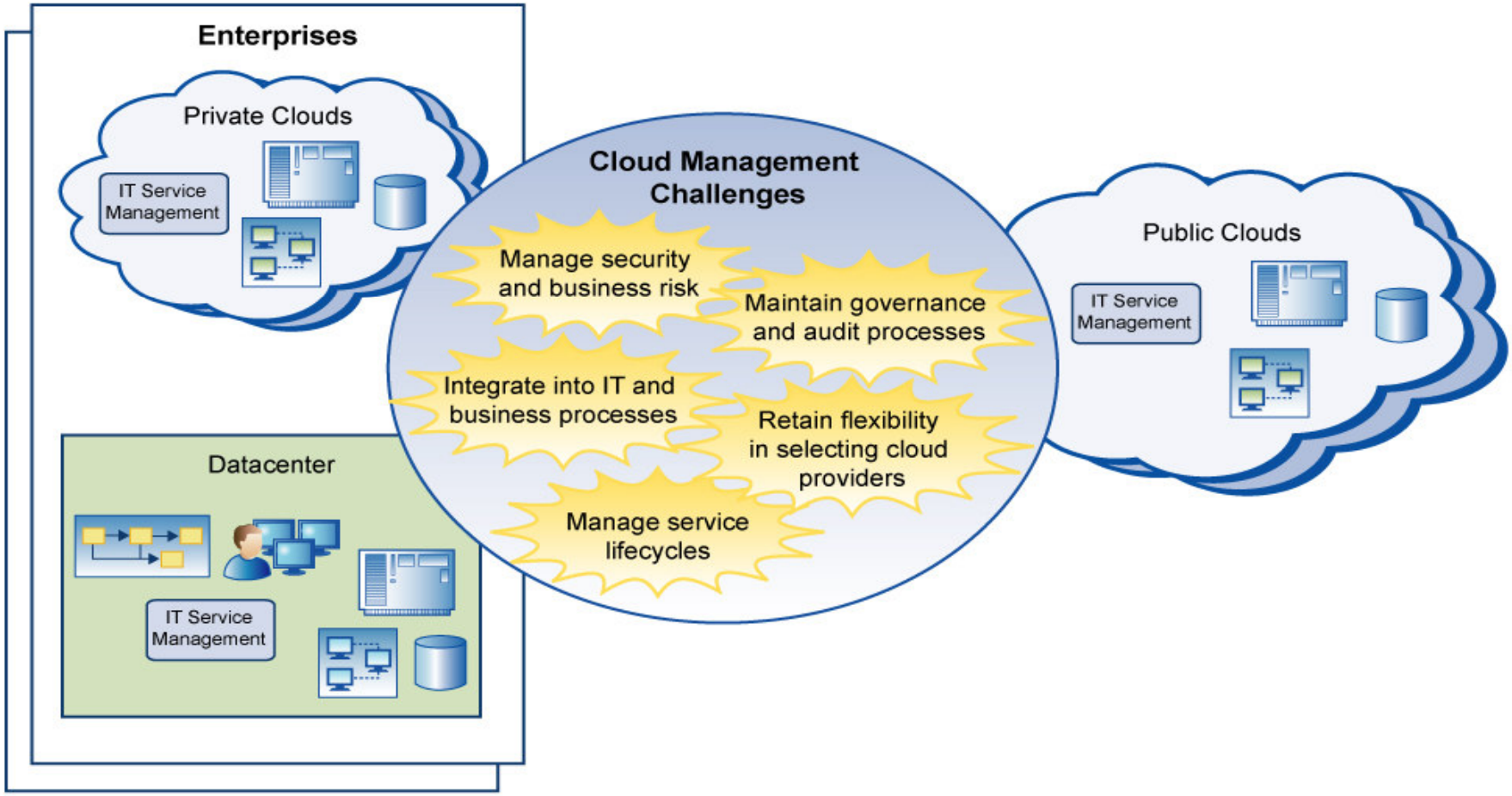
- Who is the DMTF?
- What part of cloud interoperability does your SDO see as its "charter"?
- How do your existing SDO standards and initiatives apply to the cloud?
- What new efforts might be initiated by your SDO in the cloud space?
- What publications are currently (or will soon be) available?

# Who is the DMTF

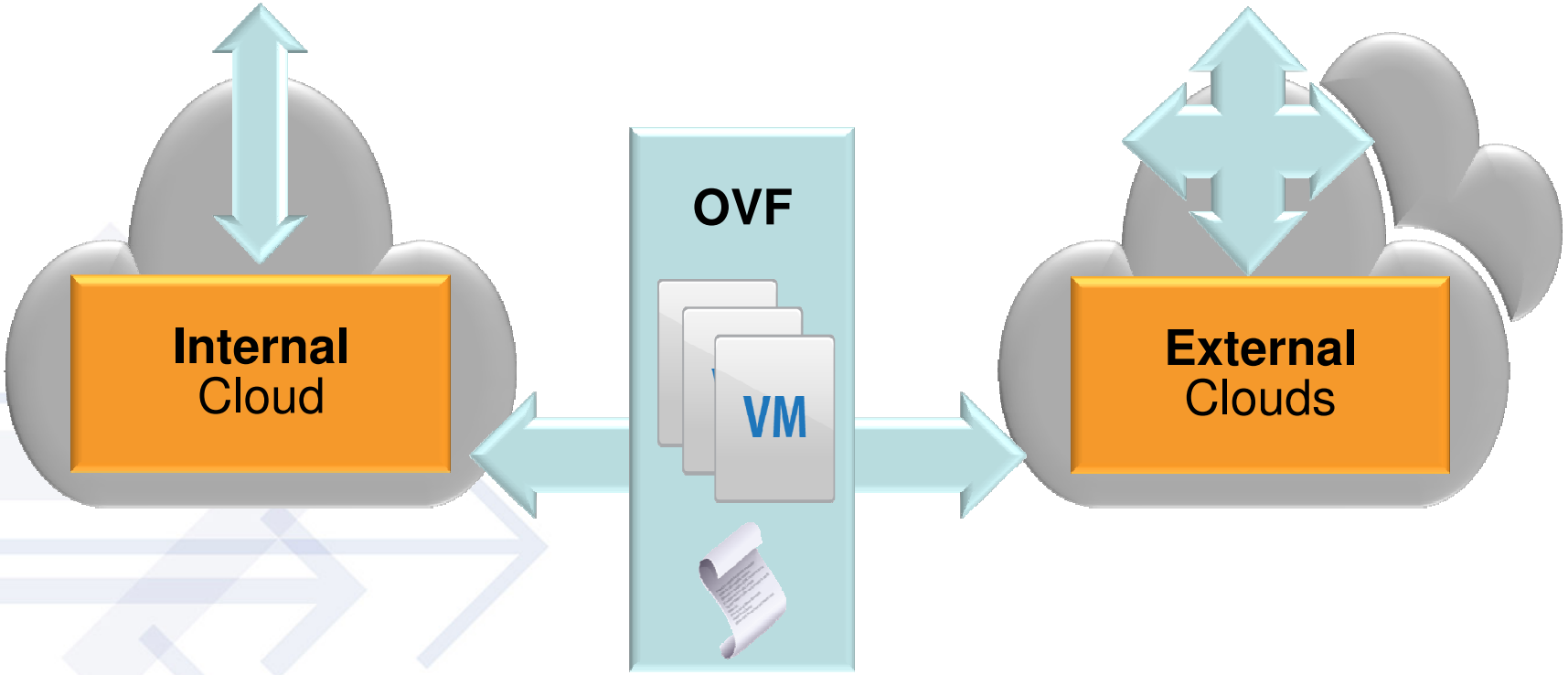
- DMTF enables more effective management of millions of IT systems worldwide by bringing the IT industry together to collaborate on the development, validation and promotion of systems management standards.
- The group spans the industry with 160 member companies and organizations, and more than 4,000 active participants crossing 43 countries.
- The DMTF board of directors is led by 15 innovative, industry-leading technology companies. They include Advanced Micro Devices (AMD); Broadcom Corporation; CA Technologies.; Cisco; Citrix Systems, Inc.; EMC; Fujitsu; HP; Huawei; IBM; Intel Corporation; Microsoft Corporation; Oracle; RedHat and VMware, Inc.

What part of cloud interoperability does your SDO see as its "charter"?

# Cloud Adoption Challenges



# APIs: Programmatic Access to Resources



# How do your existing SDO standards and initiatives apply to the cloud?

# Cloud Management Activities

- Cloud Incubator (2009-2010) published informational specifications
  - "Interoperable Clouds" white paper
  - Architecture and interfaces
  - Use cases and resource interaction model
- Cloud Management Working Group replaced incubator July 2010
  - Writing formal specifications
  - Focus on IaaS
  - Leverage other standards, e.g., OVF (Open Virtualization Format)
  - 34 actively involved companies + 10 academic or alliance members
- Virtualization and Cloud Management Forum
  - Interoperability and compliance testing
  - Cloud, OVF, and virtualization management

What new efforts might be initiated by your SDO in the cloud space?

# New Cloud Management Activities

- Software License Management Incubator December 2010
  - The representation of the identity of a licensable product (virtual machine instance, on premise product, etc)
  - How it is associated with an instance or operating system
  - Who and what (device) are assessing that instance, and
  - The ability to discover if and where the licensable product is running.

# New Cloud Management Activities

- Cloud Audit Data Federation Working Group April 2011
  - Cloud Audit Event Data Model Specification
  - Including Resource, Action and Outcome Taxonomies
  - Including Guidance and Best Practices for Use of the Data Model.
  - Cloud Audit Event API Specification
  - Including an exemplary Component Model
  - Including Use Cases
  - Profiles of the Cloud Audit Event Data Model and Event API Specifications which the CADF deems necessary.
  - Protocol requirements delivered to the CMWG (or other groups if they exist)
  - Other documents and whitepapers which the Cloud Audit Working Group deems necessary.

# What publications are currently (or will soon be) available?

# Current DMTF Cloud Related Specifications

DSP-IS0101 1.0.0 Interoperable Clouds

DSP-IS0102 1.0.0 Architecture for Managing Clouds

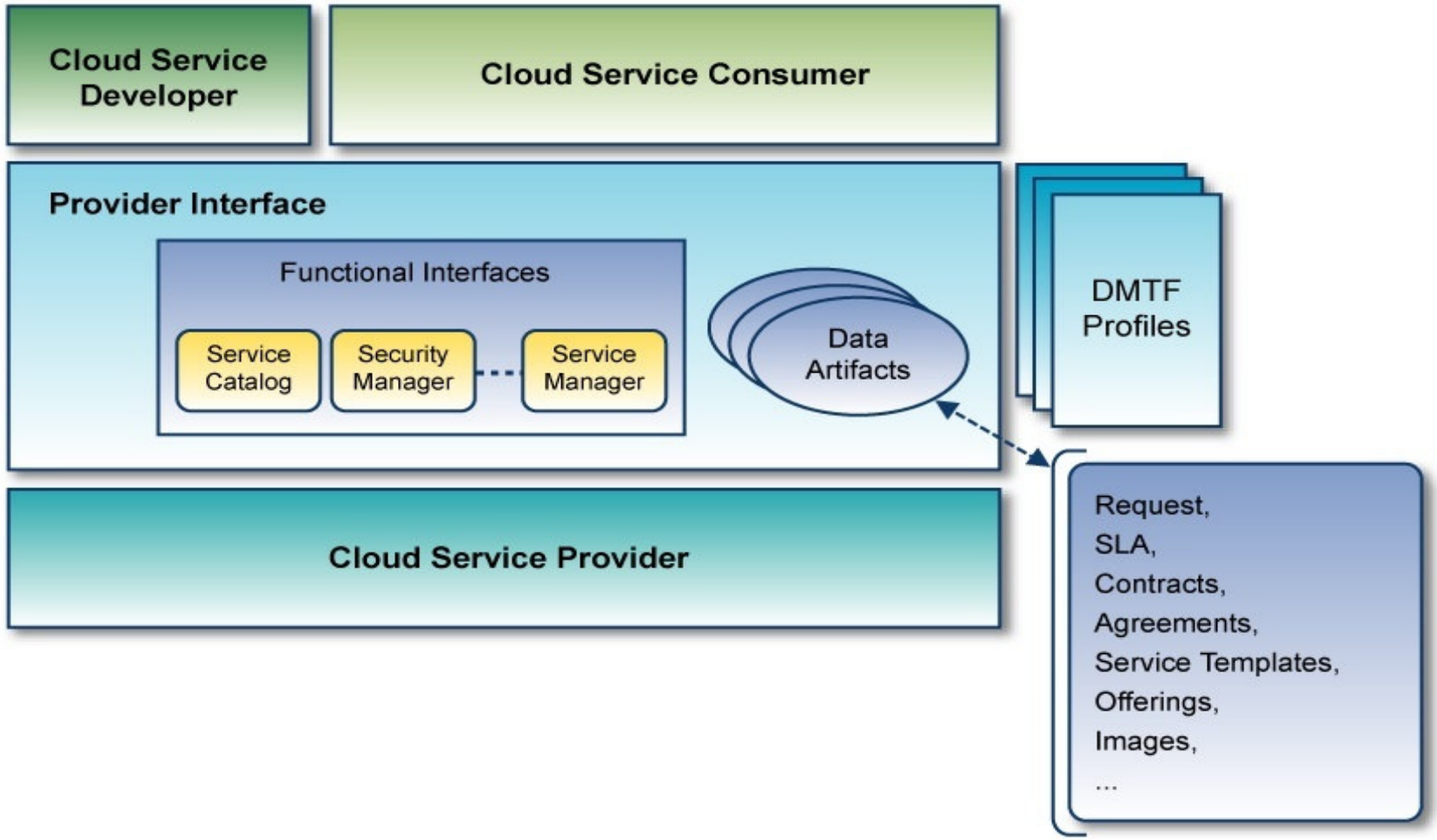
DSP-IS0103 1.0.0 Use Cases and Interactions for Managing Clouds

DSP0243 1.1.0 Open Virtualization Format (INCITS ANSI 2010-469)

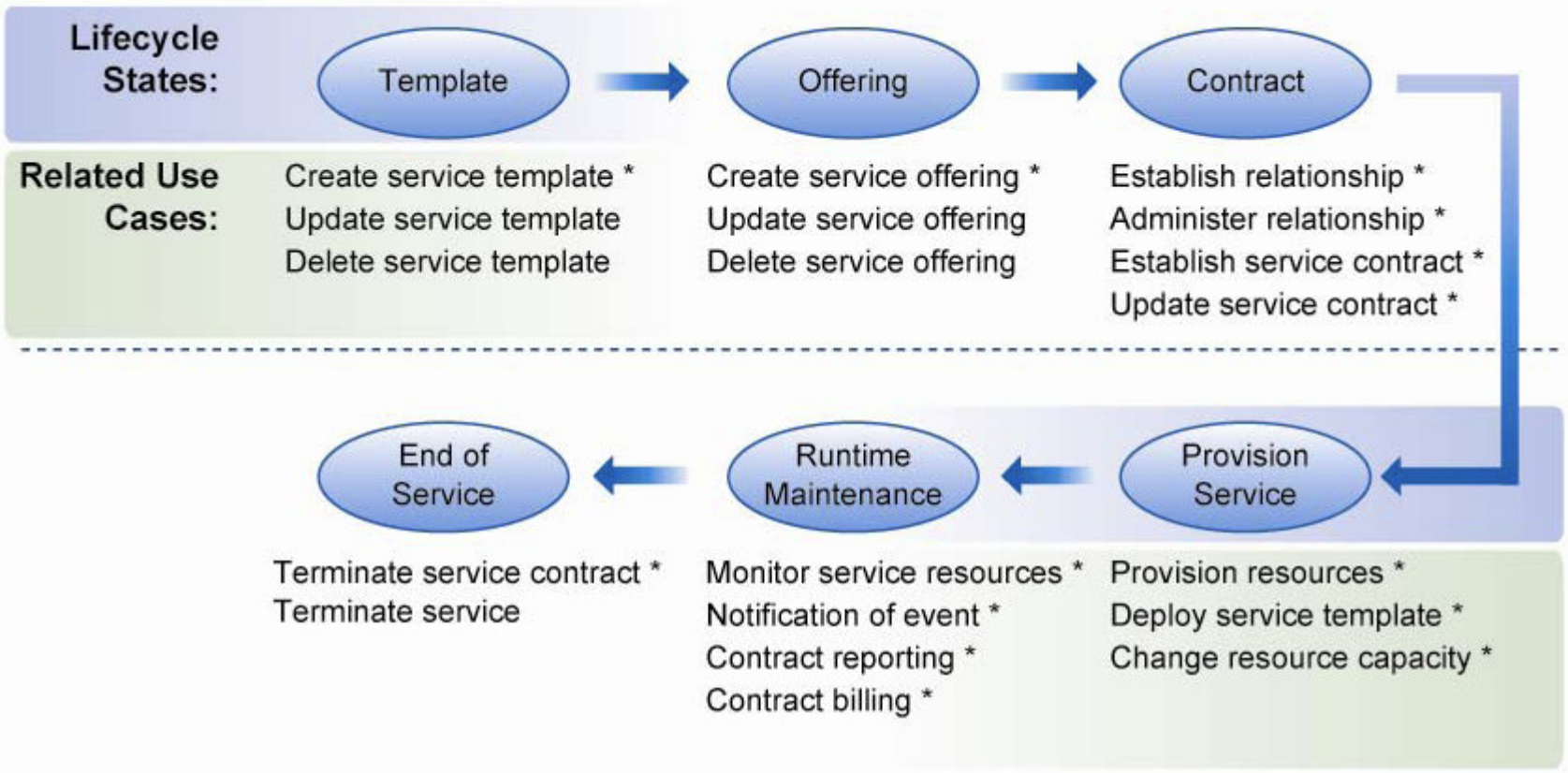
DSP2021 1.0.0 Open Virtualization Format Examples

DSP2017 1.0.0 Open Virtualization Format White Paper

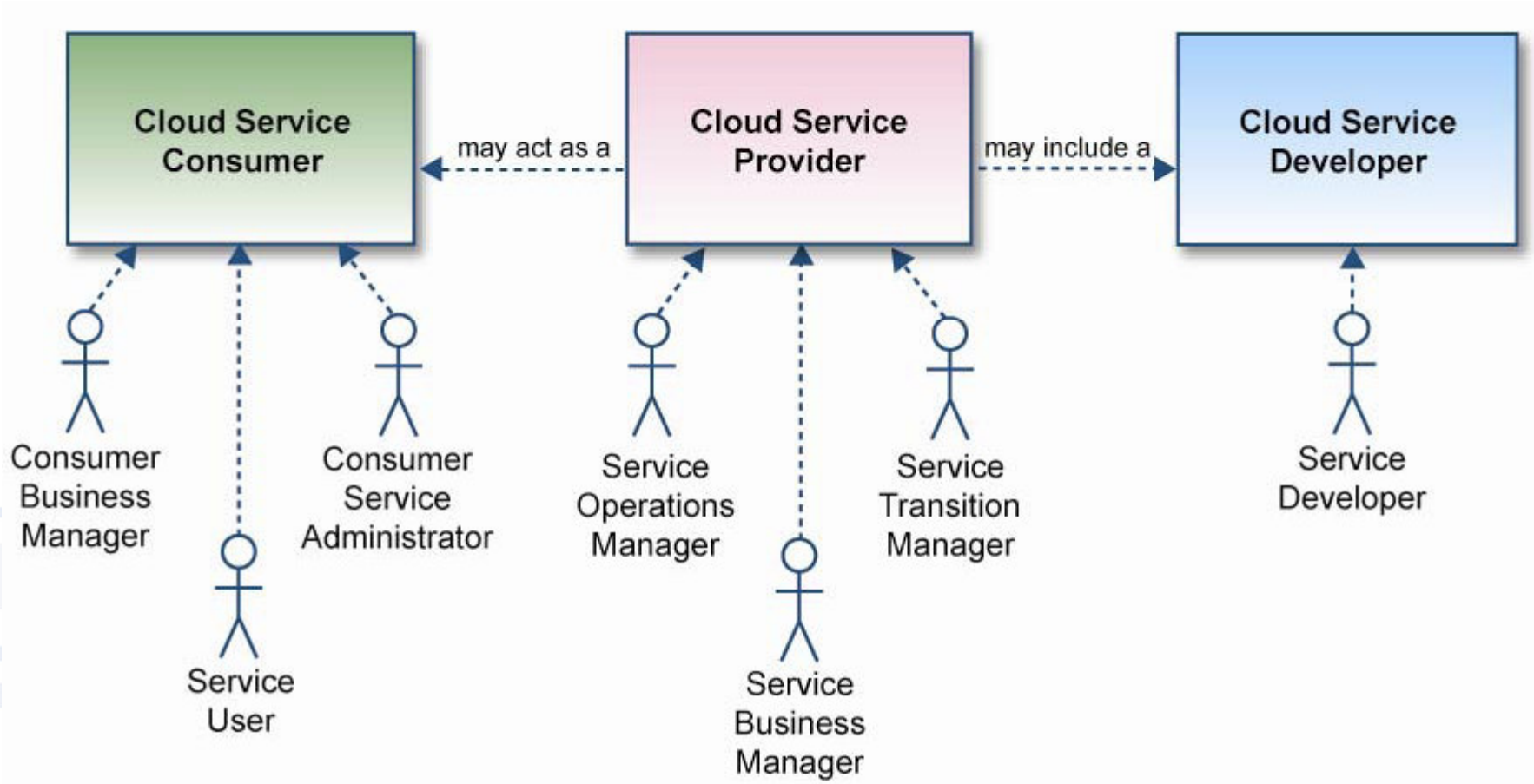
# Cloud Management Architecture



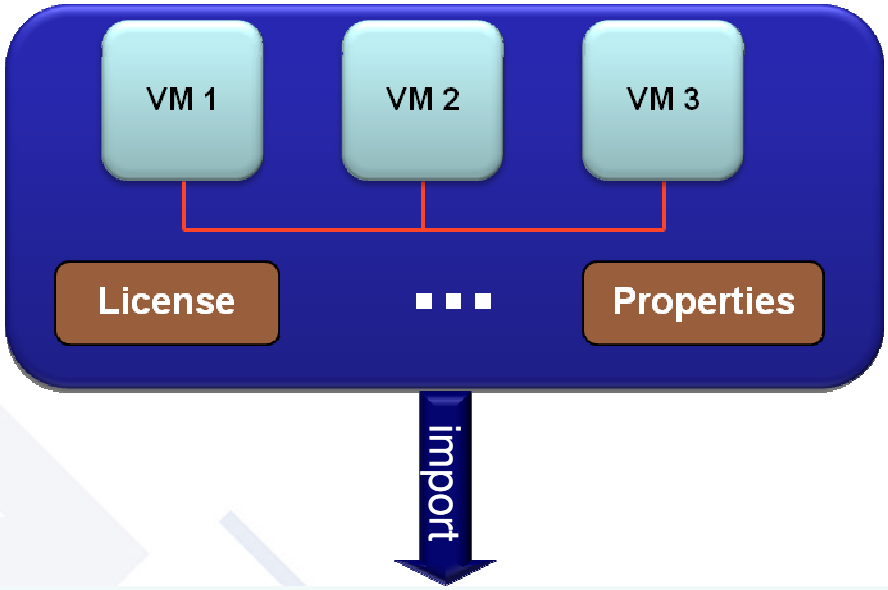
# Cloud Service Life Cycle & Use Cases

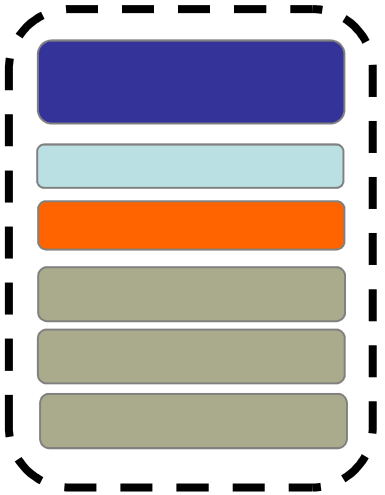


# Use Case Actors Taxonomy



# Open Virtualization Format (OVF)



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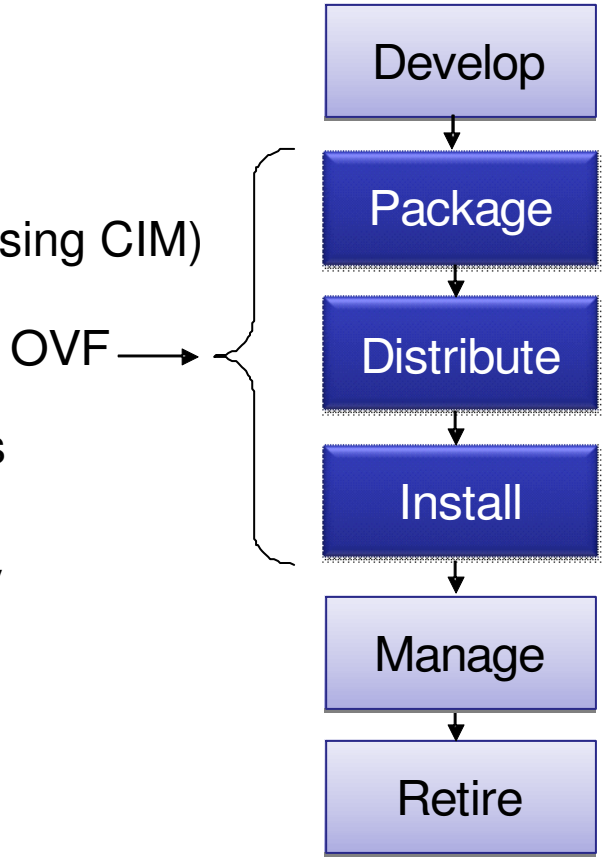
# OVF – Open Virtualization Format

- Summary
  - Packaging format for virtual appliances
  - Metadata describing environment requirements (using CIM)
  - Activation logic and artifacts
- Benefits
  - Deliver software through portable virtual machines
  - Streamlined installations
  - Virtualization platform independence and flexibility
  - Single-system and multiple-system services
- History
  - OVF 1.0 & 1.1: published 2009 & 2010
  - ANSI – INCITS 469-2010
  - OVF 2.0: under development



# Currently Planned DMTF Cloud Related Specifications

Q4 2011 - DSP0258 1.0.0 Cloud Management Logical Model

Q4 2011 - DSP0259 1.0.0 Cloud Management REST Mapping

Q4 2011 – DSPIS0301 1.0.0 Software License Management White Paper

Q2 2012 – DSP0260 1.0.0 Cloud Management WS-Management

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# BACKUP

# DMTF Board Companies

# DMTF Leadership Companies

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Brocade Communications
Cloudsoft Corporation
Compuware Corporation
Dell
Hitachi, LTD.
Lenovo
Novell
Rackspace
SunGard
Virtualstrean, Inc.
WBEM Solutions

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Blazent, Inc.
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Solarflare Communications
SolarWinds
Standard Microsystems
Telecom Italia
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Wave Systems Corp.
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# Academic Alliances

Alexandria University
Athens University of Economics and Business
Balarussian State University
Bharathidasan University
ENST Bretagne
Fudan University
George Mason University
Goethe University Frankfurt
Hangzhou Dianzi University
HOSEI Univ
Huazhong University of Science and Technology
Imperial College of Science Technology and Medicine
Indian Institute of Technology Roorkee
Indian Institute of Technology, Bombay
Instituto de Educao Tecnologica (IETEC)
Kasetsart University
Laurentian University
Leibniz Supercomputing Center
Ludwig Maximilians Universit
Lund Institute of Technology
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Modern College of Engineering, University of Pune
Munich University of Technology
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Shanghai Jiao Tong University
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Technische Universität Carolo-Wilhelmina zu Braunschweig
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# DMTF Alliance Partners

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CSA cloud security alliance SM

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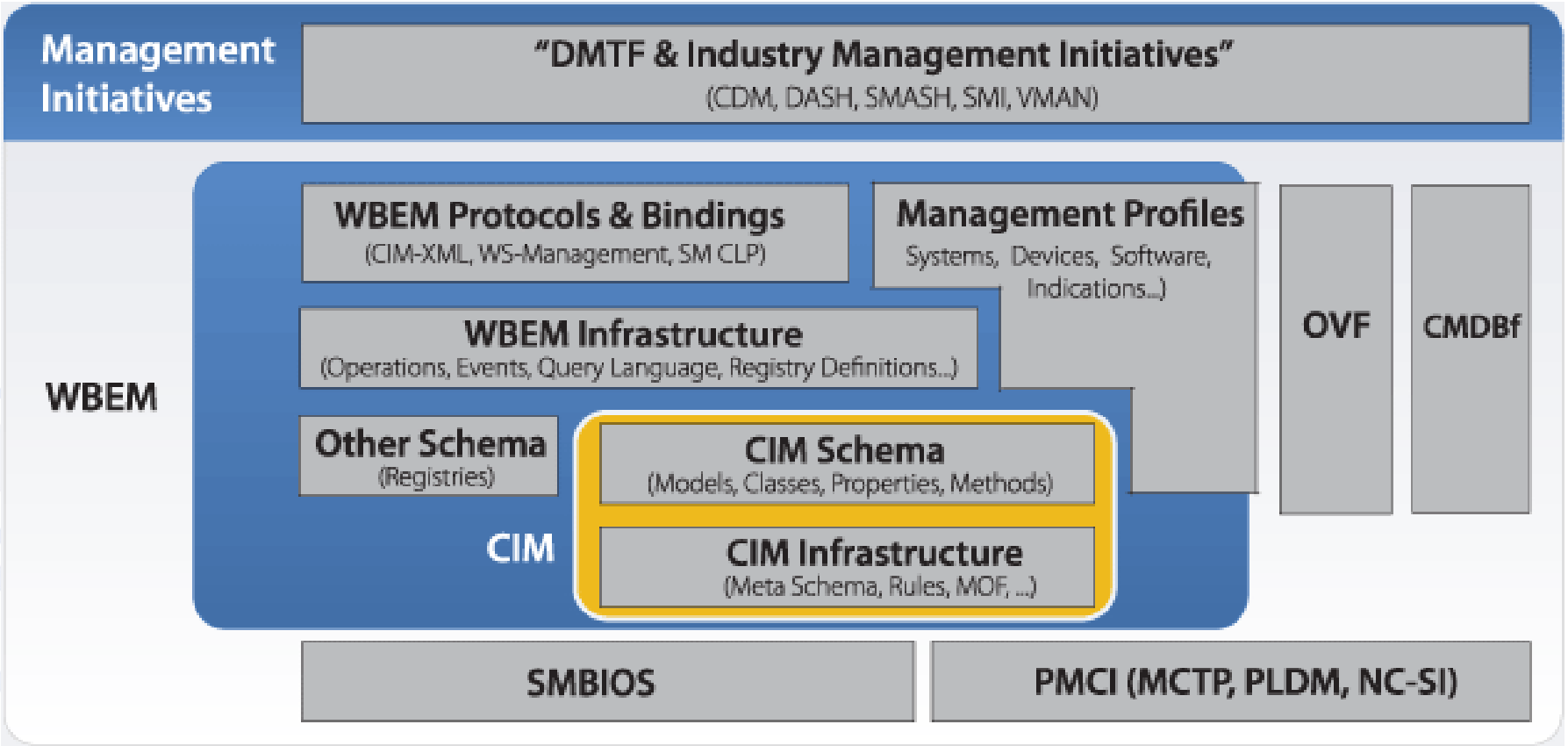
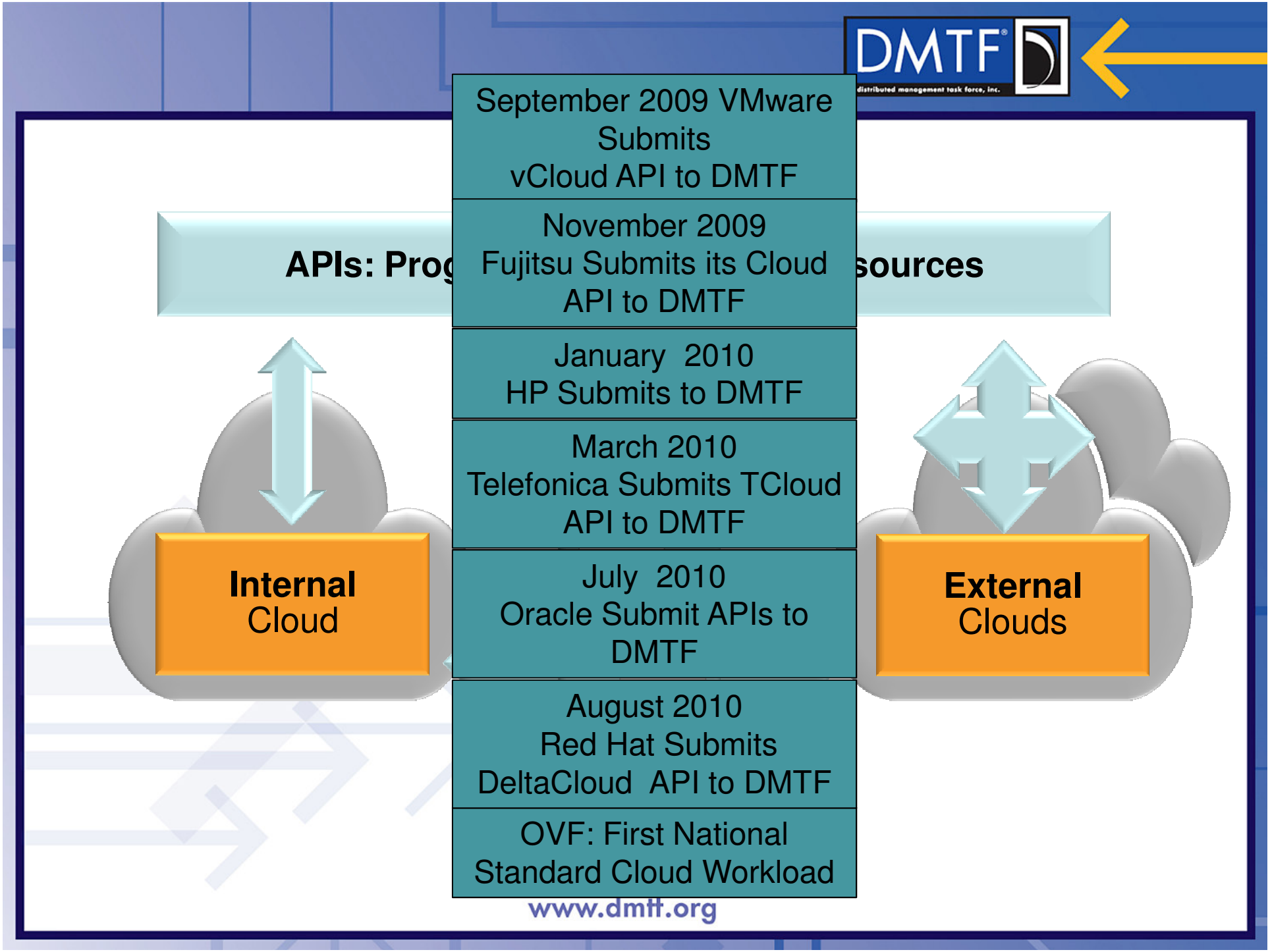
# DMTF Technologies

DMTF standards provide well-defined, interoperable interfaces that build upon each other




DMTF
distributed management task force, inc.
September 2009 VMware Submits vCloud API to DMTF
November 2009 Fujitsu Submits its Cloud API to DMTF
January 2010 HP Submits to DMTF
March 2010 Telefonica Submits TCloud API to DMTF
July 2010 Oracle Submit APIs to DMTF
August 2010 Red Hat Submits DeltaCloud API to DMTF
OVF: First National Standard Cloud Workload
APIs: Prog
sources
Internal Cloud
External Clouds
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# Cloud Audit Data Federation (CADF) Update

## Scope / Objectives

**Develop Standards for the Federation of Cloud Audit Data**

By Specifying a Normative, Prescriptive Audit Event Data Format along with Interface Definitions and a compatible Component and Interaction model.

The **Data Model** will include support for:

**Classification by Extensible Event Taxonomies** – normative, prescriptive taxonomies used to categorize cloud provider IT ***Resources***, event ***Actions*** and ***Outcomes***.

**Federation of Customized Audit Reports and Logs** - event data will support federation and be composable into customizable reports and logs.

The **Interface Model** includes:

**Definition of Service Methods** to Manage and Federate the Data Model's Events, Logs and Reports

*Interfaces will support audit data Submission, Import and Export, Query and Subscription.*

The **Component and Interaction Model** will

Demonstrate how the Interfaces and Data Format can be used by Cloud Providers and Consumers to Support Cloud Auditing use cases.

Future work may include **Profiles** that extend the core data and interface specifications to accommodate particular methods of consumption

# Cloud Audit Data Federation (CADF) Update

## Working Group Current Status

**Reviewing of Liaison Group Cloud Audit Related Activities** including:

- **CSA's Cloud Audit WG**
  - Update, 6 Month Roadmap, GRC Toolkit Examples (AtomPub, Manifest)
- **The Open Group's (TOG)**
  - Distributed Audit Services (DAS) v2 Update Project

**Accepting / Reviewing Member Use Cases and Requirements**

as input for forthcoming data format and interface model development, including:

- **IBM Cloud Audit Use Cases**
- **Novell / DAS v2 Use Cases**

**Discussing Deliverables and Timeline**

- **Primarily around a Federated Cloud Audit Data Format Specification**

# Software License Management (incubator)

This Incubator will develop whitepaper(s) which focus on the challenges listed above to enable the industry to manage licensed software product(s) and product usage, and to move closer to interoperable solutions. For each of these challenges the Incubator will identify real world use cases and scenarios, and create a taxonomy of existing or proposed solutions to identify licensed software products and product usage. Where existing standards can address these challenges, they shall be enumerated. Where they do not exist, the Incubator shall establish requirements and make recommendations to fill in gaps required to address these challenges.

The white paper(s) may also recommend a solution to these challenges by leveraging or defining extensions to existing work. The purpose of this document is to define the technical aspects required to address the requirements, use cases, scenarios and solutions identified. For example:

- The representation of the identity of a licensable product (virtual machine instance, on premise product, etc)
- How it is associated with an instance or operating system
- Who and what (device) are assessing that instance, and
- The ability to discover if and where the licensable product is running.