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T4: Standard-based IT Resource Management & Autonomous System Management

2005. 11.

Chang-Won Ahn

(ahn@etri.re.kr)

Digital Home Division, Internet Server Group

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Electronics and Telecommunications Research Institute

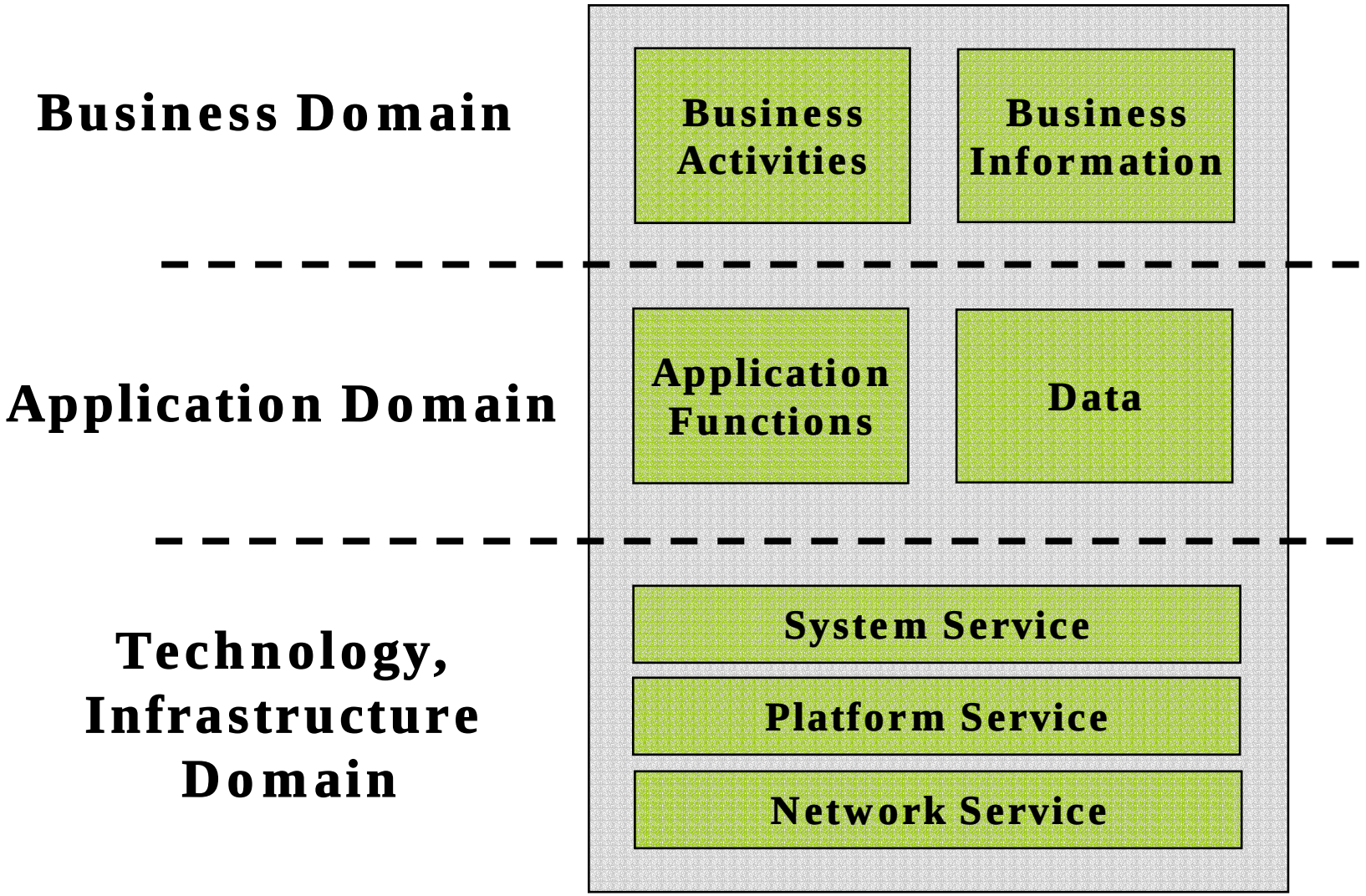
IT Environment History

- 1980's – ISP (Information Strategy Planning)
  - Usually one mainframe
  - Logical Relationship among Applications is important
  - Computing Power allocation based on Proirities
- 1990's – ITA (Information Technology Architecture)
  - Open System based on Unix
  - Relationship between applications and infrastructure is important
  - Networking standards among unix servers are developed
  - Still slow changes of business environments
  - DA, AA, TA

IT Environment History

- 2000's – EA (Enterprise Architecture)
  - Rapid globalization
  - Complex business environments → Virtual business
  - Distributed & virtualized information systems are needed
  - Most business models are no more valid than 1 year
  - Combining IT architecture into business architecture is needed
  - Enterprise Architecture = Business Architecture + IT Architecture (Data, Application, Infrastructure)

Enterprise Architecture

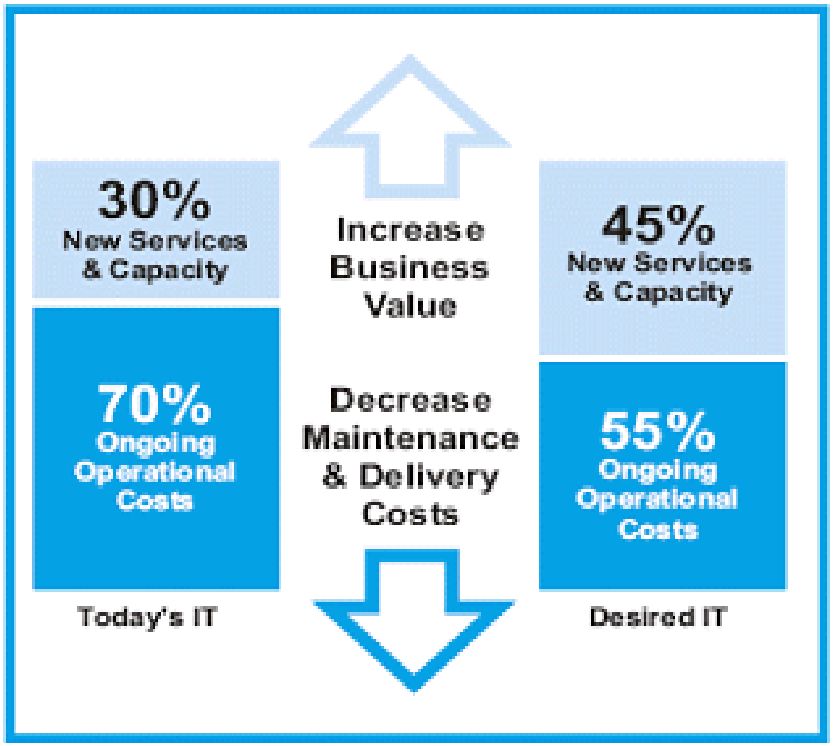


IT's Role

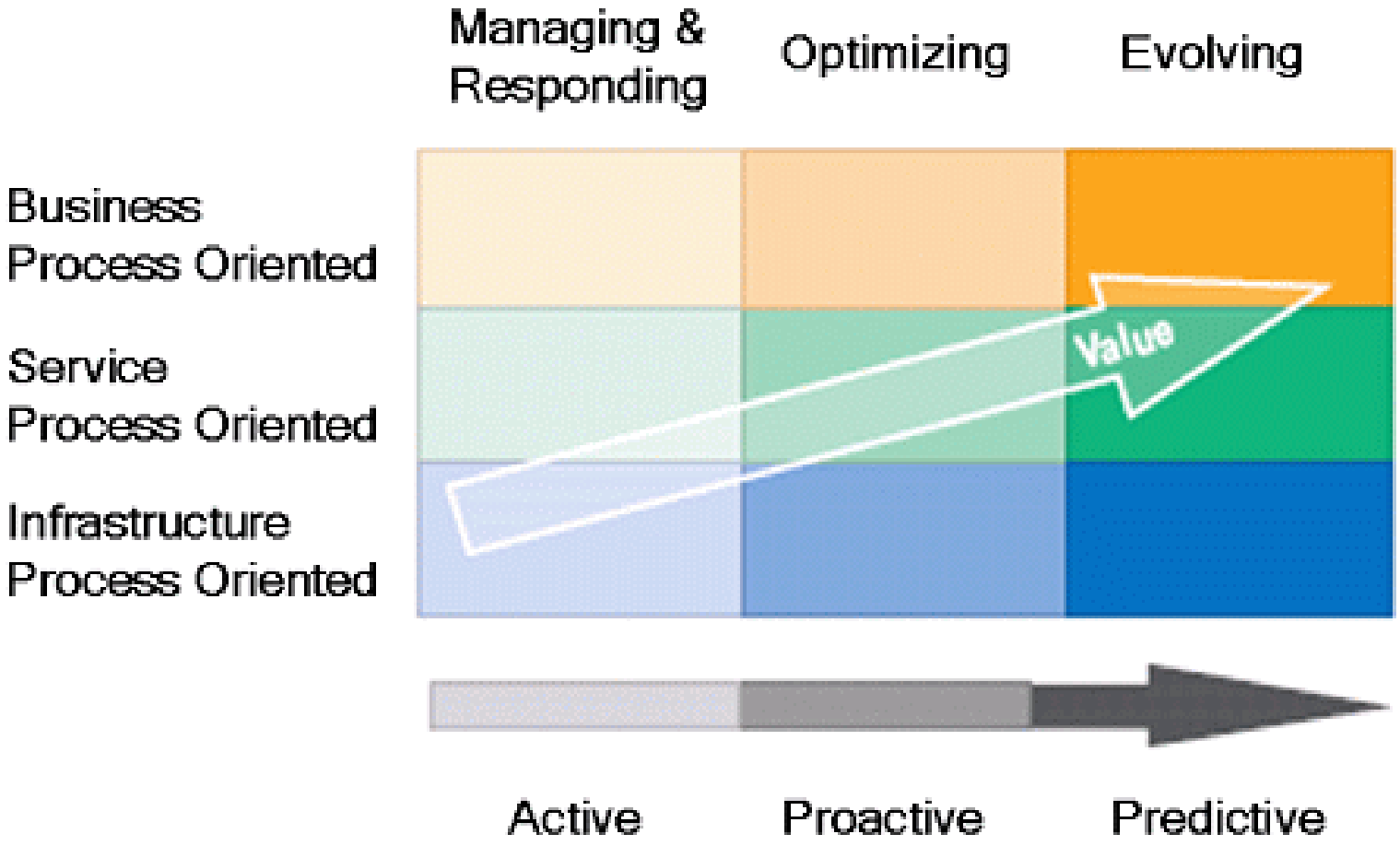
- "IT 자원을 최적화하여 운영비용을 절감하고, 새로운 서비스를 창출하기 위한 예비 자원 확보"

- IT 환경은 비즈니스 전략의 핵심분야이며, 기업 생존을 위해 IT 자원을 효과적으로 관리할 필요성이 대두됨

기술의 보편화, 일상화



IT Alignment with Business Goals



IT Alignment with Business Goals

Summary

- Recent IT buzzwords are related to Business Environments
  - BPO (Business Process Outsourcing)
  - BI (Business Intelligence)
  - BPM (Business Process/Performance Management)
- Enterprise's Requirements
  - Agility → light-speed
  - Cost Reduction → ITO/BPO
- *Utility Computing (Autonomic Computing)*
  - *Standards-based Distributed Resource Management*
  - *Policy-based Autonomous System Management*

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Utility Computing

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Why Utility Computing? – Customers' Problems

- IT infra complexity
- Data volume
  - Cannot find things by natural relationship
  - Management complexity
- Data growth
  - DB-related data growth 125% per year (* by Data Mobility Group)
  - Reference data growth rate 60% per year
  - Digital multimedia content storage growth rate 50% per year
- Management cost
  - capital cost is only 15%
  - 30% growth a year (* by Data Mobility Group)
  - Lack of end-to-end app to storage link
  - Lack of integration amongst mgmt software
- Need for real-time business needs
  - High performance and continuous access required by business
  - Min. downtime required

Map Market Trends to Customer Problems

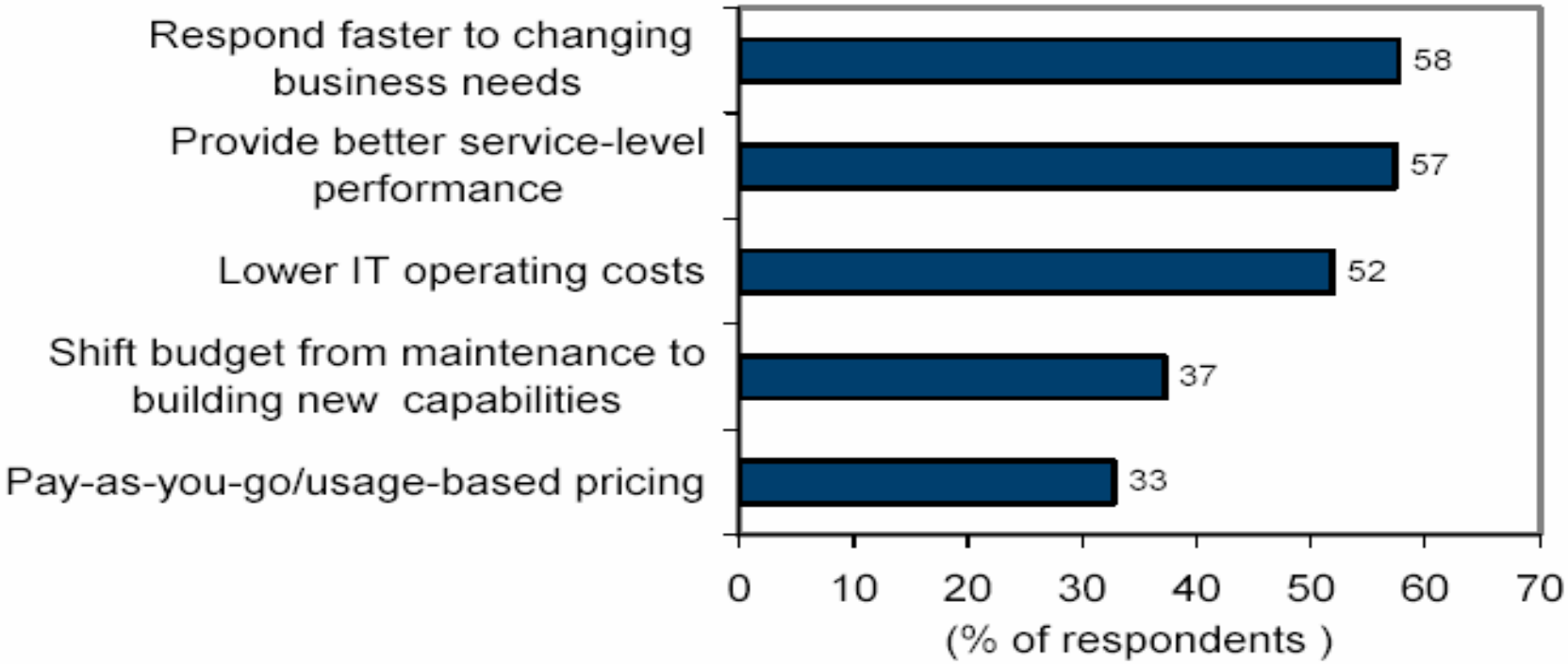
- IT infra complexity
  - Virtualization
- Data volume
  - Utility computing
  - ILM
- Data growth
  - Utility computing
  - ILM
- Management cost
  - Utility computing
  - Policy-based management
  - ILM
- Need for real-time access
  - Utility computing
  - IT alignment with business
  - ILM

Utility computing:
Virtualization, provisioning, metering and policy-based autonomous management

IDC Survey of What Customers Want

Business Value of Utility Computing

Q. How valuable are the following potential benefits of utility computing?



n = 414

Note: Data shows percentage of respondents rating 4 or 5 on a scale of 1–5 scale where 5 = extremely valuable.

Source: IDC's *Barometer II Global Survey*, March 2004

Use Case Example: Provisioning an application in a utility environment

- Administrator specifies what resources an application needs – storage, CPU cycles, network bandwidth
  - Even better would be just specifying SLAs and let the system figure it out
- The utility provisioning service will orchestrate the resources and allocate out of the pool
  - May have to move existing apps around to accommodate new apps
  - Virtualization at all levels makes this a lot easier and less granular
- The app management service will monitor the app's progress on SLAs and dynamically redeploy resources
  - Over the lifecycle of an app, SLAs can change

Drivers for Utility Computing

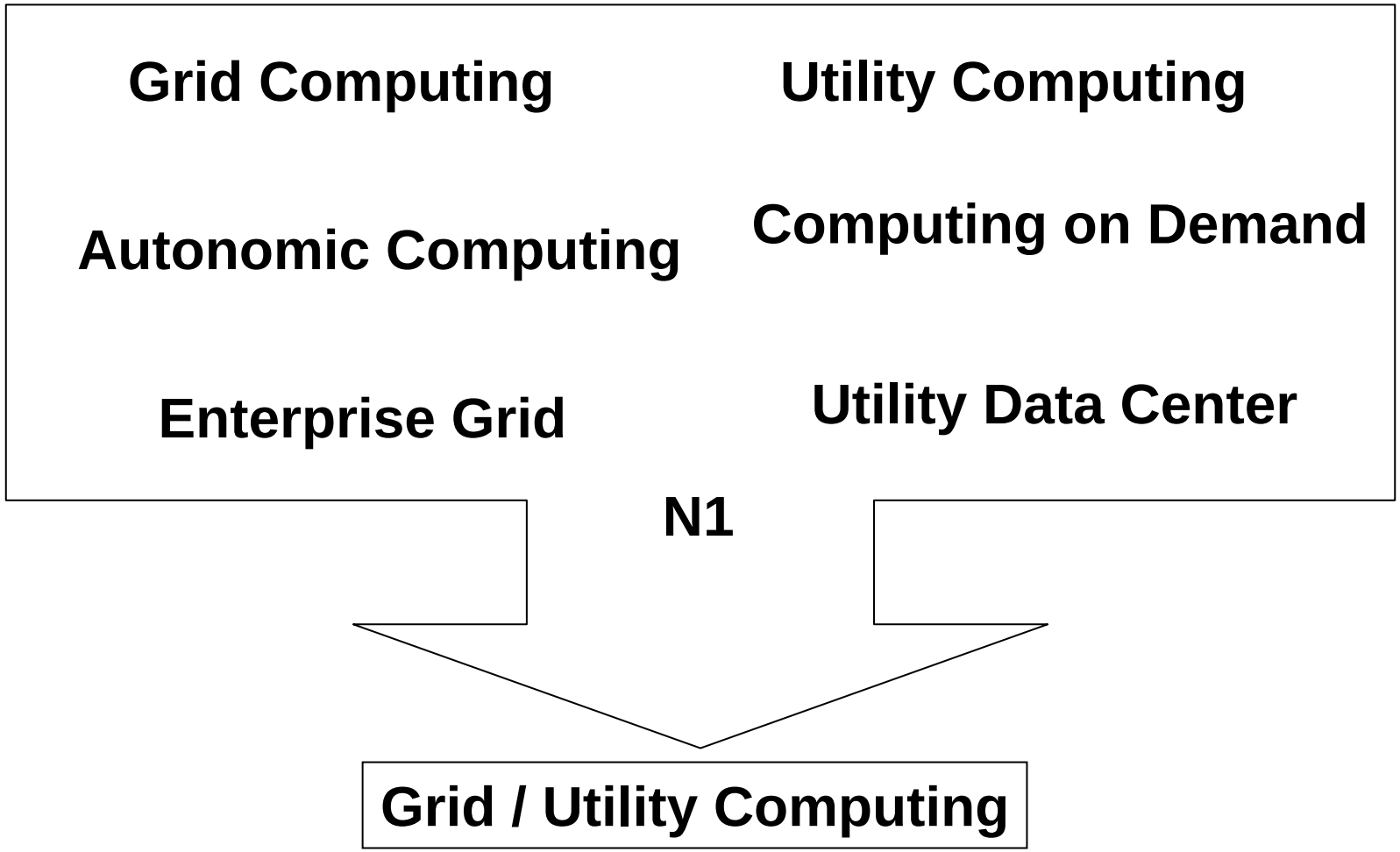
IDC, March 2004

Adoption Drivers	Reasoning
Server consolidation	Hardware cost reduction: Grids become an extension of cycle harvesting that is already under way.
Hardware flexibility	Low risk: Standard boxes can be redeployed if grid does not work.
Linux	Easier development of custom applications allowed by open source; Linux used by early adopters
Clustering applications	Smoother software transition using parallel applications
IT systems management	Managing this growing element of cost becoming more critical than hardware efficiency
Growth of data	Requires data mining and data integration capabilities made possible by grids
Uncertain volatility of workloads	Increases capacity required leading to low utilization of compute resources (cycles and system admin support)

Commercial Grid and Utility Initiatives

- IBM “On Demand Computing”
- HP “Utility Data Center”
- Sun “N1”
- Oracle 10g
- Microsoft DSI
- Veritas

Convergence of definitions



Utility Computing Architecture

- Should have a service oriented architecture (SOA)
  - To support *federation, composition & incremental evolution*
- Supports the separation of management concerns
  - Clearly defined roles relative to horizontal & vertical domains
- *Is defined to be policy driven*
  - Rules are explicit and modifiable vs. implicit and immutable
- *Uses models but is not fixed on only one model by default*
  - A common meta-model may be there enabling leverage & interoperability
  - Need to interoperate within various vendor products and standards.
- Is solutions oriented
  - Supports “composable” solutions (building blocks)

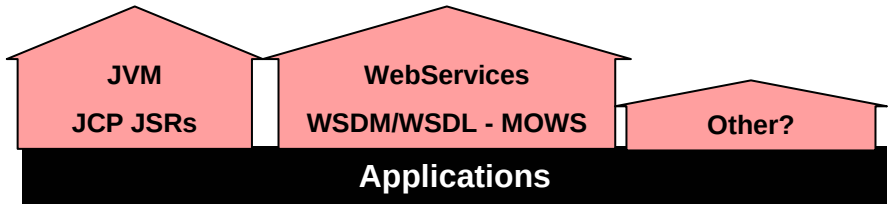
Utility Computing Topology

Utility Business Services

Track Resource Utilization, Resource Accounting/Billing, Service Level Monitoring (Availability & Performance)

System Monitoring & Management

- Configuration Visualization and Control(VLANs, LUNs, LunMasks, LunMaps, Zones, Sparing)
- Workflow Policies and Related Automation
- Health/Fault Management
- Security (role base authorization)
- Formatting, Diagnostics, Balancing Load/Path0



O.S. Image Configuration Service

Build/Replicate O.S. Images to support new processors

Application Provisioning Registry

Manifest of System Resources, Dependencies, and Service Levels Required for an Application

CIM

SMI-S, SCSI	Needed	CIM Server, IPMI	Needed	Some SMI-S	Some MIBs
Storage Subsystems Array, Switch, Library, Router, HBA, NAS, Virtualizer	**Database/TP Monitor** App-Table-volume mapping, quiesce, log status, performance	**Processor Complex** Service Proc View: Configuration, Capabilities, State, Boot Initiation	**Operating Sys** Performance, Memory Util., Installed App. Registry, Network Access	**Host Based Storage Sft.** File Sys, Volume Mgmt, Host Disc Resources, Multipath, etc.	**Network** VLANs, subnets, etc.

Veritas Contribution to DMTF UCWG

Key Features of Grid/Utility Computing

- Virtualization of Resources
  - Storage, networks, and servers
  - Allows for load-balancing and scheduling of resources
- Provisioning / Orchestration
  - Dynamically allocate resources based on SLAs
  - Rapid response to changing needs
- Metering
  - Resource consumption
  - Performance simulation / capacity planning
- Policies
  - Automation / Workflow
  - Quality of Service

Utility Computing Management Functions and Services

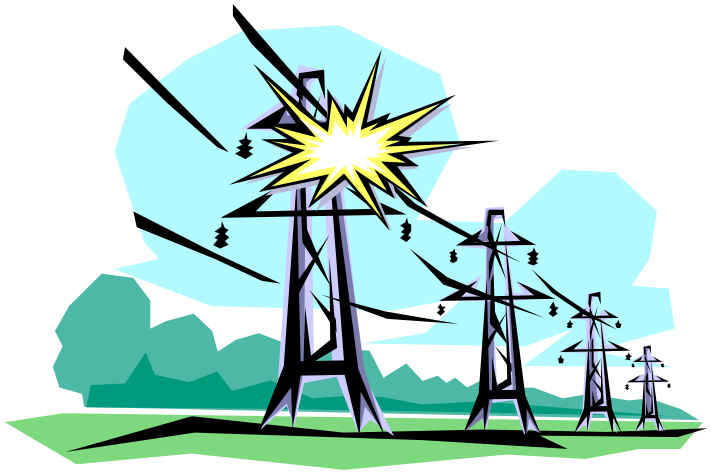
- Information Lifecycle Management (ILM)
  - For all levels of computing – networks, hardware, Systems, apps, services, Business processes. Includes provisioning, config, Transaction manager (locking) , etc.
- Monitoring services
  - Query, information, discovery and introspection, filtering and correlation, naming, Globally unique namespaces, trouble ticketing, inventory mgmt, performance mgmt, topology and associations , metering, logging
- Policy definition – General policy framework, modeling, QOS/SLA …
- Self healing – Checkpoint service, recovery, heart beat
- Security – Authentication, authorization, user identity, delegation
- Business services – Accounting, billing, Ordering, CRM, decision support systems, fraud mgmt, Revenue assurance ..
- License management – For all levels of computing – especially systems, apps, services

Utility Computing Management Functions and Services (Continued)

- Messaging – Notification, bulk data transport, control transport, event subscription
- Capacity planning and entitlement – for infrastructure
- Virtualization
  - Persistent environments, scheduling and reservation, location services, Proxy services, session mgmt, exporting resources – like desktops, virtual infrastructure – partitions, offices etc, ILM
- Data – Data mining, data backup, restore, clone …
- Profiling
  - Composition of services, resources and resource utilizations
- Domain specific services
- Internationalization

Utility computing needs standards

- Even electric grids…



Disregard for standards marked run-up to blackout; task force calls for new rules

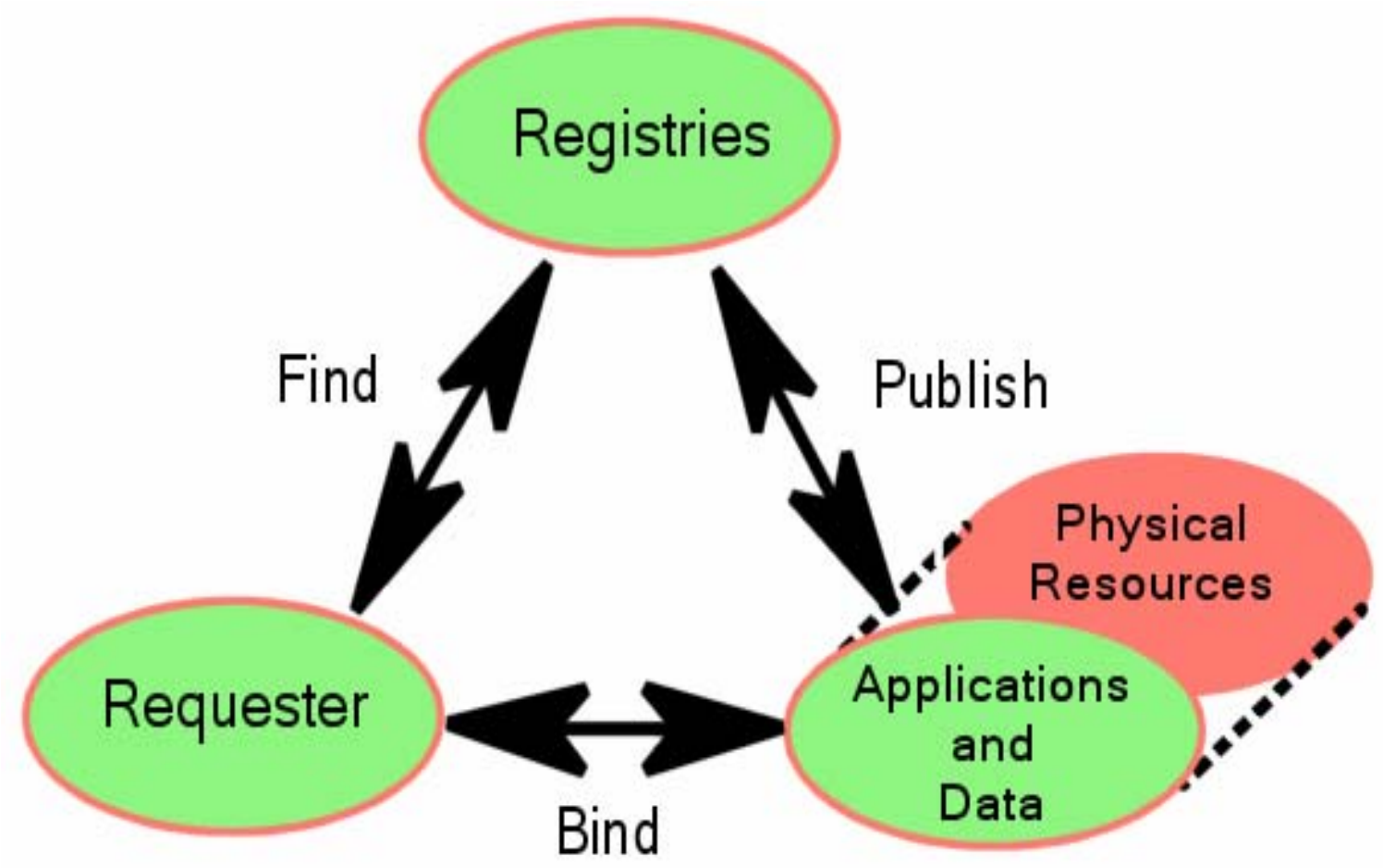
By H. Josef Hebert
Associated Press Writer
April 5, 2004

WASHINGTON -- Disregard for voluntary rules intended to ensure the flow of electricity opened the way for last summer's blackout in eight states and Canada, investigators said Monday in their final report. They urged government standards with teeth to ward off future outages.

Industry Challenges

- Taxonomy
  - Resolving differences and creating a common set of definitions
- Mapping CIM onto Web Services (WS)
  - WS and SOAP are universally accepted as the low-level infrastructure with which to manage grids
  - Different management model than DMTF
    - Manage services, not objects
    - Services have state and behavior
      - ✓ These concepts do not easily fit into the CIM model
  - Different uses of XML
    - CIM (and SMI-S) use XML to encode RPC operations.
      - ✓ Rich structure is in MOF
    - Web Services use XML as a carrier of rich structure (WSDL)

Web Service computing model
Service Oriented Architecture (SOA)



Management Models

- Mostly widely accepted management object model is the Common Information Model (CIM) developed by the DMTF
  - The model describes manageable objects (systems, networks, applications, and services)
    - Properties
    - Relationships
    - Methods
    - Allows for vendor extensions
  - Used as the basis for SNIA's SMI-S storage management spec
  - CIM is defined by MOF (Managed Object Format) files
  - CIM is protocol independent, but today, most CIM-based products use XML over HTTP as the protocol (WBEM)

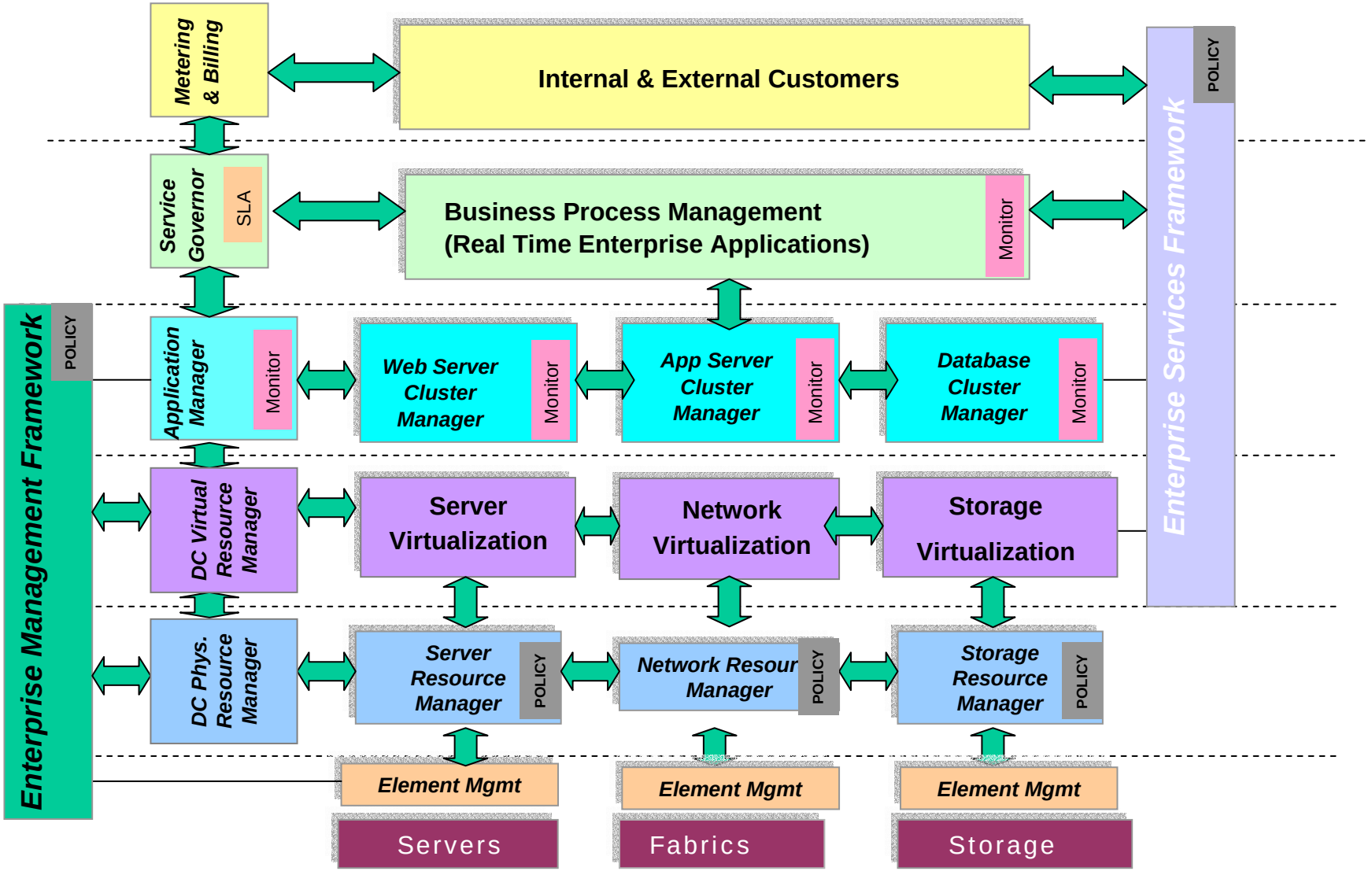
Management Models – part 2

- Utility computing (grid computing) is using Web Services for management
  - OASIS Web Services Distributed Management (WSDM) Working Group is defining how to manage using Web Services (SOAP and XML)
  - Web Services uses WSDL (Web Services Description Language) to describe how to access a web service and what operations it can perform
    - One of the three key foundations of Web Services, along with SOAP and UDDI
    - WSDL documents are in XML format
    - Specifically includes:
      - ✓ Interface information describing all publicly available functions
      - ✓ Data type information for all messages
      - ✓ Binding info about the transport protocol
      - ✓ Address information for locating the service

Summary of the Current State of Standards

- Several groups and organizations are pursuing standards for grid/utility
  - Trying to be cooperative and non-overlapping, but this may get difficult as the number of groups increases
  - However, there is a small core of people that span many of the groups
  - IBM has dedicated lots of resources to the standards activities
- Need a simple, but powerful taxonomy that everyone agrees with
  - Disagreements about number of layers and ordering
  - Something like the network stack (L1-L7)
- Some pieces of the puzzle need more attention
  - Application management
  - Security
  - Data Access

Utility Computing Stack Up



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Autonomic Computing

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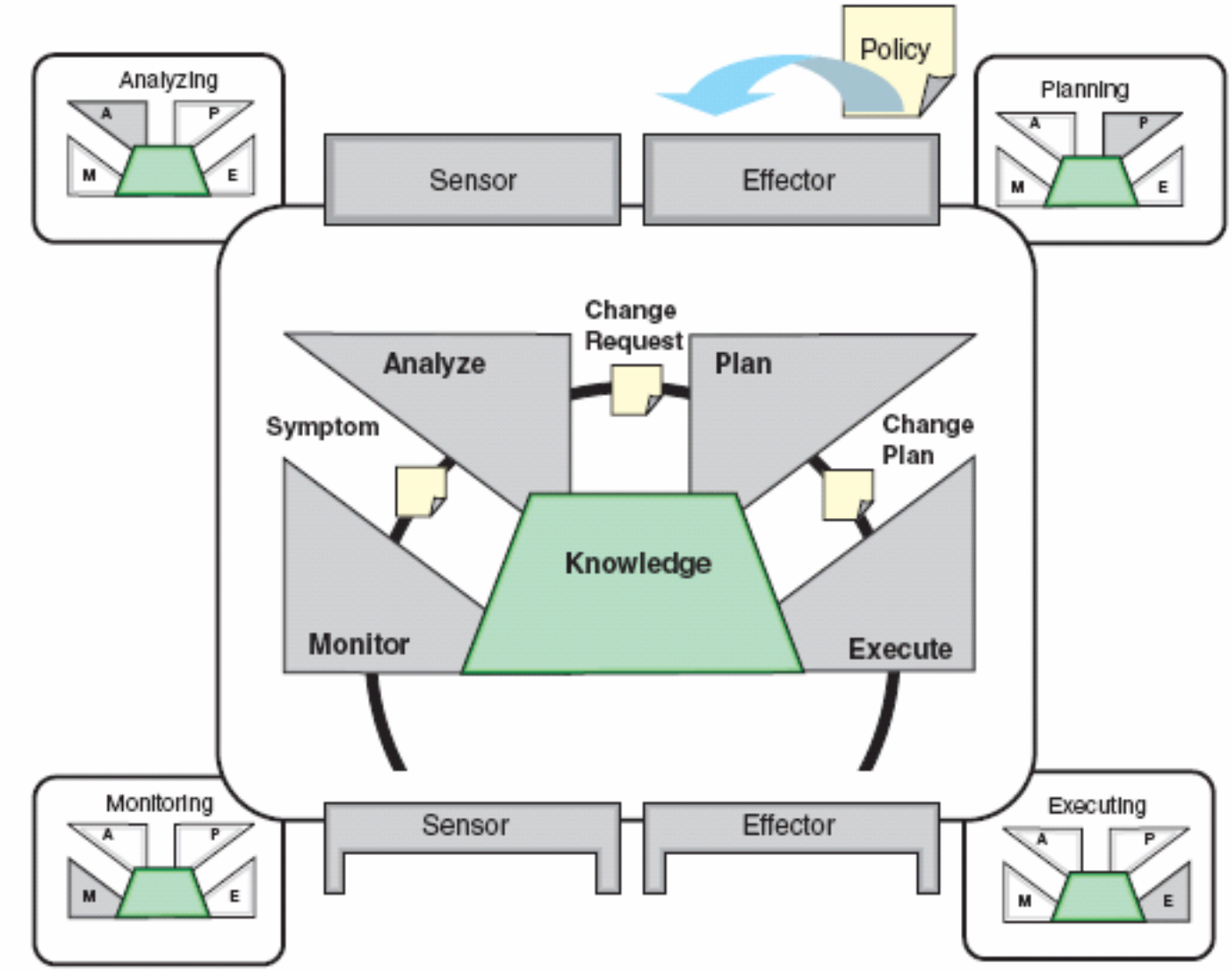
Autonomic Computing

- Human biology → Autonomic nervous system
  - Monitors heartbeat, Checks blood sugar level
  - Keeps body temperature close to 36.5℃
  - w/o any conscious effort
  - Decisions are involuntary
- IT System → Self-managing
  - Monitor event, Control it
  - Anticipate system requirements and resolve problems
  - With minimal human intervention
  - Delegate to the technology according to policies

Control Loop



Control Loop – Monitor

- Collects the details from the managed resources via touchpoints
- Correlates and filters them into symptoms that can be analyzed
- Configuration, status, offered capacity and throughput, …
- Static or changing slowly
- Dynamic or changing continuously through time

Control Loop – Analyze

- Mechanism to observe and analyze situations to determine if some change needs to be made
- Responsible for determining if the autonomic managers can abide by the established policy
- Prediction technique such as time-series forecasting and queueing models
- Complex data analysis and reasoning on the symptoms

Control Loop – Plan

- Creates and selects a procedure to enact a desired alteration in the managed resources
- Generate the appropriate change plan – a desired set of changes for the managed resources
- Passes that change plan to the execute function

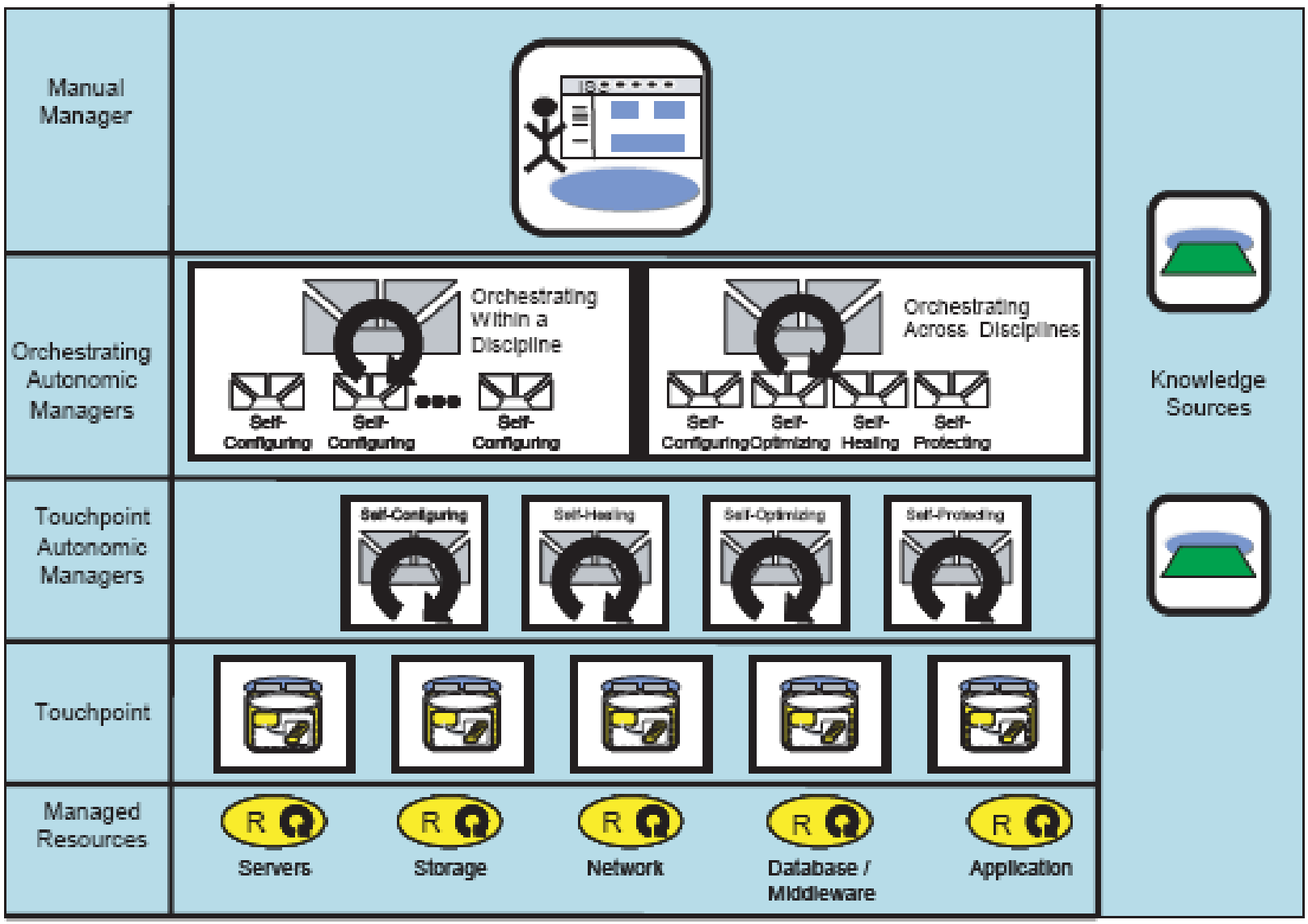
Control Loop – Execute

- Schedule and perform the necessary changes to the system
- Responsible for carrying out the procedure that was generated by the plan function
- Using the touchpoint effector interface of a managed resources
- Involve updating the knowledge that is used autonomic manager

Control Loop – Knowledge

- Data used by the autonomic manager's four function (monitor, analyze, plan, execute) are stored as shared knowledge
- Topology information, historical logs, metrics, symptoms and policies
- Knowledge types
  - Solution Topology Knowledge
  - Policy Knowledge
  - Problem Determination Knowledge

Autonomic Computing Architecture

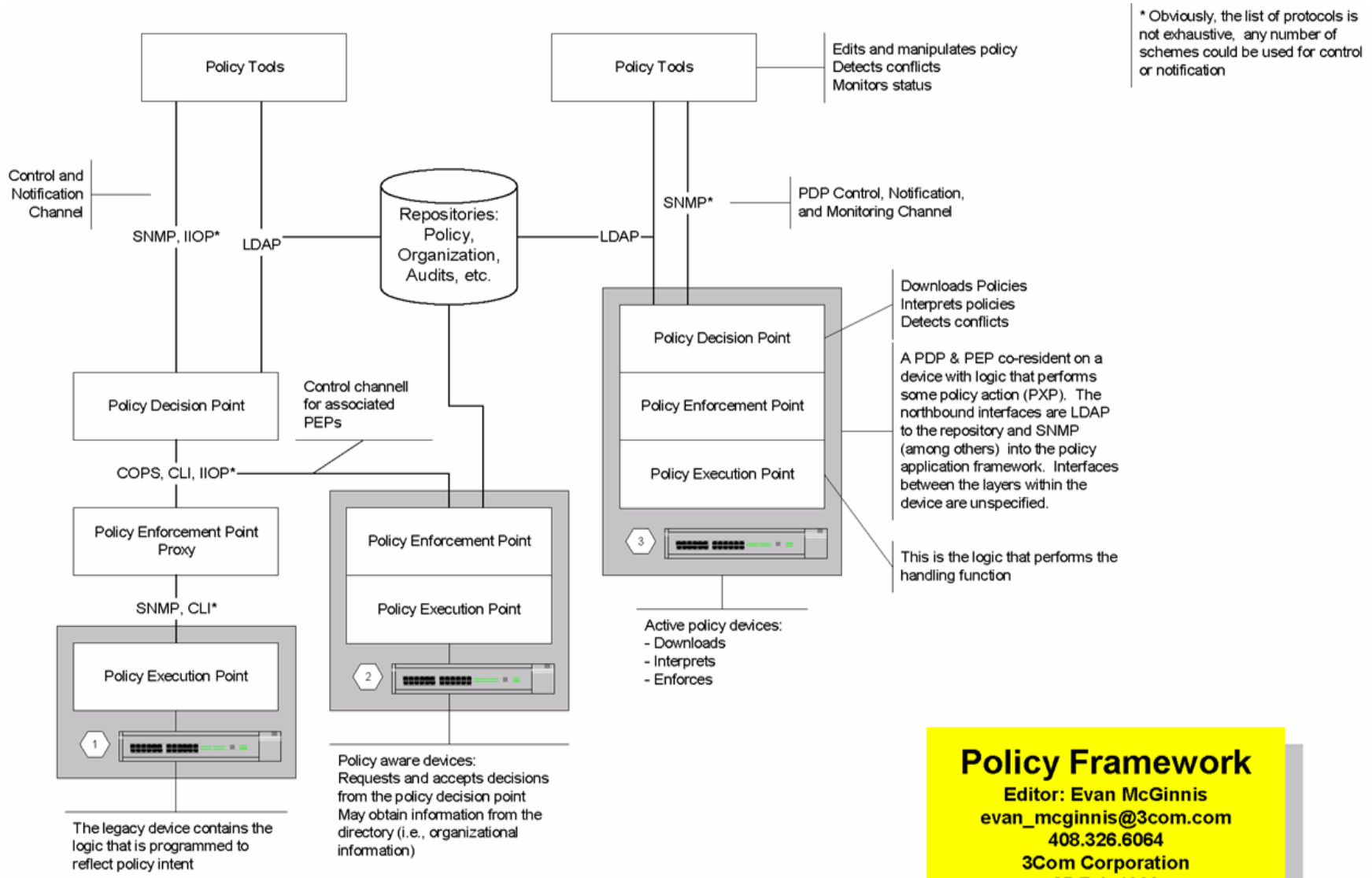


Autonomic Computing Architecture

- Manual Managers (Policy Tool)
- Autonomic Managers (Policy Decision Point)
- Touchpoints for managed resources (Policy Enforcement Point)

- Knowledge Sources
  - Knowledge Base
  - Policy Repository

Policy-based Autonomous Management Framework



Policy Framework

Editor: Evan McGinnis
evan_mcginnis@3com.com
408.326.6064
3Com Corporation
25 Feb 1999

Manual Manager

- Common system management interface for IT professional using an integrated solutions console
- Consistent human-facing interface for the autonomic managers of IT infrastructure components → Policy Tools
- Human interaction with the system
- Single platform that can host all the administrative console functions

Touchpoint Autonomic Managers

- Intelligent control loops that automate combinations of the tasks
- Work directly with the managed resources through their touchpoints
- Use policies to determine what actions should be taken for the managed resources
- 4 types of control scope
  - Single resource scope
  - Homogeneous group scope
  - Heterogeneous group scope
  - Business system scope
- Local Optimization

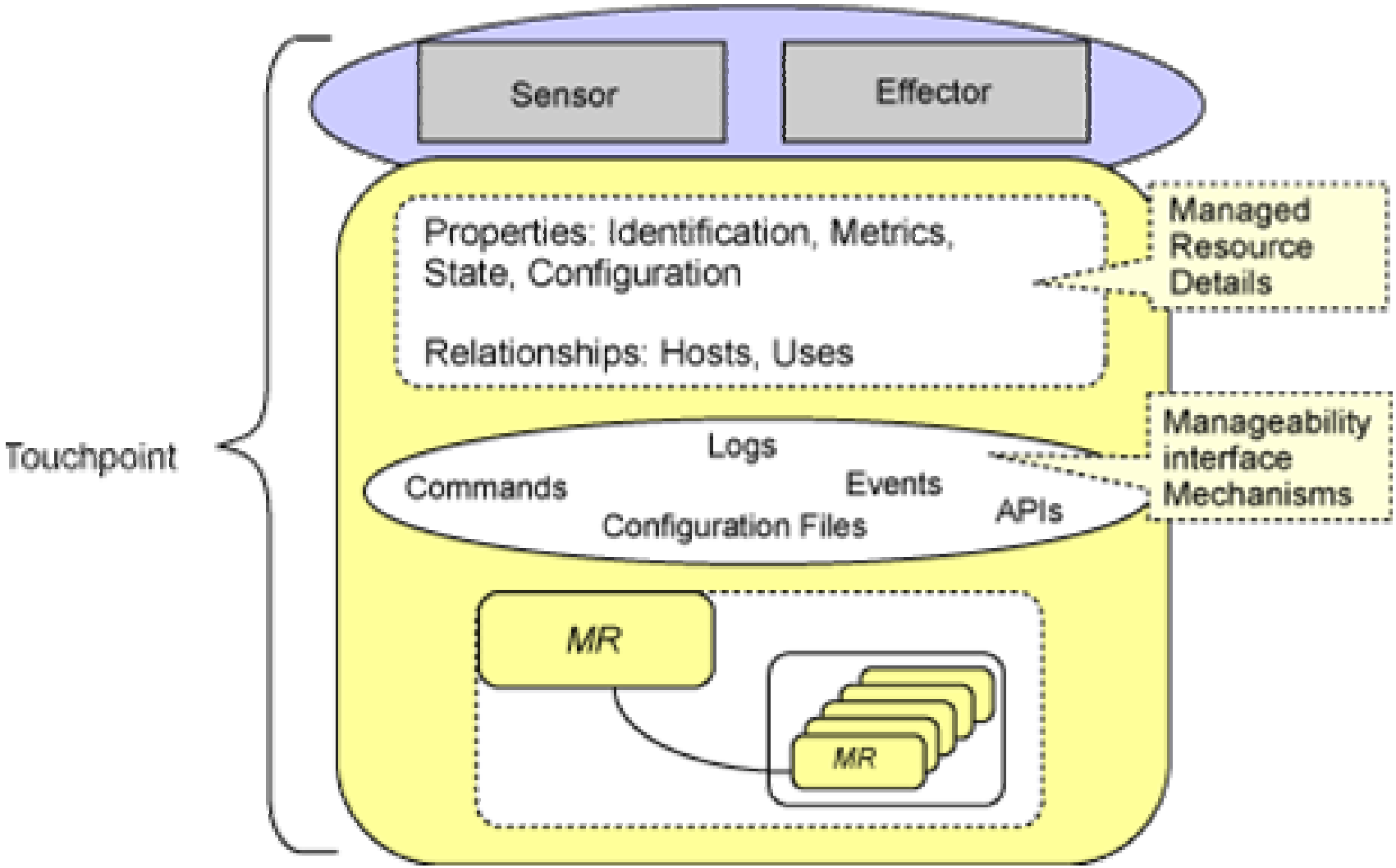
Orchestrating Autonomic Managers

- Autonomic managers need to be coordinated to deliver system-wide autonomic computing behavior
  - Orchestrate other autonomic managers
  - Hierarchical automation
  - Systemwide autonomic capability
  - Incorporating control loops that have the broadest view of the overall IT infrastructure
  - Workload manager
- Global Optimization

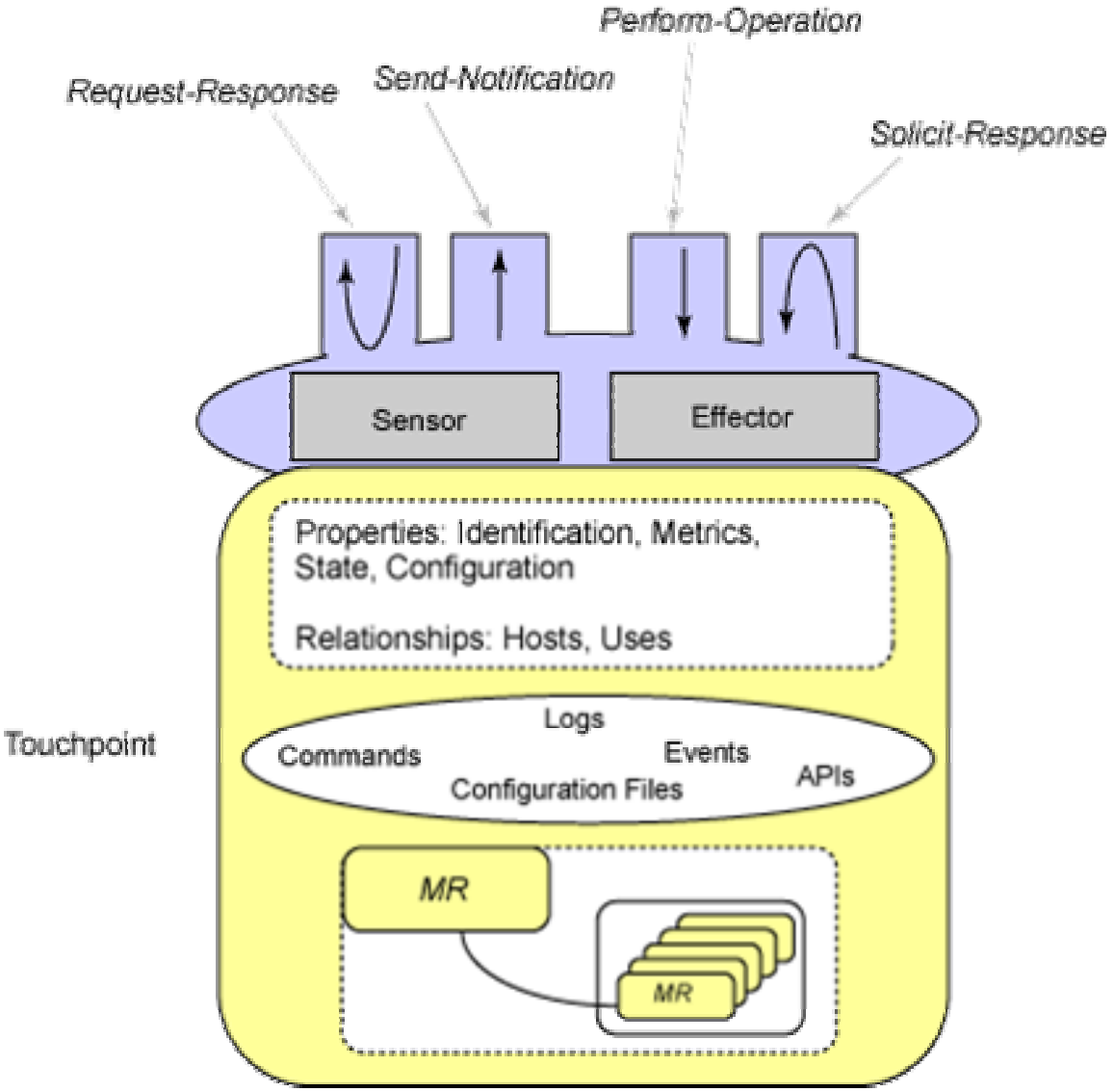
Touchpoints

- Consistent, standard manageability interface for accessing and controlling the managed resources
  - Implements sensor and effector behavior for one or more of a managed resources
  - Provides standard manageability interface

Touchpoint Architecture



Touchpoint Sensor & Effector Interface



Managed Resources

- System components that make up the IT infrastructure
- Any type of resources
  - Hardware, software
- May have embedded self-managing attributes
- Consistent, standard manageability interface for accessing and controlling

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Distributed Resource Information Management

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DMTF

Distributed Management Task Force

- Established in 1992
- Desktop Management Task Force → Distributed Management Task Force (1995)
- Industry organization leading the development of management standards and integration technology for enterprise and Internet environments
- a not-for-profit, vendor-neutral collaborative body
- http://www.dmtf.org/

Mission & Goals of DMTF

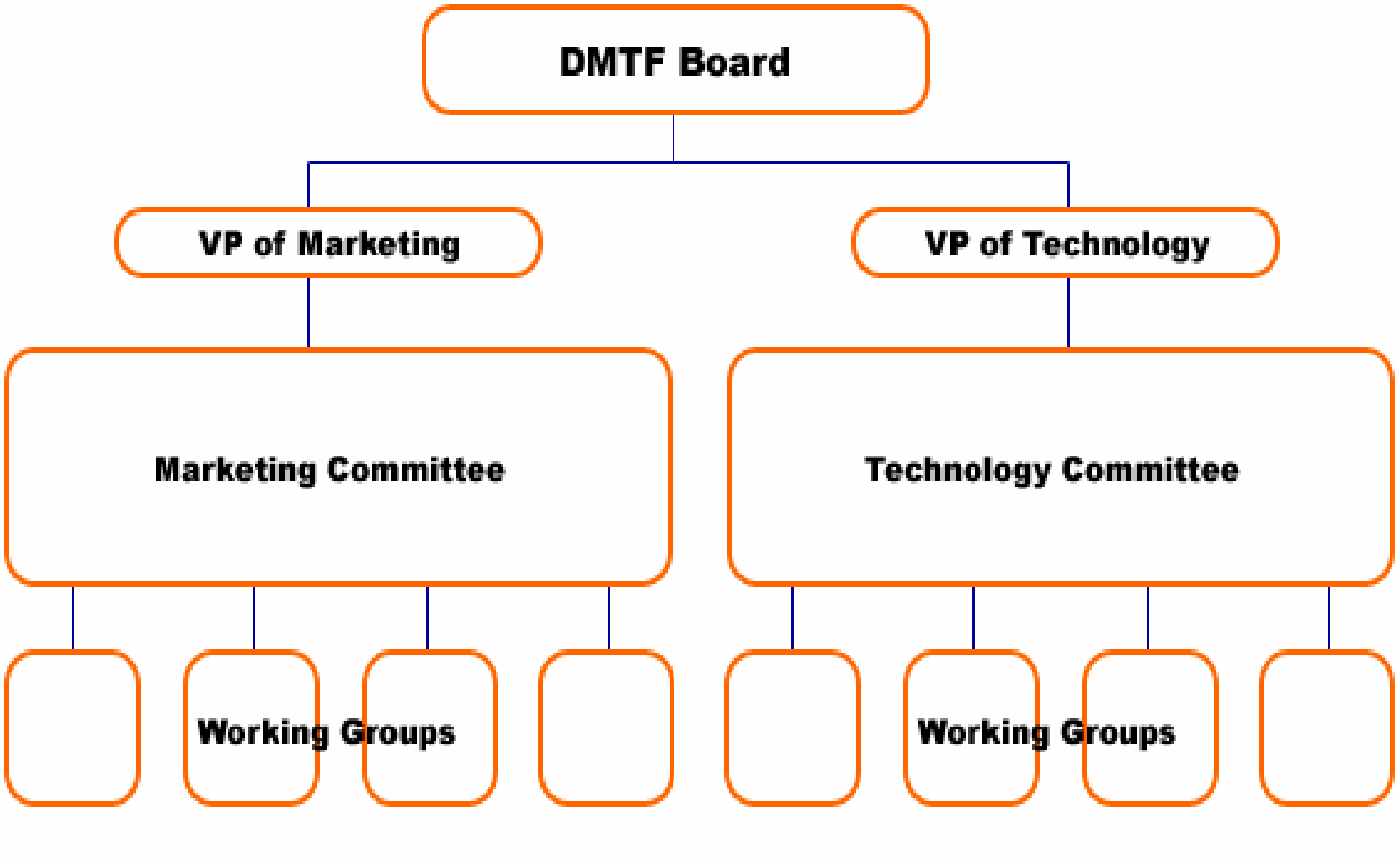
❑ Mission

- To lead the development of management standards for distributed desktop, network, enterprise and internet environments.

❑ Goals

- Accelerate adoption of management standards
- Unify industry management initiatives
- Promote interoperability among management solution providers

DMTF Organization



DMTF Organization

❑ DMTF Board

- ◆ The DMTF Board is responsible for the overall direction, strategy and activity of the DMTF, including managing DMTF finances, approving technical and marketing initiatives and leading DMTF committee work.

❑ Marketing Committee

- ◆ The Marketing Committee communicates with the industry, the public, and members about the activities of the organization. The working groups listed below are overseen by the Marketing Committee.
- ◆ Enterprise Management World 2005 (Sep.)
- ◆ Management Developer Conference 2005 (Dec.)

DMTF Organization – Technical Committee

- Technical Committee
  - develops standards and initiatives for the DMTF
  - responsible for coordinating all the technical activities of the DMTF including the Common Information Model (CIM), The Desktop Management Interface (DMI), the Directory Enabled networks (DEN) and the associated technologies required to deliver Web Based Enterprise Management (WBEM) to the industry
- Technical Committee Working Groups
  - Applications/Metrics WG, Architecture WG, Behavior and State WG,
  - CIM Core Schema WG, Database WG, DMI WG, Networks WG,
  - Policy WG, Pre-OS WG,
  - Security Protection and Management WG (User & Security WG)
  - Support WG, WBEM Infrastructure & Protocols (DEN/LDAP Mapping WG)
  - **Server Management WG (SMASH)**
  - **System Virtualization, Partitioning, and Clustering WG**
  - **Utility Computing WG**

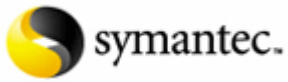
DMTF Organization – Interoperability Committee

❑ Interoperability Committee

- ◆ Supplements the resources of the DMTF such that multi-vendor implementations of our technology can be compatible in the industry
- ◆ Interoperability Committee
- ◆ CDM (Common Diagnostic Model) Forum
- ◆ SMASH (System Management Architecture for Server Hardware) Forum

DMTF Members

- Board Members of DMTF
  - Cisco, Dell, EMC,
  - HP, Hitachi,
  - IBM, Intel,
  - Microsoft Corporation,
  - Novell, Oracle
  - Sun Microsystems,
  - Symantec Corporation
  - WBEM Solutions

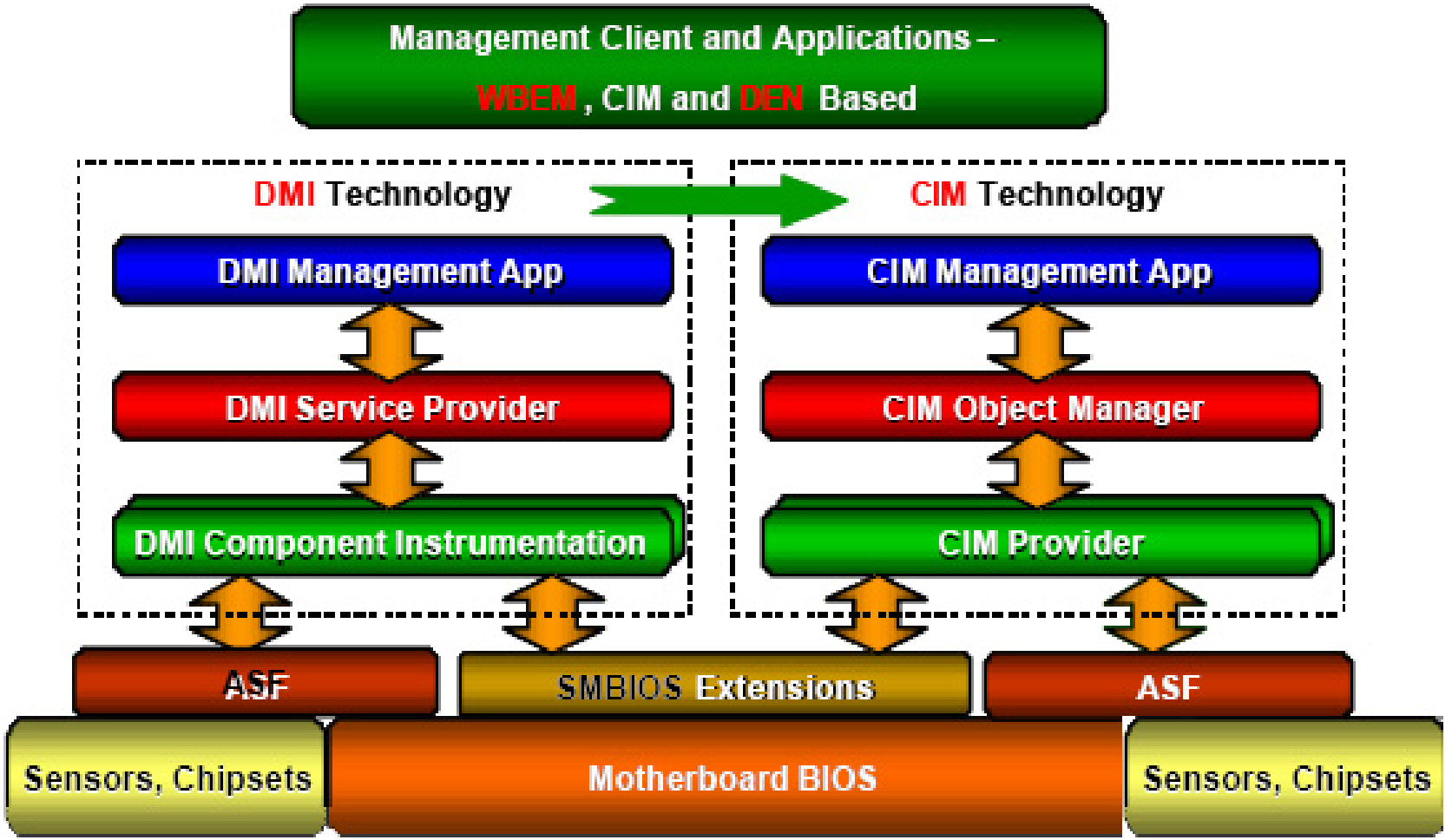


- ETRI is a Leadership member (since 2004)
  - Adaptec, Broadcom, CA, Fujitsu, Lenovo, Motorola, NEC, ...

DMTF Members

- Alliance Partners
  - Blade Systems Alliance, CompTIA,
  - Consortium for Service Innovation, Enterprise Grid Alliance
  - Federation Against Software Theft (FAST), Global Grid Forum (GGF)
  - Interoperability Technology Association for Information Processing, Japan
  - IT Service Management Forum (itSMF)
  - National Institute of Standards and Technology
  - Network Applications Consortium (NAC)
  - Northwest Energy Efficiency Alliance
  - Object Management Group (OMG)
  - Printer Working Group, Service Availability Forum (SA Forum)
  - Storage Networking Industry Association (SNIA)
  - TeleManagement Forum (TMF), The Open Group

Standards Relationship



CIM (Common Information Model)

- 비즈니스 컴퓨팅 및 네트워킹 환경을 기술하기 위한 개념적인 모델
- 플랫폼 독립적인 동시에 기술 중립적으로 관리 정보를 교환하기 위해 제정된 획기적인 표준
- 특정 영역에만 국한되지 않으며, 네트워크를 기반으로 클라이언트부터 서버에 이르는 종단간(end-to-end) 관리를 지향
- 데이터 재사용성 및 제품간 정보의 일관성
  - 관리 정보 및 서비스 의미체계에 대한 단일 모델을 정의하여 모든 요소를 이 모델의 의미체계에 매핑
- 모델 자체의 유연성 및 확장성
  - 사용자가 특정 관리 영역을 기술하기 위해 정보 모델을 추가 가능

CIM Schema

❑ 핵심모델 (Core model)

- ◆ 모든 관리 영역에 적용될 수 있는 모델

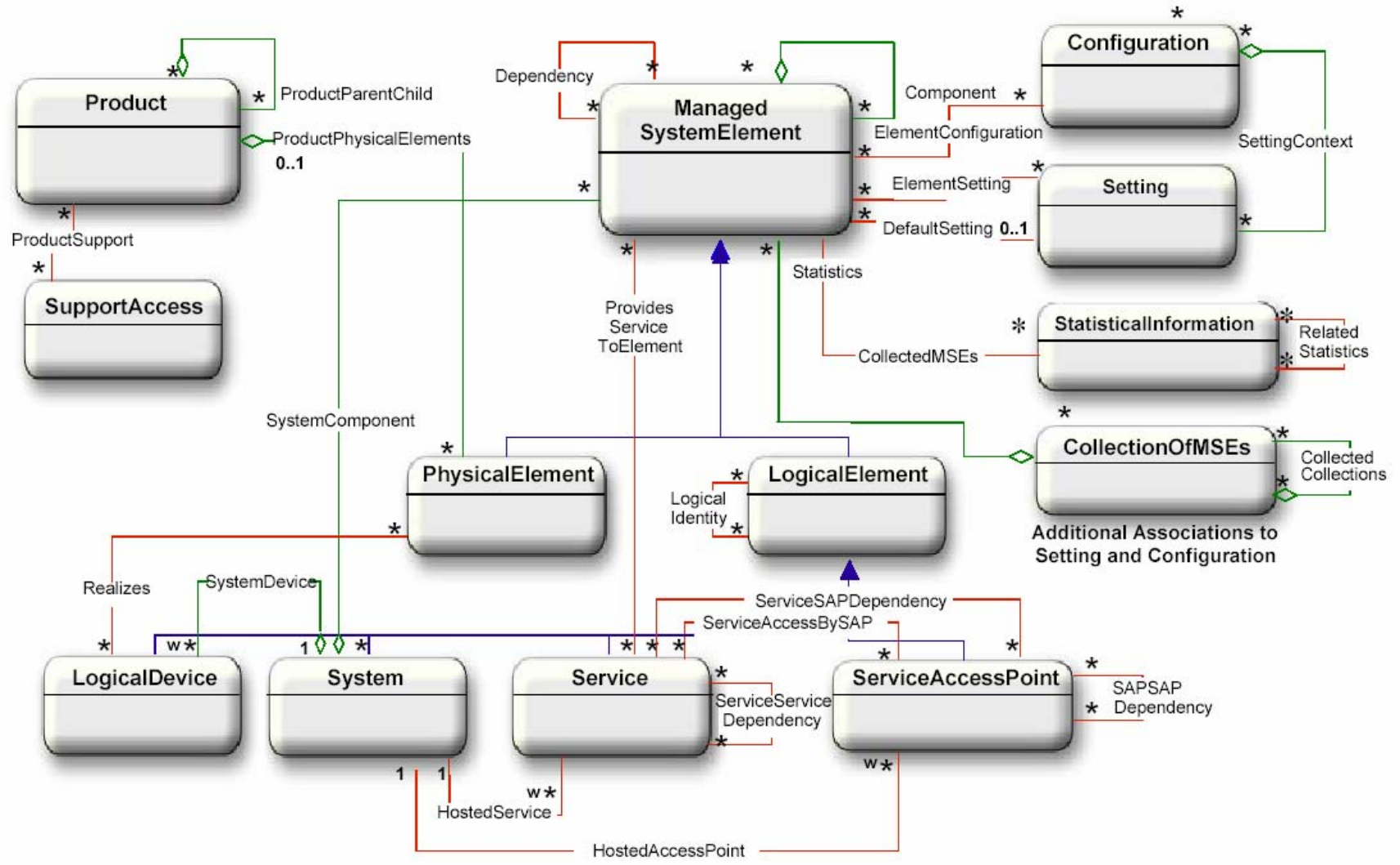
❑ 공통모델 (Common model)

- ◆ 관리를 필요로 하는 네트워크 수준부터 운영체제 및 응용 프로그램에 이르는 주요 기술 영역에 대해 공통적인 정보를 기술하고 있는 모델

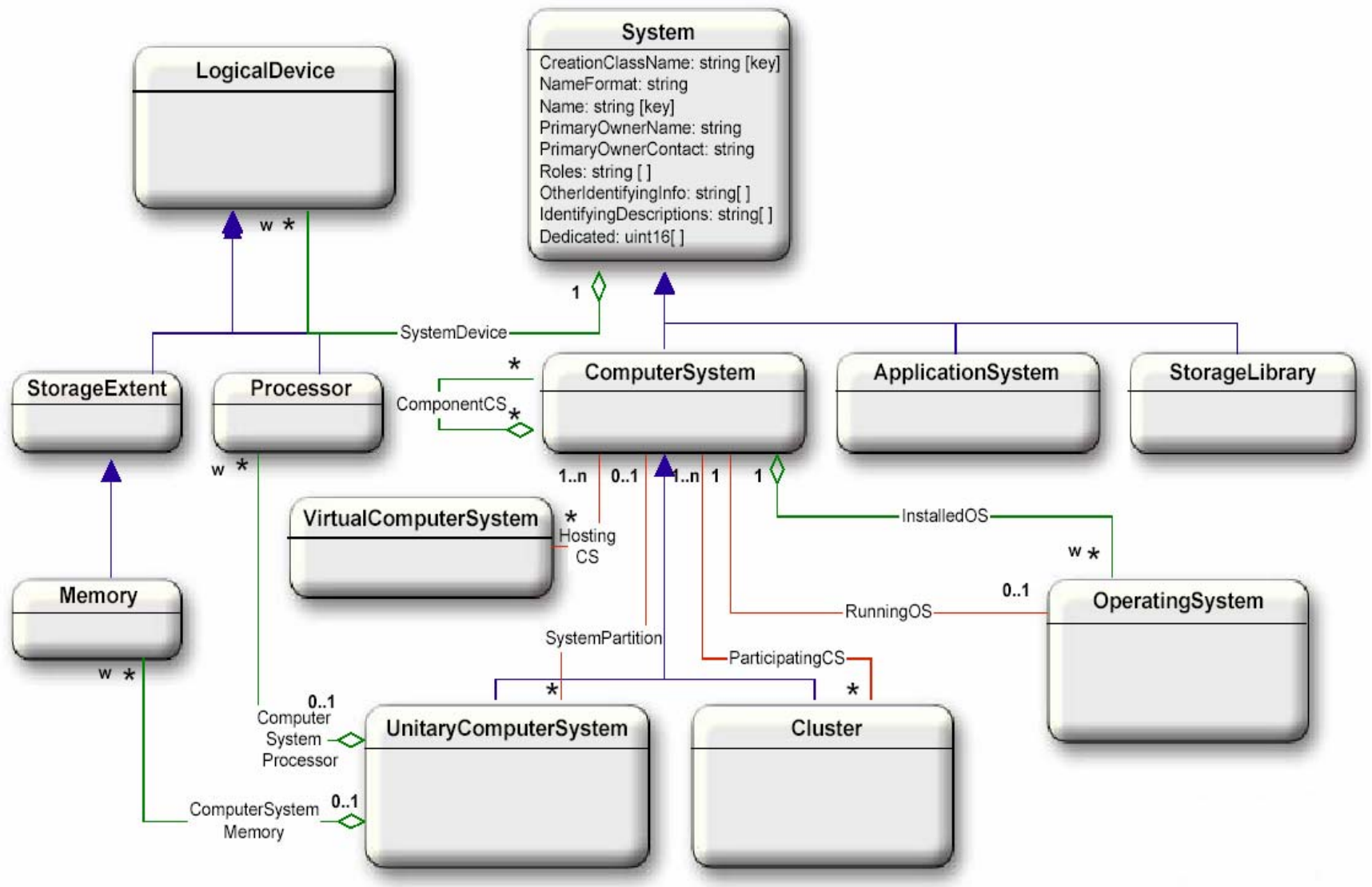
❑ 확장모델 (Extension model)

- ◆ 사용자의 요구에 따라 확장한 모델
- ◆ 기본적으로 핵심모델 또는 공통모델로부터 상속받는 것이 원칙
- ◆ 특정 기술에 국한된 사항은 독립적으로 정의 가능

CIM Core Model



CIM System Model



CIM Schema & Spec.

❑ CIM Schema

- ◆ v2.10.1, Oct. 3, 2005
  - ➢ More than 1,200 classes
- ◆ v2.9.1, Feb. 21, 2005, Preliminary
- ◆ v2.9.0, Jan. 5, 2005, Final
- ◆ v2.8.2, Oct. 19, 2004, Final

❑ CIM Infrastructure Spec.

- ◆ v2.3, Oct. 4, 2005, Final
- ◆ v2.2, Jun. 14, 1999, Final

WBEM

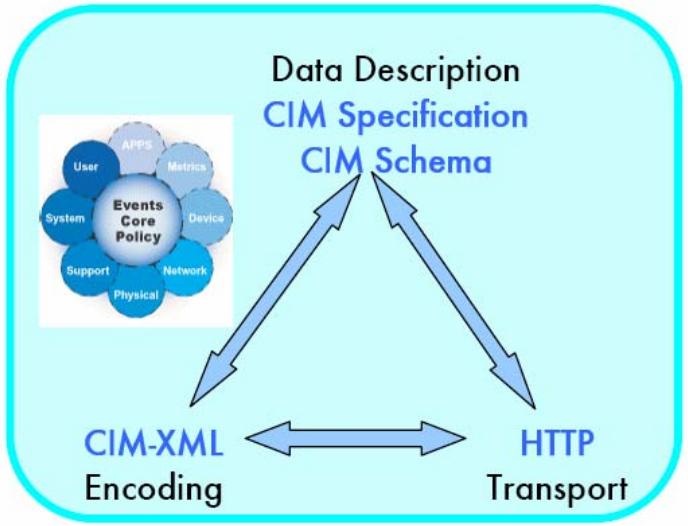
- Web-Based Enterprise Management
- **분산 네트워크 환경에서의 효율적인 시스템 관리를 위한 프레임워크**
- 1996년 7월 BMC Software, Cisco Systems, Compaq, Intel, Microsoft**를 주축으로 개발되기 시작**
- **전송 프로토콜로서 초기에는** HMMP (HyperMedia Management Protocol)**를 개발하다가 중단하고 대신** HTTP**를 사용하기로 결정**
- DMTF**의** CIM**을** WBEM**의 관리 정보를 표현하는 표준으로 선정**
- 1998년 6월, WBEM**의 탄생을 주도했던 기업들이** DMTF**의 이사회에 가입함으로써** DMTF**에서** WBEM**의 지속적인 개발을 추진**

WBEM

- Reduced Total Cost of Ownership by actually managing systems and devices with less man-hours as a result of interoperability
- Improved Time to Market (and possibly gain a competitive advantage) using standards based models
- Reduced Development Cost using and re-using existing standards models, no need to "re-invent the wheel" every time

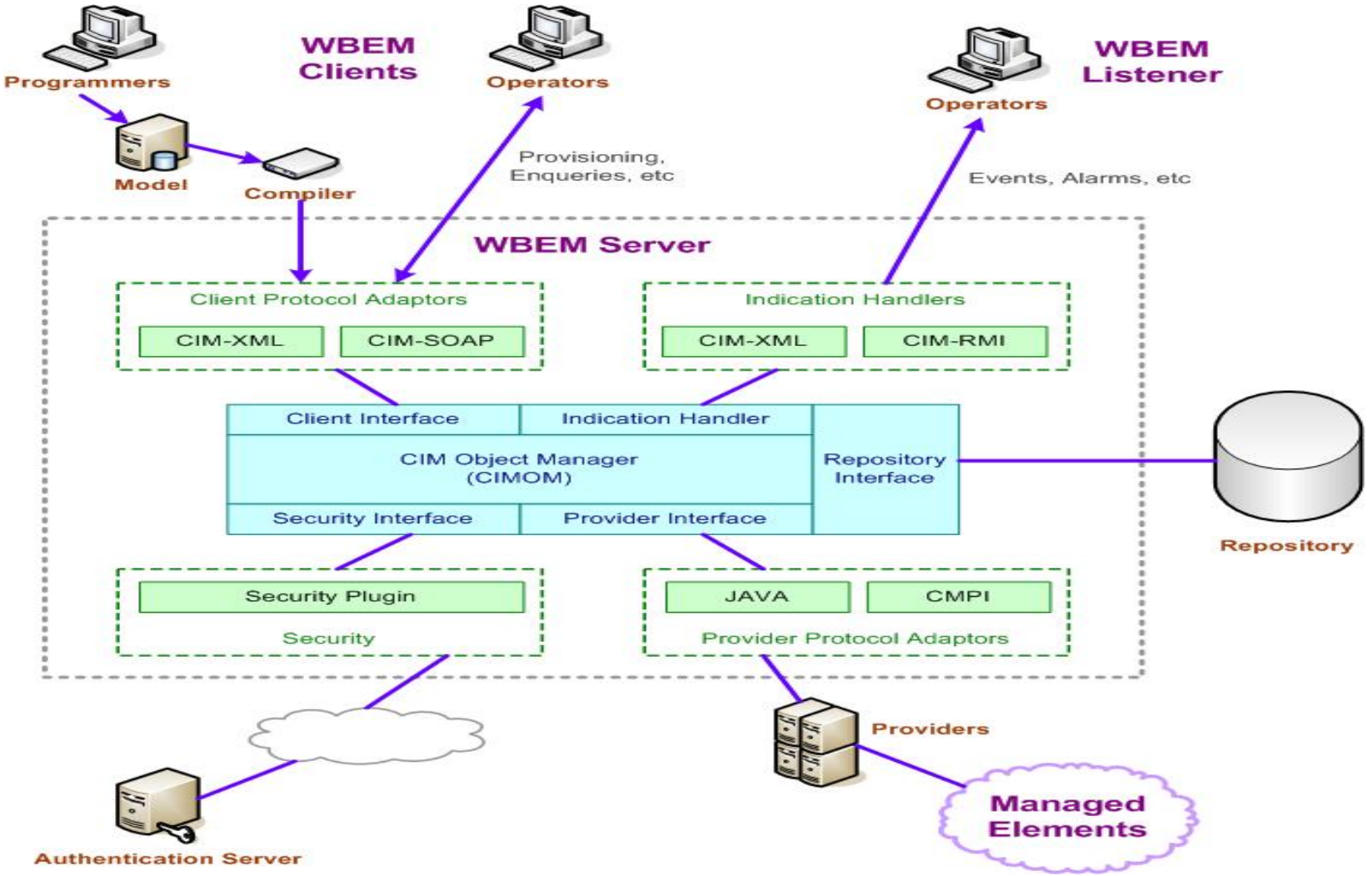
WBEM Architecture

- CIM
  - 관리 정보의 표현을 위한 데이터 모델
- CIM-XML
  - WBEM 프로토콜
  - XML Document Type Definition
  - Representation of CIM using XML
  - CIM Operations over HTTP



- WBEM Discovery using SLP and WBEM URI mapping
  - 응용 프로그램이 WBEM 시스템을 식별하고 서로 연동되기 위한 방법
- CIM Query Language
  - CIM 기반의 관리 환경으로부터 데이터를 추출하기 위한 방법

WBEM Architecture



출처 : *Chris Hobbs, A Practical Approach to WBEM/CIM Management, Auerbach Publications, 2004*

WBEM Implementations

	OpenPegasus	OpenWBEM	WBEMServices	WMI	SNIA's CIMOM
License	MIT Open Source License	BSD Style License	SUN Industry Standards Source License	Microsoft	The SNIA Public License
개발자	The Open Group	Caldera International, Inc.	SUN Microsystems	Microsoft & EMC	SNIA
언어	C++	C++	JAVA	N/A	JAVA
운영체제	LINUX, Solaris, AIX, HPUX, Windows NT/2000/XP	LINUX, Solaris, FreeBSD, Mac OS, X/Darwin	ANY	Windows 98/NT/2000/XP	ANY

SMASH – Server Management WG

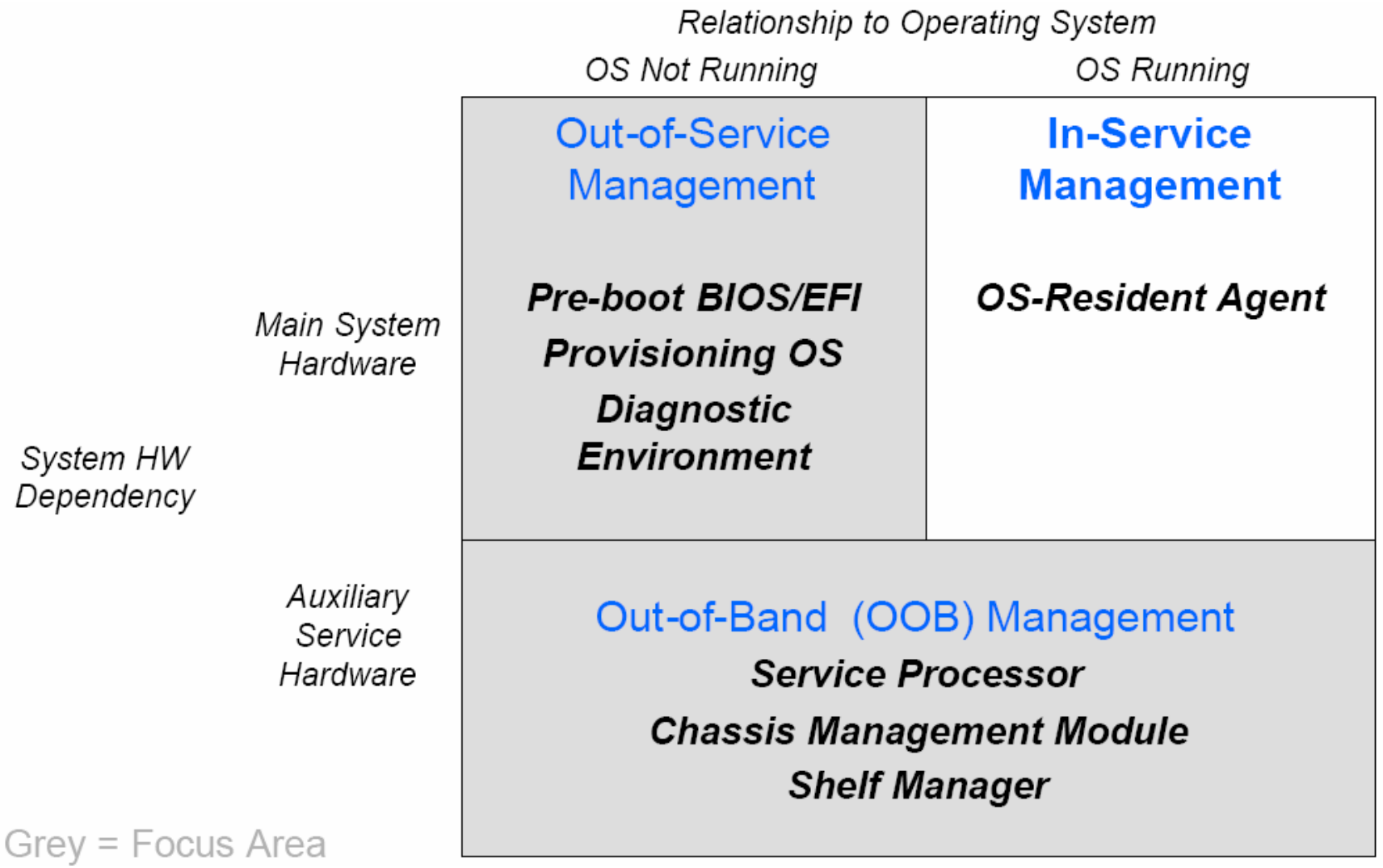
❑ 개요

- ◆ System Management Architecture for Server Hardware
- ◆ 데이터 센터의 관리를 통합하기 위하여 구조적인 의미 체계와 산업 표준 프로토콜 및 프로파일을 제공하는 일련의 규격

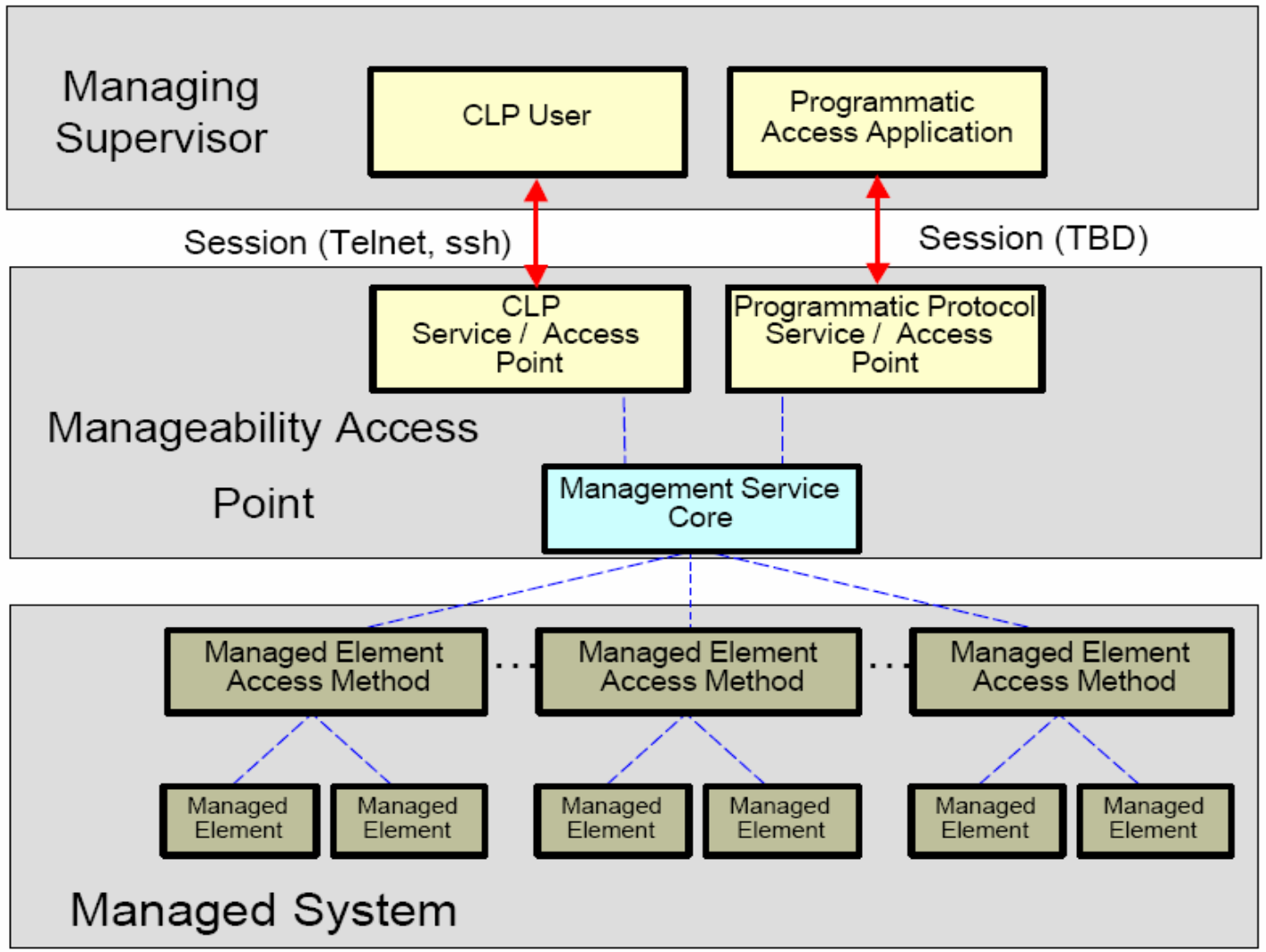
❑ 구성

- ◆ Server Management (SM) Command Line Protocol (CLP) Specification
  - ➢ 장비 상태, 운영체제의 상태, 서버 시스템의 토폴로지 또는 액세스 방법에 상관없이 데이터 센터의 이기종 서버를 단순하면서도 직관적으로 관리할 수 있도록 지원
  - ➢ Out-of-Service 및 Out-of-Band 관리 환경에서 서버 하드웨어의 로컬 또는 원격 관리를 용이하게 함
- ◆ SM Managed Element Addressing Specification
- ◆ SM CLP-to-CIM Mapping Specification
- ◆ SM CLP Discovery Specification
- ◆ Server Management Profiles

Server Management Focus Environments



SMASH Architectural Model



출처 : J. Hilland and J. Lynch, "Server Management Overview", EMW2004, 2004.

IT R&D Global Leader
ETRI

ETRI's r&D Activities

ETRI 한국전자통신연구원
Electronics and Telecommunications Research Institute

Development Activities

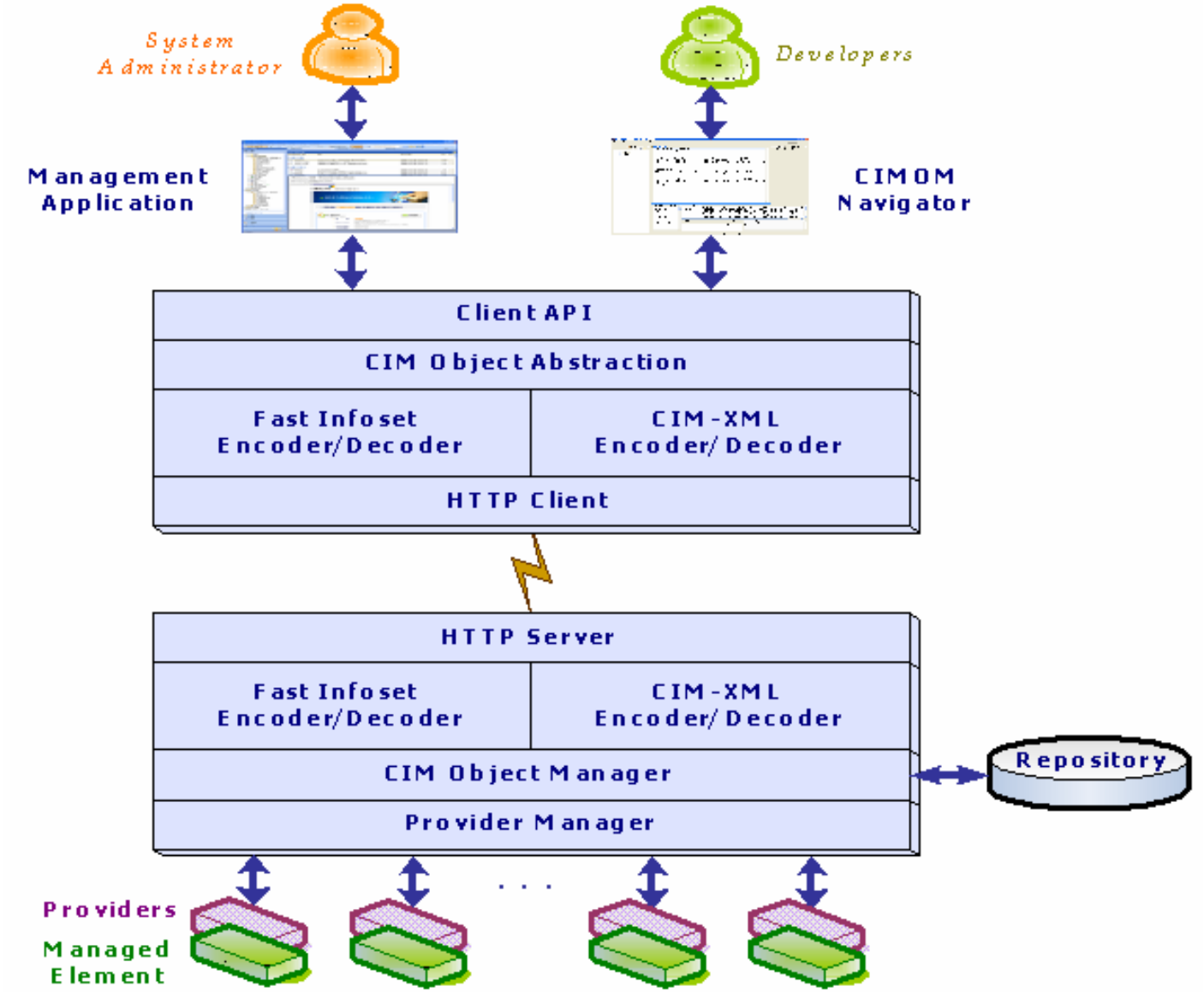
- ETRI
  - "차세대 인터넷 서버 기술 개발 과제" 내 세부 실행과제로 추진
  - 2004 ~ 2006

- MATRIx is…
  - **M**ATRIx's **A**dvanced **T**echnologies of **R**esource **I**nformation
  - {e**X**traction, *e**X**change*, e**X**ploration, e**X**ploitation}

Development Activities

- CIM/WBEM based System Management Framework (MATRIx)
  - CIM-Server CIMOM Module
  - CIM-Server Repository Module
  - CIM-Server Client Module
  - Binary XML (Fast Infoset) Message Encoding/Decoding Module
  - Management Application
- Provider Package for Linux Platform
  - SBLIM-based Provider Package
  - Booyo, Fedora Core 3, Suse (Limited) Supports
- Development Environment
  - Provider Code Generator
  - CIM Navigator
  - CIM Operation Test Suite (Time & Space Complexity)
- SMASH In-Band Solution
  - CLP Module
  - MAP Provider Module

CIM/WBEM based System Management Framework



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Standardization Activities

ETRI 한국전자통신연구원
Electronics and Telecommunications Research Institute

국내 표준화 활동

❑ 제 52차 TTA 운영위원회에서 신설 의결 (2005.10.21)

- ◆ 한국정보통신기술협회 (TTA)
- ◆ IT응용기술위원회 (TC4) → 분산자원정보관리 (PG414)
- ◆ http://www.tta.or.kr/

❑ 분산자원정보관리 프로젝트 그룹

- ◆ 제안자: 한국전자통신연구원 디지털홈연구단 인터넷서버그룹
- ◆ DRIM (Distributed Resource Information Management)

Project Group 개요 – 활동영역

- 이기종 플랫폼간 시스템 관리 정보 교환을 위한 공통정보모델 표준 개발
- 웹기반 분산시스템 자원 정보 관리 기술 표준 개발
- 운영체제 부재상황에 대한 시스템 관리 표준 개발
- 이기종 서버 관리를 위한 표준 개발
- 유비쿼터스 컴퓨팅 환경을 위한 시스템 관리 표준 개발

제안 PG의 개요 - 신설 필요성

- 네트워크로 연결되어 있는 다양한 이기종 기기를 기반으로 서비스가 제공되는 유비쿼터스 서비스 환경에서는 **분산 시스템 자원에 대한 표준화된 감시, 통제, 조정 기능이 필요함**
- 다양한 이기종 기기로 이루어진 분산 시스템 환경에서 서비스를 중심으로 end-to-end 관리를 실현하기 위해서는, **정보모델 및 시스템관리 프레임워크의 정립 및 표준화가 필수적임**
- 분산 시스템 자원을 대상으로 한 **시스템관리 프레임워크의 개발 및 표준화가 DMTF를 중심으로 진행**되고 있으며, 그 결과물이 GGF, SNIA, TMF, Open Group 등 관련 분야 표준화 단체 및 컴퓨터, 통신, 전력 등과 같은 **관련 산업으로 확산**되고 있음
- DMTF는 IT 선도 기업들이 참여하여 표준화를 주도하고 있는 반면 **국내 기업이나 기관의 참여가 미미하고, 국내에서의 관련 표준화 활동이 전무**하므로 DMTF 표준(안)의 분석 및 국내 표준화를 통해 산업계에 전파할 필요성이 대두됨
- 방대한 DMTF의 표준화 활동에 대응하고, IT 산업에서 향후 새롭게 등장하는 유틸리티 컴퓨팅 및 유비쿼터스 서비스 환경에 대비하기 위해서는 **별도의 전문화된 위원회(PG)가 필요함**

국내 표준화 활동

❑ 필요성

- ◆ 네트워크로 연결되어 있는 다양한 이기종 기기를 기반으로 서비스가 제공되는 유비쿼터스 서비스 환경에서는 분산 시스템 자원에 대한 표준화된 감시, 통제, 조정 기능이 필요함
- ◆ 다양한 이기종 기기로 이루어진 분산 시스템 환경에서 서비스를 중심으로 end-to-end 관리를 실현하기 위해서는, 정보모델 및 시스템관리 프레임워크의 정립 및 표준화가 필수적임
- ◆ 분산 시스템 자원을 대상으로 한 시스템관리 프레임워크의 개발 및 표준화가 DMTF를 중심으로 진행되고 있으며, 그 결과물이 GGF, SNIA, TMF, Open Group 등 관련 분야 표준화 단체 및 컴퓨터, 통신, 전력 등과 같은 관련 산업으로 확산되고 있음
- ◆ DMTF는 IT 선도 기업들이 참여하여 표준화를 주도하고 있는 반면 국내 기업이나 기관의 참여가 미미하고, 국내에서의 관련 표준화 활동이 전무하므로 DMTF 표준(안)의 분석 및 국내 표준화를 통해 산업계에 전파할 필요성이 대두됨
- ◆ 방대한 DMTF의 표준화 활동에 대응하고, IT 산업에서 향후 새롭게 등장하는 유틸리티 컴퓨팅 및 유비쿼터스 서비스 환경에 대비하기 위해서는 별도의 전문화된 위원회(PG)가 필요함

위원회 추진 계획

❑ 총 추진기간

- ◆ 2005. 10. 1. ~ 2007. 12. 31.

❑ 1단계

- ◆ 기간 : 2005. 10. 1. ~ 2006. 12. 31.
- ◆ 주요 활동
  - ➢ 신설 PG의 구성
  - ➢ 표준화 추진 과제 중 5개의 표준 규격 개발
  - ➢ 2단계 추진 과제 추가 선정

❑ 2단계

- ◆ 기간 : 2007. 1. 1. ~ 2007. 12. 31.
- ◆ 주요 활동
  - ➢ 표준화 추진 과제 중 1개의 표준 규격 개발
  - ➢ 1단계에서 추가된 표준 규격 개발
  - ➢ 국제 표준화 활동 적극 참여
  - ➢ 위원회 지속 여부 결정

표준화 추진 과제

No.	국문 과제명	영문 과제명	관련 국제표준	국제표준 준용	언어	일정계획
1	공통정보모델 기반구조 규격	Common Information Model Infrastructure Specification	CIM Specification v. 2.2.2	준용 100%	국문	05.10. ~ 06.12.
2	공통정보모델 스키마	Common Information Model Schema	CIM Schema v. 2.9.0	준용 100%	국문	05.10. ~ 06.12.
3	웹기반 공통정보모델 운용 규약	CIM Operations over HTTP	CIM Operations over HTTP v.1.1	준용 100%	국문	05.10. ~ 06.12.
4	공통정보모델의 XML 표현	Representation of CIM in XML	Representation of CIM in XML v. 2.1	준용 100%	국문	05.10. ~ 06.12.
5	XML 문서형 정의	XML Document Type Definition	XML DTD v.2.1.1	준용 100%	국문	05.10. ~ 06.12.
6	서버관리 명령행 통신규약 규격	Server Management Command Line Protocol Specification	SM CLP Specification v.1.0	준용 100%	국문	06. 7. ~ 07.12.

관련 위원회 (1/3)

❑공공정보 프로젝트 그룹 (PG405)

◆활동 영역

- ➢공공정보화 프로세스의 표준 개발
- ➢정보화 응용시스템, 유지보수, 운영표준 개발
- ➢응용서비스 프로파일, 서비스 정의 및 관련 표준 개발
- ➢인터넷 응용, 일반, 운용, 사용자 서비스 표준 개발
- ➢Open Group 표준화 동향연구 및 개방형플랫폼 관련 표준 개발

◆과제

- ➢정보시스템 운영 아웃소싱 관리 지침
- ➢서비스데스크 운영관리 지침
- ➢…

관련 위원회 (2/3)

❑ 메타데이터 프로젝트 그룹 (PG406)

◆ 활동 영역

- ➢ 공유가 필요한 각종 정보의 메타데이터 표준
  (GIS,ITS,CAD등의 특수 분야는 제외)
- ➢ 디지털 콘텐츠의 식별 및 저작권 관리/보호 관련 표준
- ➢ 정보 시스템간 데이터 및 정보 교환 표준
- ➢ 로컬 또는 분산 정보시스템 환경에서 데이터 관리 표준

◆ 과제

- ➢ DRM 시스템과 이미지 핑거프린팅 시스템 인터페이스
- ➢ 메타데이터 관리를 위한 온톨로지
- ➢ 건설교통기술분야 연구성과정보 메타데이터의 구성요소
- ➢ …

관련 위원회 (3/3)

❑그리드 프로젝트 그룹 (PG411)

◆활동 영역

- ➢그리드 관련 표준화 동향 파악 및 국내 표준 개발
- ➢그리드 기반 응용 기술 개발 및 관련 정보 수집

◆과제

- ➢그리드 상에서의 데이타 억세스와 처리를 위한 서비스
- ➢그리드 하부구조의 네트워킹 이슈
- ➢개방형 그리드 하부구조 명세
- ➢그리드 인증을 위한 CA 기반의 신뢰 문제 및 신원 위임
- ➢그리드 서비스를 위한 네트워크 성능 인자의 계층화
- ➢…

DRIM PG


TTA 한국정보통신기술협회
Telecommunications Technology Association
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표준화 위원회
시험인증 서비스
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GO
표준제개정현황 | IT표준화전략포럼 | IT국제표준화전문가 | ITU-T 연구 위원회 | 표준화 행사 | 표준화 관련 규정
표준화위원회 | Committee
표준총회 (TA)
운영위원회 (CC)
전략계획위원회(SPC.)
기술위원회
공통기반 기술위원회(TC1)
전송통신 기술위원회(TC2)
전파방송 기술위원회(TC3)
IT 응용 기술위원회(TC4)
과제 제안
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표준화위원회 행사
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My Committee
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분산자원정보관리 프로젝트 그룹 (PG414)
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해당 위원회에 등록된 의장단이 없습니다.
사무국 담당자
직책
성명
전화번호
E-mail
과장
오구영
031-724-0081
dangel@tta.or.kr
팀장
김선
031-724-0080
skim@tta.or.kr
활동영역
- 이기종 플랫폼간 시스템 관리 정보 교환을 위한 공통정보모델 표준 개발
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Q & A

Question & Answer