

SOA model for OSS

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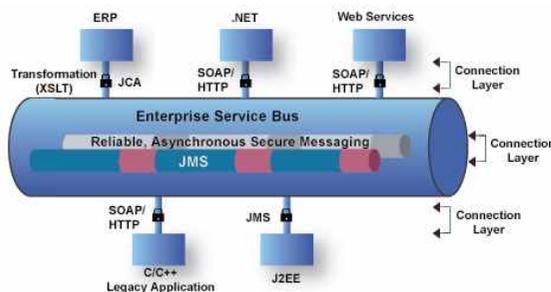
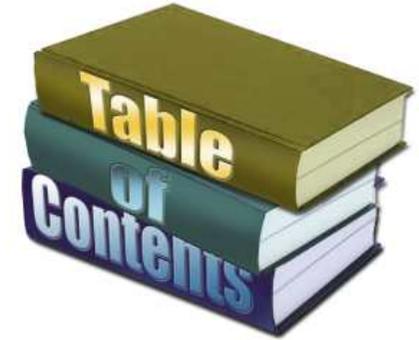




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Alphabet soup!

F/OSS : Free and Open Source Software

SOA : Service Oriented Architecture

ESB :Enterprise Service Bus

LAMP : Linux,Apache,MySQL,PHP/Python/Perl

NIPA : (Korean) National IT Industry Promotion Agency

NITP : Mongolian National IT Park

CMMI : Capability Maturity Model Integration





What is OSS?

FOSS(Free and Open Source Software)

Source code is available to public.

NO license, copyright or patent claim

“Free software movement” 1983-1998

Best known is GPL(GNU Public License)
movement.

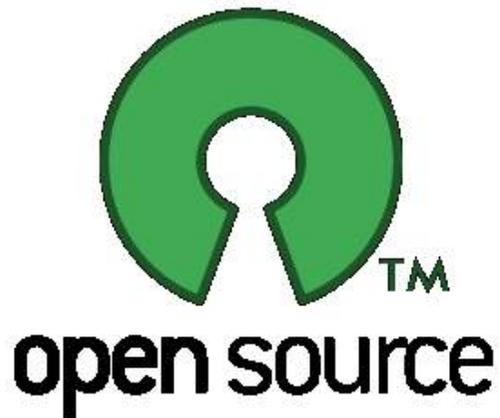
Over 300,000 OSS products





OSS/FS

- Open Source Software/ Free Software
- Defined by OSI and FSF.
- Most accurate name :
 - Free and Open Source Software (FOSS)





Certification Efforts

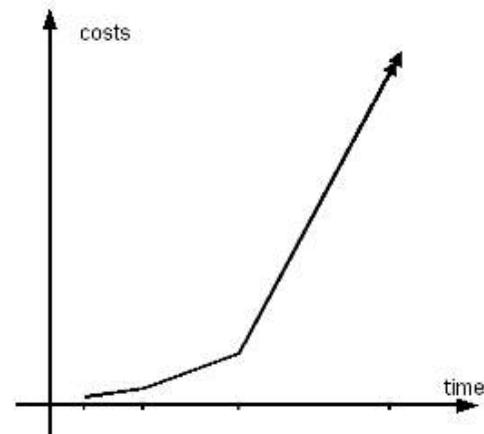
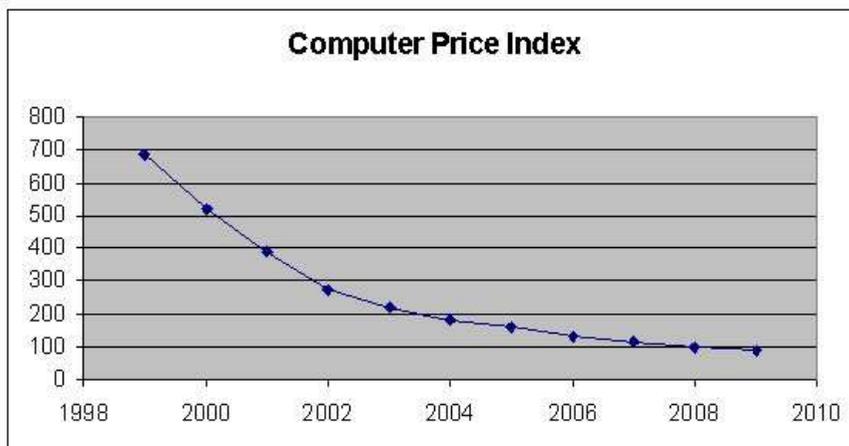
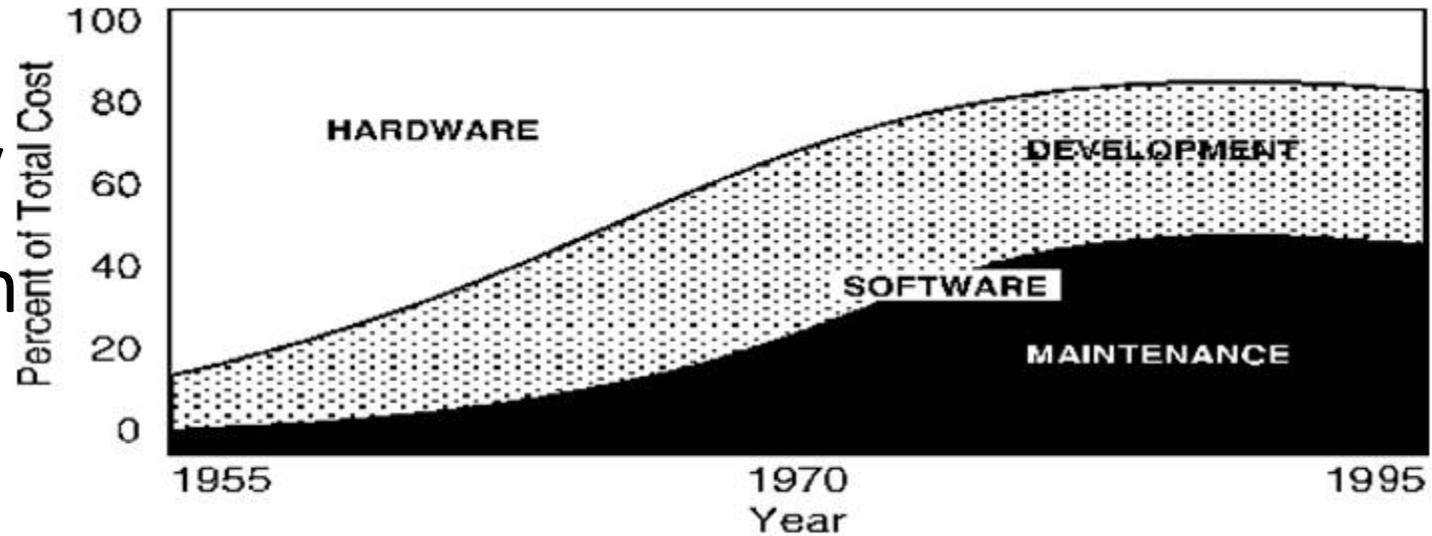
- OSI, FSF certification
- GNU LGPL (Lesser General Public License)
= GNU Library General Public License
- Apache, GPL, LGPL, BSD, X, EPL
- UN University – International Institute of Software Technology <http://iist.unu.edu/>
- ICT-Innovation – Foss certification forum
<http://www.ict-innovation.fossfa.net>





Software problem

- Price
- Quality
- Deadlin
- Piracy





NIPA Server Utilization Plan

1. OSS/FS Education and research
2. Replace current campus web server and mail server
3. Training host for computer network server training
4. Migration to legal software





Backbone OSS

1. OS – Linux
2. Programming Language – Java(-SE,-ME,-EE)
3. Learning tool - MOODLE





Linux

- PC version of Unix.
- Created by Linus Torvalds of Finland as a student.
- Very popular and used everywhere.
- Many distributions –Red Hat, Fedora, Gentu, Ubuntu. This is most popular
- Core of LAMP – Linux, Apache, MySQL, PHP/Python





Java

- Good programming language
- Many versions
 - Enterprise Edition (J2EE)
 - Standard Edition (J2SE)
 - Micro Edition (J2ME)





Moodle

- Very popular e-learning software
- CME (Computer Managed Education) tool
- Moodle - Modular Object-Oriented Dynamic Learning Environment
- Created by Martin Dougiamas
- 72,177 registered sites, 5.8 million courses
- Over 37 million users enrolled
- Access from www.moodle.org site





- › Overview
- › Moodle Introduction
- › Adding Resources
- › Assignments
- › Discussion Forums
- › Quizzes
- › Gradebook
- › Collaborative Activities and Blocks
- › Copying a Course Site
- › FAQs
- › Tutorial Index



OVERVIEW

Moodle Web Tutorial

Moodle is a learning management system developed by educators for educators and offers many channels for differentiated learning activities. Faculty can upload documents, assignment instructions, links to web sites and media. In this secure, password protected environment, learning can be extended beyond the limitations of a traditional classroom setting through chat sessions, discussions, collaboration spaces, quizzes, surveys and more.



About Moodle	Faculty Support
--------------	-----------------

- › Moodle Features
- › How to Access Moodle
- › Moodle Demo Courses
(username: audemo
password: audemo)
- › FAQs

- › Moodle Feedback
- › One-on-One Support
- › Workshop Schedule
- › Student Moodle Site





Plans for Moodle

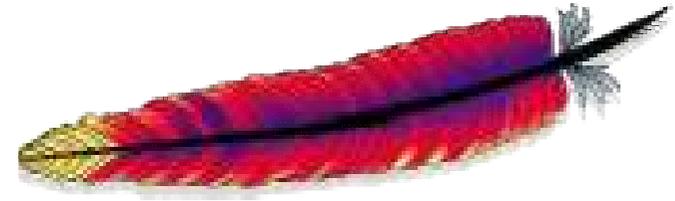
1. Training Moodle tool to many Universities and high school faculties and students
2. Main tool for Cyber university – professors from US and Korea using internet.
3. Research and course training for medical professionals.





LAMP – Web server SW Bundle

- Linux : OS
- WAMP, MAMP, SAMP, iAMP,
- Apache : HTTP server
- MySQL : DBMS
- PHP : Web-page programming language (Server-side)
 - Python : alternate to PHP
 - Perl : alternate to PHP



Other OS bundle : MAMP, WAMP, iAMP, SAMP





Ooo(Open Office.org)

Work schedule 2011-2012 (English).docx - OpenOffice.org Writer

파일(F) 편집(E) 보기(V) 삽입(I) 서식(O) 표(A) 도구(T) 창(W) 도움말(H)

표준 Batang 12 가 가 가

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Approved by a president of Huree ICT, Prof, Chung Soon Hoon
Work plan of Year 2011-2012 of Huree ICT

One. School administrative, organization, and providing teachers and improving them

No	Work to implement	Period	Respondent	Expected result	Real result
1.1	Process a calendar plan of school operation of year 2011-2012 and prepare it	September 1	Academic affair	Plan a annual procedure of Academic affair job	
1.2	Prepare the necessary number of study, student guide and teacher registration books respectively for the semester opening of year 2011-2012	September	Vice president in charge of training and research, Academic affair	School operation will be done according to the regulation	
1.3	Assign a head of faculties, departments, and divisions	September 15	President Chung Sung Hung	Clarify departments that are responsible for faculty and majors	
1.4	Summarize works that all divisions and departments have done in 2010-2011, describe a school year of 2011-			Have all school members	

페이지 1 / 19 표준 몽골어 삽입 표준

시작 Work schedule 20... KO A 漢 100% 오전 11:07





Other major OSS implemented

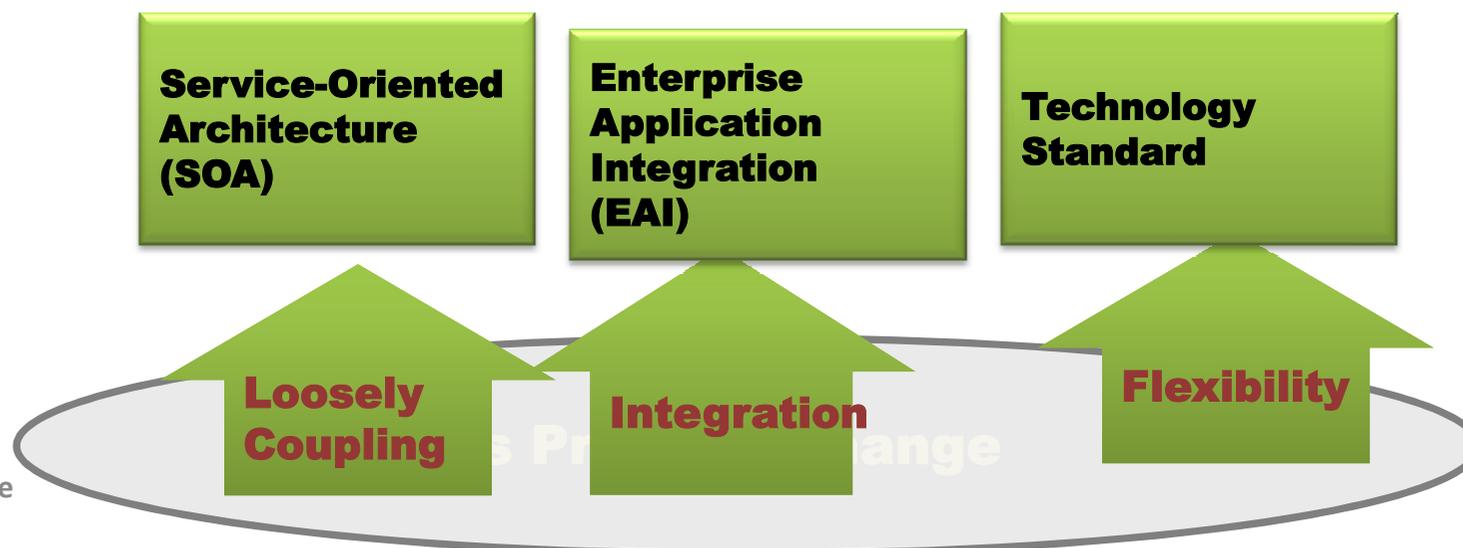
- BioInformatics –UGENE,GENTle,GenGIS,EMBOSS
- Statistics – DAP, PSPP, SOFA stat,
- Mathematics - Metamath, jmathlab, Sage
- DBMS – oooBase, Postgres, OrientDB, MongoDB
- AI – OpenCV, ROS, Orange, Weka
- CASE tools
 - OpenProj, jUnit, Bugzilla, Bison, Autoconfig, StarUML
- CAD –FreeCAD, RealCAD, BRL-CAD





Environment - Enterprise IT

- Integration of heterogeneous systems due to Enterprise Applications Integration (EAI)
- Loosely coupled applications / systems due to Service-Oriented Architecture (SOA)
- Flexible and diversified systems due to Standardized Technology





EAI(Enterprise Application Integration)

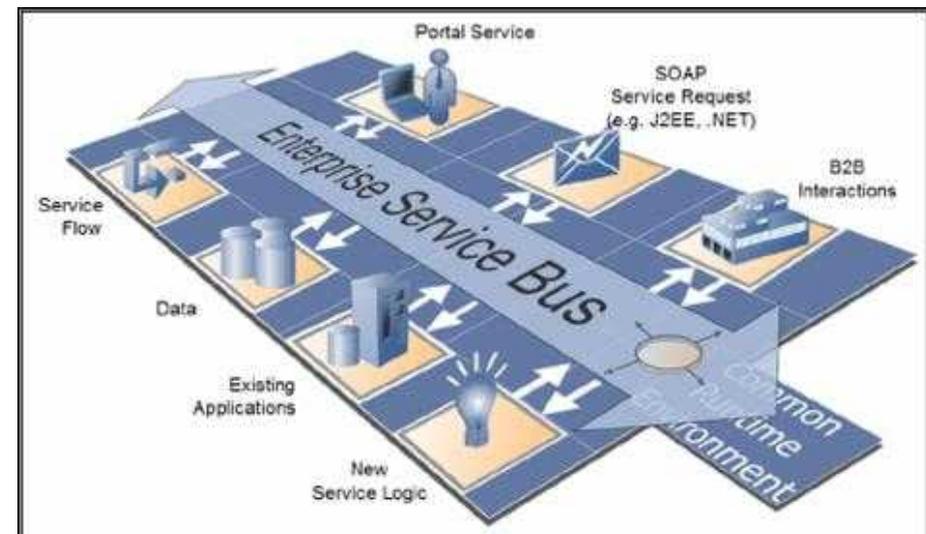
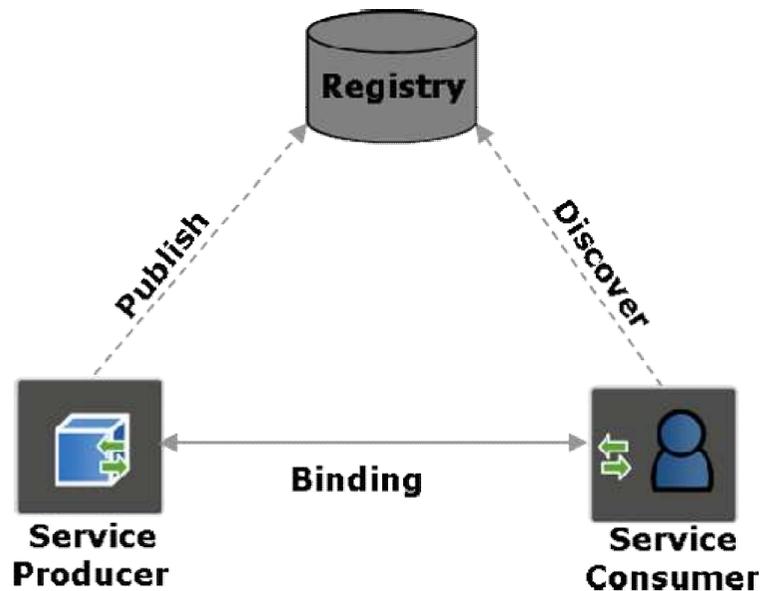
- Multiple software components to perform a tasks
- Need interconnect these components
- Client-server model
- Typically, they are tightly coupled.
- Expansion without control

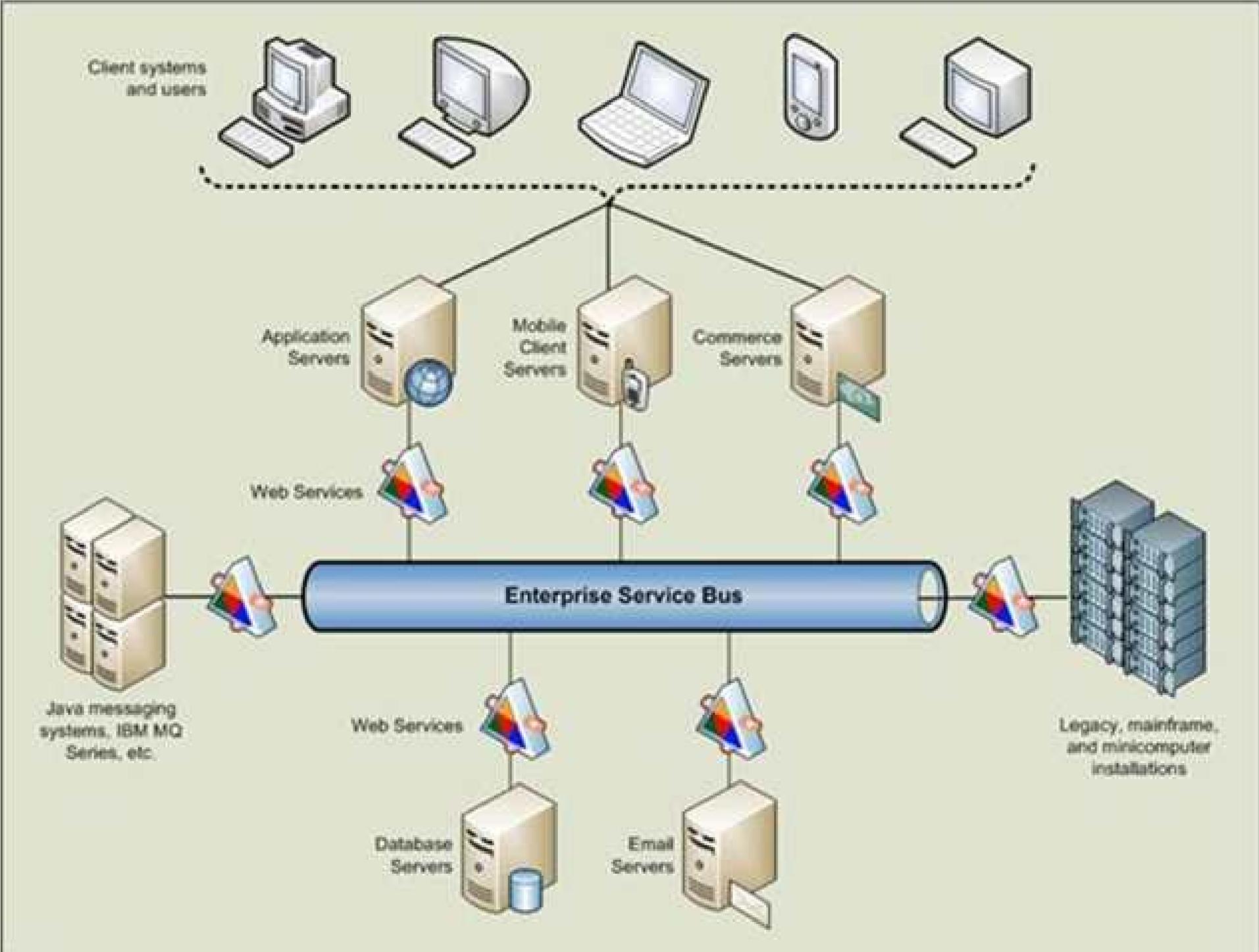




SOA/ESB

- SOA : a paradigm for organizing and utilizing distributed capabilities -Loosely coupled components and coordinate via orchestration
- ESB : Infrastructure enabling SOA implementation







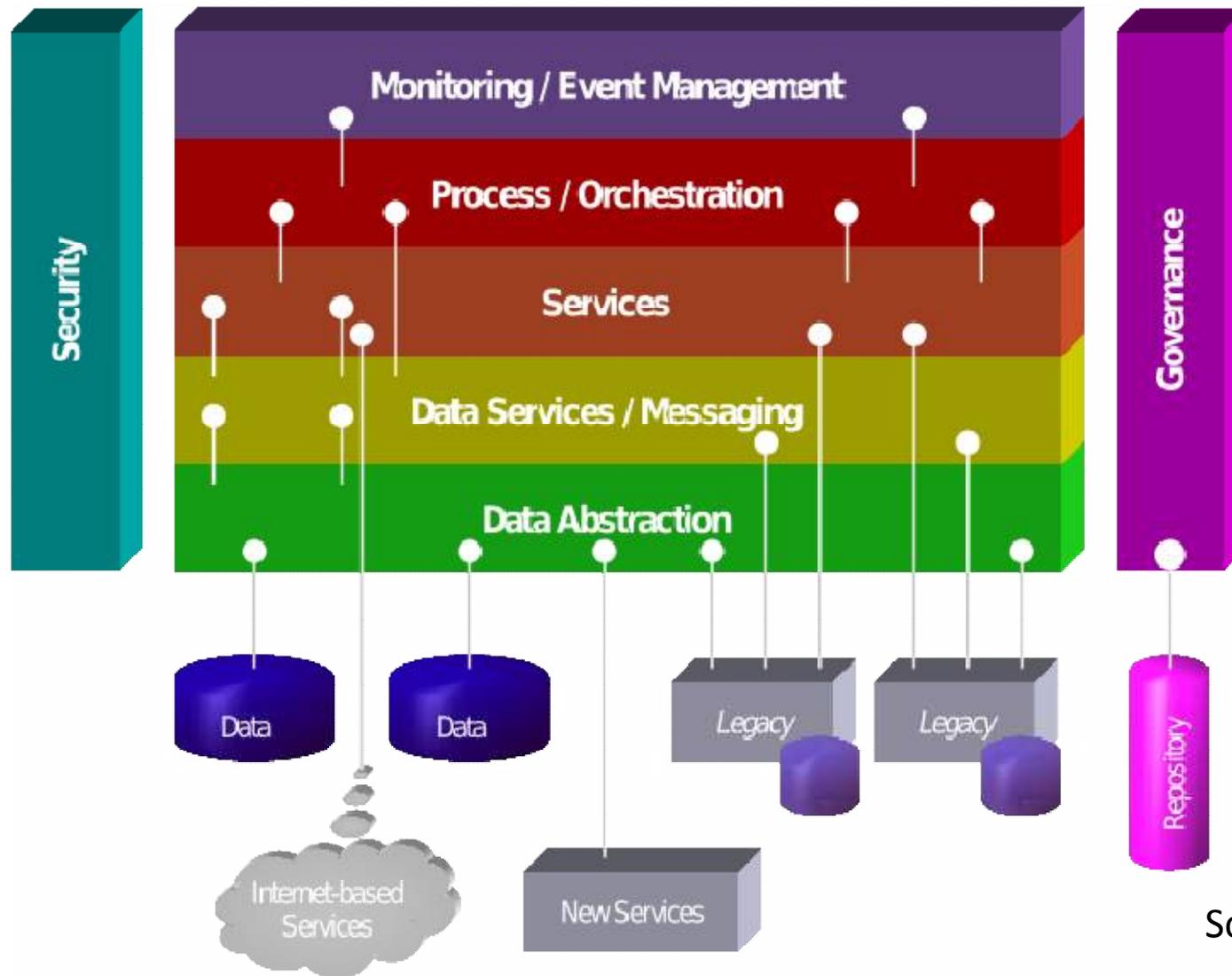
SOA Requirements

- Must be a logical representation of a given business activity with specific outcome
 - Bank transaction
 - Traffic monitoring
 - Mining operation report
 - Student record handling
- Must be self-contained (i.e. complete)
- May be composed of other services
- Is a "black box" to consumers of the service





SOA Meta model



Source : Wiki





SOA Components

- Web Services - A service that is called in a standard way, so anyone can use it without knowing its internals
- Enterprise Service Bus - A way for services to communicate with each other
- Orchestration - A means for plugging services together (XML)
- Services Management - Manage and Secure SOA, via WS-Security & Identity Management (IdM)





Open SOA software

jBoss : Java-EE based SOA Enterprise software

- Implemented in jBoss ESB.
- Developed by Red-Hat Linux.

WSO2 Caron Stack

Talend –from Talend in California

Infor : An SOA for Agile software development

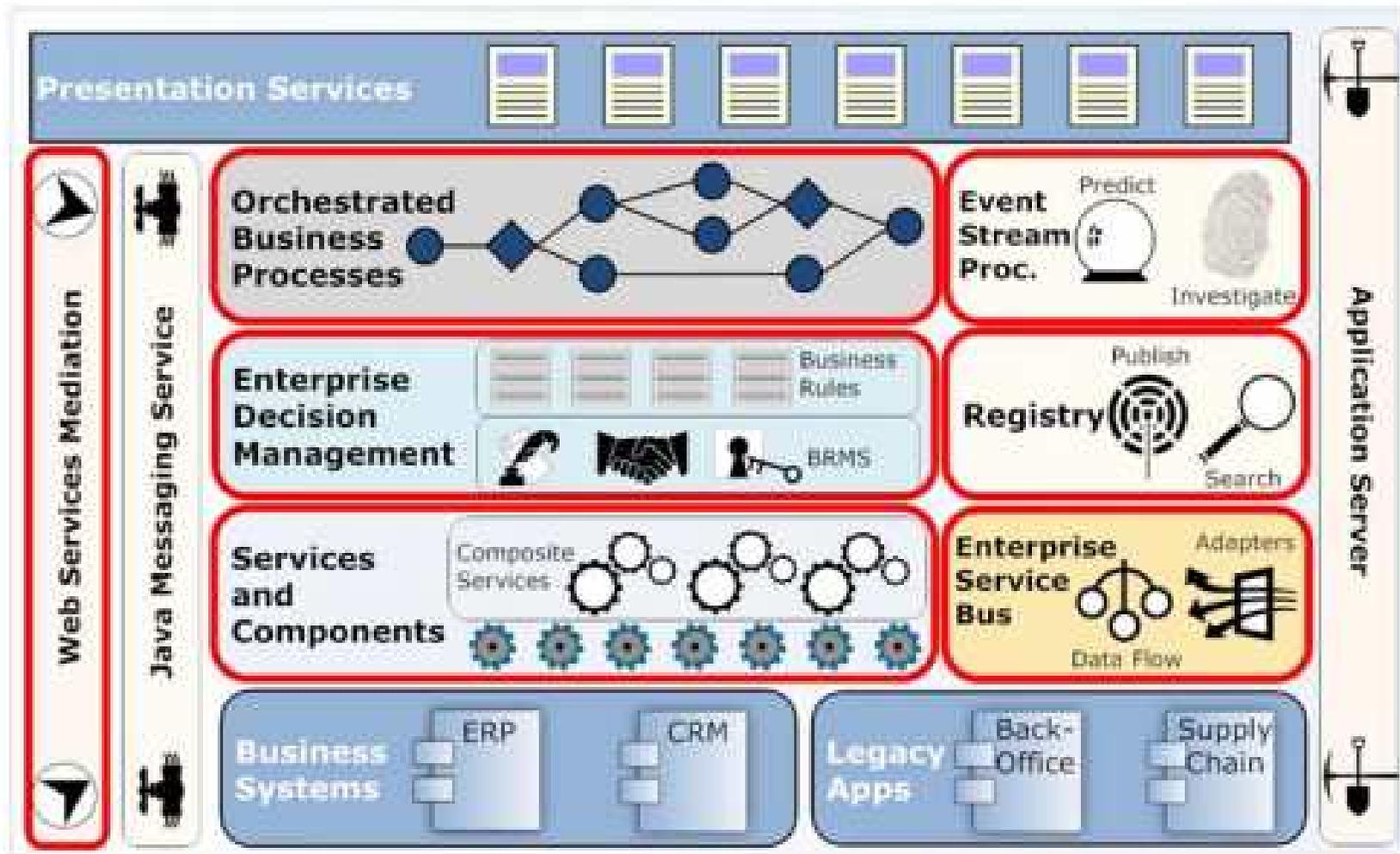
Enterprise : For integration and messaging of components

OpenSOA





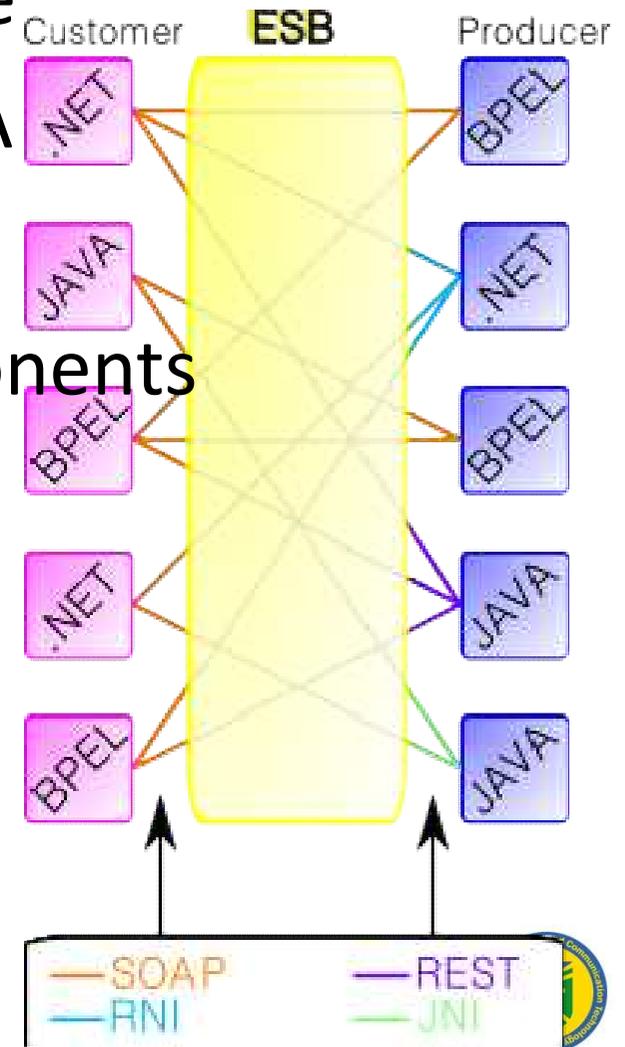
Open-SOA Platform





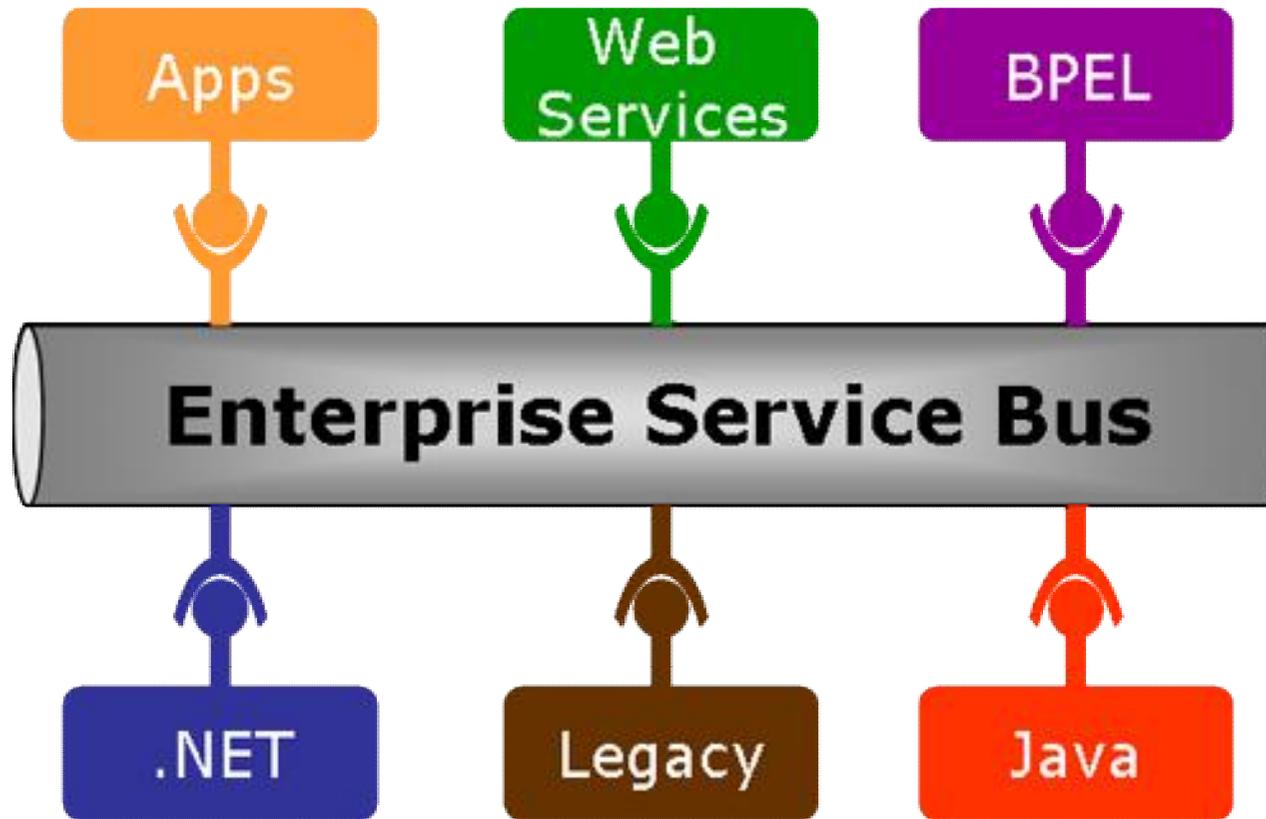
Enterprise Service Bus

- Software integration architecture
- Implementation structure of SOA
- Access software service via bus
- Loosely coupled software components interconnected for services
- Message oriented middleware





ESB Component





Cloud Computing



Contemporary application of SOA/ESB
internet → Computing using Internet
Internet based Client-Server model.

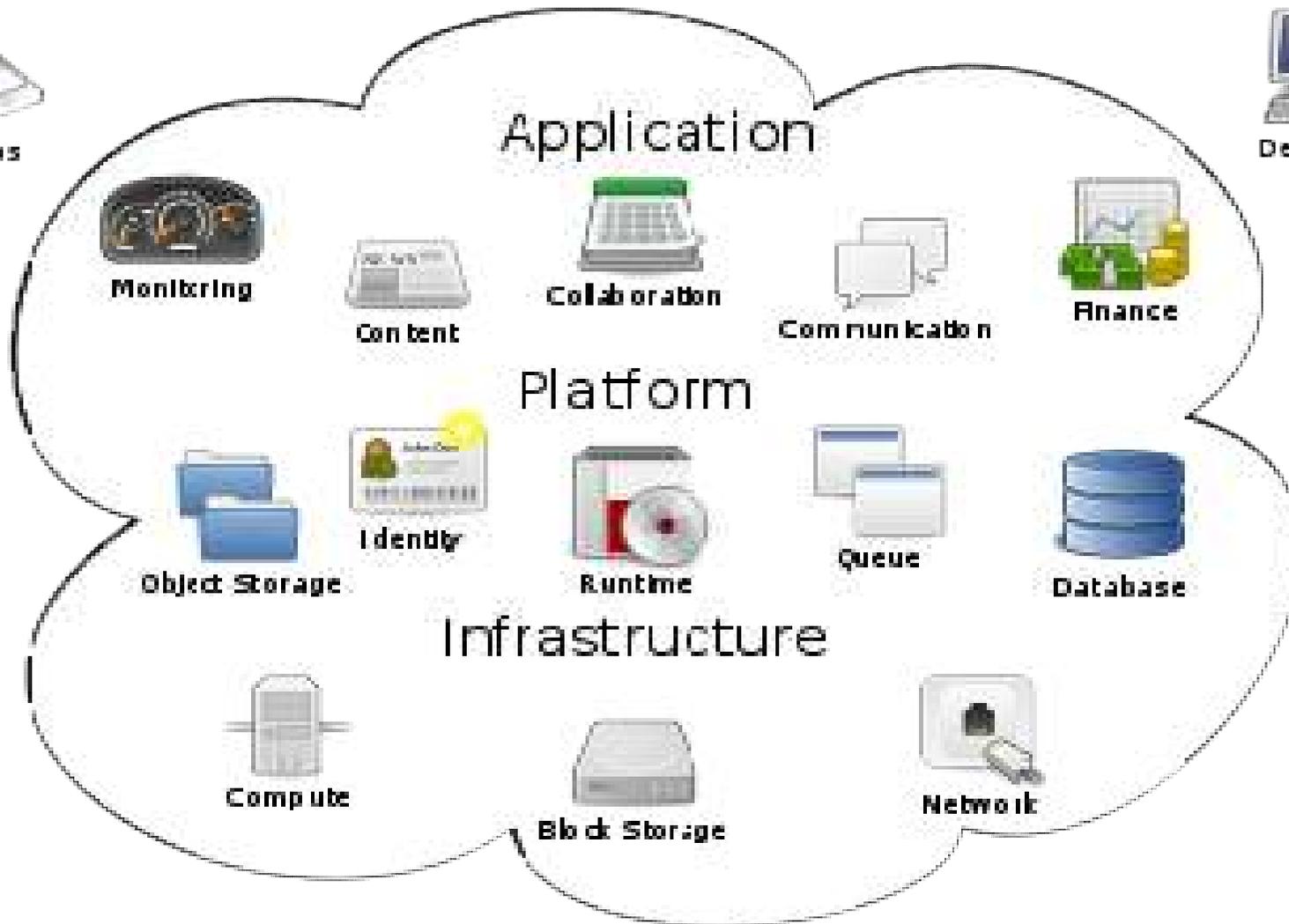
-- Server-side computing : Outsourcing
computing power over Internet

“Why buy when you can rent (cycle)?”

Avoid Capital Expenditures (CapEx)

-- Add components of Service Science (SS)





Cloud Computing





Types of CC

- SaaS(Software as a Service) – Rent software over internet
- PaaS (Platform as a Service)—Rent computing power
- Utility Computing --- Use cloud computer for special purposes
- Web Service – handles all web related tasks
- MSP (Managed Service Providers) – Contract all the services for computing need
- Service Commerce – Handles internet business
- Internet integration – Combine all the internet accesses





OSS of cloud computing(IaaS)

Eucalyptus (2008) – Private and Hybrid cloud

Nimbus – LAMP based service cloud infrastructure

OpenNebula – From NASA Ames space center

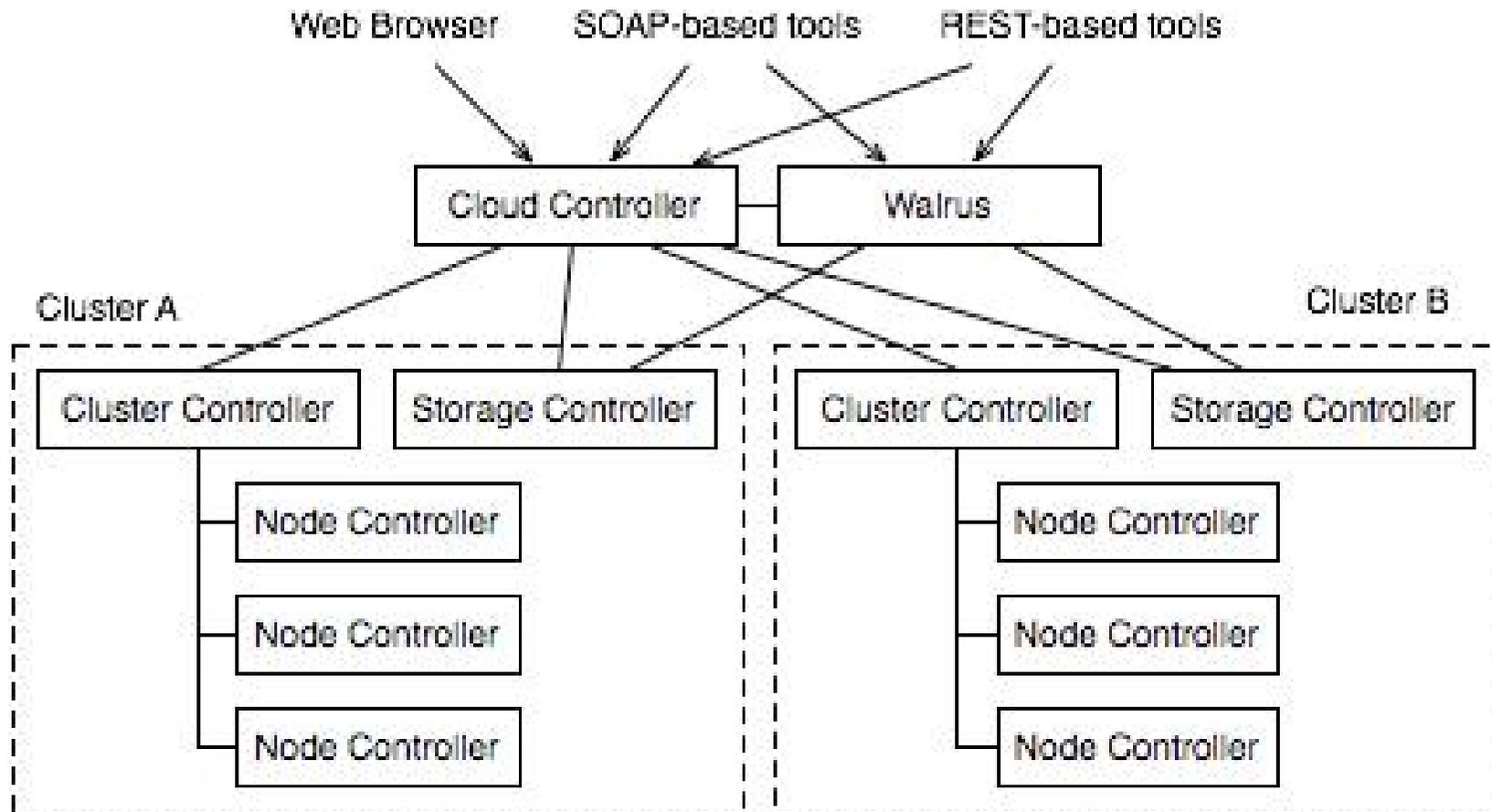
OpenStack – cloud from NASA and Rackspace cloud

ownCloud - Software suite for location-independent data storage





EUCALYPTUS





Planned SOA

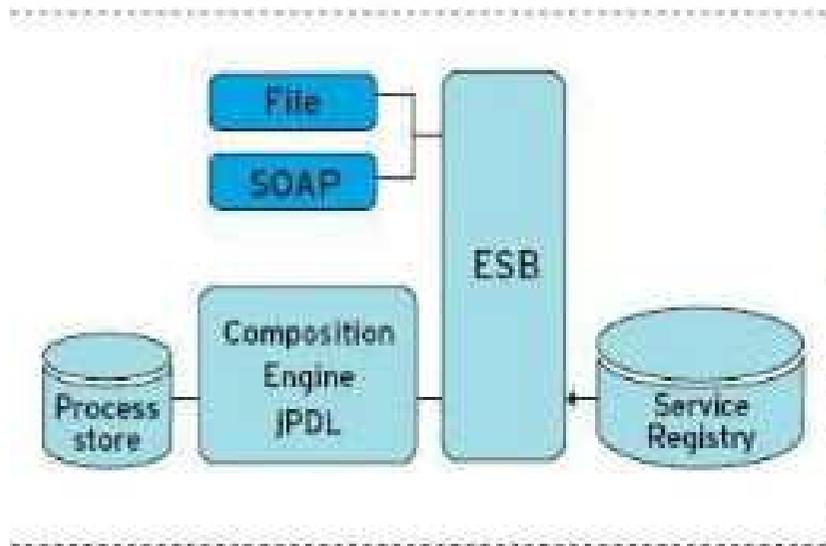
- University Curriculum
- Software Engineering course management
- Student record management utility
- Traffic monitoring report
- Mine drilling report
- Air quality monitoring report
- Other SOA on demand



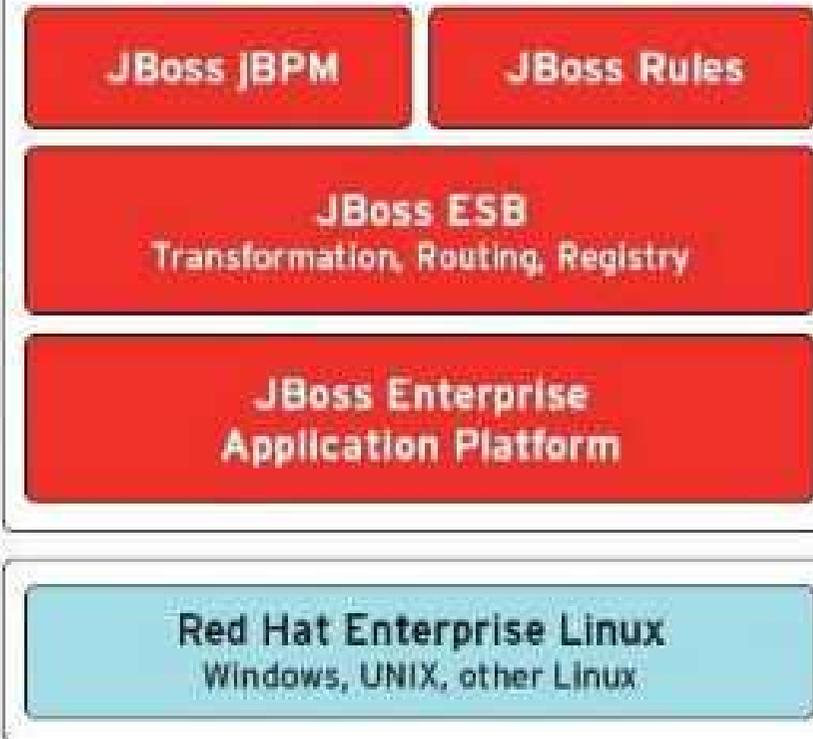


jBoss Backbone

JBoss Enterprise SOA Platform



JBoss Enterprise SOA Platform



- Lightweight footprint
- SOA, EDA, EAI, BPM, CEP (future)
- Wide range of deployment scenarios up to large-scale integration platform



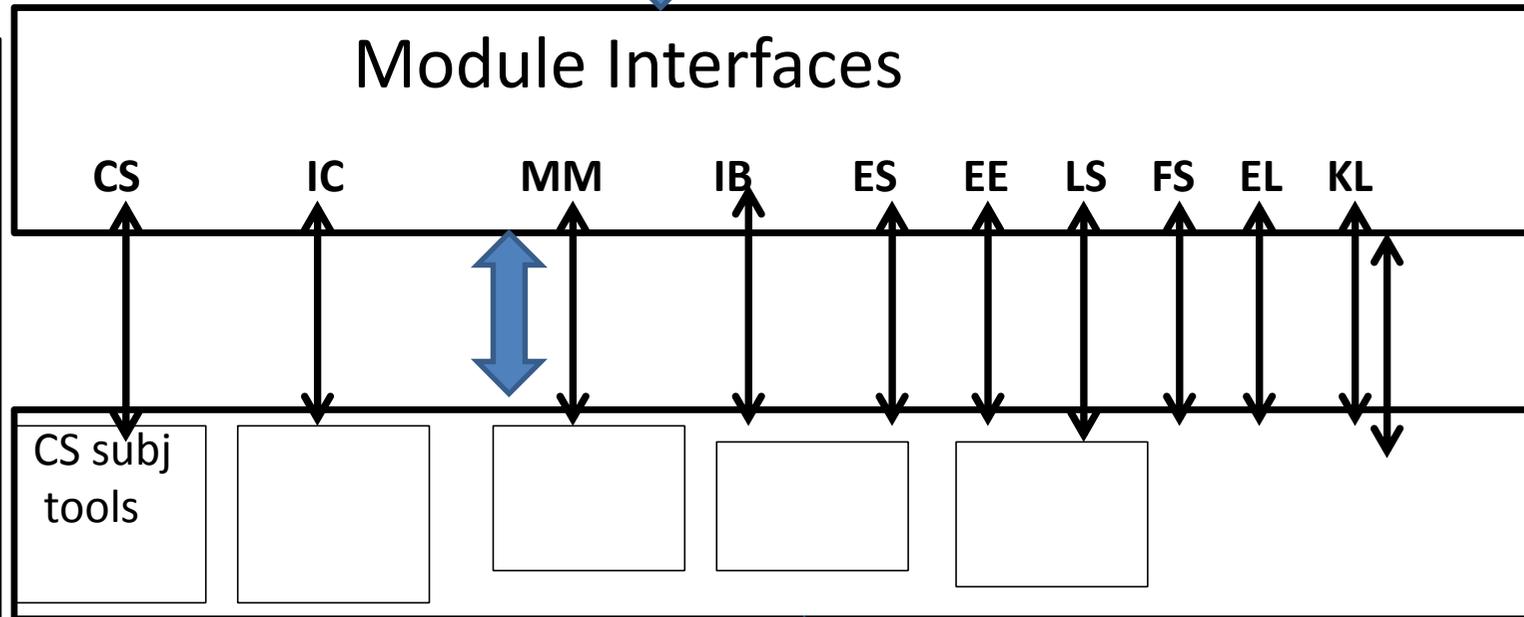
Huree Curriculum SOA Service

Admin KB manag. Monitor/mentor Record keeping Web svc



Common tool Svc

- Web Tool service
- Prog. Lang. Svc
- IDE tool service
- CME svc (Moodle)



Kernel Service (LAMP, GUI, Utility tools)



Huree CASE SOA Service

Admin KB manag. Monitor/mentor Integration Communication

Tool service
Resources
Search service
CME svc

Module Interfaces

Planning Requir.Eng Design Coding Testing Tracking maintenance

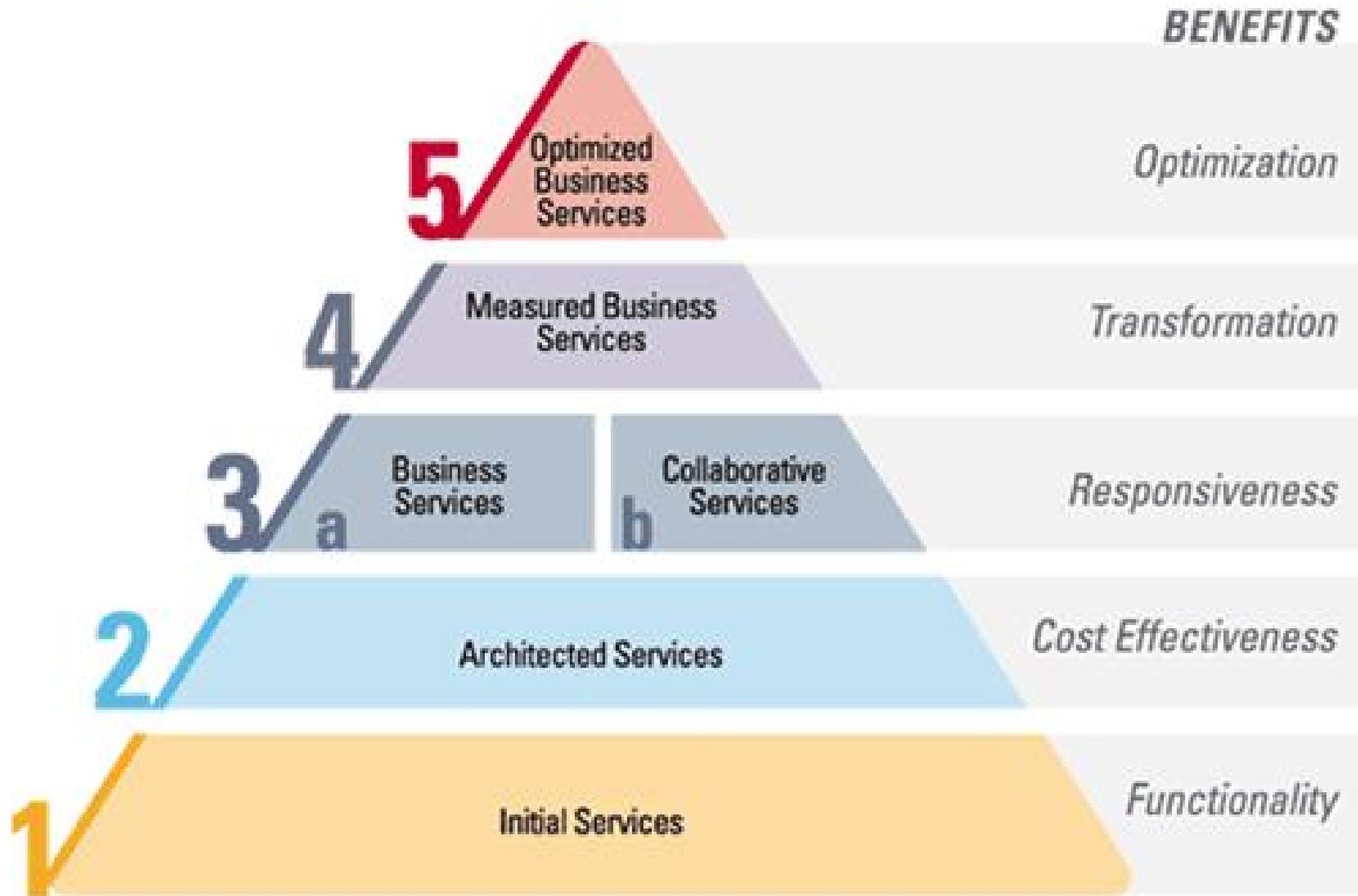
OpenProject StarUML jUnit Autoconfig
DRES Bison Bugzilla

Kernel Service (LAMP, GUI, Utility tools)





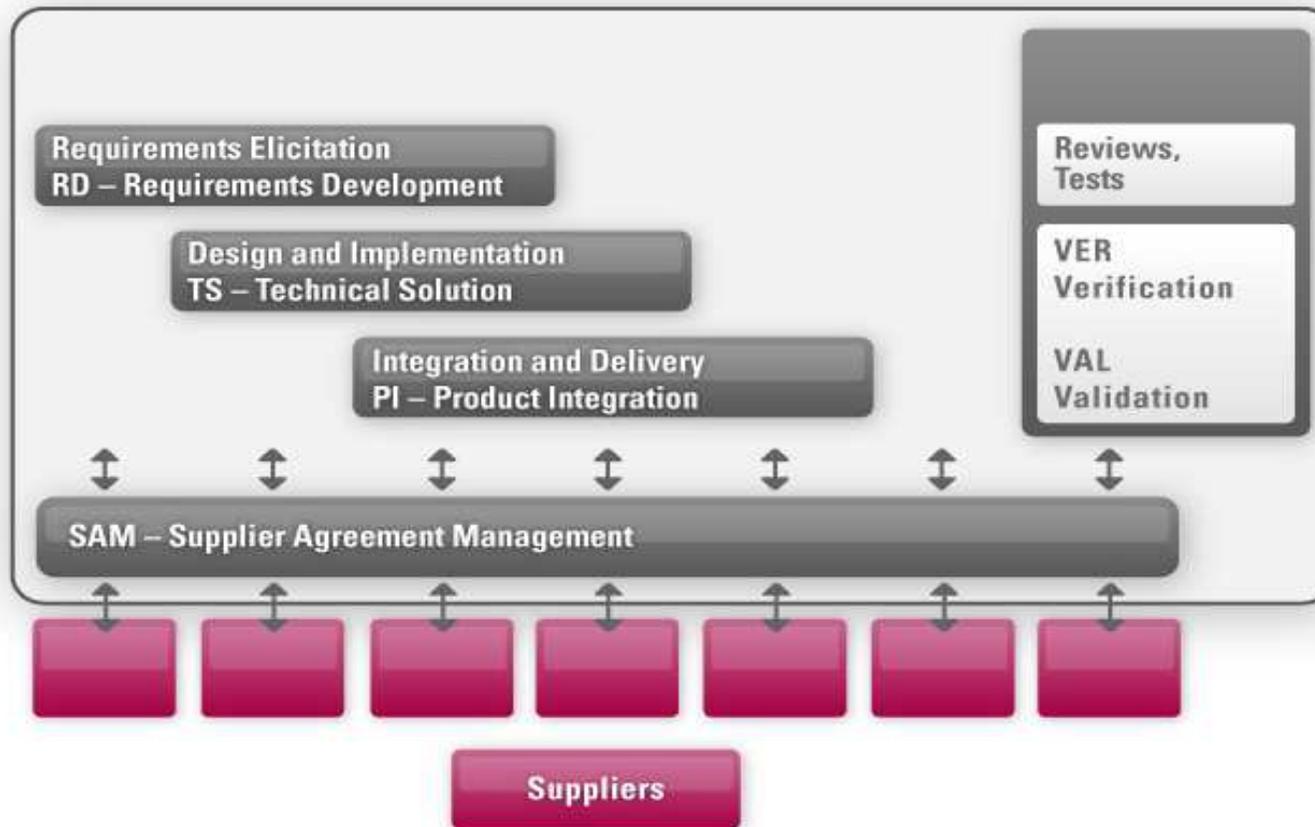
SOA Maturity Pyramid





CMMI model for certification

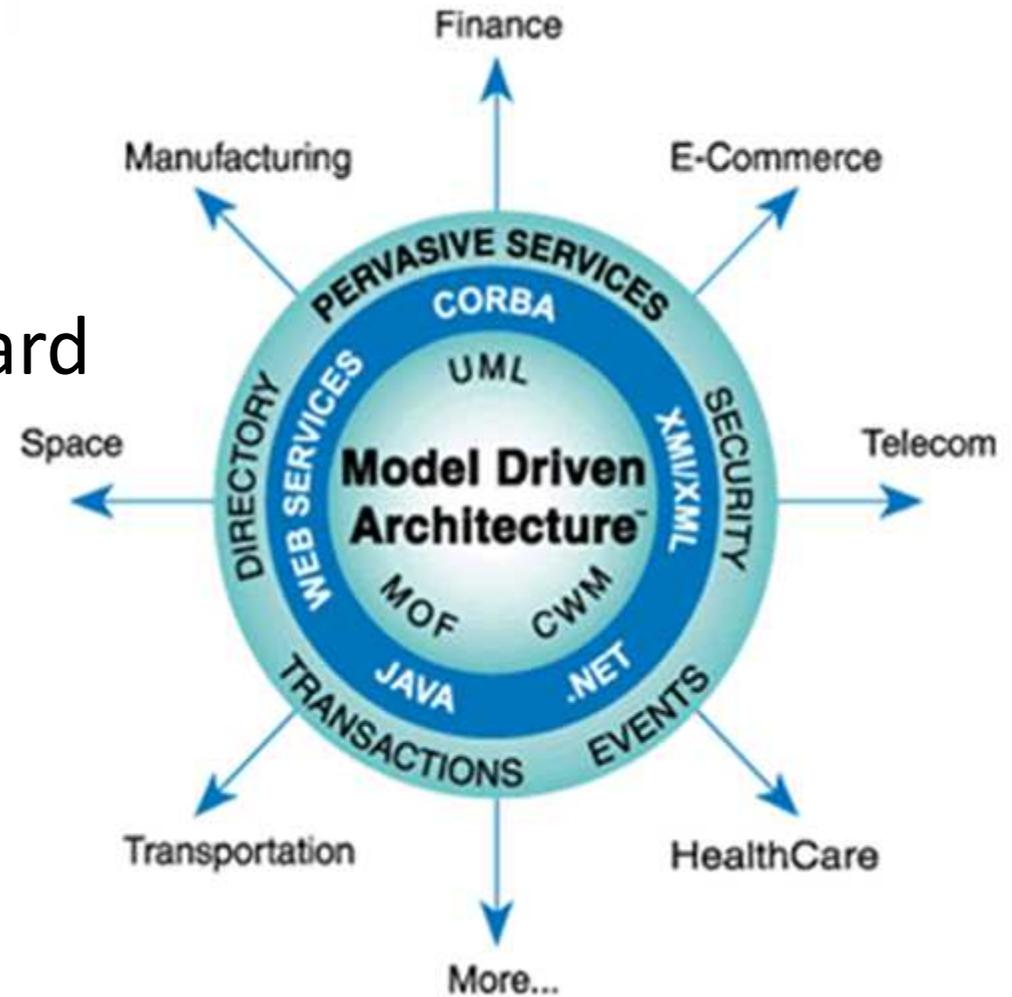
CMMI-DEV Contents





SOA/MDA

- Flexible
- Vendor independent
- Based on UML standard

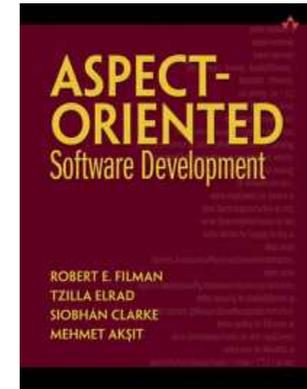


www.omg.org/mda

Administration



FOSS based on AOSD



- AOSD : Aspect Oriented Software Development
- Similar but different from “Subject Oriented” or “Feature Oriented”.
- Promote modularity by minimizing “Cross-cutting concern” – low cohesion
- AspectJ language for this method.

Adminstration





Conclusion – FOSS is

- viable answer for software problem.
- But demands good monitoring of quality.
- Due to the number and complexity, SOA/ESB model is used.
- More theoretical/methodological researches are needed.

