ObjectWeb Consortium

Sustainable Development of Next Generation Software Infrastructure.

Club Irisatech - February 4th, 2005.

Christophe Ney
ObjectWeb Executive Director
Development Project Director, INRIA Rhône-Alpes

Agenda

- ObjectWeb : A consortium to bring open-source middleware to the heart of the main stream market.

- JOnAS : ObjectWeb's implementation of the J2EE specifications

- ObjectWeb and Open-Source in Next Generation of GRID Software

NG Software Infrastructure

Middleware and Grid Software

- Abstract network resources
- Ease development, deployment, management of distributed apps
- Service Oriented Architecture
- Convergence between Business/Computing
- Stake for the future of Information Society

ObjectWeb Open Source Middleware

e-business
e-administration
e-....

ObjectWeb Open Source Middleware

Network
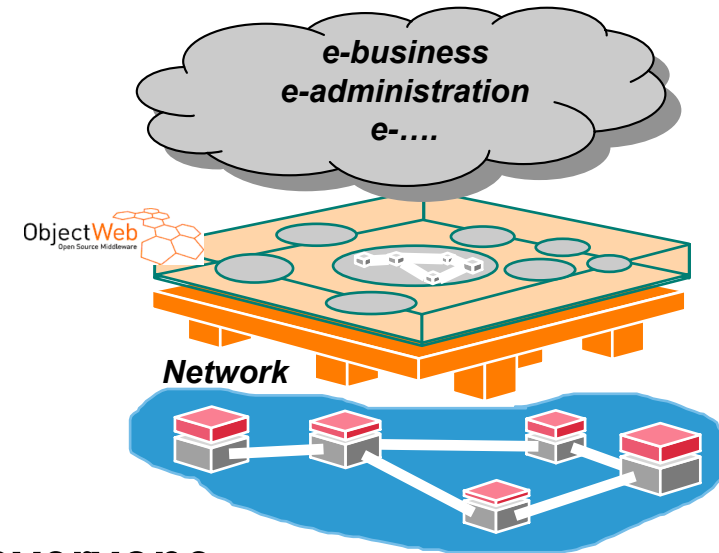
Software Infrastructure is critical for everyone

"… economic and social life becomes dependent upon a <u>common computing infrastructure</u>."

Professor Siobhan O'Mahony, Harvard Business School

Software Infrastructure is shared by everybody

<u>Software Infrastructure "offers far more value when shared than when used in isolation"</u>

Nicholas Carr in "IT Doesn't Matter", Harvard Business Review

[…] The importance of Software production goes beyond industrial and economic reasons.

In highly-connected environments with pervasive computing, social, ethical and legal issues will have an ever increasing significance. The implementation of **regulations and laws will be partially coded in the software**. If we lose the capability to produce software, business methods, accounting standards, privacy rules and intellectual property rights will be subject to interpretation and implemented by foreign-based corporations. **Free / Open Source Software may play a positive role** here in promoting the competivity of European industry […]

European Commission

Information Society

Extract from Discussion Paper by European Commission, Directorate General Information Society, Software Technologies and Distributed Systems Industry Forum, Brussels 12th October 2004
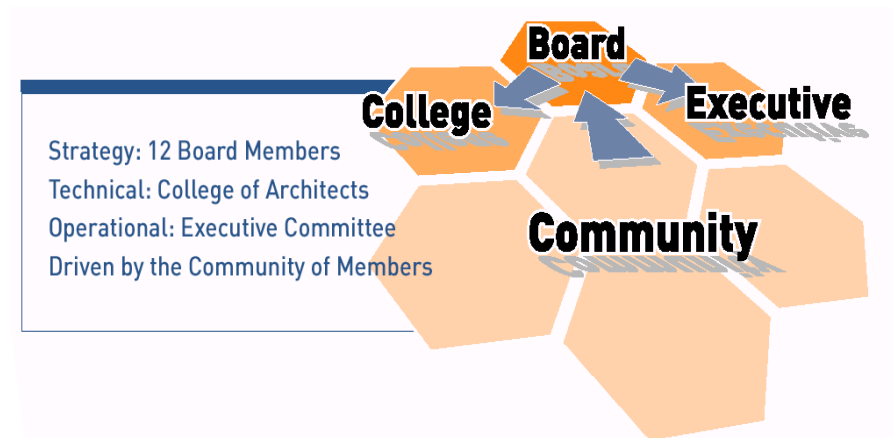
ObjectWeb : First International Consortium
for Open-Source Distributed Infrastructure Software

International

Initiated by BULL, France Telecom and INRIA

Supported by French Ministry of Industry, RNTL, RNRT, ITEA

Endorsed by 41 organisations worldwide (Public & Private, EU, US, Asia)

A community of 1300+ individual members from 65 countries

Strategy: 12 Board Members
Technical: College of Architects
Operational: Executive Committee
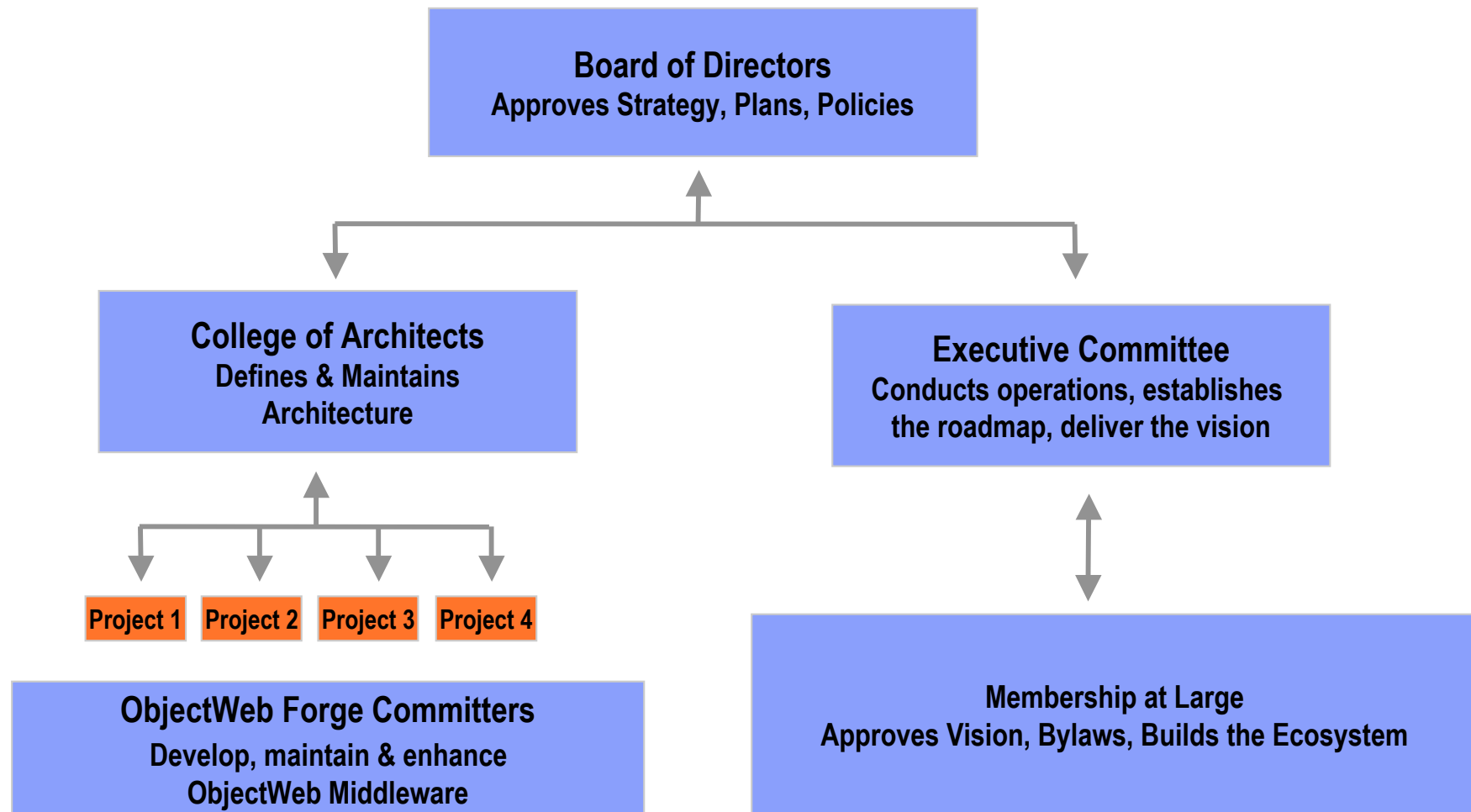Driven by the Community of Members

Mission

To guarantee a sustainable Open-Source alternative to proprietary middleware

Open and Neutral

Compliance with open standards (W3C, OMG, JCP, OSGi, WfMC,...)

Non-profit Consortium

hosted by INRIA (cf. W3C)

Open to any organisation / individual

Based on a collegial structure

ObjectWeb Governance Structure

Board of Directors
Approves Strategy, Plans, Policies

College of Architects
Defines & Maintains
Architecture

Executive Committee
Conducts operations, establishes
the roadmap, deliver the vision

Project 1 Project 2 Project 3 Project 4

ObjectWeb Forge Committers
Develop, maintain & enhance
ObjectWeb Middleware

Membership at Large
Approves Vision, Bylaws, Builds the Ecosystem

ObjectWeb Consortium

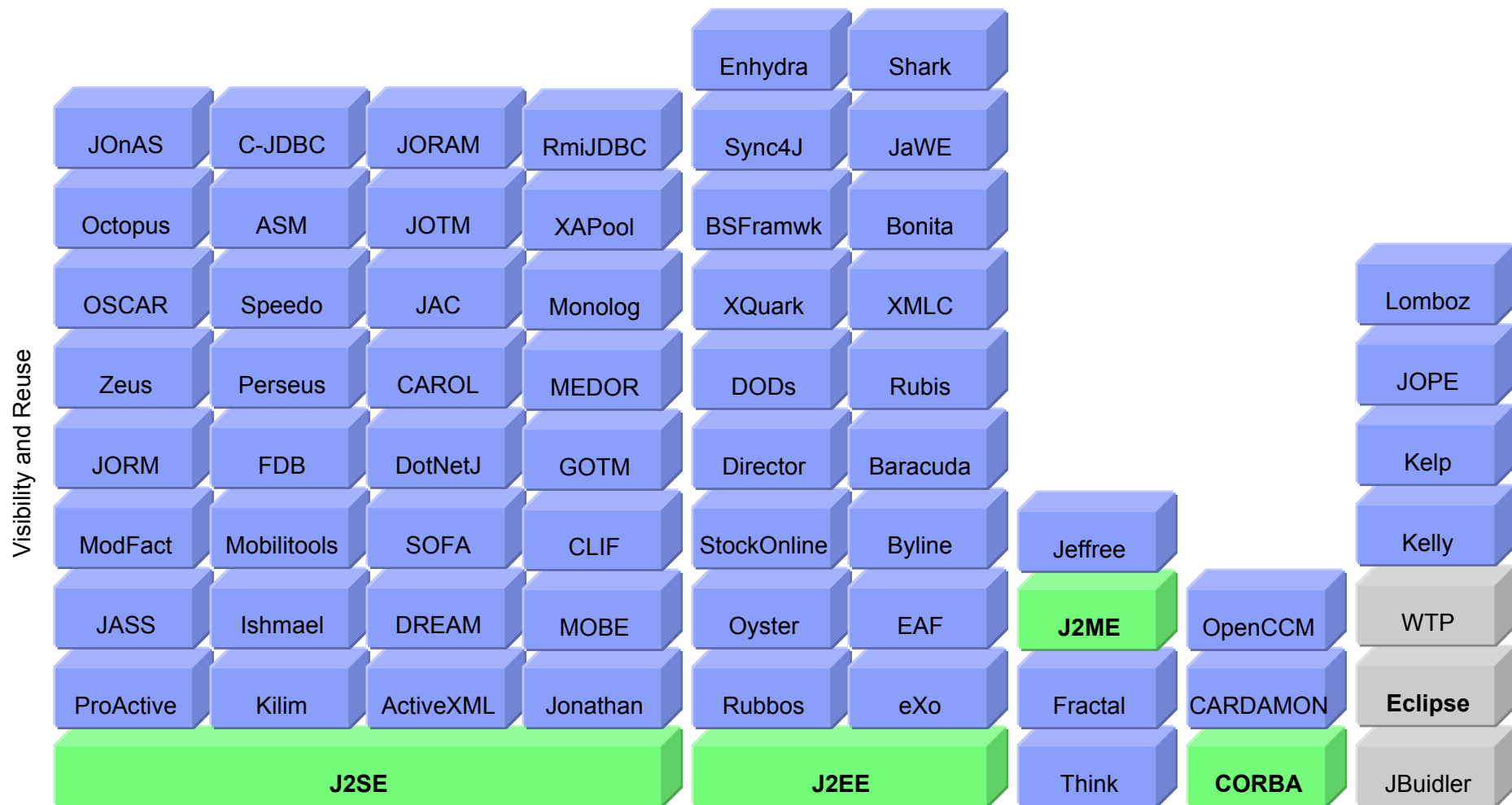# Open Source, a key of the success

- **A New Way to Produce Software**
    - Open Source is a **process**, not a product.
        - Copyright to liberate, not to restrain
        - Collective Invention vs. proprietary
        - **Independence** guaranteed
    - A process to develop **Commons**
        - Community at large
        - Business & Public
    - Thanks to **Shared R&D**

- **Why does it succeed?**
    - A vehicle for **fast propagation** of technologies
    - Feedback from **Users**
    - **Open implementations** of Standards are critical for Information Society: *Interoperability, Equity*
    - Participate to **commoditisation** of **infrastructure**
    - **Higher control** over costs, evolution & security
    - **Enable diverse interests to converge** Research, Industry, Business
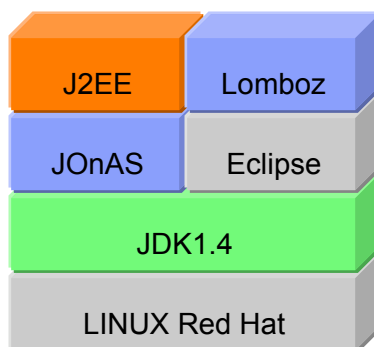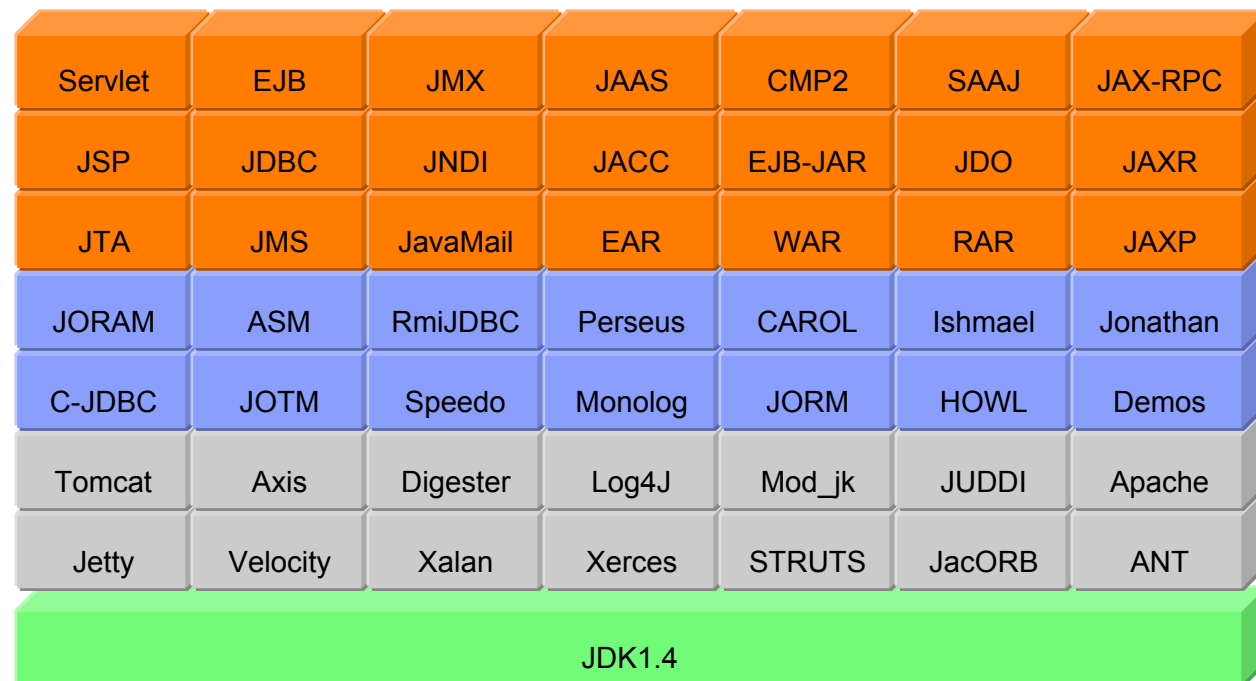
ObjectWeb Components & Platforms

ObjectWeb
Open Source Middleware

				Enhydra	Shark
JOnAS	C-JDBC	JORAM	RmiJDBC	Sync4J	JaWE
Octopus	ASM	JOTM	XAPool	BSFramwk	Bonita
OSCAR	Speedo	JAC	Monolog	XQuark	XMLC
Zeus	Perseus	CAROL	MEDOR	DODs	Rubis
JORM	FDB	DotNetJ	GOTM	Director	Baracuda
ModFact	Mobilitools	SOFA	CLIF	StockOnline	Byline
JASS	Ishmael	DREAM	MOBE	Oyster	EAF
ProActive	Kilim	ActiveXML	Jonathan	Rubbos	eXo

Visibility and Reuse

	Lomboz
	JOPE
	Kelp
Jeffree	Kelly
J2ME	WTP
Fractal	**Eclipse**
Think	JBuidler

OpenCCM
CARDAMON
CORBA

J2SE   **J2EE**

Integrating ObjectWeb Components: Examples

ObjectWeb
Open Source Middleware

Enhydra (Together T.)

WFMC	J2EE
EAF	JOnAS
JaWE	Enhydra
Shark	Director
Octopus	DODs
XMLC	Barracuda
Kelp	Kelly
Eclipse	JBuilder
JDK1.4	

Red Hat App. Server

J2EE	Lomboz
JOnAS	Eclipse
JDK1.4	
LINUX Red Hat	

ObjectWeb's J2EE1.4 Java Enterprise Platform JOnAS (BULL)

Servlet	EJB	JMX	JAAS	CMP2	SAAJ	JAX-RPC
JSP	JDBC	JNDI	JACC	EJB-JAR	JDO	JAXR
JTA	JMS	JavaMail	EAR	WAR	RAR	JAXP
JORAM	ASM	RmiJDBC	Perseus	CAROL	Ishmael	Jonathan
C-JDBC	JOTM	Speedo	Monolog	JORM	HOWL	Demos
Tomcat	Axis	Digester	Log4J	Mod_jk	JUDDI	Apache
Jetty	Velocity	Xalan	Xerces	STRUTS	JacORB	ANT
JDK1.4						

Sustainable Development & Business Ecosystem

JOnAS
Bull

INRIA
ObjectWeb
Open Source Middleware
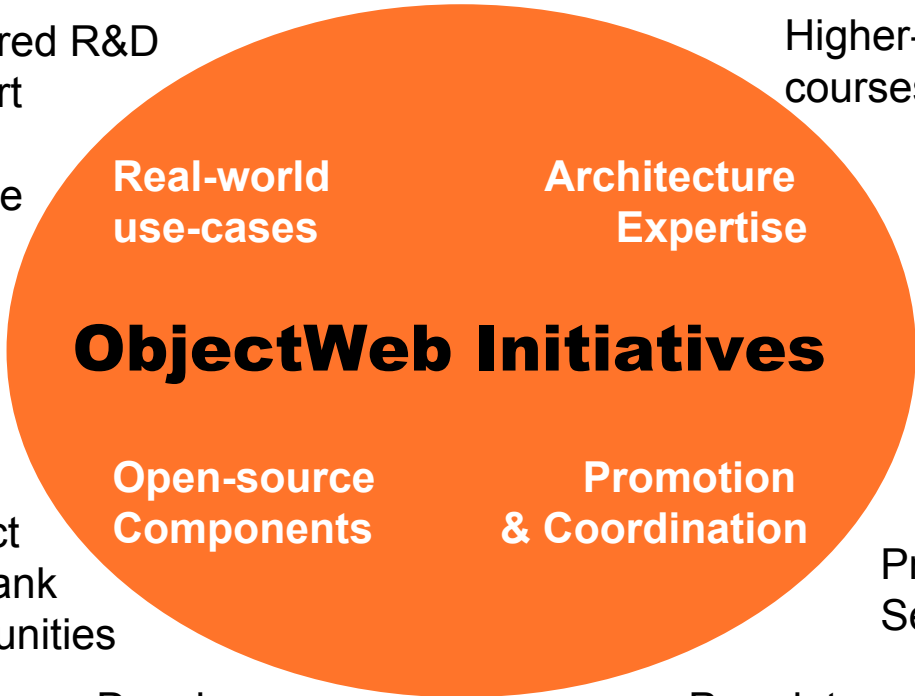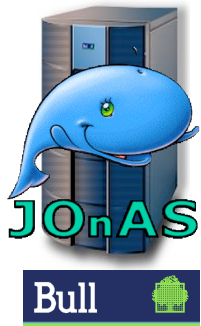
Funded R&D Projects

Research publications

Shared R&D Effort

Higher-education courses

Open-source branding

Real-world use-cases

Architecture Expertise

IT Publication & Training

ObjectWeb Initiatives

Beta-test feedback

Market Trends

Open-source Components

Promotion & Coordination

Product think-tank opportunities

Professional Services
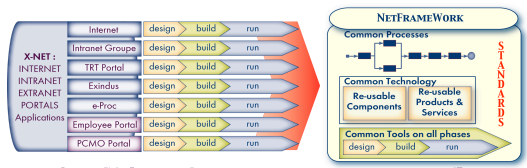
Developer Center

Proprietary Products

Business Network

THALES

redhat

ObjectWeb Consortium
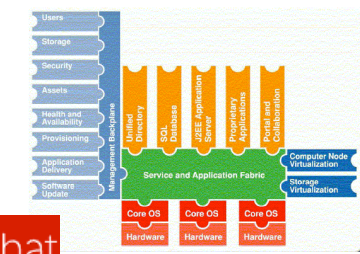
Some Benefits for Software Industry

- **No Legal Issues With Redistribution**

- **Alternative to Proprietary Software**
- **Standards, Quality & Independence**

- **Perpetuate Technology**
- **Protect Investment**
- **Increase User's Confidence**

- **Enable Wealth: Education & Business**
- **Accelerate Time to Market**
- **Increase Productivity & Decrease Cost**

ObjectWeb >100% Growth per Year!

Dec' 2003

- **People**
- **26** legal entity members

- **543** individual members
- **2 763** mailing lists users
- **874** accounts in the Forge
  165 commiters

- **Web Stats**
- **71** projects in the Forge
- **1 500 000** hits on main Web
  50 000 visitors
- **876 000** hits on Forge
  19 000 visitors

Dec' 2004

- **People**
- **56** legal entity members (+17 pending)
- **1 335** individual members
- **7 485** mailing lists users
- **3 694** accounts in the Forge
  314 commiters

- **Web Stats**
- **88** projects in the Forge
- **3 152 025** hits on main Web
  87 080 visitors
- **3 403 727** hits on Forge
  45 019 visitors

Data available on: http://wiki.objectweb.org/Wiki.jsp?page=NewsLetters

They Have Joined ObjectWeb

- **Air France** - www.airfrance.com *
- **Argia** - www.argia.fr
- **BULL** - www.bull.com
- **CEA** - www.cea.fr *
- **Charles University Prague** - nenya.ms.mff.cuni.cz
- **Cap Gemini** - www.capgemini.com *
- **CNAF** - www.caf.fr
- **Code Lutin** - www.codelutin.com
- **Cotranet** - www.cotranet.com
- **Dassault Aviation** - www.dassault-aviation.com
- **eMAXX** - www.emaxx.nl
- **Erlang** Projects- www.erlangprojects.org *
- **Eteration** - www.eteration.com
- **eXo platform** - www.exoplatform.org
- **ExperLog** - www.experlog.com
- **France Telecom** - www.francetelecom.com
- **Funambol** - www.funambol.com
- **Groupe des Ecoles des Télécom**.- www.get-telecom.fr
- **I3S/CNRS** - www.i3s.unice.fr
- **IMAG/LSR** - www-lsr.imag.fr
- **INRIA** - www.inria.fr

- **iProfs** - www.iprofs.nl
- **LIBeLIS** - www.libelis.com
- **Librados, inc.** - www.librados.com
- **LIFL/USTL** - www.lifl.fr
- **Linagora** - www.linagora.com
- **LIP6** - www.lip6.fr
- **Lynx SARL** - www.lynxonline.com
- **MandrakeSoft** - www.mandrakesoft.com
- **MySQL** - www.mysql.com
- **NEC Soft, Ltd**. - www.necsoft.co.jpindex_e.html
- **Open Wide** - www.openwide.fr
- **Red Hat -** www.redhat.com
- **ScalAgent** - www.scalagent.com
- **SourceBeat** - www.sourcebeat.com
- **Sysdeo** - www.sysdeo.fr *
- **SUSE LINUX** - www.suse.com
- **Ministère de l' Intérieur** - www.interieur.gouv.fr *
- **THALES** - www.thalesgroup.com
- **Together Teamlösungen**. - www.together.at
- **XQuark Group** - www.xquarkgroup.com
- **Yangfan Soft** - www.yangfansoft.com

* Pending Registration Oct. 15 2004.

Gartner

- «Consider ObjectWeb when looking for a single source for a comprehensive set of open-source middleware and development tools», Yefim Natis, VP Distinguished Analyst, Gartner, November 2004.

ComputerWeekly.com

- «ObjectWeb is probably best known for its involvement with Jonas, the open-source J2EE (Java 2 Enterprise Edition) application server, but its work encompasses around 50 open-source projects including workflow utilities and message-oriented middleware», ComputerWeekly, November 17, 2004.

ObjectWeb Today: an International Leader

ObjectWeb.org
Growth from Q1 02 to Q1 04

**Global Visibility – *Q4 '04***

- **130 000+** Visitors / month
- **80 000+** downloads / month
- **3700** developers, **314** committers
- Hits: 40% America, 60% EMEA
- Community keeps growing!

References

- Thales (63.000p), France Telecom (230.000p) ,…
- e-learning, e-gov., e-business, e-health
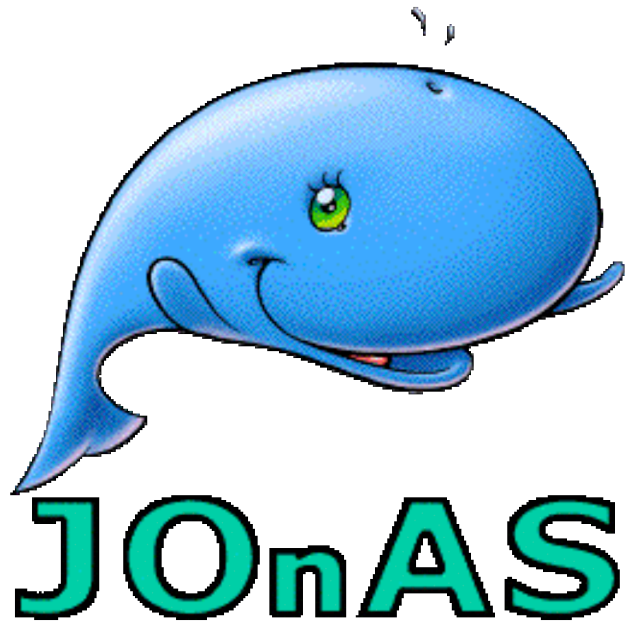- Distributions: Red Hat, Mandrake, Enhydra
- Deployed in Europe, USA, Asia

World Wide Recognition

- **JCP** - J2EE Certification (JOnAS)
- **Apache** – Common Projects
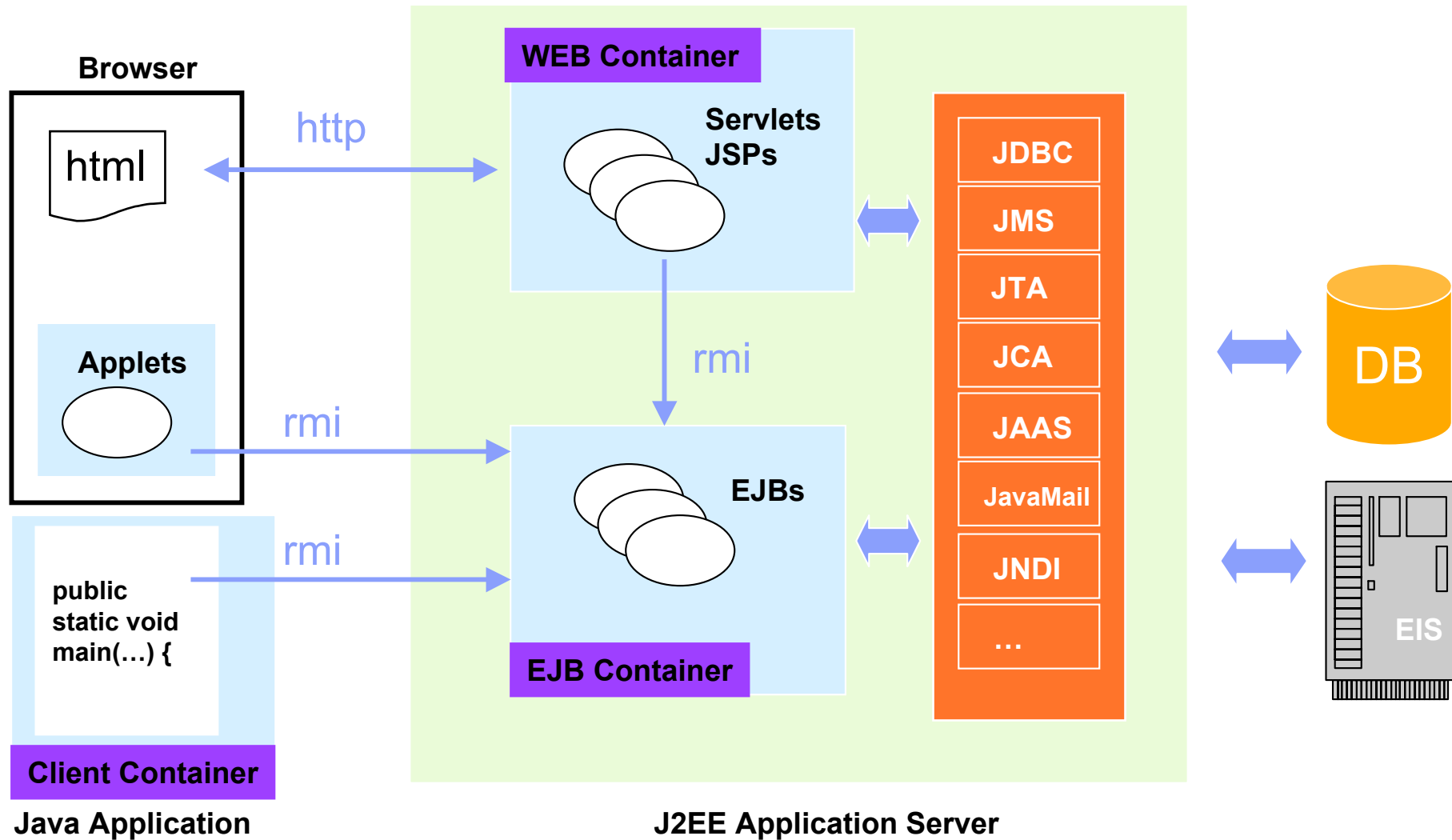- **Eclipse** – WebTools Project
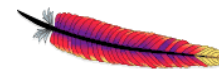
ObjectWeb Flagship Platform
JOnAS J2EE compliant App. Server

JOnAS Momentum

- **Open Source since July 1999**
  - Within the Objectweb International Consortium
  - Open community of users and developers
    - > 200,000 JOnAS downloads (2000 to 5000 per month)
    - ~ 500 users on the JOnAS list (10 to 20 mails per day)
  - Operational applications
  - JOnAS is distributed under LGPL (GNU Lesser General Public License)
  - >800 000 lines of ObjectWeb code (incl. > 400 000 pour JOnAS)
- **Achievements 2004**
  - Embedded in Mandrake & Red Hat distributions
  - J2EE 1.4 Certification Scholarship granted by Sun
- **Result from an important national and European R&D effort:**
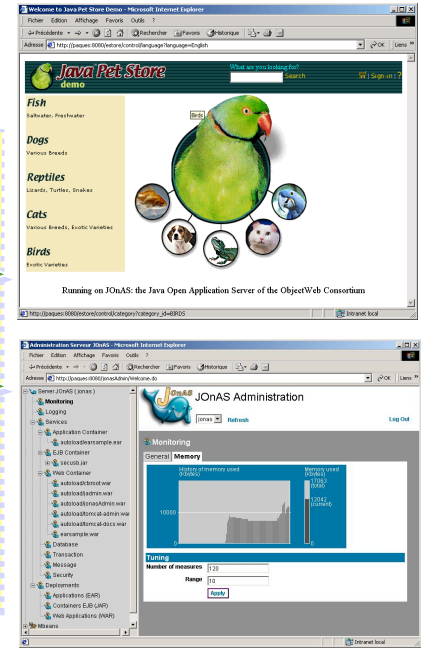 - Corsica (IST), Pepita (ITEA), Parol (RNRT), Impact (RNTL), Osmose (ITEA), …

J2EE Architecture

ObjectWeb
Open Source Middleware

Browser

html

http

WEB Container

**Servlets
JSPs**

Applets

rmi

rmi

EJBs

public
static void
main(…) {

rmi

Client Container

Java Application

EJB Container

JDBC

JMS

JTA

JCA

JAAS

JavaMail
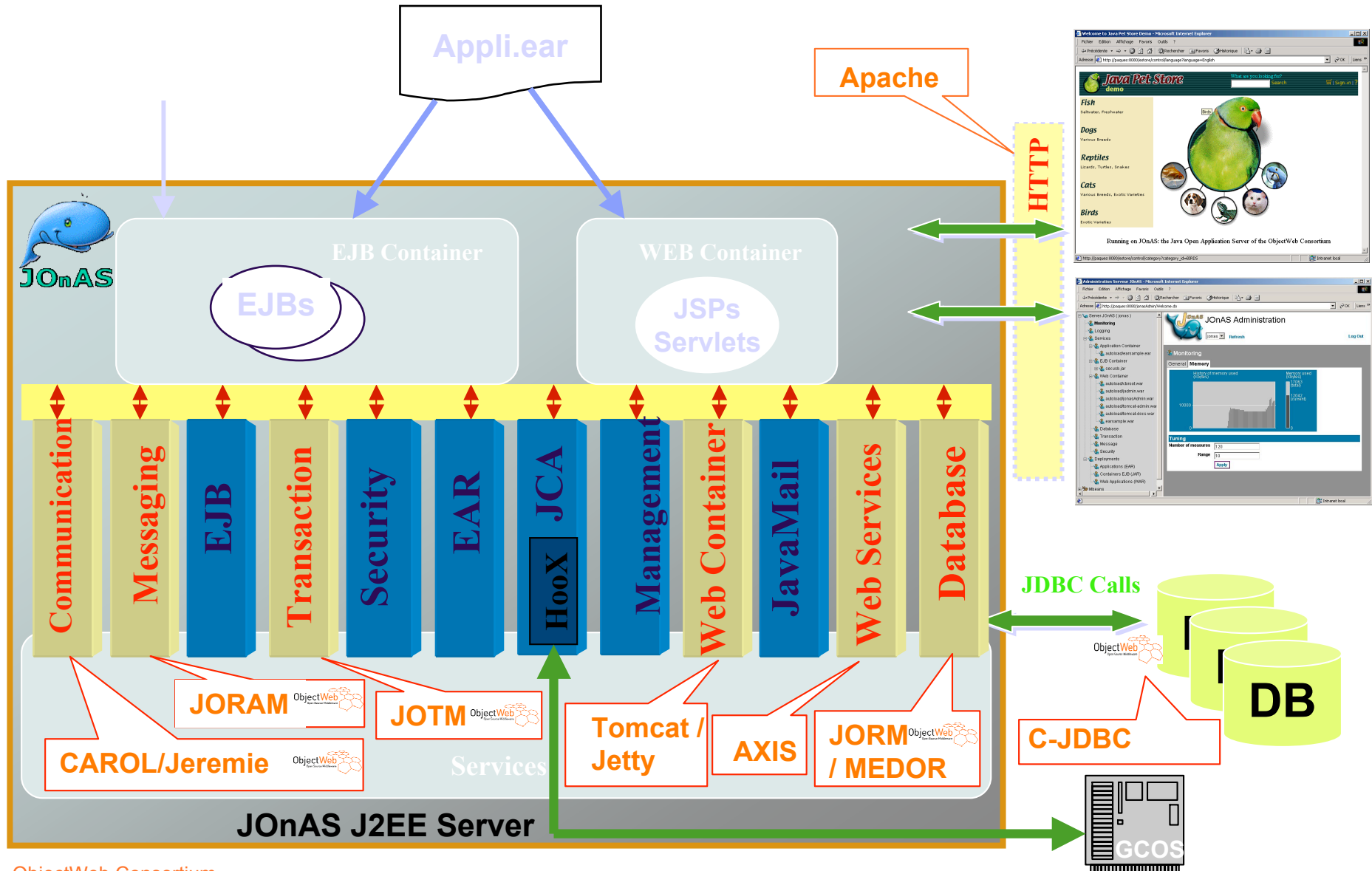
JNDI

…

DB

EIS

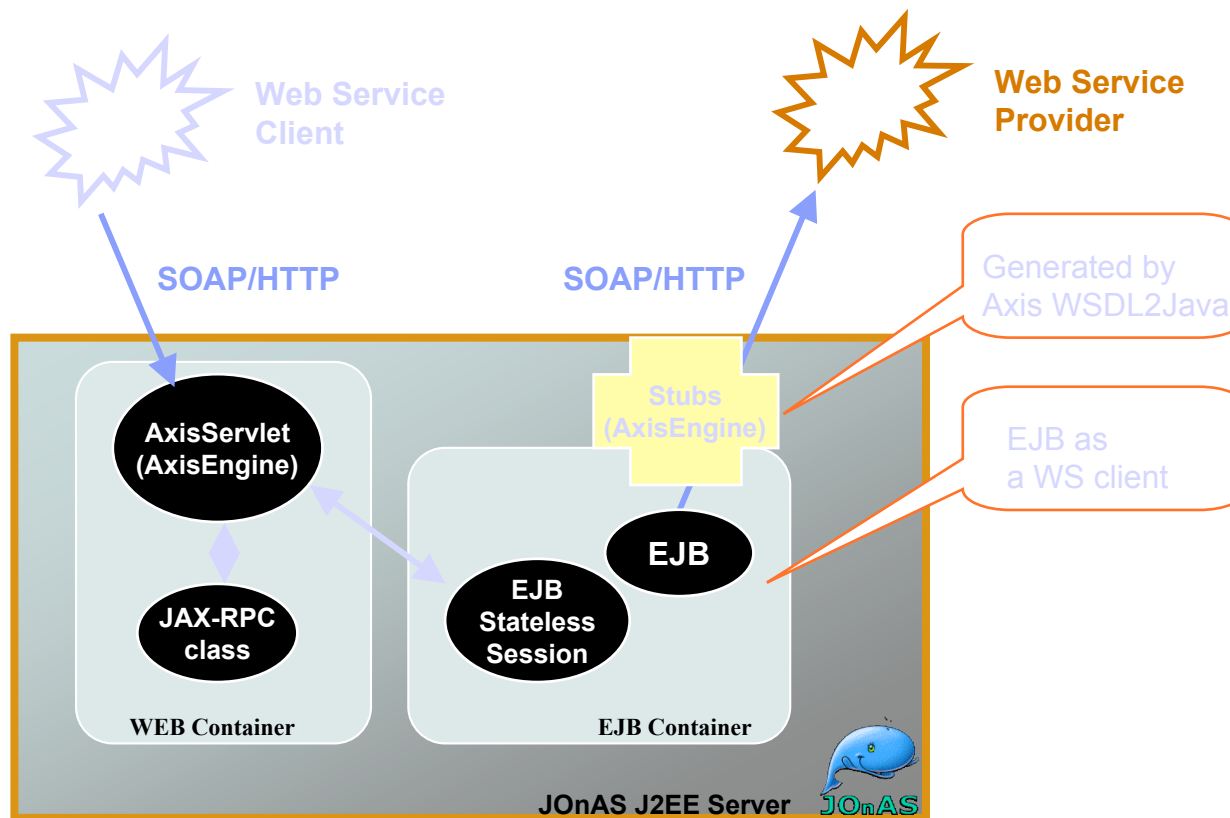**J2EE Application Server**

ObjectWeb Consortium

JOnAS Today: World Class J2EE Application Server

- **J2EE 1.4 Compliant**
  - Completed J2EE1.4 Certification Compliance this week
- **Scalability and Availability**
  - Clustering (HTTP, RMI, DB), Failover (HTTP Sessions replication)
  - Optimization mechanisms (pooling, caching, …)
- **Enterprise Integration**
  - Multi-tier Infrastructure
  - Apache, LDAP, DBMSs, J2EE CA connectors to ERPs, mainframes
  - Web Services
- **Integrated Development Environments**
  - Eclipse plug-ins
- **Administration**
  - Web Console, script commands, API (JMX, JSR77)
- **Professional Offers**
  - Multiple Sources of Support, Services and complementary products

JOnAS Architecture

ObjectWeb
Open Source Middleware

Appli.ear

Apache

HTTP

JOnAS

EJB Container

WEB Container

EJBs

JSPs
Servlets

Communication

Messaging

EJB

Transaction

Security

EAR

JCA

HooX

Management

Web Container

JavaMail

Web Services

Database

JDBC Calls

DB

JORAM

JOTM

Tomcat /
Jetty

AXIS

JORM
/ MEDOR

C-JDBC

CAROL/Jeremie

Services

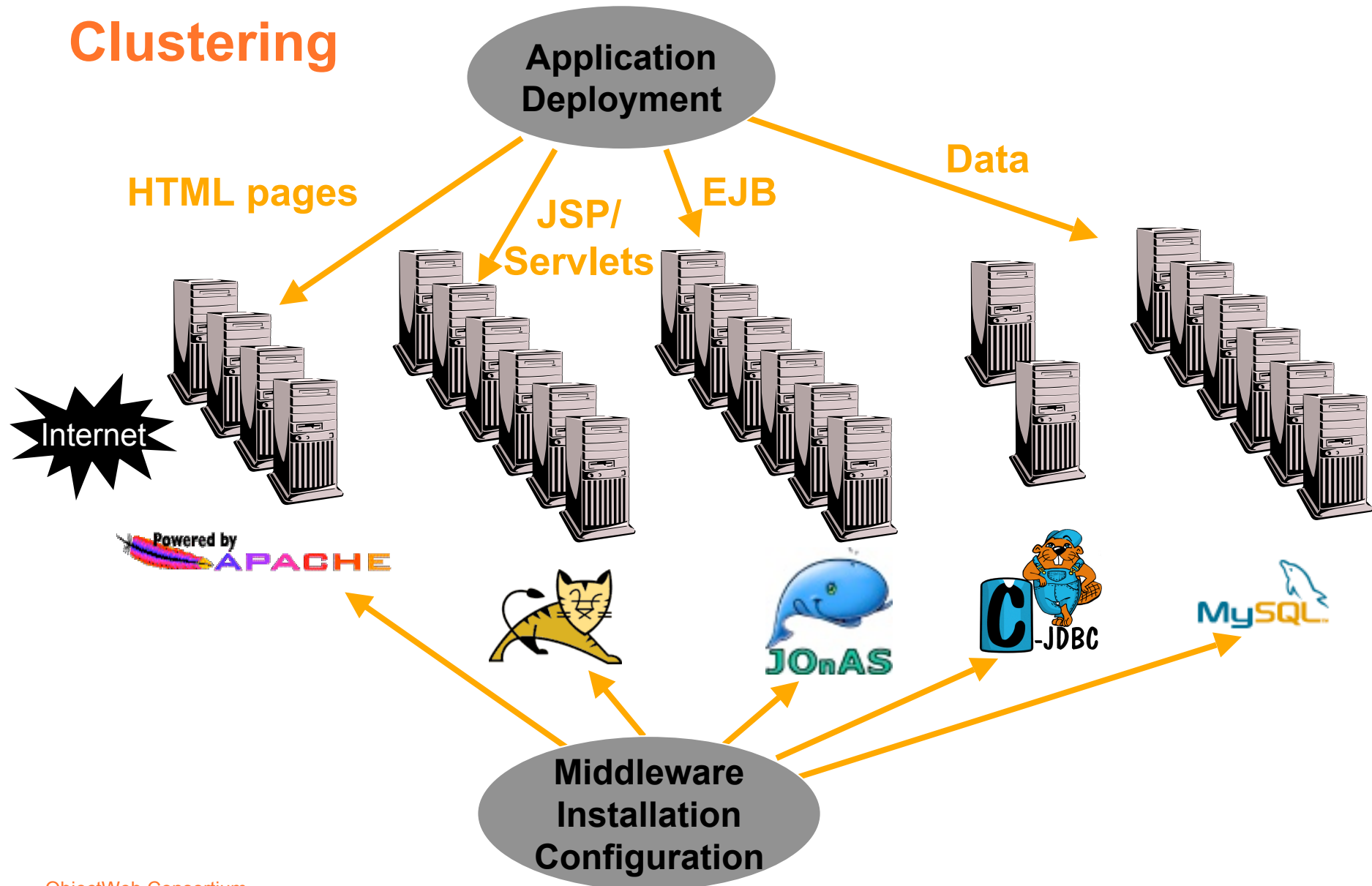JOnAS J2EE Server

GCOS

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**JOnAS
Web Services
Support**

- **Web Services Endpoints (J2EE1.4)**
    - JOnAS deployment tools and Axis integration enable exposure of any « EJB stateless session » or « JAX-RPC class in the Web container » to be exposed as a Web Service
- **Web Services clients**
    - As a J2EE1.4 compliant server, JOnAS allows any J2EE component (Servlet/JSP/EJB) to access external Web Services
- **WS Registry**
    - JOnAS embeds JUDDi to provide WS Registry services
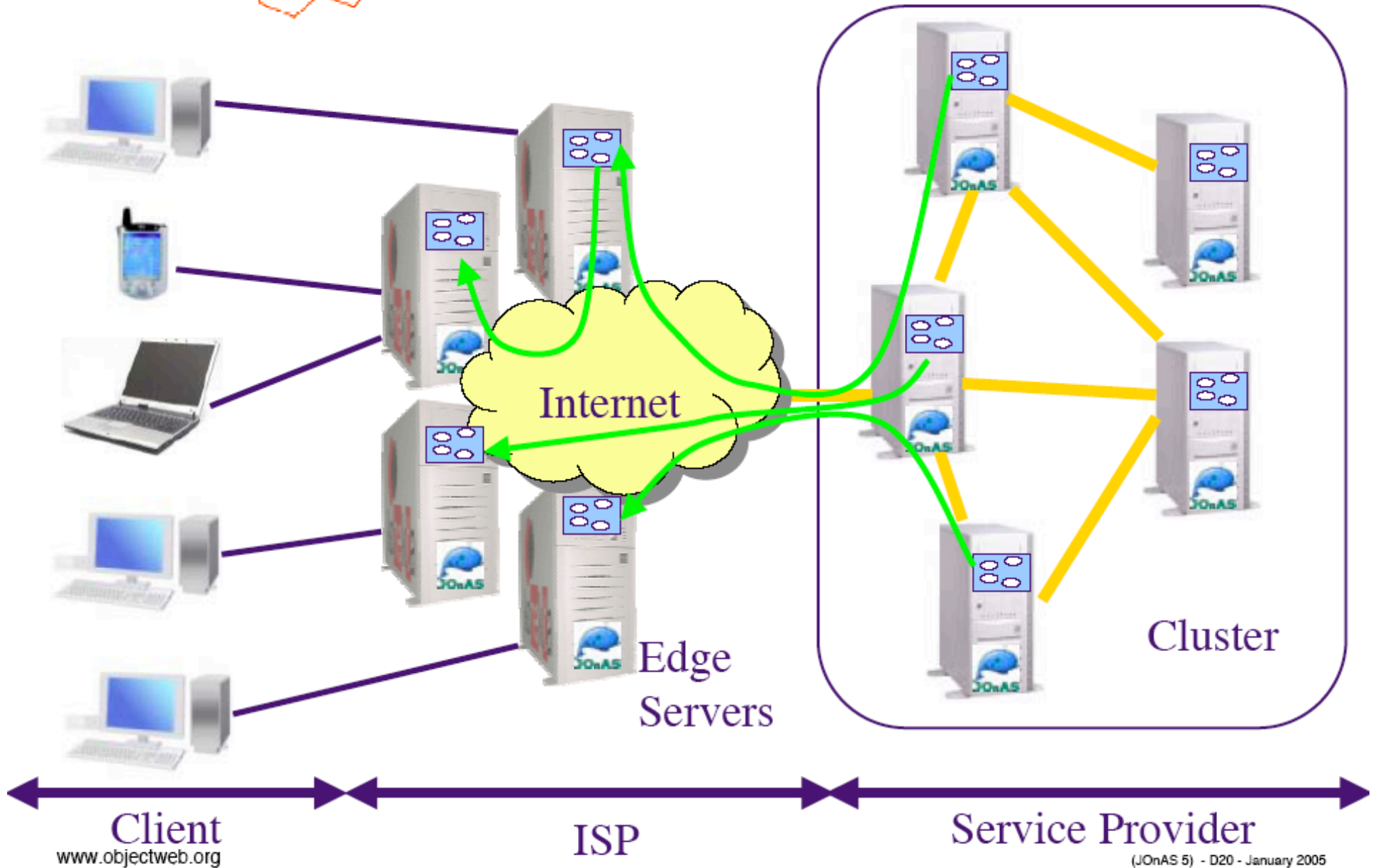
Clustering

ObjectWeb
Open Source Middleware

Application Deployment

HTML pages

Data

JSP/ Servlets

EJB

Internet

Powered by APACHE

JOnAS

C-JDBC

MySQL

Middleware Installation Configuration

ObjectWeb Consortium

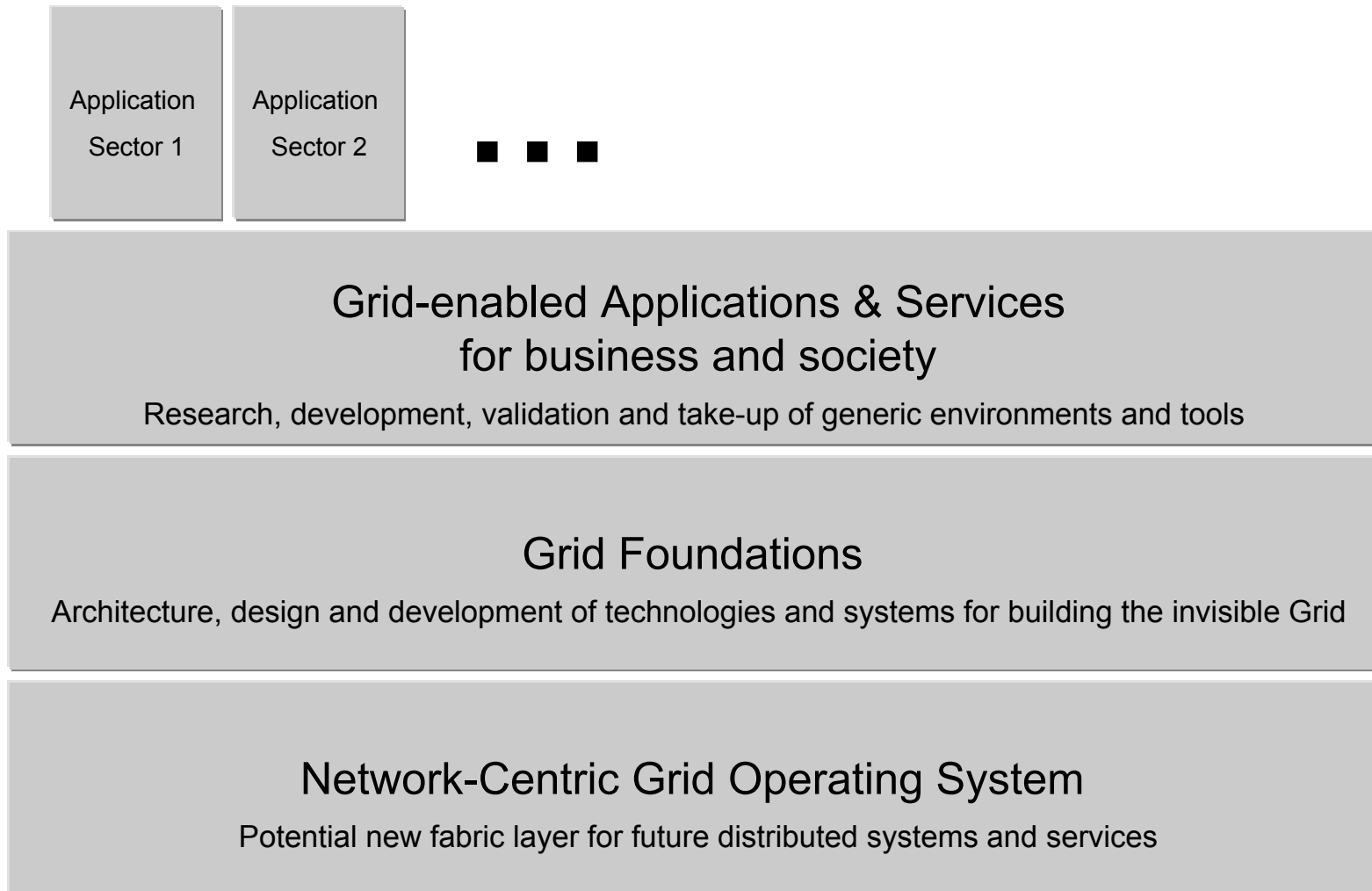# ObjectWeb and Open-Source in Next Generation of GRID Software

Clustering Issues in JOnAS

- **Deployment**
  - Dynamic Resource Assignment (Cartography)
  - Middleware Deployment (Installation, Configuration)
  - Application Deployment
- **Availability**
  - Load Balancer mechanisms
  - Replication mechanisms (sessions)
  - Failure detectors
- **Scalability**
  - Dynamic Resource Allocation and Partitioning
- **Autonomic Management**
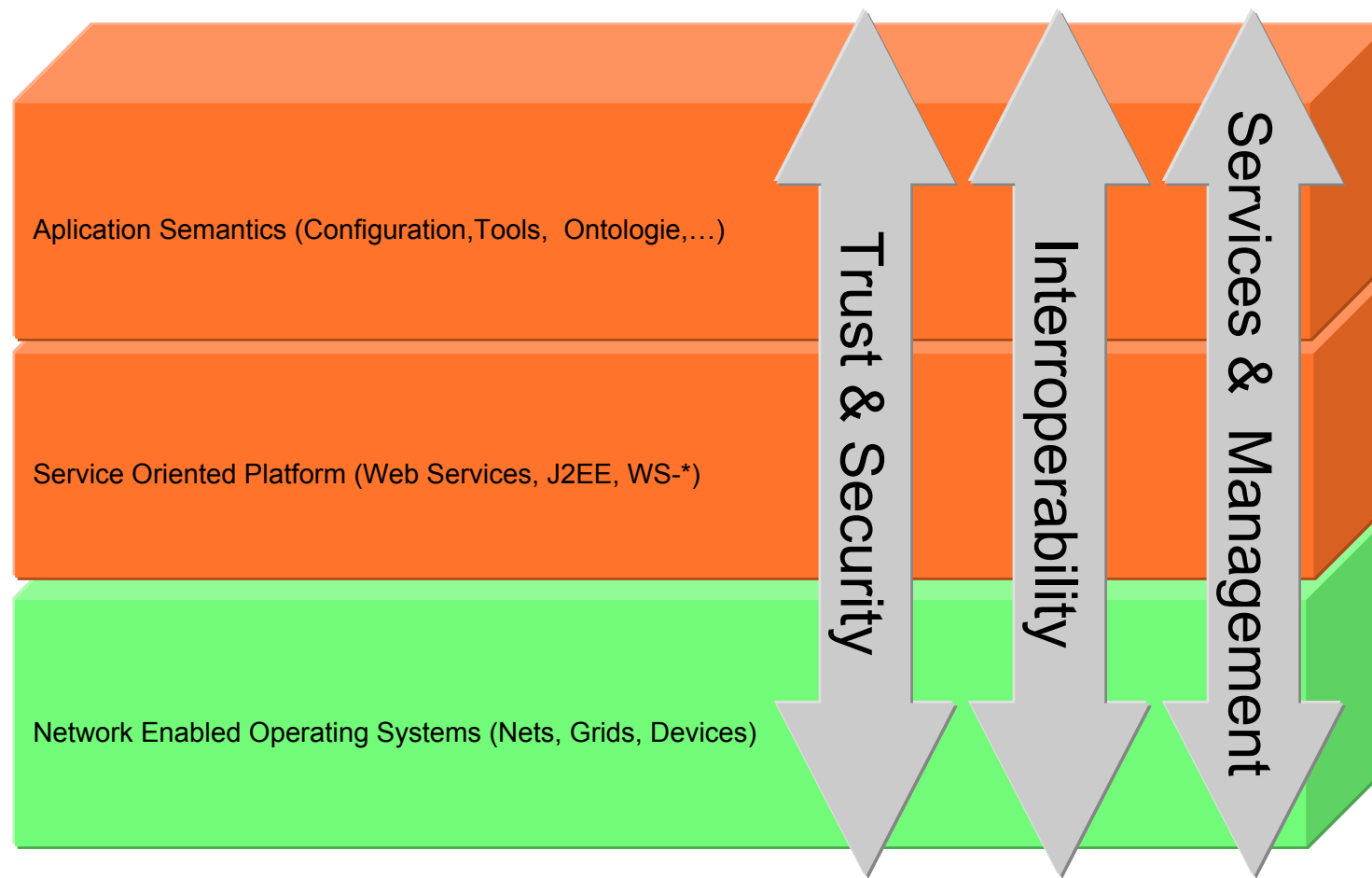 - Dynamic Reconfiguration

Advanced Grid Technologies : The IST View

Application Sector 1

Application Sector 2

■ ■ ■

Grid-enabled Applications & Services
for business and society

Research, development, validation and take-up of generic environments and tools

Grid Foundations

Architecture, design and development of technologies and systems for building the invisible Grid

Network-Centric Grid Operating System

Potential new fabric layer for future distributed systems and services

ObjectWeb Vision of NG Middleware

ObjectWeb

Open Source Middleware

Aplication Semantics (Configuration,Tools, Ontologie,…)

Service Oriented Platform (Web Services, J2EE, WS-*)

Network Enabled Operating Systems (Nets, Grids, Devices)

Trust & Security

Interoperability

Services & Management

ObjectWeb Consortium

Innovative building blocks for Grid Middleware

- ProActive
  - An Open Source Java Library for parallel, distributed and concurent computing. It features mobility and security in a uniform framework. With a reduced set of primitives, it provides a comprehensive APIS that simplify the programming of applications dietributed on : Local Area Network, Cluster of Workstations, Internet Grids, Peer-to-peer intranets,
- Fractal
  - A generic-purpose open-source software composition framework that support component-based programming including : component (type) definition and configuration (instantiation), runtime management including dynamic reconfiguration.
- And Also
  - ActiveXML, Xquark, …

Will Open-Source Grid Middleware be yours?

More information
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christophe.ney@objectweb.org