Web-Based Application Integration

Extending the Business benefits of your applications

John Apps
Senior Technical Architect
Business Critical Systems
Session 2062

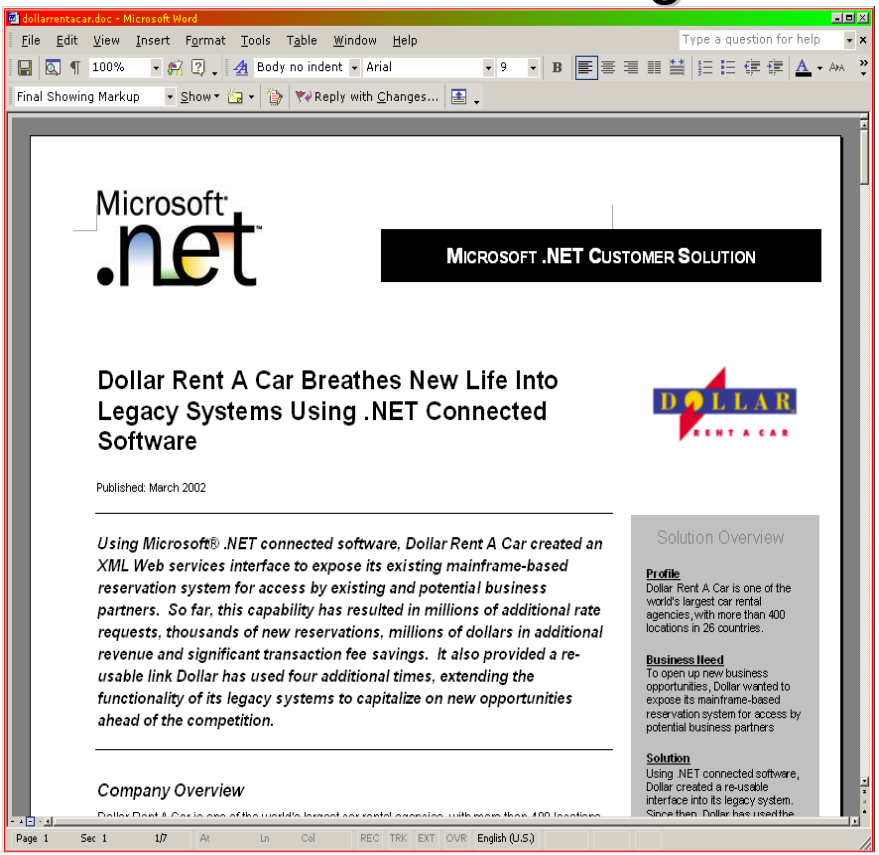
HP WORLD 2003
Solutions and Technology Conference & Expo

Agenda

- Business benefits of applying integration technologies
  - An example
- Customer issues addressed
- Integration/Web Services
- Customer examples
- Resources to help you

Business Benefits: An Example

Using the Service-oriented Architecture to integrate multiple systems using different technologies on heterogeneous platforms



Microsoft .net

MICROSOFT .NET CUSTOMER SOLUTION

Dollar Rent A Car Breathes New Life Into Legacy Systems Using .NET Connected Software

Published: March 2002

Using Microsoft® .NET connected software, Dollar Rent A Car created an XML Web services interface to expose its existing mainframe-based reservation system for access by existing and potential business partners. So far, this capability has resulted in millions of additional rate requests, thousands of new reservations, millions of dollars in additional revenue and significant transaction fee savings. It also provided a re-usable link Dollar has used four additional times, extending the functionality of its legacy systems to capitalize on new opportunities ahead of the competition.

Company Overview

Solution Overview

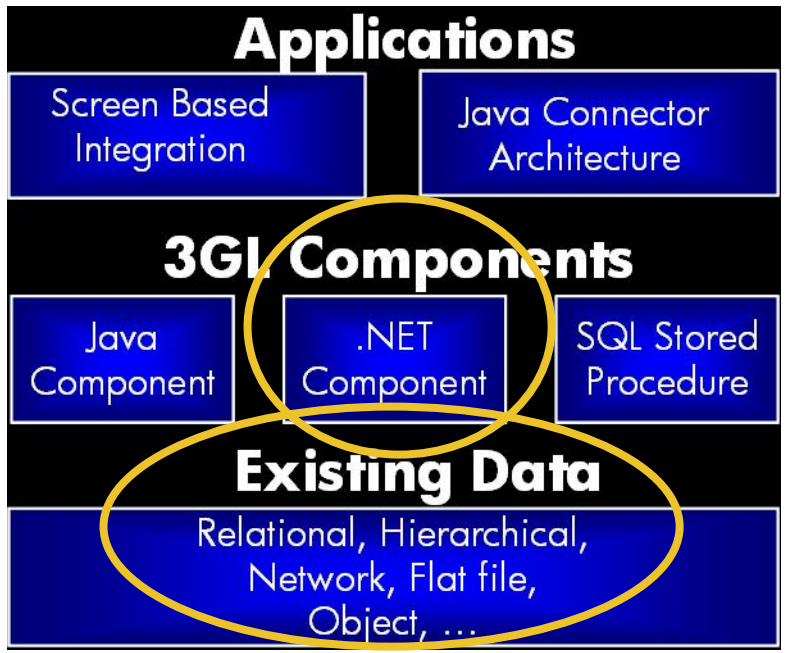
Profile
Dollar Rent A Car is one of the world's largest car rental agencies, with more than 400 locations in 26 countries.

Business Need
To open up new business opportunities, Dollar wanted to expose its mainframe-based reservation system for access by potential business partners

Solution
Using .NET connected software, Dollar created a re-usable interface into its legacy system.

http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=11626

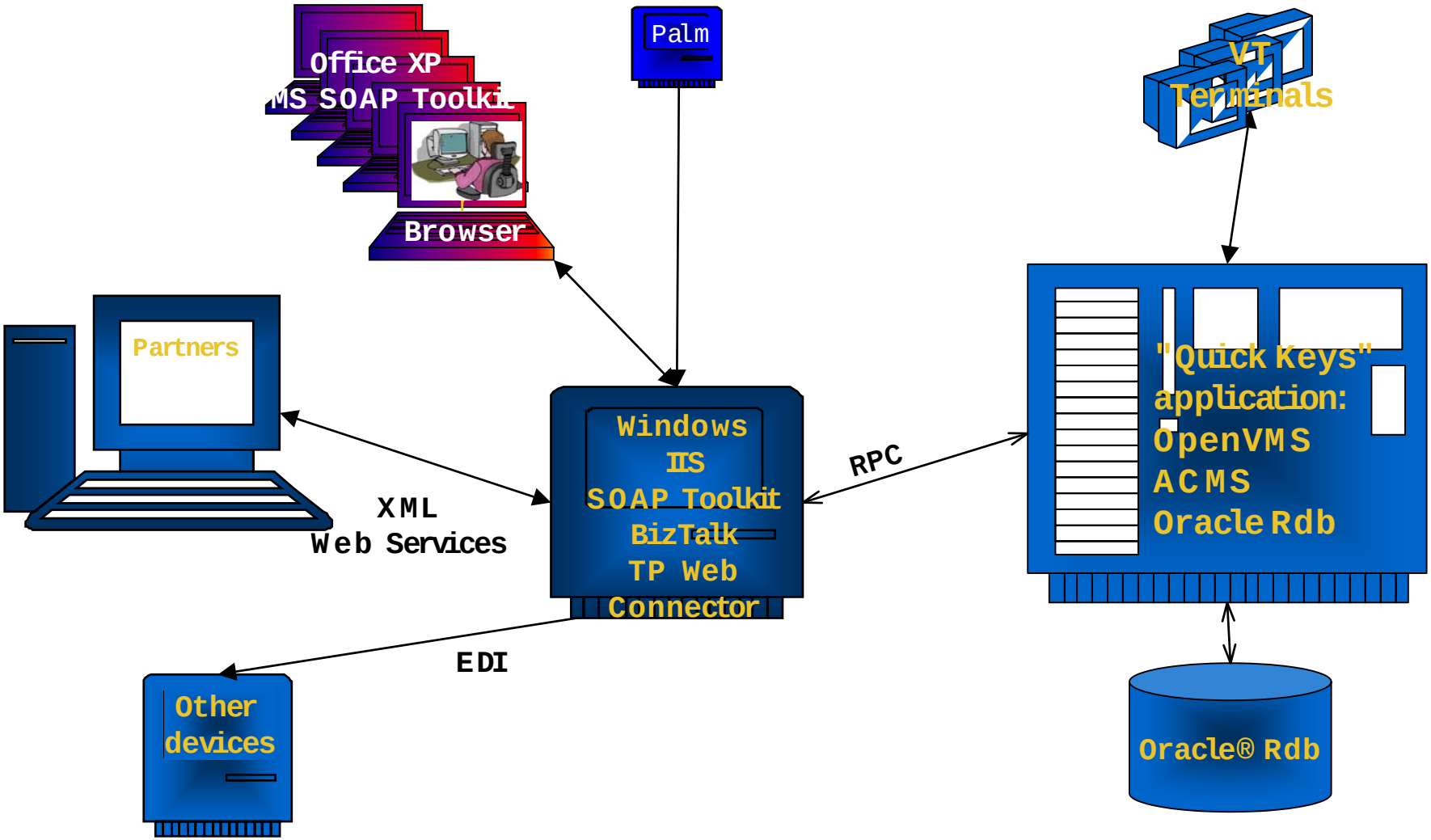
Getting the best of both worlds, minimizing the risk!



Business Benefits: Background

- Dollar wanted to provide partners with direct access into its reservation system — an OpenVMS-based application known as Quick Keys.
- For Dollar, a key benefit of this capability would be the relatively low cost of acquisition for new reservations.
- The company received the majority of its reservations through Global Distribution Systems (GDS) such as Sabre or Apollo, paying a fee for each transaction.
- By integrating directly with partners, Dollar would be able to drive incremental reservations while lowering its customer acquisition costs—a very attractive combination.

Business Benefits: Architecture



Dollar Rent A Car Case Study

Business benefits

- Dollar cost-effectively opened up another sales channel that has provided millions of additional rate requests and thousands of new reservations per year, equating to millions of dollars in additional revenue.
- The company expects to save a significant amount in annual GDS fees.
- Just as important, the company put in place a simple, re-usable interface into its reservation system that could be accessed by any system via the Internet.
  - *"We knew exposing our reservation system as an XML Web service would provide a standard interface that could be used by a wide range of other applications, both internal and external,"*
- Delivering a Palm Interface in 45 days
  - *"Time required to integrate each new business partner by 75 percent—from two months down to two weeks—and we won't need to modify our mainframe applications for each new partner."*

***R*eturn *O*n *I*nvestment**

Return on Investment (ROI) is a financial term for the economic gain directly associated with a particular capital outlay. It's a calculation of how much money comes back (or is not spent) for every dollar invested. Essentially ROI is nothing more than the sum of all the cash flows associated with a specific project or initiative, over some period of time. Simply stated:

Dollar ROI = Total Benefit – Total Investment

where:

Benefits **= Increased Revenues + Cost Savings + Avoided Costs**

Total Investment **= Custom Development/Integration Costs**
+ Equipment/Connectivity Infrastructure Costs
+ Ongoing Maintenance/Support/Training

ROI is meaningful only when considered within a defined time period. An 800% ROI may be staggering for some industries if it can be achieved in 6 weeks, but unacceptable if it takes 18 months.

The Challenges

- Develop new applications or enhance existing ones
- Skills gap breaching
  - Can I re-use traditional skills in the new approach
- Implementing “package based solutions” which:
  - Integrate with existing Applications
  - Re-use existing Data stores
- Developing “Platform agnostic” Applications (Repeatable solutions)
- Existing Character cell based applications
  - Internet access / PDA access/ Integration with other applications
  - Re-writing the GUI/Application logic or re-hosting

Challenges and Questions

- Who can manage this “new world for me”?
- What skills do I need?
- Too much Software vendor information
  - Where can I get advice?
- Web Service based solutions
  - Hype or realistic or ready for prime time?

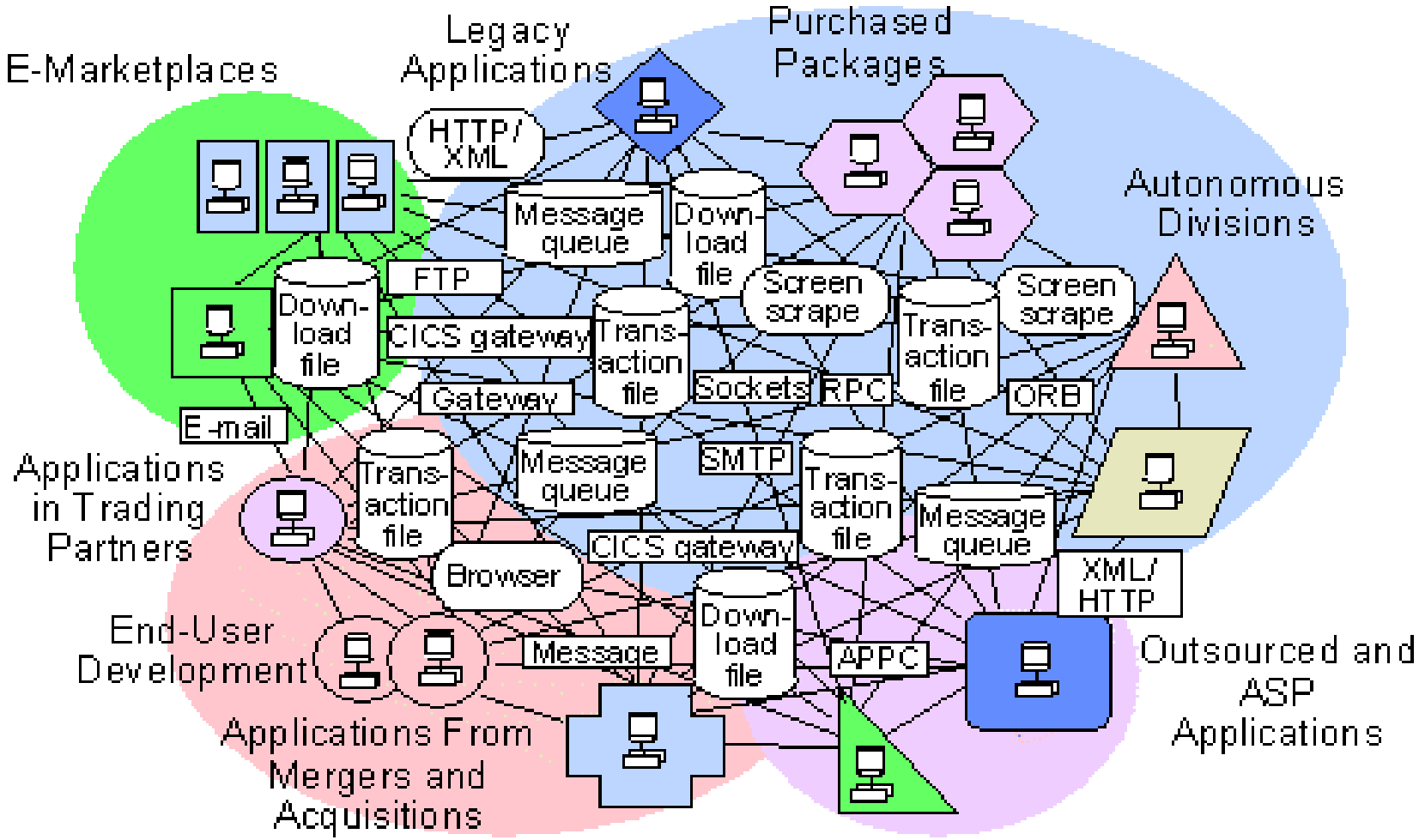
Opportunities

- New markets opportunities
  - Collaboration in cross segment engagements: (Mfg / Transport / Finance / etc.)
- Shared implementation “blueprints” being spread across all our solution architects for multi-platform implementations.
- Consolidation opportunities (Application infrastructure and hardware)
- Managed Services, UDC implementations
- “Satellite” account activity (B2B activities)

Integration/Web services

HP WORLD 2003
Solutions and Technology Conference & Expo

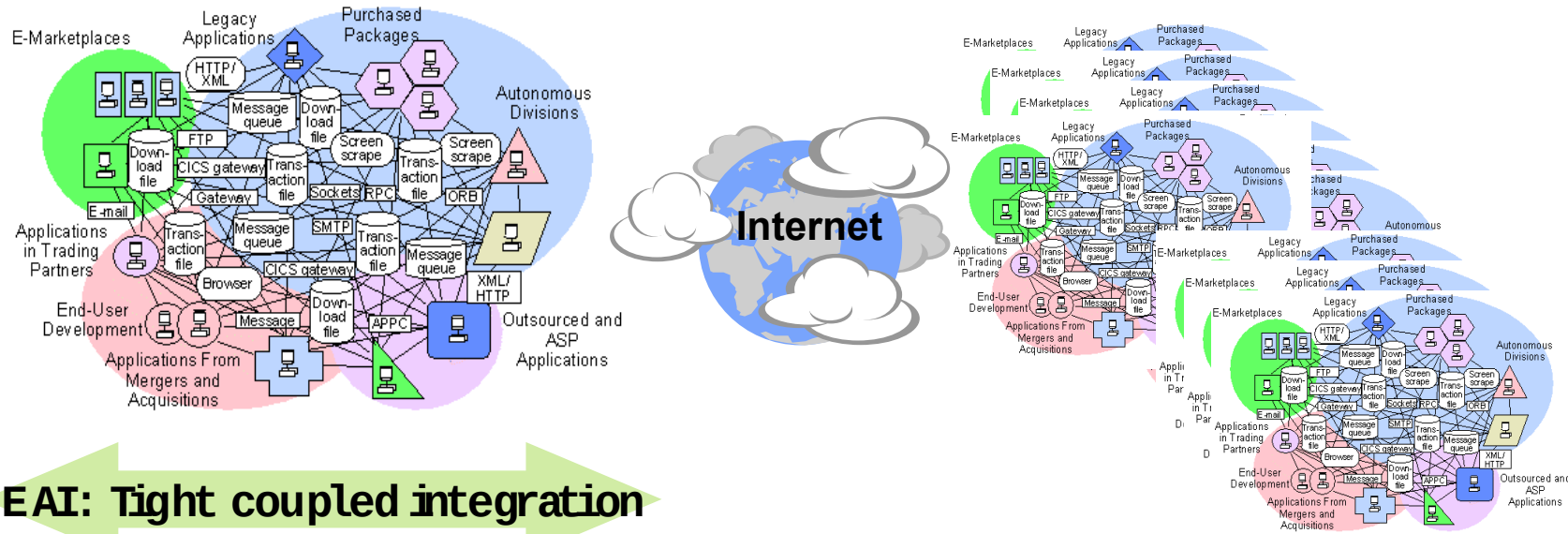
Traditional Integration Architectures are NOT sufficient for the Modern Enterprise



"Customers are still integrating the applications they bought in the late 90's"

Source: Gartner

Web Services are the *next wave* of Enterprise computing for Enterprises to automate interactions on open and dynamic markets



EAI: Tight coupled integration

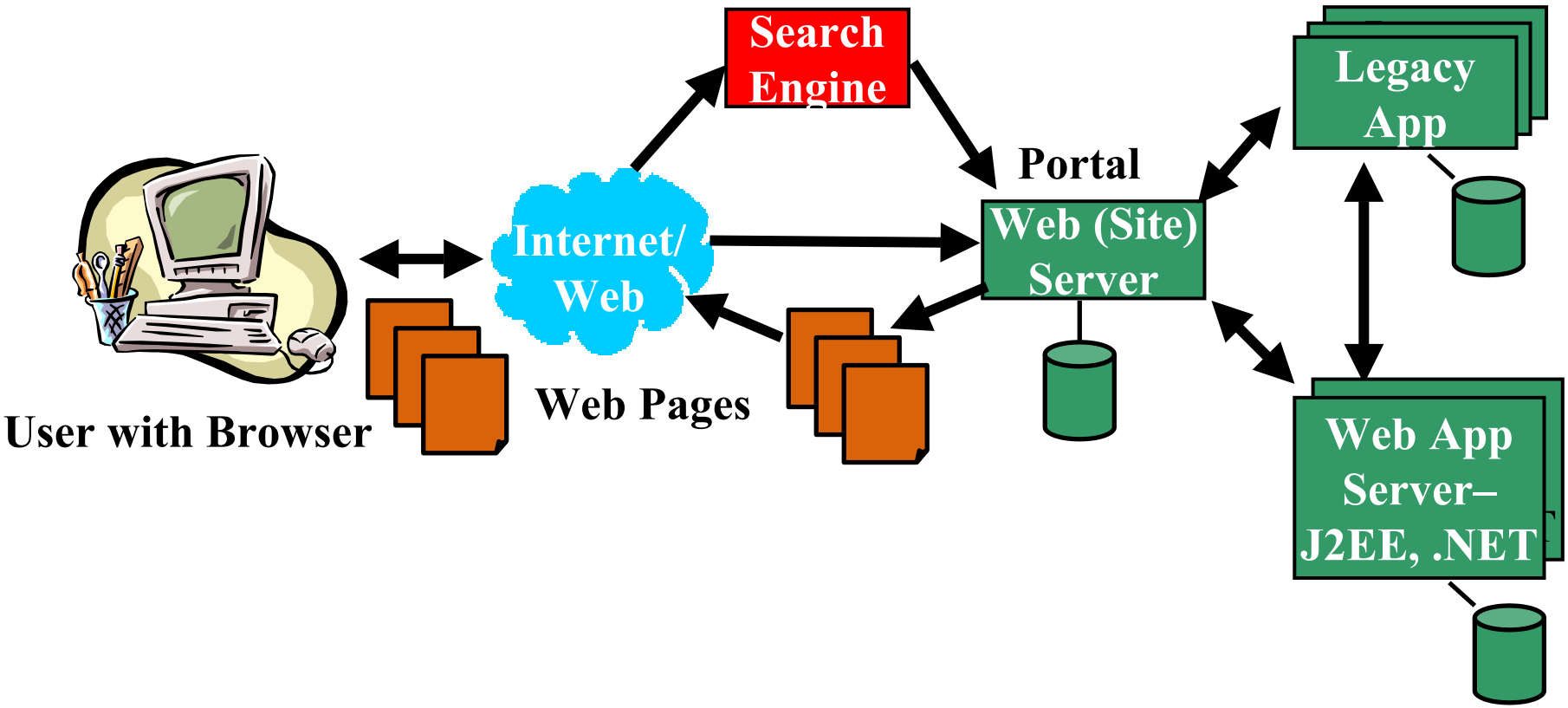
Web Services: Standards supporting dynamic – real time Integration

Web Services provide a standardized mechnanism and concept to Automate Business to Business Interactions dynamically.

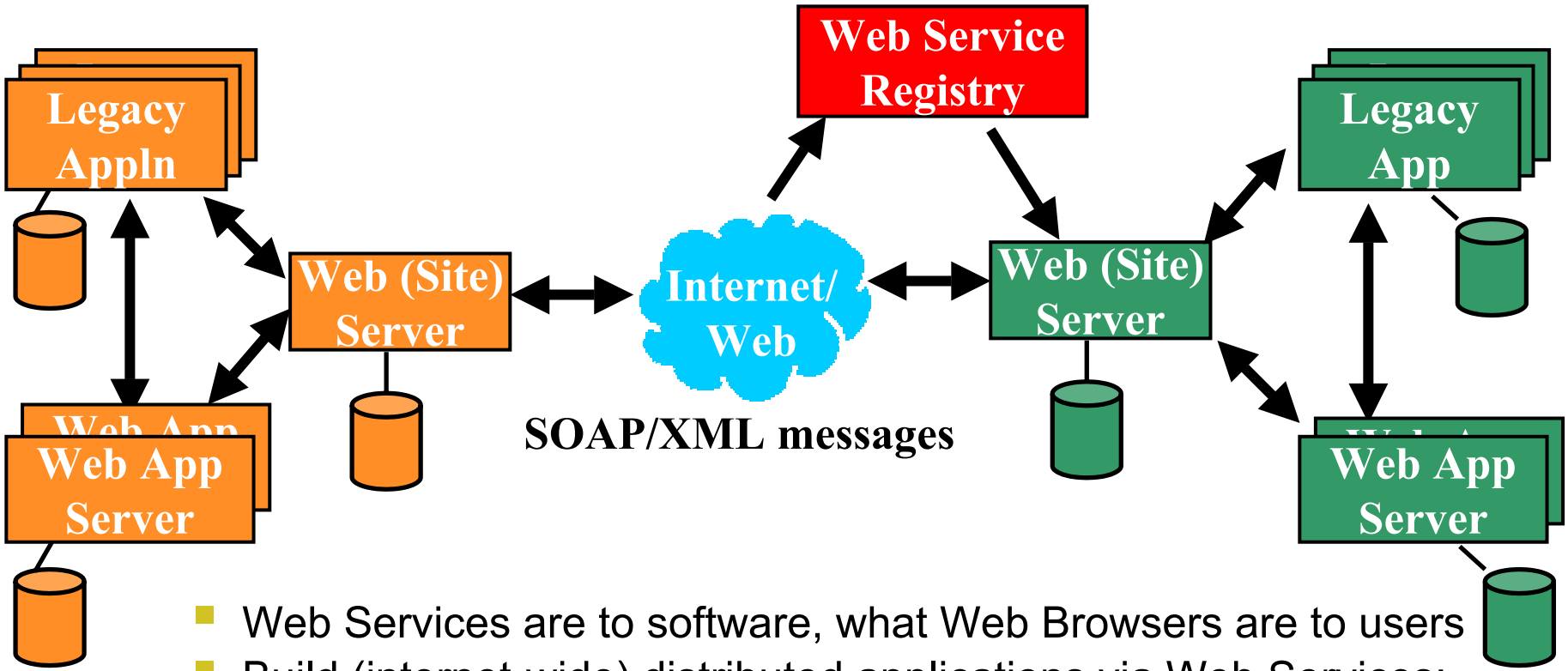
Integration Technologies

- **Application Servers**
  - J2EE and .NET
- **Web services**
  - XML, SOAP, WSDL, UDDI
- **Integration servers**
  - Data integration
  - Application integration

Browser-based use of the Web



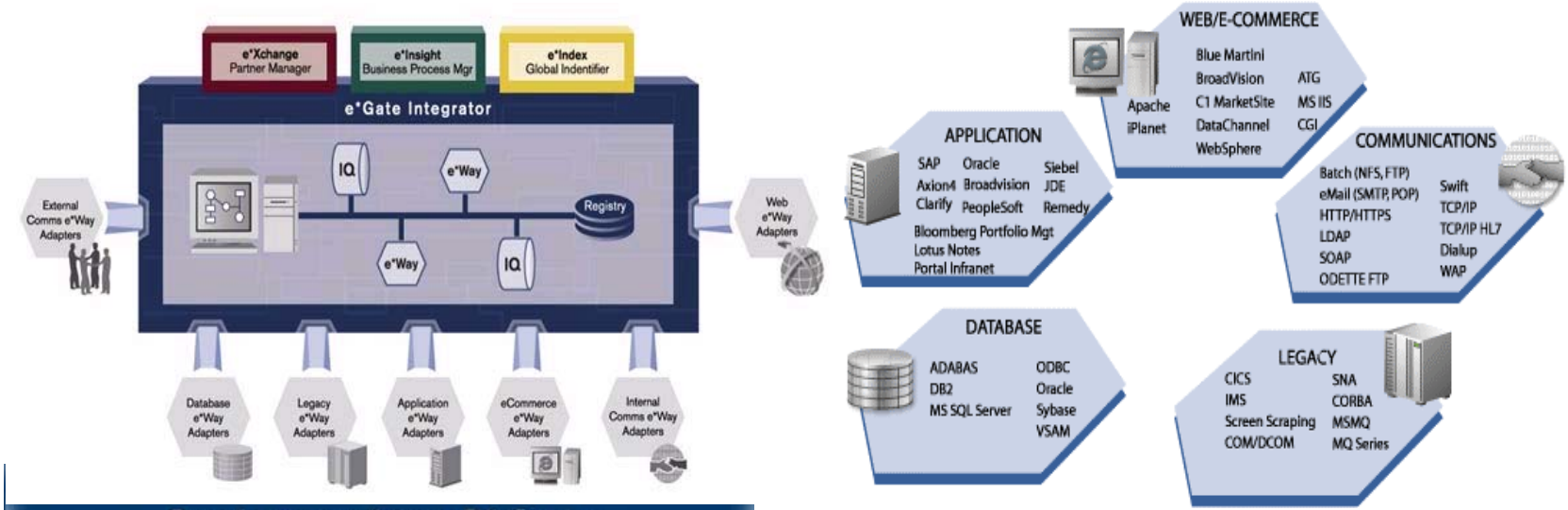
Web Services-based use of the Web



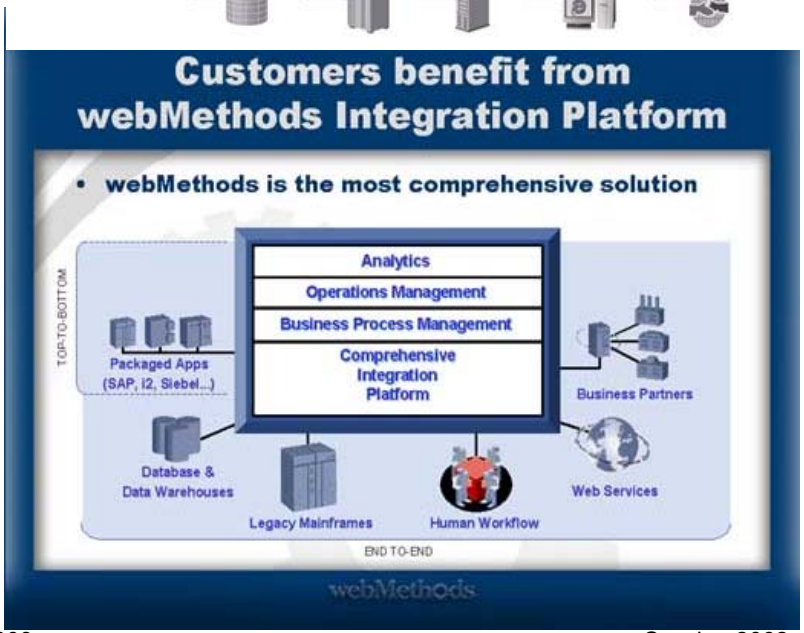
- Web Services are to software, what Web Browsers are to users
- Build (internet-wide) distributed applications via Web Services:
  - accessible using standard Internet protocols
  - Independent of hardware platform & operating system
  - Independent of programming language
  - represent black-box functionality that can be reused without worrying about how the service is implemented

Integration Servers (for legacy & packaged application integration)

SeeBeyond



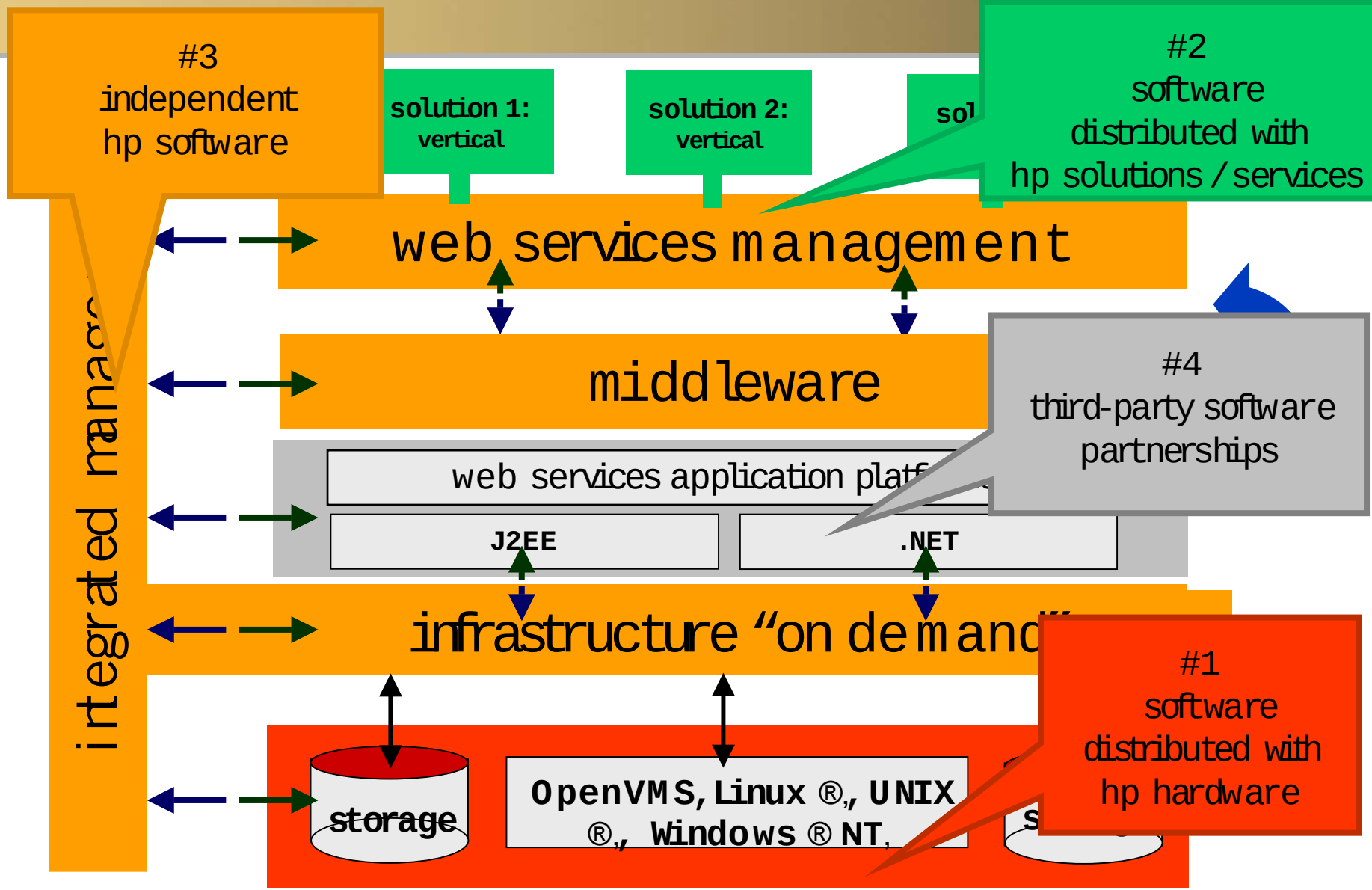
webMethods



Open Management Interface (OMI) jointly authored by webMethods and HP

TIBCO, IONA, ASCENTIAL, ATTUNITY, …

software across hp



HP and Software Consortia in this space

OASIS	Board, Officer
WS-I	Board, Officer
Liberty Alliance	Board, Officer
W3C	Advisory Board
RosettaNet	Board, CTO
Open Group	Board
DMTF	Board, Officer
TMF	Board
JCP	Executive Committee
OMG	Board
ECMA	Board, Steering Committee
etc.	

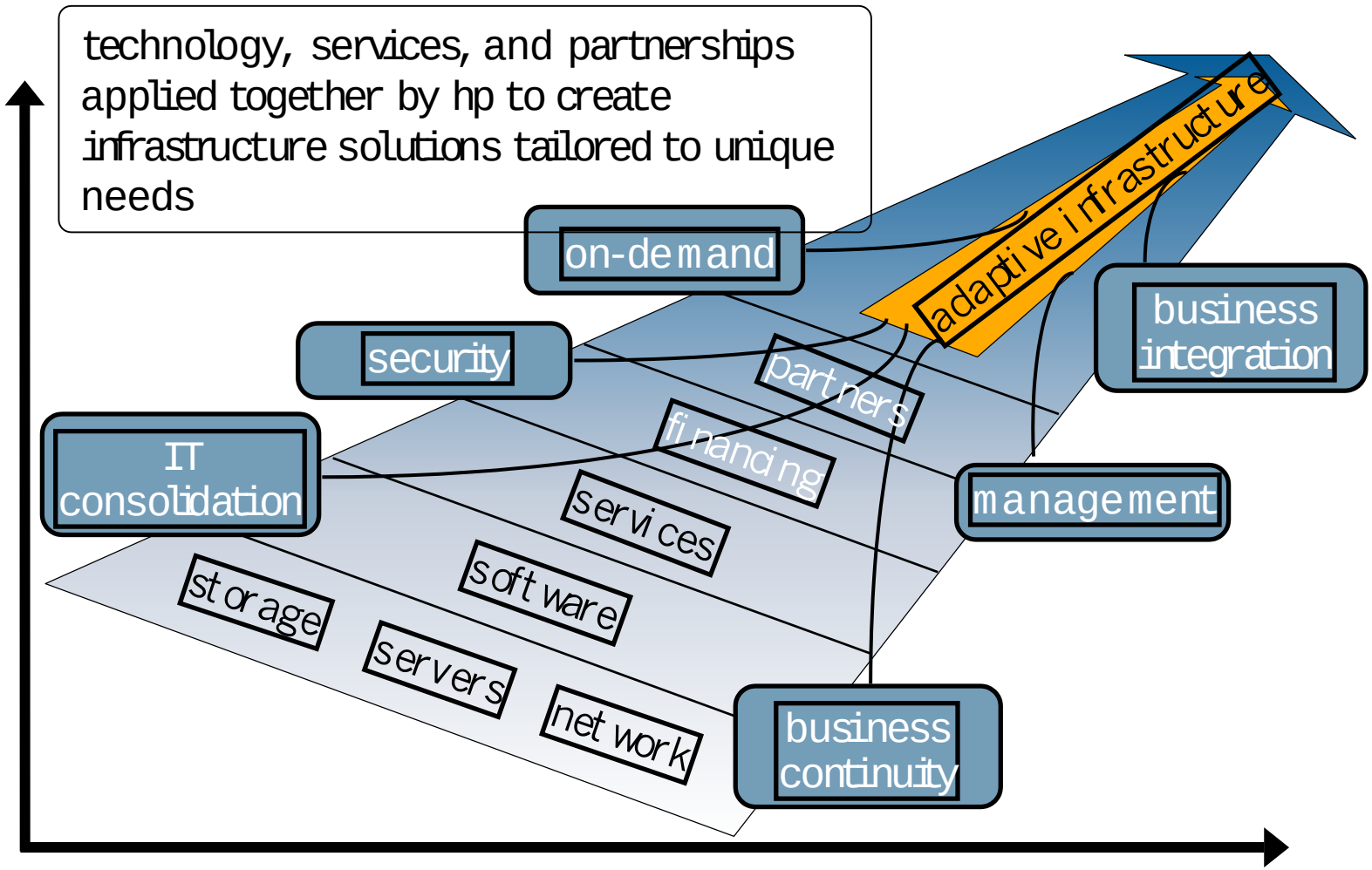
Customer examples

Using Internet based integration architectures

HP WORLD 2003
Solutions and Technology Conference & Expo

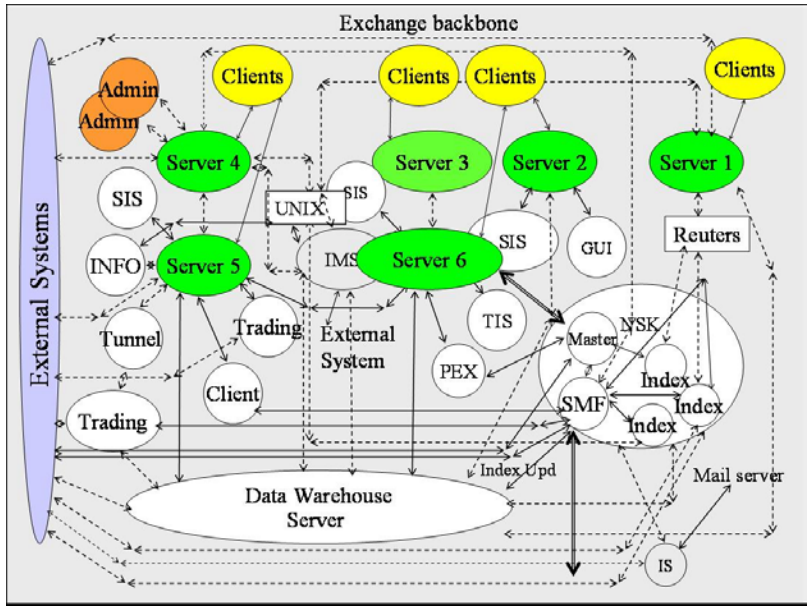
Service-oriented Architecture

Enabling an adaptive infrastructure

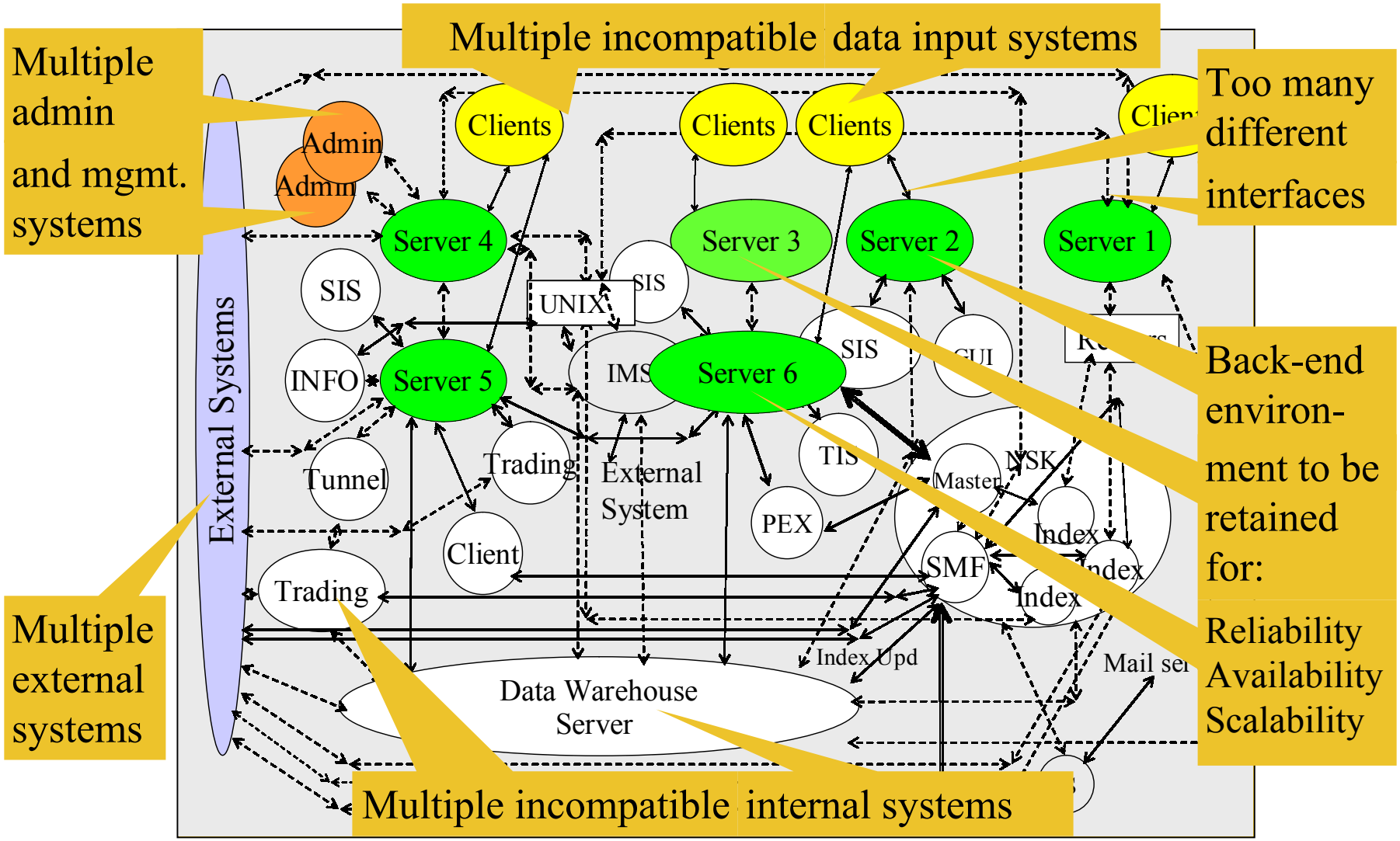


SOA: Integrating the new with the Existing

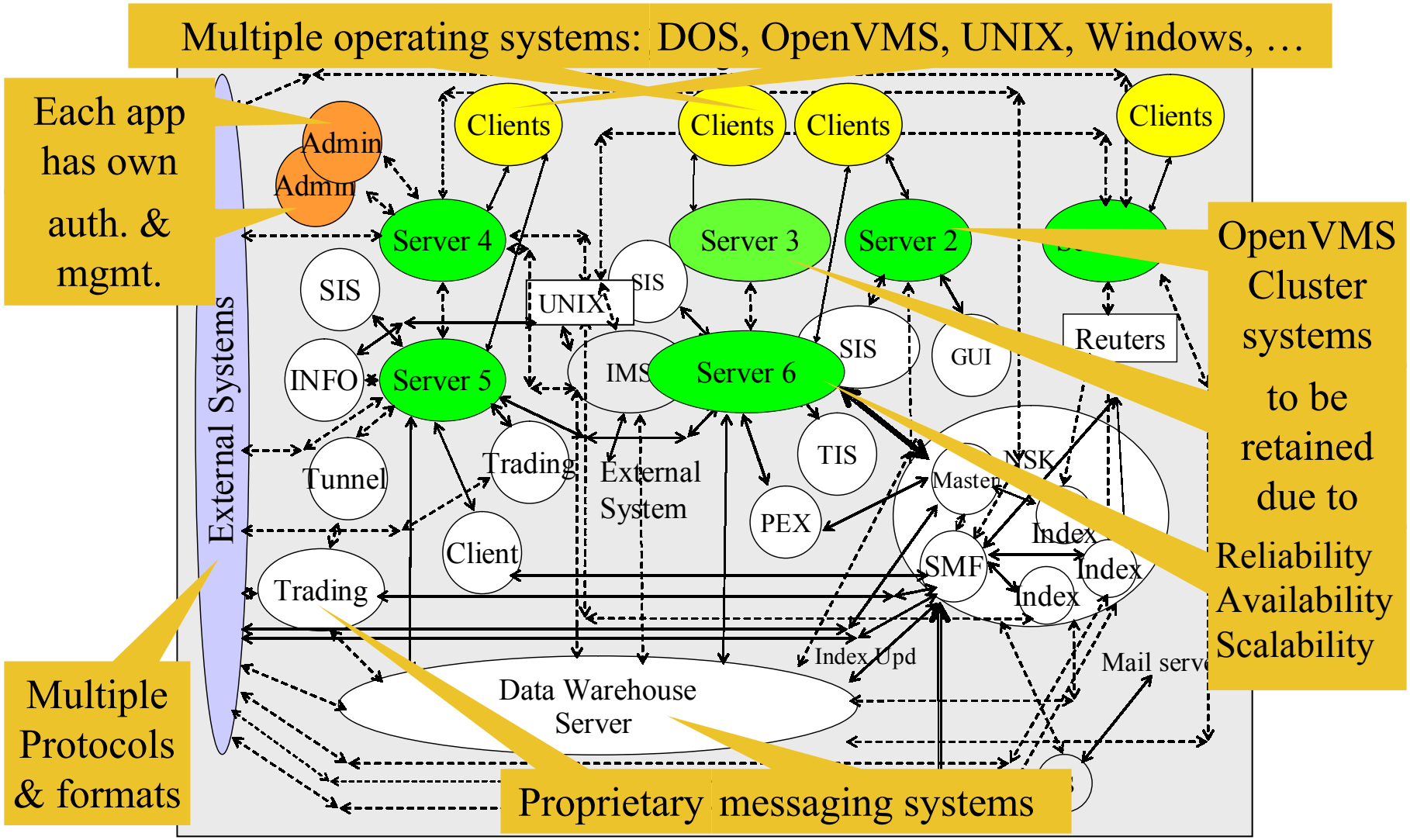
- Stable, long-running back-end application in a disaster tolerant cluster configuration
- Multiple platforms
  - OpenVMS (back-end)
  - UNIX®
  - Windows®
  - Linux
- However
  - Too many disparate data entry points leading to inconsistent data
  - Maintenance, user and data management very difficult
  - Hard to integrate new systems and applications
- Need to streamline interfaces and provide easy growth path for new clients and applications



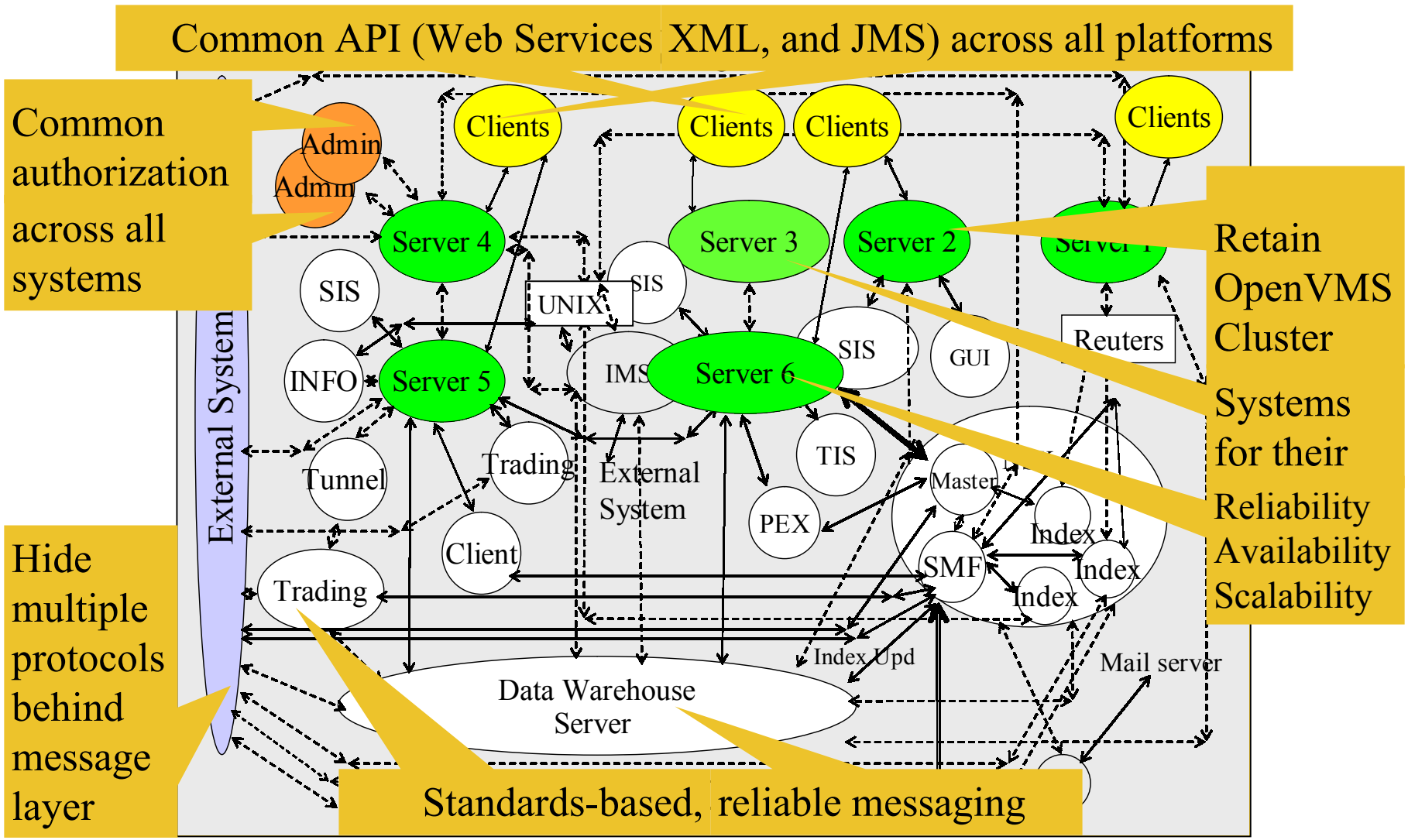
SOA: Integrating the new with the Existing



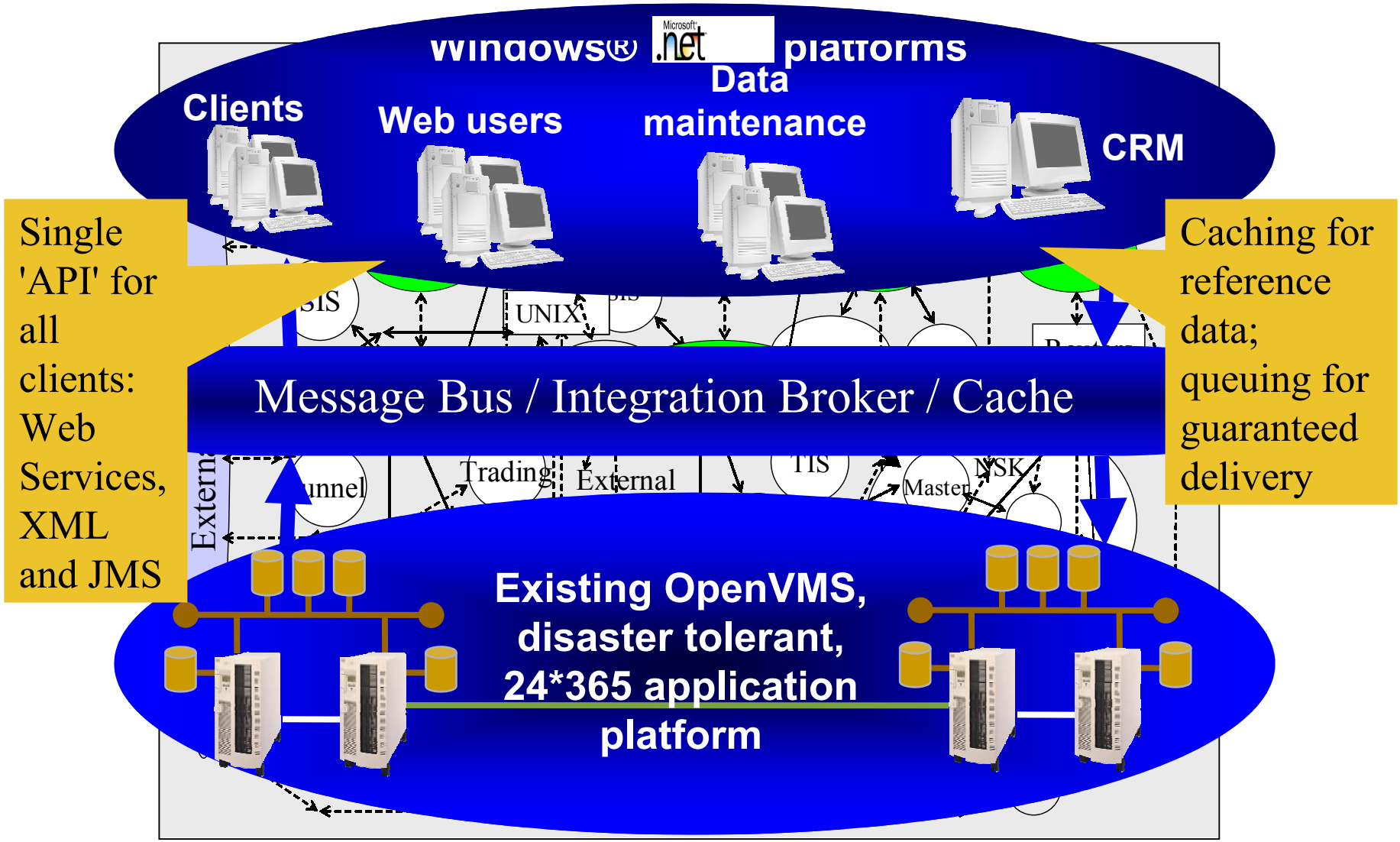
SOA: Integrating the new with the Existing



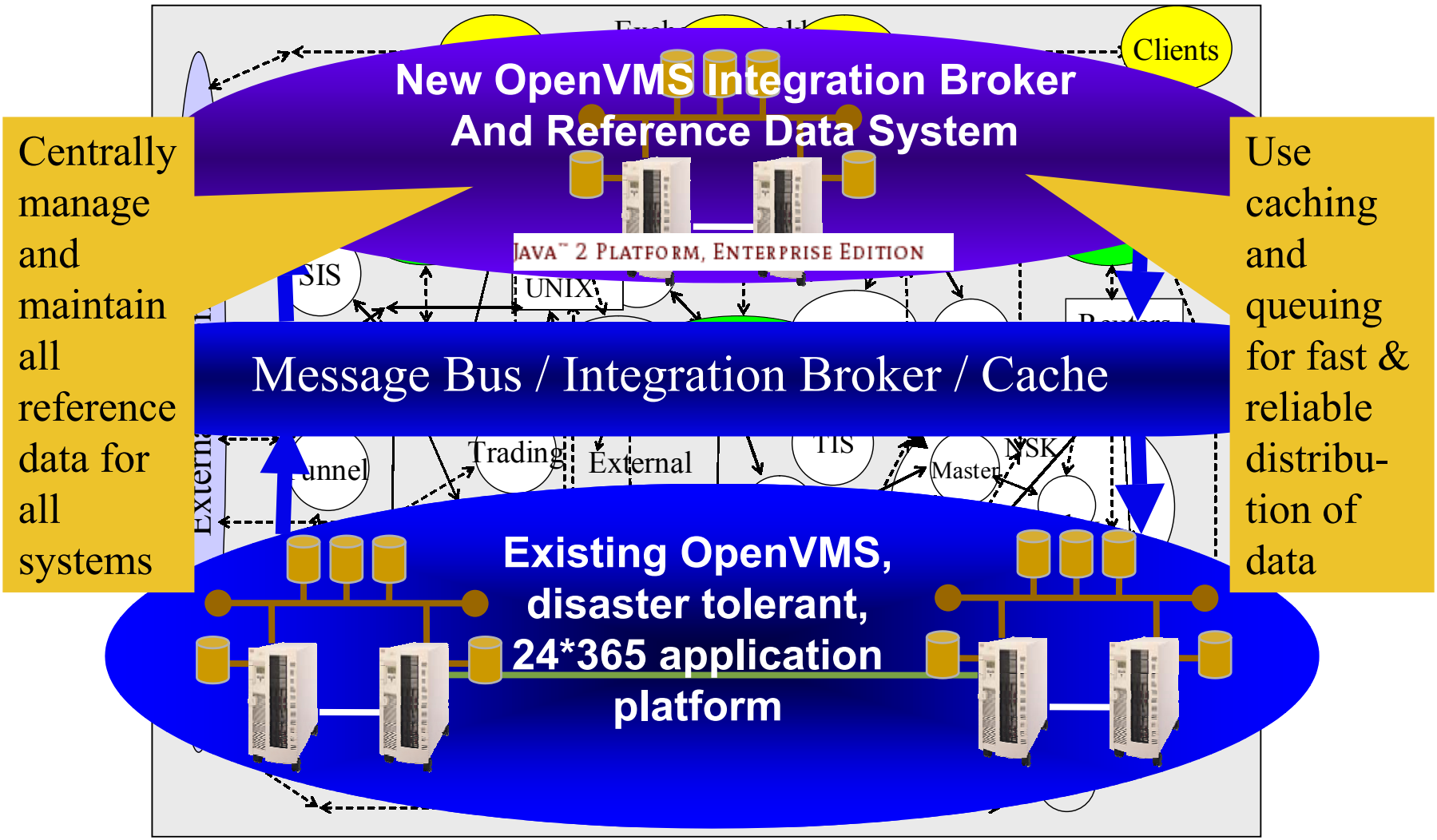
SOA: Integrating the new with the Existing



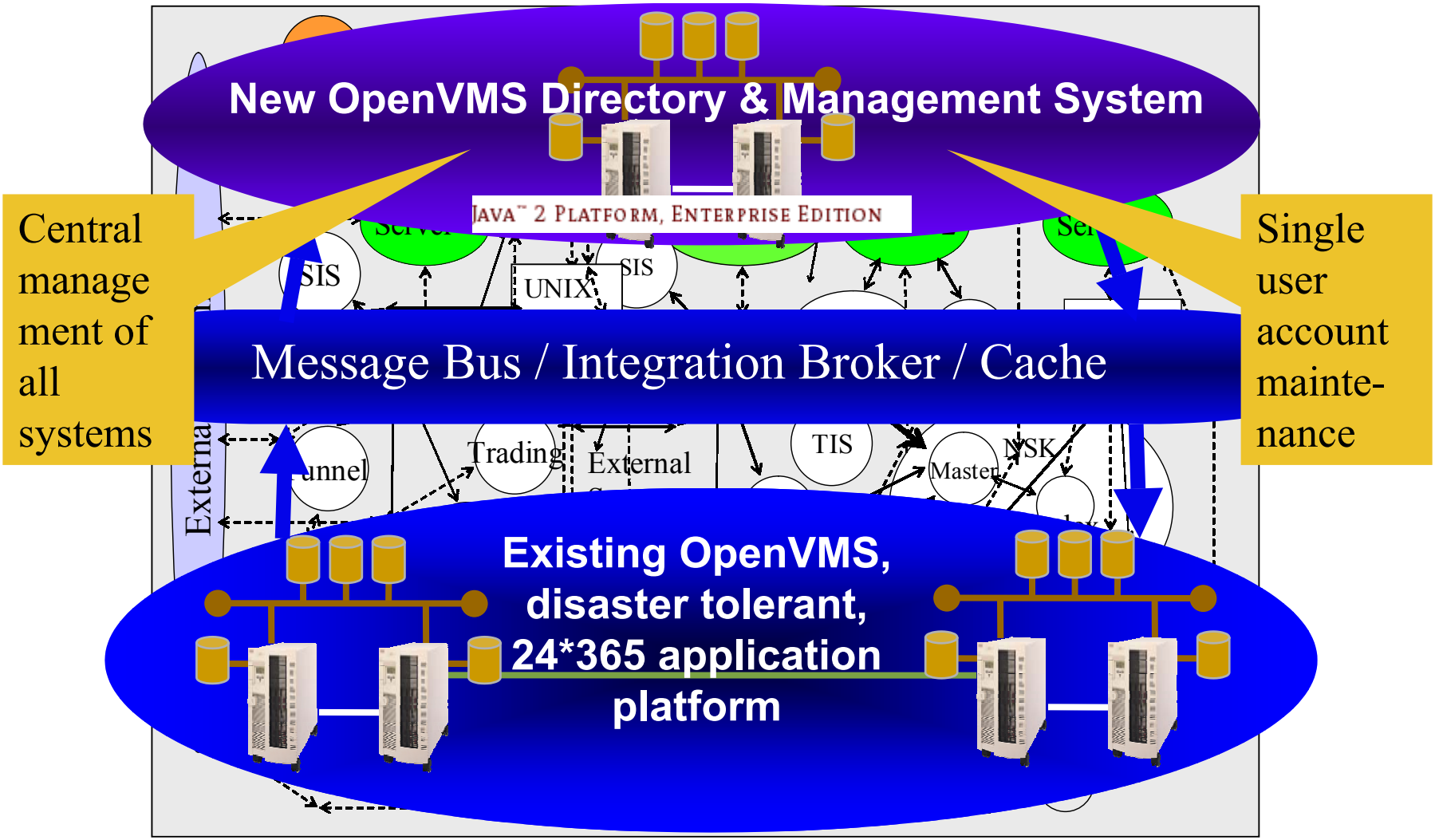
SOA: Integrating the new with the Existing



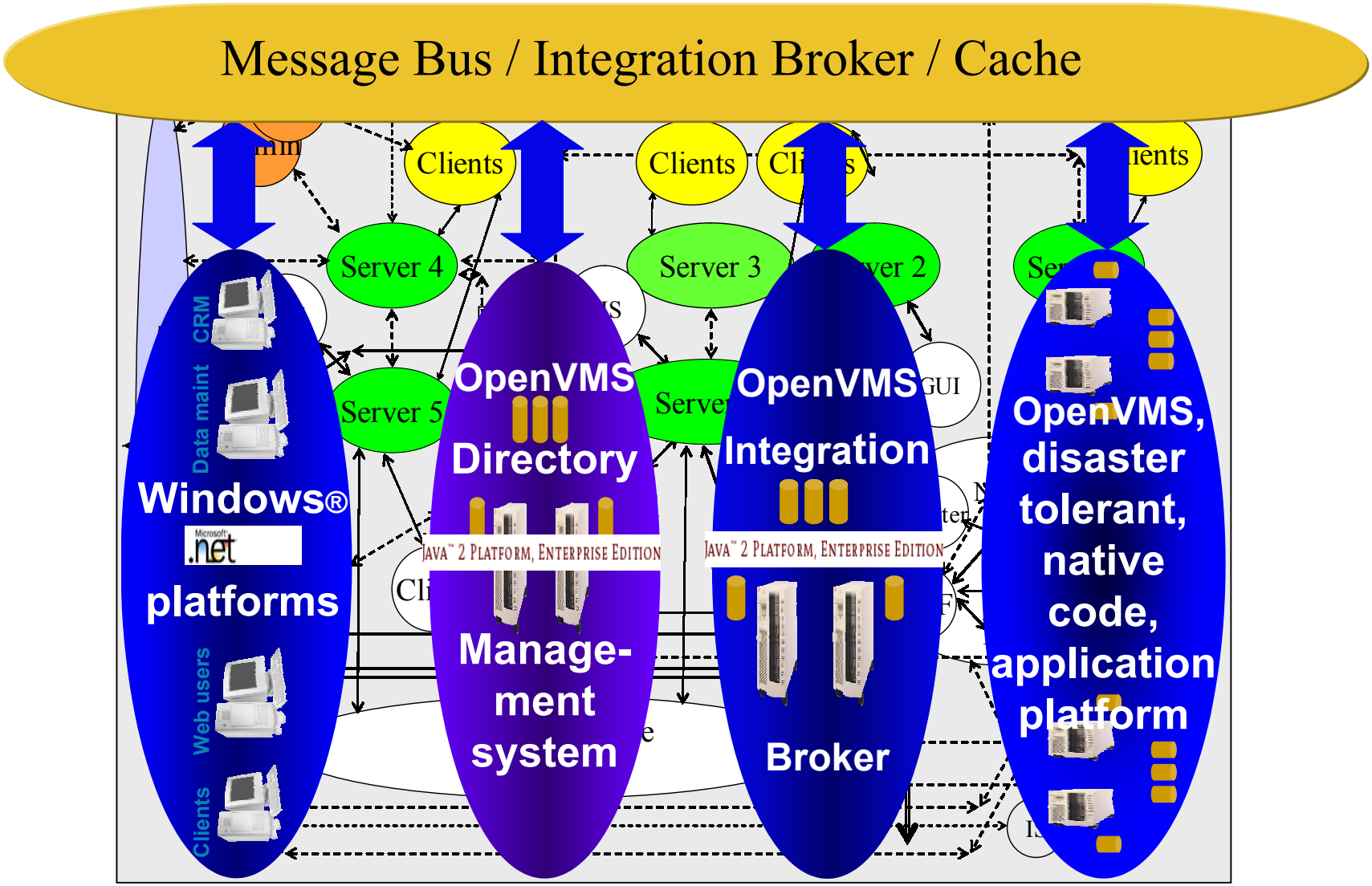
SOA: Integrating the new with the Existing



SOA: Integrating the new with the Existing



SOA: Integrating the new with the Existing



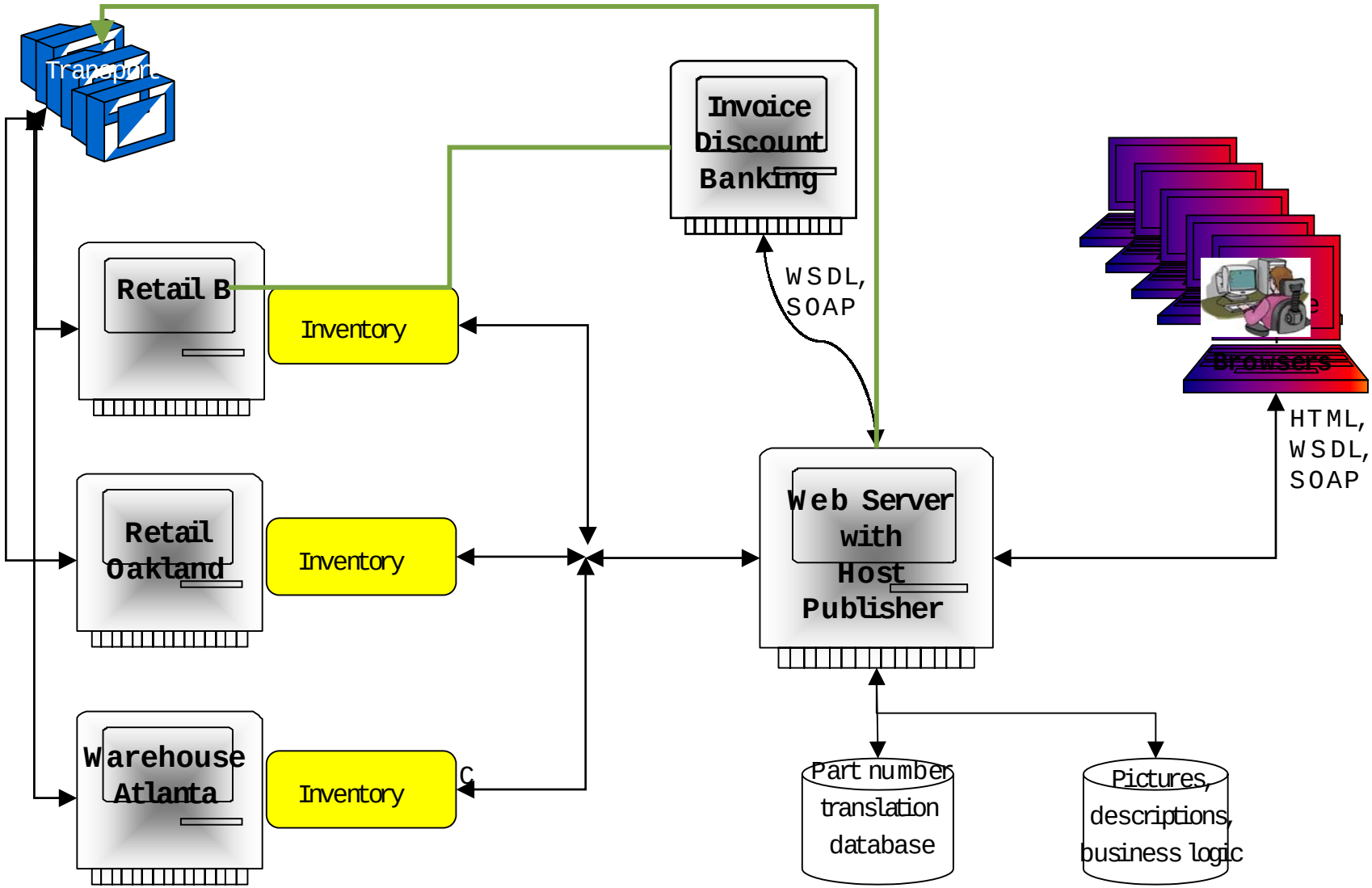
Example (1)

- Fabric Mill mfg in Carolina, USA
- Traditional IT environment 24/7. Very stable
- Traditional development skill sets

Business drivers

- Biggest customers were large retail chains
- Pressure to automate the supply chain and reduce costs
- Current “Integration” systems paper/phone based
- High error potential
- Cost of Sales too high

Example (1)


Transport
Invoice
Discount
Banking
WSDL,
SOAP
Retail B
Inventory
Retail
Oakland
Inventory
Warehouse
Atlanta
Inventory
Web Server
with
Host
Publisher
Browsers
HTML,
WSDL,
SOAP
Part number
translation
database
Pictures,
descriptions,
business logic

Example (2)

3GL Legacy OpenVMS Application

- ALL-IN-1 used for email and as a menu system for 3GL applications
- Hundreds of COBOL/FMS applications accessing RMS data files
- Developed and maintained in-house
- Four categories of applications
  - “heads-down” data entry
  - Simple ALL-IN-1 scripts
  - Simple COBOL applications
  - Complex COBOL applications

Example (2)

Reasons for Change

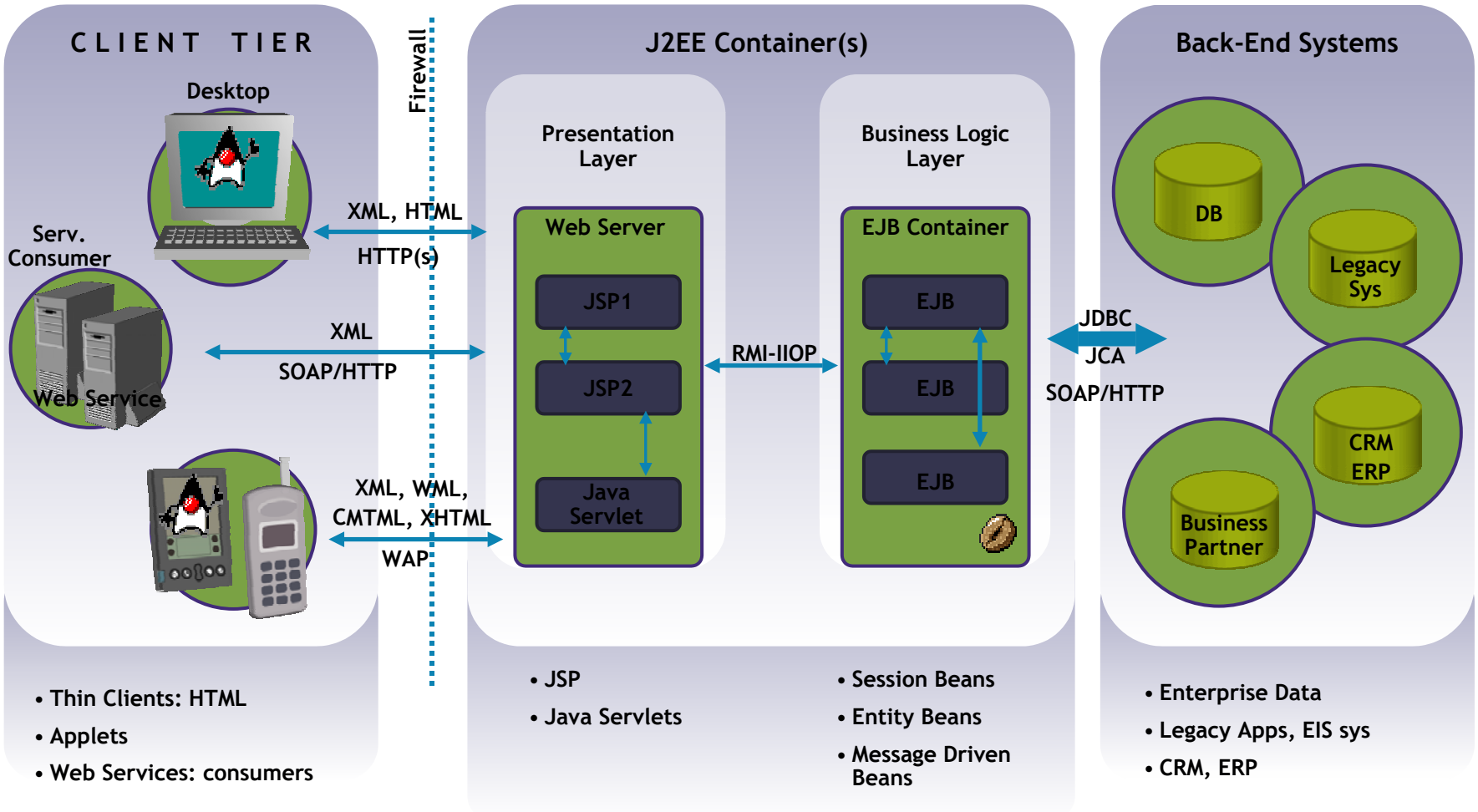
- Need for automated integration with customers
- Customer is eager to move to Itanium but ALL-IN-1 is not being ported
- New requirements for web based user interface
  - Desktop browsers, hand-held devices, other applications
- Easier to maintain modern application than to maintain COBOL/FMS applications
- Expanding number of users

Example (2)

- Two week proof of concept pilot project
  - Wrap simple COBOL application as Java bean using BridgeWorks
  - Write web based user interface as JSP
  - Deploy in Apache/Tomcat on OpenVMS
- Follow-on project to define the architecture
  - Determine if simple COBOL applications will be wrapped or rewritten in Java and deployed as servlets
  - Determine how to replace FMS data validation (some in JSP, some in server)
  - Design web menu structure to replace ALL-IN-1 menu
  - Design the security infrastructure

Example (2)

Architecture



Example (3)

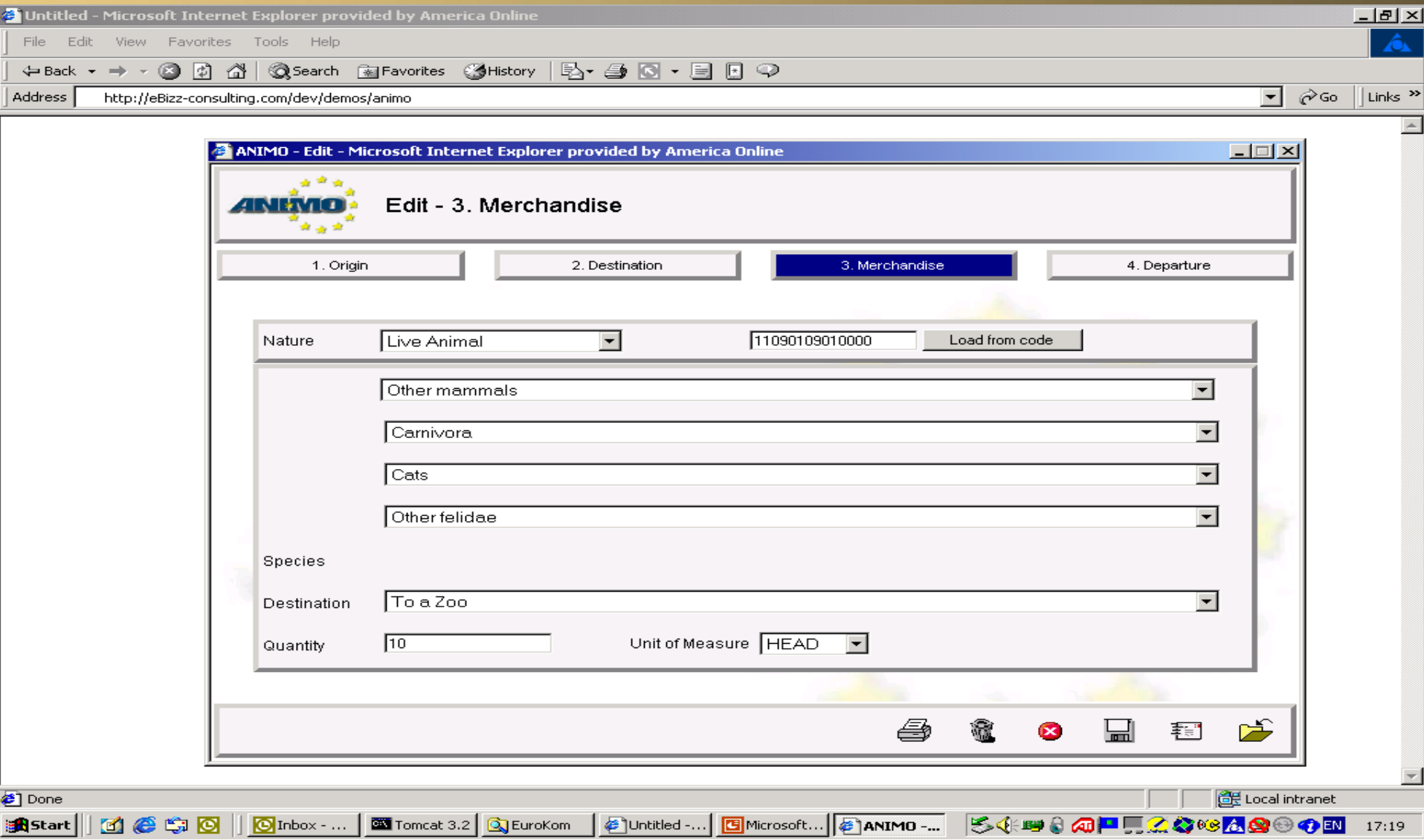
- Re-writing GUI and Application logic
  - Apache (CSWS) Java,
  - NetBeans ®,
  - Jakarta,
  - Attunity ®,
  - BEA WebLogic ®, ….

Example (3)

Animo application

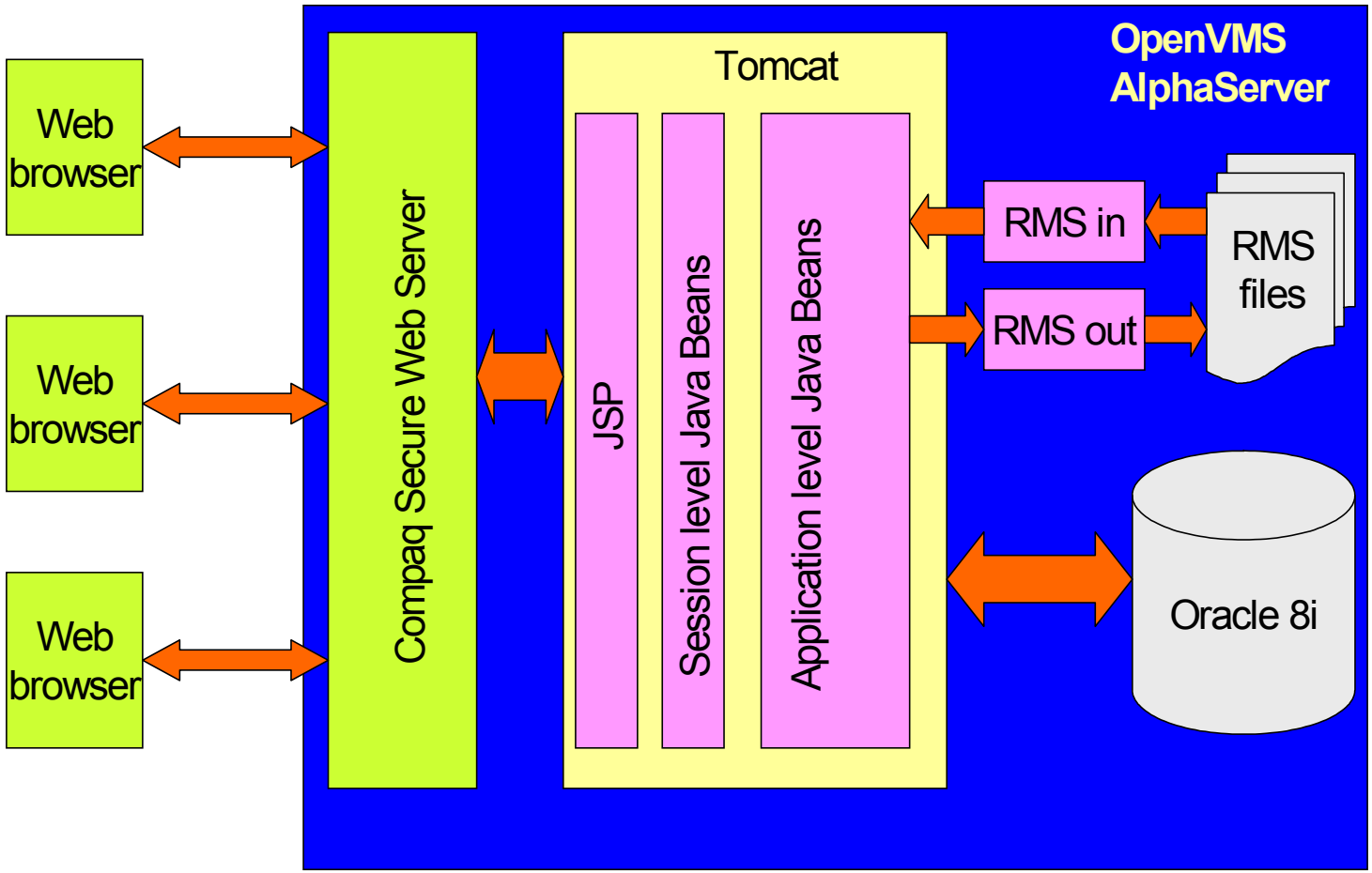
- The ANIMO system is used to track the movement of animals and certain meat products between Member States of the EU.
- All merchandise which is moved within the EU and between Member States and Third World Countries (Non-EU Countries) is recorded by the ANIMO system
- Has been in operation since 1993 and is used in approx 1,500 LVU's (Local Veterinary Units) and BIP's (Border Inspection Posts) throughout the EU.
- Has been re-developed as a web based application
- Utilises Compaq Secure Web Server, Tomcat, Oracle® 8i and runs on Alpha

Example (3)


Untitled - Microsoft Internet Explorer provided by America Online
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://eBizz-consulting.com/dev/demos/animo
Go Links
ANIMO - Edit - Microsoft Internet Explorer provided by America Online
ANIMO
Edit - 3. Merchandise
1. Origin
2. Destination
3. Merchandise
4. Departure
Nature
Live Animal
11090109010000
Load from code
Other mammals
Carnivora
Cats
Other felidae
Species
Destination
To a Zoo
Quantity
10
Unit of Measure
HEAD
Done
Local intranet
Start
Inbox - ...
Tomcat 3.2
EuroKom
Untitled -...
Microsoft...
ANIMO -...
EN
17:19

Example (3)

Architecture



Example (3)

A new Market ?

- Food traceability. All Food items must be traceable to source
- By 2006 it is a legal requirement in EU

<u>Possible consequences for:</u>

- Food production business
- Government agriculture departments
- Retail systems
- Packaging systems
- ….

Joint HP/Intel initiative

Calls for e-integration of total food supply chain

Resources to help

HP WORLD 2003
Solutions and Technology Conference & Expo

Complementary Resources & Services

- Two day Architectural Workshops to evaluate the current environment and plan for transition & integration
- Worldwide porting centers for validating ISV & custom applications on Itanium™ processor family systems
- On-Line support including “Test Drive” systems for application testing over the net
- Comprehensive portfolio of white papers with “How To” transitioning information
- http://asd.inet.cpqcorp.net/arch_workshops.html

Architecture Workshop

HP WORLD 2003
Solutions and Technology Conference & Expo

January 15th – Day 1

10:00 Welcome and Introductions

10:15 Customer Presents

- Business & Technical requirements regarding eCommerce Application / Environment and Goals
- Current Architecture
- Future Design
- Implementation Prerequisites
- Availability and Disaster Recovery Requirements today and future

12:00 LUNCH

1:00 Implementing Java based tiered solutions. Examples and best practices.

2:30 Discussion on Proposed Architecture

3:30 BREAK

3:45 Discussion on Architecture (continued)

4:30 Recap

5:00 Adjourn

Architecture Workshop

January 16th – Day 2

9:00 Review Today's Agenda and make any necessary modification

9:15 Tru64 and HP-UX Roadmaps

- TruCluster and MC/ServiceGuard Architecture and Implementation Overview
- Application Integration into a HA environment
- Disaster Tolerance Solutions

11:15 BREAK

11:30 Review of overall HA architecture based on Customer design Implementation issues and product features required for Customer's HA requirements

12:00 LUNCH (working)

2:00 Recommendation of Platform

2:30 Definition of POC and next steps..

3:00 End

Summary

- Re-use of existing logic is efficient, but plan it carefully
- Architect and design for a Service Oriented Architecture
- A lot of hype around Web services but good to architect with it in mind now.
- We are partnering with industry leaders (BEA®, Attunity®, Oracle®, etc.)
- Develop/Deploy on any HP platform
- Our aim is to help enhance your business applications in parallel with the Intel® Itanium plans for product and OS

A word in parting…

Applications?
More than the sum of the parts!

Business operations

- Fundamental knowledge of business
- Business processes and docs
- Security
- User training and support
- User and client help desks
- Business to consumer procedures
- Business to business procedures
- Legal requirements
- …

'The Total Solution'

Development and maintenance

- Source code
- Development environments
- Build procedures
- Test suites
- Quality control
- Networks
- Files
- Database design
- …

IT Operations and management

- System management
- Network management
- Operating procedures
- Disaster recovery
- Backup and restore
- Database maintenance
- Print and batch queue maintenance
- Inter and intra system comms
- …

invent