Adaptive Real-time Infrastructure for a complete OMG Model Driven Architecture™

Kabira ObjectSwitch: adaptive real-time infrastructure software for the creation and deployment of next-generation services across convergent networks to millions of consumers using the OMG Model Driven Architecture™.

Visible Services:
- web & wireless self provisioning
- bandwidth-on-demand
- combined voice and data services
- instant on wireless & m-commerce
- location based svcs
- voice over IP and packet services
- Pre-paid, LNP & SLA management

Back-End Services:
- xDR, CDR, IPDR, bit-rate-billing
- no-touch provisioning & activation
- hosting & data center session mgmt
- OSS integration & mediation
- network state & event caching
- NMS & EMS aggregation
- PARLAY frameworks
Deployed OMG MDA™ Based Solutions in 16 Countries

**Challenge**
- CDMA Activation – Flow through
- Interface with legacy LHS system
- Reduce activation from 3 days to 2 hours

**Solution**
- ObjectSwitch automates customer activation process between POS and billing systems
- ObjectSwitch supports extension of legacy billing and POS systems for billing new services

**Results**
- 1600 labor hours saved per day
- Massive reduction in people ‘touching’ activation
- Support for 1.7 million customers
OMG MDA™ Case Study

**Challenge**
- Massive Volumes, Complex Environment, Hundreds of Web Servers
- Requiring
  - Fault Tolerant Application Data Availability
  - Cross-Site Functionality without Lock Delays

**Solution**
- Create an Application Storage Area Network - ASAN
  - Application Data in Cache
  - Eliminate Databases from Application
  - Reduce Replication

**Results**
- 75% Reduction in Databases
- 2x Increase in Users
- 7x24 Non-Stop Computing

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OMG MDA™ Case Study

**Challenge**
- SLA-measured, High performance, high quality worldwide hosted content and services over privately built fiber network
- Content on 2200 worldwide distributed “edge” servers must be intelligently synchronized with central host servers
- 100% uptime, high-performance, small footprint requirements

**Solution**
- ObjectSwitch used as platform for mission-critical content “invalidation service”, which manages the intelligent removal of cached web content from remote servers, worldwide

**Results**
- Met or exceeded uptime, performance, footprint requirements for 11 criteria
  - Final field testing on 100 nodes; production in September ‘01
**Challenge**
- A Western Wireless company that needs short time to market for new services to increase market share

**Solution**
- 8 Projects
  - Billing pre-paid customers for SMS use
  - Custom ring tones
  - Sports scores
  - Integrate acquired ISP (Provisioning)
  - GPRS services,
  - pre-paid “Top up” services
  - System Monitoring
  - Customer self-serve provisioning

**Results**
- SMS billing implemented in weeks; platform for new VAS’s
- One of world’s first pre-paid GPRS services
- 8 production projects, 1.5 yr, < 1.5 programmers

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**Challenge**
- GSM Provider in Ireland
- Invoiced and pre-paid plans
- Erratic network coverage
- Dropped calls caused phone returns

**Solution**
- Kabira activation & provisioning
- Pre-paid call mediation
- Automatic SMS notification and bill reversal on Dropped Calls

**Results**
Real-time SMS messages on Dropped Calls
Prototype built in 2 days from models
Automatic billing reversal and a free call for customer
Significant reduction in returned phones, dropped plans
OMG MDA™ Case Study

Challenge
- Automated Design & Assign of Optical Fiber Circuits
- Integrate best-of-breed NE, OSS, and BSS
- Replicate solution to 25 metro cities

Solution
- Adapter factory for all NAI
- Centralized Data aggregation and Work Flow Management

Results
Project started January 2001
Integration test began March 2001
Commercial optical circuits started July 2001

A new class of problem in networks

Burst Capacity Networks
- Software activated services
- Web based and IVR front ends
- Packet Switched Hardware
- System is never offline

New Class of Problem for Software
- Huge bursts of activity and traffic
- Bit rate data mediation & billing
- Managing asynchronous events
- Continuous operations

Assured Capacity Networks
- Technicians activate services
- CSRs on voice calls
- Circuit Switched Hardware
- Service capacity is “fixed”
- Offline upgrade
Network Evolution Has Resulted in Congestion and Slow, Unreliable Services

Kabira Addresses These Problems With:

Class of Problem

- Services that require software
  - Shortage of developers
- Complex system connections
- Runtime requirements
  - Fault recovery
  - Change tolerance
  - High speed transactions
  - Scaling up to Web or IVR

Kabira Provides

- OMG Model Driven Architecture™
  - Building software from standard UML models
- Automatic adapter creation
- On Top of an Adaptive real-time Infrastructure
  - Caching & aggregation
  - Failover recovery
  - Online upgrades
  - Handling huge bursts
  - In-memory transactions

This was for One Instruction in the ‘Server’
Solution: An Adaptive Real-time Infrastructure under the OMG MDA™

On-line Upgrades
Fail-over Recover
Aggregated Services
200,000+ micro-transactions per second
Cached Applications, Data, State & Events

Complexity Challenge and APIs

Yesterday’s solution - API proliferation - is today’s mess.
From API Centrism to MODELS

APIs
• Technology specific
• Encourage hand-coding
• Assume state awareness
• Difficult to “Upgrade”
• Focused on implementation, not desired results
• Yesterday’s “Register Aware” applications are today’s “API Aware” applications

Models
• Technology Independent
• New ability to Completely Define needed solutions without hand-coding
• Simple to Upgrade
• Focused on “What” not “How”
• The new, most valuable form of software intellectual property!

Model Driven Architectures Reduce Complexity
OMG MDA™ – An Über Specification

- Starts with UML™
- Builds on:
  - CORBA® & IDL
  - JAVA
  - XMI/XML
  - HTTP
  - .NET
- With Support for
  - MOF - the meta object facility and
  - CWM - common warehouse meta-model

Next Generation Service Engines from Models
100% Code Generated – 100% Standards Based

Service Engines are 100% Auto-Generated Directly from UML and Action Specifications

Directly from Rational ROSE® to Running Kabira Cached Applications
Rational / Kabira Alliance Overview

• Kabira has become a **Rational Global Alliance Partner** for **Model Driven Architecture** Solutions in Telecom & e-Business

• The two companies are now actively working together to enable new solutions for customers based upon the **entire Rational product family** and the Kabira adaptive real-time infrastructure platform... **from models to executables!**

• Kabira provides the **proven ‘engine’** underneath Rational tools for high-performance, burst traffic scalability, in-memory transactions, online upgrades and fail-over recovery.

Kabira’s Partners

![Kabira's Partners Logos]