Liberate Your Data With MetaMatrix
Chuck Mosher, Red Hat, Inc.
AGENDA

- Company Background
- What it Does
- Where it Fits
- Customer Use Cases
- How it Works
- Demo
- ESB/JBoss Interoperability
- Open Source Roadmap
- Summary & Q/A
METAMATRIX BACKGROUND

- Founded 1998
  - Vision: Universal bridge between information-consuming applications and enterprise information resources
  - First to coin the term Enterprise Information Integration (EII)
- Shipping version 5.x – highly mature, stable, feature-rich
- Market – Global 5000 Organizations
  - Government Intelligence Agencies, Department of Defense
  - Financial Services
  - Pharmaceutical, Life Sciences
  - Manufacturing, Telecommunications, ISVs
- Focus has shifted from EII to data services/SOA
- Acquired by Red Hat April 2007
MetaMatrix is a set of development productivity tools that helps solve one of the most difficult problems in development: accessing and integrating the vast stores of legacy data in the enterprise.

It does this by creating data services (building blocks) from which to build applications, services, and service-oriented architectures.

This is done in an industry-unique way: with models, instead of code.

This approach provides for a level of agility unprecedented in enterprise architectures.
THE DATA CHALLENGE

- Different physical structures
- Different interfaces
- Different semantics (vocabularies)
- Often “locked-in” to database
- Have to ensure performance
- Have to ensure security

*Too long to implement new applications*
*Developer must code data access & transformation*
HISTORICAL APPROACHES

**Hard Code**
- Time consuming, difficult, costly
- No re-use of data logic
- Any changes break the application

**Replicate/Data Mart**
- Data not fresh
- Very expensive
- Many marts difficult to manage
- Data inconsistencies
METAMATRIX: WHAT IT DOES

- Turns the data you have into the data you want
- Speeds application development by simplifying access to distributed data sources
- Transforms data format differences
  - Vocabulary difference
  - Schema compliance
- Consolidates (abstracts) sources of data into a “single view” without the need to move data between databases
METAMATRIX: WHERE IT FITS

JBoss Enterprise Platforms
- Application Presentation, Services Hosting, & Data Persistence
- Content Aggregation, Presentation & Personalization
- Service Integration, Business Process Automation & Rules Definition

Other Vendor Portal / ESB / SOA Platforms

MetaMatrix Data Services Platform

The Fourth Annual Red Hat Summit
THE CORPORATE INFORMATION FACTORY

Information Production
- Content
- Transaction Data
- Packaged Apps
- Legacy Data
- ETL
- Data Stage
- ETL
- Content Repository
- Enterprise Warehouse
- ODS

Information Consumption
- Visualization Tools
- Reporting Tools
- Portals / Dashboards
- Data Mining
- Project Mart
- Data Marts
- Oper. Marts
- Virtual Database
METAMATRIX USE CASES

- Reports, Business Intelligence, Portal
  - Consolidated financial reports/dashboards
  - Consolidated sales reports

- Master Data Management
  - Single View of Customer - CRM
  - Single View of Supplier – supply chain
  - Single View of Employee – HR consolidation

- Regulatory Compliance
  - Provide common security and control for data
  - VISA PCI, Basel II, Sarbanes Oxley, Patriot Act

- SOA
  - Make data available to SOA environment
CREDIT SUISSE – DERIVITIVES TRADING DASHBOARD

**Challenge**
- Monitor derivatives security trades to prevent rogue trades and financial loss
- Trading data spread across many databases/systems

**MetaMatrix Solution**
- Consolidate all trading data into “single view”
- Real-time access
- Transformation of data differences

**Business Benefit**
- Prevent financial loss
- Saved time and cost to develop application
- Easier to manage data changes
SMITH BARNEY – SINGLE VIEW OF CUSTOMER

Challenge
- 600 different brokerage offices – 600 databases
- Can’t access account information from other offices
- Can’t manage “customer” only individual accounts

MetaMatrix Solution
- Enable a CRM application to “find” customer information with single query – across all databases
- Real-time access

Business Benefit
- Better manage “customer”
- Simpler/faster application development
Challenge
- VISA PCI mandates protection of cardholder info
- Can’t maintain common security policy across multiple data stores

MetaMatrix Solution
- Create “data firewall” across many data sources
- Federate rather than replicate
- Common access policy across all sources
- Common data definitions
- Audit trail

Business Benefit
- One set of data security policies
- Can prove to regulators that data is protected
Major Insurer – SOA Data Services Layer

Challenge
- Deploying SOA reference architecture
- Want common data model across all sources
- Don’t want “tight binding” to physical sources
- Ability to change data sources without breaking apps/services

MetaMatrix Solution
- All data is access via data services
- MetaMatrix provides abstraction – and logical data model for enterprise
- Expose data as Web services and SQL

Business Benefit
- All applications will “get” the same data through use of common model
- Easier to expose data to new applications
- Easier to make changes to data sources
METAMATRIX: HOW IT WORKS

Information Consumers
- Web Services, Business Processes
- EAI, Data warehouses
- Packaged Apps
- Custom Apps
- Reporting, Analytics

Exposed Data Services

Reusable Data Service Models

SupplyChain, Logistics

Enterprise Information Sources (EIS)
- services
- warehouses
- databases
- spreadsheets
- xml
- geo-spatial
- rich media

O/R Mapping
- SOAP/JMS
- JDBC/ODBC

CRM, Employee
METAMATRIX DESIGNER

Models, not code

Transformations:
- Selects
- Joins
- Criteria
- Functions
- Unions
- User Defined

Virtual Models

Physical Models Representing Actual Data Sources
WEB-SERVICE ENABLEMENT OF LEGACY SOURCES

- Target: Fixed, potentially complex XSD
- Data must comply with schema

Source: Disparate data resources that are typically structured/relational

MetaMatrix: Mapping from Data to XML

```
<person>
  <addresses>...
  </addresses>
  <accounts><accountID=...>
    ...
  </accountID>
  </accounts>
</person>
```
MAP DATA SOURCES TO XML AND DEPLOY

- Model XML docs, schema
- Build XML doc. models from schema
- Map XML doc. model to other data services models
- Enable data access via XML, but leverage the relational backend
SEMANTIC MEDIATION AND INTEGRATION

Authoritative Sources:
• Mapped to logical view

Application views of information:
• Relational, XML

Semantic Data Services

Data Dictionary:
• Based on logical data model or XML schema

Multiple Internal/External Information Sources

- C2, Logistics, Intelligence, ...
- Location_ID
- Location_Type
- bldg_id
- Depot_Number
- SITENUM
- Facility_ID

Technologies:
- ODBC/JDBC
- JDBC
- SOAP
- Web Services
- Search Applications
- Business Intelligence Applications
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DATA SERVICES AND AN ESB

User-facing Logic (Service Consumers)

Process and Other Integration Logic

Business Logic

Data Logic

Rich or Thin Desktop

Process Orchestration Services

ESB

ODBC, JDBC

WSDL, SOAP, MOM, other

Business Services

Data Services

Process, Integration Services

Business Services

ESB

Direct ODBC, JDBC

WSDL, SOAP, MOM, other

ODBC, JDBC

WSDL, SOAP, MOM, other
ESB – EII (DATA SERVICE) COMPARISON

ESB
- Data = Messages
- Process Orchestration
- Asynchronous
- Service Registry
- Message Routing

EII
- Data = DataSources
- Database Federation
- Query Optimizer
- Metadata Repository
- Synchronous
- Connectors, Adapters
- Service Registry
- Data Transformation
JBoss Enterprise Middleware

**Integrated Runtime Platforms**

- **Portal Platform**
  - JBoss Portal
  - Application Platform
    - Content Aggregation, Presentation and Personalization

- **Application Platform**
  - JBoss Seam
  - JBoss Hibernate
  - JBoss Application Server
    - Embedded Tomcat, Clustering, Cache, Messaging, Transactions
  - Application Presentation, Services Hosting, and Data Persistence

- **MetaMatrix Data Services Platform**
  - MetaMatrix Enterprise Server
    - Data Integration, Data Service Federation, Data Abstraction & Management

- **SOA Platform**
  - JBoss jBPM
  - JBoss Rules
  - Application Platform
    - Service Integration & Orchestration, Business Process Automation, Rules Definition, & Event Management

- **JBoss ESB**
  - Transformation, Routing, Registry, Repository

**Manage**

- **JBoss Operations Network**
  - Administration, Management, and Monitoring

**Design & Develop**

- **JBoss Developer Studio**
  - Eclipse IDE
  - Integrated Tooling
  - Runtime Platform
    - Fully Integrated Developer Environment

- **MetaMatrix Designer**
  - Integrated distribution with a single patch & update cycle
  - Enterprise Frameworks
  - Component
  - Major component or set of integrated components

- **Integrated Runtime Platforms**
  - Modular productivity tools that also work on other vendors application servers

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METAMATRIX/JBOSS FIT

- Makes it easier for Portal, Seam, Hibernate to talk to multiple DB's as if there were just a single DB
- Interface with Identity Management products to provide access control solution for distributed databases (“data firewall”)
- Interface with ESB, BPM, Rules to provide process-driven, event-driven data integration scenarios
OPEN SOURCE ROADMAP

- Next-generation version of MetaMatrix Repository already underway at jboss.org/dna
- The rest of the components (modeler, query engine, server) are scheduled to go open by end of CY08
- Pricing/support will not change during this transition
- Enterprise version will always have greater integration/functionality than open source bits
  - Third party add-ons
  - Extensive integration, testing, certification
  - World-class support
SUMMARY

- On-demand access to distributed information
  - Real time integration of diverse data assets
  - Avoid unnecessary data duplication, data owners retain control

- Reduced application lifecycle costs
  - Metadata-driven means data integration in days, weeks
  - Metadata models reduce “long tail” of application maintenance

- Improved agility for enterprise data assets
  - Abstraction of physical data sources enables database migration/consolidation

- Enabling SOA in an evolving world
  - Consume and produce Web services
  - And still provide full support for ODBC, JDBC, and legacy