Build Real-Time Analytical Solutions Using Oracle BAM

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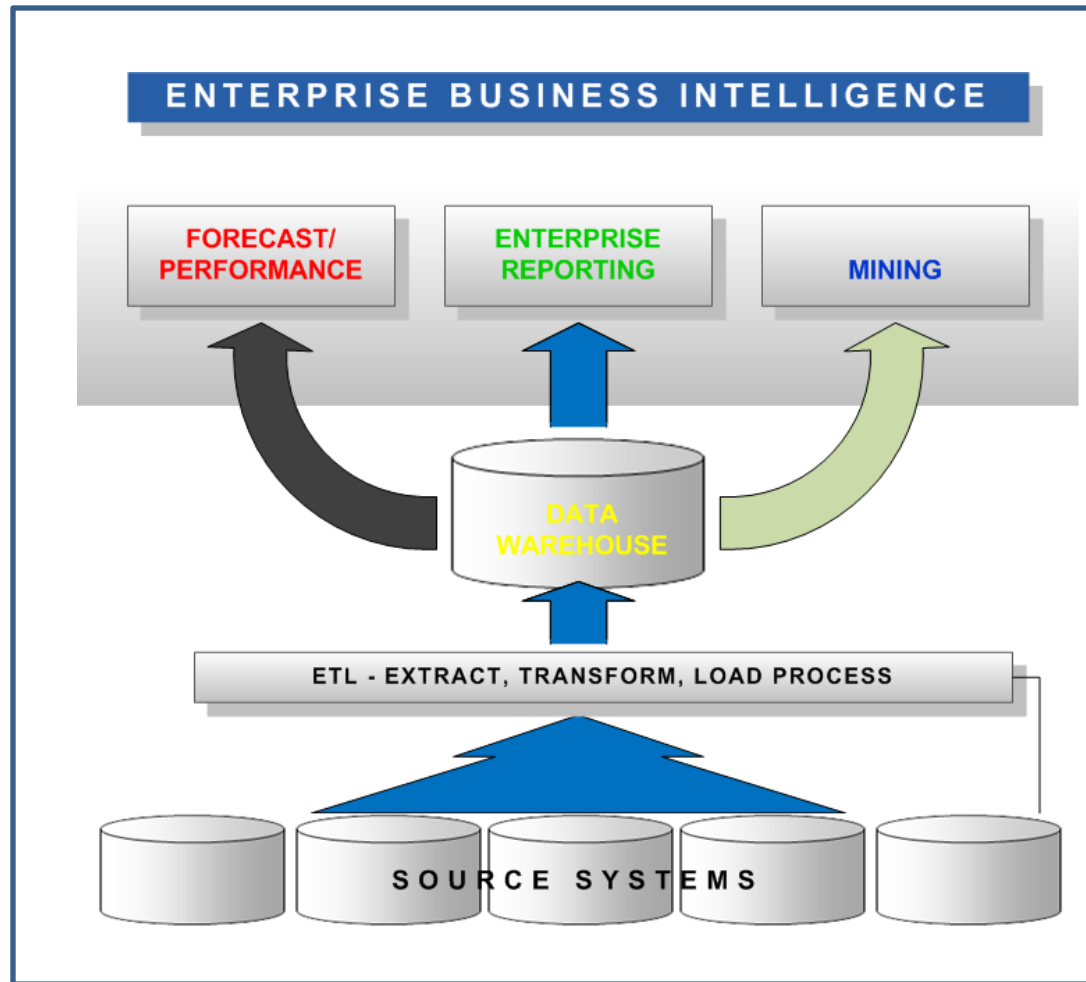
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Agenda

- Real-Time Business Intelligence Fundamentals
- Oracle SOA Suite and BAM
- Oracle BAM Architecture & Integration
- BAM Features and Capabilities
- Steps to build BAM dashboard
- BAM Implementation Case Study
- Summary
- Q & A

Business Intelligence Architecture

ENTERPRISE BUSINESS INTELLIGENCE

FORECAST/PERFORMANCE · ENTERPRISE REPORTING · MINING

DATA WAREHOUSE

ETL - EXTRACT, TRANSFORM, LOAD PROCESS
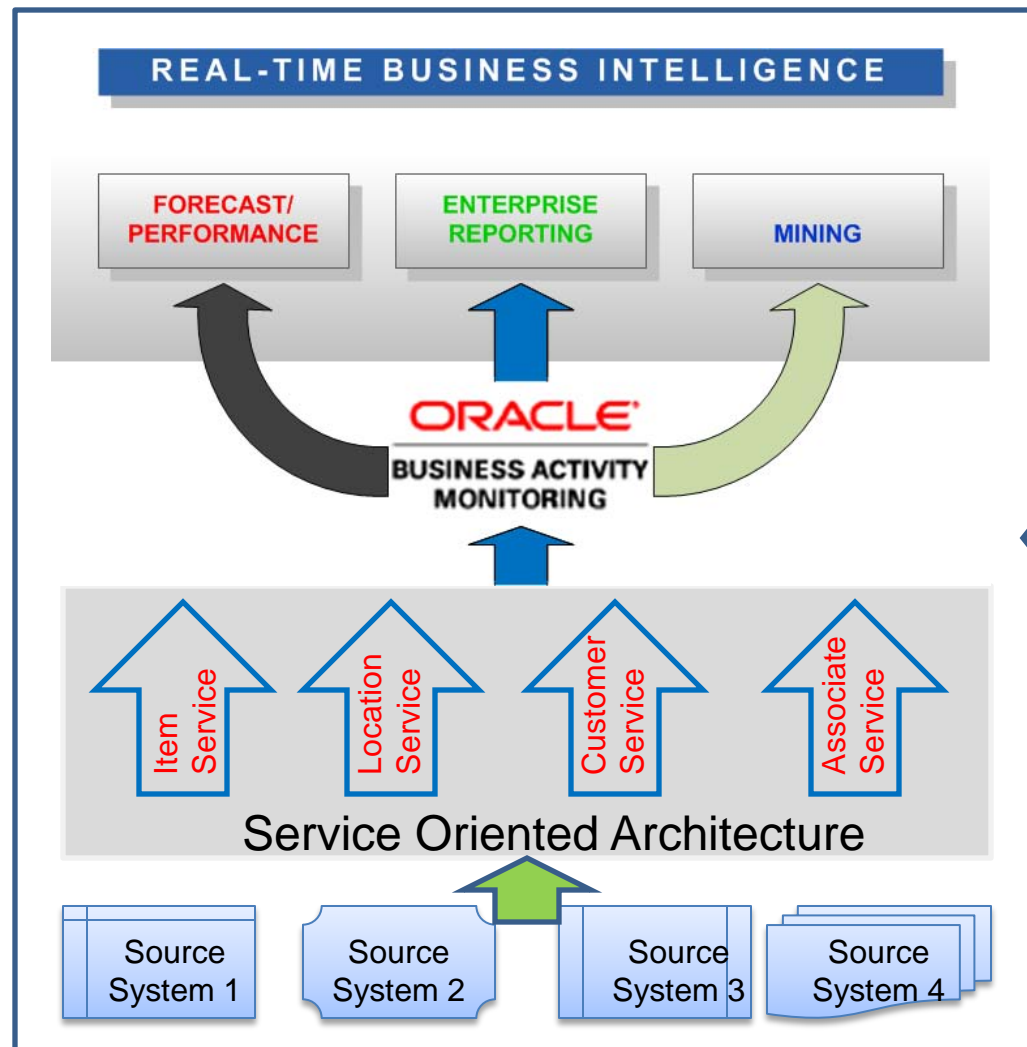
SOURCE SYSTEMS

OBIEE, Discoverer, Hyperion, ODI, Oracle Database

Non-Transactional & No Real-Time

Real-Time Business Intelligence

REAL-TIME BUSINESS INTELLIGENCE

FORECAST/PERFORMANCE · ENTERPRISE REPORTING · MINING

ORACLE
BUSINESS ACTIVITY MONITORING

Service Oriented Architecture
Item Service · Location Service · Customer Service · Associate Service

Source System 1 · Source System 2 · Source System 3 · Source System 4

BAM – Business Activity Monitoring
SOA – Service Oriented Architecture
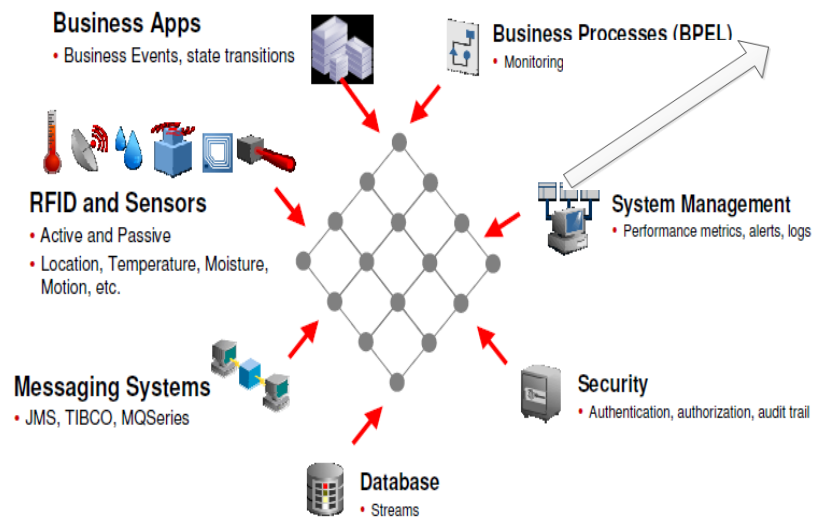
Transactional & Real-Time

Oracle Business Activity Monitoring (BAM)

- BAM – Business Activity Monitoring is a tool for Business Analysis & Monitoring

- It provides ability to monitor the **business services & processes** in the enterprise, to correlate KPIs down to the actual business process

- BAM (11g) is a JAVA component deployed on Weblogic Server

- Oracle BAM is a component of Oracle SOA Suite & Oracle BPM Suite – No Seperate BAM Installation required
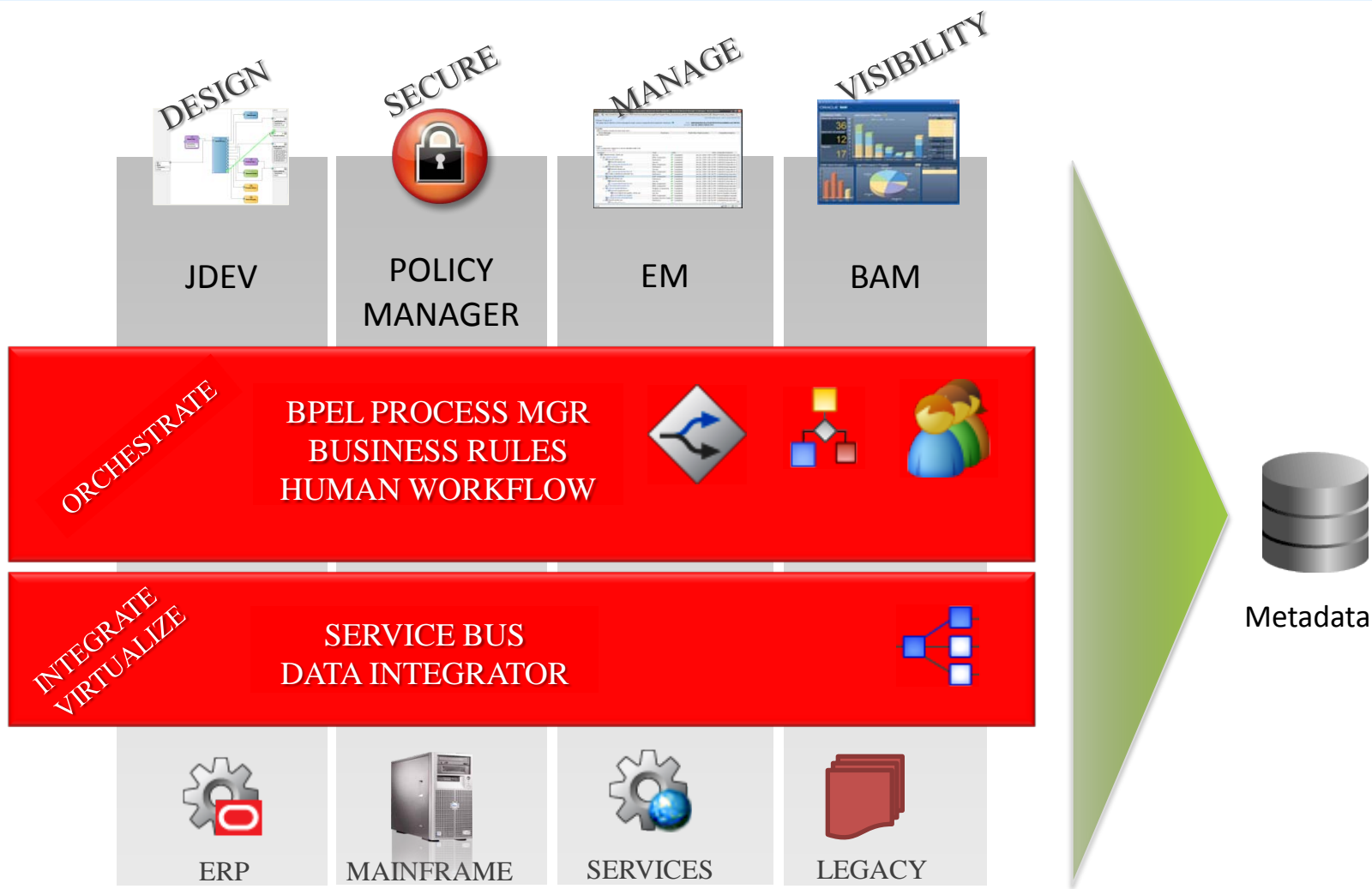
BAM Conceptual Architecture

Capture Real-Time Data

Business Apps
• Business Events, state transitions

RFID and Sensors
• Active and Passive
• Location, Temperature, Moisture, Motion, etc.

Messaging Systems
• JMS, TIBCO, MQSeries

Business Processes (BPEL)
• Monitoring

System Management
• Performance metrics, alerts, logs

Security
• Authentication, authorization, audit trail

Database
• Streams

Analyze Processes

Past Week

Today

Past 15 Minutes

Deliver Information

Figure 3 Oracle BAM dashboard supporting financial services scenario

Oracle SOA Suite & BAM

DESIGN · SECURE · MANAGE · VISIBILITY

| JDEV | POLICY MANAGER | EM | BAM |

ORCHESTRATE
**BPEL PROCESS MGR
BUSINESS RULES
HUMAN WORKFLOW**

INTEGRATE VIRTUALIZE
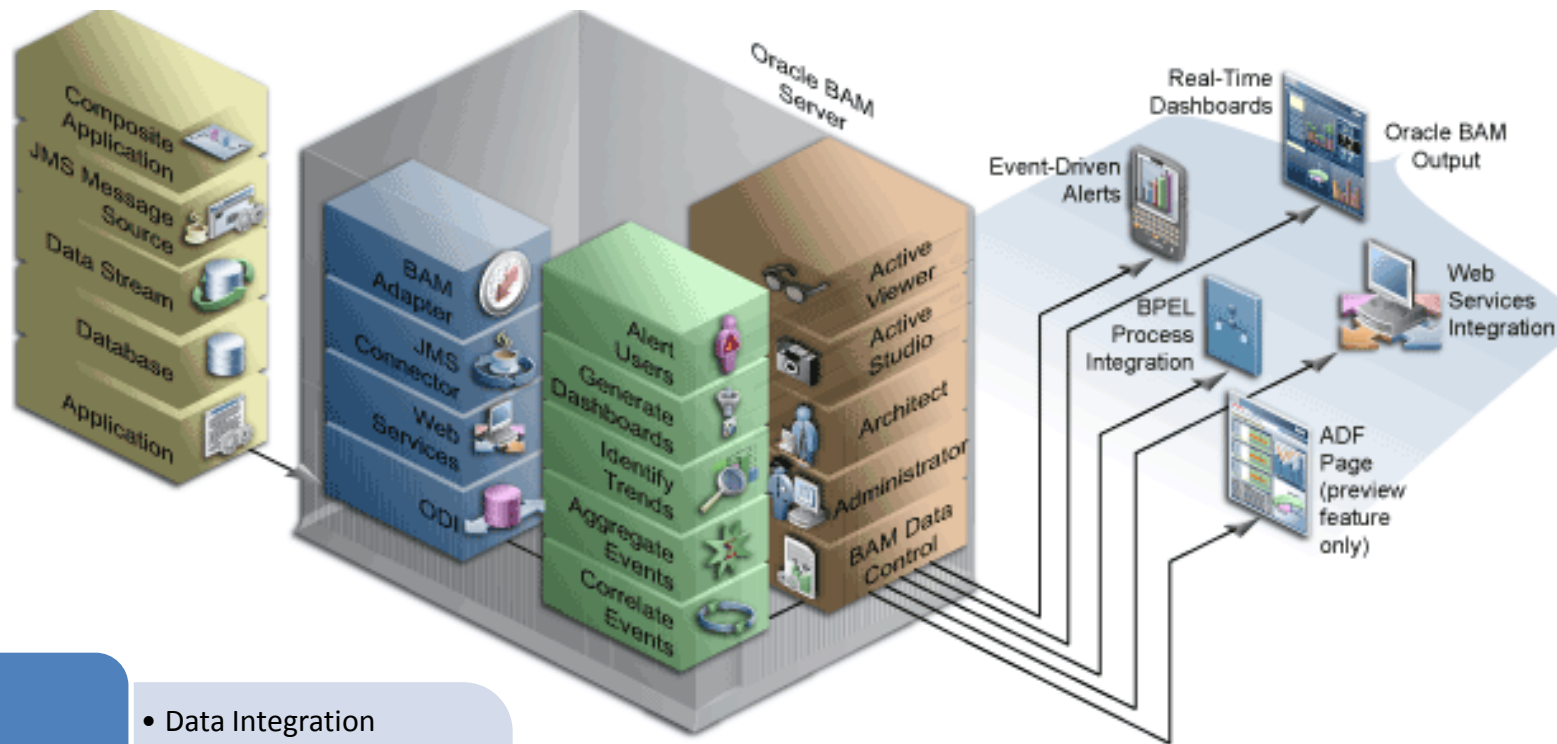**SERVICE BUS
DATA INTEGRATOR**

ERP · MAINFRAME · SERVICES · LEGACY

Metadata

BAM Software Requirement

- Oracle SOA/BPM/EDA Suite

- Application Server – Weblogic 11g

- Database – Oracle 10/11g

- Operating System – Linux, Unix and Windows
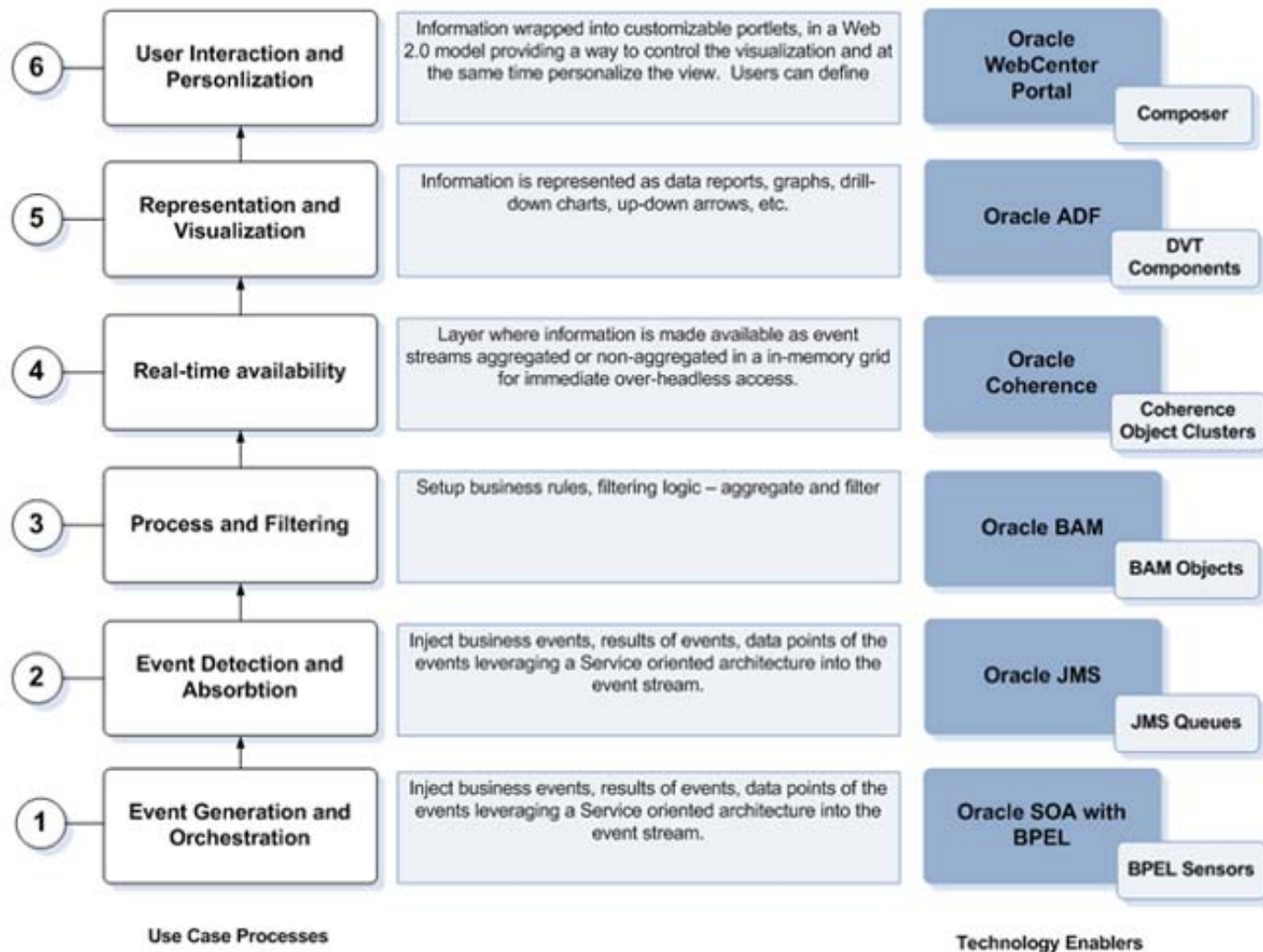
- Internet Browser – IE 7.0/8.0

BAM Technical Architecture

BAM Components

- Data Integration
- Data Caching
- Analytics
- Monitoring
- Reporting
- Alerting

BAM Integration

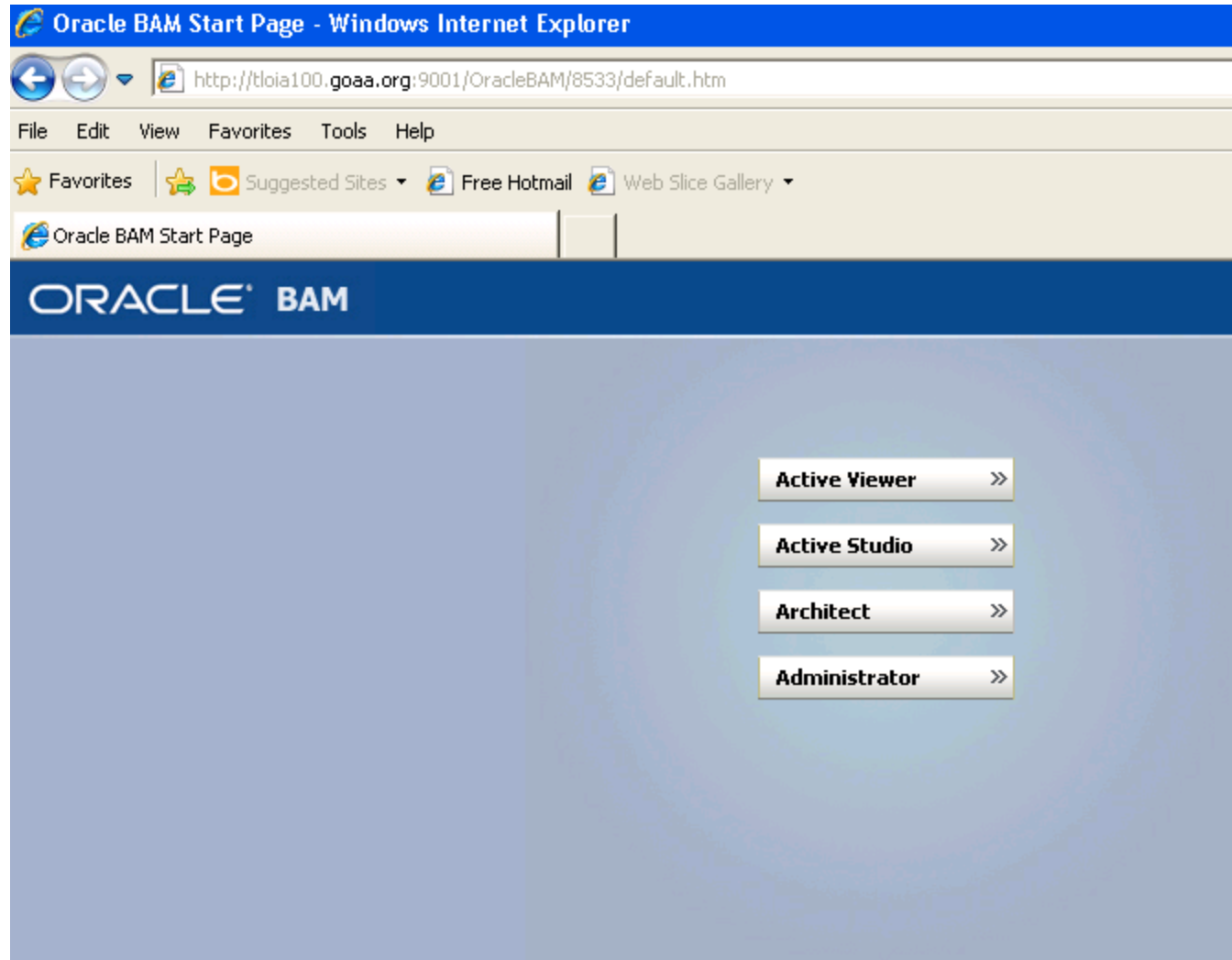| Use Case Processes		Technology Enablers
6 — User Interaction and Personlization	Information wrapped into customizable portlets, in a Web 2.0 model providing a way to control the visualization and at the same time personalize the view. Users can define	Oracle WebCenter Portal — Composer
5 — Representation and Visualization	Information is represented as data reports, graphs, drill-down charts, up-down arrows, etc.	Oracle ADF — DVT Components
4 — Real-time availability	Layer where information is made available as event streams aggregated or non-aggregated in a in-memory grid for immediate over-headless access.	Oracle Coherence — Coherence Object Clusters
3 — Process and Filtering	Setup business rules, filtering logic – aggregate and filter	Oracle BAM — BAM Objects
2 — Event Detection and Absorbtion	Inject business events, results of events, data points of the events leveraging a Service oriented architecture into the event stream.	Oracle JMS — JMS Queues
1 — Event Generation and Orchestration	Inject business events, results of events, data points of the events leveraging a Service oriented architecture into the event stream.	Oracle SOA with BPEL — BPEL Sensors

BAM Features & Capabilities

Features

- **More than 40 different view types :** BAM supports viewing reports on a large number of graphic patterns. Most common being the charts, real time lists and KPIs.
- **Actionable alerts :** BAM allows alerts to be delivered on a variety of devices. These alerts are fully actionable to take appropriate actions based on the business information delivered in the alert.
- **Integration with other products :** BAM is capable of seamless integration with several other products including BPEL, OSB, ODI and ADF.

Capabilities

- **Data and event collection infrastructure :** BAM can collect data using a variety of different mechanisms including databases, messaging systems such as JMS, AQ, MQ and packaged applications.
- **Real time visibility :** BAM has an event driven message based architecture which uses the ADC (Active Data Cache Technology) patented by Oracle.
- **Performance and scalability :** Support for thousands of events per second and streaming of data to the browser in real time.
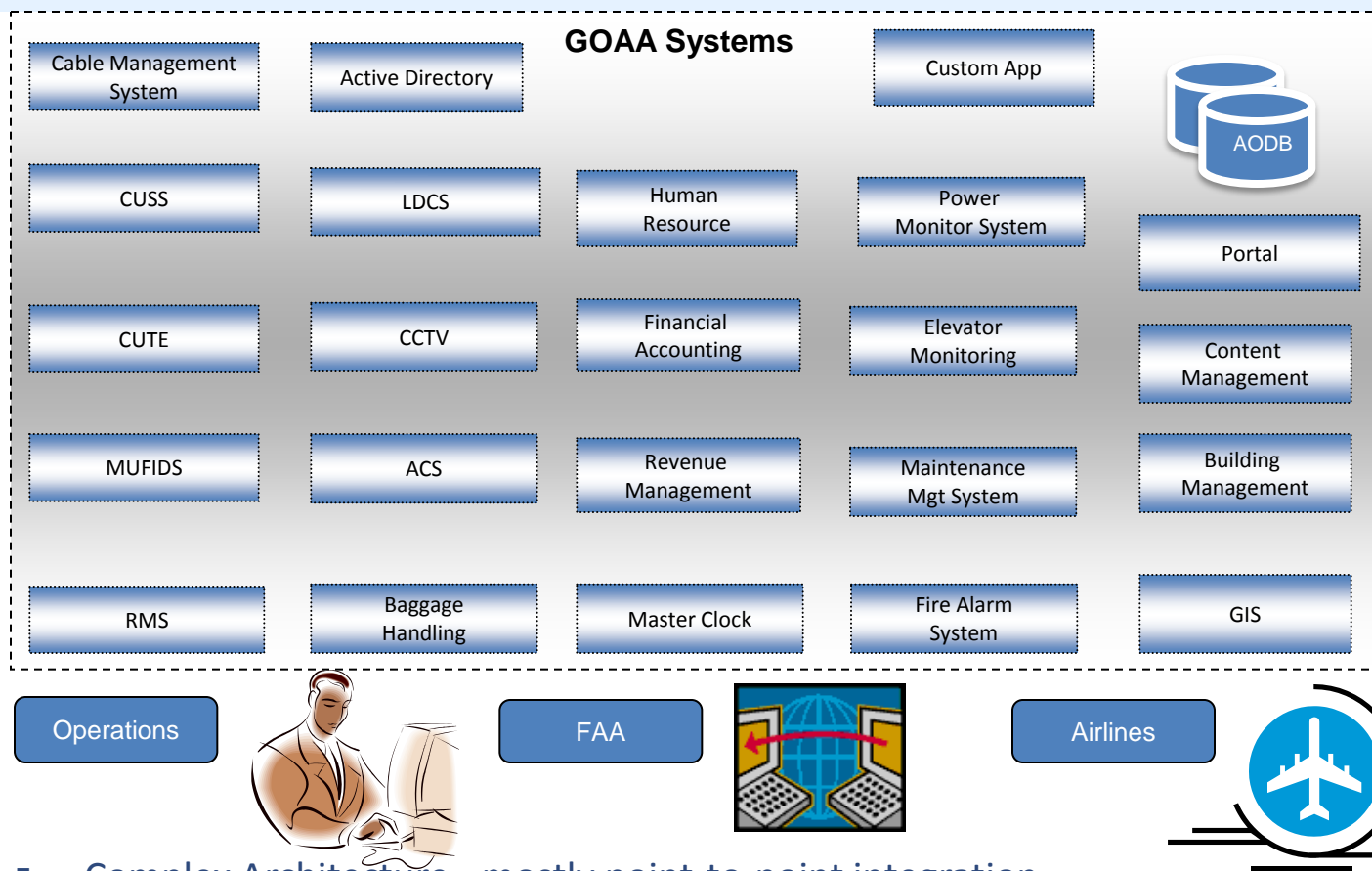
BAM Applications

BAM Development – 5 Easy Steps

1. Configure external data sources
2. Define data objects
3. Select dashboard layouts and report layouts
4. Configure data and view properties
5. Secure reports

Oracle BAM Implementation Case-Study @ Greater Orlando Aviation Authority, FL
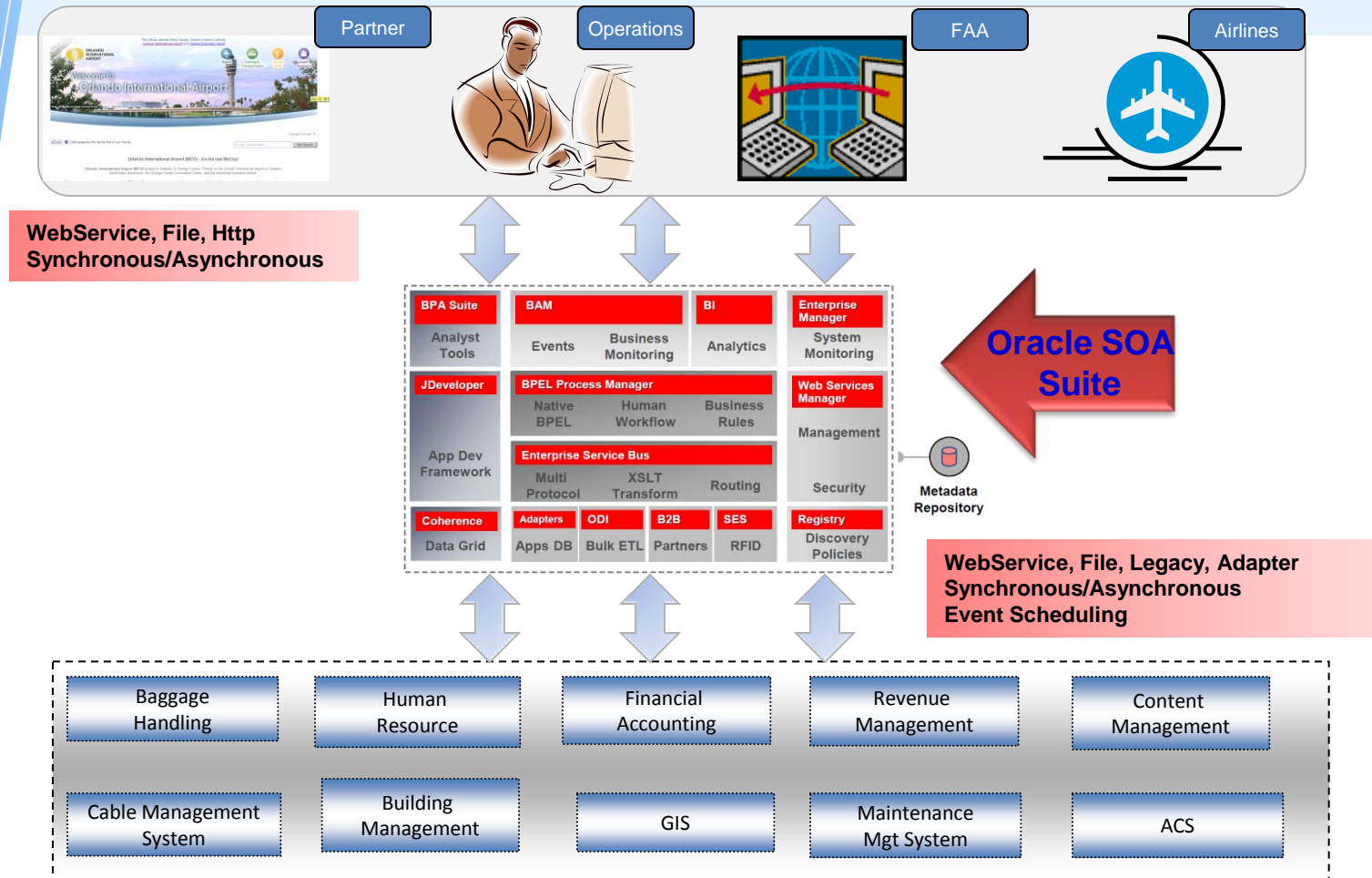
GOAA System Landscape

GOAA Systems

Cable Management System	Active Directory		Custom App	AODB
CUSS	LDCS	Human Resource	Power Monitor System	Portal
CUTE	CCTV	Financial Accounting	Elevator Monitoring	Content Management
MUFIDS	ACS	Revenue Management	Maintenance Mgt System	Building Management
RMS	Baggage Handling	Master Clock	Fire Alarm System	GIS

Operations   FAA   Airlines

- Complex Architecture - mostly point-to-point integration
- Manual Integration Processes - Inefficient & expensive
- Time-to-Deployment – challenges in implementing new integration
- **Governance** , Measurement & optimization the key challenge for management
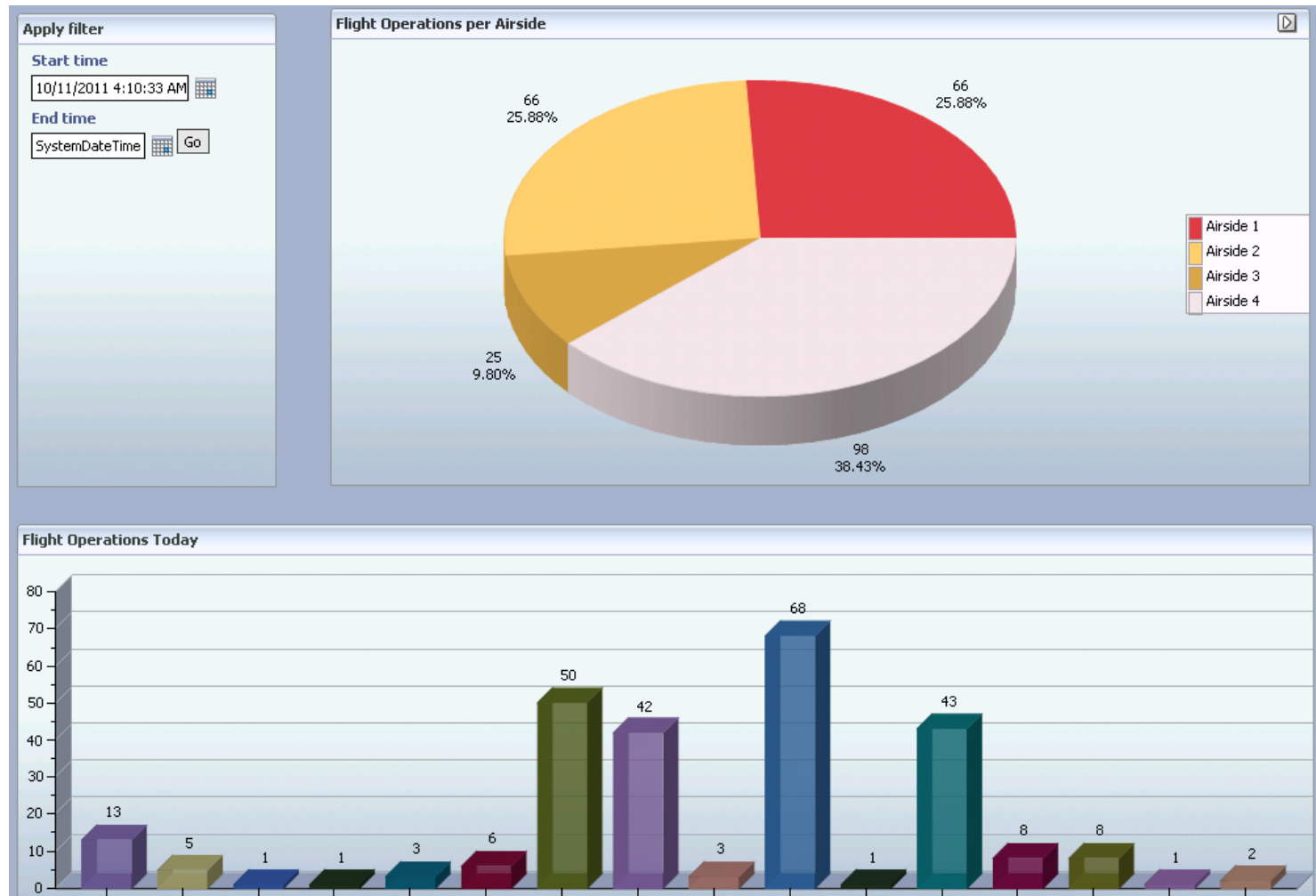
SOA & BAM Implementation at GOAA

WebService, File, Http Synchronous/Asynchronous

Partner | Operations | FAA | Airlines

Oracle SOA Suite

| BPA Suite | BAM | | BI | Enterprise Manager |
| Analyst Tools | Events | Business Monitoring | Analytics | System Monitoring |

JDeveloper	BPEL Process Manager			Web Services Manager
	Native BPEL	Human Workflow	Business Rules	Management
App Dev Framework	Enterprise Service Bus			
	Multi Protocol	XSLT Transform	Routing	Security

| Coherence | Adapters | ODI | B2B | SES | Registry |
| Data Grid | Apps DB | Bulk ETL | Partners | RFID | Discovery Policies |

Metadata Repository

WebService, File, Legacy, Adapter Synchronous/Asynchronous Event Scheduling

| Baggage Handling | Human Resource | Financial Accounting | Revenue Management | Content Management |
| Cable Management System | Building Management | GIS | Maintenance Mgt System | ACS |

Service Oriented Integration helps in reducing the integration "clutter" across the airport systems

Current Implementation Highlights

- BAM Dashboard for the real-time monitoring of FlightData Integration

- Reports with drill-down for Flight-Data integrations

- Capture 10,000 alerts for 800 flight operations

- SOA/BAM Version – 11.1.1.4

- Deployed as single domain in the SOA cluster

- Total effort (Inception to Deployment) – 150 hrs

Case Study : Sample Report

Drill-down sample report

BAM Summary

- BAM should be considered for Transactional & Real-Time Reporting & Analysis

- BAM is <u>NOT</u> an alternative to OBIEE

- Part of SOA/BPM Suite - no additional software/hardware required - BAM adapters are available

- Easy Installation and Configuration

- Would require 2-3 weeks of learning for a SOA developer to work on BAM

BAM Resource

- http://www.oracle.com/technetwork/middleware/bam/overview/index.html

- BAM User Guide - http://download.oracle.com/docs/cd/E14571_01/integration.1111/e10230/toc.htm

Questions