WebSphere Business Monitor V6
Technical Overview

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EMEA Pan IOT Technical Sales

@business on demand software

Agenda

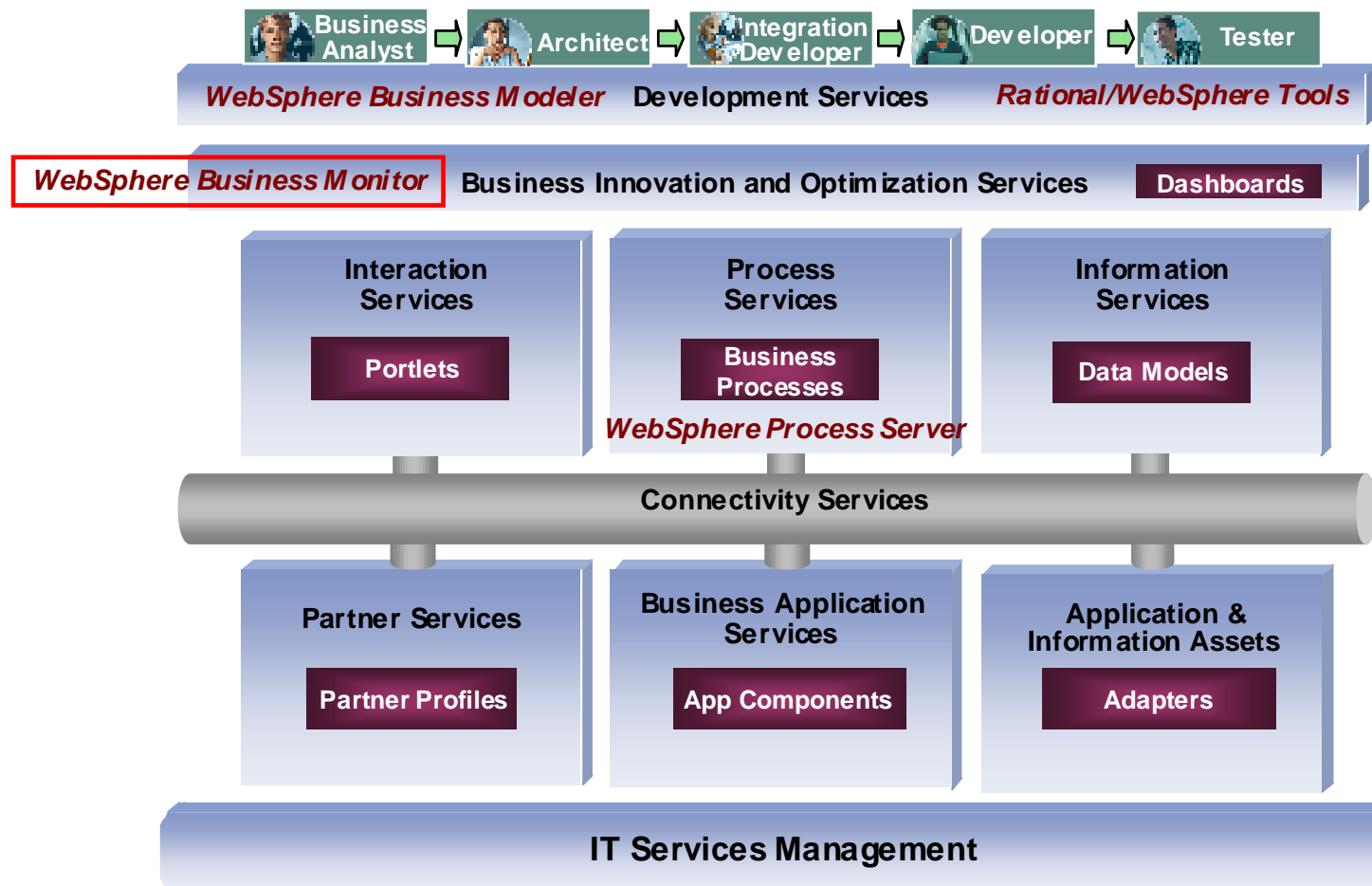- **Business Monitoring**

- **Logical Architecture and Overview**

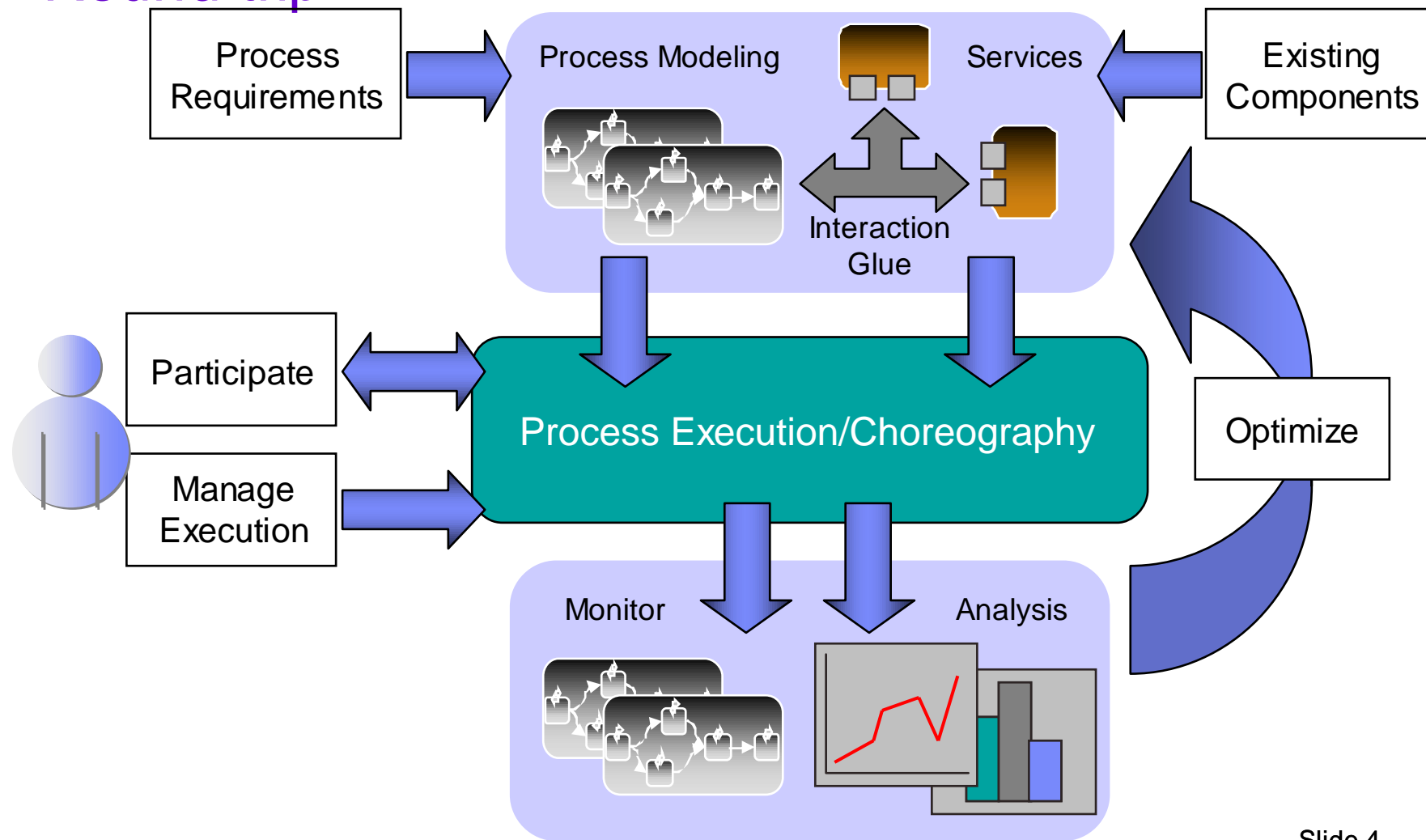- **Configuration**

- **Installation**

- **Prerequisite Software**

- **User Scenario**

IBM WebSphere Integration Reference Architecture

Roles and Sample Artifacts

Business Analyst ⇒ Architect ⇒ Integration Developer ⇒ Developer ⇒ Tester

WebSphere Business Modeler   Development Services   *Rational/WebSphere Tools*

WebSphere Business Monitor   Business Innovation and Optimization Services   Dashboards

Interaction Services	Process Services	Information Services
Portlets	**Business Processes**	**Data Models**

WebSphere Process Server

Connectivity Services

Partner Services	Business Application Services	Application & Information Assets
Partner Profiles	**App Components**	**Adapters**

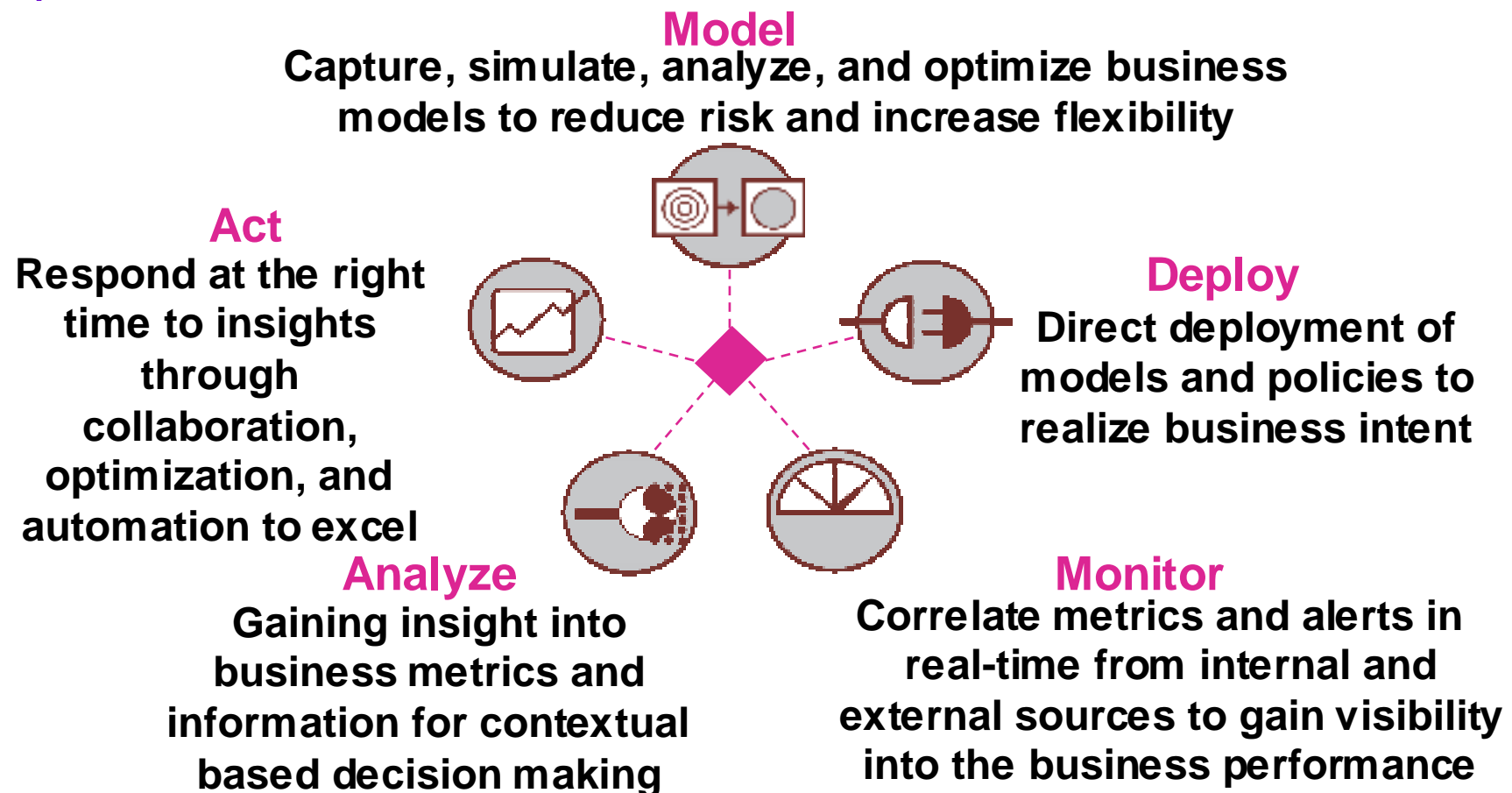IT Services Management

Continuous Business Process optimization - Round trip

IBM method for delivering continuous innovation and improvement to clients

Model
**Capture, simulate, analyze, and optimize business models to reduce risk and increase flexibility**

Act
Respond at the right time to insights through collaboration, optimization, and automation to excel

Deploy
Direct deployment of models and policies to realize business intent

Analyze
Gaining insight into business metrics and information for contextual based decision making

Monitor
Correlate metrics and alerts in real-time from internal and external sources to gain visibility into the business performance

Brings together the value of process orientation with outcome orientation
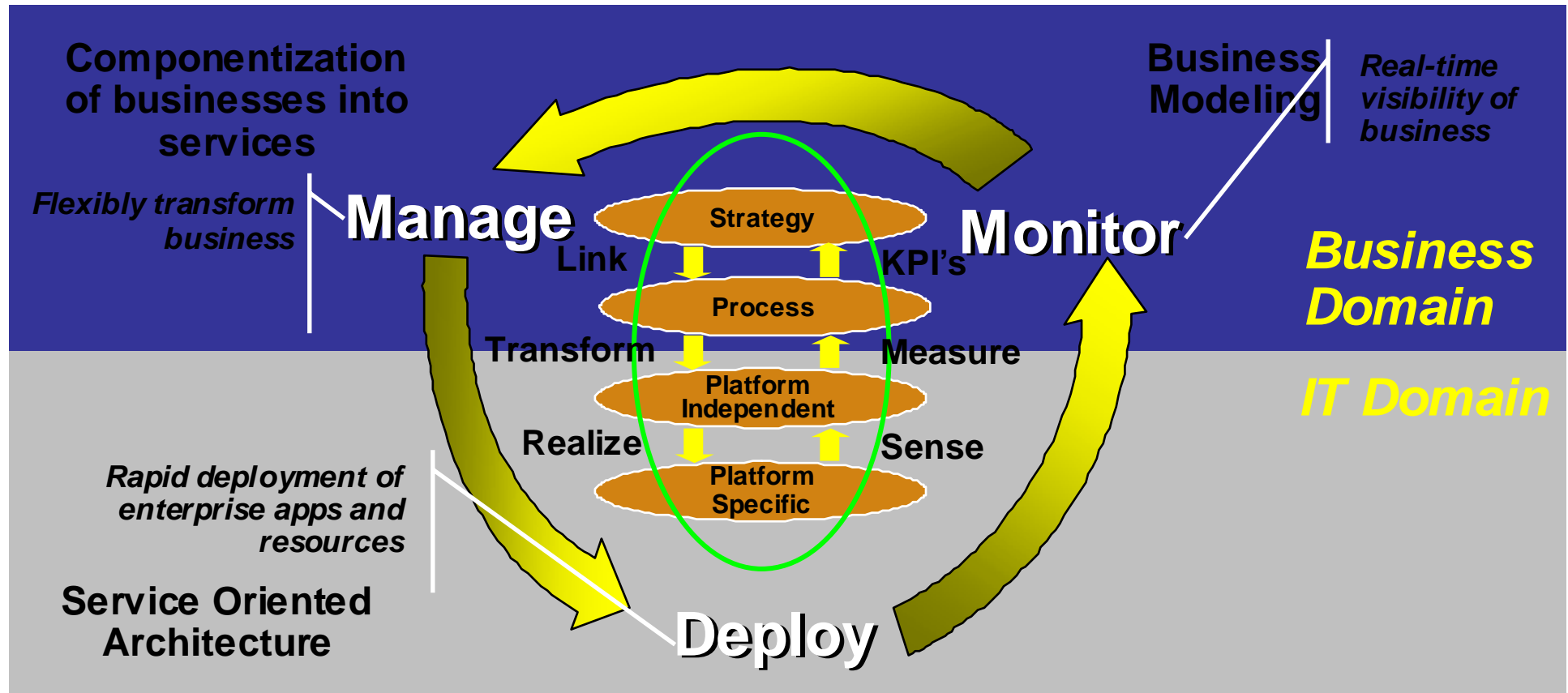
Common business monitoring goals

- **Report on business performance measured against targets (scorecard)**
  - ‣ Share growth and new product revenue
- **Track business process flow**
  - ‣ Status of particular insurance claim
  - ‣ Bottlenecks due to human tasks
- **Monitor business process metrics**
  - ‣ Duration, cost, branch ratios
- **Business Analysis through aggregation and multidimensional reporting**
  - ‣ Total monthly revenue by customer
- **Detect and alert of anomalous situations**
  - ‣ Gold customer order with no inventory and supplier decommitted
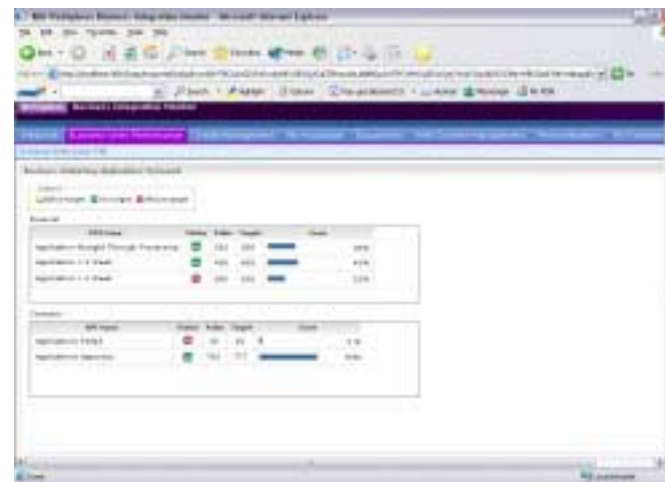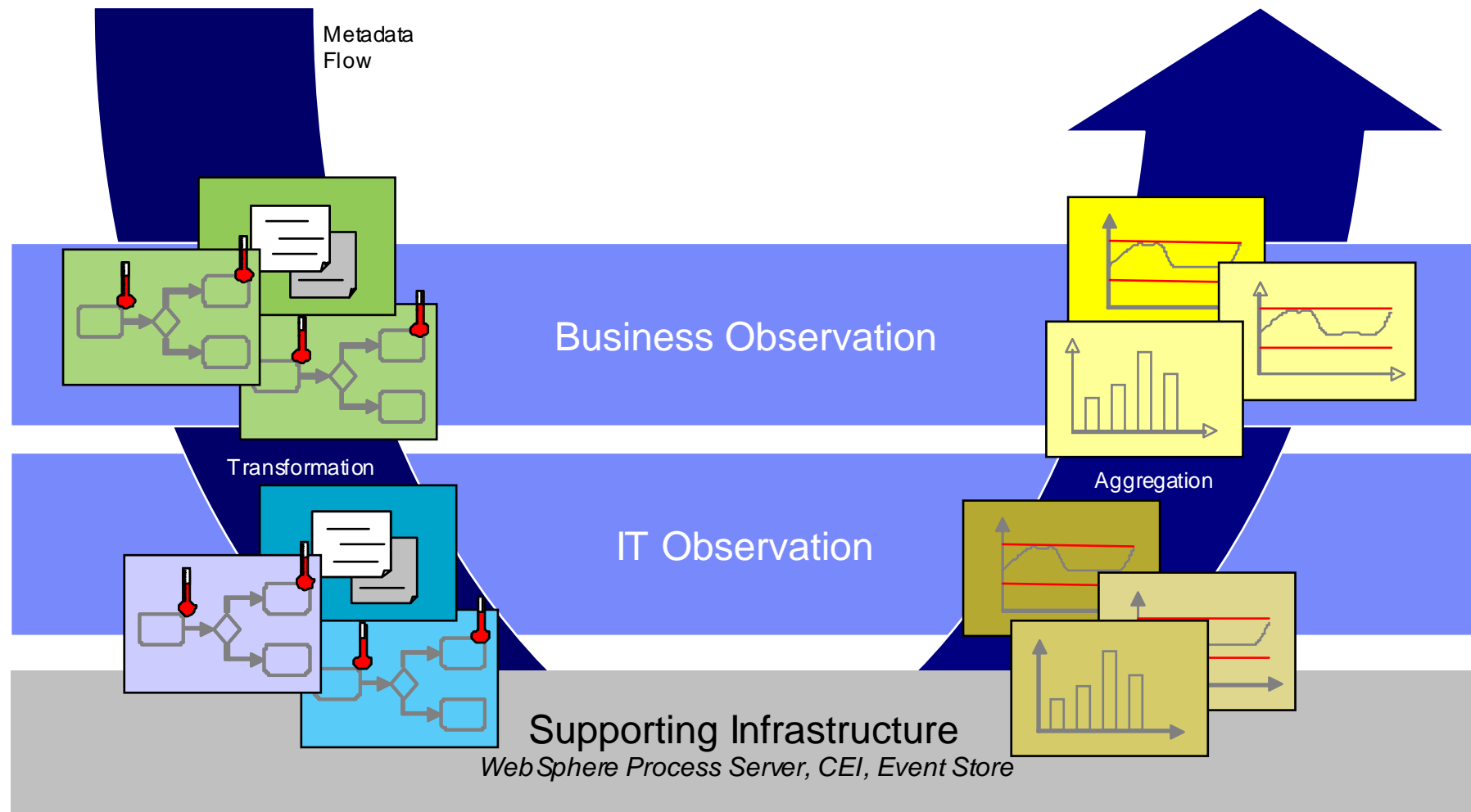
Drive Competitive Advantage

Business applications will be deployed, monitored and managed through the manipulation of multi-level models

Componentization of businesses into services

Flexibly transform business

Business Modeling

Real-time visibility of business

Manage

Link

Strategy

KPI's

Monitor

Business Domain

Process

Transform

Measure

Platform Independent

IT Domain

Realize

Sense

Platform Specific

Rapid deployment of enterprise apps and resources

Service Oriented Architecture

Deploy

Accurately and reliably capture and translate business intent into IT solutions

WebSphere Business Monitor V6 Conceptual View

Metadata Flow

Business Observation

Transformation

IT Observation

Aggregation

Supporting Infrastructure
WebSphere Process Server, CEI, Event Store

WebSphere Business Monitor V6 Themes

- **Business monitoring**
  - ▶ Manage responses to business situations
  - ▶ Business Dashboards
- **Monitor more environments**
- **Open event infrastructure**
- **Focus on performance and throughput**
- **Launchpad install – bundles pre-reqs**

- **Key element of IBM Business Innovation and Optimization strategy**

V6.0 Monitor Deliverables

- **Key Functions**
  - ▶ **Strategic framework for BPM**
    - Use of CEI (Standard interfaces for monitoring additional runtimes using CEI)
    - Improved Dashboards & Analytics with the integration of Alphablox
    - Improved performance & scalability

  - ▶ **Support for WBI Server V6 runtime, in addition to previously supported runtimes (MQWF, MB, & ICS)**

  - ▶ **Introduction of the Business Measures Editor (Eclipse based)**

BPM: Monitoring/Managing Business Processes

--- From the Business Process Perspective

Business Analyst

Business level Monitoring and Management
- ✓ Key Performance Indicators
- ✓ Business dashboards for historical analysis
- ✓ Workflow dashboards for real-time process operation management
- ✓ Event notification support

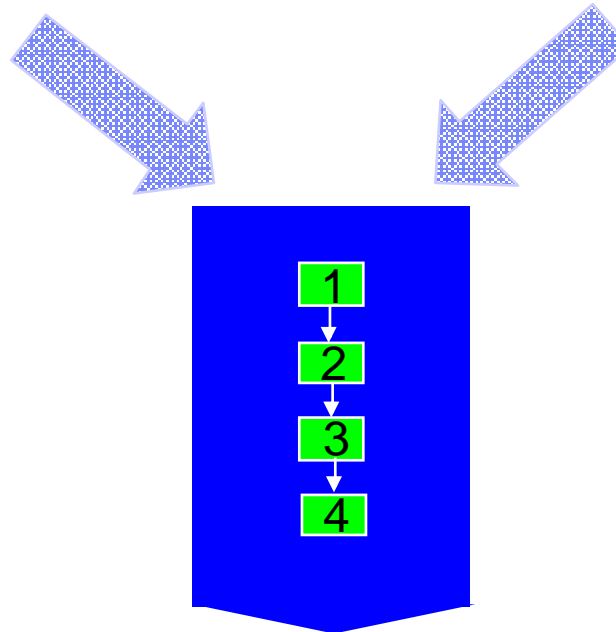**Websphere Business Integration Monitor**

I/T Operations

IT level Monitoring and Management
- ✓ Relate IT failures to business process impacts
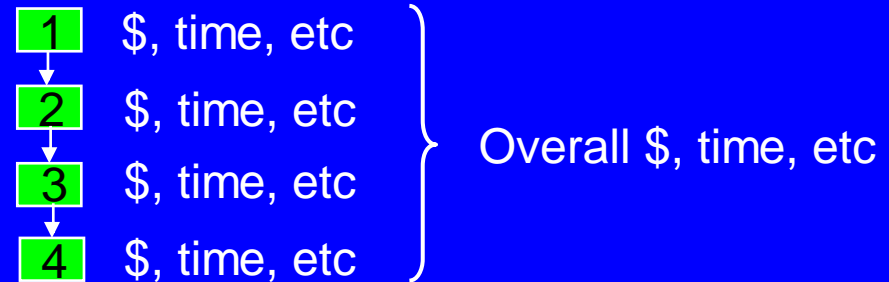- ✓ Predict and fix failures

Tivoli Suite

1
2
3
4

# BPM: Business Level Monitoring and Management

Business Analyst

The business analysts wants to know if their business process is running with the correct KPIs. They want to know where the bottle necks are etc.

1	$, time, etc	
2	$, time, etc	
3	$, time, etc	Overall $, time, etc
4	$, time, etc	

BPM: I/T Level Monitoring and Management

Automated processes run on servers, those servers call services on other servers, servers have software, hard drives, networks, etc; How do I know what business process is affected by any given I/T failure?
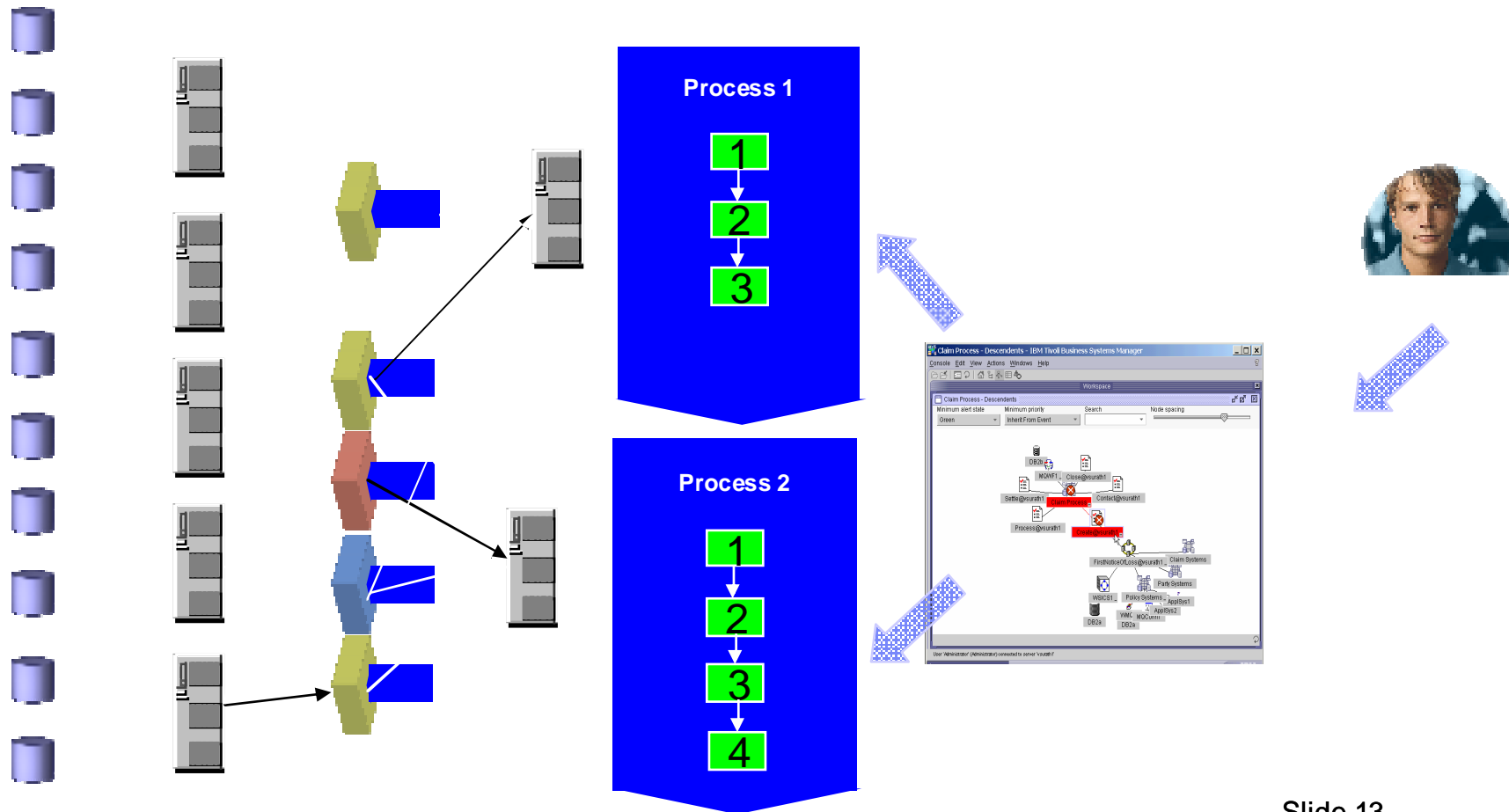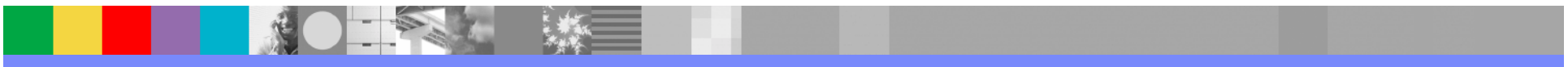
WBI Modeler/BME – Business (Observation) Modeling

- **User models based on event definitions**
- **Data modeling**
  - ▶ Import/export of event definitions from/to CEI event catalog
  - ▶ Event and metric/KPI data structure
- **Observation model elements**
  - ▶ Metrics
  - ▶ Key performance indicators (KPIs)
  - ▶ Situations
  - ▶ Inbound and outbound events
- **Data mapping and expression tools for definition of how inbound event data is propagated to metrics/KPIs/situations**

Business Measures Editor (BME) basic features

- **BME hides the generic observation model complex details from the user by an editor**
  - ▸ **process graph tab**
  - ▸ **Observation Model (OM) graph tab**

- **BME modeling constructs define runtime business measure computing**
  - ▸ **Triggers**
  - ▸ **Timers,**
  - ▸ **Counters**
  - ▸ **Metrics,**
  - ▸ **KPIs**
  - ▸ **Aggregation**

- **Define events and to the 'Action Manager' in the monitor**
  - ▸ **Outbound Events**

- **The BME creates a default Business Performance Model (BPM)**
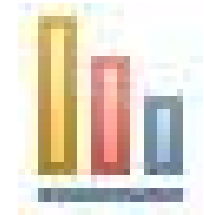 - ▸ **determines process durations and states but not costs.**
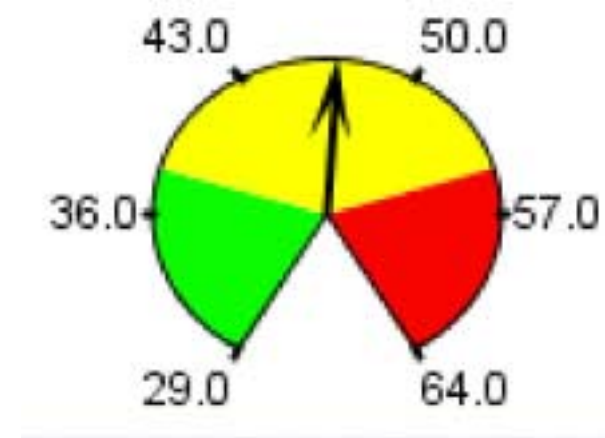
KPI generated in Business Measure Editor
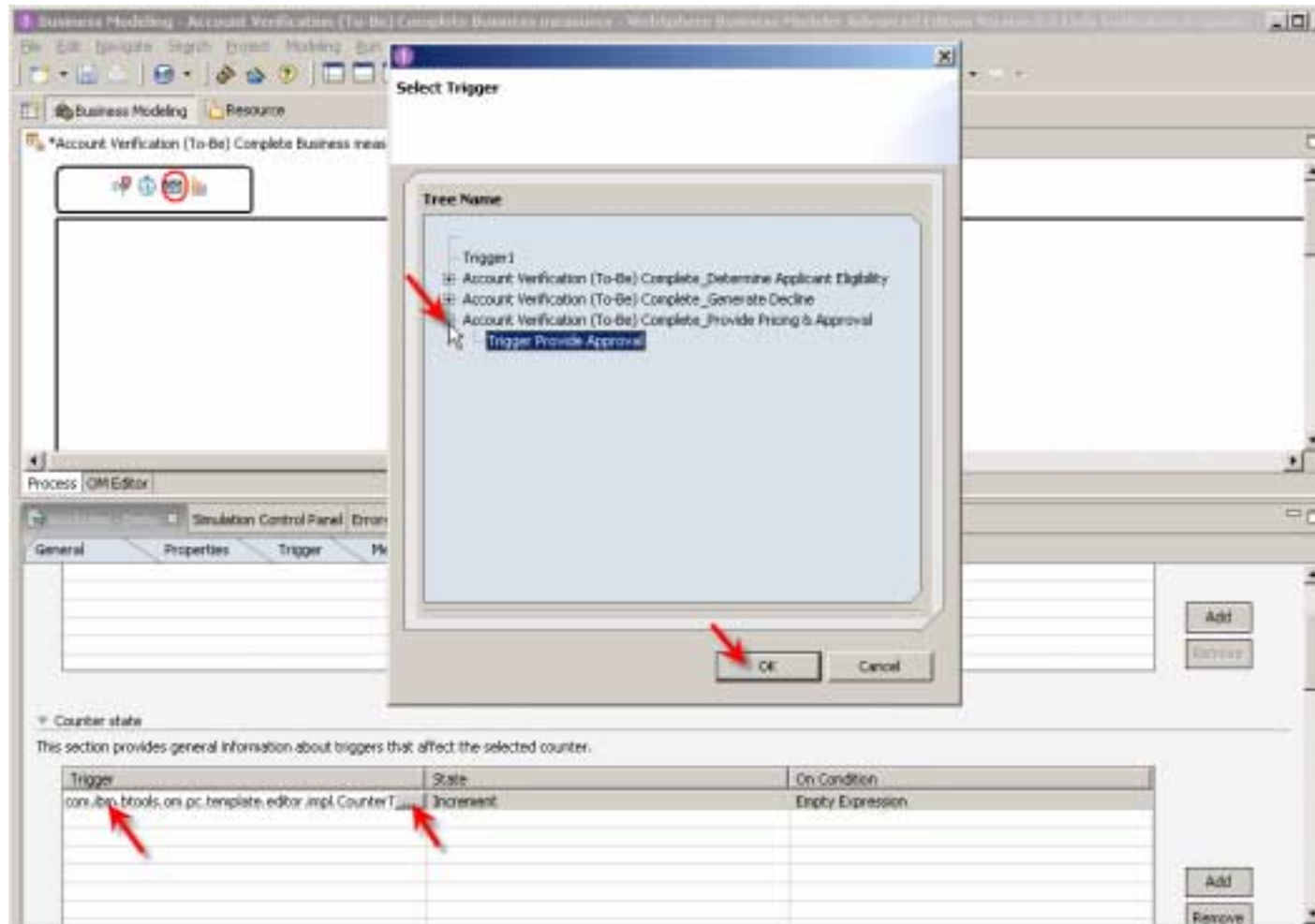
Key performance indicators (KPIs)

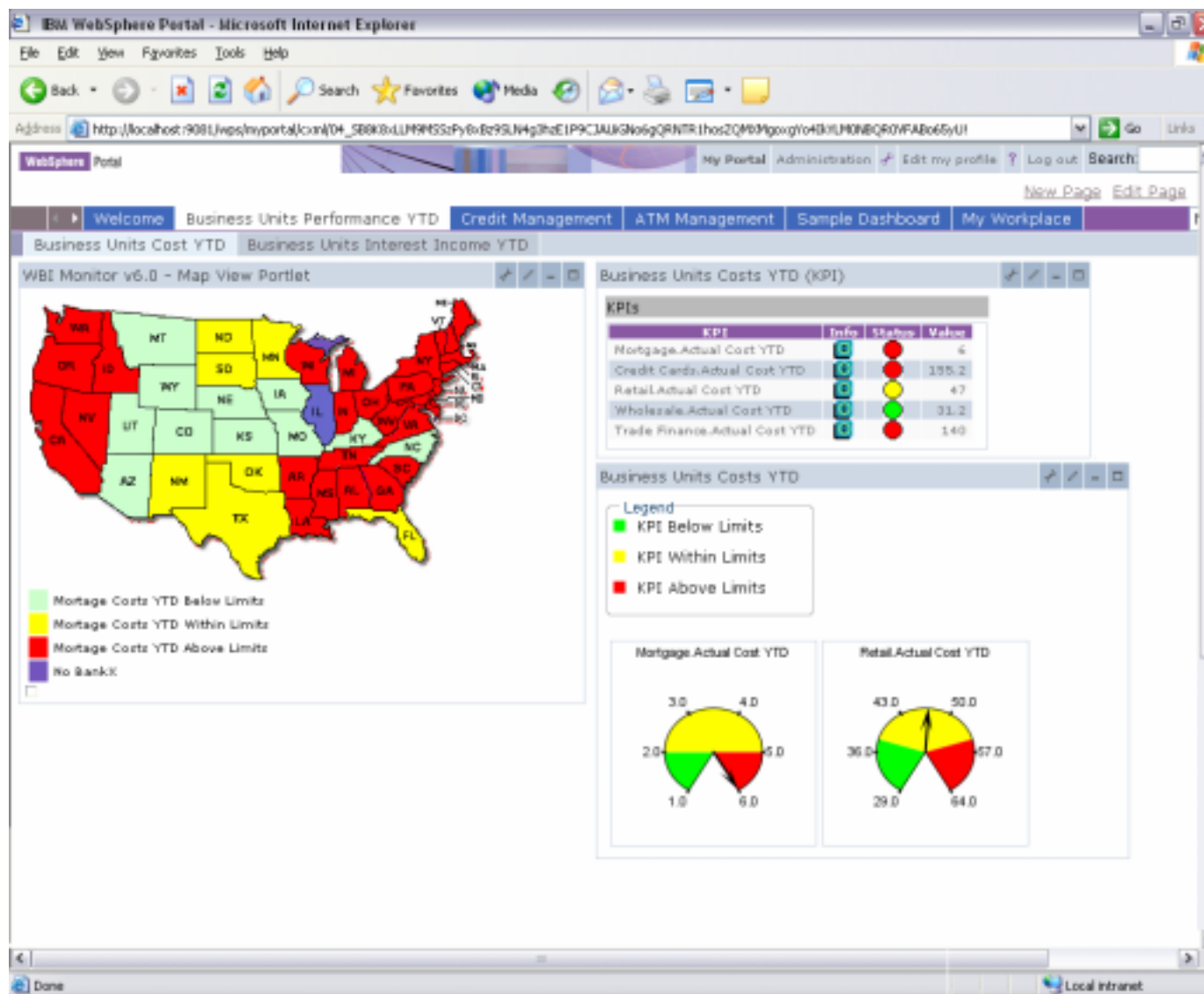- A KPI is a special metric directly related to business performance;

  ▶ KPIs can be presented by the monitor dashboard as gauges

  ▶ contains metrics for limits and target margins of the gauge

  ▶ like any other metrics KPIs gets values
    - from other metrics
    - from counters
    - from timers
    - from default business measures
    - from other KPIs
    - from Input criteria of tasks (variables of an activity)

BME KPIs relationship to monitor's dashboards

Legend
- Below lower limit
- Within limits
- Above upper limit

KPI Lower Limit Value

KPI Upper Limit Value

KPI Target

Retail.Actual Cost YTD

KPI section

KPI section description

Name	Type	Default Value	Target	Upper Bound	Lower Bound	Upper Margin	Lower Margin

Add

Remove

Metric Calculations

Legend
Below target   On target   Above target

Financial

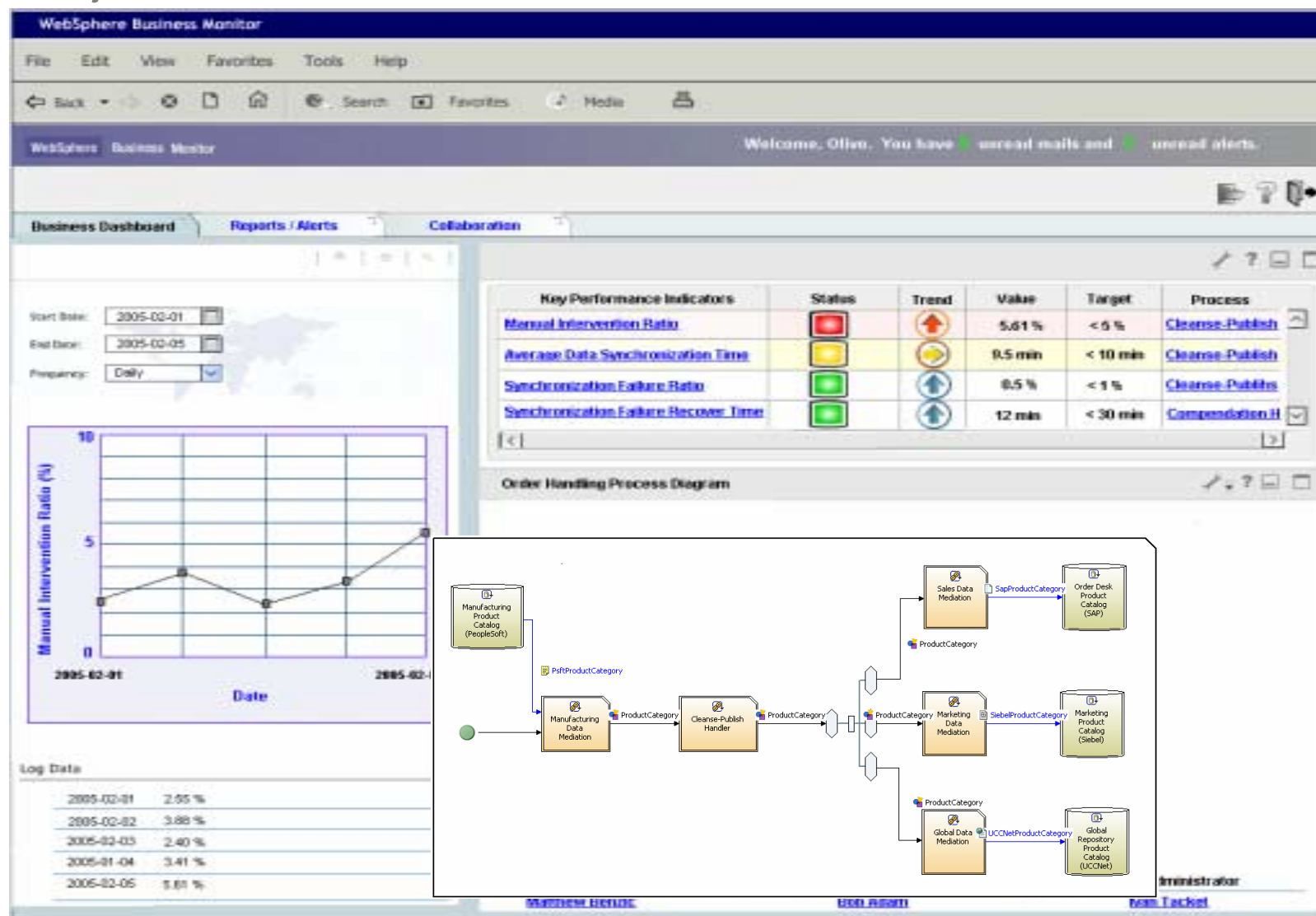| KPI Name	Status	Value	Target	Score	
Retail.Actual Interest Income YTD		470	485		97%

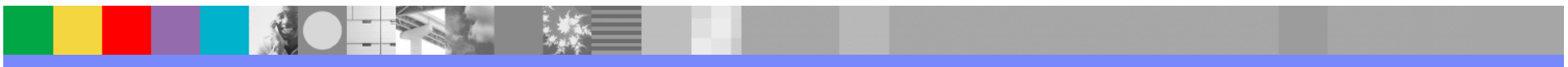# Sample Dashboard - Business Units Cost YTD (Sample shipped)
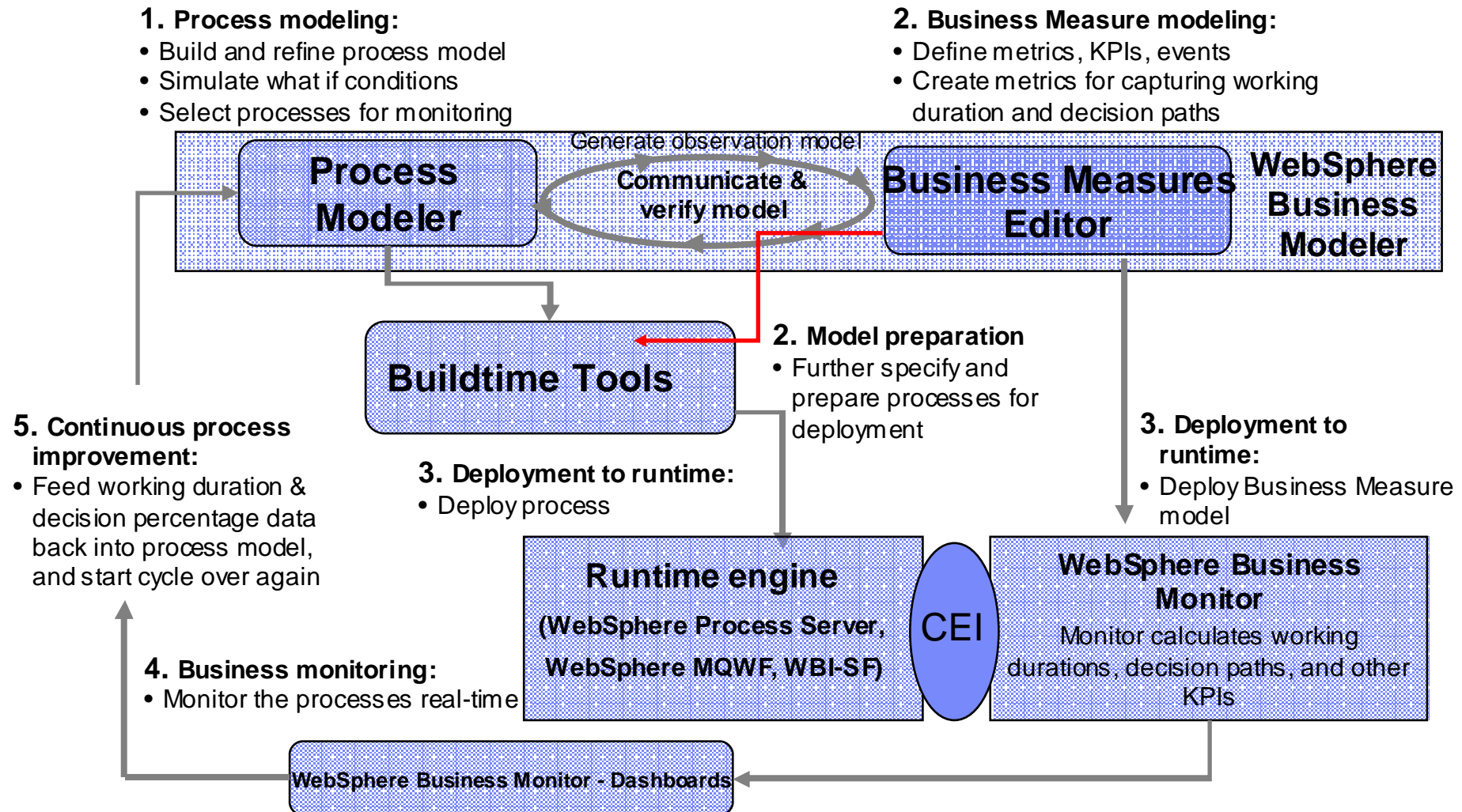
Projected User Interface

WBI Monitor to WBI Modeler Feedback Loop

- **Feedback of real-time Monitor data to WBI Modeler**
  - ▶ OME creates timers for capturing process working duration and metrics for capturing decision paths
  - ▶ WBI Monitor calculates the working duration and decision paths
  - ▶ Administrator exports actual values data from WBI Monitor Admin Console that contains the working duration and decision percentages
  - ▶ WBI Modeler imports data capturing process working duration and percentage branching based on real-time execution
  - ▶ WBI Modeler generates a simulation profile capturing this information, allowing more accurate simulation
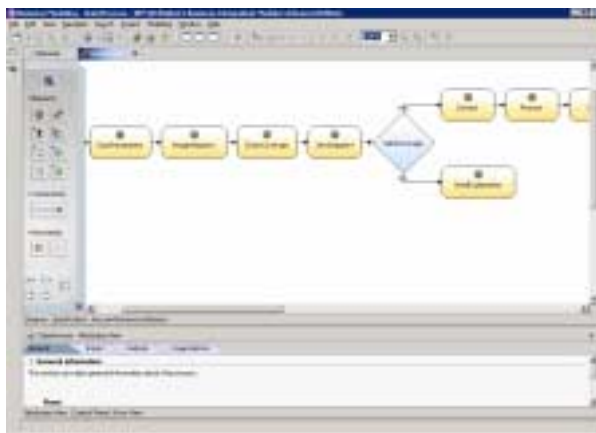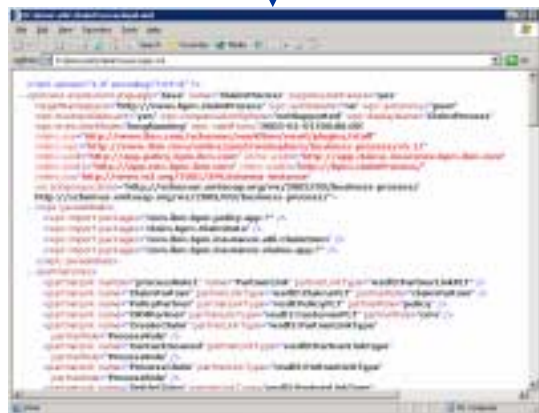
Modeler to Monitor to Modeler

1. Process modeling:
- Build and refine process model
- Simulate what if conditions
- Select processes for monitoring

2. Business Measure modeling:
- Define metrics, KPIs, events
- Create metrics for capturing working duration and decision paths

Generate observation model

Process Modeler

Communicate & verify model

Business Measures Editor

WebSphere Business Modeler

Buildtime Tools

2. Model preparation
- Further specify and prepare processes for deployment

5. Continuous process improvement:
- Feed working duration & decision percentage data back into process model, and start cycle over again

3. Deployment to runtime:
- Deploy process

3. Deployment to runtime:
- Deploy Business Measure model

Runtime engine
(WebSphere Process Server, WebSphere MQWF, WBI-SF)

CEI

WebSphere Business Monitor
Monitor calculates working durations, decision paths, and other KPIs

4. Business monitoring:
- Monitor the processes real-time

WebSphere Business Monitor - Dashboards

Tivoli Interface

Websphere Business Modeler

Tivoli Business Systems Manager

Export BPEL code

Import XML

Transform BPEL to XML
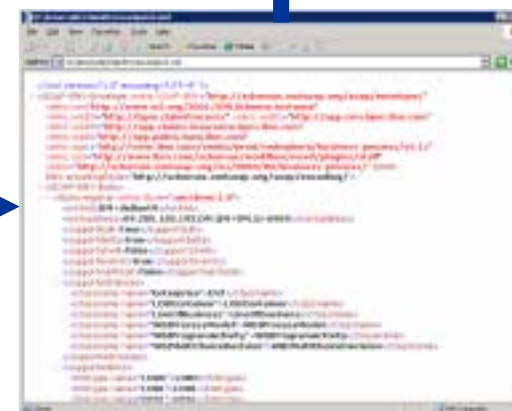
Import the Business Process Model in TBSM

Slide 24
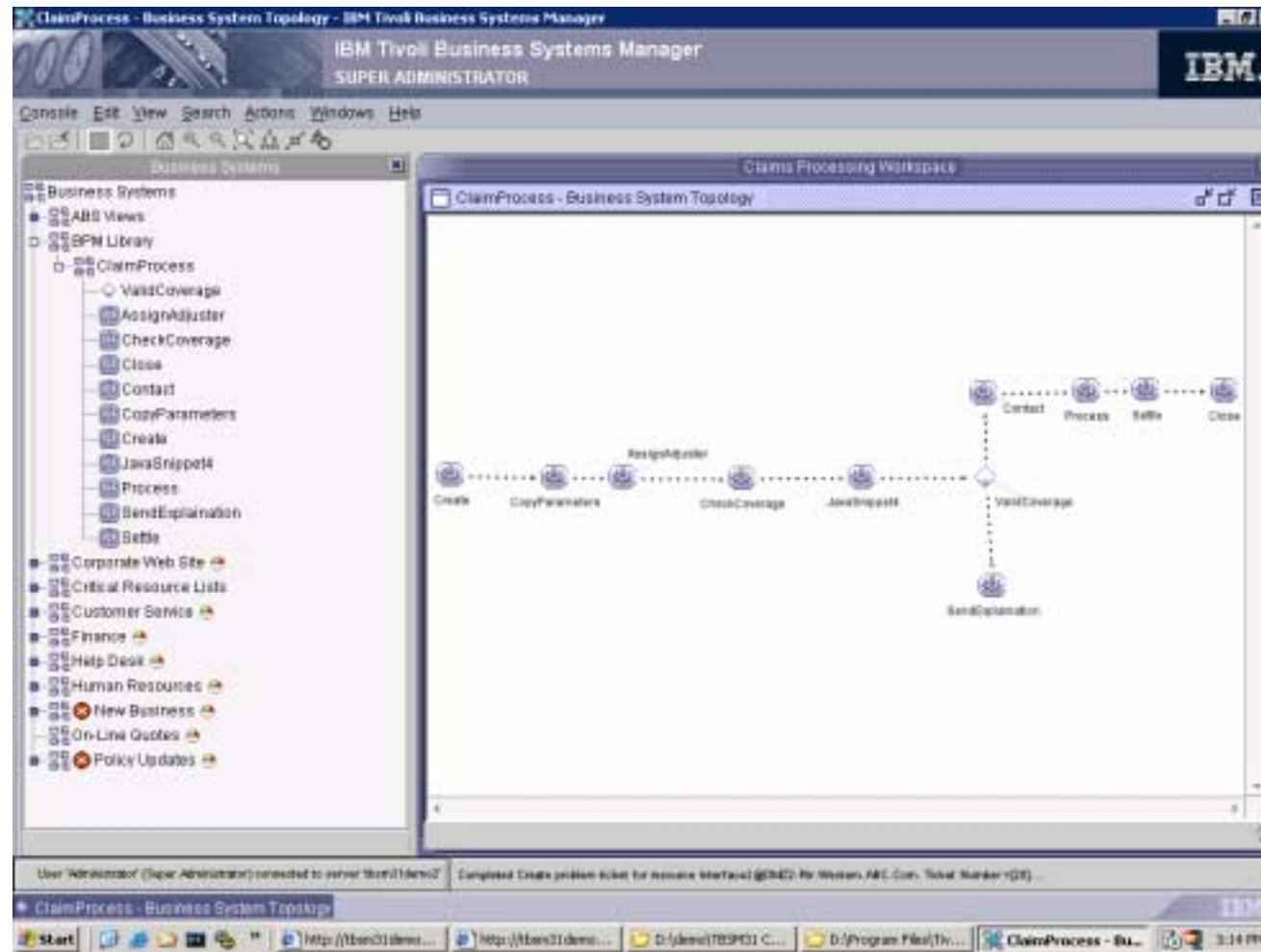
Aligning IT resources with Process Steps Tasks

Drag Customer Service Business System under Send Explanation Task to link the dependency

Examining Root Cause

Topology View of Service Dependencies

The Process View

IT Event View corresponds with Topology

WebSphere Business Monitor V6 Logical Architecture & Components

Slide 29
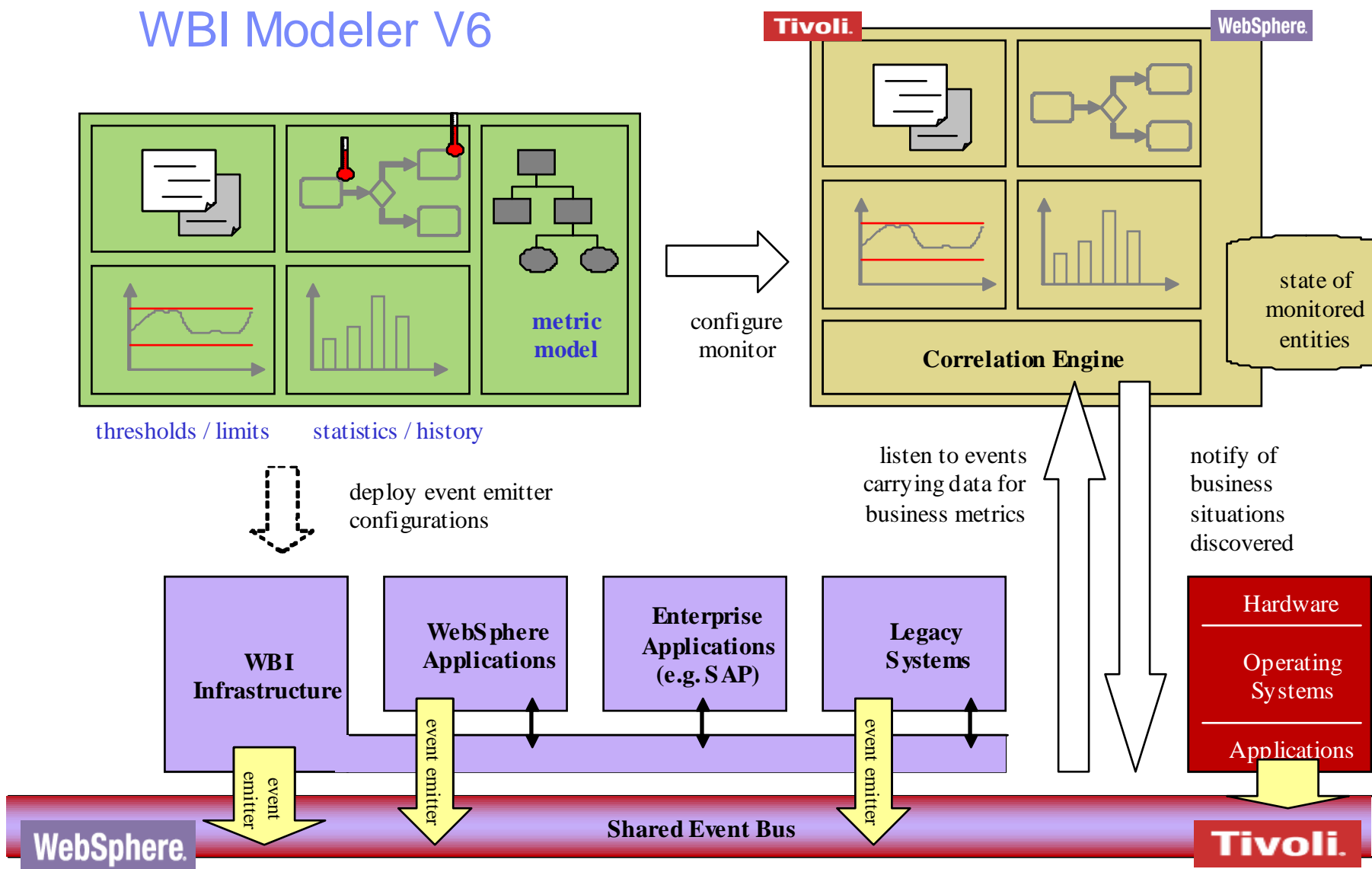
WebSphere Business Monitor V6 Logical Architecture Overview

Tools

Integrated Development Environment

Event Sources

Events

Common Event Infrastructure

Events

Events

Monitor Dashboards

Monitor Server

Integrated Admin Console

External Data

ODS   Warehouse   Mart
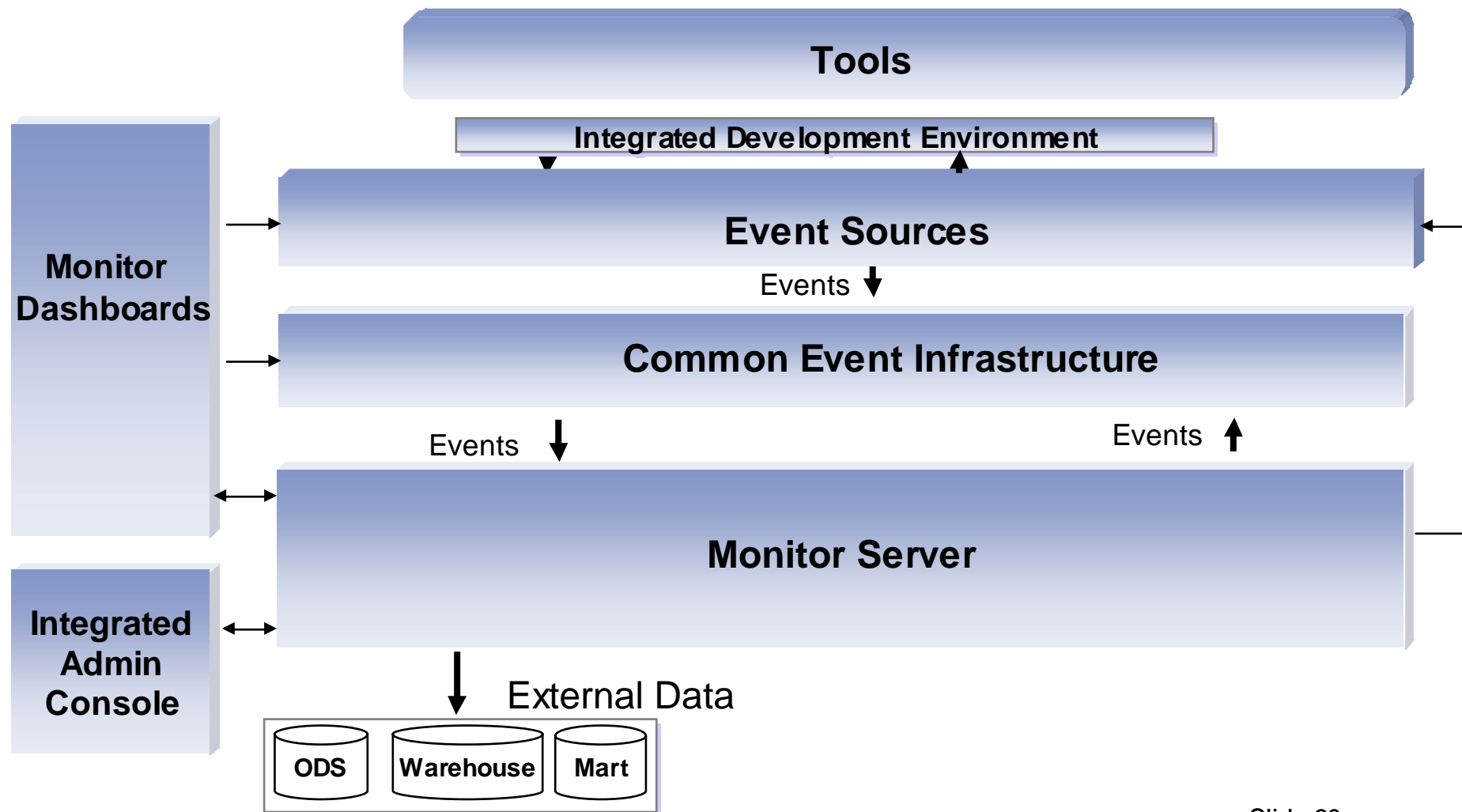
Enabling Events: CBE and CEI

What is a Common Base Event (CBE)?

❑ An "Event" is anything interesting that occurs from either a business or an IT perspective. CBE is the event data format IBM has proposed as a standard to the Organization for the Advancement of Structured Information Standards (OASIS).

What is the Common Event Infrastructure (CEI)?

❑ CEI is IBM's implementation of a consistent approach for the creation, transmission, persistence and distribution of a wide range of business, system and network events, based on common base events

WebSphere Business Monitor V6

Tooling

(Business Measure Editor)

Define BMs

Business Measures Model

CEI

Monitor Server

Action Manager

Monitor Dashboards

CBE events

CBE Situation events

Event Processing

Dashboard access

State

Replication

Runtime

Performance Warehouse

DB2 Replicator

DB2 Replicator

Replication

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WebSphere Business Monitor V6 Physical Architecture

Suite of Tools

WebSphere Business Modeler

Integrated Development Environment

Import Actuals from
Monitor to Modeler

Event Sources

| WebSphere Process Server | WBI-SF5.1 (BPEL) | MQ Workflow (Event Emitter) | Message Broker (Event Emitter) | WBI Adapters | Other/ Legacy |

Events

Common Event Infrastructure

Event Catalog

Event Store

Monitor Dashboards

Portlets for
• KPI's
• Scorecards
• Process Tracking

Events

Events

Information Manager
(Analysis, Reporting, Data Replication Services)

Observation Manager
(KPI, Metric Management, Situation Detection)

Adaptive Action Manager
(Service Invocation, Notification)

Monitor Server

Monitor Data Store
(State, Metrics & KPIs, Multidimensional Datamart)

WebSphere Process Server 6.0

Integrated Admin Console

Extract, Transform, Load

External Data

ODS   Warehouse   Mart

Slide 33

WebSphere Business Monitor V6 Physical Architecture

Suite of Tools

WebSphere Business Modeler

Integrated Development Env...

Import Actuals from
Monitor to Modeler

Event Sources

| WebSphere Process Server | WBI-SF5.1 (BPEL) | MQ Workflow (Event Emitter) | Message Broker (Event Emitter) | W... |

Events

Common Event Infrastructure

Event Catalog

Monitor Dashboards

Portlets for
• KPI's
• Scorecards
• Process Tracking

Events

Events

Information Manager (Analysis, Reporting, Data Replication Services)

Observation Manager (KPI, Metric Management, Situation Detection)

Adaptive Action Manager (Service Invocation, Notification)

Monitor Server

Monitor Data Store (State, Metrics & KPIs, Multidimensional Datamart)

WebSphere Process Server 6.0

Integrated Admin Console

Extract, Transform, Load

External Data

| ODS | Warehouse | Mart |

Suite of Tools

- Primary target role is business user.

- Modeler supports process, organization, simulation modeling, etc.

- Business Measures Editor (aka BME) is part of WebSphere Business Modeler. Includes defining "what" should be monitored (contexts, key performance indicators, metrics, business situations) and how to derive the information e.g., through events, relationships and maps.

WebSphere Business Monitor V6 Physical Architecture
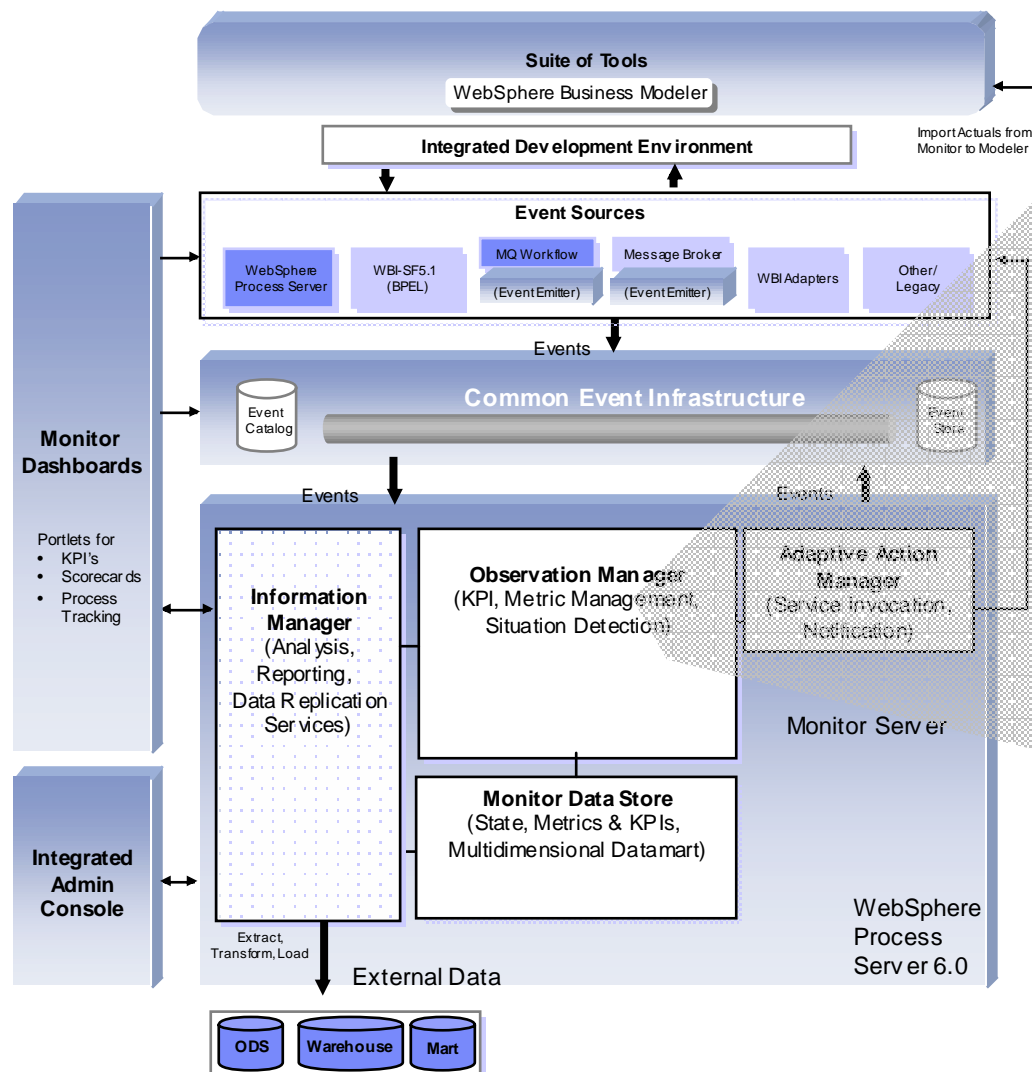
Observation Manager

- Implemented with WAS v.6 using Entity Beans

- Realized as Java classes generated from business measures models at import time.

- Receives events from CEI, manages metrics and KPIs, detects business situations and publishes business events indicating a business action should be taken.

WebSphere Business Monitor V6 Physical Architecture
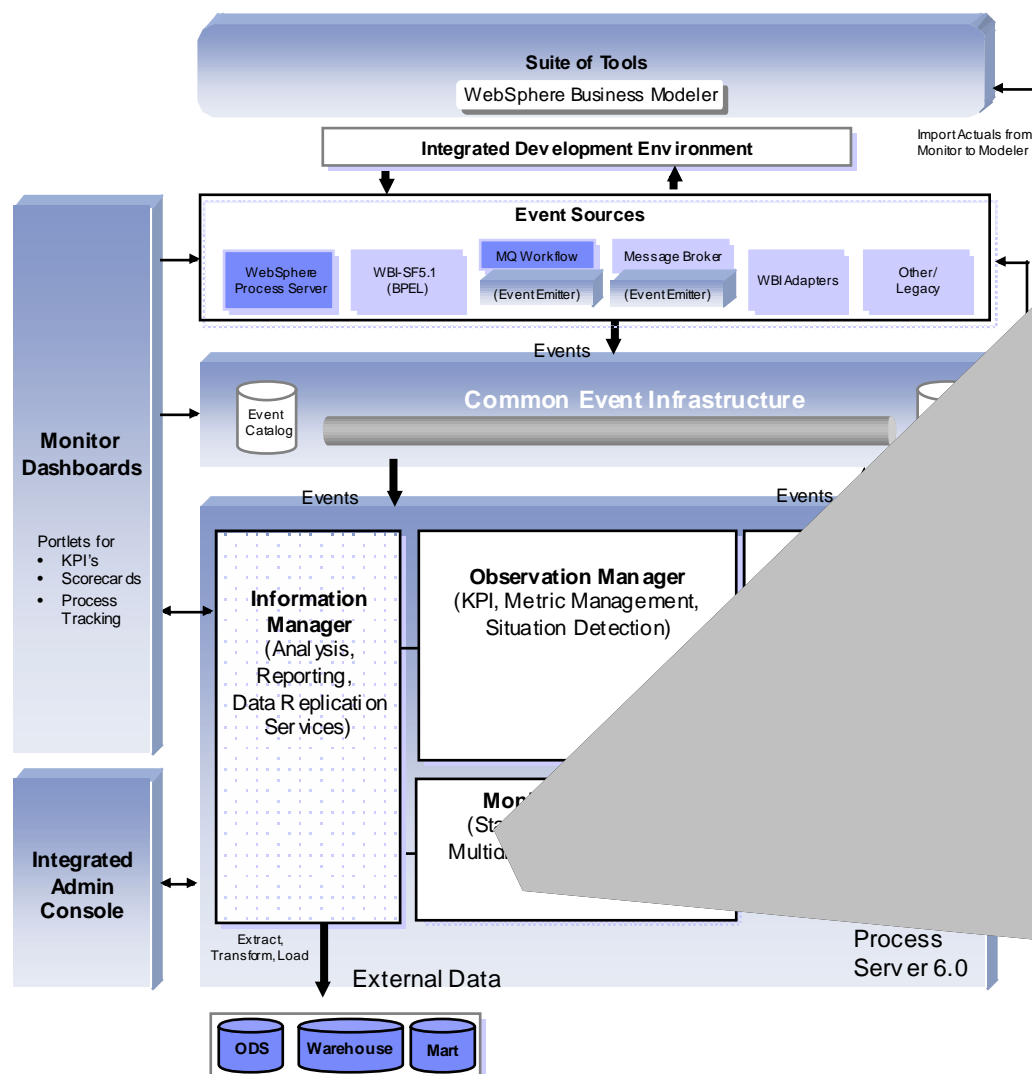
Monitor Data Store

- Includes four databases (which may be deployed on a single physical node):

  - State – "internal" persistence of the current state of all monitoring contexts.

  - Runtime – values of metrics and KPIs for use in dashboards

  - Performance Warehouse - multidimensional (star schema) representation for purpose of analysis.

  - Monitor repository – contains the definitions of the deployed models. Accessed by observation manager and dashboards.

WebSphere Business Monitor V6 Physical Architecture

Suite of Tools
WebSphere Business Modeler

Integrated Development Environment

Import Actuals from Monitor to Modeler

Event Sources

| WebSphere Process Server | WBI-SF5.1 (BPEL) | MQ Workflow (Event Emitter) | Message Broker (Event Emitter) | WBI Adapters | Other/ Legacy |

Events

Common Event Infrastructure
Event Catalog

Event Store

Monitor Dashboards

Events

Events

Portlets for
- KPI's
- Scorecards
- Process Tracking

Information Manager
(Analysis, Reporting, Data Replication Services)

Observation Manager
(KPI, Metric Management, Situation Detection)

Ada...
(Ser...
N...

Monitor Server

Monitor Data Store
(State, Metrics & KPIs, Multidimensional Datamart)

WebSphere Process Server 6.0

Integrated Admin Console

Extract, Transform, Load

External Data

ODS   Warehouse   Mart

Action Manager

- Listens for CBEs indicative of business situations. Determines which action should be taken as a result of a business situation. Determination based on situation event – action binding specified in admin console.

- Example action service types include:
  - Notification through email or dashboard alert.
  - Service invocation of MQWF process and web services.

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WebSphere Business Monitor V6 Physical Architecture

Information Manager

- Uses DB2 Alphablox Analysis Server for analytics and multidimensional cubing

- Uses DB2 Replication Services to replicate data between the databases used by Monitor.

- Uses DB2 Cube Views for two purposes:
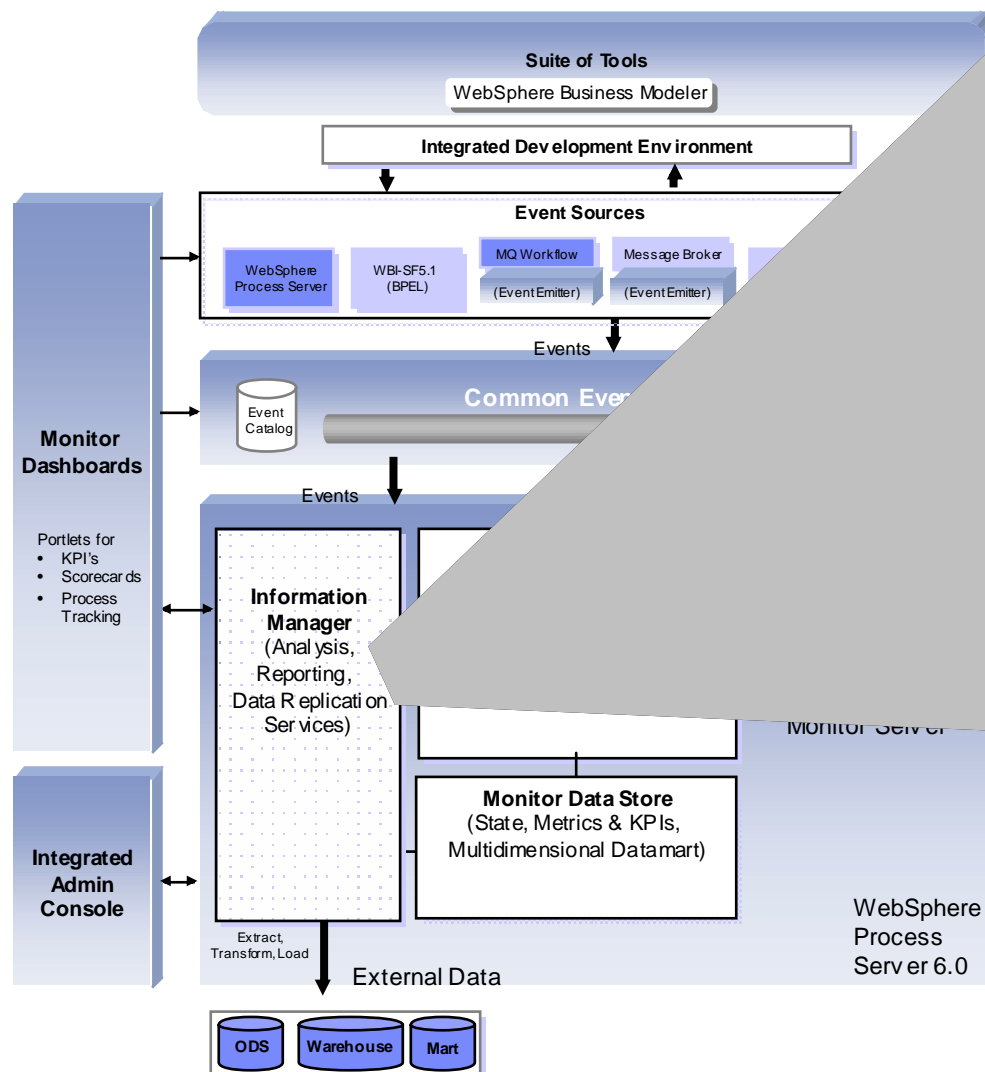 - Performance tuning: creates materialized query tables for the datamart.
  - Manages the cube model metadata. Reporting vendors can query cube views for a definition of the mart's schema.

- Provides interfaces used to query Monitor information. These interfaces are in the form of JDBC and DB2 Alphablox APIs.

Diagram labels:
- Suite of Tools
- WebSphere Business Modeler
- Integrated Development Environment
- Event Sources
- WebSphere Process Server
- WBI-SF5.1 (BPEL)
- MQ Workflow (Event Emitter)
- Message Broker (Event Emitter)
- Events
- Common Event
- Event Catalog
- Monitor Dashboards
- Portlets for
  - KPI's
  - Scorecards
  - Process Tracking
- Events
- Information Manager (Analysis, Reporting, Data Replication Services)
- Integrated Admin Console
- Monitor Data Store (State, Metrics & KPIs, Multidimensional Datamart)
- Monitor Server
- WebSphere Process Server 6.0
- Extract, Transform, Load
- External Data
- ODS
- Warehouse
- Mart

WebSphere Business Monitor V6 Physical Architecture

Monitor Dashboards

- Implemented as portal pages in WebSphere Portal Server V5

- Content includes nine out of box views in the form of portlets:
  - Report
  - Scorecard
  - KPI
  - Alert
  - Gauge
  - Process
  - Monitor
  - Multidimensional
  - Organization

- Supports business level administration of monitored processes running in WebSphere Process Server and WebSphere MQ Workflow

WebSphere Business Monitor V6 Physical Architecture

Suite of Tools
WebSphere Business Modeler

Integrated Development Environment

Event Sources

WebSphere Process Server | WBI-SF5.1 (BPEL) | MQ Workflow (Event Emitter) | Message Broker (Event Emitter) | wB Adapters | Other Legacy

Import Actuals from Monitor to Modeler

Events

Event Catalog — Common Event Infrastructure — Event Store

Events — Events

Monitor Dashboards

Portlets for
- KPI's
- Scorecards
- Process Tracking

Information Manager (Analysis, Reporting, Data Replication Services)

Observation Manager (KPI, Metric Management, Situation Detection)

Adaptive Action Manager (Service Invocation, Notification)

Monitor Server

Monitor Data Store (State, Metrics & KPIs, Multidimensional Datamart)

Integrated Admin Console

Extract, Transform, Load

External Data

WebSphere Process Server 6.0

ODS | Warehouse | Mart

Integrated Admin Console

- Implemented as extensions to the WebSphere Application Server v.6 admin console.

- Includes configuration and administrative control for major components in the server.
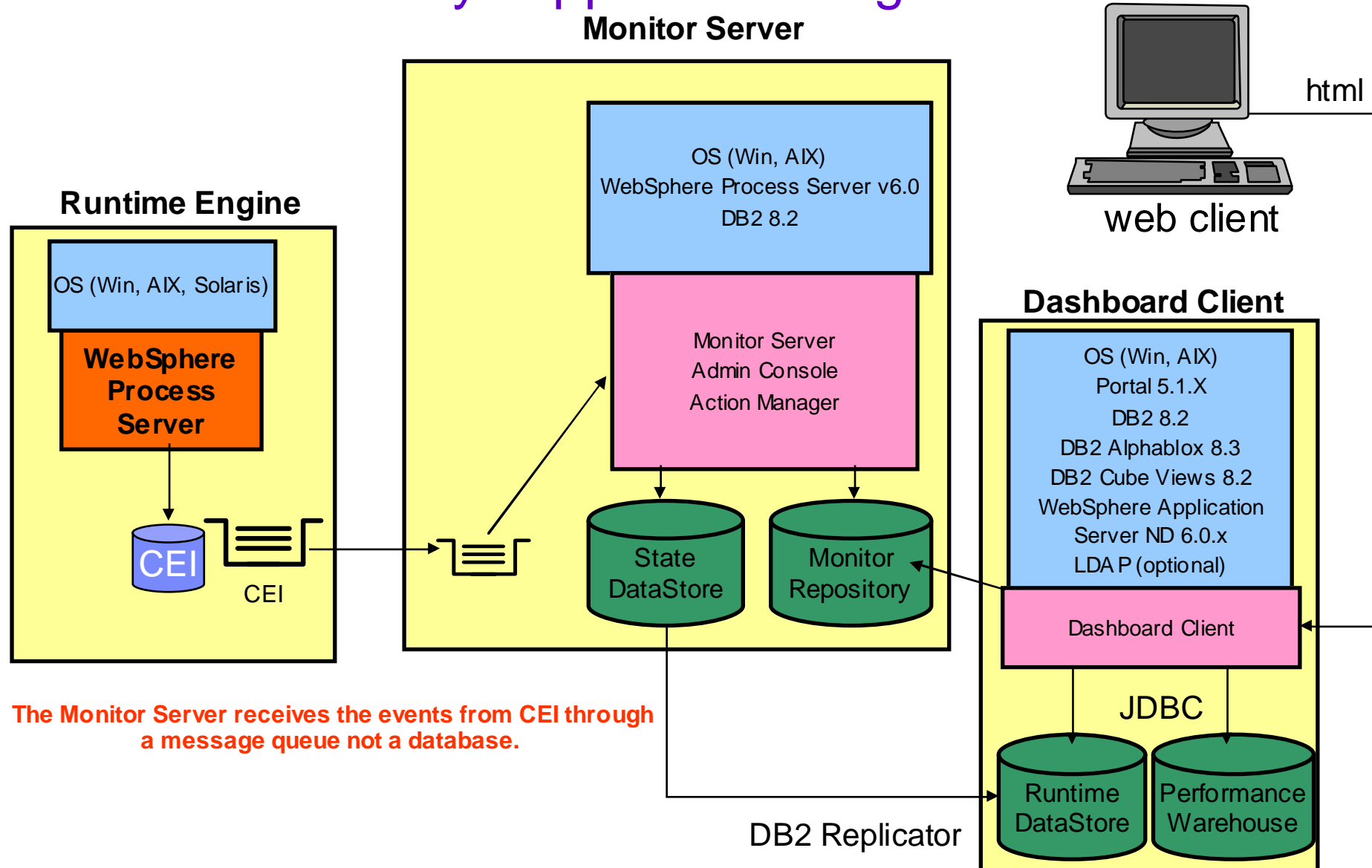
- "Deploy" business measures models.

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Databases

Observation Manager

Dashboard Client

Operational Views   Historical Views

State
Data Store

Monitor
Repository

Runtime
Data Store

Performance
Warehouse
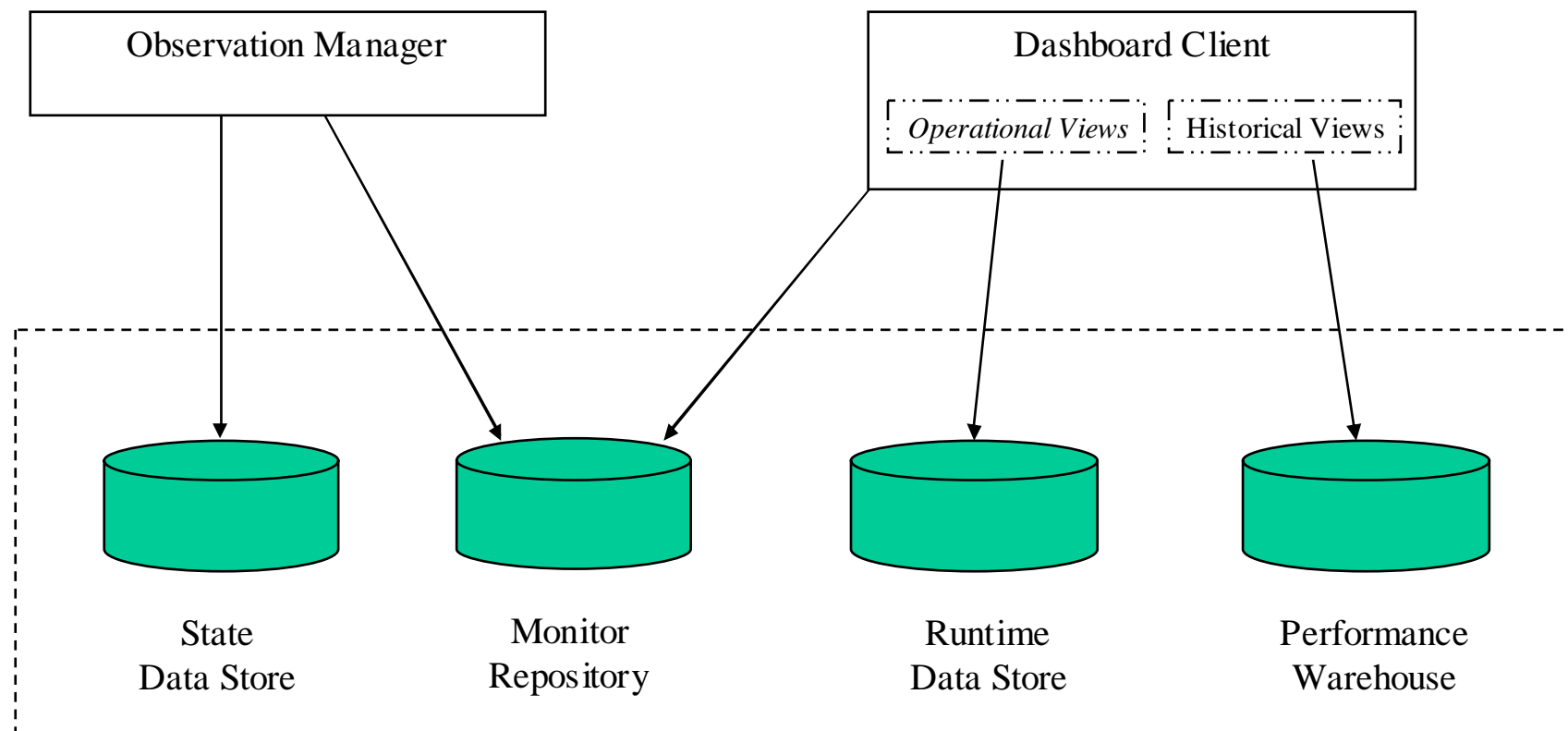
Configuration

Multi Server – only supported config

Monitor Server

Runtime Engine

OS (Win, AIX)
WebSphere Process Server v6.0
DB2 8.2

OS (Win, AIX, Solaris)

WebSphere Process Server

Monitor Server
Admin Console
Action Manager

CEI

CEI

State DataStore

Monitor Repository

web client

html

Dashboard Client

OS (Win, AIX)
Portal 5.1.X
DB2 8.2
DB2 Alphablox 8.3
DB2 Cube Views 8.2
WebSphere Application
Server ND 6.0.x
LDAP (optional)

Dashboard Client

JDBC

Runtime DataStore

Performance Warehouse

DB2 Replicator

The Monitor Server receives the events from CEI through a message queue not a database.

Installation

- Provides a **single** interface to all installation tasks

- Detects and installs software prerequisites

- Installs WebSphere Business Monitor features
  - ▶ Databases
  - ▶ Dashboard Client
  - ▶ Monitor Server
  - ▶ Event Emitters

Installer Main Window buttons

- Welcome

  ‣ Introduction to launchpad

- Create Databases

  ‣ Start the process of creating the Monitor databases

- Install Product

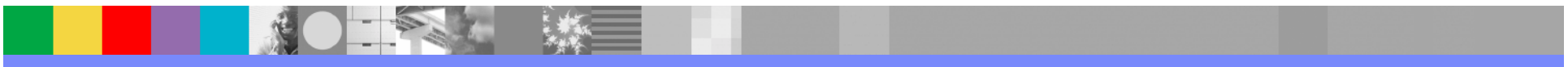 ‣ Start the process of installing the Monitor code

Software Prerequisites - bundled with Monitor V6

- **DB2 Universal Database Enterprise Server Edition 8.2 (8.1 w/FP8)**
  - ▶ With Replication Manager

- **DB2 Alphablox 8.3**

- **DB2 Cube Views 8.2 (8.1 w/FP8)**

- **WebSphere Portal 5.1.0.x**

- **WebSphere Process Server 6.0**
  - ▶ Includes WebSphere Application Server Network Deployment (WAS ND) 6.0.1
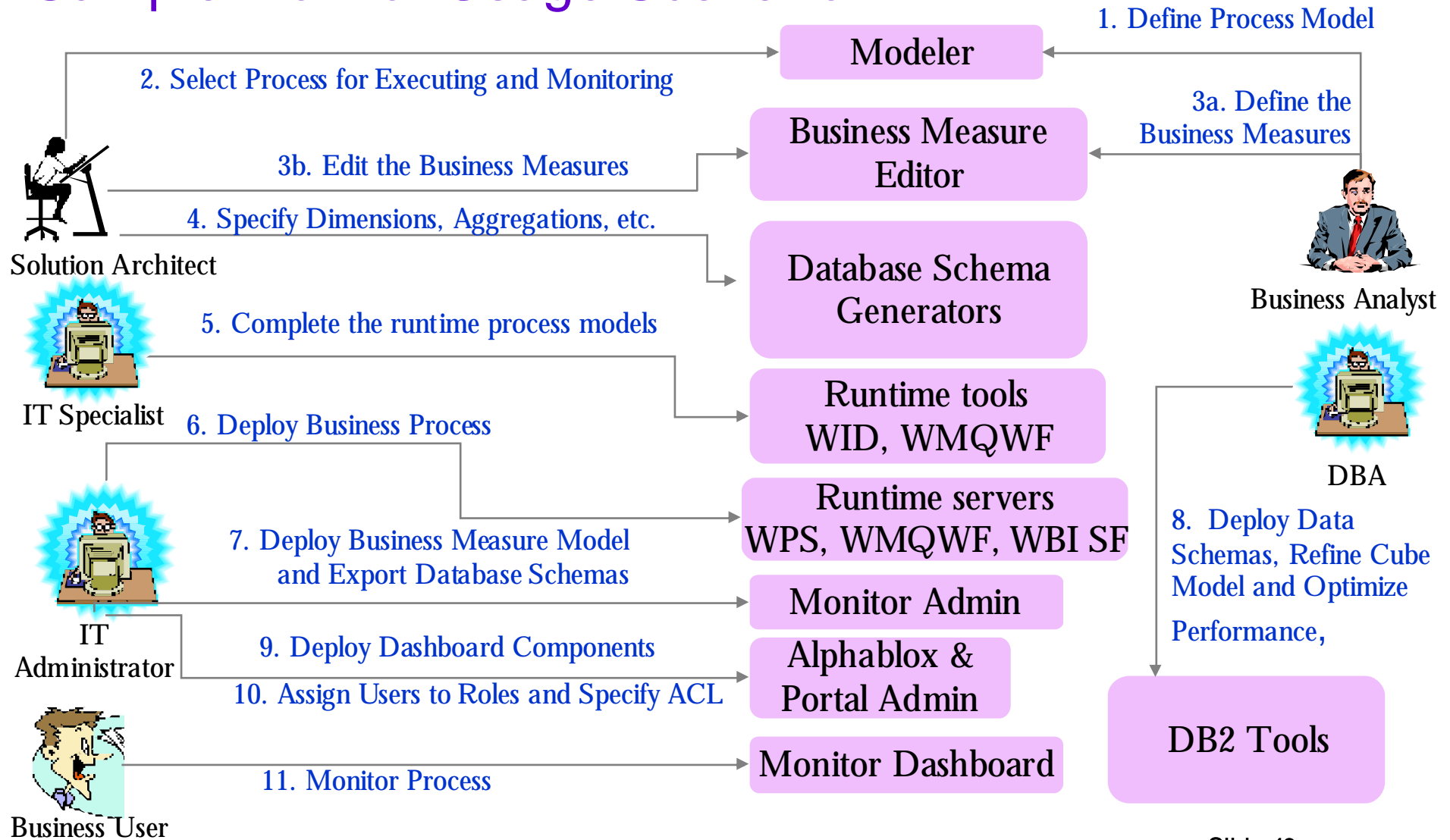
- **WebSphere Business Modeler 6.0**

Software Prerequisites by feature

- ## Monitor Server
  - ▸ WebSphere Process Server , DB2

- ## Event Emitters
  - ▸ WebSphere Process Server, DB2

- ## Dashboard Client
  - ▸ WebSphere Process Server, WebSphere Portal, WebSphere Application Server Network Deployment, DB2, DB2 Cube Views, DB2 Alphablox

- ## Launchpad will check for the prerequisites
  - ▸ 3 possible states for a prerequisite
    - • Not installed, Installed, Need to upgrade

Sample Monitor Usage Scenario

1. Define Process Model

Modeler

2. Select Process for Executing and Monitoring

3a. Define the Business Measures

Business Measure Editor

3b. Edit the Business Measures

4. Specify Dimensions, Aggregations, etc.

Solution Architect

Database Schema Generators

Business Analyst

5. Complete the runtime process models

IT Specialist

Runtime tools WID, WMQWF

6. Deploy Business Process

DBA

Runtime servers WPS, WMQWF, WBI SF

7. Deploy Business Measure Model and Export Database Schemas

8. Deploy Data Schemas, Refine Cube Model and Optimize

Performance,

Monitor Admin

IT Administrator

9. Deploy Dashboard Components

Alphablox & Portal Admin

10. Assign Users to Roles and Specify ACL

DB2 Tools

Business User

Monitor Dashboard

11. Monitor Process

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Role-based business workplaces are a critical requirement for business performance management

Business Situation Alerts:
Notification of situations that require business response

Scorecards:
Key Performance Indicators for line of business units
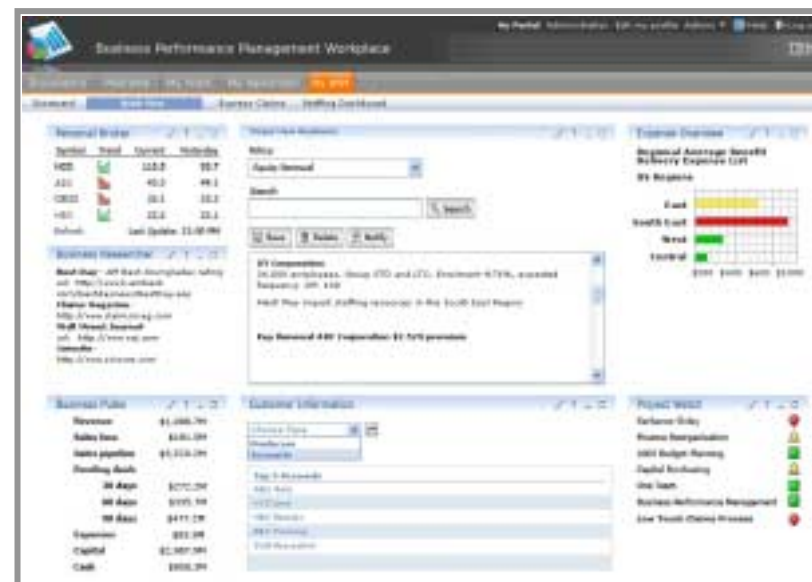
Collaboration Services:
Work with teams to resolve situations

Monitored Processes:
Operational metrics aligned with critical business processes

Prompted Actions:
Select an operation to adapt performance

Reports and Analyses:
Understand real time performance against historical trends

Monitored Actions:
Track status of actions

Market News:
External information and events affecting performance

Risk Factors:
Manage risk factors associated with initiative