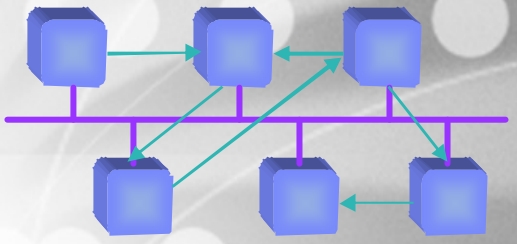
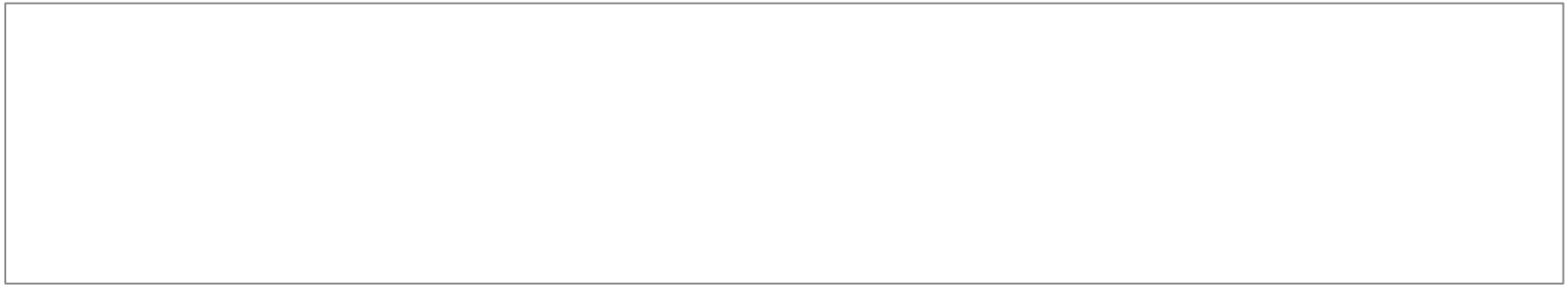
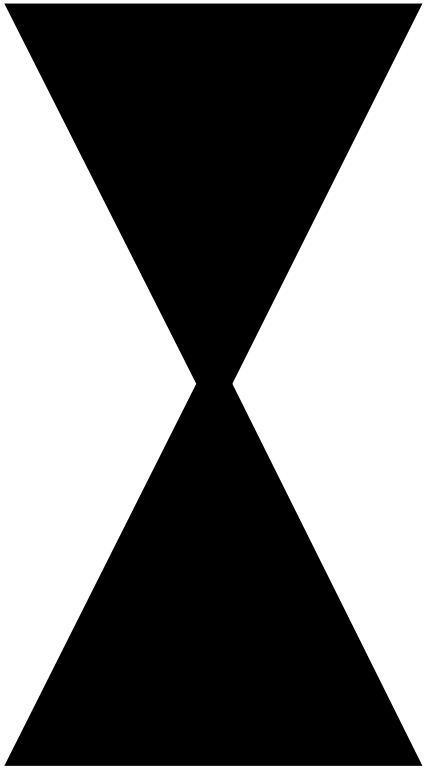
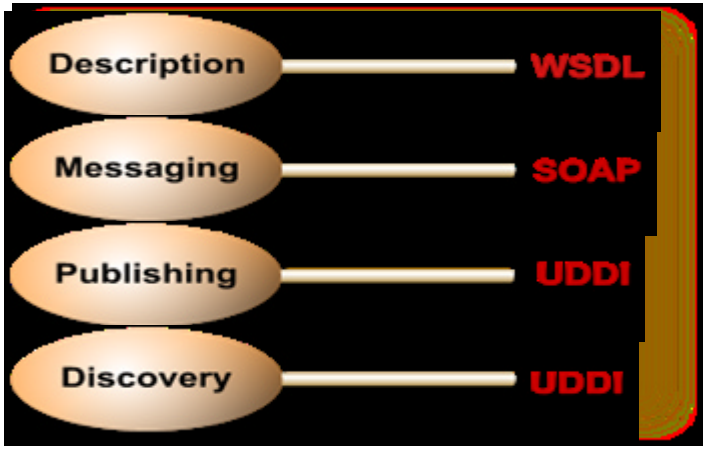
IBM

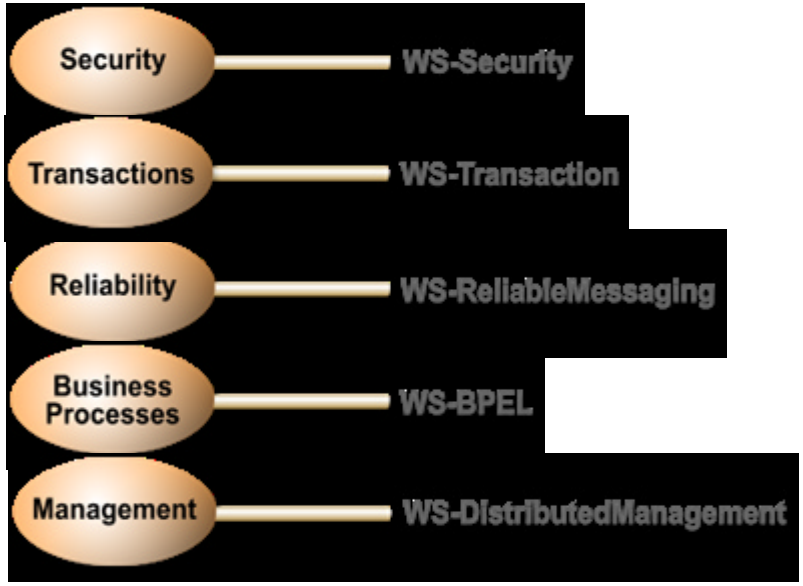


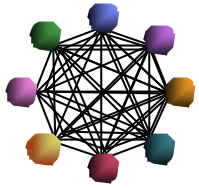
ON DEMAND BUSINESS™

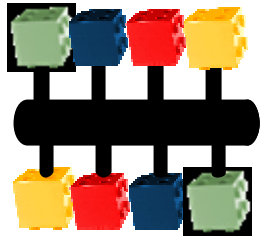


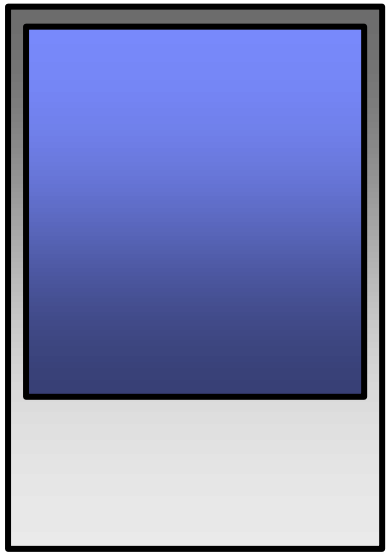


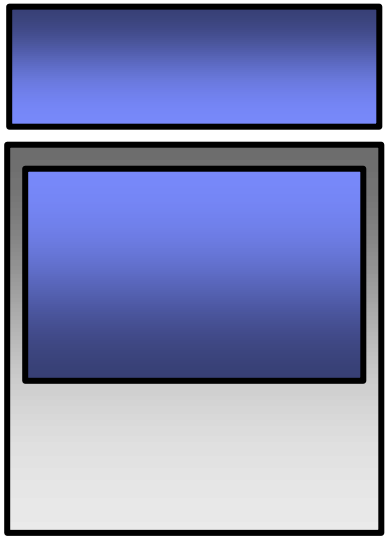

Description
WSDL
Messaging
SOAP
Publishing
UDDI
Discovery
UDDI

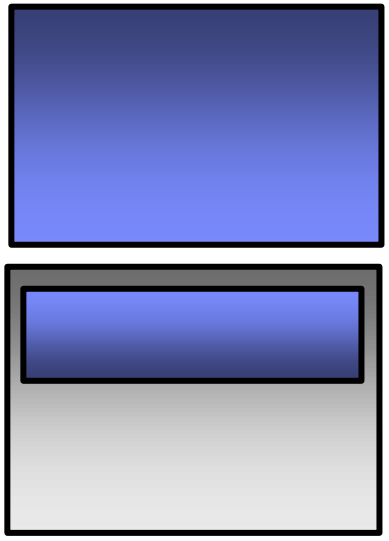

Security
WS-Security
Transactions
WS-Transaction
Reliability
WS-ReliableMessaging
Business Processes
WS-BPEL
Management
WS-DistributedManagement

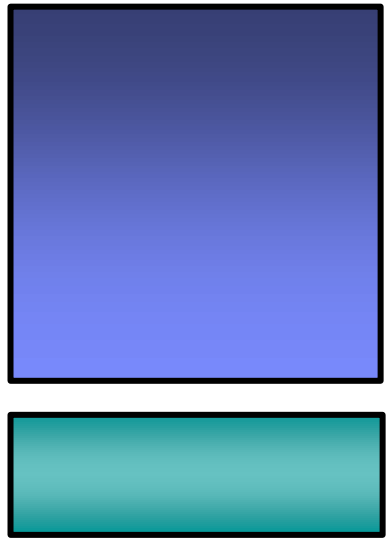




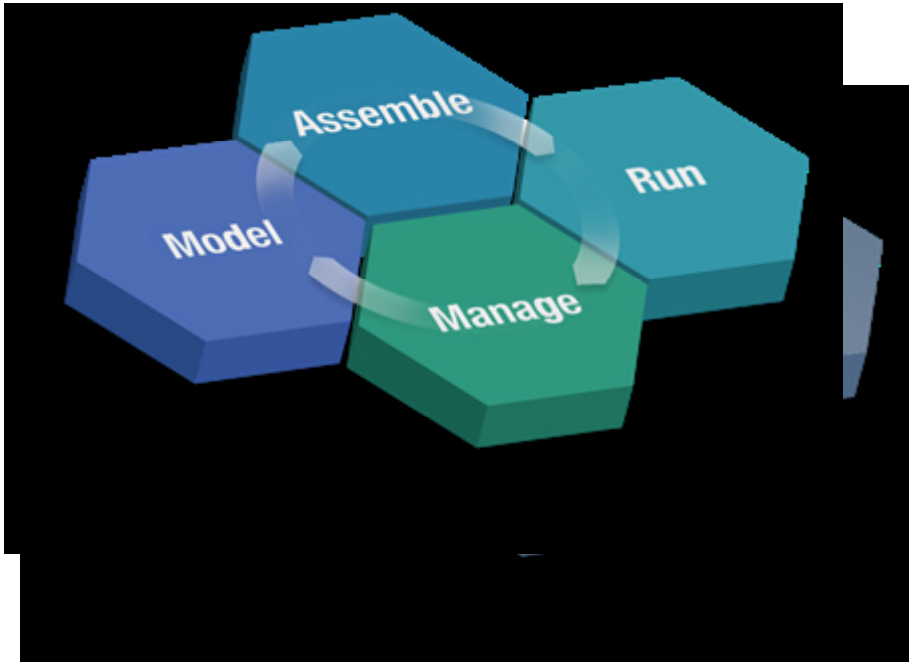


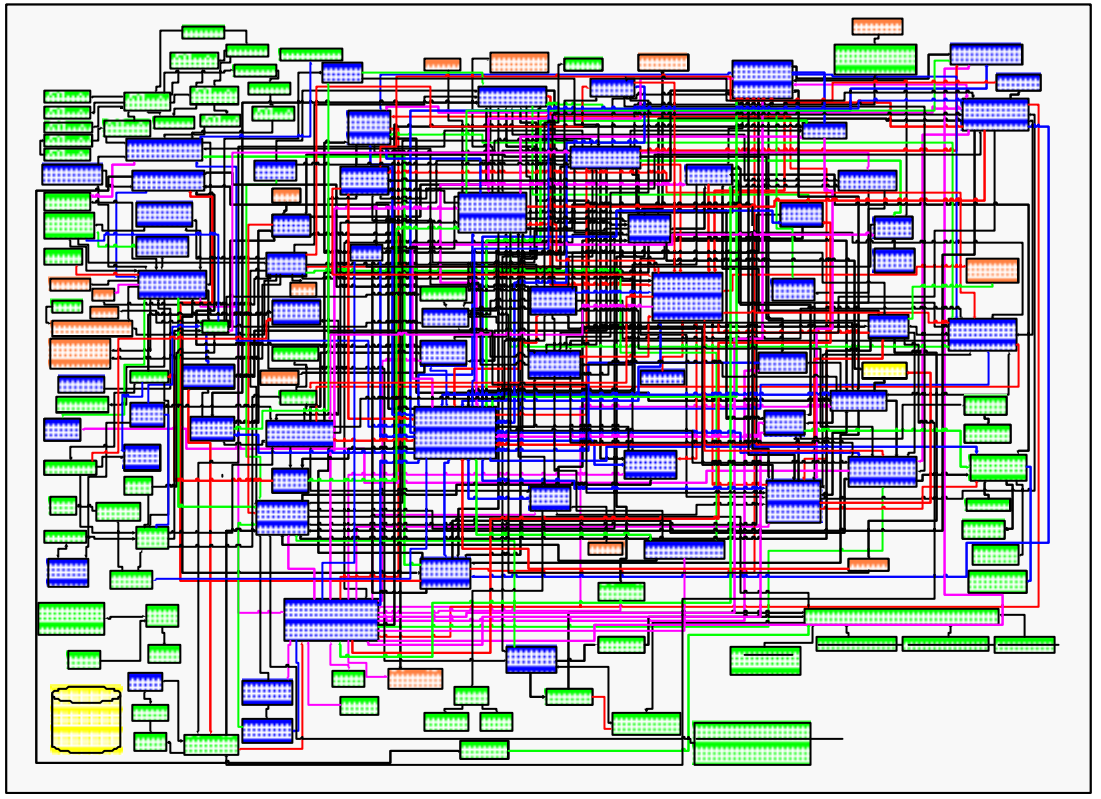


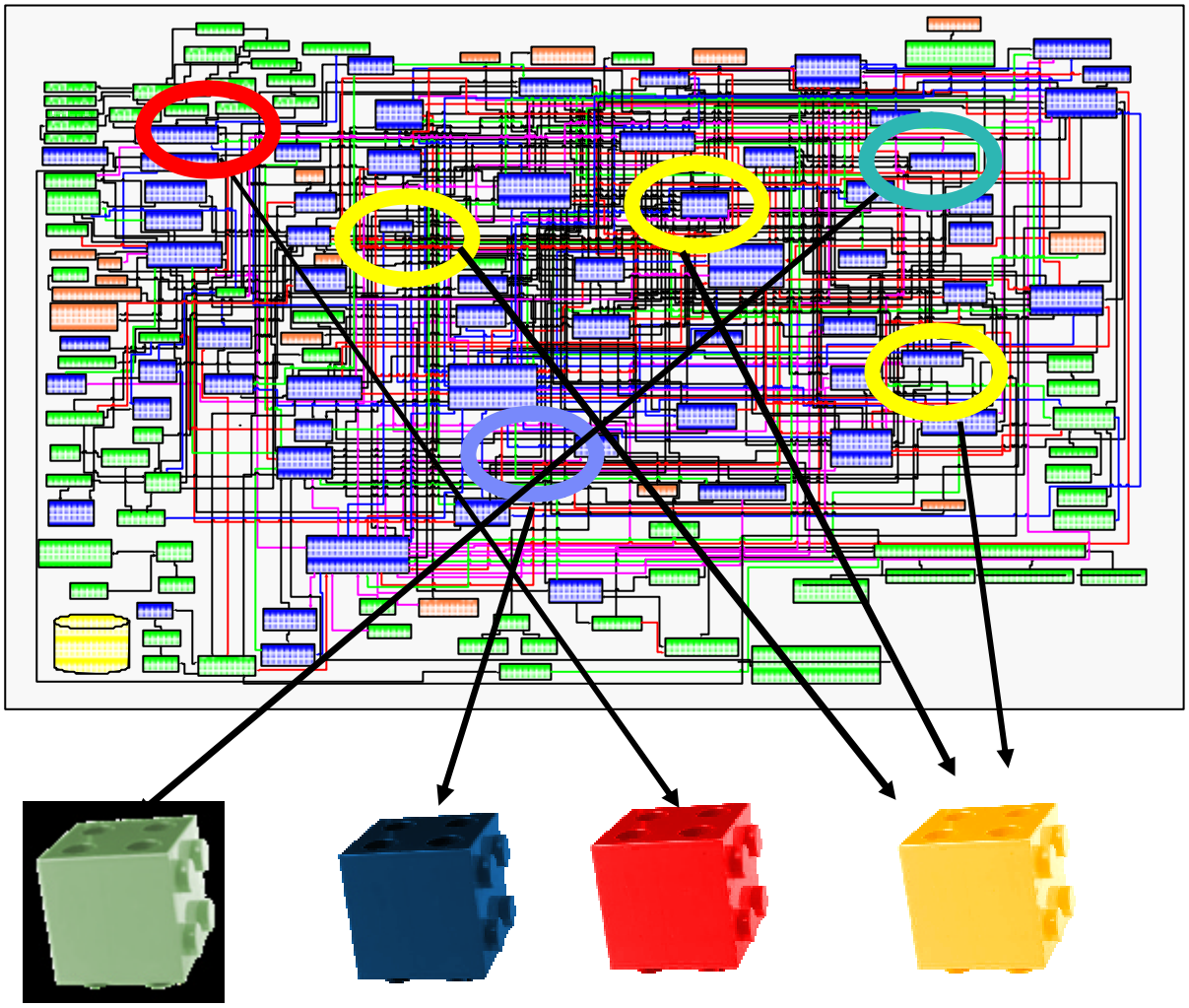


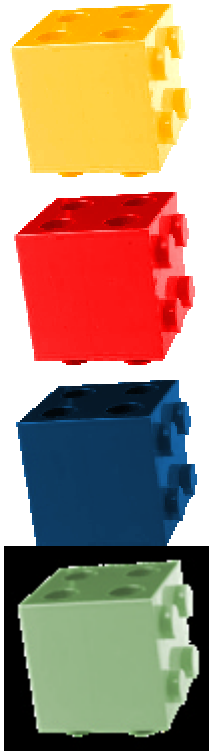


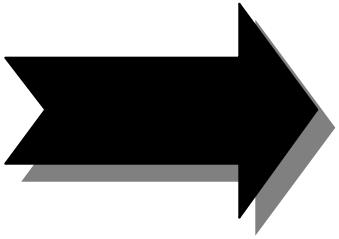
Reduces application to its core business functions

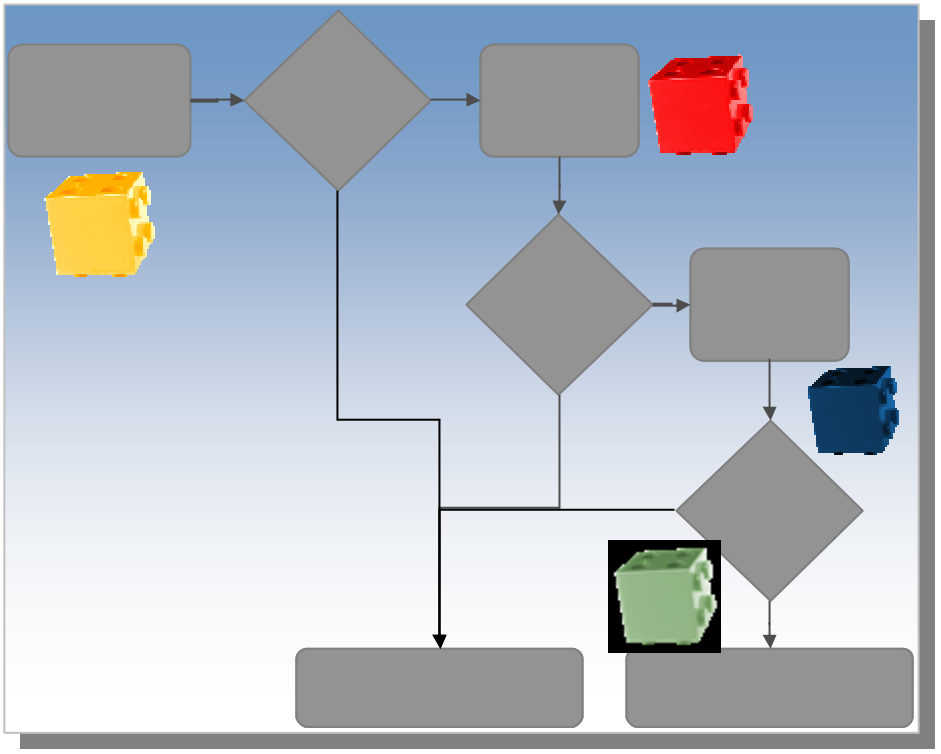

Assemble
Run
Model
Manage

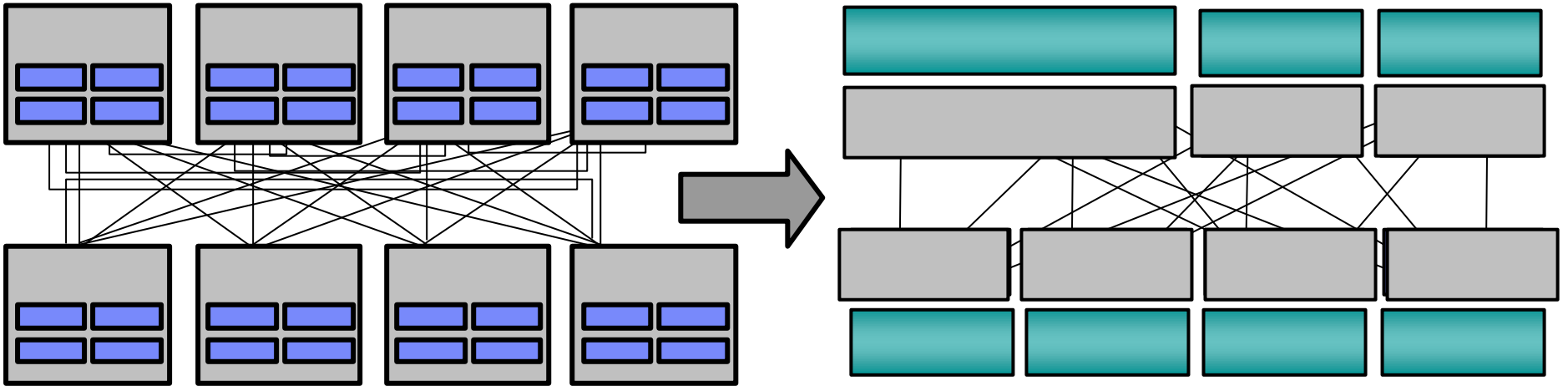


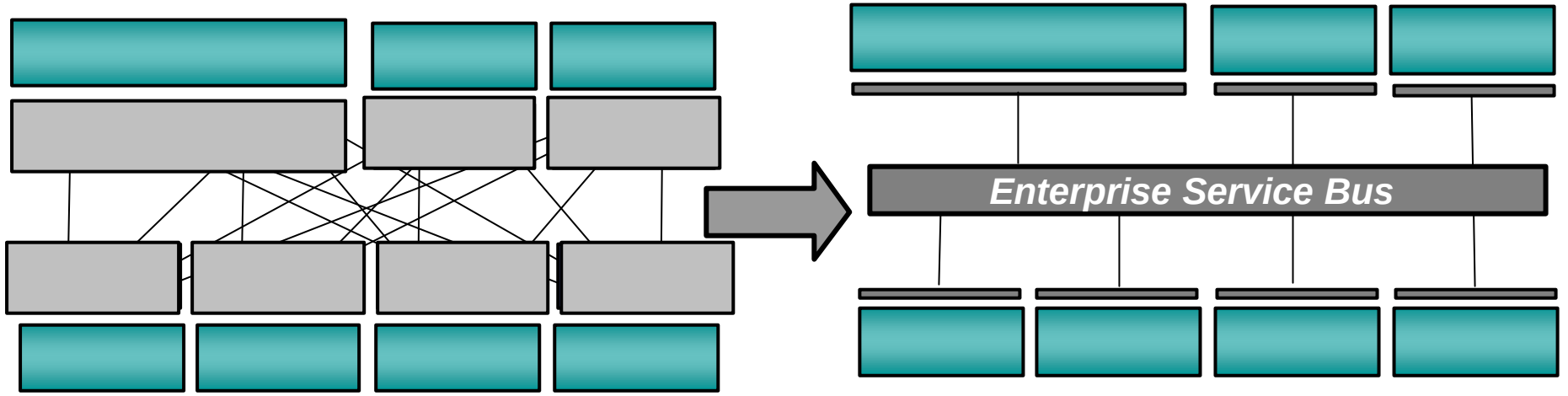


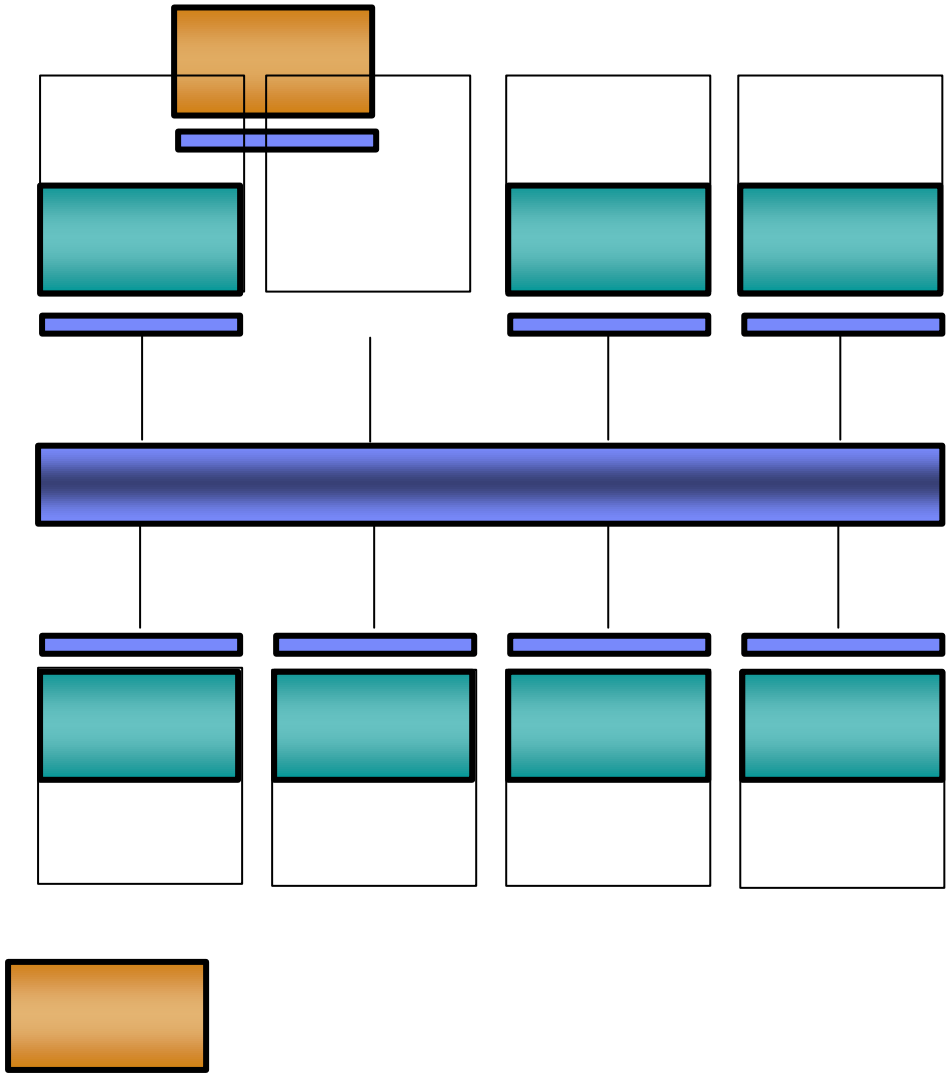


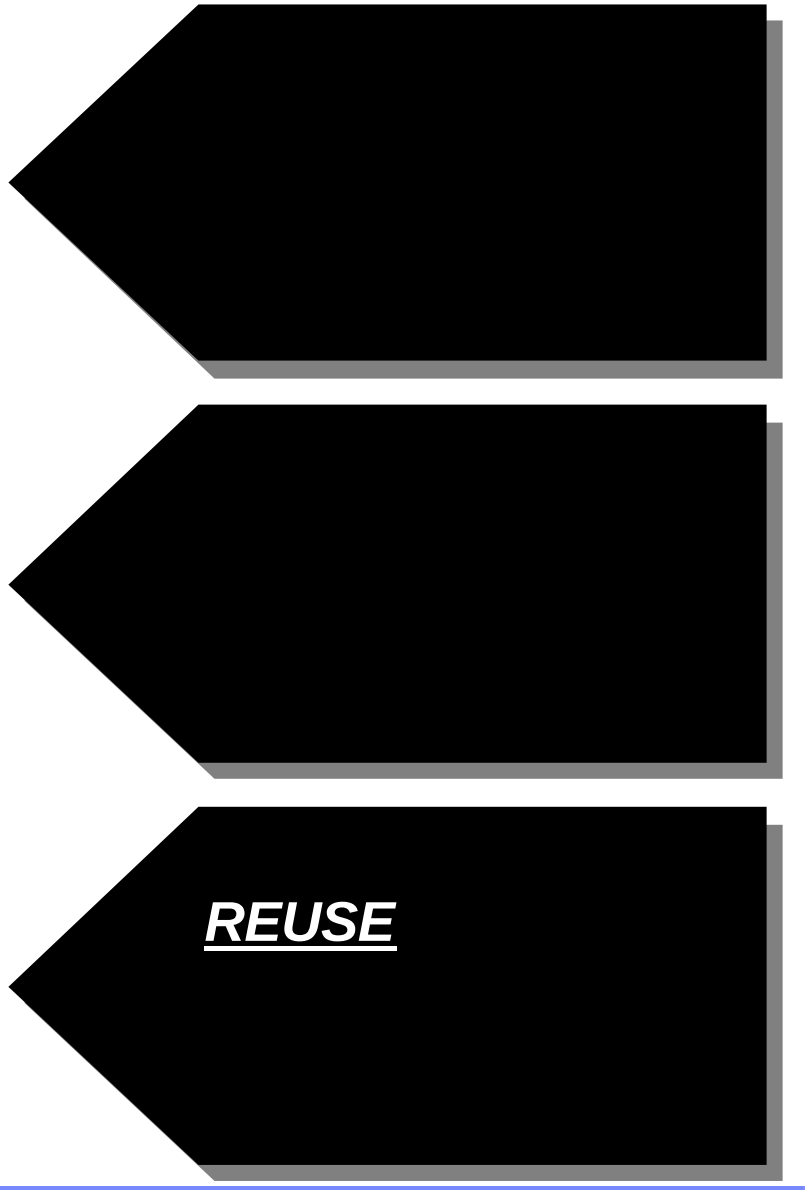


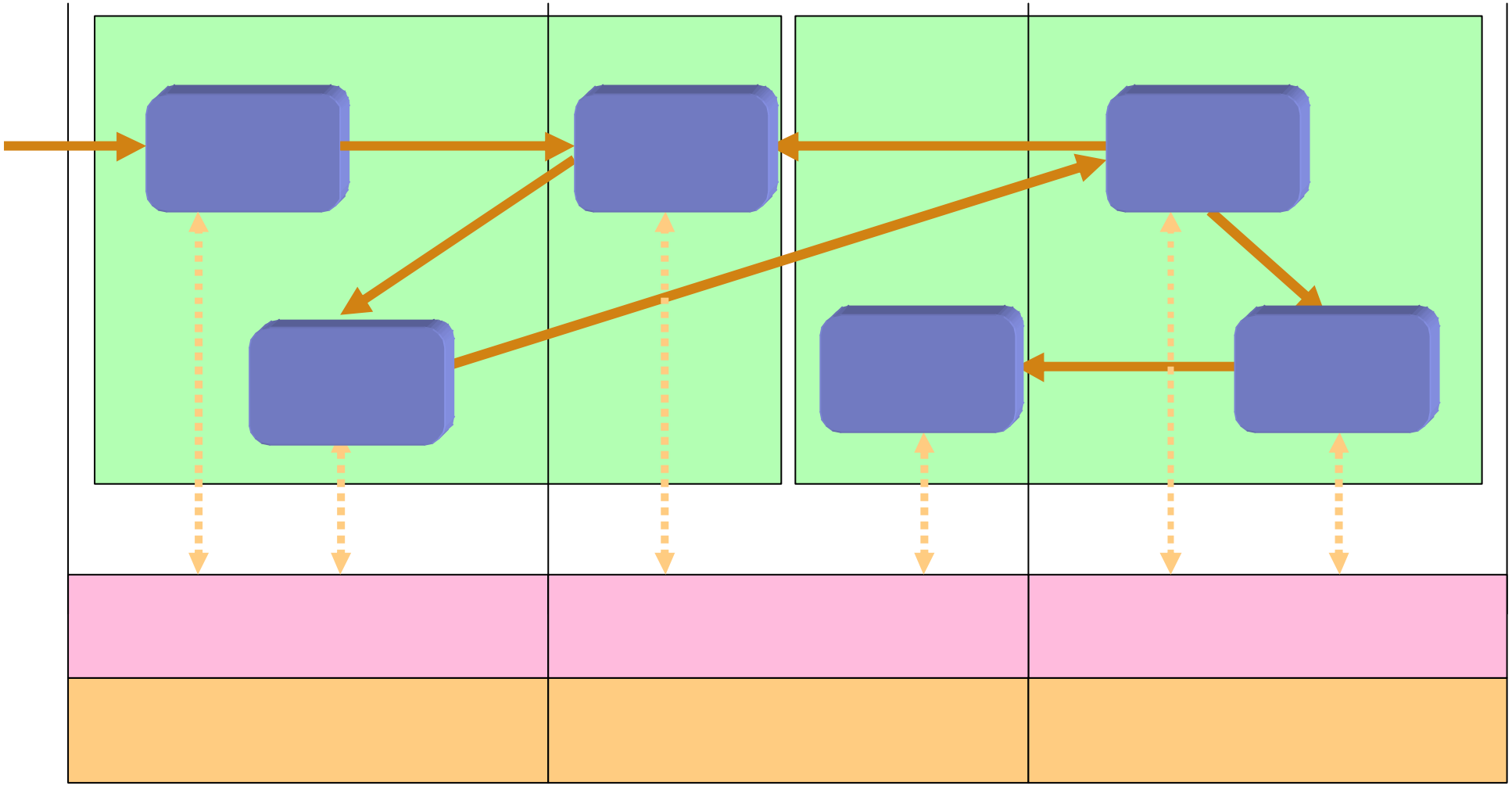




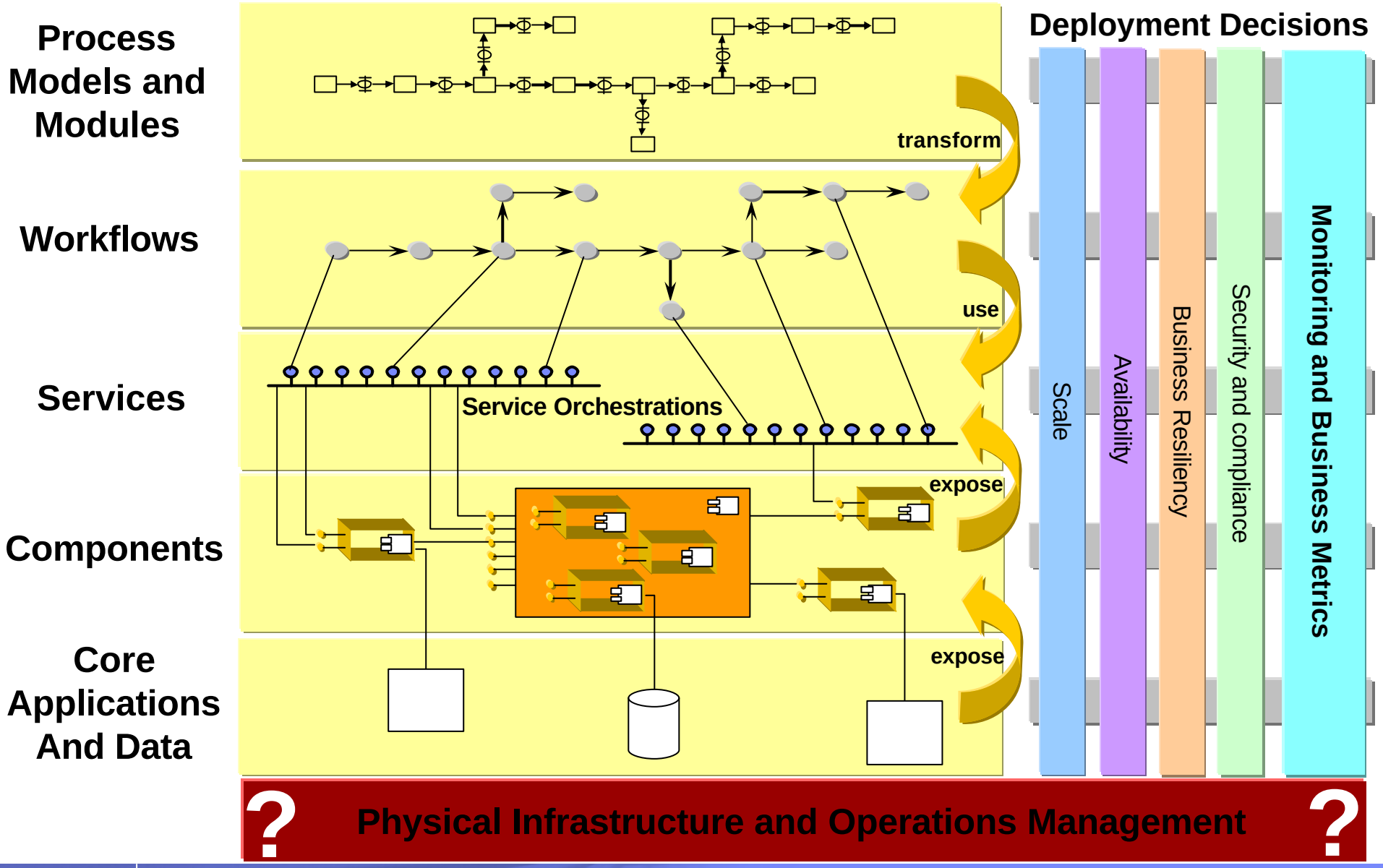

Enterprise Service Bus



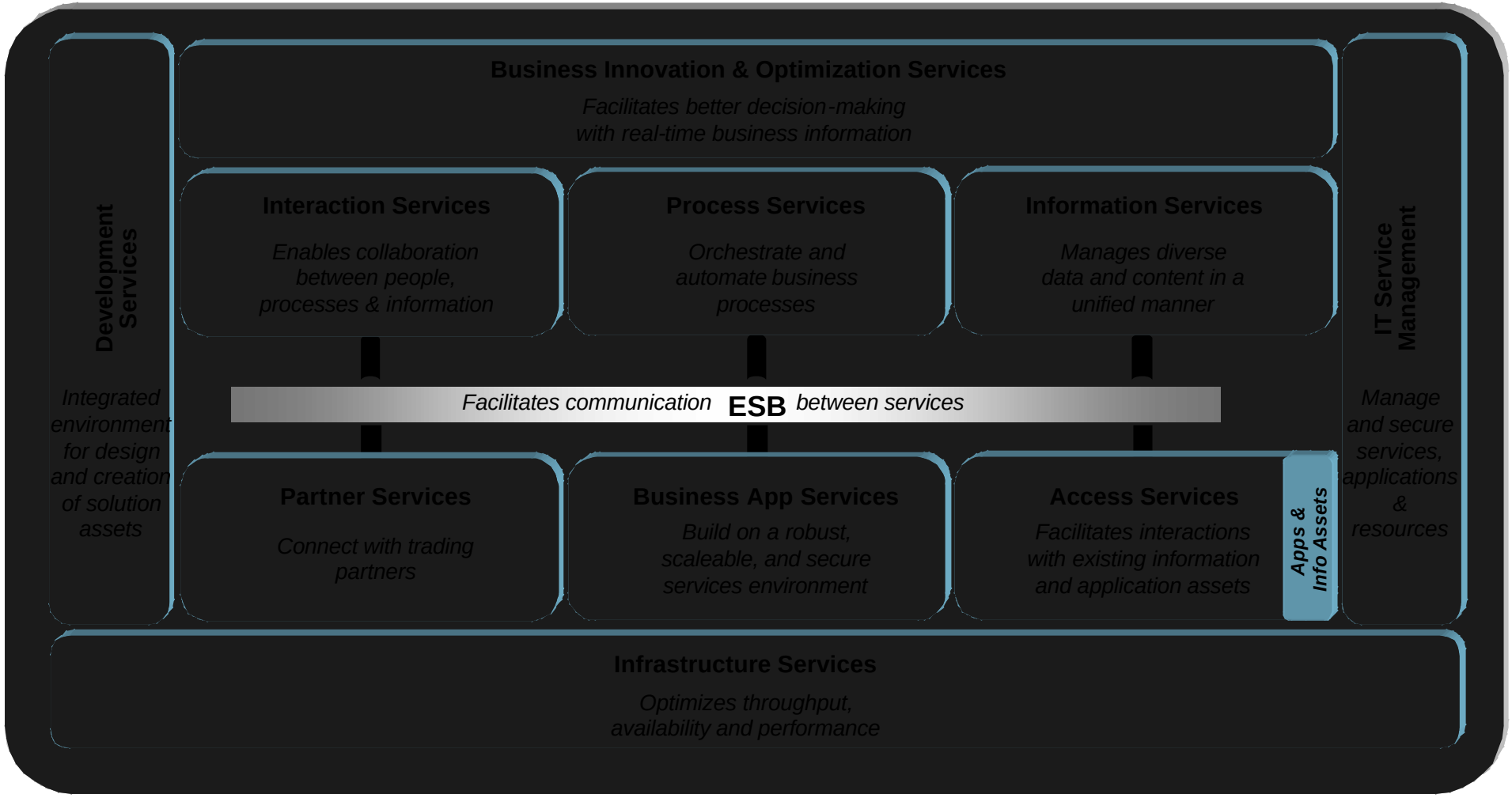

REUSE



Building and deploying SOA applications



The SOA Reference Architecture



Leverage z/Middleware for maximum business flexibility.

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Agenda

- **Key concepts of SOA**
  - Objectives, terminologies, web services, steps to SOA, IBM SOA lifecycle
- **System z and SOA**
  - Why System z and z/OS as the ”SOA hub”?
  - The WebSphere software product family

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Creating SOA composite applications with existing assets

Model

Model a new business process that builds on your current capabilities …..

WebSphere Business Modeller

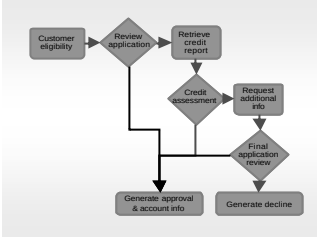
…and discover program units and business rules you can reuse in the new process.

WebSphere Studio Asset Analyzer

Assemble

Wrap programs as services, creating composite appl'ns from core assets….

WebSphere Developer for zSeries, *plus Service Flow Modeller*



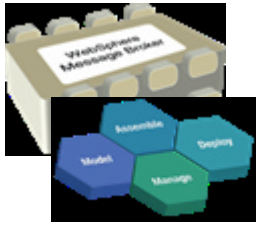
… and assemble the services across multiple platforms

WebSphere Integration Developer

Deploy

Choreograph and deploy your new composite applications ….

WebSphere Process Server



… using an advanced ESB to power your SOA

WebSphere Message Broker and/or WebSphere ESB

Manage

Monitor the processes across your SOA, and intervene if necessary ….

WebSphere Business Monitor

…. and export data for analysis and process improvement, back to ….

WebSphere Business Modeler

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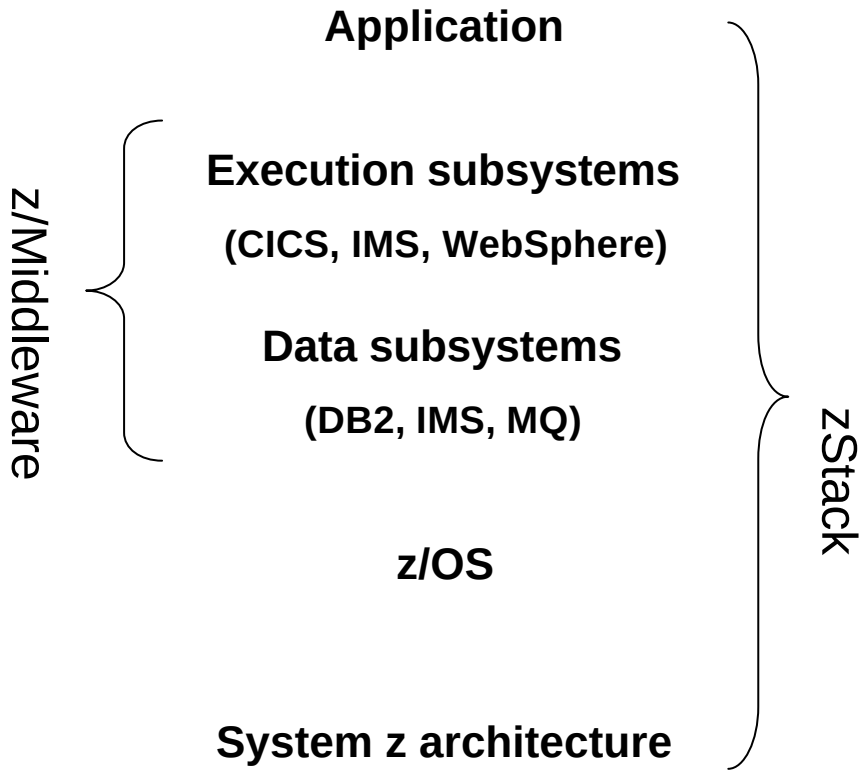
zStack Technologies Value



- **Not just a collection of technologies**
- **A $100 billion dollar investment in an integrated stack …**
- **Software and hardware *designed and optimized to work together* to achieve business objectives in demanding customer environments**
- **Deliver**
  - Rock-solid transaction processing
  - Never goes down
  - Unbreakable security
  - Ready to go
  - Operates at high levels of utilization
  - First class virtualization
  - Ready to run multiple workloads
  - Easy to scale up
  - Modern application development tools
  - Low Total Cost of Operation

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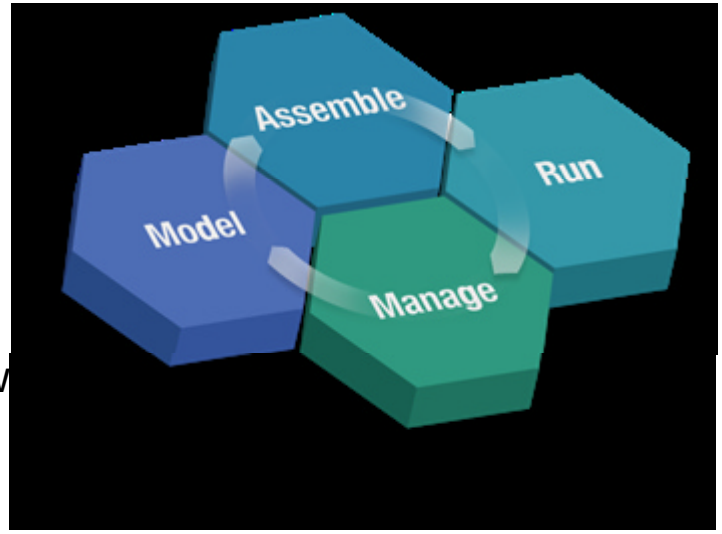
Why SOA on “z” ?



- **High availability for critical components**
  - Application Server
    - Used as server for new Java applications
    - Used as underlying component for other middlew
  - Enterprise Services Bus
  - Process Server
- **Highest security capabilities for critical components**
- **Centralized management**
- **Easier integration of core business assets**
  - “Unlock” existing assets using SOA
  - Applications
    - Optimized two-phase-commit flow
  - Data proximity
    - JDBC Type 2 driver versus JDBC Type 4 driver

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SOA on z/OS – a complete solution from existing systems to the full SOA Lifecycle

Increased capabilities / automation

WebSphere Process Server

For customers who want a higher level solution to design, automate and manage composite applications and operational business processes. Built on WebSphere ESB.

WebSphere ESB

A new product that delivers an Enterprise Service Bus. Provides Web Services connectivity and data transformation. Built on WebSphere Application Server.

WebSphere Message Broker

A new version of our proven product that delivers an advanced Enterprise Service Bus. Provides universal connectivity and data transformation. Built on WebSphere MQ.

Application/Transaction Servers

WebSphere Application Server

A world-class J2EE foundation providing industry-leading levels of availability, scalability, and performance.

CICS

IMS

WebSphere MQ

Provides reliable integration messaging to connect applications and Web services across more than 80 supported platform configurations.

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WebSphere Application Server for z/OS V6

- **A Compliant J2EE Server**
  - Extend existing Java assets with support for Web Services standards and standards-based messaging
    - Certified J2EE 1.4
    - Web Services standard support (WSI, WSS 1.0, WS-Transaction, UDDI v3)
  - Help ensure 24x7 availability of business-critical applications with clustering and high availability
  - J2EE applications on different J2EE server can be ported to WAS z/OS
- **A Compatible WAS on the z/OS operating system**
  - Functionally equivalent to WAS Network Deployment (distributed)
  - Same WAS V6 common code
- **Development Tools**
  - Same ones than for WAS distributed - based on Eclipse
  - WebSphere Developer for zSeries (WDz) to unify COBOL, PL/I, Java development tools
- **WAS works natively with relational (DB2) data and hierarchical (IMS DB) data using the JDBC standard**
- **All are optimized and exploit zArchitecture for**
  - Performance, scalability, reliability and easy management

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WAS for z/OS – Quality Of Services

- **Workload Management**
  - WLM and Parallel Sysplex exploitation
- **High-availability**
  - Based on System z availability
  - Server clustering
- **Security**
  - Based on z/OS Security Server / RACF (SAF)
  - Security context passed between WAS applications and other z/OS applications
- **Transactional support**
  - Based on z/OS Resource Recovery Services (RRS)
- **Performance improvement**
  - Parallel Sysplex scalability
  - Use of JAVA specialized processors (zAAP) to improve TCO

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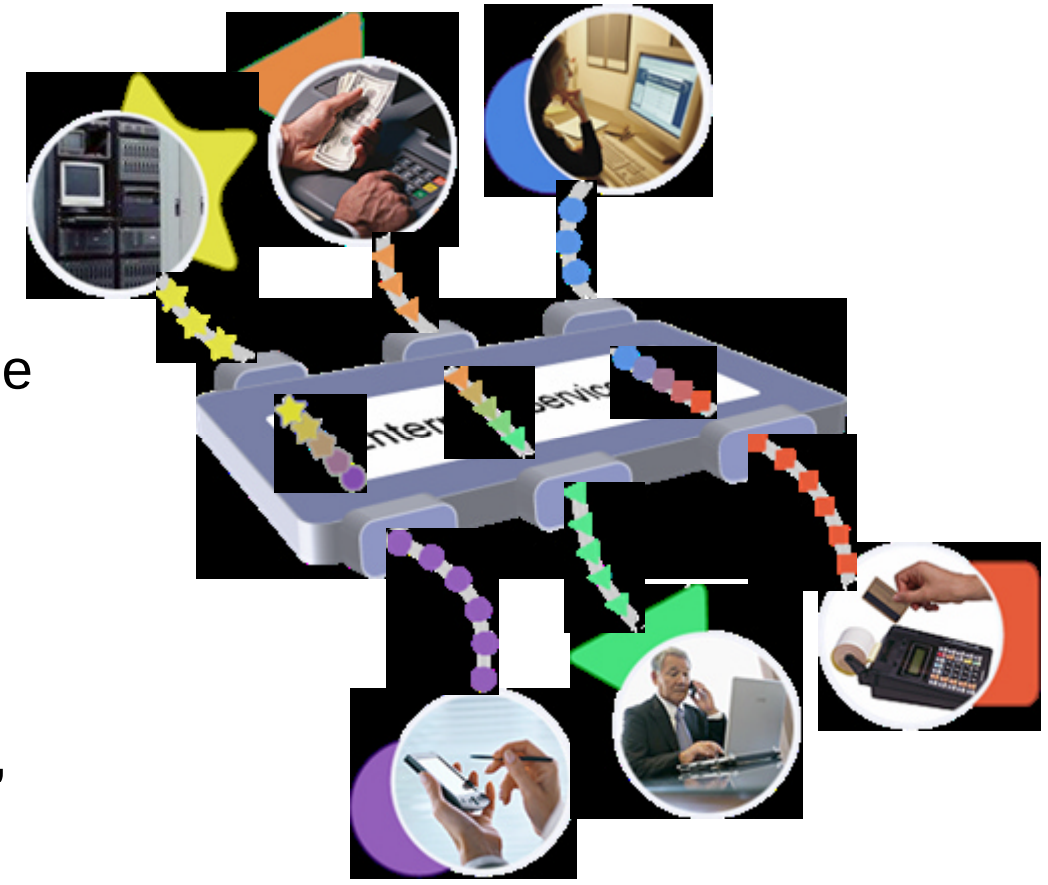
The ESB is a core component of a Service Oriented Architecture

- that connects and integrates an organization's IT infrastructure, across many locations, using different transport services, and…
- that can route messages to the appropriate systems and transform messages formats, and…
- is standards based, and…
- does all this securely, reliably, at very high volumes in a manageable manner



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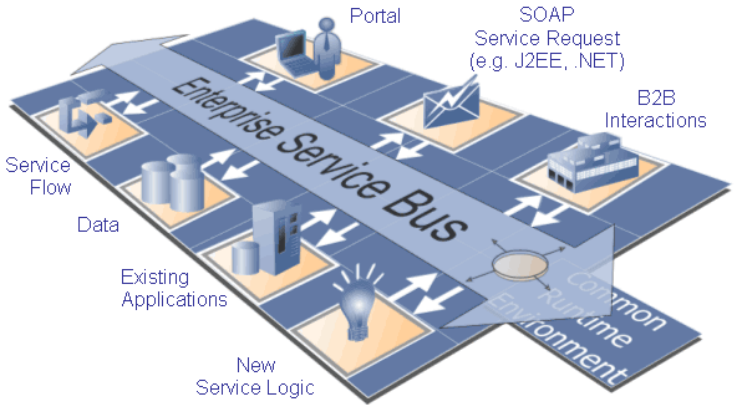
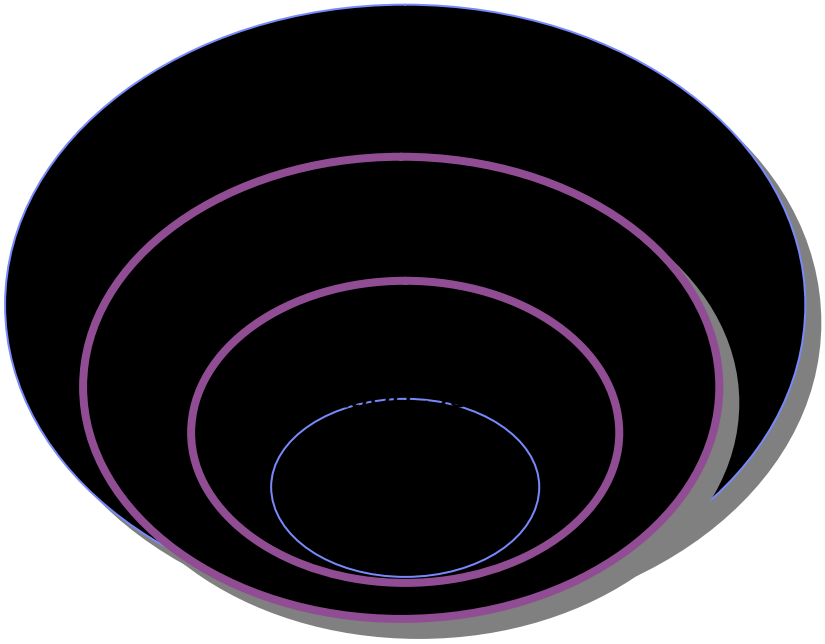
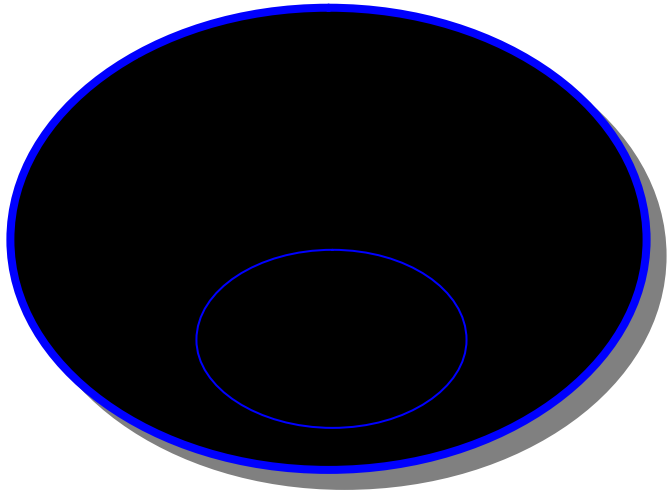
Enterprise Service Bus products



- **WebSphere Application Server V6.1 for z/OS**
- **WebSphere ESB for z/OS**
- **WebSphere Process Server V6 for z/OS**



- **Websphere MQ V6 for z/OS**
- **WebSphere Message Broker V6 for z/OS**



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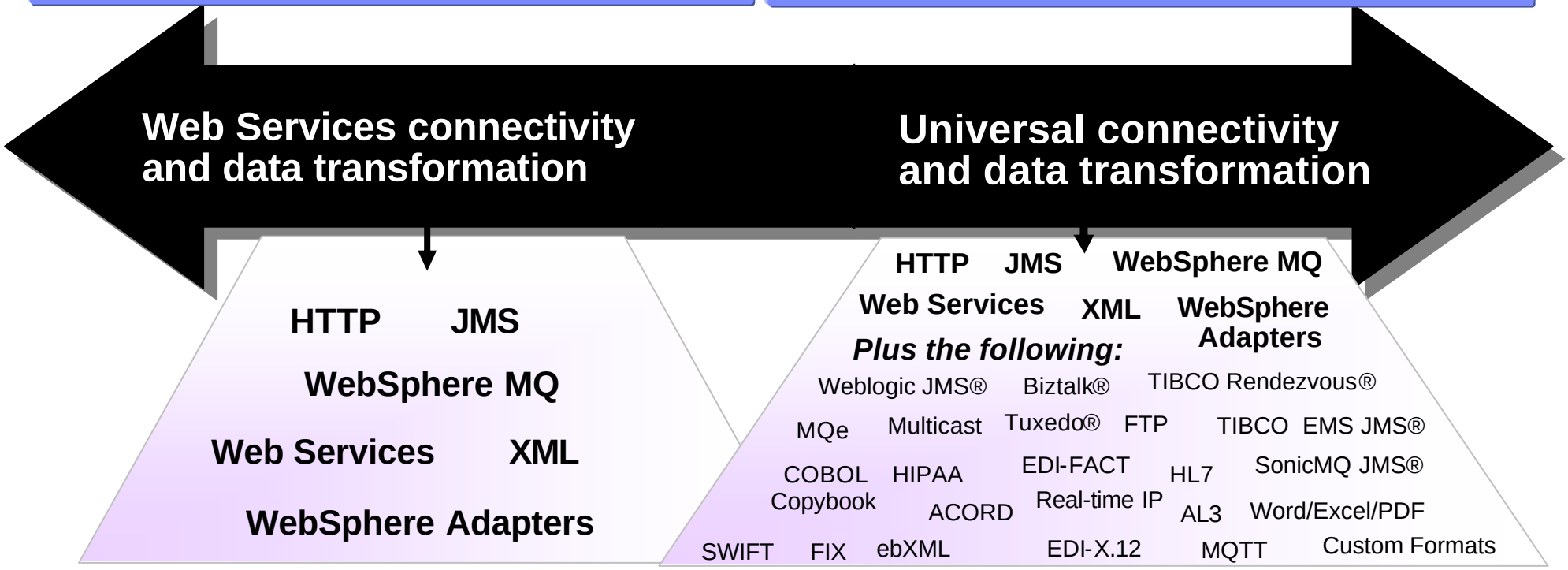
WebSphere ESB and WebSphere Message Broker

ESB:

WebSphere ESB

Advanced ESB:

WebSphere Message Broker



Customers face a range of ESB requirements. As a result, any given project might require an ESB or an Advanced ESB… OR BOTH.

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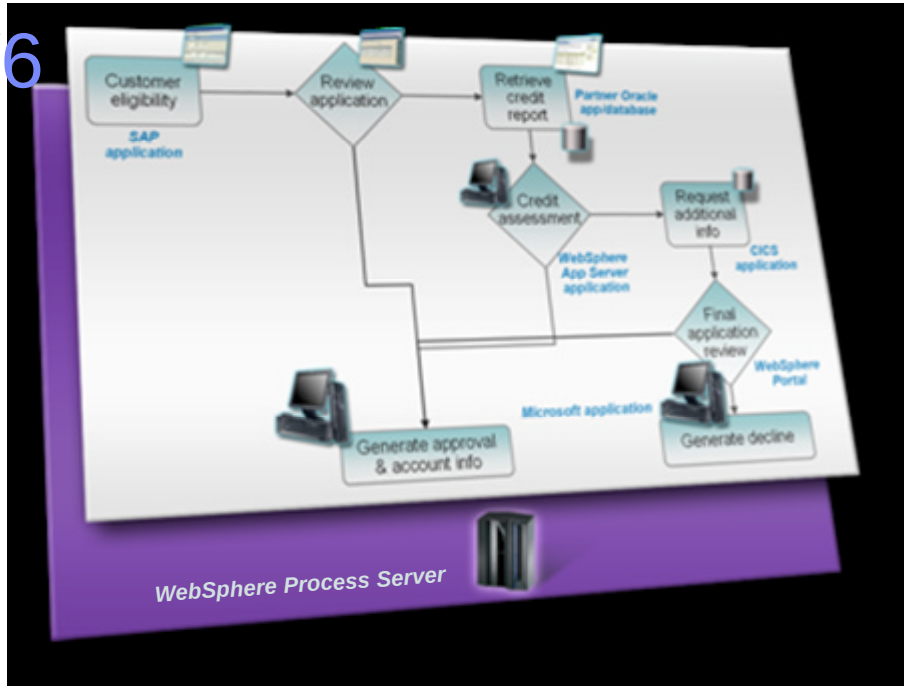
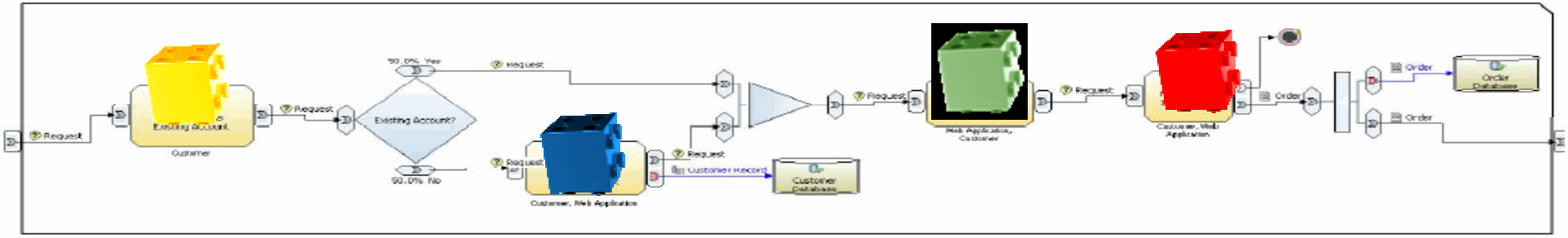
WebSphere Process Server V6



- **Based on WAS**
- **Used for deployment of composite applications**
- **A Single Process Server built on SOA**
  - Reliable, scalable, secure, open standards (WS-BPEL, SCA …)
  - Single integrated runtime for all SOA based
  - process automation
- **Support all aspects of process integration**
  - A single process integration platform
  - process flows, business rules, human steps, services, state machines
- **Rapidly change process behavior to keep pace with business requirements**
  - Reuse existing services that you already have and create new services for future use
  - Build process flows without knowing where the information is coming from (late binding of services)
    - business rules control the execution sequence of the process and can change dynamically



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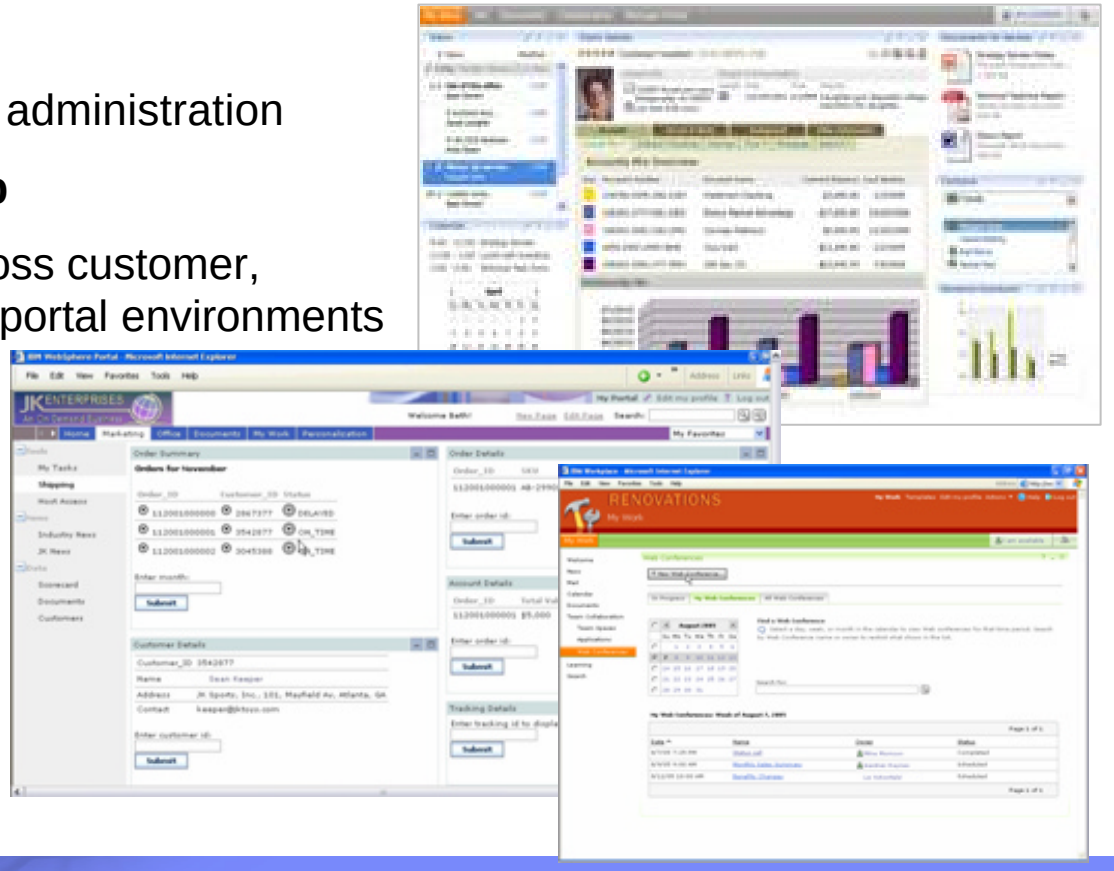
WebSphere Portal V5

- **Deliver Collaboration, Mobility, & Composite Applications**
- **Ease of use**
  - Now supporting WebSphere Process Server V6 for process-driven portal capabilities
  - Ease of management
  - Virtual portals and policy-driven administration
- **Reduced total cost of ownership**
  - Reuse of SOA components across customer, employee, and partner/supplier portal environments



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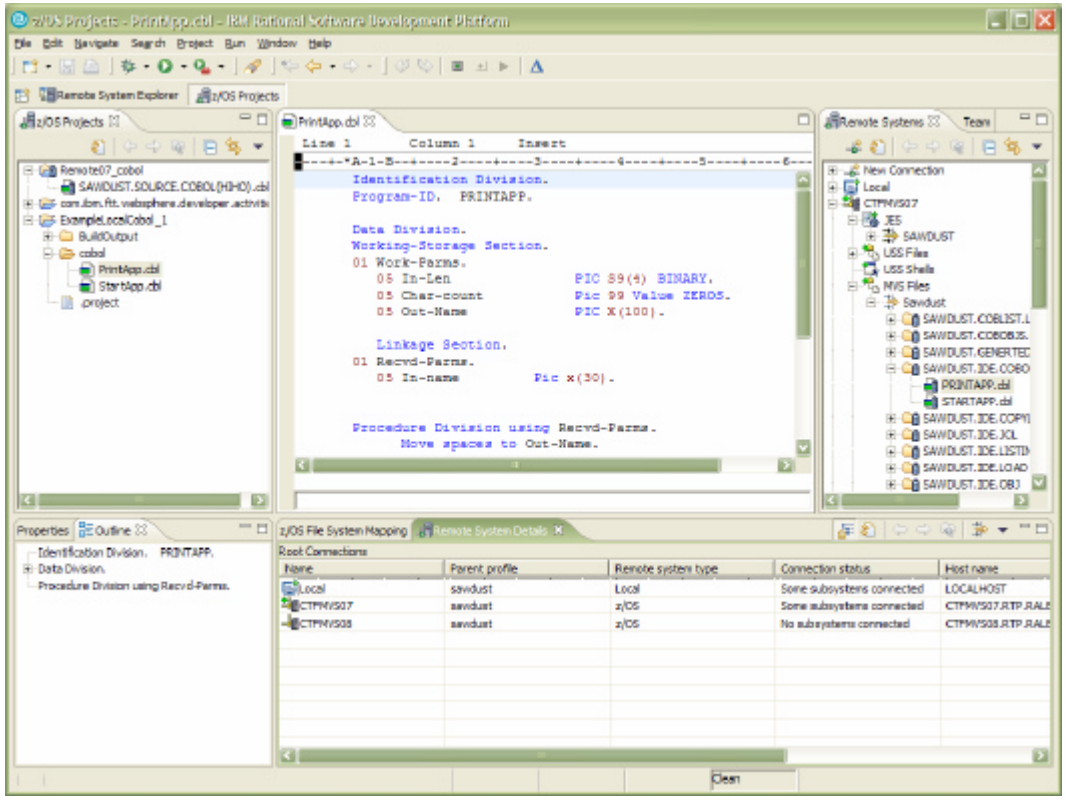
WebSphere Developer for System z

- **Bridges mainframe and client-server development**
  - For end-to-end integrated processes running across platforms
  - Shared developer repositories and tooling framework
- **For deployment to WebSphere, CICS, IMS, DB2 and batch**
  - Cross platform development
  - Workstation based development tool
  - Workstation based mainframe application analysis tool
- **Develop SOA systems that combine Web services, web applications and traditional applications**
  - COBOL, PL/I, EGL (4GL)
  - Java, J2EE, WSDL, Java Beans, XML adapters
  - Portlets and complex user interfaces
  - Service flow modeler for CICS and HATS



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Business needs are driving a renaissance in mainframe interest and use

The mainframe is obsolete	**Enterprises are rediscovering mainframe values. IBM is seeing a resurgence of interest and use of the mainframe. The ability to efficiently deliver core services - without interruption – is critical to becoming an On Demand enterprise.** **IBM has invested $bb of dollars to rejuvenate the platform. You will find most of the latest hardware & software technologies on the mainframe.** **The platform protects and enhances 40 years of investment in application assets. Our customers tell us they want this indefinitely.** **Competitors now wish their servers were more like the IBM mainframe.**
The mainframe is too expensive	**The mainframe delivers higher utilization, lower overheads and the lowest total cost-per-user of any platform.** **Mainframe delivers huge value through its leading security, availability and recoverability capabilities.** **You may be surprised at the affordability of new mainframe application projects**
I can't get the skills	**There is a resurgence of interest in the mainframe amongst younger IT professionals, driven by a recognition of career opportunities.** **IBM is sponsoring major initiatives in universities and colleges to facilitate the development of mainframe skills.**

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References / sources

- Based on ”SOA and z/OS – The perfect match” by Hélène Lyon, z/Middleware Technical Specialist
- IBM WebSphere Application Server for z/OS Version 6: A performance report, by Mike Cox, et al.
- WebSphere and System z9, Powering the On Demand Business, presentation by David McCorkle, solutions architect, WebSphere for z/OS.
- http://www-03.ibm.com/systems/z/soa/
- Enterprise Service Bus - Leadership in the Marketplace, presentation by Russ Newcombe in IBM et al.

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