

WebSphere Connectivity Directions



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Topics

Managed File Transfer

Connectivity Vision

Universal Messaging

Ubiquitous Connectivity Fabric

Service Federation Management

SOA History Telemetry

Macro Patterns

SOA for the Masses

Extended Reach

Hybrid Cloud Integration

Public Clouds

Private Clouds

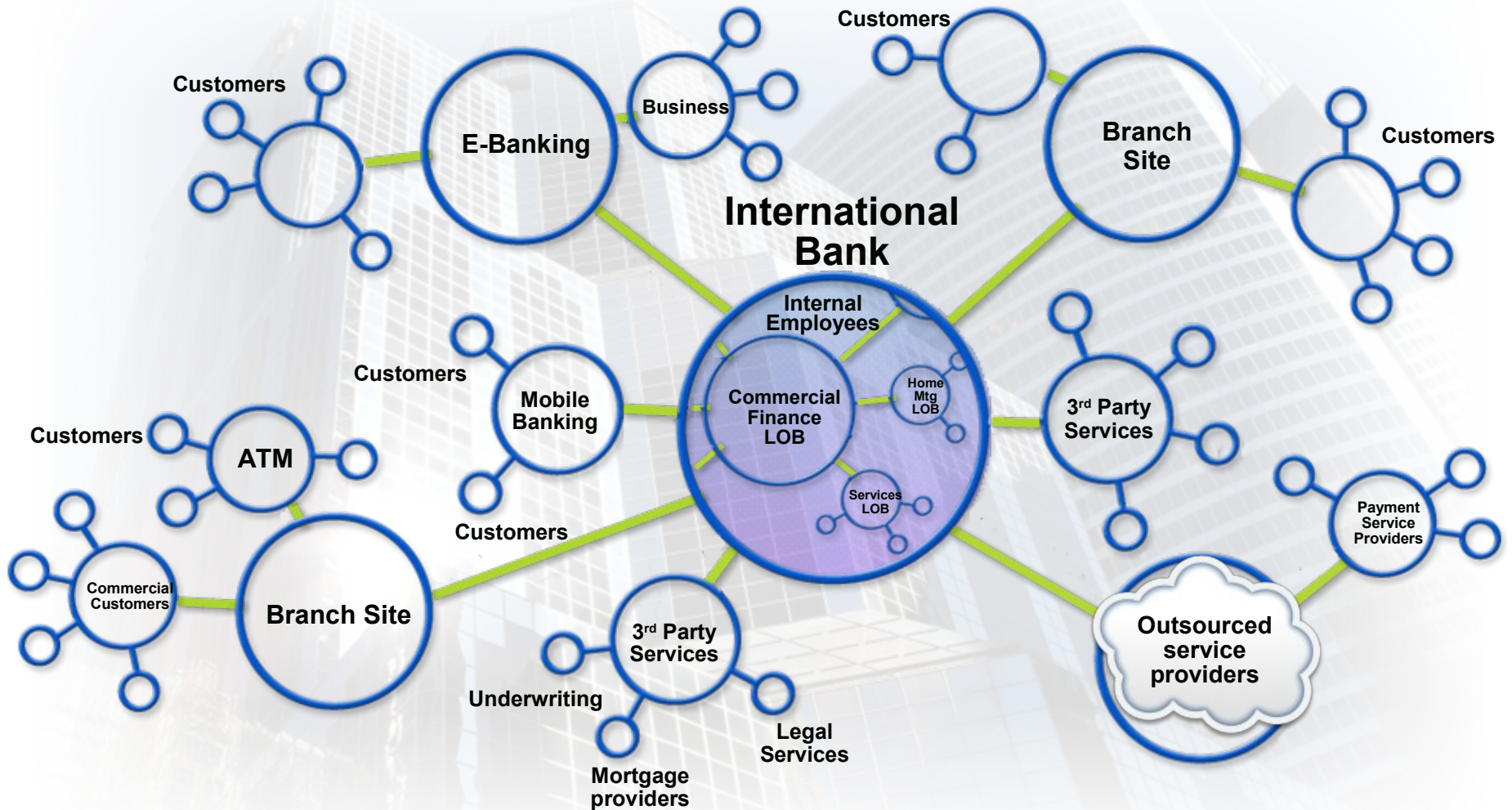
Service Governance

Cloud Gateway

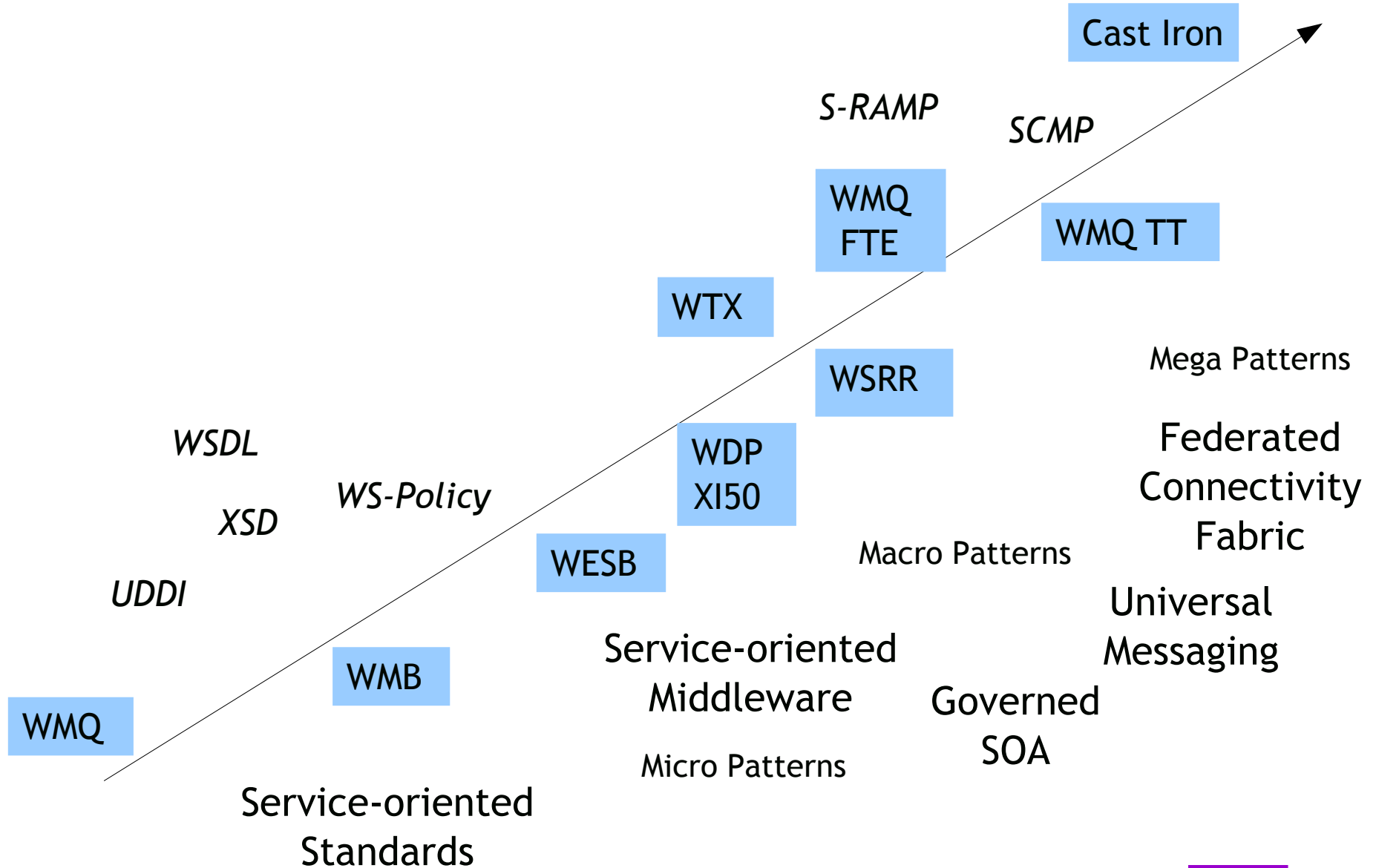
Virtualized Middleware

B2B Gateway

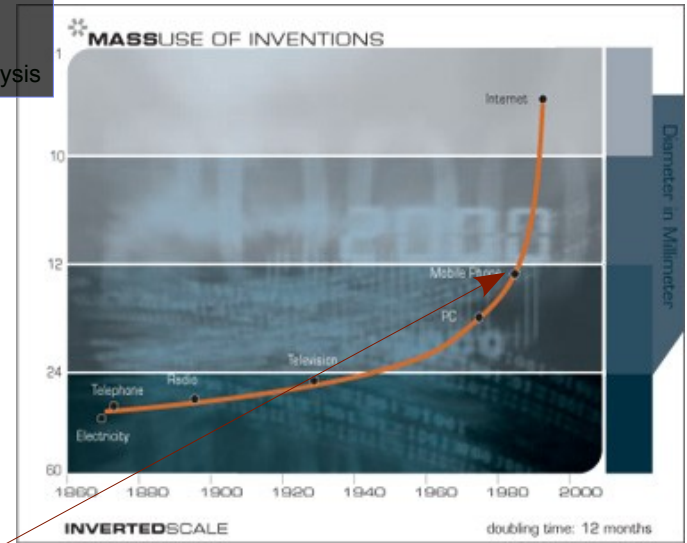
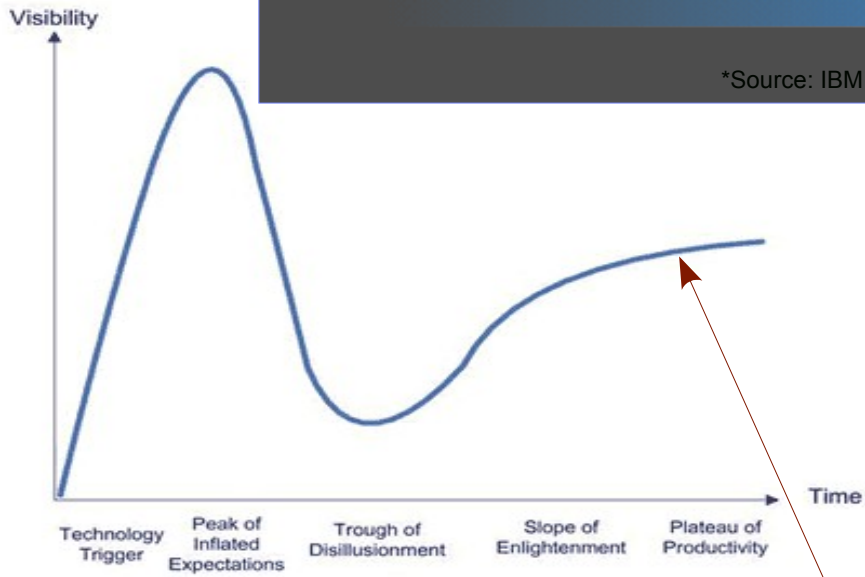
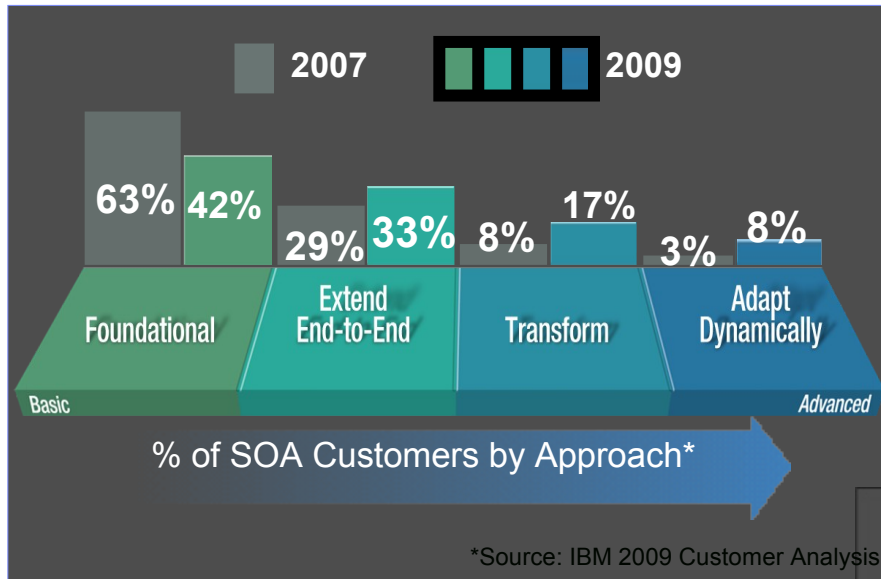
Ubiquitous, intelligent Connectivity across a dynamic business network



A short history of SOA Connectivity



Mainstream SOA adoption



You are here

Connectivity Lessons Learnt and - Trends and Directions

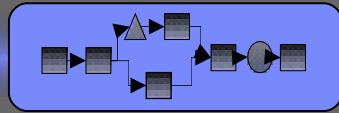
- One size does not fit all
 - Variety of products implementing ESB pattern, service metadata management & other facets of Connectivity
- Things get easier
 - Years of experience in implementing SOA resulting in better understanding and support of common patterns
- Things get more dynamic
 - Towards a patterns-inspired declarative Connectivity programming model via policy decorations and SLAs
- Connectivity needs (the right level of) governance
 - Dynamic programming models need governance counter-balance - control who can affect what kind of change
- Towards ubiquitous Connectivity
 - Connectivity within business units, across the enterprise, between enterprises and into Clouds

Trends

- Ubiquitous Connectivity Fabric
 - Smart Planet scenarios dramatically increasing the number of connected devices...
 - Service Federation within the enterprise and beyond...
 - Dynamic Policy/Agreement/Contract-driven runtimes
- SOA for the Masses
 - From Highly Configurable Point Products to Pattern-driven Capability Mixes...
 - exploiting lessons learned from years of experience in building SOA solutions...
- Hybrid Cloud Integration
 - Connectivity to, between and in Clouds

Meet the Players

Service Orchestration and BPM



WLE & WPS

Business Rules

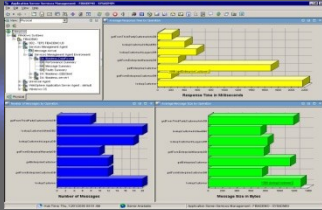


WebSphere Decision Server

Cloud Gateway



Service Monitoring



Tivoli CAM for SOA



ESB Offerings from IBM WebSphere

B2B Gateway



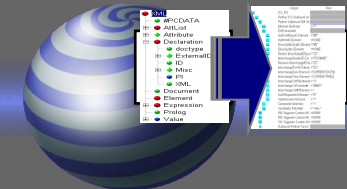
Service Security



Tivoli Security Products



Universal Transformation



WebSphere Transformation Extender

Service Registry

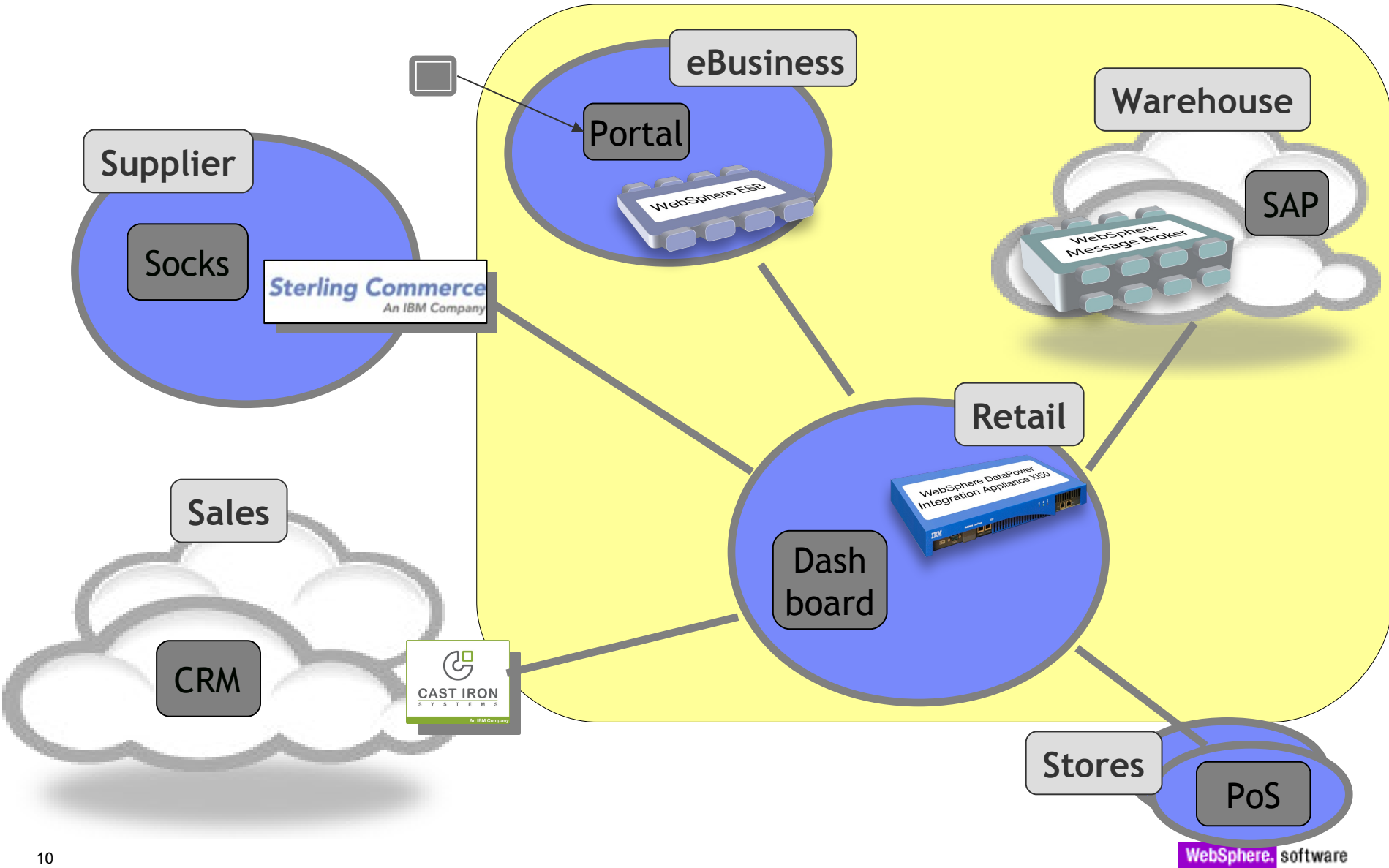


WebSphere Services Registry and Repository

Messaging Backbone for SOA



Ubiquitous, federated, hybrid Connectivity Fabric



Trends

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Universal messaging

Delivering beyond guaranteed message delivery across different platforms

Provide **choice** of language and skills

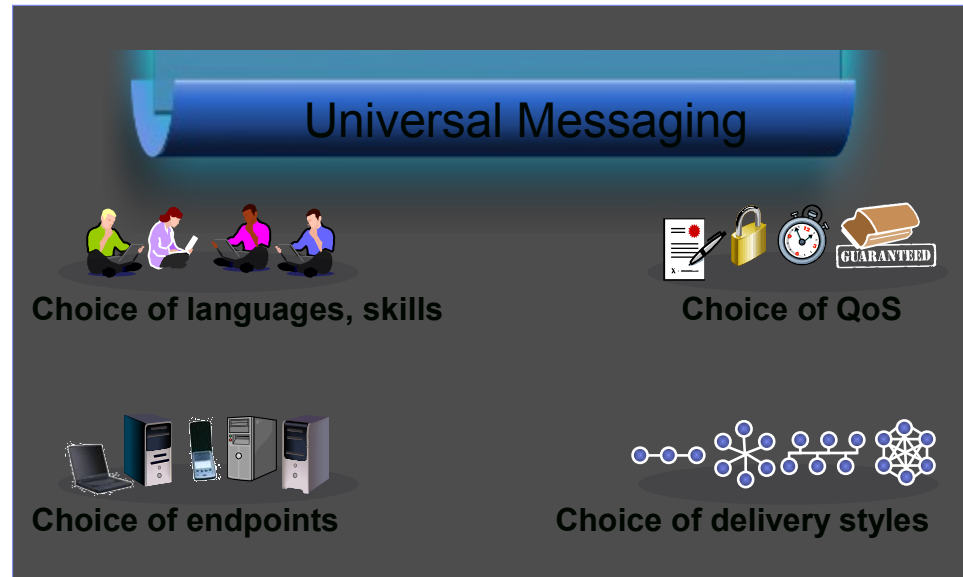
Enable rapid **change** and visibility

Allow massive **scale** incrementally and stretch elastically

Provide broad range of **qualities** of service

Driving **standards** -

MQTT, service definition



Universal messaging – market drivers

- **Reliably** transport and **share** all kinds of business data
- Leverage **existing** investments in hardware & networks
- **Reduce cost** of making changes
- Grow **incrementally**
- Achieve massive **scale**



Financial Markets

Delivering \$1 trillion transactions per day
Exchanging £400B+ in messages



Government

Agency sends 675m messages per day
~ 7,500 agency users & 50,000 citizen transactions daily



Banking

\$7-\$35 trillion messaging traffic per day
213+ million messages daily

Universal Messaging



Extended Reach

Extend the reach of connectivity to the physical world

Extend connectivity beyond enterprise boundaries to smart devices

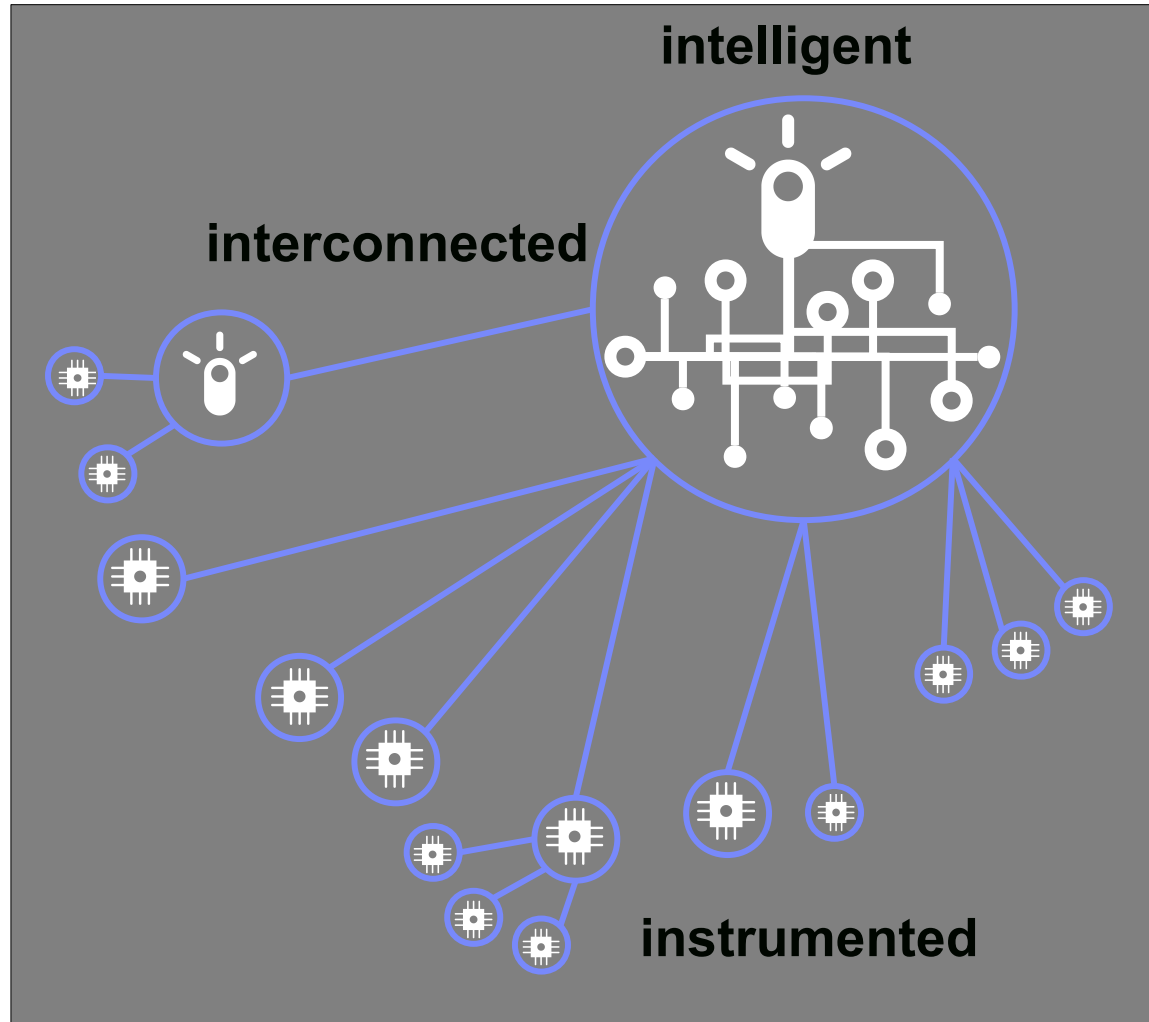
Offer connectivity capabilities **optimized** for sensors and devices

Deliver **relevant data** to intelligent decision making assets

Enable **massive scalability** of deployment and management of solutions

Create **self-managing** device networks

Driving **standards** – MQTT



Extended Reach – market drivers

Predict

Retail predictive re-stocking to optimize deliveries

Logistics optimizing shipments to move less empty containers

Monitor

Government monitoring natural events, volcanoes, rivers, dams

Energy & Utilities monitoring oil pipelines, grids, SCADA

Track

Manufacturing inventory and goods tracking

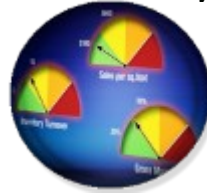
Government traffic and public transport tracking

Measure

Energy & Utilities smart metering

Healthcare patient monitoring, trials

Water



Global agriculture wastes 60% of the 2,500 trillion liters each year
Municipalities lose 50% of water supply

Retail



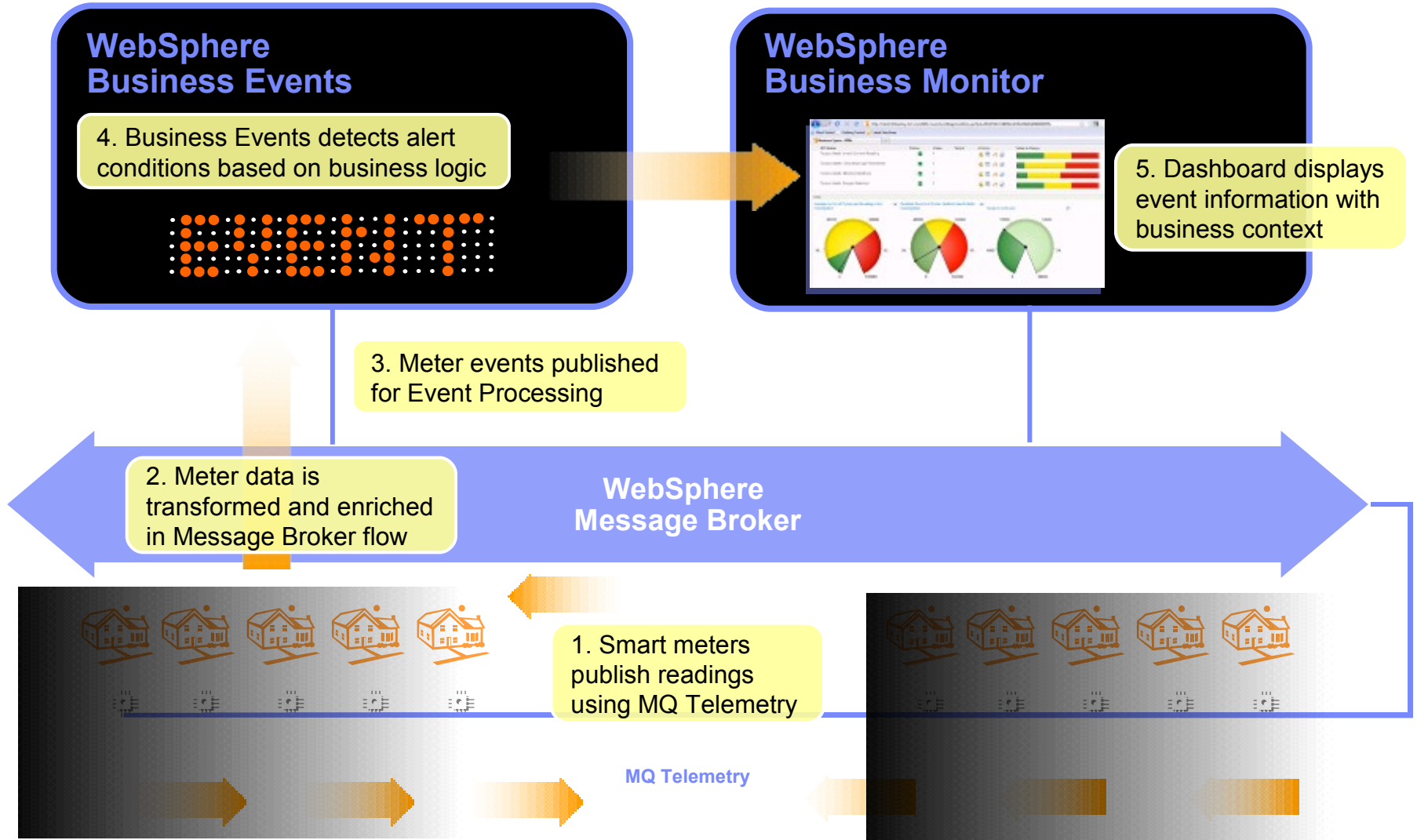
Retailers lose \$93B in missed sales every year, due to supply chain inefficiencies

Petroleum



Just a 1.5% increase in recovery from existing oil wells would yield enough oil for half a year's global consumption

Extended Reach Pattern Instantiated



Extend SOA transaction processing across trading networks

- *Increases control over, flexibility with, and visibility* into critical business processes to fuel new growth while managing costs

What's New?

- *Improve business agility* through efficient communication across and extended management of trading partner communities
- Eliminate “blind spots” and improve business performance with *real-time business transaction visibility* and performance metrics
- *Minimize business risk* and protect the brand with consistent policy enforcement and compliance



New!

Sterling B2B Integration

- Sterling Integrator
- Sterling Collaboration Network
- Sterling Community Management

Multiple ESB offerings

Solutions to Meet Any and Every Demand



ESB offerings from IBM WebSphere



Platform Based

WebSphere Enterprise Service Bus

- Optimized with WebSphere Application server for an integrated SOA platform
- Shares common registry, security, administrative and development tools
- Services hosted on the application server

Integration Based

WebSphere Message Broker

- Built for universal connectivity and transformation in heterogeneous IT environments
- Message transformation developed to accommodate disparate service interfaces
- Adapters, protocol bridges packaged with applications and legacy platforms

Appliance Based

WebSphere DataPower Integration Appliance XI50

- Hardware built for simplified deployment and hardened security
- Functions developed in one device

Trends

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'SOA for the Masses' – why and how

- Why: Drive towards simplification of commonly occurring connectivity tasks
 - So that connectivity tasks can be performed with less specialist skill
- How: **Strategy** for simplification
 - Where we know how
 - Automate the task
 - Where a task cannot be automated
 - Factor it into several simpler tasks
 - The role for experts remains
 - To add to the list of simplified tasks

Approaches to simplification: Factoring

Transformation – simplification via factoring



Mapping/Transformation: Factoring the Problem

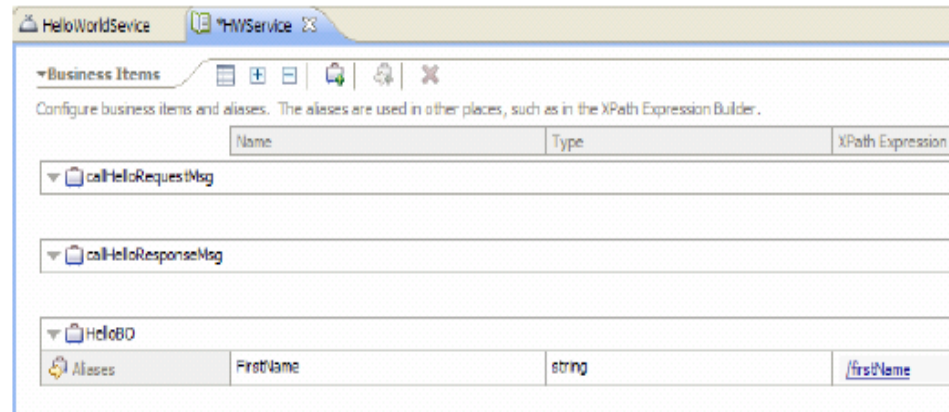
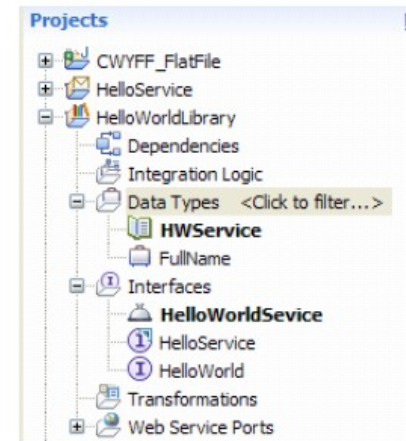
- Message transformation/restructuring is **not** fundamentally a simple task
 - My view: “It's as complex as the messages being restructured”
- But it can be factored into several subtasks, each of which is considerably simpler...

Mapping/Transformation: Subtask I: Create a business vocabulary

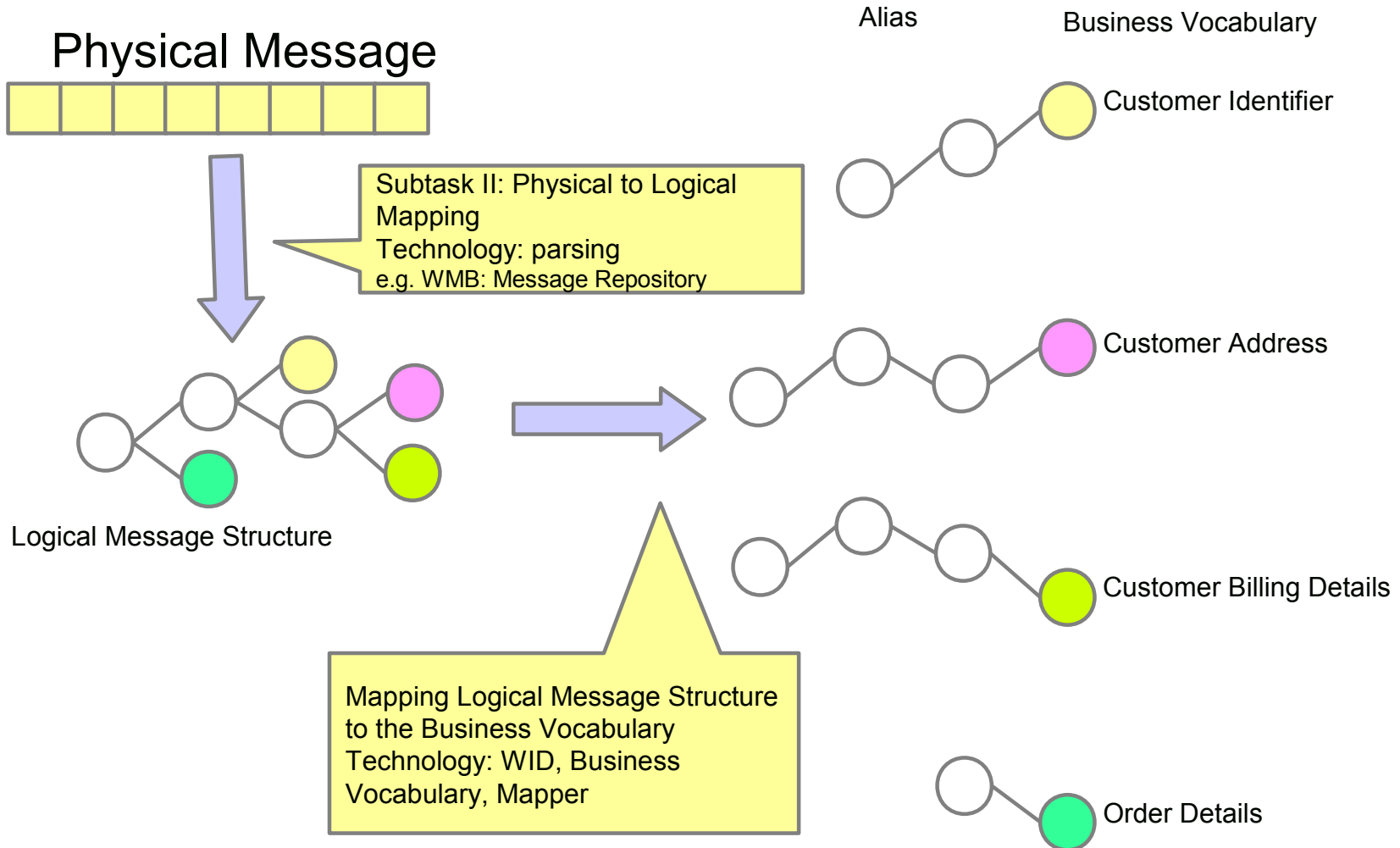
- Example
 - Every company has a de-facto **business vocabulary**
 - Business-oriented personnel such as **Business Analysts** are experts with the **business vocabulary**, and can specify transformations in those terms
- Problem
 - Real messages on e.g. Web Service interfaces are not usually expressed in those terms
- Solution
 - Create **business vocabulary aliases** that express where each **business item** is in the message
 - This enables much simpler communication between IT and Business users

Business Vocabulary in WebSphere Integration Developer

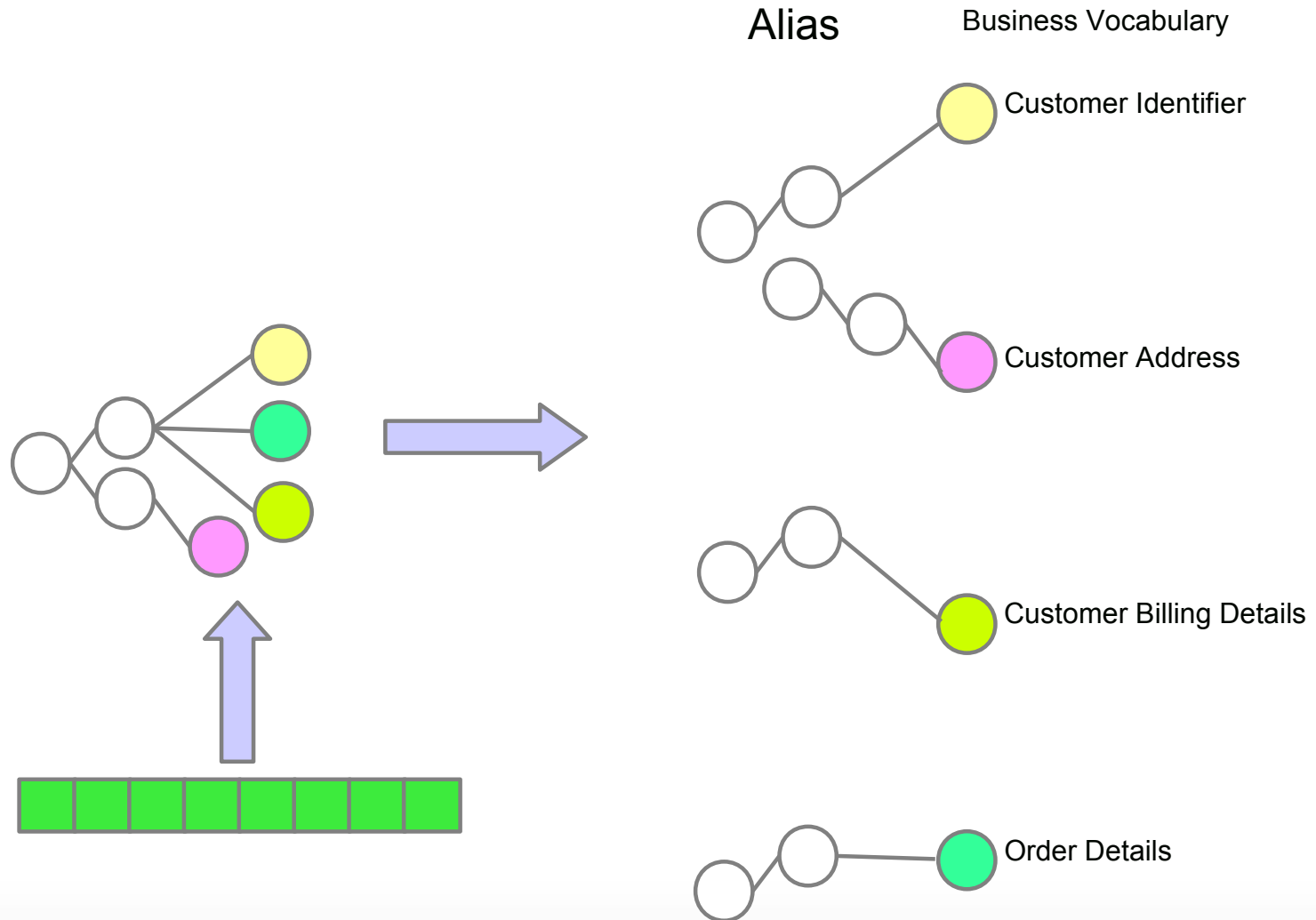
- Create alias for frequently used Xpath expression to share with team in library
- A collection of business concepts, terms and data definitions.
- Aliases can be used to expose properties of underlying data types in a business friendly fashion.
- Use aliases when mapping



Mapping from Physical Message Structure – via a logical message structure – to a Business Vocabulary



A different logical message structure may carry the same concepts – so the 'alias' for each concept will be different

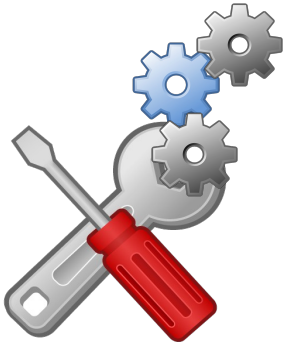


Approaches to simplification

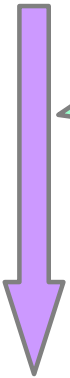
Patterns – encapsulate best practice



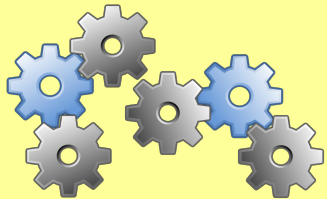
Evolution of approach to connectivity problems



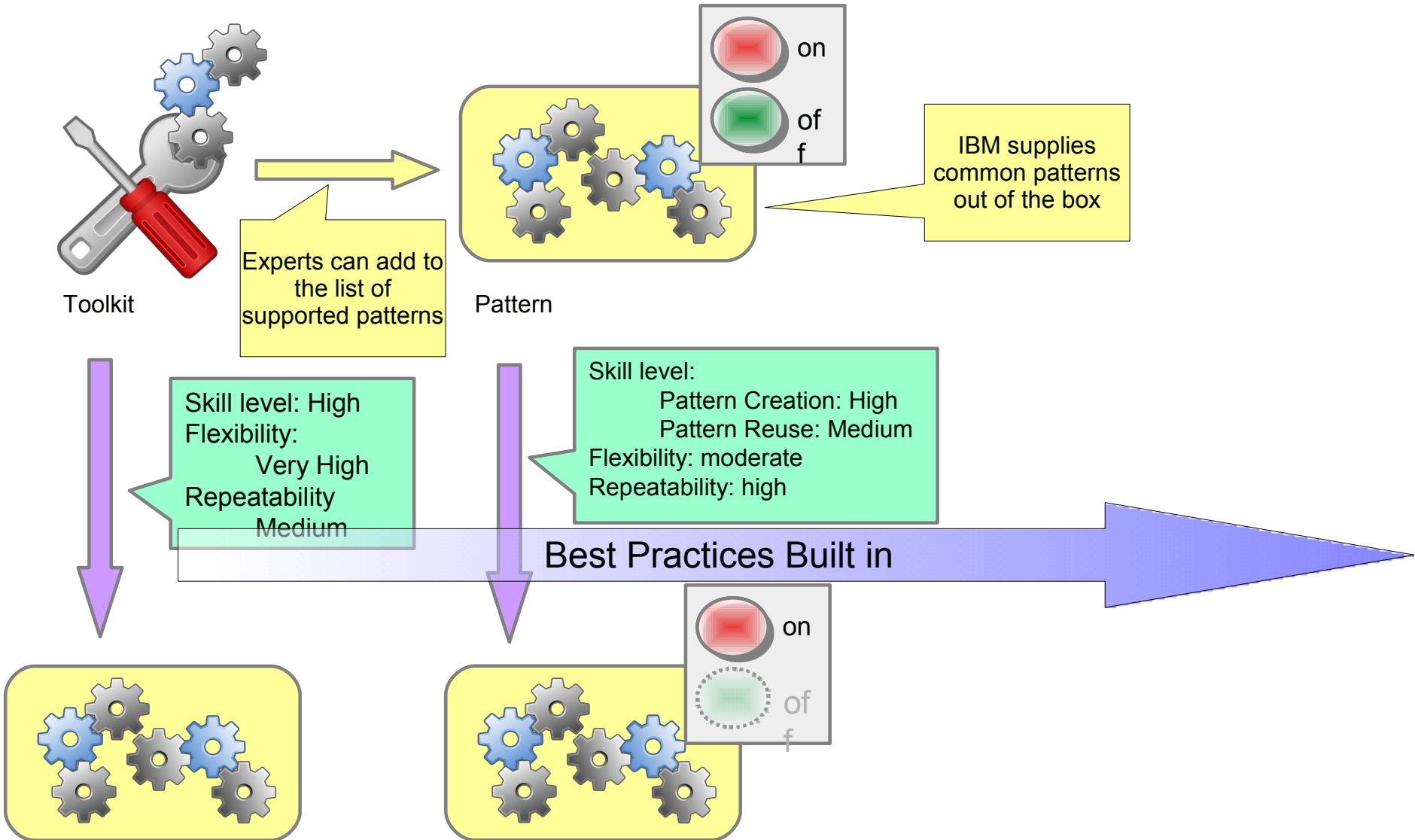
Toolkit



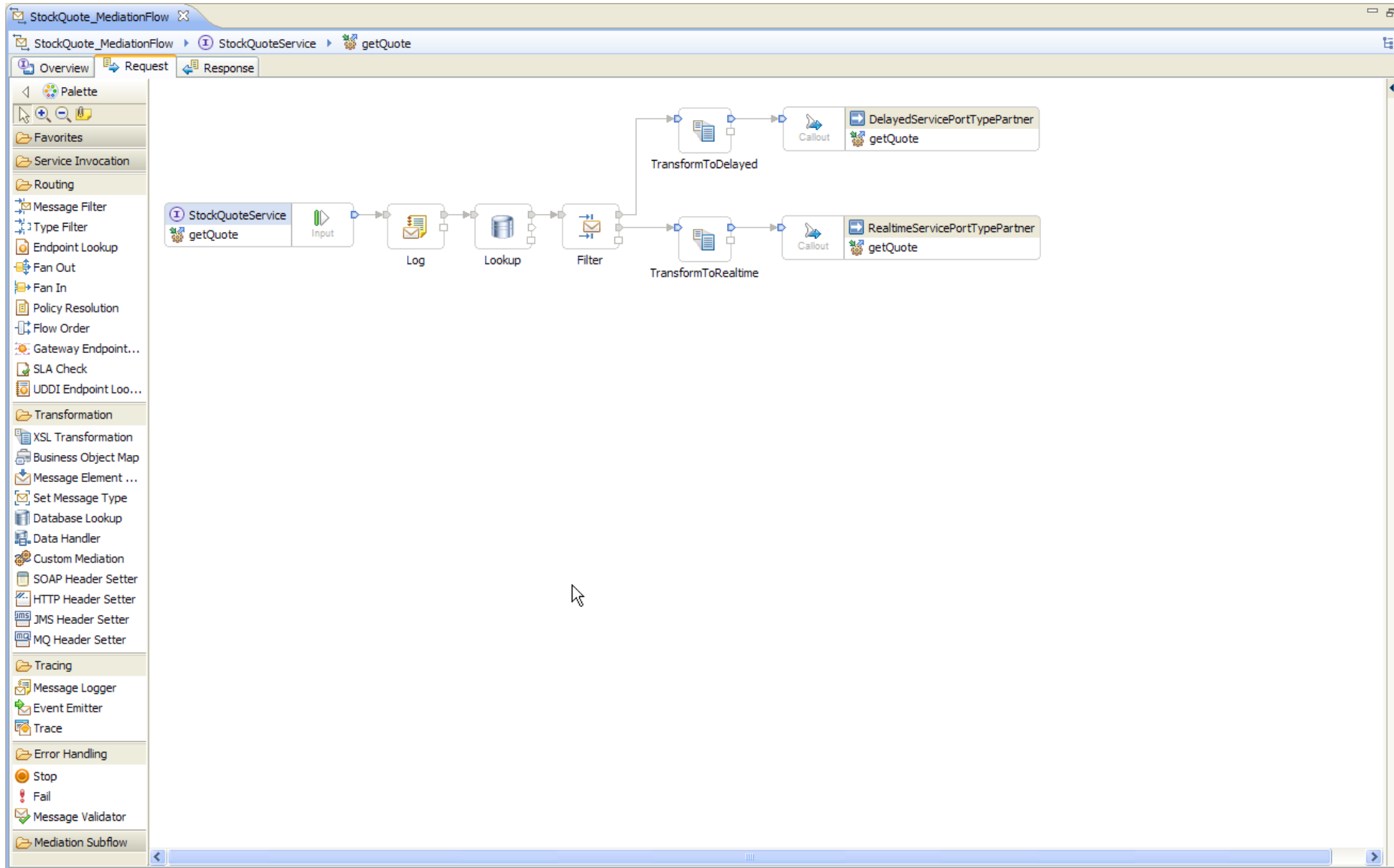
Skill level: High
Flexibility:
Very High
Repeatability
Medium



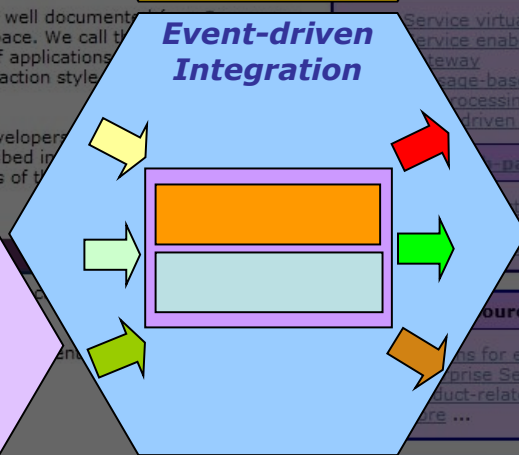
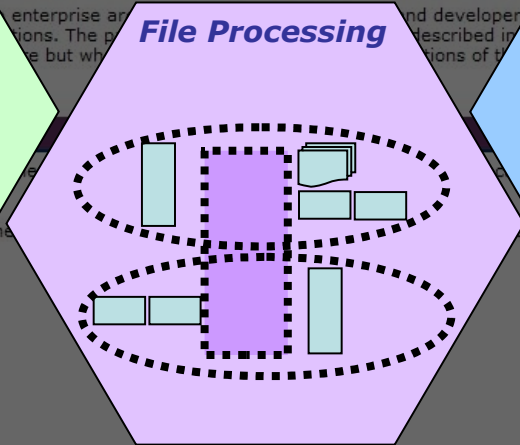
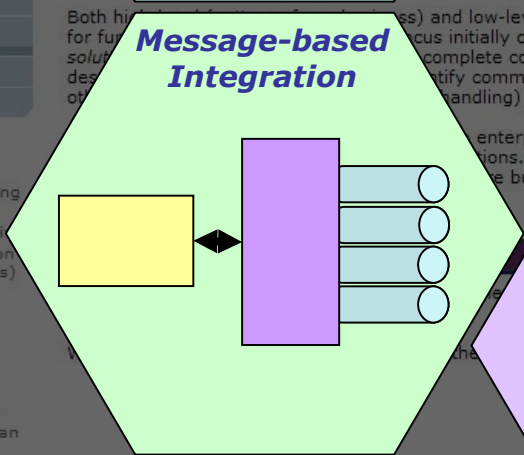
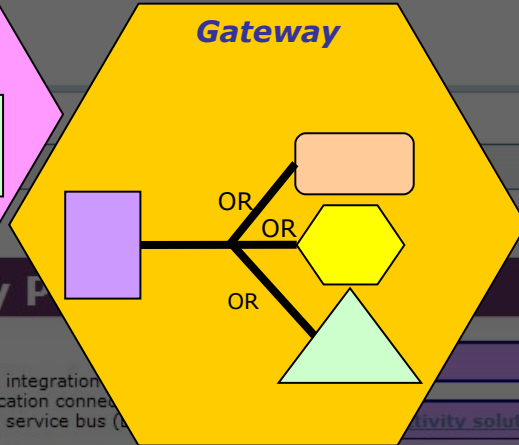
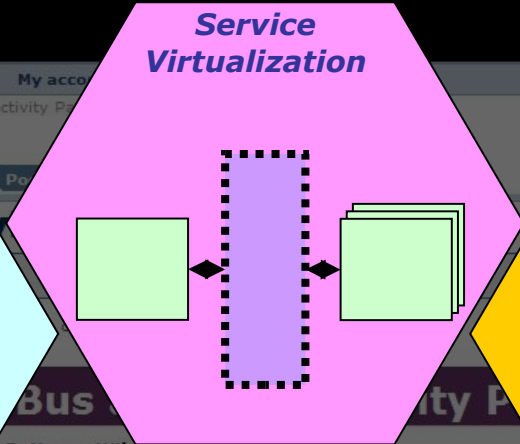
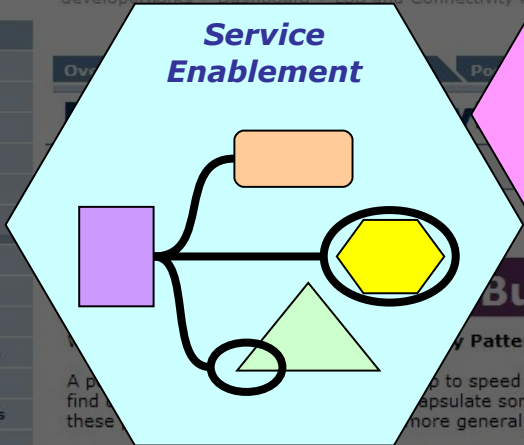
Evolution of approach to connectivity problems



ESB Micro Patterns



Macro Patterns for ESB-based Solutions

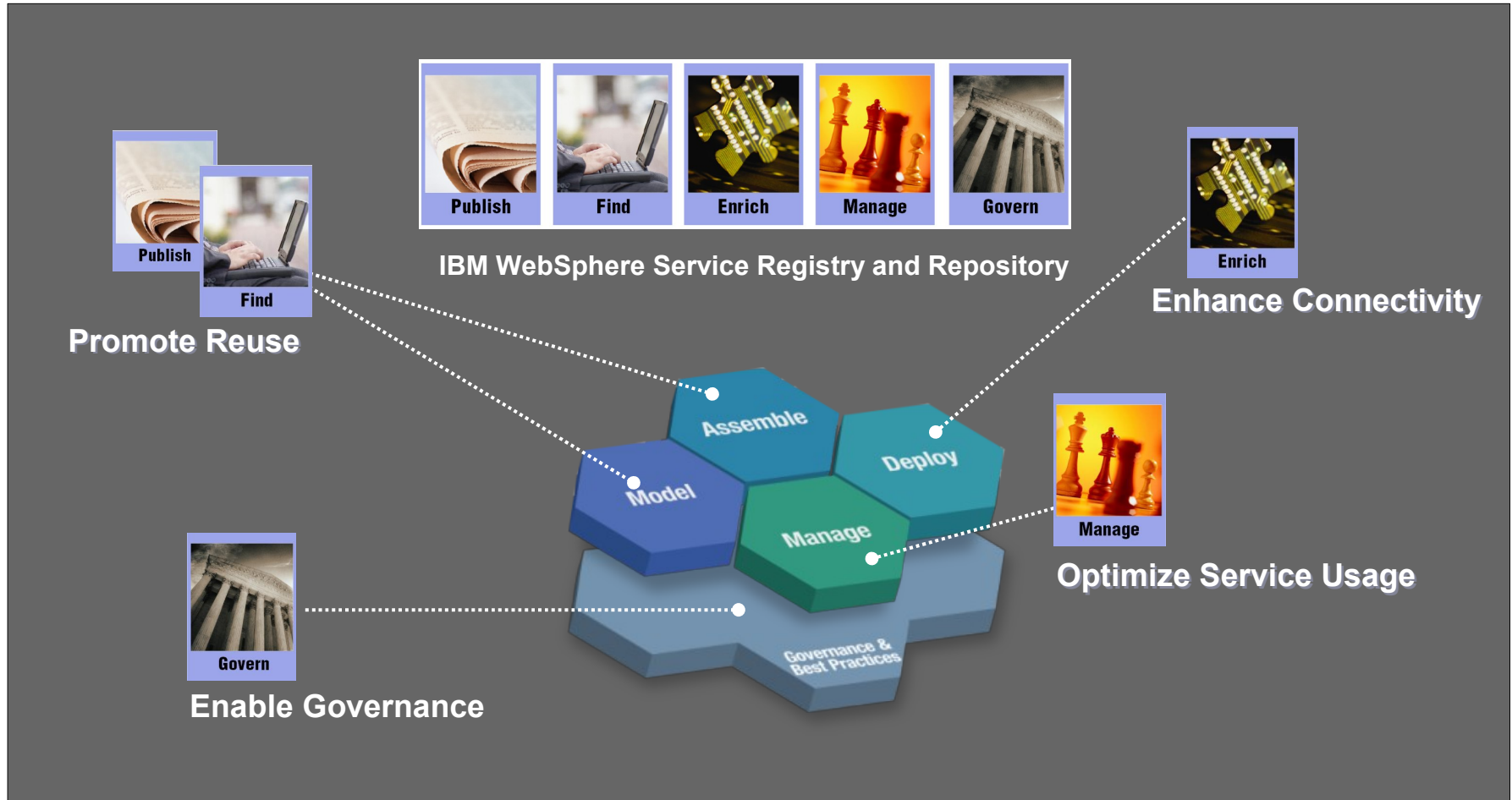


Patterns for Simplified Development

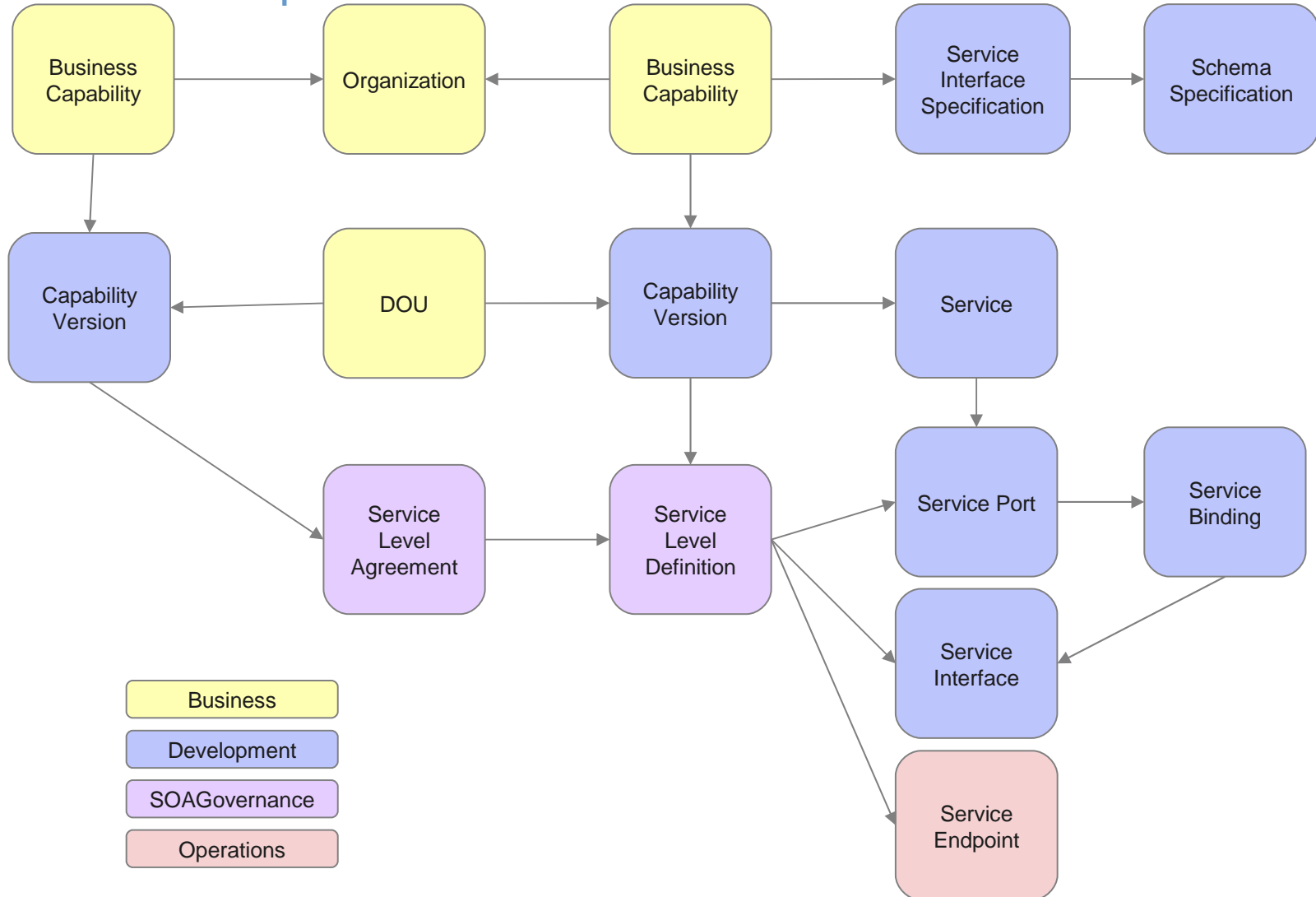
- **Patterns Based Development**
 - Create top-down, parameterized connectivity solutions
 - e.g. Web Service façades, Message oriented processing, Queue to File
 - IBM pre-supplied patterns
 - Simplifies creation of most common scenarios according to best practices
 - Complements existing bottom-up constructional approach for bespoke connectivity
- **Patterns Explorer**
 - Inventory of key patterns available for solution generation
 - Each pattern contains clear help to explain context and applicability
- **Pattern Generation**
 - Enables simple creation of solution artefacts from pre-supplied pattern
 - Pattern Properties allow configuration of behaviour
 - Solutions can be modified and/or regenerated
- **Evolution**
 - Pattern Capture creates user patterns from solution artefacts
 - Pattern Management: provides post deployment customization and operation of solutions

WebSphere Service Registry and Repository

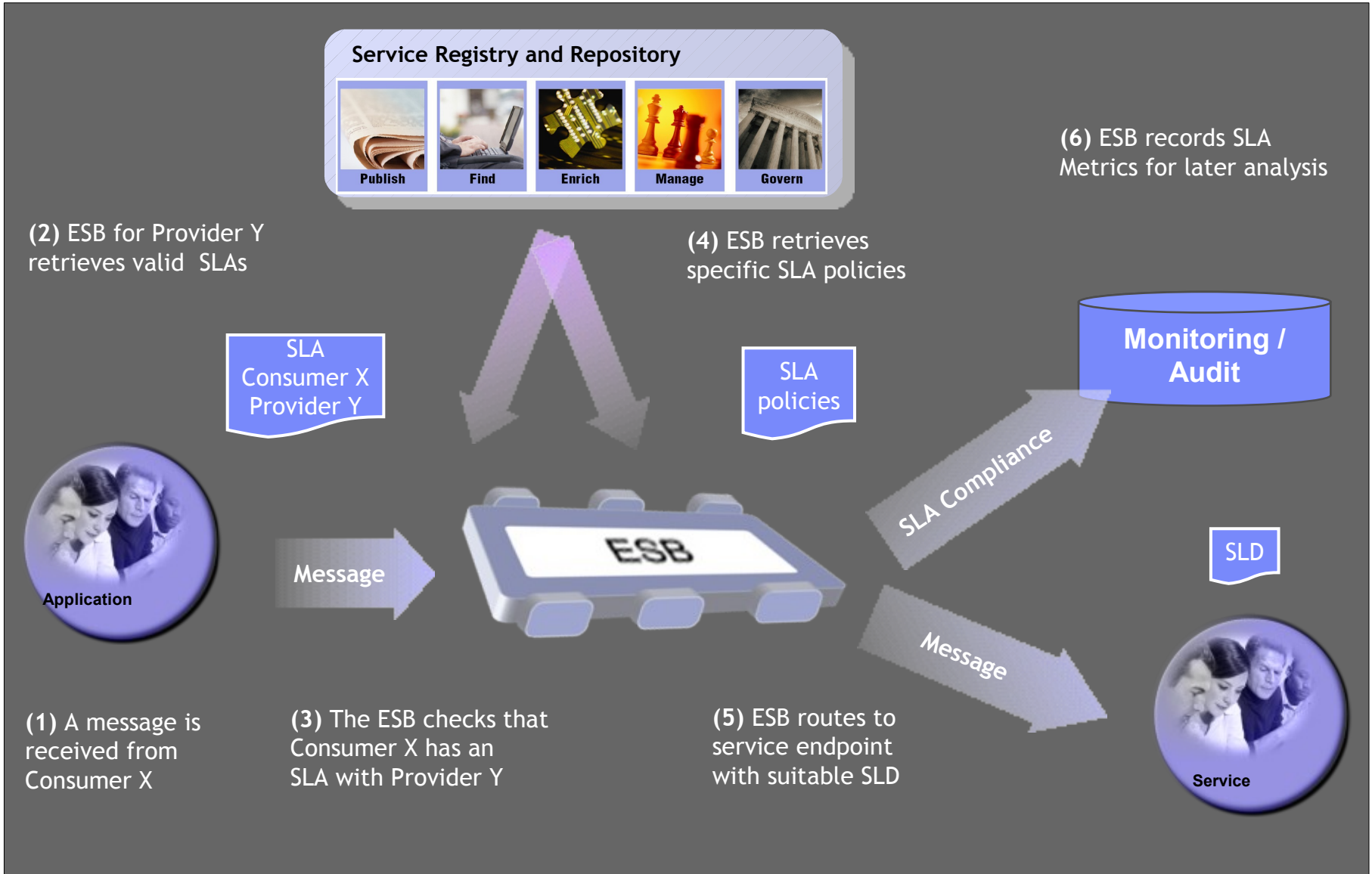
Provides value throughout the service lifecycle



Best Practice Built in: WSRR profiles provide out-of-the-box recommended practices



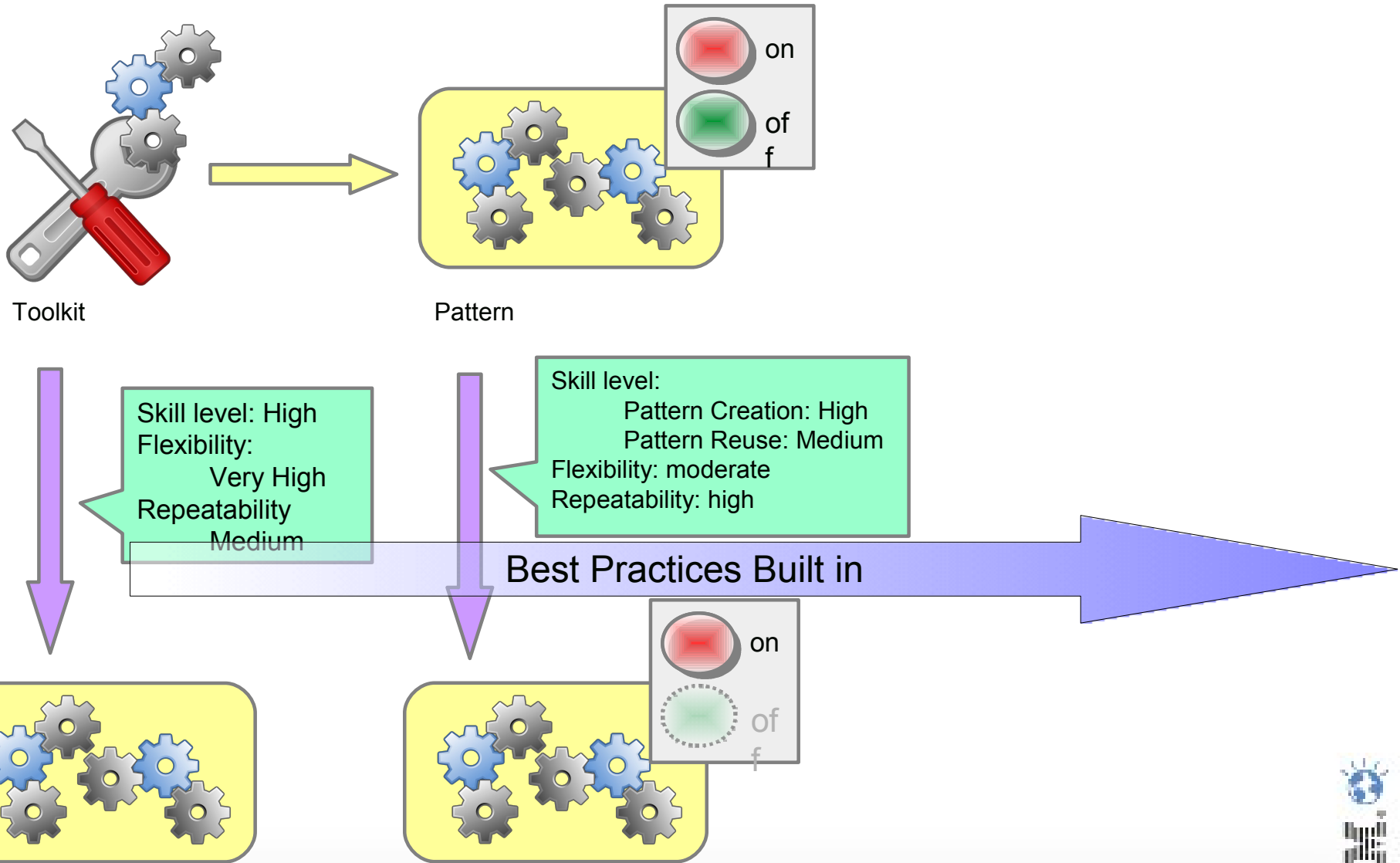
Dynamic Connectivity SLA Enforcement Pattern



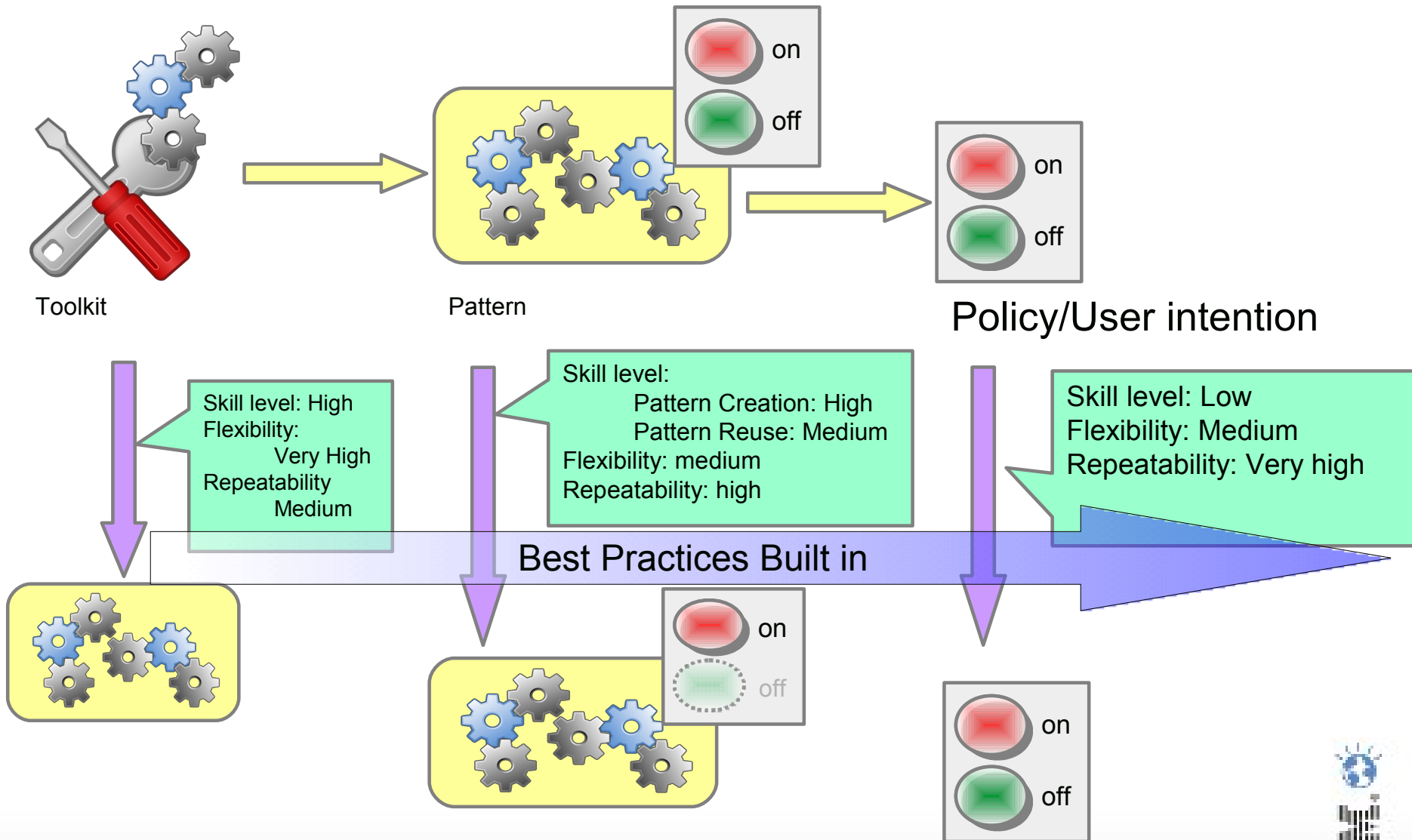
Beyond patterns...



Evolution of approach to connectivity problems



Evolution of approach to connectivity problems



- Most businesses are **not** monolithic
- There are multiple business domains that need to be reflected in the enterprise SOA

Service Federation Management

- Allows sharing of services *between domains*
- Provides *unifying view* across the *dynamic business network*

What's Enhanced?

- Configure and govern services to allow for sharing, deployment and enforcement *across multiple SOA Domains*



*IBM WebSphere Service Registry and Repository
Feature Pack for Service Federation Management
V7.0.1*

IBM® Redpapers™ publication on using Service Federation Management to share Services from an SAP Domain
www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/redp4685.html

Service Federation Management

- Integrated solution across Service Registry and the ESB family to enable service re-use across enterprise domains.
- Provides a unifying view of federation relevant content
- Easy configuration of best practice patterns for service sharing

The screenshot displays the Service Federation Management interface. At the top, there are tabs for 'Federation Management', 'Domain Management', and 'Administration'. Below these, a 'Federation server' dropdown is set to 'All servers', and a 'Federation' dropdown is set to 'federation1'. There are buttons for 'Create federation' and 'Delete federation'. The main area is divided into two panes. The left pane, titled 'Add domain', shows a diagram with four domains: 'eBusiness', 'Warehouse', 'Retail', and 'Sales'. Arrows indicate relationships: a double-headed orange arrow between 'eBusiness' and 'Retail', a blue arrow from 'Warehouse' to 'Retail', and a blue arrow from 'Retail' to 'Sales'. The right pane, titled 'Share Editor', shows a 'Shares' table with columns for 'Source group' and 'Target group'. The table contains three rows, each with a red 'X' in the right margin.

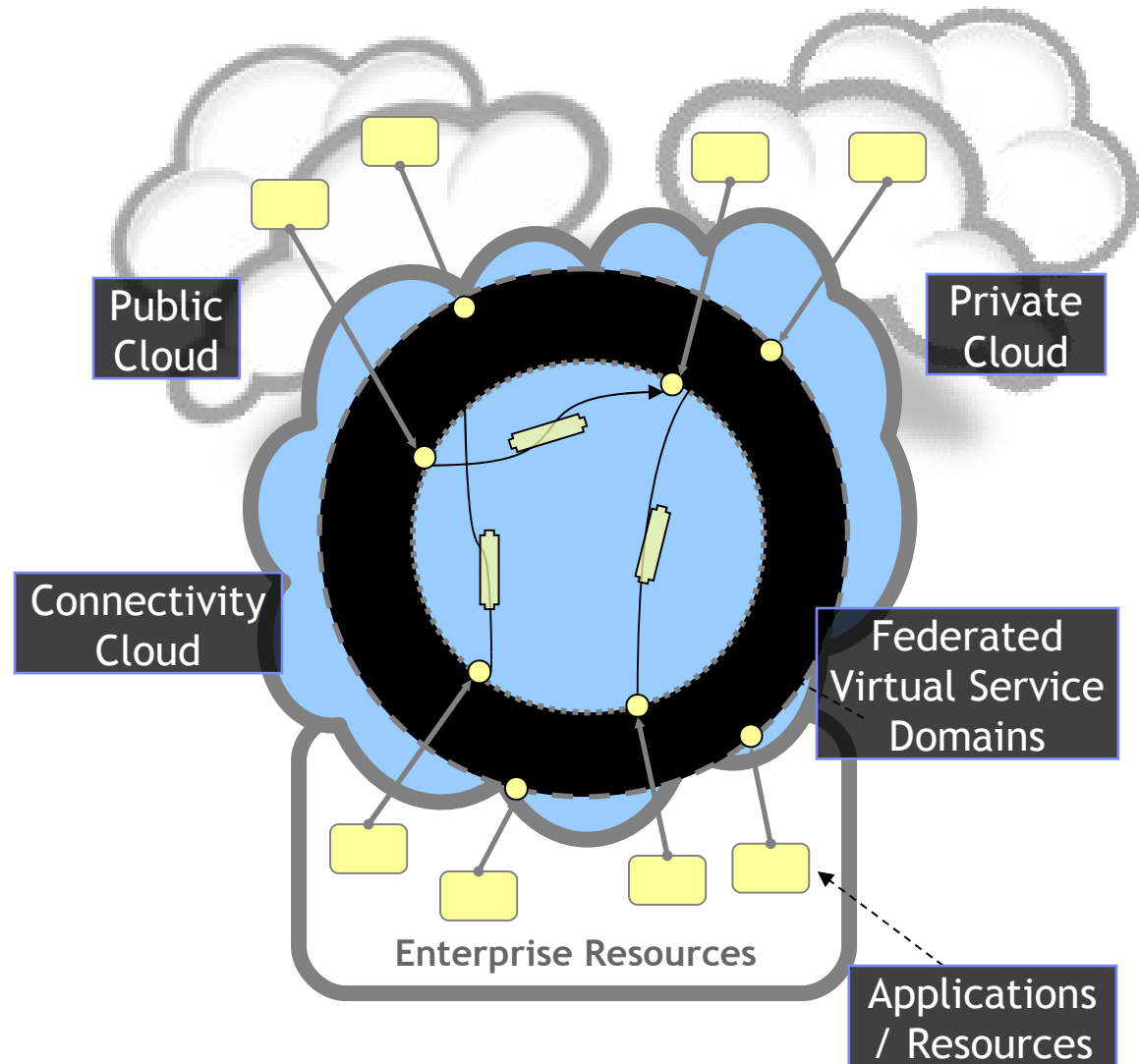
Source group	Target group	
storeServices	storeServices @ Retail	X
customerServices	customerServices @ Retail	X
orderServices @ Warehouse	orderServices @ Warehouse @ Retail	X

Trends

- Ubiquitous Connectivity Fabric
 - Smarter Planet scenarios dramatically increasing # of connected devices... Service Federation within the enterprise and beyond... dynamic, SLA-driven runtimes
- SOA for the Masses
 - From Highly Configurable Point Products to Pattern-driven Capability Mixes... exploiting lessons learned from years of experience in building SOA solutions...
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Connectivity & Clouds - Vision

- Make it easy to connect and integrate resources across, within and between clouds and enterprises
- Virtualize and simplify consumption of connectivity middleware to create “Connectivity Clouds”
- Enable enterprises to participate in an ecosystem of service providers and consumers “in the cloud”
- Provide elastic scaling of connectivity resources based on usage and demand



Cast Iron Systems

Thousands of Customer Integrations Connecting Cloud & Enterprise



salary.com™

#1 online salary management provider

Business Problem

- Need to integrate SaaS Applications
 - salesforce.com (CRM)
 - Netsuite (ERP)
- Bidirectional integration needs:
 - Sales orders from Salesforce opportunities
 - Invoices from Netsuite
- Complex data mapping & lookup rules
- Manual data entry process was time consuming and error prone

Solution

- Cast Iron integrates applications in real-time
- Web-services based integration with complex business rules for validation
- Entire project completed without writing any Custom Code



Rapidly provision and deploy ESB runtime environments

- **Speed time-to-value** by rapidly deploying and configuring environments leveraging best practice deployment patterns
- **Efficiently and cost-effectively deploy and manage** ESB deployments, including new flows, fixes, and modifications

What's new?

- **Hypervisor enablement** of WebSphere Message Broker V7.0 for use in virtualized environments
- Full deployment of Broker image with **underlying OS & configurations** via WebSphere Cloudburst appliance

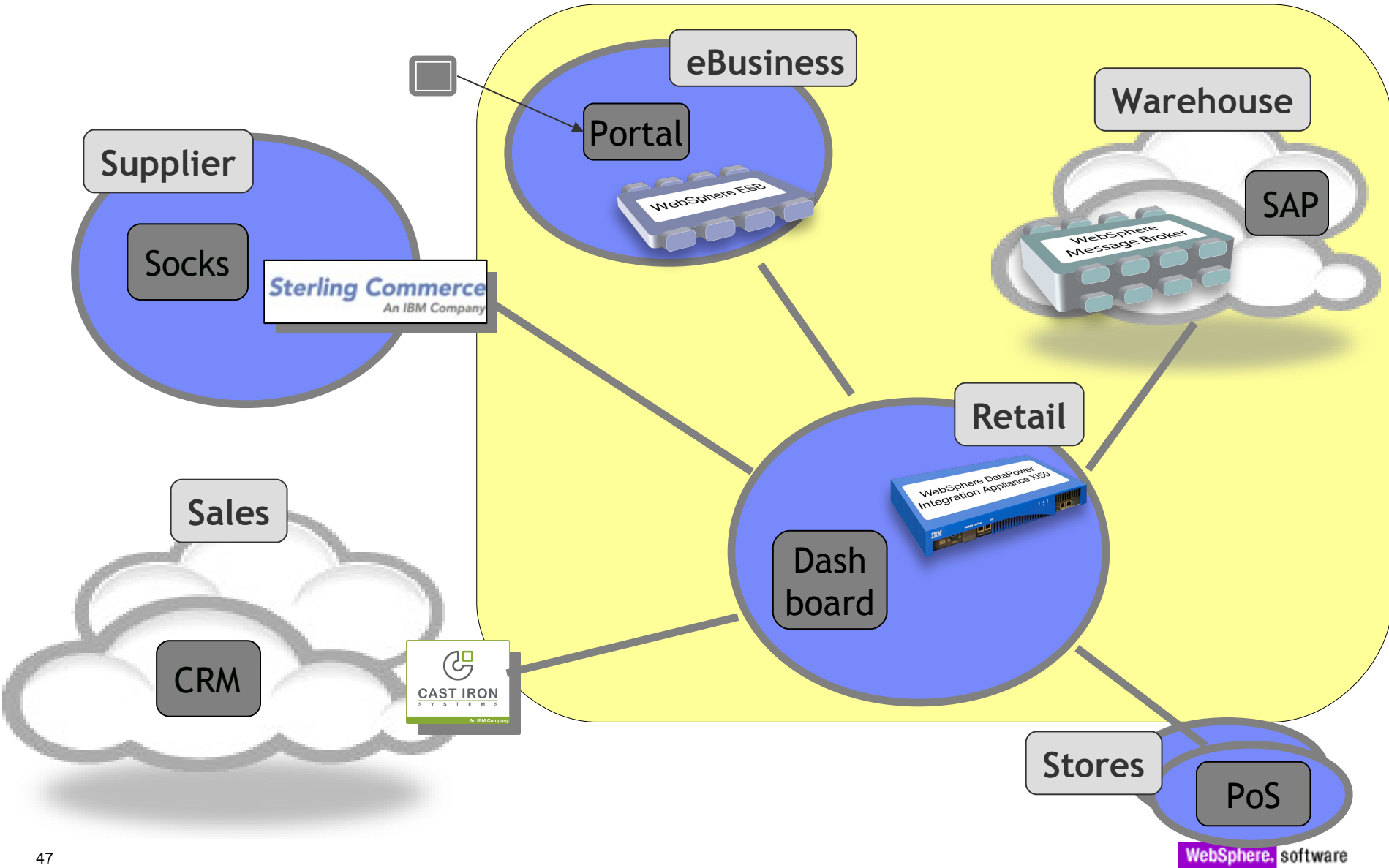


IBM WebSphere Message Broker
Hypervisor Edition V7.0

New!



Ubiquitous, federated, hybrid Connectivity Fabric



Summary

- Ubiquitous Connectivity Fabric
 - Smart Planer scenarios dramatically increasing # of connected devices... Service Federation within the enterprise and beyond... dynamic, SLA-driven runtimes
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Thank You!