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Enhancing Visibility, Flexibility, and Productivity with IBM's WebSphere SOA Connectivity and Integration Portfolio
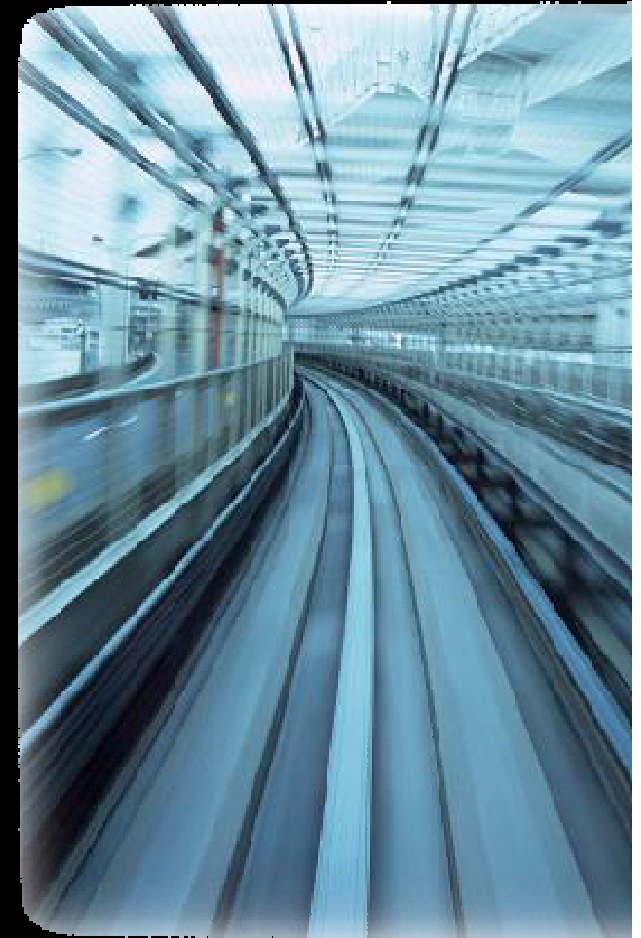
Sekhar Raju, IBM

Organizations face the opportunity of accelerating market shifts and broadening business networks

- Rising consumer expectations compel improvements in speed and personalization

- Rapid swings in economic and commodity markets highlight lack of adaptability

- Lower barriers to entry in a digital, flat world, enable fast and easy access by new competitors
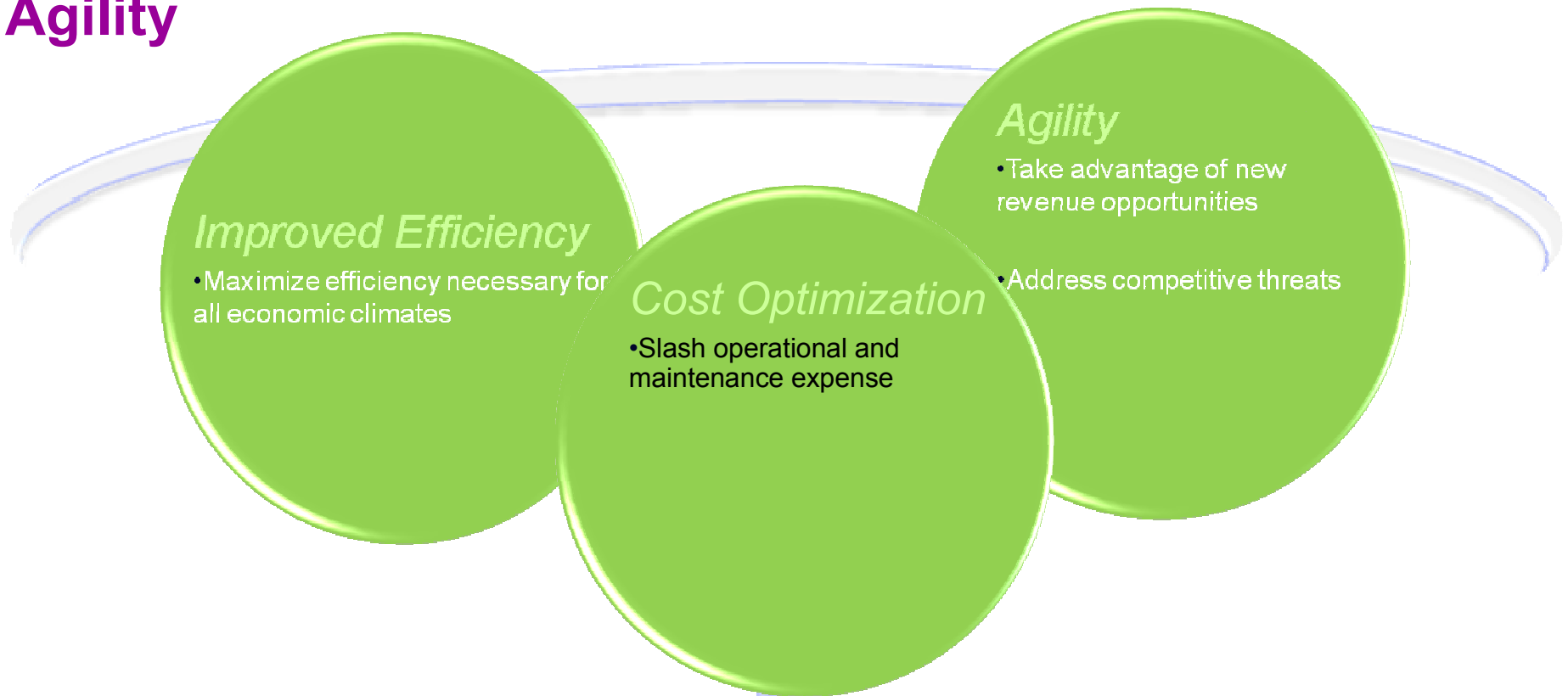
The perceived business network focuses on the challenges happening within a company's four walls …

Insurance Carrier

… but in reality the **business network is much broader** than just the relationships inside the business, and is changing rapidly

Today's Business Imperatives, Cost Optimization & Agility

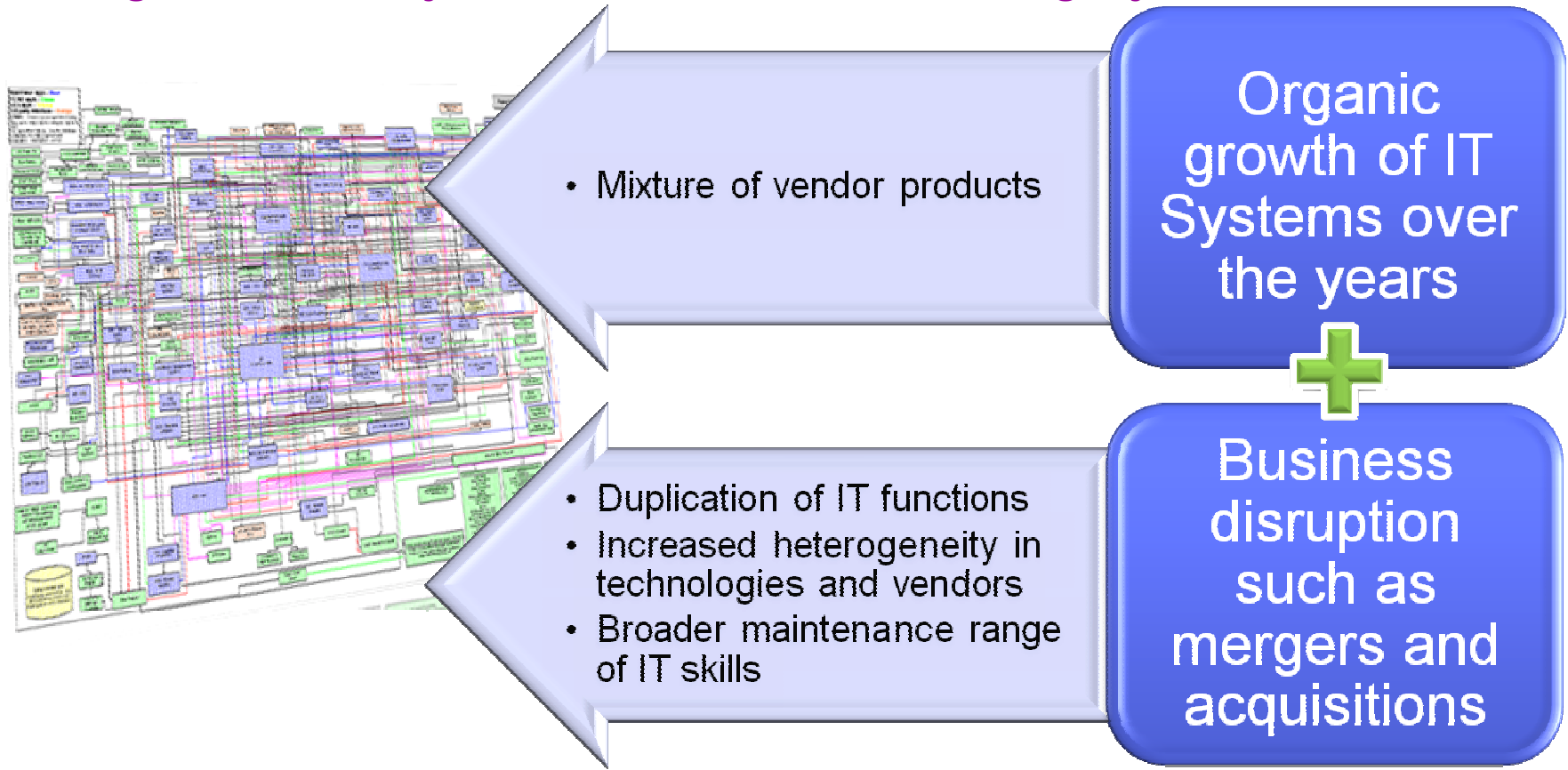*Improved Efficiency*
- Maximize efficiency necessary for all economic climates

Cost Optimization
- Slash operational and maintenance expense

Agility
- Take advantage of new revenue opportunities
- Address competitive threats

Survival & Success

Common Enterprise wide IT Problems
Resulting in Inefficiency, Inflated Costs and reduced agility

- Mixture of vendor products

- Duplication of IT functions
- Increased heterogeneity in technologies and vendors
- Broader maintenance range of IT skills

Organic growth of IT Systems over the years

+

Business disruption such as mergers and acquisitions

Integration becomes the major cost and inhibitor in building a flexible IT infrastructure

The Cost of Integration is a Major Factor of IT Budgets and Seriously Limits the Ability to Innovate

"Integration remains the number one IT priority; fully 60-70% of IT budgets are dedicated to it."

Source: WebServices Journal

"According to analysts, over 70% of the IT budget is being spent on overcoming the limitation of current systems, while less than 30% is spent on acquiring new capabilities that can provide a competitive edge to the business."

Source: IBM Research

"In 2005, 76% of I.T budgets were spent on maintenance, leaving only 24% for new investments."

Source: Forrester Research

"Various surveys tell us that the typical enterprise is devoting over 80% of its applications budget to simply supporting normal business because of the complexity of making change."

Source: CBDI
The Business Case for SOA

Product Portfolio and Customer Scenarios

- **ESB Messaging & Enrichment**
  - Trusted messaging
  - Ultra-low latency, time-sensitive data feeds
  - ESB for fast ROI
  - ESB for broad-scale SOA

- **Service Visibility & Governance**
  - Service visibility and lifecycle governance
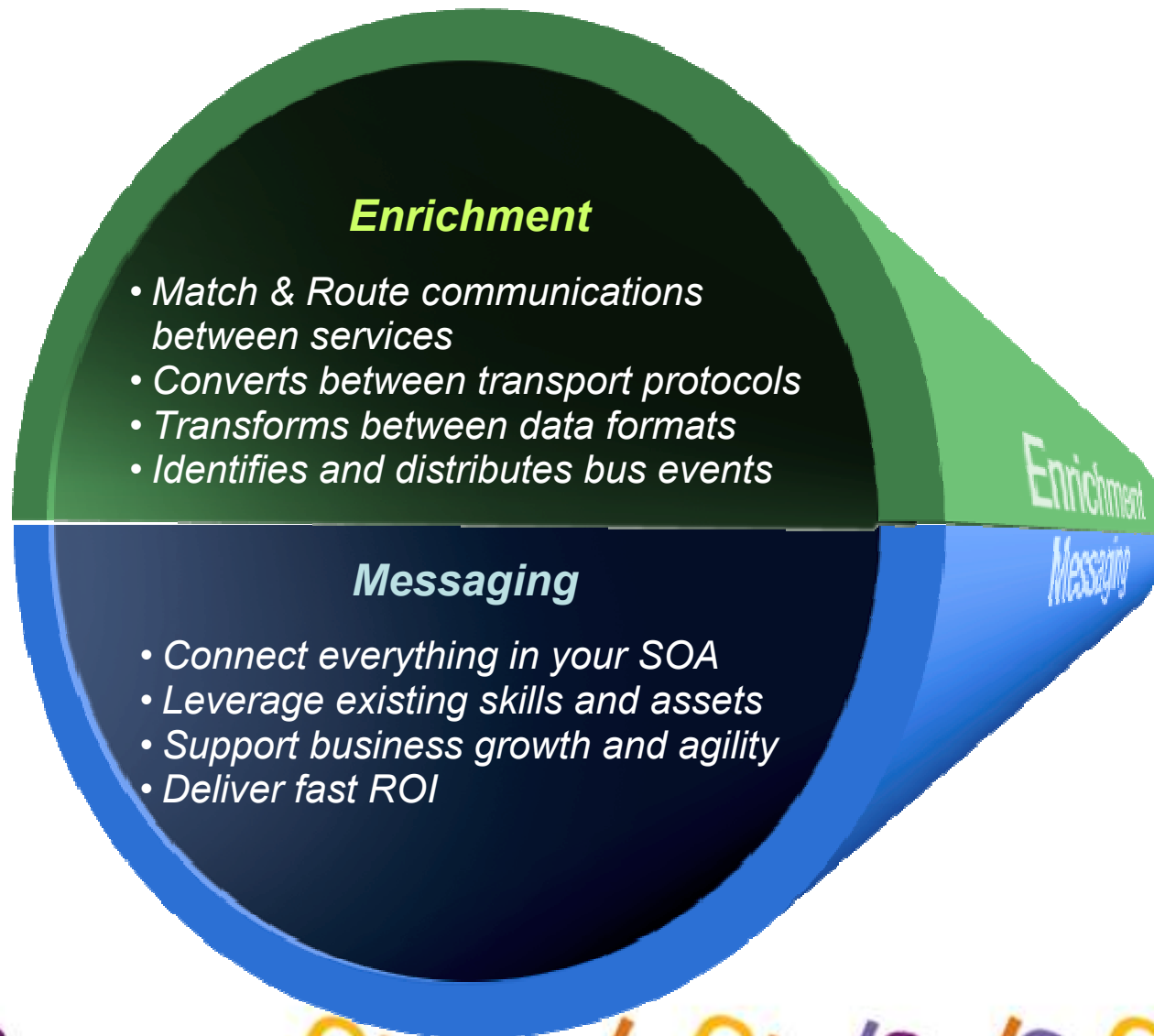 - Policy management and runtime enforcement

- **Extend Connectivity to Partners & Customers**
  - Payment processing in financial services
  - Managing your B2B transactions
  - Integrating with 3rd party applications, inside and outside the org

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Enrichment

- Match & Route communications between services
- Converts between transport protocols
- Transforms between data formats
- Identifies and distributes bus events

Messaging

- Connect everything in your SOA
- Leverage existing skills and assets
- Support business growth and agility
- Deliver fast ROI

Business Challenges in Connectivity

Dispersed Business Logic
- Over time, separate organizational units build their own pieces of business logic
- Applications developed on many different platforms.
- Connecting these together can save a lot of time and money

Process Resilience
- As systems become more integrated the reliance on and cost of failure of a process increases
- Removing dependencies and introducing redundancy reduces the risk of a failure

Process Scalability
- Many applications and processes start out on a single system. And, as business grows, a single system is no longer sufficient to cope with demand
- A scalable architecture enables the capacity to be incrementally grown to meet increasing workloads
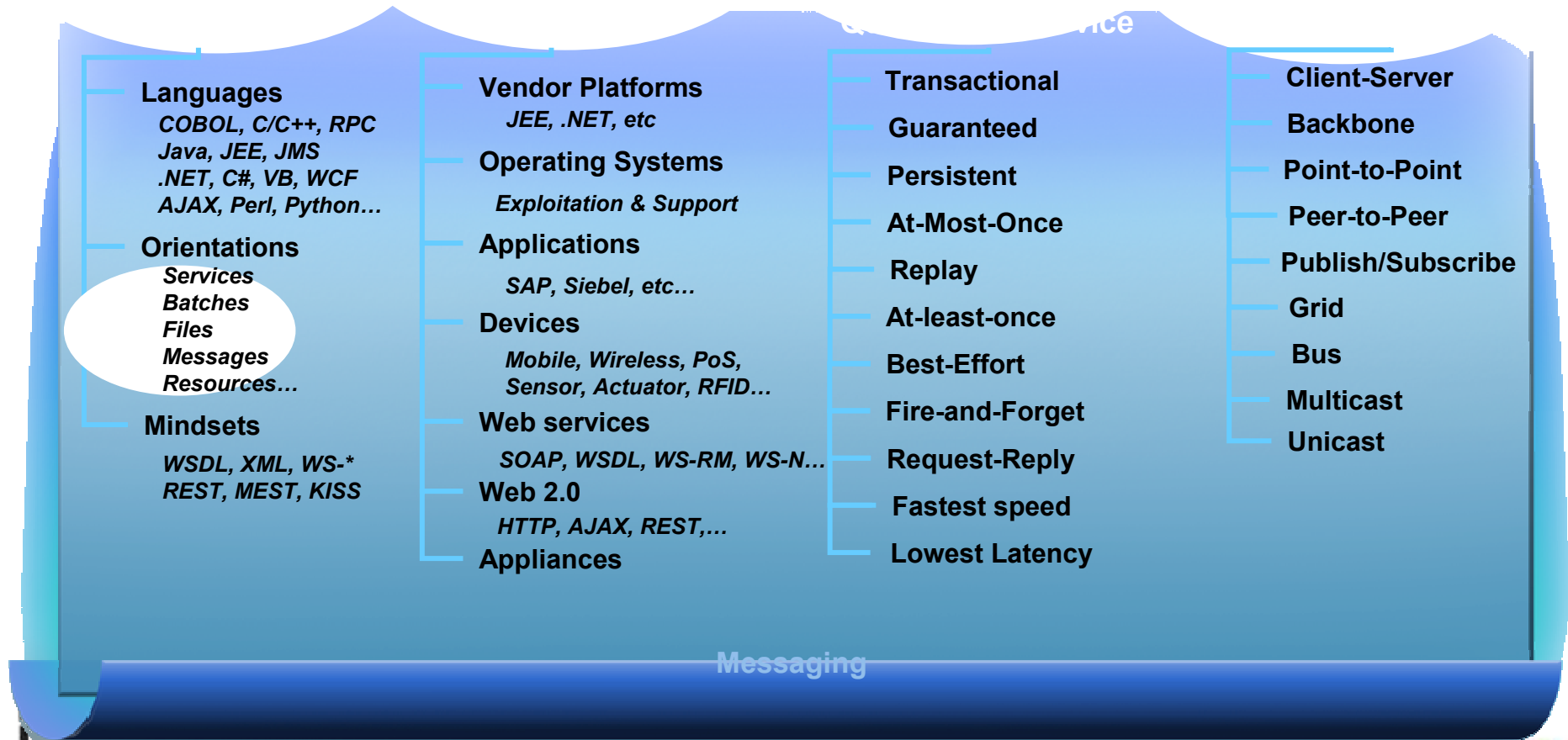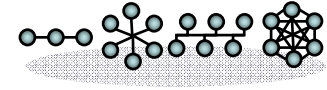
Process Flexibility
- A process originally designed for one purpose needs to change to meet new requirements
- Being able to respond rapidly to internal and external challenges gives a competitive advantage

IBM WebSphere MQ Family
Addressing the full spectrum of transport requirements

Languages
- COBOL, C/C++, RPC
- Java, JEE, JMS
- .NET, C#, VB, WCF
- AJAX, Perl, Python…

Orientations
- Services
- Batches
- Files
- Messages
- Resources…

Mindsets
- WSDL, XML, WS-*
- REST, MEST, KISS

Vendor Platforms
- JEE, .NET, etc

Operating Systems
- Exploitation & Support

Applications
- SAP, Siebel, etc…

Devices
- Mobile, Wireless, PoS, Sensor, Actuator, RFID…

Web services
- SOAP, WSDL, WS-RM, WS-N…

Web 2.0
- HTTP, AJAX, REST,…

Appliances

- Transactional
- Guaranteed
- Persistent
- At-Most-Once
- Replay
- At-least-once
- Best-Effort
- Fire-and-Forget
- Request-Reply
- Fastest speed
- Lowest Latency

- Client-Server
- Backbone
- Point-to-Point
- Peer-to-Peer
- Publish/Subscribe
- Grid
- Bus
- Multicast
- Unicast

Quality of Service

Messaging

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WMQ Key Concepts

- **Messages** can be created from any source:
  - *Data, Messages, Events, Files, Web service requests / responses*
- Messages are moved asynchronously using **Queues**
  - Publish Subscribe
- Reliability
  - Assured delivery
- Ubiquitous
  - Breadth of support for platforms, programming, languages and API
- Loose application coupling
  - Location transparency
  - Time independence
  - Data transparency
  - Platform independence
- Scalability
  - Incremental growth
- Rapid development
  - Reduce Complexity
  - Ease of use
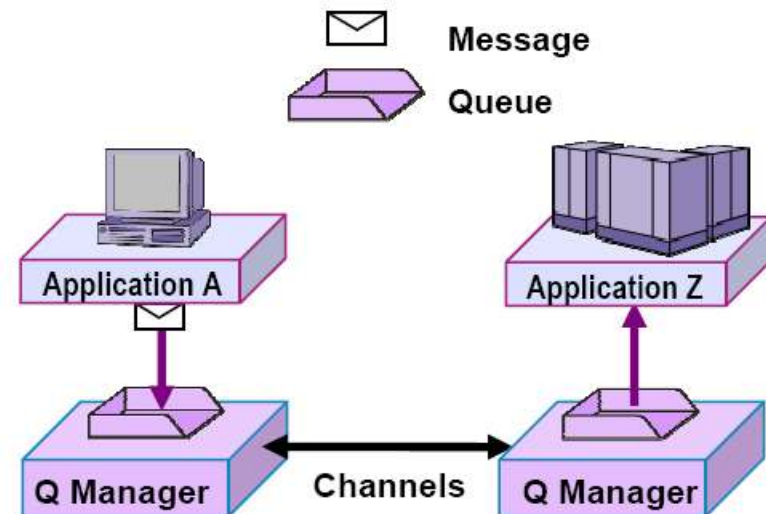
Proven & Trusted Messaging
Relied On By Over 10,000 Companies Globally
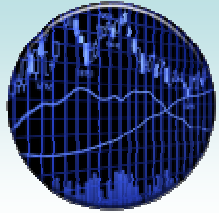
Financial Markets

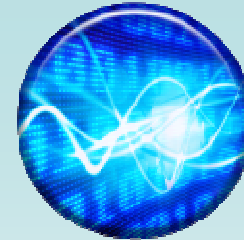- Delivering $1 trillion transactions per day
- Exchanging £400B+ in messages

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

" We needed a single integration platform that would allow all our applications to access and share information and enable them to collaboratively process transactions based on common business rules."

Chief Architect,
Health Insurance

*IBM – 16+ years of customer experience totaling 10's of billions of messages **every** day*

Enrichment
Messaging

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Fifth Third Bank banks on Extreme Reliability

With ESB Messaging and Enrichment

Banking customer Pains

- Increase availability for customer satisfaction
- Focus on becoming more dynamic and competitive

Smarter Business Outcomes:

- Resilient, flexible systems built on standardized integrated infrastructure enabling speed to market for new customer services and offerings
- Efficiently leverage existing systems and data
- Millions of dollars in cost savings through IBM initiatives

Why WebSphere Connectivity & Integration?

"With IBM's help, Fifth Third is working toward having an 'on-demand' infrastructure that gives us the flexibility to move resources—on-the-fly—to where we need them."
– Jim Scott, CTO, Fifth Third Bank

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How do most organizations move files today?

Most organizations rely on a mix of homegrown code, several legacy products and different technologies and even people!

- **FTP**
– Typically File Transfer Protocol (FTP) is combined with writing and maintaining homegrown code to address its Limitations

- **Why is FTP use so widespread?**
– FTP is widely available – Lowest common denominator
– Promises a quick fix – repent at leisure
– Simple concepts – low technical skills needed to get started
– FTP products seem "free", simple, intuitive and ubiquitous

- **Legacy File Transfer products**
– A combination of products often used to provide silo solutions
– Often based on proprietary versions of FTP protocol
– Can't transport other forms of data besides files
– Usually well integrated with B2B but rarely able to work with the rest of the IT infrastructure – especially with SOA

- **People**
– From IT Staff to Business staff and even Security Personnel
– Using a combination of email, fax, phone, mail, memory keys…
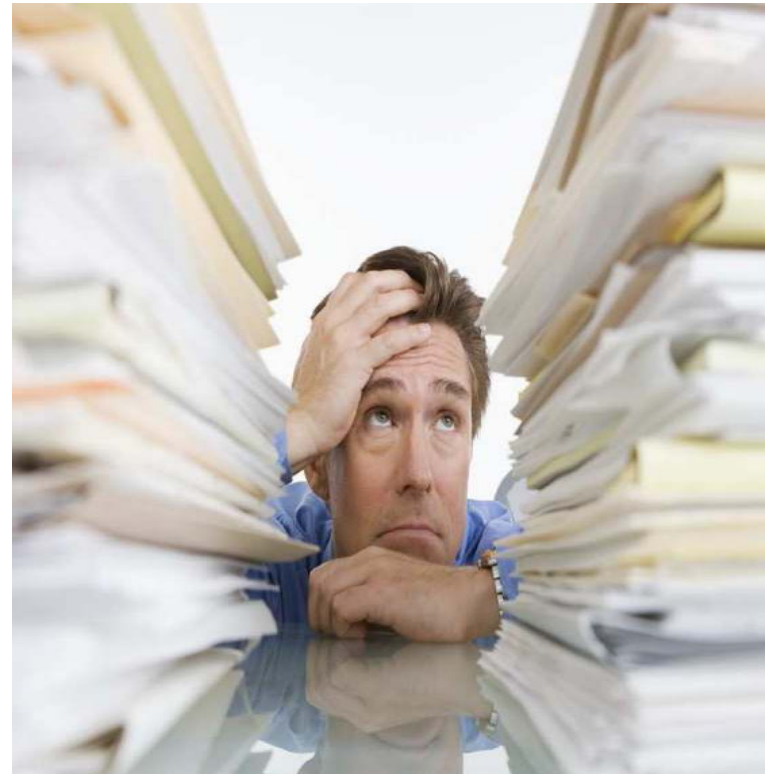
Shortcomings of Basic FTP

Limited Reliability

- ☒ Unreliable delivery – Lacking checkpoint restart – Files can be lost
- ☒ Transfers can terminate without notification or any record – corrupt or partial files can be accidentally used
- ☒ File data can be unusable after transfer – lack of Character Set conversion

Limited Security

- ☒ Often usernames and passwords are sent with file – as plain text!
- ☒ Privacy, authentication and encryption often not be available
- ☒ Non-repudiation often lacking

Limited Flexibility

- ☒ Changes to file transfers often require updates to many ftp scripts that are typically scattered across machines and require platform-specific skills to alter
- ☒ All resources usually have to be available concurrently
- ☒ Often only one ftp transfer can run at a time
- ☒ Typically transfers cannot be prioritized

Limited visibility and traceability

- ☒ Transfers cannot be monitored and managed centrally or remotely
- ☒ Logging capabilities may be limited and may only record transfers between directly connected systems
- ☒ Cannot track the entire journey of files – not just from one machine to the next but from the start of its journey to its final destination

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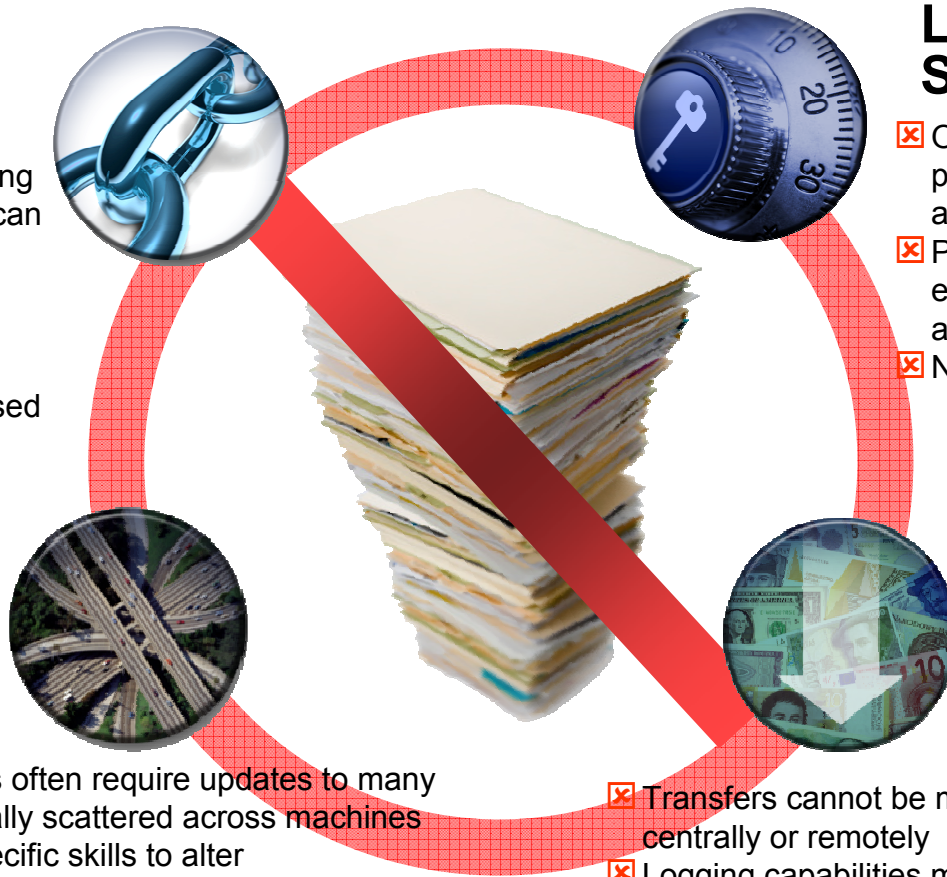
Why visibility of file movement is important

- Business
  - Need to know and report progress of business processes to customers, users
    - File transfer progress often linked to progress of business process
    - E.g. "Has my order been put through yet?"
  - Need to be able to demonstrate that sensitive information is being distributed properly
    - E.g. "Who else has seen this file?"
  - Need to be able to demonstrate that privileged information has not been altered without authorization
    - E.g. "Where did this file come from and who has changed it?"
  - Need to be able to comply with regulatory compliance obligations
    - E.g. "Can you show me exactly where your last 10 files came from and went?"

- IT
  - Need to able to help the business answer their file-related queries to show their value
  - Need to be able to diagnose issues across their IT infrastructure and pin-point the source of problems
    - E.g. "Why weren't these orders processed? Did they actually get delivered to the application or is the application at fault?"
  - Need to be able to diagnose issues with their IT systems
    - E.g. "Did the transfer fail because the disk is full?"

What is Managed File Transfer?

"Reliable, controlled, auditable movement of files around an organization"
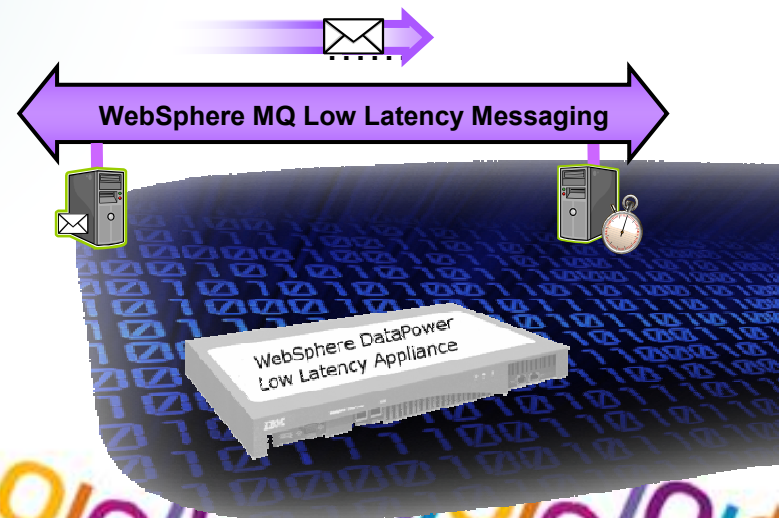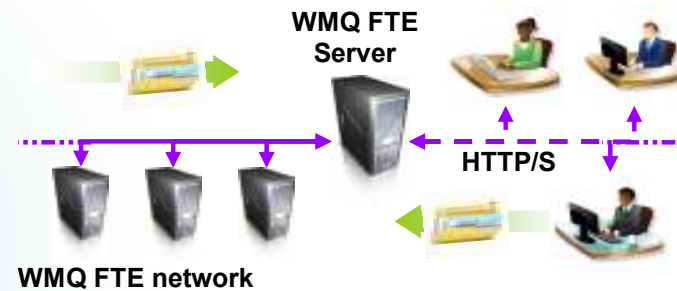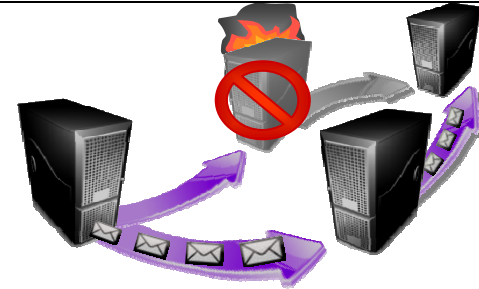
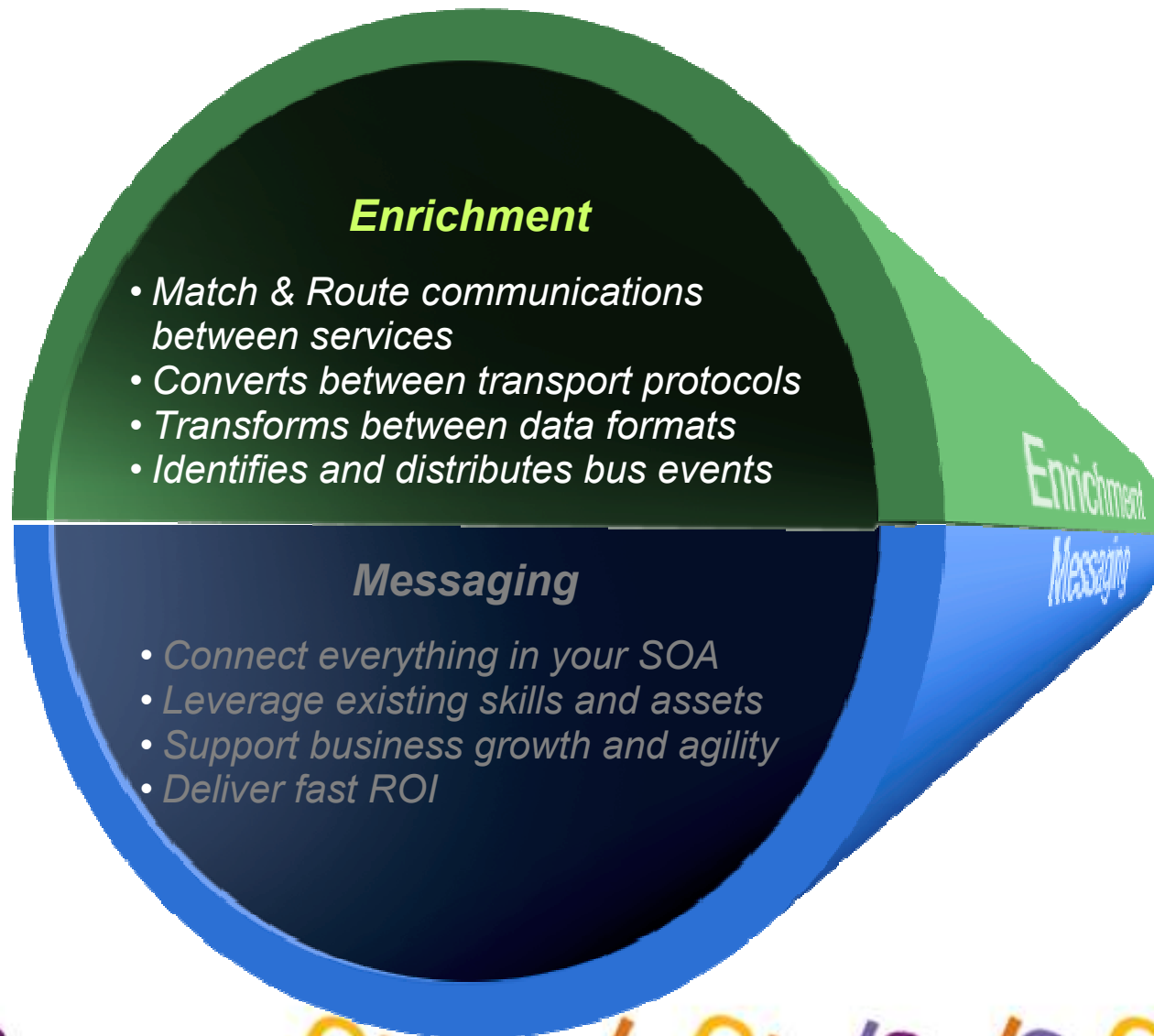|		
☑	**Auditable**	Records complete and detailed audit log of entire file journey "What went where, when and to whom"
☑	**Reliable**	File contents not corrupted or partially transmitted Files only appear at destination whole and intact
☑	**Secure**	Files content encrypted during transmission File access authenticated and controlled
☑	**Automated**	Eliminates need to manually detect problems and restart transfers Providing scheduling and triggering for event-driven transfers
☑	**Centralized**	Remote control and monitoring of file progress from anywhere
☑	**Flexible**	Able to deploy and re-configure file transfers instantaneously from anywhere Managing transfers end-to-end across a network – not just between 2 points
☑	**Any file size**	No upper limit on the size of file than can be moved
☑	**Integrated**	With SOA infrastructure: Messaging, ESBs, Governance, B2B and BPM
☑	**Cost Effective**	Provides a consolidated transport for moving both Files and Messages

What's New in Messaging?

- ## WebSphere MQ
  - Reduce business costs and disruption from unplanned outages with software-enabled high availability

- ## WebSphere MQ File Transfer Edition
  - Enable ad-hoc file transfers using standard Web browser

- ## WebSphere MQ Low Latency Messaging
  - Capable of over 91 million messages per second over Native InfiniBand
  - New support for re-playing missed messages

- ## WebSphere DataPower Low Latency Appliance XM70
  - Support for TIBCO Rendezvous/EMS Messaging

WMQ FTE Server

HTTP/S

WMQ FTE network

WebSphere MQ Low Latency Messaging

WebSphere DataPower Low Latency Appliance

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A Closer Look at the ESB, Enrichment and Messaging

Enrichment

- Match & Route communications between services
- Converts between transport protocols
- Transforms between data formats
- Identifies and distributes bus events

Messaging

- Connect everything in your SOA
- Leverage existing skills and assets
- Support business growth and agility
- Deliver fast ROI

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ESBs Simplify Connectivity

Customers
Web Shop
Portal

Partners, Suppliers

http

Internet
Standards

soap/http

JDBC

Backends

JMS

Files

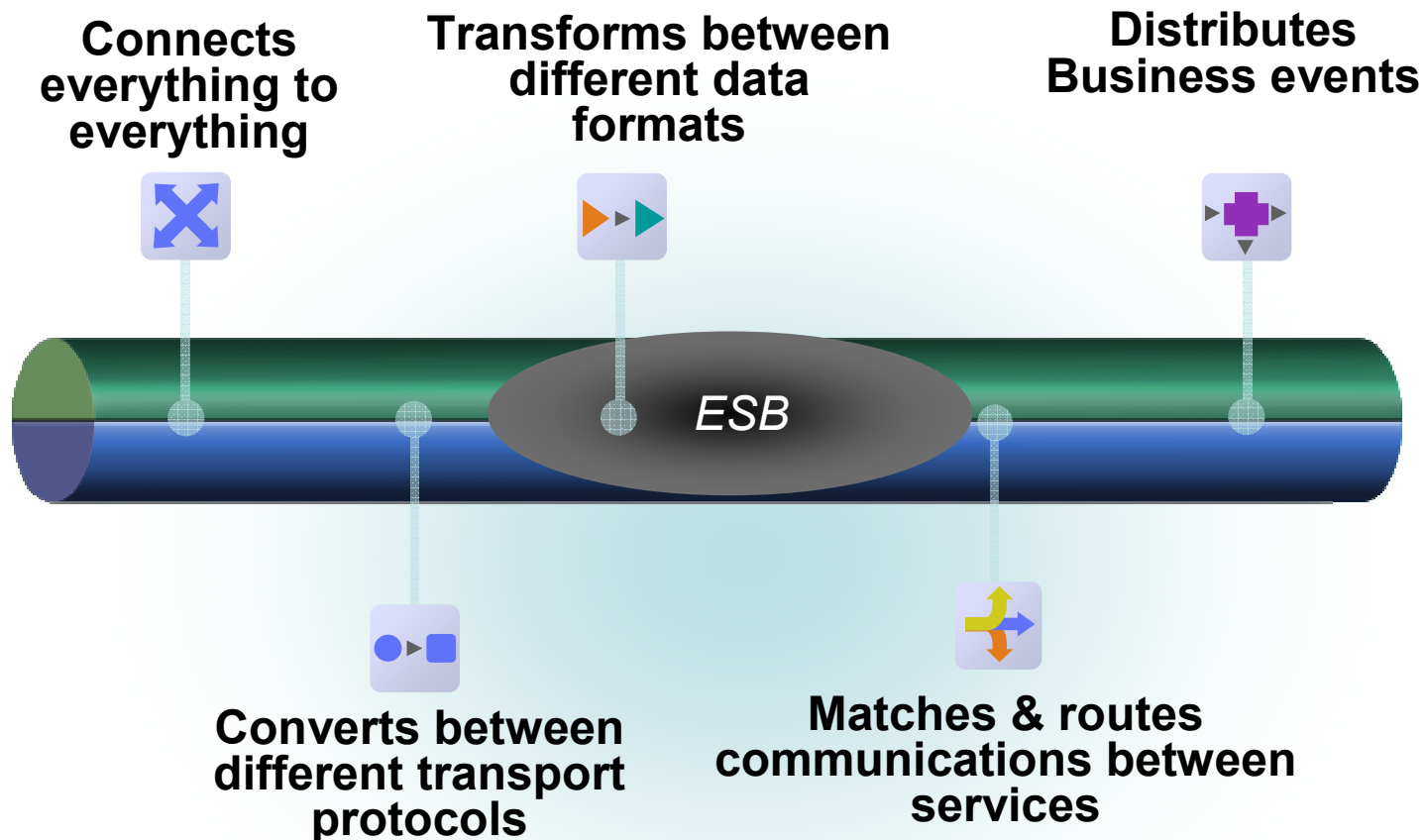**Enterprise Service Bus**

Registry/Repository
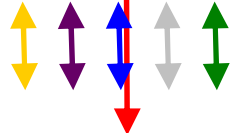
WebSphere MQ

Agility and Savings Begin with Integration
The Enterprise Service Bus (ESB)

Connects everything to everything

Transforms between different data formats

Distributes Business events

ESB

Converts between different transport protocols

Matches & routes communications between services

Optimizing Costs
- *Integrate new customers and partners up to 80% faster*
- *Improve performance more than 10x, with lower costs*
- *Achieve full ROI within as few as 6 months*

Enrichment
Messaging

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ESB Offerings from IBM WebSphere
Solutions to Meet Any and Every Demand

WebSphere ESB

Optimized with WebSphere Application server for an integrated SOA platform: service providers, registry, common tooling, extensible to BPM

ESB offerings from IBM WebSphere

WebSphere Message Broker

Platform-independent, universal connectivity and transformation in heterogeneous IT environments, with rich set of adapters and protocol bridges packaged with applications and legacy platforms

WebSphere DataPower XI50

Purpose-built hardware for simplified, self-contained deployment with hardened security, low latency, rich application integration and data transformation

What's New in ESBs?

- **WebSphere Enterprise Service Bus and WebSphere Message Broker**
  - **Patterns Based Development**
    - Powerful development capability with pattern-based development, guided task flows, mapping enhancements and simplification
  - **Service Federation Management**
    - Manage service visibility and reuse across the enterprise with WebSphere Service Registry & Repository

- **WebSphere DataPower Integration Appliance XI50**
  - **Application Optimization**
    - Simplify your IT infrastructure with new dynamic Application Optimization management
  - **BladeCenter**
    - New appliance offering which now allows customers to deploy DataPower appliance technology within new or existing IBM BladeCenter infrastructure

Service Visibility & Governance
Governs Messaging Applications and Services

Service Requests

Service Mediations

Message Queues

Messages

Queue Managers

Service Visibility & Governance
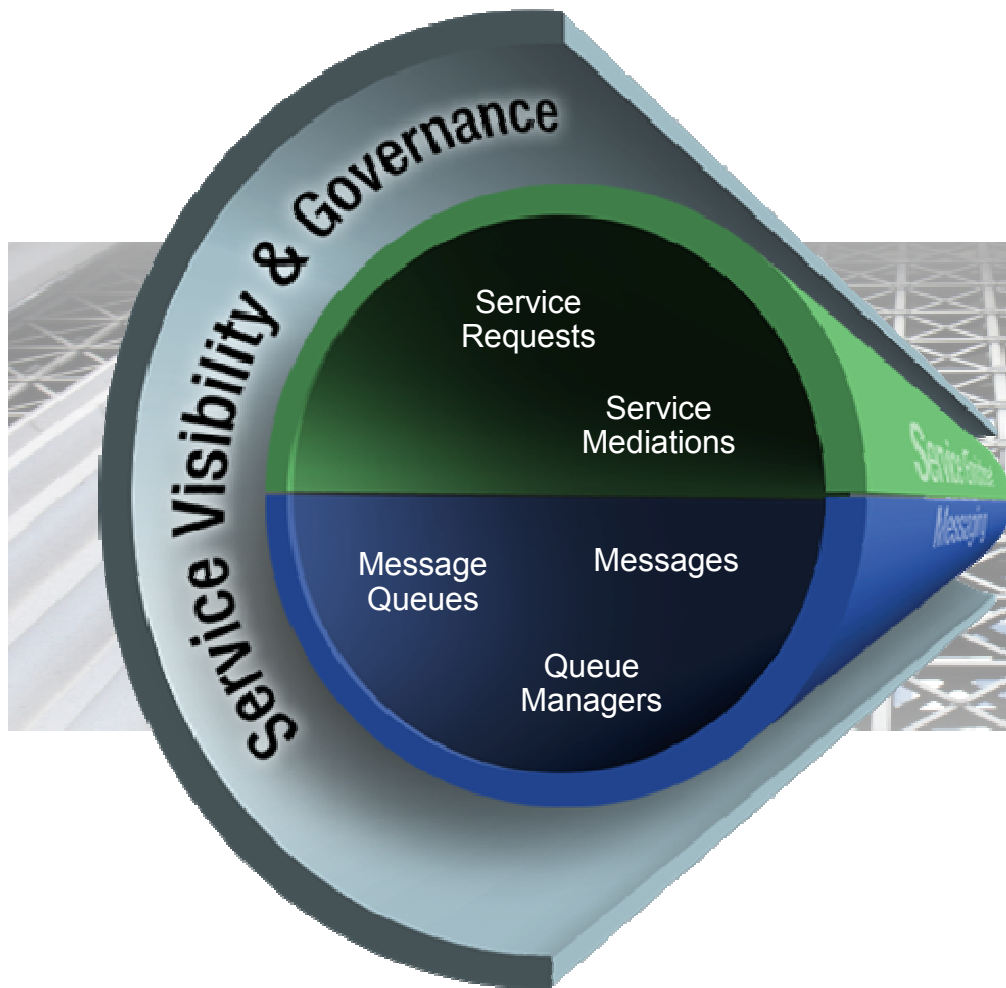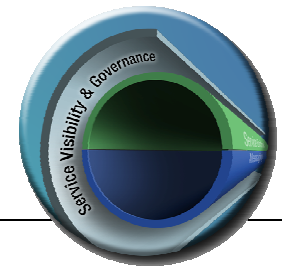
- **Manage** what you have, no matter where

- **Trust** existing services, accelerate reuse & cut costs

- **Secure** mission-critical services & documents

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Service Visibility & Governance
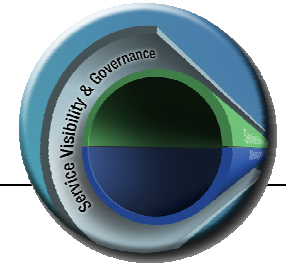
WebSphere Service Registry & Repository

Highly Prescriptive Service Lifecycle Governance

Publish	Find	Enrich	Manage	Govern

- Apply prescriptive approach to service governance with **Pre-built Governance Models**
- Accelerate reuse with **Automated Service Discovery** across heterogeneous environment
- Govern the lifecycle of Services and **Policies**
- **Interoperate** and federate with existing SOA infrastructure and service management solutions
- **Enforce policies** consistently to help achieve reliability and compliance
- Manage service visibility and reuse across the enterprise with **Service Federation**

WebSphere DataPower XML Security Gateway XS40

Centralize Web services and web application security and policy enforcement
- Purpose-built, hardened, high performance appliance for simplification of the DMZ

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Extend Connectivity to Customers & Partners

Maximizes the value and effectiveness of your ESB

- Industry transformation solutions with guaranteed quality of service

- The ability to easily manage and adopt to changing industry standards

- Real time access to disparate data and information

- A consolidated partner management platform

Optimizing Costs

- Reduce interface maintenance cost by 75%

- Reduce cost of industry standards compliance by as much as 75%

Extend Your SOA to Customers and Partners

- **WebSphere Transformation Extender**
  - Providing universal access to industry-specific data

- **WebSphere DataPower B2B Appliance XB60**
  - Drop-in solution for simplified, secure & scalable partner connectivity

- **WebSphere Adapters**
  - Standard, reusable interface points to packaged and legacy applications

- **WebSphere Partner Gateway**
  - Consolidated B2B solution to meet broad, dynamic business requirements

What's New in Extend Connectivity to Customers & Partners?

- **WebSphere Transformation Extender**

  - Expanded compatibility with the WebSphere portfolio providing users with a wider range of options to deploy with their SOA and BPM solutions

- **WebSphere DataPower B2B Appliance XB60**

  - EDIINT AS1 Support

  - Drummond Group Certification

- **WebSphere Adapters**

  - Expanded portfolio integration and improved consumability through enhanced tooling and user interfaces
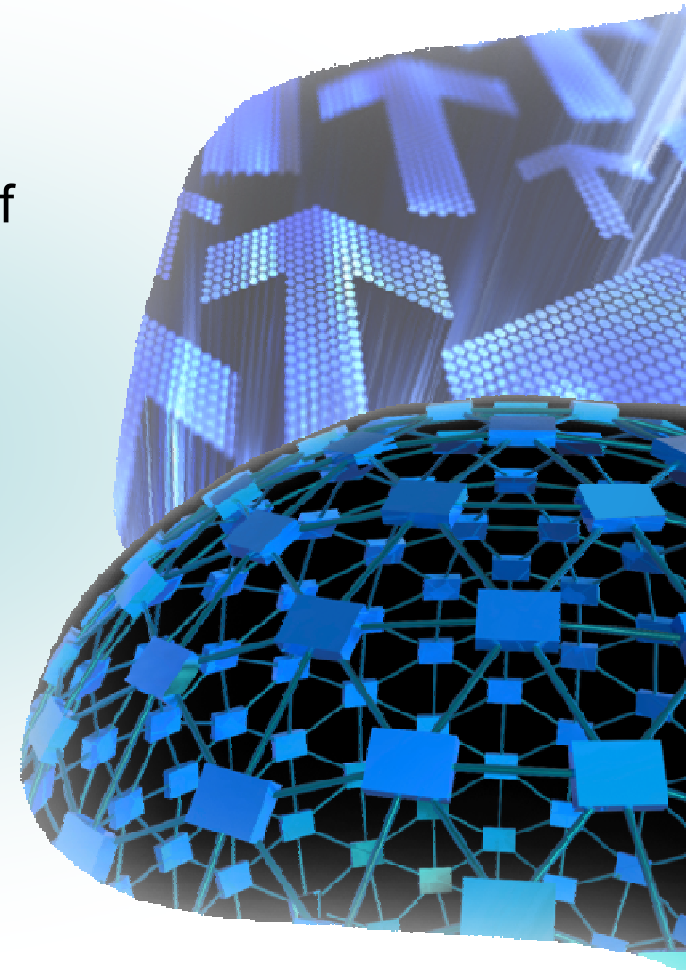
Delivering the Most Connected SOA
Product Release Highlights

- **ESB Messaging & Enrichment**
  - WebSphere MQ V7.0.1
  - WebSphere MQ File Transfer Edition V7.0.2
  - WebSphere MQ Low Latency Messaging V2.4
  - WebSphere DataPower Low Latency Appliance XM70 3.8.1
  - WebSphere Enterprise Service Bus V7
  - WebSphere Message Broker V7
  - WebSphere DataPower Integration Appliance XI50 V3.8.1

- **Service Visibility & Governance**
  - WebSphere Service Registry and Repository V7
  - WebSphere Service Registry and Repository Advanced Lifecycle Edition V7
  - WebSphere DataPower Security Gateway XS40 V3.8.1

- **Extend Connectivity to Partners & Customers**
  - WebSphere Transformation Extender V8.3
  - WebSphere DataPower B2B Appliance XB60 V3.8.1
  - WebSphere Adapters V7

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IBM Better Enables Business Agility by adding industry leading Cloud integration capabilities
Recently Announced IBM Acquisition of Cast Iron Systems

Enhancing clients' time to value ...integrate in days

Simplifying the ***integration*** of Cloud applications and on-premise applications

Ensuring client success by leveraging SaaS and Cloud at the lowest cost

Pressures on Government Systems Today
Siloed, Complex and Unfocused

- Departments and other branches of local government are disconnected with manual processes
  - Public Services: fragmented, uncoordinated, poor sharing of resources and inconsistent data
- Government mandated change can be costly, and time consuming
  - New Services deployment delays
- Focus on service provision
  - Services and applications not designed for citizen needs – built for service provider
- Concerns over value for money and trust
  - Older decaying infrastructure impacting service quality, leading to damaging failures in security and behaviours

Focus for Smarter Government

- Changing demographics

- Accelerating globalization

- Rising environmental concerns

-

- Evolving societal relationships

- Growing threats to social stability and order

- Expanding impact of technology

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Addressing the need for change in Public Sector

- Help optimize costs by automating processes
  - **Tax and Revenue Collection** : Move to online payments
  - Capture insights for effective decisions
- **Disaster Recover/ Emergency Planning** : Ensure effective communication between local services
  - Adapt and respond dynamically to marketplace change
- **Innovation for new services** : Reuse existing functions to deliver new services faster
  - Help increase productivity using business modeling strategies
- **Environmental Concerns and Benefits** : Change processes where necessary following commercial best practices
  - Support customer service by placing customers at the center of your business
  - **Social Services and Education Provision** : Rework communication and interaction with customers and partner interactions driven by needs