



e-business software

The difference  
is WebSphere.

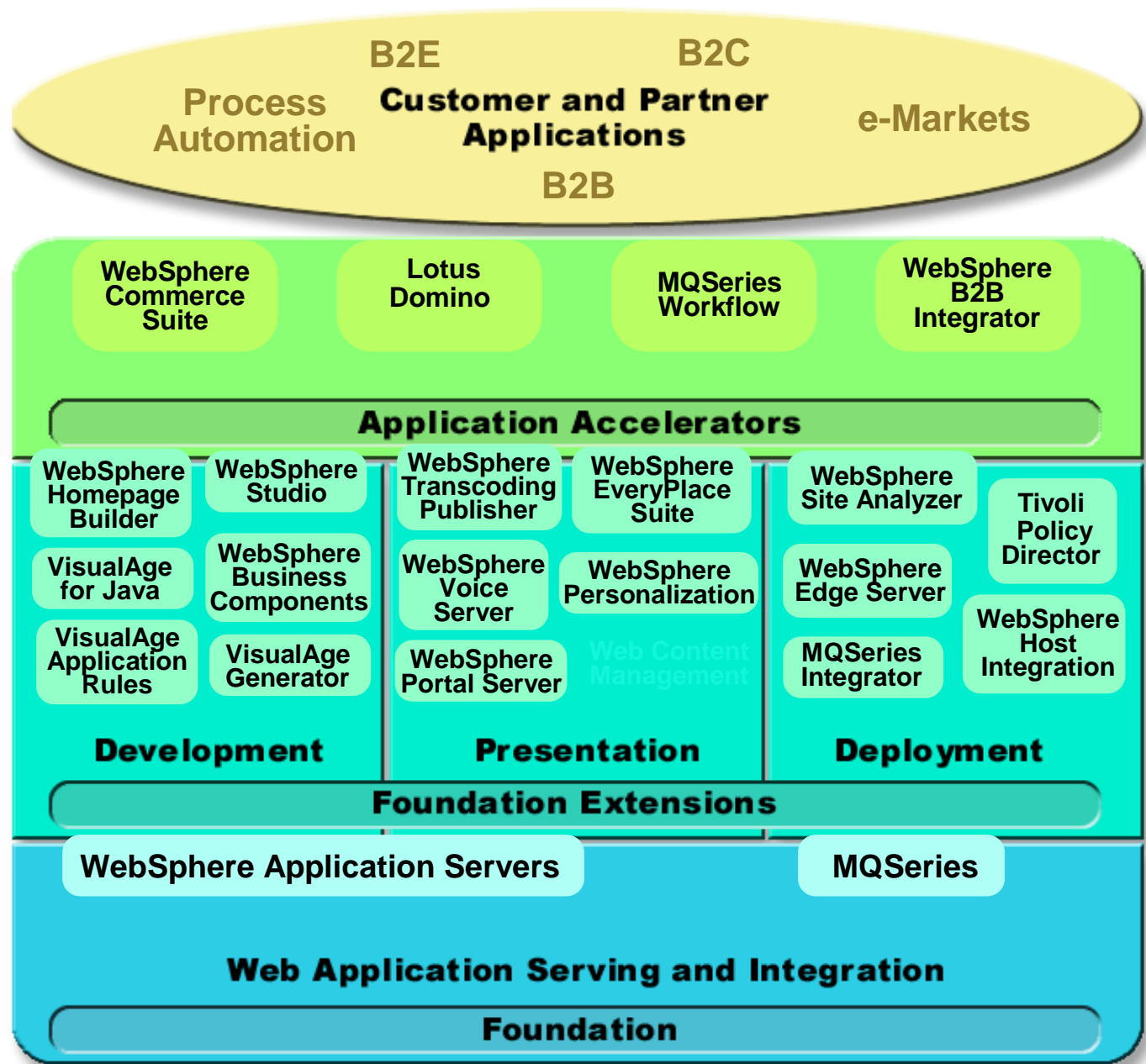
# e-business Integration with the WebSphere Software platform

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# WebSphere software platform for e-business

The difference is WebSphere.





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# e-business integration with WebSphere and the MQ family

## ■ Contents

- ▶ Asynchronous messaging
- ▶ The MQ family
  - Base MQ
  - MQSI
  - MQWF
- ▶ Integration choices: MQ, JMS
- ▶ Architectural choices
- ▶ Customer reference
- ▶ Where to find more info

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## What is asynchronous messaging

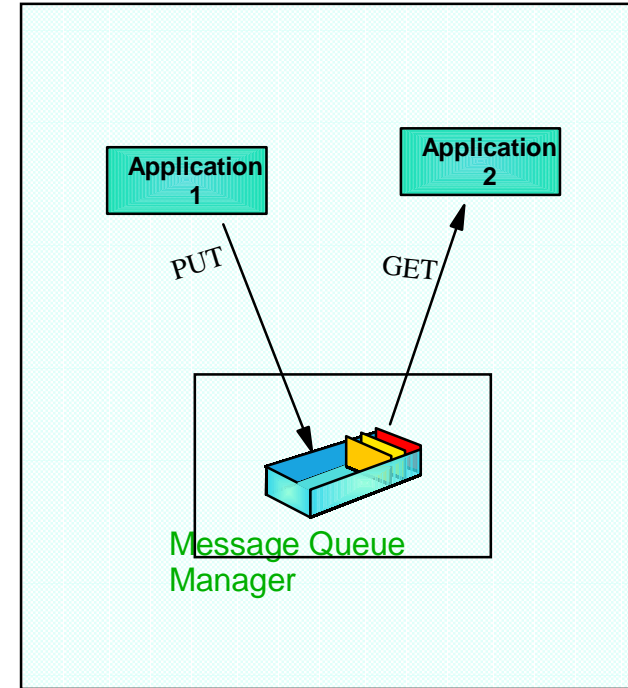
- **"Assured" delivery**
- **Usually fairly quick (sub-second)**
- **Transactional**
  - ▶ **Boundary transactions (not end to end)**
- **Simple APIs (e.g. put, get) in many languages**
- **Platform and network independent**
- **Any size message (up to megabytes and beyond)**
- **Two modes -**
  - ▶ **Fire and forget**
  - ▶ **Request reply**
- **Useful headers include message and correlation ids**



# Two types of messaging

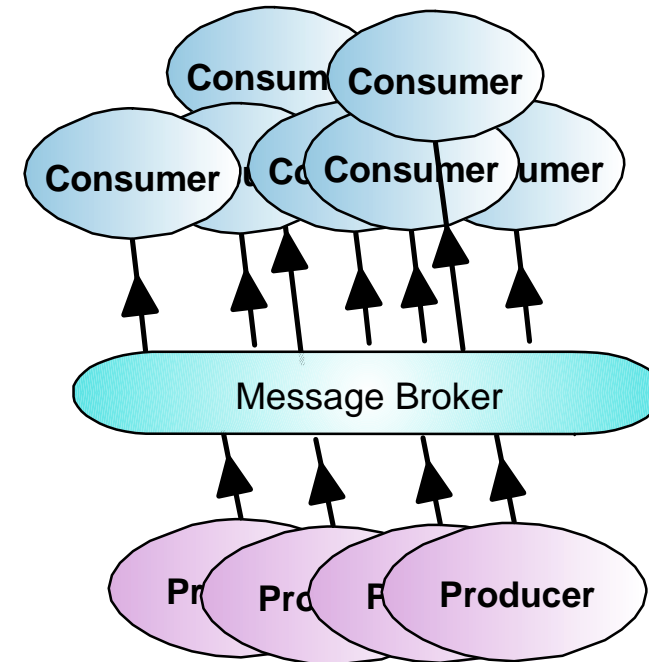
- **Point to point**

- ▶ The sender identifies the destination by sending to a queue



- **Publish/Subscribe**

- ▶ The producer is unaware of the subscribers
- ▶ Many-to-Many
- ▶ Can subscribe on topics, or based on content





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## MQSeries family

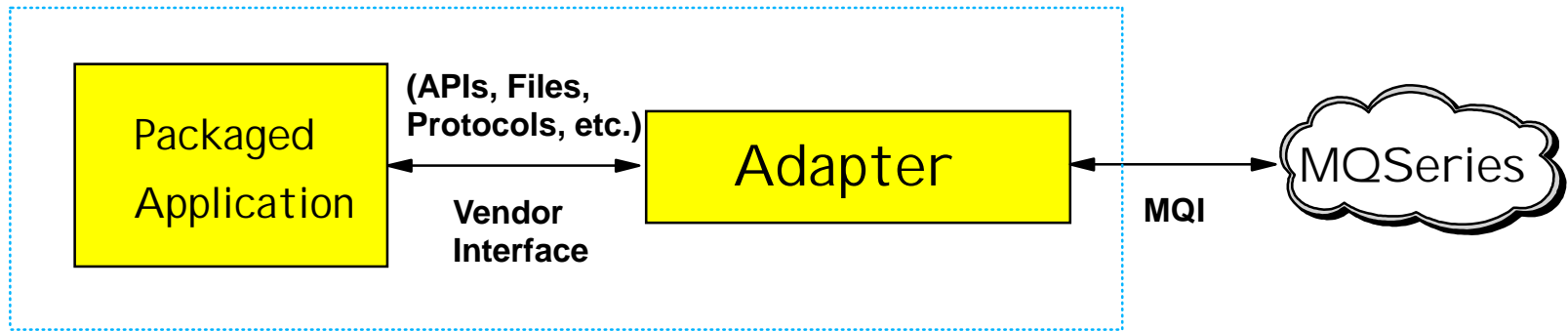
- **Base**
  - ▶ **Application to Application integration**
  - ▶ **P2P and Pub/Sub**
- **Adapters**
  - ▶ **Extend the base to easily connect to legacy apps**
- **Integrator**
  - ▶ **Enterprise Application Integration (EAI)**
- **Workflow**
  - ▶ **People and Application based workflow**
  - ▶ **Business process automation**

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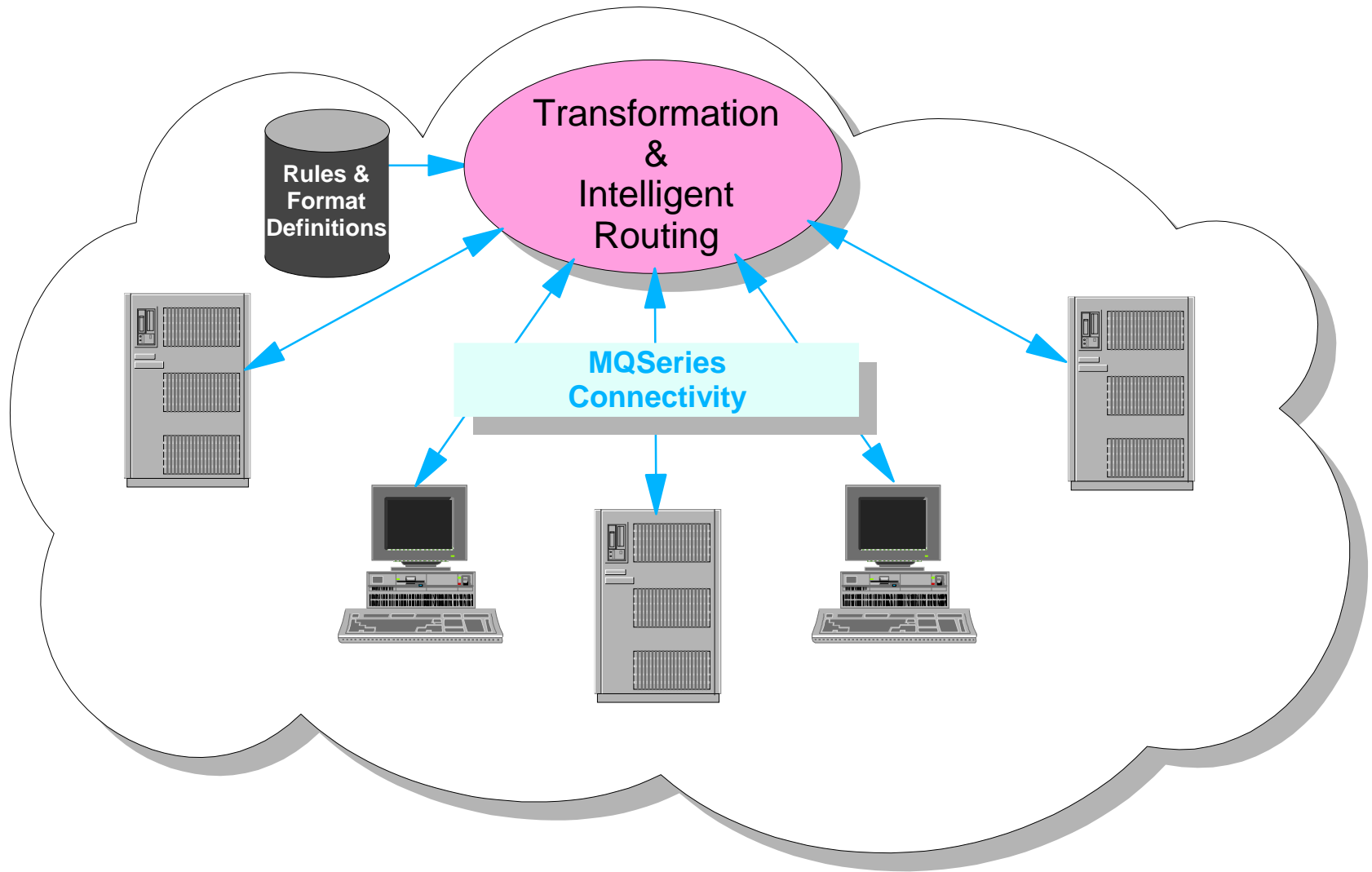


# What is an adapter?



- An adapter is MQSeries-enabled "Bridge" code that communicates between MQSeries and the target application
- A very simple adapter will simply pass information between the two environments
- A more sophisticated adapter may have many additional functions:
  - Message Transformation, Send-Reply Support, Transactional Support, Rules, etc.
- Note: Some applications do not have well-defined external interfaces or may not have message-based interfaces

# MQSeries Integrator - message broker



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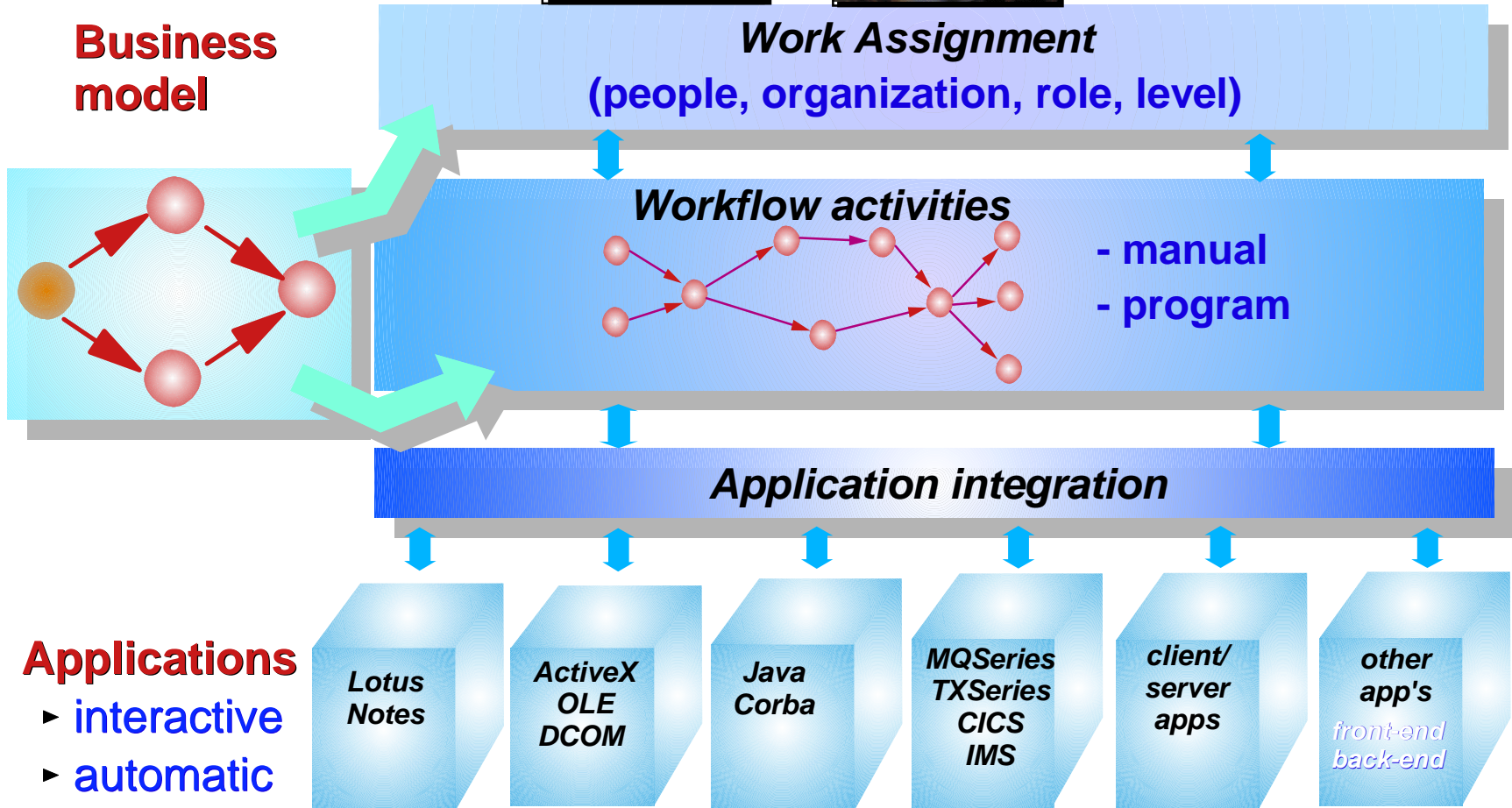
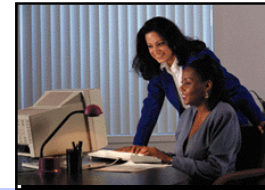
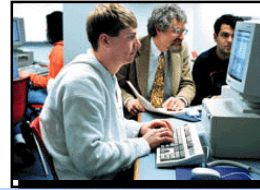




## Broker benefits

- **Hub and spoke reduces number of connections**
- **Central management of formats, rules and logic**
- **Can understand and create multiple complex message formats:**
  - ▶ **XML**
  - ▶ **Fixed field formats (e.g. COBOL)**
  - ▶ **Delimited (e.g. comma-delimited)**
  - ▶ **Repeating and recursive (e.g. SWIFT)**
- **Easy to add new services**
- **Single point to change when systems change**
- **Declarative, rules based rather than programmatic**

# Business Process Integration





## WebSphere and connectivity

- **WebSphere has excellent synchronous connectors to backend systems**
  - ▶ **Enterprise Access Builders**
  - ▶ **Can be used with WebSphere Application Server to connect to CICS, IMS, MQ, SAP, 3270, Domino etc.**
  - ▶ **When run under WS Enterprise provide a higher level of service**
    - connection pooling
    - and transactions - for CICS, IMS and MQ
- **These are "programmatic", based on the Common Connector Framework**



# Synchronous versus Asynchronous

## ■ Synchronous

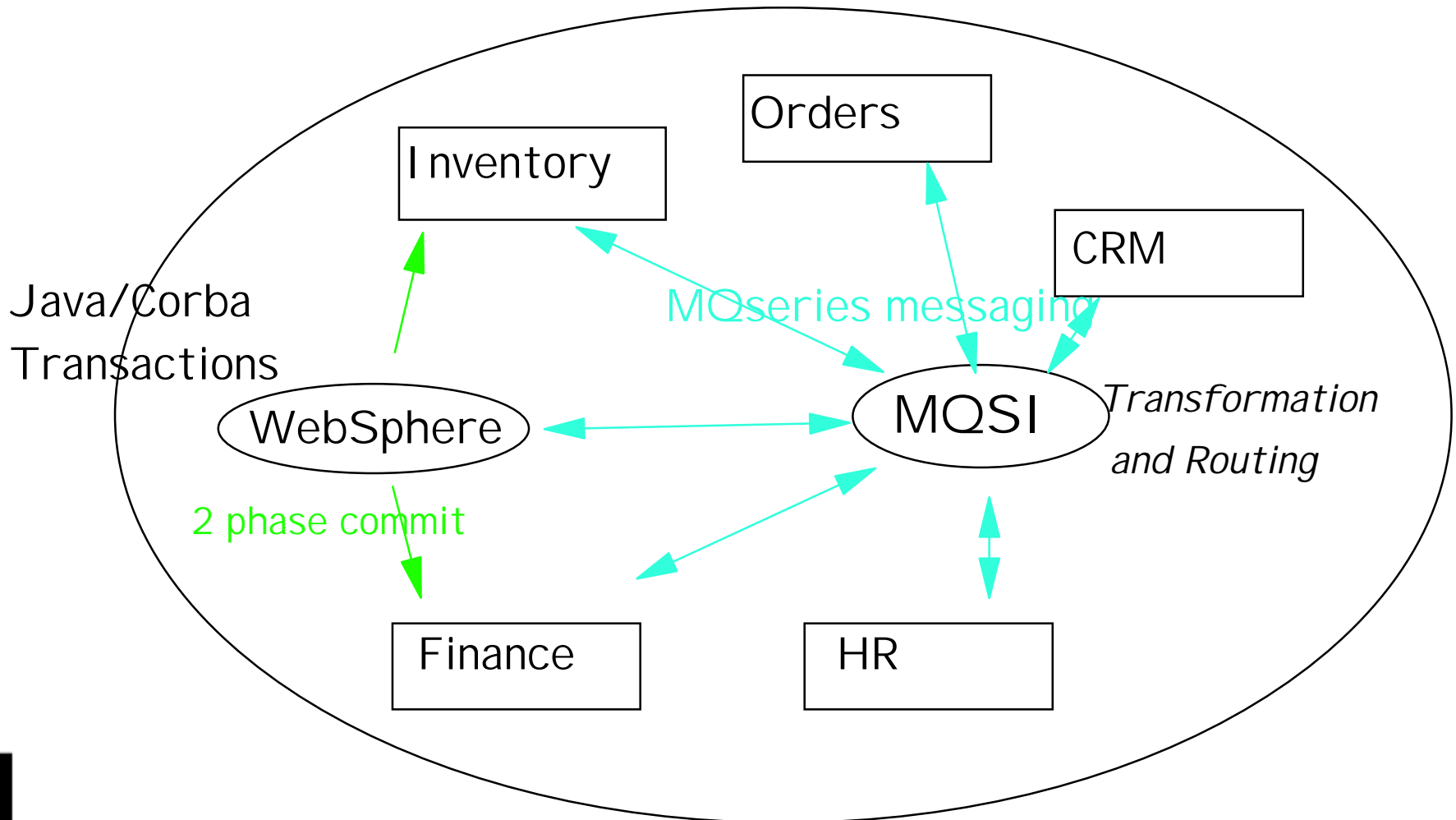
- ▶ Can be end-to-end transactional
- ▶ Suitable for LAN connected systems
- ▶ Powerful, with excellent builder tools
- ▶ Good for highly-available systems
- ▶ Suitable for islands of connectivity

## ■ Asynchronous

- ▶ Suitable for large scale integration
- ▶ Wide area
- ▶ Resilient
- ▶ Connect to almost any system

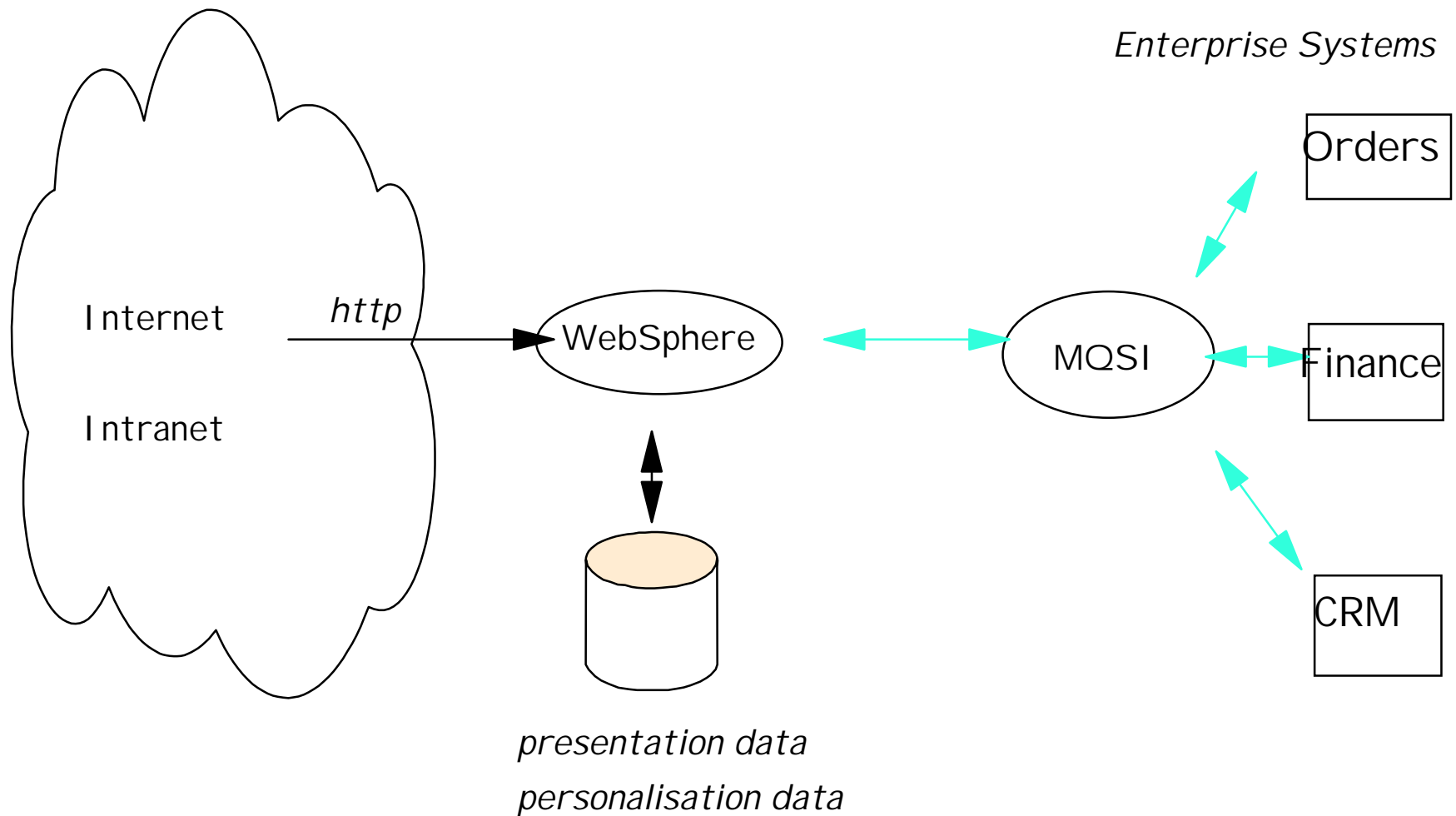
# Integration of the Enterprise - EAI with WebSphere + MQSI

Enterprise with many systems



# e-Business Integration - WebSphere + MQSI

Internet access to Enterprise systems



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## Why put WebSphere and MQSeries together?

- **e-business is about**
  - ▶ More transactions,
  - ▶ at less cost
- **WebSphere drives more transactions**
  - ▶ multiple channels
  - ▶ personalised content
  - ▶ also at less cost (web-based)
- **MQSeries family reduces cost**
  - ▶ business process automation
  - ▶ but also drives transactions - e.g. single customer view
- **And of course - B2B integration**

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# How do you use asynchronicity with the web?

- **Many people use it synchronously**
  - ▶ don't really trust it
  - ▶ wait for a response
- **One approach**
  - ▶ **For the transaction (e.g. buy instruction)**
    - Send the message
    - Return a page to the user saying it is sent, including a link to a status page
    - The user can bookmark this and check on status at any time
  - ▶ **This approach requires careful thought in the design stage at every point, but adds significant resilience to the design**





# Client Messaging APIs

## ■ Message Construction

- ▶ Roll your own
- ▶ Java Record IO
- ▶ Java Message Service
- ▶ Common Message Interface

## ■ Message Transmission

- ▶ MQSeries MQI
- ▶ CCF
- ▶ Java Message Service
- ▶ Application Message Interface



## Which API?

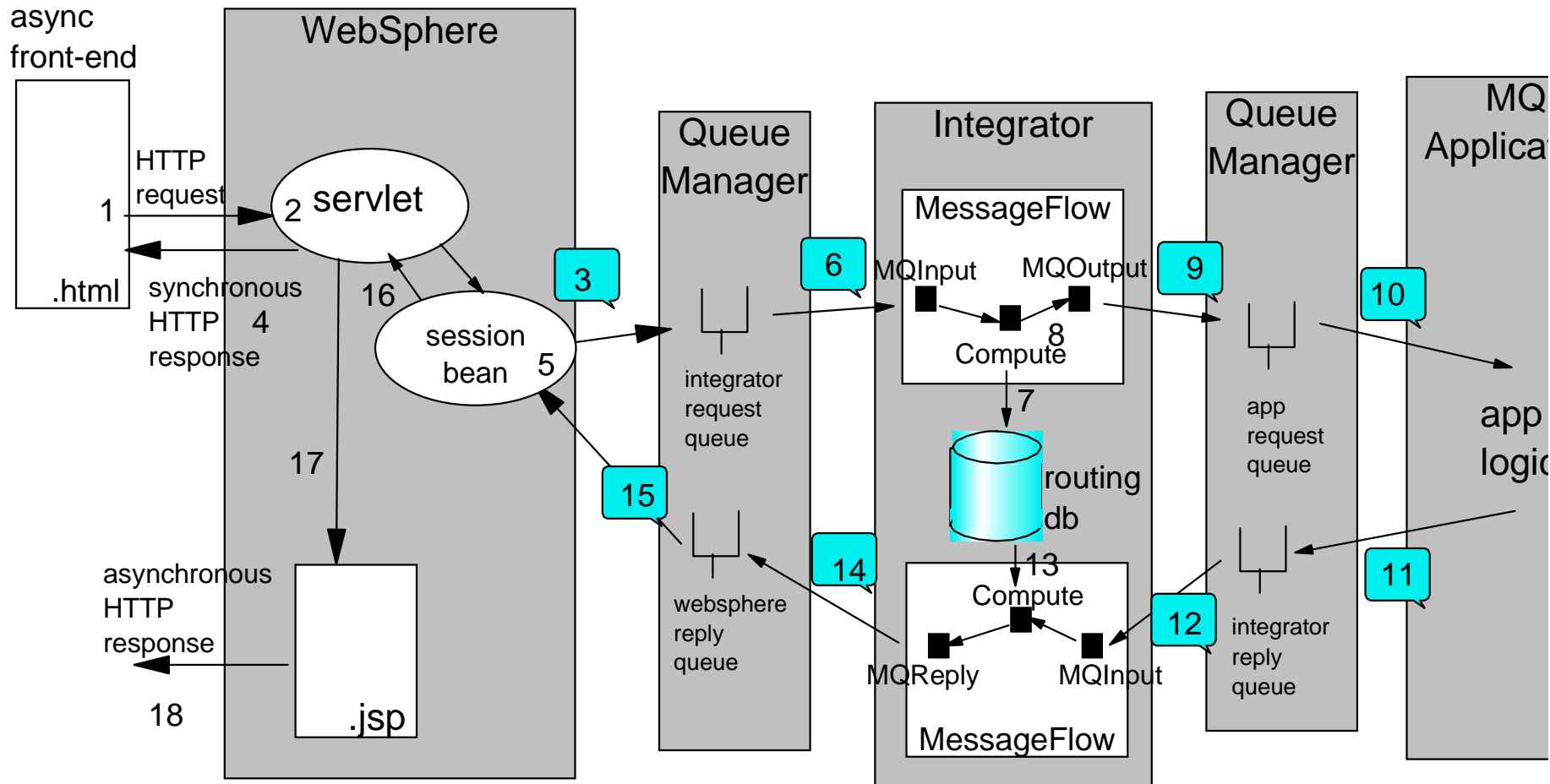
- **Out of all the possibilities, the most common choices are:**
  - ▶ **MQI**
    - Good for existing MQ programmers
    - Very powerful
    - Fast
  - ▶ **JMS**
    - Open standard
    - Part of J2EE
    - More functional - e.g listeners
    - Slightly less performant
    - Will become transactional under WebSphere Advanced
- **Both currently need connection pooling code**



## How?

- **Simple - servlets can:**
  - ▶ put messages (fire and forget / request-reply)
  - ▶ spawn listener threads
- **EJBs are not "allowed" to talk to MQ**
  - ▶ can do all the things servlets do as well
    - but not if you are strict about interpreting the EJB specification
  - ▶ The EJB 2.0 specification allows JMS communication from EJBs

# Example scenario





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## Reference customer

- **Codan**
  - ▶ Danish insurance company
  - ▶ WebSphere 3.02 and MQSeries base
  - ▶ Buy insurance on the web
- **Use XML messages over MQ**
  - ▶ Between front and back-end tiers
  - ▶ From the web-presentation layer to a personalisation engine





# The next piece: Web Services

- **Web services perform encapsulated business functions:**
  - ▶ From simple request-reply to full business process interactions
    - Stock quotes/stock charting
    - Credit card verification/payment processing
    - Integrated travel planning
    - RFQ/bid process/auctions
  - ▶ Can be mixed and matched to create complete process, product
  - ▶ Enable dynamic, just-in-time integration with decreased human interaction
- **Web services characteristics:**
  - ▶ Self-contained, modular applications
  - ▶ Use open standards for description, discovery and integration
  - ▶ Platform and implementation neutral
  - ▶ Programmatically connect business processes together (application to application)
  - ▶ Typically transactional, requiring integration with existing systems
- **Two kinds:**
  - ▶ New
  - ▶ Extending or repurposing existing applications



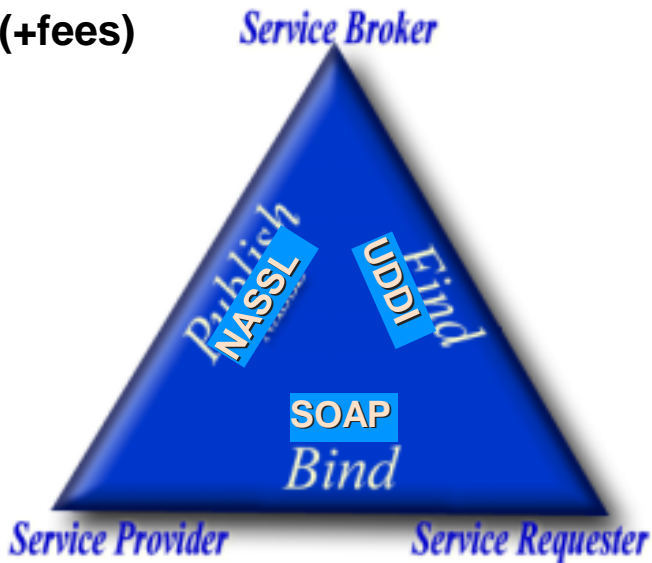
# Benefits of Web Services

## eMarketplaces, B2B Portals

- Scale membership faster
- Provide premium services more easily
- Connect to other brokers to drive transactions (+fees)

## Developers

- Speed application development
- Better use of resources
- Accelerated ROI
- Opportunity to publish new services



## Sellers

- Participate in emarketplaces more easily
- Expand reach
- Syndicate services for increase in ROA

## Buyers

- Participate in emarketplaces more easily
- Implement private broker (e-procurement hub) to more easily connect -- even small -- suppliers



## More information

- [www.ibm.com/websphere](http://www.ibm.com/websphere)
- **e-business Patterns**
  - ▶ <http://www.ibm.com/software/developer/web/patterns/>
- **SW-W102 Patterns: U2B using WebSphere Advanced and MQSI**
  - ▶ look out for the redpiece towards the end of year, and updates to the patterns site
- **JMS for MQSeries is available as a SupportPac from the website (MA88 - free download)**
  - ▶ Includes the book "MQSeries using Java" which covers both MQI and JMS
- **JMS specification from [www.javasoft.com](http://www.javasoft.com)**
- **Look out for major web services announcements shortly**