IBM Software Group

On Demand access to CICS

or How to integrate existing 'legacy' applications into an On Demand infrastructure

@business on demand software

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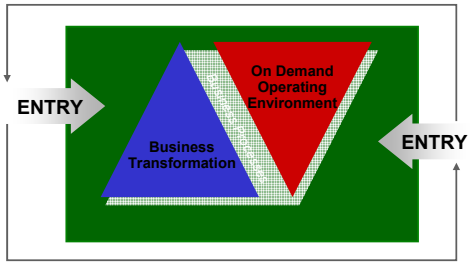
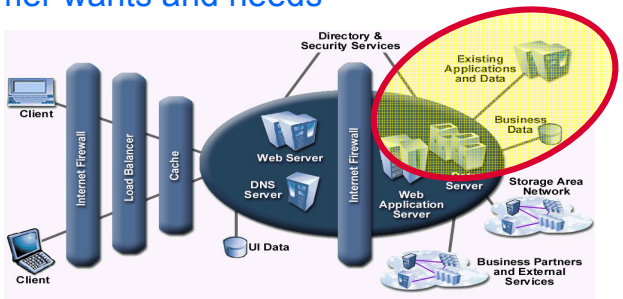
Agenda

- **On Demand Operating Environment Introduction**
- **CICS Assets and Implementations**
- **Summary**



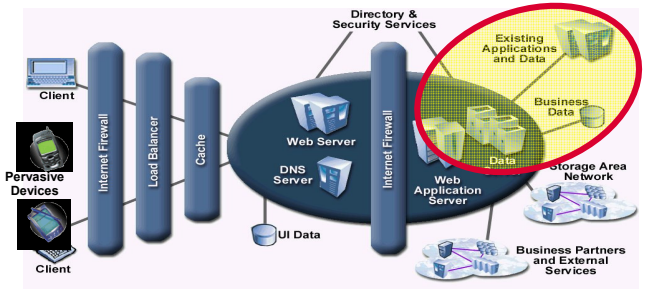
Customer wants and needs



- **Increased return on existing investments**
  - improved reuse of legacy assets
  - simplified access & better integration with Websphere Application Server
- **Lower total cost of ownership**
  - improved AD productivity
  - easier systems management
- **Solutions which are scalable, available, reliable and secure**

CICS – Fulfilling these Needs

CICS Transaction Server

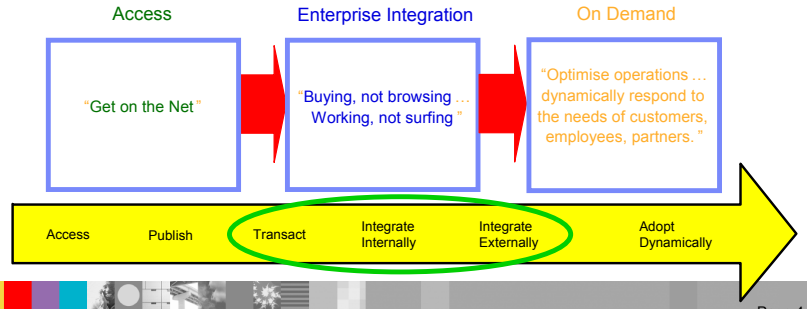


Over 30 years and $1 Trillion invested in Applications ... IDC
Over $1 trillion processed/day
Over 30 billion transactions/day
Most people use CICS

Combining the reliability and security of CICS software with the flexibility of e-business technology

Phases of On Demand Adoption

- **Provide static information to a browser**
- **Provide dynamic information to a browser**
  - with calls to backend systems (eg. CICS or IMS TM)
- **New Internet Applications**
- **Business to business "transactional" processing**
- **Publishing of Web Services**

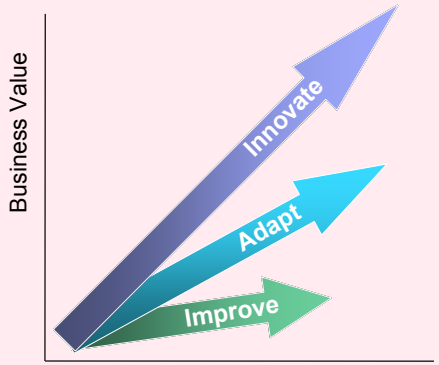


Three Styles of Transformation

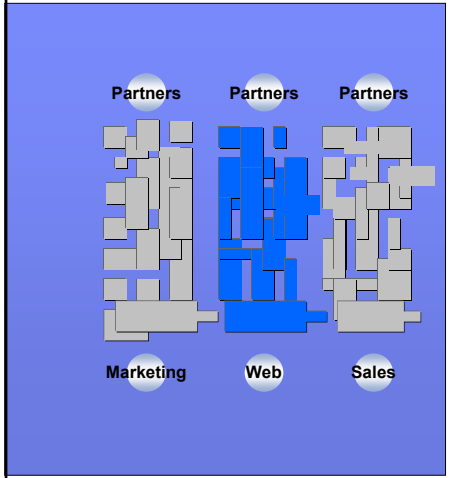
- **Improve**
  - re-face applications to enhance the user experience
- **Adapt**
  - re-use applications as part of a larger solution
- **Innovate**
  - re-engineer applications to reflect business processes

The basic business processes have not changed. So all three styles of transformation should exploit existing applications.

"To move towards an on-demand business, customers need to transform their technical infrastructure from unique, single purpose applications to shared resources"



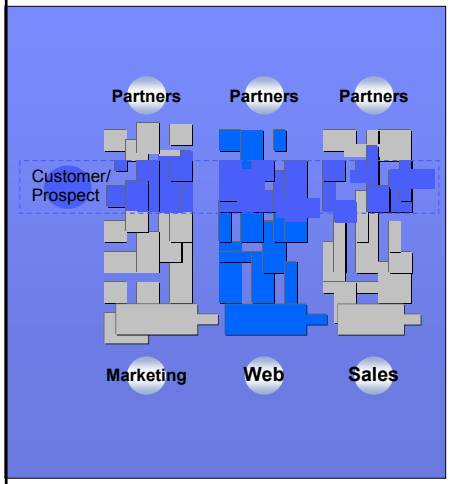
Your Reality: Functional Automation



Historical limitations:

- Monolithic applications can't be reused
- Ad hoc integration creates connections that are difficult to change/maintain
- Lack of standards limits ability to deliver meaningful interoperability

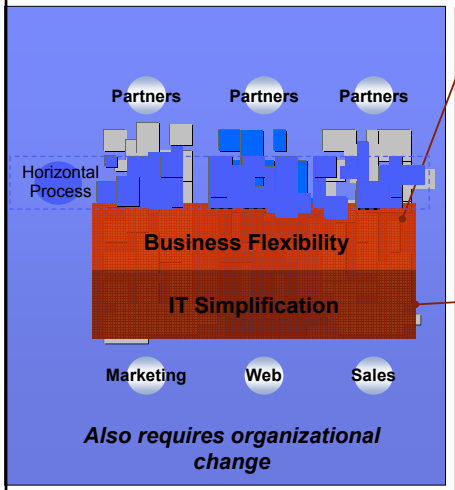
The Growing Reality: Horizontal Process Integration



Advances that make it possible:

- Standards for creating services and enabling them to communicate are agreed upon by major vendors
- Infrastructure that supports self-defined, loosely coupled services has emerged
- Tools to incorporate existing assets are available
- Automation and virtualization of systems resources readily available

On Demand Operating Environment and Legacy



On Demand Operating Environment

Integration

Business flexibility through integration of people, processes and information within and beyond the enterprise

Adapters/connectors for legacy

QoS considerations (performance, transactions, security …)

Services Oriented Architecture

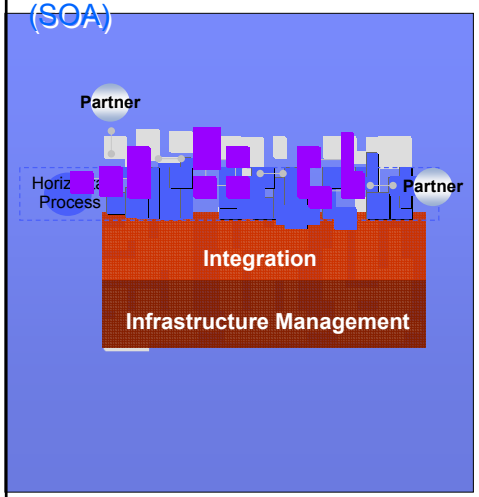
Infrastructure Management

IT simplification through automation and virtualization of resources …

Automation (availability, security, optimization, provisioning …)

Consolidated view of legacy and new

What makes this possible? A service-oriented architecture (SOA)



What is SOA?

SOA enables flexible connectivity of applications or resources by:

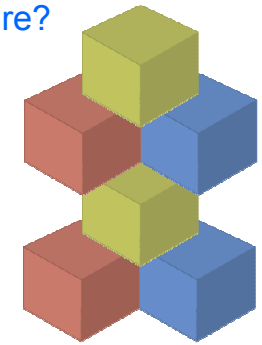
- Representing every application or resource as a service with a standard interface
- Enabling them to exchange structured information

Why do you care?

Provides the flexibility to treat business processes and the underlying infrastructure as defined components that can be mixed and matched at will

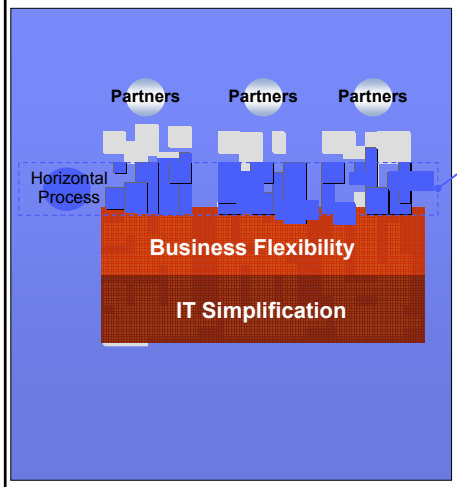
What is a Service Oriented Architecture?

- **An approach for building distributed systems that deliver application functionality as services to either end-user applications or other services**
  - An architecture that leverages open standards to represent software assets as services.
  - Provides a standard way of representing and interacting with software assets
  - Individual software assets become building blocks that can be reused in developing other applications
  - Shifts focus to application assembly rather than implementation details
  - Used externally to integrate with applications outside of the Enterprise



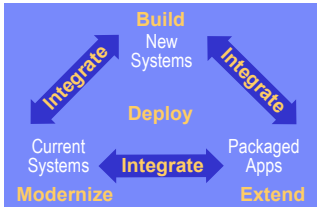
"A system architecture in which application functions are built as components (or services) that are loosely-coupled and well-defined to support interoperability and to improve flexibility and re-use".

Software Development is Key



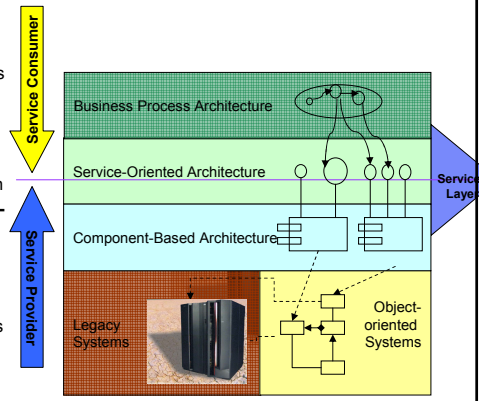
Software Development

Integrating & automating horizontal business processes:
- Unique to each business
- Competitive advantage



Why legacy services ?

- **Leverage existing assets**
  - layer of abstraction that wraps existing assets as services that provide business functions
- **Easier to integrate and manage complexity**
  - integration point is the service specification and not the implementation
- **More responsive and faster time-to-market**
  - ability to compose new services out of existing ones
- **Reduce cost and increase reuse**
  - loosely coupled core business services can be more easily used and combined based on business needs
- **Be ready for what lies ahead**
  - better flexibility and responsiveness

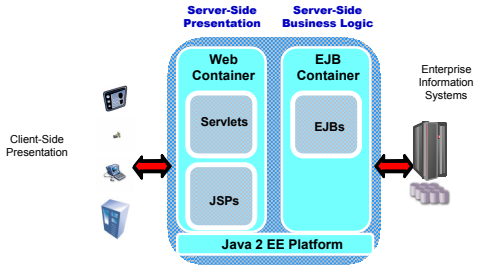


The WebSphere Software Platform

- **Web infrastructure software that helps companies at each stage of On Demand development**
  - from startup,
  - to integrating and exploiting business processes,
  - to handling high volume Web transactions.

WebSphere Application Server

A next-generation application server that simplifies build-to-integrate tasks, accelerates application development, and enables dynamic application flexibility.

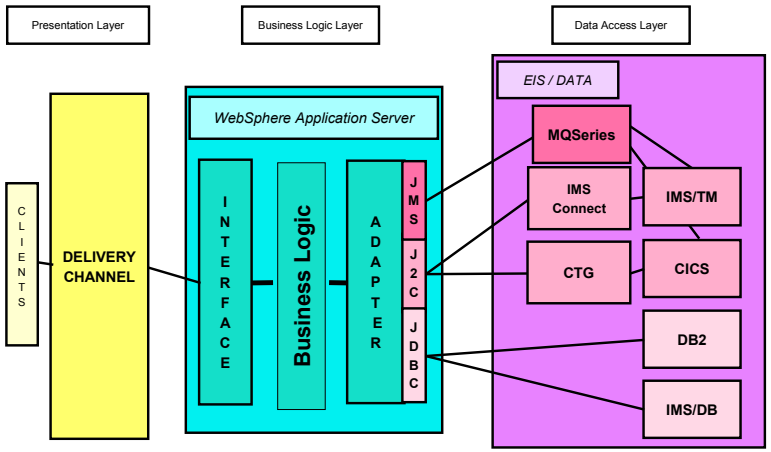


Application developers focus on business logic (components)

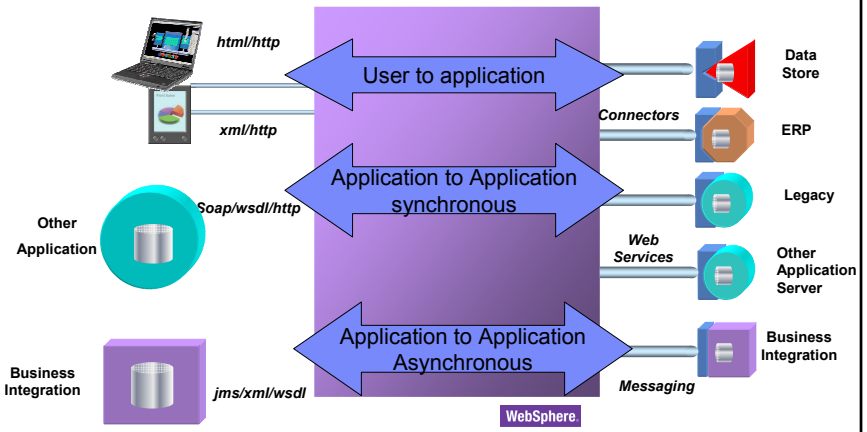
Containers and connectors conceal complexity and promote portability

Components inherit qualities of service of the underlying platform

J2EE - 3-tiered Distributed Computing Architecture



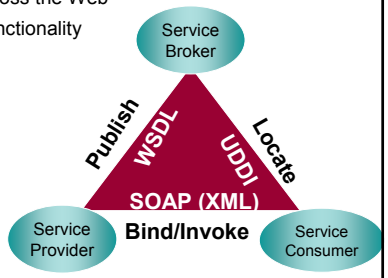
WebSphere - Foundation for Integration



Enterprise Web Services

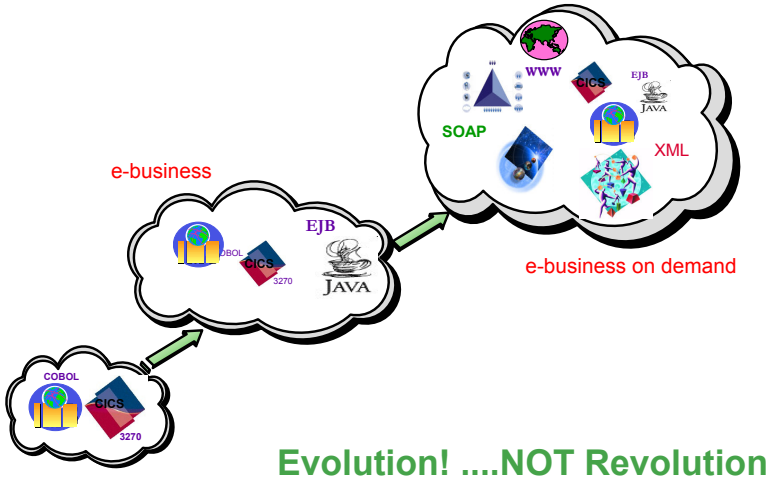
The building blocks of the future

- **Service model used by WSADIE and WSED**
- **Self-contained, self-describing modular applications**
  - Can be published, located, and invoked across the Web
  - Are reusable building blocks of business functionality
- **Use simple, standard interfaces for**
  - Publishing and discovering services
  - Communicating between service provider and service consumer in a platform-independent way (XML and SOAP)



- **Web Service is an extension of the EJB enablement**

CICS On Demand Strategy



Evolution! ....NOT Revolution

Agenda

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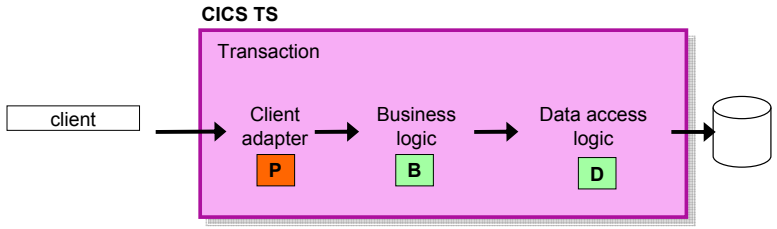
- **CICS Assets and Implementations**
- **Summary**

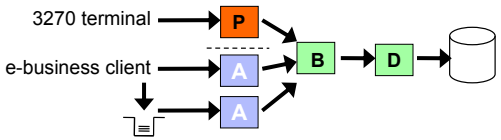
What assets in CICS can be transformed?



- **Best practice in CICS application design is to separate key elements of the application, in particular:**
  - Client adapter or presentation logic
  - Business logic
  - Data access logic

Access to CICS programs – Adapter Style

- **Typical e-business clients**
  - Web browser
  - Java servlet or EJB
  - Web Services SOAP client
  - C# client in Microsoft .NET
  - WebSphere MQ client
- **Adapter/connector can be**
  - External (e.g JavaBean using CICS Transaction Gateway classes)
  - Internal (e.g CICS XML-aware program)
  - Written or generated by tools



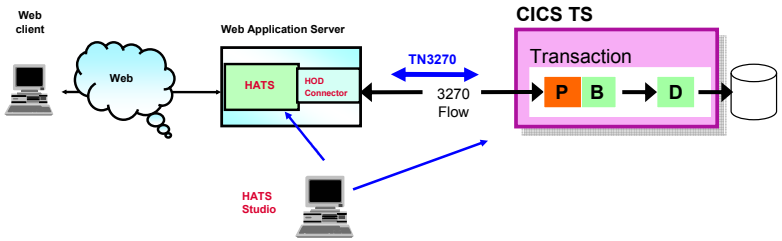
P Presentation logic

A Adapter/connector

B Business logic

D Data access logic

Web-to-Host using HATS



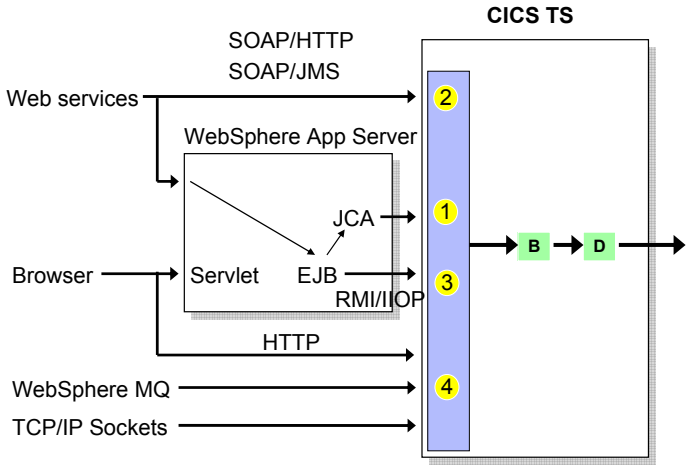
- **Host Access Transformation Server (HATS)**
  - Rules-based Web-to-Host transformation engine which dynamically converts 3270 screens in HTML pages
  - Can generate Web services or other Java objects from host transactions
  - Server based on WebSphere and 3270 HOD Connector
  - HAST Studio based on WebSphere Studio (WSAD)

*http://www.**ibm.com/software/webservers/hats***

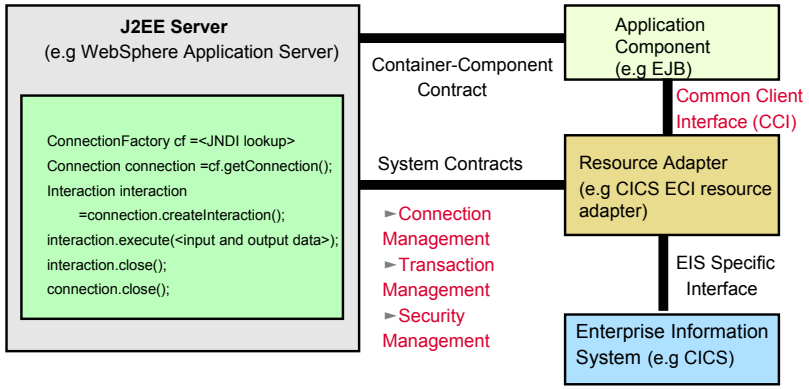
Which architecture should I use to connect to CICS?

- **Standard architectures provide a choice of options and support in CICS and tools**
  1. JCA (J2EE Connector Architecture)
  2. SOAP (Simple Object Access Protocol)
  3. Java RMI (Remote Method Invocation)
  4. JMS (Java Messaging Service)
- **Lots of factors including …**
  - Security
  - Transactionality
  - Performance
  - Architectural limits
  - Synchronous or asynchronous invocation
- **See redbook 'Architecting e-business Access to CICS'**

Which architecture should I use to connect to CICS? …

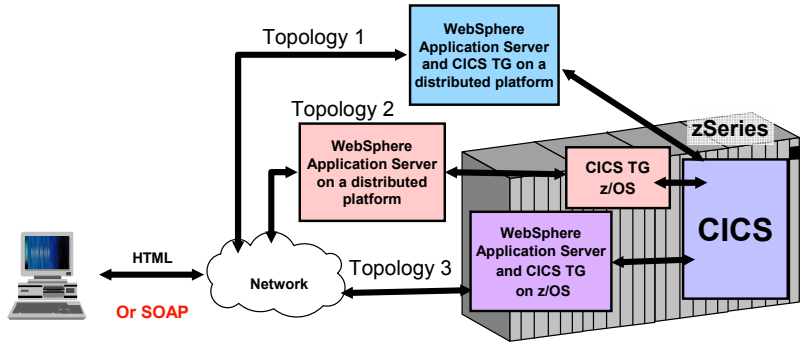


J2EE Connector Architecture (JCA) for CICS



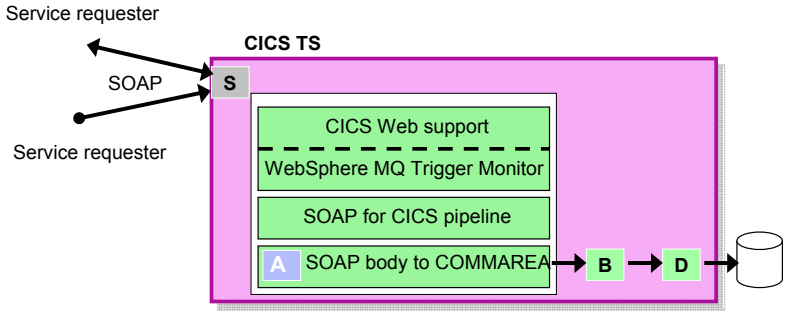
- **Standard for connecting from J2EE to EIS**
- **Resource adaptor is provided by EIS**
- **CICS resource adapters are provided by CICS Transaction Gateway**

JCA platform and topology options



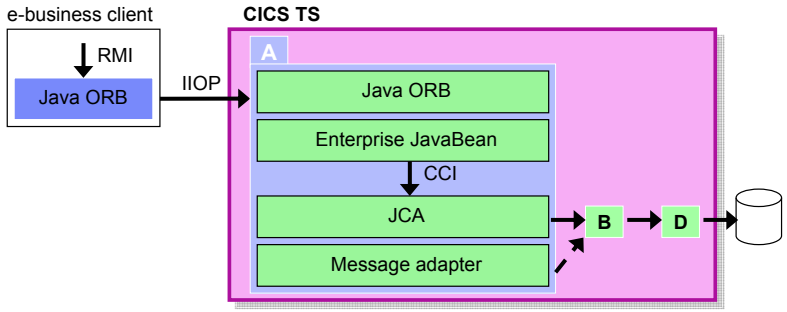
- **Qualities of service vary according to topology**
- **See white paper** '*Integrating WebSphere Application Server and CICS using the JCA*'

SOAP – Web Service deployed in CICS

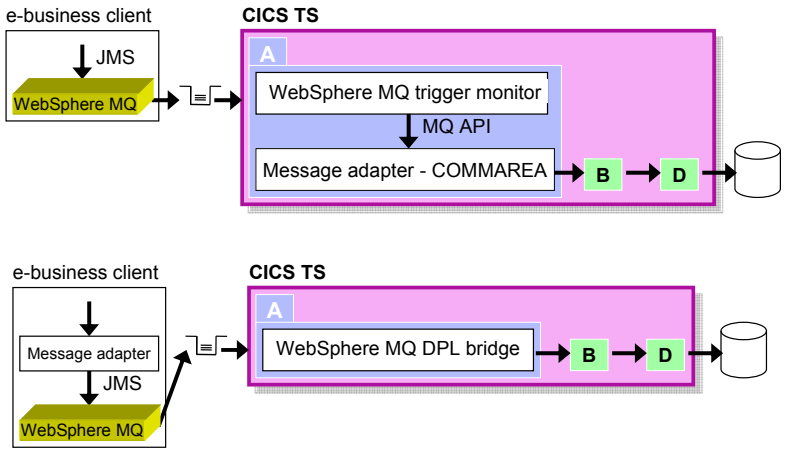


- **Service can be accessed using SOAP/HTTP or SOAP/JMS**
- **SOAP for CICS pipeline is a Business Transaction Services (BTS) process**
- **Adapter is COBOL program**
  - converts SOAP body to COMMAREA and vice-versa

CICS Java RMI Support



JMS access to CICS Transactions



CICS Strategic Options Table

Standard architecture	Middleware	Interface
0. 3270 Revamping	HATS or Link3270bridge	3270 flow
1. SOAP	a - CICS SOAP support b - WAS CTG	XML in a CONTAINER COMMAREA COMMAREA
2. JCA	WAS CTG	COMMAREA
3. Java RMI	CICS TS V2	Enterprise JavaBean (session bean)
4. JMS	WMQ	WMQ API or COMMAREA

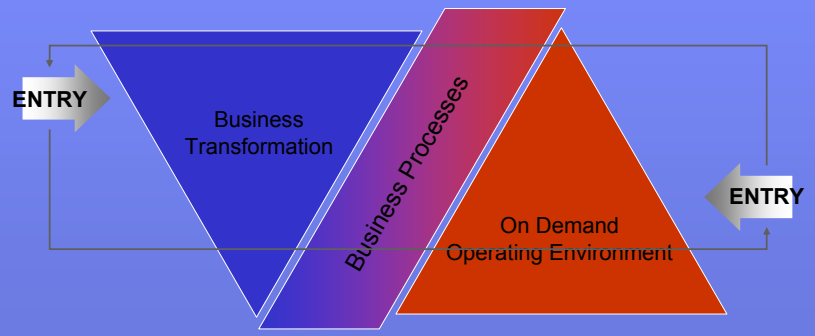
Summary

- **Legacy applications are critical to enterprise customers**
  - On-demand not interesting unless it includes legacy
  - Maintain forward progress (preserve customer investments)
  - Ratio of legacy to J2EE developers typically 5x to 10x
  - Applications must live for a long time!

An on demand business is an enterprise whose **business processes — integrated end-to-end** across the company and with key partners, suppliers and customers — can **respond with speed** to any customer demand, market opportunity or external threat.

The Essentials of an On Demand Breakthrough

Where you start depends on YOUR organization's priorities.



- Increasing flexibility is the key – business models, processes and infrastructure
- Technology acts as an enabler instead of a barrier