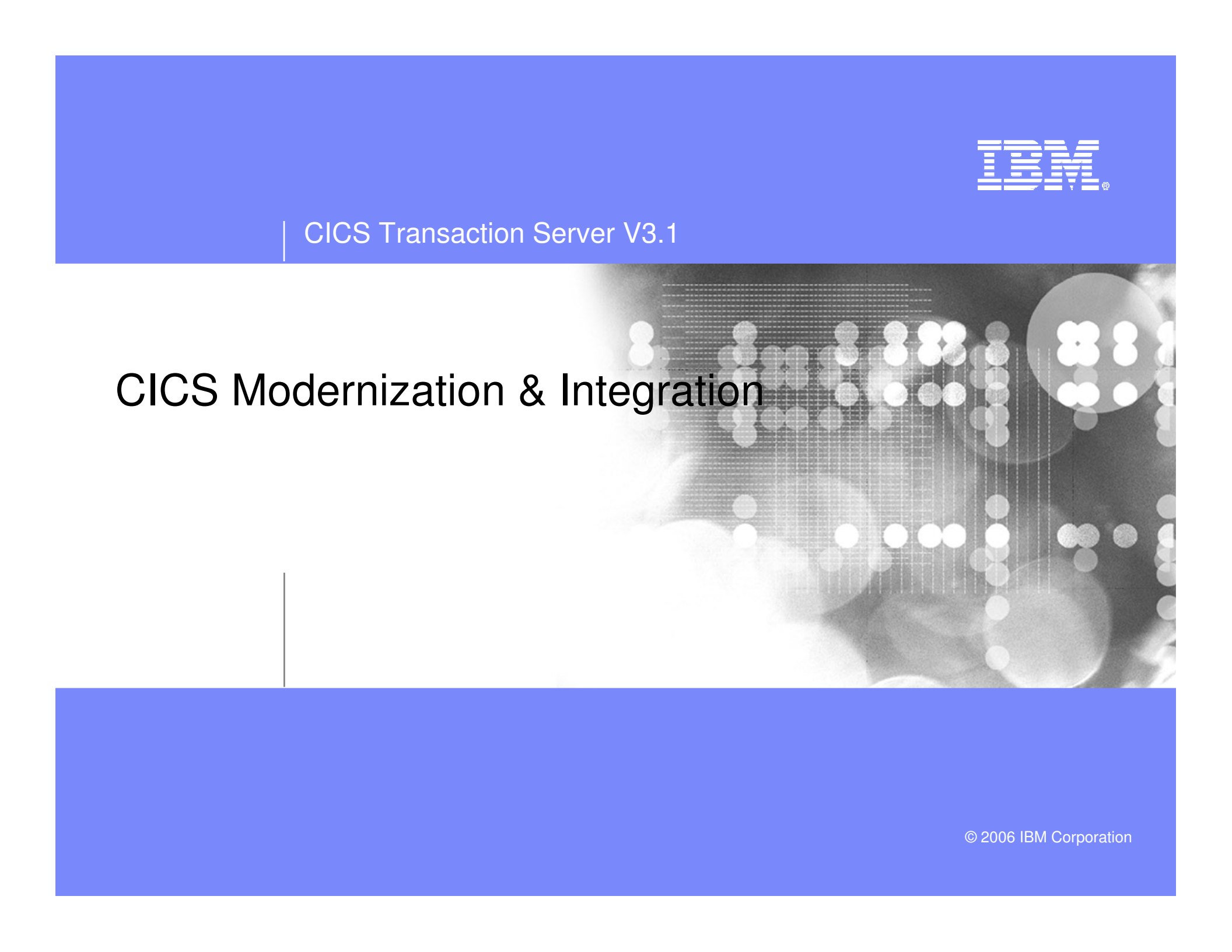


Modernization – easier than thought

"The irony is that *host applications are probably better suited for exposure as part of an SOA than many applications based on more modern 4GL object-oriented languages*

When folks wrote screen-based transactions many months ago, they wrote it at a business function viewpoint: I add a customer, I add an order for that customer, I check backlogs for that customer, etc. So in many respects, those CICS screens of 15 years ago are better suited to service orientation than a lot of the newer, distributed code that's been written over the last several years, because of their affinity with a business function, what did the object-oriented guys do? They took those screens and they broke them down into a thousand different objects."

Phil Murphy, Forrester Research

CICS and SOA is big !

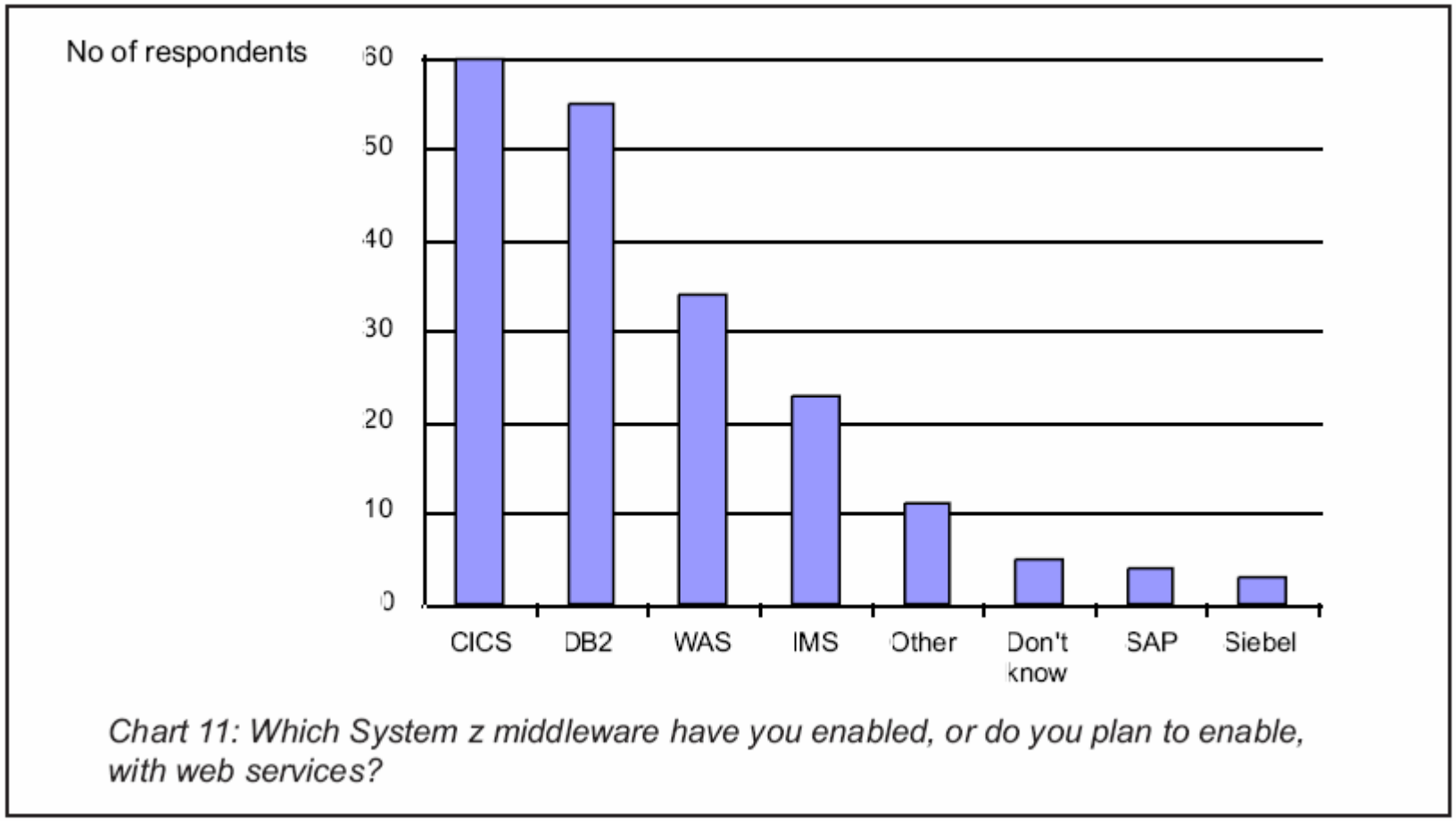


Chart 11: Which System z middleware have you enabled, or do you plan to enable, with web services?

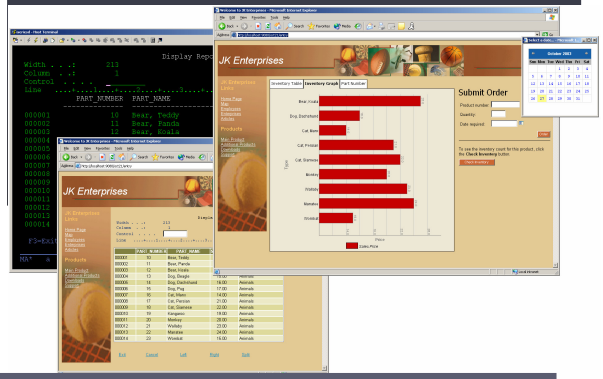
Source: Arcati Limited - The Arcati Mainframe Yearbook 2007

Three Styles of Application Transformation

1 Transform User Experience

Enhance user interface and workflow for quick return on investment

→ gui-fication



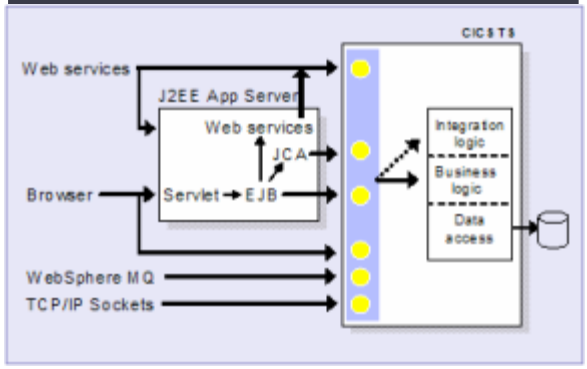
Low Risk – no change to app

Quick return on investment

Affected by change

2 Transform App Connectivity

Supply new interfaces to existing application based on open standards like JCA, JMS, J2EE or Web Services



Low Risk – little or no change

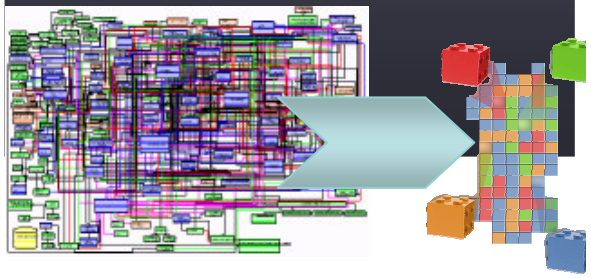
Medium Return on investment

Medium affected by change

3 Transform App Architecture

Break off monolithic applications and create flexible, reusable modules

→ componentization



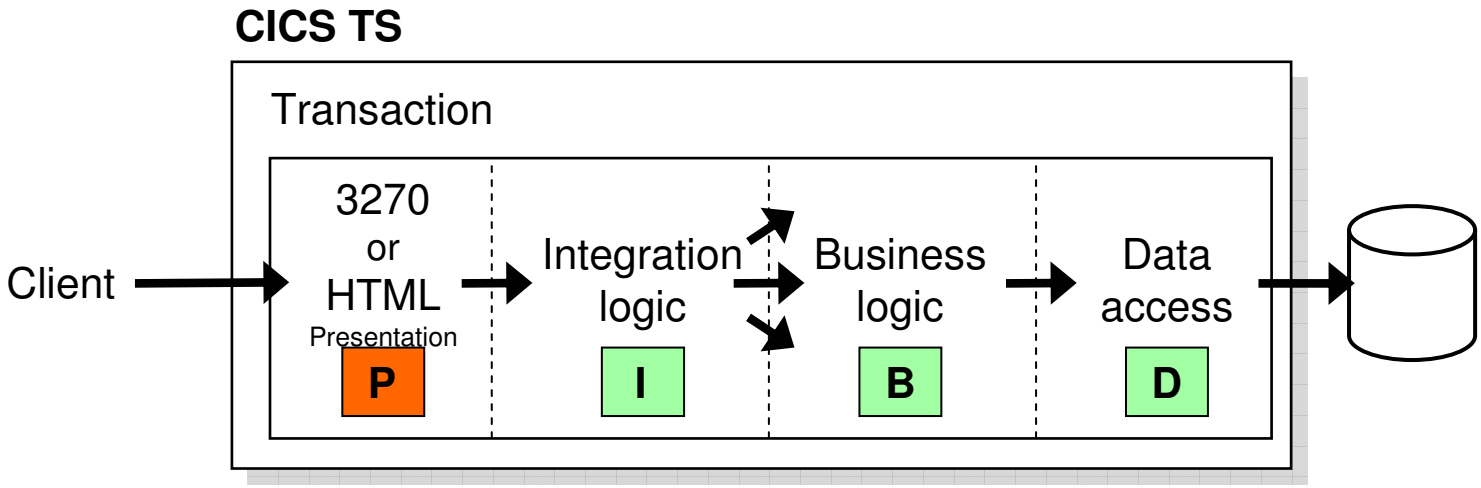
High risk → modification

High Return on investment

Reduces maintenance cost

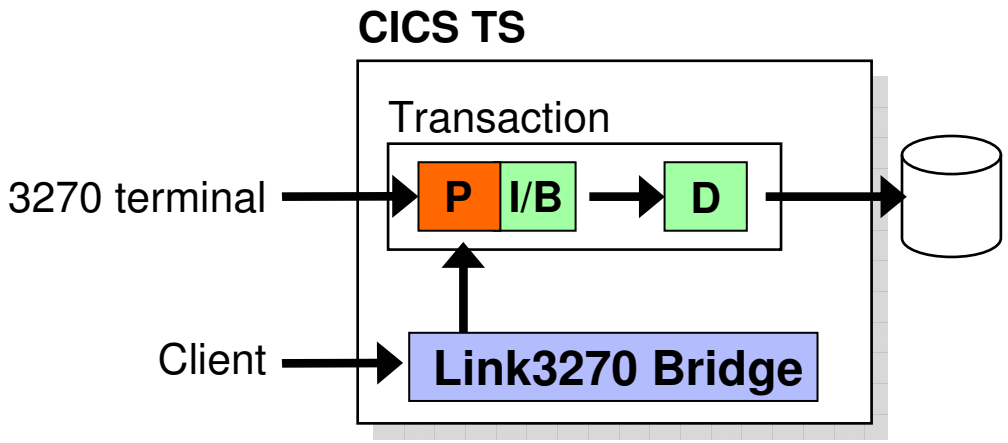
Increases application flexibility

CICS Application Architecture



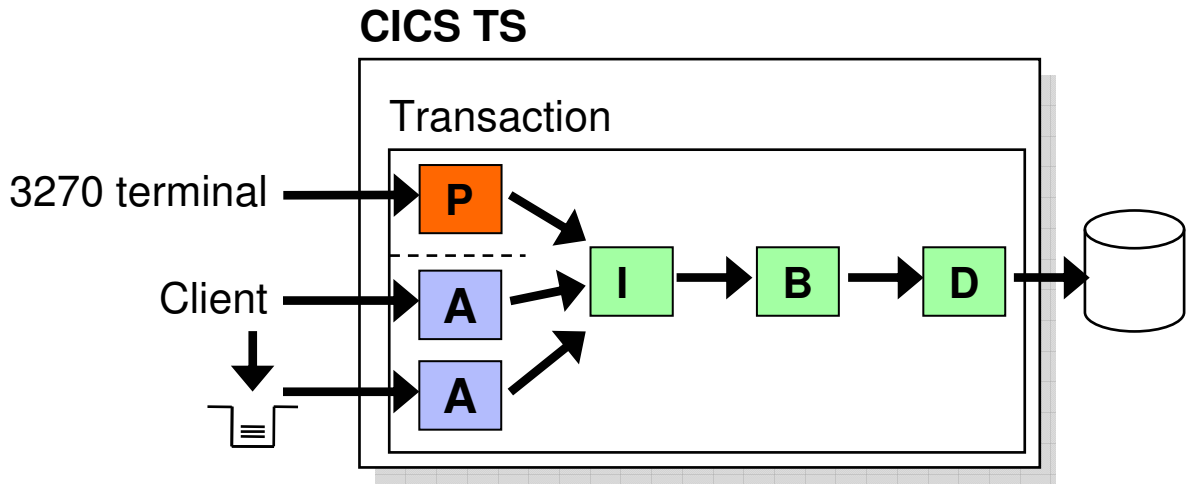
- **Best practice in CICS application design is to separate key elements of the application, in particular:**
  - Presentation logic — eg. - 3270, HTML, XML
  - Integration or aggregation logic — - Menu, router, tooling
  - Business logic — - Reusable component
  - Data access logic — - VSAM, DB2, IMS, …
- **Provides a framework for reuse and facilitates separation of concerns, clear interfaces, ownership, and optimization**
- **Allows callable business logic – parameters passed via COMMAREA**

3270 Based Program Reuse



- **Some programs combine presentation, integration, and business logic**
- **Service Flow Modeler (SFM) and Link3270 Bridge provide a callable, COMMAREA interface to many BMS and terminal-oriented programs**
  - Information in the COMMAREA is passed to the BMS application
  - Does not use VTAM or screen scraping
  - No changes required to existing BMS application

Connectivity to CICS



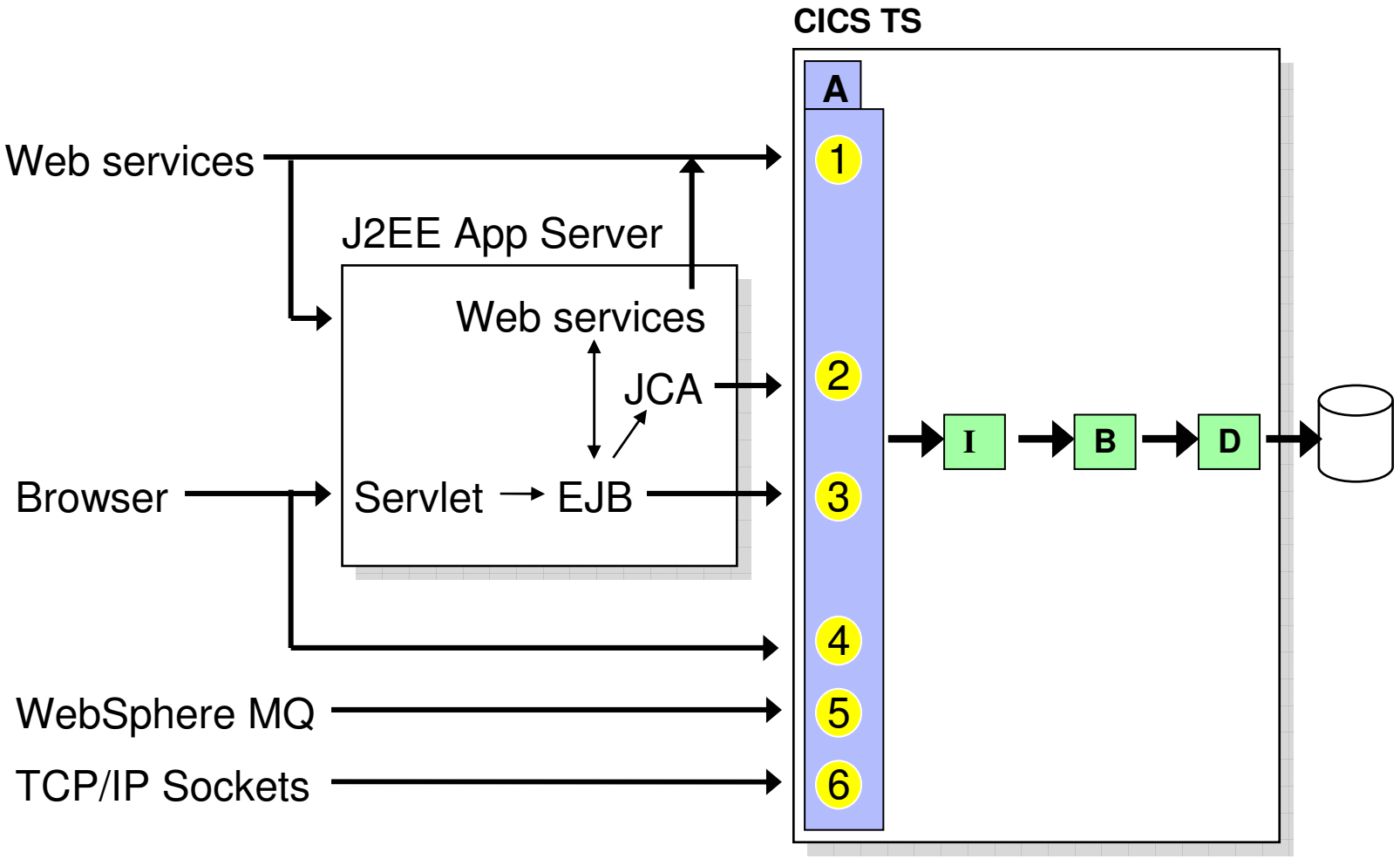
- **Typical clients…**
  - Web service requester
  - Java servlet or EJB running in a J2EE app server
  - C# application running in a Microsoft .NET VM
  - Web browser
  - Messaging middleware

- **Transforming technologies…**
  - External connectors

A Internal adapters (user written or generated by tools)

  - Standard IP-based protocol

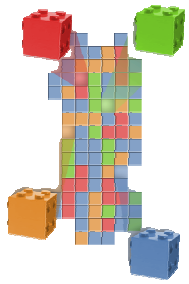
Host Integration – CICS Strategies

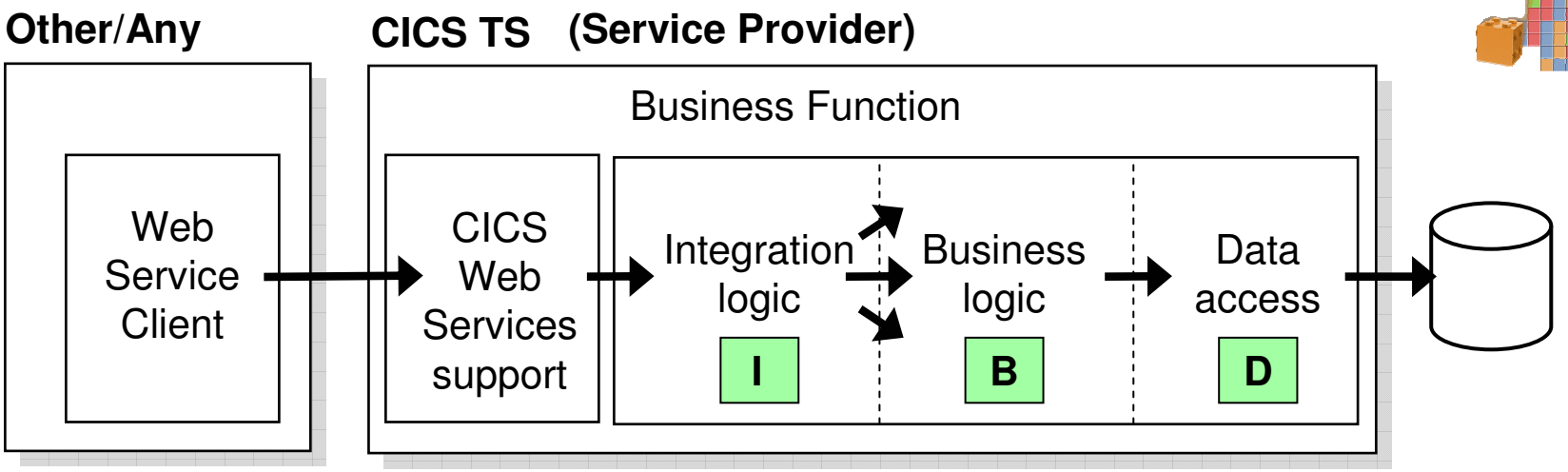


Factors Influencing your Integration Choices

- **Business factors**
  - Agreed company standard or reference frameworks
  - Preferred application development environment and tools
  - Availability of skills
- **Technical factors**
  - Security
  - Transactional scope (1pc, 2pc)
  - Performance
  - Granularity
  - Reliability, availability and scalability (RAS)
  - Synchronous or asynchronous invocation
  - Inbound and outbound capability
  - Client/server coupling
  - Data conversion
  - State management
- **Applications today are typically delivered across several e-business clients**

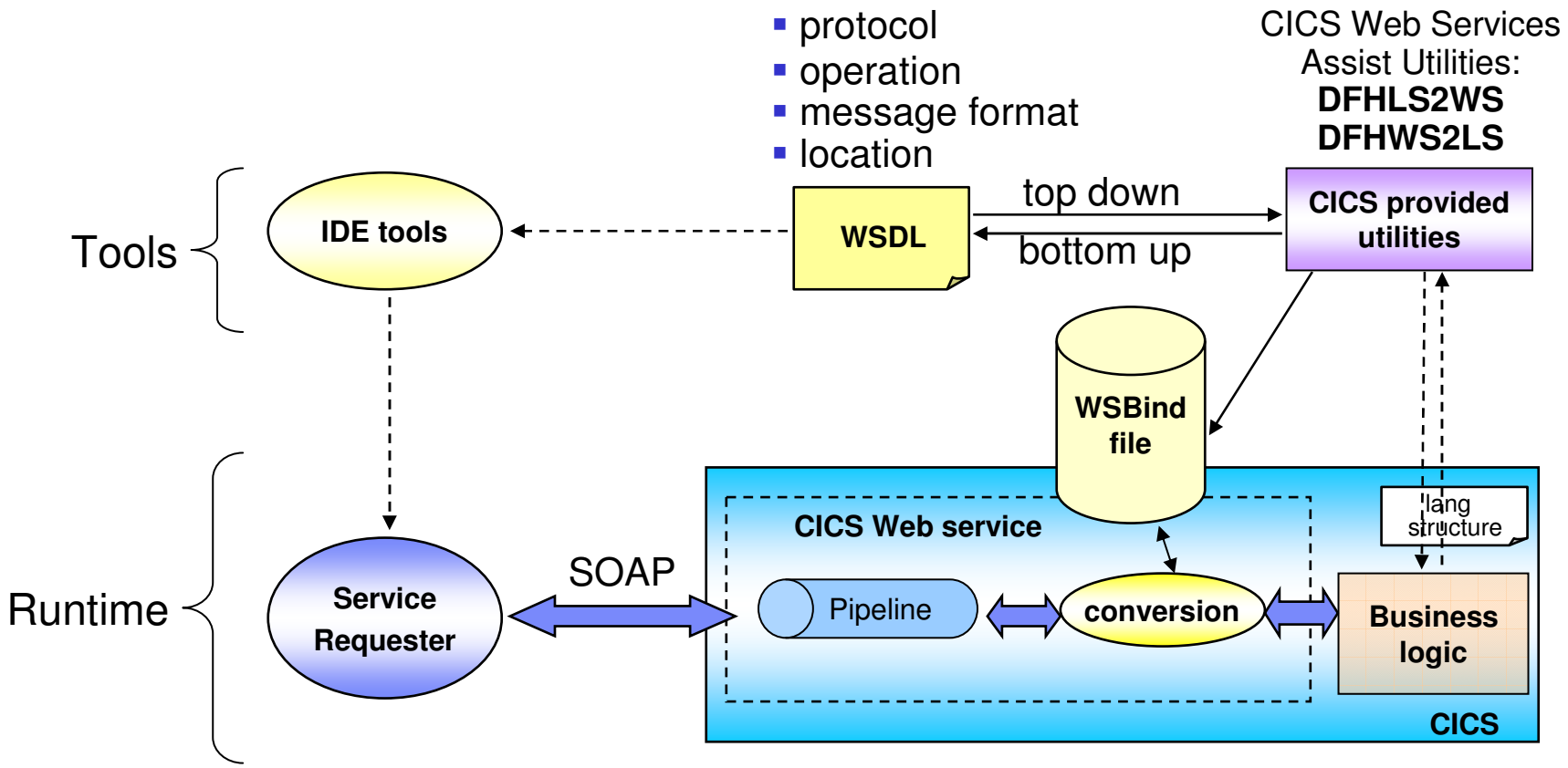
CICS Web Services Support





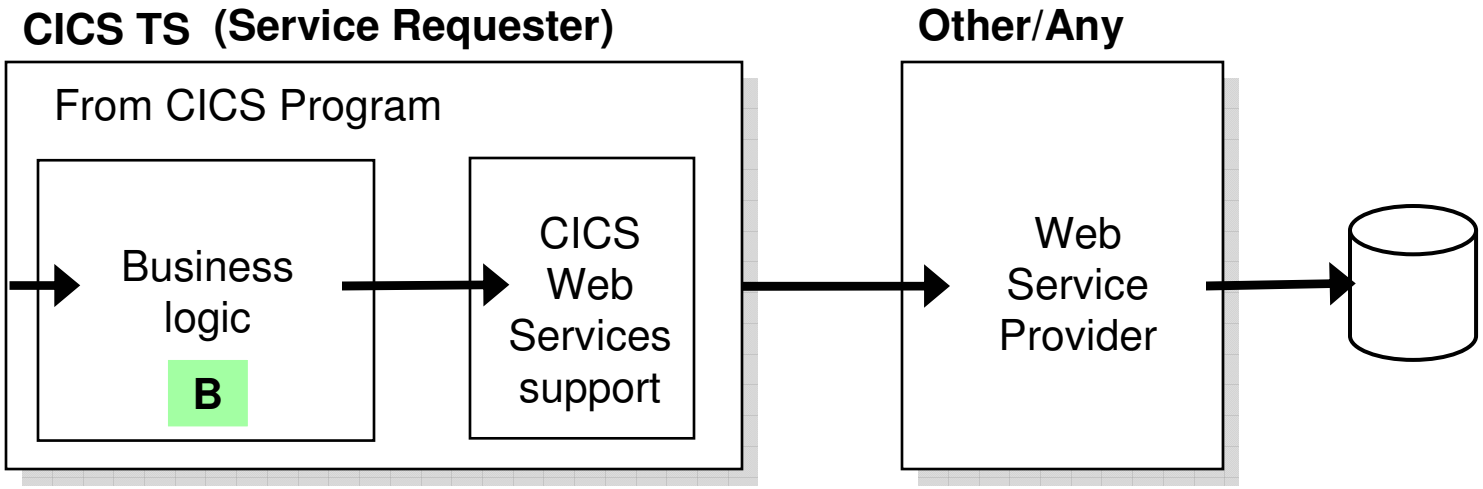
- **Web Services Clients (examples):**
  - Another program in CICS (invoke web service)
  - BPEL process (Process Choreography – WPS/WID)
  - WebSphere Web Services Gateway
  - .NET assembly
  - WebSphere MQ client
  - Anything that can invoke a Web Service

CICS Web services support (overview)

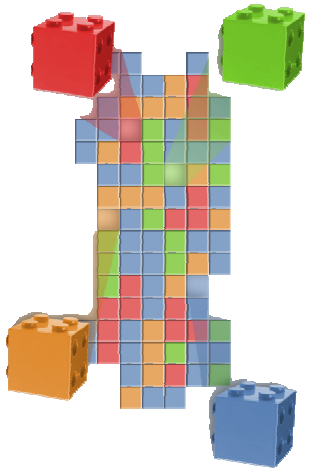


- The pipeline is a set of message handlers that are executed in sequence
- Message handlers perform 'infrastructure' processing on request and response messages and can be used for security, auditing, monitoring etc.

CICS Web Services Support (Requester)

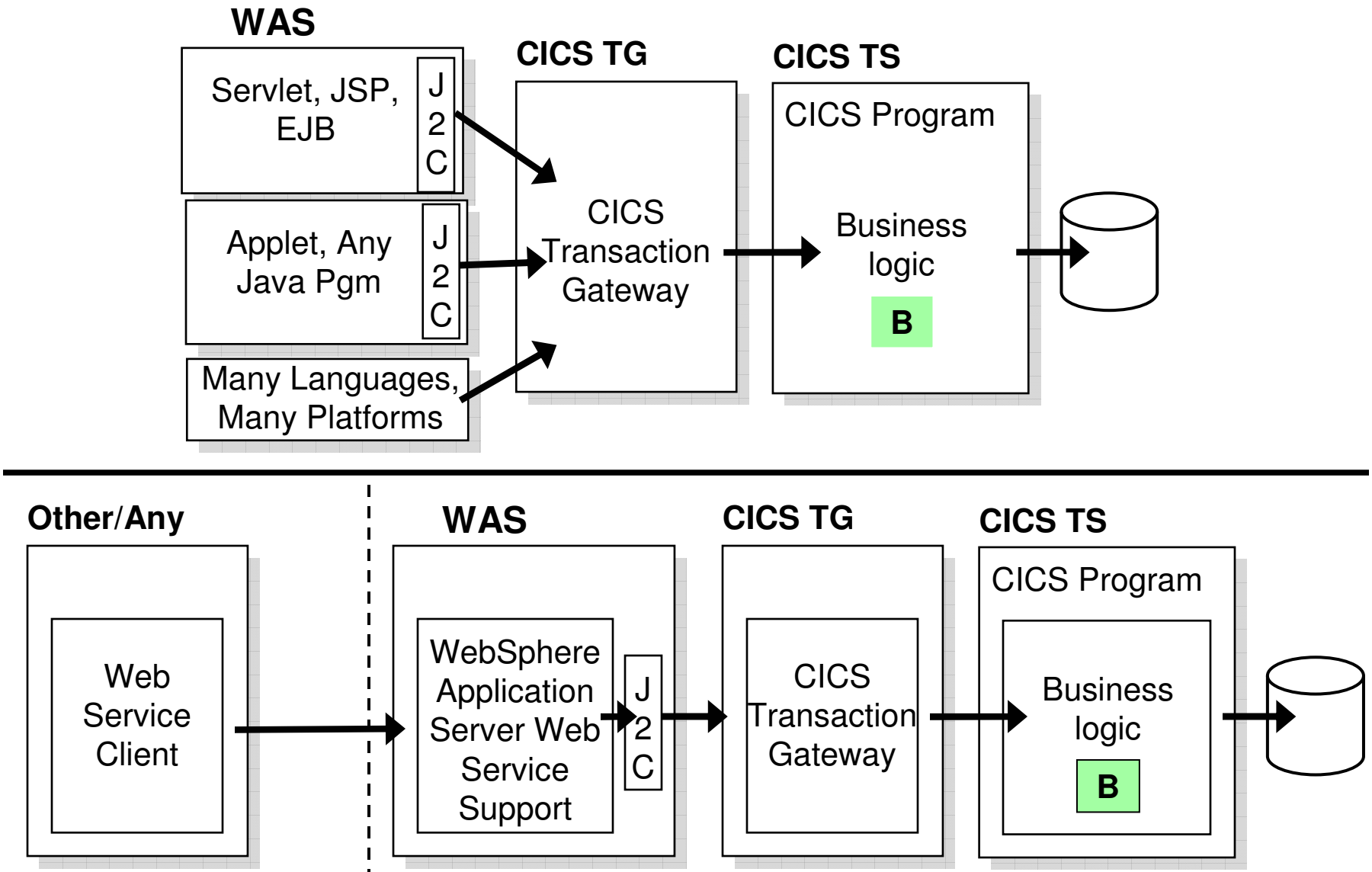


- **Invoke Web Services from CICS programs**
  - Any Language (COBOL, Assembler, PL/I, C, C++, Java)
  - EXEC CICS INVOKE WEB SERVICE …
- **Web Service Could be (examples):**
  - A CICS based Web Service
  - BPEL process (Process Choreography – WPS/WID)
  - WebSphere Web Services Gateway
  - .NET assembly
  - Any Web Service (SOAP over HTTP or MQ)

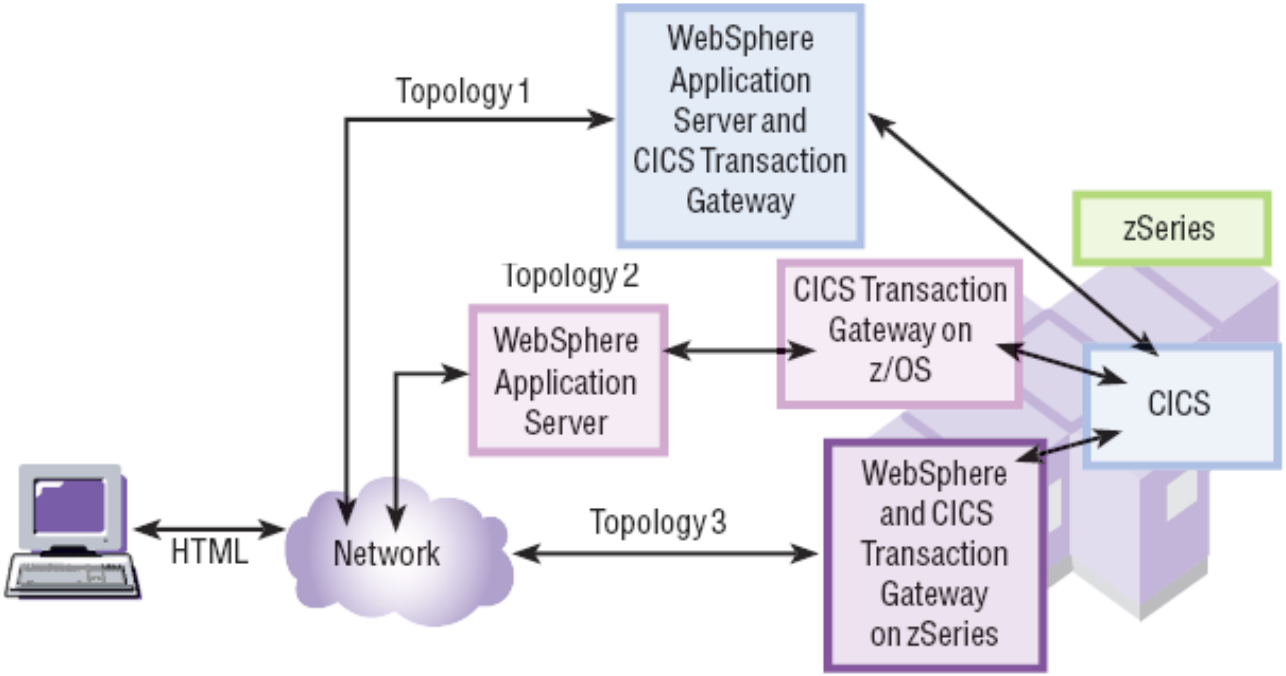


WAS=WebSphere Application Server

CICS Transaction Gateway



CTG Topologies



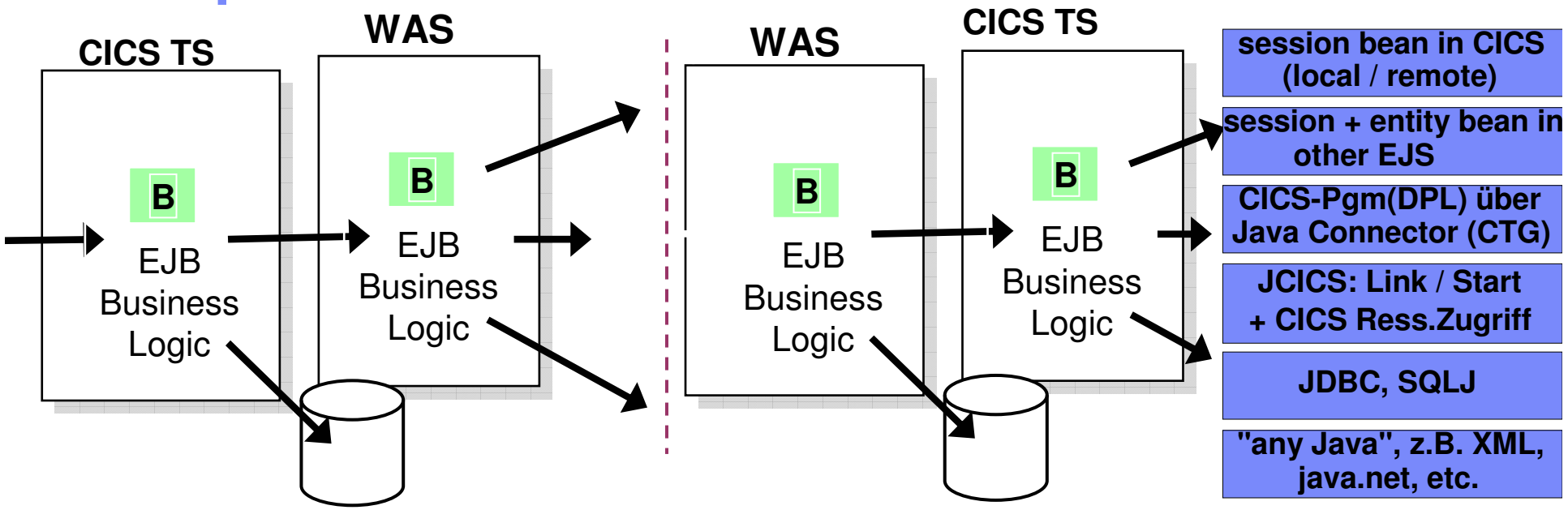
Topology 1.
Application Server and the CICS Transaction Gateway are both deployed on a distributed (non-zSeries) platform.

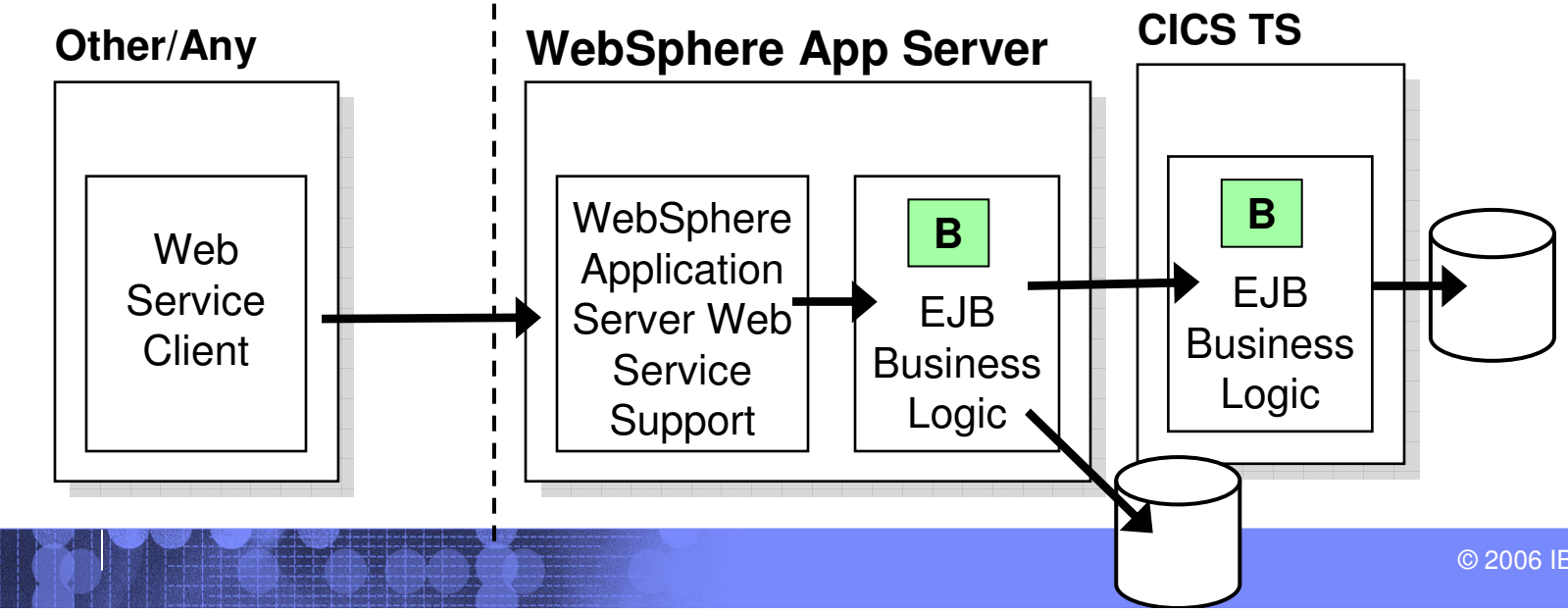
Topology 2.
Application Server is deployed on a distributed platform and the CICS Transaction Gateway is deployed on z/OS.

Topology 3.
Both Application Server and the CICS Transaction Gateway are deployed on zSeries.

Enterprise JavaBeans

WAS=WebSphere Application Server





CICS Interoperability Summary

CICS Transaction Server

Standard architecture	Capabilities	Security to zSeries	Transactional scope	Interface	Coupling
1. Web Services	Synchronous (HTTP) Asynchronous (WebSphere MQ) Inbound and outbound	User ID + password SSL	Local CICS transaction Global transaction	CONTAINER COMMAREA XML	Loose
2. JCA	32KB max message size Inbound only Synchronous and Async	User ID + password Thread identity SSL	Local transaction Global transaction	COMMAREA	Medium
3. Enterprise JavaBeans	EJB state management Inbound and outbound Synchronous	EJB security roles SSL	CICS transaction Global transaction	Enterprise JavaBean session bean	TIght

Standard transport

4. WebSphere MQ	Inbound and outbound Asynchronous Assured delivery	User ID + password SSL	CICS transaction	WebSphere MQ API or COMMAREA	Medium
5. HTTP	Inbound and outbound Synchronous	User ID + password SSL	CICS transaction	CICS WEB API	Medium
6. TCP/IP sockets	Inbound and outbound Synchronous and Async	User ID + password	CICS transaction	CICS sockets API	Tight

Any more questions?

धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You
English

شكراً
Arabic

Merci
French

Obrigado
Brazilian Portuguese

Grazie
Italian

多谢
Simplified Chinese

Danke
German

நன்றி
Tamil

ありがとうございました
Japanese

감사합니다