



IBM Software Group

CICS-TS Application Modernization

Features and Options



Available now:

TXSeries V7.1

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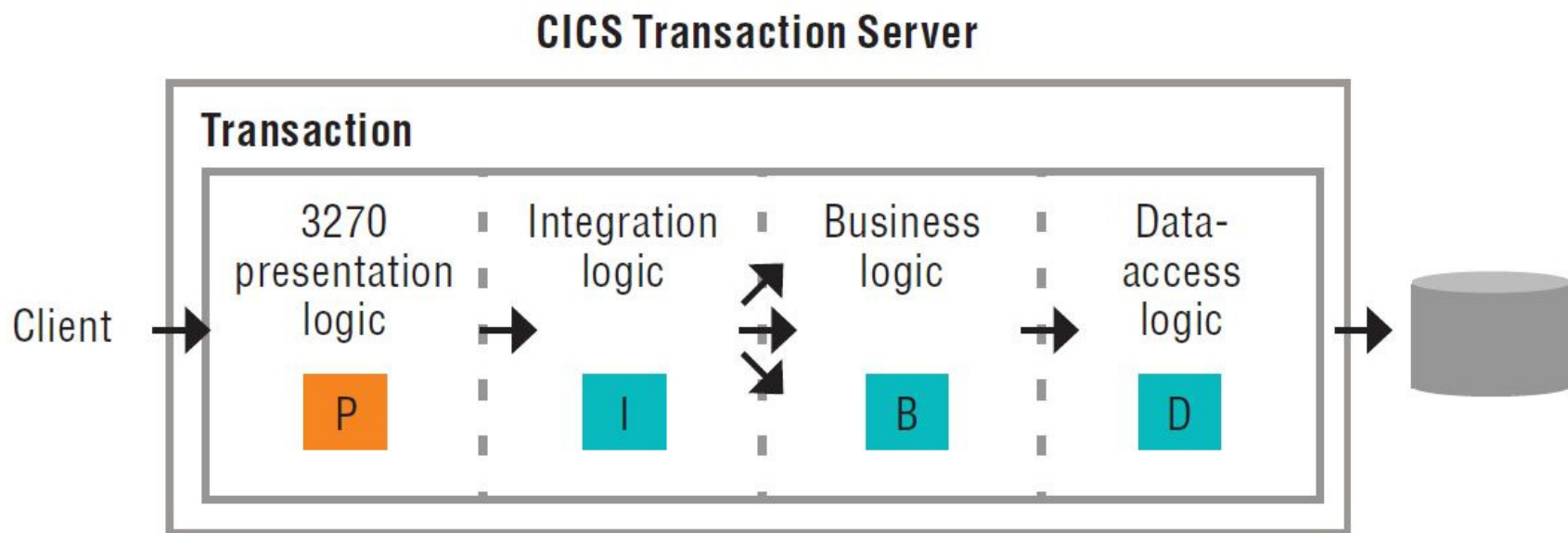
TXSeries V7.1 for Multiplatforms
The Next Generation of Distributed CICS
www.ibm.com/CICS

Agenda

- Introduction
- Web based access to CICS programs
- Service Orientation
- Strategic options
- Business Events in CICS TS v4.1
 - Introduction to Business Events
 - CICS Events architecture
 - Role based CICS events flow
- Q & A

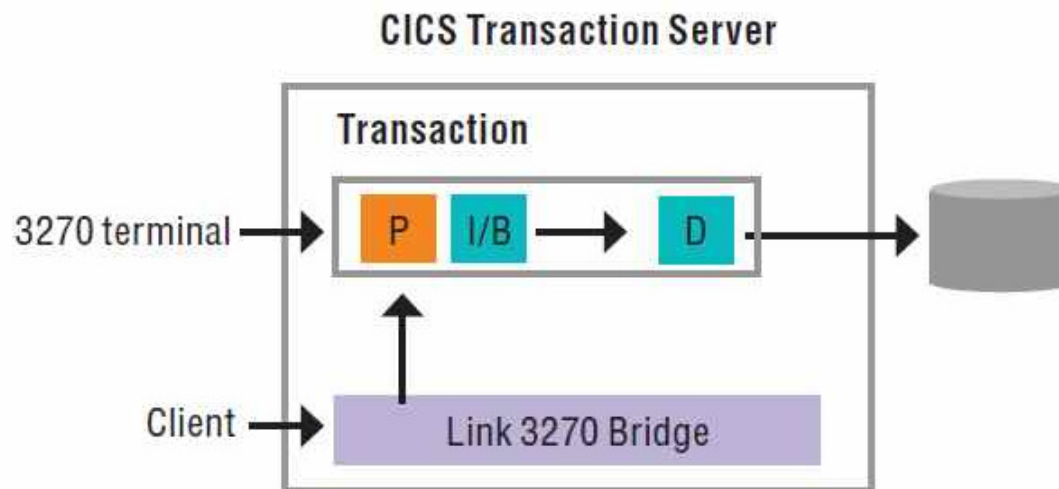
Introduction

- Need for modernization
- Which all CICS applications can be modernized ?
- Typical CICS application



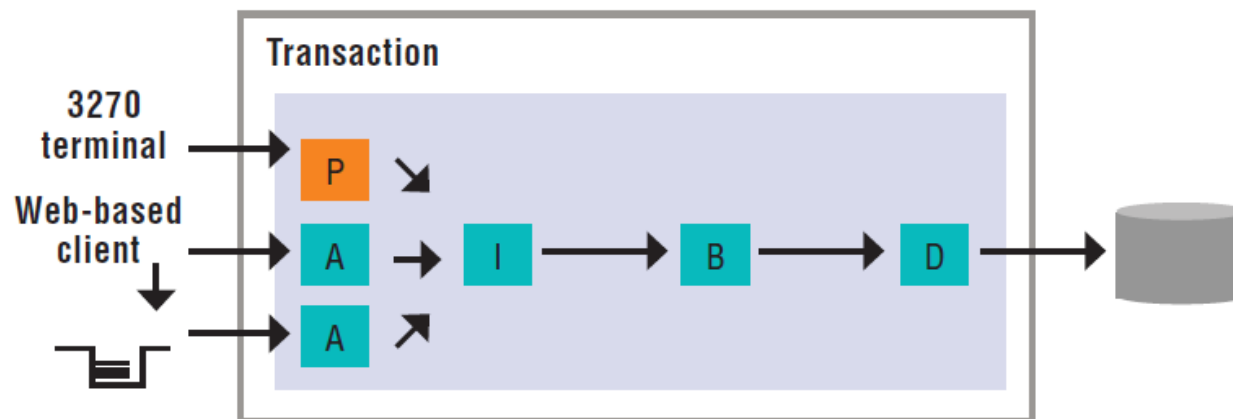
Web Access to CICS Applications

- User Interface Modernization
- Link 3270 Bridge

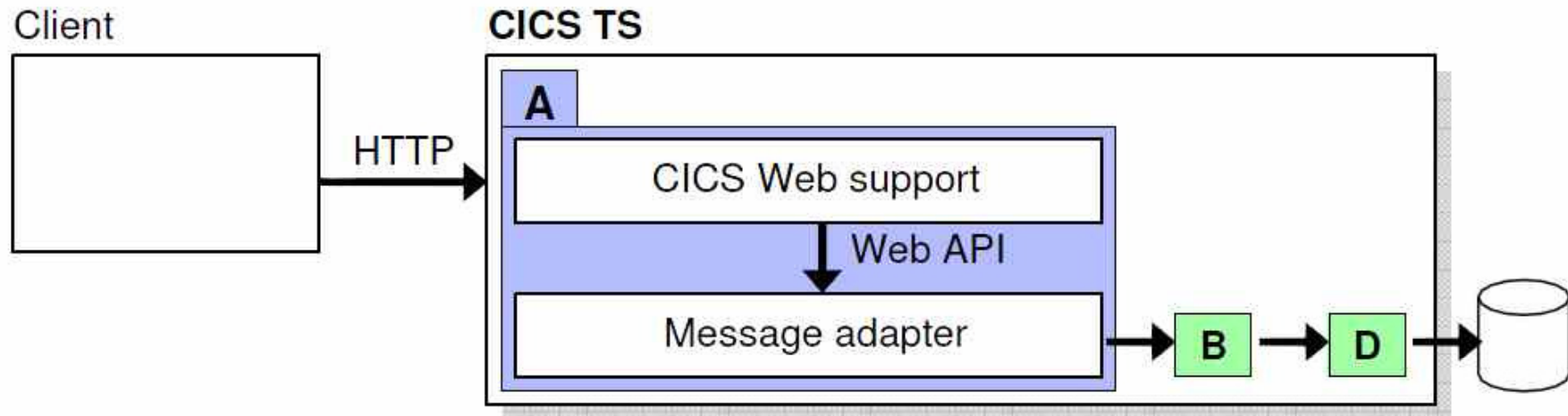


Web Access to CICS Applications

- Typical Clients
 - Web Service Requester
 - A Java Servlet or EJB running in a J2EE application server
 - A C# Application running under .NET platform
 - A browser
 - IBM Websphere MQ

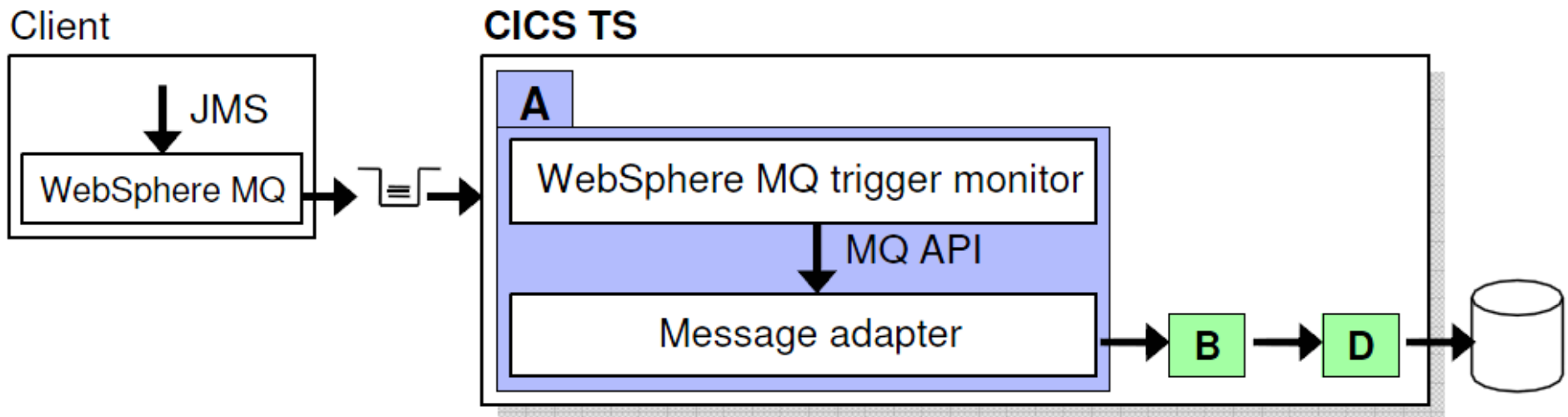


Standard HTTP Support



- ***The HTTP listener is part of the CICS Web support***
- CICS provides the EXEC CICS WEB and TCPIP APIs to retrieve the request, and DOCUMENT APIs to construct HTML and XML responses

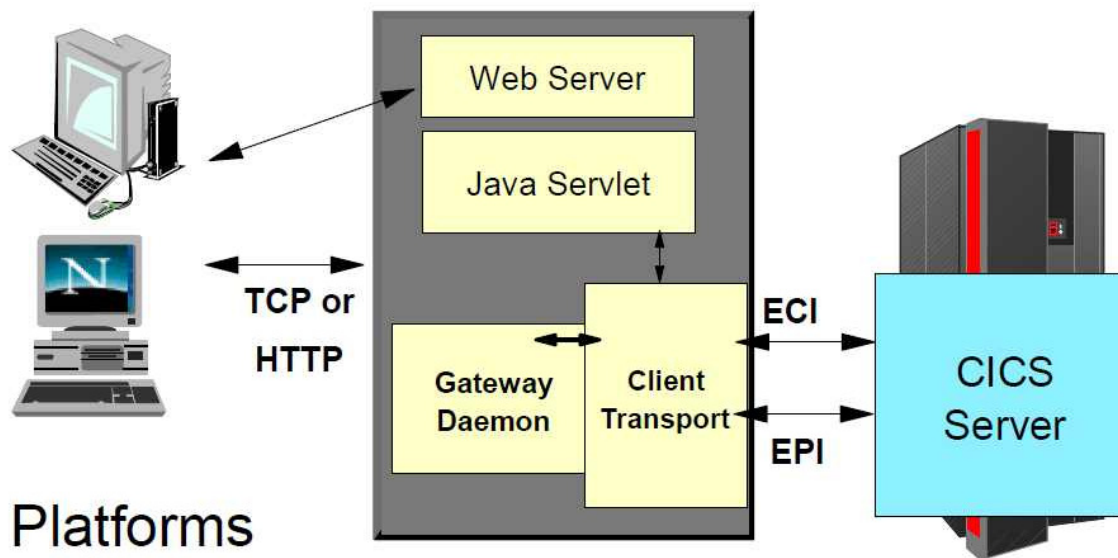
Asynchronous access



- *WebSphere MQ provides assured delivery of messages from many platforms to efficiently access CICS asynchronously*

Web Access to CICS Applications

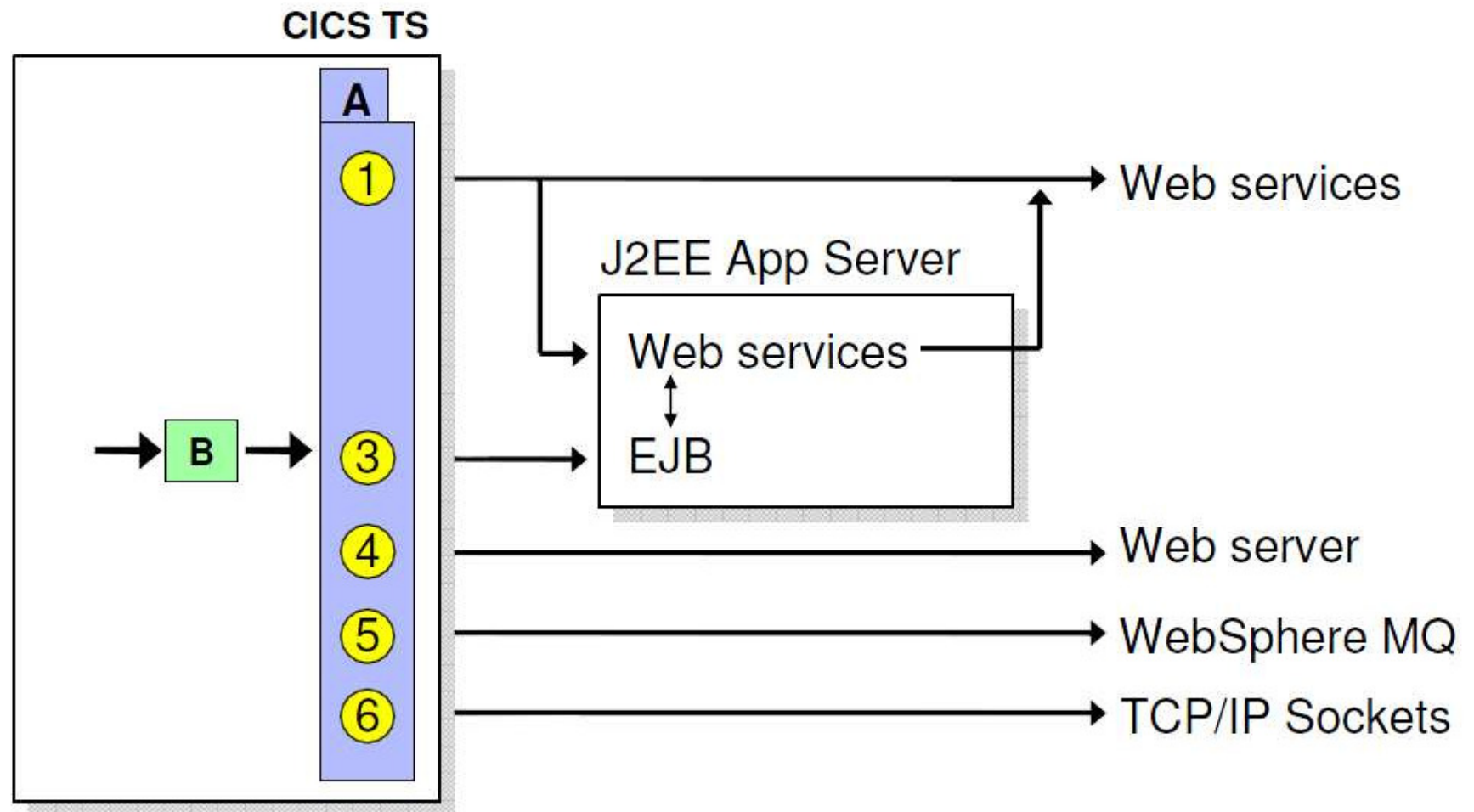
- Using CICS Transaction Gateway



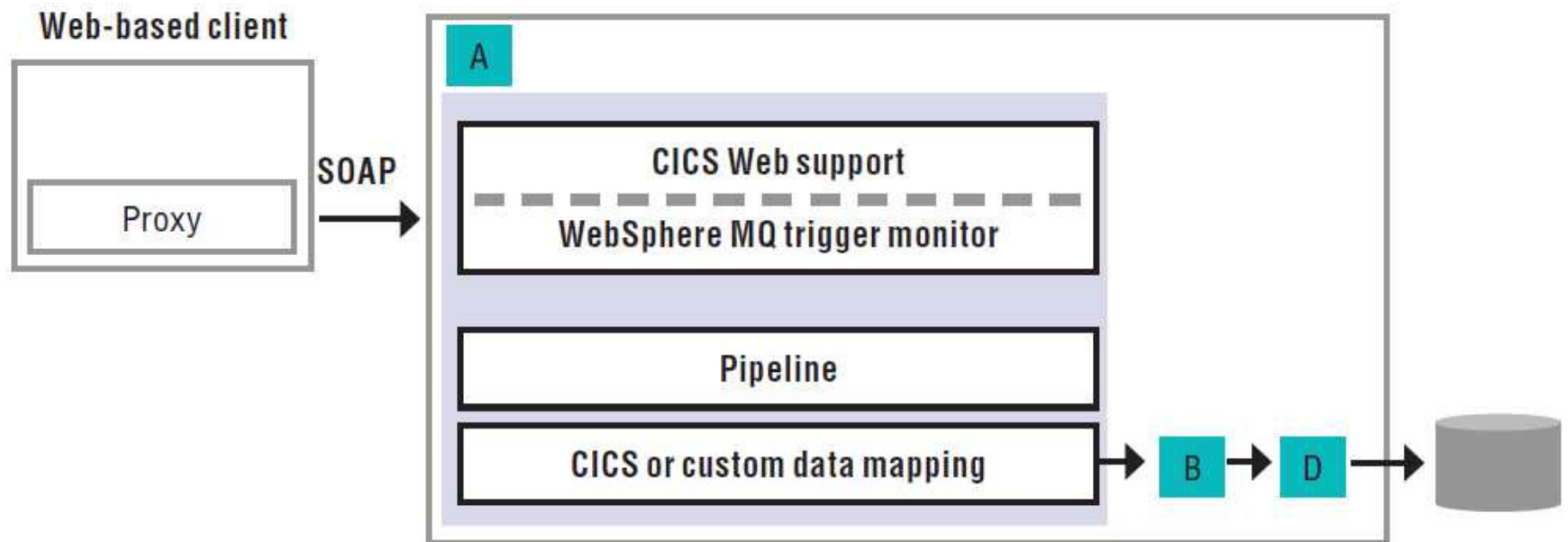
Platforms

- AIX
- OS/2
- Windows NT/2000
- Sun Solaris
- HP-UX
- Linux/390

Access From CICS

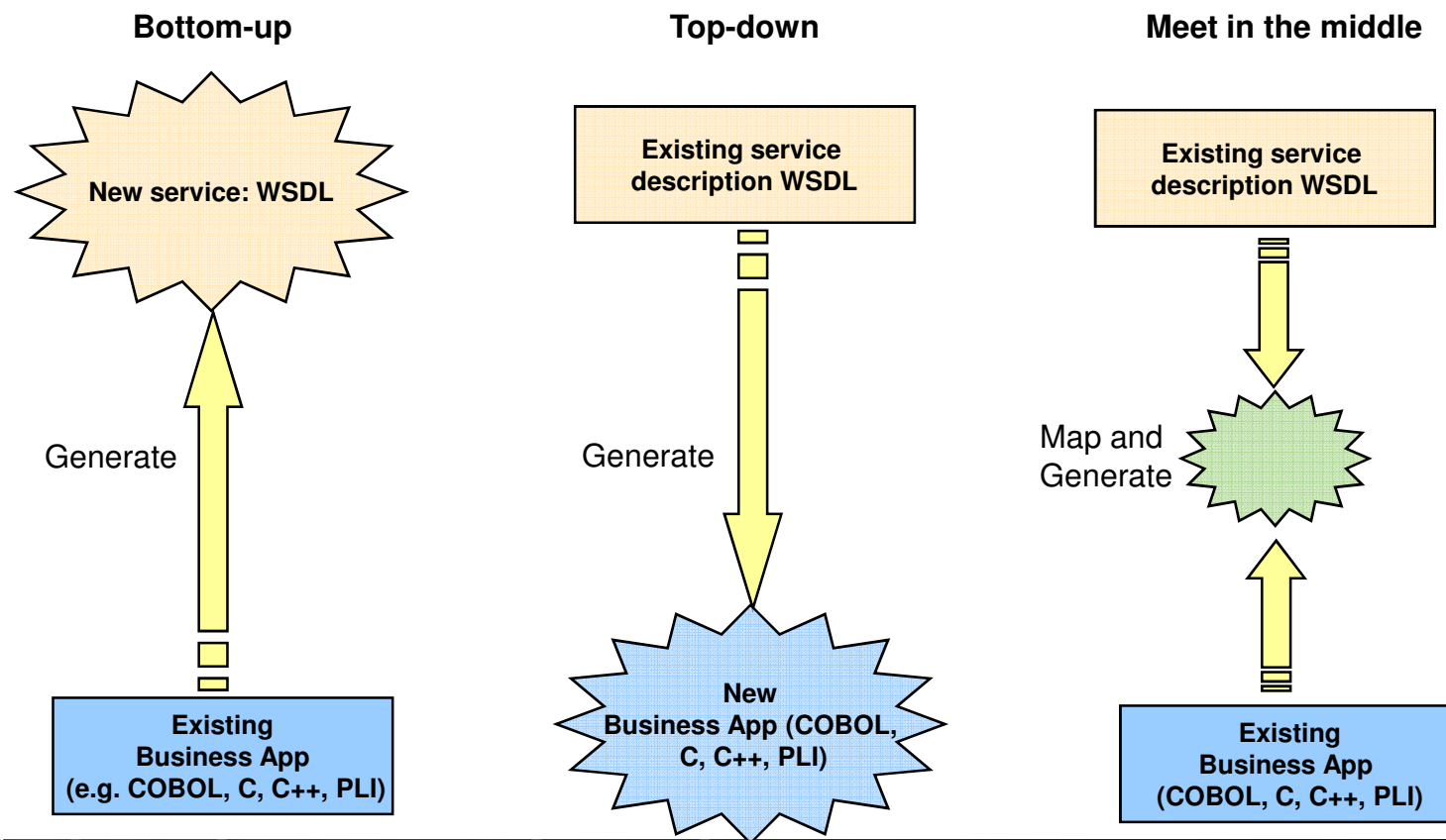


Service Orientation



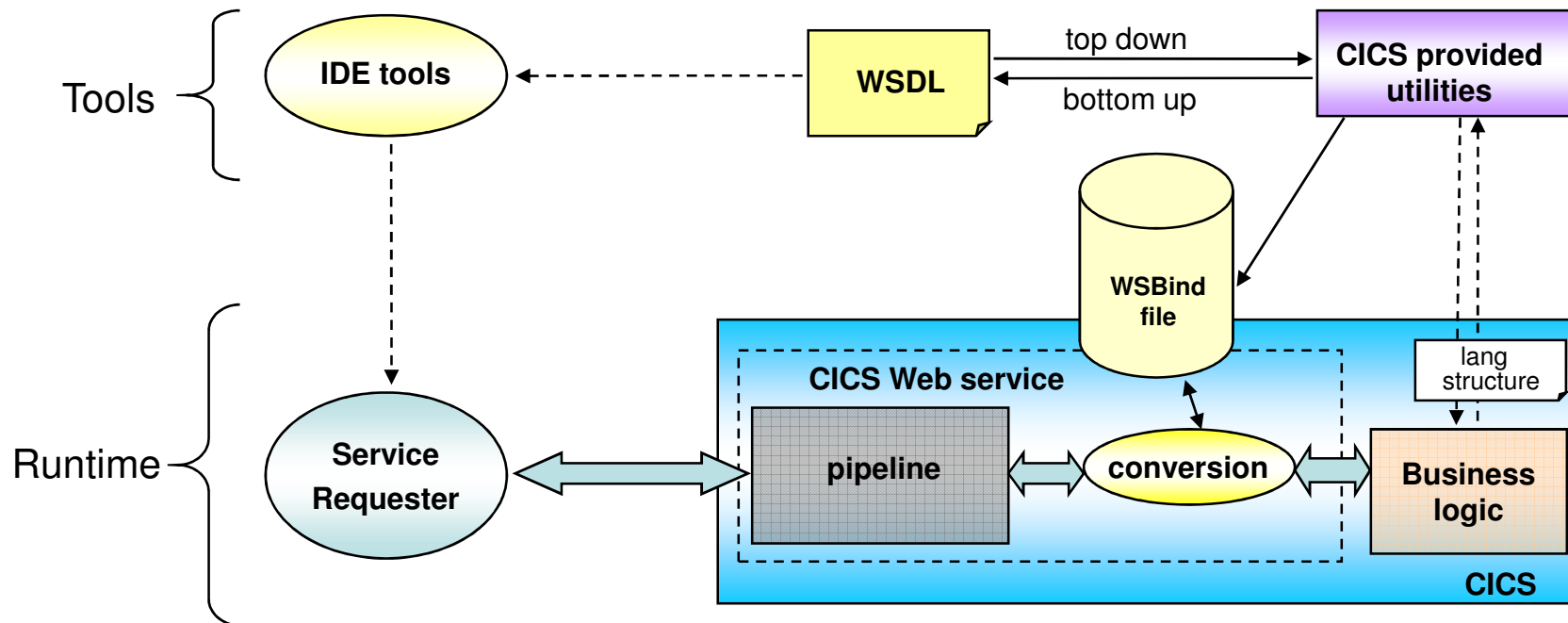
Service Orientation

- Native WebServices support
- Three different styles

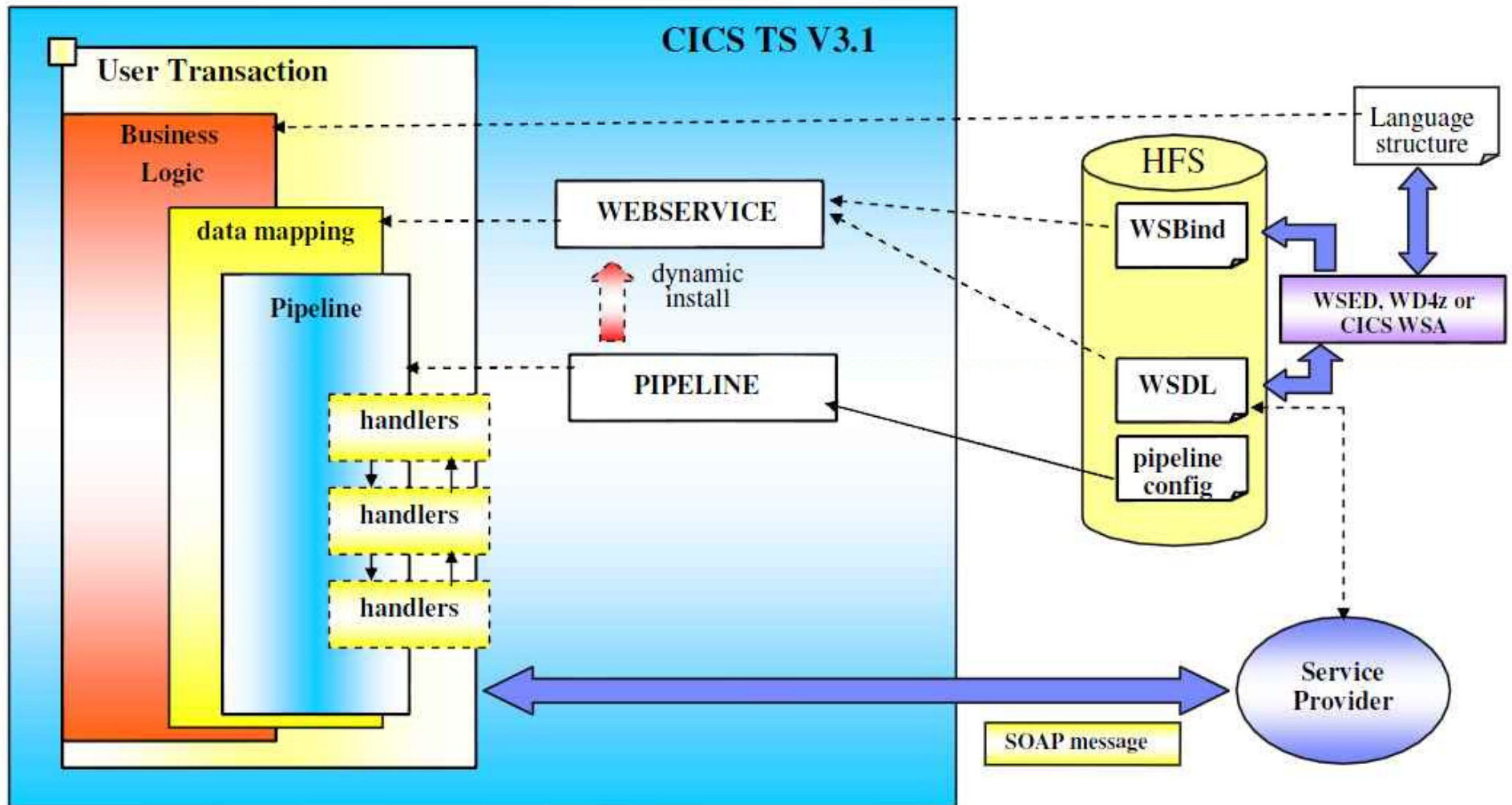


Service Orientation

- Complete picture



CICS as service requester



Service Orientation - Standards

- Support for Open standards
 - WSDL 1.1
 - SOAP 1.1 and SOAP 1.2
 - WS-I Basic Profile 1.1
 - XML 1.0
 - WS-I Simple SOAP Binding Profile 1.0

Strategic Options

- Factors to be considered
 - Security
 - Transactional scope
 - Performance
 - Reliability
 - Granularity of user interface
 - Synchronous and Asynchronous invocation
 - Data conversion
 - Inbound and outbound capability

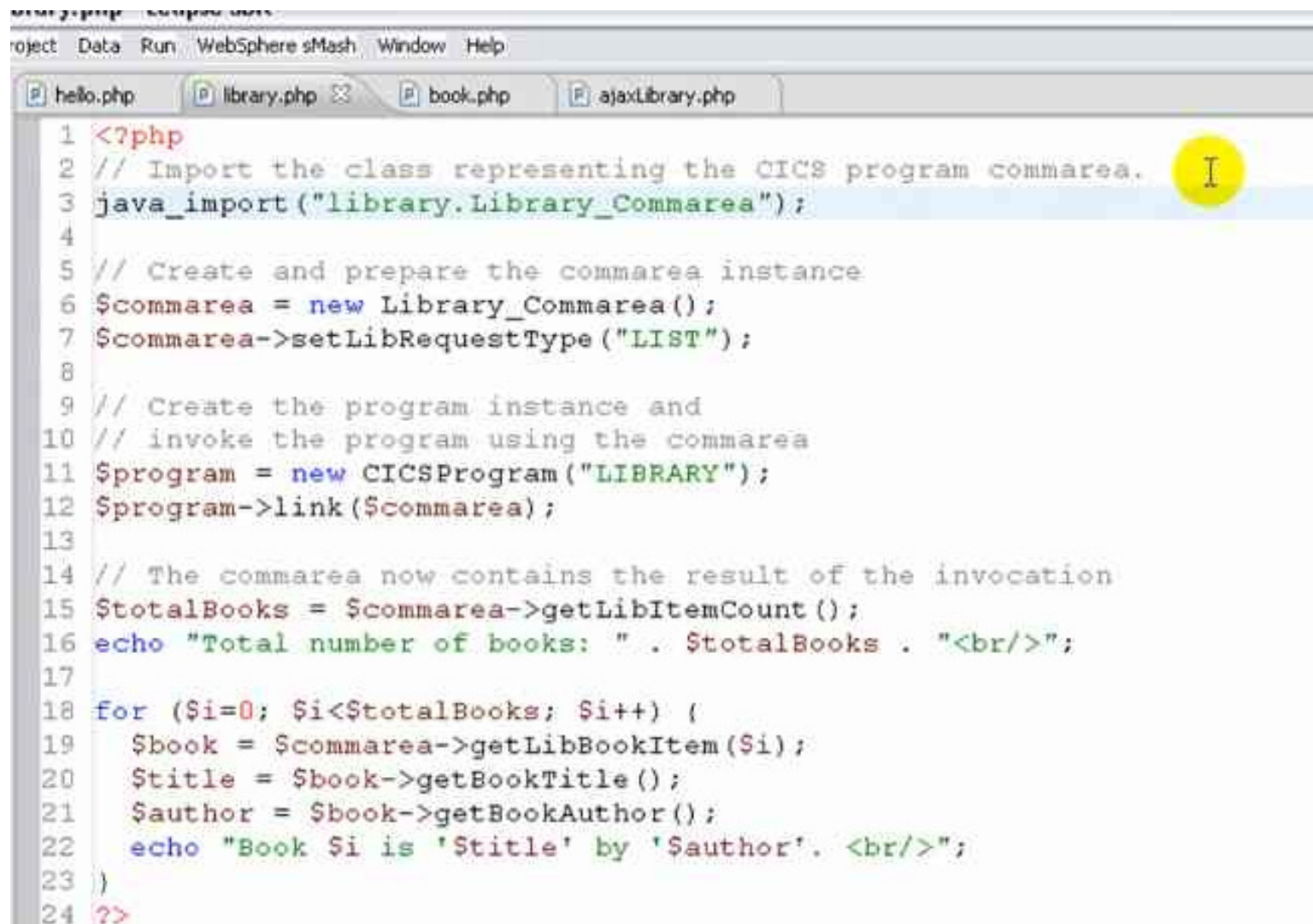
Solution table

Application interface	Connection Architecutre	Transport (connector or Protocol)	Cics solution set
COMMAREA	JCA	CICS TG	CICS ECI resource adapter
	-	HTTP	CICS Web Support (Web-aware application)
	Web services	HTTP	CICS Web Support and CICS Web services
	Web services And messaging	Websphere MQ	Websphere MQ and CICS Web services
	messaging	Websphere MQ	Websphere MQ CICS DPL bridge

Solution Table

Application interface	Connection Architecture	Transport (connector or Protocol)	Cics solution set
3270	JCA	ECI	CICS ECI resource adapter and Link3270 bridge
	JCA	EPI	CICS EPI resource adapter (not supported with CICS TG on Z/OS)
	-	HTTP	CICS Web Support (Web-aware application) and Link3270 bridge
	Web services	HTTP	CICS Web Support, CICS Web services, and Link3270 bridge
	Web services And messaging	Websphere MQ	Websphere MQ, CICS Web services, and Link3270 bridge
	Messaging	Websphere MQ	Websphere MQ CICS DPL bridge and Link3270 bridge
	-	Telnet	Websphere Host Integration: HATS
EJB (session Bean)	EJB	RMI over IIOP	CICS EJB support

PHP Support



The screenshot shows an IDE window with a menu bar (Project, Data, Run, WebSphere sMash, Window, Help) and a tab bar with four files: hello.php, library.php, book.php, and ajaxLibrary.php. The main editor displays the contents of library.php, which is a PHP script. Line 3, `java_import("library.Library_Commarea");`, is highlighted in blue, and a yellow circle with the letter 'I' is positioned to its right. The code includes comments and uses classes like `Library_Commarea` and `CICSProgram` to interact with a CICS library and retrieve book information.

```
1 <?php
2 // Import the class representing the CICS program commarea.
3 java_import("library.Library_Commarea");
4
5 // Create and prepare the commarea instance
6 $commarea = new Library_Commarea();
7 $commarea->setLibRequestType("LIST");
8
9 // Create the program instance and
10 // invoke the program using the commarea
11 $program = new CICSProgram("LIBRARY");
12 $program->link($commarea);
13
14 // The commarea now contains the result of the invocation
15 $totalBooks = $commarea->getLibItemCount();
16 echo "Total number of books: " . $totalBooks . "<br/>";
17
18 for ($i=0; $i<$totalBooks; $i++) {
19     $book = $commarea->getLibBookItem($i);
20     $title = $book->getBookTitle();
21     $author = $book->getBookAuthor();
22     echo "Book $i is '$title' by '$author'. <br/>";
23 }
24 ?>
```

Business Events in CICS TS v4.1

What are Business Events

ATM Withdrawal



Stock Purchase



Shipment Delivery



Price Change



Employee Hire



Product Order



Flight Departure



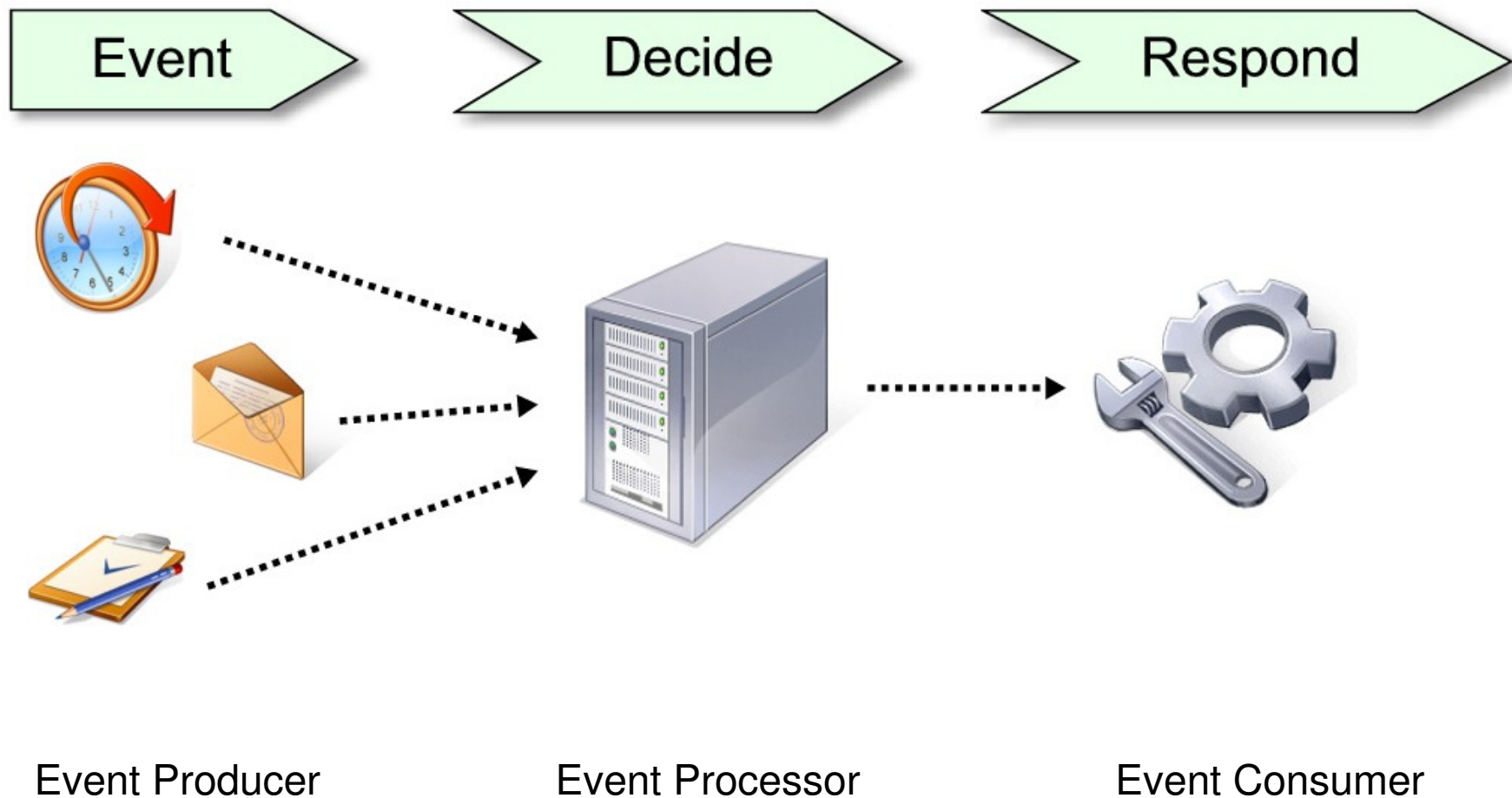
An event is

- Something that happens (or doesn't happen)

A business event is

- Something that happens (or doesn't happen) *that is relevant to the business*

Event processing in a nut shell



Business value and drivers for events

- **The business value of event processing is**
 - ▶ Decreased latency in
 - Obtaining business insights
 - Making decisions based on those insights
 - Executing the decisions
- **Factors driving business events**
 - ▶ Compliance with regulations
 - ▶ Demand for cost reduction, leading to more automation
 - ▶ Technology developments such as RFID
 - ▶ Desire for greater awareness of business behavior through Business Activity
 - ▶ Management, Business Performance Management

Event processing scenarios (Insurance)

- **Customer has obtained insurance quotes for two or more of car, house and belongings insurance**



- CICS application code which processes insurance quotes could emit an event when a quote is processed, including a customer name or identifier and the type of insurance policy

- **Customer has purchased only one of these insurance policies**

- CICS can emit an event when purchase of an insurance policy is processed, again with customer identifier and policy type

- **WBE can detect this pattern**

- When quotes for these types of policy received but not all have matching purchase (correlated by customer), then take action



- **Send offers to the customer for the other insurance for which quotes were requested**

- Better targetting than sending offers for all types of insurance available

Event processing scenarios (Banking)

- **Collect events relating to credit and other bank card usage**
- **Check for unusual patterns of behaviour**
 - New card ordered within a week of an address change request
 - Several online purchases where none had been made before
 - 2 or more cash withdrawals in quick succession when withdrawals rare on this card, or normally for smaller amounts
 - etc.
- **Action will usually be to confirm with cardholder that this change is expected**
- e.g. “Red flag” policy required by US FACT (Fair and Accurate Reporting Credit Transactions) Act to detect potential instances of identity theft



Event processing scenarios (Retail)



- **Customer purchased items online for the past two months**
- **This month, send a reminder for easy re-order of the items**
- **More elaborate scenarios could involve**
 - detecting a change in a customer's normal ordering pattern and responding to this
 - studying the ordering selections, or patterns of orders, of more active customers, and using these to make suggestions to less active customers
 - using geographical information to make relevant suggestions

CICS as a significant source of business event

IBM CICS

- Most of the top 50 Global banks use CICS
- Most of the fortune 100 use CICS
- 30 years and \$1 trillion invested in CICS applications (IDC)
- 10,000+ CICS mainframe licenses worldwide
- 950,000+ concurrent users/system
- 5,000 CICS software packages from 2,000 ISVs
- 950,000 programmers earn their living from CICS
- CICS handles more than 30 billion transactions/day valued at over \$1 trillion/week for 30 million end users of CICS Apps
- CICS TS v3 (SOA release) had fastest uptake of any CICS release.
 - 40% utilizing CICS Web Services capability

Large bank in China

- 30 Million Txs/Hour
- 9445 TPS
- 99.9% Txs <400 Msec
- Av Tx 200 Msec

Large Asian Bank

- 14,250 TPS
- 210 Million records deployed in <45 mins

- CICS & z10 – making computing cheaper

“

"CICS is probably the most successful piece of software of all time . . . It is the mainstay of business computing throughout the world . . . Millions of users unknowingly activate CICS every day, and if it were to disappear the world economy would grind to a halt."

*Phil Manchester,
Personal Computer
Magazine*

”

“



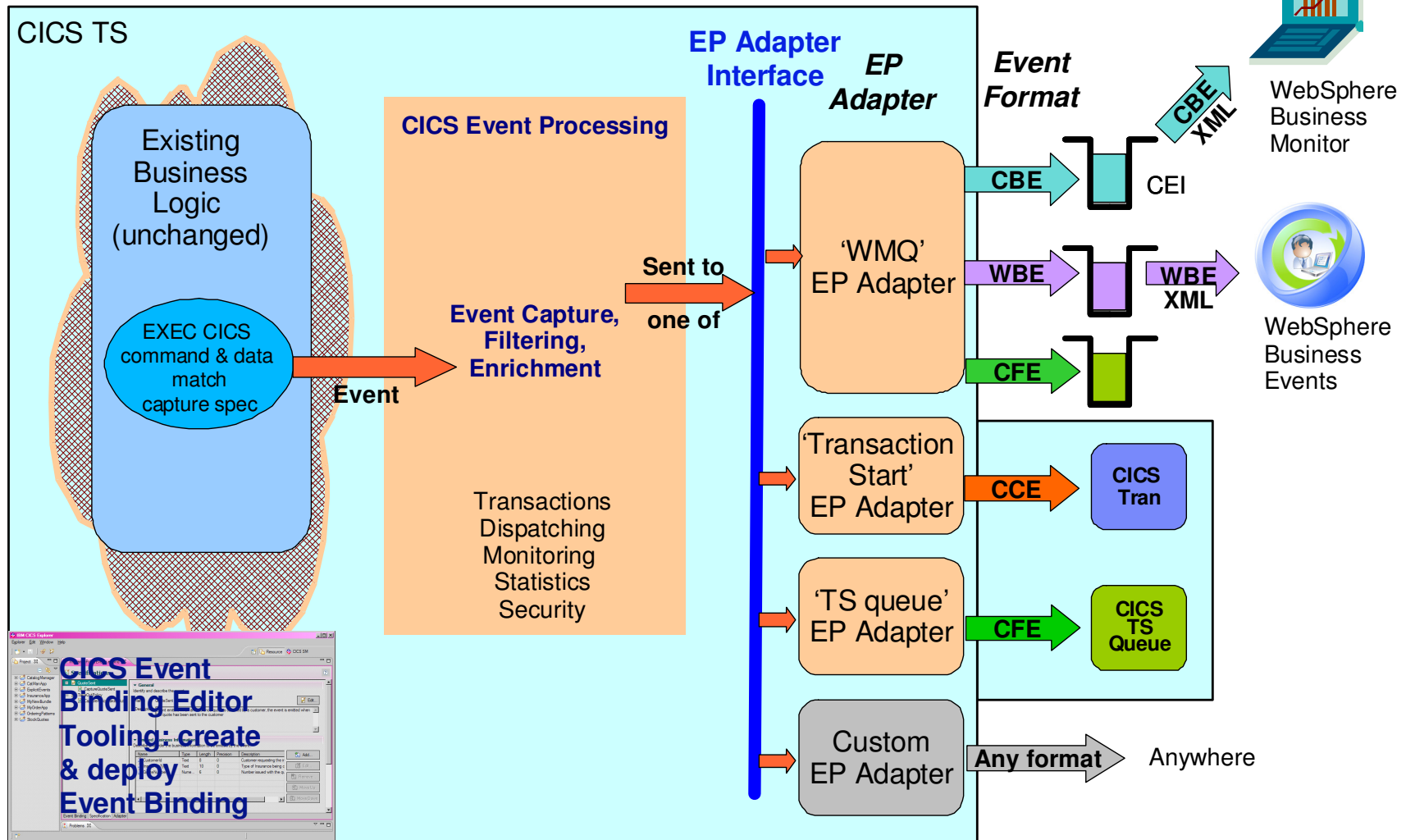
Although most people are blissfully unaware of CICS, they probably make use of it several times a week, for almost every commercial electronic transaction they make. In the whole scheme of things, CICS is much more important than Microsoft Windows." *Martin Campbell-Kelly, From Airline Reservations to Sonic the Hedgehog (A History of the Software Industry)*

”

CICS and Business Events

- CICS TS V4.1 allows you to emit business events from existing applications
 - ▶ Supporting shifting corporate policies
 - ▶ Without having to modify the applications
 - ▶ And driving your choice of destination
 - WebSphere Business Monitor, WebSphere Business Events, CICS application, application through WebSphere MQ, ...
- IBM provides tooling at all levels, including
 - ▶ WebSphere Business Events for complex event processing
 - ▶ WebSphere Business Monitor for monitoring events

CICS Events Architecture



Role-Based CICS Event Work Flow



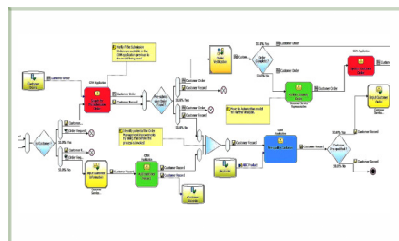
**LoB
Manager**



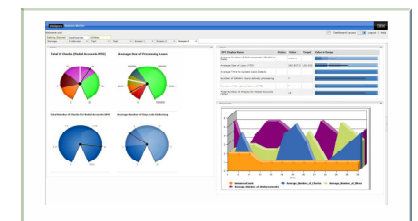
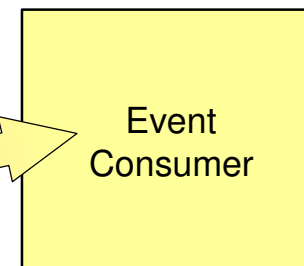
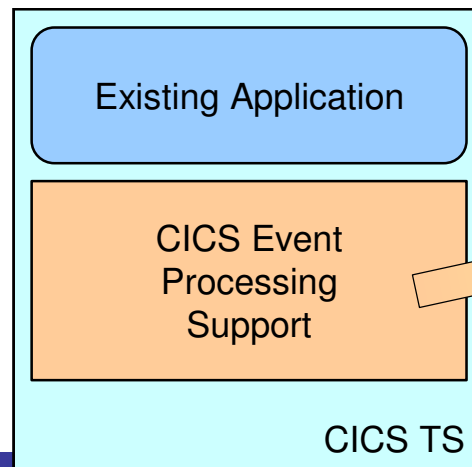
**Application
Analyst**



**Systems
Programmer**

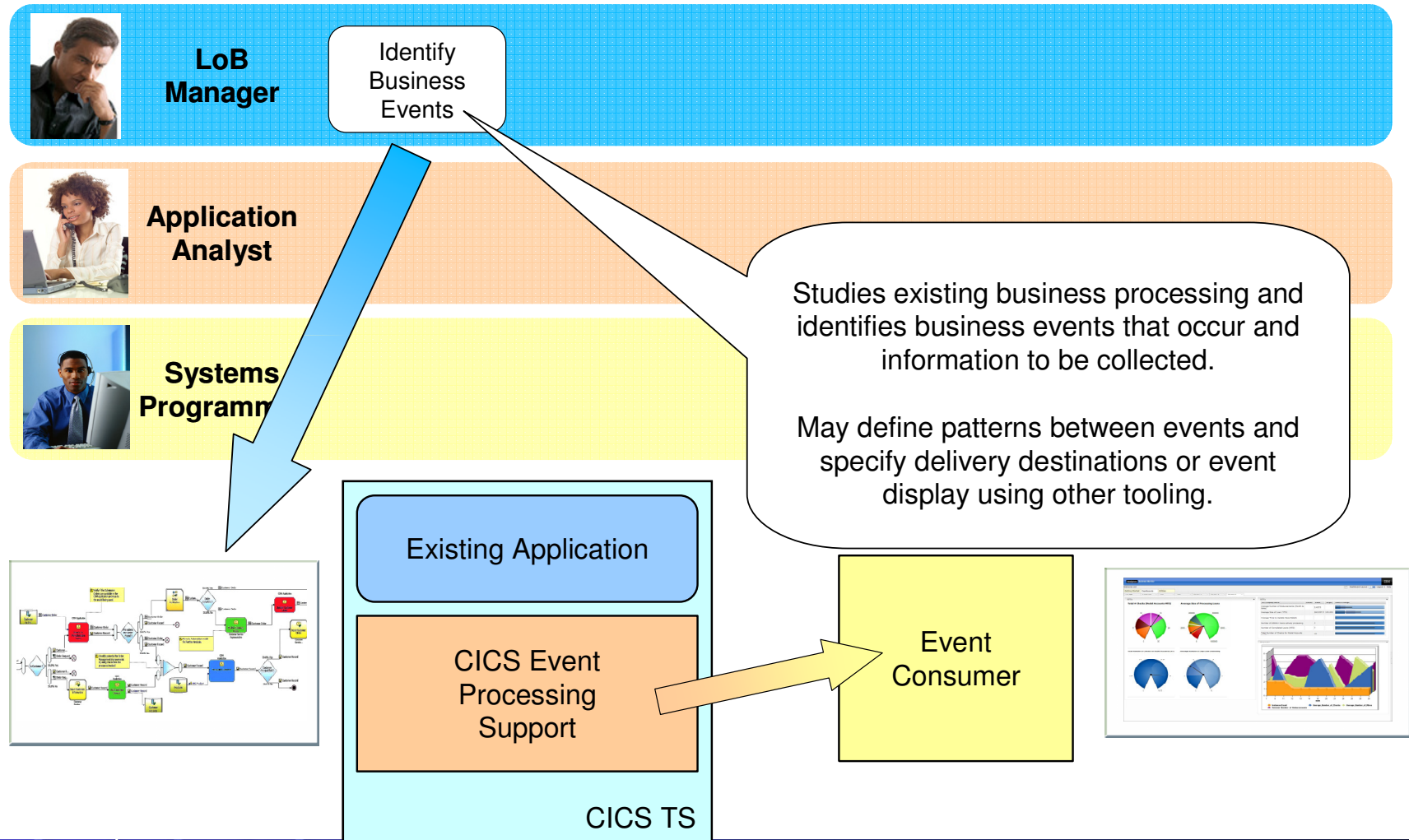


Business Modeler

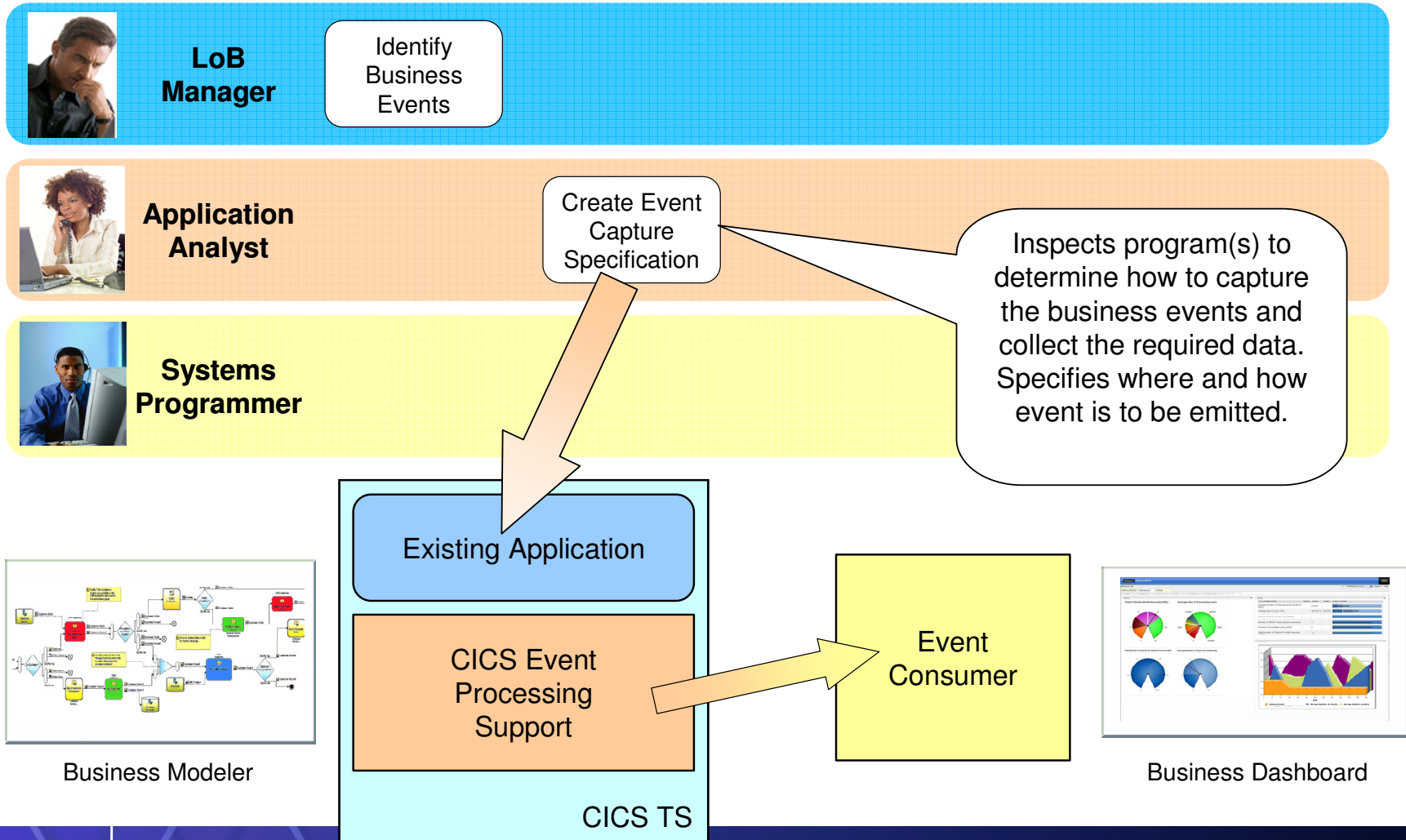


Business Dashboard

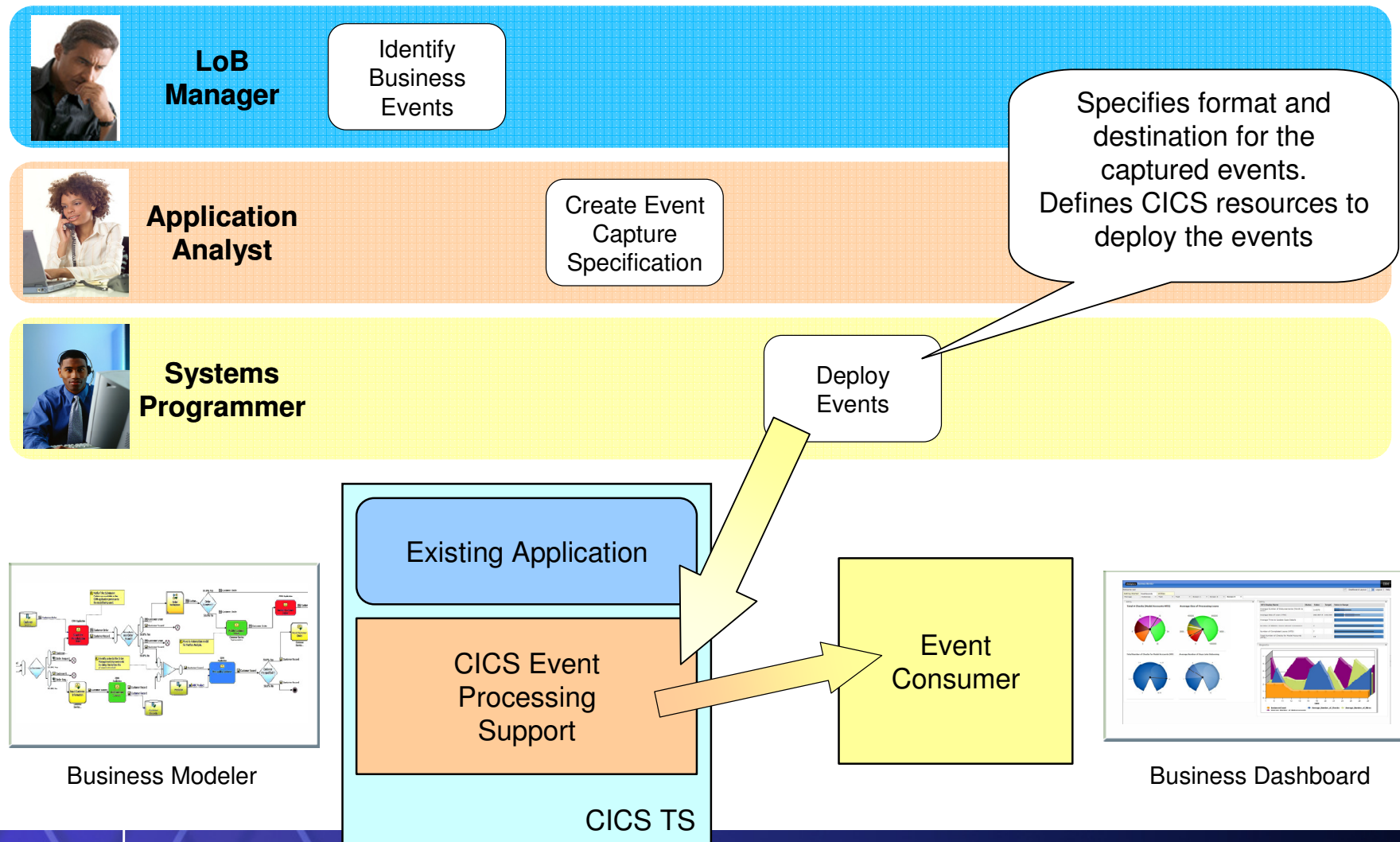
LoB defines the business events



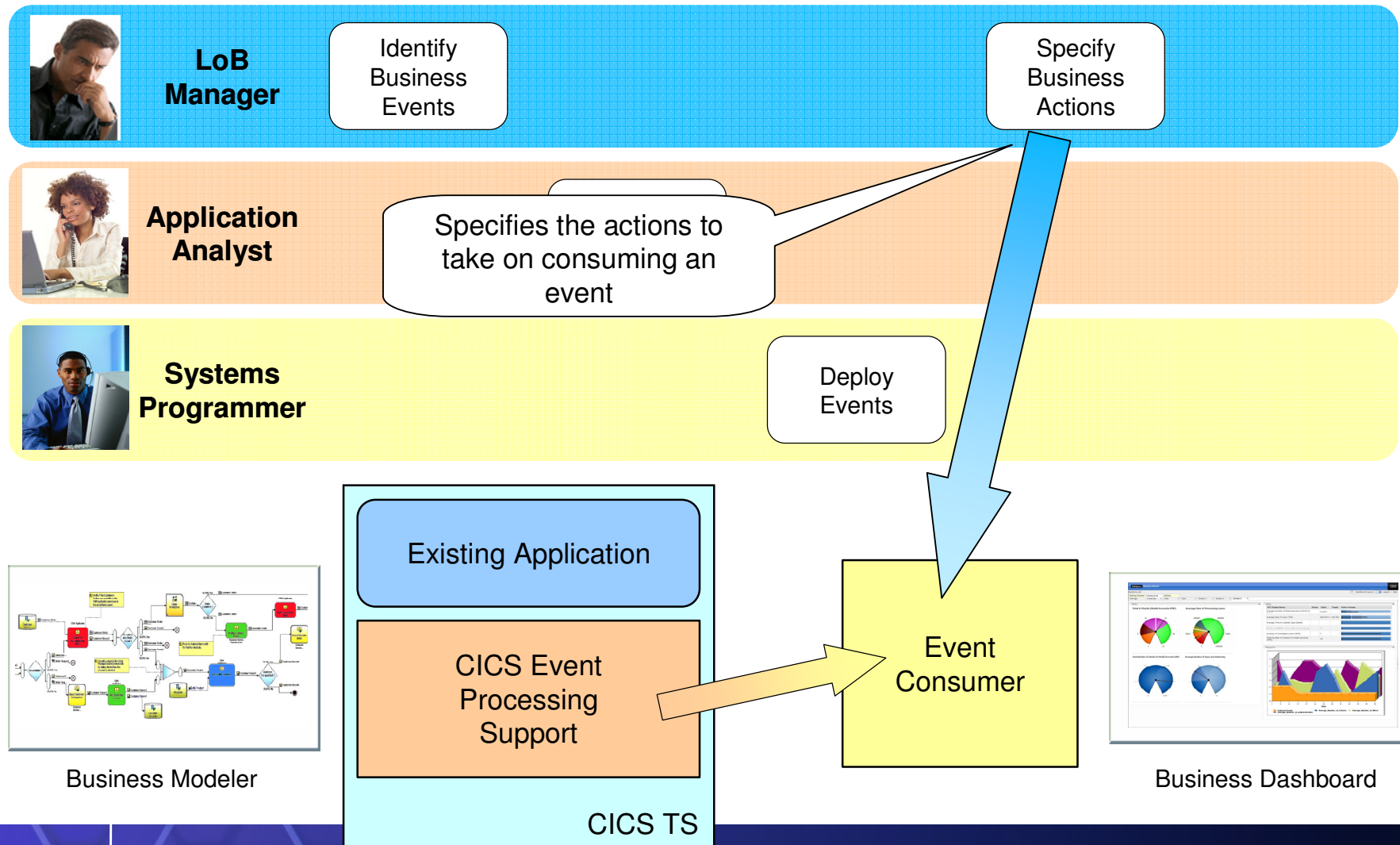
Application Analyst identifies events in application



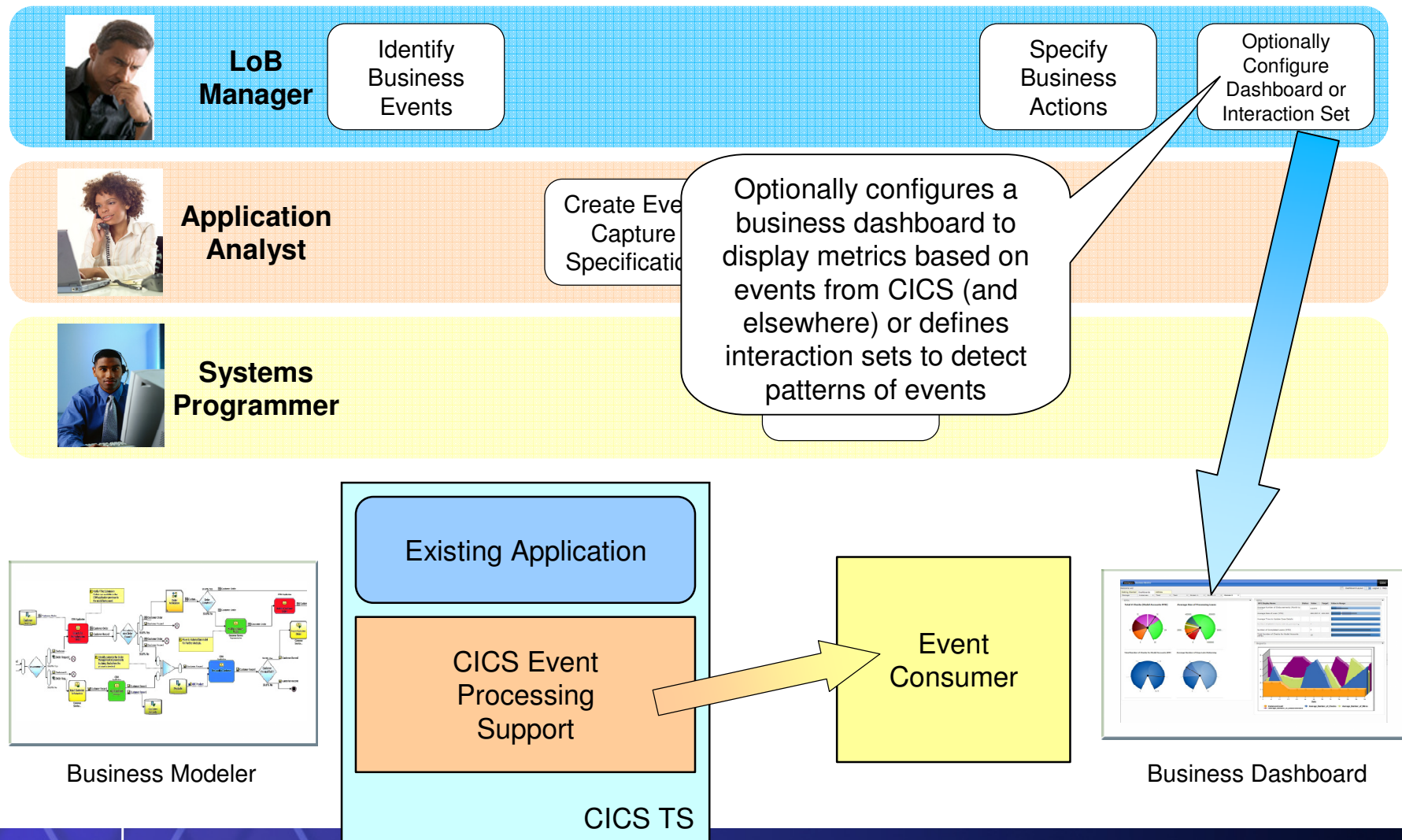
Systems Programmer configures the infrastructure



LoB defines the business actions



LOB optionally configures a dashboard



CICS Event Capture options

■ Non-invasive

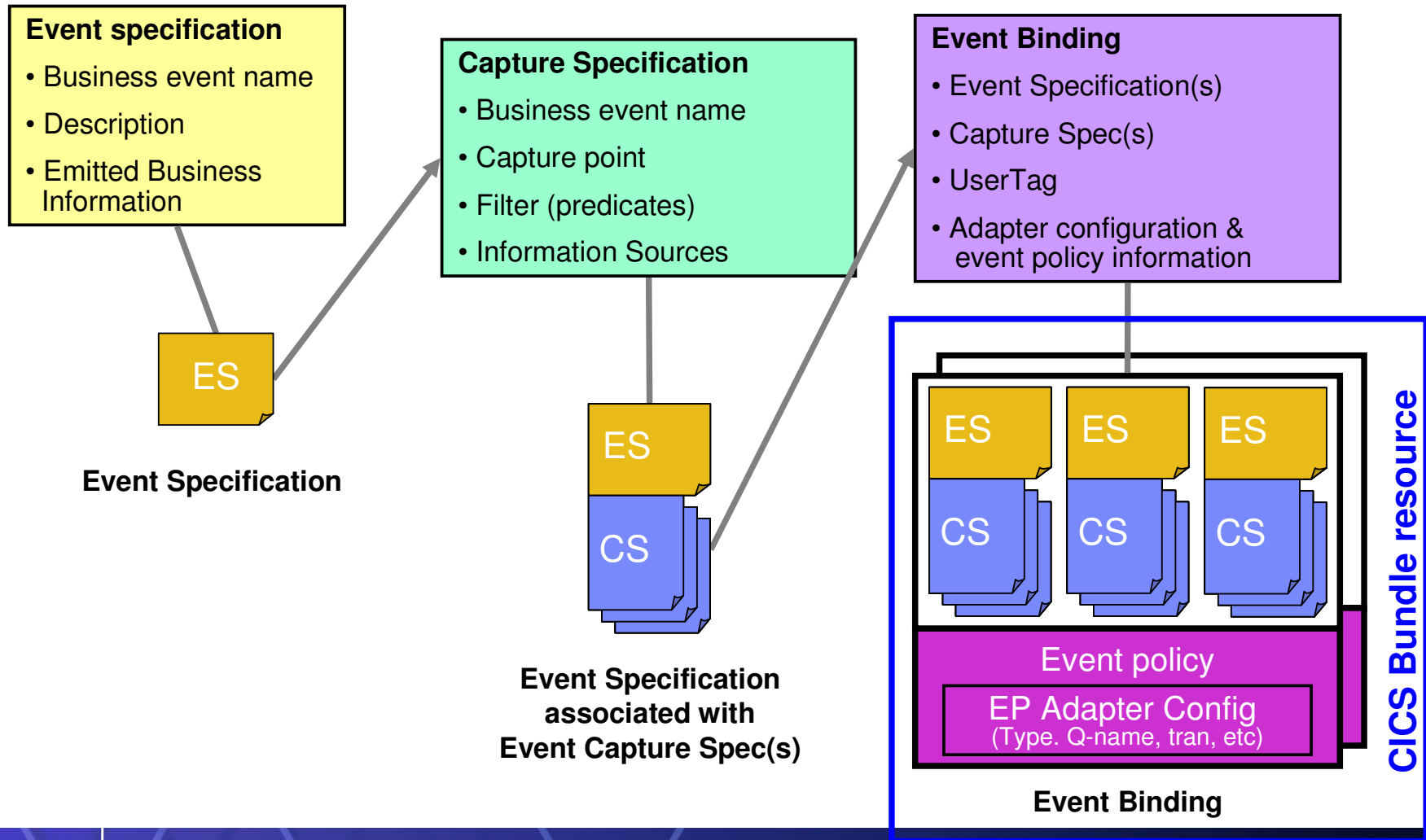
- ▶ Declare event points in application logic without opening up the application
- ▶ Use application knowledge to map business event onto point(s) in the logic where the event occurs

■ Explicit API

▶ **EXEC CICS SIGNAL EVENT**

- EVENT supplies an event identifier
- Data can be supplied as either FROMCHANNEL or Data area and length
- Identifier to be used in event specification
- ▶ Explicit way of adding a capture point to an application
 - Allows exact pinpointing of the event point, and exact selection of relevant data
 - Use to “event-enable” the application
 - Once this is done, the instrumentation can be used for different purposes
- ▶ Define as event within an event binding
 - Allows filtering and selection of data to use for different business events
 - Allows event to be enabled and disabled
 - ‘fast path’ in tooling to simplify specification of explicit events

CICS Event Specification



Event Transactionality

- Transactional option on the event definition
 - Part of the advanced adapter options on an event binding
 - When set, causes CICS to wait for syncpoint completion before either emitting or discarding event (depending on syncpoint outcome)
 - For many events, will not want transactionality e.g. attempt to write to file could be as interesting as succeeding
- Note
 - Transactional events are not emitted until the UOW reaches syncpoint – for a long-running transaction, this could mean the events are not very close to real-time

Questions