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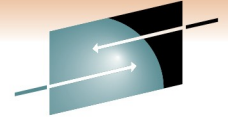
CICS Event Processing

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IBM Distinguished Engineer

Thursday, March 3rd 2011
Session 8278



Topics



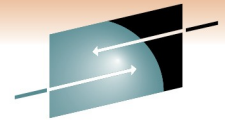
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- CICS and Event Processing
 - Introduction to event processing
 - CICS event processing overview, and Smarter Planet
 - Value from CICS events: a few example scenarios
- Building an Event Binding to enhance the Catalogue Example Application
 - Using the Event Binding Editor in CICS Explorer
- Deploying an Event Binding
- Managing a live Event Binding

Topics – Notes



- This session provides a brief overview of the Event Processing capability introduced in CICS TS V4.1. The session will dive into a practical demonstration of the steps to create, deploy and manage event specifications in IBM CICS Transaction Server V4.1 and how to make those events available to consumers such as IBM WebSphere Business Monitor and IBM WebSphere Business Events. The session will include a demonstration of creating an event specification within an event binding using the Event Binding Editor (part of the CICS Explorer), explaining the various options and aspects of the specifications, as well as showing deployment and testing of an event binding.



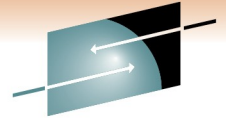
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CICS and Event Processing

An introduction to CICS as
a source of business events

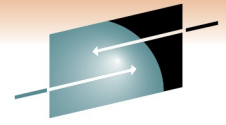


CICS and Event Processing – Notes



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- This section introduces the core concepts of CICS event processing support.



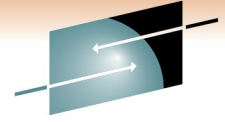
What is an event?

- An event is
 - Anything that happens (or is contemplated as happening)
 - An event has a name and usually some data (its payload)
 - Produced and responded to asynchronously
- “Simple” event
 - A single event, meaningful in itself
 - e.g. order placement; bank account update; stock trade
- “Complex event processing”
 - Detect and respond to patterns of events
 - e.g. three orders from customer A in 2 days; bank withdrawal after PIN change update; interesting pattern of stock trades
- Business Event Processing
 - Detect and respond to events that indicate business-impacting situations across the enterprise
 - Extends event processing capabilities to business users
 - e.g. IBM WebSphere Business Events provides complex event processing for business users

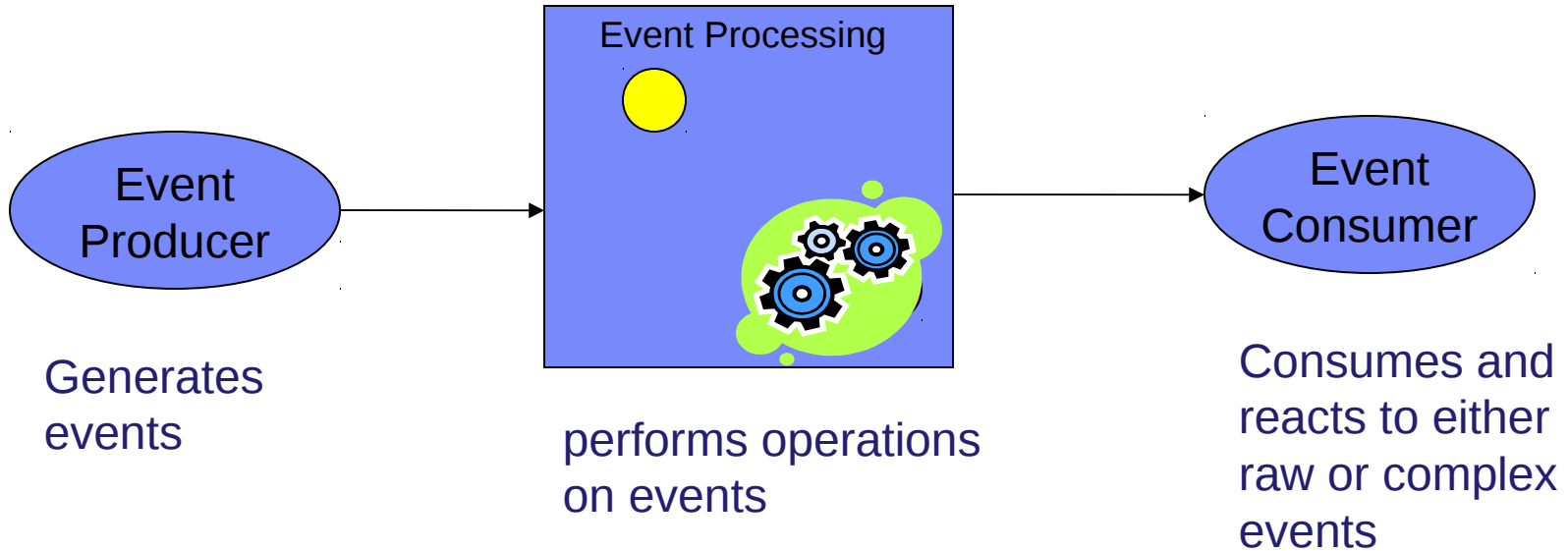
What is an event? – Notes

- This slide introduces the idea of an event, which is really simply something that happens. The absence of that thing happening can also be an event, but so called ‘complex event processing’ (see below) is generally required to detect this. The definition on the slide is taken from the Event Processing Technical Society Glossary (available at <http://www.ep-ts.com>).
- In contrast to just sending messages, one particular characteristic of an event is that it is a named. The data associated with an event is sometimes referred to as its payload.
- Events are processed asynchronously from the emitting application, with the consumption of the event being decoupled from its originator.
- This slide also explains the distinction between a ‘simple’ event, and ‘complex event processing’, the latter being based on a pattern of simple events potentially occurring over time, and correlated together in some way. Although this is a useful distinction in the context of the type of events that CICS emits, which are simple events, these terms are less widely used than they have been.
- A business event is something that happens which is relevant to the business (this is ‘business’ in its broadest sense, not just commercial businesses). This effectively means that all events are really business events, but as we shall see, the focus for CICS events is on application events as opposed to system or “IT” events.
- CICS events aim to provide information at the level of what the application is achieving, rather than what the code or system is doing.

Event Processing in a Nutshell



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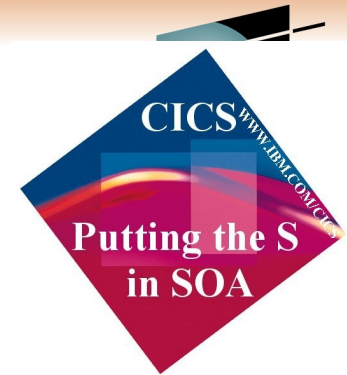


Event Processing in a Nutshell – Notes



- Event Processing involves three main aspects:
 - Event producers emit events into the event processing system. These can be simple RFID sensors and actuators, through to business flows or CICS applications. The event processor can carry out a variety of actions, ranging from simple enriching of the event in some way (e.g. adding a date and timestamp, or adding information about the source of the event), through to comparing multiple events (potentially from multiple sources) against event patterns and producing a new ‘derived’ event.
 - The event resulting from processing is available for consumption.
 - The event consumer will react to the event. The event consumer might be very simple and just update a database, or could populate a visual dashboard with the data carried with the event, or carry out new business processing as a result of the event. The event consumer could also carry out event processing itself.

CICS and Business Events



- Event processing addresses the need for agility
 - Modern businesses must react quickly to circumstances
 - Decision makers need reliable, timely information
- CICS systems run an enormous amount of existing business logic
- Using an Event-based approach, there is potential to gain insight into the processing in CICS and to introduce additional extensions to applications
 - In a dynamic, de-coupled fashion
 - Without the need to change the applications
- **CICS Transaction Server for z/OS 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, ...

CICS and Business Events - Notes



- Events are valuable to Enterprise Systems, providing the ability to respond in real-time, or near real-time.
- Given the considerable amount of business processing which is carried out in CICS systems across the world (over 30 billion transactions a day), CICS is a very significant source of business events. This can provide enhanced business flexibility and the ability to meet governance and compliance regulations.
- Event emission is asynchronous to the emitting application, and the consumption of the event is decoupled from its originator.
- CICS TS will emit simple, single events. These may be consumed by a “complex event processing” engine where they can be combined with events from other sources in addition to CICS. They can be sent to a Business Monitor to provide insight into processing within CICS.

CICS TS V4.1 is aimed at helping users to



Compete for new opportunities by gaining insight into business processes and responding by modifying key business applications quickly and with confidence

– Business Flexibility and Innovation

Comply with corporate, industry and government policies to manage business risk of critical business applications

– Governance and Compliance

Event Processing

Control costs by simplifying IT infrastructure and improving development and operations productivity through easier-to-use interfaces and functions

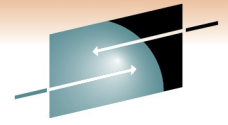
– IT Simplification

CICS TS V4.1 – Notes

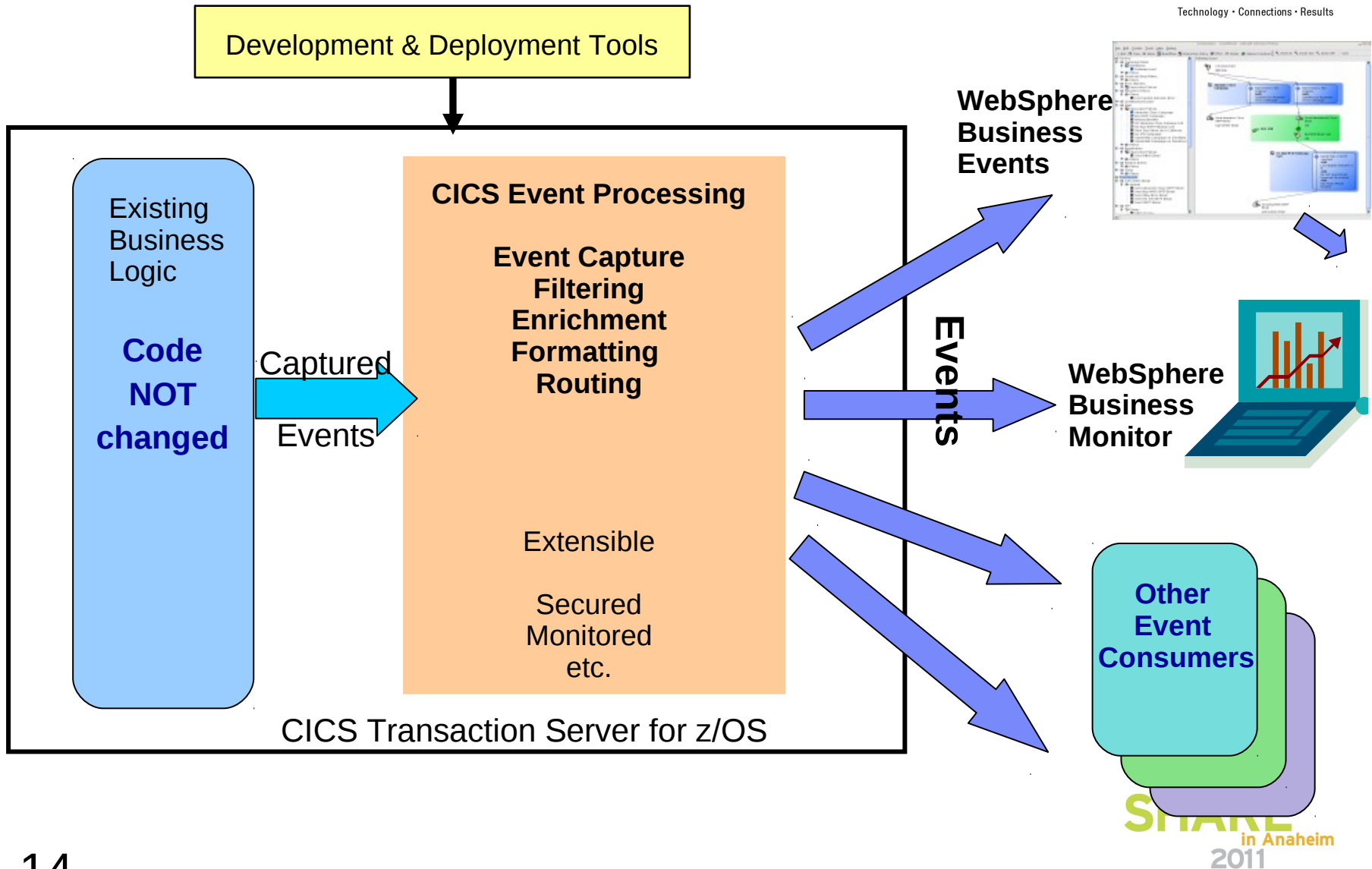


- This slide shows the overall themes of the CICS TS V4.1 release.
- CICS support for event processing helps to provide for increased business flexibility and innovation, as well as assisting with governance and compliance.
- To a lesser extent, it also plays into the theme of IT Simplification, by making it easy to create events, and to enable and disable them.

CICS and event processing – overview



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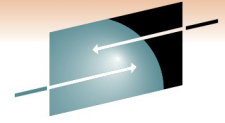


CICS Event Processing Overview – Notes

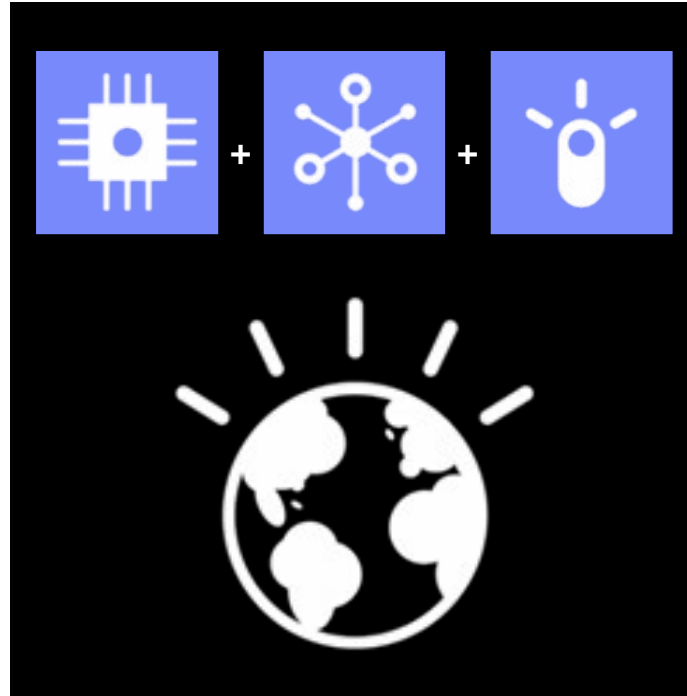


- This gives a high-level summary of CICS as a source of business events.
- CICS event processing support allows existing business logic to be instrumented to emit events without change to the application code.
- Tooling is used to define events and their data, to specify to the CICS runtime how to detect when the events occur, to indicate how they are to be formatted and routed, and to deploy the events to CICS.
- The CICS runtime will detect occurrences of events which are currently enabled, and capture the events without the need to make application code changes – enabling rapid, easy deployment of event-based solutions.
- CICS Event Processing is a core component of the CICS runtime, and will provide all the qualities of service you would expect of CICS. When CICS captures events, it will carry out specified filtering, enrich the event with information about the application context in which it occurred, format the event and route it such that it can be consumed by the appropriate event consumer.
- It is possible to emit events in formats suitable for consumption by WebSphere Business Events, WebSphere Business Monitor, and other consumers.
- CICS Event Processing support is extensible, with options for customization.

Smarter Planet



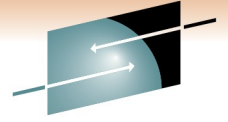
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Smarter Planet

Instrumented, interconnected,
and intelligent

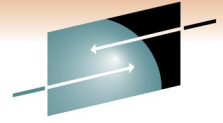
Smarter Planet – Notes



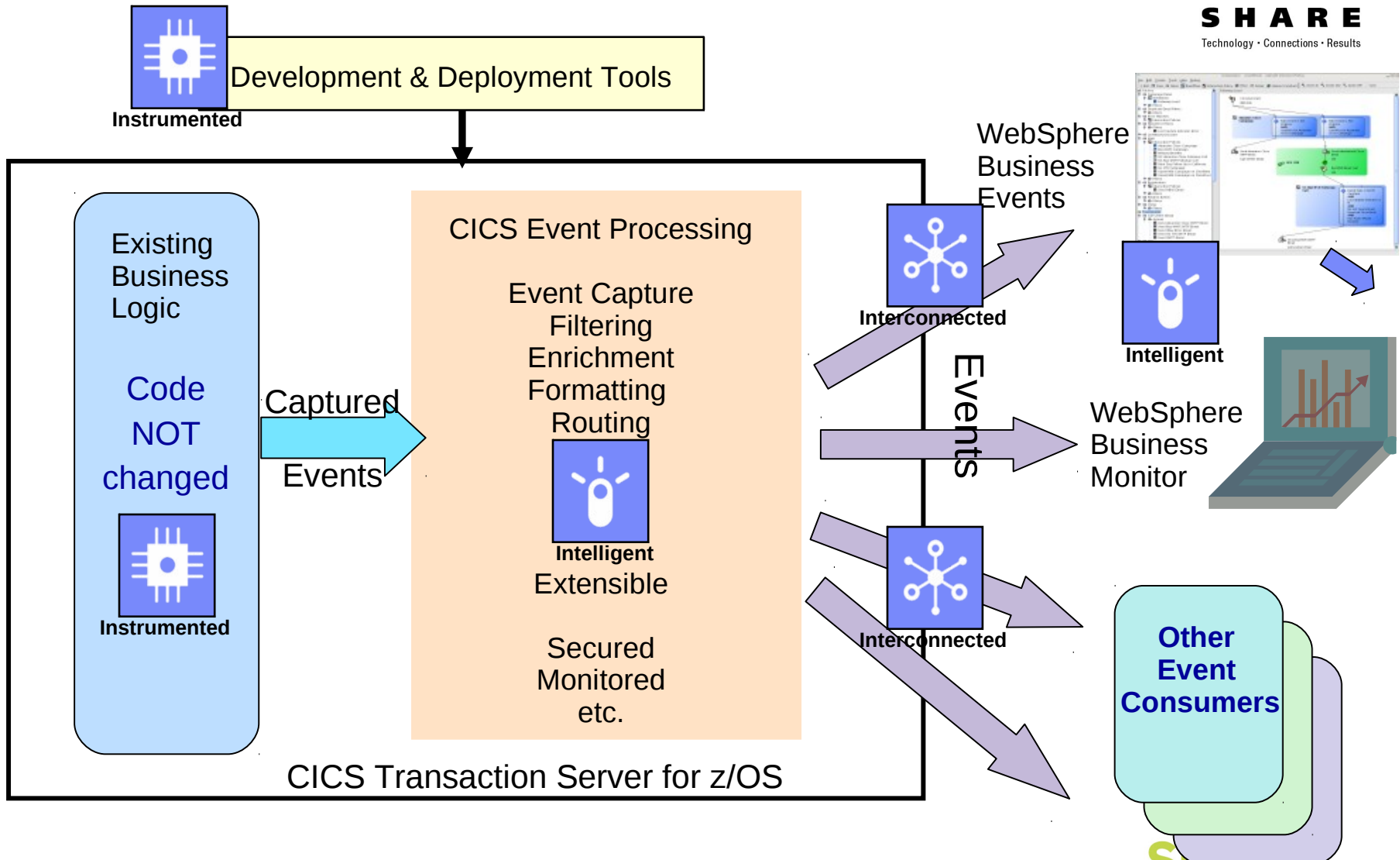
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- This slide is a reminder that the Smarter Planet is instrumented, interconnected and intelligent.

CICS events for a Smarter Planet



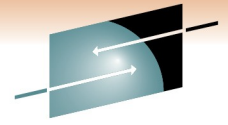
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CICS events for a Smarter Planet – Notes



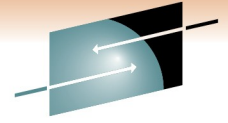
- This shows that CICS events are:
 - **Instrumented**: the tooling allows CICS applications to be ‘instrumented’ to emit events, without changing the applications
 - **Interconnected**: CICS events integrate with other event processing products and event consumers
 - **Intelligent**: CICS events can be filtered to capture the significant events, enriched with application context, formatted and routed to consumers. IBM event consumers provide intelligence such as the detection of event patterns



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Value from CICS events

Value from CICS events – Notes



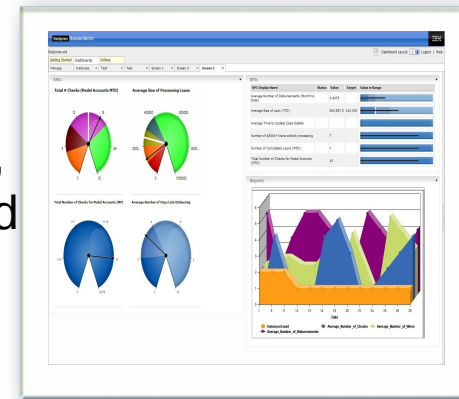
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- This section shows some of the ways in which value can be obtained from using CICS events.

EP Scenario 1 – Observe business processing



- Monitor processing carried out by an application
 - e.g. Identify key points in order processing business logic
 - order requested, order placed, order confirmed, order dispatched, order cancelled
 - Collect relevant contextual data associated with the event, including a way to correlate events for the same order, and emit event
 - Events sent e.g. to WebSphere Business Monitor
 - *Observe orders being received, processed, cancelled*
 - *Study KPIs – numbers of orders received per week, time to process and dispatch orders, etc.*
 - *Take action when thresholds exceeded, when value of a customer's orders exceeds a certain amount, etc.*
 - Original application continues processing independently:
 - Event instrumentation is 'non-invasive' to the application



EP Scenario 1 – Observe business processing – Notes











- This is a simple instrumentation example, based on an order processing system:
 - Event capture points are defined at the key points of the business application.
 - Triggered events can update a business dashboard with both notification that the event occurred and data relevant to the event (order size, customer number etc.).
 - This can be used to observe the processing, and to see KPIs and alerts.
- In this simple example the application could also be extended by manual or automatic action taken when thresholds on the dashboard are exceeded.
- The original application continues processing without change.

EP Scenario 1 – KPIs and Dimensions in Business





Instances									
orderID	itemID	customer name	item price	item quantity	order duration	order start time	order end time	order price	order status
+000012784	0001	Steve	20	20	24 m, 19.121 s	May 27, 2009 10:38:13 AM	May 27, 2009 11:02:32 AM	400	order canceled
+000012785	0002	Lijia	5	40	23 m, 25.009 s	May 27, 2009 10:39:24 AM	May 27, 2009 11:02:49 AM	200	order shipped

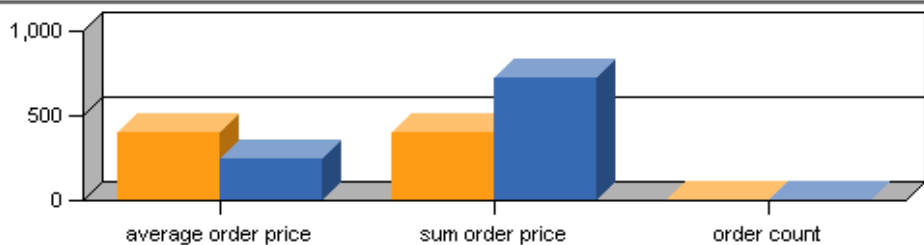
KPIs					
KPI Name	Status	Value	Target	Actions	Value in Range
average time on order shipped		23 m, 18.601 s	1 h, 0 m, 0 s	  	
percent of order cancelled		25.00%	30.00%	  	

Dimensions

File Edit View Bookmarks Data Chart Tools Help



Drill Down 



Measures

■ order canceled ■ order shipped

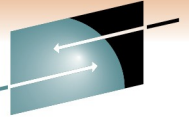
order status dimension	average order price	sum order price	order count
All order status dimension	280	1120	4
order canceled	400	400	1
order shipped	240	720	3

EP Scenario 1 – KPIs and Dimensions in Business Space – Notes



- This example of dashboard views in Business Space shows how business process performance and KPIs can be monitored using events from CICS. It shows information about orders shipped and cancelled, and KPIs for the average time taken to ship an order, and the percentage of orders which get cancelled.

EP Scenario 2 – Non-invasive change to business processing



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- Application extended by triggering new or existing separate program for extra, asynchronous processing
- Examples:
 - Extend governance practices by sending an alert when certain data is viewed or altered
 - Asynchronously send details of special offers or discounts when large customer orders have been placed
 - This example may be seasonal and is easily enabled/disabled without application change. The interpretation of a large order can be changed outside the application.

Original program continues processing independently

- Consumer program can run within CICS or externally
 - Flexibility to use available skills and other resources
 - Choice of processing platform depends on nature of processing, interaction with other subsystems



EP Scenario 2 – Non-invasive change – Notes



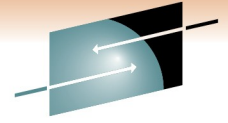
- In this example the business application can be changed or enhanced by event processing
 - Passing data relevant to the context
 - External processing could be
 - Similar to base application function (extending business function)
 - Different kind of processing – typically observation (tracking activity for business or audit reasons)
 - Different processing under different conditions or times (e.g. Tue-Thu)
 - Can make use of different platform, skills, tools
- Application code initiated by the triggered event may be a program running within CICS or may be initiated on another system via a WebSphere MQ message or as the result of the action of a complex event processing engine.

EP Scenario 3 – Event Combination



- Respond to patterns of events
 - Track banking transactions exceeding \$5000
 - Events captured from the CICS applications, generating events for large transactions via
 - *Cash deposit, cash withdrawal, account transfer (in or out), check deposit*
 - *Events sent to WebSphere Business Events*
 - Customer entering branch detected via RFID in customer's bank card, event sent to WebSphere Business Events
 - Detect pattern of customer who has performed 5 or more large transactions then visits the branch
- Specify action to take in WebSphere Business Events e.g. alert the branch manager

EP Scenario 3 – Event combination – Notes



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- This is an example of “complex” event processing with events being potentially combined from multiple sources including CICS
- A complex event processing engine (such as WebSphere Business Events) is able to collate events from multiple sources and carry out pattern matching to derive additional insight.

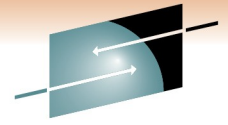
EP Scenario 3

The screenshot shows a web browser window titled "Business Space - Page 1 - Microsoft Internet Explorer". The address bar contains the URL: `http://localhost:9080/mum/bootstrap/bootstrap.jsp#pid=0914D3AE35AB5090E216B06171CE0700002&`. The browser toolbar includes buttons for Back, Forward, Stop, Home, Search, Favorites, and other standard navigation tools. Below the browser window, the "Business Events Design" interface is visible. It features a filter configuration section with a dropdown menu set to "RevitalizedBank recent significant account activity". Below this, there are two conditions connected by an "And" operator. The first condition is: "(Past Occurrences Of Ack_LargeTransaction Within 1 month) Is Greater Than or Equal To 5". The second condition is: "(Past Occurrences Of Inform Branch Manager Within 1 month 5 mins) Is 0". To the right of these conditions, there is a dropdown menu labeled "Related by" with the value "RevitalizedBank Customer.ID". Below the filter section, there is an "Interaction Set" configuration. The "Interaction Set" is named "Customer of Interest" and is "Related by" "RevitalizedBank Customer.ID". The "In response to" field is set to "Customer Enters the Branch (RevitalizedBank Branch)". The "Immediately" section is expanded, showing the following logic: "If: RevitalizedBank recent significant account activity", "Then: Immediately Inform Branch Manager (RevitalizedBank Email Server)", and "Else: no action". At the bottom of the browser window, the IBM logo and "powered by WebSphere" are visible. The system tray shows "Done" and "Local intranet".

EP Scenario 3 – Detecting event pattern using WebSphere Business Events – Notes

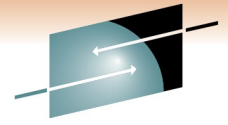


- Events from CICS can be used in interaction sets and conditions (filters) defined in WebSphere Business Events
- This slide illustrates EP scenario 3 by showing an interaction set and filters defined in the WebSphere Business Events Design tool.



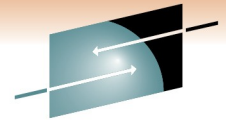
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About the demo...

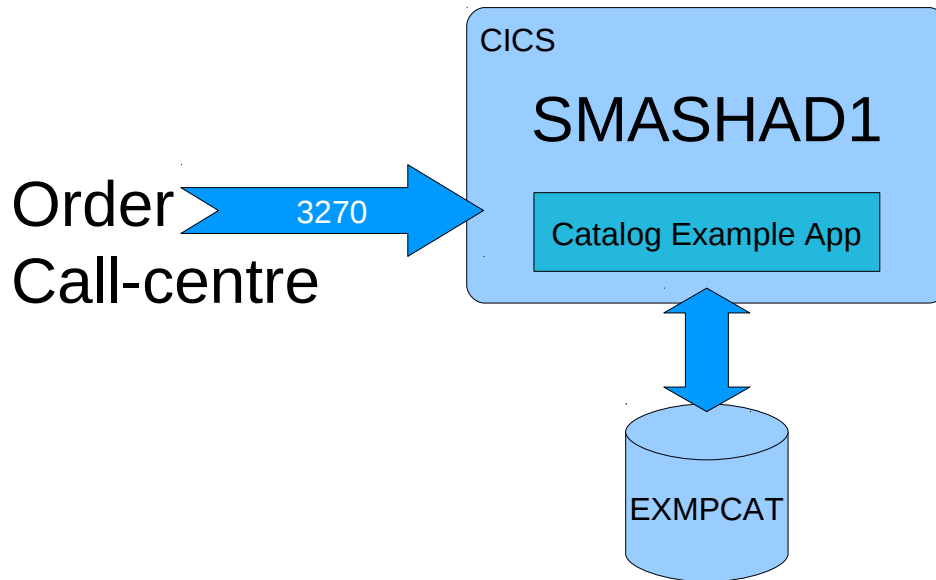


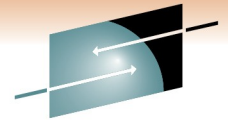
What we do in the demo

- Explore the Event Binding Editor
 - Build a new Event Binding using the supplied example as a starting point
- Deploy the binding in a bundle
 - Well, sort of...
- See the Event Binding enable the extension of the Catalog Example App
 - Integrate the 3270 app with a new Dynamic Scripting App
 - Control the Event Binding via the CICS Explorer



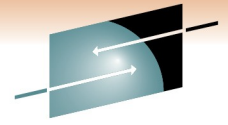
Topology of the demo app



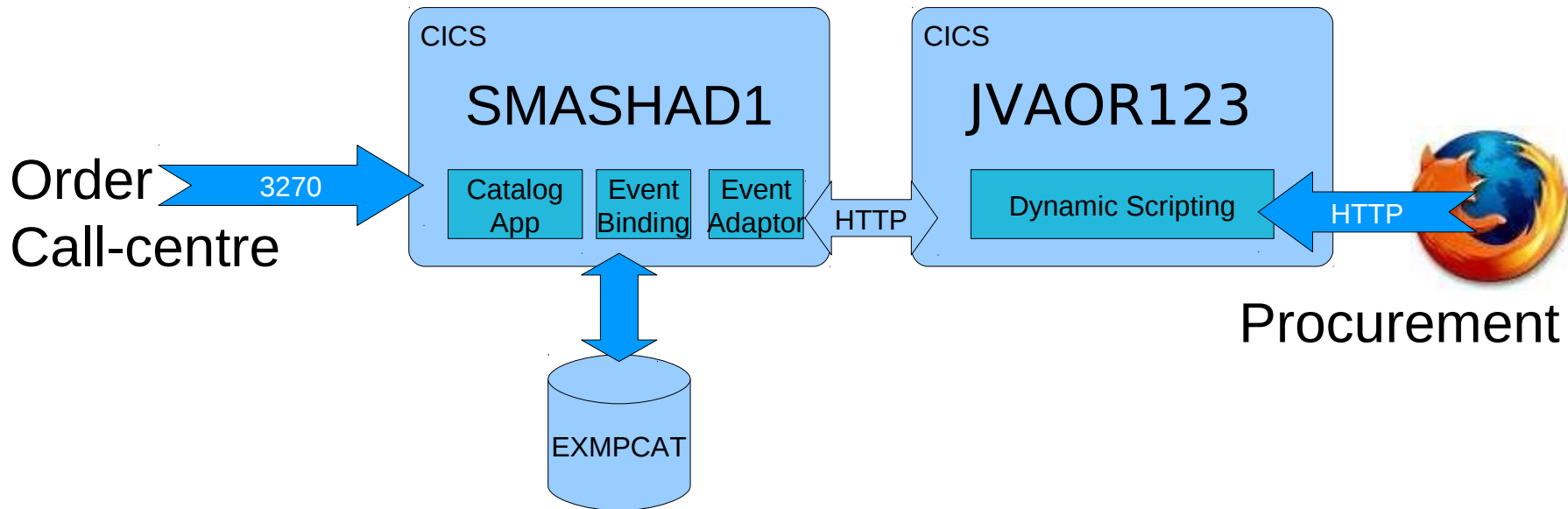


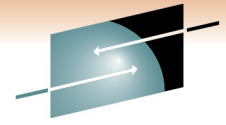
New Business Requirement

- Warn the procurement department when stock falls below 24 units and none are on order.
 - Unlike the Order Call Centre, Procurement do not have 3270 emulators and need a browser interface
 - Initial target is to evaluate the efficiency of the process improvement THIS WEEK

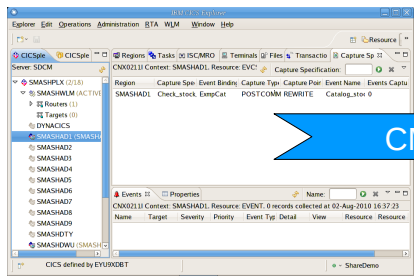


Extending the demo app with Events

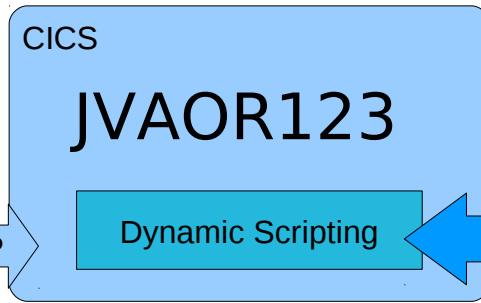
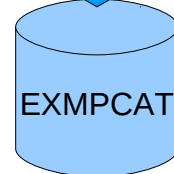
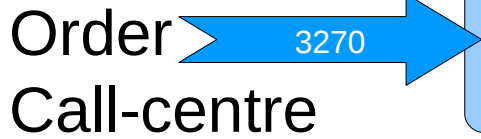
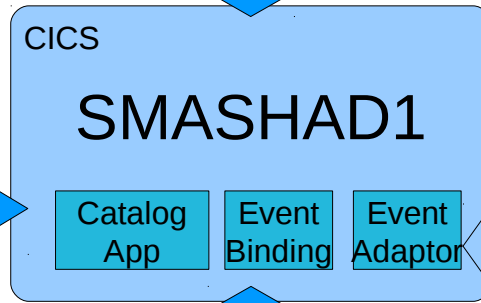




Managing the demo app

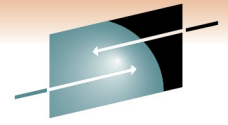


CICS Explorer



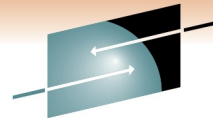
Procurement



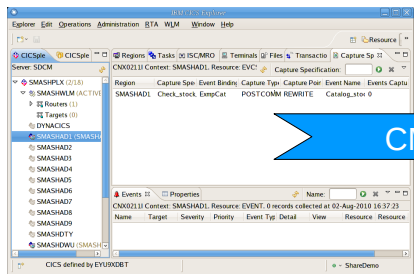


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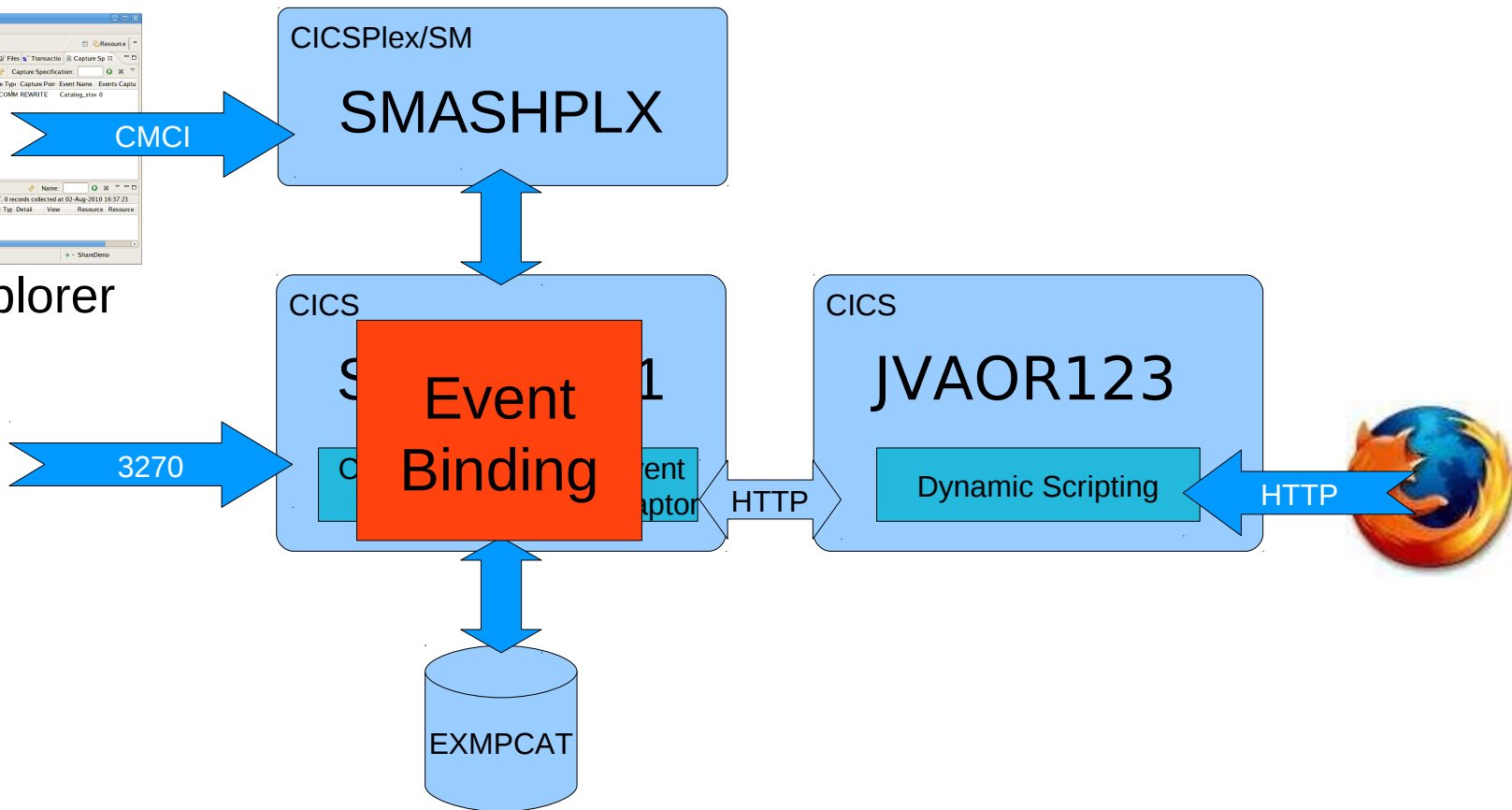
Building an Event Binding

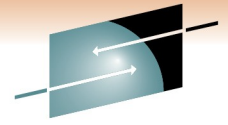


Step 1



CICS Explorer

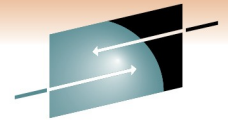




Use the example binding

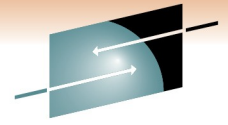
- Fire up CICS Explorer
 - (This demo applies to version 1.0.0.7 of the Explorer – details might vary with other versions)
- Switch to the “Resource” perspective
- From the menubar... Explorer → New Wizards → CICS Bundle Project
- Use New → Example... from the Bundle Project's context menu
- You now have a Bundle containing the Example event-binding.

A new bundle with the example event binding



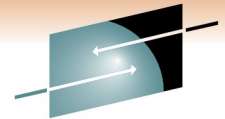
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A screenshot of an IDE interface. On the left, the Project Explorer shows a project named 'ShareDemo' with a sub-folder 'META-INF' containing 'cics.xml' and 'DemoEventBinding.evbind'. The main editor area shows the 'DemoEventBinding.evbind' file with the 'Event Binding' configuration. Under 'General Information', the 'Description' field contains 'Several catalog items have been out of stock' and the 'User Tag' field contains 'ebref001'. Under 'Event Specifications', a list contains one item: 'Catalog_stock_status_check'.



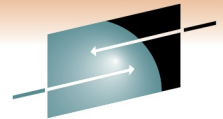
The Event Binding Editor

- Become familiar with the Event Binding Editor
- Notice the Tabs for the three major elements...
 - Event Binding – which contains a list of Specifications
 - Specification (multiple per binding) - edits the selected Specification in the binding
 - Adapter – there is one per binding
- Adapter needs changing for the demo, use
 - Custom Adapter type
 - Tranid ADAP
 - Pass string “DSAPP” to the adapter – it's the name of the URI map which has the host to post the event to



Event Binding Editor

The screenshot shows the 'Event Binding Editor' window for a file named '*DemoEventBinding.evbind'. The window has a title bar with standard OS controls. Below the title bar is a header area with the text 'Event Binding' and a help icon. The main content area is divided into two sections: 'General Information' and 'Event Specifications'. In the 'General Information' section, there is a 'Description' text area containing the text: 'Several catalog items have been out of stock before being re-ordered causing missed sales opportunities. Generate an event when an item is about to go out of stock'. Below this is a 'User Tag' text box containing the value 'ebref001'. The 'Event Specifications' section has a sub-header 'Event specifications contained in this binding.' and a list box containing one item: 'Catalog_stock_status_check'. To the right of the list box are three buttons: 'Add...', 'Edit Details...', and 'Remove...'. At the bottom of the window is a tabbed interface with three tabs: 'Event Binding', 'Specification', and 'Adapter', with 'Event Binding' currently selected.



Event Specifications

Specifications

▼ Catalog_stock_status_check

- Check_stock_status_on_rew

▼ General

Identify and describe the event.

Name Catalog_stock_status_check Edit...

Description The stock level is low and there is no re-order in place.

▼ Emitted Business Information

Describe and order the business information to be emitted by the event.

Name	Type	Length	Precision	Description
Program_name	Text	8	0	Program Name
Item_ref	Numeri	4	0	Item reference number
Item_descriptio	Text	40	0	Item description in catalog
in_stock	Numeri	4	0	Current number of items in stock
on_order	Numeri	3	0	Number of items on order

Add... Edit... Remove... Move Up Move Down

▼ Capture Specifications

Add Capture Specifications to this event.

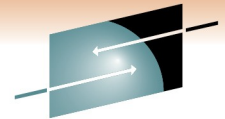
Add a Capture Specification...

▼ Automatic Capture Specification

Use this to automatically generate a capture specification for a signal event call using the business information entered above.

Add an Automatic Capture Specification...

Event Binding Specification Adapter



Event Adapter – for a TSQ

*DemoEventBinding.evbind

Adapter

▼ Adapter
Choose the adapter to emit events produced by this binding.

Adapter

Emits events to a named CICS TS queue. Use this EP adapter to validate that the correct events are being captured with the correct data and reads from a TS queue.

Queue Name

System ID (Optional) Use Local System

Use Auxiliary Temporary Storage

▼ Advanced Options

These optional dispatcher settings are for advanced users.

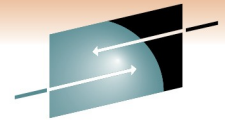
Dispatch Priority

Transaction ID

User ID Use Context User Id

Events are Transactional

Event Binding Specification Adapter



Change the Adapter for the demo

*DemoEventBinding.evbind

Adapter

▼ Adapter
Choose the adapter to emit events produced by this binding.

Adapter: Custom (User Written)

Emits events in any format that you require. A custom EP adapter is a CICS program that you write to provide a combination of formatting and routing of an event that is not supported by the CICS-supplied EP adapters. The custom EP adapter must not carry out any other processing, such as consumption of the event.

Transaction ID: ADAP

Data passed to the Custom Adapter
DSAPP

Export Event Specifications...

▼ Advanced Options

These optional dispatcher settings are for advanced users.

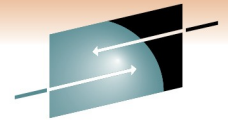
Dispatch Priority: Normal

Transaction ID:

User ID: Use Context User Id

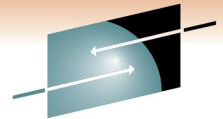
Events are Transactional

Event Binding | Specification | Adapter



Back to specifications

- There can be multiple per binding.
- Select the specification to work with from the list on the first tab (“Event Binding”)
- In this case “Catalog_stock_status_check”
- An Event Specification has four elements
 - General – name and description
 - Emitted Business Information – the data that will be collected and sent with the event
 - (Explicit) Capture Specifications
 - Automatic Capture Specifications



Specification elements

Specifications

▼ Catalog_stock_status_check

- Check_stock_status_on_rew

▼ **General**
Identify and describe the event.

Name Catalog_stock_status_check

Description The stock level is low and there is no re-order in place.

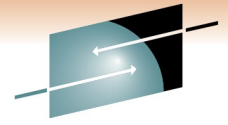
▼ **Emitted Business Information**
Describe and order the business information to be emitted by the event.

Name	Type	Length	Precision	Description
Program_name	Text	8	0	Program Name
Item_ref	Numeri	4	0	Item reference number
Item_descriptio	Text	40	0	Item description in catalog
in_stock	Numeri	4	0	Current number of items in stock
on_order	Numeri	3	0	Number of items on order

▼ **Capture Specifications**
Add Capture Specifications to this event.

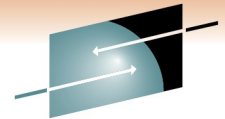
▼ **Automatic Capture Specification**
Use this to automatically generate a capture specification for a signal event call using the business information entered above.

Event Binding Specification Adapter



A capture point specification

- The example has one capture point called “Check_stock_status_on_rewrite”
 - The capture point chosen is the EXEC CICS REWRITE command
 - The capture point selection field list all the possible capture points.
- The filter tab defines predicates applied at runtime
- The information sources tab defines where the required business data for the event can be found



A capture specification

DemoEventBinding.evbind

Specifications

- ▼ Catalog_stock_status_check
 - Check_stock_status_on_rewrite

Capture Point | Filtering | Information Sources

▼ **General**
Identify and describe the capture specification.

Name: Check_stock_status_on_rewrite Edit...

Description: The number in stock and number on order are available in the FROM parameter of the REWRITE command

Remove Capture Specification...

▼ **Capture Point**
Choose the capture point.

Capture Point: REWRITE

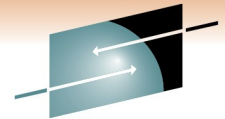
Capture before Capture after

[Next: Filtering ->](#)

Event Binding | Specification | Adapter

Filtering predicates in a capture specification

- The Filtering tab allows predicates to be defined which must match at runtime for the event to be 'interesting'.
- These apply to three types of information:
 - Context - Tranid, current program, userid, response code
 - Command options – specific to each command chosen as the capture point. In this example we can match on the filename
 - Application data – if the command has application data (commarea, container, record etc etc) then predicates can match on fields in that data
 - Here's where the stock number and order status predicates **satisfy the business requirement.**
 - The Source column in the table refers to the command's keyword which holds the application data – eg the FROM keyword on the REWRITE in this case
 - The row order in the table specifies the order of evaluating the predicates



Filter predicates in the editor

The screenshot shows the 'Specifications' window for 'Check_stock_status_on_rewrite'. The 'Filtering' tab is active, showing three sections: Application Context, Application Command Options, and Application Data.

Application Context
Define predicates to filter events.

Context	Operator	Value
Transaction ID	Equals	EGUI
Current Program	Equals	DFH0XVDS
User ID	All	
Response Code	Equals	Ok

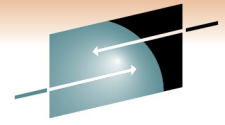
Application Command Options
Define predicates for command options. Predicates marked with * should be specified to maintain CICS performance.

Name	Operator	Value
FILE*	Equals	EXMPCAT

Application Data
Define predicates for application data. Import a language structure and pick an item to specify the data format.

Source	Container	Offse	Lengt	Operator	Value
FROM		53	4	Less Than	0024
FROM		57	3	Equals	000

Buttons: Add..., Edit..., Remove..., Move Up, Move Down



Creating predicate on application data

- An application data predicate requires knowledge of the application data structure
 - Type, offset and length
 - Can be imported from a language structure (eg from a copybook)
 - Or manually entered

Application Data Predicate

Edit Application Data

Define the predicate, choose the location where the data is found then enter the format.

Predicate

Define Predicate

Operator

Value

Variable location and format

Location

Container

Enter the format or choose an item from an imported language structure.

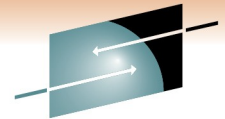
Type

Offset

Length

Precision

Codepage



The copybook importer

```

*****
*
* CONTROL BLOCK NAME = DFH0XCAT
*
* FUNCTION =
*   This copy book describes the catalog manager file
*   record structure.
*
*****
*   Catalogue record structure
01 WS-CAT-RECORD.
   03 WS-CAT-ITEM.
       05 WS-ITEM-REF          PIC 9(4).
       05 WS-DESCRIPTION      PIC X(40).
       05 WS-DEPARTMENT       PIC 9(3).
       05 WS-COST             PIC 9(6).
       05 WS-IN-STOCK        PIC 9(4).
       05 WS-ON-ORDER        PIC 9(3).
       05 FILLER              PIC X(20).

```

Obtain data format from imported language structure

Import a language structure and choose an item to obtain formatting information

Name	Format	Offse	Length	Precision
ws_cat_record		0	80	
ws_cat_item		0	80	
ws_item_ref	Zoned Decima	0	4	0
ws_descriptio	Character	4	40	
ws_departme	Zoned Decima	44	3	0
ws_cost	Zoned Decima	47	6	0
ws_in_stock	Zoned Decima	53	4	0
ws_on_order	Zoned Decima	57	3	0
filler	Character	60	20	






Buttons: Change language structure..., OK, Cancel

Defining information sources

- The Event Specification defines what needs to be emitted with the event.

Emitted Business Information

Describe and order the business information to be emitted by the event.






Name	Type	Length	Precision	Description
 Program_name	Text	8	0	Program Name
 Item_ref	Numeri	4	0	Item reference number
 Item_descriptio	Text	40	0	Item description in catalog
 in_stock	Numeri	4	0	Current number of items in stock
 on_order	Numeri	3	0	Number of items on order

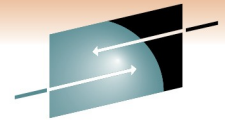
- The Information Sources tab enables you to specify where that information comes from (mainly the offset)

Information Sources

Information Sources

Define where emitted business information is obtained by this capture specification

Name	Type	Format	Length	Source	Contain	Offse	Capture Len	Capture Type
 Program	Text		8	PROGR				
 Item_ref	Numeri		4	FROM		0	4	Character
 Item_des	Text		40	FROM		4	40	Character
 in_stock	Numeri		4	FROM		53	4	Character
 on_order	Numeri		3	FROM		57	3	Character



Editing Information Source data

- Again, for information obtained from Application Data the type, offset and length can be manually entered or imported from a language structure.

Information Source for Item_ref

Edit Information Source

Choose the source of business information for this capture specification

Available Data

- Application Context
 - USERID
 - PROGRAM
 - TRANSID
- Application Command Options
 - FILE
- Application Data
 - FROM**

Select from imported language structure...

Container

Type: Character

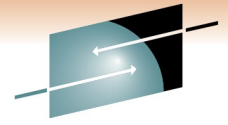
Offset: 0

Length: 4

Precision: 0

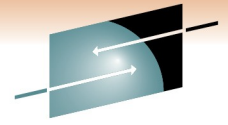
Codepage: Default (LOCALCCSID)

OK Cancel



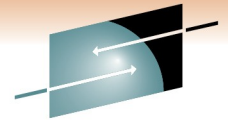
That's a complete Event Binding

- We have defined:
 - The business objective of the events in the binding
 - The information to be collected and sent with the event
 - The, possibly various, places the event can be captured
 - The command(s) to look at
 - The runtime conditions that mean the event is interesting
 - Where to get the interesting information from
 - *Via type, offset and length possibly importing a language structure*
 - The type of adapter to use to handle the event to deliver it to the intended consumer



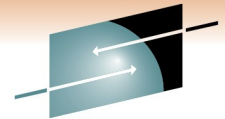
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Now for Deployment



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Running the enhanced system



Orders come in...

The image shows a mainframe terminal window with two overlapping screens. The background screen displays a catalog of items, and the foreground screen shows the details for a selected item.

Background Screen: CICS EXAMPLE CATALOG APPLICATION

Select a single item to

Item	Description
0010	Ball Pens Black
0020	Ball Pens Blue
0030	Ball Pens Red 2
0040	Ball Pens Green
0050	Pencil with era
0060	Highlighters As
0070	Laser Paper 28-
0080	Laser Paper 28-
0090	Blue Laser Pape
0100	Green Laser Pap
0110	IBM Network Pri
0120	Standard Diary:
0130	Wall Planner: E
0140	70 Sheet Hard B
0150	Sticky Notes 3x

Foreground Screen: CICS EXAMPLE CATALOG APPLICATION - Details of your order

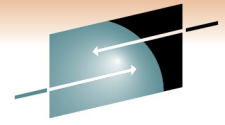
Enter order details, then press ENTER

Item	Description	Cost	Stock	On Order
0110	IBM Network Printer 24 - Toner cart	169.56	0006	000

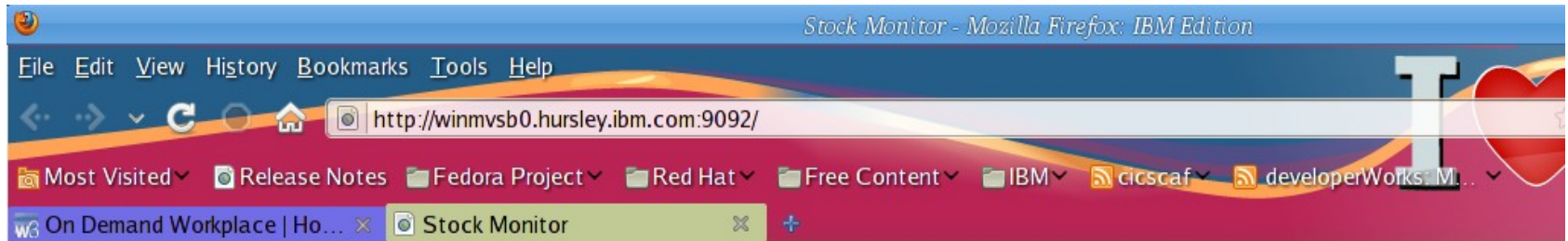
Order Quantity: _____
User Name: _____
Charge Dept: _____

F3=EXIT F12=CANCEL

F3=EXIT F7=BACK F8=FORWARD F12=CANCEL

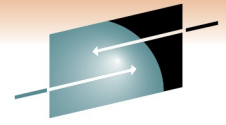


The event is delivered to the monitor



Stock Level Monitor

Program Name	Item Ref	Item Description	In Stock	On Order	Updated	Id
DFH0XVDS	110	IBM Network Printer 24 - Toner cart	6	0	2010-08-02 17:47:55.000	114
DFH0XVDS	10	Ball Pens Black 24pk	9	0	2010-07-29 15:55:08.000	113
DFH0XVDS	110	IBM Network Printer 24 - Toner cart	9	0	2010-07-29 14:34:36.000	112
DFH0XVDS	80	Laser Paper 28-lb 108 Bright 2500/case	9	0	2010-07-28 11:55:19.000	111
DFH0XVDS	80	Laser Paper 28-lb 108 Bright 2500/case	19	0	2010-07-28 11:54:51.000	110
DFH0XVDS	40	Ball Pens Green 24pk	5	0	2010-07-22 10:15:02.000	109
DFH0XVDS	10	Ball Pens Black 24pk	10	0	2010-07-21 21:45:52.000	108



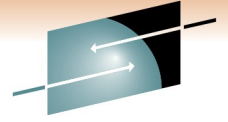
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Summary, References and Q&A

Including a summarising scenario



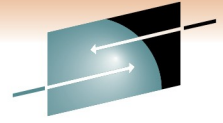
Summary and Q&A – Notes



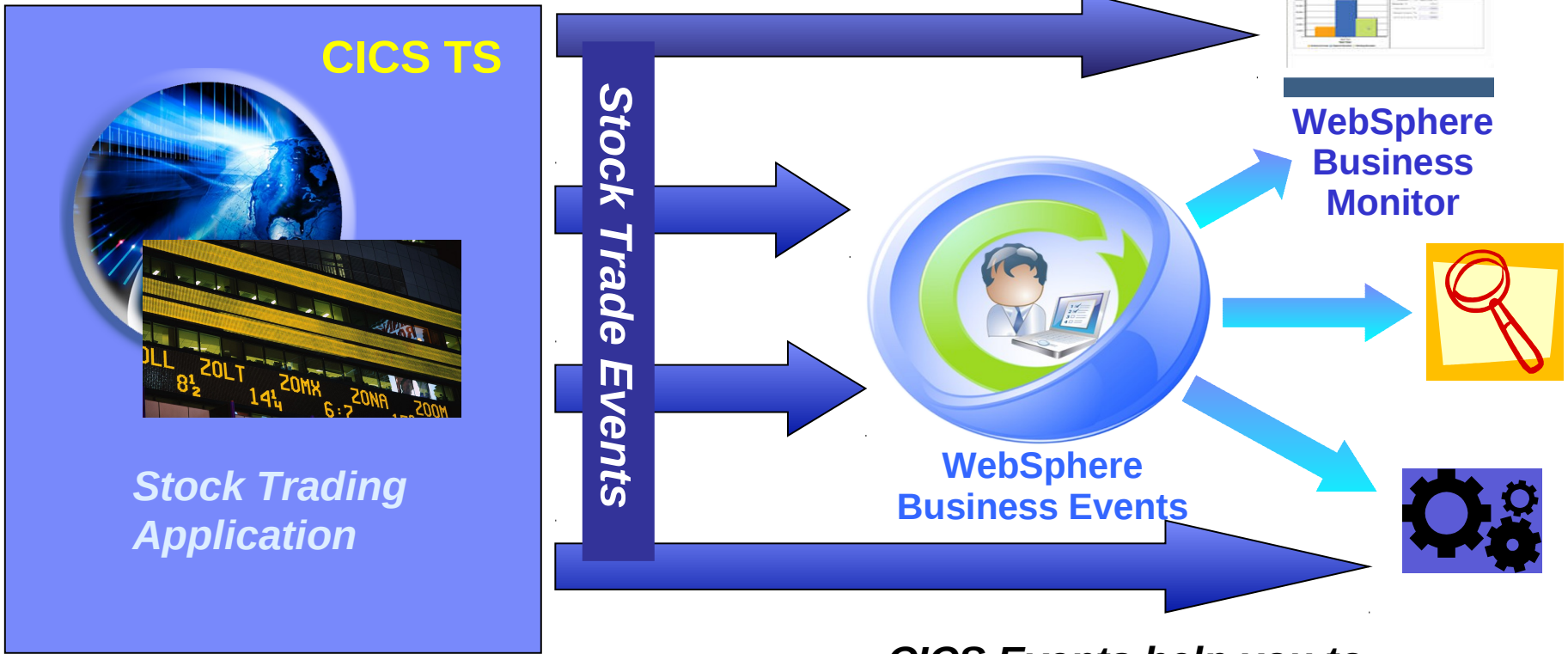
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- The presentation concludes with a summarizing scenario and a summary of the main points of the presentation.

Visibility, Compliance, and Business Flexibility with CICS Events



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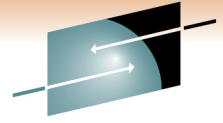


CICS Events help you to

- *Observe business processes*
- *Recognize suspicious activity*
- *Drive new processing*

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Visibility, Compliance, and Business Flexibility – Notes



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- This slide pulls together the ideas from the presentation
- CICS support for Event Processing will enable CICS as a source of events, allowing visibility into the business processes running in CICS, supporting governance, compliance and fraud detection, and providing increased business flexibility.
- The scenario on the slide shows that events emitted by a stock trading application running in CICS TS could be used to:
 - Observe the trading behaviour; for example, by displaying KPIs on a dashboard, such as WebSphere Business Monitor.
 - Spot suspicious trading activity by detecting particular patterns of events using WebSphere Business Events, and take action (which could include sending events on to WebSphere Business Monitor)
 - Drive new processing, perhaps in response to a particular type of trade, or (via WebSphere Business Events) in response to a particular pattern of trades. The new processing can be introduced to the overall application in a flexible and dynamic way without the need for long development cycles.

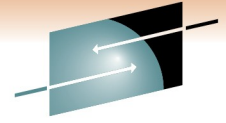
References for CICS Event Processing Support



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- [CICS TS V4.1 Announcement Letter](#)
- [CICS TS V4.1 Information Center](#)
- [CB11: CICS Events for WBE](#)
- [CICS Event Processing on YouTube](#)
 - [CICS Events with WebSphere Business Events High-level](#)
 - [CICS Events 5 minute demo](#)
- [CICS and Events white papers](#)
 - [IBM event processing solutions \(CB11 introduction\)](#)
 - [Gaining insight with IBM CICS and business events](#)
- [Redbook: Implementing Event Processing with CICS](#)
- [WebSphere Business Monitor](#)
 - [WBM Introduction](#)
 - [WBM V7.0 InfoCenter](#)
- [WebSphere Business Events](#)
 - [WebSphere Business Events Introduction](#)
 - [WebSphere Business Events V7.0 InfoCenter](#)
- [Smarter Banking with CICS Transaction Server](#) **Redbook**

References – Notes



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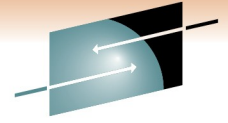
Some references for CICS Events Support are given. These notes give the URLs behind the hyperlinks.

- CICS TS V4.1 Announcement Letter:
 - http://www.ibm.com/common/ssi/ShowDoc.jsp?docURL=/common/ssi/rep_ca/5/897/ENUS209-135/index.html
- CICS TS V4.1 Information Center
 - <http://publib.boulder.ibm.com/infocenter/cicsts/v4r1/index.jsp>
- CB11: CICS Events for WBE
 - <http://www.ibm.com/support/docview.wss?rs=1083&uid=swg24021039>
- CICS Events with WebSphere Business Events High-level animation
 - <http://www.youtube.com/watch?v=S0orwDxSOvM>
- CICS Events 5 minute demo
 - <http://www.youtube.com/watch?v=-wQhxFmd9U>
- CICS and Events white papers
 - <ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/wsw14043usen/WSW14043USEN.PDF>
 - <ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/zsw03120usen/ZSW03120USEN.PDF>
- **Redbook**: Implementing Event Processing with CICS
 - <http://www.redbooks.ibm.com/abstracts/sg247792.html>
- WBM Introduction:
<http://www-01.ibm.com/software/integration/wbimonitor/>
 - WBM V7.0 InfoCenter
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v7r0mx/index.jsp?topic=/com.ibm.btools.help.monitor.doc/home/home.html>
- WebSphere Business Events Introduction:
<http://www-01.ibm.com/software/integration/wbe/>
 - WebSphere Business Events V7.0 InfoCenter
<http://publib.boulder.ibm.com/infocenter/wbevents/v7r0m0/index.jsp>
- Smarter Banking with CICS Transaction Server **Redbook**: SG24-7815-00
<http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg247815.html?Open>

CICS Event Processing Summary

- **Non-invasive** emission of business events from CICS applications *without need to change* existing business logic
- **SIGNAL EVENT API** for explicit instrumentation of events
- **Event Binding Editor** tooling within CICS Explorer to create event specifications
- Event specifications deployed to CICS via bundles containing event bindings
 - Specifies event and the emitted business data, and how it can be detected and captured by the CICS runtime
 - Specify event capture points as EXEC CICS command (a subset of the EXEC CICS API) plus filtering on command parameters and data
- Events dispatched to specified EP adapter for formatting and emission to event consumer consumers including **WebSphere Business events** and **WebSphere Business Monitor**
 - CICS-provided EP adapters plus capability for custom EP adapters

CICS Event Processing Summary – Notes



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- IBM has invested in significant new Event technology that is a fully integrated part of the CICS runtime, and introduced with CICS TS version 4.1. This provides our strategic direction for integration with event processing products in the WebSphere portfolio.
- CICS support for events allows CICS applications to emit business events in a non-invasive way, where such flexibility is required.
- A new SIGNAL EVENT API is also provided, to add explicit event-enabling points into applications, which can give greater flexibility.
- An Event Binding Editor is provided as part of the CICS Explorer, which allows event specifications to be created within event bindings, and deployed to CICS using CICS bundle resources.
- The event specifications incorporate information about what data is to be included in the event and how the event can be captured by the CICS runtime. The points where events can be specified non-invasively are the EXEC CICS commands and also on program initiation.
- Events are formatted and emitted using event processing adapters. A number of EP adapters are provided with CICS, supporting the most useful event formats and emission mechanisms. These include emitting events to WebSphere Business Events and WebSphere Business Monitor.
- There is also the ability to write custom EP adapters to support other formats and ways of emitting events.