CICS Transaction Server

CICS TS and Event Processing

I ♥ CICS Business Events

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Today's hosts

- **Nick Garrod -** WorldWide Market Manager CICS Transaction Server

- **Paul Kettley -** CICS Transaction Server Planning and Strategy Manager

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Agenda

- **Introduction to Events**
- **CICS TS V3**
  - Overview of CICS Events feeding WBE. Supportpac CB11
  - A short marketing demo ……
- **CICS TS V4**
  - How CICS TS supports business events
    - Events for CICS
    - Event adaptors
    - Event specifications
- **Some usage scenarios**

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What is an event?

- **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
  - An event has a name and usually some data (its payload)
- **Events emitted and responded to asynchronously**
- **"simple" event**
  - atomic event, meaningful in itself
  - e.g. order placement, stock trade
- **"complex event processing"**
  - detect and respond to patterns of events
  - e.g. 3 orders from customer A in 2 days, suspicious pattern of stock trades)
- **"business event processing"**
  - extends complex event processing capabilities to business users

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Why now?

- **Event processing is not new**
  - Systems management and monitoring
  - Pub/sub messaging systems
- **The business value of event processing is**
  - decreased latency in
    - Obtaining insights
    - Making decisions based on those insights
    - Executing the decisions
- **Multiple business factors have accelerated event processing requirements:**
  - Compliance with regulations, on-line
  - 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

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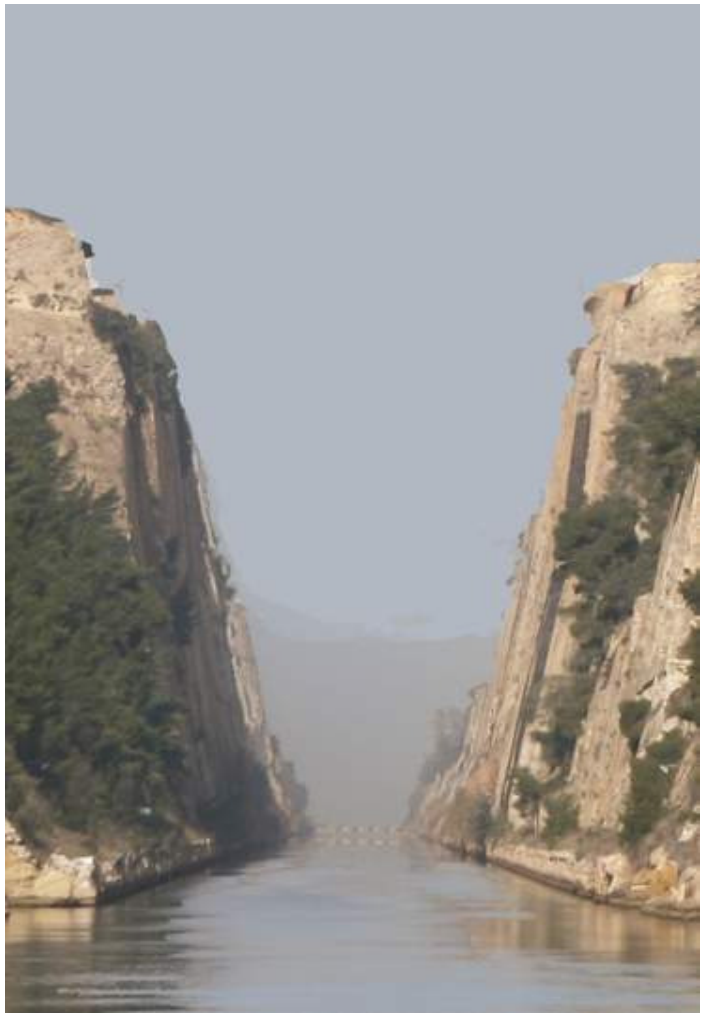
The gap between LOB and IT limits agility, flexibility and responsiveness

Business users know which event patterns are relevant and what actions are required, but aren't equipped to implement themselves

Business User



IT people *may* have event-based tools and technologies but can't respond quickly enough to changing business requirements

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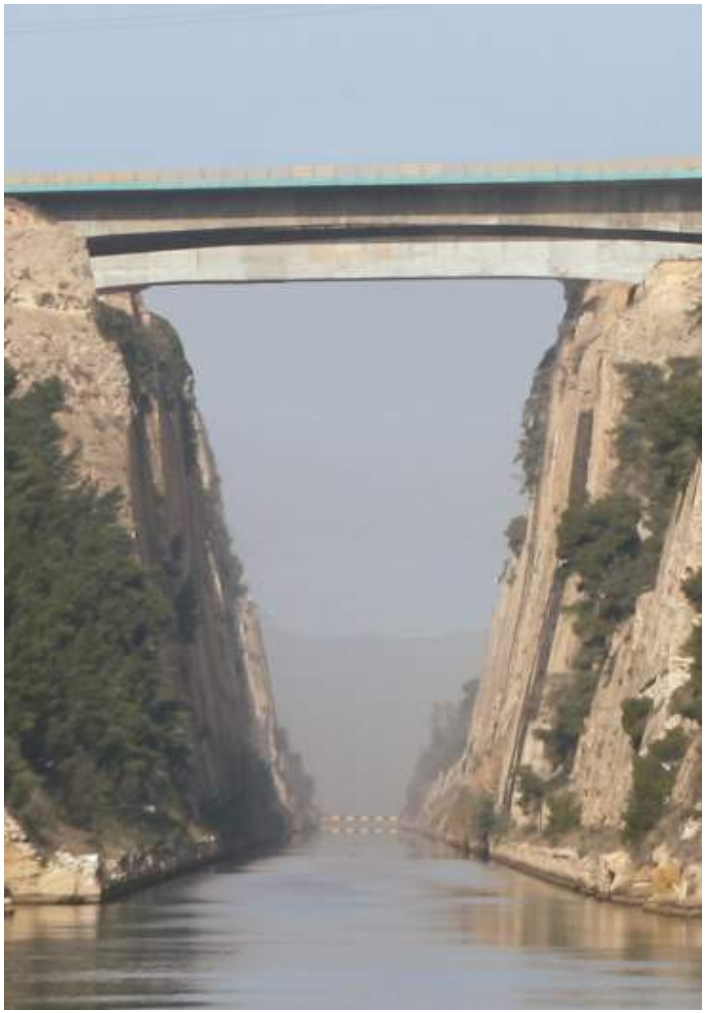
Business Event Processing Bridges the Gap

Puts power in the hands of the business user

- No coding required for defining business event patterns
- Tasks performed via tooling

Business User



Provides unique convergence of power, flexibility, and ease of use

- IT configures end-points and payloads
- Leverages SOA infrastructure

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CICS TS V3

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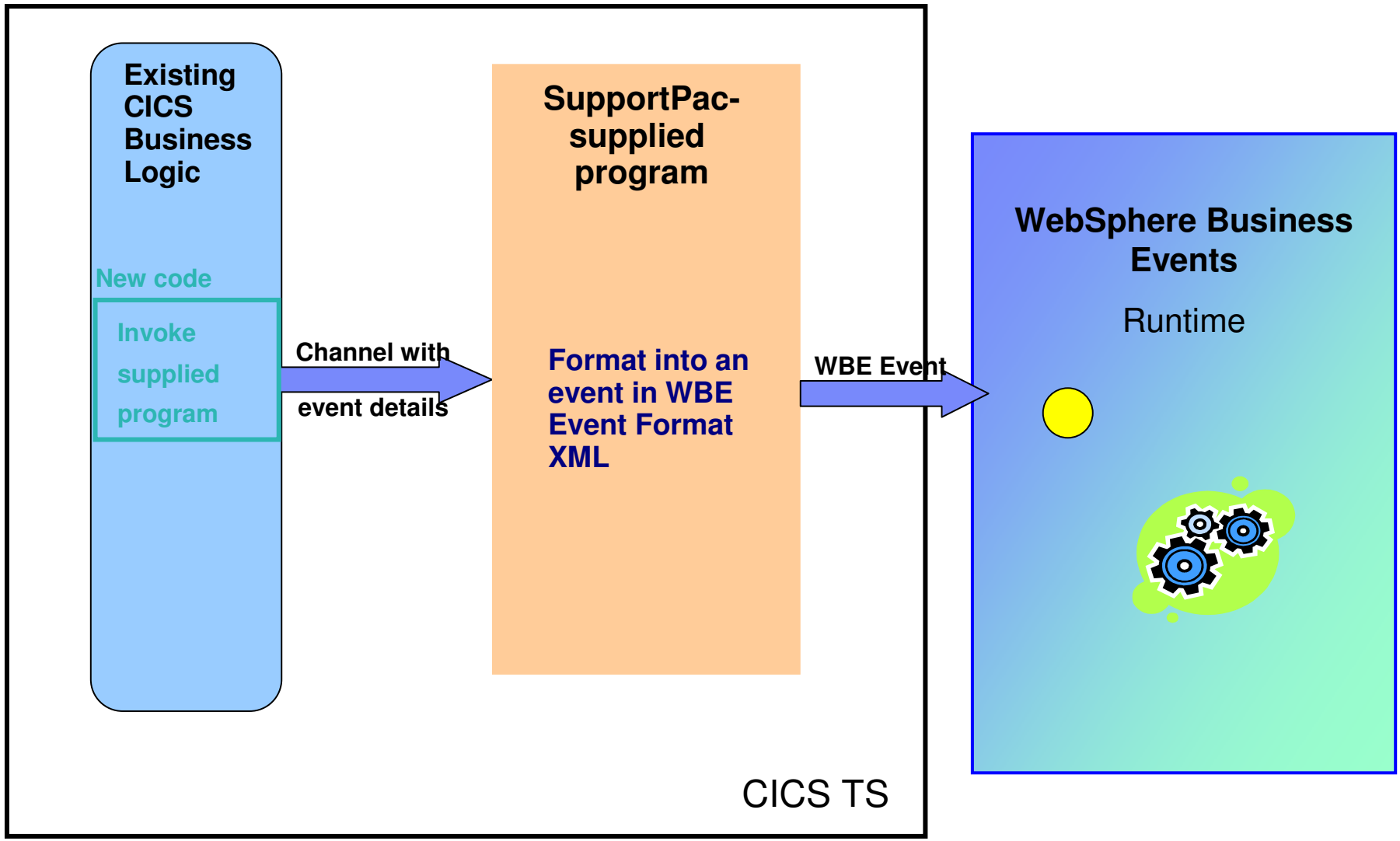
CICS Events SupportPac (CB11)



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CICS Events SupportPac

- CB11 provides a taster of CICS acting as a source of events to WBE
- The SupportPac runs on CICS TS V3, available 12/12/08.
- It requires a small change to existing CICS application code.
  - Invoke the program supplied by the SupportPac, passing event details in a channel
- The SupportPac formats the event information into XML conforming to WBE format and emit the event for consumption by WBE (or other consumer program) via the WebSphere MQ transport
- WBE can include the event in interaction blocks to carry out pattern matching etc.

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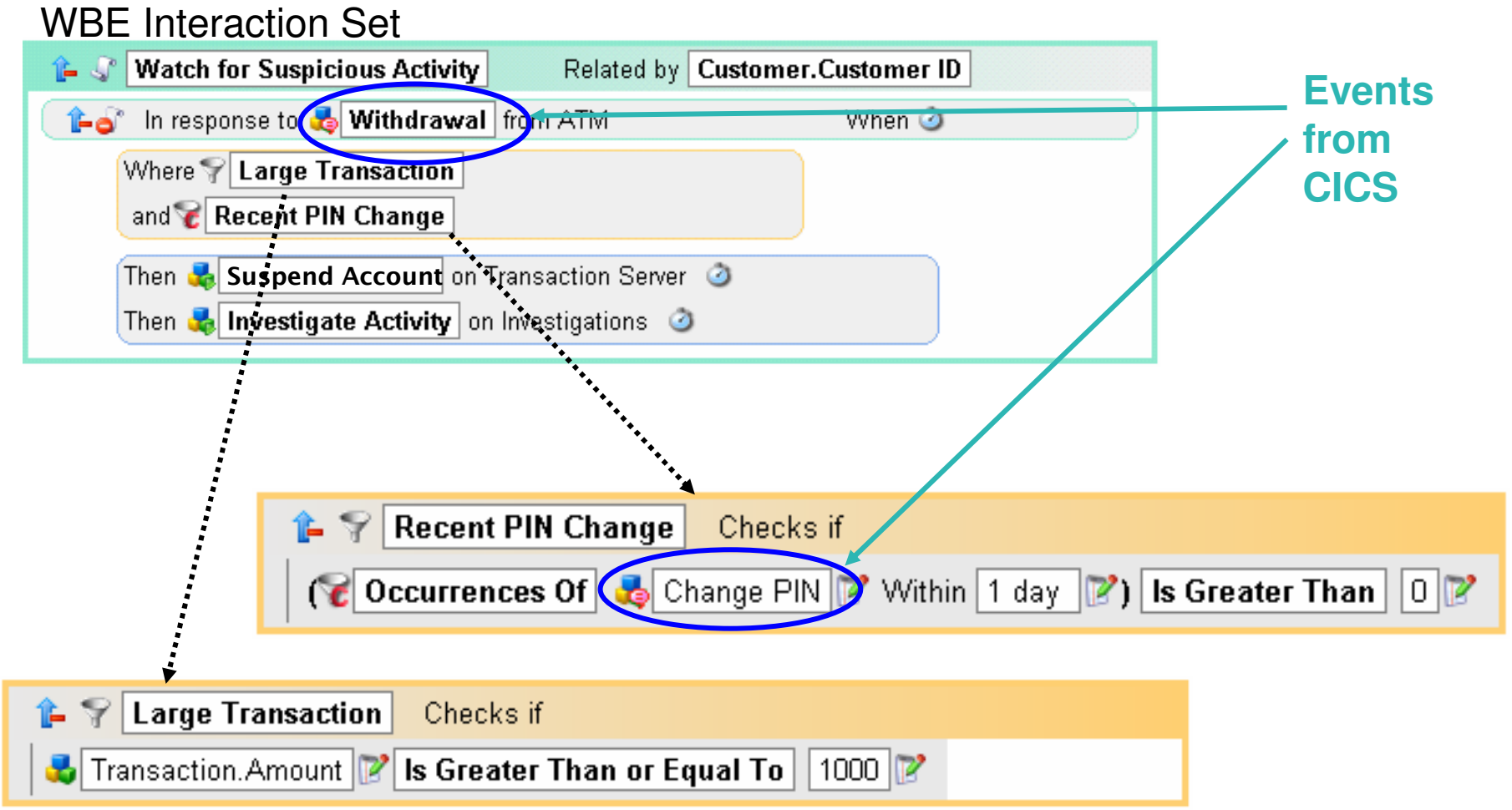
Scenario: CICS events with WBE – 1

WBE Interaction Set



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Scenario: CICS events with WBE – 1 – Notes

- Events from CICS can be used in interactions and filters defined in WBE
- The next two slides illustrate this with a scenario.
- The scenario shows an interaction defined using WBE tooling, to Watch for a Suspicious Activity.
- When a Withdrawal event occurs, check whether this is a large transaction (as defined by the Large Transaction filter).
- If it is a large transaction, then also check whether there has been an occurrence of a Change Pin event for this customer recently (within 1 day). If so, this is a Suspicious Activity.
- The WBE Design tool is used to specify the interactions and filters shown on the slide. The interaction set also specifies the actions to be taken if a Suspicious Activity occurs, which are to suspend the account, and then investigate.
- The events being checked for are events that occurred in CICS.

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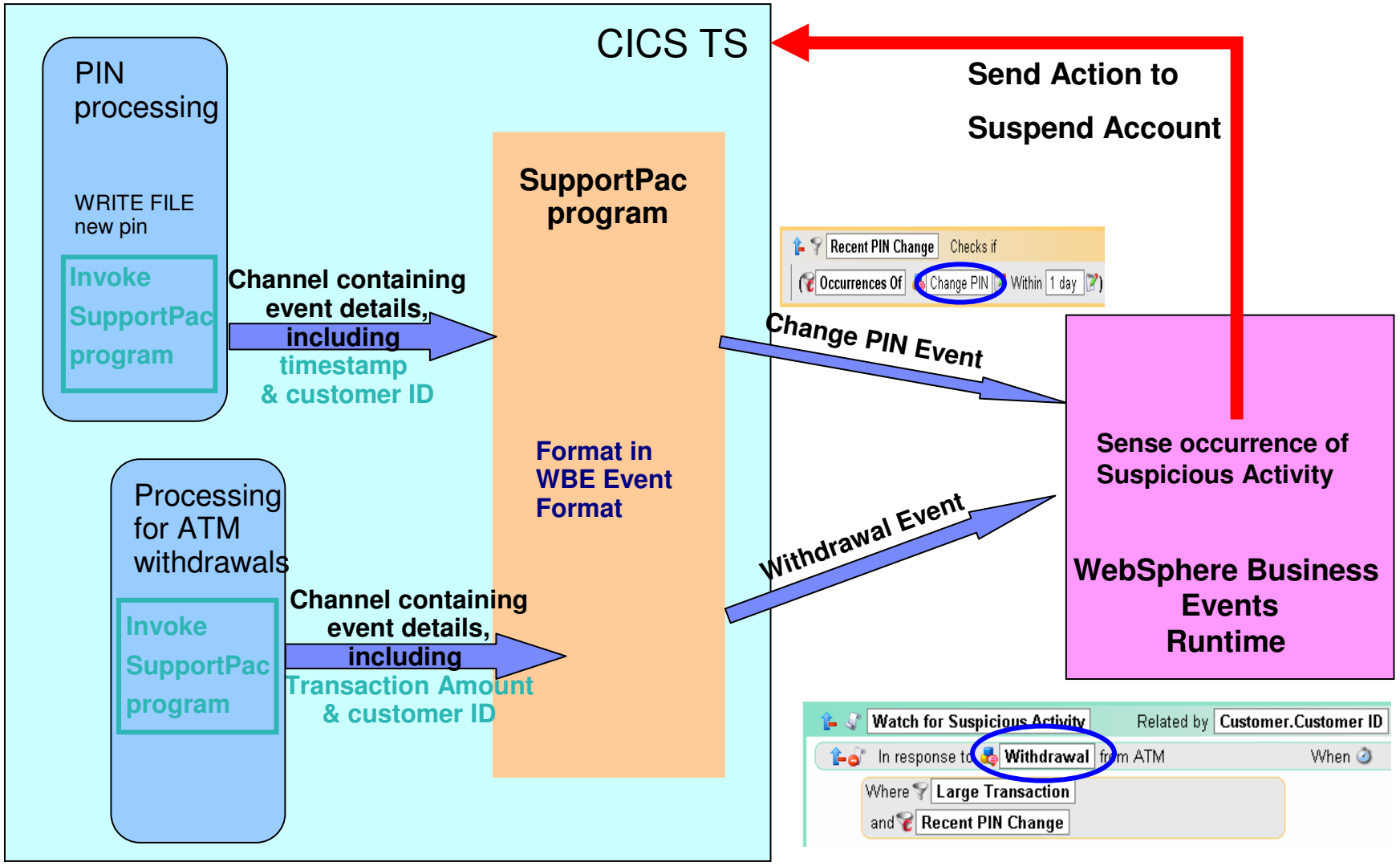
Scenario: CICS Events with WBE - 2



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Scenario: CICS events with WBE – 2 – Notes

- The SupportPac will allow events occurring in CICS and specified in WBE interaction sets to be processed by WBE.
- In this scenario, CICS carries out PIN processing and processing of withdrawals from ATMs, and the SupportPac has been installed.
- Where the PIN processing transaction writes a new PIN to a CICS file, code is added to invoke the SupportPac program, passing information about the customer making the PIN change and the time it occurred.
- The SupportPac program causes a 'Change PIN' event to be emitted to WBE.
- When the program which processes ATM withdrawals is run, code is added to invoke the SupportPac program, passing information about the withdrawal transaction and the customer making the withdrawal.
- The SupportPac causes a 'Withdrawal' event to be emitted to WBE.
- The occurrence of the Withdrawal event causes WBE to check for a recent PIN change made by the same customer, and if found this triggers an occurrence of the Suspicious Activity.
- The first action associated with a Suspicious Activity is to suspend the customer's account pending further investigation. A request is made to CICS (such as a Web Service invocation) to carry out this action.

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CICS events and WBE

- **CICS Events SupportPac – summary**
  - Introduce the concept of CICS as an emitter of events for consumption by WBE
  - Start identifying the event points in CICS applications, and how to harness the power of WBE to derive additional information from patterns of these events
  - Wil run in CICS TS V3, and require application change to emit events by LINKing to SupportPac code using channels and containers interface

- **The demo ……** ☺

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CICS TS V4

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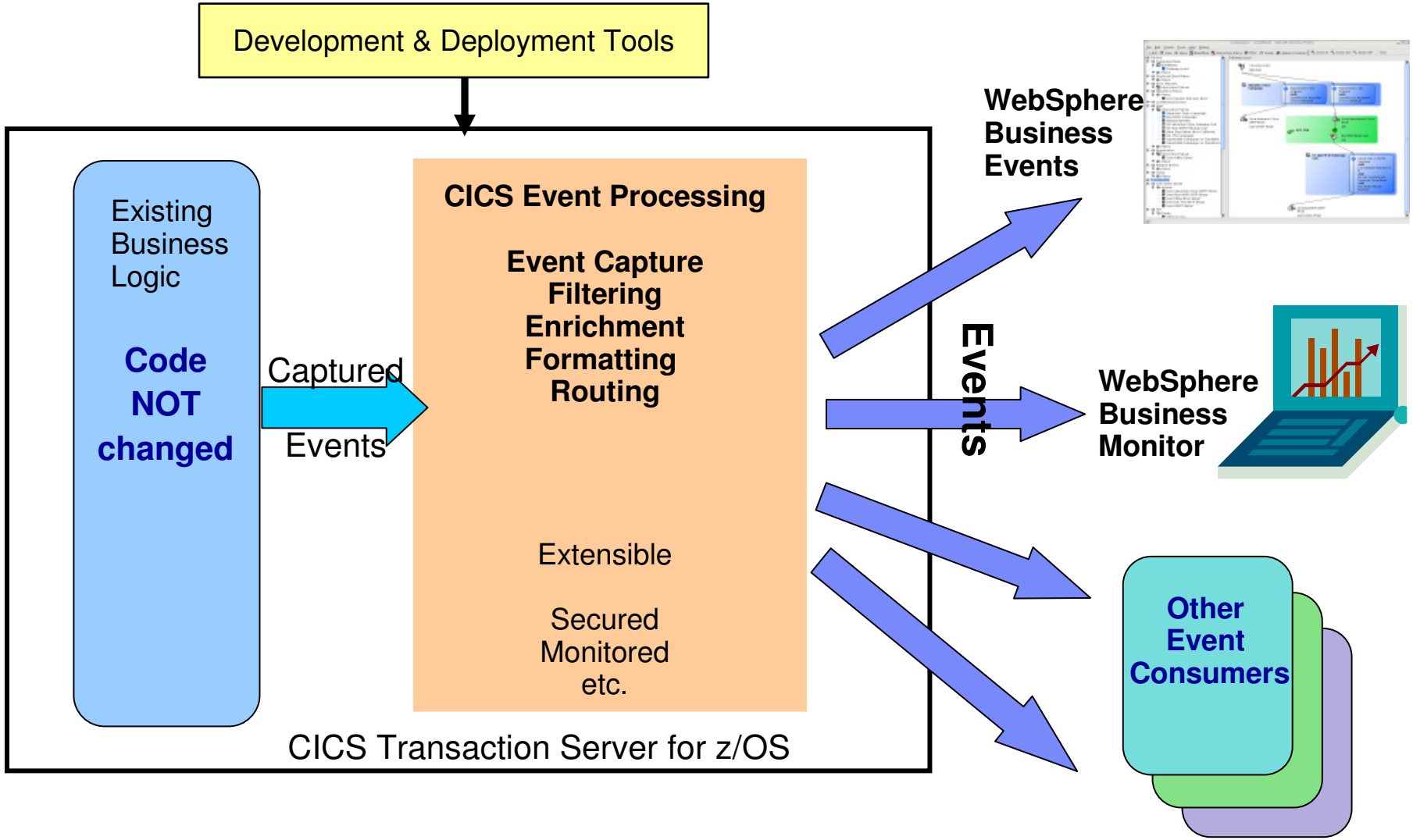
CICS TS V4.1 and event processing - overview



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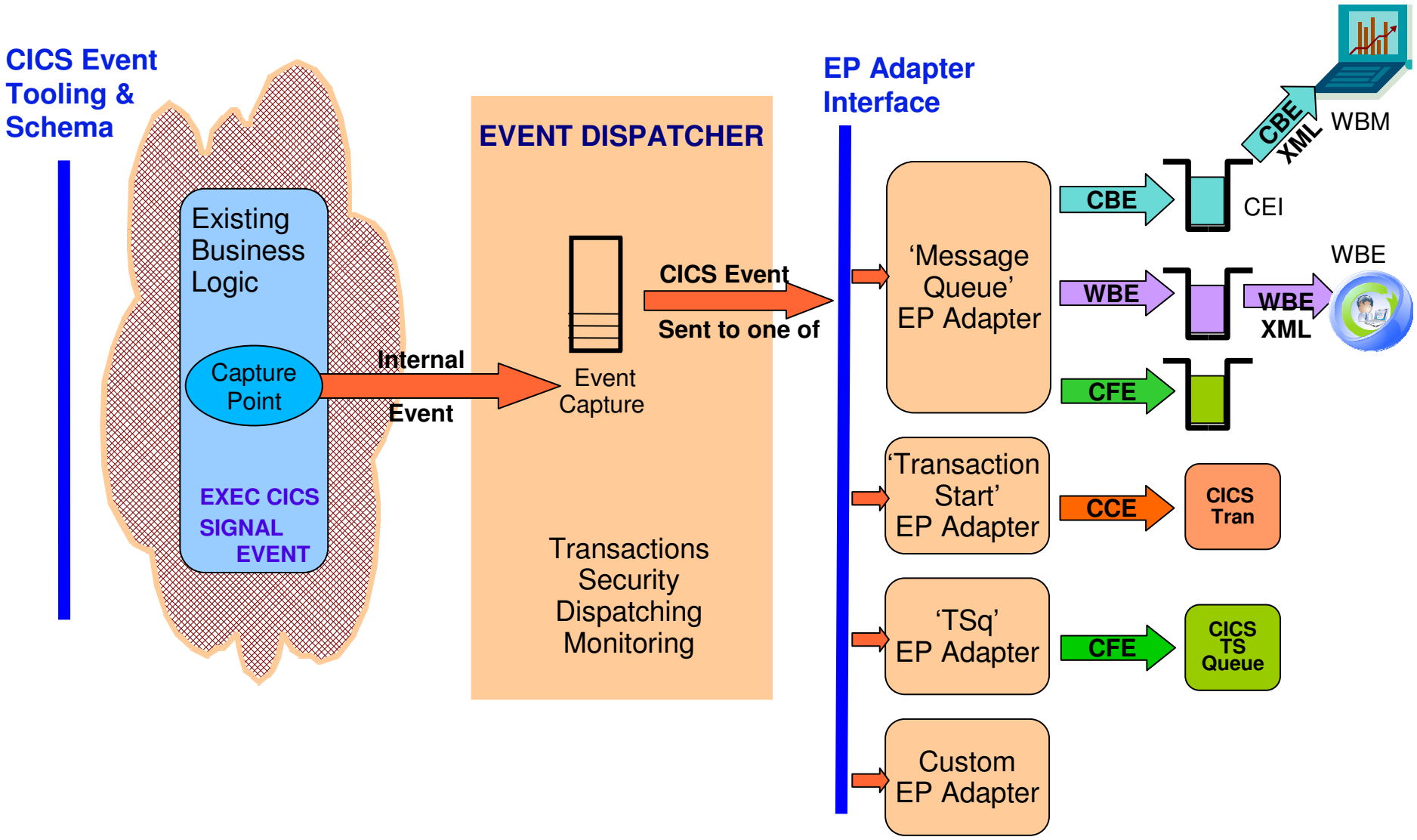
CICS Event Processing Adapters



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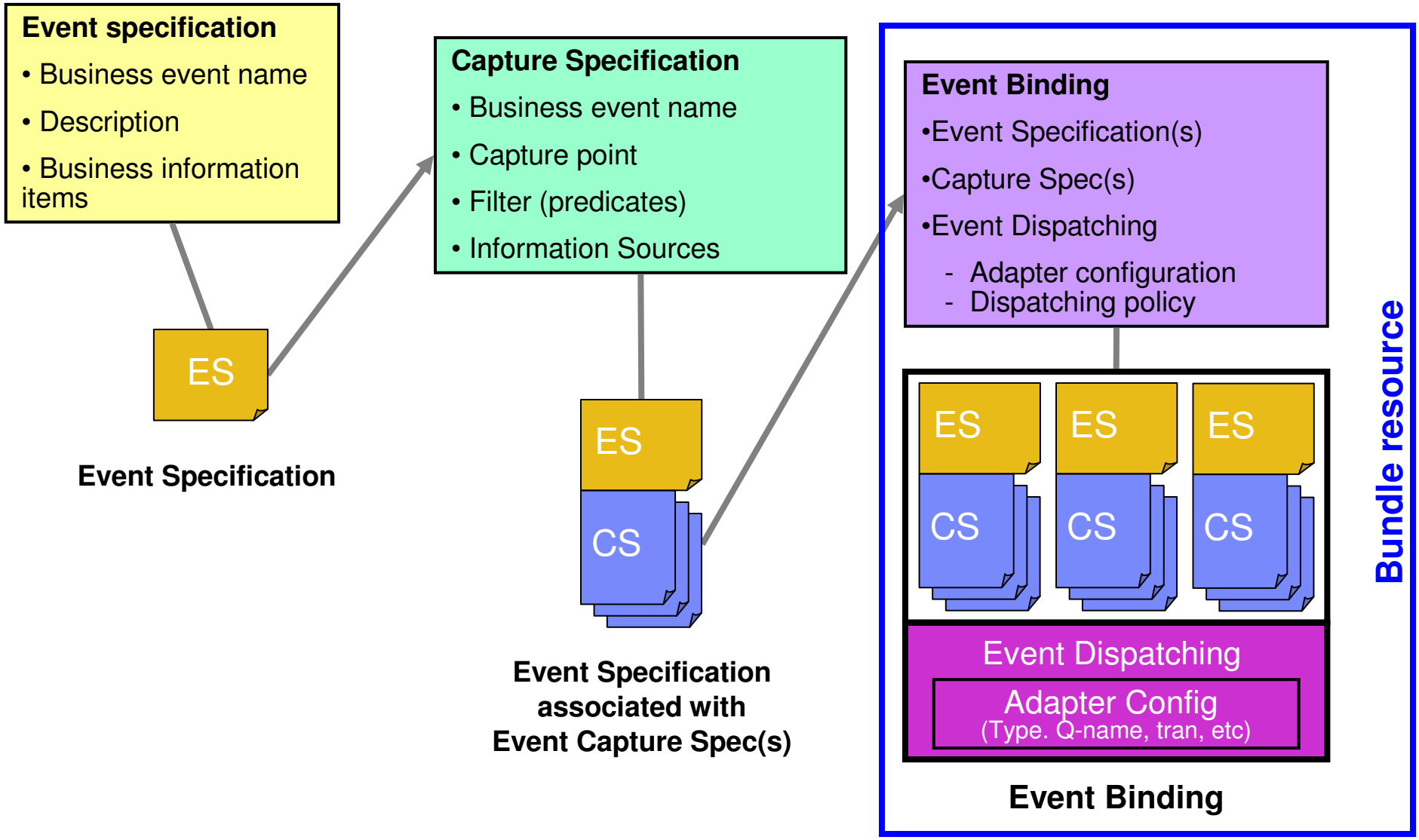
CICS Event Specification



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CICS Event Specification Example

Event Specification:

Event name: orderOverTenThousandReceived

Event description: whenever an order is processed that is for over 10 thousand, this event is triggered for display on dashboard

Event output spec (business information): customer ID, OrderNumber

Capture Specification:

Before EXEC CICS LINK command ← **Capture Point**

to PROGRAM(OrderDB) ← **Fixed Data Predicate**

from current_program = OrderUI ← **Context Predicate**

where OrderVal > 10K ← **Variable Data Predicate**

OrderVal is in the Commarea or channel passed on the LINK

"Mapping" of required data onto data available from application and context ← **Capture Data**

Note this identifies an EXEC CICS command and some filters, it does not 'point' directly at a specific location in the application code, this can be made more or less specific by use of filters predicates

Event Binding:

orderOverTenThousandReceived,

orderFromMajorCustomerReceived, … ← **can include other events to capture**

EP Adapter = CICSTransaction ← **how events in this Binding are emitted**

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What is the event solution for CICS?

- Events can be emitted *without change to existing business logic* by defining existing EXEC CICS calls as candidates to trigger events
- Only occurrences matching predefined conditions will trigger an event:
  - Specified EXEC CICS Command, and/or
  - Specified file/program/service (for example), and/or
  - Correct transaction or program (for example), and/or
- Filter conditions or predicates relating to event data can also control the trigger (for example “account balance must be less than 100 dollars”)
- Once conditions are met, CICS will
  - Capture application data specified for the event payload
  - Apply any policy relating to the event
  - Emit the event through its associated Event Processing Adapter

You define an event with the *Event Binding Editor*, under the CICS Explorer.

You then use the Explorer to deploy the *event bundle* and define it to CICS.

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Insurance Scenario - Business Opportunity

- **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 none or 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 event, or an absence of any matching purchase events (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

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Banking Scenario - Regulation Compliance

- **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**

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Banking Scenario – Business Opportunity

- **A banking customer talking to a teller requests a product**
- **The system detects the teller inquiry transaction and relates it to customer history**
- **System prompts teller to offer a complementary product based on apparent customer interests**

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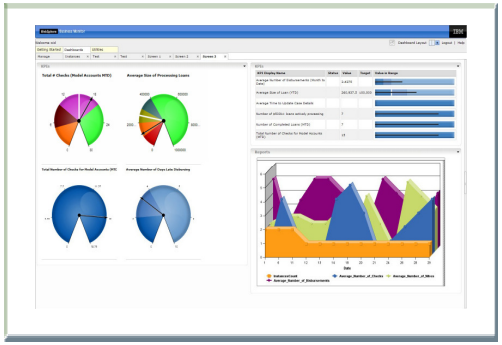
Order Processing Scenario giving Visibility into Processing



- **Events emitted during order processing**
  - order received
  - order dispatched
  - order cancelled
- **Events sent to WebSphere Business Monitor (WBM)**
  - create Monitor Model to allow WBM to provide insight into order processing
  - 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.

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Retail Scenario offering Customer Convenience

- **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

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Manufacturing Scenario for Operational Efficiency

- **A product uses parts A, B and C in its manufacture**
- **When an order is received for the product**
  - Order parts A and B from the suppliers
- **When both orders for parts A and B confirmed from the respective suppliers**
  - Order part C from warehouse
- **When parts A, B and C all received**
  - Initiate manufacture of product

- **It might be that all requests for manufacture of the product and ordering of the parts are handled by CICS applications, or some of this might involve processing outside of CICS**
  - WBE can process the events from multiple sources

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Education Scenario

- **Student registration and course management system, running in CICS, extended to send email messages to students when classes are cancelled or relocated at short notice**
- **When class details are updated, an event is emitted to WBE with class, location and student group IDs**
- **WBE takes action to deliver the event to the student, using the embedded email action connector**

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Questions?

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