

Get Insight Into Your Customer – Act at the Time of Interaction

Introducing IBM Operational Decision Manager Advanced

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What if...

A global financial services firm could make its advisors **always-aware** of client activities and needs?

An airline could optimize the traveler experience to address change and mitigate inconvenience on an individual basis in real-time?

A railroad could maximize the efficiency of train operations and predict equipment maintenance?

A bank could detect more **complex patterns of fraud** and update them faster?



Contextual data has a half-life ...



mobile



geolocation



social



sentiment



sensor



clickstream

Context
Location
Time
Activity
Relation
...

Millions of entities, 1000s transactions

Identify
Opportunity
& Risk

Action
Personalized
Proactive
Dynamic
...

*...operationalize it with
real-time action*

The average half-life of data for tactical decision making is less than 30 minutes,
with some as low as 6 seconds.

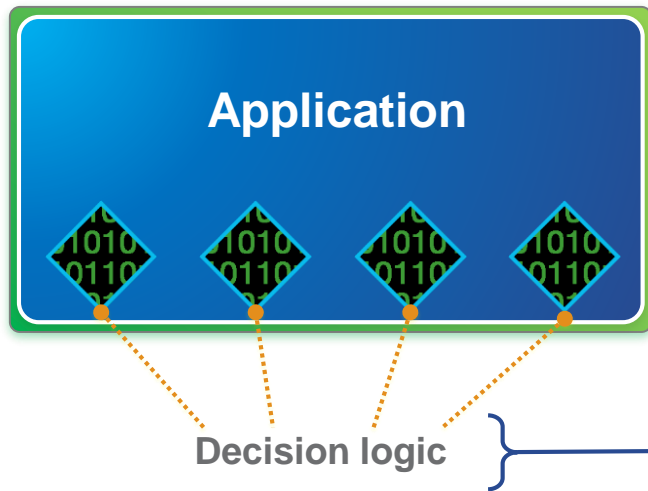
-Measuring the half life of data, Nucleus Research, 2012



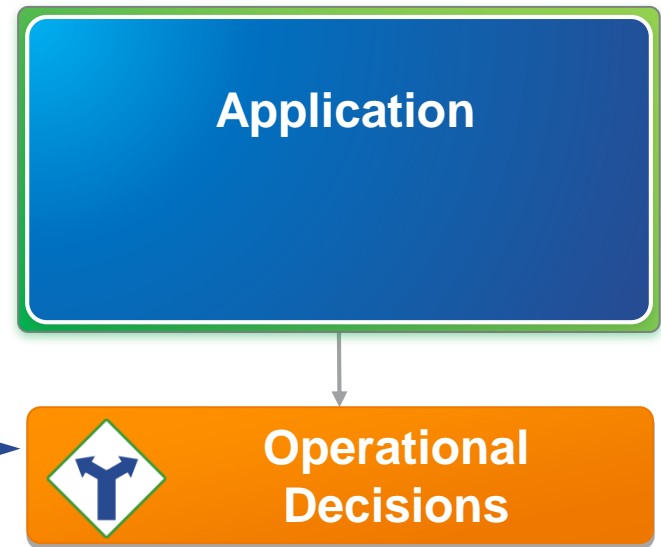
Codify business policies, practices, and regulations

Manage decision logic independently from applications

Without ODM



With ODM



- Hard coded decisions are difficult to change
- Rules intertwined within applications cannot be reused by other systems

- Externalized decisions are easy to change
- Centralized decisions enable reuse and consistency

Decision Server Insights enables decision making in context



Insights Solution Building Blocks



Event
Message representing something that happened

Entity
Some business relevant thing and related information

Agent
Business logic that is applied to an incoming event

Demonstration

Fleet Monitoring

Scenario

- Two event sources:
 - **Telematics** – vehicle location, odometer reading
 - **Fuel Transactions** – amount, location

- Move from static reporting to real-time actionable insight

- Goals:
 - Reduce Fuel Fraud
 - Encourage fuel-saving behaviours



Many fleet managers believe that fuel costs and regular price increases are inevitable.

Scenario One - Purchasing more fuel than the vehicle can hold

- Fuel transaction occurs for significantly more than the vehicle's documented capacity

```
when a fuel transaction occurs
if
  the driver is not null
  and the daily amount is more than 1.2 * the tank capacity of the vehicle
then
  set the alert message of 'the driver' to the person id of 'the driver' + " Tank overfill!" ;
  emit a new alert where
    the driver is 'the driver' ,
    the message is "Driver has purchased more fuel than the tank capacity of their vehicle." ;
```



Scenario Two – Fuel Wastage

- Driver sitting stationary while making delivery
- Ignition On

```
when a telematics reading occurs
```

```
definitions
```

```
set 'recent events' to all telematics readings where the timestamp of each telematics reading is within 10 minutes before now;  
set 'the distance travelled recently' to the total distance travelled of 'recent events';
```

```
if 'the distance travelled recently' is 0 and the ignition status is ON
```

```
then emit a new alert where
```

```
the message is the plate number of the vehicle of this telematics reading + " is stationary with ignition on";
```



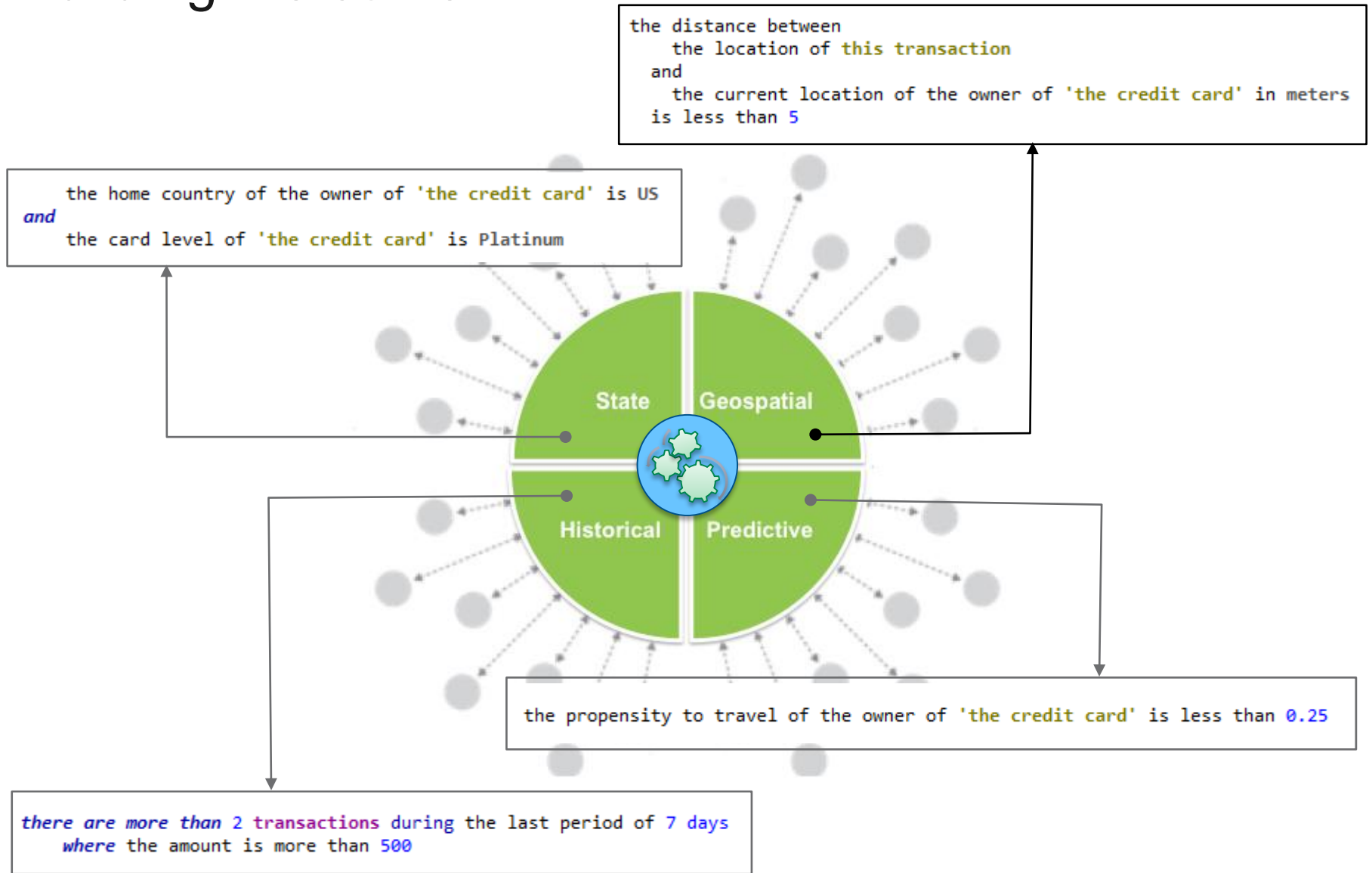
Scenario Three - Purchasing fuel for another vehicle

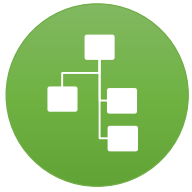
- Check that the vehicle is at the garage at the time of the fuel purchase

```
when a fuel transaction occurs
if there is no telematics reading
  where the distance between the position of this telematics reading and the position of this fuel transaction
  in feet is less than 2000
  and the period between the timestamp of this telematics reading and the timestamp of this fuel transaction
  is shorter than 30 minutes,
  then emit a new alert where
  the driver is the driver of this fuel transaction ,
  the message is "The vehicle " + the unit id of 'the vehicle' + " was not at gas station " +
  the name of the gas station of this fuel transaction + " when gas was purchased.";
```



Building the context





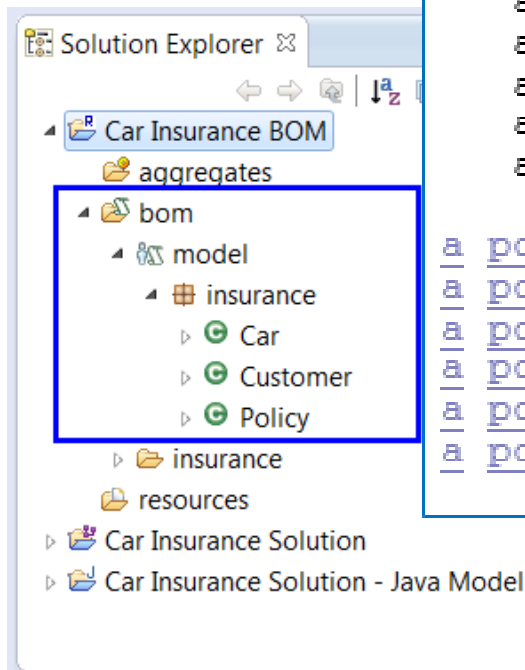
Model Entities

a car is a business entity identified by a vin with
a make,
a model,
a year (integer).

a car is related to a policy.

a customer is a business entity identified by an email with
a first name,
a last name,
an address,
a mobile number,
a sex.

a policy is a business entity identified by an id.
a policy has a start (date & time).
a policy has an end (date & time).
a policy is related to a car.
a policy is related to a customer.
a policy has a fraud status.



- Entities are used to support the business model
- Entities have an identifier and their own lifecycle



Model Events

a policy purchase is a business event time-stamped by
a date (date & time) with
a start (date & time),
a end (date & time).

a policy purchase is related to a car.

a policy purchase is related to a customer.

a policy purchase is related to a policy.

a policy cancellation is a business event time-stamped by
a date (date & time).

a policy cancellation is related to a policy.

a policy cancellation is related to a customer.

a vehicle event is a business event time-stamped by
a date (date & time).

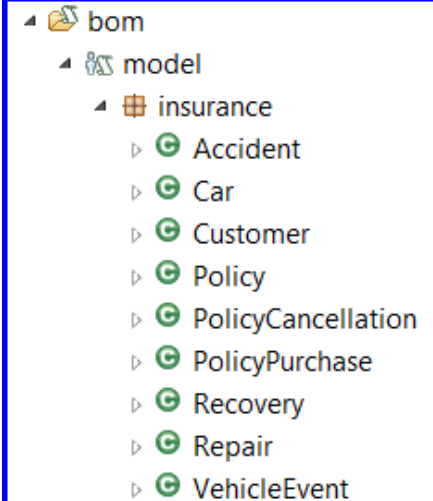
a vehicle event is related to a car.

a vehicle event has an address.

an accident is a vehicle event with
a severity.

a recovery is a vehicle event with
a cost (numeric).

a repair is a vehicle event with
a cost (numeric),
a dealer.



- Events are used to describe what happens or can happen
- Events are the representation of messages that are coming from the outside world
- Events have a time of occurrence

High Availability and Continuity of Service

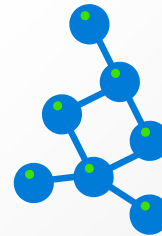
Decision context is maintained during update operations

```
when a credit card activated event has occurred
if
  the home country of the owner of
  and
  ( there is no transaction during the
  or
  the average amount of all transactions
  is less
then
  emit a new offer where
  the customer is the owner of 'the
  the offer type is Discount ,
  the message is "We offer you a 10%
```

**Business Logic
Updates**



**Analytics
Updates**



**Business Model
Updates**



**Base Application
Updates**

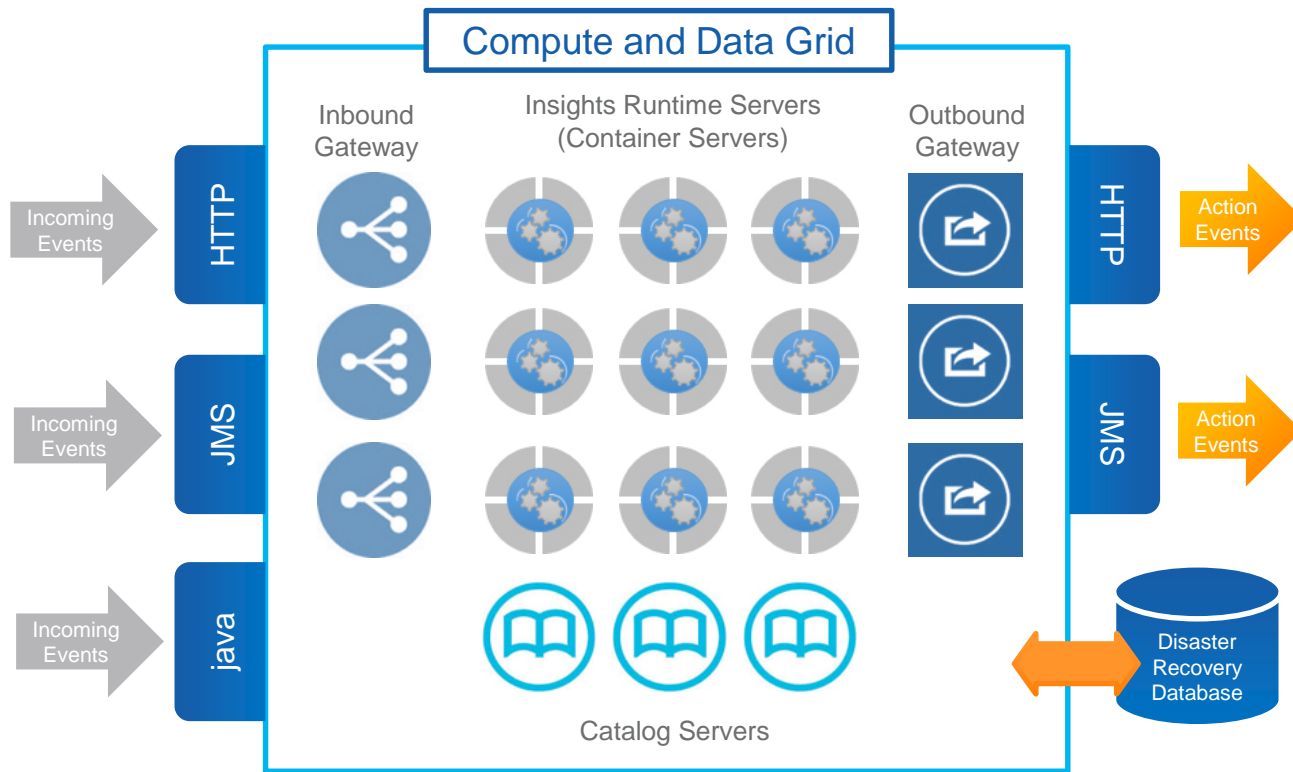


Operations Continuity

Immediate impact of changes

Scale-out, High Performance Architecture

IBM Decision Server Insights Grid



- Enables dynamic addition of connectivity and computing resources
- Collocates rule and analytics computing resources with context data
- Minimizes data movement for maximum performance

Analyzes millions of interactions over periods of **days, weeks or even months**



IBM Operational Decision Manager: Multiple editions to meet client needs

For organizations that need:

IBM ODM Express

- To adapt the decision logic of applications at the pace of business
- Visibility into, control over, and automation of point-in-time business decisions
- Affordable entry point with license restrictions

IBM ODM Standard

IBM ODM Advanced

New

- To capture events, build context, and apply it to operational decisions in real-time
- To detect situations as they occur – presenting risks or opportunities – to enable action

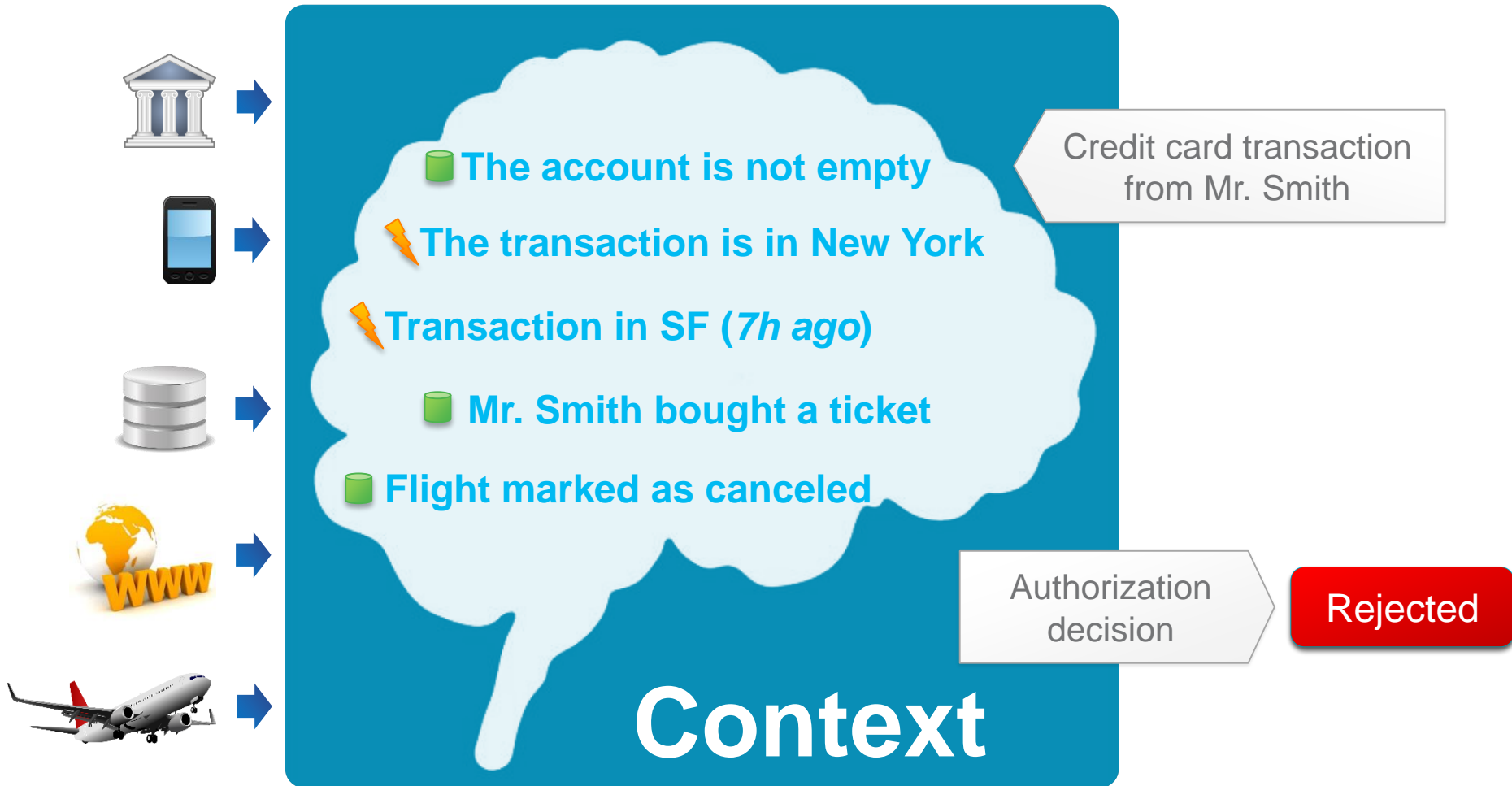


Act at the Time of Interaction




Backup Slides

Decision Server Insights enables **decision making in context**: Importance of context



Use Cases



POLYBANK
CURRENT ACCOUNT
\$3,210.51
TRAVEL INSURANCE
20% OFF

Propose dynamic location-based offers for marketing effectiveness



Day of travel journey: customer experience management



Improve supply chain & logistics efficiency with real-time insights

...and more across all industries



Banking



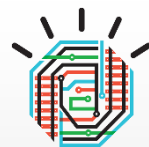
Insurance



Healthcare



Government



Transport



Telecom



Energy



Retail

New use cases enabled by IBM ODM Advanced



A bank gains the ability to provide prompt, **personalized, proactive service to their clients**

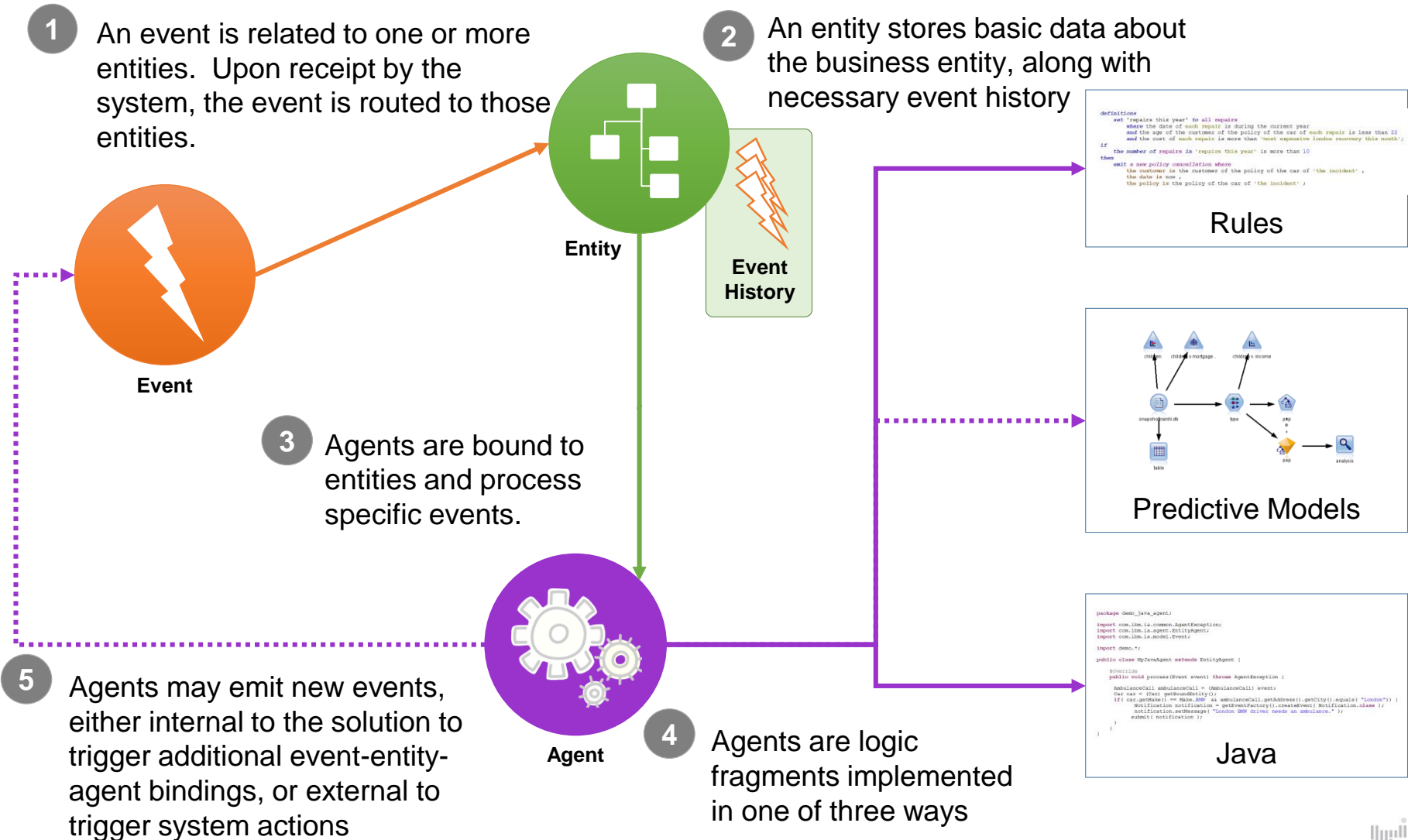
- Flexible, extensible platform for modeling growing set of alert patterns for analysts and sales
- Greater insight into client interactions across channels to enable more personalized service and more intelligent customer relationship management



A railway organization gains **real-time visibility into operations**

- Enhanced real-time visibility into train operations
- Ability to graphically visualize network of equipment
- Greater customer satisfaction from real-time insight and proactive notification

Programming Model: How the Building Blocks Work Together



Leverage the context in Rules

Detect a Risk

```
when a transaction occurs ----- Knowledge about a current event
  where the location is not the home country of the owner of 'the credit card'
definitions
  set 'out of country transactions' to all transactions
  where the location is not the home country of the owner of 'the credit card' ;
if
  the propensity to travel of the owner of 'the credit card' is less than 0.25 ----- Partial knowledge about the
  and                                                                    expected future course of events
  and there are more than 2 transactions in 'out of country transactions' during the last period of 2 days
  and the average amount of 'out of country transactions' is more than 500
then
  emit a new fraud alert where
    the customer is the owner of 'the credit card' ,
    the fraud level is Medium ,
    the message is "Out of Country Fraudulent Use" ; ----- Knowledge about past events
    related to that business entity
```

Seize an opportunity

```
when a credit card activated event has occurred 7 days ago
if
  the home country of the owner of 'the credit card' is US ----- Knowledge about a particular business
  and                                                                    entity which that event may impact
  ( there is no transaction during the last period of 7 days
    or
    the average amount of all transactions during the last period of 7 days
      is less than 'Average Last Week Transaction Amount' ) ----- Knowledge about
  then                                                                    population of entities
  emit a new offer where
    the customer is the owner of 'the credit card' ,
    the offer type is Discount ,
    the message is "We offer you a 10% discount" ; ----- Trigger Action
```


Insights Designer

Single environment to manage events rules and SPSS

- Model design through intuitive natural language editors
- Solution map provides step-by-step assistance for starting new insights projects

Decision Insight - CreditCardRules/rules/my_rules/Transaction Out Of Country.brl - Eclipse SDK

File Edit Source Navigate Search Project Run Window Help

Quick Access Java Decision Insight Samples Console

Solution Explorer

- CreditCardClient
- CreditCardJavaAgent
- CreditCardRules
 - rules
 - my_rules
 - Check Risky And Above Average
 - Too Many In One Day
 - Transaction Out Of Country
 - Transaction Too Large
 - Update Account
- bom
- resources
- META-INF
- agent.adsc
- MyCreditCardSolution
- MyCreditCardSolution - Java Model
 - META-INF
 - build.properties
 - model.jar
- MyCreditCardSolutionBOM

Transaction Out Of Country

Action Rule: Transaction Out Of Country

General Information

Name: Transaction Out Of Country

Category Filter

Categories: Any Edit

Documentation

Content

```
when a Transaction occurs , called 'the transaction'  
if  
    the country code of 'the transaction' is not "US"  
    and the amount of 'the transaction' is more than 1000  
then  
    emit a new Authorization Response where  
        the account is 'the Account' ,  
        the message is "R01: Out of country transaction greater than 1000" ,  
        the transaction is 'the transaction' ;
```

IntelliRule IRL Transaction Out Of Country.brl

Solution Map

MyCreditCardSolution (1 Warning / 0 Errors)

Model

- Import event / entity types from XSD
- Import event types from IBM Integration Bus
- Define events and entities
- Define aggregates
- Define connectivity

Author

- Add rule agent
- Add Java agent
- Add predictive scoring agent

Export

- Export event types to XSD

Deploy

- Export agent archive
- Export solution archive
- Export connectivity configuration

Problems

0 errors, 1 warning, 0 others

Description	Resource
Warnings (1 item)	



Intuitive natural language editors

For capturing models and business logic

The screenshot shows a text editor window titled '*BusinessModel.bmd'. The text inside is as follows:

```
an Account is a business entity identified by an id.  
  
an Account has a status (an Account Status).  
an Account Status can be one of : Excellent, Good, Fair, Poor, Risky.  
  
a Customer is a business entity identified by an email.  
a Customer has a first name.  
a Customer has a last name.  
a Customer has a phone number.  
a Customer is related to some Accounts.  
  
an Account is related to a Customer.  
  
a Transaction is a business event time-stamped by a date (date & time).  
a transaction
```

Four callout boxes point to specific features:

- Declarative Model**: Points to the first sentence: "an Account is a business entity identified by an id."
- Highlighted terms and vocabulary**: Points to the underlined terms "Account", "status", "Account Status", "Excellent", "Good", "Fair", "Poor", and "Risky" in the second and third sentences.
- Automatic completion**: Points to a dropdown menu that appears below the word "transaction". The menu items are: ",", "[", "can be", "can be one of :", "has", "is ...", "is a business entity", "is a business event", "is a concept", "is a data provider , <input>", and "is related to".
- Inline error detection**: Points to a small red icon with a white 'x' next to the word "transaction" in the last line of text.

Inline error detection

Declarative Model

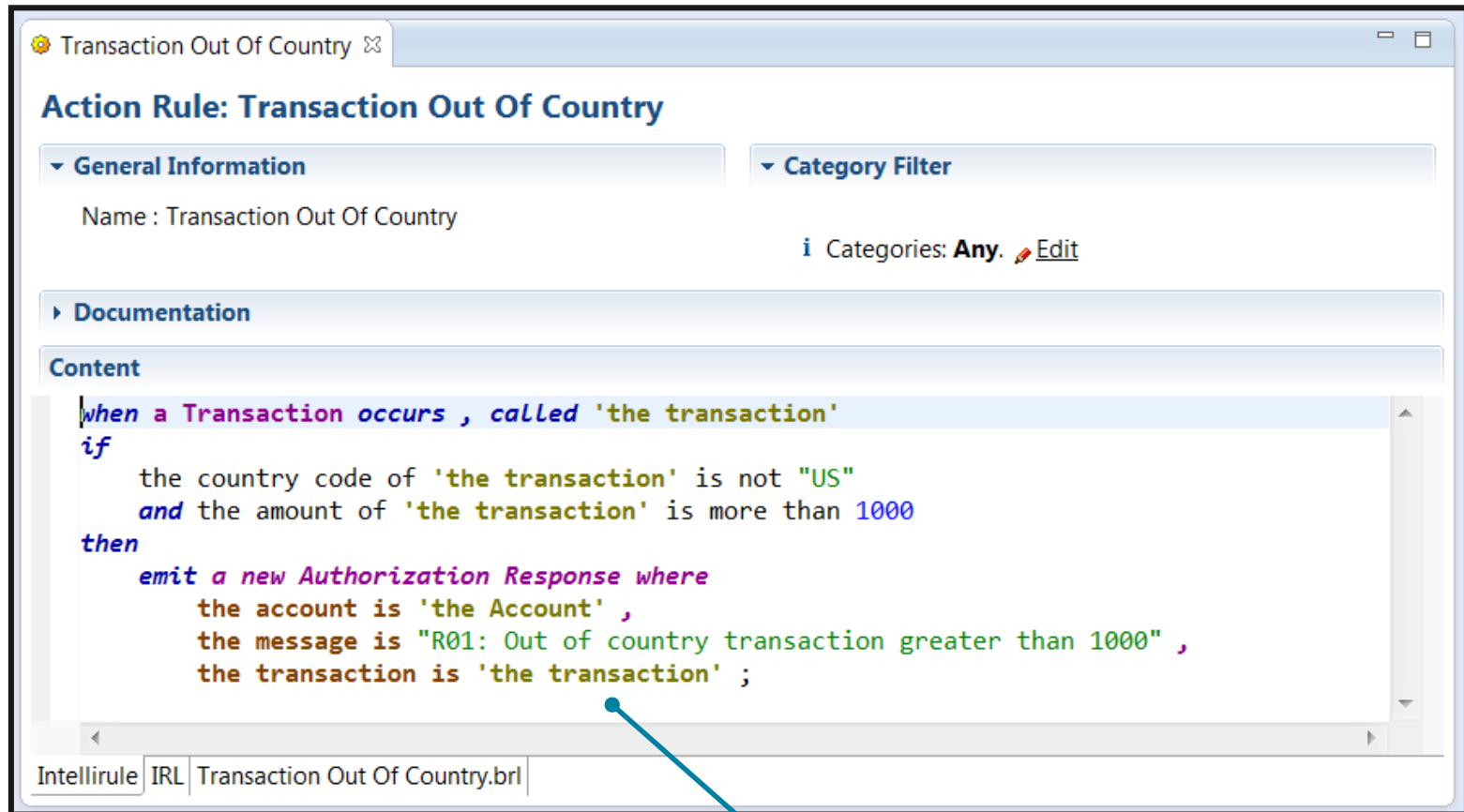
Highlighted terms and vocabulary

Automatic completion



Intuitive natural language editors

For capturing models and business logic



The screenshot displays the IntelliJ IDE interface for editing an 'Action Rule: Transaction Out Of Country'. The window title is 'Transaction Out Of Country'. The main content area is divided into sections: 'General Information' (Name: Transaction Out Of Country), 'Category Filter' (Categories: Any, Edit), and 'Documentation'. The 'Content' section contains the following natural language rule text:

```
when a Transaction occurs , called 'the transaction'  
if  
  the country code of 'the transaction' is not "US"  
  and the amount of 'the transaction' is more than 1000  
then  
  emit a new Authorization Response where  
    the account is 'the Account' ,  
    the message is "R01: Out of country transaction greater than 1000" ,  
    the transaction is 'the transaction' ;
```

The text is color-coded: 'when a Transaction occurs' is purple, 'called' is blue, 'if' is blue, 'and' is blue, 'then' is blue, 'emit a new Authorization Response where' is purple, and the rest of the rule body is green. A blue callout box labeled 'Intellirule editor' points to the text area.

Insight Inspector

- Solution testing
 - Use the Gateway API to create entities and events
 - Use the web Insights Inspector to see the event traces

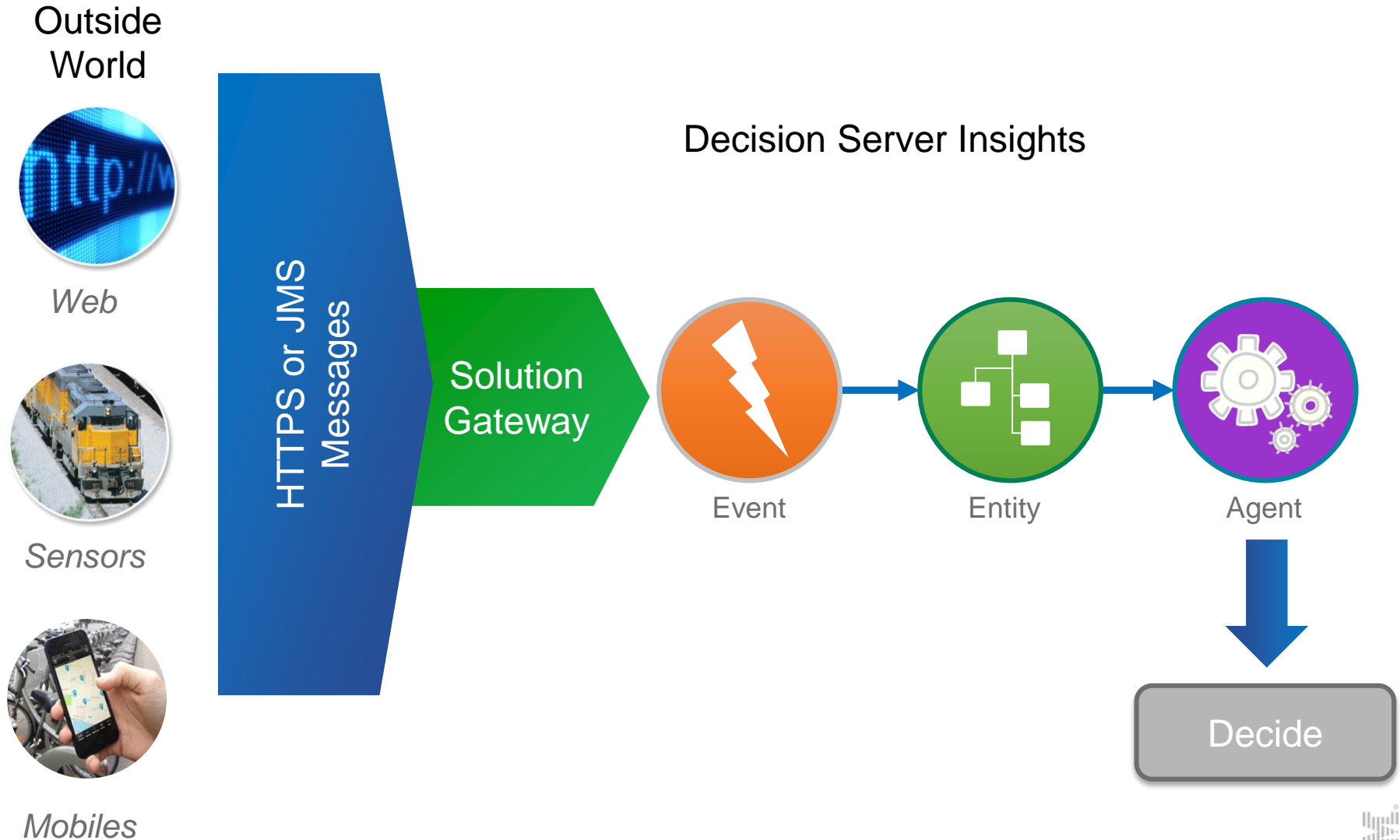
The screenshot displays the Decision Server Insights web interface. At the top, it shows 'Decision Server Insights' and 'All Solutions > AirportSolution'. The main area is a timeline for 'Sep 22, 2014' showing '17 processed', '13 emitted', and '0 error' events. A specific event is highlighted: 'Sep 22, 2014 23:39:33' with a 'FlightDelayedEvent (3)' label. The left-hand menu lists categories: 'Airport' (with sub-items 'AirportAirportAgent' and 'Bad_Weather'), 'Customer' (with 'Passenger_Compensation'), and 'Flight'. The bottom section shows data for 'FlightDelayedEvent' (1 of 3) and 'UA835'.

Attributes	Initial Value	Final Value
closestRedirectDistance	0.0	0.0
destinationAirport	BOS	BOS
flightNumber	UA835	UA835
scheduledEndTime	Sep 22, 2014, 4:00:26 PM PDT	Sep 22, 2014, 5:00:26 PM PDT

Attributes	Value
flight	UA835
type	airport.FlightDelayedEvent
newStartTime	Sep 22, 2014, 11:00:26 AM PDT
date	Sep 22, 2014, 11:39:33 PM PDT

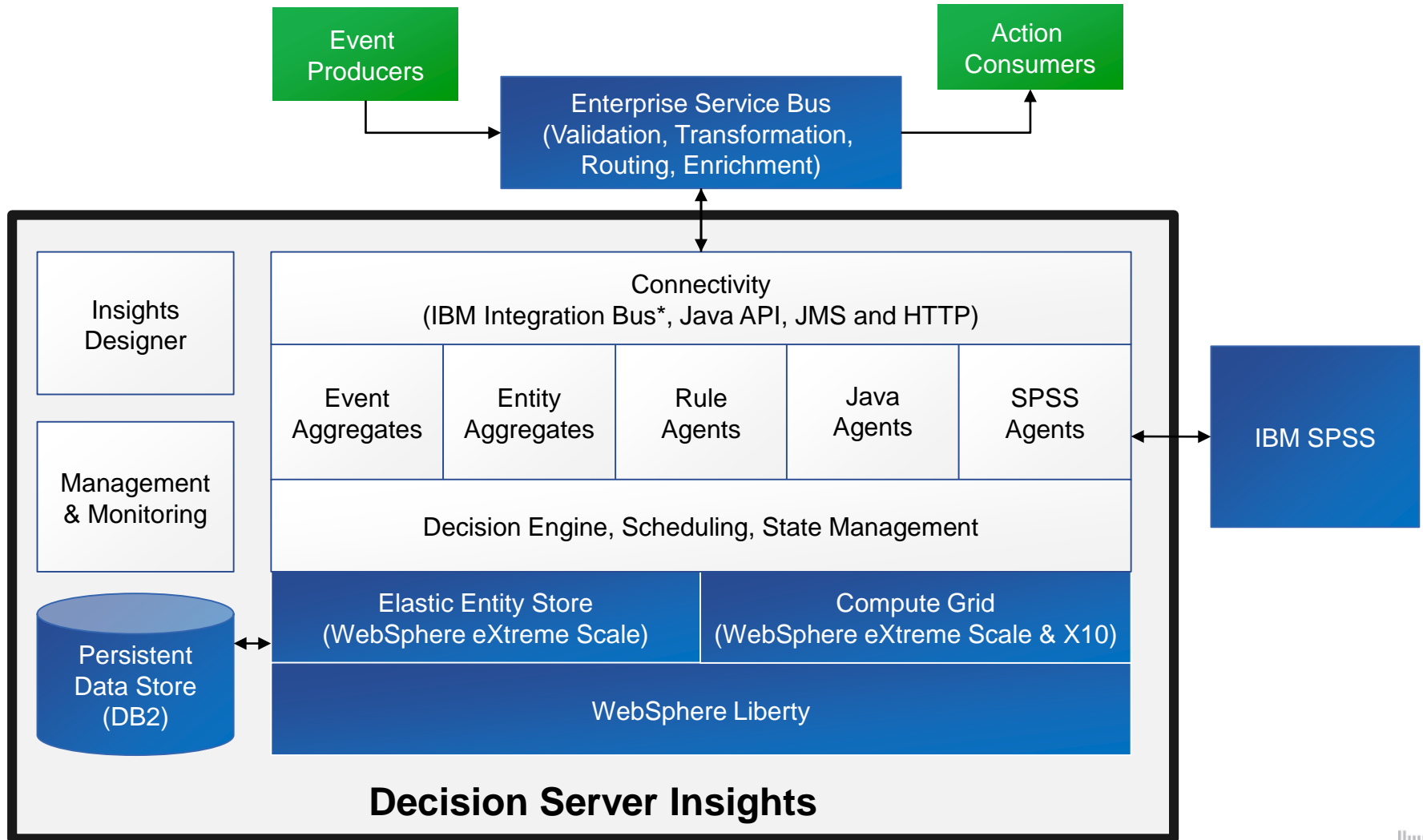


Integrating Decision Server Insights



High Level Architecture

Integrating business rules, events & predictive analytics in a single platform



*IBM Integration Bus is included as a Supporting Program, which can only be used for development and test purposes.



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Early Design Program (EDP)

- IBM will demonstrate prototypes and share confidential information about upcoming product plans.
 - ➔ This gives you a chance to see new proposed product features and enhancements, far in advance
 - ➔ You'll have the opportunity to evaluate the new features and provide feedback directly to the product teams
- A 'low touch' program ... all you need is a phone and web browser – new product designs are demonstrated via interactive web conferences
- If you find the content interesting, you might also want to participate in a related Beta program

What kind of clients we are looking for:

- Those who are invested in DM products and like being able to influence product directions and plans.
- Forward thinkers and early adopters.

Self Nomination Form

<https://www-304.ibm.com/software/support/trial/cst/forms/nomination.wss?id=908>

Beta Program

- Beta programs allow you to evaluate and provide feedback on IBM products before the products' general availability.
- IBM will supply beta code and/or virtual hosted image, beta documentation and education material.
- Covers ODM software components, which may include
 - IBM Decision Server Insights
 - IBM Decision Server Rules
 - IBM Decision Center
 - IBM ODM and Business Rules for z/OS

Self Nomination Form

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