



WebSphere Software

What's New in WebSphere MQ

Riba István

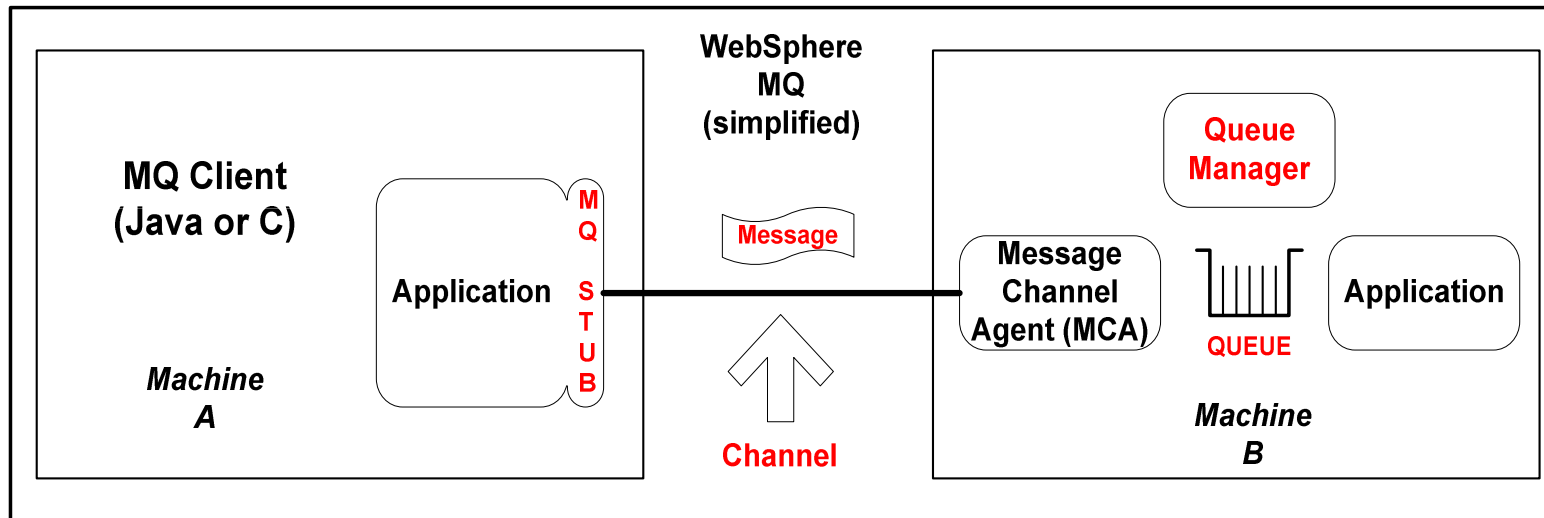
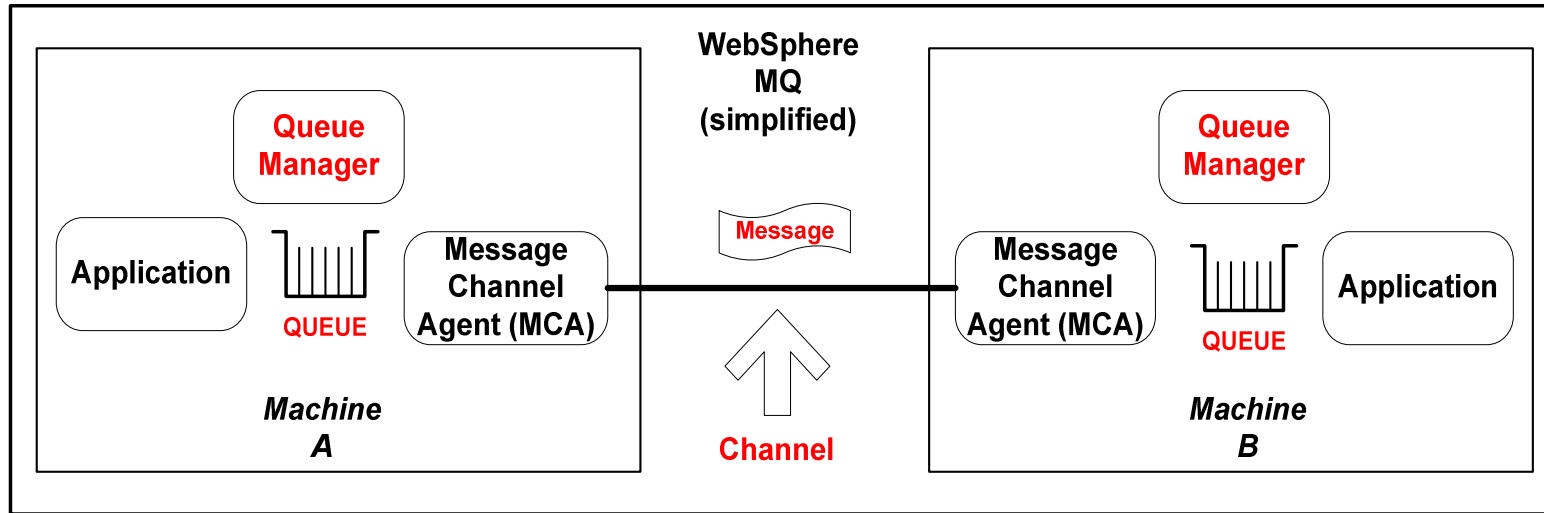
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WebSphere Technical PreSales

ON DEMAND BUSINESS™

- IBM WebSphere MQ 7
- IBM WebSphere MQ File Transfer Edition
- IBM WebSphere MQ Extended Security Edition
- WebSphere NEWS

WebSphere MQ basics



WebSphere MQ v7 – major features

- Publish/Subscribe
- MQI enhancements
 - ▶ Message Properties
- JMS
- MQ Bridge for HTTP
- Administration

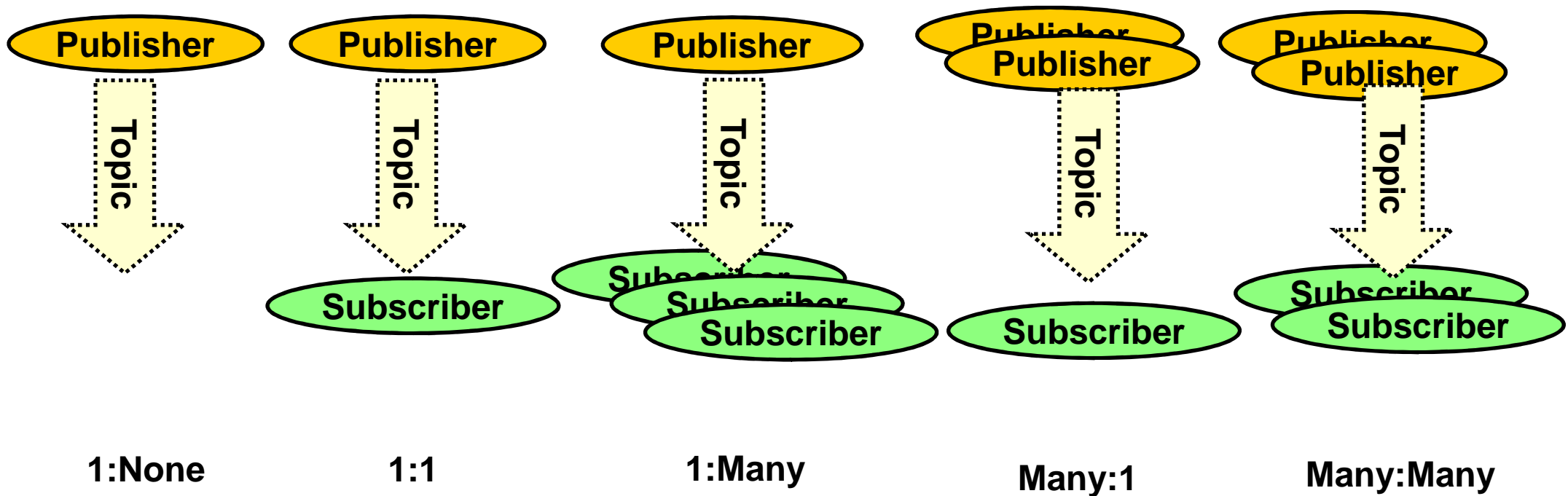
- More:

<http://www.redbooks.ibm.com/abstracts/sg247583.html>

Publish/Subscribe

- A natural part of the JMS API
 - ▶ Combines both Publish/Subscribe and Point-to-Point patterns
 - ▶ Now also a natural part of the native MQI
- Point-to-point asynchronous messaging decouples applications
 - ▶ But still implies a one-one relationship between sender and receiver
- Publish/subscribe is a further stage of decoupling
 - ▶ Sender has no direct knowledge of how many (if any) apps will see a message
 - ▶ Link between applications is a **Topic**, not a **Queue**
- WMQ V6 (Distributed) included a Publish/Subscribe broker (formerly MA0C)
 - ▶ Compatibility mode available in V7
- Implementation substantially improved with V7

Loose Coupling with Publish/Subscribe



Publish/Subscribe Administration

- Support for durable and non-durable subscriptions
 - ▶ With durable, a client can go away and come back later without missing messages
 - Durable can cause queues to fill – generating configured depth events as warning
 - ▶ Non-durable exist only for the lifetime of the application
 - No manual "cleanup" task needed when applications end unexpectedly
- Subscriptions
 - ▶ Able to see who is subscribing to topics: like DISPLAY QSTATUS
 - ▶ Able to create subscriptions on behalf of a third party
- Security
 - ▶ Use of a topic is restricted by permissions on the associated topic object
 - ▶ Follows existing WMQ model for security configuration (SAF or OAM)
- Conversion of point-to-point applications without code changes
 - ▶ Administrative changes to objects
 - ▶ A queue alias can point to a topic, not just a local queue

Publish/Subscribe in the WMQ Explorer

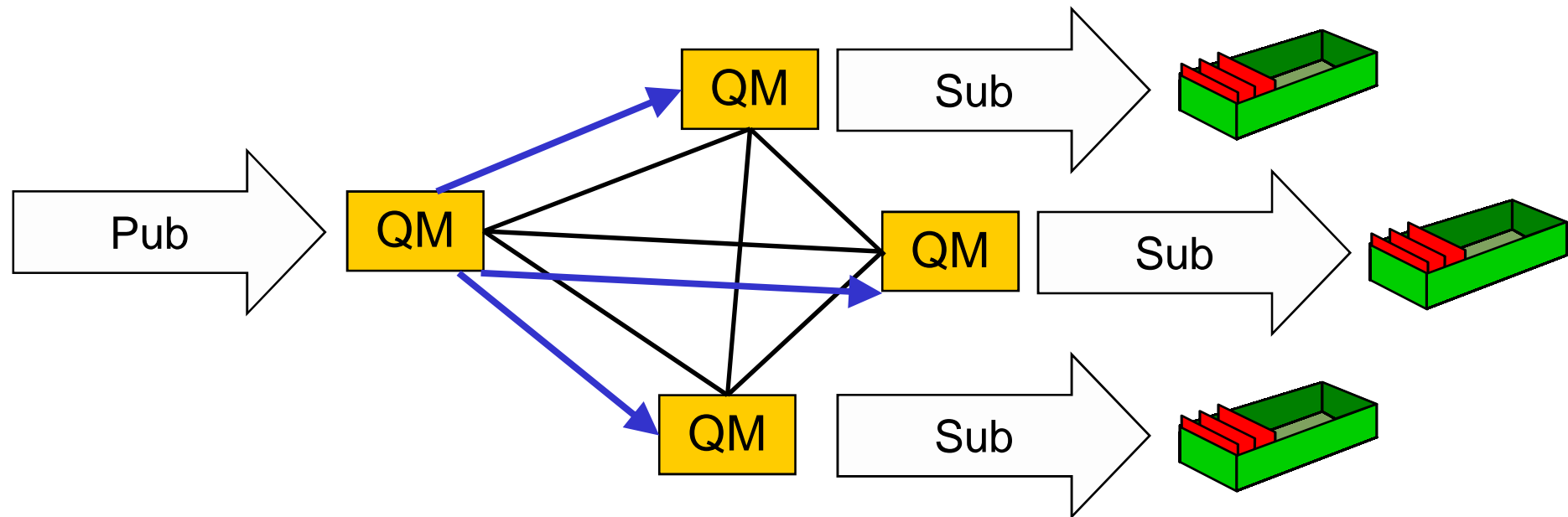
The screenshot displays the WebSphere MQ Explorer interface. The 'Navigator' pane on the left shows a tree view of the IBM WebSphere MQ environment, including Queue Managers, All, Development Queue Managers, and v7. The 'Content' pane on the right shows the 'Topics' view for the selected queue manager, with a table listing topics and their descriptions. A context menu is open over the 'v7' queue manager, showing options for managing topics and subscriptions. The 'Test Results' pane at the bottom shows 0 errors, 0 warnings, and 0 infos.

Name	Topic String	Description
SYSTEM.ADMIN.QMGR.EVENT.TOPIC	SYSTEM.ADMIN.QMGR.EVENT.TOPIC	
SYSTEM.BASE.TOPIC		Base topic for resolving
		Admin stream for queue
		Default stream for queu

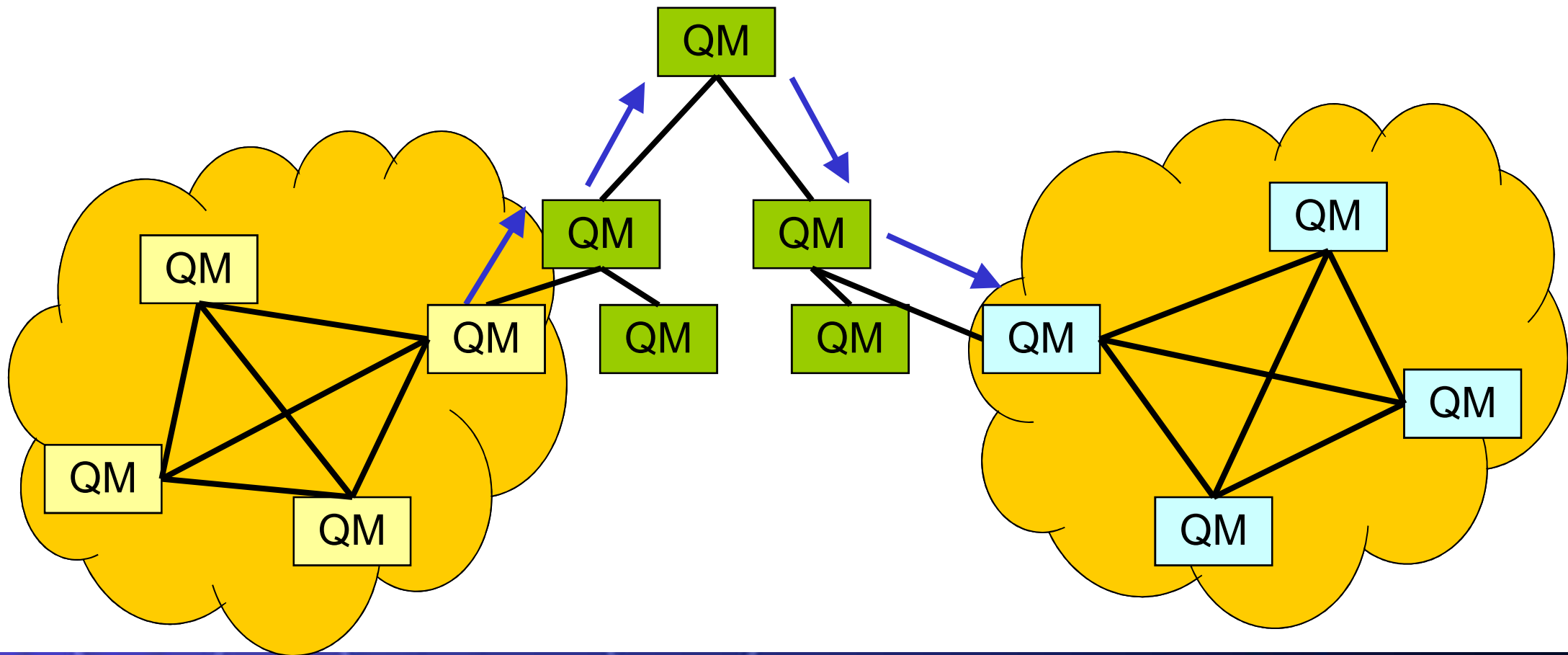
- Compare with...
- Status...
- Delete...
- Clear Retained Publication...
- Topic Status - Subscribers...
- Topic Status - Publishers...
- Test Publication...
- Test Subscription...
- Create JMS Topic...
- Object Authorities
- Properties...

Publish/Subscribe in a Cluster

- Consistent topic definitions in cluster
- Multiple routes across cluster



Publish/Subscribe in Combined Hierarchy & Clusters



Publish/Subscribe Application Programming

- New verb for subscribing
 - ▶ So you do not need to build RFH or RFH2 headers in the application
 - ▶ **MQSUB** registers a subscription
 - Includes information about where messages will be read from
 - Do not need to specify a queue – can be automatically assigned
 - ▶ Retained publications delivered immediately after subscribing
- New options on existing verbs
 - ▶ MQOPEN to get access to a topic
 - ▶ MQCLOSE deregisters a subscription
 - ▶ MQPUT, MQGET to publish and to receive publications
- Sample programs included to demonstrate use

MQI Enhancements

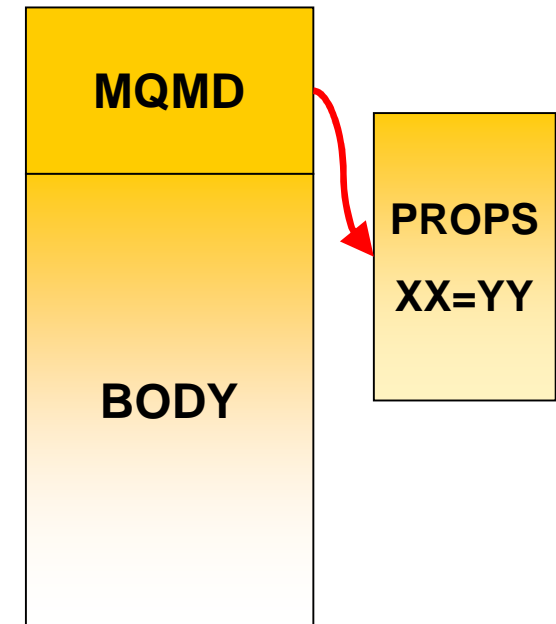
- Asynchronous Message Reception
 - ▶ New verb **MQCB** defines a callback function
 - ▶ Automatically Invoked when a message arrives
 - ▶ No need for MQGET(WAIT) or MQGET(SIGNAL)
 - ▶ A thread can receive messages from multiple queues
 - ▶ New verb **MQCTL** to start and stop message delivery to callback

- Selectors
 - ▶ Use a SQL92 clause to select messages by properties including MQMD fields
 - ▶ Can be specified on MQOPEN, MQCB for filtering messages
 - ▶ Selection is done inside queue manager
 - ▶ Not looking inside message body
 - Message Broker still required for content filtering

- Cooperative Browsing and Message Tokens
 - ▶ Efficient interface for applications reading from the same queue
 - ▶ Example: "master" program browses a queue telling "slaves" which message to work with, based on elements within the message
 - ▶ No races – messages locked but available to any cooperating process

Message Properties

- Arbitrary values associated with the message but not part of the body
 - ▶ Like a user-extendable MQMD
 - ▶ Already part of JMS
- New verbs including **MQSETMP** and **MQINQMP**
 - ▶ Properties can be integers, strings, boolean, etc.
- Easier to use than RFH2 folders
 - ▶ Receiving apps do not see them unless they want
 - ▶ No need to parse and skip over message headers
- Configuration options for compatibility
 - ▶ Queue and channel attributes define behaviour
 - ▶ Defaults will create RFH2 folders
- Permits explicit statement of relationships between messages
 - ▶ eg Message X is a **REPLY** to Message Y
 - ▶ Messages referred to by handles



Looking at Properties

The image shows two overlapping dialog boxes from the IBM WebSphere Message Properties configuration tool. The background window, titled "Message 1 - Properties", has a tree view on the left with "Named Properties" selected. The main area shows a table of named properties:

Name	Value
ibm.Rfp	
mqps.Top	

The foreground window, also titled "Message 1 - Properties", has a tree view with "RFH2 Properties" selected. The "Show details" checkbox is checked. The main area shows a table of RFH2 properties:

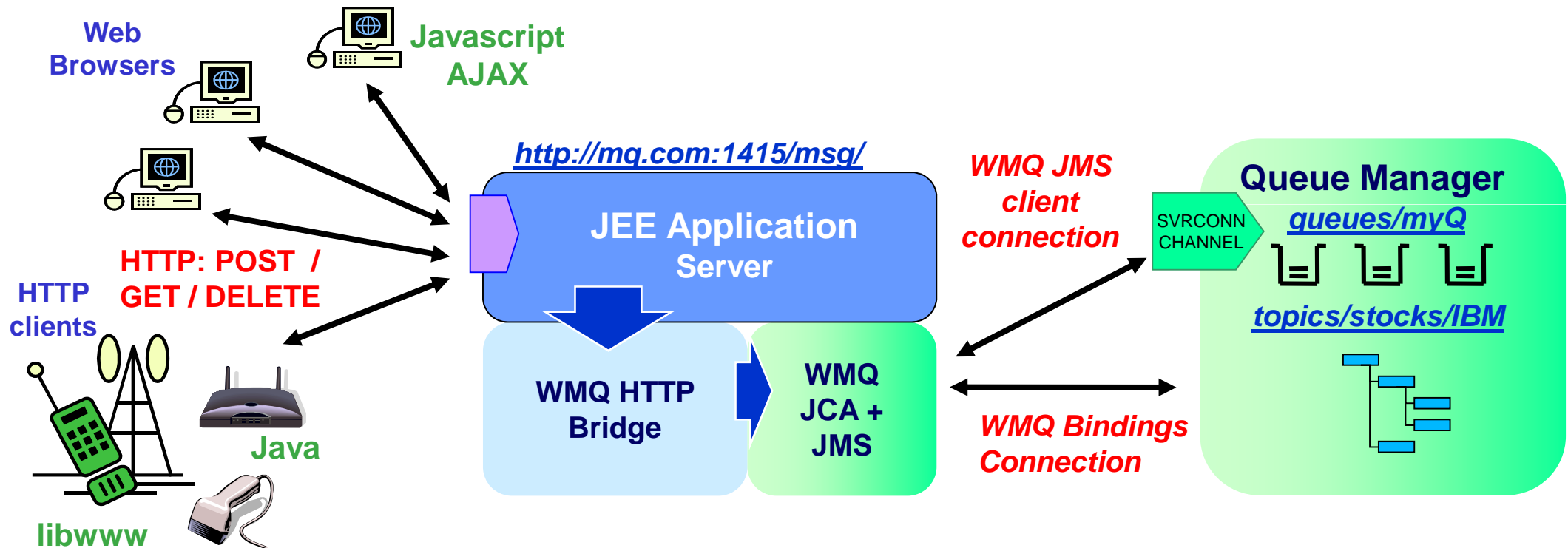
Name	Value
[-] ibm	
Rfp	v7
[-] mqps	
Top	sports/cricket

Buttons for "Apply", "OK", and "Cancel" are visible at the bottom of the foreground window.

Programming in Java

- JMS read/write access to all MQMD fields as properties
 - ▶ Have to explicitly enable this in the application program
 - ▶ Allows the application to go beyond the JMS specification
- JMS access to the raw message content
 - ▶ Can treat the whole body as a byte array property
 - ▶ Can see RFH2 folders that would normally be stripped
- Message Header Classes for Java
 - ▶ Updated and supported version of MS0B SupportPac
 - ▶ Makes it easy to build and parse PCF structures
 - ▶ Extended to handle other MQI message header formats
 - eg MQCIH, MQDLH classes

WebSphere MQ Bridge for HTTP - Architectural Overview



- Key features of the WebSphere MQ Bridge for HTTP -
 - Maps URIs to queues and topics
 - Enables MQPUT and MQGET from
 - Web Browser
 - Lightweight client
- Alternative non-servlet implementation available as MA94

WMQ Explorer Enhancements

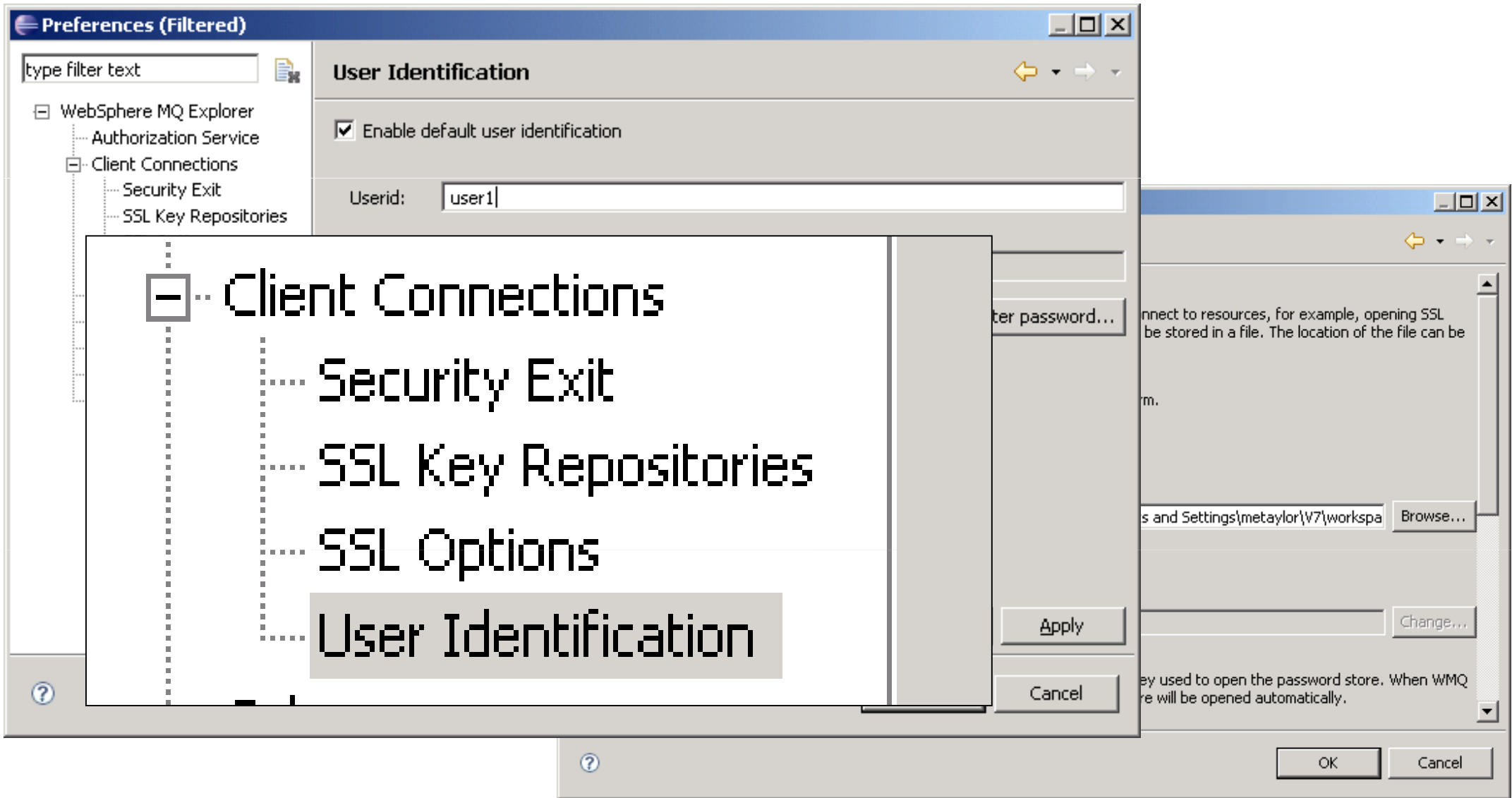
- Sets
 - ▶ Queue Managers can be partitioned into sets within the Navigator
 - ▶ For example "Test", "Production"
- Security Configuration
 - ▶ Easy to define channel exits, userid/password configurations
 - ▶ Configured for each queue manager or for all queue managers in a set
 - ▶ Password manager included
 - ▶ Still recommend security exit or service for authentication at the server
- Tighter JMS integration
 - ▶ Creating an queue/topic can define a JMS destination at the same time
- Message browser configuration
 - ▶ Number, size of messages
- Plug-in Migration
 - ▶ Explorer now based on Eclipse 3.3 – compatibility not guaranteed
 - ▶ Major change is availability of supported PCF classes

Queue Manager Sets

The screenshot displays the IBM WebSphere MQ Explorer interface. The left pane shows a tree view of the Queue Managers hierarchy. The right pane shows the details for the 'Development Queue Managers' set, which is highlighted with a dashed yellow border. The details pane includes a table with the following columns: Queue manager name, Command level, Queue manager status, Platform, and Queue-sharing group.

Queue manager name	Command level	Queue manager status	Platform	Queue-sharing group
lv7	700	Running	Unix	

WMQ Explorer Preferences



WMQ as an SOA Asset - Service Descriptions

- A standard way to describe all WMQ apps as SOA assets (services)
 - ▶ To be inventoried, and catalogued in Service Registry
 - ▶ To be re-used as services in composite SOA applications
 - ▶ To be managed and traced with SOA tools
- IBM has created the WMQ Service Definition and SOAP binding
 - ▶ IRI for WMQ addresses (“wmq:”)
 - Message destinations - Queues or Topics
 - Other resources - Qmgrs, channels, channel status etc.
 - ▶ WSDL bindings to define application properties
 - Also defines the Message Exchange Pattern; Request queue; Response queue; Correlation style; Message format; Message persistence, priority etc.
- Published as SupportPac MA93

MQ v7 - Some Performance Information

- Persistent pub/sub throughput increased up to 60%
- Non-persistent client throughput increased up to 300%
- JMS Selector rates improved up to 250%
- Message Listener throughput improved up to 45%
 - ▶ Latency also improved

- Measurements taken from pre-release code
- Performance reports will be published as usual on SupportPac site

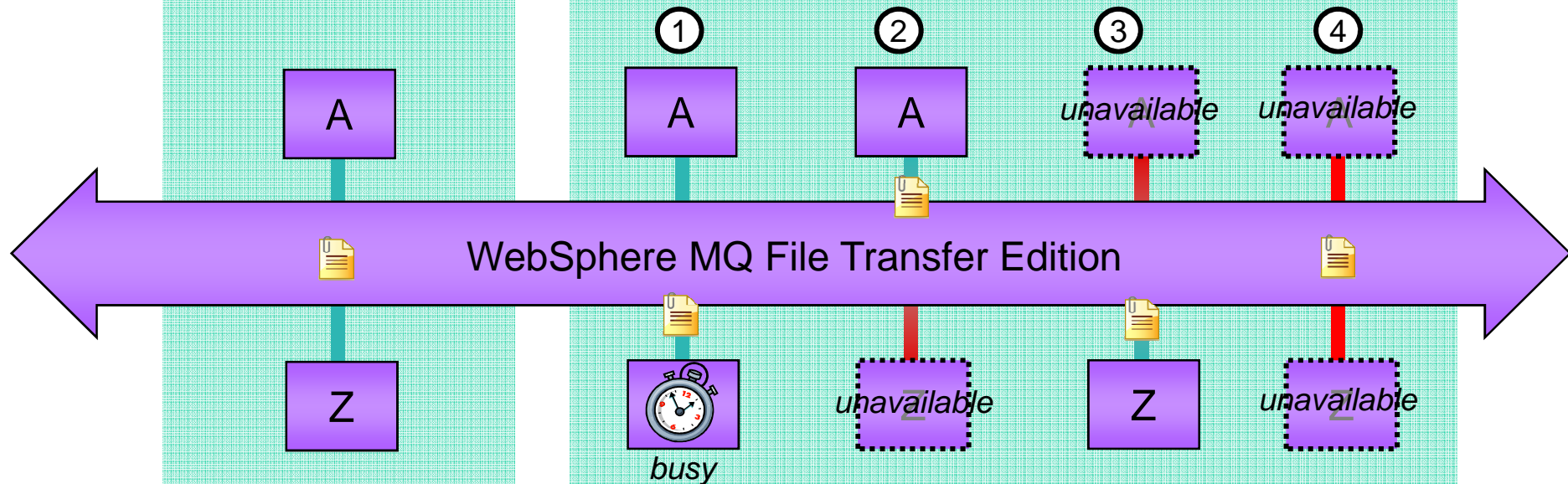
- IBM WebSphere MQ 7
- IBM WebSphere MQ File Transfer Edition
- IBM WebSphere MQ Extended Security Edition
- WebSphere NEWS

Time-Independent File Transfer

- Transfer files regardless of when solution components are free or available
Seems like this... ...Even when this might be happening!

Applications transferring files can assume that the sender, receiver & network will always be constantly available

- Sender application does not need receiver to be available in order to send files
- Sender application can continue doing useful work while files are being transferred
- Backbone handles network interruptions & recovers transfer once network resumes
- Senders & receivers can continue useful work without waiting for transfers to finish



WebSphere MQ File Transfer Edition V7.0

- Delivers a reliable managed file transfer solution for moving files between IT systems
 - ▶ Regardless of file size
 - ▶ Without the need for programming
- WebSphere MQ messaging is used as the reliable transport mechanism
 - ▶ Files are split up into messages and sent across the MQ network
- Support for binary and text transfers
 - ▶ Text files are automatically converted between the code pages and the end of line conventions for the source and destination systems.
- File data can be secured using Secure Socket Layer (SSL) based connections

WebSphere MQ File Transfer Edition V7.0

- Conditional Transfers
 - ▶ At a certain date and time (scheduling)
 - ▶ Given certain file system environment events (triggering)
 - for example the existence of a file within the file system
 - Or when a file reaches a certain size
 - ▶ Both Scheduling and Triggering are provided in the GUI or Command line interface
- Graphical tools integrated with WebSphere MQ Explorer
 - ▶ Enables file transfer initiation between WebSphere MQ File Transfer agents
 - ▶ Provides a log of file movements with information that can be used for audit purposes
- Command line interface
 - ▶ Provided to enable administration of WebSphere MQ File Transfer Edition agents and definition of transfer requests

Centralized Configuration via MQ Explorer

The screenshot displays the WebSphere MQ Explorer interface within the Eclipse SDK. The left-hand 'Navigator' pane shows a tree view of the IBM WebSphere MQ environment, with the 'Transfer Log' folder under 'QM_FILETRANSFER' circled in red. The main 'Content' pane displays the 'Transfer Log' as a table with columns for Source, Destination, and Completion State. Below the table is a filter input field. At the bottom, a 'Managed File Transfer - Current Transfer Progress' window is open, showing a table with columns for Source, Destination, Current File, File Number, Progress, Rate, and Started (Europe/London).

Source	Destination	Completion State
AGENT_ZOS	AGENT_2	Successful
AGENT_ZOS	AGENT_2	Successful
AGENT_ZOS	AGENT_2	Successful
AGENT_ZOS	AGENT_2	Successful
AGENT_ZOS	AGENT_2	Failed
AGENT_2	AGENT_ZOS	Successful
AGENT_ZOS	AGENT_2	Successful
AGENT_ZOS	AGENT_2	Partially successful
AGENT_ZOS	AGENT_2	Partially successful
AGENT_ZOS	AGENT_2	Successful
//MARTINP.FTE3.TXT'	C:\myfiles\file3cml.txt	Successful
/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/-sd	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u
/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/Delete	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u
/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/-t	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u
/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/Text	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u
AGENT_2	AGENT_ZOS	Successful
AGENT_2	AGENT_ZOS	Successful

Source	Destination	Current File	File Number	Progress	Rate	Started (Europe/London)

Creating File Transfers

List of sources and targets is built automatically
Specify directory and file name

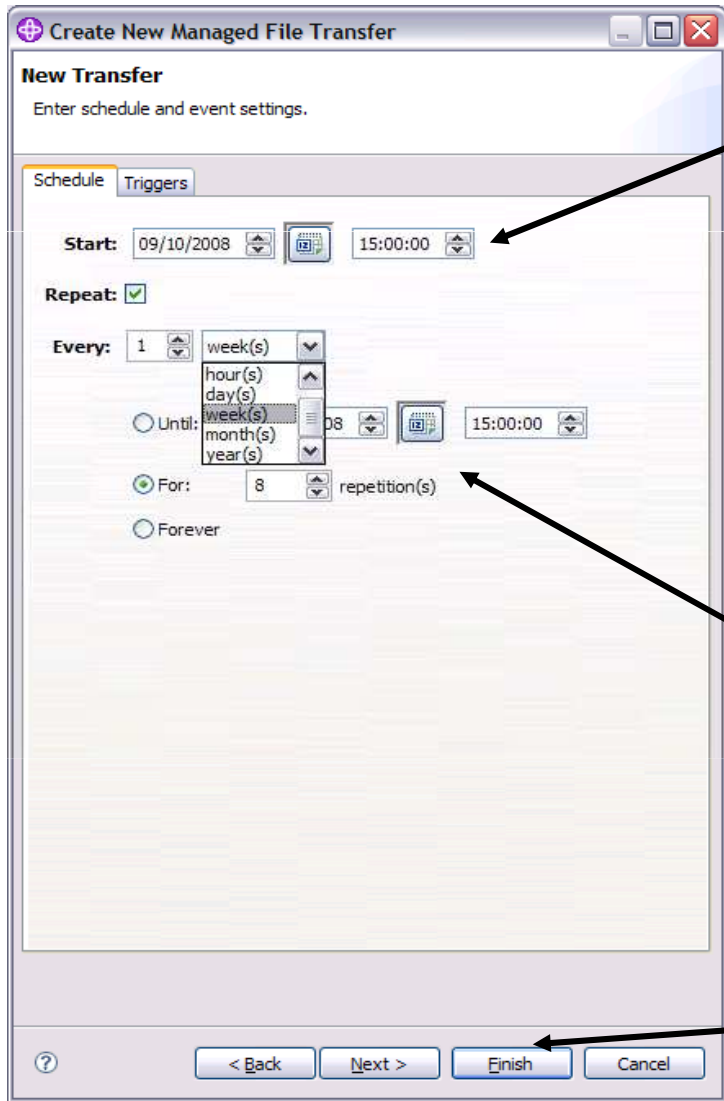
Choose advanced options

Choose mode (Binary or Text with automatic conversion)
Add each individual transfer to a group of transfers

Deploy file transfer to network

Choose priority of transfer

Scheduling & Triggering File Transfers

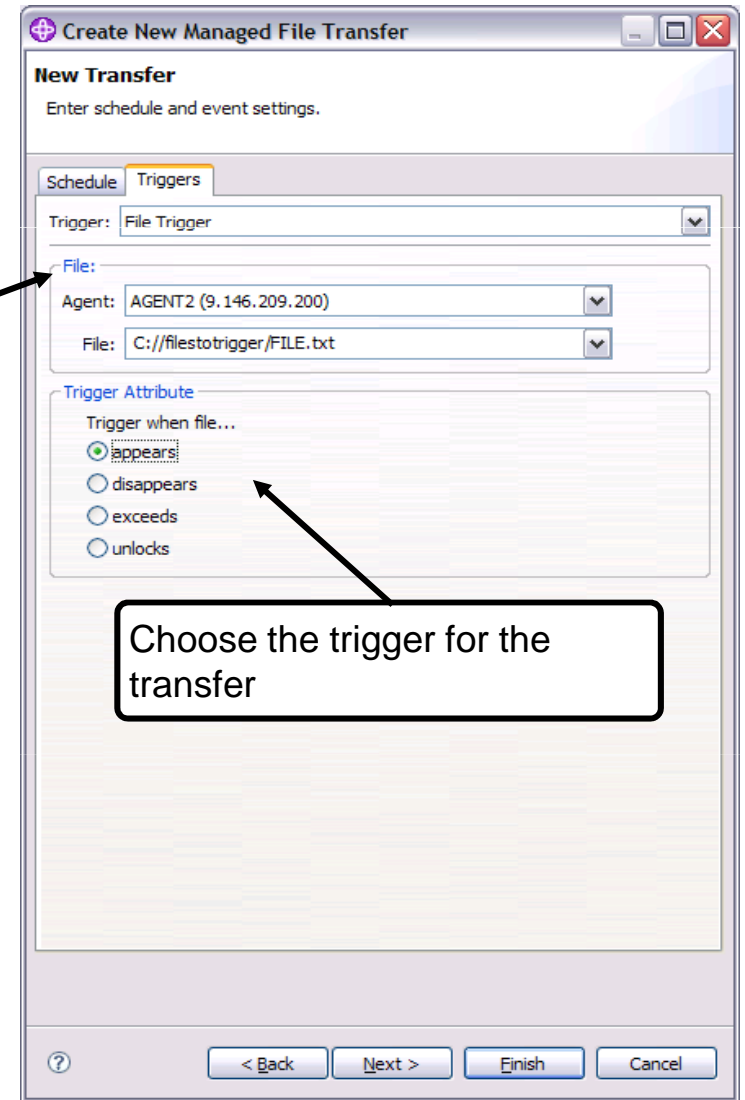


Choose when to start the scheduled transfer

Choose advanced options

Choose when to repeat the scheduled transfer and how often

Deploy file transfer to network



Choose the trigger for the transfer

Auditing & Monitoring File Transfers

View or cancel transfers that will run by schedule and/or are triggered

The screenshot shows the 'Pending Transfers' window in WebSphere MQ Explorer. It contains a table with the following data:

Name	Source	Destination	Scheduled Start (Europe/London)	Repeat Every	Repeat Type	Repeat Until
2	AGENT_2	AGENT_ZOS	2008-10-23 12:52 BST	1	weeks	
3	AGENT_2	AGENT_ZOS	2008-12-10 17:00 GMT	6	hours	2009-12-07 11:00 GMT

View audit log of all transfers and groups of transfers

The screenshot shows the 'Transfer Log' window in WebSphere MQ Explorer. It contains a table with the following data:

Source	Destination	Completion State								
AGENT_ZOS	AGENT_2	Successful								
AGENT_ZOS	AGENT_2	Successful								
AGENT_ZOS	AGENT_2	Successful								
AGENT_ZOS	AGENT_2	Successful								
AGENT_ZOS	AGENT_2	Failed								
AGENT_2	AGENT_ZOS	Successful								
AGENT_ZOS	AGENT_2	Successful								
AGENT_ZOS	AGENT_2	Partially successful								
AGENT_ZOS	AGENT_2	Partially successful								
//MARTINP.FTE3.TXT	C:\myfiles\file3cml.txt	Successful								
/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/-sd	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/Delete	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/-t	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS/Text	C:\myfiles\file3cml.txt	Failed - BFGIO0001E: File "/u/martinp/config/QM_FILETRANSFER/agents/AGENT_ZOS	AGENT_ZOS	Successful
AGENT_2	AGENT_ZOS	Successful								

View progress of all transfers currently taking place

The screenshot shows the 'Managed File Transfer - Current Transfer Progress' window in WebSphere MQ Explorer. It contains a table with the following data:

Destination	Current File	File Number	Progress	Rate	Started (Europe/London)
AGENT_2	fte.txt - (12KB / 12KB)	1 / 1	100%	53 KiB/s	2008-12-01 10:24:01 GMT
AGENT_2	wmq fte.zip - (487MiB / 706MiB)	1 / 1	69%	5714 KiB/s	2008-12-01 10:27:00 GMT

WebSphere MQ File Transfer Edition V7.0

- Files are split into MQ non-persistent messages
 - ▶ (Minimal impact on MQ logs)
 - ▶ Internal protocol handles non-delivery of messages

- Rate of transfer is paced
 - ▶ Prevents a source agent outperforming a destination agent
 - ▶ Avoids flooding MQ network with file data

- Files transferred reliably
 - ▶ Checkpoint restart feature provides for toleration of network outages
 - ▶ When a network outage is resolved file transfer requests are restarted from the last checkpoint avoiding the need to send the whole file again

WebSphere MQ File Transfer Edition V7.0

- Customization points
 - ▶ User exit routines are provided at source and end points to allow customization of file transfer behavior
 - ▶ User exit routines have the power to
 - Change which files are transferred
 - Change the order in which files are transferred
 - Cancel a transfer.

WebSphere MQ File Transfer Edition V7.0 *agents*

- Files are sent between WebSphere MQ File Transfer Edition agents
- Requires a connection to a queue manager
 - ▶ Bindings mode or client mode
 - ▶ *(note the MQ client is not required on machines without MQ)*
- Runs locally to the files being transferred as a long running Java process

WebSphere MQ File Transfer Edition V7.0 Tools

- Command Line tools
 - ▶ For operations (for example transferring a file)
 - ▶ Administration (for example starting an agent)

- GUI
 - ▶ eclipse based plug-in to MQ Explorer
 - ▶ Used for operations only (for example transferring files, browsing transfer log history)

queue manager definitions required

- queue manager definitions used by WebSphere MQ File Transfer Edition
 - ▶ **Coordination** queue manager
 - ▶ **Command** queue manager
 - ▶ **Agent** queue manager

- *Note: The WebSphere MQ File Transfer Edition installation process assumes that the above queue managers are already defined and are accessible*

The coordination queue manager

- Collects information about
 - ▶ progress of active transfers (active transfer log)
 - ▶ Auditable history of past transfers
- Holds information about agents defined in the WebSphere MQ File Transfer Edition network
- Has a SYSTEM.FTE queue and topic defined to it as part of the configuration used internally by the product
- Must be at MQ V7
- All agents in the network must have access to this queue manager in order to publish transfer log processing messages
- No WebSphere MQ File Transfer Edition code runs on this queue manager

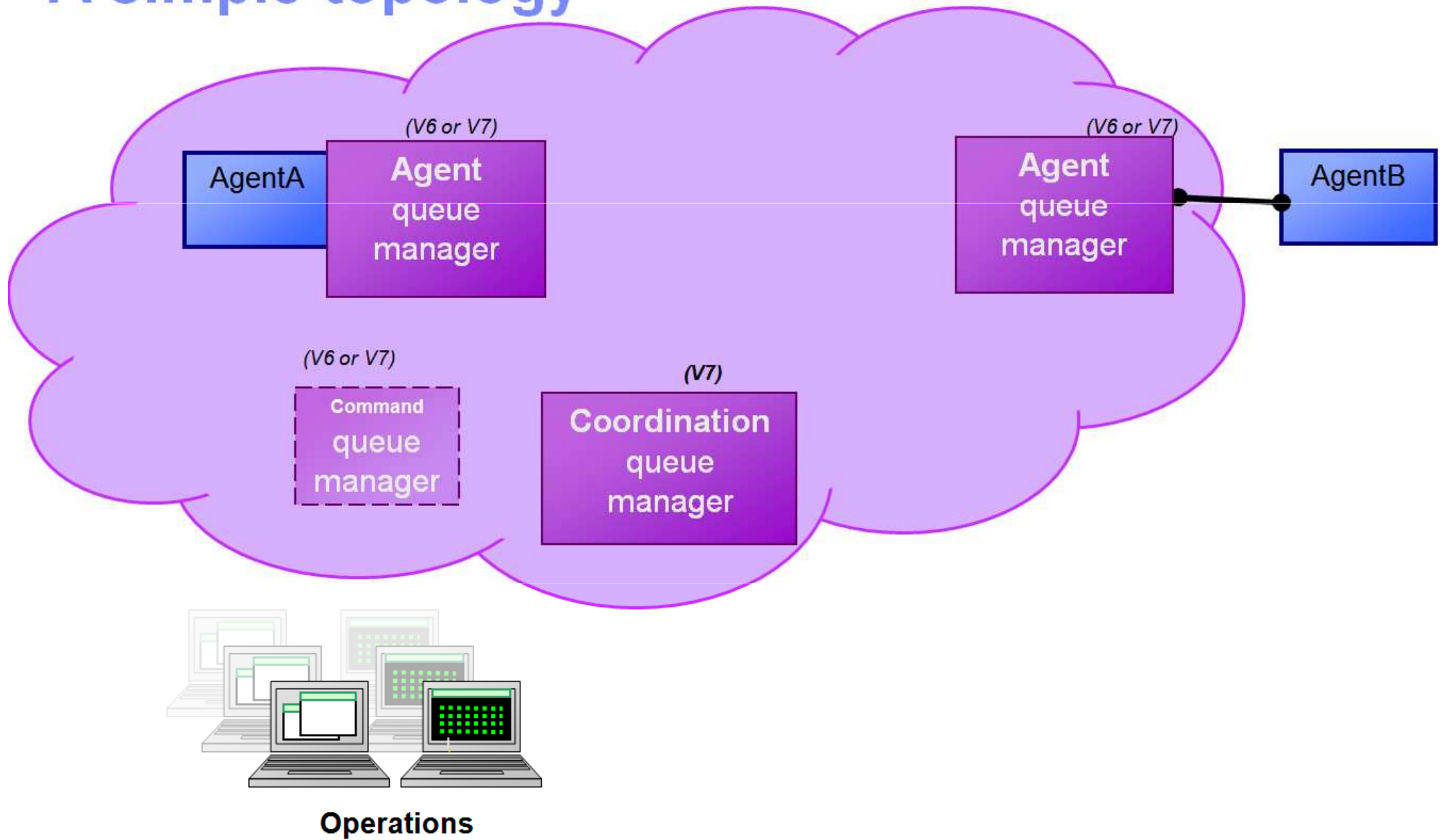
The *command* queue manager

- Used to get commands into the WebSphere MQ File Transfer Edition network
- Can be at MQ V7 or MQ V6
- Can have multiple *Command* queue managers defined for multiple command injection points
- No WebSphere MQ File Transfer Edition code runs on this queue manager
- (can be the same queue manager as the Coordination queue manager or different)

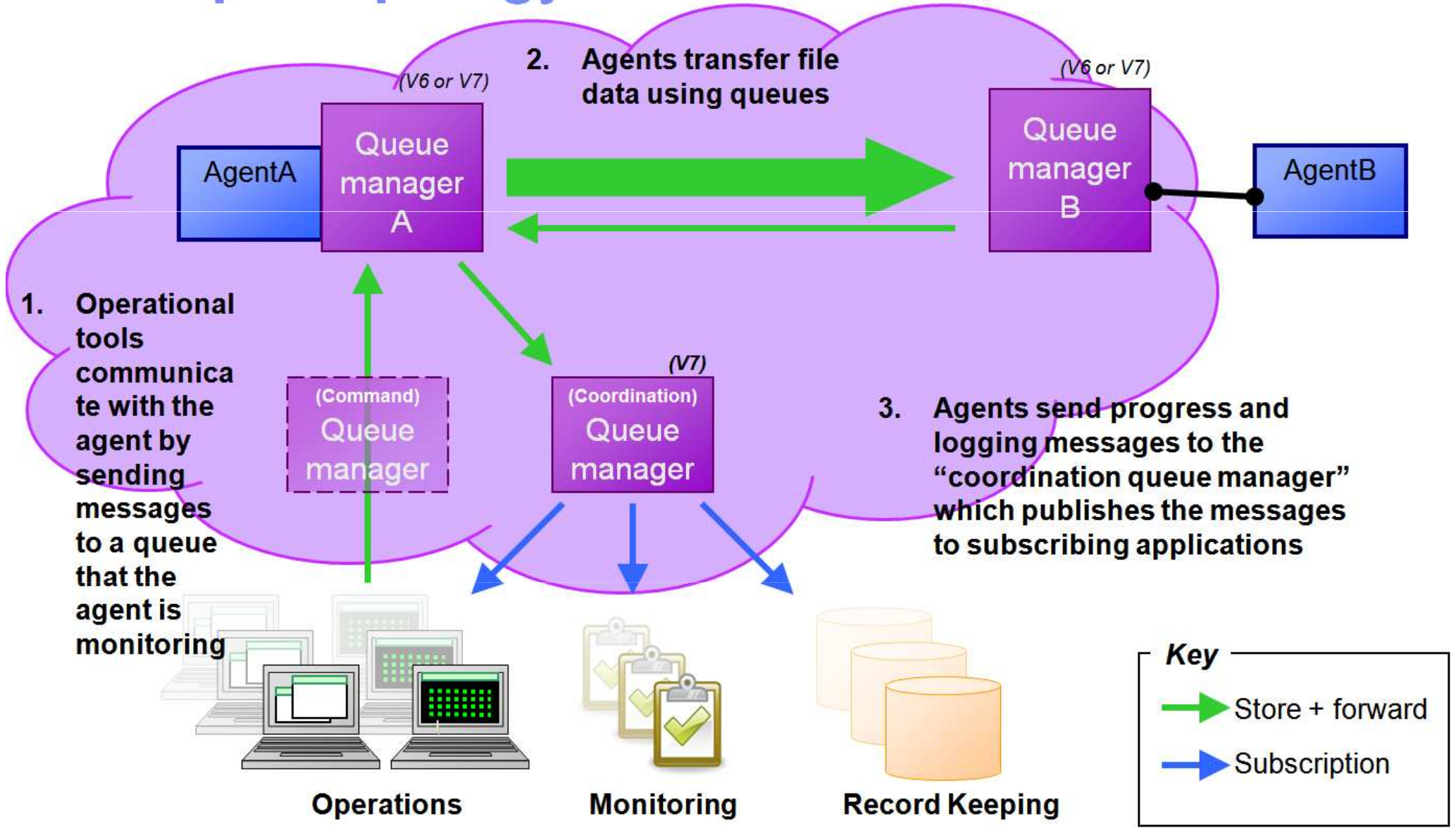
The *agent* queue manager

- The queue manager to which an Agent in the WebSphere MQ File Transfer Edition network is attached
- Used by an agent to send/ receive files across MQ
- Can be at MQ V7 or MQ V6
- Can have multiple agents attached to it
- Has internal SYSTEM.FTE queue definitions defined to it as part of the agent setup and configuration
- Requires capacity planning dependent on load

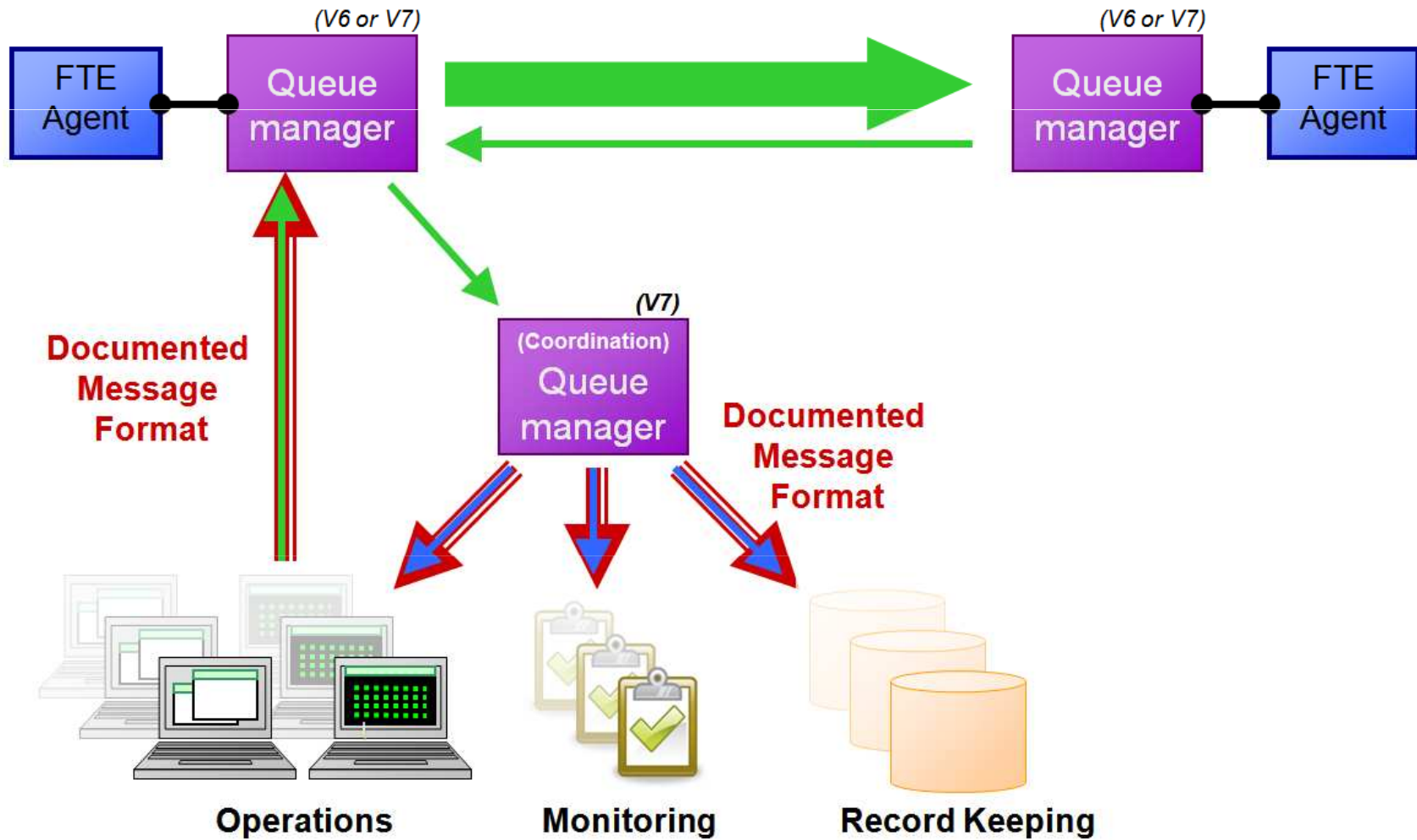
A simple topology



A simple topology



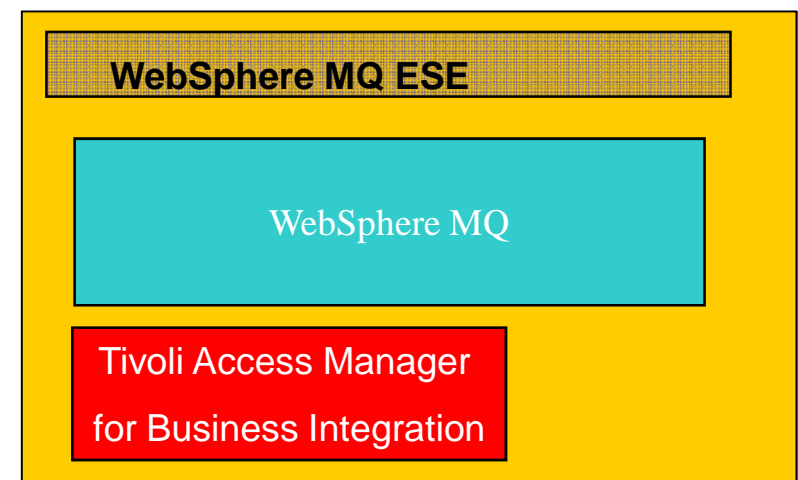
Published interfaces



- IBM WebSphere MQ 7
- IBM WebSphere MQ File Transfer Edition
- IBM WebSphere MQ Extended Security Edition
- WebSphere NEWS

WebSphere MQ Extended Security Edition

- Enterprise Security Version of WebSphere MQ
- Combines WebSphere MQ and Tivoli Access Manager for Business Integration into a single program product
- Provides same level of function as the two separate products



Why the need for Extended WMQ Security?

	Native WebSphere MQ
Data Protection	SSL services at link level Protects messages while in transit
Data Protection Policy	Statically set at Channel/link level
WMQ Client Access	Limited control over client connections
Administration	Every queue must have a unique ACL set on it Access control policy separate from data protection and audit
Identities	Authentication solely based on local OS identities

WebSphere MQ Extended Security Edition

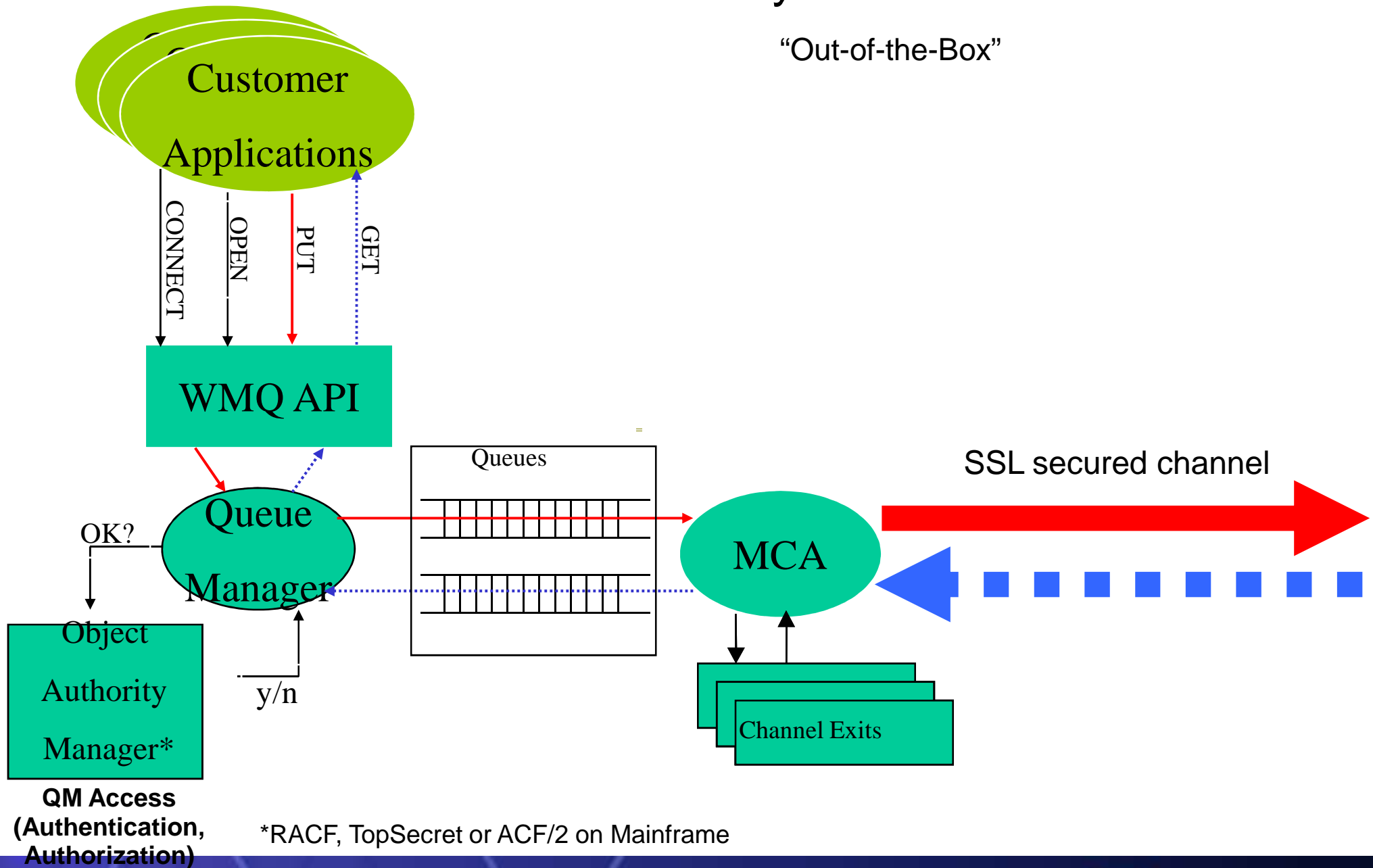
- **Provides extended security functions to WebSphere MQ**
 - ▶ Provides end-to-end integrity and privacy for sensitive message data without needing to make any modifications to existing deployed applications
 - ▶ Shortens new application development time by enhancing message bus to provide required application level security services
 - ▶ Supports encryption of a subset of the traffic on a single channel
 - ▶ Better secures WMQ servers from unauthorized WMQ client access

WebSphere MQ Extended Security Edition

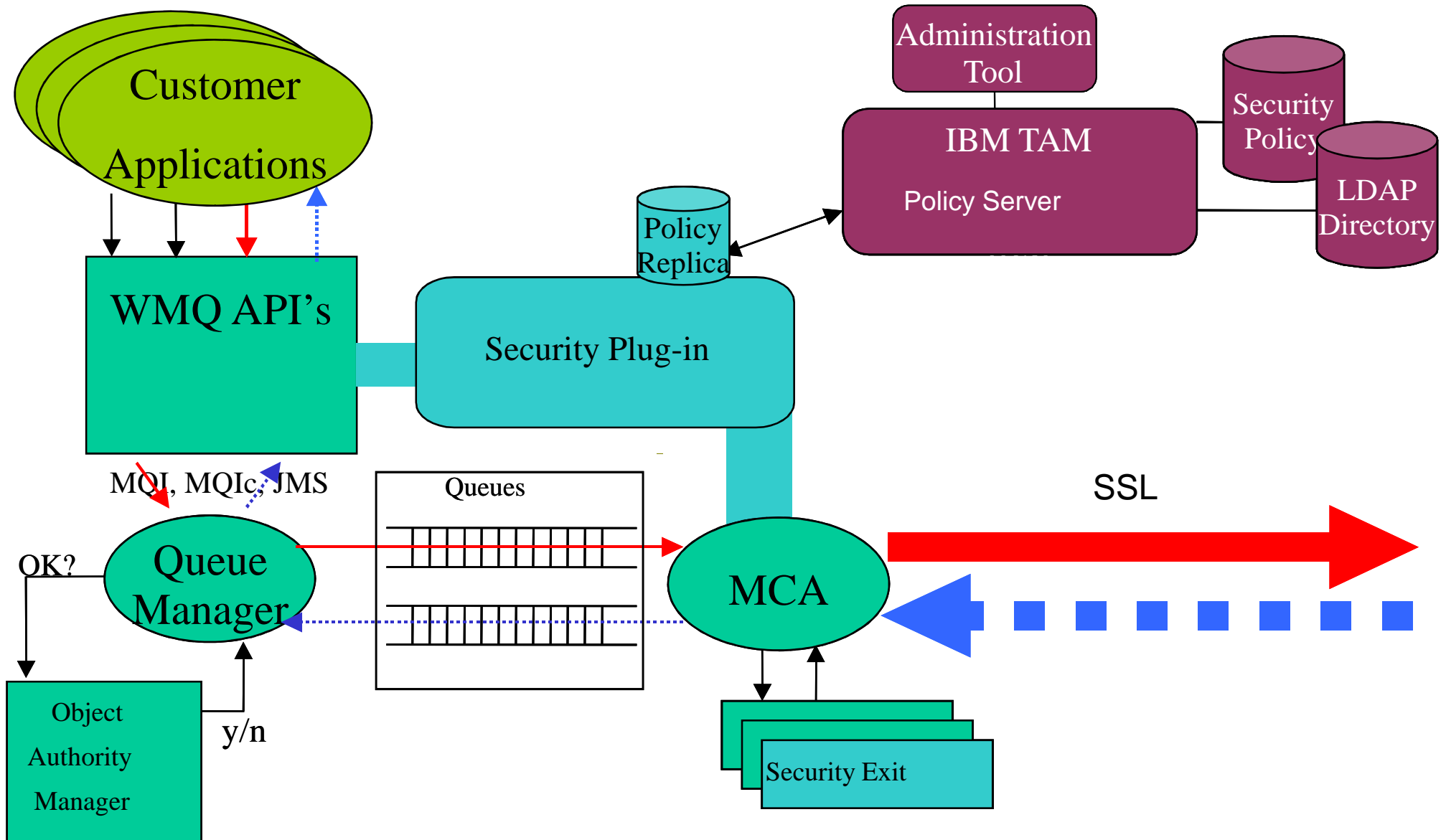
- **Extended Security Functions continued....**
 - ▶ Consolidates administration of security policies for access control, data protection and security specific auditing across the enterprise
 - ▶ Supports a delegated administration model via a Browser based interface allowing local control of resources
 - ▶ Optional detailed, message level, auditing of enforcement of security policy
 - ▶ Offers an authorization service to control pub/sub rights. This allows the consolidation of queue and topic security policy administration

Native WMQ Security

“Out-of-the-Box”



Tivoli Access Manager for Business Integration Architecture



- IBM WebSphere MQ 7
- IBM WebSphere MQ File Transfer Edition
- IBM WebSphere MQ Extended Security Edition
- WebSphere NEWS

WebSphere Application Server v7 Network Deployment

- IBM® Tivoli® Federated Identity Manager (TFIM) V6.2
 - ▶ provides a standards-based Web single sign-on using the SAML protocol
 - ▶ available at no charge to WebSphere® Application Server Network Deployment V7 customers

It features the ability to easily configure a WebSphere Application Server Network Deployment cell as both identity-provider and/or service-provider and establish federation with an external partner. An identity provider is able to authenticate users and generate SAML security tokens to establish secure trust between two partners. A service-provider is able to validate incoming SAML tokens and secures user access to its business applications.

- TFIM for WAS home page:

<http://www-01.ibm.com/software/tivoli/products/federated-identity-mgr-websphere/index.html>

WebSphere Business Modeler 6.2 samples

- **'Interactive Process Design'** Sample and Tutorial, Developing deployable business processes using **WebSphere Business Modeler V6.2**, is now available
 - ▶ http://www-01.ibm.com/support/docview.wss?rs=2025&context=SSBJDG&q1=tutorials&uid=swg27013902&loc=en_US&cs=utf-8&lang=en_us



Making Better Decisions, Faster

ILOG Overview

Jean-Baptiste Dézard
Senior Marketing Director EMEA
ILOG, an IBM Company

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April 28th, 2009

Websphere Technical Event
Budapest

Vision for Survival

In a Challenging Economy

Provide Visibility

Make Better Decisions

Optimize Your Business

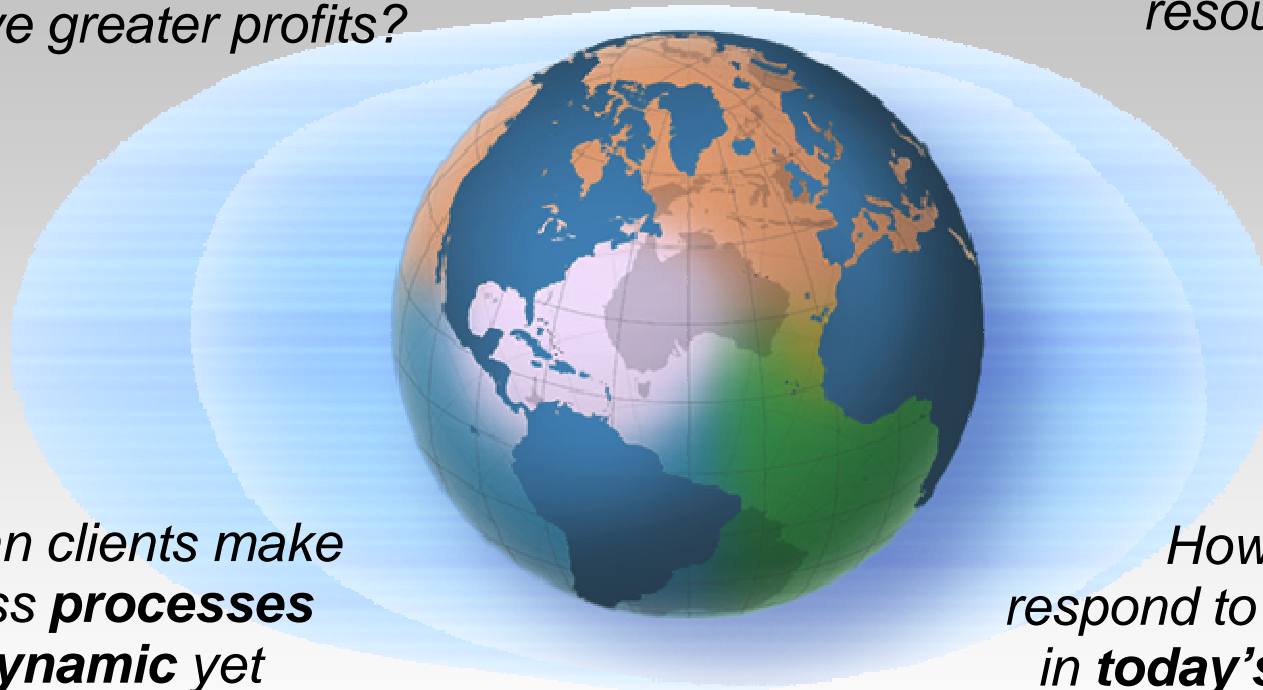


Why ILOG?

Top Market Needs Facing Clients in Today's Economy

*How can clients **embrace change**, empower people and drive greater profits?*

*How can clients increase **productivity** and allocate resources more efficiently?*



*How can clients make business **processes** more **dynamic** yet manageable?*

*How do clients, respond to challenges in **today's business climate**?*

ILOG Lines of Business

Helping clients make smarter decisions

Powerful Business Rule Management System

Adapt and respond dynamically, automating process-based decisions with business rule management

Efficient Supply Chain Management

Optimize supply chains, design & planning tools for improved efficiency and productivity



Advanced Suite of Optimization Tools

Produce the best possible action plans & schedules, enhancing abilities to explore alternatives, understand trade-offs, and respond to changes in business operations

Innovative Visualization Tools

Transform insight into action, enhancing collaboration for smarter role-based business decisions

ILOG Company Overview

Industry Leading, Award Winning, Cutting Edge

- 850 employees with HQs in France and US
- Over 3,000 direct clients in over 30 countries
- 500+ OEM partners
- Ranked 166 in Software 500 listing
- 23rd of 482 software companies with seven consecutive years of profitable growth
- IBM Business Partner since 1996



Protecting Investments, Promoting Ecosystems, Preparing for Tomorrow

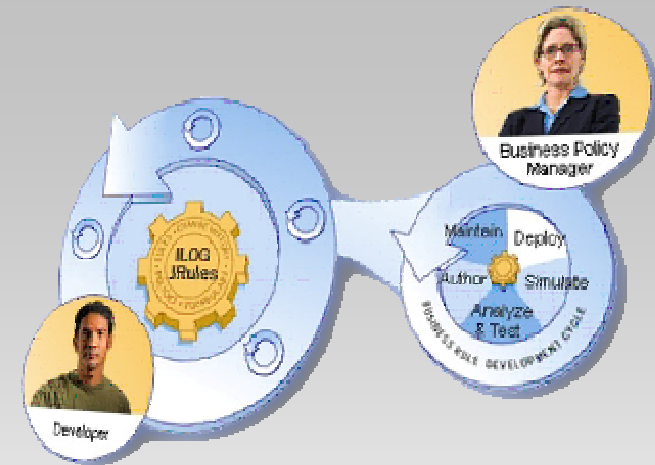
Stay Tuned ...

- Expanded Product Roadmaps
- Integrated Services
- Innovative R&D
- More Customer Success Stories



BRMS – Adapt and Respond Dynamically

- BRMS automates key complex decision making: pricing, risk scores, credit, underwriting, ...
- BRMS lets the business manage policy changes quickly – in English, Romanian, Dutch, French, German, etc.
- BRMS provides audited decisions
- ILOG BRMS is market leader
- ILOG BRMS supports Java, .NET, COBOL (z-Series)
- ILOG BRMS provides tools for developers, business users, and system administrators



Success Story

- PSA had no way to predict car delivery times.
- PSA wanted to improve sequencing of orders
- ILOG BRMS + WebSphere + Tivoli delivered the solution: Sycamore



Visualization – Transform Insight Into Action

Enhancing Collaboration for Smarter Role-based Business Decisions

- Set of high-level advanced visualization components:
 - Dashboard elements: Charts & graphs
 - Networks / diagrams with automatic layout
 - Gantt charts
 - Maps
- Market leader, fastest, most scalable solution
- Java, .NET, Adobe Flex, C++ support
- Defense, telecom, T&T, dashboards, ISV's, etc.
- Used within :
 - WebSphere Business Events
 - Tivoli Netcool

Role-based business spaces powered by WebSphere



ILOG Visualization Tools

Success Story



- Germany's national railway uses visualization for train dispatching, resulting in improved speed and accuracy of decision-making and reduced staff training time

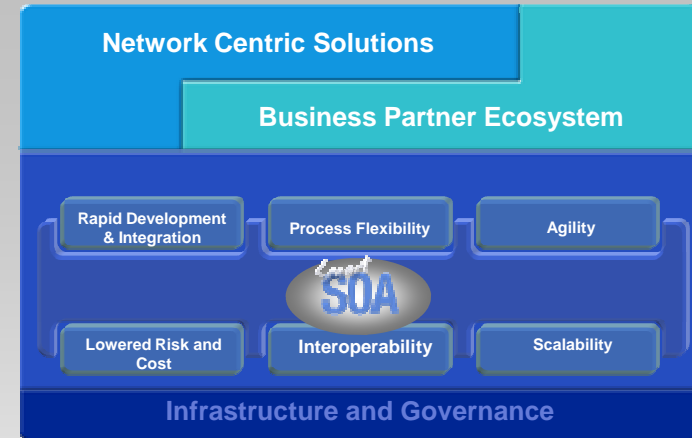
Supply Chain Management – Optimize with Design & Planning Tools

For Improved Efficiency and Productivity

IBM Industry Frameworks

SCM optimization and carbon footprint management capabilities, especially for SAP clients

- LNP: Supply network design
- IA: Inventory safety stock management
- PPO: Process industry production planning and scheduling



Success Story

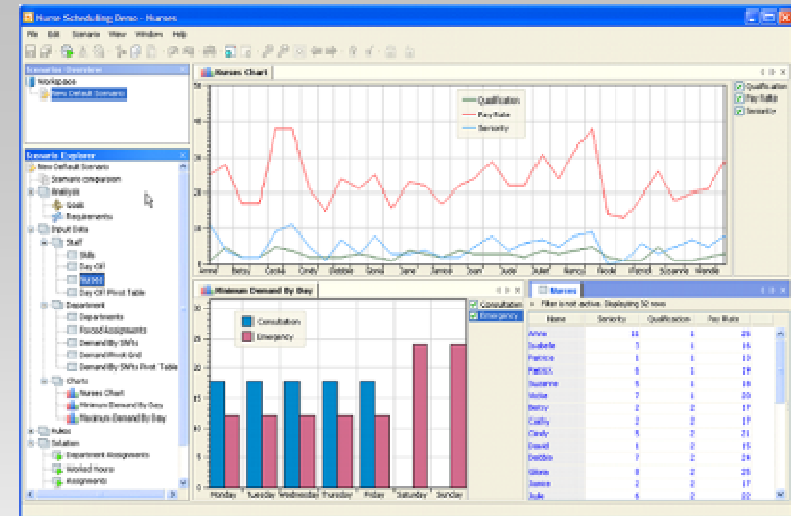
- Growth markets require optimized capacity.
- Yogurt production is complex & time-sensitive
- SAP solution required a boost
- Implemented a new, flexible production planning and detailed scheduling system that boosted fresh dairy production



Optimization – Produce Best Possible Action Plans & Schedules

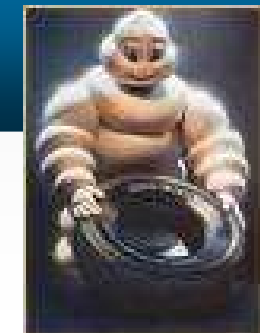
Save huge amounts of money – best leverage for capital resources

- Optimization makes the best use of scarce constrained resources.
- ILOG provides optimization engines and tools:
 - CPLEX, CPO, ODM, OPL
- ILOG is by far the market leader
- ILOG Optimization has 2 RTM:
 - Operations Research departments
 - Custom projects for business
- Examples include: production scheduling, workforce scheduling, vehicle routing, portfolio optimization, power generation scheduling, ad scheduling



Success Story

- €150M transportation budget
- Need to optimize hubs, drivers, in-house vs. 3PL
- Saved multiple budget % points, better SLA, better capacity





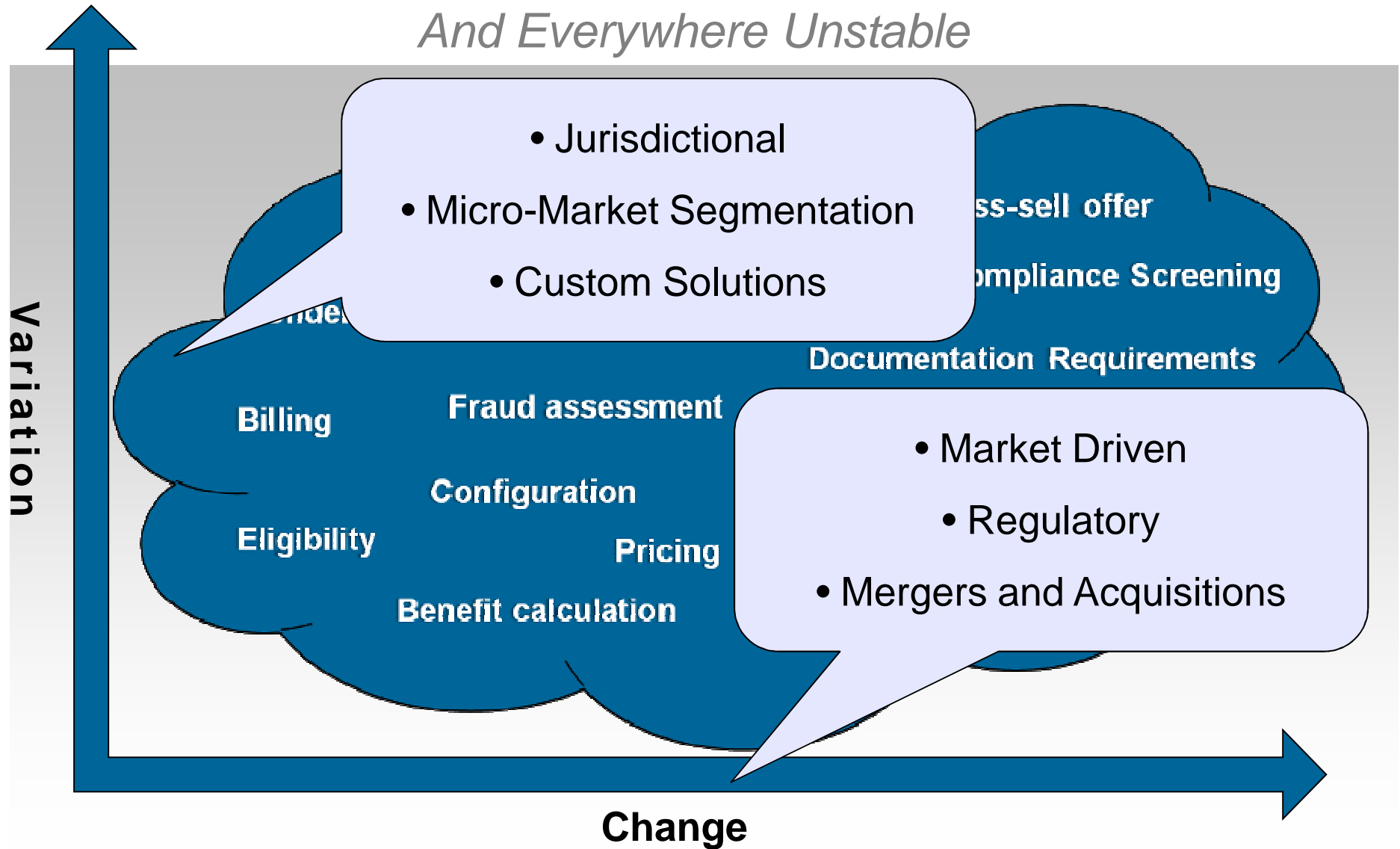
BRMS Overview



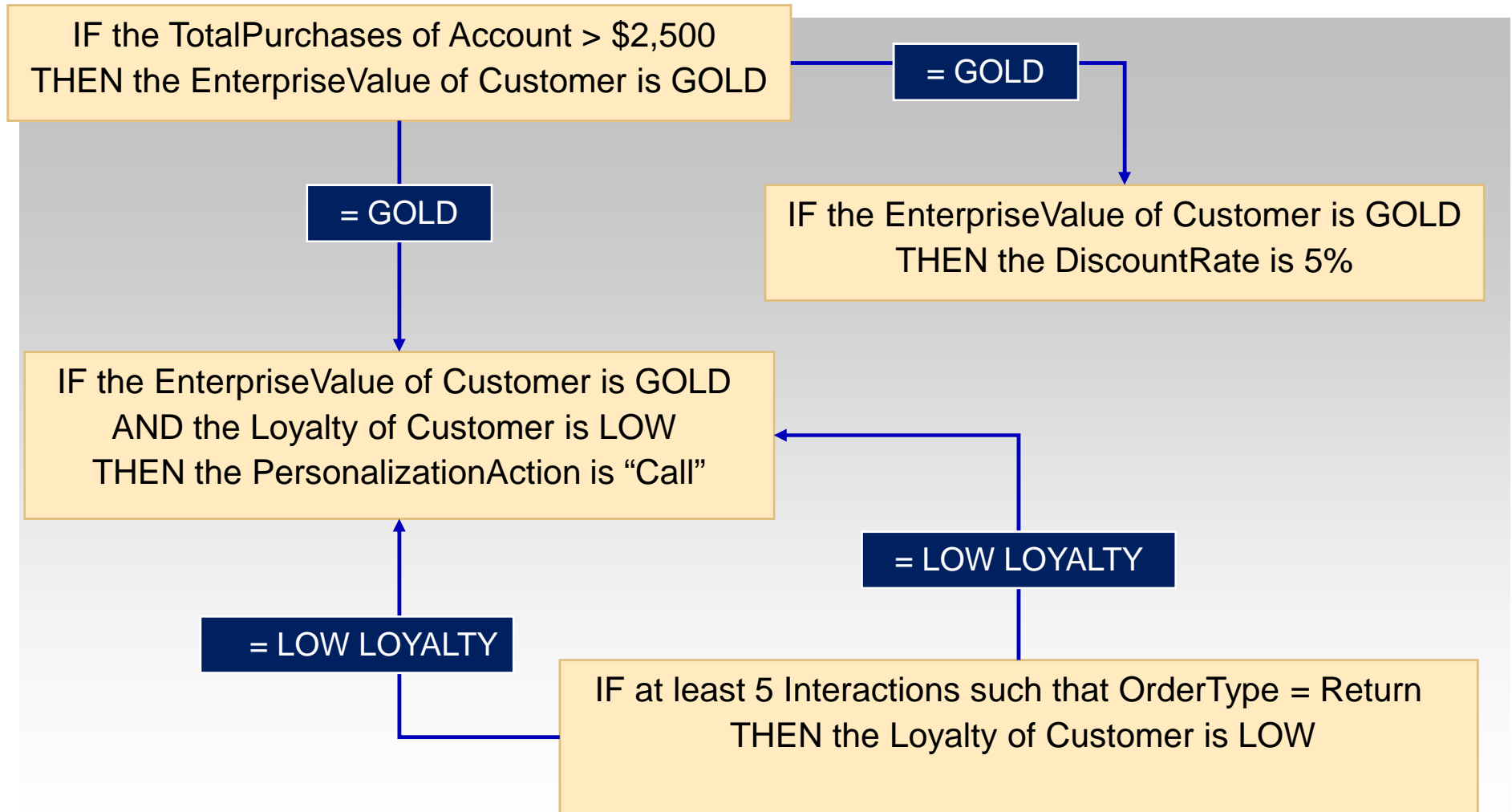
April 28th, 2009

Business Decisions are everywhere

And Everywhere Unstable



What is a business decision?



Business change drives IT agility

Decisions used in operations = “business rules”

Where Business Rules Exist

```

Wifdef __WIN__
/*
Before performing any socket operation (like retrieving hostname
in init_common_variables we have to call WSASStartup
{
WSADATA WsaData;
if (SOCKET_ERROR == WSASStartup (0x0101, &WsaData))
/* errors are not read yet, so we use english text here */
my_message (ER_WSAS_FAILED, "WSASStartup Failed", MYF(0));
unireg_abort(1);
}
}
#endif /* __WIN__ */

if (init_common_variables(MYSQL_CONFIG_NAME,
                        argc, argv, load_default_groups))
unireg_abort(1); // Will do exit

init_signals();
if (!opt_specialflag & SPECIAL_NO_PRIOR)
my_pthread_setprio(pthread_self(), CONNECT_PRIOR);
    
```

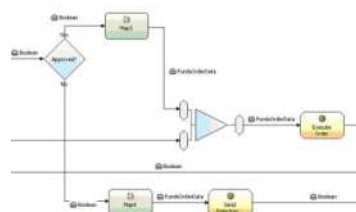
Applications



Documents



People



Processes

Issues

- Rules are hidden in code or isolated within the organization
- Changes are hard to track and maintain over time
- Rules used by systems have to be programmed and require IT resources
- Duplication and multiple versions of the same rules
 - Lack of auditability, traceability
- Decision changes cannot be easily tested or simulated

The Smarter Approach: Facilitating Change with BRMS

Where Business Rules Exist

```

#ifdef __WIN__
/*
 Before performing any socket operation (like retrieving hostname
 in init_common_variables we have to call WSASStartup
 */
{
  WSADATA WsaData;
  if (SOCKET_ERROR == WSASStartup (0x0101, &WsaData))
  {
    /* errors are not read yet, so we use english text here */
    my_message (ER_WSAS_FAILED, "WSASStartup Failed", MYF(0));
    unireg_abort();
  }
}
#endif /* __WIN__ */

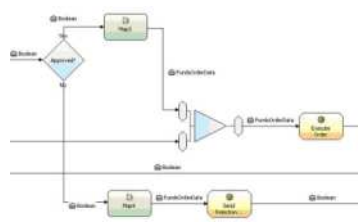
if (init_common_variables(MYSQL_CONFIG_NAME,
                        argc, argv, load_default_groups))
  unireg_abort();

init_signals();
if (!opt_specialflag & SPECIAL_NO_PRIOR)
  my_pthread_setprio(pthread_self(), CONNECT_PRIOR);
    
```

Applications



Documents



Business Rule Management System

User Tools

Rules are Defined, Analyzed and Maintained

Rule Repository

Rules are Managed and Stored

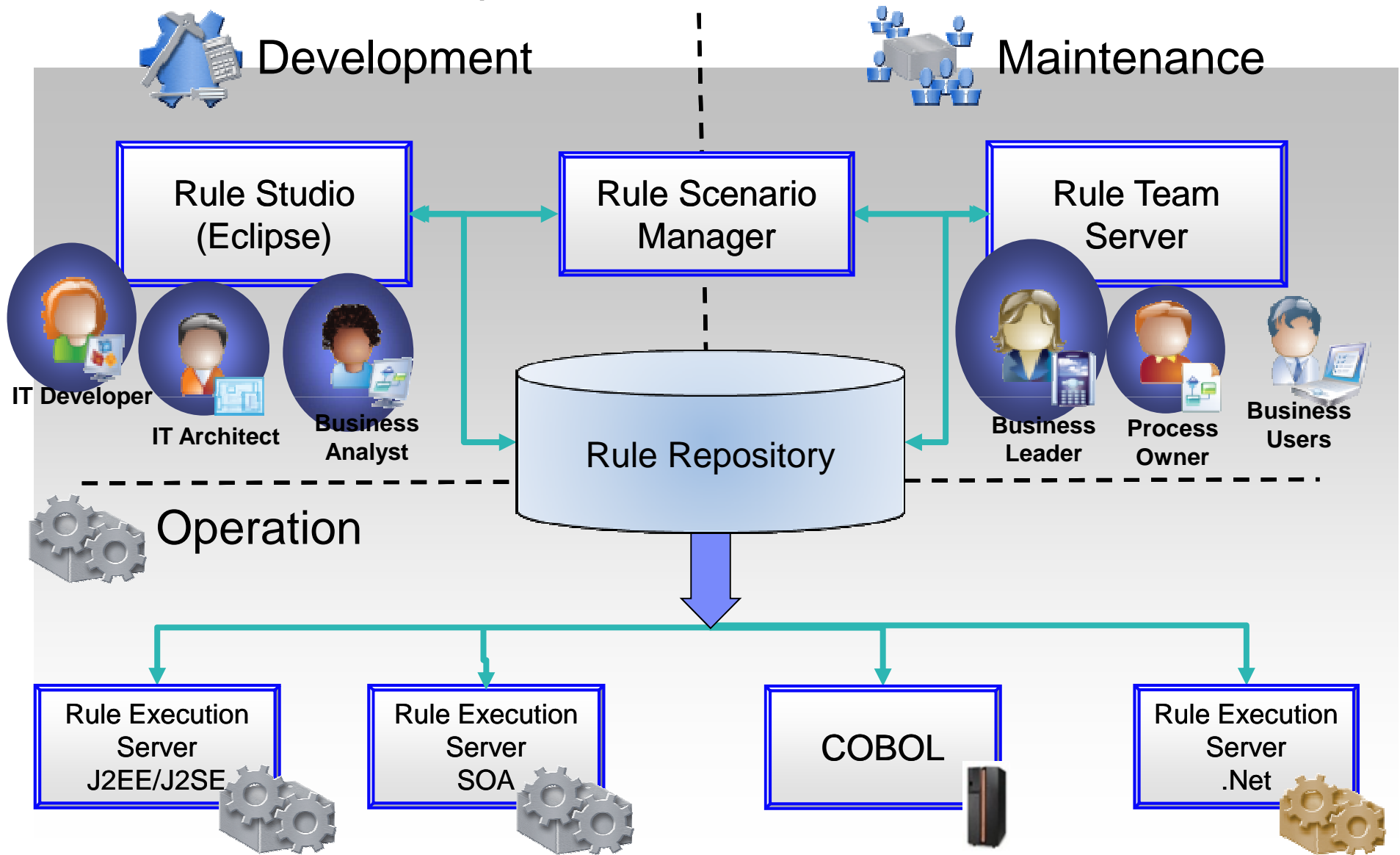
Rules are Deployed, Executed and Monitored

```

if
  all of the following conditions are true :
    - the age of the driver is between 18 and 21
    - the number of accidents the driver has been involved is at least 1
    - the number of traffic tickets the driver has received is at least 1

then
  add a $ 8 surcharge to 'Auto Quote Response' , reason: "Young driver surcharge" ;
    
```

JRules Product Components





BRMS

*Example of a Payment
Application*



March 24th, 2009

Scenario

- A bank offering payment services to retail and corporate customers needs to price payments transactions, i.e. calculate fees to be charged to customers
- Pricing is rules-intensive because it is complex, volatile and business-driven
 - Many different products, new products
 - Customer-specific rules and SLA rules
 - Bundle offers, volume discounts...
 - Need to control alignment of price and cost structures

Demo steps

1. Capturing business rules
2. Defining a business rules vocabulary
3. Organizing knowledge for maintenance
4. Managing business rules
5. Integrating a rules-based decision service
6. Deploying a rule service
7. Executing business rules

1. Capturing business rules

Cost calculation rules

Cost based on destination country and destination bank

Cost and margins for non urgent direct debits

the country of the destination bank is ▼ Ireland [4]

	Destination bank country	Destination bank	Processing cost	Margin	Explanation
0	Spain	BankBrandA	0	0	Intragroup
1		BankBrandB	0	0	Intragroup
2		BankBrandC	0	0	Intragroup
3		Otherwise	0.1	0	Iberpay
4	Ireland		0.1	0.5	Intragroup + national IRI...
5	France		0.1		
6	Greece		0.12		
7	United Kingdom		0.14		
8	Otherwise		12	0.05	

if
 (the instrument of 'the current payment transaction' is one of { "BDT" , "CDT" }
and the priority of the instructed transfer of the transaction payment instruction of 'the current payment transaction' is not "HIGH")
and all of the following conditions are true :
 - 'the country of the destination bank' is "Ireland" ,
then
 set 'the processing cost' to 0.1 ;
 set 'the margin' to 0.5 ;
 add "Intragroup + national IRish CSM" to the messages of 'the charge result' ;

These 3 action columns specify what the internal processing cost for the bank is, the margin and an explanation message.

SLA-based conditions

Bundle offer

The 10 first monthly credit transfers are free for corporates with Gold SLA and contract type = "Spanish SMB EU Expansion"

	number of monthly credit transfers		Subsidy on processing cost	margin discount	Discount explanation
	<min>	<max>			
0	≤ 10		100 %	100 %	10 first credit transfers fo...
1	11	100	0 %	100 %	
2	> 100		0 %	0 %	


```

if
( all of the following conditions are true :
- the value of 'the contract type' is "Spanish SMB EU Expansion Gold"
- the instrument of 'the current payment transaction' is one of { "BCT" , "CCT" } ,
and all of the following conditions are true :
- 'the monthly credit transfer counter' is at most 10 ,
then
set 'the subsidy' to 100 ;
set 'the margin discount' to 100 ;
add "10 first credit transfers for free" to the messages of 'the charge result' ;
    
```

Aligning pricing structures with internal cost structures is facilitated by making subsidies explicit

This rule only applies to customers with this contract/SLA type

Customer-specific conditions

For ACME, apply a 10% discount on bank margin for first hundred monthly direct debits

Direct debits for ACME

the monthly direct debit counter is at most ▼ 100 [a]

	number of monthly direct debits		Subsidy on processing cost	Discount on margin	Discount explanation
	<min>	<max>			
0	≤ 100		0 %	10 %	
1	101	200	0 %	30 %	
2		> 200	0 %	50 %	

Volume discounts

definitions

set 'customer' to the organisation of the originator of the instructed transfer of the transaction payment instruction of 'the current payment transaction' ;

if

(all of the following conditions are true :

- the name of customer is "ACME"
- the instrument of 'the current payment transaction' is one of { "BDT" , "CDT" },)

and all of the following conditions are true :

- 'the monthly direct debit counter' is at most 100 ,

then

set 'the subsidy' to 0 ;

set 'the margin discount' to 10 ;

This rule only applies to "ACME"

2. Defining a business rules vocabulary

Defining a Business Object Model

New BOM Entry

BOM Entry
Create a BOM entry from a XOM.

Choose a XOM entry: Browse XOM...

xom:/Payments-BOM//Payments-BOM/data/ISFforPayments.xsd Load XOM

Select classes:

- com.ibm.software.pmp.isf
- Account
- AccountStatusCode
- Acknowledgement
- Acknowledgement\$AcceptedTransaction
- Acknowledgement\$AccumulatedTransactionSumType
- Acknowledgement\$AckBusinessConcept
- Acknowledgement\$AckSubTypeType
- Acknowledgement\$AckTypeType
- Acknowledgement\$Error
- Acknowledgement\$PaymentErrorCodeType

Select All Deselect All

Load getters and setters as attributes

< Back Next > Finish Cancel

Import XML schema to be used by the business rules: here we use ISF, the IBM canonical format for payments, which is based on the ISO20022 standard

Select subset of relevant business elements for the Business Object Model

Verbalizing terms of the model

The screenshot shows the Eclipse IDE interface for configuring a business rule member. The main window is titled "Member Instrument (class: com.ibm.software.pmp.isf.ISFPaymentTransaction.Instrument)".

- General Information:** Name: Instrument, Type: java.lang.String, Class: com.ibm.software.pmp.isf.ISFPaymentTransaction.
- Member Verbalization:**
 - Navigation: "the instrument of an ISFPayment transaction" with template: {instrument} of {this}
 - Action: "set the instrument of an ISFPayment transaction to a" with template: set the instrument of {this} to {instrument}
- Domain:** Domain type: Literals, including values: BCT, BDT, BKT, CAN, CCP, CCT, CDT, CHK, DCP, RTI.
- Arguments:** A table with columns Name, Type, and Dom.

Annotations on the screenshot:

- Blue callout:** "Business elements and attributes that need to become part of the business rules vocabulary" (points to the Rule Explorer tree).
- Black callout:** "Term" used in the condition part of the rules (see slide 5) (points to the Navigation section).
- Black callout:** "Term" used in the action part of the rules (points to the Action section).
- Green callout:** Enumerated values to be proposed in the drop-down menus when editing the business rules conditions (see slide 5) (points to the Domain type: Literals list).

3. Organizing knowledge for maintenance

Rule package hierarchy

Keeping all your pricing rules in a single centralized place means you need a bit of order

The screenshot shows the ILOG Rule Team Server interface in a Microsoft Internet Explorer browser window. The address bar shows the URL: http://localhost:9080/teamserver/faces/explore/explore.jsp. The page title is "ILOG Rule Team Server" and the user is logged in as "admin". The main navigation tabs are Home, Explore, Query, Compose, Configure, and Admin. The current view is "Explore" and the selected package is "Payments-Pricing - Spanish SMB EU Expansion Gold (Folder)".

The left sidebar shows a tree view of the rule package hierarchy:

- Business Rules
 - 0-Retrieve customer contract
 - 1-Compute cost and margin
 - Cheque
 - Credit card
 - Credit transfer
 - Debit card
 - Direct debit
 - 2-Compute discounts
 - Company specific conditions
 - Conditions for ACME
 - Standard conditions per contr...
 - Global Large Business Gold
 - Global Large Business Platinum
 - Global Large Business Silver
 - Spanish Large Business Gold
 - Spanish Large Business Platinum
 - Spanish SMB Domestic Gold
 - Spanish SMB EU Expansion Gold**
 - 3-Calculate transaction fee
 - functions
 - Ruleflows
 - Templates

Three callout boxes on the left point to specific parts of the hierarchy:

- Business rules for all products**: Points to the "Business Rules" folder.
- Business rules specific to a customer**: Points to the "Spanish SMB EU Expansion Gold" package.
- SLA-based rules**: Points to the "Spanish SMB EU Expansion Gold" package.

The main content area displays a table of "Business Rules" with the following data:

Name	Status	Priority	Last Changed By	Last Changed On
Credit transfers for Spanish ...	New		admin	9/7/08 7:01 PM
Direct debits for Spanish SMB...	New		admin	9/7/08 7:01 PM

The table shows 2 Results. The interface also includes a toolbar with actions like New, Details, Edit, Delete, Copy, Lock, Unlock, Release lock, History, and Help.

Ruleflow to sequence rules execution

The screenshot shows the ILOG Rule Team Server interface in Microsoft Internet Explorer. The browser address bar shows `http://localhost:9080/teamserver/faces/explore/explore.jsp`. The left sidebar displays a tree view of Business Rules, including folders for '0-Retrieve customer contract', '1-Compute cost and margin', '2-Compute discounts', and '3-Calculate transaction fee'. The main area is titled 'Ruleflows' and contains a table with one entry:

Name	Last Changed By	Last Changed On	Main Flow Task
Pricing-Flow	admin	9/7/08 7:01 PM	True

Below the table is a 'Ruleflow Preview' section showing a vertical flowchart with four steps:

- 0-Retrieve customer contract
- 1-Compute cost and ...
- 2-Apply discounts
- 3-Charge

4. Managing business rules

Querying business rules

Query language can use any properties of business rules
e.g. creation date, status, author, ...



The screenshot shows the ILOG Rule Team Server web interface in Microsoft Internet Explorer. The browser address bar shows `http://localhost:9080/teamserver/faces/query/query.jsp`. The page title is "ILOG Rule Team Server" and the user is logged in as "admin". The navigation menu includes "Home", "Explore", "Query", "Compose", "Configure", and "Admin". The "Query" tab is active, and the page displays the results of a query: "Rules created after Sept 1, 2008".

The query details are as follows:

Name	Rules created after Sept 1, 2008
Include Dependencies	False
Group	

The query text is: *Find all business rules such that the creation date of each business rule is after or the same as 9/1/2008 4:58:34 AM*. A "Run Query" button is visible below the query text.

A callout box with an orange border and black background contains the text: "Query to retrieve all the business rules created recently".

Semantic queries

The screenshot shows the ILOG Rule Team Server web interface in Microsoft Internet Explorer. The browser address bar shows `http://localhost:9080/teamserver/faces/query/query.jsp`. The page title is "ILOG Rule Team Server" and the user is logged in as "admin". The navigation menu includes "Home", "Explore", "Query", "Compose", "Configure", and "Admin". The "Query" tab is active, and the "Direct debit rules" query is selected. The query details are as follows:

Name	Direct debit rules
Include Dependencies	False
Group	

The query text is: *Find all business rules such that each business rule may apply when [the instrument of 'the current payment transaction' is one of { "BCT" , "CCT" }]*

A "Run Query" button is visible below the query text. A callout box points to the query text with the following text:

Query to retrieve all the business rules that can apply on credit transfers

Query result and reporting

The screenshot shows the ILOG Rule Team Server interface in Microsoft Internet Explorer. The browser address bar shows `http://localhost:9080/teamserver/faces/query/query.jsp`. The page title is "ILOG Rule Team Server". The navigation menu includes Home, Explore, Query, Compose, Configure, and Admin. The "Query" tab is active, showing a "Query List" for "Rules created after Sept 1, 2008".

The query results are displayed in a table with the following columns: Name, Status, Priority, Last Changed By, and Last Changed On. There are 9 results listed, all with a status of "New" and last changed by "admin" on 9/7/08 at 7:01 PM.

A callout box points to the "Generate Report on Query Results" button, stating: "You can build a report from the query result".

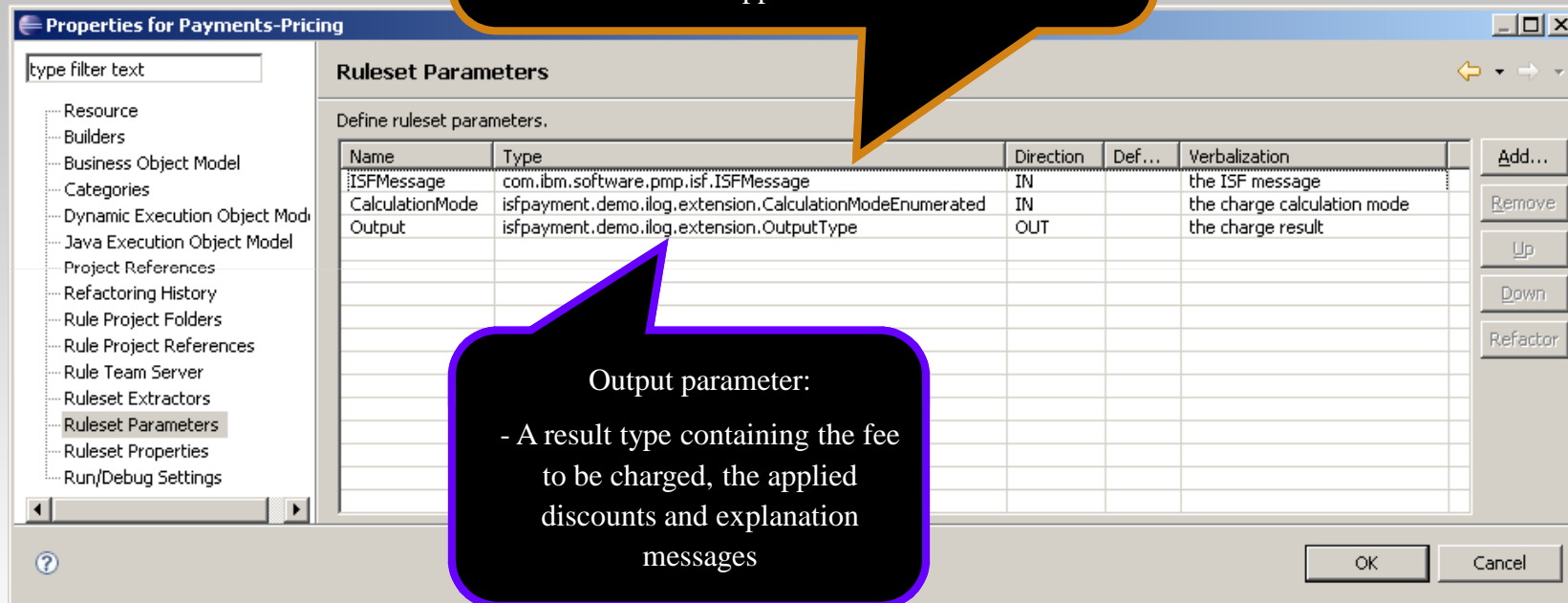
Name	Status	Priority	Last Changed By	Last Changed On
Charge calculation with defer...	New		admin	9/7/08 7:01 PM
Charge calculation with disco...	New		admin	9/7/08 7:01 PM
Contract types associated to ...	New		admin	9/7/08 7:01 PM
Cost and margins for non urge...	New		admin	9/7/08 7:01 PM
Cost and margins for non urge...	New		admin	9/7/08 7:01 PM
Credit transfers for ACME	New		admin	9/7/08 7:01 PM
Credit transfers for Spanish ...	New		admin	9/7/08 7:01 PM
Direct debits for ACME	New		admin	9/7/08 7:01 PM
Direct debits for Spanish SMB...	New		admin	9/7/08 7:01 PM

5. Integrating a rules-based decision service

Signature for charge calculation service

Input parameters:

- An ISFMessage that contains the set of payment transactions to be "priced"
- CalculationMode decides if discounts are immediate or applied as a deferred refund



Properties for Payments-Pricing

type filter text

Ruleset Parameters

Define ruleset parameters.

Name	Type	Direction	Def...	Verbalization
ISFMessage	com.ibm.software.pmp.isf.ISFMessage	IN		the ISF message
CalculationMode	isfpayment.demo.ilog.extension.CalculationModeEnumerated	IN		the charge calculation mode
Output	isfpayment.demo.ilog.extension.OutputType	OUT		the charge result

Output parameter:

- A result type containing the fee to be charged, the applied discounts and explanation messages

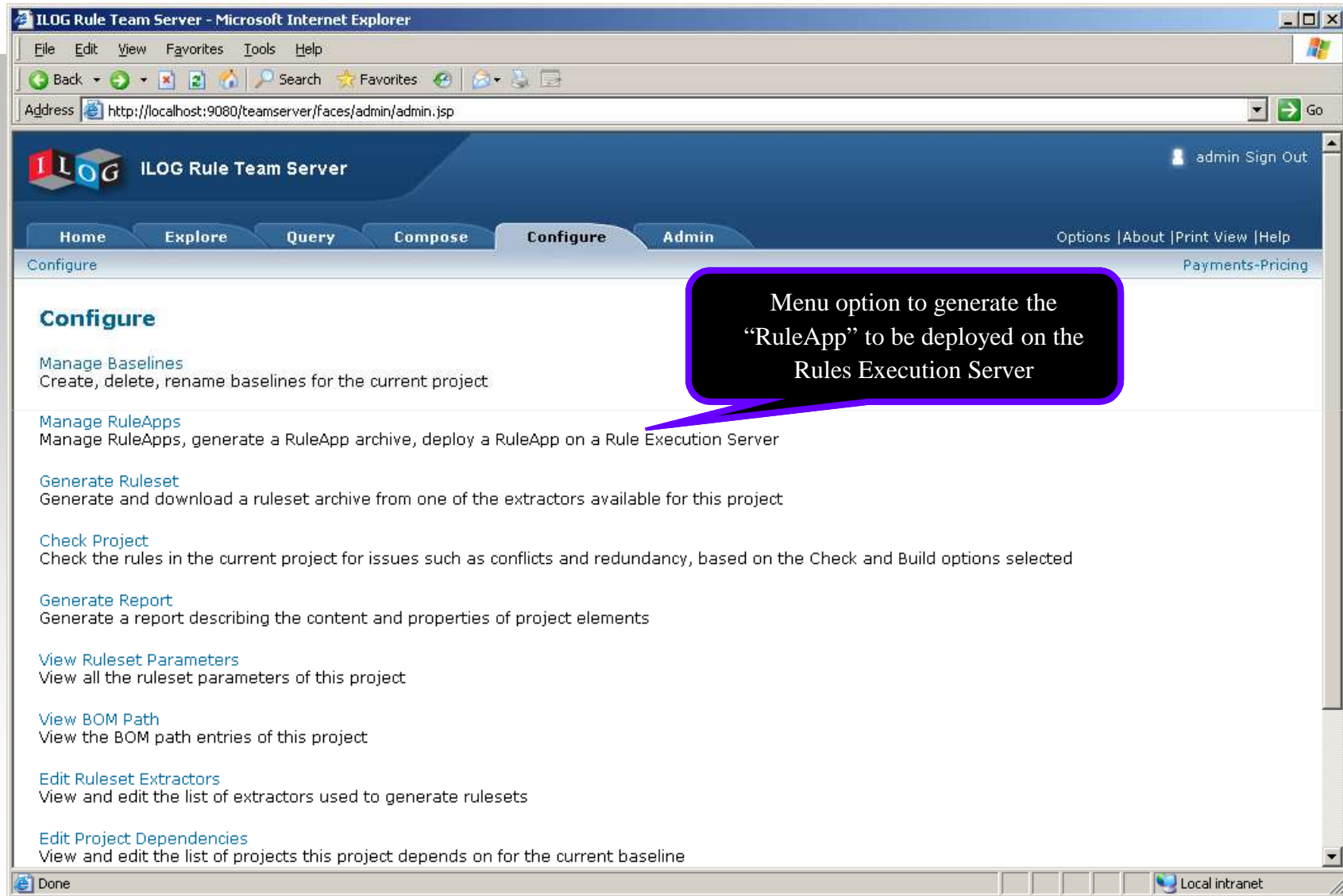
Buttons: Add..., Remove, Up, Down, Refactor, OK, Cancel

Invocation from a Business Process in WPS

The screenshot displays the IBM WebSphere Integration Developer 6.1.2 interface. The main workspace shows an Assembly Diagram for a Business Process named 'PaymentsProcess'. The process flow starts with a 'Receive' activity, followed by an invocation of the 'PaymentsPricing' service, and ends with a 'Reply' activity. A callout box points to the 'PaymentsPricing' activity with the text 'Rule service invoked from a process'. Another callout box points to the 'Variables' section in the Properties pane, which lists parameters for the service: 'PaymentsPricingExecutionResult', 'ISFMessage', and 'CalculationMode'. The Properties pane also shows 'Interface Partners' (PaymentsDecisionService, PaymentsDecisionService1), 'Reference Partners', and 'Correlation Sets'. The bottom status bar shows the 'Servers' tab with 'WebSphere Process Server v6.1' in a 'Started' state.

6. Deploying a rule service

Deploy a rules application archive from RTS



ILOG Rule Team Server - Microsoft Internet Explorer

Address: http://localhost:9080/teamserver/faces/admin/admin.jsp

ILOG Rule Team Server

admin Sign Out

Home Explore Query Compose **Configure** Admin

Options | About | Print View | Help

Configure

Configure

[Manage Baselines](#)
Create, delete, rename baselines for the current project.

[Manage RuleApps](#)
Manage RuleApps, generate a RuleApp archive, deploy a RuleApp on a Rule Execution Server

[Generate Ruleset](#)
Generate and download a ruleset archive from one of the extractors available for this project

[Check Project](#)
Check the rules in the current project for issues such as conflicts and redundancy, based on the Check and Build options selected

[Generate Report](#)
Generate a report describing the content and properties of project elements

[View Ruleset Parameters](#)
View all the ruleset parameters of this project

[View BOM Path](#)
View the BOM path entries of this project

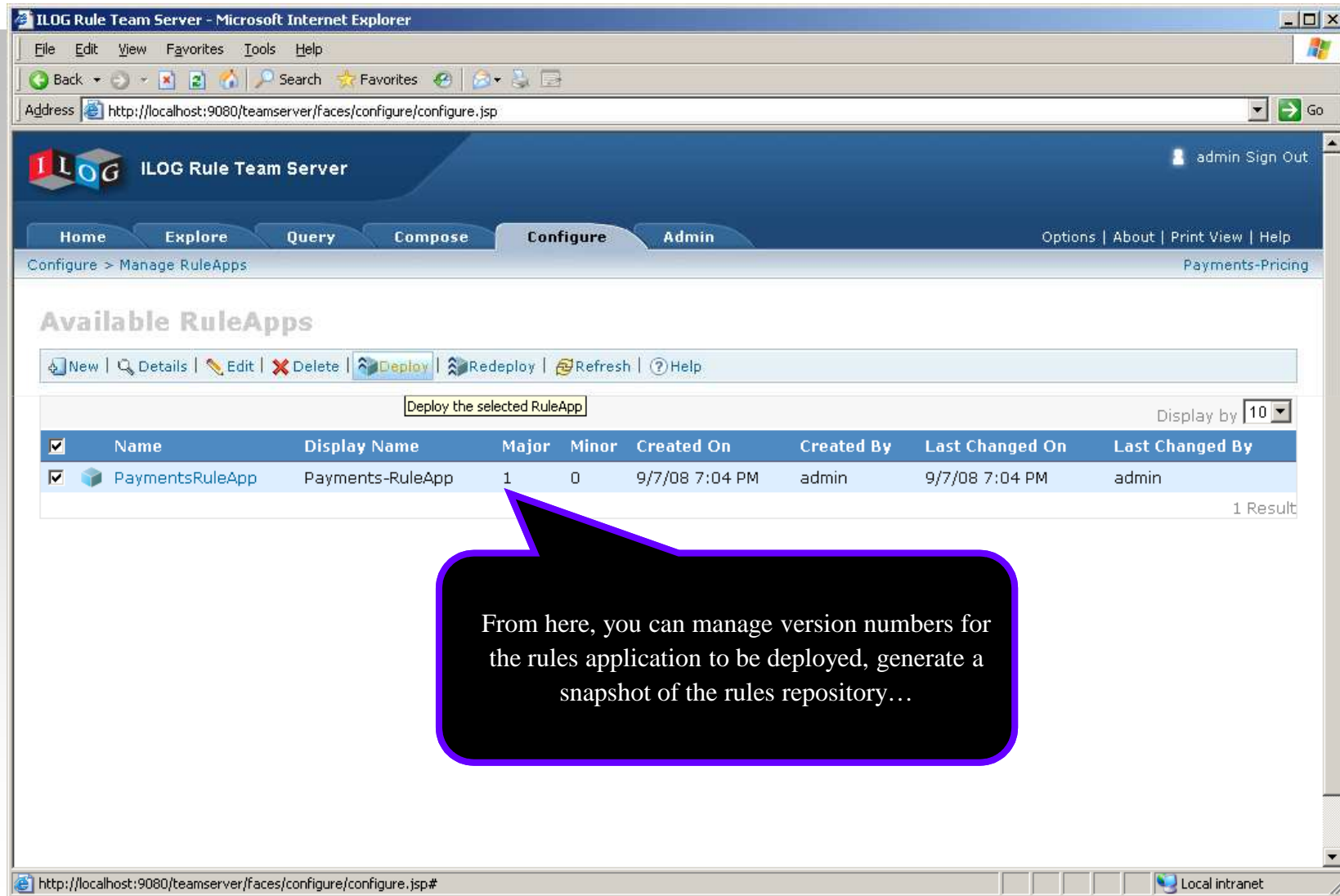
[Edit Ruleset Extractors](#)
View and edit the list of extractors used to generate rulesets

[Edit Project Dependencies](#)
View and edit the list of projects this project depends on for the current baseline

Done Local intranet

Menu option to generate the "RuleApp" to be deployed on the Rules Execution Server

Deploy a rules application archive from RTS



The screenshot shows the ILOG Rule Team Server web interface. The browser address bar indicates the URL is `http://localhost:9080/teamserver/faces/configure/configure.jsp`. The page title is "ILOG Rule Team Server" and the user is logged in as "admin". The navigation menu includes "Home", "Explore", "Query", "Compose", "Configure", and "Admin". The "Configure" tab is active, and the breadcrumb trail is "Configure > Manage RuleApps".

The "Available RuleApps" section contains a toolbar with "New", "Details", "Edit", "Delete", "Deploy", "Redeploy", "Refresh", and "Help" buttons. Below the toolbar is a table with the following data:

<input checked="" type="checkbox"/>	Name	Display Name	Major	Minor	Created On	Created By	Last Changed On	Last Changed By
<input checked="" type="checkbox"/>	PaymentsRuleApp	Payments-RuleApp	1	0	9/7/08 7:04 PM	admin	9/7/08 7:04 PM	admin

A callout box with a purple border and black background contains the text: "From here, you can manage version numbers for the rules application to be deployed, generate a snapshot of the rules repository...".

7. Executing business rules

Instructions for a direct debit

http://localhost:9080/PaymentsWeb/faces/Form.jsp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost:9080/PaymentsWeb/faces/Form.jsp

myBank
Payments || Treasury management || Electronic invoicing

ENTER PAYMENT INSTRUCTIONS

Retrieve existing customer record:

PAYMENT INSTRUCTION

Amount:

Creditor: IE

IBAN:

Country: Bank/Branch Code: Account Number:

ORIGINATION DETAIL

Name: AC

IBAN:

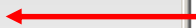
PARAMETER SETTING

Calculation Mode:

Transaction Channel:

SLA:

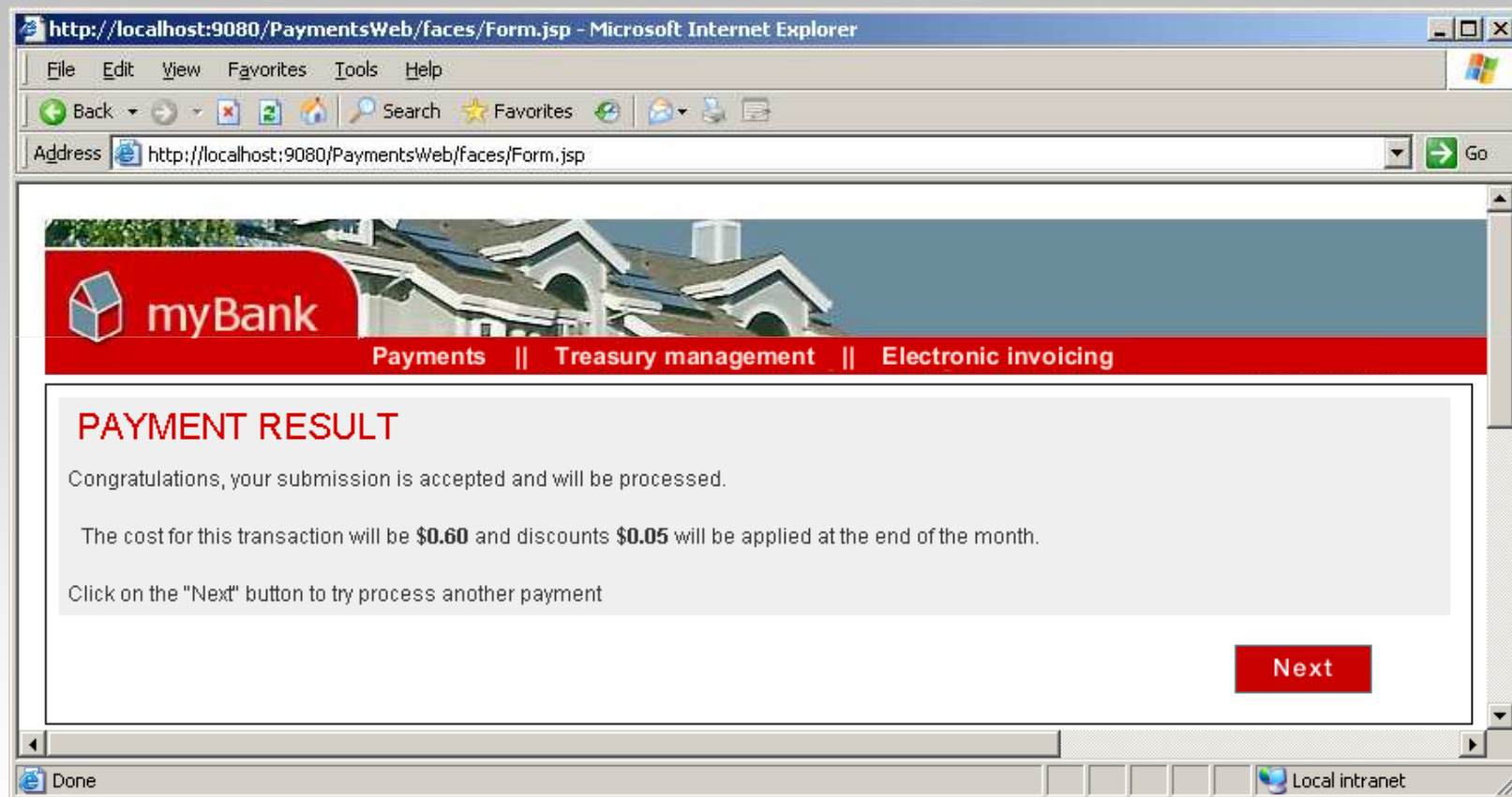
Destination country



Applied fee

Charge is 0.60\$

A deferred discount of 0.05\$ will be refund at the end of the month



Checking the applied rules

Destination-based cost calculation

Cost for IRELAND = 0.1\$ + 0.5\$ = 0.6\$

	Destination bank country	Destination bank	Processing cost	Margin	Explanation
0	Spain	BankBrandA	0	0	Intragroup
1		BankBrandB	0	0	Intragroup
2		BankBrandC	0	0	Intragroup
3		Otherwise	0.1	0	Iberpay
4	Ireland		0.1	0.5	Intragroup + national IRI...

Company-specific conditions

For the 100 first monthly direct debits, discount for ACME = 10% * 0.5\$ = 0.05\$

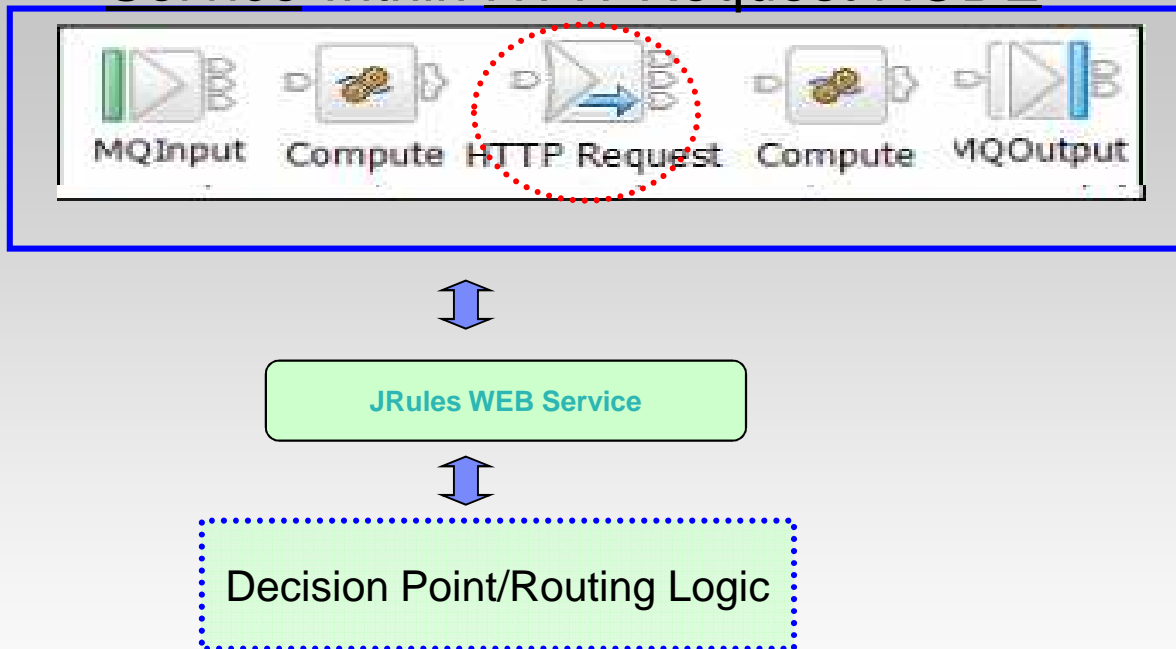
	number of monthly direct debits		Subsidy on processing cost	Discount on margin	Discount explanation
	<min>	<max>			
0	≤ 100		0 %	10 %	

Value proposition

- Rules-based decision services = Cost reduction + differentiation
- Cost reduction:
 - SOA consolidation
 - Least cost routing
 - Automated exception handling
- Differentiation = customization
 - Processing a payment differently based on customer-related conditions
 - SLA-based conditions
 - Customer-specific conditions
 - Configuration of a payment at initiation based on customer profile

Integration thru web service

- Invoke an existing JRules Hosted Transparent Decision Service within HTTPRequest NODE



Pros:

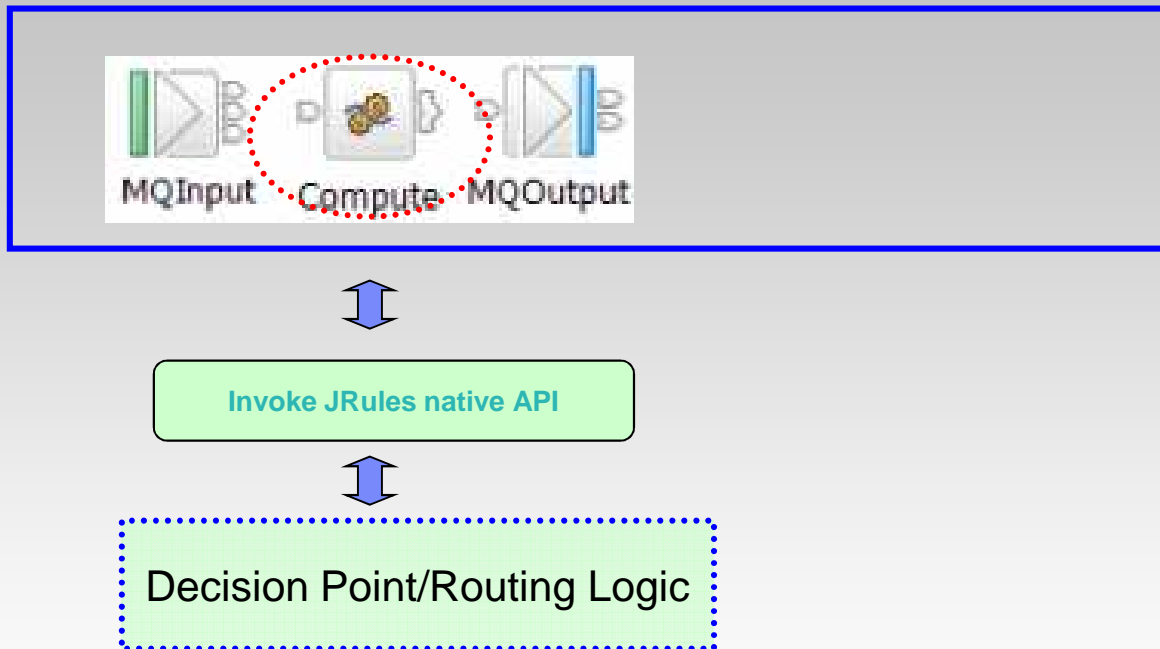
1. Loose coupling
2. Integrate with other SOA product easily, like WSRR

Cons:

1. Need transport cost

Integration thru JRules native API

- Invoke JRules native API within Java Compute Node

**Pros:**

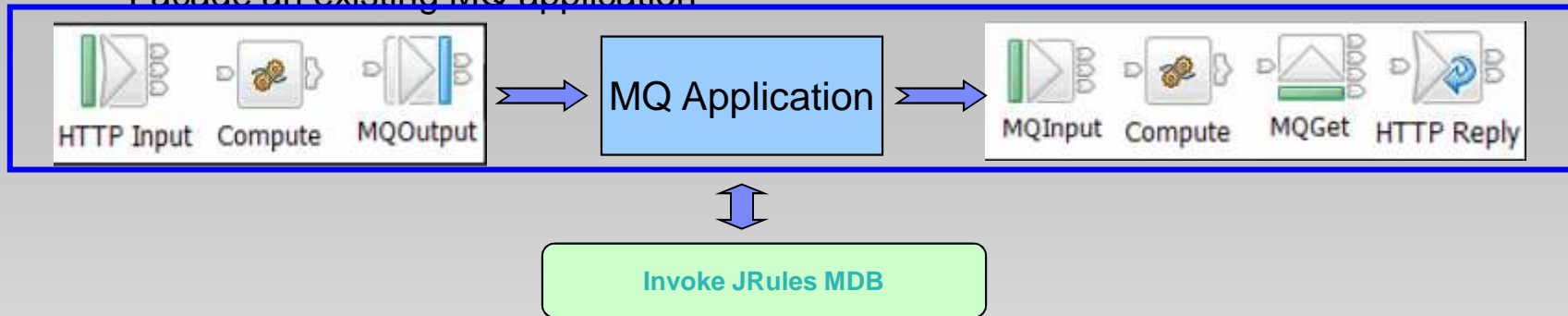
1. No transport cost, better performance

Cons:

1. Need be familiar with JRules API
2. Need add JRules library into WMB shared class path.

Integration thru MQ

- Facade an existing MQ application



Basically, it's a MQ integration solution.
 Message flow is used to façade an existing application



*Some
BRMS References*



March 24th, 2009

Natixis Financement – Credit decisioning

Situation

- Consumer lending system based on legacy mortgage lending systems – inappropriate risk scores
- Bank branches have no visibility on decisioning criteria

Goals

- Support Natixis Financement growth strategy with solid, durable IT solution to support new credit offerings and act as platform for future developments across multiple geos
- Increase rate of loan acceptance, whilst ensuring risk management for lender & consumer

Solution

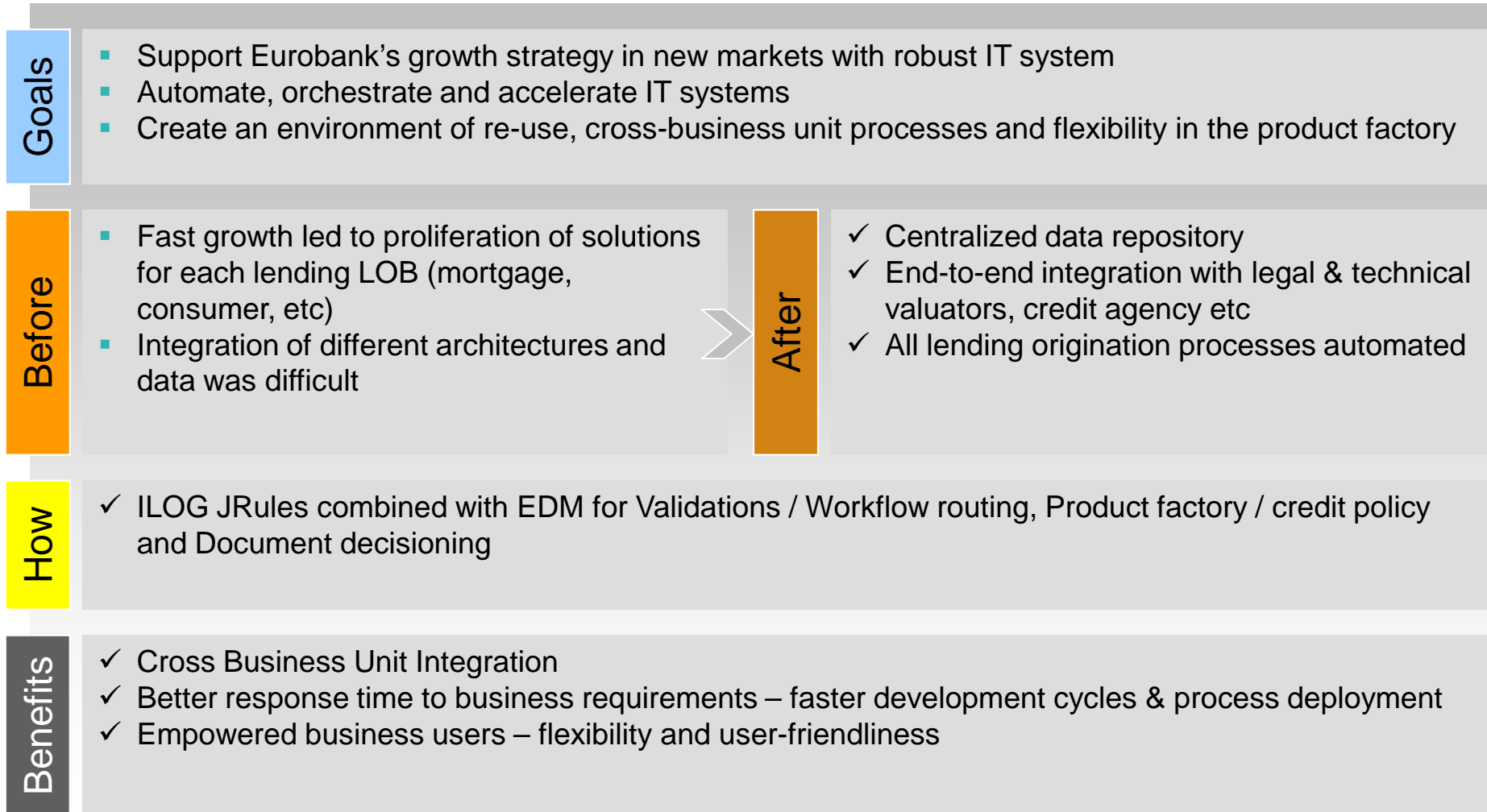
- SOA architecture JRules based middle office solution built by Capgemini and ILOG PS
- Team of four business analysts at Natixis Financement create and update rules

Benefits

- Improved loan decision processing time (end-to-end in 10-15 minutes)
- Reduce time-to-market for implementation of new marketing policies (15 days) & risk modules for new bank networks (4 weeks)
- Improved risk management – daily monitoring of impact of score risks on acceptance rates
- Bank branches empowered with visibility on decisions & upselling capabilities

Success at Eurobank EFG

Eddie – Retail-wide Lending Origination Initiative



Société Générale – Risk Management

Situation

- Significant time spent daily by branch officers to assess customer and account situations requiring action
- Complexity of cases and related actions
- Inconsistent operations leading to unmanaged situations

Goals

- Improve risk detection and management
- Increase branch financial advisor efficiency managing risk profiles
- Automate action recommendations

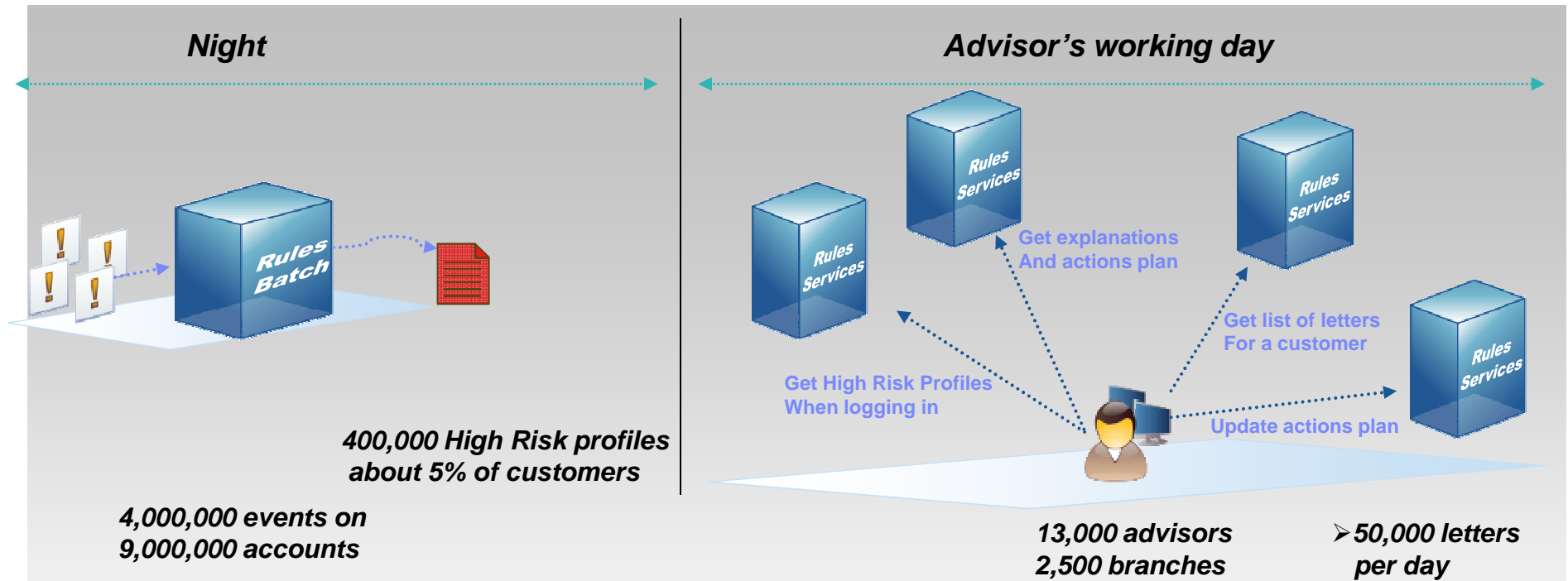
Solution

- Service Oriented Architecture sharing 400 business rules
- 7 rule services (Batch and Transaction processing programs) detecting and managing 400,000 high risk customer cases
- Determine status and priority of the risky situations
- Recommend and explain client actions to branch financial advisors
- Generate personalized mails as actions (> 50,000 per day)

Benefits

- Manage 200 risk management profiles in 7 categories
- Allow business users to manage and understand the risk profiles
- Gain 1 hour/day/advisor (13 000 advisors in 2500 branches)

Success at Soc Gen : High risk customer profile process



Generali - Infrastructure Solution & Commissioning Application

Situation

- Generali France: 14.2 B€ vs Generali Group 64 B€
- Classic organisation by Business Line (life, non-life, health,..)
- Deployment of a new software architecture
- 17 different commissioning applications/modules

Goals

- Standardize on one commissioning Decision Service for all Business Lines
- Improve Time to market – service initiative
- Commissioning : capital asset
- Improve Tracability and auditability

Solution

- BRMS part of the new software architecture
- JRules for Commissioning Services with 1st Pilot in Dec 07
- Dvpt incremental com services, on a 3 years plan
- Set-up BRMS task force in parallel (Underwriting, Claims, ...)

Benefits

- Better Commissioning change management
- Improve process time → better services → External network retention → customer retention
- less failures → improve service quality
- Extended process automation

Success at Grupo Santander (ISBAN)

Decisioning platform for SOA

Situation

- Business strategy: Customer focus
- Industrialisation of banking operations separating back-office processing operations and distribution operations
 - Huge economies of scale thanks to a “flat” back-office paradigm
 - IT management for cost efficiency

Goals

- Single core banking platform across all banks of the group to standardize processes and create product factories, i.e. back-office systems able to process the products for various distribution channels - under different brands – or for different packages
- Define a reference architecture model to be reused across projects, select the best-of-breed stack of software to support a “customer-focused end-to-end business process oriented organization”
- BRMS to maximize
 - Adaptability of platform across all banks to changes in regulations and market conditions
 - Reusability of rule-based decision services

Solution

- Integration of ILOG JRules in their SOA infrastructure (BANKSPHERE), approx 100 services deployed
- **Documents List Generator:** Creates a list of documents required for any operation. 40 different rule-services covering all underwriting processes, **Operational Security, Payments Factory , STP Manager, Processes Management, Commisioning Generation, Insurance Warranties , Automated Valuation Models**

Benefits

- Further improved cost efficiencies
- Driven improvements on IT strategic objectives:
 - Time-to-market
 - Flexibility
 - Software quality

Success at **Castilla y León Regional Government** - Social Benefits Eligibility

Situation

- Castilla y León is one of the 17 regions with autonomous government in Spain
- Trigger for the project: a new national law on social benefits
 - The law precisely defines scoring and eligibility requirements for different types of social benefits (handicapped, elderly people)
 - The law had not been voted yet when the project started and amendments to the law during discussion at parliament were likely
- Some big issues with the existing organization and IT systems supporting the application process for social benefits
 - Fragmented systems with inconsistent data meant decisions to grant benefits were not consistent from one centre to another
 - Several departments but no clear “interface” for the citizens

Goals

- New organization in order to provide to the applicant a unique interface with the administration
- Rebuild “social affairs” applications so that they become “process-oriented” in a service-oriented architecture
- Implement complex decisions and regulatory aspects by using business rules so that the system becomes auditable by non-technical users

Solution

- New system for processing application forms for social benefits
- FileNet P8 to manage the application process end-to-end
- ILOG JRules to determine the eligibility of applicants to social benefits

Benefits

- Better service delivered to the citizens: less interactions, clear and fair application process
- Key benefits brought by ILOG JRules
 - Consistency of scoring and eligibility decisions: same criteria and rules applied across all agencies and centres
 - Transparency and auditability: eligibility rules can be reviewed and validated by non-technical users
 - Flexible implementation of eligibility decisions: this will facilitate changes if amendments to the law are voted

Swisscom - Next Generation Order Management System (OMS)

Situation

- **Costly & time-consuming manual processes**
 - Contact center agents handling orders thru disparate & heterogeneous applications
 - Lack of accuracy & no real time order status
- **Large number of invalid orders**
 - Manual validations & overrides a common practice

Goals

- **Automate creation, management & processing of incoming orders**
- **Improve customer service with less errors, swifter turn around time**
- **Keep up with ever changing product & offering portfolio**

Solution

- **Implement a BRMS-based “virtual operator” within the OMS that automates**
 - Order validation with highly granular diagnosis
 - Order processing & fulfillment, while enabling real time status update
- **Design a system for change**
 - 100s of centralized business rules driving order management decisions

Benefits

- **High level of automation**
 - 90% straight thru processing
- **Better customer service thru more accurate orders & on time delivery**
- **Full visibility & greater control of the business logic by business users**
 - Business rules can be updated quickly & at will

SFR – Loyalty Management

Situation

- Aging legacy Campaign management and loyalty solution
- Strong Quality of Service constraints
 - 8 million loyalty accounts, contribution to Mobile Renewal program
 - Multi-channel approach required

Goals

- Create a robust IT system to support the growth objectives of SFR's loyalty program
- Revamp the SFR Points System Engine enabling it to meet new business requirements
 - Support for new programs for earning and using points

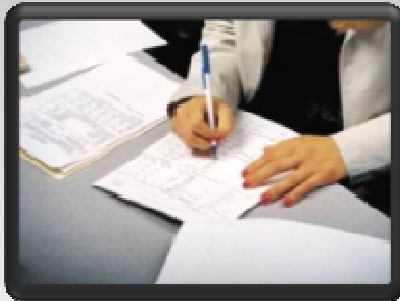
Solution

- « Garantie Carré Rouge » loyalty program implemented
- BRMS solution based on 80 rules developed Cap Gemini & ILOG
- ILOG consulting for requirements gathering, modeling, architecture & performance audits

Benefits

- Flexibility of BRMS approach
- Solution 30% cheaper than package
- Development and deployment time (- 2/5 months) quicker than package

What Are the Business Drivers?



■ Removing agility obstacles

- “Forrester has identified business rules as a key enabling technology...facilitates fast changes to business logic in response to changing business requirements.” (Forrester Research, Trends: Business Rules Platforms, 2008)

■ Reducing manual intervention

- “Enterprises need not only decisions, but also automated decisions that enable them to define why, when and how decisions should be made. The proliferation of business options, products, services...threatens to overwhelm enterprises...” (Gartner, Intelligent Decision Mgmt with Business Rules)

■ Decreasing load on IT

- “IT departments are being asked to implement data-driven applications containing business rules that are too complex, voluminous, and fast changing for traditional software architectures.” (Butler Group, JRules 6.7 Technology Audit)



The Science of Better *Optimization*



April 28th, 2009

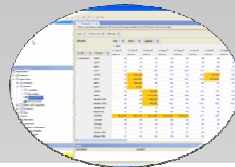
Technology for strong ROIs

2 Chilean Forestry firms	Timber Harvesting	\$20M/yr + 30% fewer trucks
UPS	Air Network Design	\$40M/yr + 10% fewer planes
South African Defense	Force/Equip Planning	\$1.1B/yr
Motorola	Procurement Mgmt	\$100M-150M/yr
Samsung Electronics	Semiconductor Mfg	50% reduction in cycle times
SNCF (French RR)	Scheduling & Pricing	\$16M/yr rev + 2% lower op ex
Continental Airlines	Crew Re-scheduling	\$40M/yr
AT&T	Network Recovery	35% reduction spare capacity
Grant Mayo van Otterloo	Portfolio Optimization	\$4M/yr

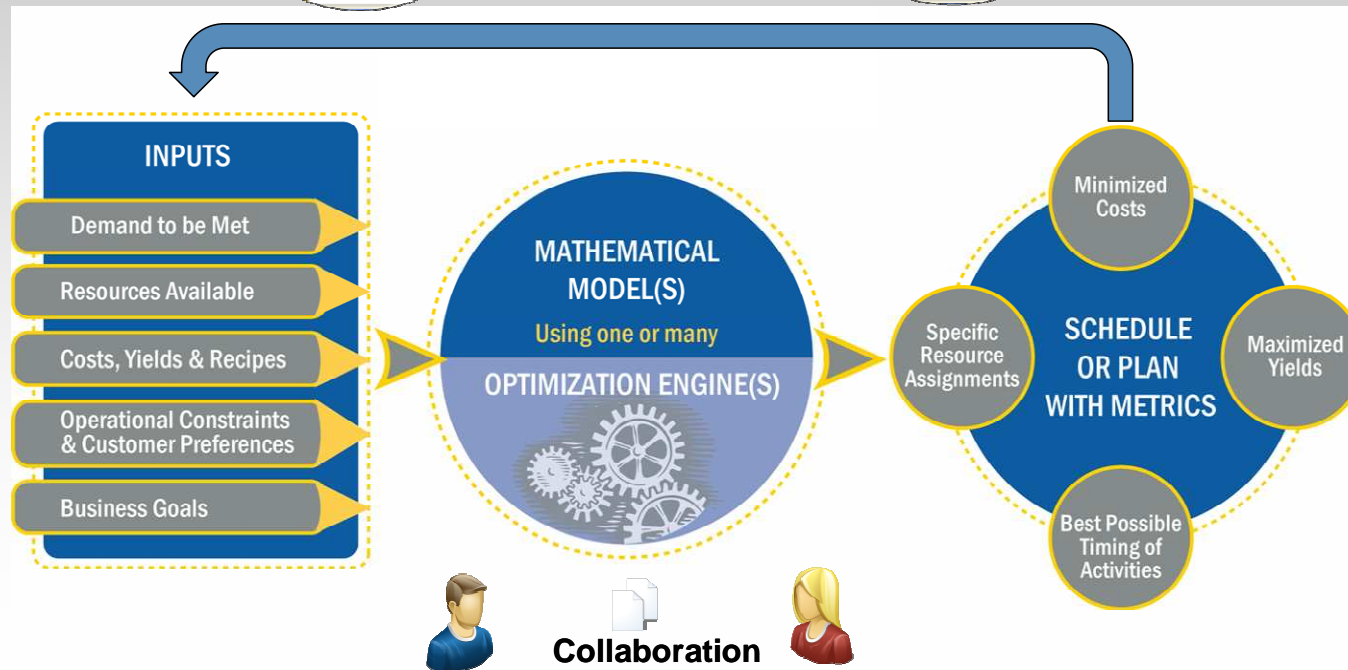
Source: Edelman Finalists, Science of Better, <http://www.scienceofbetter.org>

ILOG Optimization for Decision Support

Create the best possible plans and schedules,
 Explore alternatives and understand trade-offs, and
 Respond to changes in business operations.



What-If Analysis



At the Heart of Planning and Scheduling Processes

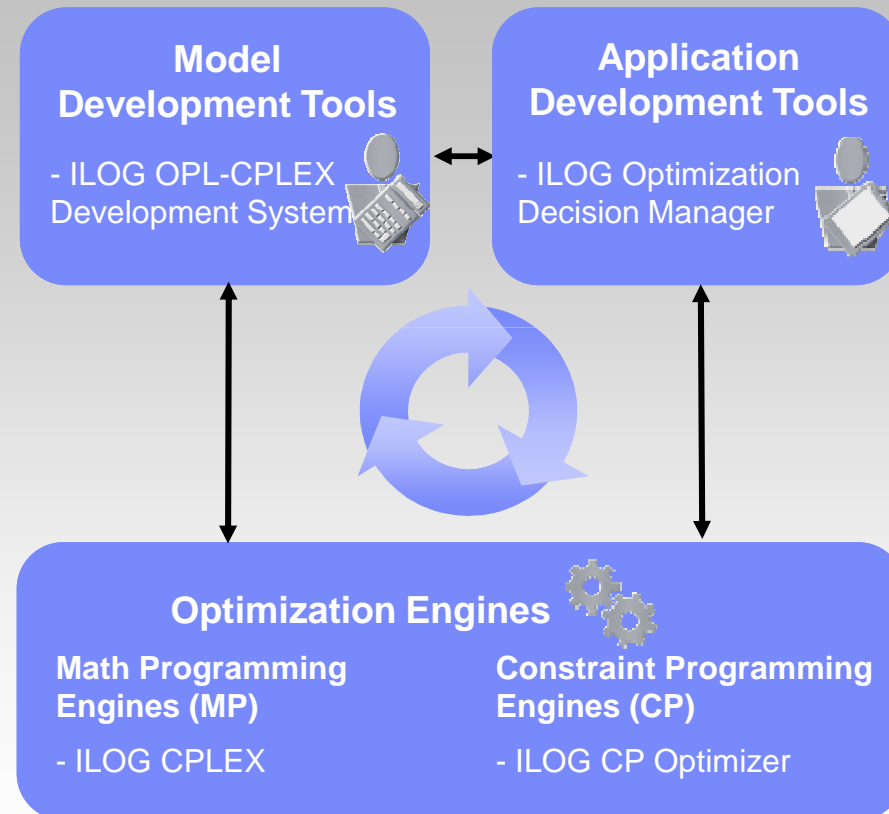
Categories of Economic Analysis		
	TYPICAL FREQUENCY	EXAMPLES
LONG-TERM PLANNING	<ul style="list-style-type: none"> • Annual • Quarterly • Occasional 	<ul style="list-style-type: none"> • Whether to expand a plant or open a new one • How many distribution centers to have • What's the value of additional equipment over time
SHORT-TERM PLANNING	<ul style="list-style-type: none"> • Monthly • Weekly 	<ul style="list-style-type: none"> • How much should we produce this week • How many shifts should we have • How many resources will we need • Which marketing campaigns will provide the most impact for a set budget
DETAILED SCHEDULING	<ul style="list-style-type: none"> • Weekly • Daily • Hourly 	<ul style="list-style-type: none"> • Which activity should be done when • Which resource should be assigned when • When can maintenance or any special task be most efficiently scheduled

Industry Applications

Applications					
MANUFACTURING	TRANSPORTATION & LOGISTICS	FINANCIAL SERVICES	UTILITIES, ENERGY & NATURAL RESOURCES	TELECOM	MULTIPLE/ OTHER
<ul style="list-style-type: none"> • Inventory optimization • Supply chain network design • Production planning • Detailed scheduling • Shipment planning • Truck loading • Maintenance scheduling 	<ul style="list-style-type: none"> • Depot/warehouse location • Fleet assignment • Network design • Vehicle & container loading • Vehicle routing & delivery scheduling • Yard, crew, driver & maintenance scheduling • Inventory optimization 	<ul style="list-style-type: none"> • Portfolio optimization and rebalancing • Portfolio in-kinding • Trade crossing • Loan pooling • Product/price recommendations 	<ul style="list-style-type: none"> • Supply portfolio planning • Power generation scheduling • Distribution planning • Water reservoir management • Mine operations • Timber harvesting 	<ul style="list-style-type: none"> • Network capacity planning • Routing • Adaptive network configuration • Antenna and concentrator location • Equipment and service configuration 	<ul style="list-style-type: none"> • Workforce scheduling • Advertising scheduling • Marketing campaign optimization • Revenue/Yield management • Appointment & field service scheduling • Combinatorial auctions for procurement

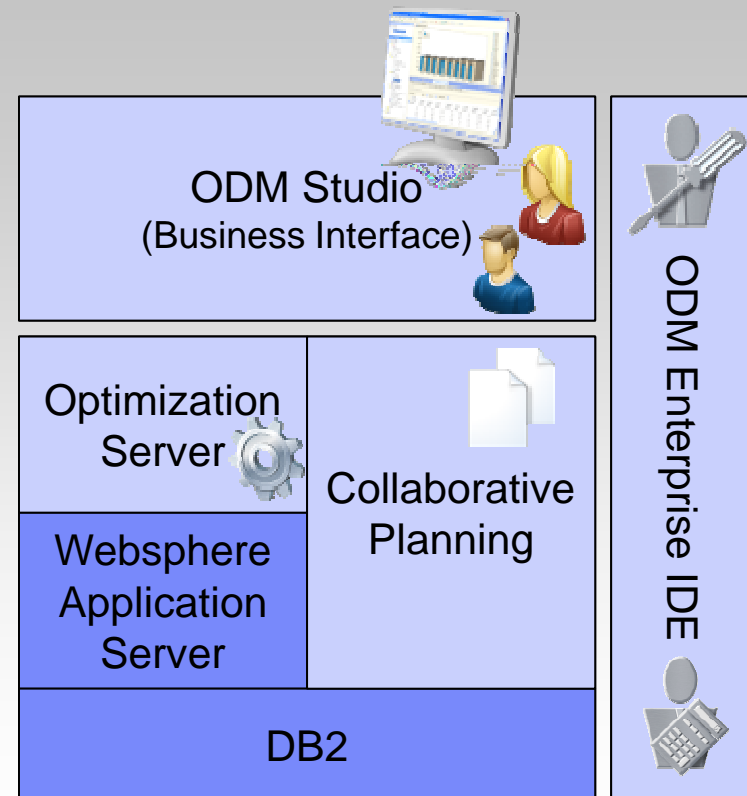
The ILOG Optimization Suite

- Optimization Engines
 - Linear Programming
 - Constraint Programming
- Model Development Tools
 - OPL
- Application Development Tools
 - ODM



ODM Enterprise Platform

- Complete application development environment
- Collaborative Platform
- Platform contains
 - ODM Studio
 - ODM Optimization Server
 - ODM Enterprise IDE
 - Engines:
 - ILOG CPLEX
 - ILOG CP Optimizer
 - Optimization modeling:
 - ILOG OPL Development Studio





Some

*Optimization
References*



April 28th, 2009

Crew Assignment at Lufthansa

Travel & Transportation –
Asset Optimization

Situation

- In 2003, the running time of the actual monthly crew planning process at Lufthansa was manual and took about 7 weeks. The last step, the crew-assignment took about 2 weeks. Time-to-market from fleet-assignment to actual flight was from 7 to 11 weeks
- A challenge to find the balance between company requirements and individual interests

Goals

- The time-to-market was to be shortened significantly
- The crew assignment step was to be automated and shortened

Solution

- ACA (automatic crew assignment) was introduced as kind of plug-in to the crew assignment editor CAS.
- ACA transforms the crew assignment problem into a mathematical problem which is solved by ILOG CPLEX.

Benefits

- Better rosters in shorter times (hours vs. days)
- Duty rosters generated in a more effective, responsive and cost-sensitive way
- Very good user acceptance



Lufthansa

Nissan : plant sequencing

Situation

- Europe's most efficient car production facility at the time
- Was mandated to support a 3rd car model
- Reduce schedule variability and increase production throughput

Solution

- Delivered a line sequencing solution that increased Nissan's ability to match customer demand with production capabilities
- Was able to produce the 3rd model on the existing two lines with an improved Detailed Scheduling system

Benefits

- Saved the cost of building a 3rd production line.
- Investment payback in three days!
- Increased capacity (potential production) by 30%
- Schedule adherence increased from 3% to 95%.
- Schedule results in minutes instead of days.
- Eliminate use of intermediary storage buffers

Netherlands Railways – Allocation of rolling stock

Situation

- 1 million passengers daily, 5500 trains, 390 stations
- Need for an optimal allocation of trains to passenger traffic

Goals

- Build a precise schedule according to traffic requirements
- Optimize to use of trains and the service/availability to passengers
- Manage thousands of constraints, including passenger preferences, seasonal variation in traffic and transport regulations

Solution

- Netherlands Railways have built a solution called TIM (Tool Inzet Matereel) to fully model the company's operations : rail networks, stations and trains as well as the above mentioned constrained. They have used ILOG OPL Development Studio and computed optimal solutions with ILOG CPLEX engine.

Benefits

- Better resource utilization, operating efficiency has increased 5 to 10 % , netting cost savings to 10 to 20M€ annually.

Zara : Optimized Store Replenishment

Situation

- Zara has more than 1,100 stores in 68 countries.
- Large volumes flowing through the supply chain meant the company could no longer rely on guesswork by store managers as to how much product it needed to replenish at each location.

Goals

- Evaluate quickly replenishment needs for all stores
- Minimize occurrence of customers not finding their size
- Minimize inventory returns

Solution

- Optimization model developed by two researchers in supply chain optimization at MIT.
- Running in seconds on CPLEX

Benefits

- 3 to 4% increased sales compared to stores using the former weekly replenishment forecasting system.
- Fewer returns and transfer of product between stores.

Red Electrica – Power supply regulation

Situation

- Need to reduce CO2 emissions
- Need to manage the electricity network through the « unit commitment » rules ie buying and dispatching available power sources at the lowest possible cost
- Need to increase the use of renewable energy – must distribute all available renewable energy before buying from other sources

Objective

- Meeting the unit commitment (ie finding the cheapest source of power) and ensuring a constant supply of power using advanced planning techniques.
- REE was using a home grown Fortran solution based on an interactive mathematical methodology. This methodology did not guarantee the optimum and most viable solution.*

Solution

- Use of complex mathematical models for optimizing company processes and decision making tasks
- ILOG OPL & CPLEX & ODM to calculate and achieve an optimal the Unit commitment program:
 - to reduce costs
 - simulate power generation
 - enable IT teams to implement frequent legislation and technology changes easily

Benefits

- Significant reduction in production costs + the duration of the processes by 1 to 2 % ie savings of between 50,000 and 100,000 € per day.
- Reduction of carbon emissions by 2,5 % - ie 100,000 tons of CO2 annually.
- Great operational advantages to IT Managers and mathematicians: they can now develop, test, maintain generation scenarios quickly and easily.
- For the user: greater trust in the solution and a significant reduction in planning time

2 – Considering CO2 costs

Unit Commitment Demo - Generators (Costs)

File Edit Scenario View Window Help

Scenarios Overview

- Workspace
 - Spinning Reserve Analysis
 - 5%
 - 10%
 - 15%
 - 20%
 - 25%
 - 30%
 - Baseline**
 - Reduce CO2 Emission

Generators (Costs)

Filter is not active. Displaying 10 rows by 4 columns built from 10 items in the source data

Drop Filter Fields Here

Drop Column Fields Here

Type	Name	\$Linear Operations Cost	\$Fixed Start Up Cost	\$Fuel Start Up Cost	\$CO 2 Cost
Coal	COAL_1	\$22.536	\$5,000	\$208.607	\$30
	COAL_2			\$117.372	\$30
Diesel	DIESEL_1			417	\$15
	DIESEL_2			1	\$15
	DIESEL_3			3.638	\$15
	DIESEL_4			\$16.259	\$15
Gas	GAS_1	\$70.5	\$1,320	\$174.117	\$5
	GAS_2	\$69	\$1,201	\$172.754	\$5
	GAS_3	\$32.146	\$1,201		
	GAS_4	\$54.84	\$1,100		

Field List (Drag Items to the Pivot Grid):

- Init Prod Level
- Max Generation
- Min Down
- Min Generation
- Min Up
- Operating Max Gen
- Ramp Down
- Ramp Up

Scenario Explorer

- Baseline
 - Multi-Scenario Comparison
 - Analysis
 - Input Data
 - Generators (Costs)**
 - Generators (Operati...
 - Demand Chart
 - Demand Pivot
 - Parameters
 - Rules
 - Solution
 - Production Schedule
 - Production Schedule
 - Off/On schedule

Production Schedule Chart

Solve Progress

Detailed Solve Progress

Combined Objective

Fuel Cost

Best Solution Found: 8101517.53

Best Possible Optimal Solution: 8100805.22

Percent from Optimal: 0.01 %

Fuel Cost: \$8,089,735.526

Relax more requirements Accept relaxation level 0:00:18

Solution found

Close this dialog box when solve completes

Continue in background... Close

Green approach: Add CO2 emission cost & cap it

...and Re-optimize!

1 – Traditional Power Generation

Generators (Costs)

Type	Name	\$Linear Operations Cost	\$Fixed Start Up Cost	\$Linear Start Up Cost
Coal	COAL_1	\$22.536	\$5,000	\$208.607
	COAL_2	\$31.985	\$4,550	\$117.372
Diesel	DIESEL_1	\$40.222	\$560	\$54.417
	DIESEL_2	\$40.522	\$554	\$54.551
	DIESEL_3	\$116.331	\$300	\$79.638
	DIESEL_4	\$76.642	\$250	\$16.259
Gas	GAS_1	\$70.5	\$1,320	\$174.117
	GAS_2	\$69	\$1,291	\$172.754
	GAS_3	\$32.146	\$1,280	\$95.353
	GAS_4	\$54.84	\$1,105	\$144.517

Production Schedule Chart

Approach: consider only operating costs

Result: Two large coal generators used 24/7 at 100%

Gas and Diesel generators turned off/on to match demand

3 – Review new “greener” schedule

Unit Commitment Demo - Goals

File Edit Scenario View Window Help

Scenarios Overview

- Workspace
- Spinning Reserve Analysis
 - 5%
 - 10%
 - 15%
 - 20%
 - 25%
 - 30%
- Baseline
 - Reduce CO2 Emission

Goal Name	Value	Active	Importance
Fuel Cost	\$8,845,765.132 (8,089,735.526)	✓	
Start Up Cost	\$6,600 (11,782)	✓	
Ecological Cost	\$4,000,000 (4,518,328)	✓	

Name	Value
Constraints	Ecological Cost
Constrain max to	4,000,000
Constrain min to	
With priority	Mandatory
Bound Searches	
Best bound	

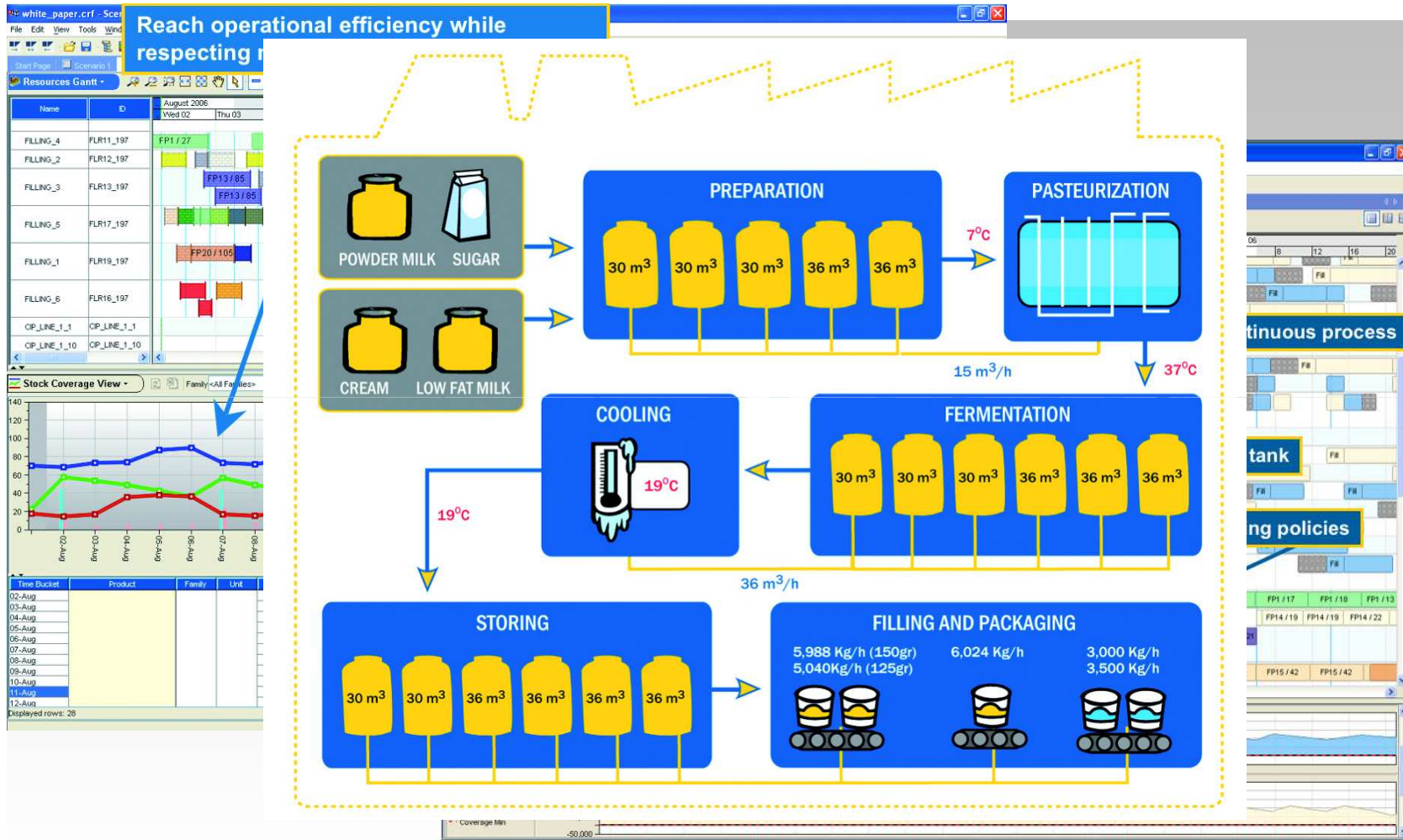
Unit	Value
COAL_1	\$2,016,000
COAL_2	1,144,944 (1,764,000)
DIESEL_1	196,560 (196,299)
DIESEL_2	191,520 (190,455)
GAS_1	31,708 (13,417)

Production Schedule Chart

At limited cost: Increased operating costs mostly offset by CO2 savings!

New schedule: 2nd coal generator only used as necessary – replaced by cleaner gas

Danone – Plant planning and scheduling



Danone – Plant planning and scheduling

Situation

- SAP APO PP/DS not meeting business users expectations.
- Production plan not accounting for business and sanitary constraints,
- Waste and lack of finished products,
- Poor operational efficiency, long and tedious manual planning with Excel

Goals

- Leverage SAP APO
- Deliver executable planning for semi-finished and finished product
- Improve key performance indicators: inventory coverage, operational efficiency, equipment utilisation, product waste, changeover costs, and cleaning costs
- Satisfy both the business goals and the ease-of-use requirements of the planners

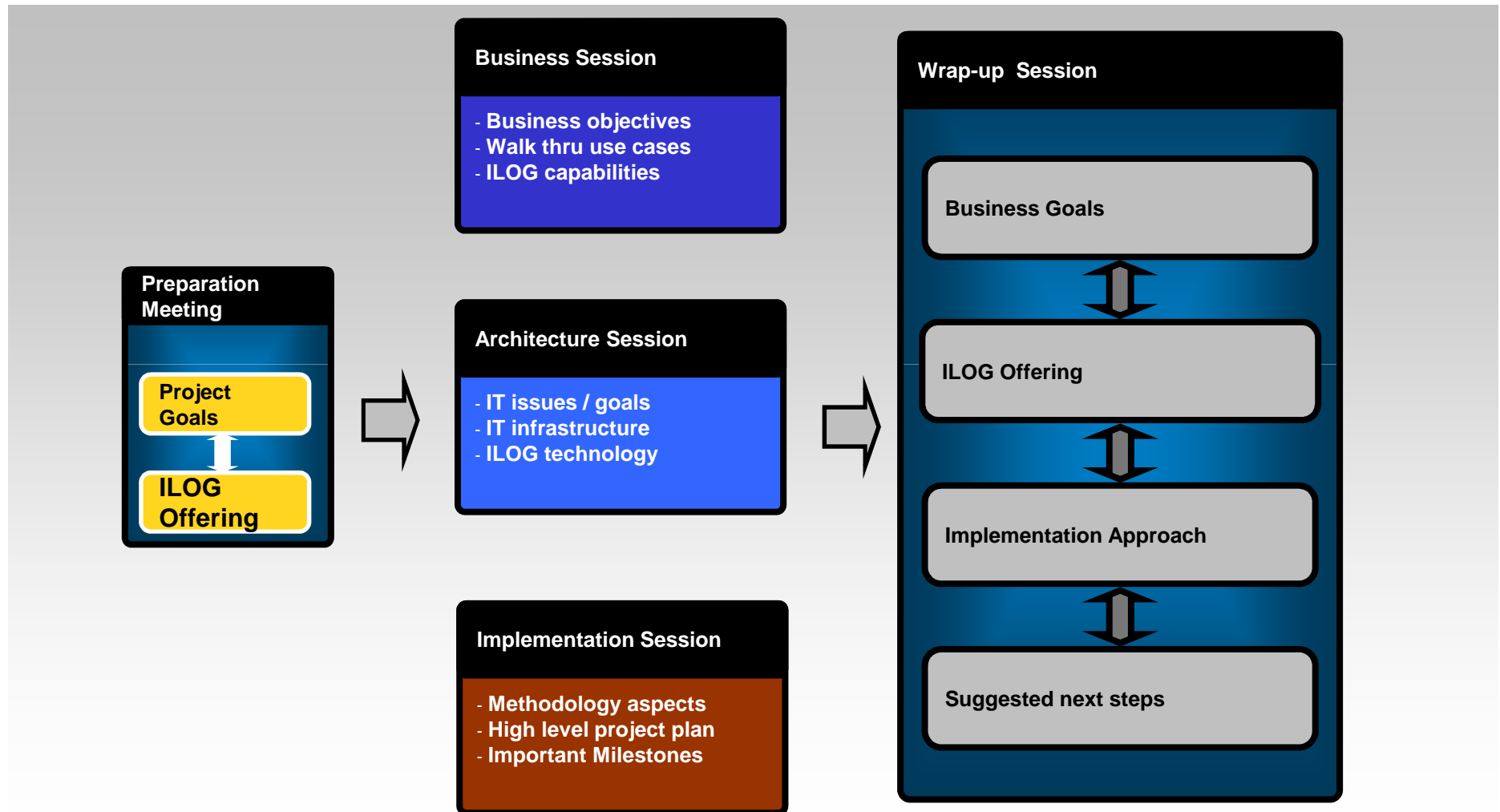
Solution

- ILOG Plant Power Ops, extending SAP PP/DS
- Using SAP Data, no separate database
- Decision support system delivering integrated planning and scheduling
- Implemented and configured by ILOG Professional Services

Benefits

- A user-friendly solution for integrated planning and scheduling
- Reduced inventory and production costs
- 10 mn planning cycle time versus 2 days with previous system
- Improved flexibility and ability to react to unexpected events
- High user acceptance of the new system

Solution Development with Discovery Workshop



Thank you

Q&A