WebSphere Software

IBM

What's New in WebSphere MQ

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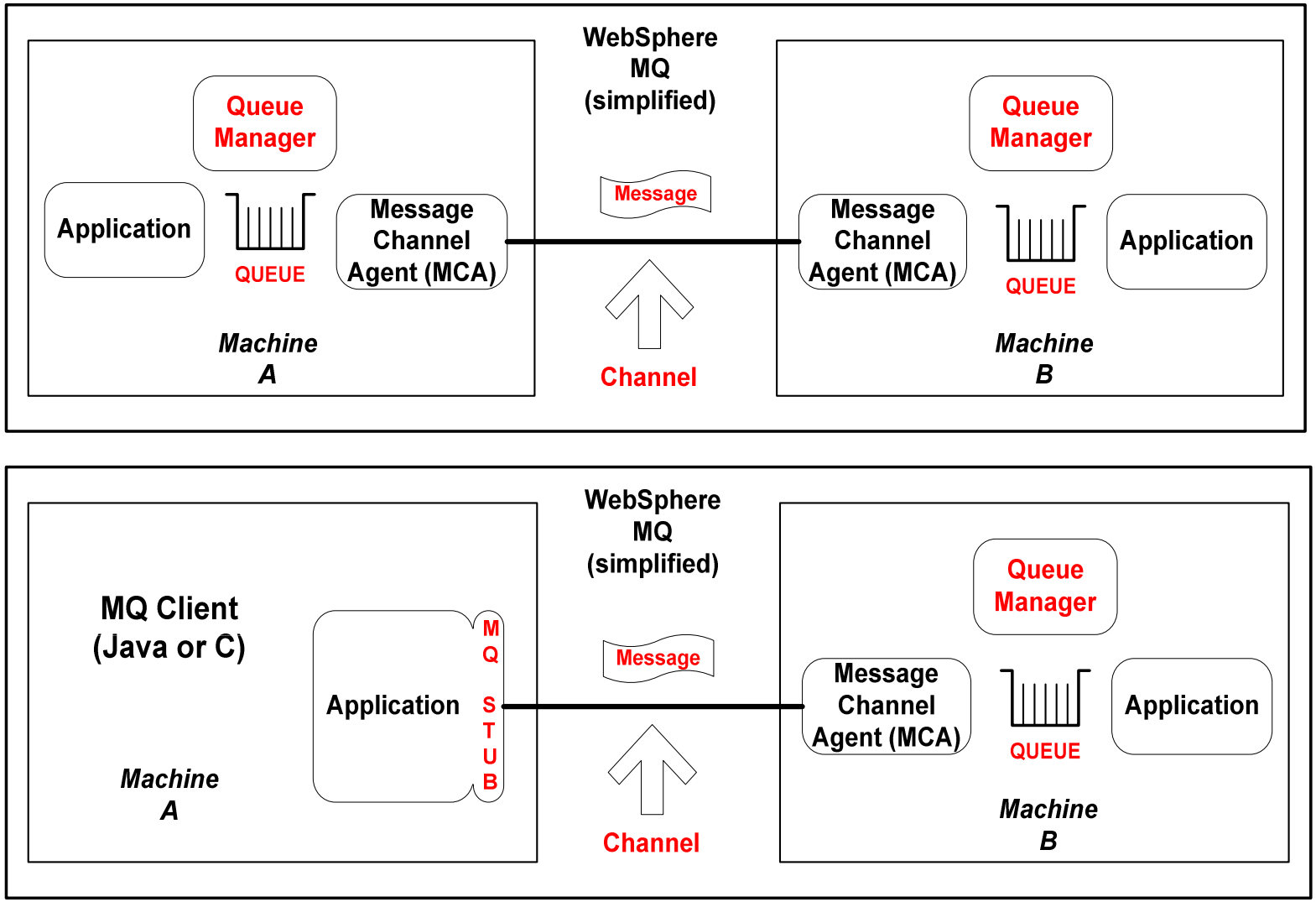
WebSphere Technical PreSales

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

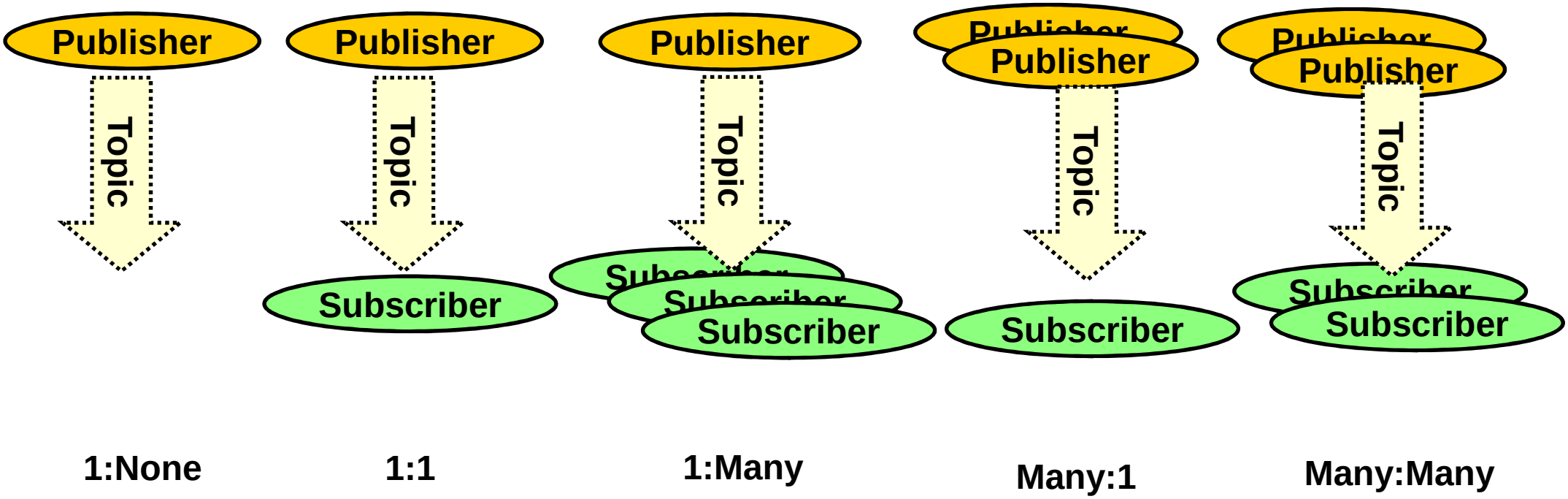
- More:

  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

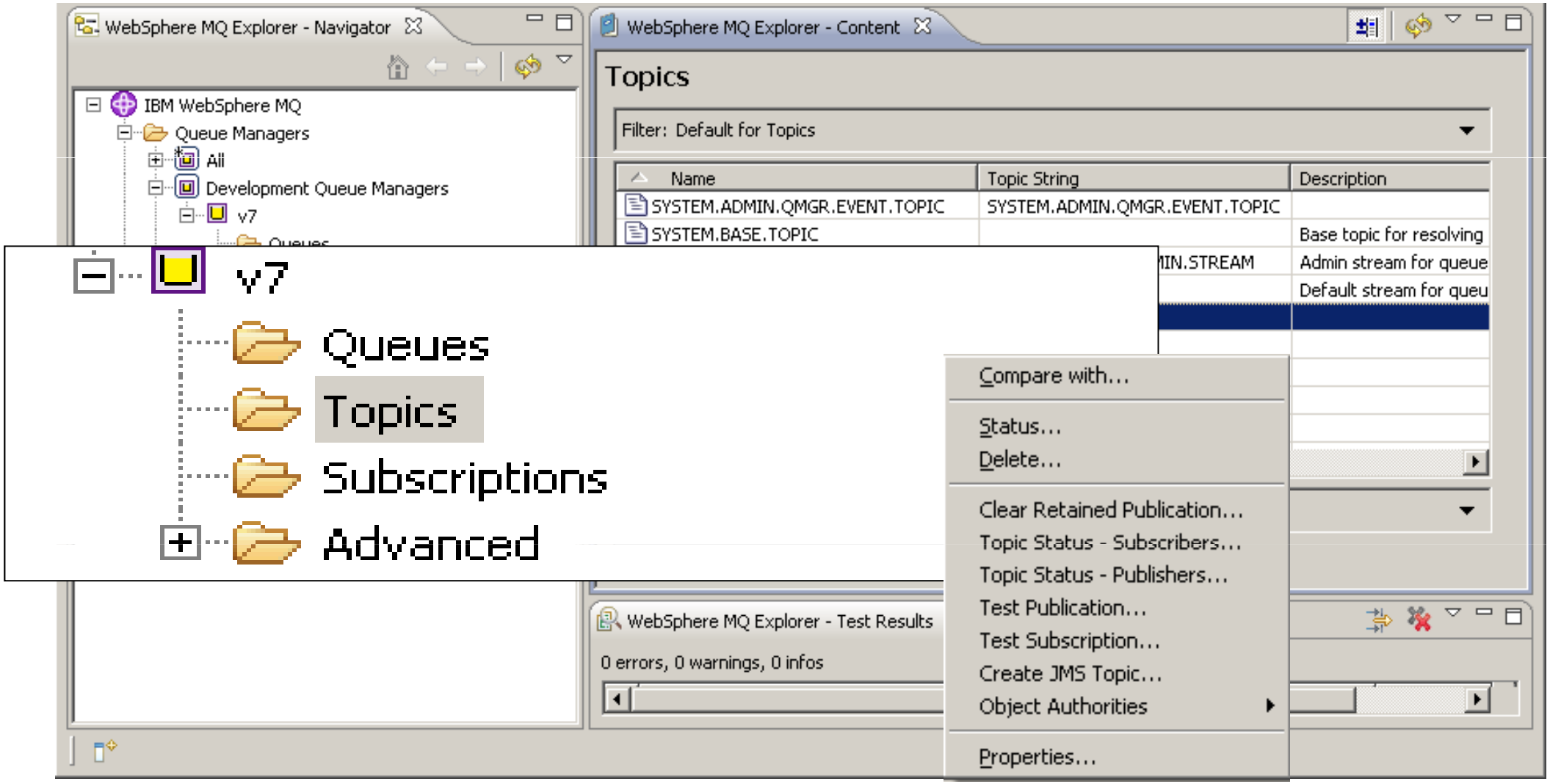
Loose Coupling with Publish/Subscribe



Publish/Subscribe Administration

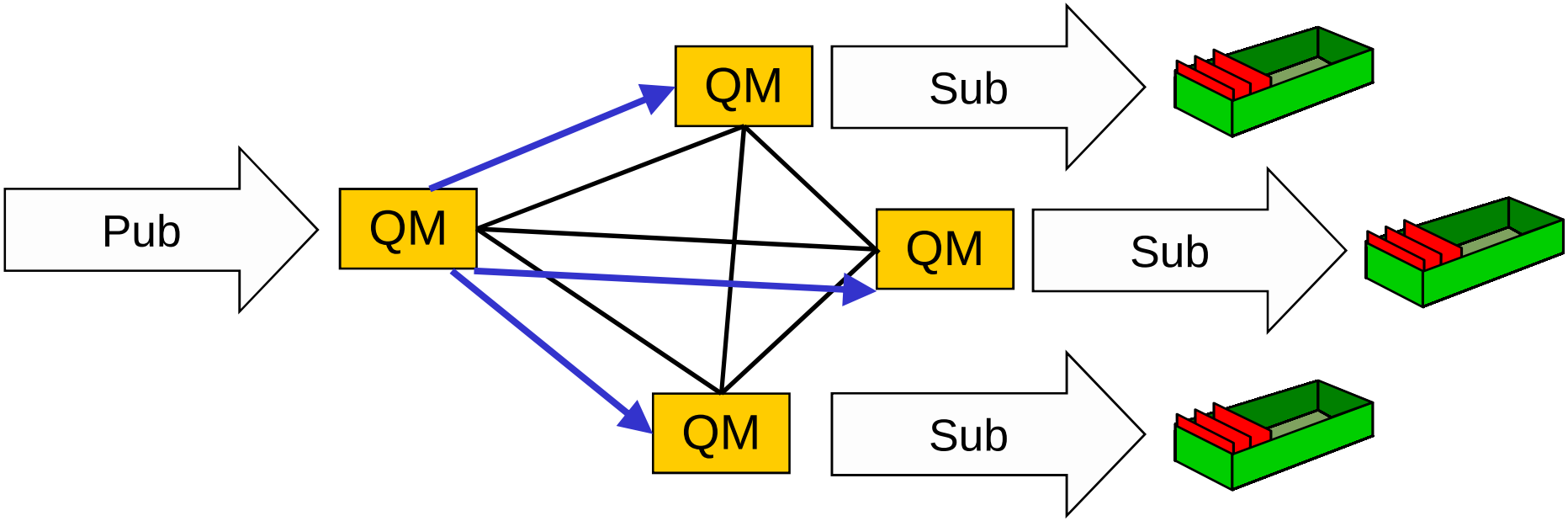
- Support for durable and non-durable subscriptions
  - With durable, a client can go away and come back later without missing messages
    - Durable can cause queues to fill – generating configured depth events as warning
  - Non-durable exist only for the lifetime of the application
    - No manual "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

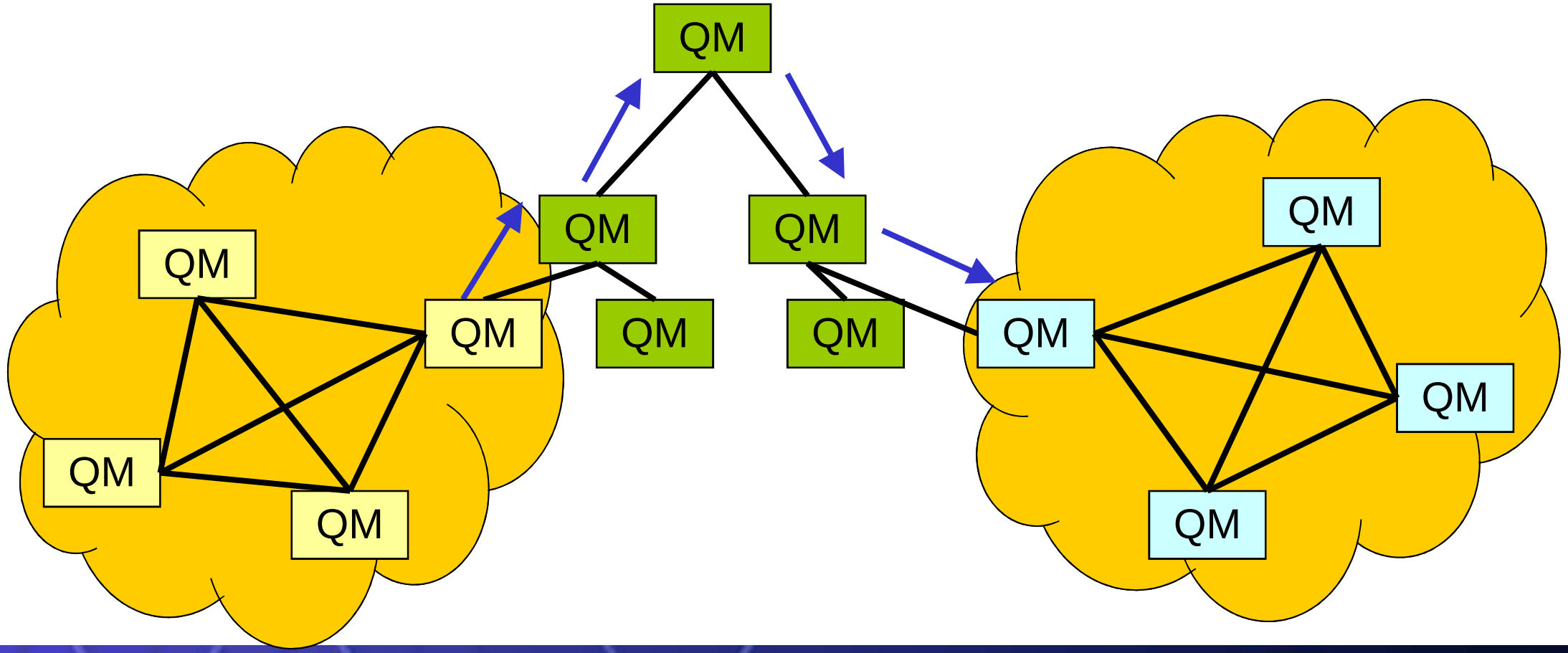


Publish/Subscribe in a Cluster

- Consistent topic definitions in cluster
- Multiple routes across cluster



Publish/Subscribe in Combined Hierarchy & Clusters



Publish/Subscribe Application Programming

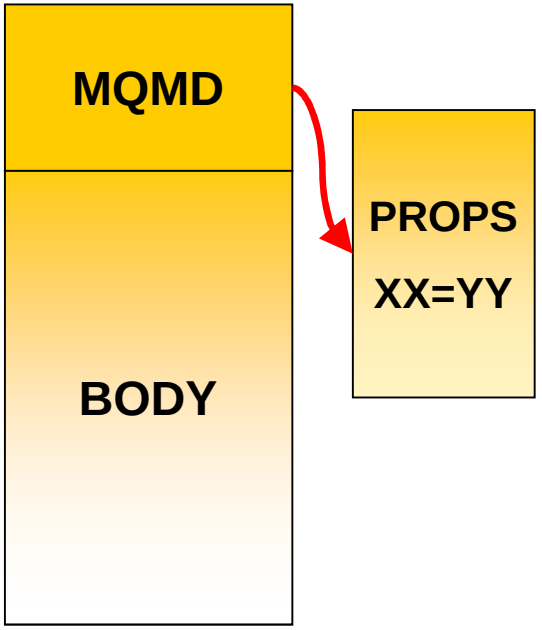
- New verb for subscribing
  - So you do not need to build RFH or RFH2 headers in the application
  - **MQSUB** registers a subscription
    - Includes information about where messages will be read from
    - Do not need to specify a queue – can be automatically assigned
  - Retained publications delivered 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

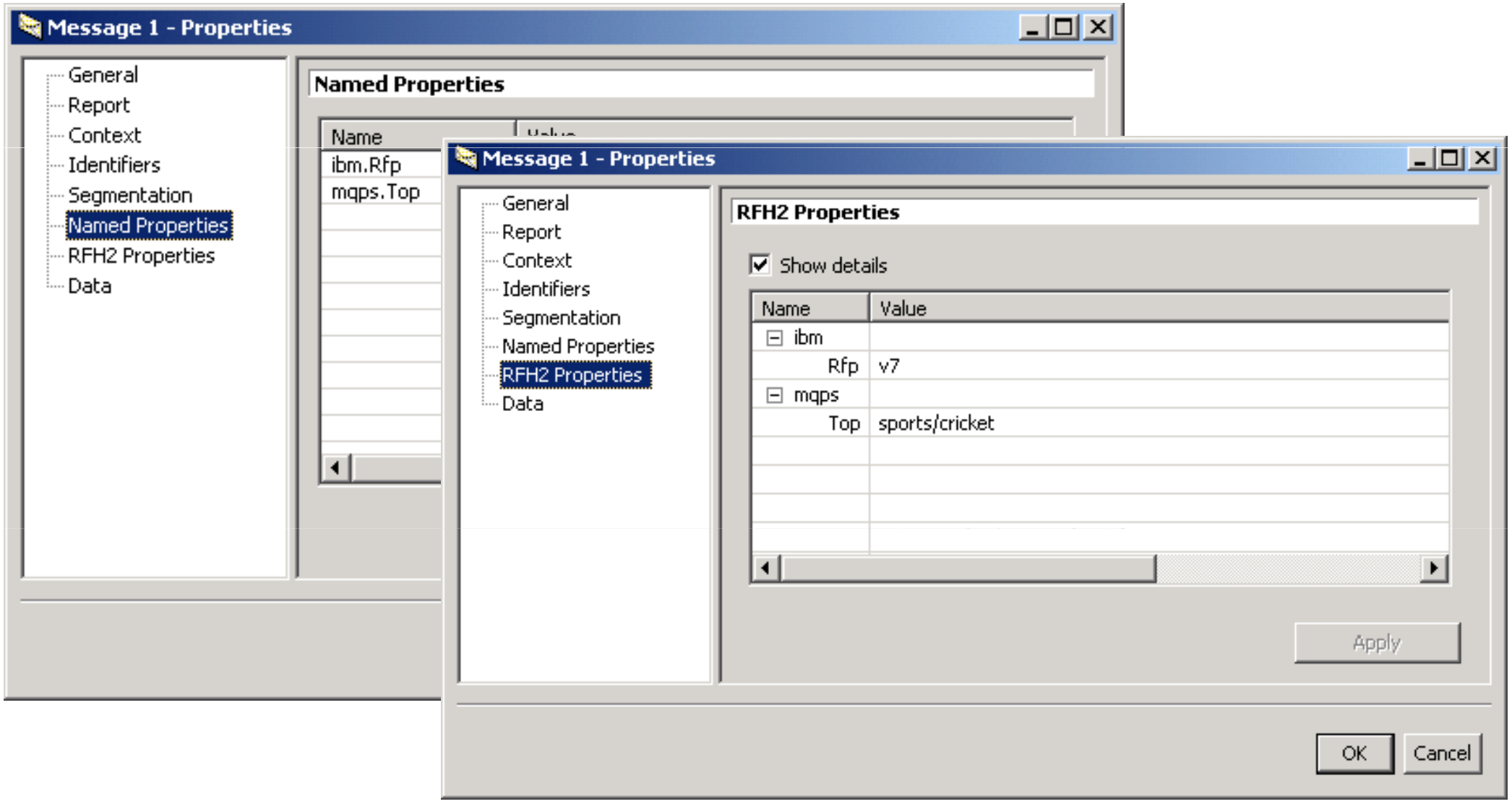
- Asynchronous Message Reception
  - New verb **MQCB** defines a callback function
  - Automatically Invoked when a message arrives
  - No need for MQGET(WAIT) or MQGET(SIGNAL)
  - A thread can receive messages from multiple queues
  - New verb **MQCTL** to start and stop message delivery to callback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



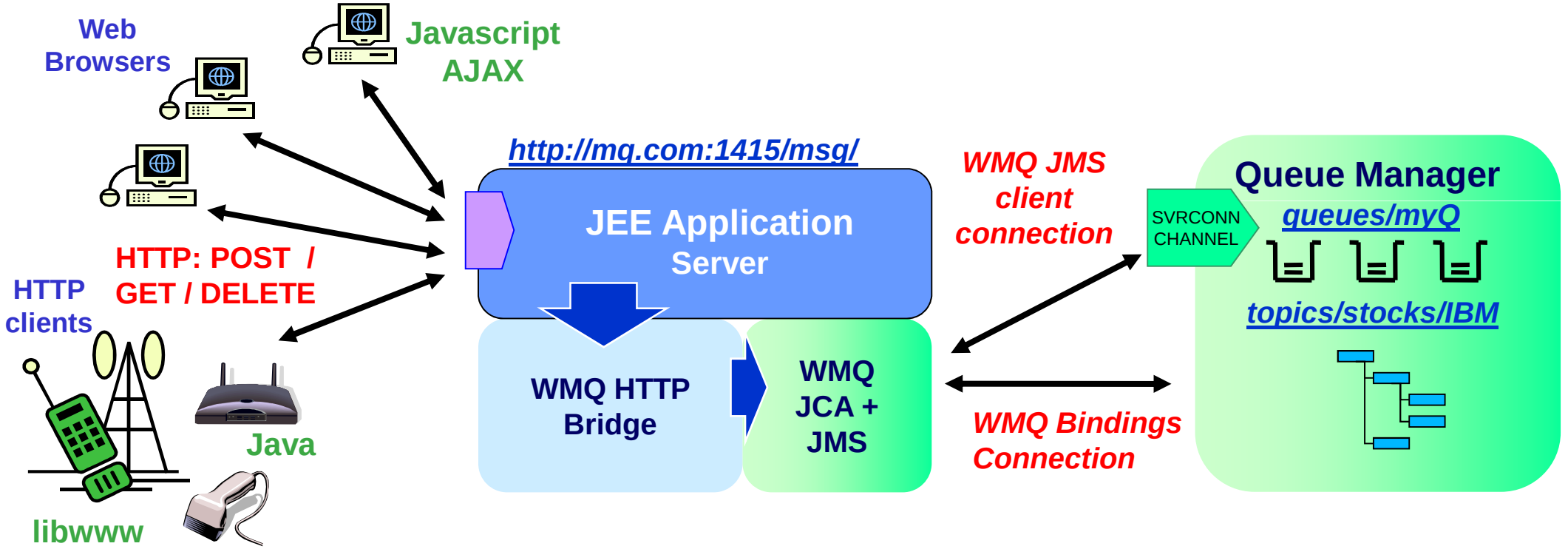
Looking at Properties



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

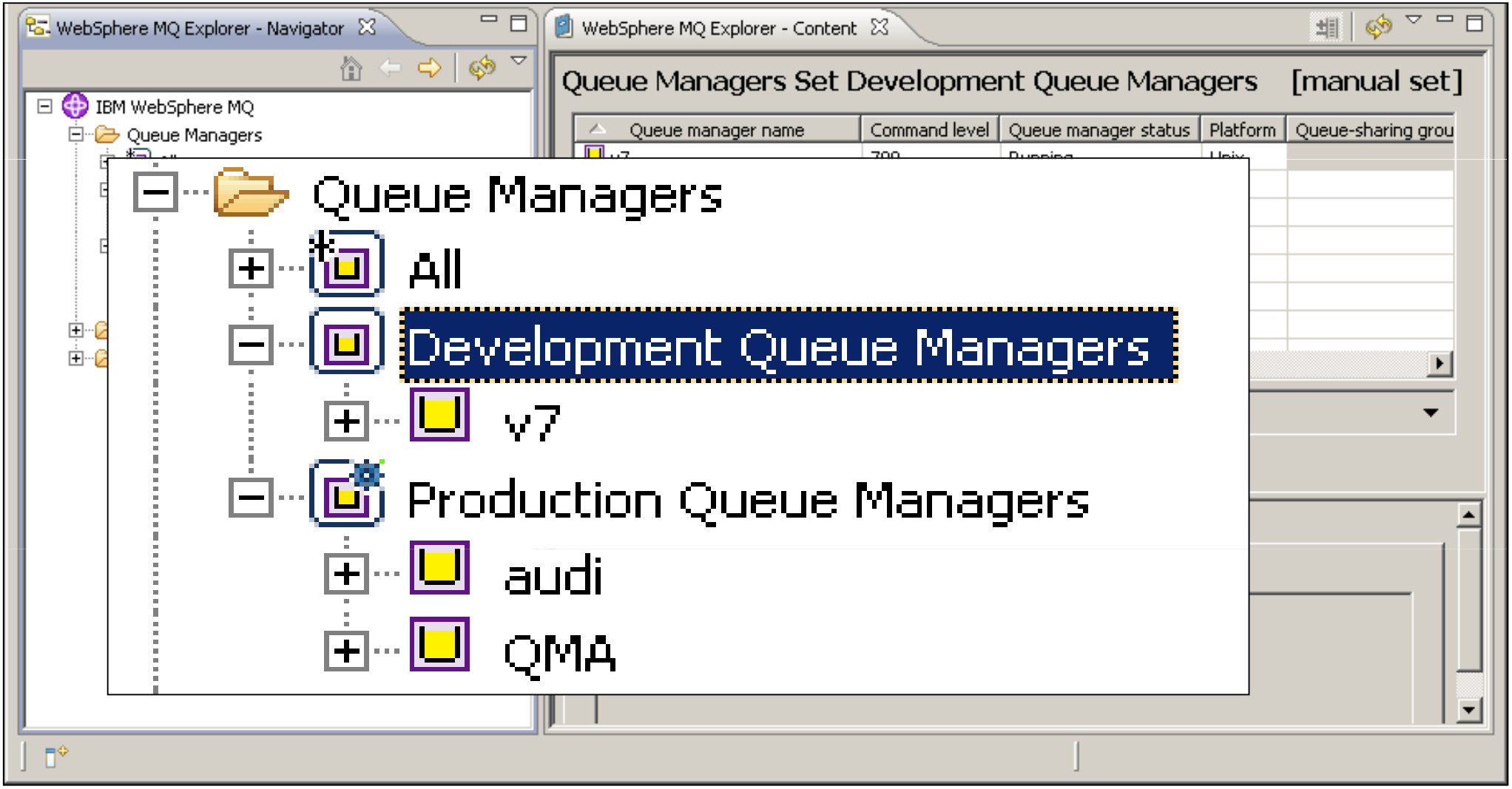


- Key features of the WebSphere MQ Bridge for HTTP -
  - Maps URIs to queues and topics
  - Enables MQPUT and MQGET from
    - Web Browser
    - Lightweight client
- Alternative non-servlet implementation available as MA94

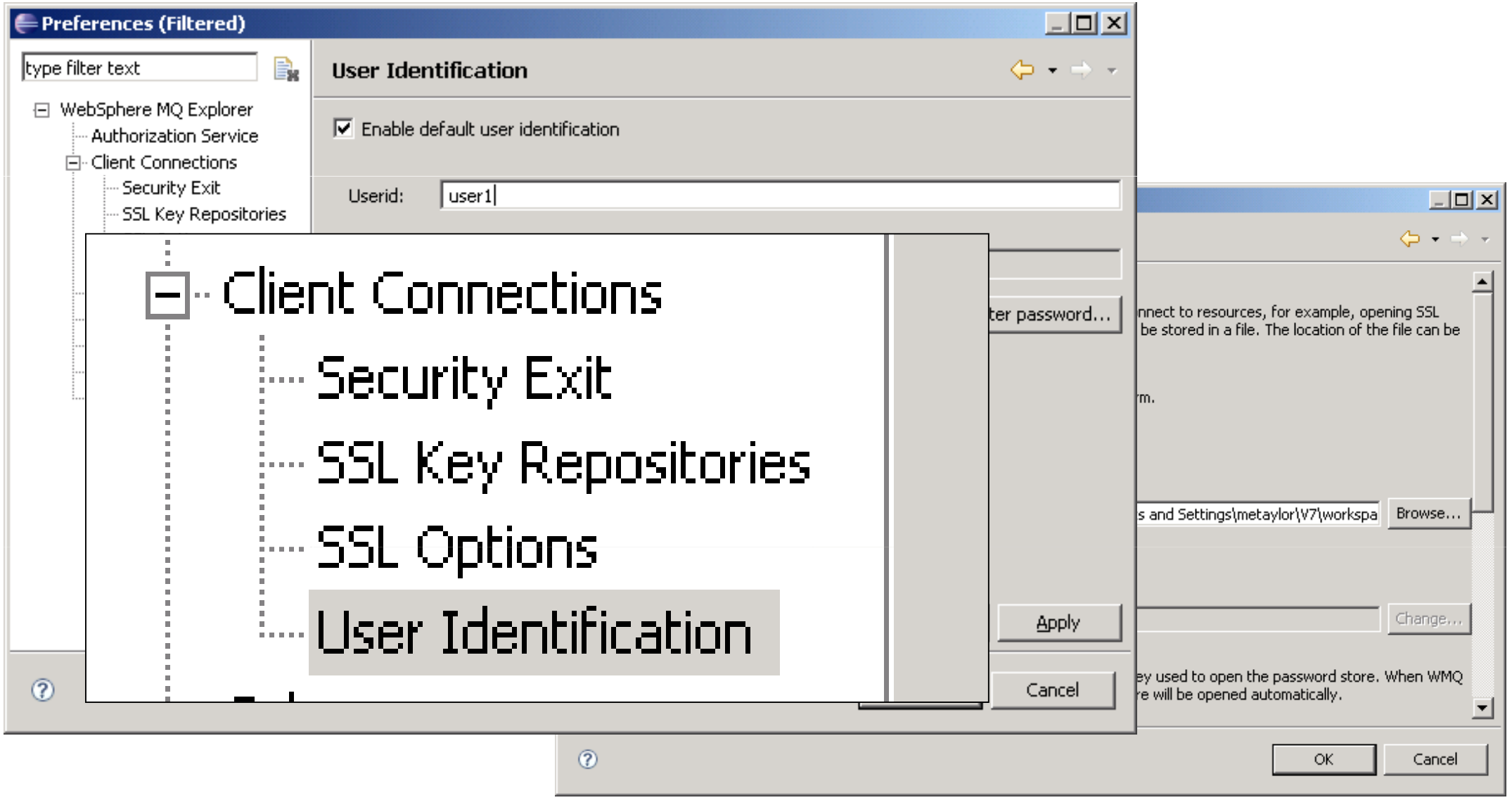
WMQ Explorer Enhancements

- 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



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

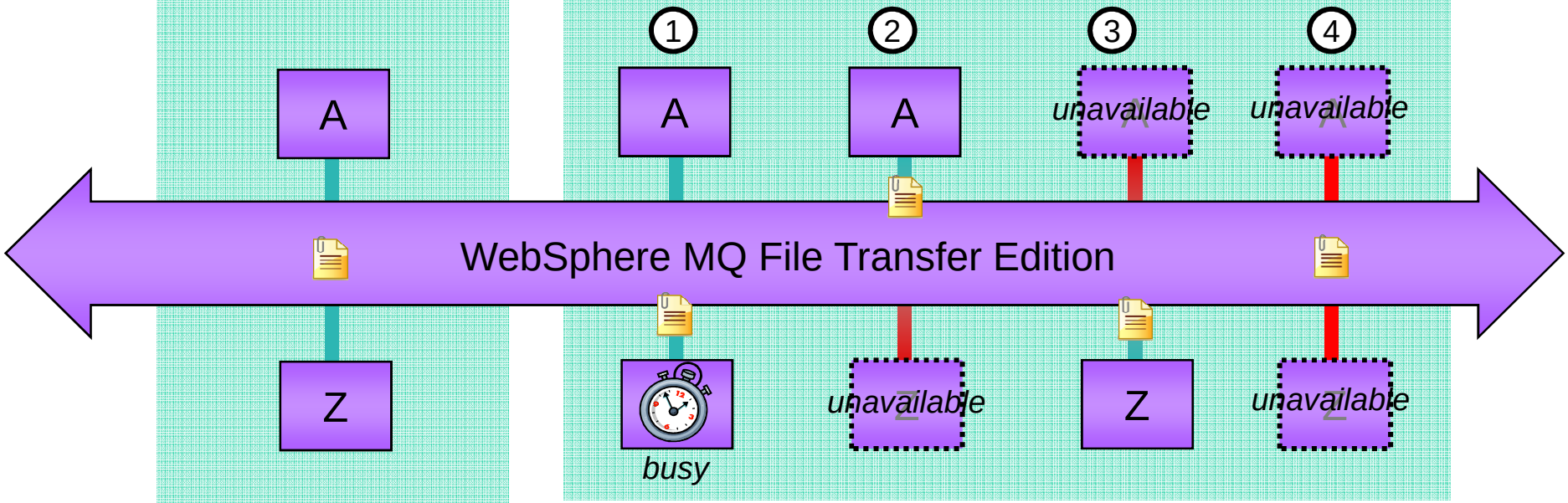
- Transfer files regardless of when solution components are free or available

Seems like this…

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

…Even when this might be happening!

- 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



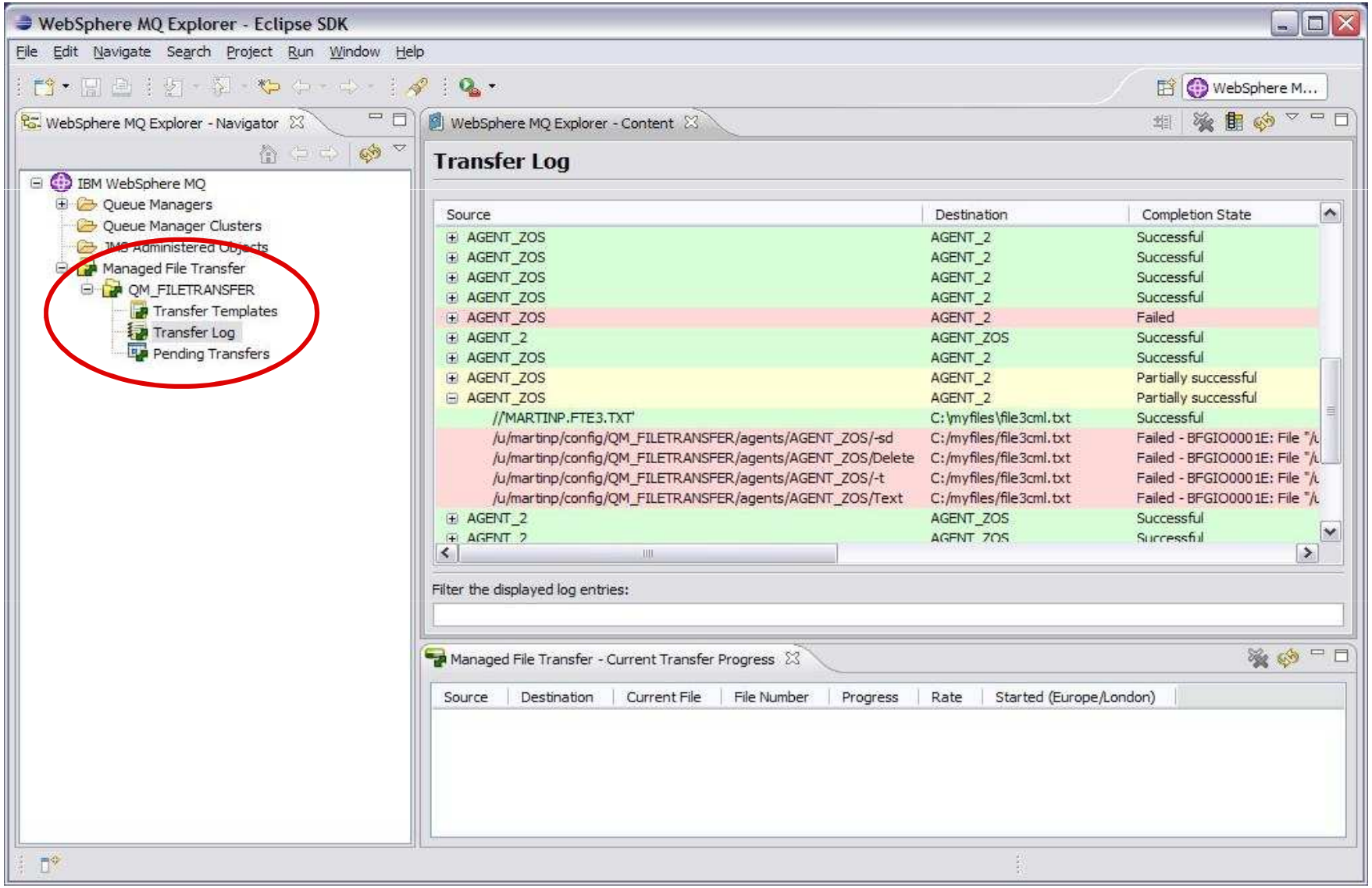
WebSphere MQ File Transfer Edition V7.0

- 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

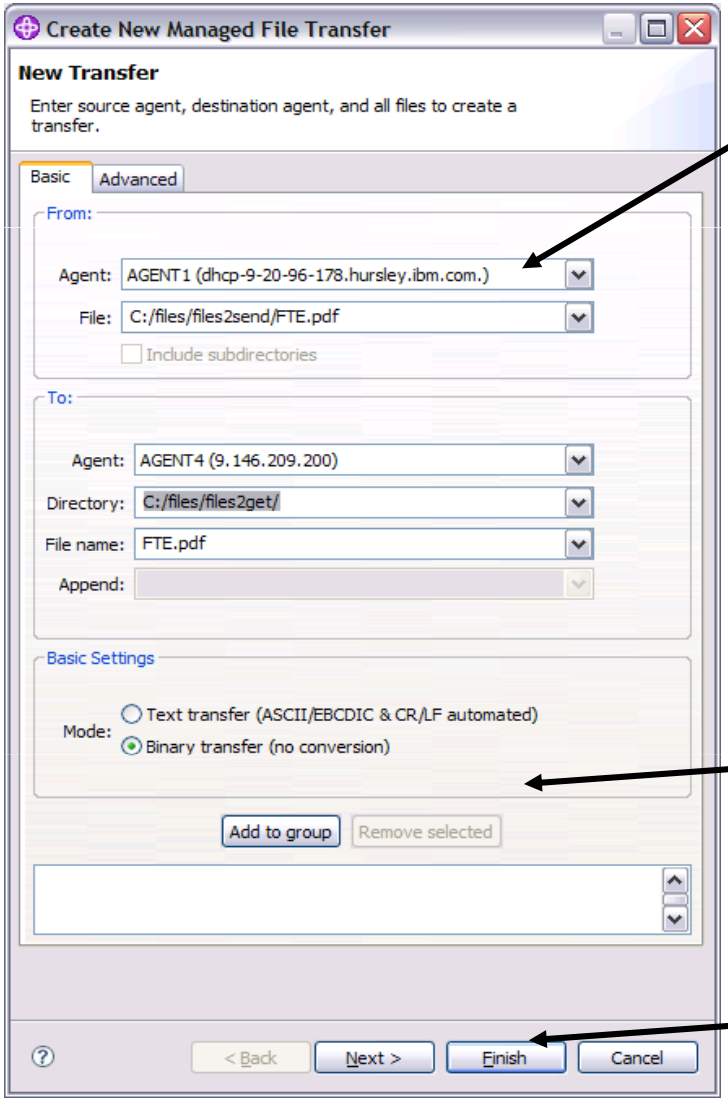
WebSphere MQ File Transfer Edition V7.0

- 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



Creating File Transfers



List of sources and targets is built automatically

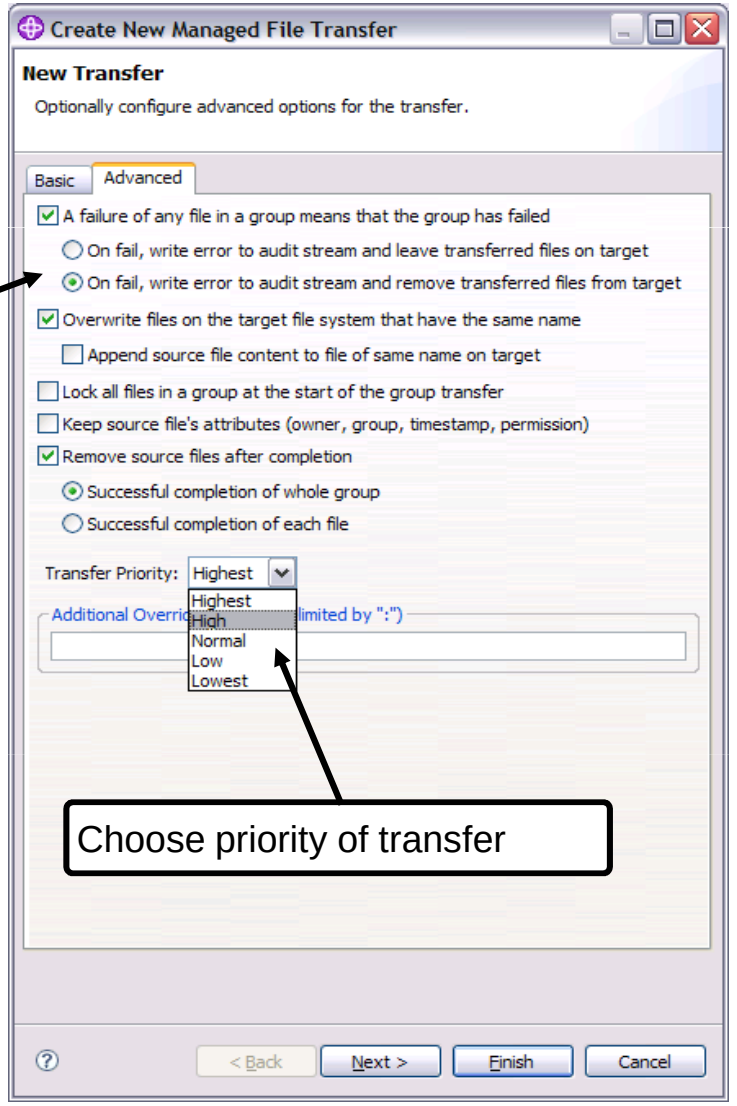
Specify directory and file name

Choose advanced options

Choose mode (Binary or Text with automatic conversion)

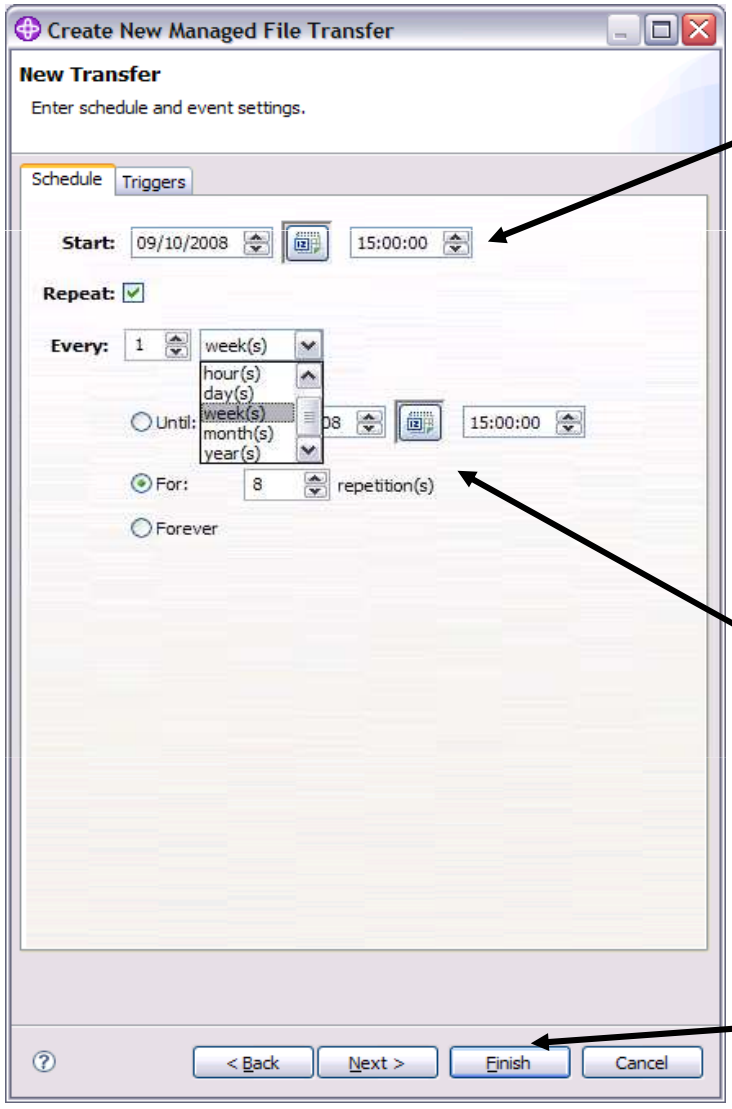
Add each individual transfer to a group of transfers

Deploy file transfer to network



Choose priority of transfer

Scheduling & Triggering File Transfers

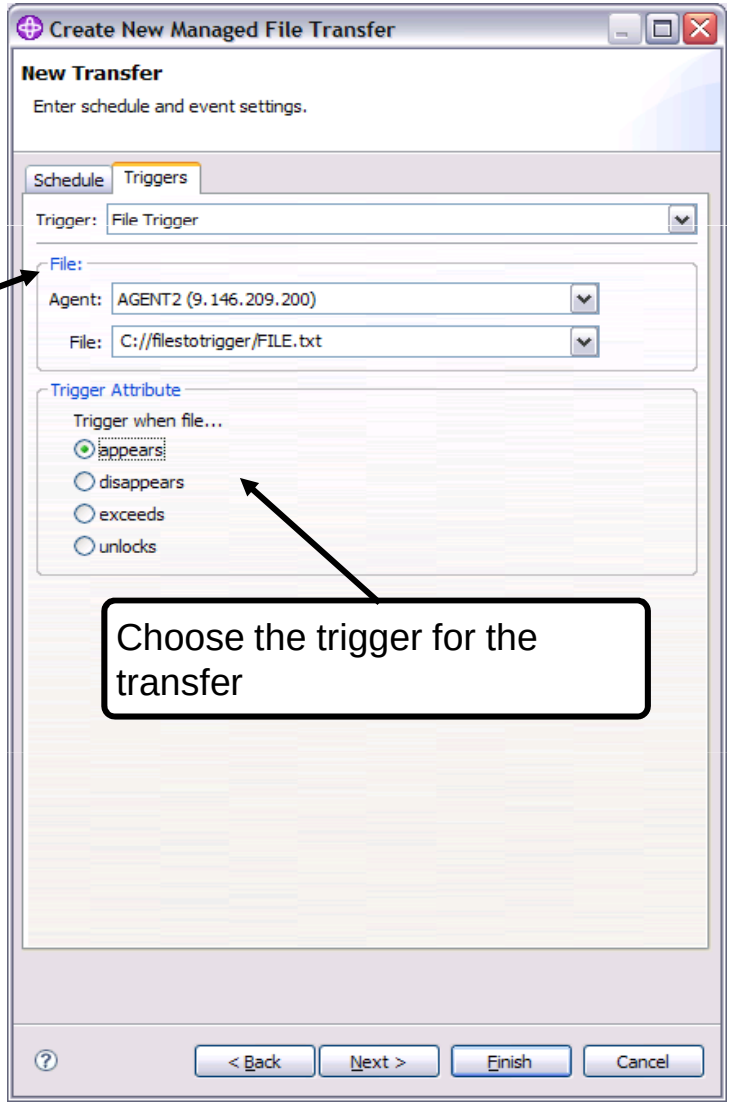


Choose when to start the scheduled transfer

Choose advanced options

Choose when to repeat the scheduled transfer and how often

Deploy file transfer to network

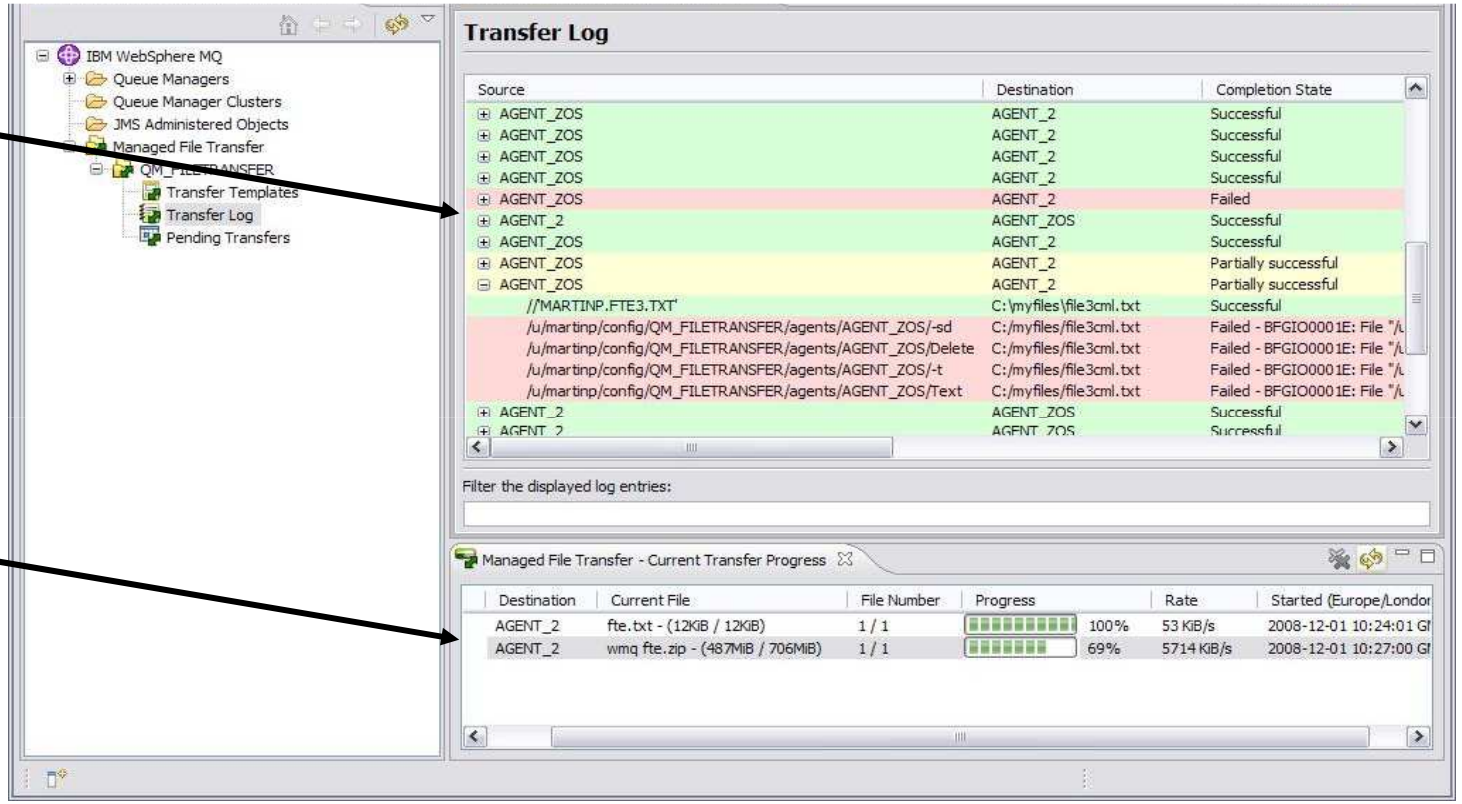


Choose the trigger for the transfer

Auditing & Monitoring File Transfers

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

View audit log of all transfers and groups of transfers



View progress of all transfers currently taking place

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

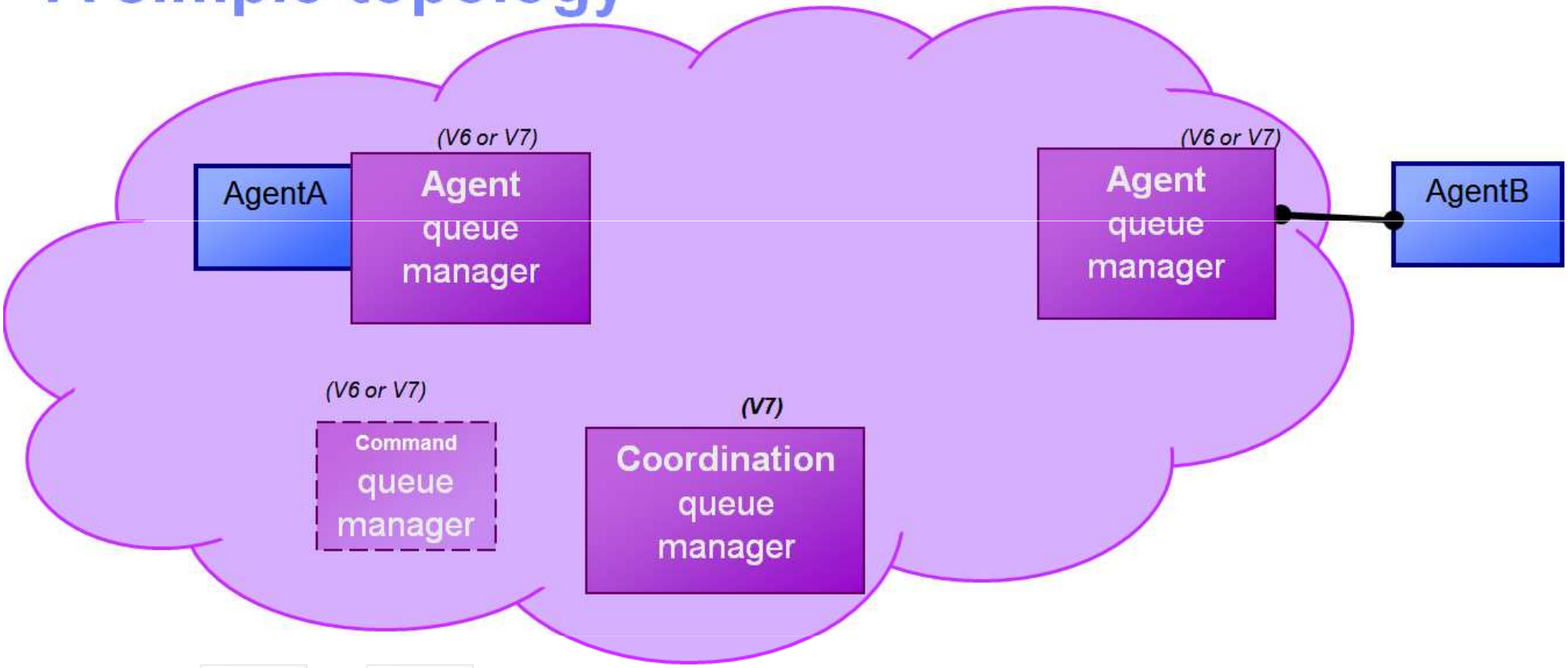
The *command* queue manager

- 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



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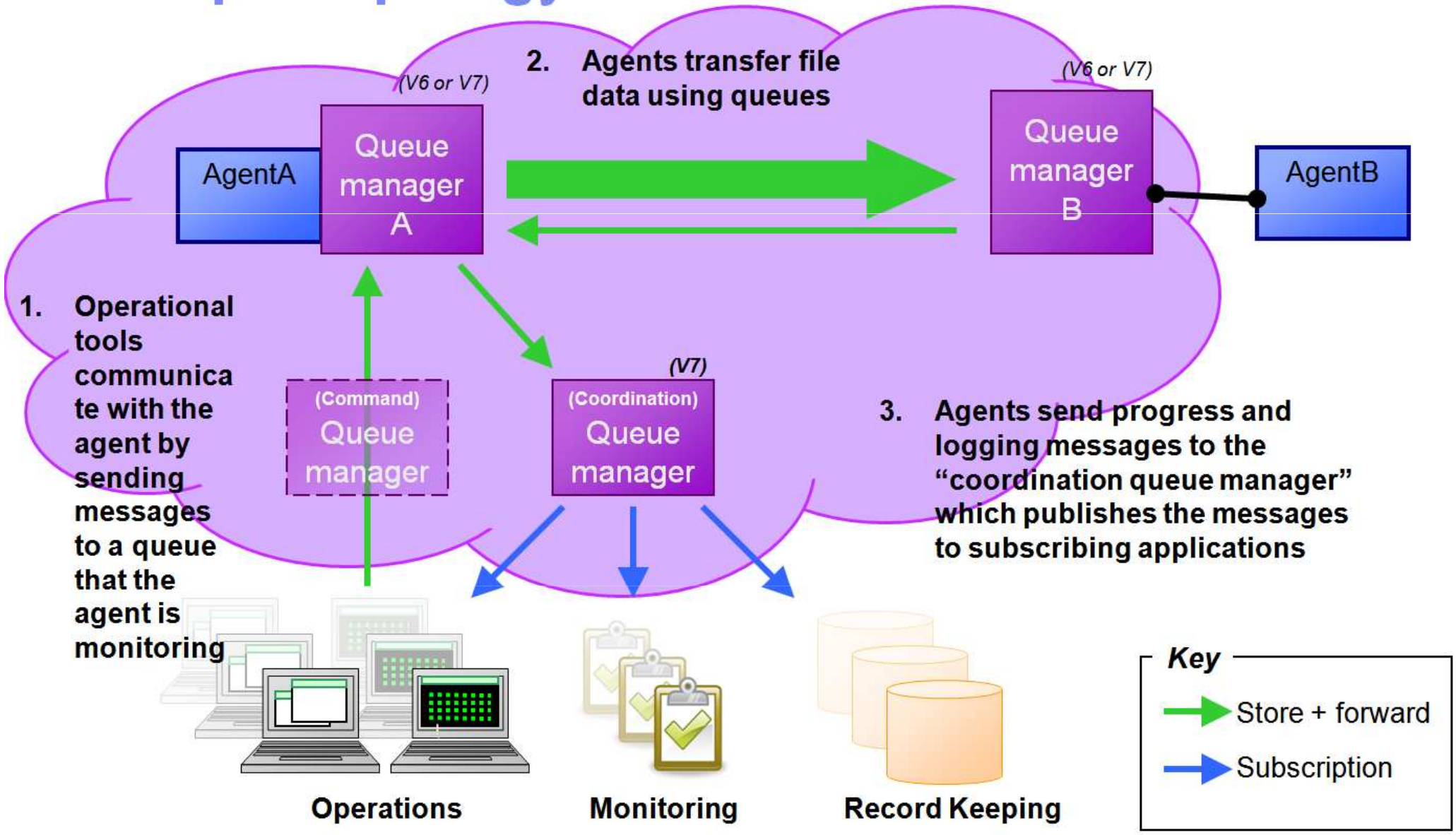
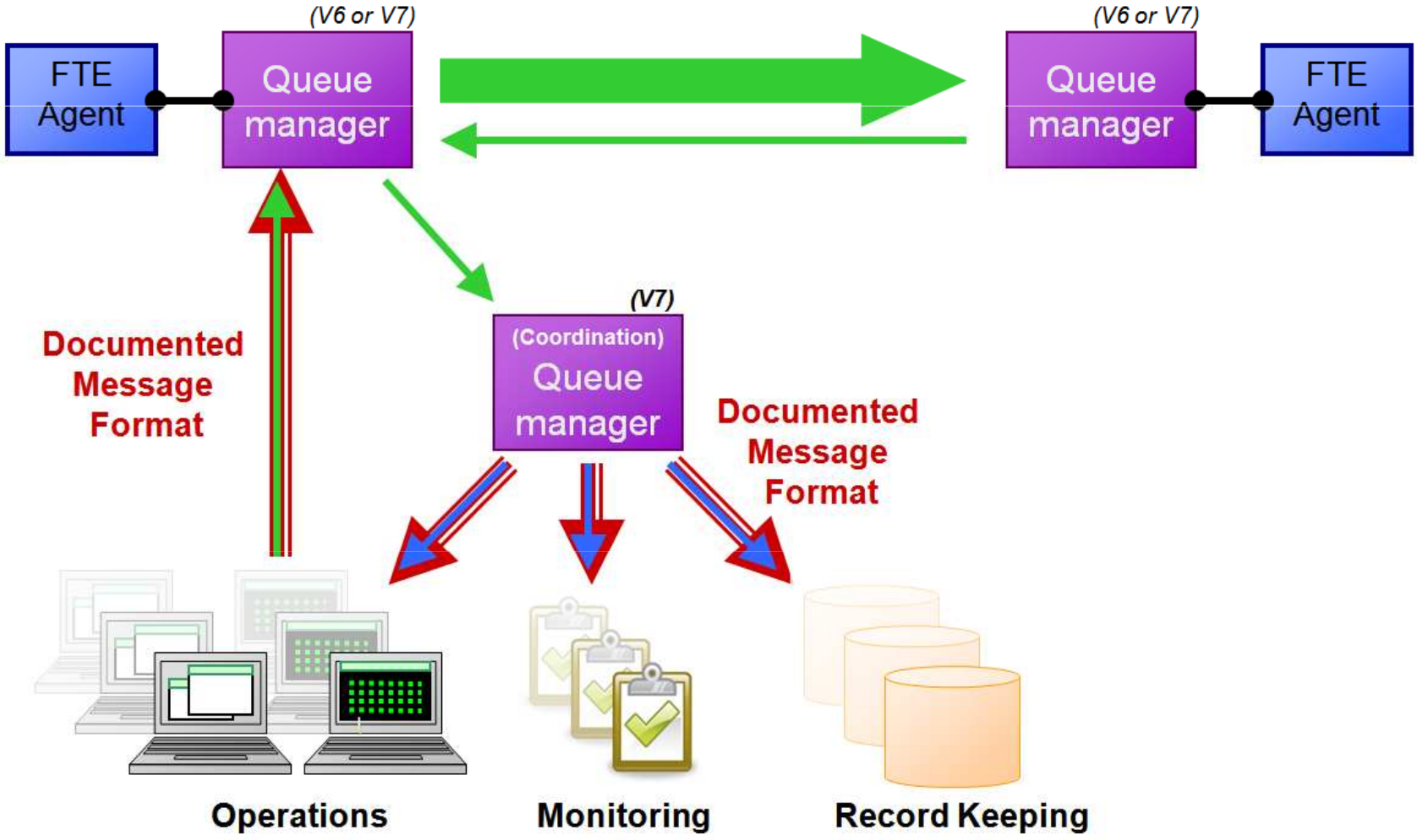


Published interfaces



- IBM WebSphere MQ 7
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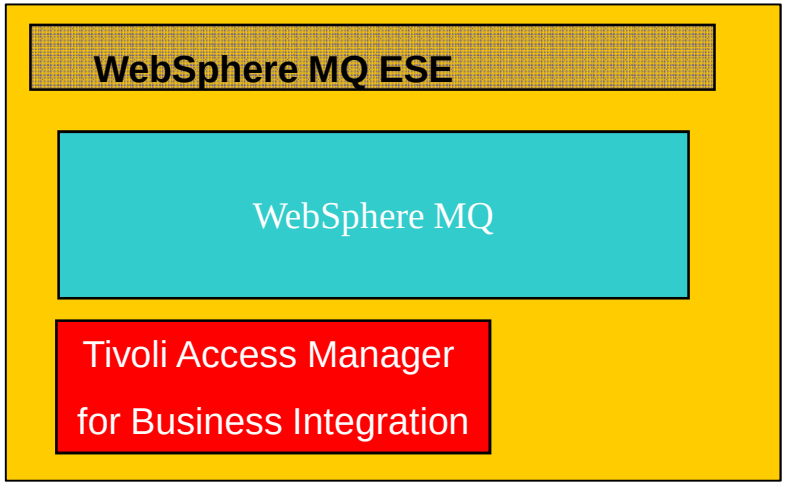
WebSphere MQ Extended Security Edition

- 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

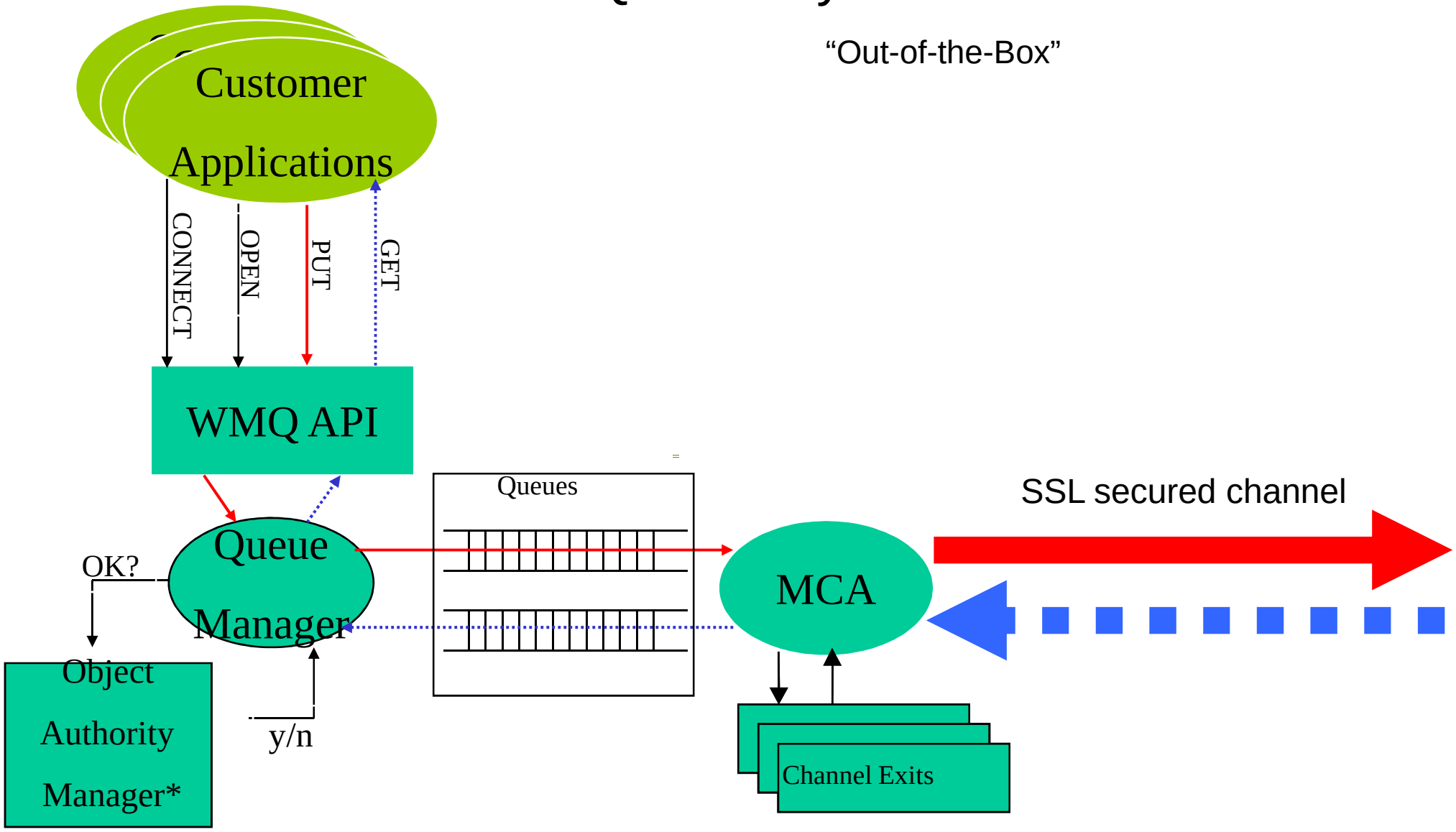
- **Provides extended security functions to WebSphere MQ**
  - Provides end-to-end integrity and privacy for sensitive message data without needing to make any modifications to existing deployed applications
  - Shortens new application development time by enhancing message bus to provide required application 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

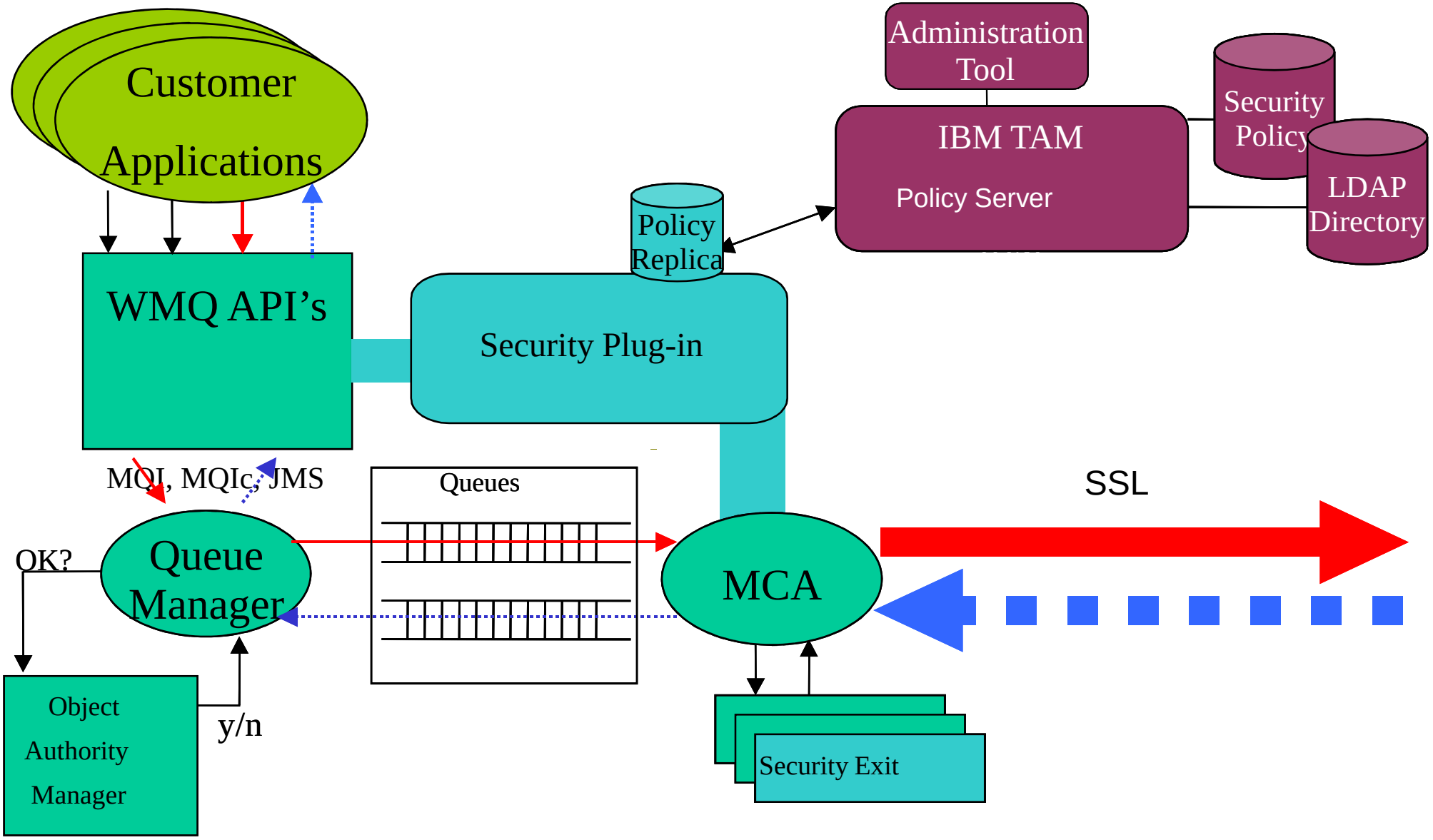
Native WMQ Security

"Out-of-the-Box"



*RACF, TopSecret or ACF/2 on Mainframe

Tivoli Access Manager for Business Integration Architecture



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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

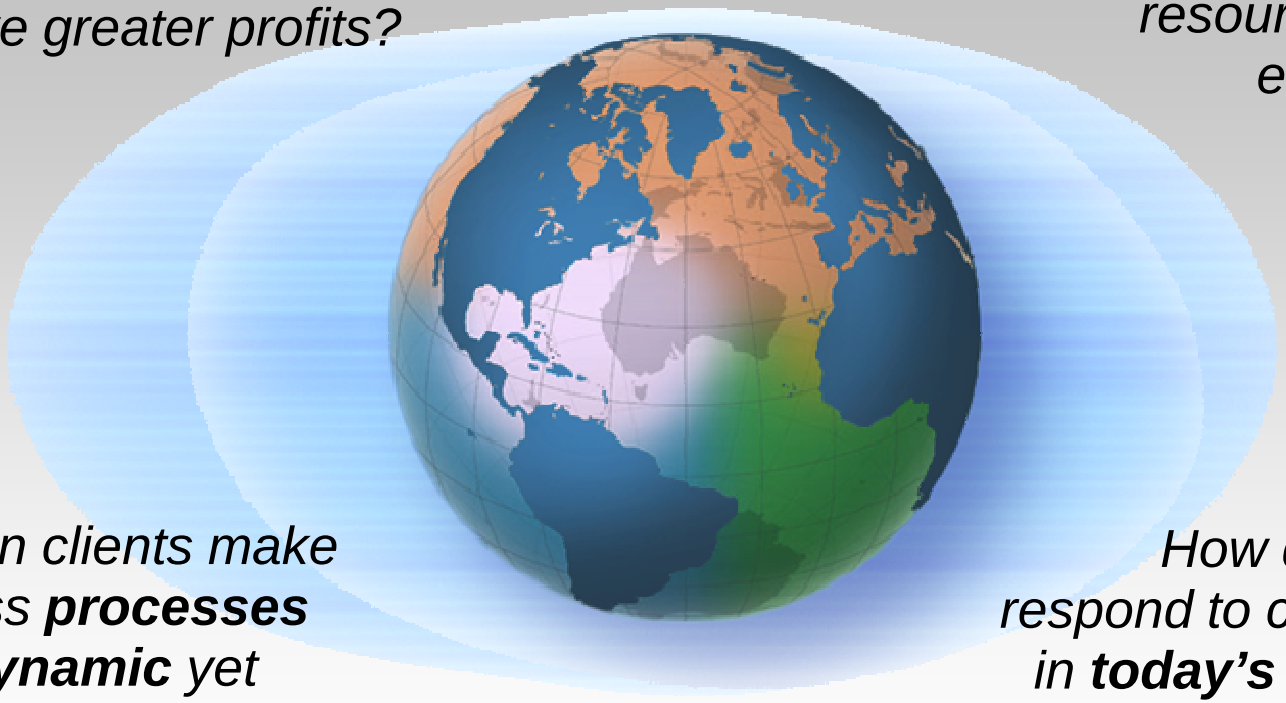
Optimize Your Business

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

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

Efficient Supply Chain Management

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

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

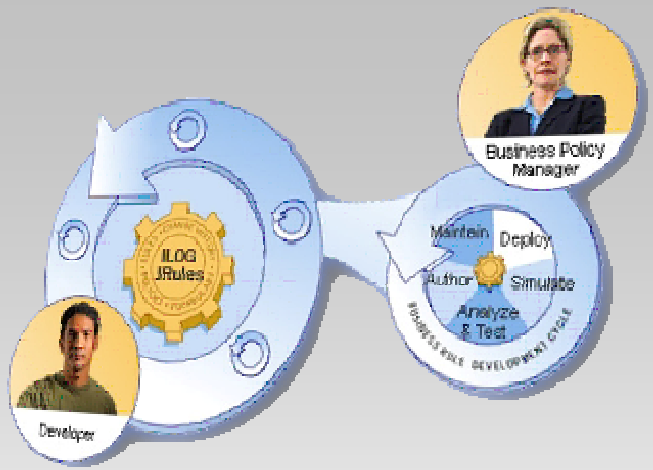
Protecting Investments, Promoting Ecosystems, Preparing for Tomorrow

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: Sycomore

PSA PEUGEOT CITROËN

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

DB BAHN

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

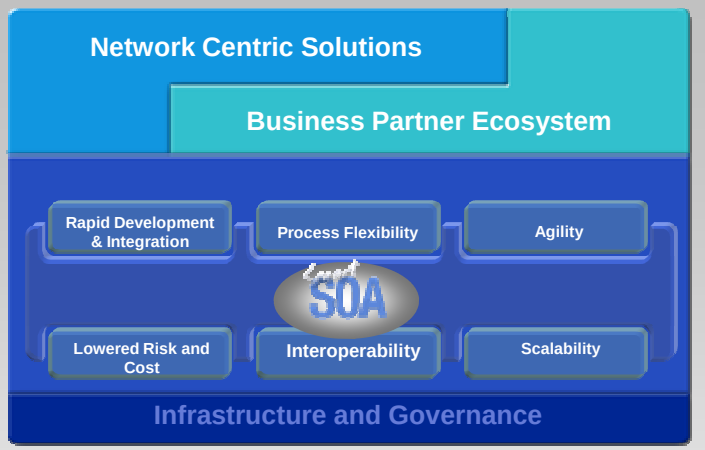
Supply Chain Management – Optimize with Design & Planning Tools

For Improved Efficiency and Productivity

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

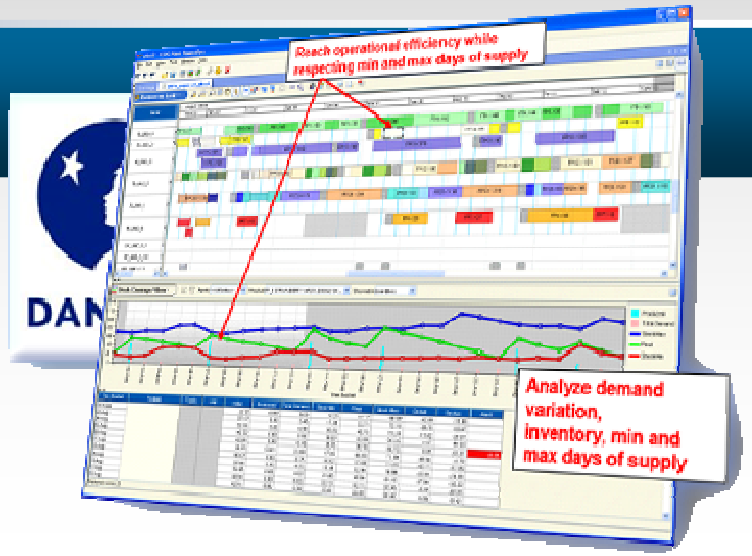
- LNP: Supply network design
- IA: Inventory safety stock management
- PPO: Process industry production planning and scheduling

IBM Industry Frameworks



Success Story

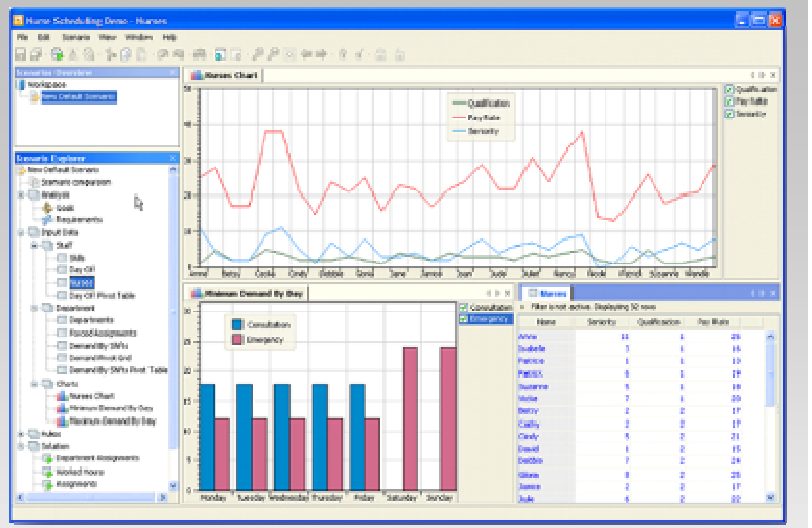
- Growth markets require optimized capacity.
- Yogurt production is complex & time-sensitive
- SAP solution required a boost
- Implemented a new, flexible production planning and detailed scheduling system that boosted fresh dairy production



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

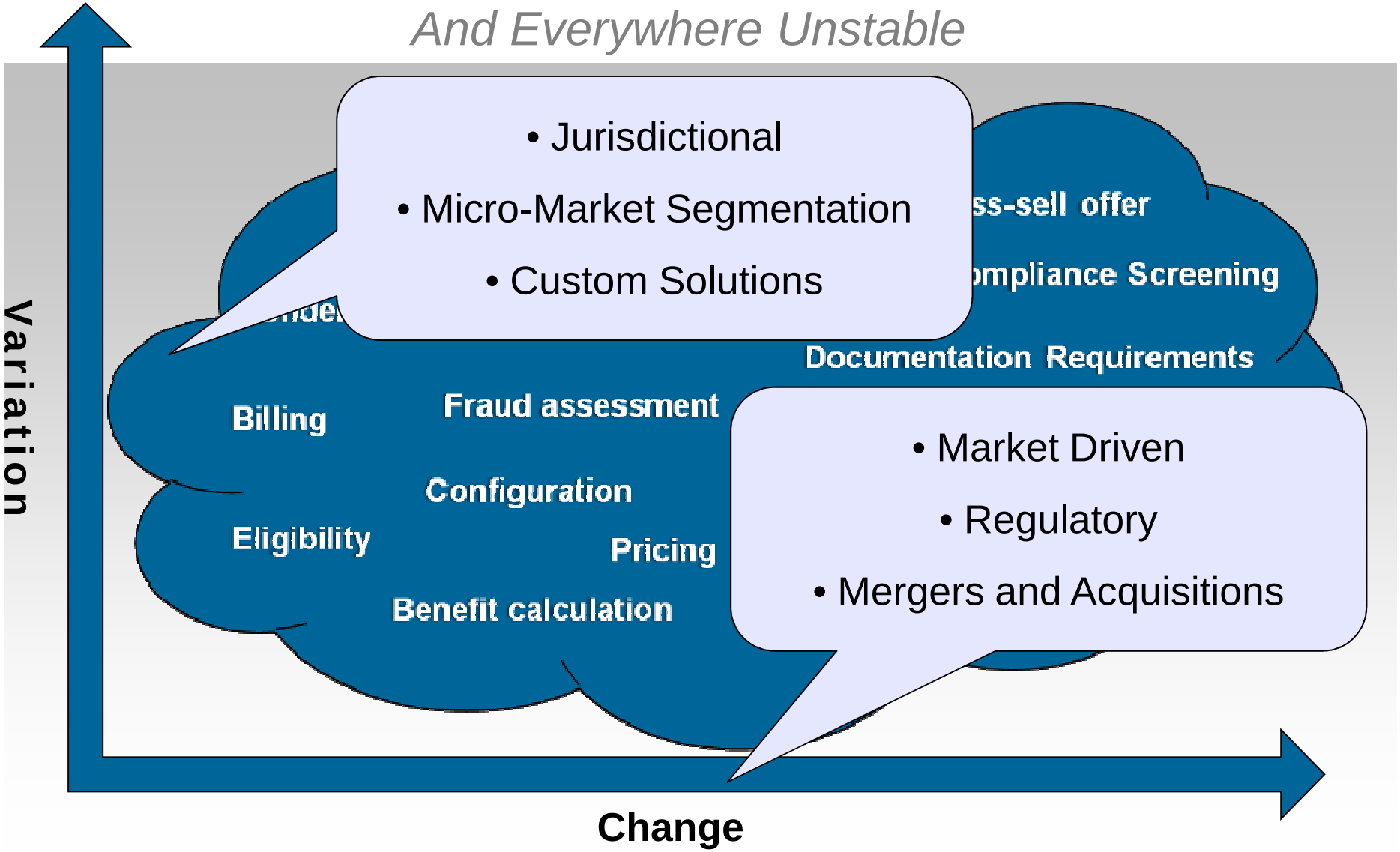
- €150M transportation budget
- Need to optimize hubs, drivers, in-house vs. 3PL
- Saved multiple budget % points, better SLA, better capacity

BRMS Overview

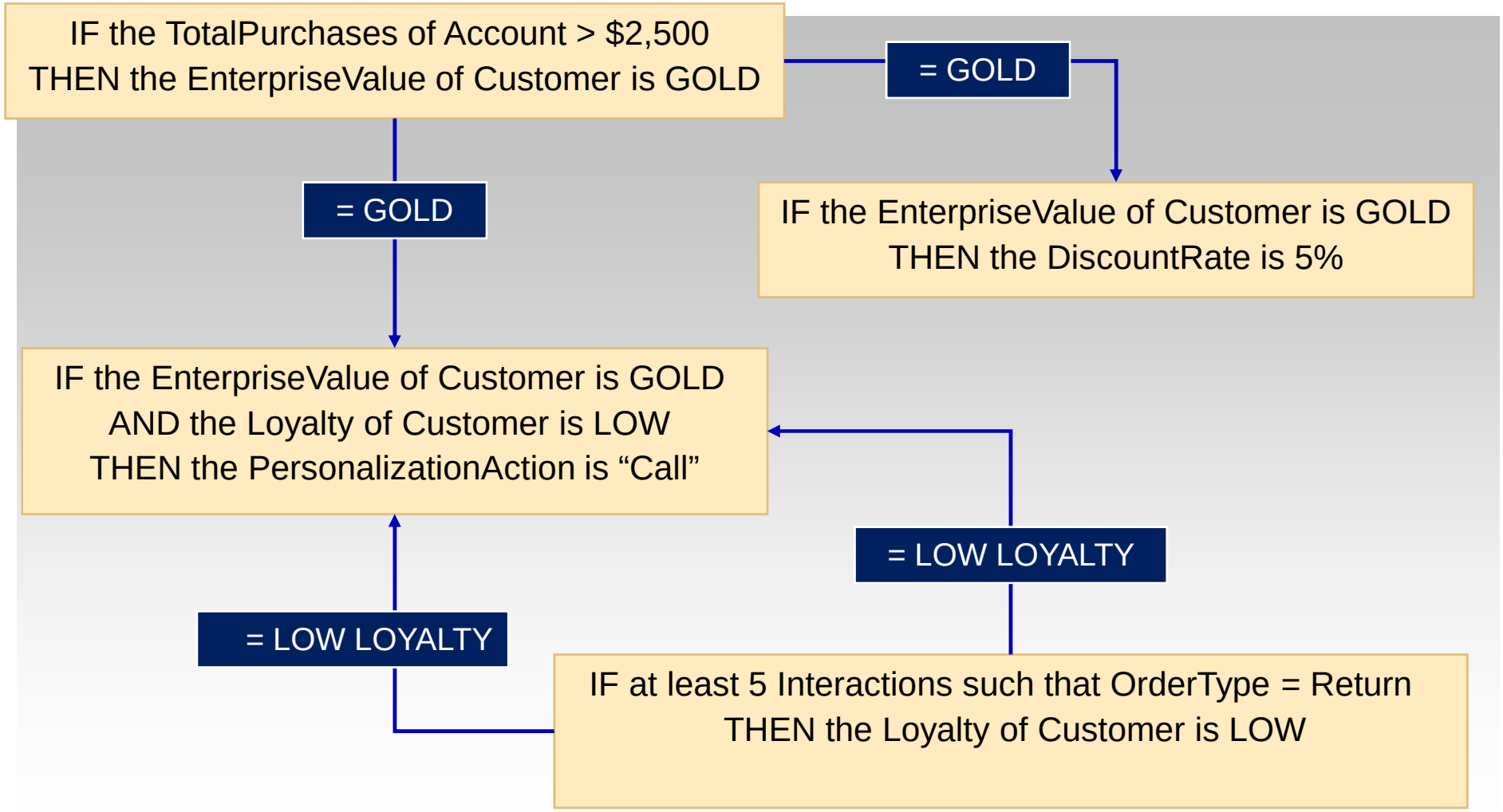
April 28th, 2009

Business Decisions are everywhere

And Everywhere Unstable



What is a business decision?



Business change drives IT agility

Decisions used in operations = “business rules”

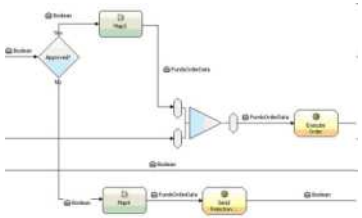
Where Business Rules Exist

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

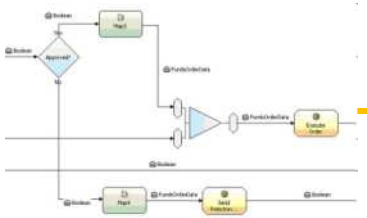
- **Rules are hidden in code or isolated within the organization**
- **Changes are hard to track and maintain over time**
- **Rules used by systems have to be programmed and require IT resources**
- **Duplication and multiple versions of the same rules**
- **Lack of auditability, traceability**
- **Decision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

The Smarter Approach: Facilitating Change with BRMS

Where Business Rules Exist

Applications

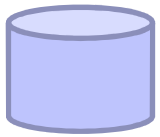
Documents



Business Rule Management System

User Tools

Rules are Defined, Analyzed and Maintained



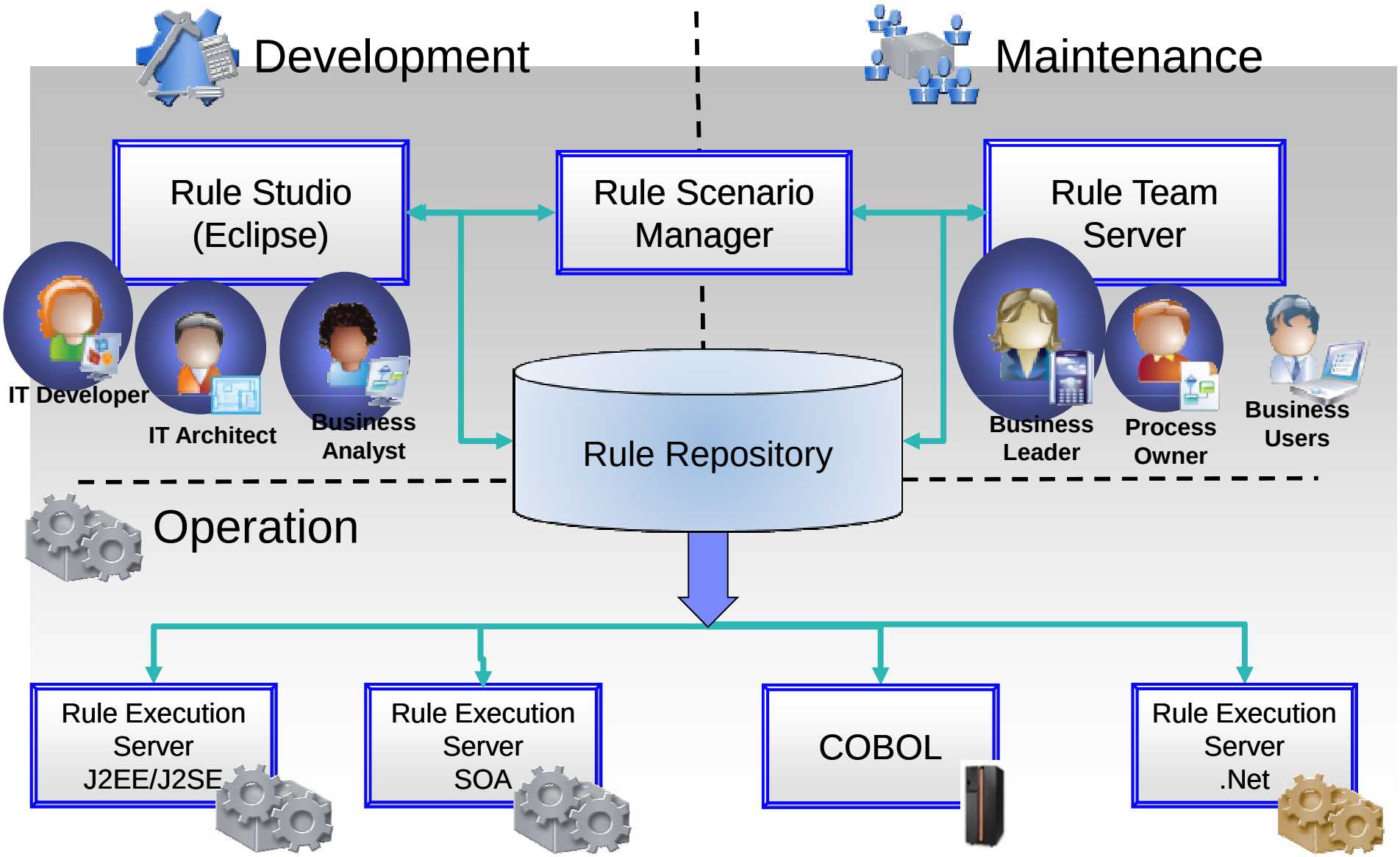
Rule Repository

Rules are Managed and Stored

Rules are ployed, cuted nd itored

```
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 [±]

	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	

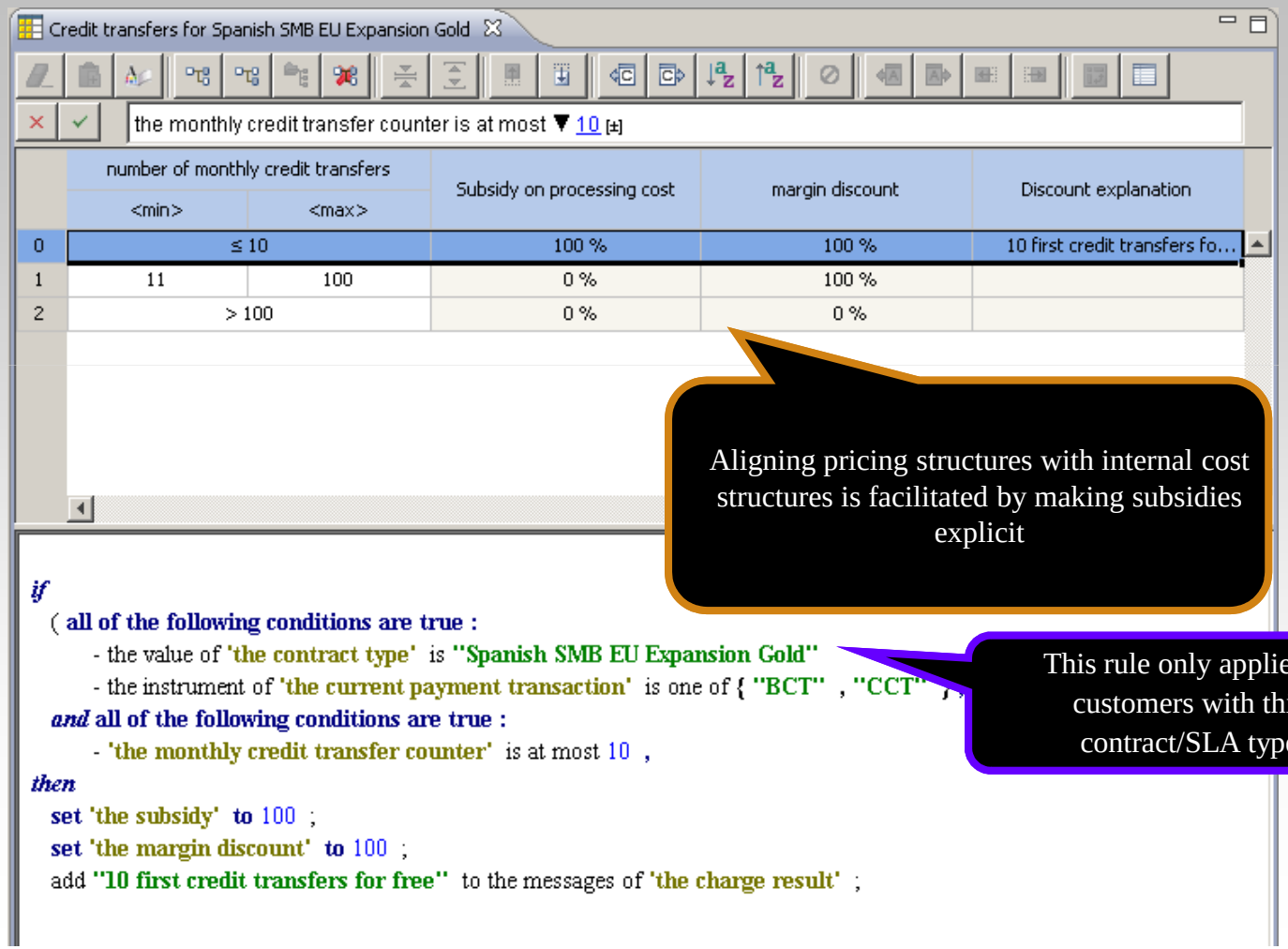
These 3 action columns specify what the internal processing cost for the bank is, the margin and an explanation message.

```
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' ;
```

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”

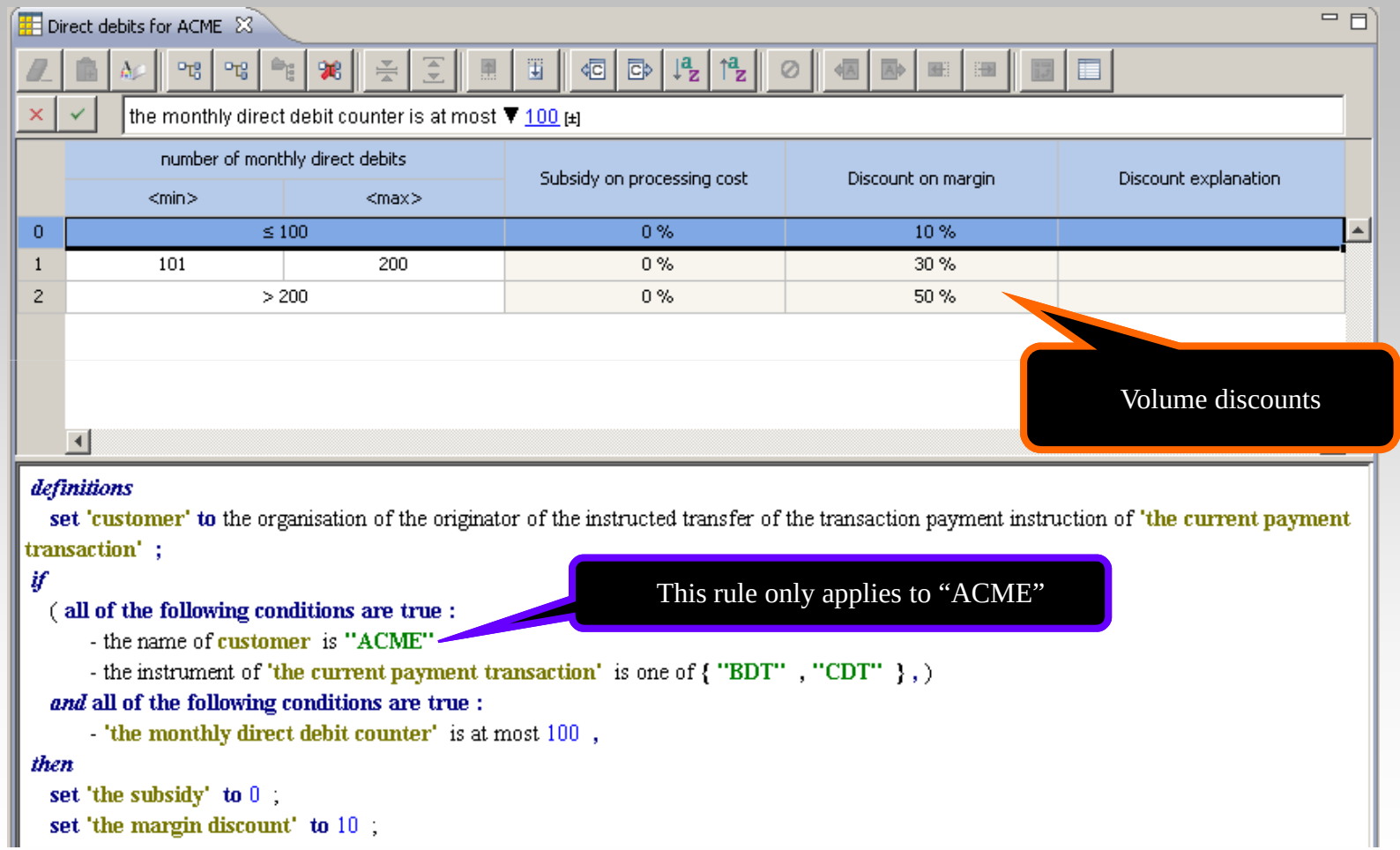


Aligning pricing structures with internal cost structures is facilitated by making subsidies explicit

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

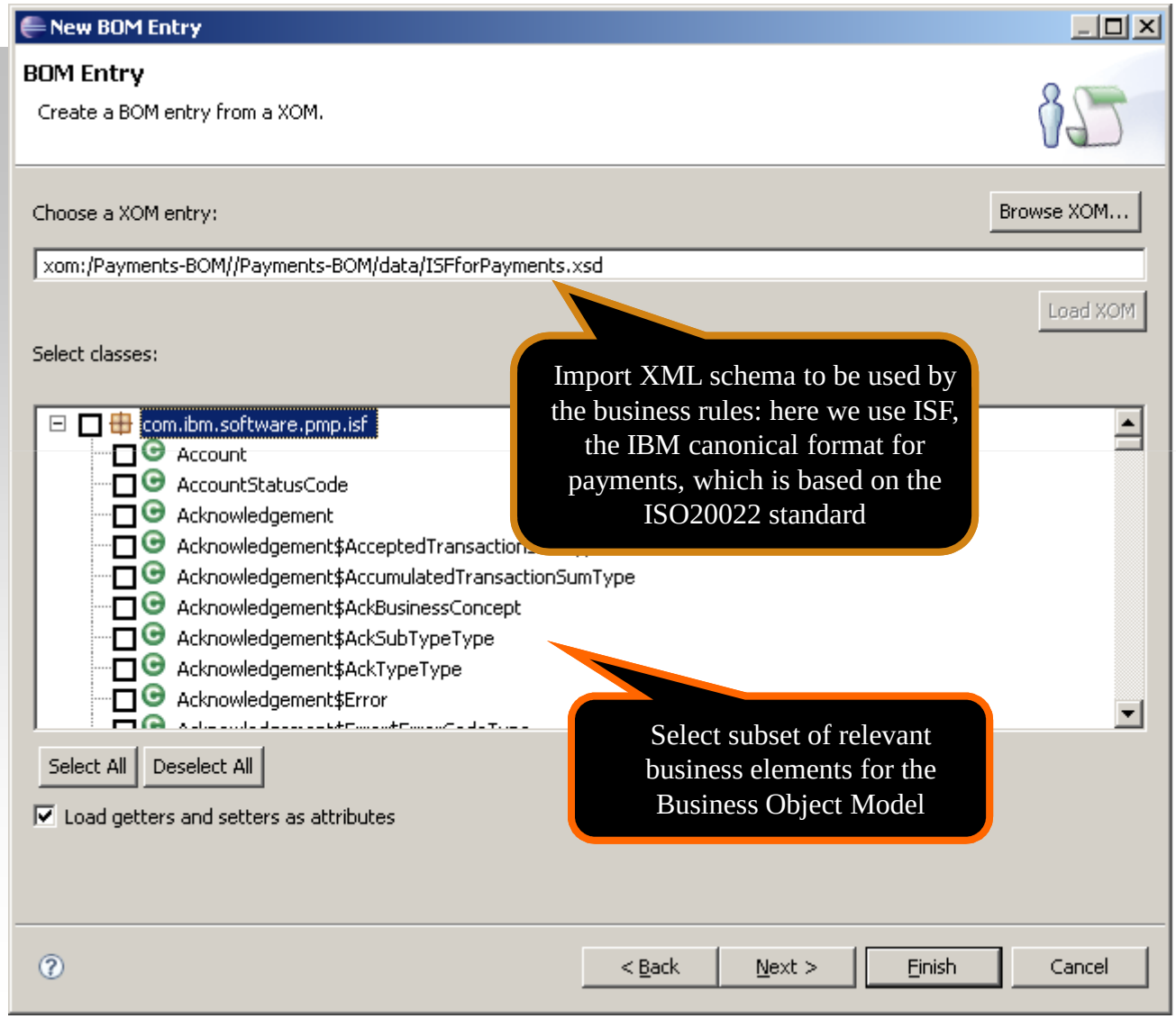
Customer-specific conditions

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

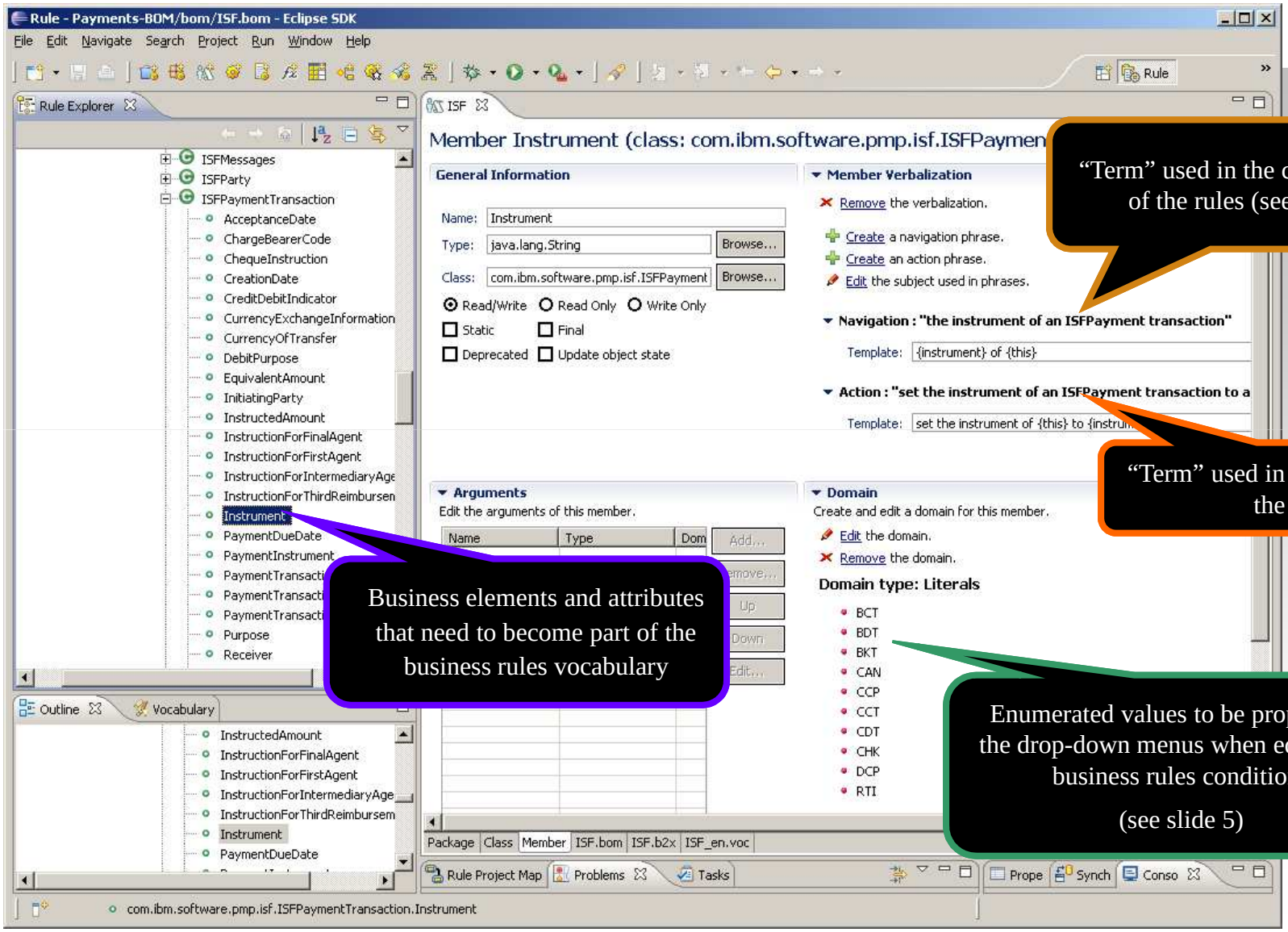


2. Defining a business rules vocabulary

Defining a Business Object Model



Verbalizing terms of the model



3. Organizing knowledge for maintenance

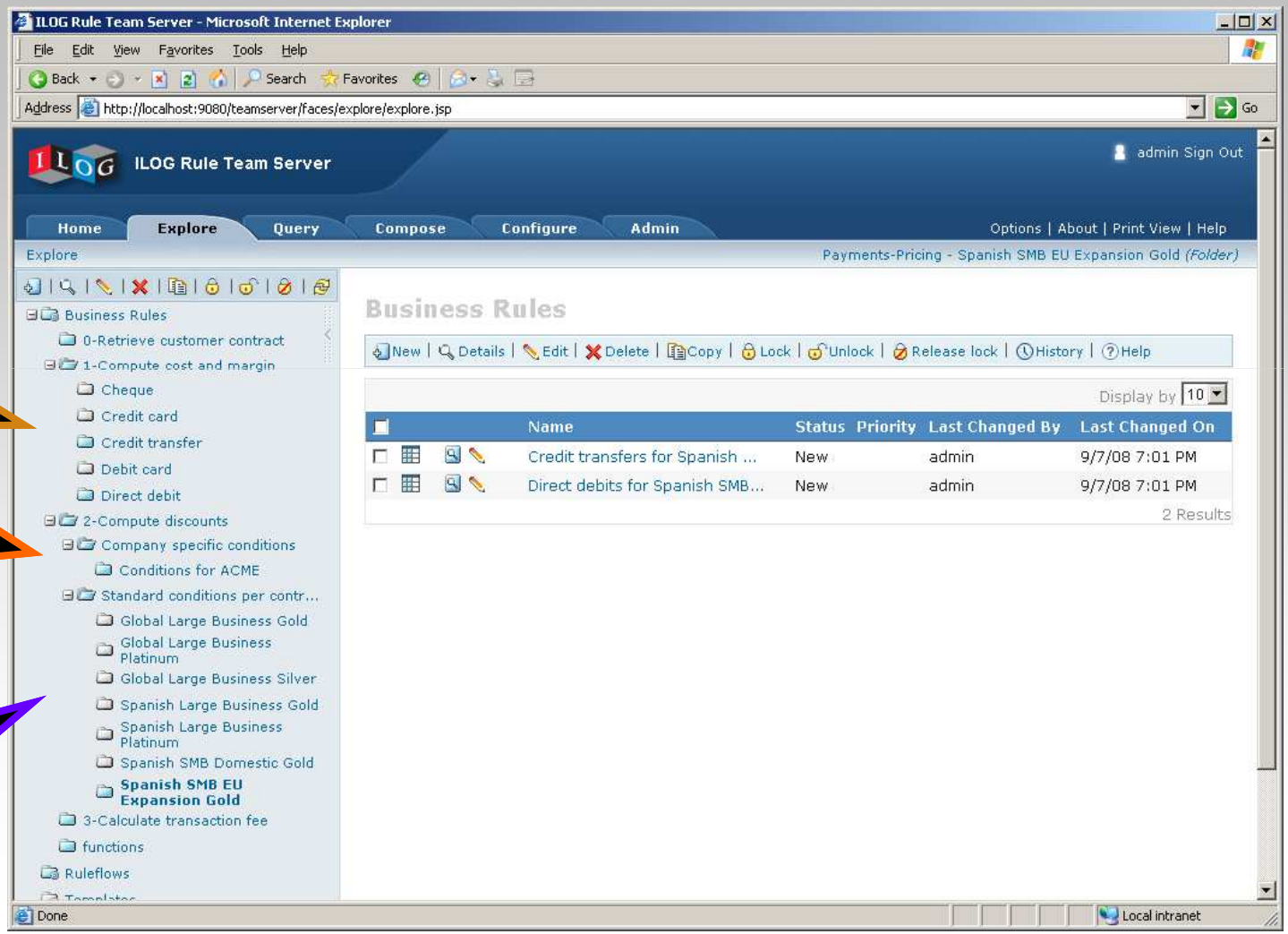
Rule package hierarchy

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

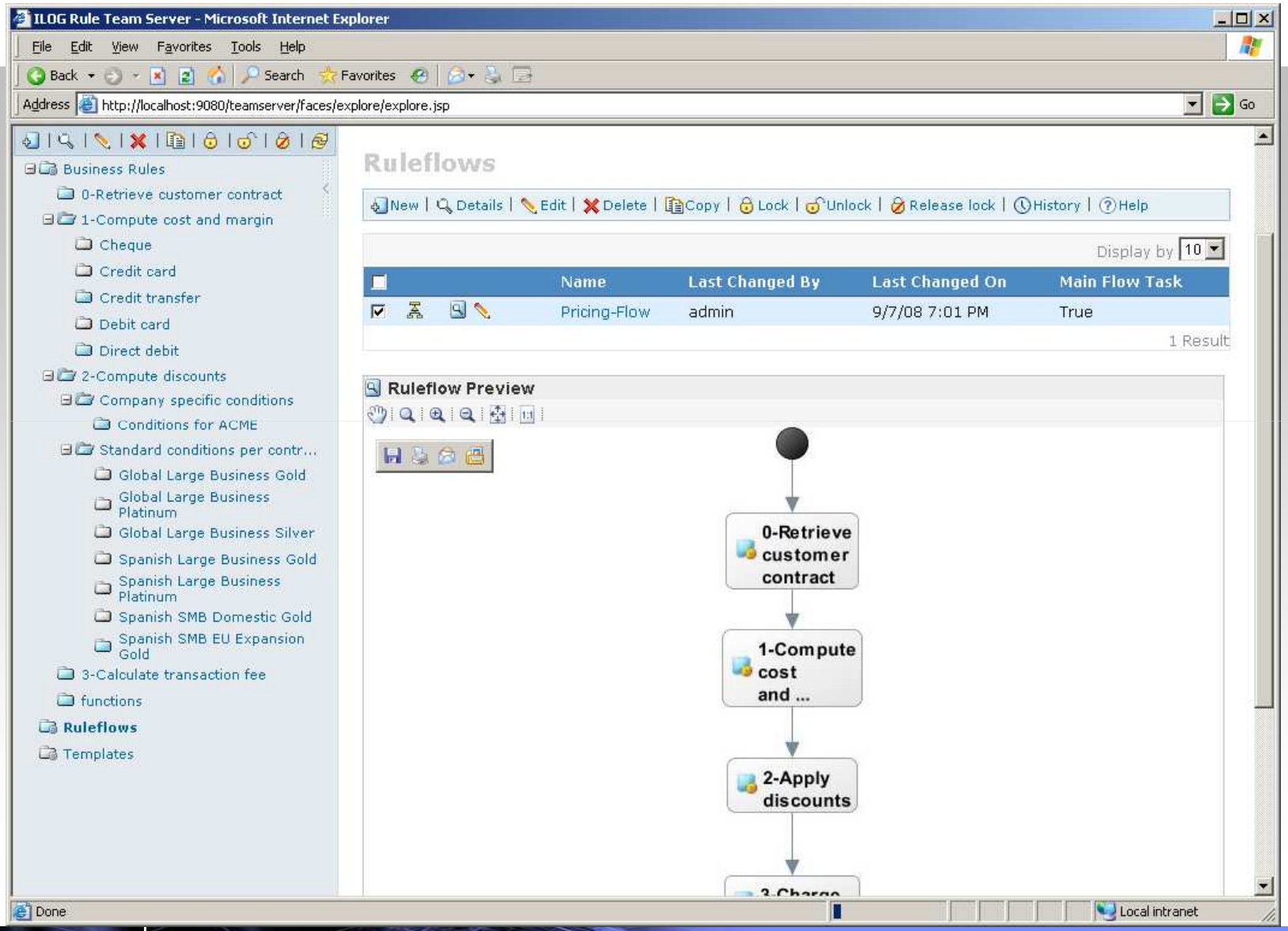
Business rules for all products

Business rules specific to a customer

SLA-based rules



Ruleflow to sequence rules execution

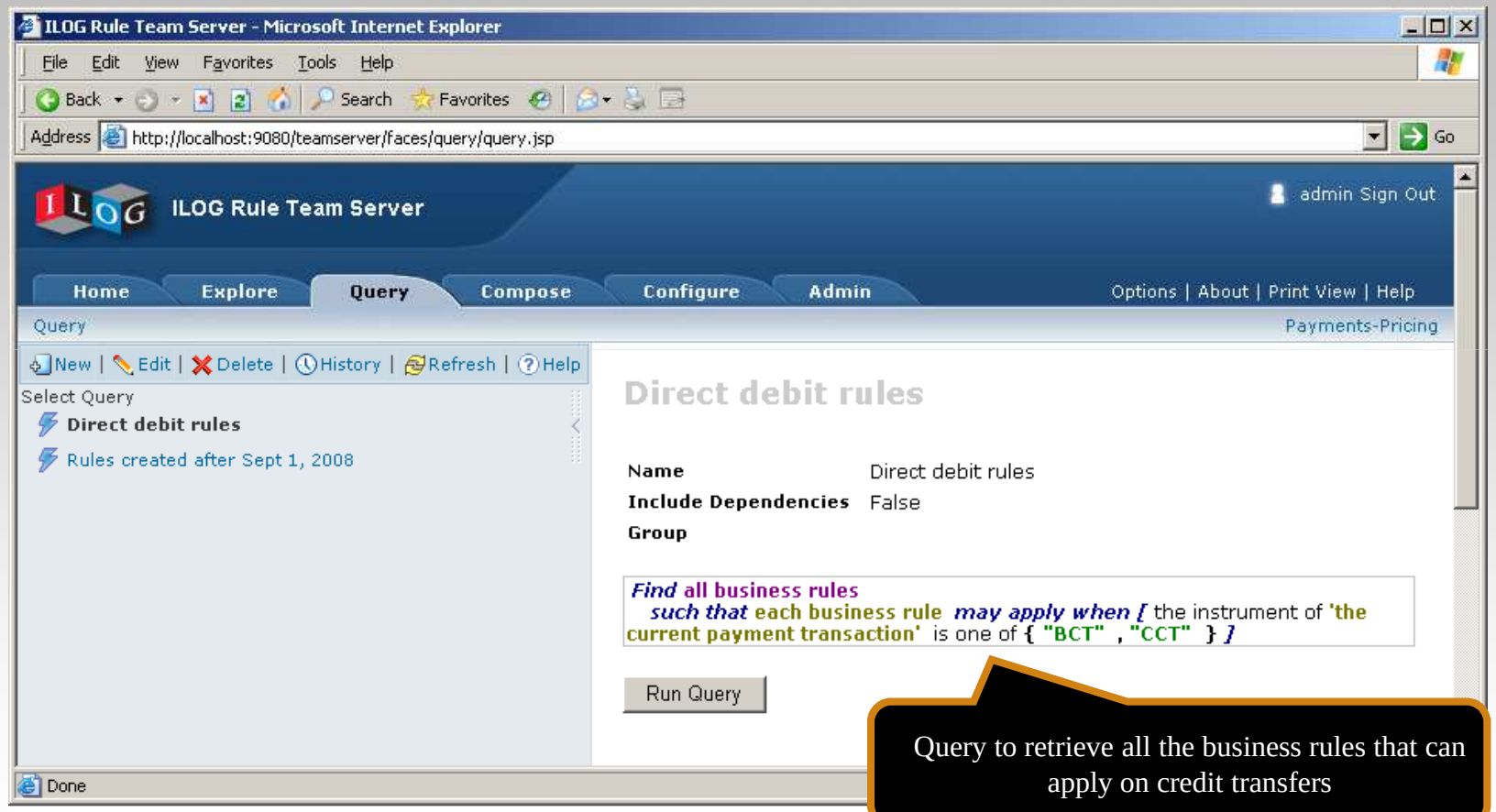


4. Managing business rules

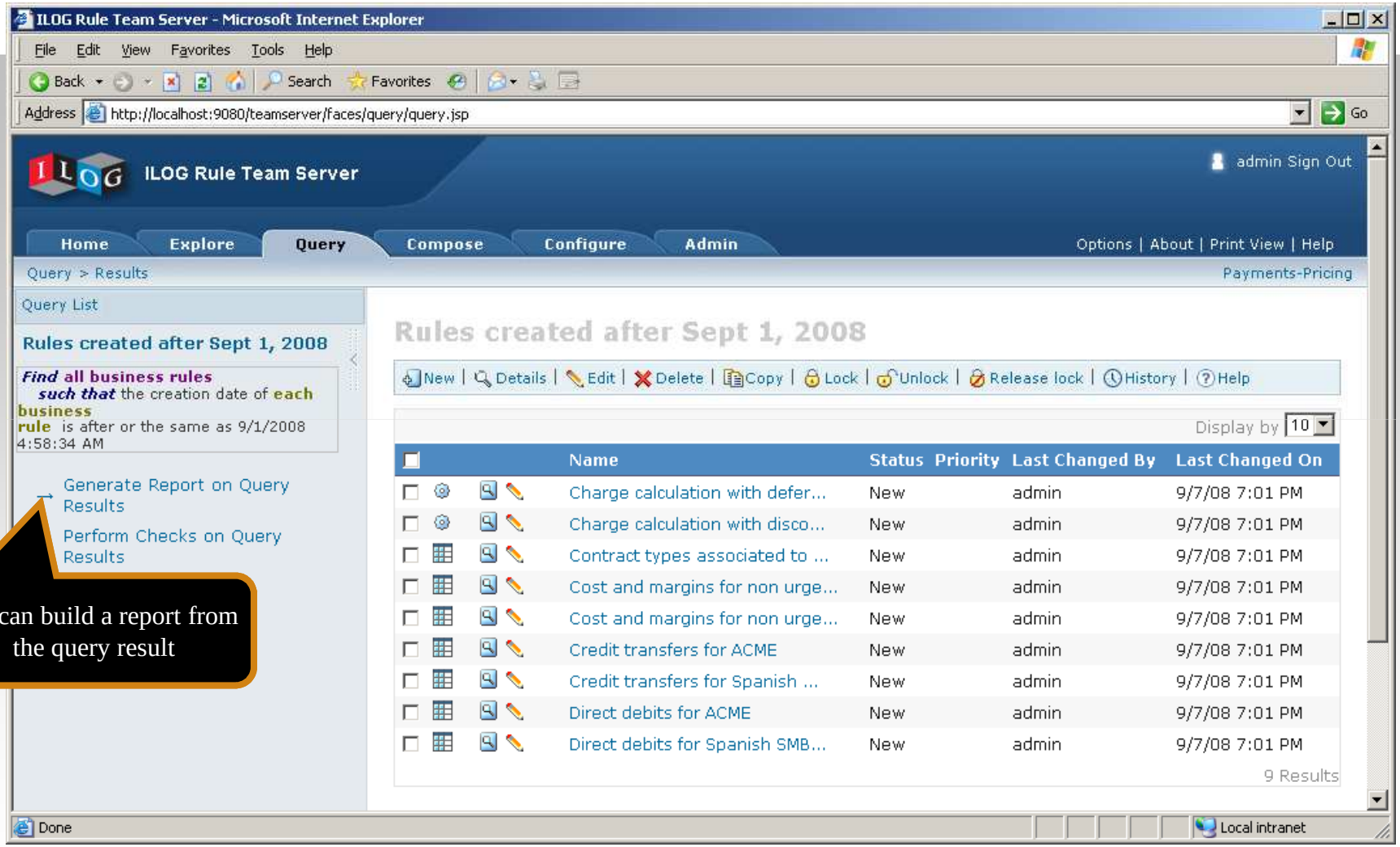
Querying business rules

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

Semantic queries



Query result and reporting



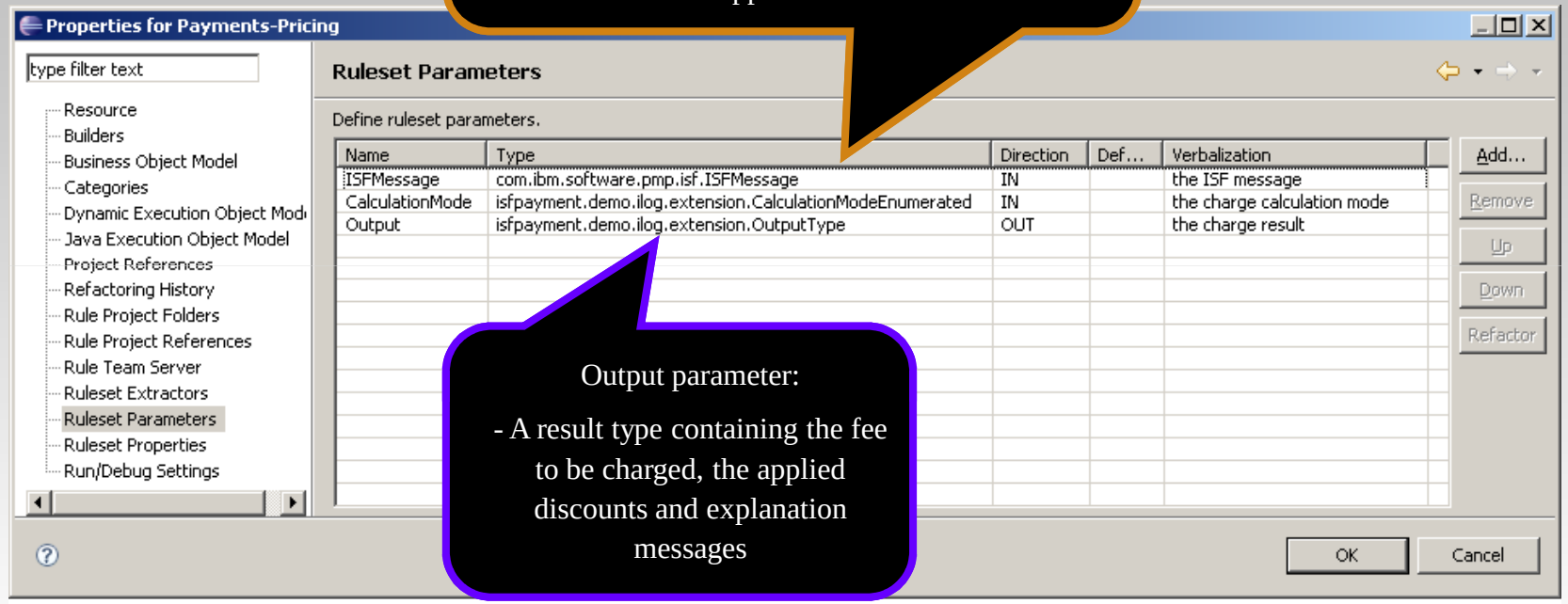
5. Integrating a rules-based decision service

Signature for charge calculation service

Input parameters:

- An ISFMessage that contains the set of payment transactions to be “priced”

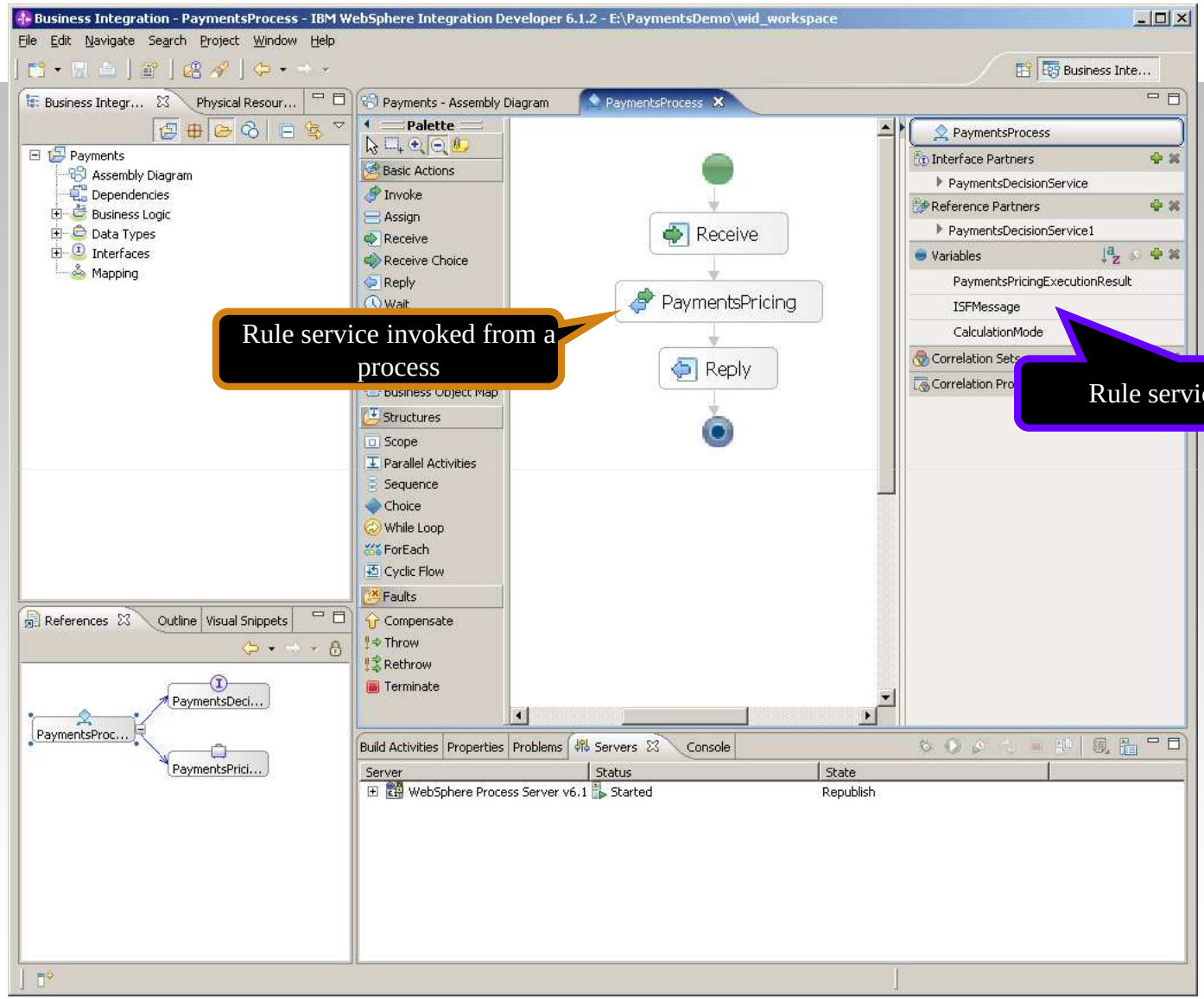
- CalculationMode decides if discounts are immediate or applied as a deferred refund



Output parameter:

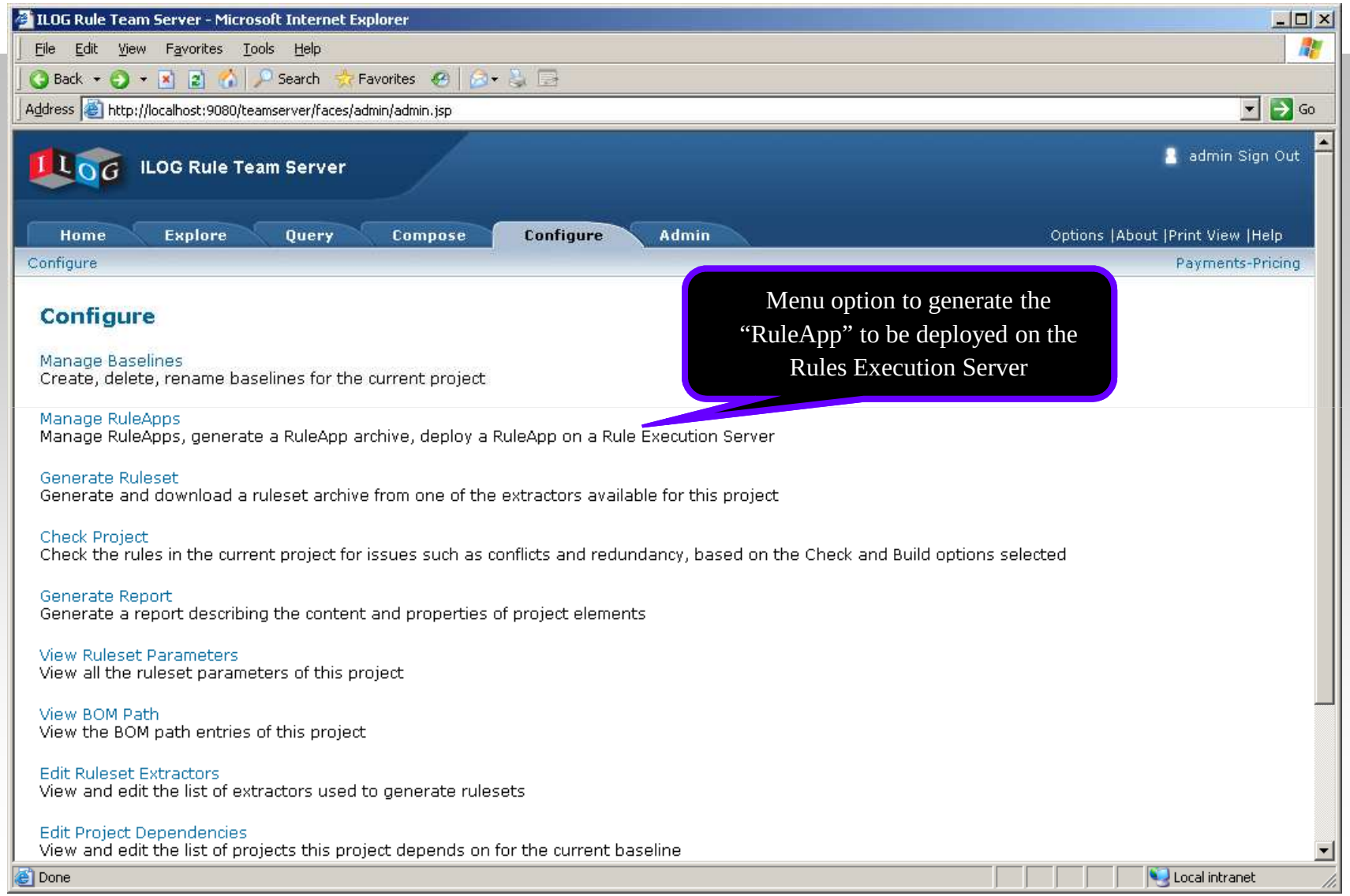
- A result type containing the fee to be charged, the applied discounts and explanation messages

Invocation from a Business Process in WPS

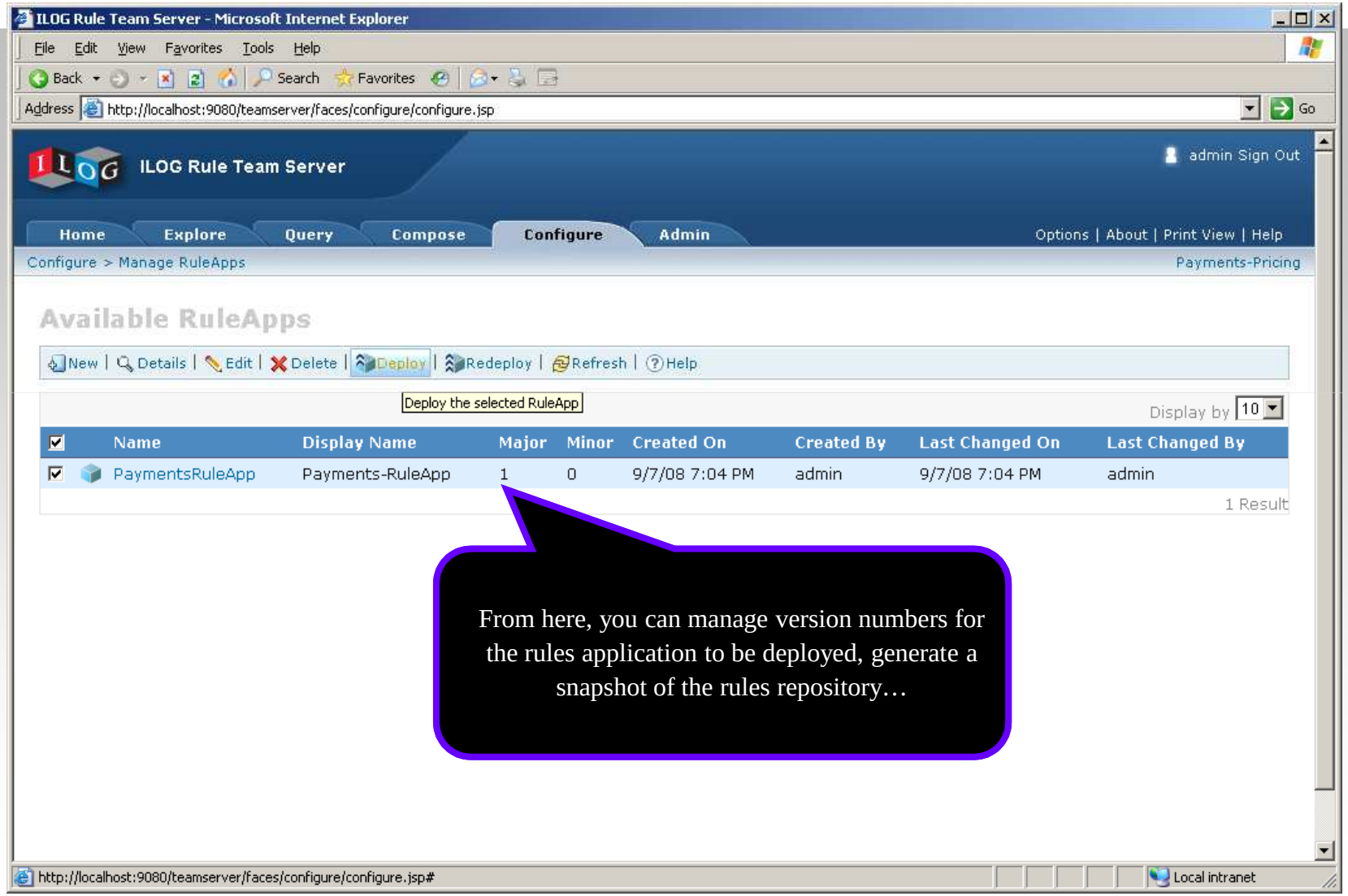


6. Deploying a rule service

Deploy a rules application archive from RTS



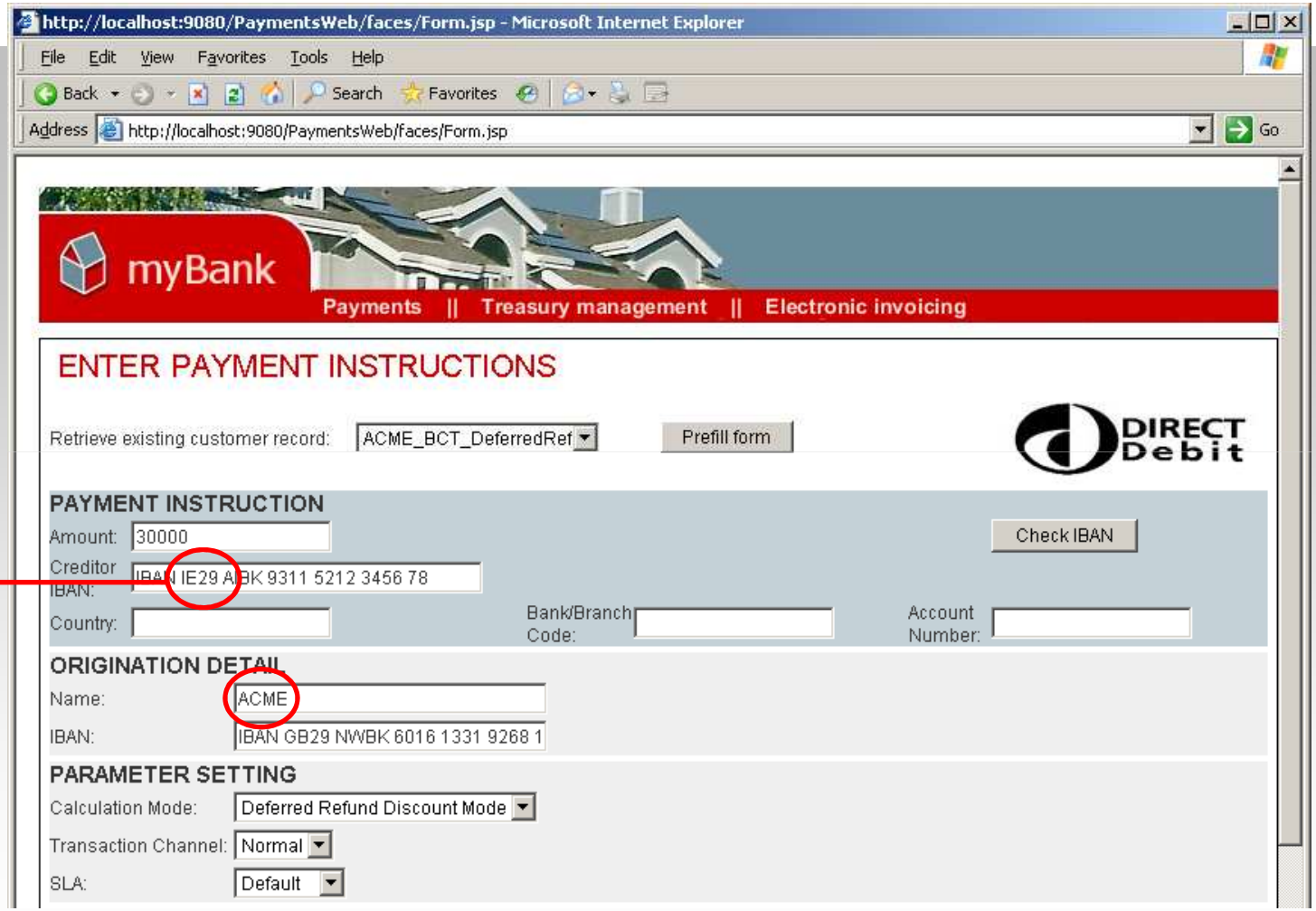
Deploy a rules application archive from RTS



7. Executing business rules

Instructions for a direct debit

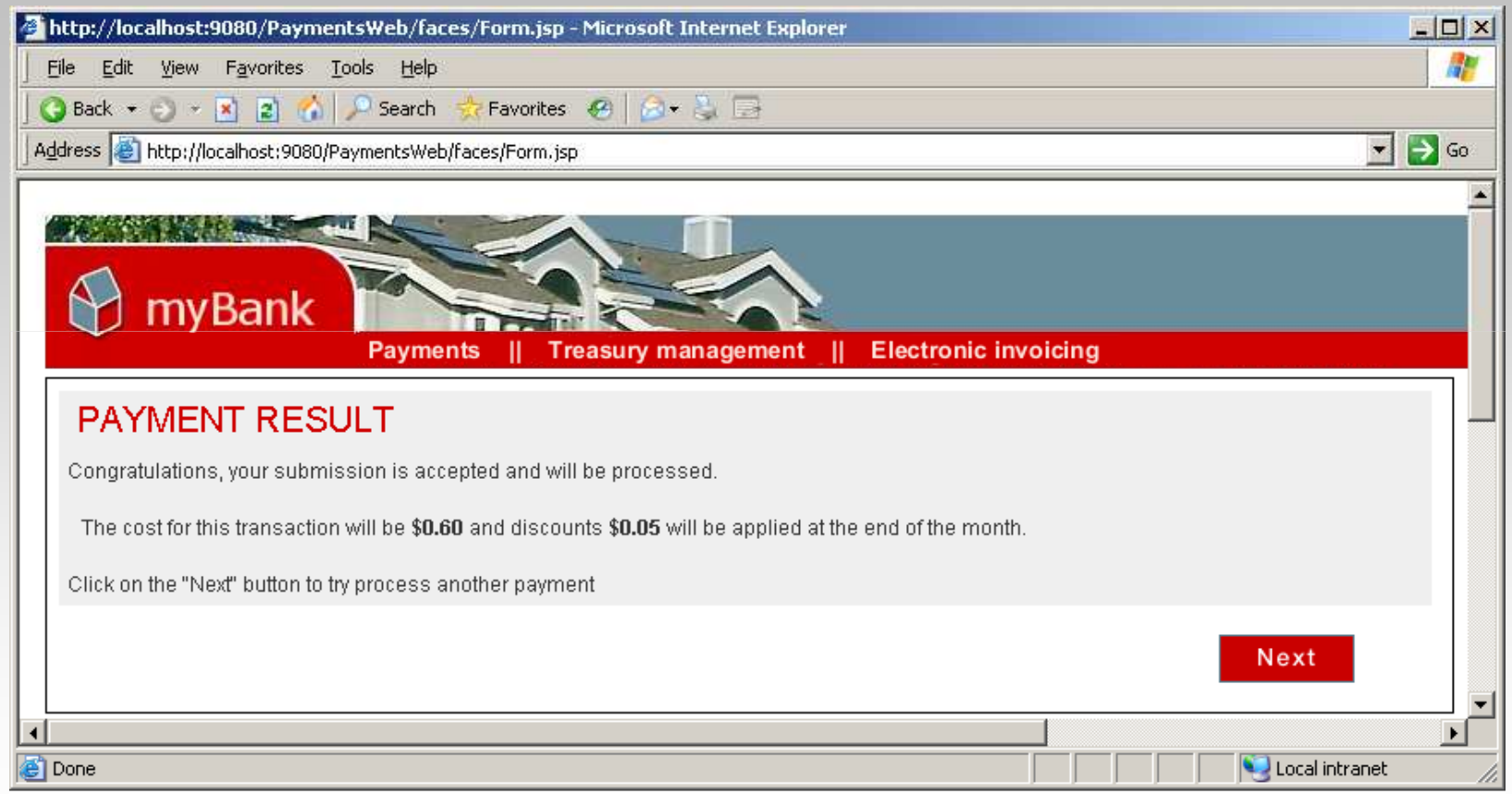
Destination country



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$

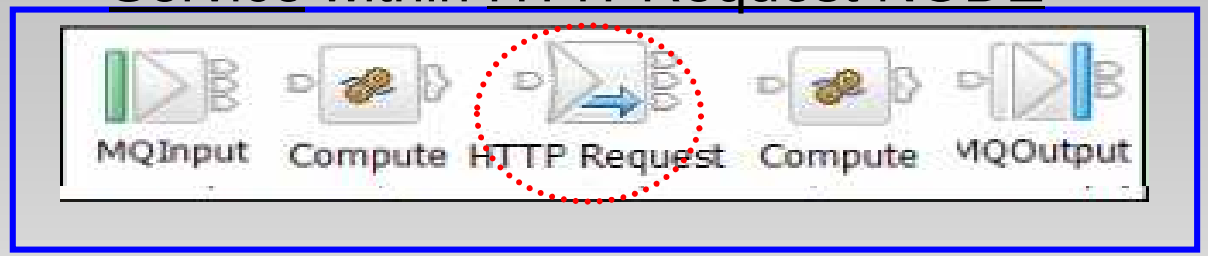
	number of monthly direct debits		Subsidy on processing cost	Discount on margin	Discount explanation
	<min>	<max>			
0	≤ 100		0 %	10 %	

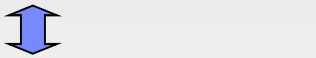
Value proposition

- 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:

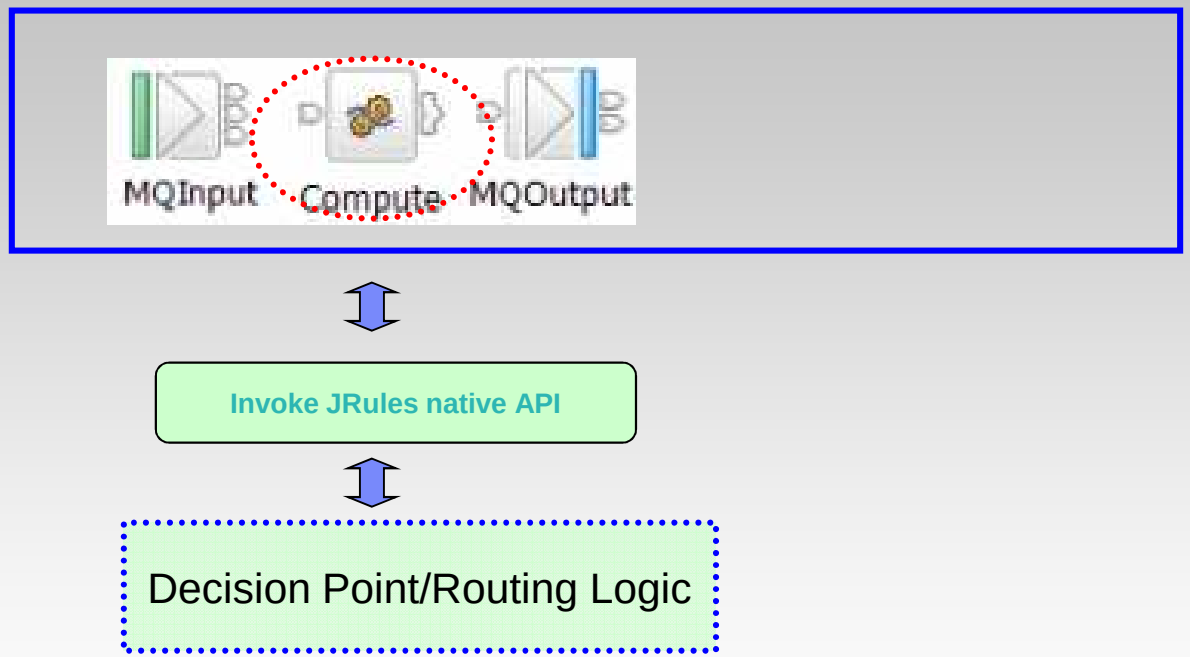
1. Loose coupling
2. Integrate with other SOA product easily, like WSRR

Cons:

1. Need transport cost

Integration thru JRules native API

- Invoke JRules native API within Java Compute Node



Pros:

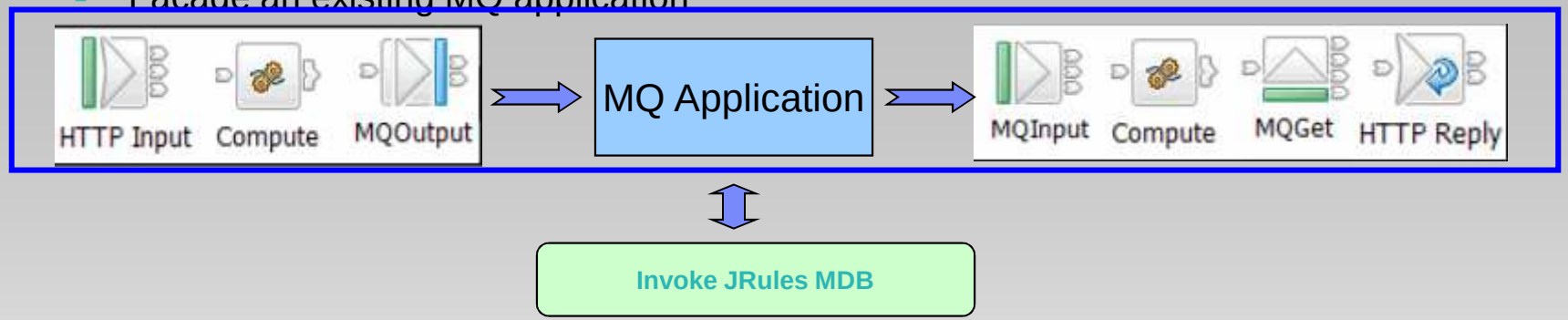
1. No transport cost, better performance

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

Goals

- Support Eurobank's growth strategy in new markets with robust IT system
- Automate, orchestrate and accelerate IT systems
- Create an environment of re-use, cross-business unit processes and flexibility in the product factory

Before

- Fast growth led to proliferation of solutions for each lending LOB (mortgage, consumer, etc)
- Integration of different architectures and data was difficult

After

- ✓ Centralized data repository
- ✓ End-to-end integration with legal & technical valuators, credit agency etc
- ✓ All lending origination processes automated

How

- ✓ ILOG JRules combined with EDM for Validations / Workflow routing, Product factory / credit policy and Document decisioning

Benefits

- ✓ Cross Business Unit Integration
- ✓ Better response time to business requirements – faster development cycles & process deployment
- ✓ Empowered business users – flexibility and user-friendliness

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

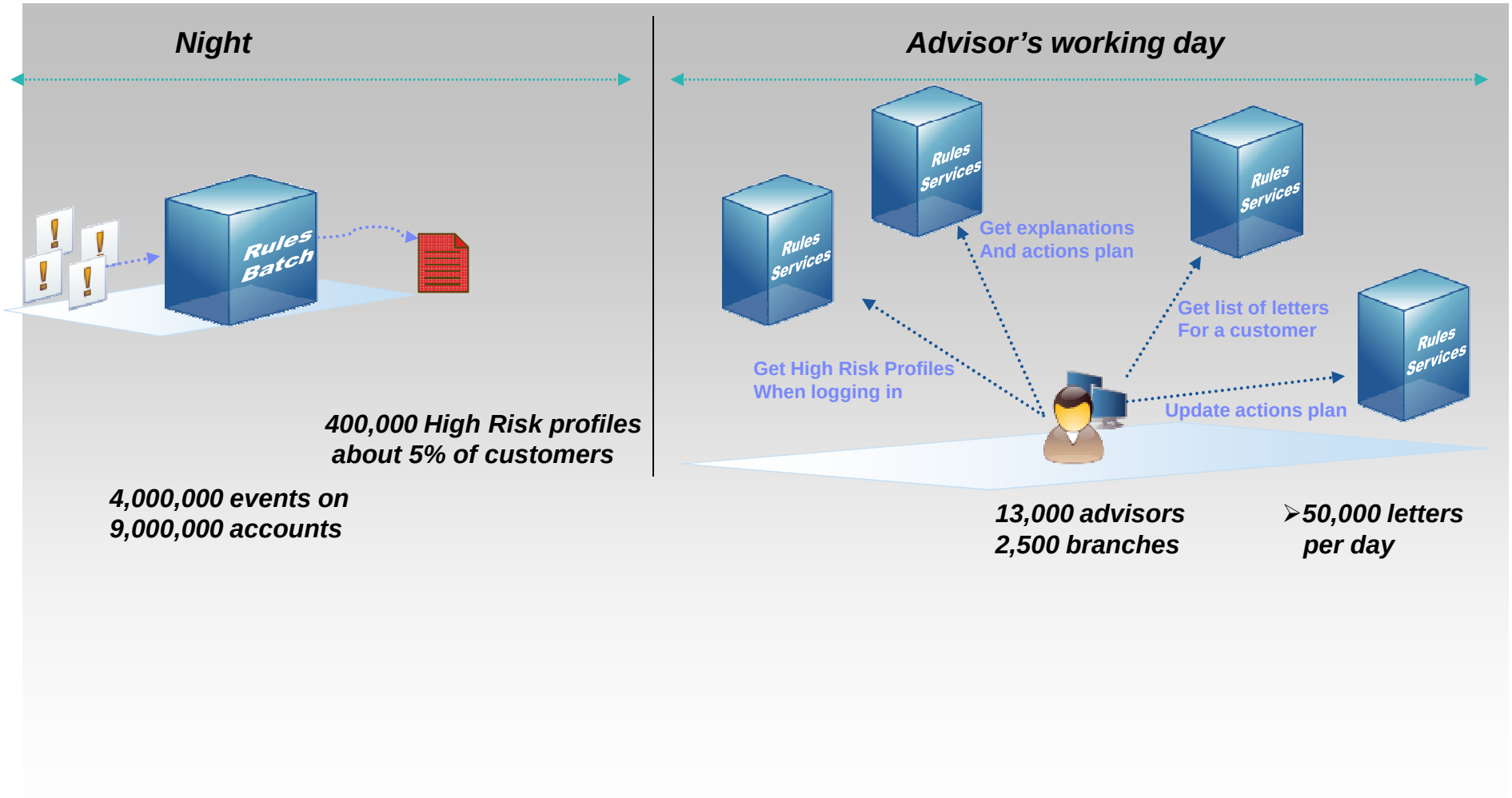
Solution

- 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

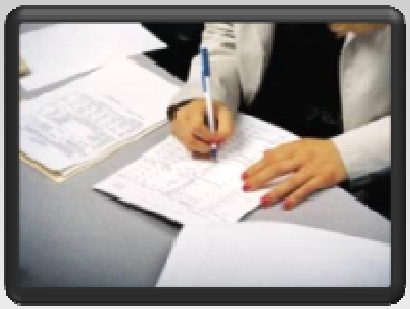
Solution

- « 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**

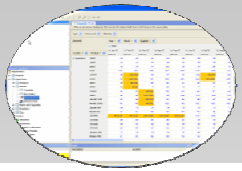
Source: Edelman Finalists, Science of Better, http://www.scienceofbetter.org

ILOG Optimization for Decision Support

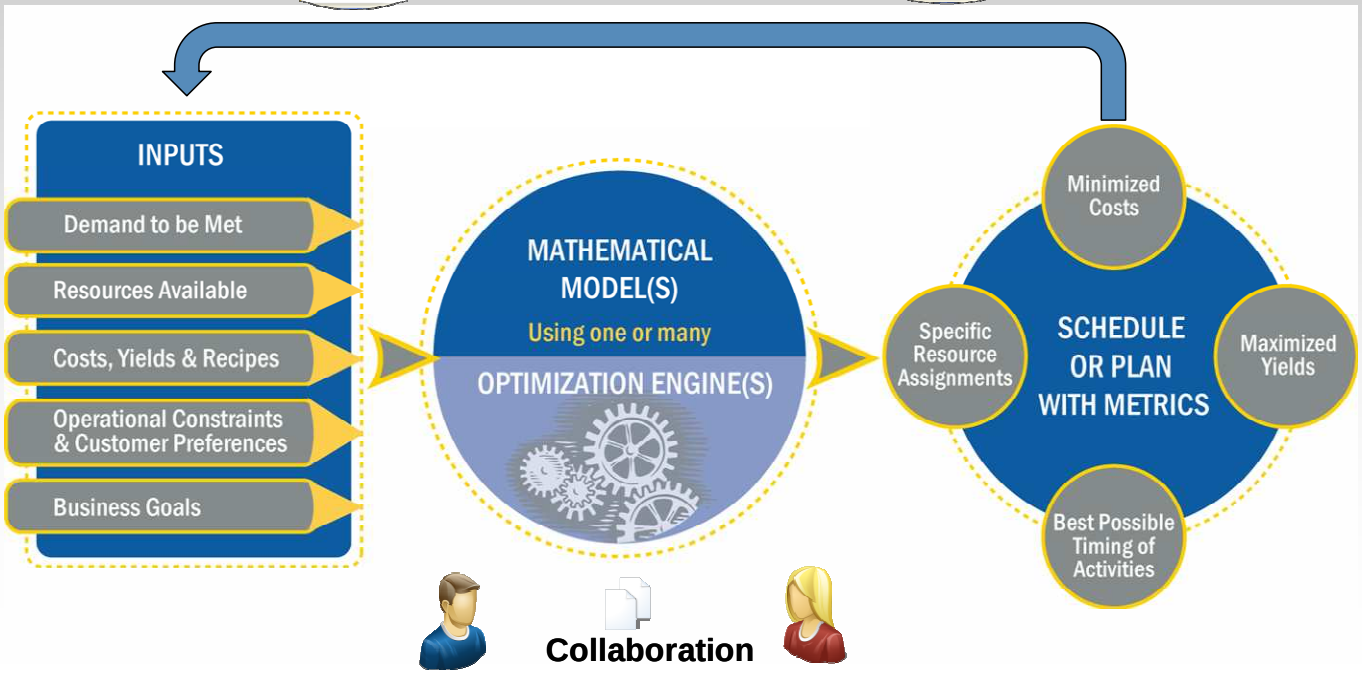
Create the best possible plans and schedules,

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	• Annual • Quarterly • Occasional	• 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	• Monthly • Weekly	• 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	• Weekly • Daily • Hourly	• Which activity should be done when • Which resource should be assigned when • When can maintenance or any special task be most efficiently scheduled

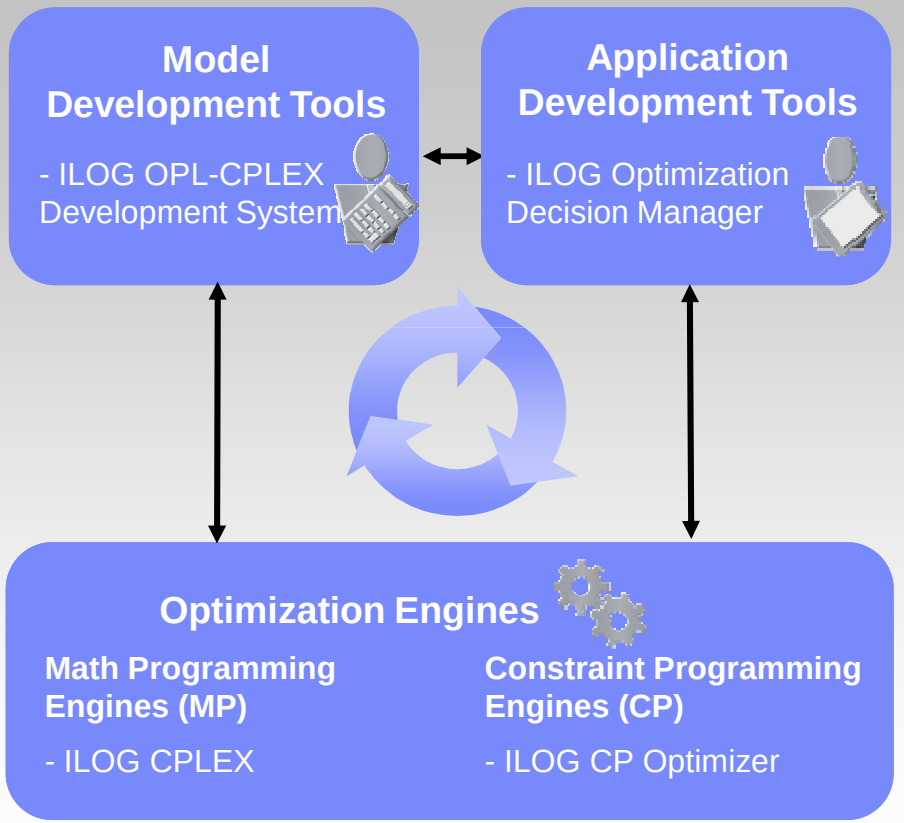
Industry Applications

Applications

MANUFACTURING	TRANSPORTATION & LOGISTICS	FINANCIAL SERVICES	UTILITIES, ENERGY & NATURAL RESOURCES	TELECOM	MULTIPLE/ OTHER
• Inventory optimization	• Depot/warehouse location	• Portfolio optimization and rebalancing	• Supply portfolio planning	• Network capacity planning	• Workforce scheduling
• Supply chain network design	• Fleet assignment	• Portfolio in-kinding	• Power generation scheduling	• Routing	• Advertising scheduling
• Production planning	• Network design	• Trade crossing	• Distribution planning	• Adaptive network configuration	• Marketing campaign optimization
• Detailed scheduling	• Vehicle & container loading	• Loan pooling	• Water reservoir management	• Antenna and concentrator location	• Revenue/Yield management
• Shipment planning	• Vehicle routing & delivery scheduling	• Product/price recommendations	• Mine operations	• Equipment and service configuration	• Appointment & field service scheduling
• Truck loading	• Yard, crew, driver & maintenance scheduling		• Timber harvesting		• Combinatorial auctions for procurement
• Maintenance scheduling	• Inventory optimization				

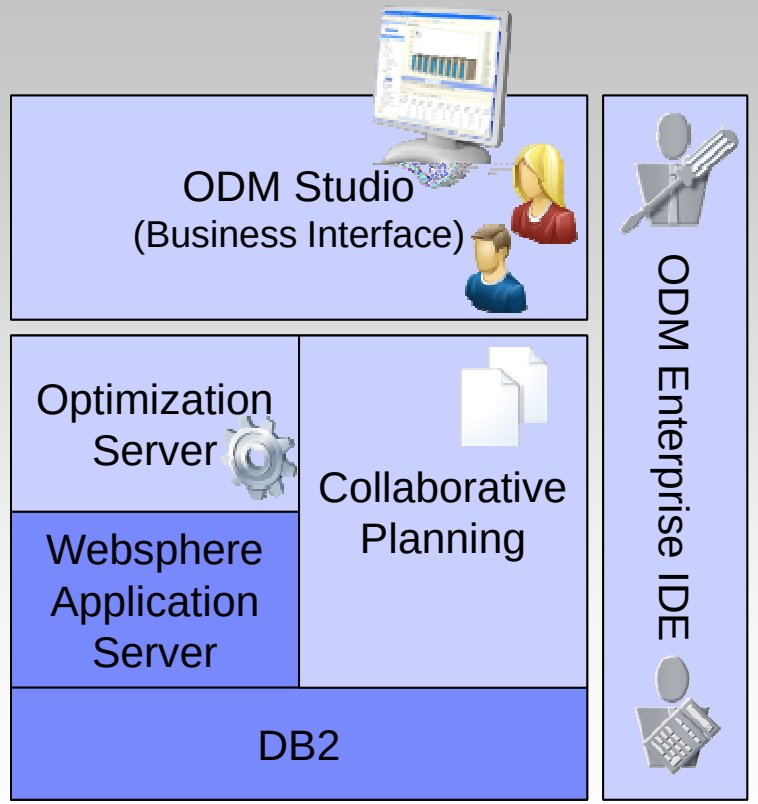
The ILOG Optimization Suite

- 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

- Buid 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.

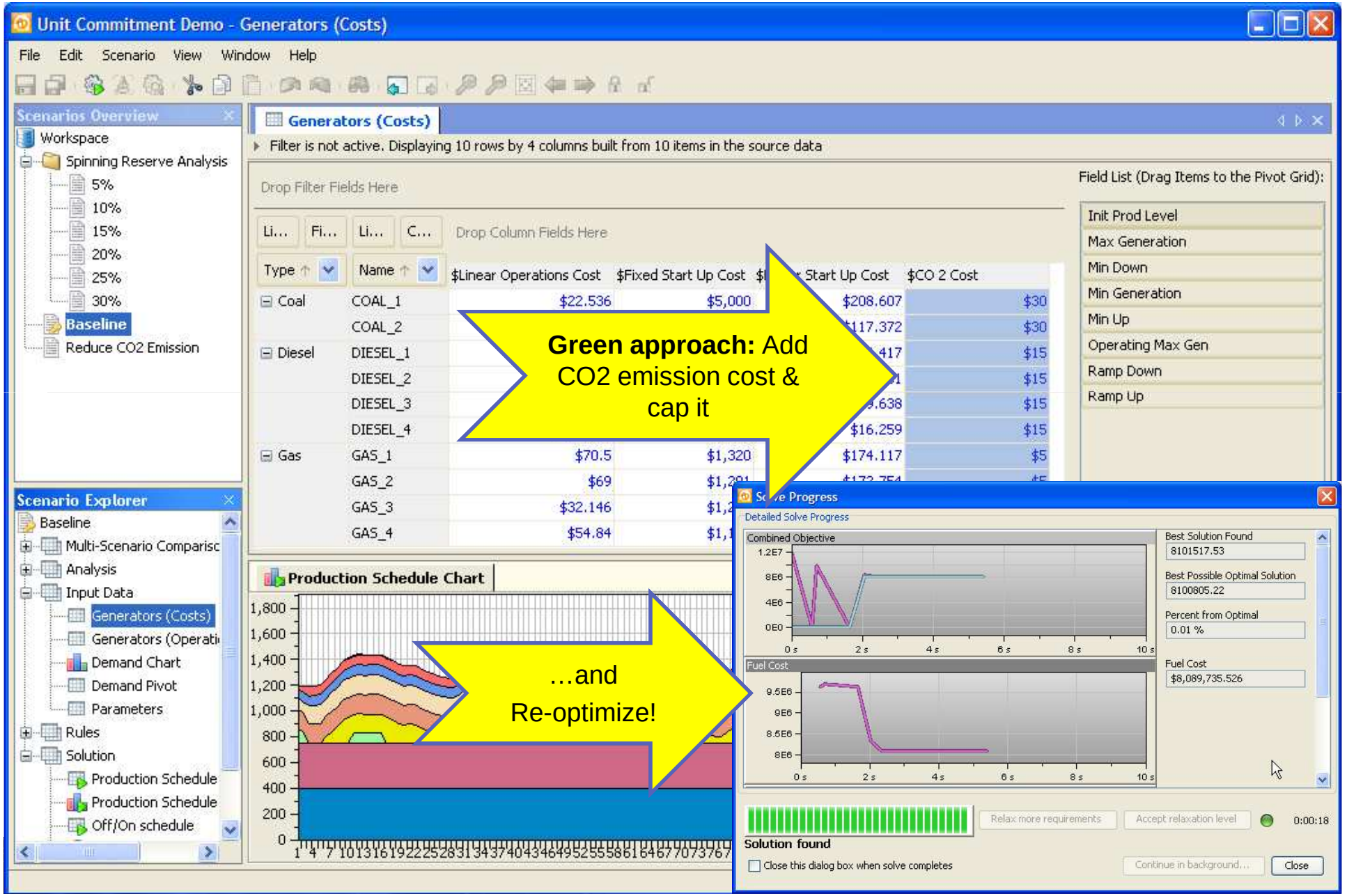
Solution

- 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

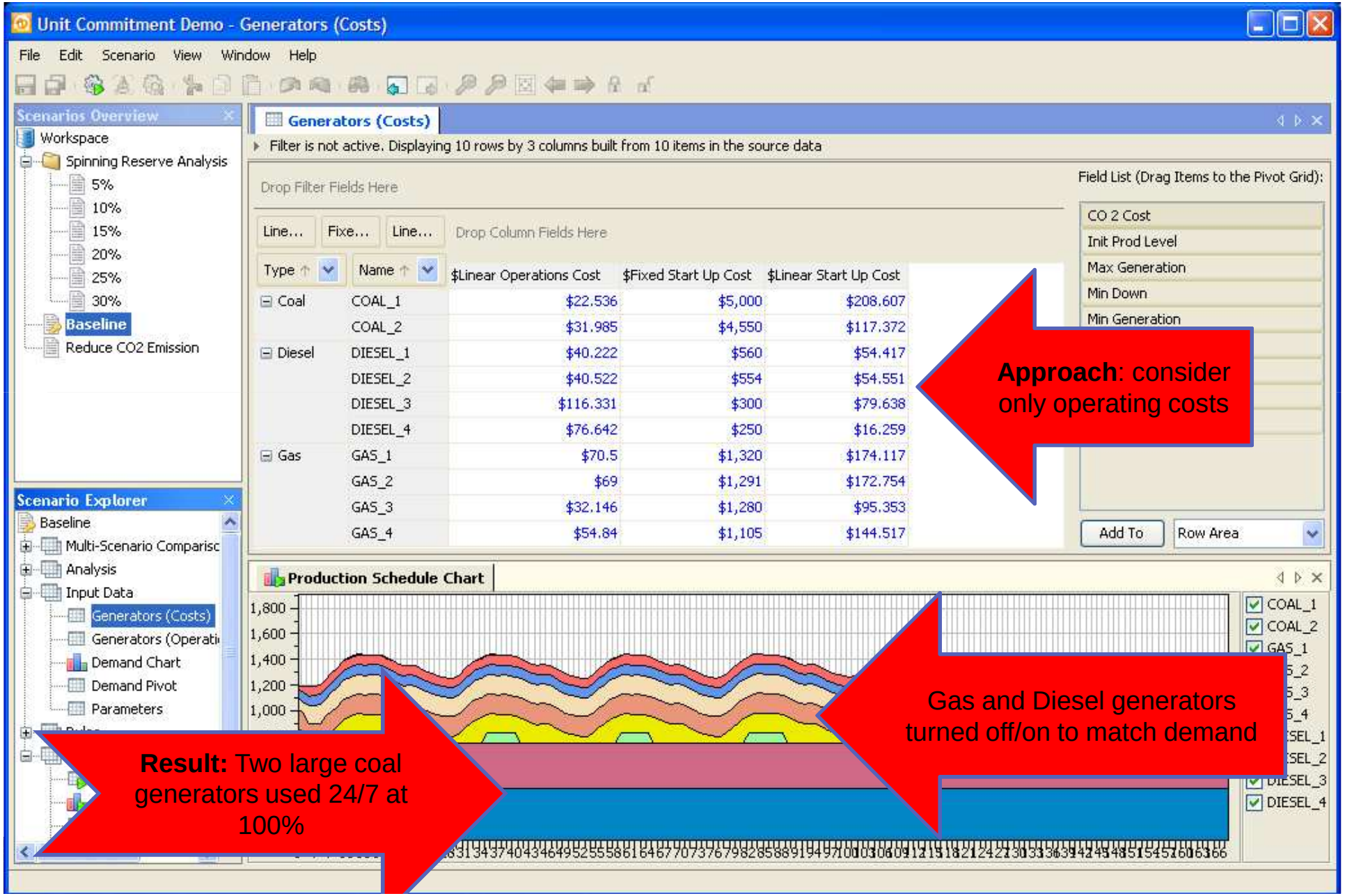
Benefits

- 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

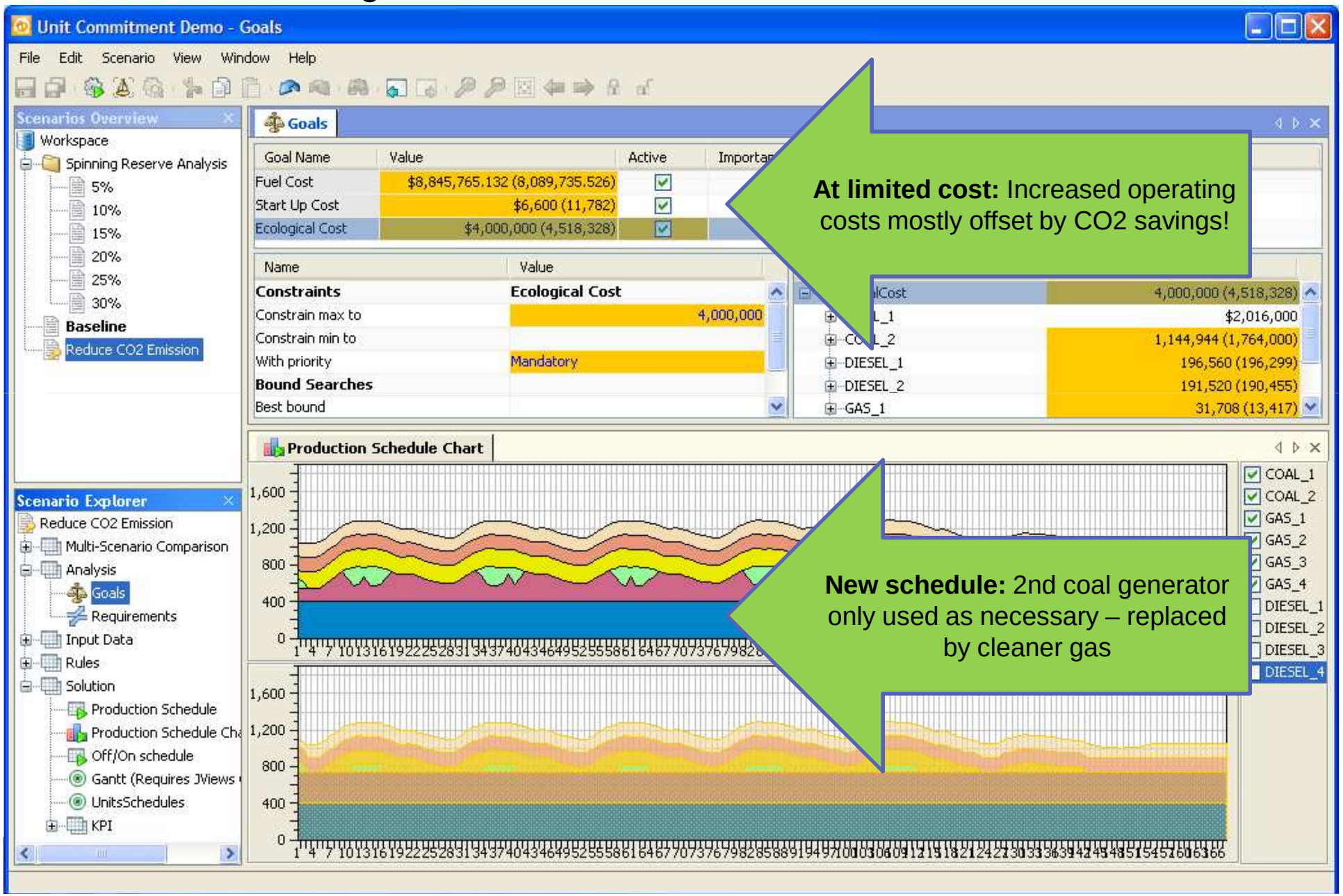
2 – Considering CO2 costs



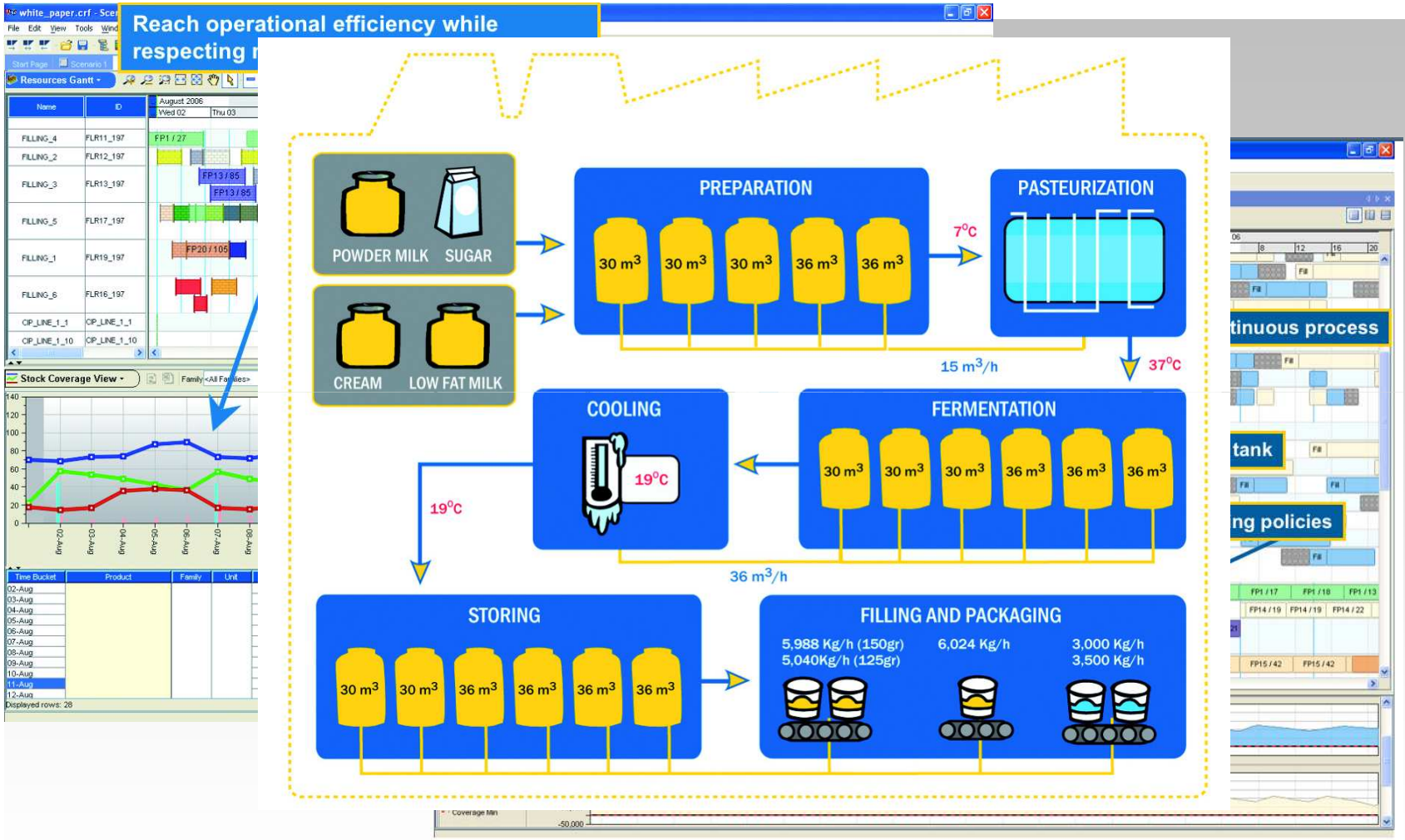
1 – Traditional Power Generation



3 – Review new “greener” schedule



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 an 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

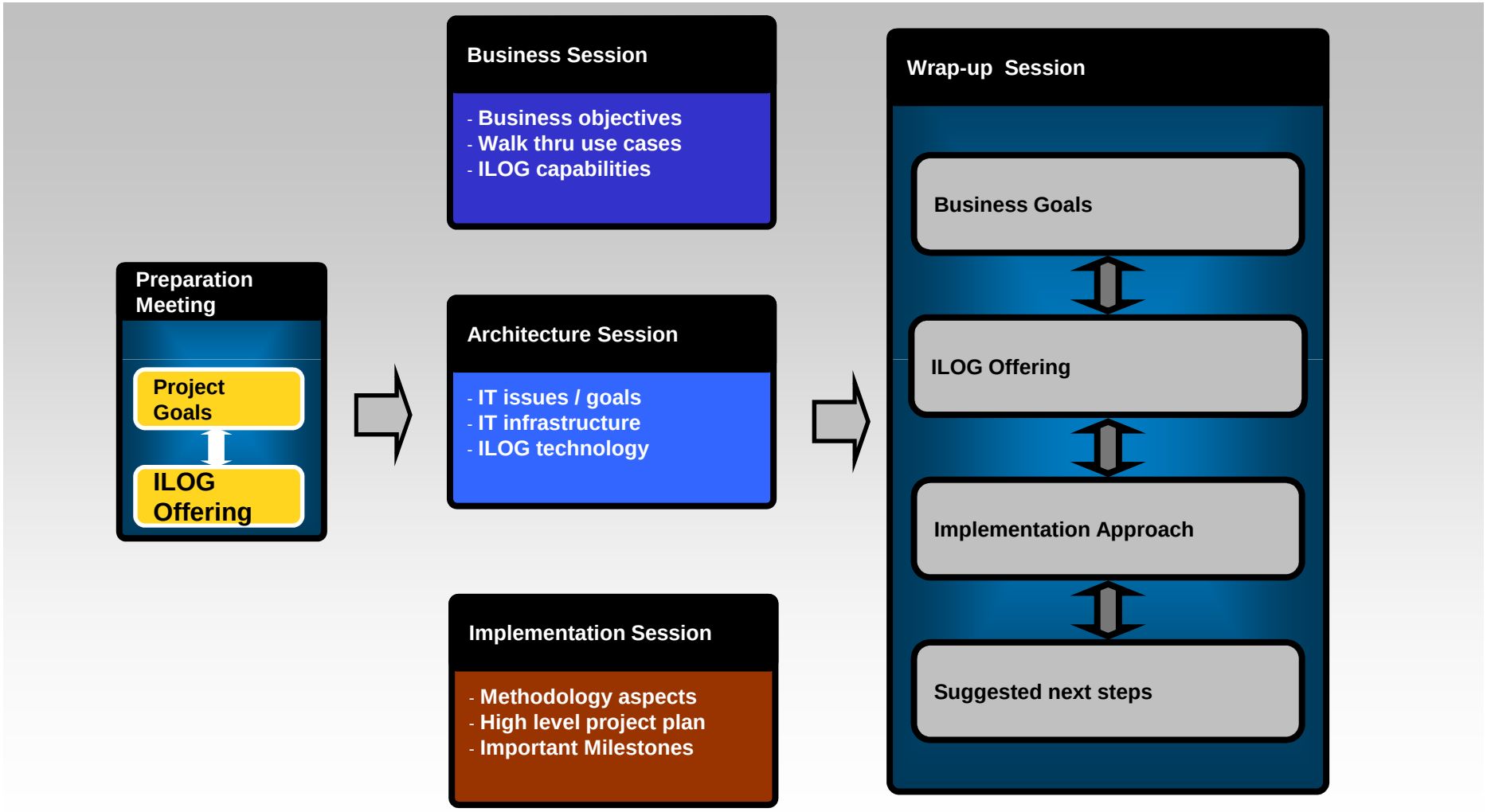
Solution

- 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