

“smarter planet”

..... con IBM ILOG



“Las especies que sobreviven no son las especies más fuertes, ni las más inteligentes, sino aquellas que se adaptan mejor a los cambios”

Charles Darwin

“la ilusión nace de la necesidad”

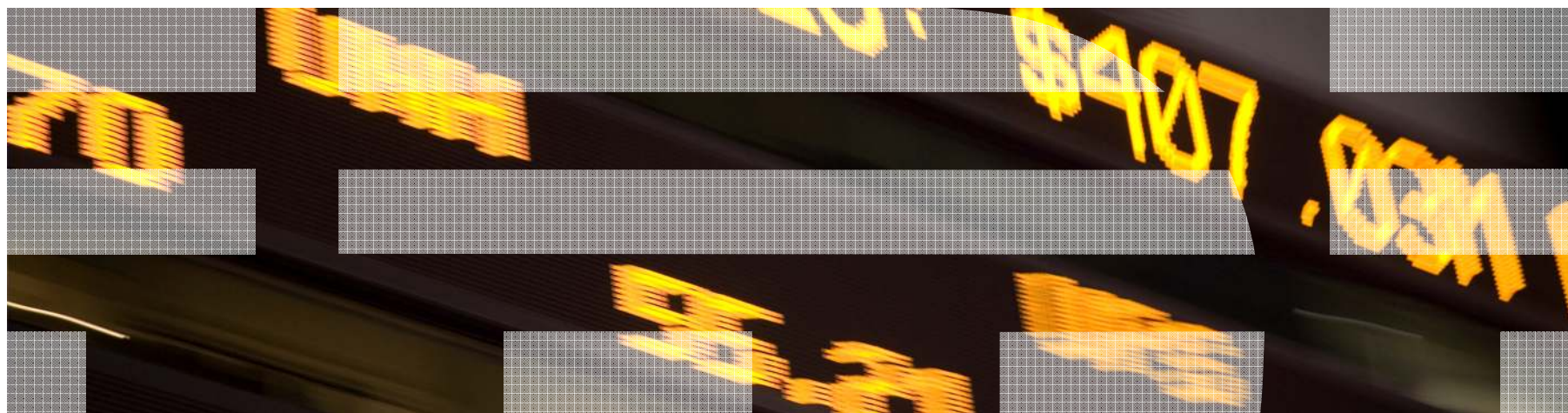
Agenda

- **09:00 Registro y café**
- **09:30 Bienvenida e introducción**
- **09:40 Los diferentes usos de las reglas de negocio en los sectores**
- **10:25 Smart Optimization: Gestión de recursos escasos maximizando el retorno**
- **11:00 Café**
- **11:30 Demostración Caso Práctico de Reglas de Negocio**
- **12:00 Testimonio de SCOR Telemed – Carlos L. de Cuenca**
- **12:30 Presentación técnica de los productos y demo**

- **13:30 Cocktail**

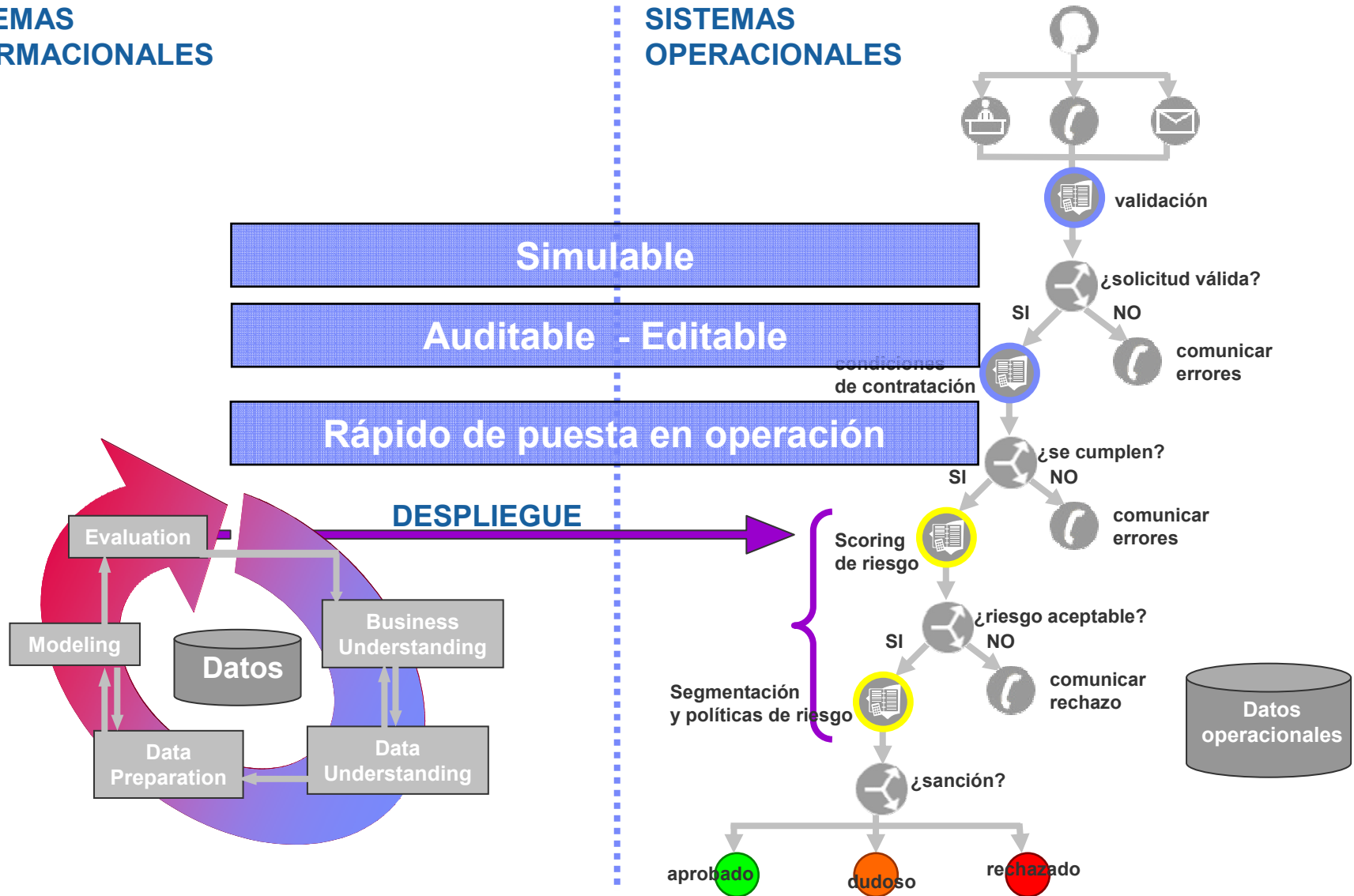
Casos de uso de reglas de negocio por sectores

Marie-Claude Belda
ILOG Specialist



SISTEMAS INFORMACIONALES

SISTEMAS OPERACIONALES



¿Cual es el riesgo de este cliente?

¿Qué cliente es elegible para esta promoción?

¿Qué ventaja proporcionar al cliente para esta promoción?

¿Cual es el riesgo de un cliente?

Regla de segmentación de riesgo

*if the applicant is already a customer
 and the account balance is more than 3000€
 and the number of overdrafts in the last 180 days is 0
 then
 the segmentation of the applicant is GOOD ASSET*

¿Es el cliente elegible para esta promoción?

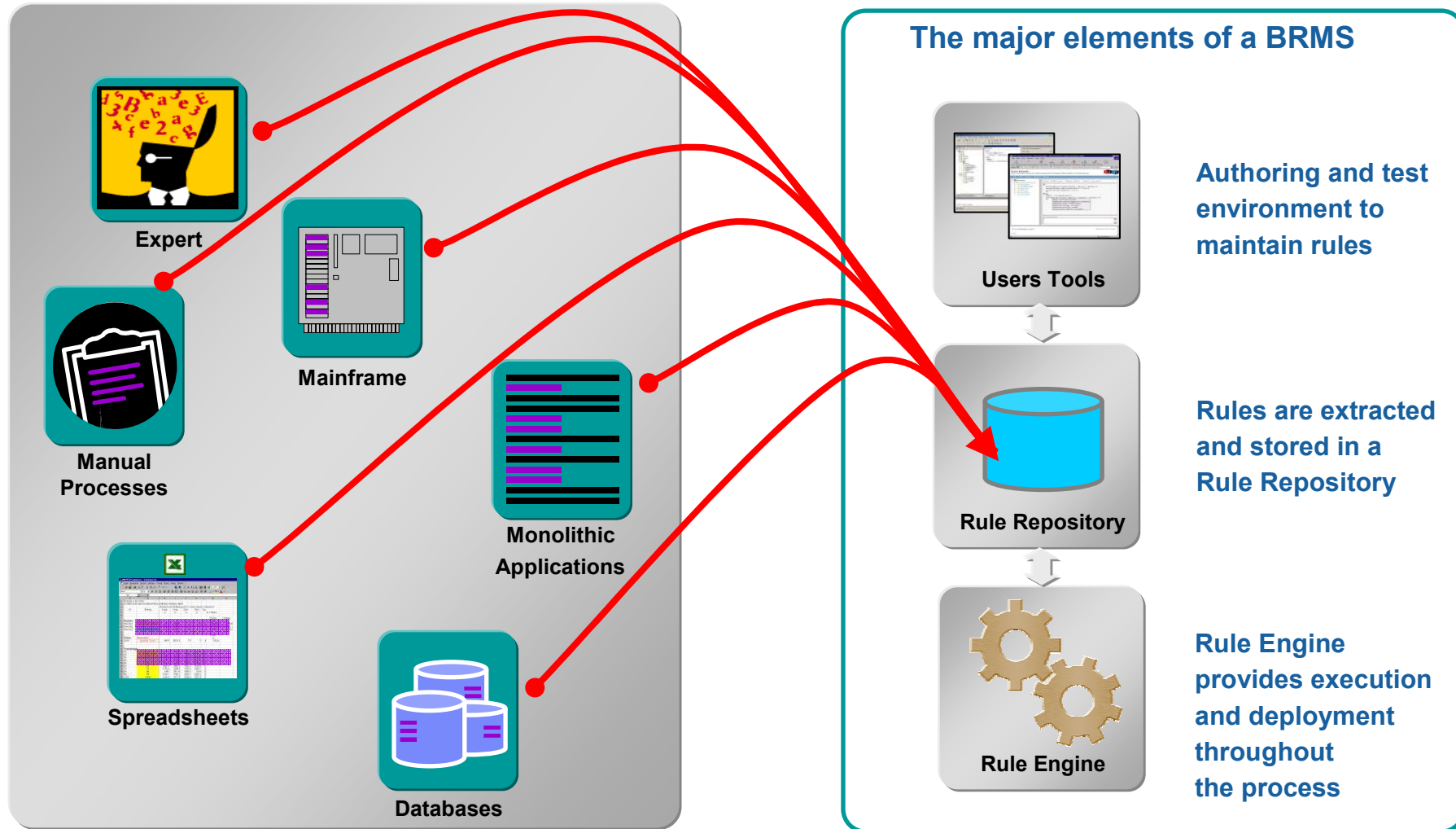
Regla de elegibilidad

*if
 the segment of the customer is Consumer
 and the type of the subscribed offer of the customer is postpaid
 and the age of the customer is between 12 and 20
 and the birthday of the customer is between [now + 5 days , now + 10 days]
 and the average monthly consumption of 'mobile voice service' is at least 10
 then
 make it true that promotion is eligible ;*

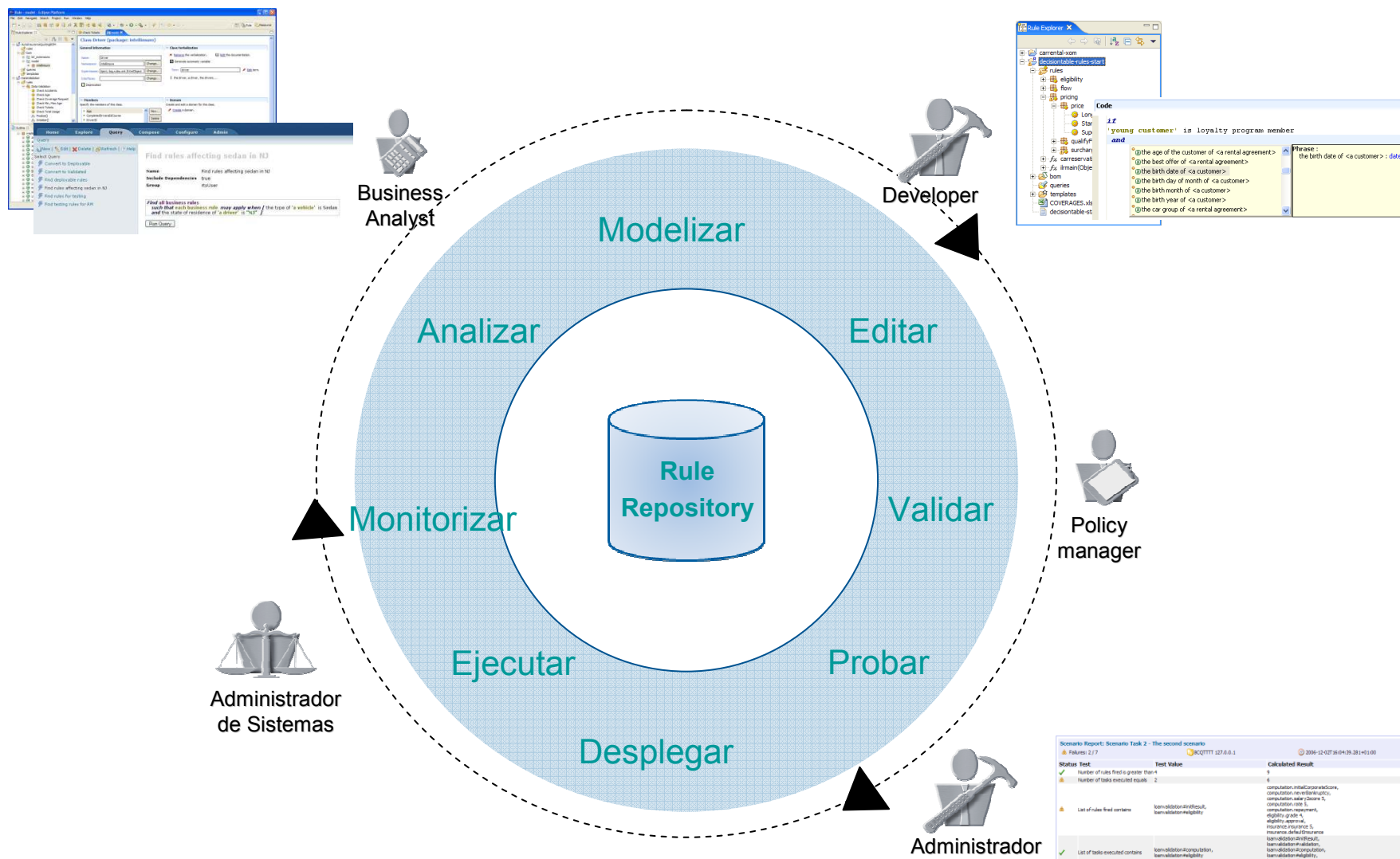
¿Qué ventaja proporcionar al cliente para esta promoción?

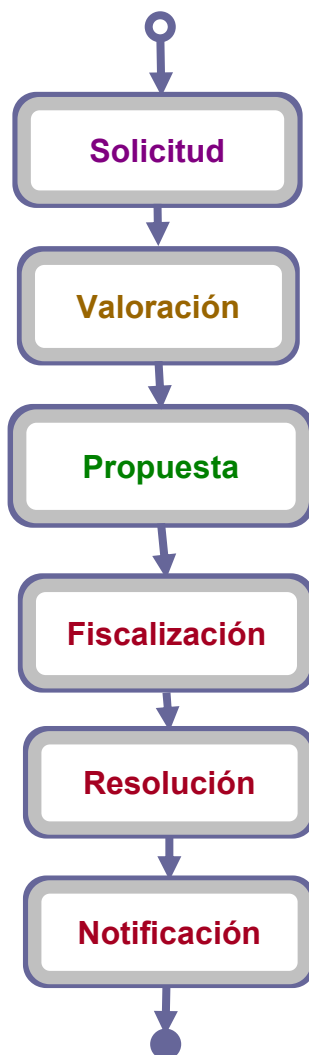
	monthly SMS usage		Churn probability	type	granted	from	duration in days
	min	max					
1			in High,VeryHigh	SMSCredit	15	ApprovalDate	15
2	0	10	Normal	SMSCredit	15	ApprovalDate	15
3			in Low,VeryLow	SMSCredit	15	ApprovalDate	15
4			in High,VeryHigh	SMSCredit	20	ApprovalDate	15
5	10	20	Normal	SMSCredit	20	ApprovalDate	15
6			in Low,VeryLow	SMSCredit	20	ApprovalDate	15
7			in High,VeryHigh	SMSCredit	30	ApprovalDate	15

Externalizar, centralizar, gestionar y desplegar



Rule repository: Agilidad y Gobierno





- **Tramitación de solicitudes de prestación de la Ley de Dependencia**
- **Tipo de prestaciones**
 - *Sistema de ayuda a domicilio*
 - *Teleasistencia*
 - *Prestaciones económicas*
 - *Centro residencial, centro de día, centro de noche*

Reglas de baremación a partir del informe social

2- MIEMBROS Y CARACTERÍSTICAS DE LA UNIDAD DE CONVIVENCIA

[*2] Datos procedentes de la historia social

S01

Vive solo 1

Vive con otras personas (nota 1) 2 N° de familiares con los que convive..... S02a

N° otras personas con las que convive... S02b

Vive en Centro residencial 3

Vive en Albergue o similar 4

Número de convivientes con enfermedad, ancianidad o incapacidad grave: (RM)

Hermanos y otros familiares..... S03a

En hijos S03b

En otros convivientes no familiares..... S03c

No aplicable S03d

Nota 1: Aquí se incluyen los que viven en viviendas tuteladas, supervisadas o apoyadas.

Todos los miembros de la unidad de convivencia necesitan atención S04 SI... 1 NO... 2

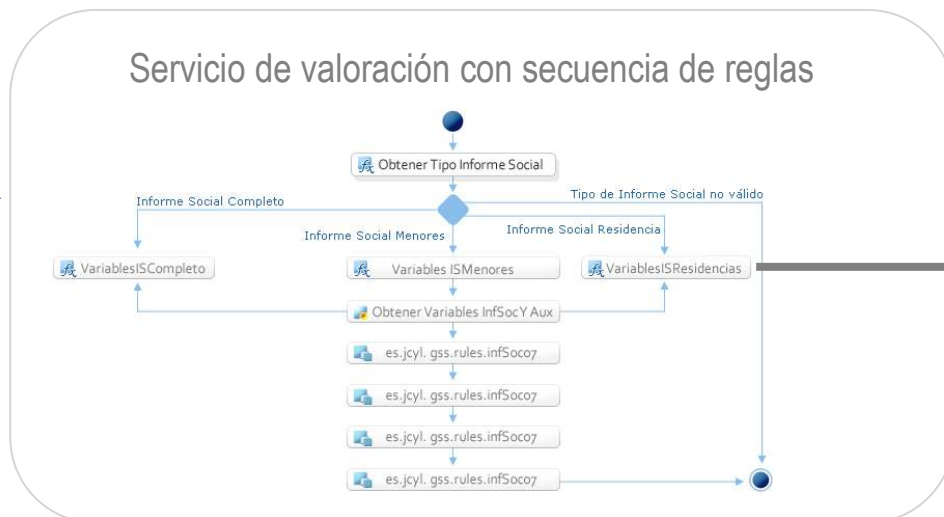
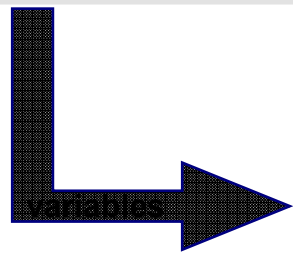


Tabla de decisión

	S01	S23	S24	SA
0	1	1	1	1
1			2	2
2			3	3
3			1	4
4			2	5
5	2	1	3	6
6			1	7
7			2	8
8			3	9
9			1	10
10	3	2	2	11
11			3	12
12			1	13
13	3	2	3	14
14				

- Reglas sobre bloques condicionales del expediente
- Calculo de **cuantías (variables)**

REGLAS APLICABLES A CUANTIAS DE PRESTACIONES ECONOMICAS

Algunas reglas hacen referencia a cuantías fijas que varían cada año (PNC, IPREM, CUANTÍAS MÁXIMAS DE CADA PRESTACIÓN). Hay que hacer tabla con los datos que correspondan en cada caso. Como la renta a utilizar es la de 2006, bastantes indicadores de referencia serán de 2006, en su cuantía mensual mientras no se diga lo contrario. Sólo en algún caso se utiliza la cifra del año que corresponda.

A: Cuantía máxima. Es distinta para cada prestación y grado y nivel, y se modifica cada año:

AÑO 2007

PRESTACIÓN ECONÓMICA PARA CUIDADOS EN EL ENTORNO FAMILIAR (PEF)

A - GRADO III - NIVEL 2 - 487,00 € / MES

A - GRADO III - NIVEL 1 - 390,00 € / MES

PRESTACIÓN ECONÓMICA DE ASISTENCIA PERSONAL (PAP) Y VINCULADA AL SERVICIO (PVS)

A - GRADO III - NIVEL 2 - 780,00 € / MES

A - GRADO III - NIVEL 1 - 585,00 € / MES

AÑO 2008

PRESTACIÓN ECONÓMICA PARA CUIDADOS EN EL ENTORNO FAMILIAR (PEF)

A - GRADO III - NIVEL 2 - 506,96 € / MES

A - GRADO III - NIVEL 1 - 405,99 € / MES

A - GRADO II - NIVEL 2 - 328,36 € / MES

PRESTACIÓN ECONÓMICA DE ASISTENCIA PERSONAL (PAP) Y VINCULADA AL SERVICIO (PVS)

A - GRADO III - NIVEL 2 - 811,98 € / MES

A - GRADO III - NIVEL 1 - 608,98 € / MES

PRESTACIÓN ECONÓMICA VINCULADA AL SERVICIO (PVS)

A - GRADO II - NIVEL 2 - 450,00 € / MES

B: Importe de la deducción. Está en función de la capacidad económica (R), recogida en el apartado V, y del IPREM (se utilizará el mismo del año al que corresponde la renta, en este caso, 2006 es: **479,10 € / mes**).

Si $R \leq 0,75 \times \text{IPREM} \rightarrow B = 0$

Si $R > 0,75 \times \text{IPREM}$:

PRESTACIÓN ECONÓMICA PARA CUIDADOS EN EL ENTORNO FAMILIAR (PEF)

$B = A \times [-0,06 + 0,08 \times (R / \text{IPREM}_{2006})]$

PRESTACIÓN ECONÓMICA DE ASISTENCIA PERSONAL (PAP) Y VINCULADA AL SERVICIO (PVS)

$B = A \times [-0,113 + 0,15 \times (R / \text{IPREM}_{2006})]$

2.2 PRESTACIÓN ECONÓMICA DE ASISTENCIA PERSONAL (MENSUAL)

AÑO	CUANTÍA MÁXIMA	REDUCCIÓN POR CAPACIDAD ECONÓMICA	RESULTADO	DEDUCCIÓN POR PRESTACIONES DE ANALOGA NATURALEZA	CUANTÍA DE LA PRESTACIÓN	PORCENTAJE A ABOGAR POR LA ADMINISTRACIÓN SOBRE LOS GASTOS JUSTIFICADOS
2008	811,98 €	0,00 €	811,98 €	0,00 €	811,98 €	96 %
2007	780,00 €	0,00 €	780,00 €	0,00 €	780,00 €	96 %

La Administración abonará el porcentaje señalado en el cuadro anterior del importe que el interesado justifique hasta un máximo de 811,98 € mensuales para 2008 y 780,00 € mensuales para 2007. Para que usted reciba la cuantía completa de la prestación, deberá justificar un mínimo de 845,81 € mensuales para 2008 y 812,50 € mensuales para 2007; si justifica una cantidad inferior, la Administración le abonará el porcentaje señalado.

IV. CAPACIDAD ECONÓMICA¶

De acuerdo con lo establecido en la Orden FAM/2044/2007, de 19 de diciembre, por la que se regulan provisionalmente los criterios para el cálculo de la capacidad económica de los beneficiarios de prestaciones de Dependencia en Castilla y León y, teniendo en cuenta la información recabada de la Agencia Estatal de Administración Tributaria, la Consejería de Hacienda de la Junta de Castilla y León, y otras Administraciones Públicas, correspondiente al ejercicio **2006**, la capacidad económica del interesado es la siguiente:¶

POSIBILIDAD A¶

Si existe declaración IRPF conjunta (vendrá señalado en la base de datos económicos), y el estado civil es C (casado):¶

- Los ingresos computables del interesado y su cónyuge son: _____ € (A)¶

POSIBILIDAD B¶

Si declaración individual o no hay declaración (imputación de rentas o sin datos):¶

- Los ingresos computables del interesado son: _____ € (A)¶

Dentro del caso anterior, caben tres posibilidades¶

B.1. Si existe cualquiera de las siguientes situaciones:¶

o → cónyuge con régimen económico de gananciales¶

o → cónyuge en separación de bienes con ingresos inferiores a 8.000 € (si no hay autorización del cónyuge, se supone que son superiores)¶

o → pareja de hecho con ingresos inferiores a 8.000 € (si no hay autorización del cónyuge, se supone que son superiores)¶

- Los ingresos computables del cónyuge/pareja de hecho son: _____ € (B)¶

B.2. Si existe cualquiera de las siguientes situaciones:¶

o → cónyuge en separación de bienes, sin autorización o con ingresos a partir de 8.000 €¶

o → pareja de hecho, sin autorización o con ingresos a partir de 8.000 €¶

El interesado tiene cónyuge en régimen de separación de bienes o pareja de hecho, que no depende económicamente. Sus ingresos no se tienen en cuenta, y no computa como miembro a efectos del cálculo de la capacidad económica personal. Si hubiera hijos menores del interesado y su cónyuge o pareja de hecho, computan a razón de 0,5.¶

B.3. Que no haya cónyuge ni pareja de hecho: se omite cualquier texto.¶

¶

Si existen otros miembros de la unidad familiar dependientes económicamente del interesado.¶

- Número de miembros computables: _____ (n)¶

Si existen datos en el fichero de Patrimonio.¶

- **Numero de reglas**

- *Mas de 250 reglas, 1000 condiciones y 250 variables*

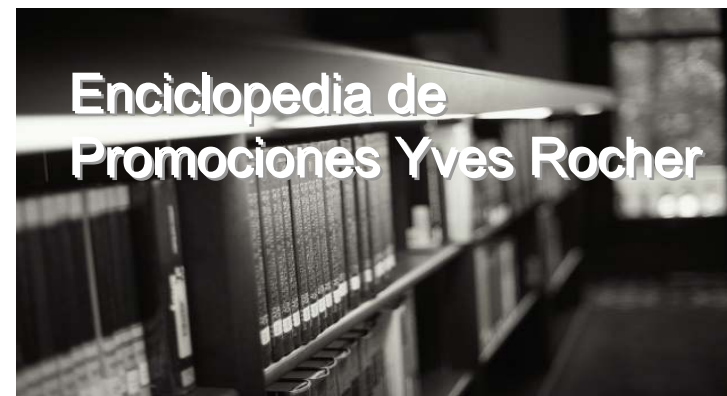
- **Principales beneficios**

- *Gestionar por separado procesos de negocio y lógica de decisión*
- *Ahorro del 30% en programación*
- *Reducción del coste de mantenimiento de las aplicaciones*

- *Flexibilidad a la hora de implementar cambios de políticas*
- *Puesta en conformidad de los sistemas con nuevas reglamentaciones de forma mas rápida*
- *Coherencia de los criterios de decisión aplicados*

- *Involucrar usuarios funcionales en la fase de definición de las reglas*
- *Herramienta localizada que permite definir las reglas en castellano*

El modelo de negocio de Yves Rocher



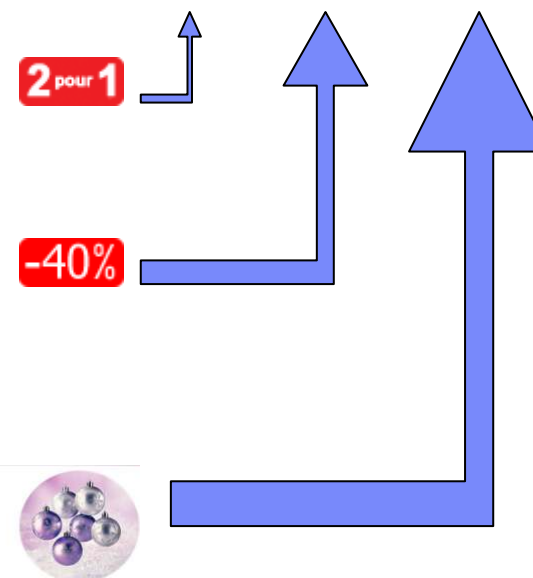
Bio-spécific Active Sensitive, Lait nettoyant Dermo apaisant
 Référence:73933 2 x 7.90 €



Lavande Essentielle Huile Lactée Relaxante Purarôme
 Référence:56443 1 x 8.90 €



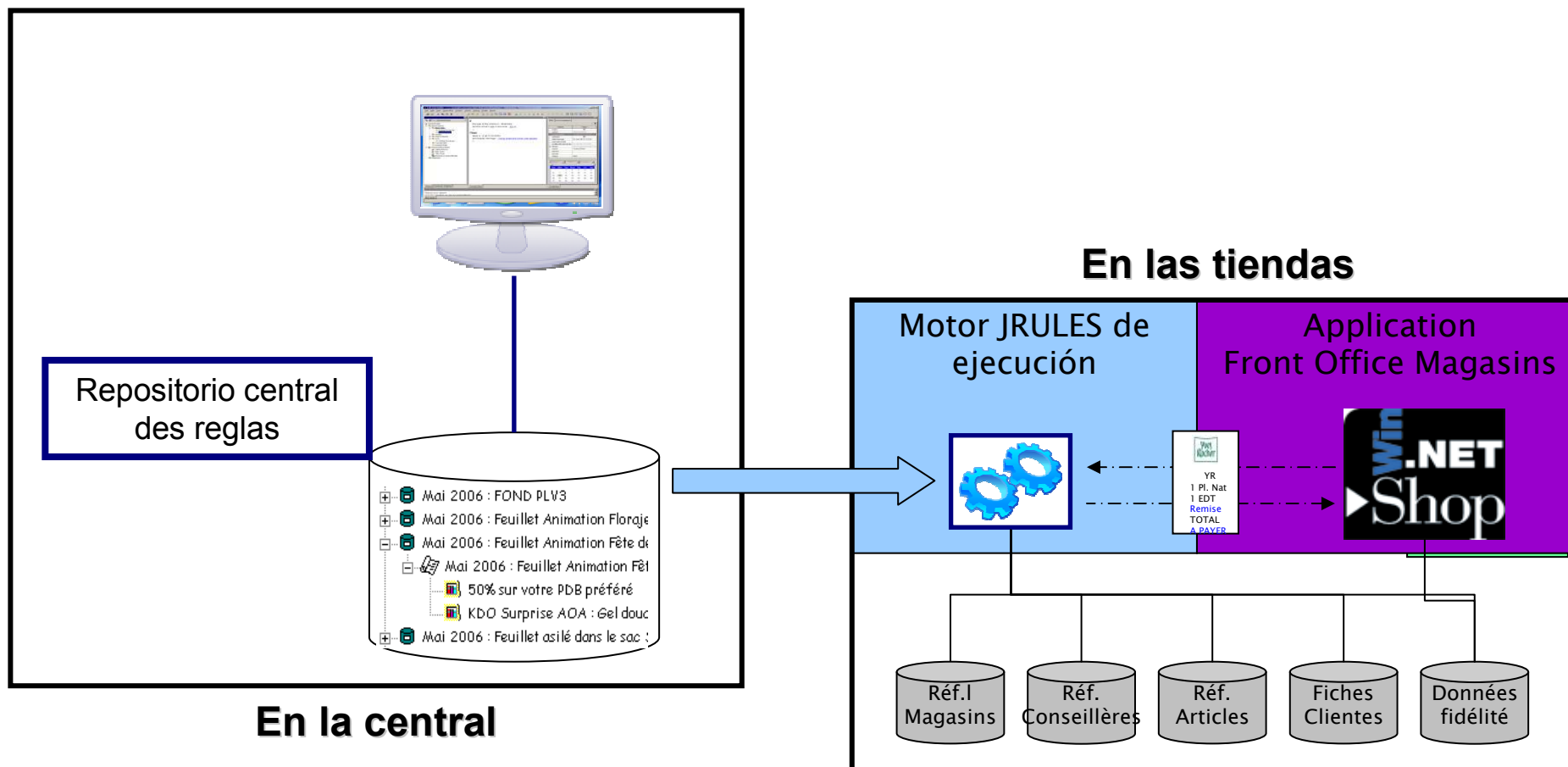
Parfum de Monde Orange du Maroc
 Référence:56239 1 x 3.00 €



Retos operacionales



Solución basada en JRules



Situación

- Una plataforma obsoleta e inadaptada
 - Sistemas existentes fragmentados por línea de negocio y no reutilizables
 - Soluciones paquetizadas inadaptadas a algunos tipos de comisiones
 - Coste de mantenimiento elevado

Objetivos

- Un nuevo sistema de gestión de incentivos operacional en menos de 12 meses
 - Externalización de las reglas de los paquetes de gestión de contratos
 - Flexibilidad y capacidad de gestionar todos los tipos de incentivos requeridos
 - Mejor capacidad de evolución

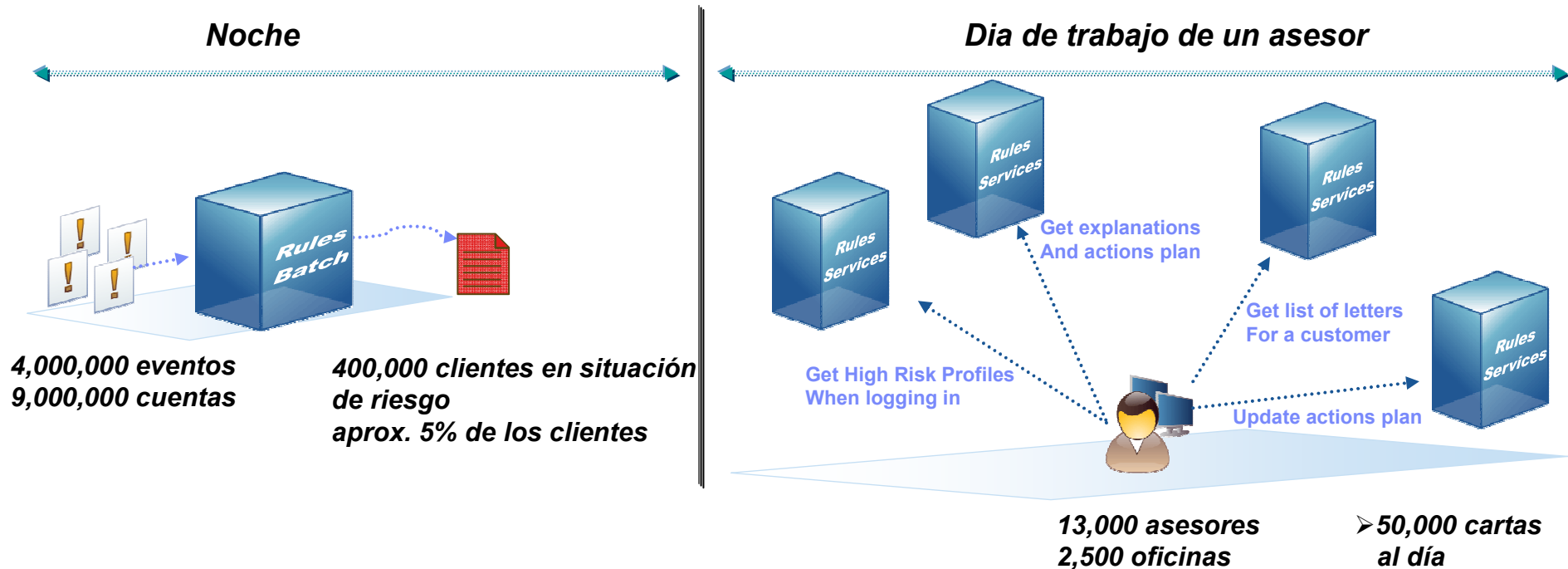
Solución

- Un sistema de gestión de comisiones unificado basado en ILOG JRules
 - Todos los productos, todos los agentes de la red comercial
 - Sobre nuevo negocio y renovación

Beneficios

- Beneficios esperados
 - Mas transparencia en la comunicación con distribuidores y vendedores
 - Mas flexibilidad en la gestión de condiciones comerciales particulares
 - Mejor auditabilidad

Proceso de identificación de situaciones de riesgo



Beneficios

- Gestión mas fina del riesgo
 - Identificación de 200 situaciones de riesgo cliente
 - Gestión centralizada de las políticas por responsables de riesgo
 - Aplicación de las mismas reglas de riesgo en cada sucursal
- Mejora de la productividad: ahorro de 40 minutos/día/asesor

1. Reglas de determinación del perfil de riesgo cliente:
 - clasifican los clientes en 7 segmentos de riesgo
 - en base al perfil de riesgo, el tratamiento de las situaciones de riesgo será distinto
2. Reglas de detección de 200 situaciones de riesgo:
 - situaciones críticas: impago relacionado con Basilea II
 - situaciones de riesgo:
 - movimientos no realizados porque cuenta no provisionada
 - ausencia de movimientos de crédito
 - limite de autorización sobrepasado
 - descubiertos continuados (varias reglas en función de la duración del descubierto)
 - deuda tarjeta de crédito cerca del limite (p.e. 90%)
 - deuda tarjeta de crédito sobrepasado
3. Reglas de calificación y priorización de las situaciones de riesgo
4. Reglas de recomendación de acciones a tomar
5. Reglas de generación de un resumen cliente y de generación de un correo personalizado

si el perfil de riesgo del cliente es bajo
y la cuenta no ha sido aprovisionada en los últimos 40 días
y el saldo de la cuenta es menor que el limite de pago

entonces

proponer entrar en contacto con el cliente para “entender porque no ha aprovisionado su cuenta”

- **La empresa**

- Uno de los 5 bancos mas grandes en Norteamérica
- Mas de 15 millones de clientes en mas de 40 países
- Múltiples servicios
 - Personal / Commercial banking
 - Wealth Management
 - Insurance
 - Corporate / Investment banking

- **Caso de uso**

- Reglas de segmentación de clientes, priorización de productos a recomendar, calificación de riesgo, **con el fin de generar ofertas pre-aceptadas**

Situation

- Bank is very customer focused
- Solid client base but feeling of missing opportunities in wallet share
- Cross-sell/Up-sell done at the branch based upon manager/client relationship
- Lots of client information from disparate sources
- Existing origination system
- Propose and ... hope

Goals

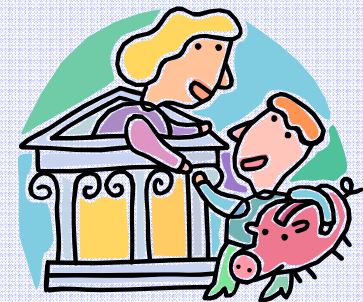
- Drive more revenues through cross-sell/up-sell offers
- Identify and qualify offers
- Propose suitable pre-approved client-centric offers
 - One or more financial products
 - Calculate limit/amount
 - Access client info sources in real-time
 - Apply policy and risk guidelines in a accurate and consistent way
- Speed-to-market for implementing guideline changes
- Agile changes are available to business users
- Build a technology foundation for agile applications

Solution

- Create a flexible customer-centric cross-sell/up-sell solution used in multiple channels (branches, call centers, etc.) where a BRMS is used throughout the process to support generation of personal offers
- Involve business users early and through the development process
- Agile solution!

Benefits

- Increase & establish client relationship
- Sales force extremely positive and confident on the offers
- Accelerated ROI
 - Significantly increased cross-sell offers: from 13% to 40%
 - Significantly increased acceptance: from 3% to 20%-30%
 - Increased revenues – \$14M in approved bookings in 2.5 m
- Reduce credit approval processing time
- Rules fully managed by the business



Smart Optimization: Gestión de recursos escasos maximizando el retorno

Juan Manuel
ILOG Specialist



IBM ILOG: Liderazgo en Optimización

160

- Más de 160 de las 'Global 500' construyen aplicaciones a medida empleando herramientas y motores de Optimización de IBM ILOG
 - 65% en Manufactura, Transporte y Gestión de Inversiones
 - 80 Manufactureras y 40 Empresas de Transporte in el 'Global 2000'

1.000

- Más de 1.000 clientes comerciales cuentan con mantenimiento

8

- Los ISVs grandes llegan a otros miles
 - 8 de los 10 mayores vendedores de aplicaciones para Cadena de Suministro
 - SAP, JDA, Manhattan Associates, Infor, Cadence Design, Tavant, Siemens, Areva, Sabre, PROS, Emptoris, ITG, Eclipsys, etc...

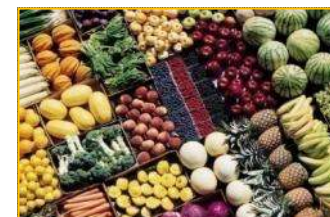
1.000

- Más de 1.000 Universidades emplean nuestros productos de optimización en sus proyectos de investigación
 - IBM ILOG CPLEX es a la Investigación Operativa lo que SPSS y SAS son a la Estadística

¿Qué es “Optimización”? “The science of Better Decisions”



¿Cómo mejor asignar
aeronaues y
tripulaciones?



Coste de inventario vs.
satisfacción de cliente



¿Qué fabricar, dónde y
cuándo?

La optimización ayuda al negocio a:

- **Crear los mejores planes posibles**
- **Explorar alternativas y entender las concesiones**
- **Responder a los cambios operativos**



Riesgo vs. recompensa
potencial



Coste vs. emisiones de
carbono

Optimization & Analytics



Source: Davenport, "Competing on Analytics"

Las decisiones basadas en Optimización

Existen en todas las industrias...

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

Los beneficios de la Optimización...

- **ROI calculable, obteniendo retorno en meses, incluso semanas**
 - Evitando gastos de capital o demoras de disponibilidad
 - Reduciendo los costes operativos
 - Mejorando los ingresos totales y los márgenes de beneficio
- **Satisfacción del cliente aumentada**
 - Proporcionando servicio al cliente mejor y más personalizado
- **Satisfacción del empleado aumentada**
 - Aumentando la productividad mediante el cumplimiento de las preferencias de planificación
 - Mejorando y facilitando los procesos de planificación y asignación



... ¡Son críticos para las empresas!

Documented ROI

INFORMS Edelman Award Finalists Using ILOG CPLEX

COMPANY	BUSINESS PROCESS	ROI
UPS	Air Network Design	\$87m/2yrs + 10% fewer planes
Motorola	Procurement Mgmt	\$100-150 mil/year
Samsung Electronics	Semiconductor Mfg	50% reduction in cycle times
Continental Airlines	Crew Re-scheduling	\$40 mil in one year
AT&T	Network Recovery	35% reduction spare capacity
South African Defense	Force/Equip Planning	\$1.1 bil/year
SNCF (French RR)	Scheduling & Pricing	\$1.1 bil/year
Grant Mayo van Otterloo	Portfolio Optimization	\$4 mil/year

IBM ILOG Optimización

Casos

Nombramiento de Servicios

Metas

- Automatizar un proceso manual y dependiente de personal experto.
- Disminuir las quejas de personal por incumplimiento del convenio
- Atender el doble de kilómetros de línea con el mismo personal

Antes

- 1998: **120 kilómetros** de línea
- **6000 personas** como recursos generales
- Departamento de Nombramiento de Servicios:
 - **25 personas** fijas
 - **80** en puntas de planificación anual



Después

- ✓ 2006: **240 kilómetros** de línea
- ✓ **5600 personas** en recursos generales
- ✓ Departamento de Nombramiento de Servicios:
 - ✓ **12 personas** fijas editan los nombramientos de servicio: anual, mensual y diario

Cómo

- ✓ **ILOG Optimización** para resolver la problemática del Nombramiento de Servicios en asignaciones Anuales, Mensuales y Diarias
- ✓ **ILOG BRMS** para la configuración de las restricciones a aplicar por tipo de asignación, tanto en personal como en puestos

Beneficio

- ✓ Reducción drástica de las quejas de personal por incumplimiento de convenio
- ✓ **Reducción de recursos** necesarios en las tareas de planificación
- ✓ Mayor número de operaciones realizado con menor cantidad de recursos

Seguimiento de la actividad del tripulante

Metas

- Dotar al personal de la Dirección de la Producción de una ayuda a la gestión diaria de la Programación/Asignación de tripulantes (6000 profesionales) a las rutas que opera la aerolínea (media de 1000 vuelos diarios) y al ajuste de tal programación a la Ejecución del Programa de Vuelos de la compañía.

Antes

- **50 personas** realizaban el seguimiento y ajuste (tracking) de las actividades de vuelo de tripulantes,
- Altos costes de mantenimiento - Tiempos de gestión altos.

Después

- La misma labor la realizan **35 personas**
- Mayor calidad de datos e información
- Sistema ágil de seguimiento

Cómo

- ILOG Visualización para **representar de forma gráfica** e intuitiva tanto la programación prevista de actividades (vuelo, tierra, vacaciones de tt y tcp) como la programación de vuelos y agrupación servicio en pairing.
- ILOG BRMS para la **aplicación del convenio** que regula la actividad laboral de los tripulantes para la detección de situaciones anómalas mediante la aplicación de reglas de negocio y motores de reglas que evalúan las mismas cada vez que ocurra alguna incidencia.
- **ILOG Optimización** para la generación de soluciones optimizadas de **asignación de tripulantes** a vuelos como respuesta a los problemas generados por las incidencias.

Benefic.

Normativa

- ✓ Garantía cumplimiento normativa vigente,
- ✓ Facilidad de cambio de los criterios para adaptar a los cambios legislativos

Gestión y Control

- ✓ **Reducción tiempo** de gestión, Mejor **control de costes** derivados de la actividad de tripulantes por los controles auditables, **Transparencia** y visibilidad para los usuarios de los criterios aplicados en cada momento

▪ Situation

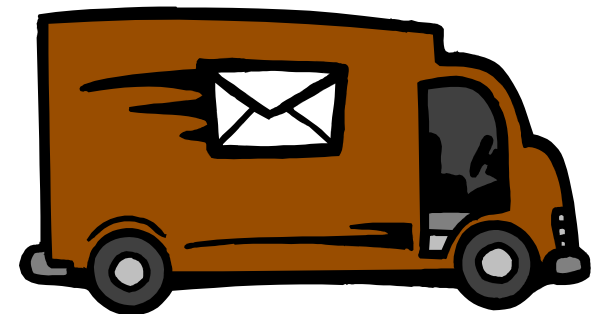
- Ships over **200 billion pieces of mail** per year
- The USPS network must consider different classes of mail

▪ Solution

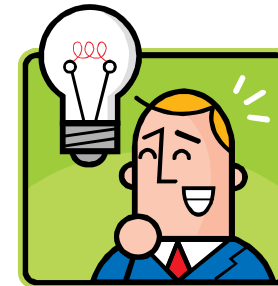
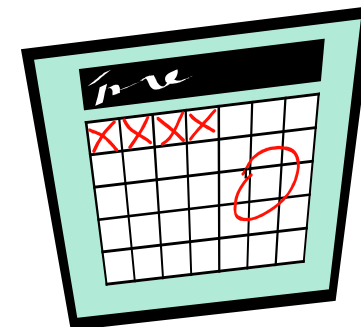
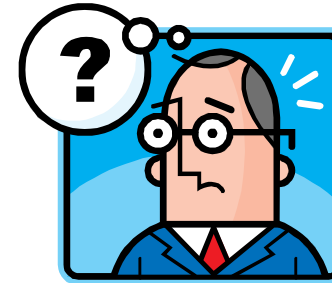
- Advanced technology to analyze transportation **scenarios**
- Helps to **consolidate trucks** without sacrificing service levels

▪ Benefits

- **\$5 million in annual savings**
- E.J. Matto – GBS Associate Partner: “ Using **optimization technology** for the transportation model helps the USPS uncover opportunities to streamline areas of long-haul transportation through consolidation.”



- **¿Cuál es el problema actual?**
 - **Debo aprovisionar suficientemente cada tienda**
 - **Debo ahorrar en costes de transporte**
- **¿Qué proporciona la solución?**
 - **Patrón de servicio semanal a cada tienda**
 - **Esquema de camiones compartidos para servir a más de una tienda**
- **¿Qué he conseguido mejorar?**
 - **Menor coste global del transporte**
 - **Mejores ingresos por no romper stocks**
 - **Menos kilómetros en vacío**



- **Necesidades**
 - **Obtener recomendaciones de surtido para los gerentes de tienda**
 - **Optimizar el uso del espacio**
- **Solución**
 - **Porcentaje de cada tipo de producto basado en la elasticidad**
 - **Recomendación de colocación óptima de productos en los expositores.**
 - **Emplea ILOG Optimización e ILOG BRMS**
- **Beneficios**
 - **Los gerentes de tienda pueden aportar su conocimiento**
 - **¡Rapidez! Respuesta para 4200 stores: de 70 horas a 70 minutos**
 - **Respuesta rápida a los cambios de requisitos de negocio**
 - **Análisis tipo “¿Qué pasa si...?”**
 - **Colocación del producto más realista: Aporta mayores ingresos**





612 games for **36** soccer clubs

Who plays against who and when ?

150 constraints and an **extensive list of conditions** in generating solutions
Respecting **complex** constraints

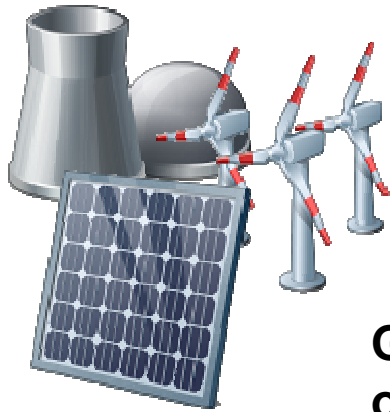


Evaluating **In less than a couple of hours** **different scenarios** and choose from **20 to 30** scheduling solutions.

How often?

Each year!





**Generadores de
operación
heterogénea**



**Distintos mercados,
cada uno con
demanda distinta**



**Distintos
objetivos
contrapuestos**

**¿Cómo usar cada
generador de la
mejor forma en
cada momento?**



Business Problem – Use exact mathematical methods to replace the approximate, heuristic methods Red Eléctrica de España, in charge of managing the Spanish national power grid, had been using for the last 20 years



The methodology applied until now ... was an interactive methodology, which **did not guarantee an optimum solution.** There were many difficulties in the smaller systems and it was hard to find the most viable solution. **Thanks to the new methodology, we have resolved this type of problem.**

- Mr. Mustafa Pezic, REE Project Director

Benefits

- The implementation of OPL/CPLEX and ODM solution has provided **great operational advantages** to company's managers and engineers
 - “The new tool allows us to simplify all maintenance tasks and any changes made to the model, which in our particular case, are very frequent.”
 - “From a user viewpoint, it has brought greater trust in the solution and a significant reduction in planning time required by users. In parallel with this, from a development and maintenance viewpoint, there has been a significant reduction in associated costs, as well as in the duration of the processes.”

The bottom line:

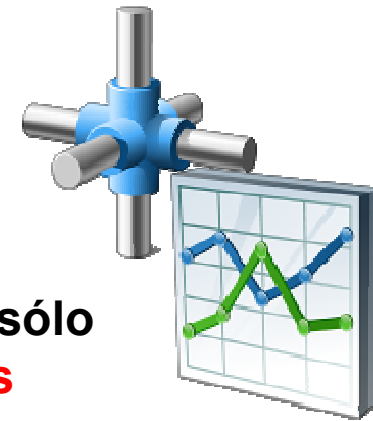
- REE reduced production costs by between **€50,000 and €100,000** per day.
- REE has reduced its carbon emissions by approximately **100,000 tons of CO₂ annually**.





El agua es un **recurso escaso**

La lluvia es caprichosa



Las demandas sólo son **previsiones**

Y hay que **gestionar la red** y otros recursos



Hay **demanda que satisfacer**

Los criterios económicos son secundarios



Respuestas necesarias:

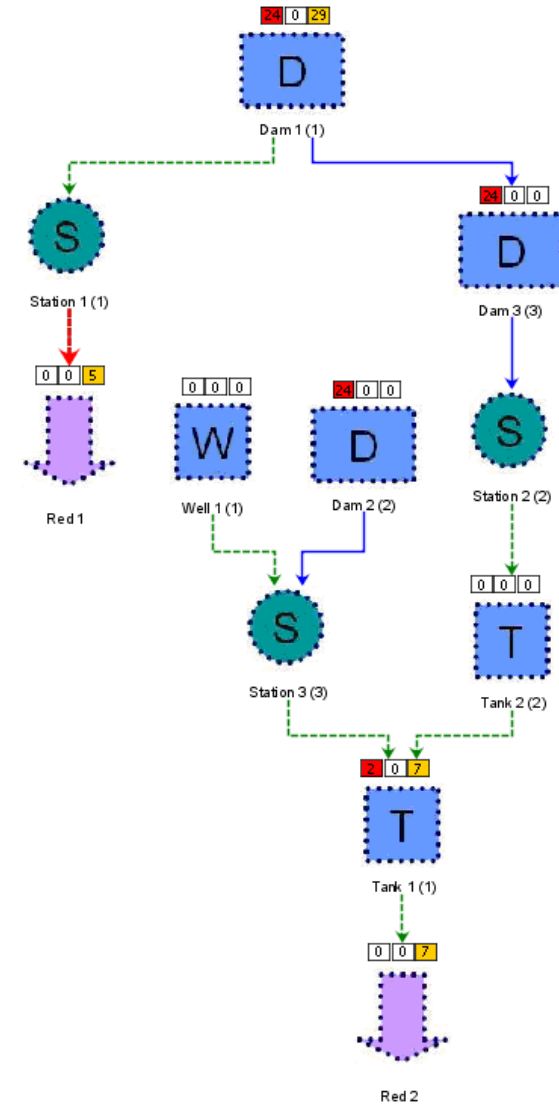
A largo plazo: modificación de red

A corto plazo: operación de la red

- **Problema 1**
 - **Definición a largo plazo de la red** a partir de modelos climáticos
 - **Optimización**, Escenarios, What-if, informes

- **Problema 2**
 - **Plan diario/semanal** de operaciones de recursos (granularidad horaria)
 - **Optimización**, Escenarios, collaboration

- **Problema 3**
 - **Agenda diaria de personal** que visite las instalaciones y ejecute las operaciones
 - **Optimización**



▪ Situation

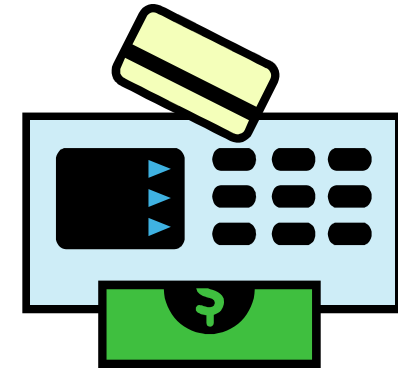
- **Cash** is just a “commodity” (but a special one) stored/distributed through network
- Federal Reserve dramatically **changed fees** for buying/selling cash

▪ Solution

- Solution to **minimize cash** holding/transportation costs and fees paid to Federal Reserve

• Results

- \$7B inventory holding requirement reduced by **35%**
- Cross-shipping fees reduced by **63%**
- Total **annual savings >\$2B**





Hundreds of products/campaigns
Combinations with incompatibilities
How much of each product/campaign?

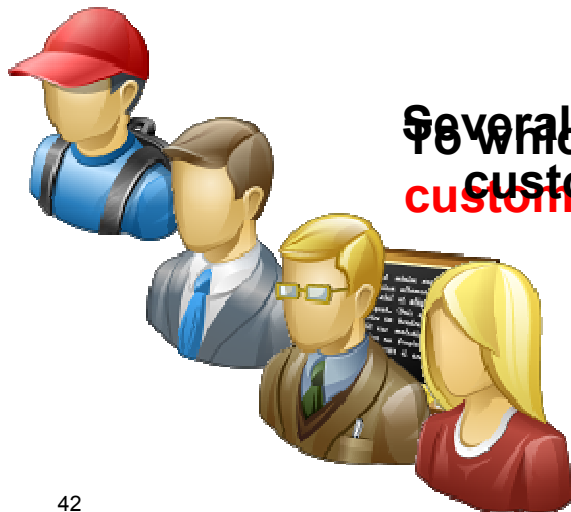
Telesales,
Mail, email,
Office, etc.
Done through **which channel?**



Nightly batch run, select over 1.2M



Experts doing what-if to improve process



Several millions of which customers?

When?
Select actions for next days

Maximize benefits of marketing campaign





Case Study recently published in Consumer Goods Technology Magazine

- **Challenge:** **New demand patterns** suddenly left PGB bottle lines operating at capacity and the peak demand outstripping instantaneous production capacity

- **Goal:** Create a process which **continually improves the production sourcing** strategy by minimizing system-wide costs, providing better customer service and creating a competitive advantage

- **Results:** Their goal was achieved with specific results including:
 - An increase in number of cases available to sell due to **reduced out of stocks**
 - Reduction in raw material and supplies **inventory** from **\$201** to **\$195** million
 - A **2% decline** in the growth of **transport miles** even as PBG revenue grew
 - Increased in the return on invested capital

“ILOG supply chain applications provided us the means to implement a 21st century supply chain by optimizing inventory, reducing costs and increasing sales” -- Paul Hamilton, VP Global Supply Chain, Logistics and Strategy

- **Situation**

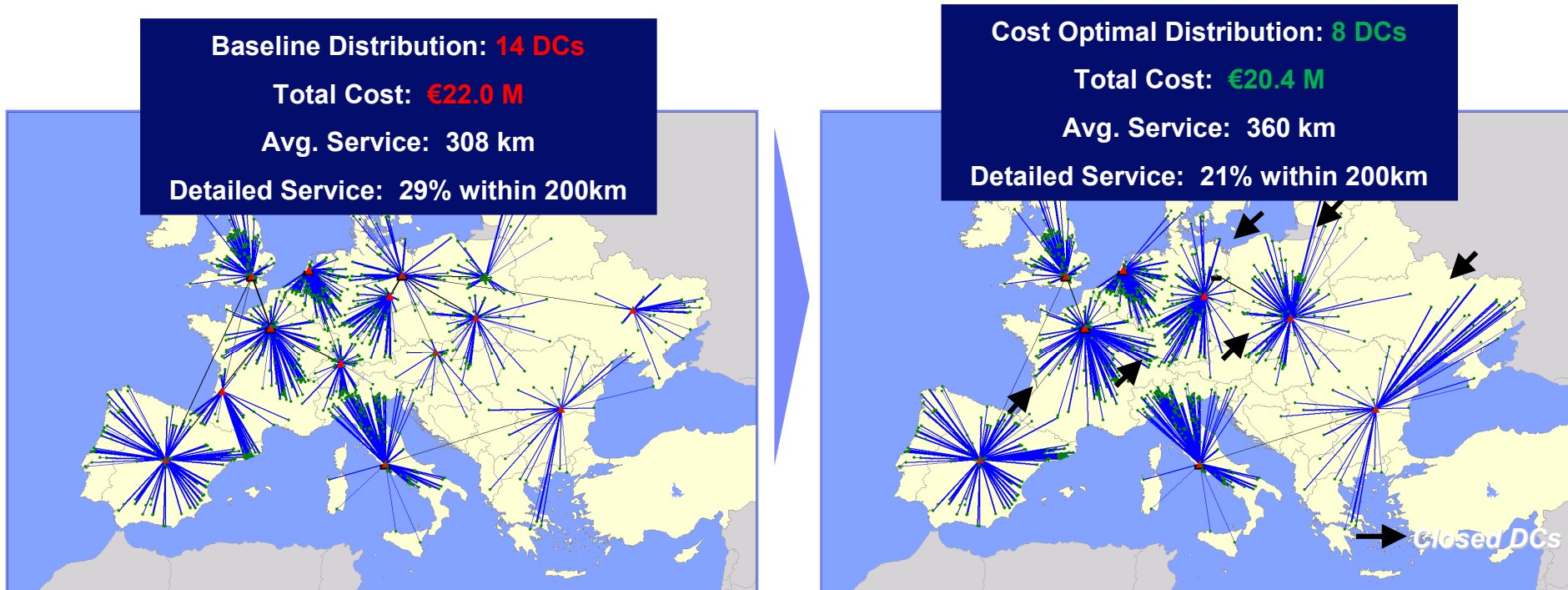
- Sunderland, UK was already Europe's most efficient car production facility at the time
- **Asked to support a 3rd car model**
 - Wanted to accomplish this without building 3rd production line

- **Benefits**

- **Able to produce the 3rd model** on the existing two lines with improved Detailed Scheduling system built with IBM ILOG
- Increased capacity (potential production) by **30%**
- Schedule adherence increased to **90%**

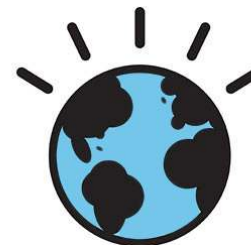


- **Business:** A European based petrochemical company is trying to optimize the distribution network and consolidate DCs.
 - Currently owns 5 production facilities and 14 DCs.
- **Project Objective:** Understand the **optimal number and locations of DCs**



Concluding Remarks

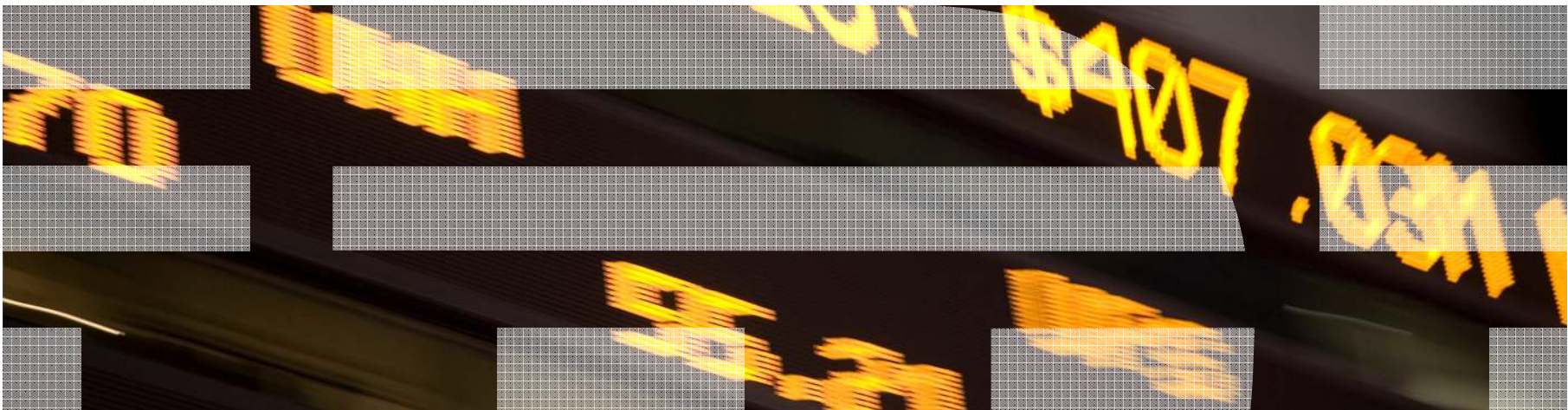
- **ROIs calculables, con paybacks en meses, o incluso semanas**
 - Evita o retrasa la necesidad de inversiones (CAPEX)
 - Reduce los gastos de operación (OPEX)
 - Mejoras de ingresos y de márgenes
- **Satisfacción del cliente mejorada**
 - Proporciona servicio mejor y más personalizado
- **Satisfacción del empleado mejorada**
 - Respeto a las preferencias de planificación, aumentando productividad
 - Mejores procesos de planificación y agenda
- **Decisiones mejores**
- **Decisiones más rápidas**
- ***Smarter Decisions for a Smarter Planet***



Café

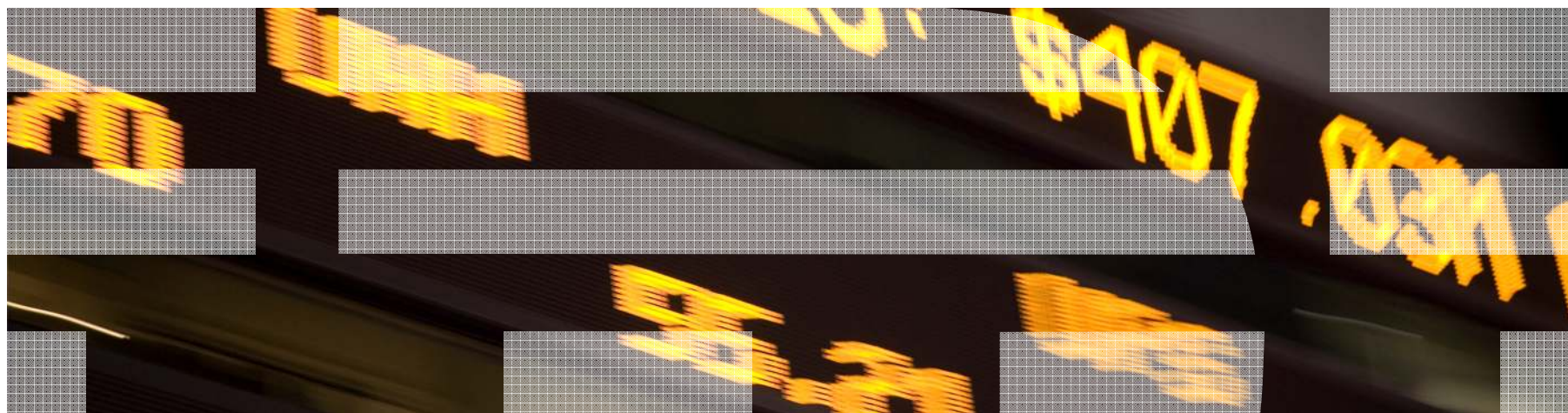
Demostración Caso Practico

Un día en la vida de una compañía de seguros...



Testimonio

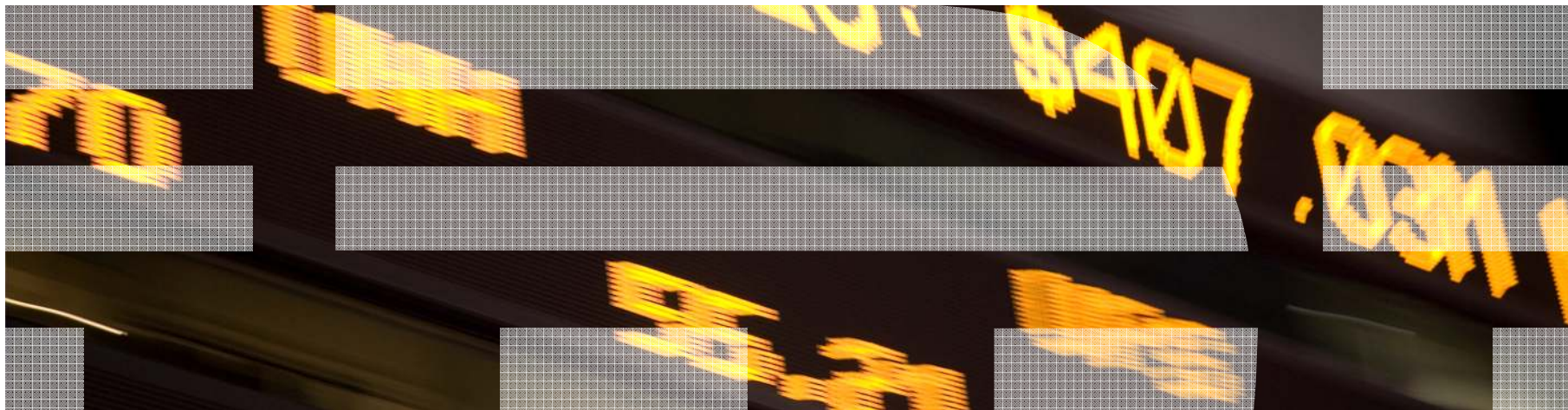
Carlos L. Cuenca
SCOR Telemed



Presentación técnica de los productos

Salvador Peñalver

ILOG Technical Specialist



IBM ILOG BRMS Overview



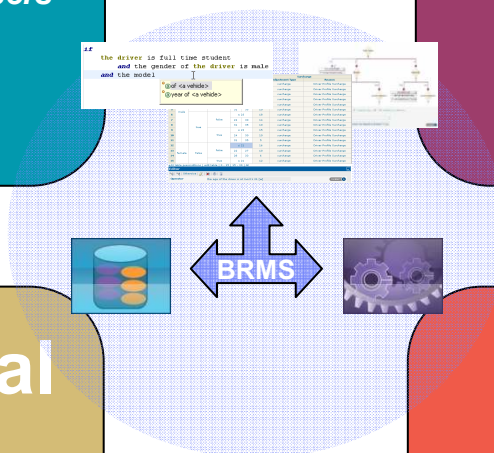
Benefits of the ILOG BRMS

Reduced lead times for changes

Fast, reliable of customer loyalty offers, deployed directly by business users (retail)

More personalized client interactions

2.5x improvement in acceptance of cross-sell offers (retail banking)



Internal/external compliance

Support of complex regulations that vary by customer location and product line (insurance)

Business – IT alignment

Reduced new policy implementation by 50% (financial services)

ILOG Business Rules Management System (BRMS)

- A business rule management system (BRMS) is a suite of tools that allows business policies to be extracted out of software code.
- The policies can then be directly authored, modified and managed by IT or Business people — independently from the underlying software system.
- Our BRMS covers the complete life cycle of rules
- The adoption of a BRMS
 - Increases business flexibility,
 - reduces the maintenance cost of applications,
 - maintains consistency policies across enterprise and
 - improves collaboration between business and IT people.

When business logic is hard coded



LOB

- Long change cycle
- Opaque for business users
- Often hidden, scattered and duplicated



Drivers for using business Rules

- **When rules change frequently** – it makes sense to externalize the rule definitions to provide speedy delivery of changes (regulations, market changes, new product, etc.)
- **Declarative Programming** – human readable way of describing “WHAT” to do without the need to describe HOW to do it.
- **Complex Decisions** – the rule engine provides very efficient way to process complex decision-making logic.
- **Explanation Facilities** – be able to log the decisions made in an Auditable fashion
- **Reuse** of decision service.

What is a business rule ?

Quasi-natural language

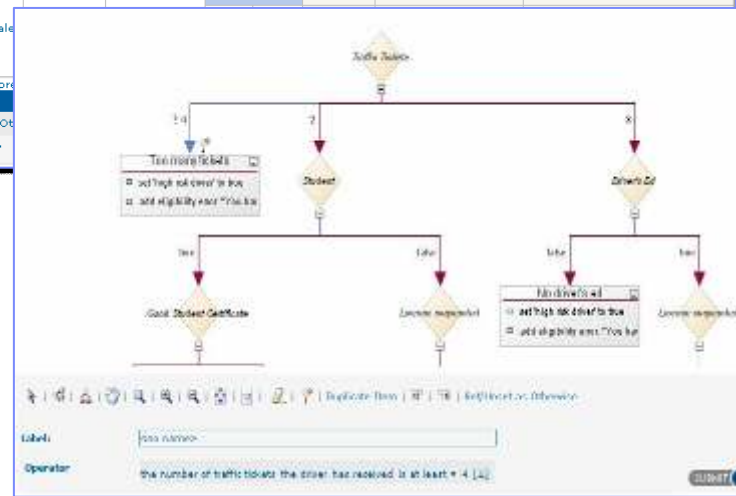
```

if the yearly repayment of 'the loan' is more than
the yearly income of 'the borrower' * 0.3
then
add "Too big Debt-To-Income ratio" to the
messages of 'the loan' ;
reject 'the loan' ;
    
```

Decision Tables

	Gender	Is Married?	Is Graduate?	Age		Dollar	Adjustment Type	Surcharge	Reason
				Min	Max				
0				≤ 23	23		surcharge		Driver Profile Surcharge
1			false	24	30	18	surcharge		Driver Profile Surcharge
2			false	31	35	13	surcharge		Driver Profile Surcharge
3				≤ 23		20	surcharge		Driver Profile Surcharge
4			true	24	30	15	surcharge		Driver Profile Surcharge
5	male			31	35	10	surcharge		Driver Profile Surcharge
6				≤ 23		18	surcharge		Driver Profile Surcharge
7			false	24	30	14	surcharge		Driver Profile Surcharge
8				31	35	10	surcharge		Driver Profile Surcharge
9			true	≤ 23		15	surcharge		Driver Profile Surcharge
10				24	30	10	surcharge		Driver Profile Surcharge
11			true	31	35	5	surcharge		Driver Profile Surcharge
12				≤ 23		16	surcharge		Driver Profile Surcharge
13	female								
14									
15									

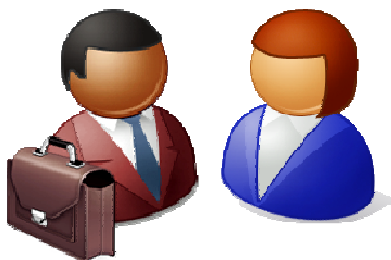
Decision Trees



Business Rule

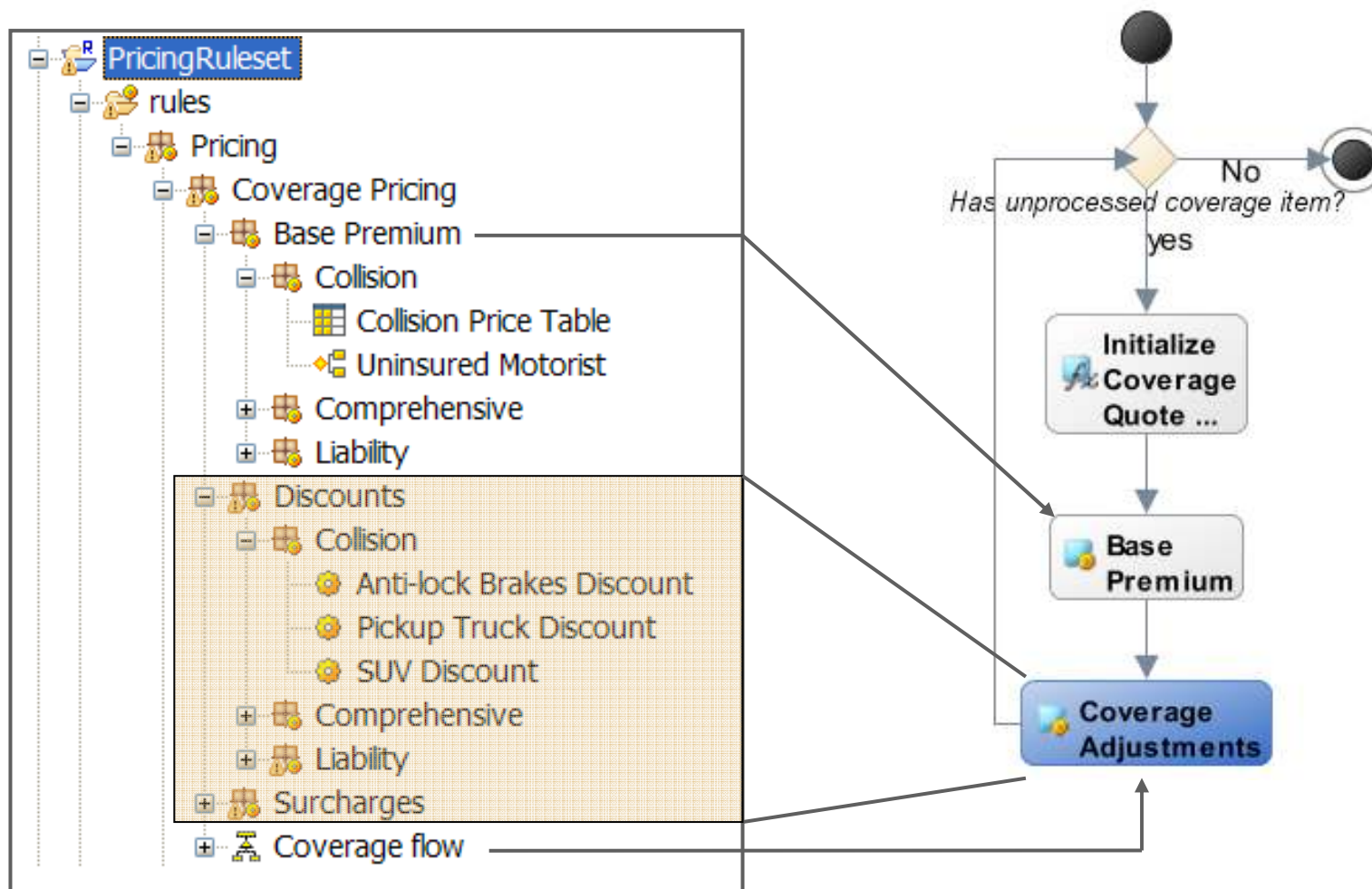
A statement of business logic that:

- ✓ Not cryptic code!
- ✓ Can be authored by business users
- ✓ Is self-documented, executable, reusable

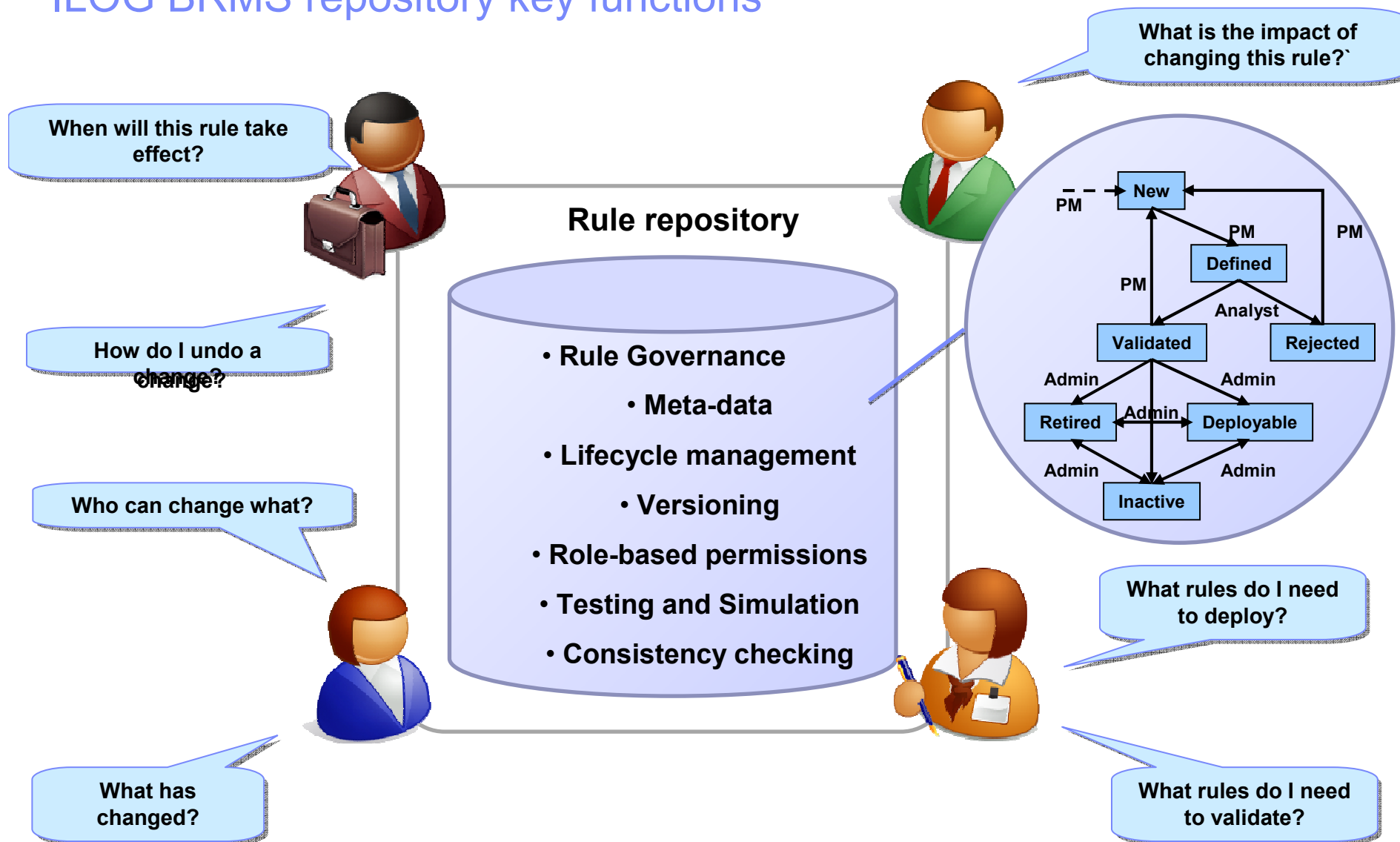


Visual decisioning process

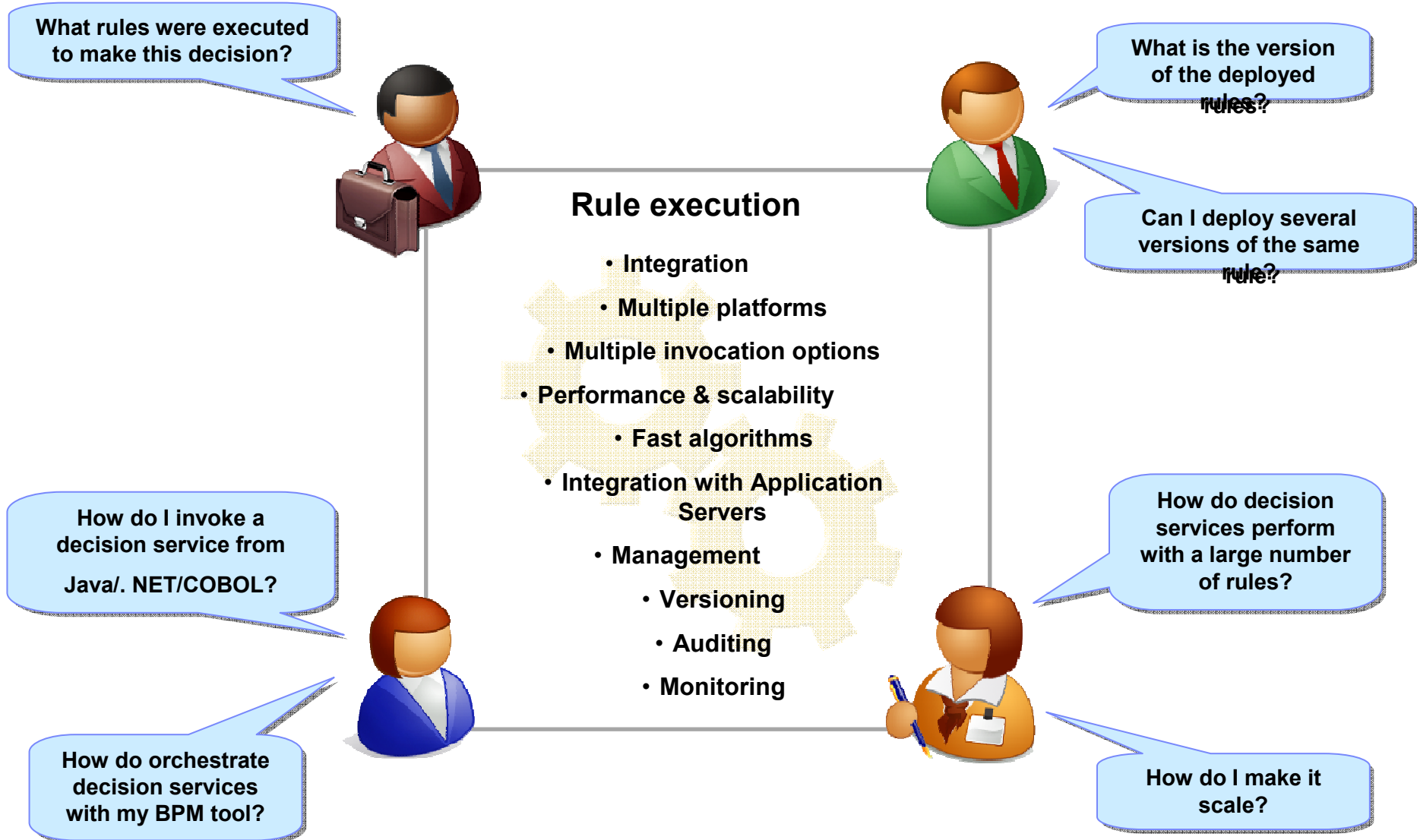
Graphical editor to model and control rule execution sequence



ILOG BRMS repository key functions

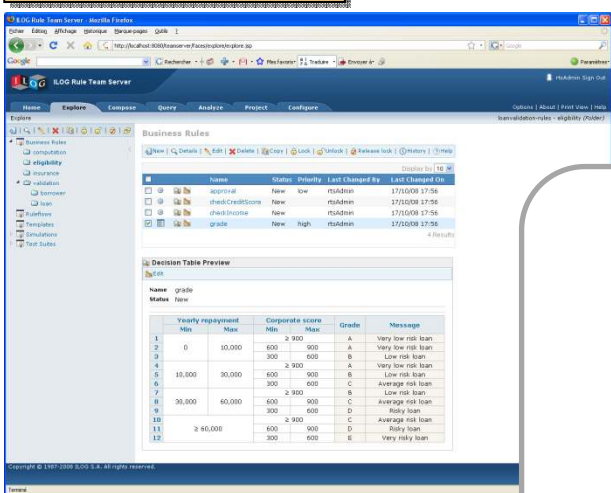


ILOG BRMS execution key functions

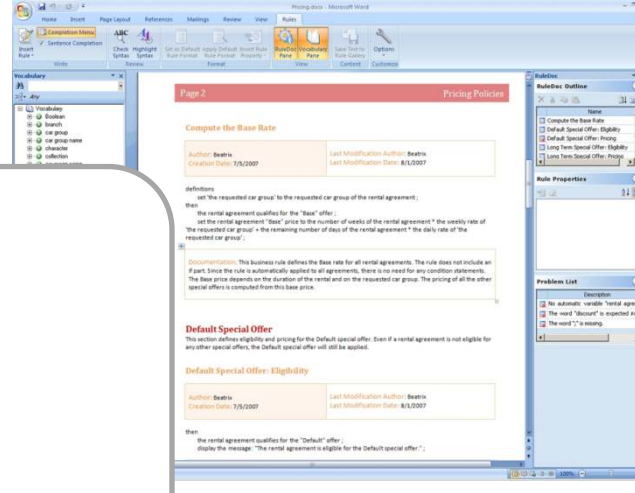


ILOG BRMS user tool key functions

Web browser



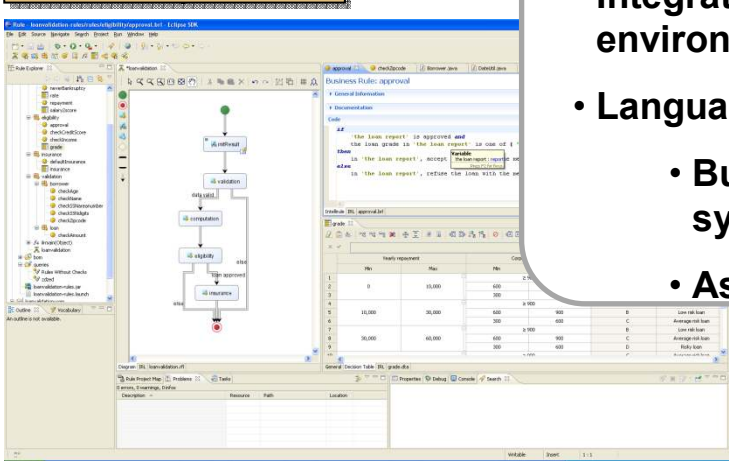
MS Office



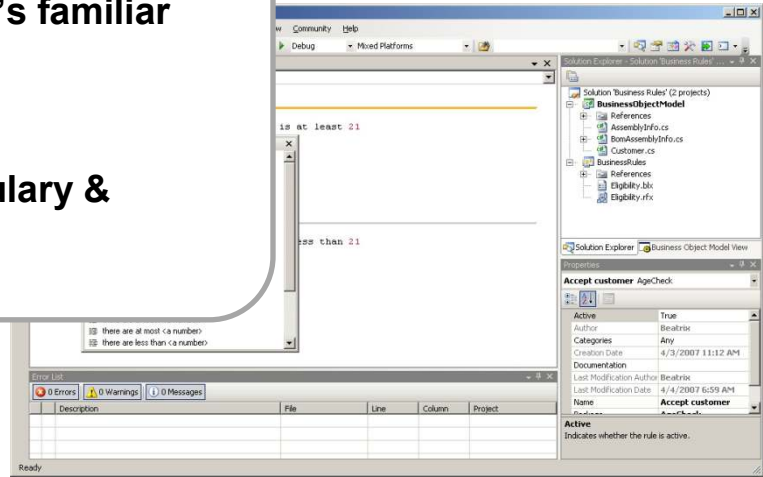
User Tools

- Integration in the user's familiar environment
- Language technology
 - Business vocabulary & syntax
- Assisted editors

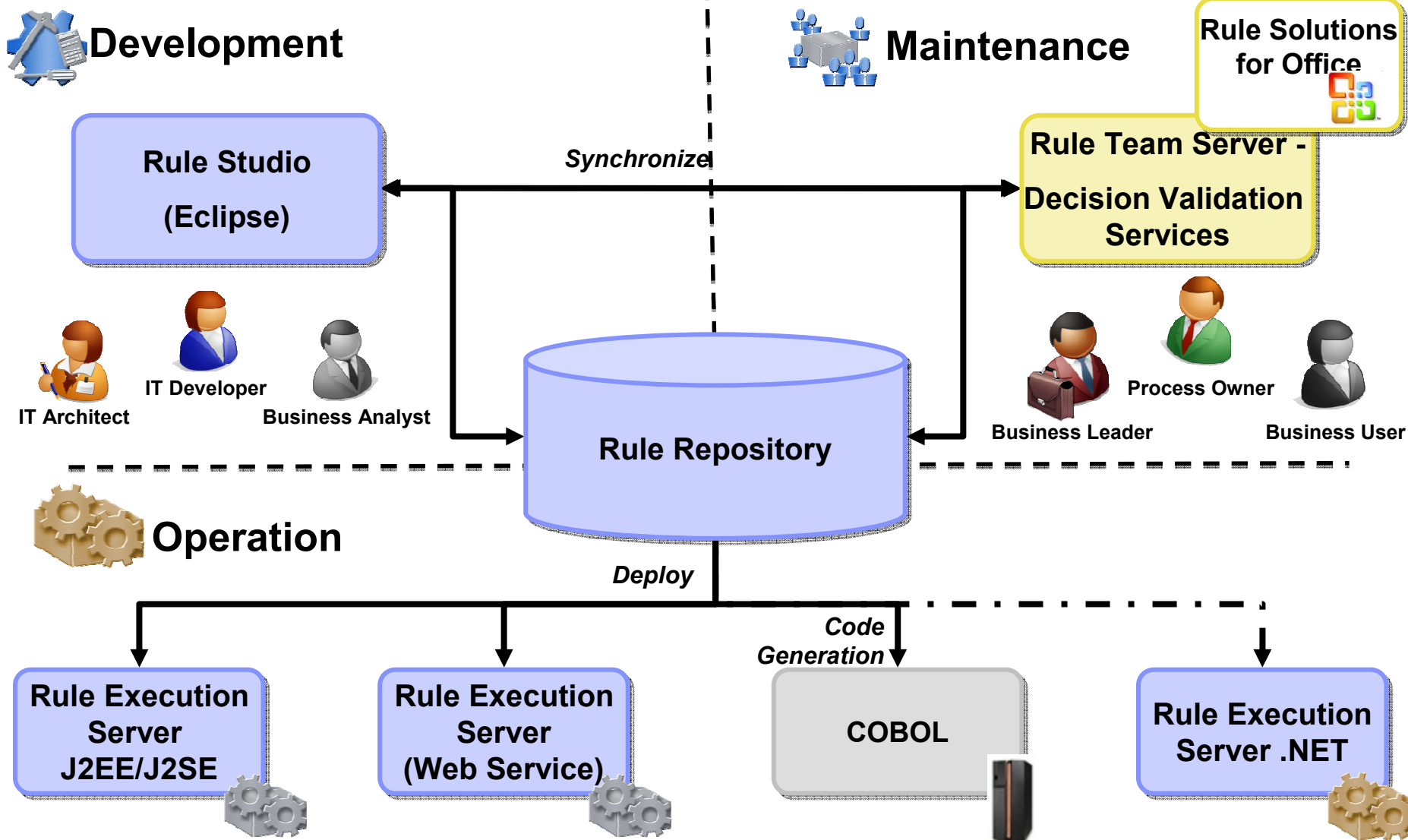
Eclipse



Visual Studio .NET



JRules Solution

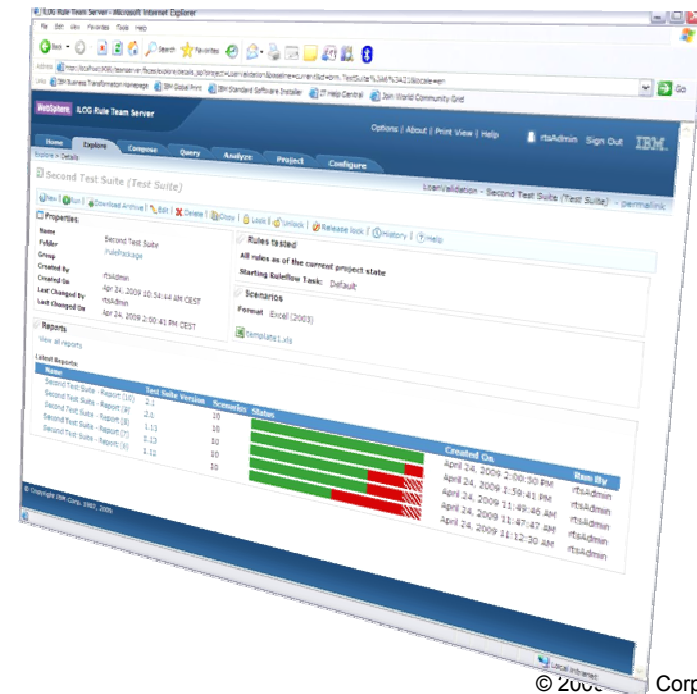


Decision Validation Services

- Unit and regression testing to ensure rules execute as expected
- Functional testing to execute sets of rules (“rulesets”) with data and capture the results
- Simulation to measure or verify rulesets against either historical or test data
- Rule execution auditing to review decision outputs

DVS gives business users the ability to:

- ✓ Input data from either Excel or enterprise data sources
- ✓ Easily modify test cases and expected outputs
- ✓ Run simulations against KPIs and what-if scenarios
- ✓ Send results to Excel or HTML



Decision Warehouse

- Gives end users a detailed overview of all rules that have been applied to a product
- Gives developers, testers a way to easily test that their business rules work fine
- Allows the details of every rule-based decision to be automatically logged to a database, for example compliance purposes.
- Provides extension points to allow integration with existing analytics databases and 3rd-party business intelligence tools.

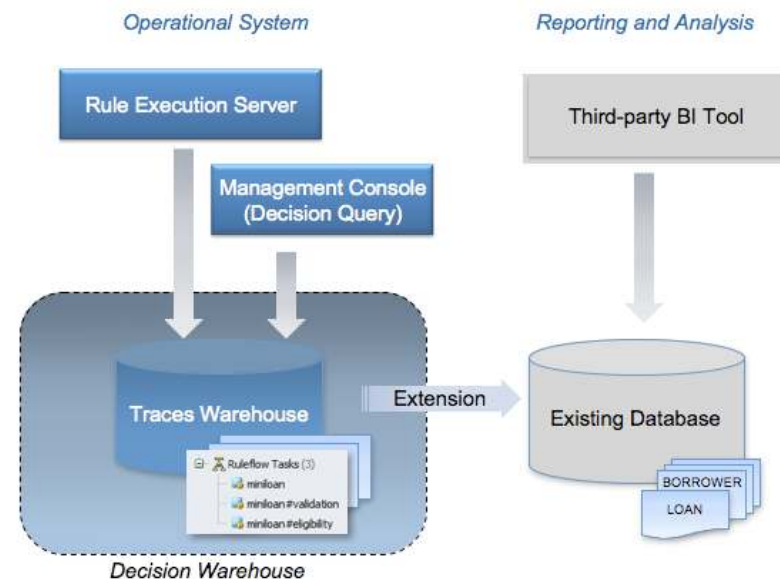
Execution Details

Decision ID:	8d5c9b6f-9c77-42f0-a912-2853ef0a612d
Date:	2009-04-23 12:46:11
Executed ruleset path:	/loanvalidationrulesruleapp/1.0/loanvalidationrules/1.0
Processing Time (ms)	16
Number of rules fired	7
Number of tasks executed	6

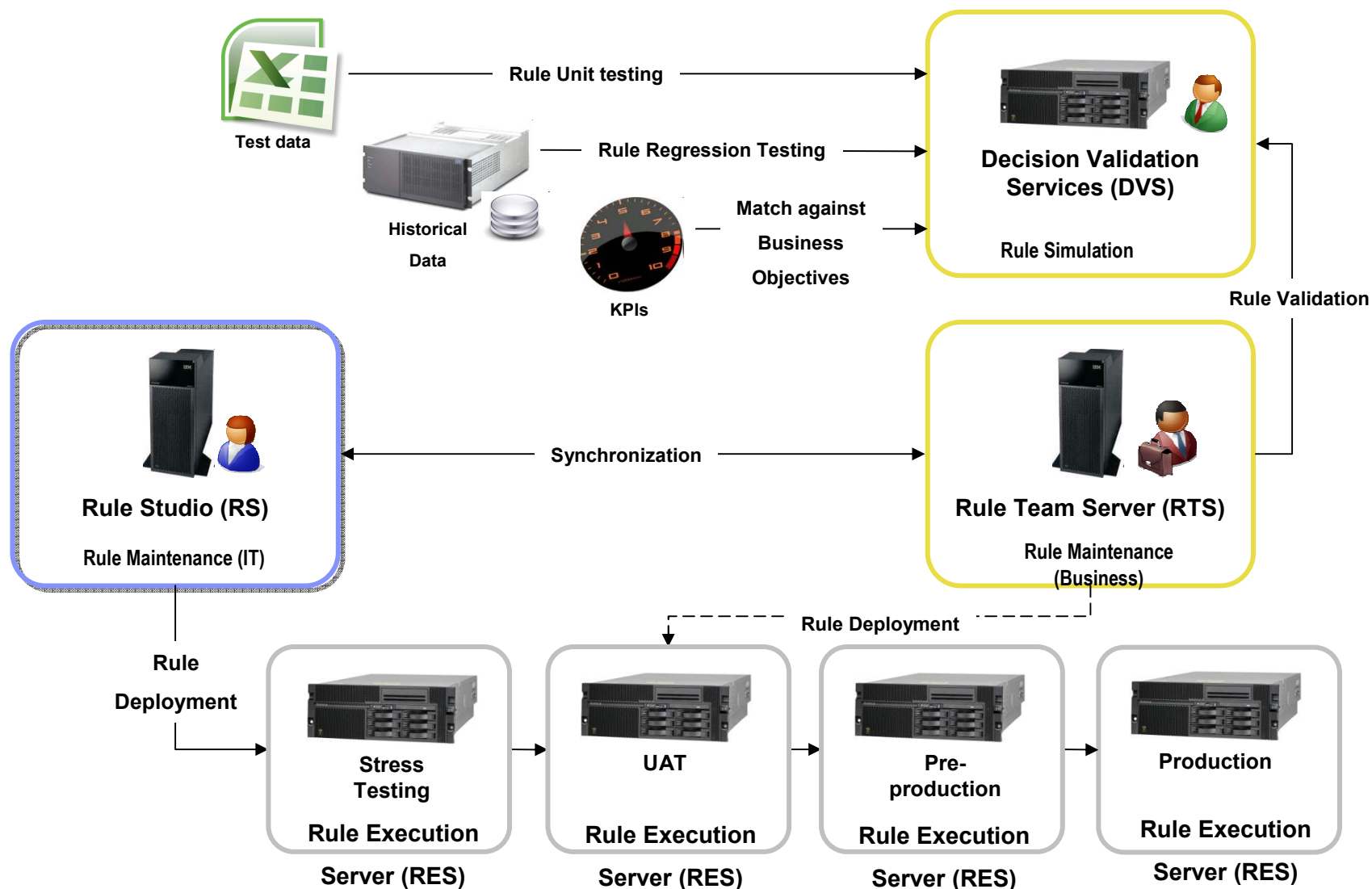
Decision Trace

```

graph TD
    RT[Ruleflow Tasks (1)] --> L[loanvalidation (5)]
    L --> LR[loanvalidation>initResult]
    L --> LV[loanvalidation>validation]
    L --> LC[loanvalidation>computation (5)]
    LC --> C1[computation.initialCorporateScore]
    LC --> C2[computation.neverBankruptcy]
    LC --> C3[computation.salary2score 5]
    LC --> C4[computation.rate 6]
    LC --> C5[computation.repayment]
    L --> LE[loanvalidation>eligibility]
    L --> LI[loanvalidation>insurance (2)]
    LI --> I1[insurance.insurance 4]
    LI --> I2[insurance.defaultInsurance]
    
```



Typical test strategy



Security and Rule Promotion

- **Authentication, Authorisation & Security**

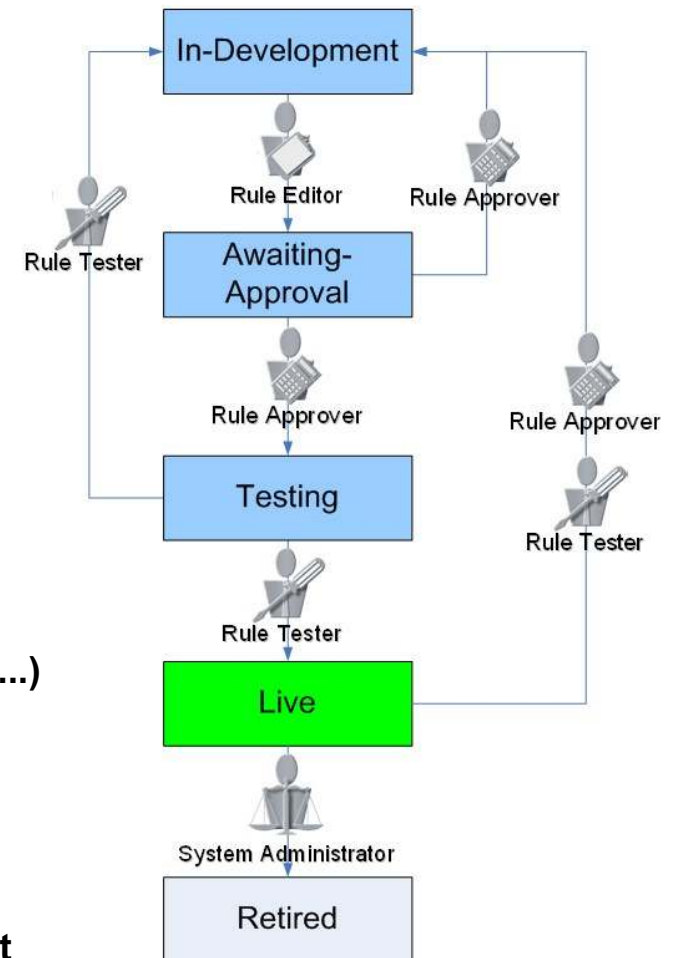
- **Fine-grained permission management**

<input type="checkbox"/>	PERMISSION	TYPE	PROPERTY	VALUE
<input type="checkbox"/>	▲ ▼ Create	Action Rule	-	Yes
<input type="checkbox"/>	▲ ▼ Create	Smart View	-	Yes
<input type="checkbox"/>	▲ ▼ Create	Folder	-	Yes
<input type="checkbox"/>	▲ ▼ View	Action Rule	-	Yes
<input type="checkbox"/>	▲ ▼ Update	Action Rule	*	Group
<input type="checkbox"/>	▲ ▼ Update	Action Rule	Status	No

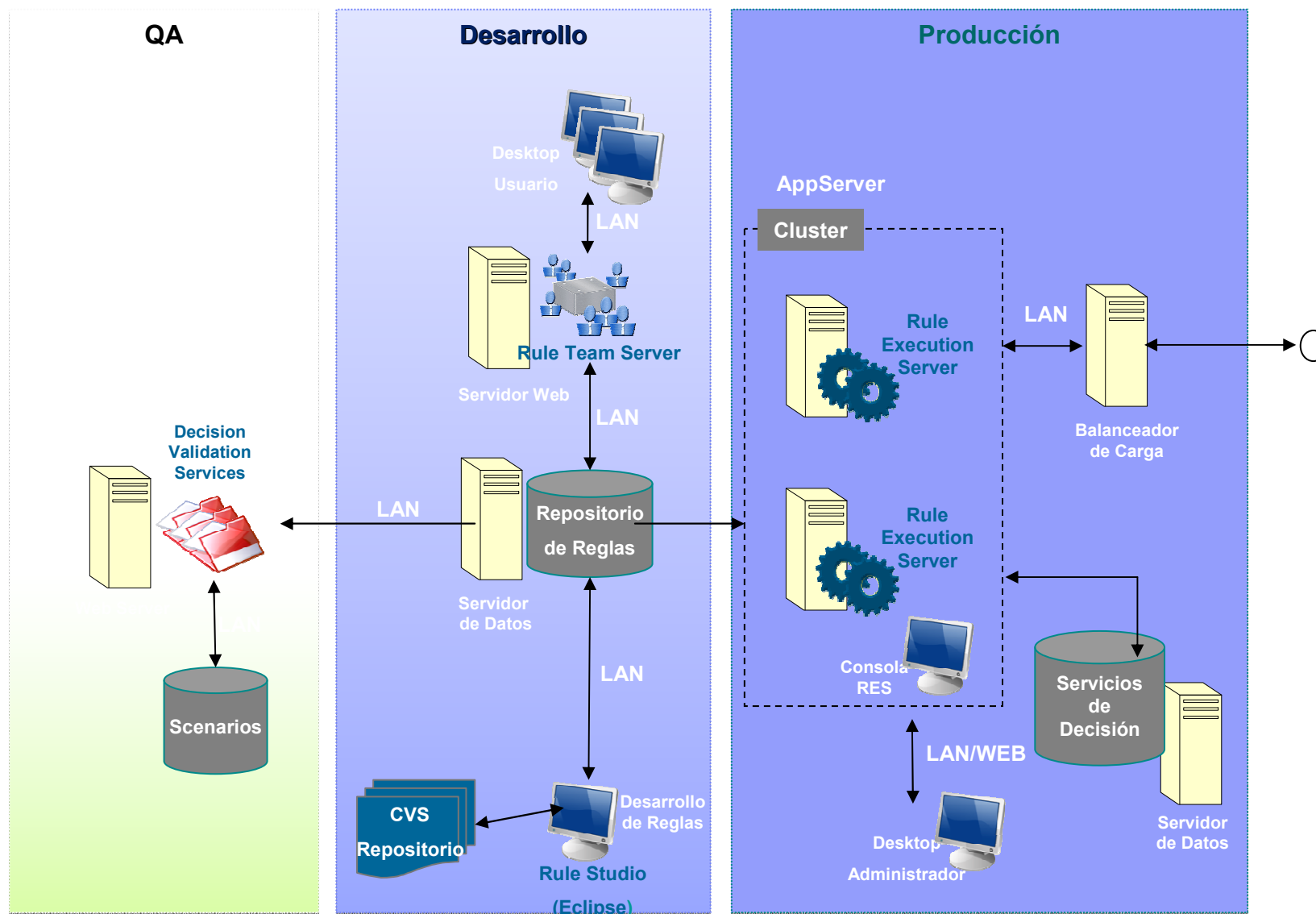
- **Rule Team Server (RTS) utilizes J2EE-standard role based security**
- **Utilise any role/permission service via API (LDAP, RDBMS...)**

- **Rule life cycle**

- **Control rule validation & promotion to the live environment**
- **Tailored to fit your process**



Architecture sample: Websphere BRMS in different environments



IBM BRMS Resources

- **DeveloperWorks (Red paper, Forums, ...)**
<http://www.ibm.com/developerworks/websphere/zones/brms>
- **Methodology and Best Practices**
https://www.ibm.com/developerworks/mydeveloperworks/blogs/isis/?lang=en_us
- **Industry Solution Center @ La Gaude**
<http://www-05.ibm.com/fr/ibmforum/lagaude/>

The screenshot displays the IBM DeveloperWorks website for WebSphere ILOG Business Rule Management Systems. The page features a navigation menu with options like Home, Solutions, Services, Products, Support & downloads, and My IBM. The main content area is titled 'WebSphere ILOG Business Rule Management Systems' and includes a description of the BRMS, a 'WebSphere software' badge, and a 'Spotlight' section with a link to a redbook. Below this, there is a section for 'Integrate WebSphere ILOG JRules with WebSphere Process Server' with a diagram and a 'More' link. A 'Search Technical library' section is also present, along with 'Downloads, CDs, DVDs' and 'Learning resources' sections.

IBM ILOG ODM Enterprise

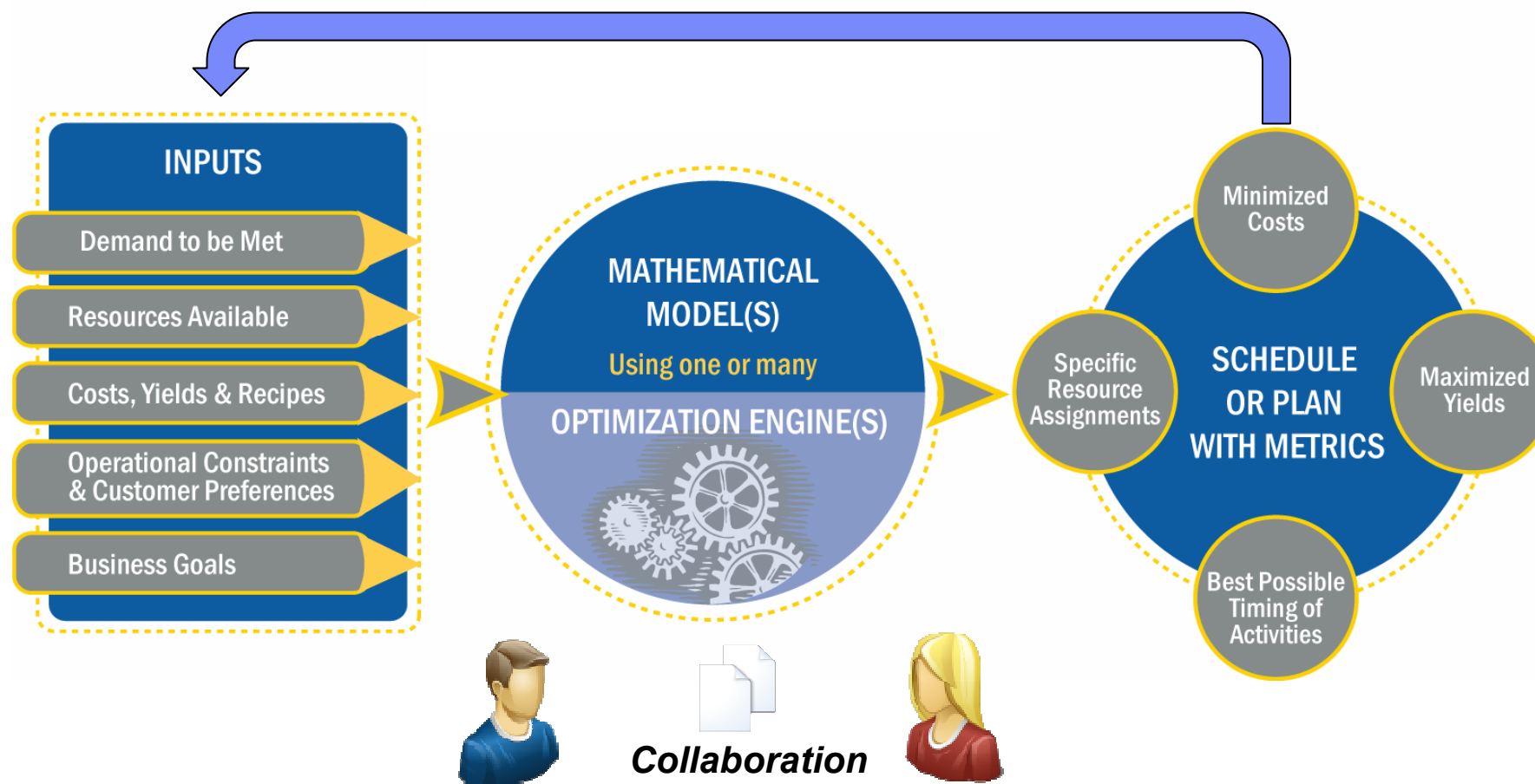
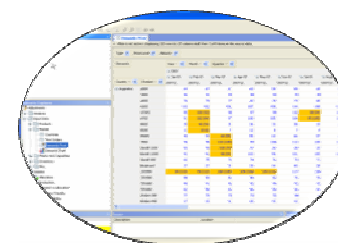
A Configurable Platform for
Custom Planning and
Scheduling Solutions



How does optimization support decision making?



What-If Analysis



Keys to success for a custom solution

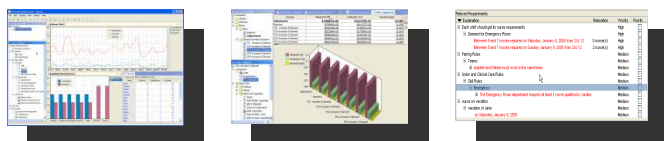
Take advantage of the best
Optimization components



Use a methodology involving
the right **People**



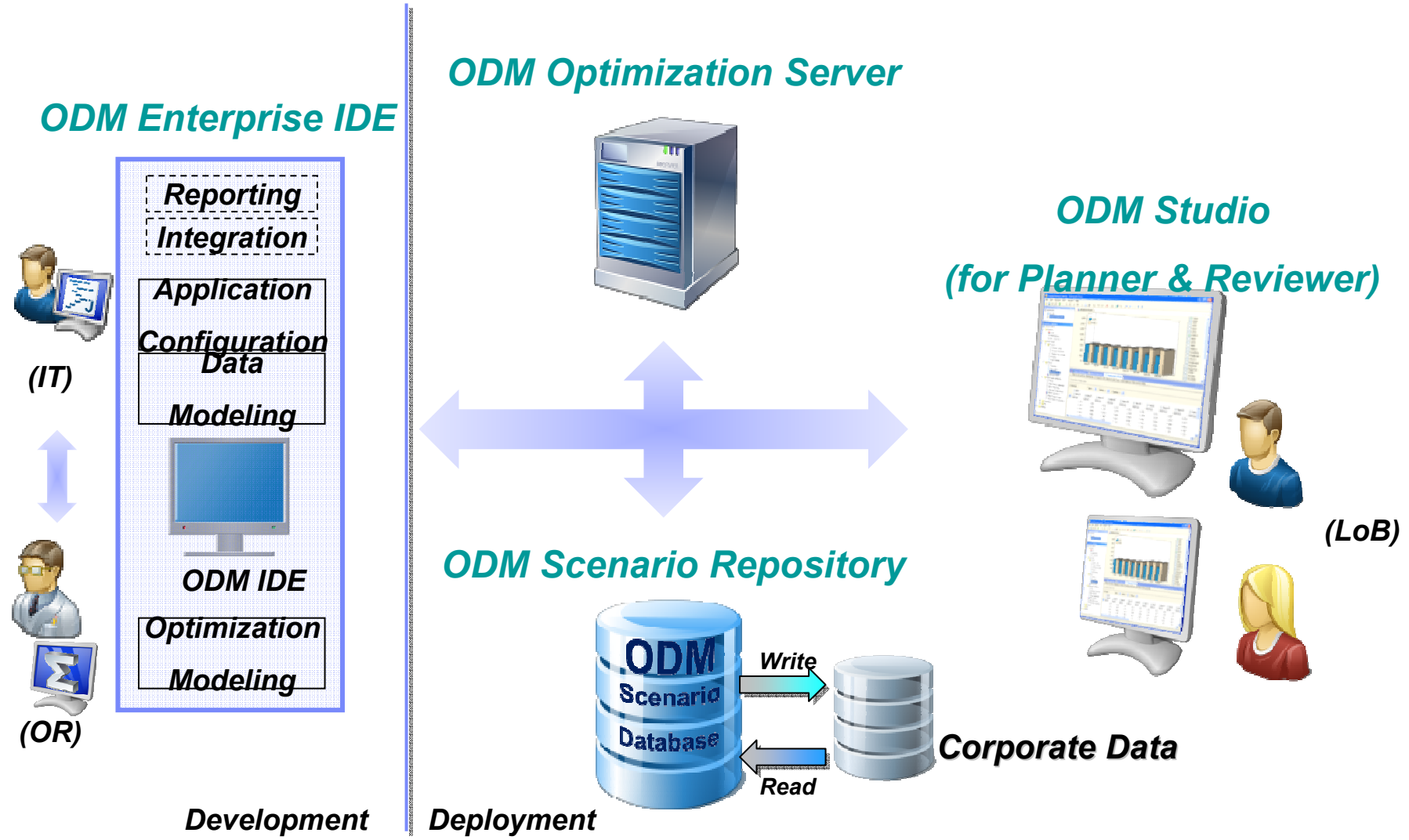
Bring value to end-users
providing the right **Features**



Leverage solid basis with
right **Platform and Architecture**



ILOG ODM Enterprise Architecture



Optimization Model Development

OPL Perspective

Manage projects with models, data and parameters

Model your problems using objectives and constraints

```
forall( o in Oils )
  ctCapacity:
    sum( g in Gasolines )
      Blend[o][g] <= Oil[o].ctCapacity;
  ctMaxProd:
    sum( o in Oils , g in Gasolines )
      Blend[o][g] <= MaxProduction[o];
forall( g in Gasolines )
  ctOctane:
    sum( o in Oils )
      (Oil[o].octane - Gas[g].octane) * Blend[o][g] >= 0;
forall( g in Gasolines )
  ctLead:
    sum( o in Oils )
      (Oil[o].lead - Gas[g].lead) * Blend[o][g] >= 0;
```

Inspect data/solution

Oils (size 3)	Gasolines (size 3)	Value	Reduced cost	Sen
"Crude1"	"Super"	2088.9	0	[-∞, 2088.888]
"Crude1"	"Regular"	2111.1	0	[-∞, 2111.111]
"Crude1"	"Diesel"	800	0	[-∞, -∞]
"Crude2"	"Super"	777.78	0	[-∞, 777.7777]

Browse Solutions

Name	Value
ProdCost	
Decision variables (2)	
a	[0 750 0]
Blend	[[2088.9 2111.1 800] [777.78 4222...]]
Constraints (5)	
Property	Value
Dimensions	2

Connect to databases

```
OilData from DBRead(db, "SELECT * FROM OilData");
GasData from DBRead(db, "SELECT * FROM GasData");
OilData from DBRead(db, "SELECT * FROM OilData");
MaxProduction = 14000;
ProdCost = 4;
DBExecute(db, "drop table OilData");
```

Analyze your problem and engine performance

```
Reduced LP has 12 rows, 12 columns, and 43 nonzeros.
Presolve time = 0.00 sec.

Iteration log . . .
Iteration: 1 Scaled dual infeas = 0.000000
Iteration: 2 Dual objective = 434000.000000
```

Application Development (Configuration)

ODME Perspective

The screenshot shows the Eclipse IDE in the ODME perspective. The left sidebar contains a project explorer with various OPL projects. The central pane shows a tree view of the 'Nurse Scheduling Demo' model, including sections for Analysis, Input Data, Department, and Charts. The right-hand pane is titled 'Minimum Demand By Day' and contains a 'Chart Tables' configuration table and a 'Preview Area' with three bar charts.

Index	Table	Column	Label
0	shifts	minRequirement (In...	Minimum dem...

Below the table, the configuration shows 'Table: shifts', 'Column: minRequirement (Integer)', 'X From: weekdays', and 'Chart For Each: departments'. The 'Preview Area' contains three bar charts for 'value 0' (blue), 'value 1' (pink), and 'value 2' (green), each showing data points for 'value 0', 'value 1', and 'value 2' on the x-axis.

Manage projects with data, displays and extensions

Define ODM views: Tables, Charts, Pivots and Custom

Configure Charts

Preview Charts

Configuring ODM Repository

Select Single-User or Collaborative Mode

Machine and DB settings

User & Rights Administration

Manage Repository Schema

ODM Repository Administration for 'SupplyDeman'

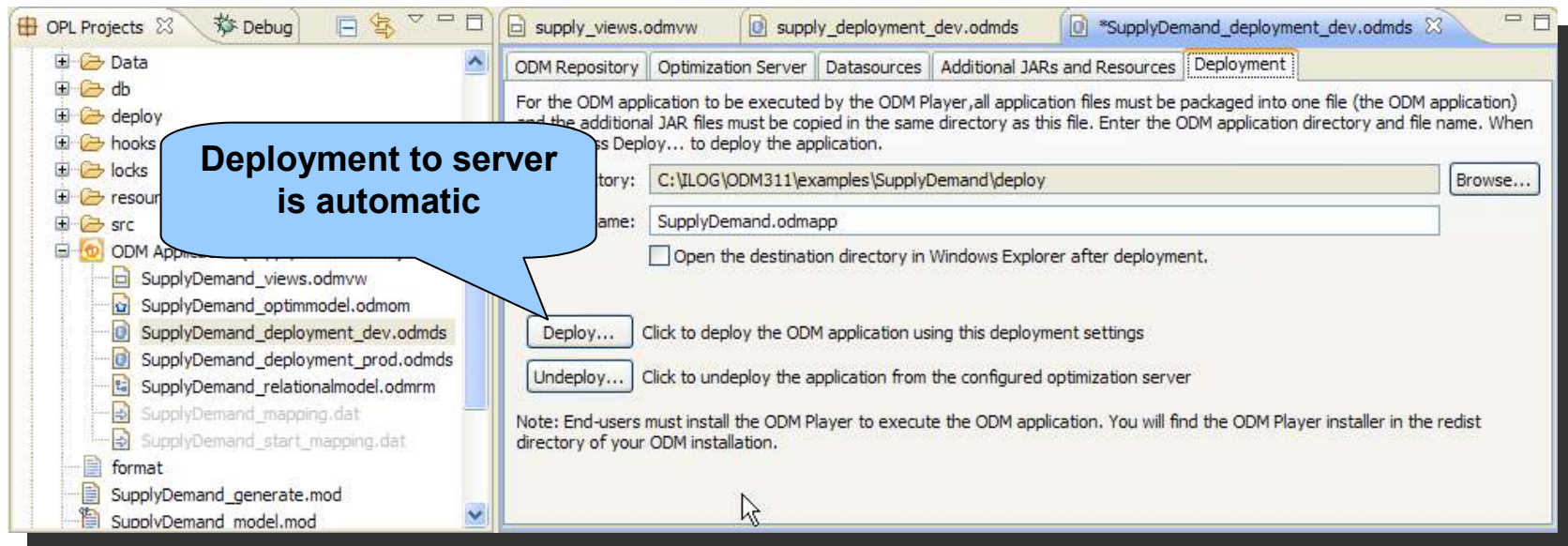
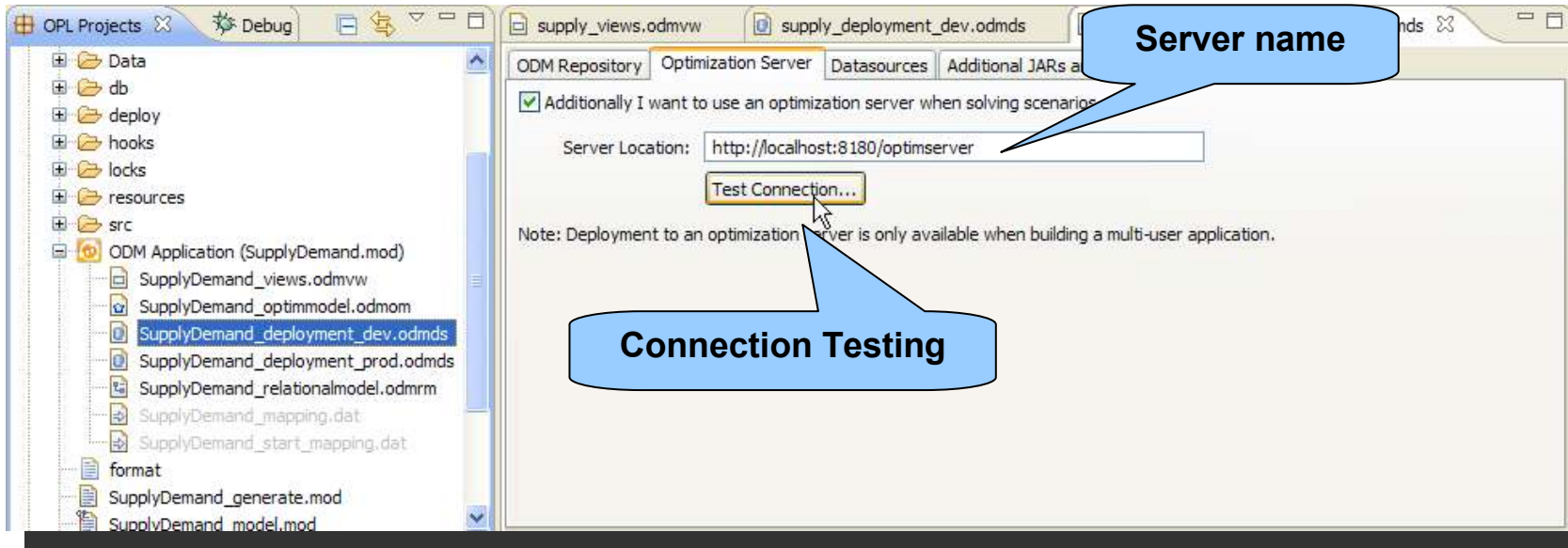
Users | Recycle Bin

This panel allows you to manage the users of the ODM application.
The special user 'administrator' is used to launch this administration panel from the ODM application.

Name	Password	Force Unlock	Cancel Solve	Administration
Sam	****	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
John	****	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mark	****	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New User				

Add User Remove User Close

Configuring ODM Optimization Server



Application Development (Customization)

Java Perspective

The screenshot shows the Eclipse IDE in the Java perspective. The Package Explorer on the left displays a project structure with a package named 'customView' containing several Java files, including 'NurseView.java'. The main editor window shows the source code for 'NurseView.java', which extends 'IloScenarioView'. A blue callout bubble points to the code with the text 'Develop Java extensions'. The bottom of the IDE shows the 'Problems' view with a message for 'customView.NursePanel'.

```

package customView;

import ilog.odm.datasvc.IloRow;

/**
 * View of nurse schedule result.
 */
public class NurseView extends IloScenarioView {

    // Collection of data listeners
    private final DataListenerCollection dataListeners = new DataListenerCollection();

    // Collection of data change listeners
    private final DataChangeListenerCollection legendListeners = new DataChangeListenerCollection();

    // Graphic panel of this custom scenario view
    private NursePanel nurseViewPanel;

    // Data model for this custom scenario view
    private final NurseViewModel nurseViewModel;

    // Part of the custom view(nurse name list)
    private final NurseListView nurseNameListView;

    // Summary information of this view
    private final IloViewSummary viewSummary;
    
```

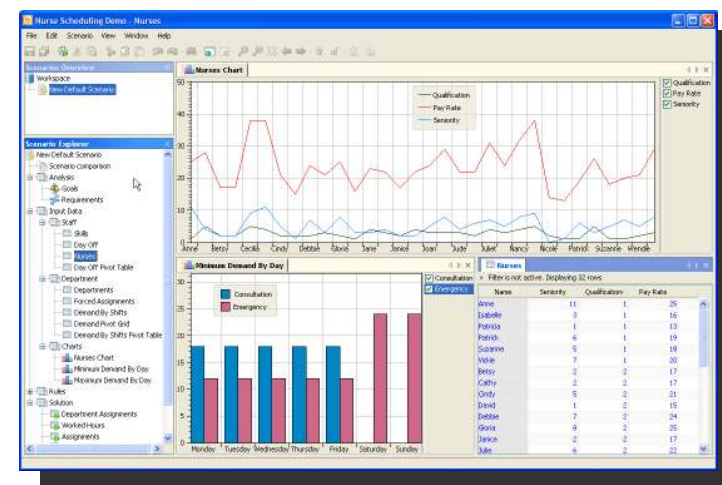
customView.NursePanel
Graphic Panel (built with a Visual editor on Eclipse)

What is ODM Studio ?



- **Planner/Reviewer User Interface**
 - Out of the box ...
 - Configurable ...
 - Customizable for perfect fit.
 - Optional if Custom (Web) UI

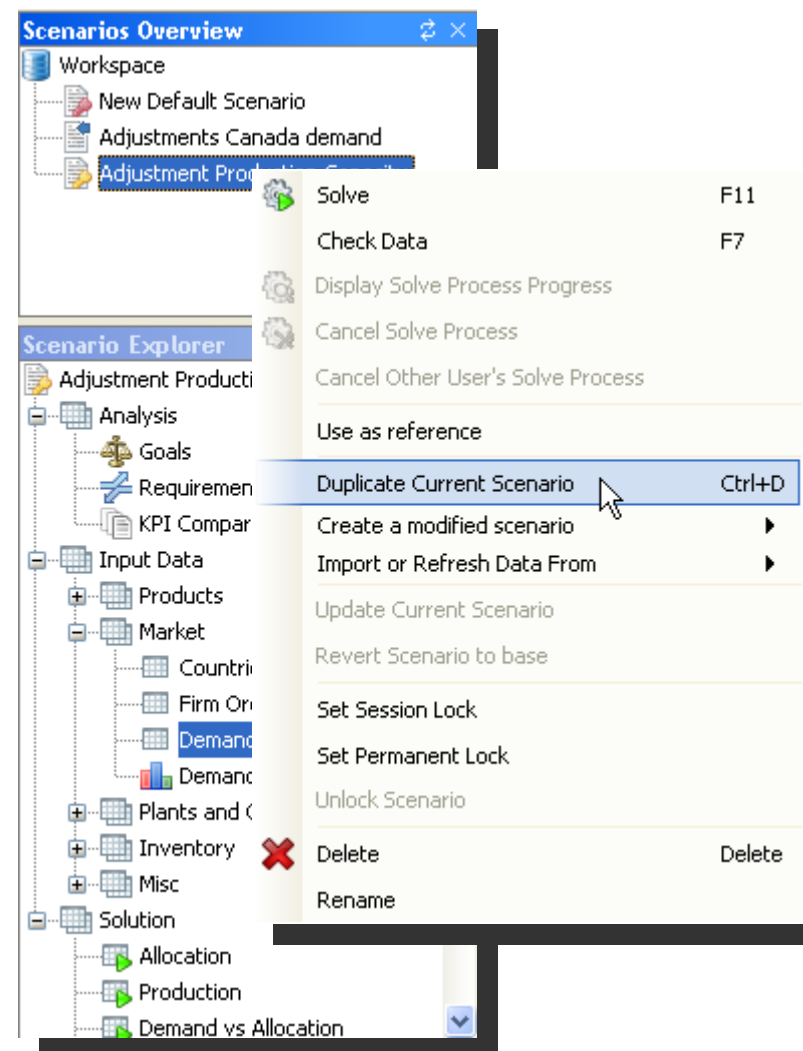
- **Support of :**
 - Scenarios and workspaces
 - What-if analysis (pair-wise and multi scenario)
 - Tables, Charts & Pivot Tables
 - Goals with (incl. weights & drill down)
 - Requirements relaxation, and priorities
 - Collaboration



Country	Product	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Argentina	2005	64	67	61	63	59	59	40	51
	3005	46	41	44	38	43	39	40	36
	6005	76	79	77	83	78	79	80	75
	6205	110	102	106	107	108	114	108	112
	676S	85	100 (93)	90	97	99	102	96 (94)	100
	676S	91	102 (94)	97	100	105	104	95 (105)	105
	9005	35	40 (34)	35	36	33	38	33	25
	6205	111	10 (8)	7	12	8	7	9	7
	996S	48	54	60 (52)	55	63	66	57	64
	996S	96	96	110 (105)	99	106	112	105	115
	Bandit 1200	83	90	100 (93)	91	86	88	92	92
	Bandit 1200S	90	96	90 (99)	103	98	101	105	105
	Bandit 900	66	75	71	74	76	70	71	75
	Boulevard	37	37	39	39	44	40	38	42
	CR:950	90 (110)	90 (112)	108 (105)	100 (106)	105 (110)	117	108	114
	CR:950	88	83	81	86	82	76	76	74
	CR:950	48	41	42	42	49	42	42	42
	CR:950	62	58	63	66	65	66	66	65
	Enduro 350	77	70	73	73	72	68	62	67
	Enduro 450	17	15	16	20	15	12	19	18

Scenario Management & What-if analysis

- **Scenarios represent**
 - Plans for specific periods
 - Alternatives (What-if analysis)
- **Scenarios contain**
 - *Data, costs,*
 - *Rules, goals,*
 - *Solution set with calculated KPIs*
- **Scenario editing**
 - Includes change to any element



Displays using Simple Tables and Charts

Nurse Scheduling Demo - Nurses

File Edit Scenario View Window Help

Scenarios Overview

- Workspace
 - New Default Scenario

Scenario Explorer

- New Default Scenario
- Scenario comparison
- Analysis
 - Goals
 - Requirements
- Input Data
 - Staff
 - Skills
 - Day Off
 - Nurses
 - Day Off Pivot Table
 - Department
 - Departments
 - Forced Assignments
 - Demand By Shifts
 - Demand Pivot Grid
 - Demand By Shifts Pivot Table
 - Charts
 - Nurses Chart
 - Minimum Demand By Day
 - Maximum Demand By Day
 - Rules
 - Solution
 - Department Assignments
 - Worked Hours
 - Assignments

Nurses Chart

Qualification (black line), Pay Rate (red line), Seniority (blue line)

Minimum Demand By Day

Consultation (blue bar), Emergency (red bar)

Nurses

Filter is not active. Displaying 32 rows

Name	Seniority	Qualification	Pay Rate
Anne	11	1	25
Isabelle	3	1	16
Patricia	1	1	13
Patrick	6	1	19
Suzanne	5	1	18
Vickie	7	1	20
Betsy	2	2	17
Cathy	2	2	17
Cindy	5	2	21
David	1	2	15
Debbie	7	2	24
Gloria	8	2	25
Janice	2	2	17
Julie	6	2	22

Business Goals and Plan Overview w/ Charts

OPL-ODM Supply Demo - Distribution Center Charts

File Edit Scenario View Window Help

Scenarios Overview

- Workspace
 - New Default Scenario

Scenario Explorer

- New Default Scenario
 - Analysis
 - Goals
 - Requirements
 - Input Data
 - Production
 - Distribution
 - Distribution Centers
 - DC Variable Cost
 - Inbound Transportation Cost
 - Outbound Transportation Cost
 - Customer Data
 - Customers
 - Demand
 - Rules
 - Solution
 - Plant to DC shipments
 - DC to Customer shipments
 - Distribution Center Costs
 - Distribution Center Charts
 - KPIs
 - Cartographic Views
 - Map
 - Map reference

Map Goals

Goal Name	Value	Active	Importance Factor	Constrained
Variable Plant Cost	\$16,603,800	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Inbound Transportation Cost	\$7,105,155.21	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
Outbound Transportation Cost	\$6,627,748.024	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
Fixed Distribution Center Cost	\$3,250,000	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
Variable Distribution Center Cost	\$2,677,000	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>

Name	Value	Name	Value
Constraints	Inbound Transportation Cost	-Inbound Transportation Cost	\$7,105,155.21
Constrain max to		-Denver	\$6,250,925.576
Constrain min to		-SKU 1099	\$2,945,706.373
With priority		-Los Angeles	\$1,787,476.106
Bound Searches		-San Francisco	\$786,045.845
Best bound		-Dallas	\$372,184.422
Worst bound		+SKU 1199	\$2,267,102.974
Ignoring priorities under	Ignored	+SKU 1299	\$1,038,116.229
		+Philadelphia	\$854,229.634

Distribution Center Charts

DC	Shipment Cost	Storage Cost
New York	~2.2E6	~0.8E6
Parkville	~0.9E6	~0.4E6
Goose Creek	~0.9E6	~0.4E6
Jacksonville	~0.9E6	~0.4E6
Memphis	~0.9E6	~0.4E6
Akron	~0.9E6	~0.4E6
West Lafayette	~0.9E6	~0.4E6
Dubuque	~0.9E6	~0.4E6
Chicago	~0.9E6	~0.4E6
Broken Arrow	~0.9E6	~0.4E6
Denver	~2.0E6	~0.4E6
Los Angeles	~0.4E6	~0.8E6
Salem	~0.4E6	~0.4E6

Legend: Shipment Cost, Storage Cost

Pivot Tables and Scenario Comparison

The screenshot displays the 'SupplyDemand - Demands Pivot' application window. The main area shows a pivot table with the following structure:

- Columns:** Country, Product, 2007Q1, 2007Q1, 2007Q1, 2007Q2, 2007Q2, 2007Q2, 2007Q3, 2007Q3.
- Rows:** Argentina, 2005, 3005, 6005, 6265, 676RS, 676S, 9005, 929S, 996RS, 996S, Bandit 1200, Bandit 1200S, Bandit 900, Boulevard, CRX550, CRX500, CRX600, CRX650, Enduro 350, Enduro 450.

Key data points from the table include:

- CRX550: 90 (110), 90 (112), 100 (105), 100 (106), 105 (116)
- CRX600: 48, 41, 42, 42, 49, 42, 42, 42
- CRX650: 62, 58, 63, 66, 65, 66, 66, 66
- Enduro 350: 77, 70, 73, 73, 72, 68, 62, 67
- Enduro 450: 17, 15, 16, 20, 15, 12, 19, 18

Other interface elements include:

- Scenarios Overview:** Shows 'Baseline' and 'Adjustments' in the workspace.
- Scenario Explorer:** A tree view showing the model structure, with 'Demands Pivot' selected.
- Legend:** Lists 'Key column', 'Relaxed requirements', 'Frozen values', and 'Differences'.
- Issues:** A table with columns for 'Description' and 'Location'.
- Scenario Status:** Shows 'Result up to date: No', 'Last run outcome: Success', 'Last run duration: 0:00:07', and 'Result proven optimal: Yes'.

From Scenario Comparison to Sensitivity Analysis

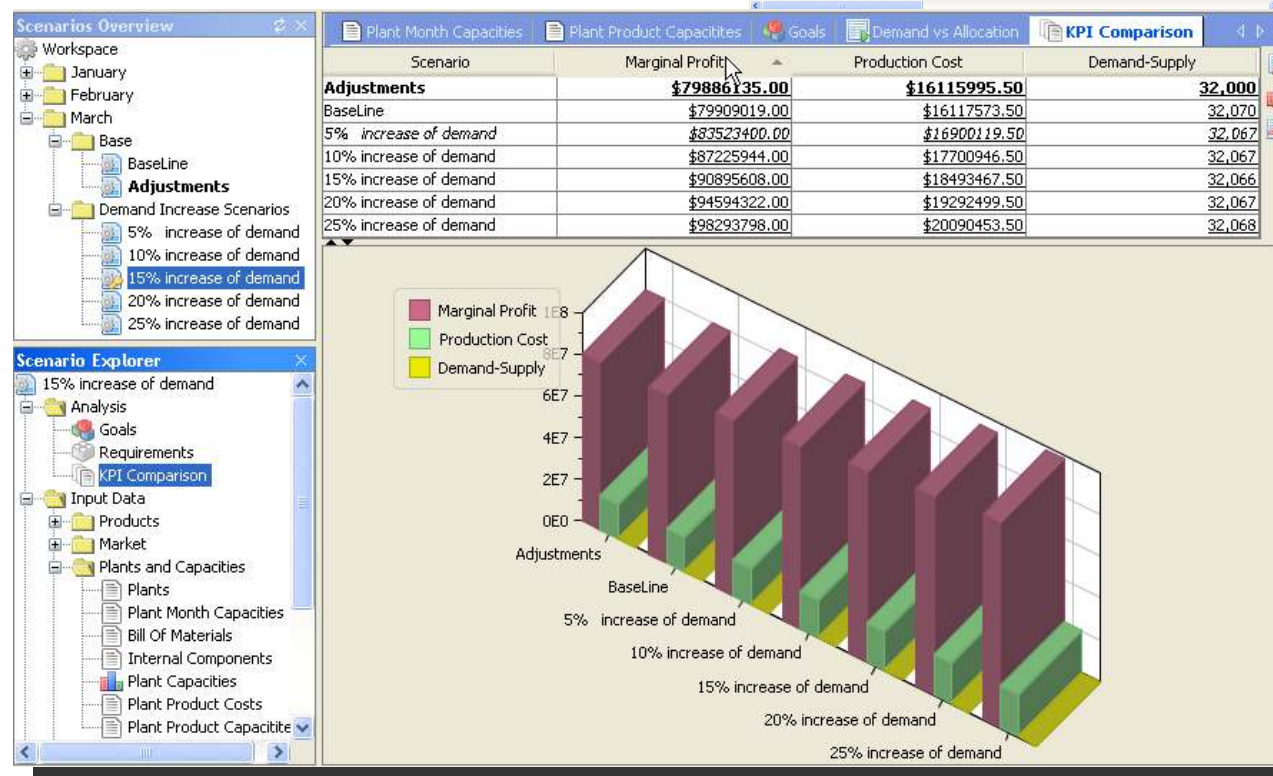
Pair-wise Scenario Comparison

- Detailed inputs and outputs,
- KPIs.

Country	Product	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Argentina	2005	64	67	61	63	59	59	60	51
	3005	46	41	44	38	43	39	40	36
	6005	76	79	77	83	78	79	80	75
	6265	110	102	106	107	108	114	108	112
	6765	85	100 (92)	90	97	99	102	90 (94)	100
	6765	91	102 (94)	97	100	105	104	95 (105)	105
	9005	35	40 (34)	35	36	33	38	33	25
	9295	11	10 (8)	7	12	8	7	9	7
	9965	48	54	60 (55)	55	63	66	57	64
	9965	96	95	110 (105)	99	106	112	105	115
	Band: 1200	83	90	100 (93)	91	86	88	92	92
	Band: 12005	90	96	90 (99)	103	98	101	105	105
	Band: 900	66	75	71	74	76	70	71	73
	Boulevard	37	37	39	39	44	40	38	42
	CR3550	90 (110)	90 (112)	100 (105)	100 (106)	105 (116)	117	108	114
	CR3650	88	83	81	86	82	76	76	74
	CR3650	48	41	42	42	49	42	42	42
	CR3650	62	58	63	66	65	66	66	66
	Enduro 350	77	70	73	73	72	68	62	67
	Enduro 450	17	15	16	20	15	12	19	18

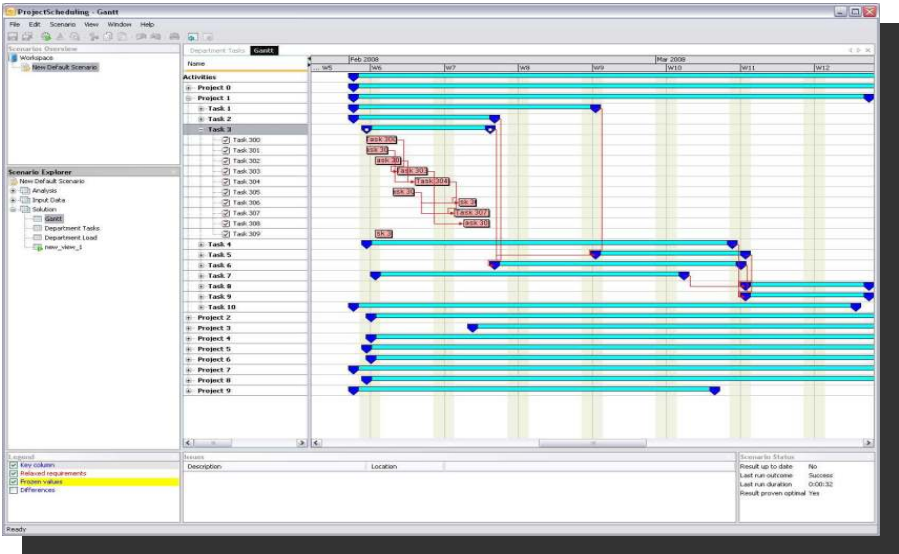
Multi-Scenario Comparison

- Goals,
- KPIs.

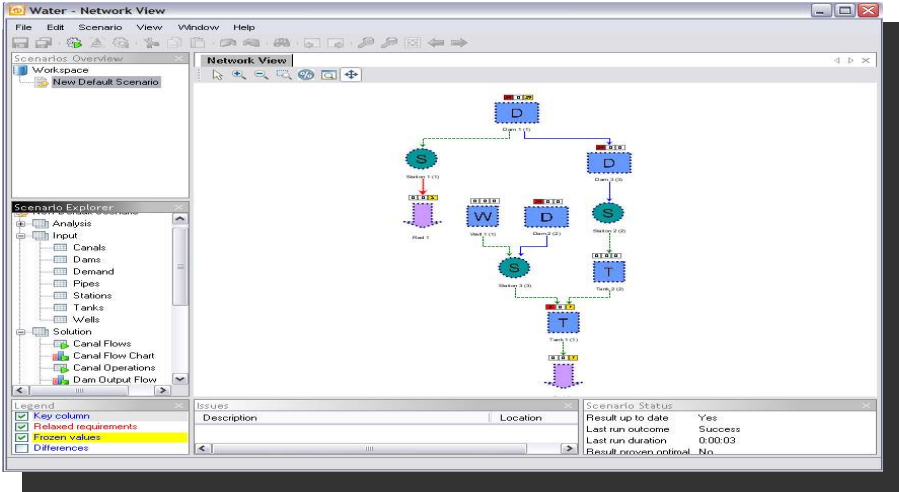


Extensible with Custom Views

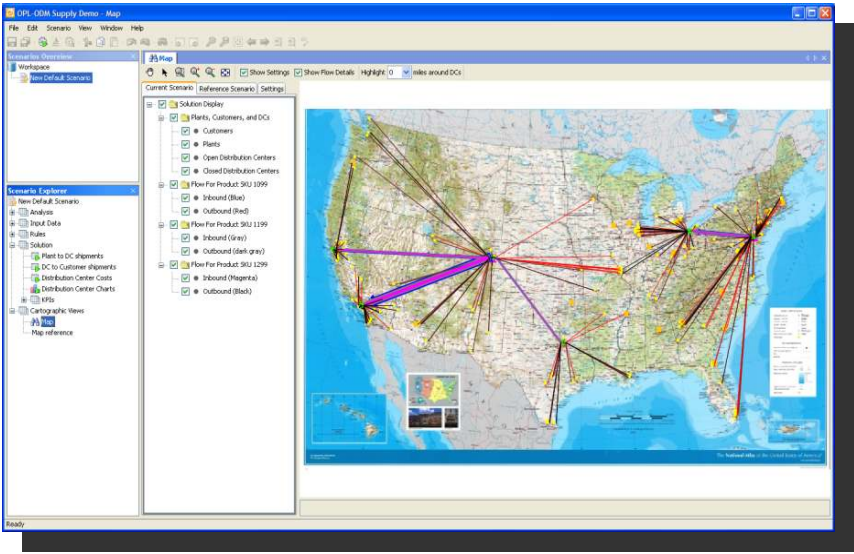
Gantt



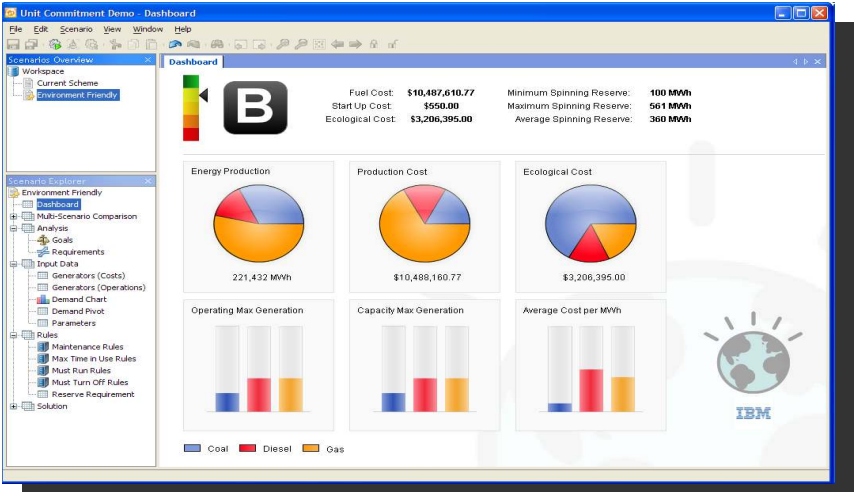
Diagrams



Maps



Dashboards



Optimizing Business Goals

- **Manage conflicting business goals**
 - **Effective trade-offs & goal balancing**
 - **Upper/lower limits, goal weights**
 - **Drill-downs for detailed cost analysis**

Goal Name	Value	Active	Importance Factor	Constrained
Variable Plant Cost	\$16,603,800	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>
Inbound Transportation Cost	\$7,105,155.21	<input checked="" type="checkbox"/>	1	
Outbound Transportation Cost	\$6,627,748.024	<input checked="" type="checkbox"/>	1	
Fixed Distribution Center Cost	\$3,250,000	<input checked="" type="checkbox"/>	1	
Variable Distribution Center Cost	\$2,677,000	<input checked="" type="checkbox"/>	1	

Name	Value
Constraints	Variable Plant Cost
Constrain max to	15,000
Constrain min to	
With priority	Medium
Bound Searches	Very Low
Best bound	Low
Worst bound	Medium Low
Ignoring priorities under	Medium
	Medium High
	High
	Very High
	Mandatory

Name	Value
- Variable Plant Cost	\$16,603,800
-Denver	\$9,040,900
-SKU 1099	\$5,918,400
-SKU 1199	\$1,619,600
-SKU 1299	\$1,502,900
-Philadelphia	\$7,562,900
-SKU 1099	\$5,659,500
-SKU 1199	\$782,400
-SKU 1299	\$1,121,000

Solve Progress

Detailed Solve Progress

Best Solution Found
36263703.23

Best Possible Optimal Solution
36236479.91

Percent from Optimal
0.08 %

Variable Plant Cost
\$16,603,800

Inbound Transportation Cost
\$7,105,155.21

Outbound Transportation Cost
\$6,627,748.024

Fixed Distribution Center Cost
\$3,250,000

Relax more requirements Accept relaxation level ● 0:00:18

Solution found

Close this dialog box when solve completes

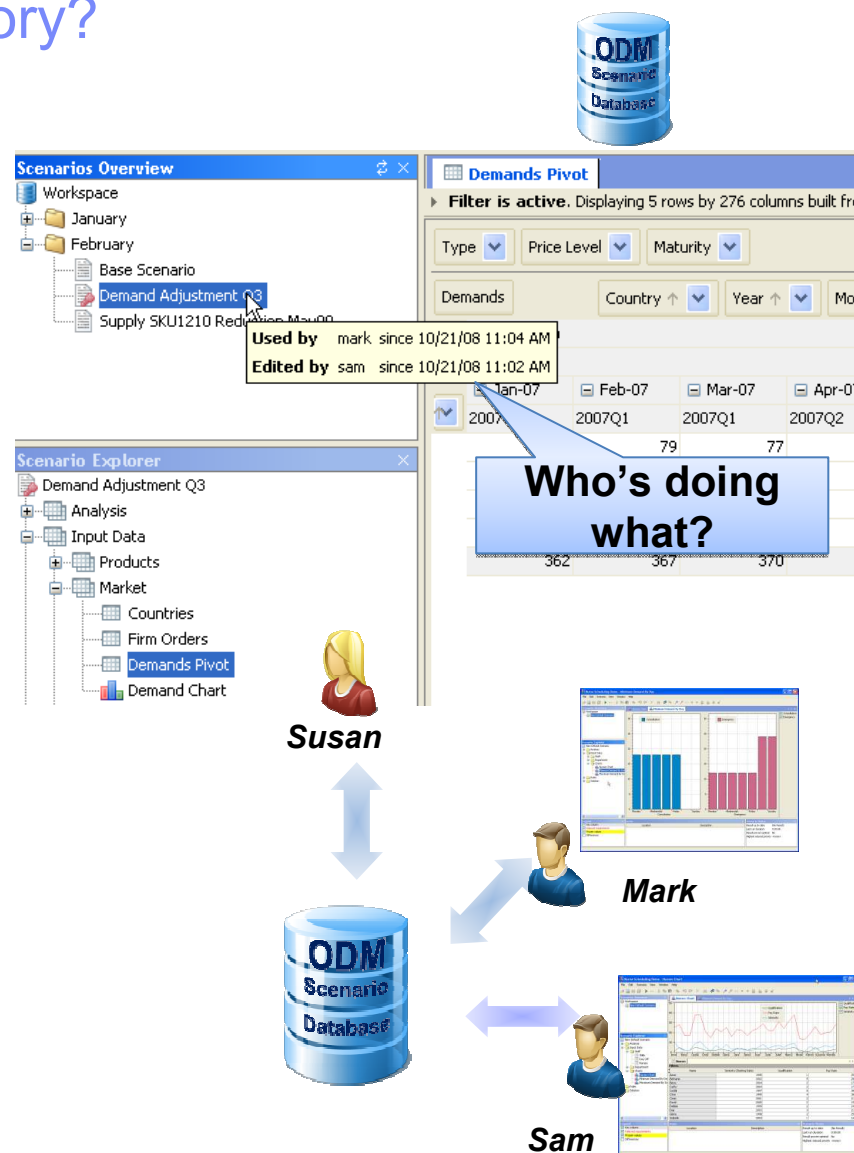
Controlled Relaxations of Constraints

- Automatically relax constraints based on business priority
- Display relaxed constraints in groups and allow trade-offs

Relaxed Requirements			
Explanation	Relaxation	Priority	Priority ...
[-] Each shift should get its nurse requirements		High	<input type="checkbox"/>
[-] Demand for Emergency Room		High	<input type="checkbox"/>
Between 5 and 7 nurses required on Saturday, January 8, 2005 from 2 to 12	0 nurse(s)	High	<input type="checkbox"/>
Between 5 and 7 nurses required on Sunday, January 9, 2005 from 2 to 12	2 nurse(s)	High	<input type="checkbox"/>
[-] Pairing Rules		Medium	<input type="checkbox"/>
[-] Teams		Medium	<input type="checkbox"/>
+ Isabelle and Debbie must work in the same team		Medium	<input type="checkbox"/>
[-] Union and Clinical Care Rules		Medium	<input type="checkbox"/>
[-] Skill Rules		Medium	<input type="checkbox"/>
[-] Emergency		Medium	<input type="checkbox"/>
+ The Emergency Room department requires at least 1 nurse qualified in Cardiac		Medium	<input type="checkbox"/>
[-] nurse on vacation		Medium	<input type="checkbox"/>
[-] vacation of Jane		Medium	<input type="checkbox"/>
on Saturday, January 8, 2005		Medium	<input type="checkbox"/>

What is the ODM Scenario Repository?

- Separate planning/what-if data from corporate operational data
- Tuned for **what-if** of large, remote, big scenarios
 - Dynamically created tables
 - Remote access to scenarios with lazy table loading
 - Table sharing for scenario duplication with slight changes
- Tuned for **collaborative planning**
 - User management with access control
 - Versioning for consistent view of scenario
- Also usable from APIs

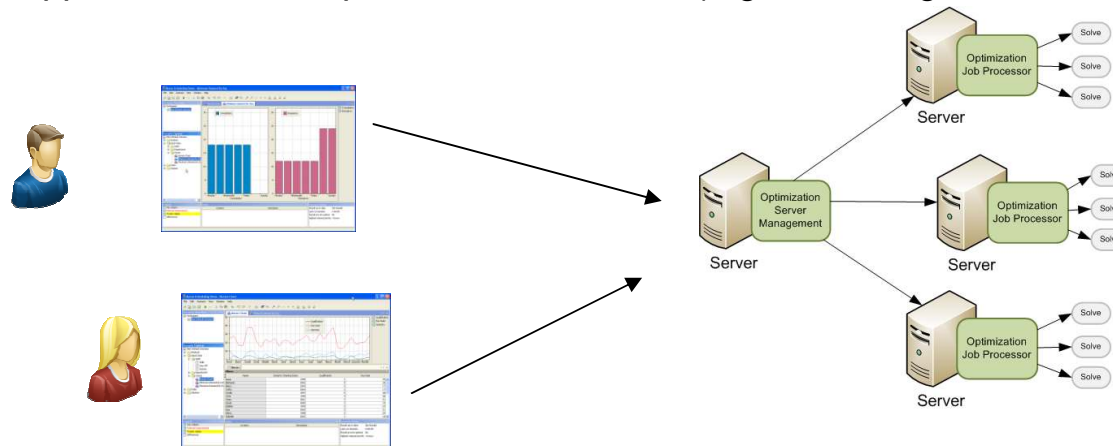


What is the ODM Optimization Server?



- A robust and scalable execution environment for ODM-based planning applications (embeds **OPL, CPLEX, CP Optimizer**) based on J2EE (Websphere Application Server)
- For planners
 - Provides sophisticated decision support for ODM Studio GUI
 - Not burdening the client with computationally intensive work
- For IT departments
 - Conforms to standard corporate IT environments and requirements
 - Supports concurrent, batch and multi-user invocations
 - Potentially allows use of application server specific functionalities (e.g. clustering, load balancing, fail-over...)

- Also usable form APIs



Management Console

ILOG ODM Optimization Server Dashboard - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:8180/optimsrver/console/

ILOG ODM Optimization Server Dashboard

Applications

2 deployed applications

ID	Version	Archive Checksum	Type	Action
SupplyDemand	1.0.25	7B1CF6C777...	ODM	<input type="button" value="Remove"/>
ucp	1.0.0	A9725E57F1...	ODM	<input type="button" value="Remove"/>

Jobs

Waiting: 2 | Running: 2 | Failed: 0 | Completed: 3

3 completed jobs

Job ID	Status	Parameters	Created	Started	Last Ping	Ended At	Duration	Archive Checksum	Failure Type	Failure Message
6	PROCESSED	{timeLimit=-1, scenarioId=Scenario:1, action=solve, withRelaxation=true}	11-04 14:54:47	11-04 14:54:51	11-04 14:55:42	11-04 14:55:43	52063	A9725E57F1...		
27	PROCESSED	{timeLimit=-1, scenarioId=Scenario:1, action=solve, withRelaxation=true}	11-04 14:55:14	11-04 14:55:16	11-04 14:55:47	11-04 14:55:47	30953	7B1CF6C777...		
229	PROCESSED	{timeLimit=-1, scenarioId=Scenario:21, action=solve, withRelaxation=true}	11-04 14:55:27	11-04 14:55:31	11-04 14:55:57	11-04 14:55:58	26500	7B1CF6C777...		
480	RUNNING	{timeLimit=-1, scenarioId=Scenario:1, action=solve, withRelaxation=true}	11-04 14:57:51	11-04 14:57:51	11-04 14:57:58		0	A9725E57F1...		
485	RUNNING	{timeLimit=-1, scenarioId=Scenario:41, action=solve, withRelaxation=true}	11-04 14:57:56	11-04 14:57:56	11-04 14:57:57		0	7B1CF6C777...		
490	NOT_STARTED	{timeLimit=-1, scenarioId=Scenario:21, action=solve, withRelaxation=true}	11-04 14:57:58				0	7B1CF6C777...		
495	NOT_STARTED	{timeLimit=-1, scenarioId=Scenario:1, action=solve, withRelaxation=true}	11-04 14:57:59				0	7B1CF6C777...		

2 running jobs

2 jobs in queue

Done

Summary

Platform for custom solutions

- A **configurable** planning platform
 - Highly configurable with low risk and low cost
 - Customizable and extensible for perfect fit
 - Adapt to existing and future user processes
- **Planning-centric** functionality
 - Data analysis & Visualization
 - Scenario management & Editing
 - Collaborative planning with Scenario Sharing
 - What-if analysis & Sensitivity analysis
- Powered by **Optimization**
 - Optimal plan generation
 - Checking, relaxations, explanations, alternatives, re-scheduling, etc
- For **Corporate** applications
 - Scalable deployment
 - Central scenario repository

Preguntas

