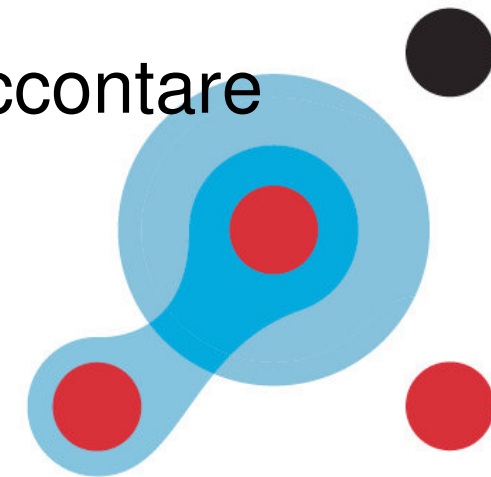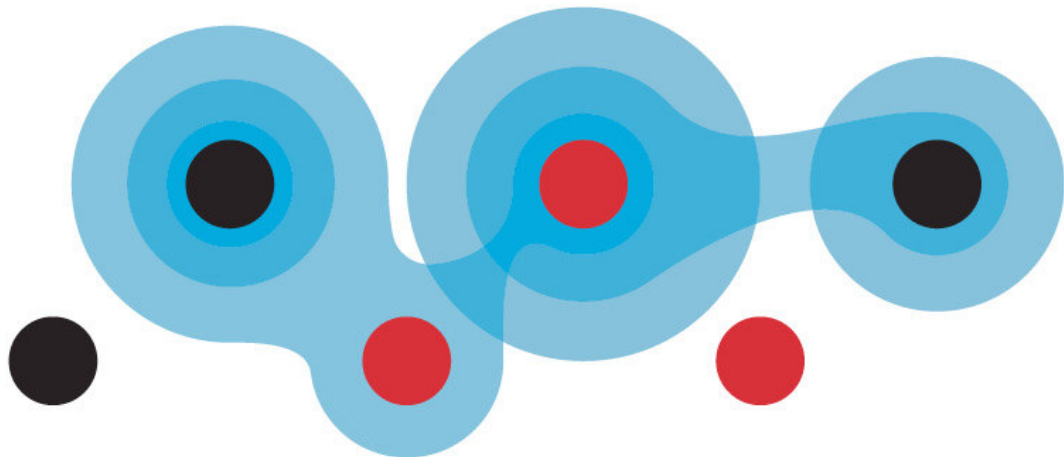# Business Agility Now!

Verso un modo di lavorare più intelligente.

Jean-Baptiste Dezard

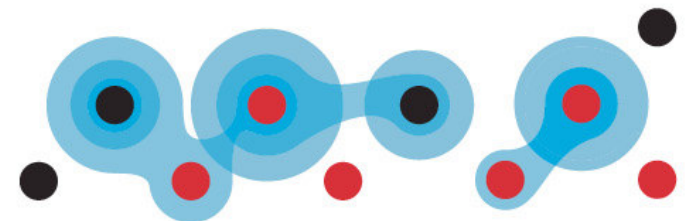Le esperienze di clienti: storie da raccontare

Milano, 17 Marzo 2010

Agenda

- IBM ILOG Overview

- Business Rules Management System – a primer

- Business Rules in Financial Services

- Case 1 : Major Banking in Belgium: Dinamicità al "Pricing" come se fosse un servizio

- Case 2 : Major Retail Bank in Canada: aumenta la sua presenza nel mercato con un'offerta multiprodotto, ROI in 2.5 mesi

- Q&A

Business Agility Now!
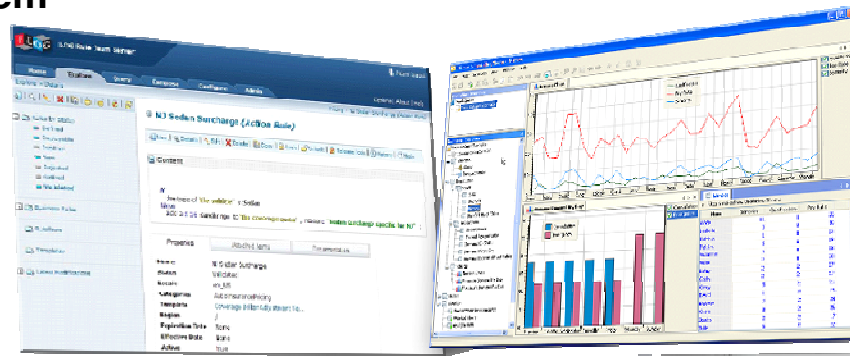Verso un modo di lavorare più intelligente.

IBM WebSphere ILOG Lines of Business
Expanded Value for IBM clients

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
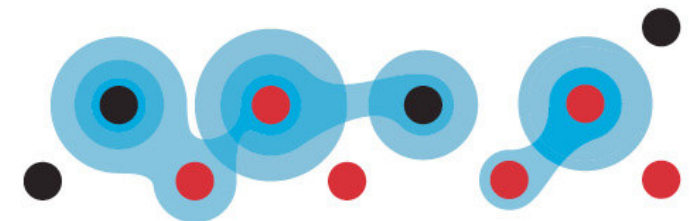
Innovative Visualization Tools

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

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Manage and Automate Decision Logic with BRMS

```
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" ;
```

```
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);
```
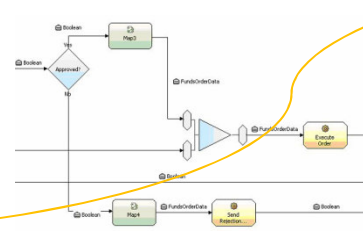
Applications

Documents

People

Processes

ess **R**ule **M**anagement **S**ystem

User Tools

Rules are
<u>Defined,</u>
<u>Analyzed</u> and
<u>Maintained</u>

Rule Repository

Rules are
<u>Stored</u> and
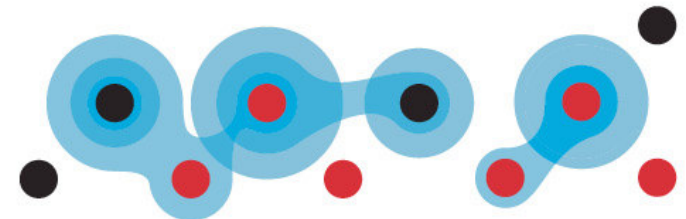<u>Shared</u>

Rule Server

Rules are
<u>Deployed,</u>
<u>Executed</u> and
<u>Monitored</u>

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Automating decisions with business rules
Pricing examples: Rate calculations on loans and deposits

Risk-based pricing for a car loan

IF
  the event type is **application** for **a car loan**
  and the value of the car loan is below **20000 €**
  and the applicant has been customer for more than **2 years**
  and the number of overdrafts of the applicant in the last 180 days is **0**
  and the average account balance is above **3000 €**
THEN
  decrease the loan interest rate by **40 b.p.**
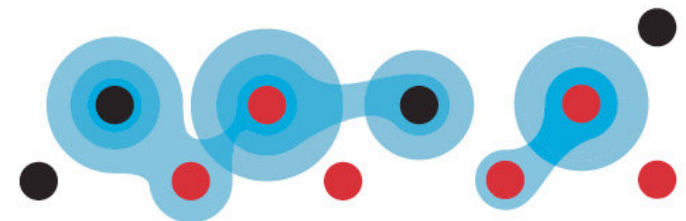
Promotional campaign on a one year deposit

IF
  the event type is **application** for **a one year deposit**
  and the channel is a branch office located in **North London**
  and the applicant is already customer
  and the applicant belongs to segment **High Value**
  and the application date is between **2009 March 1st** and **2009 April 15th**
THEN
  increase the yield rate of the one year deposit by **10 b.p.**

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Decision Tables edited in MS Excel & Word

With integrated consistency controls

Making better decisions faster in Financial Services

in trading
What's needed to onboard this customer?
What's my order routing decision ?
How to pre validate orders, check portfolio compliance ?

in lending
How risky is this loan application?
What is the applicable rate for this loan?
Is this customer eligible for this offer?

in payments
What is the fee for this operation?
How to route a payment?
How to handle this exception?

in customer servicing
Which product to recommend?
How to handle this customer complaint?

in risk & compliance
How to account for a business transaction?
How to reconcile data from many sources?
How to report for some trades?

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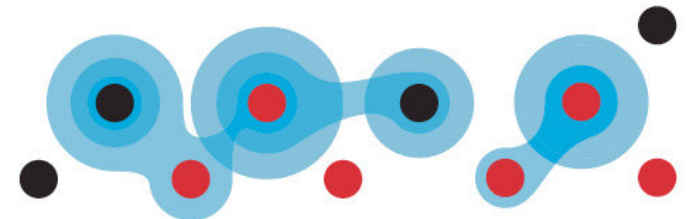
Business Rules may apply to many cases

Optimization | **Business rules**

Distribution

Next best offer	Recommendation	Segmentation	Dispute management
Offer generation	Up/Cross-selling	Sales alerts	Recommend actions
Outbound campaign optimization		Role/Actor assignment	Mail generation → Customer risk
Specific conditions (customer, campaign, ...)		Incentive management	Account opening
			Client onboarding

Operations authorization

Operations reporting

Manufacturing

Insight

Price definition
- Bundles
- Discounts

Product Factories

Product Catalog

Risk & Compliance

Payments	Lending	Investment
Account validation	Eligibility	
Semantic validation	Risk assessment	Porfolio optimization
Least-cost routing	Risk based pricing	Trade crossing
Charge calculation	Required documents	Automatic trading
Exception handling	Automatic valuation	
	Debt collection	

Price execution

Role/Actor assignment

Back-office automation

SLA conditions

Fraud detection

AML checking

Basel-II reporting

Pre-trade reporting

Post-trade reporting

Trade authorization

Accounting engine

Processing

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Business Agility Now!

Verso un modo di lavorare più intelligente.

Pricing as a Service at Major Banking in Belgium
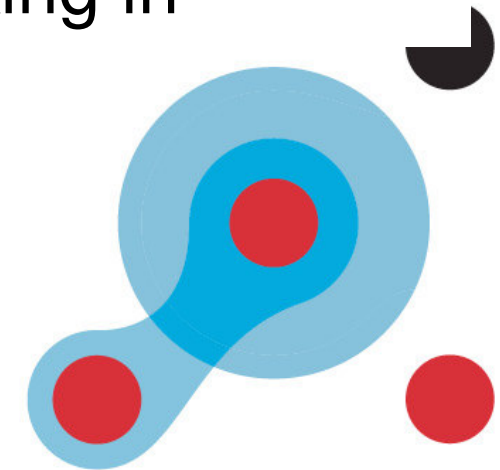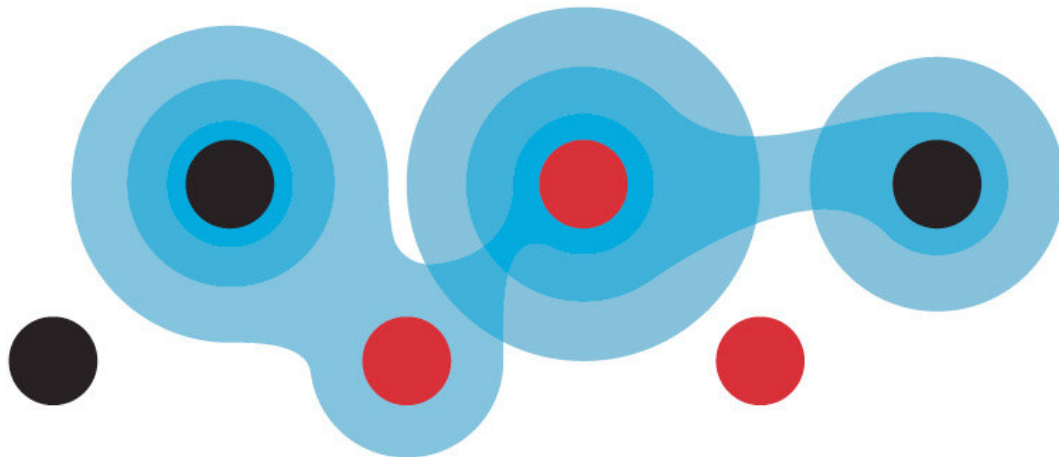
Milano, 17 Marzo 2010

Complexity over time leads to rigidity
Many duplicated functions and processes

Account Validation & Nostro

Anti-Money Laundering

Routing

Charge Calculation

Customers

Regulators

Partners

Providers

DUPLICATION:
SMALL VARIATIONS OF THE SAME PROCESSING FUNCTION: PER PRODUCT, CHANNEL, REGION, TYPE OF PAYMENT…

CONSEQUENCES:
- HIGH COST OF MAINTENANCE
- ROADBLOCK TO PRODUCT INNOVATION AND SERVICE DIFFERENTIATION

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The Group at a glance

- The bank is a global financial services company of Dutch origin with 150 years of experience,
- This company provides a wide array of banking, insurance and asset management services in over 50 countries.
- 120,000 employees work daily to satisfy a broad customer base: individuals, families, small businesses, large corporations, institutions and governments.

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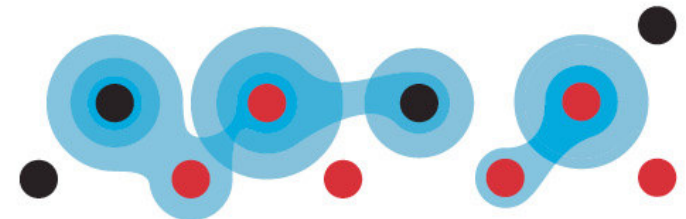
Main Challenges

- **High customer satisfaction is the way**
  - To differentiate in mature markets and to generate profitable top-line growth.
- **Payment services are really the "glue that holds customers to the bank"**
- **Fees on payment services are a significant source of revenue**
- **Way to expand product offerings and to attract new customers.**
- **Pricing management, a cornerstone to achieving closely related objectives:**
  - transparent and fair pricing,
  - adapt pricing policies to respond to competitive pressure,
  - align pricing policies with internal cost structures
- **Pricing systems need to be adapted to new regulations,**
  - such as the European directive 2001/115/EC which redefines the conditions for invoicing in respect of value added tax
  - SEPA (Single Euro Payments Area) framework : introduction of new payment instruments - SEPA credit transfers - SEPA direct debits - SEPA cards, for which it is mandatory to guarantee that pricing conditions are applied regardless of national boundaries and location.
- **Legacy payment systems are holding back banks from being flexible.**
  - Legacy systems siloed by products drive high operational and maintenance costs
  - In the longer term it bears a considerable risk of technology obsolescence.
  - For IT managers, implementing the requirements for changes consumes huge amounts of time and efforts
    - complexity of having redundant pricing logic hard-coded in COBOL in multiple legacy applications.
    - Customer-specific pricing conditions required manual calculation in 80% of the cases, which was error-prone and resource consuming.

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Verso un modo di lavorare più intelligente.
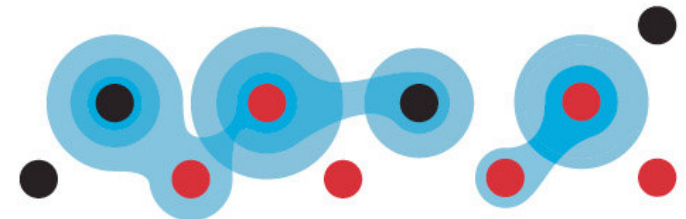
Goals

- Reduce time-to-market
    - required to introduce a new offer, a new product or a new pricing policy
- Improved transparency of the pricing policies
- Reduce maintenance costs
- Eliminate manual processing for customer specific pricing policies
    - In the legacy systems, customer-specific pricing policies are processed manually which is time-consuming and error-prone.
- Performance and scalability
    - support volumes of batch processing and to enable online processing
    - 2 Million Operations / Day

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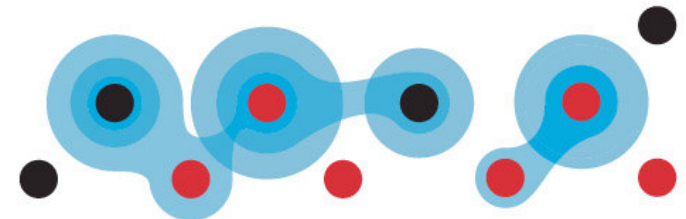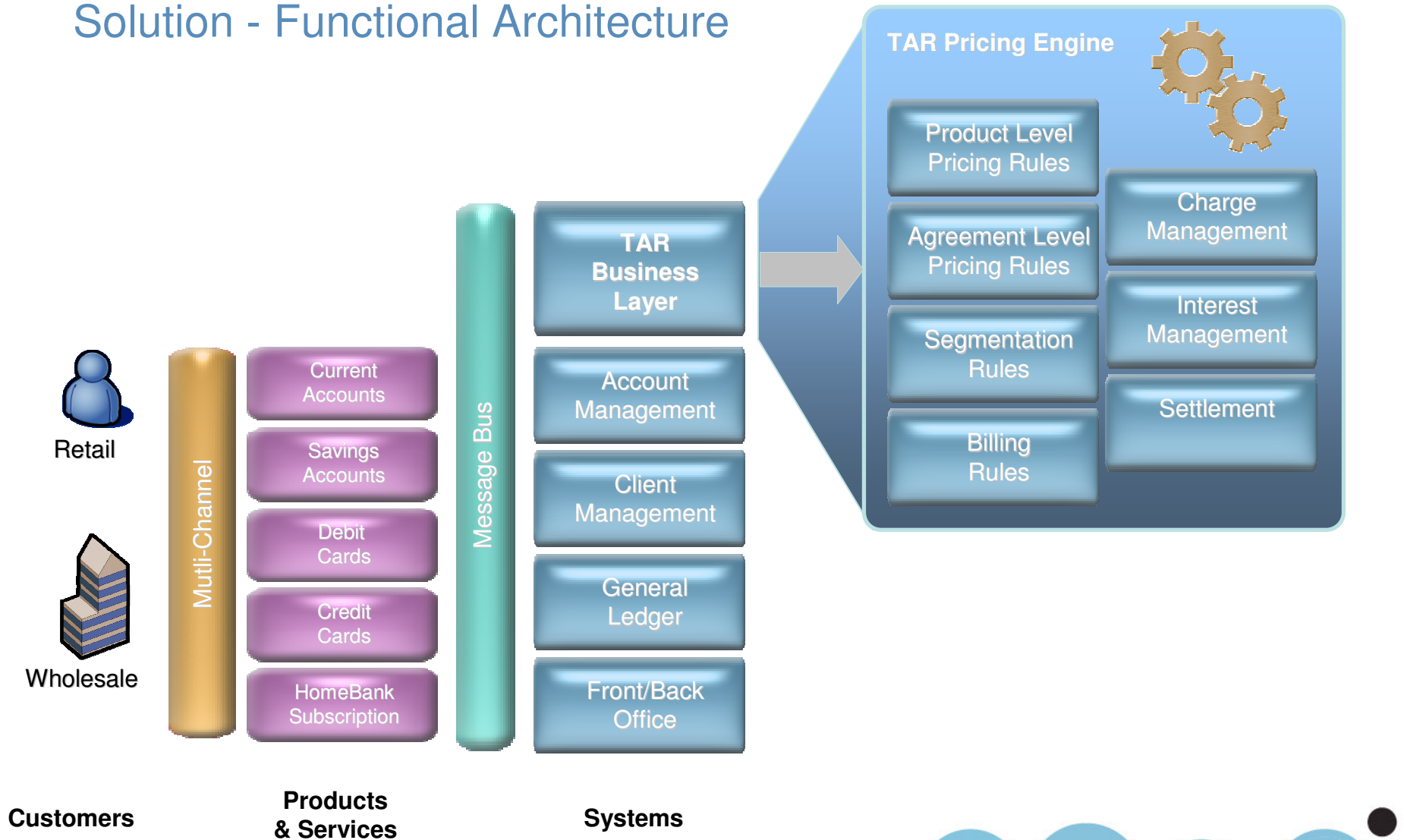Verso un modo di lavorare più intelligente.
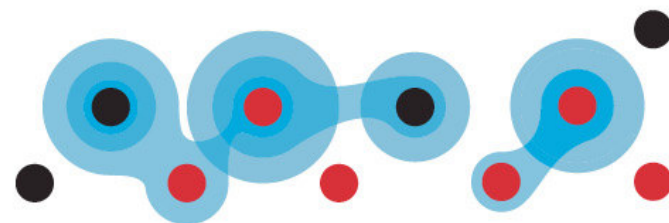
Solution

- The TAR project : central pricing module for accounts and related products, including current accounts, saving accounts, debit cards (Proton, Maestro), credit cards and Home'Bank subscriptions.

- A reengineering project
  - Consolidation of mulitple siloed pricing applications into a centralized pricing **service** reusable across multiple applications implemented using IBM ILOG JRules

- Business rules automate decisions regarding product-level pricing, agreement-level pricing, customer segmentation and VAT billing.

- A new profile of business analyst improves the alignment between business and IT and enables continuous improvement: business analysts are responsible of discussing business requirements (pricing policies) with the marketing project managers and translating them into business rules.

Business Agility Now!
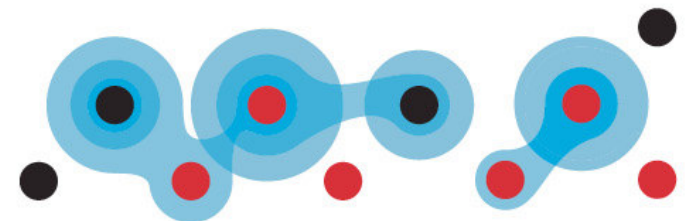Verso un modo di lavorare più intelligente.
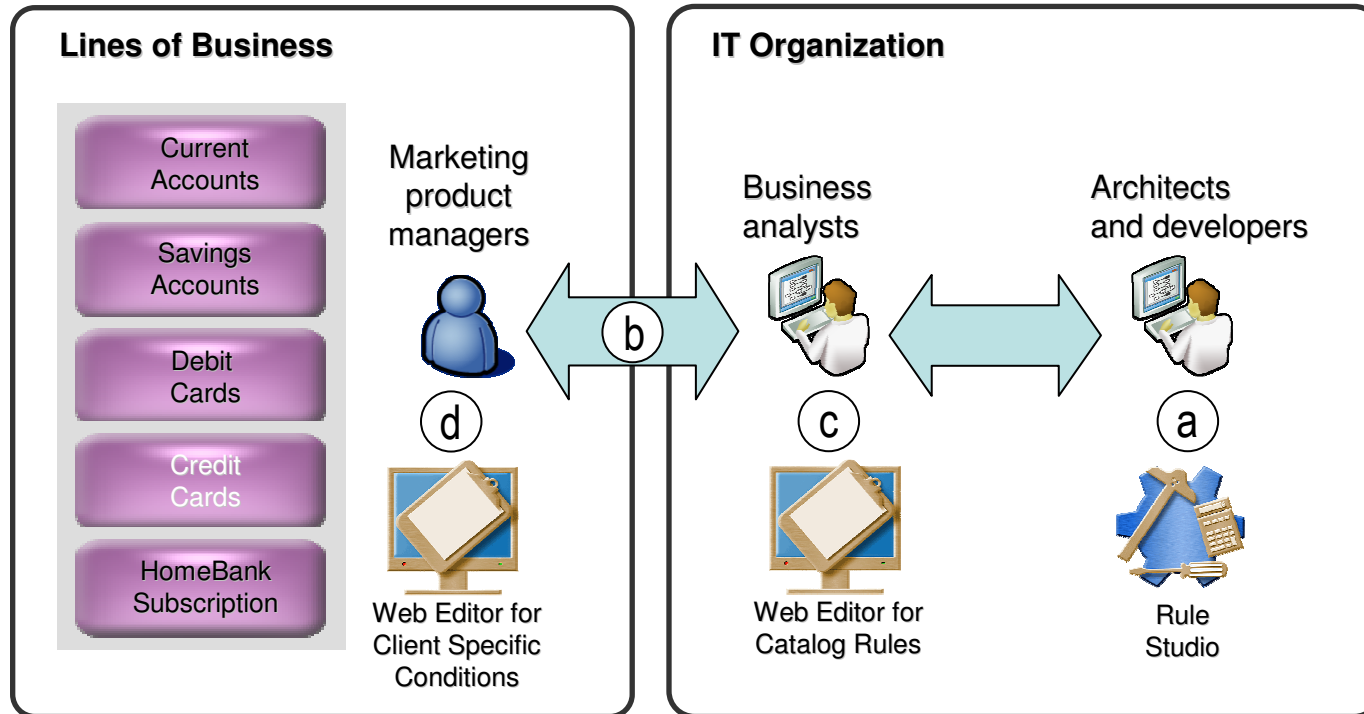
Solution - Functional Architecture

TAR Pricing Engine

- Product Level Pricing Rules
- Agreement Level Pricing Rules
- Segmentation Rules
- Billing Rules
- Charge Management
- Interest Management
- Settlement

Retail

Wholesale

Mutli-Channel

- Current Accounts
- Savings Accounts
- Debit Cards
- Credit Cards
- HomeBank Subscription

Message Bus

- **TAR Business Layer**
- Account Management
- Client Management
- General Ledger
- Front/Back Office

Customers

Products & Services

Systems

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Verso un modo di lavorare più intelligente.

Solution: People, Activities and Tools

Lines of Business

Current
Accounts

Savings
Accounts

Debit
Cards

Credit
Cards

HomeBank
Subscription

Marketing
product
managers

b

d

Web Editor for
Client Specific
Conditions

IT Organization

Business
analysts

Architects
and developers

c

a

Web Editor for
Catalog Rules

Rule
Studio

Main Activities

|		
a	Develop & manage rule management infrastructure (e.g. define new rule templates, customize editors)	System Development
b	Discuss business requirements regarding catalog pricing policies	Continuous Improvement
c	Translate business requirements (policies) into business rules	
d	Maintain customer-specific pricing policies	

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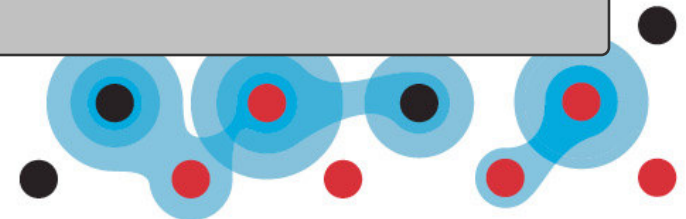
VAT calculation – Decision Table

ILOG Rule Builder - C:\wsdev\VATModule\Repository\ - VAT Project - vat_2

VAT Calculation_2

	Category	VAT Location	Usage	VAT Code	VAT Percentage
0	SBTA	1		1,003	21
1		2	1	1,003	21
2			2	1,000	0
3			otherwise	1,003	21
4		3; 4		1,000	0
5		otherwise		1,003	21
6	SBNT	1; 2		2,099	0
7		3; 4		2,098	0
8		otherwise		2,099	0
9	RPTA	1; 2; 3		1,003	21
10		4		1,000	0
11		otherwise		1,003	21
12	LMTA	1		3,003	21
13		2	1	3,003	21
14			2	3,100	0
15			otherwise	3,003	21
16		3; 4		3,000	0
17		otherwise		3,003	21
18	HOCA			9,999	0
19	otherwise			0	0
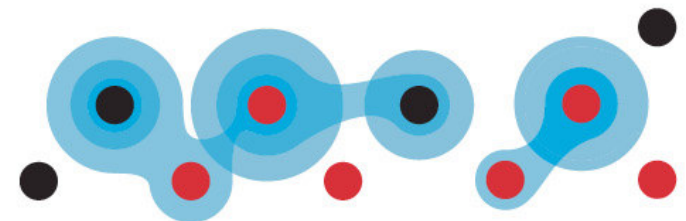
Pricing an operation part of a package

- Web editor for business analysts

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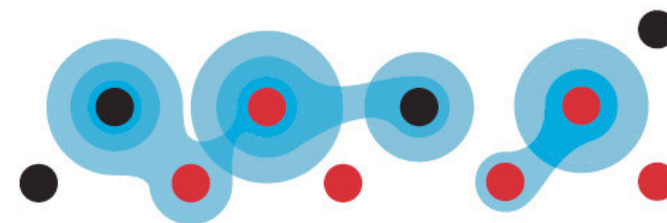
Pricing an operation part of a package

- Pricing rules documented in multiple languages

Rule Based Pricing Service at the bank

- Faster Time-to-market
  - from several months to 10 days to change a pricing policy
  - 4 weeks to implement pricing of new SEPA instruments
  - Transparency, better control by business
  - Pricing rules maintained by product managers and business analysts
- Compliance with VAT invoicing directive (2001/115/EC)
- Performance and scalability
  - 2 million operations processed in 15 minutes
  - Enable online processing
- Reduced maintenance cost
- Centralized pricing engine

TAR Pricing Engine

Events →

- Product Level Pricing Rules
- Segmentation Rules
- Charge Management
- Ageement Level Pricing Rules
- Interest Management
- Billing Rules
- Settlement
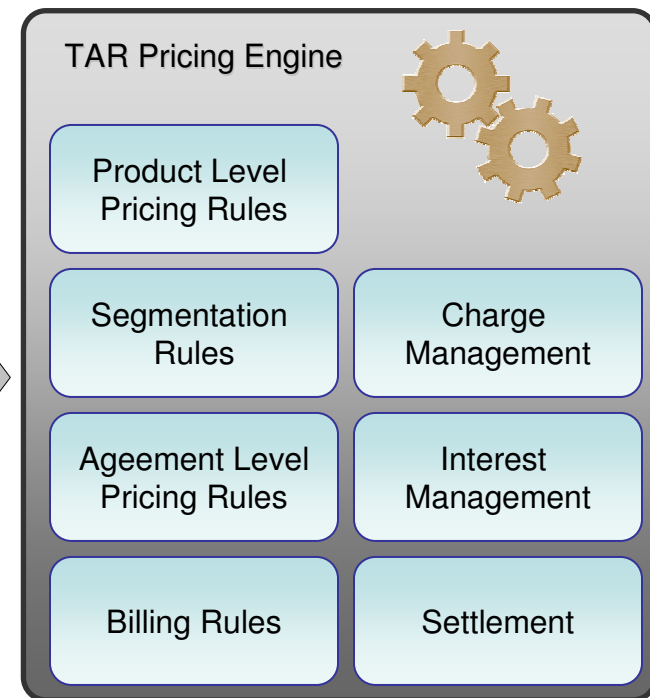
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Verso un modo di lavorare più intelligente.
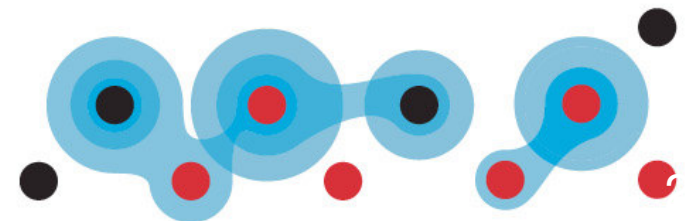
Business Rules and IBM PFFS / EPP

- IBM ILOG BRMS is fully integrated in IBM EPP platform

- ILOG BRMS brings:
    - Capacity to externalize business rules that are usually buried in WMB (ESQL), business applications or packages
    - ISO20022-based rule vocabularies (for different domains)
    - ISO20022-based rule service definitions
    - Reducing complexity: business rules as elementary building block
    - Full range of business rules management capabilities
    - Rules methodology

- Choice of architectural and integration patterns, for example:
    - Local invocation from WMB node (java session API)
    - Remote invocation from WMB to RES (e.g. RES hosted on WAS running in zSeries)

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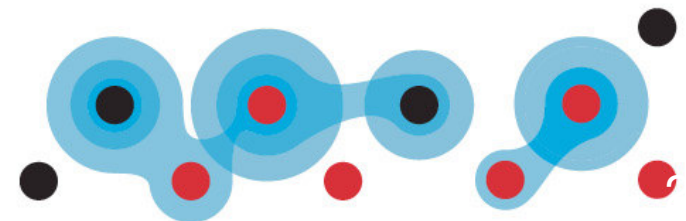
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Verso un modo di lavorare più intelligente.

Multi product recommendation in Retail Banking
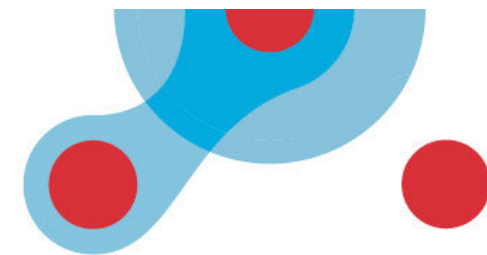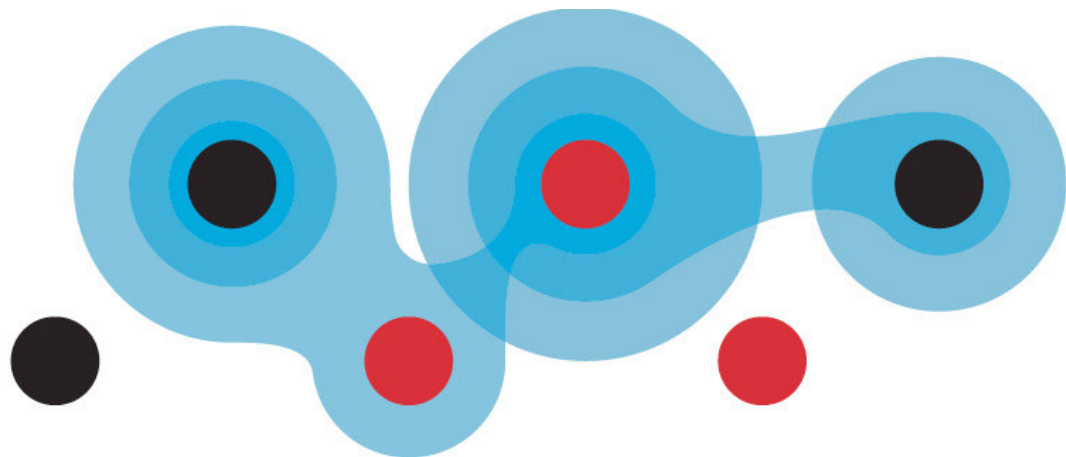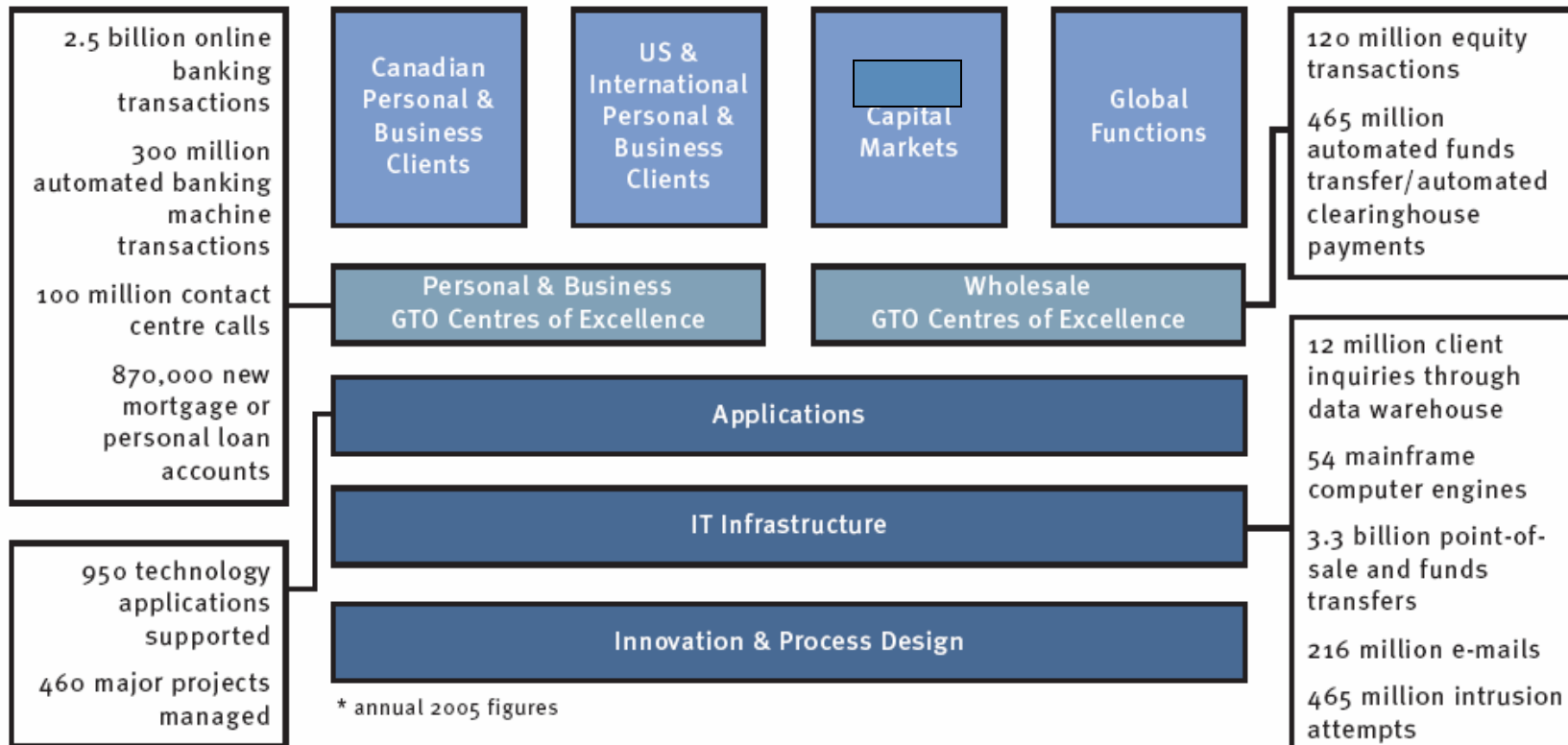
Milano, 17 Marzo 2010

Technology & Operations of the Bank

2.5 billion online banking transactions

300 million automated banking machine transactions

100 million contact centre calls

870,000 new mortgage or personal loan accounts

Canadian Personal & Business Clients	US & International Personal & Business Clients	Capital Markets	Global Functions

120 million equity transactions

465 million automated funds transfer/automated clearinghouse payments

Personal & Business GTO Centres of Excellence	Wholesale GTO Centres of Excellence

Applications

IT Infrastructure

Innovation & Process Design

950 technology applications supported

460 major projects managed

* annual 2005 figures

12 million client inquiries through data warehouse

54 mainframe computer engines

3.3 billion point-of-sale and funds transfers

216 million e-mails

465 million intrusion attempts

132 million spam messages and 12 million viruses blocked

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# Previous State : Selling one product at a time OR else ?

Business

- **Decision one product at a time**
- Decision engine limited to predefined data from application system
- Wait in line for changes to application system
- Time to be scheduled for next available release
- Product level decisions rather than customer level
- Require vendor involvement for new data or applications
- **Multi-Product Scoring worked but with minimal potential**
    - Limited rate of cross sell opportunities
    - Lacked direction when multiple products appeared
    - One time shot, then screen cannot be retrieved
    - Potential for conflicting credit decisions
    - Minimal amount of information captured and saved

Loan Managers

- **Product may be cross sold to customer and subsequently declined**
- Or attempt to pre-determine additional products then cancel/decline
- Low cross sell opportunities developed a lack of confidence in MPS benefits
- **Or "Throw everything against the wall and see what sticks" sales approach**
- Lack of saved information and MIS difficult to convey performance

Business Agility Now!
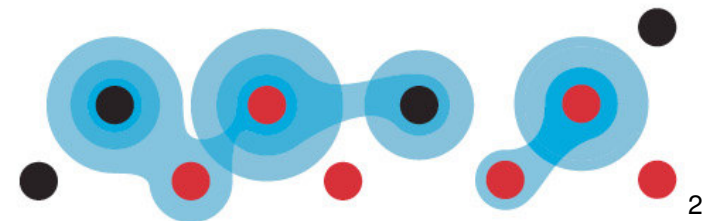
Verso un modo di lavorare più intelligente.
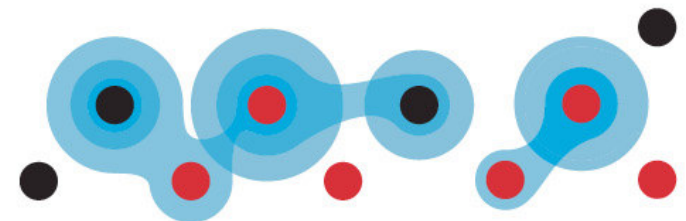
Objectives

- **Increase revenue** by enhancing cross sell opportunities
- Increase growth by attracting more customers from the competition
- Drive **"wallet share" growth** : cross-sell to RBC's existing customer base.
- Advance the ability for **multi-product credit decisions**
  - Refined rules to expand potential population
  - Include all personal credit products
- Present suitable pre-qualified client centric offers
  - right product for the right customer
- **Enhance the client experience** for providing financial advice during the credit application process
- Continue to manage risk levels, Improve **credit risk decision capabilities**
- Faster time to implement rule changes
- Increase precision in applying policy/risk guidelines
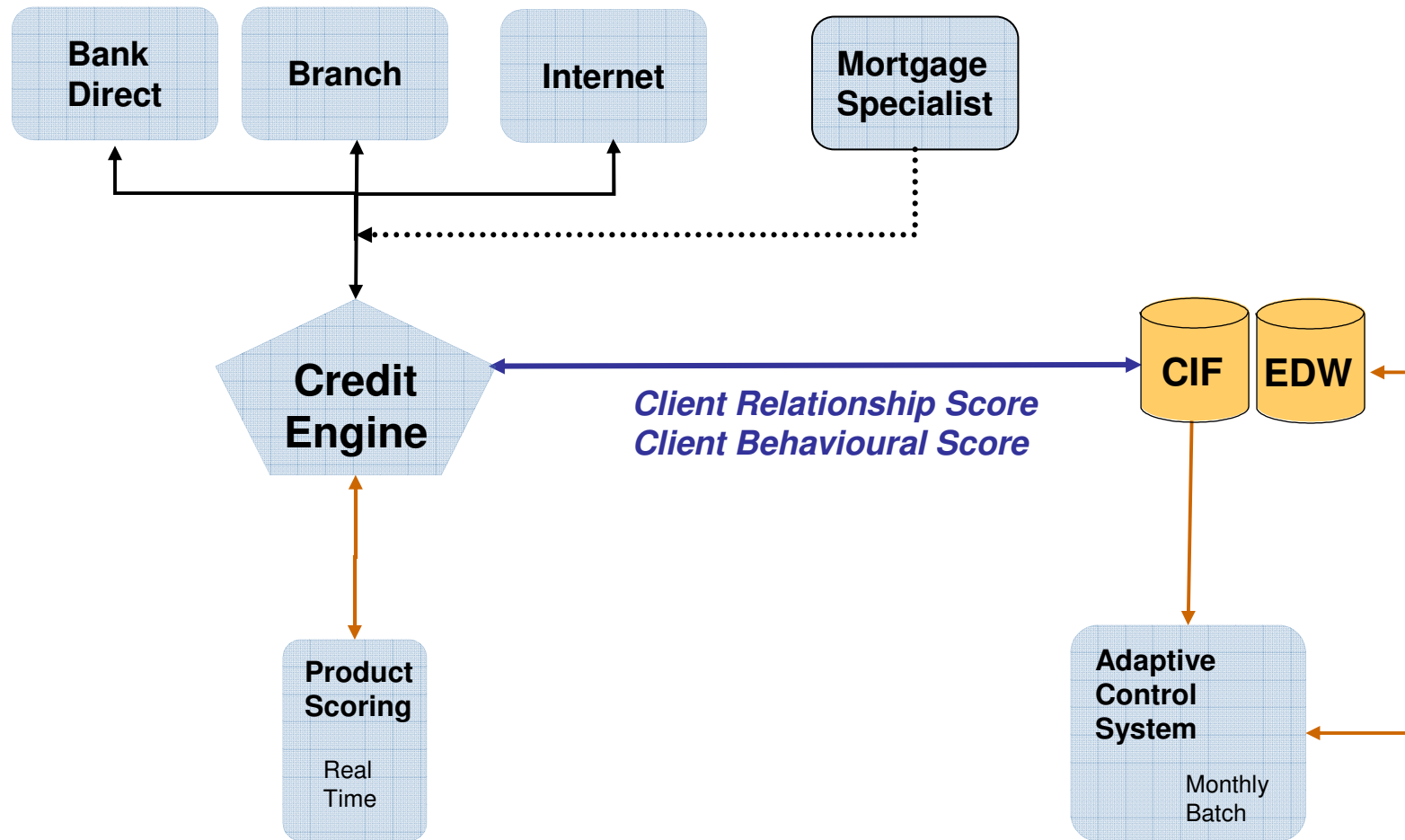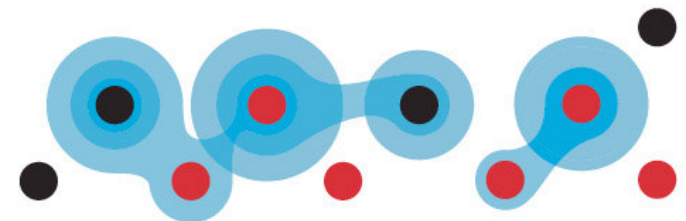- Ensure consistent treatment

Business Agility Now!
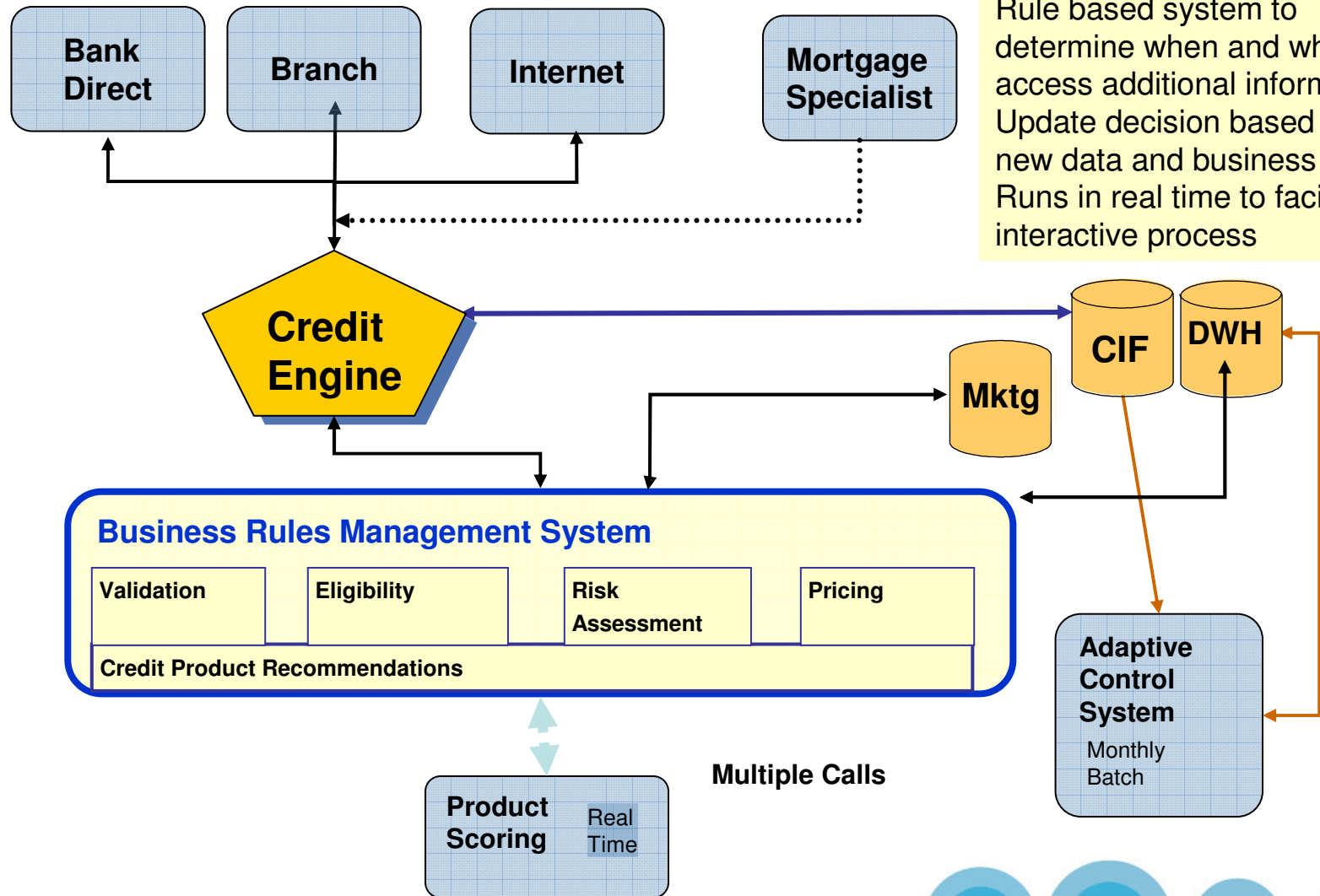Verso un modo di lavorare più intelligente.

Initial System – Credit Engine serving multiple channels

Bank Direct **Branch** **Internet** **Mortgage Specialist**

Credit Engine

Client Relationship Score
Client Behavioural Score

CIF **EDW**

Product Scoring

Real Time

Adaptive Control System

Monthly Batch

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26

New System

Bank Direct

Branch

Internet

Mortgage Specialist
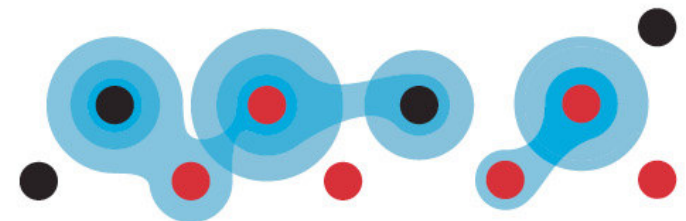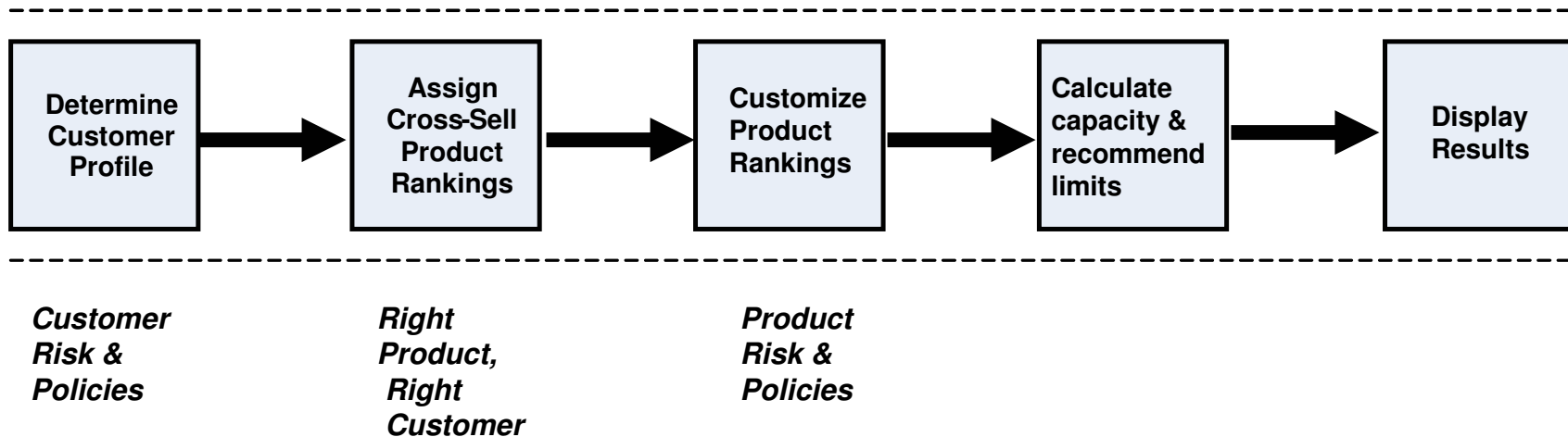
Rule based system to determine when and where to access additional information
Update decision based on new data and business rules
Runs in real time to facilitate interactive process

Credit Engine

Mktg

CIF

DWH

Business Rules Management System

Validation	Eligibility	Risk Assessment	Pricing

Credit Product Recommendations

Adaptive Control System

Monthly Batch

Multiple Calls

Product Scoring — Real Time

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Cross Sell Approach

- Approximately 1100 rules to support cross sell rules and calculations
- Rule flow :

| Determine Customer Profile | → | Assign Cross-Sell Product Rankings | → | Customize Product Rankings | → | Calculate capacity & recommend limits | → | Display Results |

Customer
Risk &
Policies

Right
Product,
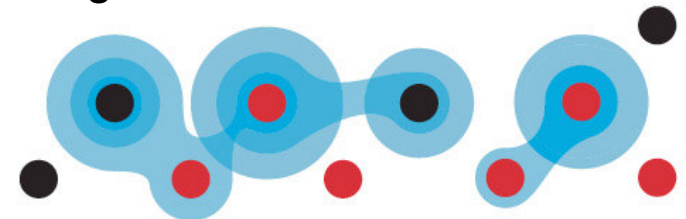Right
Customer

Product
Risk &
Policies
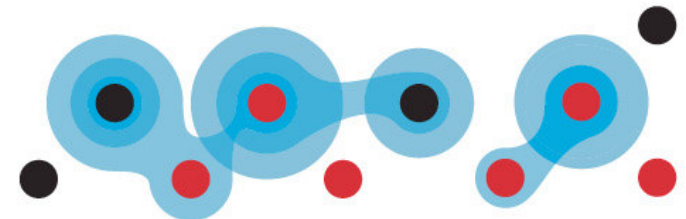
Project Breeze

- Three month pilot in 2 regions and 1 call centre
- National roll out in October 2008
- Results To Date: (May 2009)
  - **Increased frequency of cross sell offers by almost 2.5 times**
  - **Increased take up rate by more than 2.5 times**
  - **Est. gain of 14M$ in 2,5mth**
  - Surveyed sales force / client feedback extremely positive.
  - Reduced credit approval processing time.
  - Anticipate growth rate to exceed business case benefits.
  - Now implementing rule changes with minimal IT involvement
  - Warehouse information providing for analysis and detailed MIS reporting
  - Variable Rule Based Decision Services performing as forecasted

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Q&A