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Agenda

- Key Trends and Issues
- SAP Solution Overview
- Why SAP?
- Usage Examples
Key Trends and Issues
Key Trends

Forrester Research, Oct 2010

The Top 15 Technology Trends EA Should Watch: 2011 To 2013

<table>
<thead>
<tr>
<th>Rank</th>
<th>Technology trend</th>
<th>Impact</th>
<th>“Newness”</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Next-gen BI takes shape, combining real-time access with pervasiveness, agility, and self-service.</td>
<td>Very high</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Business rules processing and policy-based SOA move to the mainstream.</td>
<td>Very high</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>SaaS and cloud-based platforms become standard.</td>
<td>Very</td>
<td>high High</td>
<td>Very high</td>
</tr>
<tr>
<td>4</td>
<td>System management enables continued virtualization.</td>
<td>Very high</td>
<td>Moderate</td>
<td>Low</td>
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</table>

A key trend in application architectures is the externalization of the policies and rules that drive key decision points in application logic. Externalization exposes rules to policy subject-matter experts for explicit development and maintenance. Business rules processing enables rule management by business-side experts. Applications based on business rules processing are moving from niche into mainstream as rules enable the creation of more-responsive, more-personalized experiences based on more-complex conditions. Rules engines with the appropriate configuration management infrastructure enable business managers to maintain rules and more quickly explore ways of optimizing business processes.
Market Analysts

PWC Technology Forecast 2008

"Business processes, in whatever form they take, depend heavily on business rules. Rules drive the activities, coordinate data movement and workflow, and provide decision automation in complex situations.

[...]

For enterprises, BRMSs provide great agility not only because they automate decisions but also because they enable organizations to modify policies or implement new programs quickly.

[...]

The quality of rules engines in BPM solutions will likely emerge as a competitive differentiator.

[...]

Enterprises that create value through rapid process changes are beginning to define a market opportunity for a pre-integrated suite of tools that supports intelligent business performance management."
No organization can be more effective than its systems. Systems must be aligned with the organization, its goals and its people. A business process orientation shows how an organization really operates and positions it for continuous improvement. **Adding decisioning to business process-oriented thinking creates simpler and more agile processes, and more flexible business applications. Externalizing decisions and applying business rules technology to effectively manage those decisions improves visibility, builds in a capacity for change and helps ensure business/IT alignment.**

In each case – simpler processes, more flexible business applications, an increased capacity for change and improved alignment – **decisioning enhances a business process orientation to deliver greater value to the business.** Focusing also on the decisions within processes and applications, making them explicit, **giving the business control over how those decisions are being made, is critical.**

**SAP has developed two robust business rules management platforms**, supporting both its Java and ABAP environments. These technologies can be used to ensure that decisions are effectively managed and integrated throughout an SAP enterprise backbone.
Key Trends and Issues Driving Change in Application Development

**Flexibility at low cost**
- Fast time from initial idea to realized solution
- Decrease dependency on highly specialized IT resources
- Allow for on-going optimization and adaption of business logic

**Transparency**
- Transparent business logic and repository for business rules
- Increased demand for governance, risk, and compliance / policy enforcement

**Business user empowerment**
- Enable business user to adapt application to constantly changing environment w/o IT expertise
- Role specific user experience
Challenges …

High expectations of user

On demand solutions

How can I enable the business expert to drive IT decisions?

How can I deliver business content at low cost?

Working within a network

How can I develop, share, and maintain business content?

Legal regulations / security

Cost reduction, do more with less

Increasing importance of externalizing business rules

How can I bring immediate value to our organization?

How can I avoid the risk and cost of big bang implementations?

How can I avoid time consuming & costly upgrades?

How can I deliver immediate innovation?

How can I avoid time consuming & costly upgrades?
Challenges & Their Solutions Available With BRFplus

- Rules modeling in natural human language
- Business Rules Modeling Environment
- No IT expertise required
- Business logic modelling environment allows to deliver immediate value
- As part of SAP NW, not requiring a separate installation
- Central business rules repository
- Enables business experts to drive for the required solutions
- Allows for business content provisioning at low cost
- Allows eco system for content sharing
- Allows for controllable low risk implementable steps
- Step by step implementation of business rules
- Rule changes have immediate impact
- Part of SAP NW ABAP stack
- Business experts to drive for the required solutions
- Enables business content provisioning at low cost
- Allows eco system for content sharing
- Allows for controllable low risk implementable steps
- Step by step implementation of business rules
- Rule changes have immediate impact
- Part of SAP NW ABAP stack
■ Separate data and application logic by putting an application’s data into a database managed by a database management system (DBMS)

■ Put business rules into a Business Rules Management System (BRMS) and business processes into a Business Process Management System (BPMS)

■ Once the connection between application code and BRMS is established, programming skills and code changes for updates of the business rules are not required

■ With a BRMS business rules can be centrally managed, easily found and compared
Business Applications, Business Processes, and Business Rules

**Application**
- Completeness check
- Data validation
- No-go criteria

**Credit Score**
- Calculation of credit score
- Enable/disable contract terms

**Approval**
- Automatic/manual approval
- Compliance rules
- Risk management

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**Business Application**
- Banking

**Business Process**
- Loan Approval

**Business Rule**
- Calculation of credit score
Benefits of Using Business Rules Management

<table>
<thead>
<tr>
<th>Business Rules Management</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Separation</strong> of business rules and code</td>
<td>Agile and maintainable systems</td>
</tr>
<tr>
<td><strong>Modeling</strong> of complex business logic</td>
<td>Automation of key business decisions</td>
</tr>
<tr>
<td>Central <strong>management</strong> of business rules</td>
<td>Consistent application of corporate policy and government regulations</td>
</tr>
<tr>
<td><strong>Business Experts</strong> can find, change and test critical business rules</td>
<td>Visibility, accountability and error-free business</td>
</tr>
</tbody>
</table>

**Business Rules Management**
- Flexible & agile business systems
- Faster turnaround times for changes
- Reduced cost for changes
- Precise & informed decision making
- Improved visibility for the business
SAP Solution Overview

SAP Business Rule Framework plus
Aligning Stakeholders to Create a Sophisticated Business Rules Management Solution

How do I ensure that business logic can be implemented efficiently, consistently, and timeless?

How can I secure on-going maintenance and adjustments due to legal changes at low cost and low risk?

It is critical that our policies are transparent and consistently enforced in our business operations.

How do I gain greater control over the rules that affect our business operations? How can I reduce time to value?
# CIO: Timeless software at low costs

Objectives, issues, capabilities, and benefits

<table>
<thead>
<tr>
<th>Issues</th>
<th>Key business capabilities</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Hard coded business logic, where IT involvement is needed for any changes</td>
<td>■ Business rules management system allows for transparent and well defined business logic</td>
<td>■ Reduced costs</td>
</tr>
<tr>
<td>■ No transparency of business logic, neither for IT nor for business department</td>
<td>■ Business users are able to understand and maintain business logic w/o support by IT</td>
<td>■ Sustainable solutions</td>
</tr>
<tr>
<td>■ Inflexible frontends implying high training effort for end-users</td>
<td>■ Flexible frontend allows for role based user experience</td>
<td>■ Free up IT to focus on technical aspects (instead of business)</td>
</tr>
<tr>
<td>■ Hard to sustain and support legacy solutions and integrations on various technologies</td>
<td></td>
<td>■ Ensure transparency and consistency</td>
</tr>
</tbody>
</table>

**Objective:**
Ensure that business logic can be implemented and maintained efficiently, transparently, and consistently at low cost

**Best practice solution:**
Externalizing decision making by business rules management system
CIO: Timeless software at low costs
SAP Solution

SAP Business Rule Framework plus
- Rules modeling from business perspective
- Out of the box backend integration
- Flexibility and extensibility
- Low administration and low TCO

SAP Differentiators

Rules modeling: Business users are enabled to model and deploy business logic without IT support

Integration: BRFplus is the only BRM solution natively integrated into SAP’s technology and application stack, allowing for easy implementation of business rules services

Flexibility, extensibility: Flexibility of modeled business logic and extensibility of rules expression types

TCO: Very low costs for administration, maintenance, and setup due to being part of SAP NetWeaver
COO: Improve transparency and consistency
Objectives, issues, capabilities, and benefits

**Objective:**
Enforce policies transparently and consistently in our business operations

**Best practice solution:**
Governance by business rules management system

<table>
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<th>Key business capabilities</th>
<th>Benefits</th>
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</table>
| Business rules are often unclear, based on documents, tacit knowledge, or hidden in the system. | Business rules management system allows for transparent and well defined decision making processes  
Intrinsic tracking and tracing capabilities ensuring the compliance with policies and legal regulations  
Seamless integration to existing systems, processes, and data | Transparent and consistent business rules and decisions  
Compliance with policies and legal regulations  
Modeled business knowledge  
Tracking and auditing capabilities |
COO: Improve transparency and consistency
SAP Solution

SAP Solution

Business Application

SAP Business Rule Management plus
- Transparency
- Integration
- Governance
- Low TCO

SAP Differentiators

Transparency: Central rules repository with modeled business content

Integration: BRFplus is part of the SAP system, being fully integrated into all business processes, providing for access to all business data

Governance: Policy compliance by traceable decision making processes

TCO: BRFplus is covered by SAP NetWeaver Foundation for Third Party Applications license, no additional license needed, no additional hardware needed, no administration effort
Head of LoB: Improve automated decision making
Objectives, issues, capabilities, and benefits

**Objective:**
Gain greater control over the rules that affect our business operations

**Best practice solution:**
Business enablement by business rules management system

<table>
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<tr>
<td>Business rules often unclear, based on documents, tacit knowledge, or hidden in the system</td>
<td>Business user enablement to understand and maintain business logic</td>
<td>Become more flexible and allow for instant changes</td>
</tr>
<tr>
<td>Business needs to involve IT department for process changes</td>
<td>Gain control over decision making processes</td>
<td>Become owner of the end-to-end process</td>
</tr>
<tr>
<td>Process changes very time and money consuming</td>
<td>Transparent and documented business decisions allowing for enhanced reporting</td>
<td>Modeled process knowledge, accessible by business users</td>
</tr>
<tr>
<td>Unclear processes result in reporting impediments</td>
<td>Rapid prototyping</td>
<td>Enhance reporting capabilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Empower business users</td>
</tr>
</tbody>
</table>
Head of LoB: Improve automated decision making

SAP Solution

SAP Business Rule Management plus

- Business enablement
- Time-to-value
- Business logic modeling
- Transparency

SAP Differentiators

**Business enablement:** Modeling business logic based on business knowledge in human language, no development skills required

**Time-to-value:** Instant extensions and changes without software deployment process

**Business logic modeling:** Business logic persisted in business models

**Transparency:** Documented business decisions made by consistent processes
Why SAP?

Top Reasons
BRFplus is a Best of Breed Rules Engine

**Business User Empowerment**

Graphical approach and business semantics for intuitive rule composition and management (modeling rather than programming)

**Rapid Time-to-Value**

Rapid prototyping with feedback-based build cycle (build, simulate, optimize) leading to reduced project durations (up to 60% reduction)

**Transparency**

Transparency of rule execution and tracing for audit

**Personalization**

Personalization and segmentation of rules
BRFplus can do Much Better Than Other Rules Engines

**Business Semantics**
Business semantics out of the box

**Part of ABAP Stack**
Seamless integration with ABAP applications and ABAP server including security and authorization

**Low TCO**
BRFplus is covered by SAP NetWeaver Foundation for Third Party Applications license

**No Hardware**
No additional hardware required: BRFplus is part of SAP NetWeaver (the SAP technology platform) and runs on the same server

**High Performance**
High performance and nearly no footprint (<100 kB)

**No Setup**
Zero initial setup effort
Total Costs of Ownership of BRFplus Compared to an External Rules Engine

Installation and Connection
40,000$ (10 interfaces)

Administration
3,000$/month

Hardware
10,000$ (for separate server)

License
Varying

All numbers estimated based on a work rate of $1,000/person/day

Assumptions
- Rules Engine to run in conjunction with SAP system
- Customer has valid SAP license
Total Costs of Ownership of BRFplus Compared to an External Rules Engine

**Installation and Connection**
None

**Administration**
None (included in administration of SAP System)

**Hardware**
None (BRFplus runs on NW ABAP server)

**License**
None (assuming SAP licenses are available anyway)

SAP Business Suite

SAP NetWeaver

BRFplus
Usage Examples
Ubiquitous Business Rules

**Banking**: Relationship based Pricing, Scorecards, Credit Decisioning

**Education**: Fee Calculations, Course Selections

**Healthcare**: Claims, Patient Monitoring, Fraud Detection

**Logistics and Shipping**: Parts Management, Duties Calculations, Pricing Calculations

**Public Sector**: Tax Calculations, Customs Duties, Land Regulations, License Fee Calculations

**Insurance**: New Products, Claims Settlement, Agent Commissions
Business Applications
Powered by BRFplus
Business Rule Services with BRFplus

**BRFplus Function: Service Definition**
- Input (Context), Output (Result), Purpose
- Can be called by ABAP API, RFC, or Web Service

**BRFplus Rulesets: Service Implementation**
- Collection of rules
- Preconditions, priorities, validity
- Context enrichment (additionally needed data)

**BRFplus Rule: step implementation**
- IF <condition(s)>
  - THEN <operation(s)>
  - ELSE <operation(s)>
- Usage of expression types (decision tables, decision trees, formulas, table operations, …) to define complex conditions and value derivations/calculations
- Usage of action types (message log, workflow, email, …) to trigger side effects
BRFplus Impressions
Function
BRFplus Impressions
Ruleset

General

Detail
Show Ruleset Header | Variables | Context Overview

Rules

1. Rule: Determine Base Price - Unlimited Validity
   Perform the following operations
   (1) Change Base Price after processing Base Price

2. Rule: Product not found notification - Unlimited Validity
   If
   Base Price is not initial
   Then
   Perform the following operations
   (1) Change Discount after processing Determine Discount
   (2) Change Price after processing Determine Total Price
   Else
   Perform the following operations
   (1) Perform Notification Mail
BRFplus Impressions
Expression Type Decision Table
BRFplus Impressions
Expression Type Formula
BRFplus Impressions
Simulation

Business Rule Framework plus - Simulation

Context Values
Product: Running Shoes
Quantity: 7

Result
Amount: 386.40 USD United States Dollar

Processing Steps
Trace for Price Determination started on 02.03.2011 14:58:45 by user STROESSNER

- Price Determination
  - Event Processing
  - Context
  - Base Price
  - Value Change
    - Base Price
  - Determine Base Price
    - Rule processing: Determine Base Price (position 000001)
  - Determine Discount
    - Search Tree

Decision Table: BASE_PRICE
- Product: Running Shoes, Tennis Racket
- Value: Base Price, Discount, Price, Product, Quantity
SAP Tax and Revenue Management

Tax Authorities must …
- Maximize tax revenue without an increase of taxes
- Maximize compliance rates and fight tax fraud
- Minimize taxpayer burden to create competitive advantages for the country
- Maximize their responsiveness to taxpayers to further increase their services
- Deal with decreasing budgets by optimizing the revenue / cost ratio

**BRFplus Use Cases**
- Calculating Rules for filling in and validating tax forms
- Tax registration, including creating Business Partners, Contract Objects, Contract Accounts, Billing Documents, ...
- Tax portals (e.g. ELSTER) registration
SAP Governance Risk and Compliance
Risk Management

- Automated monitoring of key risk indicators and automated workflow enable risk owners to manage risks and immediately align strategy.
- Alignment of key risk and performance indicators across all business functions permits earlier risk identification and response.
- Cross-platform, cross-vendor capabilities deliver an enterprise-wide picture of risk exposure and strategy execution.

**BRFplus Use Cases**

- In survey valuation plugin, BRFplus enables to define formulas to calculate all elements of analysis based on numbers (scores, amount, or percentages) coming from survey response.
- In Key Risk Indicators BRFplus is used to trigger email notifications, risk assessment workflows, ...
SAP Governance Risk and Compliance
Access Control

- Reduce Segregation of Duties violations and critical access risk across SAP and non-SAP systems
- Streamline compliance processes
- Deliver immediate visibility into current access risk
- Embed compliance into business processes and minimize audit time and audit-related costs

BRFplus Use Cases

- In MSMP (Multi-Stage Multi-Path Workflow) workflow engine MSMP Rules can be implemented using BRFplus. These rules handle workflow routing and agent determination
SAP Grants Management for Grantor

- The Grants Management for Grantor solution meets the requirements of all levels of public sector organizations that fund grant programs.
- Business processes include program definition, application, assessment, agreement, grant payment, claims processing and monitoring, analysis, grant application processing, workflow authorization and notification in addition to case management, correspondence management, and records management functionality.
- Delivering robust reporting capability and content.

**BRFplus Use Cases**

- Assessment / eligibility determination of grant applications and claims to decide whether an applicant is eligible and for how much.
- Real time data validation during form entry. Pre-screening to determine eligibility and also to ensure all required data is entered on the form.
The Monetary Social Benefits scenario combines front office social decision making processes with an automated back-office solution to execute financial processes.

The solution leverages key functionalities of the Social Case Management component in SAP CRM and the Public Sector Collection and Disbursement (PSCD) component in SAP ERP.

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**BRFplus Use Cases**

- All decision making processes are BRFplus enabled
  - Social Application Processing
  - Social Service Plan Processing
  - Deduction Plan Processing
Application Incident Management deals with incident reports and provides respective solutions.

End users launch an incident report that is forwarded to experts who work on it.

Beside a description of the incident, the end user provides information on the respective component, priority, category (multi level categorization), plus information on himself, like the application creating the report, language settings, …

That information is used for auto-dispatching to respective teams, e.g. all reports with a specific component and language French are routed to the Paris team.

**BRFplus Use Cases**

- Auto-dispatching of incident reports based on available information
- Integration to CRM organizational management to identify available teams and their specific profiles and skills

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