Introduction

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Business Problems Addressed by the Business Rule Approach

Keeping Up To Speed
- Rapid change, at an ever faster pace, is a fact of life. In the Internet age, implementation of changes is expected almost instantaneously. How can line workers consumed with day-to-day activity ever hope to keep up?
- Business Rule Solution: real-time delivery of business logic to knowledge workers as errors actually occur, creating a seamless, never-ending, self-training environment.

Knowledge Walking Out the Door
- By and large, the baby-boomers created much of the core business system capacity we see in place in larger organizations today. Much of the related knowledge still sits in their heads — and nowhere else.
- Business Rule Solution: a systematic way of capturing, documenting, and retaining the business rules.
Business Problems Addressed by the Business Rule Approach

Never-Ending IT Projects
- Why do so many projects miss their deadlines? Delivery dates are adjusted time and time again. Primary requirements are forever changing mid-stream, causing endless rework. Some projects never deliver anything at all.
- Business Rule Solution: a means to capture true business requirements up-front, before costly rework is required.

IT Driving the Business
- The capabilities of information technology (IT) have advanced explosively in the past several decades. Businesses continue to devote significant resources to exploit these new capabilities, and there is no end in sight.
- Business Rule Solution: an approach enabling the business to drive development of requirements.

Inaccessible Rules
- Finding out what rules apply to a given business situation often involves an open-ended search through multiple sources.
- Business Rule Solution: a means to manage business rules, providing direct accessibility.

Massive Differentiation
- Many businesses seek to support highly individualized relationships with growing numbers of customers and other partners for ever more complex product/services.

Ad hoc Rules
- Most businesses have no logical approach for defining their business rules. As a result, business workers often make up the rules as they go along.
- Business Rule Solution: a structured approach to help you think through rules before the fact.

Miscommunication
- Does preferred customer discount mean the same across all departments? If not, what are the differences? What rules apply? Do these rules differ for different areas of the business? Are the rules consistent?
- Business Rule Solution: a clear set of concepts on which rules can be directly based.

Source: http://www.BRCommunity.com/a2003/b123.html

Australian Department of Immigration and Citizenship

Challenges
- Lack of support for decision making staff
- Gaps and vulnerabilities in systems and processes
- Lack of global consistency
- Political embarrassment from high profile errors

Solution
- A business-user owned solution to capture, test, maintain and execute their visa processing policies and legislation
- Deployed in a service-oriented architecture
- Rules automated for over 750,000 annual visa applications, delivering consistency for over 7,000 global staff
- Plus self service portal with the Visa Wizard and Citizenship Wizard
- 10,000+ rules using 30,000+ attributes
- 16,000+ regression test cases

Business Results
- Massive increase in self service using the Visa Wizard and Citizenship Wizard
- Reduced strain on frontline staff to deal with enquiries about potential Visa applications
- 98% of call centre visa inquiries are now handled through self-service (average of 8300 sessions per day)
- First prize in the Australian Excellence in e-Government Award and the International FutureGov Government Technology Awards

Strategic Impact
- Better decision making through
  - Consistent operating processes
  - Easily accessible instructions
  - Integrated record keeping
  - Effective QA processes
  - Accessible online training
  - Effective reporting
  - Improved openness and accountability

Business Rules in Practice – Example


Australian Government
Department of Immigration and Citizenship

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What is a Business Rule? – History of Business Rules
A Closer Look at Business Rules
Business Rules and Business Processes
Benefits
Questions and Answers
What is a Business Rule?

The SBVR follows a common-sense definition of 'business rule':

**Business Rule: rule that is under business jurisdiction**

'Under business jurisdiction' is taken to mean that a business (or any other semantic community) can, as sees fit, enact, revise, and discontinue the business rules that govern and guide it. If a rule is not under business jurisdiction in that sense, then it is not a business rule. For example, the 'law' of gravity is obviously not a business rule. Neither are the 'rules' of mathematics.

A rule always removes some degree of freedom.

Rules provide criteria for making decisions.

Business rules must be "practicable".

Examples:
- The rental duration of a rental must not be more than 90 rental days.
- The fuel level of the rented car of a rental must be full at the actual pick-up date/time of the rental.

- Business Rules are not software.
- Business Rules are not process.

History of Business Rules

- Earliest known published use of the term 'business rule'
  - "...[A]n explicit statement of a constraint that exists within a business's ontology."

  - "...[S]pecific rules (or business policies) that govern ... behavior [of the enterprise] and distinguish it from others.... [T]hese rules govern changes in the status [state] of the enterprise."

  - 500+ business rule examples, illustrating and defining the scope of the problem domain, and identifying core categories and patterns of business rules.

  - Commonly cited as the seminal paper for business rules.
  - "...[A] statement that defines or constrains some aspect of the business ... [which is] intended to assert business structure, or to control or influence the behavior of the business. [A business rule] cannot be broken down or decomposed further into more detailed business rules.... [If reduced any further, there would be loss of important information about the business."

  - "rules build directly on terms and facts. Actually, a rule should simply add the sense of must or must not to terms and facts that have already been defined in the fact model and Concepts Catalog. In business problems involving hundreds or thousands of rules — not at all uncommon — there is no way to achieve consistency across such large numbers of rules without a common base of terms and facts."


Source: http://www.BRCommunity.com/a2008/b448.html

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From Business Rules Manifesto:

 “Rules build on facts, and facts build on concepts as expressed by terms. Terms express business concepts; facts make assertions about these concepts; rules constrain and support these facts.”

 Rules are based on facts, and facts are based on terms.

Business Rules Mantra - Example

- Terms
  - Employee
  - Employee number
  - Car
  - Car registration number

- Facts
  - Car has car registration number
  - Employee drives car

- Rules
  - Each employee must be uniquely identifiable.
  - Each car always has exactly one car registration number.

Fact model

A visualisation or blueprint of a structured business vocabulary

Business Rules Approach

- Business Rules are neither new nor old.
- Were not treated as a resource of their own before.
- Different possible representations
  - Hidden in source code
  - Workflow descriptions
  - Decision tables

- The Business Rules approach is relatively new and the quantity of products available.
- Approach wasn’t driven by technology but business practice.

Why Business Rules?

- Rules are often hard-coded in application systems
  - Hard to identify, hard to modify
  - Tacit knowledge buried in documents, people’s heads
  - Un-standardised business terminology
  - Simplify process modelling
  - Agility: Imagine the first change to a complex decision logic hard-wired in a process model

- Try explaining your favourite game without using rules!
- We need rules for the business “game”.
Types of Business Rules

- **Behavioural Rules**
  - A business rule that can be violated directly is a behaviour rule.
  - **Obligation or prohibition.**
  - Example: Surgical gloves must be worn in performing surgery.

- **Definitional Rules**
  - A definitional business rule can be ill-conceived, misunderstood or misapplied, but it cannot be violated directly.
  - **Necessity or impossibility**
  - Example: A customer is always considered a gold customer if the customer places more than 12 orders during a calendar year.

Source: Ronald G. Ross, 2009

Business Rules

- All behavioural business rules need to be directly enforceable.
  - To be enforceable, an behavioural business rule has to be defined in such a way that violations can be detected.
  - Otherwise it is a business policy.

- Business rules are not always automatable.
  - "A customer who appears intoxicated or drugged must not be given possession of a rental car."
  - Exceptions to rules always represent more rules.

Source: Ronald G. Ross, 2009

Best-practice Expressing Business Rules

- Every Business Rule Statement
  - Should use a Rule keyword (“must”, “only”)
  - Has a sentence form
  - Should be a complete sentence
  - Should have a subject
  - A Business Rule always removes a degree of freedom (“must”, “only”). If it is not, it is called a Statement of Advice (“may”, “need not”).
  - Avoid extra words for emphasis
  - Avoid free form
  - Business Vocabulary is key
  - Avoid link to events
  - Avoid If ... Then .... (A customer must have a shipping address)

Source: RuleSpeak® Business Rule Notation

RuleSpeak® Business Rule Notation

- Used in practice in large-scale projects since the mid-nineties.
- Fully SBVR-compliant (one of three reference notations used in the creation of SBVR).
- Helps to ensure that same ideas are expressed in the same way.
- Consistency hard to achieve using complete “free-form”.

Source: RuleSpeak® Business Rule Notation

RuleSpeak® Examples

- **Definitional business rule**
  - It is necessary that each rental has exactly one requested car group.
  - RuleSpeak version
    - Each rental always has exactly one requested car group.

- **Behavioural business rule**
  - It is obligatory that the rental duration of each rental is at most 90 rental days.
  - RuleSpeak version
    - The rental duration of a rental must not be more than 90 rental days.

Source: RuleSpeak® Business Rule Notation

SBVR

- **Semantics of Business Vocabulary and Business Rules**
  - Formal specification 1.0 released in January 2008
  - 434 pages PDF document
  - Based on the work of the Business Rules Group
  - Very theoretical
    - Page 9: “This overall form of presentation, essential for a vocabulary standard, unfortunately means the material is rather difficult to approach. A figure presented for each sub-vocabulary does help illustrate its structure; however, no continuous ‘narrative’ or explanation is appropriate.”
  - General reader is urged to read the non-normative annexes
Design Objectives for SBVR

- Business-friendliness. SBVR has no reference to information or information systems concepts; rather it is conceptualized optimally for the way business people actually think. It is defined using the most common dictionary definitions applicable, and expressed using the everyday word most commonly used for that meaning.
- Business rules specified entirely from the business vocabulary.
- Business people exchange their business vocabulary and business rules in their own language.
- Semantic-integrity rules based on predicate logic. Predicate logic is to be used as linguists use it to capture semantics.
- Business people (as the 'customer') provide business vocabulary and business rules as purchase order specifications to IT (as the 'supplier').

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Confusing Rules vs. Processes?

- Who can tell the difference between a (business) process and a (business rule)?
- "You shall not kill."
- Mistake the law (rule) for the act (process) of murder?
- Processes transform/produce outputs from inputs.
- Rules evaluate whether the output is desired/acceptable or not. Decision rules can substitute for a process in the sense that they can tell you what the outcome should/will be.
- Could you create a process model for every possible scenario? No way! That is one major reason we have rules.

Is There an Alternative?

- Roger Burlton:
  - "If you separate the rules, you can develop remarkably stable processes."
  - "Anytime you stick diamonds in your business process model you’re dead."

- Ron Ross:
  - "Sticking diamonds in your business process model is a worst practice."

- The really rapid change is in the rules, not the business processes.

- Business Processes are carried out according to guidance – policies, standards, rules.

Bruce Silver, December 2009

"No other topic in the BPM arena has suffered from more misinformation disinformation and wilful ignorance as the relationship between business process and business rules. These two disciplines are most often put forward as alternative approaches rather than complementary aspects of managing the business. In reality business process management (BPM) and business decision management (BDM) need to be used together. Unfortunately each discipline has historically spoken only to its own concerns with little interest in how it integrates with the other in fact with little understanding of what the other is trying to do."

Business Processes and Business Rules

Roger Burlton:

- "If you separate the rules, you can develop remarkably stable processes."
- "Anytime you stick diamonds in your business process model you’re dead."

Ron Ross:

- "Sticking diamonds in your business process model is a worst practice."

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Business Processes are carried out according to guidance – policies, standards, rules.
Example of Process with Business Rule

Example of Business Rule Structure

Types of Business Rules (repeated)

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- **Definitional Rules**
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Source: Ronald G. Ross, 2009

Definitional Rules and Business Processes

- **Definitional rules** have direct relationship to processes.
  - Express criteria for correct decisions, derivations, or business computations.
    - **Computation**
      - Any calculations that can be encoded.
      - Can be highly complex, involving many rules.
    - **Classification**
      - Inference rules can determine the outcomes of decision points (branch points).
      - Can be complex, involving large numbers of inference rules.

Behavioural Rules and Business Processes

- **Behavioural rules** could be violated by people.
  - **Iteration**
    - Business processes often include loops that permit iteration.
    - Timing and repetition criteria can be expressed as business rules.
  - **Service Level Agreements**
    - A service level agreement generally involves four things: (1) an action item, (2) a party, (3) escalation criteria and (4) timing criteria.
  - **Compliance**

Relationship of Rules, Processes and Events

- Processes produce and respond to events, which can fire one or more rules (i.e., cause the rule(s) to be evaluated).
- Every rule produces two or more events where it needs to fire.

Example:
- A customer must be assigned to an agent if the customer has placed an order
- Related events:
  - When a customer places an order... (obvious)
  - When an agent leaves the company... (less obvious)

- Business Rules are not actions. Actions are required for enforcement, e.g. police patrol, courts sentence etc.

Source: Ronald G. Ross, 2005
Best Practice and Project Learnings

The basic idea is that business rules should be specified and implemented so as to make them readily accessible and independently changeable as needed, in a context that is as business-friendly as possible.

- Over 50% reduction of process steps and decisions/gateways after applying business rules not at the lowest level of detail but wherever appropriate in the process models.
- Not top-down process to rules approach but one that iterated between both perspectives. At every decision point:
  - What factors are involved in making this decision?
  - What else do I need to know in order to make this determination?
  - Why do I need to know this? (is this just a component of a larger decision?)


Best Practice (continued)

- Avoid mixing definitional and behavioural criteria in the same business rule.
  - Behavioural rules should indicate whether people must abide by results from evaluating definitional rules.
- Separate tasks for creating operational knowledge and for people to take business action.
- Consider the cost of business rules in developing the business process.
  - Avoid unnecessary work in a business process by testing cheap rules first.

Source: Ronald G. Ross, 2009

Capturing Rules

- The capturing of rules can be summarised in the following steps:
  - Document your process
  - Identify decisions in the process
  - Identify and validate the rules that make up each decision

Proteus Methodology

Process Candidates for Business Rules

- Multiple decision steps in the process
  - Assess, Compare
  - Calculate, Compute
  - Check, Confirm
  - Qualify, Decide
  - Determine, Diagnose, Evaluate
  - Estimate, Process
  - Test, Validate, Verify

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"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."
Charles Darwin

Benefits of Business Rules Approach
- Explicit business rules representation
- Aids quicker comprehension
- Ensures consistency
- Helps implement standards
- Black box vs. white box decision logic
- Enables agility (quicker response to change)
- Promotes knowledge sharing
- Enables rules management – central location
- Role and process clarity
- Removal of "myths"
- Clarification of touch points between cross-functional processes

Benefits of Tool Support
- Integrated process and rules analysis
  - Which processes are affected by a change in legislation?
  - Who must be informed when a policy is changed?
  - Which rules are relevant in which countries?
  - Which application systems consume a decision service?
- Path to automated execution of Business Rules

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Next Meeting
James Bachforth
Demystifying Master Data Management
6:00pm 20 June
The Somerset

Don’t forget to join our mailing list ...
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Latest Publication
Questions?

Happy to discuss, anytime...

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Partnership with Business Rule Solutions, LLC

Leonardo Consulting has signed an exclusive partnership agreement with Business Rule Solutions, LLC to deliver their world-class training on Business Rules in Australia and the Arab states.

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