

# Business Rules Adaptation in Workflows

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## Abstract:

Workflows are widely seen as the top priority for companies wanting to survive the current competitive markets [1]. A business management system with configurable workflow provides many benefits including not only a central repository for the way companies do business but also boosts team efficiency with structured processes, process automation which means errors are greatly reduced, less time is needed for training, fewer repetitive tasks and many more. Despite the many benefits that workflows bring, the complexities of configuring workflows cause major roadblocks for companies moving towards workflow solutions. The need for having configurable workflows in dynamic environments have been discussed and well documented by various authors including Gregory Harrison [2], Abdullah Raza [3] and Adel Ben et al. [4].

To tackle the configuration problem, this paper discusses a business rule component-based formal model for development of business workflows. The formal model describes the logical dependencies between business rules in the form of AND-OR graphs. The graphs are created through Event, Condition and Action components of business rules. The business rule change propagation is implemented as an algorithm of graph traversal through the AND-OR graph patterns. A two-levels inference mechanism is built as a vehicle for controlling the business process execution and adaptation of the business rules at real time based on propagating changes between business rules dependencies.

In the existing research, there is a lack of support on accounting for business rules dependencies within workflows. Without accounting the logical dependencies, we cannot have an efficient mechanism for adaptation in real-time. The major advantage of our research is the universal, strictly logic-based event-driven framework for business process modelling and control which allows automatic adaptation of the business rules governing the business workflows based on accounting their structural dependencies. The framework is entirely domain-independent and can be used across industries.

### **Keywords:**

Business Rule, Workflow, Business Rule Dependencies, Rule Adaptation, Dependency Trees, Business Process, Business Process Management.

### **References:**

[1] Gartner Group, "Delivering IT's Contribution: CIO Agenda". Stamford, Connecticut, Gartner, Inc. (2005).

[2] Gregory Harrison, "Dynamically configurable workflow in a mobile environment", 2019), (<https://patents.google.com/patent/US20160132299>).

[3] Abdullah Raza, Dynamic Partitioning and Task Scheduling for Complex Workflow Healthcare Application in Mobile Edge Cloud Architecture, (2019).

[4] Adel Ben et al., "A generic framework for rapid application development of mobile Web services with dynamic workflow management", Conference: Services Computing Proceedings. 2004, IEEE International.