Workflow and Business Process Management

Agilium: a novel approach to process management

ISSUES AT STAKE

Companies are increasingly aware of the advantages they can reap from fully optimizing their business process. For their part, BPM tools designed to instrument the different phases of process lifecycles have made significant strides.

However, apart from the undeniable benefits they offer, BPMs run up against a major challenge: how to reconcile the deterministic approach required to establish smooth-running processes, given the unknown variables, changes, and unforeseen hitches characteristic of the 'real world'? To go about imagining and etching in stone all of the possible scenarios which may arise during process flow would lead to a dead-end. Too much time would go into designing the process, and even if you managed to imagine all the possibilities, attempting to formalize them in a process design would make the diagram inextricable and next to impossible to manage.

So how does one go about determining what is essential in a process without getting bogged down in the plethora of possible variables? How should exceptions be dealt with? How do you maintain enough leeway to permit rapid response to inevitable unknown developments?

Several approaches address these problem areas:

- Extract business rules from the process: this approach involves managing business rules with a dedicated tool equipped with a repository and an engine, then associating the rules to the processes via an interface between a BPM tool and a rules engine. This lets you isolate what is stable and lasting in the process from what is subject to frequent changes. Everything that is generic and relatively stable is described in the core of the process, while evolving, complex rules are managed using a rules engine.
- Open the process models: some BPM authors are exploring the possibility of describing 80% of a process through an open model that can be enhanced in real time as the process is executed.
- Managing exceptions: similarly, in this case you don't attempt to describe all the possible scenarios; unforeseen events are managed via a generic exception processing system which emits warning signals. Where necessary, a collaborative space is opened up in which several actors involved in the process deal with the case in question.
- Intervene in the process instances during execution: the idea here is to modify the process instance diagram during execution, eliminating or skipping steps along the way, adding activities, etc.

Agilium's original solution is in line with the second and fourth perspectives.

COMPANY BACKGROUND

Agilium was created in 2003 with the objective of selling the BPM tool its founders had developed in the late 90's in collaboration with CERN (Centre Européen pour la Recherche Nucléaire). Based in Annecy, the company has 14 employees and saw revenues of €1.5 Million in 2005. Among its references are – in addition to CERN – Mobalpa, Dynastar, Saint-Exupéry Airport in Lyon, PhotoWatt, STTS, Eurolamellé, and Savoie University.

Agilium, the company's software solution which bears the same name, falls into the category of process execution tools and features the following key functions: operational modeling environment, implementation tools, process execution engine, monitoring functions, and – since the release of version 2, available since late 2005 – management functions which Aglilium brings closer to BAM.

INTERVENING IN THE PROCESS INSTANCE

Since its first version, Agilium offers the possibility of reconfiguring a process instance during execution – a one of a kind feature! An authorized administrator can thereby modify a diagram dynamically and graphically. The process model concerned is not affected, and the other instances are still executed using the same model. With version 2, Agilium extends this functionality with a management module. This module enables the user to instrument business processes by placing measuring points along their path that provide performance-monitoring data. Management processes are thus formalized, enabling the company to describe what actions must be performed in the event deviations are detected by the indicators. These actions may involve dynamically reconfiguring an instance during execution. A process instance can thus be automatically reconfigured based on the context of execution.

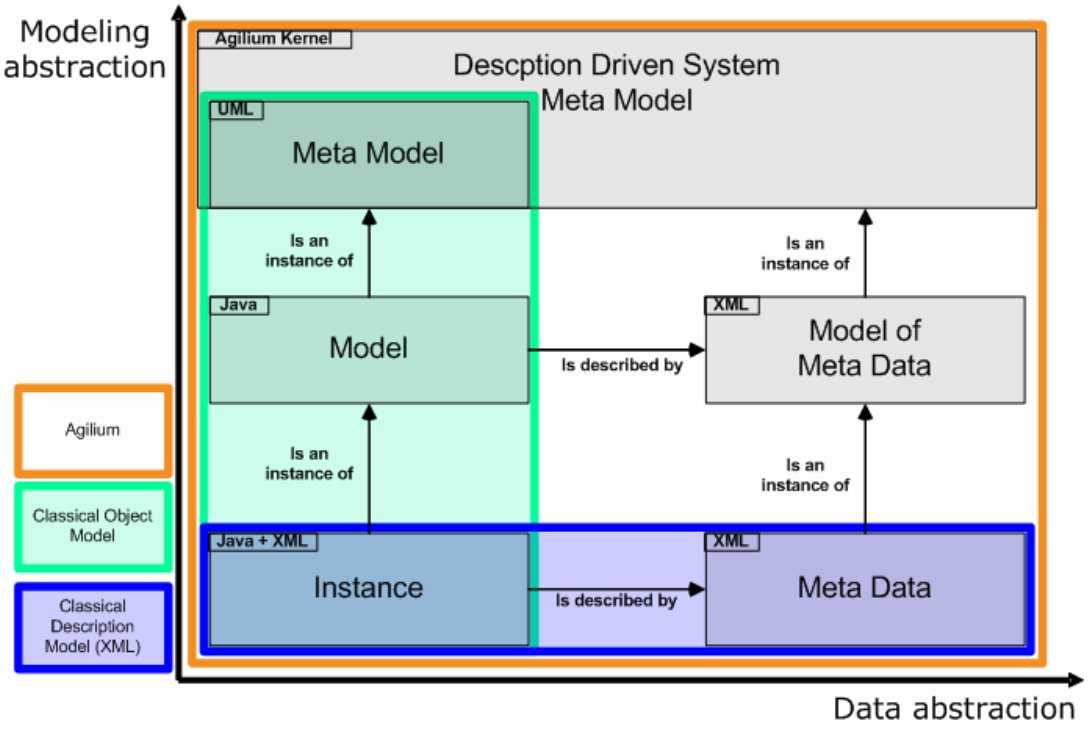
AN INNOVATIVE TECHNOLOGY

This flexibility is based on the Description Driven System (DDS) architecture, used by CERN in the context of the construction of the CMS (Compact Muon Solenoid) particle detector. This project, carried out over a ten-year period, requires the collaboration of 2000 scientists spread over 36 countries, as well as the assembly of millions of elements. A distributed data management system and processes flexible enough to accommodate the flexibility of the project and its inevitable development over time were indispensable. Unable to find on the market a product offering the workflow and data management functions required by the CMS project, CERN initiated the CRISTAL project, which was based on a subtle blend of object modeling and description technologies based on XML. The objective of this architecture was to combine the best of both worlds: the powerful behavior analysis capabilities of object modeling and the flexibility offered by meta-data descriptions. The Agilium product was then developed in collaboration with CERN by drawing in part upon CRISTAL technologies.

DDS architecture is driven by applying the principles of data abstraction (traditionally used in XML descriptions) to the objects and principles of behavioral abstraction (traditionally used in object modeling) to the data. This orthogonal association of the two types of abstraction make it possible to clarify the system's crucial elements (process, business objects, data used, etc.) and to associate with them a high-level description that can be interpreted during execution.

The following diagram shows how traditional object modeling is associated with a description of the corresponding meta-data: next to the different levels of object modeling (instance – model – metamodel) appears the traditional description model where a base-level element (an instance) is described by a meta-level. You will also notice on the diagram a new type of model – the meta-data model, which is both a description of the models based on the classes in the object model *and* a model of meta-data based on the descriptions of the base-level element. This description affords the models the ability to be transformed, not through coding or recompiling, but through simple modification of the XML description, which the interpretation engine will take directly into account.

Agilium Architecture



Source: Agilium

Finally, it also becomes evident that a process instance is not only a model instance; it can also be described using XML meta-data. This description, which can be interpreted during execution, makes it possible to dynamically reconfigure the process instances while they are being executed – without altering the models they are based on.

GUIDELINES

The dynamic reconfiguration of process instances during execution is a unique feature for a process execution tool. The flexibility offered by such a feature is considerable and makes it possible to not only address unforeseen events, but also to accommodate the inevitable shift in the requirements of processes over time, without requiring that the modeling be revised and the instance re-started. This possibility facilitates the task of process administrators or supervisors, but it also can be utilized with specific management processes. This management approach enables you to monitor the flow of the processes and detect possible deviations, as well as to react automatically in the event a problem occurs by modifying the process instance. Naturally, this ability must be strictly controlled and mastered as authorizations are granted to process supervisors and management processes.

ABOUT CERN

European Organization for Nuclear Research
CERN CH-1211 Genève 23
Switzerland
Tel. : +41 (0) 22 76 761 11
Fax. : +41 (0) 22 76 765 55
Web : www..cern.ch

CERN is the European Organization for Nuclear Research, the world's largest particle physics centre. It sits astride the Franco-Swiss border near Geneva.

CERN is a laboratory where scientists unite to study the building blocks of matter and the forces that hold them together. CERN exists primarily to provide them with the necessary tools. These are accelerators, which accelerate particles to almost the speed of light and detectors to make the particles visible.

Founded in 1954, the laboratory was one of Europe's first joint ventures and includes now 20 Member States.

Since its creation, CERN has made many important discoveries for which CERN scientists have received prestigious awards, including Nobel prizes.

The one most useful for you is the World Wide Web. It was developed to improve and speed-up the information sharing between physicists working in different universities and institutes all over the world, and now it has millions of academic and commercial users.

ABOUT LE CXP

Le CXP
12 rue Godot de Mauroy
75009 PARIS- France
Tel. : +33 (0)1 53 05 05 53
Fax. : +33 (0)1 53 05 05 54
Web : www..cxp.fr

Le CXP is a french independent research company based in Paris, France. For 30 years, le CXP has been helping organizations to select the best IT solution and to succeed in their project in order to increase business efficiency. For IT vendors, le CXP conducts strategic missions in order to better position and market their offers, demonstrating measurable value with respect to client needs.