

Introduction

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Welcome to the *2010 BPM and Workflow Handbook*. This edition marks the 10th year of publication and each year, in collaboration with the WfMC, we have produced a valuable handbook capturing state-of-the-art in workflow practices and for the past few years we expanded our focus to include articles on BPM along with spotlights on industry niches such as Healthcare, Human Workflow and Government.

This year we focus on *Business Intelligence* to illustrate how Business Process Management and Business Intelligence are increasingly intertwined. Linking business intelligence and business process management creates stronger operational business intelligence. Users seek more intelligent business process capabilities in order to remain competitive within their fields and industries. BPM vendors realize they need to improve their business processes, rules and event management offerings with greater intelligence or analytics capabilities.

This is a book for business people who just want to understand the how and why of process automation and integration in simple non-jargon terms. It is also for the technical practitioner looking for the latest insights into where BPM standards are heading, how others are managing implementations and more.

Throughout the book international industry experts and thought leaders present significant new ideas and concepts to help you plan a successful future for your organization.

- SECTION 1: SPOTLIGHT ON BUSINESS INTELLIGENCE covers a wide spectrum of viewpoints and discussions by experts in their respective fields. Papers range from an examination of the *Knowledge Work and Unpredictable Processes* through to *Using BPM to Drive Clinical Intelligence and Predictive BPM*.
- SECTION 2—THE BUSINESS VALUE OF BPM AND WORKFLOW introduces new key concepts and sets out the business case for workflow technology and BPM. This perspective is covered by papers that provide practical information on BPM (including case studies) designed for an audience of business users.
- SECTION 3—STANDARDS AND TECHNOLOGY. BPM standards have evolved from technical nuance to a business imperative. This perspective is covered by papers on system structure and values, operation and scalability issues, written for an audience of Information Technology (IT) professionals.
- SECTION 4—DIRECTORY AND APPENDICES offers an explanation of the structure of the Workflow Management Coalition and references comprise the last section including a membership directory.

SECTION 1—SPOTLIGHT ON BUSINESS INTELLIGENCE

BUSINESS PROCESS INTELLIGENCE: BEYOND THE CONVERGENCE OF BPM AND BI

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Linus Chow, Manoj Das and Peter Bostrom, Oracle Corp, USA

The use of BPM and BI together is not a new concept. Business Process Intelligence (BPI) takes on new meaning and importance as organizations become process-centric and standards and technologies mature and converge. This chapter brings discusses key trends of where organizations are moving toward bringing together products and methodology to improve business performance beyond BPM and BI: Combining the 4 Bs: Business Design + Business Process + Business Intelligence + Business Rules, Event Driven Process Intelligence, and BPI as a Cloud or Appliance.

- KNOWLEDGE WORK AND UNPREDICTABLE PROCESSES** 33
Keith D. Swenson, Fujitsu America, USA, and Vice Chair, Workflow Management Coalition
 What is the next thing beyond Business Process Management (BPM)? To many this is an unexpected question. Is there anything wrong with BPM? Any reason it seems to be flagging? Over the course of 2009 there were a number of high profile acquisitions of BPM companies and many say this as an indication of the end of BPM. Others, however, see this as an indication that BPM is mature, solid, and relatively well-defined, and a natural occurrence of a maturing technology area. Either way, it prompts people to wonder what is going to be next.
- OPEN SOURCE BUSINESS INTELLIGENCE AND BUSINESS PROCESS PLATFORM** 43
Patrick Beaucamp, BPM-Conseil/Vanilla, France
 Over the past few years, the Business Intelligence (BI) and Business Process software market has given new opportunities and challenges to software startup companies. An opportunity exists for those market segments to progress and make significant contribution to IT. Both evolve in a situation that is now comparable to what existed in other market segments (such as databases or servers) and are in a position to challenge existing commercial products.
- ARTIFICIAL INTELLIGENCE AND THE FUTURE OF BPM: SEMANTIC PROCESS AUTOMATION** 51
Francesco BATTISTA, Respondo, Italy and Gianpiero BONGALLINO, Italy
 A future, but shortly-forthcoming, scenario is going to change the approach to process management: semantic techniques and automatic tools (based on Artificial Intelligence) will guide and support humans in designing and implementing process centric solutions. This article explores this pioneering frontier made of an added-value mix of Business Process Management systems and Artificial Intelligence.
- PREDICTIVE BPM** 61
Dr. Setrag Khoshafian, Pegasystems Inc., USA
 Most businesses today engage in “predictions.” Will a customer agree to upgrade a purchase based on an array of offers? What is the likelihood that a customer within a cluster of similar customers will default on a loan? How much more effective will a targeted marketing campaign be, compared to a random sampling? How can the churn rate of subscribers be improved? What is the likelihood that a particular financial transaction is fraudulent? These are some questions that could utilize prediction with concrete and tangible business benefits.
- INTELLIGENT, AUTOMATED PROCESSES: EMBEDDING ANALYTICS IN DECISIONS** 71
James Taylor, Decision Management Solutions, USA
 The challenge of putting BI to work in business processes is that reports and dashboards only work in manual processes. If the process is automated, if straight through processing is called for, then the analytics required are different. Embedding these analytics in rules-based decisions is the ideal way to analytically enhance these processes and build intelligent, automated processes.
- ASSIGNING WORK ITEMS MORE EFFICIENTLY USING BUSINESS INTELLIGENCE TOOLS** 79
Juan J. Moreno, Marcelo Cordini, Cristian Mastrantonio, INTEGRADOC, Uruguay and Martín Palatnik, Universidad Católica, Uruguay
 Business Process Management (BPM) discipline has allowed organizations to considerably optimize their business processes, by including within some products the functionality required to assign work items to participants in an efficient way. However, nowadays these solutions do not consider user’s “busy-ness” level (meaning how busy the user is) neither participant’s efficiency when work items are assigned; this constitutes a major optimization and improvement opportunity for these tools.
 This work presents the unified results of three researches with a common objective: provide a complete model to represent and predict user’s busyness, in order to optimize work items assignment in a BPM environment. The methodology included a comprehensive analysis of

the state of the art. Subsequently, a team of several researchers developed the solution for the problem. This work has had several validation and verification stages to prove its feasibility and effectiveness, including a prototype developed using a world-class open source BPM tool, and standard programming languages.

STAYING AHEAD OF THE CURVE WITH DECISION-CENTRIC BUSINESS INTELLIGENCE 91

Sheila Donohue, CRIF Decision Solutions, Italy

Customer-related decision points which impact a financial services firm's performance are spread across the customer lifecycle, from acquisition through portfolio management and collections. These decision points which involve risk taking have traditionally been focused on credit risk management, while, as more recently seen from the financial crisis, are taking a more holistic view considering also operational risk requirements which emphasize the importance of more control and to quickly respond to market events and compliance demands. Having more information easily at your fingertips to monitor, measure and analyze performance in business processes which manage these points of risk taking decisions is essential to responding quickly and deftly to competitive and regulatory pressures.

COMBINING KNOWLEDGE, PROCESS AND BI TO DELIVER AGILITY IN A COLLABORATIVE ENVIRONMENT 99

Marinela MIRCEA, Bogdan GHILIC-MICU, Marian STOICA, Academy of Economic Studies, Bucharest, Romania

As a response to the complex interactions between partners, integration of knowledge and business processes represents an important step in improving the agility of the organization. For intensive knowledge based processes Case Management may be used, which provides a real time image on the current events and generates a rapid response to the organization's internal and external events. Business Intelligence (BI) is used at the present for performance management within business processes, helping the organization to automatically detect the problems/opportunities and to initiate corrective actions and/or change business rules in order to optimise processes. The paper provides an approach on the way in which knowledge may be combined with processes and Business Intelligence in order to achieve agility within the collaborative environment.

USING BPM TO DRIVE CLINICAL INTELLIGENCE AND PROCESS OVERSIGHT IN THE ACUTE HEALTHCARE SETTING 115

Ray Hess, The Chester County Hospital, USA

The environment of the acute hospital setting is a complex compilation of intricate processes. The healthcare worker is challenged to manage and coordinate many diverse aspects of their patients' care effectively. There is an ever-increasing burden of care options and requirements that need to be considered. The use of business process management to help automate and control patient care has been shown to be effective in improving this care burden. However, the healthcare sector has been very slow to adopt BPM. There are many reasons for this phenomenon. Clinical care processes are very complex and often do not have easily defined beginning and ending points. They tend to overlap and disrupt other workflows based on the details of the individual process. A complex matrix of conditions can change the logic for dealing with event-based data elements and the way a system should react to those events. The clinical users tend to be very mobile and are not electronically connected for extended periods of their day. These are just a few of the challenges facing healthcare process automation.

USING BPM AND BUSINESS INTELLIGENCE TO IMPROVE HEALTHCARE 123

Jonathan Emanuele and Cynthia Mascara, Siemens, USA

The healthcare industry has seen an expanding focus on clinical outcomes as they are increasingly tied to reimbursement and meeting regulatory requirements. Hospitals must be able to improve and report on more clinical outcomes than ever before. These demands on the health care organizations require leveraging technologies such as business process management (BPM) and business intelligence (BI) to help tackle these challenges. Recent examples of regulatory requirements related to reporting of clinical outcomes include the

American Recovery and Reinvestment Act (ARRA) of 2009 and Joint Commission/Centers for Medicare & Medicaid Services (CMS) core measures specifications.

SECTION 2—THE BUSINESS VALUE OF BPM AND WORKFLOW 131

BPM-ON-DEMAND: FANTASY OR FAST TRACK TO AGILITY? 133

Jon Pyke, WfMC Chair, United Kingdom

The automation of processes is a key enabler of the Cloud phenomena—without *process*, the Cloud remains a passive environment that undoubtedly saves you money and removes some of the operational headaches, but does little else. The Cloud without process cannot deliver on the promise of Business Technology or the Service-Oriented Enterprise. All of the thoughts and ideas around assembling applications quickly to support a business imperative simply won't happen without process technology. However we need to be very clear; process management in the Cloud is not just about BPM Suites-on-Demand. Indeed, the term BPM-on-Demand is beginning to take on a new meaning when used in conjunction with cloud computing.

A GENERIC FRAMEWORK FOR BUSINESS PROCESS MANAGEMENT 137

Philippe Declercq and Vincent Fauliot, CNAMTS, France

This article introduces a generic framework for business process management. It is largely inspired from BPM and other new IT standards. Functional architecture is used as a link between process definition and implementation of IT new standards, such as BPM, BI, BAM or BRMS technologies. This framework demonstrates how BPM solutions can bring added value to business users, and allows IT professionals to quickly deliver applications corresponding to business and users needs. This article is illustrated with real case studies, issued from our experience in the French National Healthcare Insurance. This efficient way for designing business processes and implementing them is now successfully used in some of our main projects.

ENTERPRISE PROCESS AUTOMATION—PROVIDING THE GIFT OF TIME 149

Roy Altman, Peopleserv Inc., USA

I recently embarked on a project to improve Human Resources processes for a client. My methodology was to interview stakeholders from various points of view, from line-level managers through executives, globally. From their feedback, it became clear that if we could eliminate the work that can be effectively automated, it would have the effect of creating more time, and the added benefit of being able to use that time for tasks more enjoyable for the worker, and more of a value-add for the company. I called the resulting action plan: “Enterprise Process Automation.”

TRANSFORMING SECURITY THROUGH ENTERPRISE ARCHITECTURE AND BPM 159

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This unified Enterprise Architecture (EA), Business Process Management (BPM), and security approach offers the potential to radically transform security on all levels, providing leadership and practitioners alike the tools to benefit from a strategic to a granular level. Security often suffers from cultural barriers, inadequate funding, insufficient attention, bolting it on the back end, lack of understanding, lack of uniformity, and many more ills. This approach enables organizations to plan and implement security throughout an enterprise and beyond through harnessing EA frameworks and integrated business process management (BPM) software to enable the EA.

CUSTOMER EXPERIENCE TRANSFORMATION—A FRAMEWORK TO ACHIEVE MEASURABLE RESULTS 179

Vinaykumar S Mummigatti, Virtusa, USA

The era of extreme competition is creating immense importance for customer experience and how companies manage their customers' expectations. The ability to successfully manage the customer value chain across the life cycle of a customer is the key to the survival of any company today. Most companies realize this but are struggling to measure and influence the customer experience. This paper is an attempt to look at various facets of custom-

er experience and how to transform customer experience to achieve measurable business goals. Business Process Management and the convergence of technologies (*such as Portals, web 2.0, BI, Content Management*) are two key elements of this transformation and hence we will focus on how the convergence of various technologies led by BPM will help achieve the business goals around Customer Experience Transformation (CET).

SECTION 3—STANDARDS AND TECHNOLOGY 189

HOW TO OPTIMIZE CAPABILITY: CENTERED ENTERPRISE INTEGRATION 191

Nathaniel Palmer and Jason Adolf, SRA International, Inc., VA, USA

Increasingly, COTS BPM and SOA platforms are leveraged as the bones of architecture and approach, allowing for the maximum amount of flexibility while reducing the need for tedious custom coding. Yet the 'Integration-centric' approach most commonly followed obviates the inherent benefits offered by BPM, notably the ability to deliver business capabilities, rather application functionality.

Taking a capability-centered approach to extracting and exposing existing application functionality, while mapping these to new processes and interaction models, allows organizations to realize optimal value from current generation COTS BPM and SOA platforms. This approach begins with modeling business concepts as addressable capabilities, and then extending these into specific deployment models which leverage BPM and SOA for capability-centered business integration. This chapter gives step-by-step instructions on optimizing this capability.

XPDL 2.2: INCORPORATING BPMN 2.0 PROCESS MODELING EXTENSIONS 203

Robert M. Shapiro, Global 360, USA

In June 2009 the OMG voted to adopt the BPMN 2.0 specification which then entered the Finalization Task Force (FTF) phase. At that time the WfMC initiated work revising XPDL2.1. The new version, XPDL2.2, is described in this paper.

XPDL2.2 is intended as a preliminary release which supports the graphical extensions to process modeling contained in BPMN2.0. In fact, the BPMN specification addresses four different areas of modeling, referred to as:

- Process Modeling
- Process Execution
- BPEL Process Execution
- Choreography Modeling

We focus only on Process Modeling. Within that we define several sub-classes to support process interchange between tools. This is discussed in a later section of this paper.

WORKFLOW CONTROL-PATH INTELLIGENCE AND ITS IMPLICATIONS 217

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In this paper, we describe the basic concept of workflow control-path intelligence and its implications on the arena of business process analysis, prediction and optimization. That is, we introduce a series of models, algorithms and frameworks for analyzing, predicting, optimizing and rediscovering the control-path intelligence from a workflow model. Conclusively, we strongly believe that the workflow control-path intelligence must be an essential factor for improving the quality of workflow model itself as well as a pioneering research issue in extracting other workflow-related knowledge and intelligence to rapidly and reliably deliver agile services to businesses and IT customers.

WORKFLOW DESIGN PATTERNS FOR DEVELOPING AND MAINTAINING E-BUSINESS WORKFLOW SYSTEMS 232

Farhi Marir and John Ndeti, Knowledge Management Research Centre, Faculty of Computing, London Metropolitan University, UK

Designing an e-business workflow system for your organisation using a traditional framework is not appropriate as it ignores the human dimension of organisational knowledge creation and the dynamic situations encountered in organisations collaborative work processes in the new e-business environment. As a result e-business workflows systems

developed using this framework are less capable in dealing with the new e-business era which is characterised by an increasing pace of radical, discontinuous and unforeseen change in e-business processes.

This paper highlights the limitation of this traditional framework and presents an alternative framework for designing flexible and dynamic e-business workflow management systems that respond to the continual changes of e-business processes.

UTILIZING PROCESS DEFINITIONS FOR PROCESS AUTOMATION: A COMPARATIVE STUDY 247
Filiz Çelik Yeşildoruk and Onur Demirörs, Middle East Technical University, Informatics Institute, Turkey

Process modeling offers a very effective means for understanding and analyzing what needs to be improved. Process models are also used for many other purposes such as process automation, which increases the effectiveness of process improvement especially when organizations need to react quickly. Although there are numerous studies on various approaches to be separately applied to process modeling and process automation, the relationship and dynamics between the two still remains undiscovered. This paper presents the results of an exploratory study on the usability of process models developed for process improvement to be applied to the automation of processes with selected Business Process Management (BPM) tools.

The case study covers two processes in a software development unit of a large organization. The extended Event Driven Process Chain (eEPC) notation was utilized for process modeling and BizAgi, WebMethods and Intalio BPM suites for automation. A comparison was made concerning time spent to carry out the modeling and automation and the effectiveness of the BPM tools was analyzed.

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