

COMPOSITE ENTERPRISE PROCESS MODELING (CEPROM) FRAMEWORK

Setting Up a Process Modeling Center of Excellence using CEProM Framework

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Abstract: Process Modeling is one of the important subject area as well as a practical tool in enterprise wide initiatives like Business Process Management, Enterprise Business Architecture and Enterprise Modeling. Process Modeling is both an art and a science which leads to better understanding and improvement of how products/services of the enterprise are reaching the customers. Though there are various researches already conducted and reported on process modeling, these researches are disparate in nature and either address a part of process modeling in detail or provide theoretical background of how to address specific issues rather than addressing enterprise wide process modeling using a structured framework that assist practitioners. The research objective is to prescribe a generic framework for enterprise process modeling – Composite Enterprise Process Modeling (CEProM) Framework with modular parts based on applied research and practical exposure enabling practitioners to comprehend enterprise process modeling at the large.

1 INTRODUCTION

Process Modeling is one of the important subject area as well as a practical tool in enterprise wide initiatives like business process management, enterprise business architecture and enterprise modeling. Multiple case studies are reported in industry standard journals as well as publications from various organizations regarding the journey of enterprises in adopting process modeling as a tool/mechanism for process improvement. Large scale process modeling exercises are common among enterprises and are reported to bring process improvements though these initiatives are associated with issues while executing such projects (Corina, 2006). Process modeling projects has become common initiatives in various firms/industries and there are reported research detailing potential pitfalls related to process modeling in such initiatives (Rosemann, 2006).

When business processes are modelled, cutting across business functions and organization units, capturing end to end enterprise processes as an information gathering initiative involving various stakeholders as well as supporting other relevant initiatives across the enterprise for a sustained long

term manner, the exercise qualifies as ‘Enterprise (wide) Process Modeling’ effort. This paper attempt to provide a practical framework for organizing such an effort, i.e., setting up a process modeling center of excellence (CoE). Since enterprise process modeling initiatives are time, resource and cost consuming, it is imperative to adopt a practical framework by practitioners for effectively program managing such initiatives. The objective of the paper is “to prescribe a generic framework which helps to visualize and structure enterprise process modeling as modular components thus suggesting the ‘parts’ that glue together to become the ‘whole’. This generic framework shall be termed as CEProM framework”. The paper is organized as follows: section 2 details CEProM framework and section 3 provides conclusion and scope for further research.

2 LITERATURE SURVEY AND CEPROM FRAMEWORK

In one of the previous publication by this author (Eswar, 2011), a brief introduction of the framework was provided with. Composite Enterprise Process Modeling (CEProM) framework is a prescriptive

practical approach with following seven major components involved: motivation, governance, modeling & architecture definition, tool administration, library management, stakeholder management and training. Such a framework with detailed sub components shall help enterprises to approach enterprise process modeling as a service in a structured manner. A Delphi study on the current issues and future challenges of process modeling list the following as overall top 10 process modeling challenges: value of process modeling, model-driven process execution, standardization, business-IT alignment, service orientation, training, model management, buy-in, ease of use and collaborative modeling. The authors also list few areas like value of process modeling, expectations management, training, process architecture and adoption as areas of interest to practitioners but do not appear as yet on the radar screen of BPM scholars (Marta, 2009). From this we can infer that a practitioner viewpoint for process modeling along with a framework shall be useful to address such issues in large scale process modeling. A formal framework is presented for enterprise and business process modeling with four major components namely, objectives and goals, roles and actors, actions and processes and responsibilities and constraints that allow business analysts to capture enterprise knowledge in a way that is both intuitive and mathematically formal (Koubarakis et al, 2002). An attempt to provide an integrated framework for enterprise process modeling suggesting that enterprise process modeling is the most important element in the design of next-generation ERP systems. The authors also list four needs that support the case for an integrated process modeling framework namely, need for a theory base, need for modeling and implementing distributed computing, need for new process redesign semantics and need to link business and engineering processes (Nikunj et al, 2004). An exhaustive review of business process modeling techniques reported in literature and a framework for classifying business process modelling techniques according to their purpose is detailed. The author classifies around 12 process modeling techniques and provides a framework which lists the strength and weakness of these techniques from user perspective and modeller perspective (Ruth Sara, 2003). Process modeling is a powerful tool in enterprise management and leads to effective knowledge management. The authors go on to list a reference model for new product development and concludes with some general guidelines for detailing level of granularity of business process models, use

of formal modeling techniques, use of reference models and use of distribution techniques for business process models (Brane & Peter, 2002). A framework for selecting business process modeling methods based on modeling objectives is presented which can serve as the basis for evaluating modeling methods and generating selection procedures (Wenhong et al, 1999). Michael Rosemann, includes "process management" as one of the transformational services that a chief services officer has to manage as part of "service-oriented enterprise" (SOE) which is similar to service-oriented architecture (SOA) that drives redesign of IT landscapes (Rosemann, 2010). In another BPTrends article, Michael Rosemann communicate that managers newly in charge of the setup and delivery of the enterprise-wide BPM capabilities in an organization often struggle with the identification of the activities as being part of their role. The author lists a set of 15 distinct BPM services out of which process modeling is one major service. Process modeling as a service includes ownership of the BPM methodology as well as related services including training in the adopted methodology, development of procedural models, methodological upgrades, and the provision of conventions and advanced practices. The author communicate that process modeling is often the bread-and-butter service of a BPM group, and it will demand substantial scalability and expertise. It is interesting to note that strategic alignment and library management of business processes are part of this 15 services listed (Rosemann, 2008). Zhiqiang Yan et al, stating that large organizations often run hundreds or even thousands of business processes and managing such large collections of business processes is a challenging task, present a framework consisting of a management model and a reference architecture that assist in managing large collections of business process models. Also based on a survey, the authors conclude that the field of business process model repositories is an important and active field in research and practice, but that complete repositories are not yet available and that existing repositories focus on traditional functionality rather than exploiting full potential of information management tools (Zhiqiang et al, 2009). A framework for classifying business process modeling techniques so as to increase BPR projects success rate is reported and business process modeling techniques are classified according to three dimensions namely, *level of change*, *modeling perspective* and *modeling purpose* (Leila et al, 2007).

Table 1: CEProM Framework Components and Sub-components.

CEProM Components	Definition	Applicable Techniques for addressing components	Deliverables related to the components
1.0 Motivation - Details “why” enterprise process modeling CoE is established			
1.1 Vision	Long term goals for CoE	Business Motivation Model	Vision Statement
1.2 Mission	Short term (3/6/9 months) achievable goals	Business Motivation Model	Mission Statement(s)
1.3 Objectives	Quantified goals for CoE which are to be tracked for success	Business Motivation Model; Balanced Scorecard	List of Objectives for CoE
1.4 Performance measures (KPIs)	Success measures taking into consideration various aspects	Balanced Scorecard; Performance measure definition techniques	List of KPIs, measurement approach & data collection
1.5 Service Definition	Define a service portfolio for process modeling CoE	Brainstorming, understanding of organization initiatives	List of services/catalogue that are to be provided to various stakeholders
2.0 Governance for process modeling - Ensures what all decisions are to be made and who will make those decisions			
2.1 Governance/ Decision Setup Framework	Classify decisions based on impact & define implementation criteria	Customized Governance Templates enabling decision making for situations	An evolving Governance Framework and guidelines/ templates/ checklists
2.2 Maturity Model	Classify state of affairs of process modeling into various stages	Brainstorming	A five (thumb rule) stage maturity framework which can be tracked effectively
2.3 Operating Model for enterprise process modeling	Define roles and responsibilities for stakeholders, mechanism of execution centralized /distributed, in house or outsourced etc; overall project management	Project management techniques and stakeholder workshops/ brainstorming	Project Management Charter; RACI matrix; operating model (centralized team, distributed team, business/domain involvement etc) detailed
2.4 Budget and cost management	Mechanism to track budget and cost incurred for sustaining CoE	Project budget and cost management techniques	Rate Cards, estimation model, time and effort estimates for projects/services part of CoE
2.5 Alignment with other enterprise initiatives	Ensure the CoE supports initiatives for which it is part of including BPM, EBA & EM, IS development, six sigma, lean and other quality assurance programs	Stakeholder workshops, understand Organization Roadmap/ initiatives, understand services part of such initiatives; establish governance for alignment	Define services that are specialized for specific initiatives; Also detail downstream utilization of process models for process improvement
3.0 Modeling & Architecture Definition - Core Component of CoE – “modeling” of business processes; information gathering and modeling of business processes for organizational decision making			
3.1 Define Process Modeling Methodology adopted	Structured methodology that define how process modeling is to be conducted; communicate how to represent mega, major and minor processes, global and local processes, process variations, information gathering approach, process hierarchy/ granularity definition etc	Brainstorming on pros/cons of a particular process modeling methodology (EPC, BPMN, etc) based on end user requirements; enable representation of processes – define process variations, global/local process details, checklist for information gathering related to processes; business rules defined to represent process modeling scenarios	Process Modeling methodology document, conceptual meta model for process modeling detailed along with properties, modeling elicitation mechanism defined and business rules for process modeling as a document
3.2 Define Process Architecture Blueprint	Details the high level enterprise business processes – value stream, value chain and other major enterprise processes	Value Chain and Value Stream definition and Enterprise Mega process finalization through workshops with stakeholders	Frozen top level enterprise business processes; it can include various ways to view the mega/major processes

Table 1: CEProM Framework Components and Sub-components. (cont.)

3.3 Process Modeling in practice	How process modeller gathers information, models them to represent reality and update process repository post validation. This also involves how effectively minor details of process model like verb/ noun usage, event/result inclusion etc are captured	Templates/ checklists for: Process modeling elicitation mechanism, modeling in a tool or other environment available and validation from stakeholders	Scope for the particular business process modeling scenario, process model itself along with other essential associated information
3.4 Quality of process models and methodology	Details how exactly the process modeller ensures process quality is adhered as per modeling methodology	Defined process modeling quality checklist	Process modeling quality assurance checklist and modified business process models
4.0 Tool Administration - Selection of modeling tool, administering and managing tool for effective process modeling			
4.1 Tool Selection Criteria	Structured approach to understand the pros/cons of market available enterprise process modeling tool, evaluate and select them	Expert Interviews, Product Vendor presentation and discussion, internal stakeholder workshops	List of criteria for tool selection, evaluation of market available tools based on their product capability viz a viz motivation for CoE
4.2 Tool Deployment, Availability and Access	Details how the tool is deployed (globally or locally, with appropriate security etc), available and accessible for various stakeholders	Infrastructure management practices, best practices communicated by product vendor and adhere to current enterprise IS policies	Policies, guidelines and standard operating procedure for tool administration; this document is to be kept live throughout the program
4.3 Platform management – users and stakeholder administration	Define user groups – with admin, write, edit, modify etc properties and maintain users/ stakeholders	Infrastructure management practices, best practices communicated by product vendor and adhere to current enterprise IS policies	Policies, guidelines and standard operating procedure for tool administration; this document is to be kept live throughout the program
4.4 Tool Operation (data import/export) and data quality management	Deals with the ‘model management’ for the repository of process models – how to organize, import/ export data, ensure quality of data and other operating features like create new model, create sub model, backup policies etc	Infrastructure management practices, best practices communicated by product vendor and adhere to current enterprise IS policies; this part should take care of modeling community requirements	Policies, guidelines and standard operating procedure for tool administration; this document is to be kept live throughout the program
5.0 Library Management - Details how process model artefacts are maintained and made available to various stakeholders; this is a crucial since number of process models can range from few hundreds to thousands for an enterprise			
5.1 Structure and availability of process repository	Details how the process model repository shall be structured (hierarchically, link/delink of process models etc) and how it shall be taken to stakeholders – html repository/ internal portals etc	Utilize html publication feature available from the tool adopted, brainstorm with stakeholders to understand various mechanisms of process repository availability needs	HTML repository of business processes – most of the market available tools enable html publication of process models but it needs heavy customization according to user requirements
5.2 Features of process repository (search/view/ browse)	Details what are all the features that can be part of business process repository which augments user requirements	Brainstorm with stakeholders and modeling community to check for various features; understand product capability to exploit things	Include features like search, view, browse and related options for process repository. Include advanced search and related features as well.
5.3 Business process glossary creation and maintenance	Details creating glossary for process terms that are used in the enterprise and ensure all relevant process related documents, artefacts and details are available at one place	Conduct workshops and explore tool options to create a longlist of business glossaries; include all relevant terminologies used related to process/domain	List of process related terms along with definitions; include all relevant internal as well as external links that shall enable better business process understanding

Table 1: CEProM Framework Components and Sub-components. (cont.)

5.4 Content management and feedback	Ensure process library is maintained for variety of stakeholders as well as the different “views” and analysis out of the repository objects are available; include feedback for users at the large	Create “views” of looking at business processes from various business process stakeholder viewpoints – conduct workshop to elicit information	Up-to-date maintenance of process repository and documents; provide various views for users to appreciate processes; add feedback mechanism to modify details regarding models
6.0 Stakeholder Management - Details practices adopted for stakeholder management – from top management to process model user community; this is a crucial step to ensure smooth functioning of the CoE			
6.1 Buy-in from Stakeholders	Ensure buy-in for enterprise process modeling from CxO community, middle management, operational management and other stakeholders including enterprise architecture team, compliance team, six sigma, BPM team, vendors, product team, process modeller community etc	Communicate Value of process modeling to stakeholders through case studies and exhibits, use effective communication mechanism and workshops to drive success factors, ensure top management help to percolate process modeling	Stakeholder buy-in and understanding of concerns and requirements of stakeholder community; create effective communication/ marketing mechanism so as to reach wider users across the enterprise
6.2 Communication and engagement of stakeholders	Details how exactly the CoE is to be positioned in the minds of stakeholders and how effectively the benefits can be reaped. Without usage of downstream applications of process models, the entire effort goes vain	Weekly, fortnightly, monthly and quarterly meetings with stakeholders, newsletters, workshops, stalls in organization meets, communication of successful case studies and process journeys	Case studies, Value proposition communication, involvement of users to communicate their benefits attained, newsletters, team space communication and other collaborative mechanisms
6.3 Time and effort management - Elicitation of process details	This predominantly relates to stakeholders who are information providers/ domain experts/ Subject Matter Experts from whom process details are to be elicited. This is crucial for success of CoE to engage them appropriately	Project Management, Communication of estimates in terms of cost and time with stakeholders, scope definition, information elicitation and iterative methods to ensure process models represent reality	Effective time and cost estimation framework, process model complexity analysis framework, elicitation checklists and involvement of all stakeholders part of particular process modeling project
6.4 Time and effort management - Validation of process details	This step assures quality through validation of process models through business process domain community, process owners and middle level managers	Validation – ensuring process models elicited are available in various formats – PowerPoint/Word/html for review and validation; workshops and meetings	Validation of process models that are made available and update them in repository; this step is important to keep up-to-date process models in the repository based on iterations
7.0 Training - Details how proper training to various stakeholders involved in CoE can be handled effectively			
7.1 Training of stakeholders on process modeling	This predominantly relates to stakeholders who are information providers/ domain experts/ SME from whom details are to be elicited. These experts are to be trained on finer aspects of modeling	Training workshops, Training materials – online and offline materials preparation which details scope, modeling methodology and other relevant details	Training materials for various stakeholders involved and these documents are to be kept alive
7.2 Modeller community training and expertise	Involves additional training on eliciting information, expert training on modeling methodology and tool	Expert training sessions, sessions detailing scenarios/ case studies and internal or external certifications	Expert/advanced training materials for process modeller community and for training new comers on modeling
7.3 Document management related to process modeling training	Ensure all these training documents are made available to stakeholders involved in modeling CoE	Collaborative mechanisms, online training tools, document management tools	Up-to-date live training documents to give overview of the process modeling CoE adopted in the enterprise

2.1 CEPROM Framework and Modular Components

Based on the literature survey, we infer that there are

suggested frameworks for BPM and services that are part of BPM. Though there are frameworks for PM as a whole, there is little research on the subject of establishing a framework based structured approach

for enterprise process modeling on its own. As discussed earlier, the suggestive framework for enterprise process modeling, CEProM, includes 7 major components and sub-components. Refer Table 1 above for complete details. This framework shall help enterprises to define modular components under each of the seven components with clear deliverables. Modular view of enterprise process modeling leads to manageable chunks of work since it is from experience of the author through various consulting assignments that enterprise process modeling faces with multiple challenges and program managing becomes difficult as the scope widens.

3 CONCLUSIONS AND FUTURE RESEARCH

CEProM is a suggestive framework and readers are advised that since the requirement for each enterprise might vary depending upon the business scenarios as well as need for the CoE and there can be additions/modifications to the components and sub components of the framework. CEProM framework provided here is a high level overview which aims to help practitioners and academics to view enterprise process modeling as a separate service in its entirety which in turn is a core element of initiatives like BPM, EBA or EM. Future research shall aim to extend CEProM framework communicating intricate details of each of the seven major components along with examples and challenges for each of these components through practical implementation at enterprises.

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