

A Practitioner's Guide to Assess the Maturity and Implementation of Enterprise Process Modeling using CEProM Assessment Framework

Eswar Ganesan

Abstract

Enterprise wide large scale process modeling initiatives are becoming increasingly common among enterprises in all industry domains. Since such initiatives are operationally cumbersome, it becomes essential to assess the maturity and implementation of enterprise wide process modeling program on a regular basis. Though there are numerous research reports relating to maturity assessment for business process management (BPM) initiatives are available, there is very little published relating to the assessment of enterprise wide process modeling initiatives. This Article attempts to propose a practitioner's toolkit for assessment of enterprise wide process modeling initiatives using Composite Enterprise Process Modeling (CEProM) framework. Using the seven basic components of CEProM framework namely motivation, governance, architecture definition and modeling, tool administration, library management, stakeholder management and stakeholder training, the assessment framework is intended to assist practitioners in assessing an organization's state of affairs relating to maturity and implementation of enterprise process modeling.

Keywords

Enterprise Process Modeling, Business Process Modeling, Business Process Maturity, CEProM Framework.

Introduction

Large scale enterprise process modeling initiatives confront numerous challenges and potential pitfalls (see references 1-3). Marta Indulska et al [4], in their Delphi study on the current issues and future challenges of process modeling, list the following as the top 10 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 a few areas, like value of process modeling, expectations management, training, process architecture and adoption as areas of interest to practitioners but have not yet appeared on the radar screen of BPM scholars. We can infer, therefore, that a practitioner's viewpoint on process modeling with a framework would be useful not only to address such issues but also to assess the implementation of large scale enterprise process modeling. This Article will present an attempt to utilize Composite Enterprise Process Modeling (CEProM) framework to detail a practitioner's viewpoint for assessment of maturity and implementation of enterprise process modeling.

A Brief Survey of the Available Literature

There are numerous maturity and implementation assessment research reports in the business process management (BPM), knowledge management (KM) and enterprise architecture (EA) topics. Tonia de Bruin et al [5], conducted a thorough examination of available literature on the subject and developed general phases for developing a maturity model in any domain. They categorize the phases as the following: scope, design, populate, test, deploy and maintain. Further, the authors state that their research of the literature reveals that there are more than 150 maturity models developed to measure, among others, the maturity of IT Service Capability, Strategic Alignment, Innovation Management, Program Management, Enterprise Architecture and Knowledge Management Maturity. In their research paper, the authors provide an account of the

phases of development for two frameworks: the Business Process Management Maturity Model (BPMM) and the Knowledge Management Capability Assessment (KMCA).

Rosemann and Bruin [6] offer a holistic model for determining BPM maturity based on case studies and a range of surveys. The three criteria that have been used in this research to measure the coverage of BPM within an organization include: number of processes included in BPM practices, staff involvement/level of staff undertaking BPM activities and links to other management tools (such as budgets, KPI, organizational charts, etc). The three criteria that have been used to define the proficiency of BPM within an organization include: response to BPM issues and initiatives, frequency of conducting BPM activities and initiatives and suitability of BPM tools, resources and practices.

Michael Rohloff [7] details a maturity model for BPM in enterprises based on the assessment of nine categories which cover all aspects that impact the success of BPM within an organization. The nine assessment categories are: process portfolio & target setting system, process documentation, process performance controlling, process optimization, methods & tools, process management organization, program management, qualification and communication, data management and IT architecture.

Other related literature is cited in references [8-11] at the end of this Article. We note that most of the literature survey is related to BPM maturity and not to enterprise wide process modeling maturity.

CEPROM Framework for assessing Process Modeling Maturity

Since enterprise process modeling initiatives consume considerable corporate resources it is imperative for practitioners to adopt a practical framework managing the initiative effectively. Composite Enterprise Process Modeling (CEProM) framework is a prescriptive practical approach with seven major components: motivation, governance, modeling & architecture definition, tool administration, library management, stakeholder management and stakeholder training [12-13]. Such a framework with detailed sub components will help enterprises approach process modeling as a service in a structured manner. This framework will also help enterprises define modular components under each of the seven components with clear deliverables. A modular view of enterprise process modeling divides work into manageable chunks which, from my experience, makes dealing with the number of challenges that practitioners must face throughout the project easier. Refer to Table 1 and Figure 1 for components of CEProM Framework. A brief definition of the components is included in the table below while detailing each of these components and sub components is beyond the scope of this paper.

Table 1: Brief Definition of CEPROM Components

Main Component	Brief Definition
Motivation	Details “why” Enterprise Process Modeling Center of Excellence (CoE) is established
Governance	Ensures what all decisions are to be made and who will make those decisions for efficient functioning of the CoE
Modeling & Architecture Definition	Core Component of CoE – “modeling” of business processes; information gathering and modeling of business processes for organizational decision making
Tool Administration	Selection of modeling tool, administering and managing tool for effective process modeling and analysis
Library Management	Details how process model artifacts 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
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
Training	Details how proper training to various stakeholders involved in CoE can be handled effectively

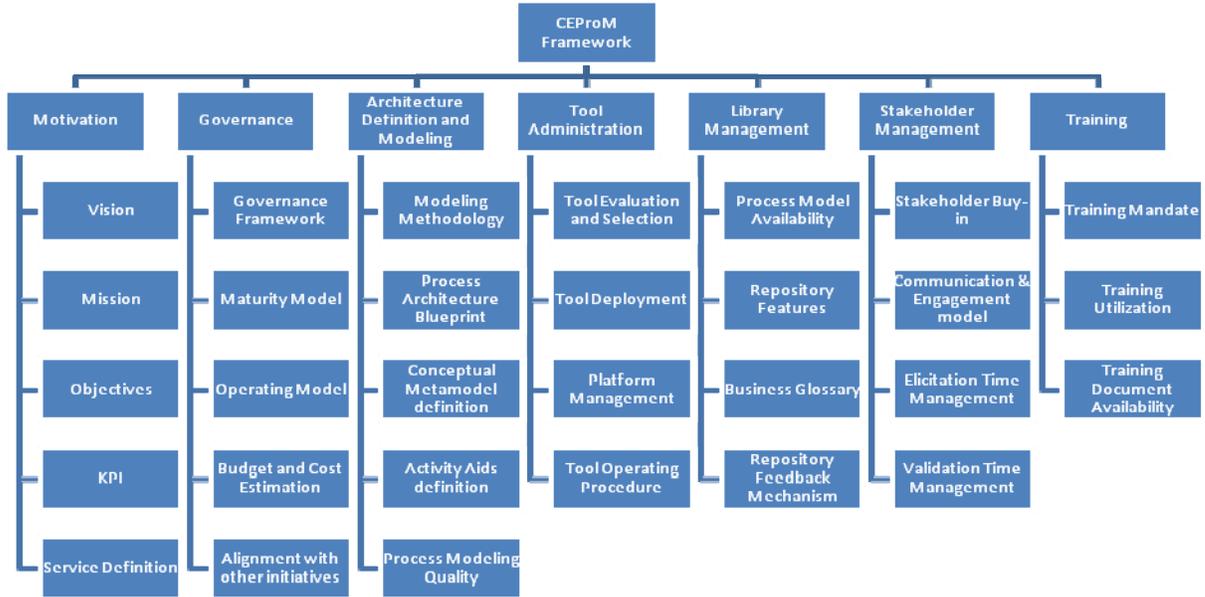


Figure 1: CEProM Framework Components and Sub Components

Assessment Questionnaire and Subsequent Interpretation

Based on the CEProM components and sub components I developed the following questionnaire to assess maturity and implementation of enterprise wide process modeling projects.

Table 2: Assessment Questionnaire for Enterprise Process Modeling Maturity based on CEProM Framework

1.0	Motivation	Assessment Questions	Response Parameter	Response Options	Sample Score
1.1	Vision	Has the Vision of the enterprise process modeling initiative is well documented?	No documented Vision exists	0	
			Exist just as an idea within process modeling team	1	
			Documented Vision exists but not clear	2	2
			Documented Vision exists, clear but not communicated	3	
			Documented Vision exists, clear and socialized	4	
1.2	Mission	Has the Mission of the enterprise process modeling initiative is well documented?	No documented Mission exists	0	
			Exist just as an idea within process modeling team	1	
			Documented Mission exists but not clear	2	

			Documented Mission exists, clear but not communicated	3	3
			Documented Mission exists, clear and socialized	4	
1.3	Objectives	Has the Objectives of the enterprise process modeling initiative is well documented?	No documented Objectives exists	0	
			Exist just as an idea within process modeling team	1	
			Documented Objectives exists but not clear	2	
			Documented Objectives exists, clear but not communicated	3	3
			Documented Objectives exists, clear and socialized	4	
1.4	KPI	Has the Performance Measures (KPI) of the enterprise process modeling initiative is well documented?	No documented List of KPI exists	0	
			Exist just as an idea within process modeling team	1	
			Documented List of KPI exists but not clear	2	
			Documented List of KPI exists, clear but not communicated	3	4
			Documented List of KPI exists, clear and socialized	4	
1.5	Service Definition	Has the Service Definition of the enterprise process modeling initiative is well documented?	No documented Service Catalogue definition exists	0	
			Exist just as an idea within process modeling team	1	
			Documented Service Catalogue definition exists but not clear	2	2
			Documented Service Catalogue definition exists, clear but not communicated	3	
			Documented Service Catalogue definition exists, clear and socialized	4	
2.0	Governance	Assessment Questions	Response Parameter	Response Options	Sample Score
2.1	Governance Framework	Does a Governance/Decision Making Framework exist for classifying decisions based on impact and define implementation criteria for process modeling?	No Governance Framework Exists	0	
			Governance Framework exists just as an idea with process team	1	
			Basic Governance Framework Exists	2	2
			Advanced and Traceable Governance Framework Exists	3	

			Advanced, Traceable and Socialized Governance Framework Exists	4	
2.2	Maturity Model	Does a Maturity Model Framework for process modeling that classifies state of affairs of process modeling into various stages is available?	No Maturity Model Framework Exists	0	
			Maturity Model Framework exists just as an idea with process team	1	
			Basic Maturity Model Framework Exists	2	2
			Advanced and Traceable Maturity Model Framework Exists	3	
			Advanced, Traceable and Socialized Maturity Model Framework Exists	4	
2.3	Operating Model	Is there a defined operating model for enterprise process modeling available or utilized? Operating Model defines roles/responsibilities of stakeholders as well define mechanism of how process modeling is conducted - centralized or distributed for effective project management?	No defined Operating Model exist	0	
			Adhoc on-the-go Operating Model is used	1	
			Basic Operating Model exists with stakeholders defined	2	
			Advanced Operating Model with stakeholder as well mechanism for structured modeling exist	3	3
			Advanced Operating Model available and well socialized with various teams	4	
2.4	Budget and Cost Estimations	Are there mechanisms in place to track budget and cost incurred for enterprise process modeling initiative?	No defined Estimation Model for budget and cost exist	0	
			Adhoc on-the-go Estimation Model is used	1	
			Basic Budget and Cost Estimation Model available with defined parameters	2	2
			Advanced Budget and Cost Estimation Model available with defined parameters and traceable	3	
			Advanced Budget and Cost Model available with defined parameters, traceable and socialized with various teams	4	
2.5	Alignment with Other Initiatives	Does a structured mechanism or documented understanding of alignment of enterprise process modeling with other organization initiatives like EA, BPM, EM is available?	No documentation exists for initiatives alignment	0	
			Exist just as idea within process team	1	
			Documented Alignment approach exists but not clear	2	2

			Documented and clear Alignment approach exists but not communicated	3	
			Documented, clear and socialized Alignment approach exists	4	
3.0	Modeling and Architecture Definition	Assessment Questions	Response Parameter	Response Options	Sample Score
3.1	Modeling Methodology	Is there a structured documented process modeling methodology available? Is that document kept alive as the process modeling service progresses?	No Process Modeling Methodology documentation exists	0	
			Exist just as idea within process team only	1	
			Basic Process Modeling Methodology Document exists	2	2
			Detailed Process Modeling methodology document exists with various process modeling scenarios explained	3	
			Advanced Process Modeling methodology document exists with various process modeling scenarios explained as well as approach to analyze processes detailed	4	
3.2	Process Architecture Blueprint	Has the business process architecture blueprint - value stream and major enterprise processes for business functions are defined? Whether the major processes are identified and baselined?	No Process Architecture Blueprint exist	0	
			Vague grouping of major processes exist - but not as a blueprint document	1	
			Basic blueprint of business process architecture exist but the process to define them is adhoc	2	2
			Structured approach is utilized to define business process architecture blueprint (Clean Slate, Basic or Advanced approach) and documented	3	
			Structured approach is utilized to define business process architecture blueprint (Clean Slate, Basic or Advanced approach), documented and socialized with stakeholders	4	
3.3	Modeling in Practice - Conceptual Metamodel definition	Process Modeling in practice - Is there a defined conceptual metamodel along with properties of each element of conceptual metamodel for modeling business processes exists?	No Conceptual Metamodel exists	0	
			Exist just as idea within process team	1	
			Elements and relationships of Conceptual Metamodel defined	2	

			Elements, relationships and properties of Conceptual Metamodel defined	3	
			Elements, relationships, properties of Conceptual Metamodel defined and socialized with various stakeholders	4	4
3.4	Modeling in Practice - Activity Aids (templates/guidelines/checklists)	Process Modeling in practice - are there templates/guidelines/checklists available for various process modeling aspects - activity modeling, elicitation mechanism, properties of elements gathering, issue and risk templates etc	No templates/guidelines/checklists documentation exists	0	
			Exist just as idea within process team	1	
			Documented templates/guidelines/checklists exists but not clear	2	
			Documented and clear templates/guidelines/checklists exists but not communicated	3	3
			Documented, clear and socialized templates/guidelines/checklists exists	4	
3.5	Process Modeling Quality	Does a structured mechanism exist to validate the quality of business process models? Are there checklist/guidelines available to ensure that the process models adhere to adopted process modeling methodology completely?	No Process Modeling Quality monitoring exists	0	
			Exist just as idea within process team	1	
			Documented Process Modeling Quality monitoring mechanism exists but not clear	2	2
			Documented and clear Process Modeling Quality monitoring mechanism exists but not communicated	3	
			Documented, clear and socialized Process Modeling Quality monitoring mechanism exists	4	
4.0	Tool Administration	Assessment Questions	Response Parameter	Response Options	Sample Score
4.1	Tool Evaluation and Selection	Does a structured approach is utilized for understanding the pros/cons of market available enterprise process modeling tools to evaluate and select them?	No approach used	0	
			Tool Selection was done based on some vague idea that existed in process modeling team	1	
			Adhoc approach was used for Tool Selection wherein secondary research was used	2	2
			Structured Tool Selection criteria/checklist was used and primary research was conducted with the vendors	3	

			Structured Tool Selection criteria/checklist was used and primary research was conducted with the vendors and socialized with stakeholders within the firm	4	
4.2	Tool Deployment	Is there a standard operating procedure listed down for tool deployment - deployment, availability and accessibility for various stakeholders across the firm?	No standard operating procedure for Tool Deployment exists	0	
			Exist just as idea within process team	1	
			Documented Tool Deployment standard operating model exists but not clear	2	
			Documented and clear Tool Deployment standard operating model exists but not communicated	3	3
			Documented, clear, socialized and followed Tool Deployment standard operating model exists	4	
4.3	Platform Management	Is there a standard operating procedure listed down for platform management - user group definition, properties/access controls for users and maintenance of users?	No standard Platform Management operating procedure exists	0	
			Exist just as idea within process team	1	
			Documented Platform Management operating procedure exists but not clear	2	
			Documented and clear Platform Management operating procedure exists but not communicated	3	3
			Documented, clear, socialized and followed Platform Management operating procedure exists	4	
4.4	Tool Operation Procedure	Is there a standard operating procedure listed down for tool operation - model management, import/export of process models, publications of models, backup policies etc?	No standard Tool operating procedure exists	0	
			Exist just as idea within process team	1	
			Documented Tool operating procedure exists but not clear	2	
			Documented Tool operating procedure exists and clear but not communicated	3	4
			Documented, clear, socialized and followed Tool operating procedure exists	4	
5.0	Library Management	Assessment Questions	Response Parameter	Response Options	Score
5.1	Process Model	Is there a common	No approach used	0	

	Availability	understanding on how the process models shall be made available to various stakeholders across the firm - html repository, team space, portal, wiki etc and how exactly the process models are linked/delinked?	Process Library/Repository is maintained only within the process team without any structured approach	1	
			Adhoc Process Library/Repository is maintained that doesn't follow any structure	2	2
			Advanced Process Library/Repository exists with a structured approach that allows customization of linking/delinking business processes	3	
			Advanced Process Library/Repository exists with a structured approach that allows customization of linking/delinking business processes and socialized through intranet with stakeholders	4	
5.2	Repository Features	How advanced are the features of the process library - does users have options to search, view or browse process repository?	No features available	0	
			Only basic process models are made available	1	
			Navigation to various process models and hierarchy is possible	2	
			Search of business process models is enabled along with navigation to various process models	3	3
			Advanced features of search, view, browse process models along with portal that users can view and edit is made available	4	
5.3	Business Glossary	Does a business glossary detailing all the relevant terms that are associated with enterprise process modeling (specific to the firm and general terms) is made available to stakeholders?	No Business Glossary exists	0	
			Exist just as idea within process team	1	
			Documented Business Glossary exists but not clear	2	
			Documented and clear Business Glossary exists but not communicated	3	3
			Documented, clear, socialized Business Glossary exists and kept live	4	
5.4	Repository Feedback Mechanism	Does a feedback mechanism for various models that are part of the process library/repository is available for stakeholders to	No feedback mechanism exists	0	
			Exist but not as part of process library/repository	1	

		communicate comments/changes?	Feedback mechanism is available for various stakeholders as part of process library/repository	2	2
6.0	Stakeholder Management	Assessment Questions	Response Parameter	Response Options	Sample Score
6.1	Stakeholder Buy-in	Does buy-in for the enterprise process modeling initiative is garnered from various stakeholders of importance - from CXO community, to executive managers and line managers? Also are teams of various other initiatives like enterprise architecture, compliance team, product teams etc are gathered sufficiently by the process modeling team council?	No Stakeholder buy in exists	0	
			Only process modeling team knows what is happening and internally discussed for projects happening	1	
			Only line managers of process modeling team are informed and buy in is solicited	2	2
			Sufficient buy-in from various stakeholders level is solicited - from CxO team, executive management of various functions/business units and line managers/business process owners	3	
			Sufficient buy-in from various stakeholders level is solicited - from CxO team, executive management of various functions/business units and line managers/business process owners as well as other enterprise initiative owners	4	
6.2	Communication & Engagement Model	Is there a communication strategy and proper engagement management approach at various levels of stakeholders is defined?	No communication mechanism in place	0	
			Only process modeling team communicates among themselves for projects involved	1	
			Adhoc communication mechanism exists but only for certain stakeholder community - especially for line management of process modeling team	2	
			Proper communication strategy in place and events are defined for communication but mostly the communication is push system from process modeling team	3	3
			Advanced two way communication and appropriate engagement model exists among the process modeling team and all stakeholders involved	4	

6.3	Stakeholder Time Management - Elicitation	Is there an organization mandate which enables the process modeling initiative/team to effectively utilize stakeholders (process owners and process line management & team) time for elicitation of process details?	No mandate in place	0	
			Elicitation time management is basically a push mechanism from process modeling team	1	1
			Organization mandate exists for both push and pull mechanism for utilizing stakeholder time for process model information elicitation exercises	2	
6.4	Stakeholder Time Management - Validation	Is there an organization mandate which enables the process modeling initiative/team to effectively utilize stakeholders (process owners and process line management & team) time for validation of process details?	No mandate in place	0	
			Validation time management is basically a push mechanism from process modeling team	1	1
			Organization mandate exists for both push and pull mechanism for utilizing stakeholder time for process model information validation exercises	2	
7.0	Training	Assessment Questions	Response Parameter	Response Options	Sample Score
7.1	Training Mandate	Are training mandate exists and utilized properly for various stakeholders (especially information providers/domain experts/subject matter experts) part of enterprise process modeling initiative?	No training happens	0	
			Adhoc training happens based on specific request	1	
			Structured training materials are available but training happens only based on specific request	2	2
			Training calendar is published and experts train stakeholders on process modeling topics based on training materials created	3	
			Training calendar, on demand training as well as online self training materials available, established and communicated with stakeholders	4	
7.2	Training Utilization	Are training mandate exists and utilized properly for process modeler community (for modeling community with more stress on information elicitation, modeling methodology and tool) part of enterprise process	No training happens	0	
			Adhoc training happens based on specific request	1	
			Structured training materials are available but training happens only based on specific request	2	

		modeling initiative?	Training calendar is published and internal as well as external experts train stakeholders on process modeling topics based on training materials created	3	3
			Training calendar, on demand training as well as advanced online self training materials available, established and communicated with process modeling community	4	
7.3	Training Document Availability	Training documents for enterprise process modeling are made available to all stakeholders and kept updated?	Training materials are not made available to stakeholders	0	
			Training materials are made available to stakeholders but there is no revision happening to these documents	1	1
			Revised training materials are available and utilized to train and certification system for various stakeholders involved exists	2	

Upon administering this questionnaire to the selected stakeholders across the firm at regular intervals, one can come up with a radar map detailing the current status of the maturity and implementation of enterprise wide process modeling initiatives. Most of the questions are scored in a scale of 0-4 and based on the section score and the number of questions in the particular section, an average section point is calculated for the particular section or CEProM component. This section average (Assessment Score) is converted into a % basis based on the maximum score that is possible for each of this section. Meanwhile, each of these 7 sections is broken down in a scale of 100% based on strategic importance of these 7 sections by the process modeling team and then for each section the section target (Target Score) is calculated based on the highest % of the strategic importance allocated for a particular section. A radar diagram is generated comparing the Assessment Score and Target Score for analysis and interpretation. A sample radar diagram is given below.

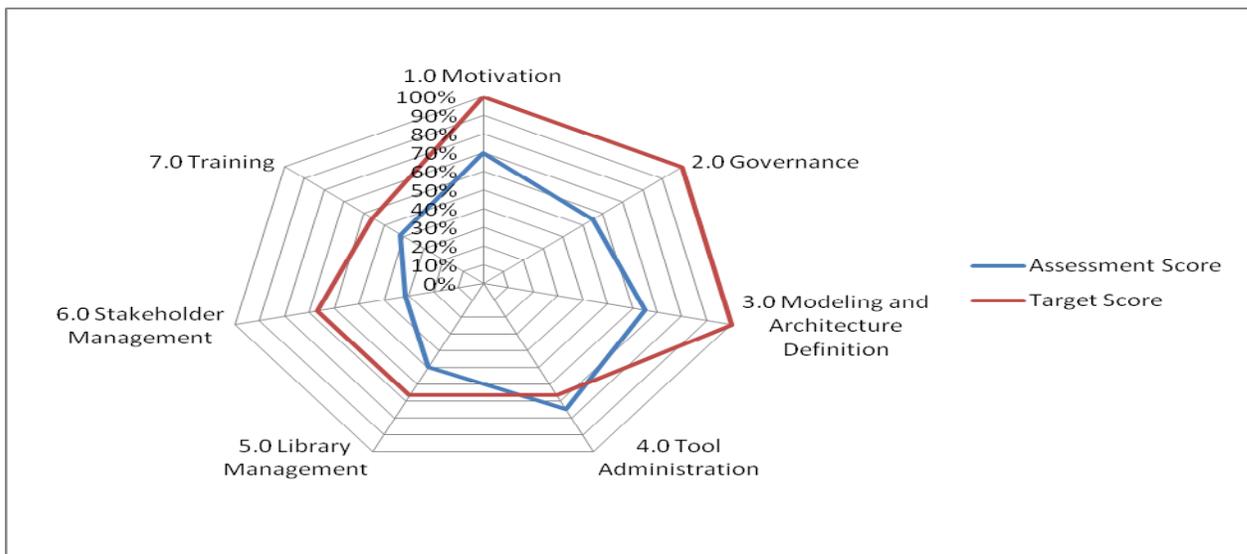


Figure 2: Sample Radar diagram for Enterprise Process Modeling maturity analysis

Conclusion

The research presented in this Article is the first of its kind and is intended to provide with a toolkit for assessing maturity of enterprise process modeling initiatives. The importance of enterprise process modeling maturity is considerable, as such initiatives are costly to the organization in terms of time and money. Based on the assessment results, a practical roadmap categorizing the scores into a five stage maturity model can be prepared to improve the areas where the organization is not achieving their goals. The research is based on my experiences as a Business Architecture Consultant and do not represent outcomes at any specific organization. Future research will focus on implementing this assessment method at various organizations with the goal of comparing the results in a case study.

References

- Corina Radulescu et al. A Framework of Issues in Large Process Modeling Projects, available at: [http://www.workflow-research.de/Publications/PDF/CORA.et.al-ECIS\(2006\).pdf](http://www.workflow-research.de/Publications/PDF/CORA.et.al-ECIS(2006).pdf).
- Michael Rosemann. (2006) Potential Pitfalls of Process Modeling: Part A, *Business Process Management Journal*, Vol. 12 No. 2, 249-254.
- Michael Rosemann. (2006) Potential Pitfalls of Process Modeling: Part B, *Business Process Management Journal*, Vol. 12 No. 3, 377-384.
- Marta Indulska et al. (2009) Process Modeling: Current Issues and Future Challenges, *Advanced Information Systems Engineering*, LCNS, Vol.5565/2009.
- Tonia de Bruin et al. (2005) Understanding the Main Phases of Developing a Maturity Assessment Model, *ACIS Proceedings*.
- Michael Rosemann and Tonia de Bruin. (2005) Application of a Holistic Model for Determining BPM Maturity, BPTrends Publication.
- Michael Rohloff. (2009) An approach to assess the implementation of Business Process Management in Enterprises, 17th European Conference on Information Systems.
- David M. Fisher. (2004) The Business Process Maturity Model – A Practical Approach for Identifying Opportunities for Optimization, BPTrends Publication.
- Bill Curtis and John Alden. (2006) Business Process Improvement Guided by the BPMM, BPTrends Publication.
- Michael Rosemann and Tonia de Bruin. Towards a Business Process Management Maturity Model.
- Amy Van Looy et al. (2010) Which Maturity is being measured? A Classification of Business Process Maturity Models, 5th SIKS/BENAIS Conference on Enterprise Information Systems.
- Eswar Ganesan. (2011) Composite Enterprise Process Modeling (CEProM) Framework: Setting up a Process Modeling Center of Excellence using CEProM Framework, Preprint version for ICEIS 2011.
- Eswar Ganesan. (2011) Composite Enterprise Process Modeling Framework, <http://www.requirementsnetwork.com/node/2686>.

Author

Eswar Ganesan is a Business Architecture Consultant with Infosys Technologies Limited. Eswar has consulted clients across the globe in engagements related to business/process architecture and requirements engineering and has 5+ years of experience in Business/IT Consulting. His core research interest is in the subject of Enterprise Business Architecture (EBA). His other areas of interest include process modeling, process analysis and industrial B2B research. He has developed Composite Enterprise Business Architecture (CEBA) methodology, a practical

approach for EBA and has multiple research publications to his credit. The author can be reached at eswar_ganesan@infosys.com .

BPTrends LinkedIn Discussion Group

We recently created a BPTrends Discussion Group on LinkedIn to allow our members, readers and friends to freely exchange ideas on a wide variety of BPM related topics. We encourage you to initiate a new discussion on this publication or on other BPM related topics of interest to you, or to contribute to existing discussions. Go to LinkedIn and join the **[BPTrends Discussion Group](#)**.