Enterprise Ecosystem: Extending and Integrating Technology Serving thee Enterprise

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Enterprise Ecosystem Mini-track

The focus of this mini-track begins with the organizational Enterprise System as a foundation for an integrated Enterprise Ecosystem which is often directly connected to suppliers and customers. These Enterprise Systems must integrate emerging technologies to achieve competitive advantage in day-to-day operations. Building on the data collected in ERP, data analysis can be used to leverage Big Data and enhance evidence-based decision making. As the technology landscape continues to change quickly, many new innovations impact Enterprise Systems and continued research is needed. The integrated Enterprise Ecosystem is impacted and must adapt to: cloud computing, sustainability, financial technologies, non-financial metrics, inter-organizational integration and more. Integrated enterprise systems are further enabled by extensions related to the Internet of Things (IoT), new Big Data information sources such as Geolocation/GIS data, telemetry, hi resolution media content and storing metadata. Data analytics tools are offered by Enterprise vendors, in the cloud and in the data center? How does the Enterprise ecosystem need to evolve to support and enhance the ability to perform analytics? Three papers focused on the Enterprise Ecosystem have been accepted for presentation in this mini-track.

The first paper and best paper nomination (A Total Cost of Ownership Model for Cloud Computing Infrastructure) addresses a holistic cost assessment of cloud computing architectures. Identified in the research is relevant cost components for Cloud Computing. This model was identified and then applied to a real-world scenario at a car manufacturer. The generic model is considered sufficient to serve as a standardizable base model for further development and customization to multiple industries. The evaluation of cost can be further refined to with the creation of tool support to increase the efficiency of the total cost of ownership evaluation. This paper fits into the ERP Research Framework [1] category of ERP Economic Impact, wherein all costs (whether pre-identified or hidden and discovered later) will impact the overall value and internal firm benefits realized from the enterprise system.

The second paper (A Model-driven Method to Design SoaML Services from BPMN Models" Principles, Proof-of-concept, and Validation) addresses the increasingly complex business process as they cross organizational boundaries. The authors have approached this research gap through the evaluation of Process-Aware Information systems that rely on multiple organizational partners in complex scenarios. This research identifies new steps for providing organizations with a method and tools to automate the creation of service-oriented interorganizational processes. This paper papers area of inquiry resides in the ERP Research Framework [1] category of ERP Critical Success Factors within the sub-area of Business Processes and Change Management related to Enterprise Systems and extends this research category to address cross-organizational boundary spanning processes. Future research is anticipated which will improve the automated mapping of services and the development of web-based process solutions.

The third paper (On Deriving Business Value Models from Process Models: An Empirical Study) focuses on a business value perspective in the environment of disruptive technologies. The emphasis is to provide a method to determine when process models are no longer representing the maximum business value in which they were originally developed. Two models are used in this evaluation: Business Process Model Notation and e^3value model. A controlled experiment was used to evaluate the business value with the most influential factor being the adopted treatment process. The more complex ecosystems were shown to derive the highest quality and elucidated factors for future research. This paper also fits into the ERP Research Framework [1] category of ERP Critical Success Factors within the sub-area of Business Processes and Change Management

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related to Enterprise Systems and seeks to evaluate best practices in face of disruptive technologies.

The abstracts for each of these three papers follows.

A Total Cost of Ownership

A holistic cost assessment of cloud computing architectures is currently hampered by the lack of assessment methods and the absence of a standardized and comprehensive total cost model. This issue creates uncertainty about the cost developments of concrete scenarios and architectural changes. This article proposes a total cost of ownership model for cloud computing, covering the cost of adoption, procurement, migration, operation, usage, and exit. We evaluated our model in multiple application scenarios and against other models. Our model has shown to be substantially more comprehensive and applicable than other available models for cloud computing. Thus, our model can be valuable both in practice and in research. We demonstrate that our model can increase cost transparency and improve decision support. 2. Formatting your paper

A Model-driven Method

Today's business processes are increasingly complex as they cross organizational boundaries. To execute their business processes, organizations develop software applications called Process-Aware Information System (PAIS). PAIS designers must consider complex scenarios involving multiple partners. Consequently, the architectural design of high quality PAIS is complex and requires vast amounts of knowledge and skills both in software architecture and in the business domain. This paper proposes a model-driven method to design the architecture of PAIS using the service-oriented architecture (SOA) style. The proposed method generates SOA-based design models expressed in SoaML from the specifications of collaborative business processes expressed in BPMN. We developed a prototype tool using the Eclipse Modeling Framework (EMF) ecosystem. We tested the method on a set of processes from the Enterprise Resource Planning literature to assess its effectiveness. Our results show that 80.95% of the identified services were relevant and corresponded to what architecture specialists expected.

On Deriving Business Value Models

At least two business requirement perspectives of the digital ecosystem should be revisited in case such an ecosystem changes significantly: (1) the business process perspective (e.g. represented by a BPMN 2.0 model), and (2) the business value perspective (e.g. depicted by an e 3value model). Although both perspectives differ largely and address different stakeholder concerns, there is also overlap between the two points of view. Moreover, often there is already an explicit understanding of how the parties in the ecosystem execute processes. However, the business value model is, in many cases, left implicit, whereas most disruptive technologies results in significant changes in the business value model. It is important to understand and analyze these using a model-based approach like e 3value. To speed up the elicitation process, it would be more efficient to elicit an e 3value value model using an already existing process model. We test a series of guidelines to derive an e 3value model from a given BPMN model. We conducted a controlled experiment through which we analyze the quality of a conceptual model – e 3value business value (e 3value) – derived from another conceptual model – Business Process Notation v.2.0 (BPMN). We measure model quality via validity and completeness with respect to a normative standard solution and an expert solution. Subjects are divided into two groups: the treatment group, which use the guidelines to derive one model (e 3value) from the other (BPMN), and the control group, which do not use the guidelines. Furthermore, we analyze and evaluate the implications of the experiments results to understand the limitations and to improve them in future research.

References

[1] S.V. Grabski, S. A. Leech, and P. J. Schmidt, "A Review of ERP Research: A Future Agenda for Accounting Information Systems", *Journal of Information Systems*, 25(1), 2011, pp. 37-78.