

IFIP Advances in Information and Communication Technology (AICT)

Selected conference paper abstracts 2019

Senderek R., Kuntz J., Stich V., Frank J. (2019) *Service Engineering Models: History and Present-Day Requirements*,

While numerous service engineering models are available to provide guidance during the design of new services, many of them cannot keep up with the requirements of today's economic environment. The Authors examine the requirements that service engineering models need to meet in order to be suitable guidelines for the digital age. The Paper illustrates how digitalization has changed the service industry and presents selected service engineering models and related standardization. Finally, a set of requirements for modern service engineering models are introduced.

Conference paper: Part of the [IFIP Advances in Information and Communication Technology](#) book series (Springer Verlag: IFIPAICT, volume 567)

Steenwerth P., Lödding H. (2019) *A Generic Approach to Model and Analyze Industrial Search Processes*

In the field of industrial production search processes occur whenever material or information is needed. While searching is a fundamental activity within production processes, existing models and methods are not designed for analyzing industrial search processes. This paper presents a generic phase model that can be used to describe industrial search processes. Furthermore, an analysis method is proposed to determine and prioritize fields of action for the optimization of search processes.

Conference paper: Part of the [IFIP Advances in Information and Communication Technology](#) book series (Springer Verlag: IFIPAICT, volume 567)

Panayiotou N., Stergiou K., Stavrou V., Panayiotou N., (2019) *Development of a Modeling Architecture Incorporating the Industry 4.0 View for a Company in the Gas Sector*

Industry 4.0 is a fast growing concept that is directly correlated with Business Process Management because its implementation concerns the improvement of business processes. Business Process Modeling is a tool which can depict the processes of an organization in order to better understand those processes. In this paper, a complete architecture which proposed in a company active in the gas industry is presented including the appropriate models for the recording of business processes and how Industry 4.0 principles could be incorporated to them.

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Petroni B C, Zonichenn Reis J, Gonçalves R F., (2019) *Blockchain as an Internet of Services Application for an Advanced Manufacturing Environment*

In Industry 4.0, a noticeable relevance is given to Cyber Physical Systems, Internet of Things and Internet of Services. Also, new technologies as Blockchain and Smart Contracts are important innovations. Internet of Services is characterized by a service-oriented computing model enabling a diversity of software-based services through the Internet, among them the Blockchain solution. The paper explores these technologies bringing their intersection as well as their possible applications in the shop floor level. Through the interlock of such concepts, the paper aims to propose an architecture that promotes the utilization of Blockchain for the validation of some service demands in an advanced manufacturing scenario of the Industry 4.0. Lastly a hypothetical case study is presented for illustrating the proposed architecture.

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Schuh G., Brettel M., Prote J P, Gützlaff A., Sauermann F., Thomas K., Piel M., (2019) *From a Theory of Production to Data-Based Business Models*

Producing companies constantly attempt to decrease their production costs, but more often than not have an determining their current production costs as basis for the intended improvements. On the other hand, producing companies face an increasing volume of production data in the course of Industrie 4.0. Yet, especially traditional companies do not know how to translate generated production data into incoming cash flows. In order to tackle both issues, this paper presents both an overview of data-based business models for producing companies and a tool for increasing transparency of production costs in global production networks.

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Yan Li Y., Steve Evans S., (2019) *Business Model Innovation for Eco-Efficiency: An Empirical Study*

Literature reveals that there is a need to study business model innovation and eco-efficiency under one text to achieve a win-win rationale to increase profits while reducing environmental impact. This empirical study conducted 8-in-depth case studies with manufacturing companies across UK and China. The author synthesized the cases and concluded the measures of business model innovation for eco-efficiency in five categories, namely (1) Selling of service model, (2) Direct selling model, (3) Collaboration strategy, (4) Whole system design strategy, and (5) Technology renovation strategy. The empirical finding suggests the adaptation of strategy and exploitation of the technologies are essential to business model innovation when manufacturing companies seeking to implement eco-efficiency.

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Lillebrygfjeld Halse L., Jæger B., (2019) *Operationalizing Industry 4.0: Understanding Barriers of Industry 4.0 and Circular Economy*

There is a need in the manufacturing industry for a transition to business models that incorporate sustainability while keeping business activities profitable. The commitment for sustainability includes a shift towards Circular Economy (CE) that poses additional barriers like geographic dispersion, product complexity, and lock-in to the contemporary linear 'take-make-consume-dispose' model of operation. This paper addresses how manufacturers perceive Industry 4.0, what motivates their investments in Industry 4.0, and what barriers they see in adapting Industry 4.0 followed by a literature review identifying barriers for adhering to CE in the manufacturing industry sector. The study offers empirical insights identifying a need for a roadmap for implementation of Industry 4.0 to support CE as well as providing directions for future research.

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Schuh G., Prote J P., Busam T., Lorenz R., Netland T H., (2019) *Using Prescriptive Analytics to Support the Continuous Improvement Process*

The continuous improvement process (CIP) enables companies to increase productivity constantly by sourcing ideas from their employees on the shop floor. However, shorter production cycles require manufacturing companies to also adapt their production processes in a faster manner and reduce resources for CIP activities. Traditional CIP approaches fall short in such a fast-paced environment characterized by uncertainty. This study proposes a novel approach for increasing the efficiency and speed of the CIP by using data of previous improvements and predict current potentials. This results in a prescriptive model supporting the employees how to improve their processes.

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