

Progress in IS

Shaun West  
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# Smart Services Summit

Digital as an Enabler for Smart Service  
Business Development

 Springer

# **Progress in IS**

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Editors

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Business Development

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# Foreword

Smart Services have come a long way in the last 15 years. Fifteen or twenty years ago, adding services, such as warranties or repairs, was considered the state of the art in product/service diversification. However, digital technology trends have enabled and empowered entirely new business models and value propositions. Since 2000, the price of sensors has dropped dramatically, while at the same time computing power and telecommunications/wireless bandwidth have increased by orders of magnitude. Combined with Internet connectivity and new approaches to data science, we have the recipe to move, as Allmendinger and Lombreglia put it, from “reactive” (fix things when they are broken) to “proactive” (fix things on a schedule) to “preemptive” (fix things before they break based on data).

These technological innovations allow smart services that create value up and down the supply chain. Producers gain value from operating and customer use data that feeds back into new product development, and customer organizations reduce the number of suppliers and the complexity and costs of downtime. Furthermore, smart services enable new business models and new sources of revenue for producers, from servitization subscription models to data aggregation and selling of analytics insights.

Innovation in the smart service area is emerging, representing the interplay between traditional, open, and platform plays, but in essence, innovation in this space occurs in the “smartification” of products, new ways of sourcing and analyzing data, and applying services and integrated solutions in new sectors. For example, collecting data from people via crowdsourcing platforms has become much more sophisticated in the last 10 years, not to mention approaches for collecting data from smart devices. Applying the insights from data analytics is finding its way into new areas beyond the typical servitization and predictive maintenance of heavy equipment into policing, traffic control, personalized health, financial services, and fleet management, among other areas.

Innovation in this space is extremely difficult for a variety of reasons. Part of it has to do with any information technology exercise in companies, that is, change management is difficult, senior leadership does not fully embrace digital transformation, the

information technology function is often put in charge rather than senior management, and companies often ignore the fears of employees being made redundant via new technology adoption.

That brings us to this timely book, which provides an overview of emergent approaches in smart services, not only mainly in the business-to-business (B2B) space but also highly relevant for business-to-consumer (B2C) and open to integrate with B2C approaches. What is clear is that companies in all sectors need to experiment with digitally enabled smart services, and those that do not may find themselves with irrelevant legacy skills and/or uncompetitive products and services. This book surfaces the latest thinking on the role of digital technology in creating and capturing value from smart services. I hope that readers will absorb its lessons and apply them to their own challenges to prepare their organizations for a digital future.

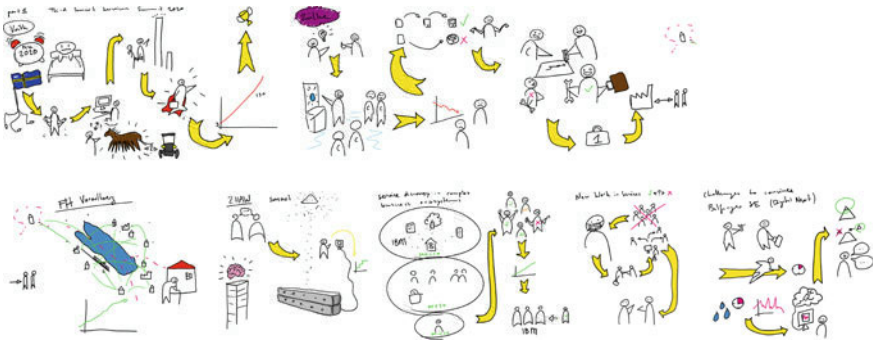
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Christopher L. Tucci

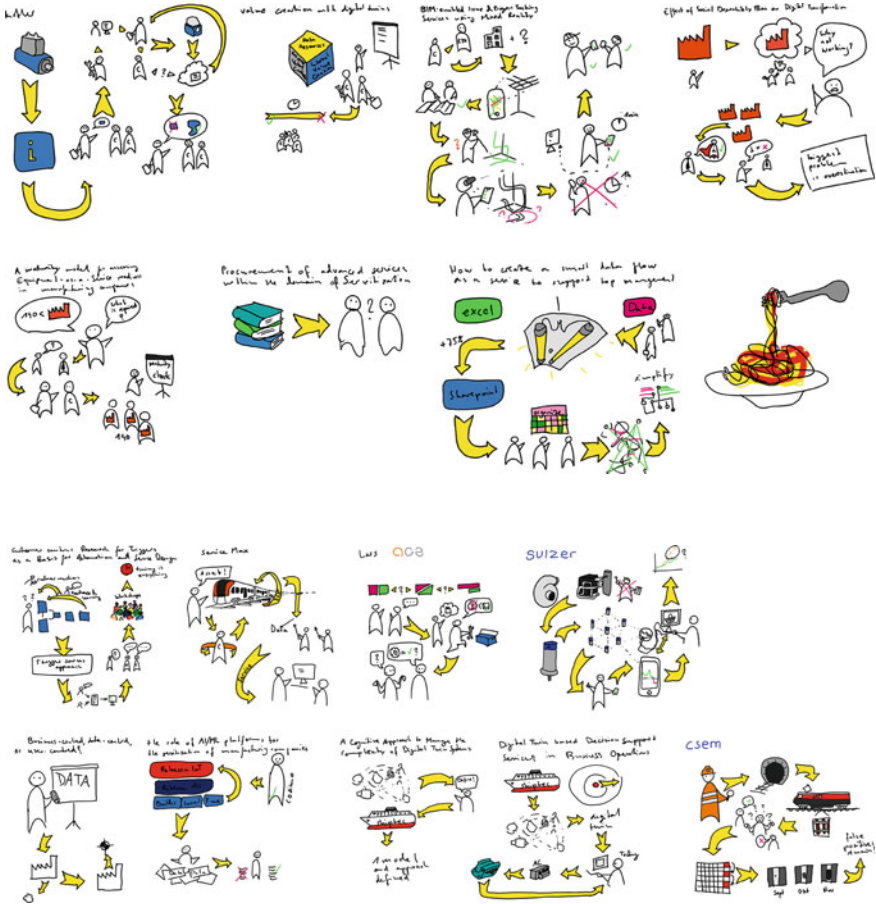
# Preface: data innovation alliance—Expert Group Smart Services

The data innovation alliance provides a significant contribution to make Switzerland an internationally recognized hub for data-driven value creation and is supported by Innosuisse.

## The Day in Graphics







Graphics by  
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## Academic Contributions

The contribution to the academic community for the Smart Service Summit was to provide a forum for emerging research in the area of Smart Services. The conference’s goal was to go beyond the technology and to consider the non-technical aspects that are important with digitally enabled value propositions and the underlying business models. The academic contributions were directly challenged by industrial presentations to allow for an active discussion of future research directions. Given the dynamic nature of digital technology and the ongoing evolution of Smart Services today, this provided a lively discussion and highlighted again the multi-disciplinary approach required for Smart Services. To guide the summit, three different panels were developed to provide a framework to shape the discussions:

1. Value system understanding for Smart Services
2. Value propositions for Smart Services
3. Value capture with Smart Services

The academic insights from each part will be described below.

The first part introduces three very different, yet complementary, views that were provided from the papers. All of the papers described multi-actor environments where value creation was distributed widely within the ecosystems and depended on the situation(s). The understanding of these complex systems allows the papers to provide approaches that support performance measures to be identified providing proxies for the value creation for various beneficiaries within the system. Martin Dobler focused on understanding services for Smart Cities, Manuel Holler on buildings, and Linus Bächler on server rooms.

The second part discusses value propositions for smart services with a strong focus on the application of digital technologies as an enabler for new value propositions. As such, the papers are all more application-based than those from the first part; they all provide insights into how new technologies can be integrated to provide improved or new solutions to existing problems. Linard Barth provides a framework for developing new value propositions based on the application of digital twins, whereas Valentin Holzwarth describes a value proposition based on the application of mixed reality technologies combined with building information modeling over the early lifecycle phases. Jonathan Roesler turns traditional good-dominate logic on its head by presenting a rental model (“equipment as a service”) predicated on the integration of digital technologies. Oliver Stoll then provided insights to an often-neglected area of the procurement of advanced services, reminding us that in a B2B environment there is always a “buyer” and that there is limited research in this area.

The third part’s focus is on value capture for firms providing smart services. Smart service design is focused on creating value for beneficiaries, which is a required prerequisite for any business success. Frank Hannich opened with a paper that described how “trigger” marketing can be successfully automated with service design within SMEs in a B2C environment. While the setting of the summit is centered around B2B markets, there are many lessons we can learn from B2C. The discussion at the summit made evident that both B2B and B2C can learn from each other

in many cases. Cosimo Barbieri moved back to a B2B case, showing how machine learning and augmented reality had been demonstrated to support the servitization of firms. Lu presented a cognitive approach to transforming disorganized complexity to organized complexity to improve the digitally enabled services' value capture. This paper was closely linked to the digital twin-based decision support services within an operational context presented by Meierhofer. The asset and process digital twins were integrated to provide decision support. Abrell followed on by questioning the different types of approaches that have been applied in value capture (e.g., business-, user- or data-centric) within the context of big data innovation. He concluded with four positions for future research to improve value capture in the future: actor knowledge; designerly approaches to enhance understanding of tacit needs; use of designerly approach to integrating the perspectives of the actors, the businesses, and data; and, a beneficiary-centric approach to the design of value capture systems based on big data.

## Challenges from Industry

In many industrial companies, the term “service” is related to fixing broken products in the field or preventing their failure. Owners of the products cannot afford to have their maintenance personnel trained on repairing every piece of equipment installed. Furthermore, a repair action would probably require in-depth proprietary knowledge that suppliers don't want to give away. The spare parts required for the repair are typically not available on the market and need to be purchased by the supplier as well.

In recent years, the industry has realized the power of the service business. While in the past the business model was often predominantly related to people lending—sending out a service technician when the customer asked for one—more advanced service offerings and business models become the norm. IoT technology has paved the way toward more data collection and more advanced data analytics, where suppliers are capable of better detecting or even predicting failures. Outcome-based service contracts are becoming possible, where more responsibility for the performance of the equipment is shared with the supplier.

Still few companies have figured out the value of “services”, i.e., the broader term that defines the service industries. Today still, many offerings are closely tied to the product (monitoring, repair, maintenance, etc.). Few services are offered in addition. The same technology that is today used for condition monitoring could also be used to monitor process performance, energy efficiency, and other KPIs important for the plant's operation. Such services address other value levers apart from uptime and plant availability.

Entering the market with more advanced services that continuously add value to the customer's operations will allow a customer and a supplier to closely interact in constant optimization of the operation.

Selected speakers from the industry presented challenges, approaches, and solutions that represent a good cross-section of the state of the art. Some of the presentations explained the approach taken and the learnings, while others presented interesting service solutions. Some also dove into difficulties that arise when dealing with the real-world boundary conditions of industrial organizations and processes.

Mario Schmuziger from Zühlke shared some insights into innovation processes that he and Dominik Böni had found over years of consulting. Many companies are locked in incremental innovation, steadily improving their offerings to their customer base. However, they often fail to bring something radically new to the market. The authors emphasize the importance of a market view. To push for more radical innovation, they value the role of generalists that can bring together technology as well as the market view.

Philipp Schenkel from Kistler explored the value of information about the installed base. It can not only be harvested to assess the performance of the delivered solutions, but also serve as the base to increase sales. An important component of such a strategy is to have the right data available at the right time, from the service technician recording data in a service intervention to the salesperson analyzing the account and choosing the right offering strategy.

Thomas Sautter from Voith presented some of the challenges in selling digital services and products. The status quo for him was not possible to accept as he had inherited a digital business that he had to integrate into his service business. Integrating the digital business into a “steel” company was the basis of the challenge, but this was coupled to sales which were used to selling from a catalog rather than building solutions around customers’ problems. To overcome the barriers that exist, solution-selling champions were identified within each of the regional sales teams and supported directly with engineering or product managers with the target of closing deals with digital content. Ongoing coaching and regular sales calls supported this new approach to selling in the firm. The objective is to disseminate the knowledge to the other regional sales managers. This is anticipated in the longer term to support both new digital solution sales as well as traditional sales.

Andreas Beyer-Köster from Bilfinger presented the challenges that are encountered when convincing manufacturers, operators, maintenance providers, and asset managers to apply Industry 4.0 concepts. Often, manufacturers struggle with the variety of data sources which are not connected. Additionally, the potential that lies in the already existing data and systems is often not recognized. Manufacturers often are surprised to see that projects can be realized fast, e.g., in 4 to 12 weeks. Top management support and cultural change are very important.

Lars Hennecke explored the challenges of the commercialization of smart services that ace Advisor Services had identified. Suppliers have a sizeable service business already today, and introducing smart services may bring some overlaps with what is currently offered to the market. To replace existing service offerings with smart services or to keep partly overlapping offerings on the market, both have their pros and cons.

When introducing smart services, Lars proposes to enter a collaborative relationship, since processes on provider as well as on customer side may be required. He

concludes that the commercialization step shall be considered already considered in the development phase and should cover a change management aspect.

Matthew Anderson from Sulzer presented an industrial IoT Monitoring solution “Sulzer Sense”. Once established as a service, he shared real-world insights into the customer’s business drivers and pain points, and how Sulzer designed a solution to address these needs in a cost-effective manner and provide real value. Important aspects of this were overcoming the challenges of a digital project covering multiple technical disciplines, allowing for innovation and the need for agility, while introducing a new type of service to the business.

An interesting use of image recognition for condition monitoring was presented by Philipp Schmid from CSEM. The asset to be analyzed is not machinery, but rail tracks. Diagnostic trains equipped with cameras continuously traverse the rail network at travel speed (160–200 km/h). The presented AI system classifies real defects from other artifacts (chewing gum, dirt, snow, etc.). Repeated monitoring of the same track combined with advanced fingerprinting techniques helps to monitor the evolution of a defect over time. The solution significantly reduces the number of false positives compared to traditional algorithms that had evolved over a period of 10 years and adds new capabilities of smart maintenance planning.

The value of the asset data was at the core of Coen Jeukens’ presentation from ServiceMax. The focus can be shifted from avoiding downtime to maximizing the outcome and the uptime while minimizing cost. This can be achieved by knowing where the assets are, in what condition, and how they are being used. By using the asset instead of owning it, real output value can be achieved. Exploiting the data from the asset can benefit stakeholders from multiple domains, among other customers, marketing and sales, field service, R&D, and many more. Thus, asset centricity becomes a cornerstone of service success.

The conversion of data to usable information and then using the information to support decision-making in pricing was the theme of the presentation from Dominik Kujawski from Regent. The core was the change management from using what looked like random data on pricing to understanding how it could be used to drive behaviors of the sales team. The automation of the preview work meant that he could then focus on the real value of supporting pricing in an environment with over 10,000 SKUs. This helped with consistency in the pricing process and assisting sales to identify new opportunities that they had missed in the past. This was a significant change for the firm and within a few months had been through several improvement cycles. Each improvement cycle provided new insights into the pricing process and the potential uses of the data.

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# About the Conference

Following on from the successful Smart Services Summits in 2018 and 2019, we were following with a similar format of short papers and posters to foster closer collaboration between industry and academia.

This year's theme was "Digital as an Enabler for Smart Service Business Development for Manufacturers, Operators, Maintenance Providers, and Asset Managers". The topics covered by the contributions are as follows:

- challenges and solutions for Smart Services;
- the efficiency of delivery within existing value propositions;
- the development of new value propositions to improve competitiveness.

In these topics, the Smart Services Summit covered new and emerging research and was about pushing the topics forward through discussion. Invited presentations from international industry experts framed the summit. These were accompanied by short academic presentations, followed by in-depth discussions.

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