UNIVERSITY OF CAMBRIDGE
Cambridge Service Alliance

2016 Service Week Academic Conference

Services in an Age of Digital Disruption

5-6 October 2016
IfM Cambridge

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Cambridge Service Alliance

WELCOME

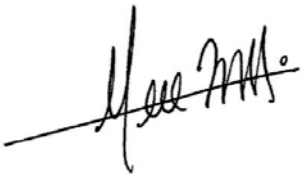
It gives us great pleasure to extend to you all a very warm welcome to the 2016 Service Week Academic Conference at the University of Cambridge.

Naturally, a thorough knowledge of 'Services in the age of digital disruption' is of fundamental importance, both in the future development of our economy and progression of Service Science.

We are aware of the tremendous effort made, and the large investment in funds and scientific effort, by many profit and non-profit organisations and Western and Eastern research councils in 'making and enabling a better society through services in this digital age'. We are keen to hear our distinguished colleagues report on their recent research developments in the field of services, human centred services, digitalisation of manufacturing and customer experience and analytics.

We hope that you will enjoy this conference and that your interaction with other participants will stimulate a creative exchange of ideas and will be personally rewarding.

Yours sincerely,



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SERVICES IN AN AGE OF DIGITAL DISRUPTION - AGENDA

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Session	Title	Speakers	Page
08:45	*Registration and Refreshments*		
A. Context Setting: What Digitalization Means for the Service Research and Policy			
09:00	Welcome and Introduction		
09:20	Reflection on Service Science: the Digital Agenda	Andy Neely and Veronica Martinez, University of Cambridge	
10:00	Digitizing European Industry Strategy: How Could This Support a Service Dominant Logic?	Charlotte Andersdotter, EU	3
10:30	*Refreshments*		
10:50	Exercise		
11:20	Roundtable Discussion		
B. Data, Ecosystems and Business Models for Services			
11:50	Birth of a Personal Data Eco-System: The HAT	Irene Ng, Warwick University	3
12:30	*Lunch*		
13:30	The Biomimetic Bank: How SD-Logic, Servitisation and Biomimetics are Transforming Bank Marketing	Graham Hill, Optima Partners	3
14:10	Business Models Under Digital Disruption	Steve Street, IBM Universities Relations	5
14:50	Roundtable Discussion		
15:20	*Refreshments*		
C. Human Centred Services			
15:40	On the Relation between Human-Centered Service Systems and Autonomous Service Systems	Paul Maglio, University of California	6
16:10	An Integrated Approach for Measuring and Managing Quality of Smart Senior Care Services	Walter Ganz and Jens Neuhüttler, Fraunhofer	6
16:50	Roundtable Discussion and Wrap-up of the Day		
17:20	Close		
19:30 for 20:00	Dinner at Madingley Hall, Cambridge		

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DAY 2

Session	Title	Speaker	Page
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09:15	Reflections from Day 1		
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09:45	A Study on Japanese Manufacturer's Transformation Toward Service-Based Business by Utilizing Remote Monitoring Systems	Kazuyoshi Hidaka, Tokyo Institute of Technology	8
10:25	*Refreshments*		
10:45	Servitization Research: Quo Vadis?	Christian Kowalkowski, Hanken School of Economics	8
11:25	Roundtable Discussion		
12:00	*Lunch*		
E. Customer Experience			
13:00	Service Science 2.0: An Ultra-Adaptive Lens for Managing Customer Experience in 2016 and Beyond	Jos Lemmink and Benjamin Lucas, University of Maastricht	9
13:40	Measuring What Matters for an Effortless Experience	Janet McColl-Kennedy, Florian Urmetzer, Mohamed Zaki and Katherine Lemon, University of Queensland, University of Cambridge and Boston College	10
14:20	Roundtable Discussion		
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F. Visual Analytics			
15:10	Visual Analytics for Service Brands on Social Media	Benjamin Lucas, Business Intelligence and Smart Services Institute, Maastricht University, the Open University and Zuyd University	11
G. What Have We Learnt			
15:50	Roundtable Discussion		
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SERVICES IN AN AGE OF DIGITAL DISRUPTION – ABSTRACTS

DAY 1

Digitizing European Industry Strategy: How Could This Support a Service Dominant Logic?

Charlotte Andersdotter
EU

The European Commission launched in April 2016 its strategy for how to support industry's "digital transformation", also called Industry 4.0. The strategy, or Communication in EC terminology, sets out the plan on how to support European industry, SMEs, researchers and public authorities to make the most of new technologies. It should also support the previous Communication on how to create a Digital Single Market in Europe. However, the strategy ignores the fact that we are talking of a mind shift, or even a total paradigm shift towards a service dominant logic. The "Digitising European Industry" suggests a (standard) set of actions that could be applied to any technology in any period of history.

Birth of a Personal Data Eco-System: The HAT

Irene Ng
International Institute for Product and Service Innovation, Warwick University

We report on the HAT personal data ecosystem that released HATs to 200 live beta users on the 27 July 2016. The presentation would cover design of the ecosystem, including the economic model design for the market of future personal data services, transaction boundaries, the public and private spaces of personal data on which the services would be sitting on. The ecosystem entities and their economic and business models will also be presented. Metadata of the HAT live ecosystem will also be reported together with the introduction of HALL (HAT living labs), an open research platform.

The Biomimetic Bank: How SDLogic, Servitisation and Biomimetics are Transforming Bank Marketing

Graham Hill
Optima Partners

The Internet and in particular, mobile has changed bank customer behaviour forever. In the past, a customer would have had to go to their local bank branch, speak to the Bank Manager, fill in reams of forms and then wait, and wait and wait before being granted a small loan. Today, they can research dozens of loans from competing banks, apply for the best loan and have it granted by the bank within minutes, using their smartphone and their chosen bank's app.

As customers have gone online and mobile, bank marketers have had to respond. Although they continue to market to customers through crudely targeted direct and email campaigns, increasingly they are using contextual data about customers, to make personalised recommendations to them as they are interacting with the bank in person, on the phone, and on its website or while using apps. This trend is only going to accelerate as banks gather more

and more data about customers, apply new technologies like machine learning to analyse it and add new conversational marketing channels like chat-bots.

Despite the veneer of technological modernity, this approach to marketing is still rooted in banking's past. It is rooted in a goods-dominant logic where standard goods are exchanged for fixed future revenue streams. It is rooted in a product orientation where tale-it-or-leave it analogue products are the only thing on offer, even on-line. And it is rooted in an engineering mentality where everything is centralised and a 'big marketing brain' makes automated decisions about which customers should receive which recommendations during which interactions. That would be fine if it worked really well. But it doesn't. The enabling personalisation technologies are complicated to implement and temperamental. Response rates for real-time recommendations remain stubbornly low. And there is a growing backlash by customers tired with yet more intrusive, irrelevant communications that do nothing for them.

The data-driven, real-time personalised approach to marketing places enormous and unrealistic burdens on bank marketers. It requires them to know everything about the customer, their context, their influencers and their underlying motivations; anything that is relevant to personalised recommendations. Banks only have a small proportion of the information they need and the information they have is often distributed across multiple systems. It also requires them to have highly modular messages, propositions and products that match the granularity of customers' interactions. Bank's products have hardly changed in the past 100-years. And like the Ford Model T, they are only available in their standard form with matching standard propositions and marketing messages. Even if you could identify the right recommendation for a customer during an interaction, it doesn't help you if you only have the same old standard products to offer the customer.

Recognising these challenges, couple of major UK banks have been experimenting with a new marketing approach derived from service-dominant logic, servitisation and in particular, biomimetic models adapted from developmental morphogenetics, behavioural epigenetics and synthetic biology.

The approach recognises that customers should be managed so that value for both customers and the bank can be optimised at each interaction, during customer journeys and over the end-to-end experience.

It also recognises that marketing should be provided 'as-a-Service' so that the customer gets just the right support, service or sales recommendation during each interaction, or indeed, none at all if appropriate.

And finally, it recognises that customers should be managed during interactions, journeys and over their lifecycle in a way analogous to how organisms develop. Based on models from developmental morphogenetics, the approach has adapted centralised decisions about what recommendation a customer should receive during local interactions to take advantage of information not available to the centralised big marketing brain. Based on models from behavioural epigenetics, the approach uses contact rules to turn centralised decisions on or off depending on changes in customer behaviour. And based on models from synthetic biology, the approach builds customer journeys one interaction at a time using Lego-like

interaction objects that take into account the customer's recent interactions, their current context and what the banks know about their future intent. Combined together, the approach provides the bank with a modular, adaptive, self-organising approach to marketing that can implement the banks' customer strategy whilst remain responsive to the customers and their context.

Benefit - The presentation will provide:

1. An understanding of current trends in bank marketing and their implications for customer management
2. An outline of the banks current data-driven, real-time, personalised approach to marketing
3. Two mini case studies showing how:
   i. service-dominant logic was used to improve marketing value co-creation for customers as well as for the banks
   ii. servitisation was used to turn marketing into a service
   iii. three biomimetic models were used to rethink how customers should be managed during interactions, journeys and the experience.

Business Models under Digital Disruption

Steve Street
IBM

This talk discusses the concept of 'Digitisation' – a potential 'buzzword' of relatively elastic content surrounded today by a significant degree of 'hype'. In fact, it may be quite hard to find a major current innovation *without* some kind of 'digital content'.

Key 'Digital' Trends and Technologies will be briefly described and their 'Business Model' content and potential disruptive impact discussed.

These will include the 'Traditional Internet' (Google, Amazon, Facebook), the newer 'upstarts' (Snapchat, Uber, AirBnB) and key 'Digital' Technologies (Mobile, Social, Cognitive, Big Data, Fintech). It will also touch on emerging technologies that embed Digital Data or Intelligence (Driverless Cars, Personalised Medicine, 3D Printing...)

What Disruptions we are or may already be seeing as a consequence of these developments will be described and debated (Music and Travel Industries, Loss of Major High Street shopping brands, stagnation of real wages...)

In order to predict the potential impact of these 'Disruptions' a Historical Analogy will be drawn with the impact of previous technology driven 'Disruptions' (Labour displacement, the lag between displacement and replacement / the 'Engels Gap').

The potential impact of current 'Digital' Trends will be discussed and the status and outlook / limitations of current archetypal 'Digital Business Models' considered.

Finally, the talk will conclude whether we actually are in an age of 'Digital Disruption' and how that 'Age' will be likely to evolve – as multiple separate but connected 'Revolutions'. Some

elements of this age of Disruption are already starting to mature but we can anticipate much further evo/revolution up to and including potentially the era of the 'Uber and Watson Gaps'

On the Relation between Human-Centered Service Systems and Autonomous Service Systems

Paul Maglio
University of California

Service systems are arrangements of people, information, technologies, and organizations that operate together to create value for multiple stakeholders. By this definition, service systems are necessarily human-centered, as the people in the systems make decisions, take action, and assess value. Yet as technologies get smarter, incorporating more human-like capabilities for action and decision-making by accumulating and analyzing ever more data and information, technologies can often make decisions, take action, and assess value in place of people, creating autonomous service systems that can operate largely without human intervention. Train systems may be autonomous, building control systems may be autonomous, financial investment systems may be autonomous, and automobile transportation systems may be autonomous, among many others. Does such autonomy decrease the need for people or make the systems any less human-centered? In this talk, I will discuss the relation between autonomous service systems and human-centered service systems through examples from multiple industries, arguing that although autonomous technologies may change roles and relationships among system elements, the people will always be key. Future service system innovation will depend on finding balance between human-centered and technology-centered operation as technologies take on new roles.

An Integrated Approach for Measuring and Managing Quality of Smart Senior Care Services

Walter Ganz and Jens Neuhüttler
Fraunhofer IAO

Assuring a consistently high quality is still one of the most relevant tasks in the development of new services, especially when focusing on medical or health-related services. However, the growing importance of technology -and data-based services issue- challenges currently existing frameworks for measuring and managing service quality.

In recent years, the term "Smart Services" has been used frequently during discussions about Germany´s industrial transformation towards an "Industry 4.0". Smart Services describe data-based, individually configurable bundles of physically delivered services, electronic services as well as physical products and devices, which are usually performed on integrated service platforms (Acatech, 2015; Ganz/Neuhüttler, 2015). But the advance of smart services is not limited to the industrial sector. Quite the contrary, in almost all service sectors data-based solutions and service offers are on the rise - even in rather conservative branches, such as Senior Care. As an example for a smart senior care service, sensor-based fall detection can be stated. The objective of such a service offer is to enable elderly people to stay longer in their personal environment instead of moving to a professional care home. Based on data from sensors (e. g. built in the floor or in a wearable devices), the service provider is alarmed in case an elderly person has been falling on the ground. After analysing the data, responsible service employee (or an algorithm of the system) decides, whether a relative of the elderly or an ambulance is notified about the incident. In case of an emergency, paramedics are

informed about the incident, ways to access the home and the health record of the elderly person. In case of a false alarm, the elderly has a certain amount of time for deactivating the alarm and contacting their caretaker.

The stated example of a fall detection service illustrates the importance of ensuring high quality over all smart service components: Physically delivered service elements, electronically provided service elements as well as products, such as the sensors. Currently existing models of perceived service quality (e. g. Zeithaml, Parasuraman & Berry, 1990), e-service quality (e. g. Santos, 2013) or technology acceptance (e. g. Venkatesh/Bala, 2008) are rather stand-alone approaches and fail to support an integrated view on smart service quality. Thus, we want to present an integrated approach for measuring and managing smart service quality by examples of a sector critical to quality - the senior care service sector. The approach is based on literature review and tested by applying it to various smart senior care service offers.

DAY 2

A Study on Japanese Manufacturer's Transformation toward Service-Based Business by Utilizing Remote Monitoring Systems

Kazuyoshi Hidaka
Tokyo Institute of Technology

We studied the key value proposition for a large Japanese manufacturer, which enjoys the great success from make and sell business, to accelerate Servitization. We found that there is an opportunity for transformation toward Servitization in re-positioning the strategic value of daily operational (monitoring) tool.

Servitization Research: Quo Vadis?

Christian Kowalkowski
Department of Management and Engineering, Linköping University and Department of Marketing, CERS – Centre for Relationship Marketing and Service Management, Hanken School of Economics

Service-led growth in product firms belongs to the most active service research domains and it has been considered a strategic research priority (Ostrom et al., 2015). Despite a sharp rise in publications and conferences during the last decade, many articles tend to replicate existing knowledge through exploratory research. Such approaches tend to reinforce rather than challenge the established assumptions surrounding servitization and do not advance theory beyond incremental improvements. Overall, while research is mature in terms of output, theoretically, the research domain is largely still in a 'nascent' phase (Kowalkowski, Gebauer, and Oliva, 2017).

Departing in a forthcoming special issue on service-led growth in product firms, this article highlights directions for further servitization research. In addition, key concepts of service-led growth processes are elaborated. In particular, while the operations-led concept servitization and the marketing-led concept service infusion are frequently used interchangeably, it is constructive from an analytical point of view to distinguish between the two. Servitization—the transformational process wherein a company shifts from a product-centric business model and business logic to service-centric ones is regarded as an overarching concept that includes but goes beyond service infusion—the process wherein the relative importance of service offerings to a company increases. Similarly, the opposite concepts of service dilution and deservitization are also discussed.

Several directions for further research are identified. First, research on the processes of deservitization and service dilution is still in its infancy. While some firms deliberately move away from services, many firms concurrently pursue service infusion and dilution initiatives. Second, the role of merger and acquisitions in the service-led growth strategy is hardly investigated. Most studies still assume that service-led growth equates organic growth. Third, more research is needed on service culture and leadership in industrial settings. While much research is concerned with various elements of service business models, these 'softer' issues are frequently omitted. Fourth, firms can have multiple positions along the product-service

continuum. Research should thus be concerned with how to manage multiple business models in one organization. Fifth, emerging economies, non-manufacturing industries, and the role of technological advancements and the product lifecycle are examples of interesting contextual dimensions that would advance the research domain. Finally, a majority of articles lack a strong theoretical foundation and/or methodological rigour. For example, more studies should generate or test hypotheses to develop theory further. In addition, while the limitations of dyadic studies of manufacturers and customers are increasingly acknowledged, most network studies (still) rely on qualitative data from the supplier side. Taking a network perspective is particularly important in the light of competition from industry outsiders, such as software powerhouses, and the need to align with channel partners to succeed with service growth initiatives.

Service Science 2.0: An Ultra-Adaptive Lens for Managing Customer Experience in 2016 and Beyond

Jos Lemmink[1,2], Benjamin Lucas[1,2]
[1]School of Business and Economics, Maastricht University, [2]Business Intelligence and Smart Services Institute (BISS)

Service science is a multi-disciplinary field focused on the discovery of the logic underlying complex service systems, with the goal of defining a common language and framework for the pursuit of service innovation and value creation (IFM and IBM, 2007; IFM and IBM, 2008). Central to this pursuit is the integration of research resources and efforts between industry and academia (Lemmink and Chatterjee, 2011) and the infusion of various technological sciences into service research, giving rise to trends such as sensor-powered services (Zaslavsky et al, 2013) and smart services (Wuenderlich et al, 2015). Further, the ongoing evolution and reshaping of the economic landscape in the form of increased customer connectivity and big data (Rust and Huang, 2014) have given rise to new points of managerial emphasis, such as customer experience (De Keyser et al, 2015).

Customer experience (CX) in the contemporary service context, primarily concerns the streamlining, integration and measurement of all customer interactions with a brand or organisation (Klaus, 2014; MSI, 2016). This encompasses new trends ranging from chatbots (Chakrabarti and Luger, 2015), powered by advanced artificial intelligence systems to deliver refined, on-demand customer service, to social media analytics (Fan and Gordon, 2014) for monitoring large-scale customer feedback in real time. These trends in-turn translate into new implications for service managers. In fact, the sheer speed of technological advancement shaping today's services necessitates the reimagining of existing service science frameworks, into ultra-adaptive lenses through which academics can help managers diagnose and solve real-world problems and maintain customer-centricity.

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Measuring What Matters for an Effortless Experience

Janet R. McColl-Kennedy[1], Florian Urmetzer[2], Mohamad Zaki[2], Katherine N Lemon[3] and Andy Neely[2]
[1]UQ Business School, University of Queensland, [2]University of Cambridge, [3]Carroll School of Management, Boston College

Customer experience (CX) management is listed in the top ten priorities of CEOs worldwide with practitioners increasingly viewing CX management as a promising approach to key marketing challenges. Initiatives geared towards facilitating better customer experiences have been gaining momentum. Yet, despite recognition of the importance of the customer experience by practitioners, academic literature on this important topic is relatively scant and fragmented (Homburg, Jozić and Kuehnl 2015; Verhoef et al. 2009).

Moreover, current measurement tools are proving inadequate to capture the complex and longitudinal nature of customer experience. Single measures taken at the end of the customer experience journey appear to mask underlying sources of friction at the various touchpoints. The single measure typically forces customers to provide an "overall" assessment of the journey. Even if multiple measures are taken at several touchpoints across the customer experience journey, they are often "averaged out", masking important details that matter to customers.

Further, even if customers are asked to provide details of concerns or compliments, practitioners often do not know what to do with these details expressed in the free text verbatim comments. If used at all, these comments are typically employed by managers as selected quotes, or allocated to one of two broad categories – either a positive (compliment) or negative (complaint). Not surprisingly, in their raw form, these verbatim comments appear of little relevance to practitioners. In contrast, single numeric scores are simpler to use as they can be averaged and easily incorporated into management reports. However, the qualitative comments offer richness unable to be obtained from single averaged numeric scores.

In addition, recently there has been a focus on reducing "pain points" or friction in the customer experience. Firms are focusing on creating "seamless" and "effortless" experiences for customers (Dixon, Freeman and Toman 2010; Toman, Dixon and DeLisi 2013). Little research has focused on reducing friction throughout the customer journey. Although some prior research has focused on how customer effort may influence choice (Simonson and Winer 1992; Sweeney, Danaher and McColl-Kennedy 2015), and how creating seamlessness or "flow" may influence customer experience (Csikszentmihalyi 2000; Nakamura and Csikszentmihalyi 2002), additional insights are needed to identify and reduce specific pain points, or sources of friction, in the customer experience.

Accordingly, we respond to Rust and Huang's (2004), Ostrom et al.'s (2015), and the Marketing Science Institute's (2014) call for research into measuring the customer experience that combines qualitative and quantitative measures to provide a novel customer experience analytic.

The purpose of this presentation is to: (1) showcase a new customer experience analytic that combines qualitative and quantitative measures; (2) illustrate that the use of quantitative measures alone masks important underlying concerns, compliments and suggestions for improvement; and (3) demonstrate the usefulness of a longitudinal customer experience analytic that combines qualitative and quantitative measures, providing deeper insights into the sources of friction, enabling touchpoints to be monitored and adapted.

Visual Analytics for Service Brands on Social Media

Benjamin Lucas
Maastricht University

In this study, the authors make use of new computational technology to collect and automatically annotate large volumes of visual social media data. The authors then analyse this data using network-based text mining and ranking techniques, where terms are represented as nodes, connected to each other by sophisticated co-occurrence structures. The authors examine the topological properties of the resulting networks, and use this information to index and retrieve important terms extracted from the visual data. The authors illustrate how this process can be used to help service managers efficiently identify important themes within large visual datasets and compare results across brands. Thus, this study has important implications for service branding and promotion, as well as social media content strategy, given the reliance services marketers often have on visual approaches to communicating utility and value when promoting their service offerings. The authors also discuss extensions of their proposed approach to other visual datasets (e.g. consumer-generated visual data, e-commerce visual datasets, and internally-generated marketing research visual datasets), and applications (e.g. customer experience monitoring, innovation landscape monitoring).

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THE CAMBRIDGE SERVICE ALLIANCE

The Cambridge Service Alliance is a unique global partnership between businesses and universities. It brings together the world's leading firms and academics, all of whom are devoted to delivering today the tools, education and insights needed for the complex service solutions of tomorrow.

About the Cambridge Service Alliance

Founded in 2010 by BAE Systems, IBM and the University of Cambridge's Institute for Manufacturing and Judge Business School, the Cambridge Service Alliance brings together world-leading organisations with an interest in complex service systems to:

- Conduct insightful yet practical research to improve the design and deployment of high-performance complex service systems.
- Create and develop industrially applicable tools and techniques that deliver competitive advantage.
- Provide an unparalleled network of academics and industrialists that share experience, knowledge and insight in how better to design and deploy high-performance complex service systems.
- Develop and deliver public and member-only education programmes to raise the skill levels of organisations.

Joining the Cambridge Service Alliance

Industrial members

The Cambridge Service Alliance is a business-led alliance with industrial members who have an active interest in the shift to services. The Cambridge Service Alliance will bring together further companies prepared to make significant and long-term contributions to support the Alliance. Benefits of joining include:

- Challenging yet practical insights into the design and delivery of high-performance complex service solutions.
- Practical tools, techniques and methodologies.
- Education and training to enhance capabilities in service and support.
- A stimulating international network of the world's best talent engaged in solving problems associated with complex service solutions.

Academic members

The Alliance draws on members from across the University of Cambridge, initially from the Institute for Manufacturing and the Judge Business School. Internationally leading researchers and educators are invited to join the Cambridge Service Alliance to meet specific research requirements and the needs of industrial members.

Further information

Email: contact@cambridgeservicealliance.org
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Developing new understanding and approaches to complex service systems

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