



UNIVERSITY OF
CAMBRIDGE

Cambridge Service Alliance

CAMBRIDGE SERVICE ALLIANCE

annual report

2014

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 partners

The Cambridge Service Alliance is a business-led alliance with industrial members who have an active interest in the shift to services. The industrial members are BAE Systems, Caterpillar Inc., IBM, Pearson and Zoetis.

The Cambridge Service Alliance will bring together up to four further companies prepared to make significant and long-term contributions to support the Alliance. The 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 partners

The Alliance draws on partners from across the University of Cambridge, initially from the Institute for Manufacturing and the Judge Business School.

Internationally leading researchers and educators will be invited to join the Cambridge Service Alliance to meet specific research requirements and the needs of industrial partners.

Further information

Email: contact@cambridgeservicealliance.org

www.cambridgeservicealliance.org

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Foreword

The Cambridge Service Alliance is a unique global partnership between Cambridge University and world-leading businesses – BAE Systems, Caterpillar, IBM, Pearson and Zoetis. Working together we are delivering today the tools, education and insights needed for the services and solutions of tomorrow.

Why services and solutions?

The world is changing. Customers, both business clients and end consumers, are focusing on the outcomes they want, rather than simply buying products. We are working with our partners to understand these changing requirements – both exploring what is driving them and developing ways of addressing them. A key trend is technology. Industry 4.0 or the Internet of Things will open up new opportunities for creative services and support solutions. As ever greater numbers of devices are connected to the internet, firms will have unparalleled opportunities to create unique and individually customised services and solutions.

Beyond technology, other important economic and social forces are also increasing the pace of the shift to services. Environmental considerations are coming to the fore: firms that can offer great solutions which are both economically and environmentally efficient will be well placed in tomorrow's markets. The complexity of many service and solutions offerings means that rarely can a single firm deliver the entire solution. One consequence of this is the emergence of more complex organisational forms – networks of organisations, sometimes involving competitors, working together to deliver great support to their customers. These more complex ecosystems also have longer life spans. Relationships between providers and their customers are long-lived – partnerships rather than traditional buyer-supplier relationships.

In essence, the Cambridge Service Alliance is itself a complex service ecosystem. Through deep and cooperative long-term relationships with our partners we are seeking to uncover and communicate the secrets of designing and delivering world-class services and solutions. We are always interested in hearing from and talking to others who share our interest in these issues. We hope you will find this annual report interesting and insightful and that it will stimulate you to join us as we continue to explore these new ways of doing business.

A handwritten signature in black ink, appearing to be 'Andy Neely'. The signature is fluid and stylized, with a prominent vertical stroke on the left and a long, sweeping horizontal stroke on the right.

Professor Andy Neely
Director, Cambridge Service Alliance

Our industrial partners



BAE Systems is a global defence, aerospace and security company employing around 93,500 people worldwide. Its wide-ranging products and services cover air, land and naval forces, as well as advanced electronics, security, information technology, and support services. BAE Systems provides a wide range of military and technical services, from preparation and training programmes that ensure personnel and equipment are ready for deployment, to maintenance and modernisation services to keep equipment at the forefront of technology.



Caterpillar Inc. For more than 85 years, Caterpillar Inc. has been making sustainable progress possible and driving positive change on every continent. Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. The company is also a leading services provider; Caterpillar Job Site Solutions offers complete solutions to customers that are designed to improve the jobsite performance and increase sustainability.



IBM. Throughout its 100-year history IBM has continually strived to innovate and progress. In the mid-1990s the company faced some real challenges as the information technology industry started to become rapidly commoditised. IBM survived and prospered by changing its strategy, and over the past decade has shifted into high-value services and software, which now account for more than two-thirds of its revenue. Radical innovation in IBM's business model has been another example and is central to its re-invention as a globally integrated enterprise. Globally integrated delivery is now IBM's business norm, enabling it to provide services that draw on large, new pools of highly skilled specialists from across the planet.






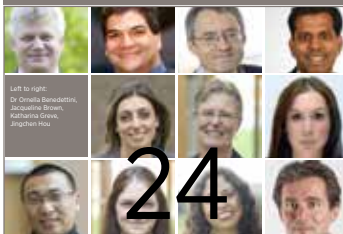


Pearson is the world's leading learning company, providing educational materials and services and business information through the Financial Times Group. Pearson serves learners of all ages around the globe, employing 41,000 people in more than 70 countries.



Zoetis is the leading animal health company, dedicated to supporting its customers and their businesses. Building on a 60-year history as the animal health business of Pfizer, Zoetis discovers, develops, manufactures and markets veterinary vaccines and medicines complemented by diagnostic products and genetic tests and supported by technical services, with a focus on both farm and companion animals. In 2012 the company generated annual revenues of \$4.3 billion. With approximately 9,300 employees worldwide at the beginning of 2013, Zoetis has a local presence in approximately 70 countries, including 29 manufacturing facilities in 11 countries. Its products serve veterinarians, livestock producers and people who raise and care for farm and companion animals in 120 countries.

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2014: new challenges

Complex services play an important part in all sectors of the economy, from education and healthcare, through to capital-intensive and asset-heavy industries. Whatever the sector, complex services have three defining characteristics:

- a focus on solutions
- networks of firms pooling their capabilities
- long-term relationships involving outcome-based contracts.

In all cases, the firms involved are looking for ways to increase the efficiency of their operations, reduce their cost-based and risk exposure and to partner with strategic providers to deliver integrated solutions.

Making this shift to services is not straightforward

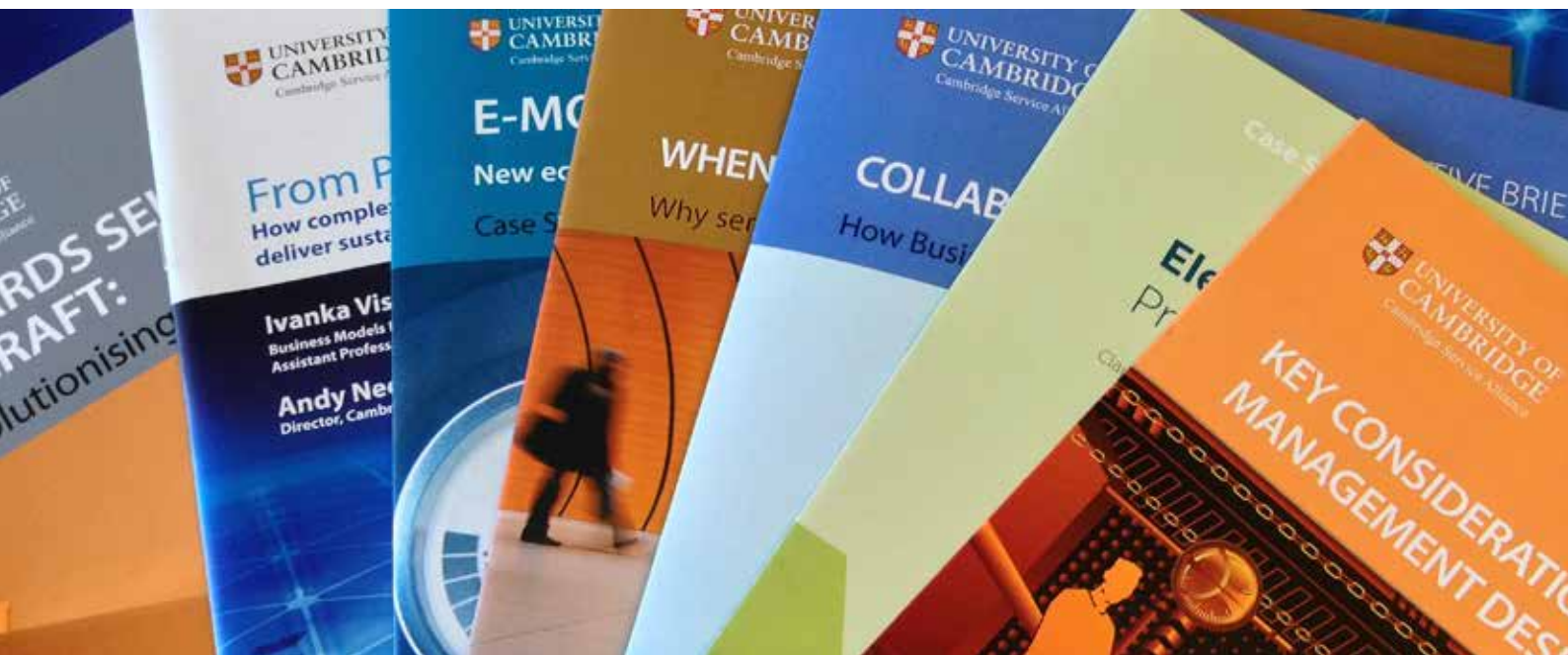
To design, deliver and support complex services and solutions many firms need to innovate their business models. They need to rethink the ways in which they interact with their partners and their broader industrial ecosystems. They may need to collaborate with companies they had traditionally regarded as competitors. New sources of competition, especially data integrators and dedicated service providers, may enter their markets. The shifting landscape means that firms constantly have to evaluate and review their approach to complex services.

The Alliance provides a forum for doing just this, by offering a unique environment where non-competing organisations can share their knowledge and experience. The partners in the Alliance jointly agree a defined research programme with the University of Cambridge, addressing issues of interest and relevance to them.

In 2014 we explored:

- successfully making the shift to services and solutions
- the rules of ecosystem competition
- making use of data to optimise services.

You can find more details about this work and our other projects in the pages that follow.



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For any enterprise which seeks differentiation in its domain through class-leading service provision, being at the cutting edge of contemporary thinking is vital. BAE Systems openly seeks the innovation which can only be found in a properly managed, multi-community research programme, focused on exploring the boundaries of performance. The Cambridge Service Alliance provides that environment and BAE Systems is already benefiting from testing new ideas and creating best practice.

Les Gregory, BAE Systems

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More impact

Through a rigorous programme of research and investigation, we have been developing a set of tools and techniques which can be used by businesses to address some of their most pressing needs.

Business model innovation assessment: this process helps senior teams understand whether their organisations have the right capabilities to innovate their business models. We have used this assessment successfully with a variety of senior teams, helping them develop a much clearer and more coherent strategy for organisational capability development as they seek to make the shift to services.

Identifying and designing enterprise-wide key performance indicators: firms often work with partners to deliver complex services and solutions but this creates a challenge when it comes to performance measures, which are typically developed within the confines of a single firm. The Cambridge Service Alliance has developed a structured process for developing cross-organisation, enterprise-wide, key performance indicators. The process helps you to identify and design a small and well-structured set of key performance indicators that you and your partners can use to coordinate value creation and delivery across the network of organisations involved in the delivery of a complex service.

Ecosystem mapping toolkit: as networks of firms pool their capabilities to deliver the desired customer outcomes, the question of who to collaborate with, and how, becomes central to the strategic debate in many firms. Understanding the structure and nature of your ecosystem, as well as its economics, is a prerequisite to thinking about your approach to collaboration and competition. The Cambridge methodology for mapping and innovating ecosystems helps you understand the structure of your ecosystem, analyse its economics and decide how you should seek to shift the balance of power within it.

Priorities for 2015

2015 promises to be an exciting year for the Alliance. We will be focusing on three areas in particular:

- The continued exploitation of existing materials – ensuring we deliver value to our partners.
- Further research and investigation – exploring new areas and ideas.
- Education and development – building skills and capabilities in our partners, and more broadly.

While 2015 will see us exploiting existing materials, we will also continue to investigate new areas and topics. To make these materials more widely available we will be running a series of executive education programmes – both public and in-house – to support organisations making the shift to services.

2014

Research themes

Each year the Alliance partners agree a programme of research which reflects their most pressing challenges and preoccupations. In 2014 we focused our activities on the following three themes:

Making and sustaining the shift to services

Theme leader: Veronica Martinez

More than ever customers – particularly industrial customers – are prepared to contract capabilities and outcomes and engage in longer relationships with providers. But they are also becoming more demanding, looking for outcomes that fit their particular needs. The ability to sell services is therefore becoming an increasingly important component of many organisations' competitive strategies.

However, shifting to services – selling outcomes rather than products – is extremely challenging and requires new ways of working across all areas of the business. Despite nearly a quarter of a century of research into servitization, companies continue to struggle to define clear strategies for the shift to services and realise the benefits of servitization. The objective of this research theme is to understand the challenges facing companies and to develop a strategic framework for making the shift to services.

Progress in 2014

Our first set of cases, based on interviews with presidents and vice-presidents, has provided interesting insights into the service journey. Findings from Phase 1 have been synthesised in the strategic service model. Phase 2 has expanded on this work by looking at how the challenges of servitization affect the organisation at different levels. Results from this project were presented in the third Community of Interest (CoI) meeting in Chicago.

Initial results and feedback demonstrate that the 'strategic service framework' is a comprehensive and practical tool to map and plan the strategic service journey of industrial firms. Next year the research will further explore the critical elements of the framework.

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Ecosystems value mapping and analysis

Theme leader: Florian Urmetzler

In today's increasingly complex and interconnected world, customers' needs for goods and services are better addressed by networks of interacting organisations: a company will have relationships with suppliers, competitors, partners, complementary organisations and a range of other stakeholders. Such networks act as business ecosystems in which companies' strategies are closely interdependent, competition goes hand in hand with cooperation, and no single firm can succeed without relying on resources and capabilities controlled by others. Thinking in terms of ecosystems is increasingly important for large corporations worldwide, and crucial to the strategic agenda of the partner companies.

This research theme aims to identify the factors which determine who creates and who captures value in complex ecosystems.

This collaborative project involves independent work developed by University of Cambridge researchers, as well as elements of action research carried out by both researchers and technical leads from the partners.

Progress in 2014

In the first exploratory phase of the study, we identified eight categories of factors that firms need to consider if they want to formulate and implement successful ecosystem strategies. The research has specified viable options for each decision a firm must take about its role in the ecosystem, and provides a deeper understanding of the possible interdependencies among different decisions and their implications for value capture.

In order to refine and enhance the Ecosystem Strategy Framework, we have been working closely with executives from partner organisations to study a number of real-world cases of business ecosystems. For each case, we have looked at: which core capabilities the ecosystem will develop around; which players will play a key role in controlling the ecosystem; and who is likely to capture most value.

Designing, deploying and enhancing services

Theme leader: Mohamed Zaki

The term 'big data' has gained widespread popularity in recent years. The exponential growth of available and potentially available data, compounded by the internet, social media, cloud computing and mobile devices, has generated new challenges and opportunities for many organisations. Important and Interesting new business opportunities enabled by data are becoming commonplace. Considerable research effort has been expended on understanding how firms create and capture value from analytics in single organisations, but little attention has been given to complex service networks. The focus of our research this year has been to develop a data diagnostic tool to improve the exploitation of operational data in optimising the design and deployment of future services in complex service networks.

Progress in 2014

We have developed a data diagnostic tool which can be used to assess the barriers to effective use of data within complex service networks. The tool provides four types of output: 1) a list of high/medium issues and leading practices that should be considered by the organisation; 2) overall gap assessment for issues and practices currently considered by the organisation, against issues and practices it should be considering; 3) a detailed analysis based on the highest to the lowest gap score for the leading practices that need to be considered; and 4) an indicator for when an organisation has expended too much effort on a particular issue or practice for insufficient reward. A case study with one of the Cambridge Service Alliance partners has been carried out to test the applicability of the tool.

2014

Research activities

In support of our core themes, Alliance researchers pursue a wide range of research interests and communicate their findings in many different ways. They also supervise PhD and MPhil projects, supporting the next generation of researchers and industry leaders.

A classification model for product-service offerings

Paolo Gaiardelli, Barbara Resta, Veronica Martinez, Oberto Pinto, Pavel Abloros

Changing customer needs and expectations (including environmental expectations), the erosion of product margins and the intense nature of competition in today's marketplace have forced manufacturers to consider adopting new business models to secure additional sources of revenue and profits.

However, many organisations approach servitization in an unstructured fashion. This can result in investing heavily in adding a service component to business without realising any returns. One of the reasons for such a failure is a lack of understanding of the different types of product-service offering.

A paper released by the Alliance in December helps address this gap by developing a more detailed understanding of product-service types. The authors developed a comprehensive model for classifying both traditional and 'green' product-service offerings and combining them in a single model. The model identifies the various options available to companies and shows how to compete between services. It also allows servitization positions to be identified so that a company can track its journey over time. Finally, it supports the introduction of innovative product-service systems as promising business models to address environmental and social challenges.

This is a strategic tool that organisations can use to map their current services offerings and plan future ones. The classification also shows how other organisations (including direct competitors) are competing with different services in different markets.

Read the paper at: bit.ly/1EalZtj



Industrial Systems, Manufacturing and Management student project
Véronique Pothas
Supervised by: Veronica Martinez

Animal health

This student project looked at one of the largest animal health companies: how it stopped being a product-focused company and started to offer service solutions to its customers and what lessons the company learnt along the way. The benefits to the company were strategic differentiation and growth of its core business.

The company made the shift to services by:

- Understanding its customers and their 'service journey'
- Developing a strong service leadership and culture to make the necessary organisational changes
- Creating an integrated service team
- Setting fair and flexible pricing structures.



Small details that make big differences: a radical approach to consumption experience as a firm's differentiating strategy

Ruth Bolton, Anders Gustafsson, Janet McColl-Kennedy,
Nancy Sirianni, David Tse

Alliance visitor Janet McColl-Kennedy led a research team investigating the concept of creating a differentiating strategy by focusing on small details in customer experience. In a working paper released by the Alliance, the authors argue that service organisations have focused too much on their core service performance and too little on designing the customer journey that enhances the entire customer experience. They suggest that when performance levels become too similar in an industry, the only competitive weapon is price and that in order to break this deadlock, firms should focus on the small details that make big differences to customers.

To understand fully the customer experience, firms need to take a holistic view, looking at all its touch points with customers. Importantly, firms need to appreciate that the customer experience starts before the first sale and includes customer search and pre-purchase evaluations, as well as the purchase itself. Similarly, consumption and post-consumption, including after-sales service, are also crucial elements of customer experience. Accordingly, we highlight the importance of co-creating value with customers through all the touch points. This means that firms need detailed and ongoing information about their customers so they can ensure that each one of them experiences a 'human touch' in an engaging way. It is critical that firms take a long-term approach to the customer experience journey and undertake research to understand what actions resonate well with their customers at the various touch points.

The key to enhancing the customer experience is keeping small, yet meaningful, details fresh. Frontline employees have a key role in continuously enhancing the customer experience. Rather than rote scripting, managers should give front-line employees the flexibility to modify their approaches to meet individual customer needs while ensuring overall consistency with the firm's service strategy. Specific examples are provided in the paper of small details that make big differences, taken from interviews with executives in successful service firms. Although fundamental human needs are the same across the globe, they need to be locally interpreted and contextualised to be meaningful to the individual customers. Only by being close to the customer and implementing small but meaningful details can organisations make big differences in practice.

Read the paper at: bit.ly/1H76Hqc

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By adopting an ecosystems approach we can look at all the companies that are involved in providing this service and that affect the outcome of this service.

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Electric vehicle rental services

Claire Weiller and Andy Neely

This report looks at a pioneering electric vehicle rental service for holidaymakers and residents in Okinawa, Japan. It is one of the first EV rental projects of its kind in the world and aims to help improve the environmental sustainability of tourism on the island.

The search for alternative fuels to reduce car CO₂ emissions is an important part of the climate change challenge. In Japan 18% of the total CO₂ emissions are caused by road transportation; in the EU it is around 12%. In China car usage is expected to rise from 43 cars per 1,000 in 2010 to 320 cars per 1,000 in 2035, thereby increasing the pressure to find alternative sources of fuel.

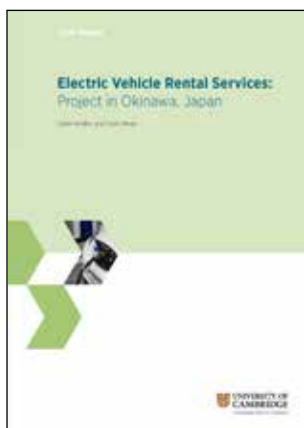
However, the take-up rates for this rental service in Okinawa were low, and the companies were making a loss. It seemed that the customers were worried that the recharging infrastructure was not sufficiently well-developed and that they might find themselves stranded.

Claire Weiller suggests that an ecosystems approach could help turn around this project and help others wanting to introduce similar schemes in the future. If all the companies involved shared information with one another and with the customer, the customer could be reassured that they would arrive at their destination.

‘By adopting an ecosystems approach we can look at all the companies that are involved in providing this service and that affect the outcome of this service. For instance, we found there was a lack of information sharing between them all. If the customer worries about whether they will be able to drive from the airport on the south of the island to the beaches on the north, and there is no-one in the value chain able to answer their questions they will not feel reassured about the rental service. An ecosystems approach can change that.’

Implementing the more detailed recommendations in this report will hopefully provide the project with the new strategic avenues it needs to succeed. This is important because it is very conceivable that this type of rental service with electric vehicles will be offered by more and more countries, including in the UK, where there are plans to develop the charging network to 70,000 stations by 2020.

Read the full report at: bit.ly/1ap8IXe





Rebalancing regional economies requires City leadership in developing ecosystems

The *Birmingham Post* covered the Alliance report, *Innovate to Collaborate*, in a blog by Beverley Nielsen.

‘... Whilst there is much talk about innovation ecosystems and their value to wealth creation there is not so much about the practical means to understand, harness and develop them. However, a recent report from University of Cambridge, *Innovate to Collaborate*, does just this. Co-authored by Ivanka Visnjic Kastalli and Andy Neely at the Cambridge Service Alliance, the report assesses how companies can use ecosystems to expand their capacity and capabilities.

As Ivanka Kastalli, Assistant Professor at the ESADE Business School in Barcelona said when I spoke to her last week, “City governance is there to incentivise players to connect and to create better conditions for businesses to do their jobs and grow. The job of Mayoral teams is to promote coordination between these players – for example, start-ups and large companies, by creating events and special programmes for screening and matching and connecting to aspiring entrepreneurs...”

Collaborate to innovate: how business ecosystems unleash business value is an Executive Briefing by Ivanka Visnjic Kastalli and Andy Neely. It urges businesses to understand the complex, interconnected ‘ecosystems’ in which they operate if they want to survive and compete. By studying the complex ecosystems of three cities, they found that while these ecosystems and the players within them were complex and diverse, in essence they boiled down to four role types – resource providers, problem solvers, constructors and architects.

Read the executive briefing at: bit.ly/1Od13VB



Key considerations in asset management design

Florian Urmetzer, Ajith Kumar Parlikad, Chris Pearson and Andy Neely

The design and implementation of asset management systems is an important part of the value creation process in the provision of services, particularly complex services. These rely on the cooperation of potentially large numbers of organisations within an often complex ecosystem. Creating an effective asset management system in this context presents a number of challenges. For example, how do you align the activities and objectives of all the organisations involved *and* their asset management systems?

The research team looked at current asset management practice and conducted interviews with organisations across a number of sectors. The aim was to assess how organisations approach asset management and, if possible, identify best practice. However, it seems that few organisations take a strategic approach to asset management but instead deal with it in an ad hoc, reactive way.

Key recommendations include:

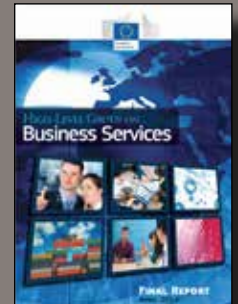
- To use horizon scanning and scenario planning to design your asset management system.
- To facilitate communication between ecosystem members, standardise the way you interact at a management, information and data level.
- To make sure that the value you are creating for the end-user is understood throughout the organisation.
- Key performance indicators and other performance measures should incentivise actions and behaviour across the ecosystem that contribute to value creation.

Read the executive briefing at: bit.ly/1CY2OAO



European policy agenda

Andy Neely was the rapporteur for the High Level Group on Business Services, which helps to define a European policy agenda for this sector. He wrote a report published in June by the European Commission with recommended actions along several lines – prioritising business services in the Europe 2020 strategy, completing the Single Market for services, seizing international opportunities and developing the skills and infrastructure needed by European companies. The recommendations are issued to the Commission, member states and industry.



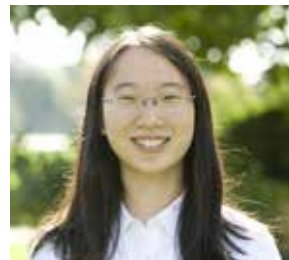
Highly cited

A paper by Alliance visitor Ornella Benedettini and colleagues Tim Baines, Howard Lightfoot and Rich Greenough, 'State-of-the-art in integrated vehicle health management', is one of the top five most cited articles published in *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* in the last five years.



IBM PhD Fellowship awarded to Jingchen Hou

Jingchen Hou has been awarded the IBM PhD Fellowship for 2014–2015 academic year. Jingchen is matched with an IBM mentor and will make use of the funding to continue her research on risks and social capital in outcome-based service contracts from the suppliers' perspective.



Teaching MPhil students

Researchers from the Alliance along with industry representatives from BAE Systems and Caterpillar taught a three-day module on service design and innovation to the Industrial Systems Manufacturing and Management (ISMM) MPhil course at the Institute for Manufacturing, University of Cambridge.





The Data-Driven Business Model

Philipp Max Hartmann, Mohamed Zaki, Niels Feldmann and Andy Neely

Key Alliance research around big data has been the development of the data-driven business model framework (DDBM). This framework allows us to analyse and classify different DDBMs and to identify and assess available and potential data sources that can be used in new DDBMs. It also provides comprehensive sets of potential activities, as well as revenue models.

For practitioners, the identified business model types can serve as both an inspiration and a blueprint for companies considering creating new data-driven business models. Although the focus of this paper was on business models in the start-up world, the key findings may also apply to established organisations. In future research, the DDBM can be used and tested by established organisations across different sectors.

A paper was released in March that discussed the DDBM and the implications for companies already leveraging big data for their businesses or planning to do so.

Read the paper at: bit.ly/1z2bkyo

Mohamed Zaki was a keynote speaker at the S2DS conference held in London in August. He spoke about 'How Data Works in Business' – how organisations capture value from big data, particularly how they use data to optimise service delivery and develop data-driven business models.

Mohamed also received a Speaker Award at the Service Research and Innovation Institute (SRII) 2014 Global Conference, held in Silicon Valley, California, for his participation on the service analytics panel.

Big data for SMEs

Andy Neely has been talking about the importance of big data for SMEs and why they need to take it seriously. In a blog article for *The Telegraph*, he argued that a failure to do so would leave them in the dust of newer, smarter start-ups.

In November he was interviewed by *Real Business* on a similar topic. You can also hear Andy explain why SMEs need to understand and analyse all forms of data in this rapidly changing and inter-connected world in a podcast at: bit.ly/1CkpN6B

Optimising asset management within complex service networks: the role of data

Mohamed Zaki and Andy Neely

In recent years there have been tremendous advances in hardware technology, such as the development of sensors, GPS-enabled devices and telemetry systems, all of which can be used to collect different types of data. This has resulted in an exponential growth of sensor and machine-to-machine data, which generates many challenges and opportunities for asset-heavy organisations.

Much of the existing research, however, focuses on how individual firms can create and capture value and tends to concentrate on the technical issues. This paper looks at how companies that operate in complex service environments can use data to improve their asset management. The authors have developed a diagnostic framework that looks beyond the purely technical to understand:

- the barriers, such as internal cultural issues, the difficulties of hiring good data scientists, disagreements with customers over data ownership or 'hard' issues, such as problems with data transmission via satellite systems;
- the value – by using data more effectively asset-heavy companies can develop condition-monitoring services which can lead to the growth of their sales and repairs business and strengthen long-term relationships between the OEM/dealer and their customers.

A paper by Mohamed Zaki and Andy Neely, released in May, describes a diagnostic framework designed by Alliance researchers to help asset-heavy firms improve their complex services. The authors recommended a set of best practices to help firms overcome the barriers they may face and how to use data analytics to improve the services they offer.

Read the paper at: bit.ly/1Pngv2W

Podcast: wearable technology

In this podcast interview, Andy Neely examines how the new wearable technologies can help firms make the shift to services. Whether it is the latest headset or a new smartwatch, the information being gathered by wearables is offering some really interesting opportunities for innovation in products and services. Andy discusses how the information gathered by wearables will have positive outcomes for firms and for society more generally.

Listen to the podcast at: bit.ly/1CkpN6B



2014

Impact on partners

Our industry partners are leading organisations in non-competing sectors who are able to benefit from one another's experiences, as well as from Alliance research. Their involvement is essential to our work, in ensuring its relevance and in helping us turn theory into practical tools and techniques.

Podcast: Surviving in the higher education market place with better business models

Massive Open Online Courses (MOOCs) are changing the business models of higher education in the UK and elsewhere in the world.

Andy Neely discusses how both public and private sector providers need to work more closely together to share standardised platforms rather than competing to provide different online courses.

Listen to the podcast at:
<http://bit.ly/1CkpN6B>

An education revolution: how Pearson is changing the way we learn

Big data is underpinning a new way of working, known as 'competency-based education', currently being developed in the US education system. A group of universities and colleges is already making huge steps in transforming the way they teach their students. They are using data to personalise the delivery of their courses so that each student progresses at the pace that suits them, whenever and wherever they like. In the old model, thousands of students arrive on campus at the start of the academic year and, regardless of their individual levels of attainment, work their way through their course until the moment of graduation. In the new data-driven model, universities will be able to monitor and measure a student's performance, see how long it takes them to complete particular assignments and with what degree of success. Their curriculum is then tailored to take account of their preferences, their achievements and any difficulties they may have. For the students, this means a much more flexible way of working which really suits their needs and the opportunity to graduate more quickly. For the institutions, it means delivering better quality education which will result in better student outcomes, and being able to deploy their staff more efficiently and also more in line with teachers' skills and interests. Both students and teachers will benefit from lower-cost, higher quality education.



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Through joining the Cambridge Service Alliance, we have been able to quickly raise awareness and focus in our organisation on the shift to solutions that our organisation is making, and we have been able to take advantage of some fantastic professional development opportunities for a large number of people offered by the faculty at the University of Cambridge.

Annabel Cellini, Pearson

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Customer service at CAT-Finning

Alliance researchers, Dr Florian Urmetzer and Mohamed Zaki, and Alliance visitor, Professor Janet McColl-Kennedy, have recently been working with CAT-Finning to study the customer experience. A holistic approach was used, involving the customers' cognitive, affective, emotional, social and sensory responses to the firm, including all customer touch points. The aim was to undertake a full range of interactions with the firm, viewing the customer experience as a process rather than an outcome.

This involved investigating both the customer and employee perspectives. The initial research involved observations at Cannock and Winsford, as well as interviews with 20 employees. The touch points studied included the workshop service, spare parts, scheduling field service visits, field service engineers, as well as sales (new and used). In the second phase, the researchers were invited by Finning to join a customer event to interview customers directly. Twenty in-depth customer interviews were conducted with customers from construction, plant hire, quarry and landfill. The next steps are to look at customer feedback which has been collected over time by the organisation, and to analyse the material gathered. The study will be replicated with Pearson and potentially other Cambridge Service Alliance partners.

Caterpillar dealer conferences

Andy Neely spoke at two recent Caterpillar Dealer conferences, one in Europe and one in Asia. As part of their regular communications with dealers Caterpillar have been organising service conferences. Andy was invited to both conferences to talk about the changing nature of services and what innovative business models might mean for Caterpillar in the future.

Research visit to Caterpillar Headquarters in Peoria, Illinois

Tom Bucklar from Technology and Solutions and Craig Olmstead from Global Services hosted a research visit at Caterpillar Headquarters. The Cambridge Service Alliance research team, represented by Dr Florian Urmetzer, Dr Stefano Miraglia and Dr Veronica Martinez, explored a diversity of service issues, including the customer service experience, the service ecosystems and the shift to services in Caterpillar.

Product safety in a world of services: through-life accountability at BAE Systems

Recent years have seen changes in the way that companies in a number of industries have responded to an evolving market environment, where the demand for intelligent service contracts and the requirements of corporate social responsibility continue to rise. Central to these changes is a modified approach to the theme of increasing service provision. Reductions in the delivery of new products and the extensions to life of existing products have forced companies to reconsider their existing product portfolios and how they can generate new business from the maintenance, through-life upgrade and support of the products they previously supplied. BAE Systems, like others in the defence arena, has done this and, in doing so, has considered what changes it has had to make, and continues to make, to the way in which it now looks at and ensures the safety and performance integrity of its products in all aspects of its operations.

A joint paper by BAE Systems and the Cambridge Service Alliance was produced, which draws together the journey that BAE Systems has been travelling down as it moves to delivery of a more service-oriented portfolio of products, and the research that Cambridge University has been pursuing to understand better how accountabilities are managed for service through-life. The paper, by Peter Fielder, Adrian Roper, Bill Walby, Joe Fuse, Andrew Neely and Chris Pearson, had been made available to the delegates attending the 22nd Safety-Critical Systems Symposium, which took place at the Grand Hotel, Brighton, UK, on 4-6 February 2014.

Read the report at: bit.ly/1DnrdRZ

Product Safety Forum at BAE Systems

Andy Neely and Adrian Roper (from BAE Systems) presented a joint paper at the recent BAE Systems Product Safety Forum. Drawing on work completed by Joe Fuse, a Cambridge Masters' student supervised by Andy Neely, the paper introduced the concept of through-life accountability, arguing that product safety has become a much more complex issue given the world of complex service systems. Product safety is no longer just a feature of the individual product, but is now affected by partnering and sub-contracting, long-term contracts and the support provided to products through life.





2014

Engagement

In order to maximise the impact of our research, we seek to engage not only with our industrial partners, but also with the wider business and academic communities and with policymakers. These are just some of the things we have been doing to engage these audiences in 2014.

Community of interest

The Community of Interest is designed to provide an open forum where Alliance partner firms can share experiences and ideas, learning directly from one another. We held four two-day meetings in 2014 at which we explored our core research themes and participants shared their experiences, best practices and challenges.

New Alliance webinar series

This new webinar series provides an effective avenue for knowledge exchange around complex services. Only employees of Alliance partners are able to participate but the webinars are subsequently made freely available on the Alliance website.

In the first webinar, Andy Neely introduced the Alliance, its origins and current activities. Subsequent webinars have included: Professor Janet McColl-Kennedy on customer experience and how looking at small details in customer service can make a big difference to customers; Mohamed Zaki on data-driven business models; Markus Eurich on the business-to-consumer lock-in effect; and Anna Viljakainen on industry transformation towards service logic.

Executive briefings and monthly working papers

These briefings aim to bring the latest thinking on complex service systems to practitioners. They describe how recent Alliance research addresses current business needs, presenting key findings and recommendations for best practice.

Social media

The Alliance is keen to develop its interactions with partners and with a wider industrial and academic audience. One of the methods of doing this is through social media. The Alliance now regularly releases blog posts and Twitter announcements and has an active LinkedIn Group.

Podcasts

Another engagement route is the regular release of podcast recordings. These have addressed various aspects of our research, as well as topical areas of complex services that have been in the media. During Cambridge Service Week we captured speakers' viewpoints via a short podcast recording, as well as the thoughts of Alliance researchers and Director. They are all available on the Alliance website.

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Cambridge Service Week

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I think it has been brilliant. I have been fascinated by everything I've heard today from the different people that have spoken. Everyone's been very energised about this type of discussion. It's brought some great industries together. I think it's been a real success.

Ed Bainbridge, former VP Digital Experiences at Disney Interactive EMEA and now Director of Digitally Connected Creative Experiences at Screen Twist.

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In October, the Alliance held its annual Cambridge Service Week, a series of events which brings together leading academics, industrialists and policymakers to address the challenges facing service education, research, practice and policy.

Industry day: the future of services in a digital age

Many organisations are making the shift to services, developing and delivering service offerings that complement their traditional product offerings. Increasingly these service offerings are data and technology enabled. From remote sensing to big data analytics, Google Glass to the Internet of Things, new technologies will change the way services are designed and delivered in the future. The aim of this conference was to explore what the future holds for services in a digital age, providing new insights into new opportunities for businesses.

Speakers from GE, SAP, Screenwist and the University of Cambridge offered their views and perspectives on the role that data, technology and the Internet of Things will play in the years to come. During the conference, all the speakers gave podcast interviews, which remain available for download from the Alliance website.

Andy Neely's five 'megatrends'

During Service Week, Andy talked about the five megatrends that businesses need to consider:

- 1 The shift to services and solutions – selling outcomes rather than products.
- 2 Web 4.0 and the Internet of Things – increasing numbers of devices connected to the internet, generating data and insight.
- 3 The emergence of the sharing economy – increasing use of social media and crowdsourcing to share experience and knowledge.
- 4 Mobile and wearable technologies – new technologies that are changing the way services are designed, delivered and deployed.
- 5 Business model innovation – all of these themes are combining to create new business models for services.



Academic conference: the future of service research

The academic conference during Cambridge Service Week consisted of a small group of around 30 invited participants, which resulted in a good balance between presentation and discussion. The agenda for the two days was structured around five themes: (i) perspectives on service industries; (ii) service business models; (iii) service ecosystems; (iv) the transition to services; and (v) services, data and analytics. Following the event, the presentations were made available via the Alliance website.



Executive education

The Service Design Programme

In October we launched The Service Design Programme: **Making the Shift to Services**. This two-day executive programme helps organisations understand how to make the successful transition to services and how to design or redesign services successfully. Participants came from South Africa, the USA and Denmark, as well as the UK. At the end of this intensive programme, participants were well equipped with practical tools and techniques to start the shift to services in their organisations.

The programme is derived from the latest research from the Cambridge Service Alliance. The tutors have a highly engaging and interactive teaching style and have delivered workshops to a host of clients in the public and private, manufacturing and service sectors.

In-company courses

We also tailor this course to a company's particular needs and run a bespoke version for them in-house. To find out more, contact: Angela Walters
Email: ahw20@cam.ac.uk

“ Through a combination of team-based workshops that helped to develop specific techniques, and presentations providing insight into the subject of servitization, I'm now much clearer on how we can take practical steps to ensure we achieve our aims in this area. It also provided the opportunity to meet a group of individuals facing the same challenges, based all over the world and from varied industries, which made the sessions stimulating and enjoyable. The IfM team were clearly experts in their field and did a great job of taking us on the servitization 'journey'.

Rob Eavens, Domino Printing

Other delegates said:

“Great overall process of understanding how to develop new business opportunities and understand the customer perspective.”

“The collaborative work created opportunities to learn different perspectives.”



Programme leaders

Clockwise from top left: Andy Neely, Florian Urmetzer, Veronica Martinez and Mohamed Zaki.

Communicating Alliance research

JANUARY

Blog and podcast: *How UK Manufacturing Firms Can Create a Business Model Fit for Exports in 2014*, Andy Neely

Working paper: *Designing Competitive Service Models*, Veronica Martinez and Trevor Turner

Case study report: *Electric vehicle rental services: project in Okinawa, Japan*, Claire Weiller and Andy Neely

Article: 'Rebalancing regional economies requires city leadership in developing eco-systems', in *Birmingham Post*

Blog: *Innovating Your Service Business Model: The Capabilities to Succeed*, Andy Neely

FEBRUARY

Working paper: *Product Safety in a World of Services: Through-Life Accountability*, Peter Fielder, Adrian Roper, Bill Walby, Joe Fuse, Andy Neely and Chris Pearson

Blog: *First electric vehicle project in the world for holidaymakers in Okinawa; Japan struggles to make a profit*

Blog and podcast: *How UK manufacturing firms can create a business model fit for exports in 2014*



MAY

Working paper: *Optimising Asset Management within Complex Service Networks: The Role of Data*, Mohamed Zaki and Andy Neely

Conference: Researchers from the Cambridge Service Alliance presented three papers at the 25th International Production Operations Management Society (POMS) Conference in Atlanta

Talk: Stefano Miraglia gave a talk on *Value Creation and Value Capture in Business Ecosystems*, to IBM's Disruptive Business Platforms Community, London

Blog and podcast: Why SMEs need to put their feet on the starting line to ensure they capture value from data ... ready, steady, go!

Blog: Is servitization for everyone?

JUNE

Working paper: *Small Details that Make Big Differences: a radical approach to consumption experience as a firm's differentiating strategy*, Ruth Bolton, Anders Gustafsson, Janet McColl-Kennedy, Nancy Sirianni, David Tse

Seminar: on manufacturing servitization delivered by Veronica Martinez in Taiwan

Webinar: Andy Neely Introducing the Cambridge Service Alliance

Article: 'Don't smash Google Glass yet - wearables are the future', Andy Neely in *The Telegraph*

Conferences: Andy Neely co-chaired PMA (Performance Management Association) Conference 2014, Aarhus University. Alliance papers were presented at: 2014 European Operations Management Association (EurOMA) conference in Palermo, Italy; 2014 European Academy of Management (EURAM), Valencia, Spain; 2014 Frontiers in Service Conference, Miami

SEPTEMBER

Working paper: *A Blueprint for the Next Generation Organisation: Reconciling agility, efficiency, and purpose*, Jonathan Trevor and Peter Williamson

Webinar: *Big Data for Big Business*, Mohamed Zaki

Workshop: BAM 2014 - Andy Neely and Mohamed Zaki took part in a NEMODE workshop in Belfast, NI, on 'Technologies and Business Models in data-intensive economies'

Cambridge Service Week with accompanying podcasts

Executive education: Cambridge Service Design Programme

OCTOBER

Working paper: *Impact of firm characteristics on survival: an empirical analysis in the context of service strategies*, Ornella Benedettini, Morgan Swink and Andy Neely

Webinars: *Industry Transformation Towards Service Logic: A Business Model Approach*, Anna Viljakainen. Andy Neely also presented a webinar to the International Society for Service Innovation Professionals on *Innovating Your Business Model for Service*.

Conferences: Mohamed Zaki was one of the panelists at the Urbanise conference. Florian Urmetzter presented on *Design Considerations for Engineering Asset Management Systems* at the World Congress on Engineering Asset Management, Pretoria, South Africa.

Blog: *GE, The Industrial Internet and the Battle to Come*, Andy Neely

2014 highlights

MARCH

Working papers: *Big Data for Big Business? A Taxonomy of Data-driven Business Models used by Start-up Firms*, Philipp Max Hartmann, Mohamed Zaki, Niels Feldmann and Andy Neely, and *Case Studies: Analysing the Effects of Social Capital on Risks Taken by Suppliers in Outcome-Based Contracts*, Jingchen Hou and Andy Neely

Podcasts: *How Organisations will capture new markets in 2014* and *Surviving in the Higher Education Market Place with Better Business Models*, both by Andy Neely

Blog: in *Business Weekly* on 'Facebook WhatsApp Deal', Andy Neely

Blog: *The Big Data revolution: what happened to data quality?*

APRIL

2013 Alliance Annual Report

Policy Report: *EU for Business*, Final Report for High Level Group on Business Services, Andy Neely

Article: *The Telegraph* 'Even SME's Need Big Data', by Andy Neely

Conference: Mohamed Zaki was presented with a Speaker Award for his participation on the service analytics panel at the Service Research and Innovation Institute (SRII) 2014 Global Conference, held in Silicon Valley, California

Blog: *Big Data for big business*

JULY

Working paper: *Systems Architectures and Innovation: the Modularity-Integrality Framework*, Stefano Miraglia

Webinar: *Customer Experience: Small Details can Make Big Differences*, Janet McColl Kennedy

Workshop: *Deployment of Service Innovation*, by Christopher Voss from London Business School

Blog and podcast: *How wearable technology can help towards servitization*, Andy Neely

AUGUST

Working paper: *The Business-to-Consumer Lock in Effect*, Markus Eurich and Michael Burtscher

Conference: Mohamed Zaki presented a keynote presentation at the S2DS conference held in London on 'How Data Works in Business'



NOVEMBER

Executive briefing: *Key Considerations in Asset Management Design*, Florian Urmetzer, Ajith Kumar Parlikad, Chris Pearson and Andy Neely

Webinar: *The Business-to-Consumer Lock-in Effect*, Marcus Eurich

Interview: Andy Neely interviewed by *Real Business*, on the importance of big data for small businesses

Podcast interview: with Andy Neely and Veit Dinges, discussing a survey suggesting that digital technologies are still key to improving the service efficiency of manufacturing firms

Talk: Andy Neely gave a speech on *Service Business Model Innovation* at the Royal Society during a seminar organised jointly by BAE Systems and the Economic and Social Research Council

DECEMBER

Working paper: *Competing and Co-existing Business Models for Electric Vehicles: Lessons from International Case Studies*, Claire Weiller, Amy Shang, Andy Neely and Yongjiang Shi

Working paper: *A Classification Model for Product-Service Offerings*, Paolo Gaiardelli, Barbara Resta, Veronica Martinez, Oberto Pinto, Pavel Ablores



2014 people



Left to right:
Professor Andy Neely,
Professor Michael
Barrett, Professor
Duncan McFarlane,
Dr Chander Velu

Left to right:
Dr Ornella Benedettini,
Jacqueline Brown,
Katharina Greve,
Dr Markus Eurich



Left to right:
Jingchen Hou, Ari Ji,
Chara Makri, Dr Veronica
Martinez

Left to right:
Professor Janet McColl-
Kennedy, Dr Stefano
Miraglia, Dr Ajith
Parlikad, Taji Turunen



Left to right:
Dr Florian Urmetzer,
Dr Anna Viljakainen, Dr
Ivanka Visnjic Kastalli,
Angela Walters

Left to right:
Dr Claire Weiller, Dr
Mohamed Zaki, Zimeng
Zhang



2014 papers

'Trends Towards Servitization', Neely, A.D. in *Driving Service Productivity: Value-Creation Through innovation*, Bessant, J., Lehmann, C. and Möslin, K. (eds), Springer, 2014.

'The Servitization of Manufacturing: An International Perspective' Neely, A.D. in *Changes in Industrial Landscape and the Future of Service Economy*, Song, Y. (ed.), Korean Development Institute, 2014.

'A Classification Model for Product-Service Offerings', Paolo Gaiardelli, Barbara Resta, Veronica Martinez, Oberto Pinto and Pavel Ablores, *Journal of Cleaner Production*, 2014, 66: 507-519.

'Why Do Servitized Firms Fail?', Benedittini, O.; Swink, M. and Neely, A.D. (2014). Accepted for publication in the *International Journal of Operations and Production Management*.

'Servitization Paradox Uncovered: Exploring The Impact Of Service Business Models On Performance', Visnjic, I., Wiengarten, F. and Neely, A.D. (2014). Accepted for publication in the *Journal of Product Innovation*.

'The Futures of Magazine Publishing: Servitization and co-creation of customer value', Anna Viljakainena and Marja Toivonena, *Futures*, Vol. 64, Dec. 2014, pp 19-28.

'Using electric vehicles for energy services: Industry perspectives', Claire Weiller and Andy Neely, *Energy*, Vol. 77, 1 December 2014, pp. 194-200.

Key Considerations in Asset Management Design, Florian Urmetzer, Ajith Kumar Parlikad, Chris Pearson and Andy Neely. Executive Briefing, November 2014.

Impact of Firm Characteristics on Survival: an empirical analysis in the context of service strategies, Ornella Benedettini, Morgan Swink and Andy Neely. Working paper, October 2014.

A Blueprint for the Next Generation Organisation: Reconciling agility, efficiency, and purpose, Jonathan Trevor and Peter Williamson. Working paper, September 2014.

The Business-to-Consumer Lock in Effect, Markus Eurich and Michael Burtscher. Working Paper, August 2014.

Systems Architectures and Innovation: the Modularity-Integrality Framework, Stefano Miraglia. Working paper, July 2014.

Small Details that Make Big Differences: a radical approach to consumption experience as a firm's differentiating strategy, Ruth Bolton, Anders Gustafsson, Janet McColl-Kennedy, Nancy Sirianni, David Tse. Working paper, June 2014.

Knowledge-based Evolution and Firm-specific Resources, Stefano Miraglia, Andrew Davies and Andrea Prencipe, European Academy of Management (EURAM) Conference, in Valencia, Spain, June 2014.

Service Offering and Financial Performance: The Role of Company Characteristics, Ornella Benedettini, Morgan Swink and Andy Neely, 25th Annual POMS conference, Atlanta, 2014.

Accountability Through Life: Definitions, Concepts and Constructs, Andy Neely, 25th Annual POMS conference, Atlanta, 2014.

The Performance Impact of Service Business Models and Innovation Strategy, Ivanka Visnjic, F. Wiengarten and Andy Neely, 25th Annual POMS conference, Atlanta, 2014.

How data play a role in optimising and improving Services in CSNs, Mohamed Zaki and Andy Neely, Frontiers in Service Conference, 2014.

Optimising Asset Management within Complex Service Networks: The Role of Data, Mohamed Zaki and Andy Neely, EurOMA Conference, 2014.

Case Studies: Analysing the Effects of Social Capital on Risks Taken by Suppliers in Outcome-Based Contracts, Jingchen Hou and Andy Neely, EurOMA Conference 2014.

Optimising Asset Management within Complex Service Networks: The Role of Data Mohamed Zaki and Andy Neely, Working paper, May 2014.

Case Studies: Analysing the Effects of Social Capital on Risks Taken by Suppliers in Outcome-Based Contracts, Jingchen Hou and Andy Neely.

Big Data for Big Business? A Taxonomy of Data-driven Business Models used by Start-up Firms Philipp Max Hartmann, Mohamed Zaki, Niels Feldmann and Andy Neely. Working paper, March 2014.

Product Safety in a World of Services: Through-Life Accountability Peter Fielder, Adrian Roper, Bill Walby, Joe Fuse, Andy Neely and Chris Pearson. Working paper, February 2014.

Designing Competitive Service Delivery Models Veronica Martinez and Trevor Turner, January 2014.

Electric Vehicle Rental Services: Project in Okinawa, Japan, Claire Weiller and Andy Neely. Case study report, January 2014.



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