

Digitally Enhanced Advanced Services (DEAS) NetworkPlus

Final Report



1. Introduction

The EPSRC-funded DEAS NetworkPlus aimed to bring together a vibrant community that would work towards positioning the UK as the internationally leading research and practice hub for Digitally Enhanced Advanced Services (DEAS).

Rather than focus on the product or service that is delivered, DEAS focus on how the product or service is used to create valuable outcomes for the customer. This represents a major change in how firms earn money and is being enabled by transformative digital technologies.

Before the network had been developed, the opportunities for DEAS were considered pervasive across industrial sectors, yet maturity varied, and the successful cases were not well-documented. It was thought that there were many shared challenges that could be dealt with most effectively through a coordinated research programme. The programme would commission a range of activities (e.g.: secondments, exploratory and feasibility studies).

The Network ran from 1st October 2018 to 31st July 2022. This report documents the aims and objectives of the NetworkPlus, the activities that took place, and a reflection on the success of the EPSRC grant.



2. Aims and Objectives

The DEAS Network aimed to:

“create a cohesive community of researchers and practitioners, working collectively across disciplines (e.g. computer science, engineering and business) and industry sectors, to accelerate the innovation of DEAS and improve UK productivity”.

The objectives were to:

- create an engaged, integrated, transdisciplinary and balanced (e.g. ECR/ Established) community of researchers with a shared interest in DEAS (OBJ1),
- engage a broad cross-section of industrial collaborators (OBJ2),
- lead the co-creation of a portfolio of exploratory projects to engage these communities and inform a strategic research agenda (OBJ3),
- create a taxonomy and formal repository of successful DEAS use-cases (OBJ4).

The deliverables specified in the proposal were to develop for the UK:

- a new research community focused on DEAS, internationally leading, and aligned and engaged with industry (DEL1),
- a portfolio of innovative research projects that will accelerate the impact of DEAS in collaborating companies (DEL2),
- a road-map articulating a thematic research agenda and priorities for international leadership in this topic (DEL3),

- an equivalent road-map illustrating the opportunity space for maximising impact on different sectors based on their level of maturity (e.g., manufacturing, transport and financial services) (DEL4),
- a taxonomy and formal repository of successful DEAS use-cases (DEL5).

Success was to be measured through: (i) the scale and diversity of the community that was developed, (ii) the level of activity and participation across this community on publications, events, workshops, and research agenda (iii) the adoption and direct impact of innovations on industry.

3. An Introduction to Digitally Enhanced Advanced Services (DEAS)

Digitally Enhanced Advanced Services (DEAS) are traditionally viewed as high-value business models that focus on the delivery of ‘outcomes’ rather than products. These usually include (i) revenue payments structured around product or service usage and customer outcome; (ii) performance incentives (e.g. penalties for in-use product or service failure); and (iii) long-term contractual agreements between organisations (e.g. spanning five, ten or 15 years) and cost-down commitments. Well-known examples of DEAS in the manufacturing sector include Xerox’s Print Management offeringⁱ, which bundles printing-equipment and maintenance services whereby customers are charged for the use of the product-service- bundle (i.e. per print); or MAN’s Pay-per-Kilometre offeringⁱⁱ, which bundles truck, maintenance and driver-management services where customers are charged for the extent of the use of the bundle (i.e. distance driven).



i Baines, T and Lightfoot, H. 2013, Made to Serve: How Manufacturers Can Compete Through Servitization and Product – Service Systems, Wiley, London, UK

ii Bustinza, O; Bigdeli, A; Baines, T and Elliot, C. 2015, Servitization and Competitive Advantage: The Importance of Organizational Structure and Value Chain Position, Research-Technology Management, Volume 58, 2015 - Issue 5

4. Network Activities

The original proposal considered three sectors: manufacturing, transportation and financial services. In a direct response to the COVID-19 pandemic, the NetworkPlus decided to also fund exploration studies that looked at how DEAS might apply to the charity/voluntary sector. The original proposal specified that a portion of the award would be set aside for secondments (facilitating academics seconded to industry, or practitioners to work on research projects). However, during the first year it became apparent that there was little appetite for this approach. Therefore, in agreement with the funder, the money that had been set aside for secondments was reallocated to fund additional projects.

4.1. Development of research agendas

The DEAS NetworkPlus Team established that each of the research agendas should satisfy the requirements of being:

- broad to cover a wide range of related areas including organisational change, digital technology, techniques, and processes;
- inclusive to look at the challenges from a range of disciplines;
- balanced in order to be guided by theory to ensure a sensible range of topics;
- exploratory to be aligned with the overall objectives of DEAS NetworkPlus; and,
- relevant to lead to impact on business and make contribution to knowledge.

In the first two sectors (manufacturing and transportation/mobility), the associated research agendas were developed using a three-step process: step 1) groundwork to develop a relevant theoretical framework; step 2) hold a physical workshop bringing together academics and industry to help understand the challenges and opportunities faced by organisations who are trying to adopt DEAS; and, step 3) use a Delphi methodology to validate and refine what was captured in step 2. Due to the restrictions related to COVID-19, namely social distancing, working from home and travel restrictions, the DEAS team needed to adapt this successful methodology for financial services. To do this, the strengths of the previous method were identified and ways of replicating them in a virtual environment considered. The theoretical frameworks that had been developed and adopted for the previous two research agendas (step 1) were deemed necessary to allow the agenda to continue to have the five characteristics outlined above. The Technology–Organization–Environment Framework (Figure 1) was also found to be an extremely useful, and an efficient way, of framing the workshops. Step 3 of the original method was also considered a necessary strength. Instead of a physical workshop, a set of virtual workshops took place each in the format of a roundtable.

For the charity/voluntary sector, pilot projects were funded and the research agenda developed following a review of the outputs of the projects. A different approach was needed

for two main reasons. Firstly, there is a lack of servitization research specific to the sector; work was needed to understand what servitization might mean in this sector. Secondly, the funded projects allowed a quicker response to the impact of COVID.

A copy of all our research agendas can be found on our project websiteⁱⁱⁱ.

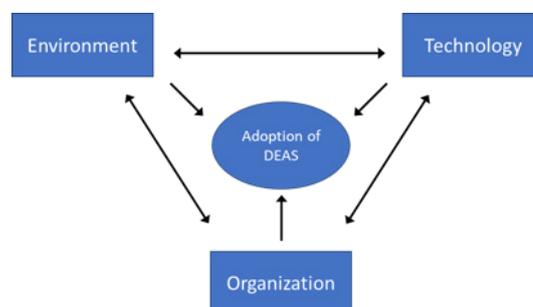


Figure 1: The Technology-Organization-Environment Framework

iii <https://www.deas.ac.uk/outputs>

4.2. The projects

The NetworkPlus has funded a portfolio of innovative research projects (see Tables 1 to 5). The portfolio includes 24 projects with awards varying from £5,000 Full Economic Cost (FEC) to £120,000 FEC. The projects cover 5 sectors and have involved 20 universities, 9 disciplines, at least 45 investigators and at least 14 industry/government partners.

For the manufacturing, transportation/mobility and financial services sectors, funding calls were released that looked for projects that would address at least one of the research questions in the associated research agenda(s). For financial services, an additional funding call was released that referenced two scoped projects that addressed the challenges of two of the Network's industry partners. The charity and voluntary sector funding call focused on research that addressed challenges

related to Covid-19 with the potential for rapid impact in the sector. Some suggested areas of relevance included, but were not limited to: mental health, domestic violence, social care, and wellbeing. Projects had to clearly reflect the DEAS principles of using data to improve charitable outcomes for their beneficiaries and be capable of demonstrating impact in the short to medium term.



<i>Project Title</i>	<i>Principle Investigators</i>	<i>Co-investigators</i>
Digitally enhanced advanced services for domestic appliances	Dr Maria Holgado (University of Sussex)	Dr Peter Ball (University of York), Prof Ashutosh Tiwari (University of Sheffield)
A digital twin Platform of the customer Journey for future BAXI advanced Services	Dr Sara Mountney (Sheffield Hallam)	Prof Vicky Story, Dr Tracy Ross, Dr Andrew May, Dr Melanie King (Loughborough University), Prof Shengfeng Qin (Northumbria University), Prof Jamie Burton (Manchester Business School), Dr Kawaljeet Kapoor (Aston Business School)
The enhancement of customers understanding and education in the value of DEAS through serious games/ gamification	Dr Soheeb Khan (Glasgow Caledonian University)	Prof David Harrison (Glasgow Caledonian University)
Development of a digital twin proof of concept for DEAS Value delivery system	Dr Victor Guang Shi (AMRC, University of Sheffield)	Dr Ruby Hughes (AMRC, University of Sheffield), Dr Miying Yang (University of Exeter), Dr Andreas Schroeder, Dr Omidvar Tehrani and Dr Ahmad Beltagui (Aston Business School)

Table 1: Projects funded for the manufacturing sector

<i>Project Title</i>	<i>Principle Investigators</i>	<i>Co-investigators</i>
Digitally Enhanced Advanced Rail Signalling Services (DEARRS)	Dr Phil Davies (Henley Business School)	Prof Glenn Parry (University of Surrey), Prof Stewart Birrell (University of Coventry), Prof Joshua Ignatius (University of Exeter), Dr Hoang Nga Nguyen (University of Coventry)
MaaS Prototype for TfGM	Dr Ulysses Sengupta (Manchester School of Architecture)	Dr Sigita Zigure (Manchester School of Architecture), Dr Delia Dimitriu (Manchester Metropolitan University)
ROSCO, Exploring future advanced services developments and collaborations for a ROSCO using a systems thinking approach	Dr Melanie King (Loughborough University)	Dr Sara Mountney (Sheffield Hallam)
MaaS Prototype for TfGM: Last Mile Freight integration (RKE-21-0352)	Dr Ulysses Sengupta, (Manchester School of Architecture)	Solon Solomou, Mahmud Tantoush (Manchester School of Architecture)

Table 2: Projects funded for the transportation/mobility sector

<i>Project Title</i>	<i>Principle Investigators</i>	<i>Co-investigators</i>
'DEAS Principles in the Charity Sector - A Case Study of the Refugee Council's Digital Social Care Provision for Children in Vulnerable Contexts'	Prof Giorgia Dona (University of East London)	Roxanne Nanton (Refugee Council)
Innovative Technologies and Gender Equality: Supporting Unaccompanied Asylum-seeking and Refugee Girls to Achieve Digital Proficiency	Prof Giorgia Dona (University of East London)	Roxanne Nanton (Refugee Council)
Innovative Digital Technologies and Emotions: Supporting staff working with young asylum seekers in the UK	Prof Giorgia Dona (University of East London)	Roxanne Nanton (Refugee Council)
Using a bricolage strategy to enhance the human touch in digitally enhanced provision for refugee service users: a response to COVID-19	Prof Judith Zolkiewski (University of Manchester Business School)	Dr Ilma Nur Chowdury, Dr Marzena Nieroda and Amir Raki (University of Manchester Business School)
Helping ensure survival: Digitally Enhanced Advanced Services in Community Business	Dr Peter Bradley (University of the West of England)	Mandy Gardner (University of West England), Prof Glenn Parry (University of Surrey)
Improve accessibility and flexibility of counselling through digitally enhanced counselling service delivery models during and beyond COVID-19	Dr Zsofia Toth (University of Nottingham)	

Table 3: Projects funded for the charity/voluntary sector

<i>Project Title</i>	<i>Principle Investigators</i>	<i>Co-investigators</i>
Supporting innovative work behaviours to drive DEAS innovation in fintech	Prof Colin Lindsey (University of Strathclyde)	Dr Nicola Murray, Professor Matthew Revie, Professor Patricia Findlay (University of Strathclyde)
DEAS- Interactive Digitally Enhanced Advanced Service Simulations	Dr David Williams (University of Portsmouth)	
Taxation policy and distributed ledger technologies (DLTs): can leveraging DLTs and smart contracts increase efficiency for the consumer?	Dr Chris Carr (University of the West of England)	Dr Dalia ElEdel (University of the West of England)
Development of a Serious Game prototype to aid education of smart contract policies	Dr Soheeb Khan (Glasgow Caledonian University)	Prof David K Harrison (Glasgow Caledonian University)
Evaluation of Serious Game prototype to aid education of smart contract policies	Dr Soheeb Khan (Glasgow Caledonian University)	Prof David K Harrison, Professor Vassilis Charissis (Glasgow Caledonian University)
Application of Central Banking Digital Currency (CBDC) and tax implications	Dr Dalia ElEdel (University of the West of England)	
The role of innovative financing for advanced service provision	Dr Chris Raddats (University of Liverpool)	
From Ownership to Use: A Systematic Literature Review and Future Research Agenda for Financing Servitization	Dr Phil Davies (Henley Business School)	Prof. Yipeng Liu, Dr Maggie Cooper (Henley Business School)

Table 4: Projects funded for the financial services sector

<i>Project Title</i>	<i>Principle Investigators</i>	<i>Co-investigators</i>
Sandpit: Contracts for Advanced Services - Developing the Research Agenda	Dr Kyle Alves (University of the West of England)	
Advanced Service Contracts - A play-book for contract development	Dr Kyle Alves (University of the West of England)	

Table 5: Cross sector funded projects

4.3. Other activities

The DEAS NetworkPlus ran the following activities in addition to the workshops that focused on the development of the research agendas.

DEAS seminar series:

A series of virtual seminars where the DEAS funded projects could present an overview of their work.

Industry roundtables:

Designed to help understand industry needs and barriers with respect to the adoption of DEAS in their sector.

Co-sponsored industry events:

During June 2020, London Market Forums (LMF)^{iv}, hosted the New World Series which comprised three weekly roundtables with senior insurance industry representatives, which DEAS co-sponsored and co-chaired. The theme of the special series was the changing workplace, the impact of technology, the effect on people, and how this changing environment is affecting decision making and its impact on the UK's digital economy. Each session lasted 90 minutes and had between 18 and 30 senior insurance participants; in total more than 80 individuals attended the three events.

LMF is a cross-sector platform for collaboration and engagement between insurance professionals. LMF works closely with personnel from Lloyd's of London, the International Underwriting Association and other bodies throughout the

London Insurance Market. It is the only central industry group of its type in the sector, where insurance professionals meet, collaborate, learn, network, and understand some of the key issues affecting the insurance sector today, from industry modernisation to the changing regulatory landscape. LMF had gained much experience of running virtual roundtables during the lockdown.

Conference special sessions:

DEAS special sessions were held at: Competitive Advantage in the Digital Economy (CADE) 2021 and 2022; Spring Servitization Conference (SCC) 2020, 2021 and 2022.

ECR training event:

A virtual session, aimed at ECRs but open to all, was run on developing a successful elevator pitch. The session was also included as part of Connected Everything Festival 2021.

Mentoring programme:

Each programme was assigned a mentor from the DEAS NetworkPlus investigator team (see section 6.2 for more information). Since minimal examples of DEAS existed in the charity/voluntary sector, the investigators and researchers from all of the funded charity projects were invited to join a monthly virtual meeting to share challenges and examples of good practice.

iv <https://lmforums.com>

5. Deliverables

Through the various activities, the DEAS NetworkPlus has developed an interdisciplinary research community (DEL1) that comprises both academics and practitioners. The community includes members from different academic disciplines and has reached out to disciplines who have not previously had much exposure to DEAS (e.g., social sciences). The community has helped deliver a portfolio of 24 innovative research projects (DEL2), many of which have evidenced impact of DEAS in their collaborating companies. A formal repository, and taxonomy, of these successful DEAS use-cases can be found on the project website (DEL5). Four research agendas have been developed, one for each of the sectors that have been considered by the Network (i.e., manufacturing, transportation/mobility, charity/voluntary and financial services). A road-map articulating a thematic research agenda, which brings together the four individual research agendas (DEL3), and an equivalent road-map illustrating the opportunity space for maximising impact on different sectors based on their level of maturity (DEL4), can both be found on the project website^v.

^v <https://www.deas.ac.uk/outputs>

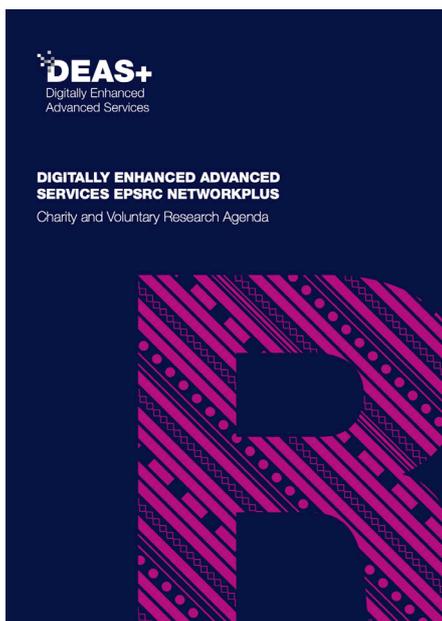


Figure 2: The four research agendas developed by the NetworkPlus

6. Findings

This paper reviews the key findings of the Network based on the DEAS activities and the funded projects (based on their final reports). The findings are discussed from two perspectives: the key themes and running a NetworkPlus.

6.1. Key themes

Seven key themes have been identified following a review of final project reports.

Concepts and their communication

The term service is a polysemy, which means the term is often used to refer to different concepts. Although the concepts of Advanced Services and Digitally Advanced Enhanced Services can be found within academic literature, the literature is mainly found within the Business-related disciplines and focuses on the manufacturing sector. This was found to be a barrier to reaching out to disciplines where the concepts had not been encountered (e.g., computer science, engineering, social sciences), and sectors where DEAS were not really found (e.g., financial services, charity/voluntary). Therefore, explanations needed to be developed that could be understood by academics from different disciplines (to facilitate multidisciplinary research) and practitioners from different sectors. Three sector agnostic principles of servitization have been identified as part of the work of the DEAS network: the use of data-

driven digital technologies, delivery of improved outcomes and changes in business models^{vi}. However, further work is needed to develop these principles and provide explanations that are applicable to different sectors and accessible to researchers in different disciplines.

Other terms that also needed further explanation were business models. This term was found to be not fully understood by those outside the Business-related disciplines or by some industry practitioners.

Ecosystem

DEAS delivery and adoption requires a network of stakeholders and, therefore, it is important that an ecosystem approach is considered. Financial services need to understand and provide monetary, insurance and risk management services that enable and enhance movement from a value from exchange to a pay-per-use/value from use model, in which ownership possession and use differs from traditional models. Insurance needs to move from understanding risk to enable pricing for profit, to removing or preventing risk. Policy and governance models often struggle to keep up with the impact of new technologies.

vi Wood and Godsiff (2021). Establishing the Core Principles of Servitization for Application Outside Manufacturing. In Proceedings of Competitive Advantage in the Digital Economy (CADE) 2021.

Ideally, policy frameworks should become more proactive (i.e., lead the way) instead of trying to react as different technologies emerge.

Customer

Many researchers and practitioners have identified the customer as a key stakeholder in the delivery of DEAS. For some, maintaining a better relationship with the customer was seen as a key motivation for the adoption of DEAS. A big change in focus for DEAS was identified as the customer, not the transaction or the asset involved. However, it is not always certain who is the customer. There may be beneficiaries outside the main value chain, or the main customer may not be who you think it is. The importance of the customer, and determining what outcomes matter to them as we progressed through sectors, and the ways in which innovative digital technologies can identify and deliver those, became increasingly apparent. The use of the term customer was not considered suitable in the charity sector where the term beneficiary was preferred.

Digital affordances

Innovative Digital Technologies (IDT) play an important part in delivering DEAS but the full implications and capabilities are not necessarily understood.

Digital technologies play key roles in the development and delivery of DEAS, especially the use of data analytics. Although for many the technological aspect of the DEAS solution being developed was considered one of the easiest aspects of DEAS delivery, issues were identified around digital literacy and the skills required to

understand the implications and capabilities of the technology (e.g., on operating models). Within the charity/voluntary sector, digital technologies were found to have played a key role in facilitating delivery of services during the pandemic. However, COVID has also revealed that many problems need to be overcome if the opportunities afforded by technology are to be possible; this is covered in more detail in section 6 of the charity research agenda^{vii}.

Governance

There is a need for a better understanding of the legal and regulatory frameworks that will enable the required ecosystem approach. Such an ecosystem will require a multiplicity of regulators. All regulatory parties will need to be educated on the benefits of IDT in delivering DEAS to ensure regulation evolves. DEAS require digital technologies, data, the associated infrastructure, and data analytics. Each of these components need to be considered in a regulatory landscape. DEAS represents a very different operating model for charities and it is important that regulation is not a barrier to adoption.

Two of the DEAS funded projects highlighted that DEAS contracts can be difficult to develop and that there are still many barriers to overcome before they become utilised across the different sectors.

Many of the DEAS solutions that the Network encountered include the use of data-centric systems that require access to good quality

vii <https://www.deas.ac.uk/outputs>

and accurate datasets, often in real-time. When identifying and delivering customer-desired outcomes through the use of digital technologies and data analytics, there could be potential (but unintended) negative consequences as the behavior of individuals are digitally tracked. Current regulation around data protection and data sharing is ill-equipped to embrace new innovative technologies that would allow the necessary access, particularly if partners are working across organizational or international boundaries.

Value is a multi-faceted concept

It is well accepted that “value” is a difficult concept to define and measure. It is equally difficult to determine the factors that need to combine to “create” value . The projects funded by the DEAS NetworkPlus have shown that, when considering

the adoption of DEAS, organisations need to consider the short-, medium- and long-term. What may constitute value at these three stages may be different. DEAS considerations will also be different for Large Existing Organisations (LEOs) compared to Small-Medium Enterprises (SMEs).

Research undertaken as part of the NetworkPlus has shown that value is subjective and contextual. It is closely linked to satisfying the goals and desires of those who are undertaking the valuation. Value is typically measured in terms of money. However, charities have a core social outcome that should also be considered when determining value.



Impact of COVID-19

The COVID-19 epidemic forced a rapid reappraisal of delivery mechanisms, with many of the changes being enabled by IDT. COVID was found to change how organisations communicated with potential beneficiaries with increased use of digital tools and social media. Some organisations embraced technology that they had not previously used in the delivery of their business model.

Some organisations thrived during COVID where others did not. Work is needed to understand what role business model flexibility played in this. Some projects within the charity sector were only funded during COVID and it is likely that these will have to stop post-pandemic due to a lack of funding.

6.2. Running a Network

Investigators and researchers from all the projects were asked to give feedback on the Network activities and how the Network was run. This section will give an overview of the feedback and includes suggestions for others considering running a network.

The Network activities were found to be supportive. The workshops helped build teams and prepare submissions for the funding calls. Each funding call had an associated webinar to help individuals prepare their submissions and address any questions that they may have. Often the webinars were run more than once, to maximise possibility of attendance and recordings made available for those who could not attend.

At least one of the DEAS investigatory team was assigned to each project to act as a mentor. Mentors met regularly with the project investigators to monitor progress and help address

any challenges that may have occurred. With the charity projects, a monthly meeting was also arranged for all investigators and researchers. In these meetings, each project shared a progress report, any challenges and examples of good practice. The bringing together of people from different projects was very well received and was appreciated by those involved. It was noted that the additional time required for these meetings could have been put in the call to ensure investigators allocated a sufficient amount of their time. It was also suggested that impact partners could have been embedded within the project teams, or covered by the mentoring teams.

The Network investigatory team wished to support the development of ECRs and ensure that they could be included in the Network activities. Feedback from those involved in the funded projects showed that they felt



Credit: Josie Ford (Studio Jojo)

that the Network provided excellent support for ECRs, allowing them to take the lead and develop their own research portfolios. The meetings that brought together investigators and researchers from different projects included individuals from various levels of seniority (students to professors). It was felt that these meetings also helped more junior members of staff learn different methods of running projects.

Each funding call was released on the Network's website and at least one explanatory webinar held to address any questions potential applicants might have. The transparency of application process is important and feedback showed that they appreciated the webinar sessions. However, it was noted that the tight deadlines were challenging and anyone issuing funding calls should be mindful of time needed by applicants to get everything ready (e.g., getting a new team together, obtaining costings, sign off from their own institutions).

Contracting can take time, which greatly impacted any short projects, or those expected to start very quickly (e.g., the charity projects as a response to COVID-19).

The majority of the projects involved industry partner(s). However, nearly all of these came from existing relationships. The scoped projects did allow academics to form relationships with new industry partners. A future NetworkPlus may consider more of these types of projects to help foster new links (this could be especially important for ECRs who are still developing their networks).

The Network has built up a diverse community but thought needs to be given as to how to keep the community going post award. The Network employed a Jisc mailing list to keep the DEAS community informed of any news that may be of interest to them (e.g., events, conferences, funding calls). Community members could also post their own news articles to the mailing list. This mechanism requires someone to monitor memberships and posts, which will not be maintainable post award. A LinkedIn group was developed and it is hoped that this is a way to maintain the community post award.

7. Reflections

There are many motivations for the adoption and delivery of DEAS. Servitization as a strategy has been as observed as both offensive and defensive in terms of protecting revenues, maintaining competitive advantage, but also genuinely part of a strategy to improve supply chain and customer outcomes, as in for example heat as a service. However, we also found evidence of a phenomenon best described as re-servitization, in which the operator who had previously been part of a servitisation contract with an Original Equipment Manager (OEM), taking the previously offered “service” (e.g., maintenance), back in house as a competitive advantage and using digital technology to get closer to and offer new digital services to their customers (e.g., the end user).

In research terms, it was clear that an interdisciplinary approach is vital and, going forward, much more interdisciplinary research is needed if DEAS are to be fully understood and exploited. This is reflected in the road-maps that have been developed by the Network^{viii}.

As was to be expected a significant number of barriers were identified during the course of the project, but also a number of enabling themes were also identified, not least of these being the COVID-19 epidemic. COVID was found to be a motivation to make a change to use of digital. The well-known barriers identified in all change programmes (e.g., inertia and opposition) were identified. People form a key component of the servitization process. To aid the transition, people need equipment, motivation and training in

both digital and the concepts of servitisation for widespread adoption.

Success was to be measured through: (i) the scale and diversity of the community that was developed, (ii) the level of activity and participation across this community on publications, events, workshops, and research agenda (iii) the adoption and direct impact of innovations on industry. The DEAS Network has developed a community that includes representation from a broad range of academic disciplines and sectors, some of whom did not have any examples of DEAS before (e.g., charity/voluntary sector, discipline of social sciences). The projects funded by the Network has already produced publications and research agendas at the time of writing this report with more being planned. Examples of direct impact of innovations can already been seen especially in the sectors of transportation and charity/voluntary.

viii www.deas.ac.uk/outputs

8. Conclusion

This report has documented and reviewed the Digitally Enhanced Advanced Services (DEAS) NetworkPlus activities and reflected on the success of the EPSRC grant. We would like to thank all of the DEAS community for their involvement in the Network activities especially those that were involved in the DEAS NetworkPlus funded projects.

9. Further information

For more information about the DEAS Network Plus and the outputs from the funded projects, please visit:

www.deas.ac.uk.

Appendix 1

The DEAS Team

Principal Investigator:

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Industry Liaison Manager: Gill Holmes, Aston University Business School

It is with great sadness that the DEAS Network Plus team lost our much-respected friend and colleague, Professor Robert John, on 17 February 2020 following a short illness.

We dedicate this final report to him.



Digitally Enhanced
Advanced Services

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