

Service Empathy Board: A Method for the Agile Development of Mobility as a Service

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Summary

To emphasise seamless mobility as a key value proposition, the term “Mobility as a Service” (MaaS) has emerged. The creation of MaaS results in three major challenges. First, complexity arises as a key characteristic from the ecosystem setup. Second, the development and design of successful MaaS is based on a deep understanding of the customers’ needs. Third, the focus of this article is on interactive, personal MaaS, which calls for a consideration of service staff in direct customer interaction. To support an empathic, collaborative development of interactive and personal MaaS, a method promoting empathy in service development is presented.

Keywords: education, mobility as a service, mobility concepts, mobility system, user behavior



1 Motivation and objectives

To emphasise seamless mobility as a key value proposition for end users, the term “Mobility as a Service” (MaaS) has emerged. The “service” in MaaS leads to several, nontrivial attributes for design and implementation that exceed purely technical challenges [1]. From the point of view of new service development, there are three major challenges: (1) Complexity arises as a key characteristic from the ecosystem setup, primarily caused by the need for a collaborative development of combined solutions (physical products, software, services) [2,3,4]. (2) The development and design of successful MaaS is based on a deep understanding of the customers’ needs that requires an empathic approach and the use of suitable methods, cf. [5,6,7]. (3) The focus of this article is on interactive, personal MaaS, which calls for a consideration of employees in direct customer interaction, e.g. [8]. To support empathic, collaborative development of interactive, personal MaaS solutions, a method promoting empathy in service development is presented.

2 Research background

“Mobility as a Service (MaaS) puts users, both travellers and goods, at the core of transport services, offering them tailor-made mobility solutions based on their individual level. This means that, for the first time, easy access to the most appropriate transport mode or service will be included in a bundle of flexible travel service options of end users”, also understood as “seamless, demand-based travel” [9].

By means of an exploratory survey conducted from September to November 2016 among e-mobility providers in Germany and covering 98 usable questionnaires, the role of services in the field of mobility were shown to serve as a bridge between necessary physical products and software and to shape user-

specific, individual mobility offerings that enable persons or goods to travel from A to B (e.g. charging station-related services, fleet management, intermodal mobility, car sharing). A cluster analysis (Ward method) based on three key indicators, namely the development of profit, number of employees, and turnover, revealed that the more successful companies prefer to involve customers in as many development phases as possible. Four additional case studies in Europe showed that playful and visual methods as well as a close dialogue with users are most effective [10].

There are numerous methods for customer involvement, mostly from service design, design thinking, or related disciplines [11,12]; varying from analytical approaches (customers as point of perspective) to co-design (joint development together with customers). A literature analysis of more than 80 methods showed that (1) user-centric methods mostly promote empathy in service developers for customers' needs and (2) when visualisation techniques are used, they support communication and collaboration in development teams and with customers. Based on a first qualitative analysis with MaaS and e-mobility services providers, a certain insufficiency of methods such as customer (emotional) journey or experience maps (see [13]) was detected. An example would be a company providing consulting services and training for transportation companies in Germany, including services that are delivered personally and interactively between service staff and customers (personal, interactive MaaS). In this instance, the idea is to extend the customer-centric method by adding the service staff's perspective.

Another point of criticism was that practitioners do not see the big picture when using a single method individually; following rigid process models does not help, either. A comparison of process models for new service development led to the conclusion that these typically consist of a stage-gate process that prescribes phases and activities without distinguishing between different types of services; however, different service types require different development strategies in practice [14]. The question of what (empathic) methods to apply should be considered together with the questions of how to use them and how to integrate target groups practically. Integrating the customers' perspective into a development process is not only a methodological issue, but also an organisational and cultural challenge (e.g. communicating with customers, motivating them to participate).

Since their emergence in the '90s, agile development practices have increasingly been drawing attention from disciplines other than software development. Integrating customers in the development process is a key component in agile approaches, e.g. communicating regularly with customers to see if the current development status matches their needs, cf. [15,16]. As shown before, new service development requires different kinds of methods with an empathic focus. Thus, agile methods have to be combined with service-specific methods during the iterative and flexible development process.

3 “Service Empathy Board” supports agile development of MaaS

The developed method is aimed at considering perceptions and emotions during the service process and in the servicescape, both from the customer's and the service staff's perspective. To support the idea of customer understanding and involvement, the aforementioned requirements “empathy facilitation” and “visualisation” are addressed. Furthermore, it is designed to be integrated into a more comprehensive and agile new service development approach. To get an overall picture, the results are visualised on a canvas that sets the customer's and the employee's view in opposition. It has four lanes (see. fig. 1): (1) phases – describing the journey through the process in major steps, (2) activities – describing the journey in detailed activities, (3) perception – defining touchpoints and describing what is perceived by the five human senses, and (4) description – detailing the quality (positive/negative) and intensity of emotions. To reveal any connections between customer and employee perceptions and emotions as well as activities and surroundings, all lanes are divided into two perspectives. Several characteristics of this method support agile development: It is easy to use and can be applied quickly and repeatedly without consuming too many resources. This underscores the idea of iterative and incremental development. The method can be used to evaluate service prototypes and variants, which is an important feature for guaranteeing testing and incremental improvement, e.g. of service concepts. It is also possible to vary the degree of customer integration depending on what other methods the Service Empathy Board is combined with (e.g. simulations based on collected data versus co-creation workshops). Furthermore, because of its visual representation, the method efficiently supports communication in agile development teams.

Service: _____	
Phases	
	
Activities	
	
Perception	
	
Emotions	 +
	 -
	 +
	 -

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Figure1: Visualisation of the “Service Empathy Board” method

The Service Empathy Board was tested in a workshop in combination with the Persona method to define a typical customer and employee and foster empathy, and with a realistic role play to simulate the emotions of customers and employees as they interact (personal consultation in a service centre). The service case was “personal consultation in the service centres of a transportation company”, e.g. what combination of transport modes and services to use individually. The workshop participants stated that empathy with customers and employees were significantly amplified by walking through the method systematically and discussing their insights intensively. This effect was found to be useful for iteratively analysing customers’ and employees’ needs and creating the service and designing its details accordingly. Another positive aspect cited in feedback was that the method was fun to use. Combining it with the role play, including a life-size backdrop and realistic background noises, made it more enjoyable.

4 Conclusion

The Service Empathy Board method was found to be very useful for interactive, personal MaaS offerings. By devoting full attention to perceptions and emotions in service processes and servicescape interactions, it can be used effectively to promote empathy in developing such services. Nevertheless, the practical implementation and trial of the method in combination with other methods was limited to laboratory conditions. The usage of the method should be repeated in an actual servicescape (here: a service centre) with real employees and customers. Furthermore, it should be tested in other MaaS settings (e.g. transportation services in buses and trains). In parallel, a first concept of an agile new service development model has been created and will be validated in companies that offer e-mobility services. The next step will be to link the principles and components of the Service Empathy Board with the agile model and to convert it into an integrated approach that can be used for personal and interactive MaaS. The use of a role play and in particular methods such as “thinking out loud” and interviews to capture the customers’ and employees’ experiences during the interaction and to fill in the emotions lane in the Service Empathy Board were useful to foster empathy and creativity. The workshop participants reported that they felt more involved by immersing in the interactions. Though, the use of these methods has revealed some drawbacks, e.g. subjectivity, bias during recapitulation of the experiences, and thus general scepticism about the reliability. To foster objectivity and to further elaborate the Service Empathy Board, the recording of emotional data needs to be automated, e.g. using a software tool for face recognition that is able to read emotions from facial expressions. For this, existing tools have to be further developed from stationary solutions to mobile equipment, in order to record emotions of people who are moving freely in interactive service settings.

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References

- [1] I.C.M. Karlsson, J. Sochor, H. Strömberg, *Developing the 'Service' in Mobility as a Service: experiences from a field trial of an innovative travel brokerage*, Transportation Research Procedia, ISSN 2352-1465, 14(2016), 3265-3273
- [2] German National Platform for Electric Mobility, *Progress Report of the German National Platform for Electric Mobility (Third Report)*, Berlin, German Federal Government Joint Unit for Electric Mobility, 2012
- [3] C. Madina, I. Zamora, E. Zabala, *Methodology for assessing electric vehicle charging infrastructure business models*, Energy Policy, ISSN: 0301-4215, 89(2016), 284-293
- [4] N. Kuehl, J. Walk, C. Stryja, G. Satzger, *Towards a service-oriented business model framework for e-mobility*, European Battery, Hybrid and Fuel Cell Electric Vehicle Congress, Brussels, Belgium, 2015
- [5] K. Ojasalo, M. Koskela, A.K. Nousiainen, *Foresight and Service Design Boosting Dynamic Capabilities in Service Innovation*, The Handbook of Service Innovation, ISBN 978-1-4471-6590-3, London, Springer, 2015, 193-212
- [6] J. Blomkvist, F. Segelström, *Benefits of External Representations in Service Design: A Distributed Cognition Perspective*, The Design Journal, ISSN 1756-3062, 17(2014), 3313-346
- [7] T. Mattelmäki, K. Vaajakallio, I. Koskinen, *What Happened to Empathic Design?*, Massachusetts Institute of Technology, ISSN 0747-9360, 30/1(2014), 67-77
- [8] F. Pakdil, F.B. Kurtulmuşoğlu, *Improving service quality in highway passenger transportation: a case study using quality function deployment*, European Journal of Transport and Infrastructure Research, ISSN 1567-7141, 4(2014), 375-393
- [9] *The MaaS Alliance*, <http://maas-alliance.eu>, accessed on 2017-01-10
- [10] S. Lamberth-Cocca S, M. Friedrich, *Success with electric mobility. Case studies of user-friendly services and innovative business models*, Stuttgart, Fraunhofer, 2016
- [11] R. Curedale, *Service design – 250 essential methods*, Topanga, Design Community College Inc., 2013
- [12] J. Ojasalo, K. Ojasalo, *Using Service Logic Business Model Canvas in Lean Service Development*, E. Gummesson (ed.), The Naples Forum on Service 2015. Proceedings, Naples, University of Naples Federico II, 2015
- [13] P. Kroghdahl, G. Luef, C. Steindl, *Service-Oriented Agility: An initial analysis for the use of Agile methods for SOA development*, Proceedings of the 2005 IEEE International Conference on Services Computing (SCC'05), 2005
- [14] T. Meiren, B. Edvardsson, E. Jaakkola, I. Khan, J. Reynoso, A. Schäfer, R. Sebastiani, D. Weitlaner, L. Witell, *Derivation of a service typology and its implications for new service development*, E. Gummesson E (ed.), The Naples Forum on Service 2015. Proceedings, Naples, University of Naples Federico II, 2015
- [15] K. Beck et Al., *Manifesto for Agile Software Development*, <http://agilemanifesto.org>, 2001, accessed on 2017-01-11
- [16] K. Schwaber, *SCRUM Development Process*, Business Object Design and Implementation, Austin, Texas, London, Springer, 1997, 117-134

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