

PAPER

HOW TO MEET THE CHALLENGES OF SMART MOBILITY ALONG THE CUSTOMER JOURNEY

Future mobility solutions require citizen engagement, agile structures and modern leadership

ALEXANDER KRIEG (BORISGLOGER CONSULTING)
RICHARD LEMLOH (LEMLOH PUBLIC RELATIONS & AFFAIRS CONS.)



The mobility sector is undergoing a profound transformation process: new political goals, digital innovations and the resulting new business models. These topics include “Intelligent Transport Systems” (ITS) and the political framework set by the European Commission as part of its “Green Deal”. In addition to this, citizens need to be integrated better and at an earlier point in the developmental stages of new mobility products and services. This complex catalogue of requirements necessitates a fundamental change of direction towards greater agility within public authorities, municipal companies and industry partners. Especially in the areas of organization, product development and leadership more agility is required. The market environment and advancing digitization require this radical rethink. This article shows how these

Paper ID #643

How to meet the challenges of smart mobility along the customer journey -

Future mobility solutions require citizen engagement, agile structures and modern leadership

Alexander Krieg^{1*}, Richard Lemloh²

1. borisgloger consulting GmbH*, alexander.krieg@borisgloger.com, Germany
2. Lemloh Public Relations and Affairs Consulting, mail@lemlohconsulting.de, Germany

Abstract

The mobility sector is undergoing a profound transformation process: new political goals, digital innovations and the resulting new business models. These topics include “Intelligent Transport Systems” (ITS) and the political framework set by the European Commission as part of its “Green Deal”. In addition to this, citizens need to be integrated better and at an earlier point in the developmental stages of new mobility products and services. This complex catalogue of requirements necessitates a fundamental change of direction towards greater agility within public authorities, municipal companies and industry partners. Especially in the areas of organization, product development and leadership more agility is required. The market environment and advancing digitization require this radical rethink. This article shows how these complex requirements can be mastered with more agility within organizations and in the project environment.

Keywords:

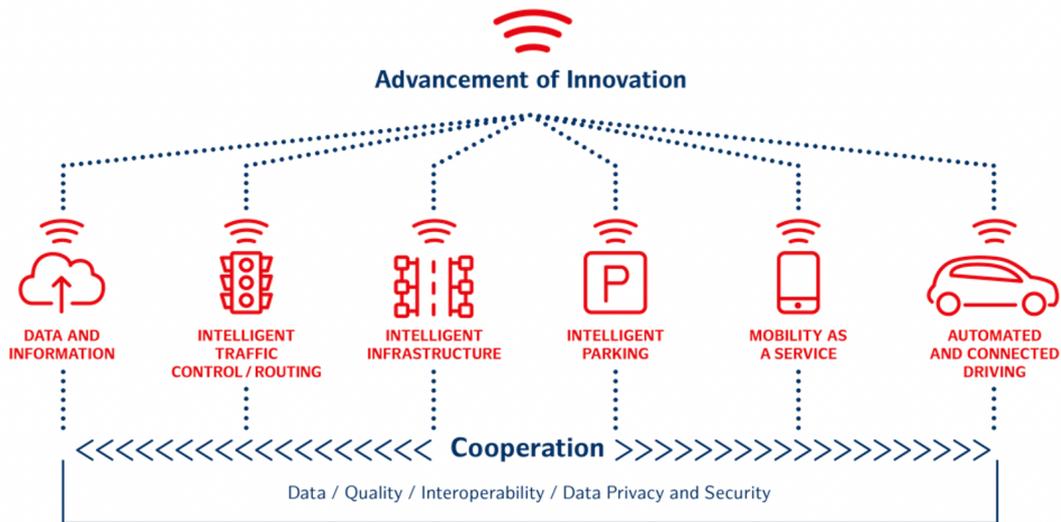
Sustainability, smart mobility, digitization, citizen engagement, modern product development, delivery organization, agile, lean startup, design thinking, modern leadership, new business models

Introduction

Even in the years before the Corona pandemic, the mobility sector was experiencing a faster pace of change than for a long time: new mobility solutions such as car-, e-scooter- and bike-sharing as well as ride-pooling are gaining ground; new vehicles with automated and connected driving are being steadily developed and the automotive industry is investing massive sums in the conversion to electromobility. Digitalization has become increasingly important and provides cities with new solutions for their infrastructure, traffic management and digital mobility services in the form of Intelligent Transport Systems (ITS). The mobility sector operates under complex political, economic and social conditions which can be summarised by the term VUCA (Volatility, Uncertainty, Complexity and Ambiguity). VUCA perfectly describes the new smart mobility framework conditions for industry and commerce. Products and innovative topics are shorter-lived than was ever the case

How to meet the challenges of smart mobility along the customer journey

before. What holds today will be superseded tomorrow, thus creating a fundamental uncertainty. Digitization as the greatest innovation driver also produces an exponential increase in the complexity of products and services. While in the past a customer still felt loyalty to a company, they now buy – online – from one source today and another tomorrow. Market research and forecasts about future developments become increasingly uncertain, because it is less and less clear who will be a market player, a competitor or a customer. Causality is increasingly subject to ambiguity.



(Fig.1 - The complexity of fields of action – Source: ITS-Strategie der Freien und Hansestadt Hamburg)

The transport and logistics sector relies increasingly on networked solutions which also require a regulatory framework — especially for what is referred to as the last mile. Suppliers of new services and products demand new market regulations from the government. Key solutions along the emerging customer journeys require completely new cooperation between the individual mobility suppliers. And, despite all the new technologies and modern vehicles, over 1.3 million people die annually from traffic accidents, even though the number is falling in many countries. Cyclists and pedestrians in particular are often exposed to human error and vehicles with inadequate safety features or an unsafe road infrastructure (cf. [ITF20]).

Understand today what will be needed tomorrow:

All this increases the pressure on political institutions and public authorities to meet people's increased demands for a policy to enable everyone the greatest possible level of affordable and safe freedom of movement and flexibility while simultaneously achieving the agreed climate change objectives. Following the Corona pandemic in which the modal split of the various modes of transport has at times changed significantly to the benefit of the bicycle and private passenger car, the pace of development of new mobility services that are being scaled up nationally and internationally will gain new momentum.

How to meet the challenges of smart mobility along the customer journey

Particularly with regard to the mobility policy for people and goods, the international pandemic has focused attention on just how useful and necessary a further strengthening of cooperation between the countries of Europe is. Like a pandemic, the climate crisis can only be overcome together, despite individual responsibility. Safety standards for vehicles and framework conditions for automated and connected driving require a joint European approach if the public is not to be antagonised and there is a desire for European products and mobility services to succeed on the world markets.

This assumes that the mobility needs of the public are already well understood and accepted at the different political levels. For this to happen, individual suppliers and developers of mobility solutions such as public transport operators, private mobility companies and their service providers must consult the public in good time i.e. involve them in the early phases of product design and development.

On 9 December 2020 as part of its Green Deal, the European Commission formulated the political framework conditions for the mobility sector for the next few years: these aim for targets such as a lowering of emissions by 90 per cent by 2050. By 2030 there are to be at least 30 million zero-emission vehicles on Europe's roads and at least 100 cities in Europe that are designated as climate neutral. In addition to this, high-speed trains are planned to connect people in the countries within Europe and zero-emission ships should be ready for market. CO₂-free travel should be achievable up to 500 km and mobility as a whole have achieved a high level of automation. A further goal that has been announced is that by 2050 almost all cars, vans, buses and heavy lorries will be zero-emission. Rail freight is due to double within the next 30 years with the establishment of high-speed connections via a sustainable Trans-European Transport Network (TEN-T) (cf. [EC20]).

Expected benefits of cooperative Intelligent Transport Systems by 2030



(Fig.2 - Source: European Commission, Factsheet Sustainable & Smart Mobility Strategy 12/2020)

This paper aims to describe the new requirements that result from the above-mentioned framework conditions for mobility policy, vehicle manufacturers, transport operators and mobility providers, and what contribution can be made by agile methods and an agile transformation. The material presented in this paper is based on the consulting and project experience of the authors.

Based on the current challenges facing mobility providers, the following section examines how citizens can be involved in the development of products and services. This new focus on customer needs is not without consequences: it requires changes within the public administration in the way of management, working methods and organizational structures. The conclusion is formed by a résumé in which the current challenges and proposed solutions are once again compared to one another.

The challenges of smart mobility:

Modern product development: how citizens become engaged in changing their mobility habits:

Members of the public accept climate-neutral and pandemic-friendly mobility solutions as per the Green Deal if they fit well with their daily lives – in other words, if they can be used flexibly and are safe, convenient and affordable. To motivate the public to adopt sustainable, zero-emission mobility requires not only incentives to buy electric vehicles but an entire bundle of government measures. In major cities in particular, people often use several different means of transport, depending on the situation: sometimes journeys are undertaken by bicycle, an e-scooter or on foot, sometimes by rail and sometimes using their own car, a taxi, a ride-pooling service or a car-sharing vehicle.

In the "Mobility Report 2021" documenting current trends published by the Frankfurt Zukunftsinstitut (future institute), Stefan Carsten describes how city-dwelling young people as "mobility seekers" develop movement in space as a mobile experience "by navigating the cities of this world flexibly, on the go and in response to the situation" (cf. [CA20]). And ideally they want to be able to change their mode of transport as required at "mobility hubs".

Even if a mobility policy cannot be targeted at a specific age group but needs to provide options for all (inclusive mobility), aiming for the needs and habits of today's younger generation sets a trend for shaping the mobility of the future. And this is heading for an "all-inclusive mobility", a "bundled access to a range of transport services [...] in a single digital mobility solution" that increasingly dissolves the traditional boundaries between public and private transport (ibid. page 35). Mobility platforms such as the Berlin app Jelbi or the Hamburger app HVV switch are digital solutions for integrating the services already available. Mobility products and services, whether public or private, thus need to be directed at the flexible requirements of future generations even in the development phase.

The business models used by public transport operators need to change to providing smart mobility solution platforms, in a similar way to the change to the business model of the telecoms sector from an

How to meet the challenges of smart mobility along the customer journey

infrastructure provider to a digital service provider. IBM has changed from a world market leader in hardware to a service provider and the ING transformed from a bank to a technology company.

Members of the public today want to be involved as early as possible, ideally already in the design phases of services, so that their needs are taken into account. There are formats and approaches for this from the areas of lean start-up and agile product development that have been used for a few years with great success, focusing on *customer engagement* in modern product development.

What is "agile" or agility?

Agile working methods and procedures emerged in software development in the 1990s as a protest against superfluous and slowing down micromanagement, the distance between requesters and executors, sedate project and organizational structures and the futility of multi-year project plans. As a more agile alternative to classic waterfall project management, agility relies on the development of products by small, cross-functional teams that collect user feedback on their designs and partial deliveries at regular, short intervals. This is to avoid developing past needs.

In the last ten years, other industries and organizational areas apart from software development have discovered the advantage of agile working and meanwhile agility is seen as an effective management approach for a complex world. Therefore, "agile transformations" - the expansion of agile principles and working methods to the entire organization or large sub-areas - can be observed more and more often.

The requirements for smart mobility solutions present solution providers with completely new challenges and issues, making an iterative process essential for developing the solutions. In the agile context this iterative process is known as "Inspect & Adapt". Another key point in agile product development is the consistent inclusion of customers right from the early phases of developing solutions.

This aims to achieve customer centricity or citizen engagement. The customers and therefore the public are placed at the centre of the development of innovative mobility products.

This requires attention to the following points:

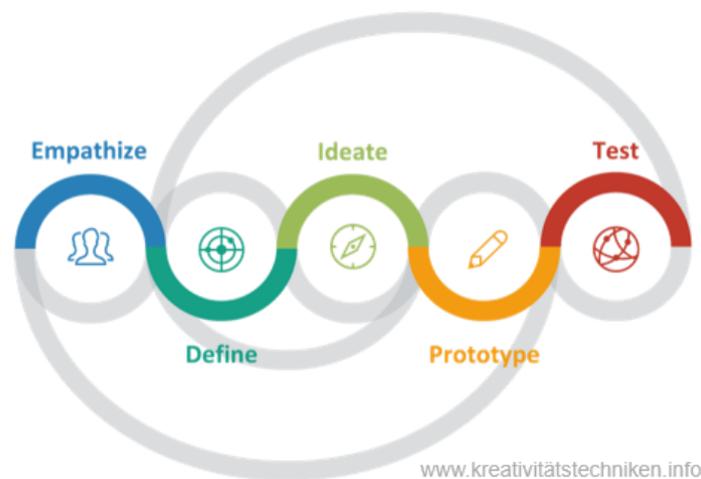
1. As part of a policy of citizen engagement, members of the public should be involved to a greater degree and much earlier in the planned mobility products and services associated with smart mobility. Professionally organised formats such as a World Café or Open Space can be used to involve larger groups of members of the public in the discussion about planned measures. Professional guidance will provide a safe space to learn about the different viewpoints of and approaches to a topic at an early point. This will allow participants to discover patterns, recognise aims and relationships, analyse, discuss constructively and thus debate and solve a problem notified in advance.

How to meet the challenges of smart mobility along the customer journey

2. Customer groups and the corresponding customer journeys need to be identified at an early stage. Customer journeys in particular present major challenges for the providers of smart mobility solutions. The journeys are complex and cover several products and services that are provided by a large number of manufacturers and providers. For example, if someone wishes to travel from their home to their place of work or the nearest airport, then they want to be able to organise this using a single app, including the last mile. En route they will likely change between a number of mobility services. Cooperation between all the mobility providers therefore needs to be very close and integrated across company boundaries.
3. Customers will be involved in the early phases of the product design and provide feedback after each development iteration that flows directly into the next product development iteration. This feedback has a definite impact on the customer journeys as a whole.

The aim of agile product development is to build and supply part of the product in short sequences, called iterations, of one to four weeks that are then presented to the customer in a review meeting. The customer's feedback is then incorporated into the subsequent iterations of the product development. At the end the customer obtains what they really need and not what experts have thought up.

Design Thinking in particular helps to find out which groups of customers (personas) there are and what requirements they develop along a specific customer journey. Based on this, teams develop prototypes from ideas for innovative solutions to previously defined questions i.e. design challenges.



(Fig.3 - The five steps of the Design Thinking process, Source:kreativitätstechniken.info)

The above-mentioned formats such as World Café, Open Space etc. are also suitable for establishing communication and transparency in an organisation in order to e.g. establish a community for specific culture and change topics and to develop these topics throughout the company. Additional suitable formats for this are e.g. Lean Café and Fishbowl.

Smart mobility management requires modern public administration, agile leadership and structures:

The overall orchestration of the most varied means of transport and mobility services for smart mobility solutions requires a new direction in management structures and a high level of agility in government, public administration and the affiliated transport companies. These stakeholders are under pressure to meet people's requirements for a flexible, environmentally friendly mobility mix as quickly as possible. In the very rapidly-growing market of new mobility services such as ride-pooling, digital sharing systems and potentially also autonomous transport services, the question is how to integrate these now in the overall mobility mix while tackling the implementation of longer-term projects such as road infrastructure changes and rail transport projects. Thinking in terms of transport networks — such as the oldest one in the world, the Hamburg Verkehrsverbund (HVV, founded in 1965) — will gain ground for ever more mobility providers as part of an increasingly networked mobility. During the Corona pandemic the unpredictable and unforeseeable have increasingly become the norm. Even before this, administrative action was already reaching the limits of its existing structures. Local authorities in particular with their close proximity to the public and everyday life are aware of these changes.

It is therefore of the utmost importance to establish a more agile public administration in the field of transport and mobility for the current orchestration of mobility chains.

The use of agility should achieve a better handling of complexity and dynamics than is possible with traditional structures and management approaches. Companies are starting to understand how important it is to become an agile enterprise, with the aim of benefiting throughout the organisation from the flexibility and speed that are aimed at with agility, as well as remaining competitive in rapidly changing markets. Management personnel at all levels and not just top managers must agree to agility as an organisational value (cf. [TH20]). Numerous studies and surveys such as Status Quo Agile (cf. [Ko14]), Agile Swiss Study (cf. Kro18)), the Chaos Report by the Standish Group and VersionOne (cf. [Ve17]) demonstrate the use of agile methods and practices as well as their success. Increasingly, departments and business units all the way to entire companies are realising that the introduction of agility in individual projects or even in purely technical fields is not enough to achieve the required flexibility and speed in the organisation (cf. [Kr18]). However, these features are of paramount importance due to the increase in complexity and speed of change produced by market digitalization. Products need to be developed along value added chains and not along fixed and often out-of-date organisational processes (cf. [Kr19]).

Besides private mobility companies and their service providers, public authorities in Germany and their local and national transport companies find themselves constantly confronted with new and rapidly changing requirements. Members of the public demand increasing involvement, innovative procedures and joint decision-making in relation to important topics in mobility policy at all levels.

How to meet the challenges of smart mobility along the customer journey

But it is not just this increase in external pressure due to digitization in all fields that leads managers in industry and administration to the conclusion that they need to introduce changes. Many managers also stress that they want to make public authorities into attractive employers who can compete with other organisations in the contest for young talent.

The VUCA challenges demand a fundamental shift in organisational thinking, whether this is in public administration or in the industrial companies of the mobility sector. This rethink applies particularly to the areas of management and organisational structures. Employees working in cross-functional teams that supply product components in short delivery cycles and integrate customer feedback directly into the next delivery cycle expect a different type of management, away from an out-of-date command & control approach – which is too slow and expensive in fast-paced markets – towards self-organizing teams and transparency. This can only be achieved if management is understood as a service and managers not only demand agile values but also demonstrate them. The development from a business manager to an agile leader is an important element of agile transformations that pursue the change-management aim of transforming whole departments or business units from a traditional specialist silo structure to a supply organisation that operates end2end as far as possible, as is the aim of the Spotify model for example (cf. [Kn12]).

The starting point of an agile transformation focuses on a consideration of the products and value streams. The aim of this agile change management approach is to direct the necessary agile structures and processes and therefore the entire organisation towards the products and value streams, and not the other way around. The key element is a guiding coalition (cf. [Ko11]), consisting of voluntary representatives from various areas and hierarchical levels who, as a transformation team, give the entire agile change process a structure and direction. As the starting point for all change impulses, this transformation team accompanies and supports individual teams and initiatives in the details of the change. The Pyramide (cf. Fig.4) shows the six building blocks of an agile organization: In all of these elements, the organization should be put to the test and further developed (cf. [Sc20]).



(Fig.4 – Pyramide of the 6 agile transformation areas, Source: borisgloger.com)

Conclusion:

As described in this paper, the entire mobility sector with all its facets is subject to a complex and rapidly changing environment. Added to this is the cooperation of organisations with the most widely varying structures, such as authorities, urban or regional public companies, startups and industrial companies, in order to jointly present rapid, innovative and citizen centred solutions. Using agile methods and processes and supported by a modern leadership and management approach enables VUCA challenges for smart mobility solutions to be overcome. In addition, the wishes and needs of the customers and members of the public need to be put at the centre of the mobility development. Working in short consecutive development cycles enables companies to react rapidly and flexibly to the constantly changing requirements. This is why a rethink by all stakeholders in the mobility sector is essential: in order to achieve the policy goals for managing the climate crisis and to satisfy the interests and wishes of the public in relation to a secure, affordable, flexible and convenient mobility chain. And at the same time to react flexibly, remain cost-effective and offer the many young talents a working environment that they find attractive.

References

- [CA20] Carsten. S. (2020). Zukunftsinstitut, *Mobility Report 2021*, page 27, September 2020) → referenzieren El-Rabbany, A. (2002). *Introduction to GPS, The global positioning system*, Boston, London: Artech House.
- [EC20] European Commission, *A fundamental transport transformation - Commission presents its plan for green, smart and affordable mobility*, press release, 9 December 2020: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2329
- [ITF20] OECD's International Transport Forum: www.itf-oecd.org/road-safety
- [Kn12] Kniberg, H.: Spotify-Modell: Siehe: <https://blog.crisp.se/wp-content/uploads/2012/11/SpotifyScaling.pdf>, 2012.
- [Ko14] Komus, A.: *BPM-Labor der Hochschule Koblenz: Int. Studie: Status Quo Agile*, 2017.
- [Ko11] Kotter, J.: *Leading Change: verändern 2011*.
- [Kr18] Krieg, A., Theobald, S. & Küpper, S., (2018). *Erfolgreiche agile Projekte benötigen ein agiles Umfeld*. In: Mikuzs, M., Volland, A., Engstler, M., Hanser, E. & Linssen, O. (Hrsg.), *Projektmanagement und Vorgehensmodelle 2018 - Der Einfluss der Digitalisierung auf Projektmanagementmethoden und Entwicklungsprozesse*. Gesellschaft für Informatik, Bonn. (S. 217-222), 2018.
- [Kr19] Krieg, A.: *Agile Organisationsentwicklung und agiles Change-Management*. In: *Gesellschaft für Informatik eV (GI)*. p. 253 (2019)
- [Kro18] Kropp, M.; Meier A.: *Swiss Agile Study*: Siehe <http://www.swissagilestudy.ch/>
- [Sc20] Schmiedinger, C., Rasche, C., Thonfeld, E., Tuchen K.: *Agile Transformation - Der Praxisguide zum Change abseits des Happy Path*. Hanser Verlag, 2020.
- [TH20] Theobald, S., Prenner, N., Krieg, A., Schneider, K. (2020). *Agile Leadership and Agile Management on Organizational Level - A Systematic Literature Review*. In *Proceedings 21st PROFES2020 Online Conference on Product Focused Software Process Improvement*, pp. 20-36
- [Ve17] *VersionOne: The 11th Annual State of Agile Report*, 2017.