Project Report **Future of Mobility**

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From *the mobility of the future* through *the future of mobility* to *immobility*

What exactly does one imagine under the vibrant picture of "the mobility of the future"? A public brainstorming at last year's Annual Conference of the Academy suggested that the idea of the "mobility of the future" is associated with sports cars, alternative power units, jet-packs or flying vehicles. Stuff we are dreaming off, things we have seen in science fiction. The common denominator was the expectation that in the future a more creative, individual and efficient locomotion will be designed.

We intended to achieve something for the future which could be developed to improve physical mobility. Innovative and even visionary ideas – like cable cars in cities, jetpacks working with water power or a "level" model, which can foresee different traffic levels and helps to efficiently enable and leverage mobility – were put forward. The conclusions we arrived at were much more surprising: instead of speeding up mobility, we found ourselves offering an alternative which is more static. *Immobility* as *mobility of the future*.

Before describing our image of future mobility, we briefly define what mobility means for us.

Mobility is an action which might be possible in many different forms – on our own or using an external power-source, fast or slow, submarine, through the air, above or below ground. In particular, the motivation to take such action might vary strongly: There are many different purposes lying behind daily actions such as shopping, going to work, vacation or a small walk in the neighbourhood. The only thing which is certain is that people have to move to satisfy their needs. Obviously, mobility is a means to an end. A physical distance between two points, A and B, is travelled to fulfil a necessity, which cannot be fulfilled at point A. The satisfaction at point B should first be spatially possible, in other words accessible. In this case, the distance to B is just an obstacle and mobility is the instrument by which to overcome that obstacle. When someone goes to the supermarket, it is for the grocery shopping and not for the ride itself.

If the need actually lies in experiencing the distance that is traversed, for example when hiking or driving through a mountain pass with a roadster, then it is totally irrelevant where the application of mobility starts or ends. People aim for the experience they gain on the road, looking for a change of scene, the thrill of speed, physical exercise or a renewed perception of nature. In that case, the trip itself is actually the goal and mobility is an end to itself.

"The world is a spaceship with unlimited resources, which are depleted by a crew called 'humankind'."

– Prof. Dr.-Ing. Gernot Spiegelberg

"Mobility forgot what staying is."

– Prof. Dipl.-Ing. (em.) Peter Latz

The factor of time defines the separation of mobility into two categories: If it comes to experience or entertainment, travel time might be assumed as a quantitative measurement of conversational amusement values. If mobility is only an instrument, then travel time depicts a measurement of inefficiency. This separation can be illustrated in the distinction between "grocery shopping" and "shopping." Buying food is something that needs to be done regularly, while "shopping" is more of a leisure activity.

To sum it up briefly: Mobility describes a spatial action and also an instrument to fulfil needs.

We carried out extensive research to be able to break down the huge topic of “mobility” into manageable proportions in relation to its principal stakeholders. We also researched and discussed the term “mobility” in relation to various backgrounds. We highlighted five different aspects of mobility:

1. Locomotion instrument & mobility user (What does locomotion concretely look like? Why does a person have to move?)
2. Technology & innovation (How is the need of moving fulfilled?)
3. Infrastructure, traffic & traffic jams (How can we manage movement?)
4. City characteristics & demography (Where does movement take place and how do we change the environment?)
5. Utopia & visions (How does the future of movement look like?)

The results of our research were extraordinarily wide and complicated: mobility of the future can be associated with so many social, socio-economic, technical and ecological claims that it might lead to a significant conflict of objectives. We give an example for such a conflict: the demand of an individual to travel from A to B quickly competes with the demand of a society that all individuals should be able to travel successfully from A to B.

Because of the immense complexity of the topic, our project does not deal with the many technically and financially problematic cases which are more concerned with driving-assistance systems, new powertrain systems and new mobility services. Our project regards “mobility of the future” from a totally different perspective. It was not our concern to define the instruments that could help our organisation to move along in the future (“mobility of the future”). But instead, we were concerned with the question “If our society could make a movement in the future, how efficient would it be?” The term “future of mobility” can be described much better with that initial question.

The main question of many current debates is how a person can move more individually, more efficiently and in a more environment-friendly way. Unfortunately, we concluded that recent studies are not enough to answer our question.

Beside the actual forms of mobility such as cars, trains or airplanes, we decided also to look at challenges in physical mobility flow. An individual’s mobility-related opportunities are ever growing, space is a scarce resource and urbanisation continues. At the same time society becomes more dynamic and needs more individual movement. By requiring mobility, all of these factors limit mobility and make it inefficient.

Consequently, there is an increasing physical complexity expected, which counteracts an efficient physical movement in terms of time and space. This complexity and inefficiency would not arise if people could fulfil their needs without moving. It is absolutely in our hands to develop new forms of organisation and ways of life that could promote such a conversion. For example, an efficient home office would be a simple solution. Instead of driving to work every single day as a commuter, we could virtually integrate into the world of work by working at home for different companies. It is clear for us that physical mobility is not always a must to reach the maximum mobility level. And this is exactly the point from which our hypothesis of the future of mobility derives:

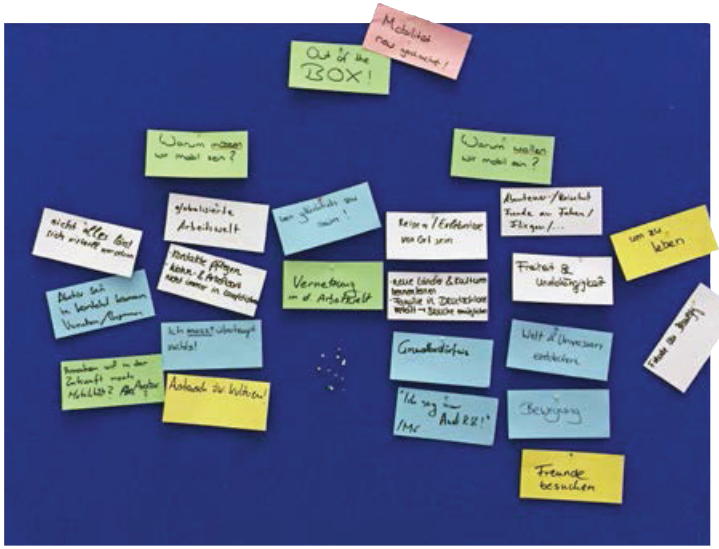
The future of mobility lies in immobility

What we understand by immobility is a reduction of physical streams of movement, while the level of need satisfaction remains the same. That means a satisfaction of needs without travelling a physical distance.
Ideally, an individual should not have to move physically to fulfil his/her needs.

In order to achieve this, a paradigm shift or a redevelopment of ideas about mobility is necessary. A wide network of mobility carriers, infrastructure and mobility users or mobility concepts derived from ideas of sharing could influence the consumer to go shopping several times a week. And the daily car driving could be replaced by an intelligent network of vehicles.

In that vision, the future of mobility should focus less on physical actions and much more on virtual, digitally possible mobility and an increased physical mobility of goods and other things, which can be easily controlled and optimised. The efficiency of the overall system and the burden on the environment and people will decrease. An individual will not move when he/she has to, but only when he/she wants to.

The outcome is a change in the range of services around mobility and new alternatives for urban planning. We take a look at the future of mobility. For us, it is certain that with future forms of mobility, we will move along less under pressure and stress and much more under positive need fulfilment.



Abstract

Today, mobility is generally examined from a commercial point of view that focuses on how future means of transport will satisfy contemporary concerns such as sustainability and efficiency. From a non-commercial point of view, we can tackle a completely different question: Is physical locomotion in fact always necessary? Mobility may well be regarded merely as a means to an end.
Thus, we formulated the hypothesis: *the future of mobility lies in immobility*.
The question, therefore, is not how locomotion takes place, but whether locomotion takes place in order to satisfy individual needs.

Background

Mobility – A Definition
According to Ahrend et al. (2013:2), mobility is the potential to change one's spatial location. We expand the definition, as, nowadays, we see mobility also happening during a phone call: A caller's body may stay at a certain location, but his or her mind is actually at a different place.
Therefore, a person's opportunity to change his physical or mental standpoint – that is what we call *mobility*.

Mobility – Nothing but Satisfaction
Before the Neolithic Revolution, mobility was a mere need; since then, it has been a need for mankind (Schinkel:2;9-11). Any kind of need requires a change of location, i.e. a locomotion. Be it hunger that pulls man to the refrigerator, a trip to the countryside or just going to the lavatory: Ultimately, you have to change your location, if you want to satisfy a need. The change of location is not necessarily taken in terms of space: Even when reading a novel one is mentally at a different place, namely in the events happening in the novel.

As described above, a person's opportunity to change his physical or mental standpoint is *mobility*, not the change of location itself; but the possibility of relocation is mobility (cf. Ahrend et al. 2013:2).
The access to spatial relocation we call *physical mobility*, the access to information movement we call *intangible mobility*.
Every relocation relies on a need. Consequently, mobility, to man, is a tool. People use *mobility* to satisfy their needs (faster). A special form of mobility is when the process of relocation itself is the need; this happens for instance when it comes to hiking.
There is also a need to experience *mobility*. This experience we call *mobility as perception* and is not a means of transport (cf. Ahrend et al. (2013:15). It is divided into *physical training* and *speed per-*

ception. S*peed perception* includes all forms of mobility in which man controls a machine or a vehicle in movement. *Physical training* includes all forms of exercise aimed at the experience of the body. *Mobility* can thus be divided in two different ways: On the one hand, there is *physical* and *intangible mobility*, on the other hand, there is *mobility as a tool* and *mobility perception* (see figure 1). Schinkel (6-9) criticises the fact that nowadays *mobility as a tool* constrains human interaction, which emerges, in our opinion, from *mobility as perception*.

Figure 1: Mobility can be structured in two ways: I) Satisfaction is achieved at the arrival of the journey – mobility is a tool. II) If the satisfaction is achieved by the process of transportation – mobility is a need. In a) intangible forms of mobility, information and thoughts are transported, in b) physical mobility, mundane things are transported.

		Reason for mobility		
		mobility as perception (satisfaction lies in transportation)		**mobility as a tool** (satisfaction lies in arrival)
Form of mobility	**physical mobility** (a body or thing is moving)	***physical training*** *e.g. running*	***speed perception*** *e.g. going for a walk*	*e.g. lift*
	intangible mobility (a piece of information is moving)	*e.g. watching a film*		*e.g. e-mail*

Future – Potential for Mobility

In general, to address the future's mobility, needs of our society have to be taken into account (Follmer & Scholz).

Be it animal domestication, railroad, bicycle, smartphone or smoke signals, technological progress makes mobility more efficient. Meanwhile, huge amounts of data are collected and analysed, nonetheless the breakthrough in automated analysis of large amounts of data has had unpredictable consequences. Technological development has increasingly united more functions in ever-smaller digital devices, which integrate seamlessly into one's daily life and can now be always at one's side. New opportunities like *augmented reality* or *virtual reality* and quicker data transmission can change people's daily lives fundamentally.

Thus, new consumer and working models do not necessarily require *physical mobility* anymore for the core population. As access to a full range of infrastructural services can be obtained from points outside urban areas, infrastructure for *physical mobility* is not required as before.

Resources – Restrictions for Mobility

Hardin (1968) explains why benefit for individuals does not automatically lead to benefit for the society: If individuals act only according to their own needs, the satisfaction of the people's needs, generally, will be more difficult. Traffic jams, for example, would appear more seldom if individuals took group vehicles like buses and trains instead of personal vehicles like cars.

When it comes to mobility, the two most important resources which cut potentials for mobility are fuel and space. Research and development are both focusing on the fuel issue. Consumption of space because of mobility, by contrast, is not as often discussed.

Detailed Hypotheses

Based on preparatory research and the derived information, we arrived at three detailed hypotheses in terms of immobility, as follows:

Hypothesis 1:

The future of mobility is immobility, the decrease of physical movement of humans.

Hypothesis 2:

Physical immobility for humans requires a high mobility of goods.

Hypothesis 3:

Mobility as perception, the experience of movement and speed, cannot be replaced by immobility.

Goals and Methods

As mobility is a broad topic it has to be carefully addressed so as not to overwhelm the investigation. The first step within the project was to carry out research on how the future's mobility is seen by various other parties. The solutions that are discussed by industry

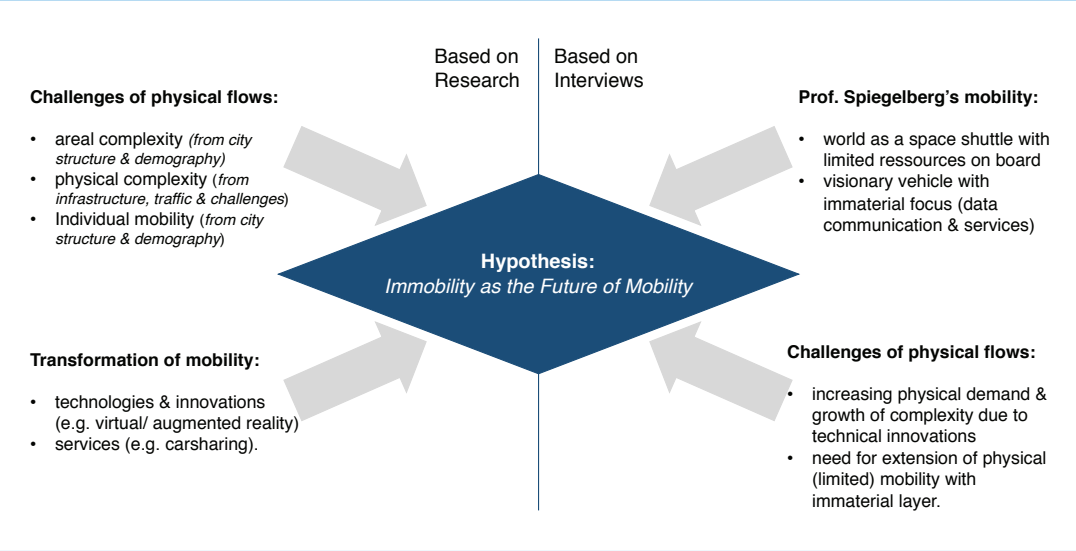


Figure 2: Inputs leading into our central hypothesis

mostly focus on improving existing technologies, rather than developing new ideas and principles. Thus, improving existing car concepts is more likely to happen than the development of new car technologies. Instead of changing mobility as a whole, existing mobility principles are enhanced.
In the first iteration of the project, the team was facing exactly this challenge and tended to think only in terms of existing principles. Only after intensive discussions with our mentors did we open our minds to radically new ideas. This also led to a renaming of our team into "Future of Mobility." Based on this first iteration of the project, the following central hypothesis was derived [compare with the above section, "Background"]:

The future of mobility is immobility,
the decrease of physical movement of humans.

To address and analyse this view and understanding of the future of mobility systematically, the topic was split into six categories: environment, society, politics, technology, economy and polity, as shown in figure 3.

The environment influences and limits all other actions: We live on one earth and are limited in every aspect by the resources that are available. The second field, society, is shaped by the environment and dictates all of our needs. Technology, economy, polity and politics then try to fulfil these needs.
Each topic was analysed in the following three steps: First, the current situation was examined in detail. For technology, this included, e.g., a review of the latest achievements and innovations. Second, the expected situation in the next twenty years was analysed, as for instance, politics might adjust to new scenarios like self-driving cars. Third and last, the challenges and possibilities for achieving intangible mobility were extracted and discussed. To give another example, the patterns of work in society might change to an almost completely remote model of working.

Due to the lack of space in this paper, the assessment of each of the 6 fields cannot be shown in detail. But the following three part visions are based on the arguments and knowledge from the assessments of each field in terms of an immobility as future mobility. Based on the six individual areas, three part visions and three hypotheses were extracted from the view of each main field (technology, economics, society). These hypotheses were critically dis-

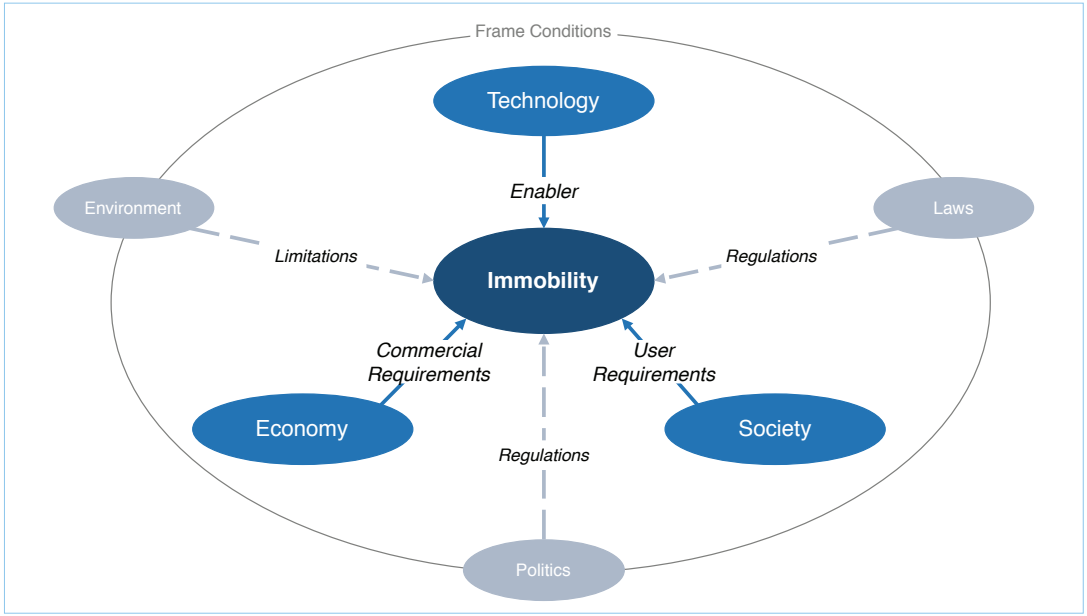


Figure 3: Division of the topic “mobility” into six categories. In each category, the possibilities for an intangible mobility are analysed. The shape of the individual fields do not indicate their importances, they only show the connections between each other.

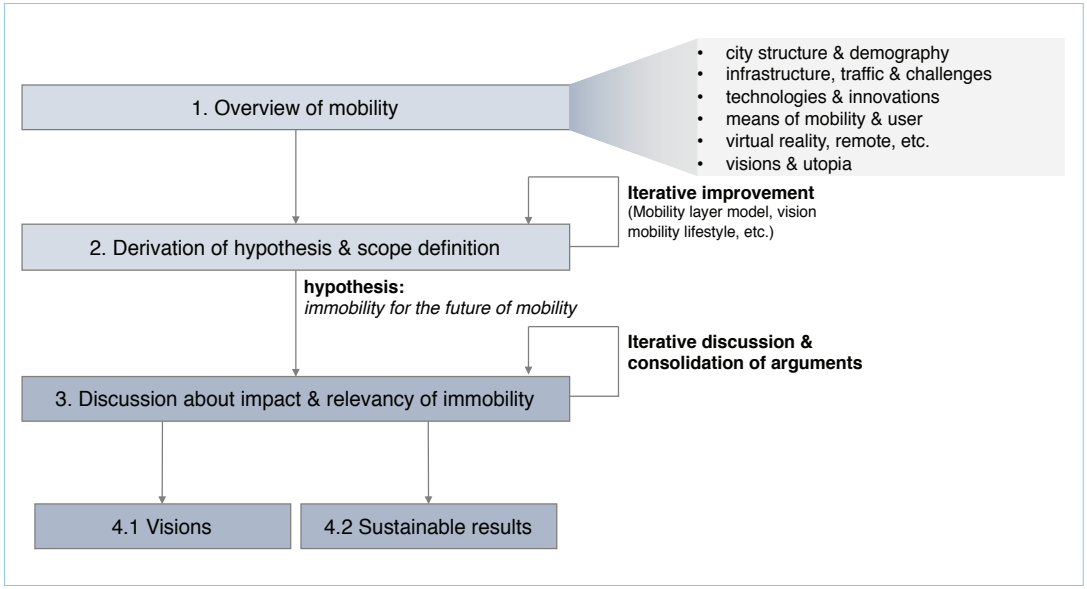


Figure 4: Overall approach and structure in the project

cussed from the different points of view of each category within the framework shown above. Each field connected to the central hypothesis was checked on whether its single interest and task within the framework would support or impede the vision of an intangible mobility. Based on this holistic discussion the core visions and results on a sustainable immobility lifestyle were derived. These are shown in the following chapter “outcome and discussion”. In conclusion the overall approach and structure within the project is visually summarised in figure 4.

Outcome and Discussion

Part Vision from the view of Economics: 3D-Printing Supply

Main ideas:

1. Immobility ideas as enablers of increasing efficiency & flexibility in provision of products for three different branches of trade
2. Immobility ideas and its advantages leads to new products, services and business models in the market
3. Decrease of physical mobility undermines the importance of classic mobility industries, e.g. automobile industry

Prerequisite: material supply

Especially in the industrial sector, procurement plays an important role in meeting the needs of a customer.
The wide *supply chain network* includes physical transport flows between suppliers and the *OEM (original equipment manufacturer)* The reasons for outsourcing the individual parts are high costs, an existing product complexity, low flexibility of components and high financial risk, because all investment and expertise are held in-house.

To offer the final customer various products, a huge amount of physical flows – transports – are essential in the industrial sector.

The physical mobility of acquisition – transports – brings huge economic inefficiencies**.** For companies, there are some transportation costs and procurement time to factor in within the production development as well. Also some economic, negative external effects might exist, such as polluting emissions or traffic jams. Ideally, as long as there is a demand for production, the supply parts should be made available right at the *OEM* without depleting the flows of goods or storage capacity.

Beaming would be a utopian solution to reach our goal. But technological developments in the last decade allow options such as

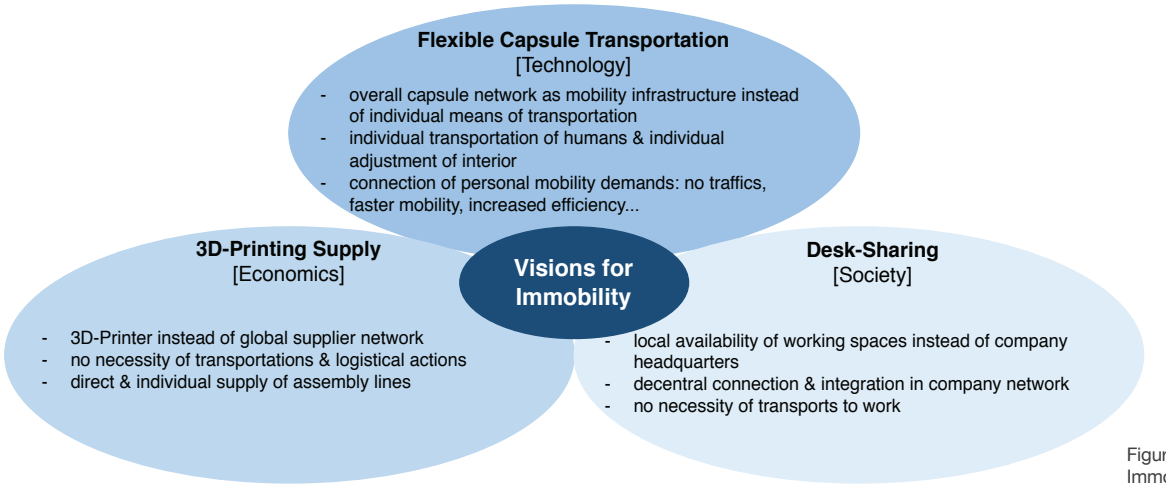


Figure 5: Summary of our vision for Immobility

additive assembly or 3D printing. Through that means, separate parts based on CAD data could be manufactured on site.

Manufactures with 3D printers, which build a link between customer demand and production need, make an acquisition on site possible. There are some additional advantages such as high flexibility and quick availability of the product components. Taking the idea one step further, a customer could even get his or her desired products fabricated just-in-time and on-site. That means complex physical flows of distribution logistics would be reduced and the customer would receive his/her own product more efficiently. Thereby, new technologies and mobility of data are the main enablers of an immobility concept in the industrial sector.

Physical immobility: The physical immobility of people and goods is only possible through immaterial immobility and new technologies. The transport volume in product development process reduces, because 3D-technology makes the acquisition from suppliers superfluous. 3D printers replace all suppliers. The outcomes are faster availability of pieces and no transportation costs.

Physical mobility: This scenario is still a vision; it is not realistic yet to expect that all delivery could be replaced by a 3D printer because of the complexity of all the separate parts. Especially, separate parts with electronic components or components with special design and requirement could not be simply manufactured with a 3D-printer. Investment costs and cycle time are big challenges. To make progress towards this scenario, individually and precisely manufactured forms should be produced out of plastic or metal.

The critical question is “when is it financially profitable to implement 3D printing?” 3D-printing technology is still in its infancy and will have a much higher potential in the future. This potential is the foundation of immobility in material supply.

Society: Physical immobility in material supply could have a big influence on society in the long term. Suppliers would lose importance. 3D-printers would need to be integrated and installed into the production environment and also maintained regularly. A bigger IT and mechanical engineering competency will be necessary. Consequently, there are some advantages for the consumer side: the direct accessibility of products on site will enable a faster delivery of customised products.

Technology: When it comes to the implantation of 3D-technologies, we speak about a vision. To replace the physical mobility of material supply in the future, 3D-printers should be able to satisfy the same product requirements, in terms of cost and performance, as the current suppliers do. To achieve this, there needs to be more research and development aimed at the successful integration of 3D-printers with suitable additive materials into the production environment. Putting the focus more on new additive technologies brings the relevance of other production machines, e.g. CNC-machines.

Part Vision from the view of society: Desk Sharing

Main ideas:
1. An ageing society with extra requirements for mobility
2. A more dynamic society with the need for greater flexibility and increased efficiency in everyday life
3. A more open society, which, for example, moves in social-media-platforms or is ready to share vehicles and flats through sharing-platforms

Pre-requisite: work activities

Each person needs to finance his own living by an income. The daily travel to work is essential for the working class. In this regard, physical mobility is only a means to an end. A living space in working places is mostly limited, expensive or not even possible. That is why large, physical mobility expenditures are necessary. A place in which employees of a company are united to create added value is necessary. This place could also be virtual: if people could do their work locally, all daily travel would be gone. It would be a massive relief for the transport system.

New technologies and future technological advancements enable a similar solution. In fact, creating a virtual work environment like this at home or at nearby *Desk-Sharing* localities is imaginable. The necessary work environment could be displayed virtually through screen technologies. Meetings or visits at the development department could be done this way. Camera and sensor technology would assist in displaying the real environment virtually with all necessary real-time information. A personal RFID-Chip could serve the standardised cells to create an individual work environment after an employee enters. A permanent data exchange could happen between employees through mail, messenger or video functions.

The mobility of the relevant data which is essential to accomplish tasks, and also new technologies which enable an efficient network of competencies and depiction of reality, can thereby serve to establish a decentralised work organisation with reduced levels of physical mobility.

Physical Immobility: The physical immobility of people is enabled through mobility of data and the application of new technologies. In other words, the need of physical movement would be reduced, if a central stationary work organisation could be replaced by decentralised, individually localised and connectable work environments.

Decentralised work environments could be created by data exchange in real-time, an efficient network of different interfaces and an individual, virtual depiction of the real world without physical travel to actual company premises. Buildings that do not belong to the company anymore but to service providers, who offer an infrastructure with screens, sensors, cameras or RFID-interfaces to virtually create a personal work environment everywhere, could be suggested as well.

Physical mobility: Of course, not all the activities that lead to the creation of a product or an offer for service, could be virtually depicted. For instance, the initial production or assembly and machine maintenances could not be conducted virtually.

Technology: To depict a workplace virtually there are some technological requirements needed. Other than the information exchange through voicemails and text messages, emotions, images and gestures are also transferable. Also for design and development activities, real surroundings like production lines could possibly be best built as a *Virtual Twin*. Thereby, decentralised and simple development in a flexible, quickly adaptable virtual environment could be enabled.

Economy: a decentralised organisation makes the company more efficient: first of all there are no huge investments in big corporate head offices needed; secondly, employees are not fatigued by long journeys anymore.

To guarantee the maximal efficiency of a final product or service, new, decentralised work organisations should be controlled and guided centrally. This might cause some risks in the workplace. But maximal efficiency could possibly be guaranteed through an efficient network in the future. The question is whether strict labour hierarchies are always needed or whether new organisational forms should be developed.

Part vision from the view of technology: Flexible Capsule Transport

Main ideas:

1. Technology enables mobility of goods and data, by which physical mobility of people could be replaced partially.
2. Technology supports physical mobility of people.
3. Personal, direct contact and interaction between people cannot be replaced by technology.

A basic and daily requirement for people is moving. Nowadays, this is possible by car, bicycle or public transportation, which provide a large amount of individual physical mobility options.

At the heart of our future vision, progressive technology would enable an extensive physical immobility for people but would support physical mobility adequately. Technological advance, which is foreseeable nowadays, unites more and more functions in small, digital terminals that integrate seamlessly into the daily lives of people and thereby does not so over daily life. A huge amount of data is transferred and processed, which is analysed with the expectations of an increasingly liberal dealing. The impacts would be various and barely predictable if a breakthrough in automated analysis of large data sets (“big data,” “smart data”) could be achieved. It is a fact that opportunities that are created by a combination of new visual technologies (AR, VR), (b) fast data transfer and (c) artificial intelligence through neuronal networks and so called “Deep Learning” algorithms could basically change the everyday life of people. Based on new service packages (apps/software), new consuming and working models could emerge that essentially do not require physical mobility to people anymore. Theoretically a large urban infrastructure could access a full range of infrastructural opportunities, if these are held out virtually or digitally transported. In that case, the physical mobility of products (consumption) and the mobility of data and information (content) enable extensive immobility for people.

Physical immobility: The physical immobility of people could be enabled by goods and data (information). This would mean that people's need for physical movement could be reduced by technology, which helps people to satisfy their needs without actually moving. Especially daily tasks such as grocery shopping, delivering or picking up deliveries could be significantly reduced. Furthermore, digitalisation of work places enables an extensive shift of work rhythm towards daytimes when clenched traffic are unlikely to happen. New working hour models which offer less presence at the office but more flexibly used time could be built by a strong relationship with decentralised employees. The basis of this development: technological advances in the field of virtual and augmented reality.

Physical mobility: Humankind tends to do physical activities because of its biology. This form of mobility represents an obvious contrast to an immobility approach that could easily bring the degeneration of the human body as in the futuristic scenario in the film Wall-E. The question is which mobility concepts will satisfy the remaining necessities of people at the end of the day. Due to the possible reduction of daily movement needs (travel to work, shopping...), there could be a greater emphasis on pure physical mobility, in which "the path is the aim" and joy and experience will substitute the pure necessity of moving.

This transition could lead to significant, solid and flexible mobility concepts. For instance, small capsules, which dynamically connect each other to big fleets and are provided with inductive power through electrical cables in roadway surface. The fully automatic control is made possible through the information contained in the infrastructure and replaces complex sensors on the board of the vehicle. In addition, the appearance in internal space and the offered functions of the vehicle could be user-specifically adapted through the personal digital terminal device and the core problem of the sharing idea could be solved. With regard to the demand, these vehicles are charged flexibly and controlled at the service centre, driven either to the cleaning service or to the next – database calculated – operating site.

The individual traffic is controlled centrally. Multi-modal travelling could easily become real, if the best possible, centrally controlled network could be given to various mobility carriers. Our vision for future mobility is that people move physically without interfaces. With automated vehicles, troublesome issues such as looking for a parking place or charging stations could be avoided, because these could be automatically found by vehicles without the driver even being bothered. In this way, workload could be optimised and sharing ideas would be lifted up to the next level.

Economy: Subsequent to the alterations mentioned above, there should be some fundamental changes in the economic structure of Germany. While automotive industry builds its main business on selling vehicles to companies and individual customers, in the above mentioned future, mobility carriers will only be a small part of the mobility on offer. And in this future model, only consumption will be essential, not the actual possession of a vehicle. The trade of the future will therefore presumably take place in the division of mobility and integration services and the mobility carrier as a customisable mobility concept will not play a prominent part.

Society: An important question that needs to be answered in the future is how people will compensate for losing the experience of mobility if it dwindles away due to the distinctive development of the technology. While a great deal of physical mobility that is known to us nowadays could be replaced through progressive technology, a fundamental need to experience mobility still dwells within every human being. This experience merges into an interaction with other people and can also be categorised into two dimensions; A, physical activity B, speed perception. Physical activity is essential for the wellbeing of all humans. It includes a wide range of activities from walking or running activities to those that allow us to enjoy and experience our bodies. To the second dimension of the speed perception belong all forms of mobility in which one person puts a machine or some sport equipment into movement and controls it. People want and need to control both their bodies and machines. They like to control and also enjoy speed. These are needs that will persist even in an age of immobility and are tremendously important for people's health. Even for interaction with family, friends and co-workers, residual mobility will remain essential to our basic needs. For mobility is the core element of those needs. It is not only a matter of coming from place A to place B, but also of experiencing and enjoying time and space. The connection may be from A to B; but the path is the aim. Mobility will be practiced as an end in itself and won't be replaceable by the immobility approach.

Summary and future work

In conclusion, we propose that the future of mobility is based on a **decreasing mobility** of humans. To achieve that goal, mobility of goods and information must increase.

In order to analyse whether this vision can or will be achieved, we looked at six different areas and checked if they would support or impede the vision of an intangible mobility. The economy is divided into two groups: one part would greatly benefit from an increasing immobility and will therefore support it; the other part fears great losses with the new model and will try to stop the change. Technology and society support the intangible mobility because it will lead to an improved lifestyle. Furthermore, the environment benefits from a reduced resource usage due to the optimised logistic processes. Politics and policy both are induced by the needs of the economy and society and therefore will follow their decision. In sum, we see the future of mobility in a decrease of personal mobility and increased mobility of goods and information.

However, some questions remain unanswered. One question is what actual life would look like in the proposed society. Detailed scenarios should be developed. Furthermore, our vision lacks evidence. This could be remedied by the gathering of information through the use of questionnaires. What reasons might speak against that development? And lastly, what would an opposite scenario look like?

One possibility is that the mobility of humans might even grow in the future. This leads to questions such as what that sort of scenario would look like, how the finite resources of our earth are to be managed, how the society and economy will be structured and what conditions must be fulfilled in order to achieve that opposite vision? These questions shall be addressed in future research.

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Sources

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