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## Business Models for Behavioural Change in Sustainable Urban Mobility

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## Management summary

The BestMOB project aims to achieve the best sustainable mobility for private businesses by developing innovative business models. BestMOB stands for *Behavioural Change for Sustainable Urban Mobility* and is an EIT Climate KIC project.

Businesses nowadays are looking for ways to reduce the negative effects of congestion. The BestMOB business models help them to achieve more cost-efficiency through the stimulation of more sustainable travel behaviour. At the same time, the models contribute to the reduction of greenhouse gas (GHG) emissions and improvement of air quality in urban areas.

BestMOB has developed three new business models. Besides, four existing business models were adapted to create new innovation based on what is already in the market place. Best practices of past projects were used in the development of these business models.

The new business models are the following:

- **School Competition** is a business model aimed at reducing car traffic during rush hours, especially before and after school, and at shifting the modal split from car traffic to different modes as bicycle and pedestrians. The idea is adaptable for whole Europe.

The proposition envisions to stimulate the formation of organized walking/cycling groups (comparable to a school bus) where the school kids meet at certain locations or are being picked up at home by one or two parents and will be accompanied on their way to school.

- The goal of **MobyCredits** is also to help reduce motorized city traffic during peak hours. Commuters can earn credits based on the degree of sustainability of the mode of transport used and the time at which they travel (during or outside peak hours).

- **Sport Works** will offer personal lifestyle coaching. This coach can help employees to live a more healthy lifestyle and may result in actions such as a more healthy diet and more movement/sports. One of the actions that can improve this healthy lifestyle is to travel in a more active way, meaning that people can replace wasted travel time (e.g. by car) by useful active time (e.g. biking or walking/running to work).

BestMOB also adapted these four existing business models:

- **SpitsVrij** is a project aimed at reducing traffic during rush hours on a certain location in the Netherlands, Province of Utrecht. Commuters are encouraged to avoid travelling by car during rush hours by leaving at another time, using alternative transport modes and practicing alternative ways of working (for example work at home). Though the project was a success, it was 100% funded by governmental money, which is not the desired situation. To relieve the need of government funding, advertisers can be attracted. To create a target group that is

substantial enough for these advertisers, the project can cooperate with comparable projects within the “Spitsmijden” program, and share one platform. This will not only enlarge the attractiveness to advertisers, but also lead to reduced costs.

- A **Mobility Budget** is type of reimbursement of travel expenses for commuters, used in the Netherlands. German employers offer a variation called “Job Ticket” to their employees, an obligatory collective transport service. The obligatory character could also be applied in the Dutch Mobility Budget. The target group for the mobility budget could be enlarged to students. The German job ticket concept appears to work for students.

- **Liftshare** is a scheme that promotes and delivers car sharing with a range of employers, businesses and educational institutions across the UK. The initiative has been quite successful in the UK and Liftshare is the UK’s largest car-sharing network with over 600,000 members. To enhance the business model, one of the main challenges is to widen the market and scope of Liftshare to elsewhere in Europe. A franchising model could be explored whereby similar social enterprises in selected EU states could be selected to help roll out the Liftshare scheme in their respective countries.

- **Insurance for travellers** is a service inspired by a trial with a Schiphol Guarantee Service, launched in June 2014 by the Dutch Railways (NS). The NS will provide traveller on their way to the airport with support in case of delays or other disruptions. In extreme cases the guarantee covers the cost for rebooking the flight, cost for a hotel or gives a reimbursement of the costs. The business model can be enhanced by extending the service to other modes of transport (metro, bus, car sharing). Also other important destinations (like a job interview) could be included in the insurance.

The following conclusions and recommendations result from the BestMOB project:

- Business modelling should be part of the innovation process from the beginning. It helps innovation teams to think about essential elements like customer segments, the value proposition and key partners.
- Customers and their needs should be the starting point of every business model. For sustainable mobility the focus should be on groups that have the possibility to actually change their travel behavior. To reach this target group, personal approximation and communication via communities worked well in a number of sustainable mobility projects.
- Scaling up to a critical mass can be a challenging phase, in which government support is valuable. There is an opportunity to expand local success into the EU, but local context should be taken into account.
- Create business models in Public Private Partnerships where opportune. Find out what partners are needed, how private parties may benefit, and involve them in the business model.
- Focus on business models that prove to be (economically) viable in the long term, supported by the public sector during the initial phase. Be creative in identifying and utilizing benefits of sustainable mobility for all partners.

- Measuring effects and making them visible contributes to the awareness of the benefits for stakeholders. Exploit the technical opportunities for measuring, informing and influencing travel behaviour.

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# 1 Introduction

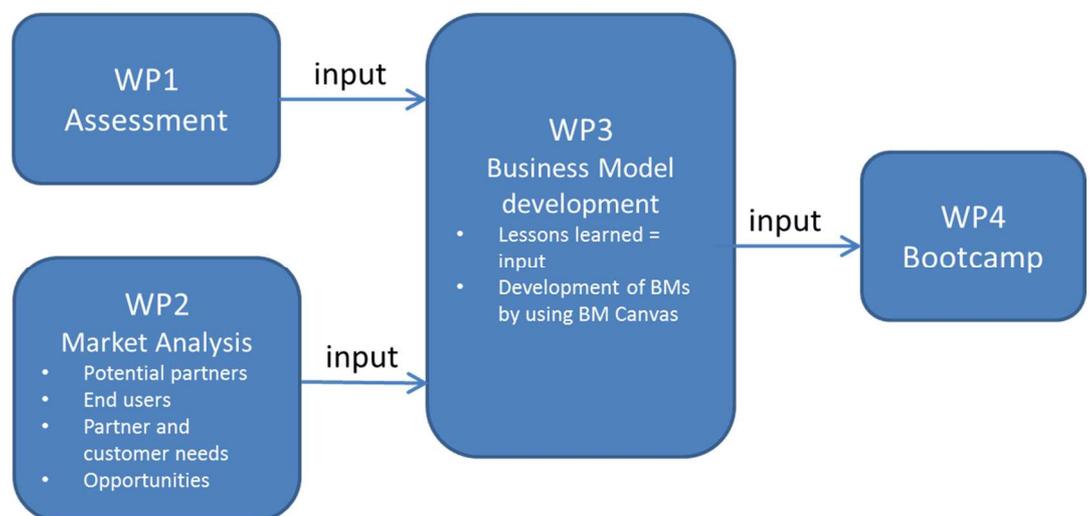
The BestMOB project aims to achieve the best sustainable mobility for private businesses by developing three innovative business models. BestMOB stands for *Behavioural Change for Sustainable Urban Mobility*. The project is funded by the Climate KIC program of EIT (European Institute of Innovation & Technology). This program aims to drive sustainable innovation, and business modelling is an essential part of that. The BestMOB project is executed by a consortium of European Partners: the Province of Utrecht, Arcadis, Utrecht University and TNO from the Netherlands; ASTER (Italy); Regionalmanagement Nordhessen and Stadt Kassel (Germany); and the Institute for Sustainability (UK).

Businesses nowadays are looking for ways to reduce the negative effects of congestion. The BestMOB business models help them to achieve more cost-efficiency through the stimulation of more sustainable travel behaviour. At the same time, the models contribute to the reduction of greenhouse gas (GHG) emissions and improvement of air quality in urban areas.

The project builds on the knowledge and success factors of prior projects and transfers these into innovative business cases by firstly assessing the market demand and end-users and secondly developing applicable business models: business models from which businesses, the environment, the public sector and urban residents will profit.

The BestMOB project consists of four work packages:

- In WP1 an assessment of best practices has been carried out.
- WP2 has performed a market analysis, mainly consisting of interviews with market players.
- WP3 has designed innovative business models.
- WP4 aims to encourage business partners to select the most promising business models, which can be implemented at a later stage in an EIT Innovation Project. A Bootcamp is organised for this in October 2014.



This report describes the business modelling results of WP3<sup>1</sup>. In WP3 the results of the best practices assessment and the interviews have been used as input. TNO has taken the lead in designing the business models. The project partners were involved in workshops, where a number of business models were designed and re-engineered. The Business Model Canvas method is used as a basis for designing the business models.

The report starts with a typology of services in the area of sustainability. This typology is described in chapter 2. In chapter 3, a resume of best practices is presented. They have been used for the business models, which are presented in chapter 4. Chapter 5 contains conclusions and recommendations. The report ends with two Annexes. In Annex A the business model canvasses for all developed business models can be found in large size. Annex B presents the success- and failure factors that were distilled from the interviews. These were used for the best practices analysis in chapter 3.

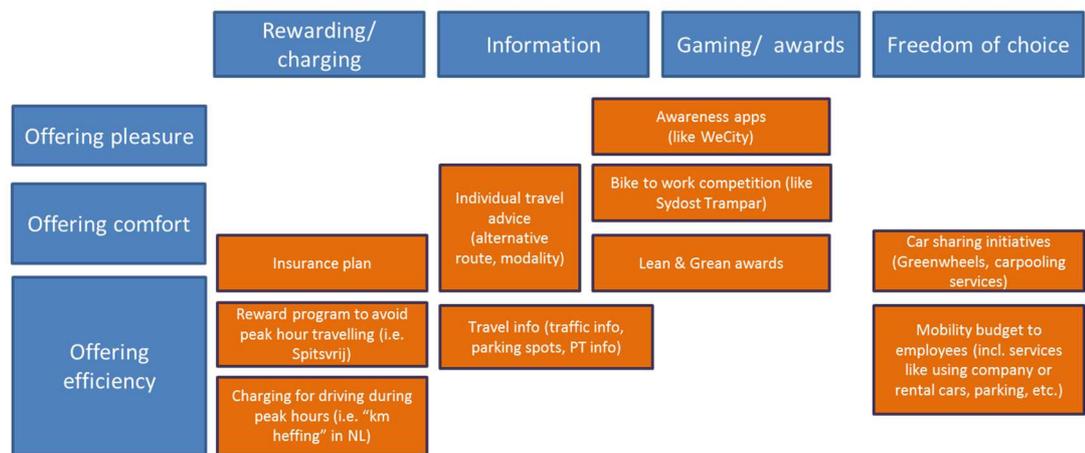
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<sup>1</sup> This report is the first deliverable of WP3 (D3.1) and focusses on business model development. Another deliverable, focusing on SME acquisition (D3.2), will be described in the final overall report of the BestMOB project. The third deliverable of WP3 (D.3.3), concerned knowledge transfer with the Citibility project. Because the Citybility project was not approved, the knowledge transfer could not take place.

## 2 Typology of services

The BestMOB project focusses on business models for sustainable mobility. To structure the services in this field, a typology of services is made. The typology contains two axes: the horizontal axis contains different service groups, and user needs are presented on the vertical axis. The services typology is presented in the picture below. In the picture some examples of existing services in the field of sustainable mobility are plotted (the orange blocks).

### Services typology



The typology divides the services into four groups:

- Services that use a *rewarding or charging* scheme
- *Information* services
- Services that have an element of *gaming and awards* to stimulate more sustainable behaviour
- Services that enable *freedom of choice*, like a mobility budget for employees

Most services can be mapped on one of these four groups. Some services have elements of more groups. For example the WeCity app in Emilia-Romagna, Italy offers and collects information, but is also linked to a game with prizes.

When designing new business models, a crucial element is always the user need. To create a feasible business model, the need of the user should be a starting point. That is why user needs form the second axis of the services typology. Most user needs are covered by the following three elements<sup>2</sup>:

- *Pleasure*: users want to have (more) fun in doing things
- *Comfort*: things are made easier and/or quicker to do for users
- *Efficiency*: users want to earn money or reduce costs

<sup>2</sup> “Gemak, Genot, Gewin”, see <http://gewingemakgenot.com/2012/11/09/gewin-gemak-genot-de-wet-van-fred/> (in Dutch)

The user may be a traveller (e.g. commuters), but may also be another entity, like society. An example of a concept aimed at society is road pricing (charging for driving during peak hours). This concept does not serve individual road users, but should serve society by using road capacity more efficiently during peak hours.

Some services have more elements of the three elements of user needs in it: for example an individual travel advice offers comfort, but may also suggest the most efficient modality (in time and money) at a specific moment.

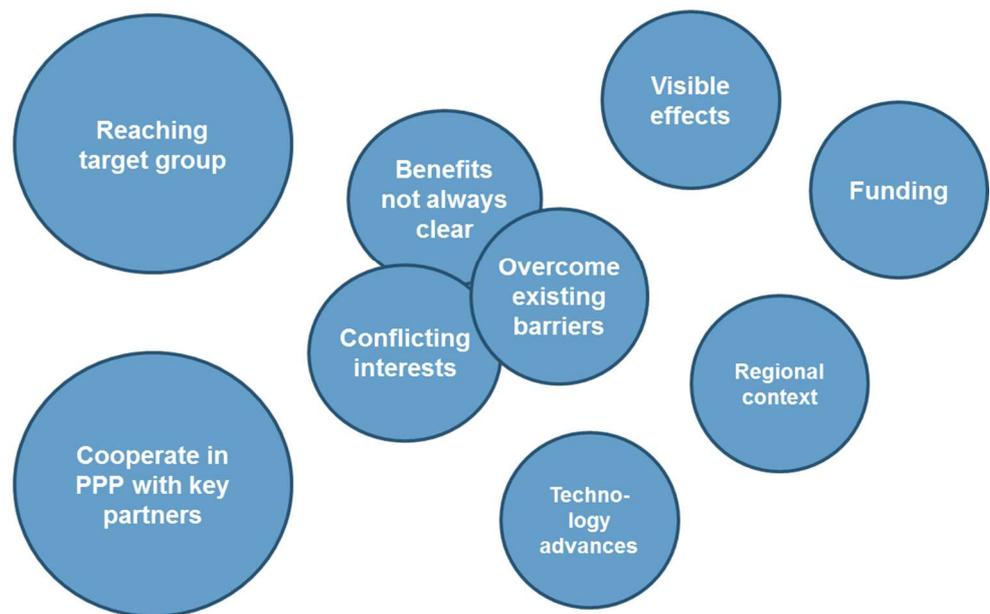
## 3 Best practices

Sustainable mobility has been an important topic on the agenda of the European Union for years already. A lot of projects and services have been launched. Some projects and services have been or are still successful, but not all. When creating new business models, it is very valuable to look at the best practices and lessons learned from earlier and existing projects and services.

To get insight in the success and failure factors of past and existing services and projects, in WP1 a best practices analysis was made. Also in the interviews in WP2 best practices and failure factors were collected. They can be found in Annex B. In WP3 the results from WP1 and WP2, together with an additional research to best practices in business models, were analysed. The results of this analysis are presented in this chapter, and used in the business model creation process.

The picture below gives an overview of the main elements in the best practices analysis. These elements are elaborated in this chapter.

### Overview of success and failure factors



#### 3.1 Reaching the target group

A key success factor for sustainable mobility projects is reaching the right target group. To realize this, the following questions should be answered:

1. Who should be the target group for the project?
2. How can this target group be reached?
3. How can enough mass be created?

1. *Who should be the target group for the project?*

Defining the target group or customer segments is the first step when creating new business models (see Chapter 4). Since the BestMOB project focusses on behavioural change in sustainable mobility, the focus should be on groups that have the possibility to actually change their travel behaviour. Next, the value proposition of the project should respond to the customer needs of the target group. For example, if one wants to stimulate the use of Electric Vehicles (EVs), it can be made fiscally attractive for entrepreneurs to purchase an EV, which was implemented successfully in the Netherlands. However this will not work for lower income segments, since they will not have the money to purchase an EV. A nice solution to bring driving an EV into reach of this last group is the EV Car Club in Tower Hamlet, London. The EV Car Club offers a pay-per-use EV car services to communities in deprived neighborhoods.

Another nice example that emphatically focusses on a group that has the possibility of changing behaviour was implemented at Maersk<sup>3</sup>: an individual travel advice is offered to new employees. Changing employer is a specific moment to rethink travel behaviour. This opportunity is taken by Maersk by advising their future employees before their first working day. New employees send in their information to VCCR, a mobility management office hired by Maersk. VCCR then offers the individual travel advice to the new employee. In practice this makes new employees rethink their default travelling behaviour, which is often by car, and sometimes delivers attractive alternatives, like making use of a park and ride facility.

Mobility budgets are most effective for employees that travel a lot. Also it appears to be mostly effective for highly educated people.

Including customers in the process of defining the value proposition is important to get customer needs clear. Customers are in many cases the travelers, but might also be business customers, e.g. employers.

2. *How can this target group be reached?*

Reaching the target group, once defined is not always easy. In the Netherlands, a number of "Spitsmijden" (avoiding peak hours) projects were carried out. The target group was well defined: people that drive by car during peak hours (on a predefined corridor) and that are able and willing to change their travelling behaviour. However research showed that this group is too diverse to identify on the basis of i.e. socio-economic characteristics. Different strategies were applied: media campaigns (a.o. by using billboards), reaching people via employees and lease companies, and approaching people personally. Media campaigns turned out to be ineffective. Reaching people via employees was somewhat more effective. The personal approach worked very well. First the potential target group was found by applying number plate recognition. These people were approximated personally and they could apply voluntarily. This concept of self-selection worked well for these projects. This self-selection mechanism also works well in projects that are targeted at testing new technologies. In Sensor City Mobility Assen, the Netherlands, flyers and posters

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<sup>3</sup>

<http://www.slimreizen.nl/case/Maersk+%96+Naar+het+werk%3F+Door+slim+beleid+liever+met+het+OV+/2820/> (in Dutch)

didn't result in enough participants. However the participants that did apply appeared to be interested in testing new technology.

There is a trend towards community based initiatives. The potential of the community can be useful for reaching a target group, i.e. by using local stakeholders and sponsors, word of mouth, etc. Recruiting participants via events also works well, when a project or service can be coupled to (travelling to) such an event. This worked well for the project "Praktijkproef Amsterdam".

### 3. *How can enough mass be created?*

For many services it is important to have a group of customers or users that is substantial. For example a car sharing service like Liftshare is attractive if enough lifts are offered. At the same time, travelers will only offer a lift if there is a fair chance that a lifter will use your offer.

At the start of most projects, this critical mass will not be reached yet. To get projects through this difficult and costly start phase, government support may help to get projects up and running, with a sufficiently large client group. Phasing the project for different customer segments, where the project starts with the customer segment that has most benefits (e.g. the transport sector), may also be effective.

Connecting strong brand names to the project may create marketing power. However this is not always effective, as we described above for Spitsmijden.

It is important to make the projects and services as attractive and accessible as possible. Extensive registration procedures or surveys will create a burden for potential customers to participate. Also a smartphone app that eats lots of the battery may discourage participants<sup>4</sup>. The EV Car Club in London indicated in an interview with BestMOB that a comprehensive booking system, easy access to rental cars by PIN and a customer service hotline where important for the success of the service.

Giving participants a reward for changing travelling behaviour appears to be successful. This may be a financial reward, a gift, or reduced prices for products. The "Spitsmijden" projects in the Netherlands learned that the degree of behavioural change correlated with the height of the rewards, with an elasticity of 0.35<sup>5</sup>.

Once concepts appear to be successful, more mass can also be created by bringing the concept to other customer segments, or to other regions or countries.

## 3.2 Cooperation in Public Private Partnerships, with key partners

Sustainable mobility is a societal issue in the first place. This makes it eligible and often necessary that governmental bodies take the lead or at least participate in

<sup>4</sup> <http://cr.previewzone.nl/spitsmijdenindetrein/resultaten/#/14/> P. 15 (in Dutch)

<sup>5</sup> This means that a an increase of 10% of the rewards will lead to 3.5% more change in behaviour. See <http://www.beterbenutten.nl/art/uploads/files/MuConsult%202013%20Eindrapport%20Mobiliteitsprojecten.pdf>, page 23 (in Dutch)

most sustainable mobility projects. In many cases however, private parties also have interests in sustainable mobility and can offer an important contribution. In general one can say that entrepreneurs and SMEs are creative, driven and specialists in their field of work. Given the variety of business ideas, possible business models and the pace of SMEs in market development, entrepreneurs and SMEs have to be highly involved in developing the business models. Governments can bring in their assets, that are much broader than subsidizing projects: they can kickstart projects by bringing parties and projects together, facilitating standardization, taking care of necessary regulation, offering pilot locations, etc. This makes cooperation in a PPP (Public Private Partnership) an obvious choice with the highest return. For example in case of traffic jam during peak hours, there are more problem owners than only the government: individual commuters are affected, and their employees have interests in a solution. The logistic sector is affected too. Making concrete appointments about results to be realized with all partners in the PPP is essential.

When governments take the initiative for a project, they should first identify the bottlenecks or problems to be solved (and for whom), the key partners that are needed and their potential benefits. Then the government can coordinate the composition of the PPS and make use of the abilities of private parties.

In practice, it appears not always simple to find private partners that want to invest and participate in sustainable mobility projects. In the Netherlands, a number of "Spitsmijden" (avoiding peak hours) projects have been carried out. Governments wanted to involve employees. This turned out to be hard. Employees didn't have enough sense of urgency and their benefits were not clear to them<sup>6</sup>. To get the key private partners involved, it is essential to make their benefits clear and to take away the most important barriers. This issue is elaborated in 3.3.

However it must be stated that not all projects need government participation. Private parties recognize more and more the opportunities that sustainable mobility solutions can offer. A good example are mobility budget projects, that appear to offer sustainability, efficiency and financial benefits to employers and their employees.

A point of attention when bringing together different parties in a PPS (or other form of cooperation), is a well-balanced composition. Innovative projects in mobility tend to attract mainly technically oriented market parties. A risk is that issues like user behaviour, finance and marketing remain underexposed. When these topics are also represented in a PPS, significant steps can be realized in sustainable mobility.

### **3.3 Benefits, barriers and conflicting interests**

A business model with more than one stakeholder can only be successful if the interests of all important stakeholders are met sufficiently. Benefits may be a better image, financial benefits (described in 3.5), increased efficiency, etc. Also existing barriers should be taken away. For example in case of mobility budgets, the administrative burden is often a barrier for employees. Outsourcing the administration can take away this barrier.

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<sup>6</sup> From Bestmob interview with BVN Mobility

However sometimes there are conflicting interests between different partners. These may form an impediment for the success of sustainable mobility projects. The EV Car Club in London met some councils that tended to put charging infrastructure in less accessible locations because they wanted to continue to obtain revenue from standard car parking. This makes the service less attractive for users to use the service. Availability of infrastructure is however essential for the success of such a service. Also public resistance can form a major barrier. The plans for charging per kilometre for passenger cars in NL were never realised, because of public resistance.

The benefits for the different stakeholders are not always clear. On one hand partners are not always prepared to be transparent on their benefits, and business sensitive information will not always be shared. This is a major issue in the logistics sector. On the other hand stakeholders do not always recognize their own benefits. Many employers don't see the benefits of a mobility budget. From practice we know that it can lead to significant cost savings, a better image, and make the employer more attractive to employees. Consumers in general are unaware of the high costs of owning a car, which makes that they overlook the attractiveness of car sharing services. Research to benefits of sustainable mobility projects, evaluation of the success and information to stakeholders can help to overcome this problem.

Sometimes regulation forms a barrier. The way in which fiscal regulation is arranged in the Netherlands, gives wrong incentives and forms a barrier for more sustainable travel behaviour<sup>7</sup>. It is to governments to prevent and remove situations like this. Regulation may however also be a tool to force parties to step over existing barriers. In the UK regulation forces companies to compose a mobility plan. This forces them to think about sustainable mobility. Similar regulation exists in Belgium<sup>8</sup>. Regulation can also enable sustainable mobility. For example for the use of number plate recognition government regulation is necessary.

Matching the benefits of the different stakeholders is key to a successful business model. For example both employer and employee have a benefit from travel time savings. The employer can enable this for the employee by offering flexible working hours. The employee can then avoid rush hour travelling and work at home first. This will lead to more efficient employees, which benefits the employer.

### 3.4 Visible effects

Measuring of effects on behavioural change, sustainability and efficiency is important to learn from projects. Making the effects visible will contribute to the awareness of the benefits for stakeholders, as stated in 3.3. However there are still lots of sustainable mobility projects that do not measure and evaluate effects. This is a missed chance.

Critical mass is important to make measuring of effects sensible. For example, in the "Spitsmijden" projects effects were visible on the level of individual participants. To measure the effect on traffic streams a higher number of participants is necessary.

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<sup>7</sup> <http://www.accountancynieuws.nl/Uploads/Files/224.pdf>. Report on "Slim reisbudget, Kansen en Mogelijkheden door de B50 Werkgroep Mobiliteitsbudget 2012".

<sup>8</sup> <http://www.mobiliteitsmanagement.be/ndl/bvplan/intro.htm>

### 3.5 Funding

Funding of sustainable mobility projects is often a problem. Many projects depend on government funding. Since sustainable mobility is in the first place a societal issue, this is not unreasonable. Delivering a structural financial contribution is however in many cases not an option for governments. This leads to temporary projects that are stopped after the funding period, whether or not they were successful. An example is the Spitsvrij project, funded by the province of Utrecht. Though the project was successful, it was stopped since it was financially not feasible. This makes it necessary to look for business models that are (also) financially feasible. A reengineered business model for Spitsvrij, with alternative funding, will be presented in the next chapter.

As explained in 3.2 the start phase of most projects, where a critical mass is not reached yet, is the most problematic phase from a financial point of view. To get projects through this difficult and costly start phase, government subsidy may help to get projects up and running. A financially feasible business model should be there for the continuation, with less or no requirement of government funding.

To construct a financially feasible business model, strong partners with benefits in the project should be brought together (see 3.3). When the interests of these partners are met sufficiently they will be prepared to invest and costs can be divided among the stakeholders, according to their benefits. These benefits may vary highly per partner and per project. Some examples of *financial* benefits for stakeholders are the following:

- Less travel costs for employers/employees. Public transport is on average 50% less expensive than travelling by car. Reducing the number of trips (i.e. by working at home) will also lead to cost savings.
- Time savings: less travel time will lead to more production or declarable hours. This may be realized by employers offering a possibility to work at home to their employees. Travelling by train instead of being delayed in a traffic jam will also lead to time savings. These time savings were the motivation for Twijnstra & Gudde to make an NS (Nationale Spoorwegen, Dutch train operator) Business Card available to their employees, which has led to more declarable hours.
- Reduce costs for parking spots. Parking spots are scarce and expensive in many cities. Alternative mobility solutions like mobility cards, Greenwheels, etc. really help to alleviate this problem. For the Erasmus Medical Centre (EMC) in Rotterdam shortage of parking spots was a problem, both for employees and patients/visitors. EMC found a solution by implementing an individual travel budget for employees. This resulted in a decline of the percentage of car commuters from 45% to 20-25% of employees. The results were that enough parking spots became available for patients and visitors, without having to invest in a new parking garage of €4 mln. Operational cost reduction of €1.4 mln yearly for parking and €0.1 mln per year for reduced administration compensated the extra costs of €1.3 mln per year for higher travel budgets<sup>9</sup>.
- Lower administrative costs when using mobility cards. Various cases were found where this was realized. The EMC case described above is one of them.

<sup>9</sup> <http://www.slimreizen.nl/case/Erasmus+MC+-+Vervoersplan+schept+parkeerruimte/1950/12/?searchString=erasmus>

Another is the William Schrikker Group that saved €20-25k yearly (0.5 FTE) yearly by implementing a mobility card<sup>10</sup>.

- Car sharing is less expensive than car owning. Many people are not aware of the high costs of owning a car. Substantial costs can be saved both by consumers and companies.

### 3.6 Regional context

Sustainable mobility services are context sensitive. Social and cultural aspects have to be taken into account when developing business models. Success depends on the ability to target local and regional needs and end users. Also the local circumstances and available infrastructure are important. Biking is a good solution in Dutch cities, where good cycle tracks are standard. In hilly regions where large distances have to be covered, cycling may not be a solution. The availability of Public Transport is also essential and varies highly per region. Many other issues that vary per region are important to take into account when developing business models, varying from regulation and fiscal policy to local weather circumstances.

Successful business models may be duplicated from one region or country to another. However the business models should be adapted to local context.

Regional context can also be used to strengthen a business model. There is a trend towards community based initiatives. Local sponsors and partners can be involved in initiatives aimed at local communities. Sustainable mobility often works best when there is local 'buy in' to a scheme and where a local authority or local housing association is directly involved. Residents who may use a scheme often identify with local organisations who promote such initiatives.

### 3.7 Technology advances

During the last decade great technology advances have been realised. These advances have created new opportunities for sustainable mobility projects. The following developments in the field of measuring, informing and influencing travel behaviour took place:

#### *Measuring:*

- Automatic Number Plate Registration (ANPR) not only makes it possible to measure traffic streams, but also to measure whether individuals change their behaviour of car use. This technique was used in Spitsvrij, combined with positioning via smartphone.
- GPS/ positioning via smartphone is an alternative technique to follow individuals. This technique is less expensive than ANPR, but more fraud sensitive because people can for example leave their smartphone at home and travel by car, while still getting rewarded for less car use.
- Chip cards for Public Transport make it easy to administrate PT use. This is often used in mobility card services. These chip cards can also be used for making use of e.g. rental cars.

<sup>10</sup> <http://www.slimreizen.nl/case/William+Schrikker+Groep+-+Geringe+administratieve+last+en+kosteninzicht/2350/12/?searchString=schrikker>

- Internet cookies and social media like Twitter are used to analyze incidents quickly.

*Informing:*

Internet everywhere has made it possible to inform travelers wherever they are. The real-time character of the internet enables continuous updates of the actual situation on routes for all modalities.

Reporting for management on travelling costs and behaviour has also been made easier due to the possibilities for measuring that were described above.

*Influencing:*

Apps on smartphones offer a simple and inexpensive way to offer services to large target groups. These apps can be used to give personalized feedback to travelers, give real-time route and modality information and suggest alternatives when appropriate.

## 4 Business models

This chapter presents the business models that were designed in the BestMOB project. The goal of the project is to realise business models that

- Reduce car-use during rush hours
- Encourage sustainable travel behaviour
- Reduce the financial burden of public sectors and are feasible for all partners that participate in the business model
- Are beneficial for environment an society

The business models were designed during a workshop, organised by TNO, on 1 and 2 July in Delft. All project partners contributed to the business models. The business models were judged by a jury and improved based on the comments of this jury. Also SMEs were invited to join the presentation of the business models.

During the workshops the business model canvas method was used. This method is explained in paragraph 4.1. In the first part of the workshop four existing business models were re-engineered, to overcome existing problems in the business model, and to make the business models better. The results of the re-engineering workshop can be found in paragraph 4.2. In a second and third part of the workshop three new business models where designed. These are presented in 4.3. Larger versions of the pictures of the business model canvasses can be found in Annex A.

### 4.1 What is a business model?

Numerous definitions of business models exist. In the BestMOB project we have used the Business Model Generation method from Alex Osterwalder<sup>11</sup>. This method gives a clear and practical method for the creation and improvement of business models.

Osterwalder defines a business model as follows:

*“A business model describes the rationale of how an organization creates, delivers and captures value.”*

The elements of a business model are shown in the Business Model Canvas. The canvas is used for the design of business models.

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<sup>11</sup> Alex Osterwalder, “Business Model Generation”, 2010



The Business Model Canvas contains the following elements:

*Customer Segments*

This field forms the start of the creation of a business model. It describes who are the main customers that an organization creates value for.

*Value Propositions*

The center of the business model is the value proposition. It describes the value that is delivered to the customer segments. The value proposition should respond to the customer's needs, and/or alleviate his pains.

*Customer Relationship*

This field describes how the relation with the customer is established and maintained. This may vary from dedicated personal assistance to an automated service.

*Channels*

Which channels are used to reach the customer segments? These channels may differ for the different channel phases: awareness, evaluation, purchase, delivery and after sales.

*Customer relationship*

The type of relationship that is established with the customers is described here. This may vary from personal assistance to automated services and communities.

*Revenue streams*

This field describes the revenue streams that are generated. One can think of subscription fees, sales revenues, revenues from advertisers, etc.

*Key resources*

What resources are required for the value propositions, the distribution channels, etc.? Examples are FTEs, knowledge and intellectual property, machinery, etc.

*Key activities*

This field denominates the activities that are required to create the value proposition and run the business model. Think of production, management of IT systems, etc.

*Key partnership*

What partners are needed to offer the value proposition to the envisaged customer segments? Reasons to partnering may be acquisition of particular resources and activities, access to customer segments, risk reduction, etc.

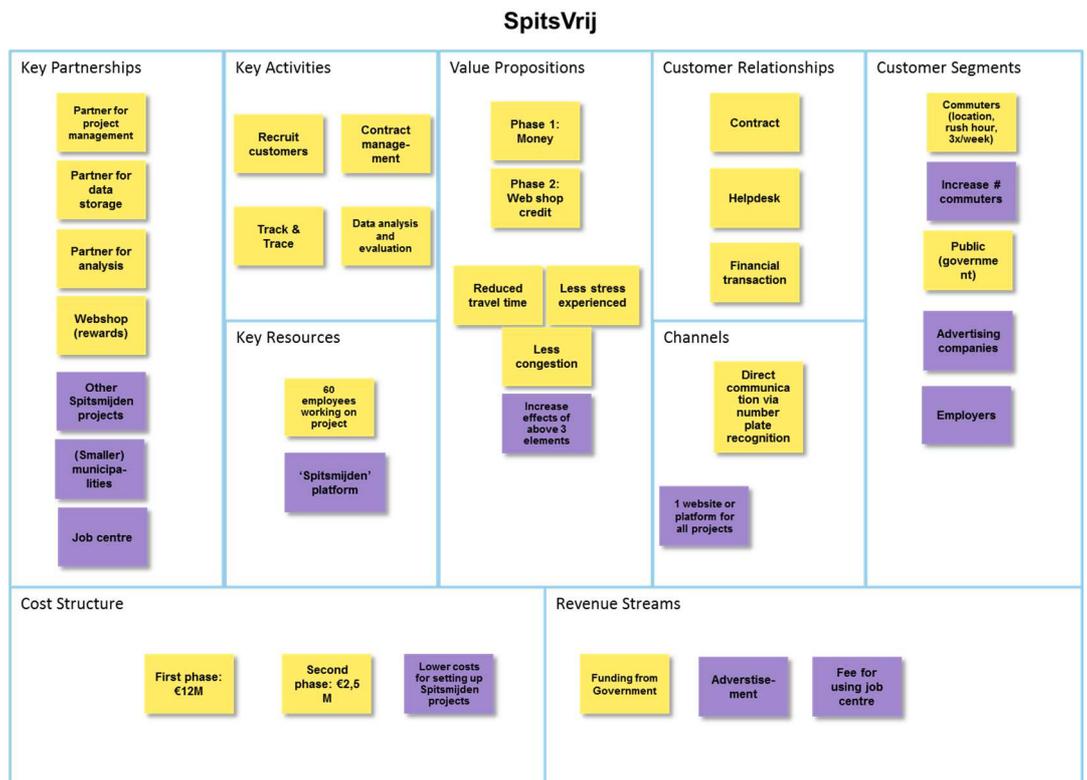
*Cost structure*

The most important costs are denominated. They are mainly based on the key resources and key activities. Some costs will be fixed (like initial investments) and other variable.

**4.2 Improved existing business models**

4.2.1 *Spitsvrij*<sup>12</sup>

Schematic Business Model Canvas for the case SpitsVrij:



**Current Business Model of SpitsVrij using the Canvas elements (yellow elements)**

<sup>12</sup> Text by Janiek de Kruijff (TNO), revised by Karin van Kranenburg (TNO)

### *Customer segments*

SpitsVrij is a project aimed at reducing traffic during rush hours on a certain location in the Netherlands, Province of Utrecht (triangle of Utrecht, Hilversum and Amersfoort). Extra congestion on this location was expected due to road works. The customers/end users of this project are commuters in the project area that are using these roads often (minimal 3 times a week) during rush hours. They are encouraged to avoid travelling by car during rush hours by leaving at another time, using alternative transport modes and practicing alternative ways of working (for example work at home).

When the project is a success, and less commuters will use the congested roads, also society will have profit: they will benefit from reduced congestion and pollution. Society is represented by the government of the Province of Utrecht.

### *Value proposition*

To persuade the commuters not to use the roads during rush hours, commuters will get an incentive to change their behaviour. During the first phase of Spitsvrij this consisted of a financial reward in cash and during the second phase of web shop credits.

The value created for society is a combination of reduced travel time on the road segment, less stress experienced (for road users) and reduced polluting emission.

### *Channels*

The commuters are recruited by contacting them directly. This could be done using number plate recognition and by asking commuters who were using the road during the rush hour for more than 3 times a week to participate in the SpitsVrij project. During the project, the participants were kept informed by using a website.

### *Customer relationship*

The participants have signed a contract to seal their participation. Also the helpdesk and financial transactions are part of the customer relationship.

### *Revenue streams*

The project is fully funded using governmental money. The (non-financial) rewards were made available by a webshop.

### *Key resources*

About 60 people contributed to the project.

The technical infrastructure to gather and analyse data, consisting of number plate recognition, in-car technology, etc.

### *Key activities*

The first essential activity is recruiting enough participants. Not all participants are able to avoid the rush hours every day, so to make a difference on the road the user group must be big enough. The contracts have to be handled. To make sure the participants do avoid the rush hours, they get in-car technology to track and trace them. The data that is gathered has to be analysed and evaluated.

### *Key partnership*

Province Utrecht is not able to perform all (key) activities. There is a partner for the project management, the data storage and the data analysis. The (non-financial)

rewards were made available by a webshop. In return, the webshop got access to an interesting target group.

#### *Cost structure*

The first phase of the project had a total cost of €12M and the second phase €2,5M.

#### **Enhancing the business model (purple elements)**

To enhance the business model, the first question is to find the most stressing problem for the project owner. The project is 100% funded by governmental money, which is not the desired situation. So *the challenge is to find ways to relief the share of government funding in the project*. This can be realised by finding new partners that provide additional revenue streams to finance the project. Another way to relief the financial contribution of the Province of Utrecht is to cut costs.

The main “customer”, the commuter, actually earns money by participating in the project, which leads to high costs. This was partly relieved by changing the financial rewards in gifts from a webshop. The benefit for the webshop, that made the gifts available for free, was getting access to an interesting target group: the participants of the project are very specific, as they driving during rush hour by car, probably to work, so they have a job and (probably) money to spend. This target group could also be very interesting for advertising companies. The Spitsvrij website will form an appropriate medium to get the advertisement to the participants, because it serves as a communication tool to provide the participants with daily information about their earned money/credits.

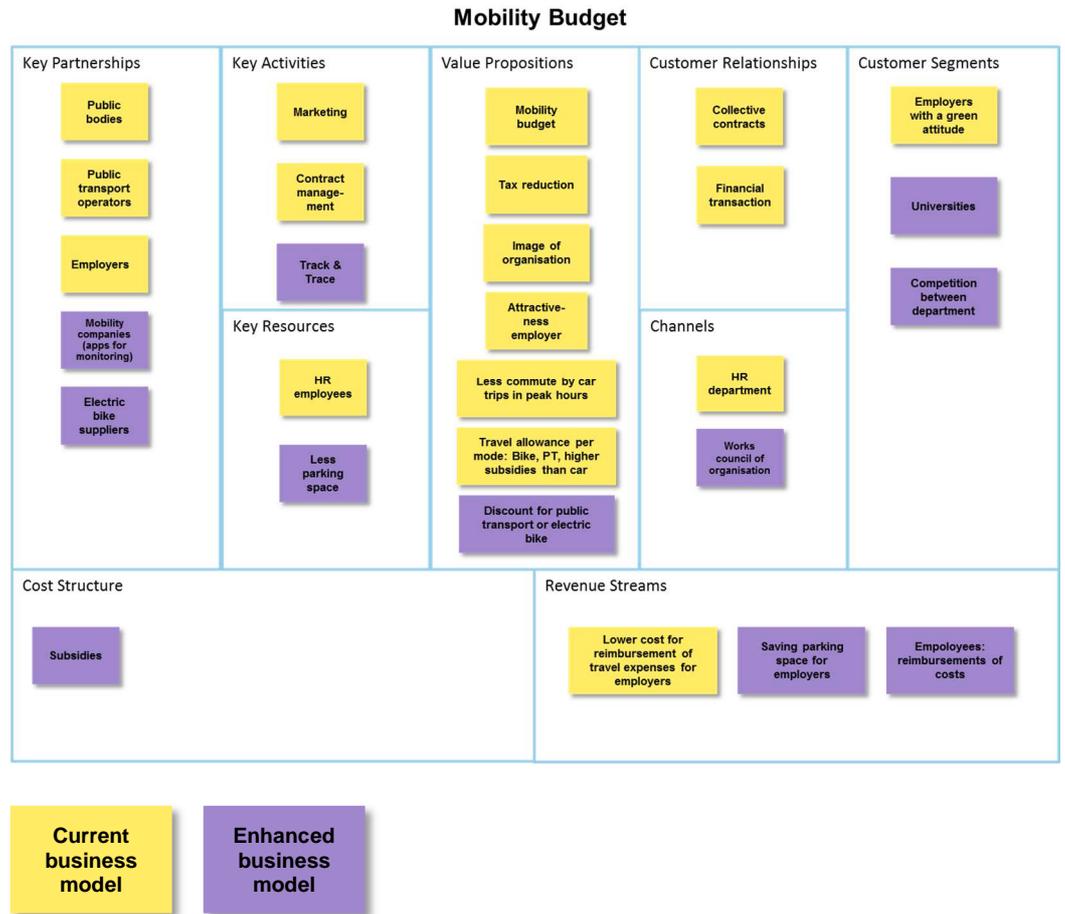
However, the total number of participants is not very high, which may reduce the attractiveness for advertising companies. To create a significant target group, it may be a solution to cooperate with other projects like SpitsVrij, of which there are many. If all these projects can use a (to be created) shared “Spitsmijden” platform, the (total) amount of participants, thus page views, will increase along with the number of projects, making advertisement more attractive. This may also result in increased efficiency for all involved projects: all projects had/have to spend resources on websites, structure and platforms. The costs of a shared platform can be shared among the different projects.

Currently the societal cost-benefits ratio is positive for SpitsVrij. A high percentage of the participants retained their changed travelling behaviour after the project had stopped. Reducing the costs to setting up a Spitsmijden project, for example by cooperation between projects, will increase the possibilities, even for smaller governmental organisations, such as municipalities. Scaling up the number of Spitsmijden projects and participants will increase the value for the public (reduced travel time on the road segment, less stress experienced and less congestion and pollution).

Another idea is to attach a job centre to the platform. They can match people and companies to attract employees that live very close to the office location. Employers will have to pay to use this service (access to data about Spitsmijden participants), which will increase the revenue for the platform. When employees switch jobs closer to their residential area, this would also contribute to the societal goals of Spitsmijden.

4.2.2 *Mobility budget*<sup>13</sup>

Schematic Business Model Canvas for the case Mobility Budget:



**Current Business Model of Mobility Budget using the Canvas elements (yellow elements)**

*Customer segments*

The customers for the mobility budget are employees of employers with a green attitude. These employees make commute trips. The mobility budget is a service that aims to encourage employees to make more sustainable commute trips.

By changing the commuting costs per mode of transport, i.e. reducing the price of a sustainable mode of transport by giving a discount or using a subsidy, certain modes of travel can be made more attractive. Examples are reduced fares for bus tickets or discounts for buying an electric bike. In some countries the commute costs are also affected by the option for tax reduction, this could also be a source for creating incentives.

Societal benefits are the reduction of car trips and that can result in requiring less parking space for employers (cost saving).

<sup>13</sup> Text by Diana Vonk Noordegraaf (TNO), revised by Thorsten Miltner (Stadt Kassel) and Karin van Kranenburg (TNO)

### *Value proposition*

The implementation of reimbursements of travel expenses for commuters is different per country. Below the mobility budget as applied in the Netherlands is described. Thereafter the “Job Ticket” proposition, as implemented in Germany by several employers, is explained.

A Mobility Budget is type of reimbursement of travel expenses for commuters. Many employers in the Netherlands offer reimbursement of travel costs to their employees. Reasons for offering this is to attract and retain employees. In the past, it was very common to offer either a reimbursement for the car, for public transport or for the bike. This did not give employees the incentive to make flexible travel choices and to use a variety of travel modes depending on their needs. Furthermore, without diversification in the reimbursement of the travel expenses, the employees do not get an incentive to use more sustainable modes of transport. Hence, the mobility budget concept increases the freedom of choice of the employees. If employees do not use the complete budget, the remaining budget is a reward for the employee and the benefits are shared between employees and the employer.

The mobility budget is paid by the employer and, if it includes tax benefits, by the government. If multiple modes of travel are offered a service provider can arrange this for employers and thereby reduce the administrative burden for the employers. The mobility budget was an initiative of employers that are active in the area of Corporate Social Responsibility. They feel a responsibility to influence the mobility choices of their employees in order to reduce the number of car trips in peak hours.

Several German employers offer a collective public transport option to their employees. This service is called a job ticket. The employer decides whether to implement job tickets in cooperation with the works council. The works council decides for all employees. In practice this often implies that if a job ticket is interesting for the majority of the employees it is interesting to decide on its implementation. It is a collective contract. Also employees that do not intend to use the public transport ticket are forced to buy it. Once they have bought the card anyway, there is a larger chance that they will actually use it. The validity of the job ticket is usually individual according to the place of residence. Employees that live in the same city where also the place of business is located get a ticket with the city fare zone. Employees that live in another city get a ticket that covers more fare zones.

### *Channels*

The mobility budget is offered to the employees through the HR department. If collective arrangements are made, the works council is also involved.

### *Customer relationship*

The employees sign a contract with the employer, followed by a financial transaction between the employer and the employees.

### *Revenue stream*

The employers still pay reimbursements for commute costs. However, as they stimulate more sustainable modes of transport and those modes are less costly than commuting by car, the employer can realize a relative saving on the total

commute costs. Furthermore, if employees would bike more, the employers might have lower health costs.

#### *Key resources*

The key resources are the HR employees who facilitate the implementation.

#### *Key activities*

Arrange interesting deals with the public transport operators or suppliers of sustainable modes (e.g. electric bike). Negotiate conditions for commute costs with employees.

#### *Key partnership*

Public transport operators or suppliers of sustainable modes.

#### *Cost structure*

The costs depend on the number of employees, their travel choices (as the reimbursement for each mode is different).

### **Enhancing the business model (purple elements)**

The interesting elements of the Mobility Budget are:

- Reimbursement of travel costs for combinations of transport modes.
- Diversification in the amount of reimbursement based on the sustainability of the transport mode (less reimbursement for commute costs by car and more for commute cost by public transport).

The interesting elements of the job tickets are:

- Collective arrangements; all employees in the organisation need to buy the public transport ticket; also employees that prefer other modes of transport.

The current mobility budget concept does not include any restrictions or obligations for the employees. Following the German example of job tickets, this element can be added as an additional incentive to encourage the use of environmentally friendly transport modes. The first step would be to implement higher reimbursements for trips made by for example bike instead of the car. The next step would be to only pay the reimbursement if a certain minimum number of trips with and environmental friendly mode is made. For example, the employee can receive a relatively high reimbursement for the expenses of bike trips, yet the employee is only eligible to receive this when he or she makes at least 6 bike trips to work per month. By adding an obligation, the whole service becomes more attractive for the service providers that can offer the option. This idea can make the value proposition more attractive for service providers. Service providers, such as public transport companies and suppliers of electric bikes can offer a discount to commuters. These service providers can become a key partner.

By adding an obligation for employees to use a certain transport mode a minimum amount of time, monitoring is required. Therefore the key activity Track and Trace is added. Mobility companies that offer track and trace services, e.g. by apps monitoring the travel behaviour of commuters, can be added as key partners. It is assumed that it is acceptable for employees that a mobility service provider is able to track and trace their commute behaviour if they receive the benefits of the mobility service in return. Once the mobility companies support a large amount of

commuters with this service, they can build a database with anonymized data of the commuters (travel statistics) which they could use to develop new services.

Another enhancement of the business model is to enlarge the target group. Not only employers can have an influence on the mobility choices of commuters. Another target group that often travels in peak hours are students, i.e. also universities create large commute flows. Therefore universities could also be added as an interesting customer segment. Especially on German universities students tickets are already very common.

Similar to the job ticket the students' ticket works in Germany. Usually the students' parliament votes for a contract with the regional transport association. On behalf of the students' parliament the students' union executive committee signs the contract. All students have to pay a fee per semester for the ticket (e.g. 122,25 € (university of Kassel)). The ticket allows all students to use public transport in the whole region of the regional transport association for free (independently where their place of residence is located).

There are also initiatives to extend the students ticket to other traffic modes. E.g. the students of the university of Kassel get access to the public bike rental system (3 € per semester). They can ride 45 minutes a day for free and get discounts on the fares. Similar to the students ticket every student has to pay the fee independent of the usage of the system.

These are good examples to include in the mobility budget idea and expand to other regions within the EU.

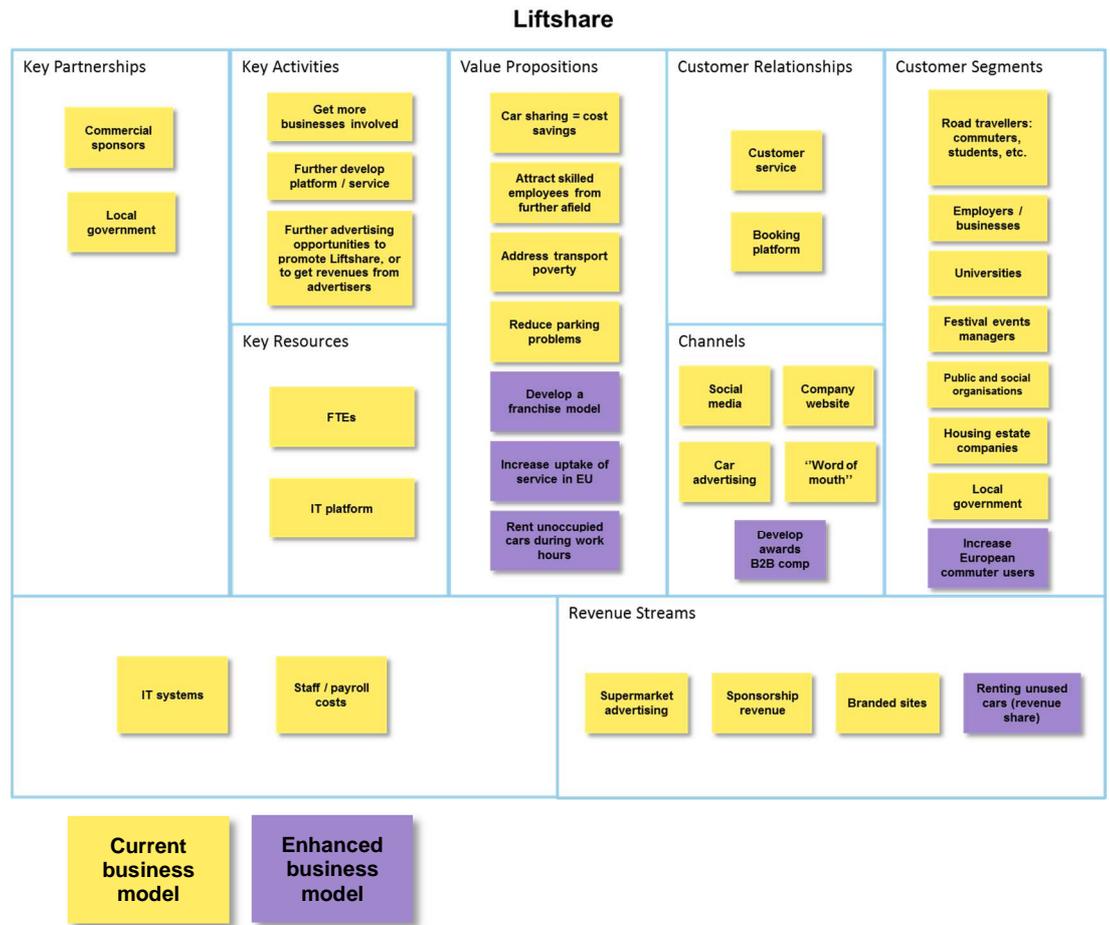
Furthermore, it is proposed not to treat the employer of a university as one organisation but to distinguish different departments within these organisations as each department might have their own characteristics and needs. Inspired by this the collective arrangements, it is possible to include another incentive, i.e. group pressure. It is possible to include a game element that challenges different departments to use as much sustainable transport modes as possible for their commute trips. Employers could start a competition between departments. It is also possible to require a minimum number of trips, a threshold, for a certain sustainable mode of transport before the employees is eligible to obtain a reimbursement.

#### 4.2.3 *Liftshare*<sup>14</sup>

Schematic Business Model Canvas for the case Liftshare:

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<sup>14</sup> Text by Mark Thirkell (Institute for Sustainability); revised by Karin van Kranenburg (TNO)



**Current Business Model of Liftshare using the Canvas elements (yellow elements)**

Liftshare is a scheme that promotes and delivers car sharing with a range of employers, businesses and educational institutions across the UK.

*Customer segments*

The customers/end users of this project are the road travellers. The biggest single attraction of the scheme is that it helps road travellers save significant amounts of money through participating in car sharing. In turn it helps to reduce congestion and pollution in busy urban centres through the reduction in car usage that would otherwise have taken place. Examples of end users are employees/commuters, students using Liftshare cars to share a ride to lectures and seminars and there is also a significant usage by those attending festivals and similar events.

Other customer segments include the employers/businesses, universities whose students use Liftshare, festival event managers, public and social organisations, housing estate companies and local governments.

*Value proposition*

The value proposition is a car sharing service to encourage individuals to adopt the concept of car sharing to help reduce the costs of travelling e.g. petrol, rail season tickets.

Liftshare also offers business solutions to e.g. employers. This helps businesses and other organisations to challenge travel behaviour of their employees, attract skilled employees from further afield, reduce parking problems, create a green image, etc.

As part of sustainable mobility, the value created for society is a reduction in the amount of congestion and pollution – particularly in dense urban centres. Liftshare's activities have a direct, positive impact on the environment with a reduction in the release of emissions such as Carbon Monoxide and Nitrous Oxides and over 700 tons of Hydrocarbons being saved each year.

#### *Channels*

Liftshare as a social enterprise uses a variety of social media channels to communicate, including via Youtube, Facebook and Twitter. There is a main website where people can book cars and the company also relies on 'word of mouth' e.g. good experiences shared by customers being passed on to potential new customers.

#### *Customer relationship*

The service is available to anyone over 18, commuters, students, football supporters, festival goers, tourists, employees etc. Joining the scheme is simple and free. All the person has to do is register their details and then activate their own account. Once they have registered their registered journey, the database searches for possible matches. When they have found a suitable match, they can then contact the member (s) using the Liftshare internal messaging system. If needed, travellers can contact Liftshare's customer service via the website, and by email or phone. Businesses can also book a demo.

#### *Revenue stream*

Liftshare has funded its growth by selling branded sites to 600+ of the UK's biggest companies (such as Tesco, Sainsbury's, BBC, GSK as well as large event organisers such as Glastonbury), which allows them to provide a free service to individuals.

Also companies like supermarkets have the opportunity to advertise on the Liftshare website, which creates another revenue stream for Liftshare.

#### *Key resources*

The Liftshare team consists of 24 people. A robust IT system is also an essential resource for the company.

#### *Key activities*

A key activity is to continue to advertise and promote the service and get more individuals to sign up and more businesses involved. Also the platform has to be maintained and developed further. Liftshare is continuously looking for further advertising opportunities, to promote Liftshare and to increase the revenue stream from advertisers.

#### *Key partnerships*

Partner of Liftshare are the sponsorship companies. Liftshare sells them branded sites to produce an income revenue scheme in order to ensure the service is free to individuals.

A number of local authorities run the Liftshare scheme and one in particular (Devon County Council) is a leader in developing this initiative.

#### *Cost structure*

No precise details of the cost structure have been provided by the organisation. We know the service is free to individuals and the bulk of the funded comes from large company sponsorships. However, they have indicated that the average local Authority client invests less than £3,000 a year supporting lift sharing. What Liftshare need is some help making the business case to policy makers to highlight the benefits of promoting lift sharing. In Washington State they invest \$4,000,000 a year on supporting their local scheme and it has 6,000 members – which they feel is good value for money. Devon County Council invests £10,000 a year and has 10,000 members. Imagine what they could achieve with £100,000, let alone £1m. Liftshare's business goal is ensuring everyone has someone to share with.

#### **Enhancing the business model (purple elements)**

To enhance the business model, one of the main challenges is to widen the market and scope of Liftshare to elsewhere in Europe. The initiative has been quite successful in the UK and Liftshare is the UK's largest car-sharing network with over 600,000 members. Current members share over 40,000 daily journeys, annually amassing savings of over £38million. In addition, approximately 1.2 million miles are saved every single day equating to over 284million miles a year. However, so far, the organisation has yet to significantly extend its reach on to the continent. It may be that the drive for car sharing is less a part of the culture elsewhere in Europe and may partly be to do with more awareness raising which could help encourage passengers in other European states to adopt this model.

As part of work to enhance the business model for the Liftshare scheme, it is proposed that a franchising model could be explored whereby similar social enterprises in selected EU states could be selected to help roll out the Liftshare scheme in their respective countries. The selected companies to run the franchise would have to be chosen carefully in order to match the social enterprise goals and objectives of Liftshare. However, as there is already a tried and tested model established in the UK, the whole process would not be starting from scratch. The biggest challenges would be to get a satisfactory cost model established early on in order to get the momentum going with the new franchise set ups. So it would make sense to 'start small' and perhaps use some of the revenue generated from the UK operation to help kick start the advertising and awareness raising activity to promote the scheme.

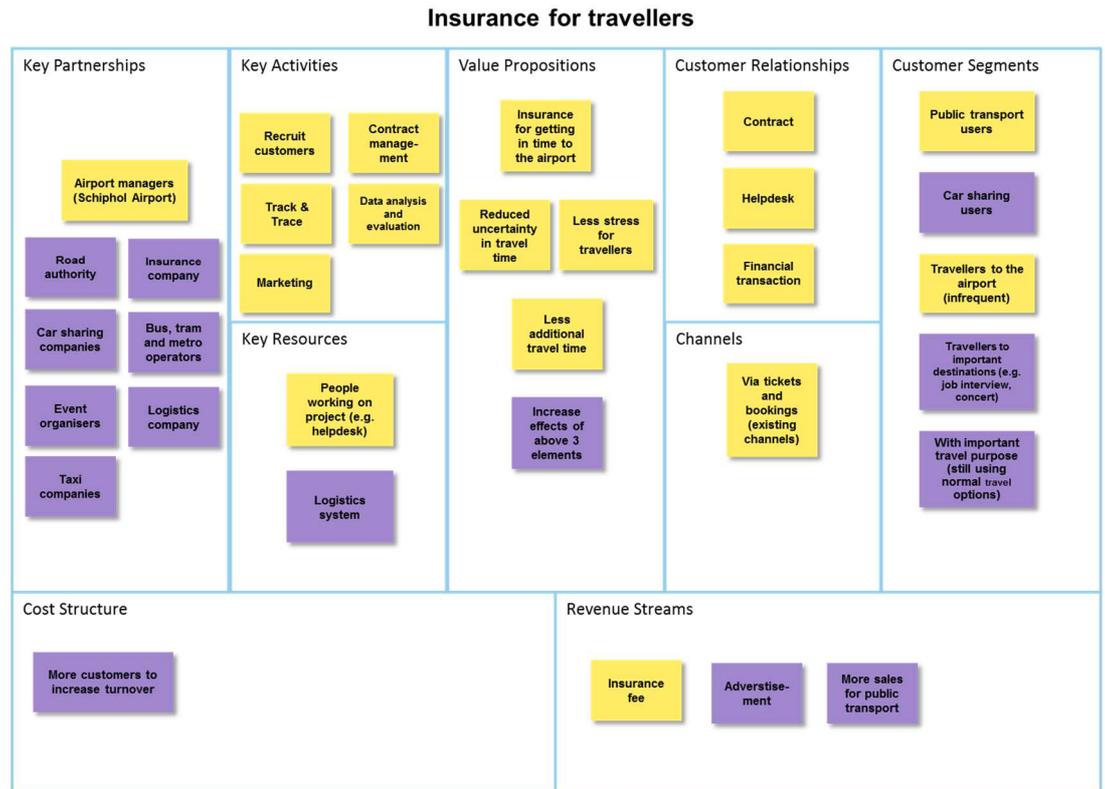
Good initial contacts to help get the franchise model going would also be important and perhaps the BestMOB partnership could act as the initial 'broker' to help forge some suitable partnerships for the franchise model. The largest cost items in every case would be the staff / employees and perhaps initially a sub set of the main UK website could be used to help get the initial bookings delivered. Once the model has been fully established in another EU state, the respective franchise company could then take over the hosting of their own web platform to further drive and develop the service.

Another aspect of the car sharing concept could link to the use of unoccupied cars during working hours. The insurance and legal aspects would need to be

considered at the outset, but the aim would be to make available private cars parked at a business during the day time which would otherwise be not used. In return for using such cars, a fee of some sort could be charged to the user which could potentially make it attractive for the owner of the car to let his / her car out to others. This could enhance people’s mobility options and save them some money that they would otherwise have to pay if they had their own car.

4.2.4 Insurance for travelers<sup>15</sup>

Schematic Business Model Canvas for the case Insurance for travellers:



**Current Business Model of Insurance for travellers using the Canvas elements (yellow elements)**

Insurance for travellers is a service inspired by a trial with a Schiphol Guarantee Service, launched in June 2014 by the Dutch Railways (henceforth NS)<sup>16</sup>. The NS cooperates with Schiphol airport.

*Customer segments*

<sup>15</sup> Text by Diana Vonk Noordegraaf (TNO), revised by Karin van Kranenburg (TNO)

<sup>16</sup> <http://www.ns.nl/over-ns/nieuwscentrum/nieuwsberichten/2014/06/proef-met-schiphol-garantie-service-van-start.html>

The customers of this service are leisure and business travellers that travel towards Schiphol airport by train. Those travellers can sign up for the service and receive during their trip - on the basis of a known NS itinerary – monitoring and supervision until their arrival at the check in desk at Schiphol. The NS will provide the traveller with support in case of delays or other disruptions. In extreme cases the guarantee covers the cost for rebooking the flight, cost for a hotel or gives a reimbursement of the costs.

The trial is part of a broad package of measures of the Dutch Railways to further enhance the accessibility of Schiphol by public transport and to increase the people's confidence in travelling by public transport. This guarantee can make public transport, and in particular travelling by train, more attractive and possibly car trips to Schiphol airport will be replaced by trips by train. Based on the evaluation of the trial the NS will decide on the option of adding this service to their package of services.

#### *Value proposition*

The service persuades travellers to Schiphol airport to travel by train to the airport. The guarantee will make the train trip more comfortable because the service offers a well-planned trip, monitoring and support in case of delays or disruptions. In addition, this guarantee reduces the need to leave early to account for possible delays. The services costs 5 euros.

The value created for society is a combination of less car traffic, less stress for travellers and reduced emissions.

#### *Channels*

The travellers participating in the trial are recruited by the NS. 10,000 customers receive an invitation to participate in the trial. In total 1500 travellers can participate.

#### *Customer relationship*

The travellers buy an additional service from NS. It is assumed that the participants are volunteers and sign a contract before participation. In order to provide the service a helpdesk and financial transactions are required.

#### *Revenue stream*

The main revenue stream is from the travellers to the NS. The project is a cooperation between NS and Schiphol, it appears that government does not invest in this trial.

#### *Key resources*

It is unknown how many people are executing this trial. The trial aims for 1500 participants. In this trial the NS uses an app for iPhone and Android phones to follow the train trip of the participants. To monitor the traveller a technical infrastructure is needed to gather and analyse data and operational infrastructure to take action in case a participant requires assistance.

#### *Key activities*

The first essential activity is recruiting enough participants. As most people do not travel by plane frequently the service is expected to be used infrequently. In addition, most of the time the delays are minimal. Hence, this service focusses on

exceptions. These exceptions are proactively monitored. For this monitoring, the travellers need to provide information on their departure station, the date and time of their flight, the flight number, the number of passengers and the number of suitcases. This information is stored in a database. In case of exceptions, the traveller receives a notification and an adjusted travel advice. If no feasible train alternatives are left, the customer service contacts the traveller and considers the options by bus or taxi. If necessary a service employee of NS or Schiphol await the traveller at Schiphol train station and directs the traveller to the right check in desk. If traveller misses the flight, guarantee covers the cost for rebooking the flight, cost for a hotel or gives a reimbursement of the costs.

#### *Key partnership*

The NS executes most activities. They have a partnership with Schiphol airport who can support fast check-in in case of delays.

#### *Cost structure*

The costs of the trial are unknown.

#### **Enhancing the business model (purple elements)**

The effort to enhance the business model focussed on the number of people that can use this service. In the Schiphol Guarantee Service the primary target group was travellers to the airport by train. Not only train travellers are faced with the uncertainty of delays during their trips. Also road users often face unexpected delays. As road users are the largest group of travellers, it was first discussed whether this service could also work for this group. If a traveller would travel to the airport by car and would face a delay, the road authority could offer a Schiphol Guarantee Service. This service could consist of giving the road user priority by for example using the shoulders. As road authorities generally do not provide these kinds of services yet (in contrary to the rail operators) an insurance company could also offer this service. However, an insurance company cannot use road related options to give priority. In this latter case, an insurance company can offer the road users alternative modes (e.g. switch to public transport or a taxi) in case of disruptions. Another idea is to win time on the last mile, by offering valet parking service at the airport. A Schiphol Guarantee Service for road users would make the option to go to the airport by car more attractive and therefore contribute to more travellers using this option. It is expected that the number of time that car users would shift to more sustainable alternatives (e.g. public transport) is limited (only in case of disruptions). Therefore this extension of the existing service was considered contradictory with the aim of the BestMOB project.

In order to extent the service more in line with the project aim, it was decided to broaden the customer segments in two directions:

- 1) From train travellers to travellers using bus, tram, metro and car sharing.
- 2) From the travel purpose 'Airport' to other important travel purposes.

Not only train travellers experience travel uncertainty, this also holds for other modes of public transport. Hence, in case of delays, travellers might appreciate a service that gives them a backup for example by using a taxi. Also car sharing can become a more attractive transport option, if the uncertainty is reduced. Sometimes car sharing users make a reservation for a car yet the car is not available on the

reserved parking place or the reserved car is broken. This uncertainty is expected to be perceived as much higher than in case of someone's own car.

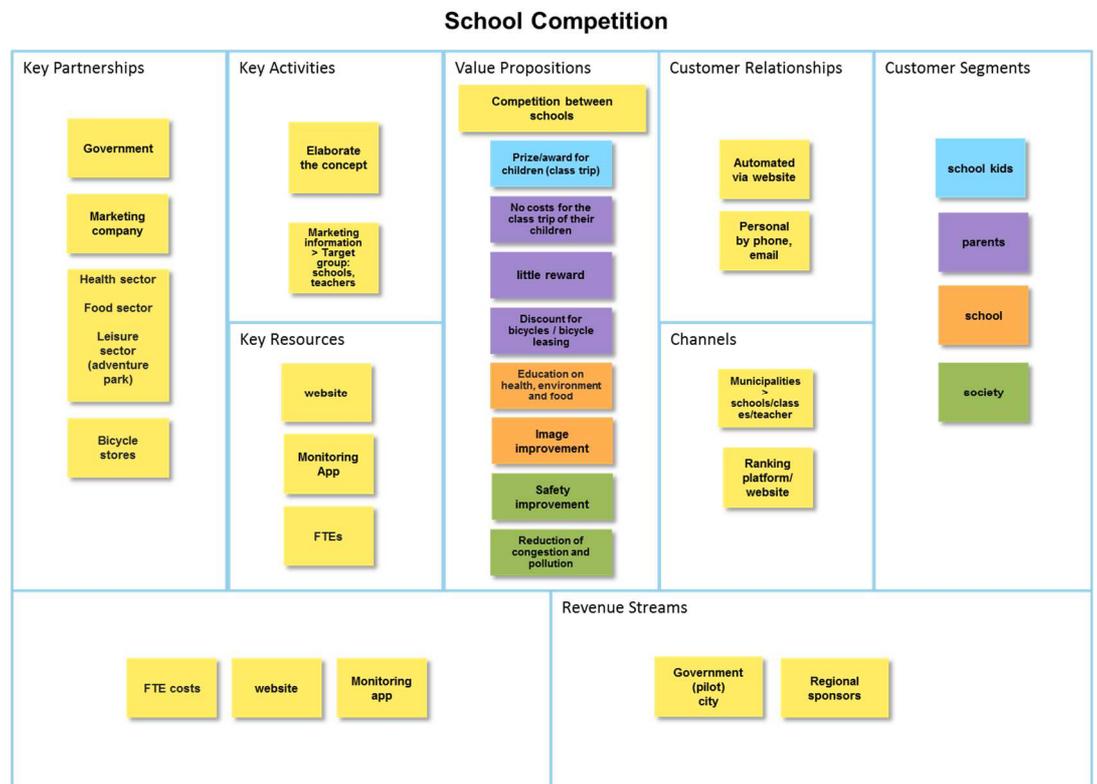
Not only trips to the airport can be important enough for travellers to appreciate an insurance. Also other travel purposes such as going to a job interview or a concert can require guarantees about the travel time. Therefore another direction the extension of this business model is to offer a travel guarantee in addition to buying the ticket for the concert. In case of disruptions by public transport or car sharing, the service offers a back-up to ensure timely arrival at the concert and if that is not possible, a rebooking for the next day or a reimbursement. In a similar way the service can provide alternative options for travellers to other important destinations such as a job interview. By offering the insurance, the traveller does not have to include additional travel time to account for possible delays. Furthermore the service can reduce the stress for travellers about the uncertainty in travel times.

Important preconditions for this service are that it should require very limited effort to buy the guarantee. This should preferably be an additional option when buying the public transport ticket, booking the shared car or buying the ticket for the concert.

### 4.3 New business models

#### 4.3.1 School competition<sup>17</sup>

Schematic Business Model Canvas for the case School competition:



<sup>17</sup> Text by Sabine Lamparter, Region Nordhessen; revised by Karin van Kranenburg (TNO)

### **Business Model of School Competition using the Canvas elements**

School Competition is a business model aimed at reducing car traffic during rush hours (especially before and after school) and at shifting the modal split from car traffic to different modes as bicycle and pedestrians. Adaptable for whole Europe. The idea is to stimulate the formation of organized walking/cycling groups (comparable to a school bus) where the school kids meet at certain locations or are being picked up at home by one or two parents and will be accompanied on their way to school.

#### *Customer segments*

There are several customers/end users in this model:

1. School kids (turquoise): They will be main participants of this project by participating in the school competition itself and coming to school by bicycle or walking (with their parents).
2. School (orange): The school is a customer and a partner at the same time. They need to be the platform and the booster for the competition.
3. Parents (purple): The parents of the school kids will be included by their kids and therefore automatically become a customer. Parents will benefit because they will not have to bring their kids to school every day but only bring a bunch of children to school every other week.
4. Society: the project has a high societal value. It contributes to children's safety and will reduce traffic congestion and pollution around schools and in cities.

#### *Value proposition*

To persuade the school kids and their parents not to use the car to come to school, school kids will be part of a school competition within their own school (classes against classes) or within a bunch of different schools (maybe even Europe wide). The prize for the winning class will be a class trip to an amusement park. The parents as well will receive a reward and do not have to pay anything for the class trip. In addition both of them receive discounts on bicycles or can lease them with special rates.

The schools will improve their image in being a sustainable school and lowering the traffic by cars and the improvement of safety around the schools. In addition their image will be improved by the additional education that children will receive on health, environment and food. To realise this, the health, food, leisure sector and local stores will be present at the schools and as well on a website that parents, school kids and teachers use.

#### *Channels*

The schools/teachers/pupils are contacted and motivated via the municipalities and cities. This must be arranged by an organization that is neutral and stands above the schools.

#### *Customer relationship*

The relation between the organization that organizes the competition and the schools, parents and kids may be arranged via a website. If more personal contact is needed, regular means like email and phone may be used.

*Revenue stream*

The project will at the beginning be funded using governmental money. The rewards are being sponsored by the leisure sector. Discounts and other sponsorship is given by local shops, SMEs, health sector and food sector.

*Key resources*

A main resource is the personnel that will contribute to the project. The technical infrastructure (website and monitoring app) to inform and steer the competition as well as promote the partners and customers is also a key resource.

*Key activities*

The first essential activity is elaborating the concept of the competition. After that recruiting enough participants and sponsors will be important. Elaborating the concept, marketing and giving information therefor are the main activities.

*Key partnership*

Partners in the food, health and leisure sectors are needed to sponsor this project. Food companies will provide the school and therefore the school kids with fresh and regional food. The partners of the leisure sector will pay for the award respectively for the prize that the school kids can win (this may be a class trip to an amusement/adventure park). Local shops may also sponsor the project, e.g. by offering/renting bikes for reduced prices. By sponsoring the project they can strengthen their awareness level and build a green image. A marketing company will need to lead the project together with the government.

*Cost structure*

The project will have costs for FTEs and the implementation and operation of technical platforms (website and monitoring app). Once the acquisitions are made the project should run with very little costs.

**Evaluation of the business model**

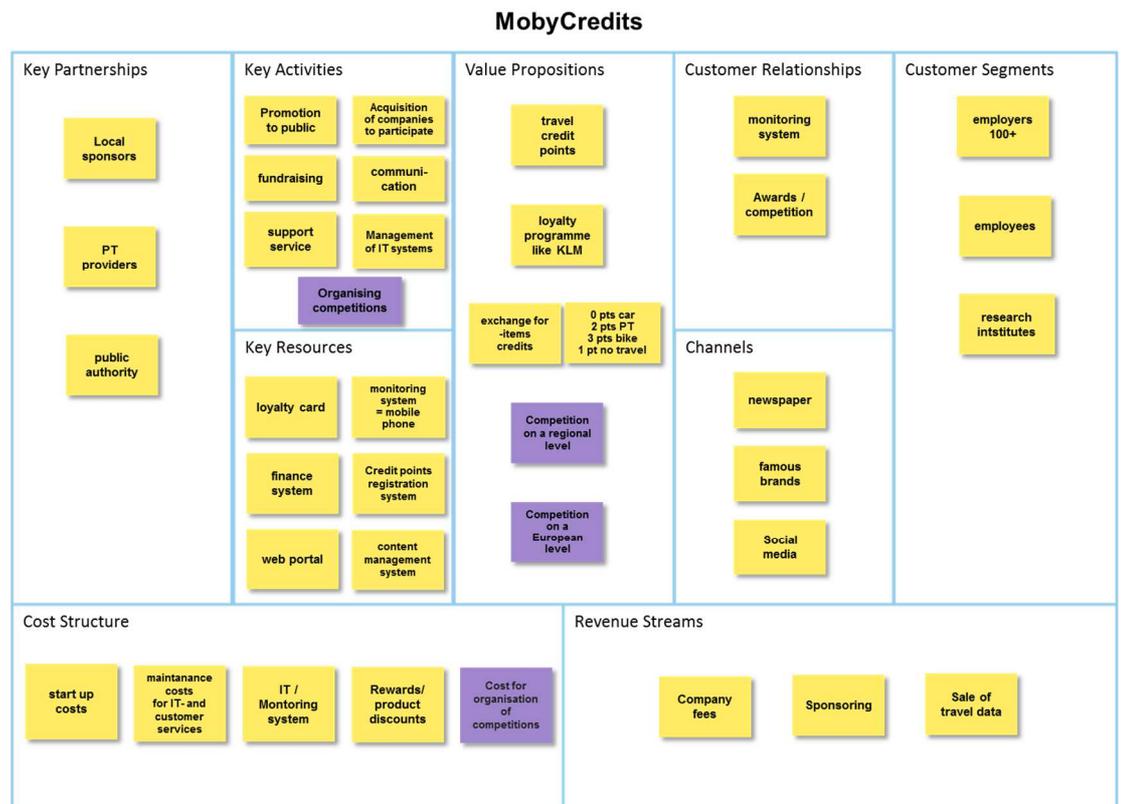
This project may not be feasible as a commercial business model. The revenue streams possibly will not cover the costs, which makes the project dependent on government funding. The idea though is very nice and the societal benefits of the project justify governmental funding.

**4.3.2** *MobyCredits*<sup>18</sup>

Schematic Business Model Canvas for the case MobyCredits:

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<sup>18</sup> Text by Thorsten Millner (Stadt Kassel); revised by Mark Thirkell (Institute for Sustainability) and Karin van Kranenburg (TNO)



**Business Model for MobyCredits using the Canvas elements**

*Value proposition*

The idea of MobyCredits is to help reduce motorized city traffic during peak hours. This would be based on the travel mode and the travel times and in turn the commuter / passenger would earn credits based on the more sustainable mode of transport used. For example, the user would get more credits if they use sustainable traffic modes and if they undertook their journey during off peak hours. The credits can be used in a customer incentive program so that users can earn items or services for free or on a reduced basis. (Individual program)

The credits system could also be used in a department bench mark competition in one company. For example, which department in a particular employer uses the most sustainable traffic modes (departments program)?

The credits are additionally used in a company competition. Which is the most sustainable company according to traffic modes and travel times in a) a region, b) a state, c) in Europe?

The last “competition” is the reason for companies to join the program. The company can show its environmental credential and promote its sustainable image to the public as its employees travel more sustainably than the employers of other companies. For this competition the company has to pay a fee.

The fee is used to run the program. The participation for employers is for free. Local retailers, sponsors and public transport providers can support the initiative and advertise it. For this, they get an emblem reading “supporter of MobyCredits” and pay for it by accepting credit points by commuters.

### *Customer segments*

The goal for the *commuter* is to earn as many credit points as possible and to swap them for goods or services. Additionally, they can be part of a department and a company travels more sustainably than other departments or companies.

The goal for the *company* is to have a departmental competition in their company focussed on sustainable travelling. The more its employees travel in a sustainable way, the healthier and more well-balanced they are. Additionally, they can demonstrate this to the public through the competition between companies.

The goal for *society* is to reduce the level of motorized traffic during peak hours, by stimulating participants to reduce travelling during peak hours.

In addition, traffic data will be collected for further activities. This data can then be made available to *universities and research institutes* who may find this information useful as part of traffic monitoring work and to see how such a scheme can actually make a difference to the level of congestion during peak hours. Additionally the traffic data can be useful for cities to optimize their traffic management.

### *Channels*

The commuters are recruited indirectly by the company via a web platform.

Individually, everybody has to agree to the terms and conditions.

Advertising slots in local radio and through local newspapers would raise awareness of the scheme to potential participants and promote the positive sustainable image of the joining companies – that is the reason why such companies would be willing to pay to be involved in the program.

The loyalty card is a kind of a membership card for employees who participate the program. It is necessary for employees to show this card to get reduced prices for products or services provided by sponsors or retailers.

### *Customer relationship*

The companies have to sign a contract to seal their participation and have to pay a fee to join. It is important to have a monitoring system to control the travel mode and travel time of the commuters. The competition and credit point system ensures a long-term relationship with MobyCredits. The customer relationship is also strengthened by the company competition for using most frequently sustainable traffic modes. Once participating in this competition it is hardly possible to stop it.

### *Revenue stream*

The project is financed by the company fees and by sponsors that offer products or services at a reduced rate for MobyCredits. Only at the start-up phase there could be a case for some initial 'pump prime' support using public funding.

Also sale of travel data may create a revenue stream for the project.

The company fees and the sale of travel data would guarantee the operation on a day to day basis.

### *Key resources*

The interface between the participants and commuters would be via a web portal. This would be supported by an effective content management system.

The credit points process will be managed through an IT and database system.

Additionally, a monitoring system is required to track what travel mode and at what time commuters are travelling. Ideally, this data would be collected by mobile phones.

### *Key activities*

To get MobyCredits up and running, it will be necessary to convince around 5 companies with a strong brand to join the program. Once signed up, a public relations campaign involving these companies will help promote the scheme to the public. It is recommended that, if possible, some household names (famous brands) are involved in the initial sign up so that the public can immediately recognise the company name and brand and associate themselves with this scheme. A fundraising team would be responsible to get enough companies and partners to support the program by offering goods and services.

The IT-systems would have to be supported through a dedicated service team to keep them running and to update them. Additionally there is a customer support service necessary to get in contact with customers to solve problems and answer questions.

### *Key partnerships*

sponsors are partners to run the program. These can be local retailers, public transport providers, local sponsors. Additionally, public authorities could be useful to give the program an "official" image and to promote the program at the early stages. The key partners support MobyCredits by sponsorship and publicity. The more active key partners support the project the more public it is. If MobyCredits is popular it is also promotion for the key partners themselves, because they are part of a popular project.

### *Cost structure*

There are development costs involved at the start-up phase. These might be bigger than the company fees are in total, so public funding may be necessary. The company fees have to correspond with the costs for operation and support to run the program over the medium to longer term. To run the program means to provide and support IT and monitoring systems and to provide a customer support centre. Also costs for rewards will be made, which will (partly) be covered by sponsors.

### *Enhancements to model (purple elements)*

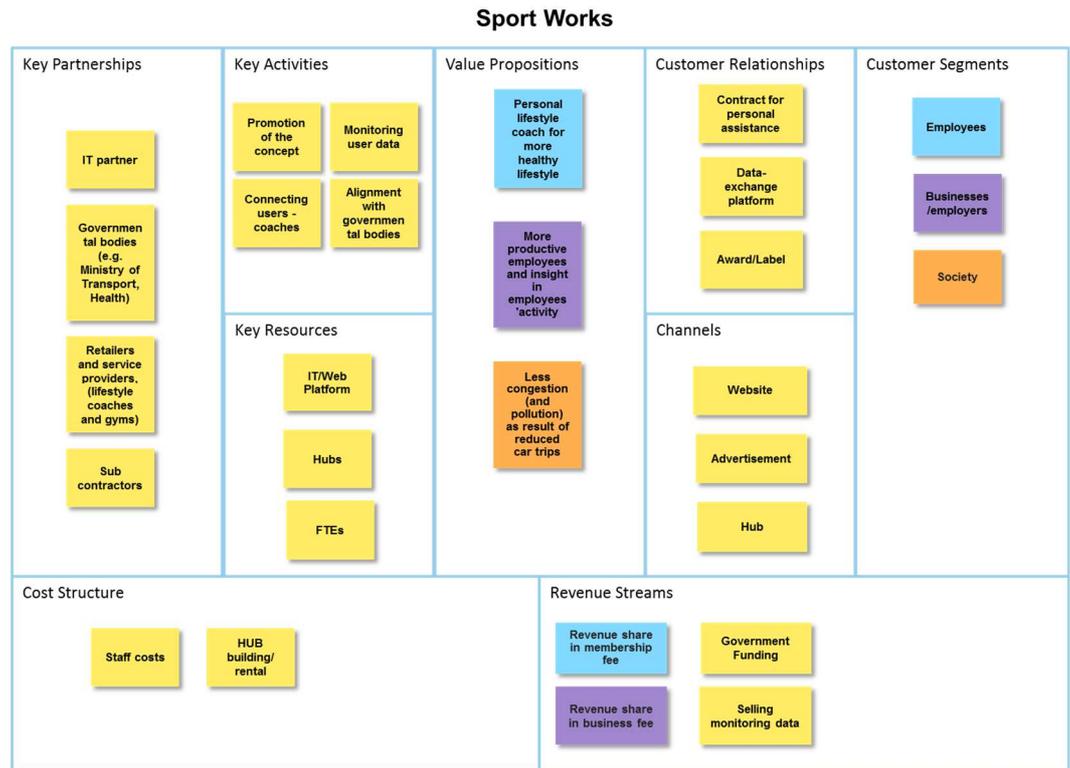
Enhancements could be made to this model by setting up some regional competitions once the initial business mode and scheme has been set up and is delivering. This could involve competitions between companies taking place at a regional level with an awards ceremony and prizes given to the best performing company. In addition, once further awareness raising and promotional work has taken place it may be feasible to run a European wide competition involving cities / towns.

#### 4.3.3 *Sport works*<sup>19</sup>

Schematic Business Model Canvas for the case Sport Works:

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<sup>19</sup> Text by Rutger van Raalten (Bureau Buiten), revised by Karin van Kranenburg (TNO)



**Business Model for Sport Works using the Canvas elements**

*Value proposition*

Sport Works will offer personal lifestyle coaching. This coach can help employees to live a more healthy lifestyle and may results in actions such as a more healthy diet and more movement/sports. One of the actions that can improve this healthy lifestyle is to travel in a more active way, meaning that people can replace wasted travel time (e.g. by car) by useful active time (e.g. biking or walking/running to work). Furthermore, employees can sport before or straight after work time, meaning that by the time they are finished they can avoid travelling during peak hours. A personal lifestyle coach can therefore benefit:

- Employees: feel more fit and be more healthy
- Businesses: improvement of productivity of employees, good for image; insight in employee activity
- Society: less cars on the road, leading to less pollution and congestion

*Customer segments*

The users of Sport Works will be the *employees* of businesses that are located around a hub-location. For reduced prices or a free introduction period (e.g. free intake, free coaching in the first months) employees can use a personal lifestyle coach. Optionally, a freemium and premium system can be introduced, meaning that the costs for a 'basic coaching programme' are covered by the employer and can be extended with other activities or a more intensive programme by the users themselves in exchange for a higher fee.

The *businesses* cover the initial costs (e.g. first visits, first months, basic 'freemium' programme, etc.) of the lifestyle coaching of their employees. By providing them this service, productivity levels of their employees are likely to increase (less sick days,

less stress, more healthy feeling and higher self-esteem). Besides, it can benefit to a company's (more) active and healthy image. Monitoring the 'lifestyle results' of their employees can also provide the businesses with useful data, such as the relation between being active and productivity and the type of activities and coaching the employees actually use. Anonymous data processing should be a central point of attention when data of employees will be used.

#### *Channels*

The users are either contacted directly through the Human Resources department of their company or via advertisement or the Sport Works website. CEOs and managers might be pioneers that can inspire the whole organization.

#### *Customer relationship*

The users will sign a contract with the personal lifestyle coach. When data of the users is monitored, a data-exchange platform has to be used. Businesses might strive to become the most active/healthy businesses and start a competition with other businesses or hubs. Furthermore, a label (e.g. A+, Green Healthy Label, etc.) might be awarded to the companies when they reach different goals, such a yearly reduction of 1.000 car trips.

#### *Revenue stream*

Users can make use of the service by paying a fee against reduced prices. The fee should be lower than regular personal lifestyle coaches and gyms in order to offer them a good opportunity. Businesses will pay the largest share of the fee. Sport Works will ask a revenue share of one percent of the fee paid to the lifestyle coaches and gyms (see partners).

Sport Works can sell the data that has been monitored to the businesses and third parties.

The concept might be supported by the ministries or others forms of governmental funding (e.g. EU funding) that will financially support Sport Works in the start-up phase.

#### *Key resources*

Sport Works needs persons to promote the concept and 'sell' the concept to businesses and connect them to lifestyle coaches. A website and IT-platform is needed to keep in contact with the clients/users and to monitor the data of the users. Lastly, physical hubs are needed to bundle the users and additional activities and to provide an opportunity to combine the activities with public transport.

#### *Key activities*

- Promotion of the concept and recruiting businesses
- Connecting users to personal coaches and gyms
- Monitoring user data
- Alignment with governmental bodies (funding, public transport).

#### *Key partnership*

Sport Works will work together with Lifestyles coaches and gyms. They can enjoy a bundled flow of (new) costumers and have the opportunity to expand the concept into a franchise at different hubs, offering their costumers not only sports and coaching at the hub at their place of work, but also at different work spots that might be more convenient or are close to the home environment (meaning that users can

also use the service when they are working from home). Coaches and gyms will be contacted by Sport Works directly and can be familiarized with the concept through advertisement. The coaches and gyms pay for the supply of (new) users by paying a fee, for example for every new user, or offering Sport Works a revenue share. Retailers, service providers and subcontractors can get involved in the concept. Retailers can offer additional services such as shopping opportunities or on-demand-grocery delivery. The hub location can also include a children day care centre to make it easier to combine activities. A first pilot hub will be used to gain interest from retailers, subcontractors and governmental departments. The data collected from the users can provide subcontractors with interesting data for which they are willing to pay. For example, marketing companies can target employees that are frequently involved in specific activities (running, weight-lifting, special diets, cycling, etc.).

The Ministries of Transport and Health are interested in improving the health of employees and are supporting the use of public transport and activity forms of transport. The hubs should be located in the proximity of a train station or bus stop, in order to offer an alternative for the car. A bike-rental system can promote bike commuting. Furthermore, the ministries might be interested in supporting the initial start-up phase for companies in order to show them the advantages of the concept. An example could be that the ministries financially rewards businesses when they achieve a reduction of a 1.000 car trips.

Sport Works needs to work together with governmental bodies for funding and combining the hub with a public transport function. Furthermore, Sport Works should work together with a party that specializes in monitoring data.

#### *Cost structure*

The costs of Sport Works are mainly staff costs, often related to promotional activities and marketing. Also investment in building physical hub space, or renting them is needed.

## 5 Conclusions and recommendations

### 5.1 The business modelling process

Many concepts to realise more sustainable mobility behaviour have already been implemented. Developing new, innovative business models proved to be hard as they often became complex and difficult to implement. However, it is not always necessary to re-invent the wheel: successful business models have already been introduced, but there is room for improvement and market expansion, such as introducing the model in another state or region. For this reason, in the BestMOB project not only new business models were developed, but also a number of existing business models were reengineered, to overcome existing problems and to improve them. Best practices from past projects were integrated in the business modelling process.

For developing the business models the business model canvas method was used. This method proved to be helpful to structure the thinking process and forced the team to make the different elements in the business model concrete. Paying attention to the business model is important for the success of new initiatives and should be an element of the innovation process from the beginning. In practice this is not always the case. When setting up innovations or piloting them, much attention is often paid to the technical part, though the business model is as important.

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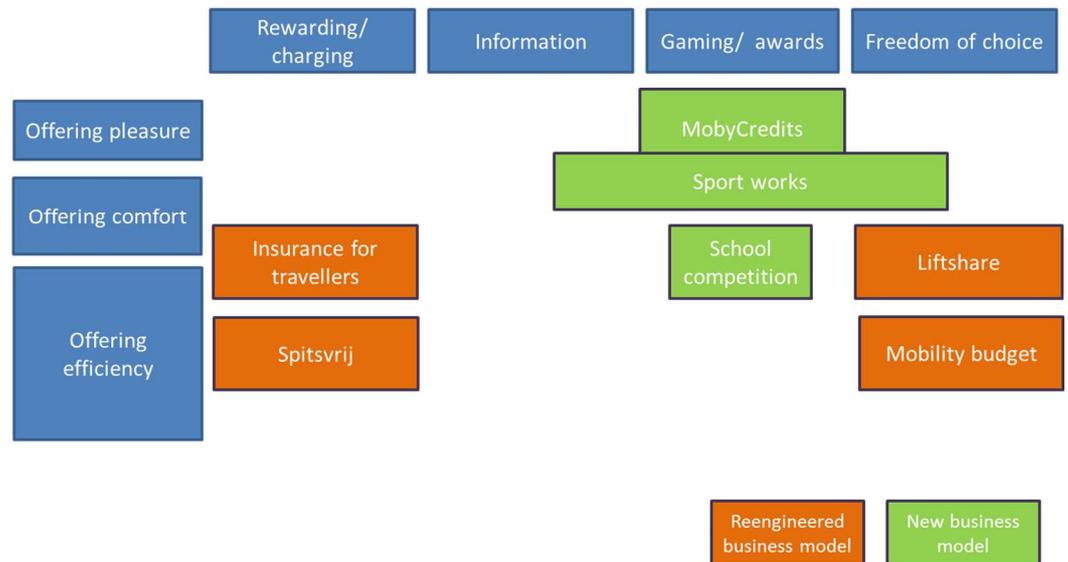
*Business modelling should be part of the innovation process from the beginning. It helps innovation teams to think about essential elements like customer segments, the value proposition and key partners.*

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### 5.2 Result: 7 business models

In the BestMOB project, three new business models were created. Besides, four existing business models were adapted to create new innovation based on what is already in the market place. The following picture gives an overview of the business models that were developed and reengineered in the BestMOB project:

## Plot of BestMOB Business Models in Services typology



The new business models are the following:

- **School Competition** is a business model aimed at reducing car traffic during rush hours, especially before and after school, and at shifting the modal split from car traffic to different modes as bicycle and pedestrians. The idea is adaptable for whole Europe.

The proposition envisions to stimulate the formation of organized walking/cycling groups (comparable to a school bus) where the school kids meet at certain locations or are being picked up at home by one or two parents and will be accompanied on their way to school.

- The goal of **MobyCredits** is also to help reduce motorized city traffic during peak hours. Commuters can earn credits based on the degree of sustainability of the mode of transport used and the time at which they travel (during or outside peak hours).

- **Sport Works** will offer personal lifestyle coaching. This coach can help employees to live a more healthy lifestyle and may results in actions such as a more healthy diet and more movement/sports. One of the actions that can improve this healthy lifestyle is to travel in a more active way, meaning that people can replace wasted travel time (e.g. by car) by useful active time (e.g. biking or walking/running to work).

BestMOB adapted these four existing business models:

- **SpitsVrij** is a project aimed at reducing traffic during rush hours on a certain location in the Netherlands, Province of Utrecht. Commuters are encouraged to avoid travelling by car during rush hours by leaving at another time, using alternative transport modes and practicing alternative ways of working (for example work at home). Though the project was a success, it was 100% funded by

governmental money, which is not the desired situation. To relief the need of government funding, advertisers can be attracted. To create a target group that is substantial enough for these advertisers, the project can cooperate with comparable projects within the “Spitsmijden” program, and share one platform. This will not only enlarge the attractivity to advertisers, but also lead to reduced costs.

- A **Mobility Budget** is type of reimbursement of travel expenses for commuters, used in the Netherlands. German employers offer a variation called “Job Ticket” to their employees, an obligatory collective transport service. The obligatory character could also be applied in the Dutch Mobility Budget. The target group for the mobility budget could be enlarged to students. The German job ticket concept appears to work for students.

- **Liftshare** is a scheme that promotes and delivers car sharing with a range of employers, businesses and educational institutions across the UK. The initiative has been quite successful in the UK and Liftshare is the UK’s largest car-sharing network with over 600,000 members. To enhance the business model, one of the main challenges is to widen the market and scope of Liftshare to elsewhere in Europe. A franchising model could be explored whereby similar social enterprises in selected EU states could be selected to help roll out the Liftshare scheme in their respective countries.

- **Insurance for travellers** is a service inspired by a trial with a Schiphol Guarantee Service, launched in June 2014 by the Dutch Railways (NS). The NS will provide traveller on their way to the airport with support in case of delays or other disruptions. In extreme cases the guarantee covers the cost for rebooking the flight, cost for a hotel or gives a reimbursement of the costs. The business model can be enhanced by extending the service to other modes of transport (metro, bus, car sharing). Also other important destinations (like a job interview) could be included in the insurance.

A next step should be to find a way into the market for these adapted and new business models. Finding market parties that are prepared to get to work with these models is essential. The business models are presented to the market during the BestMOB Bootcamp event in October 2014.

### 5.3 Reaching the target group

Creating a business model starts with defining a target group or customer segment that is envisioned with the value proposition. The needs of these customers should be met in the business model. Customers may be consumers or businesses, but also society may be the customer. Basic needs are pleasure, comfort and efficiency. Since the BestMOB project focusses on behavioural change in sustainable mobility, the focus should be on groups that have the possibility to actually change their travel behaviour. In general, the target group should not be too diverse; focus on the needs of a delimited group is important to realize a good market fit.

After defining the customer segments, a next challenge is how to reach these target groups. This will vary per project. In a number of projects we saw that personal approximation worked well, in contrast to mass communication. In community

based initiatives word of mouth and communication via local sponsors was successful.

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*Customers and their needs should be the starting point of every business model. For sustainable mobility the focus should be on groups that have the possibility to actually change their travel behavior. To reach this target group, personal approximation and communication via communities worked well in a number of sustainable mobility projects.*

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For many services it is important to have a group of customers or users that is substantial. At the start of most projects, this critical mass will not be reached yet. To get projects through this difficult and costly start phase, government support may help to get projects up and running.

Once concepts appear to be successful, more mass can also be created by bringing the concept to other customer segments, or to other regions or countries. Here is an opportunity to expand local success into other EU regions. However local context like social and cultural aspects, but also the availability of required infrastructure should be taken into account.

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*Scaling up to a critical mass can be a challenging phase, in which government support is valuable. There is an opportunity to expand local success into the EU, but local context should be taken into account.*

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#### **5.4 Cooperate in PPP with key partners**

Sustainable mobility is a societal issue in the first place. This makes it eligible and often necessary that governmental bodies take the lead or at least participate in most sustainable mobility projects. In many cases however, private parties also have interests in sustainable mobility and can offer an important contribution. In general one can say that entrepreneurs and SMEs are creative, driven and specialists in their field of work. Given the variety of business ideas, possible business models and the pace of SMEs in market development, entrepreneurs and SMEs have to be highly involved in developing the business models. Governments can bring in their assets, that are much broader than subsidizing projects: they can kick start projects by bringing parties and projects together, facilitating standardization, taking care of necessary regulation, offering pilot locations, etc. This makes cooperation in a PPP (Public Private Partnership) an obvious choice with the highest return in many cases. Understanding the benefits of the other partners in the PPP and creating a feasible business model together is key to success.

A point of attention when bringing together different parties in a PPS (or other form of cooperation), is a well-balanced composition. Innovative projects in mobility tend to attract mainly technically oriented market parties. A risk is that issues like user behaviour, finance and marketing remain underexposed.

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*Create business models in Public Private Partnerships where opportune. Find out what partners are needed, how private parties may benefit, and involve them in the business model.*

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Financing of sustainable mobility is often a problem. Initial investments may be high. To get the business model flying, critical mass of users is needed, which takes time. Though the societal cost-benefit ratio is often positive, governments are often not able to structurally finance sustainability projects (e.g. Spitsvrij). To overcome these problems, government support may suffice for the initial phase, provided that the business model is financially viable without or with little government funding on the long term.

A business model with more than one stakeholder can only be successful if the interests of all important stakeholders are met sufficiently. Benefits may not always be clear at first sight. Be creative in identifying and utilizing benefits of sustainable mobility. Benefits may be both non-financial and financial. For example employers may save costs and make more efficient use of their employees, advertisers or sponsors get access to an interesting target group for advertising, research institutes may be interested in data, etc.

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*Focus on business models that prove to be (economically) viable in the long term, supported by the public sector during the initial phase. Be creative in identifying and utilizing benefits of sustainable mobility for all partners.*

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## **5.5 Make effects visible. Measure and evaluate.**

Measuring of effects on behavioural change, sustainability and efficiency is important to learn from projects. Making the effects visible will contribute to the awareness of the benefits for stakeholders. However there are still lots of sustainable mobility projects that do not measure and evaluate effects. This is a missed chance.

During the last decade great technology advances in the field of measuring, informing and influencing travel behaviour have been realised. These advances have created new opportunities for sustainable mobility projects.

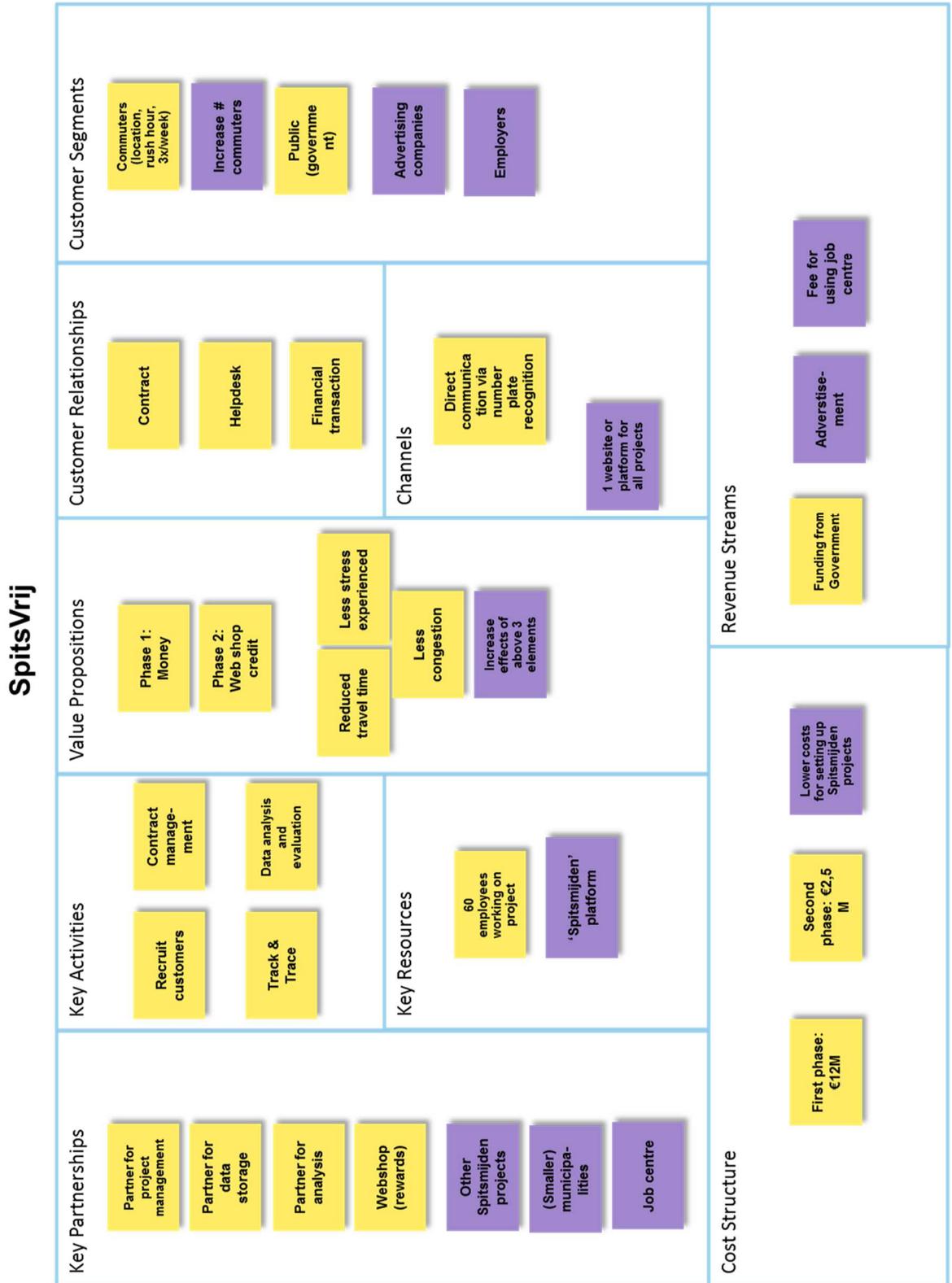
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*Measuring effects and making them visible contributes to the awareness of the benefits for stakeholders. Exploit the technical opportunities for measuring, informing and influencing travel behaviour.*

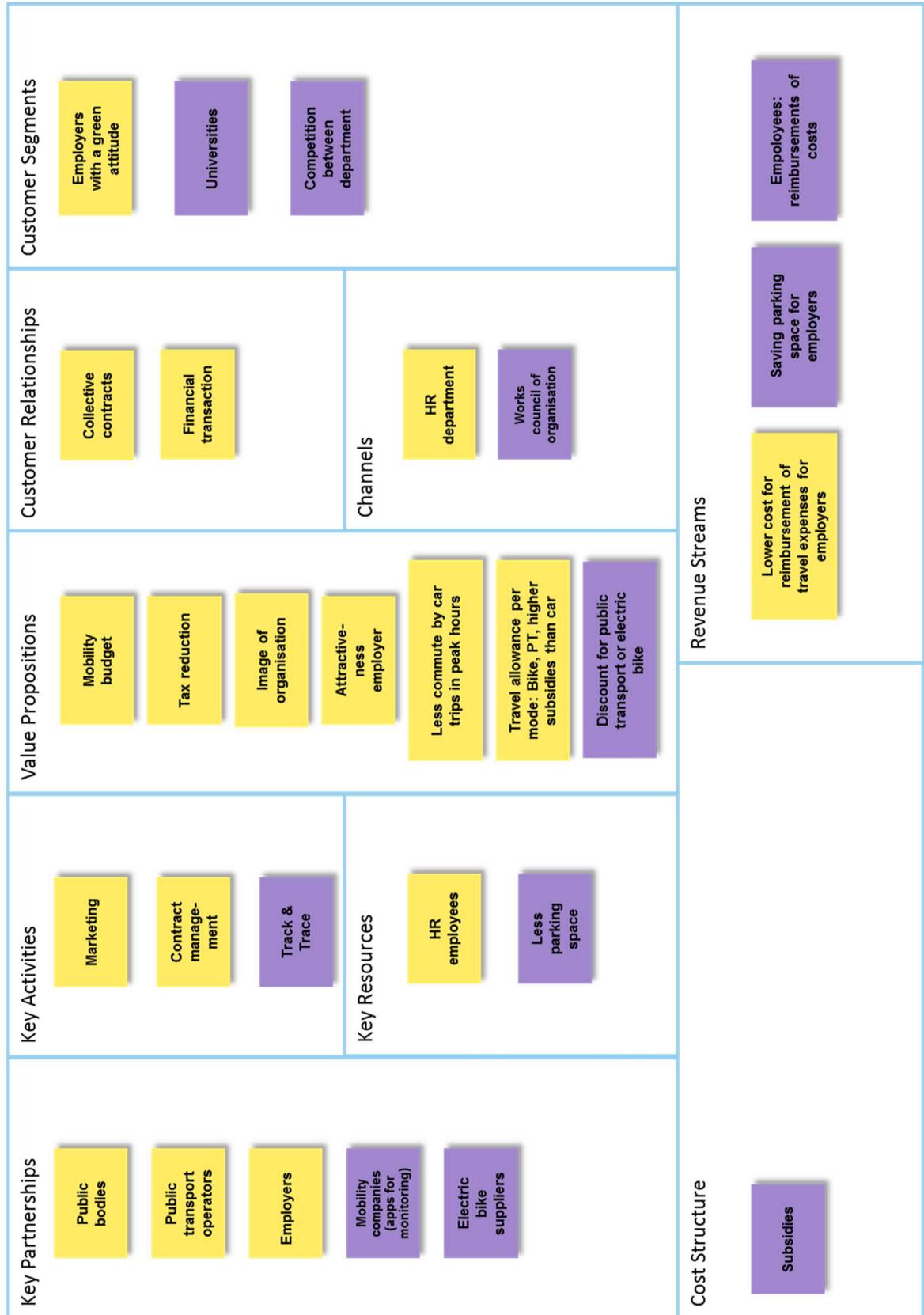
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## Annex A: business model canvasses

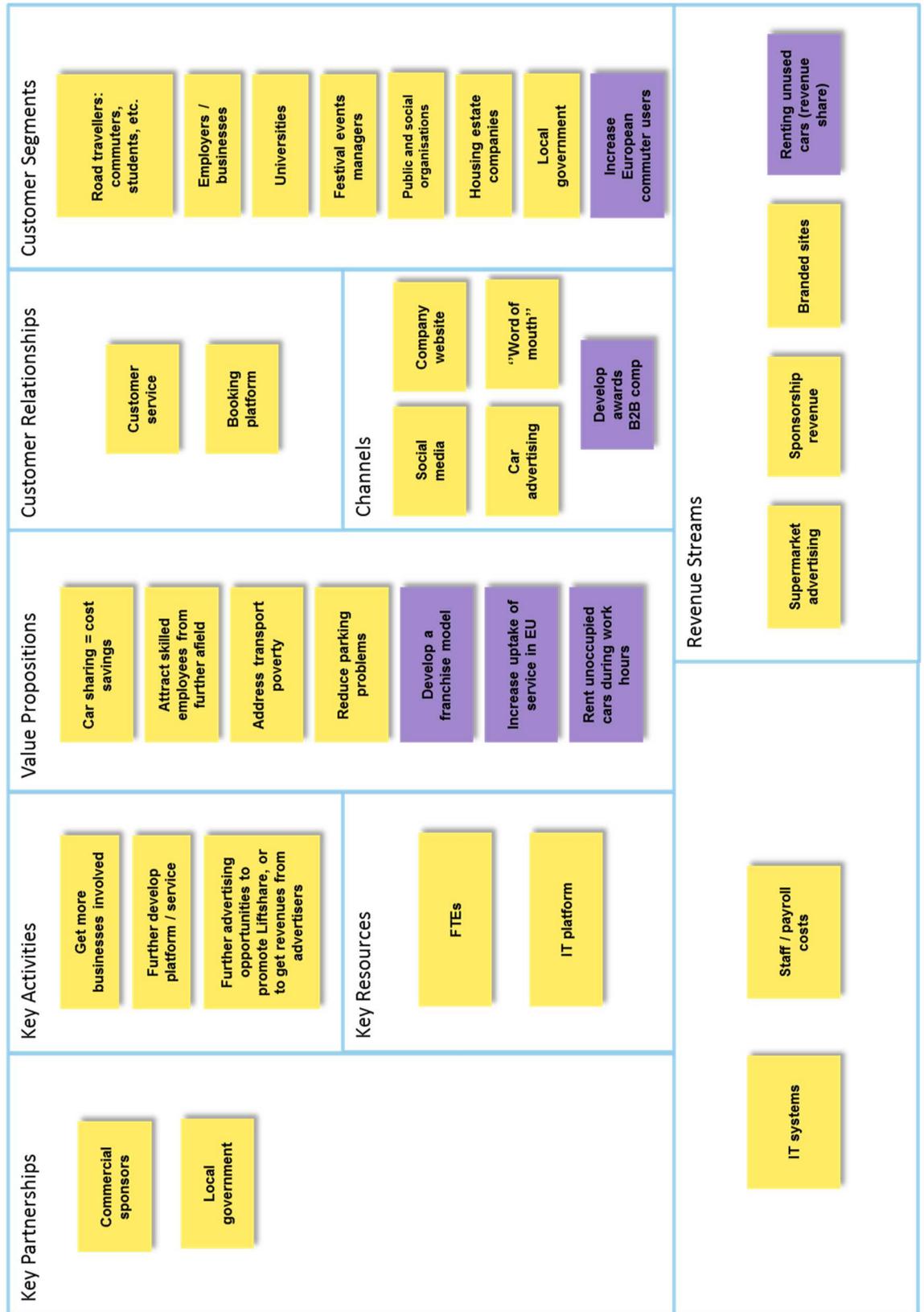
In this Annex all business model canvasses from chapter 5 are presented.



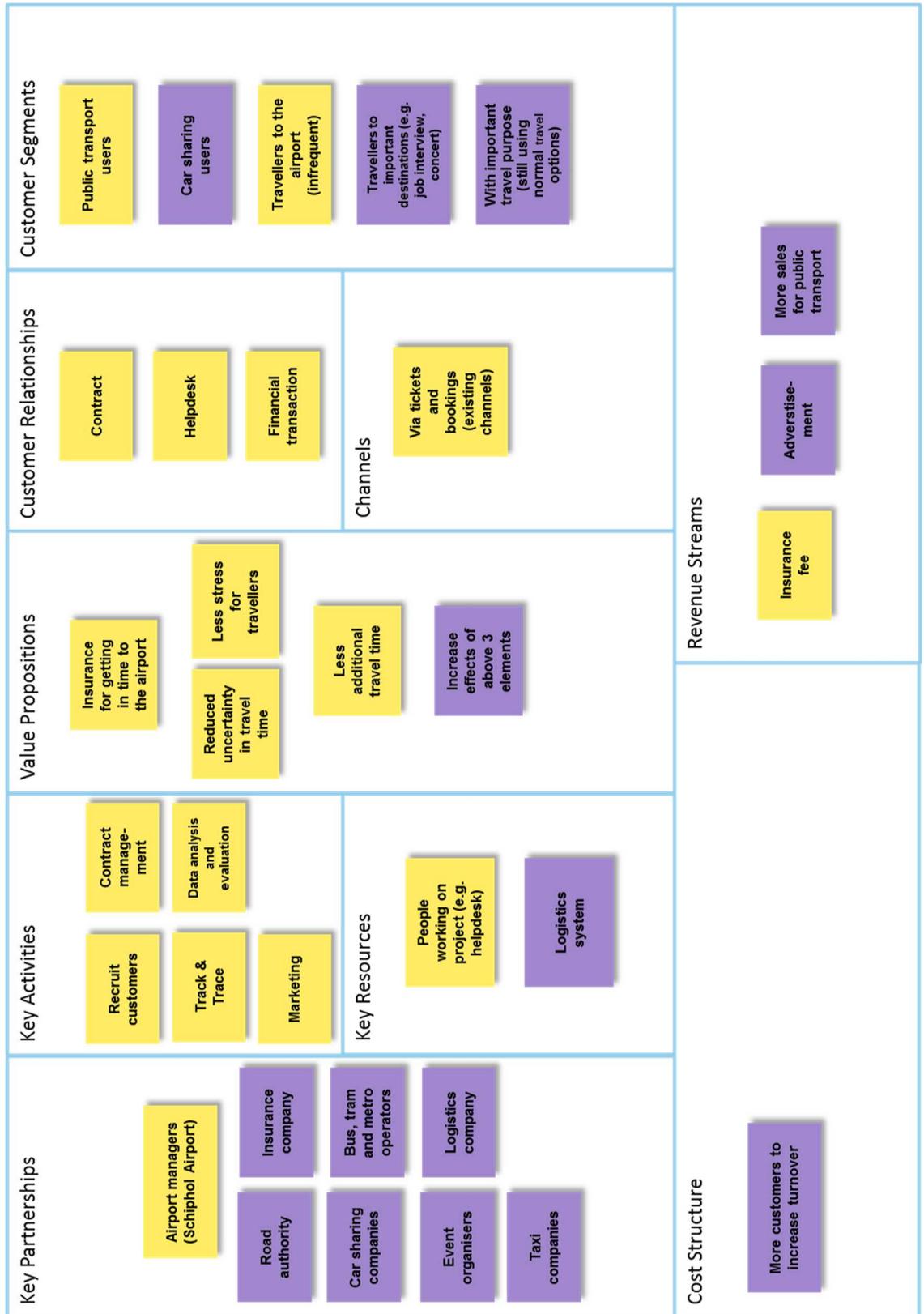
## Mobility Budget



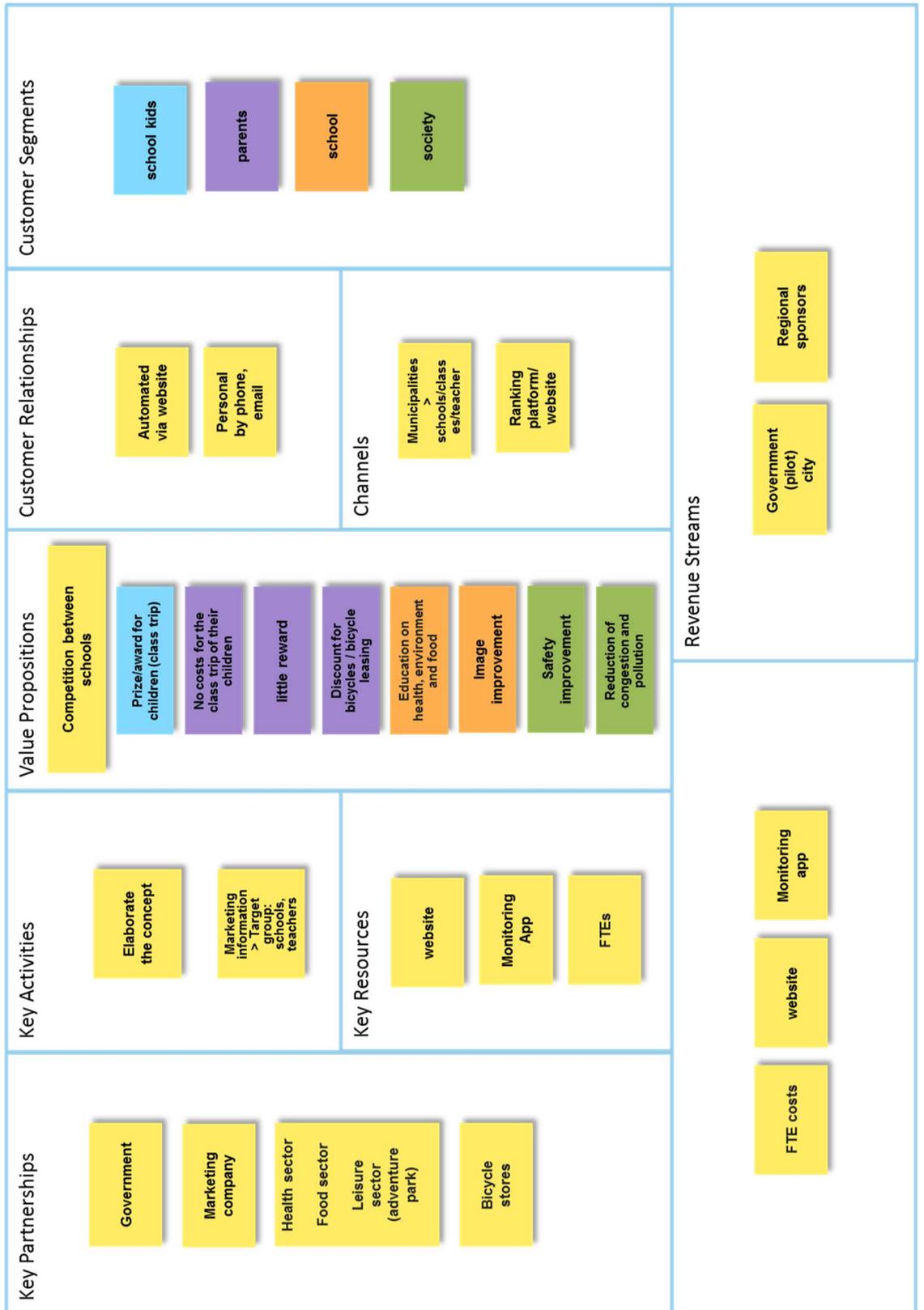
# Liftshare



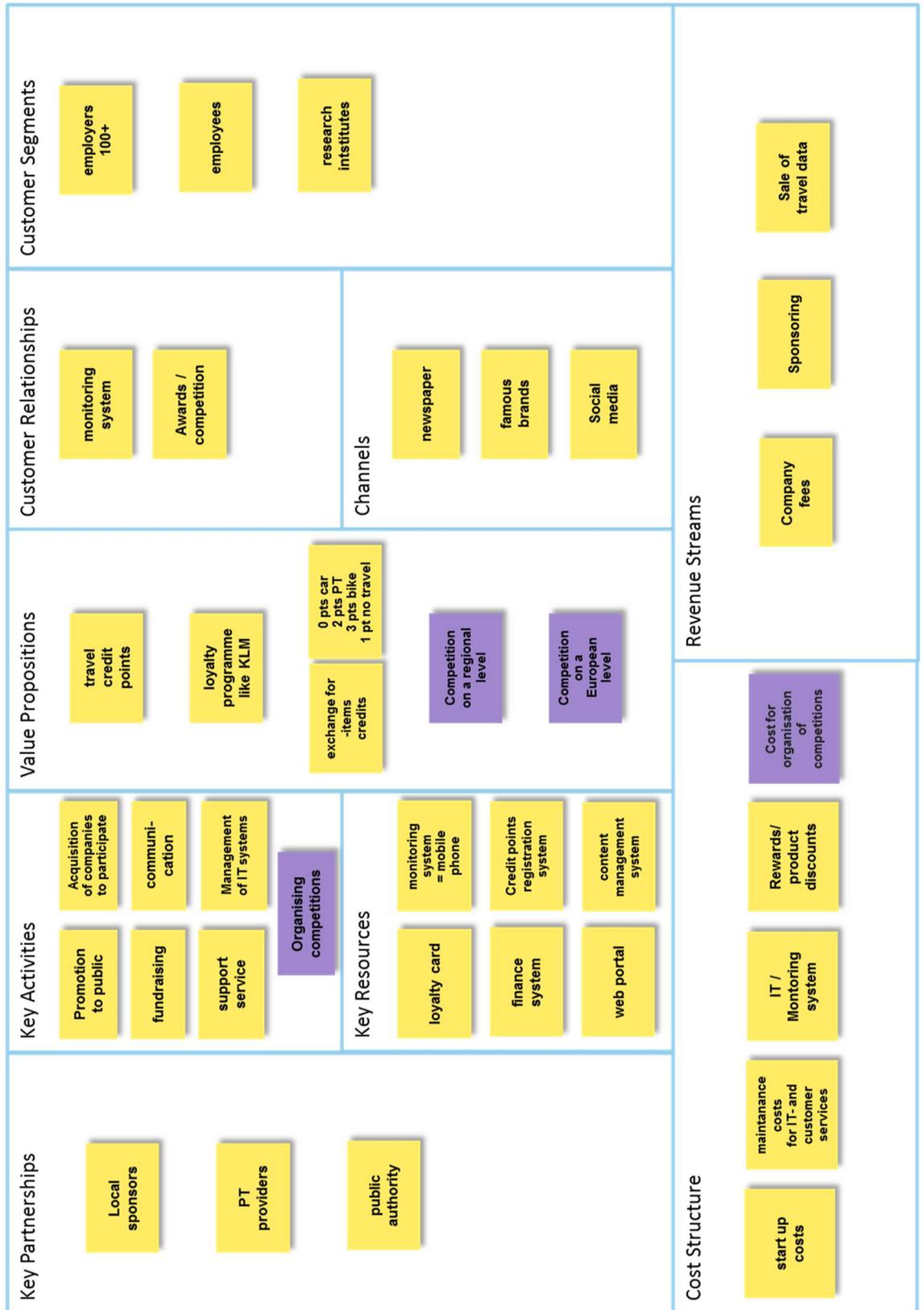
## Insurance for travellers



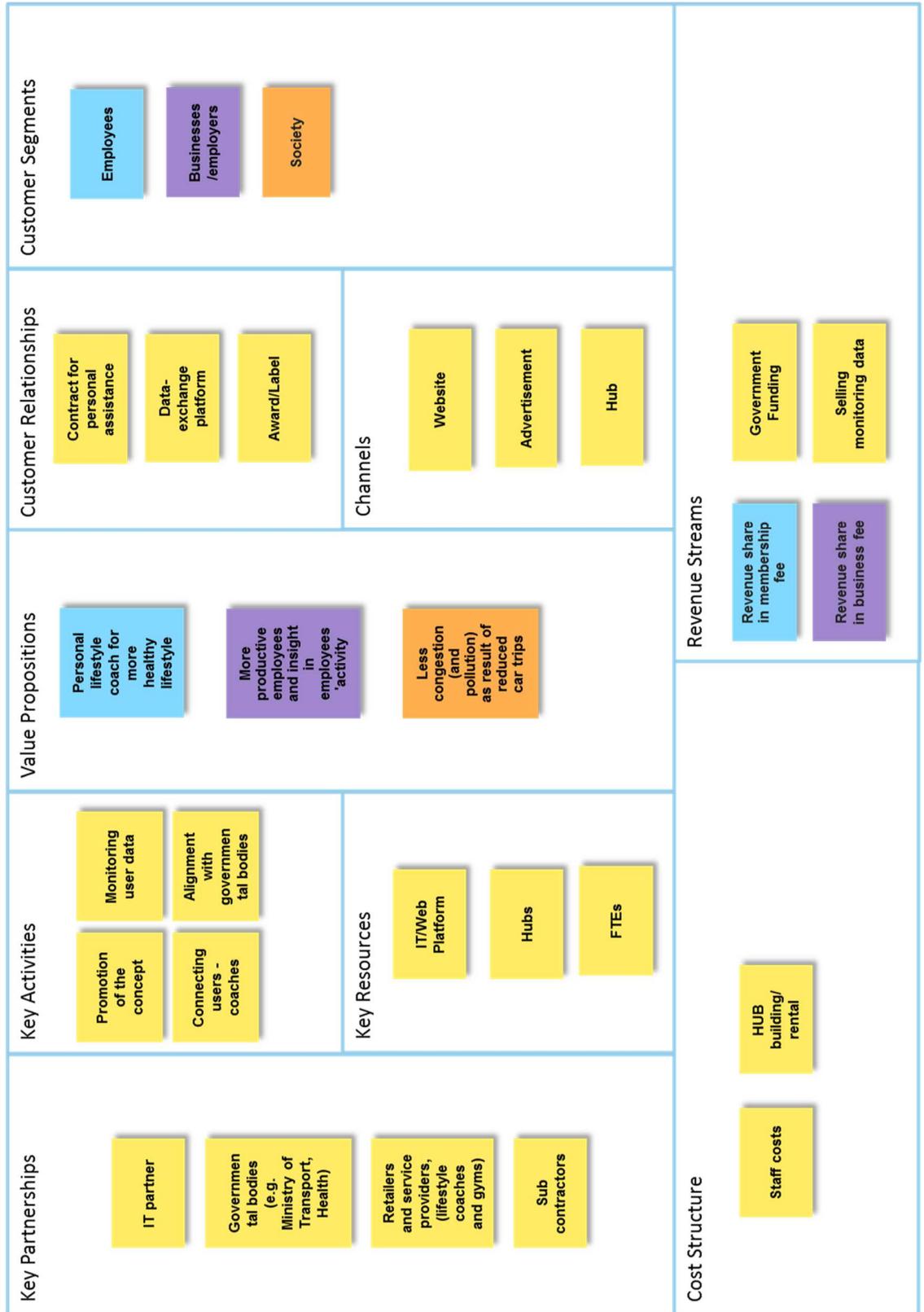
## School Competition



# MobyCredits



## Sport Works



## Annex B: analysis of interview results for the business modelling process

For the best practices analysis presented in chapter 3 the interview results from WP2 were analyzed. The success- and failure factors that are relevant for the business models are listed and presented below. Below the tables with success- and failure factors a description of the service discussed per interview is presented.

The elements in *italics* were not mentioned literally, but are interpretations, inspired by the interview.

Succes factors	
UK1 E Car, NL TNO 4 BNV Mobility	Governmental funding
Tomware	<i>Start with professional transport sector (transport companies, taxis)</i>
SRM srl	Organizing a challenge, sponsored by local companies, was the key element of the success, not the economic incentive
B.Braun Melsungen AG	<i>Make sure the business model and services are in line with the local environment, e.g. sometimes the location of a company is not ideal for bike usage</i>
B.Braun Melsungen AG	Increase the capacity of HR
D1 IVM GmbH	It is important to have strong (public) partners
D1 IVM GmbH	Users of the services can help in making the services better
D5 SMA Solar Technology AG	Direct financial benefit for the company
D5 SMA Solar Technology AG	<i>High level of support in the organisation</i>
UK1 E Car	Offer competitive prices for the service
UK1 E Car	Offer great customer service, e.g. PIN code to access key (no need to go to the rental company), 'hot line' service
UK1 E Car	<i>Target the community appeal by providing them with possibilities to help the society by reducing pollutions and emissions</i>
UK1 E Car	Good partnerships with (public) partners
NL TNO 4 BNV Mobility	Habitual behaviour can be changed using financial incentive
NL TNO 4 BNV Mobility	Habitual behaviour will stay after the financial incentive has stopped
NL TNO 4 BNV Mobility	It will become more important for companies to become an attractive employer to attract employees

NL TNO 4 BNV Mobility	New and more strict regulations regarding CO2 emissions could lead to an incentive for companies to think about cleaner mobility
NL TNO 4 BNV Mobility	In contrast to companies, consumers have more willingness to change their behaviour
NL TNO 4 BNV Mobility	Currently, the money participant earn with Spitsmijden projects are untaxed
NL TNO 4 BNV Mobility	Increase market exposure for private companies by getting involved with projects with financial rewards for participants
NL TNO 4 BNV Mobility	Get private companies and government together, although their interest may not necessarily be the same
NL TNO 4 BNV Mobility	<i>Government can give a lot of freedom to the market, which will increase the creativity of the private companies</i>
NL TNO 4 BNV Mobility	Personal drive of decision makers
UK 2 Liftshare	Obtaining a large group of diverse customers
UK 2 Liftshare	Lots of activities to increase the awareness and visibility towards potential customers
UK 2 Liftshare	Focussing on why potential customers should change their behaviour --> clarifying the "What's in it for me"
UK 2 Liftshare	Give customers the possibility to compare car sharing fairly to other modes, thus giving multimodal focus
It3 WeCity	Using a wide promotional campaign to increase the user group of the WeCity app
UK3 Poplar Harca	Affordable and clean transportation for residents who cannot afford a car themselves
UK3 Poplar Harca	Good partnerships with partners, contacts and networks
UK3 Poplar Harca	Promoting by having users try and test the service and let them encourage others to use it too
UK3 Poplar Harca	Changing the mind-set and attitude towards the service
UK5 TDC	Use Bluetooth to collect data to calculate travel times and planning
UK5 TDC	<i>Service providers can use the sustainable image of their customers to improve their own sustainable image</i>
NL TNO 1 Alphabet	The competitive element between employees works well
NL TNO 1 Alphabet	Monthly rewarding for aspects like safe or efficient driving is very positive

NL Arc 1 Dutch Oil & gas company	A collection campaign to earn/collect points for present can be very successful
NL Arc 1 Dutch Oil & gas company	If an alternative is easy to learn and has clear advantages over the old habit, people are open for changing their habits
NL Arc 3 Jumbo	Optimization is more effective when this is done with the scope and the impact on the whole supply chain
NL Arc 4 Arval	Increase awareness for lease-driver that although they don't pay for their mileage, it has effects on the environment. Give them feedback about fuel consumption, accelerate and decelerate behaviour, maintenance costs, etc.
NL Arc 4 Arval	Give lease drivers insights on how their driving style compares with their colleagues on environmental performance indicators
NL Arc 5 Capgemini	Effects on sustainability on "other areas" that are not well known by the public could be a good source to get effects on sustainability (e.g. efficient software, efficient data centres)
NL Arc 5 Capgemini	Financial incentive works well
NL Arc 5 Capgemini	Multimodal combination works well
NL Arc 5 Capgemini	PPP works well
NL Arc 6 ARCADIS	It is important to have a party that takes initiative, preferably someone from an private company, as they tend to have a stronger drive than someone from an municipality

Failure factors	
IT5 Emilia-Romagna Region, It3 WeCity, UK3 Poplar Harca	Lack of funding
SRM srl	Difficult to calculate the CO2 saved by cyclists
D1 IVM GmBh	Not able to communicate the services to a large enough group of people, as a large group of users is necessary to have measurable effects
D1 IVM GmBh	The services constantly need financial and personal resources to run on an high quality level
D3 Daimler AG	Only able to buy the public transport ticket once a year is a limitation
D3 Daimler AG	Choice of offering the PT ticket during autumn is a poor choice, as PT is less attractive during autums/winter compared to car
UK1 E Car	Could be difficult to set up the required infrastructure (parking places/charging

	infrastructure) for the service
UK1 E Car	Electric vehicle technology could have problems with incompatibility
UK1 E Car	Government may not be willing to give up financial gains from the current situation, e.g. parking revenue from standard car parking
NL TNO 4 BNV Mobility	Bring the right companies at the table could be problematic when insurance companies are involved
NL TNO 4 BNV Mobility	Difficult to involve employers to the Spitsmijden projects, as they lack a sense of urgency
NL TNO 4 BNV Mobility	Problem with defining the problem owner, regarding mobility issues
NL TNO 4 BNV Mobility	Regarding services targeting on mobility, the benefits for the employers are not clear
NL TNO 4 BNV Mobility	It is difficult to lower the entrée barrier for employers
NL TNO 4 BNV Mobility	The labour market will decrease the coming years
NL TNO 4 BNV Mobility	Because companies compare itself to each other, it becomes difficult to attract enough companies to get to the critical mass
NL TNO 4 BNV Mobility	The intern transition required for companies bay be an entrée barrier
NL TNO 4 BNV Mobility	<i>It is unclear how employers can be triggered to participate in projects like Spitsmijden</i>
UK 2 Liftshare	<i>Good market research and critical view of the competencies of your own company are essential before starting a new service</i>
UK 2 Liftshare	Sector that look close to each other (e.g. car sharing and car rental) may not be as comparable as initially thought
It3 WeCity	Lack of long term vision
UK3 Poplar Harca	Problems with the required infrastructure for electric driving: parking spots and charging points
UK5 TDC	Data protection (or the perception of data protection) is important to the customer of the service. They need to be convinced that their data is safe
UK5 TDC	IT specialists can be reluctant to change their systems as they can be averse to change
NL TNO 1 Alphabet	Services or competitions that work well at one company may fail in other companies, copy paste is not always the solution

NL Arc 1 Dutch Oil & gas company	People are not always as committed to the environment as they say; their actions may not be according to what you could expect
NL Arc 1 Dutch Oil & gas company	<i>A service may work for the majority of a group, but may not work for the individual, which could lead to problems (e.g. OV chipkaart)</i>
NL Arc 1 Dutch Oil & gas company	People are open to new things, but don't want to be disappointed or faced with uncertainties, people will drop the service that fails them
NL Arc 4 Arval	Lease drivers have commonly more interest in fast cars and driving fast, and show no interest in sustainability
NL Arc 4 Arval	The worldwide environmental targets may not be a challenge for companies in some countries
NL Arc 5 Capgemini	Services that could have impact on potential costs for employees should be communicated thoroughly
NL Arc 6 ARCADIS	Changing rules and regulations for lease cars is difficult, as their lease car is very delicate for employees
NL Arc 6 ARCADIS	Rules and regulation may not work in favour of the sustainability targets (e.g. boundary for lease car is 17.500 km/y, so people drive more to get above the threshold)
NL Arc 6 ARCADIS	Budgets for both public and private companies are not paired, so it is difficult to switch money or make a combined proposal from one department to the other (HR/Office/Mobility)

Company	Service	Description
Tomware	Track Pro	Using GPS and fleet management to give the customer information and tools to optimize fleet control, security reports, route optimization and fuel consumption control
Uber	Uber	
SRM srl	Bike challenge	<a href="http://www.europeancyclingchallenge.eu/ecc2014/">http://www.europeancyclingchallenge.eu/ecc2014/</a>
UK transport for greater Manchester	Green bus fund	promotion of green buses
B.Braun Melsungen AG	Bus to RegioTram transfer	An public bus offers the transfer to the RegioTram train station to ensure the accessibility for employees
Region Hannover	Optimization of bicycle infrastructure	e.g. dedicated bicycle fast lanes

Region Hannover	Meta-platform to communicate information about traffic behaviour	addresses teachers for school-projects, regarding "How to use PT", "School bus on feet" and "Bike heroes"
Region Hannover	Stadtradeln	Nationwide campaign/competition to collect as many km as possible by riding a bike during June and August
Region Hannover	Hannover Mobil Card	Monthly ticket for PT, reduced price for Bahncard, car sharing and discounts for taxi rides
Region Hannover	Tool-kit software	support SME with optimization of means of transport to save money and reduce emissions
Region Hannover	Bicycle friendly employer	Competition regarding bicycle friendly activities
MVO Nederland	Low Car Diet 2013 (7,2,6)	Platform to initiate sustainability. Make Companies and employees acquainted with sustainable mobility and support implementation
MVO Nederland	ParkFlyRent	Free parking on airports by allowing to rent your car
MVO Nederland	E-Driver	Driving style program to improve the driving style to reduce emissions
D1 IVM GmBh	Pendlerportal	Commuter platform to carpool, to save passenger cars on road during peak hours
D1 IVM GmBh	Vielmobil	Intermodal route planner
D1 IVM GmBh	Radroutenplaner	Bicycle route planner on bicycle friendly roads
D1 IVM GmBh	Mobility management for schools	Convincing parents not to bring their children to school by car
D3 Daimler AG	Job ticket	Public Transport ticket for one year, while paying for 10 months
D3 Daimler AG	Moovel	Moovel represents a new type of mobility. Moovel makes getting around simple, personal and intuitive thanks to a more integrated approach to mobility. Moovel combines and markets innovative services such as car2go with the similarly named Moovel app.
UK1 E Car	Electric Vehicle Car Club	Renting electric vehicles for a (long) period, without worry about insurance/tax/breakdown cover/parking permits/maintenance/cleaning
NL TNO 4 BNV Mobility	Spitsmijden projecten	Paying participants when they avoid the peak hours
NL TNO 4 BNV Mobility	Flexible insurance tariffs	Make the insurance tariffs location and time dependent, so paying more when the customer drives during peak hours or busy areas (Randstad)
NL TNO 4 BNV	Moves your day	Analyse the mobility of employees of SME

Mobility		
UK 2 Liftshare	Liftshare	Car sharing service that matches drivers with empty seats with passengers looking for a lift
UK 2 Liftshare	myPTP	employer-to-employee online personal travel planning tool
UK 2 Liftshare	Carloco	peer-to-peer rental scheme
UK 2 Liftshare	myBUDi	encourage car sharing across the world
It3 WeCity	Wecity	app to promote sustainable urban mobility using games and prizes that are made available by private companies
UK3 Poplar Harca	EV Car Club	Electric car sharing that is affordable for residents that cannot afford to buy a car
NL TNO 1 Alphabet	Mobility Budget	The Alphabet Mobility Budget offers you and your employees optimum flexibility in mobility, besides controlling costs. By combining the main forms of mobility, such as public transport, cycling and (shared) car, your employees can meet their need for mobility with their own budget.
NL Arc 1 Dutch Oil & gas company	mobility card	Combination of fuel card (tankpas) and OV-chip card (public transport), which also works for taxi's, car hire and ferries
NL Arc 1 Dutch Oil & gas company	fuel save partner	Tool connected to the motor management software of trucks to monitor fuel use of truck drivers. Interesting for companies, as they can save on fuel expenses. The software knows whether truck is empty
NL Arc 1 Dutch Oil & gas company	eco-marathon	International competition to drive as far as possible on 1 litre of fuel. The winner could drive 3000 km on 1 litre
NL Arc 1 Dutch Oil & gas company	Flexwork concept	Concept together with Regus to have flex work facilities at petrol stations. Not so many locations and introduced recently, so no proof for success yet
NL Arc 5 Capgemini	Low car Diet	Platform to initiate sustainability. Make Companies and employees acquainted with sustainable mobility and support implementation
NL Arc 5 Capgemini	Mobiliteitscoach	Advice on alternatives to cars
NL Arc 5 Capgemini	V5N4 game	Competition between departments to get as low possible car kms

## 6 Signature

Delft, <datum>

TNO

<naam afdelingshoofd>  
Head of department

Karin van Kranenburg  
Author