Imagine the result
IF DISNEY RAN REGIONAL PUBLIC TRANSPORT
APPLYING THE DISNEY PHILOSOPHY TO THE SERVICE AND ORGANISATION OF DUTCH REGIONAL PUBLIC TRANSPORT

DELT UNIVERSITY OF TECHNOLOGY, MSC. TRANSPORT, INFRASTRUCTURE & LOGISTICS

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29 November 2011
If Disney ran regional public transport...

"Someone had to eat the first oyster, you know. Someone looked at half a shell full of snot and was brave."
Terry Pratchett, Nation
# Disney Dictionary

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Prologue

Welcome! This thesis denotes the end of the Master of Science “Transport, Infrastructure and Logistics” at Delft University of Technology for me. It is the final product of half a year of looking at the possibilities for the Disney philosophy in regional public transport.

As you may have guessed from the use of the word ‘prologue’, the Disney spirit is captured in the names of the chapters. To help guide you through this document, please use the enclosed ‘Disney dictionary’, which may simultaneously function as a bookmark. For further navigation, you are referred to the reading guide on the next page.

Like any story, the protagonist cannot overcome all challenges by himself. Though this research has been executed as an individual project, the supporting cast made it possible. Full credits are on the back of this page, but I would like to mention four groups here. First of all, ARCADIS for presenting this wonderful idea and providing the means to execute it. Second, the thesis committee who provided valuable feedback. Third, all the interviewees who gave me new insights and inspiration. And last but not least, those people backstage.

The journey this document take you on consists of different turns and many pages. I have tried to keep it as legible as possible, inspired by Calvin, the cartoon character: “the purpose of writing is to inflate weak ideas, obscure poor reasoning, and inhibit clarity”. By avoiding that ‘purpose’, I can now wish you an enjoyable read.

Bart Sigger
29-11-2011

“I only hope we don’t lose sight of one thing – that it was all started by a mouse”
Walt Disney
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Backstage
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If Disney ran regional public transport

Reading guide

This document probably takes more than a single journey to read through and not all readers will want to read everything. Therefore, here is a brief guide on what (not) to read depending on your interests.

You may want to know all details, or only the core message. Similarly, you may only be interested in the results or also in the process. This leads to four types of readers, as displayed in Figure 1 on the right:

Each type of reader is recommended to read different parts of the report, as displayed in the following table:

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Chapter 1 contains an introduction to the context of the problem and the goal of this project.
Chapter 2 describes how the research questions are related to each other through a framework and how each question is tackled.
Chapter 3 investigates how travellers can be segmented in different groups and what the needs of each group are.
Chapter 4 is about changes Disney would suggest to the public transport service.
Chapter 5 concerns tender procedures and organisational changes Disney would propose.
Chapter 6 relates the application of the Disney philosophy for public transport to practice.
Chapter 7 generalises the findings of chapter 6 for a wide applicability.
Chapter 8 concludes on the findings and gives recommendations about future research and advice to operators, authorities and Arcadis.
The Appendices elaborate in each used process and background information.
Summary

Background
Public transport cuts pollution, creates space for city inhabitants and offers everyone the freedom to travel, to name but a few reasons for boasting public transport. However, the performance of public transport has decreased the past decade, in spite of an overall increase in mobility. Moreover, recent economic and political developments have led to a decrease in funding for public transport in the Netherlands. Even with the efficiency gains from public tendering, it is unlikely that the retrenchment can be compensated. So, the current paradigm is not sufficient to maintain or improve the current level of service and ridership of public transport.

It is therefore necessary to look at possible new paradigms. One such paradigm is the Disney philosophy, which has been successfully imported from entertainment to healthcare. The challenges in that public sector have been overcome by applying principles from the Disney philosophy. Due to its success in healthcare, the Disney philosophy is assessed for its usefulness in public transport. The goal of this project is therefore to research how the Disney philosophy may be applied to public transport to consider whether or not it may be a suitable new paradigm to overcome the challenges faced by public transport.

Main Research Question
If Disney ran regional public transport, what would be done differently?

Disney philosophy
The implementation of the philosophy in healthcare was done through nine principles which together form the Disney philosophy. There is one core principle, focus on the customer, supported by coherent and inter-related principles. These supporting principles cut through multiple aspects of the business and are organised in service, organisational and management principles.

Each of these types of principles is used for a different aspect: the core principle to investigate travellers' needs; the service principle to suggest improvements to transport service; the organisational principles to comment on the tendering procedure; and the management principles are scoped out.

The relations between these principles and the investigated aspects are upheld through a framework based on two established theories. As three different aspects are covered, using one theory does not suffice to cover it. So, the TRAIL layer model and the rationales of decision-making in public transport were combined to cover markets and actors.

Travellers
Literally interpreting the core principle of having travellers central would mean specifically targeting the service to each individual. Per definition, public transport is not suitable to be fully personalised. However, considering each individual as being the same is not necessary.

1 Tendering is the main organisation scheme behind almost all Dutch regional public transport
2 The length of a traffic jam multiplied by the duration
Segmentation, i.e. dividing people in homogenous groups, is a way to both focus on the customer and keep transport public.

Any segmentation starts with so-called bases on which the people are grouped. Generic literature revealed two dimensions for the bases: observable (e.g. gender) versus unobservable (e.g. motivation) and specific (e.g. coffee preference) versus generic (e.g. lifestyle). A specific literature search revealed a third dimension: situational (e.g. playing sports) versus personal (e.g. income). These dimensions can be combined.

A simplified version of the Delphi technique with three experts revealed that for public transport, the most appropriate bases are a combination of unobservable, specific and situational. Furthermore, quantitative information on the segments is highly preferred, because it can help assess the feasibility of adjusting service to particular segments.

To aid in adjusting the service to travellers’ needs, one segmentation is chosen, based on the found specific requirements: the Needscope segmentation for train travellers (Figure 2).

Even though this segmentation has been developed for train travellers, it is transferable to regional public transport. This was established through an expert interview, supported by data from Dutch mobility research (MON).

The selected segmentation is used to adjust the service to the different needs of travellers. The service of public transport can roughly be divided into a network component (location of stops, frequency, travel time, etc.) and additional services (information, seating, vehicle design, etc.).

A literature search revealed that adjusting the network to segments is generally not feasible due to volume requirements and that the optimal network results from focusing on the average traveller. However, it is possible to adjust the temporal aspects of the network due to varying presence of segments at different times.

Some practical examples were found on how to adjust the additional service aspects to different segments. The most notable is Trent Barton, a British bus company that adjusts each line to the type of passengers on it. Following this example this is only possible in highly urban areas with high patronage.

For the network component, considering the needs of segments could lead to different trade-offs for the network design dilemmas. Also, adjustments in the additional service...
aspects can help improve each segment’s experience. However, the main use of segmentation is a better and more thorough understanding of travellers.

_Service_

On top of the core principle, the Disney philosophy has three service principles which are used to help design public transport service. These principles are ‘redefine competition’, ‘courtesy over efficiency’ and ‘perception over reality’.

Redefining competition means that a broader view on competition can be helpful. For public transport, the car is often seen as competition. Redefining competition would mean that the car can also be used to cooperate with through e.g. car sharing schemes. Redefining other sources of competition result in including destination and activity choice through transport oriented development or schemes with activity providers.

Courteous over efficiency is an important principle in the Disney philosophy, as applied in healthcare. Unfortunately, it opposes the current context of public transport, as that is all about efficiency gains through tendering. So, this principle is hard to implement. None the less, there are two main possibilities for the implementation of this principle in public transport. The first one is taking good care of travellers during any disturbance and providing compensation so that the travellers remain satisfied despite the problems. Second is encouraging travellers to behave courteously to each other. One of the barriers for using public transport is that people have to be around strangers. If passengers behave courteously, this barrier would be reduced and it would also reduce mess, as courteous people clean up.

Perception over reality is related to different established theories, which confirms its importance. The most relevant of these is the EU quality loop, which states that the perception depends on the expectations of the traveller and on the delivered service. Related examples show how the expectations can positively or negatively influence the perception of travellers and how the perception of waiting time is reduced. These good examples should be followed up to improve the perception.

_Tender_

The service that is ultimately provided to travellers is decided upon in the tendering procedure. The Disney service ideas should therefore be incorporated in tendering. The process comes down to an authority selecting the most suitable operator, subsidizing and allowing him to operate public transport in a particular region. The purpose of the process is to balance the interests of passengers, operators and authorities while adhering to legal constraints.

As the tender can be considered the organisation behind regional public transport, it is reviewed using the Disney organisation principles. These principles are ‘measure to improve’, ‘decentralise authority’, ‘create an atmosphere of dissatisfaction’ and ‘don’t use competitive, financial rewards as motivation’. Rather than looking at each principle and applying it, the process is analysed using the toolbox better tendering, a guiding document for authorities, and the principles are applied where possible.
According to the toolbox, the tendering process consists of three phases, each of which consists of multiple steps. The phases serve to answer questions of an authority:
1. Goals, conditions and starting points – What is the situation concerning public transport, what is our vision and how will we realize it?
2. Schedule of requirements and tender – What is the concrete implementation of our vision?
3. Awarding – Which applicant has submitted the best plan (and what is best)?

Overall, the process is akin to the basic design cycle, which is a crystallized process. As such, the overall process is not regarded for change, but its component phases are.

Phase 1 consists of an analysis of a region and its previous concession, as well as a determination of the format of the process. The format entails four aspects of the concession (Figure 3). The analysis has little to gain from the Disney principles, but the format has potential. The principle ‘measure to improve’ results in control on output, as output is what matters to travellers. It also results in awarding on quality. The principle ‘decentralise authority’ results in a development function for the operator and a focus on traveller orientation towards their direct service provider, the operator.

Phase 2 consists, amongst others, of the requirements for the service. Therefore, adapting this phase depends more on the design ideas than on the organisation principles. The toolbox describes nine requirements, all of which can be adapted to better fit with the Disney service. More importantly, three additional requirements result from the principles: ‘traveller participation’, ‘cooperative efforts’ and ‘disturbances plan’.

‘Traveller participation’ is necessary to ensure that the travellers remain central. ‘Cooperative efforts’ are needed to ensure that all actors keep responsibility for travellers. An operator does not control all aspects and has to depend on municipalities and the authority to create a good overall service. The ‘disturbances plan’ is required to ensure that travellers are treated courteously at all times. According to Disney, courtesy is critical to provide a good service, especially if things go amiss.

Phase 3 is the final phase, in which is decided what is best for the traveller. In order to select the best operator, the criteria, method of judging and awarding can be reconsidered with the Disney philosophy.

Having the traveller central means that the criteria are considered from the point of view of travellers, rather than a system or profit point of view. The pyramid of traveller needs (Figure 4) can be used for this purpose.
Judging would need to be done objectively, which for one means that external parties should be involved, and not just the authority. Secondly, any qualitative criteria need to be really well described, to prevent subjective reasoning.

The awarding should reflect the hierarchical nature of travellers’ needs. This means that it should consist of several phases, so that aspects that are more important to travellers are always prioritized by operators.

As the tender process of public transport is quite complex, so are the changes Disney would suggest. The main impact of applying the organisation principles and the service ideas is that the tender becomes more focused on travellers and less on the interaction between traveller and authority.

Feasibility and applicability

The results generated for the service and tendering are purely based on the Disney philosophy and as such, their real world feasibility needs to be checked. This is done by first looking at the real world by analysing the tenders of four different regions: Waterland, Arnhem-Nijmegen, Zuid-Limburg and Midden-Overijssel. The feasibility of the service and tender ideas are tested by involving experts.

Analysis current tenders

The tenders of the four regions were analysed through a desk study of the documents and interviews with the authorities. There is a lot of difference between the tenders, particularly in terms of the used formats and the awarding.

The formats ranged from the lower left-hand corner of the format model (Figure 3) to the upper right-hand corner, and two in-between. Interestingly, the most outlying two tender formats had both based the format on experience.

The awarding is based on three main criteria: quality, quantity of supply and price. The weights for these three criteria differed to a large degree between the four tenders. The weights are not established based on travellers’ wishes, but on authority wishes and reasoning.

Applicability service ideas

The service ideas only need to be incorporated into the tender if they are feasible. The principles were presented to FMN, the federation of most regional transport operators in the...
If Disney ran regional public transport in the Netherlands. The concrete ideas were commented on by Connexxion and Veolia, two operators. The FMN considers the service principles and their implications for transport service desirable. However, they believe the limited freedom in tenders, the relationship between operators and authorities and the eschewed public transport market prohibit execution.

The concrete ideas were ranked on desirability and practicability by the operators and were grouped in four categories (Table 2).

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<th>High desirability</th>
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<td>Easy bits; medium feasibility</td>
<td>Essentials; high feasibility</td>
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<tr>
<td>Low practicability</td>
<td>Expenses; low feasibility</td>
<td>Extras; medium feasibility</td>
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The ideas with low practicability suffer from three major barriers for implementation: dependency on other actors, operational difficulties and cost-effectiveness. These barriers would need to be overcome for the ideas to be more feasible.

There are sufficient ideas of medium or high feasibility to conclude that the Disney service principles can be beneficial for public transport service. The schedules of requirement should therefore be adjusted to those ideas.

**Applicability tender ideas**

The two most different tenders were selected to apply the Disney principles to: Waterland and Zuid-Limburg.

Waterland has a rather closed tender, with hardly any freedom for the operator. This goes against the Disney principles. The authority indicates that the Disney principles and their implementations are desirable, but hard to implement. This is mainly caused by a lack of trust between operator and authority.

Zuid-Limburg has a much more open tender, but is different from Disney mainly on the limited attention to involving travellers, despite their ‘traveller central’ theme. Most suggested improvements based on Disney cannot be realised, due to the authority’s view of a purely money-focused operator.

**Conclusions & Recommendations**

Overall, the Disney philosophy does not result in a whole new transport system. Rather, it tweaks the current system to divert the focus to travellers. The main benefit of using the Disney philosophy lies in the fact that it looks at multiple aspects; it doesn’t cover just the organisation or just the service, but looks at the system more holistically. Implementation is currently not feasible due to a lack of trust between operators and authorities.

For future research, it would be useful to quantitatively investigate different tender formats and to analyse more tenders. Also, it is worthwhile to investigate so-called ‘development teams’ of operators and authorities to discover if that improves trust between them.

For transport authorities, it is important that they cooperate more with operators and that they develop the tender based on actual traveller needs. For operators, it is important that they prove themselves to be reliable and that they focus their efforts on travellers by implementing the service ideas. For ARCADIS, it is interesting to present themselves as an objective partner to authorities and/ or operators during tendering and as an independent expert in development teams.
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If Disney ran regional public transport...
CHAPTER 1

Upon a time

This thesis starts with a brief explanation of the connection between Disney and public transport. Following that, the context and problems of public transport in the Netherlands are discussed. The final paragraph states the research goal and questions.

DISNEY AND PUBLIC TRANSPORT

Disney is mainly associated with Mickey Mouse and other memorable characters, whom everybody knows. Behind the fairy tales and the children’s characters lies a strong business philosophy. This has resulted into Disney being one of the world’s top 10 brands the past decade (Interbrand, 2010). The goal of this project is to consolidate the Disney philosophy with public transport, so that it gains a higher modal share and higher traveller satisfaction. In the 1990’s, the Disney business philosophy was taken out of its entertainment branch and applied in healthcare (Lee, 2009). This caused a revolutionary change which resulted into higher patient and staff satisfaction. The Disney approach has since been used many times and has resulted into a great improvement in the healthcare business. This meant that the Disney philosophy wasn’t just valid for entertainment, but held true in another sector as well. So the question is whether it can also be applied in public transport.

The Disney philosophy consists of a set of interdependent principles. These principles can be split up into the core principle, service principles, organisation principles and management principles (Table 3).

The core principle of the Disney philosophy is that the traveller is central. What this means is that the focus should always be on the customer and not on the process. In public transport, the customer is the traveller. Focussing on the traveller is an important issue in the current national government policy on public transport (e.g. Schultz van Hagen, 2011) and is therefore a direct link between Disney and public transport development.

To realize the core principle, Disney has service, organisational and management principles. The service principles are used to provide excellent service to Disney customers. These principles can therefore be linked to the service offered by public transport operators. The organisation principles are used to run the business in such a way that every aspect is tuned to providing excellent service. As the main organisational aspect of regional public transport is the tendering procedure, these organisational principles are linked to the tendering procedure.

The management principles are used by Disney to have his staff work effectively. That is beyond the scope of this project and those principles are therefore not used.
If Disney ran regional public transport

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<table>
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<th>Core principle: focus on travellers</th>
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<td><strong>Service principles</strong></td>
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<td>View competition in a broad manner</td>
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<tr>
<td>Courtesy before efficiency</td>
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<tr>
<td>Perception over reality</td>
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<tr>
<td>** Organisation principles**</td>
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<tr>
<td>Measure to improve (customer satisfaction is superficial)</td>
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<tr>
<td>Decentralise authority</td>
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<tr>
<td>Don't use money as motivation</td>
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<td>Create an atmosphere of dissatisfaction</td>
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<th>Management principles</th>
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<td>Use your imagination as motivational force</td>
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<td>Close the knowing-doing gap</td>
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With the exception of the core principle, the distinction between the types of principles is not absolute. Rather, it is a way of organising the large variety of principles and helps to effectively apply them. An explanation of each principle is given in Appendix A.

The core principle lies at the heart of Disney's philosophy. The other principles serve to support and realise it. While it is referred to as focusing on travellers here, Disney means that the customers' desires have to be at the heart of the organisation. This also means that everything, from the actual service to the organisation and management behind it, is tuned to work in such a way that the customer can be focused on.

The service principles have a direct influence on what is offered to customers, while the organisation principles are related to the processes and institutions behind the scenes. This effectively means that a customer shouldn't take direct notice of these principles. The management principles are principles that are used to effectively motivate and guide the employees. The management principles are outside the scope of this research.

1.2

PROBLEMATIC PARADIGM

The fact that a philosophy that originates in entertainment is matched to public transport is caused by problems faced in public transport practice. To understand the goal of this project, it is necessary to understand the potential advantages of public transport and the problems it faces. These are explained in the following section.

1.2.1

PROBLEM(S) OF PUBLIC TRANSPORT

Public transport has an economic function and a social function (Raad voor Verkeer en Waterstaat, 2004). The economic function is transporting large streams of passengers using relatively little space. The social function is providing mobility to people who otherwise may not be able to move. While these two functions are not necessarily conflicting, there is tension between them, which contributes to the problems it's facing.

The operation of public transport is financially feasible if ridership is high, which is only the case in areas with large passenger streams. That is where the economic function is fulfilled. However, in areas where passenger streams are lower and ridership is too small for cost recovery, public transport is subsidized to help fulfill its social function. Due to the social function, the allocation of funds is not only an economic question, but also an ethical question. This need for subsidy makes the development of public transport difficult. The need for subsidy is reduced if patronage is higher, because passengers pay for the offered service. So there's the first reason to desire more public transport passengers.
If Disney ran regional public transport

To attract more passengers, it is necessary to understand why they do or do not choose for public transport. Consequently, to understand travellers it is necessary to pay more attention to them and their needs. Hence the government’s wish for a focus on travellers.

From a traveller’s point of view, using public over private transport often takes more time (e.g. Jain et al., 2008). Popularly said: “Public transport takes you from a place you’re not to somewhere you don’t want to be at an inconvenient time”. As time is a decisive factor for mode choice (Kropman & Katteler, 1993), the poor time performance makes public transport unattractive for many passengers. However, public transport is still a feasible alternative for approximately 40% of the movements in the Netherlands (Van Goeverden et al., 1998). This means there are more barriers for choosing public transport than time. Other aspects, such as price and the possibility to work during travel are also important. Moreover, it has been shown that ‘soft’ motives, such as social comparison and pleasure, have an important role in mode choice (Anable, 2005). So, these motives should also be addressed to increase the modal share of public transport.

In spite of the mentioned disadvantages from a traveller’s perspective, public transport has advantages from a system perspective. That is also the reason why it is subsidized, other than to fulfill the social function. Vautier (2011) lists some additional advantages:
- Reduction of pollution
- Less space consumption
- Higher travel safety
- Direct and indirect job generation
- Increase property value
- More efficient land use patterns

Even though the benefits should always be compared to the costs, the list above indicates that there is ample reason to promote and encourage more public transport usage.

1.2.2 PUBLIC TRANSPORT IN THE NETHERLANDS

Figure 5
Transport performance of car and public transport

The modal share for public transport in the Netherlands has shown a decrease in the past years in spite of investments (KpVV, 2008). At the same time, car usage and overall mobility have increased (MON 2009). Additionally, the traffic jam intensity\(^2\) has increased with over 30% in the past decade (Ministerie I.en M., 2011). Currently, the car is the most attractive option to the majority of travellers and as such, it has the highest modal share.

\(^2\) The length of a traffic jam multiplied by the duration
On top of the relatively poor performance of public transport, there have been two developments which are likely to further weaken the position of public transport in the Netherlands.

The first development is the international financial and economic crisis. This crisis puts a lot of strain on the government’s budget. The Dutch government plans to reduce its total spending with €18 billion in the next four years, heavily straining all public spending. Secondly, the current government can be typified as right-wing, which traditionally means they spend less on public transport and more on private transport. In the official national budget (in Dutch: “miljoenennota”), public transport is cut by €280 million between 2011 and 2015.

Public transport supply depends on the total income (subsidy + fares) and the efficiency with which that money is spent. So, to maintain the same level of supply, the efficiency and/or the income through fares must increase by large amounts. The total fares are the product of the patronage and the ticket price. In order to increase fares, the ticket price could be increased. However, this may lead to reduced demand, meaning overall income stays flat or falls. Besides, increasing fares is against the social function of public transport.

Over the past years, large efficiency gains have been made in public transport through public tendering (Van de Velde et al., 2010). Though the three largest cities haven’t tendered their urban public transport yet, it is believed that concomitant efficiency gains are not enough to compensate the reduced subsidies. Moreover, it is unlikely that further efficiency improvements are realised in other tendering areas. This means that either patronage must increase or the supply will fall. Considering the many advantages listed previously, the latter is undesirable.

IN SHORT

Recent developments put a lot of pressure on public transport. In order to overcome the reduced subsidy, large changes are necessary. The stagnation of the transport performance of public transport in the past years indicates that the current paradigm is unsuccessful.

1.3 OPPORTUNITY OF TENDERING

The large fall in subsidy for public transport requires a thorough look at the organisation behind it, as the organisation influences the service. In recent years, the concessions for operating public transport lines in the Netherlands are awarded through competitive tendering. This method of granting the rights to operate a network gives rise to new possibilities to look at the complete public transport service and the interaction between the main actors each time a new concession period starts. Public transport authorities can choose the operator which best serves customers’ needs. Operators need to offer services in a region and not just on a single line or for a single mode. This allows for better integration of different modes. More importantly, this gives rise to the opportunity to completely adjust the service in a tendered region. Any and all proposed changes to public transport service design should therefore be incorporated into the tendering procedure.
However, the tendering procedure through competitive tendering is very much a contracting game played between the authority and the operator (Figure 6). The traveller, for whom the public transport should be developed, is often lost sight of through this competition. This notion is strengthened by literature around tendering that hardly, if at all mentions travellers (Wallis et al. 2010) (Hensher & Stanley, 2008) (David & Wallis, 2005). In spite of the fact that tendering procedures hardly seem to involve travellers, a trend in public transport design is the shift to a more demand-oriented approach, i.e. traveller central. Combining the wish for a more central role of travellers with the current tendering procedure is still an unresolved challenge to which the Disney philosophy may hold an answer.

1.4 TO A HAPPY END – RESEARCH QUESTIONS AND GOAL

The current political wish is to have more attention for travellers (Schultz van Haegen, 2011), with the ultimate goal of having more patronage and higher traveller satisfaction, in spite of reduced subsidies for public transport. The transportation of the Disney philosophy from entertainment to healthcare has resulted in more attention to patients. So, it is attempted to use that philosophy to the same effect for public transport travellers.

**How the Disney philosophy improved healthcare**

When a former Disney executive became a manager in a hospital, he soon realised that the service provided by hospitals was nowhere near the excellence of the service in Disney theme parks. The largest difference was caused by a lack of focus on the customer and more attention to the running of the system itself. Using his knowledge of the Disney philosophy, he turned it around with great success.

What it boils down to is understanding the customer’s needs and being able to act on them. In order to realise this, Disney uses a set of principles to manage the organisation and shape the service. Paradoxically, his providing better service does not come at higher expenses. Rather, the high satisfaction of patients and high staff satisfaction, led to better performance, ultimately resulting in more efficiency and effectiveness.

So, the Disney philosophy improved a business which suffers from decreasing subsidies and increasing scrutiny.
Even if the desired focus is on the traveller, a great challenge still remains: matching the traveller's wishes to the design of public transport service. The Disney philosophy has explicit principles about how the service can be adjusted, which are therefore used. A service cannot be realised without an organisation to run it effectively. As such, the organisation of public transport, i.e. tendering should be suitable for the 'Disney service' and the focus on traveller. Therefore, the tendering process is subjected to the Disney organisation principles.

So, there are roughly three issues to be looked at in this project: how to focus on travellers, adjusting the service to travellers and organising the tender. All these issues are regarded using the Disney philosophy, which cuts across all issues.

The main goal of this research is to determine how the Disney philosophy can be integrated with regional public transport. The purpose of investigating the Disney philosophy is to consider a new paradigm which may bring the politically desired focus on the traveller that should ultimately result in higher patronage and traveller satisfaction. As this research is prompted by one book, the main question is inspired by its title ("If Disney ran your hospital, 9½ things you would do differently") (Lee, 2009):

**MAIN RESEARCH QUESTION**

If Disney ran regional public transport, what would be done differently?

The main question is rather brief, broad and does not comply with the s.m.a.r.t. (specific, measurable, acceptable, realistic, time-based) principle, but is f.u.z.z.y. ("feestelijk, uitdagend, zuiver, zinnelijk, yes!") (Markensteijn, 2004). While a f.u.z.z.y. question is arguably more difficult to answer and approach in a scientific manner, it is in line with the spirit of this project. However, to be able to give a satisfactory answer, the question should be more precisely scoped. To this end, there are four sub questions which act as a guide to answer the main question. Those sub questions are largely built around the three types of relevant principles (core, service and organisational) and a fourth to test the feasibility of using the principles. Also, the four sub questions cover a large array of fields to give a broad view on the public transport system from the Disney philosophy. How the questions are answered and integrated to deliver a coherent answer is explained in chapter 2.

**SUB QUESTIONS**

1. How would Disney look at travellers?
2. How would Disney change the service to travellers?
3. How would Disney organise the tender?
4. Where does the Disney philosophy meet reality?

An important remark is that only the fourth question is concerned with the feasibility of the Disney philosophy and its practical implications. Leaving the application to the end has a reason: it allows the Disney philosophy to be used to the full extent and prevents it from being flattened early on. This does not mean that there is no place for practical insights in the first three questions. Details on the approach and the use of theoretical and practical

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3 Festive, challenging, pure, sensual, yes!
If Disney ran regional public transport insights are described in paragraph 2.2. Here follows a brief description of each sub question.

The first question focuses on applying the core principle: putting the customer central. Its main purpose is to find a method for understanding travellers better and allowing the service to be adjusted to them. It is answered in chapter 3.

The second question aims to apply Disney’s service principles to public transport. It will focus on how the actual transport product can be adapted to travellers, in line with the Disney service principles. It is answered in chapter 4.

The third question explores the possibilities to integrate the Disney organisation principles with the tendering procedure. It is answered in chapter 5.

The fourth question is meant to consolidate the designs of the second and third question with the reality. It is a necessary step to answer the main question and, more importantly, helps to show how and to what extent the design ideas can be implemented. It is answered in chapter 6, after which the main question is answered in chapter 7.

Chapter 2 elaborates on the sub questions, their coherence and the used method and approach for each question.
If Disney ran regional public transport...
CHAPTER 2
How the story unfolds

This chapter elaborates on how the research questions are tackled and how this project and report are built up. The first paragraph develops a framework for the project. This framework is used to explain the approach and method for each research question and their coherency. The third paragraph describes the structure of the report.

2.1 FRAMEWORK

The Disney principles cut across different aspects of a system. The core principle is related to the needs of customers, the service principles to the provided service and the organisational principles to the organisation behind it. Despite this multitude of aspects of the Disney philosophy, it is integral and coherent. In order to ensure that the coherence stays intact within this research, a framework is created. The framework is based on two general theories about public transport: the TRAIL-layer scheme (Figure 7) and the five rationales (Figure 8). Though these two theories may not be directly related, they both describe the public transport system and its actors. The TRAIL layer scheme is developed to understand the markets of public transport and the interaction between activities, transport and traffic. The five rationales are used for a rather different purpose: to help understand the behaviour of the three main actors of public transport. Combined, these two theories can place the Disney philosophy in the context of regional public transport. First, a more elaborate introduction into the theories is given, after which their relation to each other is discussed. The framework for this project is then refined from the relation between the two theories.

**TRAIL layer model**

This model describes three layers of the transport system and their interactions. At the top layer, there are activities. Activities are undertaken at different locations and therefore require transportation. The transport services which provide this transportation are the second layer. Between these two layers is the transport market, which describes the interaction between activities and transport services. The activities demand people or cargo to be moved and the transport services supply different levels of quality and prices to facilitate that transportation.

The transport services require vehicles to be moved. This is called traffic and is represented by the bottom layer. These traffic services contain amongst others the infrastructure on which the vehicles move. The interaction between these two layers is the traffic market.
The relation with the five rationales lies in the actors for each of the layers. Activities are desired and done by travellers. The transport services are executed by operators, who are regulated by government. The traffic services are also run by government.

**Five rationales of public transport**

The rationales are related to the decision making processes for each of the main actors in public transport. The rationales can be used to describe specific knowledge on specific aspects of public transport. They also help describe the “main disciplinary focuses in the overall organisation” (Veeneman, 2002) and as such, the interaction between different actors.

“Maintain the metropolis” is related to urban planning. It focuses on the role public transport plays in keeping cities accessible and liveable. This rationale is mostly related to the government, who is responsible for spatial and transport planning. It is directly related to travellers in that it influences their choices.

“Produce the policy” is the government’s way of planning and organising the public transport sector. This rationale is affected by the social function of public transport, for which the government is responsible. Producing the policy can also be seen as a method of controlling the operators, to ensure that they run a social public transport system and not just a financially feasible system.

“Manage the market” focuses on the balancing of supply and demand, particularly with respect to the roles operators play in the market. This rationale is therefore most applicable to the interaction between government and operator.

“Schedule the service” is concerned with developing a service to meet the needs of travellers. This rationale focuses on the interaction between travellers and operators.

“Conceive the customer” is about understanding travellers’ needs. This rationale is mainly related to travellers and is a prerequisite for scheduling the service.

The relation with the TRAIL layer scheme lies in the fact that the rationales can be used to understand the behaviour of the actors. So while the TRAIL layer scheme describes different aspects of the system and their interaction, the rationales can be used to describe the actors in the system and explain their behaviour and interaction.

**Combining the two theories**

Both theories describe the overall public transport system. An attempt is made to combine the two theories to not only understand how the system works, but also understand how the actors in the system behave and interact.

Combining the theories is done in three steps. The first step connects the actors with the (most) relevant layers of the scheme and the rationale that best fits that layer. The second step consists of adding the interaction between the actors. The third step is completing the combined model with the remaining rationales.
If Disney ran regional public transport

The result is a hybrid model that describes both the aspects of regional public transport as well as the actors. The framework for using the Disney philosophy in regional public transport is then refined from this hybrid model.

The three actors play on different layers of the system. Travellers have activities and are therefore related to the top layer. The process of understanding traveller behaviour and their activities can be explained by the "conceive the customer" rationale.

Operators execute the transport services and are therefore related to the second layer. The rationale used by operators to develop the transport services is "schedule the service".

Traffic services are regulated by the government, who is therefore directly related to the bottom layer. Traffic services are strongly related to physical infrastructure and the rationale "maintain the metropolis".

The government has more relations with the different layers than through maintaining the metropolis. That is where the second step comes in.

The second step is adding the interaction between the operators, so that the actors are related parallel to the TRAIL layer scheme. The government is related to the operator through the tender which grants the operator the concession. Therefore, the tender is the main interaction between government and operator.

The operator delivers service to travellers, which is their main relationship.

The third step consists of completing the hybrid model with the remaining rationales. These are "manage the market" and "produce the policy". The TRAIL layer model actually describes two markets, which are both managed by the government. The traffic market is managed directly, whereas the transport market is managed through the operators. The tender is the product of the government's policy.

This completes the hybrid model (Figure 10).

The government may have a larger role to play concerning services that this model suggests. For example, the transport authority of Groningen Drenthe develops the service. However, that can be explained by this model through the government's relations with the operators.

So, a more government-led service also fits this model.
The purpose of creating a hybrid model is to gain an overview of the aspects and actors which play a role in public transport to be able to apply the Disney philosophy integrally. The current model is extensive and covers more than the Disney philosophy does. Therefore, a framework is refined from this model as a cornerstone for the project.

Refining the framework from the hybrid model

In healthcare, the Disney philosophy was used to provide excellent service to patients. Though infrastructure is required for this service, the philosophy did not regard the physical infrastructure of the hospital. In parallel, the traffic services are discarded for this research. As an effect, “maintaining the metropolis” and the management of the traffic market fall from the hybrid model for the framework (Figure 11).

NB: the tender may be partially concerned with the traffic market, through e.g. arrangements about bus lanes. That is hereby scoped out.

The Disney principles are related to multiple aspects (Figure 12). The core principle is about travellers and their activities and is therefore used to reconsider the top of the hybrid model. The service principles are related to operators’ actions and the transport market. As such, it is placed over the central part of the framework. This means the service principles are also used to reconsider managing the market from the government’s point of view. Third, the organisational principles are used to regard the tender and the government’s policy that led to it.

An important note on the incorporation of the Disney philosophy is that the relation between the actors shifts as a result of starting with travellers. The service that operators give travellers isn’t superposed as delivered service, but is a result of travellers’ desired service. Similarly, the tender isn’t superposed on the operators, but is an agreement between the two parties which enables them to realise the core principle: focus on travellers.

In regional public transport, two layers of government are directly involved: municipalities and provinces or city regions. The tender is awarded by the latter, while the former is a stakeholder in the arrangements. The focus of this research is on the provinces and city regions, because they are the transport authorities and have most influence on the public transport service and the tender.
The next paragraph describes how this framework is used to answer the research questions. It elaborates on the approach taken to applying the principles to the relevant aspects and actors.

2.2 APPROACH AND METHODS

There are four sub questions and a three-layered framework. The first three questions are each directly related to a layer of the framework and the fourth is a more ‘vertical’ question which aims to test the feasibility of the Disney principles on each layer. The relation between the questions is displayed in Figure 13 in which, for reasons of clarity, a large part of the framework is left out.

So the questions are directly related to the framework. Additionally, the relation between the sub questions can be explained by the framework. The travellers desire service (demand) from the operators, who operate the service (supply). The government tries to manage this market through the tender, which it arranges with the operator.

How each of the four sub questions is answered is explained in the following sub paragraphs.
2.2.1 HOW WOULD DISNEY LOOK AT TRAVELLERS?

This question is the topic of chapter 3.

The Disney philosophy’s core principle is focusing on travellers, or to use the political statement: having the traveller central. In the most literal interpretation this means each individual should be regarded separately. While that may be done in healthcare, where each patient is given an individual treatment, it is not possible to consider each traveller individually in public transport (personalised public transport is a contradictio in terminis!). That does not necessarily mean that the other opposite must be true: considering each traveller as the same. Rather, an in-between should be sought for looking at travellers. This in-between can be found in segmentation (Figure 14). Segmentation is creating homogenous groups from a heterogeneous group. It is explained in more depth in section 3.1.

So, by using segmentation, Disney’s focus on travellers can be realised. Ultimately, the segmentation should be used to help develop the service. This means that segmentation needs to yield additional insight into traveller demands.

The research about segmentation starts with a literature survey. At first, generic knowledge about segmentation is required. This has two purposes: showing how a segmentation is made and finding out how products can be matched to segments’ demands. The generic segmentation research is followed up by specific transport segmentation research. This consists of a literature survey on the use of segmentation in public transport. The findings of the generic and specific literature survey lead to theoretic knowledge on the use of traveller segmentation.

Based on the theoretical insights, a first selection is made of suitable examples of traveller segmentation. The theoretical insights are used as requirements and only segmentations that meet these, are considered suitable. Next, generic segmentation criteria (Wedel & Kamakura, 2000) are applied through a multiple criteria analysis to select the theoretically most suitable segmentation.

As “the only difference between theory and practice is that there theoretically is none” (Anon), the theoretic knowledge is supplemented with practical insights. These practical insights are obtained through experts. The practical insights combined with the theory lead to one view on what the best segmentation strategy is for use in public transport. The Delphi technique is used to establish the best strategy, because it is a tool to “achieve convergence of opinion” (Dalkey & Helmer, 1963). However, that process is rather elaborate and the amount of experts needs to be fairly high for it to work. Due to the limited time and the very specific field, the Delphi technique is not fully implemented. Rather, a simplified spin-off is used. Three experts who are willing to participate have been found.
The first round is an interview with each expert. The second and in this case final round is a survey in which their statements are compared to each other. This survey is then analysed to make conclusive statements about the best strategy for segmentation in public transport. Details of the interviews and survey can be found in Appendix D.

These practical insights are then used to make a final selection of the single most suitable segmentation. That selection is based on additional requirements obtained through the experts.

In spite of selecting the most suitable, there exists no segmentation specifically developed for regional public transport. So, the transferability is regarded to understand whether or not it can be used. The transferability is researched in both a qualitative and a quantitative way. The qualitative research answers the question whether or not it's transferable overall and the the quantitative research gives insight into the degree to which each segment is transferable.

The qualitative research consists of interviewing a general segmentation expert. Details of this interview can be found in Appendix F. The quantitative method consists of using available data about travelling in the Netherlands (MON) and applying this data to the data used in segmentation. This assumes that the segmentation uses data and that the data is available.

If the segmentation is transferable, the next task is to find out how the service can be adjusted to suit the segments' needs. This is done by comparing the segments' different needs to each other, by analysing each segment separately and highlighting common ground and differences. This analysis is executed by applying the basic theory as explained in Appendix B to the segments.

The final product of chapter 3 is insight to the demand for transport services, as displayed in the framework. Chapter 4 aims to establish what service Disney would supply to these travellers by answering the next question.

### 2.2.2 HOW WOULD DISNEY CHANGE THE SERVICE TO TRAVELLERS?

This question is tackled in chapter 4.

Public transport service is a broad issue. It contains both the network and the additional services. The network here not only means the lay-out of the lines, but also the frequency, operating speed and service hours. Additional services are all other aspects of the public transport supply, including and not limited to vehicle design, staff behaviour, information, ticketing, customer service and comfort. Because of the diversity of these service aspects, the Disney service principles are the basis to answer this question.

Besides using the principles to develop the public transport service, the segments are also used, because they give additional insights to travellers' needs. So there are two parts to this question. One relates directly to the segments and the other directly to the service principles. The research starts with a theoretic desk search of scientific literature on using segmentation for adjusting the network. The difference between the previous segmentation literature is that here the focus is on the supply rather than the demand. Added to the theoretic research
are reference projects about the implementation of segmentation in public transport. These reference projects focus more on the additional service aspects.

The development of transport networks cannot be directly traced from existing networks, but may be explained in theory. Conversely, theoretic suggestions for the additional service aspects give less insight into the feasibility of those suggestions than practical examples. Therefore, theoretical examples of adjusting the network to segments are used and practical examples for the additional service aspects.

Together, the theory and practical examples give an impression of how segmentation can be used for both the network and the additional service in regional public transport.

The next step is adjusting service to the segments. To come up with concrete examples, thought experiments are held to investigate what segments would like and dislike. So, two journeys are described for each segment, one with positive attributes and one with negative attributes. Thought experiments allow the service to really be designed with the traveller as starting point, which is in line with the Disney philosophy. The imaginary journeys and the process are described in Appendix G.

The thought experiments only gain insight into the additional service, not the network. To consider the effects of the segments on the network, the network design process is investigated. The decisive elements of this process are six public transport network design dilemmas (Egeter, 1993) (Tahmasseby, 2009). These dilemmas are reviewed using the different needs and demands of the segments.

After adjusting supply to the segments, the generic Disney service principles are used to adjust the service to all travellers. This is done per principle rather than per service aspect. The benefit of this approach is that the Disney principles remain intact. The downfall of this approach is that it’s not collectively exhaustive of all possible applications of the Disney philosophy.

So, for each principle, the possible implications for public transport service are regarded. To make it as complete as possible, a set approach of three steps is used per principle. First, the Disney principles are related to established theory where possible to consider their possible scientific truth value and to reveal possible applications for regional public transport. Second, reference projects where those principles seem to be implied are investigated. For each reference project, their likeliness to the Disney philosophy is regarded. Third, the possibilities of applying the principle in Dutch regional public transport are discussed. The three steps are all rather exploratory. To make the view on related established theory and reference projects as complete as possible, an expert is interviewed on each of the principles. Appendix G contains details of the consultation of the expert.
A nice extra: crowdsourcing as design aid - Roamler
An interesting addition to the developed design ideas has been found in an assignment for the real world crowdsourcing application 'Roamler'. An assignment to all Roamlers had been sent to ask for their improvements for public transport. This method of using travellers to help develop ideas was thought of as a good method to 'have the traveller central'.
The results of the assignment, which included both comments and photographs, were made available for this project. While the usefulness of the submitted ideas was ultimately limited, the use of a similar technique to involve travellers is considered positive and helps with the focus on what travellers want.
A description of Roamler, the assignment, the submitted ideas and the analysis thereof can be found in Appendix G.

The result of chapter 4 is a wide array of suggestions to adjust the service in accordance with the Disney principles and the segments. This service has to be run by an operator. The agreements on which this depends are set in the tender. So, to provide the service according to Disney, it is necessary to look at the lowest layer of the framework: the government, the tender and how the market is managed through the operator. That is the topic of chapter 5.

2.2.3 HOW WOULD DISNEY ORGANISE THE TENDER?

This question is answered in chapter 5.

The tender process is a well-defined and delineated process with many set steps. This process therefore lends itself as starting point for applying the Disney philosophy. So, contrary to the service design, the tender design is done from the process instead of from the principles. This requires a rather different approach.

First, the tendering procedure and its actors need to be analysed. This starts with a review of tender documents and the toolbox 'better tendering' (KpVV, 2011). The latter is a guide to transport authorities in the Netherlands on how to structure and develop a tender. It is developed by an independent knowledge organisation about transport and traffic ('Kennisplatform Verkeer en Vervoer').
The toolbox 'better tendering' contains a concise description of all the tender steps and the related issues, dilemmas and deliverables. Therefore, it serves as a guide to apply the Disney philosophy to the tendering process.

To better understand the roles and decision making of the partaking actors, interviews are held with both authorities and operators. The purpose of these interviews is to understand the development of the tenders, the reasoning behind it and the behaviour of the actors. Appendix G contains the details of the interviews.

After the analysis, the Disney philosophy can be applied to the different steps as described in the toolbox. First, a distinction is made between highly procedural steps which can hardly be altered and steps that have large potential for change. This distinction is based on the information from the toolbox and from insights of the interviews.
The steps with large potential for change are then handled separately. This includes regarding each organisation principle with respect to the step, as well as the current and preferred behaviour of the actors. To remain within the juridical boundaries, the principles and their implications for each step are presented to authorities. Details of these interviews can be found in Appendix I.

Besides the direct implications of the Disney philosophy for the tender, the service design also needs to be incorporated. This is done through looking at the schedule of requirements, which are made in line with the proposed Disney service.

The product of chapter 5 is a revised tender procedure, adapted to the Disney philosophy and Disney service. It also includes directions for the desired behaviour of operators and authorities within the Disney tender.

Applying the Disney philosophy to the tender concludes the use of the separate layers of the framework. The next step is considering the feasibility of the proposed applications.

2.2.4 WHERE DOES THE DISNEY PHILOSOPHY MEET REALITY?

This question is dealt with in chapter 6.

In order to assess the usefulness of the Disney philosophy, the ideas are tested. For each layer of the framework, these tests could be executed. However, the results of the top layer, on segmentation, are reflected in the service. Therefore, the tender and the service ideas need to be tested, but not the segmentation itself. The tests are in essence a comparison of the generated ideas with the reality by which the overall feasibility can be determined.

First, an analysis of current practice is done to better understand the ‘reality’ part of the question. This starts with a selection of different current tenders. These tenders are selected to be as diverse as possible so that the findings are as generally applicable as possible. The criteria for choosing are region size, modes and degree of urbanisation. For a good mix of diverse information while remaining workable, four tenders were selected. The selection and analysis of the separate tenders is elaborated upon in Appendix H. The interviews held for understanding the tenders for the previous sub question add to the analysis.

The service ideas can be described as concrete ideas and on a strategic level, which directly reflects the Disney principles. The strategic level is discussed with a representative of the Dutch Federation of operators. This helps to consider the relation with the tender and the overall usefulness of the application of the Disney principles. Details of this interview can be found in Appendix J.

The concrete ideas are presented to operators, who are asked to rank them on practicability and desirability and comment on each idea. These two ranks are chosen as they together envelop feasibility. The ideas can then be grouped in four categories, along the two axes of ranking. For the ideas with low practicability, the obstacles for implementation are discussed. For the ideas with low desirability, the disadvantages and how they may be overcome are discussed.

These two methods of testing give an overview of how useful the Disney service principles are for public transport, though it does not give insight in the costs.
The tender ideas are tested by presenting them to the two authorities with the most different tenders. The differences between their current tenders and the Disney tenders are discussed and analysed for each of the steps with largest possibilities for the implementation of the Disney philosophy. Common issues are then filtered out and reflected on. For details of the interviews, Appendix J can be referred to.

Comparing the Disney service ideas to the specific real tender procedures is the content of chapter 6.

The final step in answering this research question is to generalise the findings of the comparison between the actual tenders and the Disney tender. General desirable possibilities of implementing the philosophy are revealed and combined with the current toolbox. So the result of generalising the findings is basically an addition and proposed changes to the tendering guide for Dutch public transport authorities. This step is taken in chapter 7.

So, the product of the last sub question is effectively an answer to the main question as well.

2.3 STRUCTURE OF THE REPORT

This report basically consists of four parts (Figure 15): the start, the body, the end and the appendices. This paragraph denotes the end of the start, in which the project has been introduced and the approach determined. The body of the report answers the research questions. The end sums up and reflects on the findings, as well as giving recommendations about the findings to the appropriate actors. The appendices give additional background information and describe the used processes more elaborately. The appendices therefore contain e.g. summarized minutes of all interviews. Whenever information of an appendix is relevant, a reference to the related appendix is given in the main text.

Figure 15
Structure of the report

Appendices:
Background information and elaborate processes
CHAPTER 3
Starring travellers

How would Disney look at travellers?

Disney’s core principle is that the focus should be on the customer. To focus on customers, it is necessary to understand the needs of each traveller. Segmentation is a useful tool to uncover various needs of different travellers (Van Hagen & De Gier, 2010). This chapter describes how a useful traveller segmentation is arrived at and what the needs of the segments are (Figure 16).

The first step is the theory behind segmentation, which introduces the general concept and some terminology based on literature. This results in requirements for traveller segmentations. The second paragraph makes a selection based on those requirements, which is refined with practical insights from experts. The third paragraph discusses how that segmentation can be used for regional public transport, after which the segments are described in detail. Finally, the segments are compared to each other to discover possible synergies and conflicts.

3.1 BEHIND SEGMENTATION

Before going into traveller segmentation specifically, some basic concepts about segmentation are introduced here.

3.1.1 ECONOMIC THEORY

The general theoretical basis of segmentation lies in micro-economics (Wedel & Kamakura, 2000). Micro-economics describes individual demand curves, whereas macro-economics describes market demand curves. The market demand curve is the (horizontal) summation of individual demand curves. As each individual is different, the market demand curve is not quite representative for any one customer. And that’s far from optimal: the demand should be maximized for as many customers as possible. By using a market demand curve, the demand is maximized for the average customer, which could mean missing a large potential. However, addressing each individual’s need is not possible, so a balance between mass and personalisation needs to be found.

An individual in this sense can be either a person or a company.
By segmenting customers into different segments, the market segment demand gives more information on how to best approach a certain segment. This results in more effective strategies and a wider range of products. Segmentation is therefore an essential tool to increase sales of a product (Figure 17). In terms of public transport, this can be seen as maximized patronage and satisfaction.

What segmentation comes down to in the end is creating homogenous groups with the same demand from one heterogeneous group with differentiated demand.

### SEGMENTATION BASES

There are virtually endless possibilities to segment people: income, age, music style, education, religion, values, brand preference, etc. These different types of segmentations have different so-called bases. Any segmentation starts with first choosing a suitable base. Segmentation bases can be organized along two categories. The first category concerns the observability of an attribute. E.g.: income is directly observable, whereas values aren’t directly observable. The second category is whether it’s product-specific or generic. The different bases can then be grouped as shown in Table 4.

<table>
<thead>
<tr>
<th></th>
<th>Observable</th>
<th>Unobservable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>Cultural; geographic; demographic and socio-economic</td>
<td>Psychographics; values; personality and lifestyle</td>
</tr>
<tr>
<td><strong>Product-specific</strong></td>
<td>User status; usage frequency; loyalty and patronage</td>
<td>Benefits; perceptions; price-elasticities; attributes; preferences; intention</td>
</tr>
</tbody>
</table>

The examples for each of the four categories displayed here are not exhaustive. They are mainly meant to show the different types of segmentation bases possible.

Each of the four bases has specific advantages and disadvantages (Wedel & Kamakura, 2000). Data for the observable bases is more easily obtained, but has less predictive value. Conversely unobservable data is hard to obtain and describe, but has higher predictive value (Hagen & de Gier, 2010). Product-specific data is accurate for a single group of products, but its use is limited to that group and it can be gathered post-hoc or through stated preference research (e.g. Van Exel et al., 2011). This makes it relatively expensive. The general bases can be investigated a priori, allowing it before introduction of a product. In order to combine the strengths and remove the weaknesses, the so-called joint segmentation has been developed (Ramaswamy et al., 1996). This method combines different bases in segmentation and incorporates all relevant data for any segmentation.
connects specific and unobservable data to generic and observable data. This allows for generalization and as such, a great increase in knowledge of the segments. Those four bases of segmentation all belong to what is called person-segmentation. This means that segments are created based on different people. This is by far the most used type of segmentation, as people are always the target of any segmentation. There is a second type, which doesn’t segment types of people as such, but segments types of situations. Effectively, this means there are three dimensions for segmentation bases. An example of situation-based segmenting is playing sports versus watching television. Two people who fit the same person-segmentation, but who are in different situations belong to different segments. Situation segmentation can be useful in this way: the person playing sports has other needs (e.g. energy bar) than the person watching television (e.g. bag of M&M's). The advantage of situation-segmentation is its flexibility and the fact that it reflects that our needs change depending on what we do. The disadvantage is that it can be harder to target segments, as they continually change over time.

IN SHORT
There are three dimensions for segmentation bases: observable-unobservable, generic-specific and person-situation. Multiple bases can be used through joint analysis. In order to arrive at a useful segmentation for public transport, the most appropriate base needs to be chosen.

3.1.3 CHRONOLOGY OF TRAVELLER SEGMENTATION

While the topic of traveller segmentation is specialised and as such, relatively uncovered, a fair amount of research has been done into it. A chronologic overview of the literature on traveller segmentation is presented here to show the developments and changing insights. The literature can be split into two categories. The first category is concerned with traveller segmentation in general and what the best approaches and bases are, this is mainly described by the literature from before 1990. The second category consists of applications of traveller segmentation, and is given less attention here.
Using segmentation in transportation appeared about twenty years later in scientific literature than segmentation in general. Segmentation in transportation research arrived, because it was found that aggregate models did not explain differences in variability of traveller behaviour satisfactorily (Hensher, 1976).

At first, separate bases were used and their performance compared (Nicolaidis et al., 1977). Three bases were used for predicting travel behaviour: demographic, travel choice and attitudinal. None of these turned out to be superior to others. However, a joint analysis of multiple bases provided better results. This was the first indication that in traveller segmentation, using one basis won’t suffice, which was confirmed in subsequent research (Dobson & Tischer, 1978). Additionally, it was key that quantifiable information on the segments is known to be able to support decision making.

An issue arising with the previous segmentation research was that it turned out to only be effective for short term planning. The research then started to pay more attention to underlying attributes concerning mode choice, the unobservable bases (Stopher & Ergun, 1979), which gave promising results.

After the exploration of personal unobservable bases, attention was drawn to the importance of incorporating situational factors (Currim, 1981) (Dickson, 1982). It was discovered that two trends in general segmentation had not yet been applied to traveller segmentation: benefit and situation segmentation. Benefit segmentation turned out to have little merit for transportation research. Situation segmentation on the other hand, if combined with person-segmentation, created useful homogeneous groups of travellers. Situation-person segmentation turned out to be successful, but the base for person segmentation was still a matter of discussion. So, the transportation research into segmentation continued. The next step in traveller segmentation was using lifestyles to predict route and mode choice (Salomon & Ben-Akiva, 1982). Using lifestyles to predict mode choice was an improvement over observable bases, though the lifestyles were determined quite coarsely and a priori (Anable, 2005).

For a long time, only a priori segmentation was used in transportation research. This resulted into segments that were chosen by the researcher, resulting into subjectively chosen segments (Anable, 2005). Researchers only started using post-hoc product specific measures in the ‘90s, which led to yet more improvement.

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5 Benefit segmentation uses the economic theory stating that there is a difference in how people value products.
Between 1985 and 1995, traveller segmentation research mainly consisted of segmentation used in practice. Some theoretical research continued to look into effective bases. The focus now came to be with transferability of segments across different areas to generalise different segmentations (Umesh, 1987). An attempt was made to link activity-based segmenting to geographic segments and use the results to predict travel behaviour in a different area. The results were somewhat disappointing, proving once again that observable bases are a poor predictor for travel behaviour.

After several applications, some more successful than others, theoretic research continued (e.g. Egeter et al., 1994). Large amounts of data became more readily available, resulting into more complex segmentation strategies. One such strategy was to combine situation segmenting with lifestyles, which was used often and fairly effectively. During the ‘90s, the focus was on improving methodologies and using more advanced computing models for the most effective segmentation. Though there seemed to be theoretical agreement on the most suitable bases, there was a striking difference in applications at that time (Dijst, 1995) (Driessen & Goossens, 1993) (Ramaswamy et al., 1996) (Van Goeverden et al., 1998).

A significant share of research tried to re-establish the most suitable bases, not or hardly regarding previous research (Allenby & Fennel, 2002) (Krizek & El-Geneidy, 2007). In spite of continuing research into the most effective bases, it was clear that at least situation had to be incorporated in some manner. However, an arising problem with situation segmentation when combined with person segmentation was the unmanageably high number of segments (Schlich, 2003).

An attempt was made to overcome the large number of segments by a careful analysis of activities: sequence alignment* (Joh et al., 2002). This proved unsuccessful and confirmed the need for a combination of situational and personal factors in traveller segmentation. Traveller segmentation was a fairly well researched topic at the start of the new millennium. However, there was still some doubt to its effectiveness. In particular, there was little satisfaction with the way the unobservable bases were categorized (Anable, 2005). This prompted more emphasis on psychological aspects behind travel behaviour. The new focus on psychological aspects resulted into more qualitative studies, as opposed to previous quantitative studies (Beirão & Sarsfield Cabral, 2007) (Diana & Pronello, 2010) (Jain & Lyons, 2008). The qualitative, soft aspects have not only become more pronounced in research, but also in the applications. The soft aspects of travelling have become increasingly important as a goal of research.

**IN SHORT**

Traveller segmentation has been researched since 1976. Though some agreement upon the most effective base exists, a wide variety of bases is used in practice.

Concluding, traveller segmentation research has long sought to establish the most suitable bases. There are agreements on two points: a segmentation needs to be quantifiable and the base must be unobservable. Some tend to prefer situational bases as well. However, a large variety of bases is used in practice (Table 5).

---

*Sequence alignment entails the ordering of activities in order to obtain a pattern on which predictions can be made.*
Table 5
Segmentations used in transport research. Italic means situation included.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Observables</th>
<th>Unobservables</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic</td>
<td>Geographic</td>
<td>Streetlife</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staalkaart</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Behaviourist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product - Specific</td>
<td>Sequence alignment</td>
<td>Mobility-experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Currim</td>
<td>Coherence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Choice travellers</td>
<td>Mobility-style</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nominal variables</td>
<td>Needscope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSA</td>
<td>Mentality® (adjusted)</td>
<td></td>
</tr>
</tbody>
</table>

3.2 SELECTION

The previous paragraph yielded theoretically determined requirements for segmentations. This paragraph builds on those requirements by selecting the most suitable segmentation. This selection consists of a part purely based on theory and a further part on practical insights as well. The practical insights are obtained through involving experts, as detailed in section 2.2.1 and appendix D.

3.2.1 ON THEORY

The requirements from literature are that a segmentation must be quantifiable and its base must be unobservable. Seventeen segmentations were found, all of which are used in the following selection. Table 6 shows which requirements they meet.

Table 6
Selection possible segmentations

<table>
<thead>
<tr>
<th>Criterion (base)</th>
<th>Geographic</th>
<th>Behaviourist</th>
<th>Staalkaart</th>
<th>Sequence alignment</th>
<th>Nominal variables</th>
<th>Moving South-Africa</th>
<th>Mentality® (adjusted)</th>
<th>Needscope</th>
<th>Sequence alignment</th>
<th>Currim</th>
<th>Airline</th>
<th>Choice travellers</th>
<th>Mobility-style</th>
<th>Mobility-experience</th>
<th>Coherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unobservable</td>
<td>x</td>
<td>v</td>
<td>x</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Quantifiable</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
</tbody>
</table>

Out of these four, detailed information on the Streetlife segmentation is inaccessible. Therefore, it is disregarded for practical purposes. A description of the other three can be found in Appendix C.

The other three segmentations that meet the criteria are now ranked by looking at more generic segmentation criteria, using a multiple criteria analysis. Multiple criteria analysis (MCA) (e.g. Belton & Stewart, 2003) is a technique which makes it possible to assess alternatives in a quantifiable way. The most important advantage of this technique is that it compares alternatives on different criteria.
Criteria and weights

In order to select one of these three segmentations, they are judged on six criteria: identifiability, substantiality, accessibility, stability, responsiveness and actionability. These criteria are generally accepted as the most important criteria for an effective segmentation (Wedel & Kamakura, 2000).

Identifiability is the extent to which different segments are discernable; how easily can a segment be recognized? Identifiability is quite important, as it determines how easy it is to investigate the segments. Its weight is therefore 3.

Substantiality is the size of the different segments; are the segments large enough to be useful? Substantiality is rather important, as segments have to be large enough to be worth making investments for. A segmentation with a high number of small segments is fairly worthless for public transport, as it is not a market where a high degree of personalisation is possible. Its weight is therefore 4.

Accessibility is the ease with which the segments can be addressed; can each segment be communicated with? Accessibility is less important. As determined in the theoretic background, only current travellers will be addressed. This means that the group is limited and easily reached. Its weight is therefore 1.

Stability is the amount that a segment changes over time; are the segments the same for a long enough period? Stability is somewhat important. Though highly unstable segments would be undesirable, any proposed changes in public transport are for short and medium term, as they are unrelated to infrastructure changes. The short time span for the use of the segments results into the stability being of less importance. However, if the segments are so unstable as to change during a concession period, the segmentation is less useful. Its weight is therefore 2.

Responsiveness is the intensity with which a segment reacts to products tailored to their needs; does each segment react well on their product? The responsiveness is quite important. If it is not possible to make appropriate products for the segments, the segmentation will have been useless. Its weight is therefore 3.

Actionability is the degree to which products can be tailored to the segmentation; is it possible to create a product to suit the needs of the segment? The products need to be viable to implement in public transport and translatable to tender criteria. Its weight is therefore 4.

Scoring

The ranking is done per segment per criterion. Each segment can score between 1 and 5 points for any criterion. A score of 1 can be thought of as corresponding with "- -", a score of 3 with "0" and a score of 5 with "++". The numbers are less intuitive than the symbols, but can be used for calculation. Hence, by thinking about the symbols and translating them to numbers, the scoring is both intuitive and quantifiable.

The Mentality® segments are most identifiable, as they are extensively described. The needscope train travellers are highly identifiable, but transferring them to general public transport may make it slightly more difficult.

The substantiality is, logically, inversely proportional to the number of segments. Needscope consists of six segments, Mentality® of eight and mobility of five.

The accessibility is highest for Mentality®, as its segments are coupled to demographic data. While this is not true for Needscope, all possibilities for approaching the different segments have been extensively investigated making accessibility fairly good. The accessibility of
mobility experience is fairly poor, as it is not clear where and when the different segments are.
The stability of each segmentation is good, as they are all based on unobservable aspects of human behaviour, which are stable. However, Needscope’s performance is poorer due to the situational aspects.
The responsiveness of needscope is smaller than that of Mentality® and mobility, because needscope only concerns train travellers. This causes more overlap in the segments and less difference in possible products.
Actionability of needscope is higher, as it only concerns public transport travellers. Mentality® and mobility experience include segments for whom public transport products may be less interesting, greatly reducing the actionability.

Table 7
MCA Segmentations

<table>
<thead>
<tr>
<th>Criterion (Weight)</th>
<th>Identifiability</th>
<th>Substantiality</th>
<th>Accessibility</th>
<th>Mobility</th>
<th>Stability</th>
<th>Responsiveness</th>
<th>Actionability</th>
<th>Weighted Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needscope</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>59</td>
</tr>
<tr>
<td>Mentality®</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>61</td>
</tr>
<tr>
<td>Mobility</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>54</td>
</tr>
</tbody>
</table>

Though Mobility is clearly out performed, Needscope and Mentality® are very close. While the MCA is a valid method, it remains somewhat subjective. Such a small difference therefore means that the two differ little. As this small difference is also purely based on theory, it is considered not to be decisive.

3.2.2 ON PRACTICE

As the theory yields no decisive answer, experts are used to determine the most effective base for traveller segmentation. The experts were consulted using interviews and a follow-up questionnaire, inspired by the Delphi technique. Appendix D describes the procedure and the results are directly presented here.

Experts
The interviewed and questioned experts all have knowledge on the subject, but from different perspectives. Mark van Hagen (NS) is traveller oriented, Bart Egeter (formerly TNO) is more knowledgeable of the transport system and Joep ten Brink (HTM) is an expert on marketing and information.
The usefulness of segmentation has been confirmed by each expert. Also, it is deemed necessary for a segmentation to contain information on several bases. It is not enough to focus on one base, as the importance of attributes depends on the purpose of the research. In other words, specific, generic and situational factors need to be known for the most effective segmentation. Additionally, it is important to have quantifiable information as well.

All experts agree that the situation (i.e. purpose) is as important as personal attributes. This confirms the conclusion from the literature survey that it is necessary to take both situational and personal aspects into account for traveller segmentation.
The concept of using lifestyles for a traveller segmentation is disbanded by the shared opinion that familiarity is more important than lifestyles. This also strengthens the view that product-specific bases are more important than general bases.

Both literature and experts agree that underlying motivational attributes are incorporated, i.e. the unobservable aspects. Furthermore, the experts stress the importance of situational factors.

This means that the following bases should be included in a traveller segmentation: unobservable, specific and situational.

So, the experts add two requirements. Interestingly, the situational aspect is in line with the Disney philosophy as well: everybody plays a role depending on the situation in his view. By playing along with the customer and even strengthening the properties of the role, the customer can be given a good experience for which he’s willing to pay. This situational changing of properties means that a situation segmentation is most in line with the Disney principle.

Indirectly related recent literature (Gladwell, 2006) emphasises and confirms the fact that people change according to their situation. It is argued that a personality is more dependent on surroundings than on the person, with the example of the difference in behaviour between being with close friends and meeting for business. This would mean that a purely personal segmentation is much less useful than a situational segmentation.

**Final selection**

Of the three previously selected segmentations, only Needscope includes situational factors. Therefore, the Needscope segmentation is used as an example to suggest adaptations to public transport to specific needs of different types of travellers.

A critical note on the selection of Needscope is that one of the three experts uses it and is therefore biased towards it. However, as the two other experts agree with him, this is not considered a problem.

### 3.3 TRANSFERABILITY TO REGIONAL PUBLIC TRANSPORT

The extensive information on train travellers is only useful if the segments are also present on the regional public transport lines. This paragraph establishes the way in which the train traveller segmentation can be transferred to bus, tram and metro (btm) passengers. Multiple arguments are put forward to show that those travellers can be segmented in the same types. The transferability depends on the degree of similarity between the three building blocks of the segmentation. Those building blocks are the assumptions, the people and the activities.

So, the general nature of the needscope segmentation is discussed to investigate the assumptions behind it. Second, the difference between travelling by train and travelling by other modes is explained along with a brief statistical analysis of public transport travellers.
Finally, the preference for different modes is explained with the needscope segmentation, confirming the correctness of the model.

3.3.1 GENERAL NATURE NEEDSCOPE

The Needscope model is a tool to assess and categorize human behavior. It is represented by two axes, representing their displayed behavior (affiliative – individual) and their emotional processes (introverted – extroverted). Any person can be placed on the map; there is no behavior that doesn't fit on there. This means that the two axes are collectively exhaustive, so a segmentation with the Needscope model covers all people.

The model was applied to train traveler through so-called projection. While it cannot be guaranteed that train travelers are exactly the same as bus, tram and metro travelers, their emotive needs and desires will be greatly similar. This is in part caused by the segmentation process, which didn't only focus on traveling by train, but also on general aspects of traveling. Moreover, the investigated sample consisted mostly of people who also travel by regional public transport and will therefore have included concomitant desires (Gier, 2011). While all regional public transport travelers are covered by the train traveler segmentation, there will be some differences. First of all, the more extroverted people, generally lust travelers, prefer cities over villages. Conversely, more introverted people generally prefer more peripheral areas and villages. The majority of train travelers live and/or work in cities. Looking at regional public transport will therefore result in a larger share of introverted people, meaning more must travelers.

A second aspect to consider is the fact that with regional public transport, the journey is shorter and the lower needs of the traveler pyramid (Appendix B) are more important. This means that the hard aspects will have a greater impact than the soft aspects.

3.3.2 SAME TRAVELLERS?

To further investigate the transferability, it is necessary to look into the differences between traveling by train and btm. These differences investigated using MON7 2006.

The largest difference between the modes is the average distance people travel by it (Table 8). Basically, the train is only attractive for journeys greater than 10 km, but especially for distances larger than 30 km. The bus is interesting for all distances less than 30 km.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Bus, tram, metro</th>
<th>Train</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5 km</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>5 - 10 km</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>10 - 30 km</td>
<td>37%</td>
<td>17%</td>
</tr>
<tr>
<td>&gt; 30 km</td>
<td>0%</td>
<td>83%</td>
</tr>
</tbody>
</table>

The fact that the train is mainly used for longer distances has direct consequences for what travelers want. Looking at the needs pyramid, it has been said that the longer the journey, the more important the satisfiers are and vice versa. This means that for short bus journeys, the dissatisfiers (safety, reliability and time) are more important than the satisfiers (ease,
comfort and experience). So, there should be a difference in design approach and priorities between urban and regional bus services.

The similarity between regional bus services and train services in distance may indicate that they are similar, but rail vehicles are more often positively thought of than bus vehicles (Scherer, 2010). The crowd attracted to buses may therefore be genuinely different from those to trains. This means that either the balance of the segments is different or that the segments themselves are different. If the segments themselves are different, then the segmentation of train travellers is not useful for other public transport modes. However, every type of person is incorporated in the Needscope segmentation (Gier, 2011), so there are no completely new segments for buses as opposed to rail. The only difference is the size of the segments.

Unfortunately, it is impossible to determine the exact sizes of the segments for btm. This is caused by lack of data. Concerning the segments, there is only data on the number of passengers per segment. This means that the amount of passenger-km or number of trips per segment is not known. Conversely, about btm, there is only data on passenger-km and number of trips. These two sets of data cannot be reconciled exactly. However, it is possible to estimate the sizes of the segments, by looking at the relation between segments and purposes on one hand and number of trips by purpose (Figure 21 and Table 9).

The following calculations are only meant to give an indication; the data is not precise enough to do more than roughly estimate the difference in segment sizes, especially because the relation between number of trips and number of travellers isn’t one on one.\footnote{E.g. a commuter makes 40 trips per month, while one visitor only makes a trip per month. The total amount of passengers is 2, while the amount of trips is 42.}

The explorers travel for education and for commute/business. There are fewer commuters in the bus and an equal amount of students, so the percentage of explorers is lower in buses. For either purpose, fewer travel by tram or metro, resulting in fewer explorers in tram and metro.
Most of the functional planners and individualists travel for business or commute, and there are more of them in the train than in bus or metro, so the percentage of travellers in those segments is lower for bus and for tram and metro.

The certainty seekers travel for all purposes, besides other leisure and commute/business. This means that there are more of them in bus, tram and metro than in trains.

Socializers travel to visit or for shopping. There are more of them in bus, tram and metro than in train.

The convenience seekers travel for education, sports/hobby or other leisure. For tram and metro, this number is approximately the same as for the train. However, there are more of them in the bus.

The above reasoning has been applied to the segments and configured so that the total number of passengers is 100%. This serves as an estimation of the differences in terms of expected segment presences.

The results of this comparison are in line with the expectations as pronounced by De Gier (2011). It was expected that there are more segments on the affiliative (left) side of the model, especially socializers, in urban areas. Trams and metros only run in urban areas and the segments on the left side have a higher estimated presence in those modes. This conclusion cannot be made for the bus, as there are buses in both urban and rural areas.

### SELECTED SEGMENTS

There are six types of train travellers: the explorer, the individualist, the functional planner, the certainty seeker, the socializer and the convenience seeker. Furthermore, there is a distinction between the intention for the travel process and the needs of a traveller. Four types of intention have been found for the travel process and six types of needs. The result of the needscope segmentation for travellers is six segments of which four have two similar intentions for the travel process, but different needs. Figure 22 shows the four intentions people have for travelling displayed on the needscope plane of emotive needs.
At the core are values everyone has. These are linked to the foundation of the pyramid and are attributes such as cleanliness, safety, no surprises, friendliness and reliability. These core values are practically the same for every segment. The four intentions for the journey lie on the outside of each dimension. Extroverted (top) people consider a journey as a means to reach a goal; introverted people consider a journey an annoying necessity; individualistic people consider a journey as a moment to themselves; affiliative people consider a journey an opportunity for a social meeting.

**Sidestep: Comparison intentions for travelling and travel time as a gift**

Interestingly, the intentions for travelling as portrayed by Needscope have great similarities to travelling as described by Jain et al (2008), who considers travel time a "gift", which can be "unwrapped" as "transportation time" or as "equipped time". Transportation time is described as the grey area between one place and another where a person has time to prepare mentally. This is in line with the journey to reach a goal and as a necessary evil, because to these people travelling is the difference between one place and another which cannot be avoided.

It may be especially interesting to use the idea of transportation time to improve the travel experience for those who see it as a necessary evil. If those travellers can be influenced to consider travel time as something more worthwhile, they will be more satisfied with the transport.

Travel time as equipped time is explained as travel time being a moment to cut off from the world or to catch up with others. This is exactly in line with the intentions as portrayed by Needscope for the lust travellers. So, while there was no direct connection between the needscope research and Jain et al (2008), their conclusions were essentially the same. This seems to confirm the notion that the Needscope intentions are reliable.

Each intention is accompanied with different needs. As stated before, there is one segment for which the intention of travelling is social and one segment for which it is individual. There are two segments for whom travelling is meant to reach a goal and two for whom it is a necessary evil. Interestingly, the needs of the latter four segments are rather different from each other, even if they share the same intention. It is therefore clear that the needs are more important than the intention for travelling if the travellers are to be made promoters. Moreover, the needs the different segments have are mainly present for the waiting experience. This may seem contradictory, but waiting is a large part of travelling with public transport and should be considered in a broad sense. This means that the time spent in a train (or other vehicle) is considered waiting as well as waiting for the vehicle to arrive.

During that waiting time, the needs should be fulfilled as much as possible to make it a pleasant experience. That is what uncovering the needs all is about in the end: making the journey enjoyable, as Disney would like each guest to be entertained at all times.

In the following paragraphs, each segment will be explained in general, along with the corresponding needs. They will be described in-depth, covering the type of people they are, how they gather information for the journey, their waiting style, and their travel behaviour. These latter three aspects are concerned with the complete travel process and the former with their general wishes.
To make them more identifiable and connect them with Disney, each segment is linked to two Disney characters. The six archetypes in needscope are deep-rooted emotive needs of humans. Any and all mythical or fairy creatures can be characterized by these six segments. Therefore, the Disney cast are a good projection of the segments.

NB: Though each segment is unique, real people may not belong to just one segment. The behaviour and drivers of people are too complex to grasp with relatively simple archetypes. However, people will generally behave mostly like one type and this greatly helps in understanding their underlying motivation.

All data about the segments in the following descriptions are from Van Hagen (2005).

3.4.1 EXPLORER - GYRO AND DAISY

The first segment for train travellers is the archetypical Ares, god of war. They are extrovert and inward focused (top right hand over needscope model). In general, this type wants to be strong and bold, full of power and energy. They want to be active and explore boundaries. They can be considered adventurous and products suited to their needs are often innovative (TNS Global, 2011).

The corresponding train traveller type has been called the explorer and consists of 11% of all train travellers. While their intention for travelling is reaching a goal, they use the journey to get re-energized. The explorer is independent and flexible, meaning that they generally travel alone and aren’t concerned with last-minute changes. Instead, they consider anything unexpected as fun and challenging. They are intrigued by new services and are likely to try them out. They are generally trendy, younger people who are well-educated and employed. They use public transport for multiple purposes.

Their preparation is limited. They either check the schedule just beforehand or not at all. They retrieve any information necessary through new media, such as websites and apps. They prefer busy, hectic stations and enjoy people-watching. Their preference for new services is reflected by the fact that they prefer a large variety of shops. For themselves, they prefer upscale food and drinks.

For them, travelling should be a pleasant experience. They prefer to spend their time on the train in a useful manner. This means they are often found reading or working on their own.

In Disney terms, the explorer is Gyro (Willie Wortel) or Daisy (Katrien Duck), independent young types who are willing to try new services and who are easily adaptable.

Figure 23
Gyro and Daisy, the explorers

KEY WORDS FOR EXPLORER
Flexibility, independence, fascination, the unexpected

Explorers are more often male than female and only 20% is older than 55, so they are generally fairly young. Also, over 50% is highly educated.
3.4.2 INDIVIDUALIST - GLADSTONE AND MAGICA

The archetypical Zeus, ruler of the gods, is the second segment. People who belong to this archetype are ambitious and want to have as much power as possible. This often makes them confident and somewhat glamorous. They like high-end products, but only if they’re not too common.

This type of train traveller has been called the individualist, 12% of train travellers fit best into this category. Their intention for travelling is having a moment to themselves. As such, they expect everything to go as planned. They want to be cut-off from others as much as possible and enjoy the time they have for themselves. They are generally somewhat older people with a professional background, some of whom are retired.

They prepare the journey rather well, to ensure good seats and the possibility to relax. As such, they always want access to the information, so that they can anticipate changes. Whilst waiting, they want peace and as few people around them as possible. If there are people around them, they try to be as selective as possible about who’s in their immediate surroundings. They don’t care much for shops at the station, though exclusive drink and food stalls may spark their interest. A perfect station to them has a chic and exclusive atmosphere.

Whilst travelling, they expect good seating arrangements, for which they’re willing to pay extra. These seating arrangements include extra commodities, such as newspapers, a pull-out table and other accessories. Key to them is that travelling is an undisturbed moment to themselves with high class service.

In Duckburg, there are two characters who fit the individualist profile: Gladstone (Guus Geluk) and Magica. Both of them like to have power and prefer being alone.

Figure 24
Gladstone and Magica, the individualists

KEYWORDS INDIVIDUALIST
Status, exclusivity, quiet, moment of rest

There are as many male as there are female individualist and only 20% is younger than 35. Few of them hold a college or university degree, despite the relatively old age.
3.4.3 FUNCTIONAL PLANNER - SCROOGE AND MISS TYPEFAST

The third archetype is represented by Apollo, god of light and wisdom. These type of people have a need for understanding what happens around them, while distancing themselves. They have a knack for efficiency and prefer logic over feeling. They act rationally and restrain their feelings. Products aimed at this segment should not only portray refinement, but should also be functional and full of clever content.

As a traveller, they are called functional planner and make up 14% of all train travellers. They consider a journey a necessary evil which they want to get over with as soon as possible, without any hassle or disturbances on the way. They like to use the time spent travelling as efficiently as possible, so they typically read or converse with colleagues. This type of traveller virtually always travels for work or business.

Even though they are generally familiar with the journey, they like to check the most up to date information to ensure that they arrive on time. It is in their preference to access the information themselves, without staff or others needing to help. As such, they consider any extra source of information helpful and useful, as long as it is clear and to-the-point.

In the undesired case of having to wait, they like to stay as close to the platform as possible, because it greatly reduces the probability of missing the train. As such, they are hardly interested in extra facilities at stations. This lack of interest is strengthened by the fact that they travel well-prepared and are unlikely to be in need of extra supplies.

While travelling, they expect to be able to be productive. This results in their need for seats, preferably in a cabin with colleagues or other like-minded travellers. They do not want to be disturbed and expect any staff to cut straight to the case. For them, the priority lies with a quick, reliable journey.

In Disney’s world, there are two characters who resemble this archetype. One of them is the well-known Scrooge (Dagobert) for whom time equals money and who doesn’t like to waste time on anything unproductive. The other is his secretary, Miss Typefast (juffrouw Eugenia), who has a similar, though less extreme, mind-set as her boss.

KEYWORDS

Speed, control, efficiency

Most functional planners are male (57%) and between 35 and 54 years old. About two-thirds hold a college or university degree.
Demeter, goddess of the earth, is the symbol of the fourth archetype. This type has more attention for others than for themselves. They are caring by nature and avoid harshness whenever possible. They like shelter and will not easily step out of their comfort zone. To reach this type, products should be authentic and natural, without unnecessary bells and tinkles.

As a train traveller, they can be thought of as certainty seekers, who make up 14% of all train travellers. For them, a journey is an unavoidable and equally unlikeable happening. Their main purposes are hobby and visits and they are generally unfamiliar with the journey. They are worried about arriving on time and at the right place, which results in their high need for information from several sources. The more any information is confirmed, the better. They are therefore not much concerned with time, but all the more with certainty.

If they have to undertake a journey, they prepare well. Whilst travelling, they have their plans on hand and want to be confirmed as often as possible. They prefer to hear information directly from the staff, as they are quite socially oriented.

During the wait, they don’t like to be distracted. They want to have an overview of the situation and hate getting stuck in crowds. In case they have to move through the station, they need reassurance in the form of plenty of information. They need the station to look clean and well-maintained in order for them to feel safe and certain. Also, they prefer to have as little extra external stimuli as possible, as they are already in a state of fairly high tension during the journey.

Whilst travelling, they like to keep checking that they’re on the right way. This is reflected by the fact that they usually look out the window and sometimes read. They try not to get too distracted, to avoid unwanted passing of stations or stops.

In the village of Duckburg, the two characters who fit this profile best are Mickey and Elvira (Oma Duck). Both of them are friendly, socially oriented, but they don’t like the unexpected. Also, they are both thorough in their quest for certainty.

Figure 26
Mickey and Elvira, the certainty seekers

KEYWORDS
- Certainty, safety, protection

Most of the certainty seekers are females of all ages. Few have followed higher education.
SOCIALIZER - DUCKIES

The fifth archetype has been portrayed onto Hera, goddess of the city and marriage. These people are the most outgoing and honest. They want to share their feelings and despise those with unreal pretences. As such, authenticity and sincerity is of high importance to them. To appeal to this segment, products should feel mainstream and accessible.

As a train traveller, these people are socializers, which can be said of 25% of all train travellers. They consider the journey an opportunity to spend time with others. They enjoy the journey itself and are less concerned with the time it takes. They typically travel outside of peak hours and almost always for pleasure.

They check information before leaving and carry it with them. Though they don’t actively ask for help, they are happy to receive it from others. They don’t mind unexpected situations, as long as there are others around with whom they can talk about it.

During the wait, they want to be surrounded by others, preferably in a comfortable seating area with the opportunity to engage in conversation. They like getting something to eat and drink with it, to increase the pleasant experience that a journey should be in their minds. Instead of sitting, they are also happy to wander about a station that is lively and bustling. Whilst travelling, they entertain themselves with others. This can be either by actively engaging in conversation or by simply observing them. If something goes on wrong, they really enjoy the sense of brotherhood that comes with it.

Duckburg is full of sociable types, but the young Duckies stand out. Therefore April, May & June (Lizzy, Juultje and Babetje) and Huey, Dewey & Louie (Kwik, Kwek and Kwak) represent the socializer. Both these triplets are always together and socially minded.

Figure 27
Duckies, the socializers

KEYWORDS
Pleasure and sociability with one another

Over two-thirds of the socializers are female. Though they are of all ages, there are slightly more young than old socializers. Also, they have followed all levels of education.
CONVENIENCE SEEKER – GOOFY AND MINNIE

Aphrodite, goddess of love, is the face of the final archetype. They want to enjoy life as much as possible and pour all their energy into doing so. Freedom is high on their priority and as such, they often find little value in materialistic belongings. They crave pleasure at all times. Products suited to Aphrodite should be inviting and a little self-deprecating.

The corresponding train traveller is the convenience seeker, which is 24% of all Dutch train travellers. To them, travelling is a method to reach a goal. They like public transport, because it takes little effort on their part. This segment mainly consists of students and older people and the motive is generally school or pleasure. They hardly bother to look up information beforehand and make decisions at the last minute. As such, they need information to be easily accessible and not be bothered with too many details. They like to do as little as possible and expect services to be easy to use with a highly intuitive interface.

During the journey, they relax in several ways, depending what they feel like at the moment. Though somewhat socially oriented, they won’t actively engage with others, but don’t mind having a chat. Journey time is not important, as long as any complications are smoothed out by the transporter.

The station is a place to catch up on forgotten supplies. Otherwise, they don’t actively look around the station, but use it purely functional. Also, the stations should be easy to navigate and distances between transfers minimized.

The Disney characters who represent the convenience seeker are Minnie Mouse and Goofy. Both of them are laid-back, social and care-free.

Figure 28
Goofy and Minnie, the convenience seekers

KEYWORDS
Convenience, uncomplicated, care-free

The sexes are equally represented by the convenience seekers and they are somewhat older than the average train traveller (two-thirds older than 35). Though a slight majority holds a college or university degree, there is little difference in education overall.
3.5 COMPARING SEGMENTS

This paragraph gives an overview of what the different segments want and compares them in order to discover overlap and clashes. First, the qualitative properties are discussed and compared. Those properties are translated to the needs pyramids to give a visual overview of the segments. Also, the time, effort and money budgets for the different segments are mapped. This is done to make the differences and similarities between the segments and budgets clearer and to find possible synergies and clashes.

3.5.1 QUALITATIVE COMPARISON

Table 11 gives a qualitative overview of all the segments, including their travel intentions, general wishes, how they gather information, what they want to do while waiting and while travelling, based on Van Hagen en De Gier (2010).

<table>
<thead>
<tr>
<th>Segment</th>
<th>Intention</th>
<th>General</th>
<th>Information</th>
<th>Waiting</th>
<th>Journey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socializer</td>
<td>Meeting place</td>
<td>Around people</td>
<td>Less important</td>
<td>Being with others</td>
<td>Amuse with others</td>
</tr>
<tr>
<td>Convenience Seeker</td>
<td>Reach a goal</td>
<td>Be 'served'</td>
<td>Without effort</td>
<td>Get forgotten items</td>
<td>Music, phone-calls, others</td>
</tr>
<tr>
<td>Explorer</td>
<td>Discovery, unexpected</td>
<td>Modern multimedia</td>
<td>Busy, hectic station</td>
<td>Work or read</td>
<td>Work or consult colleagues</td>
</tr>
<tr>
<td>Individualist</td>
<td>Individual moment</td>
<td>Separate from others</td>
<td>At home and on hand</td>
<td>Luxury, possibility to work</td>
<td>No disturbance</td>
</tr>
<tr>
<td>Functional Planner</td>
<td>Fast, no hassle</td>
<td>Personal, detailed</td>
<td>Clear, in person</td>
<td>Bare essentials</td>
<td>Work outside or read</td>
</tr>
<tr>
<td>Certainty Seeker</td>
<td>Unwanted necessity</td>
<td>Reliable and safe</td>
<td>Overview of the situation</td>
<td>Overview of the situation</td>
<td>Look outside or read</td>
</tr>
</tbody>
</table>

The most important aggregation of these six segments is by combining those travellers who enjoy the journey and those who dislike the journey, respectively lust and must travellers. The lust travellers are the socializer, the convenience seeker and the explorer. To attract them to public transport, it is important to look at the satisfiers. The individualist, functional planner and certainty seeker are must travellers, for whom the dissatisfiers are more important.

Another difference between the travellers is whether or not they like to be surrounded by other people. The socializer and explorer prefer it being busy. The certainty seeker doesn’t like it too crowded, but also dislikes being on their own. The convenience seeker doesn’t mind either way, as long as it’s not too busy for comfort. The functional planner and individualist would most like to be travelling by themselves.

The segments can also be grouped according to the period during which they travel. The explorer and convenience seeker typically travel during peak hours. The functional planner travels during both periods. The other segments travel outside of peak hours. This means that the presence of segments depends on the time of day.

The waiting facilities for each are also different. The functional planner and certainty seeker only want a station to be a functional, informative location where transfers are easily made. The socializer, explorer and convenience seeker want it to be a place full of nice shops and
If Disney ran regional public transport restaurants, where they can enjoy themselves or purchase useful items. The individualist requires it to be a place where they can work.

It is also important to note that the segments diametrically opposite to each other (e.g. certainty seeker versus explorer) have conflicts of interest on many aspects (e.g. predictability versus surprises). It is challenging to meet the needs of each segment, without bothering the other.

Table 12 gives insights into their common and differing needs, as well as giving an overview of when they mainly travel.

<table>
<thead>
<tr>
<th>Stance</th>
<th>Socializer</th>
<th>Convenience Seeker</th>
<th>Explorer</th>
<th>Individualist</th>
<th>Functional Planner</th>
<th>Certainty Seeker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Off-peak</td>
<td>Peak</td>
<td>Peak</td>
<td>Off-peak</td>
<td>Both</td>
<td>Off-peak</td>
</tr>
<tr>
<td>People</td>
<td>Crowded</td>
<td>Either</td>
<td>Crowded</td>
<td>Quiet</td>
<td>Quiet</td>
<td>Mix</td>
</tr>
<tr>
<td>Waiting</td>
<td>Drinks</td>
<td>Shops</td>
<td>Activity</td>
<td>Work</td>
<td>Info</td>
<td>Info</td>
</tr>
</tbody>
</table>

### 3.5.2 NEEDS AND BUDGETS

In order to visualise the needs and gain a better idea of their relative importance to another, the traveller needs’ pyramid is adjusted to each group based on their characteristics (Appendix E). It is important to realise that during waiting, the focus shifts to the satisfiers (top of the pyramid). During travelling, the bottom of the pyramid is more important. Using pyramids is in line with the Disney tactic of clearly prioritizing. Disney teaches his employees to clearly prioritize instead of having several core values or business pillars. Many businesses have several pillars on which they build their product, which may make it difficult to make decisions for employees. Lee (2009) uses the example of the operational staff in a Disney theme park: they have to prioritize their tasks in the order of safety, courtesy, theatre and efficiency. Having such a clear priority allows the staff to easily make decisions about their tasks.

The pyramid for each segment can be used to determine the priorities of development points for any service aspect (Figure 29). This is determined based on the segments’ needs and explained in Appendix E.

The added value of these segment-adjusted pyramids is that it is clearer when it is beneficial to focus on a lower priority. For example, if there are many functional planners, it is likely worthwhile to invest in speed, if the safety is up to scratch. If there are many convenience seekers, it is wiser to invest in the quality of information, assuming the lower needs for speed and reliability are met. So, while the differences aren’t large, they can be used to determine which aspects require more attention.
What those pyramids show is the difficulty of meeting each need. For example, the convenience seeker has relatively high demands on ease, whereas the certainty seeker needs a lot of safety and reliability. Most importantly, it is possible to make out which aspects require attention to satisfy each segment. The segments that have more focus on the lower part of the pyramid can be satisfied by focusing on hard aspects, whereas the others value the soft aspects more. These pyramids, combined with Table 12 show the needs for each segment and how they can be fulfilled.

It is important to remember that the lower needs are more important for shorter journeys, where the emphasis is on moving. This means that in public transport, different types of modes should appeal to different levels of the pyramids. Short journeys by local buses should appeal mostly to the lower needs, while longer journeys such as by train should also appeal to the higher needs.
The pyramids are useful in making strategic decisions about aspects to focus on, depending on the presence of segments. Besides, they also serve to further the understanding of different passengers.

The remaining question is what the segments are willing to spend on getting their needs fulfilled. This can be answered by looking at their budgets (Table 13). The percentage behind the segments' names is the relative amount of bus passengers belonging to that segment, as determined in section 3.3.2.

<table>
<thead>
<tr>
<th>Table 13</th>
<th>Budgets per segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explorer (8%)</td>
<td>Time</td>
</tr>
<tr>
<td>Individualist (8%)</td>
<td>0</td>
</tr>
<tr>
<td>Functional planner (9%)</td>
<td>--</td>
</tr>
<tr>
<td>Certainty Seeker (17%)</td>
<td>+</td>
</tr>
<tr>
<td>Socialiser (30%)</td>
<td>+</td>
</tr>
<tr>
<td>Convenience seeker (28%)</td>
<td>+</td>
</tr>
</tbody>
</table>

The convenience seeker has a limited budget, both in effort and money. He likes his journey to take as little effort as possible. However, he is willing to spend a bit more time.

The explorer likes to make something out of the journey and is ready to overcome difficulties. As such, their effort budget is rather high.

The individualist considers his time valuable and wants to spend his attention on whatever he's planned for himself rather than on the journey. He is willing to pay more to make that happen.

The functional planner is limited in his time, and spends all the energy he has on his work. As such, both his time and effort budgets are low. However, paying more is no problem.

The certainty seeker doesn’t mind sacrificing time to ensure arriving at the planned time. As such, his time budget is relatively large.

A comparison of the budgets gives additional insight into possible actions. The segments who have more time available don’t mind longer journeys, as long as it’s fairly cheap and effortless.

Only one segment has little time available, but is willing to spend more money and effort. So, if there are enough travellers of that segment, the price can go up if the speed is increased.

The majority of the segments don’t want to spend effort on travelling by public transport. This indicates that it is important to provide good information and make transfers as easy as possible. The only segment that doesn’t mind spending some extra effort, the explorer, is small (8%), so it is probably not wise to reduce investing in attributes that make the journey take less effort.

There are roughly three groups when it comes to the available money. The largest group (explorer, certainty seeker and socializer – over 50%) has a limited budget. Of the customers with a higher budget, a smaller part is present in bus, tram and metro. This means that it is exceptional for more expensive tickets to be viable for a bus service.

3.6 CONCLUDING

This chapter aimed to make the traveller central by focusing on different types of travellers. It has done so by looking at a useful segmentation strategy. For a traveller segmentation, three bases are important: it should be unobservable, because that allows for appealing to underlying motives, it should be product-specific, because that makes it possible to gain
relevant information, and it should be situation based, as the behaviour and choices of travellers strongly depend on the situation they’re in.

The Needscope segmentation met all these specific transport requirements. Despite the fact that it was made for train travellers, it is also suitable for regional public transport travellers. There are two differences: the relative size of the segments changes and their needs are more basic due to the shorter distances.

The needs and budgets of each segment have been mapped and are different. This concludes the use of the top layer of the framework (Figure 30). Chapter 4 investigates this demand to consider whether or not and how the service may be adjusted to it. It will do so by looking at both the segments and by including the Disney service principles.
CHAPTER

4 Changing the service

How would Disney change the service to travellers?

This chapter investigates how the Disney philosophy and the segmentation impact the public transport service. The structure (Figure 31) is based on the Disney service principles.

Figure 31
Structure chapter 4

<table>
<thead>
<tr>
<th>Disney's view</th>
<th>Special for segments</th>
<th>Redefining competition</th>
<th>Being courteous</th>
<th>Perceiving reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>4.2</td>
<td>4.3</td>
<td>4.4</td>
<td>4.5</td>
</tr>
</tbody>
</table>

The first paragraph gives an overview of the principles, the second paragraph relates the segments to the service and the other three paragraphs each deal with a service principle.

4.1 DISNEY’S VIEW ON SERVICE

The Disney theme parks are renown not only for the experience they give, but also for their excellent service. This service is achieved through careful managing and organising, but most importantly by using the core principle in addition to the three service principles in every aspect the customer sees. This paragraph explains how the core principle can be used directly, besides involving segments, and it briefly describes the service principles.

4.1.1 POSSIBLE APPLICATIONS CORE PRINCIPLE

Having the traveller central is the core principle. It has resulted in a segmentation to clearly map the differences in travellers. Besides, all other principles act to support making the traveller central. Additionally, some concrete ideas are presented here to increase the involvement of travellers, which helps put the focus on their needs.

First of all, it is important for travellers to be able to communicate their ideas and complaints easily. If there is no communication with travellers, than they are not involved and therefore not central. So, an operator should ensure that travellers can easily contact them, both during and after/ before the actual travelling. This can be realised by a free-to-contact customer service and simple forms in vehicles.

There are two large benefits to having travellers communicate easily. First, it gives them a feeling of commitment, making them feel more positive about the product (Svendsen et al., 2011). Second, it creates a source of possibly good ideas. In practice, quite a few improvements have been based on suggestions from travellers (Weijers, 2011a) (Klok, 2011).

Another possibility to making the traveller central is by the use of social media. Social media can be used to engage travellers to a company, so it can be used by operators as well. Social media not only makes customers feel engaged, it can also be used to keep them informed of
current developments. Some operators already use this, but with a large difference in intensity (Figure 32). This relatively simple measure is much approved: of the HTM-followers, 80% deems the tweets useful and good (HTM, 2011) and the twitter account of the Dutch Railways is considered the best Dutch twitter account (Multiscope, 2011).

A third possibility to get feedback or ideas from customers is through using the ‘Roamler’ application. Roamler is an IPhone application that can be used to survey users through assignments. A pilot assignment by Roamler has been given to public transport users who were given the opportunity to freely comment on public transport. The results were made available for the purpose of this research and are presented in Appendix.

Roamler is a basically a cheap tool to do market research. Directed questions could range from ‘where do you think the bus should (not) stop’ to ‘what would you want the bus interior to look like’. As it collects GPS location-based data with pictures, it gives very concise and detailed information. The benefit of using this tool is that it can be used to ask very concrete and directed questions. As such, it helps involve travellers.

A large disadvantage of Roamler is that the specimen won’t be representative of the whole population, as it only concerns IPhone users. By adding questions to determine which segment one belongs to, this problem is mitigated.

4.1.2 SERVICE PRINCIPLES IN A NUTSHELL

Disney uses three principles to shape its service. The first principle is that competition must be viewed in a broad manner. This means that you not only compete with other companies within your business, but that it is very important to think and look outside the ‘box’ for solutions.

The second service principle says that courtesy is more important than efficiency. This means that the way customers are treated is much more important than following a protocol or the speed with which they are treated. A great example of not following this principle is the infamous ‘purple crocodile’ commercial in the Netherlands.

The third principle is that perception is more important than reality. This means that it is not about what actually happens, but that the experience of people is more important. Disney was very much a pioneer in that field, because he realised that he should provide an experience.

4.2 SPECIAL FOR SEGMENTS

This paragraph explores the possibilities of adjusting public transport service to the specific needs of the segments. The approach is described in section 2.2.2.

4.2.1 ADJUSTING TO SEGMENTS

To gain insight how the supply is adjusted to segments’ needs, both theoretical and practical examples are highlighted here. The theoretic examples cover adjusting the network and the practical examples cover the additional service aspects.
Theory
Despite the thorough literature search on creating a suitable segmentation for public transport (section 3.1.3), the found literature on how the network is adjusted to segments is quite limited.

Two useful sources have been found: Kooij (2007) and Van Nes (2003). The former develops a network for the northern wing of the Randstad based on the Mentality® segmentation and the latter considers using the preferences of specific traveller groups (i.e. segments) for network design.

Both authors focus on an urban area, where patronage for transport is fairly high. Regardless, both need to combine the networks for specific segments to obtain well performing networks. Van Nes (2003) concludes that “the optimal network design developed for the average traveller proved to be the best network for all traveller groups”, thus indicating that segmentation is of little use in network design.

However, Kooij (2007) found that improvements could be made to the network if different segments are regarded. The advantages of segments are due to disparity over time and the fact that he focused on long term planning.

All in all, transport network design based on segments seems somewhat unfavourable due to the volume requirements. This was found for urban areas and it is therefore more so in peripheral areas. None the less, considerations about the segments’ disparity over time can lead to a slightly altered timetable and some network choices.

Practice
Two good examples of adjusting additional service to segments have been found. The first is that of Trent Barton, a British bus company that has specifically designed buses for specific routes. The second is that of the current development of Dutch double decker buses, where the top level is adjusted to the ‘must travellers’ (i.e. the individualist, functional planner and certainty seeker) and the bottom level to the ‘lust travellers’ (i.e. the socialiser, convenience seeker and the explorer).

Segments’ experience: Trent Barton
Trent Barton refers to itself as ‘the really good bus company’. They are one of England’s largest bus operators with a fleet of 270 and it is an independent private company, which runs its buses without being subsidised (KpVV, 2010). To make this possible, they have adopted a rather unregular approach at running their bus lines. Rather than focussing on optimal routing and scheduling, they have focused on the experience for customers and they therefore show that focussing on travellers pays off.

The most important and striking difference between Trent Barton buses and regular buses, is that each line has its own type of buses, with a name rather than a number. They have adapted the ‘soft’ aspects for each of the buses to the customers. For example, they use completely different styles for buses to business districts than for buses to shopping centres (Figure 33).
If Disney ran regional public transport

Besides this focus on adjusting buses and advertising to segments, Trent Barton involves travellers by using social media. The company and all lines have a Facebook page, on which customers can ask questions about the service. Furthermore, there is also a twitter account on which delays and special fares are announced (Figure 34). Next to social media, they also try to get customers involved by using online surveys, called the "think tank". These surveys are usually about the quality of certain lines.

Another important tactic they use to keep their travellers as happy and involved as possible is the extensive market research they do. Any decision on operation and scheduling "acts on the results [of its market surveys] even when they diametrically differ from [their] own belief" (Mathaisal et al., 2008).

Besides involving travellers as much as possible, the management takes a rather different approach than usual when it comes to staffing. First of all, they assign drivers on specific routes, enabling them to get to know their customers and make the customers feel more at home. When hiring drivers, they don't look for bus drivers, but they look for "positive attitude, a natural ability to treat customers as you would wish to be treated yourself" (Trent...
Barton, 2011). They then give the candidates the necessary training to get a bus driver's license.

In short, this bus company does everything to adjust its service to what customers want and places strong emphasis on the experience and involvement of travellers. Moreover, their heavy investments pay off, because they run a service with full cost coverage (KpVV, 2010).

**Dutch Railways' new double decker trains**

The Dutch Railways, who have developed the Needscope segmentation, will also use it to alter their physical product and not just to train their staff. The six segments can roughly be divided into travellers who like quiet and travellers who like socialising. Obviously, this can lead to annoyances on the train between the different types. One of the actions undertaken to prevent irritations, is the introduction of quiet carriages.

But they are about to take accommodating the two types a step further. Double decker trains that need to be refurbished are adjusted to these two types. The lower level of the trains will be filled with more vibrant colours and seats facing each other to give a pleasant experience to those who want to socialise. The higher level will consist of coach-styled seating and colder colours. This should make the experience for those segments more pleasant.

So, even when the segments are mixed in one vehicle, it is possible to accommodate the different wishes.

_In general on service adjustments to segments_

Two things can be learned from these examples. The first is that adjusting the design of vehicles turns out to be possible only for a small amount of segments per vehicle. This means that it is necessary to know which segment can be found on which line. Even on double decker trains, large vehicles with high patronage, the service is adjusted to only two segments.

The second key learning is that adjusting to segments requires adjusting several aspects: for Trent Barton, it's the interior, exterior and marketing. For the Dutch Railways, it only includes interior, but very extensively so, including chair arrangements, colouring and accessories like reading lights.

So, adjusting service to specific travellers can only be done for a very small number of segments and therefore it must be known which segments are present when and where.

**SERVICE ASPECTS**

As learned from the reference examples, adjusting the service aspects to the segments requires looking at multiple aspects. The concrete possibilities are endless and therefore a structured approach is presented: first, the segments should be arranged in general desires per journey element (Bovy et al., 2006). This arrangement gives insight to the specific needs and allows for a directed approach of concrete ideas.

The general desires are described for all journey elements, but only the first element contains the arrangement and example ideas. For the other elements, the arrangements and ideas can be found in Appendix G.

_Perfectly prepared_

The preparation phase is mainly concerned with gathering the right information. First, the wishes of the segments are translated to what they want in terms of planning. A useful method to organise this is arranging the segments in high-tech versus low-tech and basic
versus detailed (Figure 35, based on Zhou et al., 2011). Placing the segments is done on reasoning based on their needs. E.g. the convenience seeker just wants simple information and doesn’t mind through which medium, while the certainty seeker wants highly detailed data from sources that have long proved reliable.

The large advantage of this method of arranging is that it can be used to fully shape the service to the segments’ needs. The disadvantages are that the service principles aren’t explicitly incorporated and that there are no concrete ideas.

The next step could be developing ideas according to the principles using a matrix. Figure 36 contains some preliminary ideas in this fashion, all of which are created in appendix G. Good methods to further fill the matrix are using traveller ideas through Roamler, ordinary surveys or focus groups (Morgan, 1997).

**Wonderful walk (x2)**

After the traveller has prepared for the journey, they need to go to the nearest station or stop. This is usually done by walking and sometimes by bike. No matter how they go there exactly, they pass surroundings which influence their overall experience. These surroundings are shaped by the municipality, which has most influence here. The only
influence the operator has is the location of the stops and even that is dependent on what is allowed by the municipality.

Similarly to the planning process, the segments are first grouped in general desires. For walking, there is a distinction between quiet versus hectic and between high arousal versus low arousal (Naugle et al., 2011). Quiet and hectic in this case represent the amount of other people in the surroundings, while the arousal refers to the amount and intensity of surrounding objects, such as advertising, light and noise.

**Wanting to wait**
When a passenger arrives at the bus stop or station, they will have to wait until the vehicle arrives. This waiting is influenced akin to the walking (Van Hagen M., 2011a), so the same attributes hold. The largest difference between walking and waiting is caused on one hand by the fact that waiting happens at one place and on the other hand that waiting is influenced by the operator, who designs the stops. However, the municipality has to approve of it and also influence the locations.

**Better boarding and agreeable alighting**
Boarding and alighting are the sparse moments where passengers get in touch with the staff and where they have to check in and out. Moreover, they’re the transportation phases between being outside the system and inside. If the entrance is already unpleasant, it’s hard to make amends. If the exit is unpleasant, the rest may well be forgotten.
The operator has most influence on this aspect by far, as they own the buses and are responsible for the staff. Also, the authority has some influence by the requirements they set. While boarding, travellers can be either welcomed or acknowledged, where a simple greeting is the in-between from. On the other hand is how much extra information they receive. This can either be actively directed to them or passively, where they have to investigate it themselves.

**Terrific travelling**
The actual travelling itself is here defined as being in the vehicle that brings the traveller from stop A to stop B. This part of the journey is influenced strongly by the operator, who is responsible for the design and attributes of the buses and the driving skills of the staff. The municipality plays a large part in the travelling, because they are responsible for the infrastructure and the routes.
Whilst travelling, a traveller either wants to be distracted by themselves or the surroundings, i.e. do what they have brought or do what the operator provides, and they want to be together or alone (Van Hagen M., 2009).

4.2.3 NETWORK ASPECTS
As found in literature, actual network design using segments is limited in usefulness. However, adaptations may be beneficial if the presence of one segment is high enough at a certain place and time.
This paragraph discusses how the segments can also help by making decisions on the network aspects. No in-depth examples are given. Rather, suggestions for how to incorporate the segments in the network design process are presented.
Public transport network design is concerned with six dilemmas (Egeter, 1993) (Tahmasseby, 2009). A choice must be made for each dilemma and knowledge of the segments can aid. To do this, insight to the segments’ budgets and needs is necessary, so findings like that of section 3.5.2 can be used.

**Stop density dilemma**
The first design dilemma is whether stop density should be high or low. The advantage of a high stop density is that it lowers the access time. However, it increases the in-vehicle time. The opposite is true of a low stop density.

Accessing stops doesn’t only cost time, but also effort. Locations where the segments have a higher effort budget should therefore have lower stop density and vice versa. So, an area with many convenience seekers should have a high stop density and where there are many explorers, the stop density may be lower.

The same line of reasoning can be held about the travellers’ need for ease. The stronger the need for ease, the higher the stop spacing should be.

The total amount of time a journey costs depends on more variables than just stop spacing, so it is impossible to make statements about the time budget.

**Access area dilemma**
A derivative dilemma of the stop density dilemma is concerned with the access area. The higher the stop density, the lower the access area. A lower access area leads to a smaller probability of travellers boarding or alighting. This probability leads to uncertainties in timekeeping, because a bus may have to stop a lot of times or hardly at all. On the other hand, more stops make it more attractive to go to a stop, from a traveller’s point of view.

**Network density dilemma**
A high network density for a given budget leads to a shorter length of the network. So, a high density leads to high frequencies, but may result in longer in-vehicle time. A lower network density means that more nodes are directly accessible and that in-vehicle time is lower, but it also leads to lower frequencies and thus longer waiting times.

The functional planner would benefit from a high network density, because time is very important and he plans his journeys well, meaning the wait is minimized. On the other hand, certainty seekers will prefer a high frequency, because they don’t want the risk of having to wait long.

For other segments, the dilemma stays in existence.
Line density dilemma

A high line density leads to fewer transfers, but also to lower frequencies and higher waiting times. A lower line density leads to more transfers, but simultaneously reduces the waiting time.

For this dilemma, the effort budget is decisive, as the expected journey time evens out, but the expected effort differs. Segments with high effort budgets will prefer a lower line density, which reduces waiting time. They don’t mind the effort of the transfer. The opposite holds for segments with low effort budgets.

Network level dilemma

One network level leads to minimal number of transfers, but higher travel times. Multiple network levels lead to lower travel times, but result in more transfers.

All segments with limited time budgets and strong requirements for speed would prefer a multi-level network, because a transfer costs effort, but saves time. Conversely, segments who are more concerned with effort than with time prefer fewer network levels.

Line length dilemma

 Longer public transport lines are pleasant for travellers, because it decreases the amount of transfers. However, they are unpleasant, because the reliability also decreases with each stop and each distance travelled. So, there is the sixth dilemma: short lines with high reliability, but transfers or long lines with fewer transfers but higher reliability.

In general, reliability has the highest priority, so the line length should be at least somewhat limited. For segments that require high reliability, particularly the certainty seekers, shorter lines are preferred. On the other hand, for segments who find ease important, longer lines are preferred. This is especially true for convenience seekers.

4.2.4 CONCLUSION ON USING SEGMENTS

All in all, the usefulness of adjusting transport service to segments is limited for regional public transport due to the necessary high patronage of any one segment. However, small improvements on the additional service aspects for each segment can be made if they do not bother other segments. Additionally, segments’ desires may help to improve the spatial and temporal aspects of the network through reconsidering the design dilemmas.

In short, segmentation helps to understand travellers, but service adjustments are difficult due to limited patronage per segment.
4.3 REDEFINING COMPETITION

Redefining competition is a principle that can be used to create strategies to approach service design. What Disney really means by redefining competition is that it is important to step out of the boundaries of what is normally done. As such, this research complies with that Disney principle by its very nature. It looks at a philosophy from the entertainment branch, which has been translated to healthcare, and applies it to public transport.

Three ways have been established, through expert involvement, research in reference examples and brainstorming, to gain a broader view of competition:

- considering it as cooperation,
- involving a larger chunk of the journey,
- looking at indirect effects.

4.3.1 FROM COMPETITION TO COOPERATION

Two regular competitors can be transformed into co-operators by considering competition in a broad manner. These competitors are private transport and other operators.

Private transport

In a fair amount of literature, private transport is depicted as the main competitor for public transport (e.g. Cain & Flynn, 2009; Egeter et al., 2004; Jain & Lyons, 2008; Vautier, 2011). But it's not just competition; it can also cooperate. Private transport can roughly be divided into walking, bicycles and cars. Especially the latter two can compete with public transport, but if you look at competition in a broad manner, they can also be used to cooperate with public transport.

Using bikes to cooperate with is already done to a fairly large extent. A great example of this is the NS-bike, which can be rented for a small fee at most Dutch train stations. These rentable bikes can be extended further to large bus stations. Even at smaller bus stations, bicycle stands could be integrated to allow for more cooperation between modes and a shorter access and egress trip.

The proof that cars can also be used to cooperate with lies in two examples, both of which are the result of viewing competition in a broad view. The first example is that of park and ride facilities. These stimulate car users to go to a station and transfer to the train, so that the car is used to cooperate with public transport. However, this only works if the transfer is favourable; otherwise it costs both extra time and effort. A negative issue of park and ride facilities is that people who used to travel with public transport only, changed part of their journey to car (Van Binsbergen & Bovy, 1998). So, in order for park and ride facilities to effectively improve transport ridership, they need to be planned really well.

A less obvious and more counterintuitive example of cooperating with the car is the car sharing scheme in Bremen, Germany. If competition is viewed in a traditional way, offering a car-sharing scheme right next to a station would be cannibalising your own business. However, the car-sharing scheme actually increased ridership (UITP, 2002). One part of this was that the access and egress trip was simplified. But there is another, more intriguing explanation: car ownership. People who don't have a car, have to rely on public transport.
for longer distances. However, everyone needs a car at some point. By offering a car temporarily through this car sharing scheme, people were discouraged to get a car. As such, car ownership was reduced (ManagEnergy, 2005) and transport ridership increased. Moreover, it improved accessibility of the stations.

In short, in order to cooperate with other modes, the stations are crucial. A station has to allow for a smooth transfer from mode to mode. This includes parking spaces for cars and bikes, as well as a logical stop location for buses near trains, etc. It can also be extended to actually offering cars and bikes through rental schemes. So, an operator should carefully look at the possibilities of cooperating with other modes through intelligent use and design of stops.

**Other operators**

Per definition, operators compete with each other for the road during the tendering phase. However, during the concession, they do not have to see each other as competition anymore, particularly if they operate neighbouring concessions.

Regional concessions have very clearly defined boarders. While these boarders hold true for operators and authorities, these boarders do not hold for travellers. While concession areas are generally defined in such a way that interaction between other areas is limited, it is unrealistic to disregard interboundary travel. Most of this interboundary travel will be done with trains in the Netherlands, which are operated nationally.

From a traveller’s point of view, this means that entering a new concession area leads to a differently designed service to which they have to transfer. This can cause confusion, if the traveller has to have new or different tickets, or if travel data are not combined. Therefore, strong cooperation with other operators, including the Dutch Railways is crucial to provide travellers with a good service wherever they go.

This includes tuned timetables for good connections, having the same ticket schemes, shared information and recognisable design. Orchestrating these aspects is a responsibility of national government, but must be executed by authorities and operators.

4.3.2 INCLUDING MORE STEPS OF THE JOURNEY

Another way to broadly view competition would be not to look at travelling only, but look further into the travel process, starting at the activity choice (Figure 43).

In general, public transport only focuses on those aspects of the journey which are presented with a continuous line. However, the four aspects with the dashed lines also have an influence on the whole journey and the experience. According to the competition principle, these aspects also require looking into.
Activity and destination choice
The activity and destination choice depend on each person's wishes and the possible activities. That may make it seem too wide to influence. However, it is possible by promoting possible activities near stops or by making partnerships and deals with organisations that do influence the activities. For example, schemes whereby a ticket to an attraction also provides free transport could influence activity choice. Such schemes can easily be set up, as it is interesting for both the attractions and the operators, who can both benefit by attracting more customers.

A more intensive way of involving activity and destination choice is Transport Oriented Development (TOD). This involves building potential destinations around transport stops, rather than leading transport lines to destinations. The biggest obstacle is twofold: it requires huge investments and a change in culture (Currie, 2011). The huge investments are self-explanatory. The change in culture is caused by the fact that public transport has traditionally adjusted to spatial developments. Wherever a large flow was observed, transport came. So it was reactionary rather than pro-active. The core of TOD is turning this around, which requires viewing competition in a broad manner.

In order to effectively apply TOD, it is necessary to be aware of the three D's: density, diversity and design (Cervero & Kockelman, 1997). Density means that the activities around which transport are based should attract sufficient patronage. Diversity means that there should be different activities, which attract a multitude of travellers at different times. To help understand diversity, it is possible to consider the six segments (chapter 3). Design means that the environment of transport should not only be functional, but also aesthetically pleasing. This latter part is in line with the perception over reality principle. So, from a Disney point of view, TOD is really interesting.

Implementing TOD requires very strong cooperation between operators, authorities and local governments. The operators should design the transport service, while the authorities and local governments should guide the developments of the surroundings. Therefore, in order for TOD to have effect, a strong cooperation is necessary, which needs to be included in the tender.

Walking
When travelling with public transport, walking is necessarily involved. Unfortunately, the power of operators over the walking is limited to the location of the stop. The surrounding area can either contribute positively or negatively to the journey. Improving this walk requires the combined efforts of local municipalities and transport authorities.

TOD can also play a large role to improve the walking part of the journeys. On the one hand by reducing the actual distance from stop to destination and on the other hand by making it aesthetically pleasing. A correlation between transport ridership and direct environment of the stop has been determined (Cervero & Kockelman, 1997), so it is worth investing in the surroundings to improve ridership.

4.3.3 INDIRECT EFFECTS AT OTHER TIMES
Public transport consists of a network, which can be more than the sum of its lines. Improving line A can have a positive effect online B and vice versa. This positive effect occurs because more areas become accessible. While this network effect is known, it can be used to broaden a view of competition.
The network aspect mostly looks at the network in space, but less at the network in time. However, improving the service at a certain time may also improve the service at other times. For example, when the city of Melbourne introduced night-time buses, their day time ridership increased significantly (Currie, 2011). This was caused by people who wanted to travel to a certain location and come back at night. Without the night-time buses, they wouldn’t make any trip. With the night-time buses, they made two trips.

A common annoyance in areas with limited public transport services, is that the buses stop running very early. This makes it impossible to travel with public transport, because one cannot get back. If buses had a larger operating window, ridership may well increase in the old time window as well as the new one.

So, when looking at the network and possibilities for synergy, not only spatial indirect effects should be taken into account, but temporal indirect effects as well.

4.4 BEING COURTEOUS

Disney states that courtesy is more important than efficiency, which makes this principle hard to implement in the current practice of public transport. One of the main goals of introducing tendering is increasing the efficiency (section 5.2.1). Over the past years, operators have therefore improved their performance to a large extent and believe they can now operate with full efficiency (Weijers, 2011a). So it may be argued that this principle’s suitability is highly limited, because the focus in transport lies on efficiency.

A very optimistic view of this observation, that efficiency is a main driver in current regional public transport, may be that this principle could lead to the biggest and most influential changes. But it is considered unrealistic to change the system to such a high degree, because it would mean turning the very nature of tendering and transport operations around by 180 degrees.

In spite of the highly pressurized environment of transport, there are some possibilities to implement this principle. It is very humane, as it is all about how travellers are treated. As such, it is used to look at interaction of staff with travellers. Staff interaction is especially important in case of disturbances (Edvardsson, 1998), where the efficiency is lost and travellers need information and guidance. Finally, drawing on researched objections to travelling with public transport (Guiver, 2007), this principle is also useful if applied directly to travellers.

So, three possibilities for implementing this principle are discussed: staff interaction with travellers, disturbances and potential for travellers. It is important to keep in mind that due to the efficiency minded nature of transport; this principle is fairly limited in usefulness.

4.4.1 STAFF INTERACTION WHEN ALL IS WELL

In regional public transport, the staff who have most contact with the travellers are the drivers. It is therefore essential that drivers learn to be courteous. Other staff that are regularly in contact with travellers, such as customer service, should also receive some training to deal with different segments in a courteous manner. Being courteous incorporates knowing what different travellers – segments – want. The NS teach their staff exactly how each segments likes to be treated (Van Hagen M., 2009). For example,
Helping with the last bit
Another way to be courteous is staff who can help passengers with their egress journey. Most bus stops aren't located at the actual destination of a passenger. If staff are familiar not only with the line itself, but also the surrounding areas, they can be courteous by explaining the road to passengers' destinations.
A critical note on this is that it may be problematic, because it would require drivers to learn an awful lot about the surrounding areas of each line they are deployed.

Guiding the way
There are other businesses where courtesy is prioritized over efficiency. For example, the supermarket Albert Heijn teaches his staff to show customers to a product they look for, rather than telling them where it is. This may take more time, but makes customers more satisfied. Though this is by no account the only reason, Albert Heijn is the best performing supermarket in the Netherlands (Hoofdbedrijfschap detailhandel, 2011) and such courtesy very likely helps. For transport staff, this can especially be done in larger (bus) stations, where people may have a difficult time finding their way.
A critical note on this is that it may require extra staff, which is very costly.

More courtesy for demand-responsive systems
The main problem with the courtesy principle, as pointed out before, is that the operation of public transport is very much focused on efficiency. An exception to this rule is demand-responsive public transport. There is less pressure on drivers in such systems (Currie, 2011), which creates room for being courteous. Drivers of such demand-responsive systems could be allowed to deter from their normal routes, to pick up travellers at their own door. While this takes time, as the driver must get to know the route and specific travellers, it is possible. This is proven by the so-called 'door stopper', a bus in Australia that picks up travellers at their door (Currie, 2011).
A critical note on this is that such a ‘door stopper’ only function in rural areas, which are much more profound in Australia than in the Netherlands.

4.4.2 WHEN THINGS GO AMISS

An important tactic Disney uses to be courteous to all customers is direct compensation for any inconvenience caused. Unhappy customers are immediately attended to by staff who have the authority to give them either refunds or products for free. This leads to unsatisfied customers turning into satisfied customers or even promoters.
As described by the service-profit chain model (Figure 44), a company can make profit and grow as a result of customer satisfaction. Unfortunately, it is difficult to keep everyone satisfied at all times. In order to uphold the cycle, unhappy customers need to be satisfied again by adding value to the service despite occurring problems.
If Disney ran regional public transport

Figure 44
Service profit chain
(Heskett et al., 1994)

Table 14
Problems faced in public transport (KiM, 2007)

<table>
<thead>
<tr>
<th>Structural</th>
<th>Incidental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer</td>
<td>Delays</td>
</tr>
<tr>
<td>Walking</td>
<td>No seats available</td>
</tr>
<tr>
<td>Distance</td>
<td>Behaviour others</td>
</tr>
<tr>
<td>Costs</td>
<td>Uncertainty arrival</td>
</tr>
<tr>
<td></td>
<td>Insecurity</td>
</tr>
</tbody>
</table>

KiM (2007) has recorded eight major problems occurring in public transport, five of which are incidental. These incidental problems may be solved using the courtesy principle. The other problems are arguably more important, but they cannot be solved with the courtesy principle.

Each problem results in a larger spending of the time, money and/ or effort budget. So, these budgets need to be compensated to make the traveller satisfied again. Unfortunately, time cannot be refunded, so in case of loss of time, it needs to be compensated by more comfort, which reduces the effort spending or less spending of the money budget.

**Compensating delays**

By integrating a discount system into the OV-chip card in case of delays, travellers may be a lot less bothered about it. If a vehicle is delayed and a person checks out, they should be charged less than when the vehicle is on time. This may make delays a lot less bothersome for customers, because it is now one of the major annoyances of public transport travellers (KiM, 2007).

Furthermore, delayed travellers may be offered beverages or snacks to reduce the effort spent. This is practiced by the Dutch Railways, who promise drinks in case of heavy delays (NS, 2011).

**Accepting all arrival times**

The problem with uncertain arrival times is that travellers believe they may be spending more time, while in fact they are not. This is generally prevented by implementing dynamic route information systems. However, in case these don’t work, travellers still want to know whether or not they arrive in time. In those situations the driver or other staff should keep the travellers up-to-date on the expected arrival time. If customers are aware of the arrival time, they will cease to worry (Watkins et al., 2011). In case of a delay, the staff should inform travellers on the results for transfers and the possibilities for compensation, such as explained in ‘compensating delays’.

A difficulty is that not even staff always know the actual arrival times. In case this happens, they should be honest with travellers. Even knowing that it is uncertain when you arrive is
better than not knowing anything. Especially if travellers are made aware that everything is undertaken to solve the problem being honest about problems is most courteous.

**Standing to stand**

On some lines, no seating is a structural problem rather than incidental. However, to travellers it is always incidental, as they may sometimes have a seat on overcrowded vehicles. So, from the point of view of travellers, it is an incidental problem. No seat increases the spending of the effort budget.

To compensate for this, it may be possible to use a similar system as proposed for the delays. Each traveller has to check in with an OV chip card. If the passenger count exceeds the seat count, the tariff should go down. This does mean that passengers who get in first, have to pay more. However, as they can sit, they pay extra for increased comfort.

This solution can lead to tactical behaviour in passengers. Segments with lower money budgets may wait, so they pay less. Segments with higher money budgets can benefit from this by getting on earlier and sitting.

There are some practical obstacles for implementation of this principle, such as relating seat count to the chip card system, standing up to let the less able sit, etc.

**Bad behaviour beaten**

Aggression or other bad behaviour from other travellers should not only be compensated incidentally, but also prevented. In case it does occur, it increases the spending of the effort budget. Most importantly, travellers should be aware that this is not tolerated, so they should see the driver or other staff react to such behaviour. It is especially courteous if the driver then asks them if they’re alright. Additionally, travellers may be offered a free new ticket, so they can experience an unhindered journey as well.

**Improving insecurity**

A feeling of insecurity can be caused by a multitude of reasons, one of which is bad behaviour from others. Other causes can range from damaged interior to being alone (Gladwell, 2006). As such, this problem is very hard to overcome. However staff can make all the difference by showing their presence or possibly interact with the traveller.

### 4.4.3 COURTESY OF TRAVELLERS

Some of the problems described above are caused by fellow passengers. While there are possibilities for the operators to fix those problems, it is even better if they can be prevented. The problems are all caused by travellers who don’t act courteously to others. So, travellers should be stimulated to act courteous to each other as well. This behaviour can be stimulated, not only negatively by punishing wrong-doers, but also positively through campaigns.

A great example of such a campaign is “Together for London” (Figure 45) from the London transport authority. That campaign asks all travellers to behave in a considerate manner, which could well be interpreted as being courteous.
An important aspect of the campaign is that it doesn’t focus on one group of wrong-doers, but addresses very different groups. For example, not only youth with loud music are addressed to keep their noise down (“I won’t play my music out loud”), but elderly are also asked to keep the wishes of others in mind (“I’ll remember what it was like being 14”). Such a campaign can be made more useful by incorporating the different traveller segments. Though no scientific research was found to the effects, some internet fora discussed its usefulness and the overall feeling was that “it has helped” (Anon, 2008). So, it may be possible to improve traveller courtesy by addressing it through similar campaigns.

4.5 PERCEIVING REALITY

Different studies have shown that the perceived time on public transport is higher than the actual time spent (Van Hagen M., 2011a) (Jain & Lyons, 2008) (Scherer, 2010) (Watkins et al., 2011). Moreover, perception is all about experience, which depends on everything. So, perceiving reality is very broad and can be used in very diverse ways.

4.5.1 RELATION OTHER THEORIES

The perception principle is related to three other theories: the EU-quality loop, the experience economy and the pyramid of traveller needs. Each theory and the relation to this principle are briefly discussed. These generally accepted theories can then help with finding suitable examples and developing ideas to implement this principle into public transport.

EU quality loop

The first related theory is the EU-quality loop, which is created to measure operator performance and customer satisfaction (Figure 46). The relation with the perception principle lies in the customer half of the model.
This model measures customer satisfaction by looking at the difference between what travellers expect and what they perceive. The model explicitly shows that there is a difference between what operators ‘deliver’ and what travellers perceive. If the customer is the focal point, then his perception is therefore more important than the reality, i.e. what’s delivered.

The way this model can be used is looking at the two relations with perception. This means what the operators deliver on one hand and what travellers expect on the other hand.

**Experience economy**

The second theory is the ‘Experience economy’ (Pine & Gilmore, 1999). That theory states that in modern day society, customers do not wish to buy services, but want to have an experience. They argue that this is next stage of products, which went from commodities to goods to services to experiences. This is in line with Disney’s principle and therefore, it should be attempted to make travelling by regional public transport an experience.

The main product of an experience is the memory the customer retains of it. So, this theory states that a journey should be so pleasant as to be memorable. As public transport is a derived demand, it is arguable that in itself it should not be the main experience. However, it can contribute to the overall experience of a traveller.

**Pyramid of traveller needs**

The third theory to which this principle has important connections is that of the pyramid of traveller needs (Appendix B, Figure 2). This theory states that experience is the highest need, which is only important if the other needs are fulfilled. Also, each experience is individually perceived and therefore depends heavily on personal needs, contrary to e.g. speed. Disney states that perception is more important than reality, which means that even the measurable aspects aren’t only dependent on the actual provided service. So the Disney principle places more emphasis on experience than the pyramid does.

The additional insight from this theory for the Disney principle is that experiences are personal and should therefore be tweaked to different preferences. This means the different...