

Digital Innovation

Problem Based Learning
Open Educational Resources



Co-funded by the
Erasmus+ Programme
of the European Union



Welcome to DIGITAL INNOVATION

Helping you gain a better understanding of how small service companies currently undertake new product development so that you can improve how innovation in services is taught.

Partnership



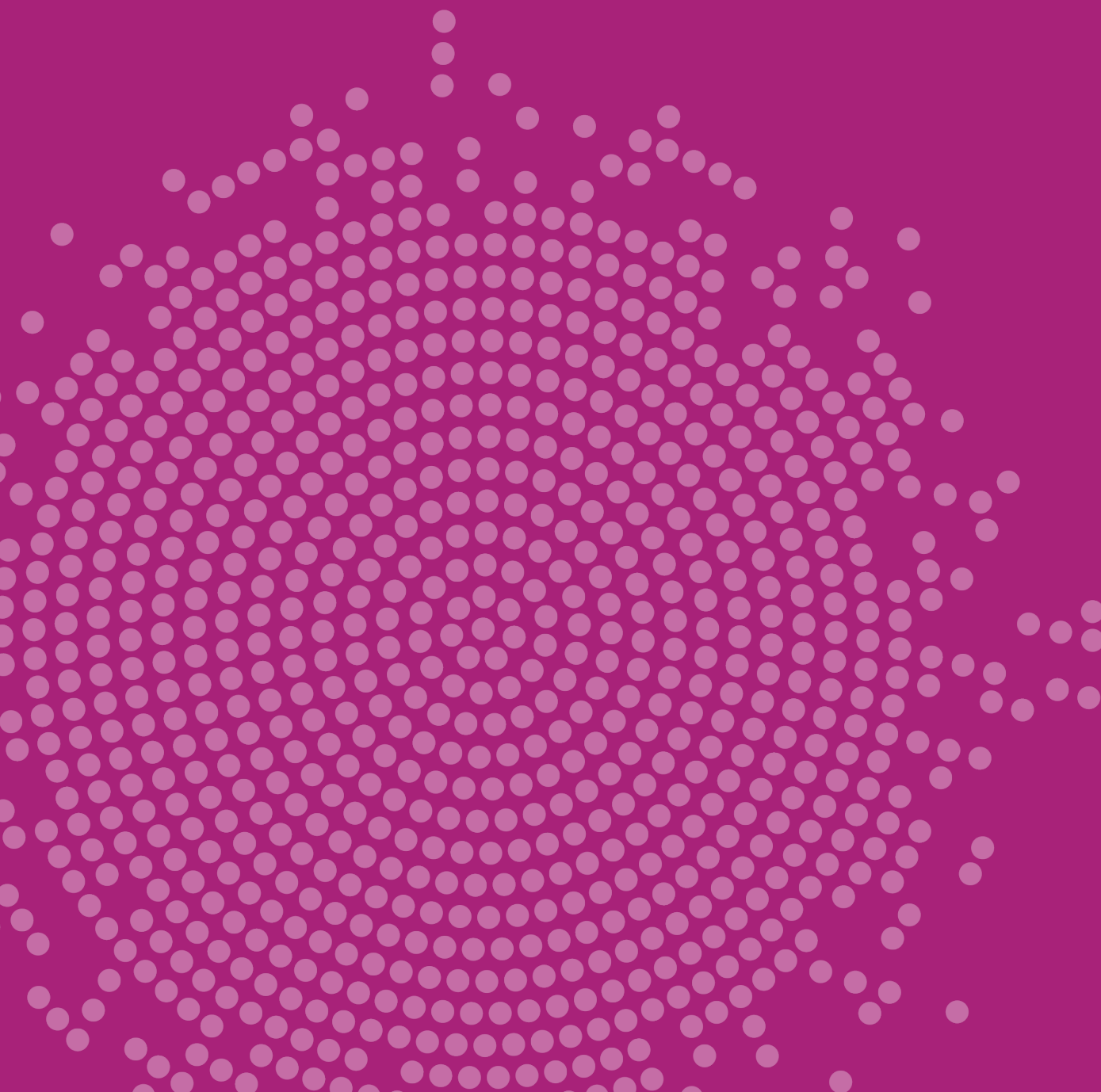
This Problem Based Learning Open Educational Resources as a part of the Erasmus+ Strategic Alliances Project “Digital Innovation for Service Sectors” was conceptualized and produced by Burcu Kör and Ingrid Wakkee, Amsterdam University of Applied Sciences, in collaboration with the Digital Innovation Project Partnership.

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Section 1

INTRODUCTION





Introduction

In the light of new trends such as **digitalization** and **servitization**, staying competitive proves to be a difficult task for many companies. Due to the challenges arising from changes in technology and customer behavior, **companies are asked to constantly innovate** (D'Emidio, Dorton, & Duncan, 2015). In this regard, servitization or service innovation has appeared as a successful way for many companies to overcome the dead-end road of competition (Bouwman & Fielt, Service Innovation and Business Models, 2008). As companies focus more and more on developing services, service innovation has started to gain increasing attention also in research causing the traditional product innovation view to shift towards **a multidimensional service innovation view** (see e.g., Carlborg, Kindström, & Kowalkowski, 2014; Biemans, Griffin, & Moenaert, 2015).

However, the development and designing of new services is **still little researched** and not a lot is known about the process (Bouwman, De Vos, & Haaker, 2008). The knowledge and understanding about how **digital technologies** are being strategically used during the process of service innovation is even more limited (Akaka & Vargo, 2014).



9 months



30 mapped digital tools

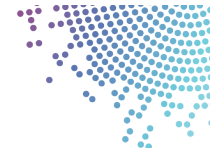


25 innovation processes analyzed



26 expert interviews and surveys

The goal is to (1) shine light on the service innovation process and (2) to focus on how and which digital tools can facilitate the innovation process.



CASE EXPLORATION

Smart City Strategy: Amsterdam



H A R V A R D | B U S I N E S S | S C H O O L

9-518-092

MARCH 14, 2018

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ALEXANDRA HOUGHTALIN

Smart City Strategy: Amsterdam, Barcelona, and Atlanta

The Smart City Concept

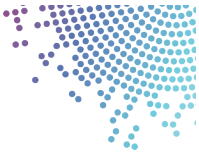
In 2005, the Clinton Foundation challenged Cisco, a leading global technology company, to put its technology to civic use, sparking the modern “smart city” movement. In 2008, the Great Recession prompted wider interest in smart cities as technology companies looked to government stimulus spending to replace corporate revenues lost in the downturn. By the late 2000s, a number of pioneering smart city initiatives had been developed, including in Barcelona and Amsterdam.¹⁰

Despite its growing popularity, there was no widely accepted definition of what constituted a “smart city.” Available definitions focused on the application of digital technologies to improve quality of life, urban services, economic growth, and citizen engagement, while reducing costs, resource use, and environmental degradation. While innovative use of technology was a foundation of smart cities, initiatives also required investments in human capital and promoting behavioral changes.¹¹

City governments around the world felt pressure to implement smart city initiatives due to a variety of global realities. The global population had reached nearly 7.6 billion by mid-2017, and was expected to add one billion people by 2030. People around the world were increasingly located in urban areas, characterized by high population density and a concentration of built infrastructure. By 2016, an estimated 55% of the world’s population lived in urban areas, which would reach 60% by 2030.¹²

As urban populations rose, cities were disproportionate contributors to major global problems such as environmental sustainability and poor health, and inequality. Cities accounted for approximately 75% of the world’s energy use and over 70% of carbon dioxide emissions. Around 1 billion people globally lived in urban slums with inadequate access to sanitation, clean water, and health care. In developed countries, urban areas saw a higher occurrence of chronic diseases such as obesity, diabetes, and poor mental health, due to factors like difficulty accessing healthy food or space to exercise.¹³ Every city also faced challenges that were unique to its economic, political, geographic, demographic, cultural, or other contexts. For example, natural disasters was a high risk for over 55% of large cities.¹⁴

While urbanization presented many challenges, cities were also hubs of social and economic activity and hotbeds for innovation, due to the close proximity of many diverse people, firms, universities, and other institutions. Large cities alone made up 55% of all economic output.¹⁵



By 2016, the count of smart city initiatives worldwide varied widely, but was likely in the low hundreds.¹⁶ The smart city concept had been particularly embraced in Europe, where the European Union had funded smart city efforts and established an organization in 2013 to develop a blueprint for replicating proven smart city strategies. In the U.S., a federal Smart Cities Initiative was launched in 2015 that promised hundreds of millions of dollars in funding.

In Asia, high growth supported the development of a number of “greenfield” smart cities that were built from the ground up. The most prominent example was Songdo, South Korea, a \$35 billion public-private partnership to build a new city on reclaimed marshland about an hour outside of Seoul, near the existing international airport. The city was designed to eliminate the need for cars, prioritizing mass transit. All buildings were connected to a central operating system and could be controlled remotely. A pneumatic tube system collected trash, eliminating trash trucks. Songdo produced a third less greenhouse gasses compared to another city of its size. By 2017, there were 100,000 residents living in Songdo and 70,000 commuters, far fewer people than the city was built to accommodate.¹⁷

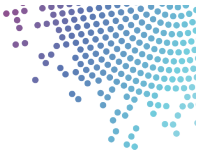
While actual results of smart city initiatives remained to be seen, a number of reports had predicted major impacts. Juniper Research estimated that smart city efforts would result in energy savings of \$17 billion per year by 2019, and McKinsey Global Institute estimated that cities could save up to \$1.7 trillion per year by deploying digital systems on a large scale. Meanwhile, technology companies such as Cisco and IBM were projected to generate a cumulative \$175 billion in smart city revenues by 2023.¹⁸

Amsterdam Smart City

The City of Amsterdam

Amsterdam was the capital and principal economic center of the Netherlands. With nearly 840,000 citizens residing in its 85 square miles, Amsterdam was the country’s most populous city and one of the most diverse cities in Europe. Amsterdam was connected to the North Sea by the Amstel River that ran through it. Much of the city resided below sea level, and an elaborate network of canals and over 1,200 bridges divided the inner city.¹⁹ Due to its low elevation, flooding was an ever-present threat. However, the Netherlands had developed the most advanced flood protection system in the world.

City planning since the 1960s had focused on reducing automobile use. Public transportation consisted of a metro, tram, bus, and ferry system. Amsterdam was known for its biking culture, with about 500 kilometers of bike paths and roughly one-third of journeys made by bicycle. Meanwhile, about 30% of cars in Amsterdam were used less than once a week. The government discouraged transportation by car through measures such as steep parking fees.



Car Sharing Main Figures in the Netherlands and Amsterdam

1. In the Netherlands, for car sharers, an average reduction of 1,600 car kilometres per year was found, compared to before they started sharing. This resulted in a reduction of 250 kilograms of CO₂ (PBI, 2015).

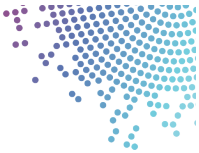
	Kg CO₂ per year
Change in car kilometres	-250
Change in mode of transport	160
Change in car ownership	-85 to -175
Total	-175 to -265

Table 1 Change in annual CO₂ emissions due to changed car ownership and car use

2. The number of shared cars is increasing mainly due to growing attention for the environment and the fight against congestion on the roads.
3. Cars are stationary about 90 percent of the time.
4. Owning your own car is expensive. An average Dutch family pays between €3,500 and €7,500 annually (depending on size) for a car (inspection, maintenance, fuel, etc.).
5. There are currently 369 shared cars per 100,000 inhabitants in the Netherlands.
6. In 2020, the Netherlands had 730,000 people making use of shared cars, according to [CROW](#). That is a 42% increase compared to 2019 — when there were still 515,000 users.
7. The municipality of [Amsterdam leads](#) with more than 11 thousand shared cars.
8. From 2030, petrol and diesel cars will no longer be allowed to enter Amsterdam. That's the major takeaway of the 'Actieplan Schone Lucht' (Clean Air Action Plan).

SnappCar Figures

1. SnappCar had the most listed cars available for shared car mobility in Amsterdam in 2018. It had around 5,500 cars on offer, which was a lot more than the runner-up, Greenwheels. What separates SnappCar from the other platforms on this list is that SnappCar offers P2P car sharing, meaning that users rent and drive privately owned cars from other users.
2. Since the start of SnappCar, 67,244 fewer parking spaces are needed. (01-08-2020)
3. SnappCar has 822.235 users! (01-08-2020)
4. SnappCar earns money in two ways: by charging transaction costs (€5.00 per transaction) and a 17.5% commission on the rental amount.
5. Most SnappCar users are in the so-called Generation Y (born after 1980). Generation Y sees the car as a resource. Baby boomers are a bit more skeptical about it and Generation X needs a little more time to get used to the idea.
6. Renting via SnappCar is 30-50% cheaper than renting via a regular car rental company or other car sharing systems.
7. The difference between opting for a shared car and renting from a car rental company is that users do not have to go to the rental company itself, but that there is (almost) always a car near them.



Mobility Information

Figure 1 - Car sharing offer according per different urban levels in the Netherlands

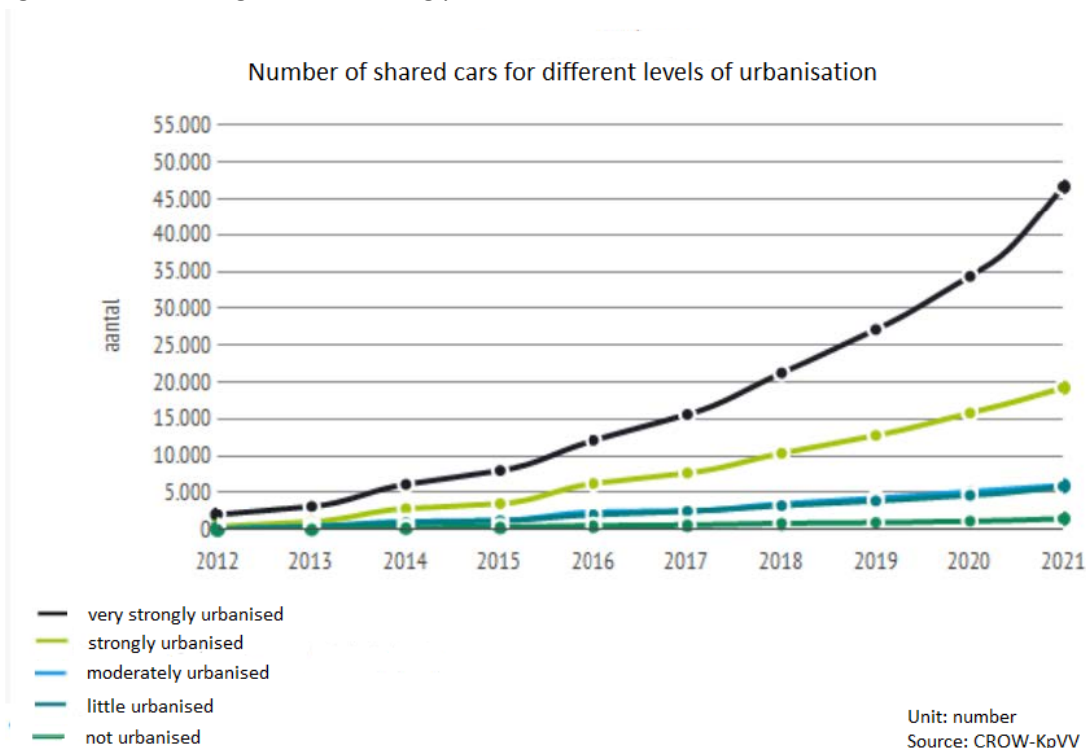
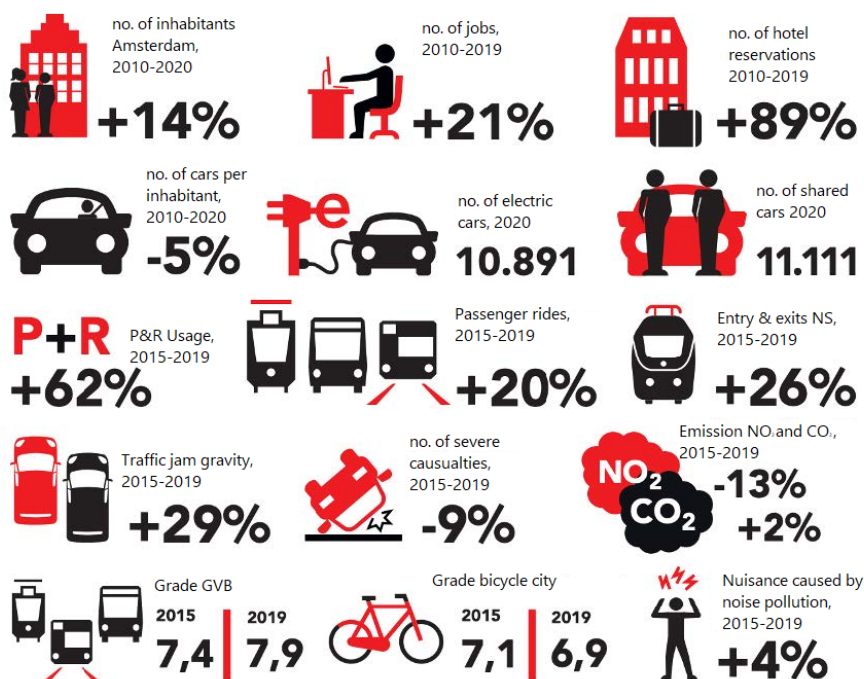


Figure 1 shows that the supply is greatest in highly urbanized municipalities. The strongest growth is taking place in the four major cities.

Figure 2 - Mobility numbers in Amsterdam



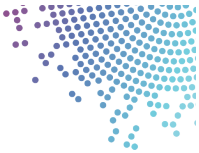


Figure 3 - Car ownership and users in Amsterdam: one single user, two persons user and family with kids user.

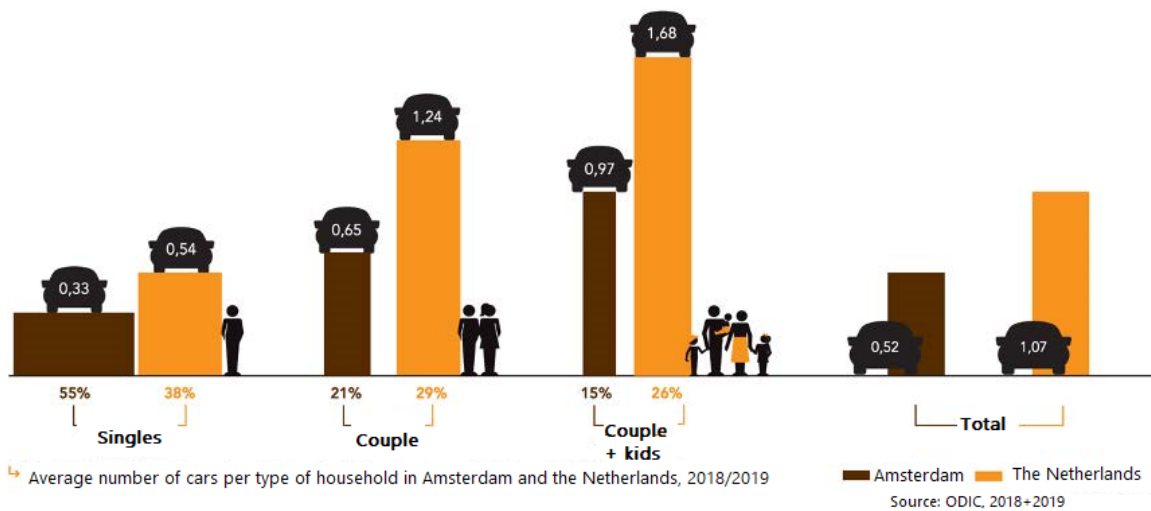


Figure 4 – Types of transportation x Age groups in Amsterdam

Mobility behaviour varies per age group

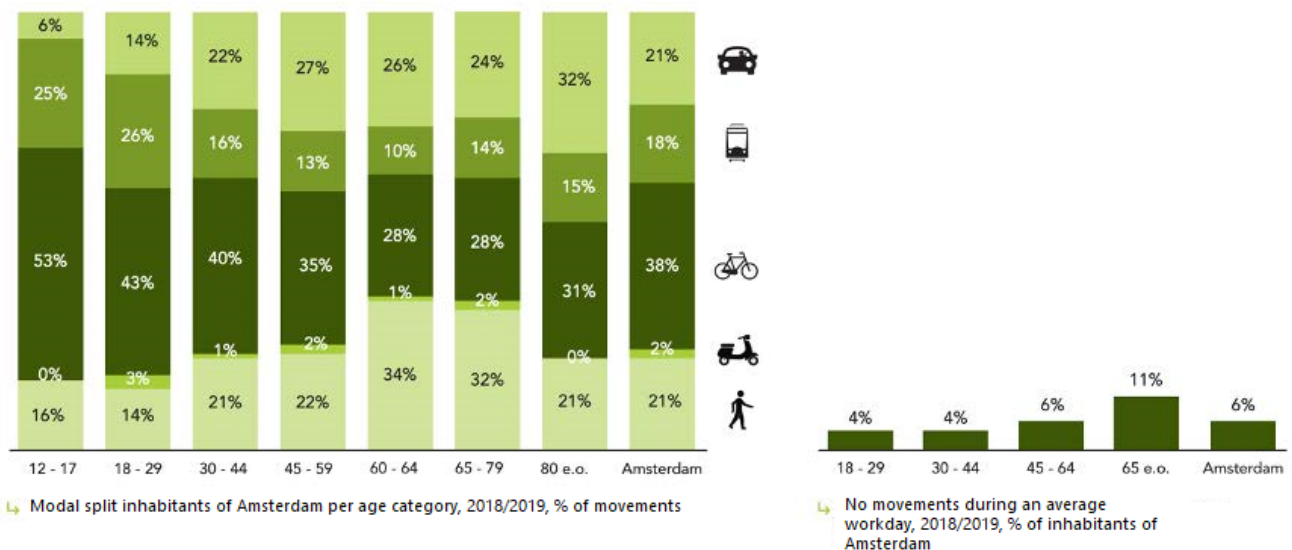
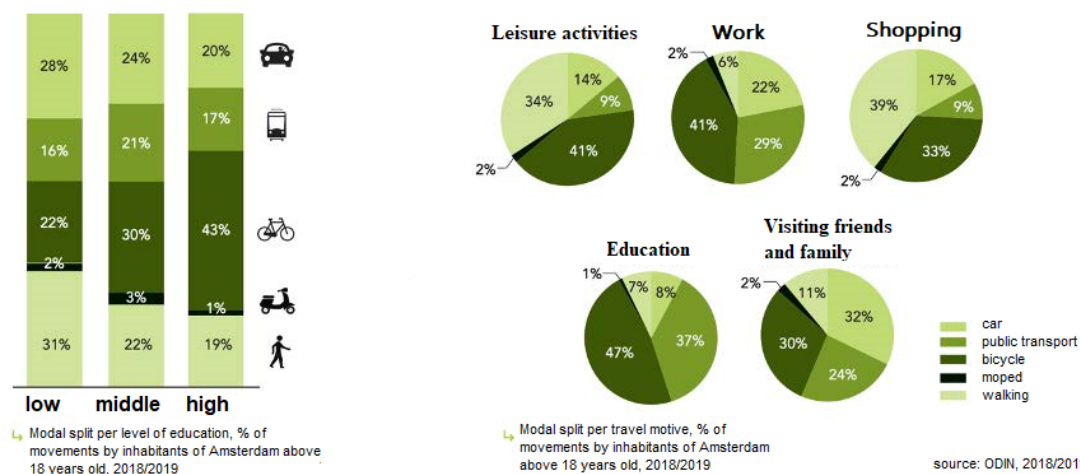
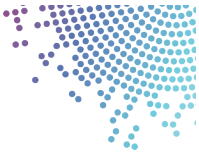


Figure 5 – Travel reasons and types of transportation in Amsterdam

Level of education and travel motive also influence mode of transportation





Stage # 0 Preparation

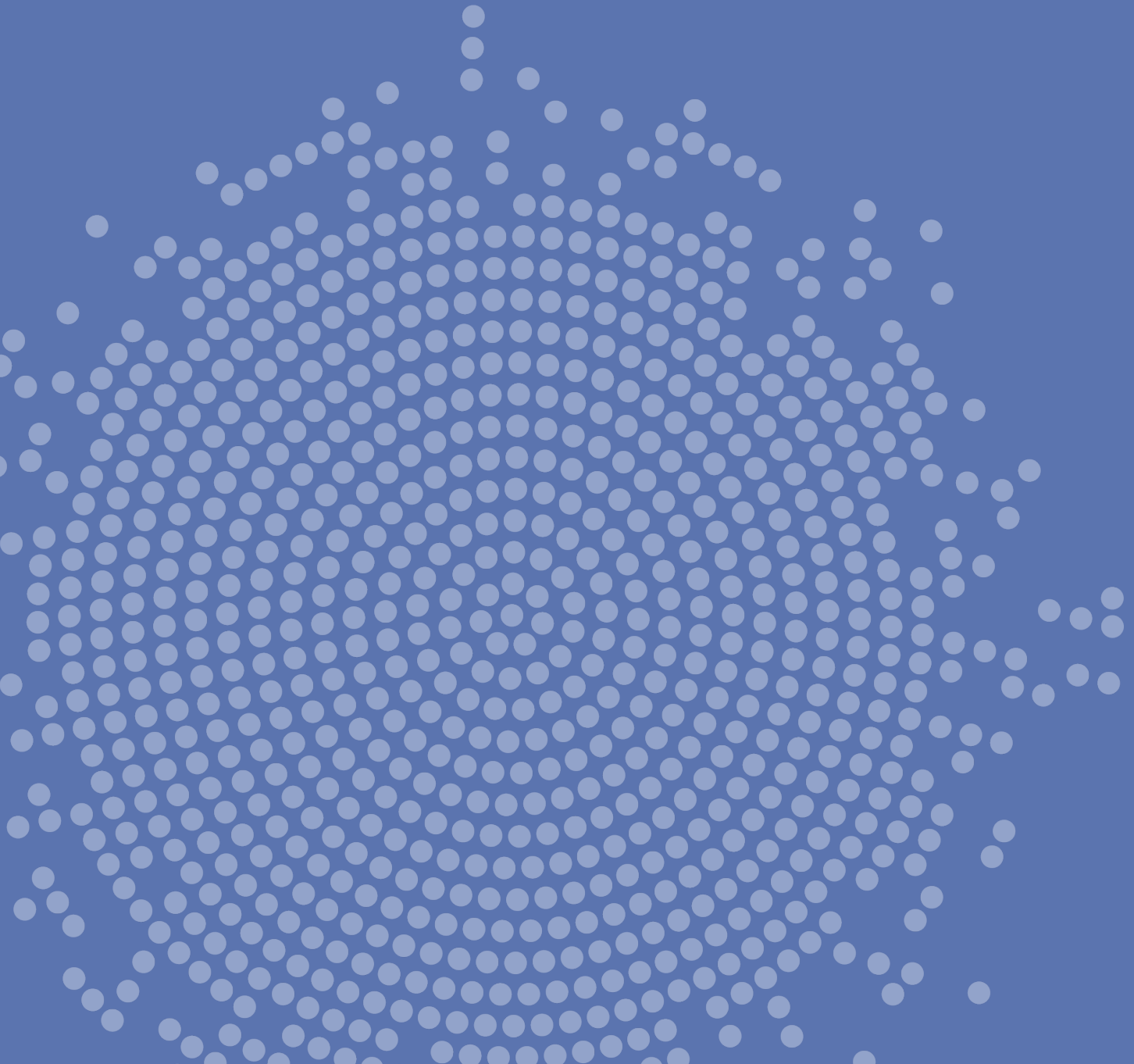
This step includes three main process:

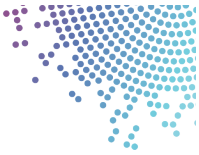
- Read the case: Read Smart City Strategy case and additional information about mobility and SnappCar.
- Investigation of Digital Tools: Investigation of digital tools is related to getting used to the digital tools on <https://www.innovatingdigitally.eu/> or <https://scanner.innovatingdigitally.eu/>.
- Students and educators can register Miro free digital whiteboard for online education from <https://miro.com/education-whiteboard/2/>.

Students and educators can register Mural free digital whiteboard for online education from <https://www.mural.co/education>.

Section 2

OPPORTUNITY IDENTIFICATION





Stage 1: Opportunity Identification

Opportunity is a novel combination of raw materials, markets, channels, processes, products and services that are deemed feasible and desirable and that when implemented will create value to the user.

The Municipality of Amsterdam wants to reduce CO₂ emissions and for it, smart technology for mobility - such as car sharing - is an essential tool for the municipality to achieve its goals. SnappCar is the leader of the car-sharing market in the Netherlands and it sees opportunities to keep growing as a company and also has an impact on the environment.

SnappCar is the leader company in car-sharing services in Amsterdam. SnappCar aims to increase the number of the SnappCar community members in the Netherlands in order to create more livable cities with more space and less CO₂ emissions.

With the recent societal and working changes caused by COVID-19 pandemic, the company expects a growing number of citizens to give up their cars in Amsterdam since they have to commute fewer times a week to work. They expect many workers in Amsterdam to embrace other types of transportation modes, such as car-sharing.

Car sharing service is most popular among Millennials, but now SnappCar sees the opportunity to expand its services to reach other age groups and, if possible, families with kids.

Task 1: Context Map Canvas

Reflect on the text and information given and identify opportunities for the car-sharing market in Amsterdam for SnappCar. Think about the below areas you need to mark the top 3 threats and opportunities. You can watch the [Context Map Canvas](#) video in order to understand the canvas better (see Figure 5).

You can select the relevant tools from [Digital Innovation Scanner Tool](#) in order to create Context Map Canvas. You can also use [Miro Context Map Canvas](#).

1. YOUR COMPANY: The company or organization stands in the center of the image.
2. DEMOGRAPHIC TRENDS: Look for data on the demographics, education level, employment situation. What are the big changes in these areas?
3. RULES & REGULATIONS What policies, rules, and regulations do you think will be applied in the (near) future? What is the government up to? Any new taxes?
4. ECONOMY & ENVIRONMENT What is happening in the economy? And what is going on in the larger environment? Are there economic trends that will impact the business? Do you think climate change will have an impact?
5. COMPETITION What about the competition? Take the time to find the unexpected competition. Are there new entries? Competition coming from unexpected sources?
6. TECHNOLOGY TRENDS What new technological trends do you see emerging that will impact the business?
7. CUSTOMER NEEDS How will the customer needs change in the future? Do you see new trends? Do you see any big shifts in customer behavior? Are there new trends going mainstream?
8. UNCERTAINTIES Do you see any important uncertainties? Things that potentially have a huge impact but it is unclear how or when?

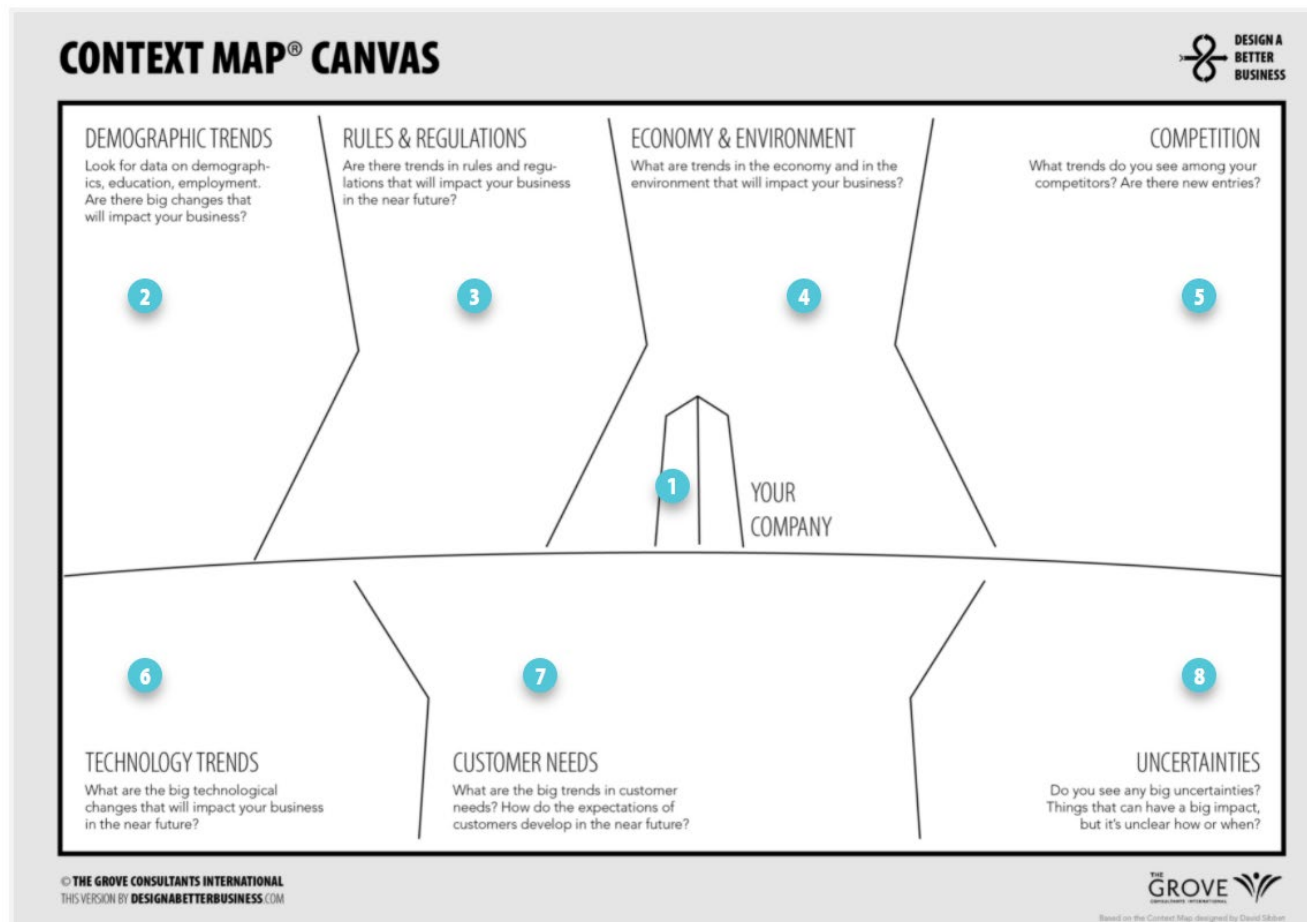
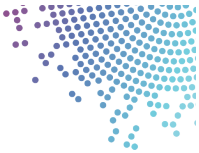
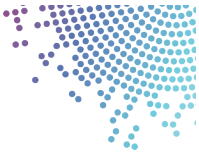


Figure 5: Context Map Canvas Overview (“Context Canvas”, n.d.)



Task 2: Jobs to be Done Framework

Job to be Done framework is a customer-centered innovation method that transforms the fundamentals of jobs-to-be-done thinking into an innovation practice. This framework enables companies to identify customer needs deconstruct a job that customers are trying to get done into specific process steps.

You can watch the [Job to be Done with Examples](#) video in order to understand the framework better. Another suggestion is watching [The Jobs to be Done Theory](#) from Harvard Business School professor and disruptive innovation expert Clayton Christensen.

You can select the relevant tools from [Digital Innovation Scanner Tool](#). You can also use [Mural SWOT analysis template](#) or [Miro Job to be Done template](#).

How to capture research insights with the Jobs To Be Done template

You can capture research insights with the Jobs To Be Done template (Figure 6) by separating your findings into three stages ([Miro Job to be Done template](#), 2022):

Step 1: Demand creation

Get together to synthesize the unmet needs of your ideal customers. Start by first listing their goals and then constraints that block them from reaching those goals.

List all the events, frustrations, experiences, and other catalysts that created urgency during their shopping process.

Step 2: Desired progress

Form groups and summarize your insights in a short story about your ideal customer and why they decided to make a change. Compare the stories of each group and discuss their nuances. Use the story later to inspire new ideas and align your team.

From your story, distill a simple Job to Be Done statement that expresses the key benefits customers are looking for.

Capture how the customer knows they are making progress as progress signals.

Step 3: Hiring

List which solutions, products, or behaviors you hired, fired, and considered for your Job To Be Done.

Discuss each aspect of the hiring process. Use green and red stickies to highlight elements that increased or decreased trust, made the product seem good or bad value for money, and that helped or didn't help customers imagine how the product could be used. Lastly, list factors that made the product seem novel or familiar.

After summarizing one or all of your interviews in this way, use the data to inspire changes to marketing, product, or sales. Jobs to be Done data enables you to reveal your ideal customer and design products that appeal to them.

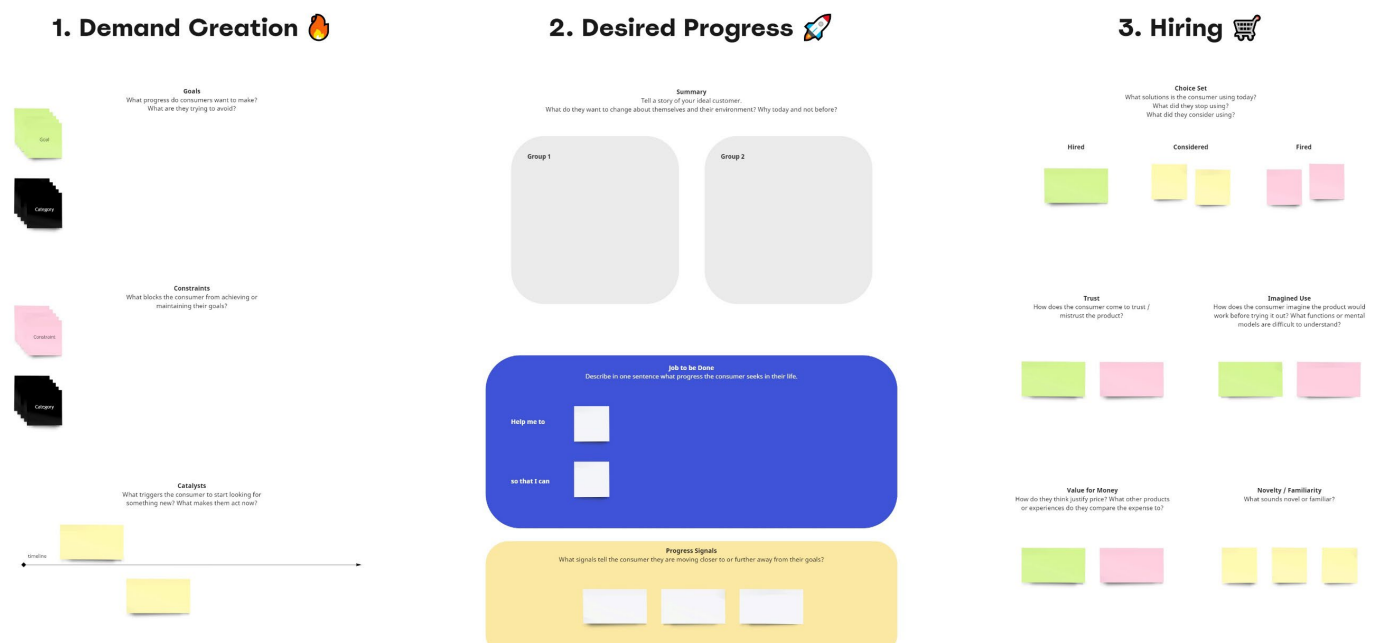
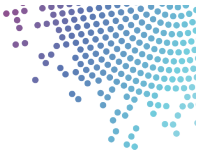


Figure 6: Job-to-be Done Template



Task 3: Applying Jobs to be Done

In order to apply Jobs to be Done, you need to create user stories with a format of “[When _____] [I want to _____] [so I can _____]”(see Figure). Specifically, the *When* focuses on the situation, the *Want* focuses on the motivation, and the *Can* focuses on the outcome.

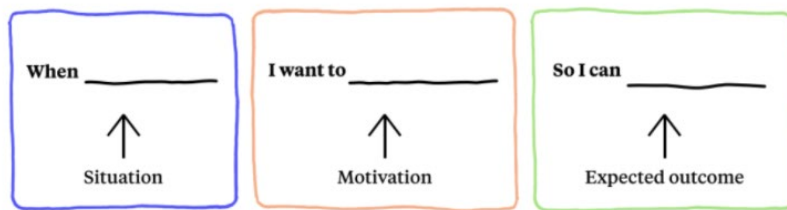


Figure 7: User stories (Jupiter, 2017)