



Behavioural archetypes

WP2 - Public deliverable D12

Keen Bull

with



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Executive summary

FreeWheel project follows the main steps of a human-centered design methodology. Specifically, the WP2 has the main objective of collecting and analyzing data about behaviors, people needs, pain-points and contexts constraints and transforming the distilled insights into product/service features and specific design requirements.

Using qualitative research techniques, we collected experiences from people with various kind of disabilities in order to define the main behavioral approaches while dealing with shopping and cultural activities.

We identified four main behavioural archetypes: the soloist, the energy saver, the would-be and the denier.

The soloist is the archetype of complete acceptance and independence. Within this

behaviour, people developed specific routines for reaching the higher level of autonomy in almost all the activities.

The energy saver archetype is connected with the recent disability status everything seems tiresome and the person tries to save energy with all the means possible.

In the would-be archetype, we found the challenge of dealing with - at the same time - the desire of moving independently and the loss of strength, the fatigue of maneuvering the wheelchair for a long time.

The denier is the archetype of denial of disability and not acceptance. Even with small mobility impairments, the person in this status refuses of appearing, acting and even thinking as a “disabled”.

Being aware that the wide spectrum of behaviors connected with the disabilities can evolve and unfold over time, we are using an iterative approach in the deepening of the already identified archetypes. We also leave open the possibility to identify further archetypes during the activities in the coming months. This iterative - and incremental - process will lower the risk of designing FreeWheel service and products relying on partial or inaccurate information.

Adopting an empirical mindset, specific of scientific method, we will continue to investigate and enhance the archetypes during time with interviews and anthropological research activities.

FreeWheel physical products and the service must be designed and developed as a the

most comprehensive and suitable answer to people needs, taking into consideration their goals, helping them to have a smooth experience by eliminating all the major pain-points.

The information collected in this document, and in its evolutions, will contribute most importantly to the WP2, WP3 and WP4 but in a wider perspective, the information collected - about the real final users of FreeWheel - will have impacts (direct or indirect) on all the other work packages activities.

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Introduction to behavioural archetypes

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Behavioural archetypes - generic definition

Behavioural archetypes are structured models of people responses to a specific stimulus. As the name suggests, they tap into the behavioural level of cognitive processing.

In a nutshell, **the focus is on who does what, how they do it, and why.**

The behavioural archetypes represent **typical motivations, goals** and **general attitudes** of the people we are designing for and also how these can change based on the quality of their experience with the service over time.

People can also fall into multiple archetypes throughout the experience of using the service, depending on their goals.

Archetypes most directly help determining the approach and functionality of a user experience, as well as contributing to **determining, validating,** and **prioritizing** products features.

Additionally, **behavioural archetypes are scenario-based**, meaning they refer to our specific scenarios: **shopping mall** and **archeological/tourist venue.**

Behavioural archetypes vs. user archetypes

User archetypes (or Personas) focus on the “**who**” of an audience research. They include demographic details such as **age, gender, occupation, education, interests**, etc.

They are useful to provide insight into the characteristics of a target audience, but often **do not include details on behavioral patterns**.

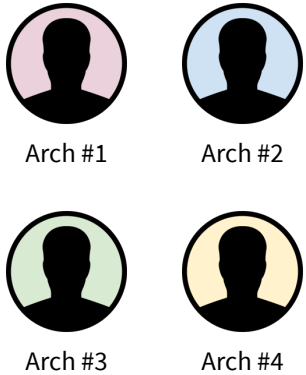
Moreover, typically only **one customer group** occupies **one persona** throughout the customer journey.

The challenge with personas, however, is that they focus on characteristics, and are often **created with little insight into the behavior of the people they represent** – which opens the door to assumptions by the project team.

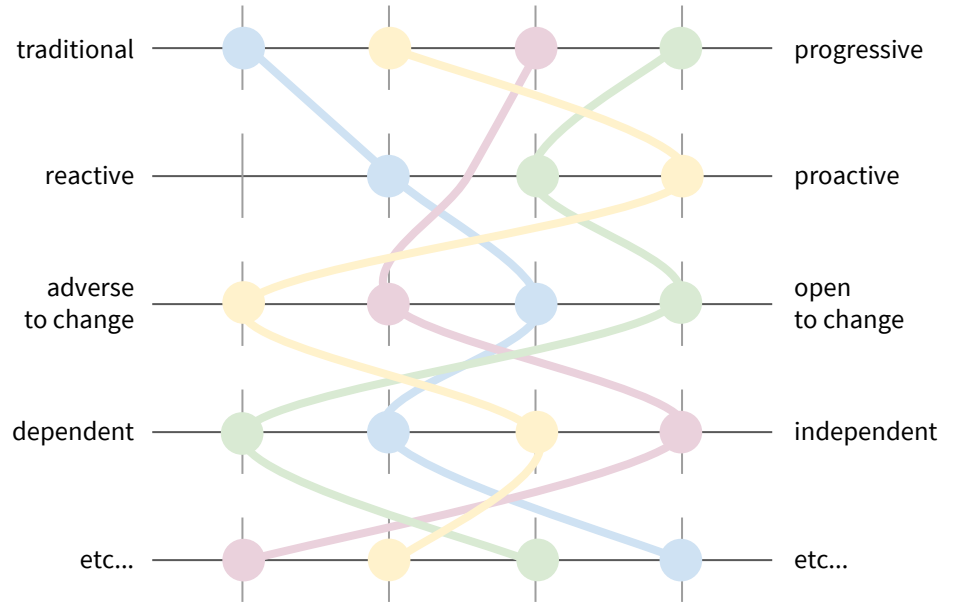
In this project, we decided to rely upon behavioural archetypes because **behavioural patterns are extremely important** and can determine **drastic changes** in the service adoption, pain-points analysis and key features definition.

Behavioural archetypes and landscape example

Behavioural archetypes



Behavioural landscape



FreeWheel categories of disabilities

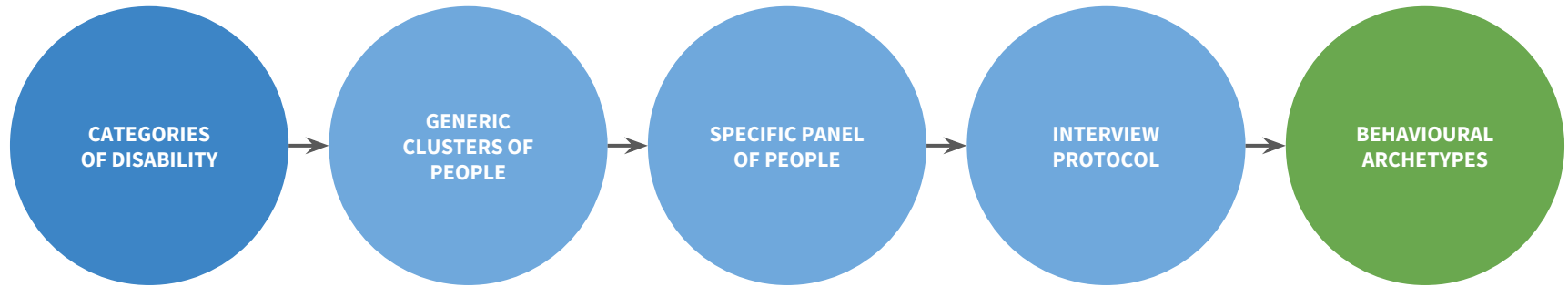
Representing behavioural archetypes and landscape for this specific project required an additional level of understanding connected with the **categories of mobility disabilities**.

Typical motivations, goals and general attitudes of the people with mobility disabilities have a wide range of variability.

With the aim of identifying the suitable target, we had to analyze and select the categories for which the consortium is going to design the product and the service.

The identified categories contributed in refining the interview protocols for collecting important information before defining the behavioural archetypes.

Steps for defining the archetypes





Categories of disability

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Mobility and physical disabilities overview

Mobility and physical impairments range in severity from **limitations on stamina** to **paralysis**.

Some mobility impairments are caused by **conditions present at birth** while others are the **result of illness** or **physical injury**.

Injuries cause different types of mobility impairments depending on **what area of the spine, brain or body is affected**.

Illness and other causes of mobility impairment are: arthritis, back disorders, cerebral palsy, neuromuscular disorders, fibromyalgia, etc.

Persons with physical and mobility impairments may experience deficits in motor and/or fine motor functioning, locomotor and non-locomotor functioning.

Considering the wide extensive literature and medical conditions in this specific area of mobility impairments, we decided to build and use a **project-specific internal classification**.

This classification does not have the aim of substituting the medical one but only to create a more agile tool to be used during project activities.

Categories of disabilities - internal classification

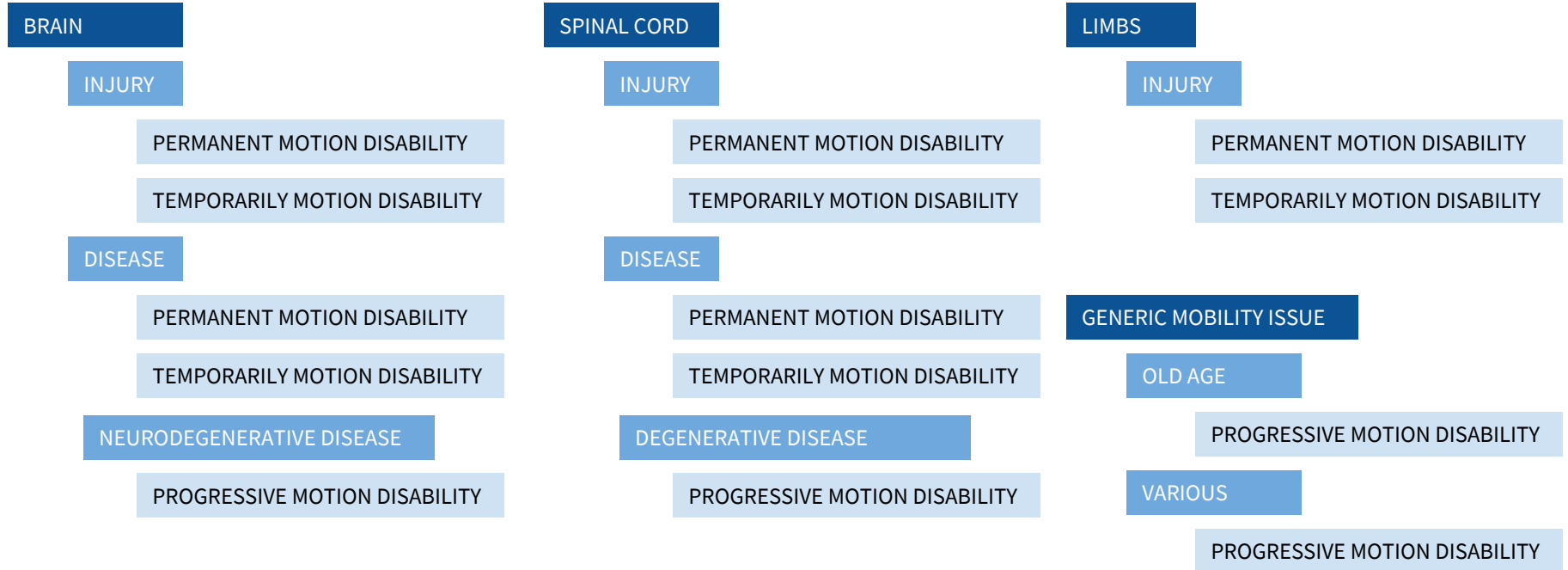
With the aim of facilitating stakeholders understanding of very complex medical classifications, we developed a ***project-specific internal classification***. We decided to start with the location of the disability: **brain, spinal cord, limbs**.

Within the first-level classification, we developed second-level characteristics connected with the cause of the disability: **injury, disease, and neurodegenerative disease**.

Then, we identified and introduced three main effects resulting from the previous two classifications: **permanent disabilities, temporary disabilities**.

Additionally we included a series of conditions generating **issues in deambulations**.

FreeWheel categories of disabilities trees



BRAIN

The brain injuries

A **traumatic brain injury** (TBI) occurs when brain tissue is either stretched or torn, often because of a **severe impact to the head**, from various sources, including: violent events, sports activities, falls, trips, accidents, or car crashes.

An **acquired brain injury** (ABI) encompasses any head injury that takes place after birth, including: those caused by **strokes** and **heart attacks**, **poison** or **exposure to toxic substances**, **tumors** and **aneurysms**, **strangulation**, **encephalitis**, **meningitis** and other **infections**.

In the context of the project, brain injuries can have the following effects on a person: they

- **Cannot walk** permanently
- **Cannot walk** temporarily
- **Cannot control movements** permanently
- **Cannot control movements** temporarily

The brain diseases

The list of brain diseases can include those **caused or triggered by infection**. The infection can come from a virus, bacteria or other agents.

Others brain disease conditions are caused by **the growth of abnormal tissue, masses or tumors in the area**. As these continue to develop, less space will be available in the region, considering that the brain is covered by the cranium or skull.

Intracranial pressure will then develop causing a variety of severe symptoms and even death.

In the context of the project, the brain diseases can have the following effects on a person: they

- **Cannot walk** permanently
- **Cannot walk** temporarily
- **Cannot control movements** permanently
- **Cannot control movements** temporarily

The brain neurodegenerative diseases

Neurodegenerative diseases cause **brain to deteriorate over time**. They can cause changes in personality, difficulty with movement or balance, and a state of confusion.

They can also slowly impair memory and thought processes. Other diseases are genetic and begin at an early age.

In the context of the project, the brain neurodegenerative diseases can have the following effects on a person: they

- **Cannot walk** permanently (with variable level over time)
- **Cannot walk** temporarily (with variable level over time)
- **Cannot control movements** permanently (with variable level over time)
- **Cannot control movements** temporarily (with variable level over time)

SPINAL CORD

The spinal cord injuries

A spinal cord injury (SCI) is damage to the spinal cord that causes changes in its function, either temporary or permanent. These changes translate into **loss of muscle function, sensation,** or **autonomic function** in parts of the body served by the spinal cord below the level of the lesion.

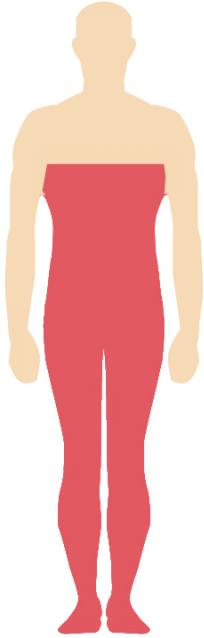
Injuries can occur at any level of the spinal cord and can be classified as **complete injury**, a total loss of sensation and muscle function, or **incomplete**, meaning some nervous signals are able to travel past the injured area of the cord.

In the context of the project, the spinal cord injuries can have the following effects on a person: they

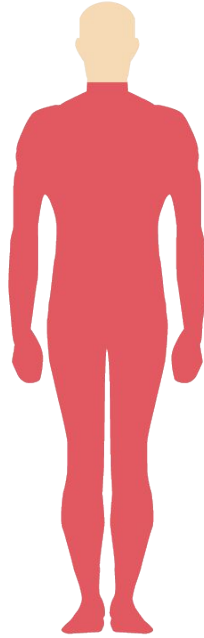
- **Cannot walk** permanently
- **Cannot walk** temporarily
- **Cannot control movements** permanently
- **Cannot control movements** temporarily

Complete

spinal cord injuries



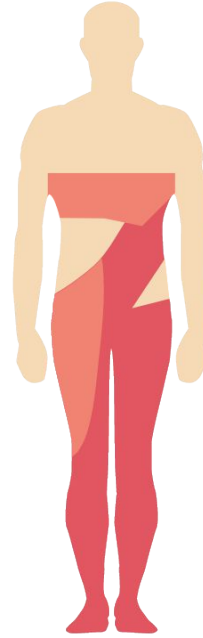
Paraplegia



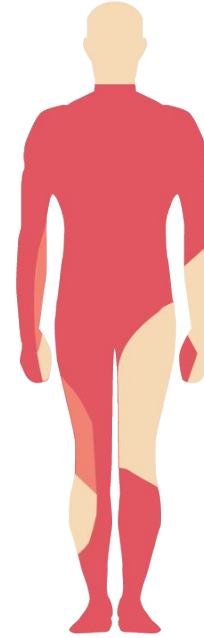
Tetraplegia

Incomplete

spinal cord injuries



Paraplegia



Tetraplegia

The spinal cord diseases

Structural, biochemical or electrical abnormalities in the spinal cord - or other nerves - can result in a range of symptoms.

Symptoms include **paralysis, muscle weakness, poor coordination, loss of sensation.**

In the context of the project, the spinal cord diseases can have the following effects on a person: they

- **Cannot walk** permanently
- **Cannot walk** temporarily
- **Cannot control movements** permanently
- **Cannot control movements** temporarily

The spinal cord degenerative diseases

Degenerative spine conditions all involve a **loss of normal structure** and **function** in the spine.

Degenerative means that the cause of these changes is mostly **age-related** wear and tear. The changes are not due to trauma, infection, or some other cause.

Degenerative spinal changes can affect almost every structure of the spine: discs, bones, cartilages, and ligaments.

In the context of the project, the spinal cord degenerative diseases can have the following effects on a person:

- **Cannot walk** progressively
- **Cannot control movements** temporarily

LIMBS

The limbs

Fracture injuries are broken bones which could be in any part of the body and are usually identified with a simple x-ray. This includes broken bones in your arms, legs.

Accidents can affect arms and legs which are often referred to as **limbs** or **extremities**.

Other than broken bones, some patients can have very severe injuries or diseases resulting in **amputations**.

In the context of the project, the limbs issues can have the following effects on a person:

- **Loss of limbs** (leg/s or arm/s amputations) permanently
- **Cannot walk** temporarily

GENERIC MOBILITY ISSUES

Generic mobility issues

Even if this is not a specific category connected with medical conditions requiring wheelchairs (permanently or temporarily) we agree to consider additional characteristics that should receive some value from the project, within the actual features forecast or within future development.

Aging, blindness, heart disease or similar can all require some sort of mobility support.

In the context of the project, the generic mobility issues can have the following effects on a person: they

- **Cannot walk** easily temporarily
- **Cannot walk** easily permanently



User research clusters

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FreeWheel generic clusters

In the wide spectrum of mobility disabilities there are **many relevant factors** to take into consideration while trying to understand behavioural archetypes.

Qualitative analysis of the interviews transcripts of people with paraplegia, for example, revealed three major themes related to spinal cord injury:

1. physiological aspects associated with the **traumatic event** and its **consequences**;
2. psychological aspects associated with **problem-solving, choices, and challenges**;
3. social aspects associated with **personal and professional relationships**.

The psychological and social aspects have different impacts also in relation with the following clusters:

- **The age** of the person
- **The time frame** elapsed from the start of the impairment condition (acquired or from the birth)
- **The social status** at current time (alone, with the partner, with the family, etc.)
- **The work status** (if the person has or not a job)

FreeWheel generic clusters





Specific panel for interviews

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FreeWheel specific panel - first iteration

The project development itself is based on human-centered design with iterative and incremental approach. These characteristics are bringing value by allowing a progressive interviewing protocol.

The behavioural archetypes will also evolve over time thanks to a more precise understanding coming from iterative interviewing process.

For the first iteration, we set a panel of people we interviewed with the purpose of defining the early-stage archetypes building blocks.

Please note: *the interview protocol is still running, meaning the archetypes have been set to be evolutive over time. Even if the task itself is closed, we agreed to keep the archetypes updated over time as source of useful design insights.*

Interviews panel - first iteration

AGE	CATEGORY OF DISABILITY	WORK STATUS	SOCIAL STATUS	TIME FRAME	GENDER
40-50	Paraplegia	Yes	Single	5 to 10 years	Male
40-50	Spinal cord neurodegenerative disease	No	Family	Not relevant	Male
15-20	Paraplegia	No	Parents	0 to 5 years	Male
30-40	Paraplegia	No	Family	5 to 10 years	Female
50	Amputee	No	Not relevant	Not relevant	Female
40-50	Temporarily disability. Generic issue.	Yes	Family	Not relevant	Female



Interview protocol #1

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Semi-structured qualitative interviews

We are using a semi-structured interview method. It is a qualitative method of inquiry that combines **a predetermined set of open questions** (questions that prompt discussion) with **the opportunity for the interviewer to explore particular themes** or responses further.

So, a semi-structured interview does not limit respondents to a set of predetermined answers (unlike a structured questionnaire).

More importantly, it also allows respondents to discuss and raise issues that we not have considered.

Questions for the first iteration of interviews

1. Are you going shopping/groceries?
 - a. (y) Please describe the last time you did it.
 - i. Where did you put the items?
 - b. (n) Why did you not?
2. Do you plan your trip exactly, before going out?
3. Do you practice some sports?
 - a. (y) Why you choose that?
 - b. (n) Why did you not?
4. Do you drive the car?
 - a. (y) How do you organize for using the car?
5. For what other reasons do you leave the house?
6. Do you go to visit museums?
 - a. (y) Please describe the last time you did it.
 - b. (n) Why did you not?
7. What is the last time you enjoyed a vacation?
 - a. Can you please describe from the planning to the travel and back home?
8. Do you visit touristic cities/places?
 - a. (y) Please describe the last time you did it.
 - b. (n) Why did you not?

Questions for the first iteration of interviews

9. Do you get help from someone pushing the wheelchair?
10. Do you travel by airplane?
 - a. (y) Please describe the last time you did it.
 - b. (n) Why did you not?
11. How many wheelchairs do you have?
12. Have you ever customized your wheelchairs on the aesthetic side?
13. Do you use smartphones and apps?
 - a. (y) What are the apps are you using most?

Please note: Additional open discussion happens every time before and after the questions



FreeWheel behavioural archetypes

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The soloist

NARRATIVE

This archetype is driven by a strong independency feeling. Performs all the major activities connected with planning and going out (to do grocery or shopping, vacation, etc).

While at the shopping mall, goes directly to the target places to pick the items. Not using any bag or help for the items to buy, puts everything on the legs.

Looking for the highest level of independency, the archetype developed a series of specific routines (e.g. filling the luggage after placing it in the car trunk, avoiding to lift it while heavy loaded) and he owns more than one wheelchair for optimizing travels (e.g one wheelchair always in the car trunk for avoiding the load/unload operations while leaving/returning home).

Drives the car and parks at the airport, before leaving. Brings his personal wheelchair and doesn't want to be pushed by anyone, including airport staff.

The archetype experiences some physical issues in pushing the wheelchair. This shorten all the visits to venues, instead of accepting help.

GOALS

Reaching the target faster and smoothly.

Not wasting time in unuseful activities.

Being autonomous for everything.

THOUGHTS

"The manual wheelchair is very ugly, but I don't care"

"I can deal with architectural barriers but I won't with people parking in front of the wheelchair ramps"

"Historic places have very bad floors, let me take care at the small front wheels not being stuck in holes"

PAIN-POINTS

Maneuvering the wheelchair limits the enjoyment of the surroundings.

Too much pain to shoulder joints excludes long visits to touristic places.

Pushing the wheelchair is not leaving the hands free.

The small front wheels being stuck in any small hole on floors in historic places.

FEELINGS

Sad to limit the desire of the partner about visiting tourist location. It is very hard for me pushing all the time just to have a look around.

Stressed about being at big shopping malls. They are full of people just hanging around.

Relieved to be using the power wheelchair because I can choose between a wider range of possibilities while hanging out with friends.

NEEDS

A better way to enjoy the tourist surroundings.

A way to lift up, for reaching high shelves.

Going out without the need for calculating how long it will takes

ACTIONS

Organizing for faster movements.

Planning every moment of the shopping/travel.



The energy saver

NARRATIVE

Using the wheelchair from not so long, this archetype tends to avoid all the unnecessary travels because they are very energy consuming. For this reason, prefers not to be going it alone.

Usually relies upon other people to do grocery and more generally buy things. If single, tends to use online shopping and home delivery.

The main reasons to leave home are connected with medical/therapy appointments.

Holiday and vacations are stressful and the archetype tends to select destinations for relaxing with not having to visit venues.

In the rare cases of lone travelling by airplane, uses the support staff for pushing the wheelchair without any problem.

Enjoys to have friends visiting for lunch or dinner.

Big museums are too overwhelming and not suitable for a relaxing tour. Then being with someone pushing implies having common interests.

GOALS

Saving (physical) energy while travelling.

Enjoying relaxing places.

PAIN-POINTS

Always asking for going out to someone else will help pushing the wheelchair..

Touristic places have a lot of slopes to deal with.

Need to choose museums on the basis of architectural barriers more than the collections inside.

NEEDS

Less physical stress while travelling.

Not worrying about the distance between places anymore.

Regaining some level of privacy.

Trying to find time to study for the new driving license.

THOUGHTS

“I would love having home visits from the doctors.”

“Museums should be smaller.”

“I can buy almost everything with my smartphone.*

FEELINGS

Overpowering with friends because forcing them in being with me in places they don't like.

Regretting spending too many hours watching documentaries instead of going there.

Anxious about the level of fatigue when deciding to meet friends outside.

ACTIONS

Advanced use of apps and computer for online shopping purposes.

Avoiding planning for going out. It is too stressful.



The would-be

NARRATIVE

This archetype has a proactive approach in deciding where to buy groceries. Tends to explore new places every time, even if this represent additional fatigue and risks.

There is no problem in being pushed while visiting tourist places or museums, but tends to try independently first.

The main obstacles in reaching the complete autonomy are: the strength needed for pushing the wheelchair and the architectural barriers to go through.

Desires to go on vacation in complete autonomy but it's not possible, so needs to ask for help or find a friend/family member to join.

Economically, going in vacation is still too much expensive for now.

Sometimes the pain to reach some specific places falls down because the physical energy finish.

Does not use a power wheelchair because it is very ugly and it is not designed for the specific disability.

GOALS

Being independent from the family, always around because they worry.

Finding a new job for pushing the independence also from the economical point-of-view.

PAIN-POINTS

Pushing the wheelchair is too tiresome.

Not having a complete autonomy.

Having family always around.

NEEDS

Increase the autonomy in being out alone.

Rely upon technology for enriching the mobility experience.

THOUGHTS

"I would love for people to consider me less from the compassion perspective and to think more about the problems they create by not parking correctly."

"I have accepted my disability but I want all the others in my family do the same."

FEELINGS

Sad because not finding a person being with me visiting places. I would feel more motivated.

Angry because not being able to reach the place I planned to go.

Unsure about being able of taking care of a pet with me while visiting a venue.

ACTIONS

Will train for reaching more social autonomy from the family and reinforcing the muscles for extending travel autonomy.



The denier

Predominantly male

NARRATIVE

This archetype has a motion disability allowing him to walk, even if with huge difficulties.

Stumbling and falling is very frequent. He unwillingly uses the crutches and hates the wheelchair to the point of not using it at all.

He goes to work by car, not using the parking space for people with disabilities even if it is closer to the entrance.

He is very demanding, while at home or during vacation, with the family members. He asks for them to bring what he needs. More generally, he accepts help only from them and refuses it from any other person.

He refuses to go out in public places because he hates other people looking at him.

His social network is becoming weaker day-by-day.

When at home and tired, he uses an office chair for moving between rooms.

GOALS

To get back as he was before the disability.

To hide the disability in the best way possible.

PAIN-POINTS

He gets exhausted very quickly.

He has no autonomy at all while being around.

After falling he needs to recover in bed but he hates to feel like this.

NEEDS

Finding something to help him move that is not a disability device.

To do not appear disabled.

THOUGHTS

“I realize I weight too much on my family.”

“I don’t want to talk about my status because they cannot understand me.”

FEELINGS

Angry because he does not accept his status.

Sad because he feels misunderstood.

Confident there is a solution that will take him back to walk again.

ACTIONS

He is always looking for new doctors and solutions to go back to walk normally.

He plans the path to places and uses only the car to reach them.

He looks for technology suitable for helping him but outside of the disability.



Conclusions

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Conclusions and findings

The major insight we recognized is related with the tendency of people with disabilities to avoid physical fatigue. In some cases they accept in being pushed, in others they refuse any help and reduce the length of the visits, until the extreme cases of not going out their homes. There are many consequences coming from the aim of avoiding physical stress, including the lost of privacy.

Another important finding is the need of having the “hands free”. This specific need has practical reasons (grabbing bags, using the mobile phone, etc) but also emotional ones: holding someone else hand. The hands-free need is sometime satisfied with the use of power wheelchairs even if they still require at least one hand to drive.

In the same spectrum of needs we found that

people with disabilities are continuously focused on not “falling” into small holes with the rear wheels or “hitting” people not taking enough care of the surroundings (maybe people looking at mobile phones or staring at paintings). For this reason, they tend to look at the floor and not at the venue.

Interesting aspect for module’s product design is the seek for “not feeling disabled” using ugly devices or physical objects resembling too much as “medical devices”.

The service design activities will surely take into consideration the fact that people with disabilities tend to use the time with extreme thriftiness. Wasting time is, very frequently, a waste of energy that is extremely important to reach places and back home safely.

Standing on the pure anthropological research perspective, we do need to keep investigating critical behaviours and interviewing people. As previously mentioned in this document, we agreed to use the behavioural archetypes as point-of-reference all along the project and evolve them with an iterative approach. These archetypes, constantly updated, will be a practical and high-value asset for all the WPs and tasks.

Additional reason for evolving the archetypes is related with the possibility of widening the categories of disabilities FreeWheel can be useful for. Today, with the level of knowledge we have, we must prudently reduce this range. In the next months or years, when the technology and service developments become more mature, we can include some

categories appearing too challenging to serve. The effect will be following the need of interviewing new people and maybe finding additional archetypes.



Links with other WPs

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Looking forward in WP2 and beyond

The information included into the behavioural archetypes will contribute on multiple levels and to different tasks.

Basically, following the human-centered approach, we will design FreeWheel experience map (Deliverable D11) taking into consideration NEEDS and PAIN-POINTS.

FreeWheel Service Design objectives definition and requirements task (D13 - D15) will rely upon this deliverable for orchestrating touchpoints.

The technical requirements features definition and prioritization (D13 - D15) will use the behavioural archetypes as one of the factors to take into consideration.

The work with the archetypes will also contribute to product design in WP3 (D17) and to all the four deliverable of WP4 (D22 to D25).

In a wider perspective, the information collected in this deliverable will have impact (direct or indirect) on all the other work packages activities.



Original title in the project proposal:

Users archetypes needs and social behaviours document

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and with the collaboration of all the other task participants.