

DELIVERABLE

Project Acronym: **CAP4Access**

Grant Agreement number: **612096**

Project Title: **Collective Awareness Platforms for Improving Accessibility in European Cities & Regions**

D2.1 Pilot plans and analysis for case study sites

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Project co-funded by the European Commission within FP7-ICT-2013-10		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Status, Abstract, Keywords, Statement of Originality

Date of delivery	Contractual:	31/12/2014	Actual:	14/01/2015
Status	final <input checked="" type="checkbox"/> /draft <input type="checkbox"/>			

Abstract (for dissemination)	CAP4Access will develop and pilot-test methods and tools for collectively gathering and sharing spatial information with the view to improving accessibility of the built environment for people with limited mobility. This document outlines the context within which each of the CAP4Access pilots cities will operate, from a policy perspective, and describes the processes and outcomes of the initial stakeholder engagement, building on work described in earlier reports D1.1 and D1.2. More specifically, it contains the plans and next steps for each of the pilot cities where CAP4Access tools will be tested.
Keywords	Engagement, accessibility, disability, mobility, usability, user-centred design, Agile wheelchair users, tools, user testing, evaluation

Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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Executive Summary

The main aim of Work Package 2 (WP2), of which this report forms a part, are three-fold: **engagement** of communities who form an integral part of the research carried out in this project and who will be actively involved in the development of CAP4Access tools and methods; **piloting tools**: pilot-testing tools developed in WP3, in and with local communities, and **evaluation**: assessing the efficiency and effectiveness of developed tools and evaluating the effectiveness and relevance of the project.

This document focuses on the **engagement** and reports on the activities carried out to support the development of four pilot city case studies. These activities of necessity take place from the outset of the project, in order to ensure that participants are recruited as required, in particular given the relatively long time-span required to recruit members of the general public.

As outlined in the DoW, to make use of Mapping for Change's experience and expertise in community engagement, WP2 activities commenced initially in London. This enabled Mapping for Change to acquire a rich understanding of accessibility in London, and to develop a network of relevant groups and individuals – both from communities and secondary stakeholder groups. Year one therefore enabled Mapping for Change to build on their experience in engagement by working with groups alive in the field of accessibility. Lessons learned and engagement experience acquired from preliminary activities in London helped structure and guide work with communities in the other pilot cities.

Further to the extensive engagement of relevant communities, it was crucial to develop a critical understanding of how accessibility is presented and shaped by policy in each pilot city. Such knowledge was important not only to avoid CAP4Access activities replicating or compromising any existing actions, but also to assess how the project might most appropriately integrate with relevant secondary stakeholder groups.

Chapter one, *Understanding the Current Landscape*, sets out the policy context of accessibility in each pilot city. In each city, key themes from local and national policy have been identified, which function as a frame for engagement activities and topics for exploration.

Chapter two, *Case Study Identification*, builds upon these topics and explores them in relation to specific case study areas within each pilot city. Section 2.1, *Pilot Site Characterisation*, explains the reasoning behind case study selection, and offers a preliminary overview of relevant demographic information for each case study area.

CAP4Access has at its core the user-driven definition of problems, design of tools, and control over solutions. In each pilot city, therefore, the activities leveraged by CAP4Access have arisen in response to the needs and priorities of communities. Section 2.2, *Local Context of Communities and Themes for Exploration*, sets out the preliminary groups engaged with, both communities, and relevant secondary stakeholders, and the issues that were subsequently identified through this process. From this engagement, each pilot city has identified two key themes for further exploration that will be used to structure activities over the next two years. The themes identified reflect the expressed needs and priorities of community groups within each city. This section culminates with a specific quarterly plan for each pilot city, which sets out tangibly the activities that will be carried out during 2015.

The participatory research methodology which defines CAP4Access' approach prioritises, as discussed, participants' co-definition of all project activities. To ensure this was approach was adopted, it was crucial to spend time tailoring engagement strategies towards eliciting the interest and involvement of those with limited mobility. Section 2.3 *Engagement Tools and Inclusive Methods* outlines how engagement activities in each pilot city reflected this. The section offers a detailed account of engagement actions in each pilot city, and explores the steps that were taken to elicit participation from a range of individuals. Also included here is a selection of 'Best Practice Examples'; projects and activities related to the topic of accessibility that have proven successful in the past. These are not necessarily drawn from within the pilot cities, but actions which have provided could provide useful insights and guidance into actions run through CAP4Access.

Chapter 3, *Pilot Testing CAP4Access Tools*, explores the steps taken to pilot test technological developments, and focuses particularly on how the project's user-driven approach was incorporated. Foremost, this offers an overview of the User-Centred design principle (section 3.1), including its historical background, and fundamental values. The chapter then explores how this principle was applied in relation to each CAP4Access tool, focusing on how participant feedback was used to inform all revisions and changes.

Finally, this document provides an overview of the evaluation techniques and methodologies that will be used to measure the process of social innovation undergone through CAP4Access. Chapter 4, *Evaluation*, explores the concept of social innovation itself (4.2), the criteria which require evaluation (4.3), and an introduction to the evaluation methodologies that will be used in each pilot city.

Finally, Chapter 5, *Interim Conclusions*, provides an overall summary of work carried out in year one, and begins to anticipate actions that will follow in the coming years.

1 Understanding the Current Landscape: Policies and Recent Accessibility Measures

This Chapter looks at the wider context of ongoing developments around accessibility in each of the pilot cities as a frame for topics and themes for exploration within the project.

The International Context

The Universal Declaration of Human Rights (UDHR) is a declaration adopted by the United Nations General Assembly in 1948. The Declaration arose directly from the experience of the Second World War and represents the first global expression of rights to which all human beings are inherently entitled. The Declaration details minimum conditions for people to live in dignity and represents a common vision of the international community that goes beyond the diverse religious, political and socio-economic systems of the member states.

Despite the best of intentions the UDHR vision made little impact on the lives of disabled people (Megret, 2008). An effort to progress the cause of disabled people and deal with the issue of equality led to the drafting of the Convention on the Rights of Persons with Disability (CRPD – See United Nations, 1948) which came in to force in 2008. This convention aims to promote, protect and ensure their full and equal enjoyment of all human rights and fundamental freedoms by all disabled people, and to promote respect for their inherent dignity. The CRPD was the first international treaty that specifically addressed the rights of disabled people. Importantly the treaty was drafted with consultation from disabled people and their representative organisations.

Of particular relevance is Article 9, where accessibility stands out as a key aspect of the CRPD in relation to CAP4Access. The article states it must “ensure persons with disabilities access, on an equal basis with others, to the physical environment” (See UN, 1948).

The rights embodied in the UDHR and the CRPD are fundamental to the implementation frameworks delivered at national and regional levels throughout UK equalities legislation.

At EU level, the main policy framework for actions supporting people with disabilities in Europe is the European Disability Strategy, adopted on 15 November 2010¹, which defined eight priority areas:

- Accessibility: make goods and services accessible to people with disabilities and promote the market of assistive devices.
- Participation: ensure that people with disabilities enjoy all benefits of EU citizenship; remove barriers to equal participation in public life and leisure activities; promote the provision of quality community-based services.
- Equality: combat discrimination based on disability and promote equal opportunities.

¹ http://ec.europa.eu/justice/discrimination/disabilities/disability-strategy/index_en.htm. See also the background report: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2010:1323:FIN:en:PDF>

- Employment: raise significantly the share of persons with disabilities working in the open labour market.
- Education and training: promote inclusive education and lifelong learning for students and pupils with disabilities.
- Social protection: promote decent living conditions, combat poverty and social exclusion.
- Health: promote equal access to health services and related facilities.
- External action: promote the rights of people with disabilities in the EU enlargement and international development programmes.

The EU's Accessibility Policy² defines accessibility as a broad concept comprising removal and prevention of barriers that cause problems for persons with disabilities when using products, services and public infrastructure. The EC has called for “successful actions [that] can enable those persons with disabilities to live more equally alongside those without disabilities”. The Accessibility Policy states that “the accessibility challenges facing society today are most visible in urban areas. The solutions for improving accessibility are most in evidence in those forward-thinking cities that are demonstrating commitment and innovation in changing the urban environment to allow all people to fully enjoy city life. Identifying the best ideas and solutions and spreading information and examples to other local authorities will allow them to learn from each other, and develop plans best suited to their own municipal environment”.

1.1 London

1.1.1 Introduction

The existence of the Equality Act 2010, and the related Public Sector Equality Duties, as well as the Disability Discrimination Act 1995 and the Disability Equality Duty (DED) 2005, has accelerated the improvements to accessibility in the UK, and in London, which now claims to be one of the most accessible large cities in the world (UK Parliament, 2013). Disability Rights UK described the 2012 Paralympic Games as a time of “real focus” on ways to make certain that disabled people can use transport in the same way as others. Subsequent to the Games, the Department for Transport (DfT) published its Accessibility Action Plan, setting out its proposals for improving transport for disabled people in the years ahead.

This review of equality, access and inclusion policy aims to place the activities of the London Pilot study within an international, national and regional context. A brief overview of international and national UK policy is followed by a series of sections that draw together the main themes from the regional policy framework for London: progress in implementation at the regional level and the impact of policy in practice.

The National Context

The key policy documents that translate the UN Convention into the UK National Equalities Framework are made up of policies that relate to equal opportunities or to specific aspects of the public realm such as the built environment, transport and access to leisure, culture and sport:

² http://ec.europa.eu/justice/discrimination/disabilities/award/about-award/accessibility_en.htm

- Equalities Act 2010 and Public Sector Equality Duty
- Fulfilling Potential Making it Happen (2013)
- Fulfilling Potential Making it Happen: Action Plan (2013)
- Fulfilling Potential – Disability Outcomes and Indicators Framework Progress Report (2014)
- The Accessible Britain Challenge.

Together these policies provide the legal framework for the protection of disabled people from discrimination. They incorporate a range of anti-discrimination legislation, and generally carry forward the protections provided by the preceding Disability Discrimination Act 1995 (DDA).

Under Section 149 of The Equality Act 2010, planning authorities such as the Greater London Authority (GLA) and London Legacy Development Corporation, through the execution of their functions, have a duty (the Public Sector Equality Duty - PSED) to consider the need to make reasonable adjustments to any physical features which may put a disabled person at substantial disadvantage compared with non-disabled people.

Fulfilling Potential Making it Happen and the Fulfilling Potential making it Happen: Action Plan (Dept. for Disability Issues, 2014) articulates the government's commitment to enable disabled people to fulfil their potential and have the opportunity to play a full role in society. The aim is for disabled people to have equal access to opportunities to realise their aspirations, enabling disabled people to overcome barriers, removing inequalities in health, education and employment outcomes and ensuring that communities are inclusive to everyone to participate and access all aspects of society.

In January 2014 the Department for Work and Pensions published “*Fulfilling Potential: Better Ways of Working with Disabled People.*” This set out new arrangements for working in partnership with disabled people, and saw The Fulfilling Potential Forum established to bring together representatives from forty different disabled people's organisations to discuss current issues affecting disabled people. Priorities for delivering the vision have been agreed to:

- improve understanding and communications;
- improve accessibility;
- improve opportunities;
- identify and share good practice.

The Regional Context: London

Disabled People in London³

The Annual Population Survey 2011 estimates that there are approximately 1.3 million adults with disabilities in London, this equates to almost one in five of the 16+ population. Forty five percent of disabled adults are aged over 55, whereas eight percent of younger adults (16-24) are disabled. The Greater London Authority's (GLA) population projections for London

³ Source: Assessment of the GLA's Impact on Disability Equality, GLA 2013

estimated that the number of disabled people living in the city would rise by approximately 18% by 2013 and that this will be significantly higher (39%) in adults aged 55 and over. Changes in the demographic with projected increases in the numbers of disabled and older citizens suggest that the accessibility of London and its infrastructure will become more of a key priority into the future. Surveys and consultation evidence gathered by the GLA with disabled people and their representative organisations found key priorities and concerns that emerged around a wide range of barriers experienced by people with disabilities in London. These included:

- accessible housing
- accessible transport
- development of inclusive and accessible physical and social environments
- lower levels of employment and income
- disability hate crime, and concerns of widespread under-reporting, particularly amongst people with learning difficulties
- availability of social care and welfare services
- low levels of participation in leisure, sport and cultural activities.

Involvement of disabled people in shaping the work of the GLA is facilitated through consultation and research to inform the development of policies and statutory plans.

National equal opportunities policy with regard to people with disabilities is delivered at a regional level in London via the GLA policies and statutory plans:

- The 2020 Vision for London
- The London Plan 2011
- Equal Life Chances for All (ELCA) 2014.
- Supplementary Planning Guidance (SPG) *Shaping Neighbourhoods Achieving an Inclusive Environment* (2014)

Plans for mainstreaming equality through the functions of the GLA and London Boroughs were introduced in the London Plan (See GLA 'London Plan', 2011). This set standards for the city in advance of the 2012 Olympic Games which have been taken forward in the London Plan Implementation Framework via equalities policy and practice strategies, such as *Equal Life Chances for All* (2014) and the Supplementary Planning Guidance (SPG) *Shaping Neighbourhoods Achieving an Inclusive Environment* (2014)

In the forward to *Equal Life Chances for All* (2014), the Mayor of London highlights the hosting of the 2012 Olympic Games and its legacy as key achievements which have been embodied in the aims, objectives and measures in *Equal Life Chances for All*. The aim is to ensure that equality is mainstreamed into everything the GLA does, including how it obtains goods and services and the mainstreaming of inclusive design standards detailed in the SPG into all new development.

The following sections of the report detail evidence of inequalities, policy objectives and measures to advance equality, together with discussion of impact and policy in practice.

1.1.2 Inclusive Design & the Built Environment

Key National Policy

- The Equality Act 2010.
- The Building Regulations Part M
- The Principles of Inclusive Design (CABE)
- The National Planning Policy Framework.

With regard to access to the built environment The Equality Act 2010 brings together and replaces existing equalities legislation, including the Disability Discrimination Act 1995 (DDA). The Equality Act requires reasonable adjustments to be made in relation to accessibility. In practice, this means that due regard must be given to any specific needs of potential users that might be reasonably met.

The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and reinforces the importance of mainstreaming inclusive design. Relevant key elements require developments to prioritise access to quality public transport.

Key Regional Policy

- Planning for Equality and Diversity in London SPG (2007)
- The London Plan 2011
- The Olympic and Paralympics Games Precedent.
- Olympic Legacy Supplementary Planning Guidance, July 2012
- Accessible London: Achieving an Inclusive Environment (2014)
- Equal Life Chances for All (2014)

As a global city with a diverse population London has one of the most comprehensive policy frameworks designed to address issues of disability inequality with regard to the public realm. The precedents set out in the Planning for Equality and Diversity SP and London Plan were further supplemented by the design standards that were put in place for delivering the venues and infrastructure required to host the 2012 Olympic Games. The Olympic Delivery Authority (ODA) set an important precedent in terms of exceeding legal minimum access requirements and incorporating best practice in inclusive design. London's winning bid to host the 2012 Olympic and Paralympic Games set out a commitment to delivering '*the most accessible Games ever*'. As part of this the ODA developed the ODA Inclusive Design Standards (2008). These are award winning standards which principally apply to the Olympic Park and venues during the 2012 Games, but which cover many issues relevant to the legacy schemes. As such, the parklands, public realm and venues inherited after 2012 have been built to a high standard of inclusive design.

The latest, and possibly most significant addition to accessible design policy in London is the *Accessible London: Achieving an Inclusive Environment Supplementary Planning Guidance (SPG) 2014*. It frames the implementation of policies for inclusive design and provides guidance on the implementation of the London Plan.

Other London Plan SPGs and Implementation Guides also address the accessibility and inclusivity of London's built and external environment. The Town Centres SPG addresses

the need for Shopmobility schemes⁴ and the provision of accessible hotel accommodation and the SPG on Play and Informal Recreation includes advice on providing inclusive children's play space.

Research carried out by the GLA with disabled Londoners, found some of the key inequalities experienced by disabled people in relation to the built environment included:

- Disabled people are put at a disadvantage by poorly designed, built and managed environments, and through solutions to access needs that create segregation rather than inclusion.
- Many disabled people experience discrimination when accessing key services and going about their daily business.
- Disabled people have concerns about their personal safety and security when on their own. Ensuring that the built environment meets their needs and is accessible for all is a key element of creating inclusive places and reducing these fears. Accessible environments also reduce dependence on other people which in turn increases dignity, choice and integration. Ensuring that the design of the built environment takes their needs into consideration by creating supervised and well used spaces, which include benches and access to public toilets, can reduce concerns for safety and security and increase confidence in the public realm for older and disabled people.

Visitor Experience

Findings from the Game Changer survey of visitors to London (GLA, 2013) found that the Olympic Games had provided a catalyst, focus and momentum for accessibility improvement. All stakeholders interviewed were positive about the impact of the Games in improving the accessibility of London's visitor experience. The Games created a context and time frame for advancing accessibility in the city. Flagship projects included the South Bank Thames Riverside walk and Queen Elizabeth Park. However, stakeholders also expressed concern that as the momentum of the Games dissipated there was a risk that "islands of good practice" would remain isolated examples. For London to become genuinely accessible visitors would need to know where those islands are and how to move between them.

The impact of political agendas and challenging funding allocations were also raised in the survey, highlighting the competing demands on limited resources which has an impact on London's Boroughs ability to deliver improvements to accessible services. In local authorities, Disability Access Officer posts continue to decline and there has been a re-focusing of disability agendas on social welfare, benefits and housing.

London now has a powerful policy framework in place that seeks to address inequalities in access to the built environment, however problems still remain in dealing with the historical legacy of existing infrastructure and buildings that were built without regard to inclusive design standards.

⁴ A scheme which aims to facilitate improved access to leisure and commercial activities by providing manual and powered mobility aids (see Shopmobility, 2014).

1.1.3 Transport

Key National Legislation:

- The Equalities Act 2010
- Making Transport More Accessible to All (Gov, 2013)

The Equalities Act 2010 places duties on the providers of transport services to make 'reasonable adjustments' so that disabled people can use services more easily. These include:

- Reviewing practices to ensure they do not make it impossible or unreasonably difficult for a disabled person to access the transport vehicle or services
- Providing additional help or assistance to enable a disabled person to make use of a service or facility.

The Blue Badge parking scheme helps those with severe mobility problems who have difficulty using public transport to park close to where they need to go. As part of Accessible Transport for All the government has changed the process for assessing who should get a Blue Badge in line with the wider reform of disability benefits.

Key Regional Policy

Every day in London 1.3 million journeys are made by disabled people, 700,000 trips are taken by people aged over 75, and nearly five million journeys are made by passengers carrying heavy luggage and 1.5 million by people with small children. So there are few Londoners for whom easy access to the transport network is not important.(TfL 'Accessible Transport', 2014)

- Equalities Act 2010 Public Sector Equality Duty (PSED)
- The London Plan 2011
- *Taking forward the Mayors Transport Strategy Accessible Implementation Transport Plan* (TfL 'Taking Forward', 2012)
- *Disability and Deaf Equality Scheme* (DES),
- Your Accessible Transport Network (2013)
- Your Accessible Transport Network Update (2014)

Transport for London (TfL) is subject to the Public Sector Equality Duty (PSED); the requirements of which are carried forward via the transport elements of the London Plan (see GLA 'London Plan', 2011); via the Mayors Transport Strategy (MTS) and are further detailed in The Mayors Accessible Transport Plan. More specifically, the *Disability and Deaf Equality Scheme* (DES) and *Taking forward the Mayors Transport Strategy Accessible Implementation Transport Plan* (TfL 'Taking Forward', 2012) sets out in further detail what TfL is aiming to do to ensure that its services are accessible to disabled people. Both supplement and provide greater detail about the implementation and priorities contained within the MTS Accessibility Implementation Plan. More specific outcomes are also detailed in the transport elements of *Equal Life Chances for All* (2013):

- Objective 3: Provide step free access at an extra 26 stations (Tube and Rail)

- Objective 4: By the end of 2016 95 per cent of bus stops will meet the fully accessible criteria.

Disabled and older residents are eligible for free public transport through the Freedom Pass Scheme. Other initiatives include improved journey planning through the provision of real time information.

Evidence of Disability Inequality⁵

The key inequalities experienced by disabled people in the UK, as researched by the Office for Disability Issues (see Office for Disability Issues, 2011) include:

- Lack of regular, accessible and direct public transport is a barrier affecting parents and carers of disabled children participating in all areas of life as well as adults with impairments.
- For all modes of transport, adults with impairments were more likely than adults without impairments to experience difficulty getting in and out of transport. For example, adults with impairments were six times as likely to experience difficulty getting in and out of local buses compared with adults without impairments (19 per cent and 3 per cent respectively) and five times as likely to experience difficulties getting in and out of local trains (11 per cent and 2 per cent respectively).
- Lack of seating at bus stops, lack of seating on the bus, wheelchair spaces being used by prams or luggage and bus drivers not lowering the bus to enable entry and exit from the bus.
- 75 out of every 100 adults with an impairment found it hard to use transport services like buses and trains. Only 60 out of every 100 adults without an impairment said the same.
- The condition of the roads (bumpy), making the journey particularly uncomfortable for people with pain in their limbs or back.
- Physical access, including having difficulty navigating the step onto the bus (especially if the driver could not lower it) or not having time to reach a seat before the bus drove off.
- The attitude of transport staff was a key issue for disabled people.
- Hate crime on public transport

TfL is also committed to improving access to transport information as detailed in the summary of improvements listed in *Your Accessible Transport Update* (TfL 'Accessible Transport', 2014)

- Redeveloped website launched
- Journey Planner upgraded
- Interactive Tube map
- Wifi introduced at 29 more Underground stations
- Accessibility signage introduced at 20 more stations
- Step-free rail map, including Network Rail stations

⁵ Assessment of the GLA's Impact on Disability Equality 2013 - http://www.london.gov.uk/sites/default/files/assessment_gla_deaf_disabled_equality_2013_0.pdf

Visitor Experience

The findings from the Game Changer (GLA 'Games Changer', 2013) survey of London as an accessible visitor destination found that between 2009 and 2012 consumer ratings of transport accessibility have improved with 55% of respondents rating transport in London positively for access (+24% increase in ratings from 2009). Respondents were more positive about the availability of ramps/lifts, induction loops and tactile information panels, consistent audio/visual updates and staff attitude and knowledge. Reasons given for low ratings included out of date information and advice not being readily available. Visitors ranked their most important access needs as:

- Blue Badge Parking
- Step free access to public transport
- Staff attitude and knowledge.

Substantial improvements were recorded in the perceptions of staff attitude and knowledge and in investments made in extending step free access.

1.1.4 Art, Culture and Sport

Key National Policy

- Equalities Act 2011
- Arts Council England, Achieving Great Art & Culture for Everyone (2013) - updates the strategic framework for the arts, libraries and museums, which were set out in Achieving Great Art for Everyone (2010) and Culture, Knowledge and Understanding (2011).
- Equality and diversity within the arts and cultural sector in England: Evidence and literature review (2014)
- The Creative Case for Diversity, (Arts Council England, 2011)

The Equality Act 2010 provides the legislative framework which informs the work of the Arts Council England to promote equality of opportunity and reduce barriers to engagement for both audiences and artists. The public sector equality duty, a key component of the Equality Act 2010, brings a range of requirements into law where those subject to the equality duty must, in the delivery of their services, have due regard to the need to eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act.

The Act explains that having due regard for advancing equality involves:

- removing or minimising disadvantages suffered by people due to their protected characteristics
- taking steps to meet the needs of people from protected groups where these are different from the needs of other people
- encouraging people from protected groups to participate in public life or in other activities where their participation is disproportionately low.

Findings in a recent review of equality and diversity within the arts and cultural sector in England (Arts Council England, 2011) found that disabled audiences' patterns of arts and cultural engagement are largely dictated by practical factors such as cost, access and

transport which, unaddressed, can become barriers. Negative experiences of these practical issues can create a vicious circle which further depresses demand. Economic barriers to participation can be more sharply felt by disabled people because of the increased likelihood of disabled people to living in a low income household.

Key Regional Strategy

A commitment to improving access to arts, culture and sport is embedded in the policies of the London Plan: London's People (See GLA 'London Plan', 2011) through the protection and enhancement of social infrastructure. The London Plan: London's Economy (2011) highlights the importance of London's visitor infrastructure and support for the enhancement of the arts, culture and entertainment offer which should be accessible to all sectors of the community.

Evidence of disability inequality

A range of barriers that prevent disabled people from participating across different cultural activities were identified in the Mayor's Cultural Strategy. Evidence from Taking Part (Dept for Culture, Media and Sport, 2013), the national survey of culture, leisure and sport, emphasises that disabled people have significantly lower levels of engagement with arts and culture. The barriers disabled people experience in relation to culture include:

- A lack of access to information about events (disabled people are three times more likely than non-disabled people to have never used the internet.)
- Lack of access to ticketing (when required)
- A lack of access to the event itself
- Lack of inclusion by artists with disabilities, or provision for them.
- Lack of positive images and promotions

1.1.5 Sport

Building on the legacy of the 2012 Olympic Games is the underpinning for the strategic approach to sports development and the accessibility of sports facilities and venues. In addition to the priorities of the London Plan (2011) the objectives, outcomes and measures of *Equal Life Chances for All* clearly prioritise equal and inclusive access for all Londoners with disabilities:

Objective 1: Deliver a grass-roots sporting legacy for Londoners from the 2012 Olympic and Paralympic Games by securing a sustained increase in participation in sport and physical activity amongst Londoners. Achieving Objective 1 for people with disabilities emphasises the need to raise awareness amongst London local authorities and other key stakeholders about the *Inclusive and Active Strategy* (GLA, 2010) This document contains a sport and physical activity strategy for disabled people in London 2010-2015, to support a cultural shift in attitudes towards disabled people participating in sport. Its desired outcome: Increased participation rates in sport amongst people of protected groups. Participation rates are measured using Sport England's 'Active People Survey', which measure people's (i) regularity; and (ii) level of "moderate intensity exercise"

Importantly, in relation to CAP4Access, one of the key actions for delivering the Inclusive and Active Strategy is the need for inclusive sport and physical activity opportunities to be

adequately mapped, where data is captured regarding sport and physical activity provision. This needs to provide clear details of whether the activity is inclusive, and should link into appropriate web resources and directories (including the 'Get Active London' web portal).

1.1.6 Accessibility Information

Official Information Sources are:

- Visit London.Com
- Inclusive London – Tourist Information in London

Findings from the Game Changer survey of visitor experience in London found that the availability of information is a key issue. Awareness of access schemes (such as Blue Badge Parking) and initiatives has declined. Similarly in relation to websites that visitors use when planning their journey, dedicated access sites have lost popularity and more visitors are using businesses' own web sites. Use of Tourist board sites has also declined since 2009, but remain popular with 44% of visitors taking part in the survey reported using them prior to their visit. The Game Changer survey found that access information is failing to reach wider audiences. Since 2009, there has been a significant increase in the amount of information available to disabled visitors, including the development of the specialist access website – 'Inclusive London' (see <http://www.inclusivelondon.com>) which offers information on accessible tourism across the capital.

The Inclusive London website and App has received over 12 million hits since its launch, has over 35,000 businesses registered and the App was named App of the week by the Sunday Times. This shows the value of providing such detailed information. However looking forward, stakeholders and disabled people want to see more access information available in mainstream provision and this should be the public sector focus. Private sector specialist sites will continue meeting the needs of a niche audience without public sector intervention. Public sector promotion of them however is essential. In the long term integrating access information into mainstream sites will reach a much larger audience including those people who don't see themselves as having a disability.

The report recommends a review and consolidation of visitor information provision. To reach the widest audience access information needs to be presented and available to visitors, including those who don't consider themselves to be disabled. Working with the main private sector providers of dedicated accessibility sites to improve the prominence of the information collected will go some way to addressing this.

Some of the key issues to address are:

- Review criteria for information collection and agree to a common standard of detail - A number of different commercial and not-for-profit organisations carry out access audits. They use different criteria and terminology which cause confusion and mean disabled people don't get the information they need
- Encourage London businesses to include more access information (access statement) on their own websites

1.1.7 Conclusion

This section looked at the wider context of ongoing developments around accessibility in the London pilot city as a frame for topics and themes for exploration within the project. A review of the policy context shows that there is a formidable array of policy in place and at a central and local government level a commitment to equality and inclusion. Policy in practice shows that although considerable progress has been made disabled people are far from having free and open access at the same level as able citizens. Limitations on the public transport networks impacts massively on access to employment and leisure and recreation opportunities and many shops, cafes and other buildings and facilities remain inaccessible. Importantly, attitudinal change is highlighted and the need for information emerges as central to enabling people with limited mobility to navigate their way in the less than perfect systems that have evolved around them. These are key themes that are fundamental to the improvement of services and are central to the design of the CAP4Access project.

1.2 Heidelberg

1.2.1 Accessible Mobility

Accessible mobility is a key concern for the city of Heidelberg (Heidelberg, 2014). The aim of the city is that visually impaired and disabled citizens should be able to reach any place in Heidelberg unassisted. For several years, the city has been committed to facilitating the participation of people with disabilities and people with limited mobility in public and social life.

For example, bus stops and pedestrian crossings are accessible to disabled people. A control system helps blind people with orientation; accessible kerbstones (e.g. elevated platforms) enable people with limited mobility an easy entry into buses and trams. Acoustic signals and dropped curbs ensure that the road can be crossed safely.

Over the next two years, several bus stops within the city of Heidelberg will be made accessible. The conversions of these are all planned and implemented in cooperation with the Advisory Council of People with Disabilities.

Besides that, requests for changes to traffic light circuits (both for cars and pedestrians) may be directed to the supervisor for traffic light circuits in Heidelberg (Heidelberg 'Ampelkuemmerin', 2014). This may of course include requests with regard to limited mobility, e.g. longer green phases.

The city of Heidelberg has already collected information for people with limited physical mobility as well as for blind people (Heidelberg Huerdenlos, 2014). This includes a list of parking spaces dedicated to people with restricted mobility (Heidelberg 'Parken', 2014). However, currently there is no map available which displays all of these points on one map.

1.2.2 Equal opportunities

Equal opportunities for people with disabilities have been on the agenda of the city of Heidelberg and the Rhine-Neckar Region for decades. In 1995, a municipal council ("Gemeinderatsbeschluss des Jahres 1995") planned that all future urban and non-urban construction projects should comply with rules that would make them "barrier-free" for people

with disabilities. Since then, the city of Heidelberg and the Rhine-Neckar Region have implemented numerous policies and initiatives to improve accessibility for people with disabilities.

The Baden-Württemberg building code

The Baden-Württemberg building code (*Landesbauordnung Baden-Württemberg, LBO*), as amended on March 5, 2010, requires that all construction projects comply with minimal standards in terms of accessibility. Under the provisions of the code, requirements have to be met for apartments⁶, public buildings (including those with residential use), transport interior design, outdoor facilities, nurseries, kindergartens, schools, sport facilities, student residence, and other public spaces.

In addition, financial support programs have been implemented, including the Accessible Flats Program (“Förderprogramm Barrierefreie Lebenslaufwohnungen”) and the Accessibility for Public Buildings Program (“Förderprogramm Barrierefreiheit für öffentlich zugängliche Gebäude”), whereby authorities provide financial support to improve accessibility of private or public buildings.

Membership in associations

The city of Heidelberg is also a member of associations and organizations that promote accessibility, such as the Regional Action Alliance of Self-help Groups (Regionales Aktionsbündnis von Selbsthilfegruppen), funded in 2003 within the context of the European Year of People with Disabilities, and which coordinates projects, events and actions related to accessibility issues.

Accessibility-related events

Accessibility-related events are organized by the city of Heidelberg, such as conferences on barrier-free public transportation systems in Heidelberg and the Rhine-Neckar Region (“barrierefreier öffentlicher Personennahverkehr in Heidelberg und im Rhein-Neckar-Raum”), which were set up by the City Planning Department with the aim of sharing information related to mobility problems for disabled people and facilitating their access to public transport.

Web-accessibility

Heidelberg city also recognises that mobility barriers do not exist only in the field of urban design, but also in the virtual world where access to Internet websites is often difficult for people with certain disabilities. To address this issue, the Office of Public Relations of Heidelberg designed the “Web for All” (Heidelberg VBI, 2010), a website dedicated to improving Internet accessibility for disabled people.

Advisory Council of People with Disabilities

In Heidelberg, steps have been taken to improve accessibility in the political sphere. In March 2008, the city of Heidelberg has created the Advisory Council of People with Disabilities (“Beirat von Menschen mit Behinderungen” see Heidelberg ‘Beirat’, 2008), which provides continuous regional representation for people with disabilities and chronic medical

⁶ Buildings that contain more than 3 apartments must have accessible apartment(s) on at least one floor of the building.

conditions. The Advisory Council consists of 17 elected members, who work without pay. They act as an intermediary for the city administration. The committee represents the interests of disabled people and those with chronic diseases. Its objective is to improve the quality of life of disabled persons and to facilitate dialog with the political and administrative bodies. The Advisory Council also has delegates in the Social, Youth Welfare, Building and Environmental, and Urban Development and Transport committees, as well as the Committee for Integration and Equality of Opportunities.

The Advisory Council of People with Disabilities has the following responsibilities:

- Promotion of equal coexistence between people with and without disabilities (the term disability always refers to any kind of disability / chronic illness)
- Improving the possibilities of participation of people with disabilities in society,
- Inclusion of people with disabilities in local political affairs,
- Ensuring that the interests of people with disabilities in all municipal policy areas concerned are properly taken into account

The advisory council of people with disabilities wants to address the issues and concerns of Heidelberger citizens with disabilities / chronic diseases and is therefore interested in their suggestions and ideas.

The topics in which the advisory council is included are

- Accessibility in all areas
- Transport and Mobility
- Housing and construction
- School, training, education
- Labour and employment
- Family and social affairs

The current main demands made by the Advisory Council regarding accessibility in Heidelberg are:

- More accessible and low priced flats
- More accessible public toilets
- More inclusive leisure activities
- More accessible parking spaces
- Better visible accessible parking spaces
- Increase the share of accessible public transport stops
- Preservation of historic buildings shall not prevent measure for accessibility
- Lots of cobblestone and also small sidewalks, especially in the old town of Heidelberg
- More employment possibilities for disabled people

Working group “barrier free”

In addition, there is a working group on accessibility (“barrier free”/“Arbeitskreis Barrierefrei”), which was founded by the city council (Heidelberg ‘Arbeitskreis’, 2014). It comprises a group

of concerned individuals, organizations, and institutions for the disabled who are working towards the common goal of reducing barriers. The group's members are representatives from self-help groups, and interested individuals and institutions in the area of disability assistance. These members communicate with government agencies and service providers, such as RNV (the local transport provider), the university, etc. Members of the advisory council for the disabled attend the meetings and provide communication back to the city council.

Tasks and areas of activity for the work group "barrier free" include on-site inspections of new constructions, alterations to public buildings or transport issues are addressed and are carried out by volunteers with and without disabilities. This work group has bimonthly meetings and its goal is to engage with local politicians and responsible persons to progress accessibility at various locations.

The duties of the working group on accessibility include:

- The inspection of buildings and traffic areas in terms of their barrier-free use by people with different disabilities
- Cooperation with the local transport operators to improve the accessibility of public transport
- Networking and collaboration with representatives of organizations with similar interests from the metropolitan region, such as AG Mob or AG Accessibility Mannheim
- Training of interested institutions and individuals on the basics of accessibility on the basics of accessibility, such as statutory provisions, barrier-free design and access to transport and open spaces, buildings, etc.
- Mediation in concerns of individuals
- Informing the public through press articles and events

1.3 Vienna

On the 1st of January, 2006 the Disabled Equality Law (Behindertengleichstellungsrecht) came into effect (Hofer and Rosner-Scheibengraf 2013). It includes the Austrian Disabled Equality Act (Bundesbehindertengleichstellungsgesetz BGStG), which aims to enable an equal participation in society for disabled people. Accessibility is one of the main goals of the BGStG. According to BGStG, 'accessible' means that buildings, means of transport, technical tools, information systems, as well as other areas of life need to be accessible and usable for disabled people without additional difficulties and without needing further help (Lenoble 2014).

1.3.1 Austrian National Action Plan on Disability

In 2012 the Austrian National Action Plan on Disability 2012-2020 (BMASK 2012) was published outlining Austria's strategy to implement the UN Convention on the Rights of Persons with Disabilities. The action plan includes goals and 250 measures on policy for disabled persons, protection against discrimination, accessibility, education, employment, self-determined living, health and rehabilitation, and awareness-raising and information, all of

which should be implemented by 2020. In this section the policies regarding accessibility with respect to mobility will be presented shortly.

General – awareness-raising

The issue of accessibility must increasingly be brought to the awareness of local authorities, the industry and the general public. Therefore pilot projects, public relations activities and the presentation of good practice examples will be supported and a cost effective and accessible access to essential accessibility standards will be provided. Counselling services will be interlinked and information in the area of accessibility by the Federal Social Office will be increased.

Services of the Federation (Access to district offices, schools ...)

All federal buildings will have to be accessible. Therefore the position of an Accessibility Officer in each federal ministry will be created. Accessibility will be included into all relevant measures regarding conversion, renovation, new rental of buildings, security and fire prevention measures. New school buildings must be equally accessible for all pupils. Architectural accessibility and freedom of discrimination will be incorporated into the federal Real Estate Strategy. In Vienna there are 1,117 listed buildings which will be made accessible. By the end of 2022, 33% of these building (including schools and district offices) should be accessible; by 2032, 57% and by 2042, 100%.

This plan concerns the following buildings: 447 kindergartens, 417 schools, 193 district offices, 39 libraries, 11 warehouses, 5 health care centres, 3 museums, 1 after school centre, and 1 retirement centre.

Construction and Public Transport

Austria aims to establish building regulations, which are harmonized in terms of accessibility. Moreover criteria of adjustable housing construction will be brought into the housing construction public funds. Therefore accessibility must be taken into account by the Advisory Council for Building Culture and by the Austrian Standards Institute. Fiscal consideration for measures aiming at accessibility for people concerned will be improved. The national action plan also outlines that accessibility will become a compulsory subject for all relevant training as well as for people in authority in Construction Agencies and in monument protection. Besides, representatives of organisations for people with disabilities will be included in all main national public construction projects funded by the Federation (BMASK 2012).

Regarding public transport, Austria aims to improve the attractiveness of public transport through modernising the carriages, which includes improved accessibility for people with disabilities. Through innovative products and services an inclusive public transport system will be developed, which is accessible for all user groups, especially elderly, children, and people with disabilities (BMASK 2012). Austrian transportation operators are under the obligation to create a plan to remove barriers in the context of their means of transportation by the end of 2015 (Vilmos 2013).

To cushion the financial burden which is connected to the creation of accessibility, interim regulations for existing buildings and means of transportation and traffic requirements have been inaugurated. Moreover, there are special regulations for reconstructions supported by public funds (Vilmos 2013).

Tourism & Culture

Austria aims to sensitise and inform the tourist and leisure industry on the topic of “accessible and cross-generational tourism for everybody”. Information material on the following topics will be distributed:

- accessible planning and construction in tourism and leisure industry,
- guidance for accessible natural tourist attractions,
- accessible travelling,
- accessible arts and cultural attractions.

Constructional investments into accessibility can be funded by the Austrian Hotel and Tourism Bank companies’ Act. Another goal outlined in the Austrian National Action Plan emphasises providing information material for disabled tourists from foreign countries, which includes information about disabled parking space, public transport, and the use of concessions in this context.

With regards to culture, the improvement of accessible entrances and usability of cultural facilities should be pushed forward on a national level. Additional intervention projects, especially the development of additional offers for educational establishments are planned. Through targeted support measures, specific groups - including people with disabilities – these will be addressed. However, many policies are still at an early level of establishing objectives and it remains to be seen what concrete actions are to follow.

Sports

Regarding sports, the national action plan aims for the inclusion of disabled sports into general sports. Most events in sports should be organised in a way that disabled people can participate (e.g. co-location of competitions). It is a main goal to create general accessibility to public sports venues, which is necessary to guarantee access to major sporting events. In addition, sport for disabled groups must be improved.

1.3.2 Accessibility Measures in Vienna

In this section current Austrian accessibility measures based on the above outlined policy fields are presented.

General – awareness-raising

The city of Vienna encourages and enables citizens to report barriers to the municipality. If citizens are confronted with any constructional barriers, such as stairs without a ramp or if there are orientation systems for blind people missing, they are encouraged to report these barriers. The concern is forwarded to the coordinator for accessible, disabled-adapted and age-appropriate planning, construction and living as well as to the municipal authorities (MA 28), which is in charge of road building. The persons in charge answer the enquiries and forward the request to responsible authorities.

The ministerial office (Burghauptmannschaft Österreich) organises workshops about “accessibility in historical buildings”. This office serves as a base for exchanging experiences between national and international institutions, museums, constructors and NGOs (Mitterlehner 2014).

Services of the Federation (Access to district offices, schools ...)

In 2013 a modern service and information centre was developed in the entrance hall of the government building, allowing all citizens accessible contact with their representative bodies. In addition to a tactile guidance system for partially sighted and blind people at the entrance and inside the service point, barrier-free access and a pull-out lectern for wheelchair users have been constructed (Mitterlehner 2014).

Vienna developed a step-by-step plan to reconstruct schools and kindergartens. By 2022 33% of the buildings should be accessible.

Construction & Public Transport

The responsible federal states partly assumed clauses in their building regulations regarding accessible or so called disabled-friendly building. For the most part these building codes apply for new constructions (after 2006). There are also plans for the step-by-step reconstruction of older buildings (before 2006) (Vilmos 2013), in particular public and office buildings, as outlined in the newspaper “Die Presse”. According to the news the BGStG includes not only accessibility for all district offices, as outlined above, it also claims that the whole public sphere including office buildings should be accessible by 2019. (All the federal states have postponed this dead line, a few as far as 2042.). Necessary renovations and improvements are often very cost-intensive and difficult to realise. However, the accessible architecture expert Peter Spitaler confirms that even for historical and listed buildings there are usually solutions available to make them accessible (Lenoble 2014). Nevertheless, there are some historical buildings which cannot be reconstructed to be fully accessible (e.g. as it would hamper the statics of the building or alter the historic look and feel of a building), such as St. Stephen’s Cathedral or most castle ruins (Vilmos 2013).

The ÖAR (Austrian consortium for rehabilitation) provides comprehensive information about accessible construction. Contacts to counselling centres, information brochures, information about funding and accessibility standards can be found on their website, (<http://www.oeaar.or.at/>).

Public Transportation

- Wiener Linien provide information for accessible public transport in Vienna, including regularly updated information about public transport stations with elevators not working and planned maintenances as well as tips for passengers using wheelchairs or blind passengers. Additionally people are advised how to give priority to disabled passengers in their surroundings.
- Wiener Linien provide a contact number, especially for people with mobility problems, people using wheelchairs and parents with baby strollers. By calling this number passengers can get information about where low-floor vehicles are operating
- Busses offer buttons for disabled people, which give a sign to the driver for help in getting off the bus. Busses are equipped with ramps .
- “Fonds Soziales Wien” offers training for traffic safety and using public transport in Vienna for wheelchair users .

Tourism and Culture

- “Wien-Guide.at” is a database on the topic of accessibility in Vienna. Since 2001 ITSwien gauges accessibility of public buildings. The guide aims to support disabled people to individually self-assess if objects are accessible for them or not.
- “Lust auf Kultur für alle“ (Culture for everybody) is organised by the Upper Austrian exhibition architect and communication curator Doris Penn. She develops “universal designs” (also called design for all) to support accessible exhibitions and enables equal access to museums for all people (Aigner et al. 2012).
- The “Belvedere”: To facilitate equal enjoyment of arts for all visitors the museum “Belvedere” reconstructed the entrance of the lower Belvedere to create accessibility to all special exhibitions (Aigner et al. 2012).
- Main theatres in Vienna, such as Burgtheater or Ronacher are fully reconstructed to be accessible for wheelchair users. Also extra parking spaces for disabled people are provided at Ronacher Vienna .
- “Fonds Soziales Wien” (run by the city of Vienna) supports social inclusion of disabled people. They organise excursions, social meetings, creative and musical offers and sports offers. Providers are different recreational facilities, clubs of disabled people, and other organisations.

Sports

- The Austrian WAT (<http://behindertensport.wat.at/>) disabled sports offers different sports and trainings for people with and without disabilities.
- WAT disabled sports aims to enable the participation of disabled people in existing sports groups of non-disabled people. The initiative invites people looking for such offers.
- WAT offers different regular sports activities for disabled people, including wheelchair-basketball, wheelchair dancing, and other activities for young and old people with disabilities.
- DanceAbility Vienna offers Contact Improvisation, which allows all people to dance. Moving elements are developed based on common dancing and physical possibilities. Dividing aspects between dancers with and without disabilities are blurred through these dancing processes. DanceAbility aims to harmonise disabled and non-disabled people together by overcoming internalised barriers and dividing aspects.

1.4 Elche

1.4.1 Policy background

Article 9 of the Spanish Constitution requires public entities to guarantee the welfare of all citizens and to make participation in politics, the economy, cultural and social life easy. Moreover, article 49 of the Constitution highlights that these entities should develop policies to guarantee that people with disabilities can enjoy their rights as with all citizens. In compliance of this article legislation for the integration of people with disabilities was published as a general framework to detail all rights and duties of people with disabilities.

Article 148 of the Spanish Constitution attributes to the Autonomous Communities the competences in relation to territory, urban planning, housing, and social assistance ordinance. According to this article, almost all Communities have established their own normative to guarantee the accessibility in cities, buildings, transport and communication.

Elche is part of the Valencia Community; where a different normative has been published to ensure accessibility across the Valencia region. The following provides an example of the current autonomous normative in accessibility:

- 39/2004 Decree of 5th March of the Council of Valencia, in which the Law 1/1998 of 5th May was developed on accessibility in buildings for public use and in urban environments
- Law 3/2004 of 30th June, of the Valencia Community, for the management and development of quality in buildings.

Furthermore, Elche has published its own policy strategy on accessibility. In fact, there is a municipal ordinance on accessibility to the environment for disabled people which provides that any building that promotes the council must have an accessibility. There is also an ordinance on removing architectural barriers, which states that building access must provide ramps and ensure there is an adapted bathroom for wheelchairs users in public facilities. The main normative in relation to the accessibility in Elche is:

- Ordinance on safety in the use and exploitation of the Elche's coast
- Ordinance on suppression of architectural barriers
- Regulation for the provision of passenger bus urban transport provision in the city of Elche
- Ordinance on accessibility to the environment for people with reduced mobility

In addition to these, there are plans at national, regional and local level to promote the accessibility of the built environment and services. At national level, one of the main aims of the Social Security Administration Body, responsible for handling Social Services supplementing Social Security System provisions (Imsero), is to develop solutions that favour the social integration of elderly people and people with disabilities. In line with this, the Accessibility Programme was initiated on the basis of Law 13/1982 to develop: diagnosis and planning activities; corrective activities to achieve accessibility; preventive or implementation activities of accessibility management; actions to promote accessible transport; and awareness rising and training activities. Moreover, at national level there is the National Plan of Accessibility 2004-2012 and a green and white book on accessibility.

At regional level, the Valencian community has focused mainly on accessibility plans related to promoting accessible tourism, the plan for accessible beaches and the plan of accessible tourism in the community, among others.

The municipal accessibility policy in Elche has two main cores: the Action Plan 2012-2016 for people with disabilities and the Inclusive Tourism Plan.

1.4.2 Action Plan 2012-2016 for People with Disabilities

The Action Plan 2012-2016 for people with disabilities, intends that every political and technical action and decision is promoted, designed, implemented and evaluated with a cross-cutting approach to accessibility, integration and participation. The Plan focuses on six

areas of action: (i) information and awareness; (ii) universal accessibility; (iii) social participation; (iv) education and employment; (v) leisure, (vi) culture and sport; and (vii) social care and support for personal autonomy.

Information and Awareness

Raising awareness of issues linked to the social integration of people with disabilities and ensure that all people with disabilities have full access to the necessary information and advice.

Specific goals include:

- Promoting awareness across society concerning the rights of persons with disabilities
- Providing people with disabilities information and guidance, in order to facilitate their full integration and improving their quality of life.
- Improving the training of civil servants in the area of disability

Universal Access

Promoting universal access to various spaces, information and communications, taking into account the different types of disabilities.

Specific goals include:

- Ensuring accessibility to new public and private spaces of Elche.
- Improving accessibility for all urban areas of the city
- Improve accessibility of information and communication
- Enhancing the availability of resources to the autonomous mobility of persons with physical disabilities.

Social Participation

Promoting and facilitating active social participation of people with disabilities. Encouraging active participation of people with disabilities in the activities of the city and promoting volunteerism in the field of disability.

Training and Employment

Improving equal opportunities for people with disabilities in access to employment, facilitating their training development, and promoting their employment.

- Specific goals include:
- Promoting the educational development of people with disabilities from an inclusive perspective
- Promoting actions of employment integration for people with disabilities
- Promoting the inclusion of people with disabilities to public employment in the city of Elche.
- Promoting the integration of disabled workers in the work market

Leisure, Culture and Sports

Ensuring and facilitating participation of people with disabilities in cultural, sporting and leisure activities.

Specific goal; promoting cultural and sporting activities for people with disabilities

Social Care and Support for Personal Autonomy

Ensuring access to existing resources and financial benefits and adequate support for the development of an autonomous life to persons with disabilities.

Specific goals:

- Ensuring access to resources and economic benefits to ensure the quality of life for the disabled.
- Providing adequate support for personal autonomy
- Support programs of social care and support for personal autonomy developed by the associations of persons with disabilities and their families

The commission responsible for monitoring and providing feedback on how the Plan is implemented comprises representatives from the administration and from local civic organisations.

1.4.3 Inclusive Tourism Plan

The Inclusive Tourism Plan's aim is to ensure Elche's public and private tourism resources, urban infrastructures that connect these, and public communications are all accessible. The plan contains the actions to be carried out in local projects for accessible tourism resources. The idea is that through these projects resources can be optimised to unearth some of the more inconspicuous accessibility issues. Planning short and medium term actions, establishing priorities and clearly defining the technical and political criteria, so as to avoid isolated measures, are all fundamental to achieving the aims of the Plan.

The Tourism Plan's approach is to tackle different areas in which tourists visiting Elche access activities and services. The general scope of intervention includes all the tourism resources of the city performing the analysis in 4 areas; building; town planning; transport and communication.

1.4.4 Consultancy board of people with disabilities

The city has a local board where disabled citizens' organisations that defend the rights of disabled people in the city are represented. It is a consultative board with democratic participation on accessibility policies. Its main aims are:

- To know what the problems of are for people with disabilities and to suggest potential solutions
- To plan actions and activities for people with disabilities
- To know what social services exists in relation to their users in order to improve them
- To work together
- To create specific working commissions inside the council

- To inform all the entities participating in the council about the actions of working commissions.

The International Day for Disabled People, held each December 3rd, and Ramp Day, which raises awareness of architectural barriers faced by wheelchair users and people with reduced mobility are annual public events used to raise awareness of the issues faced by people with disabilities across the city.

1.4.5 Elche Networks

Elche is part of the Spanish Network of Smart Cities where the possibilities offered by ICT are considered essential in improving public services, in order to create more efficient public resources and build a more liveable city. The Spanish Network of Smart Cities⁷ tries to create an open network for promoting economic, social and entrepreneurial progress of cities, using innovation and knowledge supported by ICTs.

The city of Elche also promotes the participation of disabled people in sports through provisions such as sport adapted clubs in swimming, basketball and dance, among others.

1.4.6 Accessible resources

Elche has a guide with tourist places called “Tourism in Elche” available in Spanish⁸, Valencian⁹ and English¹⁰. This guide is designed for everyone, but especially for people who have reading difficulties, as part of the Inclusive Tourism Plan, 2014. The guide contains information about all the sites and monuments to visit in Elche detailing whether they are accessible and/or audio guides.

1.4.7 Awards

In 2008, the city of Elche received with an award on Universal Design in the category of cities with more than 100,000 inhabitants. This award is promoted by the Spanish Royal Board on Disability. Its aim is to reward the continued work in universal accessibility for people with disability to the physical environment, education, leisure, culture, sport, transport, and ICTs.

In 2012, Elche was awarded with the national prize given by the Spanish Committee of Representatives of Persons with Disabilities (CERMI) in the category of the Best Autonomous or Local Action. It recognised the policy in favour of disabled people and their families promoting their participation.

⁷ <http://www.redciudadesinteligentes.es/index.php>

⁸ <http://www.visitelche.com/media/publications/pdf/GUA - CASTELLANO.pdf>

⁹ <http://www.visitelche.com/media/publications/pdf/GUA - VALENCIANO.pdf>

¹⁰ <http://www.visitelche.com/media/publications/pdf/GUA - INGLS.pdf>

2 Case Study Identification

Building on D1.2 *Plan for Engagement*, this chapter describes the characteristics of the different communities that will form part of the project and the preliminary themes that will be explored through case studies in each of the pilot cities.

CAP4Access has, at its essence, a two-fold approach to improving urban accessibility. Firstly, it aims to provide digital social innovation, through the user-driven design and production of technological tools, including navigation of, and routing through, the built environment. Although user-perspectives from across Europe will be integrated into this development, the tools produced will be standardised, and will not vary according to each pilot city. Secondly, CAP4Access also aims to leverage social innovation. Many important issues of urban accessibility fall outside the scope of technological tools, and therefore require more qualitative social solutions, such as attitudinal shifts, and raised awareness.

Digital and social innovation are clearly interrelated: an effective development and successful uptake of technological tools for accessibility has the potential to drive social innovation, and therefore much of the social innovation created by CAP4Access will be linked to digital tools. However, CAP4Access will also fuel social innovation through awareness raising and other social outcomes, which are not necessarily related to technological developments. ‘Innovation’ is itself a complex topic, and greater attention is given to this in chapter 4.2 *The Subject for Evaluation: Defining Innovation*.

CAP4Access is divided into 4 pilot cities; London, Heidelberg, Vienna, and Elche. The actions undertaken in each city reflect these dual intentions of the project. Each pilot city has its own problems, actors and communities. Given the focus on user-driven research and outcomes, the social innovation leveraged by CAP4Access must, in each city, correspond to the differing needs and priorities identified. The methods employed and activities implemented in each pilot city that seek to provide social innovation will, therefore, not be identical.

- Accessibility in each pilot city is shaped by a multitude of unique local factors; some city-wide, and some related to specific geographical areas. Given this complex landscape it has, in some instances, made sense to identify smaller case study areas - sites where precise accessibility issues can be explored and addressed by the project.
- In each pilot city, the case study areas identified correspond either to known accessibility issues, such as the presence of historical and restrictive architectural design, or inaccessible public transport; or have been shaped according to the expressed needs and interests of communities. In both, case studies aim to focus the attention of CAP4Access onto areas which are most likely to benefit from the project.
- When case studies have been established, they will allow partners to pursue and tackle the local issues and priorities identified through engagement with communities and stakeholder groups who exist in that area. They therefore aim to address the concerns of cross-sector actors, and develop actions which can cater for the needs of both community and secondary stakeholder groups.
- The identification of a ‘case study’ will encourage further engagement with relevant actors who become visible as the project progresses. The development of locally-driven case

studies will also help to mobilise communities' interest in the project at a local, national and European level.

- Case studies can provide a useful structure for actions within pilot cities, however they will not be treated as absolute at this stage of the project. As explored in *1.2 Plan for Engagement*, the engagement process to be leveraged by CAP4Access will focus on addressing the interest expressed by communities. As the adopted case study areas *can* correspond to the expressed needs and priorities of community groups, further case study areas may therefore emerge throughout the duration of CAP4Access, depending on the interest communicated to the project by communities.

There are, certainly, some comparisons to be drawn across the different case studies and indeed pilot cities themselves: issues with transport and tourism have been identified by multiple community groups engaged with across Europe. However, these issues' *local specificity*, how they affect communities and stakeholders on a micro level, renders each pilot city, and therefore case study, unique. This is an intrinsic part of participatory community-driven research.

This relationship between social and digital innovation will form an interesting topic of research throughout the duration of CAP4Access, and will be discussed in greater detail in Chapter 4 (4: Foundation for Evaluation).

The following chapter will explore the issues and activities which have been pursued in each pilot city, according to the engagement that has occurred with communities.

As outlined in the DoW, London functioned as a preliminary pilot site for this work package. This ensured that Mapping for Change's experience and expertise in engaging communities would be appropriately leveraged, and that guidelines could be created to structure engagement in the other pilot cities. Year one enabled Mapping for Change to develop a network of interested community and secondary stakeholder groups in the field of accessibility, to gain an understanding of what they perceive to be predominant issues, and to begin formulating a sense of how CAP4Access might address these. Issues encountered and lessons learned from the initial engagement of communities in London were subsequently used to plan and structure activities in the other pilot cities.

2.1 Pilot Site Characterisation

2.1.1 London

A brief description of the characteristics of each area is given below.

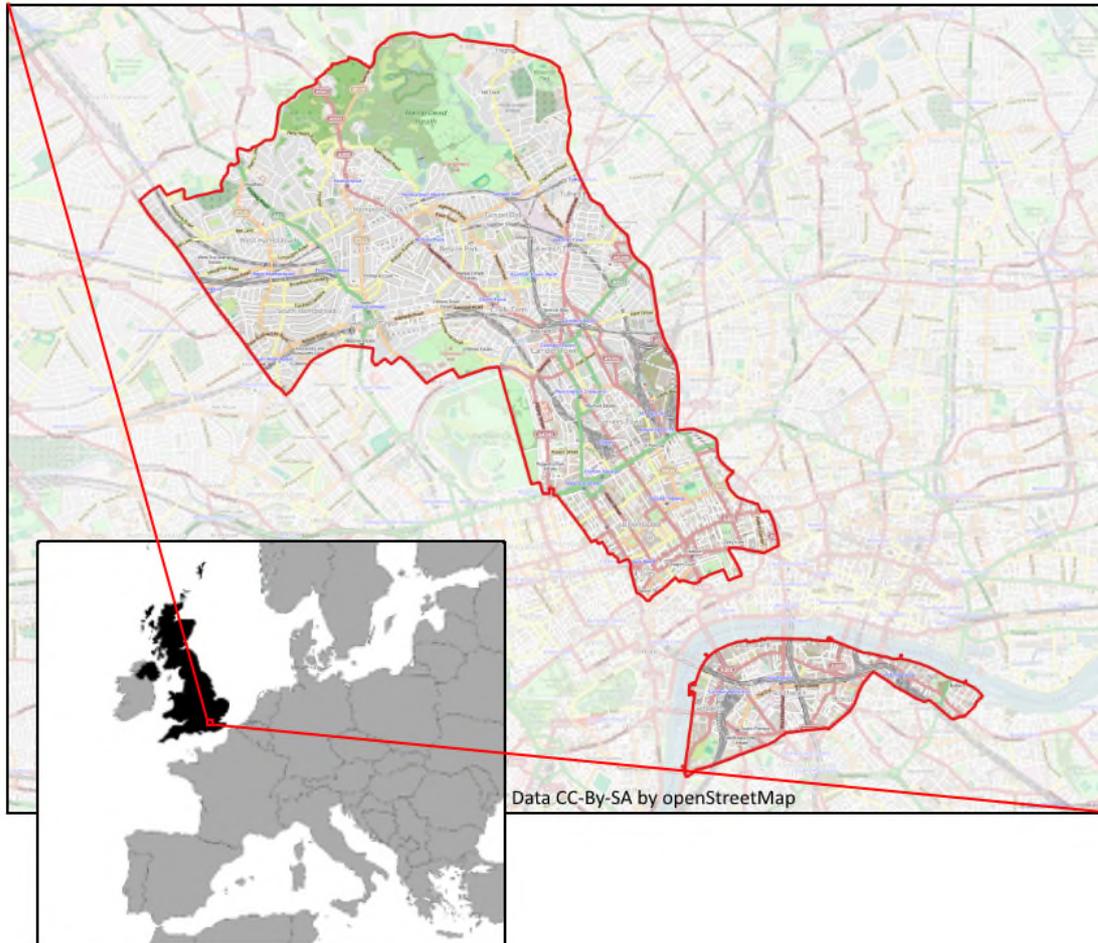


Fig. 1: London's South Bank and case study areas (OSM)

The initial case study area selected for London was the South Bank; an area of central London which extends for roughly 1.6 kilometres alongside the river Thames. This area is characterised by the presence of many of the city's cultural institutions, namely the Southbank Centre, Tate Modern, Globe Theatre and Southbank Cathedral, and is one of the most visited tourist locations in London (approx. 25 million per year according to 2011 estimates (GLA, 'Request' 2011: 3)). However, the area's residential population is relatively small; residential buildings cover only a fractional proportion of the area. In spite of this, the presence of fluctuating diurnal tourists and commuters results in considerable variation of pedestrian flows on a daily basis. The resident population across the borough of Southwark, in which Southbank is located, is 288,283. The borough is the 9th most densely populated across England and Wales, with 9,988 residents per square kilometre and most living south

of the case study area. Fourteen percent of the Southwark population as a whole have a long-term health problem or disability which limits their daily activities.¹¹

The area around Southbank is characterised by substantial transport infrastructure, foremost from the major railway intersection, London Waterloo, which contains both underground and overground links across London and the UK. Further, a number of heavily-trafficked roads such as Westminster Bridge, York Road and Stamford Street bisect the area, and restrict 'walkability' outside designated pedestrian zones. However, a pedestrianised walkway along the riverside offers a vehicle-free route across the case study area.

Architecturally, measures to facilitate accessibility within the built environment were not incorporated during the area's original construction. Fundamental cultural venues of the South Bank such as the Royal Festival Hall were built during the 1950s, with later modifications such as the Hayward Gallery constructed throughout the 1960s. At this time, planning regulations lacked the anti-discriminatory adjustments towards access that would be mandatory today.

Improvements to accessibility have been made gradually since the area's original construction, most notably in 2008 with the implementation of Rick Mather associates' Masterplan for the Royal Festival Hall. The project had a designated Access Group, facilitated by consultancy firm David Bonnett Associates. At its peak, the group comprised 8 disabled members (Fraser, 2008: 12). Through their influence, significant alterations to the original building were made, including the installation of an accessible lift, and accessible toilets on every floor, to afford disabled visitors with "the flexibility and choice of other visitors" (Fraser, 2008: 13). The Access Group was instrumental in securing these improvements to accessibility and overcame tensions from other stakeholders who viewed "access improvements as physical changes that violate conservation" (Fraser, 2008: 12). Overall, the inclusion of an access group throughout the planning and re-construction phases meant that accessibility remained a prominent focus of the works, and was smoothly incorporated into the building's design. As one member of the Access Group commented after the works had finished: "It is important to remember that what we have is not a new building, but a remodelled version of a much-loved older one, in which access has been considered from the outset rather than as an afterthought" (Fraser, 2008: 14).

As discussed in Chapter One, the announcement of London's successful Olympic bid in 2005 instigated an increased demand on planners and policy makers to provide adequate accessibility measures in the run up to and throughout the games. Despite the success of the Royal Festival Hall's accessibility renovations, such measures had not been replicated in the surrounding area, meaning many barriers to inclusion remained.

In 2011, significant alterations were proposed for the South Bank's public realm after boosting accessibility in the area was "highlighted... as a major deliverable of the London 2012 games" (GLA, 2011). A £4 million (roughly €5.1 million) budget was allocated by the GLA to facilitate a "make-over...in time for the 2012 Olympic games" (GLA, 2011: 1). This fund was assigned to benefit "Bankside, the Southwark Cathedral quarter and Clink Street, and the Globe theatre and Oxo Tower areas, and aimed to implement "the provision of seating, lighting, ramps and handrails" (GLA, 2011). Further to these physical landscape

¹¹ http://www.southwark.gov.uk/info/200223/census_2011/2723/census_2011_briefing

changes, other navigational measures were introduced by nearby venues to aid accessibility namely, the development of photo-routes (see Figure 2) which offer visual guidance to those requiring step-free routes.

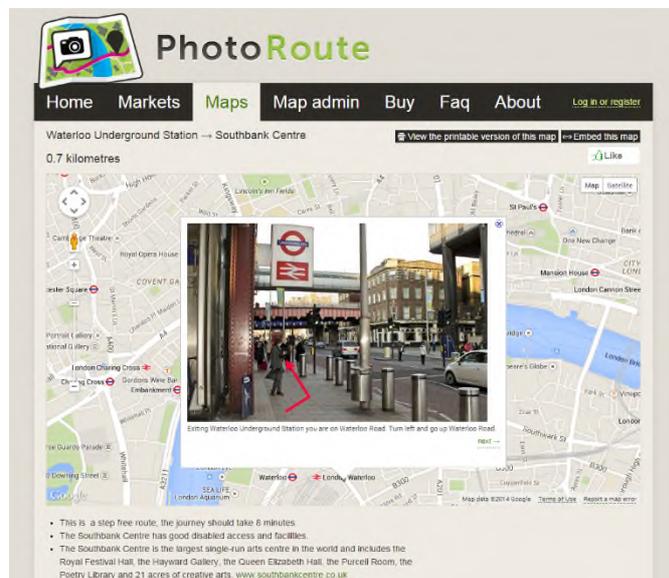


Fig. 2: Screenshot of Photoroute interface for Waterloo station journeys (Photoroute, 2014)

Southwark and Lambeth, the two local authorities with affected land, were heavily invested in this proposal. Barrie Hargrove, cabinet member for transport, environment and recycling at Southwark Council, hoped the works would “make a massive difference to the lives of residents and visitors who have not been able to fully enjoy the route along the south bank of the river” (Southwark Council, 2011).

The renovation works carried out around South Bank have become enshrined in narratives about the Games’ positive impact on accessibility (HM Government, 2013), and are frequently upheld as an example of best

practice on a regional, national and international scale (GLA, 2013). However, policy makers are aware of certain shortcomings with the work that has been carried out. Firstly, according to research conducted by the GLA, of the areas where accessibility measures had been implemented, “only 20% of respondents had visited or considered visiting the South bank, compared to 51% for Trafalgar Square” (GLA, 2013: 30). Their view is that visitors with limited mobility “lack wider awareness” of the South bank as a viable accessible destination (GLA, 2013: 50). However preliminary consultations with stakeholder groups have revealed that other factors play a role in visitors’ hesitation to visit. These will be explored fully in Chapter 2.2.

Justification of multiple case study areas

London’s South Bank is an iconic destination which holds cultural and strategic importance for the city on a local, national and international scale. As a key visitor destination, the South Bank provides an excellent case study for the evaluation of accessibility in a touristic context. However, the relatively small resident population means that, as a single case study, the perspectives that CAP4Access stand to gain from the area are limited.

London is a city of notable size, with a constantly-expanding population; last year, by more than 100,000 inhabitants (ONS, 2014). In order to engage established community groups whose interests relate to and may be met by the objectives and scope of CAP4Access, the decision was taken to include other case study areas with greater resident population numbers. The selection of several case study sites will, we envisage, enable insightful and productive lines of comparison between areas. Further, it is hoped this comparative element will assist with our capacity to influence local policy-makers, service providers, and commercial organisations, who may wish to demonstrate their commitment to accessibility by matching the activities of others.

As highlighted in the critical evaluation of South Bank’s public realm improvements, there is not necessarily a correlation between high public sector expenditure and increased visits from individuals with limited mobility. By implementing activities across several case study areas, including sites where substantial expenditure *has not* been directed towards facilitating improved accessibility, we hope to evaluate communities’ perceptions of such improvements to the public realm.

Further, as explored in Deliverable 1.2’s *Plan for Engagement*, “fishing where the fish are” or “going where the people go” are appropriate terms to describe the community engagement technique adopted by CAP4Access; pursuing the expression of interest from relevant groups. Over the course of year one, interest from community groups has seen further appropriate case study locations emerge across London.

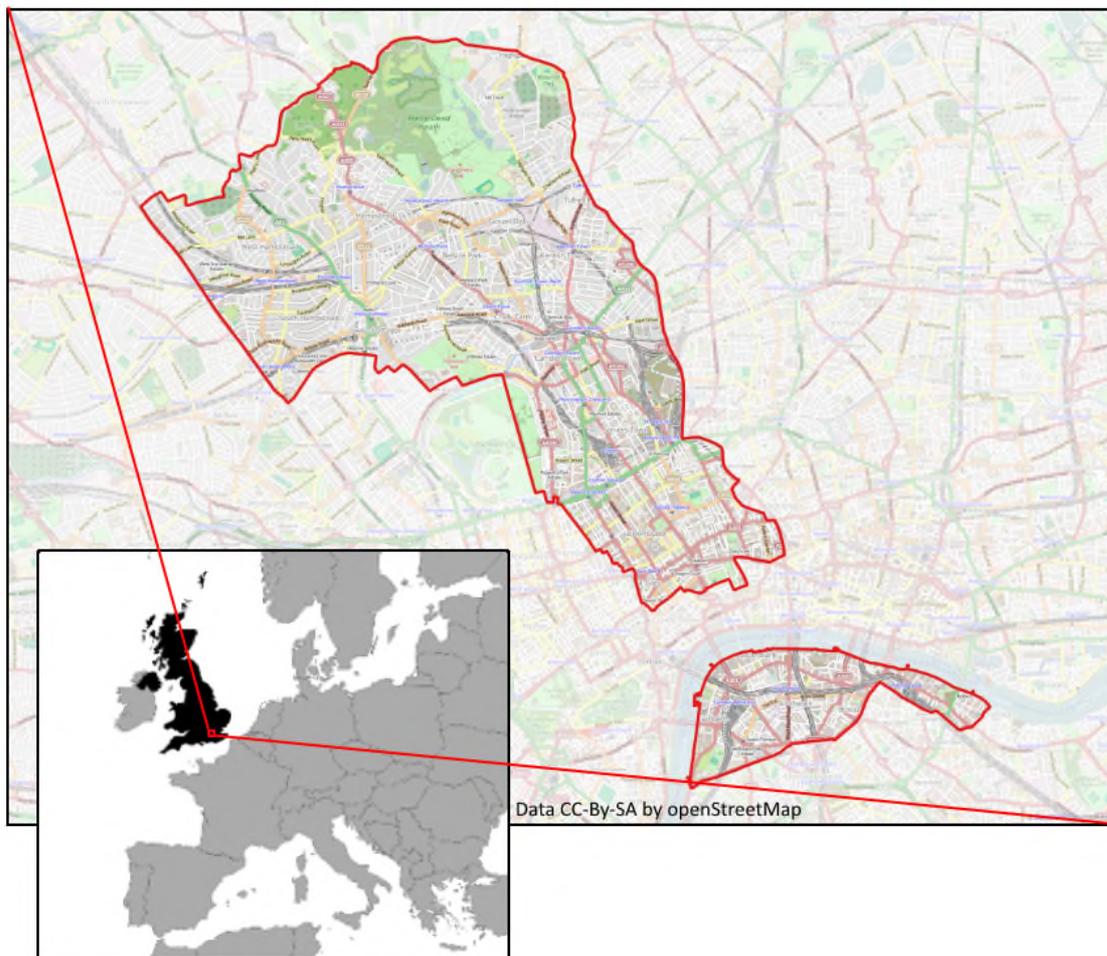


Fig. 3: Camden case study area (OSM)

Camden

Camden is a central London borough which encompasses sites of major infrastructural, environmental and cultural interest including the inter-UK and European railway terminal of King’s Cross St Pancras, the British Library, and the world-famous Camden Market. These render Camden, like the South Bank, a tourist destination for international, inter-European and national visitors. However, Camden is also comprised of a sizeable resident population; with over 229,700 inhabitants (ONS, 2013). This means that, as a case study, it stands to

offer broader perspectives on accessibility through the presence of established resident and community groups.

The borough is also home to major ongoing regeneration works, both within key touristic zones, and more residential areas. The presence of such investment into the public realm will provide opportunities to critique its impact on accessibility throughout the duration of CAP4Access.

Other

Given the participant-driven nature of CAP4Access, smaller pockets of activity beyond the scope of these main pilot areas may continue to arise. Engagement will be directed both towards the designated pilot areas, but will also respond to interests expressed by community groups across London. Further, as explored below, the majority of issues identified throughout initial engagement with user groups were not localised, but rather recurrent London-wide themes. The allocation of specific case study areas with rigid boundaries does not make sense in this context, and would restrict the potential of CAP4Access to tackle and alleviate the accessibility issues identified.

Preliminary engagement activities throughout the duration of year one have occurred across various sites, according to the interest expressed by community groups. This has included sites within the boroughs of Islington, Croydon and Harrow. Their differences from South Bank are apparent. Islington, for example, lies to the West of Camden, and covers just under 15km², but has a resident population of over 206,000 (ONS 'Islington', 2011). As a borough, Islington is characterised by fundamental sports facilities such as Arsenal football club's Emirates stadium, and renowned cultural venues such as Sadler's Wells Theatre.

Where initial interest has been expressed by community groups, a 'snowballing' process (as described in the *Plan for Engagement*) has seen engagement gather momentum in these local areas; therefore marking them out as potential case studies.

2.1.2 Heidelberg

The pilot site of Heidelberg is located to the south-west of Germany in the state of Baden Württemberg (see Figure 4). The city comprises of 15 districts with a total population of over 145,000 (from the 2011 census, see Zensus, 2011). According to official statistics (Herausgeber und Vertrieb, 2013), in 2011 there were over 14,000 people registered with disabilities in Heidelberg, although it is not clear how many of these disabilities were directly related to mobility impairments. Nevertheless, this totals a share of approximately 10% of persons with disabilities in this region.

The primary tourist region of Heidelberg is the Altstadt, which is located to the east of the central area. Within this area numerous churches can be found as well as the castle, Carl Theodor Old Bridge and the Old Heidelberg University. Although highly touristic, a number of accessibility issues are present, including narrow sidewalks, stepped entrances into many shops, bars and eateries, and the presence of cobbled or rough surfaces. The surrounding areas of Heidelberg Altstadt include a number of satellite urbanisations which have good public transport connections through an extensive tram and bus network.

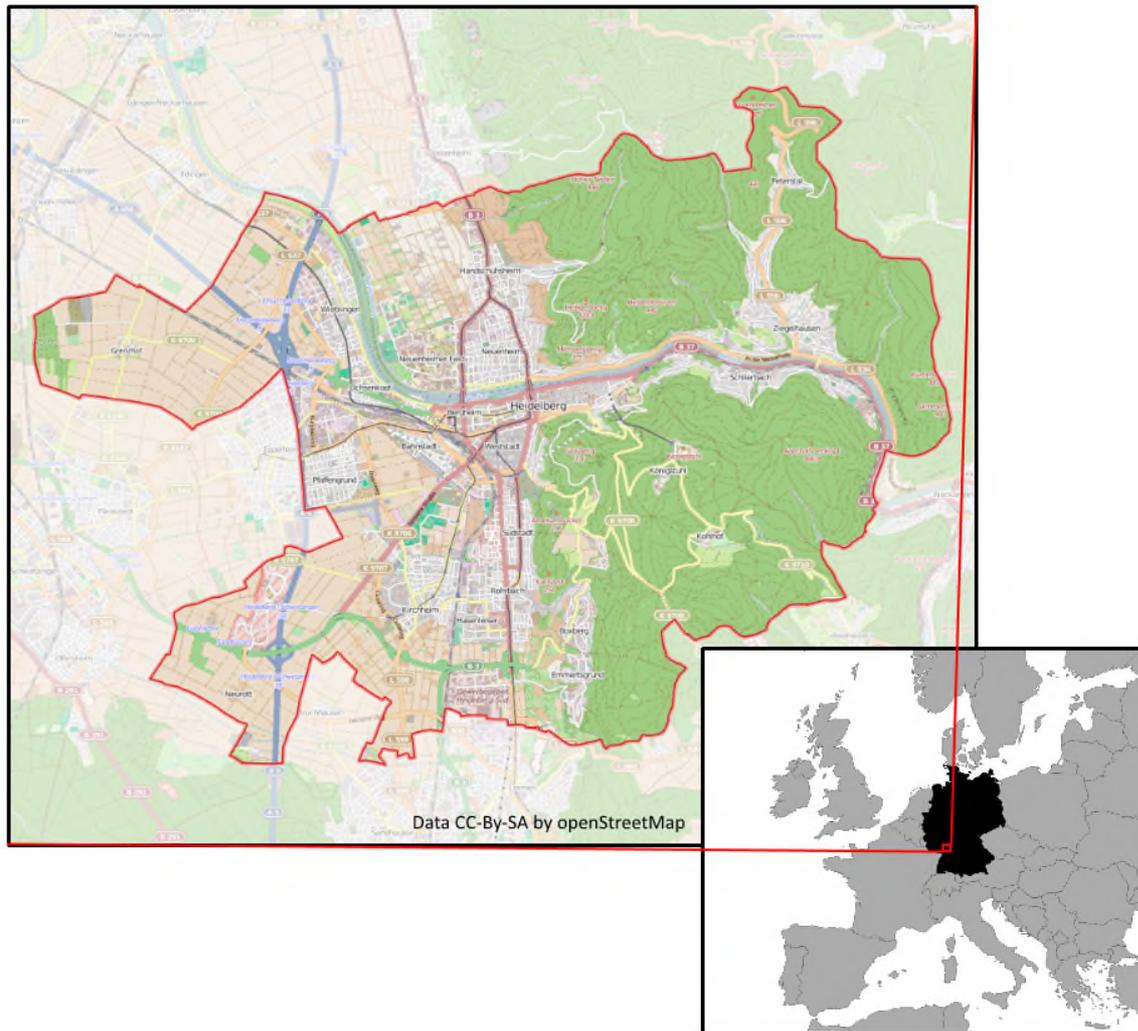


Fig. 4: Heidelberg's case study area (OSM)

Heidelberg University has long-established links with key local stakeholders working for accessibility, including the Institute of Gerontology, the Rehab Centre and grassroots groups representing the interests of wheelchair users. Heidelberg University has recently appointed delegates responsible for the interests and demands of students with disabilities (not restricted to mobility impairments) (Heidelberg University, 2014). Out of this context arise numerous ways for finding contacts and participants in the use case elaboration, piloting, evaluation etc.

Moreover, the city of Heidelberg has already collected information for people with limited physical mobility as well as for blind people (Heidelberg Hurdenlos, 2014). However, there is currently no map available which displays all of this information in one place. The organisation responsible for this initiative, the Advisory Council on People with Disability (Beirat für Behinderte der Stadt Heidelberg – BMB Heidelberg) is strongly supporting the CAP4Access initiative; a Letter of Intent has been obtained from the Board.

2.1.3 Vienna

Vienna, the capital city of Austria, has 1.73 million inhabitants (2011) and is currently one of the fastest growing cities in Eastern and Middle Europe (2 million inhabitants are expected by 2029 in Vienna). Further, looking at the statistics, there will soon be an unprecedented number of older adults living in Vienna. Today 250,000 people aged 65 plus live in Vienna with an expected growth to 27% of the whole population aged 60 plus by 2044.

An estimated 12 % men and 14% women formally recognised as having mobility impairment are living in Vienna today. These numbers don't include people who use walking frames or strollers, as they are not formally recognised as having a mobility impairment.

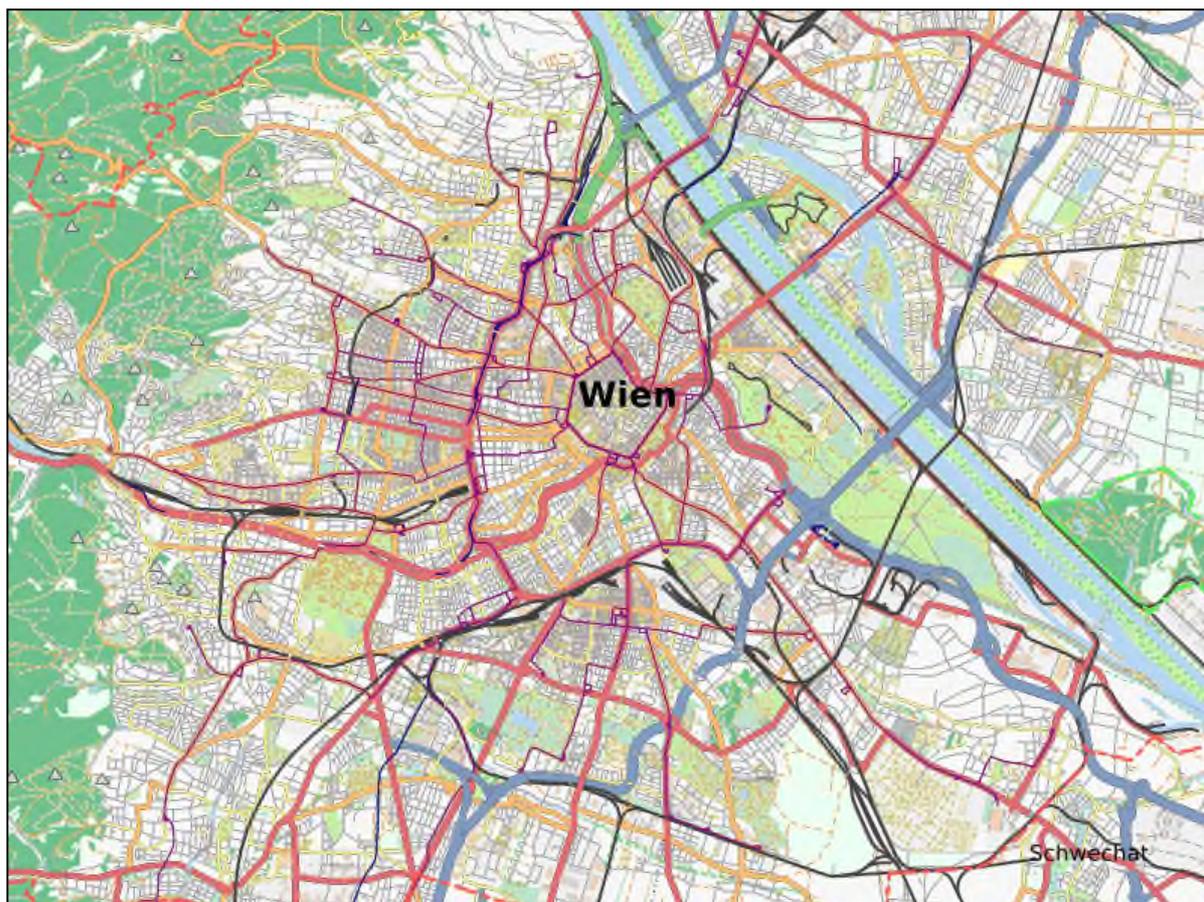


Fig. 5: City of Vienna (OSM)

Vienna is not only often ranked as one of the most liveable cities worldwide but is also a highly proclaimed tourist destination. In order to attract more tourists and make Vienna a more accessible tourist destination, The Tourism Board Vienna is eager to gather information about accessible sites. In cooperation with the information platform for accessible tourism (IBFT, 2014) run by an Austrian member of ENAT/European Network for Accessible Tourism the Tourism Board Vienna offers an online search engine for accessible hotels, restaurants, museums etc.¹²

Moreover a 'Wien – barrierefrei entdecken' guide ('Discover accessible Vienna') offers lists of accessible cafés, museums and restaurants. However feedback from wheelchair users in

¹² <http://www.wien.info/en/travel-info/accessible-vienna>

Vienna regarding this and other guides (for instance an online list of accessible doctors' offices) raised the following concerns:

- Not all places (restaurants, museums) in the guide are fully accessible.
- It would be great to also include other sites (to make it attractive to a broader population) – specifically leisure activities like accessible pools, or public and educational buildings.

Therefore, although there are officially gathered data available, a lack of information about accessible places in Vienna. and the spectrum of covered places (from schools to parks and sport facilities), restricts their accuracy.

Given the city's fast growth and subsequent need for more housing and transportation infrastructure, current urban regeneration and urban renewal projects ('Seestadt Aspern', 'Hauptbahnhof' or shared space at 'Mariahilferstrasse') bear the potential to contribute to a more accessible city.

Despite the above mentioned urban renewal projects and efforts by the local government (see 'Etappenplan' to make stores accessible by 2015 – WKO.at, 2014) many stores in Vienna are not wheelchair accessible.

For example: despite the current renovation and adaptation of the pedestrian walkways on one of the biggest shopping streets in Vienna – Mariahilferstrasse - shops have not been made wheelchair accessible in the process. Next to the engagement of end users in Vienna, including people with mobility impairments, shop owners are also an important target group of the pilot site Vienna. Shop owners can be engaged through dissemination of information about mobile ramps (as provided by 'Wheelramp' project by Sozialhelden/Berlin – see Sozialhelden, 2014) and awareness raising about the importance and need for more accessible shops through local actions.

2.1.4 Elche

Elche is a Spanish municipality located in the province of Alicante in the Autonomous Community of Valencia.

Elche covers 32,607 km² and is located on a plain crossed by the three mountain chains (Molar, Tabaiá and Castellar) creating the unique landscape of the municipality where the palm is a constant and characteristic feature. The Vinalopó River creates a north – south division within the city. The most characteristic feature within the Elche landscape is the set of vegetable gardens called Palm that cover a large part of the city and its countryside. The coast has an area of 12km, from which 9km are beaches formed by dunes and pine groves.

Elche and has a population of 228,647 habitants. While no figures on the number of citizens with physical disabilities are available from the municipal statistical office, applying the percentage of people with "severe to extreme difficulties in moving around" for the whole of Spain (5.7%)¹³ to the population of Elche results in an estimate of at least **13,000 inhabitants with severely limited mobility**.

¹³ See CAP4Access Deliverable 5.1 "Deployment environment analysis and exploitation planning preparation", chapter 3.

The CAP4Access project will be implemented in two neighbourhoods that cover an area of 1.6 km² and have a total a population of around 20,000 inhabitants. The areas comprise the historic centre of Elche and the El Raval. The historic downtown area is populated by large numbers residents, commuters and tourists, resulting in large volumes of traffic, though some of its streets are pedestrianised. The area of El Raval, which is connected to the historic centre, is defined by its medieval past, with narrow streets and sidewalks, many small shops and cafés, and little motor traffic.

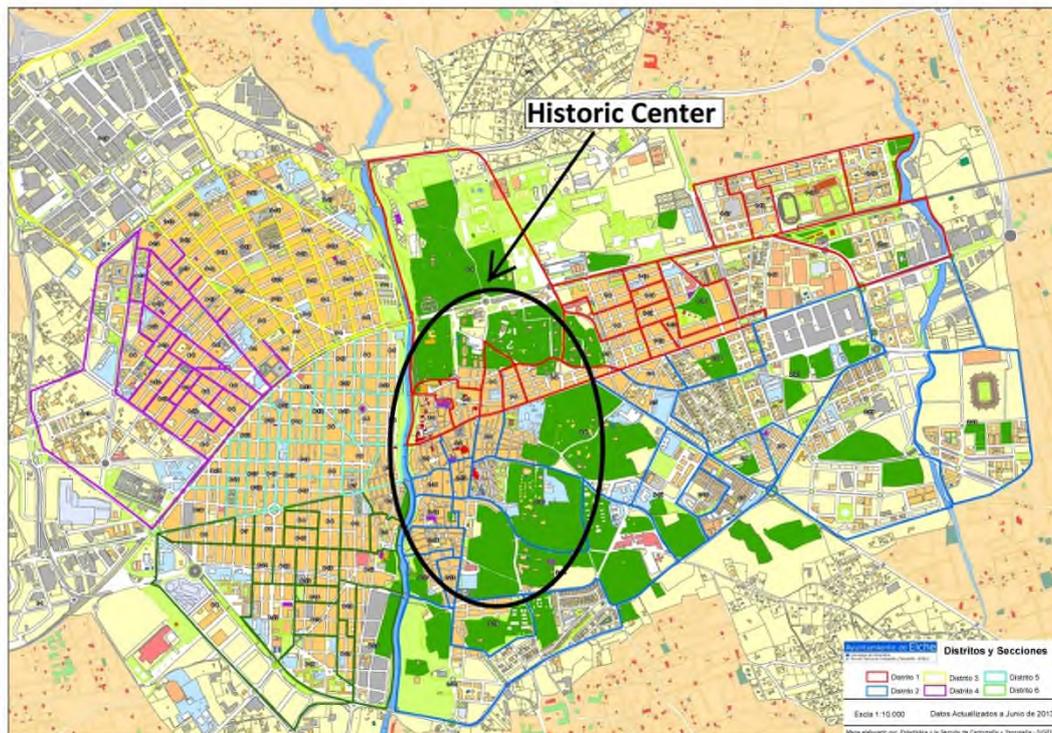


Fig. 6: Elche's case study areas

Elche's main landmarks are concentrated in these two areas. These include sites of historical interest, such as the Basilica of Santa Maria, the Museums of Archaeology and History of Elche, the Calahorra, the Arab baths and Glorieta square. However, there are also major parks such as the Huerto del Cura and the Municipal Park that are located outside these areas. Tourist that visit Elche are generally concentrated around these two neighbourhoods and, given the areas are small, the majority of journeys are made on foot.

Apart from its traditional function as home to many retail outlets, the historic centre also contains many public services. These include the main citizens' services (municipal offices for the region, public organisations related to finance or social security) and large number of bank offices, which experience a constant influx of visitors during weekday mornings. The presence of Elche's most important commercial organisations also affect visitor numbers in this area, as many receive a steady stream of trade during opening hours.

It is for these reasons that the accessibility of the built environment in the two selected neighbourhoods is of major importance for determining the degree to which people with mobility impairments are fully included in social and economic life in the Elche region.

2.2 Local Context of Communities and Themes for Exploration

2.2.1 London Pilot

London-wide

As explored in Deliverable 1.2's *Plan for Engagement*, each pilot city is *unique* in terms of its communities' needs and priorities. Some of the points identified will focus on delineated geographical areas; some will be more expansive and city-wide. To acquire a holistic picture of end-users' needs, preliminary engagement activities in London were not restricted to a particular geographic area. Between January and September, initial online and direct communication began with multiple community, third-sector, and relevant secondary stakeholder groups across London, to derive an understanding of these groups' needs from, expectations of, and interests in CAP4Access.

Although year one prioritised end-users' perspectives, it was also a period for acquiring an understanding of the relationship between community, third sector and secondary stakeholder groups, and the ways that 'accessibility' is framed in policy by the state and service providers.

This occurred through

- **Workshops** with user groups;
- **Informal and guided interviews** with users;
- **Meetings** with key actors from third sector organisations, local authorities and service providers.

Peer Exchange



Fig. 7: Members of Peer Exchange discuss accessibility at a workshop in early 2014

The primary group engaged with at this stage was *Peer Exchange*, a social enterprise which aims to support professionals working in the education sector. Part of the groups' work focuses on the empowerment of disabled people, and a high percentage of the group are wheelchair users themselves. 9 workshops were held between December 2013 and April 2014 in locations across London, with between 6-10 participants at each; all of whom were wheelchair users.

These workshops provided an insightful overview of the major accessibility issues for those with limited mobility in and around London, as well as the groups' perspectives on the scope of technological solutions. As a workshop, the meetings were designed to be an open space of dialogue, encouraging participants to feel

comfortable expressing any issues they had identified. This reflected the particular engagement technique discussed in the *Plan for Engagement*, when working with individuals

who have historically run the risk of social exclusion, or whose voices have been marginalized in the design and implementation of services in the built environment

Two central issues emerged throughout these workshops:

Existing Informational services

One recurrent point raised by participants was the already extensive array of accessibility information available; indeed, in quantities many described as ‘a deluge’. However, the issue for many participants was that this information is segregated across a huge variety of sources; meaning it can be difficult to locate what is required to assist with specific accessibility needs.

Therefore, where participants *were* aware of existing materials, concerns arose from the segregated nature of such tools. A central point raised was the need to *integrate* tools and materials into more popular services. Relatedly, the information available was not, in participants’ view, aggregated in a particularly helpful or intuitive manner.

On the other hand, participants were unaware of many existing sources of information. Many felt that not enough was done to promote the resources already available, and that, in part, CAP4Access should help to communicate existing solutions.

Transport

Issues with transport were raised consecutively by participants in all workshops. Specifically, these problems could be divided into physical problems with vehicles and the built environment, inadequacies and failures of transport policy, and attitudinal problems of front-line transport staff.

Buses

Buses arose from these consultations as a particularly problematic form of transport for those with limited mobility. In theory, TfL’s bus fleet is universally accessible: all vehicles are fitted with an access ramp, and have low floors suitable for wheelchairs or pushchairs. However, external conditions of the bus stop can restrict accessibility.

In October 2014, a revised version of the 2006 Accessible Bus Stop Design Guidance was published for consultation. The document made alterations to previous versions, including the addition of specific criteria for what constitutes an accessible bus stop. For a bus to safely operate its ramp, the curb height must be between 100-140 millimetres (TfL ‘Accessible bus stop’, 2014). Currently, 70% of bus stops are thought to meet this criteria (GLA ‘Equal’, 2014). TfL state that this figure will increase to 95% by December 2016 (TfL ‘Accessible bus stop’, 2014: 3). Many participants explained that getting on and off the bus independently is often very difficult.

Aside from physical conditions, many service users reported that one of their biggest problems with bus travel was the uncertainty as to whether there would be space to board the bus, should a ramp be successfully deployed. Many wheelchair users reported waiting anxiously for multiple buses to pass, before finally being able to board one. A sensor which communicates the availability of wheelchair space on board to individuals waiting at a stop would be, for many, invaluable.

Case Study: Traveller's and Angels at Mozilla HackDay



Fig. 8: Participants working on Hack Day applications

In response to the issues identified by Peer Exchange, *Traveller's and Angels*, a proposed travel app, was developed during Mozilla's Hack Day. The Hack Day, organised by the Nominet Trust and Swarm, brought together a diverse collection of around forty social researchers, academics, social innovators, designers, developers and citizen science practitioners, to develop potential solutions to real social challenges.

In response to problems raised by *Peer Exchange* workshop participants; MfC put forward the following challenge:

"How can we provide ways for wheelchair users and others to gather real-time citizen-generated data that aids their decision making on modes of transport, for example via real-time deployment of bus ramps?"

Together with volunteers from the pool of problem solvers we explored a range of solutions to tackle the issue ranging from docking stations, QR codes, NFC technology and more creative solutions involving crowd-sourcing and Guerilla Sensing. The design solution was to link up volunteer helpers (angels), typically people who travel regularly on a specific route say to work, with people looking for assistance (travellers) via the Travellers and Angels phone App.

Travellers and Angels connects travellers in need with 'angels', self-volunteered individuals who can offer assistance to wheelchair users on their regular journeys.

The app is based around a notification system: travellers send out a request for assistance which appears as a notification for nearby registered angels. The angels can then either accept or reject this request and, if accepting, a response is sent to the traveller in question. The traveller can then select their preferred angel, based on angels' ratings and reviews.



Fig. 9: Mock-up of interface

When the angel has been selected, a contract page appears for both traveller and angel, which contains all the details of their interaction. After the angel has provided assistance, the traveller can leave feedback, which will be linked to the angel's profile.

A range of additional functionality could be added to expand the potential of this app. To bridge the technical divide and reach those without smartphones, an SMS-based version could be implemented. *Travellers and Angels* could also be extended across other transport networks.

Blue Badge Parking

Blue Badge parking legislation is currently uneven in London. Although the majority of London's boroughs comply with generic EU policy (which permits Blue Badge holders to occupy designated parking bays), the three central boroughs are exempt from this. Kensington and Chelsea, the City, Westminster, and a small section of Camden all possess specific parking legislation which restricts Blue Badge holders' rights to occupy spaces. Supposedly, this ordinance exists to tackle problems of congestion (Blue Badge London, 2007). Many participants reported incidents where penalty fines were received as a result of unknowingly flouting this anomalous legislation.

Attitudinal

Attitudinal issues from transport service providers were consistently raised as a major barrier to access. Problems were largely related to front-line public transport workers, but also stemmed from private taxi-cab drivers. The most frequently identified issue was these individuals' failure to stop for or accommodate wheelchair users. However, many participants also highlighted staff members' failure or refusal to recognise designated disability passes.

Summary

Therefore, certain issues raised by Peer Exchange fall beyond the technological and financial scope of CAP4Access. However, in certain circumstances, it is important to pursue other points raised, because awareness of other topics can help to inspire action beyond the remit of CAP4Access. One such example of this was the *Travellers and Angels* app (see Figure 8); an idea born from issues raised during engagement events and introduced by Mapping for Change at *Mozilla HackDay* in early 2014. MfC were successful in having their challenge chosen for a "swarm" event around the theme of Citizen Social Science at the Mozilla hackspace in London on 28th March. Ours was one of four challenges that were selected that had the potential to meet the aims of the event:

"To explore the potential of applying citizen science approaches to solving persistent social problems through rapid prototyping"

Other Third Sector Organisations

The concerns raised by Peer Exchange were echoed by other third sector and community organisations, such as the Society of London Theatres, Age UK, Aspire and Royal National Institute of Blind People (RNIB) – all of whom were contacted through a mixture of online and direct engagement during 2014. With many, face-to-face meetings offered the opportunity to discuss users' needs, current issues with accessibility, and their expectations in a project such as CAP4Access.

Third sector organisations which promote sports participation, such as the accessible cycling charity *Wheels for Wellbeing*, highlighted users' issues with transportation networks as a key barrier to their participation. As with Peer Exchange, this was often expressed in relation to physical aspects of the buses, such as inaccessible ramps and the availability of space on board. People's previous negative experiences with bus travel caused anxiety and impacted their likelihood to attempt future journeys. Where transport services *could* connect users with sessions, adverse perceptions of these often meant people's participation was reliant on the availability of costly private transport services: for many, an option beyond their financial means.

However, given the emphasis given to widening participation in sport in light of the Paralympic 2012 games, numerous measures *have* been taken to facilitate disabled access to sporting activities across London. Tottenham Hotspur, a premier league football club based in the North East London borough of Haringey have worked closely with the access organisation, *Enabled City*, to provide an access tool for disabled and older fans: *Photoroute* (<http://maps.photoroute.com>). As developed on the Southbank to encourage step-free journeys from Waterloo, this tool uses “virtual images to provide a step-free route to supporters from public and private transport locations to their desired stadium entrance” (Tottenham Hotspur, 2014). *Photoroute* can also direct fans to accessible seating once inside the grounds.

As well as those who produce assistive tools, a range of third sector organisations have been formed to empower disabled and older people, in response to the various discriminatory and physical barriers those with limited mobility experience in relation to transport. Transport for All, a disabled and older people’s organisation which fights for access to transport as a basic civil right, operates on a national scale through events, seminars and campaigns. After online and direct engagement with this group, familiar problems to those identified by *Peer Exchange* and other third sector organisations emerged. These reinforced the issues previously identified in relation to buses, existing information and attitudinal shortcomings.

Key Secondary Stakeholder Groups

Transport for London

After acquiring a thorough grasp of transport-related accessibility issues from the perspective of third sector and community groups, it was important to engage with Transport for London, the chief transport service providers for the capital. This was essential to understand their awareness of and perspective on current issues, and assess what measures were already being taken to alleviate problems in order to see how CAP4Access might intervene.

Foremost, this involved an extensive literature review of existing policy documents. Transport for London is evidently conscious of accessibility-related concerns across their network. As discussed in Chapter 1, the 2012 Games functioned as a catalyst for accessibility implementation – raising awareness of what needed to be done, and generating the financial means to do it. The run up to, implementation of and legacy from London 2012 is evident in TfL’s proposals and policies: it is clear that accessibility has become an increasingly prominent topic.

In 2010, the Mayor of London presented a revised Transport Strategy. This document was prepared in tandem with the 2011 London Plan. Together, they make adjustments to the existing transport policy landscape, and aim to cater for foreseeable environmental, social and economic challenges up to 2031; predominantly, an anticipated expansion of 1.25 million people, and 0.75 million more jobs (Mayor of London, 2010: 7). Improvements to public transport accessibility are highlighted throughout both documents (GLA, 2011). TfL later produced their interpretation of this; *Taking forward the Mayor’s Transport Strategy Accessibility Implementation Plan*, which was published in March 2012 (TfL, 2012). This report outlined when, where and how these recommendations would be borne out.

TfL Consultation with service users

Consultation with multiple stakeholder and disabled user groups was central to this report's formation. TfL's subsequent *Accessible Travel Information Report* (2011) provides a detailed description of the concerns that arose from their consultation. The report was structured around three central objectives: understanding *what* disabled customers would like to know when using services, *how* they would like the information presented, and *where* they would like to find such information.

TfL also facilitates consultation with user groups through designated accessibility events. In October 2014, TfL hosted *Access for All* (see Fig. 10). This event provided an ideal environment for TfL to demonstrate their commitment to “the legacy of accessible travel promised by the 2012 Games” (TfL, 2014) and raise awareness about accessibility measures already in existence. *Access All Areas* aimed to allow disabled and older people the opportunity to familiarise themselves with transport services in a safe, simulated environment (TfL, 2014). The event was also used as a springboard to announce forthcoming accessibility measures; TfL's London underground contingent announced a £75 million fund had been allocated to improving step-free access across the network (TfL 'Innovative', 2014). A consultative element was included through a series of question and answer sessions between members of the public and senior TfL representatives.



Fig. 10: TfL Access All Areas event, October 2014 (TfL 'Access', 2014)

Key Issues: The findings of these consultation exercises echoed our preliminary engagement with users:

Access to/presentation of existing information

As with our preliminary engagement, the abundance of accessibility information available, but service users' lack of awareness of its existence, was repeatedly borne out in TfL's

consultations with service users. Clearer sign-posting to existing services emerged as a key recommendation of the 2012 report (TfL 'Accessible Travel', 2012).

These points were emphasised in forum discussions throughout *Access for All*. Many groups present were astonished by the tools and materials to boost accessibility that were already on offer. However, the need for increased personalisation of such apparatus was raised. This chimed with a finding of the 2012 report, which recognised that a variety of materials were required to cater to individuals' preferences: technical solutions were deemed insufficient on their own (TfL 'Implementation Plan', 2012: 18).

Staff attitudinal problems

Throughout question and answer sessions in *Access for All*, participants raised the issue of attitudinal issues from front-line workers. This included bus drivers' failures to stop, and a lack of awareness of designated fare-exemptions passes. Many blamed this on inadequate staff training, and suggested that more thorough equalities and disability-specific training should be incorporated into TfL procedures.

Further activities

A specific Accessibility department sits within TfL customer services. As described in their *Accessible Travel Information Report (2012)*, this department is keen to collaborate with third sector and community organisations to enrich their understanding of the landscape from the perspective of service users (12). To discuss TfL's potential collaboration in the project, a preliminary meeting with Senior Communications personnel occurred in late November. Two main points were raised:

- TfL's interest to incorporate feedback from a range of user groups into their service delivery was highlighted. Given the continual expansion of interested stakeholders and user groups in CAP4Access, TfL are keen to make use of the expertise and wide-ranging engagement that will be levied by the project. In particular, senior personnel suggested how CAP4Access community engagement could usefully identify particular routes and vehicles where problems occurred.
- Senior personnel also identified a problem with visualising available data. Where relevant datasets were available, the complexity of visualising detailed accessibility information was restricting their capacity to make such data public.

There is scope for these issues to be negotiated in the development of London Case Studies, whilst serving the needs and priorities of service users. This will be explored in the following section, *Issues for Exploration*.

South Bank

After establishing a grasp of the London-wide landscape of actors and issues, Mapping for Change began to focus on engaging stakeholders in particular geographical locations; firstly, the South Bank.

Informal Interviews

As discussed in the previous section, substantial accessibility works had already been implemented to prepare this area for the 2012 Olympic Games. Much of our initial engagement in this area reflected these changes. Direct engagement with visitors to the

South Bank largely encountered positive perceptions of the area. In informal interviews, many visitors commented on and praised works that had been carried out to prepare the area's built environment for 2012.

Despite measures to improve public realm accessibility around the South Bank, many individuals highlighted nearby transport hubs as hugely problematic; zones which compromised nearby accessibility improvements. Waterloo station frequently emerged as a difficult and unintuitive landscape for those with limited mobility. Further to the problem of step free access, many informal interviews raised issues with poor signage to the limited accessible entrances available.

Waterloo Station

A face-to-face meeting with the Waterloo Station Management team in September revealed they were unaware of passengers' difficulties with the layout and signage. Station personnel were keen to understand how these issues were experienced by passengers, and invited Mapping for Change to document a series of user journeys to and from the station. It was envisaged that these would serve to highlight any particular barriers experienced, and encourage specific actions to take place.

South Bank Employers' Group

Similarly, *The South Bank Employers' Group*, a local network of businesses who aim to maximise the area's collective best interests through marketing, public realm improvements and employment, were unaware of any specific accessibility issues, but were keen to observe documented experiences of accessibility orchestrated by CAP4Access. These views were reflected by individuals with access and equalities expertise within Southwark local authority.

These perspectives were incorporated into our planning and execution of events between September – December 2014. These will be discussed further in *2.3 Engagement Tools and Inclusive Strategies*.

Other case study areas

As discussed in section 2.1, engagement throughout year one indicated that, in order to maximise the potential scope of CAP4Access, opening up further pilot study areas across London would be beneficial to users. Our user-driven methodology has meant such expansion has been directed towards the registered interest of stakeholders, and will continue to be shaped by bottom-up community demand throughout the project's duration.

So far, this has led to small-scale activities in areas such as Croydon and Islington: these will be explored further in Section 2.4.

Issues for exploration

As described above, a range of issues both within and outside the scope of CAP4Access has been identified by stakeholder groups throughout the course of year one. In London, the issues selected for further exploration correspond to both the needs and priorities of community groups engaged with, *and* the issues identified by secondary stakeholder groups relevant to these.

Further exploration of the two issues selected will, it is hoped, both meet the needs of community groups *and* mediate the problems identified by service providers, local authorities and other relevant actors in relation to accessibility. By selecting issues which incorporate these dual perspectives, it is hoped that the project will pave the way for the latter to act beyond the scope of CAP4Access; both within the duration of CAP4Access, and going forward into the future.

Transport

Throughout this initial engagement phase, issues with transport services were consistently highlighted by multiple third sector and community groups. However, it was unclear how, at a project level, CAP4Access might be able to respond and provide solutions. Although multiple specific issues related to transport emerged through discussions with user groups, the majority of these were related to entrenched design features of vehicles that could only be addressed through costly technological solutions - such as sensory technology. Predominantly, the issues raised during this stage of engagement went beyond the scope of CAP4Access' technological capabilities.

However, given the frequent recurrence of transport in discussions with community groups, particularly attitudinal problems of transport staff, another research strand of the project, 'raising awareness', seemed one method of highlighting and tackling the issues raised. Transport for London's readiness to accept and learn from the results of engagement activities leveraged by CAP4Access warrants the use of a dedicated platform to facilitate this interaction.



Fig. 11: Community Maps administration interface¹⁴

Mapping for Change's *Community Maps* (Figure 11) utilizes GeoKey, an open source platform for participatory mapping that can enable different stakeholder groups to collect data and document local aspects of interest. The concept behind community mapping is to move away from "top-down" mapping that often fails to reflect the needs of people; maps are

¹⁴ <http://new.communitymaps.org.uk:8000/admin/>

created by members of a community or group and built from local knowledge. The maps highlight aspects of a location that people are interested in or concerned about.

Given the frequent recurrence of buses as an area of concern; both in terms of attitudinal issues experienced, and users' anxiety about journeys, *Community Maps* would empower users to build an evidence-base that could be fed back to TfL. The platform would enable users to report incidents, and identify recurrent problem areas: this could then be addressed by TfL, meeting their expressed concern to acquire and learn from feedback gained through CAP4Access community engagement. Conversely, the platform can be used to highlight examples of best practice and general positive experiences.

Community Maps has the potential to be integrated with other CAP4Access tools and empower users throughout different aspects of their journey. Further, use of the platform will permit Mapping for Change to monitor transport accessibility on a pan-London level, as well as in specific geographic destinations. In addition, the platform has the scope to facilitate wider discussion and descriptions on modes of transports and routes within the built environment more freely and openly. *Community Maps* will be used as the hub to link to other CAP4Access tools, partly already existing, partly being developed or improved during the project (Wheelmap, a navigation and routing tool, a tool for mapping barriers, and a tool for suggesting routes).

Trust and volunteered geographic information

The importance of information which encourages 'accessible cities' and enables people with limited mobility to live independently and well is a significant research theme, and one we will seek to explore by considering the following scenario:

- *“Sophia, an accessibility campaigner and blogger, has multiple sclerosis and she has been in a wheelchair almost half of her life. Using online maps (e.g. Google Maps) to plan a journey is not as simple as it is for the rest of the population; it involves significant trust issues and planning in advance. Sophia is invited to participate with several other people from her local accessibility centre, in the ‘Maps for All: Accessibility’ workshop. Sophia explains that she needs information about ramp gradient, step and obstacle free access routes, narrow doors, cracked sidewalks and other physical barriers. Even if clear maps and legends are provided, Sophia says that she needs to know that the information is up-to-date (preferably real-time) and evidence to ensure that there are not any ‘hidden’ obstacles, before she undertakes the risk to act based on the information provided. Based on Sophia’s input an online mapping application is developed and she is very excited because she can use it to navigate independently and to contribute accessibility data to help others. She writes a Blog to raise awareness, so that other people with limited mobility, worldwide, can benefit from it”.*

The collection of crowdsourced data through methods such as collective tagging and participatory sensing offer unparalleled opportunities to enhance accessibility for individuals across Europe. Development and delivery of new channels for crowdsourced accessibility information is therefore a powerful and significant objective of CAP4Access. Yet, of arguably equal importance is investigating *how* such volunteered geographic information should be communicated, in order to ensure it remains most appropriate and trustworthy for those who will be consuming it, as emphasised in the scenario above.

Early engagement activities have made clear that people with limited physical mobility have specialised information needs from online maps when planning routes or navigating in unfamiliar or familiar areas. Further, research and our prior experience in working with wheelchair users has demonstrated that they have significant trust concerns and needs for specialised information when they interact with online maps in various contexts. However, there is little evidence to indicate the extent those with limited mobility find volunteered geographic information regarding accessibility useful or trustworthy in practice.

Recent research has indicated that individuals' trust levels are shaped more by the *presentation* of crowdsourced geographic information, rather than knowledge of the expertise or authority of the individual who contributed the data (Parker, May and Mitchell, 2014). Presentation is clearly important regardless of the data's origin, whether it be crowd- or commercially-sourced. When asked about existent technological tools and online materials, such as TfL's *Step-Free tube Guide* (TfL 'Step-free', 2014) many workshop participants were critical of what they deemed to be unintuitive or over-complex presentation. Indeed, TfL themselves identified this as an issue preventing the publication of accessibility data. This supports the need for further research to identify *in what ways* crowdsourced accessibility information can be most intuitively and helpfully displayed. Such research is fundamental, as it will maximise the relevance and potential scope of tools developed by CAP4Access.

Aside from presentation, trust in crowdsourced information is influenced by a range of factors. These include conditions of the map, such as the types of data included, the geographical area covered, and crowdsourced data's combination with other supposedly more authoritative data sources. However, these are also likely to be influenced by individuals' needs, priorities and preferences. In the domain of accessibility, the presence and influence of such factors have received little attention from past research.

Quarterly planning

Table 1: London Quarterly Planning for year 2

<p>General</p> <ul style="list-style-type: none"> • Continue to establish links with groups in South Bank • Attend disability committee meeting in Southwark to discuss mapping activities • Build upon initial engagement with groups in other case study areas (Camden, Croydon & Islington) • Co-develop and participate in 'Try It' campaign with UCL Disabled Students • Engage UCL Estates • Pursue feedback from ongoing engagement in sites across London, with both communities and secondary stakeholder groups 	<p>Starting January</p> <p>January</p> <p>Starting January</p> <p>Until February</p> <p>Starting January</p> <p>January-May</p>
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<ul style="list-style-type: none"> • User trials 	Starting May
<p>Transport</p> <ul style="list-style-type: none"> • Identify areas most appropriate for piloting Community Maps to track transport accessibility issues • Develop/design community maps with transport/access focus • Launch map • Feedback to TfL and other relevant secondary stakeholder groups 	<p>Starting February</p> <p>March-April</p> <p>May</p> <p>September - December</p>
<p>Trust</p> <ul style="list-style-type: none"> • Design methodology to evaluate participants' trust of crowdsourced online maps • Workshop 1: focus on understanding information needs and expectations and visualisation requirements for improving usefulness and trust. To gather empirical evidence we will train participants to use CAP4Access tools for gathering data, where available and relevant, which participants think should be integral to online accessibility maps). • Collected data will be analysed and maps will be developed using different visualisations of key indicators to meet the needs identified in 'Workshop 1 • The visualisations will be evaluated with participants in 'Workshop 2' to explore additional needs – that will form the basis of trust experiment. • Produce research paper to evaluate findings 	<p>January – February</p> <p>May</p> <p>Starting July</p> <p>June-August</p> <p>October - December</p>

2.2.2 Heidelberg Pilot

In Heidelberg, a mixture of direct and online engagement has been levied to involve user and stakeholder groups in CAP4Access, and distinguish further issues for exploration. This has involved **meetings** with local stakeholders, **semi-guided interviews** with relevant service providers and **workshops** with end-users.

Workshop with end users

In 2014 a workshop was hosted engaging the CAP4Access project partners with Wheelchair users (GIS Science, 2014). The aim of this workshop was to present and discuss the activities, sharing of tasks, ongoing progress and issues with the various partners. Among other things, talks were given about the development of the collaborative tagging and recommendation system, the routing and navigation services and the geo-data quality evaluation service. In addition, other representatives presented their ideas and initial sketches about different user stories developed for their pilot test. Furthermore, three Wheelchair users participated in the workshop and we had the benefit of listening to their experiences and needs regarding routing and navigation. This helped us a lot with having a deeper understanding of user requirements. The talks led to fruitful comments that will be considered to ensure the quality and relevance of the services being developed, as well as outcomes that provide a direction for the next steps. Similar to the feedback received in London, workshop participants identified access to transportation services as a key issue in Heidelberg.

Key Secondary Stakeholders

Heidelberg's pilot site activities have also been shaped by the interest of key secondary stakeholder groups in the domain of tourism, specifically from Heidelberg's key historic destination: the castle.

Representatives of the Heidelberg Castle contacted the leader of the working group at Heidelberg University to express their interest in participating in the project, indicating that accessibility remains an issue for them. More specifically, visitors of the Heidelberg Castle with limited mobility could benefit from detailed information so they can plan their visit better. Concerning the outdoor space, a map with accessibility information could assist in planning a tour of the Castle's garden and surrounding buildings. With respect to indoor space, location of toilets, as well as temporal information on ramps (which are not installed permanently, but only on an as-needed basis) would help to improve accessibility and planning. In addition, as of today, visitors with limited mobility need to plan their visit much in advance, because access to the toilets of the castle site is not ensured on a permanent basis, but only on-demand. Publishing information on accessibility issues regarding the castle, though the CAP4Access platforms, would help to raise awareness among local authorities and help to obtain their support for installing permanent accessibility measures. Tourists with limited mobility would then not have to request assistance several days in advance in order to be able to visit the castle.

Issues for exploration

Tourism - Heidelberg Castle

Heidelberg Castle was selected to be part of the pilot experiments because with over 1 million visitors a year, it is one of the main touristic attractions of the region. The ruins of the once grand Heidelberg Castle rise up on a rocky hilltop over the university town of [Heidelberg](#). Once a Gothic masterpiece, the Castle of Heidelberg has encountered turbulent times: It was plundered and burned by the French army in 1689, then struck by lightning 100 years later, and its red stones were even used to build new houses. While the Castle of Heidelberg never regained its original glory, the ruins have a ragged charm of their own. They are considered the symbol of German Romanticism. In addition, the Castle of Heidelberg is a highlight of the [German Castle Road](#).

We have contacted representatives of the Heidelberg Castle, who are willing to collaborate towards a project of improving its accessibility for tourists with disabilities, as well as to share spatial data that we could use to support navigation within the premises of the castle. The tagging system being developed within CAP4Access could also be used to collect detailed information about the castle and its surroundings.

An experiment will also be conducted as part of the piloting to have participants use the navigation system for outdoor navigation within and around the castle. This will be likely to promote the visibility of the project, and would be a motivation for other potential historical places to participate in a similar manner in the project.

Transport – RNV

Rhein-Neckar-Verkehr GmbH (RNV) is the largest transportation alliance in Germany, with several cities as members. RNV operates the suburban railway, tram and bus routes in Mannheim, Heidelberg and Ludwigshafen. Furthermore, it is also operates in the southern Hessen Land, with its subsidiary V-Bus GmbH. The approximately 200-km-long railway network is the longest single meter-gauge network in Germany. It includes not only bus, tram and suburban rail routes, but also two railway routes.

In Heidelberg, RNV provides services to more than 750,000 passengers a year; it is therefore a major transportation service provider. Any lack of information on accessibility of its services is therefore likely to impact thousands of citizens.

Of major concern is the lack of information on the accessibility of new bus stations being built as the city is expanding (RNV, 2013). RNV representatives contacted by UHEI said that they lack the capacity to update their information about the accessibility of new bus stations in a timely manner. Citizens with limited mobility would therefore benefit from such information that could be collected and disseminated in a timely manner through the CAP4Access platforms, including the tagging service. This would also enable the extension of the routing and navigation services to the regions where new bus stations were added.

We have contacted a representative of the bus transportation provider in Heidelberg, with whom a collaboration that will benefit both parties was negotiated. On the one hand, the collaboration will improve accessibility for people with disabilities who will obtain better access to bus-related areas that are not yet accessible. On the other hand, the data that will be collected by CAP4Access will be shared with RNV to update their system.

Quarterly planning

Table 2: Heidelberg Quarterly Planning for Year 2

<p>Communities</p> <ul style="list-style-type: none"> • Pedagogische Hochschule. Already contacted us to give presentation about our project to geography teachers and students in order to familiarize them with the concepts of barriers and navigation of people with limited mobility and perhaps to do mapping party activities with them. These students will later become teachers of geography and thus may be multipliers of the ideas of the project • Beirat für Behinderte der Stadt Heidelberg (BMB) institution contacted us to participate to have a stand for workshop with limited mobility • Participating in Wheelchair Marathon event • Participating in Open day at Heidelberg Castle 	<p>Starting February</p> <p>Starting May</p> <p>Starting June</p> <p>Starting July</p>
<p>Application Areas</p> <ul style="list-style-type: none"> • Testing the navigation tool • Developing mapping guidelines for Routing, Navigation and Collective tagging system • Optimization of Tools 	<p>until May</p> <p>until June</p> <p>Starting June</p>
<p>Platform</p> <ul style="list-style-type: none"> • Final design (Version 2) • Prototype (Version 2) • Report (Version 2) 	<p>until August</p> <p>until August</p> <p>until September</p>

2.2.3 Vienna Pilot

In Vienna a three-folded approach has been followed in order to engage local communities, explore the current situation regarding accessibility and contextualize different needs and themes for further exploration.

Over the course of the past 12 months the following methods have been applied:

- **Individual meetings and networking** with local stakeholders (see list identified in *Deliverable 1.2*, pp. 27-34)
- **Workshop** with end-users
- **Semi-Guided Interviews** with various actors active in the field of accessibility including:
 - a representative of BIZEPS¹⁵ (an information centre for people with disabilities and their relatives);
 - a physiotherapist of a rehabilitation centre in Vienna;
 - a member of Freak Radio¹⁶ (an Austrian radio project run by people with and without disabilities);
 - Doris Uhlich, a dancer and performer¹⁷.

The main ideas were to collect information about existing local initiatives (organizations for people with disabilities, mobility agency Vienna, leisure assistance association) as well as good, problematic or missing examples regarding accessibility in Vienna. Additional aims were to find collaboration partners (e.g. Technical University of Vienna) as well as detect specific local needs of different end-user groups as well as common grounds (e.g. public transport – low-level subways).

Individual Meetings with local stakeholders (March – November 2014)

Individual meetings and networking with stakeholders active in various fields in the city directly or indirectly addressed issues of accessibility. The overview below (Figure 14) shows a categorization of some of the stakeholders into four main categories. Different groups of stakeholders bring different objectives and interests regarding ‘CAP4Access’ to the table. These interests and needs result in manifold engagement potential that have and will be followed upon in the course of the project.

Main objectives of the face-to-face meetings were to find out about:

- specific needs and issues regarding accessibility in Vienna
- interests and engagement potential in the ‘CAP4Access’ project
- collaboration partners

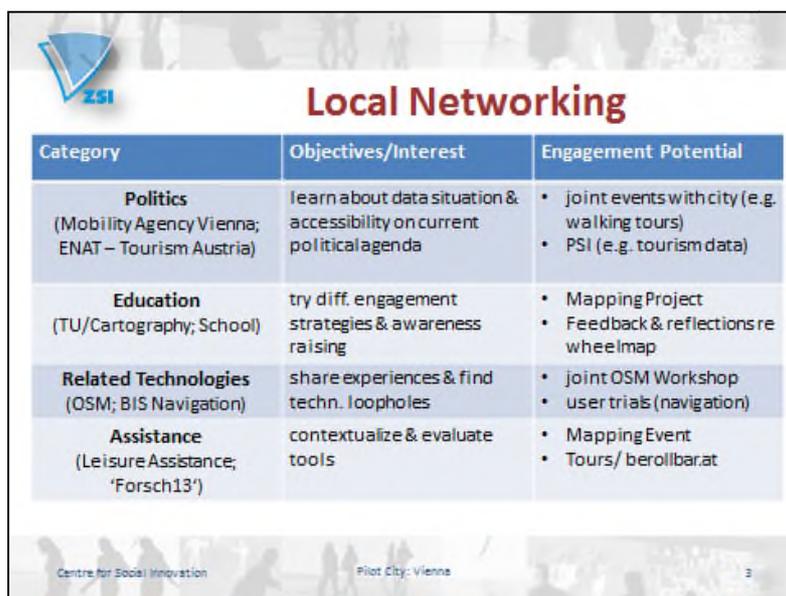
The Figure shows the local networking efforts in Vienna differentiated based on four different stakeholder categories (*Politics; Education; Related Technologies; Assistance*). For each stakeholder category different objectives and interests to take part in the project have been formulated. Consequentially the engagement potential and possible activities with these

¹⁵ <http://www.bizeps.or.at/>

¹⁶ <http://www.freak-online.at/freak-online/english/>

¹⁷ <http://dorisuhlich.at/en>

actors or groups are varying (e.g. from acquiring data to organising local mapping parties). An example for each stakeholder category is provided below.



The image shows a slide titled "Local Networking" with a ZSI logo. It contains a table with three columns: Category, Objectives/Interest, and Engagement Potential. The table lists four categories: Politics, Education, Related Technologies, and Assistance, each with specific objectives and engagement activities.

Category	Objectives/Interest	Engagement Potential
Politics (Mobility Agency Vienna; ENAT – Tourism Austria)	learn about data situation & accessibility on current political agenda	<ul style="list-style-type: none"> joint events with city (e.g. walking tours) PSI (e.g. tourism data)
Education (TU/Cartography; School)	try diff. engagement strategies & awareness raising	<ul style="list-style-type: none"> Mapping Project Feedback & reflections re wheelmap
Related Technologies (OSM; BIS Navigation)	share experiences & find techn. loopholes	<ul style="list-style-type: none"> joint OSM Workshop user trials (navigation)
Assistance (Leisure Assistance; 'Forsch13')	contextualize & evaluate tools	<ul style="list-style-type: none"> Mapping Event Tours/berollbar.at

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Fig. 14: Overview of local networking efforts in Vienna

Politics

The mobility agency in Vienna¹⁸ regularly organises walks through different city quarters in Vienna to encourage walking and exploration of new places. In order to raise awareness and push accessibility issues on the political agenda, joint walks with local politicians as well as people with and without physical disabilities through the city are being discussed. Additionally these walks can be organised with people responsible for Open Data in order to test and showcase the current situation regarding Navigation and Open Data in Vienna.

Education

A secondary school in Vienna (HTL/HAK Ungargasse¹⁹) who specialise in technology and economics offers integrative education for students with and without disabilities. Currently we are planning a mapping project with (disabled and non-disabled) students of this school. Within the project, student groups are invited to map places according to their interests (for instance: gyms or shops in Vienna) and document their mapping project in a creative way (for instance through photos, videos and blog entries. Interest and support by the headmaster and teachers mainly concerns the integrative elements of the joint project, and the experiences of using technological tools (e.g. Wheelmap) for students.

Related Technologies

Connecting with the project team of 'Wege finden'²⁰ - similar to CAP4Access in regards to creating a navigation app for wheelchair users in Vienna (project ended 2014) has proved interesting for several reasons: learning about the current data situation in Vienna, the

¹⁸ <https://www.wien.gv.at/verkehr-stadtentwicklung/mobilitaetsagentur.html> or <http://www.wienzufuss.at/>

¹⁹ <http://www.szu.at/English/131>

²⁰ <http://wege-finden.at/>

project's methodological approach, and the feedback from end-users about the current application.

Assistance

Forsch13 is a small research group led by people with disabilities (facilitated by a day care centre run by the organisation 'Balance') which undertakes local projects. In order for their group to go out and about in the city, certain information about accessibility of places and bus stops is often required, yet not available. Hence within CAP4Access, Forsch13 is interested to organise mapping projects (to improve data availability) and possibly to test tools.

Workshop with end-users (July, 2014)

One afternoon a group of 15 participants joined a workshop to discuss current issues concerning accessibility and mobility in Vienna. Altogether the participants covered a wide age span (17 years – 75 years old) as well as use of different mobility aids, electric as well as manual wheelchairs, one participant either uses a walking frame or a mobility scooter to get around the city.

A short introduction to the CAP4Access project was followed by group discussions leading to the identification of important topics regarding accessibility in the Vienna.

Some of the topics discussed concerned the use of and information about accessible public transportation, accessibility of public parks, cinemas and doctors' offices.

Accessible cinemas and the importance of detailed information

Many cinemas in Vienna have only one designated wheelchair space or have some more (one cinema 'Gartenbaukino' provides six spaces for wheelchairs) which are often located in the first row(s) which is, commonly, not the most convenient place to watch a movie for most people. In addition information about the exact position of wheelchair spaces is mostly lacking, which leaves participants to have to always "*call and inquire about the situation before going to a cinema.*"

Lack of information regarding accessible public parks, especially playgrounds

In official map of the city parks can be marked as accessible but there are "*three steps to get to the playground*" example from participant).

Public Transportation

Given all metro stations in Vienna are accessible via elevators or ramps as well as most trams have many low-level trams operating on all routes Vienna ranks relatively high when accessibility and public transportation is concerned. However crucial issues have been raised by end-users; some of these concern:

- Information about low-level metro on digital announcement (the newer metros have an entry with small ramp situated at the front and back end of the train)
- An App (qando.at) run by 'Wiener Linien' (Public Transport Providers in Vienna) with information about broken lifts which is not always timely: a real time paper printout pinned to the stations with real time information about which lifts are currently under construction could add to a smooth journey.

Social and Communicative Barriers when navigating through the city

Despite physical barriers, *social and communicative barriers* have also been discussed as crucial when navigating through the city. These for instance become apparent when waiting to get in an elevator at a subway station with a large crowd of other people in front and participants tried to make the way through – though not always feeling like raising their voice to call attention.

Similar issues concerned the getting on and off public buses as the driver has to pull out a ramp. Often it is not possible for two wheelchair users to go onto the same bus as officially there is only one destined wheelchair space. Participants reasoned that unfriendly and unaware behaviour of some bus drivers stemmed from a lack of information and sensitization regarding wheelchair users during their training.

Questions regarding hierarchies and precedence ('Who takes priority to take the elevator?') have been raised. A participant showcased a positive example (see Figure 15 below) from Strasbourg that eliminates communicative barriers regarding the getting on and off trams with heightened platforms easing the entry.



Fig. 15: Heightened Platforms at Tram Stop in Strasbourg

Current Use of Technological Tools (e.g. Navigation Apps, Wheelmap) and Feedback regarding Wheelmap

Most participants had smartphones and many used mobile applications, especially in order to retrieve information about public transportation (quando.at) or for way finding the city map of Vienna or Google Services.

Wheelmap.org was generally known by most participants, though sometimes used with caution, especially after experiences with inaccurate information about the accessibility of a place. Questions in regards to officially gathered (and measured) data and open data gathered by citizens emerged.

A suggestion by some end-users concerned the present lack of information about accessible toilets in the Wheelmap App. Participants mentioned that accessible toilets may not only be found within public toilets across the city but also in some hotels, shopping centres, restaurants or day care centres for older adults. Thus knowledge about the availability of accessible toilets can contribute to an increase of information.

Semi-Guided Interviews

In order to add to the information collected throughout individual stakeholders meetings and the workshops with end-users we set up interviews with various actors (e.g. Milli Bitterli working with disability organisation to performer and dancer - see <http://www.ichbinok.at/>). Another important basis for this undertaking concerns the reappearance of questions in relation to not only engaging end-users, but also mobilising a broader public by raising awareness about accessibility issues in their immediate environment.

How does group identity and CAP4Access relate to each other?

There is a persistent need to revisit our conceptualization of our target groups, particularly as these conceptualisations form the foundations of CAP4Access tools which should be used as widely as possible. Further the existing lack of a widely accepted unifying image of people with mobility impairments and the fragmentation of interests limits possibilities to mobilize sufficient people.

Why is that a problem?

The lack of an efficient representative organisation prevents:

- the implementation of much needed improvements (e.g. availability of ad hoc taxis for people with disabilities, accessible public buildings);
- learning and awareness raising at a societal level that goes beyond compassion or patronising.

There is a danger that ‘group identity’ discussions slip into ideology battles or belief wars, both are often characterised by inflexibility and exclusion. Common needs, however, can be strong providers of ‘group identities’.

We started with the question of ‘How do people with disabilities see themselves and do they feel they form a group?’ Our first impression was that people with disabilities see foremost their differences and only a small portion is represented within existing organizations / institutions. Hence we turned to protagonists and activist, whose campaigns contribute to different dimensions of self-actualisation, and asked them the following questions:

- Who is your target audience?
- Where do you see barriers?
- What unconventional formats do you see in order to address barriers?

Five semi-guided interviews with various actor offered different (and often unconventional) perspectives on accessibility. Some interesting points mentioned by interviewees are summarised below:

- A physiotherapist of a rehabilitation centre in Vienna discussed the difficulties with capturing the target audience(s) of *people with mobility impairments*. Wheelchairs as mobility aids can hardly be a common denominator given the different (medical) histories and often multiple disabilities (through other medical conditions or ageing processes). Moreover some diseases (e.g. Parkinson, Stroke) that cause mobility impairments don't always translate into using a wheelchair.
- A representative of BIZEPZS (BIZEPZS, 2014) an information centre for people with disabilities and their relatives in Vienna pointed out that available statistics about people with disabilities is often misused when discussing needed accessibility measures. For instance, arguments based on numbers are not necessarily relevant when it comes to ensuring independent and accessible travel. However, accessible train stations (and platforms) have to be in place **only** if more than 2000 (disabled and non-disabled) passengers use the station.
- A member of Freak Radio (2014) pointed towards the visibility and often misleading perception of people with wheelchairs as being one group with common needs resulting from external perspectives as a wheelchair as the main denominator- a "**Make-believe Homogeneity**" as he called it. Freak Radio is a local online radio station run by people with and without disabilities broadcasted twice a week, which discusses various topics in relation to the inclusion of people with disabilities (e.g. a broadcast about mobbing towards people with disabilities).
- Doris Uhlich (see Uhlich, 2014) an Austrian performer and dancer emphasized the role of theatre and performing arts in raising awareness and sensitizing visitors towards other realities often neglected or unperceived before. She pointed to the potentials of raising awareness for people with mobility impairments through theatre – either through inclusive dance performances (people with and without mobility impairments on the stage – similar to 'Danceability' movement – see Danceability, 2014) or self-performing. As people step out of their (often hasty) daily routine and have time to absorb and reflect upon the performances. Theatre performances bear potential to offer "*new perspectives on daily-life*" as she called it.

Issues for exploration

In Vienna, a number of different issues have been identified by community groups. In order to address the various problems identified, the platform "berollbar.at" will provide a central portal to the local participants engaging in CAP4Access. Primarily the portal is deemed to:

- offer a local web presence in the national language (in this case German) and an easy to access format;
- be a very flexible outlet, fast responding and taking up local issues which in some cases are not strictly related to the project's work focus, but may nonetheless represent an important part of the community's concerns, which can be helped through networking.
- be a strong connection to CAP4Access tools, which can be promoted and discussed in a contextualised way - linking to local events and/or guidelines in German.

Eventually the portal shall become a service point for five leisure activities, and their accessibility²¹.

- shopping,
- hiking,
- arts and culture,
- restaurants and bars, and
- sports.

Based on the platform berollbar.at Viennese hiking tours, shopping places, museum tours, etc. will be gathered on one platform. The target group gets the possibility to contribute and enlarge the content of the platform with the help of four different tools - partly already existing, partly being developed or improved during the project (Wheelmap, a navigation routing tool, a tool for mapping barriers, and a tool for suggesting routes). Users will be invited to map the accessibility of the routes they hiked or the shops, bars, restaurants or museums they visited via GPS-devices. Berollbar.at provides a guideline for the mapping process and a detailed defined scale from 1 to 5 to assess the accessibility or difficulty of hiking and walking routes. Single places, such as restaurants, shops or barbershops will be assessed through a traffic light system of the Wheelmap app. Additionally users are welcome to take photos along the way and make the gathered information available for other people. Mapped routes can be gathered thematically and recommended by other users. Due to the blogging system of berollbar.at users can share their opinion about already mapped places, hiking routes or tourist tours, via comments.

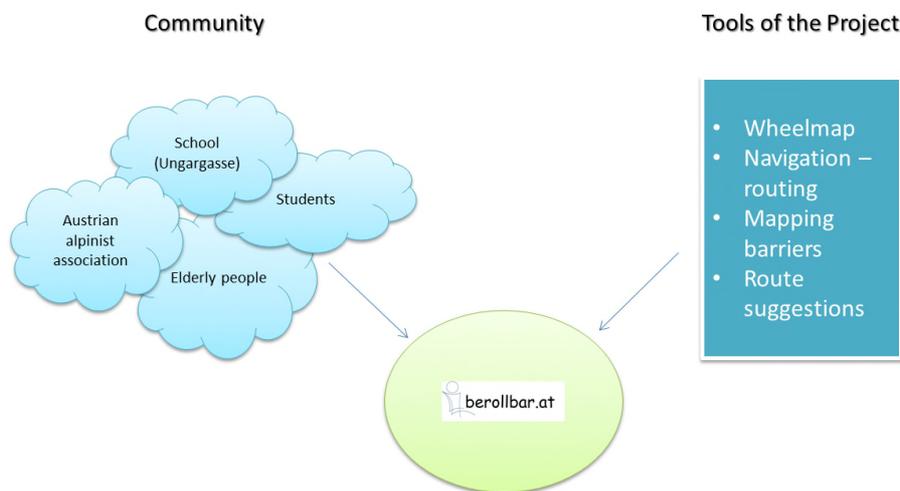


Fig. 16: Overall Structure

Through starting mapping activities and involving representative stakeholders/communities, such as the Austrian Alpine Association, schools, students, elderly people and wheelchair users the platform content will grow and be best adjusted to the needs of the target groups.

²¹ Detailed information in 3.3.3.

General approach

Austria representative key players, such as the Austrian alpinist association, shop owners, tourist associations as well as wheelchair users or elderly people will be contacted and involved in the development of local activities promoted and reported on berollbar.at. With their help and involvement, scenario specific information needs will be identified to provide best possible route and place mapping. For the next step tools will be suggested and the prototyping and piloting can start. The results will be reported and contribute to improving the identification of scenario-specific needs.

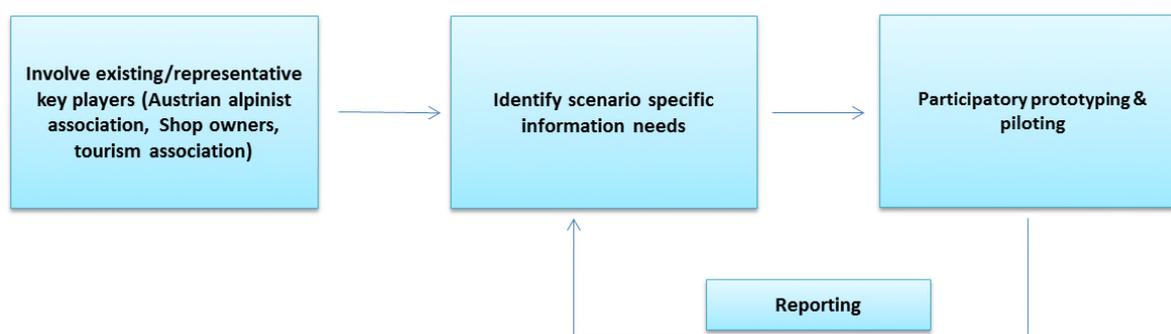


Fig. 17: General approach

Short description of application area

Shopping

The application area “shopping” provides different topics, such as food, clothes, traditional markets, etc. The shops based on the topics will be listed with the signs about their accessibility. After clicking on the item, detailed information will be opened with a possibility to recommend a shop and to comment on the descriptions.

The suggested tool for this application area will be Wheelmap. Already mapped places will be listed and can be recommended by the users. People are invited to open Wheelmap for their shopping tour and to map further places and add them on berollbar.at. Additional to the traffic light assessment system of the places pictures and detailed descriptions will be provided on the platform.

Restaurants and bars

The application area “restaurants and bars” is set up as the above indicated area “shopping”. In this section users can look for restaurants and bars in all districts of Vienna. As in the area above, they are provided with signs about their accessibility. The suggested tool will be Wheelmap.

Hiking

This application area will provide Viennese hiking tours. The list of the tours will be provided with a sign for the “most difficult” part of the tour, the duration of the tour and the attractiveness. After clicking on a tour, a detailed map will open up which shows each section of a tour and rated based on a scale of difficulty. Further, details as condition of the ground, steepness of hills, etc. will be provided. To map routes people are linked to a tool based on GPS. Moreover pictures can and shall be published through the blog.

Sight Seeing

This application area will include tours, mapped as the hiking tours, and single places mapped as shops or restaurants/bars. The tours will be divided based on topics and themes. For example, tours named “welcome to Vienna” will be suggested, which includes the most important sights in the City and provides detailed information about their accessibility. Additionally, contacts with tourist guides offering accessible sightseeing tours will be offered. Users can improve and enlarge tours based on GPS route mapping and Wheelmap. The tours and single sights will be accentuated with pictures and recommendations about their attractiveness.

Sports

In this application area sport activity possibilities in Vienna will be listed and the accessibility of sport events will be assessed. The different offers will provide contacts, prices of activities and target groups.

Quarterly planning

Table 3: Vienna Quarterly Planning for Year 2

<p>Communities</p> <ul style="list-style-type: none"> • School – Ungargasse (already contacted. First meeting with teachers and detailed discussion about the mapping activities with the students will take place) • Austrian Alpinist Association (already contacted. Further cooperation is planned in April) • Geography Students (not contacted yet) • Elderly People (not contacted yet) 	<p>Starting January</p> <p>Starting April</p> <p>Starting April</p> <p>Starting July</p>
<p>Application Areas</p> <ul style="list-style-type: none"> • Collecting platform examples • Developing mapping guidelines for all tools • Tool suggestions (depending on the activity and goal tools will be suggested) • User trials 	<p>until March</p> <p>until April</p> <p>until April</p> <p>Starting May</p>
<p>Platform</p> <ul style="list-style-type: none"> • Design (Version 1) • Prototype (Version 1) • Report (Version 1) 	<p>until February</p> <p>until March</p> <p>until July</p>

2.2.4 Elche Pilot

As with the other pilot cities, a mixture of engagement techniques have been undertaken in Elche to involve various community and stakeholder groups in CAP4Access. These have involved:

- A **press conference** to introduce interested parties to the project;
- **Forums** with user groups and relevant third sector organisations;
- **Workshops** with users, and policy makers in the field of accessibility.

Press conference

A press conference was organised for the 28th of October with all the CAP4Access consortium partners present. The event was held in the plenary session's room of Elche council, and many different media personnel were invited. As a result, press releases were published at a local and regional level, which contributed to the dissemination of the project.

Meeting with stakeholders through forums and workshops

To make use of and learn from the engagement expertise of Mapping for Change and Sozialhelden, a meeting with relevant local community and stakeholder groups was organised as part of the third CAP4Access project meeting in Elche. A press conference was held to attract interest from appropriate groups, and advertise the meeting.

Representatives from the Board of Disability, including individuals with disabilities, and companies who provide accessibility services for those with limited mobility (such as Disabled Park and Integra Espacios, the latter of which focus on accessibility management engineering), participated in the meeting.

The meeting also offered an opportunity to advertise future engagement possibilities, such as a Mapping Party, and allowed wheelchair users to describe the mobility issues they experience in Elche. In the meeting, all participants showed interest in all details of the CAP4ACCESS project, and expressed their interest to collaborate in the CAP4ACCESS mapping party.

However, it should be stressed that as most of the members of associations representing disabled people are elderly, and they are not familiar with the use of new technologies. To ensure they did not become alienated from the project, it was important to emphasise that CAP4ACCESS has two main features: the testing of new tools for elderly and disabled people, and to raise awareness amongst the public and businesses people about the difficulties experienced by individuals with limited mobility.

One issue detected in the meeting with stakeholders was that, although participants thought Elche's built environment had improved, the needs of persons with reduced mobility are still not taken into account adequately when new developments in the city or new public buildings are designed. Further, participants felt that the business, restaurants and entertainment companies do not offer an appropriate response to their needs (for example, with limited provision of accessible WCs).

Problems experienced by those with visual impairments were also highlighted, however these unfortunately fall beyond the remit of CAP4Access.

Third Sector Organisations

In terms of direct engagement, a designated Department for Disability and board composed of local organisations and individuals with reduced mobility were approached. This board for Disabled People was extensively engaged, in order to co-design specific local goals for CAP4Access, and to help raise awareness about the importance of individuals' participation in the project. The board was identified as key actor to help in mobilizing relevant groups and individuals in testing applications and tools developed by the project, and in the dissemination of results.

Together with the Department for Disability, different community and stakeholder groups believed to be of potential benefit from CAP4Access were identified. This included community groups, third sector organisations working with groups of physically disabled individuals, and commercial companies developing tools to combat accessibility issues.. These groups were identified both for the benefits they could experience, but also for their potential to offer relevant and constructive feedback to the project - in line with the intrinsic elements of participant co-design laid out in *D1.2 Plan for Engagement*.

Policy-makers/Secondary Stakeholder groups

To ensure that the objectives of CAP4Access were incorporated, where possible, into the design of new policies and approaches, the councillor responsible for implementing disability policies was also approached directly.

End-users

People with disabilities and reduced mobility were engaged via local organisations which represent their interests. The following associations have been contacted and are being encouraged to participate in the activities that are planned along the project.

- ASPAYIM, Asociación de paraplégicos y minusválidos (Association of Paraplegic and Disabled People);
- Minusválidos en acción(Disabled in Action);
- ADELA Asociación de Esclerosis Lateral Amiotrófica de Elche(Amyotrophic Lateral Sclerosis Society of Elche);
- AEBHA Asociación de Espina Bífida (Spina Bífida Association);
- FRATER, Fraternidadcristiana de personas con discapacidad (Christian association of people with disabilities);
- Asociación de Esclerosis múltiple (Multiple Sclerosis Association);
- Fundación ONCE, Organización Nacional de Ciegos Españoles (National Organization for blind people);
- TAMARIT, Asociación de discapacitados límite y ligeros de Elche y Comarca (Association of Disabilities of Elche) ;
- INTEGRA-T, Discapacitadoslímitepsíquicos (Association of Physically Disabled);
- ASPANIAS, Asociación pro-minusválidospsíquicos de Elche (Pro-mentally handicapped Association of Elche);
- ANOA-ELX, Asociación de familias con personas discapacitadaspsíquicas de Elche (Association of families with mentally handicapped people of Elche);

- ADIPSI, Asociación de discapacitados límite y ligeros (Mentally handicapped Association of Elche);
- ADR, Associació per al desenvolupament rural del camp d'Elx (Association for development of the countryside of Elche);
- Asociación de empresarios turísticos de Elche (Tourism Entrepreneurs Association).

Year one has also offered the opportunity to evaluate accessibility questionnaires and technologies in Elche, developed by organisations such as the Association of Fibromyalgia and Disabled Park company; the latter have developed an app to find parking for disabled people.

In order to engage further stakeholders previously identified in *Deliverable 1.2 Plan for Engagement*, an invitation to the mapping party will be sent, and the relevant groups will be asked to fill in the CAP4ACCESS questionnaire. Finally, all appropriate community and stakeholder groups will continue to be informed about news, results and project process.

Issues for exploration

In Elche, three main issues have been highlighted by the community groups engaged with to date.

Transport

Elche is situated in the middle of a local rail line which links the nearby cities of Alicante and Murcia. The service provided is frequent, and can facilitate good rail connections to any point on the Spanish mainland. The railway, which traverses the city by an underground route, has two passenger stations in the city centre and a stopping point in the town of Torrellano. Accessibility of the rail transport system, including popular routes for reaching the stations, is of prime importance for full social inclusion of citizens with mobility impairments.

The same applies to Elche's modern bus station located adjacent to the railway station, with services to nearby towns as well as major national and international destinations plus intra-city routes connecting all the city's neighbourhoods (see Figure 18). While all vehicles are fitted with an accessibility ramp, remaining barriers in the city's built environment still make it challenging for people in wheelchairs and other individuals with mobility restrictions to make full use of bus connections.

Tourism

As described previously, CAP4Access will have two case study areas in Elche: both are neighbourhoods close to the city centre. Tourism is a key theme in both areas, with many sites and attractions located in each. Accessible tourism in these areas is affected by the historic urban environment in which they are situated, so this will also be taken into consideration. The tourist points in question are the following:

- Town hall
- Plaça de Baix
- La Glorieta
- Plaza del Congreso Eucarístico
- Calendura and Calendureta Tower

- Gran Teatro
- Calahorra tower
- Santa María Basílica
- Bell Tower
- Central park
- MAHE
- Patio de Armas
- Arab Baths
- Huerto del Cura



Fig. 18: Map of Elche's bus routes

Shops, cafés, restaurants and private service providers

While the city's public sector buildings tend to be very well equipped in terms of accessibility for people with mobility restrictions, this does not apply to the same extent to the numerous retail outlets, cafés and restaurants, and private service providers to be found in the centre of the city. Addressing this challenge would mark a major step towards further improvement of the city's already impressive standing in terms of accessibility of the built environment.

We plan to start tackling the issue by creating a greater awareness of remaining barriers in Elche's inner city, mainly using Wheelmap (including its toilet accessibility feature which is developed within the context of CAP4Access). For this purpose, the mapping party scheduled for February 2015 is likely to also cover retail outlets, cafés and restaurants, and private service providers.

Preparatory work

Mapping accessibility of the built environment in the historic centre of Elche, including public transport infrastructure, tourist sites, shops, cafés and restaurants, requires some preparatory work, as very few of these have already been mapped on the OpenStreetMap. This is demonstrated by the excerpt from the OSM (using the Wheelmap editor) in the Figure below. Out of many hundreds of buildings intended for public access, only two dozen or so have already been mapped on OSM. This means that usability of the Wheelmap application for use at the mapping event would be compromised, as buildings would need to be mapped onto OSM first before they can be tagged according to their accessibility. Prior experience by Sozialhelden suggests that such an extra burden would endanger the success of the mapping party, as it would distract participants from the core issue of the exercise.

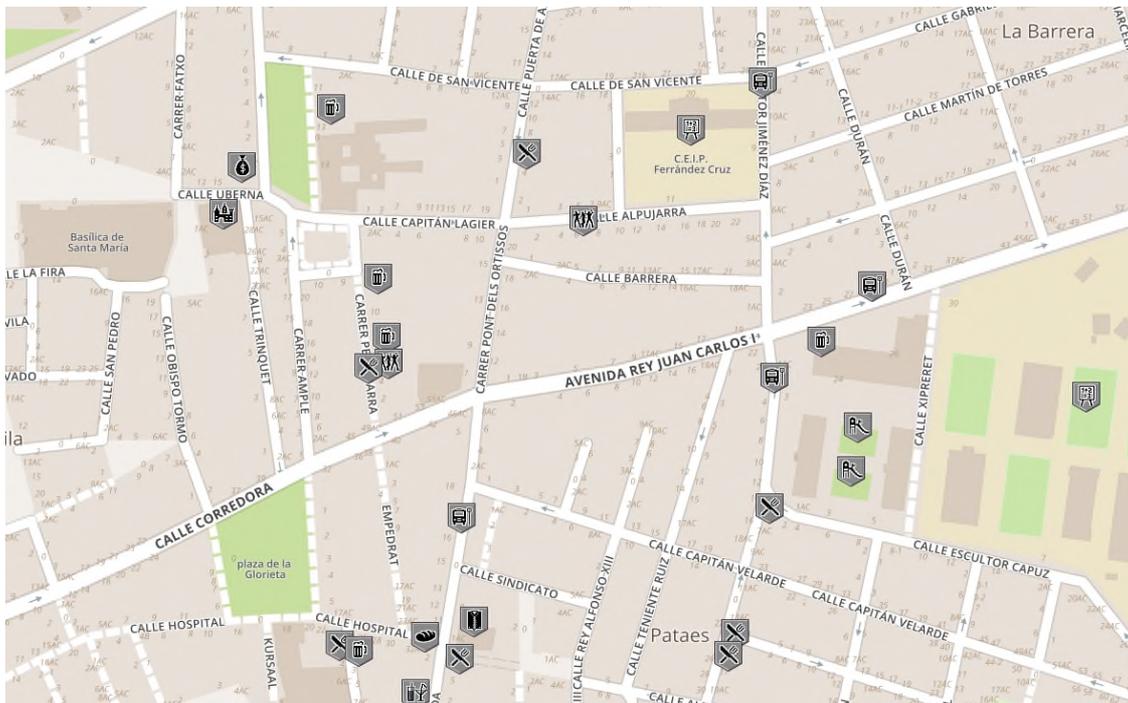


Fig. 19: Elche's historic centre as covered on the OSM

For this reason, the mapping party will be prepared by an internal mapping exercise which will consist of OSM-mapping all buildings intended for public access in the historical centre of Elche. Work on this task is scheduled for the first week of February, 2015.

Quarterly planning

Table 4: Elche Quarterly Planning for Year 2

<p>Communities</p> <ul style="list-style-type: none"> • Meetings with policy makers • Meeting with Transport Department of Elche Council. • Meeting with Tourism Department of Elche Council. Send CAP4ACCESS questionnaire among stakeholders. • Engage schools (send information about the Project, meetings) • Workshop/conference showing project results to general public, and disabled associations. • Contact with elderly associations • Contact with sport disabled associations • Contact with the associations of tourism companies 	<p>March, June, October 2015</p> <p>May 2015</p> <p>June 2015</p> <p>January – February 2015</p> <p>February 2015</p> <p>November2015</p> <p>March 2015</p> <p>April 2015</p>
<p>Application Areas</p> <ul style="list-style-type: none"> • Testing Wheelmap • Developing mapping guidelines for use of the collective tagging system for the mapping party • Mapping accessibility of transport related places and sites of tourist interest 	<p>The mapping party is planned to be held in February 2015. Guidelines for users will be developed in January/February 2015.</p>

2.3 Engagement Tools and Inclusive Methods

The fundamental principles of community based participatory research (CBPR) state that knowledge is embedded in the lived experiences of the people who form the focus of the research. CAP4Access has set out to pursue a participatory research methodology that goes beyond collecting data from or about end-users and instead includes end-users in all phases of the research process. This begins with defining the research challenges, and culminates with the exploitation of research outcomes. With this at the heart of our approach, preliminary activity in the pilot cities was geared towards understanding and assessing the end user and stakeholder needs in relation to accessibility, through a series of workshops, focus groups and face-to-face meetings. The individuals who largely comprise these groups, older and disabled people, tend to have a shared history of marginalisation; their voices and needs are seldom acknowledged in the design of urban spaces and services. The immediate challenge for such engagement was, therefore, how best to include such voices.

As the earlier deliverable report explores, direct methods are the most appropriate starting point for this type of community engagement. Direct methods involve face-to-face interviews, workshops and other activities, and can provide an overview of users' needs and priorities. As individuals with limited mobility may often be marginalised or excluded, direct engagement can help to overcome barriers to inclusion, by initially building up trust through certain figures already integrated within the community, such as carers.

Naturally, the selection of an appropriate method or group of methods with which to engage participants will differ over the course of the project, within, and between each case study. For example, taking a highly technical, online, approach may not be appropriate to recruit participants with low levels of computer literacy (i. e. the digital divide is an important consideration). Equally, recruitment of potential participants using flyers may provide a method to target a geographically constrained community (i.e. a small area) but may prove to be expensive for wider distribution. Online methods, including social media, may prove to be more efficient for a younger audience. Following on from this, the impact of individual methods cannot easily be measured, as it is evident that to maximize participant numbers and ensure that a wide range of age groups and interests are represented, these methods are rarely used in isolation of each other.

2.3.1 Best Practice Examples

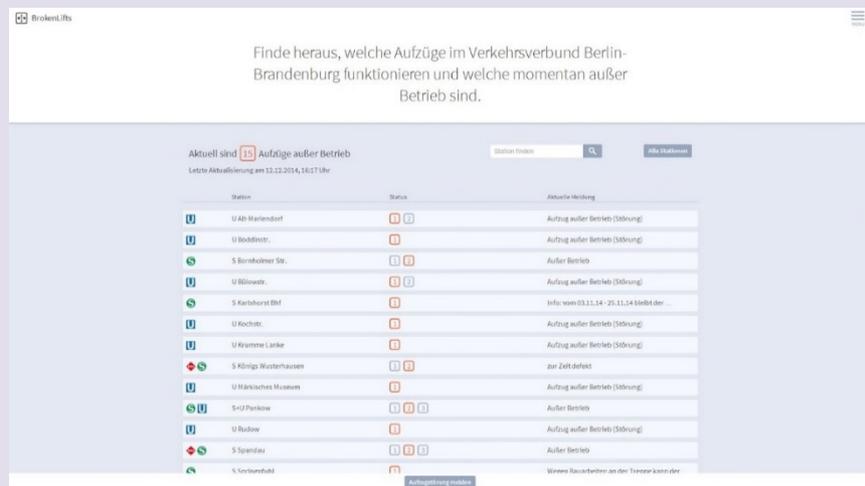
CAP4Access seeks to learn from examples of excellent work conducted to improve accessibility on a European and international scale, both in relation to engagement tools and inclusive methods. Many such examples stem from activities carried out by partner organisations. These activities may be suitable for adaptation and inclusion in forthcoming CAP4Access actions within pilot sites.

BrokenLifts

Elevators at stations are designed for people who rely on wheelchairs and walking aids, but also families with strollers and people with a lot of luggage. If these elevators are out of order, it becomes a big problem. It is quite helpful to know the operating status of lifts before reaching/arriving at the station.

For this reason, projects like BrokenLifts arose. BrokenLifts was the result of cooperation between Sozialhelden and local transport providers (VBB, S-Bahn Berlin, BVG). BrokenLifts.org unites information from any of these providers in order to have a complete database on any single elevator installed in Berlin's stations. The information is updated every 15 minutes, and is based on a single platform, making it easy for users to retrieve. Thanks to this partnership, all of these transport providers are now able to offer wheelchair accessible routing options.

Sozialhelden aims to not just establish the service of BrokenLifts.org in Berlin, but also in other cities, both within Germany and across other European countries.



Find heraus, welche Aufzüge im Verkehrsverbund Berlin-Brandenburg funktionieren und welche momentan außer Betrieb sind.

Aktuell sind **15** Aufzüge außer Betrieb
 Letzte Aktualisierung am 22.12.2014, 14:27 Uhr

Station	Status	Aktuelle Meldung
U Alt-Mariendorf	X	Aufzug außer Betrieb (Störung)
U Boddinstr.	X	Aufzug außer Betrieb (Störung)
S Bornholmer Str.	✓	Außer Betrieb
U Bülowsstr.	X	Aufzug außer Betrieb (Störung)
S Karlsruher Bf	X	Info: vom 03.11.14 - 25.11.14 bleibt der ...
U Kochstr.	X	Aufzug außer Betrieb (Störung)
U Krumme Lanke	X	Aufzug außer Betrieb (Störung)
S Königs Wartenhausen	X	zur Zeit defekt
U Märkisches Museum	X	Aufzug außer Betrieb (Störung)
S+U Parkstr.	X	Außer Betrieb
U Rudow	X	Aufzug außer Betrieb (Störung)
S Spandau	X	Außer Betrieb
S Scharnbeek	X	Wenns Hausarbeiten an der Treppe kann über

Fig. 20: Interface of Broken Lifts

TSI PRM

CAP4Access partner Sozialhelden (social heroes) is known for its practical approaches and hands-on activities. In 2014, Daniela M. reached out to Sozialhelden with a dramatic request for help. A train station which was wheelchair accessible had been renewed by Deutsche Bahn. After completion, the station was not accessible for her as a wheelchair driver anymore. Daniela M. and other people from the community in lower saxony in Germany have had no options such as buses in order to leave the city Schadelah independently.



Fig. 21: Daniela M waiting at Schandelah station, unable to leave independently

As accessibility is normally a standard whenever constructing or renewing a building, Sozialhelden did some research why this station was not accessible anymore (a chamber for lifts has been built, but no lift was installed) and if this procedure was actually conformable to law. In the end, Sozialhelden found out, that TSI PRM (Technical Specifications for Interoperability for Persons of Reduced Mobility), regulated by the European Commission specified the following:

“When renewed or upgraded, existing stations that have a daily passenger flow of 1000 passengers or less, combined embarking and disembarking, averaged over a 12 month period are not required to have lifts or ramps where these would otherwise be necessary to achieve full compliance with this clause if another station within 50km on the same route provides a fully compliant obstacle-free route. In such circumstances, the design of stations shall incorporate provision for the future installation of a lift and/or ramps to make the station accessible to all categories of PRM” (TSI, 2014)

We (Sozialhelden) as member of CAP4Access consulted European Disability Forum and ENAT and agreed that this definition contradicts with UN Convention on the Rights of Persons with Disabilities (UNCRPD). Thanks to the participation on Zero Conference in Vienna (end of February 2014) we knew Inmaculada Placencia, Deputy Head of Unit, for Rights of Persons with Disabilities within the Directorate General for Justice at European Commission.

She and her colleague Nicole from Directorate General for Mobility and Transport informed us that this particular regulation will get amended:

Nicole Magel: “In addition to Ima's comments I can inform you that the TSI PRM has indeed been revised. The adoption process is still ongoing. One important change in the revised TSI is that it provides for the adoption of national implementation plans. In this context Member States will be asked to define a strategy, including a prioritisation rule laying down the criteria for the upgrade and renewal of stations and rolling stock. This rule shall replace the current '1000 passenger rule' that you refer to in your mail and which shall only apply until the adoption of the national implementation plan. In a further step, common priorities and criteria shall be identified at EU level and then be reflected in the national implementation plans. These new provisions are aimed at contributing to the progressive elimination of obstacles and barriers to accessibility as required by the UNCRPD.

In the context of initiatives like 'wheelmap', another provision in the revised TSI might be of interest: Member States shall ensure that inventories of assets are established, i.e. data on accessibility features in stations and rolling stock shall be collected, with a view to identifying barriers to accessibility and to providing information to users.”

This leads us to the point to make sure that Germany sets high standards in terms of accessibility. We made contact to Deutsche Bahn, the ministry of transport and the official federal representative of people with disabilities, Verena Bentele. Sozialhelden wants to make sure that any single station which is being built or renewed will fulfil the high standards of accessibility, no matter how many passengers daily use the station. In 2015 these activities will continue as this might not only result in a policy recommendation but in real change and an example for other countries within the European Union as well.

In the meanwhile Daniela M. has been supported by Sozialhelden to find solutions how to escape the situation being stuck. Due to given pressure by Sozialhelden and the engagement of Daniela M. the city council of Wolfenbüttel will decide in January 2015 on the implementation of a free transport service for people with limited mobility. 70,000,- Euros were being saved for 2015 in terms to execute this measurement. Local press stations will report on this development.

For the city of Wolfenbüttel this will be quite a change. 40 people with reduces mobility will be able to use this new service to get from A to B. This is another development and best case of empowering people and political agenda setting. But this must not result for less engagement by transport providers such as Deutsche Bahn. Sozialhelden will follow-up these developments.

2.3.2 CAP4Access wide

Questionnaire

Although CAP4Access has been keen to pursue pilot site-specific research and action, the project has also sought to develop strategies that are appropriate at a pan-European level. The project has therefore developed a generic questionnaire, informed by all partners, with a view to informing work undertaken across all pilot cities.

The questionnaire has been designed to collect answers to various questions related to accessibility. More specifically, the goal of the questionnaire is to obtain specific information about accessibility and the user needs that can be used to analyse statistical trends and to assist in the first phase of the development of the global conceptual model for the tagging and the navigation system. This work will:

(1) collect appropriate data, notably by:

- Asking concise and insightful questions, and;
- Making questions engaging, varied and adapted to the end user, so that tools such as the tagging and navigation systems can benefit from it.

(2) include a data processing phase so that data is comparable and suitable for analysis.

To ensure that the questions are relevant and intuitive for users across the geographical spread of CAP4Access, the questionnaire has been shaped by several rounds of feedback – both internally, and from a select group of external participants.

In the final quarter of year one, the survey was made public at:

<http://survey20.zsi.at/index.php/survey/index/sid/651547/newtest/Y/lang/en>

Partners from Vienna have made this questionnaire available online in different languages (English, German, Spanish), but as of today, the number of persons surveyed is still low. In the second phase of the project, wider dissemination will occur, and the results will be analysed in detail. The feedback gained will be incorporated into the refinement of the developed platforms and applications (tagging, routing and navigation systems).

The survey is included in the appendix (chapter 6.5) of this document.

Mapping Parties

The implementation of routing and navigation within the CAP4ACCESS project is mainly intended to build upon OpenStreetMap data (cf. section 1.1.2, 1.1.3 in the DoW). However, OpenStreetMap is only as good as the contributions of the people who edit it. So called Mapping Parties can be used as a tool to engage people to contribute information to the map (See Wiki, 2014).

The schedule of a mapping party can take several forms. For example, a simple mapping party can just involve going to a nominated pub after doing some mapping, but typically a larger event will involve meeting beforehand to discuss the plan and to team people up. Afterwards, the event may involve use of laptops/computers with internet, to actually input the data gathered that day. For a simpler mapping party, participants take their data and input it later at their leisure.

Mapping Parties can therefore take many forms, but generally the idea is to get together to do some mapping, socialize, and chat about the mapping process. During the mapping event itself, the participants share food and drinks, and enjoy themselves. It is supposed to be a fun event. Indeed, mapping is not compulsory at a mapping party, and the event can instead be used purely as a means of raising awareness.

Mapping events can also focus on particular features or themes. This flexibility has enabled CAP4Access partners to orient Mapping Parties towards accessibility, largely through gathering data for Wheelmap. However, as well as introducing Open Street Map and Wheelmap, CAP4Access' Mapping Parties provided an enjoyable and convivial method of engaging participants in CAP4Access, and issues of accessibility more broadly – both on a European scale, and in relation to the local areas where parties were held.

Across the pilot cities, parties took the form of both outdoors data collection events, and indoor data assessment activities. A series of Mapping Party events were organised within the pilot cities as a method of engaging communities, raising awareness and introducing CAP4Access. In all cities, the events aimed to be welcoming and inclusive for a diverse range of participants. The following sections will outline each pilot city's mapping parties, focusing particularly on how the activities were tailored towards meeting the needs and priorities of communities engaged.

To encourage attendance from former participants and newcomers, Open Street Map advertise forthcoming mapping parties on their wiki page (See Wiki 'current', 2014). Similarly, CAP4Access partners advertised their Mapping Activities through a range of online channels – the details of which will be provided below.

2.3.3 London

Throughout year one, a range of engagement tools and methodologies have been implemented by Mapping for Change to build a network of relevant community and stakeholder groups London. This was namely a three-fold process: firstly, using direct engagement to assess the needs and priorities of those with limited mobility; secondly, raising awareness amongst the general public through activities and social media engagement; finally, investigating how policy makers and transport providers understand the landscape of accessibility issues, and developing plans for collaborative action. Methods of engagement needed to cater for these distinct dimensions of the project, and reflect the needs, interests or concerns of those involved.

Workshops with End Users

Primary engagement was conducted through a range of focus groups and one-to-one meetings with third sector and community organisations across London; the details of which are described in the earlier sections of this report. These were groups for whom accessibility was already a key concern, and engagement activities were therefore focused on *understanding particular issues and needs* of these groups, and focusing discussions around *how CAP4Access could benefit them*.

To ensure our subsequent engagement addressed these needs and priorities, the themes that emerged from workshop discussions were then used to structure further sessions. This

reflected the process of engagement set out within CAP4Access' *Engagement Plan*; based on the iterative and cyclical engagement methodology developed over time by Mapping for Change. Further, the seven research strands identified by CAP4Access were discussed in relation to these themes, to ensure a participant-driven approach was adopted from the onset. Sessions were therefore structured around discussions of how these research strands could be explored in relation to the needs and priorities of users.

Given the aspects of technological development intrinsic to CAP4Access, many discussions focused on participants' current use of technological tools, and what attributes they would expect or require from technological developments. However, certain participants expressed reluctance and unfamiliarity in relation to technological tools such as mobile applications. In order to overcome this 'digital divide', discussions endeavoured to incorporate equivalent alternatives, such as paper maps.

Events for awareness raising and collective action

In the design of CAP4Access events, it was important to both cater for the expressed priorities of those with limited mobility, and build interest amongst other groups not directly connected to these issues. Recent research by disability empowerment organisation *Disabled Go* has found that many accessibility issues remain under-documented in policy and media; left largely to disabled people themselves, and interested third sector organizations, to advocate (DisabledGO, 2014). This problem was described by many groups and individuals who were engaged throughout year one. Subsequent activities needed to both inform and engage such groups, and spark their interest in CAP4Access as well as accessibility issues more broadly.

Awareness raising through collective action was deemed to be an appropriate strategy; specifically, through accessibility Mapping Parties. As discussed above, these could be tailored to the needs articulated by user groups in workshops, *and* incorporate elements which would attract and engage other individuals, such as students, with no existing stake in these issues. They could also be moulded to specific local issues – such as the problems with Waterloo station's access facilities – that had been identified by user groups.

Case Study: UN Enable International Day of Persons with Disabilities

The UN International Day of Persons with Disabilities is an annually-held day which aims to promote an:

“understanding of disability issues and mobilize support for the dignity, rights and well-being of persons with disabilities. It also seeks to increase awareness of gains to be derived from the integration of persons with disabilities in every aspect of political, social, economic and cultural life. promote disability issues, and celebrate examples of success and inspiration worldwide.” (UN Enable, 2014)

It became evident that this day had the potential to involve multiple stakeholders, both those we had already engaged, but also new ones, through activities which combined awareness raising with collective action.



Fig. 22: Images of different activities carried out on December 3rd by MfC

The day offered an opportunity to meet these objectives whilst incorporating another; the dissemination of and contribution to the online wheelchair mapping tool, Wheelmap. A series of Mapping Parties were arranged in locations across London to mobilise new and existing stakeholder groups, under the theme of this UN International Day. Parties were held in and around:

- Croydon
- Bloomsbury
- South Bank

Groups engaged for the day ranged from community and third sector organisations such as Peer Exchange, educational groups including teachers, secondary school, college and university students, to public sector health workers and disability rights activists. Engagement techniques reflected this diverse range of participants, and sought to motivate groups accordingly through appealing to a wide range of interests.

As the primary tool being used was Wheelmap, a strong technological focus ran through the day. Social media is increasingly viewed as an essential tool for mobilising interest and enthusiasm in a cause (Kietzmann, 2011; Shirky, 2011). Various social media and other online campaigns were initiated to engage and enthuse students, and others with a technological interest. These campaigns ran across Mapping for Change's social media (Facebook and Twitter) (See Mapping for Change, 2014), and were shared across the My Accessible EU pages. A unique Twitter hashtag, #mapforaccess, was generated for the day and enabled participants across London and the other pilot sites to share their activities and thoughts, therefore rallying greater enthusiasm and awareness.

As the events aimed both identify accessibility issues and raise awareness, a range of techniques were developed in order to make activities as enjoyable and memorable as possible for all participants. This included ‘gameifying’ data collection: rewarding participants who made the greatest number of contributions with prizes, and dividing participants into groups to encourage a sense of ‘team spirit’. Similarly, a series of missions and task-specific activities, such as ‘find a wheelchair accessible lift and take a selfie there’, were designed. A site-specific presentation was also developed for all three Mapping Party locations, to ensure the activity was as engaging and relevant for participants as possible.

All participants who did not own a Wheelmap-ready smartphone were provided with one, with Wheelmap pre-loaded and logged in, to borrow. However, conscious that not all participants would be ‘technologically ready’, a range of alternative materials and outlets were offered so as to promote inclusivity. These ranged from the use of paper maps to document points of interest (replacing the use of Wheelmap as a mobile application), to a series of ‘wheelchair walks’ to illustrate user journeys in particular locations.

Where possible, these addressed issues that had formerly been raised by participants in workshops. For example, the South Bank mapping party picked-up on earlier problems identified with Waterloo station’s accessibility facilities, and subsequently included a group ‘wheelchair walk’ to and from the station, to highlight any particular problem areas. Feedback was subsequently related to the Waterloo station staff.

In these ways, the day aimed to both tackle issues previously identified, but also served to raise awareness amongst groups not formerly engaged. The relationship between mapping and awareness raising is a rich and plentiful subject for analysis and evaluation, and is something that will be duly explored through the course of CAP4Access.

December 3rd also presented an opportunity to engage other third sector organisations and community groups active in the field of accessibility. Although, disappointingly, the majority of London’s local authorities *were not* recognising the UN International Day, Mapping for Change managed to engage with some who were.

Islington, an area highlighted in 2.1.1 *Pilot Site Characterisation* has an active Disability Committee, which is facilitated in part by the local authority. The Islington Personal Budget Network (IPBN - see IPBN, 2014) organises a yearly-event to commemorate this day. After initial engagement through email, Mapping for Change were invited to attend their event and present CAP4Access to service users and other third sector organisations.

The day provided an invaluable opportunity to directly engage with over 200 individuals from the local community; a vast majority of those with limited mobility. As well as introducing attendees to CAP4Access, Mapping for Change also presented Wheelmap, and were able to gather individuals’ perspectives about their existing use of technological tools to assist with accessibility.

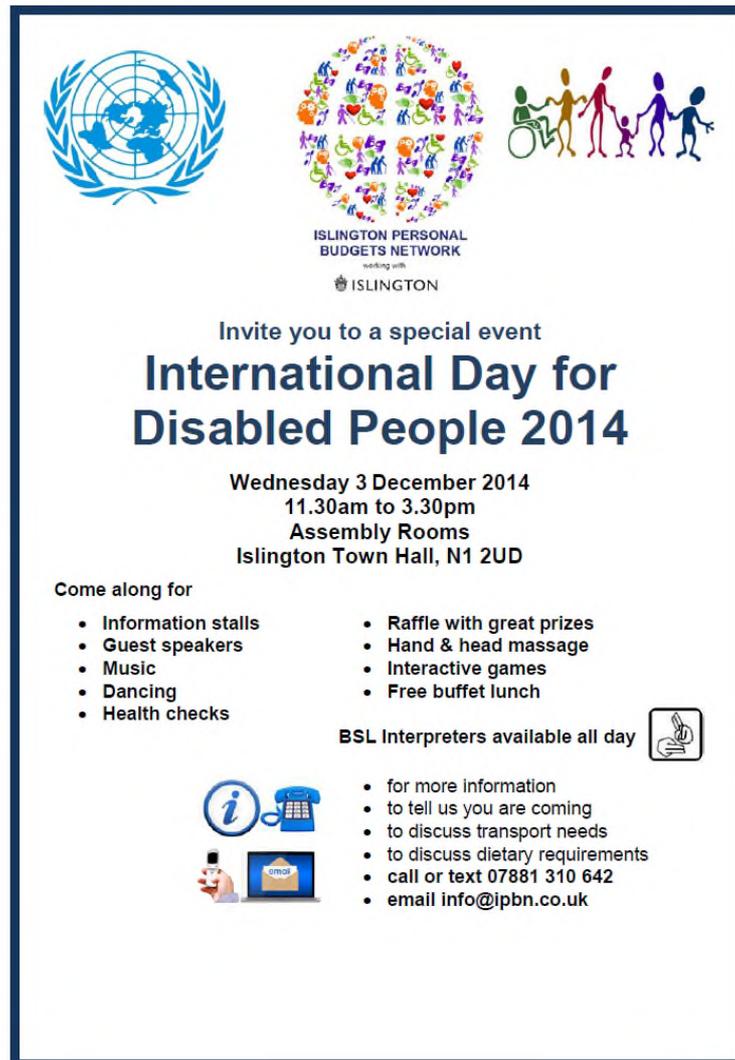


Fig. 23: Poster for Islington's IPBN event, December 3rd

2.3.4 Heidelberg

Mapping Party

In Heidelberg there is a focus on development of routing and navigation tools within the CAP4ACCESS project. For this reason, we decided to concentrate particularly on footway and sidewalk features in the mapping party. The most important attribute is whether there exists a sidewalk next to a street at all and which sides it exists. Moreover, information on surface material, smoothness, steps, ramps, sloped curbs, barriers and pedestrian crossings are of high relevance. As tagging of sidewalk information can be quite difficult for mapping beginners, we also included Wheelmap tagging, as this task is more intuitive. Participants were advised to bring their own Smartphone if available and also to have the Wheelmap app already installed. It was optional to bring a laptop for OpenStreetMap editing. However, 30 work stations were available.



Fig. 24: Participants at the Mapping Party in Heidelberg

As with the other pilot sites, Heidelberg pilot site has used the occasion of the International Day of Persons with Disabilities (See UN Enable, 2014) to invite interested persons to a joint “OpenStreetMap & Wheelmap Mapping Party” (See Institute of Geography ‘Joint’, 2014).

The venue of the event was the PC-Pool of the Heidelberg Kirchhoff institute for physics which is situated on the Neuenheim campus area. The room is fully wheelchair accessible and has a wheelchair accessible toilet next to it.

The event started with a talk to provide an introduction to the CAP4Access project (See Institute of Geography, 2014) This was followed by a presentation of specific mapping techniques that can be used to tag accessibility on Wheelmap and on OpenStreetMap (See Institute of Geography, 2014). After this introduction the group split into two teams. One group tagged points for Wheelmap on the University Campus area in Neuenheim. The other group edited OpenStreetMap sidewalk information from the PCs in the PC-Pool at the University of Heidelberg. The newly implemented street imagery of the project Mapillary (See Mapillary, 2014) within the OSM iD editor was tested. A handout was prepared that provided all relevant OSM tags for this purpose (See University of Heidelberg, 2014). The event finished with a presentation on OpenStreetMap data quality in order to make the participants aware of the open issues in OpenStreetMap completeness (See Institute of Geography ‘Vollständigkeit’, 2014).

The outcome of the event was that some already experienced mappers from Karlsruhe and Heidelberg joined the event. But also some newbies came to learn about mapping with Wheelmap and OSM. Altogether there were 11 people actively contributing to OSM, 5 of those being newly registered OSM users. With their help, nearly 100 objects were updated to include sidewalk and surface information, with 10 of those being new OSM features. Using Wheelmap, the accessibility of 16 places has been documented. The event was reported in the local newspaper Rhein-Neckar-Zeitung (see RNZ, 2014).

Forthcoming Engagement Activity

2015 will see the 13th Heidelberg Wheelchair Marathon which is held every two years in Heidelberg since 1989 (See Heidelberg Rollstuhl-Marathon, 2014). This event draws in participants and spectators from around the globe and has a large media coverage. The marathon covers a 44km route following the Neckar River and is open to wheelchair users and also to inline skaters. It is intended to use this event as a means of raising awareness of the CAP4Access project as a whole and the tools that are being developed. Being such a prominent event with a particular focus on wheelchair users, it is ideal for identifying possible participants for user engagement such as testing of tools and gathering of requirements.

2.3.5 Vienna

In Vienna different engagement tools and methods have been tested so far in order to not only approach different communities exceeding people with mobility impairments but also to include people with varying technological knowledge and abilities to use smartphones or mobile applications. So far there were three main events (beside the event mentioned in the pilot site description).

Mapping Action on 3rd December 2014

As with the other pilot cities, Vienna held a day of 'Mapping Action' to commemorate December 3rd's International Day of People with Disabilities.

The mapping action aimed at engaging people with different backgrounds, both wheelchair users and those without physical disabilities, whether wheelchair users or not, in the activity as well as testing our design of a mapping action. Learning from experiences of past mapping actions also helps to better plan and design mapping actions in the coming years. Additionally next to mapping a certain geographic area or district as organised on 3rd December, thematic mapping actions (for instance specifically looking at museums or fitness facilities in Vienna) are planned for future mapping events.

- 'What makes it interesting for people to participate in such an event?'
- 'What produces interest and creates grounds for personal learning?'

On December 3rd, a group of 15 participants gathered in Vienna at a local community centre. A mixed group comprised of people from the neighbourhood, wanting to "explore their area with different eyes", students from the University of Vienna, a wheelchair user and colleagues from the Center for Social Innovation took part. After a short introduction about the event and how to use the Wheelmap App, a wheelchair user discussed important aspects regarding accessibility of stores and pointed towards the often encountered reality of

'the devil is in the detail'. When the entrance of a restaurant is stepless but the doors are swinging doors, or a small step to the bathroom exists.

Afterwards the participants were divided into 3 groups consisting of 3-5 people. **Each group had a little task** (à la 'Take a photo of the group with an Italian Menu) to fulfil on their mapping trip through the 12th and 15th district of Vienna. These tasks proved helpful for two reasons:

- Firstly, groups had to also go inside of stores and reflect upon accessibility beyond a stepless entry (what if there are only bar tables? or the isles of the supermarket are too narrow to navigate with a wheelchair?).
- Secondly, many participants didn't know each other before and thus had a common goal, easing the communication process. In addition to the tasks, **each group member got assigned one out of three roles**:
 - researching wheelchair users
 - eager mappers
 - creative photographers

Additionally the opportunity to **borrow wheelchairs** to make personal experiences when for instance navigating to a bank in a wheelchair was well received by participants. Participants who borrowed a wheelchair gave very positive feedback and afterwards reflected upon their acquired experiences and learnings throughout the mapping action. Some of which included:

.... experiences of being pushed by another person // new perspective when looking at the other side of the street and parked cars block the view // details of accessibility e.g. narrowness at ATMs in a bank



Fig. 25: Photos taken by participants

Each mapping group also got a printed paper map (printed Wheelmap maps of the area). Mapping with printed **paper maps as an inclusive method** in case the technology fails, people who are not technically inclined can take part or participants want to note down thoughts or comments they wouldn't necessarily enter into the Wheelmap App proved to be

very useful, especially in regards to reducing technological barriers providing additional low tech options at events such as a mapping action is very important. This will also be helpful when working with senior citizens who may use a smartphone (or not) but are not using any mobile applications.

Each group toured and mapped the area for about 1.5 hours and gathered again for some hot tea and a final feedback round and discussions.



Fig. 26: Photo taken by participants

Engaging Students in ‘Mapping Urban Barriers’

Through a network meeting and introduction to the CAP4Access project at the Cartography department at the Technical University of Vienna a lecturer got interested to find ways to collaborate and engage students. Especially the gathering of information and use of technology (e.g. OSM or Wheelmap) was a good way to add practical experiences to her lecture ‘Introduction to thematic mapping’ (given to first year students of spatial planning). Thus we designed a so called bonus task ‘*Mapping Urban Barriers*’ for students which allowed them to gather extra points for their assessment at the end of the year.

Students were asked to (1) map places on the Wheelmap (new places and check places marked yellow) and to (2) document all places they have marked and to reflect upon for instance encountered difficulties to mark a place red – yellow – or green.

Altogether 55 (out of approximately 120) students participated in the Bonus Task and uploaded their sheets on the e-Learning Platform of the University.

Generally, the project with students will add to our understanding of engagement processes in local communities as well as generating feedback for the Wheelmap.org. Its specific aims were the following:

- To establish a collaboration with the university and explore successes of ‘distant engagement’ processes. In order to understand motivating factors of students better, it is planned to gather their feedback through a round of discussions.
- Gather feedback about the experiences (and difficulties) of using the Wheelmap App for non-wheelchair users.
- Communicate feedback about Wheelmap, especially the colour ‘yellow’ to Sozialhelden. Especially difficulties and personal solutions developed by students to mark (or unmark) yellow places.

Exercise: Mapping of Urban Barriers

1. **Download** the free App on wheelmap.org (available Android and iPhone)
2. **Warming Up:** Map 5 grey places: green, yellow or red.
3. **Reflections:** Visit 3 yellow marked places and think about why these places are marked yellow. Would you mark it green or red? Please take photos of the current accessibility situation.
4. **Document** all 8 places that you have listed in the pdf. Please add the name and address of all mapped places as well as a link on the wheelmap.org

Whether or not you add comments and upload photos in the Wheelmap is up to you. In order to do so you need to have a Wheelmap account. Adding more photos and comments on the wheelmap can help people to better understand the accessibility of places.

die Wheelmap hochlädst, bleibt Dir überlassen (zum Hinzufügen von Kommentaren/Fotos brauchst du einen wheelmap-Account). Allerdings würde diese Zusatzinfo anderen Menschen bei ihrer Suche nach barrierefreien Orten sehr helfen.

If you don't know a person using a wheelchair, we have created two personas that you can keep in mind while doing the task.

- Hanna, 30 years old is a lecturer at the TU University and uses an electric wheelchair. Also little steps are difficult for her to overcome.
- Georg, 25 years old is an exchange student who uses a manual wheelchair. He can overcome small steps and maneuver in confined spaces (e.g. bars or restaurants)

Thanks for your participation! Please upload your document until 19th December on the e-learning Plattform.

Fig. 27: Task description for students (original German version in appendix 5.5)

‘Peer to peer engagement’ with small local research group ‘Forsch13’

In regards to collaboration with local stakeholders and inclusive methodology a group of young people, called “Forsch13” are undertaking and planning interesting research projects within their local communities. Forsch13 is an integrative group of around 10 young adults with physical and/or mental disabilities who do small local research projects in the area (13th

district) where their day-care centre is located. This is facilitated by the organisation ‘Verein Balance – Living Without Barriers’²².

For instance ‘Forsch13’ have been organising a small research including ‘Grätzlspaziergänge’ (‘neighbourhood walks’) with students focusing on the accessibility of the area. Followed by a joint presentation (‘Forsch13’ members and students) about their experiences a short summary (in German) can be read in the monthly newspaper of the organisation.²³

CAP4Access and some of the planned activities (e.g. mapping events and guided walks) are of interest to the members as well. Some members are already using the Wheelmap App and are actively contributing (with photos/comments). Joint activities with ‘CAP4Access’ and possible support in their research projects in Vienna are currently being discussed.

²² <http://www.balance.at/>

²³ http://www.balance.at/sites/default/files/balancer_60_fini_web.pdf see page 8

2.3.6 Elche

Elché's city council has used its public-facing position to introduce a diverse range of community and stakeholder groups to CAP4Access. Given their strong public networks, they have been well-placed to organise popular events and activities and therefore generate awareness and interest in the project from a variety of sources.

In 2008, Elché was voted Spain's 'most accessible' city (Tele Elx, 2012). The legacy of this award has offered the council excellent opportunities to leverage interest and support for CAP4Access from local third sector and commercial organisations.

As mentioned previously, Elche city council organised a meeting with relevant local community and stakeholder groups as part of the third CAP4Access project meeting, held in the city during October. The meeting offered an opportunity to advertise future engagement possibilities, such as the Mapping Party planned for February 2015, and also allowed wheelchair users and people with reduced mobility to describe the accessibility issues they experience in Elche.

Dia la Rampa/ Day of Ramps, April 5th 2014



Fig. 28: participants march through Elché to celebrate Dia La Rampa

Celebratory marches are an effective method of raising awareness in a cause through collective action. Elché's Dia La Rampa (Day of ramps) serves to engage everyone – regardless of their level of mobility, or interest in accessibility. The march navigates Elché's historic centre, and highlights areas where ramps are currently impeded, to raise awareness about accessibility in the city.

Día La Rampa aimed to “enable the full integration of people with disabilities into society/hacer posible la completa integración de personas con discapacidad en la sociedad” (Información Elche, 2014) by raising awareness, and removing obstacles to ramps. All were welcome to participate, and the result was an impressive parade of wheelchair users, the elderly, and others with limited mobility moving alongside other members of the public. Over 100 people joined together to raise citizens’ awareness about the accessibility of buildings and public walkways. Given the high traffic density in Elche’s case study area, it was aimed particularly towards drivers.

The march began in Plaza Reyes Católicos – a square located in the heart of Elche’s case study area – and circled around the city, before finishing outside the Congress building in the city centre. When all participants were gathered in the square, members of the local authority presented an access ramp to a designated commercial venue: Top Movil. This organisation produce specially-adapted vehicles for those with limited mobility, and remove barriers to housing through the provision of ramps and other access measures. The award of this ramp demonstrated public recognition of their efforts to improve accessibility.



Fig. 29: Participants display banners – to the left, “My disability does not limit me or you”

Elché’s local council made use of their connections with local media channels to disseminate information before and after the event – thereby building awareness of CAP4Access and accessibility more broadly. The awareness raised through Día La Rampa facilitated engagement with a wide range of community and third sector groups, who were then involved in subsequent CAP4Access activities in the city.

International Day of Persons with Disabilities – November 29th



Fig. 30: Lecture about accessibility given to local public (Melero, 2014)

To celebrate the UN International Day of Disability, Elché city council organised a series of events and activities. To encourage greater participation from the public, these were held on Saturday, November 29th, rather than Wednesday December 3rd.

The day provided an excellent opportunity to involve stakeholders who were previously engaged in CAP4Access during dia de la rampa. To ensure a range of participants – both those with limited mobility, and other members of the community, a range of activities were organised including lectures, activities, and a film screening.



Fig. 31: Anna Vives' lecture

The main lecture was given by Anna Vives; a young woman with Downs Syndrome, who recently published “If you believe in me; I’ll surprise you”. The book is an autobiographical piece, in which Vives reflects on barriers and issues she has overcome to fulfil her goal: the creation of a new typography. Vives’ has worked for many years to produce the typography, which helps boost access to reading and writing for those with disabilities.

As well as raising awareness about the barriers and issues faced, the day also aimed to recognise excellent examples of work that had already been carried out around Elché to increase accessibility. After the main lecture, the Elche Without Barriers/Elché sin barriers award was presented. The award recognises organisations that aim to promote the social, cultural or sporting participation of people with disabilities. Local social enterprise, Rio Safari Elche Foundation, who support individuals at risk of social exclusion through therapy with sea-lions, were presented with the award.



Fig. 32: Mayor Mercedes Alonso presents 'Elche sin barriers' award to Rio Safari (Rio Safari, 2014)

To provide an opportunity for feedback and opinions from those with limited mobility, the day also included a panel forum, where individuals could discuss accessibility issues directly with council representatives.

As laid out in the *Plan for Engagement*, direct methods are the most effective form of engagement – particularly for groups and individuals whose voices can normally tend to be excluded. This forum reflected this, and empowered citizens to have their voices heard by council representatives .



Fig. 33: Participants at Elche's accessibility forum

General population

As well as engaging those with limited mobility, Elche city council sought to involve all citizens and therefore raise awareness about accessibility in the city. Various promotional materials were disseminated, including press notes, and leaflets. These aimed to spark interest amongst the general population and encourage people to participate in project activities.

Further information about the project can be found on the website www.elche.es. This website exists to provide timely information regarding the various stages of CAP4Access to the public, and to raise awareness about accessibility issues.

3 Pilot Testing CAP4Access Tools

CAP4Access seeks to develop and pilot-test methods and tools for collectively gathering and sharing spatial information for improving accessibility. The aim is to exploit the power of online maps and mobile devices for fostering awareness of barriers for individuals with limited mobility and for removing such barriers. As highlighted in the previous chapter, this involves adopting a two-fold approach throughout the project, with the aim to improve urban accessibility by leveraging social innovation through technical and social solutions. Thus, chapter 3 outlines the process with which CAP4Access tools will be tested and piloted in the respective cities. It is important to note here that the nature of tools to be developed by CAP4Access serve different purposes for different users and types of actions. For example, tools such as the quality service and visualisation tool (see D3.3) may be used to review the current status of Open Street Map (OSM) data coverage in a particular location, or to assess the accessibility of an area prior to and after a mapping party. Whereas, mobile applications providing navigation services or tagging capabilities may be used as part of everyday life. As such, the degree to which end user requirements are integral to the service being developed is varied.

3.1 User-Centred Design

To ensure participant engagement with the tools developed by the project, the elements with which they interact need to be engaging and user-friendly. This can be achieved through the use of User Centred Design principles. This section provides the basic background and an introduction to user centred design.

User-Centred Design (UCD) is a design philosophy and process that provides a framework and offers guidance through principles for designing usable technologies and application. Great attention is given to the needs, expectations, and limitations of the end user of a human-computer interface at each stage of the design process

Background

During the 1970s computers moved out of the specialised data processing centres and into the general office environment (see Table 5). This increase in use meant that the people using these systems were no longer specialists who dedicated all their time to operating computing machinery, but people who had different tasks within the organisation that could be supported and enhanced through the introduction of computers. Some of these first 'general' users included people who dealt with numerical data such as accounting clerks, warehouse managers or engineers. For these users, the computer was not the centre of the tasks that they were trying to accomplish. They were interested in entering ledger data, auditing the stock or designing a bridge, not in learning how the computer works or what is the appropriate way to represent the ledger as a computer file. Thus, for these users the computer acted as a support tool that assists in carrying out their job. Therefore, the ability to accomplish the task effectively and quickly was important, as otherwise the automation that the computer facilitate does not improve productivity, but rather hinders it (Landauer, 1995).

As a result of this increased range of users, the importance of designing computer applications that take into account the skills, knowledge and abilities of the users gained importance. Therefore, this period is marked with a growing interest in Human-Computer

Interaction and the establishment of some of the first research centres dedicated to HCI research (Shackel, 1997).

Early research on HCI focused on developing techniques for the design of better applications and metrics to compare different design options – for example, the Keystroke-Level Model that allows scientific measurement and analysis of the performance of a task with a computer system.

Table 5: Development of computers and usability issues (After [Shackel, 1997])

Period and type of computers	Users	Issues
Research computers – 1950s	Mathematicians, Scientists	Reliability, User is expected to understand the machine and programme it
Mainframes – 1960s & 1970s	Data processing professionals	Users of the output (business people) grow disenchanted with delays, costs and rigidity
Minicomputers – 1970s	Engineers and other non-computer professionals	Users must do programming and learn the technology, usability influences productivity and use
Microcomputers – 1980s	Almost anyone	Usability becomes a major problem
Laptops, PDAs – 1990s	Anyone and often in mobile situation	Complexity in providing usability, especially with new input/output modalities
Mobility – 2000s	Multiple devices, ubiquitous wireless network accessibility	Usability of multiple devices and in a connect environment

By the mid 1980s, a more comprehensive theoretical framework for HCI design was starting to take shape. Two publications; ‘*User-Centred System Design: New Perspectives on Human-Computer Interaction*’ (Norman & Draper, 1986) and the highly popular ‘*The Psychology of Everyday Things*’ (Norman 1988) were pivotal in the development of UCD.

As result of the efforts in the mid 1980s, UCD gained popularity, until it became the central methodology and philosophy. Furthermore, UCD was also enshrined in international standards and regulations which continue to emerge. These culminated with the establishment of ISO 13407 ‘*Human-Centred Design Process for Interactive Systems*’. The standard is aimed to achieve quality through the integration of a UCD process and defines it as a:

“multi-disciplinary activity incorporating human factors knowledge and techniques with the *objective of enhancing effectiveness and productivity, improving human working conditions,*

and counteracting the possible adverse effects of use on human health, safety and performance” (UsabilityNet, 2006).

The realisation that UCD is important for GIScience became clearer through the 1990s, and especially in the early 2000s (Haklay and Tobón, 2003). The acceptance of UCD by GIScience researchers increased, especially in the area of geovisualisation (Robinson et al. 2005), as well as for the design of an interactive national atlas (Kramers 2008) and mobile mapping applications (Nivala 2008). A notable increase in UCD during the last decade came with the new focus on web-based GIS, where a lot of software development is dedicated to the user interface. Unfortunately, while the knowledge that UCD exist is now common among geospatial technologies developers, quite often it is understood in a very generic form, without taking into account the full implications of turning the development process into a user-centred one.

The basic philosophy of UCD is to put the user at the centre of the development process. This means that when developing a new software product or an application, the designers and developers need to focus on what the real people who will use their product are going to do with it. Instead of considering the functionality of the application or an eye-catching gimmick in the way the software presents maps, the developers must take into account the real scenario of where the software is going to be deployed and for what purpose. A properly developed systems will take into account the skills and judgment ability of the user, and will directly support their work²⁴.

As part of the user centred design process, system requirements for the routing and navigation tools were collated and discussed with project partners and pilot cities. The initial requirements were derived based on user stories (see D2.4) which were constructed based on preliminary discussions and focus group sessions in the pilot cities. In addition, some of the tools currently under development for visualisation and awareness raising have been informed by project partners’ previous engagement with potential end users. The importance of these requirements was verified with the project team and this feedback was used to determine whether specific requirements were missing or priorities of them needed changing.

System requirements for the participatory sensing tool were initially informed by a small number of end users in order to develop relevant user stories and personas. The quality checking service, in the first instance, will serve as a tool used internally and as such the project team have provided input as to useful features and functionality requirements.

3.2 Testing Process

As part of WP3 a number of software tools are being developed across multiple platforms and architectures. An important part of the development methodology is testing in order to assess the quality of the product, to evaluate the features of the software developed against user requirements, and to ensure any technical problems are resolved before general release to the public. The importance of context in usability testing (in particular for mobile applications) should not be underestimated. Thus, much of the testing described here takes

²⁴ This is an extract from a co-authored publication by one of the contributors to this report: Haklay, M & Nivala, A. M. (2010). User-Centred Design. Interacting with geospatial technologies.

place with project partners and end users making use of CAP4Access tools in a real world setting rather than in a laboratory or test setting. It is important to note that this is an iterative process so as to ensure new tools are fit for purpose and methods refined.

A black box testing method will be used to carry out functional and system testing to test performance and usability. The black box method ignores the internal mechanism of a system and focuses solely on the outputs generated in response to selected inputs. Verification and validation will be required to (a) evaluate the system to determine whether the products satisfy the conditions imposed at the start of a development phase and (b) verification to evaluate whether the features that have been built into the software satisfy the end user requirements and are traceable to requirements previously specified. Lastly, acceptance tests will need to be executed prior to release for beta and pilot tests.

To ensure that the tools developed are of high quality a progressive and iterative testing methodology has been implemented (Figure 34). With this method, each testing round ends with a short bug-fixing development phase before the tool is passed on to the next testing phase or iteration. Its objective is to expose defects in the functional and non-functional behaviour of the software system under test.

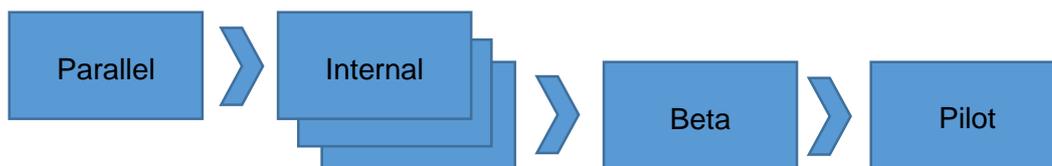


Fig. 34: Testing workflow for tool release and deployment

The iterative phases include:

- At the first level, testing is conducted in parallel to the development process by the developers themselves. This is done to identify any compilation errors and to catch the majority of run-time and logical errors.
- Once the tool has been developed to incorporate and execute the requirements specified successfully, a round of internal testing is performed by identified core teams composed of project partners and a wider team of 'experts', generally from partner institutions. The goal of this round of testing is to capture any problems relating to user interface design and issues arising from deployment in an 'out-of-laboratory' environment. Results from this testing phase are gathered and then incorporated into the tool to create a more stable product which is easier to use. This testing stage should be repeated until no major bugs are being found by the testing community.
- When the internal testing has been completed the product is ready for end-user beta testing where it is released to a selected group of individuals, in the case of mobile applications, or the wider community in the case of web-based applications, who will make use of it in everyday life. At this point the tool should be stable enough to be used for prolonged periods without error. Errors that do occur should be logical in nature meaning that they result in an unexpected output (i.e. incorrect display of an address) but not cause an instability in the system itself. The user group for this level of testing will comprise of both primary and secondary target users identified from prior public

engagement events. Beta testing should be performed for a pre-defined period of time and testers asked to provide feedback relating to any bugs that they discover or usability issues. Once the beta testing phase has been completed, the bugs found will be addressed and then the tool made ready for general public deployment and pilot testing in at least one of the pilot cities.

3.2.1 Visualisation Tool

The Visualisation Tool (see D3.3) currently under development will be tested in multiple phases, as outlined above. On completion of internal testing by all partners, a beta version of the tool will be officially released and should be made available by May 2015 in order to involve the wider community to use and test the tool as soon as possible. In addition, a design and feedback option will be provided, for example via wufoo form²⁵, in order to acquire user feedback for further optimisations. Users can be general Wheelmap users, city representatives, organisers of mapping events, journalists and other stakeholders in order to gain local statistics regarding accessibility and for the preparation of local mapping events and their impact (see D2.4). The latest versions of major browsers (such as Chrome, Internet Explorer, Firefox) must be tested, as well as mobile clients if responsive designs such as flexible design that adapts to different screen sizes for optimal use, are applicable to the version of the tool.

3.2.2 Participatory Sensing Tool

Previous approaches to participatory sensing have primarily used the smartphone's functionalities to measure the environment, and relied on subjective reporting to provide subsequent validation of these "objective" measures. These measures could be of environmental or personal factors. More recent work has begun using the subjective reports of environmental and personal factors as a source of data in its own right. The current approach developed by the UCL team of the CAP4Access project attempts to go beyond this dichotomous perspective to develop a unified approach which combines both of these perspectives, and to allow for subjective and objective data collection on both personal and environmental features. That is, in our prototype we will include both objective and subjective measures of the environment: in particular we will collect data on objective measures of a particular slope for a given path, as well as a subjective assessment of the experience of traversing that particular slope by the user.

To measure the slope of a path, we employ a method recently developed by Tanviruzzaman et al (2012) wherein the measure of the slope is determined by using two types of sensors found in every typical smartphone: gravity as measured using the 3D accelerometer of the phone, and a "direct" measure of slope using the gyroscope of the phone. The slope of the path is then determined by using a weighted average of the two measures.

This approach will require testing the sensitivity of accelerometers in a range of different devices, in which sensing quality is likely to vary widely from one device to the next. Following the three-stage model above, after the first stage of parallel testing in the development process, the second "internal" testing phase will be undertaken by the UCL team and a collection of other "expert" colleagues with relevant skills and interests. This will

²⁵ <http://www.wufoo.com/>

by necessity be a limited and highly self-selecting sample of devices, but we will aim to ensure as great a degree of device heterogeneity as possible. In moving to the beta-testing with identified end-user research participants we will initially focus on comparing responses to the same identified path for purposes of comparability. Of course, in principle by having multiple measures from numerous users of the same path an approximate true value can be achieved through aggregation unless some form of systematic bias in responses is uncovered. This will of course be part of the eventual data quality monitoring task.

Here in the objective sensing of the environment the locations are pre-determined in the first instance. However, we wish to compare the slopes of predetermined (inclining) paths by allowing the users to have “free-reign” in measuring paths that they choose themselves. We are interested to see if the slopes that are measured by user choice are generally steeper or less steep when compared to the average slope encountered in the pre-determined set of slopes. As we will see below when we also allow subjective sensing to complement the objective sensing, this will allow us to determine whether subjective responses to different slopes is dependent on that path being chosen or by being pre-specified by the researcher. In so doing, we get insight into the data quality provided by respondents and whether responses are generally more positive or negative when self-chosen. We will also use qualitative follow-up interviews with the users to get their own opinions on the data that they have provided.

We will then link this objective measure to a subjective, “emotional” assessment of that particular path (and the “place” of which it is a part). Here we will be using questionnaire items which have been used to measure subjective wellbeing for UK policy purposes under the category of experience measures with respect to stress. We are particularly concerned with the impact of mental and physical stress, as these represent two of the most common and harmful aspects of living with enhanced accessibility needs. It is for this reason that we are keen in particular to connect objective and subjective sensing wherever possible, and in particular in connecting measures of physical stress and/or mental stress with particular features of the built environment (which, as above, will be measured either by objective participatory sensing or collective tagging).

As we move to using the “emotional” or “subjective” sensing, we will similarly compare researcher-elicited responses with user-chosen responses. In the researcher-elicited condition we will use push notifications to request assessments of the immediate environment. We will firstly examine how responsive users are to the number of notifications are received. But again we wish to compare the types of responses received when the data are user-prompted versus researcher-prompted.

Again, here we will follow up the period of data collection with qualitative interviews to receive feedback on the user’s assessment of the data they provided. As important, from the perspective of user-led design, we will be seeking extensive critical feedback from the users on their experience of using the app, and their recommendations for how to improve the user experience.

We have engaged with a small number ($n < 5$) of users thus far in informing our user stories and priority personas in developing the functionality, but this input has of course been crucial. In addition to the feedback obtained from new users we also will be doing “follow-up” research with our original users who made suggestions for the app functionality in our user-

led original qualitative interviews. Based on all of this feedback we will make changes to the app functionality, before going onto rolling out to a larger user population for wider testing, which we aim to be in the range of 30-50 users.

In the future developments which we aim to complete at the end of Y2, we will introduce a social angle to the subjective and objective sensing, as well will explore the possibility of developing a number of different social communication features. These “social networking” features may include:

- Allow users to take photos and upload them to share with others regarding particular features of environments which may present mobility impairments;
- A social networking feature like “check in” which allows users to see if there are other “friends” with similar mobility issues nearby;
- Allowing users to message other users;
- Enable users to post general messages to other people in the community via a “messageboard” feature.

There are a number of benefits from developing these features, particularly how they will enable a greater social and collaborative element to the user-led design of the participatory sensing functionality, for in the following ways:

- Social networking capabilities enable the user community to collectively discuss aspects of accessibility, particularly subjective assessments and evaluations. Such social communication capabilities thus truly makes the collective online action that much more collective, makes digital social innovation that much more social, and the peer production that much more from a group of peers.
- Further, one of the most robust findings in the study of how groups overcome the free-rider problem facing collective online action is having means of communication between participants. To test this idea will enable us to better understand how to promote user participation in the app, helping to overcome potential low levels of participation or “free-riding”.
- The possibility of combining various social networking features with collective tags, subjective and objective sensing provides highly desirable “multi-modal” input and triangulation of subjective and objective data.
- Such collective discussion of tags, objective and subjective sensing can be achieving the function of “crowd-sourced peer review of crowd-sourced data”, which is seen as important aim of crowdsourcing/citizen science research (i.e., achieving good results without “expert opinion”).
- Enabling social communication amongst users enables users to collectively discuss and identify potential locations for tagging/sensing, making the research more truly participatory in a dynamic process.

We look forward to bringing this social and collaborative angle to user-led design to the development of participatory sensing functionality, and aim to bring unique methodological and technical development to the CAP4Access tool .

3.2.3 Data Quality Checking Tool

It is important to mention that testing of the quality service will be done differently from other services; in other services Wheelchair users form one of the primary user groups who will trial services and provide feedback. While the quality service will be indirectly tested by users. There is no API implemented for users to check the quality of data, but a quality evaluation service will be implemented that can “talk” with other services in the form of service chaining. Therefore, testing of the quality service will occur before performing the city pilot tests (in the preparation phase) as well as during the execution of city pilot test. For example, as reported in D3.3, checking the completeness of data is one of the data quality elements. The tagging system will need to connect to the quality service in order to retrieve information regarding the incompleteness of data (e.g. Kerbs) for a given region of interest. This would allow the tagging system to show which places/sidewalks/curbs already exist in the data and what is missing. Participants using the tagging system during pilot city tests can then enrich the dataset by providing information about the missing elements/attributes. In the case of the routing and navigation tool, the quality evaluation service could check the topological consistency of relevant features (e.g. sidewalk, kerbs, and road) by checking the proper connection of these items together. If a kerb is not topologically connected to a sidewalk and a road element, then this would be problem for routing and navigation system.

3.3 Results from Internal Testing

This section summarises the results of the preliminary internal testing of the navigation service and the sidewalk tagging mobile applications. The first round of internal testing was carried out by members of MfC/UCL ExCiteS research team whom are familiar with mobile application development and principles of Human Computer Interaction design. The participants involved may not have formed a ‘typical’ user profile but their experience and expertise in this domain provides us with initial feedback that proves valuable prior to launching a beta test case. A test scenario for each tool was developed for this purpose and can be found in Appendix 1 and 2. A summary of feedback from three of the seven participants involved in this round is detailed below with an emphasis added to critical points, and the full feedback can be found in Appendices 3 and 4.

3.3.1 Sidewalk Tagging Feedback

Participant 1:

Task 1:

“Following the instructions from the user scenario I opened the application and **wasn’t really sure what I should do or how to first interact** with the app.”

Task 2

“I entered Beaumont Place into the text box but it did not retrieve the location or provide any information as to why. I entered a different location and again it was not retrieved. I was not sure how to proceed any further in order to carry out the subsequent tasks.

I bypassed the place search option and just tried to tag my current location but **I was not sure how to do this as there is no guidance**. I clicked on the 'Edit' button and after a great deal of trying realised that if I clicked on the map I was then able to classify a location.

When entering data into the form, I got to the bottom and did not see how to continue scrolling, although it was clear that there were further fields to complete and I didn't know how to collapse the keypad to see the remaining fields. Once I realised that you need to use the phones back key then I was able to continue - **it was not obvious**.

One of the fields asks me to rate using a star rating quantifier **but I have no idea what is 'good' or 'bad'**

On completion I could not see my entry so I went through the whole process again. The second time around I noticed a green dot signifying my entry. I tried clicking on the dot to interact with my contribution but did not have the ability to do so. I added another entry with different values and it showed up on the map as a house, which I didn't in fact realise, as the symbology is so similar to the background cartography. When I rotated my phone all the entries disappeared."

Participant 2:

"When I first opened the app I saw a map of my location. **There were no instructions**. The only information I could see was a box to type in a destination and an edit button.

I tried typing in my location and it was found, but my destination had appeared when I opened the app anyway.

I could not instantly tell how to tag somewhere. I could only see an edit button which I clicked but then nothing happened. I tried this a few times and **then realised that I needed to click back on the map in order for the options to appear**. This was not obvious.

I managed to update the tag but then could not see it when I went back to the map. I then tried again selecting a building instead of a path and noticed that a small house icon appeared. It was **only then I realised that a small dot was the tag for the path**. Again this was not obvious. I tried to look at the tag to see the information or edit it but **nothing came up for me to look at**.

I turned my phone to landscape and all the tags disappeared, they did not return when I turned the phone back around."

Participant 3:

Task 1

"I see a map and search field, but **I'm kind of lost**. I don't know where to start tagging. Maybe some instruction would be helpful.

I then enter an address into the search field to find my home. I click "Done" and nothing happens. After a while the map suddenly jumps to the address I was looking for. Apparently, the search was in progress, but **the App didn't tell me**. There should be some indication of what's going on.

Then I tried to get back to my current location using GPS, but there is no button to do so...

What's 'edit'? It doesn't seem to do anything, except change the button label.

Task 2

"It takes ages to find the location, without informing what's going on"

Task 3

"I click 'edit' and then I'm lost...After I'm being told I have to tap on the map the form opens. **The form itself is straight-forward. But how do I know what I'm editing?** There's no way to tell, if I'm editing correct street or one of the adjacent ones. There should be some sort of indication on the map. Also, I can't imagine how the data is being used. Does my edit change the attributes of the whole segment, or do I need to add many different points? Again, an indication about what I'm editing will be helpful."

3.3.2 Routing and Navigation Service feedback

Participant 1: "On opening the application for the first time the icons on the home page were all misaligned and hard to see. I selected the grey arrow but was not able to interact with the button. In other words, it just didn't do anything. At this **stage I was unaware whether it was just broken or something else.** If I am not able to interact with an element at this stage of the interaction then I don't need to see it."

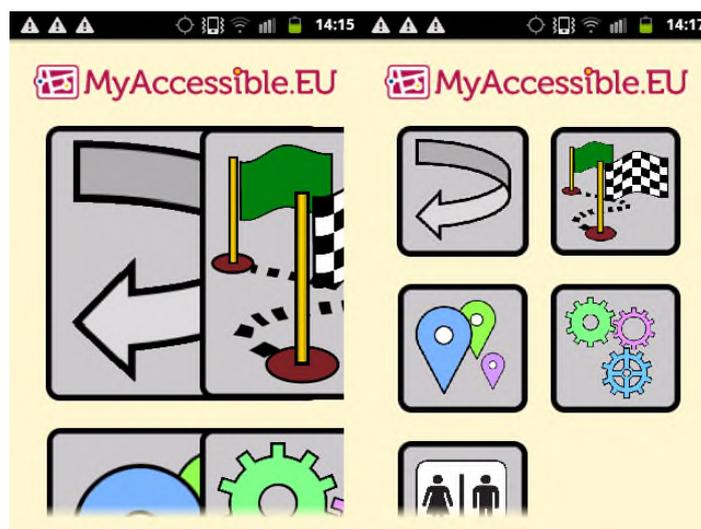


Fig. 35: Screen shots highlighting (a) alignment and (b) interaction issues

After opening the application inside it took about 10 minutes before I was told that I should make sure that I'm outside. If this is the first basic requirements, users should be informed on launching the application that they need to be outside in order for the app to commence."

Task 1:

"Following the scenario instructions I selected cobblestones as the surface type, which **was relatively straight forward.** However, I was not sure whether my selection had been registered so I went back into user preferences and checked. Cobblestone was not selected so I tried again. For the second time of re-checking the preferences I noticed that the option selection had not been saved."

"It was simple enough to enter my destination which was found successfully."

Task 2:

I was unable to proceed any further with the navigation steps because once I selected ‘Take me there’ the application informed me that there was an ‘error in communicating with ‘http://cap4navi.....This is a HTTP error.

Participant 2: “Icons appeared very large when I first opened the App. I could not get them to [fit] into the screen without turning the phone on to its side and back again.

When the icons did fit on the screen, there was **no description as to what they were which was confusing**.

I managed to **update the preferences with no problem** – once I located the correct screen to go into.

I then went to enter a destination and the app crashed so I had to start all over again.

My location could not be found even though I was outside and so I could not enter a destination either. I waited for a good 5-10 minutes for it to find my destination without success. I could not complete the rest of the test scenario because of this.”

Following preliminary parallel testing and feedback from the internal testing phase a number of bug fixes and interface modifications were made which are detailed in Table 6. Further modifications have currently been frozen until the next phase of testing

Table 6: Modifications to the Navigation Service

Date	Change	Major/Minor
05 Nov 2014	Modification of instruction handling to take into account new Navigation Service API (multiple instructions for a single waypoint if they are close together)	Major
06 Nov 2014	Update of display in instructions	Minor
	Alteration to detecting whether the user should turn around	Minor
07 Nov 2014	Added arrows to the persona slider	Minor
	Added Wheelmap logo to Wheelmap pages	Minor
	Allowed scrolling on main page to make sure buttons all appear the same size	Minor
25 Nov 2014	Updated styling to take into account older versions of Android	Minor
	Changed home page to display text buttons rather than icons	Minor
	Added info display about what the Wheelmap icons mean when they are clicked	Minor
	Added start-up info telling the user they need to be outside and that the app uses network data	Minor
	Updated the target search area so that a list of matching entries are displayed that the user can select from	Minor

Date	Change	Major/Minor
	Modified the change preferences area so that items are saved properly and they are saved when the user exits the page	Minor
	Fixed bug relating to the app crashing when the user clicks on the 'return to route' button	Minor
	The start location should now be saved when the user selects to choose an end position	Minor

3.3.3 Data Quality Collection Experiment

In the context of quality evaluation, it was understood that OSM data is incomplete regarding the sidewalk information which is a crucial object feature required by the routing and navigation service. In order to overcome this issue, and find a possible low-cost approach to derive side walk data and enrich OSM data with sidewalk information an experiment²⁶ was carried out with a group of Wheelchair users. Several GPS trackers (with different characteristics and predefined parameters for data collection) were installed on three wheelchairs and for a selected route in Heidelberg Altstadt area; multiple coordinate points of the position of wheelchairs were collected. One of the aims of this experiment was to come up with an efficient approach to derive and enrich OSM data with pedestrian sidewalk information. The participants also took photographs of the sidewalks from different angles as well as of the sidewalk surfaces. These photographs will be used for further research on a tagging system with extensive information about routes and obstacles. The results of this experiment are in progress and will be delivered in 2015.



Fig. 36: GPS trackers installed on (a) wheelchair and (b) body

3.4 Summary

Chapter 3 outlined the preliminary themes identified and to be explored with different user communities. In tandem, and integrated with these, each pilot city will undertake user testing of a range of either previously existing tools enhanced for piloting and/or new tools released for CAP4Access, as outlined in Table 7 below. This will aid in providing a robust evaluation of their potential application and scalability.

²⁶ <http://myaccessible.eu/collecting-geodata-heidelberg/>

The results from each deployment will be used to refine and revise the prototypes developed and will provide useful feedback on the different contexts within which the tools are used.

Table 7: Overview of CAP4Access Tools to be pilot-tested

	Previously existing tool	New tools	Community Map	Wheelmap	OpenRoute-Service ORS	OpenStreet-Map (OSM)
Tagging	Wheelmap	→				Mobile Tagging App (UHei)
Sensing		→	Sentiment Mapper App (UCL)			
Quality assessment	OSMatrix	→				OSMatrix-4Q (UHei)
Data Integration	Pol-Checker	→				Kerb Data Integrator (IAIS)
Routing & Navigation	OpenRoute Service	→			My Accessible.E U navigation tool (UHei)	
Visualization	Wheelmap, Community Map GeoTemCo	→		Viz-Dashboard (IAIS)		
Awareness Raising	Offline Mapper, Wheelmap goes to school, Wheelmap Ambassador, Wheelramp Ambassador	→		Compare-Regions (IAIS)		

The following chapter outlines some of the methodological approaches which will be used to evaluate the efficacy and usability of the tools under development.

4 Evaluation

4.1 Introduction

CAP4Access aims to combat issues with accessibility and provide ‘social innovation’ through a range of technical and social solutions. As discussed in the previous sections, the issues for exploration which emerge in each pilot site will vary according to the local needs and priorities of communities that they have engaged with. Therefore, the nature of ‘social innovation’ required and implemented in each pilot city will vary. Subsequently, to understand ‘the process of social innovation’ that occurs through these multiple aspects, a range of specifically-tailored evaluation measures will be required. Given this variation, a standardised evaluation technique would be unsatisfactory, as it would be unable to cater for the mixture of nuanced and fundamental differences between the forms of social innovation which occur in each case study. However, the technological tools developed by CAP4Access *can be* evaluated through more quantitative measures, such as accuracy and reliability. These will be discussed in 4.3.2. To appropriately evaluate the success of solutions on a local and inter-European level, a range of quantitative and qualitative evaluation techniques will therefore be required.

4.2 The Subject for Evaluation: Defining Innovation

Social innovation is a notoriously ambiguous field to define (Bund, Hubrich, Schmitz, Mildenerger, Krlev 2012; IA4SI, 2014). Those involved in planning, implementing and analysing social innovation stem from a diverse range of professional, academic, and community-based organisations. As such, social innovation is multi-disciplinary (Murray, Caulier-Grice and Mulgan, 2010), meaning that “definitions and understandings are likely influenced by the various authors’ disciplines” (IA4SI, 2014: 14). This privileges an academic or professional definition of social innovation: it is important to recognise that social innovation is often a grassroots process, instigated by communities who identify and pursue solutions to a particular local need or priority.

IA4SI, producers of the designated CAPS project impact assessment framework²⁷, make use of the definition provided by Phills, Deiglmeier and Miller (2008: 36) which views innovation as offering outcomes that are “more effective, efficient, sustainable or just than existing solutions”. This is a flexible and therefore appropriate framework for understanding social innovation in the context of CAP4Access, where questions of accessibility will be shaped by multiple local, national and international factors.

CAP4Access is comprised of multiple organisations, all of whom are populated by individuals with different professional and academic expertise. Numerous perceptions of what constitutes social innovation therefore influence the activities and inputs of each partner. These distinctions are emphasised by the geographically-separate nature of CAP4Access’s partner organisations.

In the context of CAP4Access, multidisciplinary research and action plays a key role in the formation of tools and strategies. Predominantly, this can be separated into digital aspects;

²⁷ See <http://ia4si.eu/>

the development of online tools and mobile applications, and social aspects; strategies for direct awareness raising, and attitudinal shifts.

This division is emblematic of other organisations and movements. Research has recently grappled with the relationship between digital and social innovation (Godin, 2012; IA4SI, 2014). Previously, digital innovation was viewed as a distinct domain; with no intrinsic relationship to social impact (Godin, 2012). However, in our increasingly ‘digital age’, the potential for planned and spontaneous social impact to arise from technological developments has been repeatedly demonstrated (see IA4SI, 2014: 17).

Digital developments can certainly warrant notable beneficial social impacts. However, in order to ensure such developments identify and pursue the needs and priorities of users, a symbiotic relationship between the two is required. Participant-driven research at all stages of development is an element central to CAP4Access. Similarly, in terms of evaluation, participant co-definition of goals and outcomes of the project is fundamental.

4.3 Evaluation Criteria

4.3.1 CAP4Access Processes: Agile Methodology

Given that face-to-face interaction is clearly the most effective method of communication for teamwork (Olson and Olson, 2000), the geographically-distributed nature of CAP4Access, in combination with the importance of participant-driven research, places great importance on the manner and frequency of partners’ communications. To overcome potential divisions brought on by multi-disciplinary team working across geographically distinct locations, *and* ensure participant co-dependency over problem and outcome definition, CAP4Access operates through an agile methodology.

Agile is a development methodology that evolved from traditional methodologies during 1990s in America. As a method, Agile arose in response to pressures for efficiency and reduced costs in an increasingly globalised world (Nishijima and Santos, 2013), and therefore prioritises flexibility and efficiency. This flexibility is, according to Kollman (2009), beneficial for multidisciplinary teams such as CAP4Access, as it encourages new modes of collaboration.

Regular communication is essential for successful agile projects (Modi, 2013; Nishijima and Santos, 2013), as it enables all partners to have a shared sense of common ground (Kollman, 2009; Modi, 2013). This communication can be either routinised or informal, according to the nature of discussions to be had (Brown, 2011). In CAP4Access, this takes place through structured weekly meetings, and, to resolve more specific issues, through informal skype sessions between ‘scrum teams’: smaller groups of relevant partners required to progress a specific task. Further, all partners have access to a CAP4Access webspace via JIRA – an online domain for sharing project documents, issues and ideas.

In the context of evaluation, frequent communication between partners enables and encourages participant centrality in the identification of problems and development of appropriate solutions. The risk of ignoring users’ needs and priorities has been identified as “one of the biggest disadvantages of agile” (Kollman, 2009: 14), where digital and social scrum teams can remain distinct. To address this, regular informal skype meetings between

developers and those engaging communities occur, to ensure that participants' input remains central.

In this way, the agile methodology will prove essential to building and maintaining appropriate evaluation techniques. Where partners' issues for exploration become shaped by local factors, the regularity and flexibility of agile methods can allow shared meanings of common ground to continue.

4.3.2 CAP4Access tools

To ensure that the operational performance of the CAP4Access tools is satisfactory, several methods will be utilised.

First, based on the workshops and the gathered experiences described above; several scenarios can be established to utilise the personas of people who will use the applications described in D2.4. Personas are a short description of a user, which provide details about their background, their characteristics and the way in which they use the tool (Pruitt & Grudin 2003). By utilising the agreed personas, the different development teams will be able to evaluate the tools in a consistent manner.

The personas, and use scenarios will be used to carry out a cognitive walkthrough (Wharton et al 1994) – this is a technique in which the evaluator puts themselves in the shoes of the users, and considers what kind of experiences and challenges they will encounter while using the application. By having several evaluators across the CAP4Access consortium, we can ensure that most of the errors and difficulties will be exposed.

Following the cognitive-walkthrough, usability evaluation will be carried out. Because of the differences in the context, applications and case studies, the most effective approach will be to carry out the evaluation in the field (known as 'research in the wild' in Human-Computer Interaction studies). The aim is to identify the most significant usability errors and address them, and this can be done with a relatively small number of participants for each application, between 5 and 10. A mixed-method approach that is adaptive to the local situation and the number of participants will be encouraged. The methods will include observing participants while they use the application, including video recording of the use episode and analysis of the video to identify issues and challenges; think-aloud protocol, in which the participant verbalises what they are attempting to do; log files used by the application to identify the choices that each participant makes during the application use; and focus groups following an evaluation episode. In addition, in tools where users are registered with their email address, short evaluation questionnaires and phone interviews will follow a use episode.

The main aspects that will be at the core of the evaluation process will follow the general principles of usability, namely to ensure that the application is efficient (user is not required to carry out unnecessary steps), effective (the application is helping the user to complete a task), engaging (the user enjoys using the application), error tolerant (recover from errors by the users, and assisting the user to avoid errors) and easy to learn.

4.4 Evaluation Methodologies

Given the ambiguity of ‘social innovation’ as a term, there is an absence of robust techniques for “analysing and measuring its impacts” (IA4SI, 2014: 17). Practitioners and policy makers are left uncertain as to what is simply ‘hype’, and what has clear beneficial impact (Carpenter and Genschow, 2012). Further, IA4SI suggest that ‘little has been done so far to analyse the results of social innovation initiatives; to evaluate the benefits produced by public-funded programs and to compare the effects of social innovation projects with previous and alternative models of tackling social issues’ (18). The lessons learned throughout CAP4Access can, therefore, help constitute groundbreaking new research.

Quantitative evaluation techniques are clearly easier to implement, and will provide distinct, tangible feedback. In recognition of this, where possible, quantitative measures will be adopted. For example, it will be possible to adopt standardised quantitative measures for certain aspects of CAP4Access, such as users of the platform, or the quantity of engagement activities hosted. Primarily, these will relate to the digital aspects of CAP4Access’s social innovation.

However, less tangible but equally valid aspects of social impact will require more subtle evaluation measures. For example, measuring the impact of an awareness raising campaign *can* be tracked through views of social media or online content, but is clearly also linked to nuanced attitudinal values that cannot easily be quantitatively defined.

Much research has addressed the issues intrinsic to this type of measurement (Murray, Caulier-Grice and Mulgan, 2010; Gore and Bloomfield, 2014). Typically, there has been a reluctance to assign rigid evaluation methodologies, but instead focus on co-developing particular goals, with a specific set of measurements, through the project lifespan. This seems appropriate for the flexible and participant-driven research of CAP4Access, with numerous distinct issues for exploration arising in each pilot area.

4.4.1 Areas of Impact and Outcomes

There are however some specific measures that form appropriate points for evaluation:

Table 8: A selection of appropriate evaluation criteria for CAP4Access

	Areas of impact	Dimensions
Social impacts	1. Impact on community building and empowerment	Online community building
		Online community empowerment
		Offline community building
		Offline community empowerment
		Impact on SI and CAP community
	2. Impact on participation and democracy	Level of citizens political awareness
		Civic participation
		Political participation
		Equality in civic and political participation
		Trust in institutions & government
	3. Impact on information flows	Access to information
		Quality of information
		Sharing and diffusion of information/data
	4. Impact on training and Human capital	Training provided by the project
		Impact on human capital
	5. Impact on ways of thinking, ethics and behaviours	Changed in opinions/way of thinking
		Change in values and ethics
		Change in behaviours
	6. Impact on science and academia	Knowledge production
		Knowledge sharing
		Change in training curriculum and educational policies

4.4.2 Research Questions

Research questions set out to evaluate more qualitative outcomes of CAP4Access. These may be both over-arching questions that are appropriate for all pilot cities, and more specific ones designed to reflect themes which have emerged at a local level. Regardless of the questions' geographical application, they will, in essence, correspond to the social solutions explored in Chapter 2, and the more technical actions outlined in Chapter 3. However, they

must also address the often complex and ambiguous relationship between social and digital innovation within CAP4Access.

As discussed, CAP4Access sets out to pursue a two-pronged approach to improving urban accessibility through social innovation: the production of assistive technological tools, and the development of purely social solutions – such as raised awareness.

Research questions will, therefore, be tailored respectively to the project's digital and social outputs, as well as the relationship between digital and social innovation. At this stage, the following 3 research questions have been drafted:

- What factors shape users' trust of volunteered geographic accessibility information?
- How does mapping relate to awareness?
- Can the use of digital tools for accessibility impact users' experience of cities?

As these topics are pursued throughout year two, methodological tools for assessment such as questionnaires will be developed to enrich analysis of each question. At this stage, it is anticipated that these research questions will provide a useful bedrock for evaluation over the next 2 years in each pilot city. However, given the multiplicity of factors shaping action in each pilot city, it may be advisable for each city to develop their own questions. The use of pilot-city specific research questions to shape evaluation will enable flexibility, and encourage assessment to reflect the needs and priorities of each area's unique themes.

5 Interim Conclusions

Year one has enabled CAP4Access partners to begin developing a critical understanding of the current status of, and issues with, accessibility in each pilot city. Such understanding has stemmed from both groups engaged with, but also extensive research and analysis of existing policies and measures in the domain of accessibility. From this baseline position, targeted engagement activities and subsequent actions have been leveraged to acquire an initial network of interested community and stakeholder groups, from which further actions will be implemented across the project's duration.

Foremost, this has involved initial engagement with a variety of community and secondary stakeholder groups. By utilising the engagement experience and expertise of Mapping for Change in London as a pre-pilot, a site for testing and revising engagement strategies to discover which approaches are most effective. As anticipated in *Deliverable 1.2's Plan for Engagement*, strategies for eliciting the interest and capacity to participate of groups and individuals with limited mobility has required specific planning, in order to develop the most effective methods. Year one has therefore provided partners in the pilot cities with experience in engaging these groups that can be used to structure and guide subsequent project activities.

From this engagement, communities have been able to express the issues with accessibility they experience at a local level. This process has been community-driven, meaning the issues identified are *local* and *specific* to each case study area within the pilot cities. However, year one has presented some interesting synergies between pilot areas: themes of transport and tourism have emerged as key across all case study areas. Further to the

localised actions within each pilot city, there will therefore be scope for some cross-fertilisation of approaches across these areas. To an extent, this has been realised already through the activities carried out on December 3rd, 2014. Project-wide engagement such as this has proven effective, and partners will look to implement similar actions in the coming years.

With regards to the development of tools and technologies, the user-centred design process described in Chapter 3 of this document has enabled partners to focus on the needs and priorities of those who will use them, ensuring they remain relevant, usable and effective. This principle of user-driven development will continue to shape tool development throughout the next project phases, maintaining CAP4Access's commitment to community-driven technological design.

In terms of evaluation, a degree of flexibility has been afforded at this stage, to permit the continuation of community-driven definition of issues and potential solutions throughout the next two years. Year one has demonstrated that the topic of 'social innovation' is complex and nuanced; requiring a mixture of quantitative and qualitative evaluation methodologies. As discussed in Chapter 4 of this document, quantitative measures will, where appropriate, be utilised, particularly in relation to the development of technological tools.

Overall, year one has enabled CAP4Access to acquire substantial expertise in the field of accessibility at a local, city-wide, and pan-EU level. In each city, a bed-rock of engaged community and secondary stakeholder groups has been formed, paving the way for meaningful and effective solutions to be co-developed over the next two years, to address the plentiful and varied issues with accessibility that are hindering individuals' experience of European cities.

6 Appendices

6.1 Appendix 1 - My Accessible.EU Tagging Application

The aim of this experiment is to evaluate the My Accessible.EU Tagging application prototype that is currently being developed. You will be asked to try out different aspects of the app and to make note of any usability issues. Based on your opinions, we will also be asking you to suggest recommendations for improvements.

Scenario

It's June, and you've recently moved to central London to be closer to your work. As a wheelchair user, you've found accessibility levels to be hugely varied in this area – both in specific buildings or venues, and when navigating the city more generally. For example, you've found many pavements too narrow for your wheelchair to pass along. You're keen to record your experiences, both to avoid others having similar difficulties, and with a view to notify the relevant public authority or owner of that space so necessary improvements can be made.

Task 1

First, open the app and look at the home screen.

- What do you see?
- Is the information clear?

Task 2

It's a clear sunny day, and you've decided to visit Regent's Park. You choose not to use public transport, as you want to be outside in the warmth. You're travelling along Beaumont Place, by UCL. The pavement's surface has severe weather damage, and as a result you find it difficult to navigate.

Select your location as Beaumont Place in the app.

- Could you find how to do this?
- Did you have any difficulties selecting this?

Task 3

Use the app to make a note of pavement's poor surface quality.

- Could you find how to do this?
- Did you have any difficulties inputting this information?
- In what ways could it have been clearer?

6.2 Appendix 2 – My Accessible.EU – Navigation Application

The aim of this experiment is to evaluate the My Accessible.EU Navigation application prototype that is currently being developed. You will be asked to try out different aspects of the app and to make note of any usability issues. Based on your opinions, we will also be asking you to suggest recommendations for improvements.

Scenario

As a keen historian, you would like to attend the new Egyptian exhibition at the British Museum. It is a Wednesday morning and you have decided not to use public transport as it will be very busy. You have not travelled to the museum without public transport before, so you need to find the most appropriate route for your wheelchair.

Task 1

You would like to avoid certain surfaces, such as cobblestones, to make your journey easier. Change your user preferences so this can be taken into account when the route is planned.

- How easy was it to select your choices?
- Were the right choices available for your needs?
- Did you experience any problems?
- How could this step be improved?

Task 2

Now you need to find your route to the museum. Use the app to find directions to the British Museum.

- Was it easy to input your destination?
- Did you manage to find a route?
- What did you think about the way the information was displayed?
- Did you experience any problems?
- How could this be improved?

Task 3

You're hungry after your visit to the museum but you've visited the onsite café previously and would like to try somewhere new. You want to find a nearby café that is wheelchair accessible. Use the app to find the nearest wheelchair accessible café to the museum.

- Was it easy to search for nearby destinations?
- Did you experience any problems with this step?
- How could this step be improved?

Task 4

The toilet in the café is out of order. Use the app to find your nearest alternative accessible toilet.

- Was it easy to search for nearby toilets?

- What did you think about the way the information was displayed?
- Did you experience any problems in locating an accessible toilet?
- How could this step be improved?

Task 5

You're feeling tired after your long day, so you decide you want to change your preferences to avoid all slopes. Use the app to change your preferences accordingly.

- Were you able to do this easily?
- Did you have any problems?
- If so, how might they be improved?
- How easy was it to select your choices?
- What did you think about the way the information was displayed?

6.3 Appendix 3 – My Accessible.EU – Tagging Application, participant feedback

All participants used a Samsung S5690 Galaxy Xcover (Android 2.3.6), apart from User 2 who used a Motorola Moto G (Android 4.4.4)

Task 1: First, open the app and look at the home screen.

Participant 1

- I see a map and search field, but I'm kind of lost. I don't know where to start tagging. Maybe some instruction would be helpful.
- What's "edit"? It doesn't seem to do anything, except change the button label.

Participant 2

- Was confused on the first screen - what's the input field for? What's the Edit button? Isn't it supposed to be Add Tag button? Also, when pressed, would expect a choice of possible tags first to choose, only then to add it to a map.
- Even after a while, I wasn't sure why there's an input field on top - tried to search for a location, but didn't get any results, and there was no button for "Search" or "Go".

Participant 3

- The UI was slow, sometimes unresponsive and feels old-fashioned. The decision of using web views instead of native android widgets results in the mentioned results for the UI.

Participant 5

- When I first opened the app I saw a map of my location. There were no instructions. The only information I could see was a box to type in a destination and an edit button.

Participant 6

- the opening screen showed a map with my current location, Information about where I am is clear

Participant 7

- I opened the application and wasn't really sure what I should do or how to first interact with the app.

Task 2: Select your location as Beaumont Place in the app.Participant 1

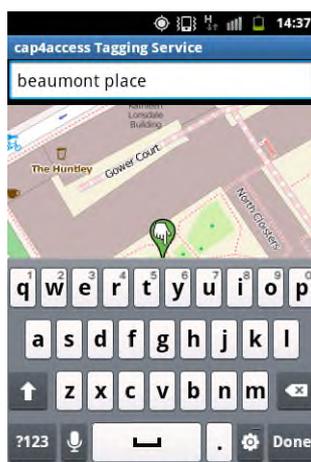
- I then enter an address into the search field to find my home. I click "Done" and nothing happens. After a while the map suddenly jumps to the address I was looking for. Apparently, the search was in progress, but the App didn't tell me. There should be some indication of what's going on.
- Then I tried to get back to my current location using GPS, but there is no button to so...

Participant 2

- When I moved the map, it kept jumping back to my current location. When finally managed to drag somewhere else, I couldn't go back to my current location - there was no button for this.

Participant 4

- Pressing Enter after entering location doesn't do anything. Stuck in search mode.



- It is unclear what I need to do. I pressed the edit button since that was the only obvious possibility. Button changed to Cancel Edit. I still didn't know what to do.

Participant 6

- It is not immediately obvious what to do to find a location. I see the text box and type in the address Beaumont Place but nothing happens. There are no instructions. I touch the screen and get a little house icon – am guessing that maybe I have managed to add a location

Participant 7

- I entered Beaumont Place into the textbox but it did not retrieve the location or provide any information as to why. I entered a different location and again it was not retrieved. I was not sure how to proceed any further in order to carry out the subsequent tasks.

Task 3: Use the app to make a note of pavement's poor surface quality.

Participant 1

- I click “edit” and then I’m lost...
- After I’m being told I have to tap on the map the form opens. The form itself is straightforward
- But how do I know what I’m editing. There’s no way to tell, if I’m editing correct street or one of the adjacent ones. There should be some sort of indication on a map. Also, I can’t imagine how the data is being used. Does my edit change the attributes of the whole segment, or do I need to add many different points? Again, an indication about what I’m editing will be helpful.

Participant 2

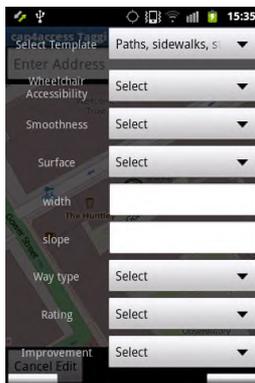
- When adding tag, was confused between “Wheelchair Accessible” and “Access” - what is the second one?
- Most of the fields were confusing - didn’t know what they mean, there was no explanatory text
- When added tag, got either a house, or two coloured dots, which meant nothing to me - there’s no legend explaining what every tag is.
- Couldn’t see any information, wanted to see existing added tags when pressed on them - but nothing happened.
- When added tag, my map tiles disappeared and only after zooming in and out I managed to get the map back
- When some tags were added, and was switching between landscape and portrait screen modes, tags disappears.
- When was in adding new tag process and flipped phone to landscape mode - app crashed:



Participant 3

- Having to click on Edit before adding a point is unintuitive and hard to find.

- After submitting an observation there was no feedback confirming the status of my submission. I was unsure if I had managed to successfully submit anything and whether that was uploaded online.
- There is no option to see a list of my collected points for confirmation and validation.
- I was unable to unzoom and scroll the map, each time that I performed those actions, the app was auto zooming to my current location.
- The map has no button for getting you to your current location.
- If you are not in edit mode, the search bar does not work at all. Maybe the search bar should be hidden if it is not necessary.
- There was no auto-completion / suggestion functionality to assist the lookup on the search bar.
- I cannot select a point on the map and make an observation about that selected point.
- On the accessibility form there is a width field, but does not specify the metric system for my observation. Is it imperial or metric and is it in mm, cm, m etc.?



- Also on the form, there is no validation for the data inputted by the user. I was able to type “asdfsafdsafdsaf” on the width and submit the form without receiving any kind of error.

Participant 4

- It took me a while until I figured out that an icon was added after tagging a location. It has the same size and style as the OSM icons which is very confusing.
- I expected to be able to bring back dialog again to at least see what I have tagged before. But icons are not clickable.
- Putting the app in landscape mode makes icons disappear.
- When I pan the map it jumps back to current location.

Participant 5

- I could not instantly tell how to tag somewhere. I could only see an edit button which I clicked but then nothing happened. I tried this a few times and then realised that I needed to click back on the map in order for the options to appear. This was not obvious.
- I managed to update the tag but then could not see it when I went back to the map. I then tried again selecting a building instead of a path and noticed that a small house icon

appeared. It was only then I realised that a small dot was the tag for the path. Again this was not obvious. I tried to look at the tag to see the information or edit it but nothing came up for me to look at.

- I turned my phone to landscape and all the tags disappeared, they did not return when I turned the phone back around.

Participant 6

- Information about what to do next is not very clear it's not immediately obvious what the 'edit' option is for and how I go about adding a Tag but have a go anyway to see what happens
- I am not sure which option refers to the Tag I want to add – for 'poor surface quality' is it smoothness or surface type? I do both.
- Not sure what to do next so try the 'return' button on the phone which takes me back to the map screen. I try using touch screen to see if my Tag is attached to the little house icon – but nothing happens – my Tag isn't there.

Participant 7

- I bypassed the place search option and just tried to tag my current location but I was not sure how to do this as there is no guidance. I clicked on the 'Edit' button and after a great deal of trying realised that if I clicked on the map I was then able to classify a location.
- When entering data into the form, I got to the bottom and did not see how to continue scrolling, although it was clear that there were further fields to complete and I didn't know how to collapse the keypad to see the remaining fields. Once I realised that you need to use the phones back key then I was able to continue - again not obvious.
- One of the fields asks me to rate using a star rating quantifier but I have no idea what is 'good' or 'bad'
- On completion I could not see my entry so I went through the whole process again. The second time around I noticed a green dot signifying my entry. I tried clicking on the dot to interact with my contribution but did not have the ability to do so. I added another entry which with different values and it showed up on the map as a house, which I didn't in fact realise as the imagery is so similar to the background cartography. When I rotated my phone all the entries disappeared.

6.4 Appendix 4 – My Accessible.EU – Navigation Application, participant feedback

Home screen

Participant 1

- The icons are unclear. What does the toilet mean? When I click on it the app crashes.

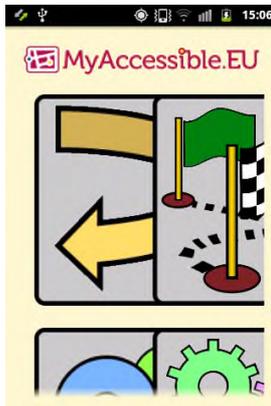
Participant 2

- Not clear what icons does - it would be better to use icons and a short explanatory text (maybe to display it as a list instead of icon grid).

- When switched to landscape mode on the map, couldn't scroll down, therefore couldn't press bottom buttons.

Participant 3

- The UI was slow, sometimes unresponsive and feels old-fashioned. The icons in the main screen were covering each other and were not fitting properly in the screen (the issue could be resolved by rotating the screen):



The icons in the main screen were unclear and ambiguous, especially the first icon with the arrow. Also, that particular icon always leads to an app crash.

Participant 4

- App crashed on pressing first icon (back button)



Participant 5

- Icons appeared very large when I first opened the App. I could not get them to fit into the screen without turning the phone on to its side and back again.
- When the icons did fit on the screen, there was no description as to what they were which was confusing.

Participant 6

- The first screen is confusing - I am new to the app and don't know what the icons represent, to start with I have no information that tells me that I can set preferences to avoid certain surfaces, slopes or steps and kerbs. There are no instructions

Participant 7

- On opening the application for the first time the icons on the home page were all misaligned and hard to see. I selected the grey arrow but was not able to interact with the button. In other words, it just didn't do anything. At this stage I was unaware whether it was just broken or something else. If I am not able to interact with an element at this stage of the interaction then I don't need to see it.
- After opening the application inside it took about 10 minutes before I was told that I should make sure that I'm outside. If this is the first basic requirements, users should be informed on launching the application that they need to be outside in order for the app to commence.

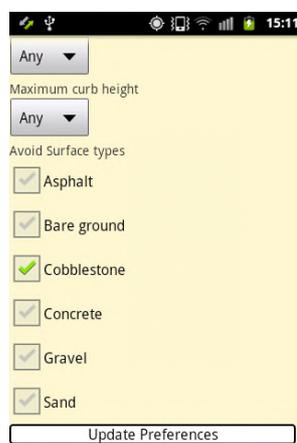
Task 1: You would like to avoid certain surfaces, such as cobblestones, to make your journey easier. Change your user preferences so this can be taken into account when the route is planned.

Participant 1

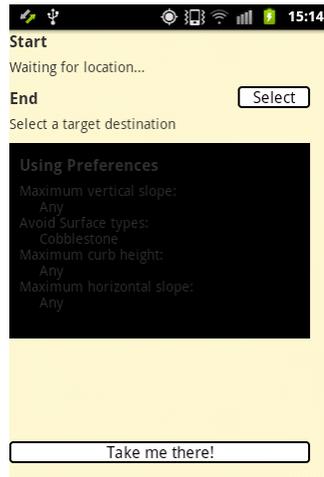
- The settings were easy to find. The form was straightforward and easy to understand.
- My preferences for surface types aren't saved.
- The buttons could be bigger, so they are easier to tap. I have really big fingers.

Participant 3

- The preferences UI is cluttered and some of the buttons, such as *Select Persona & Update Preferences*, are too small to click on:



- In the preferences UI the *Update Preferences* button seems unnecessary. The preferences should be saved automatically whenever a change is made. Finally, in my case I was unable to update the preferences. I chose Cobblestone and hit *Update Preferences* but the option was not stored.
- In the Navigation UI, there was a black box with my preferences that was hard to read. Also the buttons were small as well:



Participant 5

- I managed to update the preferences with no problem – once I located the correct screen to go into.

Participant 6

- Which icon is the one for selecting preferences? It is not immediately obvious to me. I have to just have a go and see what happens, I try three of the options before finding the right one.
- Selecting choices – I don't know what to choose in the slope and kerb height categories. The use of % to describe horizontal and vertical slopes means nothing to me – I can't visualise what at 5 or 10% slope looks like so don't know which one to choose. Similarly kerb heights in such small centimetre intervals are difficult to visualise and I don't know which ones to pick.

Participant 7

- Following the scenario instructions I selected cobblestones as the surface type, which was relatively straight forward. However, I was not sure whether my selection had been registered so I went back into user preferences and checked. Cobblestone was not selected so I tried again. For the second time of re-checking the preferences I noticed that the option selection had not been saved.

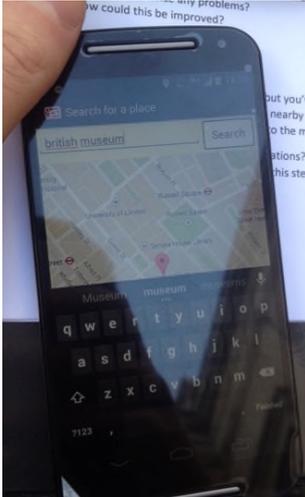
Task 2: Use the app to find directions to the British Museum.

Participant 1

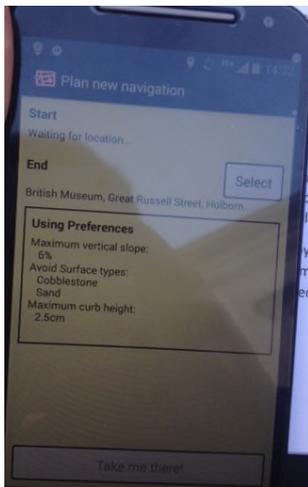
- Tried to select my destination for routing. When I click on the button, the app crashes every single time. Tried that about ten times, even restarted the phone, no change.

Participant 2

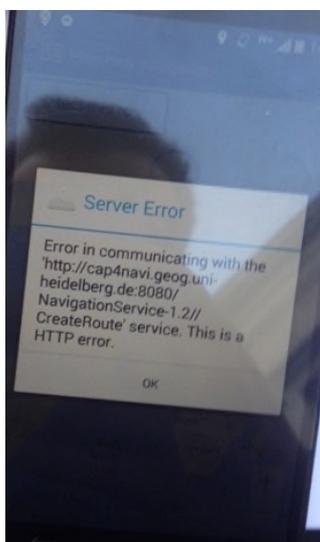
- When was searching of a location, starting to enter "British Museum" and was expecting a list of matches, but instead had to enter full name of a place, although it found it on the map:



- When selected End location, Start location disappeared, and was again looking for a current location. Also, I couldn't choose and select Start location:



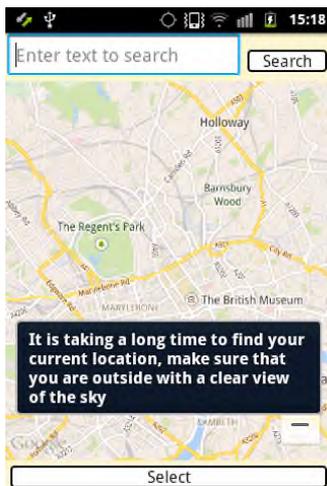
- Couldn't get the route - there was server error:



- When selected Categories and chose some random location, I managed to get the route (but it wasn't shown on the map). Then when tried to navigate to that place, got some wrong directions, point me to walls, saying to go straight, then turn around. And there was no voice navigation so I had to look at the phone's screen all the time - this might get me to an accident.

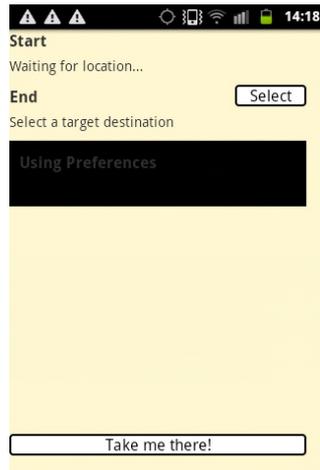
Participant 3

- The button "Take me there!" seems enabled but I cannot click it if I have not a fixed GPS location, the button should be disabled /greyed out, giving proper feedback to the user that it cannot be selected yet.
- Waiting for GPS took forever and there is no option to select my location either by searching or by picking a point on the map.
- While picking the End location, on the search bar, there was no auto-completion / suggestion functionality to assist the lookup.
- Calculating the navigation route took much time and I received 2-3 times a server error.
- When I finally received a route, the map did not zoom on the route but rather showed the whole London area, leaving me frustrated of where is my route.
- On the UI with the map for picking the End location, there is no current location button to get me to my current location:



Participant 4

- Black box is irritating and I don't know what it is supposed to do. Grey font is hardly readable.



- Toast indicating that location can't be found does not disappear
- I could not obtain a location fix, therefore couldn't finish any of the tasks. Maybe you should include a function that allows to select current location on a map if GPS fix can't be obtained.



- GPS icon stopped blinking (as Android user I am used to that meaning that a GPS fix was found). App still doesn't register current location.

Participant 5

- I then went to enter a destination and the app crashed so I had to start all over again.
- My location could not be found even though I was outside and so I could not enter a destination either. I waited for a good 5-10 minutes for it to find my destination without success. I could not complete the rest of the test scenario because of this.

Participant 6

- The App failed to find my starting location, just a message telling me that it was taking a 'long time to find my location' it never did find my location so I was unable to proceed with the rest of the task.

Participant 7

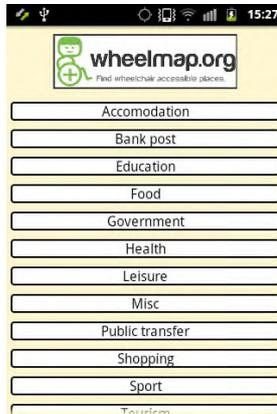
- It was simple enough to enter my destination which was found successfully.

- I was unable to proceed any further with the navigation steps because once I selected 'Take me there' the application informed me that there was an 'error in communicating with 'http://cap4navi.....This is a HTTP error.

General Interface comments

Participant 3

- Small buttons height and hard to click:



Unclear or ambiguous icons, at least for me next to each result:



- No information on the returned points:



User 4

- Buttons are really big and hard to press
- It takes a really long time until something happens after pressing a button
- Button style changes when using filters

User 6

- The interface needs a complete redesign – needs a good graphic designer, design input from a user group and user testing of icons
- A different way of describing kerb heights and slope angles – as above - design input and testing from a user group would be valuable.

Other General Comments

User 2

- I would suggest combining the apps and using one instead of two - it's a bit confusing now.

6.5 Appendix 5 – CAP4ACCESS Questionnaire

English





MyAccessible.EU is a new European project that aims to improve accessibility of European cities. For further information on the project please visit myaccessible.eu.

In our Questionnaire we would like you to tell us about **your experiences with accessibility in your daily life**. We will be asking you about information on the following topics:

- Yourself and your mobility needs
- Information channels and tools that you already use when you planning a journey
- Built features in the city (such as steps, stairs, kerbs) that make it difficult to get around
- Your experiences with using public transportation
- Information that would help you to get out and make travelling to work, school or college or for recreation easier

The MyAccessible.EU project is an opportunity to make your voice heard, to address the right people and help to shape services that are informed and designed by input from the people who will be using them.

There are 30 questions in this survey.

Load unfinished survey
Next >
Exit and clear survey

*** 1 What region are you from?**

Choose one of the following answers

Rhein-Neckar
 London
 Vienna
 Elche
 Other:

*** 2 Which age group do you belong to?**

Choose one of the following answers

16 - 25 years
 26 - 40 years
 41 - 55 years
 56 - 65 years
 66 - 75 years
 76 years and older
 not specified

*** 3 What is your gender?**

Choose one of the following answers

male
 female
 not specified

*** 4 What best describes your current status?**

Choose one of the following answers

In school
 In training
 Studying
 Working
 Retired
 Unemployed
 Other:

5 What type of mobility impairment do you have? (e.g. imbalance, restriction of motor functions, can't travel long distances, Paraplegia 3 lumbar vertebra)

*** 6 What type of mobility aid do you use?**

Check any that apply

Zimmer frame
 Manual wheelchair
 Electrically driven wheelchair
 Scooter
 Other:

* **7** Do you have a smartphone (phone that is able to perform many of the functions of a computer compared to a basic phone)?
Choose one of the following answers

- Yes
 No

* **8** Do you use online routing/navigation services (like Google Maps, AA Route Planer, TfL or City Mapper)? A online navigation service tells you the best way to travel from point A to point B.
Choose one of the following answers

- never
 rarely
 mostly, before I leave the house, office etc.
 mostly on route, as required

9 Which routing/navigation services do you use? (Please list)

* **10** On which devices do you mainly use the online routing/navigation services?
Check any that apply

- Computer
 tablet (iPad)
 on a mobile device (smartphone, GPS)
 Other:

* **11** Do you use any mapping - or navigation services that have been created specifically for people with mobility impairments?
Choose one of the following answers

- mostly
 rarely
 never
 I was not aware of the existence of such options

12
What kind of routing or navigation service specifically created for people with mobility impairments do you use? Please specify:

* **13** Do you travel with a personal assistant?
Choose one of the following answers

- never
 occasionally
 always

15
How far can you travel independently without using any form of transport?
Please estimate in kilometers:

Only numbers may be entered in these fields.

Kilometer

* 16

Which of the curb heights below can you manage by yourself? (Tick all the relevant boxes):
 15cm is equivalent to half an A4 page.
 An iPhone4 is 11,5cm high.

	Below 3cm	4 to 5cm	6 to 10cm	11 to 15cm
Get on the curb	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Get off the curb	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* 17 How much slope on a path can you manage independently? (Assumption: rough surface, 500m length)
 Choose one of the following answers

- not steep (below 6%)
- Moderately steep (7-10%)
- Very steep (11-20%)
- Other:

18

Examples (please click on picture to enlarge)



ramp with 6% slope



ramp with 10% slope



ramp with 13% slope

* 19 How many steps can you manage? (Assumption: straight stairs, no handrail, height of steps: 15cm)
 Only numbers may be entered in these fields.

stairs upwards:

stairs downwards:

* 20 How do you use public transportation?
 Choose one of the following answers

- not at all
- independently
- with assistance

21 What types of public transportation do you use?
 Check any that apply

- Metro
- Bus
- Tram
- Train

22 When would you avoid public transportation? (example: long wait, times for getting on and out of transport is too short, big crowds of people, no designated wheelchair space)

*** 23 At which time of day do you travel most?**
Choose one of the following answers

- morning (8-12 o'clock)
- lunchtime/afternoon (12 - 18 o'clock)
- evening/at night (18 - 24 o'clock)
- Other:

*** 24**
Please evaluate the following barriers:

	not a barrier	can only be overcome with lots of effort	can only be overcome with assistance	must be circumvented
Cobblestone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sandy /earthy surface	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gravel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Train tracks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big crowds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
narrow path (5cm wider than your mobility aid)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 25 For which of the following activities would you use a navigation system?**
Check any that apply

- Taking a walk in nature
- Shopping in the city
- Sightseeing
- Meeting friends for a beer/coffee
- Getting an appointment (e.g. interview, doctor)
- None
- Other:

*** 26 Would you travel further or more often if you were able to plan your routes better with a navigation/routing service for people with limited mobility?**
Choose one of the following answers

- Definitely
- Probably
- I can't say now
- Probably not
- No

*** 27 Would you travel further or more often if you were able to ask or arrange for volunteer assistance (e.g. for getting onto the bus), using a mobile application, as and when needed at required points in your journey?**
Choose one of the following answers

- Definitely
- Probably
- I can't say now
- Probably not
- No

*** 28 Do you share experiences about your trips with other people online? (Examples: a blog, a discussion forum, write comments on articles)**
Choose one of the following answers

- Often (more than 2 times a week)
- Sometimes (3-5 times a month)
- Rarely (once/twice a month or less)
- Never

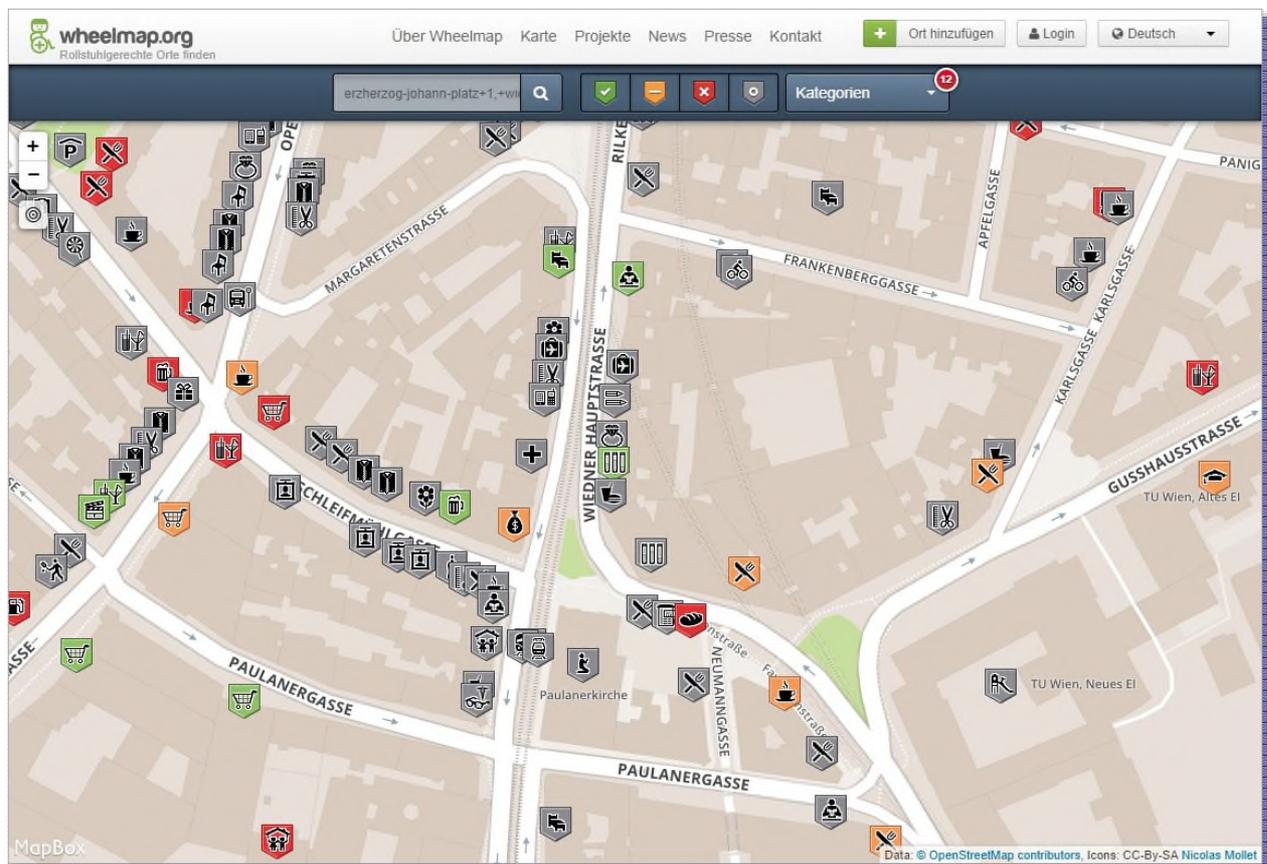
*** 29 Where do you share experiences about your trips with others? Please specify:**

31 Do you have any remarks? Please share any experiences and comments you think might be relevant in the space below. Suggestions for improvements to the questionnaire are also welcome here.

6.6 Further Documents

6.6.1 Aufgabenbeschreibung Bonus-Task

Mapping of Urban Barriers



Wheelmap.org ist eine Karte zum Suchen, Finden und Markieren von rollstuhlgerechten Orten. So schaut die Umgebung [rund um das Kartographie-Büro](#) auf der Wheelmap aus: Einige Orte sind grün (barrierefrei), einige rot (nicht barrierefrei) und einige gelb markiert – der Großteil der Orte ist aber noch grau (nicht kategorisiert). Aber: Wenn grün ‚barrierefrei‘ und rot ‚nicht barrierefrei‘ bedeutet, was genau heißt dann gelb eigentlich? Und wie markiere ich Orte in einer Karte, so dass sie auch für andere Menschen verständlich sind? Die folgende Aufgabe soll euch den Antworten zu diesen Fragen näher bringen.

Aufgabenbeschreibung

1. Hol Dir die App von wheelmap.org (verfügbar für Android und iPhone)
2. Zum Aufwärmen: Kategorisiere 5 bisher graue Orte in grün, gelb oder rot.
3. Zum Reflektieren: Besuche 3 bisher gelb markierte Orte und überlege vor Ort, warum sie gelb markiert sind. Würdest du sie aufgrund deiner Vor-Ort-Erfahrung in grün oder rot markieren? Fotografiere die lokalen Gegebenheiten, die zu deiner Einschätzung führen.
4. Dokumentiere alle 8 Orte, die du bearbeitest hast in dem angehängten Dokument. Die beschriebenen Orte müssen eindeutig identifizierbar sein (Namen und Link zum Ort auf wheelmap.org). Die drei gelben Orte aus Schritt 3 sollen zusätzlich fotografisch dokumentiert werden. Ob Du Deine Kommentare und Fotos auch auf die Wheelmap hochlädst, bleibt Dir überlassen (zum Hinzufügen von Kommentaren/Fotos brauchst du einen wheelmap-Account). Allerdings würde diese Zusatzinfo anderen Menschen bei ihrer Suche nach barrierefreien Orten sehr helfen.

Was gibt's zu beachten?

- Die Orte, an denen du mappst, sind ganz dir überlassen: sei es die Umgebung rund um die Universität, dein Wohngebiet oder eine Einkaufsstraße.
- Mehr Informationen, wie die wheelmap.org funktioniert und welche Kriterien es gibt, um Orte grün, gelb oder rot zu markieren, findest du im [wheelmap-Handout: \[http://wheelmap.org/wp-content/uploads/2013/09/Handout_Mapper.pdf\]\(http://wheelmap.org/wp-content/uploads/2013/09/Handout_Mapper.pdf\)](http://wheelmap.org/wp-content/uploads/2013/09/Handout_Mapper.pdf)
- Bevor du dich zum Mappen aufmachst, schau ob die wheelmap.org-App auf deinem Handy funktioniert und wie viele Orte auf deiner Straße und Umgebung schon markiert sind.
- Falls du kein iPhone/Android-Smartphone hast, kannst du trotzdem teilnehmen: Druck dir einfach einen detaillierten Plan mit den Orten aus, die du neu kategorisieren bzw. überarbeiten möchtest. Unterwegs trägst du deine Daten in die Papierkarte ein und überträgst die Daten später über wheelmap.org.
- Wichtig ist, Orte nicht nur außen anzuschauen (z.B., gibt's eine Stufe?) sondern auch ins Lokal hineinzugehen (z.B., keine Tische in der Höhe für Rollstuhlfahrer, enger Durchgang, Toiletten nicht erreichbar?).

Personas

Wenn ihr persönlich keine Personen im Rollstuhl kennt, ist es vielleicht etwas schwierig, euch in die Rollstuhl-

Situation hineinzusetzen. Wir haben daher zwei [Personas](#) entworfen, die ihr bei der Bearbeitung im Hinterkopf behalten könnt:

- Hanna, 30 Jahre alt und Dozentin an der TU Wien, nutzt einen Elektrorollstuhl. Auch kleinere Stufen stellen für sie ein Hindernis dar.

- Georg, 25 Jahre alt und Austauschstudent, nutzt einen aktiven Rollstuhl, den er aus eigener Kraft antreibt und mit dem er kleinere Stufen überwinden und sich in engeren Räumlichkeiten (z.B. Bars) bewegen kann.

Abgabe

Lade deine Dokumentation (als Word oder PDF) bis 19. Dezember 2014 in TUWEL hoch.

Als Dankeschön für die Teilnahme erhaltet ihr 5 Punkte für LVA Thematische Kartographie angerechnet.

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Der Bonus-Task wurde in Kooperation mit dem Zentrum für soziale Innovation

(ZSI) entwickelt. Eure Antworten geben Input für das Projekt CAP4Access – Collective Awareness Platforms for Improving Accessibility in European Cities &

Regions. Mehr Infos auf: MyAccessible.EU. Danke für eure Teilnahme!

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