

An Accessible City is a Healthy and People-Centred Smart City

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ABSTRACT

Accessibility for all is an inspiring issue for future urban agendas. In European cities, the ageing of urban population and the growth of social and economic disparities call for interdisciplinary reflection and practice on the relations between well-being and inclusion and the organization and upgrading of public facilities. The challenge is to ensure the usability of urban spaces to the largest extent of persons, according to their different capabilities. Based on research developed at the University of Trieste (Italy), and taking the region Friuli Venezia Giulia as its main study context, the article questions a variety of recent urban tools and policies in order to show their level of innovation and the obstacles that still oppose their more effective integration. The aim is to highlight possible fields for public action and the need to rethink planning instruments and technical skills in the frame of a user experience and smart design approach.

KEYWORDS

Accessibility for All, Inclusive Cities, Motility, Planning Tools, Smart Design, Spatial Welfare, University of Trieste, Urban Agenda, User Experience Design

INTRODUCTION

In Europe today, approximately 359 million people – 72% of the total population – live in cities, towns and suburbs. Even though with a slowing speed, the share of urban inhabitants continues to grow and it is likely to reach more than 80% by 2050. However, considerable differences are recognised between expanding large capital cities, metropolitan areas and suburbs, on the one side, and shrinking small and medium-sized cities and sprawled settlements, on the other (European Commission & UN-Habitat, 2016). As a common feature, the “proportion of people aged 80 or over in the EU-28 population is expected to more than double by 2050 (from 5.4% of the population in 2016 to 11.4% in 2050). Therefore, sooner than later, ageing is likely to affect all EU regions” (Margaras, 2019). In addition, urban areas are generally facing complex social problems: exclusion of less well-off people and families from the city centres, reduced social cohesion, increase of stress affecting physical and mental health, lack of supply of efficient/affordable services (from housing and public transport, to education and healthcare).

In the next future, the spread to larger social groups of multiple vulnerabilities will have important impacts on the maintenance of welfare policies and on the arrangement of the living environment, calling for stronger attention to the relations between well-being and inclusion, the distribution and usability of public spaces and urban equipment.

In this frame, accessibility comes to the fore as a strategic and cross-cutting issue of the *2030 Urban Agenda*, and as a perspective from which many fields covered by the *Sustainable Development Goals* need to be addressed in a coordinated way (United Nations, 2016a).

In synergy with welfare policies, accessible urban spaces can substantially contribute to health and well-being precisely because – through actions favouring physical connections and integrated management of public equipment, green areas, and soft mobility (mainly pedestrian and cycling) – they can help tackle the challenges of contemporary societies. The reference is to the promotion of autonomy and physical activity, in order to reduce the onset and chronic nature of diseases due to sedentary lifestyles and demographic trends; the creation of opportunities for social exchange; the contrast to the negative impacts of urbanization on environment and climate (D’Alessandro et. al., 2017).

In this sense, accessibility prompts to re-frame the *right to the city* issues into a broader habitat/ecological/political debate, and to build bridges between reflections on the ethic dimensions of spatial, social and economic urban conditions (Chan, 2019; Fainstein, 2010; Soja, 2010).

When interpreted as a *service* that cities must offer to the largest extent of people in relation to their different capacities and abilities, accessibility fosters a deep renewal of urban regeneration policies and interventions, a renovated pact between a variety of disciplines and tools, and a radical shift towards a *people-centred idea of smartness*.

The development of a Smart City actually implies a continuous process of innovation, which in addition to supplying highly technological services and products, should mainly improve citizens’ quality of life. The challenge that administrations are called to undertake is to address public policies to the treatment of real needs, through the monitoring of behaviours and demands, and the direct involvement of people in city government. In this perspective, citizens are no longer understood as passive sensors or users, but as fundamental actors who contribute to the building of new knowledge infrastructures and services.

However, despite outstanding reasons for a committed *accessibility turn*, progress towards a widespread and coordinated treatment of these issues is slow. Under the pressure of the just claims of people with disabilities, *accessibility for all* has become a recurring slogan, but planning tools and processes, as well as spatial interventions and the implementation of Information and Communication Technologies (ICT) support, still struggle to get rid of the extraordinariness of solutions defined for specific targets of users. In fact, taking accessibility as the core of inclusive environment and design means addressing not only people with (actual or potential) disabilities, but many other forms of social, economic, spatial exclusion that can affect everyone, at different stages of their life. Nonetheless, difficulty remains to build more effective synergies in the ordinary making of urban planning and policies.

Based on research developed at the University of Trieste (Italy), the article analyses this difficulty and outlines proposals to go beyond. Specifically, the second section focuses on multidisciplinary debate and the variety of inputs that accessibility gives to city regeneration. Taking the Italian region Friuli Venezia Giulia as its main study context, the third section questions recent tools and policies, in order to show their level of innovation, as well as the obstacles that oppose their more effective integration. In the fourth section outputs from the on-going research, *Proactive City. The City as a Gym of Active Design*, offer the opportunity to investigate how public action can be re-addressed to overcome silos thinking and routines, as well as possible operational fields for implementing technological devices in the frame of a citizens-centred perspective. The article closes with further inputs to rethink technical skills and planning/design approaches.

A MANIFOLD CONVERGING DEBATE

The difficulty with accessing public facilities (for educational, social and healthcare services, green spaces and sports activities) negatively affects the opportunity that individuals can have to independently reach adequate conditions of social-psycho-physical well-being.

Today, a variety of disciplinary fields and debate converge on these considerations. They share the invitation to investigate how and to what extent the ways to design and manage urban equipment

and services influence the development of a person's physical, cognitive, relational capabilities (Sen, 1987), and the "respect" of intrinsically different needs and potentials (Sennett, 2003).

Social Inclusion and Motilities

Mobility stands at the core of a reflection on growing spatial and social inequalities (Elliot & Urry, 2010; Sheller, 2017, 2019). In contemporary cities, the relationship between poverty and quality of life are highly complex: "poor is not only the person, the family or the group who have a small income and wealth, but also those who in fact do not have, even potentially, the possibility to take advantage of some essential goods and services [...]; those who do not have access to education or social assistance in their various forms and whose spatial capital excludes them from the most elementary rights of citizenship; those who are stigmatised and 'labelled' according to their place of residence" (Secchi, 2013: 16, 17). Improving accessibility to urban resources therefore becomes a tool to fight against social and spatial segregation, and to foster cohesion and inclusion.

In this frame, talking about "motility" means focusing on the more or less active role that urban population can perform in the city, in relation to the material configuration of the contexts where they live and work (Kaufmann, 2011). Taking a distance from simplified environmental determinism, motility is interpreted as a *conditioned*, *conditioning* and *enabling capital*. It takes force when the specific movement capabilities (physical, as well as economic, social and cultural) of a person match with adequate levels of spatial accessibility. In turn, the degree of expression of this capital affects the development (by individuals or groups) of additional capabilities, aimed at better organising, interacting and/or adapting one's lifestyle to contextual conditions, and at autonomously building one's own well-being. Moreover, and going beyond mere adaptation, the presence of spaces that not only welcome but also stimulate the fulfilment of these abilities can eventually lead to new urban practices; this is an important issue when rethinking policies through the involvement of citizens and social innovation.

Spatial Determinants of Health and UX-Smart Design

For some decades now, the motto of the World Health Organization (WHO) "healthy places for healthy people" has strongly linked the social determinants of health to the environmental conditions of urban life (Commission on Social Determinants of Health, 2008; United Nations Conference on Housing and Sustainable Development, 2016). WHO's assumptions informed the approval of the *International Classification of Functioning, Disability and Health* (2001), the *UN Convention on the Rights of Persons with Disabilities* (2006), and the *European Disability Strategy 2010/2020* (2010). When promoting *Universal Design* (or *Design for All*) as a fundamental approach to the conception of spaces, products and services that are able to answer the needs of the most vulnerable population, these documents reread disability not as a condition proper to a person, but as the result from the interaction with their everyday spatial setting (Arenghi, Garofolo & Lauria, 2016).

Being in line with this perspective, *Design with All* invites to take a further step towards a participated approach, in order to overcome the reference to predefined criteria, abstract subjects, parameterised and universal conditions and demands. In the same direction goes *UX Urban Design*: a still underdeveloped field of studies, where UX stands for User Experience, to underline the central role recognised to the subjects/addressees of spaces, services and technological devices in all the stages of the design conception (from the diagnosis phase, to the project itself and during its management) (Babelon, 2017; Lefevre, 2018).

According to this interpretation, accessibility to tangible and intangible urban assets becomes a link between reflections on Urban Design and on Smart Cities. As highlighted by the Digital Information Institute and Cisco, we are living in a tumultuous phase of development of information technology: Internet of Things, Data Sensing, Artificial Intelligence potentially allow extraordinary progress in the capacity to collect, process and disseminate information (Cisco, 2017). These conditions offer important perspectives for tailoring urban solutions and policies to people's needs, whereas

taking interactive knowledge as a support to decision making prompts to build new alliances between technological change and social justice.

Today, the domain of knowledge is in fact a disputed field, affected by the frequent subcontracting to private and economic players of the responsibilities and services that were previously reserved to public institutions. From being a component of “common wealth”, knowledge and information are therefore becoming powerful drivers for social, territorial and economic inequalities (Forum Diseguaglianze e Diversità, 2019). For this reason, many research studies, EU funded projects and urban policies address “technological sovereignty” and the building of “data commons” as strategic issues of future urban agendas, while asking public institutions to re-enforce action towards a more democratic, interactive and inclusive use of technologies (Bass, Sutherland & Symons, 2018; Morozov & Bria, 2018).

Going back to the issues of accessibility for all, this orientation opens up important fields of research and practice: the construction and management of public data analytics and frameworks, aimed at providing up-to-date information on types and intensity of use of collective spaces and services by different users; the integration of public administrations’ information systems with direct knowledge through interaction with stakeholders; the implementation of extended forms of e-participation and sharing of information with citizens. In Italy these issues start being addressed on a national level¹. However, they still are largely unexplored by public regional and local policies (Chiarelli & Marchigiani, 2018).

Spatial Welfare and Planning Standards

Current urban planning debate does not escape the call to take on a healthy and inclusive perspective (Gabellini, 2018). The search for hygienic living conditions is inherent to the origins of modern planning. In Italy, the recent anniversary of the *Inter-ministerial Decree on Planning Standards* (no. 1444/1968) has contributed to awake attention to these topics.

In urban contexts, planning standards have been a fundamental milestone in the construction of a rich estate of well-being equipment: spaces and green areas for leisure and sports; schools and buildings for social, healthcare and cultural activities and services. Over time, while stressing the need to go on building and upgrading this asset of public-owned facilities, many researchers and practitioners have shared the opinion that standards regulation requires maintenance and review, also with reference to the issues of health and accessibility (among the others: Bellaviti, 2008; Donaggio & Zorzi, 2013; Munarin & Tosi, 2014; Caravaggi & Imbroglini, 2016; Bricocoli & Sabatinelli, 2017; Giaimo, 2018; Laboratorio Standard, 2020²).

Social, economic and environmental crises feed the demand for updating standards’ categories and conception, taking the point of view of those who are most penalised by the organization of urban space (children, people with disabilities, the elderly, etc.). The focus on the quality of “material welfare” (Pasqui, 2017) invites to abandon a uniquely quantitative perspective (the 18 square meters/inhabitant from the norm), in favor of a performance-oriented approach based on people’s necessities and capabilities (Talu, 2014). Talking about healthy and inclusive cities therefore forces to reinterpret those spaces that were built as planning standards (and their further development) as the components of a *usable for all* framework of public equipment, extending at the urban and neighbourhood scales, and inviting all citizens to perform active lifestyles.

Accessible Design, Healthy and Active Cities: What Else to Be Done?

Today, a growing production of scientific literature, policy guidelines and international experiences address accessible design in a trans-sectorial way, showing the capacity of this issue to foster deep change in urban regeneration approaches, and to speed up the pace towards an “inclusive New Urban Agenda for All” (United Nations, 2016b)³. “Healthy Cities” (Barton & Grant, 2013; Tsouros, 2015; D’Onofrio & Trusiani, 2017), “Active Cities” (Edwards & Tsouros, 2008; AA.VV., 2015), “Inclusive Cities” (Shah et al., 2015), “Cities Accessible for All” (Rossi, 2018) are only some of the

labels used for city networks, planning and design practices, where integration of urban actions on spatial accessibility is promoted: the design of spaces accessible to people with different abilities; the implementation of green and healthy corridors, in order to combine the building of new ecological services with the spreading of motor and sports activities; the renewal of urban health policies through a stronger relationship between the supply of healthcare services and the quality of their spatial setting. Although the instances, actors and solutions that these practices refer to are diversified, they all foster reflection on the strategic role that the everyday usability of city spaces can play in assuring health, inclusion and equality conditions *for all*.

Nonetheless, integration struggles to become planning and policy ordinary practice, and many barriers still separate the wide range of skills and tools that deal with accessibility. The open challenge is, therefore, to build more effective synergies among city planning instruments: from the government of urban transformations and mobility; to the maintenance of public spaces and the construction of green infrastructures; and to the provision of territorialised welfare services and facilities.

PROJECT EXPERIENCES IN SEARCH FOR INTEGRATION

Since some years now, the interdisciplinary group *Trieste Inclusion & Accessibility Lab* (TRIAL), headed by the Department of Engineering and Architecture of the University of Trieste (DIA)⁴, has worked on spatial and technological solutions for urban areas burdened by complex vulnerability conditions.

The aim to upgrade the usability of collective urban equipment by the largest extent of people with different abilities addressed reflection on accessible design, and on interaction among a variety of policies (urban planning, public works, social-health assistance, etc.).

A first step was to analyse a number of experiences that, in the region Friuli Venezia Giulia, have recently focused on accessibility as a driver for public action's innovation (Basso & Marchigiani, 2020). Hereafter, critical and participant observation of these experiences highlight technical aspects that still need to be developed.

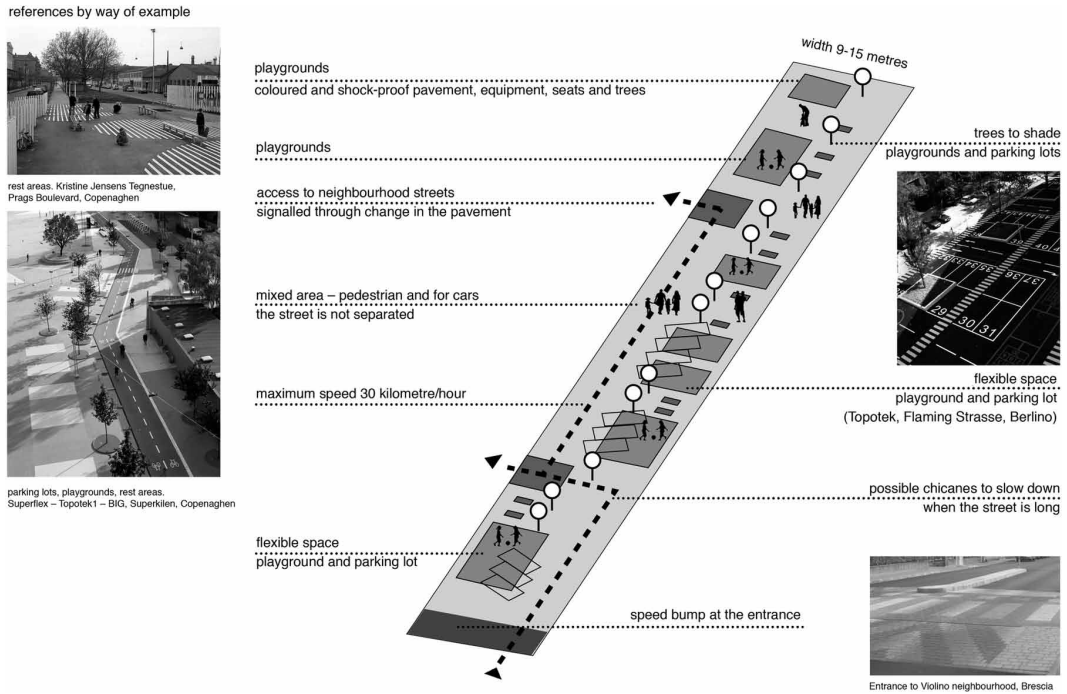
Town Plans: Frameworks of Collective Spaces

In Friuli Venezia Giulia, the prevailing of small urban centres combines with the reduction – in line with national trends – of the size of households and the growing presence of elderly population. Consistently, the images of a *welfare of everyday walking and cycling* recur in many recent town plans. The intention is both of orienting shrinking public budget to the creation of a network of spaces open to the use of everyone, and of building synergies with sustainable mobility (Basso & Marchigiani, 2019).

In town plans, the radius of accessibility to services often establishes the spatial measure and rhythm of walking and cycling itineraries, punctuated by the micro-places of everyday social life: shops, associations headquarters, open spaces for the meeting or the market. Sometimes this spatial framework becomes more articulated and, by resorting to agreements with private owners, the “connective green”⁵ fully expresses its design potential, hosting new parks, cycle paths and sports facilities. These systems of equipped places concur to give shape to a *green network* meant to promote active health practices, movement and physical exercise. In some other cases, the tiny grain of urban contexts calls for more detailed interventions. By integrating the issues of soft mobility (creation of pedestrian, slow/limited traffic zones) into planning regulations, criteria for the transformation of streets into safe and accessible spaces, for the treatment of barrier-free surfaces, and the location/type of urban furniture are defined (see Figure 1).

In general terms, what these planning experiences show is an interesting trend towards the introduction of accessibility criteria and spatial solutions as new components of the structural and regulatory contents of local town plans.

Figure 1. General town plan of Pradamano (Udine, IT). Collective open spaces for safe and inclusive accessibility. Source: architetti cicalotto e santoro associati, 2014.



Public Works: Inclusive and ICT Tools for Urban Maintenance

In 2011, the Province of Trieste established an Accessibility Laboratory (LABAC). Later integrated in the plans for social and health care (Italian law no. 328/2000), LABAC involved various actors⁶, with the aim to favour inclusion and the autonomous mobility of the most fragile city users and inhabitants (Garofolo, Chiarelli & Grion, 2018; Garofolo & Marchigiani, 2019).

On the side of the process, activities were based on the involvement of different skills, through the organization of surveys and of training courses (with professionals, public officers, researchers and persons carrying different disabilities). On the side of the technical outputs, LABAC delivered a prototype of an ict and geo-referenced tool for mapping and analysing the degrees of accessibility of urban itineraries, based on specifically localised survey sheets (see Figure 2).

In spite of the positive effects proved by the application of the LABAC overall methodology, its transformation into ordinary practice found difficulties. The predominance of inertial and sectorial procedures within local administrations still opposes a concrete shift towards the construction of effective ICT and interactive knowledge as a support to current urban maintenance.

Territorialised Welfare: Outdoor Health Practices

Percorso salute (Health path) is a local welfare project, developed in the province of Trieste, and aimed at promoting physical activity in open spaces (Paoletti & Greco, 2015). Started in 2016 by the Integrated University Health Service of Trieste (ASUITS), with the collaboration of the center for diabetic persons, it is currently implemented with the involvement of local associations and the program Habitat Microaree⁷.

Percorso salute organises periodic meetings, where persons who are overweight and with diabetes-related diseases perform outdoor activities together, and with health operators. Collective physical exercise is part of an individual program, to be independently performed and monitored, in

Figure 2. Geo-referenced map of the degrees of accessibility in Trieste. Source: LABAC (Ilaria Garofolo, with Elisabeth Antonaglia, Barbara Chiarelli and Silvia Grion), 2015.



order to reach the 150 minutes of activity per week recommended by the World Health Organization. To stress the importance to weave health and social policies, further initiatives have been recently developed through the organization of walking groups open to a wider public, both in social housing districts and in peripheral areas.

Breaking the borders of the places for institutionalised housing and services, to use the whole city as a support for health practices, is a highly innovative strategy. However, and again, the extension of this strategy to broader categories of citizens and across urban space finds a barrier in the lack of coordination with the maintenance and upgrading of the physical spaces where healthy activities should take place.

Planning and Building Regulations: A Regional Laboratory on Accessibility

In 2018, the Autonomous Region Friuli Venezia Giulia approved the law no. 1, *General principles and implementation provisions on accessibility*. This operation is surely interesting and ambitious. Taking the perspective of *Universal Design*, the objective is to develop a laboratory for public policies, and to rethink quality standards for the design of public buildings, urban and extra-urban paths in order to guarantee their usability in conditions of safety and autonomy.

To implement the law, the Region activated: a technical consultancy centre on accessibility, as well as collaborations with the Universities of Udine and Trieste; the design of a regional geo-referenced accessibility mapping web portal and ICT tools, to support and address local administrations in the construction of information on spatial accessibility; annual funds for the design and the implementation of spatial interventions, that up to now have been addressed to Municipalities that already had an approved plan for the removal of architectural barriers (PEBA)⁸.

However, in the face of the limited amount of regional contributions (a maximum of 50,000 euros per Municipality), this last condition is proving to be too restrictive, due both to the high commitment (in terms of costs and staff) required for the elaboration of a PEBA, and to the frequent focus of this type of plans on single obstacles to motor activity (while the solutions required by persons carrying perceptive and cognitive disabilities are often different and conflicting).

The innovation field opened by the law is therefore to be further explored.

Mind the Gaps

In Friuli Venezia Giulia, many urban policies and tools show a growing interest towards accessibility issues. Nonetheless, their full implementation is far from being reached.

Binding innovation to sectorial plans, such as the PEBA, is not enough. The mapping of interventions on physical barriers – however widespread and supported by the list of the works and costs that are necessary to their removal – reduces the complex theme of accessibility to a mere remedial approach. On the contrary, its assumption as a structural and precautionary component of general town planning can be more effective.

This change of perspective is anything but simple. It underlines the capacity to draw an extensive and complex design for a new *public city*: an overall view and approach that is necessary to consistently address both public works, and negotiation procedures with private actors, to whom – due to the lack of public funds – the realization and co-financing of collective facilities are today often delegated. Equally complex is the coordination of the timing and the contents of town plans with those of building regulations and tools that deeply affect the usability of public spaces (traffic, mobility and parking, commercial occupation, etc.).

Finally, when talking about healthy and active cities, no less important is the need to overcome the persistent misalignments between urban transformations and activities set by the plans for social and healthcare that are in charge of the territorialised organization of welfare services.

PROACTIVE CITIES

Integrated technical and planning dimensions of accessibility are the main focus of the on-going research *Proactive City. The City as a Gym for Active Design*⁹. By matching the concepts of motility, usability of urban spaces and public health, the goal is to overcome sectorial approaches, and to demonstrate how accessibility for all can be a guiding theme of urban regeneration.

Beyond the simple mitigation of the impacts of physical barriers, Proactive City interprets cities as gyms: as places where the choices related to the configuration of public spaces, the location and management of services are part of strategies aimed at reactivating one person's abilities to interact, move independently and perform healthy practices.

In this frame, inputs from a variety of disciplinary fields acquire relevance: urban planning and inclusive design, rehabilitative physiotherapy, web GIS and ICT, mHealth and e-care for neurodegenerative disorders, multi-criteria analysis.

In addition to disciplinary exchange, Proactive City is based on strong interaction between study and practice, doing and learning, according to a reflective practitioner's approach (Schön, 1984). In this sense, the first year was mainly dedicated to the setting of a theoretical position (to be further specified through action research), and to the co-definition with stakeholders of addresses to urban planning, policies and design.

A Different Approach

As a general outcome, Proactive City suggests three main shifts in current perspectives on urban regeneration.

From People's Disabilities, to the Comfort of Spaces of Everyday Life

Stressing the enabling potential of urban space is a fundamental premise to break the boundaries among solutions that are still addressed to particular categories of users. Accordingly, the *chain of spatial equipment and services* (parks, schools, gyms, libraries, health centres, etc., not always and not necessarily public), that build the collective city and are the theatre of urban daily life, should be intended *as a service itself*, and as the support for extended conditions of health and well-being.

In this view, accessibility fosters the review of planning and building standards: it prompts to go beyond the design of separate areas, towards the introduction of new performance criteria for sustainable and active mobility in-between public facilities.

The invitation is to look at collective equipment not as a set of detached containers, but as a connected infrastructure, helping produce physical and social relations between places and people. At the same time, the comfort and the quality of built and open spaces where services take place, as well as the links to urban contexts, acquire major importance due to their potential to generate new ways to supply and manage welfare facilities, and to customise them to a growing variety of needs.

From Juxtaposed Interventions, to Integrated and Contextual Actions

A second change in perspective concerns the overcoming of a strong separation among the administrative sectors dealing with spatial transformation (urban planning, mobility, public works), and the integration with social, healthcare, cultural/educational services, housing policies, the management of sports equipment, landscapes and cultural resources.

Talking about a city accessible for all does not mean imagining that everyone can physically get anywhere. Rather, it means questioning how to make urban facilities as accessible as possible, on foot, by bicycle, car, public transport, Internet, according to the individuals' different abilities. It means reorganising welfare services to make them closer to those who need them most, and cannot easily reach them on their own.

If these are the goals, starting from the places, their specific physical-spatial constraints, and the demands from the people who actually live there is a useful move to *replace the silos thinking and acting* that often characterise public routines with solutions that are consistent with real demands and contexts.

From Design For, to Design With

The perceived usability of a place goes well beyond the absence of sensory and architectural barriers. It refers, instead, to a more articulated set of physical and behavioural variables, that have different impacts according to individual conditions of disability, and that deeply influence the propensity to use a specific urban space.

In this sense, to be more effective, spatial strategies and solutions should be ordinarily built through interactive processes, open to the contribution of the often *ignored experts* who everyday deal with the effects of disabling environments. Through participatory surveys and mapping, direct collection and interpretation of qualitative information offer the opportunity to set aside a trivial application of given rules and standards. At the same time, these activities force to negotiate the *right to creativity of a designer* with the judgment expressed by a variety of stakeholders: persons with disabilities of different type and duration; citizens and associations. Persons who should be habitually invited to co-build and co-validate the design process and its results.

Technical Fields of Innovation

During the first year of Proactive City, research focused both on tools and solutions for integrated public governance and spatial design, and on how technological devices can support the achievement of a citizens-centred smartness perspective. A main conduct rule was the construction and testing

of research outputs through interaction with actors in charge of urban transformations and policies; this approach will also guide the second and last phase of activities.

Integrated Public Governance

Proactive City started with the participation in the national project *Accessible Cities for All*, promoted by the Italian Institute of Town Planning (INU). Contribution was given to the construction of a web portal, to be further implemented over time, and containing *Guidelines for integrated accessibility policies and projects*¹⁰. The work was built on a critical analysis of more than 120 Italian case studies (the *Atlas*), dealing with the mitigation/removal of architectural, sensory, perceptual, cognitive, cultural, social, economic, health and gender barriers (see Figure 3).

Specifically, the Guidelines provide addresses to overcome current gaps in medium-long term policies on accessibility: design criteria, aimed at fostering the usability of built and open spaces and services where not only people with disabilities but everyone can be included; integration of strategic and town plans, urban policies, regulation and financial programs, at different levels (national, regional, city); building of participatory processes open to administration's technical staff, professionals and citizens; development of training courses both inside and outside the universities, to support the raising of awareness and of technical skills.

The Guidelines highlight the need of strong public governance in the construction of local agendas, providing administrations with tools to more effectively coordinate the broad set of urban policies that contribute to achieving conditions of accessibility for all.

Accessible, Healthy and Green Infrastructures

No less important is the design of spatial solutions and the process towards their practical implementation. In order to develop these issues, another core step of Proactive City was the identification of a pilot context in the region Friuli Venezia Giulia.

The city of Grado (Gorizia) was the place of a design workshop organised by the DIA and the local Municipality¹¹. The choice was motivated by the complexity of a city that can be taken as representative of many other small urban contexts in our region and country. Grado is a tourist destination, with a strong seasonal change of urban habits and population. Moreover, the local administration is implementing innovative projects for public spaces, with a specific attention to green networks, sustainable mobility and resilience; the PEBA has been recently adopted, and the Plan for sustainable urban mobility is under construction.

During the two-week stay in Grado, professors and students met technicians from the Municipality and the Region Friuli Venezia Giulia, and took part in participatory surveys with the Regional board of disabled people's associations and the Italian Blind Persons' Union.

Surveys provided essential inputs to design *new accessible, healthy and green infrastructures*: itineraries connecting a residential district of the city to the parks and pedestrian areas at the back of the beach, where renewal interventions are needed. The objective was to conceive a system of open spaces, paths for walking and cycling, areas for cultural, education and sports, also promoting the reuse of vacant spaces and the construction of an overall urban regeneration strategy (see Figure 4).

The challenge was to imagine Grado as a small capital of healthy life, offering the opportunity to perform different outdoor activities all year long; a city where tourism becomes the lever both to develop economies, and to upgrade the quality of everyday living conditions of stable inhabitants.

With the help of technicians from the Municipality, a variety of combined solutions and rules for streets and paths were proposed: wherever possible, the increase of pedestrian areas and of separated bike routes; when available space is limited, a safe coexistence of different mobility modes through the creation of 30 km/h zones, the re-design of roads as public spaces (reduced vehicular areas and chicanes, enlarged pavements, addition of trees), the choice of street materials and furniture helping orientation and avoiding obstacles (not only to the movements of persons with different disabilities, but of anyone) (see Figure 5). The selection of the places to work on was addressed by reflections on

Figure 3. Accessible Cities for All: web Atlas of Italian case studies. Source: Italian Institute of Town Planning, 2019.

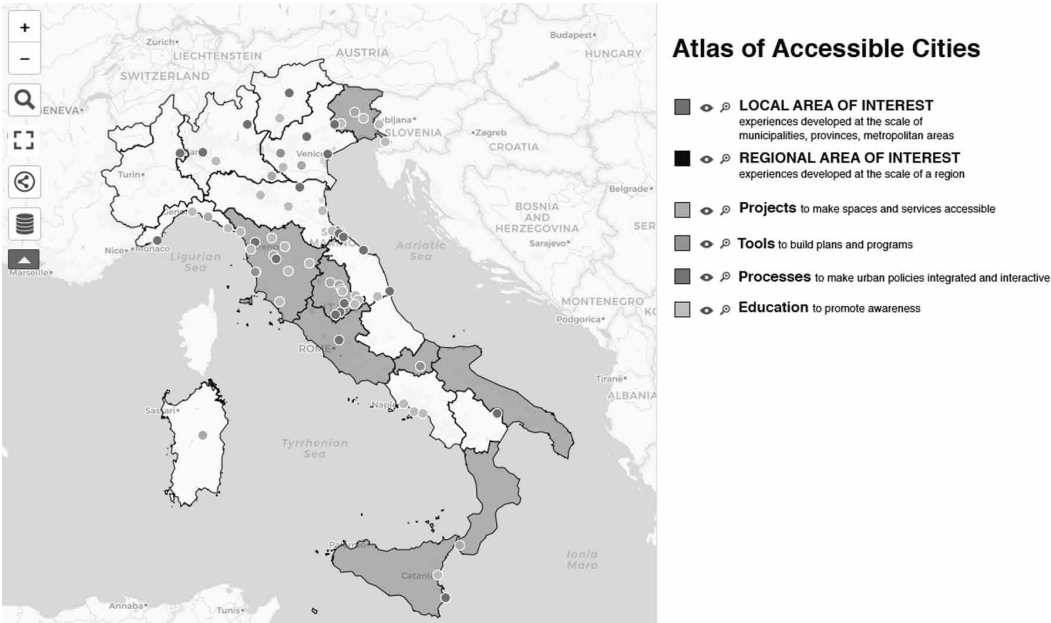
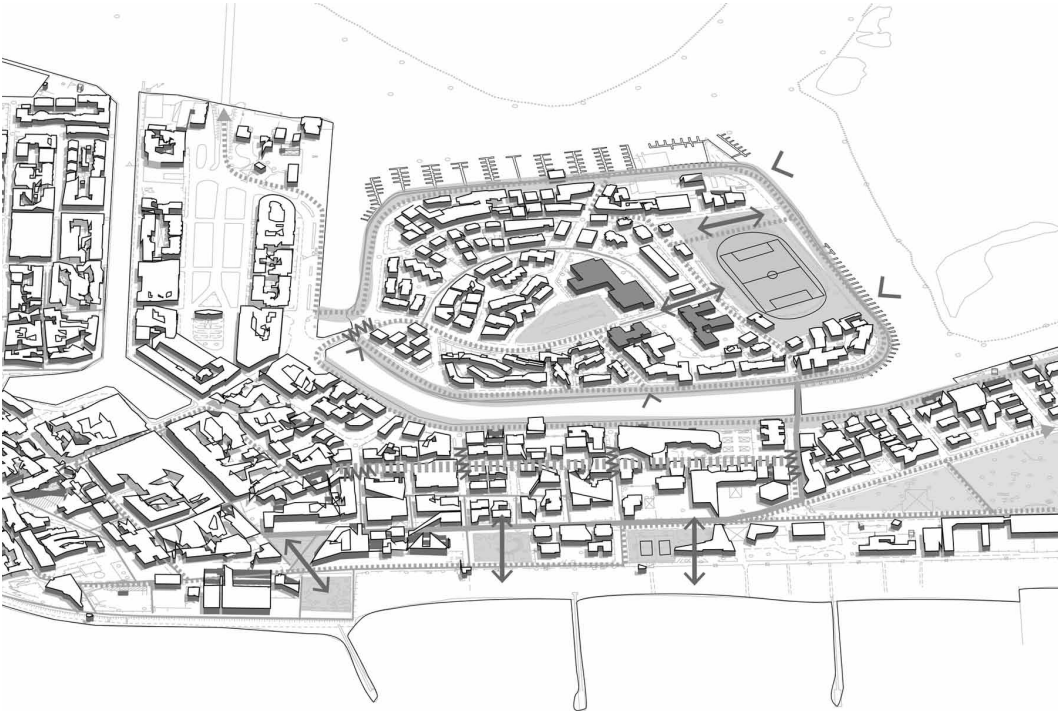


Figure 4. Design workshop in Grado (Gorizia, IT). General master plan. Source: Students from the Courses of Architecture and Civil Engineering, University of Trieste, 2019.



a larger urban scale. As keystones of the whole system were taken existing public facilities: schools, parks, sports equipment, healthcare facilities for the elderly. With the aim to multiply and offer new services to a larger number and variety of users (not only to institutionalised target), design proposals showed how to physically connect these facilities, to open up their fences, and re-draw the often forgotten and unused spaces that lay in-between the public buildings and the roads (see Figure 6). The focus was on the design of flexible spaces, where inclusive playgrounds are conceived as integral part of an overall multitasking urban equipment changing in time, inviting everyone to freely perform physical activities in the city (see Figure 7). Green materials and strategies for making urban soil permeable and resilient to climate change were the main ingredients of all the solutions, showing how accessibility, health and environmental issues can be jointly addressed in ordinary interventions on public spaces.

As the workshop highlighted, the obstacles to proactive and caring cities are not to be found as much in the lack of detailed technical devices (that, in fact, urban planning and design have already developed to a large extent), as in the difficulty in combining them as average components of a different approach to urban regeneration. *Inclusive is not synonymous with special*. The task is, therefore, to design with less barriers from the very beginning, taking the perspective of the most fragile people, and conceiving inclusive design as a response to the conflicts among different ways and capacities to move in the city (pedestrians vs. cyclists, motor vs. visual or cognitive abilities).

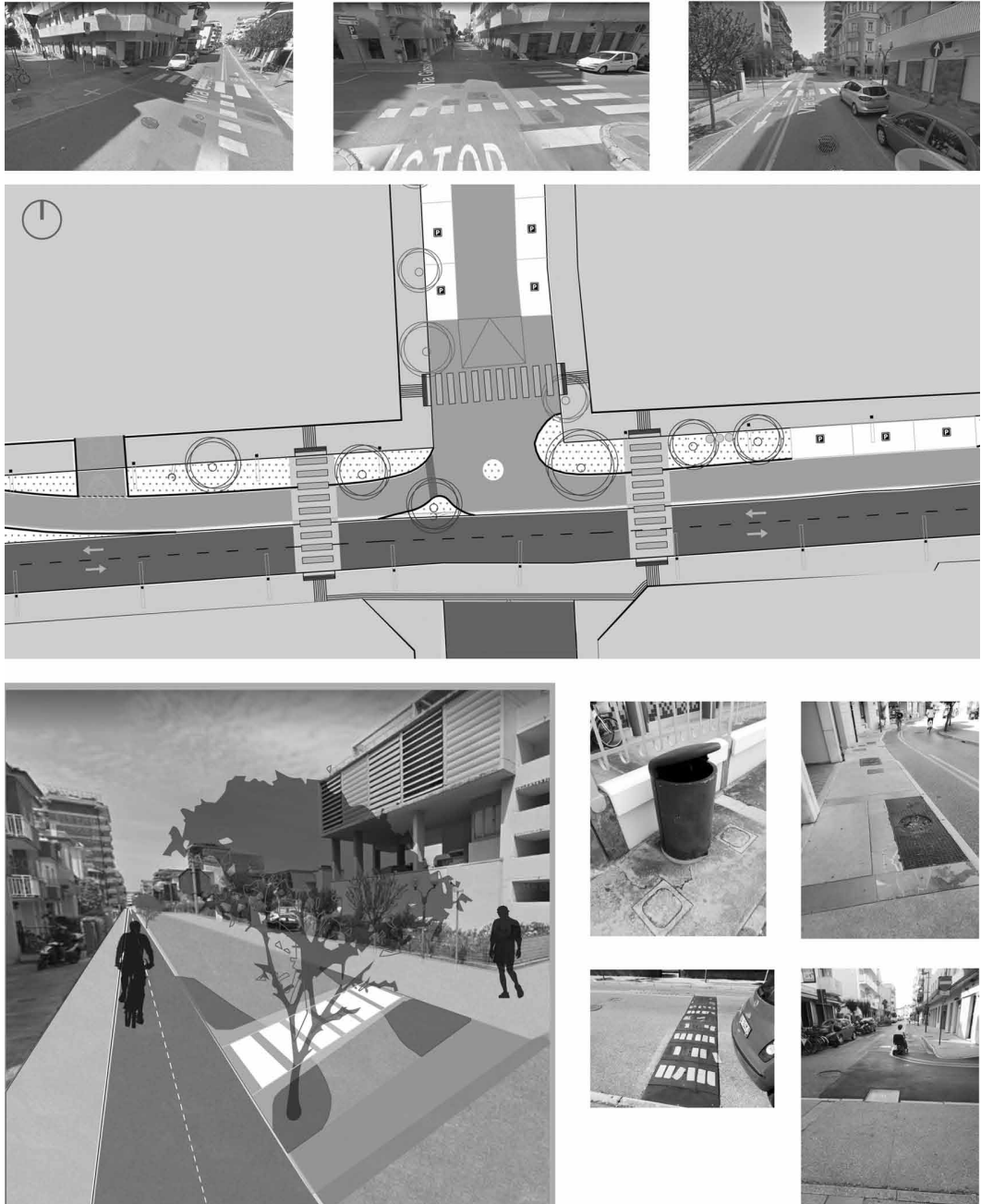
In this perspective, including the expertise of health and physiotherapy operators becomes highly important. This allows to properly understand what constitutes a real impediment or a stimulus to individual mobility in relation to different forms of disability or diseases (let's think, for example, of Autism, Parkinson or Dyslexia disorders); if and to what extent the removal of all spatialised and sensorial obstacles is really effective; and, consequently, how to define the criteria for a different organization and equipment of urban spaces, capable of reactivating still unexpressed personal and social skills. Future steps of Proactive City will specifically deal with these issues, by developing further action and research – with ASUITS and the Territorial Agency for Social Housing of Trieste (ATER) – on social housing districts in Trieste, where a large number of persons with multiple vulnerabilities live.

People-Centered Smart Tools

The construction of accessibility mapping web portals stimulates further reflection on how to use technological devices in order to make cities accessible for all. In this frame, three fields of experimentation are identified: *systematization of knowledge*, in order to enable public administrations to take informed decisions on urban policies; *participatory implementation of knowledge*, to give voice to citizens' perceptions and actual use of urban spaces; *sharing of knowledge*, as a means to offer customised services responding to a variety of personal conditions and needs. What Proactive City intends to prove is that the implementation of these actions does not necessarily require new complex infrastructures. In fact, even relatively simple technological devices can be effective to support decision making and the interaction between public administrations and citizens.

In a phase of contraction of both public budget and technical staff, efficient functioning of collective equipment and services forces to clearly program and prioritise public interventions. The construction of *platforms where to collect, harmonise and map the large amount of public-owned data* that are already available – but actually dispersed among administrative levels and sectors – becomes strategic. Data such as those referring to the intensity of use and to the profiles of the users of welfare services, local public transport, sites of tourist-cultural interest; information related to the origin/destination of users, and to the demographic composition of residents in different urban neighbourhoods. When re-organised into an integrated data framework, this information can provide a useful decision support system. It is in fact automatically and periodically updated (and hence does not require ad hoc surveys), mainly refers to public services addressed to the most vulnerable

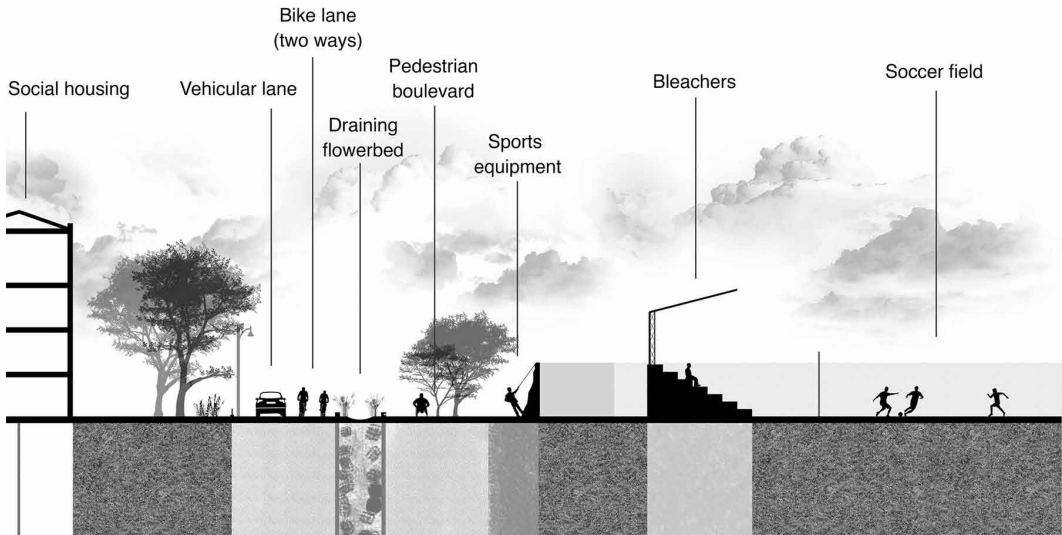
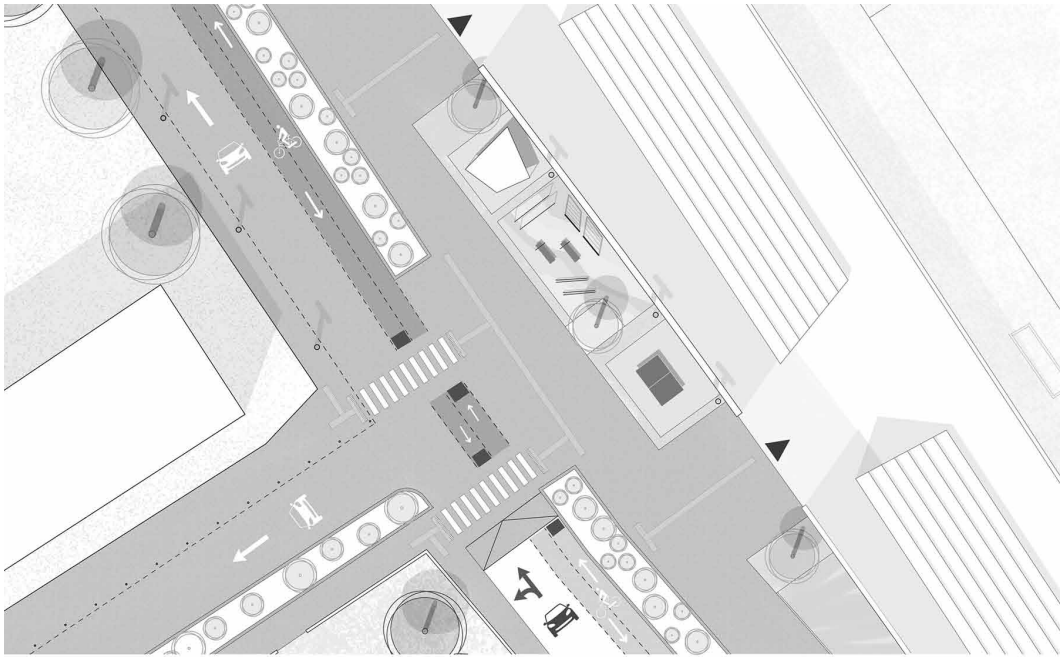
Figure 5. Design workshop in Grado (Gorizia, IT). 30 km/h roads. Source: Students from the Courses of Architecture and Civil Engineering, University of Trieste, 2019.



groups, and can help not only define where to intervene, but also assess the effects of interventions, and readdress them if necessary.

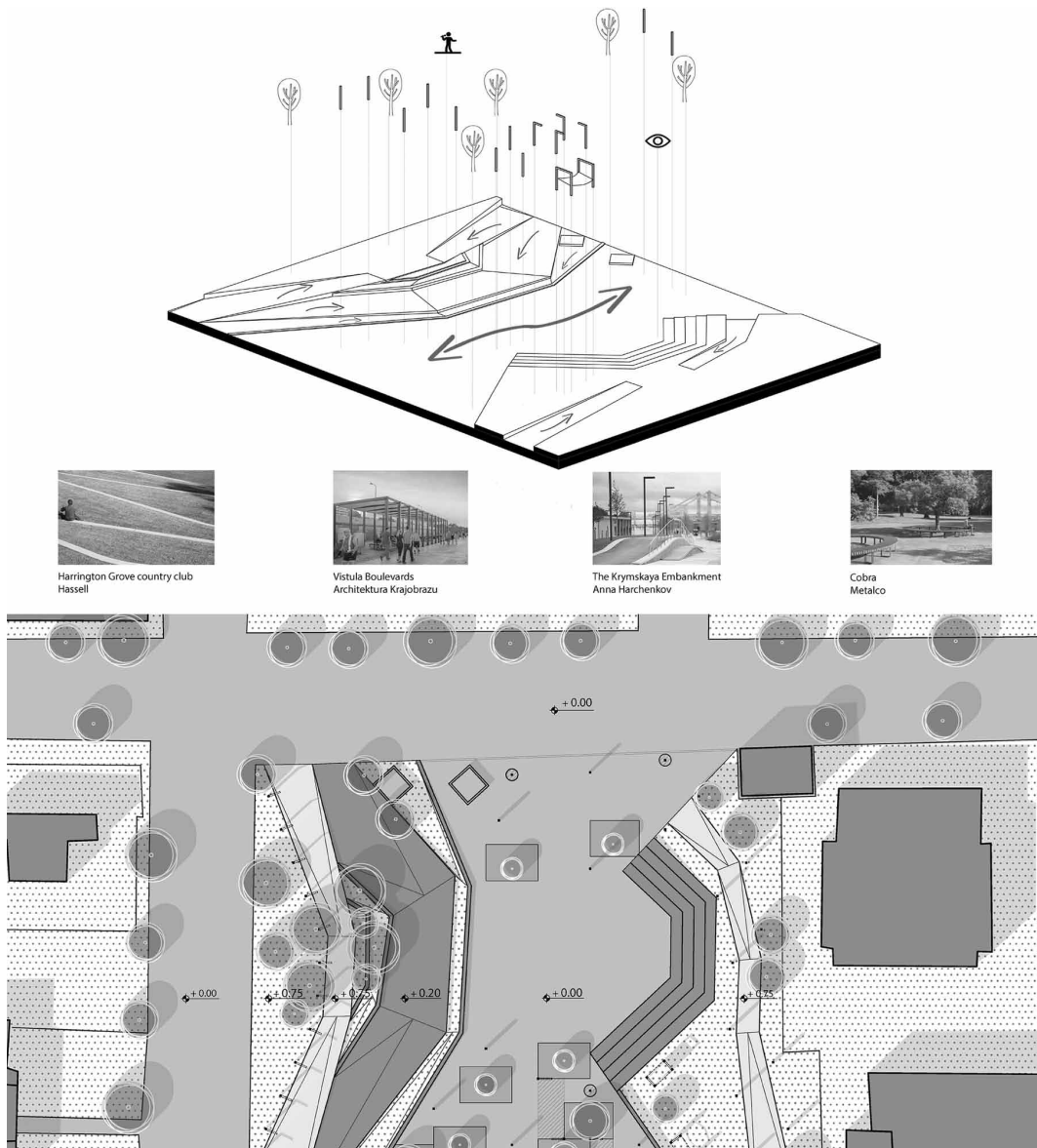
In-depth knowledge of a territory is however fundamental. The direct collection and interpretation of qualitative information on specific contexts, as well as the identification of their degrees of usability and perceived obstacles, are strategic in the construction of plans and projects for the improvement

Figures 6. Design workshop in Grado (Gorizia, IT). Spaces in-between sports equipment and roads. Source: Students from the Courses of Architecture and Civil Engineering, University of Trieste, 2019.



of accessibility conditions. In this frame, the active participation of stakeholders (persons with different disabilities, public officers, professionals, etc.) is essential: from the definition of the type of information to be collected, to its in-field testing during the surveys. Interactive processes are particularly useful to compare subjective perceptions, and allow to take into account the end users' point of view, while defining technical criteria and solutions to adapt urban spaces to the needs of people with different (and often conflicting) physical, perceptive and cognitive abilities. These processes can be made easier through the use of technological applications: *geo-referenced mapping*

Figure 7. Design workshop in Grado (Gorizia, IT). Inclusive playgrounds. Source: Students from the Courses of Architecture and Civil Engineering, University of Trieste, 2019.



tools integrated with electronic survey sheets, allowing real-time organization of the information gathered during on-site activities, the matching of critical issues (environmental obstacles and individuals' perceptions) and of possible solutions, the harmonization with local administrations' databases. Specifically, the app prototype delivered by LABAC automatically elaborates collected data into a simple visualization of spaces, providing their different degrees of accessibility based on the assessment and weighing (through algorithms) of technicians' and users' objective and subjective impressions. When questioned on specific urban spaces, the app can give useful information to define the general framework and costs of works that are necessary to solve recorded critical issues – from the elimination of single physical and sensorial barriers, to more general interventions for increasing

the usability and spatial quality of larger urban sectors. This can promptly and effectively help draw and manage an incremental program of public works, as well as monitor their implementation.

Finally, the interaction of urban planning and design with ICT tools can open up further opportunities to *communicate with people in a smarter way*. The adoption by public administrations of innovative devices and applications shows considerable potential for improving the daily use of urban spaces by a large number of persons, both tourists and residents. By providing timely and up-to-date information on services and their timetables, on physical accessibility to places (also through public transport, or dedicated parking spaces), on the presence of supports to overcome motor, perceptive or cognitive barriers, these tools allow an easier usability of city spaces¹², as well as a continuous and direct dialogue with the public administrations¹³. This is especially true if devices are customizable – that is questionable starting from specific needs, and interactive – that is capable both of gathering information and suggestions from citizens and city users, and of communicating the status of the interventions carried out to meet their requests.

CONCLUSION

Due to the radical spatial, social, economic and demographic changes, and to the environmental and climate crisis that affect contemporary cities, the need to renovate the technical skills of urban planning and design is urgent and strong.

In this frame, the design of *cities that are accessible for all* stands as a win-win solution, capable both of tackling a multiplicity of urban challenges, and of being implemented through incremental processes. This according to a *tactical approach* that can cope with the current uncertainty of public funding for urban regeneration.

As this essay tried to show, many experiences (both at international and local levels) highlight a growing awareness of the key role and potential that the issues of accessibility can play. However, while the effectiveness of accessibility solutions is deeply rooted in the administrations' capacity to coordinate interventions for urban maintenance and to clearly establish their criteria and priorities, a variety of bottlenecks still oppose ordinary integration of instruments and policies that equally impact on accessibility. These bottlenecks are mainly of *cultural nature*.

Today, when referring to active and universal design, the discourse on accessibility still suffers from contrasting tendencies. On the one hand, accessibility is often taken as a simplified attribute for connectivity, to be assigned to traditional ways of designing and equipping open and green spaces, areas for sports activities, public buildings and services. In other recurring situations, the approach is that of retreating into particular solutions that, focusing on building, single spatial barriers, assisting technologies, confine the movement of persons with disabilities to dedicated spaces and modes, thus producing a sort of *spatial stigmatization*. In the name of the application of simplified algorithms to make decisions automatic and of ergonomic parameters that measure abstract functionalities of those who are more fragile, oversimplifying predictive models as well as exceptional devices are used as additional ingredients to the design of policies and of urban spaces. In these solutions we can see the emerging of *new functionalisms* (Bianchetti, 2016), of severe *physical and spatial determinism*, which in fact segregate uses and users' diversity, and erase the democratically disputed character of streets and urban spaces (Francis, 1991).

What the research on proactive cities aims to show is that talking about *cities accessible for all* means something radically different. The invitation is to re-design urban spaces as places where persons can return to freely move and interact, with their different bodies, motilities, material and immaterial needs, cultural and social habits and conditions. The research is still underway, and further activities will be developed to improve and better integrate the use of technological, design and planning devices. In this view, the collaboration between the University of Trieste and the Autonomous Region Friuli Venezia Giulia¹⁴ will provide concrete ground for experimenting both new cultural approaches and innovative instruments: the definition of criteria to evaluate degrees of spatial accessibility

with reference to a person's capabilities (the shift is from universalistic and quantitative standards, to people-centred ones); the development of a regional web mapping system and of a specific app for the collection of accessibility data (to help municipalities develop participatory surveys and prioritise interventions); the construction, together with stakeholders, of guidelines addressing the implementation of accessibility strategies on the city scale, in order to build stronger connections among urban planning, spatial design, traffic and mobility management, welfare programs. As ongoing debate and experiences show, to make our cities more accessible, the main challenge is in fact to abandon sectorial approaches, in favour of more effective integration of accessible design within general town planning, interventions of spatial transformation and ordinary maintenance, and all the policies that impact on urban spaces and their use.

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ENDNOTES

¹ The reference is to the Team for Digital Transformation established in 2016 by the Presidency of the Italian Council of Ministries, and to the *Three-year Plan for IT in the Public Administration 2019-2021* (https://docs.italia.it/italia/piano-triennale-ict/pianotriennale-ict-doc/it/2019-2021/01_piano-triennale-per-informatica-nella-pa.html).

² Laboratorio Standard is a self-promoted research, involving Politecnico di Milano (Cristina Renzoni, Paola Savoldi), IUAV Università di Venezia (Alessia Franzese, Stefano Munarin, Maria Chiara Tosi), Università di Trieste (Sara Basso, Elena Marchigiani), Università di Roma Tre (Mauro Baioni, Giovanni Caudo, Nicola Vazzoler), with the support of the Italian Society of Urban Planners (SIU).

³ Many EU funded projects for research and innovation in cities (mainly, Horizon 2020-Societal challenges, Urbact, Urban Innovation Action-UIA), while being addressed to specific topics (cultural heritage, nature based solutions, sustainable land use, climate action and environment, green infrastructures, urban mobility, circular economy, public space and housing, energy efficiency and transition, health, demographic change and well-being), deal with the issues of accessibility to urban spaces and services as well (see, in particular: <https://ec.europa.eu/programmes/horizon2020/en/h2020-sections-projects>; <https://urbact.eu/search-content?keywords=accessibility>; <https://www.uia-initiative.eu/en>).

⁴ TRIAL is coordinated by Ilaria Garofolo, with Elena Marchigiani, Barbara Chiarelli and Ghazaleh Ashary.

⁵ The “connective green” was introduced by the Decree of the President of the Regional Council of Friuli Venezia Giulia no. 126/1995, *Review of regional urban planning standards*. Among the standards dedicated to “green equipment, sport and outdoor shows” (art.14), the Decree also includes spaces aimed at creating a green system, building the physical connection between equipment, green areas, and open spaces. In the connective green, bicycle and pedestrian paths, side areas for protection, natural free land can also be included.

⁶ In addition to scientific support and coordination by the University of Trieste (Ilaria Garofolo, with Elisabeth Antonaglia, Barbara Chiarelli and Silvia Grion), LABAC saw the participation of: Municipalities in the province; Territorial Agency for Social Housing of Trieste (ATER); Integrated University Health Service of Trieste (ASUITS, now ASUGI); Regional board of disabled people’s associations.

⁷ Habitat Microaree was born from the collaboration of ASUITS, ATER and the Municipality of Trieste. It promotes well-being and social cohesion through integrated actions on health, education, habitat, work and local democracy. Today the program works in 18 social housing districts, with local offices where healthcare and social cooperatives’ operators carry out assistance and help desk services. As a device of territorial welfare, micro-areas organise socialization, training and recreational activities, in order to foster encounter and dialogue between inhabitants and public institutions (Gallio & Cogliati Dezza, 2018).

⁸ In Italy PEBA were established by the law no. 41/1986. They concern all existing public buildings which have not yet been adapted to the regulations on accessibility to disabled people. PEBA should have been adopted within one year of the enactment of the law; in 1992 another national law (no. 104) added the obligation to integrate them with provisions relating to accessibility to urban spaces. However, the compulsory nature of these instruments was nullified by the lack of sanction measures, and the Municipalities that have approved a PEBA are very few.

⁹ Being part of TRIAL’s activities, the two-year research was funded in 2019 by the University of Trieste; it is coordinated by Elena Marchigiani, with Sara Basso, Barbara Chiarelli, Ilaria Garofolo, Lucia Parussini, Roberto Prandin and Valentino Pediroda.

¹⁰ See: <http://atlantecittaccessibili.inu.it/le-linee-guida>.

- ¹¹ The workshop took place in July 2019, saw the participation of 14 students from the Courses of Architecture and Civil Engineering of the University of Trieste (Valentina Andriolo, Margherita Caiffa, Riccardo Gergolet, Claudia Gruarin, Stela Guni, Davide Gurtner, Marco Facciuto, Maria Teresa Manzara, Manuel Milone, Giulio Pastoricchio, Giulia Piacente, Francesco Schiava, Annamaria Spezzigu, Alessia Visintin), and was coordinated by Elena Marchigiani, with Sara Basso, Barbara Chiarelli and Valentina Crupi (DIA). Maria Antonietta Genovese was the reference person from the Municipality of Grado.
- ¹² See, as an example, web portals conceived to support travelling choices by persons and tourists with different disabilities: *Lombardia Facile... oltre la disabilità* (<http://www.lombardiafacile.regione.lombardia.it>); *Trieste per Tutti* (<http://triestepertutti.comune.trieste.it>).
- ¹³ A reference is to *Torino 3.0* (<http://www.torinotrepointzero.net>), a web portal conceived as part of a bottom-up process, as an invitation to local communities to share knowledge on the state of well-being in urban neighbourhoods, and to actively participate to public debate.
- ¹⁴ In the frame of the implementation of the regional law no. 1/2018, the Universities of Trieste and Udine have recently signed an agreement with the Region Friuli Venezia Giulia to provide scientific support.

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