

Technologies and Solutions for Collaborative Processes in Mutating Cities

Daniele Fanzini¹, Irina Rotaru², Nour Zreika³

¹Politecnico di Milano, Milano, Italy
daniele.fanzini@polimi.it

²Municipality of Saint Germain-en-Laye, France

irina.rotaru@saintgermainenlaye.fr

³Politecnico di Milano, Milano, Italy
nour.zreika@polimi.it

Abstract. The city, a place of contemporary living par excellence, challenges the planner by making it necessary to adapt progressively quicker to changes and to overcome the traditional design approach linked to the modern idea of the industrial city. Indeed, living in non-stationary contexts, the complexity of problems nowadays requires a new planning endeavor capable of testing future solutions ‘in the field’ rather than ‘on paper’, involving citizens, but also continuously adapting processes to achieve the expected results. The proposed contribution aims to document possible ways to trigger virtuous urban renewal processes, sustainably activating tangible and intangible resources. The topic will be investigated from the point of view of the triad: ‘project, technology, and digital solutions’, adopting a social perspective. The latter ensures the active involvement of citizens in strategic decisions, increasing their awareness and civic sense, but also supporting the proposition of evolving planning scenarios in order to develop solutions that will be concrete, achievable, and resilient. The core element concerns the way in which it is possible to promote the creation of an extended social mind through which collective behavioral change can be fostered. In some cases, digital technologies prove to be the effective ‘expert instrument’, also for understanding the planned intervention, opening the design process for different stakeholders not necessarily familiar with technical conventions. According to Floridi, digital transformation “disconnects and reconnects specific processes” and the project represents the most powerful innovation element to promote the ecological transition. These dynamics will be explored through the analysis of some research and project activities that directly involved the authors of this proposal.

Keywords: Mutation cities; Collaborative processes; Phyigital ecosystem; Urban change management; Innovative solutions.

1 Introduction

Cities are going through an inevitable and necessary mutation. The concept of the mutating city, or rather the city as a living organism evolving over time with respect to the circumstances and needs of its inhabitants, requires tailored approaches to the management of this transformation. Design experience and the use of enabling technologies can support the implementation of adaptable systems of governance and participative project activities which exploit the potential of the widespread social network to support the central decision-making processes [1].

The practice of participatory planning began with the American civil rights movement in the 1950s and later developed with important figures such as Jane Jacobs and Jane Addams in the United States and Charles Rowley in Manchester, whose studies paved the way for 'advocacy planning'. This term, invented by Paul Davidoff, can be defined as a theory of pluralistic and inclusive planning through which the interests of various groups within society can be represented. In her idea of the city, Jacobs includes the concept of social capital deriving from the importance of networks of people. This is also true for Jan Gehl, another important European scholar, who brings the methods of the social sciences into the toolbox of architects and urban planners, to construct a new relationship between physical space and social space, starting from the careful and accurate observation of reality [2]. Gehl considers that cities are for people and urban diversity can be interpreted as a resource that originates in the past when cities were still designed around people. With his work, Gehl creates a new relationship between physical space and social life; collecting data on people's ways of life brings their needs into urban design, thus breaking the rigidity of traditional planning practices.

The process of deregulation that first began in Great Britain with the Thatcherian policies and gradually spread to other countries, including Italy, created a gap that in the 1990s was partially filled by local activism, allowing the co-creation of services or measures of responsible subsidiarity.

In the new millennium, the growth of environmental awareness will further strengthen the need for more conscious and participatory management of the common good. With explicit reference to urban issues, Goal 11 of the UN 2030 Agenda sets the objective for making human settlements inclusive, safe, enduring, and sustainable, also through the adoption of integrated policies and plans aimed at inclusion. By 2030, the UN Agenda calls for the strengthening of more inclusive and sustainable forms of urbanization and the capacity to participatively, integrally and sustainably - in a word, 'openly' - plan and manage all human settlements in all countries that are participative, integrated, and sustainable - in a word, 'open'.

The expression 'open government' refers to a way of exercising power, both at central and local level, based on models, tools and technologies that allow public administrations to be transparent in order to promote effective actions and ensure control over their work. Open Government is widely diffused in Anglo-Saxon countries thanks to the propulsive push of Barack Obama's Open Government Directive. The model is also spreading in Europe thanks to the Recommendation by the Committee of Ministers of the Council of Europe on 'Citizen Participation in Public Life at the local level', which encourages the concrete opening of the bodies and institutions of European nations to the new information and communication technologies, making them concrete tools for change with a view to transparency and dialogue with citizens.

When adopting Open Government, administrations open up to direct and participatory confrontation with private individuals, focusing decision-making processes on the actual needs and requirements of local communities. Fundamental elements of the open logic are the centrality of the citizen, participatory and collaborative administration, as well as transparency of data and information through new digital technologies. In this sense, the ICT could represent the enabling elements that make the process of reconfiguration of models, tools, and technologies within administrations effectively sustainable, both from the technical-operational point of view and from the investment point of view.

2 Digital Tools for Collaboration and Public Involvement

The critical success of collaboration, of which co-creation is the highest level, is based on sharing information, developing honesty with the (potential) client or community,

and expressing sincere interest. Co-creation with stakeholders can involve either simple on/off decision-making consultation on previously developed solutions or full partnership involvement. Several types of relationships can arise in the co-creation process and can be traced to four basic relationships: the expert club; the general public; the coalition of parties; the communities of like-minded people [5]. This categorization refers to the level of openness of the community and the ability of the public administration to capitalize on these energies through appropriate legal, administrative, and technical-operational tools. Thus, a fundamental problem of the practices is related to the forms of public involvement [3]. New formulas to overcome these limitations emerge from crowdsourcing approaches, co-creative digital media, and neogeography tools.

In some contexts (e.g., Germany, France, the Netherlands), methodologies of massive co-design have been developed [6] by using specific computerized solutions to exploit diffused intelligence in creative processes. Interactive systems are capable of facilitating public participation, anticipating problems, and allowing creative interaction between experts, the public, and stakeholders in various capacities. These technologies represent a possible solution to the problem highlighted above if intermediate forms between professional and non-professional operators, and professional operators of different disciplines are provided. The objective is to use data as a resource for the empowerment of communities and as a means to test the effectiveness of solutions. Therefore, the project supports the democratic use of data as a resource to create new values and meanings of action (sense making). Participatory design could also enable social innovation and transform data into something that can be understood and utilized by broader communities (data sensification) [7].

Based on the analysis of the information tools available online, the following types of participatory design emerge:

1. Platforms that use the power of design and art to increase citizen engagement (i.e., <http://welcometocup.org>).
2. Think tanks to support the public in defining environmental, economic and social policies (i.e., <https://cles.org.uk/about/cles/>).
3. Tools for community planning (i.e., https://www.canr.msu.edu/michigan_citizen_planner/).
4. Solutions for the facilitation of community use of social media as a design tool (i.e., <https://ecosistemaurbano.com>).
5. Solutions for urban planning (i.e., <https://minstad.goteborg.se/minstad/index.do>).

The daily use of these tools has highlighted the importance of understanding and boosting the ecosystem of co-creation as the comprehensive organizational, institutional, and cultural setting in which social innovation is embedded [4, 9]. The disconnection between various players, and between individual and collective dimensions, leads to the weakening of the ecosystem of co-creation and causes disengagement and loss of motivation. The issue here is how to encourage the direct assumption of responsibility of the parties involved through behavioral dynamics and cognitive skills to clarify why action is important for the community [8]. Obviously, this is not enough; it is also necessary to simplify access to opportunities for action (what concretely makes virtuous behavior feasible) through motivational contributions, and individual and community incentives.

3 The Motivational Platform of the Open-Air Urban Market of Saint-Germain-en-Laye

The heritage protected city center of SGL is an exception in Ile de France, being a lively

DA area animated by around 800 commercial and service activities, attracting people from a large surrounding area. However, the need to improve the attractiveness of the city center and implicitly to offer new updated opportunities to businesses in the area was felt more and more intensively. In response to this, over the past five years, several attempts were made to promote simple digital tools for increasing the visibility and selling possibilities of local shops.

Thanks to the EIT-UM funding, a team made up of researchers from the Politecnico di Milano, the local association of retailers (CAP SGL) and the Municipality of Saint-Germain-en-Laye, an active mobility and community friendly e-commerce platform (Fig. 1) was developed to support both the revival of lively people friendly public spaces and the economic relaunch of the city center. Furthermore, it represents an essential component of the people centered approach of the Safely Connected project, backing the sense of community and the creation of a solidarity network necessary especially during difficult times of crisis.

Going far beyond the simple idea of e-marketplace, this tailor-made innovative digital tool resembles a series of advanced services (for local entrepreneurs and their clients) enabling the optimization of business models and the creation of new business opportunities. Through the limitation of necessary travel and a shift towards the use of active modes of transport, by enabling the sustainable sharing of deliveries for both clients and shops (Fig. 2), this digital tool also contributes to the general improvement of the public health of local people, directly related to the public space quality and use, and in this specific Covid 19 context, to curb the number of potentially unsafe interactions.

During the implementation phase, a new series of services have been added through the organization of an urban logistics platform at the periphery of the city center in cooperation with Urby (a branch of the Post Office). Among these services are the last mile cargo bike shared deliveries for shops, transported stockage, package collection and the extension of the area for sustainable deliveries to clients over a radius of 15 km around SGL. The innovative digital tool has been conceived so as to be easily adaptable for a variety of contexts and also to allow further evolutions depending on the advancement of needs, businesses, and technologies. Tested in the city center of SGL, it can easily be scaled-up and replicated for other territories in France or abroad. Once validated, the plan is to promote and replicate it in a first phase with the help of the Ile de France Region and of the Community of cities that SGL is part of (Communauté d'Agglomération Saint Germain Boucles de Seine – CASGBS) as well as of the Romanian Ministry of Development and other foreign cities that have already expressed interest in such a facility. Additionally, it can be introduced to and made available for the members of the EIT UM City Club, prioritizing them among the other possible replicators.

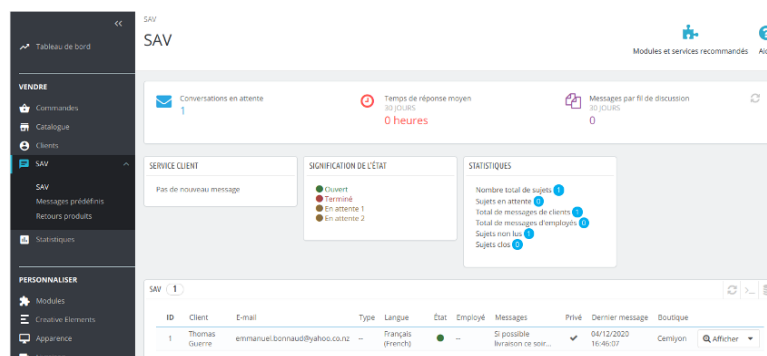


Fig. 1. SGL Platform

Fig. 1. SGL platform: Customers can choose to indicate a neighbour for the delivery of their order.

4 A Possible Evolution of the Motivational Platform: The Proposal for the Historical “Borgo di Camugnano”

Camugnano is a small town located in the Bolognese Apennines rich in history and nature. As happens for many similar realities, the desire to enhance and promote one’s territory collides with the lack of economic resources. For this reason, the current municipal administration has decided to participate in the tender launched by the Ministry of Culture (MiC) for the implementation of the Borghi Plan envisaged by the PNRR and to announce a collection of ideas by requesting expressions of interest. The Create regional cluster dedicated to Cultural and Creative Industries, in collaboration with e-Making srl, has presented its proposal, centered on the use of enabling technologies, to promote the involvement and creativity of the inhabitants. The proposal aims at creating a physical and digital ecosystem (phygital) of the Borgo di Camugnano as a tool to manage in an integrated way the different lines of action proposed by the call for expressions of interest by the Municipality of Camugnano in the framework of the Ministerial Call (“Riattivazione dei Borghi Storici”).

The Phygital Ecosystem is conceived as a space in which the ideal and the virtual city (digital model) overlap to enable through applications and interactive tools such as iPads, tablets, digital polling, QR code, AR (Augmented Realty) or VR (Virtual Realty), services, products, and suggestions. These can enrich the fruitful online experience, increasing the involvement of the public in a pre- and post-visit phase. Very different actions, ranging from the enhancement of cultural heritage to the rationalization of services, the promotion of tourism and territorial cooperation were proposed, therefore requiring an integrated platform for their effective management.

For its practical implementation, the proposal requires the following key steps:

1. Identification of the urban perimeter chosen for experimentation (a limited but significant portion of the territory).
2. Identification of the subjects to be involved in the co-design/co-management of the Phygital model (recruitment of the practitioners).
3. Digitalization of the selected urban context through the Matterport Technology (<https://matterport.com>) for digitally capturing the perimeter of the urban space

D.A (Fig.3).

4. Once the digital model has been obtained, construction of the data box for carrying out the activities foreseen by the expression of interest, including those for promotion of the territory, will be realized. By means of tags, the data box will be able to activate interactive environments within the virtual model to exchange information with the users of the platform, thus enriching the virtual space with useful contents (Fig. 4).

5. Realization of concrete artifacts and services to improve the urban environment and create the interconnections with the digital model. Some QR codes will be placed at the points of interest around the city to provide access to the same contents of the virtual urban model.

6. Definition of a communication strategy will be conveyed through existing channels and the new tool itself, which for the public will be a quick way to get in touch with the territory. The instrument could also be a 'landing' base for visitors from which they use the various links, such as the App store and other functions, for sharing contents and co-creation of visitor experiences (Fig. 5).

7. Testing and collection of monitoring data for the use of technologies.

The set of activities represents a first action plan which, if funding is granted, will be tested by the regional Create Cluster to promote the area through the contribution of cultural and creative industries.



Fig. 3. An example of digital urban space realized by the partner e-Making srl through Matterport technology.

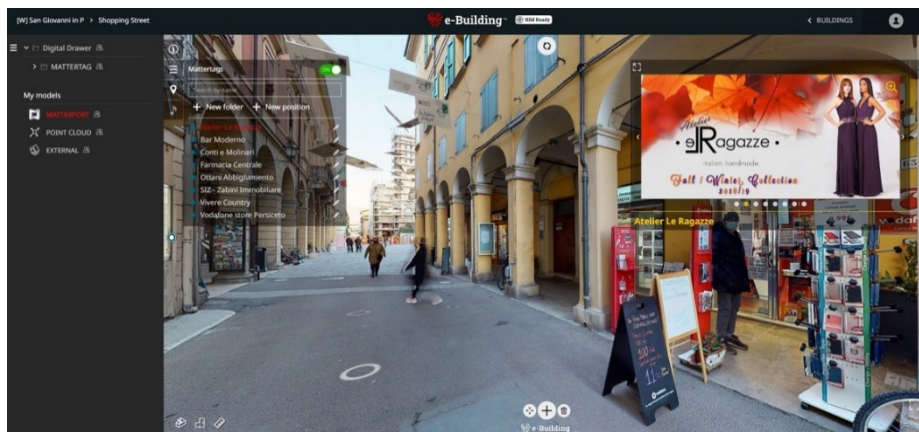


Fig. 4. An example of data box realized by the partner e-Making srl.

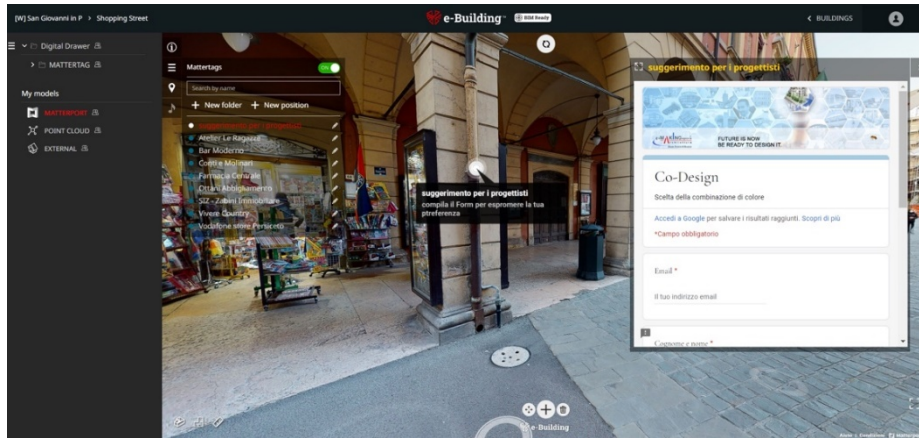


Fig. 5. An example of online toolbox for sharing contents. In this case the sharing box concerns an activity for improving the quality of the public space through co-design activity.

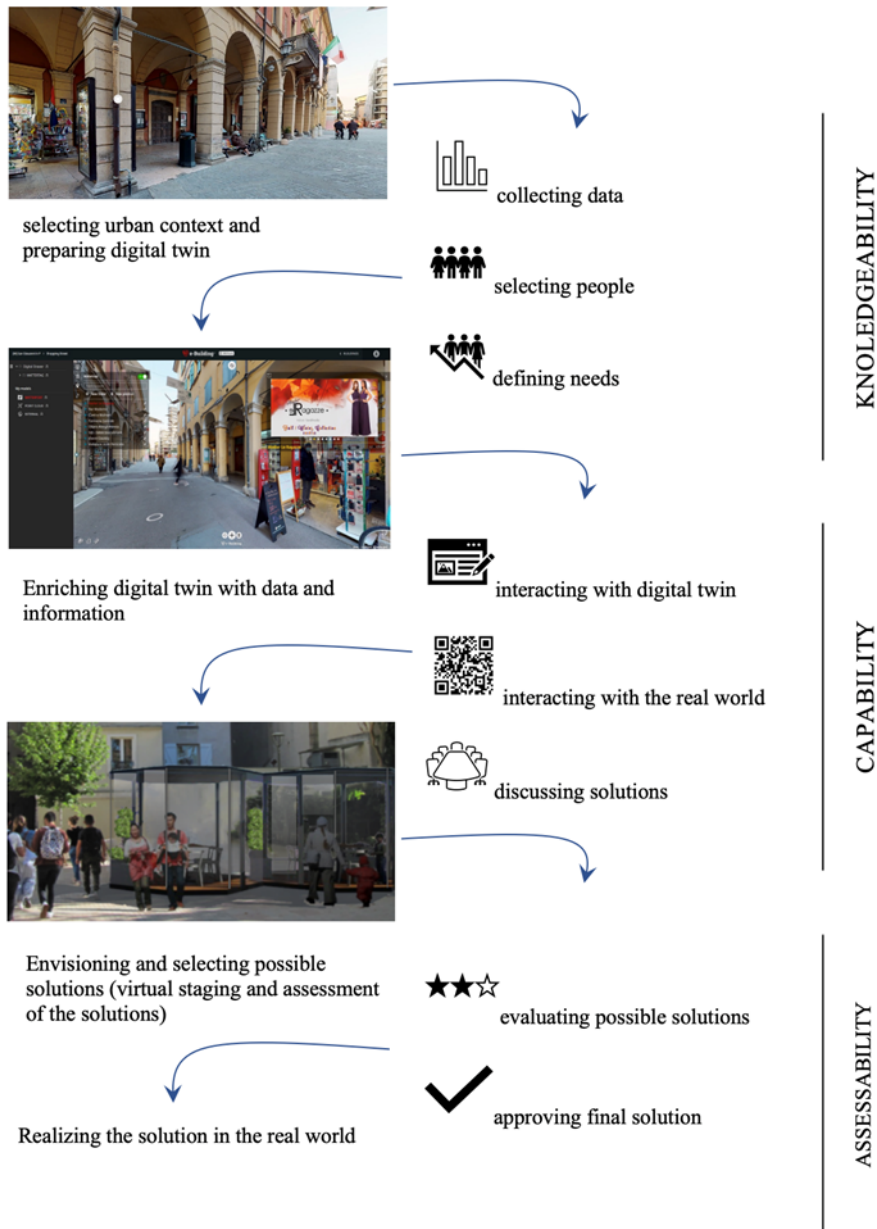


Fig. 6. Workflow of the Process.

This social-virtual world provides knowledge of possible destinations, as well as a better understanding of them by optimizing the services and promoting experiential forms of use and stimulating projects by testing their effectiveness in advance.

The creation of a phygital ecosystem of a portion of the Borgo di Camugnano, and its related applications, could represent the necessary step for the future construction of a real metaverse supported by a spatial geolocation, capable of opening up much wider and unforeseen opportunities. In fact, the extremely fast and inexpensive cultural metabolism of virtual worlds makes it possible to overcome the space-time limitations of the real world and offer to large numbers of websites. This does not mean abandoning initiatives in the field to dedicate exclusively to the communicative and social formulas of the web, but to encourage them to grow together by making one an extension of the other, through the collaborative involvement of people.

5 Conclusion

Starting from the concepts of "Mutant City" and the need to develop new tools to govern urban transformation, the contribution has analyzed the way in which information technologies can enable new and more effective forms of participatory planning based on the assumption of responsibility by the subjects involved. The practical application of these methodologies was illustrated through two research projects that involved the authors of this contribution. The first research project involved the creation of an online platform for the optimization of the logistics of the open-air urban market of SGL that provides rewarding solutions for virtuous behaviors. The second project foresees the further development of the system for transforming it into a phygital urban space. The latter research, currently under development, is supported by Cluster Create, a non-profit organization set up by the Emilia Romagna Region, which brings together companies, research centers and training institutions to strengthen the regional production system by focusing on the integration of technology, creativity, and culture.

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