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Crowdsourcing: guidelines for cities

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Smart city concepts are evolving: beyond a technical, optimisation approach that is now deemed insufficient, the sustainable city will be "human", "participatory", and "collaborative". Could crowdsourcing contribute to this new vision of the digital city, by mobilizing the participation and intelligence of its inhabitants?

Digital crowdsourcing tools give an active role to citizens, inhabitants or city users, asked to contribute new data, opinions, evaluations, solutions and projects to transform the city.[1] The study conducted by IDDRI shows that many of these tools have been implemented by local governments in France to respond to the demands of civil society to transform the nature of public action (towards more efficiency, transparency and citizen participation) and to the emergence of a "digital imperative". These experiments allowed for an initial adoption of these tools and of a "digital culture". Cities can today better assess the costs of these tools and the means necessary for their implementation (jobs, skills, support mechanisms), as well as what these tools will deliver to transform citizen participation and improve urban management.

As cities start to produce feedback on their experience, and as crowdsourcing becomes part of their toolboxes, it is important to characterize how these tools impact urban management and the forms of civic participation. To support local governments, this Policy Brief provides guidelines for the selection and the design of urban crowdsourcing tools.

RECOMMENDATIONS

❚ Numerous urban crowdsourcing experiments show such tools offer concrete promises for urban design and management and for citizen participation, both on a technical level (useful data) and on a policy level (creating a collective momentum).

❚ We identify three main uses of these tools: getting closer to an "omniscient" city; sharing the urban experience and its evaluation; building the city's future together. They correspond to three types of contributions expected from the citizen: mapping and reporting, expressing preferences and expectations, proposing ideas and projects to support decision-making.

❚ Cities should be mindful of the user experience the tools offer. Digital tools embed political "software" that defines their ability to provide a transparent and social experience, as well as the level of freedom and capacity building provided to the citizen. We offer guidelines to take this into account when designing the tools.

SciencesPo

1. URBAN CROWDSOURCING IN FRANCE: STATE OF PLAY

Crowdsourcing refers to the use of a digital application or platform to mobilise the "wisdom of the crowd", i.e. to open the production process of data or tools to a large number of non-expert contributors. Typical examples include Wikipedia, an encyclopaedia produced and managed by a virtual community of contributors, and Open Street Map, a collaborative map. Local governments in France are now developing many crowdsourcing tools to engage citizens alongside city governments, NGOs and businesses in the production of data, inputs and projects for the city.

To better understand what these tools can produce, and the challenges they create, three case studies were chosen and analysed by IDDRI. We first observed why and how city governments are using citizen-reporting apps (*FixMyStreet, Jaidemaville, TellMyCity, DansMaRue, Beecitiz*…), which allow citizens to transmit information on the public space (problems, suggestions, congratulations). To better understand the uptake of urban crowdsourcing tools, we looked into the experience of the City of Paris in launching several digital citizen participation tools (*Dans Ma Rue, Madame la Maire j'ai une idée, Imaginons Paris Demain, Participatory Budget*…). Finally, we assessed what urban crowdsourcing tools can offer for the development of public policies and the transformation of practices in a specific sector by looking at cycling (voluntary production of GPS traces, collaborative development of cyclability maps, participation of cyclists in digital consultations).

The study highlighted the number and the diversity of the experiments conducted. Urban crowdsourcing is now part of the stakeholders' (cities, NGOs, citizens…) toolboxes. Our analysis also verified its potential to transform the urban fabric. In addition to technical inputs (obtaining new and more precise data and updating it in real time, as well as evaluations and surveying of urban spaces and services), crowdsourcing brings policy-level contributions (increasing the efficacy of public action and bringing it closer to the uses of the city, giving visibility to communities or practices, supporting public decision-making). While local governments initially implemented these tools mainly to provide spaces for public participation and expression in a context of mistrust towards public authorities, they now aim at using these tools to better manage and produce the city, in collaboration with citizens.

Local governments faced technical, organisational and political challenges when implementing these tools. The development and use of such tools required human, financial and technological resources that cities did not always have. Internal workflows were disrupted by the integration of new professions (community managers, developers, digital participation managers) and divisions. In addition, some city officials were reluctant to make public intervention more legible and visible, as allowed by these tools, fearing it would lead to increased criticism of the government's actions. Local governments therefore preferred an experimental approach, limiting the scope of the tools and strongly framing how citizens could contribute.

These experiments allowed an initial uptake and diffusion among local administration of a "digital culture". Digital tools are no longer perceived as a "magical" solution to increase participation while cutting costs. The hidden costs of implementation are better quantified, as are the resources required to aggregate and analyse the collected data, as data processing remains a major challenge. Furthermore, a large number of tools were launched at the same time, sometimes in an uncoordinated and precipitated manner. In some cases, this led to a compartmentalization of initiatives, and hindered the local authority's ability to conduct internal consultations to collectively define the objectives and resources assigned to these initiatives and ensure their uptake.

Local governments now tend to better identify the goals assigned to these tools, and are moving towards the implementation of digital platforms that combine information, interaction and contribution tools. Having a permanent platform would facilitate the long-term uptake and use of these tools by citizens, while governments could mobilise user communities for specific crowdsourcing campaigns. In fact, the first experiments did not engage broad and representative user groups: local governments are now reflecting upon the means to "reward" civic contributions and to provide users with a guarantee that their contribution will influence public decision-making.

To support cities, this Policy Brief provides guidelines to select and design these tools according to the urban management objectives they should serve and to the level of citizen engagement they support.

2. CHOOSING AN URBAN CROWDSOURCING TOOL ACCORDING TO A PUBLIC POLICY OBJECTIVE

The first step in implementing a crowdsourcing tool is to identify the objective the tool will contribute to, as well as the expected role of the citizen. In Table 1, we present three types of policy objectives and how crowdsourcing tools can contribute to these goals. The table illustrates the contribution

Table 1. Three types of urban crowdsourcing to respond to different objectives

Ambition	Objective	Citizen's role		Crowdsourcing is useful…	
Better manage and design the city with its inhabitants.	**Getting close to being an "omniscient" city:** collecting data that the local government does not have.	Mapping, reporting on public spaces and services, producing use data, "citizen science".	*E.g.: mapping existing or required bicycle parking spaces, reporting on urban infrastructures, measuring pollution…*	…if data is scarce, costly to produce, or consists of personal data.	*E.g.: facing a lack of data on cycling practices, the San Francisco (CA) municipality used GPS traces generated through an itinerary calculation app to better understand the practice and improve urban planning.*
	Sharing the urban experience: consult citizens to bring public action closer to city users' experience, while increasing its efficiency and legitimacy.	Expressing preferences and expectations, evaluating urban policies and services.	*E.g.: development of the Bicycle Plan in Paris: 7,000 responses to an online questionnaire to map the needs and preferences of cyclists.*	…if the infrastructure or policy to be implemented demands a broad uptake and a precise understanding of actual usage (heating practices, mobility, use of public spaces, domestic waste management…).	*E.g.: a collaborative map of cyclability was constructed in the Nord-Pas-de-Calais region: cyclists rated roadways and thus evaluated infrastructure elements according to their user experience.*
Engage citizens as stakeholders through a collaborative process	**Building the future of the city together:** obtaining new ideas and engaging the citizen in a relationship with the city government.	Proposing ideas, suggestions and projects to support decision-making.	*E.g.: participatory budgeting in Paris allowed citizens to suggest new projects for bicycles, and contributed to making the cycling community visible.*	…if the "collective intelligence" is needed to produce new solutions for public action, or to raise the profile of certain public problems, engaging citizens in a collective and reflective approach to urban issues.	*E.g.: cycling associations are traditional counterparts for local governments. Crowdsourcing allows to increase, complete and strengthen their action by involving a wider audience.*

of the tools to sustainable mobility policies using the example of cycling. We should note that these three potential uses of crowdsourcing are complementary and can be combined, sometimes in a same process or tool, assigning a multifaceted role to the citizen.

3. CRITERIA TO DESIGN OR EVALUATE A CROWDSOURCING TOOL

Why is it important to think about the tool's design? As crowdsourcing tools become a part of local governments' toolboxes to enrich public action and support citizen participation, it becomes important to understand how design choices will affect the tools' capacity to contribute to these objectives. Digital tools are not neutral: a **policy project is embedded in the tools through their design,**[2] which will direct how users will contribute, behave, and interact.

Firstly, the tool's design organises the interactions between the citizen and the city, and among citizens as a group. For instance, tools that include social functionalities (forums, comments, collaborative mapping) and present contributions in a transparent manner tend to lead to debates focused on the common good,[3] and can contribute to the establishment of an active and long-lasting crowdsourcing community.

The capacity of these tools to mobilise concerned citizens over the long term is also determined by the tool's ability to offer a rich user experience. Civic engagement can be motivated by personal interest (namely on neighbourhood issues), but other motivations can be leveraged to support citizen commitment: opportunities for learning or sociabilit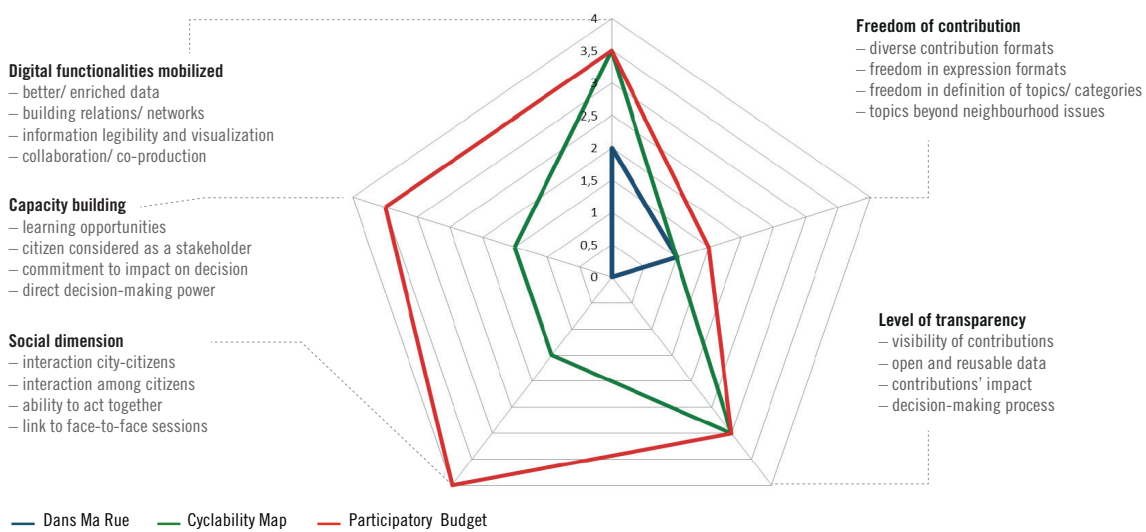y, responding to a civic duty,[4] etc. Choosing the appropriate contribution topics and guaranteeing an impact on public decision-making remain central in mobilizing citizens.

In a broader manner, these tools can contribute to citizen empowerment. By offering a freedom in contribution, they can encourage citizens to adopt a reflective approach and find new ways to describe the city and its components. By favouring the transparency of contributions, they can allow for a contextualization of actions and, by increasing the legibility of the city's operation and of different stakeholders' responsibilities, contribute to building capacity on the means to shape public decisions.

The design of the digital tool is therefore an essential dimension, which is still underestimated by local governments. We provide a matrix that highlights, on the basis of concrete criteria, how the tool will influence the user's experience. This matrix can guide the design or evaluation of crowdsourcing tools by linking the role assigned to the citizen to the policy project of the local government.

Figure 1 presents an evaluation of three crowdsourcing experiments based on these criteria.[5] The citizen-reporting app "*Dans Ma Rue*" allowed the city of Paris to collect quality data in a standardized format, but left users little leeway in terms of their contribution and did not guarantee the contribution's impact on public action. The tool developed by the NGO "*Association Droit au Vélo*" led to the collaborative construction of a cyclability map, presented in a transparent manner. However, it limited the level of interaction between users and did not directly feed into the decision making process. The *City of Paris' Participatory Budget* process

Figure 1. Evaluation of three crowdsourcing tools according to their design

Digital functionalities mobilized
– better/ enriched data
– building relations/ networks
– information legibility and visualization
– collaboration/ co-production

Capacity building
– learning opportunities
– citizen considered as a stakeholder
– commitment to impact on decision
– direct decision-making power

Social dimension
– interaction city-citizens
– interaction among citizens
– ability to act together
– link to face-to-face sessions

Freedom of contribution
– diverse contribution formats
– freedom in expression formats
– freedom in definition of topics/ categories
– topics beyond neighbourhood issues

Level of transparency
– visibility of contributions
– open and reusable data
– contributions' impact
– decision-making process

— Dans Ma Rue   — Cyclability Map   — Participatory Budget

offered a richer experience to contributors, namely by encouraging interactions in the development of project proposals. In addition, the city's commitment to implement the selected projects served as a guarantee of impact on public decision.

These three tools produced different results: real-time standardized data on public spaces; a collective evaluation of an urban system; co-produced projects to transform the city's future. Our analysis does not imply that all tools should be highly ranked according to the different criteria. Simple tools can also allow cities to develop a relationship with the citizen and to reach policy objectives. However, this matrix highlights the advantages and limits of each tool, and makes it possible to decide on accompanying instruments and tools. For instance, if the tool does not link the citizen's contribution to public decision, local governments should provide feedback in another way.

Built into a broader process that acknowledges the citizens as stakeholders in urban decisions, and supporting the citizens' empowerment over urban issues, crowdsourcing can serve as a powerful tool for the construction of a sustainable development project. Local governments play a key role in realizing this potential:
■ By evaluating the results obtained through these tools, as well as their uptake (who participates, why, how…) and sharing their experience.
■ By mobilizing start-ups and NGOs, through partnerships, to develop and manage these tools and their communities.
■ By articulating digital crowdsourcing tools and their outcomes to face-to-face participation

initiatives and technical devices for data collection (local participatory democracy, surveys, polls, sensors…) to enhance the representativeness and wealth of citizen contributions.
■ By backing the openness and transparency of tools, data, and decision-making processes, in order to increase the legibility of the city and highlight the impact of citizen's contributions on public decisions, therefore contributing to citizens' empowerment.
■ By supporting open decision-making processes and an actual exchange of knowledge between local governments, NGOs, citizen organisations, businesses, and citizens. ■

1. De Feraudy, T., Saujot, M. (2016). Could "urban crowdsourcing" transform how cities are made?, IDDRI, *Issue Briefs* n°06/2016, 4p.

2. Badouard, R. (2014). « La mise en technologie des projets politiques. Une approche "orientée design" de la participation en ligne », *Participations* 2014/1 (N°8), p. 31-54.

3. Offenhuber, D. (2014). "Infrastructure legibility- a comparative analysis of open311-based citizen feedback systems", *Cambridge Journal of Regions, Economy and Society,* Oxford University Press.

4. Mazeaud, A., Talpin, J. (2010). « Participer pour quoi faire? Esquisse d'une sociologie de l'engagement dans les budgets participatifs », *Sociologie* 2010/3 (Vol.1), p.357-374.

5. The complete evaluation matrix is available in IDDRI's Study: De Feraudy, T., Saujot, M. (2017, forthcoming). Une ville plus contributive et durable par le crowdsourcing urbain, Iddri, *Study* N°0916.