Smartization in Gatchina: A Case of a Russian Town

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ABSTRACT

In the paper, a case of a Russian town, Gatchina, is examined to find the reasonable balance between international smart city practice, governmental requirements, historical identity preservation, and human-oriented approach. The article focuses on the democratic urban design of a public space. The project included qualitative and quantitative research, three project sessions with local inhabitants, and preparation of an architectural project based on the collected data. During the design process, organizers faced two types of challenges—economic (shortage of funding) and communication issues (difficulties with informing and recruiting the citizens for the project sessions, under representativeness of some target groups, etc.)—whereby the latter dominate. Nevertheless, the project was effective; it showed that such towns can afford smart city (though by separate projects only) and that collaboration with the citizens contributes to both history and culture preservation and effective competition in federal grants for smart city development.

KEYWORDS

Democratic Urban Design, Ladder of Participation, Medium-Sized Town, Participatory Practices, Russia, Smart City

INTRODUCTION

Smart City is not a strength of Russia: the level of implementation of technological innovations and orientation towards the citizens cannot compare to Smart City leaders. However, nowadays the Russian government is taking measures to narrow the gap: national programs on digitalization are being launched and the standard requirements for Smart Cities are being published. Russian leaders of smartization usually include the largest cities of the country (first, Moscow, the capital) and so-called “monotowns,” which are settlements with strong backbone enterprises that can spend money on social issues. At the same time, other types of cities have little resources and opportunities to meet the requirements of the Ministry of Construction, which are the same for any type of settlements and are not adjusted according to the number of population, historical background, and geographical and financial conditions.

In the paper, a case of the non-privileged Russian town Gatchina is examined. On the one hand, Gatchina has little funding to implement innovations; on the other, the historical background of the town prevents standard solutions. Consequently, the main research question of the following project is how to combine international Smart City practice with Russian governmental requirements for a

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Russian town, considering cultural heritage preservation, human-oriented approach, and the shortage of resources. The project is one of the first attempts of Smart City implementation in an “average” Russian town.

The research is focused on democratic urban design of a public space in a residential area, which aims to adjust the redevelopment to the real needs of people and make a step towards a comfortable human-oriented town. The process included the following stages: qualitative and quantitative research; three project sessions with local inhabitants; and preparation of an architectural draft project, based on the collected data.

The goal of the article is to present the Gatchina project as a step for developing a general strategy of smartization of a medium-sized Russian town. In the Smart City development in Russia section, the general background of Smart City implementation in Russia is described. The Case of Gatchina town includes the historical and Smart City background of Gatchina. In the Methodology section, democratic urban design principles and their implementation in Russia are presented, along with the methodological aspects of the current research. In the Analysis section, the implementation and main results of the research and democratic design sessions are given, and the main problems revealed are described. The Conclusion section highlights further perspective of Smart City implementation and particularly of democratic urban design in historical medium-sized Russian towns.

Smart City Development in Russia

Implementation of the Smart City concept in Russia is unfortunately far behind the leading countries. If looking into the rate of “top Smart Cities” in the world, there are hardly more than a couple of Russian cities on the list, and those that are included are always metropolises. Thus, the synthetic indicator ranking “IESE Cities in Motion Index” (Berrone et al., 2019) puts Moscow, Russian “smartest” city, in position 86, while other Russian cities get “low” performance ranking deep below Moscow. In the Urban Planning, Ecology, Technology, Mobility, and Transportation dimensions, no Russian city gets into the Top 10. Speaking about the general innovation performance, according to Bloomberg’s index of the most innovative economies (2019)¹, Russia is in position 27, mostly due to the high percentage of university graduates rather than productivity or hi-tech density.

Although the idea of the Smart City has been in question all over the world for more than two decades (Dameri & Cocchia, 2013), the Russian government has just started to support Smart City development systematically. In 2018, the Ministry of Construction, Housing, and Utilities developed centralized recommendations for Smart City implementation within a national program called the “Digital Economy of Russian Federation” (Methodical Recommendations, 2018) and partly financed the program. Based on the recommendations, a “Smart City standard” (Standard, 2019) for cities more or a bit less than 100,000 inhabitants was promulgated in 2019. It covers six compulsory and two optional areas:

- **City Governing:** Digital platform for involving the citizens in problem solving (“Active citizen”); “Digital twin of the city” platform with constantly updating synchronized data on housing and utilities.
- **Smart Housing and Utilities:** Smart resource counting; energy-saving technologies; complaint-accepting system; automatic monitoring of infrastructure.
- **Urban Environment:** Energy-saving lighting; sharing systems; public Wi-Fi.
- **Mobility:** Automatic traffic violation monitoring; managing city parking spaces; managing traffic and public transport; smart public transport stops; monitoring condition of the road surface.
- **Public Security:** Smart CCTV; alarm reporting system; smart control of fire protection systems.
- **Ecology:** Automatic managing of solid waste; online monitoring of air and water.
- **United Cable Communication System** (optional).
- **Tourism and Service** (optional): Smart cards for inhabitants and visitors; general information system.

This list is based on the Smart City vision of Rostelecom, the biggest Russian commercial organization in communications.² As a result, the Ministry's approach to Smart City has two main features: it is techno-centered, although it claims that its core principle is a human-oriented view (Methodical Recommendations, 2018), and highly centralized, with government managing the entire process and large corporations implementing and maintaining complex solutions. It is specific to the Russian view of Smart Cities (see review in Vorobeva et al., 2019), which is still based on the classical work by Giffinger et al. (2007) with six aspects of Smart City: smart economy, governance, mobility, environment, people, and living. Although "people" are also included in the list, Russian smartization has few opportunities to start as a grassroots practice initiated by "ordinary locals," as Smart City implementation is mostly perceived as a highly technocratic and centralized process. Even Moscow "will become a real Smart City only when citizens rather than technologies are in the focus of Smart City planning. But nowadays there are just first steps towards the dialog between city administration and inhabitants" (Vasilenko, 2019).

Technocentrism appears to be a serious problem of smartization all over the world. If using biological metaphors, a technology-oriented Smart City looks like an attempt to grow a forest by just planting trees. Indeed, trees are an essential part of a forest, but trees cannot constitute solely a real forest, as it includes complex biosystems with other types of plants as well as animals, birds, mycophyta, bacteria etc. A city is as complex as a forest, not as a park with just trees: it includes not only technological infrastructure, but also people, buildings, roads, meanings, values, experiences, and behavioral patterns. When trying to build a Smart City above "traditional city," it is necessary to avoid simplification with turning a complex "forest" into a plain "park."

Speaking of other disadvantages of the Standard, it claims to cover any type of city with more than 100,000 inhabitants, but also to be suitable for towns with populations less than 100,000. The economical and infrastructural situation sufficiently differs from a provincial center of the area (about 100,000 people) or a regional center (about 500,000 to 700,000) to a metropolis (5,000,000 to 10,000,000); they are simply incomparable. Nevertheless, the Standard does not scale its requirements according to the size, economic and infrastructural capacity of a certain city.

As a result, Russian smartization is in direct ratio to the city's budget, and mostly covers two types of towns: the biggest cities of the country (e.g., Moscow is expectedly the smartest city in Russia) and so-called "closed monotowns," which are towns with restricted access, centered around some specific industries. For instance, the "IESE Cities in Motion Index" (Berrone et al., 2019), which measures sustainability and quality of life and also covers Smart City indicators, includes only the three most populated cities in Russia that have the largest budgets. For instance, "There is a significant gap between the investment assets of Moscow and other Russian regions: Moscow has all the opportunities to invest sufficient economic resources into Smart City development. (...) Annually the Moscow government invests \$600 million into the program" (Vasilenko, 2019).

Speaking about "monotowns," their preferences are based on the backbone enterprises: almost all inhabitants there are employees of the company or members of their families. Therefore, if the company is rich enough, it may start implementing Smart City solutions as a way of improving workers' life. One of the richest and most innovative industries in Russia is nuclear energetics, so "nuclear" towns can afford smartization, unlike other towns of similar size, which depend on donations from the state budget and hardly can cover the most urgent problems, let alone strategic development with long-term investments. For instance, according to Gubarevich (2018), there are only two cities in the Nizhny Novgorod region, which have launched Smart City programs: they are Nizhny Novgorod itself as the capital of the region, and the "nuclear" town Sarov. Sarov's project is supported by the national "Rosatom" corporation, which set up a subcompany called "Rusatom Utilities" aiming to develop and implement Smart City, primarily in "nuclear" towns.³ Besides nuclear energy, there might be a backbone enterprise of some different industry, but not all of them are wealthy enough to support "their" towns.

As we see, the towns, which do not fit into “metropolis” or “rich monotown” categories, have fewer opportunities to meet the required pace of smartization, as they are not a priority for federal budget distribution. Their own resources, first creative and professional, are swept out by more prestigious neighbors. In this paper, a case of such an “ordinary non-priority small town” is examined.

The Case of Gatchina Town

Gatchina is a town with 93,000 population in the Leningrad region. It is situated in the northwestern part of the country, 40km away from the metropolis St. Petersburg. Gatchina itself is a center of its own Gatchinsky area, but it actually is a satellite of the “cultural capital” St. Petersburg: many inhabitants work or study in the city, commuting there and back every day. At first sight, Gatchina seems an ordinary Russian provincial town with its typical problems, such as the: limited budget; amortization of infrastructure; decrease of population; and a shortage of professionals and creative people who prefer the competitive salaries and the inspiring environment of large cities. Nevertheless, Gatchina also has some distinctive features rooted in its historical background.

Having appeared as a medieval village, in the eighteenth through twentieth centuries before the Russian Revolution of 1917, Gatchina used to be one of the suburban imperial residences; the core part of the town was composed of the Royal Palace with a large garden surrounded with military barracks and servants’ houses. Besides the huge Royal Palace and its garden, there is a small Priory palace, situated also in its own park, which housed the Russian grand priory of the Order of St. John, supported by the Russian Emperor Paul I. In the beginning of the twentieth century, one of the first Russian military airfields and aviation schools appeared in Gatchina. During the Second World War, the Nazis occupied Gatchina and severely destroyed it. Nowadays, the Royal Palace and the garden are mostly reconstructed. For more detailed historical data, c.f. (Rodionova, 2006; Burlakov, 2006; Kyuchariants & Raskin, 2001).

As we see, Gatchina is a town with notable historical heritage. It results in both advantages and disadvantages for the inhabitants. On the one hand, the town has a strong individuality rooted in an important role in Russian history. On the other, historical palace-centered planning caused enormous problems in traffic, space continuity, and redevelopment.

First, the Royal Palace, with the official status of a UNESCO World heritage site and a National Culture Preserve, belongs to St. Petersburg. Tourism mostly includes bus tours to the Palace, which results in major profit flows to St. Petersburg instead of Gatchina, where the Palace is actually situated. So, two of the main goals of the town administration are attracting individual tourists to the town itself after visiting the Palace, and the development of touristic infrastructure.

Second, the enormous Royal Park splits the town into some parts with very weak transport connection. Moreover, the administration of the Culture Preserve recently prevented the inhabitants from crossing the park to get into a different part of the town by closing additional gates, prohibiting bikes in the park and planning to introduce an entrance fee, which would affect both the transition routes and recreational activities of the locals. As the museum is not subject to the town administration, the communication between these organizations is not smooth.

Third, the Priory palace and park, which belongs to Gatchina and may be a touristic and recreational source for the town, also possesses UNESCO World heritage status. It leads to sufficient limitations in reconstruction and redevelopment of the territory.

In addition, besides the Royal Park, Gatchina houses several innovative industrial organizations, such as Petersburg Nuclear Physics Institute, which operate sufficient assets but do not contribute to the town’s economy. This issue might be due to inefficient communication between the town administration and businesses, or to the economic crisis, which does not allow enterprises to invest money in the town rather than in their own profit; however, it results in lack of financing opportunities in the town despite the rather wealthy organizations locating there.

To summarize, Gatchina is a typical Russian town which does not fit into state or commercial programs of smartization, has not enough resources to become smart, and its historical background plays an ambivalent role in this process.

In Gatchina, the smartization process was initiated by the local administration. To accompany it, the Head of Administration addressed architects, specialists in urban development, and local businesses. The task was rather complicated, as the smartization roadmap had to comply with the Ministry's Standard and fit the historical background, spatial particularities, and economical capacity of the town at the same time. The main problems that the administration faced included poor ICT infrastructure, limited resources, and difficulties with involving the citizens in the public discussion and decision-making. To overcome them, several actions were undertaken.

To crowd source some technological solutions, a hackathon was held in May 2019, which might be considered as technological participatory design. It was focused on certain problems of Gatchina, but at the same time, the organizers implied technological solutions would be suitable for other towns in the Leningrad region or even in other parts of Russia. For two days, more than 50 IT-teams with 250 specialists from all over the country developed technological solutions in three areas: business, municipal governing, and social issues. The hackathon was surprisingly fruitful: IT-specialists brainstormed amazing ideas for all fields mentioned; some prototypes were accepted for further development and implementation in Gatchina; and the Governor of Leningrad region who attended the final tour of the competition picked some solutions for implementation all over the region. As a result, the Gatchina administration can choose technological solutions from both the national Bank of Smart City solutions⁴ with technologies tested in other regions, and solutions developed by the participants of the hackathon.

Currently, the roadmap of Gatchina smartization for 2019-2024 (Roadmap, 2019) covers most of the compulsory fields of the national Standard, adding some aspects important for its individuality. In the following list, only unique Gatchina features are mentioned; see the above general Standard requirements.

- City Governing: The digital platform for citizens' involvement in decision making, developed during the hackathon, implies not only providing information or voting for or against changes, but also enables inhabitants to help solving minor problems for their neighbors. It will facilitate the tasks for the administration and, at the same time, will enhance community bonds.
- Housing and Utilities: Participants of the hackathon suggested a number of solutions for the monitoring of infrastructure.
- Urban Environment: Organizing the hackathon and creating a contemporary art-space with interactive exhibitions.
- Mobility: Enabling the police to use the data of road CCTVs; online tracking of public transport; smart traffic lights; and smart bus stops.
- Public Security: Biometric identification and automatic analytics in CCTVs, enabling the police to use their data.
- Ecology: Smart waste disposal.
- Tourism and Service (optional area): Developing a tourist route across Gatchina; introducing a "Smart museum" service with VR-technologies; united informational and service portal for locals and tourists (a number of solutions suggested by participants of the hackathon).
- Education and Career (additional area not mentioned in the Standard): Career consultancy for high-school students; a "Digital education" project; a "Smart security at schools" project; youth education in the digital and innovative spheres.

Observing the roadmap and comparing it to the Standard, one can notice the following focuses of the Gatchina administration. They include: monitoring the infrastructure and public utilities, cultural recreation for locals and individual tourists (art space, touristic and informational services, sightseeing tour), state control and monitoring of the citizens (smart CCTVs and providing their data to the police), and teaching children digital and technological skills. The town is obviously pedestrian-

oriented: the roadmap includes public transport tracking, smart bus stops, lighting, outdoor Wi-Fi, and walking routes, but lacks a car-sharing platform, parking lots tracking, or a bike rental system. Ecological activity is limited to removing solid waste only, without recycling, without water or air monitoring, or other ecological actions. A new field of education and career is added, but it focuses on a very specific area of digital and technical skills provided to school children only, without support of other children's interests or, for example, teaching seniors to use computers, as is widespread in the Nordic countries (Bubholz, 2019; Lundin & Raaden, 2019).

Speaking about the citizens of Smart Gatchina, the strategy of administration is ambiguous. According to Vorobeva et al. (2019), three roles may be ascribed to "smart people" in Russia: a source of information; an object for benefactions from the government or an object for control and monitoring; and active subjects. The Gatchina administration exploits all three roles: the digital platform "Active citizen" collects people's complaints revealing infrastructural and other problems; citizens are provided with different services financed by the budget, but at the same time, they are subjected to monitoring and identification by smart CCTVs with the police having access to the data, which can become a threat to privacy.

The third role of an "active subject" is the most complicated one. In the roadmap, it is seen only in the local version of the "Active citizen" platform: if possible, a person may volunteer to help other people. However, there is one more aspect not mentioned in the plan (probably because of the lack of an appropriate category,) but implemented in city governing: it is participatory (democratic) design of public spaces. Democratic design implies participation in decision making not only for traditional stakeholders, such as the administration, businesses, and architects, but also local inhabitants as future users of the territory, as they are the experts in their living space and behavioral patterns. Moreover, the results of the project would influence the people directly, so they should have an opportunity to influence the decision (Sanoff, 2010).

The current approach to Smart City, which implies being oriented towards citizens (Dameri & Rosenthal-Sabroux, 2014; Woetzel & Kuznetsova, 2018 etc.), is impossible without cooperation with them and empowering them. Moreover, Smart City should be adjusted to people's needs, so it includes both digitalization and collaboration with citizens. One of the most widespread ways of realizing this approach is adopting participatory practices – e.g. participatory budgeting (Cabannes, 2004) and participatory design (Sanoff 2010). In the next section, the details of a certain case of the democratic design of a public space in a residential area of Gatchina are provided.

Methodology

The idea of democratic urban design is thoroughly discussed in the literature (King, 1983; Sanoff, 2010; Frisk et al., 2015, etc.). It appeared in the 1970s (Brenner, 2009) and nowadays is a widespread approach of urban planning all over the world. This concept corresponds to the so-called ladder of participation (Arnstein, 1969) consisting of eight levels: non-participation (manipulation and therapy), tokenism (informing, consultation, and placation), and citizen power (partnership, delegated power, and citizen control). Arnstein presented the structure as a description of the process of empowering the powerless regardless of the area of participation. A similar sort of classification, particularly adjusted to urban planning, was developed by Stephen Bass et al. (1995), escalating as follows: listening only; listening and giving information; being consulted; analysis and agenda setting; reaching consensus on the main strategy levels; and decision-making on the policy, strategy or its components. Participatory practices operate with upper steps of the "ladder," while dwelling on the lower steps is typical for less democratic governing. Being more complicated to apply, such practices are nevertheless more fruitful in various spheres: besides actual physical change, democratic design is an important tool for community building (Morris, 1996; Perkins et al., 1996), empowerment and growth of social capital (Sanoff, 2010), and spatial education (Frisk et al., 2015).

In Russia, "Project Group 8"⁵, which is a team of young urbanists, architects and sociologists who wished to narrow the gap between the decision-making processes of local administration

and the real needs of people living there, localized Henry Sanoff's approach several years ago. "Project Group 8" has been working in the Tatarstan republic with sufficient support from the local government, which enabled them to realize several projects all around Tatarstan – mostly parks and other recreational public spaces. According to Natalya Snigireva, one of the initiators of "Project Group 8", it was crucial, in their Russian practice, to focus on some specific aspects of democratic design as described by Sanoff:

Teaching local people to maintain and manage the territory after environmental improvement.

Real, not formal invitation to collaborate for any person willing to contribute (public discussions in Russia are often seen by all parties as bureaucratic formal procedures without actual possibility to influence the situation).

Openness of the entire process to increase trust between the inhabitants and experts, as Russian people often suspect environment improvement projects to be a cover for stealing budget money or other harmful actions⁶.

Both Russian authorities and citizens are not accustomed to an open democratic dialog, which is a part of a wider Russian phenomenon called "public muteness syndrome" (Vakhtin, 2017). It implies that, during Russian history, the people have had no chance to develop a separate discourse of public discussion in a situation of collective decision-making. Russians tend either to follow a leader's opinion or to express their feelings towards the issue without any intention to come to a shared decision or any attempt to consider points of view of other disputants. Moreover, in public discussions they are not used to sticking to the timeline, so everyone speaks as long as they can, a fact that usually results in endless quarrels or support of the ideas of the most charismatic (or just the loudest) speaker. As a result, during the project sessions, the moderators must introduce and strictly meet the deadlines and maintain turn taking. In addition, citizens are not only unused to participating in a public discussion, but also do not trust the government. It leads to differing communicational goals, such as trying to catch the representatives of the administration in speaking insincerely instead of developing a shared decision with other working groups.

Recently, in Russia more project teams, such as the Center of Development of Urban Environment in the Republic of Udmurtia⁷, have started to implement democratic design techniques. Unfortunately, they are still a substantial exception, as Russian public authorities are not yet accustomed to participatory practices from the "citizen power" block of the ladder of participation; the most widespread approaches are usually based on non-participation and seldom include informing and consultation.

However, the Gatchina administration realizes the difference between consultation, such as Internet-surveys, and real participation, although it has little experience in the latter. Besides, in Gatchina, citizen participation was a necessary condition for applying to the national governmental competition for receiving funding for realization. As a result, the town administration faced the necessity of organizing a process for the democratic design of a public recreational zone in a residential area. The main goals of the project include improving the quality of life of the residential area inhabitants (as all public zones are situated in the center of the town, and reaching them is not always convenient), along with attracting more tourists to other points of interest besides the Palace and the Royal park.

The zone for redevelopment is situated in a residential area "Aerodrome" (its territory used to be one of the first airfields in Russian Empire a century ago) with circa 27,000 inhabitants, which is rather isolated from the rest of the town. The territory in question covers a wasteland along the railway and includes a modern shopping mall, old-fashioned food market, sports center, swimming pool (under construction), youth club, two illegal parking lots, pedestrian tunnel, above-ground walkway across the railway to the station and to another residential area, lime tree alley and ruins of air sheds. These ruins attracted an activist who was planning to renovate them and establish an aircraft museum there. This idea was accepted by the administration, so nowadays the initiator is raising the funds, and the aircraft museum project is integrated into the democratic design project "Airpark" of the entire zone.

Table 1. Citizens' engagement plan.

Action	Goal	Who is in charge
Online voting to identify the territory for redevelopment	Identifying the most problematic zone in the town, from the citizens' point of view	Administration
Qualitative research: ethnographic observation	Revealing particularities of spatial organization of the zone, target groups and actual practices of local people on the territory	Anthropologist (RANEPA)
Qualitative research: outdoor semi-structured in-depth interviews	Revealing a wider context of the quality of life of residential area inhabitants, with a focus on target groups underrepresented in an online survey	Anthropologist (RANEPA)
Quantitative research: online survey	Revealing advantages and disadvantages of the territory along with demands and requirements of the citizens	Architects
Project session #1 (open call)	SWOT-analysis of the zone	RANEPA, administration
Offline survey of high school students in the only school of residential area	Revealing requirements and demands of local adolescents concerning the new recreational space	Administration
Focus group: business	Revealing requirements and demands of the entrepreneurial community having business on the territory	Administration
Focus group: sportspeople	Revealing requirements and demands of teachers and instructors from the sports center on the territory	Administration
Focus group: youth club teachers	Revealing requirements and demands of teachers and coaches from "Gemini" youth club on the territory	Administration
Project session #2 (open call)	Democratic design of the territory using maps and stickers	RANEPA, administration
Project session #3 (open call)	Public discussion of the project presented by the architects	RANEPA, administration, architects

For this project, the town administration invited experts in architecture from St. Petersburg State University of Architecture and Civil Engineering, and urbanists and anthropologists from Center of Urban Technologies and Spatial Design of North-West Institute of Management, RANEPA. Such tasks require strong collaboration between all participants, as any planning has no chance for realization without the administration's support; citizen's projects have little sense without architectural expertise; and engineers and bureaucracy tend to avoid asking people's opinion without participatory practices moderators. As a result, the approach to democratic urban design in Gatchina was based on "Project Group 8"'s adaptation of Sanoff's techniques (Snigireva, 2014; Snigireva, 2016).

The following steps for citizens' engagement into this project were developed (see Table 1).

The plan for research and engagement was the following. First, the town administration, based on the inhabitants' online voting, had to identify a certain zone for redevelopment.

Second, qualitative, and quantitative research were planned to reveal usage of the territory, its advantages, and disadvantages. The architects developed an extensive quantitative survey. It included blocks of questions dedicated to actual practices of the citizens on the territory; general requirements and wishes concerning activities and objects in different parts of the territory; particular wishes concerning features of the zone, such as type of trees, surface course etc.; socio-demographic data of the respondents. The administration developed its own survey, a smaller one, aiming to prioritize the goals of the territory development. This survey was planned to be held among high school students

in the local school, as well as among the adult people, coming to the first project session. Qualitative research included fieldwork: ethnographic observation and outdoor interviews with inhabitants of the area with special focus on groups underrepresented in online surveys, who also risked being underrepresented on project sessions.

Third, three project sessions of democratic design with citizens' participation were planned with different contents: the first session was aimed at SWOT-analysis (Jones, 1990) to reveal the main problems and possible resources of the zone. The second involved inhabitants designing redevelopment on the map (the results were proceeded to architects for inclusion into a professional draft project) and the third meeting was dedicated to discussing the architects' draft, developed by using data from the previous sessions. All sessions were planned open to anybody and did not imply special focus on specific groups. Methodology of democratic design sessions was the following: RANEPa moderators open the meeting, explain the rules of the event and split participants into some groups with six to ten people in each. According to the moderators' questions, groups work on particular aspects of the order and prepare the presentation of their shared vision; in the end, one by one, groups present their points of view to other groups, answer the questions of other participants and discuss the problems revealed. The three discussions had to take place once a month on Saturday evenings to give an opportunity for as many people to attend as possible. Having received suggestions during the project, the architects were in charge to prepare the final concept for participation in the national government competition.

Fourth, administration, along with open project session without any limitations to participants' status, planned to hold several closed meetings with particular target groups and stakeholders of the zone, such as business people from shopping mall and the outdoor market, sport trainers from the sports center and teachers from the local youth center, to find out their needs and possible contributions to the project.

Speaking about the sequence of these steps, any research could start only after the territory was chosen, and the research had to be conducted before the project sessions. Sessions and focus groups could be held any moment after analysis of research data in any sequence.

Analysis of Results

The project required strong collaboration and synchronization of actions between all three organizers—administration, urbanists and architects. Nevertheless, as it was their first experience of this kind, some lack of communication took place: the plan for citizens' engagement given above was not clear for all parts from the very beginning, but was developed by different groups of organizers during the running project. For instance, in theory, the best way to collect data is conducting qualitative research first, which provides data for developing quantitative surveys. Nevertheless, the lack of synchronization led to the fact that the architects launched the quantitative online survey before the qualitative analysis of urbanists, while administration held their own offline surveys.

Moreover, other organizers did not revise and approve all three questionnaires, so it resulted in a quite different amount and quality of data received. In addition, the administration from time to time held some events of their own within the project without informing other organizers about them. For the future projects, it is necessary to collaboratively develop a shared plan with mutually approved timelines in advance and to synchronize actions.

Speaking about the realization of the plan above (Table 1), the following results were achieved (see Table 2).

Because of mistiming, some research activities overlapped with first participatory events, but generally, the sequence of the stages was kept. According to the qualitative data of ethnographic observation, the main current functions of the territory are the following: transit to the railway station and to the neighboring residential area across the railway and walking the dogs, with some people coming for shopping or sport at the sports center, and a small amount of outdoor sporting activities

Table 2. Realization of citizens' engagement plan

Action	Numbers	Results
Online voting to identify the territory for redevelopment (15/12/2018-15/01/2019)	14 territories, 1530 voters, 1113 votes for Aerodrome wasteland	Zone is identified, project of recreational zone "Airpark" is launched
Qualitative research: ethnographic observation (February-March 2019)	Three field expedition to the residential area	Current users of the zone: walking passers-by; sporting people; mall and market shoppers; dog owners; businesspeople
Qualitative research: outdoor semi structured in-depth interviews (February-March 2019)	Six interviews with locals (focusing on parents with children and seniors), 3 expert interviews with administration and local activists	Problems: decreasing recreational opportunities, baby boom with few infrastructure, poor pensioners, walking the dogs in children's playgrounds
Quantitative research: online survey (15/01-15/02/2019)	1583 respondents	Priorities: improving public amenities; infrastructure for small children; sports activities; keeping transition routes through the zone; increasing the security of the zone; keeping the alley; renovating the aircraft pavilions
Project session #1 (open call), 26/01/2019	30 participants, four working groups + 20 offline survey respondents	Problems: no recreational zone in the area; wasting a large space; unsafety and unattractiveness of the territory. Values: pedestrian traffic, lime tree alley
Offline survey of high school students in the only school of residential area (02/02/2019)	100 respondents	The zone is received unsafe, especially by girls; adolescents prioritize improving the image of Gatchina and their residential area, creating a new innovative space attractive for locals and tourists
Focus group: business (21/02/2019)	16 participants	Shopping mall owner is ready to build and maintain an additional parking lot; convenient driveway to the market is necessary
Focus group: sports people (20/02/2019)	22 participants	Wishes: paths for running and biking, outdoor ice skating and ski in winter
Focus group: youth club teachers (10/03/2019)	13 participants	Wishes: skate park zone, small stage for youth performances, graffiti zone, shared events with future museum
Project session #2 (open call) 09/02/2019	42 participants, five working groups	Zoning the territory; suggesting a complex bike way; moving a future guest parking lot across the railway
Project session #3 (open call) 22/03/2019	29 participants, four working groups	Minor additions to the draft, as it was formed basing on previous sessions

along the alley. Therefore, any changes to the territory would affect walking passers-by; sporting people; mall and market shoppers; dog owners; and the owners of the enterprises of the territory.

As the fieldwork took place after the launch of quantitative survey and the first project session, the anthropologist could find out main target groups (parents with children of different age), underrepresented groups (seniors) and groups who would hardly attend project sessions in person (seniors and parents of babies and toddlers). Then focus on them to compensate for their absence in open project sessions and represent their viewpoint for other participants. The interviewing revealed the main problems of the residential area:

- Limitation of general recreational opportunities for the inhabitants: The Cultural Preserve administration prohibited people from visiting the Royal park with bikes and dogs; access to the park for prams is obstructed; the type of pavement in the area prevents people from rollerblading and skating.
- Baby boom and the lack of youth recreational zones: nowadays the area attracts many families with small children. In the only school in the area there are ten first grades, which in a couple of years will lead to some hundreds of adolescents hanging around without any special infrastructure and activity opportunities.
- Parents with prams are locked within the area, as it is difficult to cross the railway or to get into the public transport with a pram. At the same time, walking opportunities within the area are limited.
- Pensioners are too poor to use the common infrastructure (e.g., to do shopping in a supermarket instead of the outdoor market or to attend the sports center), so they need some free activities, such as outdoor fitness, which would allow them to do sports for free.
- Dog owners do not have any special area for walking their pets, which results in walking them in children's playgrounds (which causes pollution of the children's areas) and threats for the small dogs from the large ones.
- The zone in question does not seem attractive for the locals: they call it "far away," but, according to the research, it means that it is unsafe, uncomfortable, and hardly accessible.

To sum up the qualitative research, we revealed the following target audiences for the recreational zone: parents with small children; adolescents; seniors; and dog owners. Therefore, we suggested organizing the space with three possible scenarios included into the draft project: active recreation (for young people and active seniors); passive recreation (for parents with prams and walking seniors); and dog walking.

The quantitative data of the surveys are quite heterogeneous. Architects' survey was available online and promoted in Russian social network Vkontakte, so we get accidental sampling with little gender or age balance (76% female to 24% male; 77% are working adults, and there are less than 5% of each other sociodemographic group; 53% respondents have children), but with much data from each respondent. Adolescent sample in the offline administration's survey was close to the entire assembly (almost all high school students of the residential area, as the survey took place during a school day), but the survey was very poorly designed. Consequently, the anthropologist's task was to get from both surveys as much relevant data as possible because there was no chance to repeat the research in the right way.

Nevertheless, quantitative research helped to reveal the leading preferences of the people: improving public amenities (installing paths, benches, garbage bins); establishing infrastructure for small children and sports activities; keeping transition routes through the zone; increasing the security of the zone (establishing lighting, dealing with the homeless and alcohol consumers); keeping the alley; and renovating the aircraft pavilions. Younger respondents are also interested in improving the image of Gatchina and their residential area, creating a new innovative space. At the same time, people seemed less interested in events (concerts, Christmas markets, public lectures, and workshops, etc.) than in just pleasantly spending time.

Speaking about the quality of architects' questionnaire design, it appeared that some blocks of questions in the survey referring to inhabitants' experience were helpful and appropriate (such as questions about respondents' routine in the territory: "What do you usually do in the territory?", "How often do you visit the territory?" etc., or questions about desirable activities). While others were helpless and tried to inflict the expert architectural and engineering responsibility on the people (such as "Does the zone need sanitary fell?" or "What material should we use for path covering?"). In current projects after Gatchina we polished this questionnaire, keeping efficient questions and balancing the sample with offline paper versions distributed among seniors.

There are some other appropriate ways of research, which were not used that time, such as big data usage. Although using some technological solutions to support the participatory design process, such as online surveys and informing the people through the Internet, the organizers lacked the access to real big data. This includes mobile phones or credit card usage data, which could be helpful in revealing the time and places of people's concentration during the day or the week, the amounts of money spent in local enterprises, etc. In the future, cooperation with mobile providers or banks would help the organizers understand the situation much better and contribute to significant improvement of the following projects.

The second important stage in this process was engaging the people to participate in the project sessions. Here, the organizers faced some challenges as well. One of the common problems of participative practices all over the world is how to involve the citizens into them. In our case, the problem started from informing about the sessions as many local people as possible and from revealing existing active people or structures. Unlike other countries, in Russian cities there are no neighborhoods as social structures, no community centers, and no customs to establish NGOs to achieve social goals. As a result, organizers had no list of influencers or local formal or informal centers that could help them to inform and attract the people. Organizers used all possible ways to invite residential area inhabitants to the session in advance, using different channels for different social groups. Hence, no mean of informing was perfect: the website of the administration is rarely visited; no group in the Russian social network Vkontakte that is large enough to cover all target audiences; seniors just do not use the Internet, so an important social group of users might be missed out; local newspapers have a comparatively small audience; and outdoor stickers with the announcement can be easily missed or ignored. Therefore, one cannot be sure about representativeness, or satisfactory informing the interested people. In addition, even if people learnt about the sessions, many refused to come because they did not see the point of their participation; did not trust the organizers; were not used to such kinds of work; preferred spending Saturday evening with their families, etc. Nevertheless, the number of people every time was enough to form four working groups with six to ten persons in each.

Another important issue in democratic design all over the world is representativeness. People coming to an open session never constitute a balanced sample; even in the quantitative surveys, some important groups are underrepresented. Indeed, people could have important reasons that prevent them from coming to the sessions, starting from not being informed about them. Organizers tried to mitigate this effect by revealing social groups who would potentially use the territory, asking their opinion during qualitative research, and supporting their points of view during the sessions. However, this does not seem a perfect solution, as it generates some biases. In addition, some personal invitations were sent to particular people (local cultural and social activists, municipal representatives, local businesspeople, etc.), but some invitations were ignored. As a result, most participants were males and females of middle age living in the residence area, but an activist from a local youth club always brought some students with him, so adolescents' opinion was also represented. Unfortunately, there were few seniors and parents of babies, as getting to the sessions seemed a problem to them.

The sessions had the following structure. The meeting in a local indoor public space in the center of the town was opened by administration representatives and RANEPa moderator. The latter explained the order and regulations, presented the subject of the meeting and the analysis of current research. Then the audience was split into working groups (friends tended to work together, although organizers tried to form groups of different sociodemographic background), got acquainted with each other and developed their vision on specific questions asked by the moderator, using the map of the territory and stickers. During the work, the moderator and one to two assistants moved from one table to another to facilitate the communication or help answering technical questions. Administration members could provide an expert position on current situation and town development plans, if necessary. In the end, each group presented their map and commented on the problems and solutions revealed. Here, moderators had to stick to the procedure very strictly, as some participants without experience of group discussions tended to interrupt the speaker or moderator, talk simultaneously,

run out of speaking time, insist on their point of view without consideration of the others, accuse administration and moderators in just pretending to listen to their opinion, etc. Following the rules helped to overcome the incidents. After each session, all visual materials were collected and analyzed, a report was prepared and passed to the architects for considering the possibility to include the suggestions into the project.

The first session revealed problems and possibilities of the zone: for participants, the largest problems were wasting so much space with having no recreational zone in the area; unsafety (lack of lighting, straw dogs, homeless people, alcohol consumers) and current unattractiveness of the zone. The most valuable features were pedestrian transition routes across the railways to other areas of the town and the lime alley along the road.

As the first experience seemed successful to the people, more participants decided to come to the second session. It was dedicated to zoning the territory according to desirable functions: participants had to distribute children playgrounds, sport clusters, calm zones etc. on the map. Along with several variants of zoning, there were a few wit and valuable suggestions, which were not previously identified by the administration and architects. One included a complex two-level bikeway: one part leads along the zone to make a shortcut for bike transit, while another is zigzag-shaped and crosses the zone several times, forming a challenging training route with overhead bridges and other features. Another suggestion concerns an extra parking slot for guests and touristic buses: there is little space for it along the zone. But there is no need to leave the car close to the gate of the “Airpark” zone; guests may park across the railway and continue to the Airpark through the pedestrian tunnel on foot. It solves several problems: cars do not form traffic jams on railway-crossing to get to the area; airpark space may contain more useful recreational objects instead of a parking lot; the territory around the zone gets more pedestrian-friendly. These suggestions were included into architects’ draft.

The third session was dedicated to discussing the draft. Along with first timers, there were many participants of the previous sessions who were pleased to see their suggestions in the draft; moreover, they were already accustomed to the procedure and helped the moderators via peer pressure. All groups approved the draft, adding some minor suggestions. It was not surprising, as the draft was based on the data of previous research and sessions.

Besides the open project sessions, which could be attended by anyone, the administration held three closed sessions with stakeholders’ groups of the territory: businesspeople, sport trainers and teachers of the youth club. Businesspeople sessions are especially important, as government-SME collaboration is still rare in Russia, and speaking in terms of “ladder of participation,” their communication is mostly on an “informing” level, business owners simply get the final decisions of public authorities and have to comply with them. At the same time, businesses are not ready to collaborate directly with people: businesspeople did not attend the “people’s” project sessions, although they were invited.

To sum up, this pioneering experience allows us to form a more efficient plan for future projects. First, some leading organizer is necessary, who forms the strategy in advance and coordinates other parts. Second, the optimal sequence of actions seems the following: identifying the territory – qualitative research (ethnographic observation, interviews and expert interviews) – quantitative research (online survey with accidental sampling + quota sampling for specific underrepresented groups) – three common project sessions (SWOT-design-draft evaluation) and specific focus groups (depending on the number of interested groups). In such cases, the result is likely to satisfy all parts and target groups.

CONCLUSION

Gatchina is Russian medium-sized historical town without a strong backbone enterprise, so it is an illustrative example of an “average” Russian town, which is hardly involved in Smart City

implementation yet. The research question was how to build a Smart City over such kinds of settlements, considering all their resources and limitations.

First, such towns indeed cannot afford systematic implementation of Smart City, as Moscow does, so their most effective strategy for that is participating in federal special-purpose grants and competitions for separate smartization projects. It is definitely not a perfect way from an external point of view, as it does not allow building an entire system, but for now, it seems the only financial solution for non-central towns in case of absence of a strong industry.

Speaking about rigid requirements of Russian government for Smart City regardless of the size and historical heritage of the town, creativity and proactivity of local administration is needed. As we see, the Gatchina administration reworked the official list, choosing appropriate points, activating necessary options, and even adding their own ones, if necessary. Some cases of such adaptations in several towns might become a source for elaboration of the general requirements, with adding different roadmaps for different types of settlements.

Another important way of preserving historical and cultural identity of the town in a smartization process is empowering the local people, providing them with an opportunity to become a part of the decision-making process. Old hierarchical approach is not effective anymore, so at least consulting with inhabitants helps saving important aspects of local identity and providing people with infrastructural objects they really need. In addition, no sample is perfect, so profound social research in advance is necessary to reveal all interested groups and to represent them in the decision-making process.

One of such empowering tools is democratic urban design. Generally, local administrations in Russia are not acquainted with this method. It is widely applied in one region only, with special conditions and strong protection of the regional government. The case described here was a challenge to adapt the technique to adverse circumstances, such as doubting administration, and citizens who do not trust neither the government nor the researchers and moderators. As we see, a good point to start is again participating in federal grants, as the federal level includes the requirements to involve local citizen into developing competition projects: a sine qua non point, when executed in a right way, may turn into a desirable reproducible practice for both the people and the administration in later projects.

Pioneering never lacks fails and mistakes. As we see, the problems of the project realization are quite heterogeneous, but roughly speaking can be divided into two large groups: economic and communication issues, whereby the latter dominate. Notably, these problems are typical for many Russian towns. It draws us to a conclusion that, besides the lack of financial resources, one of the core problems of Smart City implementation in Russia is miscommunication between all sides involved: between organizers; between government, citizens and businesses; between federal and local government; between citizens themselves; between organizers and possible providers of data etc. Nevertheless, the process has started, and if all sides realize the common advantage of collaboration, they will learn by experience, and future projects will face less communication problems than the first attempt.

This spring the Airpark project has won the federal competition, and the realization has started. Moreover, the Gatchina administration now considers democratic design to be a full-fledged way of planning the public spaces: since Airpark, it has run a few collaborative sessions and workshops for other areas in the town. For instance, inhabitants contributed to the redevelopment of Priory Park and to the draft of a mural in the center of the town that reflects the local view of Gatchina rather than official or touristic views.

Findings and experience of the project are already used in further implementation of Smart City within the new established Smart City Competence Center of Leningrad region, with towns like Gatchina. Currently, six projects are in progress following the plan described above, and this experience applies to other regions in Russia.

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