



Passportization and digitalization as a tool for preserving endangered cultural heritage (using the example of the Arsk barracks and the Alexander Nevsky church in the village of Bol'shiye Memi)

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Abstract. Architectural heritage is the material memory of humanity, recording the history, culture and identity of eras. Today, thousands of unique architectural monuments around the world are threatened with extinction due to wars, climate change, urbanization, and lack of funding for restoration. In circumstances where the physical preservation of a building is impossible or delayed, the complete recording of data about the object through photography, measurements, and 3D-scanning becomes a critical task. This article presents research materials on two historical sites (the Arsk Barracks Complex in Kazan, the Church of St. Alexander Nevsky, and the village of Bol'shiye Memi), which were under threat of complete disappearance and the only chance of preserving them was to record them and subsequently passportization.

For the first site of the former military town of Arsk Barracks a comprehensive analysis of the large-scale urban development project for the comprehensive reconstruction of the territory, implemented between 2019 and 2025, is presented. The above-mentioned facility is located in the Sovietsky district of Kazan and is bounded by key city thoroughfares – Nikolay Ershov, Patrice Lumumby, and Iskra streets. The transformation of this vast area from a closed, restricted-access facility into the modern, multifunctional residential complex «Art-City» is viewed not simply as a construction process, but as a complex socio-urban development phenomenon, where what were once suburban military barracks first found themselves within the urban structure, and later were absorbed by that structure. Only the timely preservation of these structures has allowed their appearance to be preserved to this day.

For the second site, the Church of St. Alexander Nevsky in the village of Bol'shiye Memi, a comprehensive study of the building is presented, with documentation of various periods of its existence, as well as a preliminary reconstruction project. The mentioned object is located in the Republic of Tatarstan, № 1, Molodezhnaya street, Bol'shiye Memi village, Verkhneuslonsky municipal district. The church was built in 1892 in the eclectic style according to a prescribed project, which was later used to build several similar churches in the Kazan Governorate. At the time of the site inspection, the building was in an extremely dilapidated condition; part of the church had collapsed,

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and the remaining structures were in a pre-stressed state. All the structural elements were measured and recorded at the site, and two years later, after the site was inspected, the building finally collapsed. The surviving research materials allowed for a high-quality restoration project to be completed.

The relevance of the study is due to the growing interest in preserving the heritage of Tatarstan. The work provides a detailed analysis of the chronology and sequence of management decisions, investment agreements, and urban development approvals that formed the basis of the passportization projects. The relevance of the certification and prompt recording of deteriorating cultural heritage sites (CHS) is very high and important due to the irreversible nature of the loss of historical data and material culture objects. Timely registration and monitoring serve as the only legal and practical foundation for saving the monuments.

The main goal of this study is to develop conservation processes for endangered cultural heritage sites. This goal's relevance is underscored by the importance of listing a monument in official registers to obtain state-protected status. Key objectives of the study include: capturing an accurate «cast» of the site at the current time to track the rate of its deterioration; compiling historical, architectural, and archival data into a single standardized document; performing precise measurements and drawings for future work on the possible reconstruction of the site; determining the scale of destruction to calculate the cost of emergency and/or restoration work; creating a transparent database for potential patrons, investors, or government programs; using the recorded data as evidence when holding owners accountable for improper maintenance; and developing new design solutions for the site, taking into account the site's history.

Keywords: rural churches, passportization and digitalization of historical sites, historical and cultural identity, regeneration, reconstruction, planning structure, volumetric and spatial regulations, historical settlement, requirements to urban planning regulations, recreation

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1. INTRODUCTION

The current crisis in preserving historical and architectural heritage is polarized, with valuable objects being destroyed with equal probability by fundamentally different forces – blind nature and the conscious, commercially oriented calculations of man. Two sides of the same problem. Rural churches are perishing from natural decay. Due to village depopulation, churches are left unattended, while precipitation, wind, and growing trees destroy wooden and stone structures. Abandoned historic military barracks are being destroyed due to commercial interests. Sturdy, historic red brick buildings often occupy attractive development sites, leading to their demolition to make way for highly profitable residential developments. The result is a loss of identity. Both processes erase local history in both rural and metropolitan areas. In the countryside, monuments are disappearing due to neglect and poverty, and in the city, due to the pursuit of profit. Society is losing layers of material culture due to the lack of systemic protection mechanisms.

By the beginning of the second decade of the 21st century, the vast territory of the former military town, historically known as the Arsk Barracks or Oktyabrsky Town, located in the Soviet District of Kazan between Nikolay Ershov, Patrice Lumumby and Iskra Streets, represented a complex and contradictory urban phenomenon [1-2]. The once strict, closed and integral architectural planning complex had reached a state of deep degradation by 2014-2015 [3-4]. A significant part of its historical buildings was reduced to a state of ruin, and the courtyards were chaotically littered with construction debris [5-6]. A characteristic feature of the material and spatial state of the object at the initial stage of the study was the storage of dismantled authentic building materials – historical hand-molded bricks from the 19th century [7-8]. The elements were placed on wooden pallets,

demonstrating a deliberate process of deconstructing the historical substance. This act represents the implementation of a utilitarian-economic approach to cultural heritage objects, in which material authenticity was sacrificed for commercial expediency [9-10]. The current situation can be characterized as a paradox of «conservation through dismantling»: fragments of the monument were not integrated into the restoration program, but were considered exclusively as a secondary resource for a hypothetical stylistic recreation of the facades in a different location or context [11-12].

From the heritage preservation methodology point of view such actions illustrate the substitution of the restoration paradigm for the developer's one: historical matter loses its original spatio-temporal identity and turns into a commodity simulacrum, designed to ensure the marketing appeal of new development by exploiting the aesthetics of the past without preserving its essential content [13-14].

The current situation is a direct consequence of the long period of uncertainty regarding the territory's legal status [15-16]. For many years, public discourse deliberately maintained the idea of its exceptionally protected status. This supposed invulnerability of the facility was based on its status as the property of the Russian Federal Ministry of Defense. It was assumed that the complex's affiliation with a federal ministry would guarantee its protection from the aggressive commercial interests of developers [17]. However, this very status became a factor that delayed informed decisions regarding its civil use and led to its actual abandonment after the departure of its primary user. The removal of the site's special status, the relocation of the Kazan Higher Artillery Command and Engineering School, and the subsequent transfer of more than 30 hectares of land from federal to local (republican) ownership paved the way for a radical change in the site's functional program. The decision to transfer the land to a private investor for the implementation of a residential development project caused a wide public outcry and became the catalyst for one of the most notable urban development conflicts in the recent history of Kazan. Urban preservationists, local historians and a significant portion of the city's residents perceived the plans for commercial renovation as a threat to the final destruction of a unique fragment of the urban structure [18]. Public outrage resulted in a series of petitions, public hearings, and expert discussions aimed at finding a compromise development plan. The activists' primary demands were to preserve the complex's authenticity, transform it into a museum, or adapt it for public functions such as art clusters, educational centers, and creative industries. Despite the consolidated position of the urban conservation community and the reasoned objections of experts, the project was implemented in the format proposed by the developer. Today, with the first phase of construction of the Art-City residential complex completed, the area is of undoubted scientific and practical interest to researchers in the fields of architecture, urban planning, urban sociology, and conflict studies [19-20].

The Church of St. Alexander Nevsky in the village of Bol'shiye Memi was built in 1892 in the eclectic style, according to a prescribed project, which was later used to build several similar churches in the Kazan Governorate. Construction was completed thanks to the sponsorship of merchant Savin, who operated a shipping company on the Volga River. He also built an Old Believer house there. In 1931, the priest of this church was repressed by the Soviet authorities. In 1939, the church was closed, and the bells were removed and taken away. Only the smallest one remained to be used as a fire alarm, but it also was stolen later. At first, the church was used as a tractor repair shop, and then as a pea seed warehouse. At that time, the church was in very good condition; even the icons were still there.

Until 1978, all the holy images remained untouched, until the local mayor began squandering them. Some time ago, unknown people came to the village and traded the ancient icons for cheap household appliances.

The church is located in the village's central square and was once its main attraction and landmark. Unfortunately, it is now in disrepair and living out its final years. The church building consists of three main structures aligned along an east-west axis: central block (square in plan), refectory, apse, 3-tiered bell tower. The walls are covered with planks, a strip of stylized frieze runs along the upper cornice of the building, the corners of the log house, also covered with planks, are made in the form of pilasters (flat columns). The two-story central block is covered by a complex cross roof with a tented roof topped with an octagonal rotunda on it. The church's main structure is topped with a small onion-shaped dome with an Orthodox cross. The three-tiered bell tower is octagonal on a square with an octagonal tented roof. The church's main structure is topped with a dome and an Orthodox cross. The three-tiered bell tower is of the «octagon-on-a-cube» type, with an octagonal tented roof.

As part of the diploma project, field and bibliographic research was conducted between February and May 2018. Architectural measurements of the building, architectural drawings of facades, plans, sections and details, and photographic documentation were completed.

During the in-kind survey, the foundations, walls, floors, structures, and roof covering of the aforementioned structure were examined. Based on the results of these in-kind surveys, the building's physical volume, the monument's complexity, the extent of the building's loss of its original appearance, and the structural strength were determined.

The relevance of this study is determined by several factors.

Firstly, it responds to the urgent need for scientific understanding of the large historical territories complex reconstruction process in Russian megapolices. The Kazan's experience indicates how powerful private investors with significant resources interact with federal heritage sites in the context of an imperfect legislative framework and the absence of effective public oversight mechanisms. The Art City project serves as a striking example of how the commercial logic of spatial development collides with the cultural memory preserving goals. Studying this case allows us to identify typical risks and develop preventative strategies for similar situations in other Russian cities, such as Yekaterinburg, Nizhny Novgorod, and Samara, where the revitalization of former industrial and military zones is also a pressing issue [21-22].

Secondly, the study is relevant from the perspective of working with historical context methodology [23-24]. The completed project demonstrated a hybrid approach: alongside the construction of modern high-rise buildings shaping the new skyline of the district, the investor partially restored and stylistic adapted several pre-revolutionary buildings along the red line of Ershov Street. Analysis of this compromise is important for understanding the limits of what is acceptable in modern development practice [25-26]. It poses difficult questions for the academic community: can reconstructed facades, concealing modern structures, be considered an act of heritage preservation? Or are they merely a simulation of the historical environment, creating the illusion of continuity to enhance the marketing appeal of the properties being sold?

Thirdly, preserving cultural and historical heritage [27-28] is a strategic responsibility of society to future generations. The examples of the Arsk barracks in Kazan and the Alexander Nevsky Cathedral in the village of Bol'shiye Memi clearly demonstrate that threats to monuments [29-30] vary fundamentally: from the destructive forces of nature to short-term human commercial interests.

Diverse threats require a unified protection tool:

- Human factor (Arsk barracks): the tragic fate of the Oktyabrsky Gorodok complex demonstrated how the historical environment gives way to commercial gain. Despite protests from heritage conservationists, the buildings were almost completely demolished to make way for a new residential complex. This demonstrates that without strict legal status as a landmark, architectural heritage is vulnerable to the construction industry.

- Natural factors (Church in the village of Bol'shiye Memi): this unique wooden church from the late 19th century [31-32] suffered for decades from natural aging, precipitation, and dampness. Without timely conservation, the wooden structure fell into disrepair and began to literally disintegrate, requiring urgent engineering rescue.

In the context of increasing pressure from developers and climate change, there is an urgent need to create a universal mechanism for the preventive protection of cultural heritage sites (CHS) [33-34], capable of working proactively regardless of the threat type.

The purpose of this study is to substantiate the use of passportization and digitalization as universal tools for preserving endangered cultural heritage [35-36], ensuring the protection of historical and architectural monuments from various threats – both anthropogenic (commercial development) and natural (natural destruction). To achieve this goal, the following objectives were set:

1. Conduct a comparative analysis of two contrasting cases of heritage loss/transformation in the Republic of Tatarstan: the destruction of the Arsk barracks under the commercial development pressure and the physical decay of the Alexander Nevsky Cathedral due to the lack of protection from the natural environment.

2. Identify the critical role of a site's passport as a tool for documenting the «before» intervention state: analyze how the creation of a digital twin allows for the preservation of authenticity during forced redevelopment or serves as the sole proof of the authenticity of a lost monument.

3. Assess the legal potential of digital passporting: examine how the presence of a detailed registry and documented status complicates unjustified demolition procedures and compels investors to engage in dialogue and implement restoration measures.

4. Analyze the Republic of Tatarstan's experience in integrating cultural heritage site data into federal information systems (the «Наследие.дом.рф» platform) to monitor the deterioration dynamics of approximately 6,000 properties in real time.

5. Formulate systemic recommendations for improving heritage protection mechanisms:

- develop regulations for mandatory monitoring and preliminary recording of hazardous sites;
- substantiate the need for legislative recognition of hazard types (man-made and natural) as equally significant risk factors;
- propose mechanisms for institutionalizing public oversight at the planning stages of urban development activities.

Thus, despite the fundamentally different nature of the threats – commercial development in the case of the Arsk barracks and the natural destruction of the church in the village of Bol'shiye Memi – the outcome is equally tragic: the loss of an authentic historical environment. This demonstrates the vulnerability of cultural heritage sites to any destructive factors in the absence of preventative protection measures.

In the face of increasing pressure from developers and climate change, there is an urgent need to create a universal protection mechanism capable of proactive action, regardless of the source of the threat. This is why passportization and digitalization are viewed not simply as an archival procedure, but as a key tool for the recording, legal protection, and monitoring of historical and architectural monuments.

2. METHODS AND MATERIALS

To ensure the objectivity, depth, and scientific validity of the conclusions, this study applies a comprehensive interdisciplinary approach, combining methods of historical analysis, urban planning audit, and sociological conflict research.

The methodological framework was built on a consistent analysis of empirical data covering a ten-year period of active transformation of the territory under study (from 2014 to 2025).

The primary methods applied were chronological and content analysis of documentary sources. A representative sample of texts was compiled, including:

1. Historical and cultural expert assessments (HCE): Five full texts of expert assessments conducted by various certified specialists in different years were reviewed. These documents made it possible to reconstruct the protected object, determine the degree of structures' authenticity, and trace the evolution of the objects' value assessments. Particular attention was paid to the discrepancies in the different experts' opinions, which reflects the complexity of assessing such a multi-layered object.

2. Urban preservation petitions and appeals: Over thirty collective appeals from public organizations and open letters addressed to the authorities of the Republic of Tatarstan, the mayor of Kazan, and federal government agencies were analyzed. Content analysis of these texts allowed us to identify the core of public demands, the activists' arguments, and the conflict escalation dynamics.

3. Management decisions and regulations: A detailed review of the resolutions of the Kazan Executive Committee, orders of the Tatarstan Republic Cabinet of Ministers, and orders of the Land and Republican Property Relations Ministry regarding the changes in the permitted land use and the transfer of plots was conducted. This allowed us to establish a legal framework for the project's legitimacy.

4. Territorial planning projects (TPP) and territorial planning documentation (TPD): a comparative graphical and analytical analysis of three main versions of the TPP submitted for public discussion was conducted. A comparison of technical and economic indicators (TEI), development density coefficients, percentage of greenery, and parking space provision revealed a vector of change under economic pressure.

5. An architectural expedition was conducted to document the current condition of the dilapidated church in the village of Bol'shiye Memi. Measurements were taken (Fig. 1) and a digital copy of the structure was created. A preliminary restoration design was completed as part of a thesis.

The physical volume of the building was determined (Table 1).

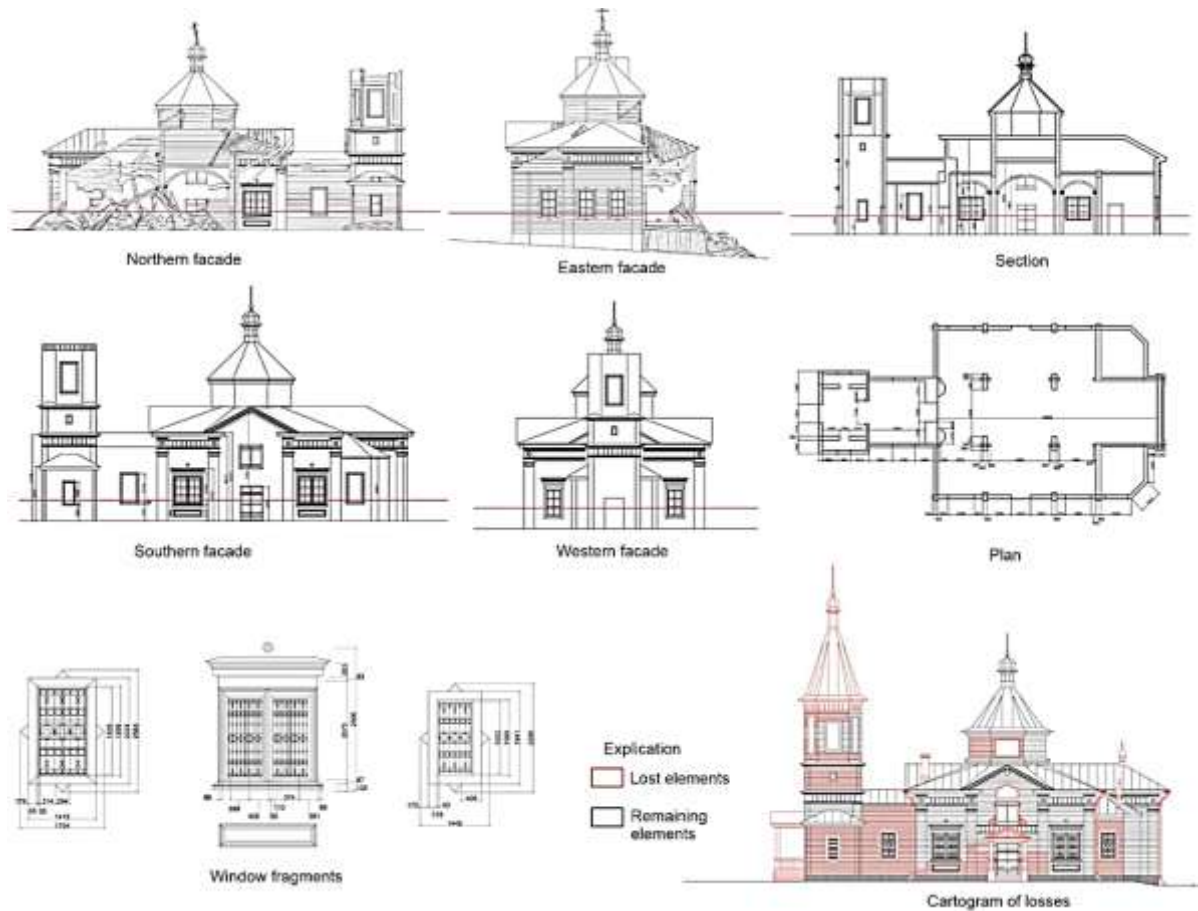


Fig. 1. Measurement drawings of the temple building in the village of Bolshie Memi (source: illustration by the authors).

Table 1. Calculation of the physical volume of the church building in the village of Bol'shiye Memi.

№	Name of parts	Area, m ²	Height, m	Calculation of volumes	Volume, m ³
1.	Bell tower	12.6	12	$12.6 \times h_{12}$	151.2
2.	Side extensions to the bell tower	$2.6 + 2.6 = 5.2$	4.7	$5.2 \times h_{4.7}$	24.44
3.	The narthex	22.5	5.1	$22.5 \times h_{5.1}$	114.75
4.	Central block	$128.5 + 24.1$	6.1; 7.9	$128.5 \times h_{6.1} + 24.1 \times h_{7.9}$	974.24
5.	Altar part	$22.8 + 11.8 \times 2 = 46.4$	6.1	$46.4 \times h_{6.1}$	283.04
6.	Roof over parts of the building: - Side extensions - Relief - Central block				13 18 295
	Total:				1873.67

Open data provided by official government online-portals was actively used as an information base for the research. Data from the Kazan Executive Committee's geographic information system for urban development management served as the basis for mapping the stages of demolition and new construction. Furthermore, materials published by the developer itself were integrated, including investor presentations, sustainability reports, and interviews with company executives. These sources allowed us to study the internal logic of business decision-making, the marketing strategy for positioning the Art-City residential complex, and the stated principles of corporate social responsibility.

An important component of the methodology was the analysis of social urban planning conflicts. Elements of actor theory were applied to identify key stakeholders: the Russian Ministry of Defense, the government of Tatarstan, the city administration, a private investor, urban conservation groups («TRO VOPIK»), and local residents. Key points of contention were identified: a dispute over the boundaries of the protected area, the issue of compensatory landscaping, and traffic congestion on Ershov Street.

The on-site survey was based on the author's own photographs, completed in three stages: in 2018 (documenting the pre-destruction state), in 2021 (the active construction phase), and in 2024 (the completed complex). The photographs were compared with historical photographs from the early 20th century and restoration projects to verify the degree of conformity of the new construction with the original.

Technical and economic parameters from the developer's public declarations were also studied: the total area of apartments, the commercial area of the ground floors, and the estimated population. These quantitative data allowed us to calculate the gross and net density, as well as analyze the efficiency of using such a valuable urban resource as land in the immediate vicinity of Kazan's center.

The integrated application of these methods allowed us to move from a simple description of ongoing events to a deep analytical study of the cause-and-effect relationships that determined the final form of one of the most discussed construction projects in Kazan in recent years. The use of a mixed methodology ensured that data from one source was verified with information from another, minimizing the risk of subjective interpretations.

3. RESULTS AND DISCUSSION

A comprehensive analysis of the transformation of the former Oktyabrsky (Arsky) town allows us to conclude that the final design for the Art-City residential complex is the result of a complex compromise between an aggressive commercial development strategy, urban planning regulations, and civil society opinion. The study's conclusions can be divided into three interrelated sections: planning and architectural solutions, the transformation of cultural heritage sites, and social and management aspects.

1. Transformation of the functional-planning structure

An analysis of the territorial planning projects (TPP) revealed a radical shift in land use principles compared to the historical period. While the Arsk barracks represented a multifunctional autonomous system with low-density development (approximately 25-30%), extensive parade grounds, and its own infrastructure (warehouses, stables, officers' quarters, and a church), the modern Art-City residential complex embodies the model of a high-density, multifunctional hub (Fig. 2-3).

Key quantitative changes:

Development ratio: increased more than fourfold. The historic street grid and intra-block driveways were completely dismantled and replaced with a concentric spatial pattern around private courtyards without through traffic.

Height of buildings: The historic silhouette of one- to three-story buildings was radically altered by the addition of high-rise dominants – residential towers up to 20 stories high. This not only visually suppressed the preserved historic volumes but also created a new climatic environment (problems with insolation of the lower levels and wind corridors).

Balance of land: the area of hard surfaces (roads, parking lots) has increased due to the reduction of open ground surfaces, which previously served as infiltration zones for rainwater. Despite the installation of modern storm drainage systems, the ecological capacity of the area has decreased.

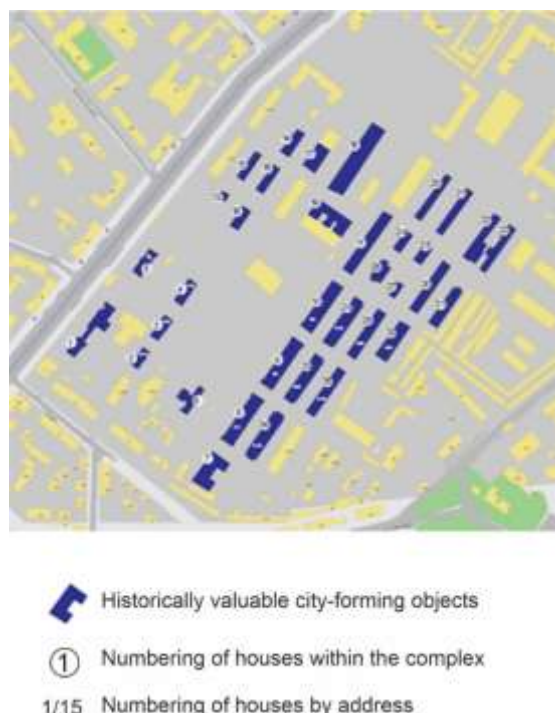


Fig. 2. Layout of buildings on the territory of Oktyabrsky Town (source: Materials of the State Institute of Culture and Heritage of the Russian Academy of Sciences – GIKE TRO VOOPIK).



Fig. 3. Oktyabrsky Gorodok development plan, 2016 (source: Kazan City Hall website kzn.ru).

Discussion of this aspect reveals a fundamental conflict of paradigms. The military town was built as an extensive structure, where the primary resource was space for maneuver and isolation. A modern city demands the intensification of every square meter. The developer addressed this challenge by maximizing the displacement of public functions underground (parking) and concentrating residential functions upward. However, the stated «city within a city» concept has only been partially realized:

the commercial infrastructure on the ground floors is oriented more toward external consumers than toward creating a self-sufficient environment for residents.

2. Reconstruction of Historic Buildings and Heritage Management

One of the most controversial results of the project was the implementation of a hybrid strategy for managing architectural monuments. Of the 55 historic buildings, only a few key buildings along N. Ershova Street were fully preserved.

The results of the on-site survey and analysis by the Institute of Contemporary Art (IKE) revealed the following:

Donor buildings: a significant portion of the historic brickwork from the 19th and early 20th centuries was deemed physically unsuitable for restoration. The dismantling of the bricks and their storage on pallets, documented at the beginning of the study, became the prelude to the creation of «recreated facades». Essentially, this is an act of deconstructing the monument for the sake of preserving the building material.

Reconstruction and restoration: new monolithic reinforced concrete frames were erected along the red line, onto which the historic façades were mounted using old brick (a process known as restoration). According to the Venice Charter, this approach violates the principle of authenticity, as the connection between the material and the time of its creation is severed. However, from an urban perspective, this step avoided the appearance of a «torn» street perspective and softened the visual shock of the adjacency of the old low-rise and the glass high-rises.

Loss of city-forming elements: the most significant loss was the destruction of the internal identity of the ensemble. The disappearance of the courtyards system and their replacement with commercially profitable closed courtyards-patios in high-rise sections destroyed the intimate scale of the military camp.

By 2017, the owner of the territory had already been determined – and its CEO sent a letter to the government of Tatarstan, which presented demands for the exclusion of building № 1/16 and the territory beneath it from the list of historically valuable urban development. By that time, the complex of buildings had been identified as a historically valuable urban development by the Department for the Protection of Architectural Monuments and Cultural Heritage of the Kazan city. The identification was carried out as part of the work to monitor historically valuable objects for the purpose of their further preservation based on repeated requests from residents of Kazan and members of the Association for the Protection of Monuments (TRO VOPIK).

According to the developer, preserving the buildings as valuable urban features prevented the implementation of construction plans: according to the planning project, a shopping center was planned for this site. At the same time, at numerous interdepartmental meetings it was discussed that in relation to this category of sites it is necessary to preserve historically valuable city-forming objects by virtue of the established order of the Ministry of Culture of Tatarstan for the maintenance of a historical settlement and in accordance with Article 59 of Federal Law № 73. Experts and public activists argued that the main volume and stylistic features of the historic facades shaping public urban spaces, roof configurations, historical facade finishing materials and roofing materials should be preserved.

The developer's innovative, but ethically questionable, marketing approach is worth noting: the recreated fragments were integrated into the brand positioning («Art»), creating the image of a loft with history. Thus, the heritage was transformed from a burden into the main commercial advantage of the property. This demonstrates a shift in the perceived value of history: from sacred sanctity to the utilitarian use of the aesthetics of ruins and the patina of time.

3. Management decisions and public response.

An analysis of the conflict's chronology reveals the evolution of the authorities' position from ignoring public opinion to attempts at dialogue under the pressure of media. The legitimization mechanism: the transfer of land to the Republic of Tatarstan, and then to the investor, was carried out through the procedure of amending the Land Use and Development Rules (LUDR). Public hearings on this issue were formal, yet they served as a rallying point for the urban conservation movement.

The role of expert assessments: Historical and cultural assessments became the main battleground. The client was an interested party, which created the risk of expert bias. As a result, the public was forced to initiate alternative independent assessments, whose findings often contradicted the official

ones. The final reconstruction project was the result of a deal: the investor agreed to preserve the façade walls of the two most valuable buildings in exchange for the removal of claims regarding the rest of the site.

The result of citizen participation: it can be argued that widespread outrage was unable to halt the construction or change its economic model, but it did significantly adjust the architectural design. Without activist pressure, the entire block could have been built with standard high-rise buildings without any allusions to the site's history. The preserved and stylistically adapted structures are a direct result of civic engagement.

Discussing the need for citizen participation, this case proves the thesis that renovation is impossible without social and public licensing. Ignoring local identity leads to residents' alienation from the new space. Even respondents who purchased apartments in Art City (according to indirect surveys on social media) noted a lack of «soul» and excessive commercialization of the environment. This confirms the conclusion: sustainable development of a territory is achieved not by maximizing square footage, but by harmonizing stakeholder interests in the early stages of design (Fig. 4-9).

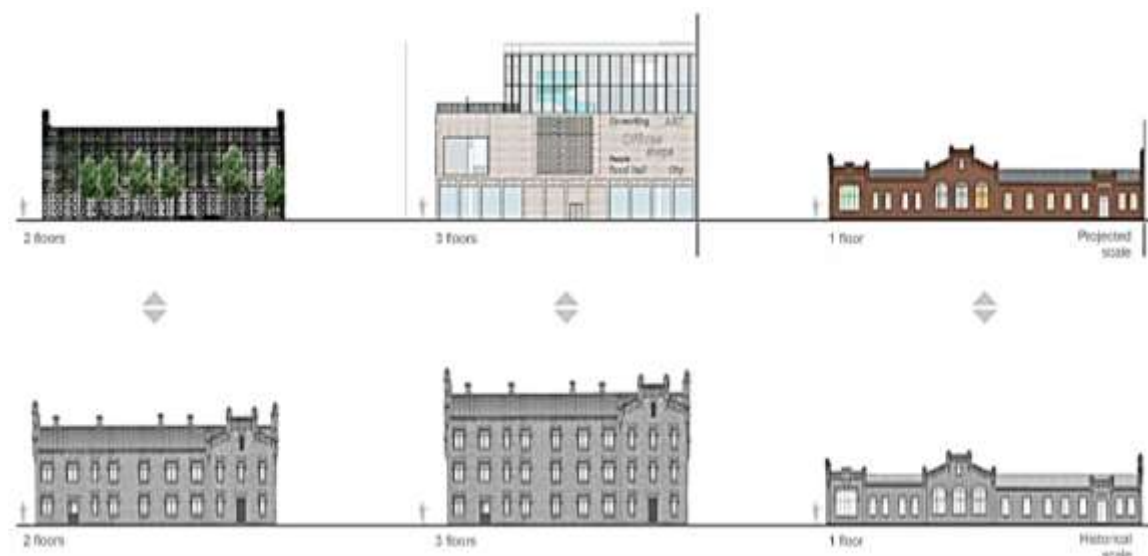


Fig. 4. A project for a modern Art Center (shopping center) on the scale of the historical buildings of Oktyabrsky Town (source: Materials of the Interdepartmental Commission on Urban Development in Historic Settlements, 2021).

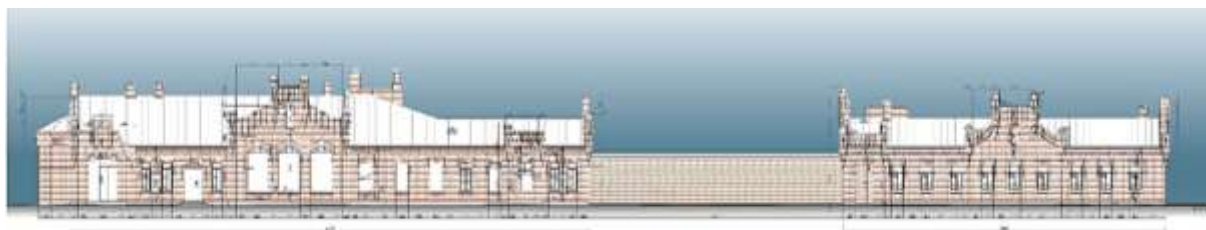


Fig. 5. Dimensional drawings of the reconstructed buildings of the Arsk barracks (source: illustration by the authors).



Fig. 6. The completed «Art-Center» shopping center, view from the facade (source: photo by the authors).

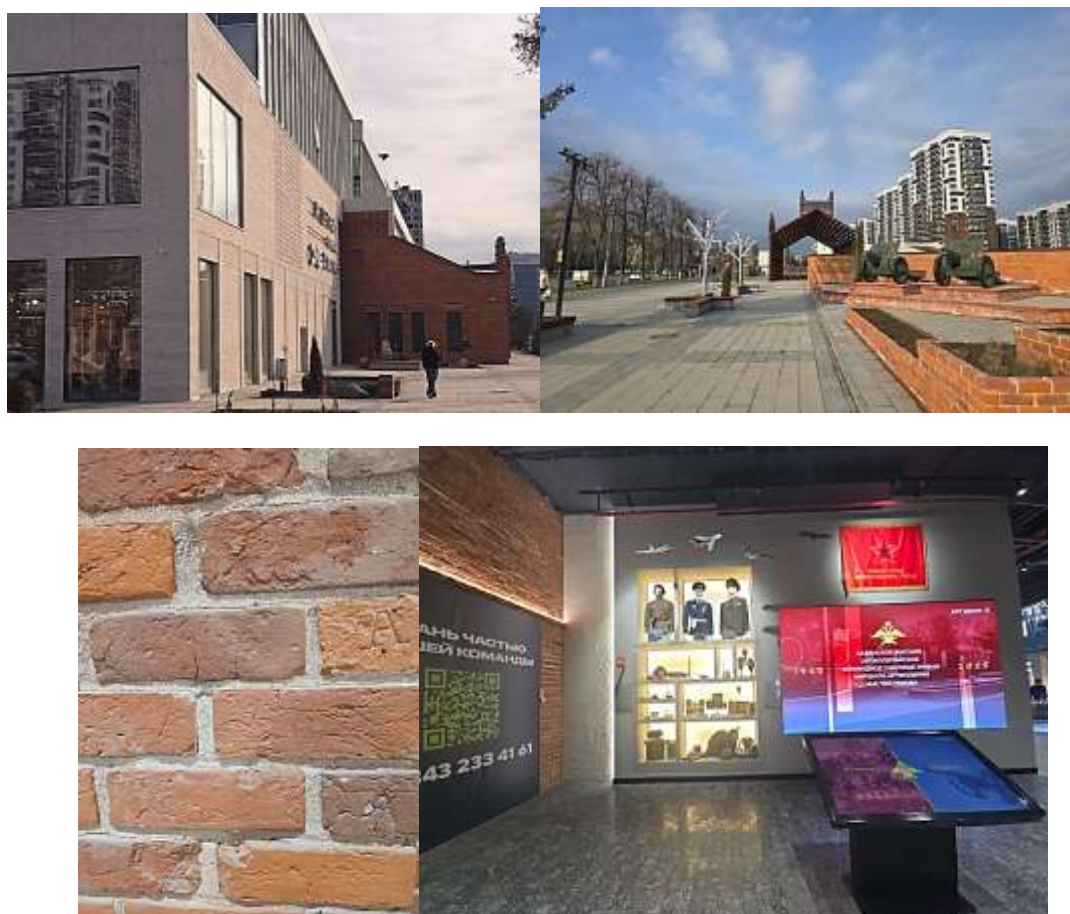


Fig. 7. View of the «Art-Center» shopping center and surrounding area (source: author's photo).

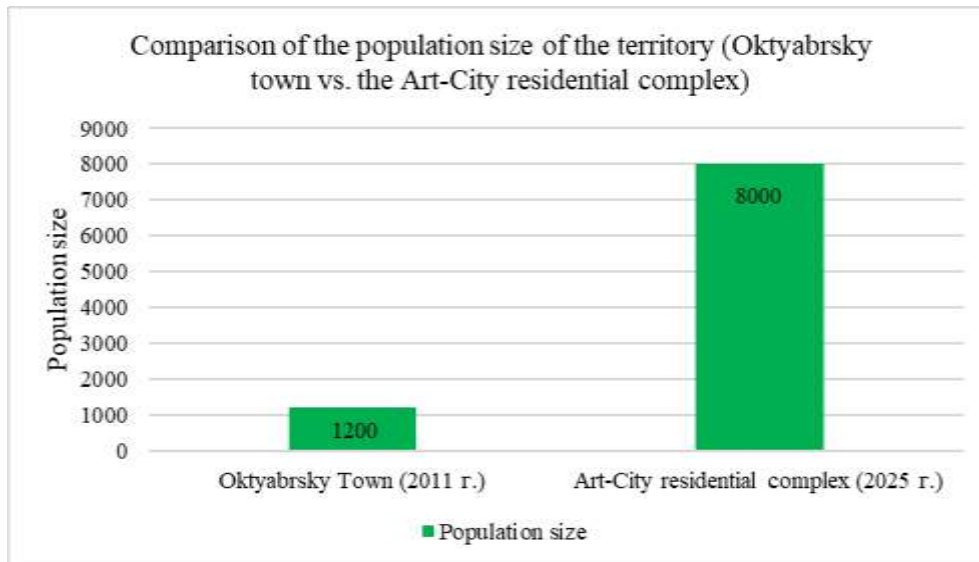


Fig. 8. Comparative analysis of population and development density (source: illustration by the authors).

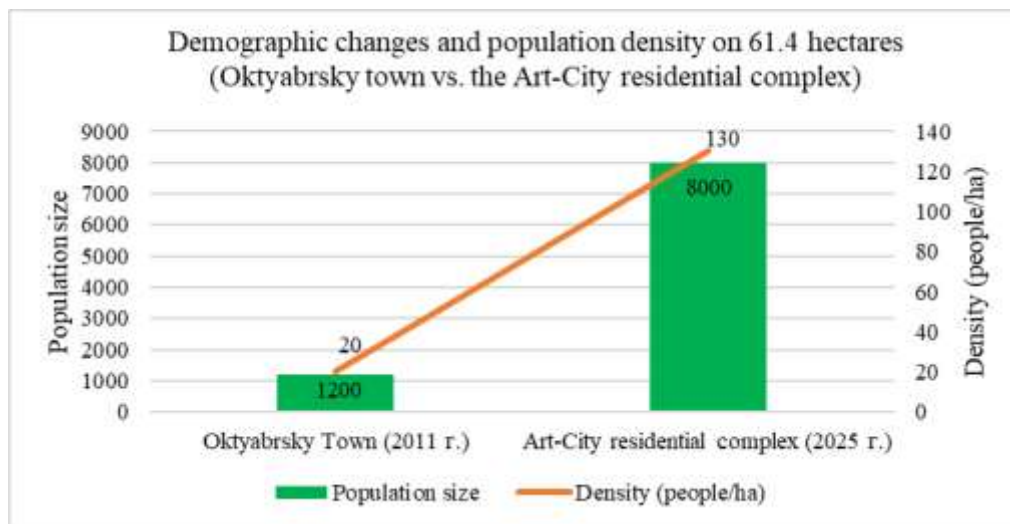


Fig. 9. Updated Chart: Population and Density (source: illustration by the authors).

The implementation of the «Art-City» project demonstrated Kazan's transition to a market-based development model for complex historical territories. The result is twofold: on the one hand, the area was rescued from a state of criminal neglect, received modern engineering infrastructure, and became part of the city's vibrant economy. On the other hand, the authentic spatial logic of the Arsk barracks was lost. The area has ceased to be a unique ensemble and has become a standardized luxury real estate product, using the historical context merely as a decorative shell. The experience of this project should serve as a lesson for future redevelopment projects in Kazan, emphasizing the critical importance of developing detailed design codes and mechanisms for genuine, rather than formal, community participation in decision-making before an investor purchases the land.

The project involved the documentation and digitization of a number of Orthodox architectural structures within the Kazan Diocese, as well as the creation of several analytical charts illustrating aggregate data on the condition and construction materials of these buildings. The first diagram (Fig. 10) shows that there are more historical stone churches in the Kazan Diocese than stone ones. The next image (Fig. 11) reveals that there are more inactive churches than active ones.

Building Material Statistics

Material	Count
Stone	83
Wooden	26
Unknown	13

Operational Status Statistics

Status	Count
Inactive	98
Unknown	13
Active	11

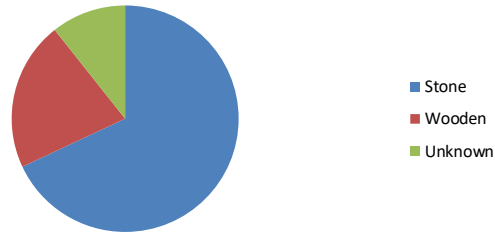
Proportion of Churches by Material

Fig. 10. Statistical data on the construction materials of churches in the Kazan Diocese (source: illustration by the authors).

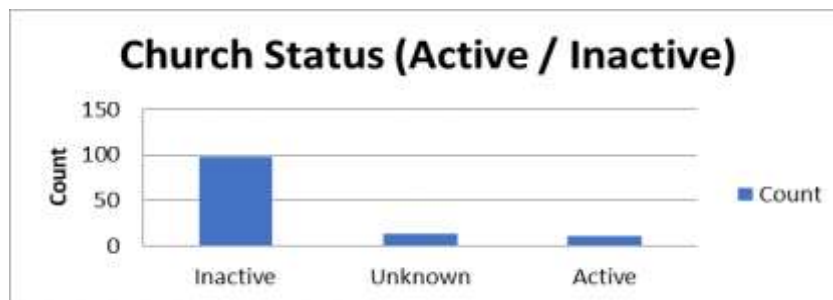


Fig. 11. Physical condition of historical churches within the territory of the Kazan Diocese (source: illustration by the authors).

As a result of this study, a classification of all wooden churches in Tatarstan in disrepair was also completed and reflected in the following diagram. Wooden churches of the Kazan Diocese in disrepair (the list does not include churches of the Chistopol, Nizhnekamsk, Almetyevsk, and Bugulma dioceses of the Kazan Metropolitanate) (Fig. 12).



Fig. 12. Author's scheme for the certification of all wooden churches in the Republic of Tatarstan in extreme condition (source: illustration by the authors).

4. CONCLUSIONS

Preserving cultural and historical heritage is a strategic responsibility of society to future generations. The examples of the Arsk barracks in Kazan and the Alexander Nevsky Cathedral in the village of Bol'shiye Memi clearly demonstrate that threats to monuments vary widely: from the destructive forces of nature to short-term human commercial interests.

Different threats require a unified protection tool:

- Human Factor (Arsk Barracks): The tragic evolution of the Oktyabrsky Town complex demonstrated how the historical environment gives way to commercial gain. Despite protests from heritage conservationists, the historical buildings were almost completely demolished to make way for a new residential complex. This demonstrates that without strict legal status as a landmark, architectural heritage is vulnerable to the construction industry.

- Natural factor (Temple in the village of Bolshie Memi): a unique wooden temple of the late 19th century suffered for decades from natural aging, precipitation and dampness. Without timely conservation, the wooden frame fell into disrepair and began literally falling apart log by log, requiring emergency engineering rescue.

Property passportization is critically important, and it is the comparative analysis of such diverse cases that demonstrates the universal value of property certification:

1. Recording the «before» state: passportization allows for the creation of a digital twin of the property before the developer intervenes or irreversible deterioration from moisture and time begins. In the case of the Arsk barracks, measurements allowed for the preservation of at least part of the façade for the stylistic adaptation of the Art-City residential complex. In the case of the church, the lack of timely recording led to a loss of authenticity – the property fell into ruins.

2. Legal protection: Having a detailed property passport and its registered status complicates the demolition process. As the battle over the Arsk barracks demonstrated, having documentation encourages investors to engage in dialogue and implement restoration measures instead of total demolition.

3. A foundation for digital monitoring: Tatarstan is a leader in Russia in the digitalization of cultural heritage sites (CHS), having launched a large-scale inventory system covering approximately 6000 sites. Data integration into Federal systems (such as the «Наследие.дом.рф» platform) allows for real-time monitoring of damage trends.

The study's results suggest the need for a systematic approach. Tatarstan's experience demonstrates a paradigm shift: a shift from controversial demolition to careful scientific restoration and the re-creation of lost heritage. However, this balance is fragile.

To effectively protect history, it is necessary to:

- Develop regulations to ensure the monitoring of hazardous sites, followed by their mandatory recording and certification;

- Codify the types of threats at the legislative level: it is necessary to clearly assess the impact of the modern development approach and compare it with irreversible natural disasters, as they have an equally detrimental effect on the preservation of architectural heritage;

- Introduce public oversight mechanisms before planning projects are approved.

Thus, only a combination of government oversight, volunteerism, science, and strict certification will preserve the region's authentic memory for the future.

The Tatarstan Republican Branch of the All-Russian Society for the Protection of Historical and Cultural Monuments (TRO VOPIK) is the region's key public organization dedicated to the protection, restoration, and popularization of the cultural heritage of the peoples of Tatarstan. The authors have compiled a list and map of all cultural heritage sites in the Republic of Tatarstan (Fig. 13).



Fig. 13. The author's scheme for the passportization of all cultural heritage sites in the Republic of Tatarstan (source: illustration by the authors).

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