

Chapter 6

Accessibility of Service Digital Infrastructures



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Abstract This chapter examines the user experience and accessibility of digital platforms that provide school-related public services in Milan. By analysing the interfaces used by both final users (i.e., families) and back-office staff, we assess how design choices, procedural workflows, and language options impact actual service accessibility for families, especially those with migrant backgrounds. The analysis reveals that inconsistent multilingual support, unclear procedural requirements (e.g., SPID, CIE, ISEE), and confusing navigation patterns can hinder users from successfully enrolling children or accessing educational services. The chapter advocates for redesigning digital environments, particularly focusing on the digital platform of the Municipality of Milan, to better support user empowerment and improve administrative efficiency.

Keywords Digital accessibility · Mediation grammar · UX/UI design · Immigrant families · School services · Inclusion

6.1 Digitalisation of Public Services

European cities' current and future agendas are being shaped by the continuous digital shift, which has a significant impact on public administration and city governance. In order for citizens to properly exercise fundamental human rights, access to critical urban services is increasingly mediated through digital platforms (Rosol and Blue 2022). A certain degree of digital literacy and the use of Public Digital Identity Systems are required for this digital platformisation, which involves designing and delivering public services through Government as a Platform (GaaP) initiatives (Cordella and Paletti 2019). Digitalisation of some administrative procedures, such as online applications for residency permits, government agency appointment scheduling for interviews, or even access to language learning platforms, has the potential to streamline widespread access to several essential public services

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(Osborne et al. 2022a, b). The introduction of digital tools and platforms, especially in the welfare context, may unintentionally create new barriers to integration, particularly for marginalised groups such as immigrant and refugee communities, since digital transformation of urban services frequently ignores existing forms of urban inequality and poverty (Pineda and Thurston 2016).

Information and communication technologies (ICTs) embedded in public services, including digital public administration platforms, mobile applications, and Digital Public Identity Systems (Kemppainen et al. 2023), necessitate a particular set of skills and knowledge that are typically thought to be universally available, beginning with a reliable internet connection (Welby and Tan 2022). According to the EU Action Plan on Integration and Inclusion (2021),¹ migrants from lower socioeconomic backgrounds sometimes lack the necessary equipment, such as computers or high-speed internet, to even try to access public services on their own.

Furthermore, as noted by Buchert et al. (2023), intersectional factors like age, educational attainment, housing circumstances, and a lack of familiarity with the host nation's welfare system can compound the conventional integration obstacles listed above. Higher language proficiency is especially necessary in the digital environment because instructions and processes typically use formal registers and technical bureaucratic words that are only communicated in writing formats. The isolated environment of digital public services, in contrast to a traditional face-to-face interaction with the service, does not benefit from contextual audio-visual information exchange or immediate assistance, necessitating a certain level of confidence in both language and digital skills that migrant users frequently lack.

Additionally, immigrants' concern about making mistakes may be heightened by their lack of knowledge of the welfare system and their ignorance of the interconnected requirements and related rights, which could deter them from utilising the digital service in the first place (Buchert et al. 2023).

6.2 Data Management and Governance in Public Organisations

As public administrations increasingly rely on digital platforms to design, deliver, and evaluate urban services, data management has become a central component of contemporary public governance. According to the European Commission report on digital transformation in public governance, digital transformation is becoming central to modern public governance and public service delivery (Millard 2023). Through this shift, public organisations collect, process, and store large volumes of personal and administrative data through digital public services, including welfare applications, residency permits, and digital identity systems. Effective data management practices are therefore essential not only for service efficiency but also for

¹ EU Action Plan on Integration and Inclusion, https://www.euro-access.eu/_media/file/123_Action_Plan_on_Integration_and_Inclusion_2021-2027.pdf (accessed: February 2026).

ensuring transparency, accountability, and trust between public institutions and citizens (Janssen et al. 2012; Osakwe 2025).

In the context of Government as a Platform (GaaP), data is often reused across agencies, offices, and policy domains to enable interoperability, automation, and evidence-based decision-making (Charalabidis et al. 2011). While such data integration can enhance coordination and reduce administrative duties, it also raises critical challenges related to data ownership, data quality, and responsibility allocation within public organisations (Cordella and Paletti 2019). Fragmented data infrastructures, legacy systems, and siloed organisational structures frequently limit the capacity of public administrations to manage data in a coherent and citizen-centred manner (Charalabidis et al. 2011; Cordella and Paletti 2019).

Moreover, the increasing use of data-driven and AI-based systems in public administration amplifies concerns regarding privacy, data protection, and algorithmic accountability, particularly for vulnerable populations. These groups are often subject to intensified data collection and monitoring through welfare, migration, and integration services, which can reinforce power asymmetries between public authorities and service users (Veale and Binns 2017). Inadequate data governance frameworks may result in opaque decision-making processes, limited possibilities for contesting administrative decisions, and increasing risks of discrimination while trying to reduce it.

From an inclusion perspective, data management practices are closely linked to questions of accessibility and fairness. Poor data quality, missing information, or errors in administrative databases can disproportionately affect immigrants who are less familiar with bureaucratic systems or lack the linguistic and digital skills required to identify and correct mistakes. As noted in studies on digital public services, errors embedded in data infrastructures can become difficult to challenge once automated processes are in place, further marginalising already disadvantaged users (Eubanks 2018).

Consequently, public organisations must approach data management not merely as a technical or administrative task, but as a governance issue with social and ethical implications. This includes adopting principles of data minimisation, transparency, and user-centred design, as well as ensuring compliance with data protection regulations (De Chaves et al. 2025). Strengthening institutional capacity for better data governance is crucial to prevent digital public services from reproducing existing inequalities and to support more inclusive urban governance in an increasingly data-driven public sector.

6.3 User Interface, User Experience, and Accessibility in Digital Public Administration

A substantial body of past research has examined how User Interface (UI) and User Experience (UX) design influence the accessibility and effectiveness of digital public services. Different studies have already highlighted that usability failures, such as complex navigation, unclear instructions, and excessive formality, often prevent citizens from completing online administrative procedures, despite the technical availability of services (Bannister and Connolly 2014; Jaeger 2006). More recently, such results have been reinforced by framing UI and UX as institutional interfaces through which public authority, legal norms, and administrative logic are translated into everyday interactions (Lips 2020).

In this framework, accessibility is increasingly understood as a multidimensional concept that extends beyond “disability-focused” standards to include linguistic, cognitive, and socio-economic dimensions (Hernandez and Roberts 2018). Studies on digital welfare systems show that interfaces frequently assume high levels of bureaucratic literacy and procedural familiarity, privileging users who already understand how public administration works (Christin 2020; Eubanks 2018). This design bias disproportionately affects immigrants and other marginalised groups, for whom administrative categories, eligibility rules, and documentation requirements may be unfamiliar or opaque. Research on UX in public sector platforms has also highlighted a persistent tension between legal compliance and user-centred design. Public administrations often prioritise risk minimisation, auditability, and procedural correctness, resulting in interfaces that reproduce legal complexity rather than mediate it for users (Bovens and Zouridis 2002; Cordella and Paletti 2019). As a consequence, key procedural requirements, such as authentication systems, eligibility indicators, or supporting documentation, are embedded into rigid workflows with limited explanatory support. From a UX perspective, this approach shifts the cognitive and interpretive burden onto users, increasing the likelihood of errors, dropouts, and reliance on informal intermediaries (Lipsky 2010; Osborne et al. 2022a, b).

From a regulatory perspective, prior work has examined how accessibility and data protection frameworks established by the European Union intersect with UI and UX design. The Web Accessibility Directive and the European Accessibility Act define accessibility requirements primarily in technical and functional terms, focusing on perceptibility, operability, and robustness (European Commission 2016, 2019). However, other works argue that formal compliance with accessibility standards does not automatically translate into meaningful usability for diverse user groups (see Lazar et al. 2015 on usability vs. compliance; Power et al. 2012). In practice, platforms may meet technical criteria while remaining difficult to navigate, understand, or complete, especially for users with limited language proficiency or digital confidence.

More recent contributions from critical data studies and public administration research have linked UI and UX design to broader questions of power, accountability, and digital citizenship. Interfaces are increasingly seen as sites where administrative

discretion is encoded, constrained, or obscured, particularly in automated or data-driven systems (Busch and Henriksen 2018; Christin 2020). When users are unable to understand why certain data are requested, how eligibility is assessed, or how decisions can be contested, accessibility becomes inseparable from issues of procedural justice and trust in public institutions.

6.4 Governance and Procedures of School Services in Milan

Within the scope of the città-IN project funded by the Polisocial Award 2023,² various actors, stakeholders, and service providers involved in selected school services, both mandatory and supplementary services, were identified. In the early stages of the project, the research team, through the qualitative analysis, developed service journeys for each service in order to understand the prerequisites, required skills, and barriers to access across the broader service ecosystem. This approach made it possible to capture different perspectives on emerging issues and challenges as experienced by users, service providers, and local third-sector actors, including associations and voluntary organisations operating in the San Siro neighbourhood.

The analysis showed that local schools are responsible only partially, mainly for an executive role in the annual school enrolment, which is managed by the Ministry of Education and Merit (MIM) at the national level, while schools independently manage other services through specific digital platforms, selecting their own service providers. For example, in the San Siro area, schools manage all communication through the electronic school register provided via the Axios³ platform.

The Municipality of Milan (School and Educational Services Area) oversees supplementary school services, namely preschool and after-school programmes, as well as summer camps, and manages user requests through its dedicated digital platform. In addition, some neighbourhood associations offer alternative after-school and summer camp services to complement the institutional ones.

During stakeholder interactions, cross-analysis of the main services considered in the study highlights that each requires specific forms of digital access and distinct user competencies (see Table 6.1). Annual school enrolment procedures demand access to the national Unica platform through SPID⁴ (Italian Digital Identity System) or CIE⁵ (Digital Identity Card), together with the ability to correctly enter personal and school preference data. The electronic school register relies on credentials provided by the school and requires families to regularly monitor grades, attendance, and assignments through a dedicated app. The annual insurance payment, managed through

² Polisocial Award, Social Engagement and Responsibility Programme by Politecnico di Milano, <https://www.polimi.it/en/sustainable-development/polisocial-award> (accessed: February 2026).

³ Axios website, <https://axiositalia.com/> (accessed: February 2026).

⁴ SPID, <https://www.spid.gov.it/> (accessed: February 2026).

⁵ CIE, <https://www.cartaidentita.interno.gov.it/en/> (accessed: February 2026).

Table 6.1 Access requirements and skills required for the mandatory services investigated (school enrolment, insurance payment, electronic school register) and supplementary services (pre/after-school and summer camps)

Service	Access requirements	Skills required
Annual school enrolment	• Access to the Unica platform with SPID or CIE • Entry of personal data of the applicant and the minor, in addition to data from schools of preference	Ability to navigate the online platform and complete the registration process by correctly entering the required data
Electronic school register	• Activation of the app with credentials provided by the school secretariat • Continuous access to monitor grades, attendance and tasks	Ability to manage a digital application for monitoring school performance
Payment of insurance	• Access to the Pago in rete platform for the annual payment of school insurance (mandatory for all students)	Ability to make online payments through the designated platform
Supplementary school services (summer camps, pre-school, after-school)	• Access to the official website of the municipality of Milan with SPID or CIE • Input of data on household, income and working status • Presentation of the ISEE certification to obtain gratuitousness • Regularity in payments of previous services	Ability to fill out online forms with financial and family information. Knowledge of the requirements for admission to the ranking list

Pago in Rete,⁶ entails the capacity to execute online financial transactions. Finally, supplementary school services necessitate access to the Municipality of Milan's digital services with SPID or CIE, the compilation of detailed family and income information, and knowledge of the criteria regulating admission to ranking lists.

Given the project's timeframe and the set of institutional and local actors who actively collaborated in the research, the investigation presented in the present chapter took a particular emphasis on the in-depth analysis of the Municipality of Milan's digital platforms dedicated to the management of supplementary school services. This focus allowed the project to explore, with greater precision, the functioning, accessibility, and governance of these online systems, as well as their role in mediating families' interactions with pre-school programmes, after-school activities, and summer camp enrolments.

Thanks to the collaboration agreement between the Municipality of Milan, Directorate for Education (School and Educational Services Area) and the Politecnico di Milano, Department of Architecture and Urban Studies, the project team was granted access to anonymised administrative data. This enabled a comparative analysis

⁶ Pago In Rete, <https://www.istruzione.it/pagoindrete/> (accessed: February 2026).

between the San Siro neighbourhood and other areas of Milan. The data supported the qualitative analyses presented in the previous chapter (Galluzzo and Bergaoui 2026 in this book), based on surveys, interviews and participant observations, and enabled quantitative analyses, including a longitudinal study over five school years (2019/2020–2023/2024). These analyses focused on school enrolment patterns of Italian and non-Italian pupils across the city of Milan, as well as their rates of access to supplementary school services, including pre-school, after-school programmes, and summer camps provided by the Municipality of Milan.

Access to the data followed a strictly ethical and legally compliant procedure, regulated by a specific agreement governing its use for research purposes. All personal and sensitive information was fully anonymised prior to data transfer, ensuring that the analysis could be conducted responsibly while protecting individual privacy and allowing for a detailed examination of longitudinal trends and patterns in service uptake.

6.5 Demographic and Service Access Analysis

The statistical data provided by the Municipality of Milan on primary school enrolment and the uptake of school-related services offers a robust foundation for examining demographic transformations and inequalities in access to educational opportunities. The present analysis considers both the spatial distribution of pupils across the city and their participation in municipal services such as pre-school assistance, after-school programmes, and summer camps. Framing enrolment and service utilisation through the lens of citizenship status enables the identification of patterns of differentiation between Italian and non-Italian pupils, as well as the socio-spatial dynamics that underpin them.

In the 2023–2024 school year, pupils with non-Italian citizenship constituted 24.28% of all primary school enrolments in Milan (Source: data provided by Comune di Milano 2024). Their distribution is not homogeneous across the urban territory: a clear concentration is observed in peripheral areas that historically display higher proportions of foreign residents and are characterised by greater socio-economic disadvantage (see Karimi et al. 2026 in this book, Fig. 2.2). This spatial clustering underscores the intersection between demographic diversity and structural vulnerability, with direct implications for the allocation of educational resources and support measures. Municipalities 7 and 8, the most populous in the city (see Fig. 6.1), illustrate this dynamic particularly well, as they combine substantial pupil populations with some of the highest proportions of non-Italian pupils.

San Siro Area Analysis: The Rise of Immigrant Families and the Decrease of Enrolled Pupils

Within this municipal framework, the San Siro area, located in Municipality 7, presents a set of demographic dynamics that have intensified in recent years. The population of school-age children residing in the neighbourhood has increased

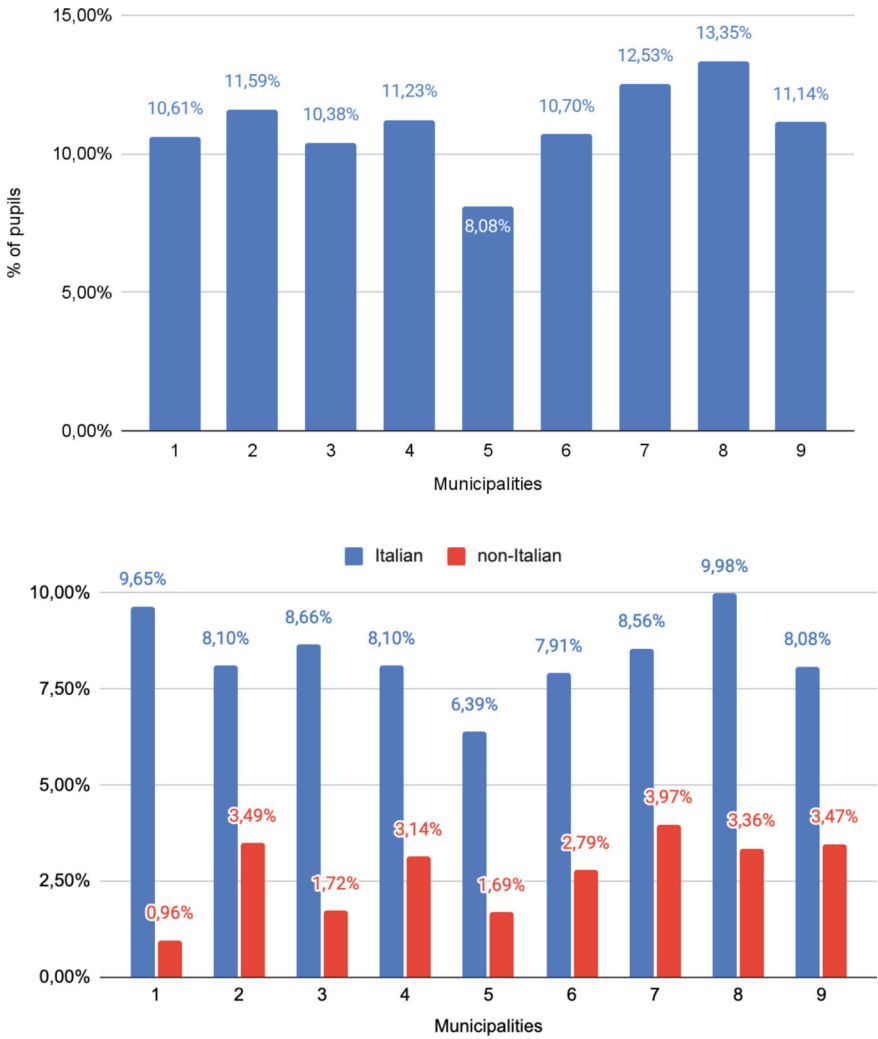


Fig. 6.1 Percentage of pupils in the municipalities of Milan (Up); percentage of Italian and Non-Italian pupils in the municipalities of Milan (Down). *Source* Authors’ elaboration from data provided by Comune di Milano (2024)

steadily, driven primarily by a substantial rise in the number of children with non-Italian citizenship. Between the school year 2019–2020 and 2023–2024, this population grew by 42%, signalling a significant consolidation of immigrant families in the area. However, despite this demographic growth, the overall number of pupils enrolled in San Siro’s primary schools decreased over the same period. This divergence between the resident population and school enrolment suggests the presence

of selective mobility patterns, differentiated school choice behaviours, or potential barriers in access to local schools.

Nonetheless, the proportion of non-Italian pupils within San Siro's schools increased by 23% between 2019–2020 and 2023–2024, indicating that, despite the general decline in enrolment, non-Italian families increasingly constitute the core of the local school population. The broader composition of foreign nationalities in Municipality 7 has also expanded in a relatively uniform manner, suggesting continuity rather than abrupt demographic rupture. These trends point to a gradual but sustained reshaping of the social fabric of San Siro, in which demographic growth is led by migrant households, while the Italian population demonstrates declining enrolment and potentially higher levels of residential or educational mobility.

Target Schools in the San Siro Area: Istituto Cadorna and Istituto Calasanzio

The demographic dynamics observed at the municipal and neighbourhood levels are also reflected in the two target schools, *Istituto Cadorna* and *Istituto Calasanzio*, although each institution displays specific characteristics. In both schools, the total number of enrolled pupils has declined in recent years, mirroring the broader reduction in enrolment among Italian pupils in the area. At Calasanzio, the decline in Italian-citizenship pupils contrasts with the relative stability of non-Italian pupils, resulting in an increasingly diverse school community despite the overall contraction in student numbers. At Cadorna, the demographic shift is even more marked, as the number of non-Italian pupils increased by 19%, significantly reshaping the internal composition of the pupils body.

Patterns related to catchment-area enrolment provide further insights into these transformations. Across both schools, the number of Italian pupils decreased, accompanied by a 12% reduction in Italian children attending a school outside their designated catchment (namely, *fuori bacino*). Conversely, the overall number of pupils with non-Italian citizenship increased by 11%, and those enrolling in their catchment-area school (defined as *in bacino*) rose by 28%. These figures suggest that non-Italian families tend to rely more consistently on local schools and may have fewer opportunities to engage in selective school choice. Italian families, by contrast, appear to exercise greater spatial mobility in educational decisions or may be relocating away from the area.

At Cadorna, the reduction in Italian pupils corresponds to a marked decrease in *fuori bacino* enrolments, reinforcing the interpretation that Italian families are becoming less anchored to the local school network. The increase in non-Italian pupils is accompanied by growth in *in bacino* attendance, indicating strengthened local settlement patterns. Calasanzio exhibits a similar structure: the decline in Italian pupils is driven largely by reductions among *fuori bacino* pupils, whereas non-Italian pupils have increased without substantial shifts in catchment-area distribution. Together, these trends underscore the direct influence of neighbourhood-level demographic change on school-level composition.

Service Accessibility and Utilisation

The analysis of attendance and service access further enriches the understanding of how families engage with supplementary school services. Across Municipality 7, both accessibility and utilisation of summer camps declined during the COVID period (i.e., 2020–2021 school year), consistent with citywide patterns. However, by the 2022–2023 school year, utilisation had returned to pre-pandemic levels, while accessibility surpassed pre-COVID rates, suggesting either a recovery in service capacity or shifts in demand patterns. Notably, no significant disparities were detected between Italian and non-Italian pupils in either the accessibility or utilisation of these summer services.

A more differentiated picture emerges in relation to the pre/after-school programme. During the pandemic, both accessibility and utilisation declined more sharply for Italian pupils, whereas non-Italian pupils appear to have been less affected by these disruptions. This contrast may reflect variations in household structures, labour-market participation, or the relative necessity of these services for different family groups. Although utilisation rates have largely normalised since the pandemic, certain school-level deviations remain noteworthy.

In this regard, Cadorna school presents distinct patterns in service utilisation and accessibility when compared to the broader context of Municipality 7. These differences in our view may be attributable to the school's changing demographic profile, its internal organisational capacity, or variations in families' ability to navigate the administrative processes required to access municipal services. Such divergences underscore the importance of continuing to monitor service engagement at the micro-territorial level, where institutional, demographic, and socio-economic factors intersect to shape access to school-related opportunities.

Data Preparation, Quality Assessment, and Analytical Pipeline

Lastly, as a final remark, the development of the analyses presented in this section required the construction of a comprehensive data-processing pipeline capable of integrating multiple datasets spanning the school years. Given the heterogeneity of municipal administrative sources and the evolving structure of data fields across time, extensive preprocessing was necessary to ensure the comparability and validity of the resulting indicators. This process involved standardising variable formats, harmonising categorical values, cleaning inconsistencies, and merging records from different years into a coherent longitudinal framework. Only after these operations was it possible to conduct the demographic, spatial, and service-access analyses in a reliable and interpretable manner.

During the exploratory phase of the work, several issues emerged that highlight significant limitations in current data collection and management practices. One notable anomaly concerned the recording of pupils' ages: in multiple instances, the datasets included primary-school children whose recorded age exceeded the expected range, including some entries indicating pupils as old as 18 years. Such inconsistencies suggest either input errors or misalignments between school-cycle classifications and registry data. These inaccuracies, while numerically limited, compromise the

internal coherence of the dataset and may distort analyses that rely on age-sensitive indicators.

A second set of inconsistencies was identified in the residence data. When restricting the dataset to pupils officially residing in the Municipality of Milan, a substantial number of records, 9543 entries across the years considered, were found to lack any associated Milan municipality information, even if a residency address was available. This absence is not marginal: for each year included in the analysis, missing municipality data account for more than 3% of all pupils. Given the centrality of territorial stratification to both descriptive and policy-oriented analyses, the presence of such gaps reduces the accuracy of spatial assessments and limits the capacity to generate precise, neighbourhood-level interpretations. It also affects the monitoring of catchment-area enrolment, mobility patterns, and service-utilisation disparities.

These findings underscore the need for strengthened data governance practices. As discussed in previous sections (see Sect. 6.2), improving the consistency, reliability, and year-to-year comparability of municipal educational datasets is crucial not only from a normative or procedural perspective but also for the effective monitoring of services and the formulation of evidence-based policy interventions. Enhancing the accuracy of registry fields, such as age and Milan municipality information linked to the residency address, and ensuring their systematic alignment across years would substantially improve the governance of administrative data. A more robust data-governance framework would thus enable continuous, precise evaluation of educational inclusion, service accessibility, and territorial inequalities, ultimately supporting more informed and equitable decision-making across the city's school system.

6.6 Assessment of the Digital Platform of Supplementary School Services

In general, service-mapping showed that users face many difficulties in successfully submitting a request for access to municipal services. This emerged consistently across interviews with local actors (e.g., groups of citizens, non-profit associations, etc.), highlighting that the current tools do not always facilitate the completion of procedures and that citizens seek support in filling out the request. At the same time, especially in the moments approaching application submission deadlines, municipal operators find themselves having to manage a system that requires too many manual interventions, creating avoidable workload and increasing the risk of errors. These critical moments generate peaks of activity that put additional pressure on staff, who must often dedicate time to repetitive tasks rather than focusing on more value-adding activities.

In particular, the form for entering requests for pre/after-school and summer camps is divided into 'Accordion'⁷ sections, but this structure creates problems in saving status and navigation, forcing users to start the procedure again in case of errors, as indicated in the attention message shown to users by the platform⁸:

ATTENTION: BEFORE MOVING ON TO THE NEXT SCREEN, WE RECOMMEND THAT YOU CHECK THAT THE DATA ENTERED ON THE PAGE IS CORRECT. ONCE YOU HAVE SELECTED 'NEXT', THE DATA CAN NO LONGER BE MODIFIED. RETURNING BACK MEANS REPEATING THE PROCEDURE FROM THE BEGINNING. (Authors' translation)

This warning illustrates a structural rigidity that leaves little room for adjustments or corrections, making the experience particularly frustrating for users who may only notice mistakes once they have advanced to the next step.

In addition, municipal employees responsible for the back-office report a lack of automation in controls (e.g. the number of family members), requiring manual checks that lengthen the processing time of the files. Such manual verifications, repeated case by case, contribute to delays and inconsistencies in workflow management. Data validation issues are an additional obstacle to the efficiency of the system. The absence of automatic checks on essential fields such as the number of family members, children, disabilities or the working situation of parents does not facilitate the entry of consistent data: for example, declaring more children than the total number of family members. Furthermore, the categorisation of disabilities is considered inadequate and unclear, as the definitions used do not correspond to those commonly adopted in the Italian public sector (as established by Italian regulations). This leads to difficulties for both users and back-office operators, who are dealing with requests. Operators, therefore, need to rely on manual interpretation or additional communication with applicants, creating uncertainty and prolonging processing times. Another difficulty highlighted concerns the graphical distinction for operators between the simulation environment/setting of a practice and that of actual modification, generating confusion and potential insertion of errors. This overlap between environments makes it harder for staff to quickly understand at which stage of the workflow they are operating.

From a user experience (UX/UI) point of view, the platform has issues related to the accessibility and readability of the interface, and missing European standards (EU Accessibility Act⁹). For example, the graphic elements are often poorly proportioned, and the text is too small for easy use (around 10px), particularly for less experienced or visually impaired users, despite accessibility guidelines recommending larger font sizes (from 14 to 16px). Such limitations reduce the overall usability of the portal,

⁷ By Accordion we refer to expandable and resealable sections to optimise the space on the web page and merge the titles of the various sections of a document.

⁸ Pre-scuola e giochi serali scuole primarie, Comune di Milano, <https://www.comune.milano.it/servizi/scuola/pre-scuola-e-giochi-serali-scuole-primarie> (accessed: February 2026).

⁹ EAA, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0882> (accessed: February 2026).

requiring greater effort to perform even simple operations. Moreover, the predominance of the Italian language further complicates access to services for users with a migrant background with limited understanding of Italian. This linguistic barrier can discourage or delay the completion of requests, especially when instructions are highly technical and bureaucratic (Jónsdóttir et al. 2023; Sperandio 2015). Finally, problems with the use of SPID are reported, particularly during account creation, which can be an obstacle for those unfamiliar with the digital identification system. In these cases, users often rely on external help or abandon the process entirely, indicating a need for more intuitive onboarding tools (see Casarin and Karimi 2026 in this book).

6.7 Recommendation for More Inclusive Digital Interfaces

Regarding the digital platform for supplementary school services, several improvements to the application are proposed, focusing on data persistence, automatic validation, and user experience. These areas emerged as central priorities during the assessment phase, as they directly affect both the fluidity of the user journey and the efficiency of administrative procedures. In particular, it is suggested to implement a system that allows applications to be saved in a draft state, facilitating recovery and completion and preventing the user from having to start over completely in the event of an error.

This functionality would significantly reduce frustration among applicants and support a more flexible approach to compiling sensitive information. In addition, it is recommended to integrate an intelligent validation system that highlights in real time any inconsistencies in the data entered, improving the reliability of the information provided by users. Such real-time feedback would help prevent common mistakes and reduce the number of applications requiring manual correction. Particular attention is also paid to the categorisation of disability, suggesting a participatory approach with municipal operators for a more precise and useful classification. This collaborative method would allow the definitions to better reflect actual needs and ensure greater clarity during data entry. As regards the distinction between the simulation environment and the editing environment, the inclusion of a flag at the top of the screen with a predefined colour code could easily resolve this issue.

From a user interface perspective, it is advisable to adopt a more accessible and responsive design, optimised for screens of different sizes, with a particular focus on mobile devices and tablets, following the Nielsen¹⁰ and W3C¹¹ principles. This would ensure a more consistent experience across devices and support users who access the service on the move or with limited digital familiarity. We would suggest improving the visual hierarchy of information, adopting a structure with horizontal pagination instead of an accordion system. This alternative layout would allow users to better

¹⁰ Nielsen, <https://www.nngroup.com/articles/ten-usability-heuristics/> (accessed: February 2026).

¹¹ W3C, <https://www.w3.org/WAI/standards-guidelines/> (accessed: February 2026).

understand their progress and reduce the sense of fragmentation often generated by collapsible sections.

In addition, the introduction of a colour code would allow for distinguishing the different operating modes (insertion, modification, or simulation of an application), making the context of use of the application clearer. This visual aid would provide immediate feedback, helping users and operators reduce potential misunderstandings. Finally, an interactive step-by-step guide and multilingual support (e.g., English language input) could facilitate users with different language backgrounds and skills. These supports would also enhance autonomy in completing procedures, limiting the need for external assistance. The use of the platform could also be facilitated by integrating, within the existing platform, the management of family delegations relating to the withdrawal of pupils attending the services, thus moving the current management via e-mail to a single portal. Centralising this functionality would simplify communication flows and ensure greater traceability of authorisations. These interventions aim to improve and maximise the usability and overall efficiency of the front and back-office system, making it more intuitive and user-friendly, including for the operators responsible for handling requests. Ultimately, the objective is to create a system that supports both citizens and municipal staff through clearer interactions and more streamlined processes.

6.8 Conclusion: Toward Inclusive Digital Public Services

The analysis presented in this chapter showed how the digitalisation of public services can create or maintain barriers for users when design and governance practices fail to account for diverse needs and capabilities. The case presented on Milan's supplementary school services platform illustrates how digital public administration can reproduce existing inequalities, particularly for immigrant families navigating unfamiliar bureaucratic systems in a non-native language.

Our findings align with existing literature on digital exclusion in public services. As Eubanks (2018) and Christin (2020) have shown, digital welfare systems often embed assumptions about user literacy and procedural familiarity that privilege already-advantaged populations. The rigidity of the Milan platform exemplifies how digital interfaces function as institutional gatekeepers that translate administrative logic into everyday barriers (Lips 2020), effectively shifting the burden of interpretation onto users least equipped to manage them (Lipsky 2010; Osborne et al. 2022a, b).

In addition, the data quality issues identified underscore that data management in public organisations must be understood not merely as a technical task but as a governance issue with profound social implications (Veale and Binns 2017; Janssen et al. 2012). When administrative databases contain errors that users cannot easily contest, automated processes risk perpetuating inaccuracies that disproportionately affect vulnerable populations.

The recommendations proposed in this chapter serve as guidelines for user-centred design that privilege accessibility and procedural justice. As highlighted by the case presented, the challenge for public administrations is to approach digital transformation not as a mere technical upgrade, but as an opportunity to redesign service delivery around the actual needs and capabilities of all users, particularly those most vulnerable to exclusion. Only through sustained institutional commitment, inclusive design principles, and proper data governance can digital platforms deliver access to essential public services rather than reinforcing existing patterns of inequality.

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