CERN IdeaSquare Journal of Experimental Innovation, 2026; 10(1): 34-42
DOI: https://doi.org/10.23726/cij.2026.1793

ORIGINAL ARTICLE

Privacy as Empowerment: UX Innovation for Telepresence Robots in Pediatric Education

Philipp Schütz,[1*] Oliver Gerstheimer,[2] Beate Tertilte[3], Isabelle Friedrich[4]

[1]Head of Experience & Partner, chilli mind GmbH, Königstor 23, 34117 Kassel, Germany; [2]Managing Director, chilli mind GmbH, Königstor 23, 34117 Kassel, Germany; [3]UX Designer, chilli mind GmbH, Königstor 23, 34117 Kassel, Germany; [4] UX Designer, chilli mind GmbH, Königstor 23, 34117 Kassel, Germany.
*Corresponding author: schuetz@chilli-mind.com

ABSTRACT

Telepresence robots are increasingly used to keep severely or chronically ill children connected to their classmates, yet existing solutions rarely anchor privacy as a central UX concern. This paper reports on the UX and interface design in the project PRIVATAR, which links the right to informational self-determination of all stakeholders with the digital participation of ill children. Drawing on studies, field investigations, and expert workshops, we derive requirements for privacy by default, data minimization, and transparency, and translate them into concrete UX patterns: child-friendly privacy icons, a "Sendbox" for visualizing current data transmissions, as well as spatial no-go and no-view zones with role-based control rights for parents, teachers, and a support team. In addition, we use AI-supported digital user twins to systematically explore rare and privacy-critical scenarios. We reflect on the methodological implications of this approach for rare and vulnerable target groups and show how privacy-focused UX can function not as a barrier but as an enabler of psychosocial participation and educational continuity in school settings.

Keywords: Privacy by Default; Privacy by Design; Data Minimization; Telepresence Software; Avatar; Robot; Sick Child; User Experience; AI-generated Digital User Twins.

Received: November 2025. Accepted: February 2026.

INTRODUCTION

Children with serious illness are often excluded from physically attending school lessons because of acute illness, chronic conditions, or extended hospital stays. Telepresence robots promise to close this gap by enabling remote participation in classroom teaching and the social life of the class. Recent studies show that telepresence robots are increasingly used internationally to support inclusive and equitable learning environments and to open up new forms of school participation (Neumann et al., 2025).

In the PRIVATAR project, the primary focus lies on children who have received a cancer diagnosis and are suddenly unable to physically attend school despite having previously participated in everyday classroom life. For these children, telepresence does not replace school but aims to preserve continuity: staying connected to the curriculum, maintaining social relationships with classmates, and sustaining a sense of everyday normality during treatment phases. At the same time, privacy plays a crucial psychosocial role. Children differ strongly in how much they wish to disclose about their illness, emotional state, or private environment, and these preferences may change over time. Transparency and self-determination regarding visibility, audibility, and presence therefore become central prerequisites for trust, psychological safety, and meaningful participation.

Telepresence systems thus contribute to educational equity and to the right to informational self-determination and participation in social life, which is defined in law in many countries. At the same time, their use in classrooms creates new risks to the privacy of everyone involved: the ill child, classmates, teachers, and parents. Questions arise regarding who sees and hears what, when, and under which conditions, and who is entitled to decide which data are transmitted and how the child's presence becomes visible. These questions are highly relevant from a user experience (UX) perspective.

Compared to alternative connection methods, telepresence robots introduce a distinct quality of participation. Unlike video calls, they establish a physical proxy in the classroom, which has been shown to increase engagement, situational awareness, and perceived presence. Virtual classrooms, in contrast, are only effective when the entire class operates remotely, which does not reflect the predominantly on-site schooling context in many European countries. Social media-based communication, while common among adolescents, is unsuitable in school contexts and raises additional data protection and privacy concerns. Telepresence robots therefore occupy a unique position at the intersection of physical presence, digital mediation, and educational practice.

Existing telepresence solutions in educational and healthcare contexts have primarily focused on technical feasibility, stability, and institutional acceptance. Privacy aspects are often treated only marginally, for instance in generic data protection notices, rather than as guiding principles for interface and interaction design. This reflects a broader pattern in digital health technologies, where considerable investments do not automatically translate into usable and scalable solutions that create tangible added value for patients and professionals.

This paper examines how the user interface of a telepresence robot for ill schoolchildren can be designed to address both the right to informational self-determination and everyday practices of teaching and participation. Drawing on studies, field tests, and workshops conducted by the PRIVATAR consortium, we developed a UX and interface concept that translates privacy by default, data minimization, and transparency of data flows into concrete patterns while integrating the perspectives of children, parents, teachers, and other stakeholders. In addition, we used AI-supported digital user twins to systematically explore rare and privacy-critical scenarios. Our goal is an experiment-driven, interdisciplinary health innovation that accommodates the needs of this young user group, including age-specific requirements for acceptance and technological literacy as well as possible cognitive impairments due to illness or medication, and foregrounds data protection requirements in an intuitive, user-centered design.
This paper addresses three central questions:

- How can UX for privacy act as an enabler of participation for ill schoolchildren in telepresence-based education?
- Which interface and interaction patterns operationalize privacy-by-design principles – such as Sendbox, spatial no-go and no-view zones, and child-centered control – for this specific target group?
- How can AI-generated digital user twins support the design process and evaluation of telepresence systems for rare and vulnerable users?

In our contribution we conceptualize UX for privacy as a central lever for participation in pediatric telepresence contexts and exploring usable interaction patterns that translate abstract privacy requirements into visual, and child-appropriate control mechanisms. Methodologically, we demonstrate how AI-generated digital user twins can complement empirical research with young, ill users whose direct involvement is ethically and practically constrained.

THEORETICAL BACKGROUND

Telepresence robots in the school context of ill children

For several years, telepresence robots have been explored to enable ill children to attend lessons despite their physical absence. They act as a physical avatar in the classroom, controlled remotely via a tablet or computer. From the children's perspective, this offers the opportunity to keep up with curricular content, maintain social relationships, and preserve a sense of normality and belonging. Intervention studies report that children, parents, and teachers experience telepresence robots as an "educational bridge" between hospital or home and school, mitigating school absenteeism and fostering social connectedness (Weibel et al., 2020)

At the same time, the presence of a robot in the classroom alters established routines, roles, and interaction patterns: teachers adapt to new forms of communication, classmates interact with a technical proxy, and parents may gain insights into classroom situations that previously took place exclusively within the school setting. A systematic scoping review by Page et al. (2021) maps both the potentials and challenges of robot use for students with long-term illness and identifies research gaps regarding long-term psychosocial effects and design questions.

The technology therefore not only opens educational opportunities but also raises questions about the visibility and controllability of the ill child's presence, the distribution of responsibilities between parents, school, and potential clinical staff, and the limits of what may be transmitted from a private or clinical environment into the public space of "school". The telepresence robot thus becomes an intersection between privacy and public life, between protective space and social participation.

Privacy, informational self-determination, and children as a vulnerable target group

In the European context, the right to informational self-determination is part of fundamental rights and is specified, among other instruments, by the General Data Protection Regulation (GDPR). Privacy is not understood merely as protection of sensitive data, but as the ability to decide autonomously which information is disclosed, in which context, and for what purpose. This applies in particular to children: they are considered especially in need of protection and, depending on their age, do not yet have a full understanding of abstract concepts such as data flows, risks, and the long-term consequences of digital visibility.

In the context of telepresence robots, several partially conflicting privacy interests are at stake. A qualitative study by Neumann et al. (2024) shows that many teachers and parents consider it problematic when parents of ill children potentially gain insight into lessons and into other children, and they explicitly wish that telepresence be limited to the child rather than their surroundings. The ill child, their caregivers, classmates, and teachers each have their own preferences, protection needs, and notions of appropriateness. While the ill child may wish to participate "normally" and avoid stigmatization, other parents may insist that no image or sound data of their children be transmitted into private environments. Privacy-related decisions are also highly context-dependent: what seems acceptable in a group situation may be perceived as inappropriate in small-group work or sensitive conversations. This results in a need for the user of permanently being transparently informed about which information arrives at the recipient and the possibility of adjusting the form of transmission at any time.

A central problem of existing solutions is that this complexity is rarely reflected in interface design. Those affected can often exercise their rights only via abstract and hard-to-understand consent texts, rather than through interaction options embedded in everyday use.

UX for privacy: design principles of privacy-friendly interfaces

Approaches such as "privacy by design" and "privacy by default" emphasize that privacy must be understood as a central component of system design rather than an add-on. For user interface design, this implies that privacy-relevant decisions should be embodied in system interactions, default configurations, and visualizations instead of being relegated to deeply nested settings menus. Based on workshops with children, parents, teachers, and other stakeholders, Büttner et al. (2024) derive user needs for privacy-friendly telepresence robots and show that transparency, finely graduated control options, and clear role concepts are central requirements.

Main principles for privacy by design:

(a) Transparency
(b) Controllability
(c) Data minimization

(a) Transparency means that users can see at any time which data are being transmitted, processed, or stored. (b) Controllability means that these states can be adjusted within the bounds of users' competencies without overwhelming them with an unmanageable number of options. (c) Data minimization aims to collect and transmit only data that are strictly necessary for the respective purpose. For ill schoolchildren, these principles must be translated into age-appropriate forms, for example via understandable pictograms, clear status indicators, reduced complexity, and interaction patterns that foster a sense of agency without making privacy management the child's main task.

From an innovation perspective, the PRIVATAR approach aligns closely with design thinking principles, including iterative problem framing, rapid prototyping, and continuous validation. The integration of AI-generated digital user twins supports shorter prototyping cycles, increases the number of evaluative iterations, and reduces the burden placed on vulnerable user groups. This contributes not only to ethical responsibility but also to economic efficiency and reduced time-to-market in health innovation contexts. Within the broader health entrepreneurship ecosystem, this work demonstrates how privacy-centered UX design can function as a strategic differentiator. Rather than treating data protection as a compliance obligation, privacy becomes a value proposition that fosters trust among users, institutions, and funders, thereby enabling scalable and sustainable innovation.

AI-generated digital user twins for rare target groups

Rare target groups such as chronically ill schoolchildren pose a particular challenge from a UX perspective. The number of cases is limited, and the burden of studies and tests is ethically sensitive. AI-based approaches using digital user twins can help condense and systematically vary personas, needs, and scenarios derived from real data. Building on the concept of digital customer twins and "living personas" from innovation and marketing contexts (Gerstheimer et al., 2024), we transfer this idea to a rare, vulnerable user group in the education domain.

We understand digital user twins as AI-supported representations of typical and atypical usage scenarios trained with empirically gathered insights about the user group. To co-create an optimized user experience design, AI-supported digital twins are used to:

- deepen user research and increase empathy and contextual knowledge
- discuss usage scenarios and refine research hypotheses
- continuously validate interface design through rapid A/B testing

These AI-supported digital twins can be trained with sensitive data because they operate in a GDPR-conform environment based on retrieval augmented generation (RAG). They do not replace real user but serve as an additional experimental method in the design process.

METHOD AND DATA

Project context and UX research design

PRIVATAR is an interdisciplinary collaborative project sponsored by the Federal Ministry of Research, Technology and Space (BMFTR) that brings together perspectives from robot technology, data protection, and usability. The consortium aims to further develop mobile robots as avatars for ill children so that they can protect their privacy more autonomously.

Fig. 1. This robot is used for testing and workshops in the school context. It can be remote-controlled by the ill child and has a screen on top to display the telepresence software.

Based on a user-centered approach, all relevant groups are systematically involved in the research process, including ill children, classmates, teachers, parents, and supporters. The aim is to understand their needs and control requirements in relation to privacy and to translate these into concrete interaction and interface solutions. A human-centered design approach was chosen because of the ethical sensitivity of the target group and the strong contextual dependency of privacy-related decisions in school environments. For vulnerable users such as severely ill children, classical usability testing must be carefully balanced against emotional burden, cognitive load, and medical constraints. Human-centered methods allow privacy needs, fears, and expectations to be explored not as abstract requirements but as situated practices embedded in everyday school routines.

Workshops, school studies, and A/B tests

A central pillar of the empirical work consists of workshops with teachers and children, in which usage scenarios, expectations, and concerns regarding telepresence robots (Fig. 1) in everyday school life were collected. Building on this foundation, different studies with more than 120 students from grades 5 to 13 was carried out by consortium partners. In one of the studies A/B tests of different UX-patterns, UI designs and icon styles were conducted to compare acceptance across age groups and to evaluate whether privacy-related symbols were correctly recognized and understood. Variants differed in visual style and placement of key privacy elements (e.g., microphone, camera, avatar visibility), enabling systematic comparison of stylistic preferences and comprehension across younger and older students. Workshops with teachers and children served primarily for exploration and evaluation. They were used to surface concerns, expectations, and implicit norms regarding telepresence, visibility, and privacy rather than to validate predefined solutions. Due to organizational conditions and the division of labor within the consortium, the detailed design and evaluation of these workshops are reported in separate publications not yet published. Nevertheless, their outcomes provided essential qualitative grounding for subsequent interface concepts and scenario development.

Workflow with AI-generated digital user twins

Building on the workshop and school study findings, a workflow was developed in which AI-generated digital user twins complement on-site research. The starting point is condensed personas and scenarios representing typical patterns, needs, and conflicts of the involved groups. These are further enriched to simulate variations in life situations, emotional states, and school conditions – for example, different disease progression, family constellations, or forms of instruction.

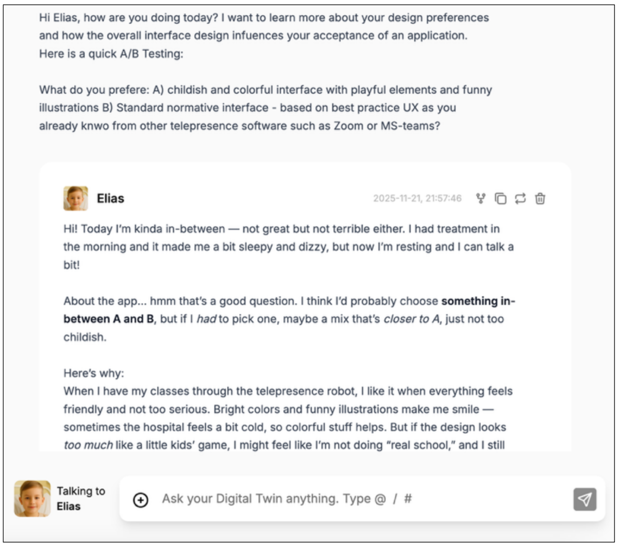

Fig. 2. Screenshot of the evaluation dialogue with an AI-generated digital user twin during the early stage of the hybrid co-design process.

The user twins are used to explore situations that would be difficult to create or ethically sensitive in real-world research. These include rare but privacy-critical constellations such as the unexpected appearance of third parties in the video, conflicts between the preferences of child, parents, and teacher, or cascade effects of multiple events during a lesson. The results are not understood as "truth", but as a curated collection of scenario hypotheses that inform the design process.

For the practical implementation, we used the "DXI platform" (https://www.dx-i.com), specialized in the creation of high-quality AI-based and dialog-capable digital experts and personas. This enabled us to base our design process on informed and data-driven decisions and test variations in the interface design quickly with the digital twins of our user group (Fig. 2). While AI-generated digital user twins enabled systematic exploration of rare and privacy-critical situations, this hybrid approach also entails limitations. Synthetic scenarios cannot fully capture the emotional nuances, situational stress, and long-term dynamics of real classroom interactions. The use of digital twins should therefore be understood as a complementary method rather than a substitute for empirical user research. Future work could further integrate generative co-design formats with multiple stakeholders to enrich creativity, inclusivity, and realism.

UX and interface design process

The UX and interface design process followed an iterative approach that interlinked information architecture, screen layouts, interaction patterns, and a scalable design system. Based on the identified use cases and roles an information architecture was co-created that clearly separates user groups and reflects their respective control and information needs. The design process (Fig. 3) was accompanied by user tests, co-design iterations with AI-generated digital user twins and feedback from technical partners to ensure technical feasibility and robustness from a privacy perspective.

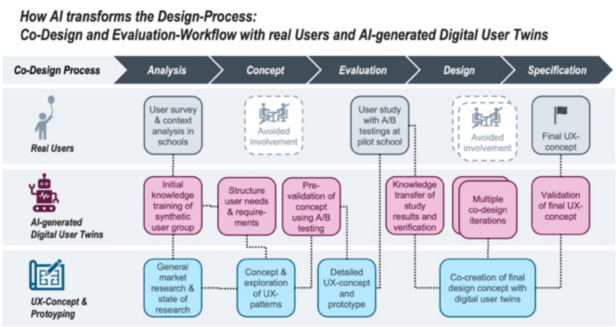

Fig. 3. Co-design and evaluation workflow with real users and AI-generated digital customer twins. By integrating AI-generated digital user twins in the design process, the involvement of vulnerable users was reduced by around 40%.

RESULTS

Four central use cases and role configurations

The analysis of requirements and scenarios led to the definition of four central use cases:

Table 1. Overview of main Use Cases.

No.	Main Use Cases for the PRIVATAR Application
UC 1	Configuration and setup of the system
UC 2	Participation of the ill child in lessons
UC 3	Conducting lessons from the perspective of teachers and classmates
UC 4	Control of the robot and no-go zones by the child

UC 1 configuration and setup is typically handled by parents or a personal supporter who understands legal and school-organizational requirements. Fundamental default settings are defined here – for example, which data are sent to the classroom or which technical features (camera, microphone, face recognition, localization) of the tablet are used.

UC 2 participation in lessons focuses on the ill child, who can control their presence, visibility, and audibility via a child-friendly interface (Fig. 4). This use case also covers hand raising, detection of another person in the camera's field of view, and a private chat with the teacher.

UC 3 conducting lessons considers the perspective of teachers and classmates. It includes starting and transferring lesson content, displaying transmitted data, and adjusting output volume to suit different learning contexts, such as group work.

UC 4 control of the robot focuses on how the child remotely navigates the robot through the classroom in the context of spatial privacy boundaries such as no-go and no-view zones.

This structure shows that privacy-friendly UX cannot be designed solely from the child's view. It must consider that certain decisions and configurations are deliberately delegated to parents or supporters, while the child still experiences control and self-determination in everyday life.

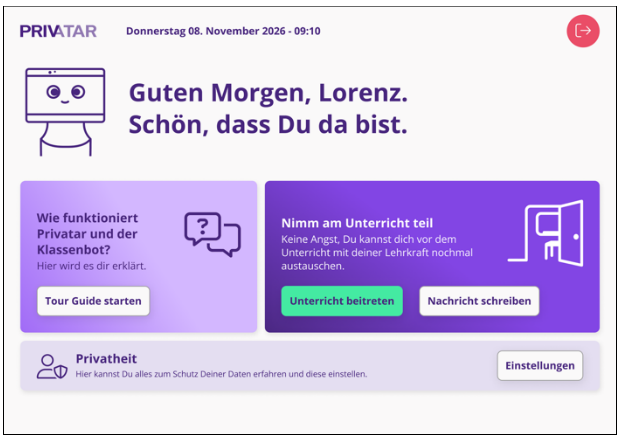

Fig. 4. The main start page of the PRIVATAR app (child view). The simplified user interface provides clear guidance, assistance with data protection and options for the sensitive handling of the sick child's health condition.

Visualizing privacy: icons, Sendbox, and transparency flows

A central outcome of the UX process is the insight that privacy-relevant states and functions must be made primarily visual and immediately perceptible to be accessible to children (Fig. 5). To this end, a set of standardized pictograms and icons was developed and tested with children to ensure that key states such as “microphone on/off”, “camera active”, or “avatar visible in the classroom” are reliably understood.

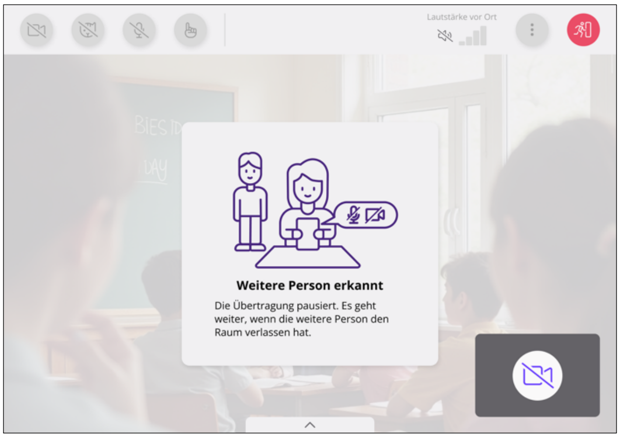

Fig. 5. The visual approach supports the communication of privacy-related scenarios to children. This image shows how the system detects a third person in the sick child's room and automatically breaks the connection for data protection reasons.

The Sendbox concept is one of the central interface elements. It continuously displays which information is currently being transmitted from home or hospital into the classroom. Audio, video, avatar display, and other signals are highlighted when active. Changes, such as muting the microphone or activating an avatar, are reflected immediately through visual feedback (Fig. 6).

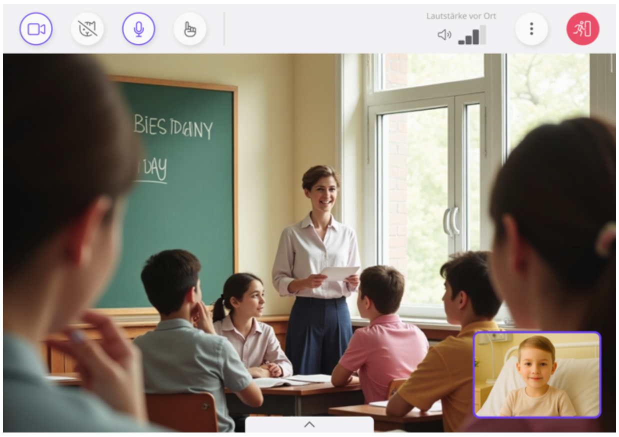

Fig. 6. The UX design of the PRIVATAR app uses clear visual feedback to show whether the camera or audio is activated by highlighting active controls and mirroring the current video being sent to the classroom.

Spatial and contextual privacy: no-go zones, no-view zones, and third-party detection

Another outcome is the translation of the abstract concept of privacy into spatial and contextual patterns. Instead of relying solely on settings controlled via checkboxes or long lists, the system uses no-go zones and no-view zones to exclude certain areas of the school from the robot’s reach or from camera capture. No-go zones are marked physically and cause the robot to stop automatically at these boundaries, with the child receiving corresponding feedback in the interface (Fig. 7). No-view zones are areas where movement is possible but visual transmission is restricted or blurred.

Fig. 7. Usable privacy: The default settings have been configured to blur the teacher's desk to minimize privacy concerns. The sick child sees a user feedback dialogue to explain why this area is blurred and what options are now available.

In addition, the system detects situations in which other persons appear in the image without appropriate consent. In such case, the stream is temporarily interrupted until the situation is clarified (Fig. 5). Teachers can assume additional control over visibility and volume in certain situations. These mechanisms translate complex data protection requirements into concrete action and perception spaces that are understandable for both children and adults.

Child-centered control and bounded complexity of robot navigation

The child’s control of the robot is another core area of the UX design. Here, the interface deliberately avoids functional overload to keep cognitive load low while still enabling a sense of autonomy and presence.

The child can also select an avatar that is displayed on the robot in the classroom (Fig. 8). These avatars, whose expressions are conveyed via facial animation, allow the child to individualize their presence while masking sensitive aspects of the home environment. Discussions with teachers and parents indicate that this form of “mediated presence” is perceived as a helpful compromise between visibility and protection. Overall, the findings illustrate that child-centered control requires limiting complexity and carefully curating and visualizing the available options.

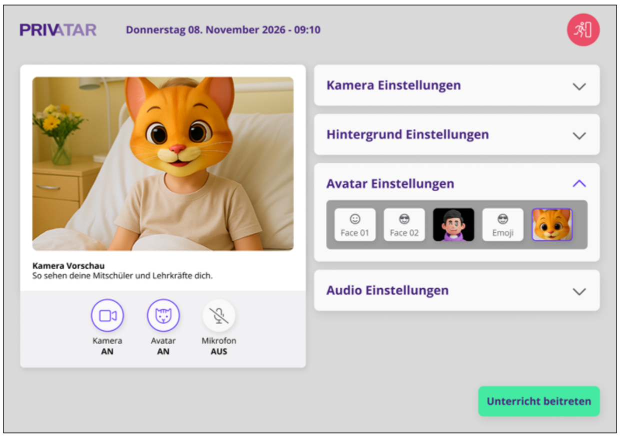

Fig. 8. Child-centered UX: Easy to control and visualized transparency for the young and cognitively impaired user group. Before the ill child joins the school lesson, she can choose how she wants to appear on the robot's display in the classroom.

DISCUSSION AND CONCLUSIONS

UX for privacy as an enabler of participation and health innovation

The results show that user experience design in the context of telepresence robots goes beyond classical usability questions: privacy becomes a central, designable component of the interaction architecture and thus a lever for effective health innovation. Our contribution illustrates how a telepresence system for ill children directly addresses this gap by understanding privacy by default, data minimization, and transparency not as regulatory ballast, but as core UX qualities. By consistently translating these principles into interface elements (e.g., Sendbox, privacy pictograms) and spatial patterns (no-go and no-view zones), the right to informational self-determination becomes practically tangible for ill children and their social environment. The results illustrate how telepresence robots mediate between the continuity of learning and the protection of privacy. By enabling selective visibility, spatial boundaries, and privacy-guided control, the system allows children to remain present in educational contexts without exposing sensitive aspects of their private or medical situation.

Methodological implications: AI-supported user twins for rare target groups

Beyond classical user research, AI-generated digital user twins open possibilities for working with rare and vulnerable target groups. In future studies – especially in the health sector, when co-creating patient-centered solutions – this approach can be used whenever real stakeholders cannot be directly or continuously involved in the design process.

Design implications for health innovation and entrepreneurship

Several design implications for health innovation practice can be derived. First, the PRIVATAR case shows that privacy-relevant states and functions in the interface must be designed so that they can be intuitively understood by children, including those who are cognitively impaired due to disease or medication. Standardized, recurring icons and elements such as the Sendbox can translate complex data flows into simple, action-guiding signals. But basic functions such as camera on/of or microphone on/off should orientate at best practice examples in the telepresence market (e.g. Microsoft Teams, zoom etc.) because they are learned and established trough previous experiences.

The identified UX patterns can be adapted to technological developments and scaled to other use cases across the health industry. This creates added value that can serve as a starting point for new business models in privacy-sensitive domains.

From a commercialization perspective, privacy-centered telepresence solutions open multiple business model pathways. Possible approaches include providing robots to schools with recurring revenue through software licenses, usage-based fees, or subscription models. Hybrid funding models involving public subsidies or health insurance contributions could further support accessibility. Flexible rental or leasing models allow schools to adopt telepresence technology without high upfront investment, facilitating scalability across educational systems.

Collaboration dynamics

The collaborative process revealed partially conflicting perspectives among stakeholders. While children often prioritized normalcy and participation, parents emphasized protection and control, and teachers were concerned about classroom dynamics and additional workload. Contrary to the initial hypothesis that privacy-related aspects would predominantly relate to the needs of the ill child, collaborative exploration revealed that parents, classmates and teachers also have relevant requirements for the fulfilment of their privacy needs.

Limitations and outlook

Like any exploratory design research, the approach presented here is subject to limitations. The number of participating schools, children, and teachers is limited, and testing of the developed solutions takes place in specific regional and organizational contexts. Long-term effects on learning trajectories, social integration, and perceptions of privacy can only be investigated to a limited extent within the scope of the project. Future studies should therefore examine longitudinal impacts and extend participatory co-design approaches with diverse stakeholder groups and AI-supported digital twins.

Conclusion

The PRIVATAR project shows that telepresence robots can be more than just technical bridges to the classroom for sick children. Through usability and interface design that is consistently focused on data protection, they become tools that transfer the right to informational self-determination and digital participation into the everyday lives of those affected. By understanding privacy not only as a legal requirement but also as a configurable user experience, interfaces are created that give children understandable control, offer parents and teachers a sense of security, and lay the foundation for trustworthy innovations in education. The iterative, evidence-based approach to the development process resulted in significantly greater transparency in the process and improved decision-making quality in the overall system. From a methodological perspective, the relevance of a standardized approach to previous telemedicine projects and their "lessons learned" could be evaluated in the following selected points (see Gerstheimer et al., 2013, p.145):

- The consistent involvement of all stakeholders ensured a high level of user-friendliness across all elements of the overall system – from processes to design.
- Visually supported communication in the early design stage shortened development times by reducing iterations and adjustment efforts.
- UX testing confirmed the digital and analog designs, particularly in terms of readability, memorability, and perception times.
- Results from subprojects, tests, and functional checks could be incorporated early on as requirements and change requests in iterative further development.
- Standardized documentation of all design elements (flowcharts, specifications, design guides) increased reusability for future product developments.

The combination of empirical user research in schools and the complementary use of AI-generated digital user twins points to ways in which other rare and vulnerable target groups can be more effectively involved in the design of technological systems. Instead of basing decisions solely on abstract assumptions or highly limited single-case studies, an iterative dialogue between real experiences and simulated scenarios becomes possible, improving the quality of design decisions and reducing blind spots.

In this way, the contribution demonstrates how experiment-driven, interdisciplinary UX design can transform a rare health application field – telepresence for ill schoolchildren – into a scalable, privacy-aware direction of innovation.

ACKNOWLEDGEMENTS

This contribution was created with the support of AI. Chat GPT 5.1 was used to structure our research results and to draft a rough outline for this article. Based on this draft, the authors manually revised, expanded, and refined the content several times until the final version of this article was completed.

CONFLICT OF INTEREST

None to declare.

REFERENCES

Neumann, L., Skoubo, S., & Wamsler, F. (2025). (Tele)present in the classroom: exploring the international use of telepresence robots for inclusive learning environments. *Learning Environments Research*, 28, 249–270. https://doi.org/10.1007/s10984-025-09541-4

Weibel, M., Fridh Nielsen, M., Topperzer, M., Hammer, N., Møller, S., Schmiegelow, K., Bækgaard Larsen, H., (2020). Back to school with telepresence robot technology: A qualitative pilot study about how telepresence robots help school-aged children and adolescents with cancer to remain socially and academically connected with their school classes during treatment. *Nursing Open*, 7(4), 988–997. https://doi.org/10.1002/nop2.471

Page, A., Charteris, J., & Berman, J. (2021). Telepresence robot use for children with chronic illness in Australian schools: a scoping review and thematic analysis. *International Journal of Social Robotics*, 13(6), 1281–1293. https://doi.org/10.1007/s12369-020-00714-0

Neumann, P., Büttner, S. T., Hernández Acosta, L., Reinhardt, D., & Prilla, M. (2024). *"I Don't Want Parents to Watch My Lessons" – Privacy trade-offs in the use of telepresence robots in schools for children with long-term illnesses*. In Proceedings of Mensch und Computer 2024 (MuC '24), 448–454.

Büttner, S. T., Neumann, P., Hernández Acosta, L., Reinhardt, D., & Prilla, M. (2024). *Towards privacy-friendly telepresence robots for schoolchildren with long-term illnesses – User needs of relevant user groups*. In Proceedings of the 10th Usable Security and Privacy Workshop (MuC Workshop).

Gerstheimer, O., Schütz, P., Trebbin, S., Rauchfuß, F., Holtel, S., (2024). *Innovation durch KI-Dialog – Living Personas & Digital Customer Twins*. In Entwerfen Entwickeln Erleben 2024 (EEE), https://doi.org/10.25368/2024.EEE.024

Gerstheimer, O., Hartmann, M. & Wüst, S. (2013). *„Tele-Medizintechnik": User-Experience-Design eines gesamtheitlichen Blutzuckermesssystems*. In H. Brau, A.

Lehmann, K. Petrovic & M. C. Schroeder (Hrsg.),
Tagungsband Usability Professionals 2013. (S. 138–145).
German UPA e.V.