

Urban Interfaces as Technopolitical Devices.

Reframing Distributed Agency through Workshop-Based Design

Alessandro Lodovini
Iuav University of Venice
Venice, Italy
alodovini@iuav.it

Abstract

Urban digital interfaces increasingly mediate access to services, participation, and organizational practices, operating not merely as tools but as technopolitical infrastructures that structure delegation and agency. This doctoral research investigates how workshop-based design practices can critically engage with urban digital systems by temporarily reconfiguring how participants perceive and negotiate distributed agency within them. Drawing on STS and critical HCI, the project frames interfaces as sites where governance logics are embedded and often rendered invisible. Through research-creation and participatory action research, iterative workshops enable collective mapping, materialization, and reinterpretation of infrastructural arrangements. Rather than proposing new platforms, the research develops an agency-centered design stance that expands interaction design toward infrastructural literacy and technopolitical inquiry.

CCS Concepts

• **Human-centered computing** → Interaction design theory, concepts and paradigms; Human-centered computing; Collaborative interaction; Social and professional topics; Computing / technology policy.

Keywords

technopolitics, distributed agency, urban digital infrastructures, workshop-based design, critical HCI

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1 Introduction

Digital interfaces increasingly mediate urban life. Access to welfare services, civic participation, community organization, cultural production, mobility, and communication are structured through platforms, dashboards, automated systems, and administrative portals. These systems are not merely interaction surfaces; they operate as infrastructural arrangements that distribute agency, encode governance models, and reorganize forms of responsibility.

Within interaction design and Human–Computer Interaction (HCI), substantial research has addressed usability, accessibility, and user experience. However, less attention has been devoted to examining how urban digital interfaces function as technopolitical devices—configurations that simultaneously enable action while shaping and constraining collective agency. Following Winner’s [8] argument that artifacts can embody political properties; interfaces can be understood as material-semiotic arrangements that structure participation and delegation.

My doctoral research investigates how interaction design practices can critically engage with urban digital infrastructures by treating interfaces not only as tools but as sites where power relations, delegation mechanisms, and socio-technical imaginaries are embedded and negotiated.

Rather than proposing new platforms or optimizing existing ones, this project explores how situated workshop-based practices can temporarily reconfigure how participants perceive, interpret, and act within these infrastructures. The research is grounded in collaborations with third-sector organizations navigating digital transition processes, while contributing to broader debates within critical interaction design and infrastructural studies. The project is situated within the DIS community’s ongoing effort to expand interaction design toward socio-technical and political inquiry.

2 THEORETICAL FRAMEWORK

This research operates at the intersection of Science and Technology Studies (STS), critical HCI, and participatory design traditions.

STS scholarship has emphasized that infrastructures are relational, embedded, and often invisible until breakdown [6]. Urban digital platforms—such as grant management portals, civic participation systems, or organizational dashboards—operate as infrastructural layers that recede into the background of practice while organizing access, categorization, and decision-making.

From an actor-network perspective, delegation is central to understanding how technical systems redistribute action [3]. Interfaces translate institutional logics into operational procedures, embedding forms of automation that may shift responsibility from institutions to users. As Suchman [7] argues, human–machine relations are not fixed but continuously reconfigured through situated practice.

The notion of distributed agency is further informed by Material Engagement Theory [4], which frames cognition and agency as emerging from interactions between humans and material artifacts. Applied to digital infrastructures, this perspective suggests that agency is co-constituted through interface arrangements rather than residing solely in individual users.



Within HCI, critical and reflective approaches have expanded the scope of design inquiry. Reflective design [5] encourages designers to expose and question underlying assumptions in technological systems. Critical HCI [1] calls for engagement with power, ideology, and social structures embedded in interaction design. DiSalvo's [2] concept of adversarial design positions design as a means to surface political issues and stimulate contestation.

Building on these traditions, this research frames urban interfaces as technopolitical devices and explores how design practices can create temporary conditions for their collective interrogation.

3 RESEARCH PROBLEM AND QUESTIONS

The central problem addressed by this research is the progressive dispersion of collective agency within increasingly automated and platform-mediated urban environments. As digital infrastructures expand, organizations—particularly in civic and third-sector contexts—often adapt to technological systems without opportunities to critically interrogate their embedded governance assumptions.

The main research question guiding this doctoral work is: how can workshop-based design practices reconfigure distributed agency within urban digital infrastructures, enabling participants to critically reinterpret and renegotiate the technopolitical arrangements embedded in interfaces?

This overarching question is articulated through the following sub-questions:

1. In what ways do urban digital interfaces structure delegation, responsibility, and decision-making processes?
2. How can design interventions make visible infrastructural invisibility [6] and embedded political properties [8]?
3. What forms of collective inquiry can support participants in articulating alternative interpretations of technological mediation?
4. How can agency reconfiguration be documented within research-creation practices without reducing it to behavioral metrics?

Rather than aiming to produce a universal toolkit, the project seeks to articulate a transferable design stance grounded in infrastructural literacy and collective negotiation. These questions are explored through the design and analysis of situated workshop formats that generate both material artifacts and documented interactions as empirical evidence.

4 METHODOLOGICAL APPROACH

The research adopts a research-creation framework combined with participatory action research. It unfolds through iterative cycles of theoretical reflection, situated workshops, and analytical documentation.

4.1 The Workshop as Epistemic Device

In this project, the workshop is not conceived as a training format or solution-oriented co-design session. Instead, it functions as an epistemic device: a temporary socio-material arrangement that enables participants to externalize and interrogate the digital systems they routinely inhabit.

Participants collectively:

- Map the digital tools structuring their organizational practices.
- Visualize data flows, access hierarchies, and decision chains.
- Identify points of delegation [3].
- Re-materialize interface logics through diagrams and physical artifacts, echoing Malafouris' [4] emphasis on material engagement.

These activities are structured into short, sequential phases (e.g., mapping, translation, and re-materialization), typically conducted in small groups (3–5 participants) and supported by visual templates, printed interface excerpts, and diagrammatic toolkits. Workshops last between 2 hours to 4 days and alternate between collective discussion and hands-on material engagement.

Outputs include annotated maps of digital infrastructures, diagrams of delegation chains, and collectively produced artifacts that externalize how agency is distributed across systems. These materials are documented and later analyzed as part of the research-creation process.

This process aligns with reflective design traditions [5] but shifts the focus from individual reflection to collective infrastructural analysis. Interfaces are displaced from their normalized operational context and reframed as analyzable socio-technical configurations.

4.2 Iterative Development and Repositioning

Recent workshop experiments—particularly in the context of a collaboration in Nîmes—have further clarified the research trajectory. In this case, the workshop evolved from being framed as support for digital transition toward becoming a space for collective archival construction.

Participants were not merely analyzing interfaces; they were co-producing a shared archive of infrastructural experiences. This shift foregrounded the workshop as a site of political articulation, resonating with adversarial design's [2] emphasis on making political issues explicit through design interventions.

The research does not aim to stabilize a fixed protocol. Instead, it refines a coherent methodological orientation capable of adapting to varied urban digital contexts while maintaining a clear theoretical grounding.

Concretely, this involved the production of shared visual artifacts such as collective timelines of platform use, layered maps of institutional interfaces, and annotated records of breakdowns and negotiation points. These outputs function both as reflective tools for participants and as empirical material for analysis.

5 EXPECTED CONTRIBUTIONS TO DIS AND INTERACTION DESIGN

This research contributes to the DIS community in four main ways:

5.1 Reframing Interfaces as Technopolitical Infrastructures

By drawing on Winner [8] and Star [6], the project conceptualizes urban interfaces as infrastructural devices that embed governance logics. This reframing expands interaction design's analytical scope beyond usability and user experience.

5.2 Advancing Agency-Centered Design

Integrating Latour's [3] delegation and Malafouris' [4] distributed agency perspectives, the project proposes an agency-centered approach to interaction design. It asks not only how systems function, but how they distribute the capacity to act.

5.3 Extending Critical HCI Through Situated Practice

Building on critical HCI [1] and reflective design [5], the research situates infrastructural critique within concrete workshop practices. It thereby bridges theoretical critique and applied design experimentation.

5.4 Repositioning the Workshop

The project redefines workshop-based design practices as sites of infrastructural exposure and collective inquiry rather than solely participatory solution-generation. In doing so, it expands the methodological repertoire of DIS toward technopolitical analysis.

6 CURRENT STAGE OF THE RESEARCH

The doctoral project is currently in its early-stage phase. Initial workshop experiments have been conducted, primarily to explore and refine the methodological direction rather than to produce stabilized results. This includes the design of a workshop titled "Accessing the City: Control Devices and Crossing Practices in Venice", which explores how urban interfaces regulate access and how participants negotiate and reinterpret these conditions through situated practices. The theoretical framework has been consolidated, and initial workshop have informed the methodological positioning. The recent methodological repositioning—treating the workshop as an archival and epistemic device—marks a significant evolution in the project.

This development raises new analytical challenges:

- How to articulate evaluative criteria for agency reconfiguration.
- How to document infrastructural literacy as an outcome of design intervention.
- How to position research-creation within broader HCI evaluation paradigms.

Participation in the Doctoral Consortium would provide an opportunity to critically discuss the methodological articulation of agency reconfiguration and its evaluation within HCI research paradigms. I seek critical feedback on how to position research-creation practices within dominant HCI evaluation paradigms, how to articulate transferable contributions without stabilizing the workshop into a fixed protocol, and how to position infrastructural literacy as a legitimate design outcome. Dialogue with senior scholars and peers would help refine both the theoretical consolidation and the next empirical phase of the project.

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