Working with Properties

Designing for Mobile Co-Located Interaction

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Summary & Learning goals

The students will practice design for co-located mobile interaction making use of the framework presented in the related lecture. The exercise is centred around how the framework's properties and values can be used to provide constraints for the design process.

Learning goals:

- Recognize how a design framework can be used as a generative design tool
- Analyse how the use of a framework can influence the design process
- Reflect on how a design tool can influence the resulting design
- Reflect on the consequences of using technology to support co-located interaction

Recommended readings

- Lundgren, S., Fischer, J. E., Reeves, S., & Torgersson, O. (2015). Designing Mobile Experiences for Collocated Interaction. Paper presented at the Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, Vancouver, BC, Canada. https://doi.org/10.1145/2675133.2675171

Designing for Co-located Interaction

- Framework
- 2 representations
  - Map
  - Properties and values
- Analytical & Generative

Designing Mobile Experiences for Collocated Interaction

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ABSTRACT
Many of our everyday social interactions involve mobile devices. Yet, these tend to only provide good support for *distributed* social interactions. Although much HCI and CSCW research has explored how we might support *collocated*, face-to-face situations using mobile devices, much of this work exists as isolated exemplars of technical systems or interaction designs. This paper draws on a range of such exemplars to develop a practical design framework intended for guiding the design of new mobile experiences for collocated interaction as well as analysing existing ones. Our framework provides four relational perspectives for designing the complex interplay between: the social situation in which it takes place; the technology used and the mechanics inscribed; the physical environment; and the temporal elements of design. Moreover, each perspective features some core properties, which are highly relevant when designing these systems. As part of presenting the framework we also explain the process of its construction along with practical advice on how to read and apply it.

Author Keywords
Collocated interaction; face-to-face; design framework; interaction design.

ACM Classification Keywords
H.5.2 [Information Interfaces and Presentation]: User Interfaces.

General Terms
Design

INTRODUCTION
Physical collocation and 'face-to-face' forms of interaction are now a pervasive and mundane feature of much technology use. We might navigate through streets with others [12], share photos [36], listen to music together or jointly edit a document using mobile devices. Yet, many portable technologies—particularly consumer electronics like smartphones and tablets—tend to be strongly oriented towards supporting *distributed* interactions, and have only limited built-in support for *collocated* use where face-to-face interactions play a key role [39]. For example, taking and sharing group photos with your co-present friends and family can be an awkward endeavour. 'Support' for collocated action is provided by the possibility of 'showing' another person the screen of a phone or tablet or simply handing the device over. Sharing copies, however, often ends up being done by email, despite being collocated.

Technological support of collocated collaborative work is a central feature of CSCW. This research has often revolved around describing topics such as collocated awareness and coordination practices [8,23,25]. A classic exploration of this domain may also be found in single display groupware systems [27]. Recently, there has been significant research exploring more inherently *mobile* settings, examining novel collaborative ways of supporting physically collocated mobile device users beyond simple screen sharing practices described above [1,16,36]. While this strong line of work offers a large corpus of knowledge for CSCW, little coherent design synthesis of it has taken place.

In this paper we present a design framework to help analyse and design for collocated interaction. The framework is the outcome of a process *focussed on helping designers shape mobile experiences which support collocated interaction*. Our process of exploration has included a conference workshop with researchers, design activities with students, reflection on our own design experiences, and reviewing the literature on collocated mobile experiences, all of which aimed to cover and describe various perspectives and properties that are relevant for design within this domain.

The resulting framework has two *representational forms*: a *diagrammatic form* and a *list form*. Respectively these provide both a relational map and a set of design properties. The framework is intended for two main forms of use:

- As a **design tool** for ideating and (re)-designing through selection and adaptation of the framework's properties;
- As an **analytic tool** for systematically describing interactive systems for collocated mobile experiences.

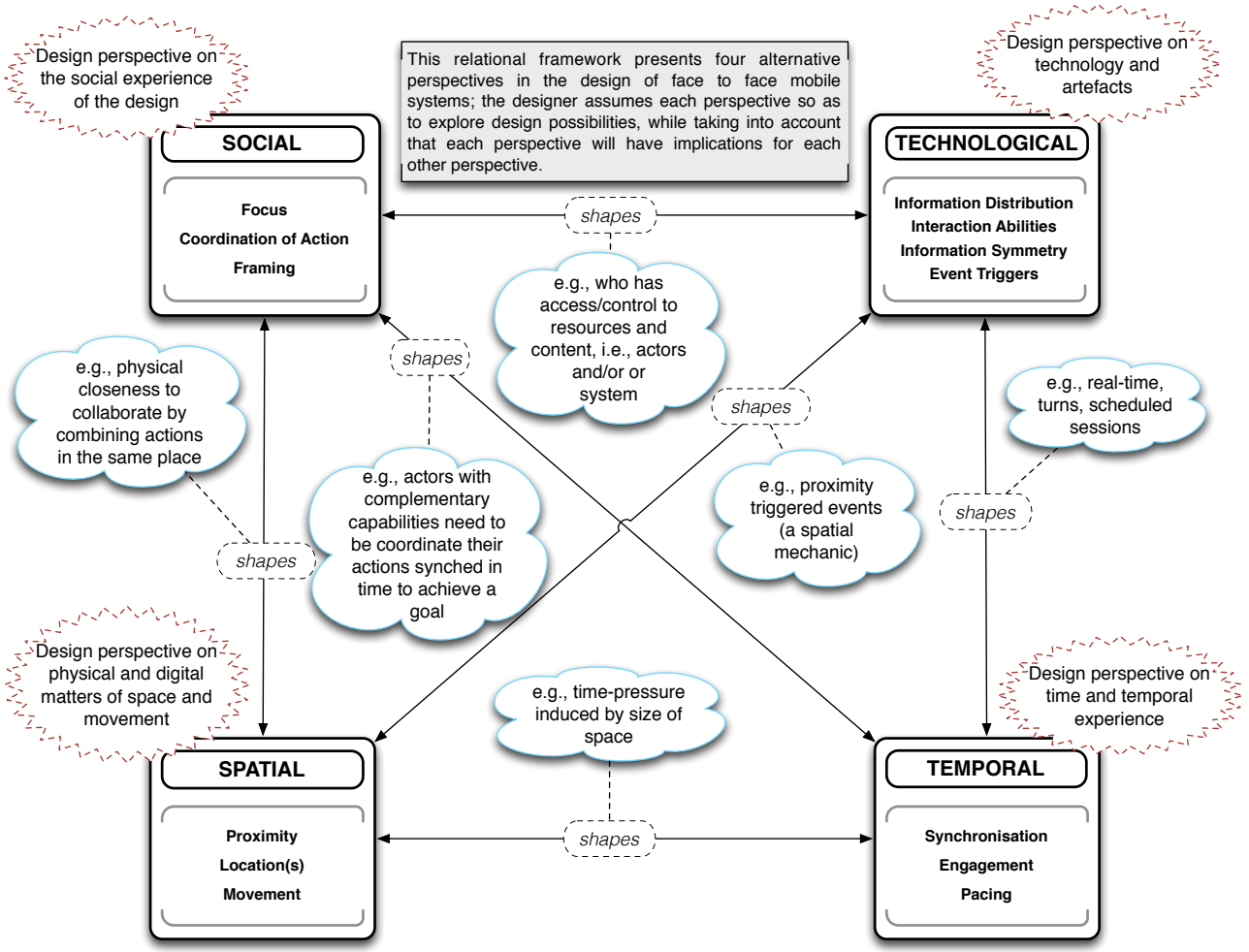
The core contribution of this work is to help understand how we can practically design interactive systems that support, enable, or augment face-to-face group interactions that occur in collocated settings.

We firstly review a range of literature that informed the framework's construction. The paper then offers a presentation of the framework itself. Finally we provide

CSCW '15, March 14 - 18, 2015, Vancouver, BC, Canada.

http://dx.doi.org/10.1145/2675133.2675171

Map


This relational framework presents four alternative perspectives in the design of face to face mobile systems; the designer assumes each perspective so as to explore design possibilities, while taking into account that each perspective will have implications for each other perspective.
Design perspective on the social experience of the design
SOCIAL
Focus
Coordination of Action
Framing
Design perspective on technology and artefacts
TECHNOLOGICAL
Information Distribution
Interaction Abilities
Information Symmetry
Event Triggers
shapes
e.g., who has access/control to resources and content, i.e., actors and/or or system
shapes
e.g., physical closeness to collaborate by combining actions in the same place
shapes
e.g., real-time, turns, scheduled sessions
shapes
e.g., actors with complementary capabilities need to be coordinate their actions synched in time to achieve a goal
shapes
e.g., proximity triggered events (a spatial mechanic)
Design perspective on physical and digital matters of space and movement
SPATIAL
Proximity
Location(s)
Movement
e.g., time-pressure induced by size of space
shapes
Design perspective on time and temporal experience
TEMPORAL
Synchronisation
Engagement
Pacing

Properties

	PROPERTY	STATES	DESCRIPTION
SOCIAL	FOCUS	collaboration | communication | competition | combined	What it is that users do together, i.e., what the focus of their social actions are intended to be.
	COORDINATION OF ACTION	timing actions | combining actions | combined	Whether, and if so, how actors perform coordinate actions together.
	FRAMING	public | private | combined	The main social situation where the activities are carried out.
TECHNOLOGICAL	INFORMATION SYMMETRY	symmetrical | asymmetrical	Whether all users should have access to the same type of information or not.
	INTERACTION ABILITIES	symmetrical | asymmetrical	Whether different users have different abilities/possibilities to interact with or in the system.
	INFORMATION DISTRIBUTION	free | unfolding | limited | shared | combined	In which way information is being distributed to users and spectators
	EVENT TRIGGERS	information-based | time-based | proximity-based | combined	What users or the system need to do in order to trigger an event that may change or cause progress in the system
SPATIAL	PROXIMITY	people | devices | objects | locations | combined	To which things proximity matters, and what needs to be proximate to what.
	LOCATION(S)	One or more | none	One or more specific locations or places that matter for the experience
	MOVEMENT	on the go | sedentary | combined	Whether users move through the space as part of the experience.
TEMPORAL	SYNCHRONISATION	user-driven | system-driven | combined	This property describes the synchronisation of actions within a temporal frame, if any.
	ENGAGEMENT	continuous | intermittent | sporadic	Users' temporal patterns of action within the experience.
	PACING	high-paced | slow | user-paced | combined	How the intensity of action is distributed across the experience, e.g. number of actions per time-frame.

Design Task

- Come up with 2 app concepts using the framework for co-located interaction.

- Pick 3-5 properties, select or randomize the values and come up with a design along the constraints given by the selected properties and values. If your selection of properties and values does not lead to anything, make a new selection and try again.

- When you have come up with a design you can experiment with the selected values and properties and see what that leads to for your design.

Delivarable

- Prepare a few slides where you

- List the selected properties and values for your concepts
- Give a brief presentation of your concepts. Using one or more sketches can be a good idea.
- Describe how the selected properties affected your design concept
- Reflect on how the design can affect co-located interaction between people

- Good luck!

References

- Lundgren, S., Fischer, J. E., Reeves, S., & Torgersson, O. (2015). Designing Mobile Experiences for Collocated Interaction. Paper presented at the Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, Vancouver, BC, Canada. https://doi.org/10.1145/2675133.2675171

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