



UiO : Department of Informatics
University of Oslo

The notion of «participation» in PD

- Participation in what?
- What counts as a PD result?
- Design decision competence

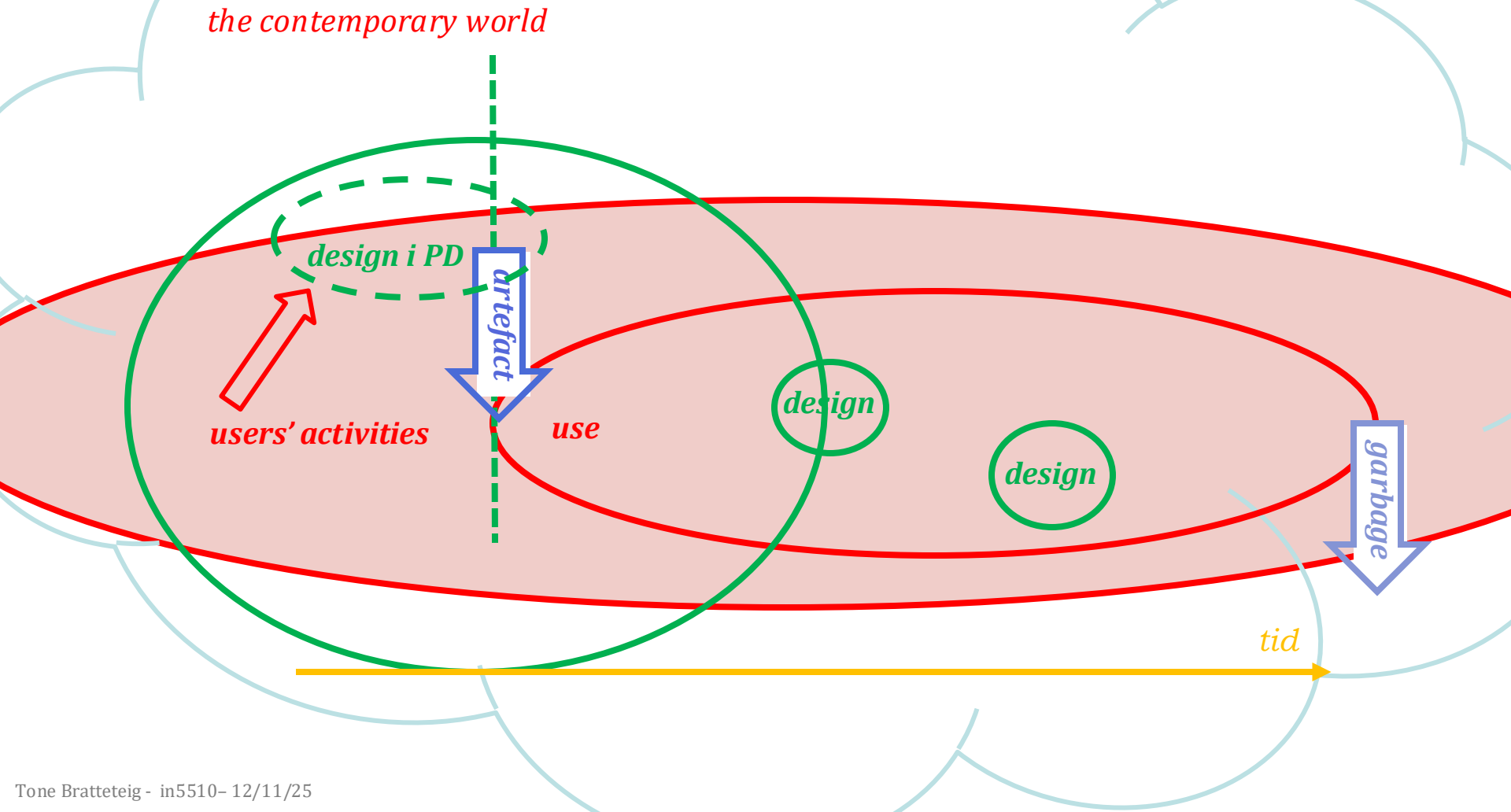


Tone Bratteteig

in5510 - 12. November 2025



the life span of a designed artefact



understand & conceptualize PD

- what is it that users participate in when they participate in PD?
- how do they know they have had any influence?
- what is a PD result? Who decides? How is it evaluated?



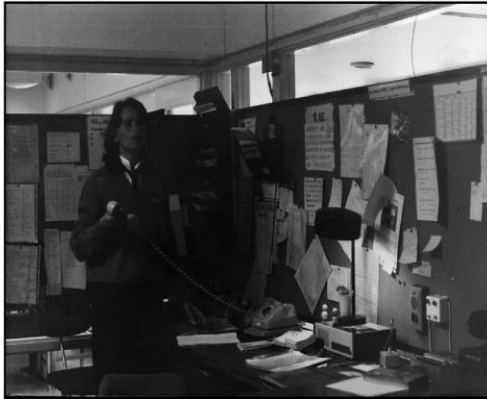
Bratteteig & Wagner:

- Spaces for participatory creativity, *PDC 2010*
- Spaces for participatory creativity, *CoDesign Special Issue on PD*, 2012
- **Disentangling power and decision-making in participatory design, *PDC 2012***
- Disentangling Participation. Power and Decision-making Participatory Design, *Springer CSCW series*
- Design decisions and the sharing of power in PD, *PDC 2014*
- The life and death of design ideas, *COOP 2016* (w/ O-K Rolstad)
- Unpacking the notion of participation in Participatory Design, 2016
- **What is a participatory design result? *PDC 2016***

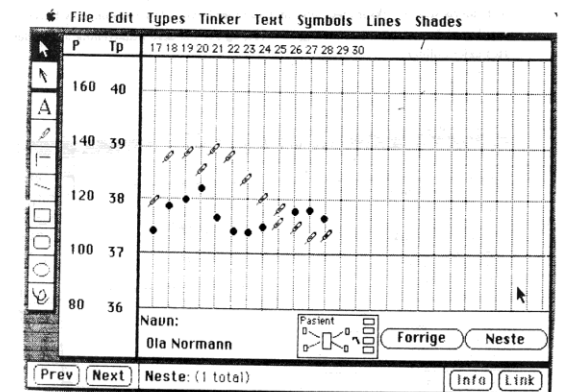
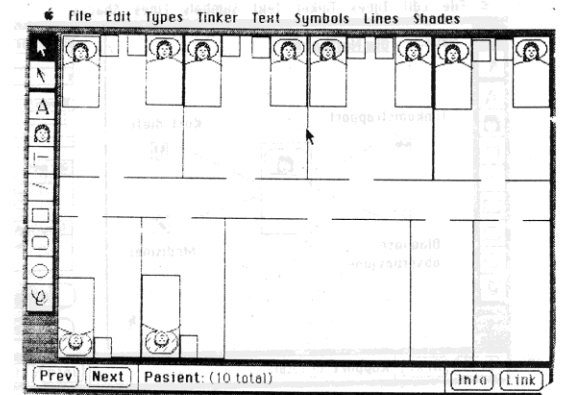
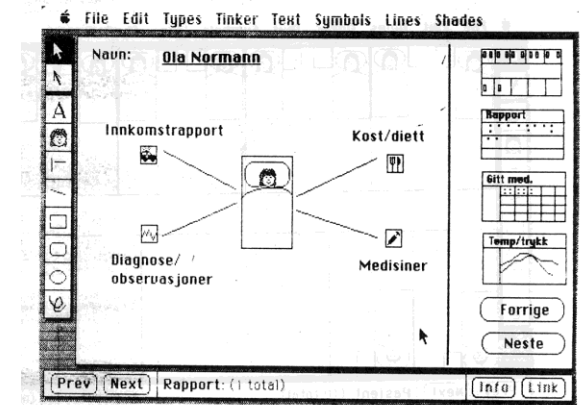


florence

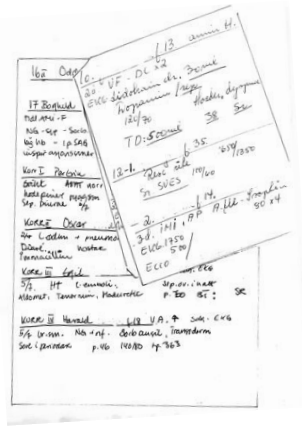
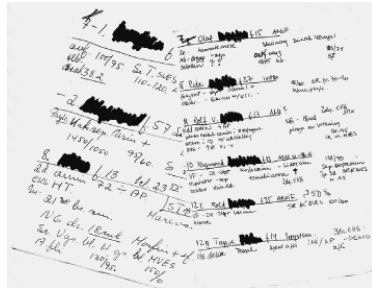
PD with nurses in 2 hospitals 1983-1987



florence



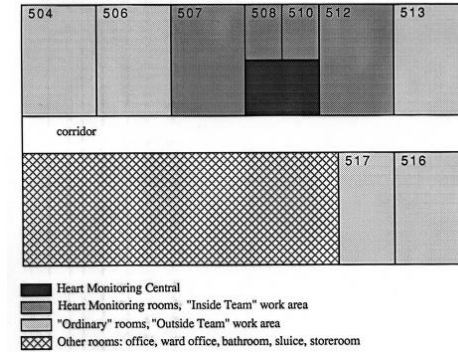
florence



D



Map of the cardiological ward.



DL

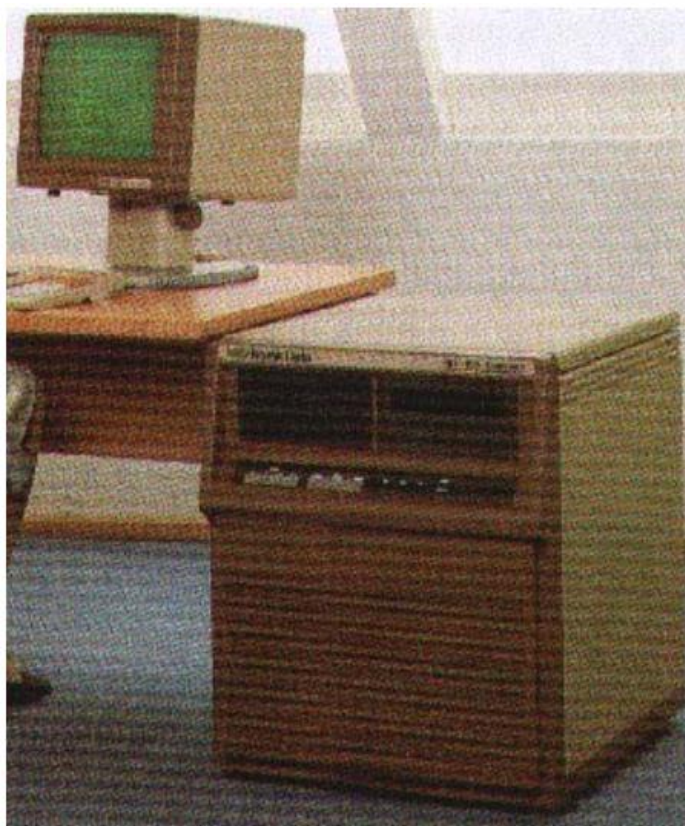
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florence



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Diagnose:	Diagnose:	Diagnose:	Diagnose:		
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Lege:					

Kommandoer er: **F**lytt pas; **E**ndre arb.gruppe; **S**kriv ut; **P**asient-info og **A**vslutt



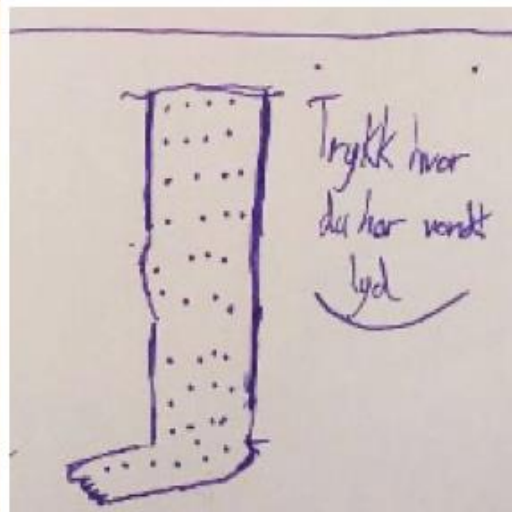
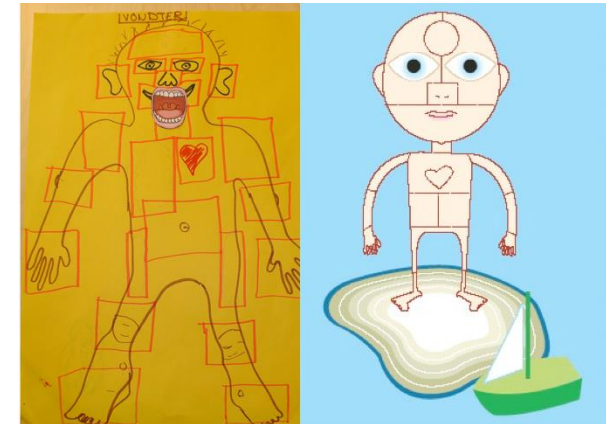
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ND-100 and Tandberg terminal

PD with children in a hospital (+ doctors)

the  project
2005-2006





Physical problem	Cry a lot (own suggestion)	Emotions	Afraid
	Bleed nose-blood		Nightmares
	Broken leg		Embarrassed
	Wounds on the skin		Angry
Head pain	Head ache		Miss family and friends
	Dizzy		Feel sorry
Vomiting	Pain in the belly		Cry a lot
	Vomit		Irritated
	Nausea	Social problems	Other children don't want to play with me
	Phlegm in my mouth		
	Things smell bad/unpleasant		Don't want to play with others
	Nose feels tight		Shivering hands
	Cough		Difficult to walk
	Warm or sweat	Unknownness	I think I don't get to decide anything
Mouth problems	Dry in the mouth		
	Pain in the mouth		I think it is my fault that I am sick
	Don't manage to eat		
Tired	Sleep during the day		I don't get to know things I want to know
	Easily tired		
	Don't manage anything	Medication problems	Can't take my medicine
	Cannot read		Disgusting to take med.



An example of the 'SiSom' application



PD with urban planners and citizens 2006-2010



- Home
- News
- Final Event
- About IPCity
- Partners
- Resources
- Publications
- Mixed reality research issues
- Application scenarios
- HCI 2008 Workshop:
Evaluating Player Experiences
in Location Aware Games
- CHI 2008 Workshop - Urban
Mixed Realities: Technologies,
Theories and Frontiers
- European City of Science
Exhibition
- La Ville européenne des
Sciences
- Impressum
- Search

Search

Meta

Log in



About IPCity

IPCity Final Event was held in Vienna, Austria. For more information, see the [Final event pages](#).

IPCity (FP-2004-IST-4-27571) is a EU funded Sixth Framework programme Integrated project on Interaction and Presence in Urban Environments.

The research aim of the IPCity project is to investigate analytical and technological approaches to presence in real life settings. Analytically, this includes extending the approaches to presence accounting for the participative and social constitution of presence, the multiplicity and distribution of events in time and space.

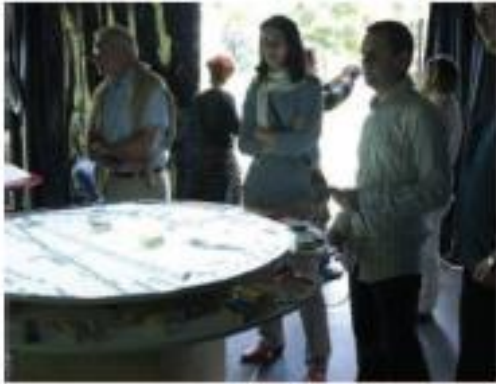
Technologically, this translates into developing portable environments for on-site configuration, mobile and light-weight mixed reality interfaces with the ambition to weave them into "the fabric of everyday life". Methodologically, this calls for moving "out of the lab" with field trials in real settings, applying a triangulation of disciplines and methods for evaluation. These range from interpretative-ethnographic to quasi-experimental approaches and include cognitive science, social-psychological, and cultural-anthropological disciplines.

The vision of the IPCity project is to provide citizens, visitors, as well as professionals involved in city development or the organisation of events with a set of technologies that enable them to collaboratively envision, debate emerging developments, experience past and future views or happenings of their local urban environment, discovering new aspects of their city. This includes:

- Extending analytical frameworks for presence, including the participative constitution of presence, the role of (shared) memory and mutual understanding, temporal fluctuations and interruptions (design for non-disruptiveness).



Figure 3: Wall scenario (1) and mixed reality scene (2)



Turning the wooden wheel to rotate view or zoom while checking with gaze at projection.



Selecting content, placing a content card on selected coloured RFID field, which associates content with colour blue, and placing blue triangle on physical map.



Areas that are enclosed by connections can be filled with ground textures (grass, stone, water, etc.) by simply placing a circular token, the colour of which has been associated with a particular texture in the area on the map.



Setting connections requires two rectangular tokens that define end points and angles defining curvature. Content card defines type of flow (e.g. pedestrian, high traffic) visible as moving dots on map.

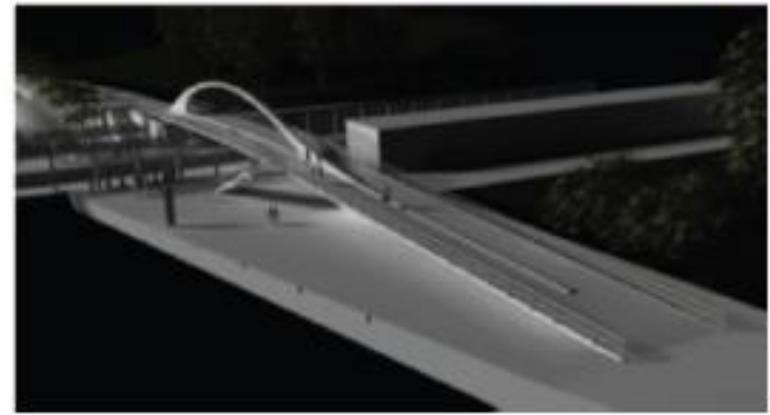


Figure 11. Map of the university campus, image of the station today and the architect's plan for a future station.



Figure 12. Current narrow bridge, design for better flow.



Figure 13. The station as a 'welcoming area'.

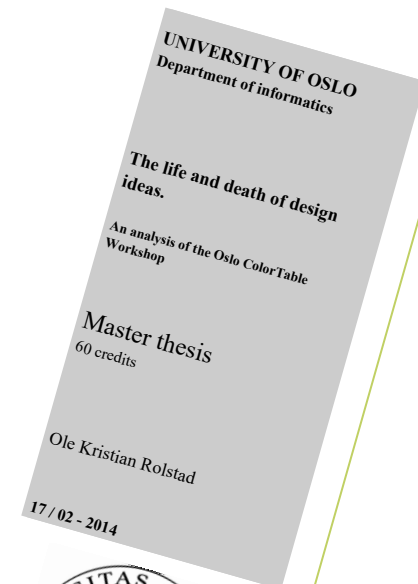




Figure 14. Architect explaining his solution.



Figure 15. Architect explaining solution with sketches.



Figure 19. Sketching content and showing recording.

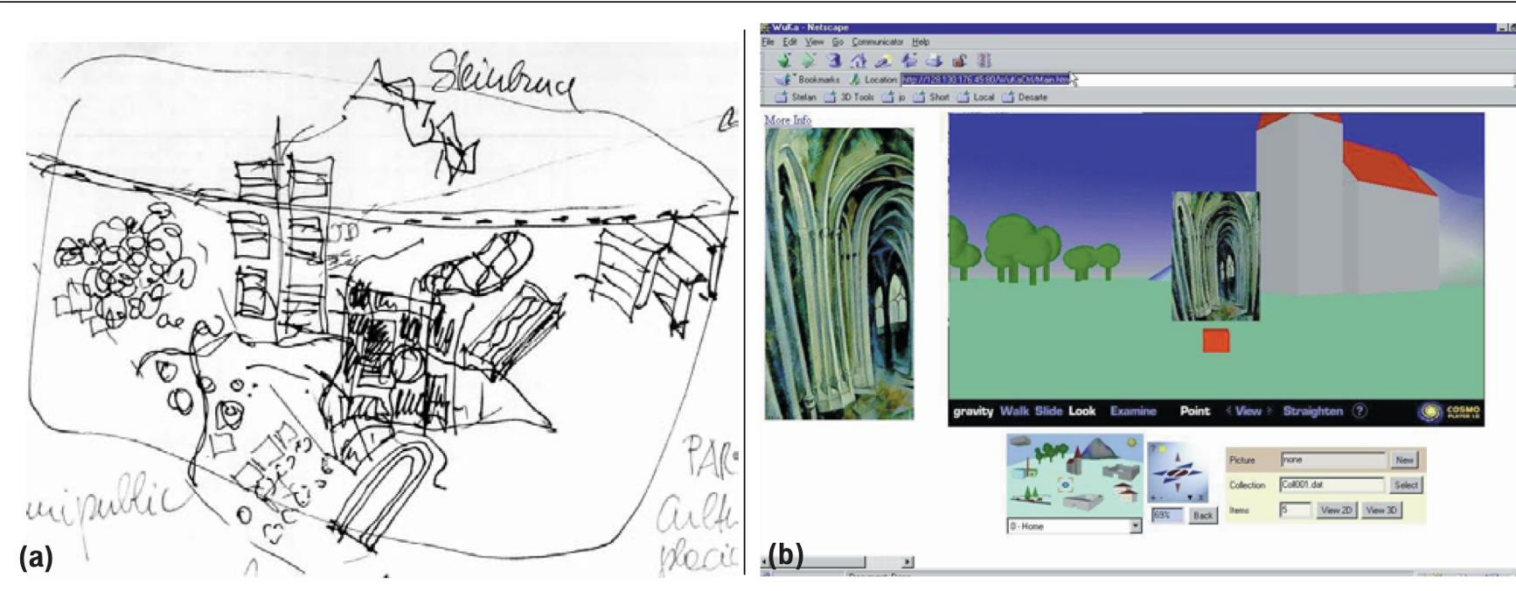
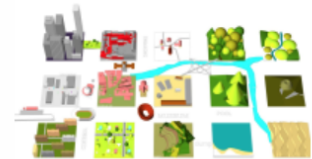
DESARTE

The observation that lies at the heart of DESARTE and our vision for a useful electronic support environment for designers and architects is a tension between ways of seeing, using, and organising materials, the limitations of physical objects in physical space, and the potential of electronic visualisation, communication, and data storage technologies. We explore this under the metaphors of **Wunderkammer** and **Manufaktur**.

The prototype, based on the metaphor of **Wunderkammer** and **Manufaktur**, consist of components developed within the project. It also consists of the assembly (bricolage) of, and integration with, existing tools on the Windows NT platform. We also have re-designed and evaluated work practices around **Wunderkammer** and **Manufaktur**, based on the metaphor of **open planning**, and have assessed the appropriateness of the 'bricolage approach' for the co-evolution of technology and work practice.

The design rationale of the **Wunderkammer** is based on fieldwork revealing the relevance of and need for inspirational objects throughout the design process. Inspirational objects assist the designers in their effort to form, develop, and communicate design concepts. Most of them are images, but their nature and sources are varied and so are the ways of collecting them. It is our aim to support the archiving and discovering of inspirational objects and to facilitate their movement to and from the **Wunderkammer** to integrate with the flow of the work.

The **Wunderkammer** is an inhabitable multi-media archive, collection support, and view generator. Users can place inspirational objects – images, sketches, 2D or 3D scans of samples and objects, sound, and video – in a metaphorical space of cities and landscapes. They can navigate in this space and explore



n task, a project, or the ensem-

led, arranged and manipulated
arameters and materials to hold
involved, the progressing of
sily customisable, affording the



Figure 3. Translating the architect's sketch into the first visual interface

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of providing an environment and some tools and techniques to organi
flexible and situated use of information resources.

DESARTE – Computer-Supported Design of Artefacts and Spaces in A
1999-2001



Figure 1. Placing and collecting images, looking for inspiration



Figure 2. Creating exhibitions



task, a project, or the ensem-

ed, arranged and manipulated
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nvolved, the progressing of
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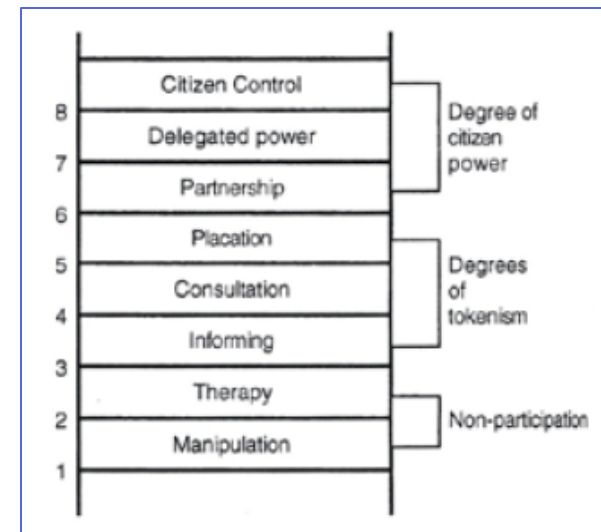


what is participation & how to think about it

- what is it that users participate in when participating in PD?
- how do they know they have had any influence?

participation:

the action or fact of having or forming
a part of something / sharing of something



Arnstein's ladder of participation

participation in PD

PD: sharing power with users

- 1) having a say (& having a voice)
- 2) mutual learning (2-way learning, over time)
- 3) co-construction (co-design)

4 projects we knew well

- Florence (*Tone*)
- Sisom (*Tone*)
- Desarte (*Ina*)
- IPCity (*Ina*)

Table 1. Overview of analyzed PD projects.

Project	Florence Project (1983–87)	Sisom Project (2005–06)	Desarte Project (1999–2001)	IPCity Project (2006–10)
Intended end-users	Nurses in hospital ward	Children with cancer Hospital staff	Architects and landscape architects	Urban planners, different stakeholders in an urban project
Project team	IT designers, anthropologists, nurses, medical doctors, nursing assistants (anthropologist and one nurse employed 100 % by the project)	Project leader, child psychologist, systems developers, graphic designer, participatory designer, healthy children as substitutes for very ill children	Participatory designer, systems developers, (landscape) architects, graphic designer, 3D designer	Project leader, urban planners, designer team (IT specialists, product designer, visual artist, sound artist)
Design result	Work sheets with patient inform-ation overview	Mobile system for patient reporting of symptoms	Navigable 3D archive for inspirational material	Collaborative urban mixed-reality application
Context	Real use in hospital; later requirements for new nursing system	Real use in hospital	Research	Research

first round of analysis: decisions

- values & concepts
 - openness, stakeholder participation, immediacy, urban concepts
- how to implement the vision
 - haptic engagement with tokens, tracking framework, bringing Mixed Reality outdoors, panoramas as re-presentations of the site, working with sound
- negotiations with outside world
- decisions & non-decisions

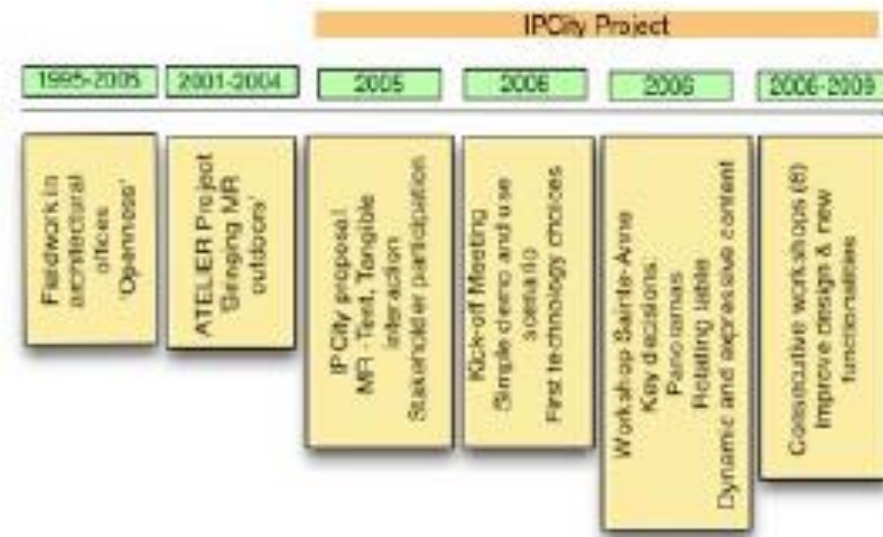


Figure 1: Overview of key activities

first round of analysis: decisions

- values & concepts
 - openness, stakeholder participation, immediacy, urban concepts
- how to implement the vision
 - haptic engagement with tokens, tracking framework, bringing Mixed Reality outdoors, panoramas as re-presentations of the site, working with sound
- negotiations with outside world
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big decisions

**small decisions
(+ technical decisions)**

**balancing stakeholders' views
what was not discussed**



Figure 1: Overview of key activities

second round of analysis: design decisions

participation in the design process

⇒ design as design experiments: seeing – moving – seeing

1) seeing

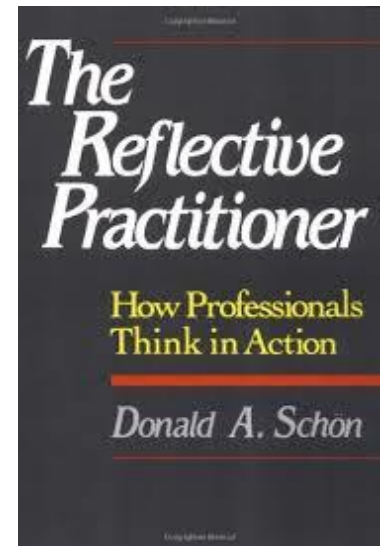
- evaluate the situation
- suggest possibilities ≈ bring in choices

2) moving

- select one possibility ≈ select a choice
- concretize the choice

3) seeing

- evaluate the choice (against the vision)



second round of analysis: design decisions

participation in the design process

⇒ design as design experiments: seeing – moving – seeing

1) seeing

- evaluate the situation
- suggest possibilities ≈ bring in choices

decision-making:

*choosing between possibilities, i.e.,
the space of design ideas*

2) moving

- select one possibility ≈ select a choice
- concretize the choice

i.e., the result of a design move

3) seeing

- evaluate the choice (against the vision)

• in context

• over time

*understand how choices are interrelated, e.g., even small choices can open or
close design possibilities*

bring in choices

- two-way learning throughout the PD process
- ethnographic studies as a basis for mutual learning
- multi-disciplinary collaboration
- provide a basis for technological imagination for the users
 - BUT maintain their own perspective
- meeting the participants where they are
 - adjust the process
 - adjust the activities and techniques

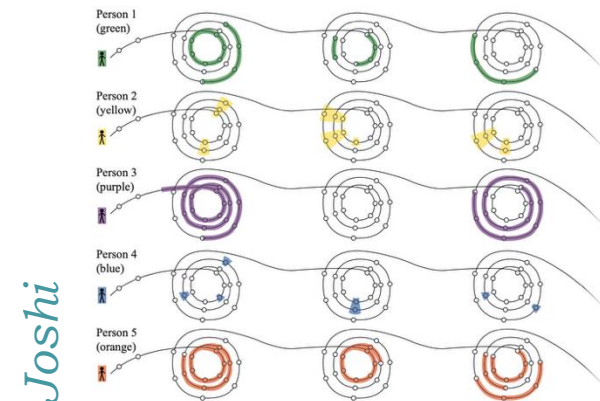
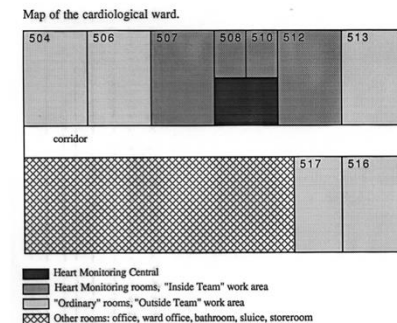
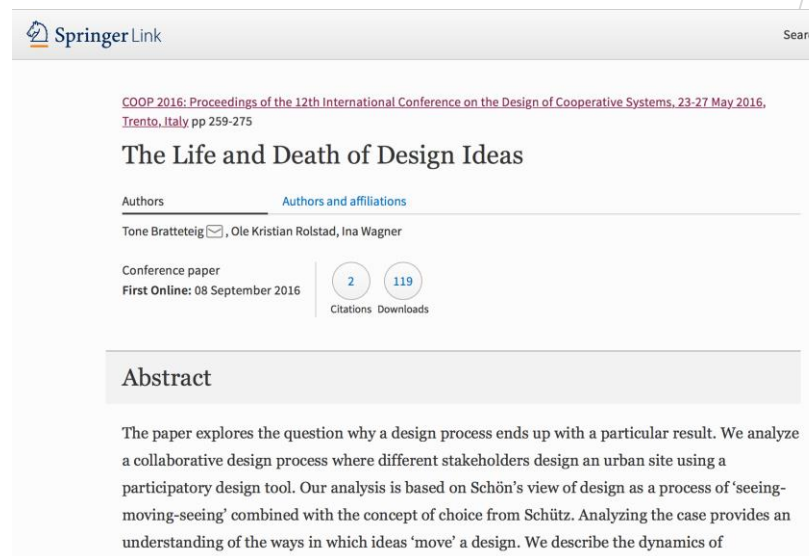
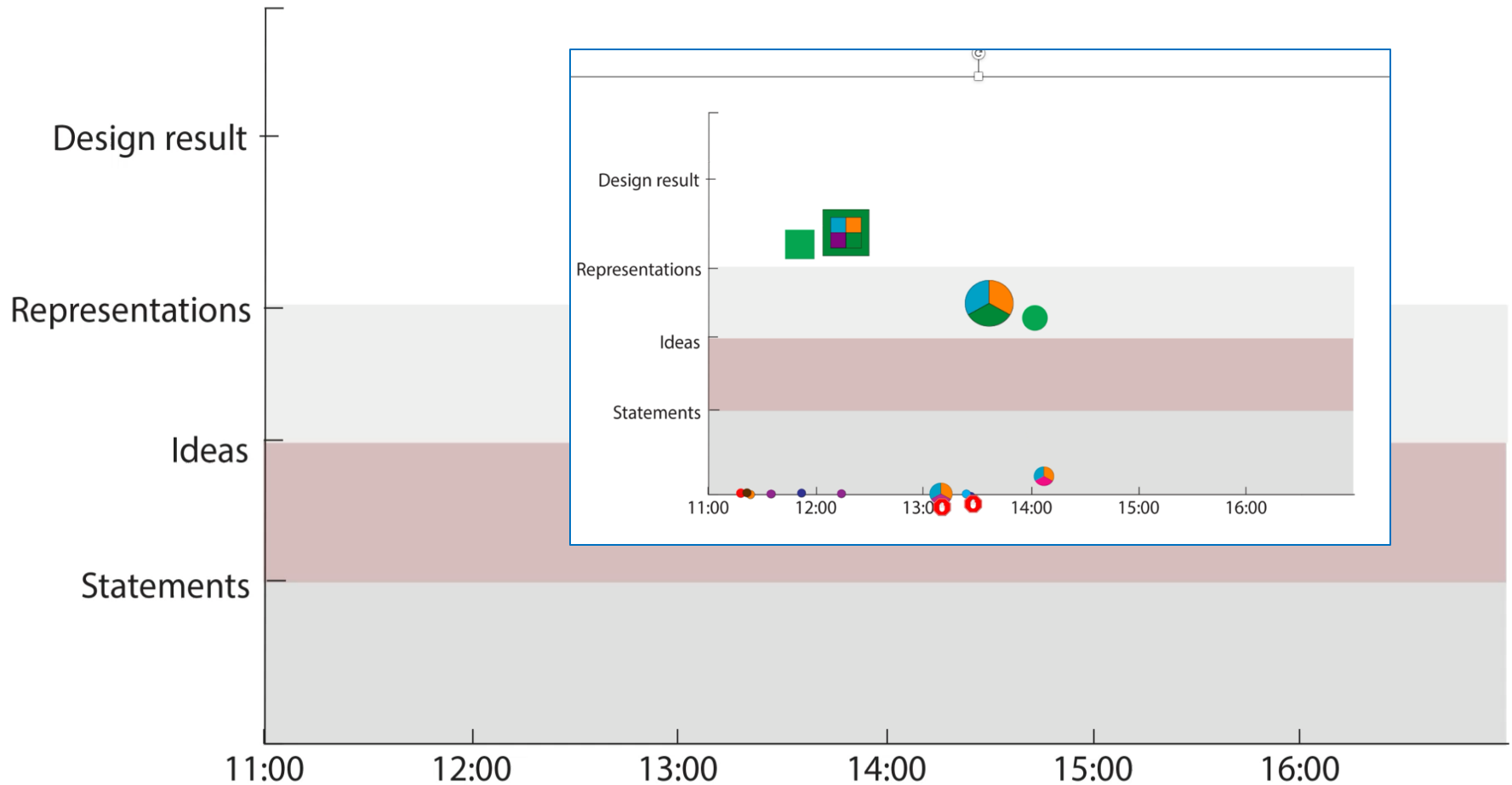


Figure 4. The participation activity for five of the participants throughout the project.

select a choice

- problem setting and solving happens together
 - steps towards the vision
 - postponing decisions: “placeholders”
 - understanding the effects of a choice
- negotiations and power games





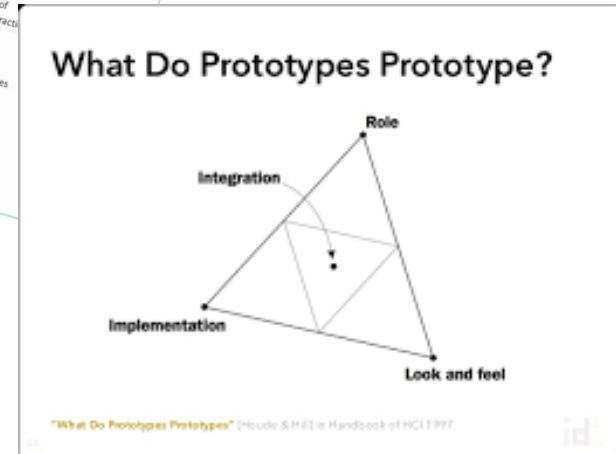
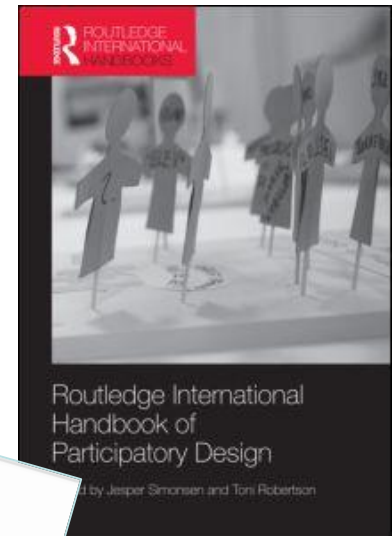
Ole Kristian Rolstad

concretize a choice

- the power of the maker – in the making
 - technical choices
- mock-ups and demos
 - show, not tell
 - scenarios and simulations



507-3 CNAMED: Hans Diag: AMI Hosp hist: Att. 24.1. Earlier post-operative splenectomy, virus treated. Still bothered with some pain. Out of bed. Times in nap smacking. IV: Inv:	508 CNAMED: Kjetil Diag: AMI, 250 dyspnoea Hosp hist: AMI and insuff. earlier. Now acute dyspnoea. Improved on morphine treatment. Delirious. Started on capoten. IV: Inv: 27/1: 3dayspr. Ecg.	509 CNAMED: Gunnar Diag: AMI, 250 AMI stop Hosp hist: Hypertension earlier. To day he pain. Pulse and resp. data in doctor's office. H. massive collapse of msa. Rubbing. Insuff. Tachycard. IV: Inv: 27/1: 3dayspr. Ecg. six	510-1 CNAMED: Thorbjørn Diag: AMI, 250, A Hosp hist: Born with small AMI since 9 years. AMI since 9 years. ST-seg V2-V4 symmetrical ischaemia. IV: Inv:
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evaluate the choice

- seeing – moving – seeing
 - evaluation is an inseparable part of design
- seeing as explicit evaluation
 - the artifact
 - the artifact in its real use context
 - independent prototypes
 - first impression vs long-term use



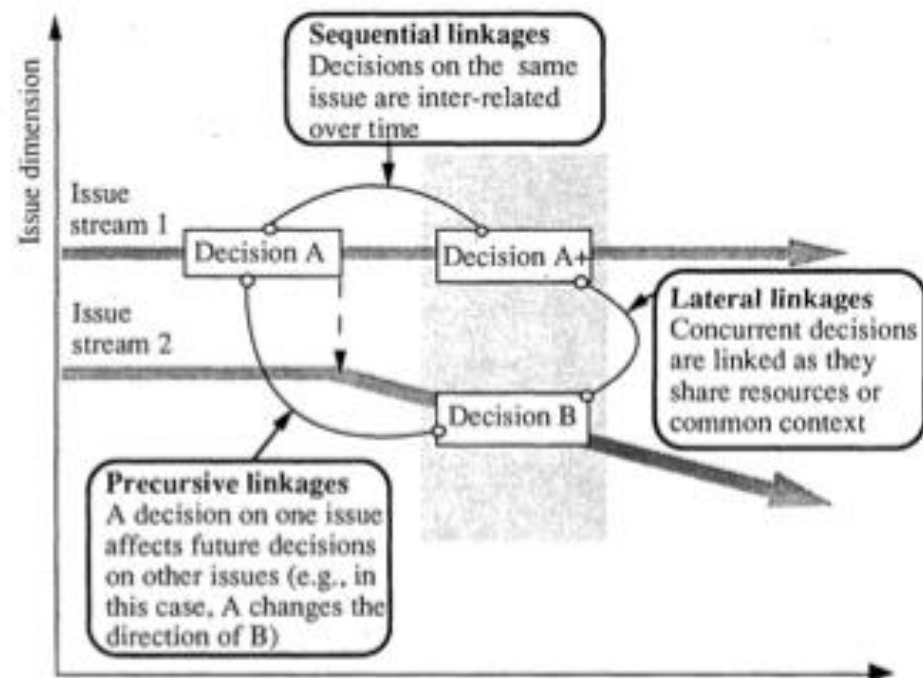
decisions interact & are interlinked

- big and small decisions: which decisions are important to be part of?
- unforeseen consequences of decisions

Langley et al

- decision linkages
 - *sequential linkages: a decision leads to other decisions, smaller ones (nesting), larger ones (snowballing), or same decision recurring*
 - *precursive linkages: a decision can affect premises for later decisions/ issues: enabling, evoking, cascading, pre-empting, merging, learning*
 - *lateral linkages: different issues share resources and compete (pooled) or share a context (contextual)*
- non-decisions

Figure 6 Types of Decision Linkages



a participatory design result

“Results are all action carried out by the MWU, centrally and locally, which on the basis of activities and insight gained within the project are aiming at giving the MWU* and its members increased influence on the planning, control and data processing of the firms.”*

(Nygaard & Bergo 1975: 7)

** MWU = Iron and Metal Workers' Union*



Kristen Nygaard

“can we have good participatory processes that do not show evidence of more democratic ideals in the resulting artefacts?”

(Balka 2010: 3)

what is a participatory design result?

= the results that exist when a PD project ends

- “shows evidence of democratic ideals” by increasing the agency of its users and giving them a voice in matters they did not have before
- strengthens the users’ “power to” act (which can strengthen their “power over” their resources)

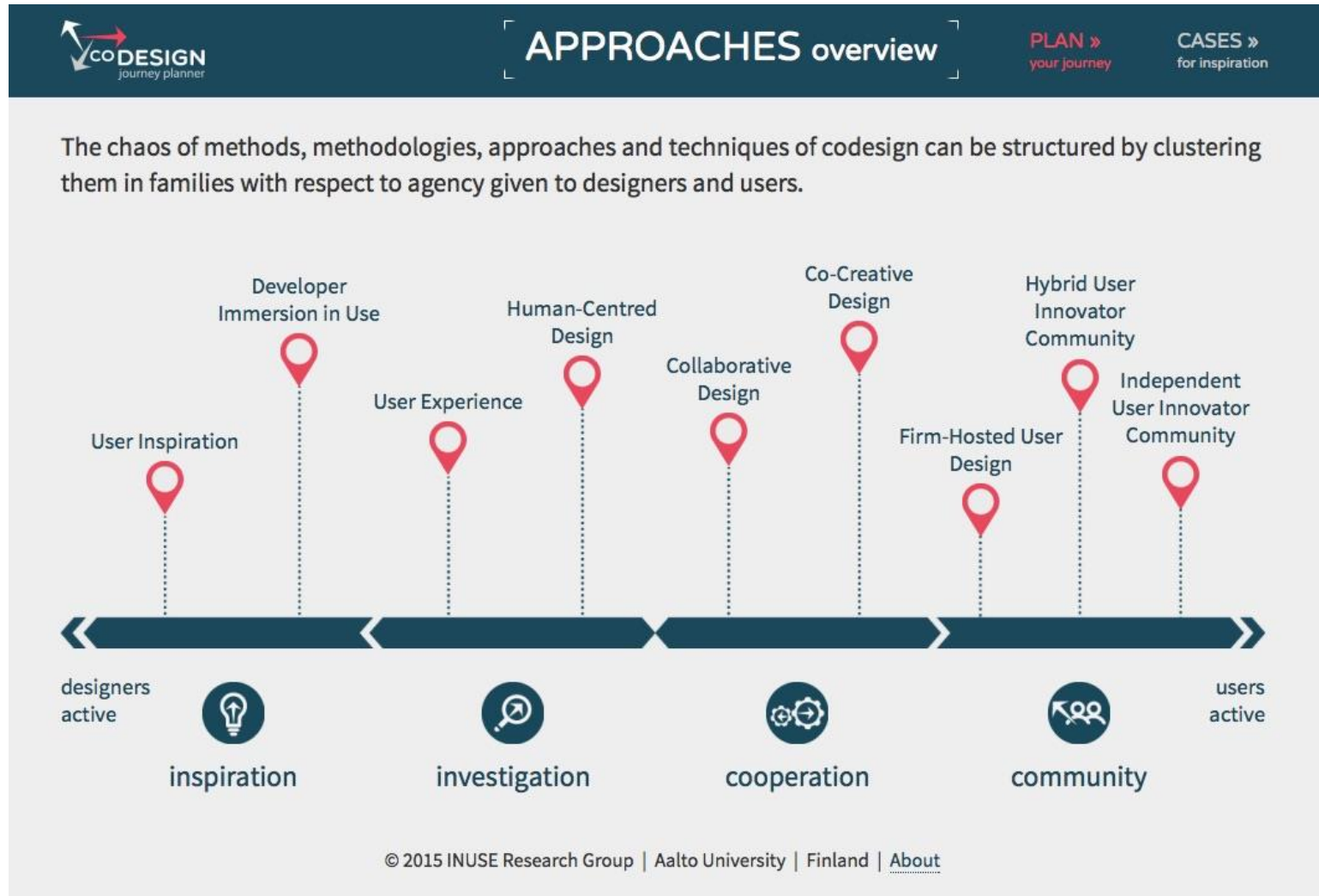
florence



Who decides and how is it evaluated?

- participatory design results can be achieved in many different ways
- there are many ways in which a PD result can be participatory

PD is an approach not a method



Design decision competence

Supporting user participation in design decisions

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ABSTRACT

The paper suggests the notion of design decision competence to describe the competence that users need to develop in order to participate in design decisions in Participatory Design (PD). We present two PD projects with older adults where they participated actively in making design decisions and we describe the competence they developed as a basis for these design decisions. We argue that experiences with materials and prototypes that demonstrate technical possibilities are important for developing such competence. We conclude by proposing a refined notion of design decision competence which enables real participation in design decisions.

CCS CONCEPTS

• Participatory design; • Interaction design theory, concepts and paradigms; • Empirical studies in interaction design; • Human-centered computing

KEYWORDS

Design decisions, user competence, mutual learning, prototyping

ACM Reference Format:

Harald Maartmann-Moe, Heidi Bråthen, Suhas Govind Joshi, and Tone Bratteteig. 2022. Design decision competence: Supporting user participation in design decisions. In *Participatory Design Conference 2022: Volume 2 (PDC 2022 Vol. 2)*, August 19–September 01, 2022, Newcastle upon Tyne, United Kingdom. ACM, New York, NY, USA, 7 pages. <https://doi.org/10.1145/3537797.3537874>

the necessary knowledge about the technical possibilities (and limitations) to imagine artefacts or systems that could realise these changes.

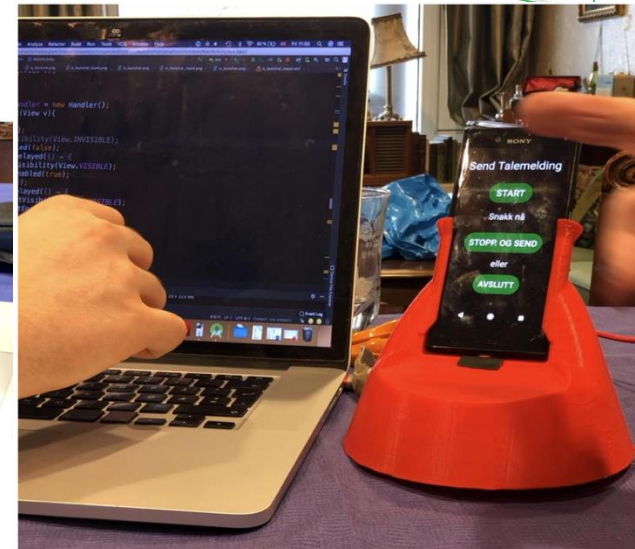
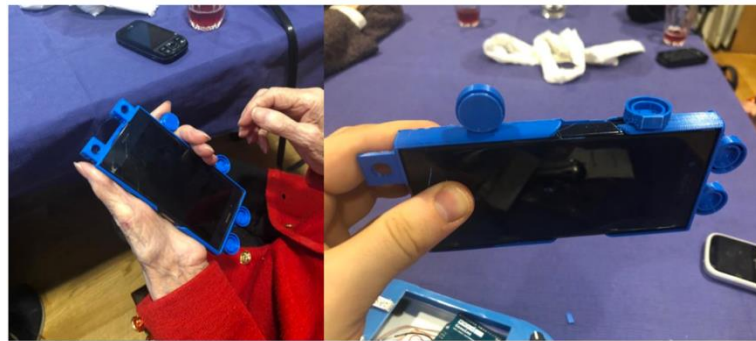
Many PD projects, therefore, seek to expand the users' imagination by showing examples of technology that mix up new possibilities. However, users' imaginations may also be strained by the selected examples. The designers' bias and preferences may in this way reduce the range of design possibilities for the users, as they tend to suggest technical solutions they have been shown (Simonsen and Robertson 2012, Bratteteig 2012). Facilitating a mutual learning process aimed at enabling the users' own position and interests while widening imagination for technical support is a challenge in PD.

In this paper, we discuss how to build an understanding of technical possibilities for the users to develop their own design decisions, and how this is a part of making informed design decisions. We use examples from our own empirical research to describe how PD designers can facilitate mutual learning processes that support users' own use competence. The overall aim of the paper is closer to an understanding of what it means to participate in design decisions. We are particularly interested in how users can develop competence for making design decisions while maintaining their own position and interests.

The paper is structured as follows. Section 2 presents our design as decision-making and discusses the competence that users need to make design decisions. Sections 3 and 4 describe



Figure 10: Prototyping and prototypes from the robot workshop



summary: what is participation & how to think about it?

- the action or fact of having or forming a part of something / the sharing of something
= the stakeholders influence & share control over development initiatives and the decisions and resources that will affect them

Participation in PD:

- have your voice heard & respected AND have a say = be part of making decisions (& recognize them in the process and the result)
- mutual learning ⇒ develop knowledge, empathy, respect & trust ⇒ create design decision competence among all participants
- co-design ⇒ explore & select not only possible but also wanted forms & functions + explore short and long term effects of the design decisions

summary: what is participation & how to ~~think about~~ do it?

Facilitating participation in PD:

- enable everyone to have a voice & a say in the decision-making
- enable mutual learning that develops knowledge, empathy, respect & trust = create design decision competence among all participants
- enable co-design activities where everyone can take part in design to explore & decide on their future (short & long term)

The PD process therefore needs:

- a critical perspective that can recognize power structures in the use context / situation and address them
- address and work in the arenas of participation that the PD project aims to influence
- design for possible and wanted futures
- include stakeholders that do not normally have a voice by widening the accountability of the design project in time and space