

# kap. 7 Designideer, skisser og prototyper

in1060 Bruksorientert design

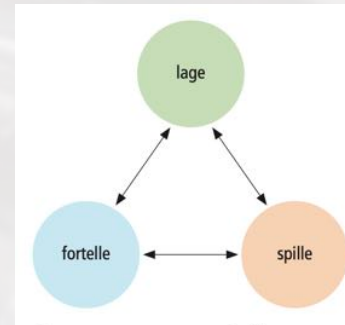
# å jobbe med konkretisering av ideer

## mål med kapitlet:

- diskutere hvordan designere kan jobbe med ideer
- beskrive metoder og teknikker for å konkretisere ideer
- forklare hvilken rolle prototyping kan ha i DMB
- beskrive, planlegge og gjennomføre prototyping med brukere

## hvordan utvide idérommet

- hvordan får vi flere ideer?
- hvordan jobber vi med ideene?
  - systematisk skifte perspektiv
  - systematisk bruke metaforer



- utnytte kunnskap og erfaringer i gruppa
- skaffe nye kunnskaper / erfaringer i gruppa
- involvere andre ekspertiser (f.eks. brukere)

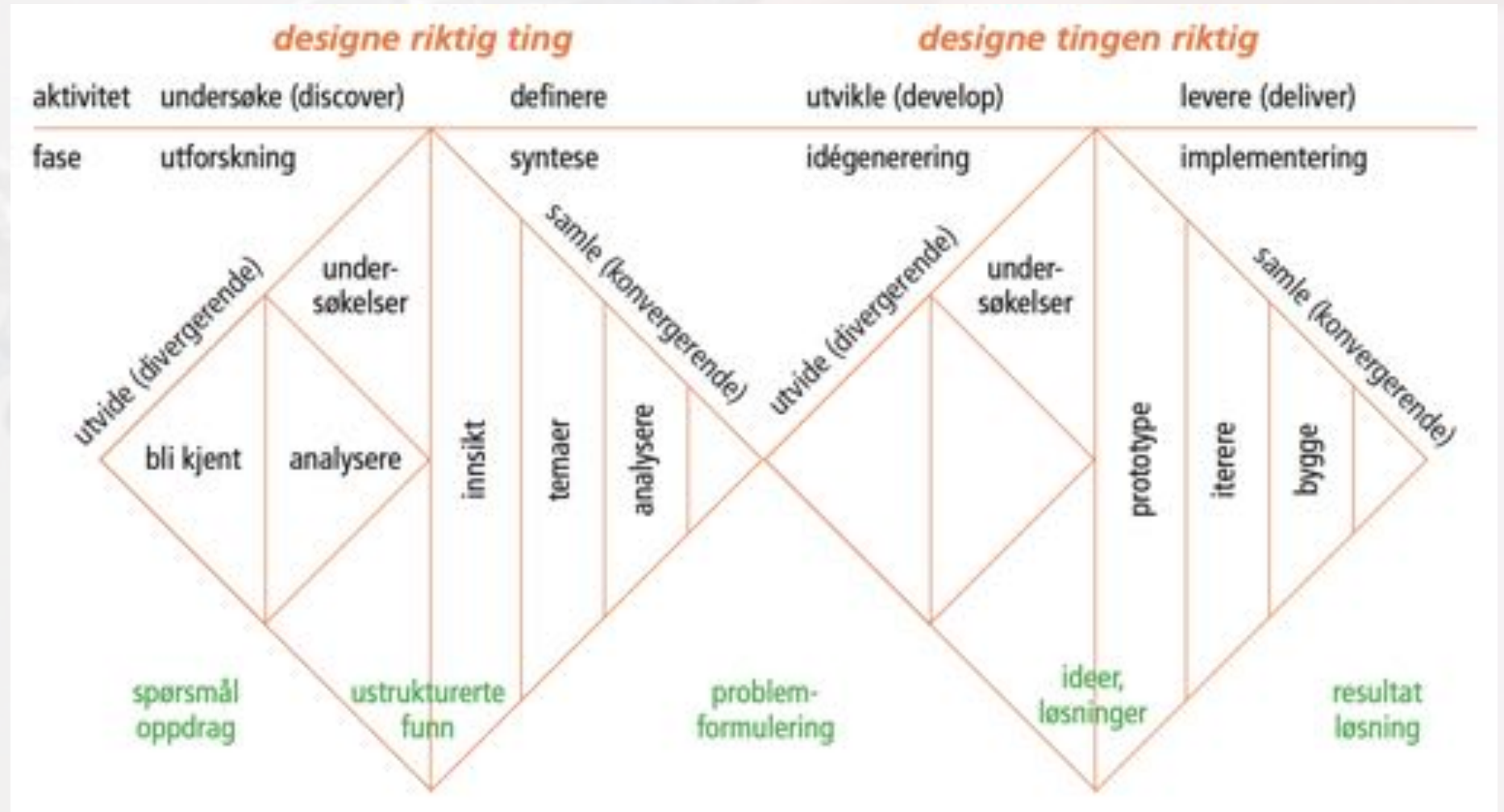
## Kapittel 7

### Designideer, skisser og prototyper

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# idégenerering foregår i hele designprosessen

divergent &  
konvergent  
tenkning


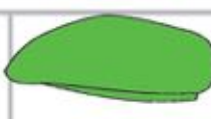





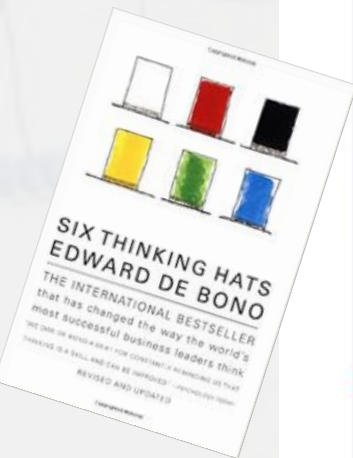
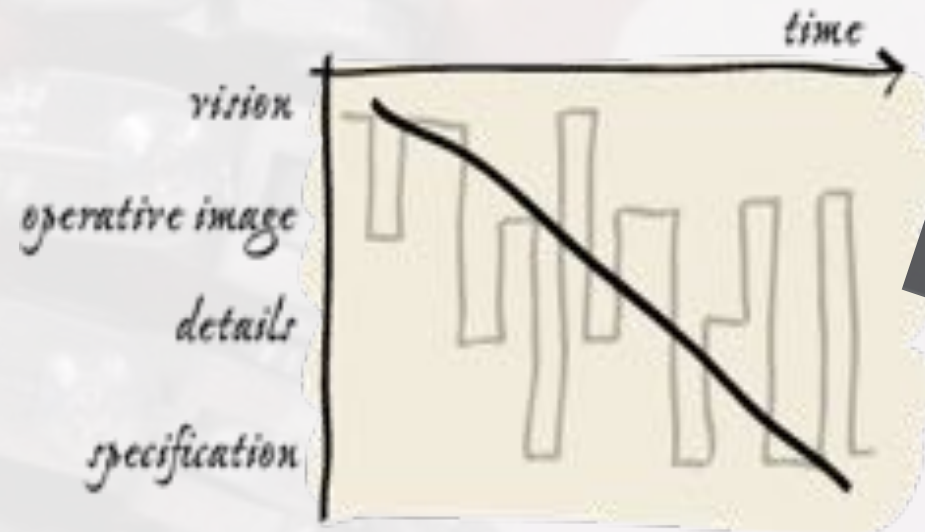
figur 2.8 i læreboka

# å få flere designideer

- systematisk skifte perspektiv
- perspektiver og ideer i teamet

*bevege seg mellom flere nivåer av konkretisering samtidig*

 <b>Process</b> Planning for action. What type of thinking is needed? Thinking about thinking.	 <b>Creativity</b> Ideas, possibilities, pie-in-the-sky alternatives. Imagining all kinds of solutions.
<b>Facts</b> What do we know? What do I need to find out? Objective information and data.	 <b>Benefits</b> Positive points. Why an idea may be useful. Logical reasons are provided.
 <b>Feelings</b> Current feelings. Intuition, hunches, gut instinct. No reasoning needed.	 <b>Cautions</b> Weaknesses, risks, difficulties, dangers. Logical reasons are provided.



# å få flere designideer

- systematisk skifte perspektiv
- perspektiver og ideer i teamet
- innspill utenfra



## POWERS OF TEN AND THE RELATIVE SIZE OF THINGS IN THE UNIVERSE



1977

*Powers of Ten* is one of the Eameses' best-known films. Since it was produced in 1977, it has been seen by millions of people both nationally and internationally. As with *A Communication Primer* and *2n* (a 2-minute Peep Show from the exhibition, *Mathematica*), in this film, Charles and Ray employed the system of exponential powers to visualize the importance of scale.

When the Eameses came across the 1957 book by Kees Boeke, *Cosmic View: The Universe in Forty Jumps*, they decided to

# å jobbe med designideer: skisser

å bearbeide ideer

- vurdere & videreutvikle
- konkretisere

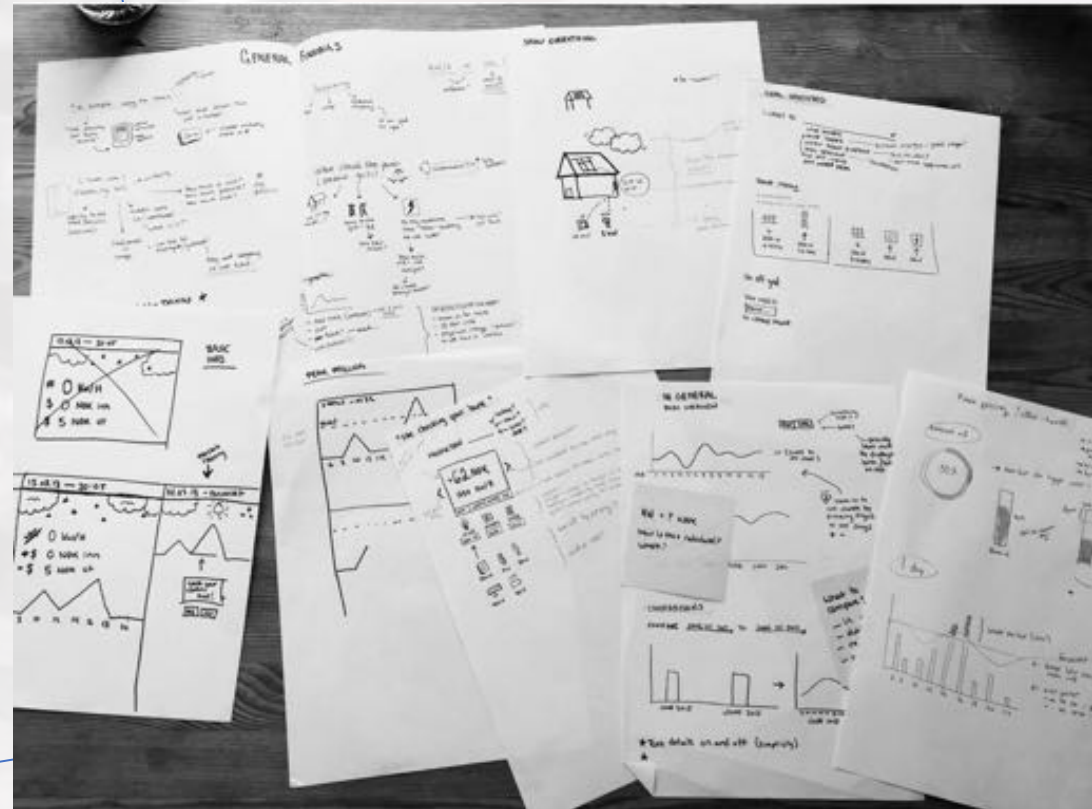
Designing a solar panel display:  
Information, visualization and personalization

Thea Snillsberg Sørtving



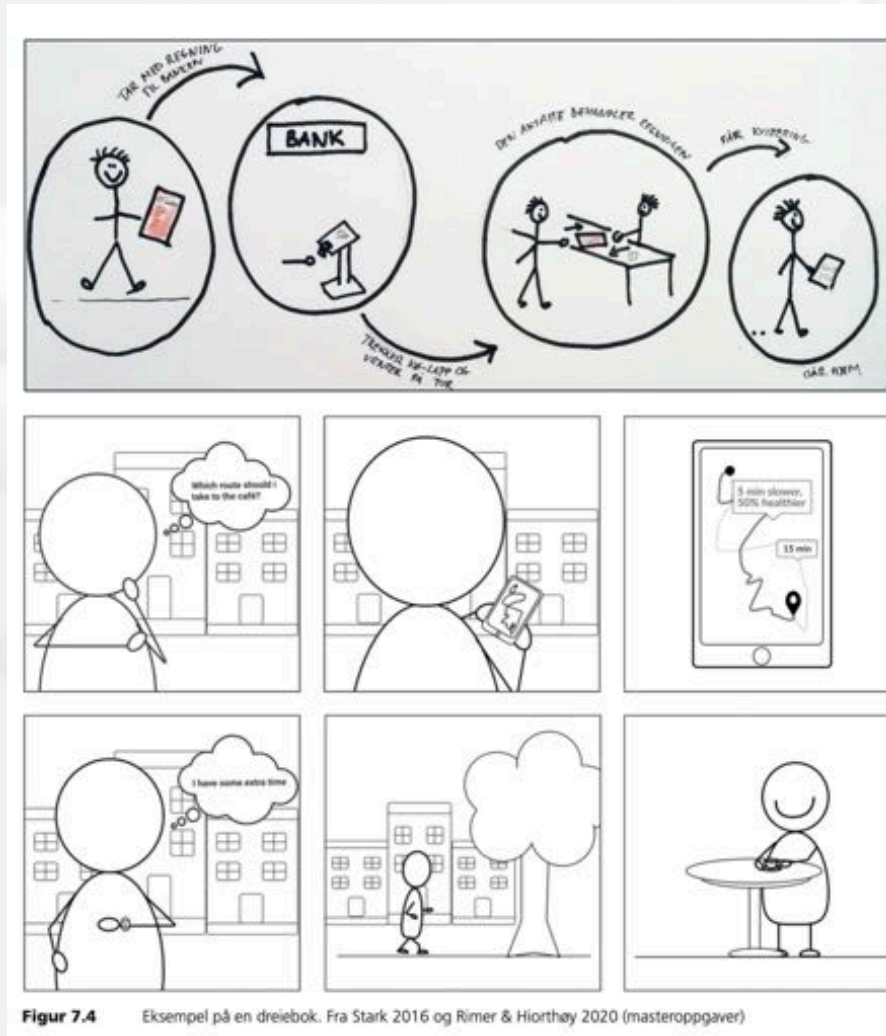
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Master in Informatics: Design, Use, Interaction  
60 credits

Department of Informatics  
UNIVERSITY OF OSLO  
Spring 2018



Munchs skisser til «Skrik»

# skisser av prosesser / dreiebok



eksempel på dreiebok ("story board")



# skisser av prosesser

A breath of fresh air

Visualizing air quality for young adults

Jonas H. Hiorthøy and Marte Rimer

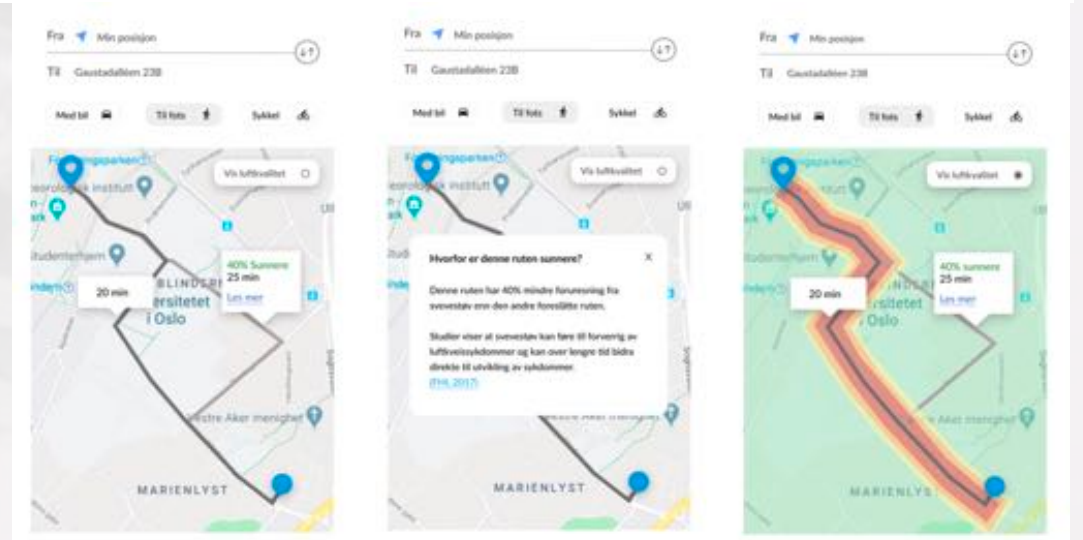
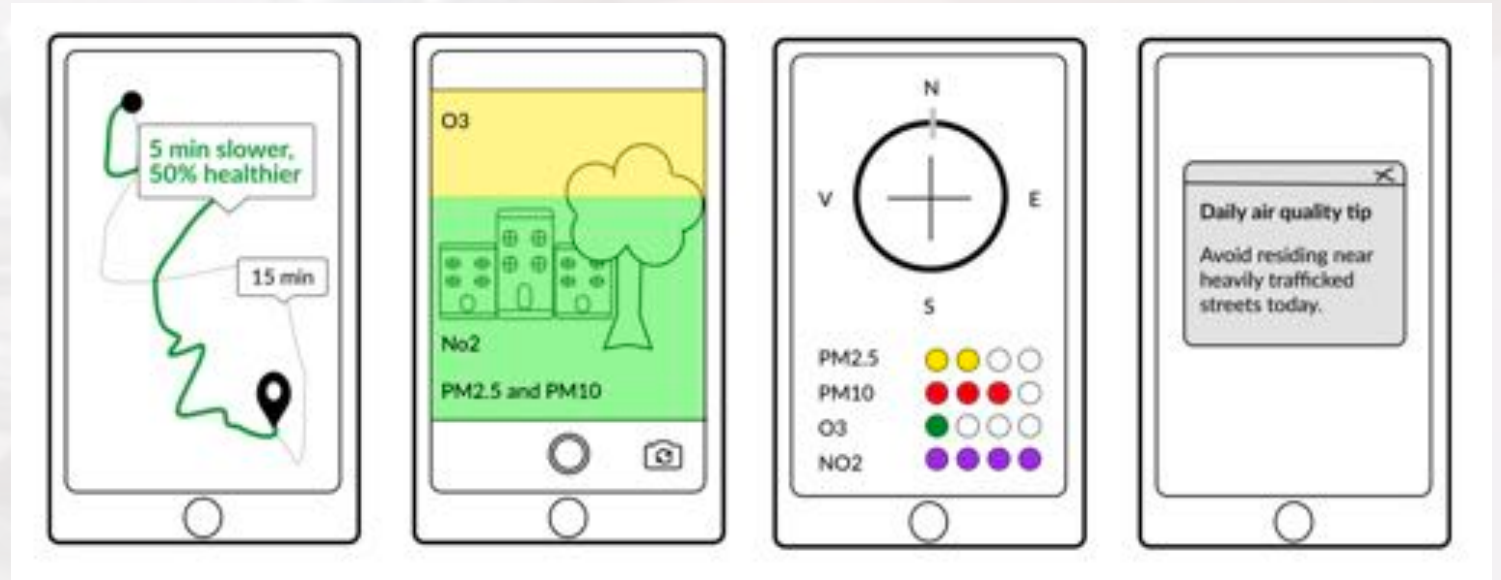


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Spring 2020





# skisser av prosesser

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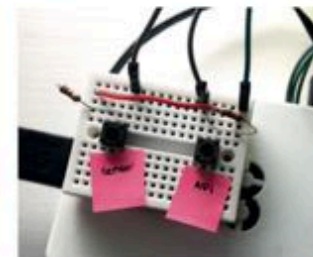
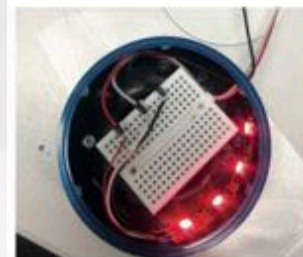
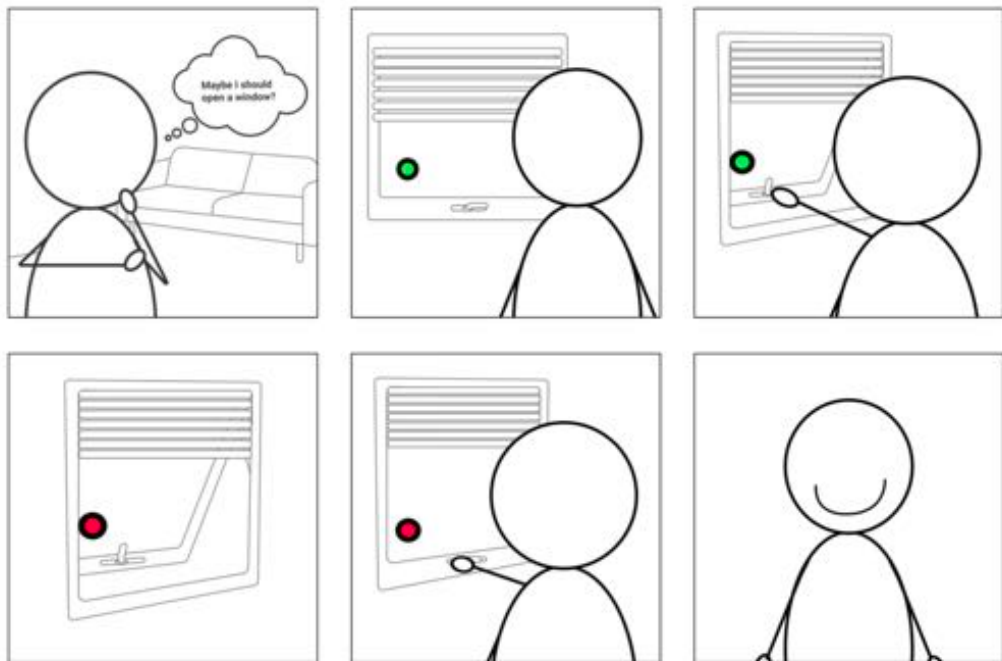


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# prosessbeskrivelser

## tjenestedesign

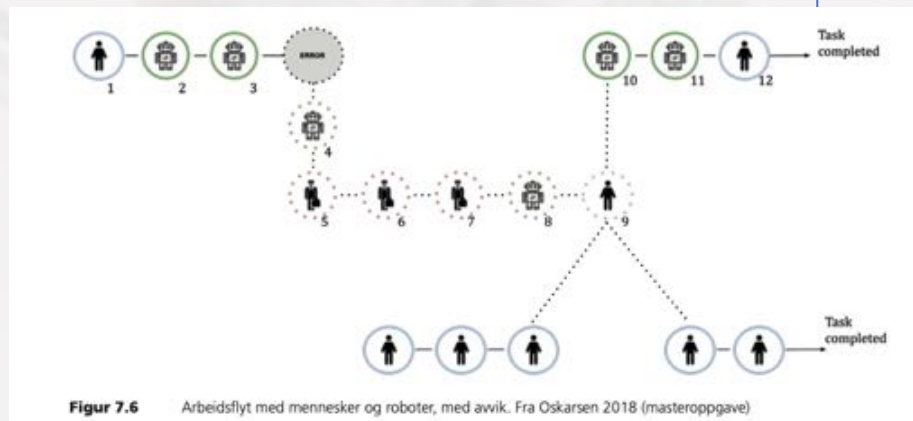
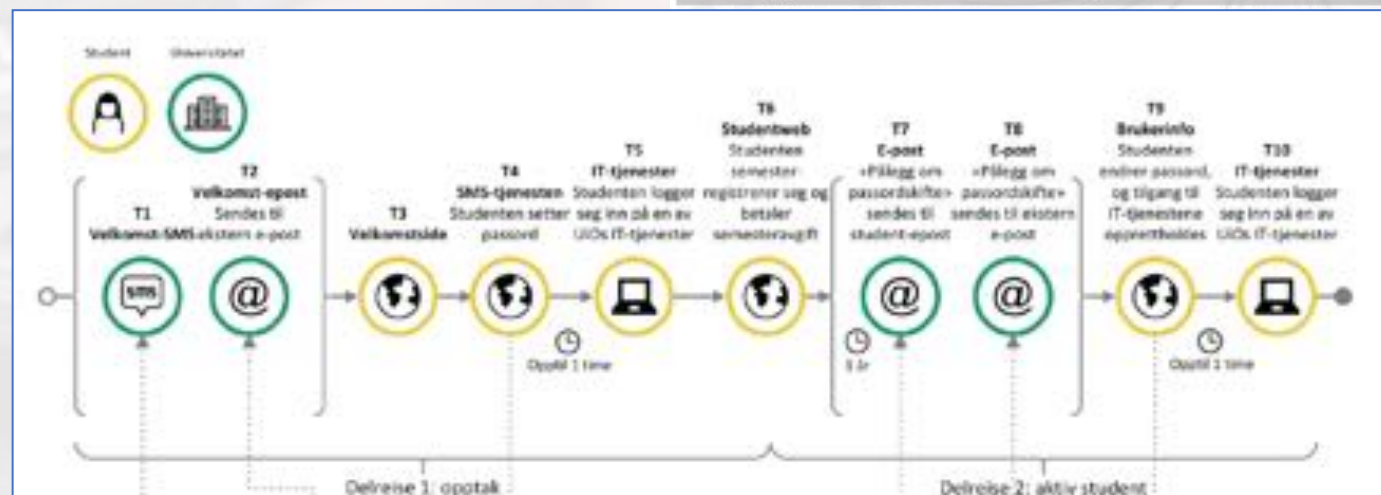
- kundereiser (“customer journey”)



«Hæ? Hvorfor har ingen fortalt meg dette?»

En analyse av IT-løsningene ved UiO i et  
tjenstedesignperspektiv

Masteroppgave - Martine Birketvedt Eklund og Seline Tomt - 2016-08



## Human-supported robot work

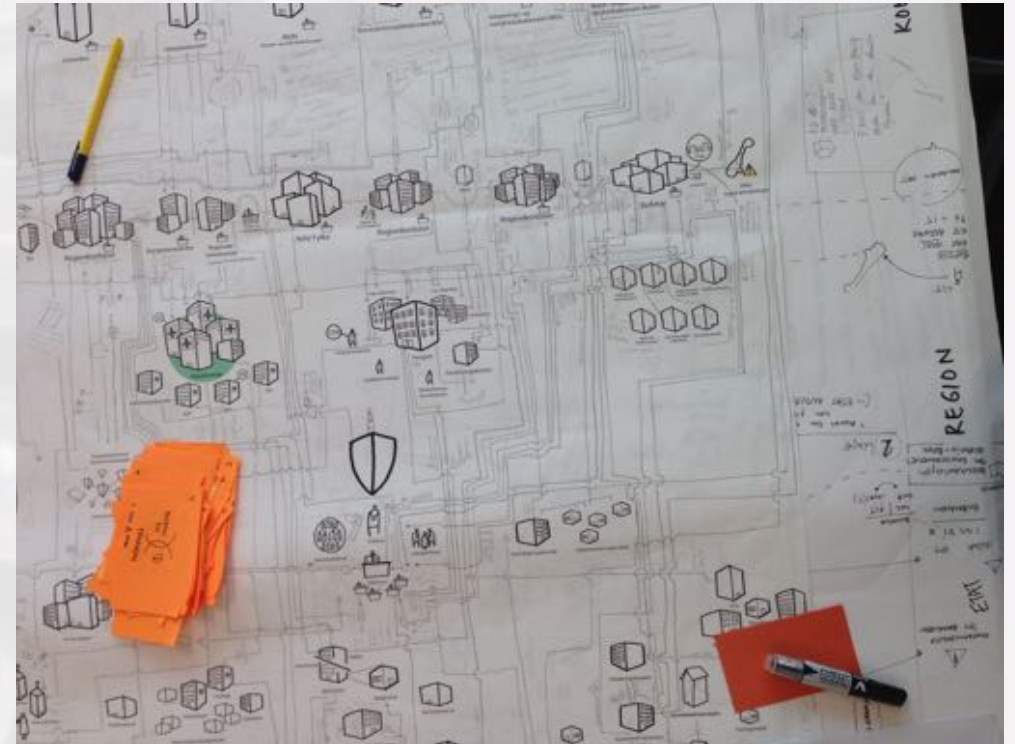
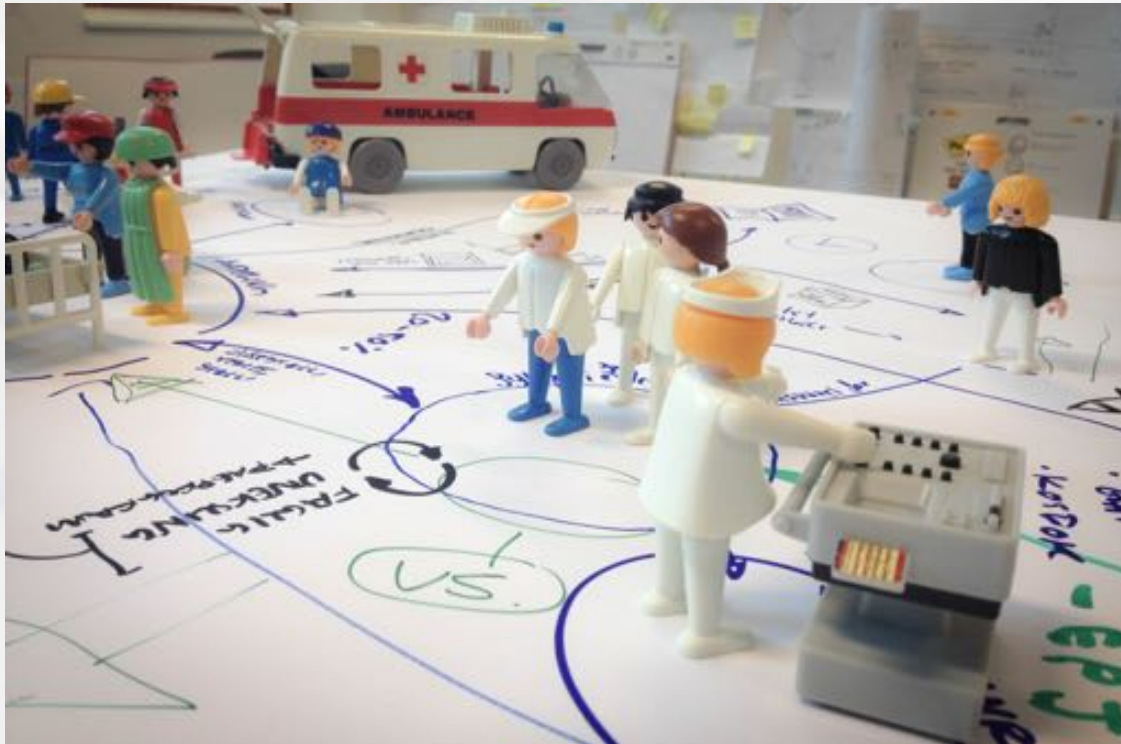
*A case study on mobile robots in  
hospital environments*

Johanne Svanes Oskarsen



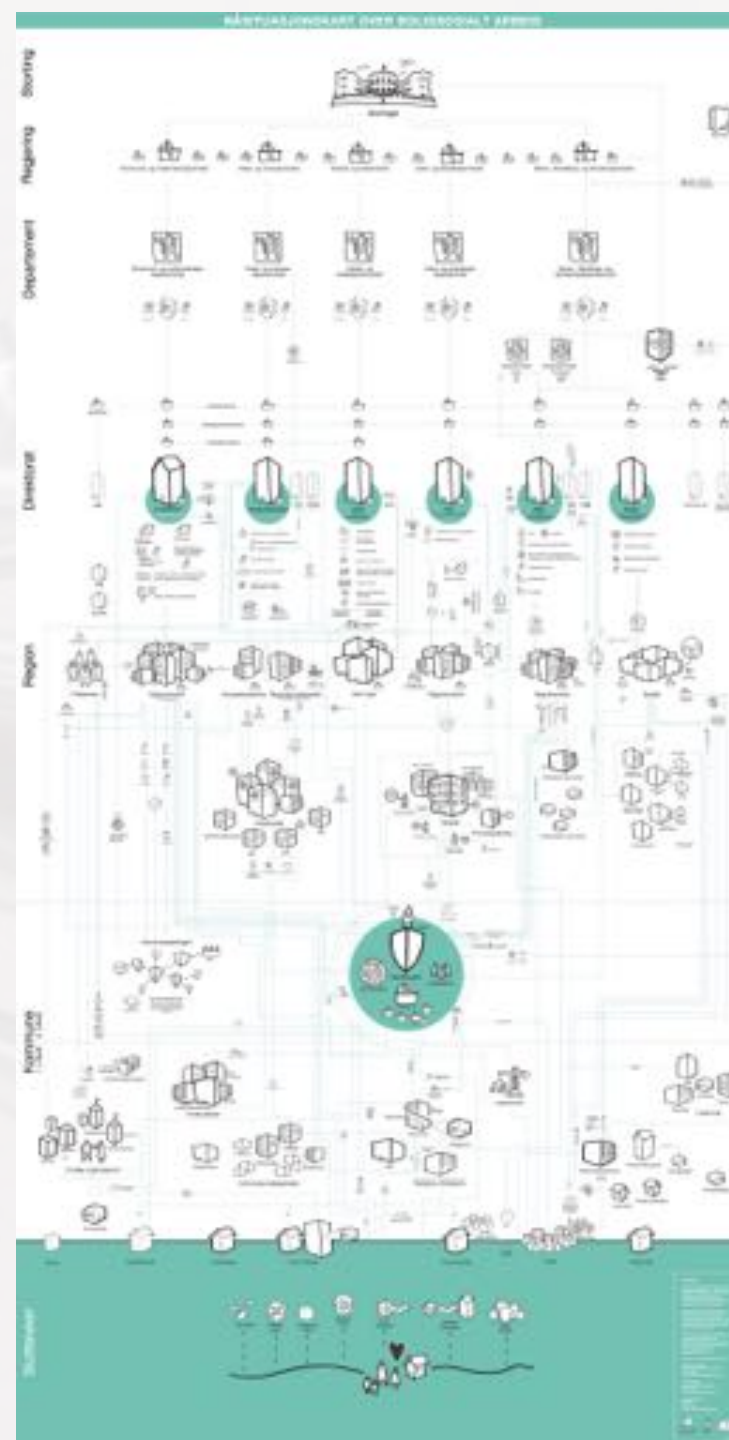
# beskrivelser for analyse + som resultat

gigamapping (rike bilder)



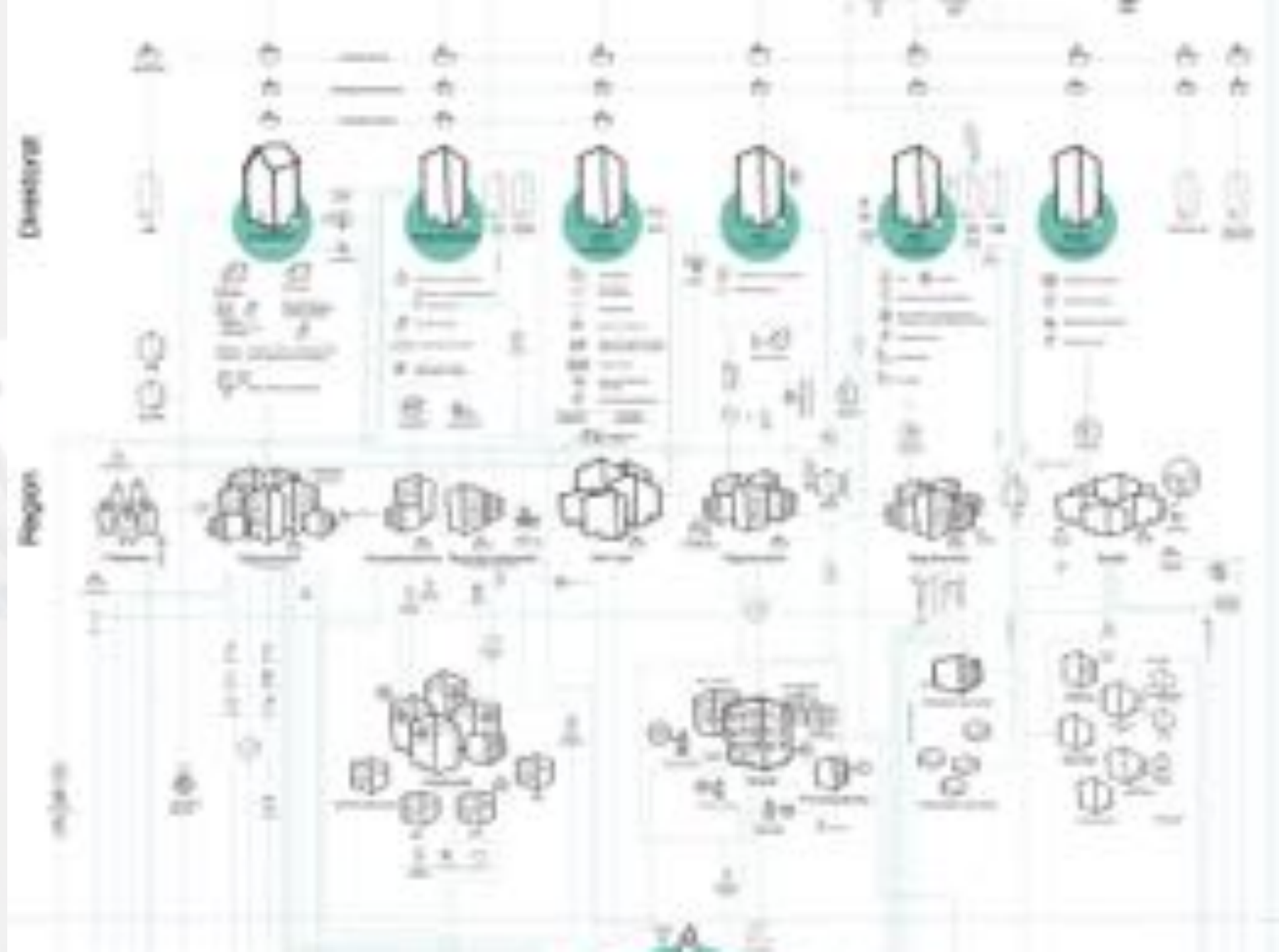
*foto: Halogen*

# gigamapping



*foto: Halogen*







# gigamapping

*mer om gigamapping på  
systemsorienteddesign.net*

*v/ Birger Sevaldson*

Systems Oriented Design Search

SOD- GIGAMAPPING- TOOLS- FRAMEWORKS- PROJECTS- RESEARCH-


### Systems Oriented Design / Systemorientert Design (NO)

The designerly way to work with systems  
The main mission of Systems Oriented Design is to build the designers own interpretation and implementa systems thinking can fully benefit from design thinking and practice and so that design thinking and practi thinking.

News blog

#### RSD10 Online

Created: 30 March 2021 Hits: 62



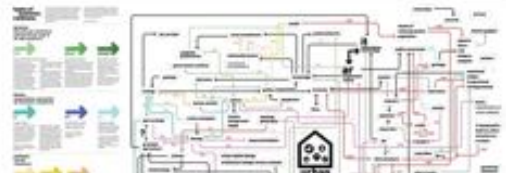
### Relating Systems Thinking & Design Symposium

Playing with tensions

Share Like 5 Share 5 Tweet

#### Executive Master in Systems Oriented Design

Created: 22 February 2021 Hits: 526



Systems Oriented Design Search

SOD- GIGAMAPPING- TOOLS- FRAMEWORKS- PROJECTS- RESEARCH-

## Gigamapping

Created: 31 March 2012 Hits: 105689


By Birger Sevaldson

Gigamapping is part of the [Systems Oriented Design \(SOD\)](#) framework, which has started to live its own life and spread much further than SOD. This site is a part of the SOD web where aspects of Gigamapping are collected.

The whole SOD menu is directly accessible from the left sidebar menu (red square).

- Gigamapping is super extensive mapping across many sections, layers and scales with the goal of investigating relations between seemingly separate things, categories, and silos.
- Gigamaps are tools for visual thinking and understanding complex systems.
- Gigamaps are super for sharing views, getting teams on the same page and for co-design and co-creation.
- Gigamapping is a design tool, however anybody can gigamap. It has a very low initial threshold and lot of depth to learn and progress.
- Gigamaps are process tools and not meant to communicate outside of the involved stakeholders or owners of the maps.
- Read these pages and start to practice or contact [birger.sevaldson@aho.no](mailto:birger.sevaldson@aho.no)

To read more about the context and the whole methodology of **Systems Oriented Design** go here: >>>>





# prototyping

*prototypos* (gresk): original form

*protos*: første + *typos*: type, inntrykk

- en første modell som brukes som mal for videre utvikling, opprinnelig en første fullskala funksjonell form av et nytt design av et artefakt (f.eks. i bilproduksjon)
- et eksemplar som demonstrerer viktige egenskaper hos et fremtidig artefakt
- en modell som representerer en visjon (en løsning)



[www.modelljernbanensdag.no](http://www.modelljernbanensdag.no)



# begreper om prototypen i seg selv

- *resolution* = oppløsning, detalj-rikdom
- *fidelity* = nærhet til produkt, forseggjorthet

forseggjorthet: avhengig av rollen til prototypen / de spørsmålene dere lurer på

- *low fidelity* = enkle skisser
  - billig og rask (& kan med fordel kastes)
- *high fidelity* = nesten ferdig produkt
  - forseggjort, kan testes av brukerne alene
- *horisontal prototype*
  - bredde, ikke dybde, mange funksjoner
- *vertikal prototype*
  - dybde & detalj, få funksjoner

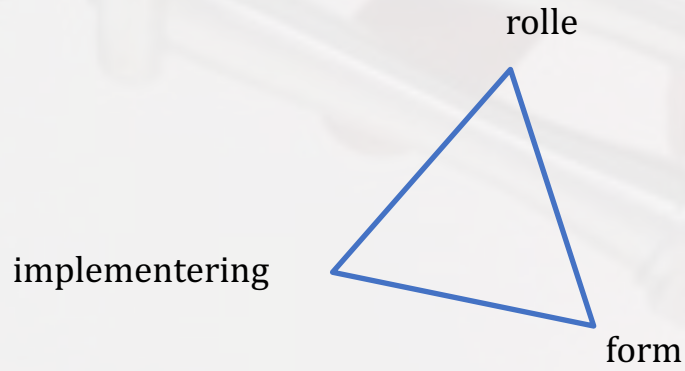


# prototypen svarer på spørsmål i design

H&H s 3:

We define *prototype* as any representation of a design idea, regardless of medium

Houde & Hill 1997



## What do Prototypes Prototype?

Stephanie Houde and Charles Hill  
Apple Computer, Inc.  
Cupertino, CA, USA  
s.houde@ix.netcom.com, hillc@ix.netcom.com

### 1. INTRODUCTION

Prototypes are widely recognized to be a core means of exploring and expressing designs for interactive computer artifacts. It is common practice to build prototypes in order to represent different states of an evolving design, and to explore options. However, since interactive systems are complex, it may be difficult or impossible to create prototypes of a whole design in the formative stages of a project. Choosing the right kind of more focused prototype to build is an art in itself, and communicating its limited purposes to its various audiences is a critical aspect of its use.

The ways that we talk, and even think about prototypes, can get in the way of their effective use. We can get in the way of describing prototypes ourselves, such as how we use them, and how they are used.

the kinds of prototypes to build. With a clear purpose for each prototype, we can better use prototypes to think and communicate about design.

In the first section we describe some current difficulties in communicating about prototypes: the complexity of interactive systems; issues of disciplinary teamwork; and the audience to whom we must communicate. Next, we introduce the model of prototypes. Next, we introduce the model of prototypes with some initial examples of prototypes from real projects. In the following section we present several more examples to illustrate further issues. We conclude the chapter with a summary of the main implications of prototyping practice.

### 2. THE PROBLEM WITH PROTOTYPING

Interactive computer systems and artifacts can have a rich variety of characteristics: auditory, visual, and interactive. For example, a personal digital assistant has an auditory interface, a graphical user interface, and how it is used.

# prototypen svarer på spørsmål i design

tre klasser av spørsmål om artifaktet:

rolle (funksjon, nytte)

*i brukerens liv*

*hvordan er det nyttig for dem?*

integrasjon

*for full bruksopplevelse*

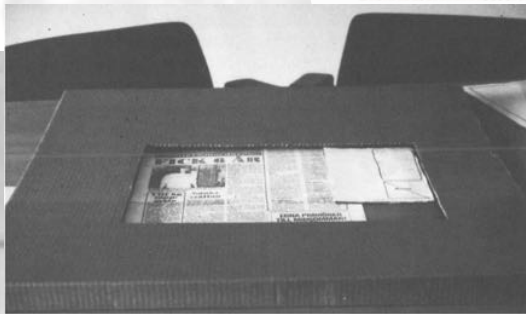
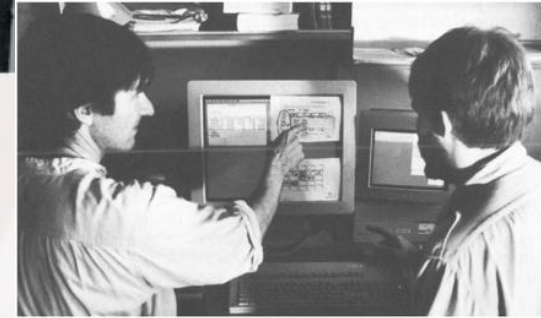
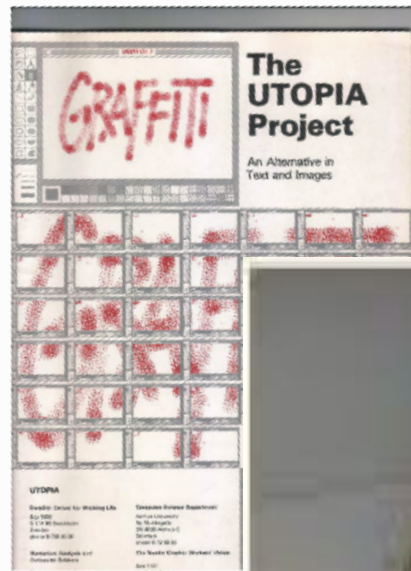
implementering  
(hvordan den fungerer)

*hvordan få den til å virke?*

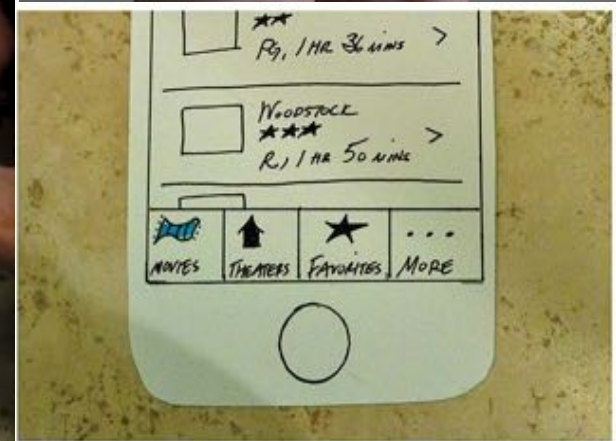
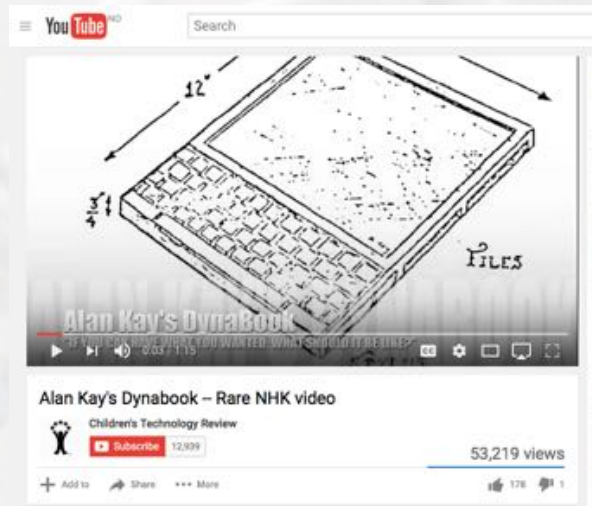
form («look-and-feel”)  
(brukerens sanse-opplevelse)

*konkret bruksopplevelse:  
se, høre, føle ...*

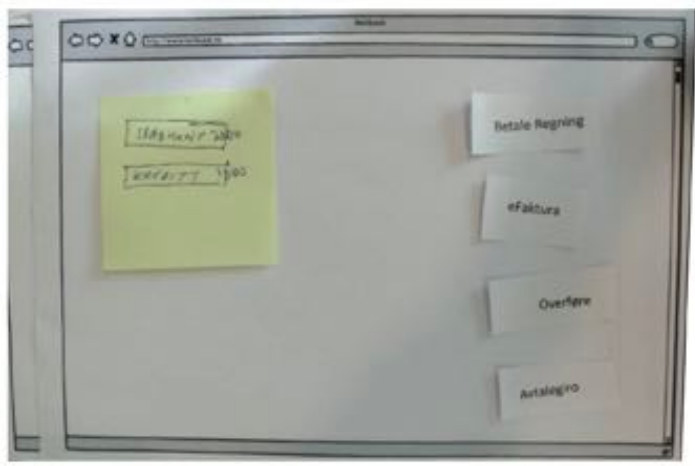
# UTOPIA-prosjektet



# Alan Kay med Dynabook



# enkle prototyper



*Karoline Stark  
Harald Maartmann-Moe*

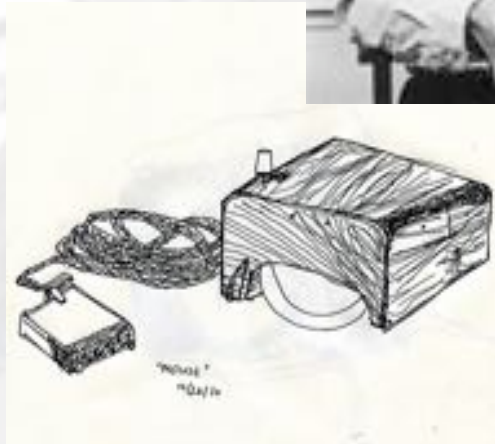


*Julie Nilsen Hagen & Kristine Røynealand*

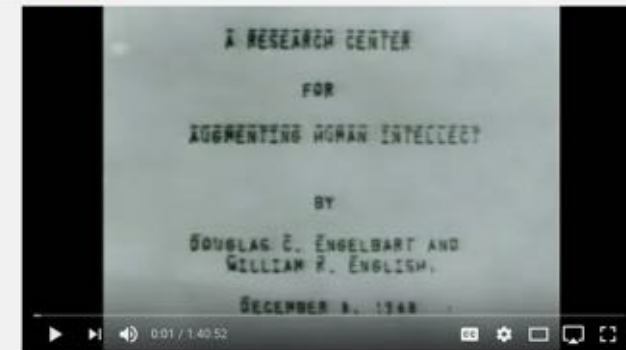


**Figur 7.7** Eksempel på bruk av «Trollmannen fra Oz». Fra Nilsen & Røynealand 2019 (masteroppgave)

# Douglas Engelbart med alle den første data-musen



A screenshot of a Wikipedia article titled "The Mother of All Demos". The article is in English and discusses Douglas Engelbart's 1968 computer demonstration. The page includes a navigation menu on the left, a search bar at the top right, and a list of contents on the right side of the article. The main text describes the introduction of a complete computer hardware and software system called the oN-Line System or, more commonly, NLS. The 90-minute presentation essentially demonstrated almost all the fundamental elements of modern personal computing: windows, hypertext, graphics, efficient navigation and command input, video conferencing, the computer mouse, word processing, dynamic file linking, revision control, and a collaborative real-time editor (collaborative work). Engelbart's presentation was the first to publicly demonstrate all of these elements in a single system. The demonstration was highly influential and spawned similar projects at Xerox PARC in the early 1970s. The underlying technologies influenced both the Apple Macintosh and Microsoft Windows graphical user interface operating systems in the 1980s and 1990s.



A screenshot of the YouTube video player interface. The video title is "The Mother of All Demos, presented by Douglas Engelbart (1968)". The channel name is "MarcelVEVO" with a subscriber count of 577. The video has 507,494 views. The interface includes a play button, a share button, and a "More" button.



# prototyping med barn



# bruk av prototyper i rollespill

*Buchenau & Fulton Suri*  
erfaringsprototyping – “body storming”

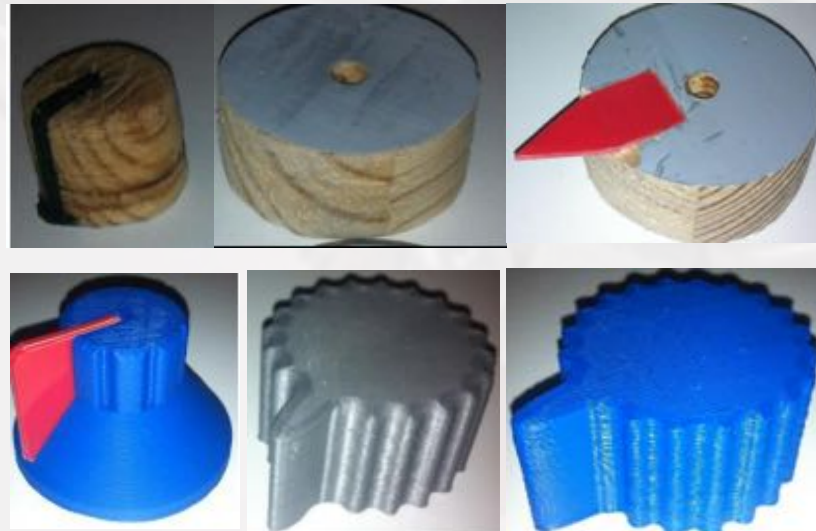


*Figure 15 The children's first meeting with the embodied representation of the CA*

*Julie Nilsen Hagen & Kristine Røyneland*  
“trollmannen fra Oz”

# prototyping med eldre

*Espen Johnssen m.fl. & Suhas Joshi*



*Rune Rosseland*



*Thomas Iversen & Suhas Joshi*

# prototyping med eldre

- en klar hensikt / funksjon
- materialutforskning gir ideer
- ønskelige og mulige løsninger

## The Role of Physical Prototyping in Participatory Design with Older Adults

An Exploration of Form and Materials in the Design of a Robot for Older Adults

Heidi Bråthen, Harald Maartmann-Moe, Trenton Schulz

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*Abstract*— How can older adults actively participate in the design processes of assistive robots designed for their homes? We have organized workshops with a group of older adults who worked actively with materials and physical prototyping to design a fetch robot for the home. We present the basics of the workshop materials, how the workshop was performed, and findings on the role of physical prototyping from the workshops.

*Keywords* — robots; human-robot interaction; physical prototyping; older adults; participatory design

### I. INTRODUCTION

Assistive technology, such as robots, is designed and implemented to help older, retired people to stay independently at home longer. In the Participatory Design tradition, one of the core values and points of origin is the ideal of democratic

learned from working with older adults through physical prototyping and material explorations before we conclude the paper in Section VI.

### II. RELATED WORK

Participants' limited in-depth knowledge of a design project [4] may make it difficult for them to gain an overview of the possibilities in the design domain, and hence challenging to be creative within the design problem. Joshi and Bratteteig [5] suggest that elderly users should be enabled to participate in mutual learning and co-construction activities on their own terms. They describe a successful mutual learning process as the possibility for both groups to extend their creative and imaginative capacity and build on each other's ideas to design concrete artefacts. To participate on their own terms, the participants should be able to express themselves in their own language, without having to adopt the professional tea



Figure 1. Workshop setup



Figure 3. A: "Burger" robot with a 3D printed "backpack" for demonstration, B: Antonella, C: Antonella, D: Brenna, E: Aimee, F: Anca, G: Agelica H: Bruno, I: Bruno, J: Basilio, K: Antonella, L: Antonella

# uavhengige prototyper

- så robust og høyoppløselig at den kan brukes av en bruker på egen hånd, hos brukeren eller i brukskonteksten, uten at designeren er tilstede

slik at brukerne kan prøve prototypen

- hjemme, i eget tempo og forme sine egne meninger
- over tid og ikke bare få et førsteinntrykk

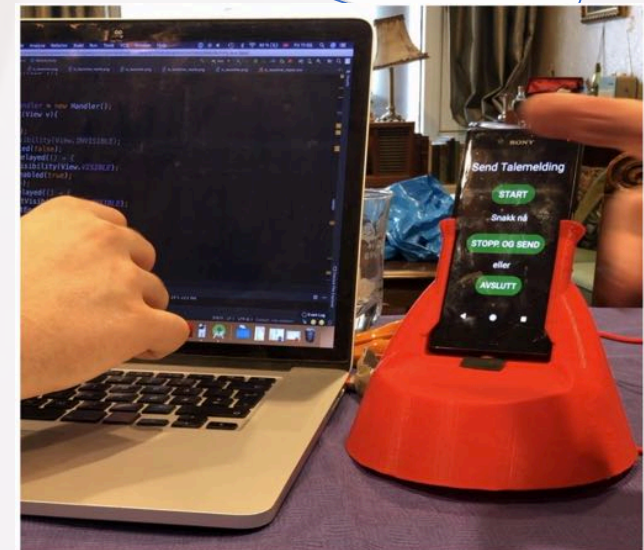
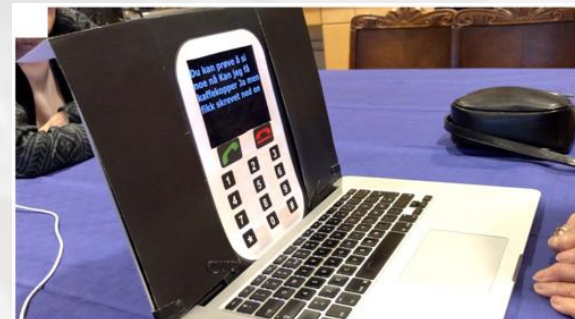
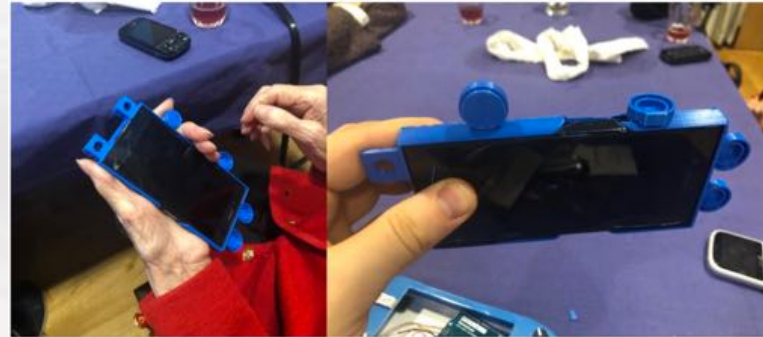
uavhengige prototype er tidkrevende, men gir god læring til alle



# uavhengige prototyper



*prototyper av  
Harald Maartmann-Moe*



# tips for prototyping

- lag mer enn én prototype til brukerne: da blir de eksempler & lager et idé-rom
- uferdige “kladder” gir inspirasjon til forbedringer og gjør det mulig for brukerne å delta i design-arbeidet



# presentasjon av prototyper

## in1060 obligatorisk presentasjon 2: prototyper

I denne obligatoriske gruppeoppgaven skal prosjektgruppene presentere en eller flere lav-oppløselige prototyper i gruppetimen i uke 17, mellom 25-28. april. Vi oppfordrer til å presentere mer enn én prototype.

Gruppelærerne lager en liste over hvilke prosjektgrupper som skal presentere når, som ved den første presentasjonen. Også her er det obligatorisk for alle å høre på alle presentasjonene fordi man lærer så mye ved å se og diskutere andre gruppers arbeid.

Presentasjonen skal vare maks. fem minutter og gi en veldig kort presentasjon av hva som er gjort i prosjektet til nå, ideene dere har kommet fram til, og hvordan de er forankret i undersøkelsene deres og hos brukerne. Bruk ca. halvparten av tiden til å presentere minst to lav-oppløselige prototyper (eventuelt skisser) der de to på ulike måter konkretiserer den design-ideen dere har identifisert som relevant for brukerne (eventuelt flere ideer om dere ikke har landet på én idé ennå).

### Presentasjonen skal inneholde

1. kort introduksjon om temaet og problemområdet dere har identifisert og hvordan dere kom frem til det
2. kort om hvilket konsept dere har kommet fram til og hvilket form-konsept har dere valgt (evt. visjon og målbilde). Hvorfor disse; hvordan er de forankret i undersøkelsene deres?

Legg mest vekt på å formidle:

3. minst to prototyper som konkretiserer konseptene
  - hvilke aspekter prototypen utforsker dere: rolle, form («look-and-feel») eller implementasjon?
  - eksempler på forskjellige konseptuelle, tekniske eller funksjonelle måter som kan brukes til å konkretisere samme idé

Prototypene skal presentere konseptene på en god og forståelig måte og ideelt sett gjøre det mulig for brukergruppen å evaluere dem.

Kort avslutning om:

4. eventuelle tekniske utfordringer med å utvikle en høyoppløselig prototype, og hvilken rolle Arduino har i denne. Litt om veien videre

**Lykke til!**

hensikt: å få feedback tidlig i prototypingen

## 1. presenter kort hvor langt dere har kommet

- hva handler prosjektet deres om?
- hvilke konsepter & formkonsepter har dere kommet fram til? Hvordan & hvorfor disse?

## 2. presenter minst 2 prototype som konkretiserer konseptene

- hvilke aspekter av prototype utforsker dere?
- hvilke andre ideer har dere til å konkretisere konseptene?

## 3. hvordan skal dere gå videre?

- eventuelle utfordringer (særlig tekniske utfordringer)