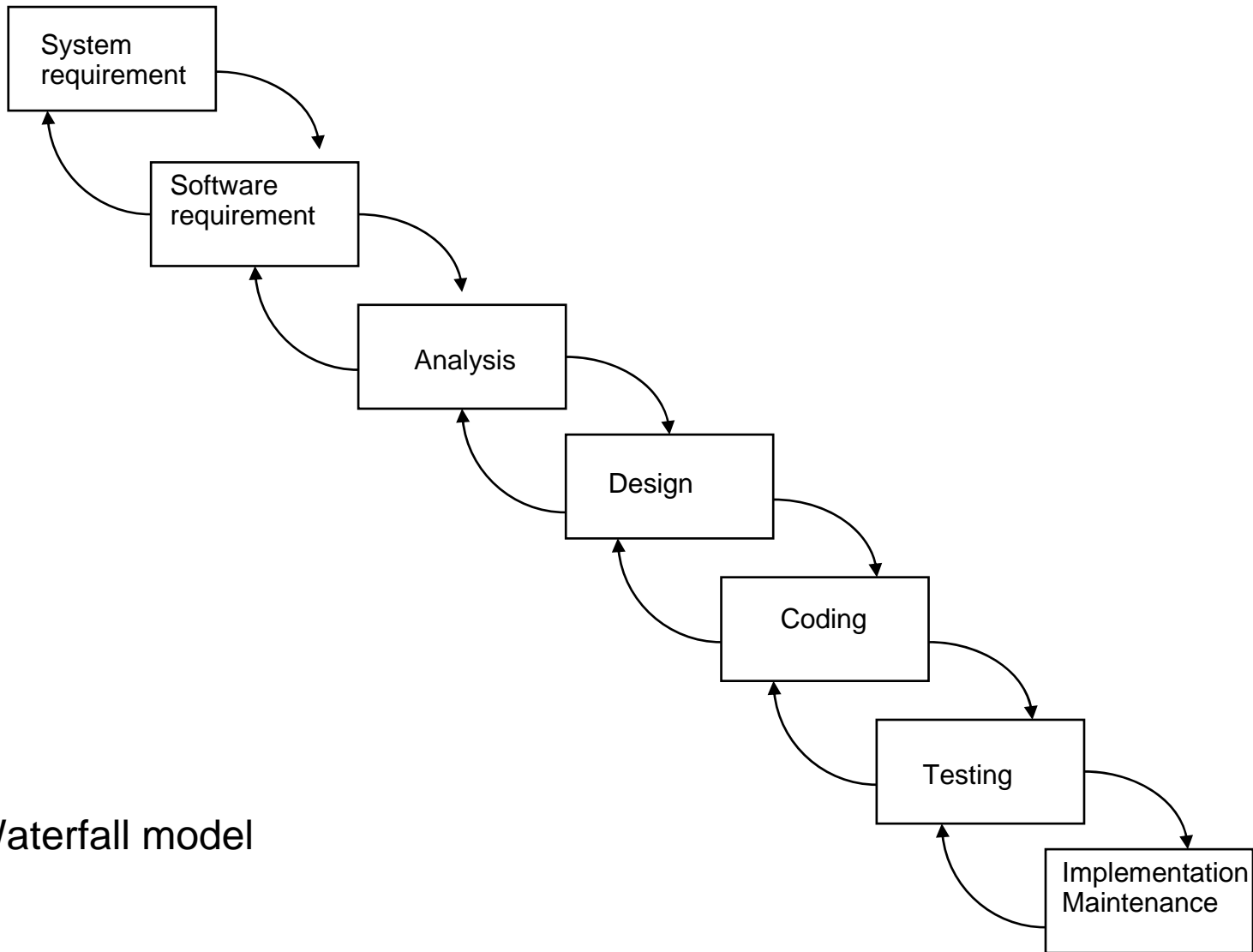# Design in Systems Development

Christina Mörtberg

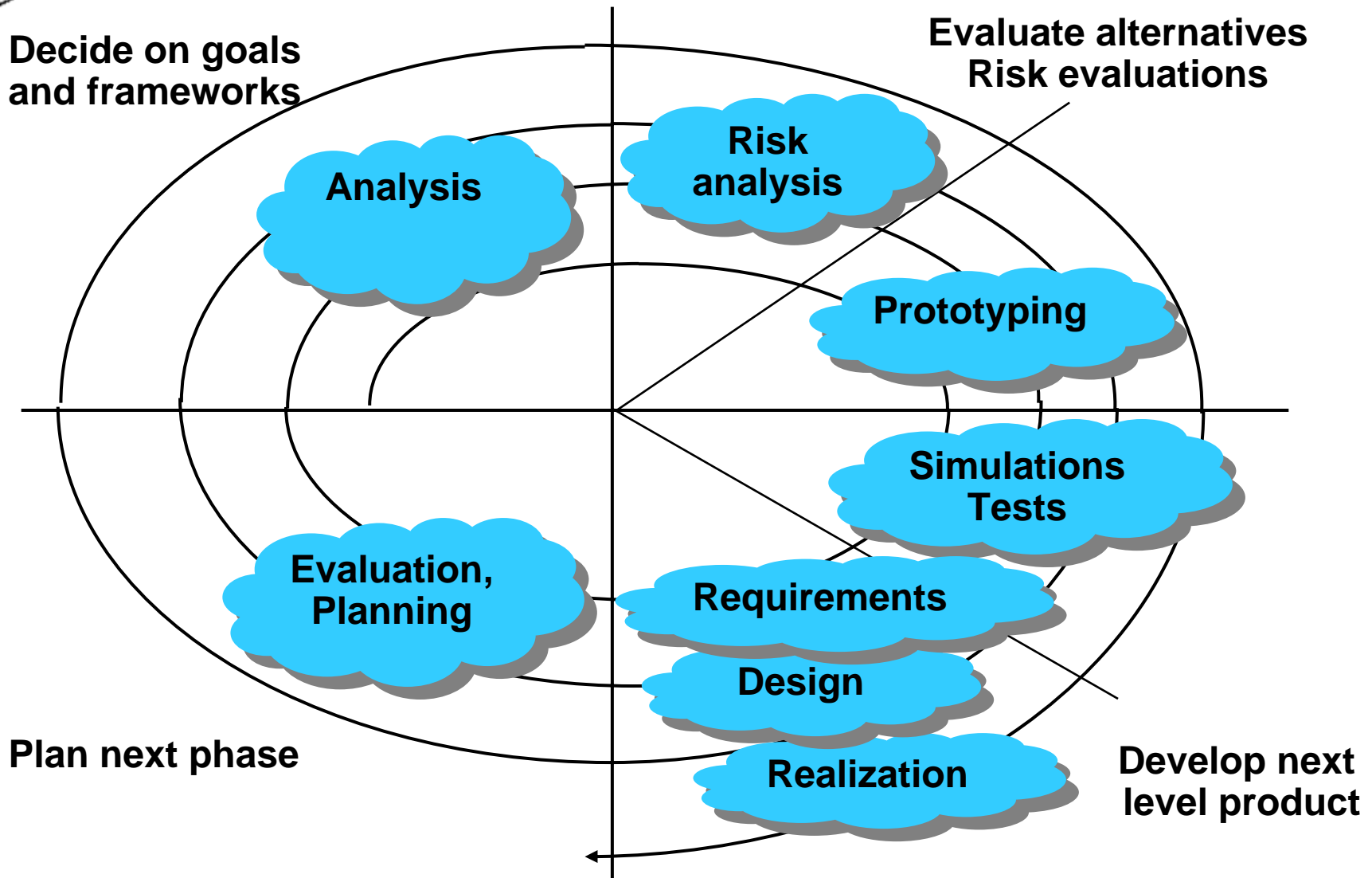# 2007-11-06

Löwgren & Stolterman, Winograd,
Bratteteig & Stolterman, Kyng & Greenbaum, Suchman
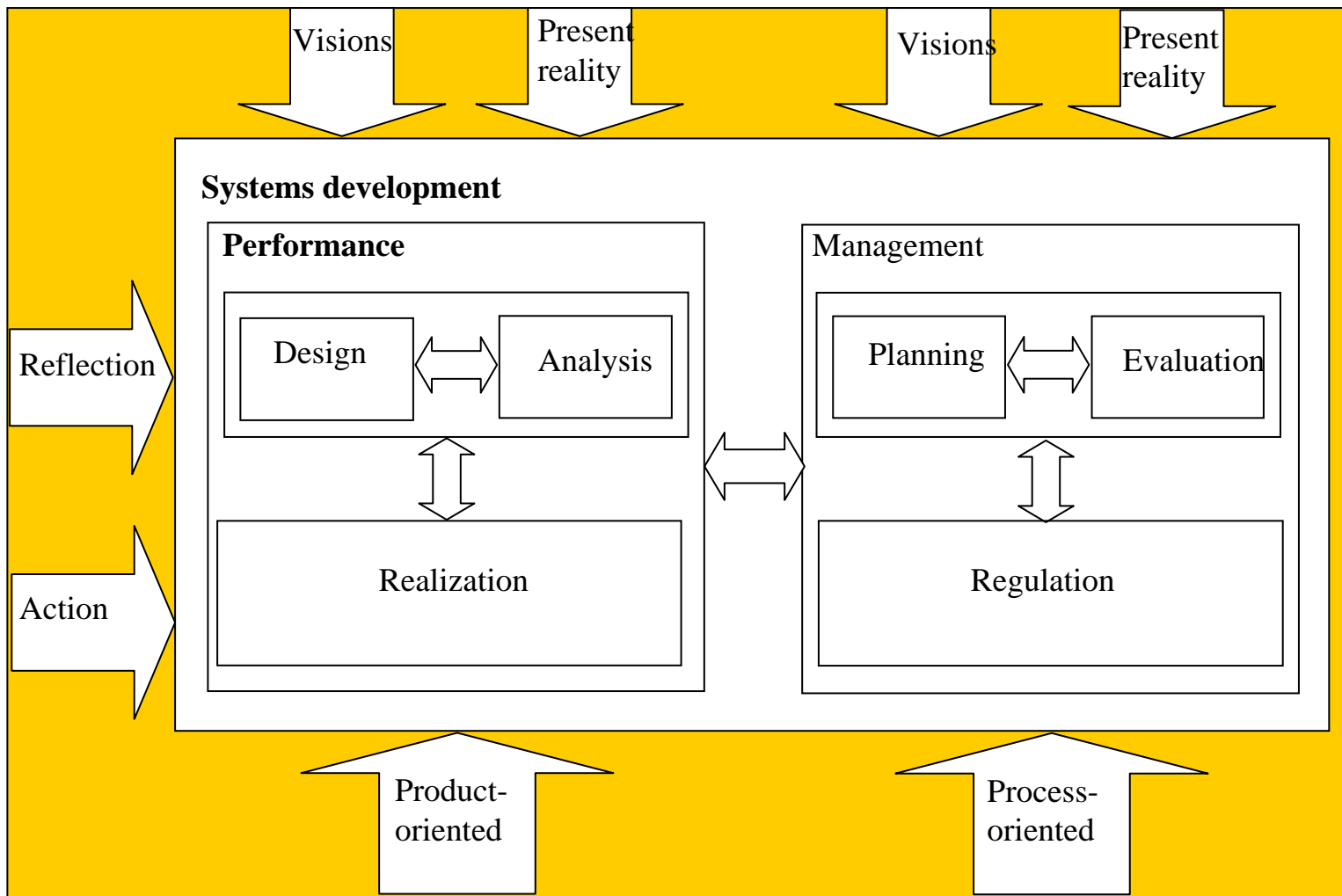
Waterfall model

System requirement → Software requirement → Analysis → Design → Coding → Testing → Implementation Maintenance

2

The spiral model (Boehm 1988)

Decide on goals and frameworks

Evaluate alternatives
Risk evaluations

Analysis

Risk analysis

Prototyping

Simulations Tests

Evaluation, Planning

Requirements

Design

Plan next phase

Realization

Develop next level product

Hva er systemutvikling 2?

Visions   Present reality   Visions   Present reality

Systems development

Performance   Management

Reflection

Design ⟷ Analysis   Planning ⟷ Evaluation

⟷

⟷

Realization   Regulation

Action

Product-oriented   Process-oriented

Oversikt over OOA&D

Krav til bruk

Analyse av anvendelses-området

Analyse av problem-området

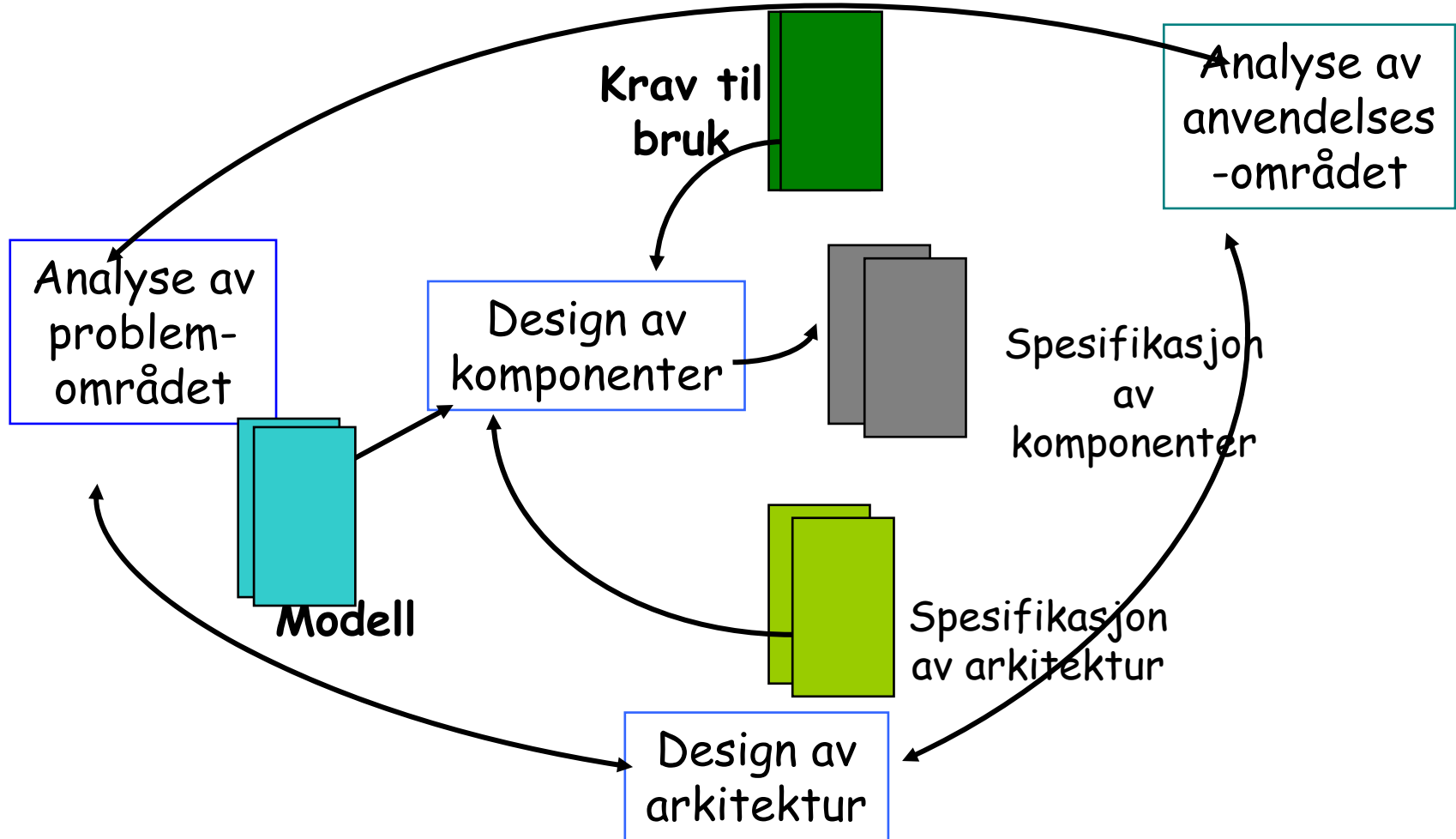Design av komponenter

Spesifikasjon av komponenter

Modell

Spesifikasjon av arkitektur

Design av arkitektur

What is design?

Design work consists of producing design representations in different modalities, scales and materials, and their constant transformation in a process of ongoing refinement and increased specificity. In order to be able to do that, designers typically have to mobilize resources from a diversity of disciplines and to enlist the cooperation of experts of all sorts.

Wagner, Ina lecture Oslo 2004.

Interaction design refers to the process that is arranged within existing resource constraints to create, shape, and decide all use-oriented qualities (structural, functional, ethical, and aesthetic) of a digital artifact for one or many clients

Löwgren & Stolterman (2005:44)

Software design sits at the crossroads of all the computer disciplines: hardware and software engineering, programming, human factors research, ergonomics. It is the study of the intersection of human, machine, and the various interfaces – physical, sensory, psychological – that connect them.
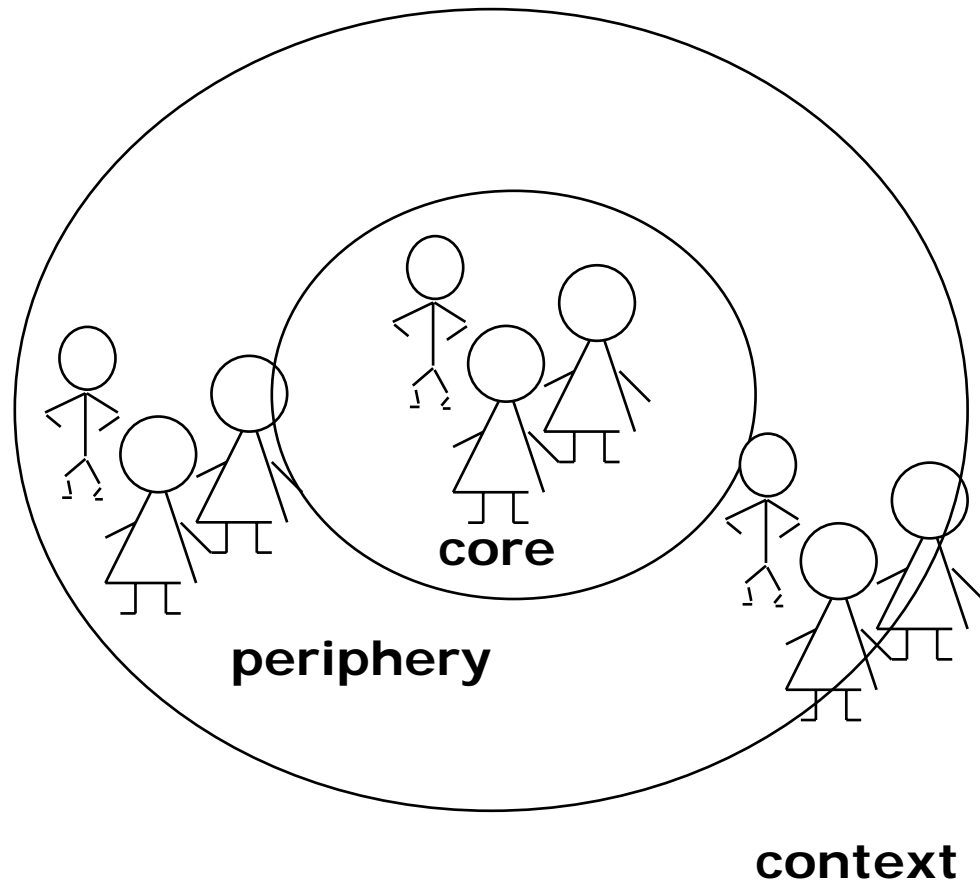
(Winograd 1996:xv)

A vision:

"appears very early, maybe too early: before you start thinking about any analysis you find yourself thinking about the final solution" [Stolterman, 91: 137 (our translation)].

(Bratteteig & Stolterman 1997:289)

core

periphery

context

Design from nowhere – (s-knows-that p)

IT systems are constructed from nowhere to everyone or the designers are seeing everyone but not seeing themselves

The developers are not aware of their own positions, activities, visions, dreams.

How the disciplines are organised separate use and design

Lucy Suchman (2002)

Detached intimacy
distance from the specific sites of technologies-in-use

intimate relations with their own professions and with the companies

Design from somewhere - extended set of working relations

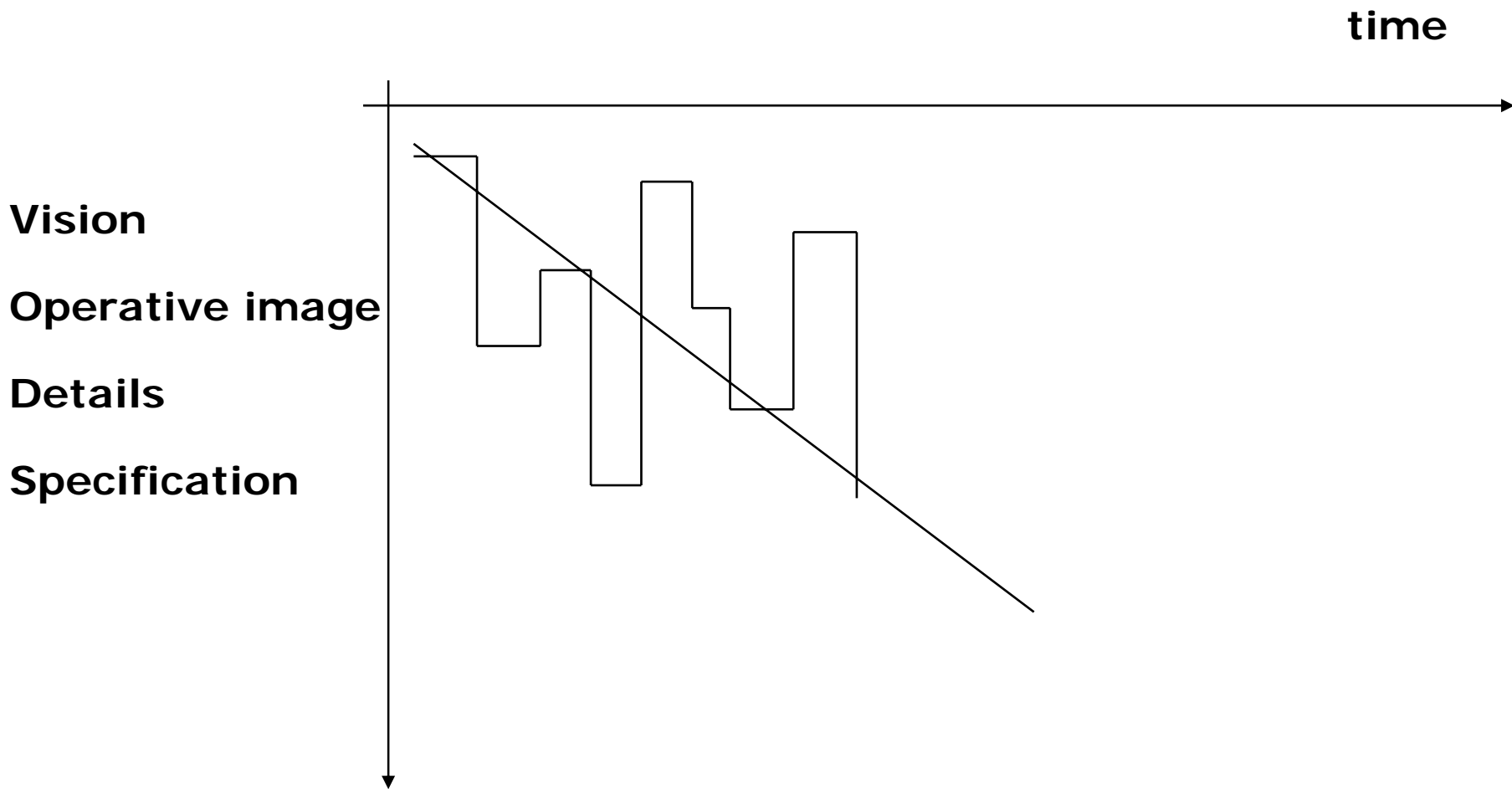Knowledge is partial, located and situated
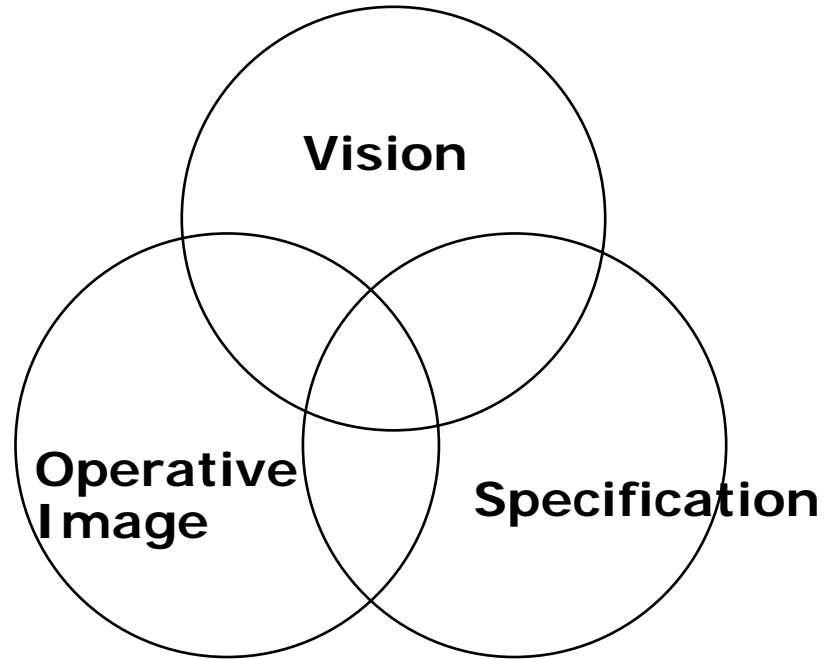
Lucy Suchman (2002)

Designer

Traditional approach	Cooperative approach
focus is on	*focus is on*
problems	situations and break-downs
information flow	social relationships
tasks	knowledge
describable skills	tacit skills
expert rules	mutual competencies
individuals	group interaction
rule-based procedures	experience-based procedures

Greenbaum & Kyng 1993

time

Vision

Operative image

Details

Specification

Löwgren & Stolterman 2005

Vision

Operative Image

Specification

Löwgren & Stolterman 2005

Oversikt over OOA&D

Krav til bruk

Analyse av anvendelses-området

Analyse av problem-området

Design av komponenter

Spesifikasjon av komponenter

Modell

Spesifikasjon av arkitektur

Design av arkitektur
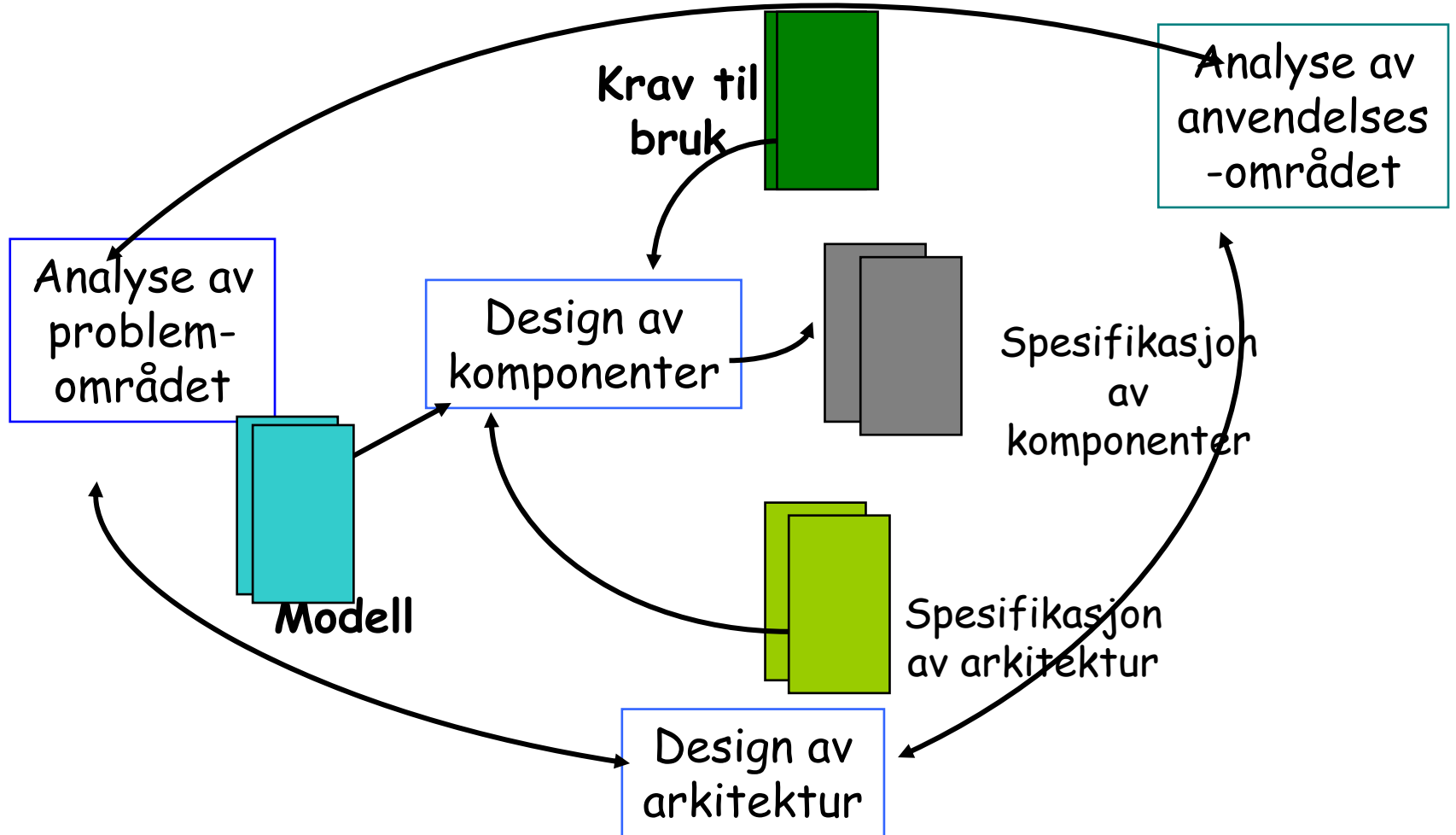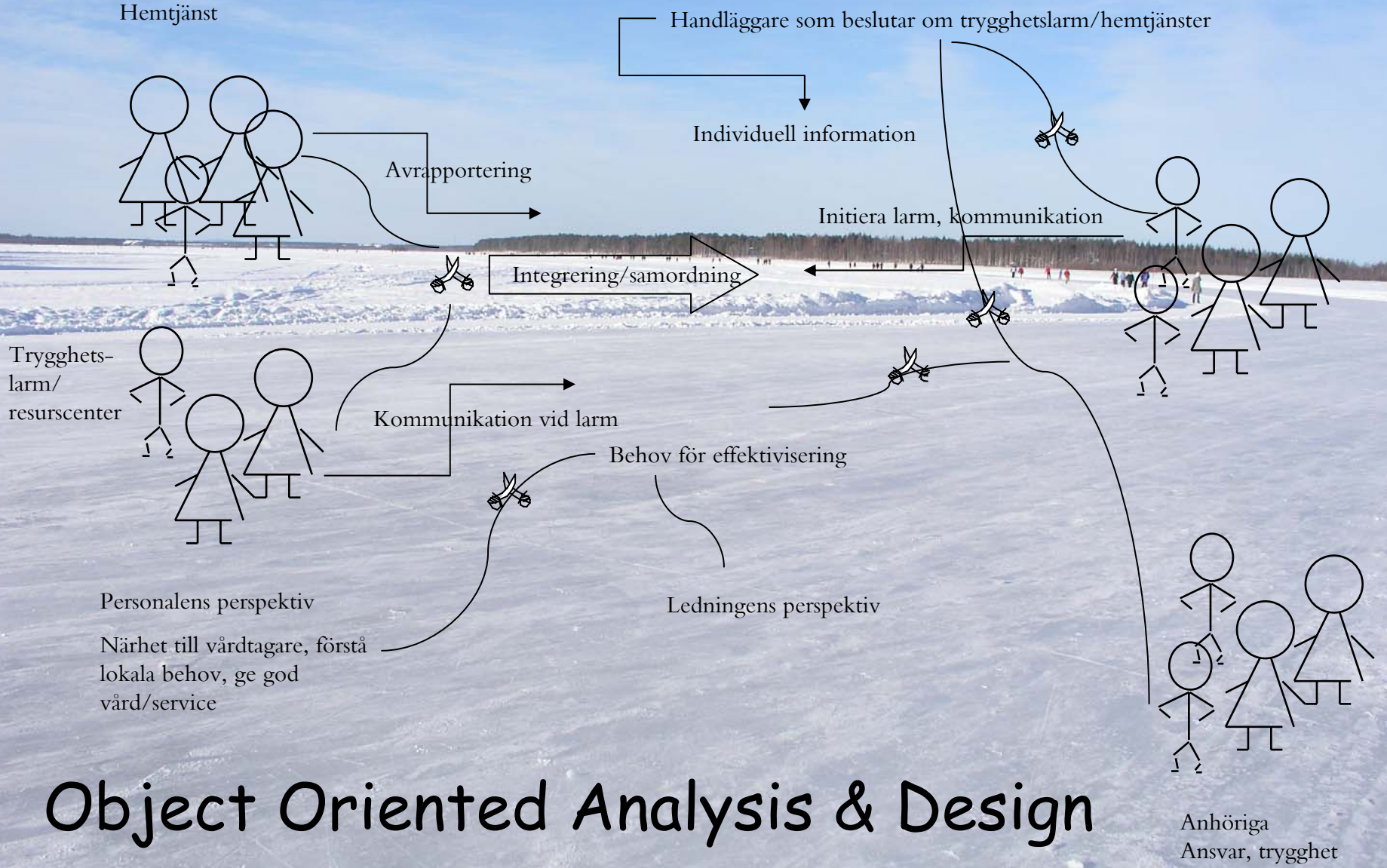
OOA & D

Rich Pictures

System Definition

FACTOR
(Functionality, applicatio domain, conditions,
 technology, object, resposibility)
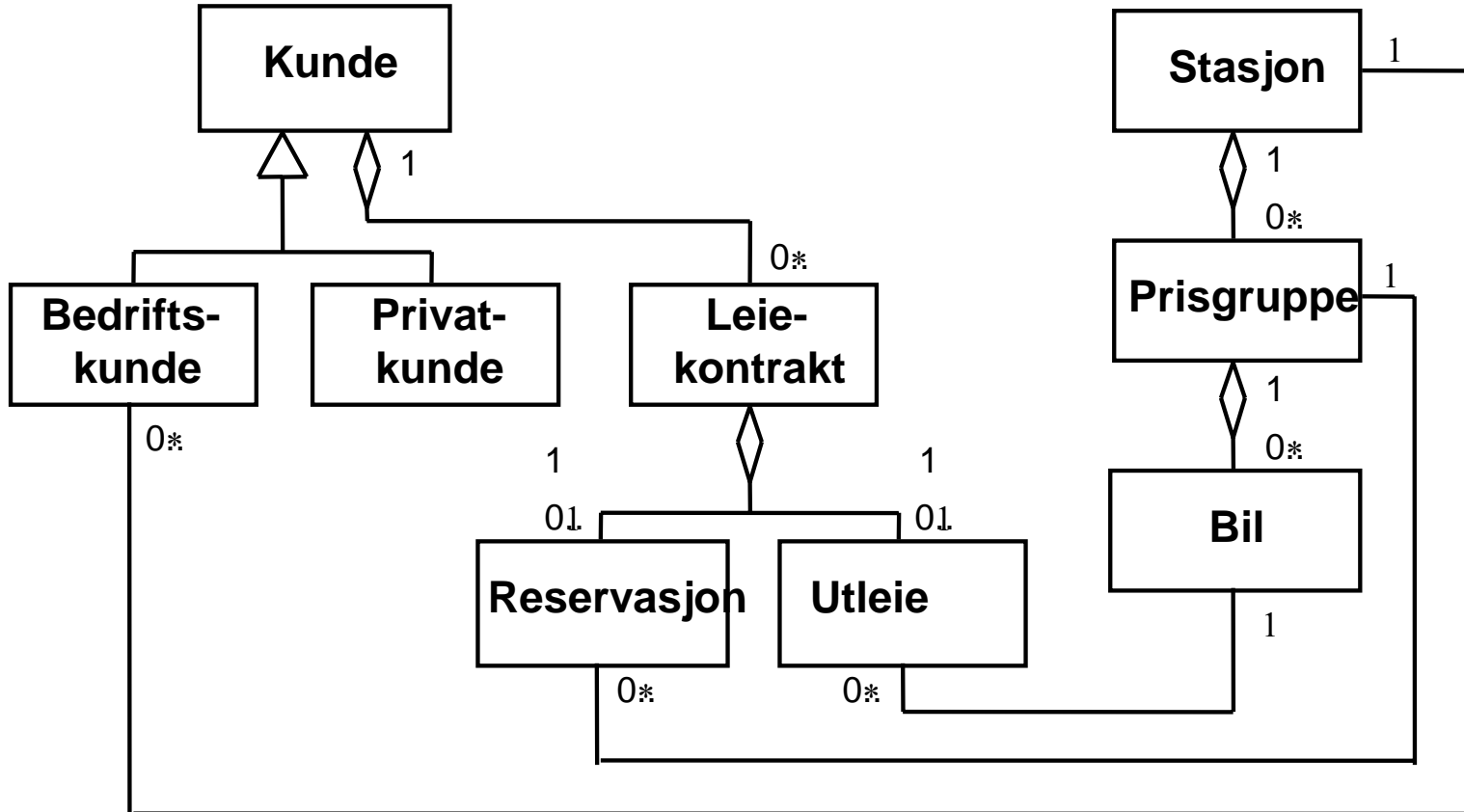
Problem-Domain Analysis

Application-Domain Analysis

(

Hemtjänst

Handläggare som beslutar om trygghetslarm/hemtjänster

Individuell information

Avrapportering

Initiera larm, kommunikation

Integrering/samordning

Trygghets-
larm/
resurscenter

Kommunikation vid larm

Behov för effektivisering

Personalens perspektiv

Ledningens perspektiv

Närhet till vårdtagare, förstå
lokala behov, ge god
vård/service

Object Oriented Analysis & Design

Anhöriga
Ansvar, trygghet

Photo: Tomas Stefansson, Christina Mörtberg and Pirjo Elovaara
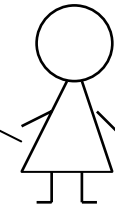
The Glit Project

Klassediagram

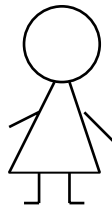# Use-case diagram - example

Care assistants

Civil servants

Register, update, delete user/care taker

Download information about the user

Report performed services

Alarm staff

User/care taker

Activate alarm

Monitoring

Communication

Establish communication channel

Mobile system

Present information