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## Health-related research to improve working environment and patient safety (presentation)

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# Health-related research to improve working environment and patient safety

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Gerd Johansson, Department of Design Sciences, Lund University



# Department of Design Sciences



- Faculty of Engineering
- 110 co-workers
- Competence areas:
  - Ergonomics, Innovation,
  - Rehabilitation Engineering , Logistics,
  - Construction and Design
- Research platforms
  - Health design – future healthcare from a proactive perspective
  - Aging and design





Britt Östlund



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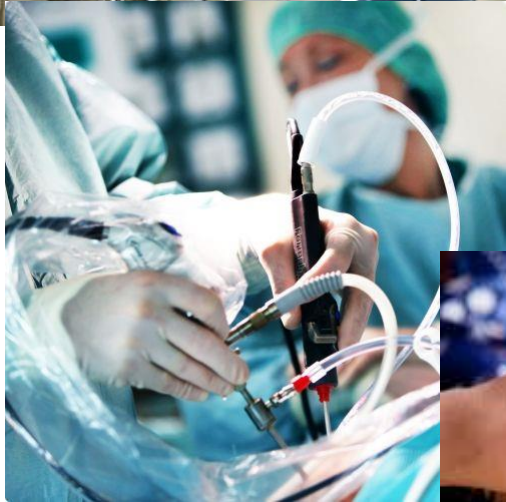


# Trends in today's healthcare

- Increasingly specialised and fragmented
- Focus on diagnosing and the problems that need to be treated
- The individual (patient) passive recipient
- Holistic perspective forgotten



# Cure and care



# The healthy healthcare

- Decrease of medical injuries
- The patient continue a normal and active life
- Patient participation – get involved and take responsibility
- A good working environment



# Decrease of medical injuries

- Spread of infections through air
- Slips and falls
- Drug-related injuries

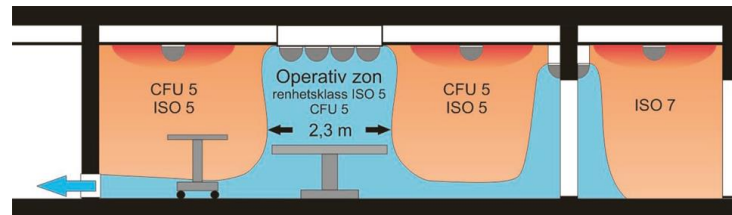




# Spread of infections through air

Investigation of infectious material in operating theatres during surgery.

Development of ventilation for operating theatres.



Studies of airborne dispersal of airborne bacteria and other biological material.

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# High risk medications



- Cytotoxic drugs used in error
  - Dosing errors, mix-ups of drugs and patients
- A national web-based encyclopaedia for cancer treatment is created
  - Proactive; updated, correct information available
  - Both for health professionals and patients

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# OpDesign: Project design



## 1. Past

**Interview study regarding work facilitated by visualization**

## 2. Present

**Video observation of actual work.**

**Study of ergonomics for reducing the prevention of musculoskeletal disorders**

**Study of visual ergonomics**

**Airborne infectious material in operating theatres**

## 3. ...Future

**Group for innovation and change**

**Optimization of lighting for operating theatres**

**Proposed solutions around musculoskeletal disorders**



# Video observations of 27 surgical procedures



- Study of the practical use of the WHO pre-operative surgical safety checklist
- Distributed leadership in the operating room

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# Musculoskeletal disorders

- Survey of physical and psychosocial load and health
- Preventive solutions



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# Visual Ergonomics



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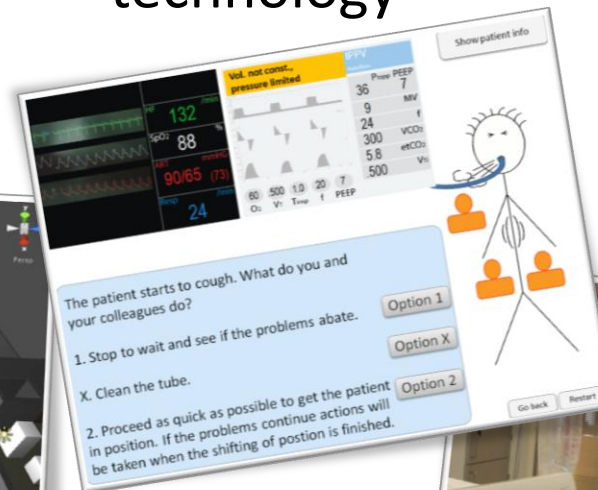
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# Interactive visualization in advanced health care for learning, planning and participation

Visualization as a tool for user involvement and planning



Interactive learning tools for training interaction between practitioners and medical technology



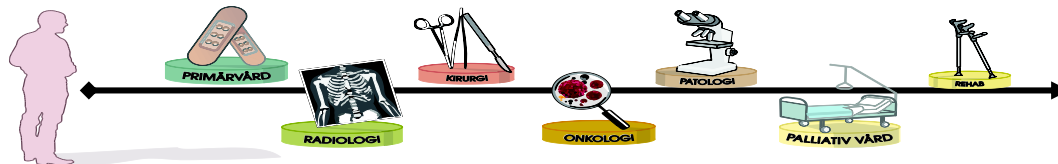
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Gerd Johansson ([gerd.johansson@design.lth.se](mailto:gerd.johansson@design.lth.se))

# Patient process oriented health care

A research program focusing the patient's journey from first insight of health issue to being treated.

- Empirically focused on cancer care
- Involves patients and multi-professional teams from 5 hospitals
- A design science approach and teoretically based on complexity theory, logistics and innovation.



Contact. Fredrik Nilsson ([fredrik.nilsson@plog.lth.se](mailto:fredrik.nilsson@plog.lth.se))



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# Deployment of Online Medical records and E-health services – DOME



**Aim:**

To produce and disseminate knowledge about the adoption and use of medical records online and other eHealth services aiming at benefits for both patients and healthcare.

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# Robot technology for older people



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## EU-projects

### GiraffPlus:

Trying robot technology, to support senior citizen's communication needs, safety and security, and to facilitate early detection of health changes.

### HOBBIT:

To identify what kind of help older people would like from a robot and then develop a robot that can enable them to continue living and functioning in their homes.

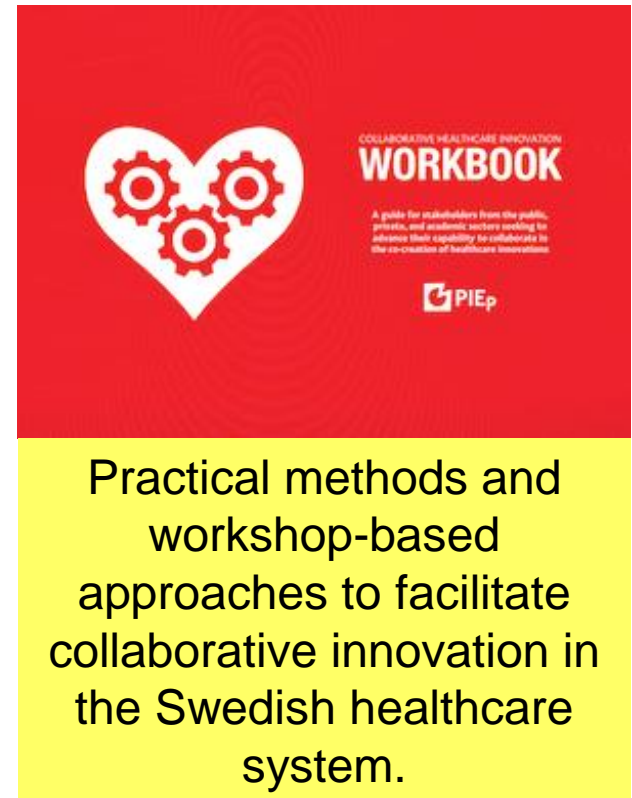


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# InnoPlant

- Part of the project Product Innovation Engineering program (PIEp),
- Overall purpose: To increase knowledge on forms of collaboration leading to enhanced innovation capability in healthcare innovation.
- Collaborative research: Mixing representatives from the private, public and academic sectors

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(andreas.larsson@design.lth.se)



<http://www.piep.se/forskning/projekt/innoplant>



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# New projects starting autumn 2013

- The impact of e-Health services on healthcare professionals' working environment (Uppsala University)
- Is teamwork the key to a better work environment for physicians in health care? (Karolinska institute)
- Study of lightning in an operating theatre during minimally invasive surgery



[www.design.lth.se](http://www.design.lth.se)



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