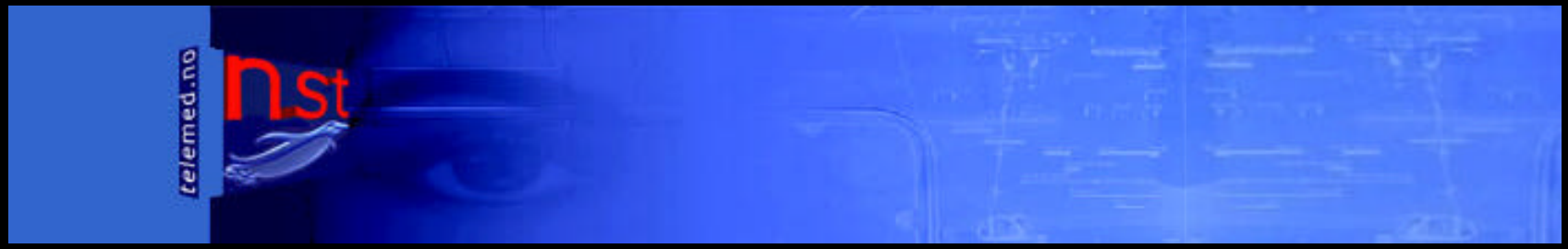

”In-the-Field” Health Informatics

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”In-the-field”

- Human – human relations
- User focus on other tasks than using a mobile information system

”In-the-field”

- Tasks
- Procedures
- Formal information
- Informal Information
- Documentation
- Co-ordination
- Collaboration

Communication

The story of Nurse Lars

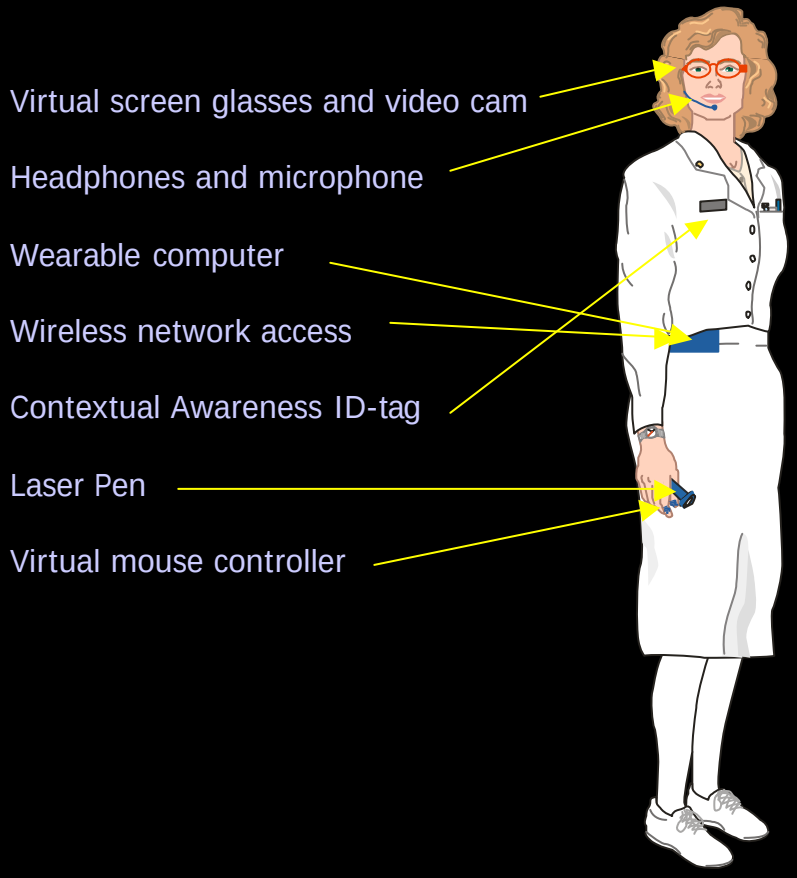
The Norwegian Centre for Telemedicine

- Non-profit part of Norwegian public healthcare
- R&D on Telemedicine and Heath Informatics
- Multi disciplinary (approx 30% technology, 50% social sciences, 20% health)
- Funded 75% by Department of Health, 25% by research funds (Norwegian, Nordic and EU)
- Almost 100 people (65 man years)

Telemedicine and Health Informatics

- A way to **organise** healthcare services
  - By use of technology
  - Independent of
    - Distance
    - (Time)

The CyberNINA Concept



- Created in 1997
- Wearable computing
- Wireless networks
- Personal networks
- Augmented Reality
- Contextual Awareness
- Collaboration
- Information sharing

Research Methods

- “Apprenticing”
- Brainstorm sessions
- Workshops
- Storytelling

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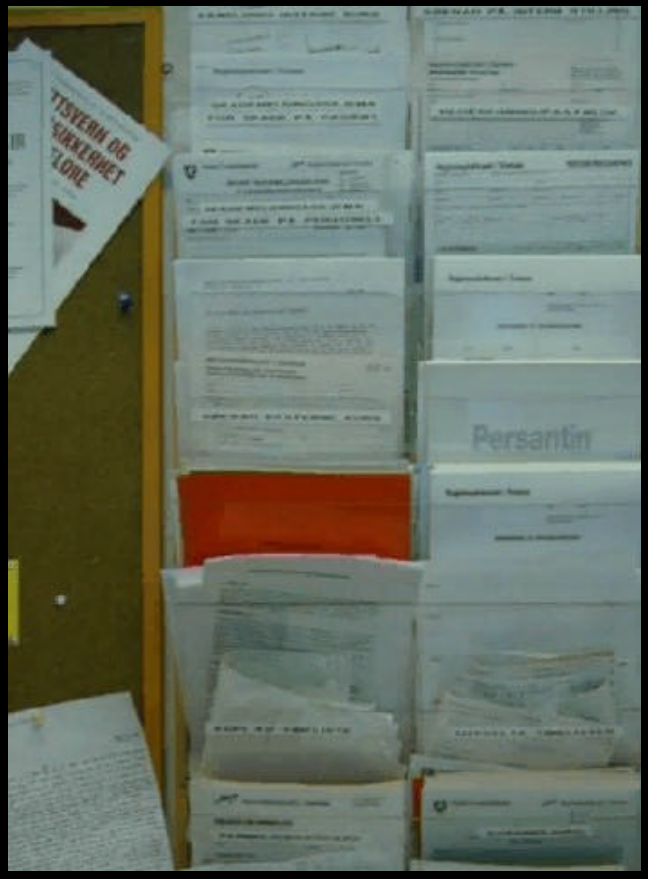
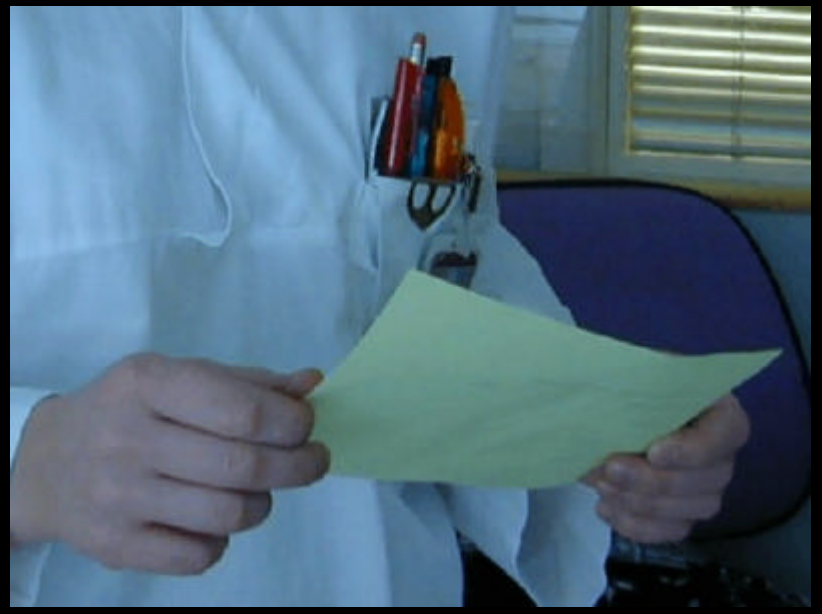
nst





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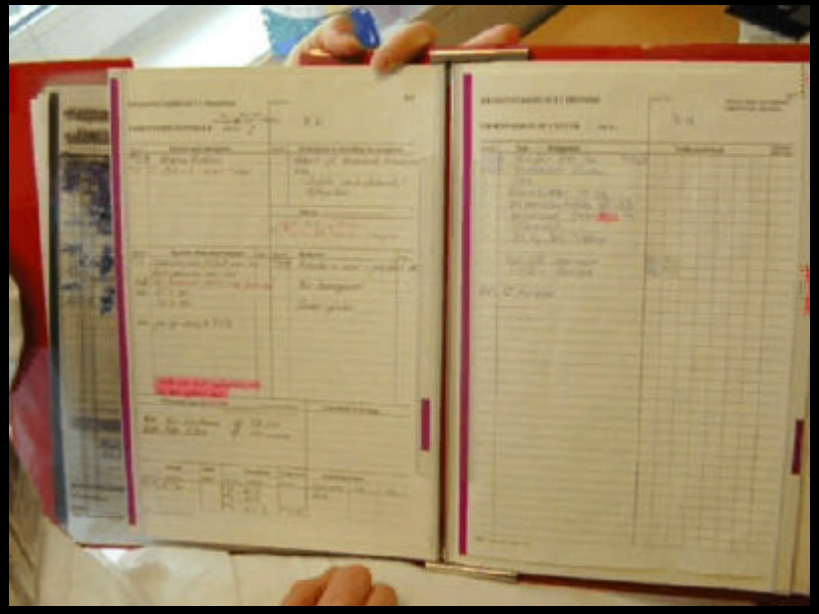

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Is there an interest in mobile computing?

- Wireless LAN covering entire department
- 2 Portable PC's
- Access to all hospital information services
  - Laboratory
  - Radiology
  - Electronic Patient Record
- Used for pre-visit meetings
- Used by some during visiting rounds

Whiteboard

Hans Hansen
Per Pedersen
Olav Olavsen
Petra Persen
Markus Markussen
Trond Trondsen
Kari Karlstuen
KORK
NYE
Sonja!
Hildegunn - 44
Vigdis
LISS

Whiteboard on PDA – Patient list

Hovedmeny Registrer ny pasient

Ansvarsvakt: Laura Oppdatert:2/4 0:52

Sted	Navn	Diag	Opr	S	E
12--1	Holmestad, Gro			-	-
12--1	Fjeld, Jonas	Caro		-	-
12--2	Hansen, Teodor	clau		-	-
14	Hansen, Frode	Caro	Lobe	-	x
14	Egil, Bare			-	-
17--2	Nordheim, Sondr			-	-
17--4	Zahl, Tore	AP	ACB	-	-
19--1	Rekvik, Roar	Caro	PTA	x	x
19--1	Heltberg, Hilde	Vari	ACB	-	-
22--3	Krogrygg, Inge	Gang	Y-gr	-	-
87--1	Barnikov, Fjodo	AP		-	-
87--2	Frosk, Frode	Vari	Thor	-	-
88	Brumm, Ole	AP	ACB	-	-
88	Tønne, Tore	AP	Lobe	-	-

- List of patients
- Sted = Location
- Navn = Name
- Diag = Diagnosis
- Opr = Surgery procedure
- S = Nurse report
- E = Resume

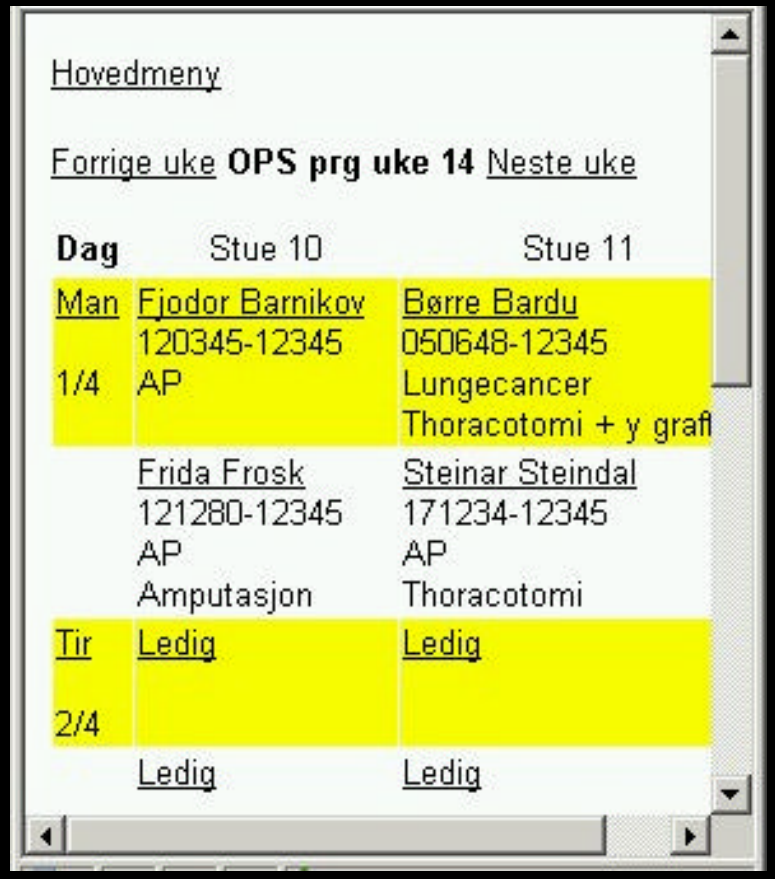
Patient information

Pasientliste Hovedmeny Slett

Navn	Rekvik, Roar		Endre
PersNum	050541-12345		Endre
Diagnose	Carotis stenose	15/2	Endre
Opr	PTA	14/3	Endre
Status	frisk som en fisk		Endre
Isolasjon	Barrieresmitte		Endre
Sted	19--1		Endre
US/dato	spirometri kl. 12:00	14/3	Endre NY
	rtg thorax kl. 22:00	22/3	Endre
CAVE	ACB + Thorax + ØNH		Endre
R-dato	Kurbadet kl.09:00	29/3	Endre
Ø-hjelp	NEI	Faster	NEI
Epikrise	JA	Spldok	JA
Pleier	Gunda 33-156		Endre

Pasientliste Hovedmeny Slett

Surgery Schedule



Hovedmeny

Forrige uke **OPS prg uke 14** Neste uke

Dag	Stue 10	Stue 11
Man 1/4	Fjodor Barnikov 120345-12345 AP	Børre Bardu 050648-12345 Lungecancer Thoracotomi + y grafl
	Frida Frosk 121280-12345 AP Amputasjon	Steinar Steindal 171234-12345 AP Thoracotomi
Tir 2/4	Ledig	Ledig
	Ledig	Ledig

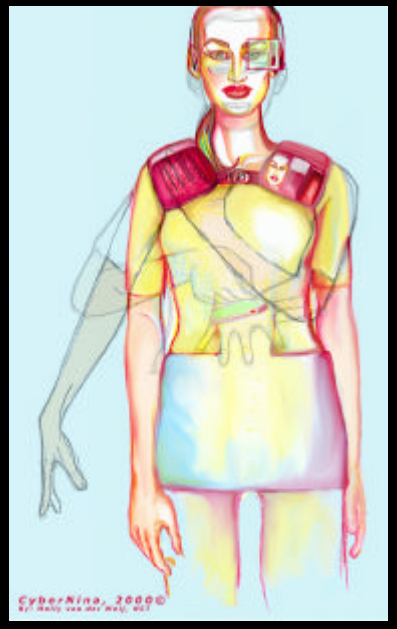
System overview

- Servers: MS NT, MS IIS, MS SQL Server
- Application: Active Server Pages
- Plasma screen: 40”
- Wireless LAN: IEEE 802.11b, Orinoco WaveLAN
- PDA: 18 x Compaq iPaq w. backpack for PCMCIA card (Wireless LAN)
- PC: Connected to Plasma screen + access to all hospital information systems
- PDA User accounts do not have access to other hospital information systems

Other issues

- Will we need formal meetings when less time is spent chatting?
  - Should we design in coffee bars?
- Users and non-users?
- Concern of health risk
- Flexibility vs. standardisation

Smart Wear



- Design project
  - Finished at end 2001
- Plastic models of best 2 – 3
  - Fall 2002
- Next step?

...*almost* there...

- Battery lifetime
- Security
- Weight
- Integration with installed base
- Must be possible to sterilise device
- R&D ⇒ commercial product!?!?
- TRUST between co-workers on the net

Mobile applications in Nordic Healthcare

- A number of projects
  - (5-10 in Norway)
  - PDA
  - Mobile phones
  - PC Tablets
- Projects
  - Local Enthusiast
  - Commercial
  - Organisation
- Databases
  - Procedures
  - Medication
- Documentation
  - e Patient Records
  - e Order & Reply
- Communication/ collaboration
  - Telemedicine
  - Emergency
  - Lab
- “Paperless Hospitals”

Projects

- Secure communication: MUNIN project (Thales)
- Telenor: Pre-UMTS network in Alta, homecare nursing
- RiT2000: New hospital in Trondheim
- Finland: Access to radiology via Nokia Communicator
- Emergency Medicine: Logistics, resource management, overview of scene, medical info (ECG, Identity, etc.)
- Marine Telemedicine: WLAN+mobile computers on boat, Satellite WAN

Thank you!

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