

Cwi.unik.no/wiki/UNIK4700

Josef Noll <sup>cal. jnoll.net</sup> ↪ Video conference  
m: 9083 8066

Ali Zaher  
JOHAN TRESVIG

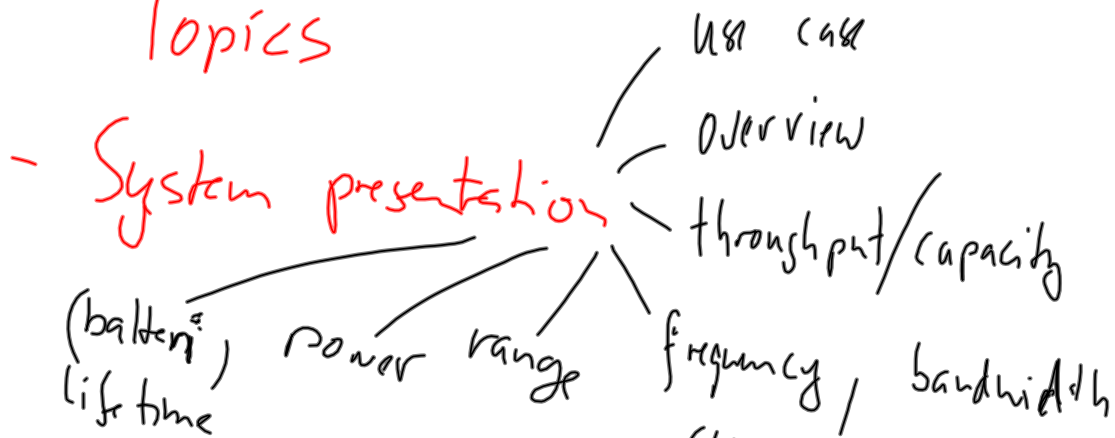
Dag Ole Eggum

SUSANA RODRIGUEZ DE NOVOA

Thomas Aasebø

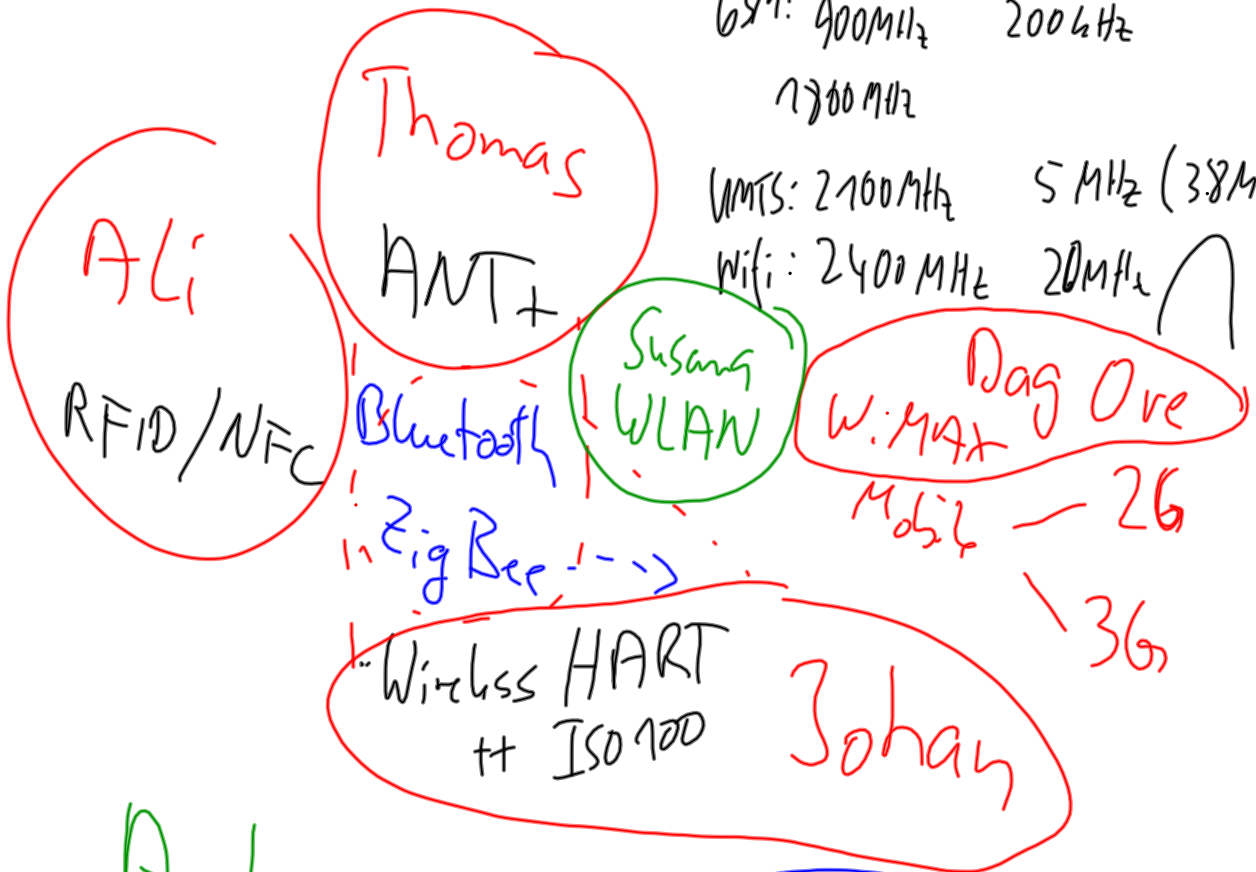
Joachim Tingvold

# Topics

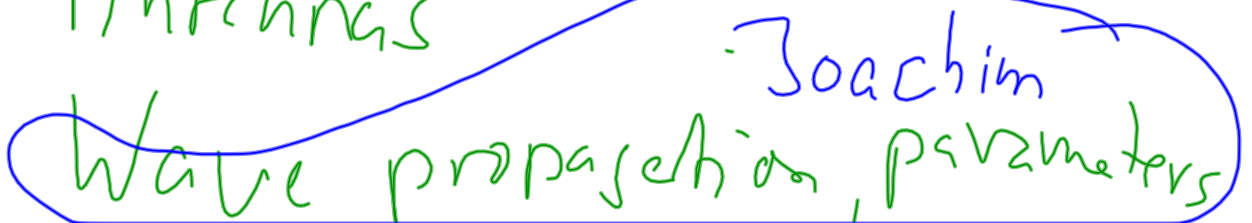


UMTS: 2100MHz 5MHz (3.8MHz)

WIFI: 2400MHz 20MHz



## Antennas



UNIK4700 - CWI

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The course material is still presented at [wiki.unik.no, Courses, UNIK4700](http://wiki.unik.no, Courses, UNIK4700)

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  - 3.1 Radio
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**Antennas Radio Shannon Mobile Systems Mobility Gain Propagation Models** Scattering Diffraction Reflection Propagation equation Transmit power Reflection, Scattering and Diffraction in Propagation MobileIPv6 Bandwidth Propagation UNIK4700-Introduction Capacity MobileIP **UNIK4700** Free space attenuation UMTS Radio propagation for mobile and wireless communications Basics of Communication, TDMA, CDMA CDMA FDMA Directivity Radiation pattern Antennas and their communication parameters Beamwidth

## Info [edit]

- This course is a Master course (UNIK4700) Radio and Mobility
- List of Participants: UNIK4700H12Participants
- The course takes place on fridays, 0900-1200h at UNIK. A video communication is available to lfi, Room Scheme@lfi.UiO.no (room 1251).

## Lectures overview [edit]

	Date
Propagation models for mobile communications	5 October 2012
Reflection, Scattering and Diffraction in Propagation	28 September 2012
Radio propagation for mobile and wireless communications	21 September 2012
Antennas and their communication parameters	14 September 2012
Basics of Communication, TDMA, CDMA	7 September 2012
UNIK4700-Introduction	31 August 2012

To add new lectures, use: [Add a lecture](#)

## References [edit]

### Radio [edit]

- Relation between transmitted effect and received power of an antenna: Barry McLarnon - <http://www.tapr.org/ve3jf.dcc97.html>

### Security [edit]

UNIK4700 - CWI Innovation and Entrepreneurship  
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**Propagation Models Mobile Systems Shannon**  
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**References** [edit]

**Radio** [edit]

- Relation between transmitted effect and received power of an antenna: Barry McLarnon - <http://www.tapr.org/ve3jf.dcc97.html>

**Security** [edit]

Books related to security:

- "UMTS Security" - Gunther Horn, Dan Forsberg, Wolf-Dietrich Moeller, Valtteri Niemi, Wiley  
 ri Niemi. Kaisa Nvbera. Wiley

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## UNIK4700-Introduction

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<b>Course</b>	UNIK4700
<b>Title</b>	Introduction
<b>Lecture date</b>	2012/08/31
<b>Lecturer(s), (users)</b>	Josef Noll
<b>Objective</b>	<p>This lecture provides an introduction to the topic. It will address</p> <ul style="list-style-type: none"> <li>Radio</li> <li>Systems</li> <li>Mobility</li> </ul> <p>The lecture will also include details on the expected outcome, the deliverables and the (optional) exam</p>
<b>Learning outcomes</b>	<p>Having joined this lecture, you will</p> <ul style="list-style-type: none"> <li>have an impression on where to focus</li> <li>have an impression on the topics being discussed in this course</li> <li>get an impression on what is expected from you in terms of deliverables (presentation, papers)</li> <li>understand how to search for literature on IEEE and ACM</li> </ul>
<b>Pensum (read before)</b>	<p>[[Pensum::You should have registered for this course :-)]</p> <p>Please read also how to search for literature: <a href="#">Search_for_literature</a>]]</p>
<b>References (further info)</b>	
<b>Keywords</b>	Radio, Mobility, Mobile Systems

*this page was created by Special:FormEdit/Lecture, and can be edited by Special:FormEdit/Lecture/UNIK4700-Introduction*

Categories: UNIK4700 | Lecture

**Main**

- CWI Norway
- List of Theses
- List of Courses
- Help
- MediaWiki FAQ
- Semantic Wiki help

**Forms (create or edit)**

- Add User
- Add ActionItem
- Add Meeting
- Add Master-Thesis
- Add a paper
- Add a lecture
- Add Course
- Project Proposal
- Create a Project
- Add Task
- Add Organisation
- Interested in PhD?

**External links**

- UNIK wiki
- pSHIELD internal
- JBV project
- UNIK home page
- old Wiki

**Support Forms**

- Bug Innobars
- Bug Yeboo

**Toolbox**

- What links here
- Related changes
- Upload file

*Handwritten notes:*

- Focus:** Radio Systems
- Topics:** Mobility, Capacity
- Expectations:** - own work, - presentation, - programming
- Literature** (circled)

For next week

- Topics  $\leftrightarrow$  names

- Literature  $\rightarrow$  5-7 articles / full  
book/chapters - Titles  
abstract

Search for literature - CWI x Innovation and Entrepren... Move succeeded - CWI x Susana Rodriguez de Nov...

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## Search for literature

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Search

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### How to search for literature at UiO [edit]

- assume that you have a user account at UiO
- remember to register your publication in *Cristin* (old *Frida*)

### Library sites [edit]

you have full access to all these sites if you have the UiO VPN up and running. Mac: vpnclient

- <http://ieeexplore.ieee.org> IEEE explorer
- <http://www.springerlink.com/home/main.mpx> Springer Link
- in case that you don't see University of Oslo, close browser and open again*
- <http://www.sciencedirect.com/> ScienceDirect
- <http://portal.acm.org> ACM
- electronic books (ebooks): <http://www.netlibrary.com> - remember to have Cisco VPN up and to create an own account, MAC: need to activate "internal pdf reading" in case of Firefox. Safari works (and Automator: sort files, combine pdf generates one pdf output)
- you can also start with <http://scholar.google.no/>

Nye tidsskrifthefter kan leses på nett, her er oversikt over de ferske: <http://www.ub.uio.no/umn/inf/periodika/nyeeltid.html>

Pensumbøker til Akademika, **UB har kjøpt tilgang til Springer e-books** <http://springerlink.metapress.com/books/?Language=English&sortorder=asc&cb=> - [[see more details on UiO-eBooks -> UiOeBooks]]

### Set up VPN [edit]

- Latest information from UiO on VPN connectivity**: <http://www.unik.no/drift/english/> -> remotely, alternatively directly to UiO: <https://www.uio.no/tjenester/it/nett/utenfra/vpn/>
- vpn through browser: WebVPN-løsningen <https://vpn.uio.no>

Category: HowTo

*Handwritten notes:*  
 boogle scholar  
 Microsoft Academics  
 ↓ keywords  
 ↓ articles  
 abstract  
 yes no  
 redefine keywords  
 → UiO account

springerlink.metapress.com/books/?Language=English&sortorder=asc&cb=

Radio

Wireless Networks

Multi-roll radio

Wimax @ 3.5 GHz // forest

Satellite comm. systems

Mobile

2G-3G...LTE

range

0-20 cm

--- 1m

--- 10/100m

1.5/15 km

RFID/NFC

Bluetooth

WLAN

W:MAX

ZigBee --->

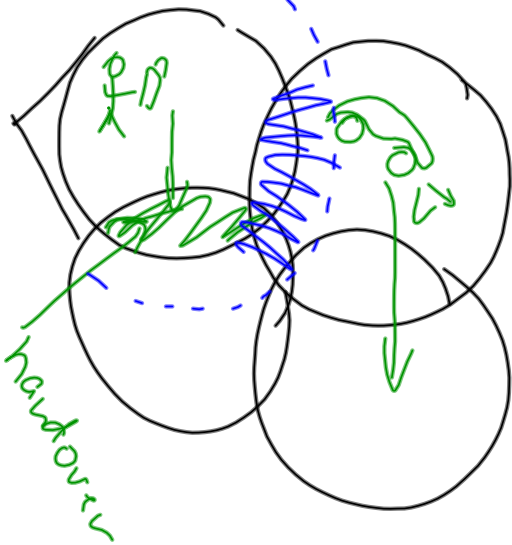
Mobile

Wireless HART  
+ ISO 15700



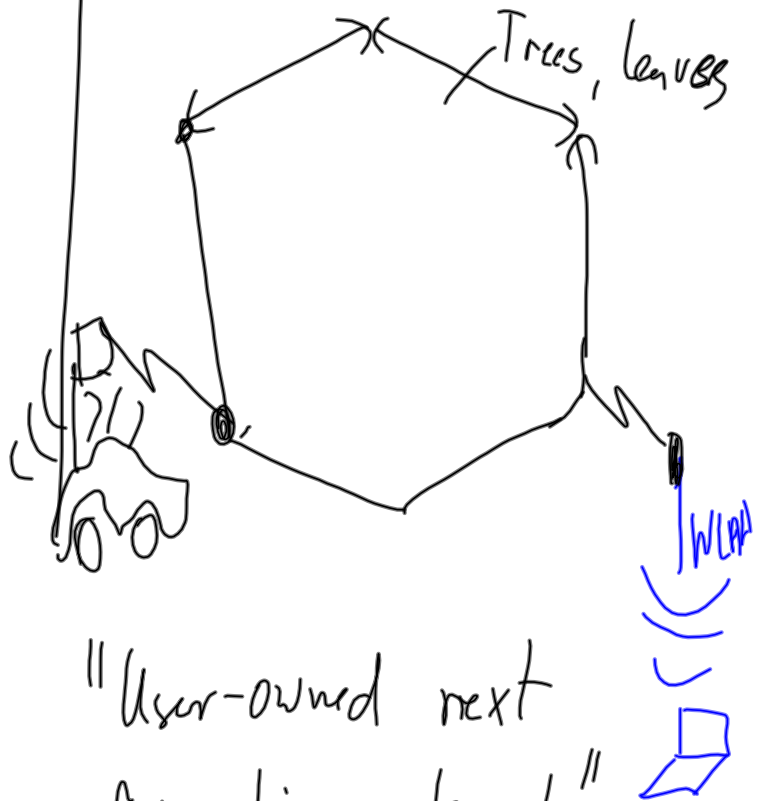
. Vision

mobility & cell parameters

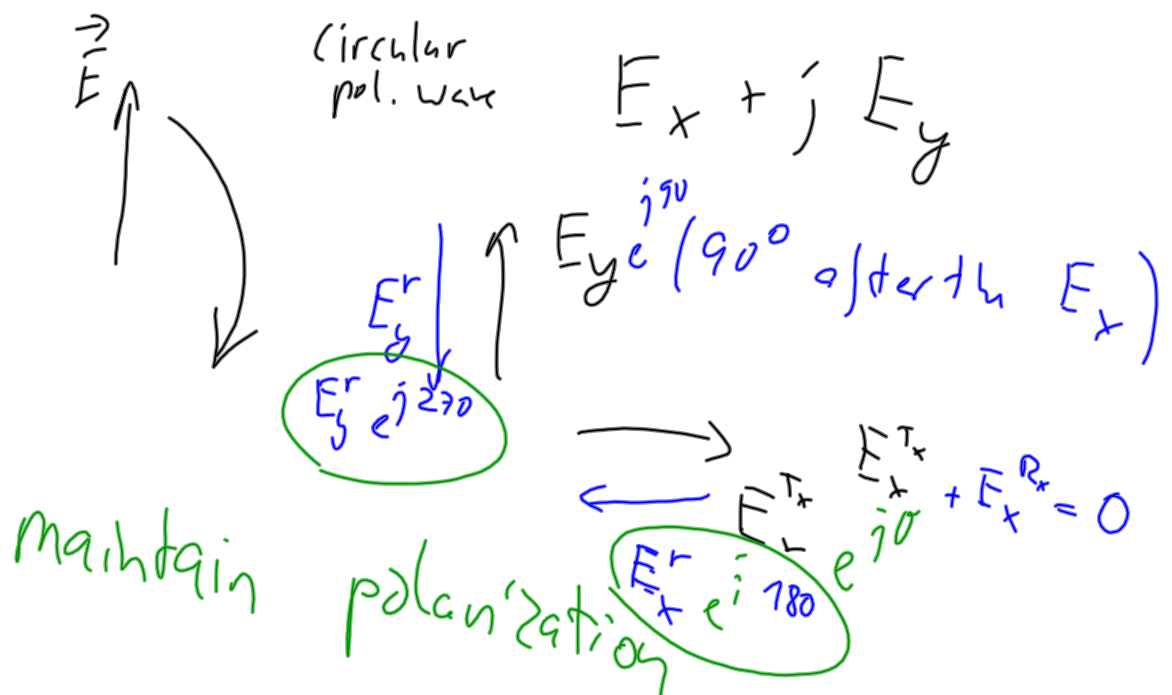


SW-tool

cheap  
W, MAX  $P_{Tx} = 20\text{dBm}$



"User-owned next generation network"



Long distance link (Nera)

240 km 6 GHz? (Crago)

32 Mbit/s ( $\rightarrow$  155 Mbit/s)