

# NISlab - Norwegian Information Security laboratory

Erik Hjelmås

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# What is information security?

*"Information security encompasses the study of the concepts, techniques, technical measures, and administrative measures used to protect information assets from deliberate or inadvertent unauthorized acquisition, damage, disclosure, manipulation, modification, loss, or use."*

(MCDANIEL, G. "IBM dictionary of computing". McGraw-Hill, Inc., New York, NY, USA, 1994.)

## History: 2001-2002

- June 2001 Pre-project for start-up M.Sc. initiated by Gjøvik University College and Gjøvik Science Park, The Norwegian Army at Jørstadmoen and Telenor, funded by Telenor, Norsk Tipping and Innovation Norway
- Jan. 2002 Main project for M.Sc. 2002-2005, funded by Telenor, Thales, PricewaterhouseCoopers, Norsk Tipping, DnBNOR and Sparebanken Hedmark
- Mar. 2002 Academic collaboration established with KTH/Stockholm (quality assurance) and SITAS/UiO (Legal aspects course)
- May 2002 Over 100 highly qualified applicants for the program
- Nov. 2002 Professor Einar Snekkenes entered NISlab

# History: 2003

- Jan. 2003 Professor **Jan Arild Audestad** entered NISlab
- Apr. 2003 The **Bluelight** network initiated
- Oct. 2003 ESORICS and NordSec held in Gjøvik, hosted by NISlab
- Oct. 2003 Two research projects awarded funding by the Research Council of Norway
  - “Authentication in a health service context” (Snekkenes, 500’ EUR)
  - “Security of approaches to personell authentication” (Snekkenes, 225’ EUR)

## History: 2004

- June 2004 Graduated first batch of M.Sc. students (13 candidates)
- Sep. 2004 NOKUT accreditation of M.Sc. Information security received
- Oct. 2004 Two research projects awarded funding by the Research Council of Norway
  - “Security reporting” (Snekkenes, 260’ EUR)
  - “BAS 5 - Effectiveness of information security measures” (subcontractor of FFI, Snekkenes, 200’ EUR)
- Nov. 2004 Professor **Slobodan Petrović** entered NISlab

# History: 2005

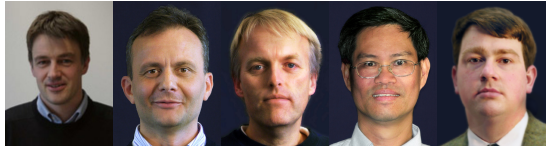
- Jan. 2005 Information security selected as Gjøvik University College' PhD area in the university project
- Apr. 2005 Professor **Stephen D. Wolthusen** entered NISlab
- July 2005 Assoc. prof. **Patrick Bours** entered NISlab
- Aug. 2005 Professor **Chik How Tan** entered NISlab
- Aug. 2005 Assist. prof **Tor Arne Folkestad** entered NISlab
- Aug. 2005 B.Sc. Information security initiated

## History: 2006-

- Jan. 2006 **NorSIS** relocated to Gjøvik
- May 2006 17 highly qualified applicants for faculty positions at NISlab
- Sep. 2006 The **Bluelight** network establishes itself permanently with NISlab represented in the steering committee
- Jan. 2007 Assoc. prof. **Katrin Franke** entered NISlab

# Permanent NISlab Faculty

Professor



Førstemanuensis



Høgskolelektor





# Adjunct NISlab faculty

- Professor Jose J. Gonzalez
  - Information security management
  - Critical infrastructure protection
- Professor Jan A. Audestad
  - Network security and telecommunication
- Assoc. prof. André Årnes
  - Attacks & forensics
  - Privacy
- Assist. prof. Lasse Øverlier
  - Network security
  - Privacy, Anonymization
- Assist. prof. Morten Schjelderup
  - Information security management

# Current NISlab: People

- 15 faculty members (9 permanent and 6 adjunct)
  - 7 professors (5 permanent, 2 adjunct)
  - 4 associate professors (3 permanent, 1 adjunct)
  - 4 assistant professors (1 permanent, 3 adjunct)
- 10 researchers
  - 1 post.doc
  - 9 PhD students
- ~ 100 students
  - ~ 50 M.Sc. students
  - ~ 50 B.Sc. students

# NISlab: Key facts

- International environment (employees from 8 nations)
- 36 refereed publications in 2006
- 5 Norwegian Research Council research projects (2003-2007)
- 1 EU IP project (2008-2011)
- 84 graduates with M.Sc. Information Security (2004-2007)
- 35% of M.Sc. theses with external partners
- 1 spin-off company
- Located on same campus as Gjøvik Science Park which hosts:
  - NorSIS
  - Bluelight
  - KinS
  - SECTOR

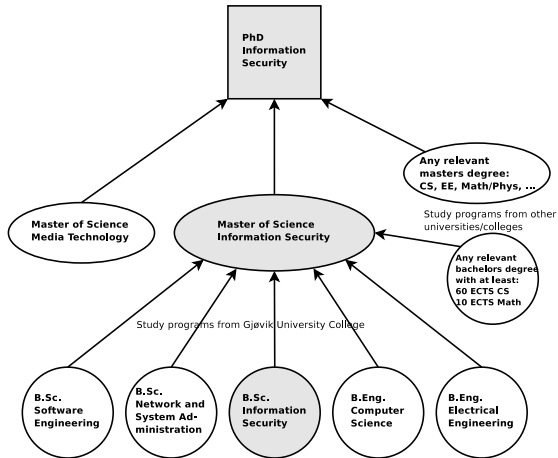
## Current PhD students

- **Lasse Øverlier**, “Network anonymity”
- **Nils Kalstad Svendsen**, “Connections between network topology and network security”
- **Geir Olav Dyrkolbotn**, “Smart Cards - Robustness against Electromagnetic Side-Channel Attacks”
- **Kirsi Helkala**, “Authentication in a health service context”
- **Davrondzhon Gafurov**, “Security of approaches to personnel authentication”
- **Janne Hagen**, “Security effectiveness assessment”
- **Vitaliy Pavlenko**, “Security reporting”
- **Frode P. Gilberg**, “Interactive information security simulation”
- **Knut Wold**, “Securing Cryptographic Algorithms in FPGAs Against Side Channel Attacks”

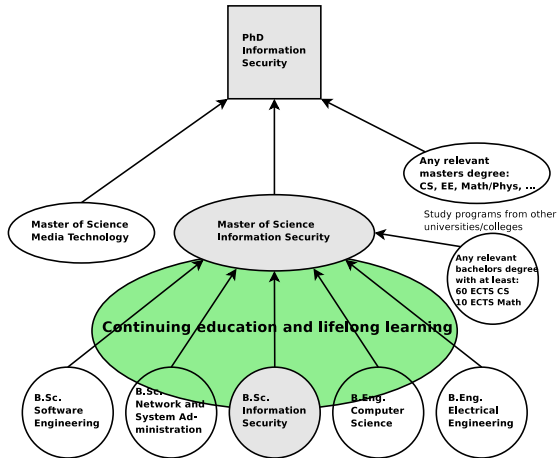
## Previous PhD students

- **Hanno Langweg**, “Metrics for software resistance against malicious software attack” (2003-2006)

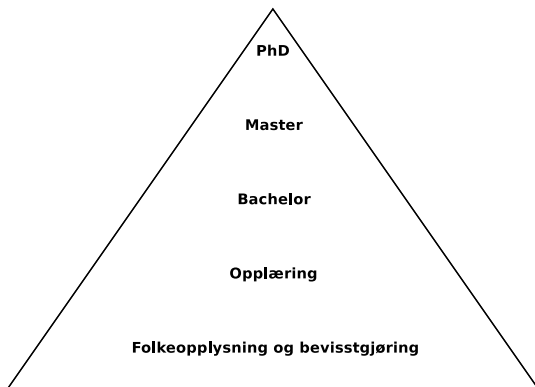
# Study programs



# Continuing education/Lifelong learning



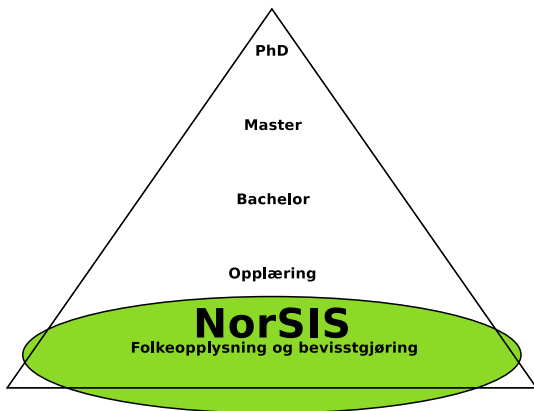
# Needs for education in information security



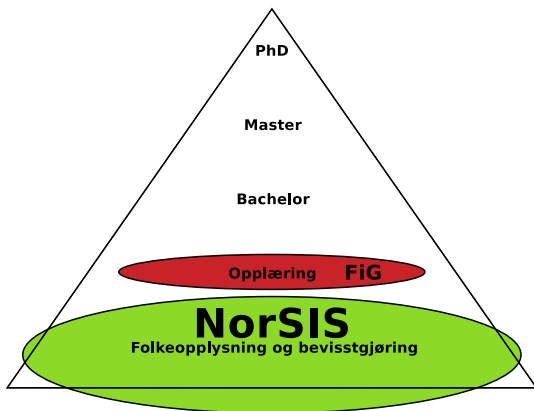
(M. Bishop. "Education in information security". IEEE Concurrency, oct-dec 2000.)



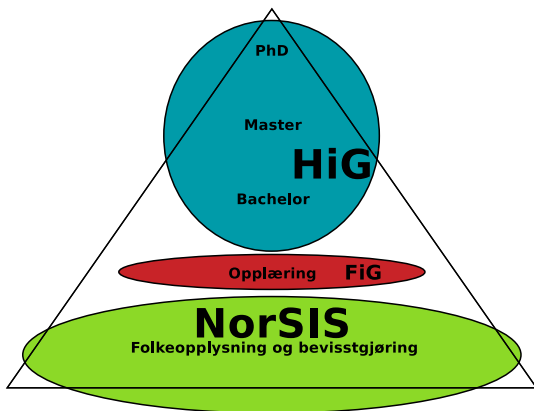
# Needs for education in information security



# Needs for education in information security



# Needs for education in information security



## B.Sc. Information security

<b>Bachelor i informasjonssikkerhet</b>					
<b>1. år</b>		<b>2. år</b>		<b>3. år</b>	
<b>Høst</b>	<b>Vår</b>	<b>Høst</b>	<b>Vår</b>	<b>Høst</b>	<b>Vår</b>
IMT1031 Grunnleggende programmering	IMT1082 Objekt-orientert programmering	IMT2021 Algoritmiske metoder	IMT2441 Sikkerhetsplanlegging og hendelsehåndtering	IMT3381 Applikasjonnssikkerhet	IMT3911 Hovedprosjekt
REA1101 Matematikk for informatikkfag	IMT2431 Datakommunikasjon og nettverkssikkerhet	IMT2272 Datamaskinarkitektur	IMT2282 Operativsystemer	Valgbare emner (må velges fra kryssnivå-emner innen informasjonssikkerhet)	
IMT1121 Innføring i informasjonssikkerhet	IMT1132 Risikostyring: metodikk og standarder	IMT2261 Informasjonsstrukturer og databaser	IMT2243 Systemutvikling	Valgbare emner	

	<b>Spesielle emner for Bachelor i informasjonssikkerhet</b>
	<b>Felles emner med Bachelor i drift av nettverk og datasystemer</b>
	<b>Felles emner med Bachelor i drift av nettverk og datasystemer og Bachelor i programvareutvikling</b>
	<b>Felles emner for alle informatikk-baserte bachelorutdanninger</b>

# M.Sc. Information security

Master of Science in Information Security				
1. year		2. year		
Fall	Spring	Fall	Spring	
IMT3071 Cryptology	IMT4101 Network Security	Elective courses	IMT4901 Master Thesis	
IMT4162 Information Security and Security Architecture	IMT4421 Scientific Methodology			IMT4091 Legal Aspects of Information Security
IMT4112 Security Management	IMT4481 Information Security and Society			IMT4441 Pre-project for master thesis

Technology courses
Management courses
Elective courses
Research courses

# Ph.D. Information Security (TBA!)

- 1 Information security management
- 2 System security
- 3 Cryptology
- 4 Network security
- 5 Privacy
- 6 Attacks and forensics
- 7 Information warfare and critical infrastructure protection
- 8 Content protection
- 9 Dependable computing

More than just technology!

# Where do our students end up?



# Where do our students end up?

- Telenor, EDB, Det Norske Veritas, Ergo, Accenture
- Statoil, Hydro
- DnBNOR, Terra, SpareBank1
- FSA (Jørstadmoen), FFI, NSM
- Mnemonic, Secode, Buypass, IBAS, NorSIS
- Bluegarden, Opera, WebDeal, IQ
- Motion Recording
- Norsvin, Eidsiva Energi Nett, Geoservice
- HiG