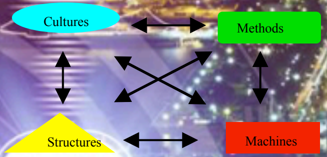
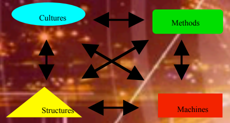
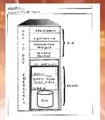
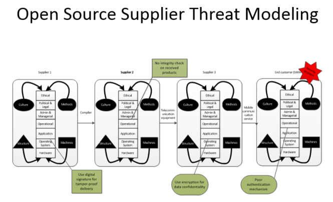
Socio-Technical Modeling Approach to Secure Digital nsformation.









Open Source Supplier Threat Modeling

Supplier 1
Supplier 2
Supplier 3
End customer (SWA
Security problem
No integrity check on received products
Culture
Methods
Structure
Machines
Ethical
Political & Legal
Admin & Managerial
Operational
Application
Operating System
Hardware
Compiler
Telecommunication equipment
Mobile communi -cation service
Use digital signature for tamper-proof delivery
Use encryption for data confidentiality
Poor authentication mechanism

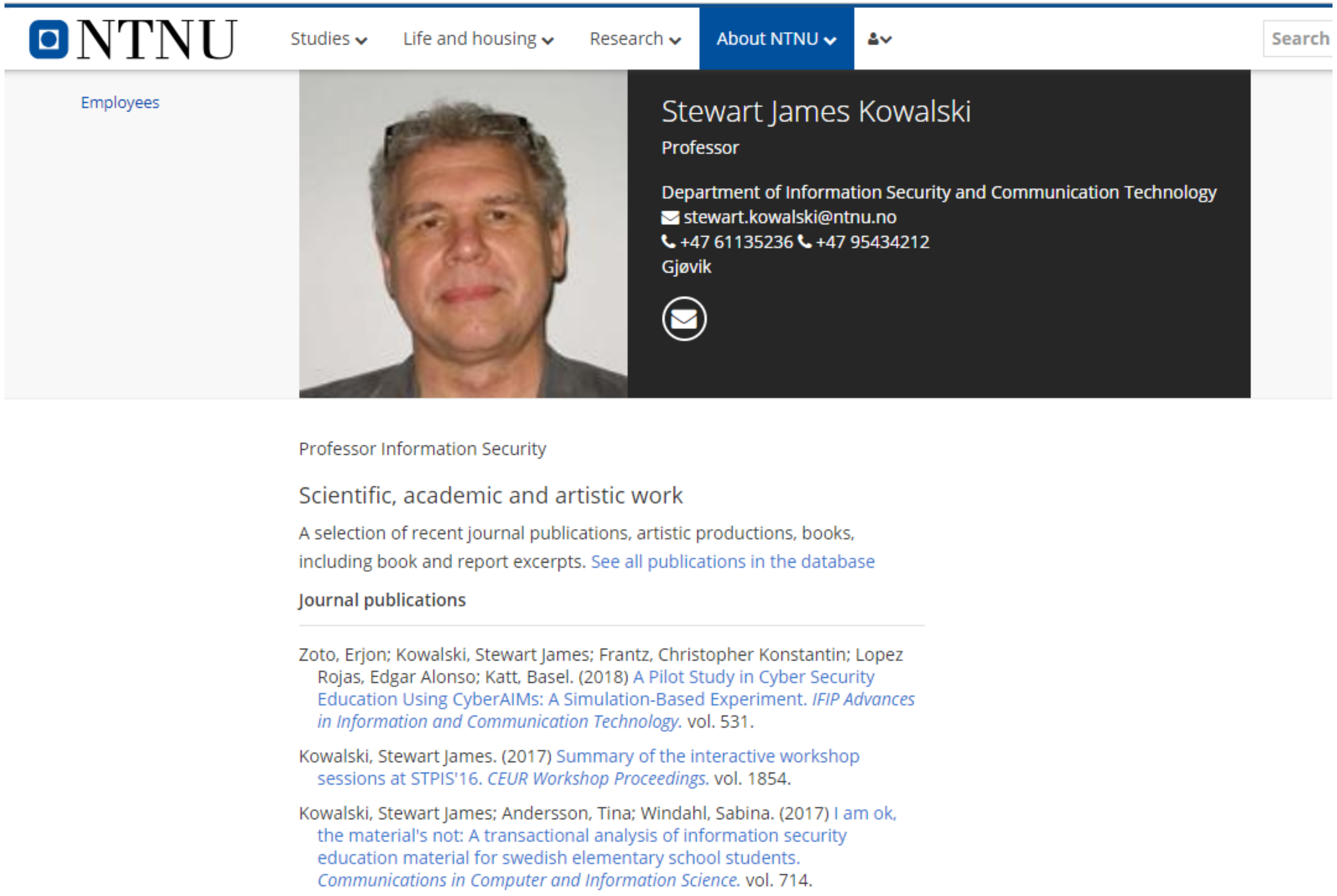
Stewart Kowalski
Professor Information Security
Norwegian Cyber Range
Norwegian University of Science and Technology

PICS Semi
6th Dec 20

1977
UNIVERSIT
OF SKÖVD

A Digitial Model of Kowalski

https://www.ntnu.edu/employees/stewart.kowalski



Stewart James Kowalski
Professor

Department of Information Security and Communication Technology
✉ stewart.kowalski@ntnu.no
☎ +47 61135236 ☎ +47 95434212
Gjøvik

Professor Information Security

Scientific, academic and artistic work

A selection of recent journal publications, artistic productions, books, including book and report excerpts. See all publications in the database

Journal publications

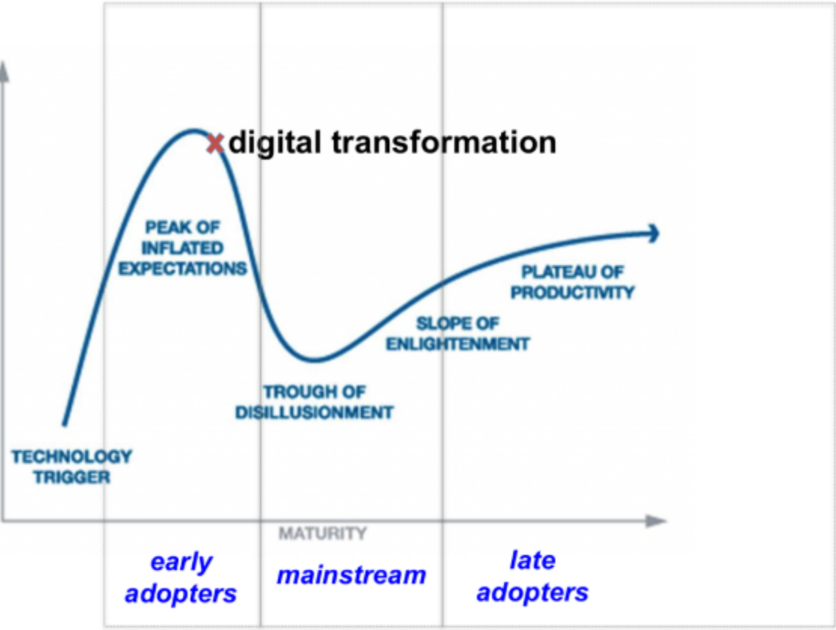
Zoto, Erjon; Kowalski, Stewart James; Frantz, Christopher Konstantin; Lopez Rojas, Edgar Alonso; Katt, Basel. (2018) A Pilot Study in Cyber Security Education Using CyberAIMs: A Simulation-Based Experiment. *IFIP Advances in Information and Communication Technology*. vol. 531.

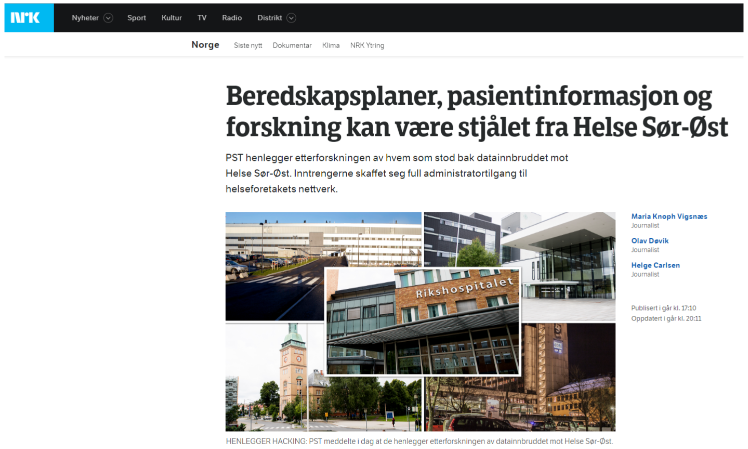
Kowalski, Stewart James. (2017) Summary of the interactive workshop sessions at STPIS'16. *CEUR Workshop Proceedings*. vol. 1854.

Kowalski, Stewart James; Andersson, Tina; Windahl, Sabina. (2017) I am ok, the material's not: A transactional analysis of information security education material for swedish elementary school students. *Communications in Computer and Information Science*. vol. 714.

Ukraine
Polish
Canadian
Swedish
Norwegian
Socio-technical
Systems Security
Educator, Researcher and Consult

Vhat Keeps me up at night





Beredskapsplaner, pasientinformasjon og forskning kan være stjålet fra Helse Sør-Øst

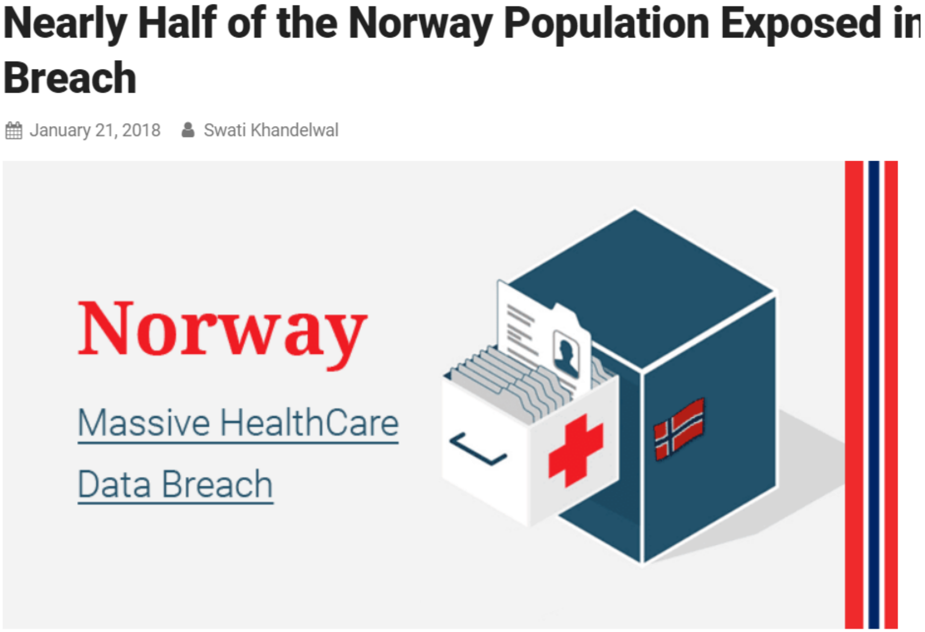
PST henlegger etterforskningen av hvem som stod bak datainnbruddet mot Helse Sør-Øst. Inntrengerne skaffet seg full administratortilgang til helseforetakets nettverk.

Maria Knoph Vigsnæs
Journalist
Olav Døvik
Journalist
Helge Carlsen
Journalist

Publisert i går kl. 17:10
Oppdatert i går kl. 20:11

HENLEGGER HACKING: PST meddelte i dag at de henlegger etterforskningen av datainnbruddet mot Helse Sør-Øst.

Hype



Nearly Half of the Norway Population Exposed in Breach

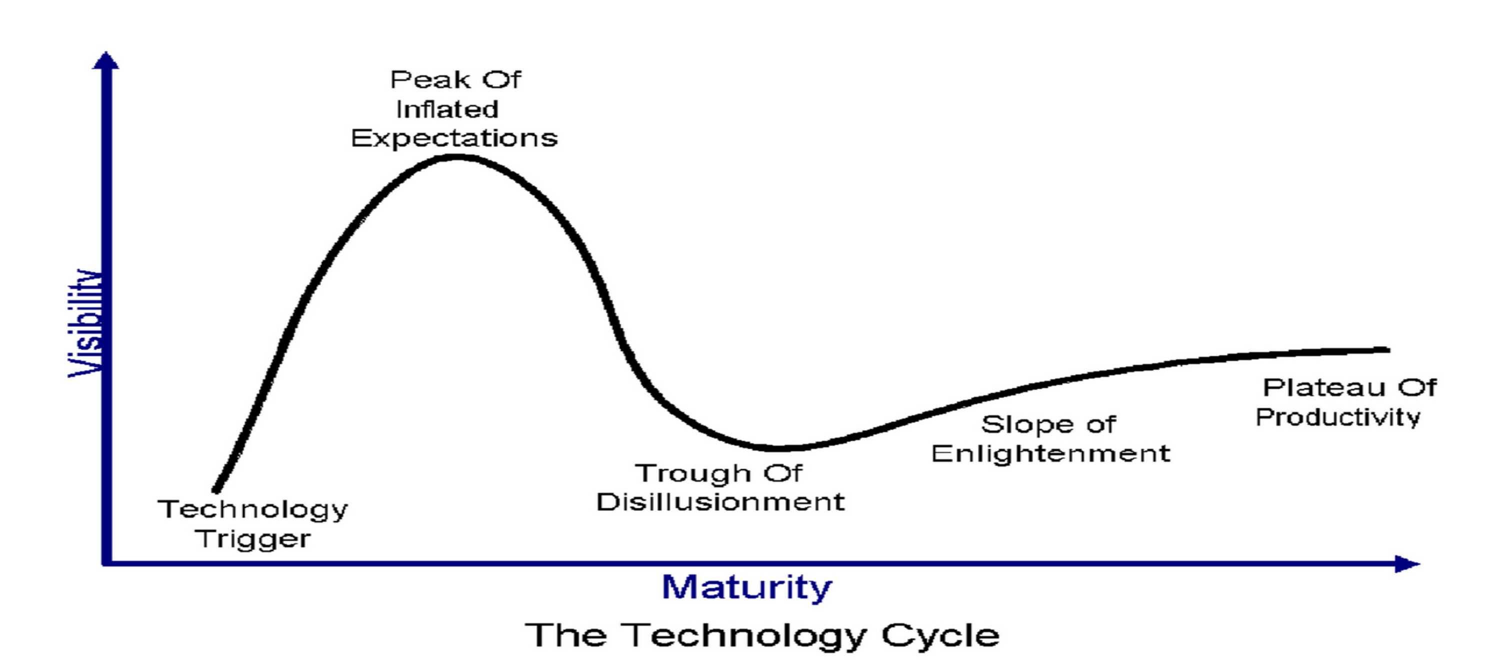
January 21, 2018 Swati Khandelwal

Norway and the EU
Mission of Norway to the EU
MENU
Digital Economy and Society Index
2017

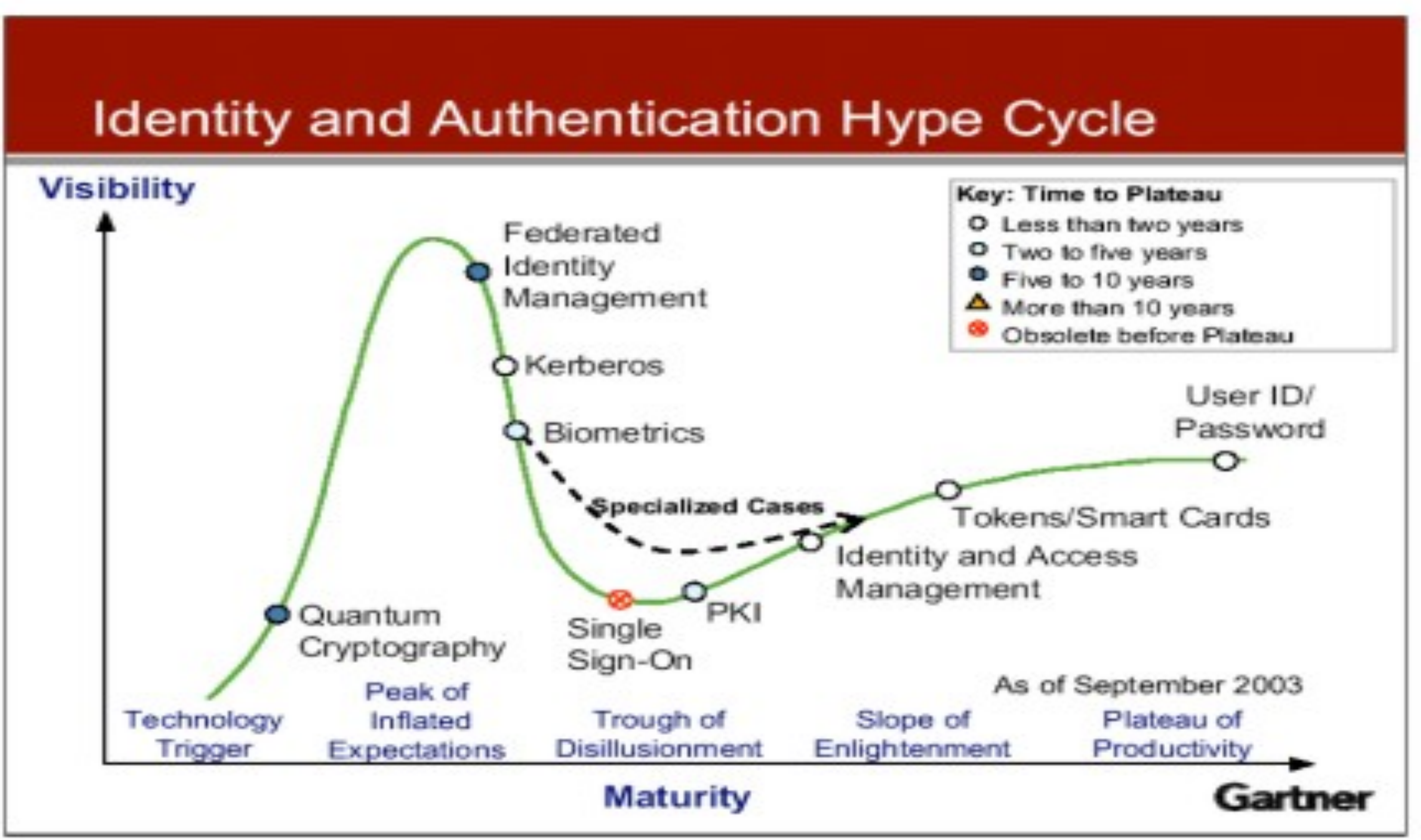
Norway retains top two spot in 2017 EU ranking.

PROBLEM 1

“Computer and Media Technology” research and development, adoption and implementation is driven to a large extent by “hype” and security and privacy issues and legal constraints are neither thought about or taught correctly!

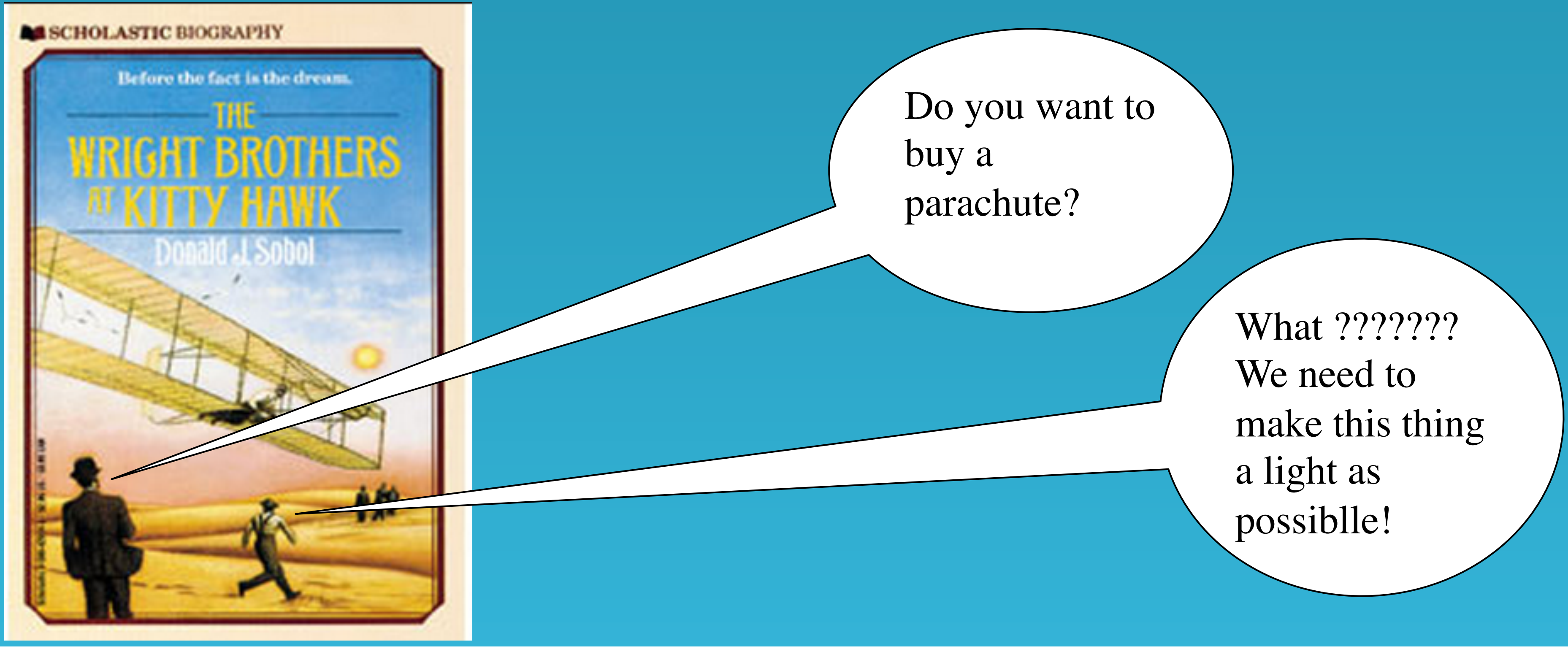


EXAMPLE GARTNERS SECURITY HYPE CURVES 2003



PROBLEM 1

Computer and Media Technology research and development, adoption and implementation is driven to a large extent by "hype" and security ,privacy and the law are neither thought about or taught correctly!


SCHOLASTIC BIOGRAPHY
Before the fact is the dream.
THE WRIGHT BROTHERS AT KITTY HAWK
Donald J. Sobol

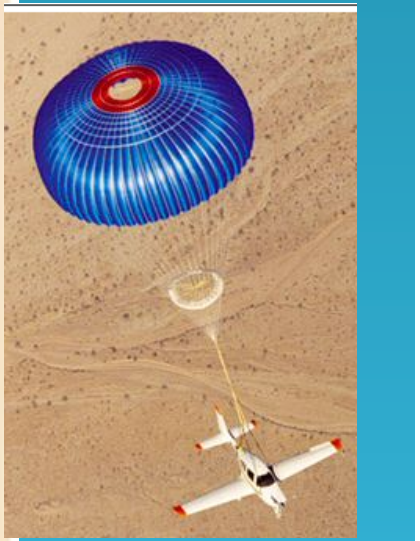
Do you want to buy a parachute?

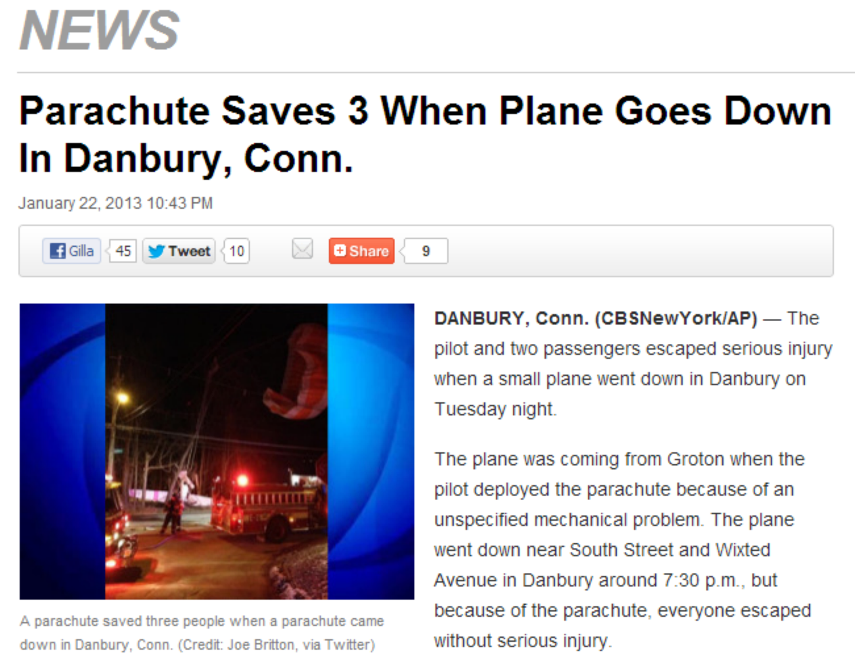
What ??????? We need to make this thing a light as possiblle!

PROBLEM 1

Computer and Media Technology research and development, adoption and implementation is driven to a large extent by “hype” and security issue and other constraints are neither thought about or taught correctly correctly!

SCHOLASTIC BIOGRAPHY
Before the fact is the dream.
THE WRIGHT BROTHERS AT KITTY HAWK
Donald J. Sobol





Parachute Saves 3 When Plane Goes Down In Danbury, Conn.

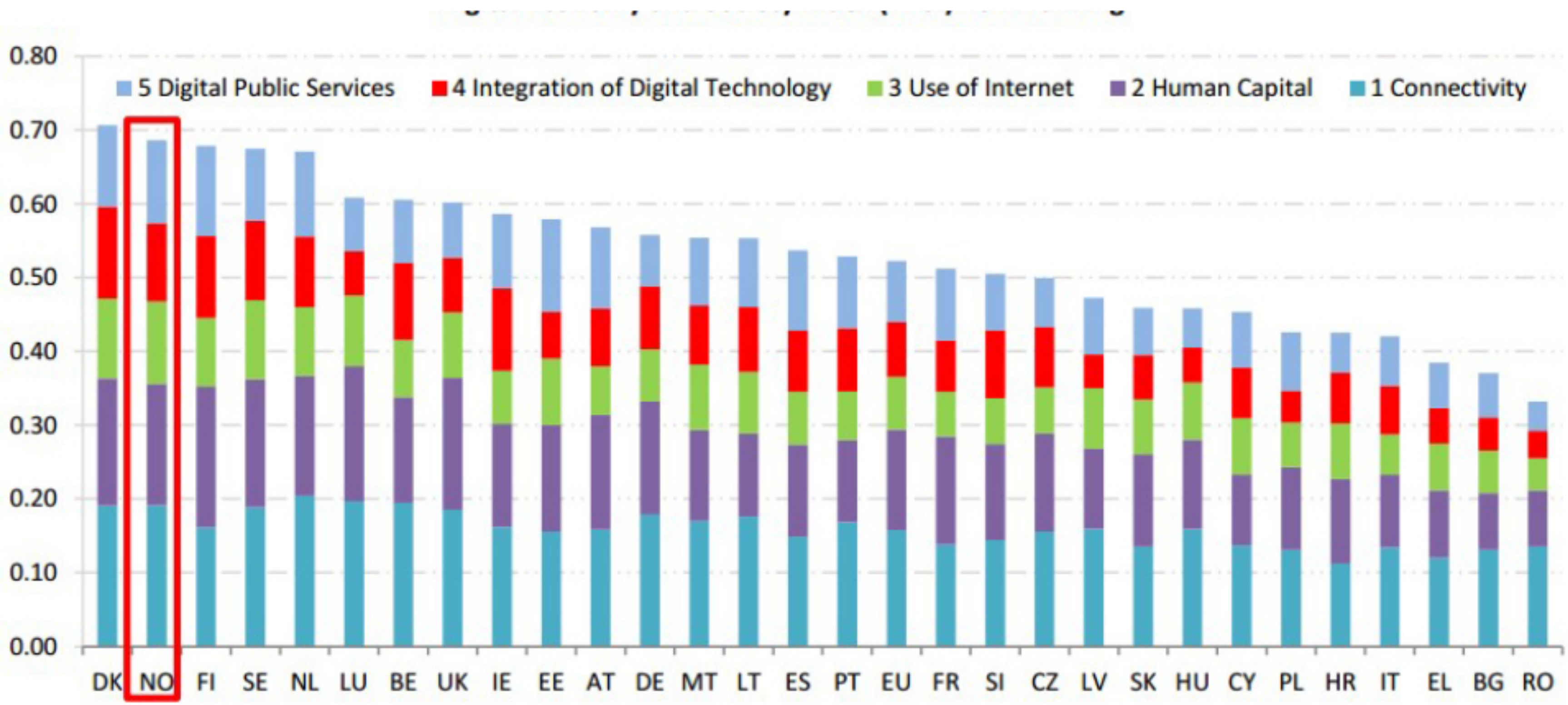
January 22, 2013 10:43 PM

A parachute saved three people when a parachute came down in Danbury, Conn. (Credit: Joe Britton, via Twitter)

DANBURY, Conn. (CBSNewYork/AP) — The pilot and two passengers escaped serious injury when a small plane went down in Danbury on Tuesday night.

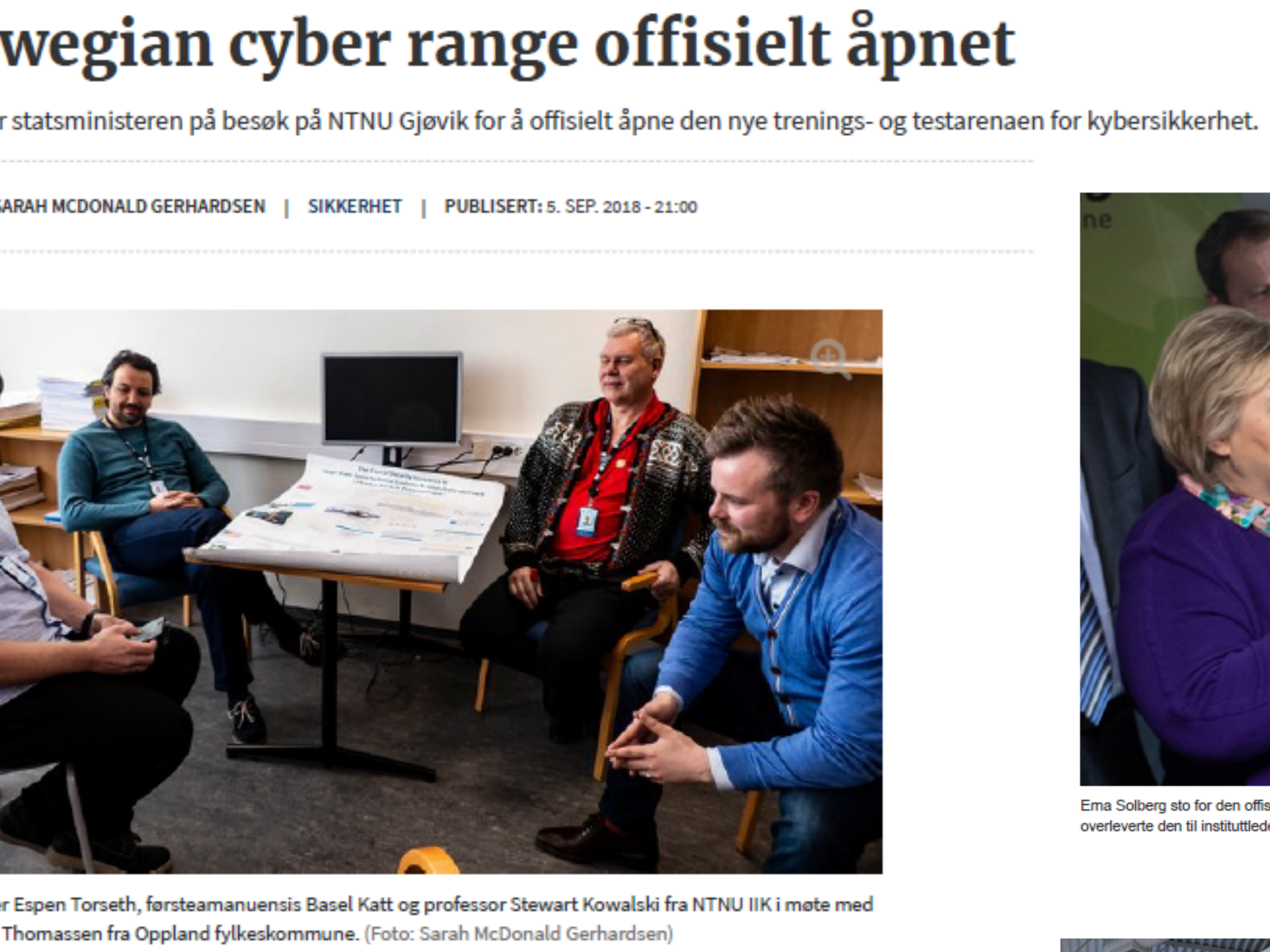
The plane was coming from Groton when the pilot deployed the parachute because of an unspecified mechanical problem. The plane went down near South Street and Wixted Avenue in Danbury around 7:30 p.m., but because of the parachute, everyone escaped without serious injury.

http://ca.news.yahoo.com/blogs/good-news/airplane-recovery-parachute-saves-three-lives-connecticut-crash-171749029.html



DESI - evolution over time

Why are we climbing wall



wegian cyber range offisielt åpnet

r statsministeren på besøk på NTNU Gjøvik for å offisielt åpne den nye trenings- og testarenaen for kybersikkerhet.

ARAH MCDONALD GERHARDSEN | SIKKERHET | PUBLISERT: 5. SEP. 2018 - 21:00

r Espen Torseth, førsteamanuensis Basel Katt og professor Stewart Kowalski fra NTNU IIK i møte med Thomassen fra Oppland fylkeskommune. (Foto: Sarah McDonald Gerhardsen)

EKSTRA
NTNU
Norwegian Cyber Range - NCR
Åpnet av statsminister Erna Solberg
Gjøvik 4. september 2018
Erna Solberg

Erna Solberg sto for den offisielle åpningen av Norwegian cyber range. Etter å ha avduket skiltet tok hun seg tid til å brette duken pent sammen før hun overleverte den til instituttlederen. (Foto: Sarah McDonald Gerhardsen)

Drowning in Data

lski Quotes Swedish-Norwegian-English
 arena where you can exercise with complex
-technical systems

 have a number of great climbing wall in
vay to keep fit which is great . Unfortnuatley
eed better swimming pools since most of
vegians are drowning in data!

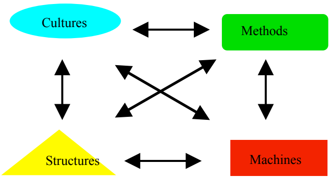
Work Plan for The Next XX Minutes Together

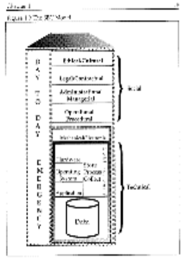
ntroduction

- Model
  - Me model You - US
    - Calibration?

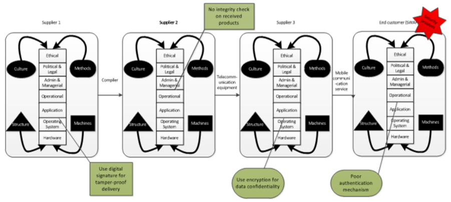
ecurity Modeling and Socio-Techncial Modeling

- Some History
- Some Theory
- Some Practise





Open Source Supplier Threat Modeling

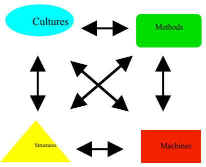

Supplier 1
Supplier 2
Supplier 3
End customer (SWA
Security problem
No integrity check on received products
Culture
Methods
Structure
Machines
Ethical
Political & Legal
Admin & Managerial
Operational
Application
Operating System
Hardware
Compiler
Telecomm-unication equipment
Mobile communi-cation service
Use digital signature for tamper-proof delivery
Use encryption for data confidentiality
Poor authentication mechanism

iscussion

Information Security Mana--gement and Privacy Group (ISMP-G)

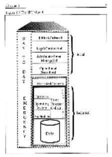
"You continually need to learn to mange yourself and your organization or society efficient and effectively with incentives and disincentive or you will end up being managed by your enemies or near friends. "

The Information Security Management Group researches and teaches, theoretical, empirical, applied and clinical methods and techniques to



model, mea-sure, manage

i.e. govern



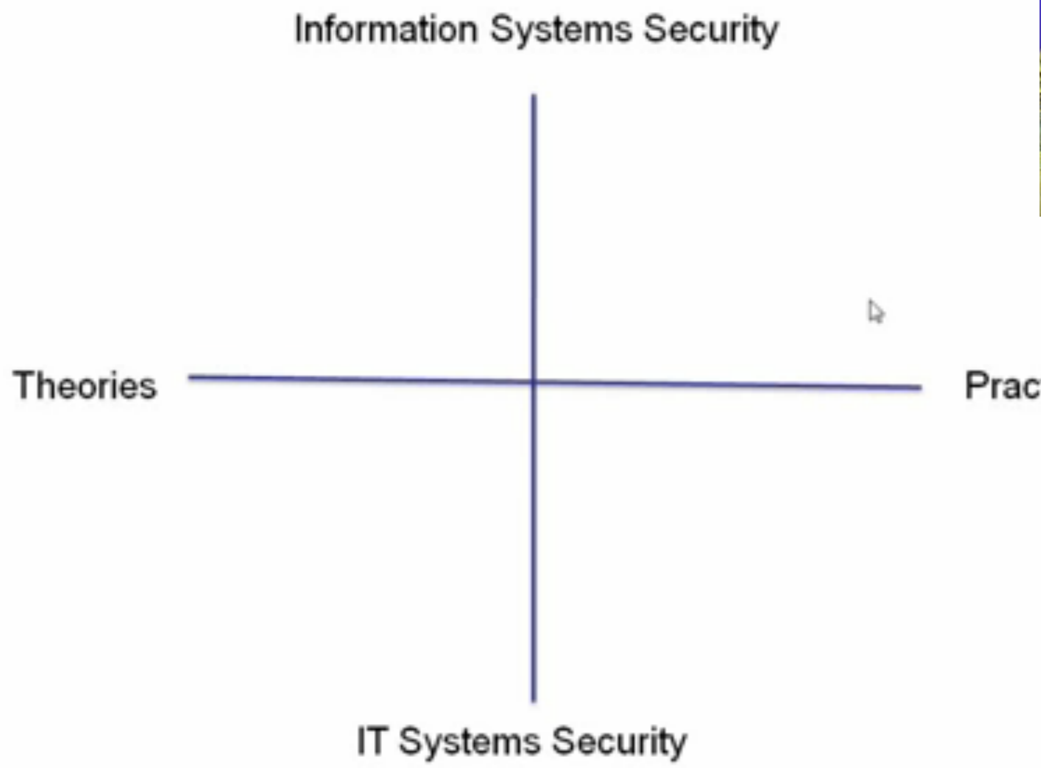
information security management system's strengths (security, privacy) and weaknesses (Risk) at the individual, organization and nation levels.

! Manage or be Mana-ged !

Let Us Callibrate

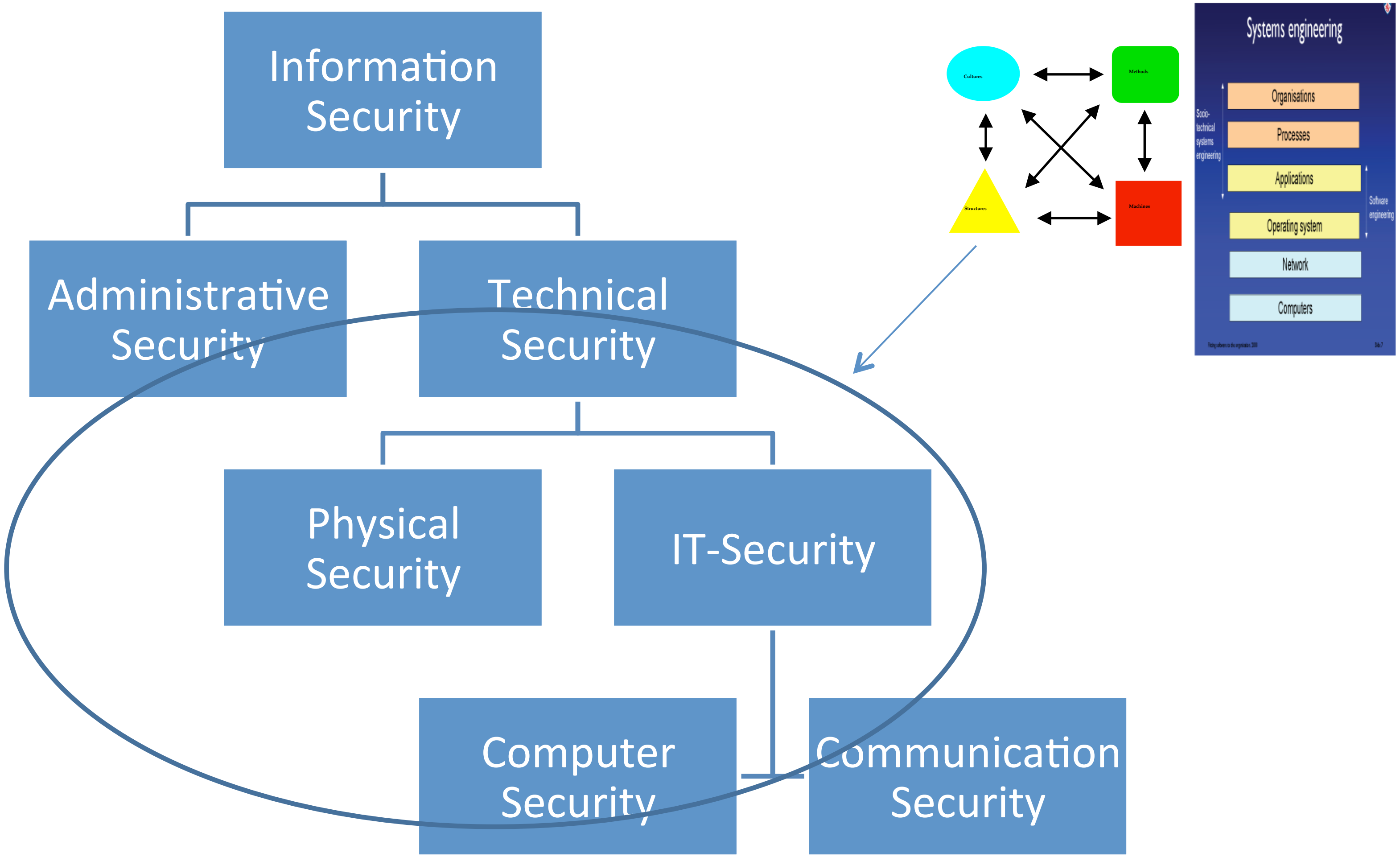
The PICS seminar is a PICS forum for research in the fields of privacy and information security and cyber security. We discuss both practice and new research and improve our knowledge about selected practice and research areas of common interest.

Security Behavior Economics



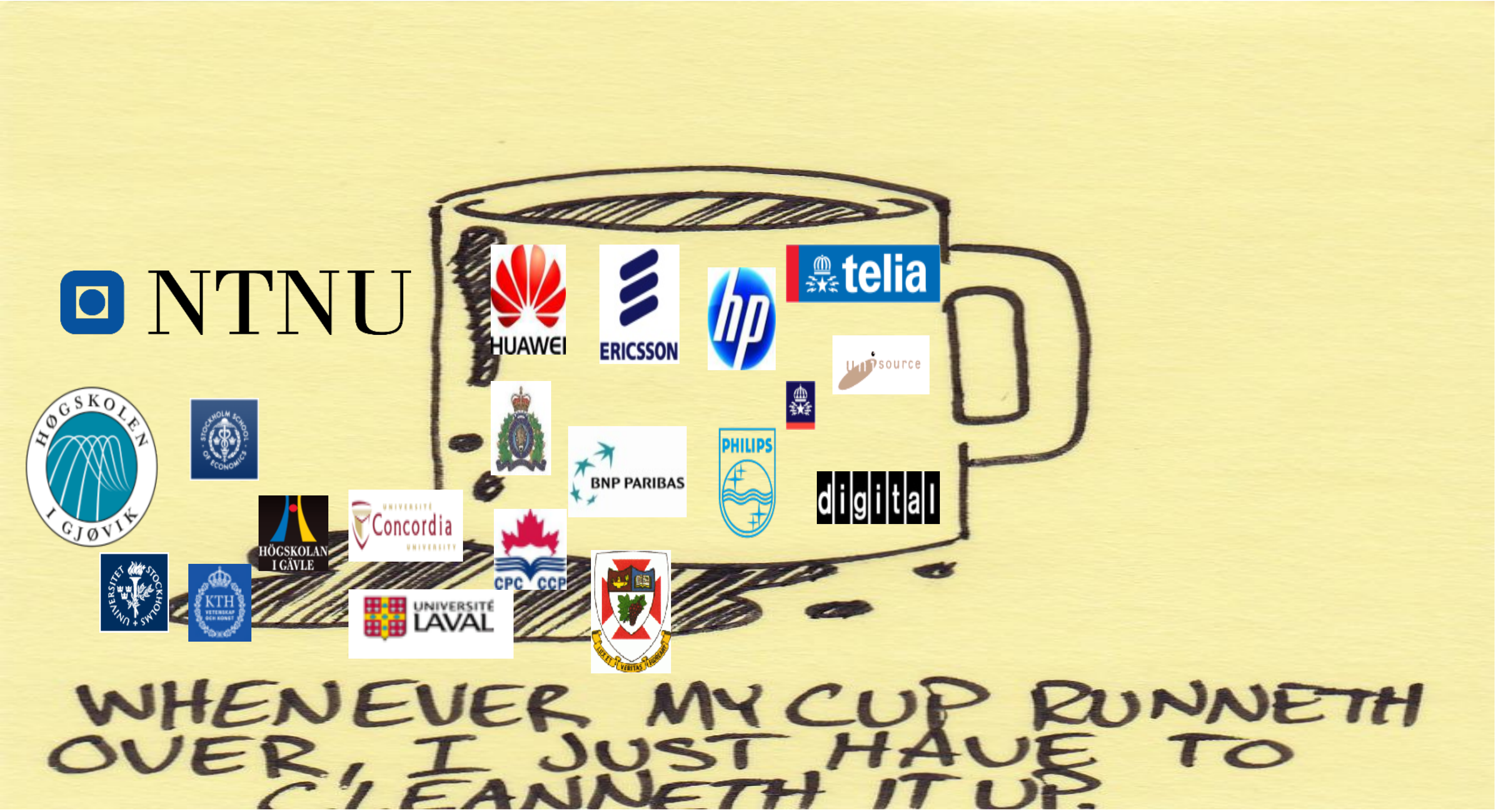
https://oldplay.dsv.su.se/hypercaster/3762/width=640/height=360/link.js

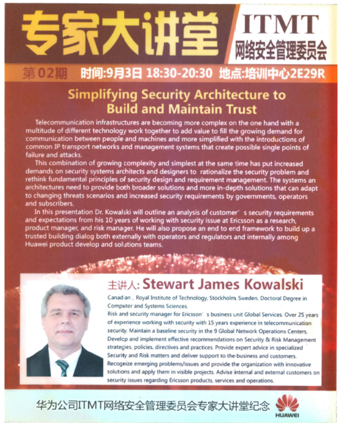
Socio-Techincal Systems Engineering Mapped on Information Security



me History

walski is a cup that runneth over and on!





专家大讲堂 ITMT 网络安全管理委员会

第02期 时间:9月3日 18:30-20:30 地点:培训中心2E29R

Simplifying Security Architecture to Build and Maintain Trust

Telecommunication infrastructures are becoming more complex on the one hand with a multitude of different technology work together to add value to fill the growing demand for communication between people and machines and more simplified with the introductions of common IP transport networks and management systems that create possible single points of failure and attacks.

This combination of growing complexity and simplest at the same time has put increased demands on security systems architects and designers to rationalize the security problem and rethink fundamental principles of security design and requirement management. The systems an architectures need to provide both broader solutions and more in-depth solutions that can adapt to changing threats scenarios and increased security requirements by governments, operators and subscribers.

In this presentation Dr. Kowalski will outline an analysis of customer' s security requirements and expectations from his 10 years of working with security issue at Ericsson as a research, product manager, and risk manager. He will also propose an end to end framework to build up a trusted building dialog both externally with operators and regulators and internally among Huawei product develop and solutions teams.

主讲人: Stewart James Kowalski

Canadian , Royal Institute of Technology, Stockholm, Sweden, Doctoral Degree in Computer and Systems Sciences.

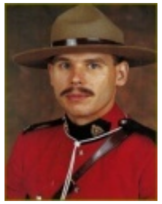
Risk and security manager for Ericsson' s business unit Global Services. Over 25 years of experience working with security with 15 years experience in telecommunication security. Maintain a baseline security in the 9 Global Network Operations Centers, Develop and implement effective recommendations on Security & Risk Management strategies, policies, directives and practices. Provide expert advice in specialized Security and Risk matters and deliver support to the business and customers. Recognize emerging problems/issues and provide the organization with innovative solutions and apply them in visible projects. Advise internal and external customers on security issues regarding Ericsson products, services and operations.

华为公司ITMT网络安全管理委员会专家大讲堂纪念 HUAWEI

Security Architect
Cyber Security Officie
2009-2011 & 2015-201

Islamabad November 25, 2008 : Chairman Pakistan Telecommunication Authority (PTA), Dr.Mohammed Yaseen chairing a meeting of Expert Group Forum on Information Security Guidelines held at PTA Headquarters.

Risk and Security Mana
Ericsson Global Service
2006-2009

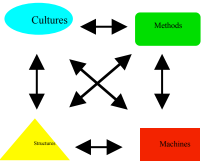


Royal Canadian Mounted
1980-1985

Information Security Mana--gement and Privacy Group (ISMP-G)

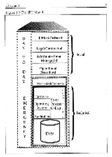
"You continually need to learn to mange yourself and your organization or society efficient and effectively with incentives and disincentive or you will end up being managed by your enemies or near friends. "

The Information Security Management Group researches and teaches, theoretical, empirical, applied and clinical methods and techniques to



model, mea-sure, manage

i.e. govern



information security management system's strengths (security, privacy) and weaknesses (Risk) at the

individual,

organization

and

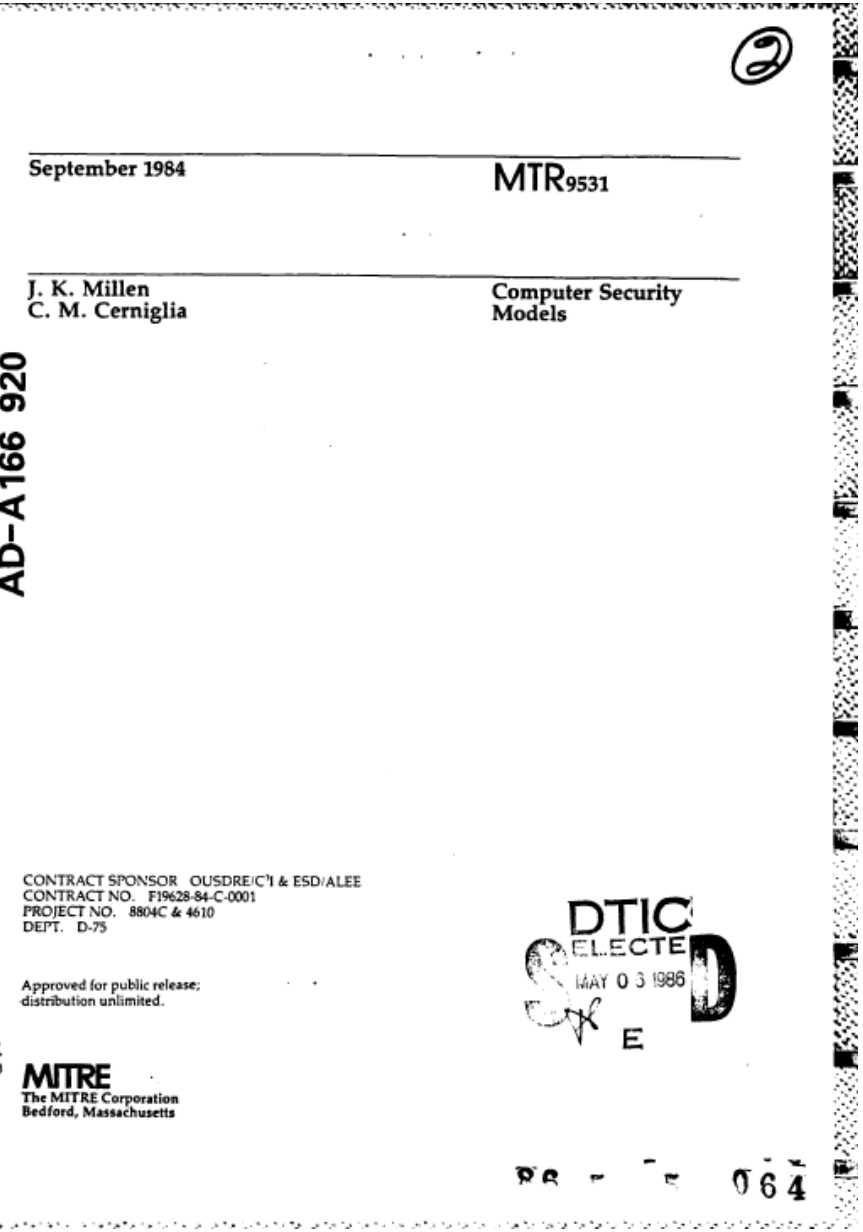
nation

levels.

! Manage or be Mana-ged !

Some History of Security Modeling

1984



②

September 1984

MTR9531

J. K. Millen
C. M. Cerniglia

Computer Security Models

AD-A166 920

CONTRACT SPONSOR OUSDRE/C^3I & ESD/ALEE
CONTRACT NO. F19628-84-C-0001
PROJECT NO. 8804C & 4610
DEPT. D-75

Approved for public release;
distribution unlimited.

DTIC
ELECTE
MAY 0 3 1986
D
E

MITRE
The MITRE Corporation
Bedford, Massachusetts

86 064

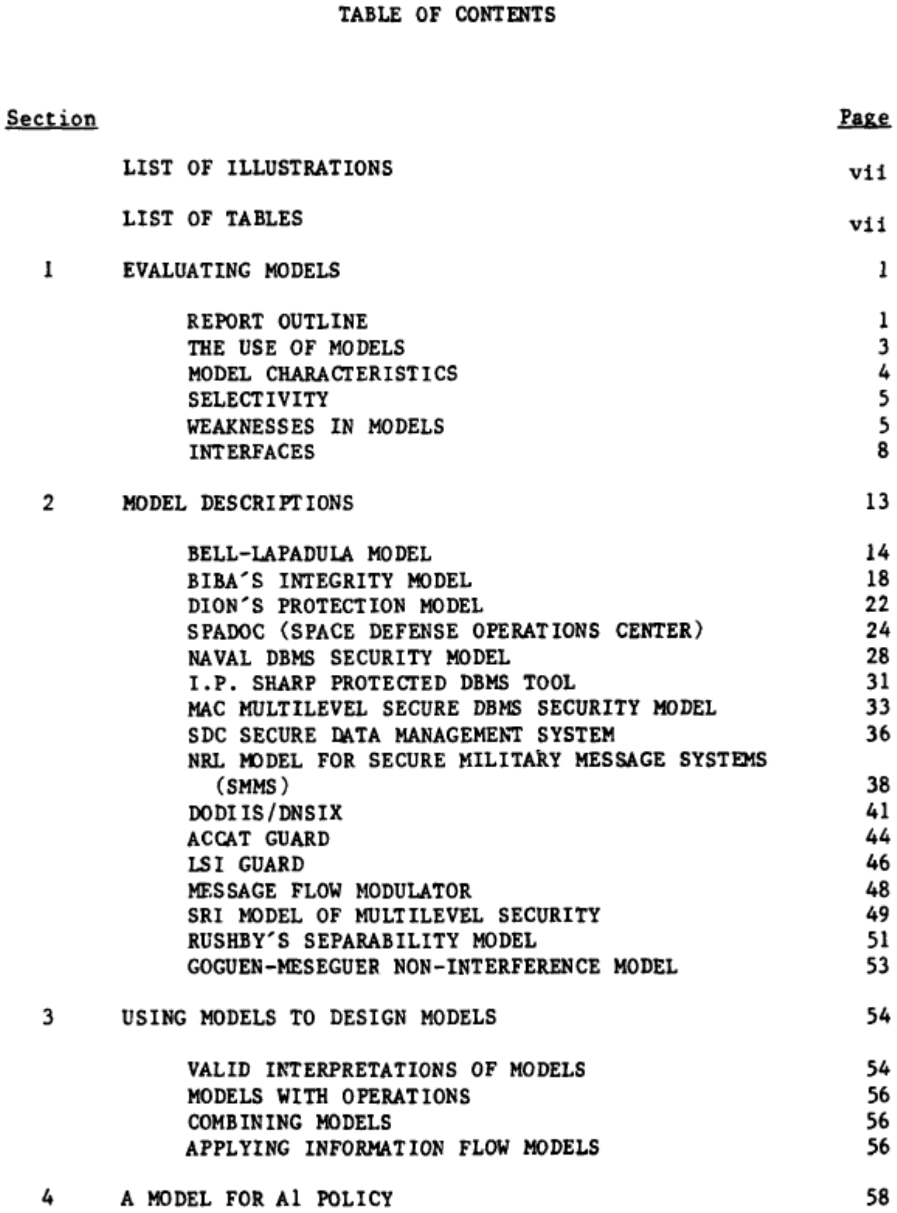
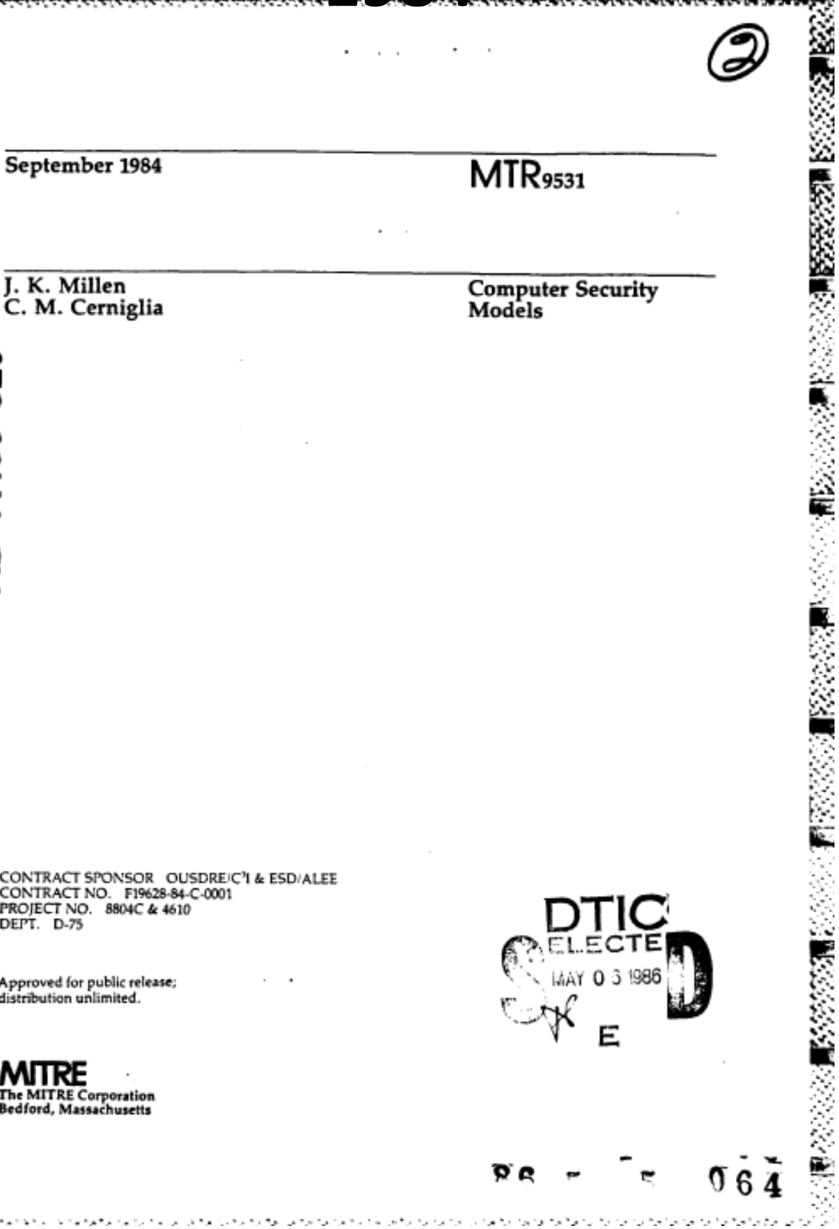


TABLE OF CONTENTS

/www.dtic.mil/dtic/tr/fulltext/u2/a166920.pdf

1984



2

September 1984

MTR9531

J. K. Millen
C. M. Cerniglia

Computer Security Models

CONTRACT SPONSOR OUSDRE/C³I & ESD/ALEE
CONTRACT NO. F19628-84-C-0001
PROJECT NO. 8804C & 4610
DEPT. D-75

Approved for public release;
distribution unlimited.

MITRE
The MITRE Corporation
Bedford, Massachusetts

86 064

/www.dtic.mil/dtic/tr/fulltext/u2/a166920.pdf

Some History of Security Modeling

"Computer security models are engineering models, giving them somewhat more freedom than models used in physical science.

In physical science, <u>reality comes first</u>, and one uses a model to mak predictions about physical events and measurements.

If a prediction fails, <u>the model is wrong.</u>

In engineering, the model comes first.

The engineer decides what the system ought to do, and then constructs a system that does it.

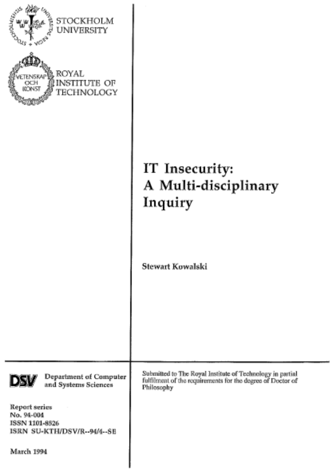
If the system output does not match the model,
<u>the system is wrong, not the model.</u>

What is an Educated Person?

One who in every subject he ”or she” studies looks for only so much precision as its ”nature ”permits
(Aristotle, 350 BC)

Questions   1994

What is the nature of information security/insecurity



STOCKHOLM UNIVERSITY

ROYAL INSTITUTE OF TECHNOLOGY

IT Insecurity:
A Multi-disciplinary
Inquiry

Stewart Kowalski

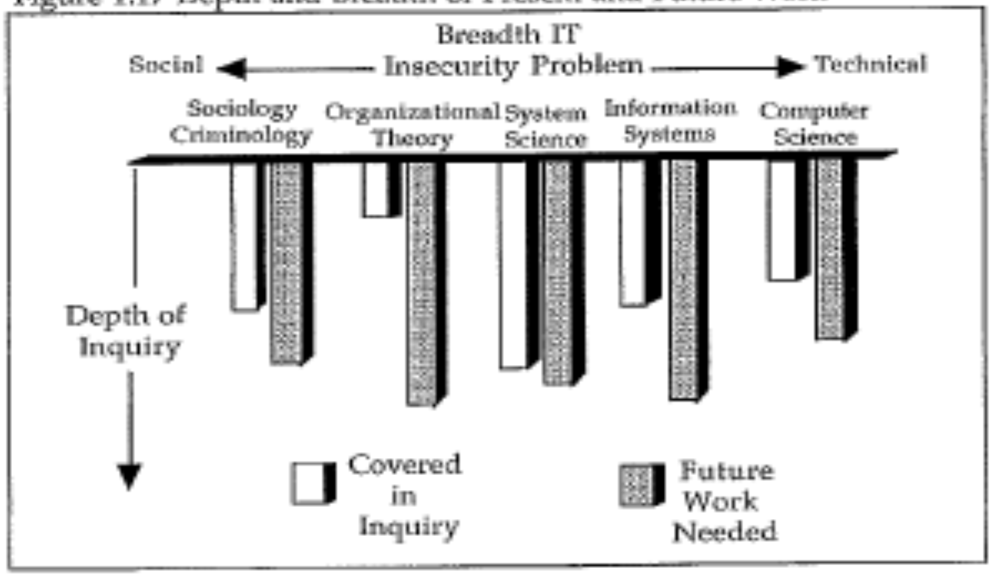
DSV Department of Computer and Systems Sciences

Report series
No. 94-004
ISSN 1101-8526
ISRN SU-KTH/DSV/R--94/4--SE

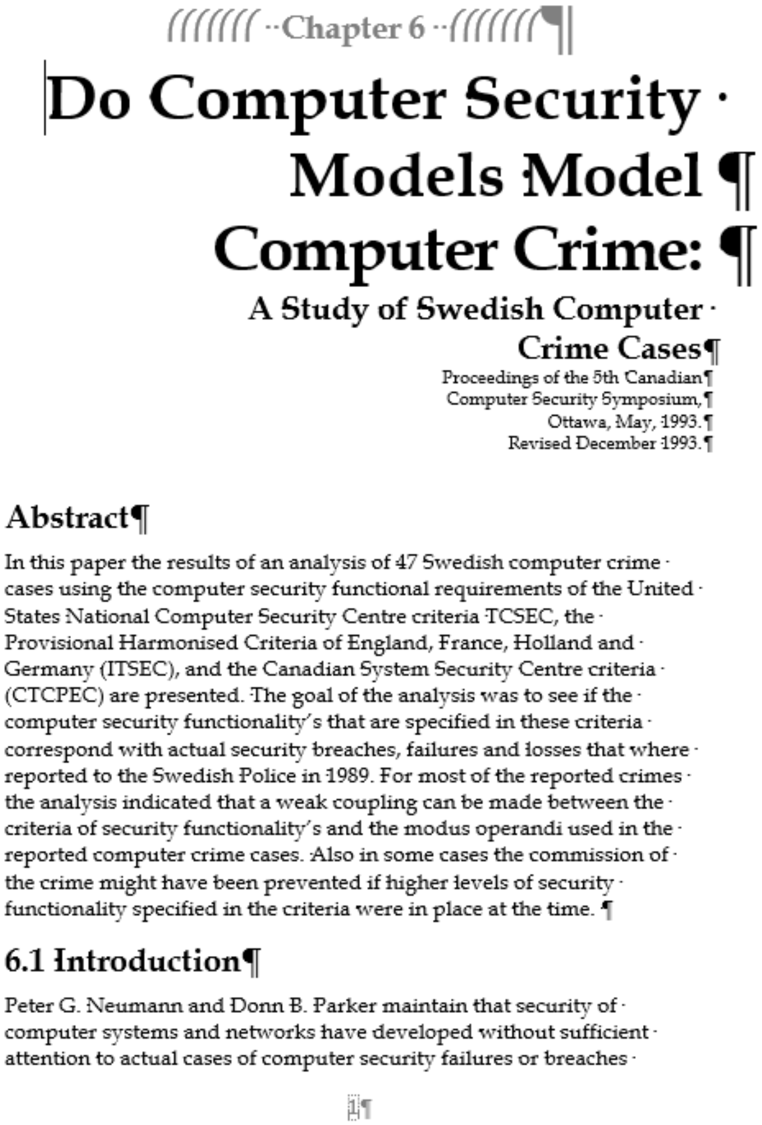
March 1994

Submitted to The Royal Institute of Technology in partial fulfilment of the requirements for the degree of Doctor of Philosophy

Figure 1.17 Depth and Breadth of Present and Future Work



Sunking “CapStone” 1994



Chapter 6 ¶

Do Computer Security Models Model Computer Crime: ¶

A Study of Swedish Computer Crime Cases¶

Proceedings of the 5th Canadian¶
Computer Security Symposium,¶
Ottawa, May, 1993.¶
Revised December 1993.¶

Abstract¶

In this paper the results of an analysis of 47 Swedish computer crime cases using the computer security functional requirements of the United States National Computer Security Centre criteria TCSEC, the Provisional Harmonised Criteria of England, France, Holland and Germany (ITSEC), and the Canadian System Security Centre criteria (CTCPEC) are presented. The goal of the analysis was to see if the computer security functionality's that are specified in these criteria correspond with actual security breaches, failures and losses that where reported to the Swedish Police in 1989. For most of the reported crimes the analysis indicated that a weak coupling can be made between the criteria of security functionality's and the modus operandi used in the reported computer crime cases. Also in some cases the commission of the crime might have been prevented if higher levels of security functionality specified in the criteria were in place at the time. ¶

6.1 Introduction¶

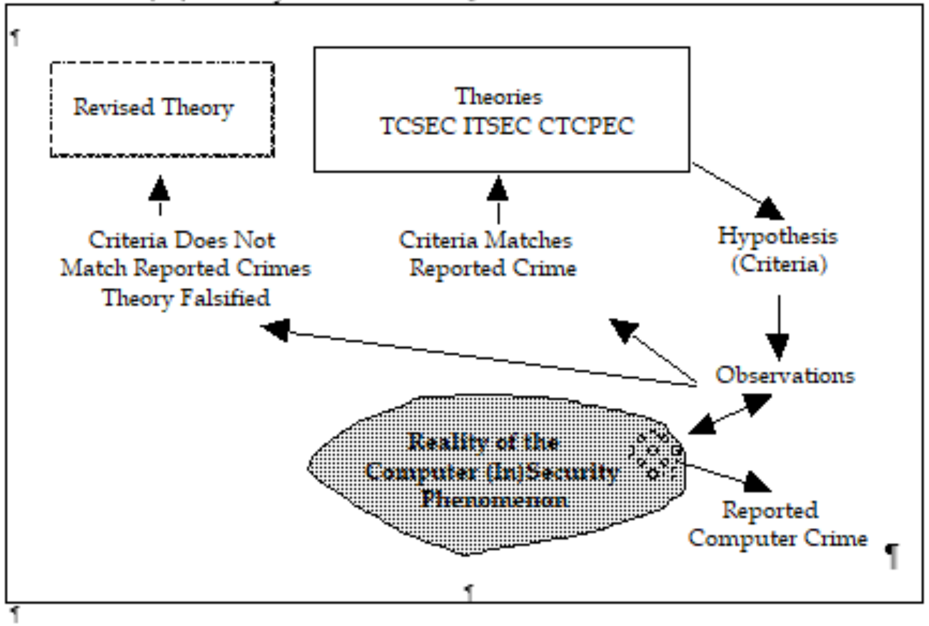
Peter G. Neumann and Donn B. Parker maintain that security of computer systems and networks have developed without sufficient attention to actual cases of computer security failures or breaches

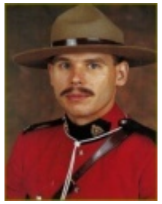
Some History of Security Modeling

Science Social : If a prediction fails, the model is wrong.

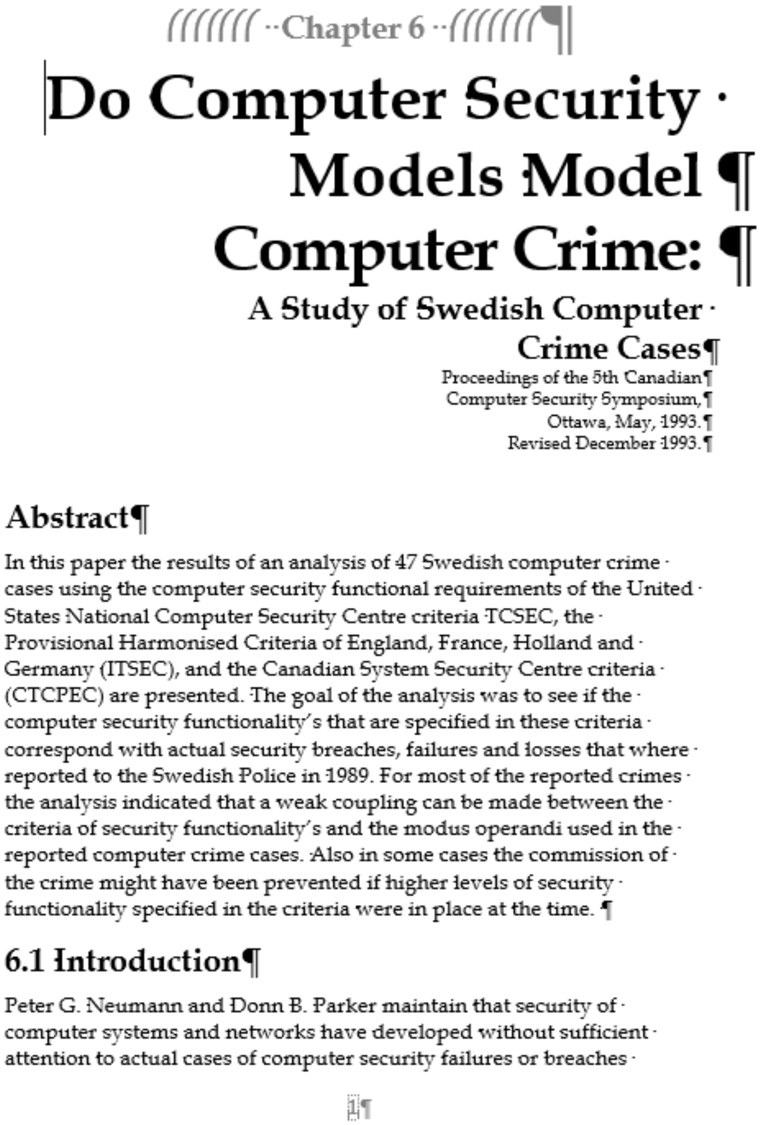
Technology : If the system output does not match the model, the system is wrong, not the model.

Figure 6.5 Computer (In)security Theories and the Computer (In)security Phenomenon¶


Revised Theory
Theories
TCSEC ITSEC CTCPEC
Criteria Does Not Match Reported Crimes Theory Falsified
Criteria Matches Reported Crime
Hypothesis (Criteria)
Observations
Reality of the Computer (In)Security Phenomenon
Reported Computer Crime



Some History of Security Modeling



Chapter 6

Do Computer Security Models Model Computer Crime:

A Study of Swedish Computer Crime Cases

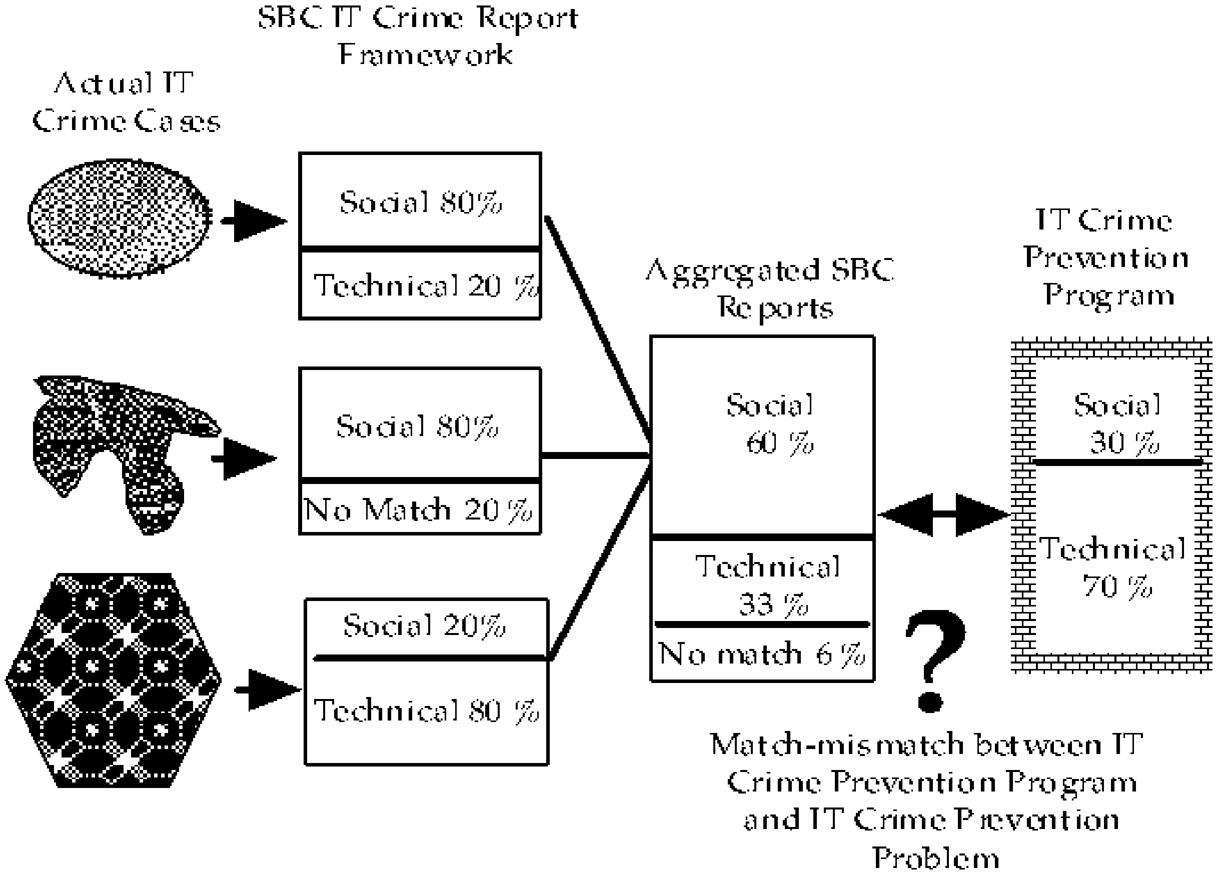
Proceedings of the 5th Canadian
Computer Security Symposium,
Ottawa, May, 1993.
Revised December 1993.

Abstract

In this paper the results of an analysis of 47 Swedish computer crime cases using the computer security functional requirements of the United States National Computer Security Centre criteria TCSEC, the Provisional Harmonised Criteria of England, France, Holland and Germany (ITSEC), and the Canadian System Security Centre criteria (CTCPEC) are presented. The goal of the analysis was to see if the computer security functionality's that are specified in these criteria correspond with actual security breaches, failures and losses that where reported to the Swedish Police in 1989. For most of the reported crimes the analysis indicated that a weak coupling can be made between the criteria of security functionality's and the modus operandi used in the reported computer crime cases. Also in some cases the commission of the crime might have been prevented if higher levels of security functionality specified in the criteria were in place at the time.

6.1 Introduction

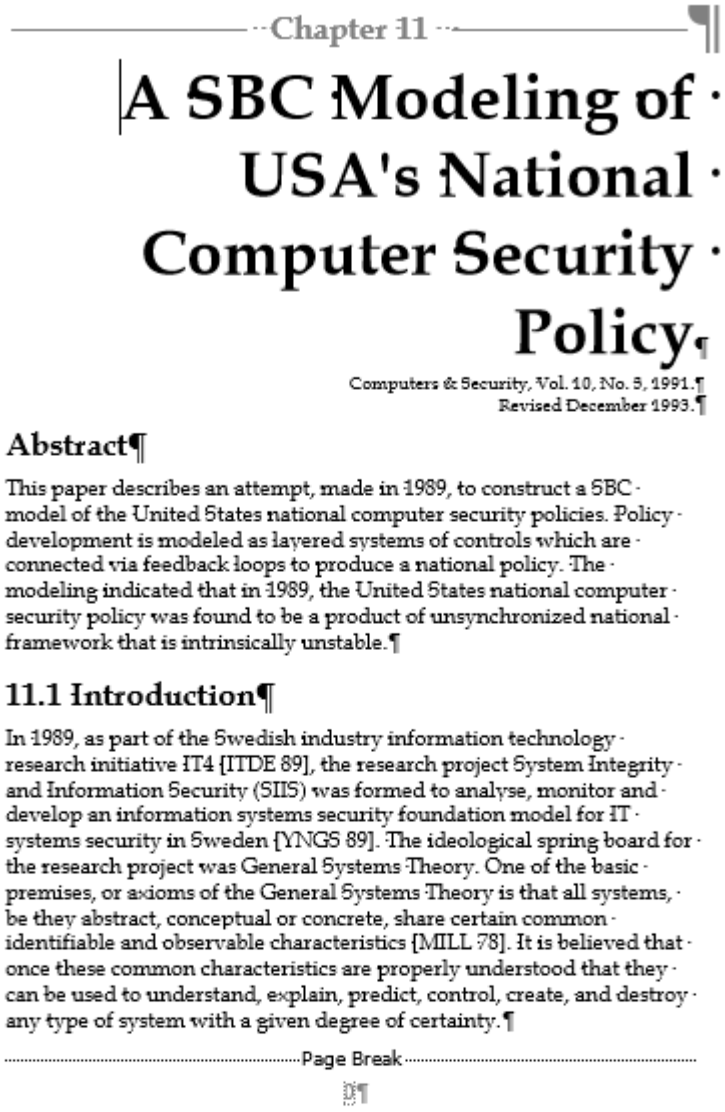
Peter G. Neumann and Donn B. Parker maintain that security of computer systems and networks have developed without sufficient attention to actual cases of computer security failures or breaches



Essentially, all models are wrong, but some are useful. (Box and Draper 1987, 424)

Some History of Security Modeling

1989



Chapter 11 ¶

A SBC Modeling of USA's National Computer Security Policy¶

Computers & Security, Vol. 10, No. 5, 1991.¶
Revised December 1993.¶

Abstract¶

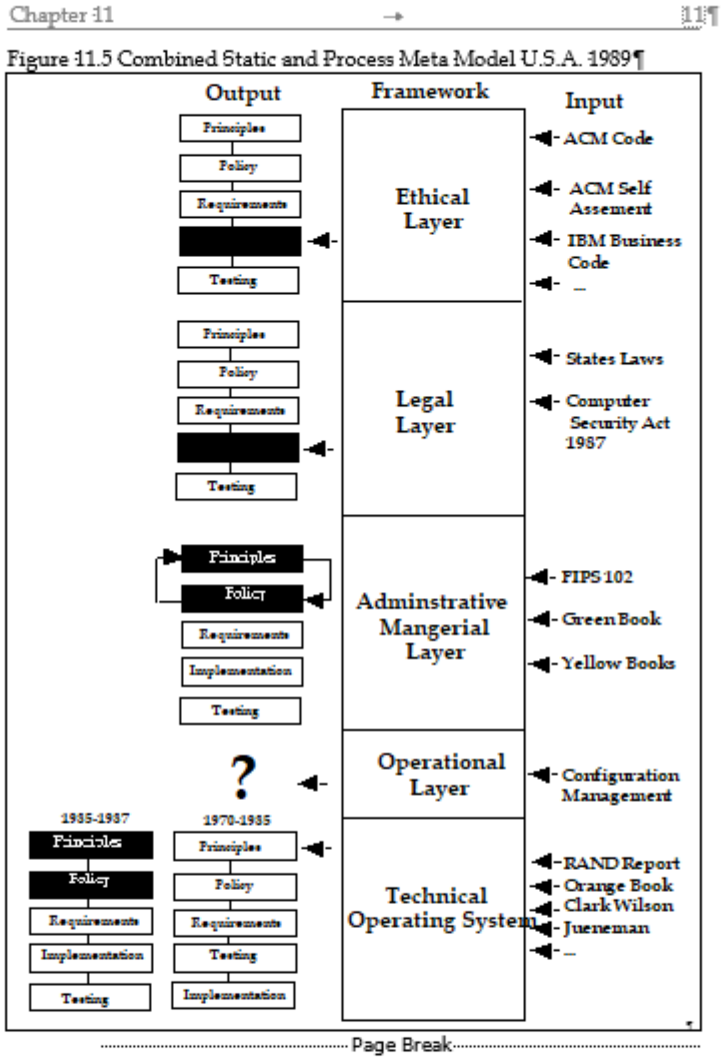
This paper describes an attempt, made in 1989, to construct a SBC model of the United States national computer security policies. Policy development is modeled as layered systems of controls which are connected via feedback loops to produce a national policy. The modeling indicated that in 1989, the United States national computer security policy was found to be a product of unsynchronized national framework that is intrinsically unstable.¶

11.1 Introduction¶

In 1989, as part of the Swedish industry information technology research initiative IT4 [ITDE 89], the research project System Integrity and Information Security (SIIS) was formed to analyse, monitor and develop an information systems security foundation model for IT systems security in Sweden [YNGS 89]. The ideological spring board for the research project was General Systems Theory. One of the basic premises, or axioms of the General Systems Theory is that all systems, be they abstract, conceptual or concrete, share certain common identifiable and observable characteristics [MILL 78]. It is believed that once these common characteristics are properly understood that they can be used to understand, explain, predict, control, create, and destroy any type of system with a given degree of certainty.¶

Page Break

¶

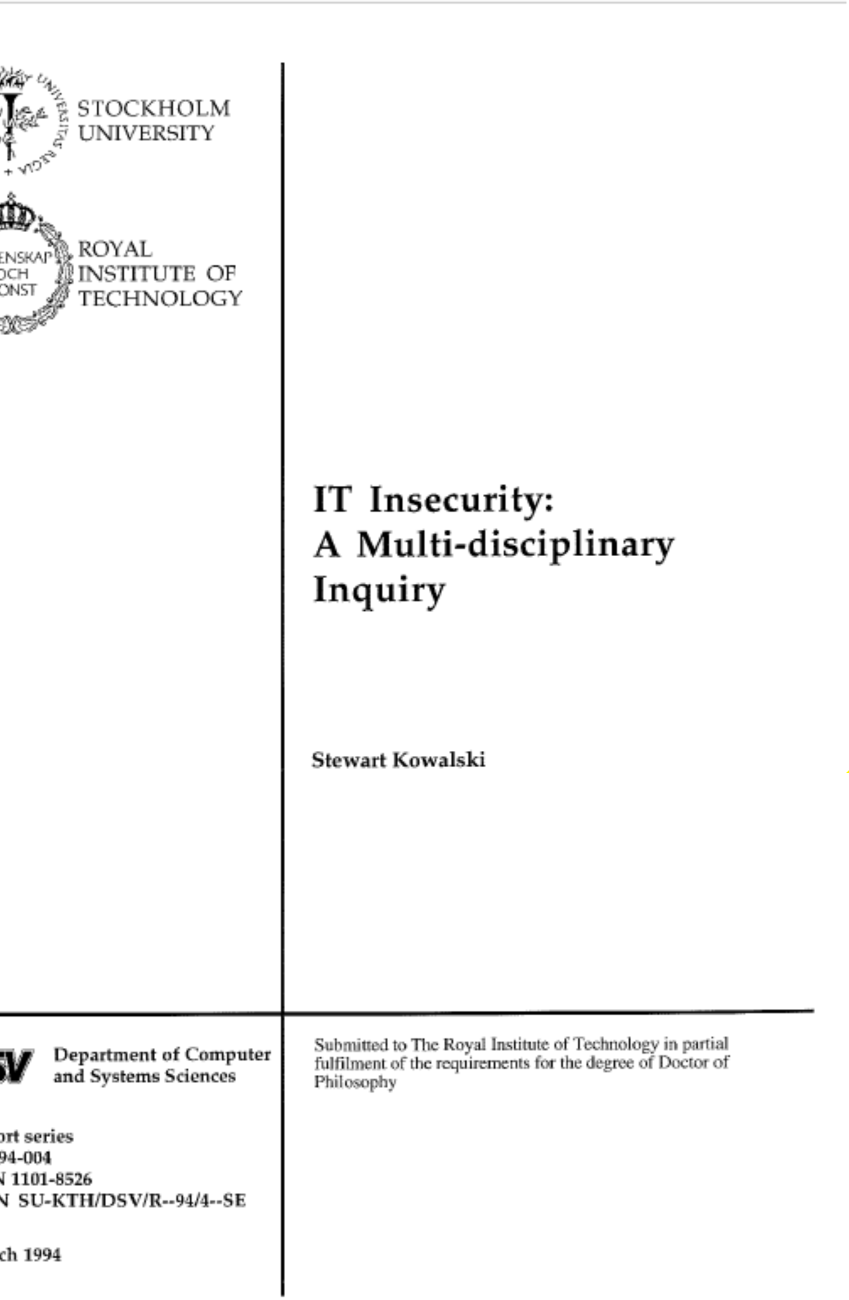


Chapter 11 → 11¶

Figure 11.5 Combined Static and Process Meta Model U.S.A. 1989¶

Page Break

A Socio-Technical Dynamic Model



STOCKHOLM
UNIVERSITY

ENSKAP
OCH
ONST

ROYAL
INSTITUTE OF
TECHNOLOGY

IT Insecurity:
A Multi-disciplinary
Inquiry

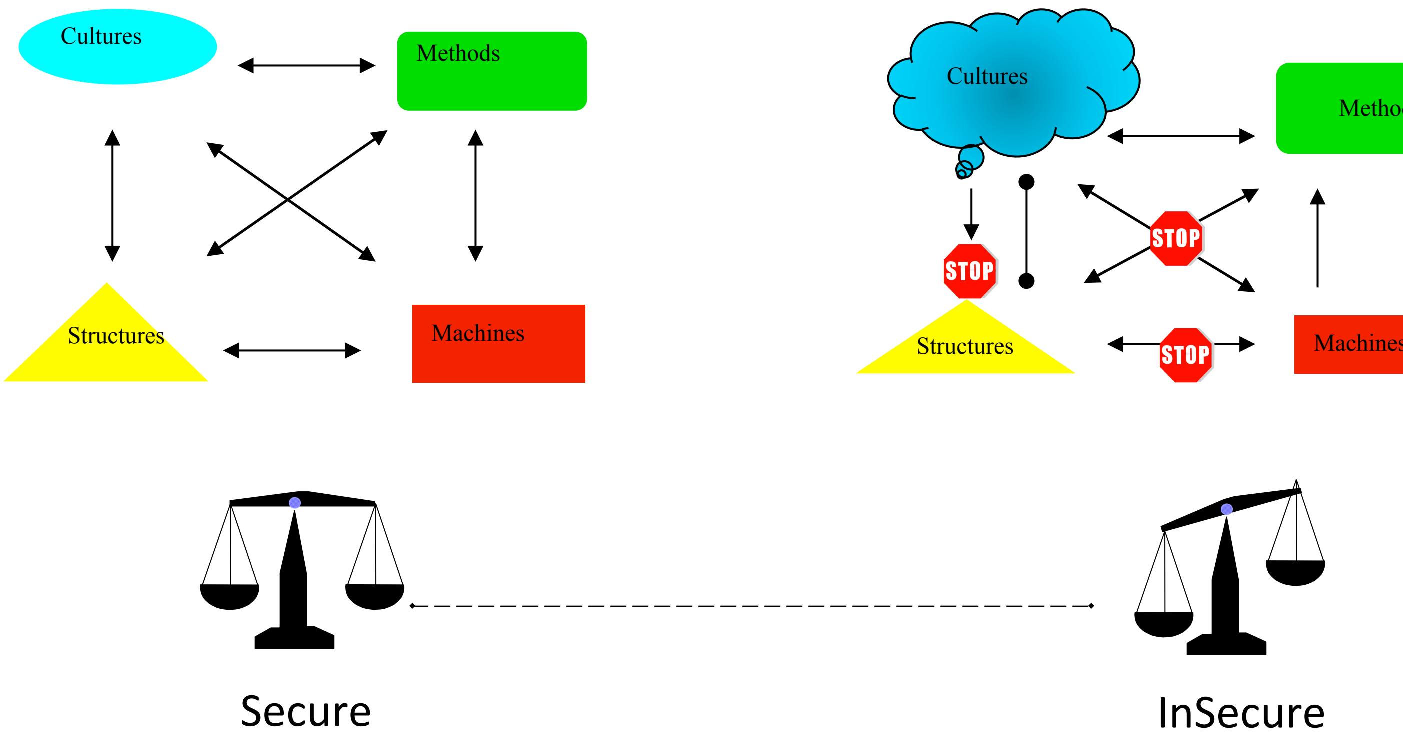
Stewart Kowalski

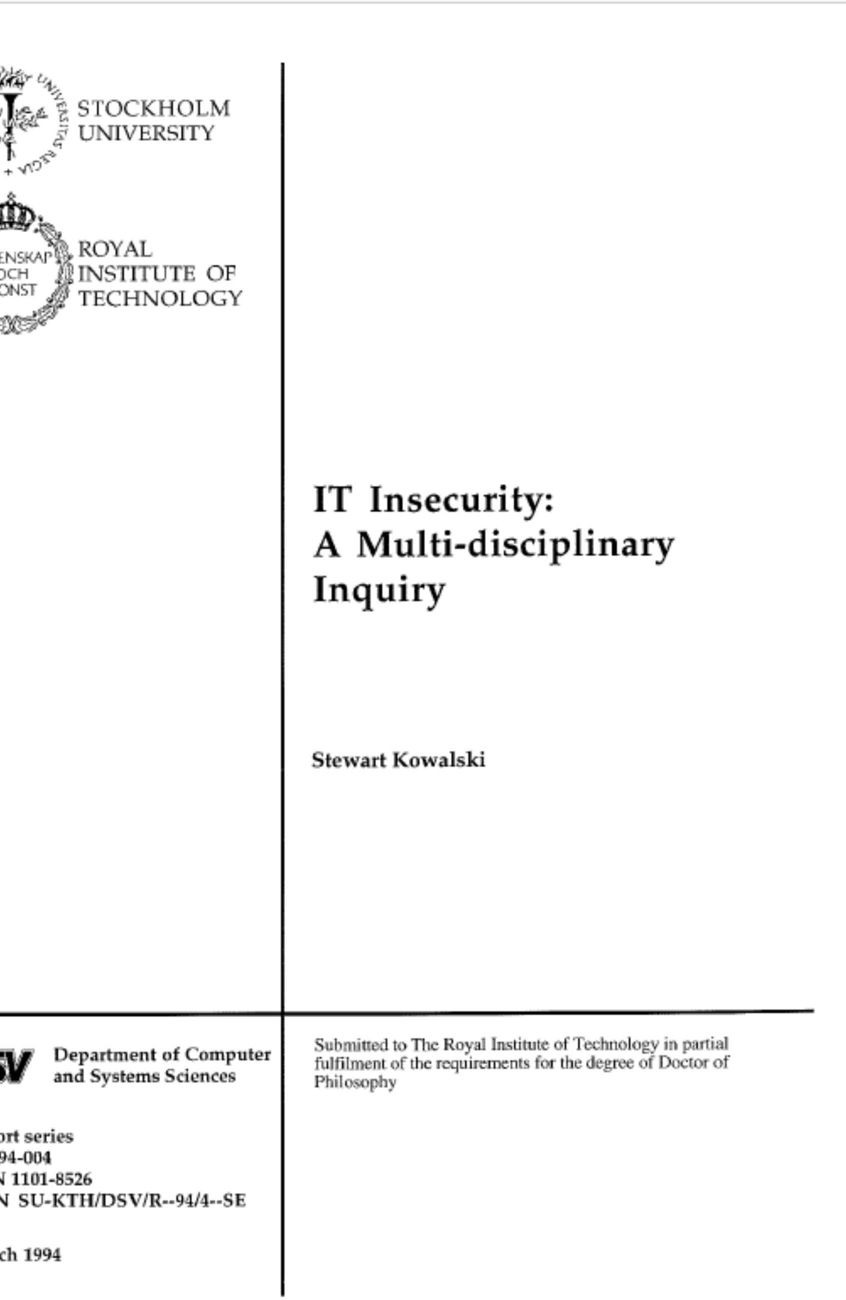
SV Department of Computer
and Systems Sciences

Submitted to The Royal Institute of Technology in partial fulfilment of the requirements for the degree of Doctor of Philosophy

ort series
94-004
N 1101-8526
N SU-KTH/DSV/R--94/4--SE

ch 1994





STOCKHOLM UNIVERSITY

ROYAL INSTITUTE OF TECHNOLOGY

IT Insecurity:
A Multi-disciplinary
Inquiry

Stewart Kowalski

Department of Computer and Systems Sciences

Submitted to The Royal Institute of Technology in partial fulfilment of the requirements for the degree of Doctor of Philosophy

ort series
94-004
N 1101-8526
N SU-KTH/DSV/R--94/4--SE

ch 1994

A Socio-Technical Static Model

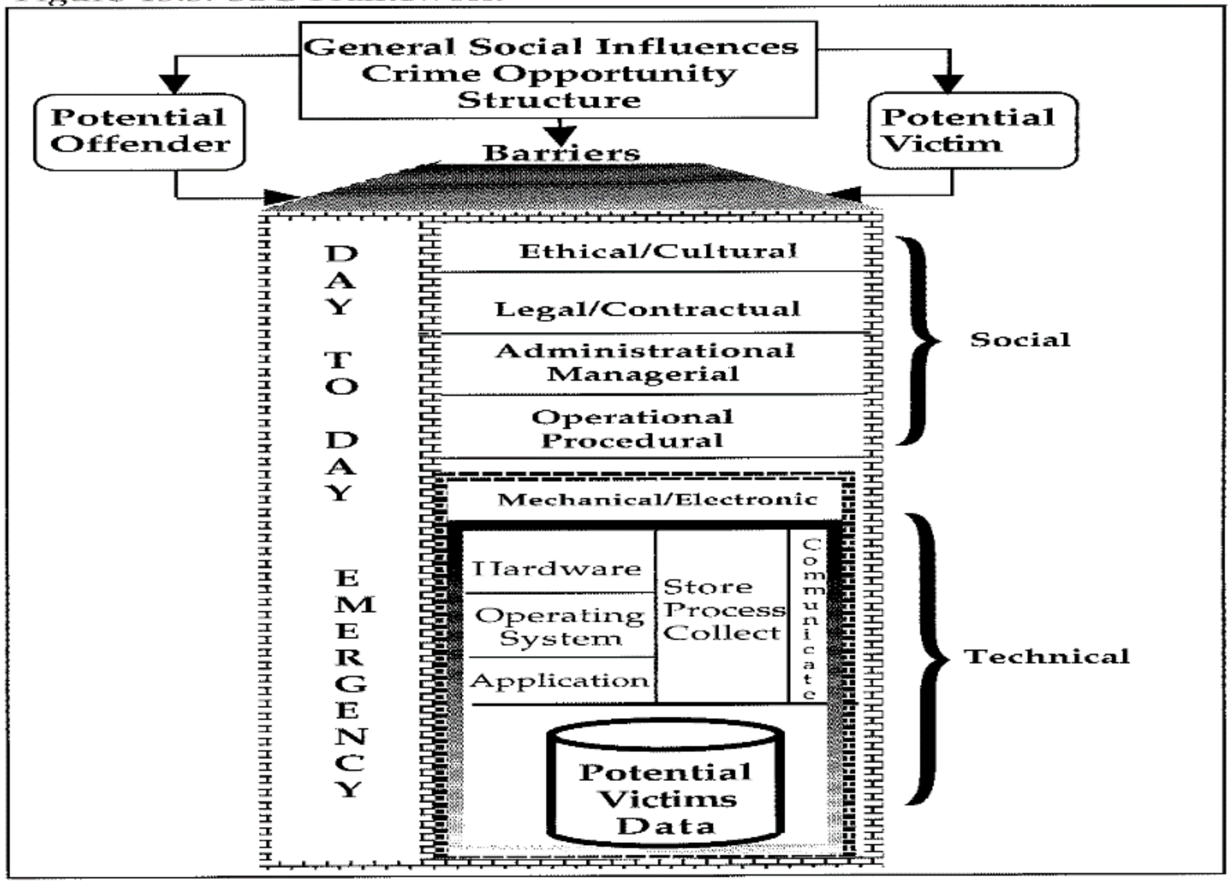
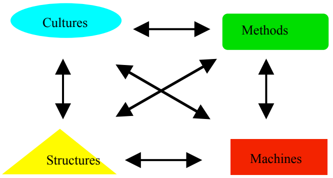
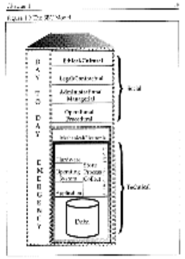


Figure 13.3. SBC Framework

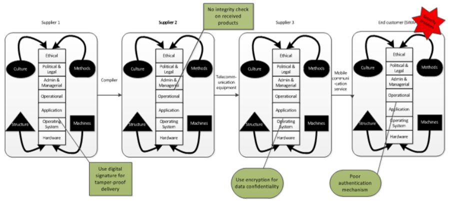
Work Plan for The Next 30 Minutes Together

- Security Modeling and Socio-Techncial Modeling 20 Minute
  - Some History
  - Some Theory
  - Some Practise

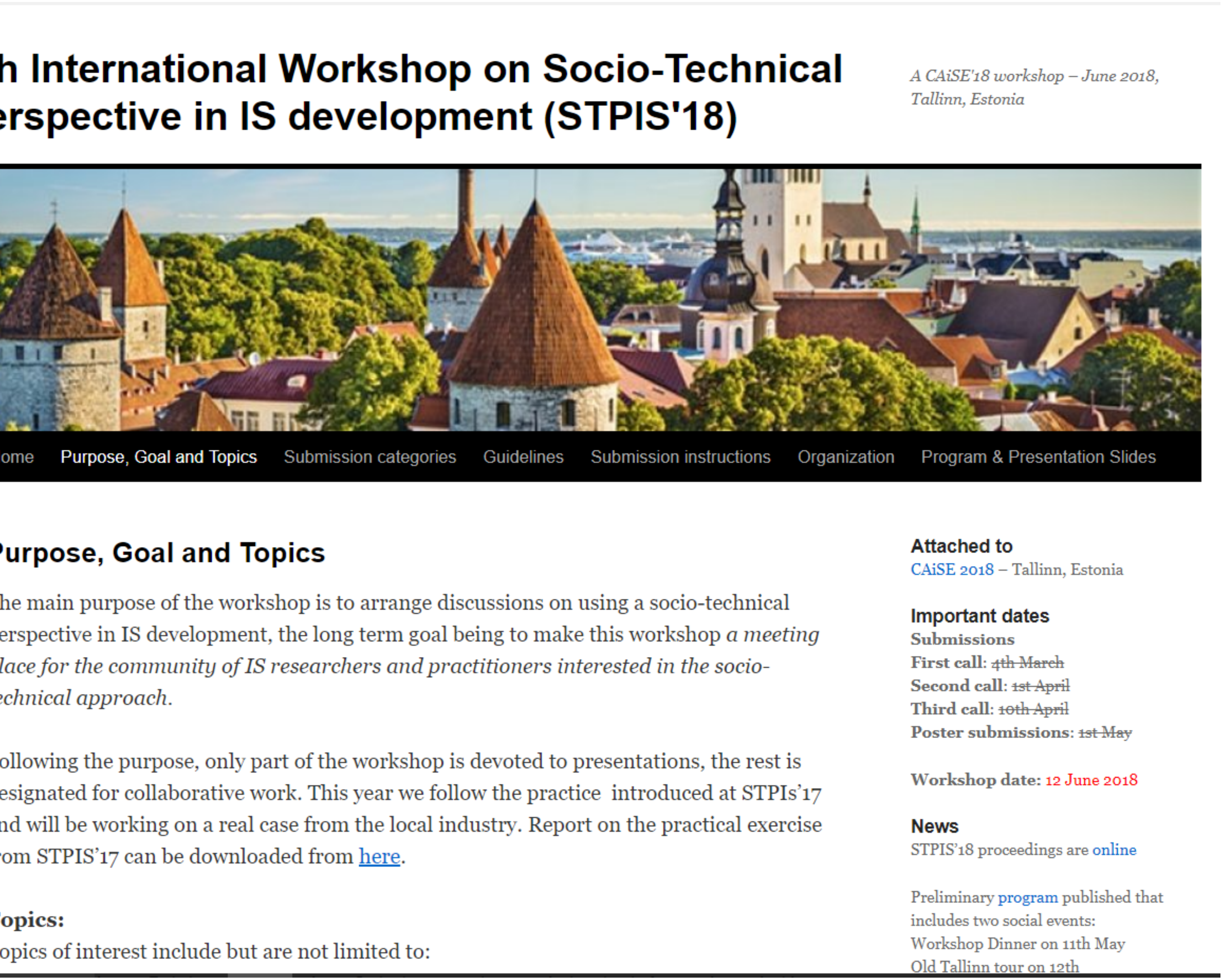




Open Source Supplier Threat Modeling


Supplier 1
Supplier 2
Supplier 3
End customer (SWA
Security problem
No integrity check on received products
Culture
Methods
Structure
Machines
Ethical
Political & Legal
Admin & Managerial
Operational
Application
Operating System
Hardware
Compiler
Telecomm-unication equipment
Mobile communi-cation service
Use digital signature for tamper-proof delivery
Use encryption for data confidentiality
Poor authentication mechanism

- Prolog Roundtable Session II 5 Minutes
  - Introduction to Cases Study Esclation Maturity Modeling Validation
- Questions (5 Minutes)



h International Workshop on Socio-Technical erspective in IS development (STPIS'18)

A CAiSE'18 workshop – June 2018, Tallinn, Estonia

urpose, Goal and Topics

he main purpose of the workshop is to arrange discussions on using a socio-technical erspective in IS development, the long term goal being to make this workshop *a meeting lace for the community of IS researchers and practitioners interested in the socio-echnical approach*.

ollowing the purpose, only part of the workshop is devoted to presentations, the rest is esignated for collaborative work. This year we follow the practice introduced at STPIs'17 nd will be working on a real case from the local industry. Report on the practical exercise rom STPIS'17 can be downloaded from here.

opics:

opics of interest include but are not limited to:

Attached to

CAiSE 2018 – Tallinn, Estonia

Important dates

Submissions
First call: ~~4th March~~
Second call: ~~1st April~~
Third call: ~~10th April~~
Poster submissions: ~~1st May~~

Workshop date: 12 June 2018

News

STPIS'18 proceedings are online

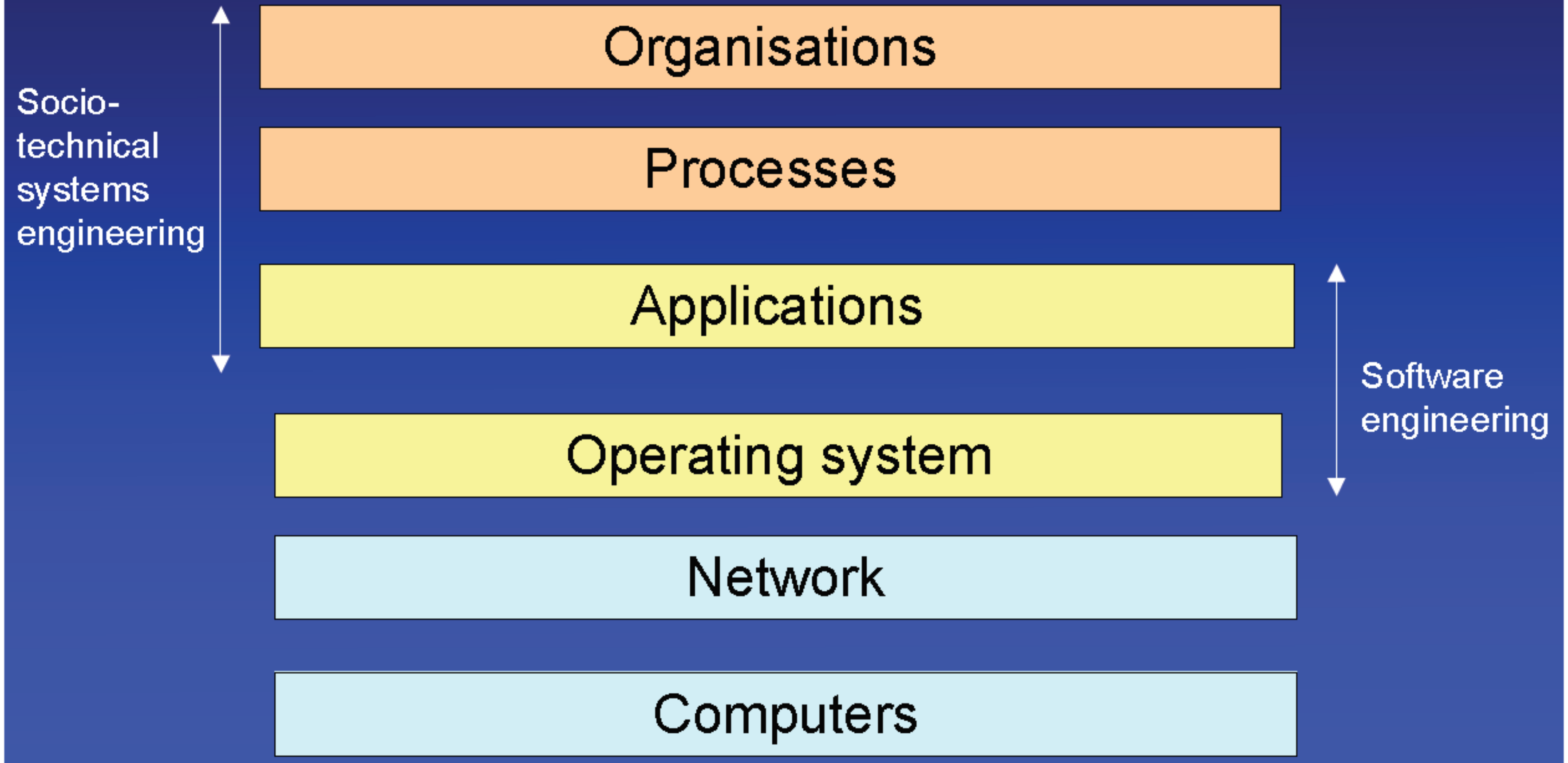
Preliminary program published that includes two social events:
Workshop Dinner on 11th May
Old Tallinn tour on 12th

Where Theory and Practise Mee

Next Workshop 2019
June –Stockholm

Open for Business Cases.

Systems engineering



Organisations

Processes

Applications

Operating system

Network

Computers

Socio-technical systems engineering

Software engineering

Mental Models

- The concept was first introduced by Kenneth Craik in his book

  The Nature of Explanation (1943).
  - that the mind forms models of reality and uses them to predict similar future events.

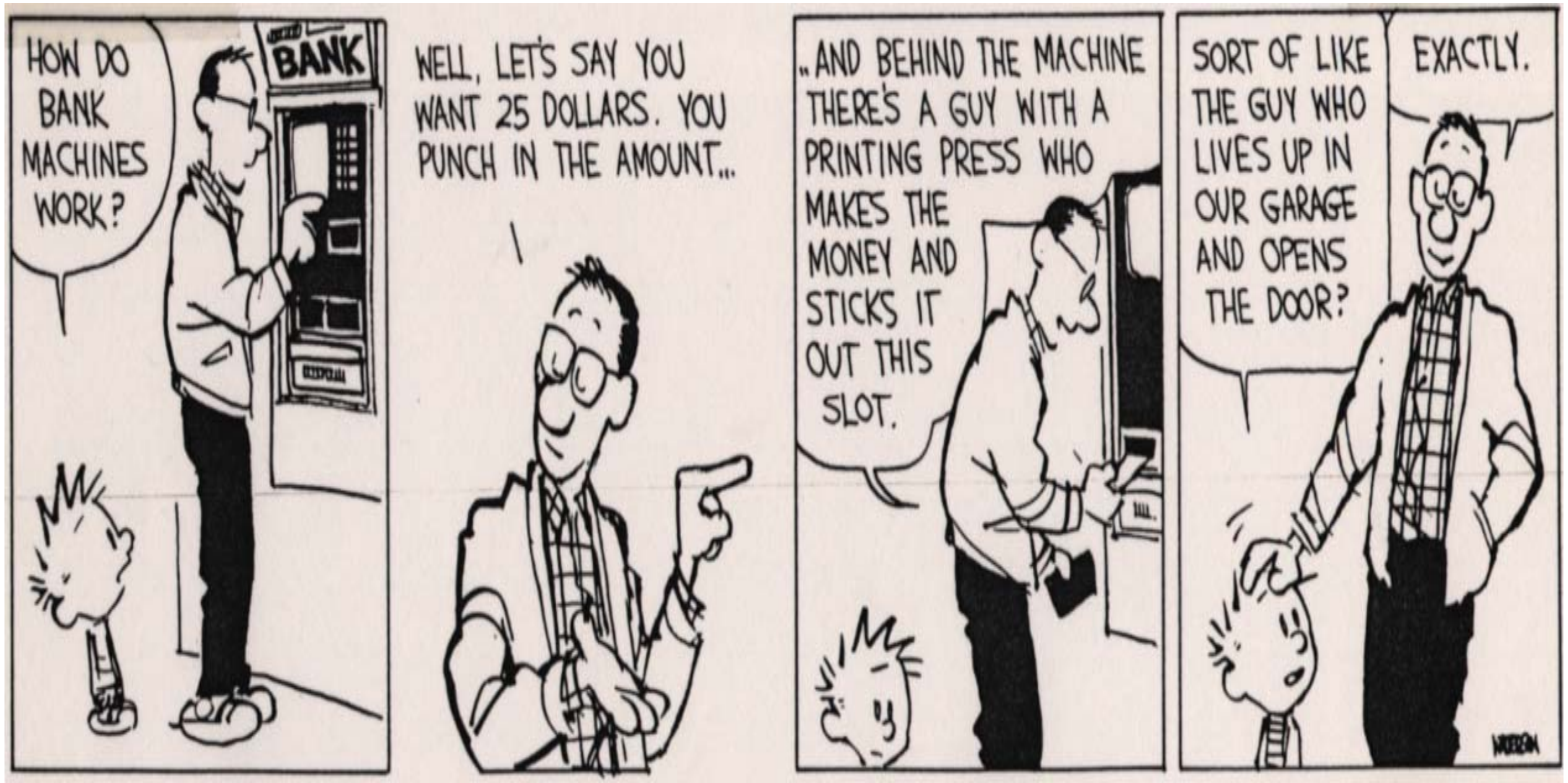
- User gain experience by seeing and using thinks and systems

- User gradually form a working model of the systems based on their past experience.

- As they use gain more experience they develop a model to predict how the system works or does not work

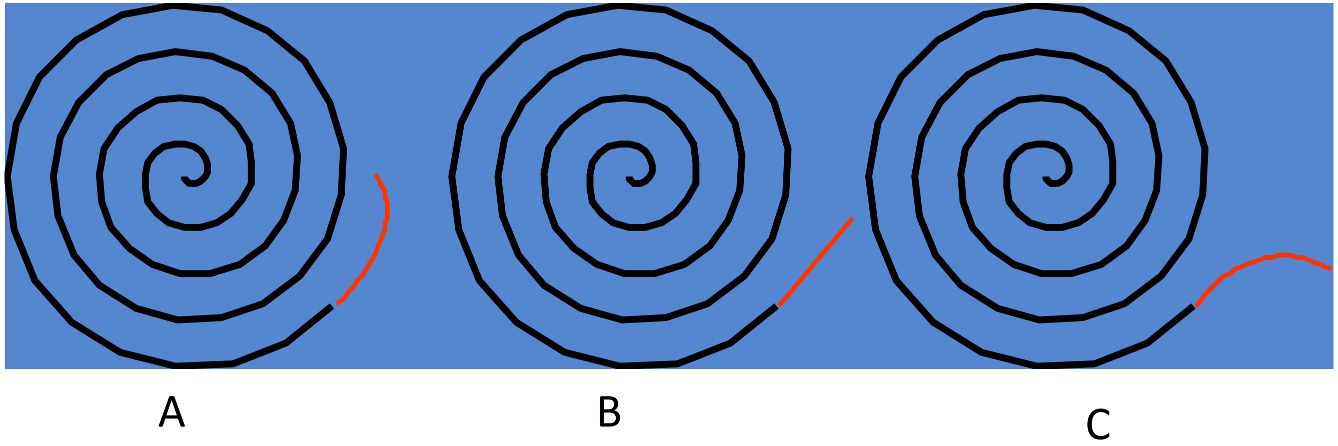
- http://managementhelp.org/systems/systems.htm

Mental Model ATM

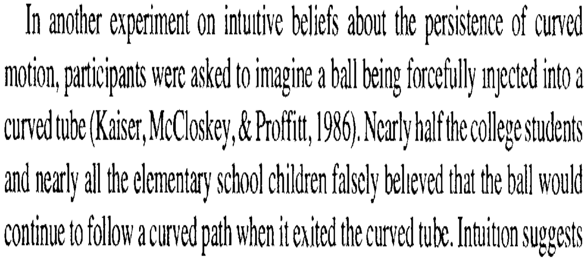

HOW DO BANK MACHINES WORK?
BANK
WELL, LET'S SAY YOU WANT 25 DOLLARS. YOU PUNCH IN THE AMOUNT...
..AND BEHIND THE MACHINE THERE'S A GUY WITH A PRINTING PRESS WHO MAKES THE MONEY AND STICKS IT OUT THIS SLOT.
SORT OF LIKE THE GUY WHO LIVES UP IN OUR GARAGE AND OPENS THE DOOR?
EXACTLY.
WATTERSON

Naïve physics (Visual Logic to predict path of Ball)

- What would happen to a ball shot through this pipe?

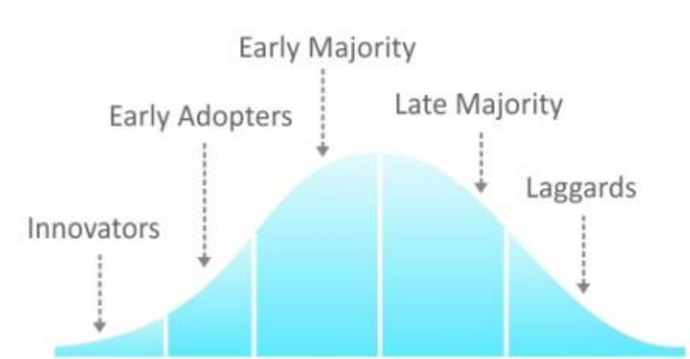


- People often respond by assuming curvilinear momentum
  - McCloskey and Proffitt



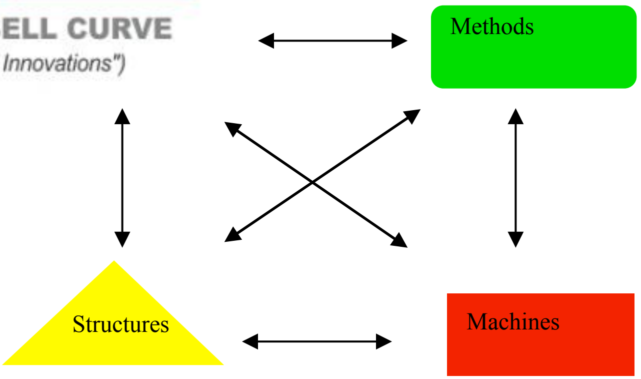
In another experiment on intuitive beliefs about the persistence of curved motion, participants were asked to imagine a ball being forcefully injected into a curved tube (Kaiser, McCloskey, & Proffitt, 1986). Nearly half the college students and nearly all the elementary school children falsely believed that the ball would continue to follow a curved path when it exited the curved tube. Intuition suggests

A Measurement Culture and Adoption Bell Curve



TECHNOLOGY ADOPTION BELL CURVE

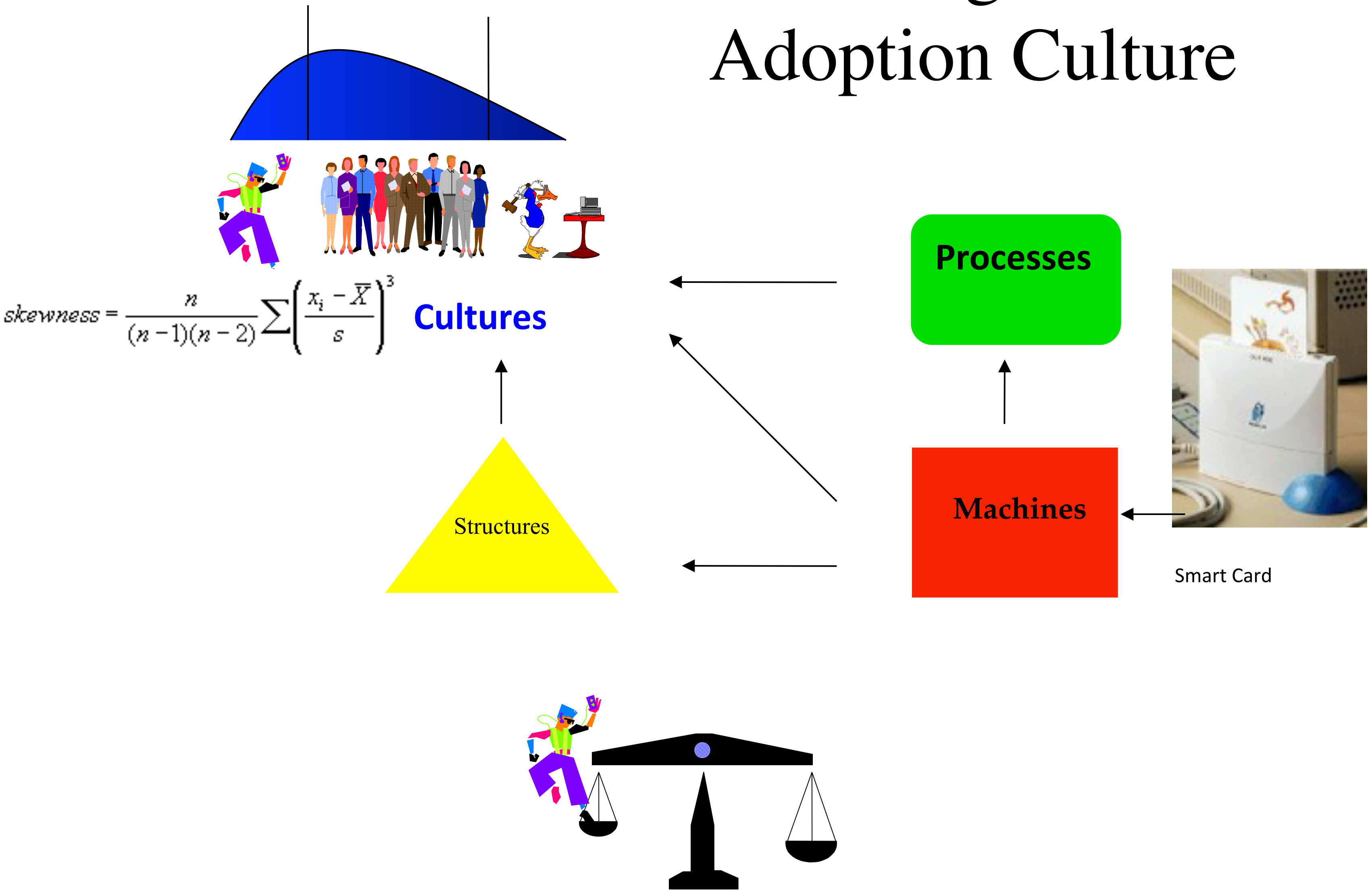
(By Everett Rogers, Ref. - "Diffusion of Innovations")


Methods

Structures

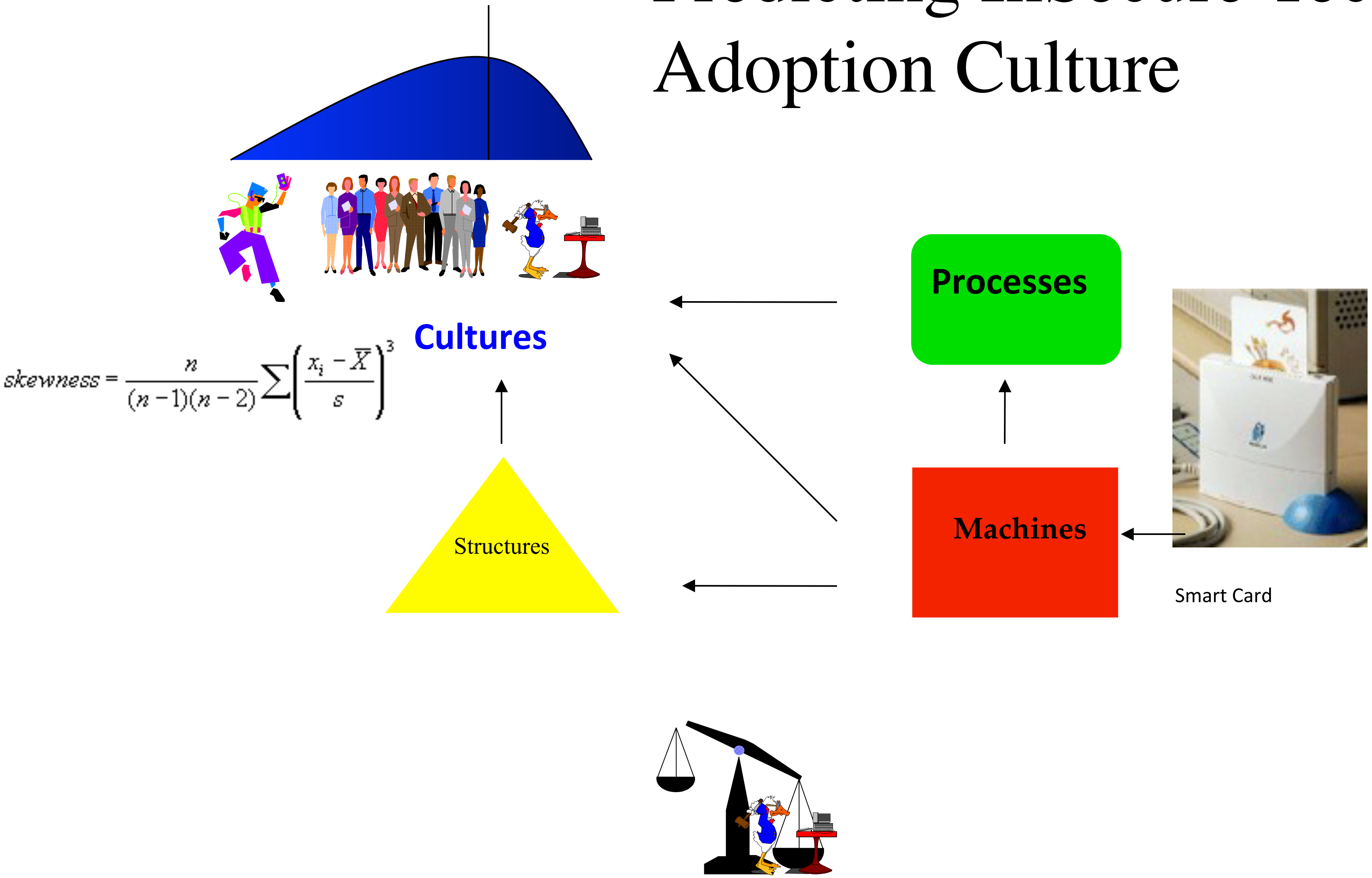
Machines

Predicting Secure Technology Adoption Culture



$$skewness = \frac{n}{(n-1)(n-2)}\sum\left(\frac{x_i - \overline{X}}{s}\right)^3$$

Predicting InSecure Technology Adoption Culture



$$skewness = \frac{n}{(n-1)(n-2)}\sum\left(\frac{x_i - \overline{X}}{s}\right)^3$$

Case Study in Socio-Techncal Security Mental Models at a Swedish Agency

Tove Wätterstam

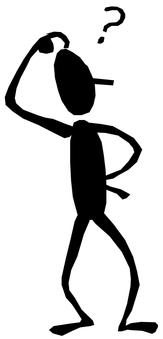
Stewart Kowalski

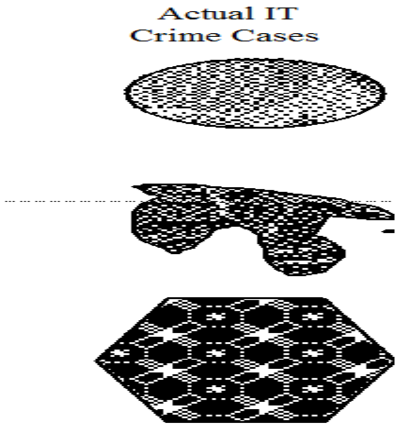
Robert Hoffmann

The Problem

Information Security Incidents {X,Y,Z} has occurred

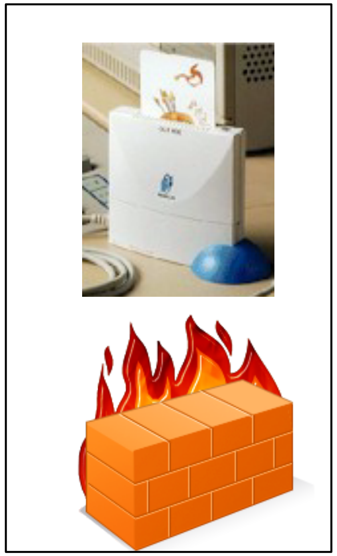
What should we do so it does not happen again?





(Social)

Policys, Guidelines, Rules...



(Technical)

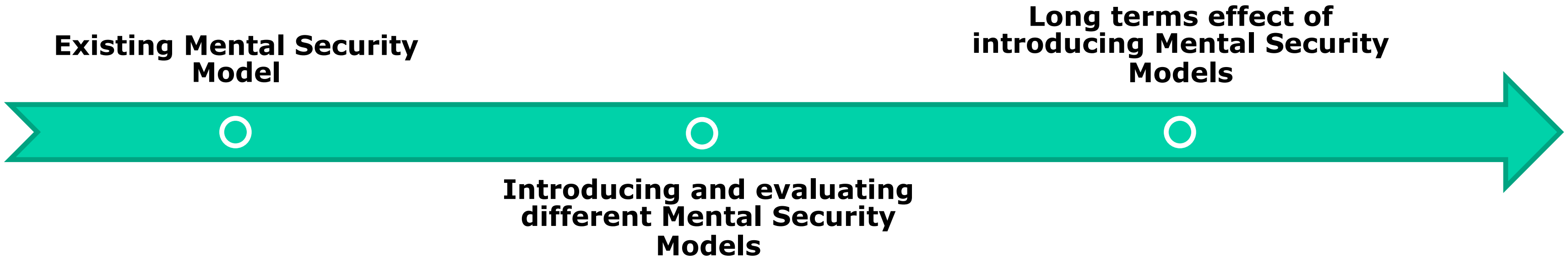
Mental Models – Related work

The SBC Model (Kowalski 1991)

Valued Based Risk Analysis: The Key to Sucessfull Commercial Security Targets for the Telecom Industry (Kowalski et al 2002)

Mental models of Data Privacy and Security Extracted from Interviews with Indians (Diesner et al. 2005)

Mental models of Computer Security Risks (Asgharpour et al 2007)

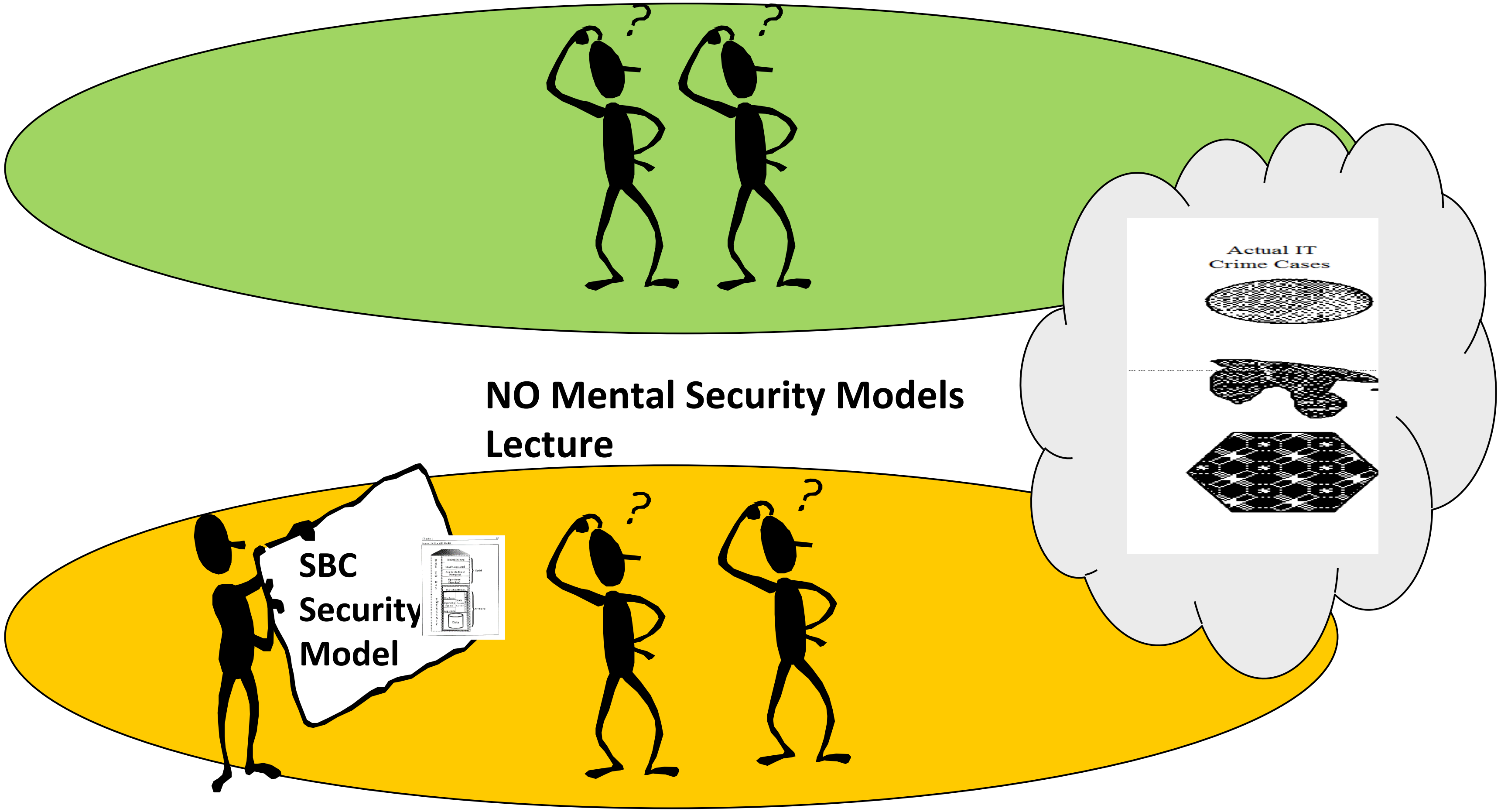


Existing Mental Security Model

Introducing and evaluating different Mental Security Models

Long terms effect of introducing Mental Security Models

Experiment



NO Mental Security Models Lecture

Mental Security Models Lecture

Tasks to solve for the groups

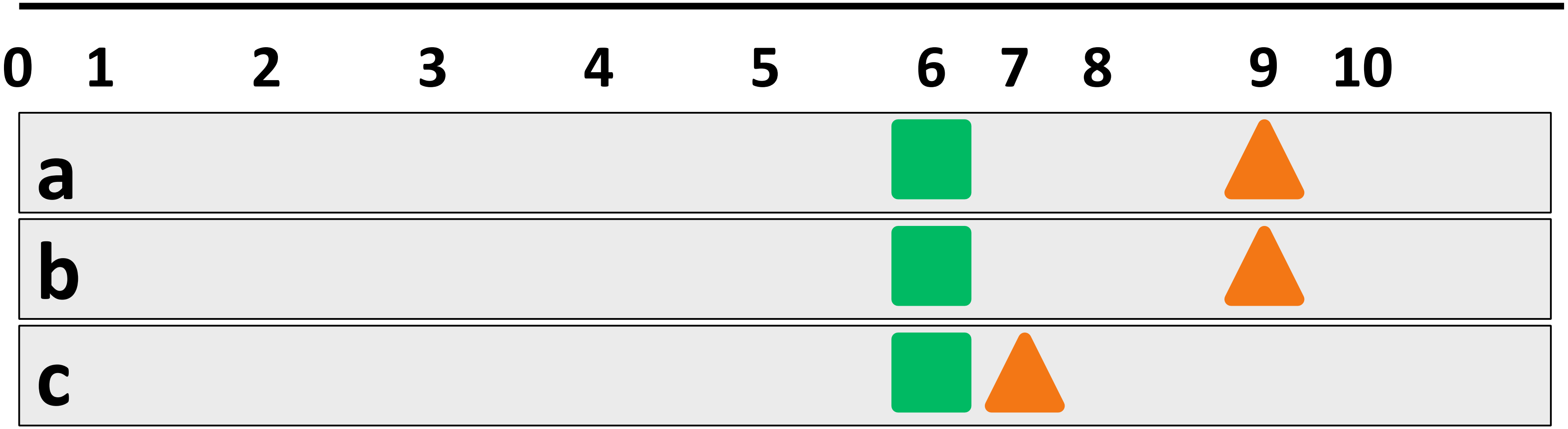
- Allocate limited resources on five different information security improvment actions
- Describe what went wrong and how to avoid two different information security incidents, described in time set log format respectively in text format
- Describe general and specific problems with the organization‘s IT security policy.

Results from the experiment

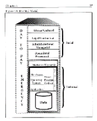
a. Allocate resources - money

b. Incident described as log file

c. Incident described in text format



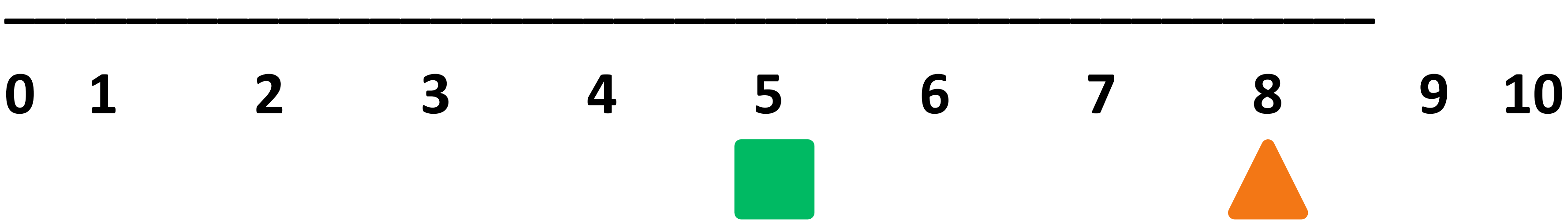
🟩 No lecture



▲ Mental model lecture

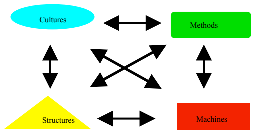
Results from the experiment

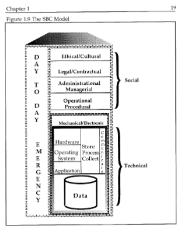
The trained socio-technical modeling group suggestions to improve existing IT security policy were ranked significally higher to a „blinded" expert reviews



🟩 No lecture

▲ Mental model lecture

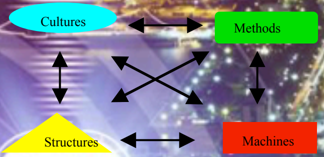


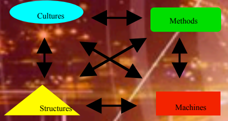


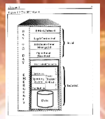
rwegian Cyber Ranges -NCR

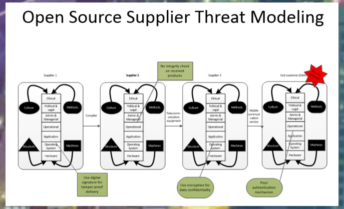
lace Where the Digital World and the Real World Can Meet

a simulated and safe socio-technical enviaroment







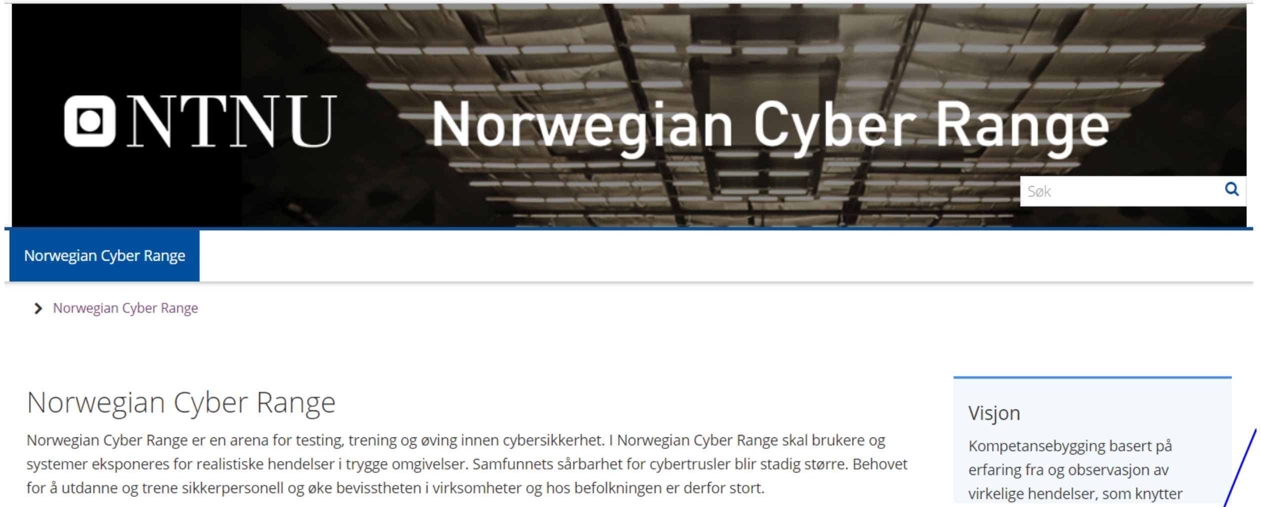

Open Source Supplier Threat Modeling

Supplier 1
Supplier 2
Supplier 3
End customer (SWA
Security problem
Ethical
Political & Legal
Admin & Managerial
Operational
Application
Operating System
Hardware
Culture
Methods
Structure
Machines
Compiler
Telecomm-unication equipment
Mobile communi-cation service
No integrity check on received products
Use digital signature for tamper-proof delivery
Use encryption for data confidentiality
Poor authentication mechanism

Stewart Kowalski
Professor Information Security
Norwegian Cyber Range
Norwegian University of Science and Technology

Research Partners and Beta Customers
Welcome to contact

stewart.kowalski@ntnu.no



NTNU Norwegian Cyber Range

Søk

Norwegian Cyber Range

› Norwegian Cyber Range

Norwegian Cyber Range

Norwegian Cyber Range er en arena for testing, trening og øving innen cybersikkerhet. I Norwegian Cyber Range skal brukere og systemer eksponeres for realistiske hendelser i trygge omgivelser. Samfunnets sårbarhet for cybertrusler blir stadig større. Behovet for å utdanne og trene sikkerpersonell og øke bevisstheten i virksomheter og hos befolkningen er derfor stort.

Visjon

Kompetansebygging basert på erfaring fra og observasjon av virkelige hendelser, som knytter

https://www.ntnu.no/ncr

OPPLAND fylkeskommune

FORSVARET Cyberforsvaret

SIVILFORSVARET

telenor

EVRY

NorSIS Norsk senter for informasjonssikring

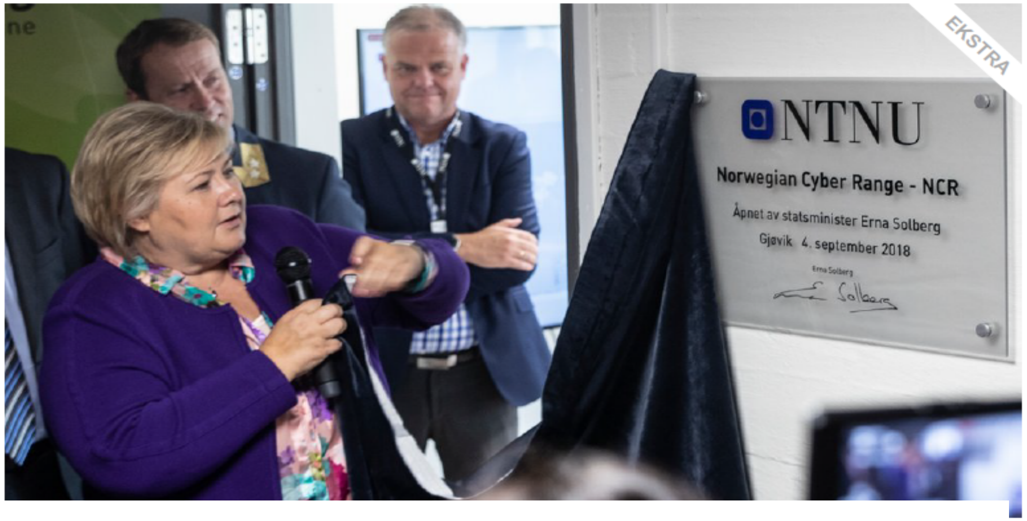
Innovasjon Norge

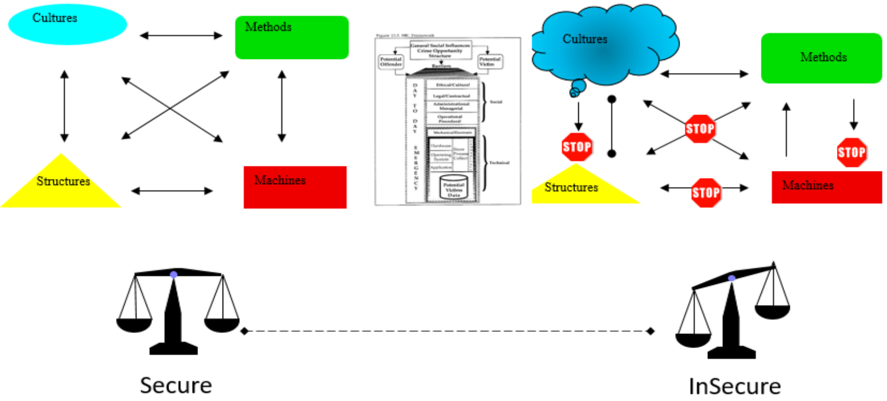
REPUBLIC OF ESTONIA MINISTRY OF DEFENCE

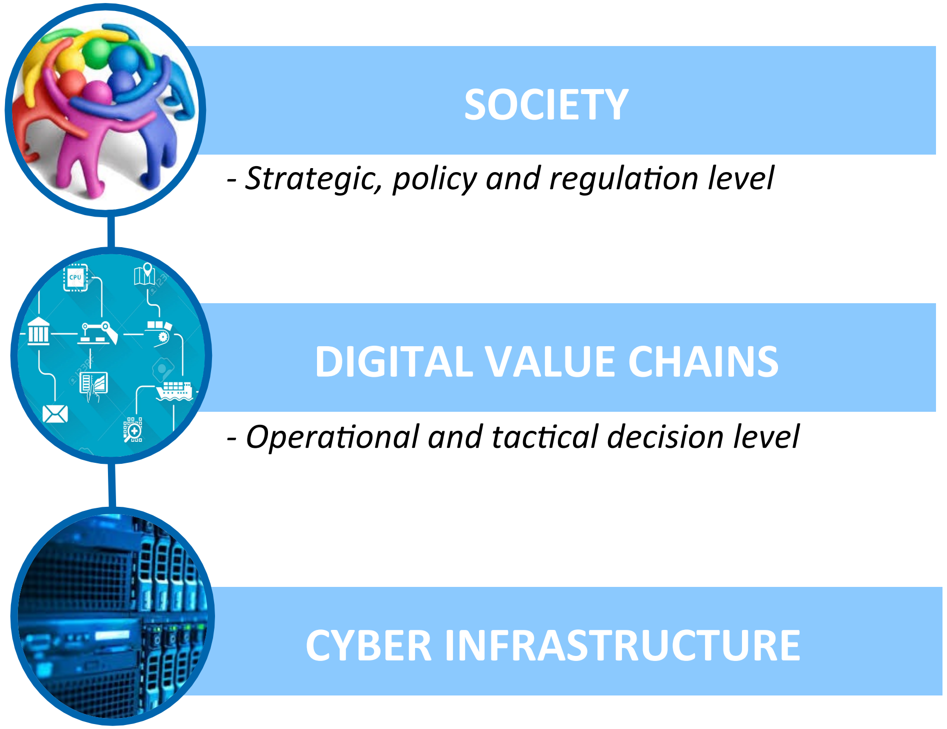
TALLINN UNIVERSITY OF TECHNOLOGY

NTNU Kunnskap for en bedre verden

STOCKHOLMS
ckho
ivers


EKSTRA
NTNU
Norwegian Cyber Range - NCR
Åpnet av statsminister Erna Solberg
Gjøvik 4. september 2018
Erna Solberg





SOCIETY

- Strategic, policy and regulation level

DIGITAL VALUE CHAINS

- Operational and tactical decision level

CYBER INFRASTRUCTURE

ational, international cyber range for testing, ning, educating and researching the socio-technical blems and soultions with the adoption and rgration of cyber and information technologies in anization and societies.