Ministry of Defence

SLF 30 jaar
SERVICE LOGISTICS FORUM

Science meets Business

March 30, 2026

Welcome

Ministry of Defence

SLF 30 jaar

SERVICE LOGISTICS FORUM

Program

- DReSC | Science point of view — Abhishta Abhishta
- DReSC | Business point of view — Jan-Willem Bullee
- Poster carousel
- Break
- DASLOCA | Science point of view — Bram Westerweel
- DASLOCA | Business point of view — Tom van Tent Beking
- Closure
- Drinks

Ministry of Defence

SLF 30 jaar
SERVICE LOGISTICS FORUM

Abhishta Abhishta

University of Twente

DReSC: Digital Resilience in Supply Chains

Abhishta
Associate Professor
Cyber Security Risk Management
University of Twente

TKI DINALOG
Dutch Institute for Advanced Logistics

UNIVERSITY OF TWENTE.

TU/e JADS Jheronimus Academy of Data Science

Topsector Logistiek

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Security to Resilience

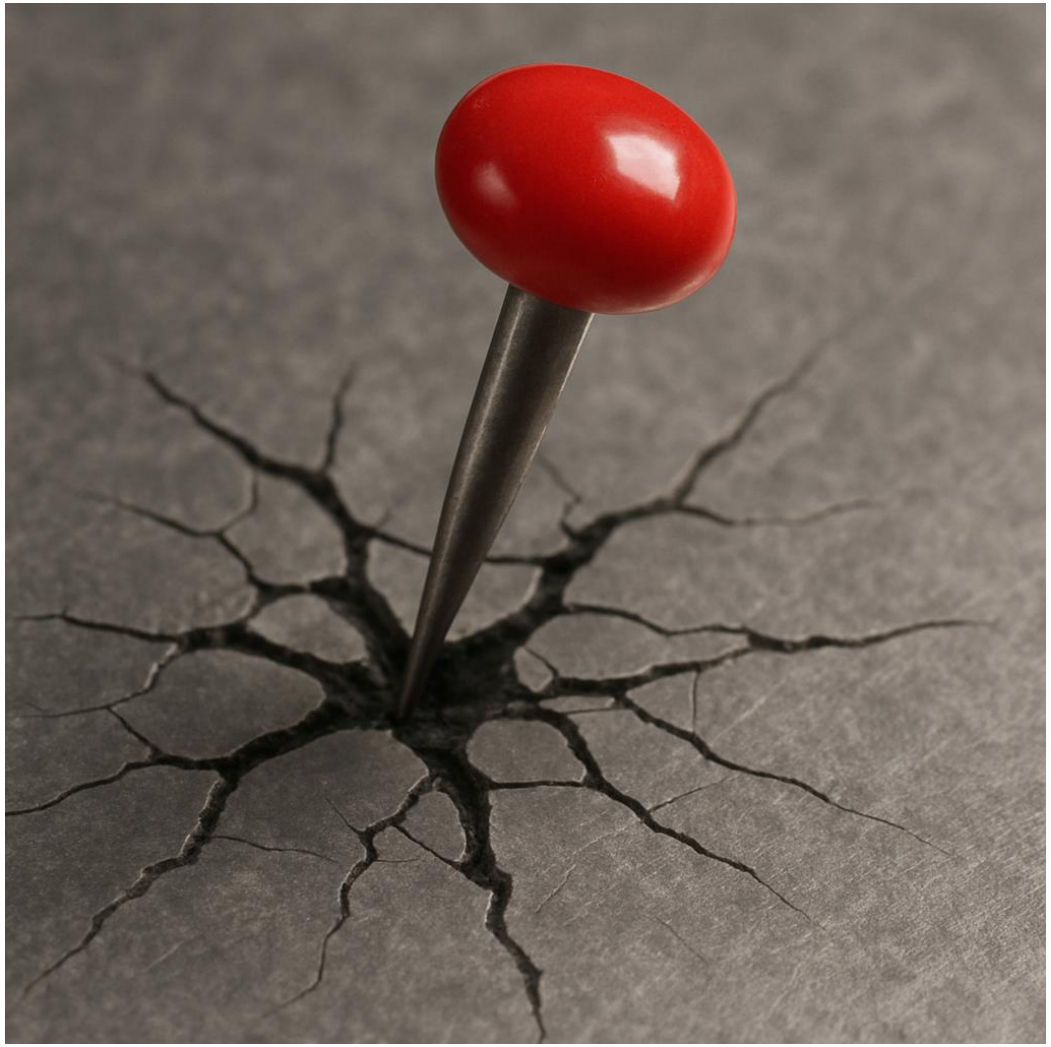
MAERSK MARKETS PEOPLE HARDWARE INDUSTRIES INVESTOR RELATIONS THE MAERSK GROUP

Maersk IT systems are down

We can confirm that Maersk IT systems are down across multiple sites and business units due to a cyber attack. We continue to assess the situation. The safety of our employees, our operations and customer's business is our top priority. We will update when we have more information.

Follow our Twitter feed for more information.

Read the post



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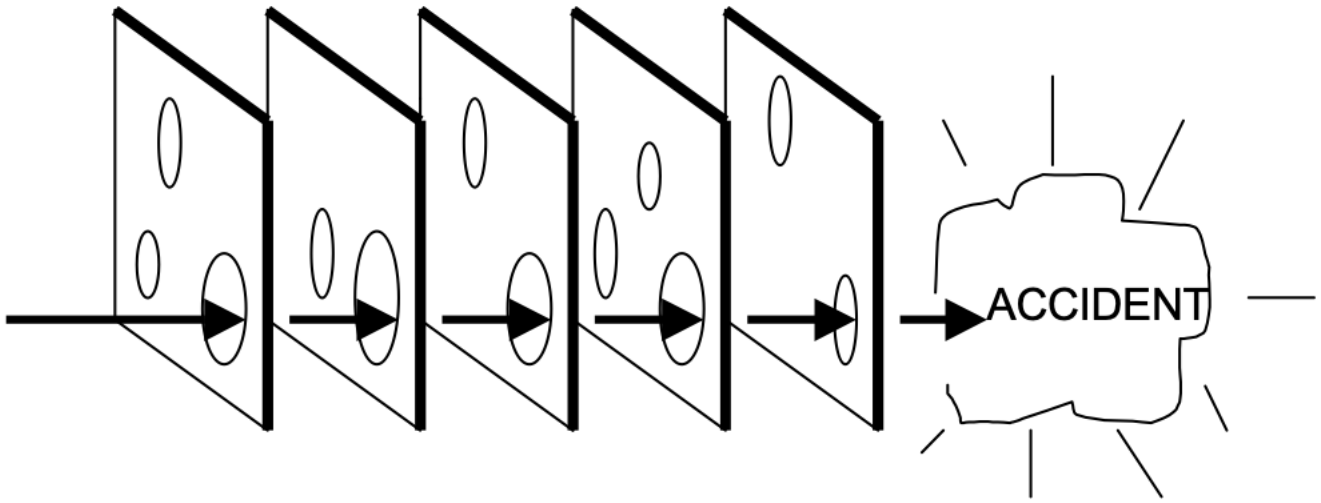
Swiss Cheese Model



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What we need to build resilience?

TRANSPARENT
PROCESSES AND SYSTEMS

MONITORING

PLAN OF ACTION

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NIS2 in brief

- Applies to essential and important entities across sectors like logistics, energy, health, finance and digital infrastructure.
- Requires cybersecurity policies, incident response plans, supply chain security, and encryption standards.
- Major incidents must be reported within 24 hours, with follow-ups and final impact assessments.
- Company leadership is directly responsible for compliance and must undergo cybersecurity training.
- Non-compliance can lead to fines of up to €10 million or 2% of global annual turnover.

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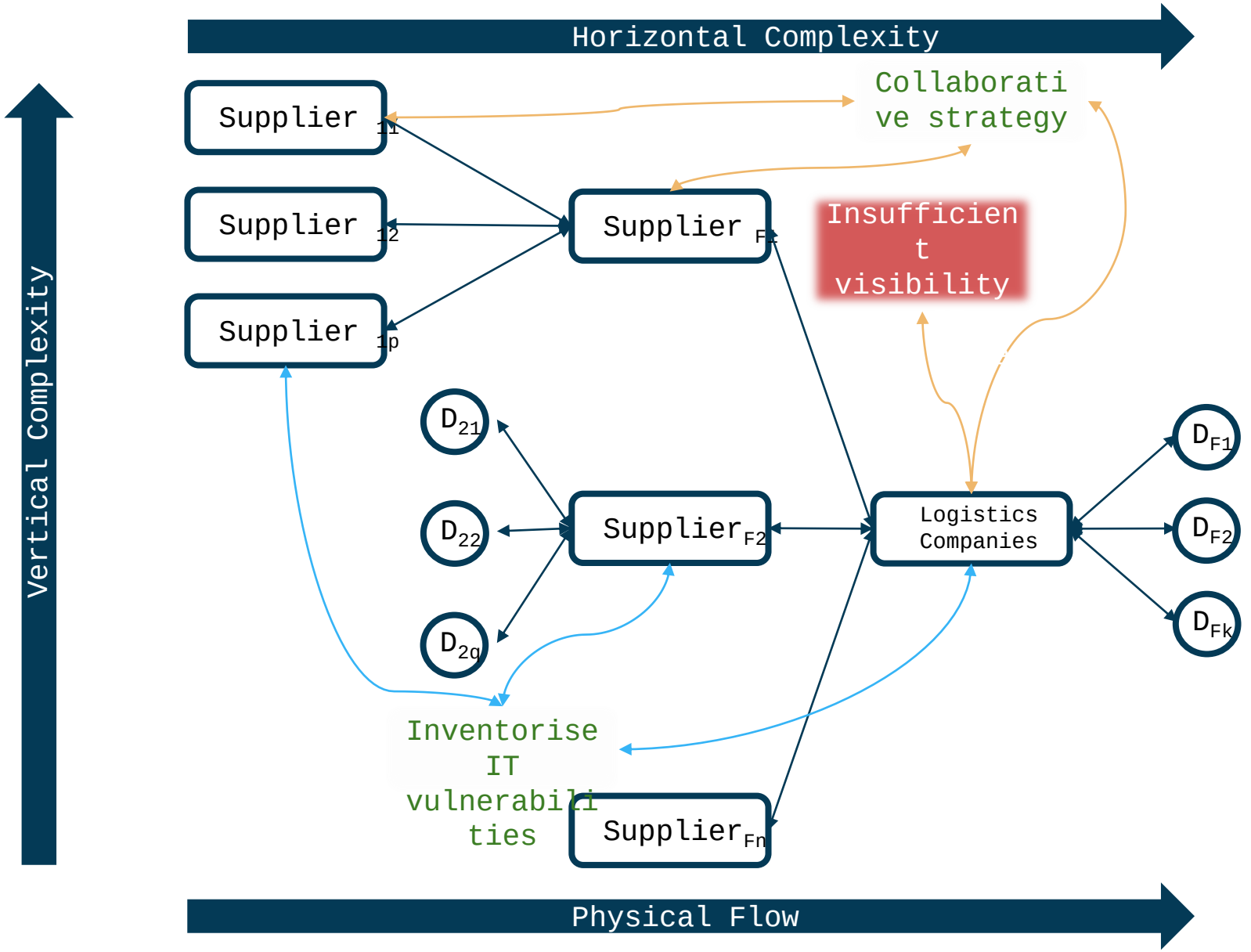
Popular Security Standards

ISO 27001

- **Risk-Based Framework**: Identify, assess, and treat information security risks using a structured, repeatable methodology.
- **Control Implementation**: Apply security controls from ISO 27001 Annex A, supported by documented policies and procedures.
- **Continuous Improvement**: Monitor, audit, and review the ISMS regularly to enhance effectiveness and respond to changes.

NIST CSF 2.0

- **Govern & Identify**: Define cybersecurity roles, responsibilities, and risks across assets, systems, and supply chains.
- **Protect & Detect**: Implement safeguards (e.g., access control, training) and monitor for anomalies or threats in real time.
- **Respond & Recover**: Act on incidents with structured response plans and restore operations while learning from disruptions.


Horizontal Complexity
Vertical Complexity
Physical Flow
Supplier 11
Supplier 12
Supplier 1p
Supplier F1
Collaborative strategy
Insufficient visibility
D21
D22
D2q
Supplier F2
Logistics Companies
DF1
DF2
DFk
Inventorise IT vulnerabilities
Supplier Fn

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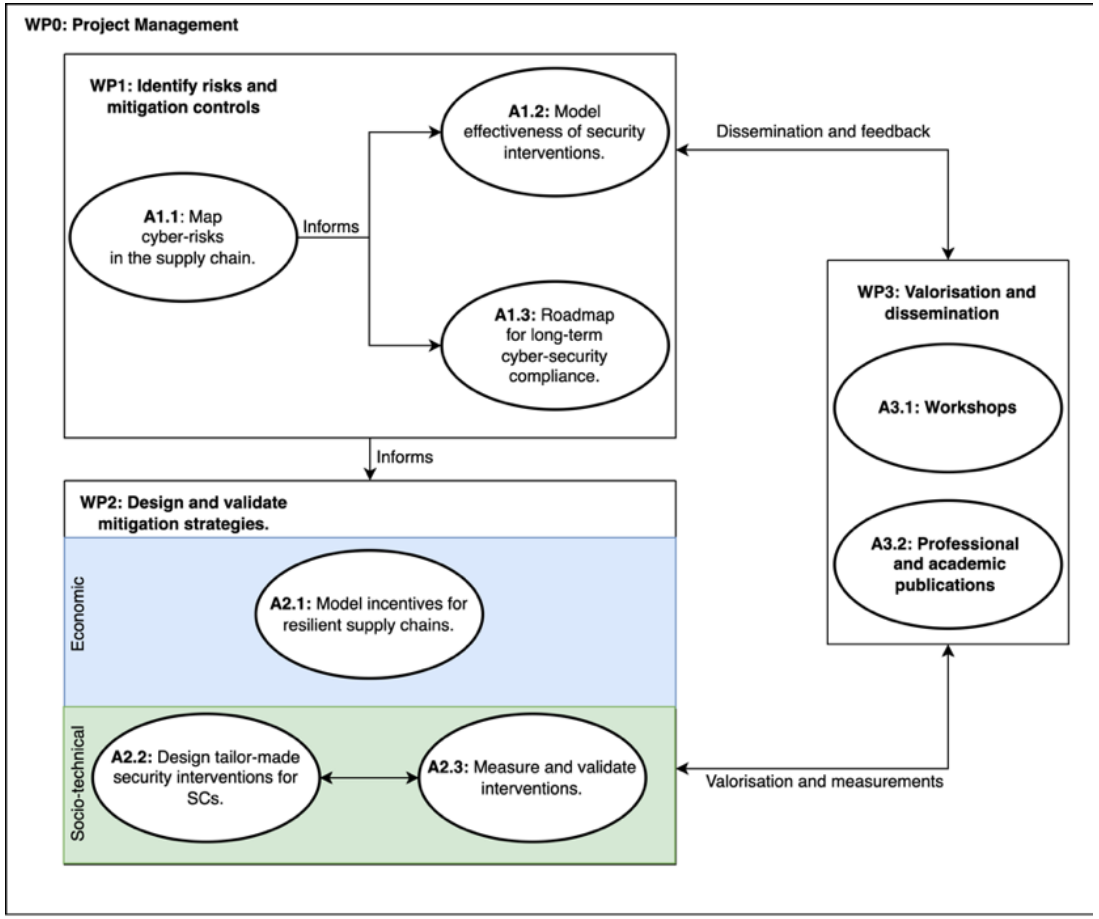
Our approach



- Address both **technical and non-technical** cybersecurity risks.
- Align **actions to strategy**, and embed both into organizational **culture**.
- Use **continuous feedback loops** from real-world practice to improve.
- Prioritize by resolving **known dependencies** and **existing risks** first.

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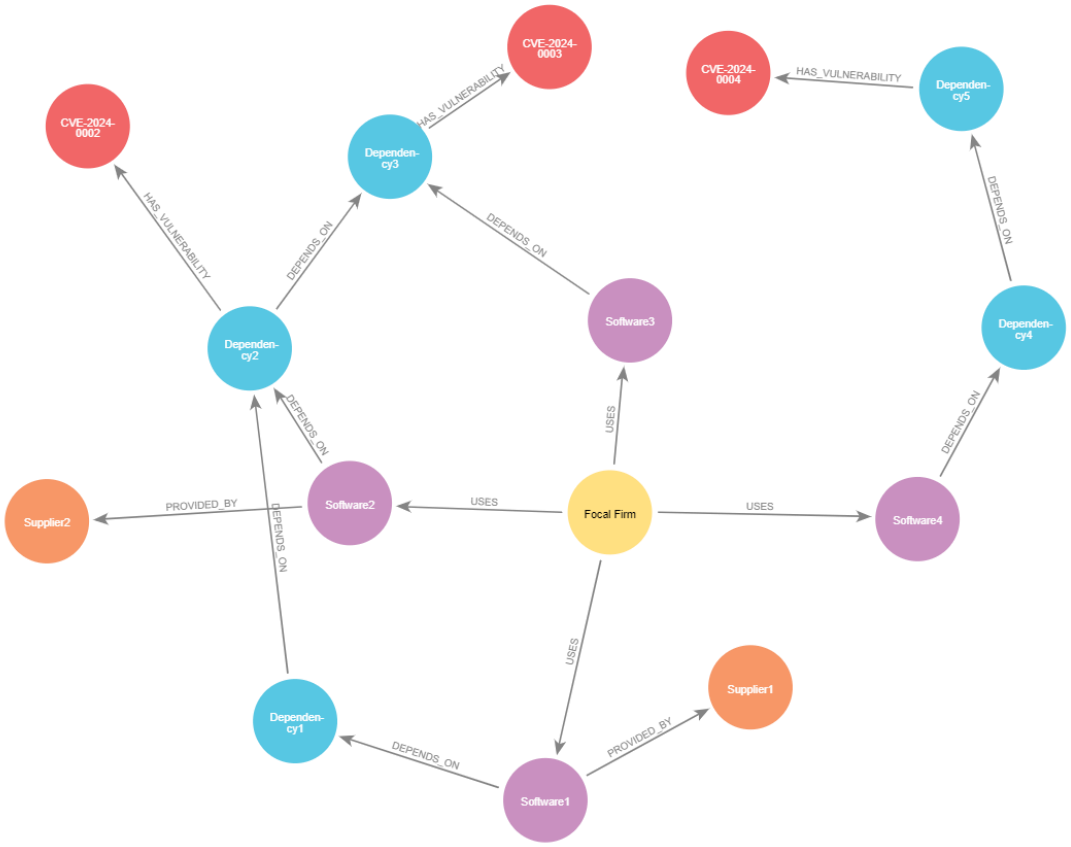
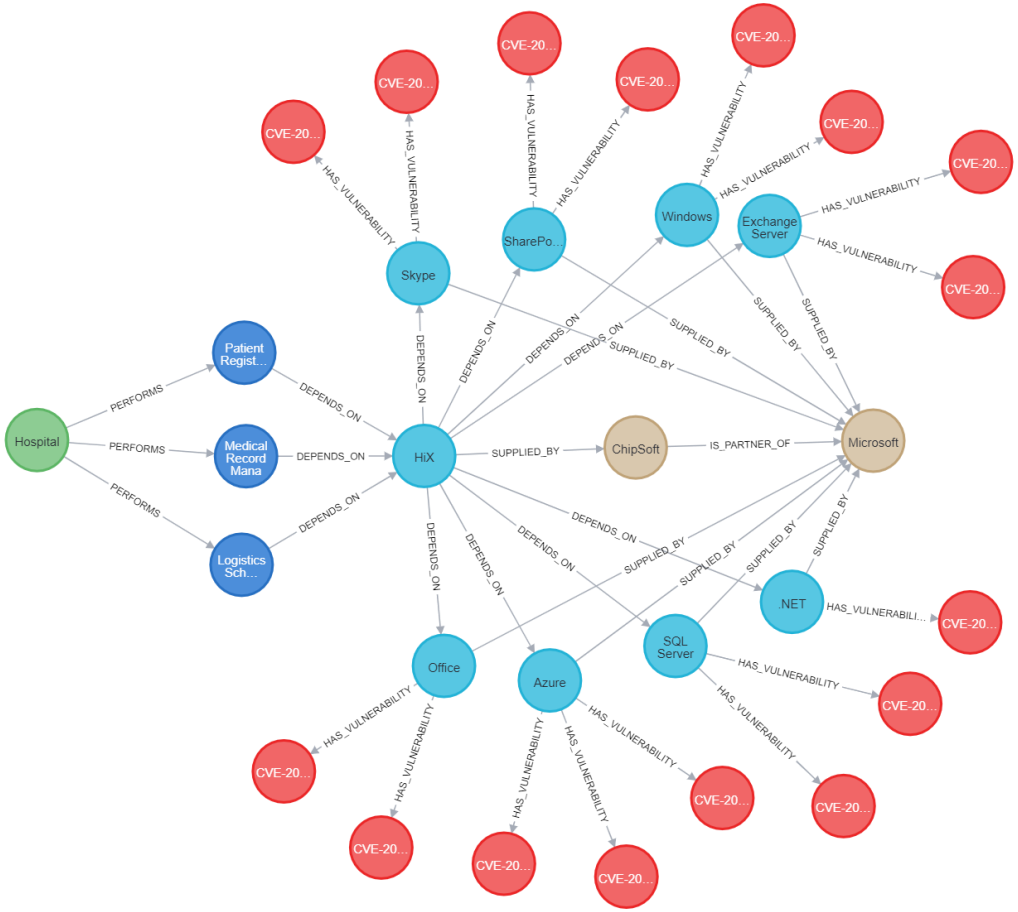
Dependency to vulnerability mapping





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Using Knowledge Graphs for Role-Based Cybersecurity Training

Building tailored training for real-world security challenges

System Mapping Process

We identify critical business processes and map software dependencies to create a comprehensive view of the digital ecosystem.

- Map critical workflows
- Document dependencies
- Identify vulnerabilities

Role-Based Security Training

Our approach links vulnerabilities to specific roles and creates training content tailored to each department's needs.

- Connect systems to roles
- Build knowledge graph
- Create targeted training

Behavioral Economics Integration

Security decisions are affected by cognitive biases and real-world pressures, like staff delaying updates due to time constraints.

- Change behavior patterns
- Reduce security fatigue
- Address decay over time

Try it out!

dresc.nl

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- https://abhishta.org

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Questions?

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Jan-Willem Bullee

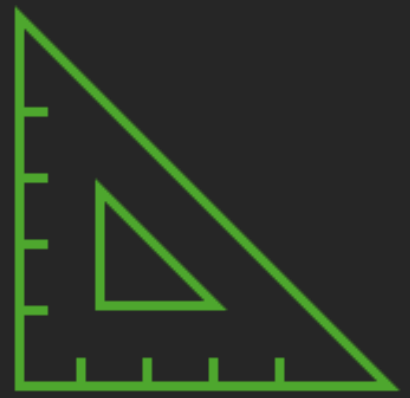
Awareways

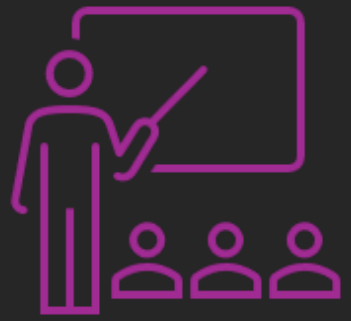
Evidence Based Cybersecurity

Do your behavioural change interventions really work?

dr. Jan-Willem Bullee
j.h.bullee@utwente.nl

Evidence Based Cybersecurity





Visible Learning™ 250+ Influences on Student Achievement

CLASSROOM	ES
Classroom composition effects	
Detracking	0.09
Mainstreaming/inclusion	0.25
Multi-grade/age classes	0.04
Open vs. traditional classrooms	0.01
Reducing class size	0.15
Retention (holding students back)	-0.32
Small group learning	0.47
Tracking/streaming	0.12
Within class grouping	0.18
School curricula for gifted students	
Ability grouping for gifted students	0.30
Acceleration programs	0.68
Enrichment programs	0.48
Classroom influences	
Background music	0.10
Behavioral intervention programs	0.62
Classroom management	0.35
Cognitive behavioral programs	0.29
Decreasing disruptive behavior	0.34
Mentoring	0.12
Positive peer influences	0.53
Strong classroom cohesion	0.53
Students feeling disliked	-0.19

TEACHER	ES
Teacher attributes	
Average teacher effects	0.32
Teacher clarity	0.75
Teacher credibility	1.09
Teacher estimates of achievement	1.29
Teacher expectations	0.43
Teacher personality attributes	0.24
Teacher performance pay	0.05
Teacher verbal ability	0.22
Teacher-student interactions	
Student rating of quality of teaching	0.45
Teachers not labeling students	0.44
Teacher-student relationships	0.48
Teacher education	
Initial teacher training programs	0.10
Micro-teaching/video review of lessons	0.88
Professional development programs	0.37
Teacher subject matter knowledge	0.23

STUDENT LEARNING STRATEGIES	ES
Strategies emphasizing student meta-cognitive/ self-regulated learning	
Elaboration and organization	0.75
Elaborative interrogation	0.56
Evaluation and reflection	0.75
Meta-cognitive strategies	0.55
Help seeking	0.72
Self-regulation strategies	0.52
Self-verbalization and self-questioning	0.59
Strategy monitoring	0.58
Transfer strategies	0.86
Student-focused interventions	
Aptitude/treatment interactions	0.11
Individualized instruction	0.23
Matching style of learning	0.32
Student-centered teaching	0.36
Student control over learning	0.02
Strategies emphasizing student perspectives in learning	
Peer tutoring	0.51
Volunteer tutors	0.51
Learning strategies	
Deliberate practice	0.79
Effort	0.77
Imagery	0.51
Interleaved practice	0.47
Mnemonics	0.80
Note taking	0.51
Outlining and transforming	0.66
Practice testing	0.46
Record keeping	0.52
Rehearsal and memorization	0.73
Spaced vs. mass practice	0.65
Strategy to integrate with prior knowledge	0.93
Study skills	0.45
Summarization	0.74
Teaching test taking and coaching	0.30
Time on task	0.44
Underlining and highlighting	0.44

TEACHING STRATEGIES	ES
Strategies emphasizing learning intentions	
Appropriately challenging goals	0.59
Behavioral organizers	0.42
Clear goal intentions	0.51
Cognitive task analysis	1.29
Concept mapping	0.64
Goal commitment	0.40
Learning goals vs. no goals	0.51
Learning hierarchies-based approach	0.19
Planning and prediction	0.76
Setting standards for self-judgement	0.75
Strategies emphasizing success criteria	
Mastery learning	0.61
Worked examples	0.37
Strategies emphasizing feedback	
Classroom discussion	0.82
Different types of testing	0.12
Feedback	0.66
Formative evaluation	0.34
Questioning	0.48
Response to intervention	1.09
Teaching/instructional strategies	
Adjunct aids	0.35
Collaborative learning	0.34
Competitive vs. individualistic learning	0.24
Cooperative learning	0.40
Cooperative vs. competitive learning	0.53
Cooperative vs. individualistic learning	0.55
Direct instruction	0.59
Discovery-based teaching	0.21
Explicit teaching strategies	0.57
Humor	0.04
Inductive teaching	0.44
Inquiry-based teaching	0.46
Jigsaw method	1.20
Philosophy in schools	0.43
Problem-based learning	0.35
Problem-solving teaching	0.67
Reciprocal teaching	0.74
Scaffolding	0.58
Teaching communication skills and strategies	0.43

TECHNOLOGY, SCHOOL, & OUT-OF-SCHOOL STRATEGIES	ES
Implementations using technologies	
Clickers	0.22
Gaming/simulations	0.34
Information communications technology (ICT)	0.48
Intelligent tutoring systems	0.51
Interactive video methods	0.54
Mobile phones	0.43
One-on-one laptops	0.16
Online and digital tools	0.26
Programmed instruction	0.23
Technology in distance education	0.01
Technology in mathematics	0.33
Technology in other subjects	0.55
Technology in reading/literacy	0.29
Technology in science	0.23
Technology in small groups	0.21
Technology in writing	0.42
Technology with college students	0.42
Technology with elementary students	0.44
Technology with high school students	0.30
Technology with learning needs students	0.57
Use of PowerPoint	0.26
Visual/audio-visual methods	0.22
Web-based learning	0.33
Implementations using out-of-school learning	
After-school programs	0.40
Distance education	0.14
Home-school programs	0.16
Homework	0.29
Service learning	0.58
Implementations that emphasize school-wide teaching strategies	
Co- or team teaching	0.19
Interventions for students with learning needs	0.77
Student support programs – college	0.21
Teaching creative thinking	0.37
Whole-school improvement programs	0.28

Key for rating

- Potential to considerably accelerate student achievement
- Potential to accelerate student achievement
- Likely to have positive impact on student achievement
- Likely to have small positive impact on student achievement
- Likely to have a negative impact on student achievement

ES Effect size calculated using Cohen's *d*

The Visible Learning™ research synthesises findings from **1,600+** meta-analyses of **95,000+** studies involving **300** million students, into what works best in education.

STUDENT	ES
Prior knowledge and background	
Field independence	0.94
Non-standard dialect use	-0.29
Piagetian programs	1.28
Prior ability	0.98
Prior achievement	0.59
Relating creativity to achievement	0.35
Relating high school to university achievement	0.60
Relating high school achievement to career performance	0.38
Self-reported grades	1.33
Working memory strength	0.66
Beliefs, attitudes and dispositions	
Attitude to content domains	0.46
Concentration/persistence/ engagement	0.54
Grit/incremental vs. entity thinking	0.25
Mindfulness	0.28
Morning vs. evening	0.12
Perceived task value	0.46
Positive ethnic self-identity	0.12
Positive self-concept	0.47
Self-efficacy	0.71
Stereotype threat	-0.33
Student personality	0.30
Motivational approach, orientation	
Achieving motivation and approach	0.42
Boredom	-0.47
Deep motivation and approach	0.57
Depression	-0.26
Lack of stress	0.17
Mastery goals	0.06
Motivation	0.38
Performance goals	-0.01
Anxiety	-0.44
Surface motivation and approach	-0.14
Physical influences	
ADHD	-0.90
ADHD – treatment with drugs	0.32
Breastfeeding	0.04
Deafness	-0.61
Exercise/relaxation	0.21
Gender on achievement	0.08
Illness	-0.44
Lack of sleep	-0.05
Full compared to pre-term/low birth weight	0.57
Relative age within a class	0.45
Bullying	-0.20

CURRICULA	ES
Reading, writing and the arts	
Comprehensive instructional programs for teachers	0.72
Comprehension programs	0.55
Drama/arts programs	0.42
Exposure to reading	0.43
Music programs	0.30
Phonics instruction	0.60
Repeated reading programs	0.75
Reading Recovery	0.53
Sentence combining programs	0.15
Spelling programs	0.58
Visual-perception programs	0.55
Vocabulary programs	0.63
Whole language approach	0.06
Writing programs	0.46
Math and sciences	
Manipulative materials on math	0.30
Mathematics programs	0.59
Science programs	0.56
Use of calculators	0.27
Other curricula programs	
Bilingual programs	0.36
Career interventions	0.38
Chess instruction	0.34
Conceptual change programs	0.99
Creativity programs	0.64
Diversity courses	0.09
Extra-curricula programs	0.20
Integrated curricula programs	0.47
Juvenile delinquent programs	0.12
Motivation/character programs	0.35
Outdoor/adventure programs	0.43
Perceptual-motor programs	0.08
Play programs	0.50
Social skills programs	0.37
Tactile stimulation programs	0.58

HOME	ES
Family structure	
Adopted vs non-adopted care	0.25
Engaged vs disengaged fathers	0.21
Intact (two-parent) families	0.22
Other family structure	0.16
Home environment	
Corporal punishment in the home	-0.33
Early years' interventions	0.44
Home visiting	0.29
Moving between schools	-0.30
Parental autonomy support	0.12
Parental involvement	0.45
Parental military deployment	-0.16
Positive family/home dynamics	0.52
Television	-0.18
Family resources	
Family on welfare/state aid	-0.12
Non-immigrant background	0.01
Parental employment	0.03
Socio-economic status	0.52

SCHOOL	ES
Leadership	
Collective teacher efficacy	1.39
Principals/school leaders	0.37
School climate	0.43
School resourcing	
External accountability systems	0.20
Finances	0.21
Types of school	
Charter schools	0.04
Religious schools	0.24
Single-sex schools	0.08
Summer school	0.19
Summer vacation effect	0.02
School compositional effects	
College halls of residence	0.05
Desegregation	0.28
Diverse student body	0.10
Middle school interventions	0.18
Out-of-school curricula experiences	0.07
School choice programs	0.12
School size (600-900 students at secondary)	0.43
Other school factors	
Counseling effects	0.35
Modifying school calendars/ timetables	0.09
Pre-school programs	0.28
Suspension/expelling students	-0.20

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CORWIN Visible Learning plus

visiblelearningplus.com
corwin.com/visiblelearning

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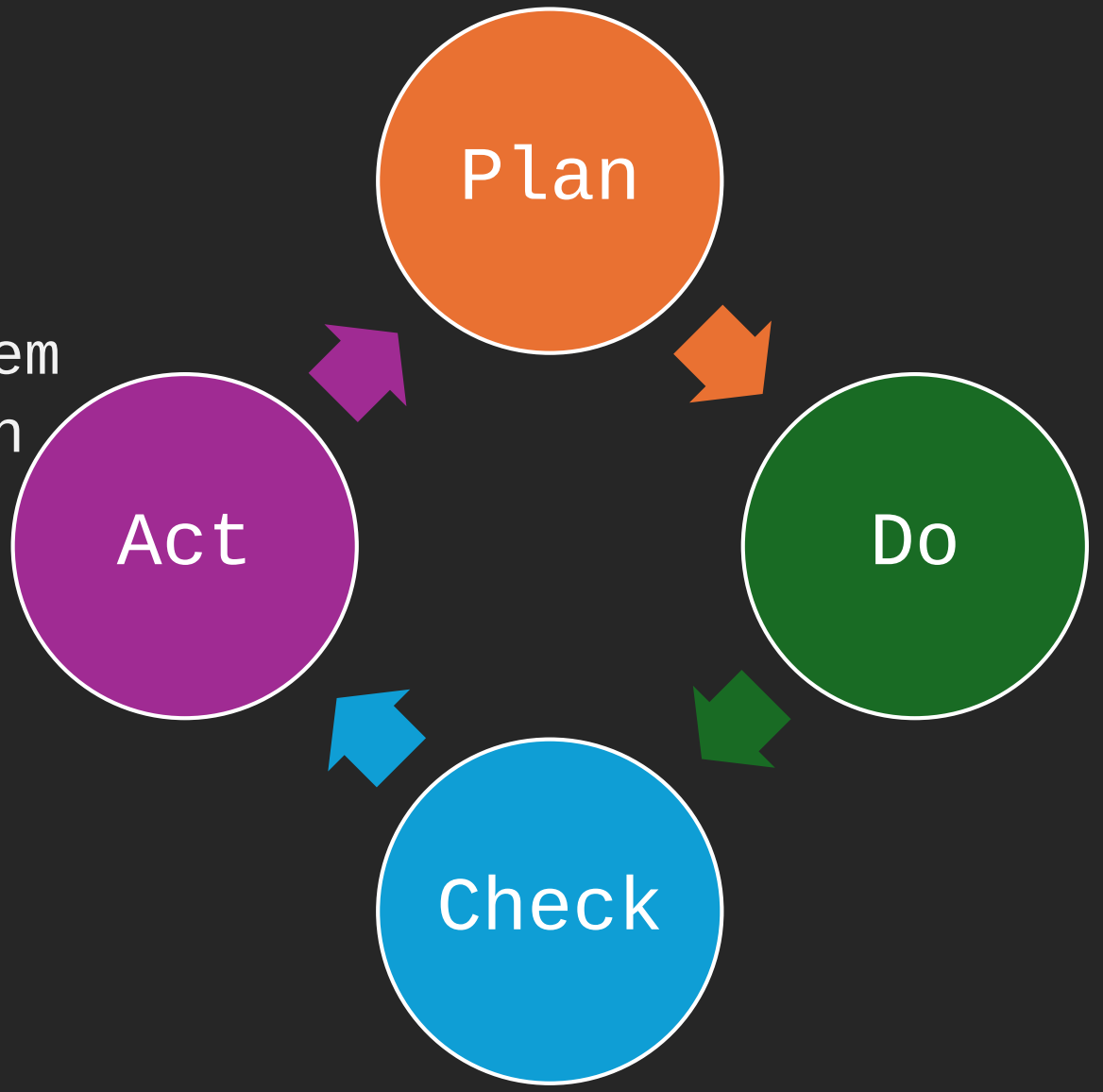
ES Effect size calculated using Cohen's *d*

Approach

- Plan Do Check Act
  - Plan / Identify the problem
  - Do / Design Intervention
  - Check / Measure Effect
  - Act / Evaluate



PLAN – Identify the problem

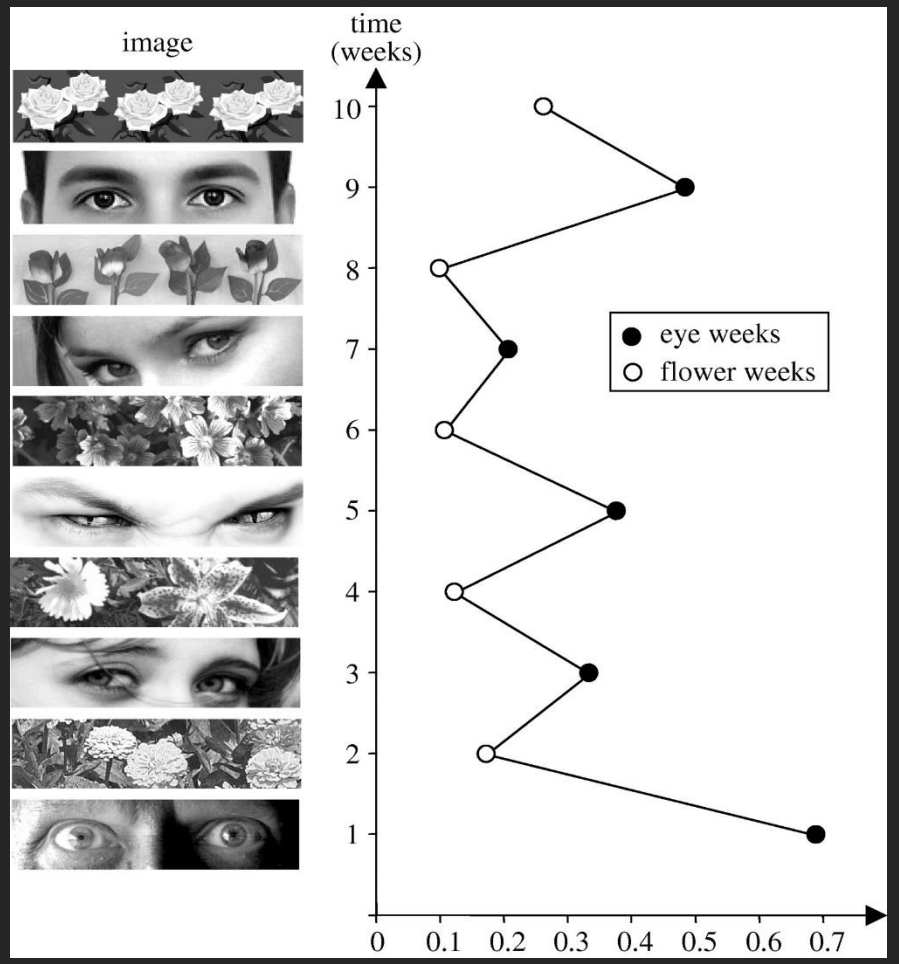
- *Which threat would you like to tackle?*
  - *Cyber Threat Landscape (e.g. ENISA);*
  - *Incident reports, etc.;*
- Perspectives:
  - Criminology; Technology;
  - Human Factors; Economics;
  - Ethics; Law;
  - Model an attack; Forensics;
  - Cyber Risk Management; Change Management;

DO – Design Intervention

Do

Situational Crime prevention

- Increase risk

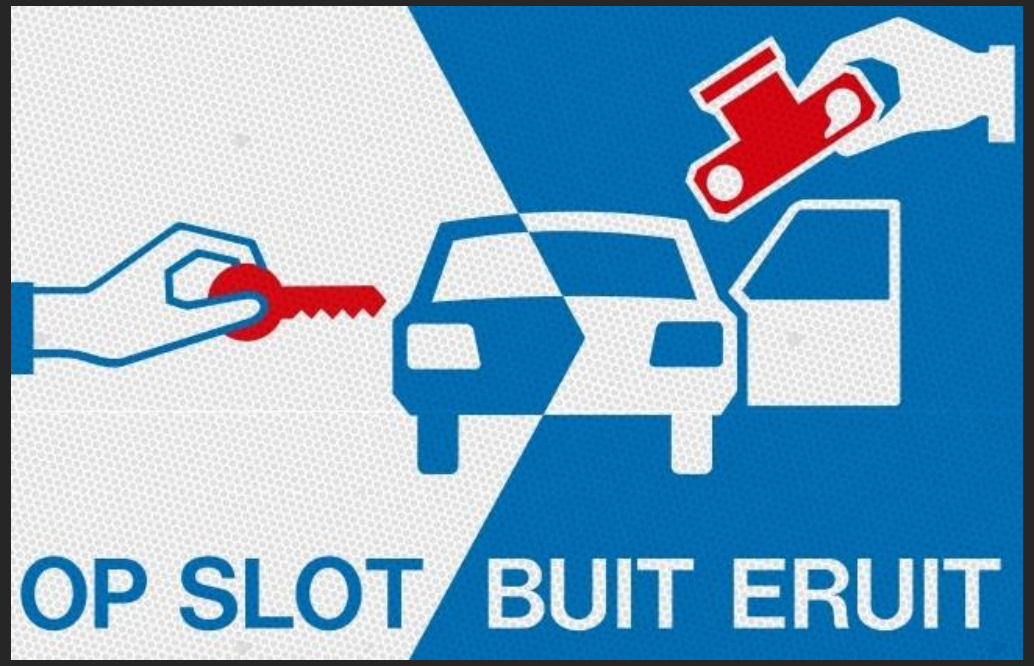


DO – Design Intervention

Do

Situational Crime prevention;

- Increase risk
- Reduce rewards



DO – Design Intervention

Do

Situational Crime prevention;

- Increase risk
- Reduce rewards
- Remove excuses

DO – Design Intervention

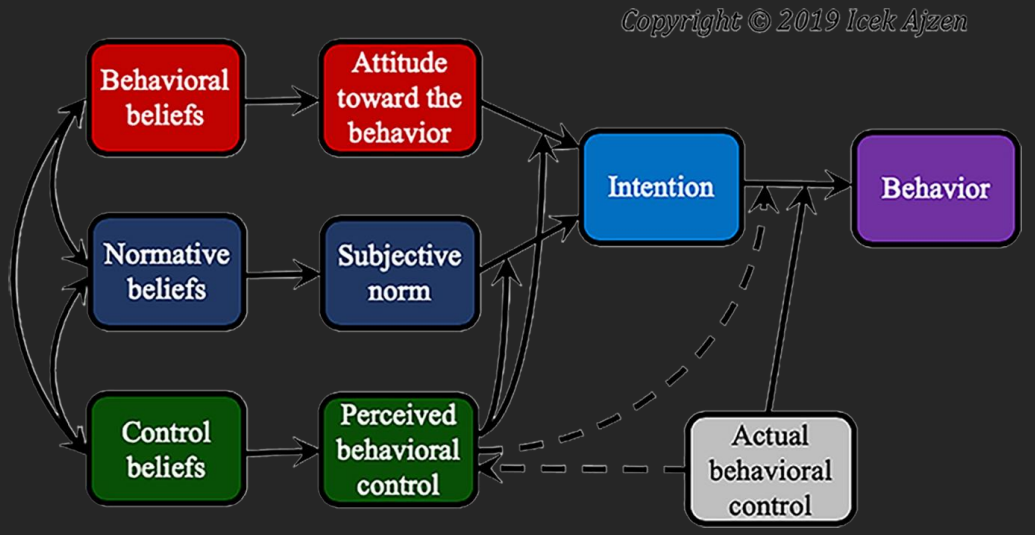
Do

Situational Crime prevention;

- Increase risk
- Reduce rewards
- Remove excuses

Behavioural change models;

- Theory of Planned Behaviour



DO – Design Intervention

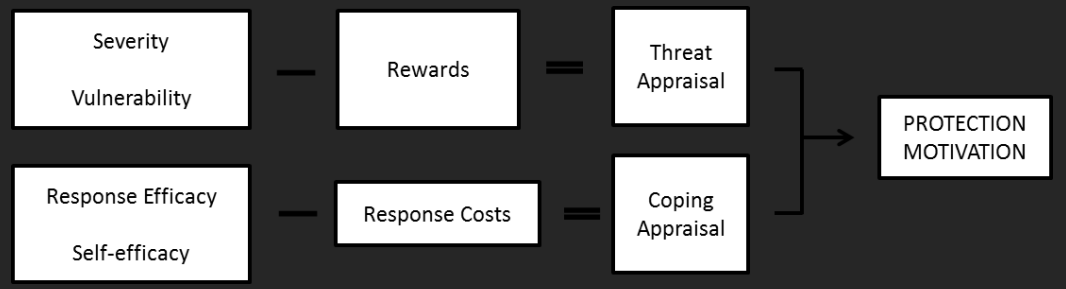
Do

Situational Crime prevention;

- Increase risk
- Reduce rewards
- Remove excuses

Behavioural change models;

- Theory of Planned Behaviour
- Protetion Motivation Theory



DO – Design Intervention

Do

Situational Crime prevention;

- Increase risk
- Reduce rewards
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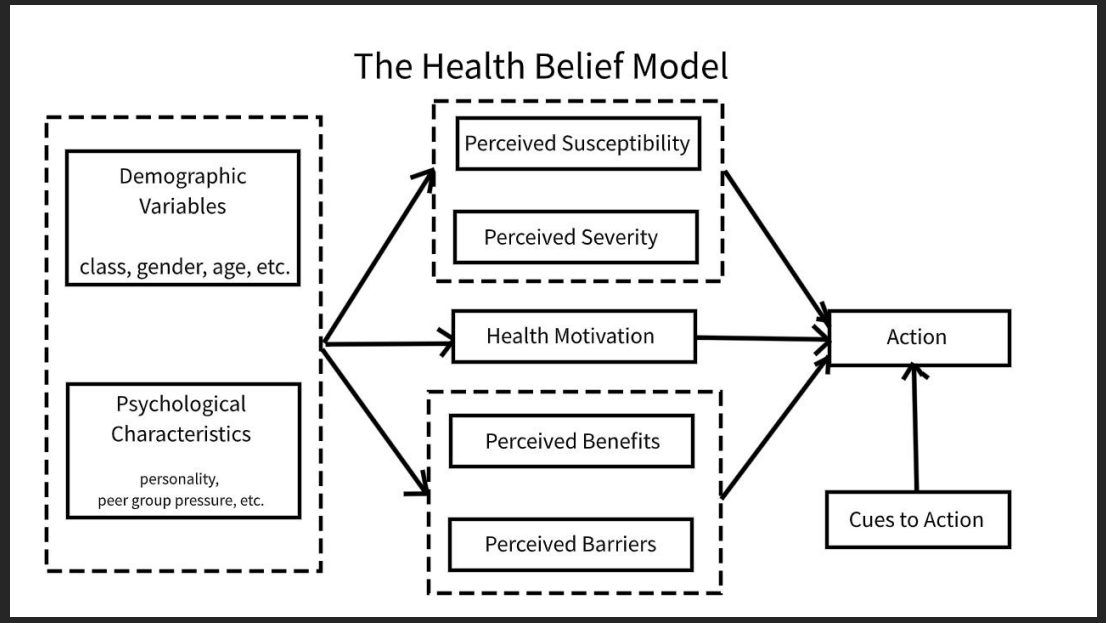
Behavioural change models;

- Theory of Planned Behaviour
- Protetion Motivation Theory
- Health Belief Model



DO – Design Intervention

Do

Situational Crime prevention;

- Increase risk
- Reduce rewards
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Behavioural change models;

- Theory of Planned Behaviour
- Protetion Motivation Theory
- Health Belief Model

- The End User
  - User Preferences

	Cybersecurity training 1	Cybersecurity training 2
The learning method of the training.	**Serious game** or **simulator**.	**Video** of the training.
Location of the training.	**Online** training.	**In-class** training.
When the training can be followed.	**Any time** during your study.	Any time during **specific quartile.** Q1
Length of 1 training session	Microlearning of **5 minutes** in length. (5 min)	Knowledge block of **15 minutes** in length. (15 min)
The amount of personalized relevance to you.	Training that is **relevant** and shows **importance** for your **future job environments.**	Training that is **relevant** and shows **importance** for the **university environment.**

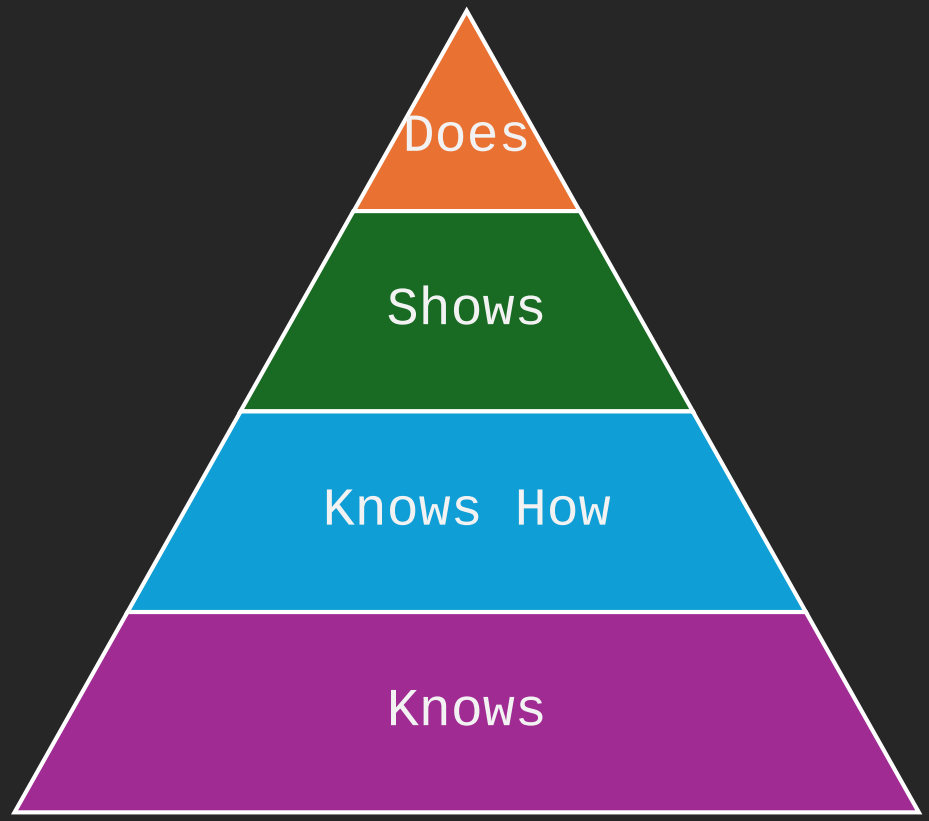
DO – Design Intervention

Do

Situational Crime prevention;
- Increase risk
- Reduce rewards
- Remove excuses

Behavioural change models;
- Theory of Planned Behaviour
- Protetion Motivation Theory
- Health Belief Model

- The End User
  - User Preferences
- What to measure

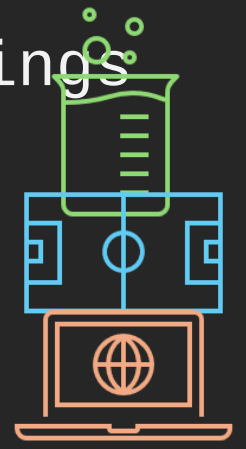


Check – Measure Effect

Check

Setting:

- Lab: Directly from the participants thoughts, feelings or behaviours.
- Field: Recorded by a researcher by watching the participant.
- Online: Gathered by actions participants take, especially digital.



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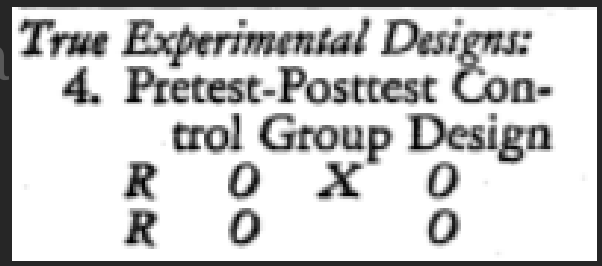
Experimental Design:

- Allocation of groups
- Threats to validity



True Experimental Designs:

4. Pretest-Posttest Control Group Design

R	*O*	*X*	*O*
R	*O*		*O*

Check – Measure Effect

Setting:

- Lab: Directly from the participants thoughts, feelings or behaviours.
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Experimental Design:

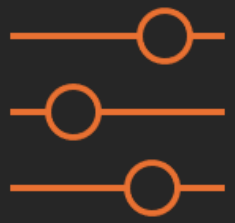
- Allocation of groups
- Threats to validity

Experimenting in an organisation

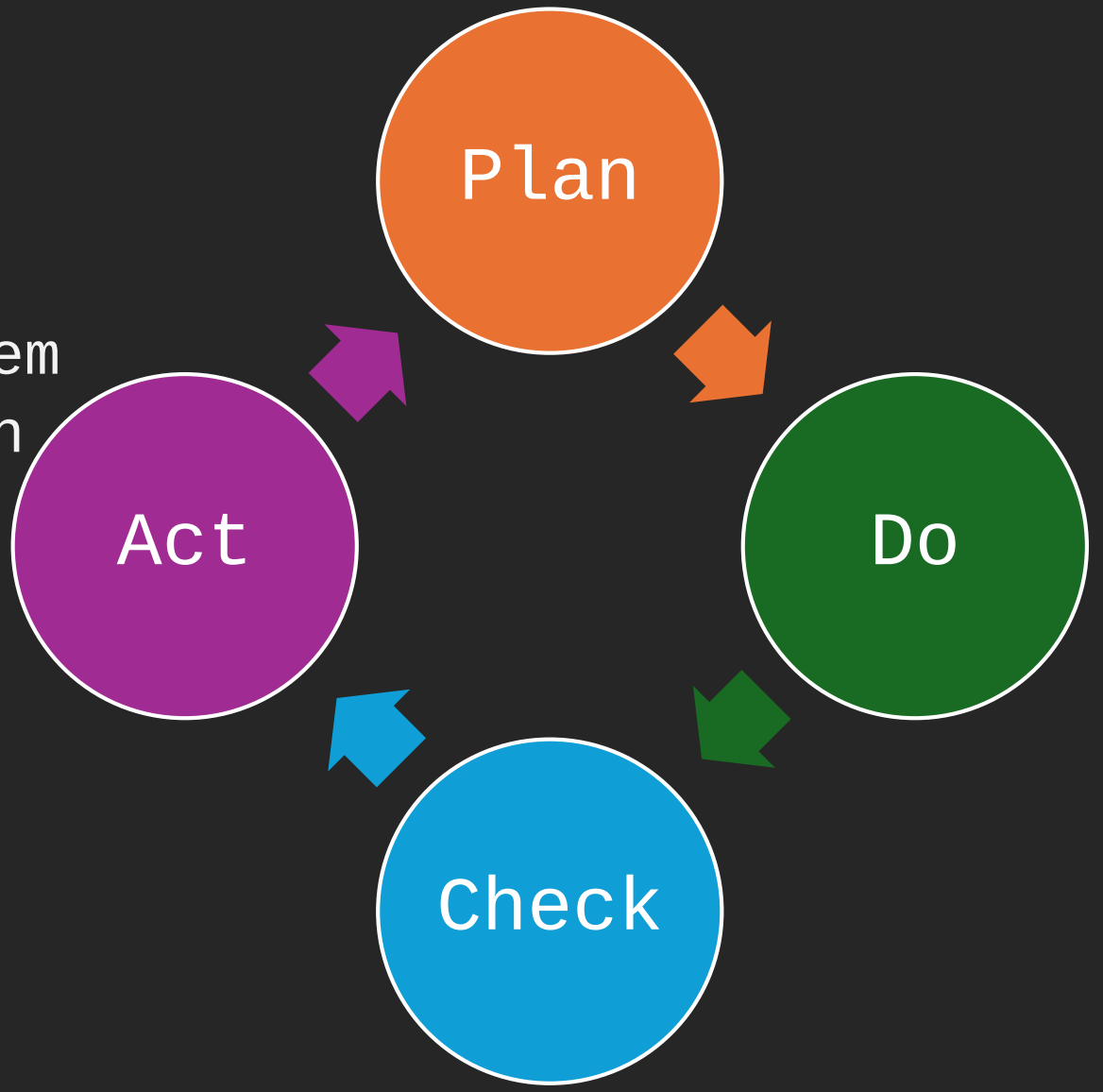
- Practicalities

Act – Evaluate

Act



- Plan Do Check Act
  - Plan / Identify the problem
  - Do / Design Intervention
  - Check / Measure Effect
  - Act / Evaluate



Ministry of Defence

SLF 30 jaar
SERVICE LOGISTICS FORUM

Questions?

Ministry of Defence

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Poster carrousel

DASLOCA

Data-driven service logistics in contested airspace

30 maart 2026

Agenda

- The DASLOCA consortium
- A note on helicopter operations
- Scientific achievements
- From scientific achievements to practical results
- Future steps
- Wrap-up

Project and Consortium introduction

DASLOCA

- *The Royal Netherlands Air and Space Force's operations are evolving. We can not longer count on air supremacy to achieve our goals. We must be able to operate in ment.*

Nederlandse Defensie Academie
Ministerie van Defensie

Koninklijke Luchtmacht

Capgemini

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

TILBURG UNIVERSITY

TKI DINALOG
Dutch Institute for Advanced Logistics

30 maart 2026

Koninklijke Luchtmacht

Attack Helicopter Operations and science

Major Ir. T. (Tom) van Tent Beking
Head of Maintenance & Services
301 Attack Squadron

Content

1. **Setting the scene**
2. **Operational Plan (simplified)**
3. **Capabilities + Weaknesses AH-64E**

Setting the scene

- From wars of choice to wars of necessity
- Air superiority is not guaranteed

Logistic support is challenging

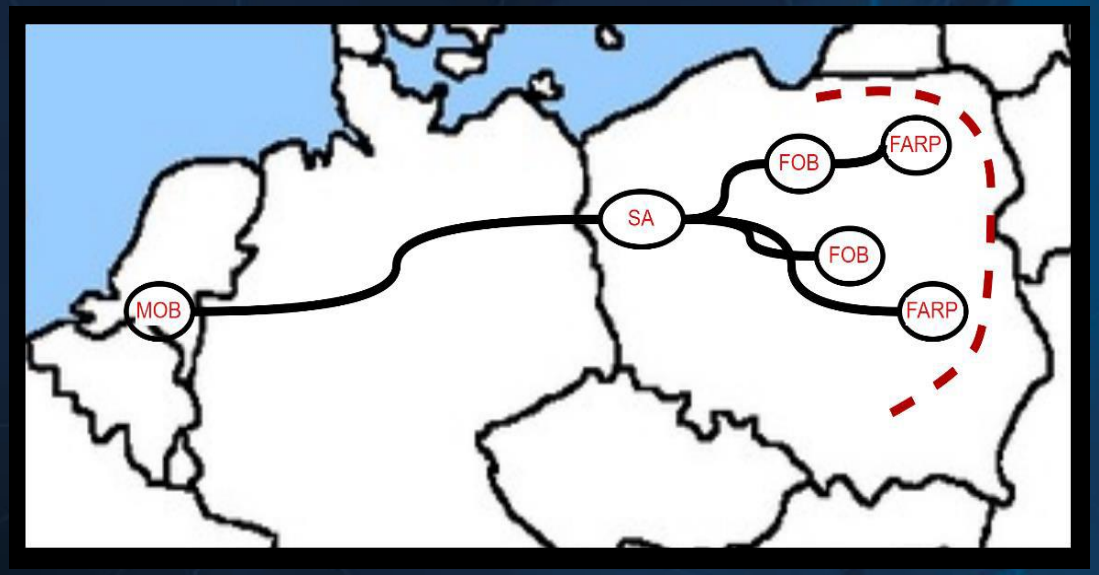
- Limited in Resources and Personnel

Support in decision making in order to maximize availability and thus effect

Operational Plan (OPLAN)

Staging Area
- Static
- Fixed location
- For a longer period
- Medium to high standard facilities

Forward Operating Base
- Highly mobile
- Dispersed
- Temporary (<72 hours)
- Low standard facilities



AH-64E *Apache Guardian*

Totale lengte: **58 ft 7 in / 17,86 m**
Rotor diameter: **49 ft / 14,9 m**
Hoogte: **17 ft 6 in / 5,33 m**
Max. snelheid: **195 KTAS / 360 km/h**
Kruissnelheid: **120 KTAS / 222 km/h**
Max. gewicht: **23.000 lbs / 10.433 kg**

Motoren: **T700 General Electric 701D**
- **Upgrade met meer vermogen**

T700-GE-701D
2x General Electric motors

FCR
Fire Control Radar

MRFI
(Modernized Radar Frequency Interferometers)

Communicatiemiddelen
- SATCOM (Satellietcommunicatie)
- Multiband radio's

CMWS
Common Missile Warning System

MUMT
Manned Unmanned Teaming

New Airframe
- Nieuw, versterkt air frame
- In staat om het grotere (lift)vermogen op te vangen

Crew
2 piloten

Composite blades
Leveren meer lift

Network Enabled Capability (Link 16)
Voor betere communicatie met vriendelijke troepen

Verbetering sensoren
Verbeterde IR (Infrarood) en kleuren TV

Bewapening

Configuratie kan wisselen afhankelijk van het doel van de inzet

Boordgeschut
- M230 cannon 30mm met 1200 patronen

Raketten

- 16 AGM-114N en/of R Hellfire missiles
- 76 Hydra 70 raketten:

Ongeleid: Laser-geleid:

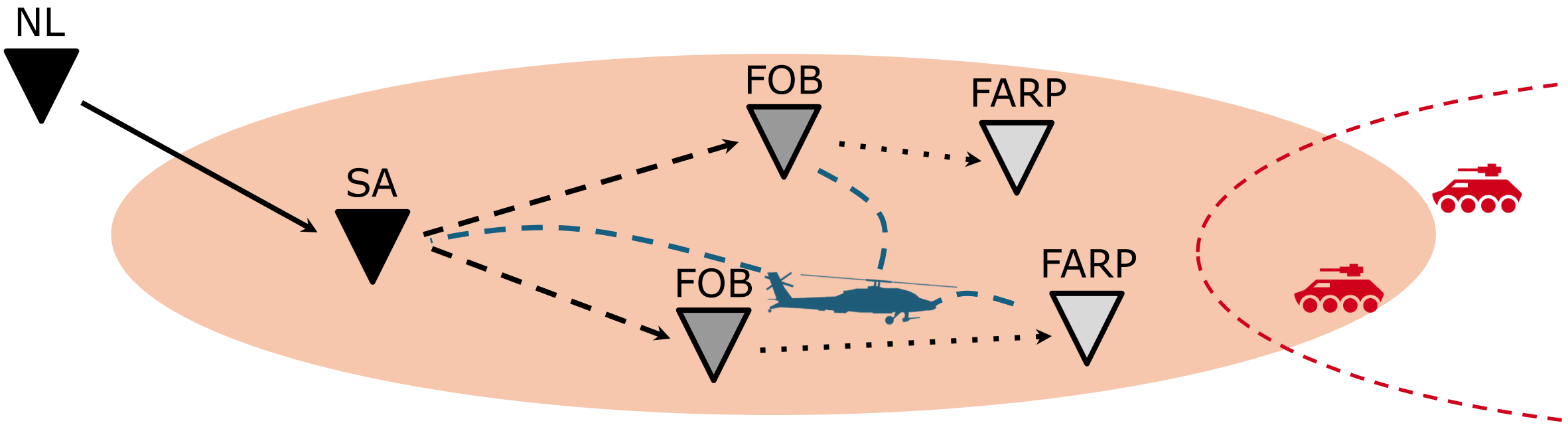
Missies

Control of the Air | Air Attack | Air Mobility | ISR


Questions?

Scientific achievements

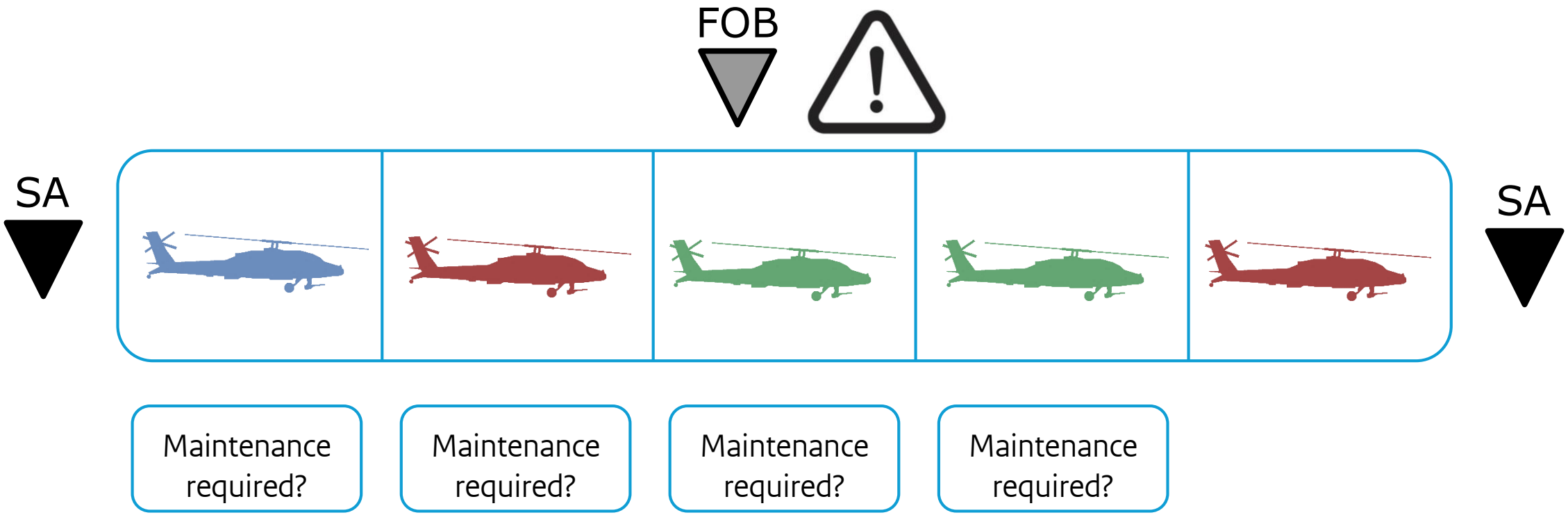
SA=Staging Area, FOB=Forward Operating Base, FARP=Forward Arming and Refueling Point



Uncertain use of assets	Mobility	A dynamic threat perception	A short time horizon

Model description

We consider a staging area with one helicopter, subject to a single failure mode. Our goal is maximize the number of executed missions



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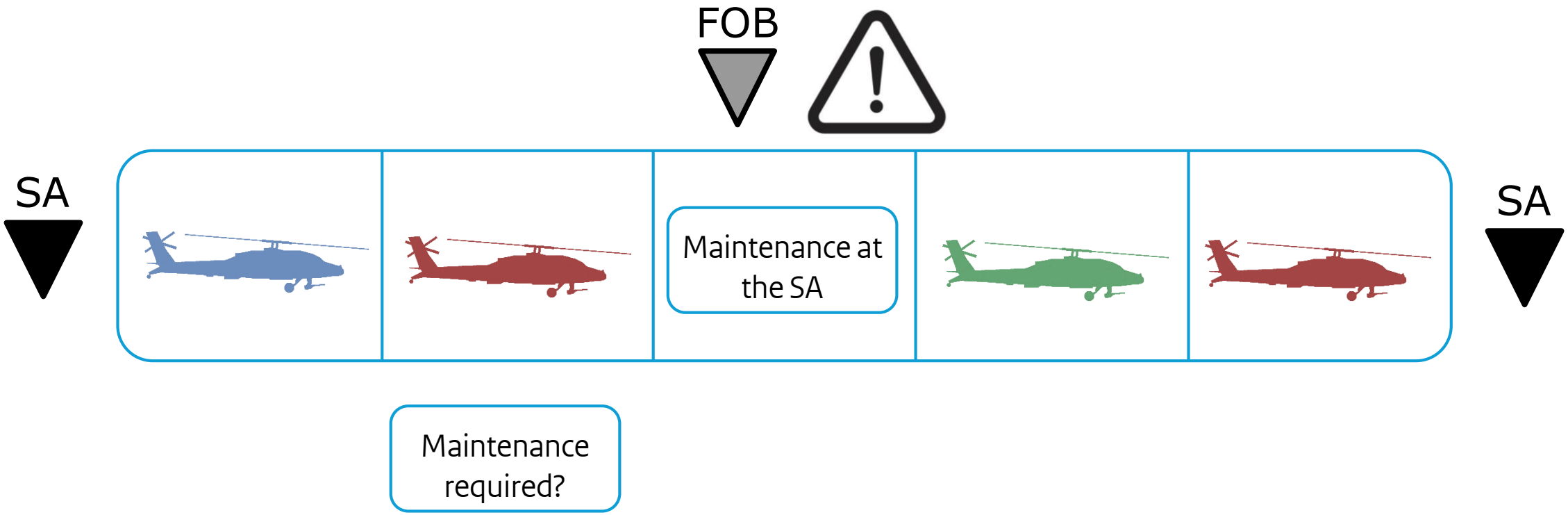
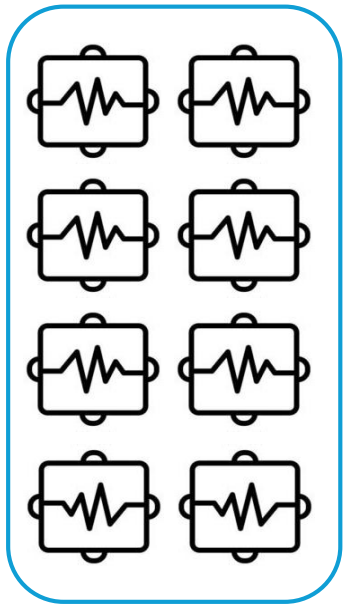


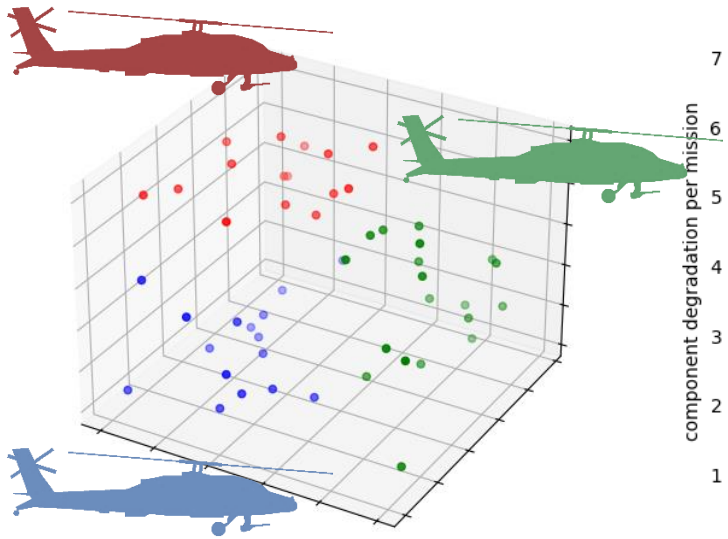
Honorable mention to
Kai Merkx

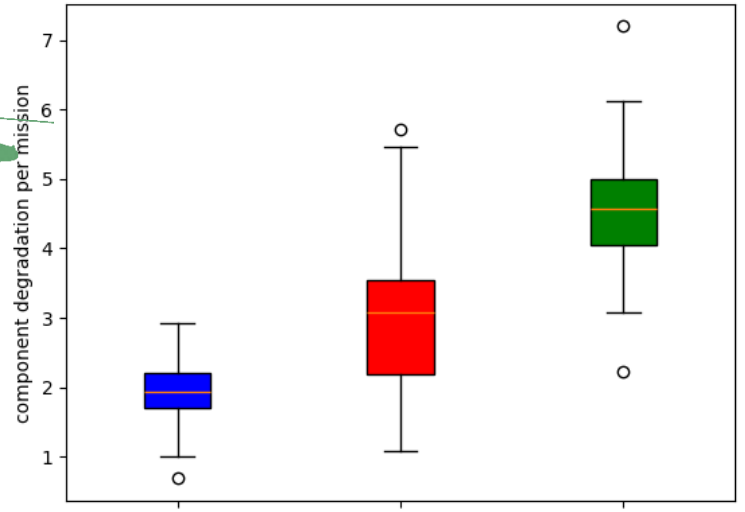
Data-driven degradation assessments



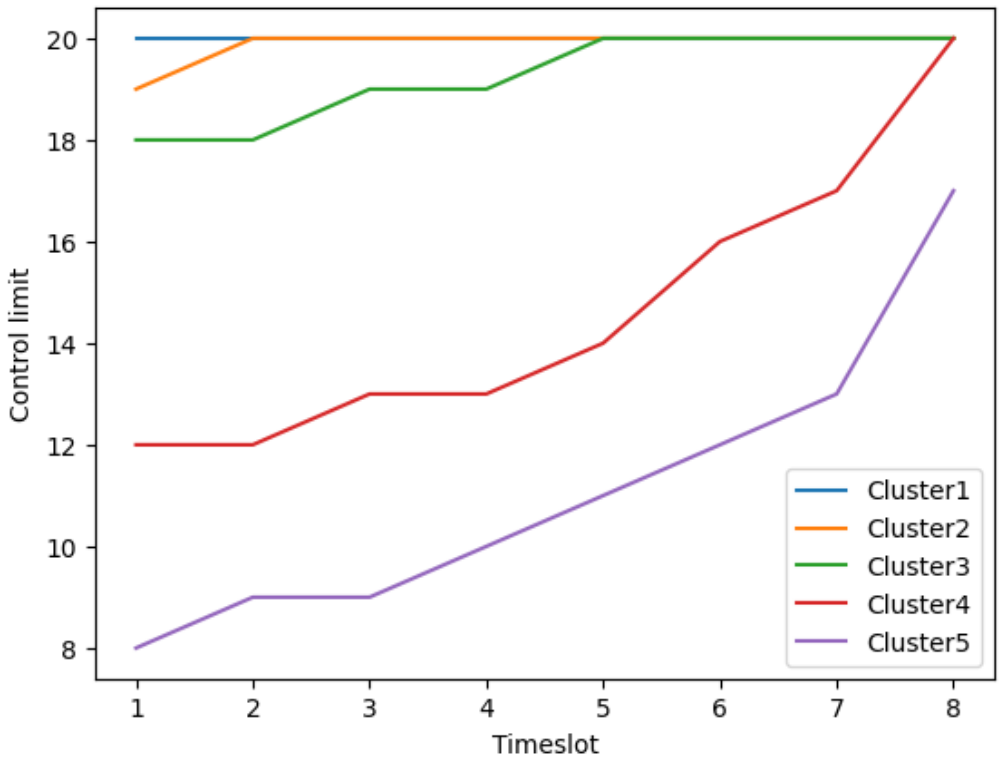
Sensordata

Expert knowledge





Model outcome



Based on actual flight data, we determined optimal maintenance thresholds, depending on the degradation state, the next tasking and the remaining operating periods at the FOB

- Training flight data shows that the difference with a baseline policy is negligible (<1%)
- At higher intensity (i.e., faster degradation), the number of executed taskings exceeds the baseline policy performance by 5-10%

From scientific achievements to practical results

Conducting practice-based research

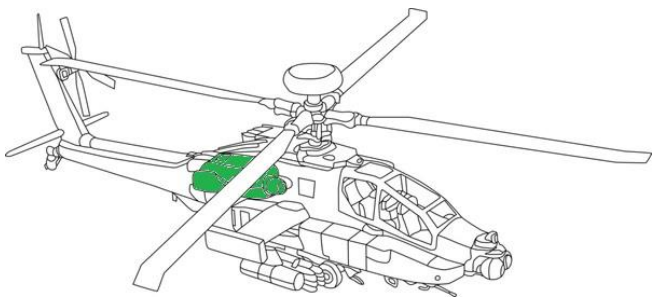
- In order to connect our work to current practices at the RNLASF, we conducted brainstorm sessions.

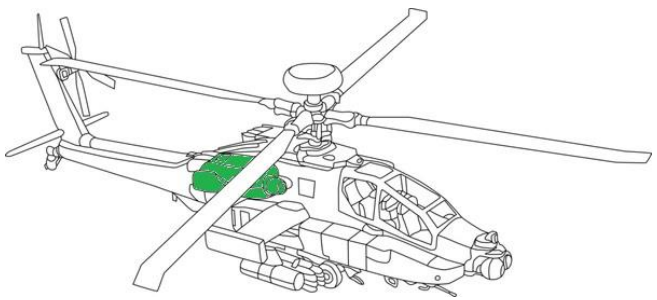
    - *How can our scientific results provide benefits in the short term to helicopter operations?*

- We decided to focus on supporting the planning process at the staging area, where the S4A has to determine which aircraft to send to which locations.


Ganlook
Edelweiss
4x
8x
Graustark
Axphain
Dawsbergen
2x

Future steps





Project wrap-up

Data-driven service logistics in contested airspace

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Save the date:

SLF Service Leadership Summit

November, 25 | Jaarbeurs Utrecht

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Thank you!