From Campus to Bootcamp and Back – Activities in Cyber-Security Education
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CDIS Education

- Cyber-conscript training

- Further training of officers

- Anytime, anywhere and anyhow

- Continuous education

- Professional education

- Agile education at Cybercampus Sweden

- Conclusion
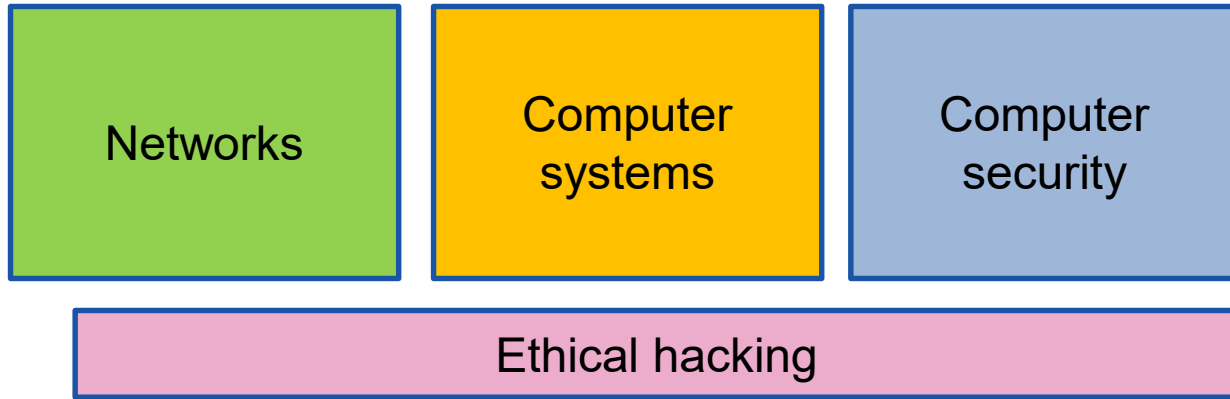
Academic education in military context

- Four courses
  - Two introductory
  - Two at master's level
  - Formal credit, 7.5 ECTS each
- Programming assumed and tested

- KTH responsibilities
  - Curated contents
  - Examination
  - Instructor support
- SwAF teach and adds context

Also as officer training in 2022!

Networks	Computer systems	Computer security

Ethical hacking

CDIS

From campus to bootcamp

- Challenge driven
  - Define task
  - Provide necessary resources
  - Set high expectations
- Highly intensive
  - Clear priorities and focus
  - No parallell activities
  - Scheduled work time
- Students organize work
  - Responsible for their own and peers' learning
  - Discussion, reflection and feedback

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Further education for officers

For specialist officers who are cybersoldiers

- Introductory computer science, 6hp

- Introduction to C, 5hp

- System security, 7,5hp

- Digital forensics and incident response, 7,5 hp

- Project in ethical hacking, 4hp

Format

- Project based

- Teaching online while learning in groups or pairs

- Ongoing pilot trial 2022 and 2023

Continuous education

- Joint development with interested stakeholders
  - Many parameters to select
    - > Topic and scope
    - > Format and level
    - > …
  - Contract education main vehicle
    - > Legal entities, not private persons
    - > Credits and grades
    - > No university admission
- Build for scale and longevity
  - Version handling
  - Curation of curriculum
  - Cost coverage

Anytime, anywhere and anyhow

- Hard lessons from two tough years
  - Online education works well … when done right
  - Opens for study of new groups, working and remote
- Main findings for successful online courses
  - Clear structure – no confusion
  - Get students to collaborate and support one another
  - Active learning for scheduled lessons
- Remaining challenge: formal examination
  - Proctored
  - Randomization
  - Oral examination
  - Trust

Professional education

- Micro master (to be developed)
  - Three modules of 5 credits each
  - One curriculum, many formats
    > Part-time asynchronous, 10-20 hours per week
    > Intensive and immersive in three weeks

- One year master (to be developed)
  - Cybersoldier + specialist officer
  - Boot camp training
    > Scheduled work time
    > Focus on one subject at a time
    > Dedicated space for students
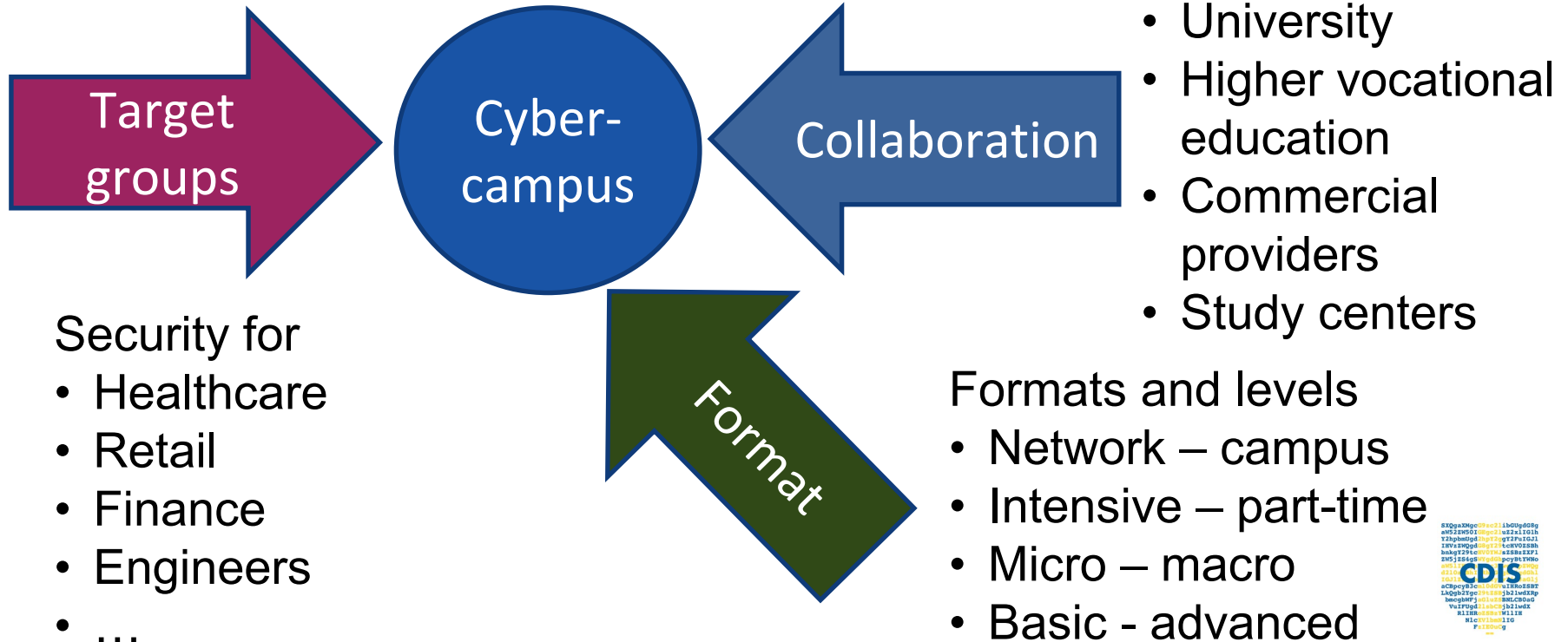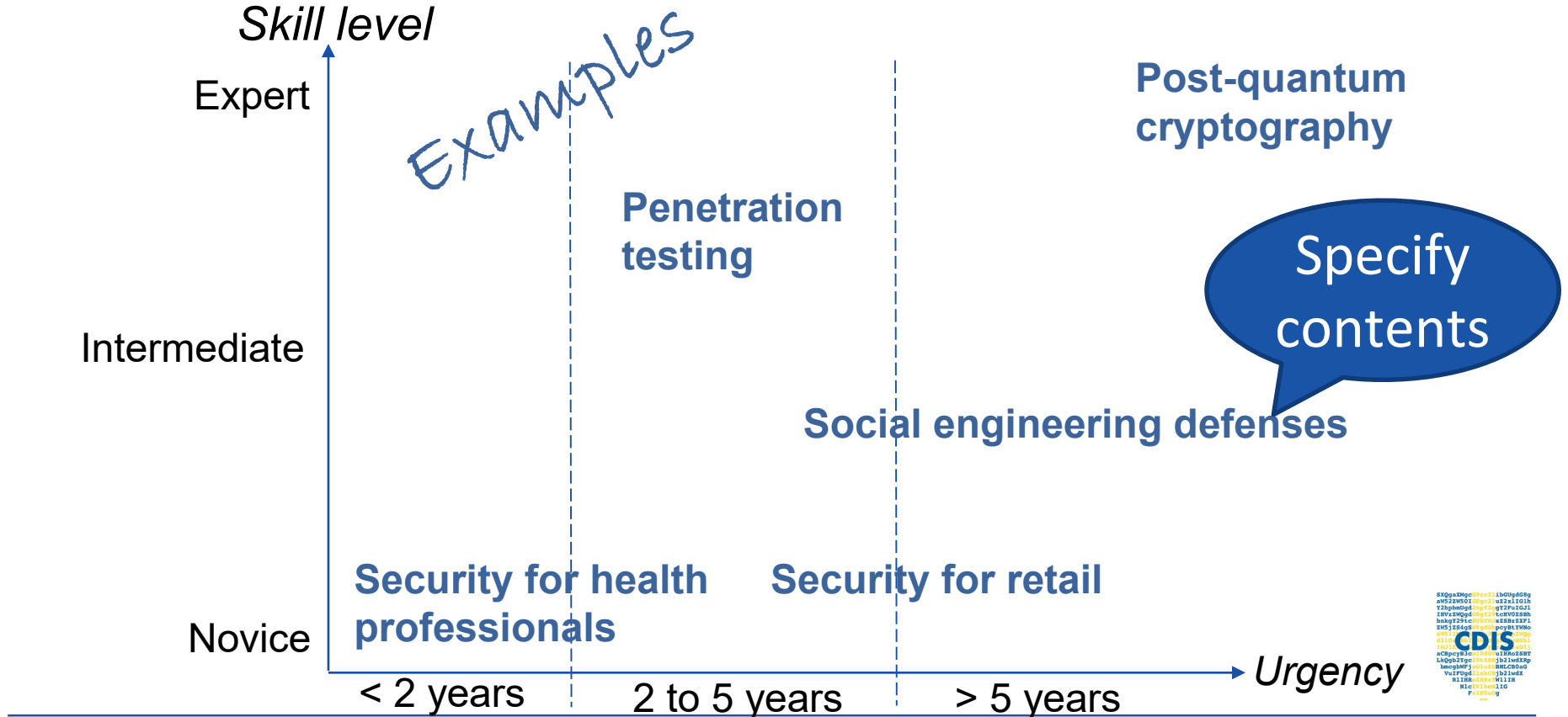
Network and computer	Computer security

Ethical hacking

Agil education at Cybercampus Sweden

Target groups

Cyber-campus

Collaboration

Format

National
- University
- Higher vocational education
- Commercial providers
- Study centers

Security for
- Healthcare
- Retail
- Finance
- Engineers
- …

Formats and levels
- Network – campus
- Intensive – part-time
- Micro – macro
- Basic - advanced
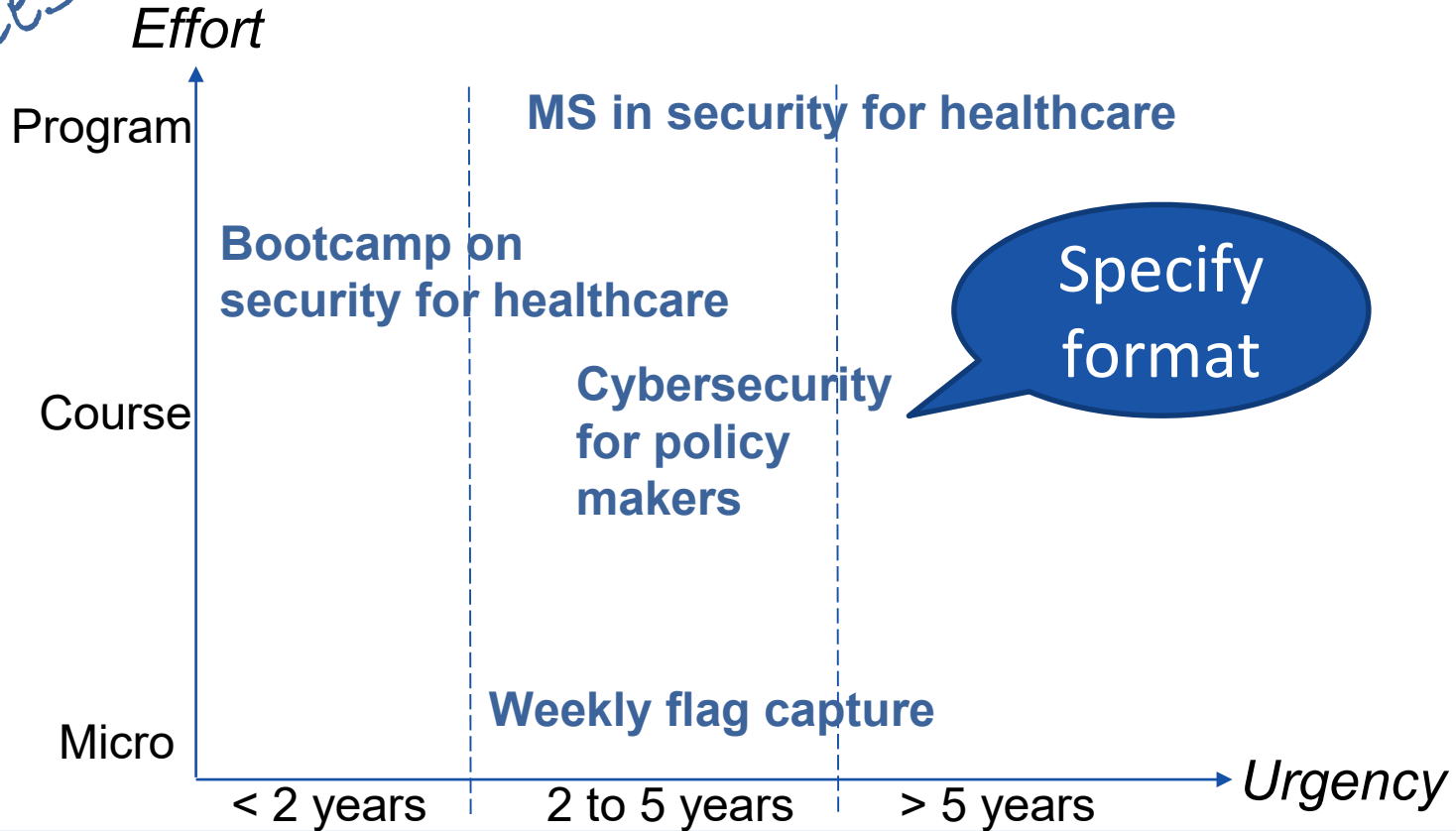
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Process – workshop on October 17

- Why *agile*?
  - Fast responses to needs
  - Adapting contents to target groups and to new developments
  - Collaborate to meet demands
- Work through needs for education
  - What subjects?
  - For whom?
  - Which formats?

What educational topics are relevant?

What educational formats should be in focus

Examples

Effort

Program | MS in security for healthcare

Bootcamp on
security for healthcare

Course | Cybersecurity
for policy
makers

Specify format

Micro | Weekly flag capture

Urgency

< 2 years | 2 to 5 years | > 5 years

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Report from workshop – in progress

AGILE EDUCATION IMAGINED

A report from the Cybercampus workshop on October 17, 2022

Skills and knowledge

Gunnar Karlsson, with illustrations by Dall·E 2

Conclusion

- Great need for education in cyber security
  - Program education
  - Continuous education
  - Open education for the general public
- Many formats, much uncertainty
  - Intensive full-time
  - Self-paced
  - Collaborative
- Cybercampus education building on experiences
  - Open for collaboration and contributions
  - New agile work practices to meet demands