



Setup, capacity and flexibility of the cybersecurity expert's education system

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- To present and discuss NÚKIB's perspective of the Czech cybersecurity expert's education system
- Main points will cover current situation and ways and means to improve the state of the cybersecurity by increase of the number of cybersecurity experts.
- The presentation will be focused on selected aspects of the setup, capacity, flexibility and capability of the system.



Do we produce enough of cybersecurity experts to satisfy demand from the cybersecurity sector?







- Setup of the education system
 - Relying too much on universities, formal education and full-time oriented study plans
 - Tertiary Professional Schools and Upper Secondary Schools not fully utilized.
 - Systematic further education limited, non-certified or non-existent (reskilling and upskilling capability)



- Capacity of the formal education system
 - Insufficient
 - 60 universities
 - 15 ICT programs
 - 3 with 7 cybersecurity programs.
 - Negative declining trend.
 - 2011/12 – 25 198 students, 4893 graduates, 2021/22-22 442 students, 3801 graduates.
 - 151 tertiary professional schools
 - 14 ICT programs (no cybersecurity dedicated program).
 - Negative declining trend.
 - 2011/12-1191 students, in 2021/2022 it was only 674 in the ICT and related programs.
 - 43 % drop.
 - 780 upper secondary schools (maturita exams)
 - 127 informatics – oriented programs. 2 testing experimental cybersecurity – oriented program.
 - Very positive increasing trend.
 - 2011/12 – 9 985 students, 2021/2022 – 16 731 students.
 - 67 % jump.



- Flexibility of the education system
 - Very limited.
 - Between 3 and 5 years to produce a cybersecurity expert.
 - Universities:
 - Bachelor's degree programs – 3 years, master's degree programs – 5 years.
 - Very limited number of professionally – oriented programs
 - Tertiary Professional Schools
 - 3 years
 - Professionally – oriented
 - Upper Secondary Schools
 - 4 years



- Who knows exact numbers of cybersecurity experts?
- Very difficult to quantify
- What we see:
 - ICT vs CS jobs – not trackable
 - Nonsufficient statistics
 - 3374 ICT jobs records registered as opened in the Czech republic in the middle of this year
 - Almost 100 % of all offers comes from the private sector
- Education requirements
 - Universities: 1 324 jobs records:
 - Bachelors – 1 039
 - Not specified – 283
 - Postgraduate – 2
 - Higher Vocational Schools: 350 jobs
 - Upper Secondary Schools (maturita exam): 1392 jobs
 - Others: 308 jobs



In cooperation with the office of the Deputy Prime Minister for Digitalization and other stakeholders initiate implementation of the national complex strategy to maintain sufficient number of cybersecurity experts



- Cybersecurity jobs and the National Register of Occupations
- Cybersecurity jobs qualification frameworks and the National Register of Qualifications
- Acceptance of commercial cybersecurity certificates
- Increase of number of cybersecurity dedicated programs (formal education)
 - Support of professionally – oriented Bachelor´s programs
 - Support of Upper Secondary Schools Cybersecurity Centers of Excellence
- Greater emphasis on blended and on-line learning
- Wider involvement of formal education institutions in further education (reskilling and upskilling)
- Development of further education programs outside of formal education institutions
- Increase the share of women in cybersecurity sector



Thank you for your attention

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