



Technische
Hochschule
Wildau [FH]
*Technical University
of Applied Sciences*

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Breaking Down (Gender) Stereotypes in the IT Security Occupation Field

Securi**fi**y

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NATIONALER PAKT
FÜR FRAUEN
IN MINT-BERUFEN

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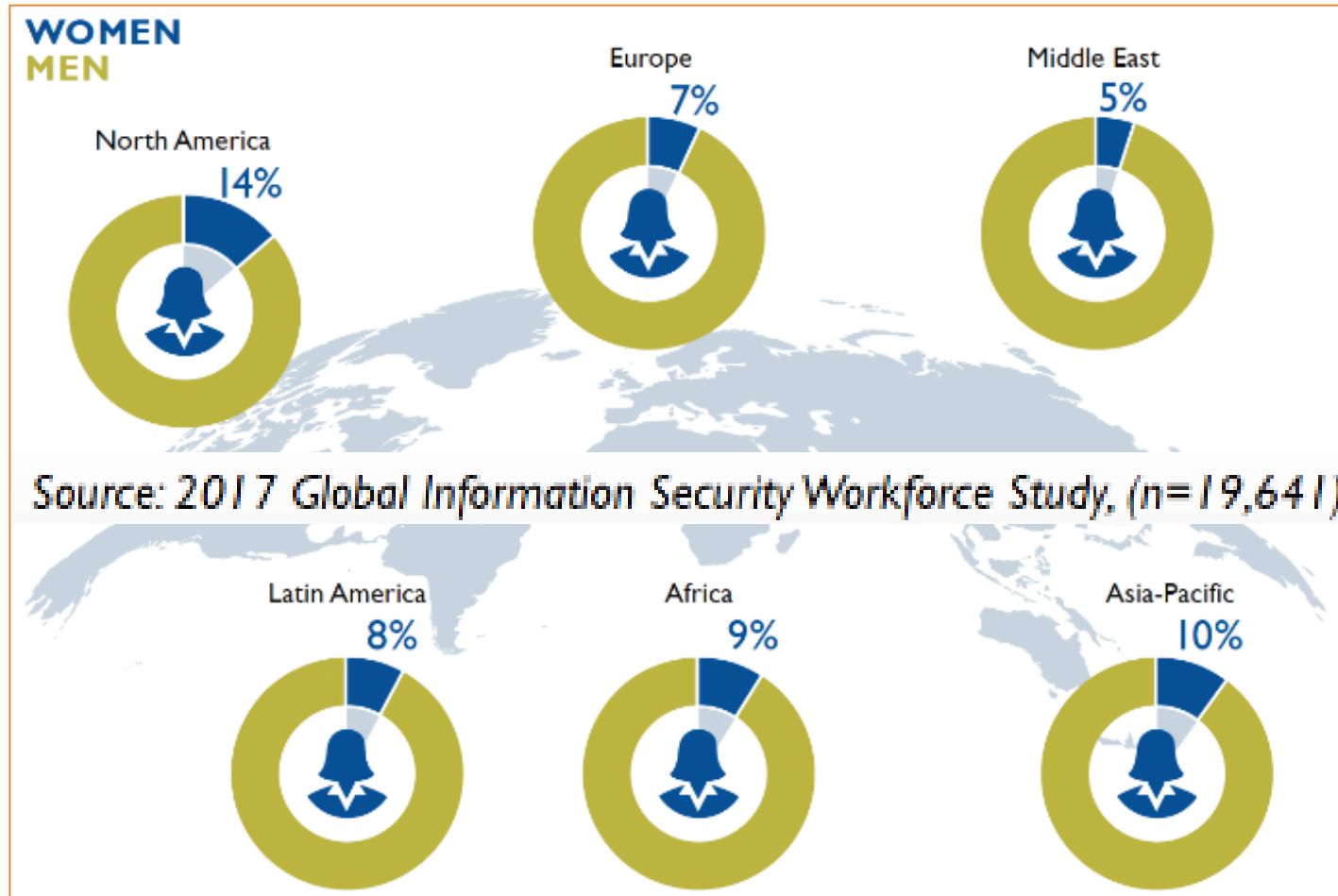
(<http://security.wildau.biz/en.html>)



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1 Initial situation

Small proportion of women in this fast growing career field



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Low interest of young women in a career in IT and IS

78% of the surveyed young women don't consider a career in this field

(Jäger & Schmitz 2017)

Stereotypical image of work in information security: only technical jobs and coding tasks

(Jäger & Schmitz 2017)

Stereotypical image of computer scientists as male "geeks"

(Ashcraft et al. 2012)

Absence of female role models

(Microsoft 2017)

Paucity of information about specific IT job profiles

(Paukstadt et al. 2018)

Reasons for the low interest

Few points of contact and lack of practical experience

(Paukstadt et al. 2018)

Lack of encouragement from teachers and parents

(Microsoft 2017; Ashcraft et al. 2012)

Low self-confidence in computer and digital skills

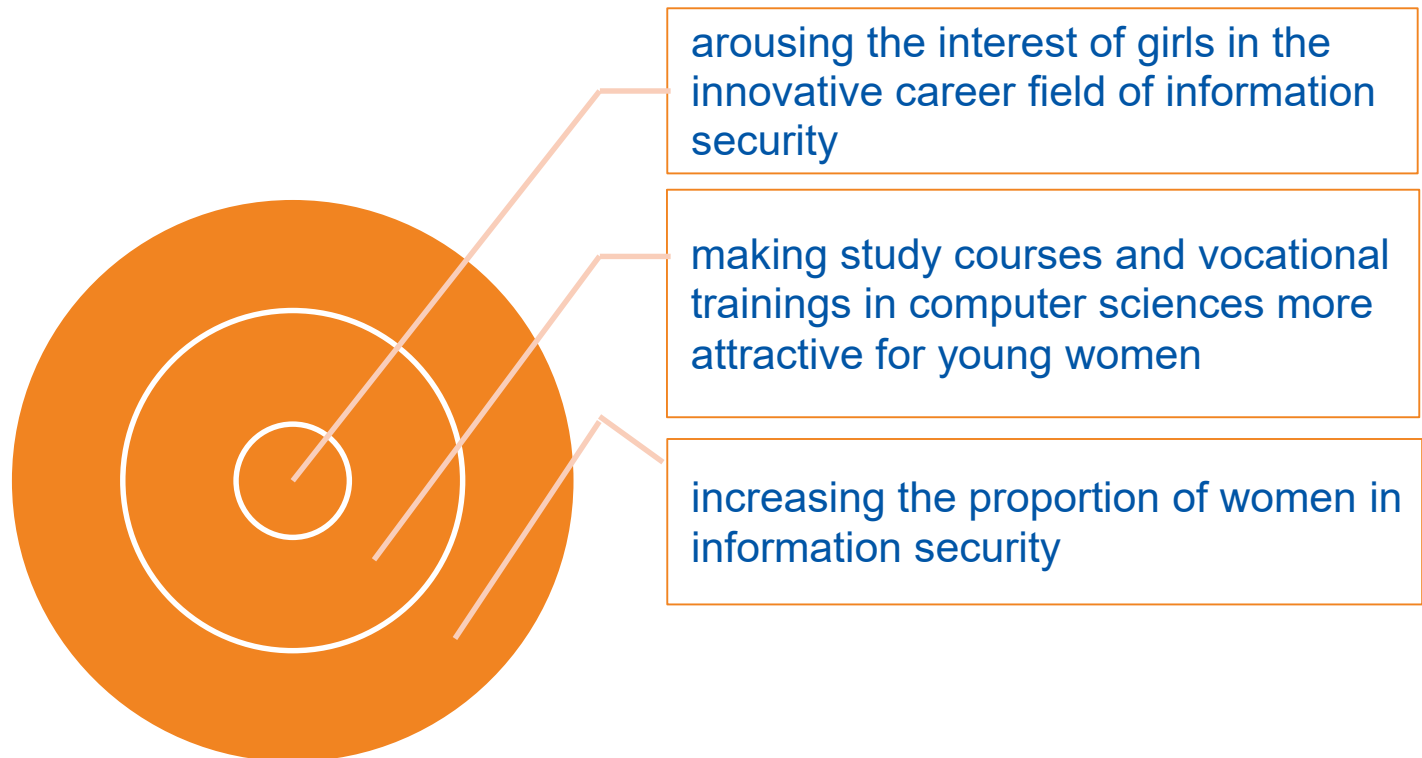
(Yen, Wang & Chen 2011)

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2 Project “Security”

2.1 Aim

The project **Security** aims at



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2.2 Methodological approach

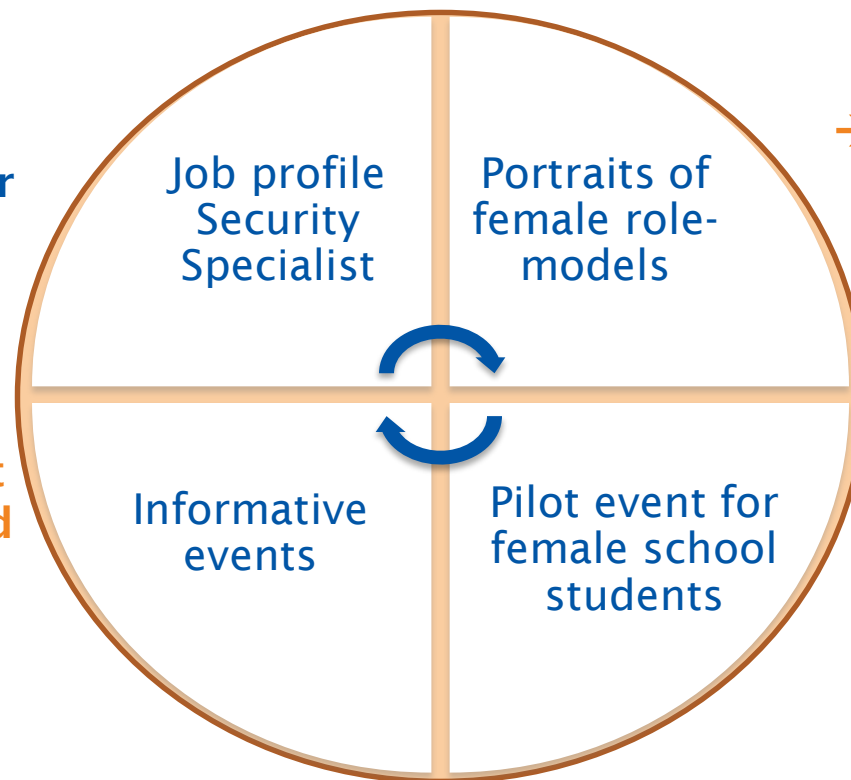
Breaking down (gender) stereotypes and increasing self-efficacy of young women by means of **four experience-driven measures**

→ Are there any possibilities for improvement?

→ Experiences and narratives presented by women working in the field

→ Encouragement by teachers and parents

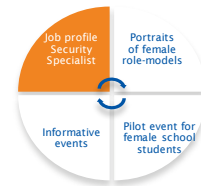
→ Individual positive experiences and successes



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2 Project “Security”

2.3 Job profile

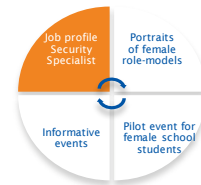


- Aim:
To depict the career field in a way that reflects what it is—diverse, creative, communicative, and meaningful
- Methodological approach:
 - Semi-structured interviews with experts
 - Analysis of job ads in information security
 - Research of job descriptions on web-based career guidance platforms

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2 Project “Security”

2.3 Job profile

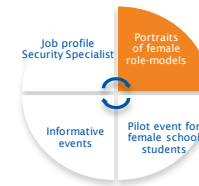


- First results (see Fuhrmann et al. 2019):
 - Important skills: creativity, communicative abilities, willingness and eagerness to learn
 - Versatile positions and tasks: from “profound technical skills” to “technical understanding”
 - Lack of job descriptions: 70% of 20 searched platforms no information about security jobs
 - Job ads can be improved: gender-sensitive language, highlighting work-life-balance, the social impact, challenging problem-solving and team-based tasks

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2.4 Portraits of female role-models

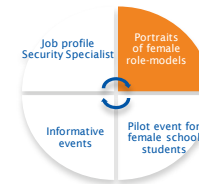


Ada Lovelace, mathematician and first software engineer of the world (https://de.wikipedia.org/wiki/Datei:Ada_Lovelace_Chalon_portrait.jpg)

- Aim:
 - To make female role models in the field of information security more visible
- Methodological approach:
 - Local role models girls can identify with
 - Semi-structured interviews including photo shoots and video recording
 - Interview topics: professional activities, inspiration, enjoyable moments, challenges, interests, advice
 - Preparation as book, posters, and videos.

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2.4 Portraits of female role-models



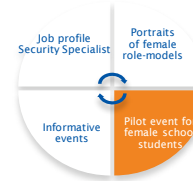
Ada Lovelace, mathematician and first software engineer of the world (https://de.wikipedia.org/wiki/Datei:Ada_Lovelace_Chalon_portrait.jpg)

- First impressions:
 - Diverse and inspiring women
 - Educational backgrounds in computer sciences and other disciplines (e.g., politics, economics)
 - They value the variety of their professional activities
 - Some love technics, others have a good understanding of technical contexts and know whom to ask if there is, for example, something to code

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2 Project “Security”

2.5 Pilot event for school students



■ Aims:

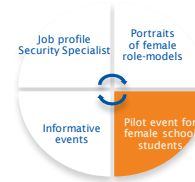
- Enable female pupils (9th grade) to experience and explore information security
- Raise awareness that information security is already a part of everyday life
- Foster understanding of professional opportunities
- Increase self-confidence and generate enthusiasm for information security
- Developing, testing and using game-based learning scenarios.

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2 Project “Security”

2.5 Pilot event for school students

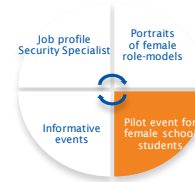


- Methodological approach:
 - Anonymous, standardized survey of school students
 - Circuit training with 6 game-based learning scenarios with real-world contexts
 - Questions about different security topics corresponding to the daily life
 - Social activities in teams
 - Only-girls groups in comparison to mixed-gender groups.

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2 Project “Security”

2.5 Pilot event for school students



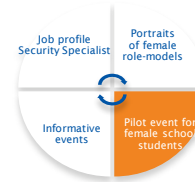
■ First findings:

- 97.42% of 194 polled school students in the 8th grade use a smartphone (42% female, 55% male)
- 95.88% are using messenger services, for example, WhatsApp (99% of the female, 95% of the male participants)
- 61% of them indicated that information security topics are not taught in school
- The interest in learning more about information security varies with the topic, but is always higher for girls.

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2 Project “Security”

2.5 Pilot event for school students

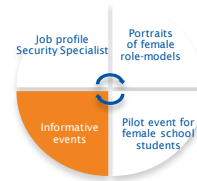


- First findings:
 - Topics for the 6 learning scenarios: pictures, phishing, passwords, cryptography, fake news, apps

| Topic | All participants | Female participants | Male participants |
|---|------------------|---------------------|-------------------|
| Phishing | 53.09% | 54.32% | 52.83% |
| Secure passwords | 33.51% | 38.27% | 28.30% |
| Secure use of social networks (e.g., privacy) | 25.26% | 33.33% | 18.87% |
| Secure use of messenger services | 30.93% | 39.51% | 23.59% |
| Secure smartphone use in the public | 29.38% | 37.04% | 22.64% |
| Legal recording and use of pictures | 31.44% | 38.27% | 26.42% |

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■ Informative events

- Increasing awareness of the career field of information security with multipliers such as teachers and parents
- Motivating teachers and parents to encourage girls, in particular, to gain practical experience and develop interest in the field.

■ Sustainability

- The developed materials can be borrowed by schools, career guidance institutions, etc. or are freely accessible from the project website.
- Recommendations for similar projects and computer science training focused, for example, on single-sex education.

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Thank you for your attention!

Q & C ?

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Project website:

<http://security.wildau.biz/en.html>

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