Hochschule Albstadt-Sigmaringen
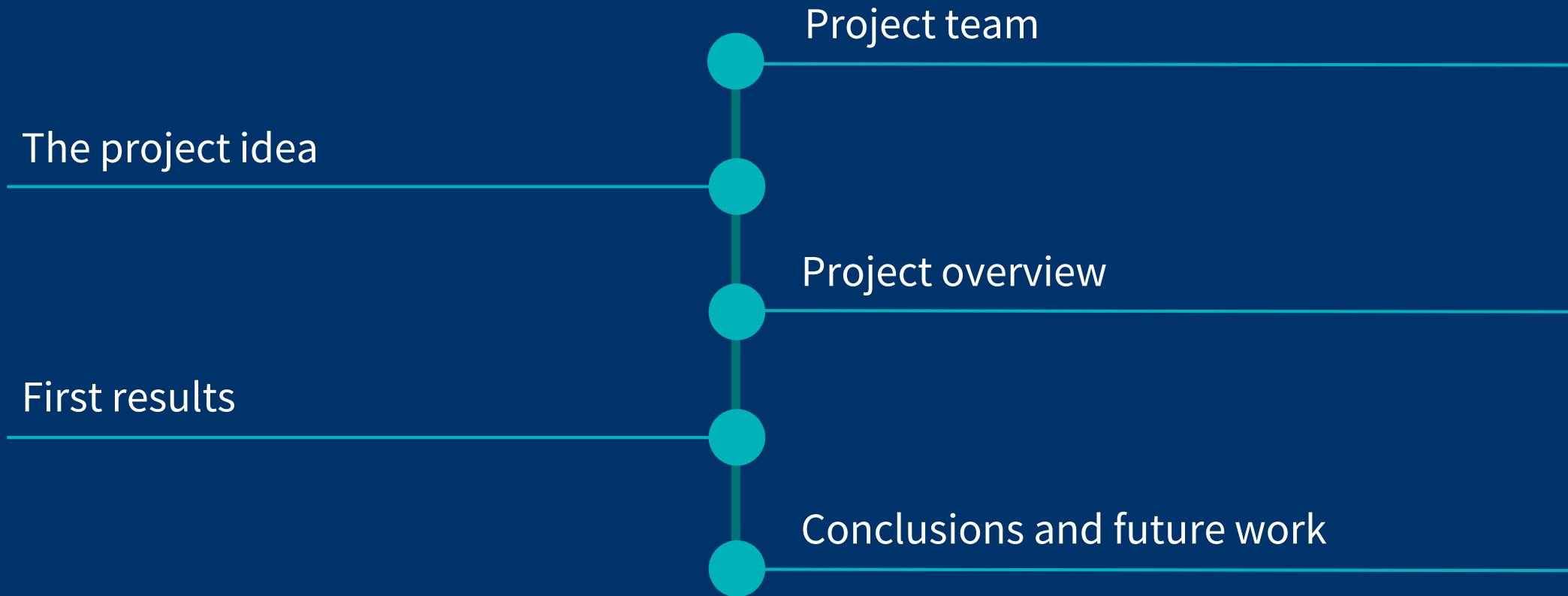Albstadt-Sigmaringen University

Faculties of Computer Science and Engineering

1st ITG Workshop on IT Security (ITSec)

SEKT IT Security of electronic communication systems in smart textile products

Prof. Manuela Bräuning, Désirée Göbel, Prof. Holger Morgenstern, Prof. Dr. Martin Rieger, Nele Schäfer, Tobias Scheible

03.04.2020 Eberhard Karls Universität Tübingen

Outline

Project team

The project idea

Project overview

First results

Conclusions and future work

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2

Project team

Albstadt-Sigmaringen University

Textile & Clothing Technology

- Prof. M. Bräuning
- D. Göbel
- N. Schäfer

IT-Security and Digital forensics

- Prof. H. Morgenstern
- Prof. Dr. M. Rieger
- T. Scheible

Industrial partners

- Hugo Boss AG
- Autoflug GmbH
- medi GmbH & Co. KG
- Interactive Wear AG
- MeetNow! GmbH
- sodge IT GmbH
- Association of the South German Textile and Clothing Industry - Südwesttextil e.V.

Cooperation partners

- Institute for Knowledge Management and Transfer of the Chamber of Industry and commerce Reutlingen
- Technology Studio Albstadt
- Military Science Institute for Materials and Operating Supplies (WIWeB)
- Friedrich Alexander University Erlangen-Nürnberg
- Faculty of Law of the University of Hamburg

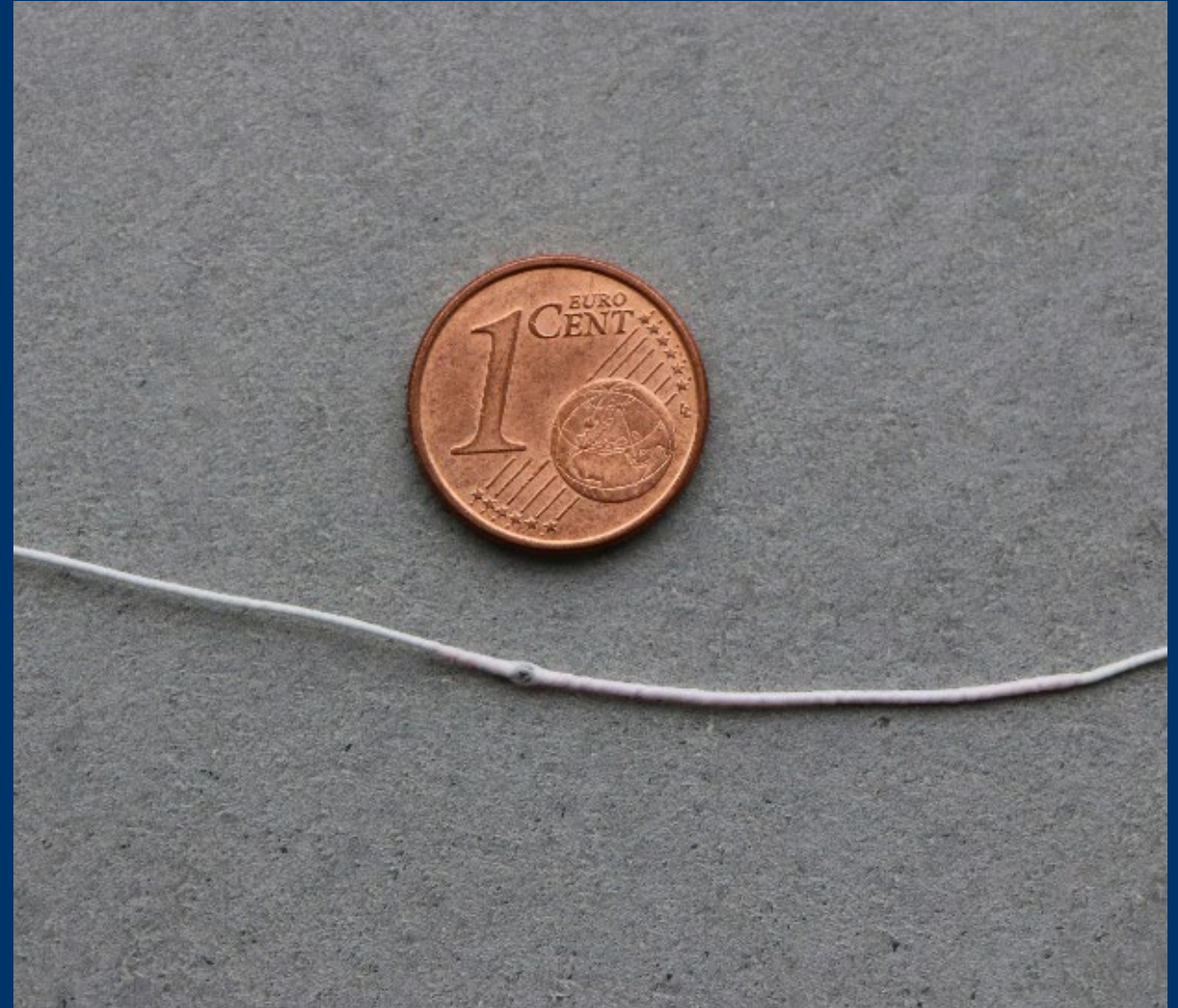SEKT - IT Security of electronic communication systems in smart textile products | Tobias Scheible - Hochschule Albstadt-Sigmaringen

4

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5

Project overview

Analysis of current system solutions

▶ Conduction of an extensive survey
▶ Publication of a study

Analysis of specific systems

▶ Investigation of the integration of electronic components in smart textile products
▶ Investigation of the IT security concepts used

Practice-relevant safety concepts

▶ Analysis of the applicability of existing concepts
▶ Development and evaluation of security concepts

Smart demonstrators

▶ Selection of three areas
▶ Development, conception and manufacturing of selected smart demonstrators

Knowledge and technology transfer

▶ Publication of guidance for further action
▶ Development and implementation of a teaching module in blended learning technique

Quelle: https://www.bmf-versand.de/details/clipsonic-led-rucksack-leuchtsignale-fahrrad-fernbedienung-tea150, abgerufen am 2.4.2020
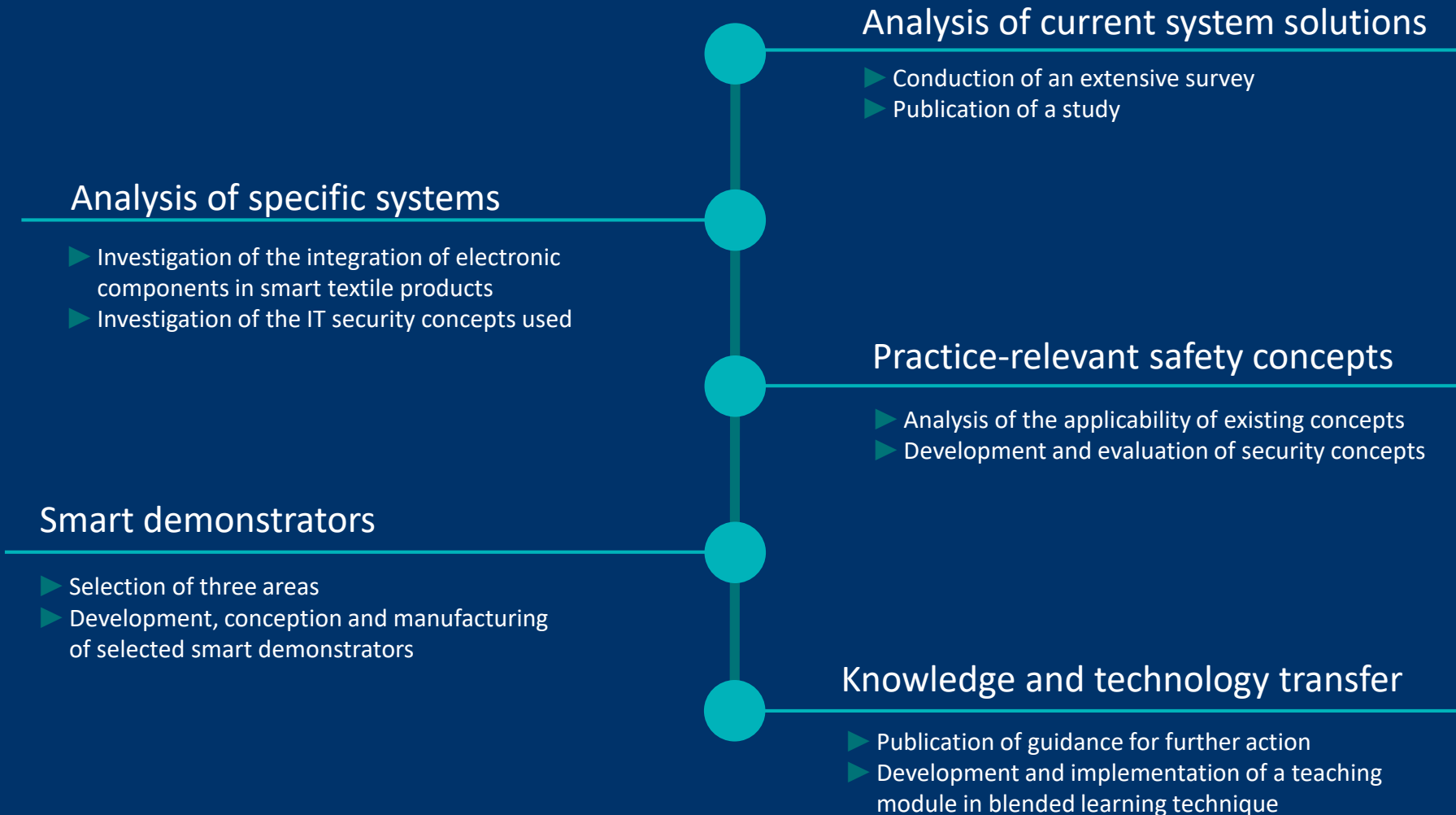
- A smart backpack with turn signals for bicycle tours was successfully attacked with a replay attack.

- For this the signal of the remote control was intercepted with an SDR (Software defined radio) device and then played back again, so that the display could be manipulated as desired.

Quelle: https://www.bike24.de/p1202519.html, abgerufen am 2.4.2020

- Bluetooth LE with pairing without display

- Security feature: MAC address is continuously regenerated

- Aktuelle Herzfrequenz kann von allen ausgelesen werden

- Individual ID and software versions will be sent along

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8

First results

- Backpack with an LED matrix (64 x 64).

- Can be programmed via WLAN with a smartphone and an Android app.

- Fun Fact: SSID is generated randomly (first four characters always the same). The password is always the same (user manual).

Quelle: https://de.gearbest.com/backpacks/pp_009718456691.html, abgerufen am 2.4.2020

Conclusions

- Many companies do not yet recognize the importance of IT security for their products.

- A lot of products have serious security flaws and are years behind the state of IT security.

Future work

- More penetration tests for smart textile products

- Development of secure prototypes

- Knowledge transfer via a blended learning module to the textile and clothing industries

Questions or suggestions?

Thank you very much for your attention!

- Project web site:
  https://projekt-sekt.de