Keynote: «Cyber Sovereignty - Reality or Illusion?»

Improving Cybersecurity: How Sovereign Can Switzerland Be?

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Kickstart Accelerator, Kraftwerk, Zürich

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Dr. Thomas Dübendorfer

- Dr. sc. ETH, PhD in Computer Science from ETH Zürich on Cyber Security; CISSP
- President, Swiss ICT Investor Club (SICTIC)
- Chairman, swisssecurity.org
- Ex-Googler (tech lead in security/privacy engineering)
- Past President, Information Security Society Switzerland (ISSS)

Work experience

Co-Founded Startups (selection)

SOLD

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Agenda

- **Digital Communication Equipment Origins**

- **Banking Infrastructure**

- **Secure Communication**
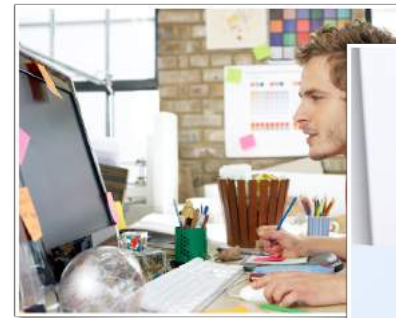
- **Advanced Persistent Threats**

- **Conclusions**

New Business Communication Patterns

In the Office → Anywhere

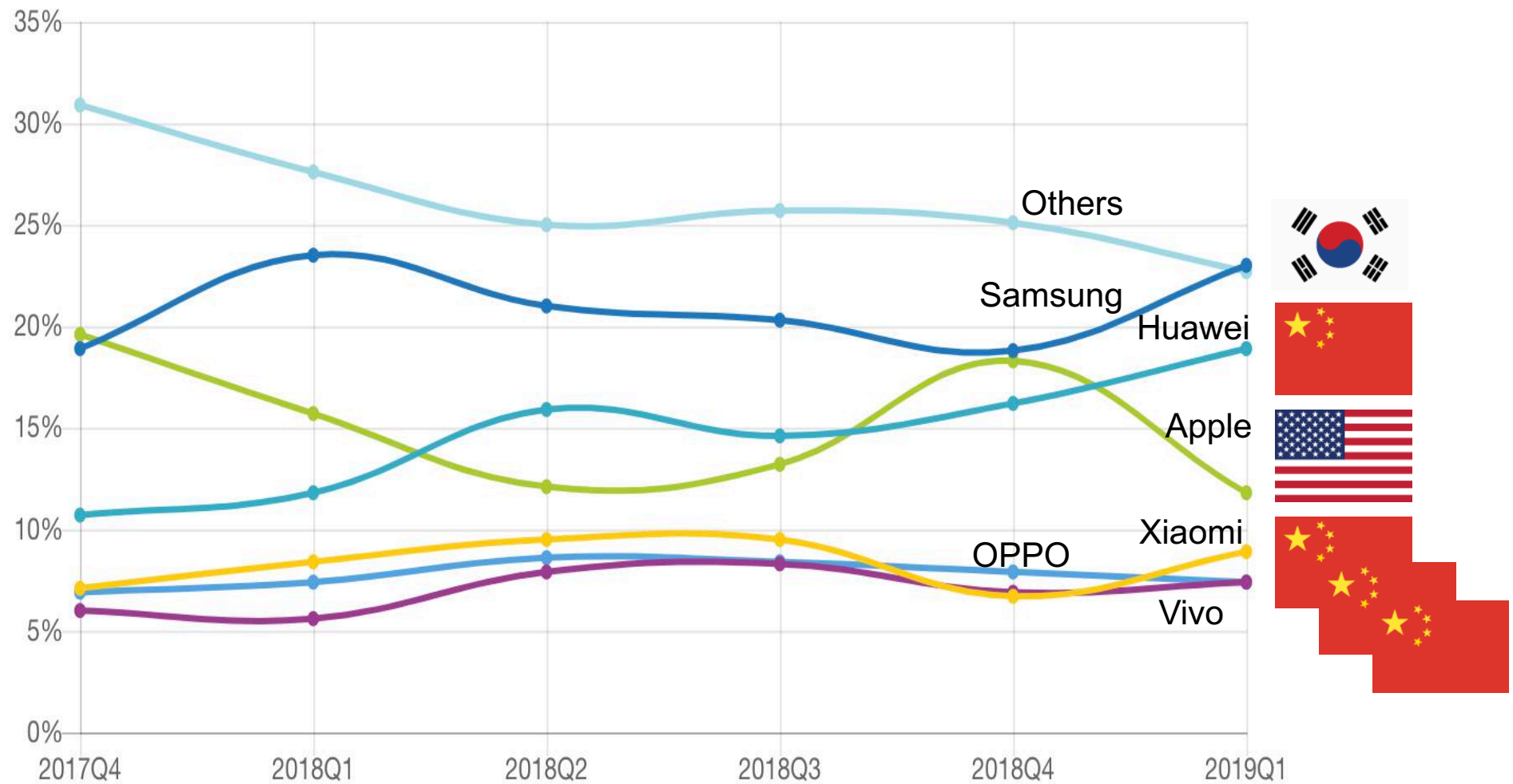On the company PC → On any device

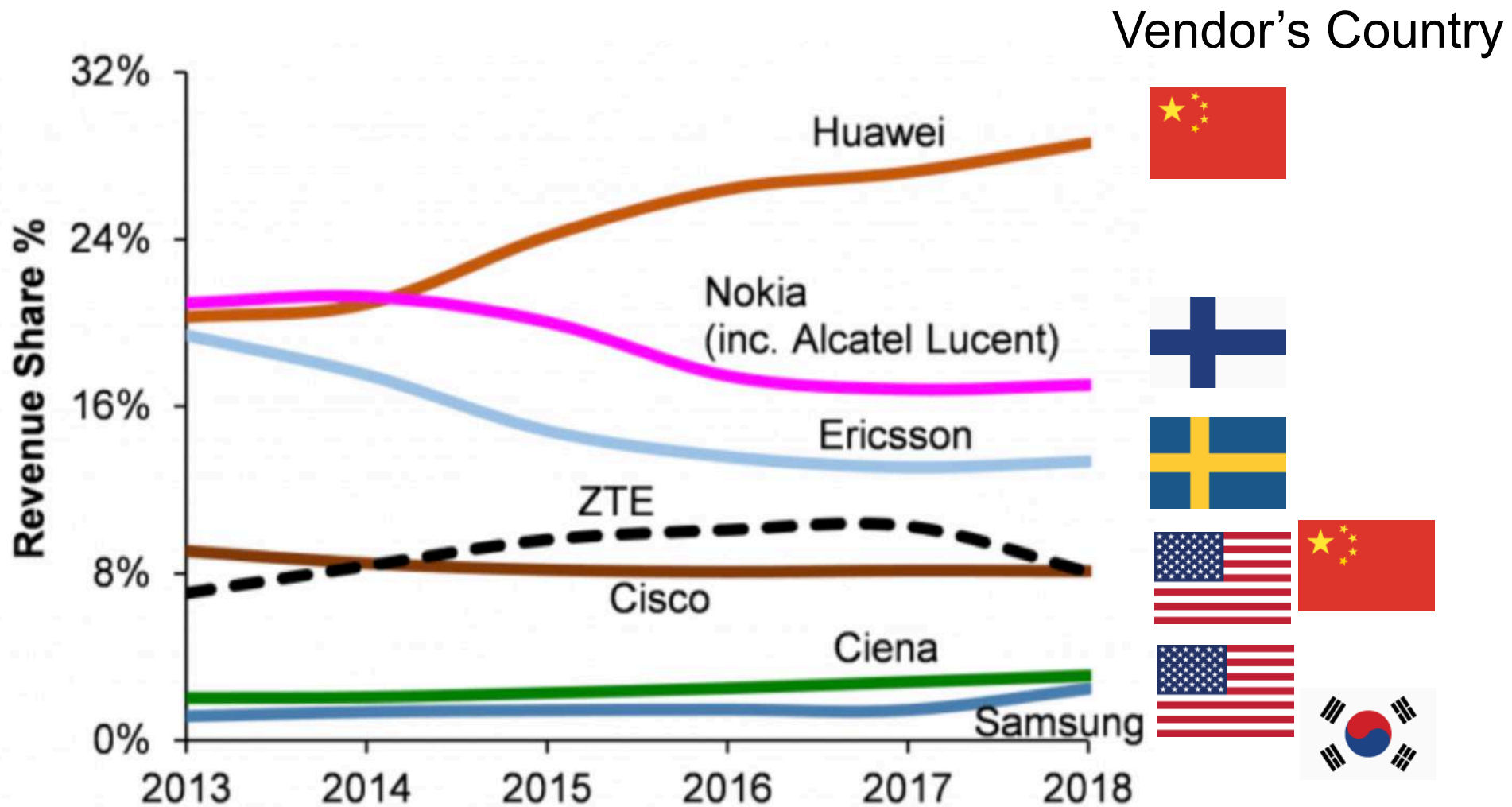09:00 – 17:00 Uhr → Anytime

Local employees → Freelancers

DIGITAL COMMUNICATION EQUIPMENT

Worldwide Top 5 Smartphone Shipment Company Market Share
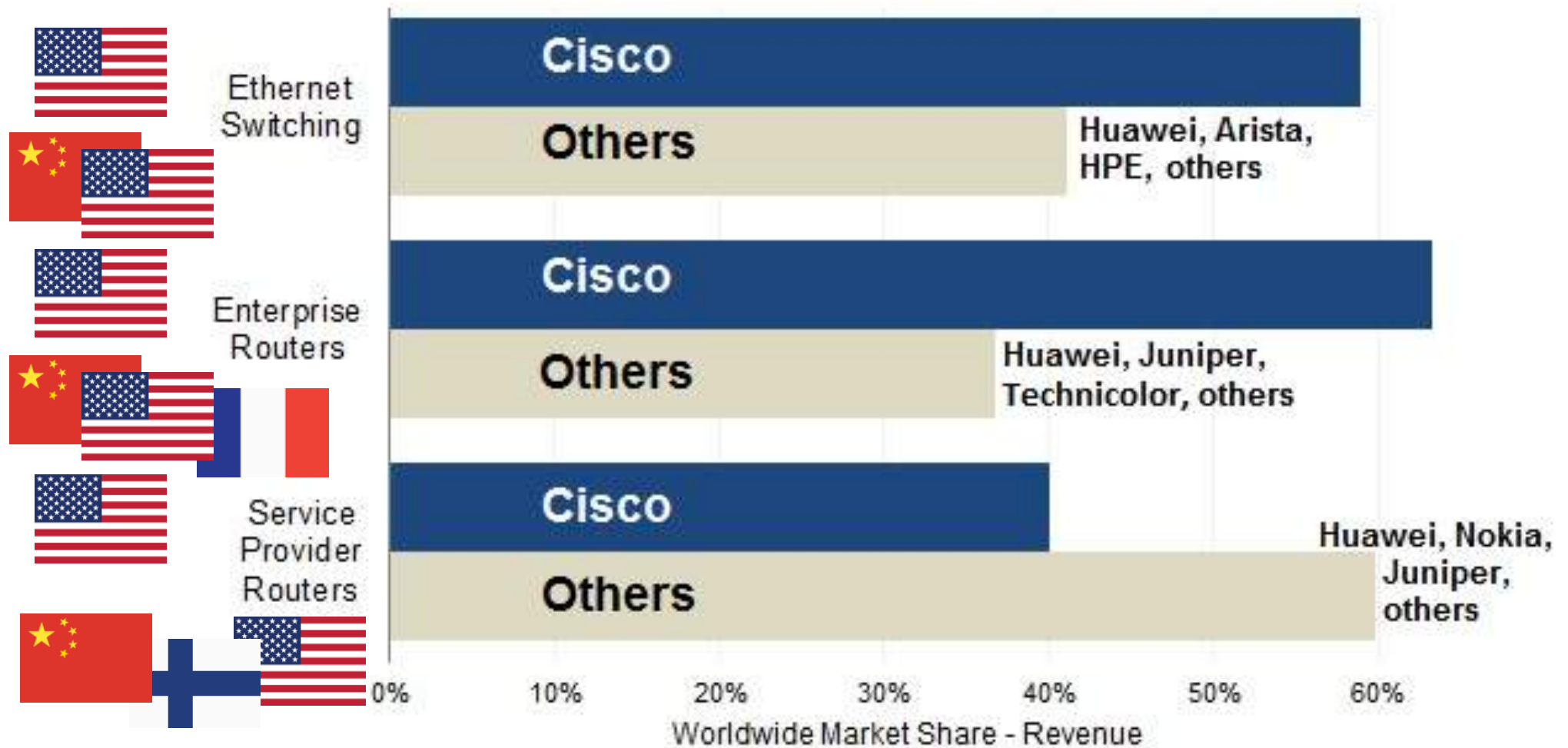

Source: IDC

Worldwide Telco Equipment Market Shares

Vendor's Country

Source: Dell'Oro Group
*Equipment includes: Broadband Access, Carrier IP Telephony, Microwave, Mobile RAN, Optical, SP Router and CE Switch, Wireless Packet Core

Ethernet Switch & Router Market Leaders

Source: Synergy Research Group, Q3 2018

BANKING INFRASTRUCTURE

Swiss Interbank Clearing (SIC)

- Operated since 1987 by SIX Interbank Clearing Ltd on behalf of the **Swiss National Bank** (SNB).

- System for **large-value transactions** and retail transfers trough services provided by financial market participants (bank transfers, card payments, automatic debits, etc.).

- Statistics for August 2019:
    - **3 trillion CHF turnover**
    - 50 million transactions
    - Peak: 171 billion CHF / day
    - Up to 700 transactions / second
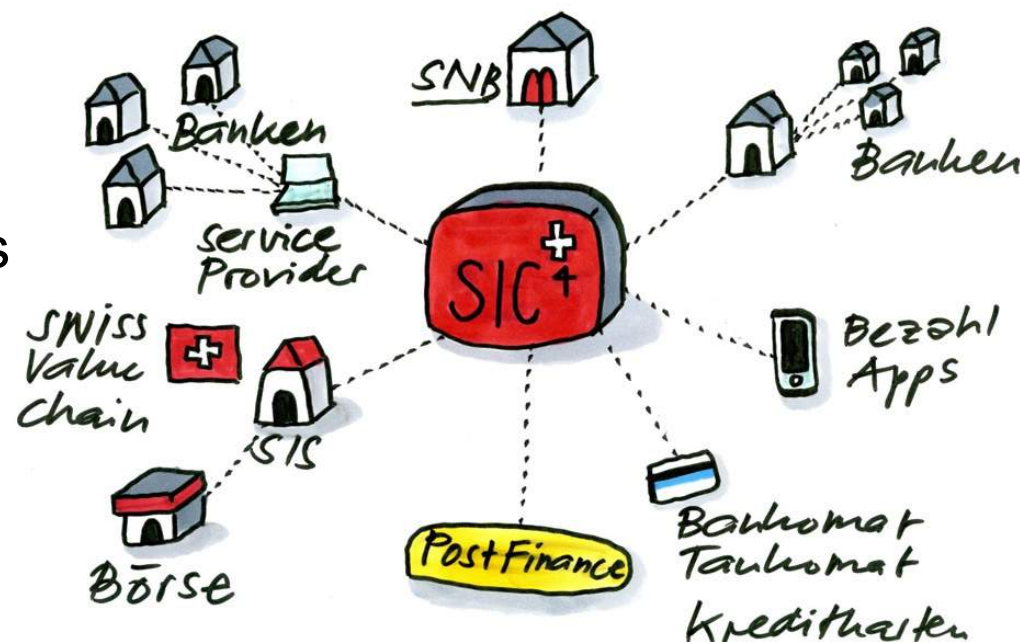
Sources: SNB (data), SIX (image)

Hardware Security Module (HSM)

- **HSMs by Securosys**
  - Digital signing of SIC transactions
  - Settlement of all Swiss stock exchange (SIX) transactions

- **Developed, produced, tested, and operated in Switzerland**
  - Trustworthy supply chain
  - Independent and neutral
  - Offered as hardware and cloud service
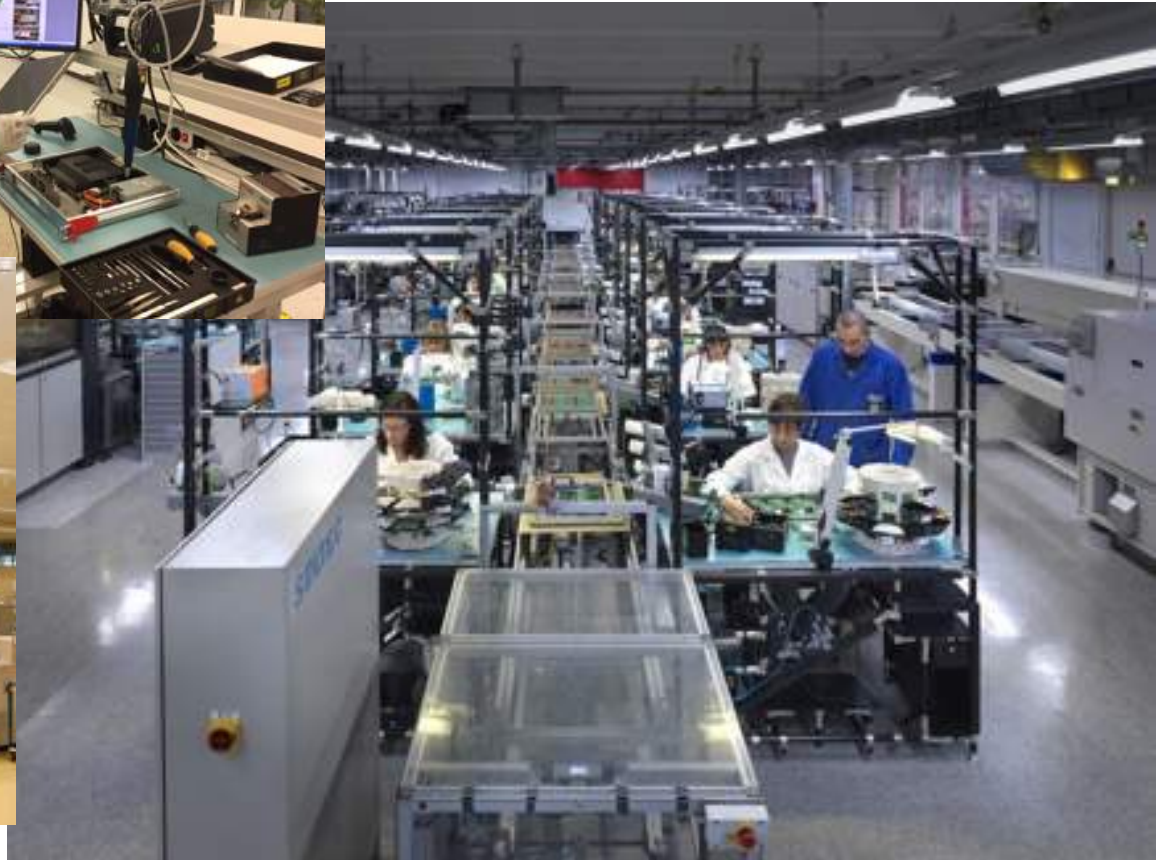

- Securoys - Company Information
  - Established in 2014
  - Ownership: Founders, employees, independent Swiss investors
  - Headquarters in Zürich, Switzerland
  - Subsidiaries Germany (EU) and Hong Kong (APAC)

Source: Securosys SA, info@securosys.ch

HSMs Manufactured in Switzerland

Source: Securosys SA, info@securosys.ch

SECURE COMMUNICATION

Polycom: Secure Radio Network

- Switzerland-wide secure radio network of the Swiss rescue and security authorities and organisations (BORS).
- Voice and data transmission by radio within and between border guard, police, fire service, ambulance, civil protection organisation and supportive military units.
- About 55'000 users.

- Built about 10 years ago, significant updates planned (switch to LTE broadband technology) until 2030.
- An independent mobile radio infrastructure is planned with its own frequency range and own power supplies.

- Not accessible for private or business users.

ID Quantique – Quantum security

Technology to secure point to point communication links with quantum secure encryption. Company based in Switzerland.
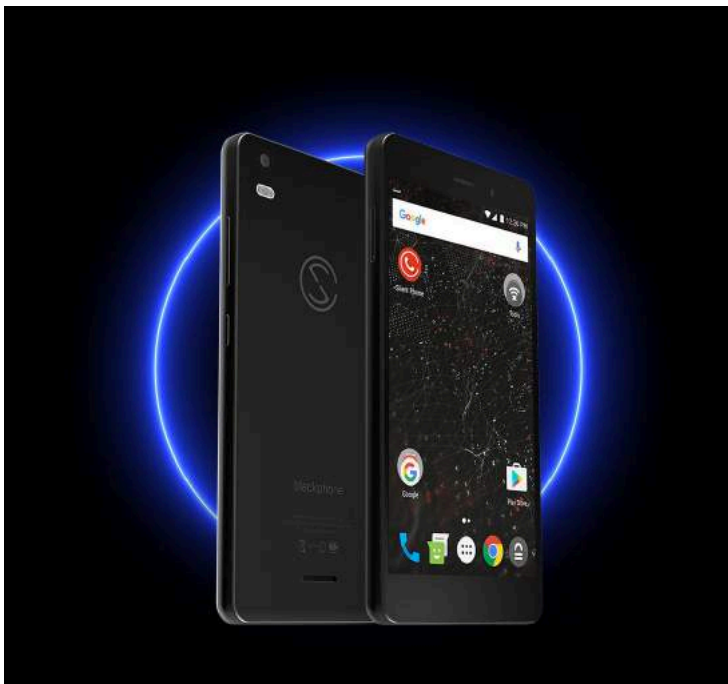
Services and Products:
- quantum-safe network encryption
- secure quantum key generation
- quantum key distribution solutions and services

Customers:
- financial industry
- enterprises
- government

Blackphone – by Silent Circle

Secure mobile phone

Company was based in Geneva, now headquarters are in US.

Swiss entity liquidated in July 2019

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Zefix – Central Business Name Index

DE FR IT EN ⚙

in the SOGC published publications regarding the registry of commerce since 03. Februar 2016

SHAB: Pub. Nr. 1004708414 from 03.09.2019   ⓘ   Registre du commerce du Canton de Genève ☍

daily register: Nr. 16303 from 29.08.2019   publication as a PDF 📄

Silent Circle SA, à Le Grand-Saconnex, CHE-175.457.163 (FOSC du 24.04.2019, p. 0/1004616520). Par décision du juge du Tribunal de première instance du 11.07.2019, la société a été dissoute conformément à l'art. 731b CO; sa liquidation a été ordonnée selon les dispositions applicables à la faillite. Par conséquent, sa raison sociale devient: Silent Circle SA, en liquidation [Silent Circle AG, in Liquidation] [Silent Circle Ltd, in liquidation].

Trustless.ai - Secure E2E Communication

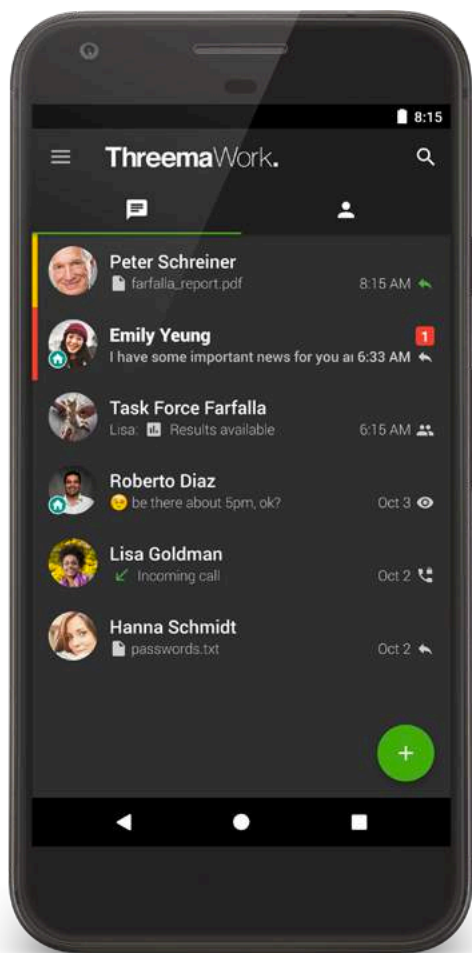Secure mobile phone "extension pad" for e-banking, crypto wallet, passwords, secure messaging etc.

Status: Prototype, looking for funding

Based in Switzerland.

Source: Trusless.ai

Threema – Seriously Secure Messaging

Secure messaging app for private and business customers.

Status: Live with millions of users.

Based in Switzerland.

Source: Threema

ADVANCED PERSISTENT THREATS

THREATRAY – **Understanding Malware**

- Spin-off from University of Applied Sciences Berne

- Threatray takes a "DNA"-like probe of an infected file and compares it to "DNA"-fragments of known malware
    - Allows to understand the malware threat in much more detail than traditional anti-virus software, even for new and highly customized malware (i.e. advanced persistent threats).

CONCLUSIONS

Conclusions

- Internet infrastructure, mobile networks and mobile devices are mostly built by Chinese, South Korean and US vendors.
- Switzerland has its own communication infrastructure for rescue and security authorities and organisations.
- Switzerland based companies have:
  - Built hardware security modules to secure valuable transactions.
  - Developed secure messaging software (apps) used by millions of people.
  - Built quantum secure point-to-point communication devices.
- Building a "secure phone" is costly and getting it used by many people is hard.
- Switzerland is highly innovative.

Thanks for your attention!

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