

Safety, Security, and Information Security

An Integrated Approach for Railway Operations

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Why the topic? – Example 1

- From 2016 to 2021, there were 374 ransomware attacks on healthcare facilities in the United States. Between 2016 and 2021, attacks more than doubled.
- The probability of dying as a patient in a hospital increases by 20 to 35 percent if the hospital is affected by a ransomware attack.
- In the period 2016 to 2021, between 42 and 67 patients died as a result of a ransomware attack.

Neprash et al. (2022), McGlave et al. (2023)

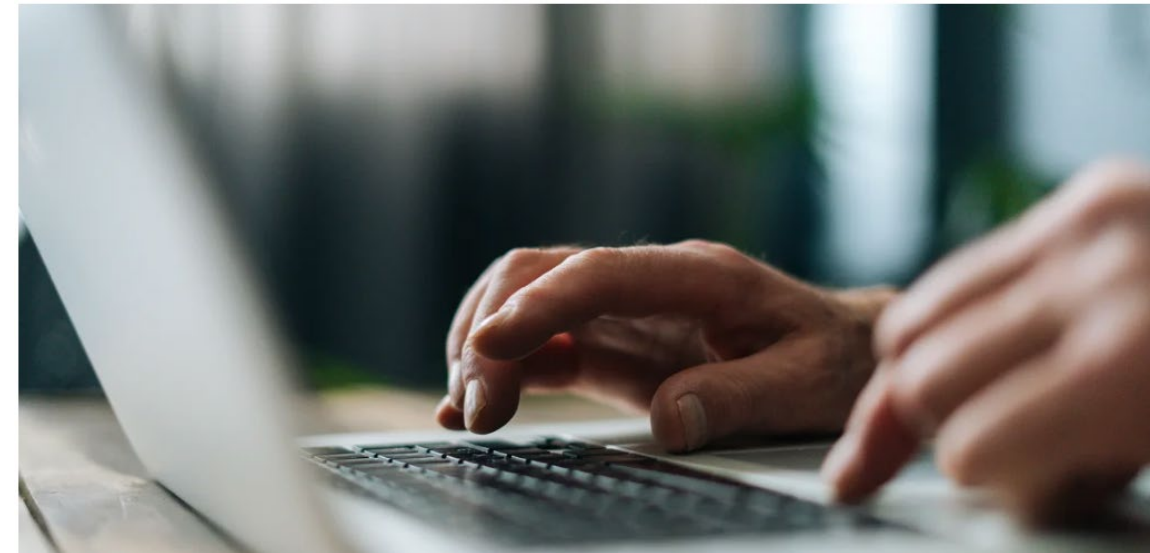
Business / Tech

‘It’s putting patients’ lives in danger’: Nurses say ransomware attack is stressing hospital operations



By Sean Lyngaas, CNN

🕒 6 minute read · Published 12:16 PM EDT, Wed May 29, 2024



Example 2

'Malicious and targeted' sabotage halts rail traffic in northern Germany

By Sarah Marsh and Andreas Rinke

October 8, 2022 7:33 PM GMT+2 · Updated 2 years ago



(Quelle: Reuters)

Example 3

Keys for the Railway Sector



Advantages

- Keys for operating locks in the railway sector (especially outdoors).
- **Version a):** universal key for railway applications.
- Tool for 4 inserts:
 - conical square insert (Berne key),
 - socket square 7.6mm insert (UK insert),
 - DÜWAG insert,
 - conical square 9mm.
- Integrated eyelet for attaching key ring or key bands.
- **Version b):** railway key
 - Key for quarter-turns with conical insert square 9 (Berne key) and conical outer square.
- Integrated eyelet for attaching key ring or key bands.
- **Version c):** railway key
 - Key for quarter-turns with insert socket square 7.6 (UK insert) and conical outer square.

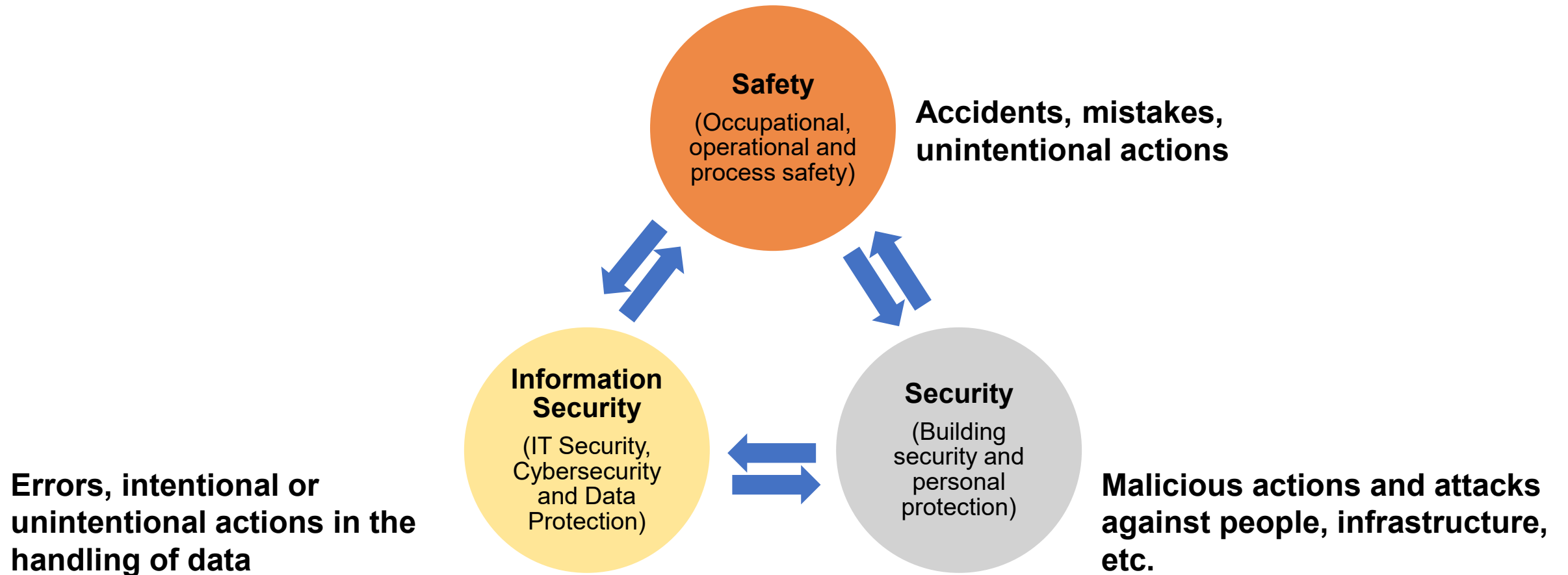
Quelle: FINK

(Quelle: Dirak)

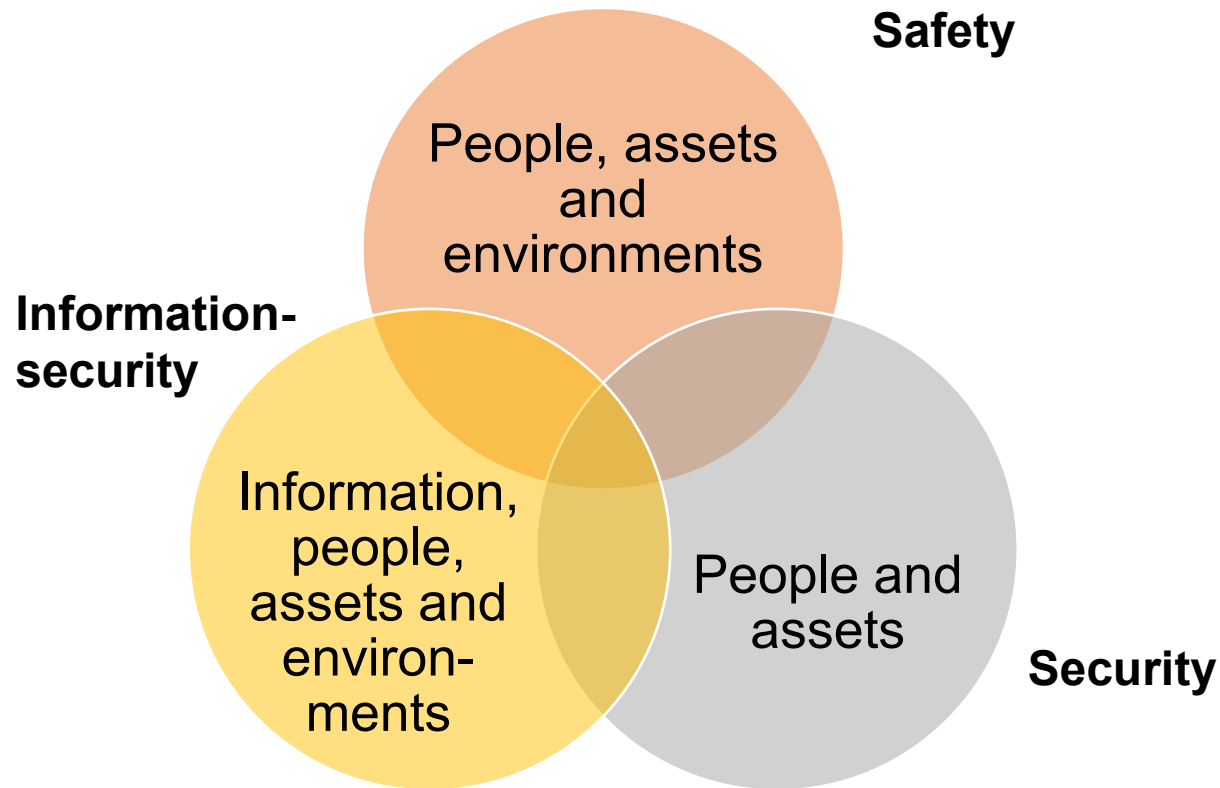
Safety, security and information security should be considered and further developed together!

- Safety, security and information security are increasingly interdependent.
 - They can strengthen and influence each other positively.
 - Safety, security and information security have certain conflicting goals!
- ▶ Swiss Federal Railways (SBB) has merged the 3 departments on a corporate Level

Differences: Origins of the hazards



Commonalities: Protection as goal



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(Quelle: Reuters)

Commonalities: Fields of action



- Condition-related:
 - Risk assessment and risk management: e.g. risk analyses, incident analyses, risk minimization measures...
 - Crisis management
 - Technological change Management
 - Communication and collaboration after incidents (e.g. reporting, organizational learning)

Commonalities: Fields of action

- Person-related (Trainings and selection):
 - Human behaviour and human error must be considered in all three areas.
 - Human perception and behaviour are central
 - to the causation of critical incidents, but also
 - to the prevention of critical incidents.
 - All employees should always be aware of all three topics!



Dealing with it

- Tools need to be developed to facilitate an integrated view of protective measures critical to rail operations.
 - Operators
 - Regulators
- Several models that are commonly used in railway safety management allow (theoretically) the inclusion of security and information security topics:
 - Swiss cheese model
 - Attack and fault trees
 - ERA culture model

Challenges for integration of the 3 areas

- Prioritizing
 - Fear of loss (control and resources), watering down of content
- Safety is ahead in many ways
 - Human image (as a resource instead of a threat)
 - Recognition of near misses
 - Scientific models (e.g. for incident analysis)
- Regulator does not (yet) regulate in an integrated way
 - Most demands target Safety

Questions

