Security and big data: How to catch a train pyromaniac?

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Session 1b. Security and privacy
1. PROGRAM

- Introduction
- The Netherlands Railways (NS) in short
- Case: The Train Pyromaniac
- Plan of action
- Big data analysis
- Privacy
- Research process
- Smart measures in smart stations
- Conclusions
- Questions?
1.2 million train travellers per day
17 billion travel kilometres per year.
9 million Dutch inhabitants travel with NS per year.
Amsterdam Central: 165,000 travellers per day
6.830 km tracks ‘From Utrecht to Tibet’ incl. 9,000 track switches
3,430 machinisten en 2,950 conducteurs, 2,500 shifts per day
Revenue 2015: 4.97 billion euro
Profit: 118 million euro
Busiest railway track in world:
1. Holland
2. Switzerland
3. Japan
3. CASE: THE TRAIN PYROMANIAC

- Arson attacks: Probability of a pyromaniac in trains;
- Major effect on logistics and security;
- 15 registered incidents between Dec. '16 and March '17;
- Estimated damage: 7.000.000 euros;
- Public unrest and media coverage;
- Fires started in toiletroom.
4. Approach

- NS Security analysis shows incident pattern;
- Cross check with police report;
- Joint taskforce police, NS, IT, analysts and a private forensic accountancy Company;
- Big data analysis with 2 groups;
  - 1 group was formed for data analysis
  - 1 group was formulating hypotheses regarding possible perpetrator.
Deze slide is te summier kan meer in mbt MO
Kamil, Tawfik T (NSG); 10/10/2017
7. RESEARCH PROCESS (2)

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5. BIG DATA ANALYSIS (1)

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6. PRIVACY

- Joint Task force privacy constraints:
- Due to investigation by a private company privacy laws and regulations were applicable:
  - No personal information was allowed to be investigated.
  - Traveldata from train tickets were analyzed by chipnumber inside the card.
  - All steps were documented and approved by a police officer (leading organisation).
7. RESEARCH PROCESS (1)

- Linking used train tickets to fires
- Excluding cards staff/employees
- Cooperation with police
- Use of CCTV
- March 10th: Pyromaniac arrested red-handed
7. RESEARCH PROCESS (2)

Security and big data: How to arrest a pyromaniac in trains?
8. SMART MEASURES IN SMART STATIONS

- Controlled access by gates;
- Control by train conductor with electronic measures;
- CCTV on controlled access;
- Timetable of trains;
- Security Operations Centre (SOC) for documentation.
9. CONCLUSIONS & LESSONS LEARNED

- Combine all information to get the overall picture;
- Cooperation with police is of vital importance;
- Cooperation with private forensic accountancy company/big data expert is recommended;
- It’s possible to achieve results in very short notice (total 3.5 weeks);
- We learned and experienced how to build smart stations with smart security measures!
THANK YOU
GRACIAS