



EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



COST ACTION TU1103:

**OPERATION AND SAFETY OF TRAMWAYS
IN INTERACTION WITH PUBLIC SPACE**

Final conference – Frankfurt, Germany – 29 September 2015

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From the accident to data acquisition and analysis: Monitoring Tools

Aim:

To present advised tools

for a good way to **collect** , **use** and **manage** accident data

Objectives:

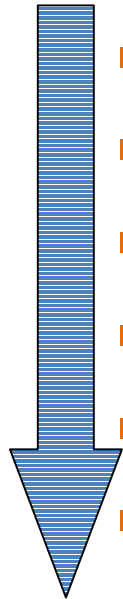
- accurate and valuable data for analysis and safety improvements
- ⇒ the **existence and quality** of safety-related data = crucial pillar

Operator = core actor

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From the accident to data acquisition and analysis: Monitoring Tools

Content:



- Accident Report on site
- Ideal Accident Report
- Other data collection
- Post-analysis and hotspots
- National and European database
- Indicators

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The Ideal Accident Report

The template is a suggestion, adaptable for each operator's need.

A continuous application provides:

- structured data acquisition on site,
- essential element of accident prevention,
- conservation of evidence.

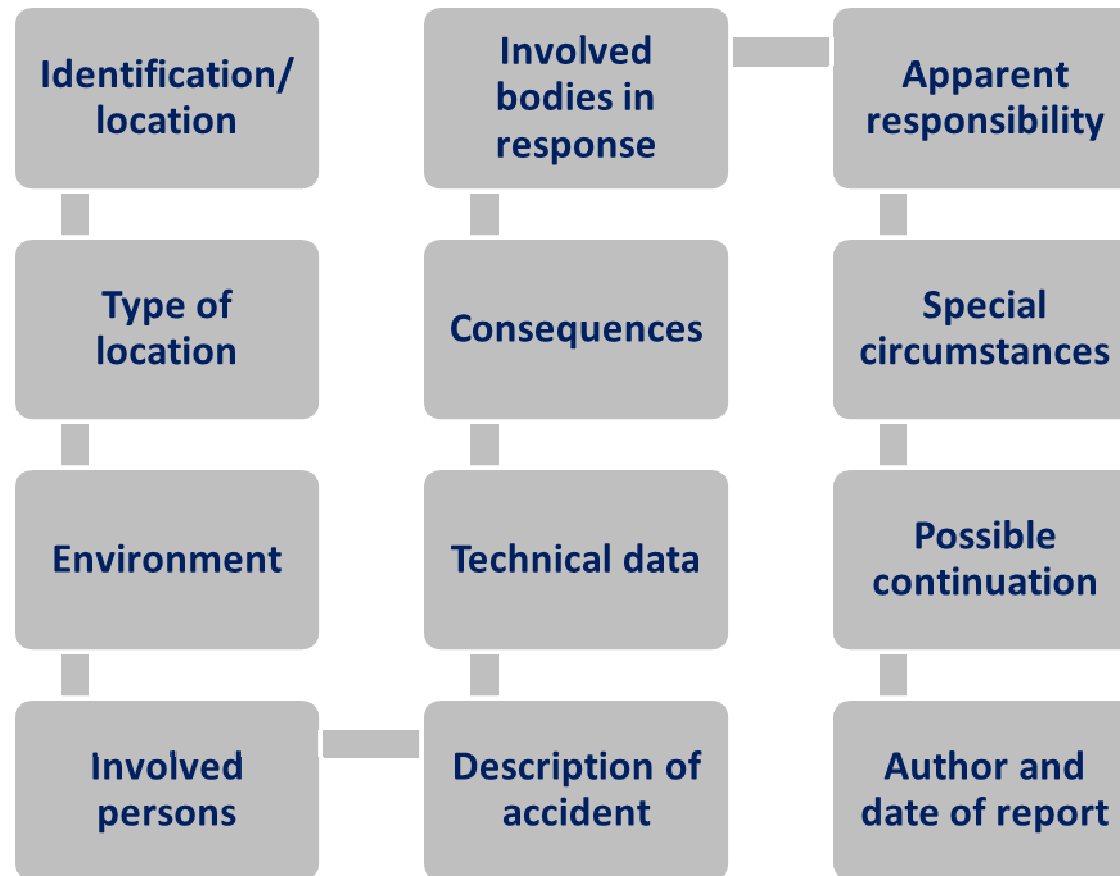
Methodology COST TU 1103:

- Examples from 7 different countries
- Examples show extent and different approaches
- Common denominator + suggestions for improvement

→ Ideal Accident Report

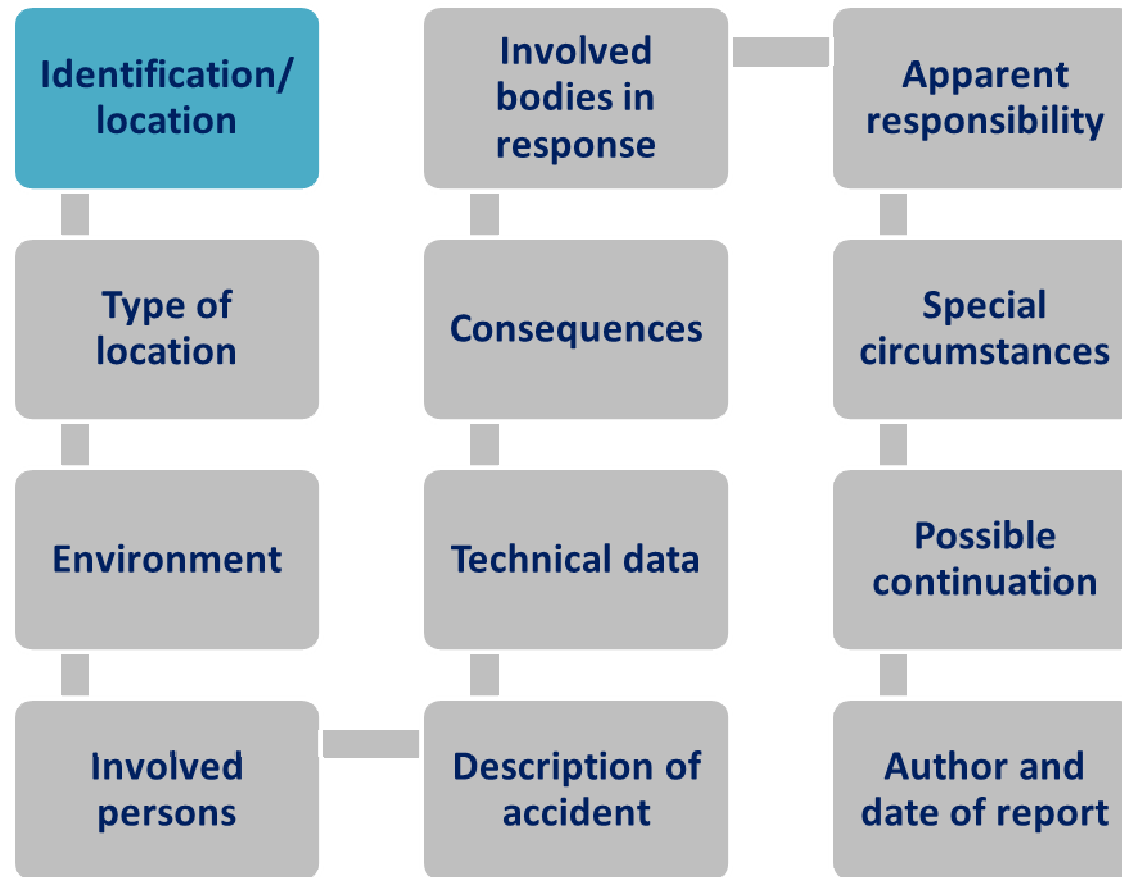
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The Ideal Accident Report – check list



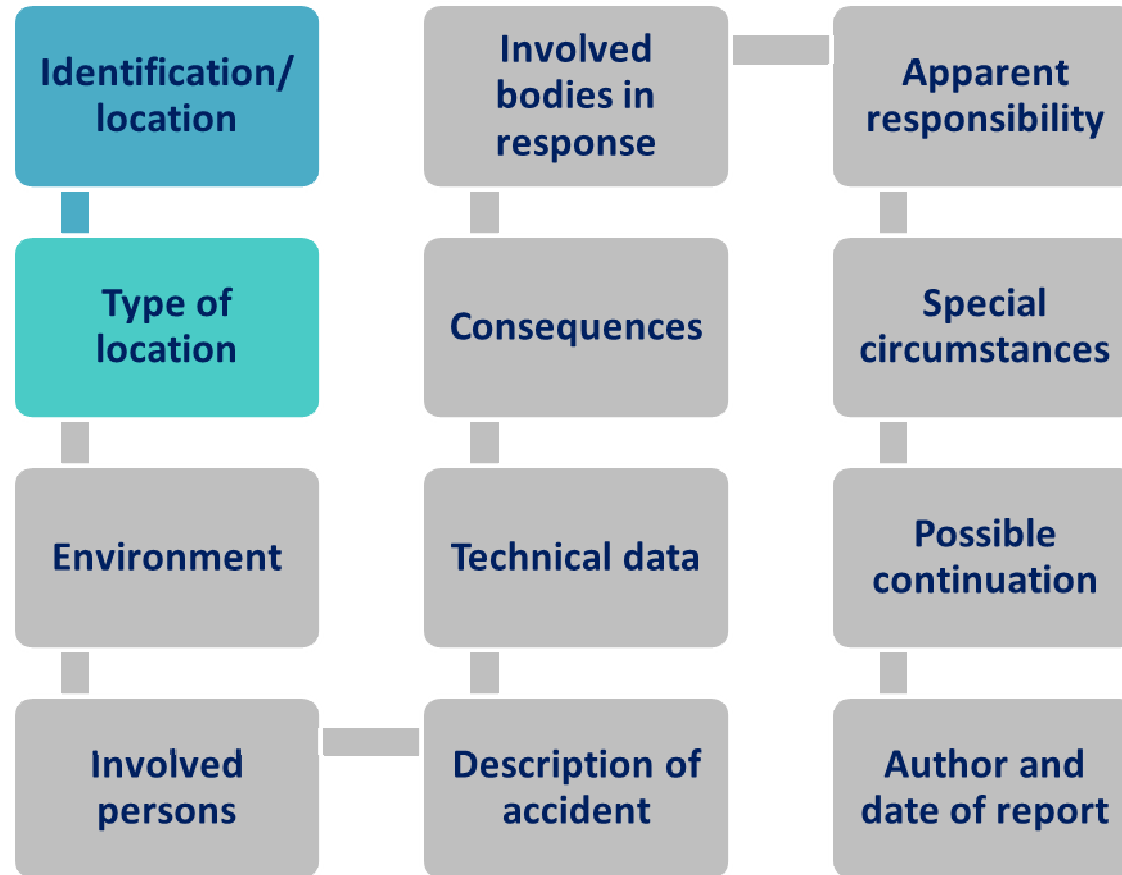
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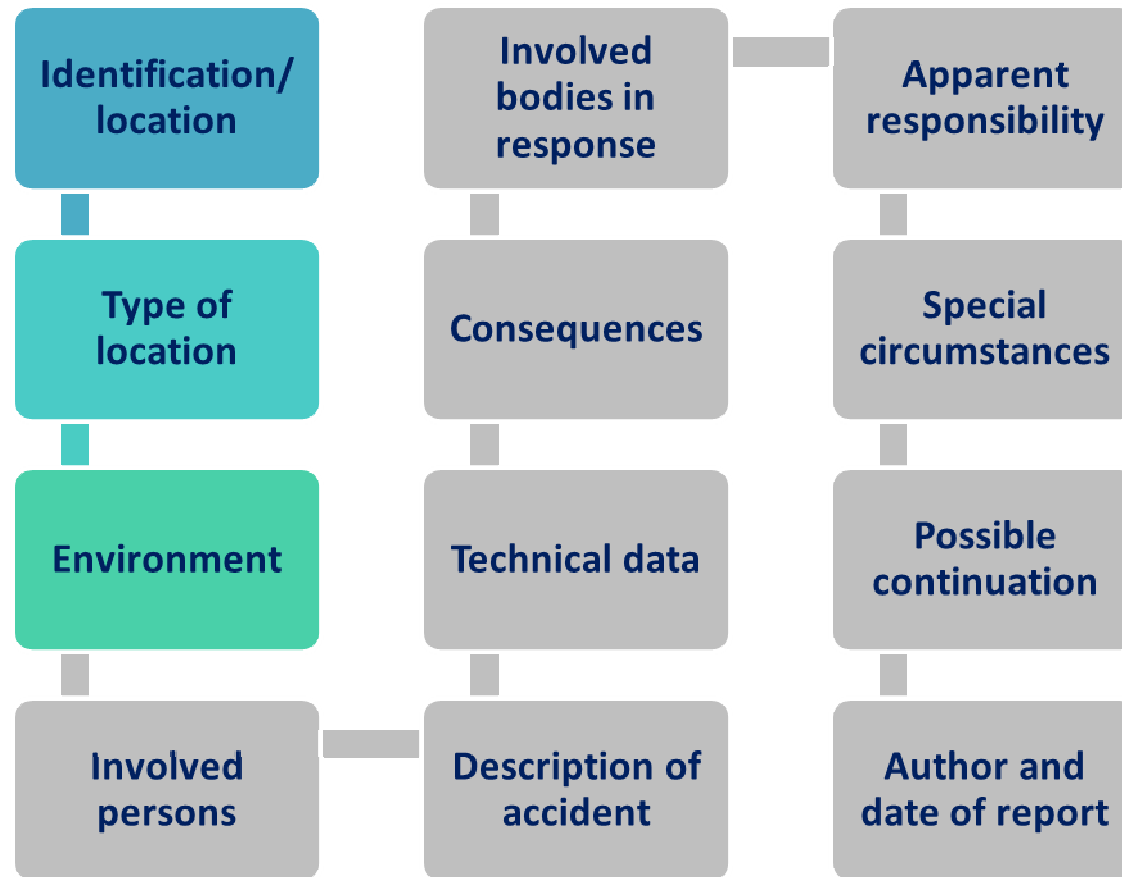
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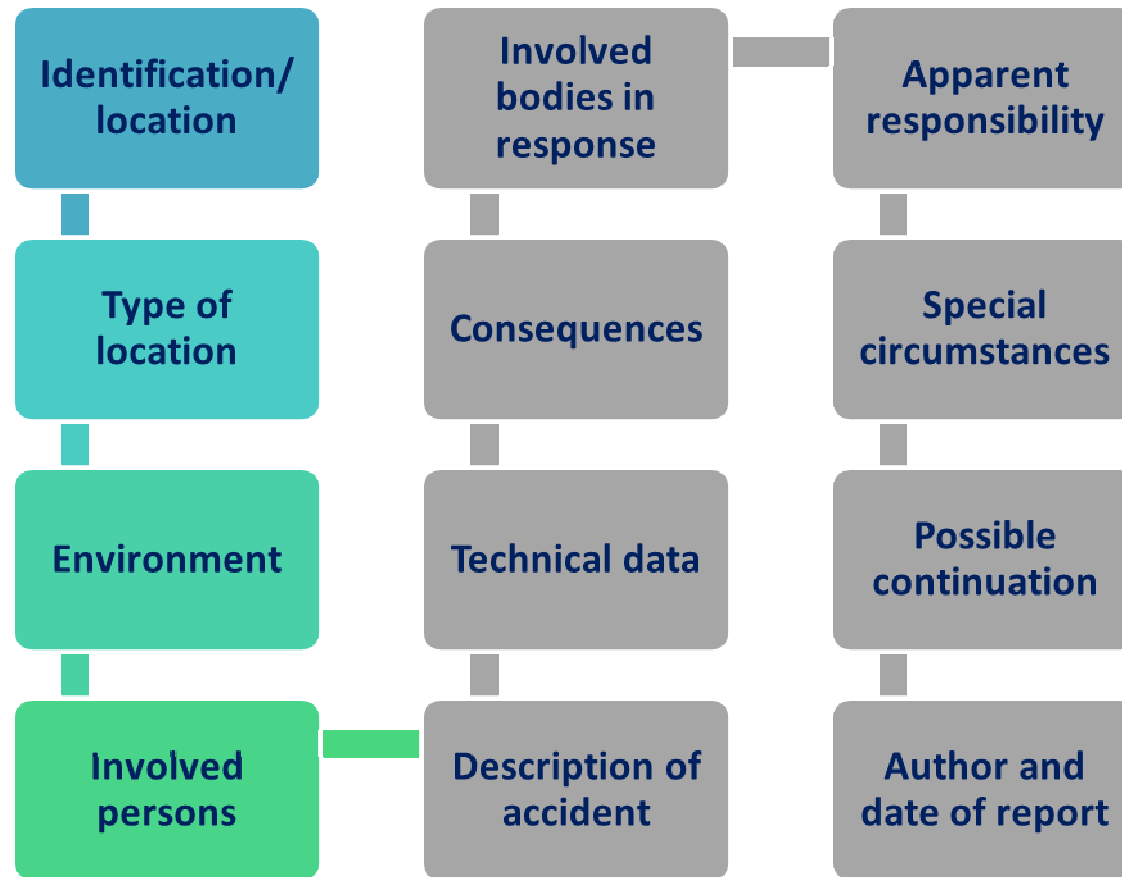
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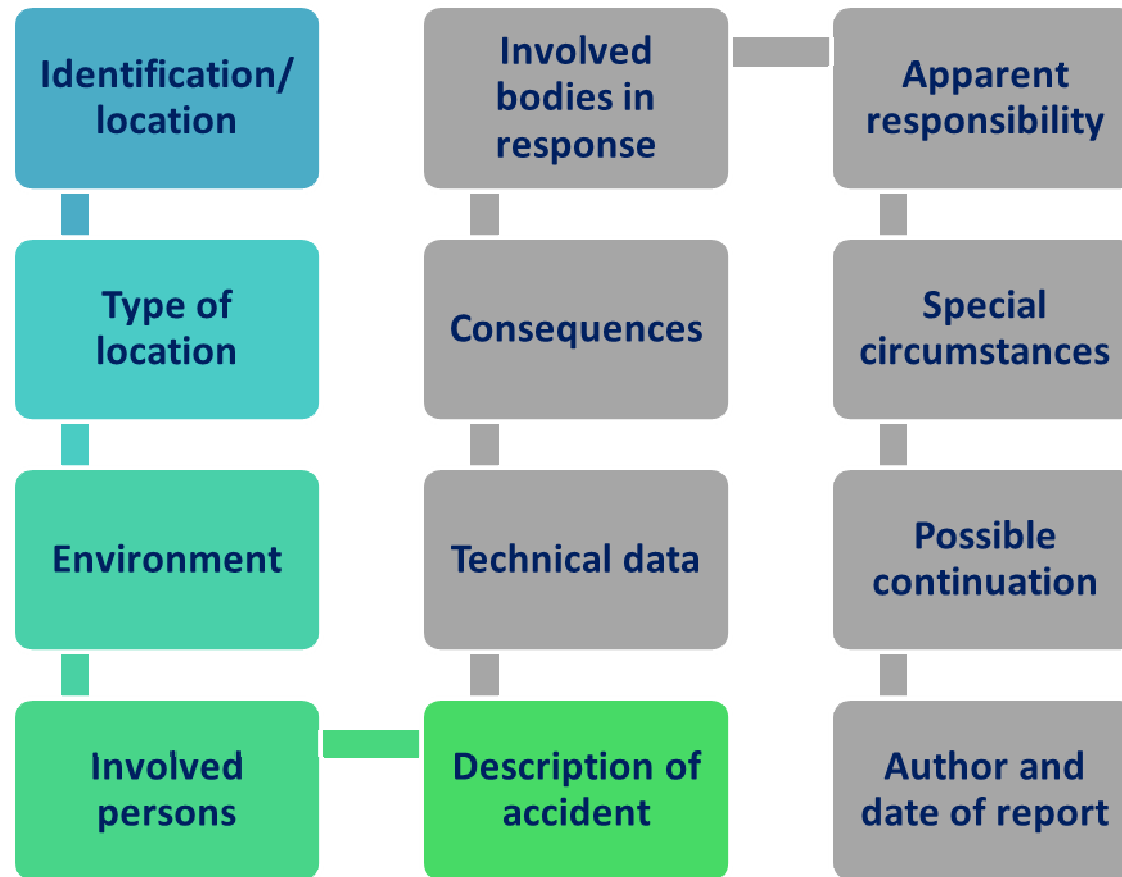
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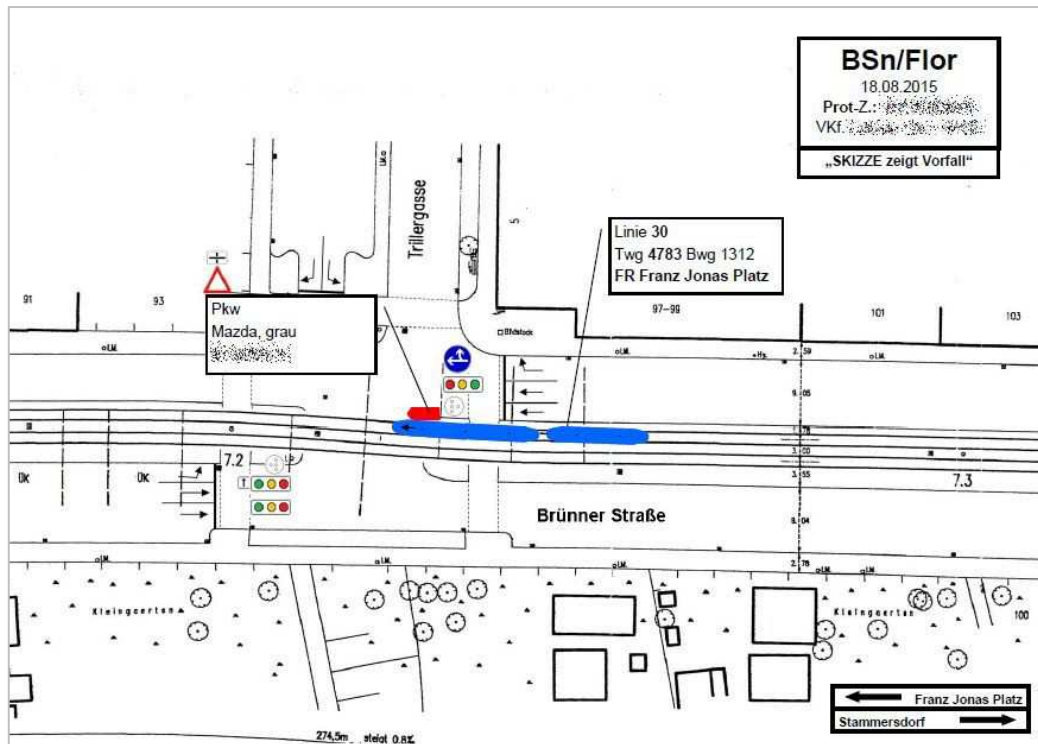
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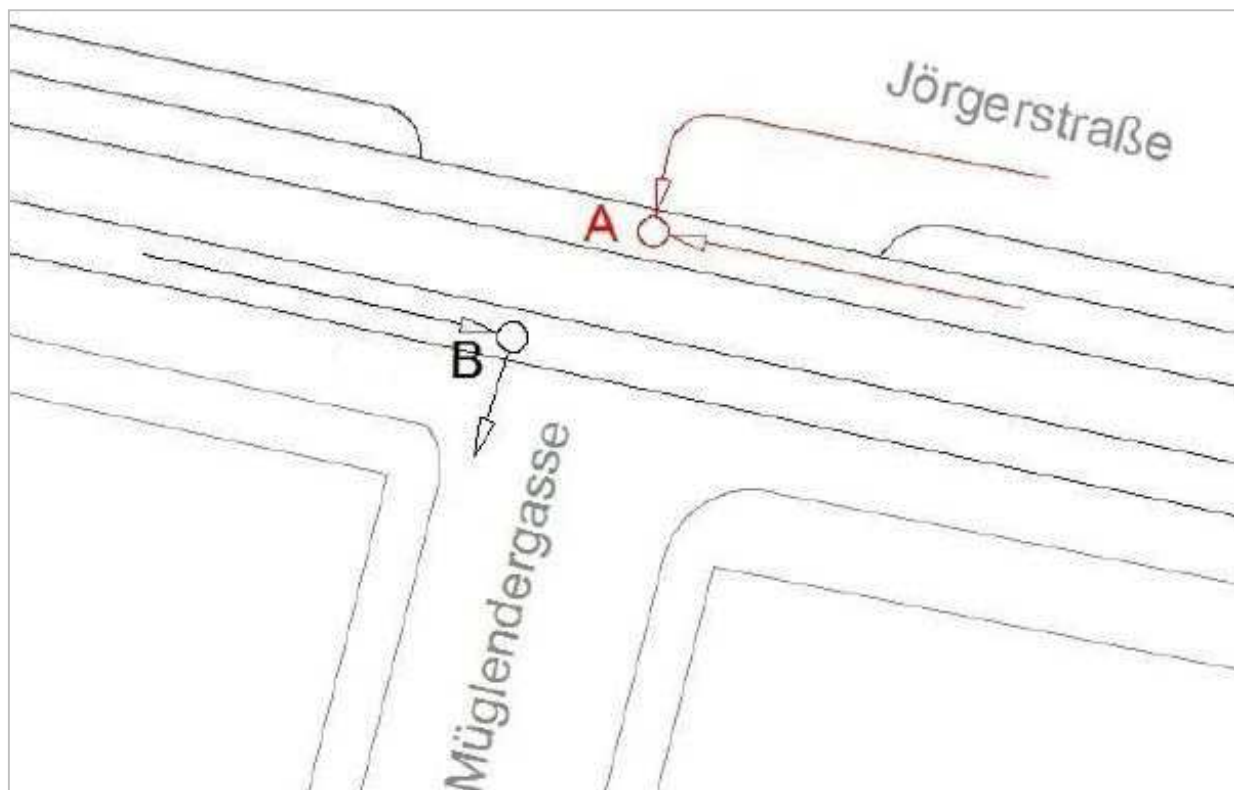
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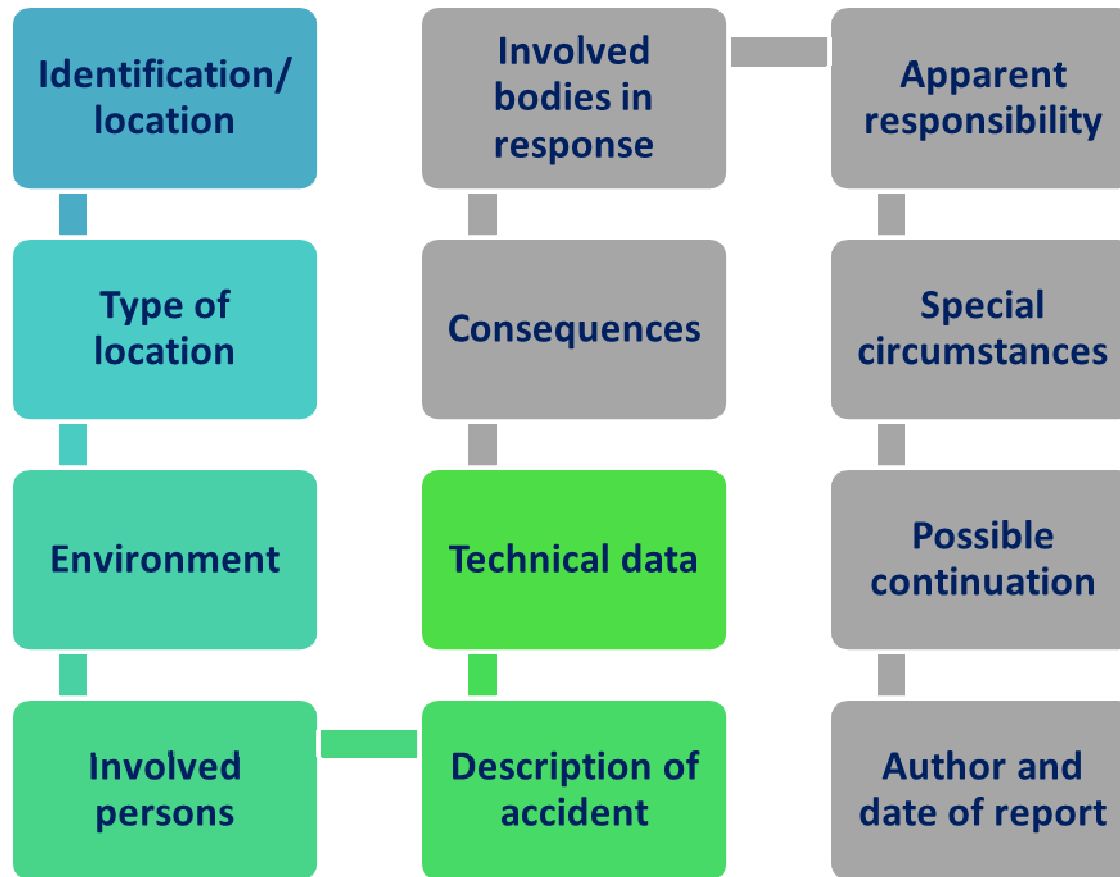
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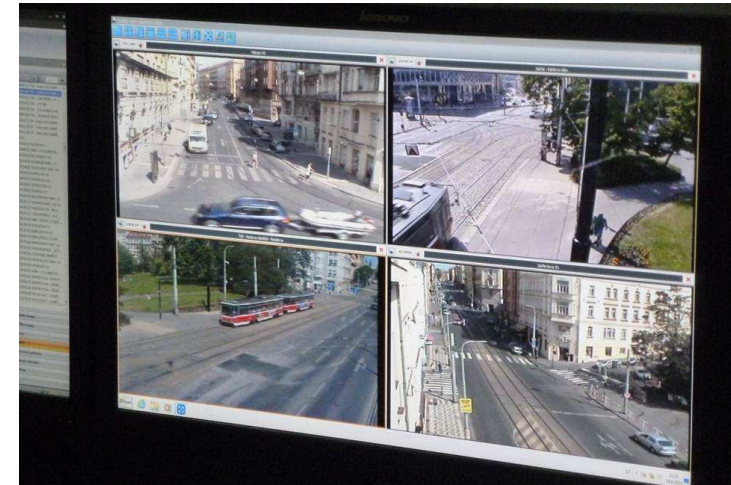
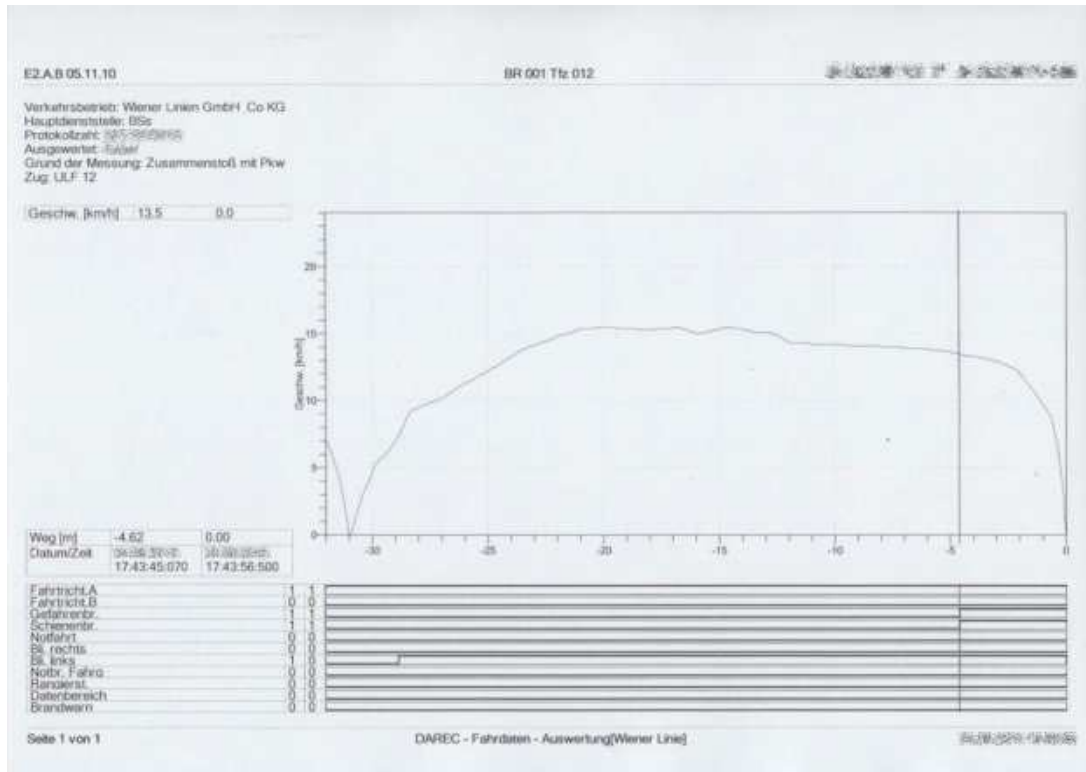
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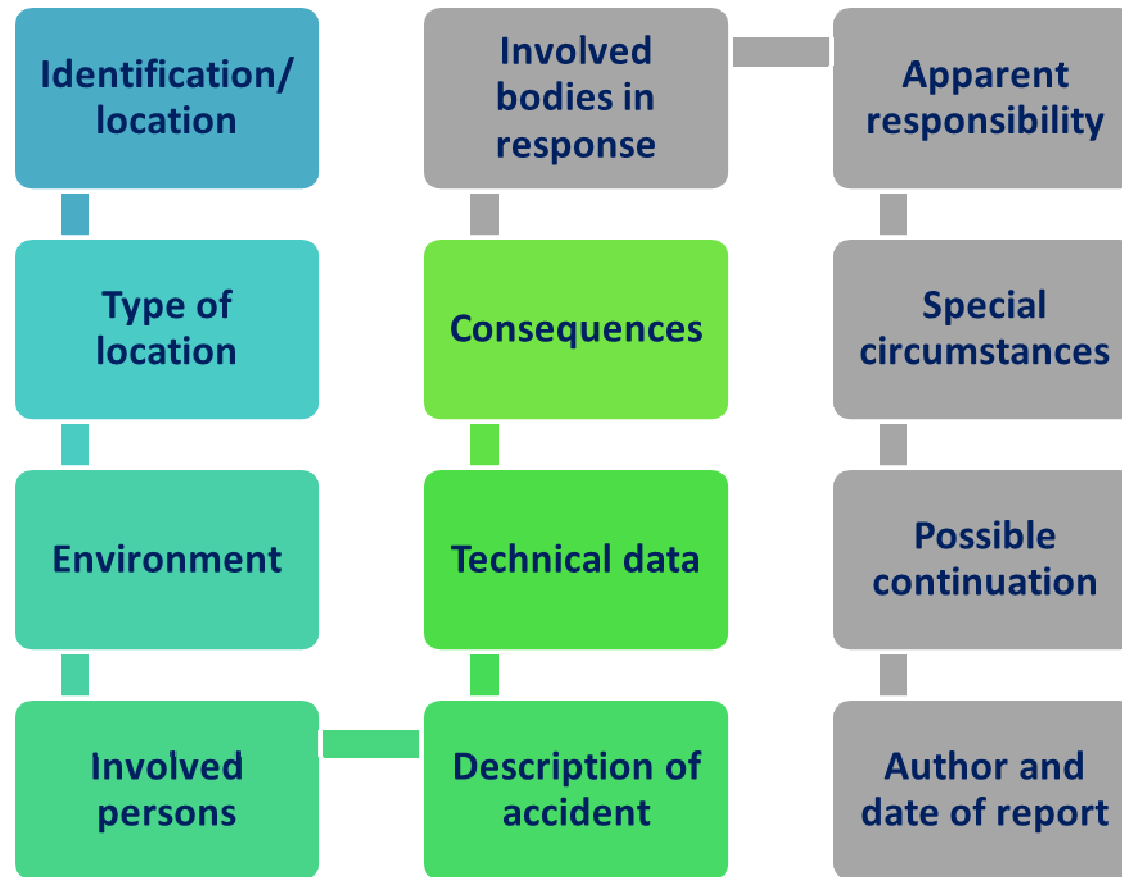
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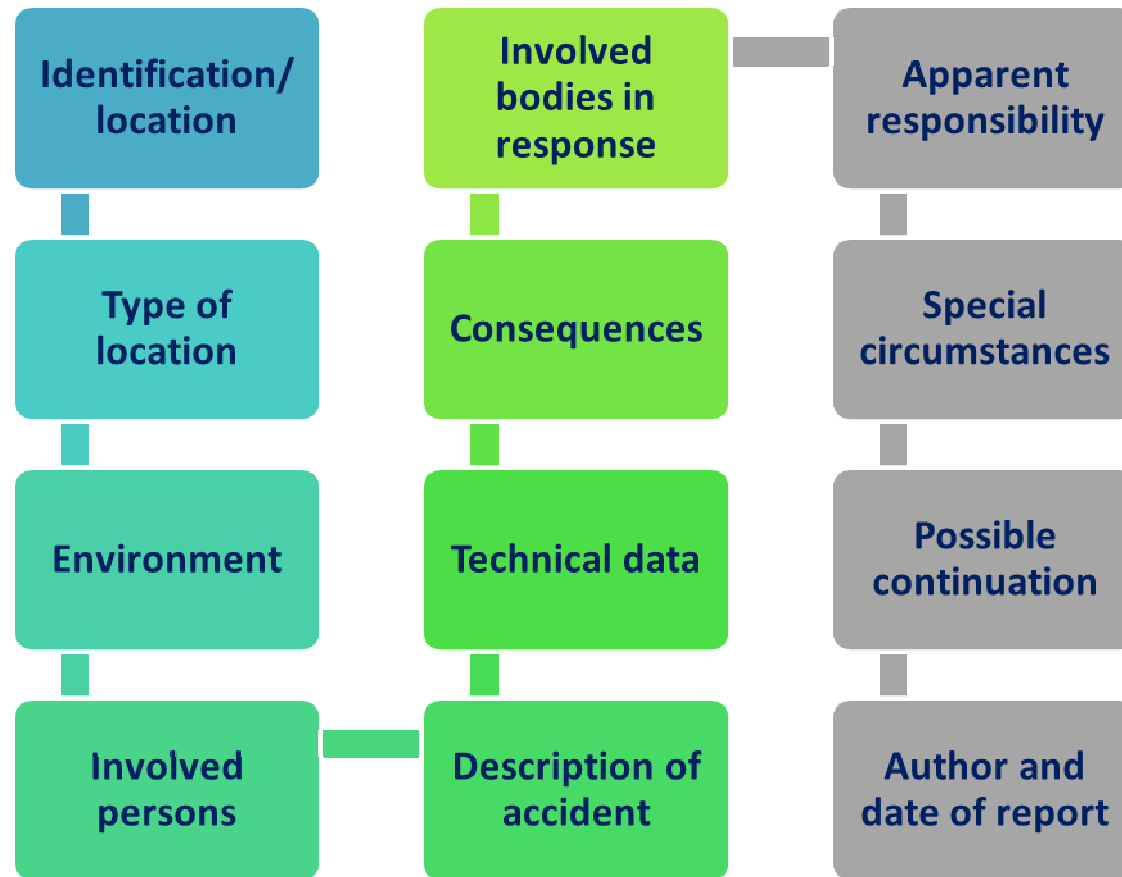
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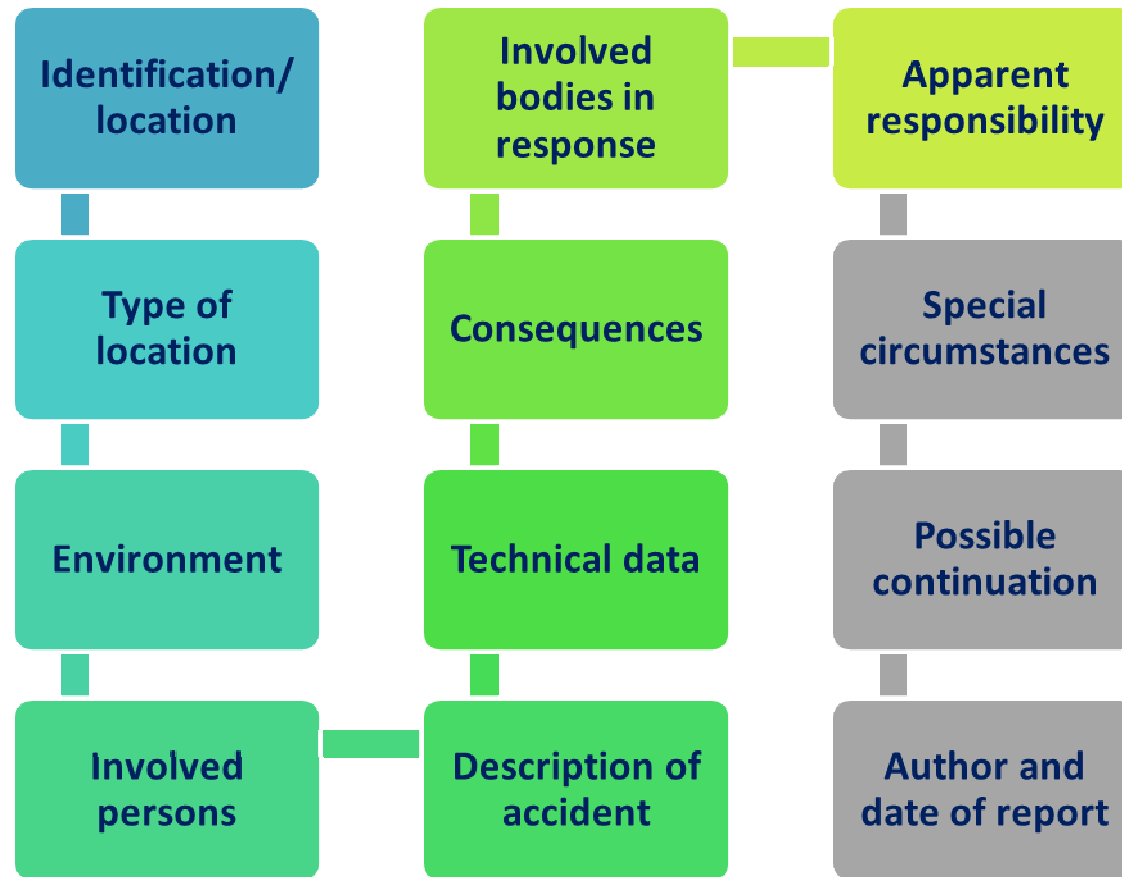
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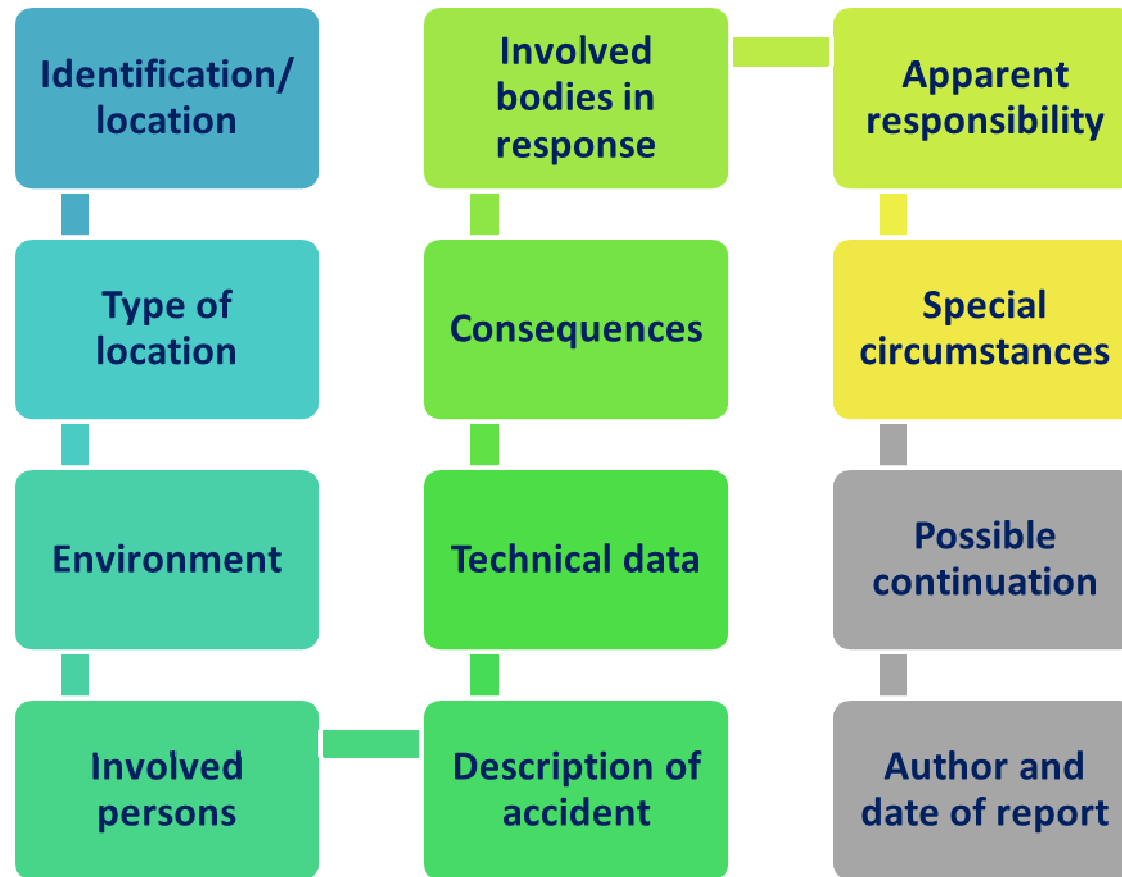
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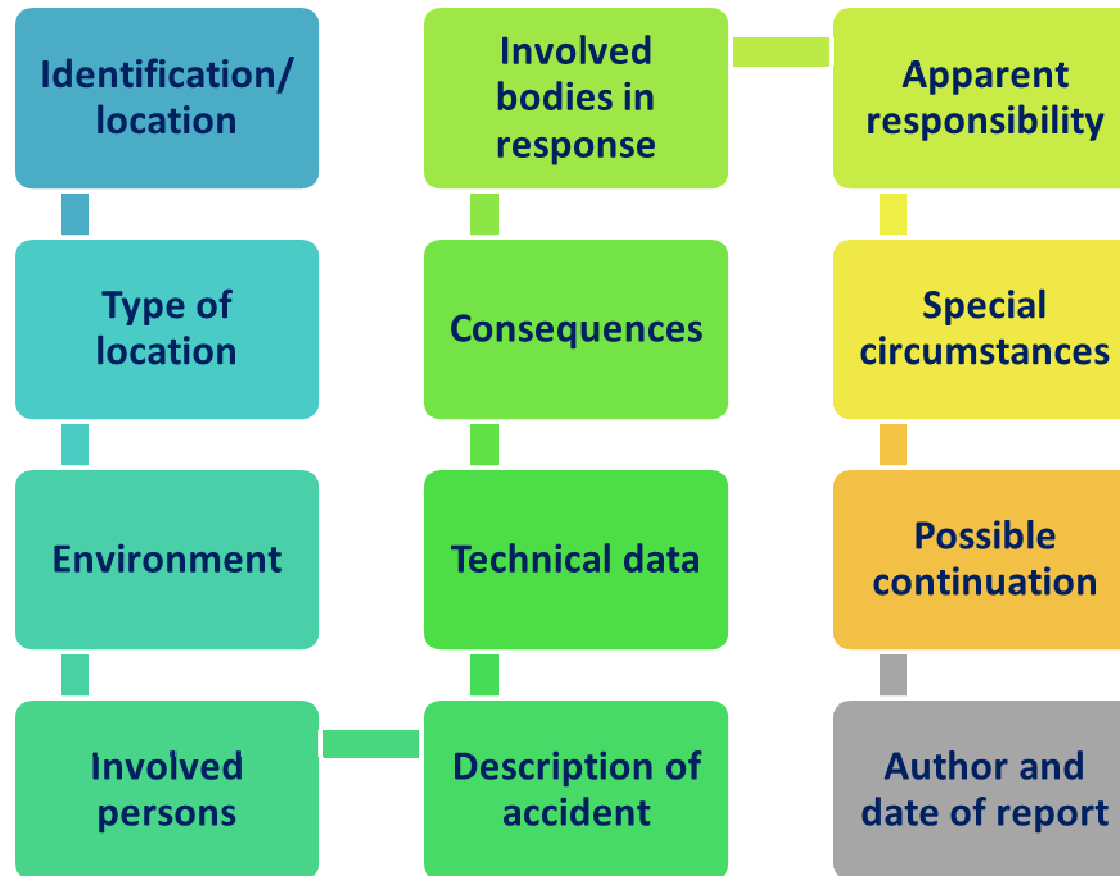
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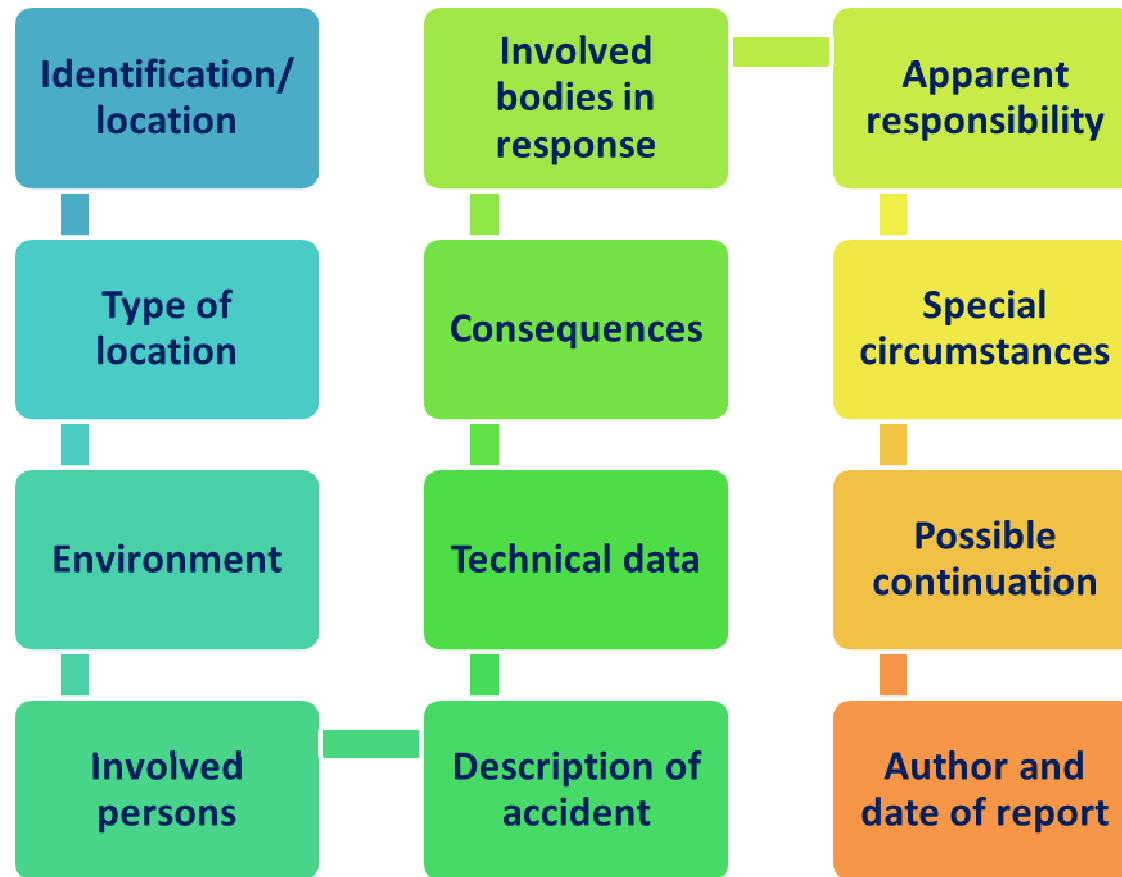
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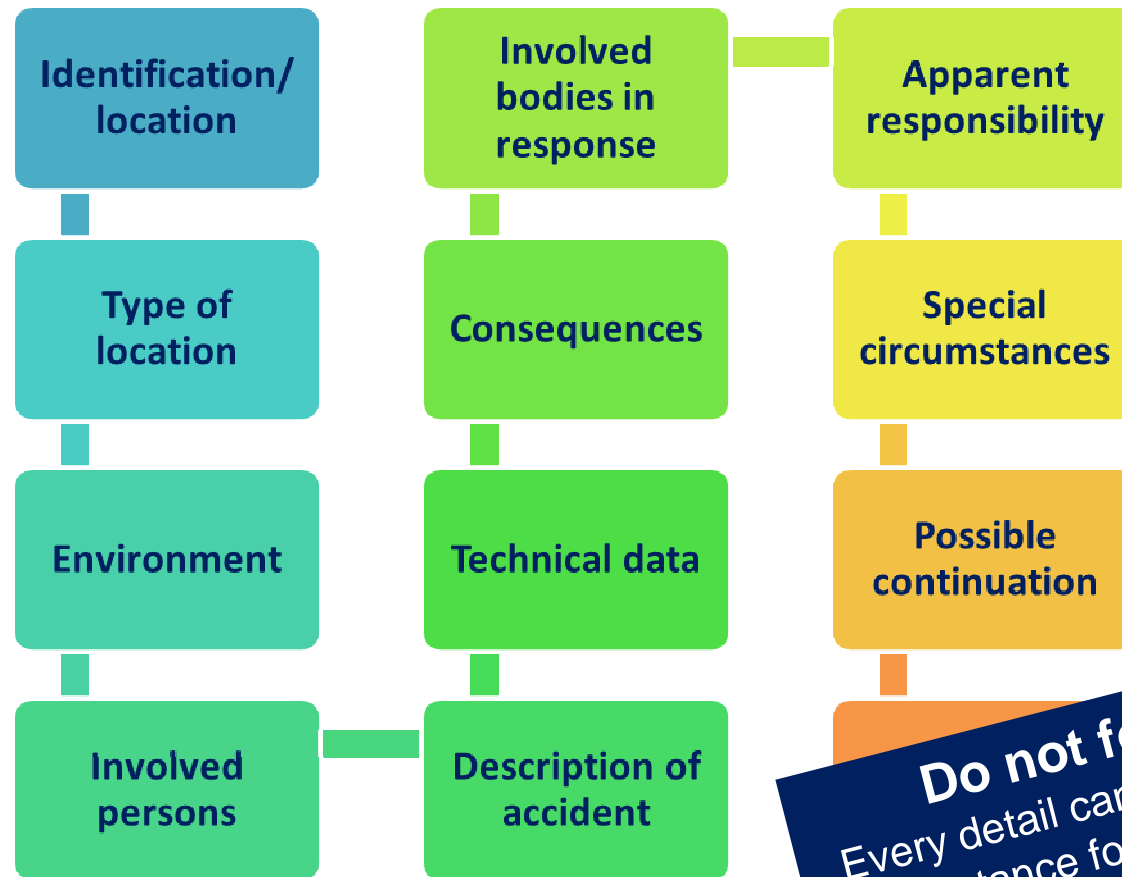
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The Ideal Accident Report – check list



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The Ideal Accident Report – check list



Do not forget!
Every detail can be of crucial
importance for subsequent
investigations.

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The Ideal Accident Report

Important notes:

- Ensure consistent professional execution of data acquisition → consistent internal structure
- Commitment by the employees is required
- Theoretical and practical training: employees need to maintain required abilities

The amount of detail and information provided depends on the seriousness of the incident.



ResPublica Workflows

Event data

INTERGRAPH

> Events > Event information

Event data

Basic data | After-effects | Collision

Event No.: 53959

Type of event

Collision: Emergency braking: Pers. accident: Derailment: Autom. train stop: Others:

Reported by: Driver

Type of trip: scheduled trip

Date: 05.06.2013 Time: 18:00

Transport mode: tramway Line: U9 Direction: U9: Hederfingen -> Botnang (BT)

Route/Course: 09/01

Vehicle No.: 3053 Vehicle type: DTB. 4-9

Staff No.: 8275

Position: Hackstraße 7

Comment:

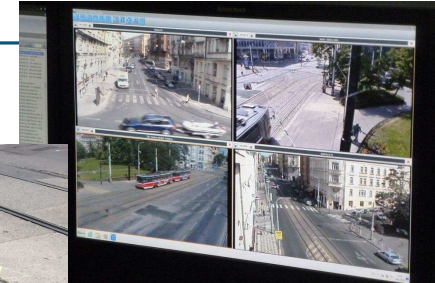
Cancel

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Other tools: near-miss accidents, pictures, black boxes...

Aim and list

- sources that give **supporting evidence** about accidents
- to find accident information via **other routes**
- most important tools and sources for accidents are:



| More objective tools | More subjective tools |
|--|--|
| Video images | Personal information of drivers, passengers and/or witnesses |
| Pictures | Occurrence books |
| Automatic recording ('black boxes') | Newspapers and other news channels |
| Voice recording | |
| Tracks and traces in the incident area | |

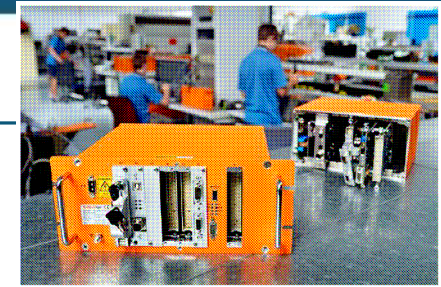
- for near-misses or risky situations:

| More objective tools | More subjective tools |
|------------------------|-----------------------|
| Emergency brake events | Driver's accounts |
| | Occurrence books |



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Other tools: near-miss accidents, pictures, black boxes...



Focus: Emergency brake monitoring

- In full safety management => not sufficient just to record, monitor and analyse incidents & accidents
- Near misses as well => **get a better insight of the risks in the network**
- Often because of acts by third parties, e.g. the road vehicle driver, pedestrians and cyclists
- So: useful indicator of a precursor to an incident (near miss) = number of emergency brake applications tram drivers have to make

| Advantages of EB analysis | Disadvantages |
|--|---|
| <ul style="list-style-type: none"> ○ Brings more data to supplement rare accident data, so providing better statistics ○ Precursor to an incident ○ Thus, allows identification of risky places – no accident yet but potential | <ul style="list-style-type: none"> ○ Difficult to collect data (black box gives no clear identification of location or drivers' declaration) |

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Databases

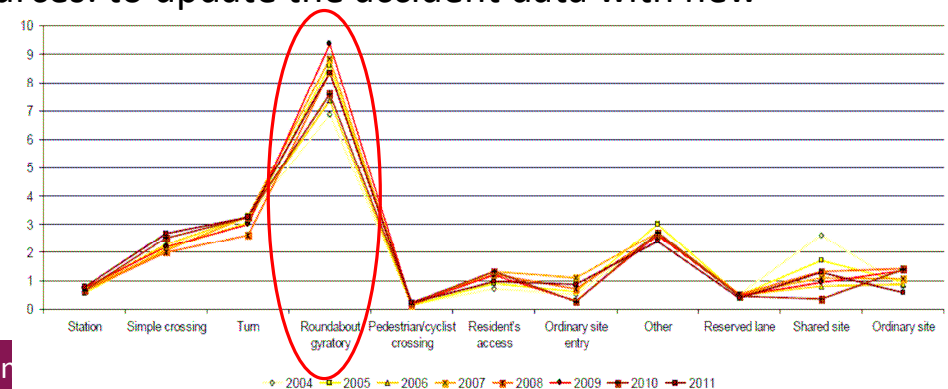
What for?

1. Statistics, indicators => global analysis, trends, hotspots
 - accident data should **first be recorded locally** - often done by the tram operator or municipality
 - accidents might be evaluated on a **broader basis**, in a **systematic** manner - on national or EU level = define in advance which body takes over responsibility for running and operating such a database but should be **independent**



Advantages and difficulties of a national database (regarding tram accidents)

- in **general**: To make a larger analysis based on more than one network // Common nomenclature (i.e.: light injured / seriously injured)
- for **operators**: To get references (with national indicators) and to be warned/aware of any gap regarding their own indicators // More resources: to update the accident data with new information.
- for **states**: To identify national trends/issues on tram safety + relevant information for leading projects/modifications on tramlines // Communication



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Databases

Some necessary criteria to make a national database successful:

- Easy to fill in and to use
- Collect high-quality, relevant, comparable and useful data
- Common way of collecting and reporting
- Management by an independent office (responsible for transmitting updated data, ensuring confidentiality, performing analysis, quality checking, providing assistance for operators)
- Legal obligation for operators to report their data
- Dedicated means + training of users

Relevant at a European scale?



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Relevant at a European scale?



The aim of the Action was not to build a European database, nor to compare tramway safety in various countries.



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Thank you for your attention !

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www.tram-urban-safety.eu