UNECE

“Inland Transport Security Discussion Forum”

Geneva,

28.-29.01.2010

Secure Architecture

Securing Railway by Pro Active Design

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The Norwegian Railway Family 2006

- Ministry of Transport and Communication
- Railway Inspectorate (Safety Authority)
- Accident Investigation Bureau
- Jernbaneverket (Infrastructure Manager) “JBV”
- 13 Railway Undertakings (Train Operating Companies); Freight and pax

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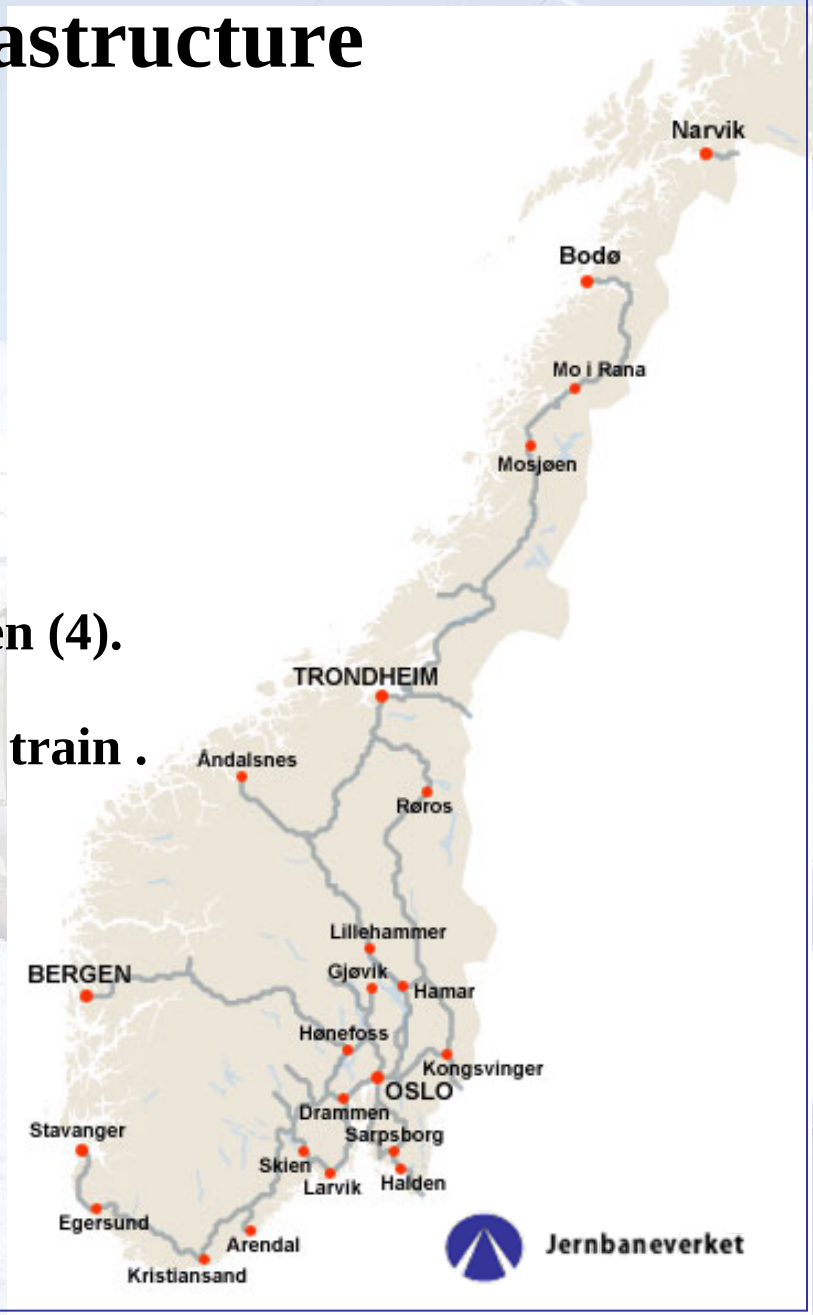
Norwegian Railway Infrastructure

- Appr. 3000 employees
- National Network 4087 Km
- Transport and Stations
- GSMR
- Railway border crossings with Sweden (4).
- Europe's fastest international freight train .



Infrastructure - Key figures

- Longest brigde 454 m
- Longest tunnel 14.580 m
- Highest point 1237 m asl
- 2807 Brigdes
- 702 Tunnels
- 4100 Levelcrossings

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JBV's Security Program

Development of a Security Program for JBV

-based on "All Hazard Risk Approach"

Security Policy > 1 Main goal – 3 Section goals – 11 Strategies

-the 3 section goals:

- **Structure, Organisation, Education**
- **Preventive measures** ***(i.e.secure architecture)***
- **Cooperation – Exchange of experience**

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Secure Architecture

Securing Railway by Pro Active Design

- means planning of physical measures for surveillance of critical infrastructure and traffic management systems, protection of public areas, cargo terminals, objects, buildings and personnel against terrorism and other evil minded actions.

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The concept of Secure Architecture

- The reduction of crime and the fear of crime are key objectives of Secure Architecture.
- The architecture is the starting point for the solution of protection.
- Secure Architecture is an initiative to encourage the building industry to adopt crime prevention measures in the design of developments, in order to assist to the reduction of opportunity for crime and the fear of crime, thus creating a safer and more secure environment.

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Key factors

Crime and anti-social behaviour are more likely to occur if the following seven attributes of sustainable communities <u>are not</u> incorporated:

- **Access and movement**
- **Structure**
- **Surveillance**
- **Ownership**
- **Physical protection**
- **Activity**
- **Management and maintenance**

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Early Stage Planning - Integrated Approach

Well-designed environment - community cohesion

- **Anonymity**
- **Planning of security measures**

1. Periphery security
2. Shelter security
3. Room security
4. Object security

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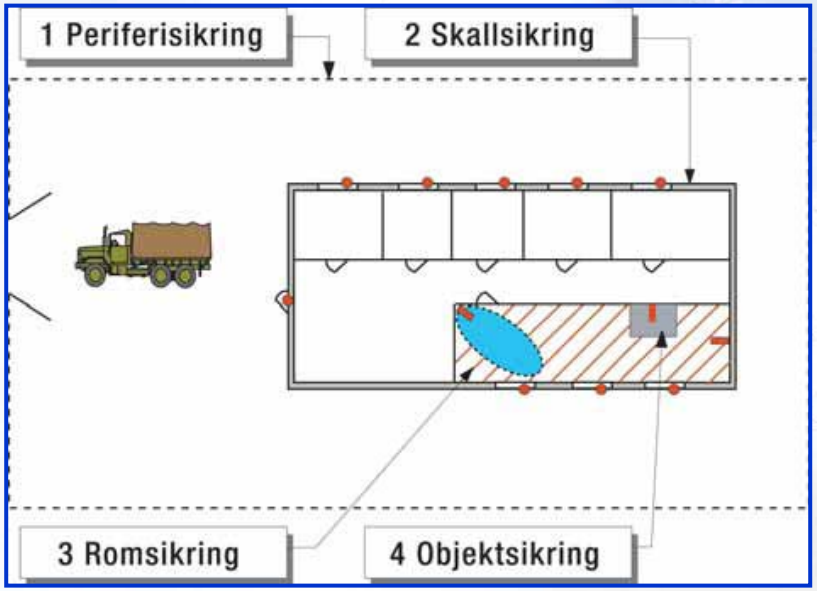
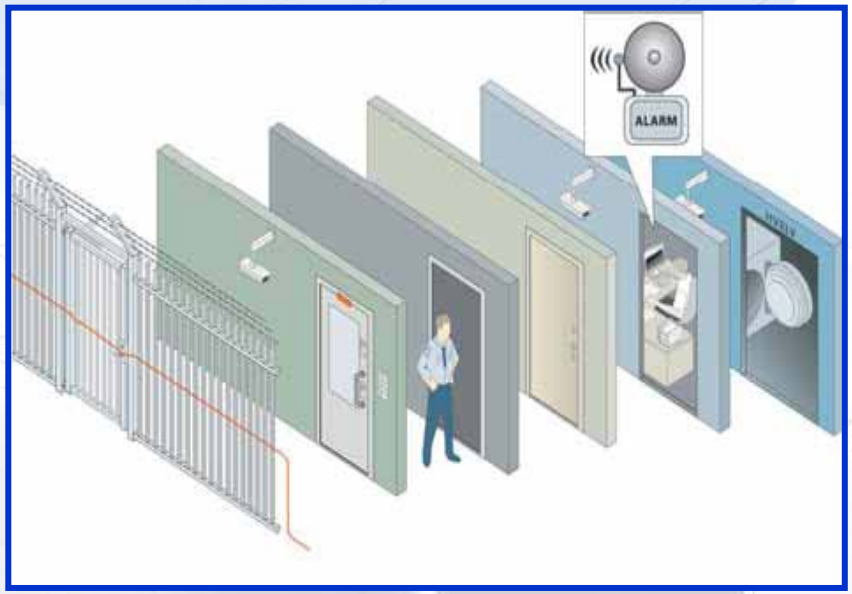
Planning of security measures





1. Periphery security
2. Shelter security
3. Room security
4. Object security

Combination of several measures and technology

-Fences
-Cameras
-Different door-systems
-Light
-Alarmsystems
-Sensors

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All Hazard Risk Approach & Risk Analysis

- Collision train - train
- Collision train - object
- Fire
- Passengers injured on platform / public areas
- Passengers injured at level crossings
- Passengers injured on –and besides track.
- Derailment
- Crime
- Sabotage
- Terrorism

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Main Plan
-identifications of security threats

Strategies for the built environment

- Natural surveillance
- Natural access control
- Natural territorial reinforcement

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-identifications of security threats

- Buildings and parking areas
- Entrance and emergency exits
- Cargo terminals
- Role of landscape design
- Maintenance standards

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Building Design

When starting the detailed design, the chosen security measures should be described in detail as a part of the planning. It must be considered if part of this planning should be defined as restricted information.

The following design parameters should be documented if relevant for the planned object:

- **Architecture & Design**
- **Access control & Electronic security**
- **Camera surveillance**
- **Public information**
- **Lighting**
- **Sign boards**
- **Choice of building materials**
- **Litter bins**
- **Ticket automats**
- **Platform –and station furniture**
- **Emergency equipment**
- **Maintenance standards**

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Architecture & Design

- Suitable design of public areas, platforms, platform shelters, technical units and buildings can contribute to lower risk and reduce the damage caused by crime, sabotage or terrorism.

- Clear line of sight is important for the video surveillance cameras to catch un-normal situations and suspicious objects.

- Security measures planned to be implemented with increased threats, and which is expensive and will take time to implement, should be established as a part of the basic protection measures (green alert level).

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Hiding place for explosives.
Postautomat is placed under the Crisis Emergency rooom and the traffic management

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Access control & Electronic security

- Access control, combined with intrusion-detection system, should be planned where it is necessary to control legal access to offices, guard rooms etc.

- Electronic security should be used if physical protection (lock, gates etc.) is insufficient.

- Electronic access control should be combined with a personal identification card (name, picture, employer, etc).

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Camera surveillance

- Closed-circuit television (CCTV) is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors.

- CCTV could be used for surveillance in areas that may need monitoring such as public areas, platforms, technical installations, lifts, luggage boxes, restricted areas, gates etc. The cameras must be installed with free line of sight.

- New technology enables the traffic management to supervise the infrastructure from defined central control rooms, and combine CCTV with alarms.

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Public information

- In an emergency situation with evacuation from stations and public areas, it is important that information via PA system is done in a proper way

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Lighting

- Improved lighting can be effective in reducing fear of crime, and in certain circumstances reducing the incidence of crime.

- Proper lighting is very important in a situation of evacuation

- Different lighting sources need to be considered for different environments – the character of the local environment must always be respected.

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Sign boards

- All public areas should have proper sign boards that indicate emergency exits, emergency equipment etc.

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Choice of building materials

- Materials used at stations and other public areas should be fireproof. In case of heat and fire it should give out as little toxic gas as possible.

- All sorts of materials should be easy to keep clean (tagging). Materials used in critical infrastructure (windows / glass) should be explosion-proof. Broken glass is often the cause of personnel injuries

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Litter bins

- Public litter receptacles should be avoided on a station or on public areas. These could be hiding places for explosives. Preferably refuse sacks of clear transparent plastic should be used.

- If litter receptacles are used, there should be procedures for removing them if the threat level rises.

- Under no circumstances should litter boxes be placed near critical columns or concrete constructions.

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Litter bins

Luggage lockers – Left luggage
Ticket machines (ATM)

- **Lockers and left luggage offices should preferable be placed away from public areas. It should also be placed away form critical concrete structures, guard rooms or technical rooms.**

- **It should not be possible to hide dangerous objects or explosives behind –or on top of ATM's and sales automates. There must therefore be a strategy where to place these.**

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Platform –& station furniture, Emergency equipment

- Platform –and station furniture should be placed away from the passenger track and should be well maintained. I must be possible to get a clear view under the furniture to avoid hiding dangerous objects under – or behind the furniture.

- Emergency equipment such as fire extinguishers, first aid equipment etc, should be clearly visible and properly maintained. The equipment must be sealed.

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Secure Architecture - Summary

- Terrorism, - concerns the whole Railway family and the transport sector
- Secure Architecture, - national responsibility – but a need for international cooperation and exchanges of best practice,- good access to new technology
- International cooperation “is a must” to obtain a good result
- Establishing valuable relationship to international colleagues
- Better technical solutions
- Secure Architecture should be taken into consideration in all types of building projects
- Secure Architecture is the starting point for the solution of protection
- GOAL :

From guidelines for project managers and consultants to Development of a Secure Architecture Design Handbook for Stations and Terminals

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Thanks for your attention

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