Bringing Sweden closer together
A functioning transport system
• Transport system planning for roads, railways, shipping and aviation
• Construction, operation and maintenance of State roads and railways
• Procuring inter-regional public transport
• Shipping aid
• Civil defence transportation sector
Board of Directors
Director-General Roberto Maiorana

10,000 employees

150 different professions

Business volume 2022
EUR 7.9 billion
National plan 2022-2033

68 EUR billion

Development
37 EUR billion

Maintenance railways
14 EUR billion

Maintenance roads
17 EUR billion

+ 7 EUR billion from congestion charges, co-founding, loans, infrastructure and track fees.
Major Projects

- ERTMS (national project)
- DAT, Digital Capacity Programme (national programme)
- North Bothnia Line
- East Link Project
- Mälaren Line Project
- Gothenburg–Borås Project
- Marieholm Connection Project
- West Link Project
- Hässleholm–Lund Project
- Trollhättan locks
- Port of Gothenburg
- E4 Stockholm Bypass Project
- Södertörn Crosslink Project
- Landvetter Connection
- Skavsta Connection
- Port of Gothenburg
Major Projects

ERTMS (national project)
DAT, Digital Capacity Programme (national programme)

North Bothnia Line
East Link Project
Mälaren Line Project
Gothenburg–Borås Project
Marieholm Connection Project
West Link Project
Four Lines Uppsala

Trollhättan locks
Port of Gothenburg

E4 Stockholm Bypass Project
Södertörn Crosslink Project

Landvetter Connection
Skavsta Connection

Using or about to use InSAR measurements
E4 Stockholm Bypass Project

• 56 km of tunnels (highway)
• Control of ground water related behaviour due to tunnelling activities
• Strict regulated reporting to the Region of Stockholm County, stated by The Swedish Land and Environmental Court of Appeal
West Link Project

- 8 km of tunnels (railway)
- Control of ground water related behaviour due to tunnelling activities
- Strict regulated reporting to the Region of Gothenburg County, stated by The Swedish Land and Environmental Court of Appeal
East Link Project (upcoming)

- 160 km of railway,
- Include a variety of different conditions; construction through three cities, 25 km of tunnels etc. that has different needs and requirements of monitoring:
  - monitoring of ground water related behaviour due to construction
  - monitoring of movements
  - behavior of pre-load areas
  - mix of rural/urban areas
Four Tracks Uppsala Project (upcoming)

- 25 km of railway
- Include a variety of different conditions; construction through two cities, large amount of clay etc. that has different needs and requirements of monitoring:
  - monitoring of ground water related behavior due to construction
  - monitoring of settlements
  - behavior of pre-load areas
  - mix of rural/urban areas
The Crosslink Södertörn Project (upcoming)

- 20 km of highway,
- Include a variety of different conditions; mostly rural area, 8 km of tunnelling, bridges etc that has different needs and requirements of monitoring;
  - monitoring of ground water related behavior due to contruction
  - monitoring of movements
  - behavior of pre-load areas
  - mix of rural/ urban areas
  - pin-pointed R & D project
Advantages in the Projects

- Local coverage - primarily within the project (and connecting projects)
- Vegetation
- Winter (snow)

+ High level of:
  - area-coverage
  - accuracy in specific points
  - access to historical data
    = value for the money
Further nationwide developments InSAR

National coverage useful for
  o  Pre-planning
  o  Monitoring of infrastructure
  o  Climate adaption
  o  Condition assessment

Co-operation between several Swedish authorities and The Swedish National Space Agency
Further nationwide developments InSAR

Area of special interest
- Monitoring of infrastructure
  - Identifying areas of interest
  - Condition assessment
  - Use of AI for detection
  - Year-round monitoring
Further nationwide developments InSAR

Combination InSAR Sweden + SBAS

1. utilize and analyze the SBAS technique to generate a dense displacement map for transport-related infrastructures located on non-urban, slopes and partly vegetated areas

2. assess the feasibility of developing a satellite-based monitoring system to integrate both PSI (used in the InSAR-Sweden project) and SBAS maps to improve the accuracy of displacement estimation
Summary of InSAR in Sweden

For the case of the major projects at Swedish Transport Administration, InSAR is considered to be an established and cost-effective way of monitor several types of conditions and is from now-on to be included in the pre-planning process.

But, since Swedish Transport Admin. consists of much more than our Major Projects, an extended usage of nationwide InSAR will be in place for an overall use within Swedish Transport Administrations areas of operation.
Thanks for your attention!

For further information, please contact

Bo.larsson-gruber@trafikverket.se