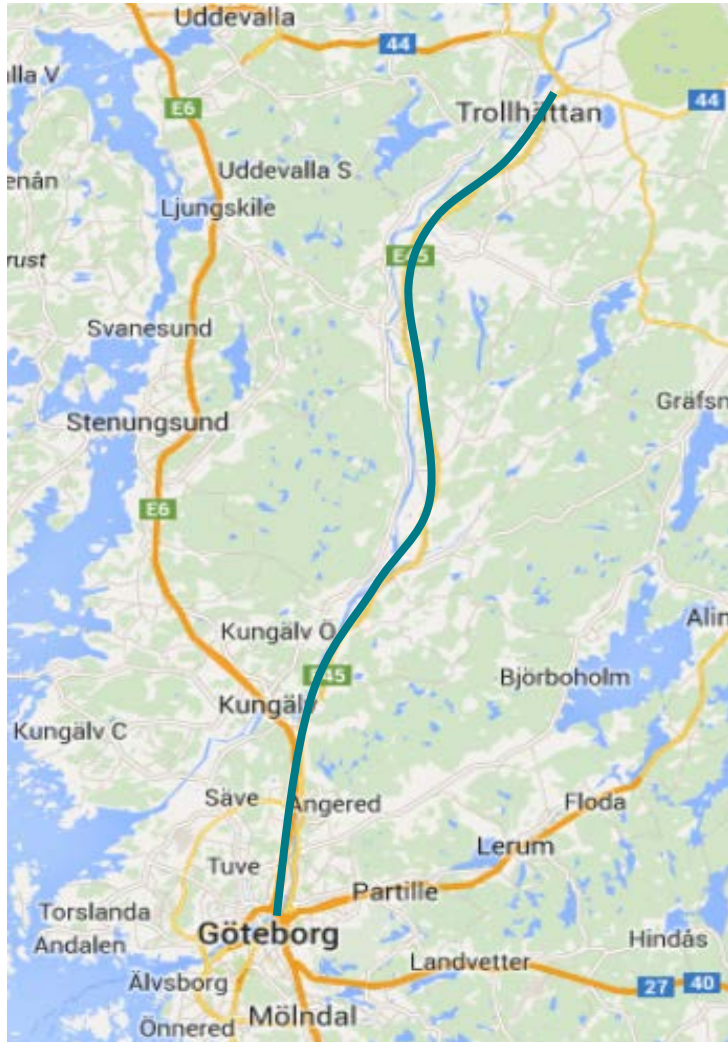




Adapting Network RTK for Civil Engineering Purposes

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Bana Väg i Väst 2003-2013

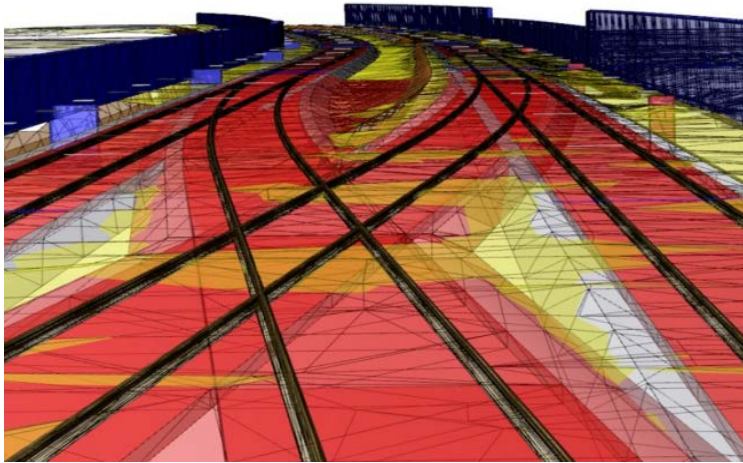


- 75 km from Göteborg to Trollhättan
- New railway and highway
- bridges
- a new tunnel
- difficult conditions



The evolution from 2D to 3D

(2003)

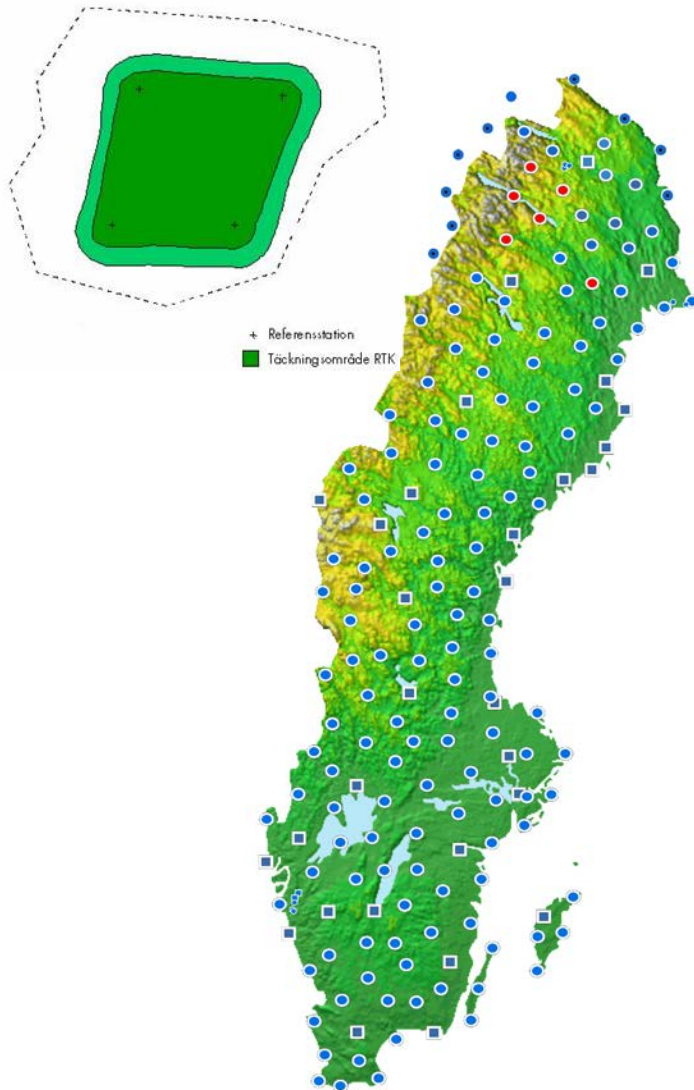


Requirements on new solution



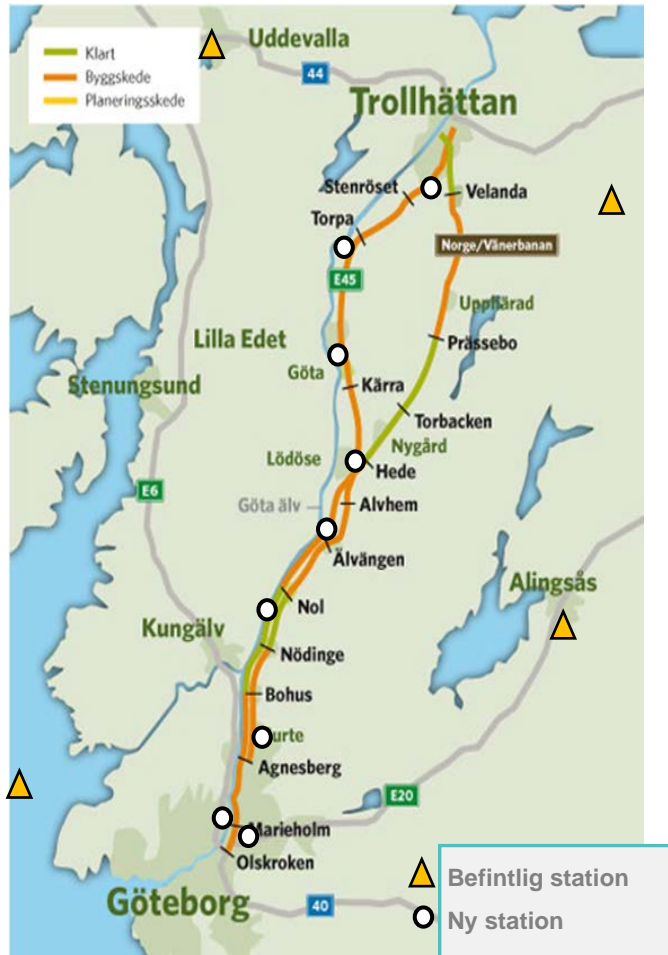
- fulfil the users needs (RTK)
- cover the whole of the project area
- open for everyone
- backward compatible
- robust solution
- scalable to a national level

New questions to be raised...



- What happens if the system fail to deliver RTK-data?
- What happens if the user gets incorrect position?
- How do we solve the issue of backward compatibility?
- Where should we place the reference stations?
- How do we get useful feedback from the users?
- How do we solve the national scalability?

Network RTK adapted for civil engineering purposes



Active realization

- SWEPOS +
 - 9 reference stations (≤ 12 km)
 - 9 fixed VRS stations
 - corrections locally distributed through radio link
 - 4 monitoring stations
 - post processing service
 - local geoid model

Passive realization

- a levelling network (0.5 km)
- A pair of horizontal control points every 3 km

Research project, “Stomnät i Luften”



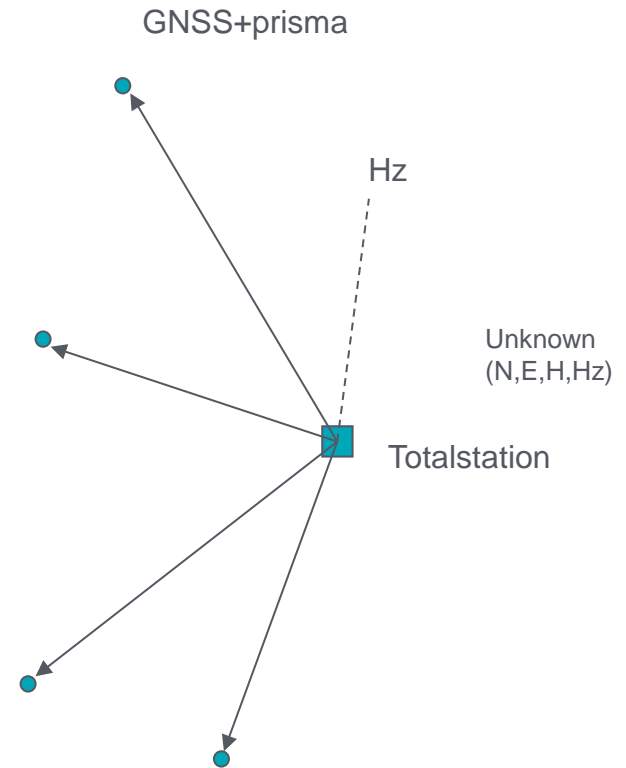
- **PA-NRTK**
 - *The process “how to establish” a PA-NRTK*
 - *Design of a PA-NRTK*
 - *The data distribution issue*
 - *User manual*

- **Post processing service**
 - *Automatic combined adjustment*
 - *New post processing service*

- **RUFRIS**
 - *Theoretical and empirical evaluation*



RUFRIS



-Estimates coordinates and orientation directly in field

User experiences



- the same and known conditions for everyone...
- shorter lead times...
- increased level of interaction between participants
- increased level of productivity
- freedom of movement
- focus on controls and monitoring
- 24h production
- 32 million sek