

Actual organisation and developments of  
geodetic infrastructure in The Netherlands.  
Seen from user's perspective.

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# Introduction

- Some technological aspects
- Users
- Users - Future
- Users' perspective
- Actual organisation NL
- Risks, needs, business continuity management
- Actions prepared
- Conclusions and recommendations

# Some technological aspects

- Geodetic infrastructure
  - Reference system (X,Y,Z, gravity)
  - Distribution
  - Knowledge



## Some technological aspects

- International Terrestrial Reference System (ITRS). For practical purposes 1:1 identical to WGS84
- Drift continents causes change of ITRS coordinates. Therefore European TRS (ETRS)
- Regular update ETRS to ITRS



# Some technological aspects

## INSPIRE Directive 2007/3/EC

- To ensure that spatial data infrastructures member states EU are compatible
- European geodetic infrastructures in ETRS (longitude, latitude)
- Surveyors want X,Y,Z -> map projection
- No INSPIRE standard for map projection, only 1:1 relationship

# Some technological aspects

- RDNAPTRANS™: set formulas, in order to transform ETRS to RD (X, Y) and vice versa
- RDNAPTRANS™ implemented in Dutch GPS-receivers
- Traditional RD, tachymetry, consisting of physical points in church towers
- Discrepancies traditional RD and RDNAPTRANS™

## Some technological aspects

- Transformation for every X, Y from RDNAPTRANS™ to traditional RD
- Approach Z (NAP) comparable (EVRS)
- Z very important, large part The Netherlands below sea-level
- 3 commercial network RTK providers
- 1 government only network RTK provider
- The more transformations, the more risk of errors → UTM!



# Users

- Science: atmosphere, geophysics, oceanography, hydrology, glaciology, meteorology, monitoring subsidence (!); rising sea-levels (!)
- The really important challenges!



# Users

- Practice, in need of absolute X,Y,Z
  - Geodetic professionals
  - Public authorities, responsible for basis registrations dealing with locations (tax; Cadastre etc.)
  - Building industry
  - Infrastructure industry (machine guidance)



# Users

- Practice, in need of absolute X,Y,Z
  - Water management
  - Archeologists
  - Landscape architects
  - Police



# Users

- Practice, in need of absolute position
  - Precision Farming
  - Automotive industry
  - Others .....



ASK MORE, GET SMART

# Users



# Users - Future

- Galileo, Compass. Higher accuracy, higher availability
- Extension users in need for absolute accuracy
  - Pricing traffic
  - Registration subsurface infrastructure
  - Automotive industry
- Public: basic infrastructure reference stations
- Private: positioning services



# Users' perspective

- In The Netherlands technology works well
- If something goes wrong, it has to do with the transformations to specific projection
- INSPIRE directive requiring Universal Transfer Mercator (UTM) would be preferable
- Fugro: UTM in working procedures. Final step transformation to local projection.
- Many users, in need for absolute position, work with ETRS



# Users' perspective

- Many sectors and market segments more and more dependent on **accurate, actual, reliable, fast** and **24/7 available** geodetic infrastructure!



# Actual organisation in NL

- X, Y (RD): Cadastre
- Z (NAP): Public Works (Rijkswaterstaat, RWS)
- North Sea: Navy (Hydrographical Services); RWS



# Risks

- Formulated by Netherlands Geodetic Commission (NCG) , part of Royal Netherlands Academy of Arts and Sciences, geodetic conscience NL
- NCG:
  - Risks continuity knowledge
  - Risks future quality

# Risks

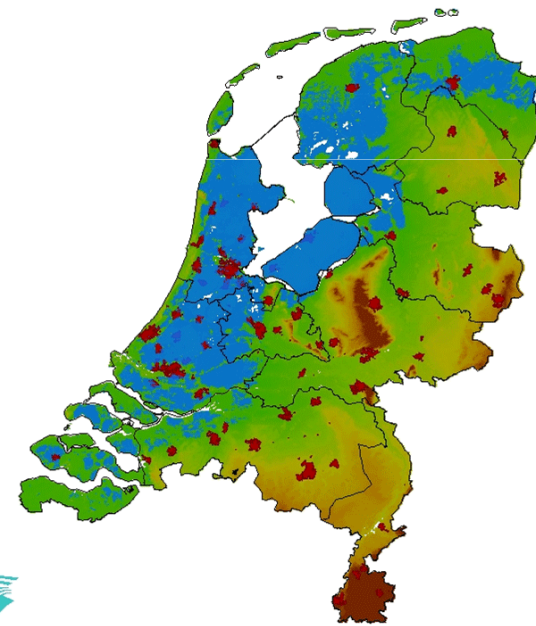


- Small amount elder professionals, scattered over different organisations
- Lack of geodetic professionals in near future
- Sometimes lack of awareness authorities of large and increasing amount of users dependent on geodetic infrastructure

# Needs, business continuity management

- For the Netherlands
- monitoring subsidence (!);  
rising sea-levels (!)  
very important

Nederland onder zeeniveau  
Bij 0 NAP



Bron: Actueel Hoogtebestand Nederland (AHN)

# Needs, business continuity management

- Dutch infrastructure is part of European geodetic infrastructure
- Need for more active Dutch involvement in research, development, management geodetic infrastructure at European level

# Needs, business continuity management

- Sustainable research, development and management geodetic infrastructure needs to be organized

# Actions prepared

- Guarantee continuity knowledge and strong relations with academic world by concentrating research, development and management
- Plan is being prepared for integration, co-operation X,Y,Z management activities Cadastre, RWS, Navy. Shared Service Organisation Geo?

# Actions prepared

- Research and development: Concentration Cadastre, RWS, TU Delft. But is this sufficient? International?
- Education problem. Is it possible to attract students? Should be bundled at European level?
- Bring together land and sea

# Conclusions and recommendations

- Action needed and prepared to guarantee quality future Dutch geodetic infrastructure. Integration/co-operation management. Same need at European level?
- Action needed and prepared to guarantee continuity knowledge. Same need at European level?
- Intensify co-operation public authorities and universities



# Conclusions and recommendations

- Education at European level needed
- Increase Dutch involvement in R&D at European level needed
- Increase involvement in R&D at European level
- Organise financial basis at Dutch (European?) level. Costs seem to be affordable.

# Conclusions and recommendations

- CLGE could express common feelings of the users of geodetic infrastructure:

Many sectors and market segments more and more dependent on **accurate, actual, reliable, fast and 24/7 available** geodetic infrastructure!

Thank you for your  
attention!

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