

NETPOS

Netherlands Positioning Service

A Real Time Kinematic Network for the
Governmental Authorities of the Netherlands

Joop van Buren and Jochem Lesparre

Kadaster (Cadastral Service of the Netherlands)

What

- RTK service for satellite positioning by surveyors of *Kadaster en Rijkswaterstaat* (Transport, Public Works and Water Management)
- cm precision everywhere in the Netherlands
- Continuously available (support only during business hours)
- Cooperation with *Rijkswaterstaat* and *KNMI* (Royal Dutch Meteorological Institute)

Why

- *Kadaster* decided to end the use of the RTK network operated by a private company for reasons of independency.
- High performance (reliability!) because of:
 - Typically 40 km between stations
 - In-company networks
 - GPS + GLONASS

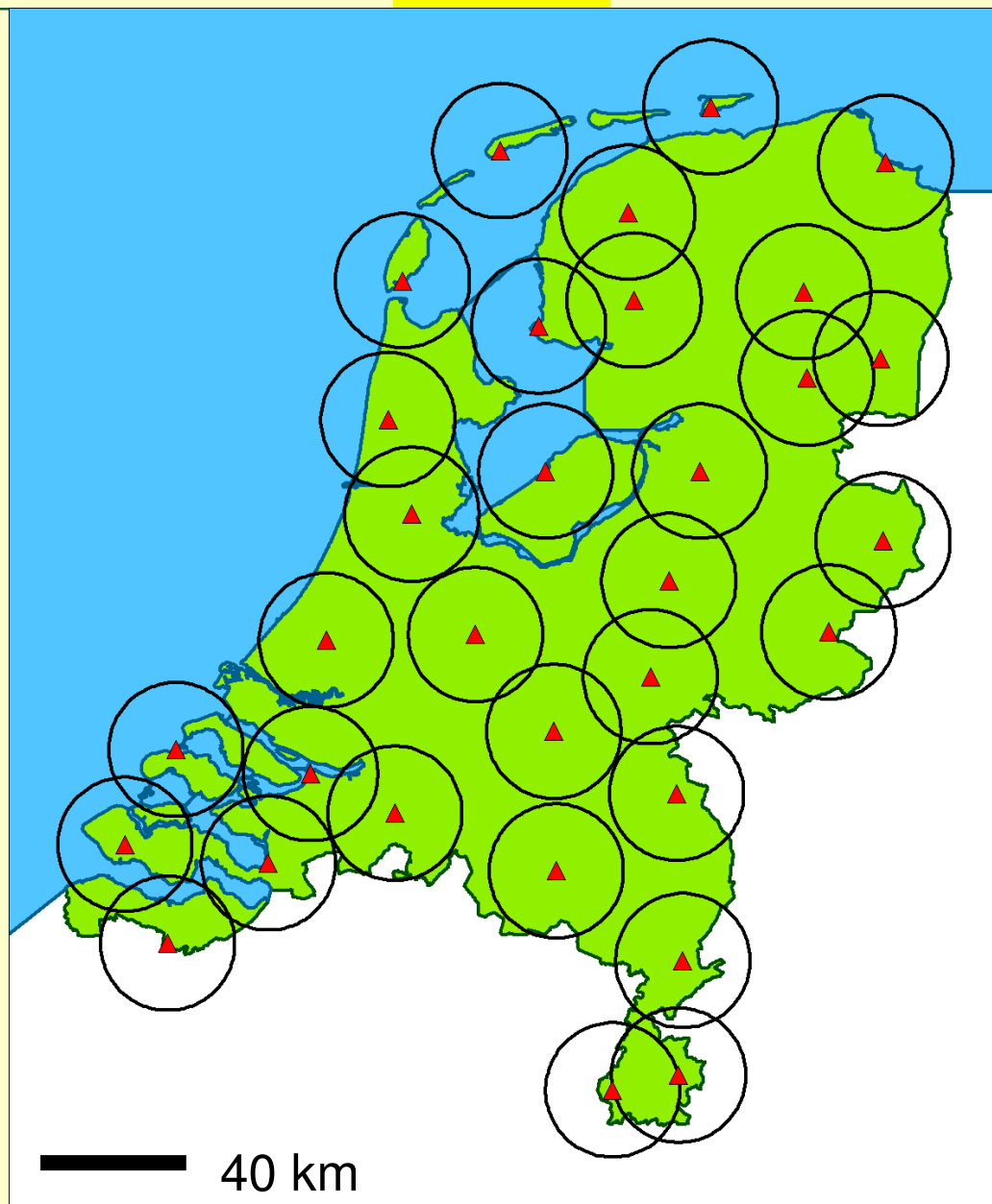
40 km between stations



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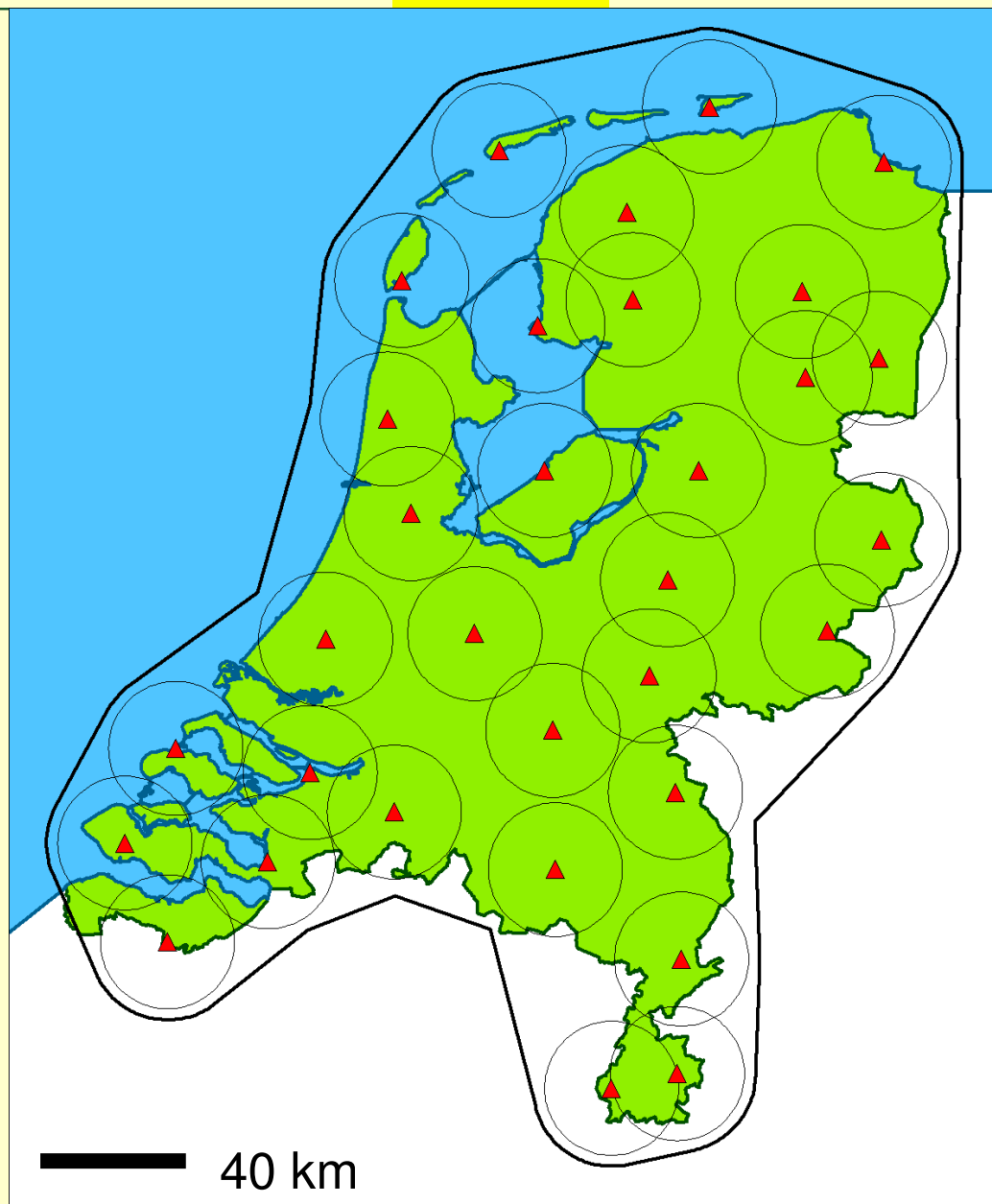
40 km between stations



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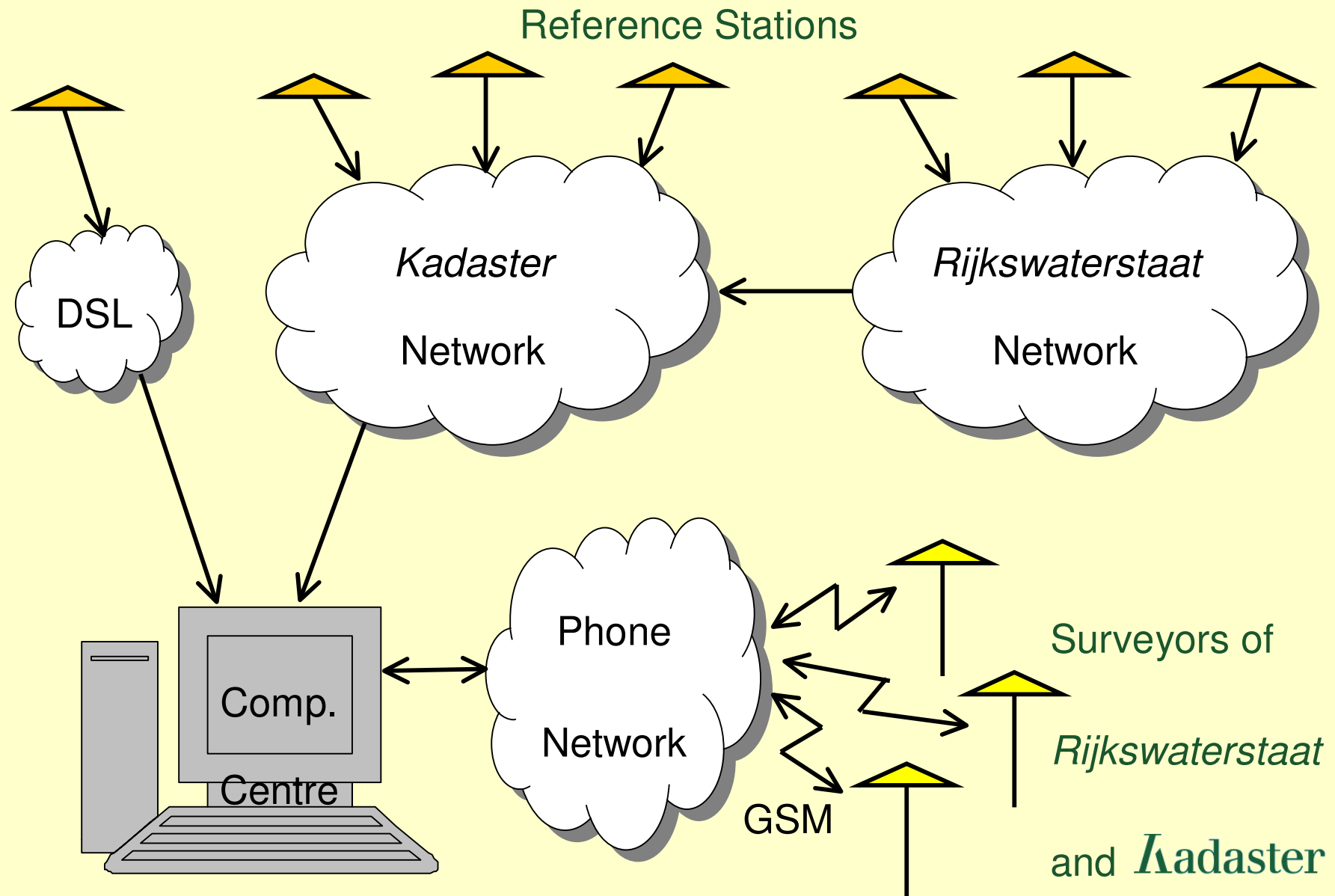
40 km between stations



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In-company networks



Receiver

Topcon Odyssey RS was selected



Because:

- GPS + GLONASS
- 40 channels
- 20 Hz sampling rate

In spite of:

- Not lowest price

Antenna

Topcon PG-A1 was selected



Because:

- Signal reception at the same level as CR-3
- Small (14 cm) and lightweight (0,5 kg)

In spite of:

- Some more multipath

Antenna mount

Typical location on
Kadaster or
Rijkswaterstaat
office building



Antenna mount

A steel pipe mast was selected

Because:

- Simple and robust construction
- Moves only 2,5 mm in heaviest storm
(above Beaufort 12)

In spite of:

- Not as stable as a skeleton mast of the same weight

Software

GNSMART (Geo++) was selected

Because:

- Price
- Scalability
- Proven performance

In spite of:

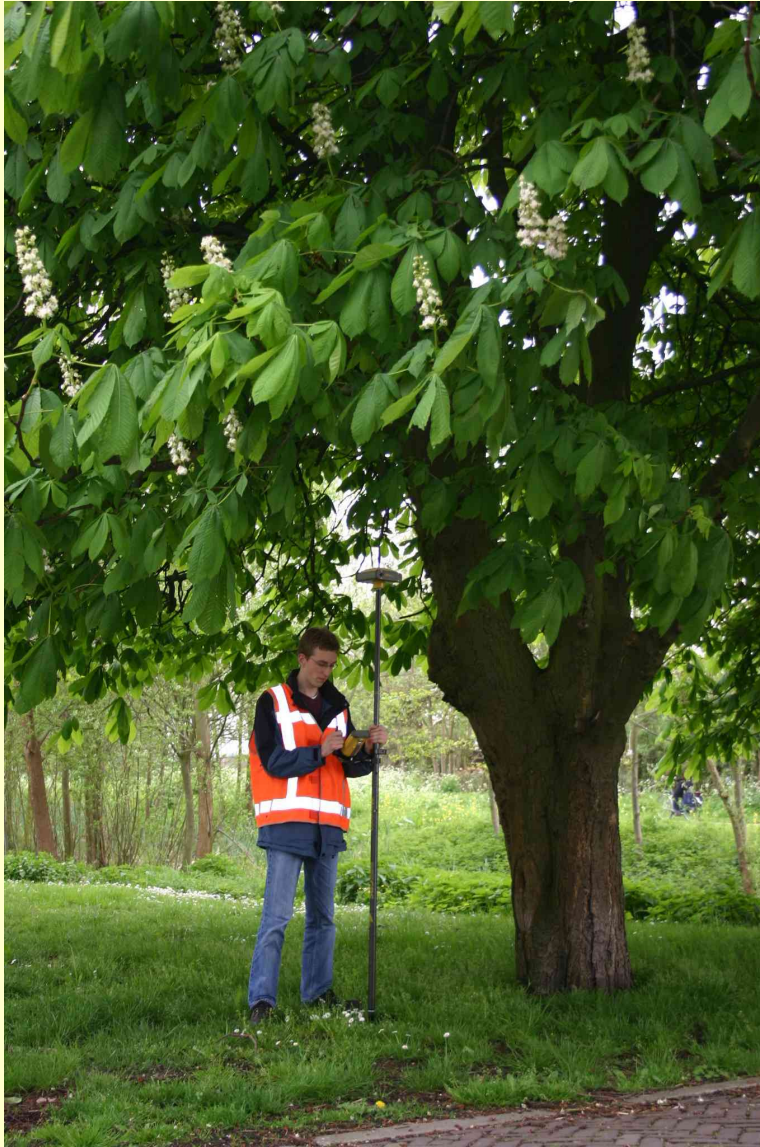
- Command prompt user interface

Software

Call for participants in GNSMART user group

- Consisting of an e-mail list and archive
- For the discussion of the use and possible improvements of GNSMART
- Moderated by NETPOS
- To subscribe e-mail to netpos@kadaster.nl

GPS + GLONASS



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GPS + GLONASS

Results of field tests for the use of GPS + GLONASS in cadastral measurements

- Number of possible GNSS measurements would increase from 30% to 50%
- Time to initialise would improve to 15 s

Planning

2004 Business case; Selection of locations

2005 Jan - Apr Purchasing components

Realising data connections

Jan - Jul Setting up computing centre

Setting up stations

1st Aug Prototype \geq 3 stations + CC

Aug - Oct Adding stations

Testing

1st Dec Operational

Conclusion

A RTK network of 32 GPS + GLONASS stations will be established in the Netherlands

- With off the shelf hardware and software
- In less than one year
- For a investment of

€ 10 000 per station

€ 130 000 for computing centre and software

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Questions?