Royal HaskoningDHV
Enhancing Society Together

Innovative bicycle infrastructure

Examples from The Netherlands

Wim van der Wijk
17 September 2013

Importance high quality infrastructure

- People don’t cycle without proper infrastructure
- People need to feel safe, secure and comfortable
- Good bicycle infrastructure increases road safety
- The safer infrastructure, the more cyclists
- The more cyclists, the better awareness of motorists
- The better awareness, the safer the public space / roads
- The safer the roads, the more cyclists

Importance of innovation

- Continuous care to improve safety
- Continuous care to improve bicycle usage

Three examples from The Netherlands

- High Speed Bicycle Route “RijnWaalpad”
- Bicycle parking garage Utrecht Central Station
- “The Forgiving Bicycle Path”

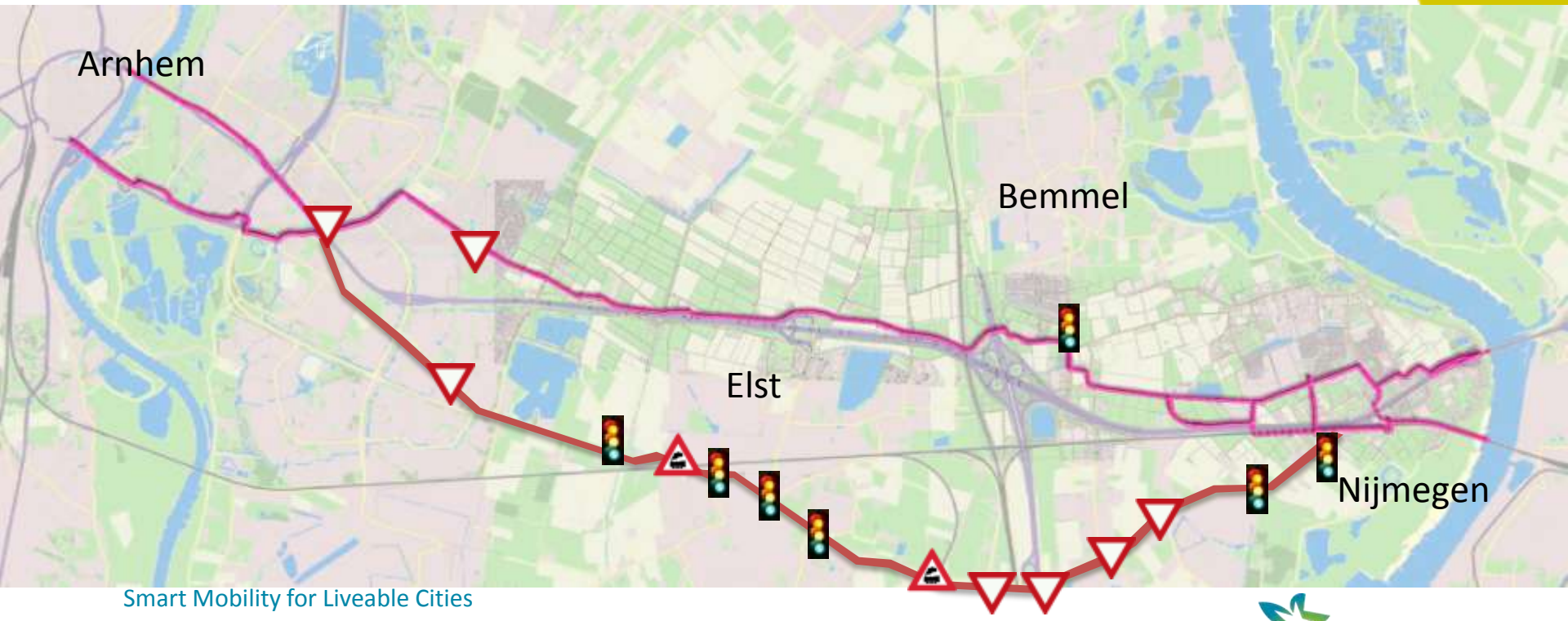
High Speed Bicycle Route “RijnWaalpad”

- 16 km free route
- Connecting Arnhem and Nijmegen
- As little as possible delay
- 4 meter wide asphalt
- Wide curves (20 meter)
- Priority for cyclists
- No traffic lights

RijnWaalpad

- The route

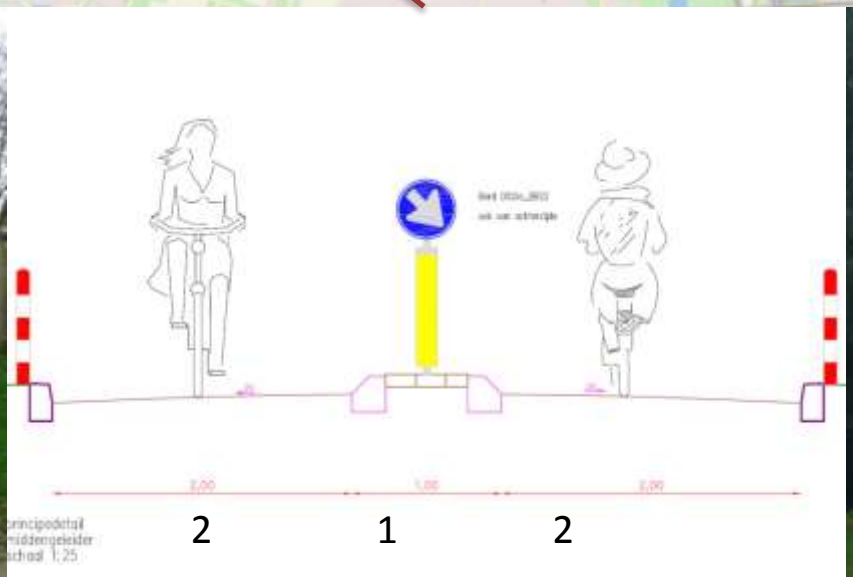
Old route: 18 km, 1 hour
New route: 16 km, 40 minutes



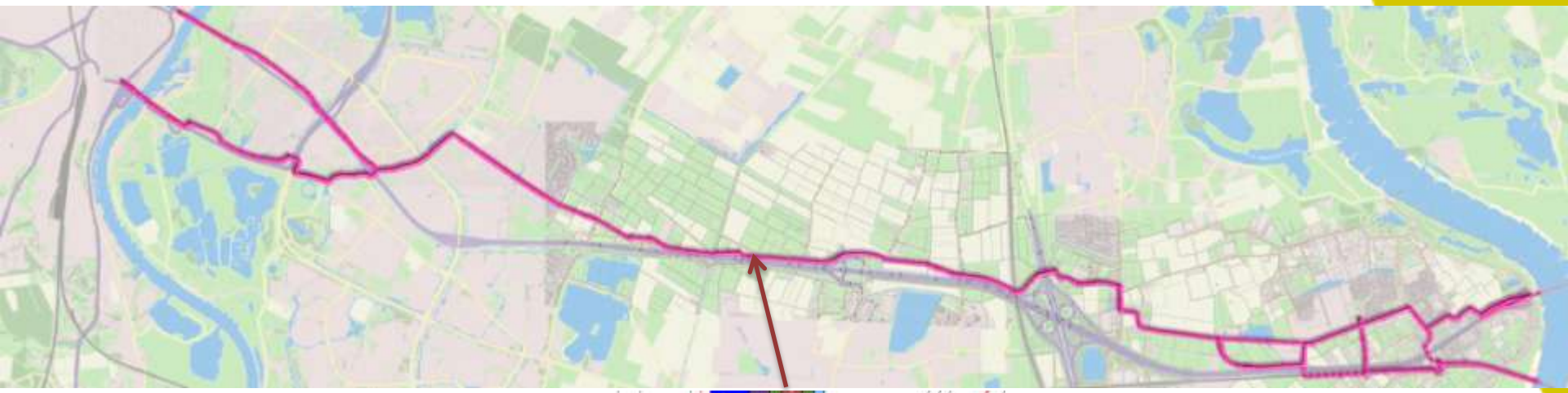
RijnWaalpad

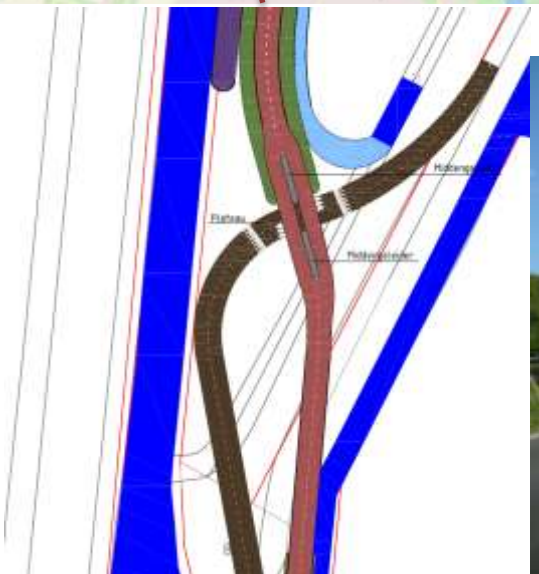
- High speed = little delay
  - Wide curves (no slow down)
  - Wide surface (to ease passing by)
  - Junctions / crossings grade separate or priority

RijnWaalpad

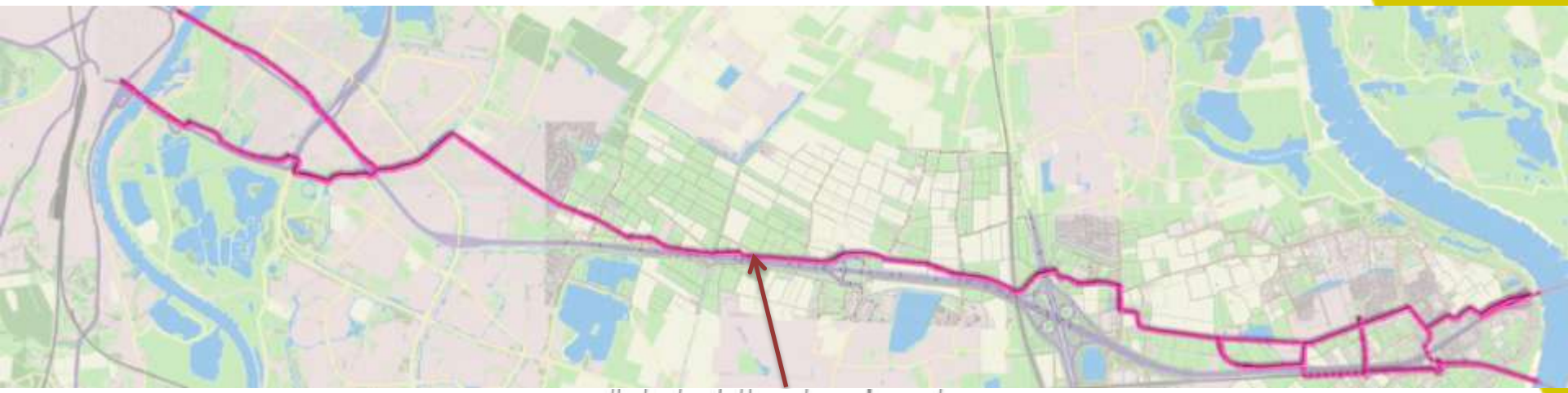


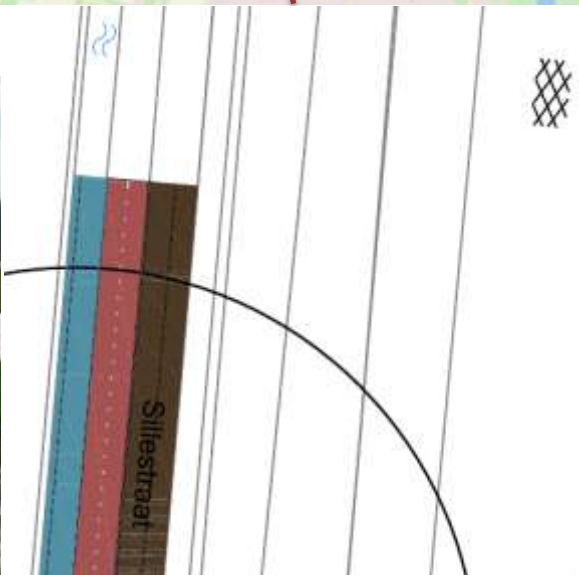
RijnWaalpad





RijnWaalpad





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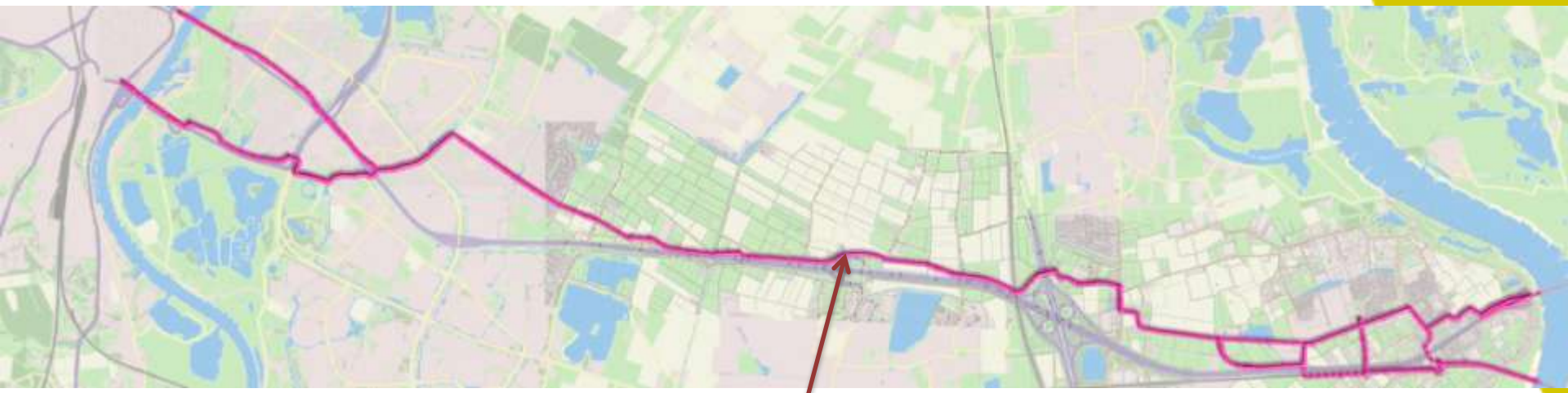

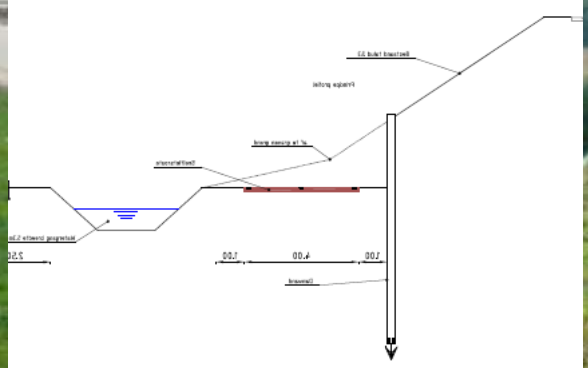

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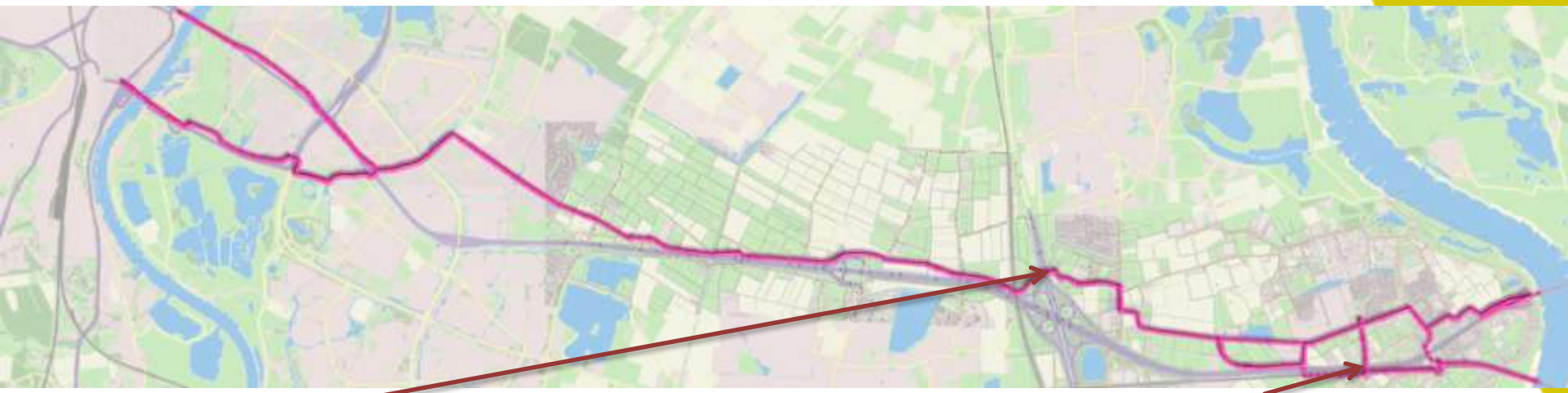

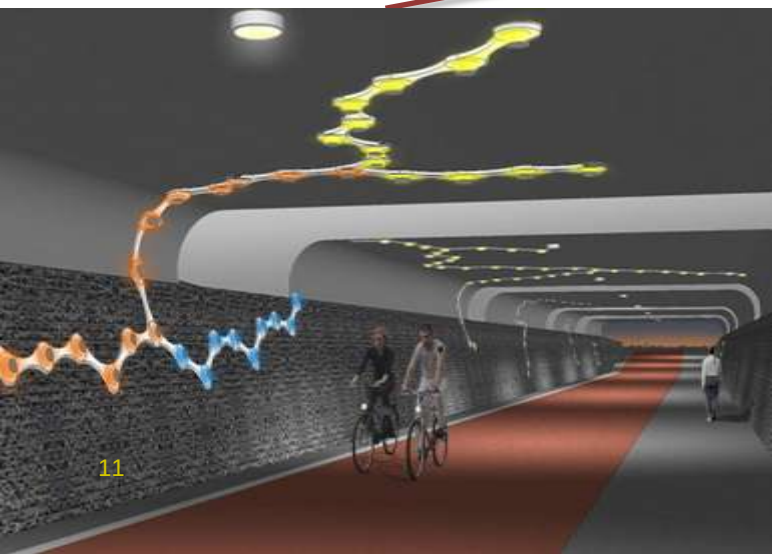

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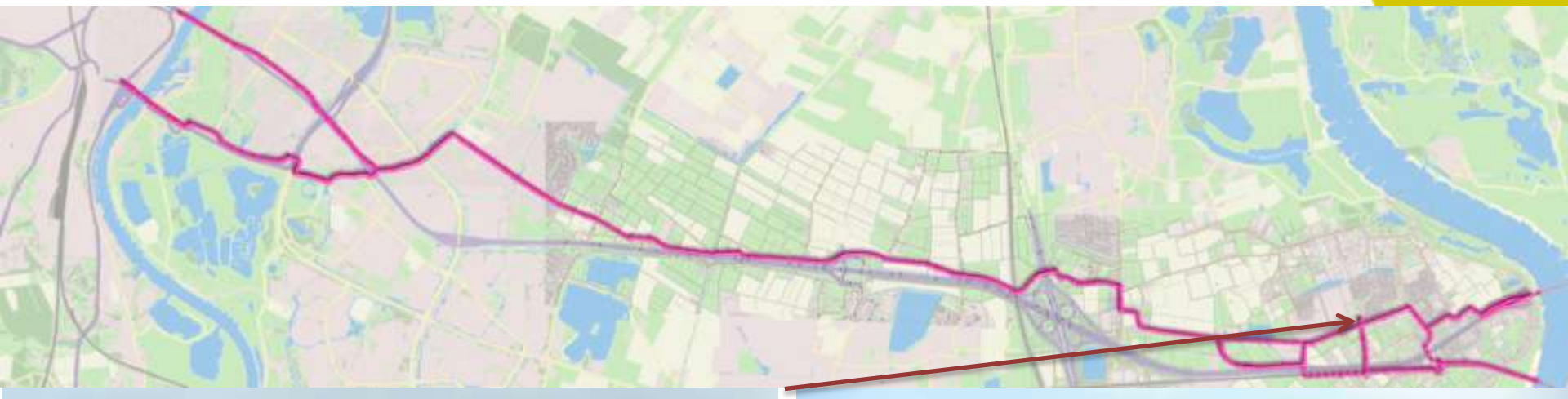

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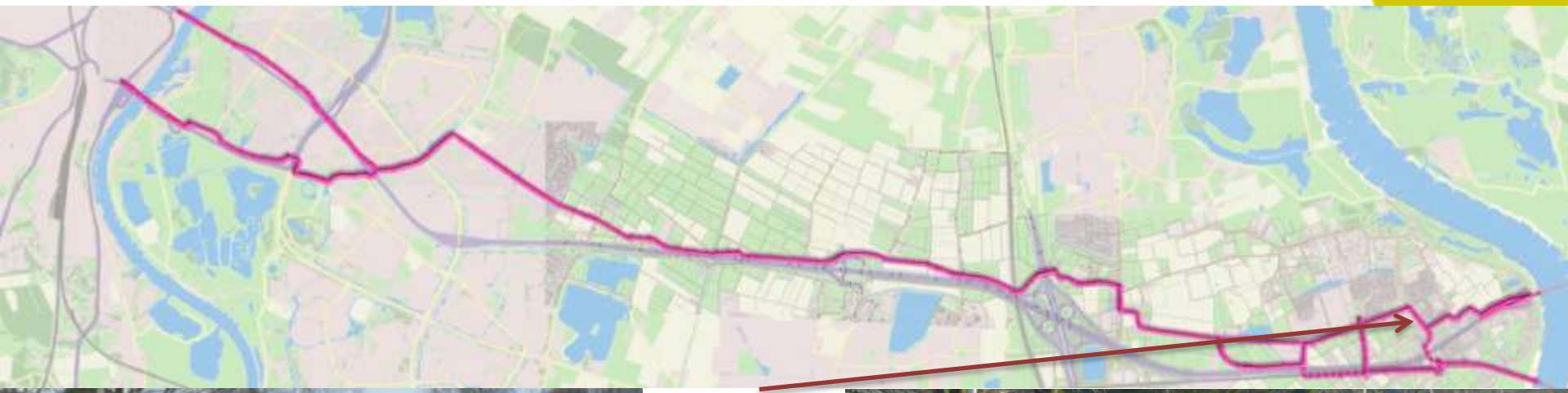


Bicycle parking Utrecht Central Station

- Capacity problem
- 12,500 bicycles
- Bicycle congestion
- How to find my bike back

- Artist impression

“The Forgiving Bicycle Path”

- “Only cyclists’ accidents”: policy focus
- Elderly cyclists’ (50+) more than average
- Bicycle usage is growing, especially amongst elderly
- More kilometres, different vehicles (e-bike)
- Layout bicycle infrastructure does not cope with changes

The Forgiving Bicycle Path

- Towards Sustainable Safe Bicycle Infrastructure
- Framework: Initiative “Veilig Fietsidee” (Safe cycling Idea)

Aim of the project

- Develop knowledge on causes of single-participant accidents with elderly
- Develop knowledge on effects of measures (behavioural change via infra) to prevent this type of accidents from happening.

Partners

- Royal HaskoningDHV
- University Groningen
- Cyclists' Federation Fietsersbond
- Police Region IJsselland
- Province Overijssel
- Province Friesland
- Province Utrecht
- Municipality Zwolle
- Municipality Leeuwarden

The Forgiving Bicycle path

Four components / stages in development of single-participant-accidents:

1) Keeping balance
2) Keeping course
3) Room to correct mistakes
4) guarding obstacles

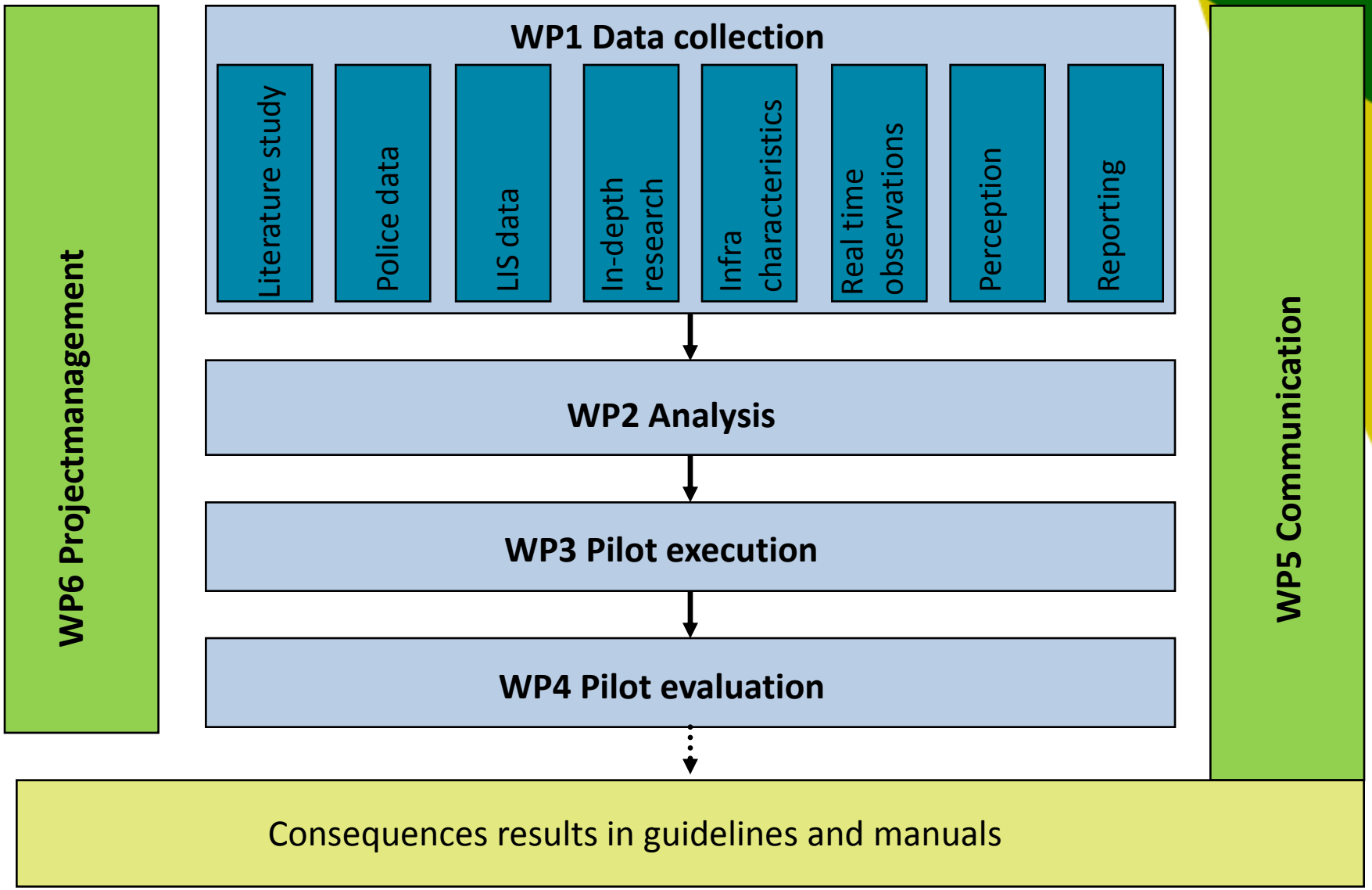
Results of the project

- Clear recommendations for forgiving bicycle infrastructure (book for inspiration / examples)
- From research and pilot to common use via update of relevant guidelines / manuals

Schedule

- 2013: desk research
- 2014: pilots
- 2015: analyses / recommendations

Structure of the research

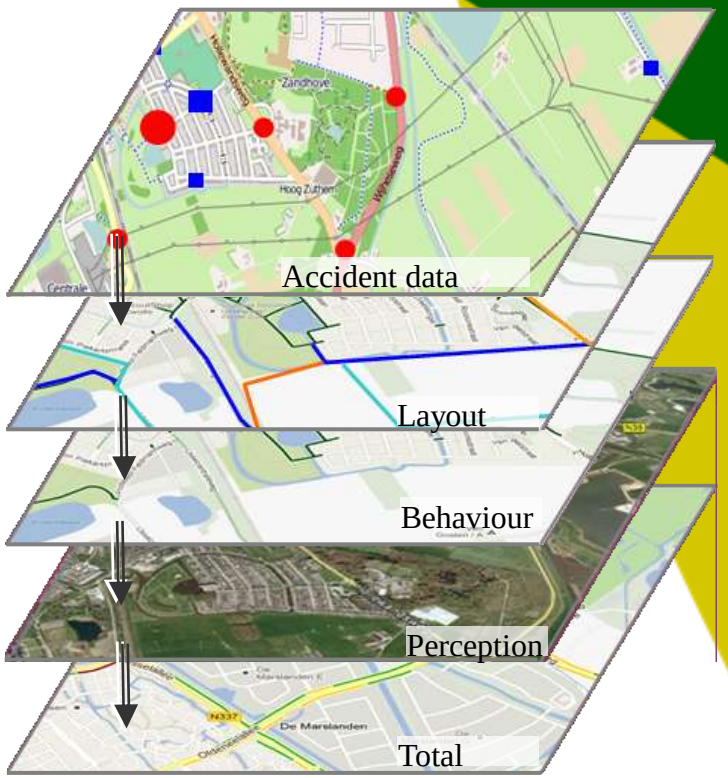


WP 1. Data collection

- Back ground:
  - Literature study
- Bicycle infrastructure and behaviour:
  - Design characteristics of bicycle paths
  - Behavioural observations (instrumented bicycle)
- Accidents:
  - Data Police Region IJsselland
  - Data in-depth research SWOV
- Subjective safety:
  - Perception research in 3 provinces
  - Complaints and reporting by cyclists

WP 2. Analysis

- Synthesis of the collected data
- Choice of pilots
  (measures and locations)
  supported by iRoom sessions



WP 3. Pilot execution / research setup

- Locations / road stretches in three provinces
- Research methods:
  - Behavioural observation (fixed camera's)
  - Experimental research (instrumented bicycles)
  - Perception research (inquiry)
- Control groups and control locations

WP 4. Pilot evaluation

- Conclusions on the **effects of measures** with regard to:
  - Behaviour (speed, position on bicycle path, manoeuvres etc.)
  - Critical safety situations (near misses, conflicts)
  - Perception of the target group (road safety, comfort, mobility)
  - When available: Accidents(via LIS and/or police)

- **Cost-effectiveness** of the measures

WP 5. Communication and consequences

- **Professional target group:** to be informed regularly:
  - Start of the research
  - Intermediary results, start of the pilots
  - Usage / consequences of the final results

- **Target group elderly cyclists:** sent positive message

- **Main conclusions** to be known and used by target groups
  - Professional: CROW (publications) and road authorities (in working processes)
  - Elderly cyclists: via interest groups / associations for cyclists and elderly people

Research methods

- Mobile camera
- Fixed camera
- Inquiry
- Experimental and behavioural research

Bicycle path along side N229 (Utrecht)

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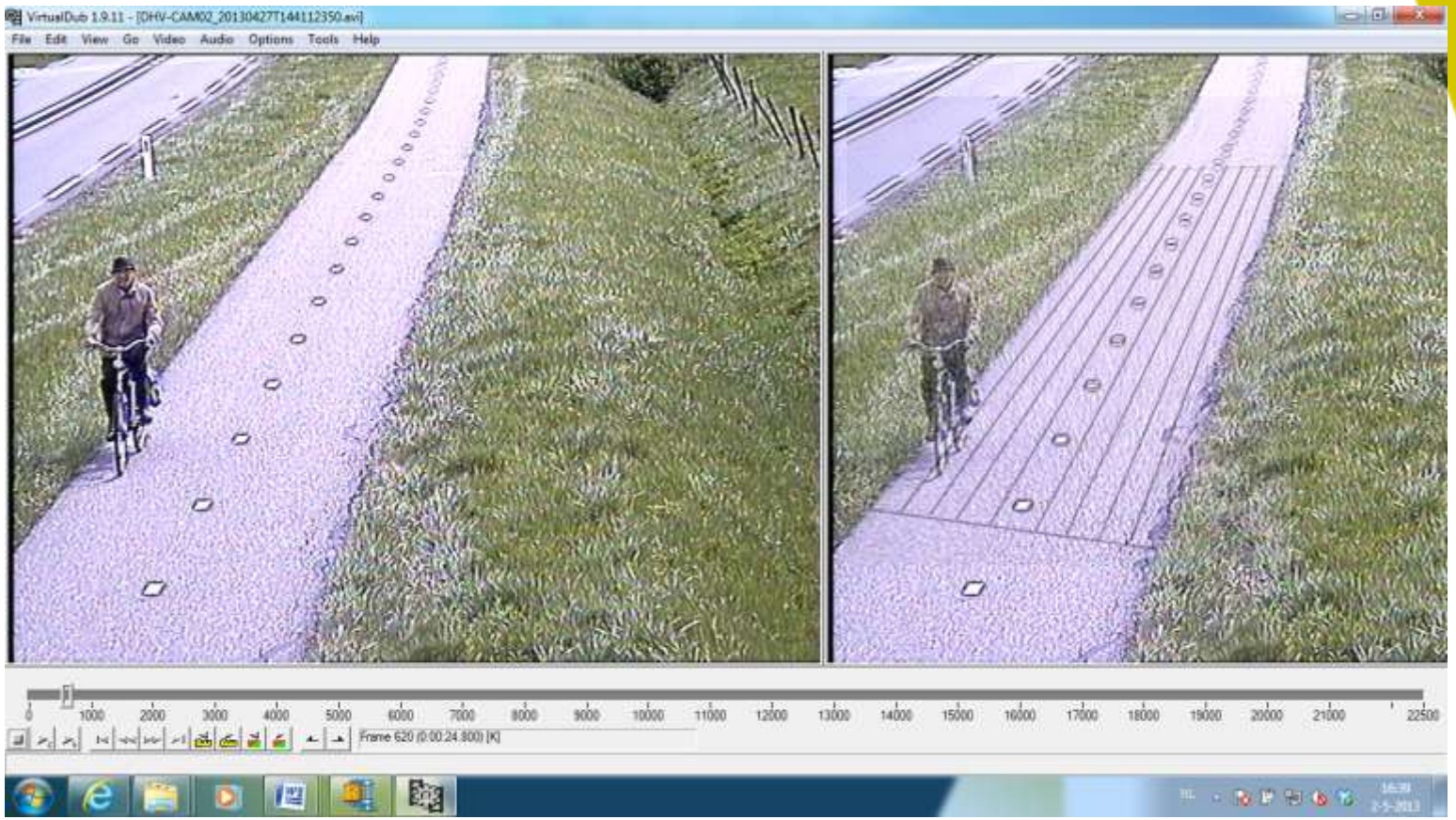
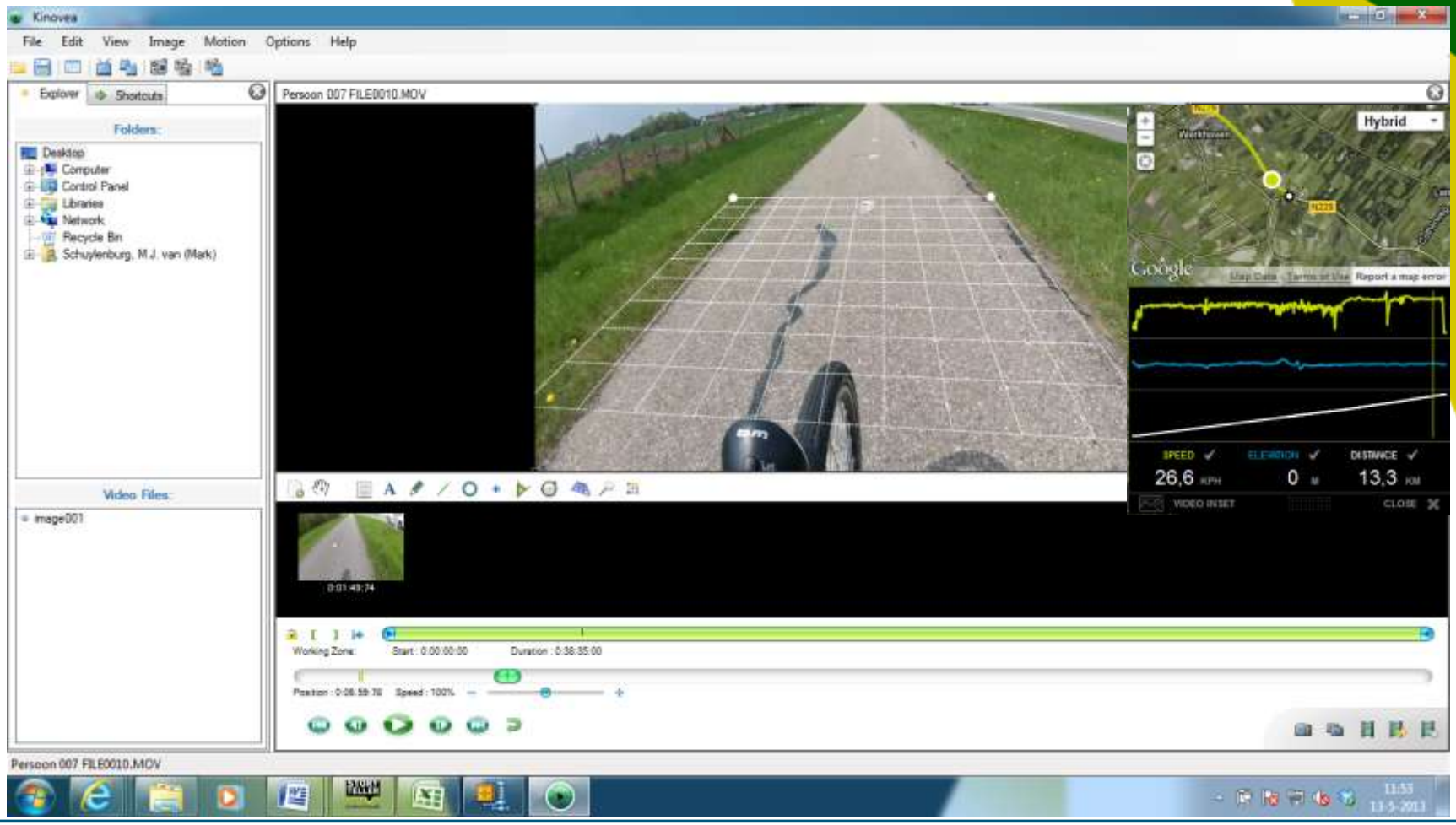
Fixed camera: camera placing (curve)

Fixed camera: straight section



Mobile camera: Contour



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Proposed measures

- Widening surface
- Guiding by marking (axis / edges)
- Safe edge of surface
- Hardened shoulders

- On-going separate studies:
  - Guarding obstacles
  - Improved winter maintenance

Thank you for your attention!

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