The Randstadrail project.

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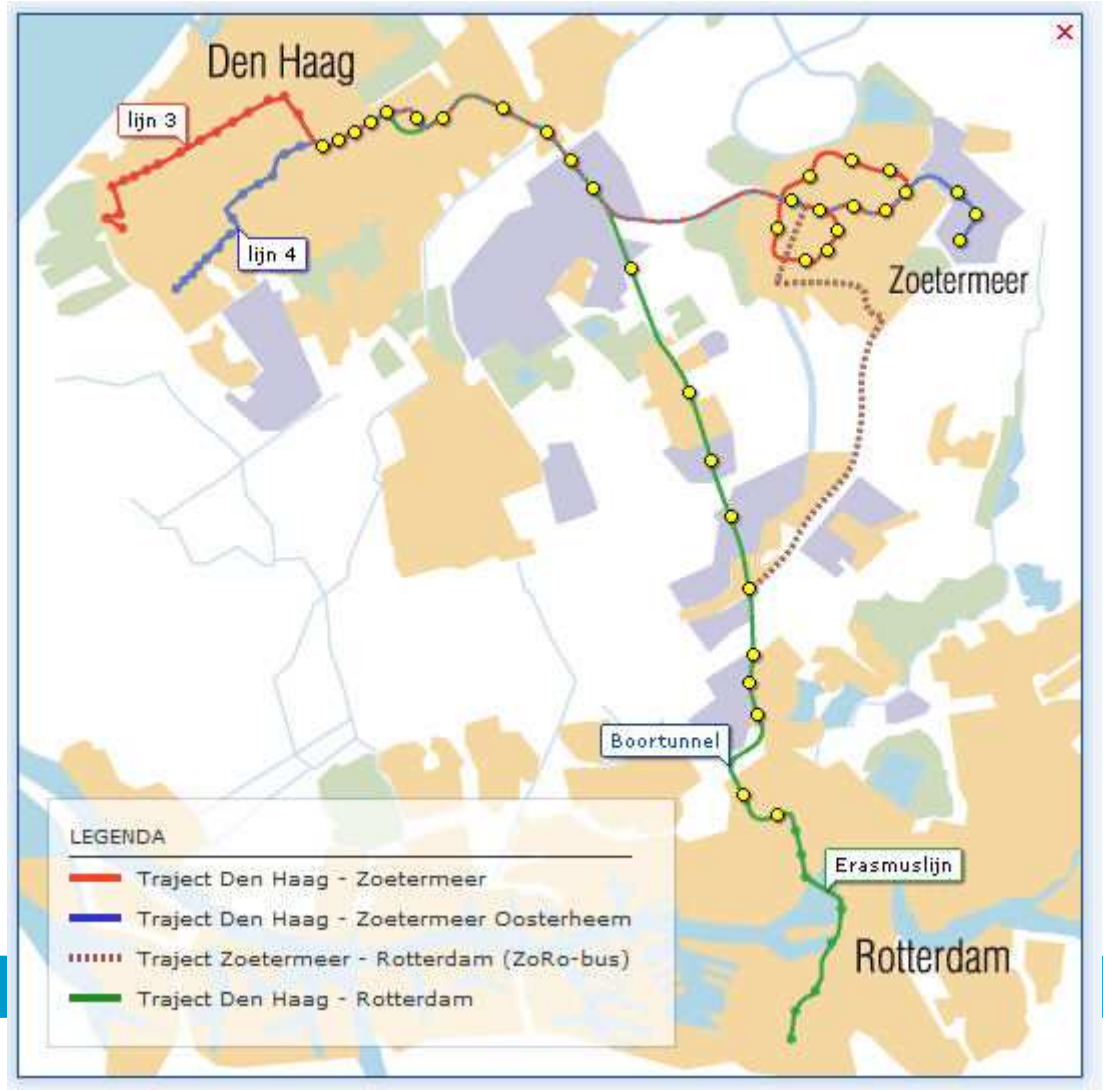
1. Project
2. Research goal & methods
3. Findings
4. Lessons

1. The RandstadRail project

- High quality **lightrail** network
- Replacing former heavy rail, connecting trams and metro networks of
The Hague, Rotterdam and Zoetermeer
- Costs: 1 billion euro
- Focus on the The Hague part (500 million euro)



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2 Reason for research assignment

- Start of operation in October 2006 with 2 months delay

- Operation plagued by interruptions

- 29 November 2006 2 derailments: TI closes down system

- October 2007; system fully operational

Research assignment

- Responsible portfolio holder of SGH (Van Woensel) requested a research to account for what happened

- Reconstruction events from 2001 until start operation

- No technical analysis but project set-up, organization and management

- Research period: August 2007 - februari 2008

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3. Findings: What caused the trouble?

- 13 weeks for **Construction, Testing and Trialing (CTT)** in summer 2006.
- Lots of simultaneous activities
- Late radical **scope changes**:
  - Replacing switches former heavy rail track (7 June 2004)
  - Signaling system on Zoetermeerline (6 September 2004)
  - New power stations and other voltage (6 December 2004)
  - Replacement rails Zoetermeerline (summer 2005)
- CTT out of control: switch damaged
- Too short test and trail: 3 days.

Problems not noticed

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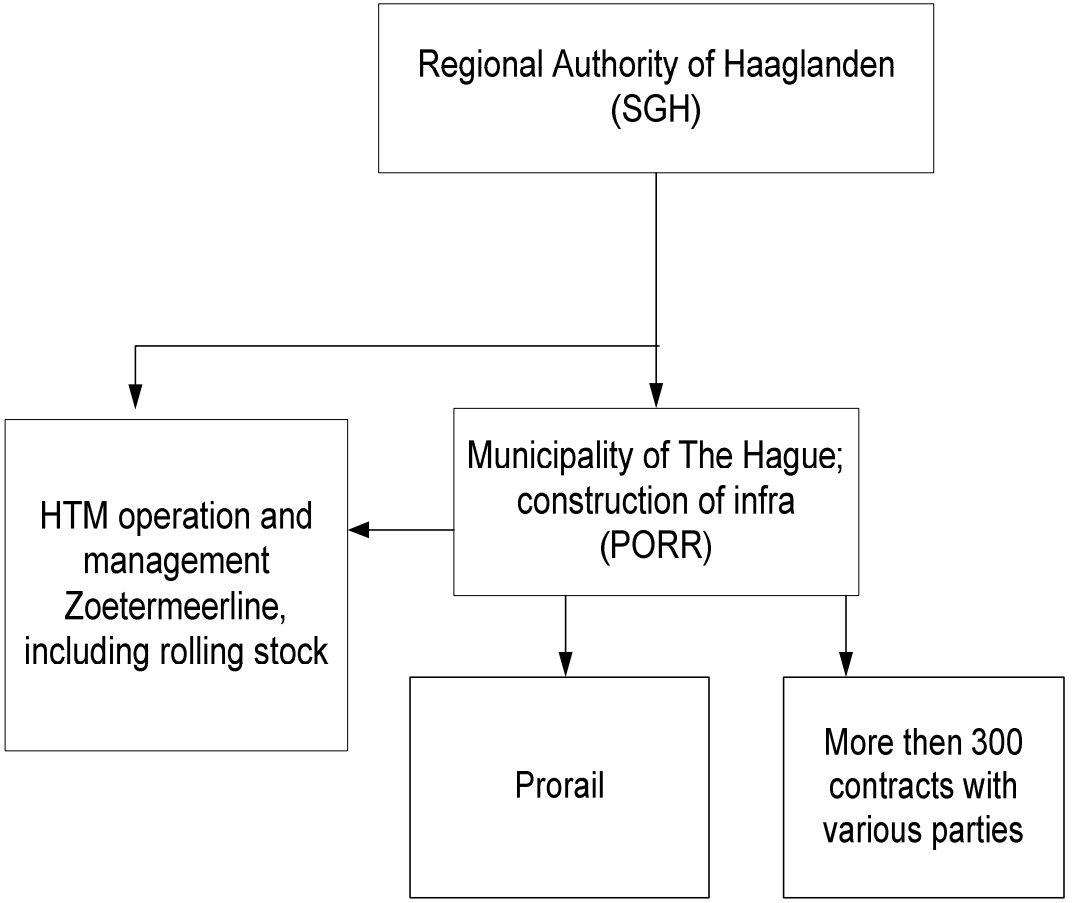
Findings: the role of project governance

Construction separated from transport operation, infrastructure management and rolling stock.

1. Construction by The Hague (PORR)
   Lump sum + Turn Key agreement.
2. The other parts by Transport operator HTM



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The game of project realization

1. PORR: incentive to steer on budget & time
   - Starts in 2002
   - 300 lowest cost-contracts: limited commitment contractors
   - PORR doesn't wait for HTM or Haaglanden
2. HTM: certainty on role only in 2004
   - Late input expertise & wishes
   - Late request scope change (signaling system)
   - Problematic interface rolling stock-rail
3. Prorail: not interested
   - Late information on Zoetermeerline

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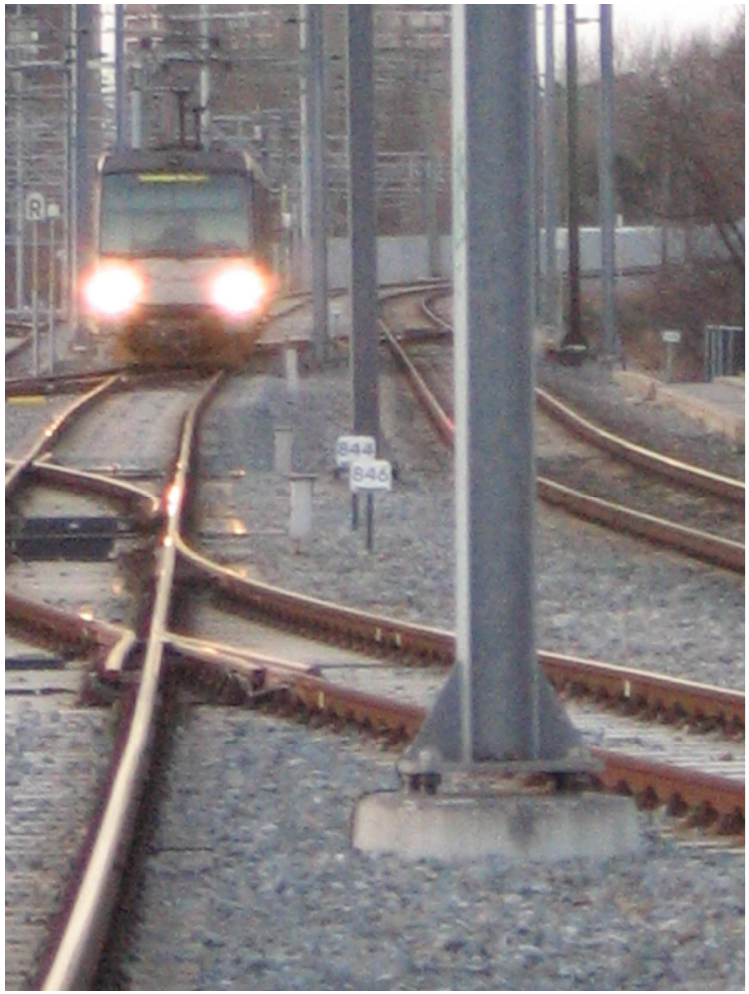
Consequences:

Steering on time and money + Fragmented set up:

- reactive attitude and low trust ->
- problematic system integration and late scope changes ->
- Huge coordination load ->
- Insufficient management of interfaces + relations ->
- Overloaded CTT period + interface problems

Steering on time and money + political pressure

- No lengthening CTT, insufficient testing
- Too early start



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4. Lessons from RandstadRail

Choices were unavoidable + justified

- Separation infrastructure + rest of project and asynchronous development: hard to avoid
- Steering on time and money: contributed to success.

But they didn't match. Steering should have been complemented with:

- Management of interfaces and relationships
- Independent anchorage of Quality and Safety

Overall lesson:

- Due to complexity and dynamics of large projects: hard to optimize starting conditions.
- This has to be counteracted by project governance

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