LEARNING FROM THE DUTCH: A DECADE OF EXPERIENCE USING INCENTIVISED TDM TO MODIFY BEHAVIOUR

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Common Approach

Frustrated motorists
Dutch Approach

A different customer experience
Motivation: major road improvement programme 2008-11 ‘Spoedaanpak’

“Spoedaanpak” - tackled 30 main bottlenecks highways

Faster: deliver quicker
- Adapt procedures
- Many parallel projects

Goal: extra capacity
- Permanent lanes and/or managed lanes (left or right)

+ major maintenance 14 steel bridges

Developed the Minder Hinder (reduce nuisance) approach
Manage Efficiently to Minimise Impact

- Issue
  - Economic impact due to loss of travel time
  - Motorist ‘frustration’ and negative media
  - Political damage to image of highway agency

- Approach “Major Maintenance”
  - Goal: reduce hard (congestion) and perception of nuisance
  - Organizational awareness
  - Supplying tools and sharing best practices

Reduce congestion caused and maintain customer experience
The “Minder Hinder” Approach

7 Pillars

1. Smart planning
2. Smart construction
3. Mobility Management
4. Traffic Management
5. Communication
6. Public-oriented execution
7. Regional co-operation
Pillar 1: **Smart Planning**

Planning management:

- No road works on alternative routes / derivation routes
- No road works at the same time on parallel routes
- Combine road works as much as possible
- Chose either short period heavy traffic or longer period of lighter traffic congestion

Road works in low traffic periods:

- Weekends / nights
- Holidays

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From years to days a head
Pillar 2: Smart Construction

Contractors required to demonstrate how they will prevent or mitigate traffic jams: core part of contract quality evaluation

Examples...

• Smart Construction Methods
• Better assessment traffic space and building space
• Smart phasing
• And shorter delivery period – endure traffic jams for small period
Pillar 3: Mobility Management

Influencing travel behaviour of motorist:

• Re-time (change time of travel)
• Re-mode (use a different method of travel)
• Re-route (travel by a different route)
• Remove (not travel at all: home-working)

For example:

• Extra or free/reduced public transport
• “Spitsmijden” (rewarding programme)
• Participation of employees
• Ikea discount delivery goods when showing bus or train ticket

Specified by highways agency not contractor
Pillar 4: Efficient Traffic Management

Active network management:

• Redirect traffic flows
• Prioritize traffic flows: maximize to network optimum
• Close or reduce less important lanes or junctions temporary

Incident management:

• Extra tow truck ‘standy by’ near road works’.
• Signed detour routes for major accidents (u-routes)
• Incident Management Camera’s
Pillar 5: Effective Customer Communication

What:
- Planning details (facts)
- Story telling (what’s going on and why, work at night)

How:
- Purchase relevant Facebook / Twitter mail-list
- Companies provide /facilitate emails to motorists
- Dynamic message sign near the highway
- Radio and television commercials
- Advertisements in national and regional papers
- Billboards near the highway
- Time lapse videos
Pillar 6: *User-friendly operation*

**What:**
- Logical road signing
- Road marking clear visible for motorists
- Road works (action) visible

**Auditing**
- Professional
- Through the eyes of road users
Pillar 7: *Regional Co-operation*

What:
- Co-operation with all adjacent regional road authorities
- Co-operation with third parties
- Runs throughout pillars 1-6

How: finding new alliances
- Efteling (theme park) expanded their opening hours
- Companies inform their employees (information toolkit supplied)

Governmental and non-governmental co-operation
Not Just the Dutch

Swedish have been developing approach for 5 years
Swedish Also Have Detailed Guidelines

Every infrastructure project analyse potential for managing demand
Proactively Manage Customer Experience

Target Groups

1. Register cars on film
2. Identify primary residential areas ← MEASURES
3. Travel habits and change potentials (travel survey)
4. Identify primary work places and workplace areas ← MEASURES

Learnt from and adopted the Dutch approach
It Works… and its Cost Effectiveness is Proven

Sweden - E45 Gärdshejmsvägen to Göteborgsvägen

Compared cost due to disruption with cost of mitigation strategy

Mobility management programme cost circa EURO 200k with BCR 2.5 : 1

The Netherlands - Utrecht Bereikbaar PT Pass

Benefits from avoided congestion 2009-11 EURO 15 /vehicle hour

BCR of 5.6 : 1 (or 3:1 including public transport subsidy costs)

5.6 EURO benefit for every 1 EURO Invested
Political Success Just as Valuable

A16 Moerdijkbrug, The Netherlands

€2m for traffic management, mobility management and communication

Estimated €2.4m in benefits (value of time only)

A2, The Netherlands

€2m budget (2008-10)

Positive public opinion about A2 upgrade, positive perception about public transport alternative

User satisfaction 8.6 /10 for Rijkswaterstaat

Financial value of improved customer experience?
Compelling Business Case

The dis-benefits of traffic congestion during major roadworks typically reduce overall benefits of an improvement scheme by at least 10%.

BUT - modelling of impact tends to work on averages. The impact is more severe during roadworks, so the impact is likely to be underestimated.

Post-implementation studies of road schemes don’t tend to consider cost of congestion during roadworks.

Need more accurate models /proxies that better represent real costs.

Application of proven techniques can reduce costs
Reflects Treasury Approach

Consider how the benefits of infrastructure may be enhanced through the use of demand management

...which can bring significant benefits through improved asset utilisation patterns

It is a way of improving performance of the existing networks and/or of maximising the benefits of further infrastructure investment

Appraisal should consider the costs and benefits of relevant resilience measures

Supports the prevailing ideology
“SPITSMIJDEN”
Change your travel routine and earn money
How it Works

ANPR

YY-YY-YY

Peak hours

ANPR or GPS

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Summary of Key Impacts

Around 25-30% of invitees participate in the project

Participants reduce their peak hour travel journeys by circa 40-55%

Limited reduction of the traffic demand (3-5%) has relatively larger effect on the traffic flow (about 10-15% less travel time lost by vehicles).

Similar to traffic flow during vacations

3-6 months post opening research show out that 50-80% of changed behavior continues

3% reduction in traffic = 10% less travel time lost
Reward Options

• Several options to reward:
  - Money / cash (most effective)
  - Points → transferable to products in web shop
  - Gaming elements
  - Intrinsic motivation (more free time, healthiness, no-stress, etc.)
  - Lottery: option to win things
  - Or combination of options above
Obtaining Addresses From License Plates

- Database with addresses number plate owners is controlled by the ‘RDW’ (equivalent of DVLA).
- Only government organizations can obtain addresses out of this database for certain goals. F.e.:
  - Law enforcement
  - Research and surveys (rarely because of privacy issues)
  - Traffic flow management (Spitsmijden)
- Data processors send the relevant number plates of potential participants to the RDW.
- Data processors obtain the addresses on behalf of the government initiating the project.
- Data processors print the letters and send them to the owner of the (private) vehicles.

- Drivers of a company or commercial car are more difficult to address.
- Sometime (lease) companies forward the invitation letters to their customers. Issue: contracts and protection personal data
FRAUD PREVENTION
Fraud prevention

Monthly monitoring vehicles and number plates participants (DVLA):

- Cars could be sold and/or replaced by new ones
- Other vehicles to disposal? (quantity)

Data analysis participants:

High level avoidance behavior indicator for:

- Good behavior
- Change of work / home-addresses.
- Long-term illness / holidays / maternity leave, etc.
Technology options

ANPR
- Privacy non-participants
  + Accurate and proven technology
  + Easy participation and usage: no action needed

On board units
- Lower participation: installation needed
- Privacy participants: tracking device. Without dataminimalisation: 24/7
- Expensive because of installation
  + Accurate and proven technology
  + Easy usage: no action needed after participation

GPS-tracks/smartphone application
- Battery usage: balance between accurate GPS-tracks and low energy
- Action needed: activate app and geolocation
- Privacy participants: tracking device. Without dataminimalisation: 24/7
  + relatively cheap: almost everyone has a smartphone
Data **quality** is very important:

- Detection rate (98%): did I miss a vehicle?
- Recognition rate (98%): did the software register a number plate?
- Reliability rate (99%): did the software register the correct number plate?

Speed camera’s are not suitable

- Different data collection goal: traffic flow management ≠ law enforcement

**Each participant car you miss during peak hours costs money**
PROTECTION OF PERSONAL DATA
Working Within the Law

Number plates and GPS-tracks are (sensitive) personal data

Compliance with EU Directive 95/46/EC necessary

Implemented in the Netherlands in national law (Wbp)

Challenge: Registration of number plates without consent of the driver, how possible?

No issue: Processing data of participant

Registration of number plates without consent of the driver
Article 7 EU Directive 95/46/EC

Personal data may be processed only if there is a legitimate objective.

The considerable options:

• 7a: the data subject has unambiguously given his consent; or

• 7b: processing is necessary for the performance of a contract to which the data subject is party or in order to take steps at the request of the data subject prior to entering into a contact; or

• 7e: processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller or in a third party to whom the data are disclosed; or
Legality of Processing Data without Consent

Legal base founded in article 7e of the EU Directive 95/46/EC:

The Dutch Ministry of Infrastructure and the Environment is an official authority Rijkswaterstaat, part of the Ministry undertakes tasks of public interest:

- Secure road safety highways
- Advance traffic flows highways

Spitsmijden advances traffic flows and secures road safety
Closing Thoughts
Opportunity to Learn from the Dutch

- Significant opportunity to improve highway investment value for money
- Major potential to increase customer satisfaction during roadworks
- Wealth of international practical experience to build on
- Improving data on congestion costs during roadworks helps build business case
- Future opportunities to enhance network resilience

A new era for managing customer experience...
Discussion and Questions