Excellent Cities
Mobility Hubs in the Bay Area: A Cycling Policy with Lessons from the Netherlands

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Goudappel Coffeng
Content

• Goudappel Coffeng & Excellent Cities

• Setting the scene: Transportation in the Netherlands

• The Dutch Integrated Mobility Network

• City Level Case Study: the city of Utrecht, in the Randstad area NL

• Regional Level Case Study: Lessons from The Randstad for the Bay Area USA

• Q+A
Los Angeles, Thinkbike Workshop 2011
5 -> 3 car-lanes, realized within 3 months
‘Our mission is to use proven Dutch solutions on mobility to create sustainable, accessible, and livable cities worldwide’
The Netherlands
Dutch Credentials in Mobility Planning

- One of the world’s most cost-efficient (public)transport systems
- The world’s highest use of cycling
- The world’s transport-safest country
- Balanced modal share in most major cities
  - ~30% car, ~30% public transit, ~30% bike, ~10% walk or other
- Fully integrated international, regional, and local transit networks: one card for transportation for the whole country!
Elements of The Dutch Integrated Mobility Network

1. Hierarchy of Nodes (Mobility Hubs)

2. Four Strategies of Connectivity
1. Hierarchy of Nodes (Mobility Hubs)

- International Nodes
  - High-speed trains

- Interregional Nodes
  - Intercity trains

- Metropolitan Nodes
  - Metro, light-rail, commuter rail

- Local Nodes
  - Trams, buses, cycling
# Node Classifications

<table>
<thead>
<tr>
<th>Transit Nodes in Randstad</th>
<th>Catchment Zone</th>
<th>Travel Distance</th>
<th>Operational Speed</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>3 miles</td>
<td>50-100 miles</td>
<td>60 - 90 MPH</td>
<td>1-2x / hr</td>
</tr>
<tr>
<td>Regional</td>
<td>2 miles</td>
<td>20-50 miles</td>
<td>50 MPH</td>
<td>2-4x / hr</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>1 miles</td>
<td>1-20 miles</td>
<td>15-25 MPH</td>
<td>4-8x / hr</td>
</tr>
<tr>
<td>Local</td>
<td>&lt;1 miles</td>
<td>0-1 mile</td>
<td>10-15 MPH</td>
<td>On demand 1-4x / hr</td>
</tr>
</tbody>
</table>
2. Four Strategies for Connectivity

1. Connection between the Node and Development (land use)
   - *How does the planning organization prioritize and develop nodes?*

2. Connection *between* Nodes (regional)
   - *How does the region access the nodes?*

3. Connection *to* the Node (local)
   - *How does the city access the node?*

4. Connection *within* the Node (as a destination)
   - *How does the individual experience the node?*
The case of Utrecht
Utrecht: city ambitions

- Ambition sustainable urban mobility plan: change modal split
- Strong urban growth $\rightarrow$ growth in transportation demand (car, transit and bicycle)
- Usage of space all mobility modes together: +16% until 2035
- Modal shift $\rightarrow$ no extra space needed for mobility
The principles

1. Re-organize car networks to create space for other modes
2. Location determines choice of mobility (ABC mobility zones)
3. Cycling as a primary choice
4. Dynamic centers at mobility hubs
1. Re-organize car networks to create space for other modes
2. Mobility zones developed by the city

- **A** Downtown
- **B** City
- **C** Suburbs
3. Cycling as primary choice
What kind of city do you want?

- **INVITE**
  - Equal or dominating infrastructure
  - 8 - 80 years
  - Up to 15 kilometers
  - 40% cycle potential
  - Present but dominated infrastructure

- **ABLE**
  - 18 - 48 years
  - Up to 5 kilometers
  - 20% cycle potential

- **DARE**
  - Hardly any infrastructure
  - 18 - 28 years
  - Up to 3 kilometers
  - 4% cycle potential

Amount of cyclists vs. Cycle distance
4. Dynamic centers at mobility hubs
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Central station Arnhem

Central station in Rotterdam
Measurable public goals of Mobility Plan Utrecht: Accessibility of economic hotspots

<table>
<thead>
<tr>
<th>Location</th>
<th>Change via Car</th>
<th>Change via Tram</th>
<th>Change via Bicycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binnenstad</td>
<td>+4%</td>
<td>+20%</td>
<td>+27%</td>
</tr>
<tr>
<td>Utrecht Centraal</td>
<td>+10%</td>
<td>+11%</td>
<td>+32%</td>
</tr>
<tr>
<td>Uithof</td>
<td>+18%</td>
<td>+40%</td>
<td>+42%</td>
</tr>
<tr>
<td>Rijnsweerd</td>
<td>gelijk</td>
<td>+26%</td>
<td>+20%</td>
</tr>
<tr>
<td>Leidsche Rijn Centrum</td>
<td>+6%</td>
<td>+53%</td>
<td>+177%</td>
</tr>
<tr>
<td>Lage Weide</td>
<td>+21%</td>
<td>+27%</td>
<td>+75%</td>
</tr>
<tr>
<td>Papendorp</td>
<td>+13%</td>
<td>+18%</td>
<td>+46%</td>
</tr>
<tr>
<td>Overvecht</td>
<td>+10%</td>
<td>+23%</td>
<td>+26%</td>
</tr>
</tbody>
</table>

*Change in number of people that can reach economic areas in Utrecht in a fixed traveltime, in the present situation and with the measures in the mobility plan. Software = Omnitrans*
Lessons From the Randstad: Sustainable Mobility in the Bay Area
The San Francisco Bay Area

- Home to 7.7 million people
  **9.6 million expected by 2040**

- 5\textsuperscript{th} Largest GDP in the US
  **38\% increase in jobs by 2040**

- 33\% of population work in a different county than where they live

*An interconnected, growing, economic region...*
...facing massive challenges in transportation

Modal Split

• **75% of people drive to work**

Congestion growing rapidly

• **up 80% since 2010**

High travel times for AM Peak commutes

Analyze-tool: MOVE Meter

Isochrones from Oakland (green star) to SF (red star) from the MOVE Meter show a 60+ commute in the AM Peak
Randstad Sets the Standard for Regional Connectivity

- Economic Region comprised of area around and between the four largest cities in the Netherlands
  - Amsterdam, Utrecht, Rotterdam, and The Hague
**SIMILARITIES IN REGIONS**

- **Population**
  - Bay Area: 7.7 million
  - Randstad: 8.1 million

- **Size**
  - Bay Area: 4,100 sq miles
  - Randstad: 3,200 sq miles

- **Economic activity**
  - Bay Area: 781 billion GDP (5th in US)
  - Randstad: 429 billion GDP (4th in EU)
Mobility Hub Current Data

• Density of Employment
  • Transit Hubs and their catchment zones make up only 5% of the land but have 51% of jobs

• Car Commuters
  • Although living close to transit stations 69% commute by car

• Goal:
  • 30% of commuters by car in all hub zones
  • By investing in stations (3 levels) and bike-networks
Connection within the nodes (local) : Improve first and last mile connections in the catchment zones of hubs

Goal:
- For trips under 1 mile: 50% of auto trips reduced
- For trips 1-2 miles: 30% of current auto trips reduced

How can ABC mobility zones reorganize the car network and reduce short trips within catchment zones?

MoveMeter showing short trips (under 3km) within the catchment zone of the San Francisco Mobility Hub in AM Peak
Annual Results of Achieving 30% Auto-Commuters in Bay Area Hubs

Annual Benefits

- **560 million** less miles travelled by Car
- **100 million** less car trips
- **225,000** metric tons CO2 reduced
- **Regional Non-Auto Mode Shift: 15%**
In Summary

- Mobility planning in the Netherlands is integrated system of land use and transportation planning

- Emphasis on all modes of transit! Get from A to B in most efficient way: transit, bike, car

- The hierarchy of nodes (mobility hubs) and four levels of connectivity have led to a successful local, regional, and international transit system

- These strategies can be utilized in the American context to help inform future decisions on Reshaping cities
Thank you!

Questions and Contact Info

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