Towards a synergetic regeneration of the urban public transport system in the socio-spatial fabric of Vinex neighbourhoods
Master thesis: Reconnecting the public transport city

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Presentation subjects

1. Introduction
   *project motivation, context and goals*
2. Research
   *case+literature research and conclusions*
3. Location analysis
   *problems and opportunities in Carnisselande and its surroundings*
4. Goals and ambitions
   *conditions for the design*
5. Design: Masterplan
   *Strategic design on a large level of scale*
6. Design: Light rail environment design
   *Detailed design of a lightrail stop within Carnisselande*
7. Conclusions & evaluation
   *Are the project goals achieved?*
Project motivation/problem statement

**academic**

- Land use
- Accessibility
- Public Transport system
- Human Activity

**societal**

- Problematic Vinex neighbourhoods
- &
- The increasing need for sustainable transport

**practical**

- Carnisselande's future socio-spatial development
- &
- Carnisselande's public transport connectivity
Societal problem statement

Vinex & sustainable mobility

Vinex infrastructure goals
> decrease car usage
> focus on high quality pt
> high density urban areas
> Mixed building
> well connected urban areas

Vinex Urbanity goals
> Concentration
> Mixed functions

Typical Vinex neighbourhood

Increased mobility pressure
the Vinex-neighbourhood of Carnisselande

inhabitants: +/- 20,000 (2010)

dwelling: 10,000 (2010)
Project aims

Knowledge goal

Search guidelines/theories/methods which strengthen the relation between urban regeneration and public transport systems in Vinex neighbourhoods.

Location/Design goals

1. Increase Carnisselande’s connection with - and position within - the regional pt network

2. Improve the relation between pt systems and the socio-spatial fabric within Carnisselande.
Research &

literature &

case studies

IJburg,
Amsterdam

Ypenburg,
Den Haag
Literature conclusions

Research Question:
*What are the relations between urban transport system investment and urban development/planning and what criteria can improve this relation?*

- Large potential reach
- Flexible pt system
- Accommodate mobility patterns of a variety of inhabitants groups
- Accomodate combined trips

*meet their mobility demands!*
Research Question:
What are the relations between upt system investment and urban development/planning and what criteria can improve this relation?

> Functional mix and dwelling density, with increased density near nodes and stops

> High (pt) accessibility: interesting facility and firm settlement location
Research Question:
What are the relations between upt system investment and urban development/planning and what criteria can improve this relation?

> Create tension along the length of the pt line

Generate pt users throughout the day...

... and along the entire lenghth of the pt line
Research Question:
What guidelines can be distilled from upt systems and their environment in Vinex-neighbourhoods?

> Low average distance to stops
- high pt system coverage
Case study conclusions

Research Question:
What guidelines can be distilled from upt systems and their environment in Vinex-neighbourhoods?

> Functional mix and dwelling density, with increased density near nodes and stops.

> Eyes on the street, social security along the pt stop environment.
Case study conclusions

Research Question:
What guidelines can be distilled from upt systems and their environment in Vinex-neighbourhoods?

> Public transport system as the backbone of the neighbourhood

Central transport/functiona l axis within IJburg
### Case study conclusions

**Research Question:**
What guidelines can be distilled from up systems and their environment in Vinex-neighbourhoods?

> Accommodate cycling as a feeder mode: high quality and safe feeder lines and bicycle storage facilities.

*Increased stop service reach due to cycling feeder mode*

*High quality radial slow-traffic lines*
Case study conclusions

Research Question:

What guidelines can be distilled from upt systems and their environment in Vinex-neighbourhoods?

> Create acceptance to live in a high density Vinex-neighbourhood: integrate green/blue into neighbourhood

Direct connection with surrounding water structure on IJburg
Case study conclusions

Research Question:
What guidelines can be distilled from upt systems and their environment in Vinex-neighbourhoods?

> sheltered stops, information provision, safety

Shelter from elements
Real-time information provision

Eyes-on-the-street
Design & Planning tool booklet

*Guidelines for the synergetic implementation of upt systems within the urban fabric*
Location analysis: Carnisselande and its regional context

**Research Question:** What is the current and future state of Carnisselande’s upt system and socio-spatial urban fabric and how do they relate to each other?

- poor high quality **public transport** preconditions
- poor high quality **urbanity** preconditions
Problem statement - **poor high quality public transport preconditions**

- non-flexible pt system: limited transfer possibilities
- limited potential reach
- pt system accommodates limited mobility patterns

Rotterdam’s radial pt system

![Diagram showing reach in 45 mins and 30 mins]
Problem statement - **poor high quality public transport preconditions**

> **Large average distance to stops**
> **Weak public transport system coverage**

**Percentage of inhabitants served**
Tramstops 1-5 serve **28,7 %**

**Centers/hubs served:**
1 commercial center, Carnisseveste
1 neighbourhood center
Problem statement - **poor high quality public transport** preconditions

> low dwelling density throughout the neighbourhood and near nodes and stops

*monotonous, low densities (30 dw/ha - 38 dw/ha)*
Problem statement Carnisselande conclusions

*poor high quality public transport preconditions*

- > parking standard (1 per dwelling) not reached
- > low public transport modal split
- > high level of car usage
Problem statement - poor high quality urbanity preconditions

- low functional density and variety throughout the neighbourhood

Function concentrated inside a mall

Monotonous, limited & segregated facilities
Problem statement - poor high quality urbanity preconditions

- **non flexible real estate**
  Hard to change to future needs

- **monotonous real estate**
  1 family housing (75%) identical blueprints high price level (average € 179.000)

- **No spatial connections with surroundings**
Problem statement Carnisselande conclusions

poor high quality **public transport** preconditions

- > parking standard (1 per dwelling) not reached
- > low public transport modal split

poor high quality **urbanity** preconditions

- > hard to adapt to future
- > limited target groups (young, above modal)
- > limited (work) facilities
- > Remain dependant on surrounding urbanities

Vulnerable for social, economic and spatial problems
Problem statement regional context: IJsselmonde’s pt and urban structure

> Carnisselande is part of IJsselmonde
> area with 400,000 inhabitants yet NO intercity station
Design goals & ambitions: location analysis

Higher quality public transport

- increase potential reach
- connect important functions & concentrations
- fast, efficient, comfortable
- high pt usage
- meet mobility demands of potential users

Higher quality urbanity

- diverse and more flexible urban design
- more and higher variety facilities
- increased connection with surroundings
- use high quality slow traffic network
- accommodate a mix of flavours and lifestyles
Design goals & ambitions: VVPR 2002-2020

> Transferia and P+R areas

> Increase pt system reach and flexibility

reach 45 min (2003)

reach 45 min (2020)
Carnisselande masterplan: the Carnisselijn lightrail
Integration Carnisselante into the regional pt system
Zuidtangent (radial metro line proposed by Rotterdam)

> Flexible pt system

> Accommodate mobility patterns of a variety of inhabitants groups

> Connect important centers en transport hubs
Linking regional and urban networks

> Flexible pt system

> Coherent, covering and efficient regional transport system
Closing the IJsselmonde pt loop: connecting Ridderkerk

> Flexible pt system

> Accommodate mobility patterns of a variety of inhabitants groups
Increased potential reach

> Large potential reach

> Flexible pt system

> Accommodate mobility patterns of a variety of inhabitants groups

> Accommodate combined trips
Integrated high quality slow traffic network

> Create acceptance to live in a high density Vinex-neighbourhood: integrate green/blue into neighbourhood

> Accomodate cycling as a feeder mode: high quality and safe feeder lines
Carnisselijn running within the Middeldijk.
Increased pt system coverage - from end of the line to interwoven

- Low average distance to stops - high pt system coverage
- Create tension along the length of the pt line

Likelihood of use increase from 11% to 20+%.  
**Percentage of inhabitants served**  
Lightrail 58%  
incl. tram: 71%  

**Centers/hubs served:**  
4 commercial centers  
4 neighbourhood centers  
2 transport hubs
pt system & the road network

> Mixed-use zones should be reachable by car

> Create P+R areas where highway and pt meet
Increased touch points between national road system & pt network

> Releasing pressure from the city’s road system

> More P+R locations

*segregated pt networks: national - urban*
Increased access points (inter) national train system

> Linking the national pt network to the regional & urban pt network

> Intercity station (Stadiumpark) within IJsselmonde
Development zones along the Carnisselijn

- A29 zone
- Business Transferium
- Suburban
- Neighborhood living and facilities
- Neighborhood center
- Regional facilities
- River front development
- Living, business, leisure
A29 zone (Vaanpark lightrail stop environment)

> decrease barriers
> work facilities
> urban environment
> diverse urban program
linked to pt backbone
Portland
Portland’s current situation: *open green and blue spaces in between neighbourhood segments*
Neighbourhood atmosphere of the Portland stop and urban environment
> High slow traffic accessibility

> Pedestrian/cyclist area

> pt stop accessible by car from the Portlandsebaan
Portland stop environment, a neighbourhood oriented center

*Binding the neighbourhood segments in terms of spatial structure, transportation and functions.*
Mixed use area

> Functional mix and dwelling density, with increased density near nodes and stops.

> Eyes on the street, social security along the pt stop environment.

> Sheltered pt stop

> Functional diversity within the neighbourhood as a whole
New urban living environment (apartments)

> Living environment diversity within the neighbourhood as a whole.
Integration of green and blue structures

> Create acceptance to live in a high density Vinex-neighbourhood: integrate green/blue into neighbourhood
Location analysis

Goals & Ambitions

Masterplan

Design

Conclusions

**Introduction**

**Research**

**Location analysis**

**Goals & Ambitions**

**Masterplan**

**Design**

**Conclusions**

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**Dike routes**

**Neighbourhood routes**

**Commercial corridor**

**Boulevard/water route**
Design usage example: Fam. De Vries

Jan  
*Teacher at Erasmus University*

Sabine  
*Manager at VROM*

Marit & Sven  
*Primary school students*

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work Sabine

work Jan

school and house

Portland LR stop
Sabine de Vries - a day in her life

8:15 am

8:35 am

9:20 am
Jan de Vries - a day in his life

8:00 am

8:10 am (5 mins transfer time)

8:20 am

8:38 am

Line E + Zuidtangent

cycling path

shopping corridor

school
Project aims achieved?

Knowledge goal

Search guidelines/theories/methods which strengthen the relation between urban regeneration and public transport systems in Vinex neighbourhoods.

Evaluate

1. Increase Carnisselandes connection with - and position within - the regional pt network

Implement

2. Improve the relation between pt systems and the socio-spatial fabric within Carnisselande.
Is the proposed plan realistic?
Yes, because ...

> sufficient ridership can be generated (over 12,500 unique users/day)
> sufficient urban program can be developed (950,000 to 1,200,000 m²)
> contribution to the overall PT network and replacement of other investments in infrastructure and new urban layouts (verkeersbundels op Zuid, Zuidplaspolder)

However hard to realize due to political and financial reasons.

It is an interesting way to look at:
- the future regeneration options of Vinex neighbourhoods;
- the way we use, integrate and interpret PT networks into the socio-spatial urban fabric.
Questions?

Thank you for your attention!