Automated Valuation in the Dutch Housing Market

- The web-application ‘MarktPositie’ used by NVM-realtors
- Data
- Fully automated valuation
  - Similar houses
  - House-price inflation
  - Hedonic modelling
  - Overall precision
- Automated mass valuation
Housing data of the NVM

- NVM market share > 70%
- Characteristics of the house itself
- Location and characteristics of its surroundings that are relevant to the market value of the house
- Sales status (last asking price, earlier asking prices, time on offer)
# House characteristics

## General characteristics

### House type
- **Type**: *Eengezinswoning*

### House maintenance
- **State**: Good
- **Roof**: Good

### Insulation
- **Type**: C.V.
- **Condition**: Good

### Facilities
- **Plumbing**: Geen/Cotekend

### Other
- **Style**

## Cadastre data

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>House surface</td>
<td>250 m²</td>
</tr>
<tr>
<td>Electricity type</td>
<td>Volt eigenisom</td>
</tr>
<tr>
<td>Lease type</td>
<td>Net/orbeterend</td>
</tr>
</tbody>
</table>

## Details

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>House surface</td>
<td>155 m²; Total area: 800 m²</td>
</tr>
<tr>
<td>Construction period</td>
<td>Between 1960 and 1970</td>
</tr>
<tr>
<td>Roof type</td>
<td>Orbeterend</td>
</tr>
</tbody>
</table>

## Clubhouse
- **Type**: Geen tijn

## Garage
- **Type**: Geen garage
- **Capacity**: auto's

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**Created on**: 31-10-2007

**Reviewed by**: Lka. Ingeautenticatie

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**Presented by**: Herenstraat 53, 3431 CX Nieuwegein

**Website**: opdrachtgever en adres waarnemen
Fully automated valuation

- Characteristics of the House
  - Find similar houses
  - Apply similarity function
    - Similar Houses Ranked according to Similarity
      - Checks for heteroscedasticity and autocorrelation
        - Hedonic regression
          - Regression coefficients
            - Goodness of fit
              - Estimated Market Value

MIDAS Database: all houses sold since 1985
Similar houses

- Starting set of similar houses based on the type of house, the geographical distance to the valuated house and the date of sale
- Similarity functions for different types of characteristics
- Three groups based on importance to the market value and possibility of improvement
- Weighted similarity score for each house
House-price inflation

- Selling prices are recalculated to prices at the valuation date
- Price development in market segments:
  - price development within the segments is comparable, between segments the development is different
  - the price development over a longer period of time must be smooth
Automated hedonic modelling

- Weighted least squares regression
- Checks for extreme values
- Checks for intercorrelation
- Every time a valuation is wanted the whole estimation process is gone through
- The application is self-learning and near-real time in terms of the conditions on the Dutch housing market
Overall precision

- Median average difference selling price and calculated market value:
  - Houses: 5% - 11%
  - Apartments: 4% - 15%

- Check on the characteristics available for the houses that are valued by an experienced realtor reduces smaller and bigger mistakes in the characterization of the house at hand greatly and improves the precision considerably.
The valuated house compared with the similar houses
Automated mass valuation

- ‘MarktPositie’ can straightforward be adjusted for the automated mass valuation of the entire housing stock of a region
- For the set of houses to be valued the full set of characteristics as used by the application must be available
- Some additional data-gathering is necessary to apply ‘MarktPositie’ as it is now in any given municipality