

Can modern homes be an example for smart homes?

Thea Weijers

EURAS conference 16-17 June 2008

Smart homes: no mass product

- Rivalling technologies
- Problematic standardization
- Low penetration rate of home networks (TP-cable)
- Might serve the public interest:
 - Save energy (smart meters)
 - Support independent living of old people



@thesmartmeteringshop.com

“Government should intervene”

- Co-ordinate standardization process
- Impose a standard
- Make home networks mandatory in new houses
- “As it has done in the case of domestic electric installations and the standard NEN 1010”

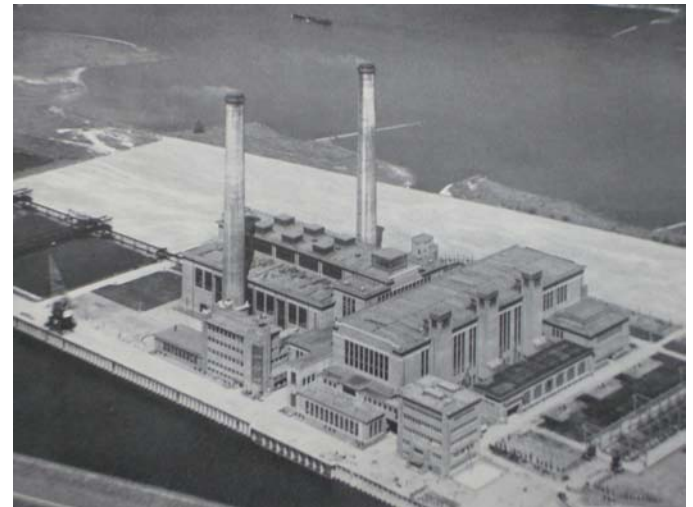


Research

- What has been the role of government in the development of NEN 1010?
- What has been the influence of NEN 1010 on the diffusion of electrical installations in private homes?
- Nijmegen, a medium sized town, in the period 1910-1965
- Building regulation was responsibility of municipalities
- Electricity companies were owned by municipalities

And then there was light

- 1906 Council decided to set up Municipal Electricity Works:
 - In response to citizen pressure group and several potentially big customers
 - New source of income
- Power station completed in 1908
- Shops, private homes and hotels important users of lighting




Regulation

- 'Regulation of the conditions for the delivery of electricity by the Municipal Electricity Works'
 - Domestic installation is responsibility of home owner
- 'Installation Directive'
 - Technical description of necessary properties of cables and other materials
 - Inspection by MEW
- Tariff system designed to increase number of customers
 - Free coin meter installations for the working class

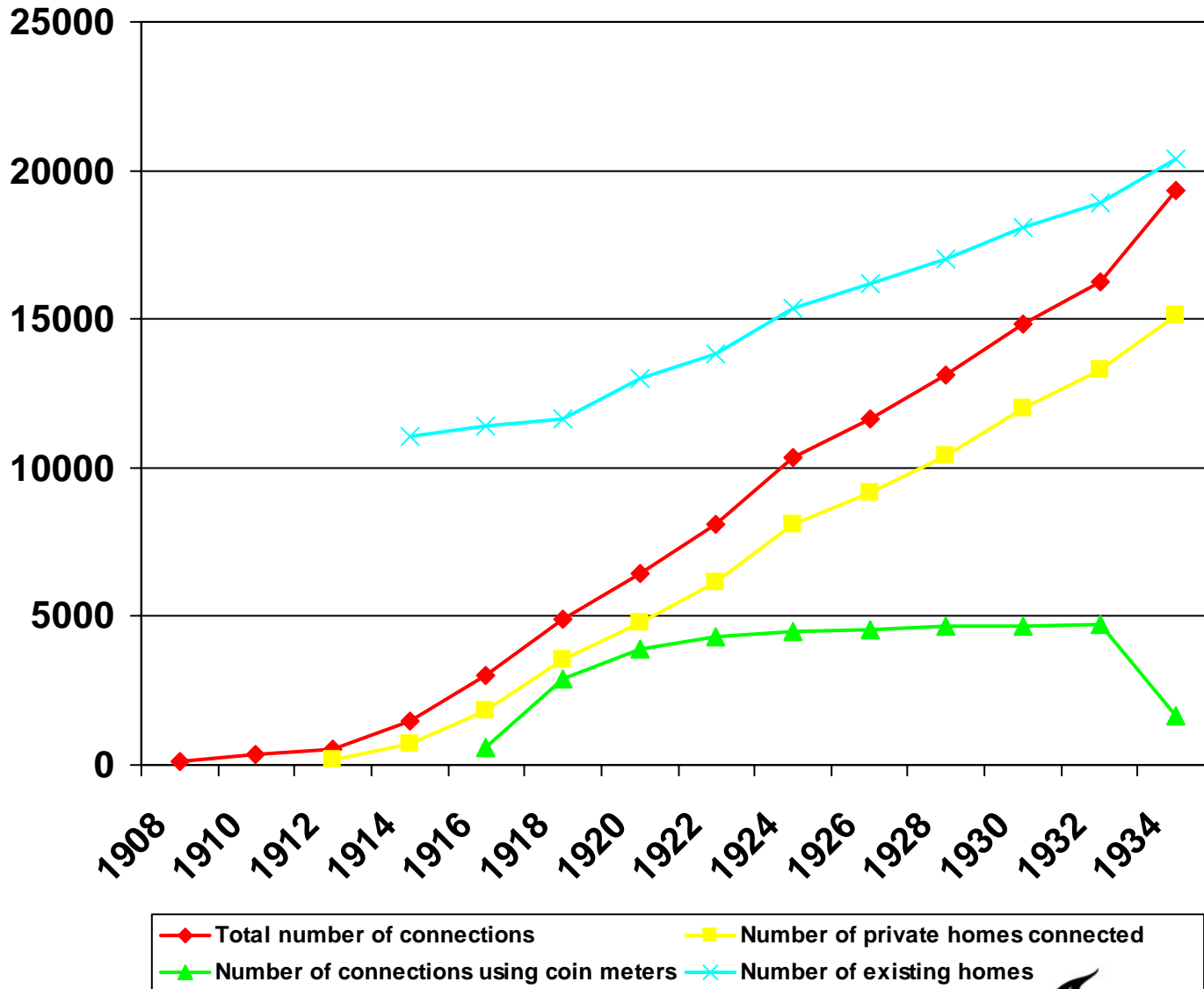
Substantial momentum 1920-1940

- Number of connections grew at substantial rate
- Electricity as a symbol for modernity and civilisation: the creation of the modern home
- Growing number of professional organizations:
 - Association of Directors of Electricity Companies
 - Union of Electro-technical Trade and Industry
 - Dutch Women's Electrical Association
- Vocational training for electricians



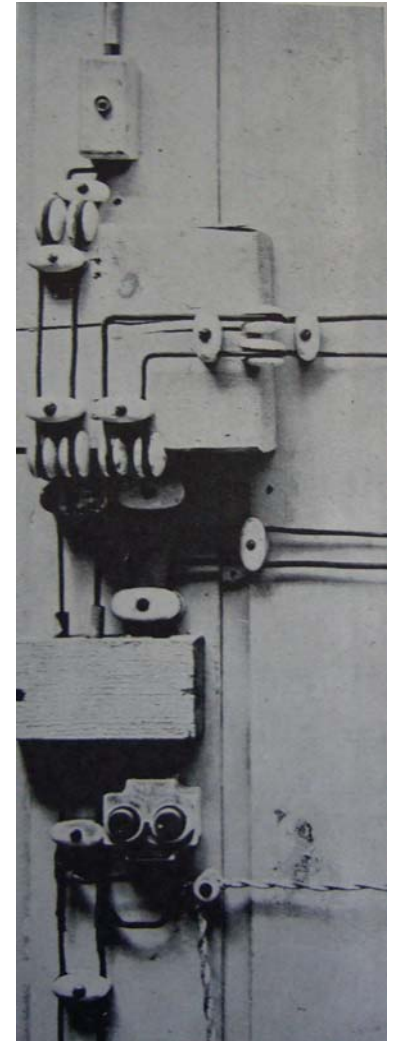
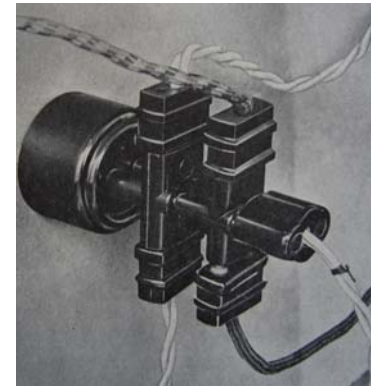
Lohr, first director of electricity company 

Number of Connections



Certification of installers

- Bad installations were the downside of growth
 - Unsafe and unreliable
 - Bad for people and business
- The industry set up local and national certification of installers
- The installation directive of 1930 prescribed the use of certified installers as a condition for a connection



1930's Standardization and N1010

- Association of Directors and Main Committee for Standardization
- 1934 Provisional Standard for Domestic Installations V1010
 - Certified installers
 - Certified materials
 - Certified methods
- 1935 Industry issues 'Guideline for Installations'
 - Minimum amount of lighting points and sockets in each room
- Both were included in Installation Directive
- Debate: quality versus costs



Shield certified electrical installer

50's: Changes in building process

- Building high volumes:
 - Industrialization of building industry
 - Unification of local regulations
- Association of Dutch Municipalities and Study Group for Efficient Building
 - 'Provisional Hints and Directives' 1946
 - Included provisional installation directive
- Nijmegen: New Installation Directive, effective 1950

Debate over new directive

- Prescribed possibility to connect electric cooking and heating:
 - connection points
 - empty ducts
- Debate
 - Public interest or market interest?
 - Future proof or a waste of money?
 - Consumer choice or disregard for consumer behaviour?
- Only slight changes were made
- National 'Model Building Regulation 1965' includes NEN 1010

Conclusion 1: the influence of NEN 1010 on the diffusion of domestic installations?

- Diffusion was already substantial
- It ensured that lack of safety did not become a 'reverse salient'
- In combination with the industrial guideline the standard led to a growth in the scale of a domestic installation: increased number of sockets and lighting points:
 - Innovative effect of standard
- In the 70's the minimum scale became the maximum scale:
 - Conservative effect of standard

Conclusion 2: the role of government



- N1010 was created by electricity industry, especially the Association of Directors.
- N1010 was included in the Installation Directive
- The Directive became part of municipal regulation because municipality owned the company
- In case of debate the municipal council negotiated
- Domestic installations were not part of legislation and were not mandatory until Building Decree of 1965
- By then it was a widely accepted standard
- The role of government as regulator was limited

What can smart homes learn?

- Standardization requires dominant needs or dominant actors
- Smart homes don't require new network outside homes
 - No strong need for compatibility
 - No strong actor
 - More comparable to consumer goods
- Regulation and legislation follows standardization
- Unless there is a strong public interest
- Smart home industry has to solve its own problems

Thank you for your attention!

Questions and comments?



TU Delft