Privacy determines whether new technology is accepted in the home

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Three values determine most whether end users and other parties involved accept a smart electricity meter in their home: privacy, active consent for passing on data and the correctness of that data – in this order. For a home energy management system efficiency and ease of use come top of the list. But privacy ranks third place here as well. Researchers from the NWO programme Responsible Innovation discovered this.

A research group at Delft University of Technology, led by Prof Jeroen van den Hoven and including Dr Andreas Ligtvoet and Dr Geerten van de Kaa worked together with among others Siemens, the Dutch metrological institute VSL, the norm institute NEN and the Dutch union of consumers. They investigated which values are important for the acceptance of two energy technologies that penetrate far into the private domain: the smart meter and the home energy management system. First of all they made a long list based on the literature and then they asked end users (or their representatives), producers, regulators and other parties involved to prioritise the values.

Smart meter

The smart electricity meter is vital for making the energy infrastructure flexible and future-proof. It must be able to cope with peaks in the demand (for example, because everyone wants to put their electric car on the charger at 5 p.m.) and in the supply (for example, on a fine day

when solar panels produce a lot of energy). The key aspect for acceptance of the smart meter is that end users can determine which information is passed onto the energy supplier (privacy and active consent). In addition users and suppliers want to be assured that the data are correct.

Energy management

For a home energy management system the researchers discovered that two other criteria apply. Such a system ensures that consumers can register and manage the use of energy (including self- generated energy) from different sources. To be successful the system must yield users a financial gain. Secondly the system must be simple to use. Thirdly, in this case too, the users want to determine who has access to their data.

Unexpected resistance

The partners in the project are interested in insights into values that are relevant for the acceptance of technology. In the past, instruments that worked well technically nevertheless failed due to unexpected resistance from users. The first version of the smart meter was a classic example of this; for many people it was an eye-opener. At its introduction, the Ministry of Economic Affairs encountered stiff opposition. Consumers were of the opinion that far too much personal information was quietly passed on with the detailed registration of their electricity use. The smart meter had to go back to the drawing board and that resulted in delays and large financial losses.

Value-sensitive design

With this study the researchers have demonstrated a way of finding out at an early stage what values users and other interested parties consider

relevant. If the values are known, the technology can be designed in such a way that the requirements of users are met and the technology can be implemented quickly and successfully. This is what happened, for example, with the Wifi technology for wireless Internet. The users were involved in the design and the technology was enthusiastically embraced straightaway.

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