AutHoNe – Autonomic Home Networking

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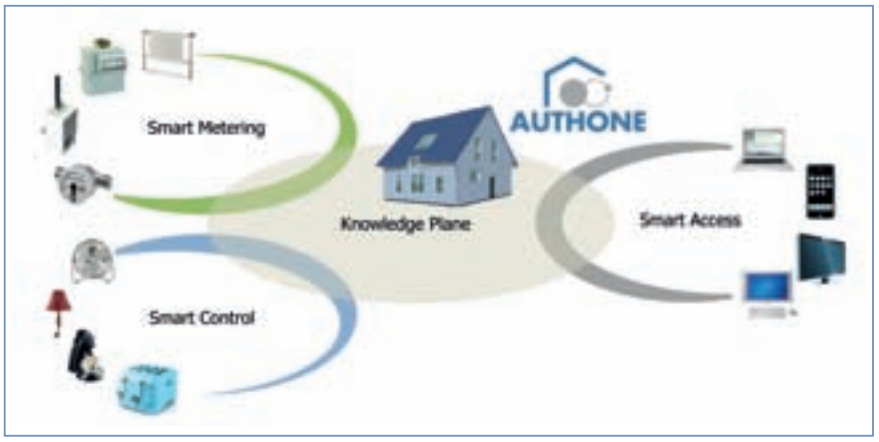
Our ambience is getting more and more enriched by technical equipment that aims to support us in our daily activities. In our homes these devices are motion detectors that turn on the light or start playing our favourite tune when we enter, microchips that control heating systems, Internet-enabled TV sets and set-top boxes or remote controls for various devices and functions.



The AutHoNe concept

The support that all these devices provide to residents in their daily lives can be enhanced by facilitating cooperation between them. An intelligent home network that has access to all entities in a house might optimize energy efficiency, for instance through demand driven heating. It could also increase safety and security via presence control of, e.g., iron and stove or via automated door/window locking mechanisms and enhance comfort by adapting to user needs and habits.

One of the major objectives of AutHoNe is to support this kind of cooperative scenarios by providing autonomic mechanisms for integrating new devices into home networks. Our focus is not only on enabling devices to participate in the cooperative scenarios, but also to autonomously optimise the connected nodes all the time.

Knowledge sharing

Authone is creating a middleware that is especially taking into account the heterogeneous nature of home networks. Bridging the resource gap – e.g. computing power, memory, and bandwidth – is the first challenge. The range goes from a variety of low-resource embedded devices, like sensors and actuators in light switches, to one or more powerful control servers that are installed in a typical home of the future.

The second focus is on knowledge representation by means of a flexible data model especially being designed by the project.

Security

Security is essential in our scenario. We introduce a home-local public key infrastructure for that purpose. Our initial "layman proof" registration process equips all nodes with the necessary key and certificate material. Additionally, we equip the network with autonomously adapting trust ratings. Our identities and trust ratings are available to services like video streaming, allowing them to profit from our security mechanisms as well.

Remote access

When interconnecting home networks we have to consider that every home is protected by a combination of NAT/Firewall. Thus, AutHoNe delivers concepts that allow for the secure autonomous configuration of such devices in order to support service usage across multiple domains.

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Further information is available on the Celtic website at *www.celtic-initiative.org/Projects/0OClosed-projects/AUTHONE* and on the website of the German partners at *www.authone.de*.