BASE MoVE - A Basis for a Future-proof IoT Sensor

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Abstract. For a long time, the Internet of Things was considered the vision of interconnecting every device, leading to fundamentally new and pervasive application scenarios. In practice, however, the projected growth and realization of IoT scenarios is often impeded by practical problems. The BASE MoVE research project, a cooperation between universities and industrial partners, took a holistic look at requirements and inhibitors for investing in IoT solutions, using Ambient Assisted Living as an application domain example. The perspectives of all stakeholders involved were taken into account during the design of a solution architecture, from the user to the manufacturer to the service provider and housing association. This paper presents the resulting modular base platform for IoT applications. Power supply through battery and energy harvesting enables low installation costs, since no expensive installation of cable ducts in existing buildings is required, which reduces the initial investment. The use of open source software and the support of several common smart home protocols also prevents a lock-in effect and dependency on a single manufacturer. This makes it possible to protect investments from market-driven changes from one manufacturer's ecosystem to another. Over-the-air updates allow for secure operation as well as remote maintenance, no longer requiring expensive in-person maintenance. Finally, the manufacturing of the solution as a hardware module, as realized in BASE MoVE, also allows for easier creation and certification of new sensor devices in a company's product portfolio. To evaluate the developed solution, an apartment was equipped with different sensor devices and a smart home scenario was implemented. The feasibility study could demonstrate that it is indeed possible to create a base platform that meets the requirements of the stakeholders involved. In addition to the scientific results, the project gives an assessment about components' maturity and cost, which is valuable for the commercial project partner and its market entry strategy.

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