World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:12, No:05, 2018

End-Users Tools to Empower and Raise Awareness of Behavioural Change towards Energy Efficiency

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Abstract : This research work aims at developing a solution to take advantage of the potential energy saving related to occupants behaviour estimated in between 5-30 % according to existing studies. For that purpose, the following methodology has been followed: 1) literature review and gap analysis, 2) define concept and functional requirements, 3) evaluation and feedback by experts. As result, the concept for a tool-box that implements continuous behavior change interventions named as engagement methods and based on increasing energy literacy, increasing energy visibility, using bonus system, etc. has been defined. These engagement methods are deployed through a set of ICT tools: Building Automation and Control System (BACS) add-ons services installed in buildings and Users Apps installed in smartphones, smart-TVs or dashboards. The tool-box called eTEACHER identifies energy conservation measures (ECM) based on energy behavioral change through a what-if analysis that collects information about the building and its users (comfort feedback, behavior, etc.) and carry out cost-effective calculations to provide outputs such us efficient control settings of building systems. This information is processed and showed in an attractive way as tailored advice to the energy end-users. Therefore, eTEACHER goal is to change the behavior of building´s energy users towards energy efficiency, comfort and better health conditions by deploying customized ICT-based interventions taking into account building typology (schools, residential, offices, health care centres, etc.), users profile (occupants, owners, facility managers, employers, etc.) as well as cultural and demographic factors. One of the main findings of this work is the common failure when technological interventions on behavioural change are done to not consult, train and support users regarding technological changes leading to poor performance in practices. As conclusion, a strong need to carry out social studies to identify relevant behavioural issues and to identify effective pro-evironmental behavioral change strategies has been identified.

Keywords : energy saving, behavioral bhange, building users, engagement methods, energy conservation measures
Conference Title : ICCBE 2018 : International Conference on Civil and Building Engineering
Conference Location : London, United Kingdom
Conference Dates : May 14-15, 2018