

Using Ontologies for Knowledge-based Monitoring of Building Energy Systems

Hervé Pruvost¹ and Olaf Enge-Rosenblatt¹

¹Division Engineering of Adaptive Systems EAS, Fraunhofer Institute for Integrated Circuits IIS, Zeunerstr. 38, 01069 Dresden, Germany; e-mail: herve.pruvost@eas.iis.fraunhofer.de

ABSTRACT

Many developments and research have led in last decade to enhanced building automation systems embedding data analytics algorithms and performing energy-optimized building systems control. The presented approach aims at providing a complementary analysis layer compared to such systems by the means of semantic modeling and knowledge reuse. For that purpose, it relies on a semantic description of a building energy system from which energy conservation measures can be derived. Starting from an ontological description of the building energy system, an expert system is proposed that provides a monitoring plan and operation advices to building users and managers. This system consumes for a part real-time building data gathered during its operation. For another part, it relies on information about the built-in technical systems which is usually available in initial design models. The resulting software application might be used in the future as an add-on to existing building management systems and for easing their configuration.