

## Dynamic Process Model for Designing Smart Spaces Based on Context-Awareness and Computational Methods Principles

**Authors :** Heba M. Jahin, Ali F. Bakr, Zeyad T. Elsayad

**Abstract :** As smart spaces can be defined as any working environment which integrates embedded computers, information appliances and multi-modal sensors to remain focused on the interaction between the users, their activity, and their behavior in the space; hence, smart space must be aware of their contexts and automatically adapt to their changing context-awareness, by interacting with their physical environment through natural and multimodal interfaces. Also, by serving the information used proactively. This paper suggests a dynamic framework through the architectural design process of the space based on the principles of computational methods and context-awareness principles to help in creating a field of changes and modifications. It generates possibilities, concerns about the physical, structural and user contexts. This framework is concerned with five main processes: gathering and analyzing data to generate smart design scenarios, parameters, and attributes; which will be transformed by coding into four types of models. Furthermore, connecting those models together in the interaction model which will represent the context-awareness system. Then, transforming that model into a virtual and ambient environment which represents the physical and real environments, to act as a linkage phase between the users and their activities taking place in that smart space . Finally, the feedback phase from users of that environment to be sure that the design of that smart space fulfill their needs. Therefore, the generated design process will help in designing smart spaces that can be adapted and controlled to answer the users' defined goals, needs, and activity.

**Keywords :** computational methods, context-awareness, design process, smart spaces

**Conference Title :** ICBDSM 2016 : International Conference on Big Data and Smart Cities

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** December 01-02, 2016