Architecture Oriented Design to Enhance the Testability of Smart Tourism City IoT System

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Architecture-Oriented Design to Enhance the Testability of Smart Tourism City IoT System

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Abstract

Testability enhancement is a key factor in the successful Smart Tourism City IoT System (STCIS) systems development. Disciplined system layering, published interfaces, well-defined components, and well-defined behaviors are four main factors to enhance the testability of STCIS. Architecture-oriented design uses the structure-behavior coalescence (SBC) approach to formally design the integration of systems structure and systems behavior of a system. Architecture-oriented design contains three fundamental diagrams: a) framework diagram, b) component operation diagram, and c) interaction flow diagram. Architecture-oriented approach uses three fundamental diagrams: a) framework diagram, b) component operation diagram, and c) interaction flow diagram to accomplish the design of STCIS. Through framework diagram, architecture-oriented design of STCIS demonstrates tremendous effects of disciplined system layering. Through component operation diagram, architecture-oriented design of STCIS demonstrates large effects of well-defined components and published interfaces. Through interaction flow diagram, architecture-oriented design of STCIS demonstrates tremendous effects of well-defined behaviors. Structural equation modeling (SEM) refers to a diverse set of unrelated computer algorithms and statistical methods that fit networks of constructs to data. Finally, we use SEM to verify that architecture-oriented design is really be able to enhance the testability of STCIS.

Keywords: Smart Tourism City IoT System, testability, architecture-oriented design, structural equation modeling