

University of Macau

Abstract

SEMANTIC INTEGRATION OF HETEROGENEOUS
ONLINE HOTEL INFORMATION SYSTEMS

by Yufeng Luo

Thesis Supervisor: Assistant Professor, Jingzhi Guo
Master of E-Commerce Technology

Global hotel electronic markets had fast development in recent years, more and more hotels used Internet to publish their information and sell tourist products. However, hotel management systems are fragmented in the sense that each is an information island. The interoperation of hotel information between hotels and tourists is difficult especially in the level of semantics communication. To solve this problem, many online hotel information platforms run by tourism service providers adopt integration approaches for heterogeneous hotel information integration. However, existing online platforms are limited in exploring the issues, business strategies, and technical solutions of hotel information integration. This thesis aims at the semantic integration of heterogeneous online hotel information. It creates a new Hotel Power Theory for business integration strategy and a novel Hotel Information Collaboration Platform (HICP) for technical integration solution.

Hotel Power Theory is a theory of how to identify the hotel's active type for joining an information integration plan, which means the hotels have power with regard to hotel information integration, the larger and more famous hotels will have more power than small hotels. Based on this theory, the hotel service providers can classify the different kinds of hotels, and make specific business strategies for attracting more hotels to join in the integration system. The main contribution of Hotel Power Theory is its provision of a theory to identify and classify hotels, finding out the most important requirements of each type of hotel, and helping hotel service providers to make correct integration strategies.

Hotel Information Collaboration Platform is a technical solution of how to achieve the Hotel Power Theory's integration strategies. The design foundation comes from CONEX approach, it resolves semantic conflicts between the integration platform and the distributed hotels' local management systems, and provides a flexible framework to add varied business applications. The main contribution of Hotel Information Integration Platform is its provision of a platform for heterogeneous hotel semantic integration and its achieving the idea and strategies proposed in Hotel Power Theory.

HICP has been implemented in a HICP Prototype. This prototype demonstrated the services of collaborative concept design for semantic conflict resolution, and heterogeneous concept transformation for accurate and automatic concept exchange between the core platform and the distributed hotels. This prototype is implemented on Microsoft .Net framework and VB.net programming, and it conforms to the standards of W3C XML, HTTP and Web Services Description Language in both document specification and document transport. This prototype has been evaluated by *information richness* and *answer ratio*, and been proved that the HICP has more information, powerful search function and effective programming than other existing hotel information integration platforms.