Reference:	**Hotelkit-Semantic Web**
Topic:	Semantic Integration for a Hotel Management Communication System
Lecture-Type:	Practical course, Bachelor thesis
Start:	As soon as possible
End:	To be defined
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Background

Communication and message exchange between guests and the hotel management team enable pleasant stays in the hotel for guests and allow seamless hotel processes to address guest requests, such as housekeeping, reservations for rooms and restaurant tables. In practice, guests typically express their requests via phone or personally with guest service team members, who pass orders or tasks to service team members via phone. In a large hotel, these communication paths may become inefficient, error-prone, and might lead to dissatisfied customers.

The *hotelkit*[1] communication platform enables direct communication via smartphones or laptops by assigning requests and tasks to service team members. The application also allows status tracking for requests and tasks. However, guests still have to come to the guest service to express their requests.
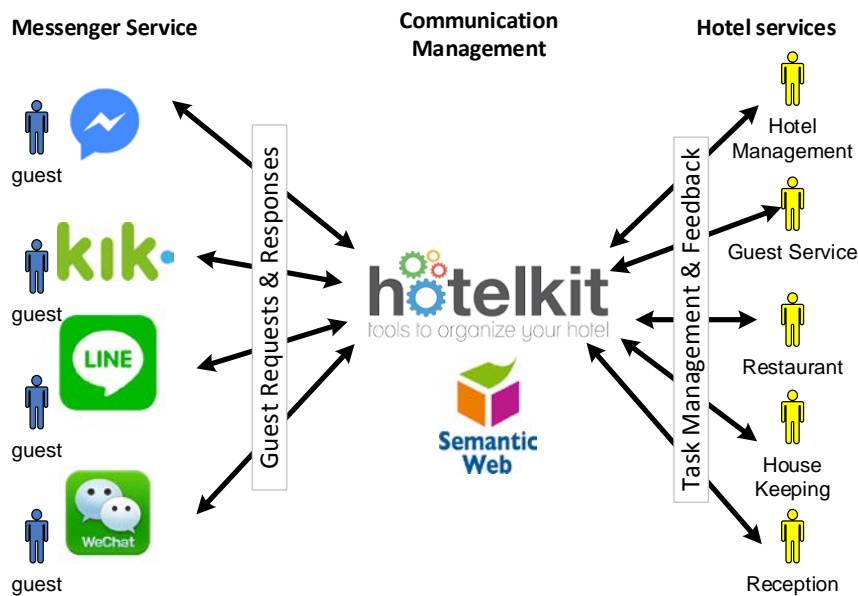

Figure 1: Integrated Hotel Management Communication System.

Common communication approaches, such as messenger services (e.g., *Facebook*[2] , *kik*[3], *line*[4], and *we chat*[5]) are frequently used for private, public, and commercial use. However, there is only limited support for integrating these communication services into specific applications for hotel communication. Therefore, the goal of this work is to bring together messenger services and the *hotelkit* platform. Figure 1 presents the planned concept of an integrated hotel management and communication system with semantic technologies for integration and analysis. The main goal is

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[1] Hotelkit: https://www.hotelkit.net/de/

[2] Facebook: https://www.facebook.com/

[3] Kik: https://www.kik.com/

[4] LINE: https://line.me/de/download

[5] WE Chat: https://www.wechat.com/en/

to extend the *hotelkit* application by integrating various messenger services (e.g., plug-ins) and to support hotel management processes.

Tasks

Main goal is to investigate and evaluate *Semantic Web* concepts [1] for automated analysis and scheduling (e.g., communication between messenger services and *hotelkit*, guest request management, and tracking of requests and orders) of messenger service requests. While human operators can be the scheduler of received messages, this step should be automated by defined semantic web technologies. Individual sub-tasks include

- Identification of *hotelkit* platform requirements and application scenarios for integration and request analysis.

- Systematic investigation of *Semantic Web* concepts that are capable of analyzing messages (coming from messenger services) in the context of hotel application scenarios.

- Development of a concept and prototype implementation for automated task classification and scheduling, e.g., prioritization of defined request classes with respect to resource scheduling.

- Report on the system requirements, design, and evaluation results.

Expertise and Skills Needed

Based on the selected work tasks, the required expertise and skills may vary. For this project, at least two of the following skill types are needed.

- Software Engineering Skills, e.g., requirements analysis, implementation, testing.
- Java and the standard technology stack (e.g., Build Tools, Issue Tracker, SCM)
- Semantic Web technologies, e.g., for automated analysis of messages (typically text analysis)
- Interest in working with real-world business applications.

You can learn …

- How to systematically elicit requirements and evaluate integration needs.
- The application of Semantic Web concepts in real-world business settings.
- To practice implementation skills in context of business software and messenger services.
- to interact with real business partners in professional software development environments.

References

[1] Biffl S., Sabou M. (Eds): "Semantic Web Technologies for Intelligent Engineering Applications, Springer, 2016.