

Abstract

During the last few years the medical IT infrastructure within clinical environments has changed dramatically. It has become common for a modern hospital to have a multiplicity of department-specific information systems that assist their employees. Worldwide, many different vendors are busy developing new solutions relying on the latest technologies as well as on the latest medical workflow requirements. These applications are brilliant on their own and work efficiently within their scope, for example their department. The major problem, however, is the lack of communication among these systems. Most of these applications do not offer a mechanism to interact with other clinical systems. If communication solutions exist, they are very vendor-specific and thus unable to exchange information with another vendor's system. Because of this problem, a strong need to introduce information systems that are able to communicate with one another in an efficient way and ignore the fact that they have been developed by different vendors arose within the clinical domain. This communication is necessary in order to reach the long-term goal of creating a heavily networked health care system together with the introduction of global patient records.

The IHE (Integrating the Health Enterprise) initiative aims to introduce clinical information systems that follow strict guidelines so that a high level of connectivity among the applications is ensured. As a result, IHE provides different technical frameworks which can be seen as guidelines for developing modern information systems. Providing various use cases, vendors can implement a standardized behaviour for miscellaneous scenarios that appear in the health care process.

The majority of this work deals with providing a mechanism that allows efficient communication with other medical systems. This solution had to follow the guide-

lines specified by IHE in order to ensure a high level of integration into an existing medical IT infrastructure. With the help of this solution, other medical applications are now able to communicate with the multimedia archive DOMAIN, having the goal to retrieve reports or even whole documents in a self-defined content type. Every system that claims to be an IHE-compliant Display Actor is now able to make use of some basic functionality of the multimedia archive DOMAIN.

Moreover, an in-depth analysis of the existing multimedia archive brought the current level of IHE compliance to the surface and revealed some points that must be changed in order to be even more IHE-compliant. A further goal of this analysis was the publishing of the current IHE Integration Statement for the clinical multimedia archive DOMAIN. With the help of this statement, potential customers can see the current IHE compliance level at first glance and decide whether DOMAIN fits within their existing health care infrastructure or not.

At any rate, the main goal of this thesis was the implementation of a communication module that will help to optimize the existing clinical workflow.