

# Chapter 13

## Integrated Hospital Information System Architecture Design in Indonesia

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### ABSTRACT

*Implementing Hospital Information System is an ultimately important practice that should be performed by hospitals in order to deliver accurate, timely, complete, and easily accessible data/information in an integrated manner. Given the specific characteristics of Indonesia, the objective of this research is to design an Information System Architecture as part of the Enterprise Architecture based on The Open Group Architecture Framework in order to support the Hospital Information System implementation in Indonesia. This research focuses on the hospitals basic processes, viz. the emergency processes, the inpatient processes and the outpatient processes. The integration aspect of the architecture should connect the hospitals with other related stakeholders. This research is a qualitative study by conducting interviews and observations in three government public hospitals, several directorate generals of the Indonesian Ministry of Health and a representative from the WHO. The result of this research is an integrated Information System Architecture model.*

## INTRODUCTION

Hospitals as one of the public entities are expected to provide optimal services to the public and other stakeholders. To provide optimal services, information technology can be used, which has been acknowledged by the Directorate General of Health Development (*Direktorat Jenderal Bina Upaya Kesehatan*) of the Indonesian Ministry of Health by endorsing the use of information technology (IT), such as information systems, in the healthcare sector. The use of information technology in the healthcare sector is commonly known as e-health (Rawabdeh, 2007). The information system that is specifically designed for hospitals is widely known either as the Hospital Information System (HIS) or the Clinical Information System (CIS) (Petroudi & Giannakakis, 2011). According to Petroudi and Giannakakis' study, the Hospital Information System can provide solutions in producing effective and efficient operational processes in a hospital by integrating the entire process from the registration process to the payment process in conjunction with all of the required information.

The Hospital Information System is not only important for supporting operational processes in the hospitals but also important for the government, which is a stakeholder, because it can effectively and efficiently provide data of citizens' health information to enable the government to make decisions regarding healthcare facilities and healthcare programs to manage and finance healthcare facilities and medical research (World Health Organization, 2001). In addition, Law Number 14/2008 on the Public Information Disclosure, the President Regulation Number 12/2013 regarding Health Insurance, and the Minister of Health Regulation Number 1691/Menkes/Per/VIII/2011 regarding Hospital Patient Safety agree that hospitals should be able to provide accurate, timely, and complete health data/information that is easily accessible for the public and other relevant stakeholders. Thus, implementing the Hospital Information System is an important practice that should be performed by hospitals to not only produce effective and efficient operational processes but also to provide and deliver accurate, timely, complete, and easily accessible data/information in an integrated manner.

Pursuant to the Regulation of the Minister of Health Number 1144/Menkes/Per/VIII/2010 regarding the Organization and Working Procedure of the Ministry of Health, Article 106 states that the Directorate General of Health Development shall: (1) formulate and implement policies in the area of health development; (2) formulate norms, standards, procedures, and criteria in the area of health development; (3) provide technical guidance and evaluations in the area of health development; and (4) implement the administration of the Directorate General of Health Development. To date, although the Directorate General of Health Development acknowledges the importance of e-health, which includes the Hospital Information System, the Directorate General of Health Development has only issued one regulation (Kementrian Kesehatan RI, 2011), the Regulation of the Minister of Health Number 1171/MENKES/PER/VI/2011 on the Hospital Reporting System (HRS), which manages the reporting mechanisms and defines the types of reports that are required by the Ministry of Health from each hospital as the basis to determine health policies in Indonesia. In addition to the Directorate General of Health Development, the Indonesian Government has enacted Government Regulation Number 46/2014 concerning the Health Information System that defines the scope of health information as encompassing the health effort, health research and development, health funding, health workers, medical tools and equipment, health management and regulations, and community empowerment. Likewise, this regulation also lacks the standard procedures and guidelines in determining the business processes and data that are required to be exchanged between the hospitals and other relevant stakeholders. Therefore, despite the urgency to implement the Hospital Information System, the lack of regulations and the absence of standard pro-

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