FINAL PROJECT

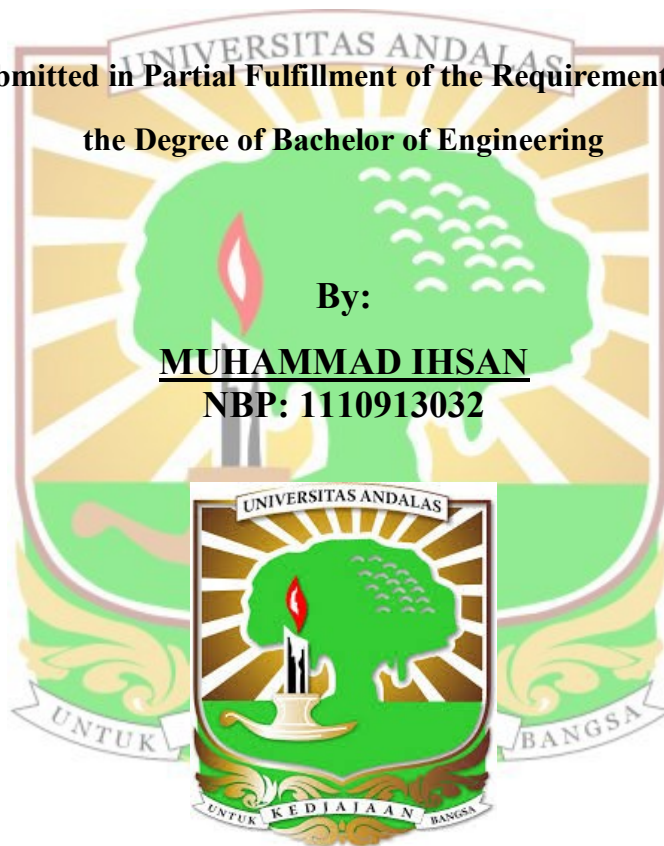# DEVELOPMENT OF AN INTERACTIVE AND COLLABORATIVE VIRTUAL MAINTENANCE MANUAL BASED ON WEB3D TECHNOLOGIES

Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Engineering

By:

MUHAMMAD IHSAN
NBP: 1110913032

Dr. –Ing. Agus Sutanto
NIP. 196608141992031004

MECHANICAL ENGINEERING DEPARTMENT

ENGINEERING FACULTY – ANDALAS UNIVERSITY

PADANG, 2017

ABSTRACT

Developments in Information and Communication Technology (ICT) and an emerging global trend called the Internet of Things (IoT) have revealed a number of impacts and opportunities for the life cycle of a product, particularly for maintenance purpose. The complexity of today's maintenance processes challenges engineers to step up the development of maintenance by streamlining required product support information to enhance maintenance process efficiency. An effective and efficient maintenance process is dependent on availability of accurate and on-demand information, which is easy to understand and supports collaborative work between users. Therefore, the objective is to produce an interactive and virtual maintenance manual from 3D CAD models and to produce on-demand maintenance manual which allows users or other third parties to collaborate at any time and any place.

The objective is achieved by performing the following steps: (1) modifying 3D CAD model of a production equipment obtained from a manufacturing company using Cortona3D RapidManual software, (2) setting scene effect and animation of 3D maintenance simulations based on the case studies discussed in this final project, (3) converting the modified data into VRML file format using Cortona3D RapidManual software, the converted file will be accessible through Web.

The result is a virtual 3D maintenance manual which is informative, interactive and on-demand. This manual will speed up the learning process for users to solve maintenance cases. With the help of networked infrastructures, this interface allows users in different locations to obtain information and communicate complex maintenance procedural problems virtually at any time and any place. Moreover, it can minimise travel and information searching cost.

Keywords: **Maintenance manual, informative, interactive, collaborative, cost-effective**