CHAPTER

3

ROLE-BASED GOAL MODELLING WITH REQUIREMENTS CLASSIFICATION MATRIX

Rohayanti Hassan, Nor Ashila Abd Rahman,
Noor Hidayah Zakaria, and Alif Ridzuan Khairuddin

3.1 OVERVIEW OF ROLE-BASED GOAL MODELLING

Due to the different types of stakeholders' role, various goal and priority, the concept of goal is significant and useful in understanding and clarifying requirements in the early stages of system developments. Goals are implemented during requirements analysis and at the early stages of a system's development process. Huysegoms et al. (2014) describe goals as wishes, ideas and opinions from stakeholders that need to be realised in the system-to-be. Besides, the representation of goal could demonstrate the relationship between a system and its environment. Stakeholder role-oriented identification is used in this process to classify the stakeholder's requirement based on the functions required in the system. In addition, Pacheco and Garcia (2012) claimed that stakeholder's representation at this level is important in order to accomplish the goals of a system-to-be. With the existent of stakeholder's representation, all the stakeholder's needs that are engaged to the system could be organised wisely and would produce less conflict of unnecessary requirements from different stakeholders' point of view.

Goal-oriented has been applied by Boness et al. (2011) that address confidence from stakeholder requirement that being illustrate using goal sketching technique. The goal sketching technique that highlights the appearance of assumptions and establishes them to the system elements before it can be constructed. Each goal is evaluating based on four independent risk factors. In goal sketching, we need to set down the objectives and show how each objective is to be satisfied in the resulting system. However, the goal sketching that is currently being used does not describe the requirement from multiple stakeholders. Therefore, this study proposed a goal realisation technique with an enhancement of stakeholder requirement representation by including the stakeholder-oriented identification. An advantage of this technique is that it emphasises the importance of classifying stakeholder requirements according to their specific roles and functions.

3.2 DEVELOPMENT OF ROLE-BASED GOAL GRAPH

The development of a role-based goal graph serves as a systematic approach to model and represents the relationships between stakeholder roles, goals, and their corresponding sub-goals within a system. This section outlines the process of constructing the goal graph, beginning with the identification of key roles and their high-level goals, followed by the development of a hierarchical structure of sub-goals, and concluding with an explanation of the notations used. The role-based goal graph helps requirements engineers visualise stakeholder interactions and dependencies, ensuring that system objectives are aligned with stakeholder needs and priorities.

Figure 3.1 depicts the process of system analyst/requirement engineer with the respective work products involved in the developing role-based goal graph. The development of role-based goal graph begins with identifying the roles and respective high-level goal. Afterwards, the following section provides details of the steps to form the goal graph and notation used in development of role-based goal graph.

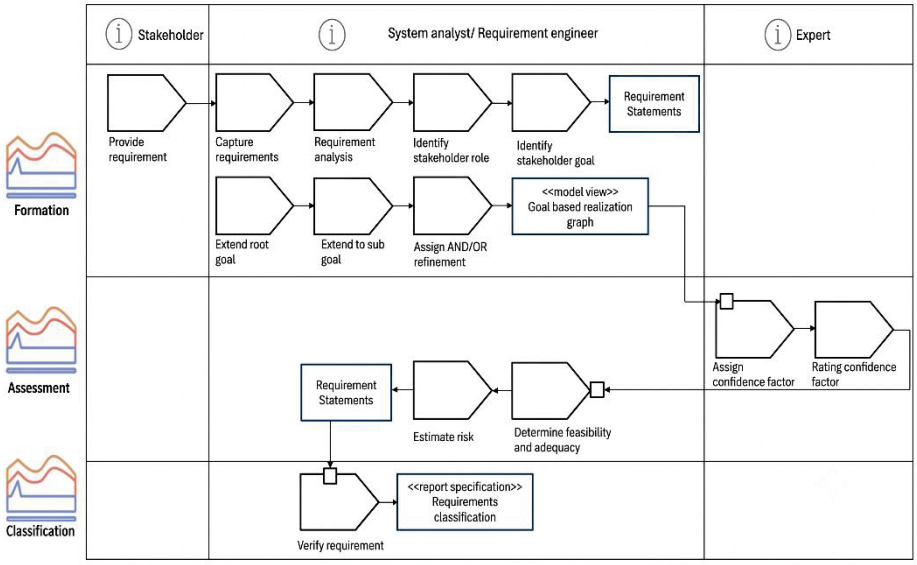


Figure 3.1 Summary of role-based goal graph

3.2.1 Identifying Role and Goal

Stakeholders may be classified under different viewpoints which represent the structuring of different stakeholder's perspectives. There will be many different stakeholders with their own role and objectives that need to be analysed by requirement engineer (Zhang et al., 2011). Sharp et al. (1999) has discovered that stakeholder identification usually focuses on identifying actors for use case development rather than interactions between stakeholders. Business workflow is another useful representation that can describe the business requirements of different stakeholders (Fan et al., 2012). Therefore, stakeholder role of the system-to-be can be identified and extracted from viewpoints, use case representation and business workflow representation. Meanwhile, Figure 3.2 depicts the process of requirement engineer identifying the stakeholders' role and their respective goal towards the system-to-be.