9.1 INTRODUCTION AND PROBLEM DEFINITION

One of the main objectives of this thesis is to enhance the operating model (OM), due to its inherent deficiencies, which were illuminated in Chapter 6. In Chapter 7, seven requirement categories were identified for augmenting the OM concept, addressing the OM deficiencies pertaining to the identification of process reuse opportunities. In the previous chapter (Chapter 8), the use of the ontological aspect models was evaluated, and more specifically the interaction model, to address *two of the seven requirement categories* for developing the PRIF *method, mechanisms and practices*. This chapter[5] proceeds with the third development sub-cycle (Figure 77, *Sub-cycle 3*) to develop the second part of the PRIF (Figure 77, PRIF *method, mechanisms and practices*), in addressing the second research question, namely:

What constructs are required for a process reuse identification framework to enhance the operating model concept, using the business-IT contextualisation model?

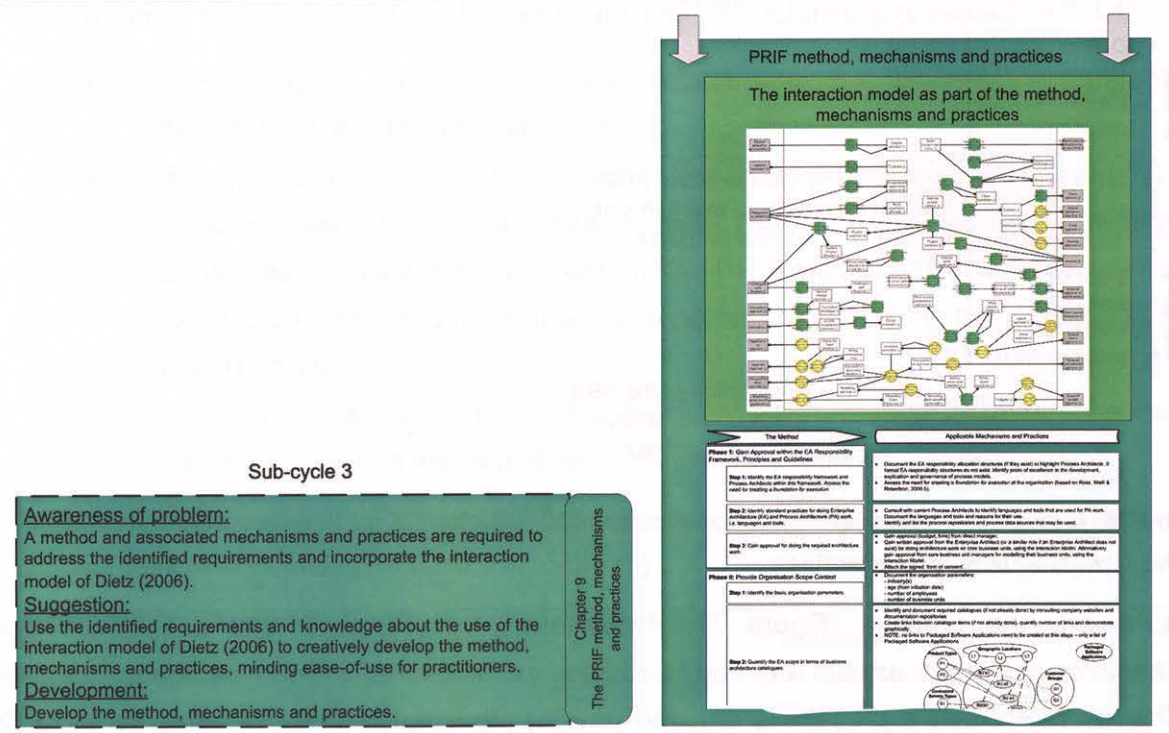

Figure 77: Design cycle context for Chapter 9 (duplicating part of Figure 15)

[5] The content of Chapter 9 is based on: De Vries, M., Van der Merwe, A., Kotzé, P., & Gerber, A. (2011). A method for identifying process reuse opportunities to enhance the operating model. In *IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) 2011* (pp. 1005-1009). Singapore: IEEE.

The second development sub-cycle of the PRIF (discussed in the previous chapter), evaluated the use of interaction models to compare replication potential between departments. The second development sub-cycle led to circumscription and the awareness of another problem, i.e. a *creative process* was required in developing the PRIF *method, mechanisms and practices*, also including the interaction model as part of the PRIF *method, mechanisms and practices*.

With reference to the *basic system design process* (Figure 78), construction of the object system (e.g. construction of the PRIF *method, mechanisms and practices*), requires a process of *devising specifications*, i.e. translating the function of the object system (e.g. the function/requirements of the PRIF *method, mechanisms and practices*) into the construction of the object system (e.g. construction of the PRIF *method, mechanisms and practices*). According to Dietz (2006, p. 73) the process of *devising specifications*, is a creative process, since the constructional designer has to bridge the mental gap between function and construction. According to Hoogervorst (2009) *devising specifications* may also be interpreted as *devising constructional requirements*.

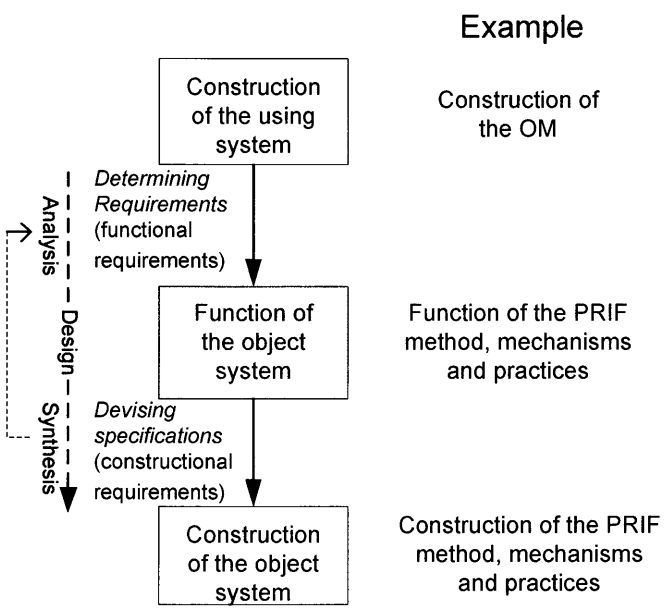

Figure 78: Using the basic system design process (from Dietz (2006)) in constructing a new method, mechanisms and practices

In summary, the *problem* (Figure 77, *Awareness of problem*) is that a PRIF *method, mechanisms and practices* was required to address the seven requirement categories identified in Chapter 7. A *creative process* is required to translate functional requirements for the PRIF *method, mechanisms and practices* into the construction of the PRIF *method, mechanisms and practices,* whilst ensuring *ease-of-use*. In solving the problem, it is *suggested* (Figure 77, *Suggestion*) that a creative development approach is followed for developing the PRIF *method, mechanisms and practices*.

This chapter addresses the *suggestion* (Figure 77, *Suggestion*) by *developing* a PRIF *method, mechanisms and practices* (Figure 77, *Development*). Section 9.2 presents the creative

development process for developing the PRIF *method, mechanisms and practices*. Section 9.3 delineates the three phases and phase-steps of the *method*. In addition, applicable *mechanisms and practices* are provided for each phase step. As to guide the practitioner in the correct use of the *method, mechanisms and practices*, mechanisms and practices *motivations, considerations and implications* are also provided. Each phase also triangulates the *mechanisms and practices* against the requirement categories defined in Chapter 7. The chapter concludes in section 9.4.

9.2 THE DEVELOPMENT PROCESS

The initial development of the PRIF *method, mechanisms and practices* (Chapter 8), already motivated the inclusion of the interaction model (associated with the *essence of operation* approach). According to the basic system design process (Figure 78) construction of the full PRIF *method, mechanisms and practices* require a creative development process to address all requirements. Other than the requirement categories stated in Table 15 (and repeated in Table 18 below), three additional *constructional requirements* have been identified, i.e. the PRIF *method, mechanisms and practices* need to:

1. Enhance ease-of-use. The PRIF *method, mechanisms and practices* should enable cognition and thus promote its use.
2. Incorporate the interaction model as a part, as motivated in Chapter 8.
3. Address the *implicit method* defined by the OM characteristics (see section 7.3.1):
    - The enterprise needs to analyse certain business architecture parameters to establish rationalisation opportunities.
    - Rationalisation opportunities could be identified within two main areas: (1) Data (sharing data across enterprise entities), and (2) Process (replicating/re-using processes across enterprise entities). The PRIF *method, mechanisms and practices* focus is on identifying rationalisation opportunities pertaining to the second area, i.e. process reuse.
    - Once rationalisation opportunities have been established an enterprise needs to derive a future OM that would exploit these opportunities.

Table 18: Requirements for addressing deficiencies pertaining to process reuse identification opportunities at enterprises (duplicate of Table 15)

No	Category	Requirement Detail	Motivation
R1	User(s) of the practices and related mechanisms	Any EA practitioner who wants to use the OM specified by Ross *et al.* (2006) and needs to collaborate with other stakeholders in defining the required level of process standardisation/replication.	The practices and mechanisms are created for the purpose of enhancing the OM concept as defined by Ross *et al.* (2006).
R2	Generality	The practices and mechanisms should be generic in their application to	The foundation for execution approach is generic in its application. The generic use

No	Category	Requirement Detail	Motivation
		different types of industries. An EA practitioner should be able to apply the practices and mechanisms to either a profit-driven, not-for-profit/government enterprises within any industry, in combination with the foundation for execution approach.	may be attributed to the fact that the foundation for execution approach aims at cost reduction due to process rationalisation. Cost reduction is an aim for both profit and not-for-profit enterprises. Cost reduction should however not be driven at the expense of needful flexibility.
R3	Process categories included	The practices and mechanisms may be applied to all processes in the enterprise however; practices and mechanisms will be most effective when applied to the primary activities of an enterprise.	The foundation for execution approach is based on the paradigm of creating a foundation for execution, which not only focuses on competitive distinctive capabilities, but also rationalising and digitising everyday processes that a company requires to stay in business (Ross et al., 2006, p. 4). The practices and mechanisms will however be most effective when applied to the primary activities of an enterprise, as support activities automatically provide the opportunity for enterprise-wide standardisation (Smith & Fingar, 2003, p. 63).
R4	Current architecture capabilities	The practices and mechanisms need to take current work in terms of Enterprise Architecture, Business Architecture and Process Architecture into account, but also need to provide sufficient detail if none of these architectures have been defined/documented.	According to Ross *et al.* (2006, p. 26), the first step in building a foundation for execution is to define the OM for the enterprise. No pre-conditions are defined for defining this model. The ability to define this model however is dependent on current architecture capabilities and documented/explicated architectures. Immature architecture capabilities may require additional architecture work, such as defining enterprise-wide process management standards and a centralised process repository (Smith & Fingar, 2003, p. 177).

No	Category	Requirement Detail	Motivation
R5	Process representation	The practices and mechanisms should encourage consistent process representation to ensure re-use. The extent of re-use includes the following: 1. It should be possible to add process measures if required for the purpose of performance measurement and/or process improvement. 2. The process representations should support end-to-end views of processes. 3. Process representations should not hamper the transition from the third to fourth levels of architecture maturity, i.e. it should allow for modular process design. 4. The representations that are used to communicate process replication opportunities should be understandable to business users (from the contextual and conceptual viewpoints).	A consistent representation may enhance communication about how the business operates, enable efficient hand-offs across enterprise boundaries and allow for consistent performance measurement across enterprise entities or similar competitors (Davenport, 2005). In addition, transitioning from a third to fourth level of architecture maturity (as defined by Ross *et al.*, 2006) requires the identification of business services that may be shared among different enterprise entities. Heinrich *et al.* (2009) maintain that the identification of business services requires a consistent representation of the enterprise's processes.
R6	Replication identification	The mechanisms and practices should enable the identification of operational similar organising entities.	Weill and Ross (2008) mention that replication opportunities may be defined across various types of entities (business units, regions, functions and market segments). The OM itself is however primarily used in defining replication and data sharing requirements across business units.
R7	Feasibility analyses	The mechanisms and practices should not suggest the means for assessing or measuring the feasibility of process replication/rationalisation. Feasibility analysis, e.g. operational, cultural, technical, schedule, economic and legal feasibility (Whitten & Bentley, 2007)) that may be associated with process rationalisation solutions are therefore excluded.	Although a feasibility analysis may direct the required level of process standardisation, this set of mechanisms and practices will merely propose a way of identifying replication opportunities, based on similarities between units. The means for selecting processes that will benefit most from standardisation and the prioritisation of end-to-end processes for standardisation may require a number of mechanisms and practices.

9.3 RESULTS – NEW METHOD, MECHANISMS AND PRACTICES

This section conveys the resulting PRIF *method, mechanisms and practices* (see Figure 79, Figure 80 and Figure 81) to address the seven requirement categories discussed in Chapter 7. The sub-sections (sections 9.3.1, 9.3.2 and 9.3.3) delineate three phases and phase-steps of the PRIF *method*. For every phase-step, applicable *mechanisms and practices* are also provided, offering additional guidance with *motivations, considerations and implications*. Each phase also triangulates the *mechanisms and practices* against the requirement categories defined in Chapter 7.

9.3.1 Phase 1: Gain approval

The first phase involves gaining approval within the EA responsibility framework, principles and guidelines and consists of three steps:

Step 1: Figure 79 presents *mechanisms and practices* that address the requirement that the EA practitioner needs to collaborate with other stakeholders in gathering evidence for identifying the process standardisation/replication requirements in defining an OM (Table 18, R1). The *mechanisms and practices* also acknowledge that current architecture work needs to be taken into account (Table 18, R4).

Steps 2 and 3: The *mechanisms and practices* presented in Figure 79 once again ensures that current architecture work is taken into account (Table 18, R4) by identifying current languages and tools that are used by the enterprise to do process architecture (PA) work. In addition, execution of the method requires that architecture work is performed, which will have resource implications and consequently needs management approval.

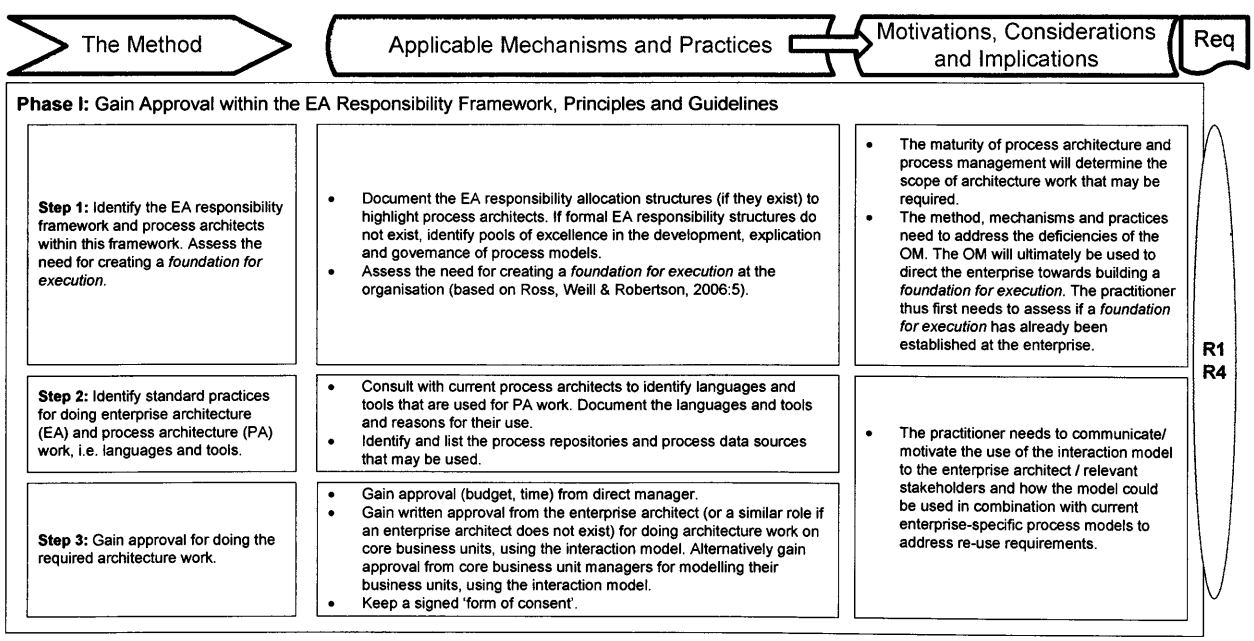

Figure 79: Phase 1 of the *new method, mechanisms and practices*

9.3.2 Phase 2: Provide enterprise scope context

The second phase provides enterprise scope and context and consists of three steps:

Step 1: The identification of certain enterprise parameters (presented in Figure 80) provides an indication of industry-type and size, and conforms to the requirement in category R2 (Table 18, R2) of accommodating different types of enterprises (e.g. manufacturing / services and profit-driven / not-for-profit).

Step 2: The mechanisms and practices demonstrated in Figure 80 still adhere to the requirements in category R2 (Table 18, R2) by accommodating enterprises that produce tangible products (categorised by product types) and/or immaterial products (service types). In addition, a graphical technique is proposed whereby operational similar organising entities are identified, in accordance with requirement category R6 (Table 18, R6). The graphical technique that is proposed in *Step 2* refers to core business units that are responsible for the primary activities of the business in addressing the requirement category R3 (Table 18, R3). The list of packaged software applications that are identified in this step is used later on in the method.

Step 3: The mechanisms and practices demonstrated in Figure 80 extend the analysis effort in the previous step by identifying similarities between core business units, which may have different geographical locations, but are similar in their production of product types / contracted service types. Similar organising entities (core business units) are thus identified according to the requirement category R3 (Table 18, R3) and hypotheses are created about possible business unit types (i.e. several core business units may conform to the operation of a business unit type).

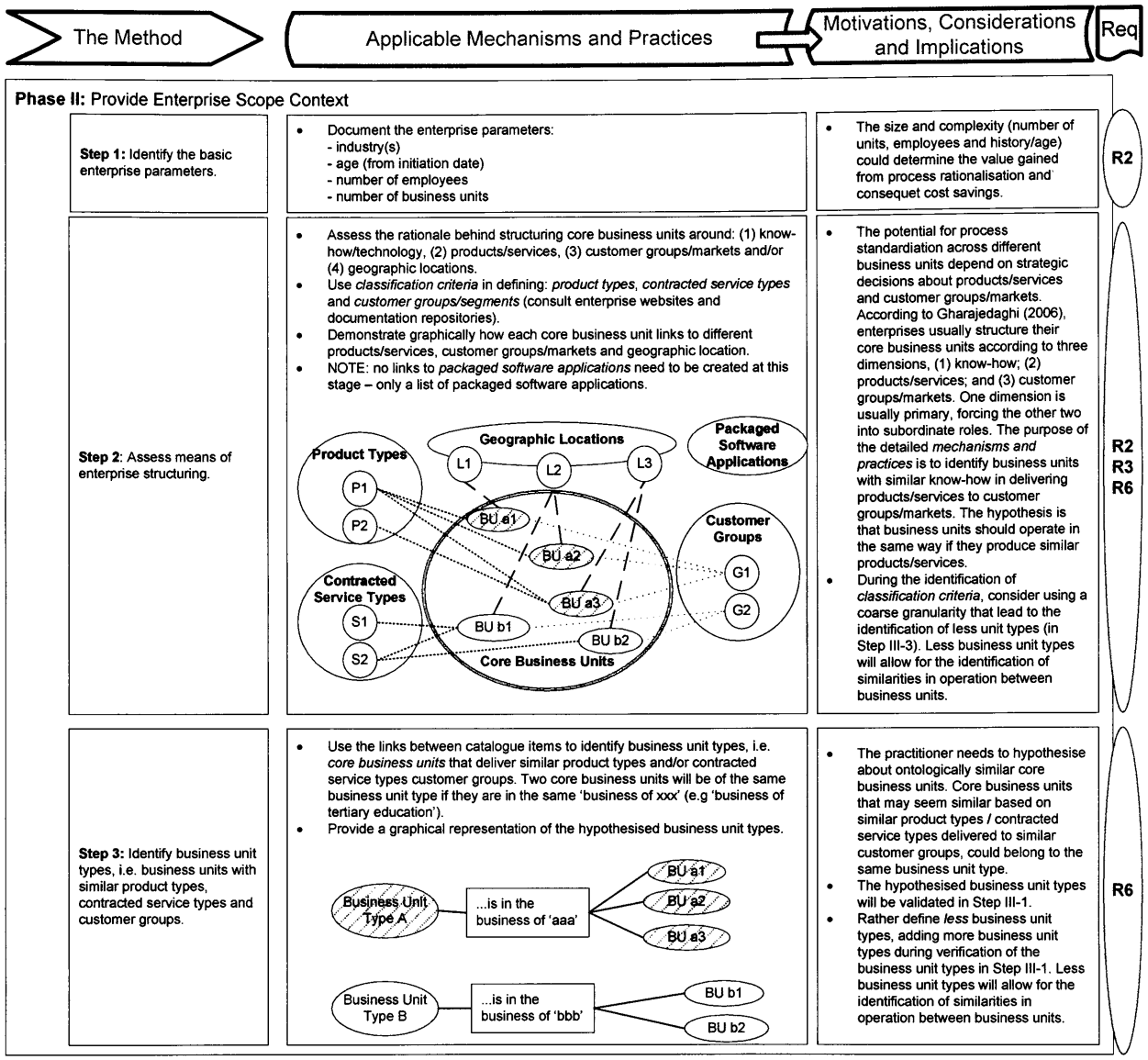

Figure 80: Phase 2 of the *new method, mechanisms and practices*

9.3.3 Phase 3: Identify process standardisation opportunities

The third phase identifies current process standardisation and opportunities for standardisation and consists of three steps:

Step 1: Current architecture work (e.g. process models) are used as information sources, conforming to requirement category R4 (Table 18, R4) to develop interaction models for each business unit type (see mechanisms and practices in Figure 81). Section 8.3.2 motivated the selection of the ontological aspect models, and more specifically the use of the interaction model as an appropriate process representation language to address requirements R5 and R6 (Table 18, R5 and R6). Contrary to other process representation languages, the ontological aspect models represent enterprise operation independent of its realisation and implementation. By abstracting enterprise operation from the material aspects (i.e. excluding forms and files used for communication between participants), the identification of operational similar organising entities (Table 18, R6) is enhanced. In addition, the interaction model incorporates units of logic (transaction types) that are consistent in the detail embodied in the underlying

transaction patterns – this characteristic contrasts with other process modelling techniques that are inconsistent in the aggregation of process logic for different levels of detail. The interaction model also encourages the identification of ontological units of competence, authorisation and responsibility, which will also assists the practitioner to compare different business units.

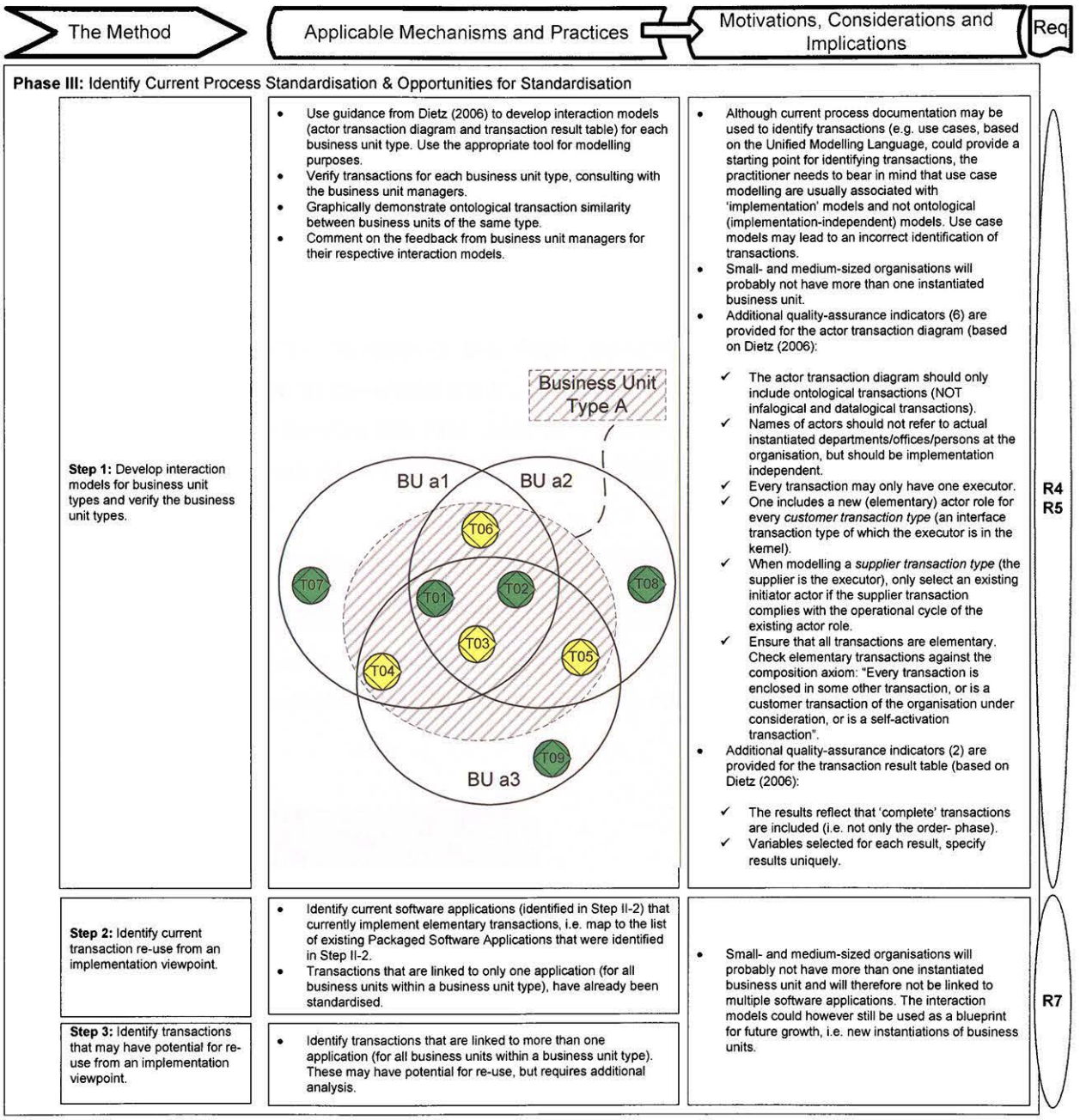

Figure 81: Phase 3 of the *new method, mechanisms and practices*

Steps 2 and 3: The last two steps of the *method* conclude with the identification of transactions that have already been standardised across different business units via the implementation of shared software applications. In addition, ontological transactions that seems to be similar across different business units, but implemented with different software applications, may have the potential for standardisation. The method thus excludes the means for assessing or measuring the feasibility of process replication/rationalisation as stated in the requirement category R7 (Table 18, R7).

9.4 CONCLUSION

This chapter discussed the newly developed PRIF *method, mechanisms and practices* based on the requirements stipulated in Chapter 7. Furthermore, this chapter explicated the three phases and phase-steps of the *method*. In addition, applicable *mechanisms and practices* were designed for each method step, triangulating against the seven requirement categories stipulated in Chapter 7. As to guide the practitioner in the correct use of the *method, mechanisms and practices*, the chapter also included mechanisms and practices *motivations, considerations and implications*.

The chapter concluded with the third and last sub-cycle of the *development* phase of the main design cycle. The PRIF *method, mechanisms and practices* form part of the entire PRIF, which requires final evaluation. The next chapter proceeds with the main design cycle in *evaluating* the entire PRIF.