



Temasek Defence Systems Institute

A SYSTEMS APPROACH TO ADOPT PERFORMANCE-BASED LOGISTIC (PBL) FOR MILITARY SYSTEMS, A SINGAPORE ARMY CONTEXT

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1. Objectives of Thesis

3. Findings and Limitations

With the scrutiny faced by the Ministry of Defence on the prudent use of public monies, a cost-effective approach needs to be taken to sustain the fleet of Army equipment at a high operationally ready state. The use of Performance-Based Logistics (PBL) was explored using a combination of soft and hard systems modelling techniques to determine its applicability in a Singapore Army context.

- SE uses a **structured and flexible** approach to explore the problem space and understand the **big picture issue of the situation**.
- It allows understanding **perspectives and motivations** of key stakeholders (e.g. Army, Contract/ System Manager, Technician, Operator)
- Iterative** system comprehension is advocated before applying the engineering process to select an **optimal** solution to the problem.

2. Systems Approach Application and Results

- All modelling are **abstract, not a one-size-fits-all approach** and need to be tailored to suit the application context.
- PBL is **applicable in Singapore Army context**, but need to consider 9 areas: (a) contracting approach, (b) payment type, (c) prime and sub-contractor, (d) RTS, (e) infrastructure, (f) operating sites, (g) maintenance and administration, (h) knowledge management, and (i) effective engagement and relationships.

4. Future Work and Application

The output generated from the study could be further expanded and applied in real-life scenarios, with the following areas proposed for in-depth studies:

- The models should be presented to and discussed with the relevant stakeholders before use.
- Future work could explore other methodologies or techniques to determine the feasibility to adopt PBL in the Singapore Army context.
- Need to consider the CONOPS and doctrine of the respective formations.
- A trade-off analysis could be conducted to determine the optimal PBL solution for the identified scenarios.

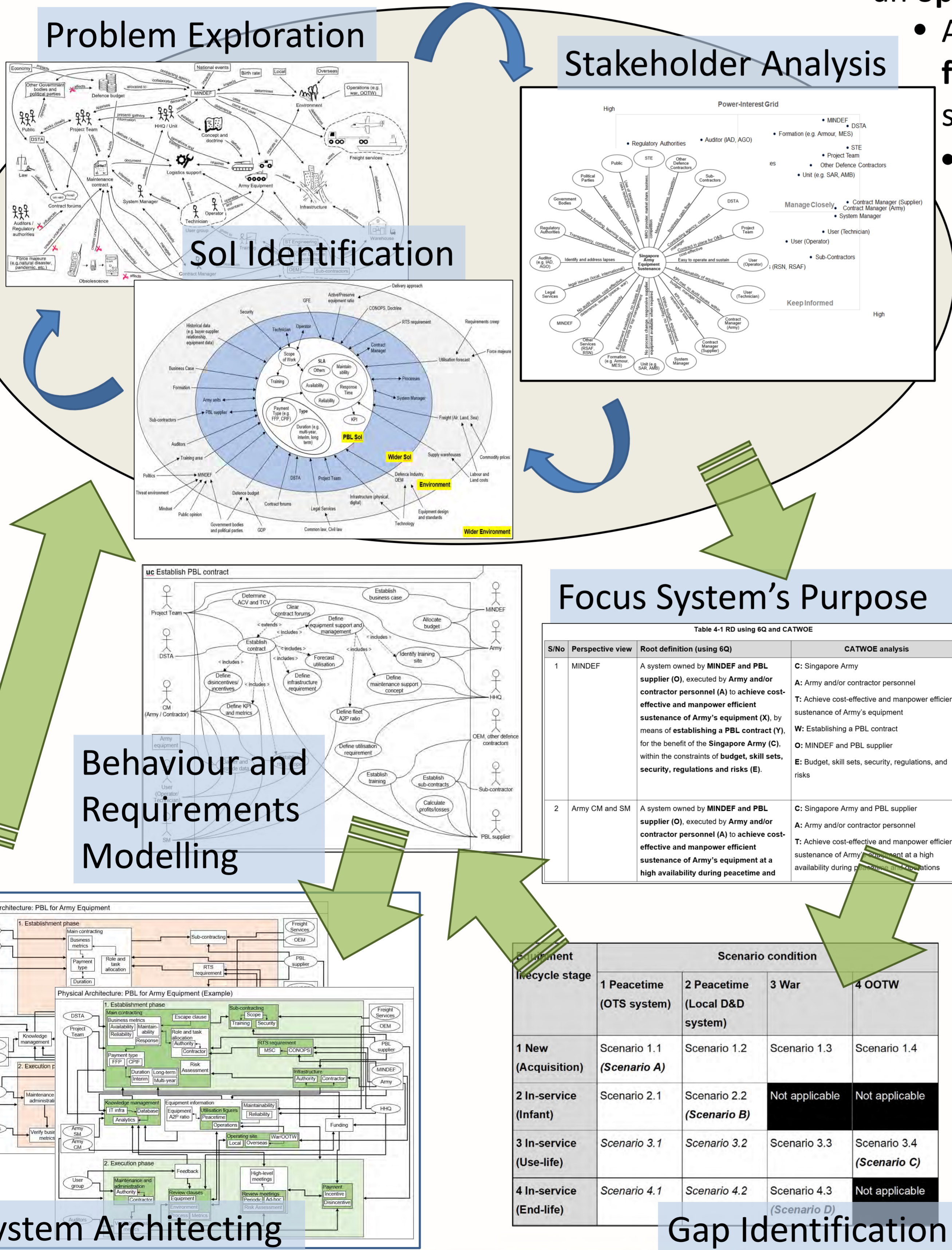


Table 4-1 RD using 6Q and CATWOE

S/No	Perspective view	Root definition (using 6Q)	CATWOE analysis
1	MINDEF	A system owned by MINDEF and PBL supplier (O), executed by Army and/or contractor personnel (A) to achieve cost-effective and manpower efficient sustenance of Army's equipment (X), by means of establishing a PBL contract (Y), for the benefit of the Singapore Army (C), within the constraints of budget, skill sets, security, regulations and risks (E).	C: Singapore Army A: Army and/or contractor personnel T: Achieve cost-effective and manpower efficient sustenance of Army's equipment W: Establishing a PBL contract O: MINDEF and PBL supplier E: Budget, skill sets, security, regulations, and risks
2	Army CM and SM	A system owned by MINDEF and PBL supplier (O), executed by Army and/or contractor personnel (A) to achieve cost-effective and manpower efficient sustenance of Army's equipment at a high availability during peacetime and	C: Singapore Army and PBL supplier A: Army and/or contractor personnel T: Achieve cost-effective and manpower efficient sustenance of Army's equipment at a high availability during peacetime and

Environment Lifecycle stage	Scenario condition			
	1 Peacetime (OTS system)	2 Peacetime (Local D&D system)	3 War	4 OOTW
1 New (Acquisition)	Scenario 1.1 (Scenario A)	Scenario 1.2	Scenario 1.3	Scenario 1.4
2 In-service (Infant)	Scenario 2.1	Scenario 2.2 (Scenario B)	Not applicable	Not applicable
3 In-service (Use-life)	Scenario 3.1	Scenario 3.2	Scenario 3.3	Scenario 3.4 (Scenario C)
4 In-service (End-life)	Scenario 4.1	Scenario 4.2	Scenario 4.3	Not applicable (Scenario D)