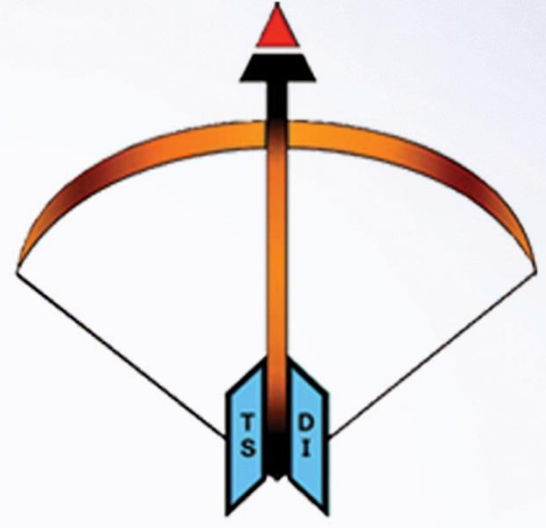




Exploring the Feasibility of Adopting Hybrid Electric Technology on Military Vehicle through a Systems Engineering Approach

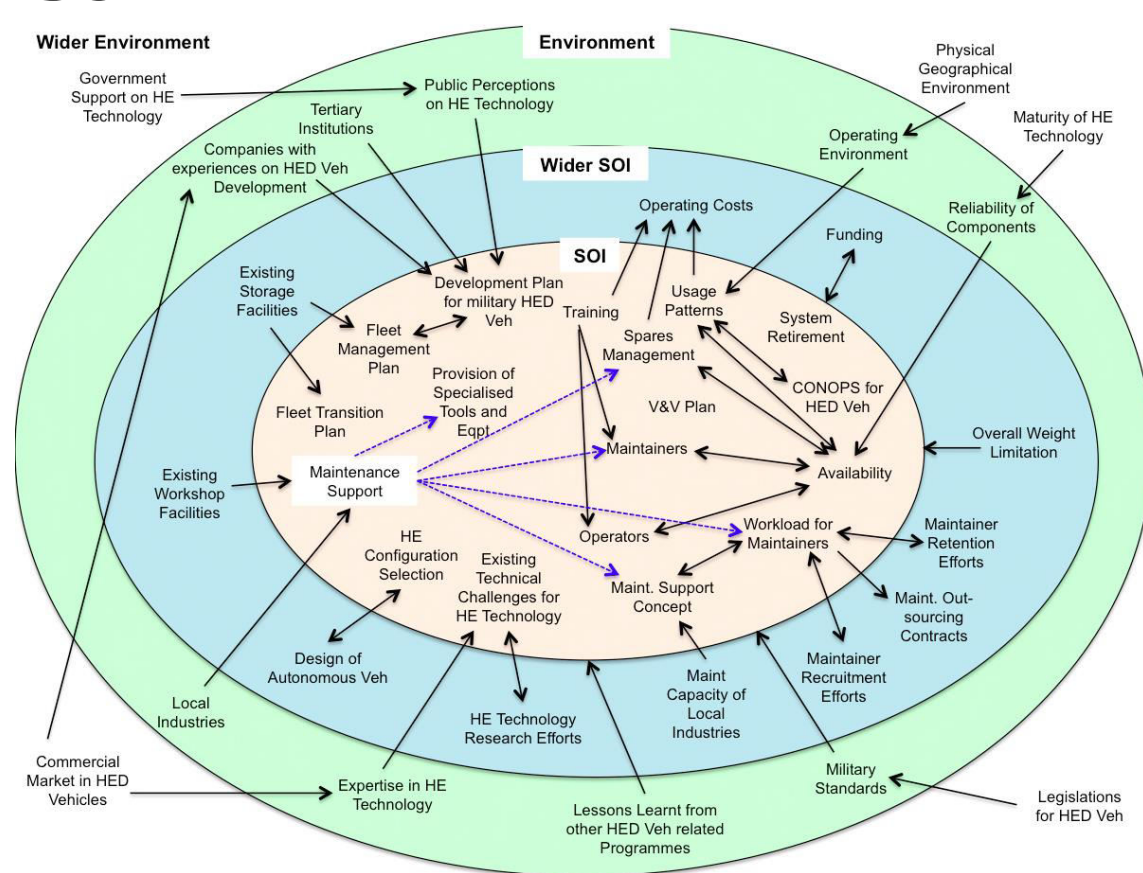
Liqiang See
Claus Nielsen

Objectives:

The overall aim is to develop a holistic understanding of using hybrid electric drive (HED) military vehicles through exploring the surrounding context to identify a wide range of challenges associated with incorporating hybrid electric (HE) technology on military vehicles and assessing the feasibility of adopting this technology.

Methodology of Research

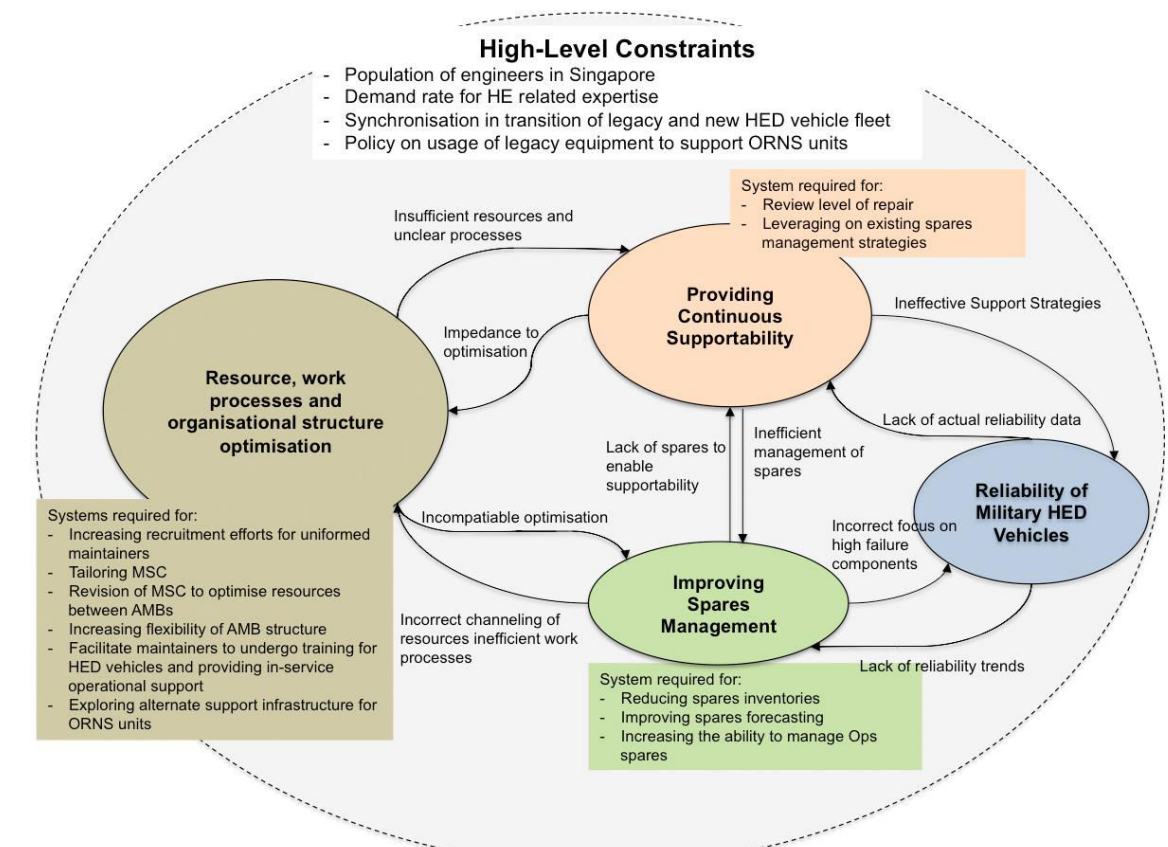
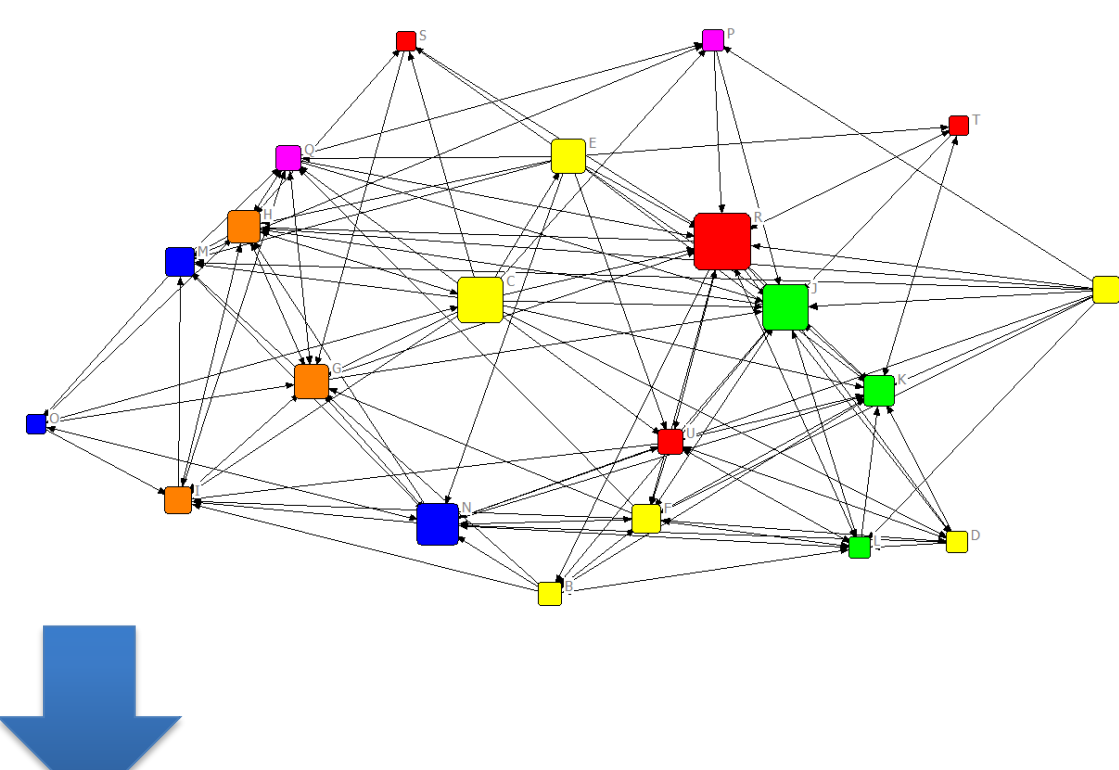
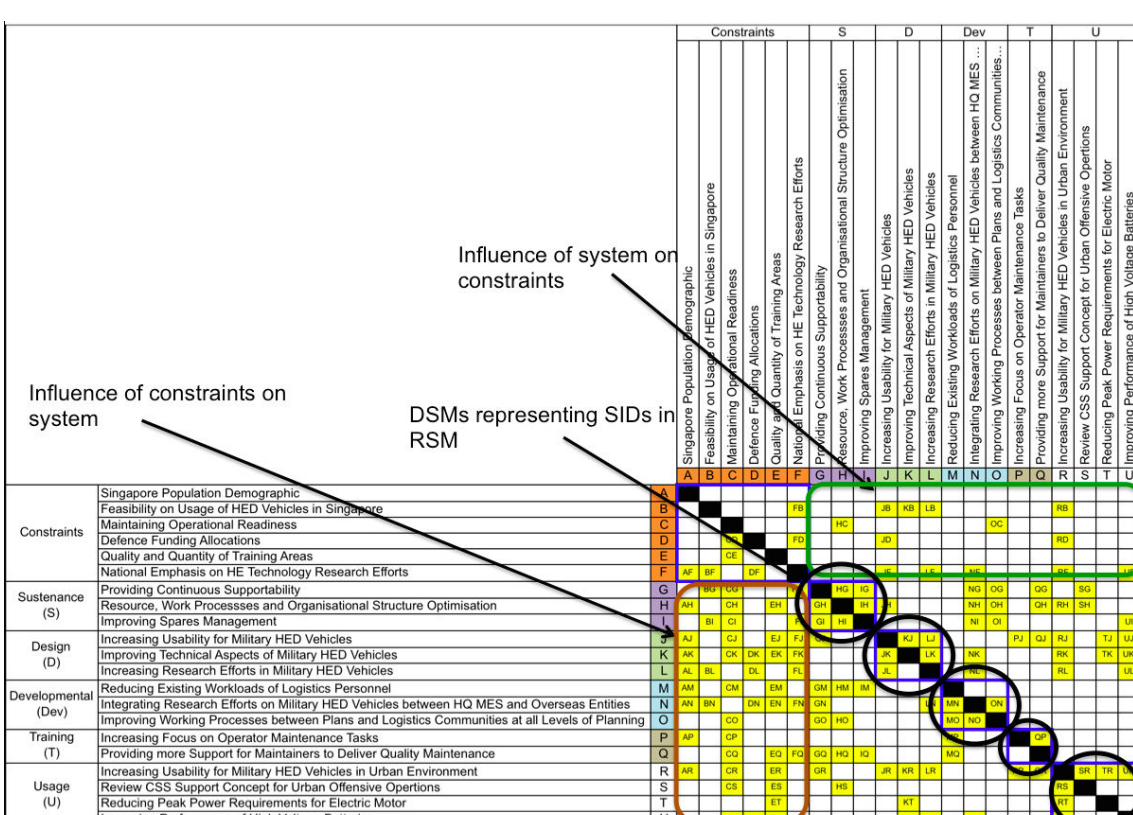
Systems Thinking Tools to generate issue domains



Sustenance, Design, Developmental, Training, Usage and Cultural Issue Domains generated

Rigorous Soft Method (RSM) to analyse each issue domains and a System Interaction Diagram (SID) developed for each domain

Multi-Domain Matrix (MDM) to cluster interacting systems and constraints identified from SIDs, which are analysed through Network Analysis



e.g., SID for Sustenance Domain

Increasing usability of military HED vehicles in urban environment being the most influential interacting system in the network; this interacting system was used for feasibility assessment

Tracing this interacting system back to the MDM and SID analysis, it was concluded that it is feasible to adopt HE technology in military vehicles, as most of the issues identified could be mitigated

Applicability of the Methodology

The same methodology could be used to explore the feasibility of highly complex issue such as the adoption autonomous technology in a military context