

SciO Systems Thinking Case Study

PROJECT

Using the Viable System Model (VSM) to diagnose and redesign a supply chain operation

PRACTITIONER

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SITUATION AND CONTEXT

An Information & Communications Technology company was faced with serious operational issues, when working with supply chain providers during customer service order fulfilment. Problems with configuration data and order co-ordination appeared regularly, whenever equipment needed to be delivered to customer sites, especially where that equipment required technical configuration prior to shipping for installation.

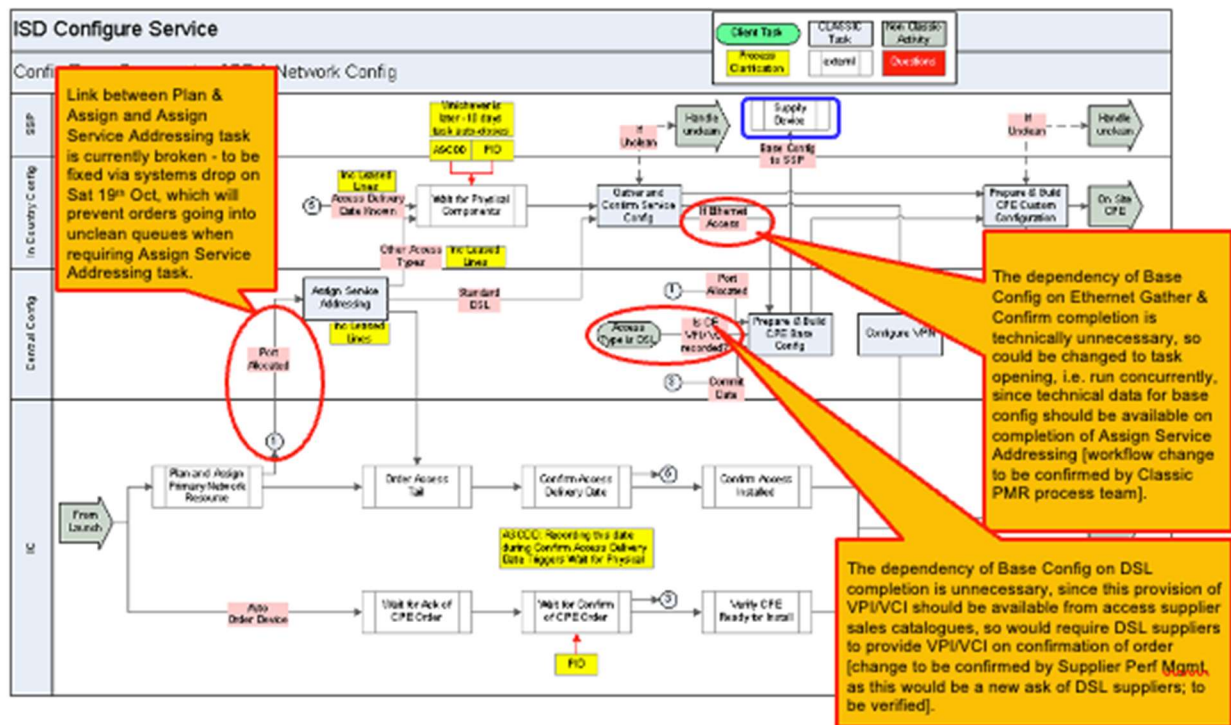


Figure 1: processes within the problematic supply chain situation

The organisation’s understanding of its primary activities regarding the problematic supply chain was incomplete, the situation regarded as messy, as illustrated by Figure 1, and there were long-standing delivery issues affecting high-profile customers.

The situation had proved intractable to previous attempts at resolution; preventing the organisation from being able to negotiate acceptable contract terms with suppliers.

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SYSTEM OF INTEREST

The system of interest included the following key elements:

- Process activities to deliver equipment from Original Equipment Manufacturers (OEMs) to configuration agents, then to customers,
- Approaches to monitoring, performance measurement and jeopardy management,
- Organisational accountability and responsibility for jeopardy handling and escalation, should delivery or supply problems occur,
- Configuration dependencies on customers' technical requirements, data capture at sites, and how that information was conveyed into delivery processes,
- Status messaging and order co-ordination between the organisation, OEMs, configuration suppliers, technical engineering specialists and customers.

APPROACH TAKEN

The Viable System Model (VSM) was used as the principal systems methodology in diagnostic and design modes, supported by use of some Soft Systems Methodology (SSM) to understand and model interactions between processes, relationships, and boundaries for relevant stakeholders.

Those systems thinking methods were combined with facilitation and group decision-making methods to help stakeholders reach agreement. Performance measurement methods were used to inform decision-makers about progress, as well as benefits management to assess financial and customer service impact, in particular the organisation's investments in IT and order co-ordination.

MODELS AND INSIGHTS DEVELOPED

A VSM model was developed for the supply chain situation, incorporating primary activities relating to service delivery and configuration processes flowing across a global organisation and its customers.

There had been insufficient understanding of the underlying mechanisms at work, or why previous attempts to fix processes and IT systems have failed to result in improvements. The organisation was also unaware of exactly how customers participate in resolving equipment configuration difficulties, so the VSM and process models were used to distinguish between issues affecting processes, customer interactions, co-ordination, measurement, resourcing and performance measurement.

KEY INTERVENTIONS UNDERTAKEN

The stakeholders who are directly affected or involved included the organisation's sales teams, order handling specialists, order management and co-ordination teams, as well as customer project managers, equipment configuration agents, technical engineers, shipping specialists, goods incoming agents, IT specialists, and contract managers.

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Several roles were involved from the OEM suppliers, in particular order handling specialists, technical engineers, shipping specialists, contract managers and customer supply coordinators. In addition, the organisation's customers had direct involvement in the situation, especially communication managers, and on-site technical engineers.

The contract managers for the organisation, OEMs and the configuration agents agreed that the insights arising from the VSM and process model review situation would form the basis for designing improved operations. The re-design necessitated changes to: people and IT interfaces between all parties, order processing and workflow across organisations, effective monitoring of order status, and how order-handling exceptions would be handled.

RESULTS

The intervention concluded with significant changes made to a number of elements of: technical infrastructure, processes, and inter-organisational working.

- Elements of customer delivery-related primary processes that flow from the organisation to OEM and configuration agent suppliers were redesigned and implemented, to include problem-handling, data capture, and jeopardy monitoring.
- Performance measurements were redefined and built into contracts, to ensure all parties understood how they would be monitored and assessed, and to set standards for reviews. The organisation has been able to assess the impact of equipment delivery issues on commitments for customers.
- IT applications and interfaces were re-engineered to handle customer data, and to allow for monitoring or co-ordination by contract parties.
- Order co-ordination organisational arrangements were redefined, and a team established to manage across the boundaries of the organisations involved.
- New reporting and accountability arrangements for the team were agreed, especially how they would work with teams in sales and engineering.

AFTERTHOUGHTS & OTHER METHODS THAT MIGHT HAVE ASSISTED

Senior managers noted that the insights from a relatively simple application of systems thinking methods, notably VSM and SSM, when combined with established process modelling methods, created impetus for successful change, whereas a plethora of previous attempts at 'fixes' using a variety of quality, lean, and 6-sigma methods, had failed to uncover the variety of issues and their relationships in the situation.

An expansion of the SSM modelling, or, alternatively, Critical Systems Heuristics (CSH), to explore power and stakeholder aspects of the relationships, may have offered further insights to expedite management decision-making about improvements to order co-ordination and IT application resourcing, since those steps took longer to progress than the entire study to understand the supply chain situation using systems thinking methods in the first place.