

# Introducing Manufacturing Cost Considerations Into Thales' Hardware Design Process

## Executive Summary

MIE463 - Team 18

Thales Group is a global electrical systems company having over 60 thousand employees and serving aerospace, space, transportation, defence and security markets. Thales' mission is to deliver innovative solutions for the civil and military sectors. Thales is looking for ways to reduce manufacturing costs by improving its hardware design process for rail signalling equipment. In the current enterprise model, the cost is not a significant consideration in the engineering process and only confirmed after designs are finished. This arrangement creates constant budget overruns which are being addressed by the process improvement team (PIT). While solving the problem, the team has to take into account interests of following stakeholders (including external customers): Urban/National Transit Authorities, Train Manufacturers, Suppliers, Contract Manufacturers, Competitors, Company Shareholders, Train Riders and Employees. The project has three levels of objectives: general (e.g. identify and verify "As-Is" processes, improve and document redesigned processes), specific (e.g. reduce equipment manufacturing cost, reduce the scale of design iterations) and underlying (e.g. increase competitiveness and customer satisfaction).

To gather required data, PIT has used a variety of methods: searching the internet and Thales' intranet for documentation, interviewing insiders, identifying and structuring root causes along with drilling down existing processes through hypothesizing. The team analysis focused on examining how purchasing and manufacturing costs can be lowered during major phases of the design process and relevant concurrent processes belonging to other functional groups. PIT has identified majorly overlapping steps of a selected hardware engineering process: orient, design, develop, integrate, verify and validate. Its overall mission is to achieve customer satisfaction with the delivered solution (system, product, service) in consistency with product policy and make or buy

strategy. People with various roles and responsibilities are involved in the process: design engineers, product and bid managers, sourcing officers, IT specialists. To succeed in cost reduction, the cross-process multilevel key performance indicators (KPIs) were created (from abstract to very specific): earnings before income and tax (target: 10% annual increase), cost of engineering (target: 10% annual decrease), bid purchasing cost estimate confidence (target: 15% annual increase), components and total purchase price variance (multiple targets), average amount of design revisions (target: 1.4 revisions in 2 years).

PIT has found three lower-level wasteful processes: quote review process (waiting time waste), the engineering change notice process (overprocessing waste) and the product change notice process (scrap and rework waste). Besides, misaligned departmental goals were observed: illogical labour costs of different process steps, contradicting objectives of design and verification teams, conflicting delivery time and design accuracy concerns. To address these problems, PIT suggests a set of recommendations to implement: integrate a design-to-cost (DTC) strategy with the current hardware design process through SAP; invest in ERP modernization (including knowledge sharing and information reporting); lastly, facilitate newly established PIT policies and knowledge transfer among employees. To conclude, the solutions focus on elimination of traditional “silo” mentality that is grounded deep in the design process.