L&T Technology Services

Cost out without redesigning the platform

USD 15M unlocked. Fit, form and function untouched.



CASE STUDY

engineering intelligence

EXECUTIVE SUMMARY

A global MedTech leader was driving an advanced robotic-assisted surgical system toward commercialization and needed roughly 30% cost out of its three most expensive subsystems, without touching fit, form, function or reliability. LTTS ran Value Analysis and Value Engineering concurrently with live verification and validation, delivering approximately 32% savings and around USD 15 million in unlocked product value with no impact to the launch timeline.

CLIENT CHALLENGE

Cost reduction on a robotic surgery platform is never only a design problem. Every decision reaches into manufacturing, suppliers, assembly, validation and serviceability, and on a Class-grade platform each carries a regulatory shadow. The obvious route, pausing to value engineer, would have cost the launch window. Altering anything a regulator or a surgeon would notice would have reopened V&V already in flight. So the brief was uncomfortable by design: find real money inside a system that was not allowed to visibly change, and leave the platform cheaper to build for every variant that follows.

ENGINEERING COMPLEXITY - WHY IT WAS HARD

The difficulty was sequencing, not ideation.

01

Concurrency was the constraint:
Every accepted idea had to be tested against whether it invalidated a protocol already executed. A saving that reopens validation is a net loss, and that call had to be made hundreds of times.

02

The system is coupled:
A part change in the Robotic Arm shifts mass distribution, which touches motion control, which touches validation. No lever moves independently.

03

Ideas are cheap, feasibility is not:
Proving which changes hold function is where most VAVE programs quietly fail.

04

Serviceability is a hidden cost floor:
Fewer parts can mean longer field service, reversing the saving across the product life.

OUR SOLUTION



VAVE run as a system exercise:
Treating the platform as connected engineering rather than a parts list, so every lever was assessed against its knock-on effects.



A funnel with rigor at each stage:
287 ideas generated, 202 prioritized, 145 engineered to feasibility, by 23 engineers over 5 months.



Multi-lever optimization:
Across manufacturing process, mechanism design, PCB, part count, custom part elimination and sourcing, because no single lever reaches 30% here.



DFM, DFA and DFS applied together:
So production savings were not paid back in field service.



Execution is concurrent with commercialization:
The hardest requirement in the brief and the reason the program was never structured sequentially.



Direct supplier engineering:
To unlock alternatives, rather than issuing target prices and waiting.

BUSINESS OUTCOMES

~32% savings,
beating target and spread across Patient Cart, Surgeon Console and Robotic Arm rather than concentrated in one subsystem.

~USD 15 million unlocked, the aggregate of 145 individually engineered changes, not a modeled projection.

50% fewer machining operations, the largest manufacturing lever and the one that compounds with volume.

27% fewer custom parts, cutting unit cost, supply risk and qualification time for future variants.

Zero changes to fit, form, function or reliability : which is exactly why not a single saving forced a validation cycle to be repeated.

THE EI EDGE

The number to remember is not 32%. It is 145 out of 287. Most teams can generate cost-reduction ideas on a robotic platform. Very few can carry half of them through engineering feasibility while verification is running and the launch date is fixed.

This collateral includes AI-enhanced imagery

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