

Medical Device R&D:

HOW TO FOCUS YOUR TEAM ON WHAT MATTERS MOST



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There is a frustrating paradox at the heart of productivity: how do you develop increasingly complex systems, within the constraints of increasing cost and time pressure, and stay differentiated in an increasingly competitive market?

Surgical robotics, as a standout example of technological complexity, provides a useful case study, but the ideas presented below apply across MedTech more broadly.

Our MedTech clients have highly capable R&D teams, but as device and system complexity grows, those teams are being asked to operate across an ever-expanding scope.

The temptation to build and do everything in-house has a major downside: The business can **lose focus on**

the core product mission – diluting strategic and competitive advantage and resulting in time delay, cost increase and often quality challenges.

We work with our clients to navigate this challenging landscape by asking a few simple questions.

1. What must your teams master?
2. What should you deliberately delegate?
3. How can you delegate effectively?

Our **'Core vs. Deploy'** framework helps set up the conditions for product development success by selectively and deliberately choosing where to involve external partners; partners who can own the distractions, so that your team can maintain laser-focus on the IP that delivers and enhances your company's unique value.

1

What must your teams **master**?

2

What should you deliberately **delegate**?

3

How can you delegate **effectively**?

BUILDING SURGICAL ROBOTS HAS ALWAYS BEEN HARD. **AND IT'S GETTING HARDER.**

The surgical robotics systems developed over the last 30 years are some of the most complex in MedTech, introducing new classes of surgical tools that have re-invented minimally invasive surgery.

Today that complexity continues to grow: Increasing data capture and rapidly computer intelligence (yes, AI) is enabling step changes in not only surgical tasks, but also revolutionizing the care-delivery ecosystem – from surgeon training to case scheduling, and other efficiency drivers well outside the OR.

And as international players enter the market, there is increasing competition and pressure to develop these systems faster and more cost-effectively.

So, how do you develop increasingly complex systems, within the constraints of cost and time pressure, and stay differentiated in an increasingly competitive market?

The answer is in understanding the relationship between program and organizational efficiency. In R&D, whether optimizing for speed or cost, efficiency comes from getting the right people, doing the right things, in the right order. And about creating conditions that eliminate distraction and promote focus¹.

[1] This article by Gonçalo Melo is a helpful discussion of focus and flow: <https://medium.com/@freedomtheoryofeverything/the-science-of-focus-the-main-value-in-the-world-is-focus-84462380f1ea>

How do you develop increasingly complex systems, within the constraints of **time and cost pressure?**

Stop looking at stage and gate speed, and instead focus on the **Total Time to Innovate.**

Internal business cases and conversations should reflect the **Total Cost of Innovation.**

Identify how a partner helps your team **focus and become better**, not simply bigger.

THERE IS A HIDDEN COST OF DOING **EVERYTHING** IN-HOUSE

We see it often: Organizations trying to build a team that does it all in-house, and feeling the pain that comes from spreading their in-house teams, and internal attention, too thin. The result is distraction and dilution of focus, which stunts progress and

can ultimately lead to product delays and the associated opportunity costs. The bias to do it all internally seems to stem from a few misapprehensions, that deter decision-makers from seeking external R&D support:

1.

Reluctance to be seen to hand off R&D, due to concern about the internal and market optics, seeing outsourcing as an admission of failure, rather than a strategic capability.

2.

The very real problem of trust and that there are experienced partners that will deliver, and that institutional knowledge and IP is secure.

3.

Belief that these firms are for emergencies only – fixers – which leads to only seeking external support reactively.

4.

A focus on the immediate financial cost without balancing the value. It's easy for teams to look at fee rate and 'cash cost' metrics, and overlooking more difficult performance drivers of 'Total Cost of Innovation', 'Total Time to Innovate', and 'Quality of Innovation'.

Well-intentioned as it may be, building an all-in-house team misses a powerful opportunity to access special expertise, rapidly scalable teams, and it can stunt progress:

1. Distracts the organization away from what really matters, diluting focus.

Impact: The best engineers spend time on low value jobs, while the tasks that build competitive differentiation and clinical value get diluted.

2. It takes time to find the right talent and integrate it into a functioning team.

Impact: Development progress is paused or stunted, risking false-starts, delayed/stunted progress, that often requires costly rework once the team finds its feet.

3. Taking on excessive scope can bloat teams, demanding more middle-management, and overburdensome structure and process.

Impact: This dilutes the creativity and pragmatism that feed healthy and effective innovation culture.

4. Adds overhead and creates a higher fixed cost base when demand for specialist skills fluctuate.

Impact: Inevitably, some specialist teams will be under-utilized at different points in the development cycle, creating costly downtime and poor utilization metrics. And when priorities, programs or funding change, reducing that cost base can mean difficult and disruptive restructuring.

But there is a better way:

The right partners can share the load, bringing unique experience and scalable capacity, so your team can focus on your Core.

**A real-world reference:
The build-to-buy**

In July 2025, Olympus and Revival Healthcare Capital co-founded Swan EndoSurgical – a \$458M build-to-buy partnership for endoluminal robotics. Revival's stated intent was to 'harness the innovation culture, speed and cost efficiencies of a start-up' while aligning incentives to develop a purpose-built solution for Olympus.

Olympus and Revival understood critical principles of effective R&D, and they applied them to the Swan model:

- Promote a lean and focused R&D team
- Harness and protect innovation culture from corporate interference
- Plan for strategic outsourcing, to gain ad hoc access to the best minds, already integrated into effective teams
- While remaining tethered to the commercial awareness of the product founder/organization (i.e. Olympus), bring well-informed, market need driven product proposition, and strong, clear direction

YOUR CORE – FOCUS YOUR TEAM ON WHAT MAKES YOU GREAT

Having a meaningful differentiator is the foundation of successful product development, and effective R&D organizations apply the same principle to the way they design their teams. They are clear about their core technology, IP, unique know-how and the product capabilities that genuinely set them apart. These are the areas where internal capability should be strongest and where knowledge needs to deepen over time.

Similarly, these organizations understand the role of external R&D partners, to augment and support their in-house teams.

We call this Core vs. Deploy.

It's a model that gets your team focused on creating and maintaining the in-house expertise that matters, and leverages the experience, expertise and innovation culture of specialist R&D teams to expand your capacity where it's needed.

Internal teams keep the work that gives the product its edge: the proprietary knowledge that's genuinely hard to copy.

Specialist partners take on the rest – the infrastructure – bringing expertise and capacity you don't need to build yourself.



The key is making the right distinction between Core and Deploy – what to own in-house and what to outsource. There is no universal boundary, but these five questions provide a useful framework:

- 1. Is this capability central to competitive advantage?** Consider whether the work is fundamental to your IP, USP or long-term differentiation, and whether future advantage depends on developing deep internal know-how. If so, there is a strong argument for making it Core. If it is essential to the product but does not materially differentiate the organization, specialist support may make more sense.
- 2. Will you need it continuously?** Some capabilities are fundamental, and required on an ongoing basis, while others are intensely important for a relatively short period during architecture, development, verification or industrialization. Building permanent teams around temporary or highly specialized needs can create utilization and cost problems later.
- 3. Does your organization create the right environment for the work?** Established medical technology companies are often exceptionally good at manufacturing, quality, regulatory compliance, commercialization and post-market support, but that operating environment is not always the one required for ambiguous, fast-moving early-stage development. People, structures, processes and performance measures can encourage creative problem-solving and sensible experimentation, or unintentionally favour caution and incrementalism.
- 4. What is the cost of waiting?** If a capability takes six or twelve months to build, what happens to the program during that time? Some delays are manageable; others carry substantial commercial and strategic consequences. This is where ‘Total Time to Innovate’ and ‘Total Cost of Innovation’ becomes more useful decision measures than a simple comparison of internal and external cost.
- 5. Can a partner make the team better, not simply bigger?** The strongest specialist partners bring accumulated experience from other programs, technologies and industries. They may recognize technical risks earlier, understand which approaches tend to fail, or know where an apparently minor compromise can create significant problems later in verification or transfer to manufacture. And crucially, when they’re not needed, you can switch them off.

Sometimes the most valuable contribution comes from knowledge your organization has simply never had reason to encounter. At that point, external expertise is no longer simply extending capacity; it is adding capability to the overall team.

Keeping your secret sauce a secret

Many organizations are concerned about leaking IP and know-how through external partners. This can be mitigated by design:

- 1. In the Core and Deploy framework, the deploy scope is by definition not where the key IP and know-how reside.**
- 2. Bring in partners with specific specialist experience, in which case, know-how is actually flowing into your organization, not leaking out.**
- 3. Work with partners who explicitly don’t own IP, where there is no conflict of interest. And work with partners who are experienced at managing IP firewalls.**
- 4. Build mutually beneficial relationships with aligned incentives, firms who understand that in the long-term your success is their success, and who therefore value integrity and trust over the short-term win.**

BEFORE YOU EXPAND YOUR TEAM, ASK WHAT IT IS REALLY FOR

As medical technology advances, and complexity increases, the need to expand R&D expertise and capacity will be ever-present. But each new technology and feature-set places more demand on your in-house team. Core vs. Deploy asks for a deliberate choice: build internal strategic capability only where it creates and protects competitive advantage, and build strategic partnership capability where specialist expertise, breadth of knowledge and scalable capacity can improve speed, cost and quality.

The practical test is whether you can answer five questions clearly before the next capability decision is made:

- **Is this central to our competitive advantage?**
- **Will we need it continuously?**
- **Is ours the best environment in which to build it?**

- **What will waiting cost in 'Total Time to Innovate' and 'Total Cost of Innovation'?**
- **And can an external partner bring expertise or perspective that makes the overall team materially better?**

If those questions are difficult to answer, consider that a signal to step back and reconsider how you design your R&D programs. Reconsider what your team really needs to master in-house and where you can involve external expertise that enhances your team, scales with your need and crucially allows your team to focus on building and maintaining the technology that sets you apart in the market.

To take the first step navigating these questions, we can help. Reach out to one of our team – we welcome open discussion, and enjoy bringing our experience not just to execution, but to the planning table as well.

Bio:

James Boonzaier is the Technical Director of Surgical Robotics at Cambridge Design Partnership (CDP).

CDP's team of engineers and product development experts support medical device companies to get their complex regulated products through development, qualification and onto the market. With over 15 years' experience, James steers complex hardware development programs across CDP's Medical Device clients, with a particular focus on bedside medical and surgical robotics systems.

About CDP:

For nearly 30 years, CDP has partnered with leading medical device and robotics R&D teams to transform their groundbreaking device concepts into instruments and toolsets, bedside capital equipment, and embedded software and control systems that work, demonstrating clinical performance in the real world and getting them to market faster.

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