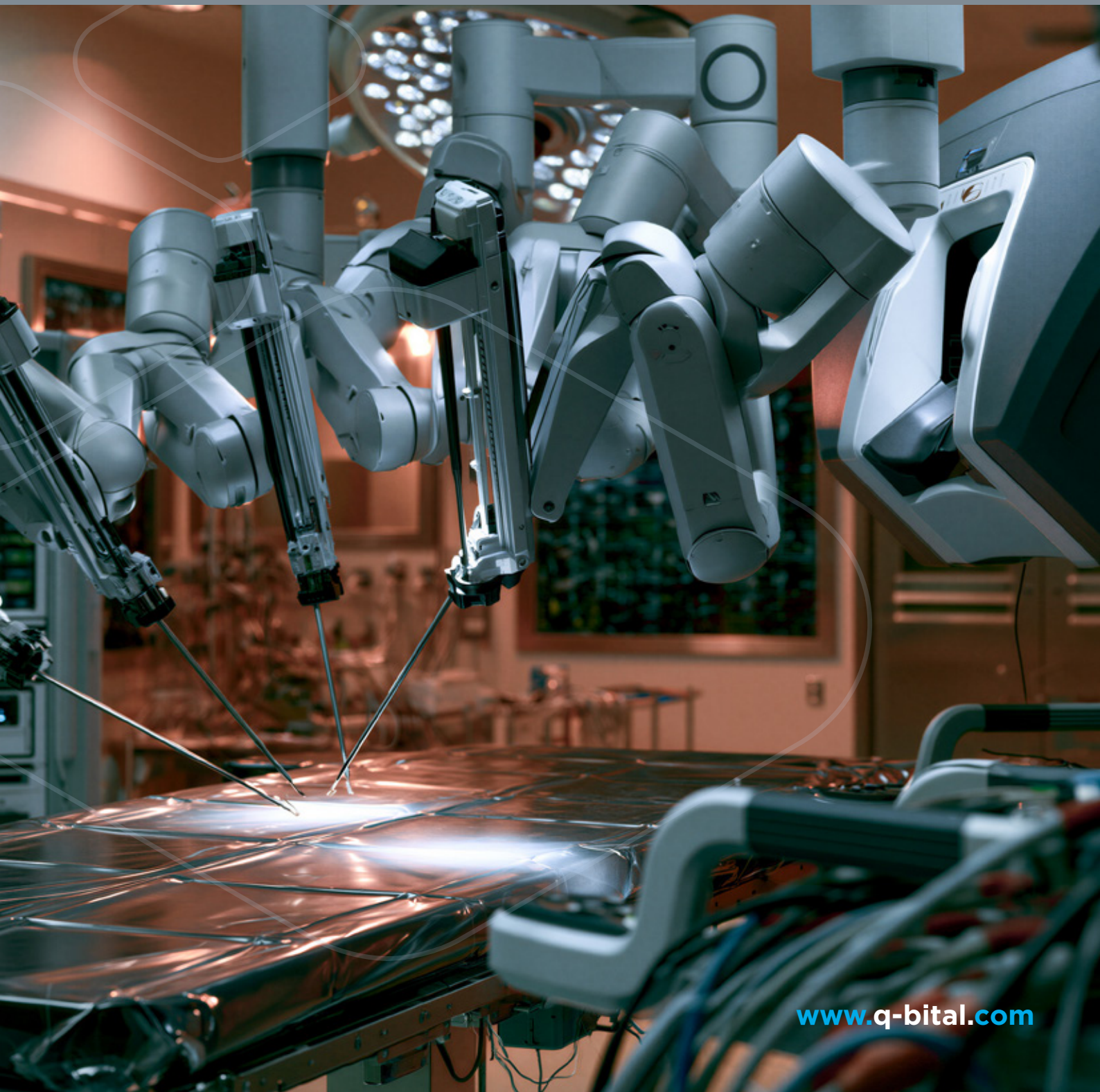


Robotics-ready healthcare estates in Europe: aligning surgical ambition with infrastructure reality



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Executive summary

Across Western Europe, healthcare systems are accelerating their adoption of surgical robotics.

Driven by clinical outcomes, workforce pressures and the need to improve productivity, robotic-assisted surgery is moving from innovation to expectation. Many countries are already expanding programmes across urology, gynaecology, colorectal and thoracic pathways, with further growth anticipated over the next decade.

However, this transition is not occurring on a level playing field.

Healthcare infrastructure across Europe varies significantly in age, configuration and adaptability. While some systems benefit from modern, flexible estates, others continue to operate within buildings designed for earlier models of care.

This creates a structural challenge.

Robotics does not scale through technology alone. It requires environments that can support new clinical workflows, engineering demands and throughput expectations.

This paper explores the growing gap between robotics ambition and estate readiness across Western Europe, and examines the role of Modern Methods of Construction (MMC) as a practical enabler of change.



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A shared direction, but not a shared starting point

Across Europe, there is clear momentum behind robotic-assisted surgery.

Drivers include:

- ◆ Improved clinical precision and patient outcomes
- ◆ Reduced length of stay and faster recovery
- ◆ Increasing demand for minimally invasive procedures
- ◆ Workforce constraints and the need to improve productivity

However, while the direction is shared, the starting point is not.

Western European health systems differ significantly in:

- ◆ Capital investment levels
- ◆ Estate age and condition
- ◆ Hospital configuration and site constraints
- ◆ Governance and procurement models

This variation shapes what is achievable in practice.



Robotics as a system challenge

Surgical robotics is often framed as a clinical or procurement decision.

In reality, it is a system-level transformation.

Successful implementation requires alignment across:

- ◆ Clinical pathways and case volumes
- ◆ Theatre utilisation and scheduling
- ◆ Workforce training and capability
- ◆ Data and performance monitoring
- ◆ Physical infrastructure

Without this alignment, the benefits of robotics are reduced.

Infrastructure plays a central role in this equation.

The infrastructure requirements of robotics

Robotic-assisted surgery introduces a set of demands that extend beyond traditional theatre design.

These include:

- ◆ Increased spatial requirements for equipment and team positioning
- ◆ Higher service density within ceiling voids
- ◆ Enhanced ventilation and environmental control
- ◆ Greater electrical capacity and resilience
- ◆ Expanded storage and instrument handling requirements
- ◆ Integrated digital systems and connectivity

Many existing facilities were not designed with these requirements in mind.

As a result, adaptation is often required before robotics can be introduced or scaled.

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The constraint of legacy estate

A significant proportion of healthcare infrastructure across Western Europe predates current clinical models.

Common challenges include:

- ◆ **Constrained theatre footprints**
- ◆ **Limited flexibility for reconfiguration**
- ◆ **Ageing engineering systems**
- ◆ **Disruption risks during refurbishment**
- ◆ **Competing demands for capital investment**

These constraints can slow or limit robotics adoption, even where clinical demand is strong.

In some cases, they result in robotics being concentrated within a small number of centres, rather than distributed more broadly across a system.

The risk of fragmented adoption

Without coordinated infrastructure planning, robotics adoption can become fragmented.

This can lead to:

- ◆ **Uneven access to advanced surgical care**
- ◆ **Variation in clinical outcomes**
- ◆ **Inefficient utilisation of high-cost equipment**
- ◆ **Challenges in workforce training and retention**

For health systems focused on equity and efficiency, this presents a significant risk.

Delivery at pace: a European challenge

Healthcare systems across Europe face a common constraint.

The need to modernise infrastructure is clear, but delivery is often:

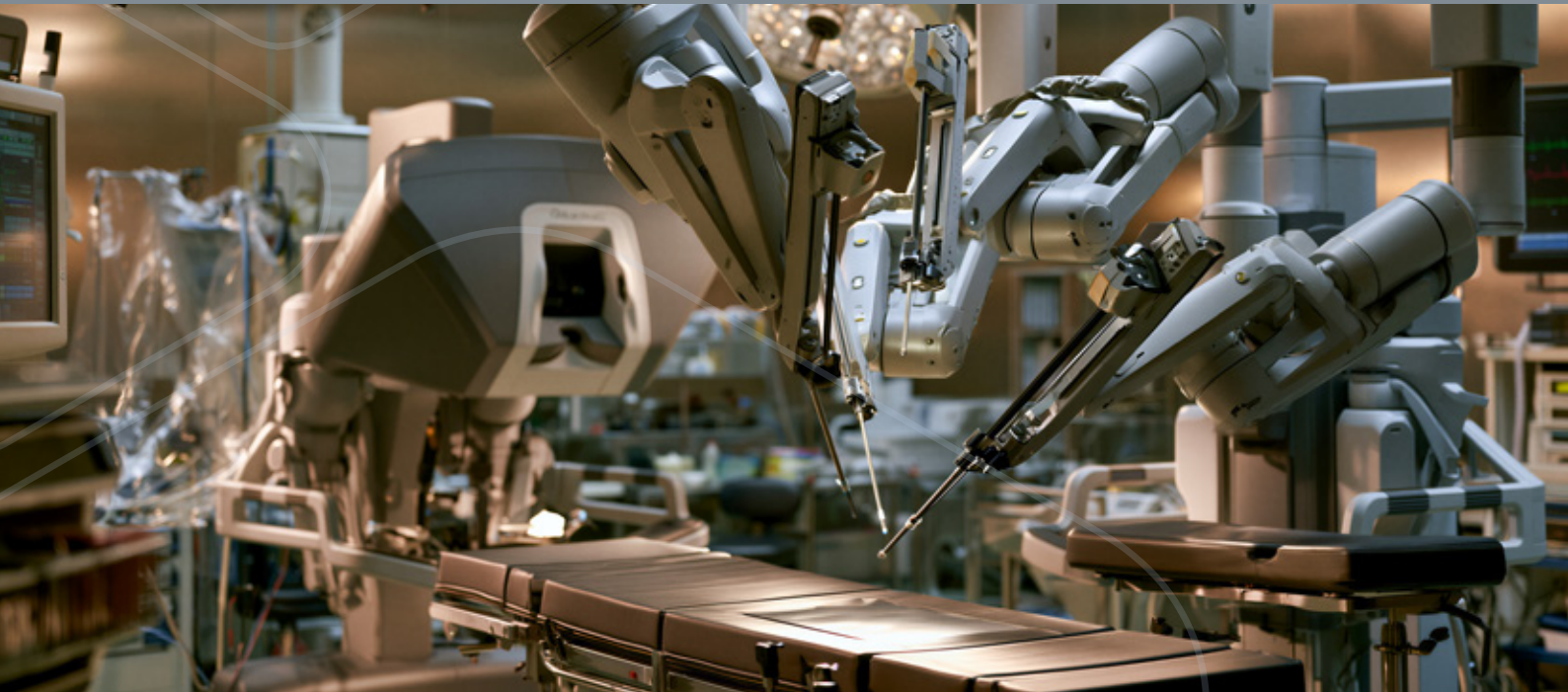
- ◆ **Time-intensive**
- ◆ **Disruptive to ongoing clinical activity**
- ◆ **Constrained by procurement complexity**
- ◆ **Limited by capital availability**

At the same time, demand pressures do not allow for delay.

This creates a tension between ambition and deliverability.



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The role of Modern Methods of Construction

Modern Methods of Construction are increasingly being explored as part of the solution.

In a European context, MMC offers the potential to:

- ◆ Deliver infrastructure more rapidly
- ◆ Reduce disruption to live healthcare environments
- ◆ Improve consistency and quality of clinical spaces
- ◆ Enable repeatable design approaches across multiple sites

For robotics-ready facilities, where requirements are becoming more standardised, this is particularly relevant.

However, the effectiveness of MMC depends on how it is applied.



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Conditions for success

MMC is not inherently faster or more effective. Its success depends on:

- ◆ **Early definition of clinical and infrastructure requirements**
- ◆ **Adoption of standardised design approaches where appropriate**
- ◆ **Integration of digital design and coordination**
- ◆ **Alignment of procurement and contracting models**
- ◆ **Engagement of delivery partners at an early stage**

Where these conditions are met, MMC can support delivery at pace. Where they are not, benefits are limited.

Aligning ambition with infrastructure

The key challenge for European healthcare systems is alignment.

Robotics ambition must be matched by:

- ◆ **Infrastructure investment**
- ◆ **Estate modernisation strategies**
- ◆ **Workforce development**
- ◆ **Operational redesign**

This requires a more integrated approach to planning.

Technology, infrastructure and clinical strategy must be considered together, rather than in isolation.

Conclusion

Surgical robotics represents a significant opportunity for healthcare systems across Europe.

However, its successful adoption is not guaranteed.

It depends on the ability to create environments that support new models of care.

Infrastructure is therefore not a secondary consideration. It is a central enabler.

Modern Methods of Construction offer one potential route to delivering that infrastructure more effectively, but only when applied within a clear and coordinated strategy.

The future of robotics in European healthcare will be shaped not only by technological advancement, but by the environments in which that technology is deployed.