Deloitte.

Delivering with confidence

Transforming capital project delivery through world class project controls

Capital Project Insights

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Transforming project controls

We are currently seeing a 'golden age' for investment in infrastructure and capital projects across both the public and private sectors; annual global infrastructure investment is expected to rise from $2.5tr today to $3.8tr by 2040. Today's major projects are increasingly complex and under significant scrutiny. Scale, duration and complexity are growing, as are expectations around predictability and control. No-one likes surprises; the unexpected is unacceptable whether from a HSSE, cost, schedule or quality perspective. Tighter control is essential, to minimise risk and provide delivery confidence.

Achieving effective project controls requires much more than the selection and implementation of a set of systems and processes or choosing the 'A-team' from a delivery partner. It requires the transformation of the entire organisation to ensure the project controls technical solution and operating model are fully aligned; and that this alignment extends to the project's wider operating model, such as commercial, finance, legal, engineering and human resources.

Deloitte has extensive experience of successfully setting up and transforming project controls. We have helped transform organisations responsible for some of the most complex capital projects including asset management organisations, 'in-flight' projects, programmes running multiple projects, and pop-up organisations responsible for the delivery of 'mega projects'.

This insight shares our experience of the challenges of setting up and transforming project controls, why controls are valuable, and how our knowledge, experience and tools support our clients to achieve this transformation.

ROI through good project controls targets **5-10%** savings in CAPEX spend[1]

We combine **insights from across our business** to explore innovative approaches including the use of technologies such as **artificial intelligence (AI), machine learning and robotics** through to how changes in working practices and workplace technology impact the way project teams interact.

Why project controls are critical for successful capital projects

Project controls are mechanisms by which project activities can be measured or forecast and accurately reported, to inform timely decision-making and intervention. The most useful controls, such as time, cost, and risk, tend to recur across multiple projects. However, the absence of clear standards, and differing cultures and practices, mean that – even with familiar controls – transformation involves different organisational challenges every time.

In principle, the benefits of project controls are rarely disputed **but clients often see project controls as a reactive reporting function when in fact the best performers are able to look around the corner and pre-empt major project issues.**

1. The ability to reliably predict project outcomes means potential problems can be spotted early enough to make interventions simpler and more cost-effective.

2. Culturally, clear controls create transparent lines of accountability throughout the organisation, informing and aligning shared objectives throughout the project, setting clear priorities and promoting collaboration.

3. Stakeholders can be reassured, creating more support and autonomy for project management.

50%
of the top reasons projects failed in 16/17 was poor project controls[3]

No industry standard, it's hard to get right

Effective controls get the job done, not get in the way, so they deliver information that's clear, timely and relevant to the job at hand. **Data is increasingly easy to generate, but too much data can swamp, rather than support, effective management,** particularly if it is used through the wrong systems. More controls data does not mean more control, and it's essential that both the data and the toolset that uses it is appropriate.

"For me, project controls is about building and maintaining confidence, confidence at all levels from sponsors and investors to the teams delivering on the ground, that the plans, actual progress and performance against those plans and forecasts at completion are timely, robust and reported in succinct and transparent ways to enable solid decision making and corrective action planning."

Steve Elliott – Programme Controls Director, Crossrail; Thames Tideway; Terminal 5 Heathrow

Even with all the correct ingredients project controls capability often falls short of what is required. This insight sets out both the key conditions for success and the approach that should be taken to ensure robust controls are established.

The cost of getting it wrong can be immense

First Astute class submarine was **4 years late and £2bn over budget**[4]

The cost estimate to electrify the UK's Great Western mainline has tripled from £879m to £2.8bn due to "**inadequate planning** and **poor cost estimating**" [5]

Berlin's Brandenburg Airport will open **9 years late** and **$4.5bn** over budget[6]

Conditions for success

While there are many circumstances that can impact or hinder the ability to transform project controls, there are a number of key success factors without which the transformation of project controls is severely impeded.

Clear sponsorship & business case

To establish alignment to the vision and to enable the development of a PC strategy

Early investment

To establish and embed controls ahead of when they are critically needed

Transformational leadership

To drive and embed business transformation aligned to a clearly defined case for change

Holistic approach

To ensure that all layers of the operating model are considered in an integrated way

Expertise across the project controls disciplines

To ensure a robust and integrated design and implementation

Clear sponsorship & business case

Clear sponsorship is key to institute alignment to the vision and to enable the development of a strategy and roadmap for project controls, and to present the case for timely investment. Accountability for establishing and operating project controls can too often be blurred, when it isn't clearly designated to a specific leader in the organisation.

In practice, cost can be an obstacle to achieving good controls, as there's often no clear cut business case for investment. Transformation can also mean writing off the sunk costs of existing controls. Any quantifiable case must set the cost of establishing or transforming controls against the risk and potential cost of things going wrong, whether financial or reputational.

While good controls will result in organisational efficiencies, the business case for controls is primarily concerned with reduction in CAPEX outturn, and improved confidence, both of which can be difficult to quantify in absolute terms. Deloitte research has found that improving project controls from a primitive condition to an enhanced state can reduce remaining capex spend by between five and ten per cent; as well as improving stakeholder and sponsor confidence, the benefit of which, while difficult to quantify, is none the less significant.

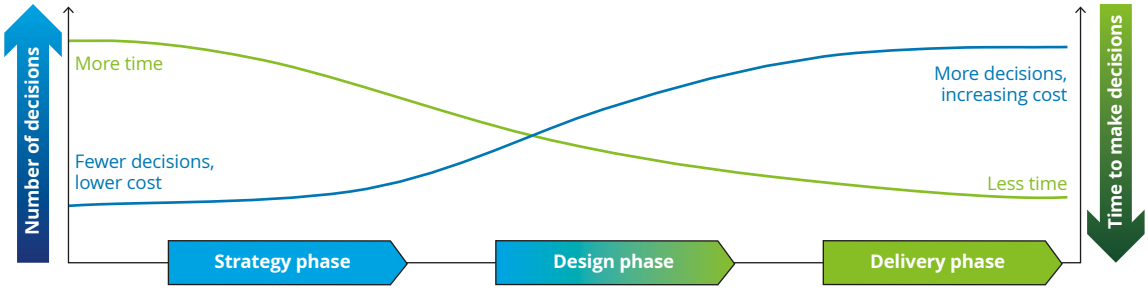
Business case driver[7]	**Value** (% of remaining CAPEX spend)	**Value** (£ based on £5bn programme)
Reduction in project management and controls headcount through improvement in project controls efficiency	0.5 – 1.5%	£25m-75m
Reduction in capex out-turn through better decision making, improved control, and a reduction in the amount of contingency used	4.0 – 7.5%	£200m-375m
Reduction in cost of capital, through better understanding of borrowing requirements and timing	0.5 – 1.0%	£25m-50m
TOTAL impact	**5 – 10%**	**£250m-500m**

Early investment

Failure to plan early enough for project controls can cause major problems. Once a project is underway, existing behaviours, established contracts and data structures mean it could take a significant period of time and cost a considerable amount of money to change. Starting early is essential, because the ability to influence outturn cost reduces over time. As a result, **late establishment of project controls has a significant opportunity cost.** Failure to have the right controls in place makes decision-making more costly and less effective at controlling project outcomes.

Projects are typically subject to governance which requires them to demonstrate they have the requisite controls capability, allowing them to progress. These 'trigger points' generally relate to investment decisions at major programme milestones, often prior to a significant increase in capital expenditure.

Early investment is crucial and a clear strategy is required to ensure the right controls are available when needed. It should also allow controls to continue adapting dynamically – to adjust or improve as required – throughout the project lifecycle.



	Strategy phase	Design phase	Delivery phase
Programme controls requirements	• Ability to support business case development through: cost estimating, risk assessment and high-level scheduling to enable investment decisions	• Ability to provide oversight of basic design and procurement activities • WBS and scope packages defined, with baseline estimates and schedules developed	• Programme controls capability scaled to fit • Standards and processes understood and followed by clients teams and suppliers • Timely, consistent, quality outputs
Decision making characteristics	• Broad stakeholder engagement • Time for detailed analysis • Loose process • Consultation and involvement	• Technical and commerical focus • Functional execution • Cross stream integration	• Limited time to interpret information • Need a 'chain of command' • Time, cost, quality critical • Risk and programme execution focused

Transformation leadership

Transforming project controls can mean changing the underlying fabric of an organisation; not just the way it is structured, but the culture and behavioural expectations of its people. Leadership is therefore particularly important, not only to make a senior-level case for transformation, but also to ensure that all partner organisations are willing and able to commit to, and see through, the transformation process. While overall leadership must come from a senior level, project controls require the support of leaders at all levels of the organisation.

Establishing project controls involves significant demands, within and between partner organisations. Clear ground-level leadership means that robust, project-wide standards are set, followed and trusted. Embedding the correct practices and protocols to drive project controls excellence starts with leaders role modelling the right behaviours, and setting a template for others to follow. A zero-tolerance approach to deviation from those standards and processes helps build shared trust in the controls, throughout the project.

Holistic approach

Achieving effective and robust controls involves multiple interfacing and integrated disciplines (e.g. finance, cost management and commercial management), which are enabled by a number of capability dimensions; people, leadership and culture, governance, process, data and IT systems. None of these function in isolation and a holistic approach is needed to design, implement and operate project controls effectively.

A consistency of approach is required when gathering insights on the current situation, when progressing the development of a coherent strategy and blueprint, or when transforming the organisation to implement it.

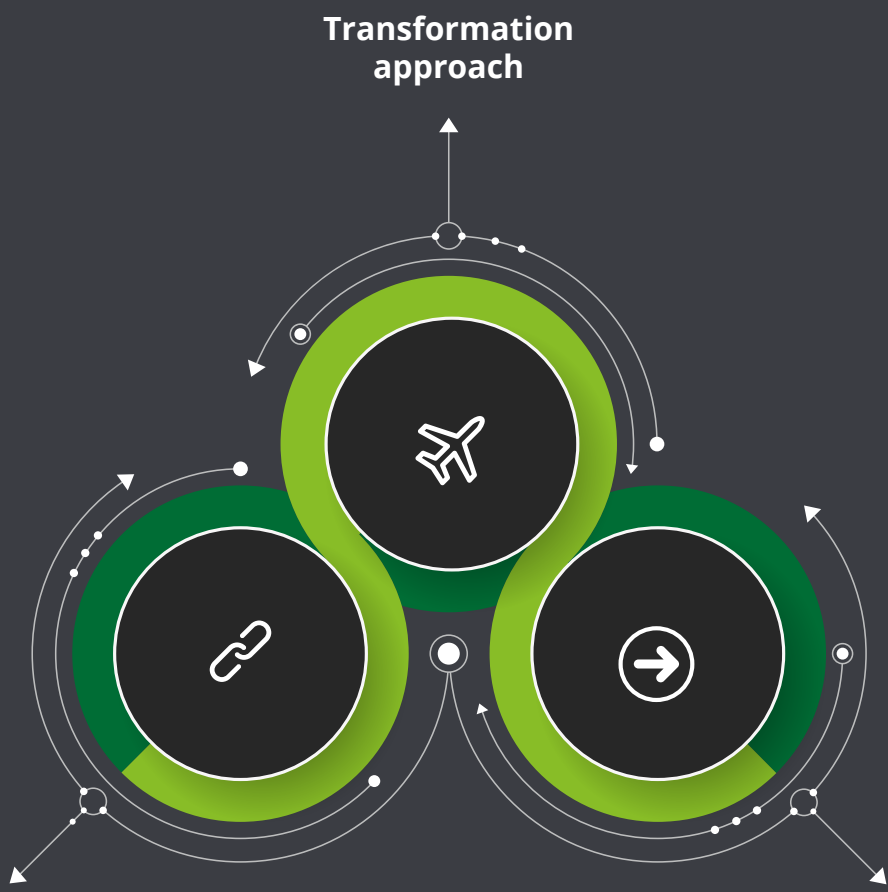
Expertise across the project controls disciplines

There is no single industry standard for project controls, meaning practice can vary across organisations and industries depending on their specific requirements and context. Expertise from experienced and knowledgeable project controls specialists is essential to ensure that the design of the project controls disciplines meets the needs of the organisation.

Whilst the terms are sometimes used interchangeably, project controls must be viewed as distinct from project management, with differing skills, training, competency requirements and career development. This expertise is essential during transformation to safeguard the fit of the technical solution with the wider holistic approach.

The transformation ecosystem

Our point of view



Project controls transformation has historically been heavily focused on the technical controls solution, using operating expertise, rather than design and transformation experts.

1. **Project controls Disciplines;** to provide the technical controls aspects.

2. **An integrated operating model method;** to consider the required capability from a leadership, culture & talent; organisation; governance; process; data & reporting; and systems perspective.

3. **A transformation approach;** to ensure that the right environment and culture exists to enable change to happen.

While the disciplines are a core component of any project controls transformation; our experience is that there are three elements that need to come together to drive success.

Together these three elements ensure that the technical solution, the operating model and the behaviours of the organisation are aligned; and crucially that they share a single transformation journey.

While the ingredients for successful project controls is consistent, organisations each have their own individual operating models. Therefore transforming project controls is always contextually different.

"All client organisations and all projects are unique. The fundamentals as to how to manage and control projects irrespective of size or complexity are, however, the same. The key is in the establishment and deployment of the structures, operating models, technology and teams and the embedding of these within the organisation surrounding the project. **Deloitte's 'transformation' approach ensures that fundamentals-based solutions are well thought through, more readily adopted within the organisation and stick.**"

Steve Elliott – Programme Controls Director, Crossrail; Thames Tideway; Terminal 5 Heathrow

Project controls disciplines

The Project controls disciplines – setting out the project controls technical requirements and capabilities – is complex and it requires suitably qualified and experienced people to support their definition and development.

The project controls disciplines are:

- Schedule Management
- Cost Management
- Risk and Opportunity Management
- Baseline Management
- Performance Reporting
- Contract Management

While it is imperative to have project controls expertise involved in the design of the disciplines, consideration needs to be given to the type of individuals who are engaged who can act with objectivity, and deal with the ambiguity which typically exists in the early stages.

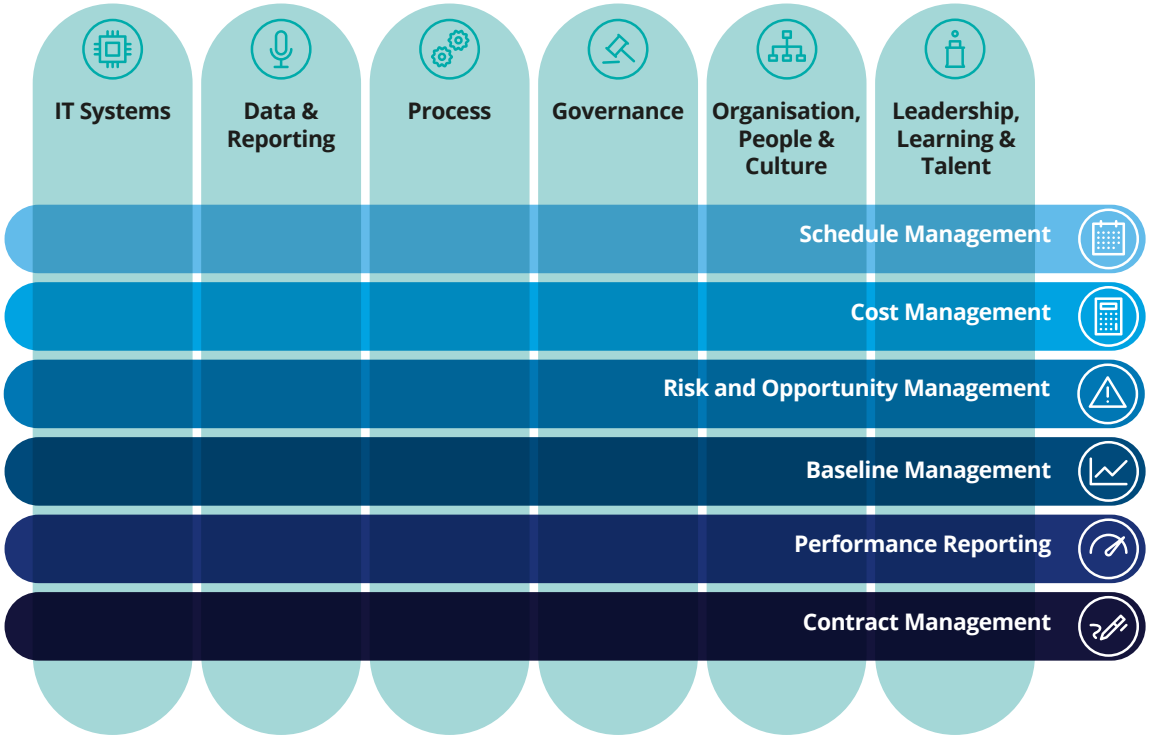
While each discipline is unique and has specific characteristics, they are also naturally integrated together. For example, a project baseline held in the form of a defined scope, schedule, cost and risk must then be contracted, managed and reported against. Therefore both the design and implementation must support the interaction and interface between the disciplines. However historically these disciplines have typically been considered in isolation.

No industry standard, it's hard to get right...

However, at Deloitte we've helped some of the biggest organisations on the most complex programmes to establish world class project controls. So **we know what a high performing project controls capability looks like** and **can help accelerate your organisation** giving confidence to key stakeholders in your ability to deliver your projects on time, to budget, and in line with the stated benefits.

Investor
I have the confidence that projects and programmes are being managed effectively and controlled so that the stated benefits are going to be realised, providing the greatest return on investment.

Board Member
I have continuous, clear line of sight, giving me control of our portfolio, enabling the Board to make the executive decisions required to meet the needs of our customer and shareholders.



Sponsor
I am confident that the forecast for this strategically important programme is accurate and robust, and I can recommend we proceed with investment in other areas of our portfolio.

Project Controls Director
I am confident that the data my team provides is accurate and timely, underpinned by robust processes, governance and a unified data model that provides a single source of truth.

Programme Director
Variations to my project are immediately clear to me, enabling me to make informed decisions to keep the project on track, manage the supply chain and report progress to the board.

Planning Team Leader
I take pride in my professional ability, and career in project controls, delivering high profile projects using world-class methods and processes with confidence.

Integrated operating model

We have adapted our Deloitte Target Operating Model approach to underpin project controls, modelling the key elements required to ensure the right programme decisions can be made based on assured data produced in a consistent manner.

Given the integrated nature of the project controls disciplines, it is essential that design and implementation is done using an approach that supports this characteristic. Our target operating model method provides such a framework, enabling the development of an effective project controls strategy and blueprint, by considering the required organisational capabilities to deliver the project controls disciplines, how they need to integrate across all relevant functions, and how they need to develop and be realised through the project lifecycle.

Leadership, culture & talent

Leaders role modelling the right behaviours is a key success factor for embedding cultural change in transformation programmes. The establishment of the right culture and behaviours is critical to ensuring that the new controls approach is a success.

The right people organised in the right way

The organisation must be structured to deliver the project controls capability that the organisation needs, with clear roles and accountabilities defined. This is more than just boxes and wires. When defined and implemented in the right way, the organisation – both in terms of structure and its people – will be aligned to the project controls strategy and will enable the realisation of a common set of goals with strong alignment between the client organisation and its delivery partners.

Effective governance

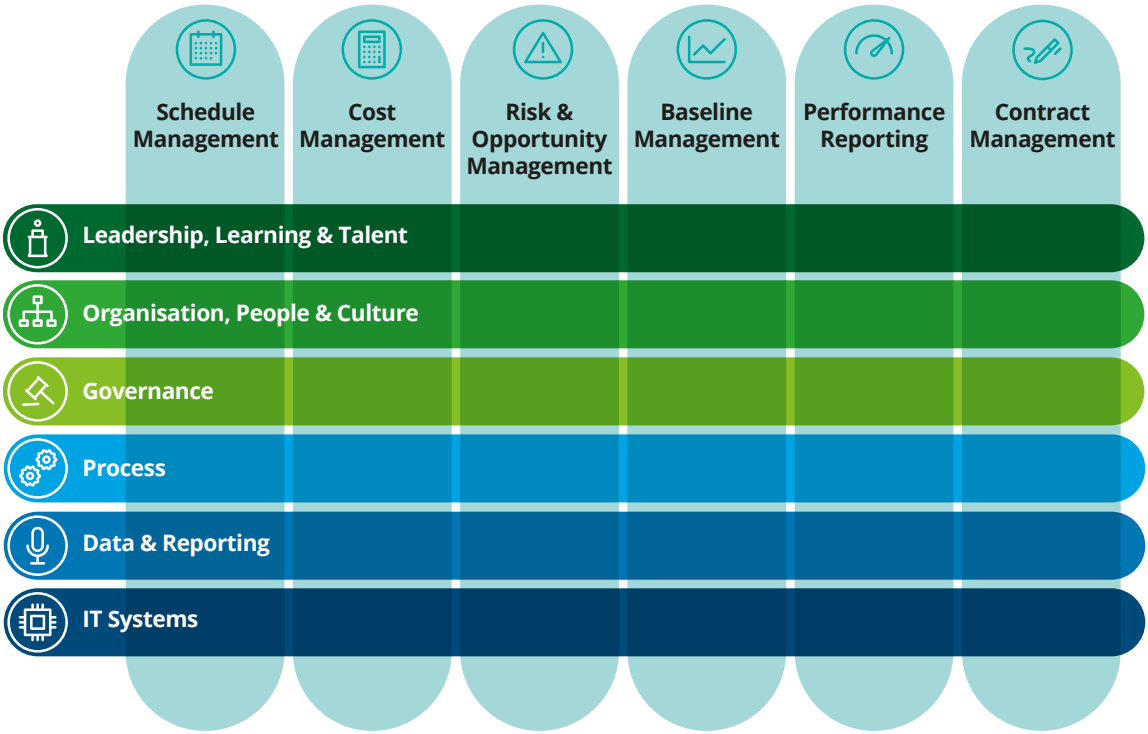
The vision and objectives for the project, how it's managed and monitored, and how that monitoring is informed, all cohere around project controls. Successful transformation must take a holistic view ensuring that a structured governance framework provides the necessary control, by ensuring a clear path to decision making and authority, as well as clear accountability.

Coherent processes

Organisation processes set out a logical set of steps through which capability is realised within the organisation. Successful transformation must take a holistic view ensuring that the identified processes are able to deliver the Project Control disciplines within the capability of the organisation, supported by the other layers of the operating model.

A single data model and fit for purpose reporting

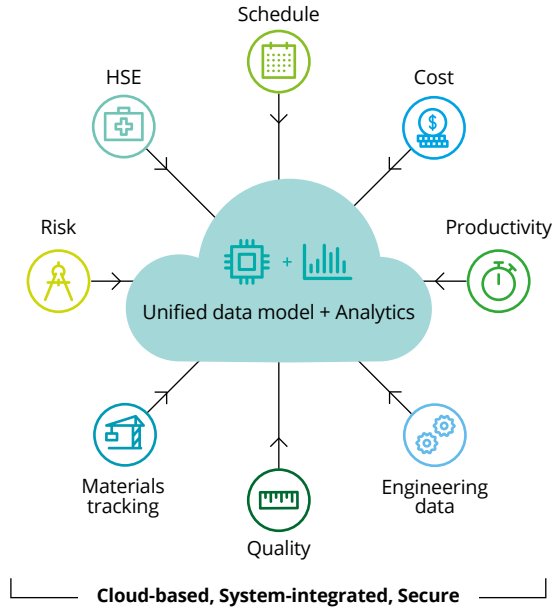
Every organisation collects and uses data in its own way, reflecting policies and practices that have evolved over many years. Data models (definitions, organisation and storage) can represent overt or subtle discrepancies between organisations. Data that appears common across all project partners can be useless if each has different standards. Through aligning data models and systems standards, data can be aggregated, analysed and reported effectively. Quality and timely data and reporting build trust and ensure that controls are relied on. Without it, confidence is lost.



Integrated systems

A key enabler to an efficient and accurate project controls capability is a set of integrated systems. By selecting and configuring systems to reflect the structure and needs of the organisation, the technology solution enables the organisation to be both more efficient in the way that it works, more innovative in the way it analyses and models data, and more accurate in the information it is reporting. This in turn improves the organisation's project control and enables better decision making.

The unified data system



Source: Deloitte

Transformation approach

Fundamental to transforming project controls is ensuring the right environment is created and sustained for change both within the project controls disciplines and the overall organisation operating model.

Shaped and guided by a number of strategic principles our approach provides a series of logically linked transformation phases, which are supported by an Agile transformation methodology and toolset. Together these provide not only a structured approach to transformation, but also a set of accelerators that emphasise flexibility, integrated organisational involvement, and rapid delivery of value.

Creating the right environment

The environment in which any transformation is landed is critical to its success. The right contextual factors must be in place to ensure that the change is sustained. During project controls transformation individuals often go through multiple cycles of change at different times, causing significant uncertainty and stress.

Our approach addresses this requirement, for example, by supporting leaders to develop so they can role model the right behaviours and culture, and supporting new ways of working. Ambiguity is minimised by using a structured journey with clear waypoints mapped out and targeted change interventions put in place to create a single narrative, incorporating other organisation-wide change taking place. Together these factors allow people to understand the transformation as a whole and where they fit within it, and increase the probability that the change is sustained.

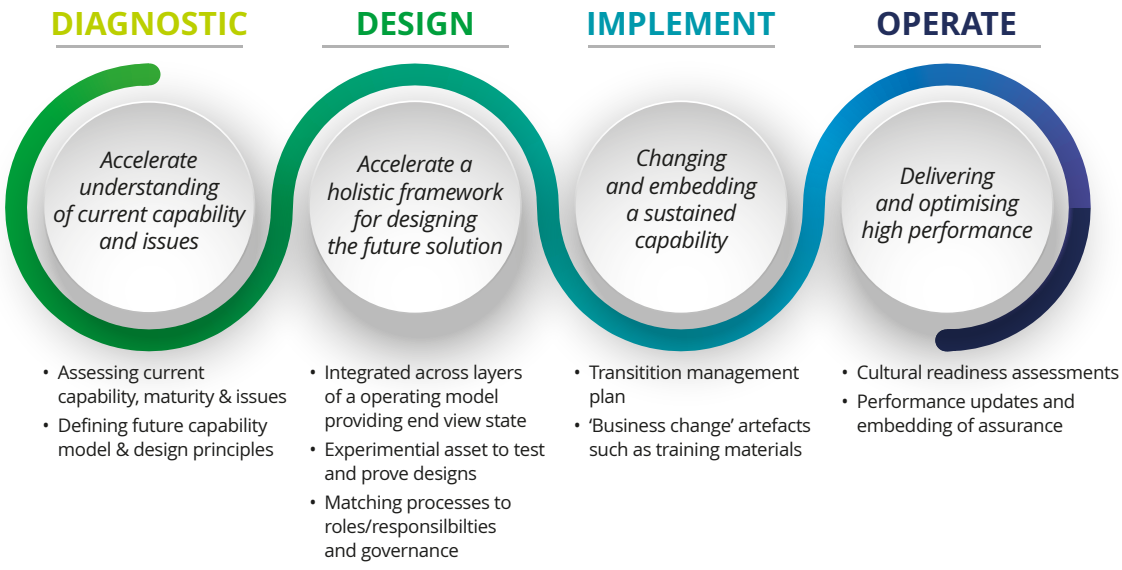
Following a series of transformation phases

To facilitate change in a complex and often ambiguous environment requires an element of simplicity and structure. We advocate a series of phases, with the timing of each varying depending on the scale, complexity and maturity of the project as well as the existing capability of the established organisation.

Initially the focus is on gaining a shared understanding of the current capability, areas of improvement and a strategy for project controls to inform the future design. Next is a design phase to build a blueprint for project controls that sets out how each element (each discipline and operating model 'layer') will work together. Changing and embedding sustained capability through implementation follows, to deliver a high performance operating environment.

Prove the design whilst building confidence

Given the design complexity and integrated nature of project controls, using an approach that facilitates design and test at pace is important in building confidence in the final solution. This is unlike traditional 'big bang' delivery which sees an organisation isolated from the end result for an extended period during detailed design and implementation, followed by a completed product being launched. The Agile design method allows early and continuous delivery of capability and tools, through the deployment of solutions during the early stages of their development, with additional elements being added as they reach maturity. This enables the solution to be tested as it is being built, keeps the organisation engaged and allows the early realisation of capability as stages of design and implementation are completed.



Complementing the Agile approach, an 'Experiential Asset' provides a working, physical facility for teams to test out the integrated project controls system, give feedback on its design, and accelerate adoption of practices. Culturally, it showcases a tangible sense of the vision and future direction, to build confidence and assurance from stakeholders. Moreover after completion, it remains an asset for ongoing training and development testing, providing a long term benefit to the organisation.

Working with partners and stakeholders

Achieving coherent controls across a project involves every partner organisation, and this needs to be recognised when setting up working relationships and contracts. This establishes a collaborative culture from the outset, by showing how project controls benefit the whole supply chain, to reinforce project cohesion.

Clients need to define their approach to project controls early enough, so this can inform supply chain contracts, to define suitable working relationships and information sharing. Introduced too late, this can mean contract variation or renegotiation, with cost, schedule or risk implications. Appropriate senior accountability for project controls is crucial, to help drive a leadership and strategy that aligns the underpinning objectives and motivations across all partners.

However, resistance from suppliers can be significant: they may fear overly intrusive scrutiny, or see information they provide as a binding constraint, so may compromise information quality in favour of local priorities. They might also be tied to approaches common in their own industry, rather than those that best serve the project.

Why Deloitte?

Our vision is to leave a sustainable project controls capability, securing delivery of your future investments. Deloitte has years of experience helping clients establish effective project controls – either by creating an appropriate structure from the outset, or, as is more often the case, by transforming an underperforming set-up.

Crossrail

£15bn

official professional services provider to the Olympic and Paralympic Games

£9bn

Tideway

£4bn

Crossrail is one of the most complex capital programmes ever attempted in Europe. Deloitte led the development of the Project Controls Target Operating Model for Crossrail's delivery organisation that elevated the strength and capability of its Project Controls function. As a result, Crossrail gained a single integrated Project Controls organisation, with reduced overall headcount, the demonstration of which played a key part in Crossrail's successful Major Projects Review Group assessment.

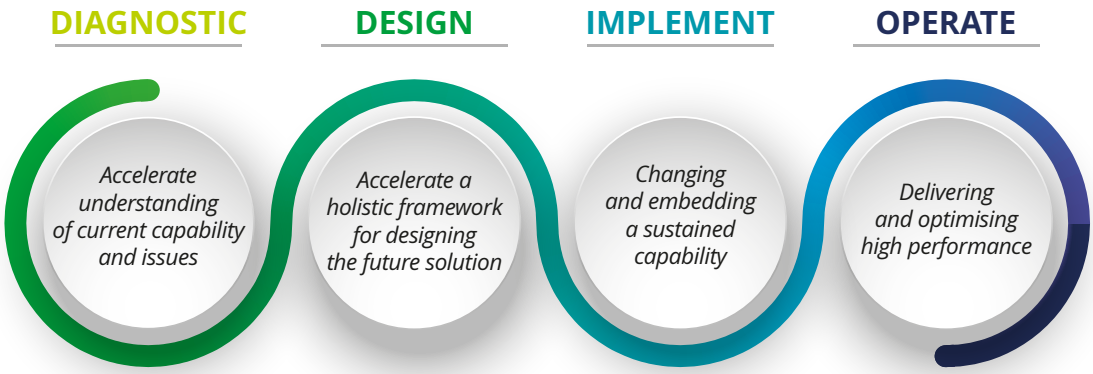
LOCOG was established with the objective of fulfilling a nation's ambition to build a world class organisation to stage a memorable Olympic Games and leave a lasting economic, sporting and cultural legacy. The key challenge was the tight time-frame to deliver such a large scale operating model and organisational transition close to operation. Deloitte's collaborative approach ensured that consensus was built around recommendations as work progressed.

Thames Tideway Tunnel (TTT) is a £4.2bn capital programme to develop a new major sewer in London. Deloitte supported TTT in the development of its Project Controls function within a wider Business Transformation Programme. Deloitte advised TTT on all areas of Project Controls, including organisation change, business process design and improvement, setting up appropriate data models, enterprise / system architecture, system selection and implementation.

"The work that Deloitte led for us was mission-critical for Crossrail. Deloitte read very accurately what we needed and demonstrated their commitment to delivering with confidence. Deloitte has taken the lead working in partnership with our own teams, our other partner organisations and many suppliers to deliver first-class programme controls systems and a business organisation fit for purpose. This has enabled me and my team to lead and control the largest and most complex construction programme in Europe."

Andy Mitchell, Crossrail Programme Director

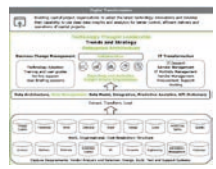
Our holistic approach means that we think about the whole project, not just the individual components. We have the depth of understanding in transformation, with our well-developed methodology and tools for each phase.



Innovation Labs

Operating Model Blue-Print

Transformation Management Office (TMO)



Technology & Innovation

Programme Controls Diagnostic

Competency framework

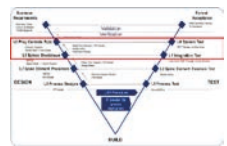
OrgVue

Model Office

Hosted PC Systems

Culture Path

Change Methodology



Assurance

We have established relationships with strategic suppliers, subject matter experts and key software vendors to help ensure that the right expertise is sought and solution realised. Talk to us early, even if your project is still an idea or proposal. While we can certainly help further down the line, it costs less to think early about project controls.

Key contacts

Sounds of interest?

Contact one of us to understand how we can establish a lasting world class project controls capability.

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Endnotes

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Notes

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