Establishing a basis for effective project control
The challenges of the “Board” in delivering Capital Projects

Maturing economies and population growth across the Middle East have driven a rapid increase in demand for transportation, real estate, energy, utilities and social infrastructure assets. Project owners, investors and stakeholders have responded by investing in billions of dollars in major capital projects across a variety of sectors to accommodate this growth.

Experience in asset delivery through capital investment projects varies greatly, from organisations that routinely deliver complex programmes to those that may deliver one project every business cycle. However, a common factor that unites these organisations is that capital projects represent a strategic investment for the Board, typically form part of a long term strategic plan to increase shareholder return, serve socio-economic need, take market share, enter new markets or gain competitive advantage.

High profile project failures are common and can damage reputations, brands and significantly disrupt the implementation of longer term strategic plans. In the worst cases they can threaten the very existence of the organisation altogether. Our experience is that Boards have a hierarchy of needs when it comes to capital project investment, which include knowing that:

- Capital is being deployed effectively
- Risks are being managed and appropriate trade-offs made
- Returns are being optimised and commercial viability regularly tested
- Business benefits will be delivered and aligned with end user requirements
- Informed strategic decisions are taken at Board and Project level
- Reporting is accurate, timely and can be relied upon by stakeholders

In the following pages we set out how our Review, Design, Apply and Monitor framework puts Boards and project teams in control.
## Outline

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Most project owners want to know their capital project is ‘on track’ to deliver defined business benefits and the risks are managed.

A risk resilient project should be able to demonstrate and stand up to challenge on:

**Benefit**
- Business revenue/benefit will be realised

**Risk**
- Key risks are adequately mitigated

**Stakeholders**
- Stakeholders confident with status & team / suppliers are performing

**Cost**
- Actual & forecast vs planned cost variances are authorised

For any ‘issues’ in these areas, there needs to be a monitored plan addressing:
- The impact on scope, key deadlines, cost and revenue
- Achievable actions to get the project back ‘on track’
- Visibility on the action status for critical issues

**Quality**
- Technical, HSSE requirements are met

**Schedule**
- Key milestones will be met

**Change**
- Impact of any changes are understood and managed

**Regulation**
- Project meets regulatory & oversight requirements
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Significant delays and cost overruns for major projects show these are often not ‘in control’ and control objectives are unclear

<table>
<thead>
<tr>
<th>Millions or billions over budget</th>
<th>Wrong contracting model</th>
<th>Delays &amp; multi-million disputes</th>
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<tr>
<td>Cost overruns in major infrastructure projects...often 50-100%</td>
<td>Incorrect contracting to build ships and infrastructure led to a $2m tax loss</td>
<td>€2.4bn damages sought for 3 year delay on a turnkey €3bn power project</td>
</tr>
<tr>
<td>For $100m+ off-shore projects, routinely 25%+ overruns</td>
<td>‘Lump sum’ questions in power sector – rather partnerships and early contractor involvement</td>
<td>Capability gaps</td>
</tr>
<tr>
<td>A central Asian oil project $2.5bn budgeted, $4.1bn actual</td>
<td></td>
<td>$50m+ team inefficiencies in off-shore exploration projects</td>
</tr>
<tr>
<td>MEast LNG $10bn budgeted, $19bn actual</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Poor cost control</th>
<th>Regulatory investigations</th>
<th>Lost opportunities</th>
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<tr>
<td>Typically no approval for up to 10% cost overruns ... an energy project view</td>
<td>US and UK anti-corruption investigations in local and international construction projects</td>
<td>‘Sharp’ commercial management, incorrect (high) billing ... break down of trust, lost future contracts</td>
</tr>
</tbody>
</table>

Sources: ‘Megaprojects – An Anatomy of Ambition’ (Flyvbjerg et al); PennWell Oil & Gas / Power Engineering journals, Cambridge University engineering case studies, specific project reviews

Good controls are essential to mitigate risk and minimise the impact of ‘issues’
Our approach to improved project governance and control focuses on key risks, control gaps and active monitoring, taking into account organisational aspects.

### Organisation & Behaviour
- Clear project structure, roles & responsibilities and project management methodologies
- Explicit control procedures and application guidance
- Use of supporting tools so that project controls are practical to apply
- Learning and sharing ‘as built’ and operational knowledge

### Key Risks
- Each project has a different risk profile
- Top-down & bottom-up assessment
- Prioritised project risk register
- Mandated mitigation standards and objectives for key risks
- Project plan includes mitigation

### Control Gaps
- Project success factors a basis for overall control objectives
- Control environment designed specifically for each project
- Mandatory mitigation standards & metrics for key risks
- Minimum set of good practice project controls

### Monitoring & Escalation
- Good control requires active monitoring
- Regular self assessment, challenge & independent confirmation
- Exception-based reports
- Visibility of corrective actions
- Clear escalation criteria
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We use a top down and bottom up risk assessment to identify key risk and control issues, specify mitigation requirements, develop action plans and monitor these.

Our approach uses established performance improvement and risk management approaches to engage at executive and project levels.
Identify key project risks and mitigation status – taking an overall top-down view and engaging at executive and project levels

Questions to Address

- What are the key project risks?
- How are these project risks monitored, updated and reported?
- What are the mitigation plans and status?
- Do the project policies set out clear mitigation standards and objectives?

An Example of Key Risks Across a Project

A project risk profile from the assess phase of a major power project, based on a standard risk register

Indicative Risk Exposure Rating

- High: fundamentally undermines ability to achieve core project objectives
- Medium: potential to significantly impact the project, but not an immediate priority
- Low: comparatively less impact at present, but must re-appraise to address changing circumstances

Key risks are adequately mitigated
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For the project control objectives and management areas, identify control gaps to assess achievement of the objectives – drawing on good project practice

<table>
<thead>
<tr>
<th>Project Management Areas</th>
<th>Performance Control Objectives</th>
<th>Questions to Address</th>
<th>Criteria to Assess Achievement of Performance Control Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business &amp; Regulatory Environment</td>
<td>Business revenue/benefit will be realised</td>
<td>• How well defined are the required project process controls? See the matrix of project process controls across life cycle</td>
<td>The maturity of control processes is the basis for assessing whether control objectives are met, in line with their criticality. Processes which are assessed ‘Not Achieved’ require agreed improvement plans</td>
</tr>
<tr>
<td>Scope &amp; Change Control</td>
<td>Impact of any changes are understood and managed</td>
<td>• Does project documentation and reports indicate that these processes are operating?</td>
<td>0. Nothing in place 1. Informal, not documented</td>
</tr>
<tr>
<td>Time Management (Schedule)</td>
<td>Key upcoming milestones will be met</td>
<td>• Do these findings suggest that the performance control objectives are likely to be met?</td>
<td>2. Working practice, but not fully documented or tested / monitored</td>
</tr>
<tr>
<td>Quality &amp; Inspection</td>
<td>Technical, HSSE requirements met</td>
<td>• Are key control gaps shown as risks in the risk register?</td>
<td>3. Documented and in place, but not tested / monitored</td>
</tr>
<tr>
<td>Cost Management</td>
<td>Actual &amp; forecast vs planned cost variances are authorised</td>
<td></td>
<td>4. Documented and tested / monitored and reported</td>
</tr>
<tr>
<td>Communication &amp; Reporting</td>
<td>Stakeholders ok &amp; team / suppliers are performing</td>
<td></td>
<td>5. Optimised, gone through an improvement process to gain value – e.g. automated checks</td>
</tr>
<tr>
<td>HR Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement &amp; Contracts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk and Issue Management</td>
<td>Issue impact understood + improvement plans</td>
<td></td>
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A matrix of key process controls across the life cycle is the basis for the control gap assessment, with key gaps included in the project risk register.
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Address requirements for ongoing risk management and control reporting, including the status of action plans to address key risks and control gaps

Regular checks by the Directive group against the business case and implementation of risk management standards, recognising the need to challenge the Project Manager / Teams’ assessment
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What questions and concerns typically drive steps to improve project governance, risk management and control

**Project Phases**

- **Assess**
- **Procure**
- **Design**
- **Build**
- **Operate Retain/Exit**

**Key Parties**

- CEO, CFO, Investor/Developer
- Financial Controller, Head IA
- Operations Head

**Typical Concerns**

- Is the **full risk spectrum** (financial & other) considered and is ‘optimism bias’ managed?
- Is the **commercial model & contracting** risk resilient?
- Are cost ‘blow outs’ and **delays** likely and how can project controls be tightened up?
- Is the **operational organisation ready** to ‘go live’?
- Has the ‘**as built**’ and **commissioning knowledge** been retained’?

Are project delivery costs, risks and benefits adequately addressed in the delivery plan?
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The ability to influence success and enhance value is greatest in the early stages of a project and declines rapidly as a project advances towards completion.
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What a typical project governance and control engagement covers

We use a tailored end-to-end approach, aligned with key project governance requirements and based on standard process improvement and risk management approaches.
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A case study from the energy industry

Project readiness assessment for a nuclear power plant construction – A major utility required our help to establish the organisation's preparedness to start a multi-billion, multi-year new build project. The highly regulated context meant a strong control environment to manage the project was essential.

I

Governance Readiness Review – As part of the project planning and set up, we undertook a governance readiness review to assess the current systems and controls. We established key project organisational and procedural risk areas, and developed mitigation plans. Using an integrated risk management approach, we identified priority areas of the project organisation and procedures. This took into account the current project state, key risks, and the controls to manage those risks at each phase of the project life cycle. The scope included:

- Proposed controls for oversight of the EPC contract and quarterly reporting to regulatory bodies
- Documentation and retention guidelines to evidence decision processes, alternatives and conclusions
- Internal controls to meet regulatory accounting and Sarbanes Oxley reporting needs
- Relevant existing programs in the organisation, including the construction audit program
- Available technology to provide timely and accurate access to project data

Our report presented actionable recommendations based on industry standards and good practices, to various groups including the Project Steering Committee. This led to a second phase to provide implementation advice.

II

Controls Development – Assistance with the development of the project organisation, processes and procedures and systems, including:

- A Project Financial System to forecast the Total Project Cost, manage invoice payments, formulate "what if" scenarios, report Earned Value and develop a detailed cost audit trail suitable for regulatory proceedings
- A consolidated pre-deployment schedule with all project elements leading to the start of physical works
- A project level risk management system to track, communicate, escalate and report all levels of identified risks across the entire project

III

Application Advice & Monitoring – We subsequently undertook periodic governance and control reviews, along with regulatory, contract administration and project execution support.

Drawing on experience gained on numerous multi-billion dollar, multi-year projects, we provided assurance that key project risks, regulatory requirements, and gaps in the control framework were adequately addressed.
We have deep engineering experience from major international capital projects in energy and utilities, real estate, transportation and infrastructure as well as other sectors. This includes process evaluation, project management/administration, contracting, cost analysis, disputes and risk management.

Depending on specific project risks and the stage of the project, practical aspects of our work can include:

- A proven approach to project risk management and control
- Assessment of contracts, contractor payment applications and contract compliance
- Identification of root causes for project failures relating to time, cost and resources
- Working with Project Management Office (PMO) groups and back-office staff of corporate clients
- Ability to transfer knowledge to client’s team’s through training sessions, deep-dive meetings and workshops
- Work on capital projects that are subject to retrospective reasonableness reviews by regulatory authorities for purposes of cost recovery
- Forensic based approaches to maximise cost recovery opportunities
- Design and management of underlying financial processes
- Design and development of web-based approaches to governance, risk management and compliance
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Benefits of good project governance and control

Projects deliver the expected return on investment

Minimised project delay and cost leakage or “blow outs”

Reliable and timely project status information - critical project issues identified early, enabling managed intervention

Board and key stakeholders are informed, with realistic expectations, and able to intervene quickly if required

Compliance with regulatory and other stated requirements, with an audit trail
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Supporting Details

A. Sizing up your project governance challenge
B. So what’s wrong with project governance?
C. Examples of our energy capital project experience
### Establishing a basis for effective project control

#### What tells you that your project may have governance challenges?

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<tr>
<th>Question</th>
<th>Lower challenge</th>
<th>Higher challenge</th>
</tr>
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<tr>
<td>How often does the organisation conduct capital projects as part of its business?</td>
<td>Multiple: Capital project portfolio</td>
<td>One-off: One-off</td>
</tr>
<tr>
<td>Is the project critical to strategic business objectives and/or revenue?</td>
<td>Low: Business criticality</td>
<td>High: High</td>
</tr>
<tr>
<td>What is the organisation's track record of performance in capital projects?</td>
<td>Good: Track record</td>
<td>Poor: Poor</td>
</tr>
<tr>
<td>What is the political / regulatory environment context in which the project is being delivered?</td>
<td>Stable: External environment</td>
<td>Dynamic: Dynamic</td>
</tr>
<tr>
<td>How many locations is the project being delivered in? Are the business and project teams co-located?</td>
<td>Single: Geography</td>
<td>Multiple: Multiple</td>
</tr>
<tr>
<td>How well is the end solution defined at the outset?</td>
<td>Defined: Clarity of scope</td>
<td>Emergent: Emergent</td>
</tr>
<tr>
<td>In terms of the end state, how technically complex is the solution?</td>
<td>Simple / proven: Technical complexity</td>
<td>Complex / novel</td>
</tr>
<tr>
<td>How many interfaces are there with other projects and programmes?</td>
<td>Few: Dependencies / interfaces</td>
<td>Many: Many</td>
</tr>
<tr>
<td>What characterises the way the organisation gets things done?</td>
<td>Rules based: Organisational style</td>
<td>Principles based</td>
</tr>
<tr>
<td>How is the project being delivered and how is control exerted over the resources?</td>
<td>Centralised: Delivery model</td>
<td>Decentralised: Decentralised</td>
</tr>
<tr>
<td>What is the complexity in the engagement of the supply chain?</td>
<td>Low: Number of third parties</td>
<td>High: High</td>
</tr>
</tbody>
</table>

PricewaterhouseCoopers
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So what’s wrong with project governance?

From our experience, questions and issues that need to be addressed

We like risk
- Are key risks and opportunities identified and managed effectively?
- Are executives engaged to maintain alignment and develop wider opportunities?

Thinking inside the box
- Are projects ‘open’ or ‘black boxes’ managed for the benefit of the project team or the contractors?
- Are there independent checks on project status?

Who’s in charge today?
- Is senior level sponsorship clear?
- Are roles, responsibilities and authorities clear?
- How well do project stakeholders communicate?

Front end spend
- Is upfront spend enough for maximum influence on the final outcome?
- Is sufficient time spent on project definition?

The games people play
- Do rewards align with corporate objectives?
- Are subcontractor risks and dependencies clearly visible?

Budget variances are good
- Are there variance ups and downs in status reports?
- Are actual costs visible to management at any time?
### Establishing a basis for effective project control

#### Examples of our energy sector capital project experience

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<tr>
<th>Company Type</th>
<th>Experience Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>European energy company</td>
<td>Prior to approval of a multi-billion capital project, assessment of strategic risks and mitigation plans across the project. Developed a governance and risk management framework, including a supplier health check</td>
</tr>
<tr>
<td>European industrial consortium</td>
<td>Assessment of strategic program risks for nuclear new build projects, drawing on an earlier review of strategic risks and mitigation strategies for a nuclear new build project</td>
</tr>
<tr>
<td>Major US utility</td>
<td>To support multi-billion capital investment plans for major infrastructure projects, including new power plants, upgraded facilities, and environmental projects, we identified key risks facing the organisation and helped it to establish more rigor around its capital projects policies, procedures, organisation and methodologies</td>
</tr>
<tr>
<td>Major utility</td>
<td>A major utility required our help to establish the organisation's readiness to start a multi-billion, multi-year nuclear new build project. The highly regulated context meant a strong control environment to manage the project was essential</td>
</tr>
<tr>
<td>US repowering project</td>
<td>After helping select a contractor for a project to transform a power station from natural gas to clean coal, we reviewed the plans to manage the construction phase. Assessed the utility’s governance framework based on key project control components across the lifecycle, made recommendations based on a review of policies, procedures and systems, and proposed ways to implement these</td>
</tr>
<tr>
<td>UK nuclear utility</td>
<td>Assessed the contract governance framework for capital projects to improve end-to-end contract management, taking into account risk factors, supplier relationships and alliancing</td>
</tr>
<tr>
<td>Oil major</td>
<td>Review of selected international exploration projects and management approaches, including in Africa and central Asia. Identification of organisational development and management control lessons for petrochemical joint ventures in SE Asia</td>
</tr>
<tr>
<td>North American oil supplier</td>
<td>Review of the project control environment, governance organisation, and general readiness to undertake a major capital project. Required analysis of business functions and needs to make recommendations that best positioned the company to successfully manage its projects</td>
</tr>
<tr>
<td>Spanish power plant</td>
<td>Appointed as independent delay experts for arbitration relating to a significant delay on a $920m turnkey contract for a power plant constructed by an international consortium</td>
</tr>
<tr>
<td>Philippines utility</td>
<td>An independent review of a contractor dispute relating to a delayed half billion dollar power plant construction</td>
</tr>
<tr>
<td>African joint venture</td>
<td>A review of the performance of constructing a process manufacturing plant in Nigeria</td>
</tr>
<tr>
<td>Russia energy company</td>
<td>Performance review of engineering and project management services on a multi-billion new-build refinery</td>
</tr>
</tbody>
</table>
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