Front End Productivity Design: More commercial certainty is key to delivering UK productivity and infrastructure Accenture, 2024

"Looking at construction projects today, I do not see much difference in the execution of the work in comparison to 50 years ago" – John M. Beck – CEO, Aecon Group, Canada at the 2016 World Economic Forum.

Introduction

Productivity in UK construction has long been a pressing concern, with stakeholders grappling to unlock its full potential. Strategies such as training, design for manufacture, developing local manufacturing, and forming supply chain hubs are well-known levers to enhance productivity¹. However, achieving these improvements necessitates significant investment, whether in capital or labour, and investment demands certainty.

Yet uncertainty is everywhere – Will planning be delayed? Will predicted volumes materialise? Will a key risk transpire? Whilst some uncertainty is out of our control, some of it is a failure to make a decision and some is bad decision making. A failure to make a decision and to insist on unhelpful optionality is expensive. Do you want to travel by air or rail? To fail to choose either ends up buying both or buying late and expensively.

The Resolution foundation's report Ending Stagnation²: A New Economic Strategy for Britain describes how public sector investment is "too low and too volatile." Government is, it seems, making decisions that are bad for productivity. Yet, we have to operate with what we have; how might we find a way to manage uncertainty?

Two historic approaches to uncertainty have been to ignore it or to attempt to force it on supply chain partners. Both approaches ultimately cost money and block investments in productivity. Ignoring uncertainty results in material, expensive project changes when the uncertainty can no-longer be ignored. Passing risk to suppliers that are ill equipped to manage them results in either expensive risk premia (because they need to protect against expensive outcomes) or worse suppliers going bust when the going gets tough. Neither drive the "bankable" confidence needed to drive investment in productivity.

Ongoing difficulties with the HS2 project, once touted as a cornerstone of infrastructure advancement, have damaged the government's credibility as a guarantor of such certainty. This raises a pressing question: How can we incentivise investment and ensure productivity gains in an environment where certainty is elusive?

Front End Productivity Design

"You are more likely to get what you want if you ask for it."

The challenges faced by large-scale infrastructure projects in the UK, highlight the need for more effective strategies to manage uncertainty and drive productivity. This paper introduces the concept of Front-End Productivity Design (FEPD), an innovative approach that integrates Commercial Design (CD) and Engineering Design (ED) to achieve project outcomes at lower cost and without regret. By focusing on the early phases of project development, FEPD provides a structured methodology for improving alignment, risk management, cost optimization, stakeholder confidence, and project flexibility.

Engineering Design is a critical, well established phase in large UK infrastructure projects that assesses technical feasibility, cost estimation, technical risk management, regulatory compliance and detailed engineering planning; it describes how and when the engineering components work together to deliver the

¹ Infrastructure Project Authority – Transforming Infrastructure Performance https://assets.publishing.service.gov.uk/media/5a81c980e5274a2e87dbf7a2/transforming_infrastructure_performance_web.pd

² https://economy2030.resolutionfoundation.org/wp-content/uploads/2023/12/Ending-stagnation-final-report.pdf

Front End Productivity Design: More commercial certainty is the key to delivering UK productivity and infrastructure

technical outcome. The Commercial Design is complementary and describes how the commercial components such as revenue streams, engineering, management and finance costs, over-runs, productivity opportunities and risks work together to deliver the desired commercial outcomes.

Both the Engineering and Commercial designs share a common, robust and owned set of outcomes, assumptions, risks and timelines. The timeline can be staged with gates that pull risks forward – it is unfortunate to discover fatal flaws late in the spend.

Productivity is achieved in three ways:

- 1- Waste Less: Less waste by avoiding the cost of regret spend by creating a structured approach to certainty on both engineering and commercial designs by "facing in" to key risks. For example HS2 firstly took a big design risk by proposing a design speed far above European norms this impacted costs, routes and reusability; what-if this decision had been carefully tested up front? Secondly HS2 faced big acceptance risks by attempting to begin in highly congested Northwest London; what-if the project had started with the Manchester to Birmingham leg first, building confidence in the project and buying time for the inevitable challenges around Euston? Thirdly a clear risk was planning; a Hybrid Bill delivered "highest common denominator" costs clearly fronting up to this risk was always going to be key.
- 2- **More for Less:** Design optimisation by iterating engineering and commercial designs to optimally allocate risks and so reduce the cost to achieve. A good example is how Thames Tideway spent more on the engineering delivery (by double lining the tunnel) and commercial design (giving clarity and certainty on revenue streams) to give a high degree of confidence in an extended asset life that in turn dramatically reduced the cost of finance.
- 3- Productivity Investment: By providing a "bankable" commercial commitment enable the supply chain to invest in productivity and so reduce total cost. The most striking example is the use of Contracts for Difference in offshore wind. By providing commercial, "bankable" certainty about what would happen in the event electricity wholesale prices dipped it enabled project developers to make smaller scale investments in skills and equipment. On a more macro scale however, it is also a good counter example. There was no bankable commitments to 10 years of work (as it was let project by project) so there was no development of UK manufacturing facilities.

Understanding FEPD

Components of FEPD

- **Concept**: This is the beginning of any infrastructure project. An idea is either dismissed or progressed depending on the assumptions related to the other four components: outcomes, engineering design, commercial design and productivity plan.
- **Outcomes**: These are the objectives of the project and what it sets out to achieve. Clear, measurable outcomes provide a benchmark for success. It also makes clear the critical external assumptions what is outside the scope of the project, but a dependency nevertheless.
- Engineering Design: An engineering solution and timeline that explicitly determines which engineering assumptions can be relied upon without regret and where there are residual uncertainties. It is crucial to ensure that the engineering solutions are feasible and aligned with the project's objectives.
- **Commercial Design**: A deliberate and optimised design for which parties take on which costs and risks over time to determine the commercial assumptions that participants can safely make to enable

Front End Productivity Design: More commercial certainty is the key to delivering UK productivity and infrastructure

Accenture, 2024

a scenario where there is sufficient certainty to invest in productivity. It ensures that the financial and contractual aspects of the project are sound.

- Productivity Plan: A specific plan that looks at:
 - Waste Less Identify the largest potential regret costs with risk drivers and ways to pull each forward
 - More for Less The largest actual costs (engineering and finance), the underlying drivers and options to optimise across the integrated (engineering and commercial) design
 - Productivity Opportunities The opportunities for making commercial commitments that unlock new levels of performance
 - Governance recommendations Given any residual uncertainties, how should that be reflected in the project governance.
- **Option recommendation:** exit the stage to FID when a productivity plan has been accepted and incorporated into the engineering and commercial designs.

Iteration of Assumptions

FEPD emphasizes the iterative process of refining assumptions for all four components (outcomes, engineering design, commercial design and productivity plan). This iterative approach helps form a shared set of assumptions that are proactively managed to balance finance, engineering, and the supply chain to influence project outcomes. Typically this iteration would be done in collaboration with the supply chain to understand their perspectives on the risks and productivity opportunities in a structured early contractor (and financier) engagement process.

Proactive Management of Assumptions

Ownership and proactive management of assumptions are crucial in FEPD. Without clear ownership, assumptions may not be driven forward to remain true. The following areas need to be managed:

- **Commercial**: How do all participants work together (government, investors, the public, contractors, etc.)?
- Engineering: How do all components of design work together to make the project feasible?
- **Outcomes**: What are the intended outcomes, and what objectives are assumed to be met if all assumptions hold true?

"Bankable" Commercial Commitments

Sadly government's handling of infrastructure has damaged the credibility of investing ahead of demand in the context of UK Infrastructure. To make commitments bankable (ie ones investors are prepared to spend money on in anticipation of future orders) it may well be that key assumptions will need to be backed with explicit cost recovery clauses in the event of project cancellation or delay. These costs helpfully highlight to key stakeholders the consequences of changing their mind.

Case Studies

Case Study 1: Thames Tideway Tunnel (TTT)

Many of the key principles of FEPD were executed in TTT:

- Less Waste. The engineering and commercial designs were iterated and optimised extensively before work began so "front loading" the key risks.

Front End Productivity Design: More commercial certainty is the key to delivering UK productivity and infrastructure

Accenture, 2024

- More for Less: By extending the asset life (by spending more on engineering) the total cost came down. By reducing revenue risks by giving clarity on recovery (including Government contingent support for high impact, low probability risks), a smaller risk premium was due.
- Productivity Plan: Layers of project oversight and unhelpful conflict between parties was identified as a potential source of excess cost. TTT's owner, consultants and consortium members operating under an Alliance Framework that incentivised "badgeless" collaboration.

Case Study 2: UK Government-Backed Fibre Rollout Programme

The UK government's fibre rollout programme provides a practical example of FEPD in action and in particular a willingness to react when assumptions (such as that a detailed contract would drive the right behaviour) turned out to be untrue.

Less Waste: Upfront there was a good understanding that some regions would be harder to deploy broadband than others so in an attempt to drive less waste they began with a **Targeted Rollout Strategy**. Realistic targets were set, focusing on accessible areas and incentivizing market participation.

More For Less: Over time it became apparent that a highly centralised command and control approach had two big drawbacks: it bore the costs of under-utilisation and a lack of local knowledge. The detailed cost recovery didn't work well either - the time and effort of administration created overhead without delivering control for the prime or confidence in recovery for the contractor. Consequently, specialist firms were encouraged to cover rural segments, supported by the Rural Gigabit Connectivity (RGC) programme.

Secondly they took the innovative approach of empowering contractors with a trust based governance system. Once a contractor had provided sufficient evidence over a number of periods, the level of oversight was reduced – freeing the contractor to focus on delivery and less on compliance.

More generally, we can see how the discipline of private finance (common to TTT and fibre roll-out) is that investors and lenders will not release money unless and until they have clarity of on the risks they are taking. This forces the very "front-ending" which FEPD is all about; and supports confidence building within the supply chain. Even where the finance is not the private sector, the public sector should approach the project in exactly the same manner as private investors and lenders would - pro-active and informed enquiry to get everything that matters (costs, risks and benefits) surfaced, sorted and locked down up-front.

FEPD and the Green Book

FEPD aligns with the Green Book framework, enhancing the strategic, economic, commercial, financial, and management cases of infrastructure projects:

- Strategic Case: By drawing together the outcome, technical and commercial assumptions it helps synthesise national, regional, and local strategies into measurable goals.
- Economic Case: Identifies and mitigates potential economic risks through structured productivity investments.
- **Commercial Case**: Allocates risks between public and private sectors, ensuring commercially • attractive projects.
- **Financial Case**: Provides a structured approach to financial planning, managing risks proactively. •
- Management Case: Establishes robust governance structures, ensuring continuous monitoring and • timely interventions.

Front End Productivity Design: More commercial certainty is the key to delivering UK productivity and infrastructure Accenture. 2024

The Front End Productivity Design would form part of the Commercial Case within the Green Book Five Case Business Model justification (e.g. OBC). Some productivity investment might stand alone ie the net saving within the project fully justifies the cost incurred by the project. In other cases, e.g. building a strategic capability for the UK that contributes to this project, but is only fully recouped in a broader programme, would also need the underpinning of productivity being a project requirement within the Strategic Case. This requirement would, essentially, justify project costs that delivered benefits lying outside the direct scope of the project itself – viz within the supply chain. All of which stands on clarity of desired outcome; the first component of the FEPD.

Such costs would need also to pass a relevant value-for-money test and would only really do so if they boosted the UK supply chain, which could be captured within the "Social Value" benefits within project requirements and tender evaluation criteria. Clearly, relevant procurement legal advice would be recommended in advance.

Conclusion

Front-End Productivity Design (FEPD) represents a significant evolution in the approach to infrastructure project planning and execution. By integrating commercial and engineering designs, FEPD provides a comprehensive framework for managing risks, optimizing costs, and enhancing stakeholder confidence. This methodology is particularly relevant to the UK's infrastructure landscape, where uncertainty and productivity challenges are prevalent. By adopting FEPD, project stakeholders can drive more successful outcomes and deliver lasting value to the UK economy.

This document although authored by Accenture is the product of close collaboration and iteration with the Infrastructure Forum and has been created with the invaluable input and review from its members.

This document is provided as the basis for discussion to assess whether there is merit in the ideas presented. It is no substitute in any circumstance for advice from a suitably qualified professional.