INFRASTRUCTURE AS A SERVICE: THE FUTURE OF PUBLIC ASSET DELIVERY

A CBS Group White Paper
CBS-WP-003 | July 2025

Executive Summary

Traditional infrastructure procurement is failing at an alarming rate, with a staggering 92% of major projects failing to deliver their promised performance outcomes, locking governments into decades of underperformance and unsustainable costs [1]. This systemic failure stems from a misalignment of incentives, where contractors are rewarded for on-time, on-budget delivery, not long-term asset performance.

Infrastructure as a Service (IaaS) directly addresses this fundamental flaw by shifting the focus from asset ownership to service consumption. Instead of buying an asset, governments purchase guaranteed service outcomes, creating a powerful alignment of incentives between the public and private sectors. This paper introduces the CAPITAL Framework, a proven methodology for structuring these complex arrangements.

IaaS models transfer significant risk to the private sector while driving substantial performance gains. Pioneering deployments demonstrate a 30-50% risk transfer away from government, coupled with a 25% improvement in service reliability and lifecycle cost reductions of 25-40%.

The CAPITAL Framework provides a clear roadmap for successful IaaS implementation, enabling governments to navigate the complexities of outcome-based contracting, optimal risk allocation, and whole-of-life asset optimisation.

The imperative for change is clear: organisations that develop IaaS capabilities will gain a significant competitive advantage. Successful implementations across transport, water, and energy sectors validate the IaaS approach, demonstrating its potential to deliver superior value to communities.

1. The Problem: A System Designed to Fail

For decades, governments have followed the same playbook for infrastructure procurement: design, build, own, and operate. This approach made sense in an era of stable technologies and predictable service demands. But today's infrastructure landscape is radically different. Technologies evolve rapidly, community expectations shift constantly, and budget constraints tighten relentlessly.

The result is a procurement system that consistently underdelivers. While governments pour billions into infrastructure assets, the vast majority fail to meet their performance targets. A recent Accenture study found that a staggering 92% of major infrastructure projects fail to deliver their promised performance outcomes on time and on budget [1].

The Crisis: A 92% Failure Rate
The fact that only 8% of major infrastructure projects deliver on their promises highlights a systemic failure in traditional procurement models. This isn't just a matter of budget overruns; it's a failure to deliver the services and outcomes that communities need and deserve.

The fundamental flaw lies in the misalignment of incentives. Under traditional models, contractors are rewarded for delivering assets on time and on budget, not for ensuring those assets perform well over their lifecycle. Once the ribbon is cut and the contractor departs, governments are left holding assets that may underperform for decades, forcing the public sector to absorb risks they are poorly equipped to manage—from technological obsolescence to demand volatility to operational inefficiencies.

2. Current Approaches and Their Limitations

The status quo of infrastructure procurement is defined by a focus on asset ownership and upfront cost minimisation. This traditional approach, while familiar, is increasingly ill-suited to the complexities of modern infrastructure delivery. It creates a system where the party procuring the asset (the government) bears the majority of the long-term

performance risk, while the party delivering it (the contractor) has little incentive to optimise for whole-of-life value.

This leads to a number of critical shortcomings:

- **Reactive Maintenance:** With no long-term performance incentive, maintenance is often reactive rather than proactive, leading to higher lifecycle costs and reduced service reliability.
- **Stifled Innovation:** The focus on upfront cost and rigid specifications discourages the adoption of innovative technologies and materials that could deliver better long-term outcomes.
- **Poor Adaptability:** Traditional models struggle to adapt to changing community needs, technological advancements, or new regulatory requirements. Changes often require new, costly procurement processes.

To illustrate the stark contrast between the traditional model and a service-based approach, the following table compares the two across key dimensions.

Feature	Traditional Procurement	Infrastructure as a Service (IaaS)
Primary Focus	Asset delivery on time and on budget	Service outcomes and user satisfaction
Risk Allocation	Government bears 80-90% of lifecycle risks	Private sector bears 50-70% of lifecycle risks
Innovation Incentive	Limited—contractor exits after construction	Strong—provider benefits from efficiency gains
Lifecycle Cost	Higher—reactive maintenance, suboptimal operation	Lower—proactive maintenance, optimised operation
Service Reliability	Variable—depends on government operational capability	Higher—provider incentivised to maintain performance
Adaptability	Low—changes require new procurement	Higher—provider incentivised to adopt improvements

3. A New Paradigm: The CAPITAL Framework

Infrastructure as a Service (IaaS) represents a fundamental reimagining of infrastructure delivery. Rather than purchasing assets, governments purchase services. Rather than owning infrastructure, they contract for outcomes. This shift from asset ownership to service consumption mirrors the transformation that has revolutionised the technology sector—and it holds similar promise for physical infrastructure.

To navigate this new paradigm, CBS Group has developed the **CAPITAL Framework (Commercial Asset Performance, Infrastructure Tailoring And Lifecycle)**. This proven methodology provides a structured approach for designing and implementing IaaS arrangements that deliver superior outcomes.

Key Insight: Risk Transfer Creates Value
IaaS models achieve a 30-50% risk transfer to the private sector while improving service reliability by 25%. This isn't just about shifting risk—it's about allocating risk to the parties best equipped to manage it, creating value for all stakeholders.

The CAPITAL Framework is built on four core principles:

1. **Outcome-Based Contracting:** Payment mechanisms are tied to measurable service outcomes, not asset availability. This requires sophisticated performance measurement systems and clear service level agreements that reflect genuine user needs.
2. **Optimal Risk Allocation:** Risks are allocated to the parties best able to manage them. Demand risk, technological risk, and operational risk typically sit with providers. Regulatory risk and force majeure events typically remain with the government. The key is achieving a balance that incentivises performance without creating unsustainable risk burdens.
3. **Whole-of-Life Optimisation:** Commercial structures must incentivise lifecycle value creation, not short-term cost minimisation. This requires long-term contracts, performance-based payment mechanisms, and provisions for continuous improvement and innovation.
4. **Collaborative Governance:** IaaS arrangements are partnerships, not

transactions. Effective governance structures enable collaborative problem-solving, transparent performance monitoring, and adaptive management as conditions change.

4. Evidence and Case Studies

The evidence is clear: IaaS implementations across transport, water, energy, and social infrastructure consistently outperform traditional approaches on cost, performance, and risk metrics. The commercial frameworks and methodologies exist to enable successful implementation.

Case Study: Transport Infrastructure

In one major transport project, an IaaS model was used to deliver a new light rail network. The private provider was responsible for financing, building, operating, and maintaining the network for a 20-year term, with payments tied to service reliability, punctuality, and passenger satisfaction.

Metric	Before (Traditional Model)	After (IaaS Model)	% Improvement
Lifecycle Costs	AUD $2.5 billion (est.)	AUD $1.8 billion	-28%
Service Reliability	92% on-time running	99.5% on-time running	+7.5%
Passenger Satisfaction	75% satisfied	91% satisfied	+16%

This case study demonstrates the power of IaaS to drive significant improvements in both financial and non-financial outcomes. The provider, incentivised by the performance-based contract, invested in predictive maintenance technologies and optimised operational procedures to maximise reliability and user satisfaction, ultimately delivering a better service at a lower cost.

Additional Applications:

- **Water and Utilities:** IaaS models have achieved superior environmental outcomes and reduced operational costs by 25-35% through investment in advanced treatment technologies and predictive maintenance.
- **Social Infrastructure:** In hospitals and schools, IaaS has improved service availability and quality while transferring significant operational risks to private providers, resulting in predictable costs and guaranteed service levels.

5. Implementation Guidance

Successful IaaS implementation requires careful planning, stakeholder engagement, and rigorous commercial structuring. Based on CBS Group's experience across multiple sectors, we recommend a phased approach:

- **Phase 1: Strategic Assessment (3-6 Months):** Identify infrastructure needs suitable for IaaS delivery, assess market capacity and appetite, develop a preliminary commercial framework, and engage stakeholders to build support.
- **Phase 2: Commercial Structuring (6-12 Months):** Define service outcomes and performance metrics, develop a risk allocation framework, structure payment mechanisms and performance incentives, establish governance arrangements, and prepare procurement documentation.
- **Phase 3: Procurement and Contracting (12-18 Months):** Conduct a competitive procurement process, evaluate proposals against outcome criteria, negotiate final commercial terms, and execute contracts to establish governance structures.
- **Phase 4: Implementation and Monitoring (Ongoing):** Commission services and commence performance monitoring, implement collaborative governance processes, conduct regular performance reviews, and identify opportunities for continuous improvement.

6. Addressing Common Concerns

Despite the compelling evidence for IaaS, implementation faces several common barriers:

- **"IaaS is too expensive."** This misconception confuses upfront costs with lifecycle costs. While IaaS may involve higher initial payments, lifecycle costs are typically 25-40% lower than traditional procurement due to optimised operations, proactive maintenance, and risk transfer benefits.
- **"We lose control."** IaaS doesn't mean losing control—it means focusing control where it matters most: on service outcomes

rather than asset management details. Governments retain strong oversight through performance monitoring, governance mechanisms, and contract management.

- **"The private sector will profiteer."** Well-structured IaaS arrangements align provider profits with performance outcomes. Providers earn returns by delivering superior services efficiently, not by cutting corners or exploiting information asymmetries. Competitive procurement and transparent performance monitoring ensure value for money.

- **"It's too complex."** IaaS arrangements are more sophisticated than traditional procurement, but this complexity reflects the genuine complexity of infrastructure delivery. The CAPITAL Framework provides proven methodologies for managing this complexity and ensuring successful outcomes.

7. Conclusion

The infrastructure challenges facing governments worldwide demand new approaches. Traditional procurement models, designed for a different era, consistently fail to deliver the performance outcomes communities need and deserve. Infrastructure as a Service offers a proven alternative—one that aligns incentives with outcomes, transfers risks to the parties best able to manage them, and creates value through innovation and lifecycle optimisation.

For infrastructure owners, operators, and policymakers, the question is not whether to adopt IaaS models, but how quickly they can develop the capabilities to do so. The organisations that move first will gain competitive advantages while delivering superior value to the communities they serve. Those that cling to traditional approaches risk being left behind with underperforming assets and unsustainable cost burdens. The future of infrastructure is not about owning assets—it's about delivering services. Infrastructure as a Service shows us the way forward.

8. Key Takeaways

✓ Traditional infrastructure procurement fails 92% of the time to deliver promised performance outcomes, creating unsustainable risks and costs for governments.

✓ Infrastructure as a Service (IaaS) fundamentally reshapes delivery models by focusing on service outcomes rather than asset ownership, aligning incentives with performance.

✓ IaaS achieves 30-50% risk transfer to the private sector while improving service reliability by 25% and reducing lifecycle costs by 25-40%.

✓ The CAPITAL Framework provides proven methodologies for structuring IaaS arrangements that optimise risk allocation, incentivise innovation, and deliver superior outcomes.

✓ Successful implementations across multiple sectors validate the IaaS approach and provide roadmaps for broader adoption.

✓ The imperative for change is clear: organisations that develop IaaS capabilities will gain competitive advantages while delivering superior value to communities.

References

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Further Reading

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About CBS Group

CBS Group is a premier infrastructure advisory firm revolutionising value creation in asset-intensive industries. We partner with government agencies and private sector clients to deploy innovative technical solutions that deliver measurable performance and financial outcomes.

Our Mission: We improve our client's asset performance for less money over the whole of life.

Our Expertise: Professional Engineering • Asset Management • Systems Safety • Commercial Innovation

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