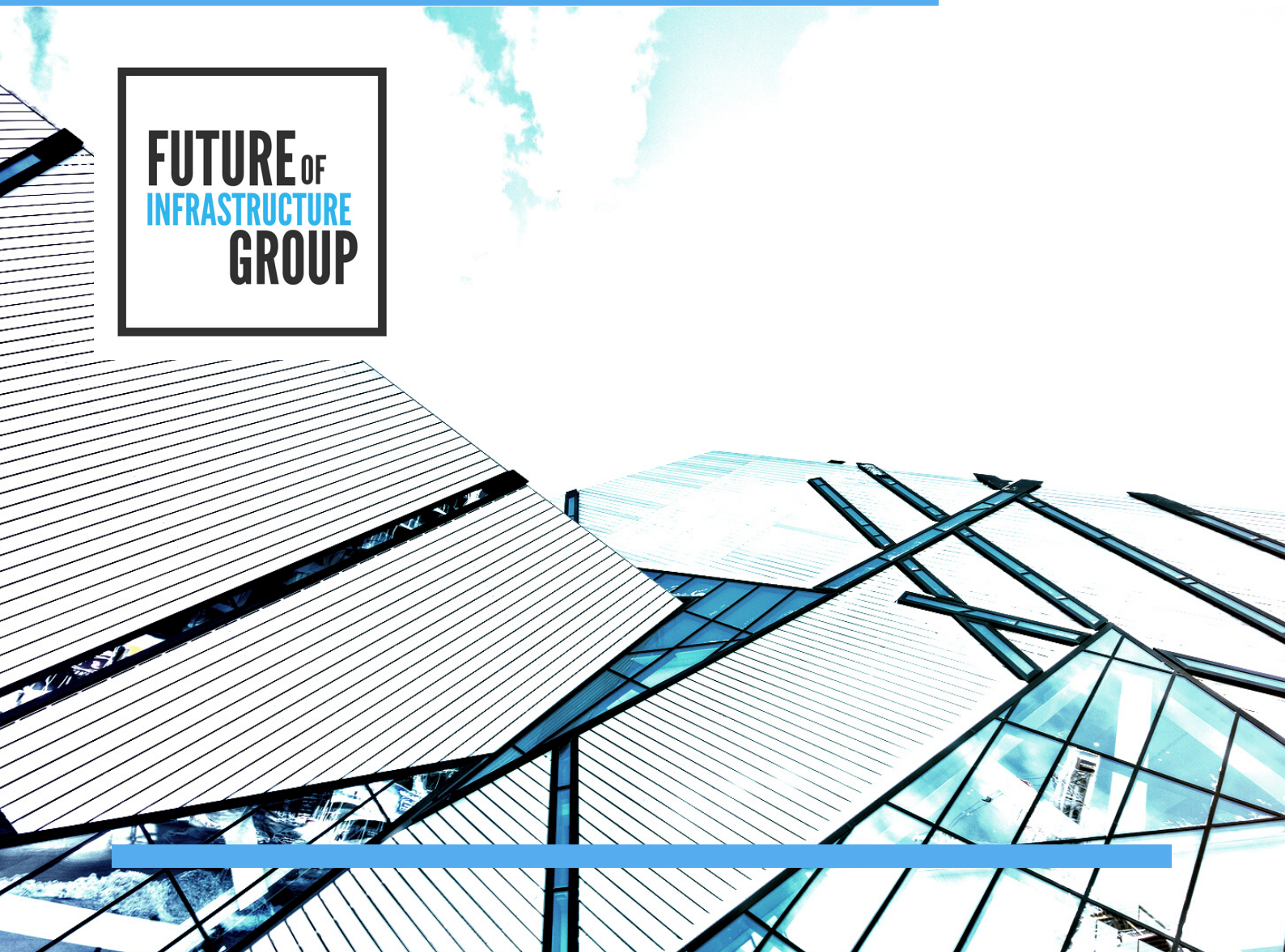
INNOVATION IN PROCUREMENT

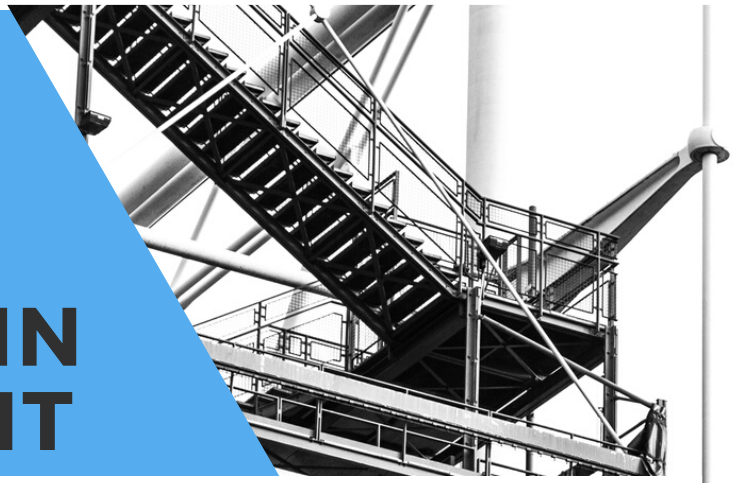
Getting more value from infrastructure investments

FUTURE OF INFRASTRUCTURE GROUP



Infrastructure Policy & Governance

ENABLING INNOVATION IN PROCUREMENT



Labour productivity in the construction sector has remained flat for a number of years. Research by McKinsey shows that since 1945 productivity has barely grown at all for construction, but it has risen by 1500% for sectors like manufacturing, retail and agriculture.[i] With new technologies and different approaches to infrastructure life cycles emerging, there should be more innovation in the sector. Canada has an opportunity to further enhance its credentials as a global centre of excellence of innovation in infrastructure. By developing a system that better enables innovation, it would see greater value for investment, and the opportunity to develop better products and services in the province to export around the world.

In 2018 Canada invested $85.8 billion in infrastructure across the country, with around $58 billion coming from different levels of government and the broader public sector. 585,000 direct and indirect jobs are supported by investment in infrastructure.[ii]

To deliver innovation, companies in the infrastructure sector need certainty to make long-term investments in skills, equipment, and research. This comes from a stable and predictable pipeline of projects and consistent levels of government spending.

Governments can provide this through more effective use of business cases and data to determine long-term priorities that become less prone to political risk if there is a change in government for example. Based on feedback from industry, another major factor holding back innovation is the procurement process and evaluation being used for infrastructure.

An over-reliance on technical output specifications (such as types of materials to be used, or particular methods to be used in construction) and the way bids are scored creates a downward spiral that focuses too much cost as the primary deciding factor for who delivers a project.

Long-term this is creating a problem in the market where if bidders have little or no ability to bring different solutions to the table it forces bidders to potentially cut corners or rely on change orders to make a project profitable. This creates an adversarial relationship on the project which prevents the public and private sector from working together to come up with solutions.

This paper explores different approaches to enabling innovation to be introduced into a project in the most efficient and effective way with a focus on procurement.

[i]https://www.mckinsey.com/~/media/McKinsey/Industries/Capital%20Projects%20and%20Infrastructure/Our%20Insights/Reinventing%20construction%20through%20a%20productivity%20revolution/MGI-Reinventing-Construction-Executive-summary.ashx
[ii[https://www150.statcan.gc.ca/n1/daily-quotidien/190411/dq190411a-eng.htm

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ABOUT THE FUTURE OF INFRASTRUCTURE GROUP

The Future of Infrastructure Group brings together industry leaders in the sector to provide a positive, and coherent voice to help governments across Canada deliver the best value from infrastructure investments. To make the most out of Canada's planned investments, this group discusses and shares their expertise on best approaches to prioritizing, planning, purchasing, constructing, maintaining, and operating infrastructure.

Innovation in Procurement

2020

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WHY INNOVATE?

There are various reasons why governments want to promote innovation through their procurement, and they can be summarized as four main goals:

1

Better end-products and services:

Innovation delivers benefits for the public who are the ultimate end users of public services. Plus, front line public services workers such as nurses and doctors, transit operators, teachers, and the police. Many hospitals have found better building designs have improved patient care for example.

2

Better value:

Innovations in design, construction, or through use of different materials and technologies can lead to significant long-term cost savings, creating better value for taxpayers and local communities.

3

Increased economic growth:

Government can act as a first buyer, demonstrating proof of concept and leading to significant demand, and local creating jobs. There are also potential export opportunities, as well as increasing the competitiveness of local firms with US$10 trillion spent each year globally on construction goods and services.

4

Solving societal challenges:

Procurement is often used by governments to solve challenges like mitigating the impacts of climate change, reducing environmental impacts, or providing more sustainable public services (for an aging population for example).

CHALLENGES INNOVATING IN INFRASTRUCTURE

Innovation in infrastructure projects can take place at any stage, but there are a number of factors that can hold it back. To overcome these barriers there must be a strong culture to encourage innovation, and effective processes and policies in place to enable it.

PRE-PROCUREMENT	• Early engagement with the market to determine the best possible solutions • Overarching organizational innovation vision
PROCUREMENT	• Prescriptive specifications and/or firm adherence to specifications • Emphasis on cost over value • Weighting of innovation in scoring criteria • Hesitance of companies to bring new approaches due to concerns • Reuse of old procurement documents • Mechanism for introducing innovations • Emphasis on risk over reward • Cultural resistance to change • Negative impact/assessment on bid of innovative approach • Maintaining fairness in evaluating different (innovative approaches) • No project innovation plan
DELIVERY	• Risk aversion of project owners/managers • Process for submitting and reviewing innovations • Strict timelines once construction underway • Safety/regulations • No champion for project innovation • Concerns on legal challenges of unsuccessful bidders
POST-DELIVERY	• Lack of institutional learning from project delivery • Lack of celebration of innovation in project success

SPECIFIC AREAS OF FOCUS FOR CANADA

For infrastructure agencies there are six main areas of focus that must be addressed to drive greater innovation and deliver more value to communities and taxpayers:

1. **INNOVATION VISION**

2. **USE OF SPECIFICATIONS**

3. **EVALUATION OF INNOVATION**

4. **MECHANISM FOR INTRODUCING INNOVATION**

5. **RISK AND REWARD**

6. **LEARNING AND LEVERAGING**

Area 1

INNOVATION VISION

The decision to make innovation a priority must come from the top of an organization and be clearly articulated with strong leadership backing. Provincial infrastructure ministries and agencies work with different government ministries and municipalities to deliver complex infrastructure.

Without a clear vision and strategy around innovation that focuses on partnership with the private sector it is difficult to drive a culture change within an organization. Culture is arguably the single biggest barrier to infrastructure innovation. An analysis by the UK's Infrastructure and Projects Authority and the Department for Transport undertook an analysis of major transport and other largescale projects found culture was more important than process in delivering projects successfully.[iii] The same is true for trying new approaches, where people become very risk averse and prefer to stick to tried and trusted.

The lack of a clear innovation vision and strategy for specific projects also represents a missed opportunity. Such a strategy should align with the organizational priorities of the project owner and provide a common purpose for collaboration between public and private sector partners. It would also give people within the public sector greater confidence and a mandate to innovate.

An example in driving cultural change is at Severn Trent Water, a water utility in the UK. The leadership team had a clear vision for innovation and wanted to engage their employees.

They set their employees a challenge to come up with a new idea that could deliver value and at least £70 in savings, this helped develop a culture of innovation within the organization and tapped into the brainpower of 15,000 people from across different parts of the organizations.[iv]

A designated project innovation champion could become a key role. A designated individual who is responsible for hearing and advancing innovations and who is accountable internally for their development, evaluation and implementation could help foster a change in approach.

[iii] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/796294/dft-review-of-lessons.pdf
[iv] http://infrastructurelab.com/delivering-clean-water-event-report/

Going Dutch

Dutch Ministry of Infrastructure and Environment, Rijkswaterstaat

Rijkswaterstaat set out five objectives around positioning innovation in their targets, leveraging national and international best practice, having a procurement process that selects promising innovations, developing a policy framework for procurement, and eliminating obstacles to innovation procurement. Facing a number of challenges around climate change and aging infrastructure the Rijkswaterstaat introduced a framework in 2015 to promote innovation through procurement. [v]

The goal was that each innovative project should reduce lifecycle costs by 30%, increase functionality by 30% and increase safety and sustainability by 30%. The ministry has a goal of spending 2.5% of its budget on innovation and is also looking to set up its own public-private innovation fund with the long-term goal of seeing returns on investments from that fund. One key element of this is a decision flowchart for public procurement of innovation, this emphasized the importance of functional demands over technical specifications. It developed a new system of testing and validation to evaluate applicability of innovations, setting up pilot projects, and arranging competitions to solve specific challenges.

Getting Government & Industry on the Same Page

Construction Sector Accord, New Zealand

In New Zealand the government and industry signed an accord [vi] to work together towards a safer, more productive, innovative industry. The government as the industry regulator and a major client recognised the need for a new way of working to meet some of the major challenges faced by the sector together.

The accord provides a platform to improve performance, with commitments from government to develop better procurement practices, improved project pipelines, and better regulations. Industry committed to deliver greater leadership and alignment on key issues, better performance, and improved culture. With shared goals to develop the workforce, improve risk management, and a focus health and safety.

[v] https://www.government.nl/ministries/ministry-of-infrastructure-and-water-management/organisation
[vi] https://www.constructionaccord.nz/the-accord/

Area 2

USE OF SPECIFICATIONS

Technical specifications play an important role within infrastructure projects, but being overly prescriptive can stifle innovation in a project. Specifications can include the types of materials or components that should be used, minimum requirements around design and layout of an asset, profiles of key roles, and even number of newspaper adverts expected during delivery of the project.

In many cases technical specifications make sense, but not all technical specifications should be considered equally important. Their use in procurement has accumulated over time as procurement documents tend to build on previous versions rather than focusing on core elements of what is required. The possibility to put forward alternative approaches that could save significant amounts of money through acceptable equivalence is onerous with a low rate of success. Using scope ladders could also be an option where if specifications cannot be met within cost ceilings, the lowest priority specifications can be removed.

Where there is a long-term requirement around operations and maintenance there is a huge opportunity to be an incubator of innovation. To do this infrastructure agencies must work with government ministries to encourage them to be less prescriptive and put more trust in the private sector to develop new approaches as part of their bid. As project teams look to innovate within the specifications, owners can often revert to strict interpretations to avoid any perceived technical or legal project risk even though the bidding team will be required to live with their design for 30 years in some cases where operations and maintenance is included.

According to the World Economic Forum, the delivery of infrastructure can represent as little as 10% of its total infrastructure whole-of-life cost.[vii] By including operations and maintenance in contracts it effectively acts as a 30 years warranty as the asset must be handed back to the public owner as if it was brand new. This provides a powerful incentive for companies designing and constructing the project to deliver something that works well for end-users and staff, and keeps costs low and should provide more comfort for owners to be less prescriptive.

The fairness monitor is an important role, but the mandate of that role has become constricting in some jurisdictions. Bidders should be encouraged to have open dialogues with project owners so they can get a true sense of what is most important and work together on solutions early in the process. Market soundings provide a vital early opportunity to develop ideas that could deliver substantial value that should be embraced. There should be a heavy emphasis on using these opportunities to get a true sense of how a project could be delivered more effectively early in the process.

[vii] https://infrastructure.org.nz/resources/Documents/Reports/Infrastructure%20NZ%20Procurement%20Study%20Report%20FINAL.pdf

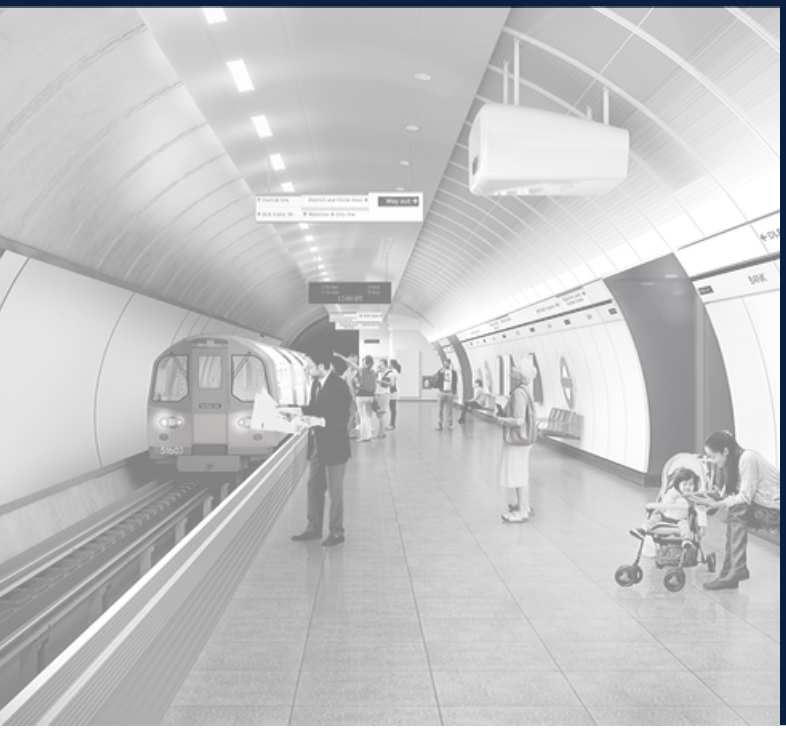
Delivering Outcomes that Benefit Patients

Karolinska University Hospital, Solna-Stockholm, Sweden

With a growing and aging population and the cost of care rising, Stockholm County Council commissioned a new hospital to support projected new patients. The design for the hospital was built around delivering a better, more integrated patient journey. [viii]

The "patient always first" vision shaped the project which was procured as a design, build, finance, operation, and maintenance contract lasting until 2040, with the first patient received in 2016. A number of goals shaped the planning and construction and included: integrated care, research and education to support dissemination of knowledge; attractive environments; healthcare and support services should be optimized; it should permit continuous operational development; should be sustainable.

This helped shape the design that allowed a faster response to patient needs, and a focus on recovery. Factors like light, space, and indoor climate were optimized to deliver a better care experience. By seeking perspectives of doctors, nurses, and technicians, the design team could envisage the flow of care and ensure patients with then highest and most urgent need were located close to MRIs and X-ray machines for example.



Delivering Outcomes that Benefit Commuters

Bank Station, London, UK

With a highly complex upgrade of Bank Station on the London Underground, Transport for London developed a new procurement approach called Innovative Contractor Engagement (ICE).[ix] Rather than the usual approach where the winner is typically the one bidding the lowest price for a relatively fixed scheme, the process was flipped on its head with bidders invited to bring ideas to the table to bring greater value for commuters and employees.

Giving bidders access to a range of documents including TFL's business case, all of the detail of the original scheme, including the price risk register. This also outlined a base price and what was most important to TFL in their operations of the station including what was most important to them: reducing journey times and relieving congestion on platforms; providing step free access; and improving station fire evacuation times. Bidders were engaged early and effectively asked – "can you do any better?"

This helped to draw in ideas from down the supply chain before the design was too locked in. The market was involved in a protected dialogue where they could share ideas and losing bidders were compensated for time spent and received half the share of any savings their ideas produced. The winning bidder presented a 19 percent improvement in passenger journey times and a 23 percent reduction in cost.

[viii] https://futureofconstruction.org/case/new-karolinska-hospital/download/
[ix] https://www.secbe.org.uk/content/panels/Report - Innovative Contractor Engagement Procurement Model - Bank Station Capacity Upgrade-6d5f2a.pdf

Area 3

EVALUATION OF INNOVATION

Procurement is built on the pillars of fairness, openness, and transparency. Based on experience to date the easiest way to directly compare bids is to have a comprehensive list of requirements that a bidder must be able to meet, then to purchase the bid that offers the lowest price. This is exacerbated by a scoring weighting that is geared very heavily towards price. The lowest price approach is often at the heart of many systemic challenges faced by government in delivering infrastructure as it often drives bidders to look to ways to cut costs. A more distinct two-step process that involves a technical submission, then invites bidders to submit a price would help deliver greater value and drive better bidding behaviour.

There is a perception that it is difficult to provide a fair process if evaluation criteria are seen to be subjective, and without a direct comparison between technical specifications. Outcome-based evaluation criteria – which look at the end goal of the infrastructure - are currently underused given the opportunity a long-term operations and maintenance component offers. These criteria are difficult to write but can provide much greater flexibility in design. Through effective engagement throughout the process bidders can ensure that the end-users get buildings or transit lines that delivers the best service. In a hospital, factors like amount of daylight, travel times from nurse stations to patients, energy costs, and staffing required to operate the hospital can all be assessed and provide metrics that can be factored into the evaluation if the benefits for the hospital are judged to be excellent.

Scoring systems awarding points for including innovation in isolation have proven ineffective. The amount of points on offer can represent an insufficient incentive to evaluate, review and propose innovations, (in some cases only 10 points from a possible 1000). Ideas put forward are often discarded or shared with other teams to be approved. Introducing concepts and approaches that provide savings to the client in their operational budgets provide quantifiable metrics that should be used for scoring proposals.

An example is the Sustainability Scored Elements on Royal Inland Hospital in Kamloops, British Columbia. Scored elements inviting innovation through the full evaluation criteria would help deliver greater value for end-users. This would encourage bidders to spend more on design and construction if savings were evident in operations and maintenance.

Delivering Better Patient Care

Abbotsford Hospital and Cancer Centre, BC

The primary purpose of hospitals is to provide the best possible patient care. The new 300-bed hospital ensured patient care was central to its design by incorporating specific requirements in the evaluation criteria. Of 100 points on offer the largest portion (30) were offered for clinical operations, efficiency and design. Thinking of the life cycle costs of the hospital, facility management and human resources considerations could earn up to 25 points, with construction only worth 10 points. This scoring framework and the process of **acceptable equivalents** provides more of an incentive to propose innovative solutions as they are more likely to get accepted and contribute to a good score. It is also much clearer how the solutions put forward would positively contribute value. [x]

To score well on the clinical side the design had to take into consideration things like travel distances for nurses and medical staff, daylight and acoustics to promote a healing environment, infection control, and potential recurrent cost savings. This helped to underline that the infrastructure is the location where a service is delivered, and more weighting was given to the operations and maintenance of the hospital which accounts for over 80 percent of the total cost over 30 years.

Going Beyond Pure Cost

Construction Procurement Handbook, Scotland

To help drive better value in construction procurement the Scottish government developed a Construction Procurement Handbook [xi] that includes guidance on approaches to evaluation. A key principle is that tenders should be evaluated on the basis of best price to quality ratio, which may include life cycle costing for major projects.

They provide guidance in setting this ratio by considering type of work, the contract value, project complexity, requirement for innovation, and if the project is a repeat. They encourage evaluators to use the full range of scoring on quality and not cluster all bids around a score so the award becomes purely about price.

Scotland has also moved towards a Whole Life Cost approach which favours innovation. This takes into account all aspects of cost including acquisition costs, operational costs such as energy use, maintenance and end of life costs such as decommissioning and demolition. The Scottish Futures Trust developed a Whole Life Appraisal Tool [xii] to help guide contracting authorities to consider a whole life outcome approach as they assess bids.

[x] https://www.partnershipsbc.ca/pdf/procurement/archive/RFP_Appendix_2.pdf
[xi] https://www.gov.scot/publications/construction-procurement-handbook/pages/7/#TenderEvalWholeLife
[xii] https://www.scottishfuturestrust.org.uk/storage/uploads/Whole_Life_Appraisal_Tool_For_Construction.pdf

Area 4

MECHANISM FOR INTRODUCING INNOVATION

There are multiple stages where innovation can be introduced with the infrastructure life-cycle, but the earlier they are introduced the bigger potential there is to drive value. At present in Ontario for example, there is the lack of an effective mechanism for introducing innovations beyond raising ideas in Commercially Confidential Meetings (CCMs) or Requests for Information (RFIs). This is a common concern across Canada.

Companies bidding on, or delivering, projects are concerned that introducing innovations at any stage will not bring them any benefits. In the procurement phase there is a concern that taking the time and investing resources in developing an innovative approach will add to nothing if there their bid is not selected. Even worse, if that concept is then used by a competitor to their advantage. The fact there is no consistent, formal process makes the procurement more vulnerable to legal challenges.

There are few examples of different innovative solutions being proposed and then adopted by governments across Canada as they are often viewed as non-compliant. There is often a challenge as designers get wedded to their original design and see changes as inherently non-compliant. During construction, contractors fear introducing new ideas or approaches will be reviewed, but ultimately rejected, which may lead to project delays.

Proposing Alternatives

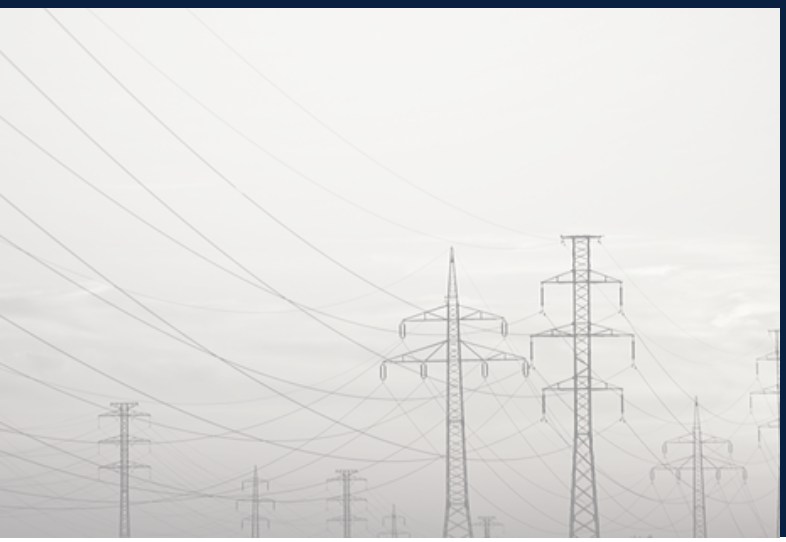
US Departments of Transportation: Alternative Technical Concepts (ATC)

An ATC is approach used in the procurement phase when a team can propose an innovation specific and confidential to them.[xiii] Only that will be amended into their contract during Preferred Proponent phase of the Project. ATCs have been provided on:

- Equivalent or Better – process already exists through Acceptable Equivalent;
- Cost Benefit Analysis – sometimes ATCs are utilized to relax overly stringent requirements identified in the contract (can be for technical or functional items) that from the proponent team's experience will not be required. In other instances, they increase the costs but provide better functional solution.
- Schedule Analysis – impacts to schedule by the proposed ATC

All the above are evaluated for impacts (social, environment, economic) along with rationale. Detailed drawings are provided and the ATC (if required) has separate meetings with the client for Q&As and are accepted prior to technical submission. This helps alleviating the concerns noted above.

ATCs have become an essential tool in delivering greater value and cutting costs on US highway projects. One ATC accepted on a Mississippi bridge projects brought estimated savings of US$ 7.4 million. Caltrans estimates it saves 10% on its design build projects due to ATCs. One recent example in the US saw US$111 million in savings from proposed ATCs being accepted.



Providing a Pathway for Smart Ideas

Ontario Energy Board, Innovation Sandbox, Ontario

To help drive the adoption of ideas, solutions, products and services that can benefit consumers, the Ontario Energy Board developed an Innovation Sandbox. [xiv] This concept has been rolled out by regulators in Singapore and the UK and gives utilities and companies a point to come forward with ideas, questions and proposals.

The Ontario Energy Board provides guidance and can grant temporary relief from a regulatory requirement that may have been acting as a barrier to innovation. If a proposal is adopted this enables utilities to get proof of concept in a real-world environment and also allows the OEB to gain insight on innovation in the sector and keep pace with regulations.

[xiii] https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/pdfs/edc_atc.pdf
[xiv] https://www.oeb.ca/_html/sandbox/index.php#

Area 5

RISK AND REWARD

Effective risk management is crucial for public infrastructure projects, and striking the right balance is the key to unlocking innovation and better project performance. There is a tendency amongst many public sector owners to revert to tried and tested approaches as they represent the lowest risk in delivering infrastructure. Equally important in delivering high quality infrastructure is a strong working relationship between the public and private sectors that is built around sharing risk and reward, particularly in working together to solve challenges or come up with new ideas that deliver greater value.

The opportunity of using alternative delivery models such as public-private partnerships is the opportunity to collaborate to find solutions. This involves sharing the risk and the reward. Effective risk allocation is important to getting a project right and unlocking innovation. The mantra that risk should sit with the party best able to bear it. There has been a tendency to unload a lot of the risk to the private sector in areas like utility relocations where it is very difficult to manage. Where risks are shared if they are well defined, or there are caps in place, it can provide a great opportunity for the public and private sector partners to come up with smart, innovative solutions.

Often the balance of risk-reward around innovation does not represent a partnership, in Ontario for example successful proponents must usually take all of the downside risk, and only take one third of the potential gain from any innovation. Other jurisdictions such as BC split risk and reward fifty-fifty.

If an innovation is proposed, if it is viable and relatively straightforward and the client choses to accept it they will often submit the proposal as a variation. Given the time required to develop an innovation, there are insufficient protections to protect the idea.

Collaborations and Alliances

Rantatunneli Tampere, Finland

Around the world alliance contracts are sometimes used to promote greater collaboration between owners and contractors. It was used for the expansion of Heathrow Airport Terminal 5 and the London Olympics in the UK; on over A$30 billion of public sector projects in Australia [xv]; and most recently for the Integrated Project Delivery crossing in Kingston, Ontario. In Finland the approach was used around a complex tunnel project that looked to reduce accidents, have less impact on land use, reduce traffic noise impact, and improve the flow of traffic.

Originating in the oil industry, the concept aims to promote a better partnership on projects between all involved including flexibility to adapt to changes on large-scale, complicated projects; a no fault, no blame attitude to disputes to move away from adversarial dispute resolution; alignment of interests under one performance framework; transparency of information and costs; and a unified collaborative agreement on sharing pain and gain. The payment provisions usually involve reimbursing all direct costs on a transparent basis to avoid any cutting corners, contribution to corporate overhead, and a risk/reward compensation model that incentivizes both owner and contractor through the performance on key results areas.

For the Rantatunneli project in Finland, the key result areas were designed so that the minimum requirement was the industry average (this included schedule, safety record, traffic disruption, and public image). The gain share was built around improved performance: reducing traffic during construction, limiting damage, securing accolades and reducing life-cycle costs. Negative considerations included: traffic disruptions to neighbouring roads, disrupting a nearby trainline, and use of grey economy workers. The result was a reduction in expected cost, and the schedule was cut by six months.

Enabling Innovation in Healthcare

Harbour Mental Health Hospital, Blackpool, UK

The National Health Service in the UK has been a pioneer in using a type of contract known as NEC that encourages collaboration. In 2014, the NHS delivered a new 154-bed mental health hospital in Blackpool UK. The new facility provides integrated specialist care and therapy.

The NEC contract provided a foundation for early collaboration that helped reduce costs and maintain high levels of quality on the £39.5 million facility. This early engagement meant together the healthcare trust and the contractor were able to increase capacity by 11 beds and reduce floor area by 10% and subsequently helped reduce operating costs.

The pain share/gain share mechanism within these contracts incentivized innovation that enabled the building footprint to be reconfigured, a shift from steel frame to load bearing masonry, and the use of off-site manufacturing delivered £5 million in savings.

[xv] https://infrastructure.gov.au/infrastructure/ngpd/files/National_Guide_to_Alliance_Contracting.pdf
[xvi] http://constructionblog.practicallaw.com/painshare-and-gainshare-provisions-in-alliancing-contracts-the-benefits-of-pulling-together/
[xvii] https://julkaisut.liikennevirasto.fi/pdf8/lr_2018_rantatunneli_value_web.pdf
[xix] https://www.neccontract.com/NEC-in-Action/Case-Studies/The-Harbour-mental-health-hospital-Blackpool

Area 6

LEARNING AND LEVERAGING

The greatest opportunity for innovation is in the early stages of a project before much of the design work and commercial terms are agreed. Infrastructure agencies must prioritize early engagement through market soundings, but this could be further enhanced by building on previous project experience. The opportunity to pass on learnings from projects could potentially deliver major savings across a whole range of infrastructure projects.

Arguably the biggest benefit to come from public-private partnerships is the possibility of unleashing the innovative power of the private sector to help address some of the systemic challenges in the industry. If a solution is developed that has broader applications, it could deliver huge value and productivity improvements for the industry. Infrastructure ministries or agencies could act as an information hub to gather these learnings and actively engage with ministry and municipal partners to ensure that benefits of innovation are more widely adopted.

Learning and Improving - Post Completion Review

Infrastructure Australia

Once a project has been delivered and is operational Infrastructure Australia works with partners to gather lessons to improve future project planning, project delivery, and risk mitigation. This helps to develop a culture of continuous improvement. [xx]

They look at whether or not the project delivered on its objectives, if net benefits laid out in the business case were realized, if assumptions in the cost-benefit analysis were appropriate, and if outcomes could have been achieved more effectively. Although these reviews are held in confidence, and not published, they are still seen as an important aspect of the process.

In British Columbia a post contract evaluation is required for all contracts valued at over $50,000.[xxi] This looks at deliverables and outcomes; contractor performance; and the internal management team performance.

Building a Learning Legacy

Crossrail, London, UK

For London's Crossrail, a C$26 billion new rail line under the heart of London, one of the main objectives was to draw lessons from the project that could be used for the benefit of other projects. To do this they specifically set up their Learning Legacy [xxii] which shares lessons and innovations on a range of challenges, including sponsorship and delivery models, supply chain management, and procurement strategies and assurance.

Crossrail was relatively unique in that it was one of the first megaprojects to have a standalone innovation strategy. [xxiii] The scale of the project enables more collaboration, and a four-strong team dove the program to establish a culture across the project. Light touch governance process for innovation enabled shared ideas to be examined and funded and could provide lessons for future projects with a clear flowchart for decision-making. The learnings on innovation helped shed some light on the challenges of innovation and procurement, but also highlighted the need for leadership, clear process, collaboration, and use of effective incentives.

[xx] https://www.infrastructureaustralia.gov.au/submission-stages/stage-5
[xxi] https://www2.gov.bc.ca/gov/content/governments/services-for-government/bc-bid-resources/how-to-buy-services/procurement-process/close-out/contract-evaluation
[xxii] https://learninglegacy.crossrail.co.uk/wp-content/uploads/2016/02/11A-013-Innovation-Management-Procedure.pdf
[xxiii] https://learninglegacy.crossrail.co.uk/wp-content/uploads/2017/04/11A-023-Crossrail-Project-The-Evolution-of-an-Innovation-Ecosystem.pdf

SUGGESTED APPROACH

Infrastructure projects are amongst the biggest procurements made by governments. To position Canada at the forefront of global infrastructure innovation we recommend the following steps:

1. **Develop an Innovation Strategy** to drive a culture change across the organization, partner ministries and municipalities, and contractors

2. **Appoint an innovation leader** with the mandate and resources to champion innovation on an organizational and project level

3. **Identify systemic or major challenges** and provide incentives for industry to solve them via competitors or procurement

4. **Change guidance around early supplier engagement** to promote regular dialogue between owners and bidders to better develop solutions for end users

5. Provide clear **opportunities and a process to propose new ideas** as early as possible in a protected environment with financial benefits if ideas are subsequently used but a bid is lost

6. R**estrict use of technical specifications** to those that are absolutely necessary from a safety and service delivery perspective and use a process for challenging those included on a project that may harm innovation

7. Develop clear guidelines and training on use of **outcome-based specifications** with methodologies for calculating benefits across the whole life of a project from design to end-of-life

8. Be **clear and transparent on risk** and provide well-defined frameworks or capping around risk-sharing

9. Introduce a clear, quick and effective **process to introduce alternative concepts** and ideas

10. Develop a **period for "value engineering"** after contract award where new ideas can be introduced with a shared goal to reduce cost and deliver value with any gains shared

11. Build an **incentive structure** for procurement and contract management based on pain share-gain share to reward exceptional performance and innovation

12. Develop a **portal to share experiences** and champion innovation for each major project and provide rewards for ideas submitted that result in future project or value

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