



New Alliances

Collaborative contracting in the GCC projects market



Transforming today for a better tomorrow

2020 has been a challenging year for people, businesses, and industries around the world. Prior to the COVID-19 global pandemic, project delivery in the GCC was faced with several challenges to maintain sustainable growth. This included pressure generated by oil prices, environmental impact, and the need to accelerate economic diversification. Many of these external conditions have been evolving over the years, pointing toward the necessity for traditional project delivery to become more streamlined and efficient.

During the COVID-19 crisis, many unforeseen challenges have emerged. The oil price has been significantly impacted by the pandemic, causing losses in developers and operators' revenues globally. As a result, some projects have been placed on hold or cancelled. Due to lockdowns and travel restrictions, the industry has also delayed many scheduled activities. In addition, these disruptions have changed the risk profiles of various projects. While the global pandemic has resulted in many challenges, it has also allowed various industries to rethink their approach to project delivery and assess ways of collaboration among key stakeholders to ensure better outcomes.

With over 100 years' presence globally, The SNC-Lavalin Group navigated challenging conditions and took decisive action to set the Company in a new strategic direction that yielded results in short order and put the business on a sustainable path forward. 2020 tested our resilience and demonstrated our ability to transform into a leading global provider of professional engineering services and project management solutions. The Company's transformation is underpinned by embracing digital and innovation and adopting the latest technologies to work more efficiently as an organization and deliver value to our clients.

In the Middle East, we are working closely with our clients to understand the pandemic's impact on their industries and growth plans and help them navigate current and future challenges. Through this White Paper, we are putting forward a strategic framework that brings industry stakeholders together to address existing gaps in contracting models and provide effective solutions that improve collaboration and efficiency in project delivery in the GCC. With global expertise delivered locally in engineering, design, and project management across resources, nuclear, infrastructure, and the built environment, we are proud to be part of the continuous regional transformation and shape future communities.

Executive summary

Over the past two decades, the GCC has established a reputation for delivering ambitious megaprojects that push the boundaries of what can be achieved. With an estimated \$2.9tn of major projects planned or underway at the end of 2020, there are abundant future project opportunities in the region.

But despite the ambition to drive forward with development agendas, change is needed in the way that projects are delivered. The traditional models are becoming a hindrance, causing significant abortive work, waste and fostering disputes that lead to delays and cost overruns.

With finances under growing stress, sponsors and clients want more social and economic value from their investments in order to meet the needs of growing populations, and to deliver national visions for diversification and competitiveness.

Much of the waste stems from a lack of collaboration and shared objectives between project stakeholders. Ill-defined requirements, late changes to designs, poor or undocumented communications, and working from out-of-date information can quickly escalate into delays, additional costs and then contract disputes.

These expensive and adversarial legal procedures lead to mistrust and poor team cultures on projects as well as tying up resources and lead to late payments that may take years to resolve.

An industry survey conducted by MEED in 2020 found that waste levels on construction projects in the region could be as high as 25-30 per cent. Other studies have suggested that time and cost overruns are endemic across the region's projects industry.

As the scale and volume of the developments have grown, so too has the complexity of projects creating additional commercial and technical risks and generally increasing the numbers of project participants.

Given the challenging economic conditions, wasted investment capital cannot be replaced and will inevitably affect other planned investments from going ahead.



Collaborative contracting

Project sponsors across the GCC will surely benefit from re-examining their current approaches to project delivery and seeking to adopt more cooperative ways of working, centred around common objectives.

Collaborative contracting, if tailored to the specific project, its risk profile, and the sponsors organisation, will contribute significantly to resolving many of the challenges currently facing project delivery in the GCC.

In other regions, such as Europe, Australia and North America, this type of approach is fast becoming the norm and it has already demonstrated success in delivering financial savings, improved quality of assets and optimisation of available resources.

But whole-industry transformation remains difficult to achieve and to succeed, requires a shared sense of purpose and a change in culture, across all key project stakeholders, from clients to contractors and consultants.

The essence of collaboration lies in the idea that all key parties on a project are working towards a common vision, and will share equally the risks and rewards of the development.

Project teams that are set up to work together, rather than in silos, or in opposition to one another, will deliver better outcomes, improve productivity, reduce significantly the abortive work and waste, and create a culture that encourages joint solutions to problems and innovation in delivery.

In this approach, project partners are generally selected on a measure the basis of the value they bring to a project and not just on the basis of the lowest-priced bids.

Aspects such as their cultural approach, corporate governance, safety records, ability to continually improve and innovation will all be part of a matrix of factors used to select the best project partners.

The success of each member of the project team is then directly related to the success of the overall project, through setting pre-defined common targets with progress against them being measured by key performance indicators (KPIs).

Collaborative contracts can be used successfully on all types of projects, but they generally produce best benefits when applied to complex, medium-to-long term projects that involve multiple stakeholders and are subject to a variety of key risks that need to be identified and managed effectively from the outset.

Project sponsors and construction clients are demanding ever-more value from their project investments in order to achieve their objectives within more constrained budgets.

Meanwhile, current industry delivery methods in the GCC continue to deliver projects, exhibiting high levels of abortive work and waste and an increasing number of disputes that waste sponsors capital and thus lead to fewer projects being initiated

To ensure the long-term sustainability of the GCC construction industry, and to maximise the impact of the limited capital available for projects, the GCC projects industry surely needs to examine, tailor and adopt more collaborative ways of working, centred on common objectives with a balanced share of project risk and reward.

It is clear however that one size does not fit all, and that what works in one jurisdiction may not work in another. It is imperative, therefore, that project sponsors fully assess the situation at the outset of each project on a case-by-case basis to identify which facets of a collaborative working approach can they successfully adopt and implement, before embarking on a particular approach.

The need for a new approach

Fundamental change is needed to improve the way that the GCC projects industry does business

From Dubai's iconic Burj al-Arab to the Haramain High Speed Railway in Saudi Arabia's Western Region, the GCC has delivered a non-stop flow of world-class projects that have redefined a region that, until not so long ago, was known primarily for its oil production. The GCC today is a centre for global trade and travel, a regional business hub and a magnet for investment and innovation.

While oil revenues have been the primary enabler of these projects, it is long-term government strategies that have driven development, as the region's leaders seek to meet the needs of a rapidly expanding population, while at the same time diversifying national economies away from a dependence on hydrocarbons.

But as the scale and volume of the developments have grown, so too has the complexity of projects. This introduces new commercial and technical risks and a growing array of project participants. Increasingly, traditional approaches are undermining project delivery, increasing inefficiency and fostering disputes that lead to delays and cost overruns.

"The UAE has witnessed an increased focus on creating sustainable infrastructure and adopting innovative solutions that meet the evolving market needs. Working closely with both project owners and the wider supply chain in the market, we have also seen a real appetite for change and a move away from the conventional delivery methods. Adopting a new approach to contracting models will significantly impact project delivery to help shape a resilient future and lead the way for more complex developments to come across the GCC. As market leaders in engineering, design, and project management services, we are committed to drive this change in the UAE and the wider region alongside our clients," says Johan Hesselsøe, Managing Director – UAE, Atkins, a member of the SNC-Lavalin Group.

The gaps in the GCC projects market have been amplified in recent years by a tougher economic environment that has led to a slowdown in government spending on infrastructure and pressure on the real estate market.

Project sponsors have sought to ensure the commercial viability of their projects by procuring work at the most competitive rates. This has reinforced a culture of "lowest-price-wins" that typically permeates through the project supply chain, creating an adversarial contractual approach to project relationships and unwillingness for any party to go outside their strict contractual scope in helping to propose and/or implement joint party solutions to emerging project challenges along the way.

"Selection is most commonly made on the basis of the lowest tendered price rather who is most likely to produce a quality asset in the shortest time and at the lowest overall outturn cost," says Paul Abbosh, managing director for the GCC (excluding UAE and Saudi Arabia) at Atkins, a member of the SNC-Lavalin Group.

"Having tight penalising contracts of this nature with little leeway for additional spend, also means parties are heavily dissuaded from identifying any problems when they arise early for fear of being blamed," says Abbosh. "Nor are they willing to participate in proposing joint solutions to emerging project challenges and implementing them, as such behaviour often leads to them incurring additional cost which are difficult to recover"

Procurement on projects in the region is often conducted in a manner and sequence that is not consistent with helping identify problems as they arise, optimising the best design and fastest construction or working together to overcome project challenges.

Because of the numerous parties involved in the design and construction of complex projects and also because of the need to optimise the commercials, project participants are not always brought on board in the optimum sequence that enables best contribution early into the design phase, and the ability to clearly identify each party's scope and deliverables in a way that gaps and overlaps are minimised.

Such out of sequence procurement of parties coupled often with a lack of clarity is cope and timed deliverables on all contracts, often lead to significant abortive work waste and potential disputes between parties along with their associated costs and delays. Resolving such disagreements requires considerable time and effort from the client team.

This approach to procurement often sets up project stakeholders as opponents rather than partners, and leads to mistrust on the project, disputes, penalties and claims. It goes directly against the need to engender a collaborative working environment, in which problems are identified and addressed early, design is optimised with minimum changes leading to savings in both design time and contractor wastage on site and incentives all to work together towards the common project goals.

Risk allocation

As well as seeking the lowest tender bids for contracts, project clients usually require their contractors to assume responsibility for the majority of the delivery risk on a project. This is done through lump-sum turnkey type contracts that offer little flexibility during the construction process.

Typically, the main contractor on a project then passes the risk on in the same manner to their subcontractors and suppliers. This approach to project procurement fails to effectively promote or incentivise collaboration between parties engaged in delivering projects.

“There is a lack of trust in the market today,” says Paul Raphael, senior manager, Middle East at Atkins Acuity, a member of the SNC-Lavalin Group. “The environment is not conducive to completing a project on time, within cost and to the best quality. There are too many parties and interfaces involved and their objectives are not always aligned.”

The lack of trust has led to a growing number of checkers on projects, put in place to look after the client's interests. This additional tier of supervision can also contribute to further laborative work, lost time and wastage, which in turn cause further costly delays.

With an estimated \$2.9tn of major projects planned or underway across the GCC, according to projects tracker MEED Projects, the pipeline of future projects is vast. This includes long-term masterplans such as the \$500bn Neom future city development in Saudi Arabia's north-west, as well as thousands of standalone projects and subprojects that are part of larger programmes.

Saudi Arabia is the region's biggest projects market with about \$1.4tn of projects. The UAE is the second-biggest market with \$839bn of projects in planning or under execution.

Construction projects, covering building and real estate projects, account for the biggest industry segment of the regional projects market in terms of projects in execution, with about \$374bn of projects. Transport and logistics projects, including road, rail, ports and airport schemes, make up the second biggest segment with \$169bn worth of projects underway.

Across the wider Middle East and North Africa (MENA) region, some \$1.4tn of projects are either under study or in design. These are the projects that will determine the trajectory of the market over the coming decade.

The focus on lower tender prices, as well as the client-versus-contractor nature of lump-sum contracts, makes it increasingly difficult for project parties to mitigate design and construction risks on a project. For clients, this has meant that projects are increasingly being delivered late, over budget and facing quality issues.

For contractors and consultants, the additional commercial risk that they are required to carry can often lead to projects becoming loss-making ventures. This has created an inefficient and unsustainable model that can see companies prioritising costs over delivering a high-quality project for clients and end users.

Payment delays are among the biggest areas of concern for companies working in the GCC projects industry, requiring contractors and suppliers to finance large portions of the works as they pursue a complex chain of approvals and certifications in advance of getting paid.

The disruption this causes to business cashflow discourages companies from making any additional effort to work beyond the scope of their contractual commitments where it conflicts with the general interest of the project.

Consequences of doing nothing

Ultimately, the challenges facing the GCC projects industry make it more difficult for project sponsors to achieve their development agendas.

While the slowdown in the regional economy since 2015 has put the GCC projects industry under growing strain over the past five years, the Covid-19 pandemic has amplified the challenges facing the construction sector.

Although many construction sites were able to maintain some operations through the year despite lockdown restrictions, there has been considerable disruption across the entire projects industry. Many of the consequences of the pandemic have not yet been fully realised, but will be felt for years to come.

Measures introduced to restrict the spread of the virus have inevitably slowed the delivery of projects. This means that many current projects are running behind schedule and incurring additional costs.

The consequences of failing to fix the problems in the region's construction industry will hold back the region's progress.

An industry survey conducted by MEED in 2020, found a consensus view among contractors and consultants working in the GCC that waste levels on construction projects in the region were around 25-30 per cent.

With more than \$4.3tn of major projects planned or underway across the MENA region, including about \$2.9tn of projects in the GCC, even at the low end of these estimates, such high levels of waste would mean that vast amounts of money are being misspent due to inefficiencies on projects.

Much of the waste stems from a lack of collaboration and shared objectives between different companies working on projects. Late changes to designs, poor or undocumented communications between individuals, and other errors can quickly escalate into contract disputes on projects.

With project finances under increasing pressure from the tough economic conditions, wasted investment capital cannot be replaced, and will ultimately prevent other investments from going ahead.

As more projects miss key deadlines, an increasing volume of up-front performance bonds, put up by contractors and underwritten by their banks to cover any additional costs to the client resulting from poor delivery, will be cashed in by the project clients.

As a result, it is becoming more and more difficult to secure financing for projects. Bankers in the region are now increasingly wary of providing financing to contractors at the same time as they are they are facing growing cash flow and liquidity challenges, and require bridging loans to complete projects.

In order to protect liquidity, contractors will delay procurement, using up valuable contingency time that is built into project programmes to mitigate the risk of unexpected delays.

Poor payment terms and processes combined with excessive contractual penalties contribute to a siloed mentality on projects, which impedes parties from identifying problems as they arise or engaging in collaborative working with others for the benefit of the project.

If projects companies cannot convince their banks that the problems in the industry are being addressed, the loss of confidence from financial institutions will threaten the viability of projects in the future.

Despite the challenges, this disruption of the Covid-19 pandemic provides an opportunity for the GCC projects industry to rethink its approach.

Throughout 2020, the pandemic encouraged people and companies to collaborate to find new ways of working in order to overcome the challenges of working from home and social distancing. In particular, the crisis has accelerated the adoption of new digital and online technologies.

Many project client bodies have expressed a desire to work more closely with their construction suppliers to mitigate the impact of the pandemic on their projects. However, overcoming habits established through years of working as contract adversaries may prove challenging.

Defining common goals

Aligning the interests of project parties is the key to overcoming a large number of challenges facing the regional projects market

The starting point for solving many of the challenges facing projects in the Gulf today is establishing a collaborative environment. Through a more balanced distribution of project risk and with shared project objectives, stakeholders will find that developments are delivered much more efficiently, with minimal overruns.

An integrated project programme with aligned objectives and incentives for all project parties encourages people to view projects holistically, considering the whole-life value of the scheme rather than seeing it through the narrow lens of their specific contract deliverables.

Such an approach enables the sharing of ideas to help the project achieve its goals in terms of its key performance indicators (KPIs) for time, cost and quality.

"I first came across collaboration nearly 20 years ago, on an oil & gas project," says Paul Abbosh, managing director for the GCC (excluding UAE and Saudi Arabia) at Atkins, a member of the SNC-Lavalin Group. "The client was looking for a consultant who could design construct and maintain their portfolio of filling stations across Europe."

Two partners were elected to work on this project with the client on a fully collaborative basis, under a cost reimbursable contract with a fixed amount of profit and gain/pain share on achieving targets measured by mutually agreed KPIs based on past performance.

"The focus was on setting commonly agreed benchmarks and then working to continuously improve against them, which is easy to do particularly where works are reasonably repetitive," says Abbosh. "Furthermore, we aimed to improve on our benchmarks by working in collaboration with our supply chain, looking at innovative ways of designing and constructing our works."

Sharing the benefits

Despite the evident benefits, collaboration is rare on construction projects in the GCC. Contracted parties are typically only concerned only with their own contract deliverables, and there is little flexibility or incentive to overlap or adjust delivery schedules to support another party on the project. There are seldom incentives for parties to identify and address project-wide problems early, or when they lie outside of their own contractual limits.

What does exist however is the threat of penalties and delayed payments whenever the client says that a contract deliverable has been missed. This offers little incentive to collaborate or introduce innovations that could benefit the project.

"Nobody feels comfortable taking on additional risks and nobody feels they will be rewarded for it if they do," says Abbosh.

"The problem with having contracts that impose penalties on the participants," he says, "is that you end up with no one identifying problems when they happen. The later these problems come to light, the tougher it gets to deal with them."

Viewing project responsibilities through the narrow lens of contractual deliverables means that contracted parties will take responsibility for tasks only once all pre-requested inputs are in place. From the contracted parties point of view, this limits the risk that they are exposed to, and enables the maximum utilisation of resources once on site.

In the event that the project is delayed and the project manager requires the specialist contractor to start early in order to save time, there is rarely a mechanism in both contracts to facilitate this easily.

This can be remedied by aligning the project risks and rewards with the owner's project objectives when establishing the contractual framework for project participants. Through an appropriate mix of fees, along with shared pain and gain that are aligned with the client's goals, this ensures that success for all parties is interconnected.

In this approach, all project parties have an incentive to identify and highlight problems at the earliest opportunity, and to help one other overcome challenges.

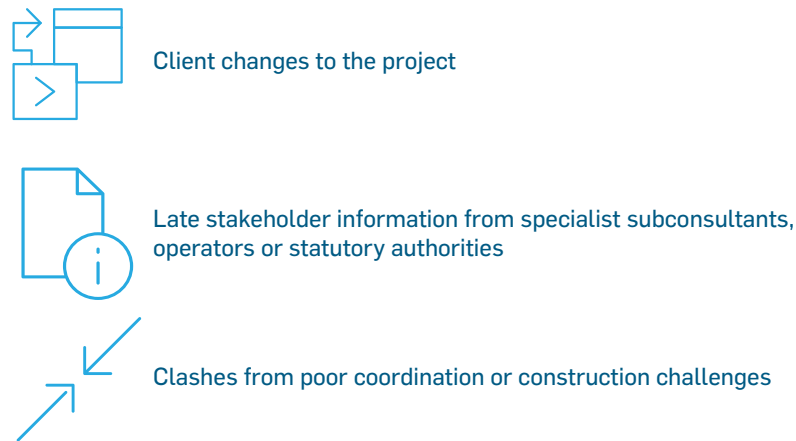
It is the responsibility of project sponsors to ensure that all project parties are contracted in a way that not only allows them to act beyond the scope of their contract, but which also incentivises them to do so where it helps to achieve the overall project goals.

Optimising the scope

Unclear or poorly-defined project requirements in the early phase of a project are also major contributors to project overruns, creating delays as clients are forced to reassess their requirements as clashes or uncertainty over specifications emerge during later stages.

Contractors in the GCC say that it is common for project clients to introduce design changes after construction work has commenced. Or for projects to begin construction before detailed design work has been completed.

They say that the most common reasons for design changes to be introduced after construction has already started include:



Ideally, the fewer design changes, the better it is for the project. But where there are changes made, the earlier that they can be introduced, the simpler it is to incorporate them into the existing programme, and to mitigate their impact on potential costs and time overruns.

It is more effective to conduct value management exercises during the early design stages of a project, when different design solutions exist, than it is to carry out on-site value engineering actions, where options are more limited, and likely to be more disruptive and costly.

Setting up an alliancing culture

The role of the project integrator is critical to collaborative contracting. The project integrator works with the client to develop the overall project delivery plan. This includes designing suitably incentivised contracts for all project participants that clearly define their respective scope and deliverables in line with the plan.

In short, the project integrator facilitates maximum collaboration between all parties by aligning all parties pain and gain share in line with the client's goals.

Many of the problems arising from late-stage design changes can be mitigated through the early involvement of downstream project parties – main contractors, subcontractors, suppliers and specialist subconsultants, whose expertise can identify issues to be considered and incorporated into the design phase.

This early-stage collaboration with the project integrator and concept design team can establish early control of project requirements and to shape the incentives for project participants. This is achieved by setting up an alliance culture combined with a comprehensive management plan and structure from the outset of a project.

A vital step in creating an collaborative project framework at the outset of a project is the establishment of an integrated Alliance Management Team (AMT) that includes all key stakeholder organisations, that will resolve scope overlaps and gaps early, agree all design and information inputs in accordance with the management plan, and which will address all the necessary requirements to complete a good and coordinated design that minimises abortive design and site work as well as wastage.

Early stakeholder engagement workshops that include representatives chosen from the design consultant, contractors, suppliers, sub-consultants, owners, operators and authorities, as appropriate for the relevant key project risks, should take place early.

This ensures designs and programmes can be optimised to deal with key risks from the outset, thus saving abortive time, wastage and delays at a later date. This will ensure a more robust, integrated project schedule. Dependencies are also established to align common objectives and targets.

Modular mindset

Another decision that can be taken early in the life of a project with the designer and contractors working closely and collaboratively with the client, is getting the balance of modularisation of the design right without compromising the client's aesthetic requirements.

This can be done with expert contractor input on the best construction methods and supplier information on materials. And it allows the designer to optimise project constructability through repeated elements, such as repeated floor plan, standard details, stacking building services, among others. This establishes design efficiencies for the supply chain without compromising the development vision.

"The procurement of a trusted supply chain working collaboratively with good pre-sanctioned processes will require not much more than an audit process on the checking side," says Abbosh. "Ultimately, this will result in huge time, cost and quality benefits for the clients and supply chain alike."

Similarly, the involvement of the asset operator and maintenance contractor during the design stage will allow designers to include operations & maintenance (O&M) considerations in order to mitigate late disruptive changes once the asset has been handed over.

A key success factor in achieving many of these efficiencies is to ensure that there is integrated and contiguous management of the entire project delivery process, from the early-stage definition of requirements through to the construction and operational phases.



Digital transformation

Digital technology is the key enabler of closer collaboration between parties from different phases of the project lifecycle, as well as improving the coordination of multiple teams in real time.

This can involve a large number of parties. As the design programme manager and detailed designer on the Dubai Metro project, Atkins had to coordinate designers from 35 different design offices across Australia, Europe and the Middle East who were providing continuous updates to project drawings and other design information.

“Technology is a stream that runs across the whole process,” says Abbosh. “It benefits the project right from the planning and front-end stage, all the way through design, procurement, construction to the operations and maintenance phase.”

The wave of new digital solutions is emerging at the same time as project clients are increasing their demand for faster and efficient construction within tighter budgets. And technologies can assist in significant savings if efficiently adopted.

But the opportunity to capitalise on such tools is often lost by a mismatch in the level of technology used by clients, consultants and contractors.

There is a lack of clarity on the minimum technology requirements of a project, regulations surrounding these tools, data ownership, security and management. Moreover, these tools can only be successful if the data input into the system is accurate.

Through early collaborative working by the consultant, contractor and integrator, the client can mitigate further project risks by defining technology requirements at an early stage and integrating these into the project.

This will help inform clients and facilitate early decisions. This is especially useful for BIM, digital twins and cloud-storage solutions, which have a role to play throughout the life cycle of an asset.

A single project management plan available to all and a source of current project information in the cloud makes work more efficient and minimises abortive works and wastage by parties working with out-of-date drawings and information. This supports the integrated project delivery approach of a collaborative model.



The way forward

Aligning the interests and objectives of the project parties is the key to removing much of the waste on projects in the GCC today. And the growing use of PPP models to deliver projects will play an important role in the development of collaborative project structures in the region.

While the purpose of a PPP is for the public sector to benefit from the expertise and efficiency of the private sector, as well as using private investment capital to reduce government capital expenditure, PPP contracts also require collaborative working.

PPPs often involve the establishment of special purpose vehicle (SPV) project companies to implement and maintain a project for a contracted period.

An SPV is typically formed with the operator, contractor and consultant all holding equity in the company and sharing in the overall SPV profits. The contract between the SPV and the client is also usually set up on a pain/gain share approach, which encourages the SPV participants to collaborate and work together to deliver the client goals and, in doing so, share in the benefits achieved.

In such a set-up, the designer and contractor are encouraged to collectively design and build an asset that optimises operating and maintenance costs, as they share in the benefits saved.

As the ultimate paymasters on a project, project clients have the biggest influence on how a project is set up. But for many project sponsors, introducing collaborative contracting models to deliver projects may be difficult, as it may require significant changes to their established protocols and processes. To facilitate the transition, their contractors, consultants and other key partners must provide support.

"It is important to work with your clients to understand the particular risk profile of their project, and what can and cannot work," says Abbosh. "And then to work with the client to tailor a collaborative and integrated solution that optimises the benefits achievable by tailoring the solution to the client and project needs."

While it will be relatively easy for project clients to move from traditional construction-only contracts to more integrated design & build contracts, which are sometimes used in the region, this would require a huge cultural change to jump straight to full alliancing contracts.

A middle lies somewhere between the two extremes to smooth the transition, while also working for the client's established set up. "Think of it as a design and build plus," says Abbosh. "Or an alliancing minus."

It is important to understand the risks, resources, how much can be delivered, and then accordingly tailor the project delivery solution to suit.

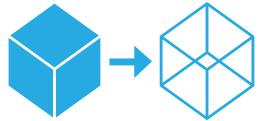
A project integrator can help chart a course for change through workshops, ultimately arriving at a model that best suits the client and the project. The project integrator approach starts off with the designer working closely with the contractor while involving the client and other stakeholders. And then gradually introducing a new working culture and elements of pain and gain share.

One major advantage of collaboration is that it allows for continuous improvement. It is important to start taking the initial steps to collaboration and to set tight but achievable targets that motivate.

Project stakeholders may not see all of the benefits of the collaborative model at first. But it the effectiveness of the approach improves in a continuum, as people become more familiar with the model, and as project incentives and targets evolve. It should not be seen as a one-off exercise.

While project sponsors are the most critical agents of change in the transition to collaborative contracting, the responsibility for change does not sit entirely with the clients. To work effectively, the entire construction industry must rethink its approach.

Harnessing the wave of new technology



Digital twins:

The development of the Internet of Things (IoT) and Big Data has seen the emergence of advanced building information modelling (BIM) technology and cloud-based digital twins that allow the updating of project data in real time, which can be instantly used by anyone on the project, at anytime, anywhere in the world. The digital twin enables early clash detection and removal before getting to site, and it can maximise modular construction and offsite fabrication to assist with reducing programme or improving logistics on a tight city centre site.



Modular construction:

New processes, such as 3D printing and modular construction, will require a change in project relationships. Both solutions shift the bulk of construction work offsite. And both require early contractor involvement and close relationships within the supply chain.



Drones:

Drone technology has seen rapid adoption across the projects industry and is being used for remote monitoring of sites and scanning projects with greater accuracy compared to traditional methods.



Artificial intelligence:

Artificial intelligence (AI) and machine learning systems allow firms to convert the data that they collect into predictive tools for project outcomes.



Virtual reality:

Augmented/virtual reality tools allow teams to trial and improve spaces in the virtual dimension, while also enabling safety training.

"Digital technology plays a key role in transforming project delivery. The COVID-19 pandemic has shown the industry that much more can be done virtually. This can be from as simple as the collaboration tools that project teams are using to conducting virtual site inspections through live feeds from sites, to applying AI and advanced analytics to forecast manpower and material needs.

In the UAE, we have been helping clients ensure they have optimal infrastructure and methodologies for remote working. For example, we have been utilising MS Hololens 2 technology to conduct virtual site inspections and improve safety measures by reducing the number of project staff on site. Moving forward, the industry will increasingly look to technology to drive better decision making and optimise project delivery."

Johan Hesselsøe, Managing Director – UAE, Atkins, a member of the SNC-Lavalin Group

Lessons from other sectors

Collaborative contracting models are commonly used for project delivery in the oil & gas and nuclear industries

In the oil & gas sector, where the cost of shutting down production can have huge commercial and economic consequences, there are high levels of collaboration across project teams.

Oil & gas projects often see significant overlaps of tasks, which encourages companies to work together in order to meet short time windows. But the region's national oil companies also see collaborative contracting as an important way to support other important objectives, including technology innovation and increase the share of local content on projects.

As a result, contracts typically are not secured on the basis of 'cheapest-price-wins' in the oil & gas industry.

"You can't sustain innovation and high-quality service if it's just based on price," says Michael Clyde Dunn, senior vice-president, Resources, Middle East & Africa and Asia Pacific at SNC-Lavalin. "You have to invest for the long-term. These companies are doing that, and it needs to happen in other sectors as well."

Construction and infrastructure project clients in the GCC meanwhile are hanging on to a lowest-price-wins mentality to procurement.

"A number of factors influence who wins contracts in oil & gas," says Dunn. "Innovation, in-country value, corporate governance, etc. Construction is yet to go through that curve, however and has not incorporated these lessons into their processes. People are ready to increase manpower, instead of investing in better ways of manufacturing."



Incentives

Dunn says that commercial incentives are critical to encourage a culture of innovation and knowledge transfer.

“Some of the most successful projects that we’ve done in the region have not been as independent consultants, but as an integrated project team,” he says. “We pick relevant expertise from our team and from the client’s side. And the team jointly focuses on the project goals rather than individual goals. And when the outcomes are achieved, both organisations equally benefit.”

A critical factor in the approach followed by the nuclear and oil & gas industries is the focus on safety and quality. The consequences of a major incident in either of these industries could be catastrophic. As a result, much greater emphasis is placed on quality than in the construction projects industry.

“The priorities are different on these projects,” says Dunn. “Aspects such as quality of assets and safety are extremely important. There commercial implications and reputational risks involved. Unfortunately, the penalties and incentives for these in the construction sector aren’t stringent enough. The guidelines have to change, and lessons from oil and gas and nuclear can help transform the construction industry.”

Another important difference between these industries and the construction industry is scale.

The vast size and cost to develop a nuclear power plant means that any delays can be costly for everyone involved. As a result, nuclear power project clients use collaborative project delivery models in order to minimise delays and waste.

“Some countries have supplier alliances within the supply chain,” says David Haboubi, head of nuclear, Middle East and Africa at SNC-Lavalin. “They are still competitors, but set the KPIs, challenge each other, and keep each other in check. It’s a very mature supply chain relationship.”

Secondment is also a common practice in the nuclear industry, which involves the temporary deployment of a client team member to the contractor or consultant team.

“This enables some real joint working and maximises knowledge transfer,” says Haboubi. “We work together as one team, we’re responsible for their work and targets. And by working on our side, clients also better understand how the suppliers work.”



Case study: collaborative delivery Heathrow Expansion Project (HEP)

Name: Heathrow Expansion, Utilities collaboration – HEP Connect

Location: UK

Industry coverage: Utilities

Year of establishment: 2019

Reason for choosing alliancing: Extensive interaction of capital investment

Project overview

The expansion of Heathrow Airport will have a significant impact on the 30-plus utility providers operating in and around the world's busiest airport, requiring diversions, disconnections, abandonments, new connections, network reinforcement. In addition, the project has to be delivered without significant disruption to ongoing utility operations as statutory undertakers, while minimising disruption on roads and in local communities.

This required Atkins, a member of the SNC-Lavalin Group, to re-evaluate how to develop a utilities masterplan design to support the airport's application for consent and to understand how expansion-related works would interact with utility companies' own operational and investment programmes.

Working alongside Heathrow, Atkins co-created an engagement plan with the major utility companies to improve coordination and enable collaborative schemes through effective risk and opportunity identification and management.

This work stream validated the need for greater collaboration between Heathrow and the utility companies and led to the development of HEP Connect, a customer-centred design approach that was underpinned by a cloud-based collaboration portal comprising a communications hub, an information hub and an integrated webmap in which existing and proposed utility schemes overlaid the proposed masterplan to drive new insights.

The portal was a success, changing established ways of working and data sharing between the Expansion Programme and utility companies.



Case study: collaborative delivery Heathrow Expansion Project (HEP)

Key success factors



Customer-centered design

An iterative approach in which we focused on the needs of the utility companies at every phase of the process, involving them in research and design; tasks, goals, user workflow, etc. Effective stakeholder engagement unlocked executive sponsorship to drive outcomes, socio-economic and social consequences from long periods of activity and mobility restrictions.



Capable owner / Intelligent client

Heathrow understood the importance of innovation and new ways of working. Value was defined by long-term outcomes of programme and management of stakeholders rather than short-term cost saving and rushed programme definition.



Benefits-led approach

Demonstrating the value of enhanced collaboration with the utility companies and targeting their key problems and needs with features and services every step of the way developed a clear road-map to greater levels of collaboration and some form of Alliance / Enterprise, social consequences from long periods of activity and mobility restrictions.



Data-led innovation

By developing a data-led approach (underpinned by a multilateral data license agreement), we could demonstrate to potential of systematic analyses to identify the risks and opportunities of capital investments due to interactions and interdependencies between programmes.



London's Infrastructure and Development Coordination Team

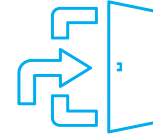
The IDCT was set up by the GLA to reduce disruption and other adverse effects caused by streetworks and roadworks by improved coordination and collaboration between major infrastructure providers, developers and utilities regulators.

Challenges & lessons learned



Time required to establish alliance

Alliancing is a new concept that has yet to be fully implemented anywhere and is a way away from being universally adopted; a clear road-map developed and bought into by stakeholders is key.



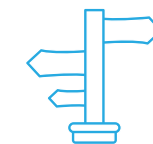
Restrictions on regulated markets

Utility companies are regulated and cannot commit to gold-plated solutions, changing their capital investment governance processes takes time, cannot be rushed or driven by external agents; 'pull' is needed.



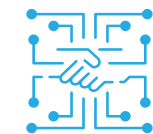
Data quality

Variable and incomplete datasets require extensive time and effort to manage updates, absence of master data leads to data integration challenges. Need to trial and establish what is worth doing, balancing cost vs. value.



Uncertainty

Companies future investment plans often incomplete due to the existing challenges they face coordinating and delivering plans so don't expect to 'simply' coordinate existing future plans; focus on identifying risks and opportunities.



Digital integration

The ability to realise effective data integration is likely to require significant effort to implement and assure.

Integrated programme delivery framework

Combining merging modular construction methodologies within an integrated delivery framework has the potential to cut construction times in half, while reducing waste and costly onsite errors

The traditional starting point for most developments is a bespoke design that satisfies the vision of the client, while taking into account the specific location of the project.

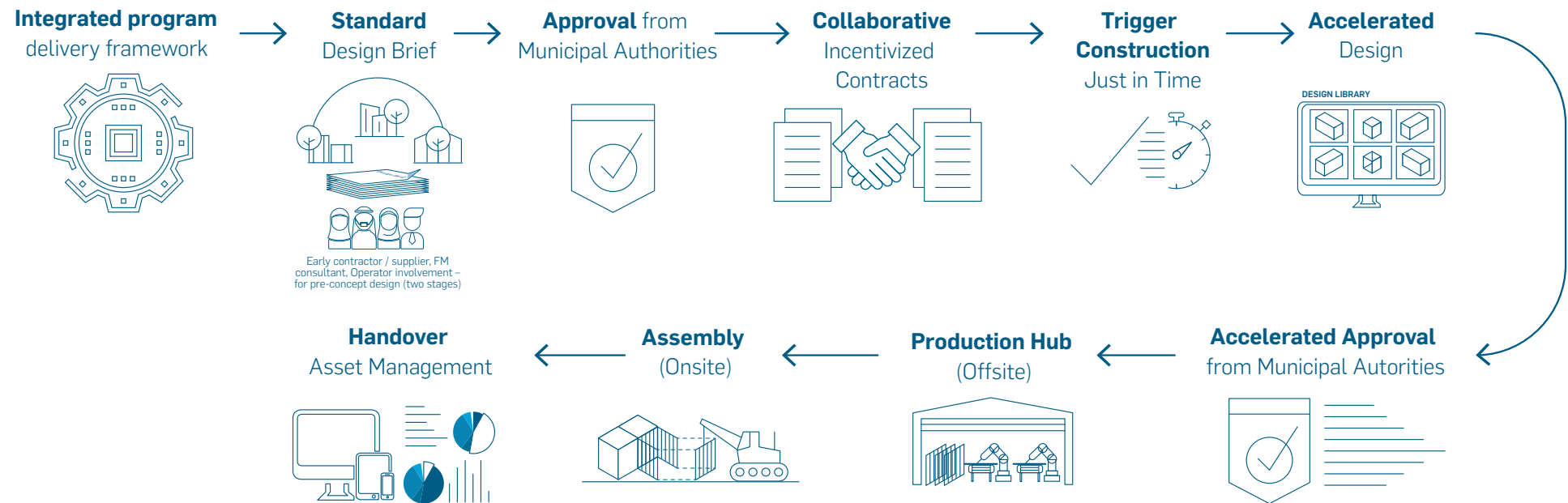
Throughout the life of every project, thousands of individual decisions are made during the conception, construction and operation of every building, road or structure. Meanwhile, exactly the same decisions are being taken on every single other project.

It is a duplication of effort that represents a significant, and unnecessary, waste of time and money. It also considerably amplifies the scope for bad decisions and errors. Integrated Program Delivery Framework (IPD) mitigates all of this risk.

The IPD framework can expedite the delivery of complex infrastructure projects where the integrator acts as a strategic partner and single interface between the owner, supply chain, operator and other members of the value chain. The Integrator role is to support the owner representatives to achieve the program objectives, identify the requirements, develop a standardised design to address the requirements, align the suppliers with the program objectives including the incentives around mitigating risks and equal pain and gain shares between the Owner and Non-Owner representatives.

Modern Methods of Construction (MMC) such as modularisation used within an integrated programme delivery (IPD) framework enable just-in-time production, where manufacturing is triggered by customer demand, to reduce inefficiencies in the supply chain.

This IPD framework offers reduced waiting times for design approvals and improved project predictability to support transparent, incentivised contracts.



Module library

The first step of the IPD framework is to establish the base design of a unit. This requires careful consideration of the standard requirements for the type of development. For example, a hospital may need a specific configuration of rooms and utilities, while a school requires more flexible, mixed-use teaching spaces or a community housing development may require standard typologies with specific space requirements and budget

The base unit design is developed in close collaboration with a pool of stakeholders including municipal authorities, user groups, owners and operators. At this stage, designers also take on board early feedback from contractors and module suppliers in the region.

The base unit design is then sent to municipal authorities for approval, saving vital time at the later stages of a project.

A design library of pre-approved base units can be established, resulting in components selected to form a standardised kit or module. A client can easily envisage the development at an early stage and only small changes may be needed to allow for variables such as plot size or shape.

This will accelerate both the design and the approval process as only incremental design changes need to be considered by municipal authorities.

Managing supply

A vital component in the process is the pool of competent contractors and suppliers. It is important to identify companies that can demonstrate a focus not just on their products, but also on efficient and predictable processes using modern methods of construction. A framework agreement is then signed with selected suppliers.

As soon as the client triggers the construction process, incentivised, transparent, collaborative contracts ensure visibility of the available supply chain capacity. At this point synergies in the production hub may be discovered for multiple orders or similar projects, and suppliers can exploit the benefits of shared designs to streamline and accelerate production.



Modern Methods of Construction (MMC) – Modularisation

The strength of modular construction lies in repeatability. Carefully designed identical modules or units that are manufactured offsite in tightly-controlled, factory conditions, are transported to sites to be rapidly assembled.

As well as removing the inefficiency of having to make the same decisions again and again, the process ensures far higher levels of consistency and quality than traditional construction methods, pollutes less, improves safety, and minimises disruption to the local community.

While the concept of modularisation may be unpopular with project sponsors seeking unique architecture and design, it is a perfect solution for projects such as community housing, or schools, where there is an ability to standardize the outputs in modules / kits.

Modular construction methods used within an integrated programme delivery (IPD) framework enable just-in-time production, where manufacturing is triggered by customer demand, to reduce inefficiencies in the supply chain. This IPD framework offers reduced waiting times for design approvals and improved project predictability to support transparent, incentivised contracts.

Offsite to onsite

The offsite module production hub carries the same benefits as most manufacturing environments. It can be a controlled area, protected from extreme weather conditions, well-lit and familiar to employees. This means that there are fewer errors and work can be carried out with consistent quality and accuracy.

Specialist, qualified staff can be employed to work on repeatable elements of the manufacturing process and safety protocols for workers are easily implemented.

At the construction sites, fewer workers are required to assemble the modules than would be required for traditional construction methods. This not only allows contractors to bridge the ever-present skills gap in the region, but it reduces the reliance on migrant workers who may be affected by pandemic-related travel restrictions.

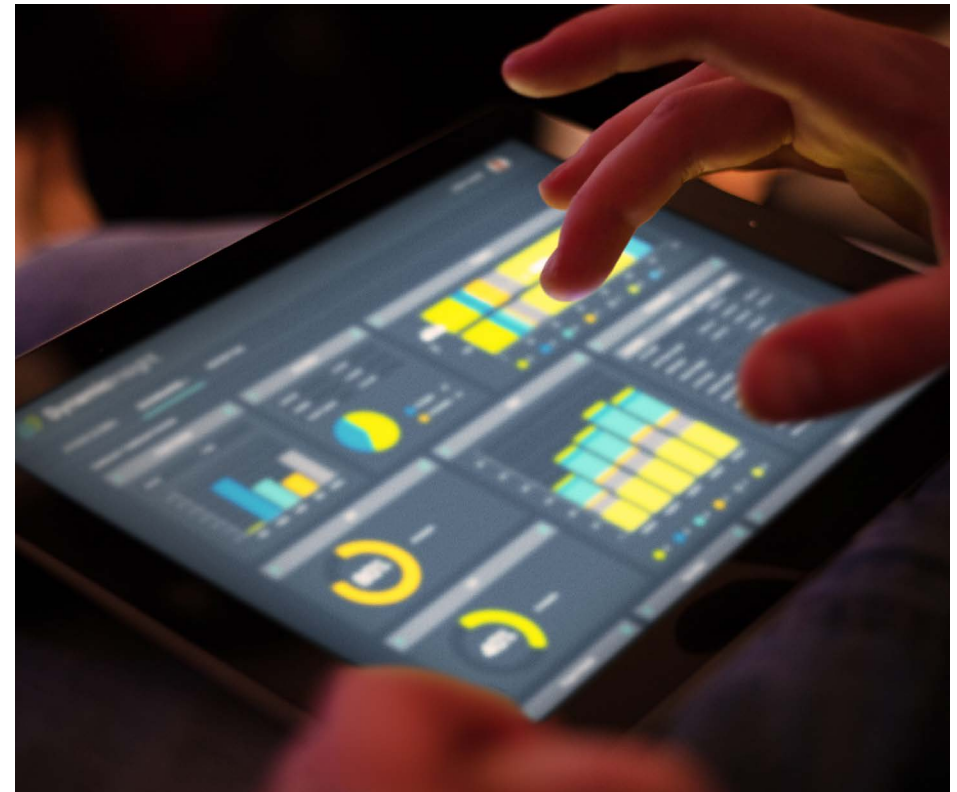
There are different types of modular construction techniques available such as complete box modules, panels and modular MEP floor plates. The module type and assembly methods are selected according to the logistics of a particular site.

Digital enabler

Leveraging the benefits of smart technology, the initial digital designs for a development can be overlaid with updates, communication and data from subcontractors and suppliers to provide the client with an integrated view of the asset.

This digital twin enables facilities management professionals to formulate a mature operations and management strategy at the outset of a project, and to follow the plans through to the handover stage.

It also allows contractors to manage the project without the waste of both materials and time that occur in a traditional, fragmented construction process.



Moving forward through enhanced collaboration

Collaborative contracting can be the solution to many of the challenges facing the construction sector. Projects teams that are set up to work together, rather than in opposition to one another, will deliver better project outcomes, improve productivity, reduce waste, and create a culture that encourages innovation.

Before project owners and stakeholders can engage in a collaborative environment, it is imperative for them to understand what is meant by a collaborative contract.

Understanding collaboration

A collaborative contract is an agreement between two or more parties, which lists the opportunities for collaboration at various stages in a project's life cycle. It enables mutual success for all parties involved.

The essence of collaboration lies in the idea that all parties involved are working towards a common vision and will share equally the risks and rewards of the development.

In this approach, project partners are selected on the basis of the value they bring to a project, and not just on the basis of the lowest-priced bids. Aspects such as corporate governance, safety records and innovation would all be part of a matrix of factors used to select project partners.

The success of each member of the project team is then tied to the success of the overall project, which in turn is driven by pre-defined targets and key performance indicators (KPIs).

Collaborative project team models have been shown to deliver considerable financial savings, improved quality of assets and optimisation of available resources.

Drivers of collaboration

Collaborative contracts are well-suited to complex, medium-to-long term projects that involve multiple stakeholders. These complex, large-scale projects carry a larger number of risks than smaller developments, and consequently need to be better managed from the outset.

However, one size does not fit all. And what works in one sector or jurisdiction may not work in another. It is therefore important to fully assess each development on a case-by-case basis before embarking on a collaborative contract. This assessment should ascertain the existence of key enabling factors that will support the appropriateness and success of collaborative contracts.

Enablers of collaborative contracts



VfM* - value for money

1. Specific project features



1. Complexity on interfaces and number of parties: Large-scale projects that involve “layers” both internally (within the client organisation) and externally (other project stakeholders such as contractors, subcontractors, consultants, designers, etc)



3. Significance to the owner and potential stakeholders: Commercial or reputational value of a project



5. Interdependent programs and tight time frames: Completion dates and outcomes of one project and their impact on another project



2. Risks on the project: High-risk projects involving financial and legal complexity that need to be jointly shared



4. Project criticality and strategic importance: For example, infrastructure schemes that are of strategic importance to a city

2. Defining parameters



1. Define the value for money (VfM) for a project: Understanding the whole-life costs and what benefits can be achieved from the project.



3. Equal pain and gain share with owner and non-owner participants (NOPs): Adopting a one-team mentality.



5. Early contractor involvement: Contractors brought on board early to minimise design and feasibility issues.



2. Identify the key performance indicators (KPIs) to deliver the VfM and fairness to all parties: Establishing performance indicators and risk-reward mechanisms that will maximise the key result areas (KRAs).



4. Tighten the benchmarks through continuous improvement for standardised programmes /projects: Regularly adjust and readjust outcomes based on project ‘health checks’. Encourage innovation on long-term projects.

3. Identify the right consultant and contractor



1. Contractor alignment on collaborative mindset: Select contractors that are willing to be transparent and share the risk and rewards of collaboration. Contractors must have the expertise to steer a project towards efficient delivery and positive outcomes.



3. Collaborative contractual arrangement between contractor, consultant and owner: Clearly defining project roles through contracts that could be established between each party and the client, with horizontal agreements between stakeholders for joint works.



2. Cultural and behavioural readiness: Collaboration requires a shift in culture and attitudes from traditional contractual behaviours. All parties involved need to understand the objectives.



4. Workshops and training: Availability of resources to educate and train stakeholders on collaborative practices.

4. Owner and stakeholder involvement



1. Right client team representatives for collaboration: Clients provide their best representatives to be a part of the collaborative process.



3. One team representation between owner, contractor and consultants: Appointing an alliance management team that includes representatives from all parties



2. Investment of time by client and project stakeholders for collaborative project leadership and management: All participants view the project as a collective responsibility.

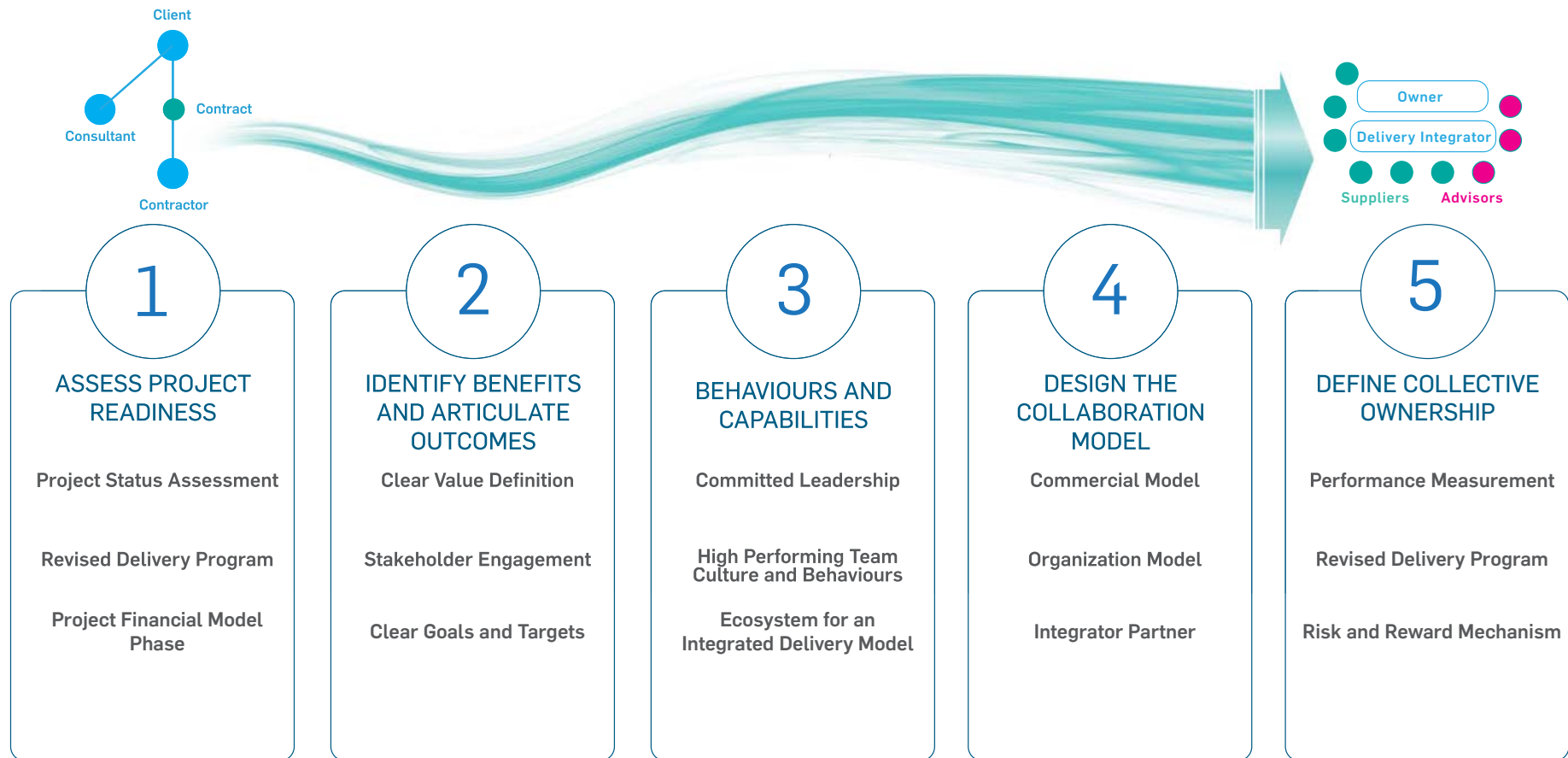


4. Senior management support: Top-level leadership needs to drive the necessary cultural change and enable effective decision-making.



Building shared collaboration

Once a project assessment has established that the appropriate enablers for collaboration are in place, and that there is appetite for a collaborative approach, the project parties can set up a collaborative contract. This can be achieved through five steps:



Co-develop Transformation Strategy to ensure Right Behaviour Environment enabled for a Collaborative Delivery Model



Assess project readiness

Key recommendations:

1

ASSESS PROJECT READINESS

Project Status Assessment

Revised Delivery Program

Project Financial Model Phase

- > **Conduct a comprehensive project assessment of the benefits of a collaborative approach at the outset of the project**
- > **Conduct a comprehensive assessment of the project against baseline expectations when the project has been severely disrupted**
- > **Reassess current contract models**
- > **Clearly define schedules and budgets**
- > **Identify interdependencies with other projects in the portfolio**

A collaborative project contract can come about in two ways. The first one is when a client decides from the outset of the project that they will get the best value from a collaborative approach, and that they trust their consultants and contractors to successfully adapt to the requirements of an alternative delivery model.

The second way is during an ongoing project when key parties who have been appointed under a traditional structure face significant problems in executing the project. For example, if movement restrictions caused by the Covid-19 pandemic affect resource availability on a project, slowing down the pace of work and delaying the program.

In this scenario, the client and project stakeholders will need to make an assessment of the project against baseline plans, using methods such as earned value management to understand how much of the allocated budget has been spent against the planned schedule. This kind of 'health check' allows project parties to understand the condition of a project. Detailed project risks will be also be identified and probable mitigation plans will be defined.

Based on this assessment, a revised delivery programme can be devised with key benefits highlighted. For instance, on a project that has been stalled for several months by Covid-19, the priority would be to deliver the final product as close to the original deadline as possible.

In the Middle East, where governments are major drivers of project spending, budgets have been slashed in light of the pandemic. It has become critical for both public and private project spenders to decide what their funding models will look like over the coming years and how ongoing project budgets can be revised.

Client organisations may seek external consultant support to conduct the project health assessments, and to devise the appropriate project financial model, before proceeding to the next steps of identifying project benefits and articulating project outcomes.

Identify benefits and articulate outcomes

Key recommendations:

2

IDENTIFY BENEFITS AND ARTICULATE OUTCOMES

- Clear Value Definition**
- Stakeholder Engagement**
- Clear Goals and Targets**

- > **Ensure that all stakeholders are engaged while identifying the benefits and determining the project outcomes**
- > **Risk and reward model must be “value based” and not “output based”**
- > **Prioritise joint outcomes, not individual outputs**

It is vital to identify the benefits of adopting a collaborative approach to a project as many of the outcomes, and sometimes the most critical ones are intangible.

For instance, it could be a reputational requirement for a client to finish certain high-profile projects on time. The benefits of a collaborative contract should be seen in terms of how this approach streamlines the delivery times against this overarching objective.

Identifying the key outcomes at the outset will help define pertinent performance measurement for the project and for each party such as key performance indicators (KPIs) and value for money (VfM) indicators.

The benefits of collaboration must be assessed by identifying the key stakeholders; those who are impacting the project either directly or indirectly.

For instance, the expansion of Heathrow Airport will have a significant impact on the existing 30+ utility providers operating in and around the airport. The development will require diversions, disconnections, abandonments, new connections and network reinforcement. This work needs to be delivered without significant disruption to their operations as statutory undertakers and with minimal disruption to roads and local communities.

To do this, Atkins needed to re-evaluate the Heathrow Expansion Project (HEP) and identify the key outcome in direct interaction with the utility providers on the project. The key objective / outcome of the HEP is “how to develop a utilities masterplanning design to support the airports application for consent and to understand how expansion-related works would interact with utility companies’ own operational and investment programs”. The required outcomes were further synthesized into parts by conducting joint engagement workshops with the 30+ utility providers.

A properly structured collaborative model applied to this kind of project results in fewer unexpected late interferences. The VfM measurement covers both cost and non-cost related components.

The collaborative model is most effective when everyone involved in the project has a clear understanding of their responsibilities and their contribution to project outcomes. Internal stakeholders, such as the project sponsor, as well as external stakeholders, including operators and contractors, need to be engaged early and familiarised with the vision and purpose of the project, its benefits and desired outcomes.

Traditional delivery models tend to focus on the outputs rather than the outcomes and this is something to be wary of while transitioning to a collaborative model. In one particular water project in the UK that was being delivered through a collaborative model, the asset owner discovered that even after years of work, they were unable to achieve the desired outcomes of the approach. Analysis of the problem revealed that the focus on the risks and rewards model was “output based” instead of “value based” – so in the early years, the risks and rewards were linked to outputs that did not add real value to the program.

Prioritising project outcomes rather than individual outputs is crucial to the success of a collaborative model. An alliance management team, which consists of representatives from client, consultants and contractors, addresses the project outcome. The team ensures that

Behaviours and capabilities

Key recommendations:

3

BEHAVIOURS AND CAPABILITIES

Committed Leadership

High Performing Team Culture and Behaviours

Ecosystem for an Integrated Delivery Model

- > Be open to collaboration – senior leadership should drive the right attitudes
- > Owner and non-owner participants must involve 'high performing teams' with a clear understanding of the objectives of a collaborative model
- > Conduct behavioural change workshops to move away from traditional project delivery mindset

It is imperative that the collaborative model is actively supported by the project sponsor. If the project sponsor is not supportive, then the team will be reluctant to embrace a collaborative model, especially since there is no significant precedence for this model in previous endeavours.

A culture of collaboration must be implemented top-down, both internally within client organisations, and externally across the supply chain of a project.

The buy-in of the senior decision makers across all project parties is essential to the success of collaborative models for project delivery.

But it is not an easy change to make. Procurement models in the Middle East tend to stifle innovation.

Alliance Management Structure



The success of the collaborative model depends on the commitment of all parties, particularly the clients or owner participants. Owner participants who are not clear in their objectives and/or do not deliver on their goals, will weaken the entire model.

The project Alliance Management Team (AMT) can escalate instances where a representative, either from the owner participants or non-owner participants, is not supporting the achievement of project outcomes, and is affecting the project delivery.

The right behaviour and capabilities are key for the success of a collaborative contracting model. It will require focused attention through collaborative workshops with the AMT to bring about an attitudinal change from the traditional delivery model to collaborative model values.

If the required behaviour is not understood from the start of a project, it can lead to conflicts at later stages. Behavioural change workshops can help in instances where stakeholders need to be educated on the nuances of the collaborative delivery model. Continuous assessment also needs to be conducted to identify and address non-performing members at an early stage.

To get the right capabilities, owner participants often tend to award project contracts on the basis of the lowest-price-wins, instead of identifying the value and capabilities that an organisation brings to the project.

In an industry where cash flow is already under pressure and profit margins are narrowing, contractors are desperate to win contracts, even by pricing work at unrealistically low levels. This leads to lower standards of work, stifles innovation and creates the potential for lengthy and expensive legal battles. It is impossible to stimulate and sustain innovation in this kind of environment.

Designing the collaborative model

Key recommendations:

4

DESIGN THE COLLABORATION MODEL

Commercial Model

Organization Model

Integrator Partner

- > Find the middle ground – work with legal / commercial teams to align the FIDIC contract and the pure alliance contracts to suit project requirements
- > Establish KPI's and related commercial targets at the outset with a balanced approach to determine the pain and gain share

Traditional contracting models can foster an adversarial culture on projects with the majority of construction risks typically passed down from the client to its contractors and suppliers, forcing every party to adopt self-protective behaviour in order to avoid blame. In the event of failure, there are heavy penalties as well as legal and commercial consequences.

Such a confrontational model affects project delivery, triggering contract disputes while contributing to delays and waste.

Alliance or collaborative models are based on incentive-based relationships, where parties work together as an integrated team and equally share in the achievements and setbacks on a project.

Collaborative models require a greater level of communication and transparency, with every participant working towards a common goal.

Pure alliancing models represent a big departure from traditional contracts in the Middle East, where construction contracts are generally based on FIDIC forms of contract designed to favour one party.

A more balanced approach is needed where the existing FIDIC forms can be made bespoke with collaborative principles from NEC 4 Alliance (UK) contracts and / or National Alliance Contracting guidelines (Australia), thereby a middle path is achieved.



Similarly, if the project costs exceed the target cost due to inefficient delivery, then the pain is equally shared with both parties with a capped downside for the non-owner participants.

At an organisational level, the contracts could be signed as a multi-party contract or between each party and the owner, with an addendum specifying collaboration and an AMT structure.

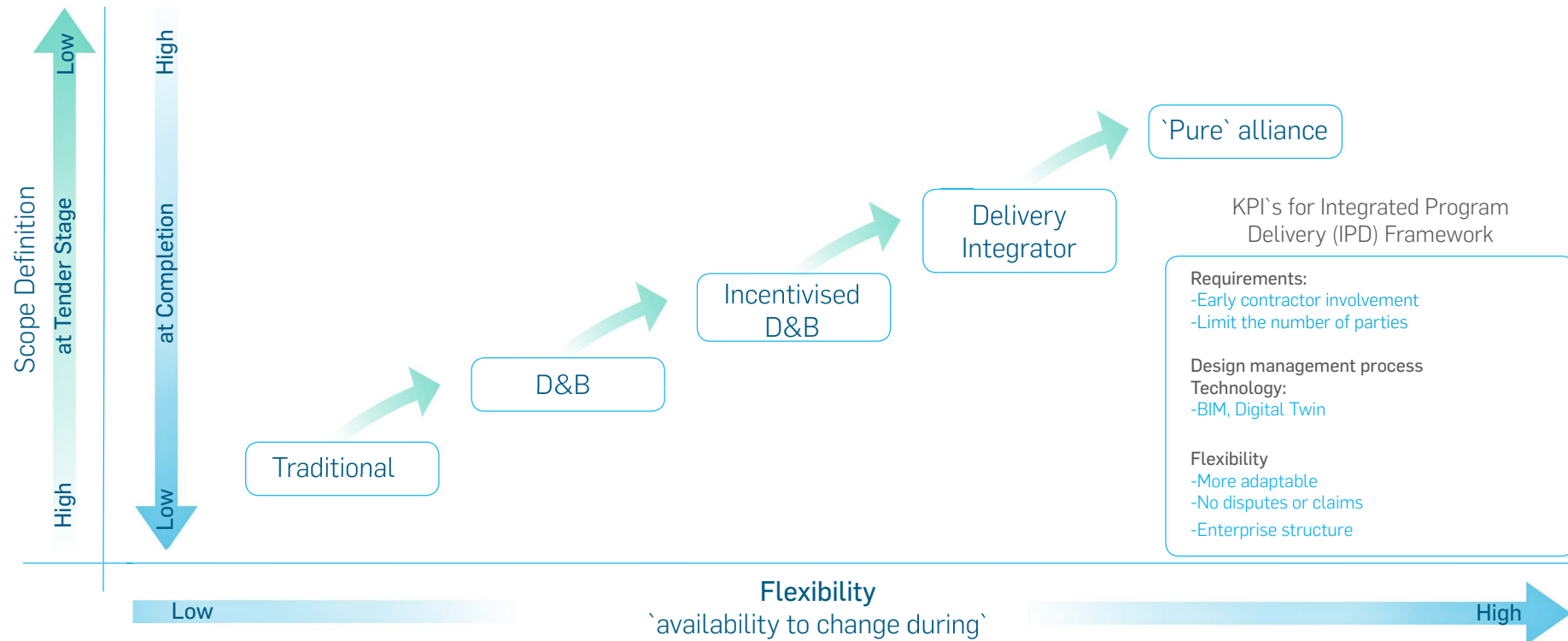
A delivery integrator model combines features of a pure alliance model and elements of a FIDIC design & build contract, resulting in a contract that is palatable for both parties involved.

Key performance indicators (KPIs) for a collaborative model include:

- > Early contractor involvement
- > Limited number of parties
- > Design management process (coordinated across the life cycle)
- > Use of technology (BIM, digital twin)
- > Flexibility – Greater adaptability; no dispute or claims; enterprise structure

TRADITIONAL Vs DESIGN & BUILD / COLLABORATIVE MODELS

Forms of Contracting





Defining collective ownership

Key recommendations:

5

DEFINE COLLECTIVE OWNERSHIP

Performance Measurement

Revised Delivery Program

Risk and Reward Mechanism

- > Define risk and reward mechanisms
- > Have a balanced approach to managing risk
- > Set smart and balanced KPIs

Under a collaborative model, each participant shares the success and failure of a project through a clearly defined risk and reward mechanism.

Such a mechanism incentivises project stakeholders to perform their best, based on Minimum Conditions of Satisfaction (MCoS). Rewards are offered when performance targets are achieved or exceeded, and burdens are shared when outcomes are not achieved. The idea is to foster a 'win-win' environment, underpinned by joint financial incentive.

KPIs are used to measure the outcomes or key result areas (KRAs) of a project. They play a key role in providing information on the performance – and even non-performance of tasks. Only once these KPIs and outcomes have been achieved can the project stakeholders benefit from rewards.

However, KPIs can often be unfairly defined in a one-sided manner, or may not be relevant to achieve the project outcomes. This can be detrimental to the collaborative model, as a stakeholder may never be able to succeed if the KPI is skewed against one party.

When defining collective ownership, it is important to have a balanced set of KPIs and other measurement parameters. KPIs will largely vary from project to project and could cost or non-cost based. For instance, the KPIs of a development in an eco-sensitive zone will focus on reducing the environmental impact. Owner participants will have to support the development of these KPIs to ensure they correlate with the final outcomes of the project.



Conclusion

Change is needed in the way that projects are delivered in the GCC. With regional finances under growing stress, project sponsors and clients want greater social and economic value from their investments in order to meet the needs of growing populations, and to deliver national visions for diversification and competitiveness.

The growing scale and complexity of projects is introducing additional commercial and technical risks. Increasingly, the traditional models used to deliver projects in the region are contributing to increased waste and cost overruns.

Much of this waste stems from a lack of collaboration and shared objectives between project stakeholders. Project owners in across the region will benefit from more cooperative ways of working.

Collaborative contracting solves many of the challenges currently facing project delivery in the GCC. With all of the key parties on a project working towards a common goals, and sharing equally in the risks and the rewards, collaborative project alliance teams will deliver better outcomes, improve productivity, reduce waste, and create a culture that encourages joint solutions to problems.

In this approach, project partners are generally selected on a measure the basis of the value they bring to a project and not just on the basis of having submitted the lowest-priced bid for a contract. The success of each member of the project team is directly related to the success of the overall project, through setting pre-defined common targets.

Collaborative contracts can be used successfully on all types of projects, but they generally produce best benefits when applied to complex, medium-to-long term projects that involve multiple stakeholders and are subject to a variety of key risks that need to be identified and managed effectively from the outset.

To ensure the long-term sustainability of the GCC construction industry, and to maximise the impact of the limited capital available for projects, the GCC projects industry needs to examine, tailor and adopt more collaborative ways of working, centred on common objectives with a balanced share of project risk and reward.



WE ARE IN THIS TOGETHER – OUR EXPERTS ARE HERE TO HELP

We understand to bring about a fundamental change in the market through Collaborative Contracting requires adequate guidance and support throughout the journey. With over 50 years' presence in the Middle East, The SNC-Lavalin Group provide the expert advice across the project life-cycle right from the feasibility and requirements management process for the initial stages of the project up to handover and Facility management services as required for the Operator.

We can broadly split these services as follows:

Building an Integrated Programme Delivery (IPD) framework:

Our Advisors will engage closely with your organization to establish the building blocks for an Integrated Programme Delivery (IPD) framework for your project / program. We will focus initially on understanding the key risks and drivers for the project and based on the initial assessment provide a requirements management process, identify the benefits and articulate the outcomes, evolve / change behaviours and identify the right capabilities within the project team.

Designing the collaborative model:

We will work with your legal and commercial teams to advice on the amendments on the standard contracts to make room for alliancing arrangements. These could include - Pain/gain share measured against set KPIs; Target outturn costs to be agreed for completion of works; Establishing the right KPI's and related commercial targets at the outset with a balanced approach to determine the pain and gain.

Developing the Project Management plan, the programme budget, work and cost breakdown structures and the scope and specifications. Agreeing the number of packages of consultants and contractors to procure defining the ideal procurement sequence, scope and deliverables in line with optimising the client's objectives. Agree the communication, reporting and meeting protocols and the risk and Value Management processes to be applied to the project. Along with the established incentives ensuring a no blame and collaborative culture is maintained and supported at all times to facilitate early problem identification and joint early mitigation or resolution is applied to all risks and emerging challenges as appropriate.

Design management / Consultancy aligned to Modern Methods of Construction:

We will develop a robust design as early as possible by identifying all key internal (specialist consultants operators Geotech information etc), external design stakeholders (utility companies, civil defence etc) and contractors and specialist suppliers that have an influence over the design and what is to be constructed to ensure early timely input by all parties that have a key influence on the design. In this way, we can ensure as many issues as possible have been identified and accounted for at the appropriate points of a developing design including knowledge of the contractors, construction methodology, the key suppliers, and all long lead equipment and or material items.

We will introduce sufficient discrete stop-go points within the design continuum to ensure all disciplines are up to date and coordinated before moving into the next stage.

Our Design Consultants will work with you to develop designs aligned to Modern Methods of Construction (MMC). We can develop a Design Module library with base units, resulting in components selected to form a standardised kit or module that can be utilized for developing an accelerated design as per the project specific requirements.

Digital enabler for the collaborative model:

Our Digital Advisors will provide services that enable a digital thread whereby data is exchanged between multiple functions within the supply chain and technologies across the project lifecycle. Our digital twin capabilities will enable facilities management professionals to formulate a mature operations and management strategy at the outset of a project, and to follow the plans through to the handover stage.

Programme assurance to achieve project outcomes:

Our Advisors and Project Management experts will work with your team to conduct Programme Assurance services that is required to conduct audit and check to ensure the project outcomes and KPI's identified in the initial stages are being adhered to. Also, all risks and challenges are addressed by team members in a collaborative and timely manner and any reset of the KPI's are reviewed independently.

Operations and facility management advisory:

Our Operations and Maintenance experts we will work closely with your team and the design team to establish the framework for sustainable strategies, policies and working practices for asset management. This will be achieved by designing and implementing a responsive, consistent operations and maintenance structure to ensure all systems are running to their best potential.

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About SNC-Lavalin

Founded in 1911, SNC-Lavalin is a fully integrated professional services and project management company with offices around the world. SNC-Lavalin connects people, technology and data to help shape and deliver world-leading concepts and projects, while offering comprehensive innovative solutions across the asset lifecycle. Our expertise is wide-ranging consulting & advisory, intelligent networks & cybersecurity, design & engineering, procurement, project & construction management, operations & maintenance, decommissioning and sustaining capital and delivered to clients in four strategic sectors: EDPM (engineering, design and project management), Infrastructure, Nuclear and Resources, supported by Capital.

About Atkins

Atkins (www.atkinsglobal.com) is one of the world's most respected design, engineering and project management consultancies, employing over 18,300 people across the UK, North America, Middle East and Africa, Asia Pacific and Europe. We build long-term trusted partnerships to create a world where lives are enriched through the implementation of our ideas. You can view Atkins' recent projects [here](#).

About Atkins Acuity

Acuity is the end-to-end advisory business from Atkins. Atkins Acuity combines management consulting, financing and technical capabilities to help clients solve complex front-end problems in the built environment. We help to successfully deliver our clients' big ambitions for infrastructure and energy, worldwide. We use a results-driven and engineering-led approach, to make our partnerships higher value and more rewarding. Together, our core areas of expertise enable us to deliver seamless, results-driven advisory solutions.

About Faithful+Gould

SNC-Lavalin's Faithful+Gould business is a world leading integrated project and programme management consultancy. We strive to build strong relationships by understanding the challenges our clients face, sharing their vision and helping them transform potential into reality. Our core suite of digital platforms and tools underpin our service delivery model and through innovation, standardisation and automation, we maximise efficiencies for our clients to save time and money.



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