

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

Competitive Collaboration

Story: All for One, One for All: The SCIRT Collaborative-Competitive Model

Theme: The SCIRT Model

A document which describes the SCIRT model and how it drove both collaboration and competition.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz



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All for one, one for all: the SCIRT collaborative-competitive model

How the SCIRT alliance model utilised both collaboration and competition to drive performance.

To manage the infrastructure rebuild following the Christchurch earthquakes, one of New Zealand's largest natural disasters, a new model was created, one that utilised both competition and collaboration to drive performance. This model was new for New Zealand. How did it work, what were the benefits, and what lessons can be learnt for the future?

Need for a new approach

Building large-scale public sector works in New Zealand, as in many countries, involves public-sector clients putting out projects for tender; and competing civil engineering companies bidding for the work. This approach has its drawbacks: The process for awarding just one project can take months and requires the scope of the project to be well defined.

The sheer scale of the rebuild facing Christchurch in the wake of the 2010-11 earthquakes made a conventional approach unworkable.

SCIRT was founded to harness the combined power of the country's leading engineering firms and contractors. The challenge was how to get them all to work together as efficiently and effectively as possible.

How it works: an overview

SCIRT was based on an Alliance Agreement between national and local government and five civil engineering contractors, but was not a conventional alliance.

As with most collaborative relationship contracts, there was a "pain share/ gain share" payment that was shared between the contractors and the clients. However, in a departure from usual alliances, the contractor Delivery Teams competed for the construction work, which was allocated according to performance in both cost and non-cost Key Result Areas (KRAs). Strong drivers were thus created for both competition and collaboration.

"Those who performed better were allocated more work," said SCIRT General Manager Ian Campbell. All contractors started out being allocated an equal amount of work; however, each company's share altered over the course of the programme.

Delivery Teams were paid actual costs plus a fee based on the target cost of work done. Poor performance therefore meant less fee earned; good performance increased the fee.

The difference between target cost (budget) and actual cost for each project was added to a gain share/pain share pot, a nominal 50% of which was paid to (or paid by) the contractors at the end of the programme according to the amount of work each had done.

This encouraged collaboration because all contractors needed to perform ensure an overall "gain" rather than "pain" result.

An overarching structure

The Alliance Agreement underpinning SCIRT was created between three Owner Participants: the Canterbury Earthquake Recovery Authority (CERA), Christchurch City Council, and the New Zealand Transport Agency (NZTA); and five civil engineering companies, the Non-Owner Participants (NOPs): City Care, Downer, Fletcher, Fulton Hogan, and McConnell Dowell.

SCIRT essentially had six main teams: the Integrated Services Team (IST), which was responsible for the

"Collectively we are stronger"

SCIRT value

overall programme management and professional services; and five Delivery Teams (DTs) responsible for the construction work.

The five NOPs each contributed a Delivery Team to SCIRT. The IST was formed by personnel seconded from both Owner and Non-Owner Participants, as well as designers and consultants seconded from other companies.

A key benefit of NOPs providing delivery teams was that duplication of management and administration services could be avoided, efficiency increased, and costs reduced costs by Delivery Teams continuing to use home organisation processes and programme management support. This also enabled the SCIRT delivery programme to ramp up quickly.

The IST was responsible for investigating damage (asset assessment); programme management, including scoping and allocation of projects; design; target cost estimating; functional coordination; and oversight of delivery teams. The Integrated Services Team worked out of a central site. The five Delivery Teams maintained separate offices.

Determining the target costs

IST estimators used project information provided by designers and delivery teams to build up a cost estimate called the Target Out-turn Cost (TOC) for each project.

To further ensure accuracy and alignment with wider civil industry pricing, an independent estimator prepared a parallel estimate. The two estimates were then compared, discussed and revised until they were in alignment (see Estimating story for more information).

Incentives for performance

Because Delivery Teams were paid actual costs and fees were set in advance, based on a percentage of the TOC, contractors did not have the opportunity to make huge profits. However, commercial incentives still drove performance. Two core components of the SCIRT commercial model encouraged companies to both collaborate and compete in order to gain financial

rewards and at the same time provide the cost and non-cost outcomes required by the owners:

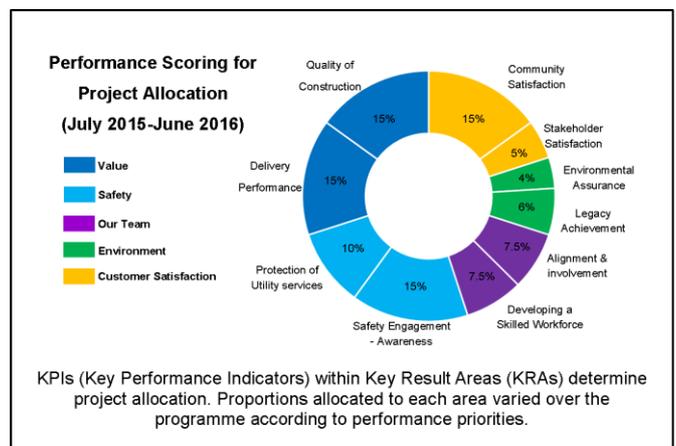
- Allocation of work to each delivery team, according to its performance;
- The pain share/ gain share formula, which led to either a bonus or a penalty for all parties, depending on how well the projects were delivered by all teams.

Project allocation to create competition

The amount of work each of the five Delivery Teams received impacted their home organisation financial returns significantly. On a \$2.2 billion programme of hundreds of projects, even a small variation in the share of work could translate into millions of dollars in fees.

Each of the five Delivery Teams started off being allocated an equal share (20 per cent); however, this percentage then varied over time.

Those companies that performed better were allocated more work. Fifty percent of the project allocation score was based on how well companies managed costs, and 50 percent was based on non-cost factors such as schedule performance and Key Performance Indicator (KPI) measures in five Key Result Areas (KRAs): health and safety, environment, value, including quality of delivered projects, community and stakeholder engagement, and teamwork.



Each month the project allocation score was determined for each delivery team based on its recent performance. A standard formula was then used to convert the score for each delivery team into a target share of the work, currently in construction or handover, which was then compared to its actual share to determine which team was most entitled to be allocated the next project.

That may sound simple; however, making it work in practice month-on-month and achieving a full balance every month was not always possible for reasons including:

- Because the share was work in handover/construction, the actual share changed when projects were completed as well as when projects were allocated; a single project being allocated or completed could mean a one per cent change in share.
- There were not always enough projects ready to be allocated to enable target shares to be achieved.

The reason only current work and current performance were considered was to avoid historical performance unduly influencing allocation, and to maximise the reward and incentive for current and future performance.

Pain share/gain share to drive collaboration

To explain the collaborative driver, it is necessary to briefly explain the commercial model (the model is outlined in more detail in a separate story).

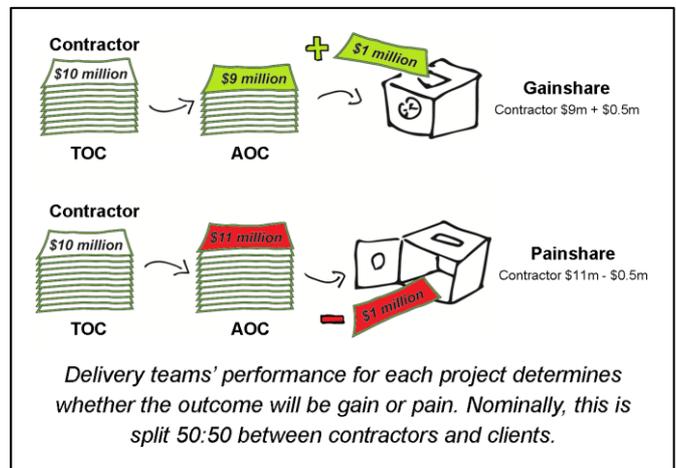
A Target Out-turn Cost (TOC) was established for each project. This was non-negotiable. The contractor would receive payment for the project in three parts (or “limbs”):

- **Limb 1:** Actual cost of the work (AOC)
- **Limb 2:** An additional fee calculated as a fixed percentage of the TOC
- **Limb 3:** Pain share/gain share – the difference between TOC and AOC

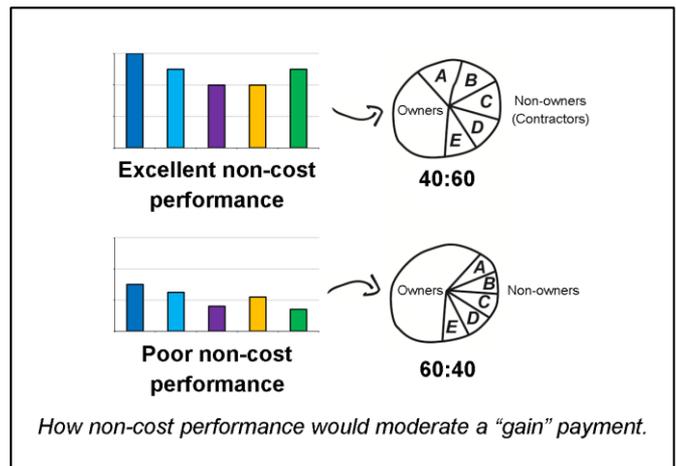
If a Delivery Team could complete the project under budget, the difference between the budget and the

actual cost (gain) would increase the programme pain share/ gain share pot (create “gain”).

However, if the Delivery Team completed the project over budget, then there would be a reduction in the pain share/ gain share pot (pain). At the end of the programme, the pain/ gain pot was shared between Owners and NOPs. If in gain, NOPs were paid a share of that as a reward. If the pot was in pain, they paid money back.



Non-cost performance was factored in. The pot was nominally shared between Owners and NOPs 50:50 but this could be 40:60 or 60:40 depending on non-cost performance.



“The pain share/ gain share model ensured all parties focused on the same outcomes that would drive success for all parties rather than failure for all parties, because parties would either all succeed or all fail together,” said Campbell. “Because pain and gain was

shared, it was not in the interest of high-performing Delivery Teams to let the others fail.”

In fact, because the NOP share of the pain share/gain share pot was shared according to how much work was allocated to each Delivery Team, the higher-performing Delivery Team, which had been given the most work, would actually end up paying back a lion’s share of the pain.

This drove collaboration among contractors who in their normal business environment would regard their knowledge and methods as intellectual property (IP) that gave them a commercial advantage. Now they had an incentive to share their expertise.

The verdict: Collaboration pays off

“We found that contractors understand how to compete better than how to collaborate” said Campbell, so achieving effective collaboration was the greater challenge.

“The devil was in the detail. The concepts were simple, but implementation was more difficult to get right. Collaboration and competition did not always fit well together, and the competition did sometimes limit the collaboration, but on balance, the value we got from both was more than could have been gained from one or the other alone.”

Competition was a strong motivator, said Delivery Manager Tim Mason. “Encouraging teams to up their game and get better and have them compete against each other for work improved performance. It provided a lot of value to the programme.”

Collaboration required engineers and project managers to share resources and information openly and proactively. “It’s about maturity of conversation, transparency, and it’s more effective if you have got projects working at optimum efficiency,” said Mason.

Nevertheless, he believed the outcomes were positive and will leave a lasting legacy. “It’s broken down a lot of barriers to communication across the industry.”

Mason considered an important lesson learnt is that it is necessary to encourage a collaborative environment as early as possible. “Competition is important, but the

biggest gains will be made when everyone is working together.”

Commercial Manager Richard McDowell said from a commercial perspective the key question was whether there was a more economical way of achieving the best results. “The inherent challenge was five competing companies getting their head around collaborating and sharing work for the greater good.

“I think the model is great. Like most things, it has room for improvement, but I think it was ideal for this programme and other big projects.”

Key lessons

- Competition and collaboration both have a role
- Funders, contractors, and the public all benefit
- Efficiency and performance increase.
- Budgets are controlled and costs are transparent and managed
- Innovation and knowledge sharing are encouraged
- Collaborative behaviours create a more enjoyable working environment

“On balance, the value from both [collaboration and competition] was more than could have been gained from one or the other alone”

Ian Campbell, SCIRT Executive General Manager