CLOUD COMPUTING

A project to deliver a new supercomputer to the UK Met Office has the potential to revolutionise the PPP market. Paul Jarvis reports

"We completely broke our model of five-year investment cycles," says Alison Wilson, associate director in the Met Office's commercial team.

Indeed, the Supercomputing 2020+ initiative broke the mould in a number of ways. A £1.2bn programme to provide the Met Office with a state-of-the-art supercomputer, the deal also includes a host of ancillary functions such as data delivery platforms and even the facilities in which it will be hosted. "This was a pretty broad procurement," says Mark Hunt, supercomputing programme associate director at the Met Office. "It was not just buying a supercomputer."

Such a complex procurement requirement helped convince the Met Office that the project could and should be done as a PPP, rather than simply buying a supercomputer, as it had done previously. "It brings it into the 'infrastructure as a service' category," says Jeremy Brittenden, a partner at Hogan Lovells who worked on the deal. "The Met Office is buying a fully integrated service on an availability basis for 10 years, with an outcomes requirement."

Brittenden argues that this project, far from being a one-off in a highly specialised field, offers a clear direction of travel for the PPP industry. "This is the PPP sector moving into what is going to become one of the most important services in the future: artificial intelligence in the cloud," he says.

As technology becomes increasingly integrated into the built environment, through smart infrastructure and efforts to monitor and tackle energy consumption, the Met Office's pioneering

> ## This is the PPP sector moving into one of the most important services of the future

efforts could lay the groundwork for others to follow across different sectors.

So what was the Supercomputing 2020+ project all about, and what lessons can be learned for the future?

The deal will see the private sector provide the Met Office with a new supercomputer and ancillary items, and manage and maintain it for 10 years. Given that the life of a supercomputer is no more than five years, there is a requirement in the contract for the private partner to provide a new supercomputer halfway through the contract.

"One of the hardest things was to ensure value for money with a refresh that is a wholesale replacement, and with technology that is changing rapidly," says Brittenden.

Key to understanding this project is recognising how much of a break with the past has been achieved. Traditionally, as Wilson mentions, supercomputers are procured on a five-year basis, with the procurer buying it and then disposing of it as new technology makes it obsolete.

There is a growing acknowledgement in the sector that such an approach may be unsustainable in the long term, especially as ancillary requirements become more complex. "Today, if you want to get maximum efficiency, there is the chip to consider, but also the mechanical & engineering elements such as the

> ## We never ran the procurement in the way we intended because of the pandemic

This deep engagement with the industry paid off with competitive bids produced, despite the complexity of the deal and the speed with which it needed to be procured. The team believe they hold a record for the fastest OJEU to financial close on such a complex deal, spanning just 14 months. That timeline was largely dictated by the fact that there could be no continuity gap between the current supercomputer running out of steam and the newly procured one coming online.

"The new approach brought interesting time challenges," says Hunt, pointing out that the team were also aware that going to the market too early would not have brought best value, in part because of the position of the market at the time but also because of the speed of technological change. "So we were always against the clock."

Add in a snap General Election, Brexit and, finally, a pandemic, and the fact a procurement was run at all may seem something of an achievement, never mind the pace at which it was done.

Wilson highlights the fact that changes in government often meant changes to those from whom key approvals were needed - each time triggering another round of education to explain why the project was not following the old, tried and trusted route. "You have to keep on top of your stakeholder relationships," she says.

"The fact the team was able to complete four rounds of competitive bidding, with associated dialogue, remotely in under a year is extraordinary," says Ciara Kennedy-Loest, another partner in the Hogan Lovells team who worked with Brittenden on the deal, referencing the impact of the pandemic.

"We never ran the procurement in the way we intended because of the pandemic," adds Wilson. "Although that probably enabled us to do it better in some ways: for example, we weren't flying people in to get their input, we were doing it over the internet."

There are clearly some important lessons here for other projects, whether it be working in a more nimble way thanks to the restrictions created by the pandemic, or recognising the importance of keeping stakeholders informed and engaged.

However, when embarking on such a novel procurement, all agree that time and resource are critical factors. "Whatever resources you think you need," says Wilson, "double them. You also need a team of experts around you to test your theories. You need to work with experts who can test these things."

"Every project takes on a life of its own," says Brittenden as he reflects on the differences and similarities between this and other PPP projects he has worked on. "We quickly developed a team here that could have difficult conversations when necessary. The confidence and collegiality this built was a big factor in its success." **PB**

cooling system and how to integrate different elements to create the enhanced supercomputing capacity," says Brittenden. Therefore, the Met Office began considering other ways of getting the results it was looking for.

"The process starts with defining the organisation's requirements," says Hunt. "What do we need to deliver our climate and science strategies? That helped us to define what options were not open to us."

At the early stages of the process, the Met Office was open to a wide range of possibilities, including potentially hosting elements of the supercomputer overseas primarily to explore opportunities for more environmentally friendly power sources typically available outside of the UK. Given the Met Office's service to critical national infrastructure such as defence and regulated aviation sectors, this was always likely to be only a viable option for non-production research workloads.

This project was the first supercomputer to be planning a longer term model, while at the same time looking to outsource the risk to the private sector, so it was no surprise that the approvals process to get sign-off within government proved to be rigorous and challenging.

Wilson explains, however, that the arguments in favour of the approach the Met Office was taking were compelling, and getting that message across to government during the approvals process was important. "We had a strong project and a strong programme team," she says. "We gave insight into what we were seeing in the market and we could demonstrate value for money. We carried out a lot of education to help get a greater understanding."

Market engagement proved crucial not only in getting government backing, but also in ensuring there was sufficient interest and competition in the market to make this new approach work. "We carried out extensive market engagement, which showed us that there was likely to be more competition and that the market was heading in this direction," says Hunt. "And that we had the right support to make this approach work."

However, timing had to be key. "We delayed going to market partly because the market itself was changing considerably," says Wilson. "We did a second round of market engagement to test our assumptions and get the industry's reaction."