

NEWS BRIEFS

Canada Stops Exporting the Factory — At Least This Time

Xanadu is building an \$893-million quantum-manufacturing project in Toronto. The bigger story is what Canada is trying to keep when innovation becomes industry.

PUBLISHED 2 SEP 2026 BY NASTY CANUCK EDITORIAL DESK



Illustration: Nasty Canuck / AI-assisted.

Toronto quantum-computing company Xanadu is building an \$893-million advanced-manufacturing project in Canada. The interesting part isn't just what the company hopes to invent. It's what Canada is trying to keep here when the invention becomes an industry.

Canada has never had much trouble producing smart people or good ideas. We have universities, researchers, engineers and startups that routinely punch above the country's weight. Where things tend to get more complicated is what happens next: turning research into a company, turning the company into production, and keeping enough of the resulting jobs, expertise and economic value in Canada once serious money enters the picture.

That isn't just Canadian economic self-criticism. The Canadian Intellectual Property Office describes much the same problem in its new [IP PRIME 2026 report](#): Canadian firms and institutions are strong at research and invention but continue to struggle with commercialization, market adoption and long-term value capture.

That's what makes Toronto-based [Xanadu Quantum Technologies](#) worth watching.

The photonic quantum-computing company is embarking on a project valued at about **\$893 million** to expand its Canadian research, development and manufacturing capabilities. At the centre of it is Inception, a new **158,000-square-foot advanced photonics facility in Toronto** designed to manufacture, package, test and assemble components for future quantum computers. Ottawa has committed up to **\$195 million through the Strategic Response Fund**, and the federal government says the project will create 275 high-quality jobs.

There is another \$195-million-sized wrinkle worth keeping straight. Earlier this year, Xanadu entered negotiations with Ottawa and Queen's Park for **up to \$390 million in combined government support** for Project OPTIMISM. The August agreement finalized the federal portion. Ontario's portion had not been finalized when Ottawa announced its deal, and Xanadu CEO Christian Weedbrook said discussions with the province were continuing.

Quantum computing supplies the futuristic part of the story. The more important Canadian word may be considerably less glamorous:

manufacturing.

The hard part after the clever part

Founded in Toronto in 2016, Xanadu is developing quantum computers that use photons — particles of light — rather than the approaches used by many competing systems. Much of its photonic hardware can operate at room temperature, although that description needs an asterisk: Xanadu's [Aurora system](#) uses photon-number-resolving detectors housed in dilution refrigerators operating at 12 millikelvin. Most of the photonic machine does not require that kind of deep cooling; the current detector system does.

The company also develops PennyLane, its open-source quantum-computing software platform. In March, Xanadu [began trading on both the Toronto Stock Exchange and Nasdaq](#) under the ticker **XNDU**.

You do not need to understand quantum error correction before breakfast to understand the industrial problem Xanadu is trying to solve. A commercially useful quantum computer will require much more than a clever chip design. The federal government says some of the necessary manufacturing capabilities — integrating photonic components, packaging chips, testing semiconductors at wafer scale and assembling quantum modules — [do not currently exist at industrial scale](#).

That is where Inception comes in. Xanadu wants the Toronto facility to handle much of the difficult work between “we designed it” and “we can reliably manufacture it.” Think less traditional assembly line and more highly specialized photonics factory: cleanrooms, semiconductor equipment, precision testing, chip packaging and racks of machinery that presumably cost enough that nobody puts a Tim Hortons cup on them. Xanadu says the facility will also house its Systems Integration and Operation Centre, where quantum modules are to be assembled, tested and verified before installation into server racks.

And this is where the actual federal contract gets more interesting than the press release.

Subject to specified exceptions, Xanadu has agreed to carry out the project in Toronto and its benefits commitments in Canada. Those commitments include creating and maintaining skilled Canadian jobs, working with Canadian research institutions and smaller businesses, conducting Canadian R&D, making Canadian capital investments and developing a supply-chain plan. Many of the numerical targets have been redacted from the public filing, but the obligations themselves have not.

Even more significantly, the agreement requires Xanadu to **exclusively own and retain ownership in Canada of intellectual property created through the project for the term of the agreement**, unless the federal minister agrees otherwise. Xanadu must also develop an IP strategy aimed at creating and retaining IP ownership in Canada and commercializing resulting products domestically.

That is a much harder commitment than promising to keep a few office chairs in Toronto.

Canada’s commercialization problem has never simply been whether we can invent something impressive. The harder question is whether the experience, intellectual property and industrial knowledge accumulated while turning that invention into a repeatable process stay here too.

A factory does more than employ the people inside it

The immediate employment number is 275 jobs. Useful, certainly, but the longer-term value of a facility like this is harder to fit into a government news release.

Manufacturing creates know-how that doesn’t live neatly inside a patent. Engineers discover what stops working when a process leaves the laboratory. Technicians learn how to operate and maintain unusual equipment. Suppliers figure out how to meet specifications they have never encountered before. Someone runs into a production problem on a Tuesday afternoon and learns something that eventually saves the next company six months.

That kind of industrial knowledge is difficult to order from a catalogue when you suddenly decide you need it.

Canada has spent years trying to get better at converting research into globally competitive businesses. Xanadu is interesting because this project attacks the problem from the manufacturing side as well as the research side. If it works, Canada isn't merely home to some of the people who understood the physics. It becomes one of the places that understands how to build the hardware.

There is no guarantee that expertise spills into a larger Canadian photonics and quantum ecosystem. But it has a considerably better chance of doing so when the facility, engineers, suppliers and project-generated IP are actually here.

Canadian manufacturing doesn't mean every screw needs a maple leaf on it

Inception will not create a self-contained Canadian quantum supply chain, nor would that be particularly realistic. Xanadu says the facility will use specialized equipment from international suppliers including ASMPT, Bluefors, DISCO, EVG, FiconTEC and MPI. Modern semiconductor and photonics industries are global because the machinery, materials, research and expertise needed to build them are global.

Economic sovereignty gets silly pretty quickly if it becomes a demand that Canada manufacture absolutely everything itself. The more useful question is which parts of a strategically important value chain we need to know how to do well enough that we retain meaningful capability of our own.

For Xanadu, that includes some of the difficult integration, packaging, testing, assembly, R&D and systems work that turns sophisticated components into functioning quantum machines. Canada can buy world-class equipment from abroad without outsourcing all of the knowledge required to use it.

That looks less like isolation and more like having something valuable to bring to the table.

About that \$195 million

There is another reason this project deserves scrutiny: Canadians are helping pay for it.

The federal contribution is not simply a \$195-million cheque with no strings attached. The signed agreement describes it as a **conditionally repayable contribution** equal to no more than 22.1 per cent of eligible supported costs and capped at \$195 million. Xanadu is required to make repayments, although the publicly filed schedule containing the actual repayment mechanics has been redacted.

There is one additional detail in the contract worth noting. It defines a **maximum amount to be repaid** as 1.5 times whatever Ottawa actually disburses. That does **not** mean the government is guaranteed to receive 150 per cent of its contribution; the normal repayment formula and timing are in the redacted schedule. But it does tell us the agreement contemplates circumstances in which repayment can exceed the original amount advanced.

The contract also gives Ottawa reporting, monitoring and audit rights, restricts certain changes of control and disposal of project assets, and sets **March 31, 2031** as the project completion date. The agreement itself remains in effect until the later of **December 31, 2052** or the final repayment, unless it ends earlier under its terms.

None of that answers whether \$195 million is a good investment. It gives Canadians something against which to judge the result.

If the promised manufacturing capability appears, employment and investment commitments are met, Canadian suppliers and researchers participate, the technology reaches the market and the required repayments materialize, there will be a credible case that public money helped anchor something economically useful here. If those things don't happen, that belongs in the story too.

A **Canada Wins** label shouldn't mean putting away the scoreboard.

A different way of putting public money to work

The timing also makes Xanadu an interesting contrast with another tool Ottawa is now establishing: the **Canada Strong Fund**.

The two should not be confused. Xanadu's \$195-million agreement is through the Strategic Response Fund and is conditionally repayable. The Canada Strong Fund is a separate initiative announced in this year's Spring Economic Update. Ottawa intends to seed it with **\$25 billion over three years** and have it invest commercially alongside other investors in strategic Canadian projects and companies. Its proposed mandate expressly includes advanced manufacturing, seeks market-rate returns and focuses primarily on equity investments, with the fund taking minority positions alongside private capital.

That distinction is worth watching because the two approaches divide risk and reward differently. A repayable contribution can help anchor activity in Canada and attach contractual benefits while returning money under agreed terms. An equity investment exposes public capital more directly to both the upside and downside of the underlying investment.

Xanadu is **not** a Canada Strong Fund investment, and there has been no announcement suggesting it will become one. The comparison is useful for a different reason: Canada is starting to use different financial tools to answer the same broad policy question. How much public capital should be put behind strategically useful private investment, what should Canadians receive in return, and how do we decide afterward whether the bargain worked?

Those questions matter regardless of which program signs the paperwork.

Now Xanadu has to build the thing

There is still a sizeable gap between an ambitious roadmap and a commercially useful quantum computer.

Xanadu's latest plan targets a fault-tolerance milestone around **2028–2029**, a quantum data centre around **2029–2030**, up to 200 logical qubits by 2029, up to 500 by 2030 and more than 1,000 by 2031. Those are company targets, not accomplishments. Xanadu's own disclosures repeatedly warn that the timelines, technical milestones and commercial outcomes are forward-looking and uncertain.

That uncertainty comes with the territory. Quantum computing is a global technology race involving competing architectures, difficult engineering problems and competitors with very deep pockets. Nobody should mistake a government funding announcement for proof that Xanadu has already won it.

But that uncertainty is also a reason to focus on the manufacturing story rather than the quantum hype. Even if the industry develops differently from what Xanadu expects, the ability to manufacture advanced photonic systems, package sophisticated chips, test them at scale and train people who know how to do those things is real industrial capability.

That's more useful than declaring Canada a "world leader" because somebody managed to squeeze the phrase into a press release.

Keeping more of the difficult part

Canada isn't going to stop successful companies from expanding internationally, nor should it. A Canadian technology company that succeeds globally is supposed to have customers, partners, employees and operations beyond our borders.

The trick is making sure growth abroad doesn't require hollowing out the difficult work at home.

That is why Inception deserves more attention than another argument about whether Canada produces enough unicorns or files enough patents. Xanadu is trying to anchor a specific capability here: not simply thinking about the future, but learning how to manufacture part of it. The federal agreement goes further by attaching Canadian benefits commitments and requiring project-generated intellectual property to remain Canadian-owned for the term unless Ottawa agrees otherwise.

There will be plenty of time to check the results. Xanadu has milestones to meet, taxpayers have money at stake, and quantum computing has generated enough extravagant predictions over the years to justify keeping one hand near the skepticism switch.

For now, though, Canada is doing something sensible. We helped create the technology here, and we're trying to keep more of the difficult work required to turn it into an industry here too.

If you invent the future in Canada, building some of it here seems like a pretty good place to start.

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Reprint generated September 20, 2026.

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