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D-Wave

Second Quarter 2026 Earnings Call

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PRESENTATION

Operator

Good morning and welcome to the D-Wave Second Quarter 2026 Earnings Call.

All participants will be in listen-only mode. Should you need assistance, please signal a conference specialist by pressing the star key followed by zero. After today's remarks there will be an opportunity to ask questions. To ask a question, you may press star, then one on your touch-tone phone. To withdraw your question, please press star, then two. Please note, this event is being recorded.

I would now like to turn the conference over to Kevin Hunt of Investor Relations. Please go ahead.

Kevin Hunt

Thank you and good morning. With me today are Dr. Alan Baratz, our Chief Executive Officer, and John Markovich, our Chief Financial Officer.

Before we begin, I would like to remind everyone that this call will contain forward-looking statements which are subject to risks and uncertainties and should be considered in conjunction with cautionary statements contained in our earnings release and the Company's most recent periodic SEC reports. Both an on-demand webcast and a transcript of the conference call will be available on the Investor Relations section of the website within 48 hours after the call.

During today's call Management will provide certain information that will constitute non-GAAP financial measures under SEC rules, such as Adjusted EBITDA loss and non-GAAP adjusted operating expenses and operating metrics such as bookings. Reconciliations to GAAP financial measures and certain additional information are also included in today's earnings release, which is available in the Investor Relations section of our Company website at ir.dwavequantum.com.

This morning, we will be limited to taking one question from each analyst during the first round of questions and then, time permitting, proceed to a second round of questions where again we have to limit each analyst to one question.

I'll now hand over the call to Alan.

Alan Baratz

Good morning everyone and thank you for joining us.

The quantum computing market is reaching an important inflection point. Scientific progress is accelerating, customer interest is expanding and a growing number of companies are entering the public markets. That increased visibility is good for the industry, but it also means investors need to separate measurable progress from rhetoric.

In a market increasingly crowded with claims, investors should ask three simple questions. First, does the company have differentiated technology with a credible path to scale? Second, can the company translate that technology into reliable enterprise-ready systems? And third, can it execute and produce measurable customer value.

At our recent Investor Day, we demonstrated why we believe that D-Wave stands apart on each of these three criteria. We have a differentiated technical foundation, deep expertise building and operating commercial quantum systems, a growing portfolio of production applications and clear roadmaps across our dual platform strategy. This quarter added further evidence.

IDC recently named D-Wave as one of only two companies in the leaders category in the IDC MarketScape: Worldwide Quantum Computing 2026 Vendor Assessment. We believe this recognition is significant because IDC evaluated companies not simply on a single performance metric or future roadmap, but on both their current capabilities and their ability to execute. IDC highlighted D-Wave's production deployment footprint, our mature framework for enterprise access and hybrid adoption, and our work extending annealing quantum computing beyond optimization and into scientific simulation.

It also observed that competition in quantum computing is shifting away from raw qubit counts and towards broader platform maturity. That includes software, hybrid integration, deployment flexibility and integration with existing HPC, AI and enterprise computing environments. In other words, the industry is increasingly being judged on whether companies can deliver complete usable quantum platforms, not simply announced ambitious roadmaps, and that plays directly to D-Wave's strengths.

Quantum computing leadership requires far more than a promising processor. It requires hardware, cryogenics, control systems, software, cloud infrastructure, developer tools, professional services and the operating discipline to make the entire stack perform reliably. We have spent more than 15 years doing that hard work.

Let me now turn to the technical developments announced this quarter and the roadmaps they support.

Our objective for D-Wave's gate-model program is clear: to deliver a fast, scalable and commercially useful fault-tolerant quantum computer. The threshold for commercial relevance is high. We believe that initial commercial applications will require approximately 100 logical qubits and the ability to perform more than 1 million operations reliably. A system that cannot reach both sufficient scale and sufficient reliability may be scientifically interesting, but it is not yet capable of addressing commercially meaningful problems. That is the standard investors should apply when evaluating gate-model roadmaps.

Reaching that threshold requires much more than increasing physical qubit counts. A system must have computational capacity, fast gate operations and an error correction architecture that can scale efficiently. Error correction is essential because physical qubits are inherently susceptible to errors. Without effective error correction, a gate-model system cannot reliably execute the long and complex computations required to solve meaningful problems. That's why we believe investors and customers should evaluate gate-model architectures using three fundamental measures. How quickly can the system perform gate operations and error correction cycles? How efficiently do errors decline as error correction capability is added? And when will the system support enough reliable operations on enough logical qubits to address commercially relevant applications?

At our Investor Day, we detailed how D-Wave's superconducting dual-rail architecture is designed to address these requirements. Superconducting technology provides an important speed advantage with gate operations and error correction cycles performed on microsecond time scales. At smaller system sizes, differences in speed may appear less consequential. At commercial scale, when a system must execute enormous numbers of operations and error correction cycles, speed becomes fundamental to whether it can solve a problem within a commercially relevant timeframe.

The other critical measure is Lambda, which describes how rapidly logical errors decline as the size of the error correcting code increases. A higher Lambda means each additional increment of error correction produces a greater reduction in errors, lowering the number of physical qubits required to create a reliable logical qubit.

Leading superconducting approaches have demonstrated a Lambda of approximately 2, meaning errors decline by roughly a factor of 2 with each increment in the error-correcting code.

Our gate-model road map targets a Lambda of 10. This target is grounded in the inherent error detection characteristics of our dual-rail architecture, the performance that we have already demonstrated on our system and the recent peer-reviewed results validating that those advantages are preserved during high fidelity entangling operations.

Taken together, this evidence gives us confidence in our ability to achieve significantly more efficient error correction as the architecture scales.

A Lambda of 10 would reduce errors by a factor of 10 with each increment in error-correcting code. At scale, that level of efficiency could enable approximately 100 to 200 physical qubits to produce 1 reliable logical qubit rather than the many thousands that may be required by less efficient superconducting approaches.

That is not a marginal improvement. It is transformational. It fundamentally changes the size, complexity and hardware overhead required to reach fault tolerance.

We believe this combination of superconducting speed and highly efficient error correction is the core differentiation behind D-Wave's gate-model architecture and an important reason we believe our approach offers an efficient and achievable path to commercial fault tolerance.

The peer-reviewed research that we announced yesterday provides important validation of that foundation. Published in *Nature*, the research demonstrates a fast, high-fidelity 2-qubit entangling gate designed to support efficient quantum error correction. The research demonstrated approximately 99.9% fidelity during 2-qubit operations with fast gate times of about 500 nanoseconds, all enabled by native hardware-level error detection and no additional error correction.

So why is this significant? The results address one of the industry's most consequential challenges by reducing the immense quantum and classical hardware overhead typically required to detect and correct quantum errors as systems scale. It also addresses a longstanding challenge for superconducting quantum computers, which are known for their speed, but have historically struggled to achieve the high fidelity required for scalable fault-tolerant systems.

The Nature paper validates that our dual-rail architecture combines fast superconducting operations with high fidelity performance while preserving native hardware-level error detection. Our simulations indicated that our dual-rail architecture could reduce the logical error rate by as much as a factor of 10 for each increment in error correction, significantly reducing the physical overhead required for fault-tolerant quantum computing.

We believe these results provide strong technical evidence that the architectural principles underlying our road map can support faster, more hardware-efficient fault-tolerant quantum computing than any other approach to gate-model quantum computing.

Importantly, this is not isolated laboratory work. The entangling gate demonstrated in the research was done on our 8-qubit dual-rail processor, creating a direct line from peer-reviewed validation to roadmap execution. That architectural foundation supports the gate-model roadmap that we presented at our Investor Day, which is designed to progressively demonstrate more effective error detection and correction, lower logical error rates, and increased scale on the path to commercial fault tolerance.

Specifically, later this year, we expect to deliver a 17 physical qubit system designed to support logical error rates approximately 2x lower than the underlying physical error rates. Next year, we expect to complete a 49 physical qubit system designed to deliver an approximately 20-fold error reduction factor. In 2028, we expect to complete a 181 physical qubit system designed to deliver an approximately 2,000-fold error reduction factor. We expect that system to provide the scalable architectural blueprint for the fault-tolerant systems that follow.

Then by 2030, we expect to complete a system with 10 logical qubits capable of supporting the first fault-tolerant algorithms. And by 2032, we expect to scale to 100 logical qubits and more than 1 million reliable operations, creating a system capable of supporting initial commercial applications in areas such as quantum chemistry and quantum AI.

We have given investors a clear basis for evaluating our progress: faster performance, more efficient error reduction and a growing number of reliable operations. Achieving those milestones is what will move gate-model quantum computing from technical progress to commercial utility.

We're also building the developer ecosystem required to support adoption as the hardware advances. We are now waiting for the final fault tolerance system to begin creating the customer and developer base around our architecture.

During the quarter, we announced our forthcoming gate-model simulator, which we expect to make available in our Leap Quantum Cloud platform later this year. We believe it will be the first simulator designed specifically for error-aware quantum programming. We expect it will enable developers to prototype, test and validate applications and error correction routines based on realistic dual-rail error detecting system behavior before executing them on the actual quantum hardware. Rather than treating errors as an abstract hardware issue, we expect developers will be able to understand how errors occur and then design applications and workflows that respond to actual processor behavior. We believe that capability can accelerate the development of error correction techniques and applications.

Our technical roadmap extends across both gate-model and annealing quantum computing. At Investor Day, we provided additional details on our plans to scale annealing systems using advanced packaging and superconducting interconnect technologies that can connect multiple quantum processing units in a multichip fabric.

Our product road map targets a 20,000-qubit Advantage3™ system in 2029 and a system reaching 100,000 qubits by 2031.

We also announced a scalable I/O prototype design intended to support significant QPU expansion without a corresponding increase in the number of control lines.

Together, these advances reflect the breadth of our technical ambition and the strategic value of our dual-platform approach.

Customers face different classes of computational problems and no single quantum computing architecture is best suited to all of them. Our strategy is built around a straightforward premise. Customers should have access to the quantum computing technology best suited to the problem they need to solve. We believe D-Wave is uniquely positioned to provide that ground.

Our technical leadership is translating into expanding commercial momentum. Let me highlight several recent customer engagements.

First, AT&T.

Last week, we announced an expanded agreement with AT&T focused on applying D-Wave's technology to complex optimization challenges across its network operations. The initial work will integrate our annealing quantum computing capabilities with the agentic AI tools AT&T already uses to improve network performance and reduce customer disruption.

In one early application, D-Wave's technology reduced processing time from approximately one hour to less than 15 seconds. Building on that result, AT&T plans to evaluate additional applications, including outage response, technician routing and network planning and traffic management as it expands its fiber and 5G infrastructure to support rising AI-driven demand.

Second, Optum.

At Qubits Europe last month, Optum, a major subsidiary of UnitedHealth Group, discussed its experience applying our Quantum hybrid technology to difficult optimization problems involving thousands of variables, hundreds of thousands of constraints, and multiple competing business objectives. Optum had worked on these mature problems for years, but classical approaches struggled to consistently produce sufficiently strong solutions. The initial proof of technology produced results strong enough for Optum to move directly to a production application, bypassing the traditional proof-of-concept stage. We believe that accelerated move to production reflects both the strength of the results and the value of D-Wave's approach.

After launching the application in May, Optum had already run approximately 30,000 jobs by mid-June, the team is now evaluating additional opportunities within Optum and across the broader UnitedHealth organization.

And third, NTT DOCOMO. NTT DOCOMO has similarly expanded its production use of D-Wave technology. Its first application optimized paging signals across its Japanese mobile network, reducing paging signals by 15% and contributing to meaningful infrastructure efficiencies. Its second application addresses the more complex trade-off between location registration signals and paging signals. Using D-Wave's technology, NTT DOCOMO reduced location registration signals by approximately 65%, while also reducing paging signals by 7% during peak periods. These improvements can reduce computational load across the network, improve operational efficiency and help lower infrastructure requirements.

NTT DOCOMO described the optimization results as exceeding expectations and has indicated that it intends to continue identifying additional areas where D-Wave quantum optimization can create value.

The takeaway here is that the one successful production deployment led NTT DOCOMO to identify and implement another application, and that is how individual use cases begin to develop into broader enterprise adoption.

We now have six customer applications in production with many others advancing through the development process. Based on publicly available information, we are not aware of another quantum computing company with a comparable production application portfolio.

These are not demonstrations or laboratory experiments. They are applications operating within customer environments. In our view, this gives D-Wave a significant head start in the customer relationships, application expertise, software capabilities and enterprise infrastructure required to scale commercialization.

Our progress in transitioning customers like Optum and NTT DOCOMO into production applications is underscored by the fact that over 37% of our first half QCaaS revenue was derived from production applications compared to just 9.8% in the first half of 2025.

Our on-premises system business also continues to progress, supported by a strong pipeline of opportunities. As previously stated, we expect to deliver a system to Florida Atlantic University in 2026, and we continue to expect to book two to three systems deals annually going forward, including two system deliveries in 2026.

Let me now turn to government activity.

We are seeing increasing recognition from U.S. government agencies that our quantum computing is a strategically important technology and that D-Wave has a meaningful role to play in strengthening domestic quantum leadership.

During the quarter, D-Wave was selected to receive approximately $1.57 million from the U.S. National Science Foundation through its National Quantum Virtual Laboratory Program. The funding supports our participation in the ERASE project, which is developing foundational technologies for fault-tolerant quantum computing. The current phase is expected to span two years and includes development of hardware system designs for feasible fault-tolerant gate-model quantum computers. Successful completion could create an opportunity to participate in a third larger phase of the program.

We were also awarded second-year funding for the improved materials for superconducting qubits with scalable fabrication or SQFab project through NORDTECH. The project is one of four programs selected for continued funding after achieving key first year technical milestones.

Taken together, these programs reflect growing government confidence in D-Wave's technical expertise, our ability to execute and the strategic relevance of our technology.

And finally, D-Wave received Great Place to Work certification for 2026 based entirely on employee feedback. Building and scaling a commercial quantum computing company requires exceptional people and a culture focused on collaboration and execution.

As we expand our commercial operations and advance both our annealing and gate-model technology roadmaps, our ability to attract and retain that talent will remain critical. I want to thank the entire D-Wave team for the expertise, commitment and hard work they bring to our customers and our mission every day.

With that, I'll turn the call over to John.

John Markovich

Thank you, Alan, and thank you to everyone taking the time to participate in today's call.

Revenue in the second quarter of 2026 was $3.1 million, essentially flat with revenue in the second quarter of 2025. For the second quarter, D-Wave recognized revenue from approximately 100 individual customers with 62.4% of revenue derived from commercial enterprises. That compares with 45.1% of revenue derived from commercial enterprises in the year-earlier second quarter, further evidencing D-Wave's progression in providing commercial quantum solutions to commercial organizations.

Forbes Global 2000 customers accounted for 47.7% of total revenue in the second quarter compared to 20.4% in the second quarter of '25, further demonstrating the evolution of the customer base from smaller educational and research organizations to global enterprises.

From a product perspective, Q2 revenue was comprised of $1.9 million in QCaaS subscription revenue that increased 50% on a year-over-year basis, approximately $900,000 in professional services revenue that increased by over 18% on a year-over-year basis, and approximately $300,000 in systems and other revenue, primarily from installation and site prep activities associated with the $20 million system sale to Florida Atlantic University.

Bookings for the second quarter totaled $2.1 million, an increase of approximately $800,000 or 59% when compared to the second quarter of 2025 bookings of $1.3 million. The average booking size increased by over 87% on a year-over-year basis.

GAAP gross profit for the second quarter was $1.7 million, a decrease of approximately $300,000 or 14% from the second quarter of 2025 GAAP gross profit of $2 million, with the decrease due primarily to increased personnel costs.

GAAP gross margin for the second quarter was 55.4%, a decrease of 8.4% from the second quarter of '25 GAAP gross margin of 63.8% with the decline also driven by the increased personnel costs.

Net loss for the second quarter of 2026 was $48 million or $0.13 per share compared with a net loss of $167.3 million or $0.55 per share in the second quarter of 2025, with the decrease in net loss due primarily to a $142 million year-over-year decrease in the amount of non-cash non-operating charges related to the remeasurement of the Company's previous warrant liability. One hundred percent of the Company's remaining publicly traded warrants were redeemed in November of last year. This was partially offset by a $9.7 million increase in personnel costs and $9 million of non-cash expenses.

Adjusted EBITDA loss for the second quarter was $37.1 million, an increase of $17.1 million or 85% from the second quarter of '25 Adjusted EBITDA loss of $20 million, with the higher loss due primarily to increased investments to support the Company's accelerated product development and go-to-market initiatives that are primarily personnel-related expenses.

I'll now address the first half operating results.

Revenue for the six months ended June 30, 2026, was $5.9 million, a decrease of $12.2 million or 67% from the $18.1 million for the first six months ended June 30, 2025, which included $13.7 million in revenue recognized from the Company's first sale of an annealing quantum computing system.

During the first half of 2026, we made significant progress in demonstrating our traction with commercial enterprises with commercial customers representing 67.7% of first half 2026 revenue compared to 16% in the first half of 2025. Forbes Global 2000 customers accounted for 48.5% of total revenue in the first half of '26 compared to 7.5% in the first half of '25, and over 37% or $1.3 million of total QCaaS revenue was derived from business applications in production in the first half of 2026 compared with 9.8% or approximately $300,000 in the year-earlier period.

In addition, first-half 2026 revenue was comprised of $3.6 million in QCaaS subscription revenue, up by over 30% on a year-over-year basis, $1.9 million in professional services revenue, up by 22% on a year-over-year basis, and approximately $400,000 from systems and other revenue.

Bookings for the first half of 2026 totaled $35.5 million, an increase of $32.6 million or 1,120% when compared to the first half of 2025 bookings of $2.9 million. First half '26 bookings included a $20 million annealing quantum computer system for Florida Atlantic University, the revenue for which will be recognized in subsequent quarters.

Our sales pipeline continued to expand during the first half with the dollar value of our sales opportunity pipeline increasing by over 120% from December 31, 2025 to June 30, 2026.

As of June 30, 2026, the aggregate amount of remaining performance obligations, otherwise referred to as RPOs or backlog that were unsatisfied or partially unsatisfied related to customer contracts totaled $40.7 million. That represents a $35.4 million or 668% increase over the June 30, 2025, RPO balance of $5.3 million. Approximately 57% of the $40.7 million RPO balance is expected to be recognized as revenue within the next 12 months and 72% is expected to be recognized as revenue within the next two years, with the remainder to be recognized as revenue thereafter.

Revenue allocated to remaining performance obligations represent the transaction price of non-cancelable orders for which service has not yet been performed, which include deferred revenue and the amounts that will be invoiced and recognized as revenue in future periods from open contracts. It excludes unexercised renewals.

GAAP gross profit for the first half of '26 was $3.5 million, a decrease of $12.4 million or 78% from the first half of 2025 GAAP gross profit of $15.9 million with the decrease due primarily to the higher gross margins associated with the sale of an annealing quantum computer system in the year earlier period.

GAAP gross margin for the first half of '26 was 59.4%, a decrease from the first half of '25 GAAP gross margin of 87.6% with the decline also due to the high gross margin associated with the sale of an annealing quantum computer in the first half of '25.

Net loss for the first half of 2026 was $66.4 million or $0.18 per share compared with a net loss of $172.8 million or $0.59 per share in the first half of 2025 with the year-over-year decrease in net loss primarily due to a $138.1 million decrease in the amount of non-cash non-operating charges related to the remeasurement of the Company's previous warrant liability, partially offset by a $28.4 million non-cash tax benefit related to the Quantum Circuits acquisition in January.

Adjusted EBITDA loss for the first half of 2026 was $69.9 million, an increase of $43.8 million from the first half of '25 Adjusted EBITDA loss of $26.1 million, with the increased loss due primarily to increased investments to support the Company's accelerated product development and go-to-market initiatives that are primarily personnel related.

With respect to the balance sheet and liquidity, as of June 30, 2026, D-Wave's consolidated cash and marketable investment securities balance totaled $546.2 million, a decrease of $273.1 million or 33% from the second quarter of 2025 consolidated cash and marketable securities balance of $819.3 million, with over 90% of the decrease related to the approximately $250 million in cash consideration associated with the acquisition of Quantum Circuits that was closed in January of this year.

As Alan previously noted, we still expect to ship two annealing quantum computer systems over the balance of this year, both of which are likely to ship during the fourth quarter, resulting in some carryover revenue related to the installations and calibrations of these systems into 2027. Given this timing, we are expecting the third quarter revenue is likely to be up modestly from the second quarter revenue with fourth quarter revenue up significantly over the third quarter revenue and comprising the majority of the year's total revenue.

In conclusion, as we have previously stated, we continue to believe that D-Wave has the opportunity to be the first independent publicly-held quantum computing company to achieve sustained profitability and to achieve this milestone with substantially less funding than required by other independent publicly-held quantum computing companies.

With that, I'll hand this over to the operator.

Operator

Thank you. We will now begin the question-and-answer session. To ask a question you may press star, then one on your touch-tone phone. If you are using a speakerphone, please pick up your handset before pressing the keys. To withdraw your question, please press star, then two. In the interest of time, please limit yourself to one question. If you have any further questions, you may rejoin the queue. At this time we'll pause momentarily to assemble our roster.

And our first question comes from Troy Jensen from Cantor Fitzgerald. Please go ahead.

Troy Jensen

Hey gentlemen, congrats on the results and thanks for letting me in the queue here. Alan, I guess for you, the announcement this past week from AT&T, I guess I'm under the assumption that nearly all or most Fortune 500 companies are going to be starting or expanding some type of quantum deployment. So I would just love to hear about just the pipeline that you guys have for some of these QCaaS,kind of annealing customers.

Alan Baratz

So Troy, the only thing I'll say about the pipeline is that it is expanding pretty rapidly and that we are closing larger deals with larger companies. We talked about AT&T earlier in the call today. I mentioned Optum earlier in the call today. We talked about expanding work with AT&T earlier in the call today. There are a number of others that we closed this quarter as well, which we're not yet able to mention. And so without giving details of the pipeline, which we don't provide, what I can say is that we have a very strong pipeline for both QCaaS and systems, but it's especially interesting for QCaaS because it is very large corporations that are coming to us with interest from the outset in multiple applications. Of course, we start with one to demonstrate the value and then grow from there.

Operator

Our next question comes from John McPeake from Rosenblatt Securities. Please go ahead.

John McPeake

Great. Thank you. Nice Lambda, Alan.

A question for you about QCaaS. Was 2Q the first quarter of the two-year $10 million deal that you had talked about? Assuming linear recognition, that would be $1.25 million. Did you say you did $1.9 million of QCaaS in the quarter? I'm just wondering how we should think about that trajectory given AT&T and what you just mentioned?

Alan Baratz

John, I'll let you answer whether Q2 was the first quarter in which we recognized revenue from that deal or not.

John Markovich

We commenced the rev rec on that in the first quarter.

Alan Baratz

The only thing I'll say beyond that is that, that is the prototype, if you like, for where we're headed with QCaaS in the sense that it started with an initial application. That application delivered significant value, enough that it moved quickly to production. And then on top of that, there was an interest in exploring a multitude of other applications. That's the work that we're doing now, and we have several others that are in development right now.

Operator

Next question comes from Krish Sankar from TD Cowen. Please go ahead.

Steven

This is Steven calling on behalf of Krish. Thanks so much for taking my question. I guess the first one I have is on the announcements with AT&T. Some of the work that they've done on the annealing systems and then future use for your gate program as well, I guess, can you give us a little more color on for the initial applications that you used on the annealing systems what that translates to for future opportunities today?

For today, are you seeing the number of quantum operations from the networks running in the thousands per day or tens of thousands per day and sort of what the trajectory might look like going forward based on the interest in expanded use of applications for annealing systems? And related for the gate program interest that you're exploring, what that means for interest on the asset for quantum operations? Thank you.

Alan Baratz

Okay. So there were a number of comments and questions wrapped up in that comment. And honestly, I'm not sure I even understand some of what you're asking. But let me say this. First of all, only our annealing systems are capable today of delivering true commercial production value. And by the way, that's true across the entire industry. There are no other quantum computers anywhere in the industry that are capable today of delivering commercial production value. All other systems are gate, not annealing, and those systems are still in the R&D phase. And the work that's going on either by government labs or commercial institutions are research experimentation. Only our annealing quantum computers are capable of running commercial production scale applications.

Now that having been said, the concept of operations over the network doesn't really make any sense to me, so I'm not sure what you're trying to drive at there. These annealing quantum computers run an application workload by basically submitting the application to the quantum computer and then it provides the results back. With annealing quantum computers, it's not like gate systems where there are gates or algorithmic operations that are processed. The only thing we do is run the annealing algorithm to solve the problem and sometimes it's like one machine instruction. So the concept of number of operations for annealing quantum computer doesn't really apply and operations over the network doesn't really apply.

Operator

Our next question comes from Shadi Mitwalli from Craig-Hallum. Please go ahead.

Shadi Mitwalli

This is Shadi from Needham. Congrats on all the progress. I just want to talk about the Optum agreement. I believe you guys mentioned that they skipped the proof-of-concept stage and moved directly into a production application. I just wanted to get your thoughts on if you view this as an outlier or do you expect this trend to continue with future customers?

Alan Baratz

Yes. It depends a little bit on, frankly, the readiness of the customer with respect to data access. A lot of times, what's happening when we are moving from a proof-of-technology to a proof-of-concept is that we're trying to transition from kind of an abstract implementation of the application that's running on made-up data to a more complete development of the application that's running on real workloads to demonstrate the value.

In this case, the data was readily available and it was pretty easy in the proof-of-technology stage for us to demonstrate the value. So I think this will all depend on the readiness of the customer with respect to the data and their ability to engage with us to really kind of build out that initial implementation in a way that can demonstrate the value.

I think some customers will probably be able to move from proof-of-technology to production; others may have to go through two steps. So I'm not sure I say what we did with Optum is the prototype for everything going forward but I think there are other customers that will fall into that model and some that won't.

Operator

The next question comes from Kingsley Crane from Canaccord. Please go ahead.

Kingsley Crane

Hi, thanks. Good to speak with you all. I'm trying to get a better sense of the implication of the Nature paper. I think you're talking about a Lambda-10 from the simulation results and then starting with the 17 qubit system this year with the 2x ratio. As we look at that 2027 system and 2028 at 20-fold and 2,000-fold, is it now a fait accompli that we'll reach that? What level of engineering work is required to operationalize the results of the paper? Thanks.

Alan Baratz

Yes. First of all, thanks for asking the question. The Nature paper is very significant and really demonstrates in a sound technical way what we've been saying since we acquired Quantum Circuits, which is that the dual-rail technology represents the best of both worlds. Specifically, the ability to process operations to run gates at superconducting speeds in a nanosecond regime versus milliseconds, which is what we see from trapped ions or neutral atoms. But at the same time, to demonstrate the fidelity—99.9% currently—that you would typically see in trapped ions or neutral atoms. So it really is the best of both worlds. It's superconducting speed with ion or atom fidelity.

And in fact, if you look at all the other superconducting either publications or pronouncements, they have superconducting speeds but their fidelities are well below 99.9. They're typically running at 99. I think the second best for superconducting is 99.5 and only ours is 99.9.

The only other place you'll see 99.9 is trapped ion. You don't even see that in neutral atom. So this is a very concrete sound technical result demonstrating the best of both worlds that we've been talking about since the acquisition of Quantum Circuits.

And this is done on our 8 qubit dual-rail system. This is not an abstract demonstration in a lab. A lot of times, these gate fidelities are abstract demonstrations in the lab, not on actual systems. This was done on our 8-qubit dual-rail system, which means we have confidence in our ability to preserve this as we scale into the future.

Now the reduction in error rates that you mentioned, factor two in the 70-qubit system going to 20 in 49, going to 2,000 with a 181-qubit system, this comes from the fact that these incrementally larger gate-model systems allow us to implement incrementally larger error-correcting codes. These numbers come from that Lambda of 10. With incremental error correction, we see significantly greater reduction in error rates than what has typically been talked about for superconducting.

So we believe based on what we've seen in the 8-qubit system and what we published in the Nature paper, combined with the simulations for what we would expect as we scale the system and are able to add incrementally more error-correction capability in the larger system that we will achieve that 2,000-fold increase, which gets us to the point where we actually can support on the order of a million operations reliably. And at that point, after the 181, then we basically just start scaling the logical qubit count.

Operator

The next question comes from Mark Lipacis from Evercore. Please go ahead.

Mark Lipacis

Great. Thanks for taking the question. Alan, you talked about the gate-model roadmap for physical qubits hitting 181 through '28 and then the logical roadmaps starting in 2030 and 2032. How should we think about like revenues associated with any of these milestones, either from like PDK emulation systems? Or do we wait for logical qubits systems to be delivered before you get some kind of service, QCaaS kind of revenues or system revenues? What's the right way to think about as you hit those milestones on gate-model, the kind of revenues you guys could expect to see? Thank you.

Alan Baratz

Yes. So first of all, let's talk about government funding. That's happening today on our gate-model system. I talked about two government contracts that are already in place that are generating initial revenue on the gate-model systems. Then as we look to how that scales from a QCaaS and a system sale perspective, we already have interest by more than one company in purchasing a dual-rail system, so I suspect that will come next.

The reason is that the error detection capability is a fundamental differentiator and there's a lot of interest in getting started working with that technology and developing new algorithms—and in some cases, participating in developing new error correcting codes that leverage that capability.

So I suspect that the step after just sort of government contracts would be some system sales to maybe universities or research institutions that are interested in working with the dual-rail technology.

We won't see commercial application relevance of these systems until we get to the 100 logical qubit, million reliable gate operations that's out in 2032. So we'll probably start seeing some limited QCaaS over the years for entities that may want to start playing with the system, do some research experimentation, but can't afford to purchase their own system. But I don't think we see significant QCaaS revenue on those systems until we get back out into the 2032 timeframe.

Operator

The next question comes from Suji Desilva from ROTH Capital. Please go ahead.

Suji Desilva

Hi, Alan. Hi, John. I'm curious, Alan, how your QCaaS discussions with commercial have evolved. Are you seeing any trend in talking perhaps to individual business units versus central quantum IT teams? Any trend there year-over-year? Just to understand if you're kind of going deeper and these guys are deploying more resources towards this.

Alan Baratz

Yes, that's a really good point. That transition has occurred. Now, I'm not going to tell you that all of our discussions are now with the line of business, but what I can tell you is if we go back in a year, none of them were with the line of business. They were all with the research team or the innovation team. But I'd say now we're at the point where maybe 25% to 30% are with the line of business, either directly with the line of business or the innovation team brings the line of business in right upfront. So we are seeing that transition.

I think part of the reason why we're seeing that transition is because as we are able to talk more and more about some of the very large Fortune 100 customers that are using our system in production, it becomes much more real to these companies that there may be important capabilities that their business can leverage.

Operator

The next question comes from Kevin Garrigan from Jefferies. Please go ahead.

Kevin Garrigan

Hey, Alan and John, congrats on all the progress. Alan, going off of one of the previous questions, several of your peers have started investing across the second modality. How do you think about working with modalities beyond superconducting? Is that something that you thought about? It almost sounds like maybe the dual-rail approach makes it unnecessary to have to use multiple modalities.

Alan Baratz

Yes, I think that's the answer to the question. So you got it. I mean, in some sense the dual-rail technology is from a capabilities perspective, like a combination of superconducting and another higher fidelity modality. And so we actually believe that, that alone will have the ability to actually get us to large, fully fault-tolerant fast gate-model quantum computers.

That having been said, we actually are investing in more than one modality. We're investing in both annealing and superconducting, so it's an architectural multimodal as opposed to a technological multimodal, but very important.

Operator

The next question comes from Gary Mobley from Benchmark. Please go ahead.

Gary Mobley

Good morning everybody. Thanks for taking my question.

John, you mentioned, and I think you were clear on this that you expect to deliver somewhere between two and three annealing systems per year or close, approximately that number of deals. And so roughly $40 million to $60 million in revenue. Am I thinking about that correctly? What's the gating factor there in terms of delivering those systems? Is it demand? Is it supply? And then I guess, somewhat related, what's the revenue that could be supported from annealing currently based on deployed capacity in the cloud for QCaaS?

John Markovich

Sure. So we've outlined pricing on our annealing systems, Gary, of between $20 million and $40 million, with the lower end of that geared towards research labs and universities. That's the pricing for Florida Atlantic University. So to be conservative, think about a system being towards the lower end of that range.

Typically, the timing is a function of site selection and then it takes time to build the system, install it and then to calibrate it. And as I've outlined previously, you should think of the rev rec to be on average over a two-quarter period of time.

Alan Baratz

I think, John, once the site is ready over a two-quarter period of time.

John Markovich

Right, right.

Operator

The next question comes from Harsh Kumar from BMO. Please go ahead.

Harsh Kumar

Hey, Alan and John, congratulations on all the good news and commercialization. I wanted to continue on that theme. You had gate systems, you've had QCI now for, call it six months-odd. How do you feel about how things are going there in terms of your ability to commercialize by that timeframe that you mentioned? And then also on that topic, on similar topic, your pipeline of annealing customers, is that pipeline—is it the same pipeline that's showing interest in gate, or is it a completely different set of customers that are coming to you for gate?

Alan Baratz

Okay. So Harsh, first of all, the integration with Quantum Circuits has gone extremely well. The cultures of the two companies are very similar. The teams started working together the day we closed. We're sharing technology back and forth between the annealing and gate-model programs, which is critically important because part of the thesis for the acquisition of Quantum Circuits was that there were things that we had developed for our annealing systems that could accelerate the progress on the gate-model side, and then there were some things that Quantum Circuits has been doing on coherence signs that we thought we could pull back into the annealing side. So that's all going very well.

We're still on track to deliver the 17-cubit dual-rail system before the end of this year. And so we feel quite good about the acquisition, the integration and the progress that we're making.

The pipeline? It's mixed. We've got annealing customers that are asking about our gate-model systems and we've got companies that we haven't talked to before that are asking about our gate-model systems. Also, some of the folks that Quantum Circuits had been talking to have started asking about annealing, so there's synergies all around.

Operator

This concludes our question-and-answer session. I would like to turn the conference back over to Alan Baratz for any closing remarks.

Alan Baratz

Great. Thank you.

Let me close by returning to the three measures of quantum computing leadership that I discussed at the beginning of the call, differentiated technology, enterprise readiness and demonstrated execution. D-Wave gives investors evidence across all three. We have delivered six generations of quantum systems. Our technology is supporting customer applications in production. Peer-reviewed research has validated a critical component of our dual-rail gate-model architecture. We have established measurable milestones across our annealing and gate-model road maps, and leading commercial and government organizations are expanding their engagements with D-Wave.

We are not asking the market to evaluate D-Wave solely on a distant promise. Investors can assess us based on technology we have delivered, customer value we are creating, and clearly defined milestones for what comes next. That combination of technical leadership, commercial experience and execution discipline is what differentiates D-Wave and why we believe we are exceptionally well-positioned to lead as quantum computing adoption accelerates.

Thank you all for joining us today.

Operator

The conference has now concluded. Thank you for attending today's presentation. You may now disconnect.