Rocket Lab Investor Day Transcript
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PRESENTATION

Video Presentation

Space is hard, or so you've been told. You see, doing things in space requires three things. It requires spacecraft, the hardware on orbit, and the software that powers it, delivering services from space, conducting scientific research, and helping to expand humanity's reach deeper into the solar system and beyond. It requires launch vehicles, a reliable and affordable path to orbit, and it requires ground-based operations. Mission operation centers and a global ground station network to task and manage spacecraft

on orbit. Historically, each of these things were managed by multiple companies with conflicting schedules and long lead times at exorbitant cost.

Rocket Lab has brought all three together, streamlining space and making it easier to use as a platform for innovation, exploration, and infrastructure. This is not an aspirational promise of future capability. We are delivering real spacecraft, real launches and real missions to real customers right now. We pioneered a new generation of rockets, one that gave small satellites affordable, dedicated access to space for the first time.

Right now, in our state-of-the-art factories, an Electron rocket rolls off the production line every 20 days ready for the journey to space, launching from one of our three dedicated pads across two hemispheres. Right now, satellite supporting defense, intelligence, science, education and commercial innovation are being prepared for flight, ready to join the 150 other satellites launched to orbit by Electron, and counting. Right now, spacecraft destined for Mars, Venus and innovative missions in orbits closer to home are in development and production in our clean rooms, ready to deliver groundbreaking science and vital services to millions of people.

Right now, in labs and manufacturing lines across five states, our team are delivering high-performance spacecraft components that will enable some of the world's most ambitious missions, from the solar panels powering humanities return to the moon, and the spacecraft software enabling new defense capabilities. With flight heritage on more than 1,700 missions, our proven space systems technology is delivering mission success right now.

As for the future, we're working on that right now, too, with a new-generation launch vehicle designed specifically to provide access to orbit for the spacecraft and constellations of tomorrow. From idea to orbit, Rocket Lab is delivering it right now.

Morgan Bailey

Hello. Welcome, everyone. My name is Morgan Bailey, and I'm the Senior Director of Communications at Rocket Lab.

Now, first and foremost, I'd like to apologize for the late start. I know that you're all busy people, and here is where I answered a joke about our reliability and track record of launching on time, but perhaps presentations, we need to scrub up on that a little bit.

Look, I won't take too much of your time, because we've already taken out a lot of it already. What I will say is that you're going to be joined by a fantastic group of our senior executive team members today, sharing some updates about Rocket Lab's successes over the past year, since our last investor day, and sharing some insights into the exciting new technology that we have under way. Some of which you can see right behind me here.

Before I launch into those presentations, I will just read a brief disclaimer for everybody. After our prepared comments today, we will take some questions. Now, our comments and the slide presentation today will include forward-looking statements within the meaning of applicable securities laws. In addition, we will make forward-looking statements relating to trends, opportunities and uncertainties in various products and geographic markets. These forward-looking statements involve substantial risks and uncertainties. More information on these and the other risks that may affect the forward-looking statements as outlined in the Risk Factors section of our 2021 10-K filing. Any forward-looking statements are made as of today, and Rocket Lab has no obligation to update or revise any forward-looking statements, and a replay of today's event, as well as the presentation itself, will be available on our Investor Relations website very soon.

With that, in conclusion, I will hand over to our first presenter for today, Rocket Lab's Founder and CEO, Peter Beck.

Peter Beck

Thanks very much and welcome, everybody, to the Intrepid. When we're thinking about doing this, the obvious choice was some stuffy conference room in the center of New York, and we're like, no, that's no Rocket Lab style. It's great to be here and standing under the Enterprise space shuttle. I think it's cool for a couple of reasons. The space shuttle here represented the state-of-the-art in 1970s and 1980s, and to my right what this represents is a state-of-the-art in 2022, and I think it's also cool, because the space shuttle was the first re-usable rocket, and we're going to be talking a lot about re-usable rockets today, and then, finally, it's just cool to be here, which is always important.

We're going to go through a bunch of sections today about Electron and space systems group, also Neutron, and then Adam is going to talk to you about the financial aspects of their business. We'll start with a little bit of a Rocket Lab overview, and I apologize for those people who know the Company well, but there's probably some people in the room who don't know the Company that well. We'll go over a little bit of stuff.

The Company's vision and, quite frankly, what gets me out of bed in the morning and excited, and most of the stuff, is that it's really about the impact you can have from space. We got a space to really have impact to the human rights. I want everybody to think that you would have seen an impact report, please take that away and have a read of it, and you can see some of the stuff that they were up to, both in the space industry, but also outside the space industry.

But that's the fundamental big goal here, and as I think about the Company, we're actually not very good at naming stuff, believe it or not, and we probably should have called the Company Spacelab instead of Rocket Lab, because everyone thinks we just build rockets. But at the end of the day, the vision remains the same, and that's really to have a meaningful impact. Launch was just the beginning for us. I think we're most well-known for it. We are a small dedicated satellite ride to space. We also build spacecraft and do a lot of space systems, which we'll go into more detail later, and the thing that we don't really talk about very much, because it's too early, is a belief that if you have your own ride to space, you have the ability to build any spacecraft you wish. Being the natural progression for an end-to-end space company is to actually put infrastructure and applications on orbit yourself in due course.

At Rocket Lab, we need everybody, whether they're an executive, or an intern on one statement. Literally, the HR department is run-off. Did you do what you said you were going to do? That's how we measure everybody. That's how we like to be measured in the world, and that's the fundamental core value at Rocket Lab. Did you do what you said you were going to do?

Today, we're going to spend a little bit of time looking back to when we first became public to today. I know there's a number of public companies that don't like looking back to what they said they were going to do, to what they're doing, but we're proud to look back at what we said we're going to do and what we've actually done.

I think it's important to remember that launching is just a small element of this business. We start off from end to end. We start off at satellite design and manufacturing. Customers will literally come to us with, hey, we've got this thing that we want to solve, and sometimes we do contract design services for the customer, which may or may not result in a spacecraft build, or even a launch. But the beautiful thing is that we have a full array of components to then move forward and actually piece together the things that a customer actually needs. Then, software is one of those things that's really underappreciated.

We wrapped the software around it. We have all the ground infrastructure, whether it'd be launch, or ground stations, then we've got to launch it, and then the final piece is on-orbit operations. When we talk about an end-to-end space company, this is what we really mean, and if you look across those six things, we have projects and customers in all of those such things today.

Little bit of a glance at Rocket Lab as a company. We've done 30 Electron launches, we just had a thirtieth launch a few days ago, also delivered 150 satellites to orbit, we have three pre-launch pads operational. Second most frequent launched U.S. rocket, we have five mission control centers dotted around the planet. Then on the space systems side, we've got over 1,700 satellites on orbit using Rocket Lab technology, and as more of a wider company, 1,300 and 1400 people, we've been obviously busy with a lot of strategic acquisitions, and you'll hear a little bit more about how they're going today. Three Rocket Lab Photon satellites already on orbit: one went to the moon and back. It's currently about a million kilometers on its way out into the Helios inter-orbit. Obviously, we've got Neutron, which we'll provide a more fulsome update.

The way I like to think about the space industry is you can chunk it up into three segments. You've got launch. Some of these numbers we've updated from the latest reports from this year. You've got launch, and that's about a $20 billion TAM now. You've got space systems, which is about $44 billion TAM, this is throughout the infrastructure. Then you got space applications, which is the really big number. That's basically all of the services that are provided from space. Number one and number two there, well in hand.

Number three is more aspirational for us in the future. But what we're ensuring is that, when we do decide to go after an application, we have all the infrastructure in place to obviously excel in win in that. When we first came public, we were out in front with respect to launch and a few other things. Pleased to report, we remain out in front. The team just continually and relentlessly executes launch after launch, spacecraft after spacecraft. We really cemented that leadership in small launch. For as long as I've been doing this, there's always been like 40 other small launch companies in various states. It's a testament to how difficult it is to stand a launch business up, as that still remains relatively unchartered.

Obviously, we're addressing new markets with Neutron, which is super exciting. We're increasing our mission heritage on all of our space systems. Some of space systems have a huge amount of heritage. Some are very new, like our Photon interplanetary probe there. We're continuing to grow all that heritage. Of course, as we do that, we're opening up more and more opportunities and more and more TAM. One of the things that we really focused on, as well as like building a super solid executive team, I'm not going to go through name by name here. You'll get to meet a lot of these folks here. But I think it just speaks to the maturity of the Company.

We brought on a General Counsel, People and Culture Officer, Chief Information Officer, Vice President for all of our DC operations, and Brad, who is going to talk to you, who leads up the whole space systems group. Then we're super lucky under the space systems group to have all of the founders of the companies that we acquired in fellow engineeringship roles.

These are incredible folks who've built businesses, in many cases over decades, that are just industry powerhouses within the team now. As you can see, a very broad background of experience and capabilities across both the space system, that space sector, but other sectors, as well. There's been a little bit of time reflecting on Electron. It is a small launch, so we remain the second most frequently launched U.S. rocket behind SpaceX. I believe we're still the fourth most frequently launched rocket in the world at the moment. We're pleased that we've been able to hold that title for a few years running here. We're launching a bunch, which is super good.

To that end, since we became public, we've launched nine times with a 100% mission success. We've been to the moon, and we've also really stretched the legs of Electron, demonstrating its pilot capability to a very large number. We've launched a tremendous number of customers, both government and commercial. We've demonstrated that we can fly out into the middle of the ocean and catch our rocket with a helicopter. Even though we did drop it slightly thereafter, we still demonstrated that, operationally, we can get out there, we can rendezvous, we can catch it, and that's really the hardest, but done.

We've taken components, we've re-tested them and re-certified them for flight, so re-usability is really on its way. We delivered our fastest turnaround launch, we'll talk a little bit about that, and introduced a new responsive space program. One of the things that I think is super important to talk about here is that, during the launch day, our job is to try and make it look as easy as possible for everybody else in the world, but rest assured every launch is always really challenging and takes a huge team and really incredibly synchronized team to pull it off.

The real trick here is to do it over and over and over again successfully, because launching very early on and when you've just got a small number of launch vehicles, you can have your engineers pour over every one incredibly lovingly. By the time you're launching and building one every 20 days, it's all automated, it's all test scripts, it's all technicians and work instructions and supply chain, and it really is much harder to launch your twentieth rocket than your first. Even now that we've just done number 30, it's like we're cranking the handle; but boy, if you'd said to me when I started this program, what would be the hardest thing? I would not have said to you to launch rocket number 20. I would have said to you launching rocket number one, that'll be super hard, and then maybe rocket three kind of hard, too, because we should be in production by the end, but actually rocket 20 just enormously difficult. That's referenced as others tried to scale just how hard that scaling piece actually is.

This is an important one, because it's super easy to create a pilot user guide that says can lift a certain mass. But you have to realize that 1% to 2% of the total rockets mass is actually the payload you lift. If you're a fraction of a percent out on your trajectory or any of your performances, it has a massive effect on how much payload you can lift. This is really how you determine reality from fiction, and maturity from immaturity. It's like, can you lift what you said you can lift? Does the rocket perform as advertised? That's something we're super proud of. We lifted 320 kgs with the vehicle. Honestly, the vehicle was ultimately designed for 300, and so we even squeaked a bit more out of it than we thought was possible. But I think that is a super important distinction to make, because at the end of the day, why this matters is that it's all revenue.

If your rocket only lifts 20 kilos, or something like that, you can only sell 20 kilos. This is actually a really important business metric to make sure you've got right, because if your rocket doesn't lift what it says it's going to lift, then you don't have a business, fundamentally. It's really hard to explain how hard it is to build a rocket, how hard it is to launch it reliably, how hard it is to do it regularly, but also how hard it is to actually hit the numbers, especially on a small launch vehicle, like the mass of a sticker matters, the mass of the ice on the outside matters. It's a really difficult thing to pull off.

Our fastest turnaround was 15 days. It would've been 10, but we had a customer that had a small issue with their payload and needed another five days to correct that, but that was our fastest turnaround mission to date. Once again, to turn a mission round in 15 days, you've got two rockets on the pad, you got three clean rooms in operation, you've got two seats of customers, you've got two sets of flight analysis and safety, and on and on it goes. To turn a mission round in 15 days is really difficult, and, once again, it's all about maturity.

There's a lot of talk in the industry about responsive space, and there is quite a number of line items in government budgets about responsive space. The reality is, responsive space is just what we do. We do it every day. The fastest turnaround from a customer contact on orbit was five weeks. I'm not sure how

fast and how much capacity you need than that. Responsive space within Rocket Lab at least exists today. It's important not just to stop at the launch piece, because if you've got a rocket sitting on the pad, that's great. If you have no satellite to launch on, that's a problem.

When we talk about responsive space, once again, we talk about end to end from a customer has a requirement, to building a satellite, to getting on orbit. But I guess the point here is that we introduced this program to formalize what we actually do today, and for our customers, it's another option to expedite to orbit. Surprisingly, the customers that care the most about this are actually commercial customers, not necessarily defense customers, which you might not necessarily expect.

I think one of the things that's slightly under appreciated is the launch machine. The launch site is essentially Stage Zero. There's a tremendous amount of automation and complexity in that first stage in sort of that ground infrastructure to enable that quick turnaround launch, that quick cadence, and that reliability. We have two pads down in New Zealand. One pad can be out for maintenance while we're working on the other pad. It's not uncommon for us to be wait listing one rocket while we're getting ready to launch the other. Having those multiple launch pads is super differentiated and super critical to hit the cadences that we're currently hitting in going forward.

You don't just turn up in the country and build a launch pad. I could give you a full-on hour dissertation of all of the bilateral treaties and regulations and stuff that you have to go through to make this happen. Even down to the smallest thing in New Zealand when we established the launch pad down there, we had to get space designated as a freight destination so that when the satellites came in, it was a temporary import export and they weren't charged import duties. It's all the most crazy things that you could possibly imagine that it takes to come to another country and launch.

But what we have here between these sites is the ability to launch every 72 hours for the next 20 years. Our launch capacity and launch capability is well and truly a completely solved problem. A little bit of news today. The Electron for the LC-2 launch has been shipped, so it is on order, and it's due to arrive at that launch site here in the next week or so. That should give everybody a pretty warm and fuzzy feeling about this LC-2 launch going by the end of the year. We have absolute assurances from NASA that the IFDS will be complete on time, so that's great. After nearly a two-year delay on that, we're super excited to get this first vehicle launched up, LC-2, by the end of the year. So that will be exciting. Hope everybody can make it down and watch the launch.

Electron still remains the go-to dedicated small launcher. Our backlog continues to grow up. Nearly 40% grew from August 2021, so we continue to sign more and more customers onto Electron, and it can continue to be the leader. People like its flexibility, its reliability, and its ability to deliver customer's payloads exactly where they need to go consistently. We have another little bit of announcement today. We've seen growing demand from LC-2, so we're announcing—unfortunately, we can't name the customer, they require confidentiality, but we have another customer launching out of LC-2 in January. Basically, we'll have one out of December, one in January, and that LC-2 launch site will be well and truly kicked off and up and running. That will be super exciting.

We continue to remain the trusted choice, as we mentioned. If you look at our manifest for Electron, it's basically 50% commercial, 50% (audio interference) defense, 20% civil. But the bottom graph, the one that I want to spend more time on, is that we have a saying at Rocket Lab that once you go Electron, you never go back. If you look at our customers, we have over 70% returning customers. There's testament to the service that we provide them and the capability that gets provided. We're flowing for all of the major emblems that you can imagine. More recently, we just did the two Interrole missions back-to-back. Very discerning customer. These are missions that really matter. These are national security missions, these missions are of national importance. So really honored to be able to fly such a customer. Then, obviously

the CAPSTONE mission to the moon, which Ehson will talk a little bit about, and all the commercial customers, from blue-chip primes, through to startups.

I would say that the quality of our revenue on the launch side is certainly very high. If you look at the majority of our customers, they're all very, very established players who really understand the importance of the service. This is just a snapshot of our manifest. This is by no means a complete picture of our manifest. We have a lot of customers that wish to remain anonymous and government customers in the same light. But we have three missions left to launch for HawkEye, we have one mission left on Synspective. We just launched Synspective a few days ago. We've got five Kineis launches. We've got one more launch left in the BlackSky out of the seven launches we've done for them, a whole bunch of U.S. Government customers. We've got a General Atomics mission coming up, which is a very important satellite. We got Astroscale which is a debris removal spacecraft, and a whole bunch of NASA stuff, as well, which, in the interest of time, we won't spend too much on that.

Where our usability is at for Electron right now is, like, we're just cranking the handle. We've really operationalized it, standardized re-usable vehicles come down the production line right now. We really feel like we've demonstrated that this is a doable thing and we're off. We have teams working on refurbishment and working through all of the systems that it requires to get product back into the groove and get it reflowing again. There'll be a recovery mission coming up soon. You may have seen a re-usable vehicle on the pad for Interrole mission that could have been re-used. For various customer reasons, that wasn't a re-usable flight. But this is just pretty much standard pace for us now, is these re-usable vehicles coming through, and we'll just start hitting them. We expect about 50% of our flights to be re-usable. So not 100%.

Catching a rocket with a helicopter is non-trivial, doing it at night in the clouds is just not possible. So there's also a number of operational reasons why we won't recover all vehicles. But I guess the key point for this one is that there is no way we could have taken on the Neutron project with as much speed and confidence as we are without doing this. We learned so much on re-entering Electrons and going through the process of re-usability that, if we had just gone straight to Neutron as a re-usable vehicle without learning all of those super tough lessons, it would've been ugly. These are reflex systems and muscles that you create within the organization, which is just super important.

We have here a video of an engine. It just goes on and on, as a rocket engine should. But the point being here is, like, that matters. Bringing an engine back and putting it back on the test and doing some light refurbishment and running it again, that’s non-trivial.

What's really important there is that engine was right down the middle, but just the same ISP and thrust, all the numbers were as it was as was the day it flow, so that gives us incredible confidence moving in here that, when we get this vehicle back, there's not a ton of refurbishment, it's not going to be just an absolute dog to continue to have to put hours and hours, and if it can get it flying again.

We can go into this with a lot of confidence that, actually, the vehicle is going to be good and we're going to be good to go. One of the things that when you have a mature product and you just cranking them, the next thing you can focus on is improving the margins on it. We have established production facilities. We know what we're doing here, all of the production systems are all running and, as I mentioned, we’re just banging these things out. There's no more R&D to do, there's no more, like, we need to stand up factories and we need to do this, it's all there.

The focus for the Electron team now, if the product is mature, it's complete, it's like now that we have this thing, where can we tweak it? Where can we improve margins? Where can we decrease the amount of hours that go into it and all those kinds of things. We have a real solid program here to increase the

margins of the vehicle, and re-usability is like cheating, in some respects, so I always tell the team don't rely on re-usability, because that's just cheating, it's just so unfair.

But there's a whole bunch of work going on to really focus in and dial some of this stuff in, and then re-usability is just icing on the cake. When you're in a full-scale production and its regular and reliable, you can go to customers and negotiate bulk orders and do these things; when you're still developing, it's very difficult to commit to long-lead and long-procurement cycles, so we think we're in a really good state there to really drive this product home.

With that, I'm going to introduce you to Brad, or I'll let Brad introduce himself.

Brad Clevenger

Thanks, Pete.

As Pete said, driven by mission, everything that goes to space should have a Rocket Lab logo on it. We're well on our way to doing that, and I'll tell you how. But for me, I'm Brad Clevenger. I come to Rocket Lab by way of the SolAero acquisition in January, where I was CEO for seven years. There, over the last 21 years, we've powered more than 1,000 spacecraft on orbit, 500 more power systems delivered to customers. So a lot of experience comes into the Company with SolAero, and I'm happy to have the opportunity to contribute now with Rocket Lab.

Think of space systems on three pillars, satellites as a service, complete design-build end-to-end construction of satellites. Everything from high-complexity national security space of civil missions, to commercial Leo constellations. Satellite components, both organically developed within Rocket Lab, as well as inorganic through the acquisitions. Then finally, as Pete said, aspirationally space applications, we have all of the elements, strategic component supply, satellite manufacturing capability, launch capability. We have an increasing number of customers coming to us, asking us to deliver products from orbit, not just products to orbit.

Video Presentation

But there's more than just rocket in this lab now. With Electron, we set out to open access to space, pioneering new technologies and rewriting the rocket development rule-book. We knew there was a better way to get small satellites to orbit faster and on their terms, and we succeeded. Now, we're doing the same for space systems, developing complete spacecraft and their vital subsystems. You see, space doesn't actually have to be hard, in fact, we've made it really easy.

We've streamlined satellite design, manufacturing, launch and on-orbit management together as a complete mission solution, enabling some of the world's most ambitious scientific missions. Supporting critical defense capabilities, pushing the boundaries of exploration, and powering commercial innovation that serve people and planet. We're doing it at scale. With a dedicated and experienced team of more than 1,300 people and acres of manufacturing and test facilities across three countries and five states. Featuring state-of-the-art spacecraft clean-room and processing facilities, automated manufacturing and 3D printing capability, precision machining capability, comprehensive spacecraft tests and analysis facilities.

The world's largest production lineup, high-performing space solar power products. Five mission operation centers for on-orbit spacecraft management. Of course, three dedicated launch pads providing the gateway to space. This capability isn't a future aspiration. We're delivering real spacecraft to real customers today. From complex missions to the moon, to the solar cells powering mega constellation, to

the reaction wheels providing precision pointing, and the flight software that commands it all, we're making mission possible.

In fact, more than 38% of globally addressable launches in 2021 had spacecraft on them featuring technology created by Rocket Lab companies. Even if it's not launched on Electron, if it's in space, there's a good chance it has a Rocket Lab logo. Rocket Lab, more than just rockets in this lab.

Brad Clevenger

Now, with the combination that you've seen, demonstrated capability to build satellites, a launcher to go with it, our investments are focused on scaling those capabilities. To help us do that, we have our first major constellation manufacturing award that was recently announced with MDA and Globalstar.

Importantly, Rocket Lab doesn't do anything without a strategy. A big part of the acquisition strategy has been vertical integration of supply constraints, strategically important components. You can see there, the companies that have been acquired over the last couple of years, each best-in-class on its own. But importantly, think not just about those companies, but the interfaces between them. Our abilities to work together amongst companies, and combine those companies' products with the ones organically developed by Rocket Lab.

In a few minutes, Richard will tell you about many new products that are coming out from the Company that represent a combination of the capabilities of these companies, and Rocket Labs' organically developed products; it's opening the aperture for us to in-source more, giving ourselves additional competitive advantage, both in the supply of the components as well as their cost, etc. A lot going on here, and, of course, always with an acquisitive eye, we're looking at the market to understand where we can continue to develop that competitive advantage.

As you heard in the video, more than 38% of all satellites that went into space from our addressable markets last year had products that are now made by the Rocket Lab family of companies, and that number is growing. So we are well on our way to Pete's vision of everything going into space having a Rocket Lab logo on it. With the new products coming out, etc., we expect this number to continue growing for years to come.

Importantly, I think you'll find amongst the satellite prime contractors out there, and those trying to build the capabilities you've heard about today, that they're often focused on a limited spacecraft type, or a limited mission type, or a limited orbit. What you'll find when you look at Rocket Lab is we're out there amongst the most demanding missions in the market. Whether it be next-generation missile warning for national security space, extremely challenging civil space missions like James Webb Space Telescope for the margins annuity helicopter (phon), or some of the biggest applications in commercial satellites, like the Globalstar Constellation or the OneWeb Constellation. Rocket Lab is servicing all of those pieces of business now, so not limited to any certain satellite type, orbit, etc. We're all over the place meeting extraordinarily difficult demands. So able then to access all of those markets as we continue developing the Company's capability.

Finally, I'm happy to share that we just commissioned our new satellite production facility in Long Beach. This has just been completed within the last month or so. We're in the process of occupying this space. Within about six months or so, we will be filling it with satellites under construction; this space is large enough to build more than a dozen satellites simultaneously. A fantastic capability for the Company, that again is part of the investment we're making to scale the Company's capability toward mission applications.

With that, I'll turn it over to our Chief Engineer, Ehson.

Ehson Mosleh

Thank you, Brad.

My name is Ehson Mosleh. I'm the Chief Engineer for space systems. A little bit about me. I've been working building small spacecraft and instruments for about 20 years now, when I started out as a undergrad intern, building spaceflight hardware, transitioned to a career of building and really being at the forefront of pushing new technologies, miniaturization, and realizing a lot of the progress that's been made in the community in the last decade or so.

I'm very excited to be part of the Rocket Lab team. I joined about two years ago. The reason why I joined was this really is the future, as Pete mentioned, where you really do need to, in the future space economy, vertical integration is absolutely key, and necessary in order to bring costs down, to be able to optimize solutions, not just for launch, not just for spacecraft, but for applications.

My job is to really take that thread piece by piece from a technical perspective and really get us to the finish line with eventually potentially getting into the applications. Discussing a little bit about that, again, when I joined two years ago, we had one mission, which was our Lunar Photon CAPSTONE mission. This was a challenging mission, but one that allowed us to, again, by realizing and performing on that mission, really take those pieces of technology and push them forward into different arenas.

What you can see is, with CAPSTONE, we demonstrated a capability to get not just a payload to a very interesting lunar orbit, but also we learned as a team to build complex missions on the spacecraft satellite side, and also to be able to make sure that we can now take that and scale it to other missions. The NASA ESCAPADE mission is two satellites that will be going to Mars, performing a NASA science investigation. This is very important for our general understanding of science and the progress of NASA's vision in the scientific community.

One of the things that we did, though, is we didn't just start from scratch, though; this is really a continuation of the CAPSTONE vehicle, which you see the test model here right next to us. The Mars ESCAPADE mission really advances that to the next level. Then, in addition, we have our private mission to Venus, which again takes the Lunar Photon platform and really tweaks it in order to be able to realize some of these missions.

As you move forward the chain, you now take some of those really hard lessons and you can apply it to now a broad area for various customers, like Varda, which is doing in-space manufacturing, be able to provide them a platform that's reliable where they can do their experiments. Part of the real secret sauce at Rocket Lab is very, very precise trajectory design and mission design. Realizing that on Lunar CAPSTONE, being able to provide a customer that needs to bring a capsule back and land it into down in Utah desert after the manufacturing is complete, these are all things that we're slowly continuing to build on.

The other missions we have is a technology demonstration for cryogenic experiments in low-Earth orbit. This is important. As NASA starts to go with the Artemis program back to the moon, the Lunar Gateway, it’s very important to be able to demonstrate that you can keep fuel depots in space, transfer fuel without having boil-off.

These are very important pieces of technologies that we're helping the NASA community demonstrate. I think the other progression that you see here is we're not just now doing onesie and twosies. Onesie and twosies of a particular mission, the Globalstar Constellation of 17 satellites is really our entrance now into a place where we're really actually giving operational missions to customers.

A little bit about the Artemis program. The term program is actually a quite a misnomer here. This is a real large initiative by NASA to return to the moon and establish, essentially, a Lunar Gateway there for future exploration. This is important, because the NASA's initiative here is to essentially really try and expand our breadth in the solar system. By doing that, taking a step to the moon is the right way to do it.

CAPSTONE was the first mission in the Artemis program. This, step-by-step, we wanted to basically, with the data that provided by CAPSTONE and our mission Lunar Photon, we demonstrated that you can get to the moon with a low-cost launch vehicle. We made it a very innovative mission design, which I'll talk about it a little bit.

This is just the first step to all the other programs that NASA projects has under the Artemis program in order to get to Lunar Gateway and back to the moon. As I mentioned, one of the key elements of being able to do this is to really be precise about trajectories and mission design; there's very small error bars when you're doing these types of complex missions, especially with a small rocket, and especially with a mass-constrained system. We were able to demonstrate that, we were able to get a successful mission complete, as Pete mentioned. We've circled back, and now we're headed out into a heliocentric orbit. We deployed the CAPSTONE spacecraft, too, which is now conducting its experiment.

A little bit about how that mission went down. If you look here, typical Rocket Lab missions, typical Rocket Lab launches, basically hang out in that low-earth orbit area. Customer wants to go launch, and we get them up to 500 kilometers, 550 kilometers circular orbit. Then our job is done.

As you can see here, the Lunar Photon CAPSTONE missions was quite more complex. Back in the Saturn V days, we created a really, really big rocket. It had a lot of capability, and with one set of maneuvers, we basically circled the earth and went to the moon. Well, (audio interference) without this is not possible. We came up with an innovative design in order to get ourselves to the moon. We had to do these very delicate phasing orbits. We go up in a normal fashion. We get to like a circular, a small—a low-Earth orbit regime. Then every time we pass perigee, we do a burn and extend that orbit out.

Finally, as you can see, what we did was after the seventh—the burn, we were on an escape trajectory from Earth. At that point, we deployed the CAPSTONE spacecraft, which was NASA customer spacecraft, in order for it to go and do its experiment at the moon. Our job was done at deployment.

We also did some other experiments with our Lunar Photon spacecraft, which was great, again, learning to extend those lessons to Venus and Mars. But again, from a team's perspective, this a major accomplishment this year. I'm really proud of the team. This was a real fun one.

A few key statistics or points here. Bringing this all together was a culmination of a lot of things. For our first deep space mission, innovative mission design, bringing in pieces of the acquisitions into play as we progress. Reaction wheels and star trackers from Sinclair Interplanetary. We used the flight software suite from ASI, the MAX Flight Software suite to actually on the spacecraft and for some of the ground processing on the ground.

Again now, taking those and extending them over to and having those building blocks to future missions. As Richard will talk about, we have a suite of radios, and not just any communications radios. These are radios that can work in a family of frequency regimes. The first light radio, Frontier, the S-band version of the radio, we used on this mission. It not only provides communications, but for interplanetary missions, communication systems need to also provide Doppler arranging. This is a unique capability of this radio that Richard will talk about in a little bit.

Now, moving along, this is a great jumping-off point, but obviously, now that we have this capability, we better use it, because it's pretty cool. On the left here, you'll see this is a rendering of our private Venus mission. We're working with world-class scientists at MIT in order to be able to craft an experiment using the Lunar Photon platform. We now know, based on the data that we got from the CAPSTONE mission, and our build, that we can actually with this vehicle get a capsule to Venus. What do we do with that capsule?

There are essentially little markers of bacteria known as phosphine (phon) that, if you can go in and measure them in situ, there may be a possibility of signs of extraterrestrial life there. That's one of the things that really excites me, being able to craft and experiment like this and have the building blocks to actually realize it is very cool. The next mission is the Mars ESCAPADE mission. Again, two identical spacecraft. This is a NASA-funded mission with the scientists from UC Berkeley. A suite of instruments to be able to measure ions and electric fields and particles at Mars. Again, this is now extending in even more complexity the Lunar Photon platform to do a really amazing science mission.

A few other missions to talk through. Again, Varda is a company that's doing in-space manufacturing. We send them up to orbit, they do their manufacturing cycle, then they bring that capsule down, and they land back from the Utah desert and go retrieve their experiment or the material they made. This is, again, one that the platform is now our precise trajectory mission design is really enabling this, along with being able to create four spacecraft for them in a timely fashion in a production fashion. This is extending from, once again, onesie, twosies, now into four identical spacecraft builds.

Again LOXSAT, too. LOXSAT is a cryogenic experiment for liquid oxygen zero boil-off transfer. Very important for the Artemis program and Lunar Gateway. We also entered into a CRADA agreement with the U.S. Transport Command for basically looking at different mission designs for on-orbit cargo deliveries, which is really exciting and at the forefront again of the capabilities of our systems. Probably the most—this is a big deal. This is, again, a real operational mission for a real customer that has a very important anchor customer that you may have heard of. There's 17 spacecraft that will provide global communications and emergency communications for worldwide.

The company Globalstar does that currently with the current constellation. This system is going to replenish. Those satellites are getting old. This system will replenish that constellation. Again, we're going from the land of science experiments and technology demonstrations, to one where we're really making a platform that's going to be used globally and worldwide. This is, again, and also building infrastructure that's needed to do that with a clean room that Brad mentioned. We're going to start seeing satellites get in there and come off the line in the next couple of years.

This is, again, building blocks, we couldn't have done this really in an efficient manner, or really we couldn't have won this competitive bid without being able to compete by utilizing the strength of some of the acquisitions that we had in the past that we did. We're getting all the solar panels and the primary structures are being built at SolAero and Albuquerque and then delivered to us. This is again allowing us—this type of integration allows to really tweak and optimize the performance of the spacecraft. We have the Frontier radio, which Richard will talk about again, the C-band version of it is going to be on all of the spacecraft. We're using the ASI Mac software suite on the flight systems, but also on the ground testing systems.

We also have our in-house-build power distributor units and reaction wheels in every single one of these satellites, as well. There are a couple of options on the contract, as well, for ground operations that we may be able to talk about in the future.

With no further ado, Mr. Richard French.

Richard French

Thanks, Ehson.

My name is Richard French. I lead BD and Strategy for our space systems. I spent 12 years at Jet Propulsion Laboratory, helped land a Mars rover, built in synthetic aperture radar missions. But I always had a passion for the commercial space sector. I went to NASA headquarters, set up some programs to support commercial companies, but ultimately wanted to put my money where my mouth was. When I found Pete, Rocket Lab was on the way to becoming the global leader in dedicated small launch, but what really compelled me was Pete's end-to-end space company vision and the opportunity to grow space systems at Rocket Lab.

I'm going to share a little bit about our strategy for growing the Company, what we're doing today, and some of the examples that demonstrate the success. As you've heard multiple times from Brad and from Ehson, we're really focused on delivering operational systems that require discriminating capabilities for high-value customers, and you can imagine why. That's how we improve the unit economics of the spacecraft that we sell. We're not trying to race the bottom of the cube sat market, or small satellites that you can just throw away. These are high-value assets that solve very challenging problems.

You can see that in the missions that we've already signed. The NASA ESCAPADE mission going to Mars, requiring very discriminating capabilities for deep space communication and navigation and in-space propulsion. The LOXSAT mission is another really great example where integrated launch in satellite solutions came to bear. The cryogenics needs to be loaded at the very last minute before launch. Really great example where that integrated launch in satellite solution has a lot of benefit. Varda Space Industries and their re-entry missions is another great example where we can flex our propulsion, GNC and other muscles to be able to deliver again a very challenging mission.

Then Globalstar. This is a 12-year operational high-radiation environment, extremely high-power system, very challenging thermal management, among other things like reliability, that necessitates block redundant avionics. These are the types of capabilities and the customers that we're going to be continuing to target moving forward.

Vertical integration, of course, is another key pillar of our strategy. This is important to reduce the cost of our own systems, but also allow us to monetize it. The diversity of revenue that you see is a combination of our integrated systems and components. We love the components business. Those capabilities are coming both organically and inorganically. As Brad talked about, we've been focusing on the highest value, most supply constrained elements to grow.

I'll talk a little bit about some of the new products that we have in release, as well as the ones that we're expanding and improving on to continue to either protect or grow our serviceable market. Constellation class capabilities are, of course, super important. A lot of the growth in the TAM and a lot of the existing TAM today is constellations. If you don't have the constellation class component manufacturing, then you won't be able to address those opportunities. We've demonstrated those capabilities with large contracts or reaction wheels, heritage programs like OneWeb delivering the bulk of the solar power, as well as reaction wheels and star tracker programs for small geospatial constellations that really lay the foundation for us to be able to deliver these constellation programs in the future, both for components and integrated systems.

Of course, when you have a constellation program, you need to integrate the spacecraft, and that is another area that we're gaining experience, both with the Varda deal where we have four vehicles, and the MDA Globalstar deal where we have 17 vehicles experiencing constellation class satellite integration. Cross-selling opportunities are another really interesting opportunity for us. We have customers like

BlackSky working with LeoStella where we already supply a huge range of capabilities, whether it's the solar, flight software, reaction wheel, star tracker, and then we get to launch them. This is the customer that we target and that we want to grow with. Astro Digital is another great example, another very good customer of ours. They use a lot of our capabilities. In fact, there'll be integrating one of our first S-band radios into a future mission and flying that for their customer.

Lockheed Martin is another great one where we have deep relationships on the solar front and we've had penetration of some of our existing component products, but also represents an opportunity to expand with some of the new products that we're bringing to bear and others that haven't gotten into their supply chain yet. Of course, Lockheed Martin also represents that type of high-value customer with demanding requirements that we like to work with.

Then, finally, Globalstar MDA. Ehson mentioned some of the options that we have in that contract for mission operations software, as well as launched dispensers. Both of those represent opportunities to grow capability, introduce new products that we've all talk about. As Pete has mentioned, this is really all about an eye towards future applications, and so bringing the total cost of ownership to the application layer.

Things that we're doing to expand our service addressable market. The first one is a brand new reaction wheel. Traditionally, we've had reaction wheels that go up to about one newton-meter second. It's about that big. We've got a new reaction wheel that's about that big. This is going to address constellation customers up to about 600 kilograms. We're underpinning that with a constellation class manufacturing capability in Auckland, which is operational, and we'll start delivering reaction wheels for customers in quantities thousands soon.

On the flight software front, I think you got a little sense of how many missions have flown the MAX Flight Software to date. We traditionally bundled the ground software capability with that flight software. Well, what we've found is that ground software itself is monetizable and can address a huge need in industry. We're productizing and breaking off that ground data system as its own software product that we'll make available to customers, even ones that don't fly MAX software, even customers that don't fly our hardware. This will be a very important new product for us to increase our serviceable market with software solutions.

On our launch separation systems, we've got best-in-class launch separation systems, really the trusted provider for launch separation systems with our heritage products. But we can always do better. We can work on improving our throughput. We can work on improving the cost performance, and then there's some key technical aspects of these that we're also always working to improve. We've recently announced the Advanced Lightband, and in fact, we've gotten our first launches and flight heritage of that product. This will be an important area of growth for us, also.

Then on the solar front. This is an area where we continue to invest in capacity and new technology that I'll talk about in a second. But the core capabilities that go into solar, including structures, allow us to create a whole new business.

We'll be growing a new structures business for both spacecraft and launch vehicle primary structures, again, to increase our serviceable market. I mentioned the option in the Globalstar contract for launch dispensers. We're looking forward to bringing that capability to bear. Traditionally, SolAero has operated a few levels of the market, including solar cells and solar panels. But a lot of customers want a full integrated array solution. Rocket Lab has that need. All of the systems that Ehson is building require integrated array solutions.

We're now asking Albuquerque to do that for us. As a result, we'll have a turnkey product to be able to give full array solutions to customers. Really, it's amazing. The SolAero team and Albuquerque, they're really special. They are the world's leading high-efficiency solar cell technologists and manufacturers.

Rocket Lab now has the single highest efficiency solar array, or solar cell, in the world, which is already enabling missions. The Mars helicopter that you've seen, some important missions for Maxar (phon). Really importantly, this is the only cell technology that meets the Space Force's coming requirements for solar cells. It's also lighter.

There's been some innovations to eliminate some key materials that allow us to build this at 40% lower mass, which for a satellite you can imagine is very important. We're working on investing in capacity. I talked about the constellation class opportunity. We do that already with our traditional solar cells, and we're working to bring to market the capacity for high-volume manufacturing for this really transformative technology.

Then the radios. As we've talked about, radios are enabling for a lot of applications, deep space. These radios that we manufacture under license from Johns Hopkins University provide a special feature that allows that deep space navigation. It also enables us to do radiometric navigation in other orbits, particularly ones that you need a robustness in GPS-denied environments, which is very important for national security.

We actually announced the X-band (phon) variant of this product last November, and we'll be delivering our first flight model in just a few weeks to an external customer. Of course, we're supplying this radio to our own programs already. But we're really excited to expand this product line with an X-band variant. This is important because customers require different frequencies for different applications. X-band is the next product that we'll be announcing, and this one will be actually flying to Mars on our own ESCAPADE mission. There's other variants in development, as well, and so be watching for more announcements as we expand our RF products line.

I've given you a sense of what the broader strategy is and some examples on how we're growing the business today. I'll just conclude with suggesting that it's working. Rocket Lab's top-line revenue now has over 60% space systems contribution, which is a diverse set of revenue of both integrated satellites and component products. That's really exciting. We're also seeing a huge amount of growth in our component hardware areas. Production capacities have grown from 2x to 4x, relative to the pre-acquisition in many of those, which is important, because we are seeing increased demand. Then the backlog, almost $400 million of backlog that the space systems division will get to work through.

With that, I'm going to hand it back over to Pete, and thank you for your attention.

Peter Beck

Thanks, Richard.

I'm not going to spend too much time on this, but I think we always like to drive this home that everything you've seen today is about positioning us to actually be able to deliver on an application in the future. We're not talking about applications that we might or may or may not get involved with in the future. But I think it's pretty clear that you can see we're building the infrastructure, in many cases have built the infrastructure, to really enable us to go and do anything we want, either in low-Earth orbit, medium-Earth orbit, geo or interplanetary. We have all the capability there, and we continue to build on that.

Now for the meat of this is to talk about Neutron and give everybody a bit of a Neutron update. I guess the message here is this is happening. This is not a PowerPoint hope or anything. This is happening. We

are building this thing. There's real hardware coming, and this is an exciting time. This is a turkey. The reason why this is a turkey is building a rocket is like cooking a turkey.

I was trying to think of something to explain a very complicated thing, but actually it's quite simple. When you start off with a turkey, you get this bird. It's not very attractive, it's gross, and you've got to stuff it, and massage it, and put a whole lot of effort into it, and it really doesn't look great. You burn a whole lot of work, but it's not until you actually pull it out of the oven and you put it on the table that everyone goes, "Oh, wow, that's amazing," and you get that gratification of all of your effort.

Where we are with Neutron right now is we are flat-out staffing that turkey as hard and fast as we can. You'll see a lot of things we're talking about are super, super infrastructure-heavy, foundational things that enable you to do the things you need to do and actually develop the program. So it's coming to life.

Now, one of the things with Electron is it's a carbon composite vehicle, and this black thing that looks like a bit of a piece of staging, that's not staging, that's a piece of tank. That half of a first-stage section of a tank to give you guys a sense of scale of the diameter of this thing. It's big, and that's made out of the carbon composite materials that we intend to fly with.

With a carbon composite vehicle, one of the best ways to determine or understand progress is are you building molds or not? Because if you're building molds, that means that the design is mature enough that you're actually investing in the tooling. Because building a composite rocket is a little bit different to building a metallic rocket. Building a metallic rocket, you basically need no tooling.

You can get started and you can start banging bits of metal together and iterating and iterating and following that path. Compensate rocket, it's like you build the tools, once you've got the tools, then you're banging them out. For us to be at this point where we're building tools should give everybody a pretty high degree of confidence that we are in the program.

Lots of tools and lots of parts coming off tools, and it's really that the toughest bet is building is getting through the design phase to the confidence level that you can go build tools, and start banging out parts, and that's where we are today on that. The first Neutron tanks here you'll see come to life by the end of the year, which is super important, and it's actually a really quite big milestone. I guess the other point here is we're building it. There's real hardware coming off real machines.

I think one of the things that is like turkey stuffing is, like, we had to order machines a year ago or more. These machines that we're building this on aren't your go to Lowe's and pick it up; these are bespoke machines, some of which there's only one or two of them in the world, very, very large 3D printers, very incredibly, just seeing that image there, a very unique 3D printer that 3D prints the machines at the same time.

Then Rocket Lab has its history in additive manufacturing, we were the first company to ever additively manufacture a 3D printed rocket engine and put it into orbit, we've put over 300 engines into space now. So we really know this technology well, and we're really starting to see parts. Like I say, a lot of turkey stuffing to get to this point, because defining the machine, some machines don't even exist, these are machines that have never been built, and seeing all those machines coming online now is super exciting.

A little bit of recap with the vehicle. This wasn't a vehicle that we all sat round a boardroom table and designed by committee; this is a vehicle that was just yelled at us by our customers. Its configurability, its payload performance, all of that is being market-driven. I want to expel a little bit of a theory here. The vehicle is capable of lifting 15 tons to orbit expendable. There are some expendable missions, there'll be some end-of-life missions that we will do that. If the customer requires, it lifts 13 tons re-usable if we land down range; it lifts eight tons if we return it to the pad.

Now, obviously we love returning to the pad, because that will be the lowest cost, it's the least amount of infrastructure; but equally well, we have requirements to land it downrange. Call it a 15-ton launch vehicle. I know that we probably weren't as clear as we could have been about when we call it an eight-ton launch vehicle, it means it's eight-ton returning to the pad, but it's 15-ton Falcon 9 class vehicle. Forty-two meters high, the (inaudible) diameter is five meters, the first stage is a bit over seven meters in diameter, it's a really, really big first stage.

One thing that's changed is we added a few more engines on the bottom, and we've changed the engine geometry a little bit, and we'll talk a little bit about that in a minute. Neutron's famous or infamous for its Hungry Hippo fairing, so it's a slightly less Hungry Hippo now, so it's two hip hearing hubs instead of four, and we made that change to just reduce part counting and complexity. But that's one of the small changes of the vehicle, is now we have a true Hungry Hippo fairing rather than a four way Hungry Hippo fairing.

The first stage major design elements are complete. Neutron is a weird-looking launch vehicle, because it's designed to go up just as much—just as well as it's designed to go down. If you've ever played badminton, I find it an intensely frustrating game, but if you've ever played it, you hit that shuttle cock super-hard and it goes fast for just like an annoyingly short period of time before it rapidly decelerates, and that's because it's got a low mass and a high ballistic co-efficient. The real challenge with the re-usable launch vehicle is actually it's a thermal problem. It's a heating problem on re-entry. It's not a controlled problem, it's not a performance problem, it's a thermal problem.

The very best way to deal with a thermal problem is just to not have one. The reason why the vehicle is carbon composite, super light, very large diameter at the base is because we have, just like a shuttle cock, we have a very low mass and a high ballistic co-efficient. So it decelerates really quickly and doesn't produce a whole bunch of heat. Now, there's a couple of subtle details. If you notice the shape of it is a little bit lava lamp shaped. It's not for any shape for any other reason other than it basically we have a decreasing pressure profile across the vehicles so we don't attach any shockwaves, and it just keeps it cool. Let's just say it keeps all the thermal loads under control. This is not a ‘capsule announcement’ announcement, so we're not announcing any capture just to be clear, but we get lots and lots of people asking us about in-human rating (phon).

The vehicle is designed to be human ratable. You don't design of vehicle at this without that in mind. We don't have any particular programs focusing on capsules, but we're looking at it. Clearly, you're not going to make a vehicle without having that in mind. Just to be clear, this is not a ‘capsule announcement’ announcement. But if we were going to do something, that was what it looked like, in theory.

Then, the second stage is a real pain, because it has competing requirements. It needs to be the cheapest, but it also needs to be the highest performing. Generally, those two things don't go together. But one of the beauties with their construction is that it's very fast to produce, very high performance, lightweight structure, so you get the performance and really low cost. The geometry and the way that we've integrating this payload makes it super easy for customers to get in there and integrate and get out, and really optimize that whole flow.

I mean, we've done this 30 odd times on an Electron. We know what it takes to integrate a payload. We know all the pain points, we know how we can streamline that to save the customer time and cost, and ourselves time and cost, as well. We've really taken all of those lessons that we've learned and piled them into Neutron here. I think composites often get a bad rep. It's like, oh, they're expensive, they're slow to build. If you think those things, you just don't know how to make composite structure, and composite structures have been made in an automated fashion in the aerospace industry forever. I mean, right back to 737 tail-fins.

The process we're using here is called automatic type line. Literally, I don't want to say the word 3D printing, but it's like 3D printing a rocket, but it's not 3D printing. You literally laying down meters of carbon fiber a minute. The time to go and build one of these structures is just super, super short. As a result, it's incredibly cost-effective. We're taking this technology out of the aviation industry and applying it into the space industry here. A lot of people in the space industry thinks this is new. If you talk to someone in the aviation industry, it's just like we've been doing this for years, but we're just applying it to these kinds of structures.

What you end up with is super lightweight, super high-performance structures that are really inexpensive. Carbon composite on a strength-to-mass ratio is at least four times lighter than metallics or steels. You use a quarter of the amount of the material for the same specific strength. The raw material is expensive, but the trick here is you don't actually use that much. Even though the raw material per kg is more expensive, there's just not that much in it. Probably one of the bigger updates is the Archimedes engine, and we'll start to see some (inaudible) here by the end of the year. Shaun D'Mello is going to talk a little bit more about that.

Now, there's a model of it behind me here, you can see that it's a fairly significant engine. It really leverages all of the additive manufacturing technologies and experience over the year. For the rocket geeks in the crowd, you look at the ISPs and go, oh, it's only 330 seconds of ISP, or 367 VAC. For a liquid oxygen methane engine, those ISPs, they're just average. But we're trying to build the most reliable, the most re-usable engine possible. Really, we have such lightweight and high-performance structures that we don't need to extract every second of ISP out of an engine. Why that's important is that these engines are not stressed.

If you're sitting in an aircraft and you look out on the wing, and you look at that turbine engine, you don't want to look out at a turbine engine that's literally running within 1% of its capability of its life. Like, that doesn't make me feel good. You want to look out on a wing of a turbine of an aircraft, look at a turbine that's got hit some margin and hits a safety factor. That thing can just run and run, it can suck a bird and just keep on running and running. That's what you want for a re-usable rocket, and that's what we're building here with Archimedes. We go to pains to saying we're building the most boring rocket engine possible. But that's what's required for it to be successful for this vehicle.

One big update. For all, once again, the rocket geeks in the crowd, they'll look over that and go, well, that's not a gas-generated cycle. What's going here? We did change the cycle from being a gas-generated cycle into an oxidized rich close cycle. Now, the rationale behind this is that as we started working through all of the concept of operations and did all the power balances of the engine and really got down to the weeds, what we found is that we started to get turbine team pitches that we're looking to hire. We started having to make a whole bunch of compromises, because we need this vehicle to be able to deliver a mission to Mars, that means you need really high performance in the upper stage, which means it's probably very low mass. You just butt up against these throttling curves all the time.

Of course, when you're landing, you also need a good throttling, except in the upper stage, you need good throttling and good ISP. We just found that we were continually falling off the curve on the gg cycle. If you have one fixed engine throttle point, great, but we don't. We have a whole bunch of engine throttle points, and we just found ourselves we were pushed right up against the wall, and it really defeated the purpose of trying to build the most boring engine when turbine temperatures were getting too high, the power balance was getting a bit ugly, and we just didn't have any margin.

Now, oxidized rich close cycles are typically the cycle you use when you want the most amount of performance. That is the go-to if I want every second of ISP. The reason why I pointed out the ISP at the very beginning is because if you just dial back the ISP and say, no, we don't need 10,000 PSI chamber

pressure. We only need 1,500 to 2,000 PSI chain refresher. We don't need this crazy ISP. Then what you end up with is just a super, super (inaudible) engine. This thing, the turbine temperatures in the engine, are super, super low. The power balance is just sitting right in the middle. What that really means is we have a heap of scope to throttle up or throttle down, or increase the performance, if we even need to.

Yes, it's the most boring oxidized rich closed cycle engine with the lowest temperature we've ever seen and the lowest chamber pressures, but that's exactly what you want for a re-usable vehicle that just needs to go over and over and over again. That's probably the biggest change here. There's some pump parts over on the tables there, when we go over there for a drink, pick up the pump parts and have a look, there's actually an oxidized volume from Electron there and one from Neutron to give you a sense of scale and the different. By all means, have a look and (inaudible) an engine, as well.

With that, I'm going to introduce Shaun D'Mello. Shaun is one of the longest-serving Rocket Lab members. He's in charge of all launch for the Company. Electron is also running the Neutron program, and he's going to teach you a little bit more about stuffing turkeys.

Shaun D'Mello

Thanks, Pete.

With that introduction, I'll keep it brief. My name is Shaun D'Mello, the Vice President, Launch Systems here at Rocket Lab, and I'm leading the development for Neutron. Pete mentioned the engine being a very critical part of the launch vehicle. It is fundamental as part of developing the engine that we can test it. Typically, that's something that takes a lot of infrastructure, a lot of capital outlay.

With that, today I'm excited to announce that we've selected the A3 Test Complex as the home of testing the Archimedes engine, like the example we see behind me here. This site was originally built to test engines much larger than Archimedes. As you can see, it comes in with all manners of critical infrastructure like cryogenic systems, tanks, test systems, instrumentation bays, buildings, and a whole lot more that can be quickly adapted to support our engine test operations. Beyond the concrete and steel, as well, this whole test site's about a million square foot in area. Moving these tanks and the actual hardware, it takes a lot more to get a test site online and running.

By being in the Stennis facility, we can leverage a lot of their site-wide infrastructure for power systems, transport network, commodity and supply chains, all the little things that make a test site run and tick. We're really looking forward to stepping this up here, and typically what would take in the order of years to set up a test site, we can now jump in here very quickly, modify some systems and get testing in the span of a month.

The details with this test site that we've announced today, we'll have exclusive use of the entire land, as well as all the test infrastructure you see in the image there in that video before, and we'll have this for 10 years with the option to extend for another 10 in lifecycle of the program. I also want to probably shout out to the NASA Stennis Space Center as well as the State of Mississippi for not only welcoming us but also putting forward a generous capital incentive and investment for us to be able to develop this site here very quickly.

It's all systems go for as of Stennis, and we're looking forward to breaking ground here very shortly and seeing some construction to modify this historic sites to what will be a key part of history moving forward with testing the Archimedes out there.

Looking out east, as well. We continue to make great progress in Virginia, the Neutron factory. You might recall we broke ground at this site earlier this year, and it's been a hive of activity since; it was literally a

greenfield when we started, but now it's been cleared, it's been graded, we're pouring our first concrete, and what you're seeing there is actually the site on which will be building our first Stage One tanks. That's something we're very much looking forward to kicking into later this quarter and into next year.

The other thing I want to point out with Virginia, and the uniqueness of this, is the fact that this is more than just a factory to start. It's a development site. It's an area where we can build the rocket, but also test it in very close succession. All our test systems and tests infrastructure will be co-located to some of the production facilities, and that'll really just help accelerate the timeline we've got here in front of us in developing Neutron.

Two and a half miles from the Neutron factory is what you see here is a vision for Launch Complex 3. What you're looking at here is the art of the possible. It's a launch pad that being in such close proximity to the Neutron factory enabled us to avoid all the painful logistics and moving a rocket that's seven meters, get a sense of scale here with the half section across transport ways, and so on.

Having the site co-located with production and launch really enables us to unlock all the constraints that typical rocket programs otherwise face. There's a reason why you find most modern launch vehicles being about a maximum of three meters in diameter, because they've got to go into a tunnel or a bridge somewhere across the coast.

This is a unique proposition that we have here with the launch pad and production facility of major functions being so closely located. But what you're looking at here is Launch Complex 3, and through our partners in Virginia Space and NASA Wallops Flight Facility, we have secured the land to locate this pad. To give you a sense of scale, and those familiar with the Wallops Island, this pad is located between Launch Complex 2, which is currently the home of Electron from the United States, and Pad 0-B there, and we've been able to secure the land to be able to move into construction here very swiftly.

One of the key things with Launch Complex 3 that's been on the forefront of our mind is to have this operation be as slick and seamless as possible. We've had an eye in all architectural decisions we've made to minimize the amount of infrastructure we need on the pad. Ultimately, that just raises the operating cost for a big system like this one here, so that's been at the forefront.

The pad essentially features a static launch mount where Neutron will be vertically stacked, surrounding it are some propellant fans and fluid storage that feed the launch pad and the launch vehicle. In the vicinity is a landing pad where you can receive return to launch site, returned booster; but also what's unique about this is we're laying in the provisions here for sea walls to extend out the sea, and essentially be able to pick up a booster off an ocean platform that returns from a downrange landing. It gives us that extra performance here all within the same capability.

Finally, the big structure you see within place just behind the launch pad there is what we call the roll-over structure, the roll-over gantry. It's indented to effectively slide over the launch pad, support stacking of Neutron, specifically in adverse conditions, provide that extra and enhanced launch vehicle and pillared protection that's sometimes required for certain missions. But also, ultimately that structure is intended for us to be able to operate all year round in adverse conditions, so to be free of any launch availability constraints. That same structure then is envisioned to come out to sea and then pick up the booster that's returned from a downrange landing, pick it back up, take it back to the launch pad, and set it down again.

Ultimately, what this overall architecture really presents us is with, again, a slick and streamlined operations where we're not handling the vehicle multiple times, we're not transporting it through various phases and various parts of the country to get it back to the pad.

Part of the development program, I think, has also seen us have some critical customers onboarded relatively early in the program, and that part speaks volumes to the credibility of the program we have here. Late last year, we signed a contract with United States Space Force for about $24 million to develop the upper stage for Neutron, and also lay the foundation for us to on-ramp Neutron under the National Security Space Launch program.

That is quite an important program for us. It is one that essentially showcases and features all of the nation's most critical space missions, and it's an honor for us to be on-ramp and to be able to on-ramp this early, and be part of a program that helps us get there. We're tracking pretty well for a period of performance so far. We've had our key milestones delivered, and we're looking well to complete this entire contract award by the end of next year.

In addition to the Space Force contract, we've also signed a co-operative research and development agreement with the United States Transportation Command, and this is to really explore using Stage One as a point-to-point delivery mechanism. You've heard from Pete before, Stage One has a whole bunch of energy packed into it. It's capable of lifting sizable Stage Two and then precisely land onto a target, all the key ingredients you need to deliver point-to-point cargo, and we're really excited to see Neutron being showcased in this capacity, as well.

Finally, before I wrap, there's a lot we've updated you on today, but I do want to convey, as well, that the team and I are focused on getting a vehicle to the pad in 2024, but I do want to emphasize that we're not starting from scratch. We've got to compressed schedule in front of us, but what makes this happen is that we have a strong team that's coming off the Electron program, a vault of technology that scales really well from a small rocket like Electron onto Neutron. To put this in perspective, a flight computer sitting inside Electron is about the same size as it would be in Neutron. So just like that, a lot of technologies in avionics, GNC, software, telemetry, command and control, production processes that take a lot of pain to set up initially all just translate across to Neutron.

We don't have to do these things from scratch. We simply leverage the team we have, the technology we have, and port over to the bigger rocket. What you've seen today, too, is we've secured the large amounts of capital we need and the infrastructure we need to get our test sites and launch sites underway. That really lays the foundation for us to go forth and execute on the rest of the program.

Looking at the next 12 months, we've got a number of critical milestones we want to share. Taken off later this quarter into next is our engine pre-burner testing. We'll also see our first building up at our Neutron factory and production complex. Construction will start at Launch Complex 3, the architecture that we talked through here.

We'll see full-scale Stage One and Stage Two tanks coming off the molds that we saw the (inaudible) presentation, as well as the test sites to support their qualification and testing. Stennis will be ready, and we'll also have an all-up engine hot-fire here before the year closes in '23. Other key milestones include our avionics hardware and software coming to life, as well as it being deployed across various elements on the launch vehicle and propulsion systems, and hardware in the Loop facility being brought up online, as well, in the ramp-up through the next year.

With that, we look forward to keeping you informed on our progress. We'll be sure to share how we're going with Neutron, and I'll hand you over now to Adam Spice, our CFO, to give you a financial update.

Adam Spice

Thanks, Shaun.

We'll run some of the financial scenarios here, but I didn't know Pete was going to show a picture of a turkey and talk about stuffing a turkey. If I'd known that, I would have talked to our general counsel, (Inaudible), show like a mattress being stuffed with all the future returns that I hope we're going to generate for investors from all these exciting developments. I don't think he'd let me do that.

One of the things that hopefully came through today is the fact that we do what we say we're going to do. I think on the financial side we're no different. I think Pete mentioned it earlier that we've done a lot of amazing things this year, just delivering on the engineering side, but I think we've made equally as impressive movements on delivering on the financial commitments that we made.

It's hard to believe that it was a little over a year ago that we came public, and I think what's been done over the last year where we had nine successful missions, we've acquired three companies, and we've developed this new rockets. A lot of things have gone very well for us in the last year, and we're very pleased to be able to report those things. But when you look forward, what did we say we were going to do last year when we came public?

Well, we said we're going to execute on small launch, which really means capitalizing on the early leadership position that we had. We've certainly done that. We'll talk in the next slide about how we've done that. But really high-level (inaudible), we are going to execute on small launch, we're going to expand into the larger launch, and then we said that we're going to deliver end-to-end space solutions and we really start to deliver on that vision that Pete had articulated and that we all believe so strongly in.

Some of that involved expanding our portfolio of solutions so that we were expanding our addressable market. That's a theme that is continued here. We're all about opening up more and more market for us to participate in. It's great to have a portfolio, but you need to have a portfolio of heritage-proven solutions. A key thing that drove us to acquire the assets that we acquired in the last year was it's not easy to build a thousand spacecraft here, just like Brad was talking about with solar solutions at 100% on orbit mission success. It's not easy to deliver or develop heritage on the separation systems that are so important when you think about the importance of separating your spacecraft from your rocket reliably. All of these things are incredibly important, and we thought it was the right time to make those aggressive acquisition investments, because to develop your own orbit heritage, it takes a long time, we can do it.

Richard talked about what we're doing with radios in partnership with Johns Hopkins and so forth, but acquiring these assets we felt it was absolutely the right time to do it, and we thought it was the right use of corporate capital to do that.

What have we done? We look at the execution on small launch, it was mentioned earlier that launch is hard, but I think we've made it look pretty easy. You see all launches, we've got 30 launches now. We're really making it look easy, but it's very hard, and I think you can't say enough about when Pete mentioned making your twentieth rocket is harder than making your first rocket, absolutely true. It sounds intuitive, but it's absolutely true. If you could see behind the curtain for all the investments that we've made in the Company across things like quality systems, ERP systems, accounting systems, all the different things that go into developing a company that can develop or put a successful and reliable product in the market like a rocket, it's incredible what has to get built behind the scenes, and we've been very successful in putting that in place.

We have dramatically extend our leadership in small launch. There really is nobody who's even close to where we're at. We've had 30 launches. It's hard to believe I've been around now for 28 of those 30 launches, and you'll see that the next closest person we've had almost seven times more successful launch than they've had, so it's really not even close. We're starting to see companies that are falling out, as well. You've seen people who are abandoning old vehicles and so forth. This is one thing where, again, it looks easy, but it's not easy at all. It's very difficult. When you look at the things that we have, the

progress we've made, specifically on recovery, that just creates a bigger moat around our business. Think about everything that we've done now and put the distance that we have, it just becomes that much more difficult to catch up to us when we have the cost advantages that we'll talk about a little more detail in some upcoming slides.

One of the things that's very important that people don't really appreciate with the re-usability of a booster is the fact that it really drives our ability to push cadence. You're not having to build an entire booster. Again, you could really get back to the pad and support more missions, and that has a lot of goodness. We'll talk about that, as well. When you have cadence, it allows you to absorb a lot of your overhead and brings your whole margin profile into a much better focus.

We also said we were going to build a bit larger rocket. I think both Pete and Shaun have given some good insights into that. We've talked about that. That we're not doing this alone. It's not a *Field of Dreams*: build it, they will come. We actually have partners that we're working very closely with. We have state and local governments that are very invested in our success in this market. Again, it's super important that we're not just building something that nobody has pre-commitment to.

Then, Pete also mentioned the fact that we're leveraging the core of Electron. A lot of the things that we do with the small rocket apply to a large rocket, and it's hard to imagine building a successful large rocket until you've built a successful small rocket, and so we had done something 30 times. The amount of data that we generate each time we launched allows us to de-risk not only Electron platform but also build a smarter next-platform with Neutron, and we're constantly iterating. Then I'm sure everyone's waiting on bated breath to hear the first Neutron Constellation customer contract. Well, it's very important that you pick, just like it's important to make design decisions that are correct, that you don't have long recovery pads if you make the wrong decision. Same thing with picking your customers. We're looking for customers that are going to be multi-year, and we're not looking for one-off and quick hits here. We're looking for the right long-term strategic customer. We have more to announce, we'll talk about that.

Then, executing on the end-to-end space systems vision, there's been a lot of organic developments that Richard talked about some of those in his slides around things like the radios, but we've also done things around battery systems and other parts of the supply chain that are very important. But we've also acquired. So we acquired three companies since coming public last year. I think that probably certainly wasn't the easiest thing to do. Some would say it probably wasn't the wisest thing to do, but, again, it was the right place at the right time. We had to pick up these assets, and we're very pleased with what we've been able to do with them so far. Evidence of that is the fact that we would not have won, I don't believe, the Globalstar/MDA contract if we hadn't acquired these assets. There's just no way.

Ehson talked about the fact that how we've integrated the technology in the teams. Again, if you could see behind the curtains what happened on the CAPSTONE mission, we had people from all the acquisitions playing meaningful roles in getting success for that mission accomplished.

It's also a very important heritage. You'll hear that word used a lot. Heritage is very important. Cost is much less important than heritage. When you think about the years that go into baking a program, the fact that how much risk are you really willing to take to take non-proven flight hardware and try it out on your mission? The answer is very little.

Acquiring that heritage is very important. You can build it, but it just takes a lot of time, and there's lot more risk to it, and you probably end up paying a price for that down the road. Part of what we've done is achieve an incredible amount of heritage, and the fact that we've now got 1,700 missions with Rocket Lab technology, both acquired and organic, and we have 220 missions that are currently in development right now. Again, big backlog, a lot of heritage, so very comfortable with the execution requirements going forward and what we've been able to bring to market.

Richard talked about the backlog. I think that's not only a big number, but if you look at the quality of that backlog and the fact that it's across a diverse number of customers, different types of platforms, it's design services, it's component sales, it's building satellites, it's doing on-orbit servicing and so forth, so it's a very broad and diverse set of customers and also products and services.

Obviously super important is that we continue to grow our exposure in the market. It is a large market today. If you look where we were last year, we were playing in a relatively small part of the market, really focused on small dedicated launch, and then a small subsystems of space components. We were just getting into spacecraft design services business.

When you look at this chart, what you'll see is, in 2024, a pretty big step-up, and that step-up is aligned with the anticipated launch of Neutron. So it allows us to move up the food chain, moves us into the mass scale as far as payloads, and we've matched our market assessment about where we can play, not only from the actually launching other people spacecraft, but also the components that go into those larger spacecraft. This is really an encouraging set of addressable market expansions.

Just as a note, Pete talked about the fact that we haven't yet announced our applications ambitions. This is just launch and space systems; this does not address any space data applications. Again, so we've done a lot in 2022, and you can see the expansion there. Again, through organic and inorganic means. Going forward, it's all about opening more TAM. Neutron, as mentioned before, we're building to address a bunch of needs, not just launching satellites, but the potential for human space flight as well, and then ISS resupply.

Then, we're constantly looking for ways to continue grow this TAM. For us, it's give us more TAM or give us depth. We really have to keep growing this business and growing the way that the different things that we can attack with the technology and the team.

Super important, as well, is increasing the revenue scale and diversity, so a lot of good things obviously come with revenue growth. You can see very impressive growth rates that we've shown over the last several years, growing from a relatively small business in 2020 to now, if you see the performance for the first half of 2022, and then the mid-point of the guidance that we provided for our Q3 quarter.

A lot of great things come along with scale. With scale, on the revenue side, allows us to invest more aggressively. It also gives us more credibility. Again, moving up the food chain and picking up these opportunities, like the MDA Globalstar win.

Also, as mentioned, we're much more than a launch company now. We're known as a launch company, and that's incredibly important. It's a very strategic core part of our business, but as far as building out our capabilities go end-to-end, as Richard indicated in his slides, 66% of our revenue in Q2 came from space systems.

This is a point of diversification where, when Pete and I sat down about five years ago and talked about where we wanted to take the business, we thought, yes, it'd be great if we could get to one third of our revenue coming from launch, two thirds coming from other more diversified applications, and we've gotten there probably about five years faster than we thought we would. So pretty much ahead of track there. Not only are we growing the revenue, but we're growing the diversity of our customers. So become much less single point of failure exposed, so our customer base has actually grown about 3x in the same time period here, so from less than 30 customers to almost 90 customers. Again, great, not only revenue scale growth but also diversity of our customer base.

Obviously, in the long run, it's great to think about going to Venus and going to Mars is the point, but we got to make money. And how are we going to do that?

As we scale the business, we're looking at a few very important things that are going to get us there. Cadence is very, very, very important. A lot of good things happen when you go from launching one rocket per month to launching two rockets per month or three rockets per month. A lot of overheads, if you think about what it takes to run a rocket company, it's a very, very expensive, very fixed-cost-intense endeavor. You want to take advantage of all those investments and spread them over a larger number of units. Cost of goods sold is a big thing where you think about the fact that it's not just carbon fiber and Inconel powder, and so forth; it's people and systems and processes and buildings and equipment, and so forth. We really want to amortize those expenses over a greater number of units.

There are some savings that we can recognize over time through supply chain as far as typical bomb cost reductions, so forth. But that's not where the real leverage comes from. The real leverage comes from spreading over that large fixed cost base over a larger number of units. On the R&D side, we are very focused. Our primary focus right now is delivering the Neutron launch vehicle on schedule and performance. But, of course, we're also putting more investments in our space systems group, as well, but we're very focused on investments that expand our TAM. We want to keep growing our market and being very disciplined about where we put the money. The one thing I can say is I've worked at quite a few successful companies over my 30-year career, and I've never seen an organization that is as disciplined and as, I would say, cheap might not be the best word, but it's a very scrappy organization that does a lot of things with a very small team. If you look at what some of our peers took a $1 billion to get to a first launch, we did with about $150 million. It's an amazing ability for this organization to pivot and do a lot with a relatively constrained resource.

When you look at our path forward, really, you can see we've made progress, and this chart represents spending as a percentage of revenue. Again, you can see the trend going in the right direction, particularly as we progress from where we were in 2020 to the first half of 2022. Again, you can see where we're heading as far as our target, we believe we can create a 50%-plus gross margin business with the operating margins in the mid- to upper twenties. Again, we think this is our path. We've done a lot of tangible things that we're driving to get there. Again, we're very excited about putting these investments in for not just to grow the business, but also to increase our profitability. We'll talk about how we're going to enhance it with the profitability in the next couple of slides.

First and foremost, Electron, we talked about 30 launches. We're really now at the point, as Pete mentioned, turning the crank. This really is turning the crank now. We're out of the R&D phase where it's well into production, and now so how do we enhance the profitability of the business to increase the returns? Again, volume is key.

I'm going to run you through some numbers, and the basic fundamentals here are based on the fact that, today, we're building and launching roughly one rocket per month. In the relatively near term, the plan is to get to two rockets, so are doubling our cadence, and that is a target that we're looking at as our exiting rate exiting 2024. Not 24 rockets in 2024, but actually exit rate in Q4 of 2024. If we can constrain the overhead pools we have today, and, again, as we've all mentioned, we've put a tremendous amount of investment in infrastructure in the Company across people, systems, and facilities. But if we can constrain that, and I think we put enough infrastructure, we've talked about this for a couple of years now, that we can actually build a rocket per week with the footprint that we have.

We don't ever forecast that in our models, but we could actually support the build rate for that. If we can leverage what we've put in place today and go from building 12 to 24, just spreading those over those units gets us a 25% savings over our current cost per mission. If you look at the launch ranges, you saw the slides that Shaun was showing earlier, there's a lot that goes into these ranges. Lot of infrastructure

costs. If we can, again, leverage our cadence there to spread those costs over a greater number of launches, we can get about an 8% reduction over our current cost that we're launching only 12 per year. Of course, you think that might come down more, but really it's this percentage of the total cost. It's not the greatest piece of our expense, but it's meaningful.

We are continuing to invest in our launch range in LC-2, and then, as was mentioned, LC-3, as well, at Wallops. We yield about 8% from those. That gives you about 33% across the volume-related focus areas. Then, of course, we've talked about the Stage One booster recovery. That's a very, very, very big enabler for our margin improvement. If you think about it, if you want to get to step back and just look at it from a perspective of variable cost, if we can grab this rocket, this booster, coming back from space and set it off times the speed of sound with a helicopter, bring it directly back to the range, and estimating a relatively nominal amount of rework to be done—I was actually in New Zealand a few weeks ago, I saw one of the recovered boosters and all the other related parts, and those were in remarkable shape. If we can actually what we think is possible for the minimal amount of rework, put it back on the pad. Of course, a new launch requires a new Stage Two and Stage Three. But we believe that if you can take that rocket, put it back on the pad with minimal rework, it represents about a 62% cost reduction opportunity, which is absolutely huge. It allows us do a few things. Again, re-usability is great for driving cost reduction, margin improvement, taking more share, but also does great things as far as cadence. We can launch much more frequently and support the market with much more aggressive growth.

When you sit back and say, well, for doing 24 launches per year, as Peter mentioned, half of them are re-usable, half them are not, it works out to be a blended cost. Again, we start spreading the overhead over those full 24 units. It works out to be at about a 42% cost reduction, again, from where we are right now where we're supporting one build and one launch per month. When we look at these, we're not putting an audacious numbers out there where we have to launch hundreds of times per year, we're talking about roughly doubling the rate where we're at today in a very early nascent market where we have a very strong leadership position and a lot of advantages over the competition. Again, we're very comfortable on our focus on profitability and how we're going to get there.

The other piece of our business, obviously, is space systems. Now, the great thing about our space systems is it's incredibly diverse. It's a much bigger TAM than launch business. If you look at the elements of our space systems today, all but SolAero are well above our targets for gross margins, so there's not a lot of heavy lifting that needs to get done there and a lot of stars need to align. But what we really do need to do is get SolAero in focus. Now, SolAero is an incredible strategic asset for us to have. We think there's going to be a pretty significant solar crunch coming when these large-scale constellations are coming to market. SolAero is one of three space grades solar providers out there. So we believe that it's an underserved market that's going to get constrained, and we'll benefit from being in the position that we're in. But we need to get our gross margins up from the acquisition level around 10% to around 30%. Given 30% gross margins, we think we can drop about 20% operating margin as a result of a lot of the R&D is really subsidized, and it's not the same level of R&D as you see in some other parts of our business.

Again, we think through a combination of yield enhancements, capacity utilization, and overhead absorption, we can achieve that scaling up to 30% gross margin. Again, when we acquired SolAero, we said that would take place in around two years from the date of acquisition. We're about eight months into that process now, and we feel very comfortable with the progress that's being made and our ability to drive those margins.

As mentioned before, it's a very strategic piece of our business. If you look at it, and Richard and Ehson were talking about having a complete solution, you get to do a lot more intelligent things when you own more of the platform. You can make choices, you can do optimizations that aren't available for people that have to buy components off-the-shelf from third parties, and don't have the ability to very targeted area in

place to get system level improvements. Again, we think the portfolio strategy is really coming into focus, and, again, the MDA Globalstar is a great example of that coming to fruition.

Lastly, I think for folks that have the opportunity to participate in other new space investor days, this is probably not a slide you'll see for many others, the fact that we don't have cash issues. We were very fortunate that we raised a lot of money through our de-SPAC process. We raised $775 million gross proceeds. We have deployed a significant amount of that to the strategic acquisitions. The great thing is these acquisitions don't really require a lot of cash, they're actually generating cash. We did put about $180 million of the money raised towards those assets, and, again, super pleased about what those are delivering and enabling as far as high-end constellation wins and moving up the food channel.

Despite having this relative wealth, we're being very disciplined about where we put our money to work. I will say, again, having worked for quite a few CEOs, I've never come across one as quite as tight as Pete, he's pretty judicious with how he doles out capital. Again, the great thing actually about the Company, too, it's not just landing on Pete, the one thing I've really come to respect about the Company is what gets done with a small amount of dedicated people, and you give them a challenge, they'll execute to it. It's not like this is from my perspective being the CFO. So, that part of the job is easy. There's not a tremendous amount of policing. Things get done because people just want to do the right things for the right reasons, find creative ways to do things more efficiently.

From that perspective, we feel like we're in a phenomenal position, having almost $550 million of cash on the balance sheet exiting on our last quarter, and so really the takeaway here is, we have all the necessary capital resources to do whatever we need to do to execute on our vision and our plan. This is not something where we're wondering about how we're going to pay the bills to finish Neutron.

We really overcapitalized ourselves when we came public, and that was really one of the advantages that came along with the de-SPAC process, was just the quantum of cash that could raise to really make sure that we could go with full conviction to deliver what we needed to and not have to worry about, well, will the markets be opened and so forth, and as we see right now, that ended up being a pretty prescient thing to go out and raise that much money when we could.

With that, we'll open up to Q&A. Morgan?

Morgan Bailey

Thank you so much, Adam and everybody else.

That concludes the formal part of our presentations for today.

Now, I know we've kept you seated for a very long time, so we won't spend much more time on Q&A, but I do want to give you the say to ask some questions. If you'd like to ask them in this format, please go ahead, just raise your hand, give your name and where you're from, and we'll bring the mic to you. If you don't want to ask questions in that format, after the conclusion of this Q&A we will move behind the screen here, and those who can join us for some refreshments, please do. We'd love to spend some time with you, and feel free to ask the team some questions one-on-one.

With that, I'll ask my speakers to come up to the stage here, bring your chairs with you, please, and we will begin the process of selecting some first questions. Please raise your hand if you'd like to ask anything. Right here in the front. The mic.

Male Speaker

Let's get settled in. Thanks, everybody, for the wonderful presentations today. (Inaudible) with ROTH Capital.

You talked about going from one to two rockets, and then 24 launches per year. It seems like from your side you can get there. I'm curious from the customer side, there is a lot of inward and outward movement of customer launches, pushout so forth. How mature is that customer process coming to you? Where do you think you can get there? It's evolved, obviously, from the beginning when it was one prototype rock satellite at a time. I'm curious how that's evolving.

Peter Beck

I would say that I can't think of a time where a customer has waited for a rocket. Generally, we've always got the rocket really, and the biggest challenges that we have, as we call it, manifest whack-a-mole, where one customer we think is ready, but they delay, and then you can't get back that month or that launch window. We're always continually trying to step through it. What we have seen is that the quality of the customer really increase to where most of the deals we do now are bulk buys, which we really like. They're not ones and twosies. A customer will go and find a ride-share, do a tech demo, and then to actually put their constellation in an orbit that can be commercial, they'll come to a dedicated platform where we can place their assets in the exact (inaudible) that we like to see. I would say that the market needs to continue to grow in small launch. The space industry is relatively nascent industry.

The thing that drives our launch cadence right now the most is actually customers turning up on time, rather than anything else, and we're getting better at that. If you're providing a dedicated service, you don't want to ever be in a position where you turn around the customer and say, "Sorry, we're launching this person now", or, "We screwed that up." We are getting more aggressive, and we know which kinds of customers often delay and which ones are always on time, and, in some cases, we'll have two customers at the launch site integrating at the same time, we've got multiple clean rooms there to enable that, and if this customer turns out early this week, we've actually moved them, leapfrogged in some occasions, this year, but that probably continues to be our biggest challenge, is just like that manifest whack-a-mole.

Male Speaker

Great, thanks, and maybe a separate question on Globalstar and MDA real quick. You had a bunch of bullets up that, which were very impressive reasons you won that contract. But at the bottom, as you went past quickly, it said something about a platform for additional communication services. I'm curious, what you might have meant by that language. Was that just thrown in there, or was that really that this could be the beginning of multiple customer engagements like that?

Peter Beck

Obviously, I should let you guys talk a little bit. Obviously, we're building a very unique capability there. This is a platform that lives in a horrible environment. It's got a 12-year life span, really operational. That can be used for a bunch of things.

Maybe you guys want to…

Ehson Mosleh

I can illuminate a little bit. From an engineering perspective, these platforms, the physics really drives what needs to happen. For a persistent communications platform, you need that longer lifespan. In the environment, you need a lot of power to drive consistent and constant communications. You also will need block redundancy in order for you to, in case there's an error on some of the systems, be able to

switch over to a redundant system to not have any gaps in the operational traffic that's required for those businesses.

From an engineering perspective, that's really driving what we mean by platform that can be used for future communications applications. In addition, the makeup of the spacecraft also allows us to scale it such that either with a number of spacecraft, different types of frequencies, different types of antennas, and be able to play with that in order to maybe not the same type of communications applications but something slightly different.

Richard French

I'll just add on the demand side. When we announced that, we had a lot of customers come to us and say, what can you do for us? That's both on the national security, civil space, and commercial fronts. A lot of demand for this capability in its class, and so we're really excited to see what we can do with it.

Adam Spice

It's not to say that, some day, we're not going to own quite a few of these types of spacecraft in orbit and offer satellite as a service, that's ultimately the dream for us. We want to move from event-driven revenue to launches and shipping a satellite somebody else. We think we're very natural owner of space assets. You can either go after and try to find out what the next great gold mine is, or you can find people that already have a gold mine and help them mine it more efficiently with better infrastructure.

We're more leaning towards this point, because we can do that today. These projects allow us to tap more confidence in the fact that we could build the best infrastructure out there. We can support it. Having that launch and having the design and the key supply chain components, it allows us to do everything. Some people look at a deal like this Globalstar contract and say, well, is this really what your model is? Is just to build spacecraft for other people? It's like, well, that's part of the business. It is, but the longer-term vision is much broader than that.

Erik Rasmussen

Thanks for taking the questions and nice job on the presentation and certainly a lot of progress you guys have made since the de-SPAC. It's Erik Rasmussen from Stifel.

Just on the Neutron update. You obviously have a number of key milestones that you put on that one slide. It's a pretty aggressive time-frame to get there. It looked like you were still maintaining the target of, I believe, it was two launches: one test, and then obviously one would be a paying customer in 2024. But of the things that you've put on there, the key milestones, the Archimedes is a design change. LC-3 is a big undertaking in terms of the infrastructure build-out. Where would you see, if you were to say the top two or three where you really feel like most of the effort is going to go in to meet that time-frame?

Peter Beck

Yes, I'll start, and you can jump in.

But the majority of the effort is actually in like stuffing the turkey. Those key pieces of infrastructure are the bits that take the most amount of time and are the least visible and the most amount of—you put tremendous amount of work and you really can't see much for it. Obviously, when you roll tanks out, it's super obvious. It is always long pole in the tent. But the announcement we made today really shortcuts a huge amount of time for us. Like, if you had to go and build all of that engine test infrastructure, that's a big deal.

Those deals don't come together in a week; that's something we've been working for a very long time, just like the launch site. That doesn't happen in a week. We've been working with Virginia for more than a year to secure that land and those facilities. Shaun showed where we were building the factory was like a year ago, it was a giant chicken farm, and there was just chicken wings coming out of there, flat out. Now it's rocket factory. Those are those kind of long poles. The bit that keeps me up at night is not so much how are we going to have avionics finished in time? It's just like the general supply chain is just tough, like buying CNC machines and concrete.

And Shaun, you should talk to that.

Shaun D'Mello

Yes, I think (inaudible) supply chain is definitely interesting now. We're hedging our best, we're pushing all parts in parallel.

I think one thing I'll tack onto what Pete was saying before, too, is it's not a game of developing a launch vehicle with lot of serial things. We don't wait for the engine to be done then to start something else. We're pushing all parts in parallel, and it's largely because we have the teams all listed up. We're not looking to build teams from scratch in many areas. We're certainly hiring a lot and growing our talent base in each one of these areas, but it's definitely not a serial development, too.

Where we can, we're pushing launch complexity as fast as we can, the engine test as fast as we can so that the engine gets bottom line. The fluid systems, the tanks all being built by a separate team, fully focused, as well. I think the other thing I should say is we're playing our diversity of our operations across multiple talent areas to our advantage. We've got teams in New Zealand working, teams on the East Coast and West Coast also working different parts of the project. It's a number of parallel parts, but that's the way we fostered ourselves to get to 2024 to get some hardware on the pad.

Peter Beck

To be clear, the image that Shaun showed of the launch site, that’s in it's finished, complete state, like tap the last (inaudible) piece down and call it done. We'll be coming to market with a much more simplified site than that. Just as we did with Electron, we brought the vehicle to market quickly, we demonstrated capability, and then slightly later we added another launch pad. Slightly later we added other facilities and other manufacturing. Don't expect to see what you saw on that slide on launch day one.

Austin Moeller

Thanks. Hi. Austin Moeller with Canaccord Genuity.

I think recently, Peter, we had had a conversation where you discussed the transition of a lot of these aspirational constellation companies from, they start out with maybe a 3U or a 6U CubeSat Bus, and then they want to go upstream to a larger, more capable platform in the 300 to 600 kilogram range. Can you touch a little bit on how this benefits the Photon side of the business?

Peter Beck

Yes, absolutely. I think that's incredibly correct, and typically we see a lot of technology demonstrators in small platforms and in larger platforms before someone graduates on and goes and builds a big constellation. Sometimes these constellations can be like a BlackSky, which is a dozen, which naturally

flows onto Electron. Then these larger constellations will flow directly onto a Neutron. No, we absolutely see that as consistent across the board.

The really nice thing is that we've worked with those companies building CubeSats, and especially with some of the companies we acquired. They provided the reaction wheels or the software, so it's a really long relationship. The great thing about our long relationship, if you deliver, then you become a very trusted partner through the whole ecosystem. Yes, we still see that today.

Austin Moeller

Awesome. Then just a question on the launch side of the business. I assume you guys are going to go after National Security Space Launch Phase 3?

Peter Beck

Yes, we're interested to see how that's shaping up. We've obviously been working with that customer and giving our thoughts of how are we thinking this NSSLP Phase 3 should look. We're watching to see what ultimately occurs there, but it's pretty hard to get a bit of validation of a customer's belief in your product than them helping you develop it, so I think that's a good sign.

Austin Moeller

Great. Thank you.

Morgan Bailey

(Inaudible).

Nathan Evans

Hi, Nathan from Launch Window Research.

Is Rocket Lab looking into building a Photon-like spacecraft for Neutron, or a modified second stage capable of secondary missions?

Peter Beck

Yes. I presume you're talking about the Photon Lunar. We're really rubbish at naming stuff in some respects. So the Photon Lunar. Yes, one of the nice things about that platform is it is scalable. It's been a very successful platform for us, not just the Curie engine on the kick stage, but also into the Lunar Photon. For geo missions and deep space missions, absolutely.

Now, Neutron is a state of product that doesn't require a kick stage. We've been able to optimize (inaudible) engine cycles and whatnot needing a kick stage; but certainly for a third stage or an interplanetary cruise stage, these are all well within our wheelhouse of our capabilities.

Richard French

It's probably worth noting, also, that in the space system area, for customers that come to us with a problem, we look at how to combine the two and optimize, and so when you don't have to manage across a customer interface, you can design the space vehicles to match up and improve the unit economics. So, we're absolutely going to be leveraging that.

Nathan Evans

Great. Thank you.

Spencer Breitzke

Spencer Breitzke from Cowen.

How should we think about cash burn for the next few quarters in 2023?

Peter Beck

I'll pass it to you, Adam, and can you handle that?

Adam Spice

Yes. We are really very much in the throat of the investment cycle on Neutron. Again, whole reason why we came public in the way that we did was to raise enough cash to make sure that we can fully invest in that. That's really going to be the cash flow consumer for at least the next six quarters. I think our turning cash flow positive, we've talked about exiting 2023 cash flow positive. That's really going to continue to be dependent upon where we are in that investment cycle for Neutron. We're still very comfortable with the envelope of spending that we originally talked about, the amount of cash to develop Neutron, but the timing is always one that's a little bit more difficult to predict.

But the rest of our business is not consuming cash, right. It's all Neutron at this point. We've made a tremendous amount of progress despite the fact that we couldn't turn on resources as soon as we'd like to for Neutron because of CAPSTONE, which is an all-encompassing mission to do this mission to the moon. It's, again, just the way we cobbled together resources and do things as prudently as we can. But again, I think the cash flow, I would say, profile is really going to be all Neutron, all Neutron, all Neutron, with offsets from our other business, including Electron and the rest of the space systems.

Mariana Perez Mora

Hello. Mariana Perez Mora, Bank of America.

As a follow-up to this cash flow question, how do you think about free cash flow conversion whenever you are at this 2024/2025 volume where you've doubled Electron launches, where you have SolAero already at target multiples, and where you have already launched Neutron?

Adam Spice

I missed the beginning of the question. It was hard to hear.

Mariana Perez Mora

Sorry, free cash flow conversion. Free cash flow conversion

Adam Spice

One advantage that we've had, particularly on the launch side of our business, is the fact that we get paid against milestones. We recognize revenue when we launch a rocket, but we collect cash all along the

way. Typically, we've collected about 60% of the value of the mission by the time we actually start to build the rocket. I think we have a very virtuous cash flow and cash generation cycle from that perspective. But again, once Electron is again at the target of 24 per month and we're past the meet of the investment curve on Neutron, I think we'll still deliver pretty sporty cash flow. But again, I think it's timing is really the question, whether that really turns the corner in mid-2024 or 2025.

I think, as Pete mentioned, when we were talking about the investments in Neutron that we'll come up with our first minimum viable product that we'll launch so we can get some heritage and also get some revenue-generation coming. But we're going to be investing in Neutron and the whole facilities around that for probably at least the next three to four years. Again, it's all about the timing and when that starts to taper off and how that dovetails with hitting 24 launches on Electron where it's at our model and then continue to grow the other parts of our business, particularly some of the space systems projects and portfolio solutions.

I hope that answers your question.

Jonathan Safer

Hi, Jonathan Safer from the Harlem Launch Alliance.

Could you talk more about the reason for your switch from seven engines to nine on Neutron, and also how that might affect engine out capabilities?

Peter Beck

Rocket is a joint engineering trade. We only want to build one engine. Two engines is an optimized scenario, but the reality is that it's double the amount of development program. The engine that sizes the whole problem case, if you will, is actually the upper-stage engine. The problem space that really defines that is maximum G-loading for like a geostationary mission. We have a relatively light payload and you're going fast, so you need high energy.

That basically sets the thrust level that you need to meet without exceeding the G-load. Once that bounding cases set, then you've got a couple of options. Either you have a big engine that you've throttled way down. The trouble is you start losing ISP on that upper stage, which is not what you want, or you shrink that engine down. Now, it's a happy coincidence that the upper-stage engine also pretty much matches exactly the thrust requirements for the landing engine. It wasn't like it was one bounded case.

Those two binding cases drove the particular thrust class. With those two cases down to make the performance requirements on Stage One, then you just have to add more engines. It's really an optimization thread that you need to run to minimize the development timeline by not having multiple engine development programs against particular mission profiles.

Thomas

Hi. I'm Thomas from Gilder (phon).

Long term, I think you guys outlined about a 25% EBITDA margin with efficiencies from Electron shrinking the total or like doubling the volume, increasing SolAero margins, and I think that just speaks to your incredible execution and your ability to vertically integrate all of these different parts of your business. But since you're dancing with elephants, competing with SpaceX and others, and you have to continuously build newer rocket models like Neutron. You funnel all those cash flow and all the savings you get from all these production efficiencies from Electron, it's developing Neutron. When Neutron gets built, the same

processes are going to get better as you get better at making the production efficiencies with Neutron. But then it's going to be 2025, 2026, and there's going to be another new thing to do in space and you're going to have to continuously build another rocket model.

I'm just curious about how you guys think about returning cash to shareholders versus continuously funneling it into capital expenditures, and whether you see a target percentage of Capex as a percentage of revenue, long term?

Peter Beck

I'll do part of it, and then, yes.

I'm not sure that you need to continually develop rockets. I don't think that a continued evolution assumption is correct. Building rockets, it's a big deal. It's great to get it done twice. I think if you asked anyone to do it a third time, it's just, no, I'm out. What we're trying to build here is a platform that if we project forward and we look forward and we talk to all the customers, it's a platform that we see to be very enduring in time. Yes, there might be other platforms that other companies develop for going to other destinations and doing other things, but this classic launch vehicle has existed since the beginning of time with Soyuz, and I don't see any time soon that it's going to get phased out.

I'm not sure we continually need to chase rocket development. I think what we've proven that we're good at is finding a target market, and executing on that target market, and being able to be best in class in that target market. We're always going to develop stuff; we're not going to stand still in any way, but we are only going to do stuff not because we have, like, Pete's got an internal passion to go and do something because he wants to do something. It's like everything is a business-based decision. The one thing I would say about Rocket Lab versus some of the other space companies out there, it's this is not a passion project, this a business. All the decisions that we make are around, exactly to your point, how do we return value to the shareholders, to the Company, and how do we have an impact to humanity? That's the whole point of it.

Maybe, Adam, you can add some more economic financial elements.

Adam Spice

No. I think Pete hit on the fact that we don't constantly plan on iterating a new launch vehicle every three to five years, that's not the model. The model is to use our capabilities and the launch vehicles we have to actually create almost like recurring revenue streams on orbit. Again, our whole plan here is not to build satellites just strictly for other people. We want to be generating a cash flow machine from assets that we own up on orbit eventually, and how we apply those into what applications, or whether we're supporting customer applications verses our own, that's different. I think that, again, our model does not revolve around the next big rocket. As far as what we've modeled as far as investment in Capex, we're taking a more traditional aerospace model of once you're stabilized around 4% of revenue each year into Capex.

Morgan Bailey

We've got some time for probably two more questions today, before we need to wrap up. I know I've kept you long enough. I think we've got just one question there, Michael?

Male Speaker

Yes.

Adam Stettner

Adam Stettner, Special Situations Funds.

Quick question on the Rutherford. How many life launches do you expect its lifespan to be?

Peter Beck

For the Rutherford engine, or the vehicle?

Adam Stettner

I guess we used Electron. But I would—

Peter Beck

We're going to use Electrons, yes. Look, it's an iterative process. It's probably too early to give you a hard and fast number. What we can say from the testing we've done and the hardware that's been returned, it's really in good shape. The moment I give a number, then the number is going to be that this is a number. But, for example, one of the elements in the vehicle that is the most perishable, if you will, is the batteries. We've just finished up a big battery program that enables those batteries to be re-flown at least 10 times.

Prior to that, it was a one-shot wonder. Those batteries, we draw down one megawatt in 160 seconds, the batteries turned themselves inside out and we're done, we're on orbit. But we've really spent a lot of time on those batteries now that we know that we can do those at least 10 of those big discharges before we need to go and touch them. The battery represents quite a significant part of the refurbishment. Certain things will have really long life time, like a vent relief valve could go 100 times, and batteries can go 10 structures, it's too early to say. At least on a propulsion system, 20 hot flies on a Rutherford is pretty blasé, so different aspects of the vehicle will have different lives.

Adam Stettner

Okay. One quick follow-up on your Archimedes. Given that it's oxygen rich, do you have to use—can you use off-the-shelf materials so you don't have to develop any metal?

Peter Beck

Yes. There's no material science in there at all.

Adam Stettner

Because you're running it cool?

Peter Beck

It's cold. We're not even doing any contortion in there whatsoever.

Adam Stettner

No hydrogen.

Peter Beck

Yes.

Konrad Kelling

Hi. Kon Kelling, Barclays.

If you could, just maybe discuss and quantify the pricing trends that you're assuming in your long-term margin targets. Then talk about how you balance that versus a persistent cost inflation environment. Thanks.

Adam Spice

I guess I'll take on the pricing trends assumed in our model.

We've actually been seeing increased pricing on our vehicle. When we first started back in 2017 with our first initial flights, we were pricing the vehicle a little under $5 million, about $4.9 million. Now our average off-the-shelf prices for a standard mission is $7.5 million. In our model, we actually assume about 2.5% increase per year in the selling price for a standard launch. Now, inflation certainly has been running higher than that recently. But at the same time, the synergies that we're realizing and the learning benefits, the learning curve that we're riding in producing the vehicle, and then the increased cadences to absorb those overhead costs, (inaudible) enough so that we're not really worried so much about fighting pure inflation in our pricing model and in our cost model.

But I hope that answers your question.

Morgan Bailey

Okay. Well, thank you so much, folks. That is the end of our Q&A and of our formal presentations today. Thank you so much for your patience and for coming out today in person. You are very welcome to join us for some refreshments afterwards. The team will all be here, so do feel free to ask any remaining questions you have of them. Also, all of you will have my contact details now, because I've emailed you, so do feel free to send any follow-up questions through to me, and thank you again very much for coming along.