



Technology stocks to watch

Investment ideas and insights from ASX tech companies

Alan Kohler's

The Constant Investor

Foreword



The thing about investing in technology stocks is that, to some extent, all companies are engaged in technology, or at least they should be. I'm not saying that all companies are technology stocks, far from it, but if you think about it even the firms that you might think are the furthest from being tech stocks, are actually in it up to their barcodes.

Take a supermarket: it's constantly having to improve the technology in its checkout systems and its supply chains. The same goes for any retailer for that matter, not just online ones.

Banks are obviously tech stocks because money is digital these days and most people engage with them online now, most of the time. And every business these days is focusing on the data they collect and how better to use it to understand their customers.

For The Constant Investor I interview a wide range of corporate CEOs and with all of them, at some point, the conversation gets onto technology and data, without exception, no matter what business they are in and no matter how small or how large they are.

But this exclusive e-book of TCI interviews is with a selection of my favourite small companies, usually start-ups, that are at the forefront of technology.

In the book I have tried to cover all of the most exciting developments going on at the moment: the internet of things, 3D printing, artificial intelligence, space, energy and some things you might not have thought of, like family cyber safety and intelligent sound.

Many of the companies included here, if not most, are "burning cash" as they say in venture capital land – that is, they are not yet covering their costs with revenue and therefore not making profits.

Conservative, institutional investors generally steer clear of these firms because they can't apply normal valuation methods like the PE (price earnings) ratio. They know the P, but there's no E.

How do you value a business that's not making a profit? Well, it's not easy, some would say impossible and certainly you can't use normal investing tools to do it.

But there are two things to note: first, as long as a stock is reasonably well traded, there is a daily auction going on, so you can have some confidence that you are paying a market price and not one that's set by someone with a vested interest; and second, with all early stage companies you are investing in people, not assets that are susceptible to maths.

Obviously the basic idea of the business has to be a good one, and the patents must strong enough to create some kind of moat around the company, but what is always most important in a start-up is the drive, persistence and, above all, integrity of the men and women behind it.

That's why one of the key pillars of The Constant Investor service is long (30 minute) interviews that I do with CEOs every day. I've been around for 48 years talking to business people and following the markets, and I've seen it all.

I know what to ask managers to get to the heart of how the business makes money, how wide its moat is, what is its cash position, and most of all what's the character of the individuals behind it.

I'm not saying that we can learn everything about someone in half an hour, far from it, or that a skilled operator can't pull the wool over my eyes – especially when we're just talking on the phone.

But I am saying it's a good start. The way I think about these interviews, and in fact all of the ones I do for TCI, is that they are "research starters" – a good basis for a decision about whether to look into the business more deeply, before deciding whether to invest,

You might decide that one or more of the businesses in this collection is interesting enough to invest in immediately, and that's fair enough. I would only urge you to not put all, or even most, of your eggs into one basket.

Perhaps the most important thing about investing in early stage technology businesses is to spread your risk. Some are definitely going to fail, and it's impossible to be sure which ones, no matter how much due diligence and research you do.

Technology is moving so quickly that sometimes even the most nimble geniuses get left behind, or run over.

The final thing to note is that all of these firms are global: the business of technology, and in fact all business for that matter, is unconfined by borders these days, and the margins are usually such that only a global market will do.

That makes it both harder, more exciting and more rewarding.

I hope you gain some valuable ideas and insights from the e-book.

Cheers

Alan Kohler

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Fadi Geha is the CEO and Executive Director of a microcap business, Simble Solutions.

It IPOed in February this year so it has only been around for a few months on the ASX. It's a software as a service (SaaS) business and has both an energy management platform as well as a mobility software offering. It's selling the energy management software in the United Kingdom (UK) to go with smart metres that have been mandated over there.

It has a distribution deal with Optus and Synnex in Australia, and Powercor in the UK.

Fadi, perhaps we can just start with the cash situation because you were queried this month by the ASX, wondering if you were going to run out of money I think they were and I think they noted that you had negative cash flows of \$2 million for the quarter and you didn't have much left in the bank, so why are you going to be okay? Tell us about your cash position.

Very good question there, Alan. I mean, the whole point of raising money obviously through the IPO process was to obviously cash flow the operation as we scale up in both Australia and the UK. We had always known that the March quarter for us is a low cash collection quarter because most of our customers are basically July to June renewing customers, so really most of the collections happen in the third quarter. I guess where we would have been better served was obviously providing the cover letter which we had actually prepared to issue out at the same time as the 4C. As a result, by missing that date by a day, we got the query from the ASX.

We had already prepared the cover letter to explain basically how our business model works. We obviously leading up to the IPO had some one-off costs which related to the IPO which all had to be paid in that quarter, so we had a very large abnormal non-recurring outflows for that quarter. But moving forward, that is not typical of the quarters that we would have and as a result we obviously got the query from the ASX.

You did, that's right. A lot of the costs from the IPO would have come out of the bank which was unusual. What's your current kind of run rate now and what's your cash inflow position look like now?

Where we stand – and obviously I can only disclose what we've sort of disclosed to the market – we had a net outflow for the quarter of March of \$1.25m, we foresee the June quarter to be very much in line with that. Most of the costs related to the IPO were, as I said, paid out in that. Then, as per the announcements we made with regards to the Optus channel and the Synnex channel and our partnership in the UK, we anticipate that we'll start obviously showing sales from those channel partners very soon and as a result will start to add to our current recurring revenue stream. So, we'll get into a more normalised business as usual.

As disclosed in our prospectus, we've got very strong targets we're aiming to achieve as far as EBITDA results for '18 and '19 and as a result we anticipate to move away from the weak quarter that we had in March.

Just before I move off the cash situation, the deals you've got now with Optus and – what is the other one, Synnex?

Synnex is the distributor that we announced recently and obviously PowerCore is our first channel partner in the UK.

They're not promising cash, are they? They're just going to distribute for you, so you don't know for sure whether you're going to get cash in the door from those deals?

Well, we don't know for sure, but where we're sitting here at the end of May is we've got obviously line of sight as per our latest update for the AGM, we included that in the update that I provided to everybody that we've signed up these channel partners as per the prospectus and everything's going to plan for us to start transacting through them with their customers. When those customers come on board, for us to deliver our solution to the market we obviously sign up the channel partner who then signs their customers. They place orders on us and we obviously then provide software and hardware solutions. We invoice for that and we collect cash for that as well and we'll be able to address that.

Let's move onto talking about the business, what your solutions are, and perhaps in answering that you can just take us through a bit of the history of the business? Because you started the business or a business called Acresta, which ended up turning into Simble Solutions, tell us how that occurred.

I founded Acresta in 2009 and the key driver, I guess, was to build a business that would be able to offer sustainable solutions to the market, primarily helping businesses be more sustainable. Our first solution was a carbon accounting solution used by corporates to disclose their carbon emissions. We then expanded that capability and went into the area of what we call workforce mobility and we offered a solution that helped businesses' workforce be more productive. All of them were software, as I said, the solutions enabling businesses to be more productive from this point of view with mobile apps.

About three and a half to four years ago we saw the opportunity to rollout what is now our Simble Energy Platform. We built a software as a service solution once again to help businesses visualise their energy. I saw the opportunity in the UK, it required scale from both an R&D capability and sales capability on the ground in the UK as well as obviously here in Australia. We went out to the market to look at potential partnerships and we identified an organisation that built an R&D capability offshore. We felt that there was good alignment between their skills and capability and between our commercial footprint in Australia and where we wanted to go with the UK.

We basically brought those businesses into our business and then raised some money under a convertible note last year and then set the company in motion for an IPO. That's sort of how Acresta merged into becoming Simble.

There seems to be two solutions that you have, one for energy and one for, as you say, mobility. Are they basically the same things that you had in Acresta or you've developed them a fair bit since then have you?

They're basically what we started with in Acresta, but obviously we've developed them for especially the energy solutions. When we first built the energy solution it was working with one specific energy metre and our solution's always been about being what we

call hardware agnostics. We're a software provider and we aim to work with multiple hardware or energy metres or IOT devices. On the back of the investment, on the back of the plans to expand into the UK, we wanted to make sure that we would be agnostic to the underlying data collection device.

We can connect to a utilities metre, we can connect to energy metres or sub-metres to get a more detailed circuit level monitoring. We can also connect to IOT devices or internet of things devices. We've expanded the capability in order to be able to address the needs of both what the UK market needs for its SME businesses as well as what the Australian market needs.

And are they two different things?

Interesting. Well, they are in a way. The UK's a lot more mature when it comes to understanding that to drive energy demand down you've got to start with energy efficiency and to get energy efficiency you can't manage what you can't measure, so therefore let's start with the measurements. There is definitely a mandate from the UK Government to firstly rollout 53 million smart metres across homes and businesses by the end of 2020. That's driving, I guess, a de-commoditisation of data. What it means is businesses will be able to have this data but what they're needing to understand is what does that data mean? We're basically working conjunction with our partners in the UK that we're, a) signing up; and b) looking to further engage, potentially utilities as well. We'd want to take our software, bundle it with their capability and take it to market, to their SME clients as a value-add so those clients can understand their energy footprint and then do something about it. The other play in the UK is actually a residential play as well. We recently announced a partnership with Utiligroup, which is sort of stage one of that partnership, and they're a provider to quite a few of the disruptor utilities in the UK.



Similar to the Australian market, there's about half a dozen large UK utilities and then there's 40-50 odd smaller players who each have a healthy customer base, but they're

Simble - Energy Management (ASX:SIS)

looking to do more for them. They're looking to engage them with data and analytics and software. What we're looking to do is to be that software provider to those utilities who will white label our solution to offer it to the market. That's one of our channel models in the UK.

What does your software do that the smart meter software doesn't already do? I'm just surprised – if they're selling smart meters I presume they come with software. What does yours do that isn't already in the smart meter?

I think the key thing is, the smart meter is fundamentally a digital version of the analogue meter, it's capturing data still at a macro level. It's not diving into the detailed usage within a business, it's saying for this business, whether it's a manufacturing business, a warehousing business or just a small High Street business, you're getting visibility of your full monthly bill or you're getting the last day's usage. What you're not getting is an understanding of, is your usage linked to this piece of equipment? Is it the lighting? Is it the power points? How much energy's being generated by the solar panels if you have any? Where are the potential areas for savings and efficiency?

What we're doing is we're overlaying our software on top of those meters and keep in mind that the smart meter rollout hasn't quite happened in full anger, so to speak. As a result, there's still quite a few 'dumb' meters out there and they still need that level of information. We sit across the top as a visualisation,



granular visibility of meter data down to a circuit level if need be. Which means – I'll give you a home example, I guess, keep it simple. In the home there might be a pool, there might be solar on the roof. People would understand their electricity usage, lighting versus the

power points, we can give that level of granularity as well as obviously the overall visibility of what's happening across the entire home.

Being able to see that, people can make informed decisions. Do I move my pool pump for instance in

a residential case to daylight because I've got solar panels on the roof and I can use the energy generated by the sun to actually power the pool pump? Those same decisions move to a business obviously that's spending tens of thousands of dollars or pounds per month, can generate significant savings for them for not much of an outlay.

Is it only useful if you have got solar panels on your roof?

No, no. I think the first step, in fact, is all about understanding what the usage is. Businesses that were clients of ours, they will literally put that in as a baseline. They get a baseline of understanding which piece of equipment is using up more energy than another, which one is less efficient? Have they got all the lights coming on because the first employee walks in the door a certain time, therefore everything is turned on? Do they have areas where the voltage is out of play and therefore potentially one of their pieces of equipment might have a shorter lifetime because it's been incorrectly used?

They get a baseline understanding and then they implement whatever energy efficiency projects they will. The example in the UK, PowerCore, they're a partner of a major LED lighting OEM. For every project they're now going into their customer base, they take out solution as the baseline measure and verify. They put in the capability that we have, they then highlight that there's a need for LED lighting savings here of 20-30%, whatever the savings that can be achieved through replacement of lighting, and then they show through the replacement of lighting how the energy bill has actually dropped from post implementation of the LED lighting.

It becomes a business case justifier for that business client to go, well I want to roll the same solution out to my other site and achieve the same savings and then I will look for the next area of savings within the business.

Do your partners incorporate your solutions within their service or is it an added extra that they offer?

The objective we're working with is the really sticky partners, incorporated into their service. PowerCore is a perfect example of that. Every client that signs up to buy LED lighting or have installation of energy efficiency projects that PowerCore provide has our

software bundled into their capability as part of their offer with their logo on it. It becomes – to use the analogy, we're like the intel inside in this case. Our software's just got full branded for the partner and the partner's taken it to market as their differentiator with their customer base.

Tell us what you get out of that? What's the price that you achieve from say, the PowerCore deal?

It is a little bit horses for courses, but as we disclosed in the prospectus I think the easiest way for me is to quote the numbers we quoted in the prospectus which are pretty much the average transaction that we see. Our average contracts are anywhere between three years and five years as a recurring SaaS fee and the average client is paying \$1,200 per year for a typical site installation. Obviously, large manufacturing sites would skew that further up while a resident at home would be less. The average transaction, when we talk about customer sites coming on board, the average transaction would be in the vicinity what was disclosed in the prospectus at \$1,200 per year of SaaS fees.

Do you expect that those sort of fees are always going to come via deals as with PowerCore, whether you're embedded in a service that your partners are providing or you're going to sell them directly?

Our whole model is to sell via the channel. The question then becomes, are they embedded as part of the channel's standard service offering or are they value-add. In Optus's case they're value-add. Optus obviously has their customer base, their SME clients who obviously use them for telco services. They are taking our solution as an additional value-add over the top of their current offering to provide a further differentiator, being able to give a business owner the ability to then understand across their multi-site business, the energy use all the way down to a circuit level and then be able to do something about it. In that case it's on top of their current value offer to the market.

What about in Synnex, the one you've just signed?

Synnex is a distributor so an example that might be in the market, there's about two or three distributors in the market that move technology. Ingram Micro is one, Dicker Data is one and Synnex is a significant player in the Australian market and the Asian market,

headquartered out of Taiwan. They move technology product, be it hardware or software. Obviously in our case we're providing it with a combined solution that they then distribute through their network of channel partners of which they have over 6,000.

Those resellers can be anything from corner stores that maybe work with manufacturing clients in Western Sydney or the Eastern Melbourne manufacturing belt. Anyone that basically distributes technology. What they're looking to do is to target, in their case, who are these sort of resellers who are actually working with the customers in an area where energy is a large cost centre item for those businesses. They will offer them the hardware with the software solution bundled as one for that client to actually use. In that case once again it's a distribution model, they go via their channel or reseller partner to the end SME customer and we provide product through the distributor to the end SME customer.

Can you tell us what percentage they take?

Well, it's commercial in confidence, but typical distributors – I mean, the distributors work on obviously lower margins but they're the warehousing logistics provider. Pretty much they are the first port of call for us, we provide product to the distributor, then we do some co-marketing with them, they then provide it through their selected channel partners that they know they can move product quickly for them and then obviously through that model the reseller has to take their cut and ultimately, we keep the majority of that. But when we talk about a channel model, and we disclosed that in our prospectus, it's a 70/30 split. Roughly speaking, we're keeping 70% of whatever the end customer fee may be, we're keeping that as basically our recurring SaaS model.

Does the customer become your customer or does it stay owned by the distributor?

It stays really owned by the reseller who's sort of the halfway between their distributor and the end customer. That reseller has the relationship. They're the ones that are servicing that customer, potentially upselling other technology solutions to them, they own the customer relationship, we are literally two levels behind as the software provider behind the IP.

Is PowerCore at the moment the only relationship where you're in fact, white-labelled or you're sort of embedded in the product?

No, we have partners in Australia that were sort of disclosed prior to the IPO. We've got energy services consulting companies who signed up companies like Energy & Carbon Solutions, who work with large industrial companies to help them with energy efficiency projects, they also white-labelled our solution. Companies like Endeavour who are also in the environmental consulting/energy consulting space, all of these guys basically the analogy I've used in the past is it's a bit like what Xero the accounting software is for the accountant. The accountants obviously differentiate by providing their own professional services, but they use a standardised software product as the solution they provide their end customers.

Companies like Endeavour, Energy & Carbon, pit&sherry, Pangle & Associates, they're all sort of very focused on the energy consulting space and use our software as the key differentiating tool for their measure and verification process for energy management.

How many energy subscribers do you have at this point?

Actually, it's interesting, we recently in our AGM presentation talked about the fact that we're the fastest growing energy management software company listed on the ASX.

“We've been growing at a rate of greater than 100% year on year and that was before we signed up the most recent channel partners in 2018.”

We're currently sitting at over 75 customer sites and that's been growing at a rate of greater than 100% year on year. We're very optimistic about the channel model now it's starting to deliver results for us.

Tell us about your mobility software. Is that an entirely different product and different solution to energy?

It is. It is a different solution. It was very much sold direct. We took the solution to market as a direct solution to enterprise customers. We're in the process now of also recognising the value of being able to leverage a channel and being able to rollout a solution to a channel. We see the opportunities to engage the same customer base that we've signed up directly on the mobility side, to engage them on the energy side and vice versa, to look at ways to rollout mobility more volume play versus the original business that I built, which as you can appreciate, a small private business than when it started was about signing up customers directly and offering professional services to supplement that. The model now has shifted to being a pure play software as a service volume play via our channel partners.

What does the mobility software do?

In its simplest form, clients that use it basically are looking to move what would be paper based processes onto smart phones and tablets. Think of a council that might do tree inspections or building inspections or any asset inspection and they might have in the past done that on paper and they decide that moving forward they want to be able to streamline the capture of that data and remove the opportunity for error I guess or rubbish data being collected and therefore not being able to actually act on it. What they've done is they've looked at using our capability in order to streamline that. We move these paper-based forms onto what we call smart phones that can be captured by that same workforce and then the data will feed straight into their IT system. It removes the double handling and the potential room for error in capturing information in the field. It's a heritage business, we're looking to grow that not at the same rate, or I guess, focus on the energy one because obviously the energy one is more of a volume play for us and a faster way to market.

Is the energy one the only one you're taking overseas or are you selling the mobility thing around the world as well?

The energy one is the one we're taking overseas and when we say overseas we're really driving that Australia across to the UK and the reason for the UK one is because of the legislation and the mandate. We've taken sort of a laser focus on the energy solution for the UK market so that the discussions we have – it's a common pain point we're seeing when

talking to potential clients and those clients are really channel partners in the UK and we want to make sure we service their needs first.

Is that the only place that's mandating smart meters?

Well, actually it's interesting, the entire EU is very much pushing for smart meters and there's a penetration starting to happen in countries like Germany, France, Italy and Spain. We picked the UK because it was the one that had probably the strongest mandate that had passed the test of time, been in play since 2006, change of government regardless, they're still pushed through. The highest number of disruptor utilities entering the market also is in the UK, so we felt that it's a good place for us to basically establish the beach head and then start to engage customers.

We also see the UK as providing some leadership back into the Australian market. Australia's got some disruptor utilities now obviously, nowhere near the same number as the UK but they're all thinking the same, which is, how do I engage my customer better, how do I stay closer to my customer and obviously try and prevent them from churning. It's obviously a lot easier to keep a customer than trying to win a new one. There's a bit of shift in mentality happening in Australia I think on the back of what the UK started.

But smart meters are going to go global eventually aren't they? I mean, what's happening in the US and China with these things?

US is obviously a huge market and in a way it's almost state by state based, so if a utility is operating on the west coast it's probably thinking more about how does it cater for its clientele, whether they're business or residential, who might be a bit more aware of their energy usage and a bit more sustainable in their thinking. But ultimately there are hundreds of utilities in the US and the opportunity there is obviously rife as well. They're all heading down that same path. We just picked the UK market for the reasons I explained earlier but that doesn't mean that the opportunity doesn't transcend the UK, it definitely does.

It's interesting, you mentioned Xero before and the accounting software business is not that competitive. I mean, Xero is obviously coming in and disrupting MYOB, MYOB's responding. Paint us a picture of your market, is it competitive and crowded? How many competitors are there that you're up against?

It's interesting. There's lots of players that operate in what I would call the energy management software space. My background was large technology vendors. The largest of technology vendors would suggest that they work in the same space as a small private company that may be working with one energy consulting company. There are many players out there in the market trying to service a variety of needs. What we've decided to focus on is helping businesses, specifically SME businesses, be more agile, more energy efficient, by giving them solutions that really are at a price point that they can afford. There are solutions that are significantly more expensive and might offer other features that we don't feel are going to deliver the return on investment that the target market that we're going after are interested in.

We're not unique in the market in our own right under the code of an energy management software company, but what we are unique is our focus on SME businesses in the two markets of Australia and the UK. We've definitely done some price comparisons out there and I felt that in order to work with channel partners who are wanting to obviously engage customers and be utilities, for instance, who want to disrupt, we needed to also be a disruptor in the price point. We've really priced it in a way, as I've referred to earlier, that we feel we're coming in at a price point that any company that has energy as a pain point or doesn't even realise energy as a pain point for them can actually make use of our technology for a very, very affordable price. I think the key thing is businesses aren't appreciating how easy it is to get started, I guess, because they get the bill shock, they come for contracts and all of a sudden they go, 'Energy is such a high cost for us and we hadn't budgeted for it.' They expected a CPI increase and that didn't happen. We definitely feel we're very competitive in the price points and that's the feedback we're getting from our channel partners as well, especially when we consider that we are white-labelling. I say it in the nicest possible way, we're not precious about our brand being front of centre, we want our channel partners to basically sign up their customers and get stickier with their customers by leveraging our technology.

Interview conducted 28th May 2018

FlamingoAI - Virtual Assistants (ASX:FGO)

Dr Catriona Wallace is the CEO and founder of Flamingo AI which is a listed company that has been around for a few years. It's still burning cash but it's just about to really start stepping up the sales effort.

In fact the other day, the shares jumped 13%, well it was actually just from 4.4 to 5 cents per share but still 13%, up to a market cap of \$45 million after they did a deal with a US insurance distribution business called EXL.

I think it's a very interesting artificial intelligence play. What they do is they make artificial intelligence or machine learning virtual assistants to help companies deal with their customers online to take them through sales processes. It looks like it's a very interesting proposition, I think it's worth a look, certainly worth listening to or reading the interview.

Catriona, can you give us a bit of the background on Flamingo, when did it start and when did it become a listed business?

I founded the company in late 2014 and took the business to the US where we became a Delaware company, so we did a flip up, became a Delaware company, put the head office in New York but kept the data scientists and developers in Sydney. We then decided that it would actually be a better strategy to build a global artificial intelligence business out of Australia rather than out of the US and so brought the business back in November 2016 and listed it at that time and so we have been in the capital markets just under 18 months now.

And just explain the product, how it works.

We're in the artificial intelligence field, we're a machine learning company. Our point of differentiation is that we do unsupervised machine learning and this manifests as virtual assistants that we sell to large financial services companies in the US and in Australia. Think of it like a chat bot on steroids, our customers or our clients use our virtual assistants to guide customers through their financial

services product purchase or customer service experience.

Right, but do you sell it once off or a subscription and how much do you sell it for?

Yeah, so we deploy the virtual assistants, it's typically around \$100,000 to do an installation and set the virtual assistant up and get the machine learning brand trained. Then we do a monthly subscription model and on average that sits around \$300,000 per annum for one virtual assistant who is guiding customers through one particular process. So, life insurance quotation, that may sit around a \$300,000 a year, an annual fee, but we charge that at monthly subscription rates.

And does that depend on the number of seats in the client or it depends on the size of the company?

Right, not really. The subscription is for one virtual assistant, so they pay a fee for one virtual assistant. It's easy to think of these as almost like employees, so they pay for one, this virtual assistant can handle 10,000 customer interactions during a month and we can charge a usage model, so usage might be number of conversations had by the virtual assistant, and we also offer a potential model around a revenue share model which would sit somewhere between 5% to 20% of the first year premium of whatever was sold, so quite flexible in the pricing model.

If these large clients get two, three or four virtual assistants then we can sell them an enterprise platform license, with them they can have multiple virtual assistants handling different customer interactions.



That's very interesting. So, how many did you say they can handle, how many customers they can handle, is it 10,000 or was it actually more than that?

Yeah, illustrative. So, really the platform is built to scale globally around multiple clients, multiple interactions, so they can handle hundreds of thousands of interactions at a given time.

Right, so I'm just wondering where you're at with the business model and growth now, I noticed in the last quarterly you made \$200,000 so obviously it's fairly early days still at this point.

We're coming out of early stage revenue into a commercialisation strategy now. So, the best way to think about it is we've built a unique product, all of the machine learning capability is our own built by ourselves, not built on the back of anyone else's platform, so not on the back of Microsoft, not on the back of Amazon.

We've done that, we've tested, we have nine current clients who are all at various stages of implementation or go live.

"We've seen very good product market fits. We raised \$15 million at the end December 2017 and we're now moving into a commercialisation strategy."

The revenue to date has been really paid trial based revenue. We do have one client nationwide whose monthly recurring revenue already and our focus now is putting on a sales team to start to take not only the business to scale but to really focus on the US market as our predominant market.

You're likely to go further into cash burn. I mean you're going to now, as you scale up your sales force ahead of actual sales I guess you're going to start burning cash at a big rate, aren't you?

Not necessarily. We have built this business on Lean Startup Principles, so that's my background. We're actually very conscious of our burn. So, currently the runway that we've got even regardless of revenue takes us well into 2019 so we're very well-funded to achieve the milestones that we need to do and at this point in time not necessarily needing to raise any further capital based on the revenue targets and how we are doing commercialisation strategy, so very

confident at this stage that we have a solid runway, incredible amount of interest in the sales pipeline.

We're going from having no sales team to around five sales people across the US and Australia and are really focussed on conversion to monthly recurring revenue and new sales opportunities.

Talk to me a bit more about the nine – you say you've got nine customers at the moment, they're basically testing the product, are they, for you? They're not actual paying customers, you've got one paying customer. The nine who are using it, what's the feedback you're getting?

Yeah, so the feedback is very good. The nine clients are all paid clients so we're in formal contracted relationships with them in a software service licence where we do what's called a production pilot. So, a production pilot is a fully integrated virtual assistant that they run in a trial mode for a couple of months and if that's then successful then we'll look at moving them into the monthly subscription model. It's not an unpaid proof of concept, these are all paid engagements setting the platform up to then go into a further contractual relationship.

I'll just get a sense of the market now. In your recent presentation you talked about the \$17.7 billion addressable market just in the US. Paint us a picture of what that looks like. How many businesses, are they all potential customers?

Yeah, so the addressable market is huge. We've purposely focussed on the insurance sector because it's highly commoditised and needing to increase their online sales revenues by 10 times in the next five years and it also needs to strip out costs.

We're very focused on the insurance vertical but in addition to that we're now starting to look at banking and we've just done our first exploration into the telecommunications sector.

In itself in the US there are 6,000 insurance companies of some type, either top tier, we focus on Fortune 100 companies but second, third and fourth tier companies, 1,000 those companies that potentially could be our market. Having said that banking sector is also entirely appropriate for us really as would be the telecommunications sector. So, we're looking for where is there higher customer interactions for sales or service which really means that these markets are

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huge for us not just in the US, also in the European market eventually which will probably be our next market after APAC and the US.

These nine customers you've got now, are they insurance companies?

They are predominantly insurance companies, we have one telecommunications company that we're just doing early exploration in as well.

What exactly does your virtual assistant do for them? Just run us through what the sort of day to day tasks that they're performing?

Yeah, so I'll give you an example. One of our large US clients has our virtual assistant to guide customers through their auto insurance, so if a customer gets a quotation online then typically 95% of them will abandon or go elsewhere. Our virtual assistant would appear at the time a customer gets a quotation and then guides them through their configuration of their quotation. The virtual assistant, we call her Rosie, Rosie can guide customers to considering up to six cars, six drivers, can do all the vehicle checks, can issue the binding policy and take payment to do the

binding policy for the auto insurance, so very sophisticated in what she can do. From an end customer perspective it means that they can have a conversation with the virtual assistant can

guide them through their full transaction so that they can complete what they set out to do. So, that's an example of the sales.

Is Rosie talking to them? This is a voice activated thing, is it?

The first iteration that we do is digital, so this is all web based. It'll be a text chat so a customer would be doing it off their mobile phone or desktop or tablet and Rosie would text chat back with them. However,

to convert that into a voice application is the next step for us which is actually a very simple process.

We're doing it because our clients want this to be a digital interaction but another way to do it would be using the voice interaction.

But it's not doing that yet?

Not doing it yet. We don't have demand for that yet, it's really that's going to be next on our road map just reflective of where the market maturity is at.

Why does it need to be machine learning? I'm just wondering because I mean I would have thought that these steps were pretty standard, they were always the same, what does the machine need to learn or am I missing something?

Well, possibly. I'll give you a quick example. We did an installation for a large US insurer which was life insurance quotation and on day one – so, think about Rosie as a really smart employee. On day one she will turn up and she's very good at learning but she knows nothing about this particular insurer's life insurance quotation. We can pre-feed her, so we work with another ASX listed company called Appen who is a machine learning training company. We get Appen to go and crowd source all the questions and answers that an American consumer might ask in a life insurance quotation journey and we get Rosie to ingest that, she just sucks that up into her brain. On day one typically then she'll be able to answer maybe 25% of questions that a customer will have around their life insurance quotation. By week two in an unsupervised learning environment she was able to answer 70% of all questions customers had. By week seven it's 90% plus and she was converting over 30% of customers who came to get a quotation, were converted into going on to do an application. What she learns, Alan, is all the questions that customers will have to try and then complete their transaction online.

If you compare this to a web form a web form there is no way that a customer can ask questions, reconfigure things, they just have to go through a static process. So, there is the value.

Right, and so that's Rosie, you've also got Maggie. Is she different?

Yeah, so think about Rosie as narrow and deep, Rosie

is going to know everything about life insurance quotation but she's not going to know anything more, so you can't ask her about a different product line, you can't ask her around dental insurance or home and contents insurance, she just knows how to close sales for life insurance in this one particular company. Of course, in another company she will know how to do auto insurance binding policy. Think of Rosie as the closer, she's narrow and deep. Maggie is broad, so Maggie is more like a frequently asked questions bot where she is going to be able to answer many questions across all different product or inquiry types but not know the depth of product or customer transaction or journey that Rosie will know. The way we put these two machines together is that Maggie is kind of the concierge and helps customers understand what they need to do and then Rosie is the closer.

You'll sell them as a bundle, is that right, do you always sell them together or separately sometimes?

It can be separate or could go together. Ideally they'd go together because Maggie could also plug into things like social media and potentially do lead generation for a company as well, so there's a lot that we can do with Maggie as far as attracting customers to then buy from our client companies. Really the best way to think about what we do is conversion optimisation using clever machine learning.

Right. Just go back to the pricing for a minute, just to remind me it's \$100,000 to install and then \$300,000 a year subscription I think you said. Where did you get that pricing from, have you tested that that's fine, that that's an okay level of pricing? Obviously you have.

We have, yeah. As we do more installations and see the value that we're creating we know that we'll be able to move up on that pricing model. Particularly we're really encouraging our clients to use the usage or consumption based model so then we will be paid by the number of conversations and ideally for us as all good smart, young SaaS companies we would like to be in a position where we have a lot of our clients using the revenue share model. It'd be a very low subscription rate and then we would take a variable percentage of what the platform generated. We would like to move towards that and we'll encourage our clients to move towards that which means we have to back ourselves that this product is very good and can sell on behalf of our customers and we will share in the upside of that.

You've just done a deal with a Nasdaq listed business called EXL Service Holdings, I gather that's a go to market channel for you. Is that a big deal?

Yeah, that's a really big deal. EXL Services is a 27,000 person, \$2.4 billion market cap US based insure-tech company. Their expertise is in data analytics. They service eight of the top ten US insurers. We are their chosen conversational AI partner organisation and so we'll be doing joint go to market, they'll be doing client introductions and ideally, they will also integrate our technology for us and also integrate it into their platform. This is a significant partnership for Flamingo, so we're very excited about it.

Right, how many did you say they've got, 27,000?

Employees, and over 800 clients. Yeah, it's great for a young Australian company to be travelling in that company.

I'm not sure it actually moved your share price, did it?

Yeah, about 13%.

13%, yeah well there you go, it did. Tell us a bit about your own background. What was the business you were in, you were a long time in a business called...

Fifth Quadrant.

Fifth Quadrant, yes, tell us about that.

Yeah, so that would be the last time I spoke to you would be Fifth Quadrant.

Yeah.

My background is in customer experience, design, human-centred design and market research around customer experience. Very different to other AI companies which are really all around automation and efficiency. I brought the customer experience meets machine learning into this business and this is a very different offering.

I've got a PhD in human technology interactions and I've been studying the role that computers play in replacing humans for some time and this business is kind of the converging of my areas of expertise.

Interview conducted 24th May 2018

Tim Levy is the Founder and CEO of a business called Family Zone and basically, they're a very sophisticated Net Nanny. He started it a few years ago, wrote the software, obviously built this thing, based in Perth. It's designed to allow parents to determine what children see on their internet, on their phones, whether they have porn and sexting and so on, all these bad things. It turns out that the business is mainly supplying schools and so 90 or more per cent of their revenue such as it is, is coming from schools.

But they have 130 schools in the US, which is quite interesting. They've got quite a few schools in Australia and New Zealand but the market they're focusing on and starting to do quite well on is America, which obviously is a very large market. The market for cyber-safety, as it's called, is enormous around the world and this little Australian business called Family Zone seems to have quite a unique product which schools are snapping up. It's a really interesting interview, really worth listening to.

I mean, obviously it's speculative because they're still burning cash. He reckons they're going to be burning less and less cash, probably heading for breakeven fairly soon. But their current burn rate is a bit under \$10 million dollars per year. So they're burning a fair bit but they're really going for it. Interesting prospect. The other thing that's worth thinking about is they're working hard on some sort of solution to cyber bullying.

I don't think they're there yet, but as he says in the interview, this is the holy grail of all of these cyber safety businesses to try to do something about bullying in addition to access to porn and so on, the things that you don't want kids to access. Bullying really would become a big deal if they could crack that. It's worth a listen.

Tim, perhaps you could start by just telling us how and when you started the business, what you had in mind and what was the gap in the market that you saw?

Because there are a lot of cyber-safety operations around. What did you think you needed to do that wasn't being done already?

Great question. That's sort of part of the problem, right? There was proliferation of parental control cyber-safety type products out there and yet adoption of them is incredibly low. Globally the industry is about \$2.5 billion dollars a year which is tiny, less than 50% of parents try anything and most of those parents give up relatively quickly. It started for me about five or six years ago when I had young kids and I started to trying to address the challenge of compulsive behaviour around digital devices and all the nasties that you can see online.

I was confronted with how challenging it was to install this stuff, to understand this stuff and to work with what's happening at school and so on. The gap that we saw and probably the best way to explain it is – because we're all telco guys and we think parental control should work like international roaming. You get off the plane at Heathrow, you turn on your phone and the telecommunications networks know who you are, know what services are available to you in your home carrier and they might overlay that with some kind of local idiosyncrasies from the local network provider, and that's what parents want. Parents just want literally to be able to click a button and know their kids are safe and know that what they're doing is aligned to the school cyber-safety programs and so on. What we're trying to achieve, and we call it this kind of universal approach to cyber-safety, is trying to achieve is – and we call it this kind of universal approach to cyber-safety, is little bits of technology that can be embedded anywhere. Embedded in a school network, on a mobile device, in a carrier network, on a router at home and all inter-operating, so that as a parent I can be confident that wherever my child accesses the internet on whatever device that what I want him to be able to access or not is applied.

As I said, that's what's unique about what we're doing. We in fact don't compete with a lot of the providers in the market. We are trying to help them actually

provide a better service to the whole community.
What exactly did you create?

It starts with a clever, and probably the most unique thing we do is a cloud-based policy management platform where a parent can register their child and subscribe to policies. What's acceptable or what would you like your child to do at play time or study time or at school time. Those policies can interact with policies that might be applied at school or might be applied at your cousin's house. They might have a slightly different perspective on internet access than you. All these policies can be managed in the cloud and then we have little bits of technology that we offer essentially for free under licence to anybody who wants to participate which can be installed in a router or on a mobile device in an app or in a PC as an application or as an extension in Chrome.

Or it can be embedded like a fire wall that would sit at school. What that enforcement technology does is it authenticates, so it identifies the user, checks with the cloud policy to see what's this child allowed to do right now and then enforces it. There's a lot of cleverness that we've had to build in the way that we store policies and syndicate policies across the globe because no one's ever had to do that before. That's probably the most unique thing that we do.

I'm just trying to get a clear idea of what you're doing. You put bits of technology, as you put it, onto devices and then the kids can't do anything with those devices that isn't in accordance with whatever the policy is?

Yeah, so let me give you a real-world example. We're in a partnership with Donvale Christian College, a school in the eastern states. Most of the parents in that school are using our technology and the school's using our technology and the way it works is this – if a parent's installing the Family Zone router at home, every device that connects to that router is managed according to the policies that parent set. So, it might be the child's iPad. You associated that with a 10-year-old. That 10-year-old has been given access to things that's appropriate for a 10-year-old or customisable by the parent.

When that iPad, which may have a sim card in it, leaves the home and so then the child maybe on the Telstra network on that iPad on the bus on the way

to school, then the technology that the parent would have downloaded as our Family Zone app onto that iPad turns on. Then that enforces the same policies that were being enforced on the child's iPad at home on the Family Zone router. Then when the child gets to school, sits in their classroom and connects to the school wi-fi network, the Family Zone technology on that device will turn off and then it will let the school's network take control of all the policy settings and the schools will have different policy settings. The other thing that's unique about this approach is that even if that child is at school or it's school time and they're not on the school network, our technology on the device will turn on and will enforce the school's policy. Even if the child is sitting at McDonalds at 2:30 in the afternoon, the school's policies will apply on that device. Does that make sense?

Yeah. Are you saying at that time the school's policy would apply, not the parent's policy?

Yeah, correct. Our platform's designed so that parents and schools can collaborate, can share responsibility. The big problem for schools dealing with mobility is that they are becoming responsible for everything that these kids are doing online and schools have a duty of care but that duty of care is really around school time and within the school. So, what our technology is doing is allowing the parents to pickup responsibility after school and at home if they choose to, or they can choose not to, it's entirely up to them.

What if there's a conflict between the school's policy and the parent's policy? Say, the parents are prepared to be more relaxed than the school or the other way around?

So, our time based policies, only one can apply at a time. If you've delegated responsibility to the school during school time, then the school's responsible. If



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the school says school time finishes at 3:15 then all the policies will transition to the parents, all the policies will turn off if the parents choose not to filter their children.

But if the parents want to be stricter than the school, can they enforce stricter policies during school times or not?

Yeah, they can. They can remove delegation to the school and they can control that themselves. But that's not an advisable thing for the parent to do because it doesn't...

That's a big thing to do, isn't it?

Yeah, absolutely.

I can see that. Is what you've got still unique? I mean, as we discussed at the beginning of the interview, there's lots of this stuff around, there's lots of cyber-safety operations. Was yours the only one that does this?

Yeah, we're the only one that's approached all the segments of the cyber industry in a holistic way, from a direct proposition that works for parents, a proposition that works for schools, solves their real problems, and also technology that can be sold through carriers and embedded on devices.

We've done a deal recently with Alcatel where all of their android mobile devices that have come into Australia all have Family Zone preloaded on them. We're the only one that's ever offered an integrated service across all of those environments. There's heaps of competitors.

In the consumer industry there's parental controls, there's Disney Circle, there's OurPact, there's Net Nanny, you name it. But the problem with a lot of those is they don't work on all devices, they don't work in routers, they don't work with school platforms, they're not working with carriers. The limitations of all those things is what we're trying to solve. The providers of built in services in schools, really none of them have a consumer proposition that solves this real-world challenge for schools which is who's responsible at any

point in time for these devices.

At the moment, personal mobiles going to school is creating all sorts of problems at school and these learning devices when they go home – if a child's using the school provided MacBook and then accessing inappropriate content at home, who's responsible for that. We're really the only company in the world that's just targeting that problem.

I get the feeling, and in fact, I think it's supported by the data that your main customers are schools, in fact. Is that a surprise to you?

In a way, yeah. The speed of take up from these schools has shocked me a little bit. We thought we'd be a direct business with a bit of an education focus, but it very quickly turned. Within months of listing we became more of an education business that's using the challenge of duty of care in schools to access parents. That is a bit of a shock to me but I guess it shouldn't have been

though because schools are very influential. I get these book lists every year. If the school tells me to buy lined paper or green pens I do it and issues around the use of technology, the schools are really becoming a focal point for those decisions at home.

And I imagine in fact that the schools are more into cyber-safety in some ways than the parents. Although the parents are probably concerned about it.

The schools have a kind of statutory or commercial duty to avoid issues, where are a lot of parents are, I guess, possibly a bit lax about it.

Very much so. For parents it's overwhelming. A lot of parents don't understand the technology or the apps that these kids are using and it's an icky subject. It's not something that many parents want to deal with. You're talking about pornography and sexting and stuff. These are things that parents don't really want to talk to a 10 year old about, so it's difficult. But the schools – you're exactly right – they've got a legislative duty of care to keep kids safe at school and even the recent Royal Commission into institutionalised abuse of children highlighted the role of schools in educating and influencing some of the choices outside of school hours.

The duty of care is increasing for schools around this stuff. Expectations of the community I think are increasing. But probably as a more practical thing, particularly in private schools, if you're paying \$20-30-40,000 dollars a year to put your child into a private school and their educational outcomes are being affected by them being on Instagram at 2 am then there's really no excuses. The parents expect the schools to support parents and those issues. From educational outcomes to duty of care, schools have to deal with this, have to exercise leadership and we're trying to give them tools to exercise leadership without taking full responsibility.

You mentioned sexting before, it makes me wonder whether your devices, your software can actually do something about cyber bullying too?

That's the gold standard challenge for all of us, is cyber bullying. We believe our approach is on the path to providing an effective solution for it. There's a lot of practical things that our technology can do. For instance, making sure that kids aren't using Kik Messenger. You wouldn't have even heard of that, but it's an incredibly popular app with adolescents and it has a lot of behavioural issues associated with it. Encouraging your children to use apps or social media where there aren't those behavioural issues, is one thing that our filtering systems can do and there are other things that we'll be offering parents down the track with social media monitoring and so on.

There's more things I'd love to talk to you about in this call but I'd bore you with technology that we'll be introducing down the track. But cyber bullying can never really be solved entirely by technology, it's a much broader challenge than that. What we do is we've integrated our solution with cyber experts. We've got this thing called the cyber expert market place in our platform and parents can subscribe in our platform to an expert like Jordan Foster from Perth who's a very well-known cyber expert. You can subscribe to her, pay her a few dollars a month and get all of her advice and settings. You can get educational material sent to you each week with a new topic and cyber experts are increasingly working as consultants and the schools are rolling out cyber programs that operate, extend beyond just the school fence, full programs digital citizenship with students and parental engagement programs. Our response at the moment is to kind of integrate the education and expertise of cyber safety with our technology and enable schools to roll out these comprehensive programs.

Let's talk about the business. I note that in the March quarter you invoiced \$1.7 million and I think you received \$1.2 million. Is the difference between those two numbers receivables?

Yeah, correct. We had \$660,000 dollars, I think, of receivables at the end of March. That's a really pleasing result. We would have obviously liked to have collected more of that but 80-90% of our revenue now is from schools. They're of good paying reputation so it's not a bad position for us to be in. We've had subscription revenue from...

How much do you charge the schools?

It depends on the size of the school. Say it's a big school, so it's a 1,000 feet school. The entry level price for us is quite affordable, it's around about \$9,000 dollars a year. The way we sell to schools is we don't sell licenced software, we actually in a way give all of our software, our filtering and firewall stuff, our mobile technology – essentially we give that to the schools for free but we ask the school on behalf of their community to make a commitment to us or a number of families and that's usually in the order of say 2-300 families. 200 families, standard price for that would be about \$12,000 dollars and we charge the school \$9,000.

Then we work with the school to allocate what we call family packs to the school community and then introduce cyber-safety across that school over time. Our pricing model isn't really about flogging licenced software to the school like all of our competitors. We're about introducing cyber-safety to that school and allowing them to introduce that in the time, in the way they'd like and to the year groups that they'd like.

Are you saying your business model is effectively that the schools pay but the parents still have to agree to it individually?

That's right. The schools will commit to that, say, \$9,000 dollars a year, but if the community then starts paying themselves, at a certain level we say to the school, well your community is now engaged, you don't need to pay us anything anymore because we've got 3-4-500 families that have an active subscription with us for \$60-70 dollars a year. So the way that we are defraying that big cost of filtering of cyber-safety through the school to the many hundreds of parents in



Family Zone - Cyber Safety (ASX:FZO)

that community – and that's right, if the parents don't want to do that, that's fine, the school can still... Let me be clear about it, the money that the school pays, is that part of a minimum number of families that they're paying for and then you start getting the money off the families and as that money comes from the families that means the school pays less, or does it go from \$9,000 to zero once you get to the right number?

Yeah, once you get to a certain number, the \$9,000 stops being charged, that's right.

Up to the \$9,000 you're getting money off both the school and the parents?

Correct.

That's very nice. [Laughs]

[Laughs] Well, it doesn't work out that bad, right? Obviously, we're installing infrastructure, we're doing a lot of integration work. There's real costs for us but once that community delivers us 300 direct subscriptions and 300 direct subscriptions at \$60 is \$18,000 a year. At around about that level we're willing to stop charging the school. If a school can do that in the first year then they never get another charge from us which is great for everybody.

And so once you've got the families paying, what's happening to the kids' web surfing and so on is still controlled by the school within the school grounds, even though the parents are paying, it's still sort of a school thing during those school times.

Yes, what's happening on the school network is controlled on the firewall. What's happening during school time is controlled by the technology on the device and then after school the parents can disable it or apply their own policies, that's right.

How many schools have you got signed up now?

We have a bit over 600 schools now globally. I think

it's 130 in the US. Something like 200 in Australia and the rest are in New Zealand.

Wow, 130 in the US, how'd you get them?

Yeah. We acquired a firewall a couple of years ago just after our listing and those were part of that deal. It's grown a little bit, I think we've added 40-odd schools since the IPO, but we've been working incredibly hard on building out this integrated platform. Haven't really done much in the US but that's becoming a bigger focus for us in the coming quarters. Schools that are what we call partner schools, that are buying family packs from us, not the licenced software, by the end of this quarter we think it's going to be close to 200.

Typically, within a number of weeks of engaging with these schools, we're typically getting around about 20% of the school community who are signing up with us or using a family pack paid for by the school. The adoption is quite remarkable. If you compare that to any software as a service business where you're doing a 30 day free trials and stuff. If you can get 5-10% retention rate from those sorts of offers, you're doing incredibly well. Within a month we're getting 20%-plus penetration in these school communities.

It's proving to be a really good commercial approach for us, it's proving to be a really good solution for schools and by and large, whilst of course some parents have troubles with it, troubles with the privacy and the time stuff, but by and large parents are incredibly supportive. They're just looking for an answer.

How big do you think the market is, what's your potential, do you believe?

It's estimated that the addressable market is anywhere between \$80-100 billion dollars, that today is less than \$3 billion. It's open territory, it's a massive opportunity. We're working probably too aggressively, we've probably signed up more carriers and more device manufacturers, more schools and a little under-capitalised Perth-based technology start-up can handle, but it's a big problem, it's moving quickly and

we think we've got a very unique solution that is being adopted quite quickly.

Well you're not burning that much money, I mean you burnt \$7 million in the first nine months, does it look like being a sort of \$10 million dollar burn for the year?

"It's estimated that the addressable market is anywhere between \$80-100 billion dollars, that today is less than \$3 billion. It's open territory, it's a massive opportunity."

Yeah, probably. It's coming down a lot. I think people will be shocked when they see our quarterly for 30 June. It's coming down quite rapidly as revenue grows and also we're finding synergies in the businesses that were brought together. Certainly, our hope is that we're burning under \$10m for this calendar year and we're showing market signs of pretty big growth.

Are you aiming towards breaking even or are you going to keep burning so that you get the growth?

I'm very clear in my objective to have a window on breakeven quickly. I do get challenged by investors from time to time saying, 'Well, if I could do you this, what could you do with it?' Yeah, so those are active debates with our investors, the big funds and our board.

What sort of funds have you got? You have got big

funds on your register, have you?

Yeah, we do. We've got one that's significant. We've got Regal, who are over 5%, and then we've got a number of east coast funds who are just below the radar and a couple in Asia in Hong Kong and Singapore. I think there's five or six institutional investors and most of the rest is high net worth clients out of Victoria and Sydney.

How much do you still own?

At the moment I think I own – I haven't really paid much attention to be honest. I think it's about 7% of the shares.

So you've diluted a fair bit then obviously?

Yeah, I did. I've got some performance arrangements which were as a consequence of the IPO, to get the IPO away, all the founders, we cancelled a lot of our shares and turned them into a promise of delivery. If it all goes to plan then with our current register I think I can have 10 or 11%, but yeah, it's got to go to plan.

That was Tim Levy, the CEO and Founder of Family Zone.

Interview conducted 18th May 2018



Titomic - 3D Printing (ASX:TTT)

Today's CEO is Jeff Lang of Titomic Limited. He's not exactly the CEO, he was the CEO but he's just stepped down. He's the founder of the business, he's becoming Chief Technology Officer and they've just appointed a new CEO called Gilbert Michaca. He's about to start, he's an international CEO, Jeff is moving backwards into the background as Chief Technology Officer, but it's a very interesting business and he's able best to talk to us about it. Basically it's a 3D printing or additive manufacturing company based on CSIRO technology which allows much higher volumes of material to be used in the additive manufacturing.

Basically, what they're saying is they're going to be able to use it to build ships or anything big, which is the first time that's really been possible according to Jeff and their technology will allow it. He reckons it's really the full move towards human-less manufacturing for the first time, that's what they're on about, which I don't know, is that good or bad? But it's possibly going to happen anyway and you might as well take advantage of it.

They're still obviously pre-profit, they're burning cash, they've just raised \$12 million dollars, but the interesting thing about this business is they listed last September at 20 cents per share and the stock's now over \$1.60, so eight-fold in about eight months, which is not bad. And they've just raised \$12 million dollars at \$1.25 and they were over-subscribed. People are just piling into it from everywhere in the world. Really interesting company, clearly going somewhere or already been somewhere from 20 cents to \$1.60 in not very long and well worth reading the interview.

Jeff, you've had a big few weeks, you've obviously replaced yourself with a CEO and raised \$12 million dollars at \$1.25 barely seven months after listing at 20 cents, so that's pretty good going I would have thought. Before we get into that though, can we just start with how the company began? You were incorporated in 2014, can you tell us what the technology was and how it started?

Yes. My background was in composite technology, producing carbon fibre parts and also doing a lot of advanced manufacturing like new materials and so forth. I've worked with many different industries overseas and locally in research centres as well and setup a couple of pre-fab large composite manufacturers in Melbourne and I moved to China in 2004. To cut a long story short, basically I used to do a lot of keynote speaking, engagement with CSIRO and a specialised...engineers talking about...machines and composites. Through that, some of the people at CSIRO approached me about a project they were working on up in Brisbane called Ore For More in 2007 and it was about how we could use this mineral sands resource with titanium and that process and looking at ways if we developed a whole supply chain of titanium powder could we create anything necessarily around that bit.

Through that initial sort of scope and looking at ways we could maybe exploit that sovereign capability we have in Australia, I worked with the CSIRO and in 2009 we entered into a four-year project to identify ways to use that powder for industrial scale manufacturing. Through the CSIRO we came across an old technology called cold spray technology which had been around for about 30 years, it's already utilised in aerospace and a couple of other industries as well but haven't been utilised to its full potential. It was basically a coating technology and we decided to utilise it as an additive manufacturing technology...

Excuse me, Jeff, what is cold spray technology? As you say, it's a coating technology, so it wasn't originally invented or used for 3D manufacturing?

No, exactly. It was just used as putting sort of micron layers and metal coatings onto different parts. For instance, inside a jet engine they might put a heat shield metal layer in, so they spray it in. But unlike normal paint where you're sort of spraying something

on, this is what's called a supersonic jet stream. Basically, you accelerate the metal particles at such high speeds when they collide with a surface they... form. They never actually heat at a melting point.

Unlike every other 3D printer on the market pretty much – there is the desktop metals that you get in a jet binder – but pretty much all of the other processes melts metal. Our process doesn't melt the metal, so it allows us to do very high-speed depositions, up to 45 kilograms per hour. I think the average metal 3D printer which is the laser and electron beams, are around about 1 kilogram every 24 hours. They're exponentially faster in the deposition than anything else. When we first came across this my goal was to look at ways to use big volumes of titanium powder ex the mines and then turned into a powder in Australia.

When we looked at all those existing 3D metal printing systems, they were all very slow, so we weren't talking any sort of high volumes of powder. But with this technology we pretty quickly realised there wasn't a limitation on size, it's not melting, it doesn't have to be inside a vacuum chamber. And also, the quantity, how quick it can build at 45 kilograms an hour. We realised then we actually had a process that actually could use high volumes of powder and from that we then spent another five years and considerable investment from an older company and also funding from the state government and federal government to actually create the process into a patented system for using the large scale industrial pump.

Basically, your process called "Titomic kinetic fusion" is a re-application of the CSIRO's cold spray technology?

Well, it wasn't theirs. The cold spray technology was originally invented by the Russians in the 80s, so that's just been around for quite a while.

What did the CSIRO do and have they patented their application of it?

No. Basically, it was my patent, I came up with the process, a couple of processes. I did the patent but then decided to pass the patent with the CSIRO and there was a bit of a reason why we did that. Basically, we're playing with a lot of the big multinationals in aerospace and stuff like that so it's important that the holder of the patent was needing to be a strong group and also a very thorough patent as well. During that

period, I was working with CSIRO – it was when the wi-fi case which was happening between the big telcos around the world with CSIRO who owned the wi-fi.

Because the case was won by the CSIRO, we thought it was in good interest for ourselves to give us that extra level of protection. Even though I was the inventor, we convinced the CSIRO to pass the patent with them and we licensed it back at a very low royalty, 1.5% and favourable returns. It was sort of like a win-win from both sides of it.

So you basically invented yourself, the re-application of cold spray into 3D printing, did you?

Yes, we created the way to be able do that in the complex forms and large industrial scale, which links back now to what we're doing here. We now have basically the world's largest 3D printing equipment and really, that's what our promotion is at the moment, is that we take 3D printing into industrial scale. What we mean by that is just the size of parts we can produce, but also other things like where we do a whole production line, which is generally when we talk about industry 4.0 digital manufacturing, something to sort of look at all the theoretical side of it and the management tool for it.

On that the actual shop floor, the factory floor, it's been a slow uptake into that area. Then when we look at people at the forefront of advanced manufacturing such as Elon Musk and what he's doing with the automotive sector, he's always struggling to do the automation process. He's had a lot of problems and I think delays recently again with the robotic programming and getting that up and running. What were looking at doing is how do we create a whole turnkey system from one end to the other with minimal human inputs? Because the whole point of going to full digital manufacturing is the automation.

Where we can, we might have a hand in sort of managing the process, but we have to create the equipment on the factory floor that can actually do it at that scale and currently we believe we're pretty much the only company in the world that's actually working in that area. A lot of other companies like GE hype up what they're doing but it is still very small scale production and may be complex-shaped parts but nothing that you would see as any way in the metal fabrication industry.

Titomic - 3D Printing (ASX:TTT)

Just go back to the offer, the IPO last year, you priced the stock at 20 cents a share to raise \$6.5 million with a proposed market cap on quotations of \$22 million but now it's \$80 million and the stock's \$1.60. Do you think with the benefit of hindsight, you really under-priced it back then?

No, not really. When we were shopping around for different brokers, we had some other broking firms wanted to put a valuation of \$50 million upwards. I've been in business for over 30 years and set up numerous different manufacturing facilities and I think one of the things I've always looked at is how you put a valuation on blue sky. Fundamental of what the level of the capital raise and our value was, was what we believed was realistic, and like you said in hindsight it was probably undervalued to what it was but we felt it was realistic at the time.

We wanted to under-sell and over-deliver basically and which was pretty much my motto moving forward, which we constantly do. We could have raised considerably more capital as well but we raised what we thought was suitable for that phase of the business and now we're in the second phase of business, why we did the subsequent capital raise. We're not about just going about the business keeping an amount of money and it not being there, it all has to be aligned for what we're doing and so it was important that the first capital was to setup the facility, demonstrate the equipment at the very large scale and now we've just been inundated with interest by multiple industries around the world.

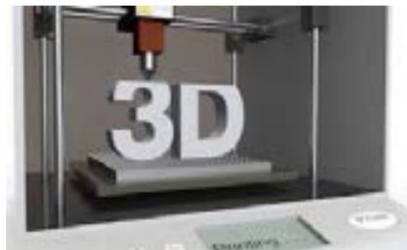
Now to address that opportunity we decided now was time to do another capital raise to also address those current opportunities as well. I think our model moving forward is to continue to do that as the business expands, we'll actually look at market opportunities there. A lot of my businesses in the past have always been private with private investment, but we felt with Titomic that the sky was the limit with the opportunity there, we felt by being a public it always gave us that avenue to go back to further capital raises if required as we expand the business.

As you say, you had a \$12 million over-subscribed capital raising and you seem to have got money from all over the world, from various people, lots of institutions, high net worths, so everyone's clamoring for it.

Yes...

Tell us what's exciting about it? What's attracting everybody to the business?

I think in the short term, it can be quite convoluted, the answer I give you there, and so I won't bore you with the complexity of that. The reality is that everyone's looking at digital manufacturing. Say, for instance, I'll give you an example, say the large ship builders in the world. Most of the ship builders haven't changed their technology in over 50 years. Nothing's really come along that we would say would replace human labour or traditional fabrication technologies in metals.



Now, we're really at the forefront of being the pioneers of doing industrial scale metal manufacturing and I think that's what's really putting us on the map on a global scale. We don't shy away from the fact that a lot of our clients, it gives

them hurdles to overcome as far as verification and validation of the process. We're also quite aware this is the first tangible process that's come along and nothing has really changed in the 5,000 years. 5,000 years ago the Greeks dug a resource up out of the ground, melted it into metal and formed it into a shape.

We do look at all the metal industry fundamentally around the world now and it's still using that same process that's 5,000 years old. When you look at other areas of amenity and industry where we're about to change and move towards the more modern processes, the metal industry is probably the very last of really industrial scale and dirty industry and we're looking at sort of just changing that. I think the level of interest we're getting is the fact that we're pioneering a whole new direction that you can actually do industrial scale manufacturing at very large scale using industry 4.0 and digital manufacturing. I think that's the...

And the thing that makes it possible in your process is the volume of powder that can be delivered, is that right? I mean, it's just colossal amounts of material can be delivered?

Exactly. We can use up to 500 kilograms a day on one machine. I think the average 3D printer maybe builds one part in 24 hours at about 1 kilogram. We have an exponentially larger scale. Also, this is using our standard equipment that was off the shelf, the spray equipment. Now we're also working on a lot of modification of the equipment to even bring it to the next level as well. We envisage we'll have equipment within basically 18 months that'll be able to spray a couple hundred kilograms per hour, using a multi-head spray equipment. We've quoted everything from doing rocket fuselages that are 60 metres long, all the way up to looking at a whole oil tanker hull that you can produce with this process. So we're talking very, very large scale volumes and in areas that people would never envisaged being possible before.

Are you saying that you're going to be able to in a sense, 3D print or use additive manufacturing to build a ship?

Potentially, yes. There's no reason why we can't do that. The only limitation of that is the setup of your facility and the scale of the actual gantry is different and that type of equipment. But it's all feasible, it's not like a pipedream, it's a very feasible process. We're already in discussion with a lot of companies about this type of scale that we're talking about.

And are you also saying that really, this is the kind of ultimate human-free manufacturing?

That's where I'd like to take it. I've been heavily involved in manufacturing for the last 30-plus years and one thing I've noticed in manufacturing, it's generally the loggerheads have always been the labour costs. If you look at countries that have come on the map and what countries lead the world in manufacturing, it's always been centric to cheap labour. Our idea, when we look into the future, is not going to be about the labour costs of manufacturing, it's going to be around the whole supply chain. What's important is countries start looking at sovereign capability and unfortunately in Australia in the past we sell our resources off and then we get no real return.

We did have quite a large drilling material trade in an iron ore resource, but unfortunately that all got sold off and we'll now get back to exporting iron ore. Now we have an opportunity with digital manufacturing, not just Australia, any country in the world you can bring the manufacturing back to your location. For instance, we've spoken to US companies who currently produce parts in Asia for the labour cost savings, but now they're looking at bringing 'made in the USA' back in there with our system because one production line, say for a smaller component, it might be a sporting goods product, one production line can replace 50 staff and only requires one or two staff to operate the whole system.

So it allows the brands that we're producing overseas and warehousing in a different country, can now setup their manufacturing directly at their warehouse and to do just the main manufacturing. It actually changes the whole dynamic of how we trade globally in different products. It's really about creating sovereign capability for Australia and that's our whole project, that's how it was initiated, we have this amazing titanium resource in Australia and how we could build a whole industry and put Australia on the map as far as a major supplier in the titanium sector.

That said though, we're not limited to just titanium, we can do other metals as well and we have a lot of applications just doing a lot of work with general steel for the defence sector and then also in other industries as well we've had a whole range of metals that we used as well.

Can you explain to us your business model? What exactly is your product or your service and how much will you charge for it and how's that going to work?

Our current model is – to be honest, since we started we had a very structured approach the way our revenue model was, which was basically selling the machines, to sell the consumables. So I always fall back on, the whole project started around how we could exploit this sovereign capability in Australia. Our end game was always to be a major supplier of titanium powder into the world market and to do that we felt we needed the necessary equipment that could use that scale of powder.

Titomic - 3D Printing (ASX:TTT)

So really that was our model but what we are finding moving forward, because we have created a very strong engineering team that has a lot of links in the material clients in other areas as well, there's a lot of companies that are approaching us now are interested in purchasing the machines and also the ongoing consumables supply, the powder. But they're also showing interest in doing joint ventures with us for setting up manufacturing as well. That's something our board actually has to deal with, part of our growth moving forward. In those situations, do we entertain a JV with the company or do we just stick to the original model?

Being a young company, we're keeping the end game fairly fluid, so we actually haven't put any mark on how big this can actually be. We're always about being an early company where we can bring in early revenues. The original model we had about doing the original prototyping for clients and then moving to a manufacturing licence and machine sale and ongoing revenue of powder, that is still our base model but we also consider other opportunities as well. For instance, we're working with a couple of governments overseas at the moment. They're getting us to help do computation with them and looking at supply chain procurement for those governments as well.

Right, but if this extends to ship building and so on, presumably you'll be licensing the technology?

Exactly. It's very strong for us to continue with our patent suite and this is one of the reasons I'm actually stepping down as CEO, to focus on my role as Chief Technical Officer of the company. I felt it was always on the cards and part of our prospectus was always to set the company up, get to that foundation point, then we move across into getting a reputable CEO that actually shared the vision with us to create this as a truly multi-national company on the global scale. We've actually recently finished our hire which we announced last week for Gilbert Michaca, and it's actually spelt Gilbert but has a French twist on that.

But look, Gilbert comes with a wealth of experience from Siemens in Germany and also worked with Grey's Innovation more recently and helping them get into the global market with their technology as well. He brings a wealth of experience that will help secure our growth and structures moving forward. Also, he has a huge range of networking as well. And so it allows me to focus more on the technology and continue to develop the patent and in the technology with our process as well.

Is the new CEO going to move to Melbourne or is he going to base the company overseas?

No, he is Melbourne based now. He's European descent, originally from Switzerland, but he's based in Melbourne and has an Australian wife and family. He's quite happy to stay in Melbourne but he actually has that capability and he's worked with a couple of big multinationals and has a lot of global experience, so he's the right person for the job at the moment.

Tell me, how much cash are you burning now? Are you going to increase the cash burn now that you're raised some more money and how long do you think before you can start making some cash?

Our cash burn is sort of fairly public information anyway that people can address but we're fairly strong in that area. I've been in many businesses over the years, so we run a fairly tight ship here, as they say, as far as our overheads and costs go moving forward. Currently we have very strong sort of model that we're planning our cash burn at least over the next 24 months. One of the ideas with the new CEO coming on board, he has enough capital behind him that there wasn't going to be any limitations for him to move into his role, so we've been able to create that moving forward.

As far as our revenue model I think our original model was for revenue coming in third quarter of 2018. We are working on quite a few significant opportunities in that area, whether it be a combination of just working with clients as far as prototyping and projects that can range anything from \$20,000 dollars up to \$500,000 dollars on these projects. We currently have about 20 projects on the books at the moment we're working on and we're just finishing the contracts with them and the revenue will start flowing shortly from them. They all lead into manufacturing licences which is about machine sales. Those machine sales range from \$1.5 million up to \$15 million per machine. To give you a connection on that too, so one of the bigger systems that might run between \$10-15 million and can use up \$20 million dollars' worth of powder per year.

So it's not just selling the machine and the machine has a 30-year life on the machine, but it's the ongoing consumable sales as well that will bring considerable revenue. For us though it's always to focus where we can sell a lot of powder in the bigger systems that are going to generate a lot more capital than some of the smaller systems. At the same time we feel those smaller systems is helping get the technology out into the marketplace as well.

Interview conducted 9th May 2018

Sensera - The Internet of Things (ASX:SE1)

Ralph Schmitt is the CEO of a business called Sensera. Now, it's based in Boston Massachusetts in the US. I spoke to Ralph from California where he was talking to some customers. It's just bought another business in Berlin. Basically, it's a Boston/Berlin business that's listed on the ASX and that's a spinoff from a business in Boston called Triton Systems. Apparently, Triton Systems has spun off a number of ASX listed technology companies but unfortunately Ralph couldn't tell me what they are. Anyway, Sensera is definitely one of them. The product that they make is to do with the Internet of Things, IoT as Ralph keeps talking about it as. Essentially what their sensor does is provide location data that tells you where they are. It can be used and is used in mines, for animals, and wherever you need location data where the GPS isn't good enough. The acquisition in Berlin provides the communications backbone apparently. They've got the product, now they've got the communications backbone.

They're predicting \$6.25 to \$7.25 million revenue this year, they're still losing money, about \$8 million per annum loss in cash at the moment but they're predicting also, Ralph says 75% to 80% based on contracts, a 60% increase in revenue next year and breakeven next year. There's probably some more capital to be raised, they're going to have to come to shareholders with some more cash later this year. They've got \$5 million cash now though he reckons they'll need \$15 million to get to breakeven so there is a bit of money to be raised still but basically what it's about, I would imagine, is to build a business to be sold to one of the big players in the internet because they've got a niche. Now, he sees they're in 60 mines, there's a lot more mines than that in the world, maybe they're going to sell more of this stuff.

Again, it's a cash burning speculative internet play that's in an interesting area of the internet, that is to say the Internet of Things, Massachusetts based with now another company in Berlin, and listed on the ASX. The market cap is \$25 million so a micro cap essentially, a speculative micro cap called Sensera, the CEO is Ralph Schmitt, here he is.

Well, Ralph you joined Sensera last November, appointed Managing Director effective December, what did you do before that?

I've run a number of Nasdaq listed technology companies and it's always been in similar spaces than where Sensera is in and my last company has sold to Toshiba and I was running that division at Toshiba for a number of years but I wanted to get back to getting out of a very large company and start running a small company that I thought had a lot of room to grow.

And you took over from Matt Morgan who became Chairman, Non-Executive Chairman. Tell us a bit about the background of the company, did Matt start it? I can't even figure that out actually.

No, Matt didn't start it. The company was actually a spinout of a group called Triton Systems in the Massachusetts area and they have spun out a number of technology companies into the Australian exchange. Sensera was a MEMS fab that they spun out in December of 2016 and Jack Solerno was the CEO who is now our CTO or vis dev guy, and Matt was on the board at the time.

What are the other companies that Triton Systems have spun out that are on the ASX?

I'm sorry, I don't remember the names, I can follow up with you and get them to you no problem.

Yeah, no worries, that's fine. So, tell me what the product is, MEMS, what is it?

Yeah, so the company itself is really geared towards going after the Internet of Things, the sensors on the Internet of Things. When it was founded under the MEMS fabrication flag it essentially was in the medical technology and in some aerospace, military customers, building these mechanical engines which essentially is the sensor interface from the physical to the electrical world. What the strategy was was to go vertical into real products, end products. In August of 2017 the company acquired a group called Nanotron, that's in Berlin, and Nanotron is known to build wireless location aware sensors and so they essentially would use the type of technology that the original Sensera would build. Nanotron was also a company that's been around for a number of years and was just starting to get commercial success so it was a very good match with the Sensera team.

Sensera - The Internet of Things (ASX:SE1)

Right, well we'll get to that in a moment but perhaps we'd better take a step back and discuss what are the sensors used for? I mean, when we talk about sensors being used in the Internet of Things what are we talking about?

The sensors that we build essentially detect kind of the location of where you are and it's typically in a very harsh environment or difficult environment. For instance, in our case two of the key markets are one is in mining and the other one is in animal health. In both of those areas people are trying to get valuable information or do things like safety management in the mining space but need to know where all the people are, all the equipment is, all those types of things. We build sensors and tags that are wireless that you attach to either people or assets and then detect exactly where they are, a very high accuracy, and typically inside, in a mine obviously underground. It's very difficult to do that. Outside people use GPS, it's not as exact as what we build but that's sort of the basis. The Sensera piece in Boston builds sensors that add contextual data to the location, so for instance we build a gas sensor for a miner who would have that on his tag, so not only knowing where you are but that you're not in a dangerous situation with gases that would be harmful to you.

It feels like a limited market.

Not very limited at all. Our estimation is it's about a \$7 billion market. That same technology can be used in all kinds of other location-based markets. The other one that we use is animal health. We can detect the movement of let's say an animal like a cow and we have partnered with a large pharmaceutical company to do things like detect health of an animal much earlier than any other way possible. It's not just the location but it's other contextual data that these sensors pick up that allow you to add value to a solution. The markets we're addressing are many billions of dollars and are growing at a fairly rapid pace.

That market exists now, are you saying that there's \$7 billion worth of these products being sold now?

Yes, in variety of different forms, not necessarily getting to all the details that we get to with our solution.

How much do you sell your sensors for?

It depends on the application, they vary quite widely. I'll give you an example. We're in about 60 mines

worldwide and every one of those are about \$75,000 to \$100,000 in initial revenue because you're selling an entire system so it's not just the sensors but the tags that the sensors are built into and then the anchors that actually get the data from the tags, and then the software that goes with that. It's a full system solution that we provide with the sensors just being one part of it.

Does that mean there is ongoing revenue and not just once off sales?

That's correct. Yes, as the mines expand, because they're obviously a living breathing thing, they expand we get more anchors and tags. Obviously, it's a difficult environment I should say and obviously things break and we add more on. There is recurring revenue but that actually leads itself to a discussion of a model. Our goal is actually to take it to a kind of service model, location as a service if you want to call it that, and actually outfit the mines and then have a monthly fee per miner per asset, that sort of thing. So, that's directionally where we're trying to take it. We think it will get into the mines faster that way and have more of a recurring revenue base, a more consistent recurring revenue base.

So, you're predicting revenue, I think, for this year, financial year 18, of \$6.25 to 7.25 million. So, obviously in a \$7 billion market then your market share is quite small and basically, it's all ahead of you, that'd be fair to say wouldn't it?

Yeah, absolutely. We feel like we're just starting to scratch the surface. Again, just sticking with mines for a second, there's other markets, we're in 60 mines as I mentioned, there's 62,000 mines worldwide and clearly this type of technology hasn't been deployed in all those mines but it just shows you that we're just really getting started right now. One of our biggest challenges is just figuring out how to scale this appropriately. Right now we work with system integrators to get access to different mines and that's a fairly good model because it scales out but it's still not as quick as we would like to see it.

Explain to us exactly what the Nanotron acquisition in Berlin adds to your business.

Yeah, so it's mostly around this location aware technology, so they built the wireless backbone to the sensors that we add and that's critical in an IoT environment as I'm sure you're aware. Most of the difficulty isn't gathering the sensor data it's actually

how to transport it to a place where it's usable and you can do analytics and those type of things on it. One of the things in our situation where let's say you have, I'll stick with the mining example, miners that are in a tunnel and there's oncoming trucks and dangerous things everything has to be done in real time. So, the wireless network is a key part of that, so you respond in milliseconds and so the Nanotron wireless backbone that they have build is really the core of that capability.

Right, okay. I don't fully understand why the business is listed in Australia on the ASX.

Yeah, again it was a model that the Triton team has used in the past. We also felt that based on the target markets that we're going after it's obviously a target rich market environment for us. It was a good access to capital for us to be able to build this company much further along than it is currently.

How much more capital do you think you need?

We think that we'll get to a breakeven or cashflow positive situation late in fiscal '19 and between now and then it's somewhere between \$5 and \$10 million that we believe we'll need to get there.

And how much have you got now?

We're hovering around \$5 million now in cash so we do believe that at some point we're going to need to go out and do one more fundraising. We're looking at other options today as far as equipment leasebacks and other debt instruments to not dilute our shareholders further, not sure we're going to be able to cover the entire need but that's obviously a desire so that we don't dilute shareholders.

Does Triton Systems still own much of the business?

Yeah, they're still a significant shareholder and I'll say they're in the top three shareholder base of the company.

Right, so the plan really is to just keep building the business, get penetration. Are you in many mines in Australia? I presume what you were talking about before was that there's a few mines in Australia of which is one reason for listing here.

Yeah, actually it's interesting, we're just starting to get penetrated there, so I'll say most of the mines that we've had are in other parts of the world, South

Africa, Chile, Mexico, Canada, Russia. It's interesting, we're just really getting going in that part of the world so you should hear more about the mines that we penetrate there shortly as we engage with some of the system integrators down in that part of the world.

You're predicting a 60% increase in revenue next year, 2019, to what extent is that based on actual contracts or just an estimate?

Yeah, so we wouldn't come out this early and put that kind of a growth number out there if we didn't have a lot of contracts in place already and I would say probably 75% to 80% of that number is with existing contracts. We've also talked about there may be some opportunity to upside but that's the best view we have today.

Are you saying that in effect you've got contracts that get you to break even?

Almost. I actually haven't done that analysis, I probably should have but I have not completed that analysis. But, we can see a path to that breakeven pretty easily based highly on the contracts we have. There's also recurring revenue that isn't contract based obviously that we're counting on as well.

Do you think there's a sale of the business exit ahead for this company?

It's a possibility. This IoT market is going to go through a lot of consolidation. We see that already where there's been a number of technology companies combined. It's an interesting market because it's got a lot of small players taking pieces of it and as it matures obviously there's consolidation that typically happens. So, if it's the right thing for the shareholders from a valuation perspective we're not afraid to do that.

Have you had any approaches yet?

It's probably something I shouldn't talk about but there's nothing pending, that's for sure.

Right. Well, great to talk to you, Ralph, it sounds like an interesting business.

Interview conducted 24th April 2018

Nuheara - Intelligent earbuds (ASX:NUH)

Justin Miller is the Chief Executive of Nuheara. They're a start-up tech company in Australia that's got earbuds, but they're intelligent earbuds, and they're showing very interesting growth.

To bring everybody up to date you're CEO at Nuheara, it's a start up but it had products out in the market before it listed last year and this is not your first start-up, is it, so tell us a little bit about you first.

My background is I've had a number of start-ups that have gone on to be quite big companies, IT services companies. My last company before Nuheara was an industrial hearing company again with some innovative Australian tech that we productised, commercialised, monetised, multi-million dollars of sales. I spent some time in the U.S. having moved there to build up that business and returned to Australia about four years ago. That's where this whole concept of Nuheara and the consumer and providing an innovative solution to what we see as a growing problem over the years and that was providing some assistance to people that needed it, hearing assistance. But, also providing functionality that they were used to from a hearing device which included phone calls and music, and these sorts of things. So, a little bit of my background is I've been involved in a number of different start-ups, all quite successful, and I'm pleased to say Nuheara is following that same route.

Constant Investor subscribers are interested in Nuheara. It calls itself an innovative audio wearables company but we're talking about earbuds, ear phones that are wireless that fit into your ear. So, tell us a little bit about the technology and the products that you've got out there.

Yeah, we classify ours as hearing buds because they are multi-functional buds. As a company we focussed on transforming the way people hear and initially, we've been around, we've been listed for two years actually, we bought our first product to market in January of last year and they're now sold in major consumer electronics retailers around the world. That quickly grew to 1,500 stores plus big online presences. This was allowing people to completely control the

way they hear so that's controlling their environment or perhaps listening to music or taking phone calls or augmenting their hearing situation and that would mean overlaying perhaps your digital world with your physical world. An example of that might be you're out walking, you're listening to your music but you've also set it in such a way that you can hear your surroundings. That's one of the innovative features that we offer, so that's augmentation.

Another one was an intelligent noise control, so the ability to enter particular environments, control your background noise in relation to conversation which was advantageous and gave us a lot of indications then for where we are today, new products and how we're pretty much evolving more into the hearing healthcare market.

Yeah, you've launched a product that targets that specifically now, haven't you?

Yeah, the thing we found having brought that product to market and having sold thousands of these around the world, that people were using them to provide hearing assistance. One of the interesting things about the hearing healthcare market, if I can talk about the hearing aid market, which is really designed for those with a disabling loss or a profound or severe loss. That's about 30% of the market and it has good penetration levels and people get good assistance at those levels. What we found at the mild to moderate loss end, which is about 70% of the global hearing loss market, there was penetration rates of about 10% and there are a number of major reasons for that and one is accessibility and the other is affordability. So, we looked to solve a couple of those problems with some of our new products and that's targeting a market which is growing, unfortunately, hearing loss is growing. It represents 10% of the global population.

For us it was a market that needed some innovative type devices to help people. The interesting thing about hearing aids is that the median age of a wearer of a hearing aid is about 72, what we also know is that most people start to lose their hearing at about 35 which is the mild to moderate category. There's a massive market there that's under-served in that 35 to 70 year old range and we thought through providing products that could be self-fitted, self-configured at a much lower price point that are more suited to a lifestyle product, music, phone calls, those sorts of things, would be beneficial and so we set about building a product that enables us to cater to that particular market.

And as hearing degrades filtering unwanted sound is one of the sort of early indicators and it's just so annoying, I think, for people as they get older. They're in a crowded restaurant or a bar, there's noise coming at them from everywhere and they have difficulty focussing in on the noise they want to hear.

Absolutely, and that's one of the key benefits of the product we offer. Even in our early product IQ Buds and now with IQ Buds Boost, is that ability to treat the environment. So, our innovation has this ability to treat the environment, not just the individual. Because, you can amplify things but in amplifying everything you can sometimes make the situation worse. The ability to use some innovative technology and allow you to treat the environment as well as configure it to your own personal hearing profile is a big step forward. We believe in hearing healthcare.

Is there an issue in that quite a few of your users are going to be sort of middle aged up, this is an app driven technology. I went on and had a look at some of the reviews and early on people were saying I can't get the app to work and so on. Do you run into that issue, that you're using cutting edge technology, you're using apps, people are getting used to them but are still sort of familiarising networking the app on the phone and the device that they're using?

Yeah, that's a good question and yes there are challenges in that regard. One of the learnings we took from our early product that we had in the market was this ability for people to self-configure. What we did with Boost, our new product, was that we integrated a hearing assessment within the product and that hearing assessment then automatically configures the product using hearing aid prescription formulas and prescription formulas which are used by all the major hearing companies around the world. We then use that prescription formula then to automatically configure the ear buds to that particular user's profile and that's taken a lot of the angst out of setting up the product in that you can self-fit, you do it in your own home but it's set to your hearing profile. So, we create what we've termed an ear ID, and that ear ID is a relatively simple process that takes a lot of the configuration work out that we had in our earlier product IQ Buds.

So, we've seen certainly in our consumer testing a lot greater acceptance of the product and the ability to use that product through the learnings we've had

through having a product out there over the last 12 months.

It's great when you've got technology as a consumer that is intuitive like that. I've got Sonos and you can get it read the rooms for the speakers for example.

That's actually an interesting sideline in terms of the way people are getting used to voice and response through speakers, and we believe that there'll be a personalisation of that through hearing buds. The speakers, the products you're talking about, are becoming more prolific on a day to day basis. People are putting them in their rooms and they're getting used to voice and response.

I've got Alexa right next to me, yeah.

Right, fantastic products but they're room bound. So, our belief is even across the consumer electronics industry but also hearing healthcare industry is that hearing buds or ear buds will become the smart speakers of the future in that they'll provide mobility outside of the room. So, we see an enormous opportunity as those people get used to voice and response but they'll want mobility in that mobility in that particular service and that is truly going to come through intelligent wireless ear buds.

Alright, now who are the competitors, what is the competition?

Yeah, it's interesting for us. I mean we started in the consumer electronics space and bought some sophistication and some hearing intelligence into that particular space. We're at the upper echelon of a really intelligent headphone. What we found through use of the product was that people were using it for a number of different ways, obviously to compensate and to tune it to their own hearing profile but also in a manner that we hadn't anticipated and that was in relation to concentration type disorders and this relates to auditory processing disorder, autism.

That ability to treat the background environment was providing the ability for people with these types of disorders, young or old, to enable them to concentrate on a situation. In fact, we have kids as young as eight now using our earbuds in classrooms. In a traditional sense they would have relied on an FM system, the teacher would have worn a microphone, the kid would have worn a headset and there would have been a one to one communication. With our earbuds we've got

the ability to turn all the background distraction down and focus on the conversation.

It's an interesting aspect to the whole hearing healthcare market. These hidden hearing losses, as they've been termed, are likely to be twice as big as traditional forms of hearing loss and there aren't a lot of solutions out there that cater to those particular needs. So, at the one end of the market you've got hearing aids that target a particular market and that's at the very top of the tree and at the bottom of the tree you've got headphones. There's not a lot that sits in between those particular products, so it's early days. We've got some ways to go in terms of educating the market but that gap between, I guess, hearing aids and headphones is our particular space and there's not a lot that's entered into that particular space. So, we're keen to fully exploit that.

How do you learn what use consumers are making of the product? Do you get feedback from the app?

Yes, we do, which is allowing us to improve that interaction. It's allowing a better customer experience and it's allowing us to build better products. I mean, Boost came from the fact that we saw people using the augmentation features in such a way that we needed to allow better profiling and better hearing compensation for them. Yeah that's quite valuable and where hearing aids have just come into this sort of data realm they're only really picking it up when people enter that market which is in the 70 plus. What we're helping to build is more data from – as I said, we've got people as young as eight and as old as eighty. So, we're getting a much better picture on hearing data and that data is enormously valuable in helping us build better products.

Having products out there, having that app and being able to understand how people are using them is incredibly valuable. To this point headphones and hearing aids don't really provide that ability to access that particular type of data. So, we're fairly unique in that regard.

Alright, now there was news this month that you've been registered for the Australian governments \$593 million hearing program, your shares popped on that news and they're still I think 11 cents today which is close to the high they set earlier this month on that news. Tell us about that and why it's important?

We've registered, IQ Buds, the company was registered as a supplier under that contract. It's a big contract, Australia is one of the countries in the world that provides a fairly significant government funded hearing program to provide hearing assistance because accessibility and affordability when it comes to hearing assistance are not prevalent around the world. The Australian government does a very good job in providing that assistance. For us to be listed on that supply list and one of the few Australian companies that are listed, most of the hearing aid companies are international and assisted listening device companies are international based companies. So, significant for us, lower price points both from a product perspective but also from a serviceability perspective. A lot of the cost that goes into this market is spending time with people. So, self-configuration, these types of things, are very significant. It's a big program and we're keen to be part of that.

Yeah, you would be at the high end of the consumer market in terms of price and at the low end of the hearing aid market, am I right on that?

Absolutely, and it was interesting, the ACCC last year released a survey that highlighted the significance of price in hearing aids, and sales have been driven by commission rather than consumer needs. They found hearing aids priced from \$1,500 to \$15,000 per pair. We're in the category of \$500 to \$600 per pair. So, \$1,500 you're not getting much of a hearing aid and it's interesting to note, and one of our big opportunities, is the change in legislations that are occurring. The over the counter hearing aid act which has been passed late last year in the US is essentially designed to provide accessibility and affordability in hearing devices in the US because there is no Medicaid, there is no Medicare, and even private insurance doesn't cover hearing devices in the US. That's spawned an interesting industry because the biggest provider of hearing aids in the US is in fact Costco because they've been able to drive the price down and people understand that to buy hearing assistance in the US is out of pocket expense.

We see a significant opportunity in that mild to moderate category to provide hearing assistance that's self-configured, self-fit, they can buy it, take it home and do it themselves and at an affordable price so, there's some significance in that.

What's the situation with health insurance here, are you on the insurers' lists?

No. We're seeking to do that now obviously with Boost and the imminent shipping of the Boost product. Again, we can help to drive down the cost of hearing assistance through providing accessibility at those levels. Unfortunately, there's a lot of stigma associated with hearing and hearing devices. Our feeling is with hearing buds rather than hearing aids is we've got the ability to provide a more lifestyle suited product that people are more likely to wear in those situations. The health funds will become important for us but again it's educating that particular part of the market which is a big part of the market but it's going to take a little bit of time for us.

Alright, let's have a look at some of the numbers. I'm looking at the December half here. There is an interesting set of figures, you lost \$4.3 million but really this is a revenue growth story at this stage for you guys. I thought it was interesting that at the operating level you actually turned a profit, revenue of \$1.96, cost of sales \$1.4 and a gross profit of half a million dollars. That's a good hurdle to clear at this early stage. Tell us how you're travelling, tell us about the cash burn, tell us about the revenue growth and where you're headed.

Yeah, I think those numbers are a relatively good result. As you say we're in revenue growth, we have to spend to educate to push the product out there. We've done a good job of that, we sold circa \$4.5 million worth of product to almost all countries around the world in our first 12 months of selling, so a good success story. Importantly, as you pointed out we were able to generate gross profits approaching 30%, we can improve on that – or gross margins I should say. We can improve on that and certainly will through having multiple products released. In fact, we're releasing two new products over the course of this year which will enable us to build up our gross margins through diversification. But we're travelling quite well in the sense that we've had circa \$20 million invested in us, we've seen other companies

in the US that have invested nearly \$100 million and haven't got as far as we have so I think we've been able to do that very cost effectively and in doing so I think proving Australia is actually a fairly good place to develop tech. That is from an R&D perspective at least we know we're supported 43.5 cents in the dollar through the Australian government R&D tax offset which allows us to get cash back for the R&D that we conduct in Australia which is a great initiative and providing us with benefit in our early stages.

It's great, we're co-located, we have our main office in Perth but we have a sales and marketing office based out of San Francisco in the US. It's still early days for us but we've been able to show the market, the investor market at least, that the products are wanted and we've been able to develop new products. We've got a fairly significant road map as we move forward.

At December 31 you had \$5.6 million of cash on the balance sheet, total equity \$11.1, so you're obviously comfortable at the moment but of course the cash burn is going to sort of decide things as you go on and that in turn is going to depend on revenue growth. What's the trend on revenue growth?

The trend is positive. In fact, a lot of that spend over the last half was building up our inventory levels as well. Having built inventories, we've got stock in our four warehouses located around the world. **Yeah, I see a bit over a million bucks on inventories there.**

Two million, yeah, nearly approaching two million in costs, so that's fairly significant and that gives us the ability. We're turning sales every single day and with multiple products out there have the ability to grow that, and in fact our response to the Boost product, which we announced pre-orders, has been quite overwhelming in fact. There's a proven need there for a really good multi-functional hearing ear bud for the market and we're very excited by having multiple products in the market as we move forward. That product ships in the next three to four weeks, so we're incredibly excited by having two products in market.

Who are your significant shareholders? I read that WAM is in there, I'm not sure whether it's WAM, are the founder shareholders still all there?

Yes, absolutely.

Nuheara - Intelligent earbuds (ASX:NUH)

Are Wilsons still there?

Wilson's, I am not too sure. We were in a micro-cap fund that they had set up. Interestingly we do have the likes of IFM. There's a number of funds that have participated at an early level. Having said that we've grown from the point of listing 400 shareholders to nearly 4,000 shareholders so there's a number of retail investors, a number of which are just interested in the story, know that we're doing something positive. There's a number of investors that are in there for different reasons and that's significant for us. We've got a great deal of support from individuals that see that we've got some game changing products that they're interested in more so than a simple investment.

What is the cash burn running at right now and have you got a target to shift it into the black, a target time?

Yeah, look we're very careful about that. I mean, it's still early days for us so to put those projections out there is a very difficult thing for a small business and something we're very cognisant of, and particularly in relation to how tech and very much of recent times has been regarded on the ASX. So, very careful with what we do put out there, we're very factual, we're very careful not to mislead because at the end of the day it's about building a credible business and I think we'll continue to be cautious as to how we push out those particular numbers but I think from a cost efficiency point of view, if I can touch on that, if we don't manufacture, if we don't market, then the cost to run the business is quite minimal. We've got a global business that's got 30-odd people, it's not a hugely expensive business to run and it's got a lot of smart people, that makes a difference.

Where are the buds made?

We use an international company called Flex, or Flextronics as they were formerly known. Flex is one of the largest contract manufacturers in the world. They manufacture in 40-odd countries, have 140 facilities, they're very large. Ours are manufactured in a facility in Zhuhai which is just sort of behind Macau in China. That facility has about 60,000 people on it, that one campus. We're manufactured in one building in that particular facility where they also manufacture the likes of Garmin, Fitbit, and others. We're in very good hands in terms of scale and quality, and they're a

world-renowned contract manufacturer. For us scale and quality are issues that are really taken care of by contracting one of the best in the world.

I think our time is starting to run out but one of the things I think – I don't know whether you would call it a trend or just a fact of life in the IT space, is that small companies can come up with great technology and can get it to market, and at that point they either get taken out by one of the giants or one of the giants blows them out of the water by just basically replicating the technology in some shape or form. How do you protect the technology you've got and are there any giants out there looking at this space or do you think you've found a niche that gives you room to grow in?

Good question. There's no doubt it's a niche but it's a massive niche. The expectation is there is going to be competition in that particular space and we welcome that competition because educating that particular market is going to take many forms. I think if I look at the top of the pyramid, which is hearing aids and those sorts of things, there's a lot of competitors in that space that are running fairly significant businesses. At the bottom end the headphones are prolific. There's room for competition and we're not frightened by that competition. I think what we've been able to demonstrate is that we've had products fairly unique – well not fairly but very unique in their approach to hearing. They've been in market and out there even as a concept for nearly three years now.

For us we still haven't seen anyone enter this particular space and that's because hearing is hard. The expectation is that it will get easier but where it sits today is we're comfortable that we're unique enough and gaining acceptance and gaining traction. We're market-first, we've got to worry about competition second. If we sit here and worry about what the big guys are going to do we'd never get anywhere. So, we're clearly focussed on bringing game-changing hearing solutions to market that are accessible and affordable and that is the pathway for us to sustainability and profitability. Once we reach those then anything is possible.

Well it's a fascinating project you've got there. It's great to see an Australian company bringing a product like this to the world, and all the best of luck for the future with it, Justin.

Sky and Space Global - Satellites (ASX:SAS)

Meir Moalem is the CEO of Sky and Space Global, one of the Israeli companies that's listed on the ASX. As the name suggests, it's a satellite business. Those who may have invested in NewSat in Australia, Adrian Ballantine's company, may want to not touch satellite companies with a barge pole and that's fair enough. But this one's quite interesting in that it's proposing to launch 200 what are called nanosatellites that are 10 kilograms heavy, about the size of a shoe box.

Apparently, they'll whiz around the equator and create a constellation of satellites that will provide phone services for people in Africa, Latin America and Southeast Asia. That's the plan. They need \$150 million dollars to do that. He reckons they'll have no problem raising that because they've got a few satellites up there now that are proving that it can work. They're burning a bit of cash still of course. They haven't actually launched their satellites but they're proposing to.

It's a speculative investment, no doubt about it, but an interesting one certainly and could be successful.

Meir, your company deals in nanosatellites, how big is a nanosatellite?

Usually nanosatellites are defined as satellites which has a mass of lower than 10 kilograms. Our first few satellites which are in space right now, we call the 'Three Diamonds', are roughly the size of half a shoebox. They are 3 kilograms and they're just like a small baby and we treat them like our own babies. Our next generation satellites which will be much more capable and provide a real service, will be around 10 kilograms. These are very, very small, it's almost unbelievable that you can use them in space and provide services, but technology has moved to the point that you can actually do that in the same way as we're doing it in other fields like in computers or other electronic equipment. Things are getting smaller and smaller, but still with gains to capabilities.

What sort of coverage do your Diamond Three satellites provide?

They actually provide the entire earth, but since they are in a lower orbit they will pass overhead a few times a day. For example, in Sydney they pass two times per day, once in the morning and once in the evening. As you move closer to the poles they pass overhead more times. If you're in exactly the North Pole, for example, they'll be passing overhead 16 times a day, so every hour and a half. That gives us the possibility to use them in order to demonstrate our capabilities and our technology anywhere in the world with the potential customers. But our goal is to deploy a constellation over the equatorial area of the earth which is where our market is and we can talk more about it later on.

Well, let's talk about it now. The three satellites that you've got there, are they demonstration satellites, you're not selling communications on them?

Yes, exactly. Well, we're selling a bit of communications from them. What happened was, when we started the business our goal was to demonstrate that the technology actually works. You have to remember, nobody even thought about using nanosatellites for communication purposes. We were the first ones to do that and actually we are still the first. There's no other company that has any space assets, any nanosatellites which are providing telecommunication services or demonstrating telecommunication technologies.

So we wanted to demonstrate that it works before we go and get the funding to deploy a full constellation of 200 of them, and by that not only demonstrating that it works, also reducing the risk. The risk in the technology, testing the software, testing the hardware and getting to the point where it's actually a kind of a gradual development of the business. The next stage for us which we are in the middle of is deploying, as I've mentioned, the constellation of 200 satellites around the equatorial region and that will create a full network that will give you a service 24 hours a day.

So it's not like those Three Diamonds which pass overhead a few times per day, but it's a service which is always available in the same way like we're talking right now, over the phone. You can take out your cellular phone and it works every time if you have coverage. We're targeting the equatorial region for the reason that this is the most undeveloped area of the earth. There are 3 billion people living in that

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area, most of them living in areas where there's either no infrastructure or very limited communication infrastructure. That means that they really require someone or something to provide them the capability to connect, and that's what we are doing.

Who will be your customers? Will you be selling the service to local telephone companies or will you become a phone company yourself?

We have no desire to becoming a phone company. The business model that we have is what we call a B2B, a business to business model. That means that we're selling, exactly like you said, to telecommunication providers. Those can be either via phone companies which we are not competing with but we are providing a complementary service for them, or it can be other telco providers which works today in the satellite fields.

These are usually companies who sell capabilities from existing satellite operators and resell them to different types of customers. We already have some agreements in place, some contracts that we have announced and of course, a lot more in the pipeline.

Take us through the contracts that you have announced already. I think you've got one in Africa, where else?

Yeah, we signed a few contracts already in Africa. Well, let's go back a little. In the early days – and I'm saying early but it was only a year ago – before the Three Diamonds were in space, we already had a lot of agreements. They were mostly non-binding. Those were what we call MOUs, memorandums of understanding, or letter of intent, LOI, which means that the customer is expressing his willingness to do business with you assuming that you would actually be able to demonstrate what you're saying if you're planning to do.

Once we have launched those three satellites and we have proven that the technology works, we have converted those pre-agreements, as you might call them, into actual contracts and I'll give a few examples. One of them is with a large telecommunications provider in Africa, a company called Sat Space Africa that works in most of the

African continent, in 27 countries, and they're reselling our capabilities to their end customers.

Another example is BeepTool, which is a small company from Nigeria that provides financial transactions over the phone.

By the way, almost 80% of the usage of mobile phones in Africa is not for calls, it's for financial transactions, for text messages. BeepTool is a small provider of these financial transactions and we have signed a contract with them with a value of \$30 million dollars guaranteed revenues for the company. Another example is a company based in Ghana called Universal Cyberlinks and they are working mostly with the government of Ghana, but with others as well, and they're providing all kinds of satellite communication services in the agriculture field, in the education field and in other government sectors.

These are a few examples. We are in the process of moving forward with our South American customer called Global Sat Group and in other areas of the world as well which of course we'll announce once things fruition into agreement.

How much will it cost to send 200 nanosatellites into orbit?

Believe it or not, it's unbelievably low cost. A usual standard telecommunication satellite that is launched to a geo-stationary orbit, the ones that we use to watch TV with for example, is usually at the cost of a few hundred millions of dollars. We're deploying a full constellation of 200 satellites is less than the cost of one large telecommunication satellite. It's \$150 million. That means that to manufacture, develop, launch and operate a single nanosatellite cost around \$750,000 if you do the maths.

This is due to the path that we're in the middle of a revolution in space business, it is called 'The New Space Era'. Using nanosatellites lowers the cost at least in order of magnitude per satellite while, as I said, maintaining almost the same capabilities. So with \$150 million dollars we are launching this entire constellation and operating it and very quickly, because this is a huge market and we're talking about economies of scale or economics of scale to be exact, we're starting to generate revenues and we're becoming self-sufficient and the company's expected to have very nice revenues over the years.

How much revenue can each of the nanosatellites make per annum?

We're not measuring it per satellite. This is one of the changes that we're bringing into the table. Usually if you have a telecommunication satellite it has a certain capability which is called the capacity and you sell this capacity for a certain price. You have, let's say, a bandwidth of 72 megahertz and you're selling it for \$1 million per megahertz, for example, using numbers just for the conversation. You're capped by a certain revenue that you cannot exceed because you're selling your capacity over the satellite. We're doing something completely different. We're selling an availability to the service in the same way that when you're using your cellular phone, you're not using a capacity from Telstra or Optus but you're using an availability to make a phone call or to make a text message.



If we look at the entire constellation and the availability that we would be able to provide and a very conservative number of customers, out of these three billion people we're expected to generate more than half a billion dollars in revenues per year once the constellation is up and running. And again, these are conservative estimates. Just think about, as I said, there's three billion people. 1% of these three billion is 30 million people. 0.1%, a tenth of a per cent, is three million people. Just assuming that each one of them is paying a few dollars per month for these services, which is a very reasonable price, the numbers add up really, really quickly.

But obviously there's a number of people who are going to be kind of consuming that revenue. You'll be something that's a wholesaler, the wholesaler sells to the retailer and so on, so...

When I'm talking about revenues, maybe I need to clarify, these are revenues for Sky and Space Global. These are not revenue which include the customers,

the resellers, etcetera... These are entirely revenues for Sky and Space Global.

In fact, according to a recent presentation, you're talking about multiple revenue streams, so not just mobile phone end users. You're selling on instant messages, you're going to sell to marine and shipping, aviation black-box tracking and so on. Talk a little about the other revenue streams that you're looking at?

That's one of the nicest things. What we're building actually is the platform for communication or an infrastructure for communication. If you think about it, almost everything that you're doing involves some way of transferring information from one place to another. Indeed, there are almost endless revenue streams. It can be from the sectors of agriculture, from education, from finance, from the transportation... You've mentioned the maritime services, indeed every container needs to transfer information from one place to another.

Aeroplanes – we're developing a real time black-box to transfer information from the aeroplane to the ground with the help of a small Melbourne company called [Esat 14:56.6]. I talked about the financial sector, it was about financial transactions. Corporates or governments which need to transfer information from one place to another. Almost everywhere we you look, there's information waiting to be transferred. One of the most exciting things is the development of what we call IOT, internet of things.

This is something that a few years ago was at its very early stages and today is growing exponentially. IOT means all of the devices that have very small amounts of information that needs to be aggregated into a central server to be processed, to be analysed and it can be asset management remote sensors. Imagine you have a very long pipeline, a few hundreds of kilometres or thousands of kilometres and you need to put some sensors every kilometre to monitor this pipeline. All of these new things are coming into play. We're expecting billions and billions of IOT devices to be around in the next few years.

Somebody has to collect all of this data and transfer it to the users or to the managers or to the administrators or whoever it may be and we are one of these someone's who can provide the capability to transfer this information. Not only are we transferring this information. We have done a few world firsts in the last few months. One of these was implementing cyber security measures into our systems. We're the only company as far as we know that provides

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commercial telecommunication services which are secured in the most advanced ways, cyber security measures. We're doing that in corporation with a global giant called Checkpoint, one of the leaders in the world in the cyber security industry.

We've done additional world firsts. We're the first ones to do a phone call with the nanosatellites, we're the first ones to do a financial transaction with the nanosatellites. We're the first ones to transfer information between nanosatellites in space. Nobody has done that before. We're the first movers, we have a big advantage as we move forward.

Can you tell us, what's the revenue that you've actually signed contracts for? Not MOUs, but actual contracts, how much revenue is in those contracts?

Of course. We're listed at the ASX, so we're fully transparent and every agreement that we're doing is disclosed to the public and if you look at our announcements, I've mentioned BeepTool, that's a \$30 million contract over five years, so around \$6 million dollars a year. These are minimum currency revenues, so no matter what happens BeepTool still has to pay this amount, it's a non-refundable number. The other contracts we did not put into revenues, these are pay as you go contracts, so that means that the more the system is used, the more money Sky and Space Global is being paid. As we will move forward and sign additional contracts, we will announce the details of them. They will have either guaranteed revenues or pay as you go or a mix of both of them. And at the end of the day since we're listed we're required to announce a half-year report and yearly report which have all the financial details within them.

Meir, Australian investors haven't had a very good experience with satellite companies. You've probably heard of NewSat, Adrian Ballantine's company which went broke two years ago?

Yeah, I'm familiar with that. The interesting fact is, when we did our first roadshow in Australia it was in March, 2016, so it was very close to the news that it was losing all of its money and all of the investor's money and as you can imagine when we met with investors for the first time, they said, "Oh, there goes another satellite company, there's NewSat all over again." Other than the fact that this is one company, this is another, it's a completely different company. Completely different business model, completely different business model, completely different technology and I think a completely different track record of achievement. It's true that the Australian market is not that familiar with Space technologies.

"We're the only listed space company in Australia. There's no other space company in Australia. There are companies which are using space assets such as Speedcast or others, but there's no other space technologies company in Australia."

The Australian market is very familiar with the resources market, it's not that familiar with high tech technologies in general and space technologies specifically. One of the challenges we had was to overcome this almost the basics [unclear 20:42.3] in the first days. I think we have done that very, very successfully, the company has done really well.

We have done three successful capital raising rounds in the market which we're heavily oversubscribed. So I think other than an initial response relating that to NewSat, the investors and the market are sophisticated and are understanding the differences. This is a totally different company and there's no single thing to compare us with NewSat other than the fact that they were planning to use satellites and we are planning to use satellites.

Tell us how much cash you've got now and how much you're burning?

We have announced our half-year report just a few weeks ago, we had \$4 million dollars in the bank at the end of the year. The company itself is a very lean and mean company. The burn rate is very, very small. I will not mention the exact numbers, but you do have the data in our yearly report that you can deduce. Most of our expenses are due to the capex. We are developing satellites and we need to launch them to space. If you take our first Three Diamonds, it had cost us half a million dollars. Out of the \$3 million dollars that we raised in order to deploy the Three Diamonds, more than half, a bit more than \$1.5 million dollars, was the cost of manufacturing them and launching them. The rest, \$1.5 million, was burnt over more than two years for the required capital to operate the company.

You can understand and you can do the maths, it's something like \$150,000 dollars per month, which is a very low burn rate for the entire company. What we did when we did the additional capital raisings is we have accelerated a lot, the required effort to deploy the constellation which was the end game all along. The goal was not to deploy three satellites, it was to develop a very successful business based on a constellation. We have accelerated the software development, which is a major thing that we need to do, and we have accelerated the process with our subcontractors. With GOMspace who are doing our constellation for us, with Virgin which will launch our satellites and with other providers as well such as more simulators, more satellite deployment mechanisms and other things as well.

Most of the cash required by the company is used in order to develop the constellation itself to our different subcontractors and a very small part of it is the actual burn rate for the employees of the company. Globally, we have something like 35-40 people today and this number is not about to change. These are people working in Australia, the UK, Poland and in Israel. All of them together are a bit less than 40 people. It's a very, as I said, lean and mean company.

Okay. What about the \$150 million you need to launch the 200 satellites, where's that going to come from?

Fortunately for us, we have multiple options. This number was always on the table. From the first day that we started the business we always said it's about the constellation and we need \$150 million dollars in order to get there. We'll do that in stages. First, we'll deploy it with satellites and prove that it works and after we prove that it works, then we'll go and do the additional funding. We can do that either by equity or presale or by debt or by mix of all those, and as we move forward and as we sign more and more contracts and as we move forward we're developing the constellation itself, the certainty level always goes up and the uncertainties are slowly diminishing, the risks are being managed and are being lowered over time.

In the near future of course we will have to do some kind of find a way, of getting some of this funding. We do not need the entire \$150m immediately. We can do it gradually, first deploying a batches of satellites and then maybe having a mix of revenues and funding and that and presale and so a lot of options are on the table. We are very confident that we will find the right and suitable way for the company in order to move forward.

Interview conducted 1st March 2018

Today I'm speaking with the co-founders of Roots Sustainable Agricultural Technology – Sharon Devir, who's the CEO, and Boaz Wachtel, who's a non-executive director. Roots is one of those 16 Israeli companies that is now listed on the ASX. The two technologies it's got are keeping roots of plants warm or cooling them, and also condensation-based irrigation. That is to say, to take the humidity out of the air and turn it into water for irrigating crops basically in the desert mainly.

Here's Boaz Wachtel and Sharon Devir, the co-founders of the Israeli business, Roots Sustainable Agricultural Technologies.

Maybe we'll just start off by asking both of you a bit about the background of the business. It was formed from the Chief Scientist's Office, is that correct?

BW: That is correct. Part of the Chief Scientist technological incubator for three years. We graduated and we kept working after that and then the ASX became an option. We reviewed it and decided to advance with it and here we are, almost a year and a half after the graduation from the Chief Scientist Office.

What do you mean by graduation, what does that involve?

SD: Graduation, which means you've finished the term. Not all the companies apply for these programs, because we applied for two programs and have been accepted. The first one was the technological incubator for the first two years – It's even less. Originally it was for 24, but we were faster and we made it in about 20 months. Additionally, we applied to another company which will be eligible to get double the amount of budget compared to the first one. Then we could benefit from that and the big benefit from that is some kind of a loan which has to be paid back only once you have an income, there's hardly no interest, no personal liability. It's very common in Israel, technological incubator programs started about 15 years ago and more than 1,600 companies started their own thing today.

That's a loan from the government that you have, is that correct?

SD: Yes, that's a loan from the government, it's a loan with very good term, very low interest and to repay only once you have sales, which we have so it's a good result. We have already started to pay back the loan.

When did you guys get involved with the technology, was it right back at the beginning when it was first invented in the Chief Scientist Office or did you come in later?

BW: I started working on it under a different company that I own and developed the technologies and then I met Sharon about six years ago and we decided to form Roots together and develop the technologies. We've been at it for some time. In our culture it takes a long time to validate technologies. You have to check the technology in various weather conditions, under various crops and so forth, so it's a low validation cycle first of all and secondly, the introduction of new technologies in our culture also takes a while. It's not a high-tech start-up where you invent an application and you can have in half a year, 200 million users. It's a slow process but we find it extremely important technologies that may impact the two major issues today in agriculture.

One is how to manage the climate of a plant with lower environment signature, how to increase the yield and so forth. Secondly, how to provide the irrigation or access to water in the era of global warming and the elimination of suitable water sources.

Boaz, are you saying that you invented both of those things? Is that what you're saying, that you developed those technologies?

BW: Yes, initially, and then I wouldn't have been able to take the company alone. Sharon is a great CEO and scientist/researcher and together we work diligently for a number of years to develop them and validate them.

Let's go through the two technologies one at a time. The first one is the root warming technology, what does that involve?

BW: Root warmings – actually, it's not just root warming, it's heating and cooling. It involves an exchange underground, a depth of about 7 metres.

Heat between water flowing in underground inserted coils and the coils exchange the heat with the stable temperature underground, so you have water flowing out of the coils – it's closed cycle but they come out at a constant temperature year-round, let's say 24 degrees, and we run the water next to the plants in the soil and what changes are the seasons. When it's very hot, let's say 40 degrees in the soil, so it pulls the temperature down by up to 10 or 12 degrees and in the winter it's the opposite. If you have let's say 5 degrees in the soil temperature, it pushes the temperature up towards the 24, so it heats it by 24.

In the basic configuration we only use a circulation pump, which is a very low energy consuming pump and we're able to influence the temperature of the roots which are more critical than the temperature of the canopy. The culture also in Israel, which is considered an advanced country in terms of our culture, only now does the role of the roots or understanding of the roots is taking hold and the role of roots zone temperature is coming to the forefront because it's much easier to manage the plant's canopy – that's what people see, the farmers see – but they're now shifting into understanding the processes that are affecting the roots and what happens to the roots affects the entire plant.

The idea is based on the idea that at 7 metres below the surface the temperature is stable?

BW: Year-round, that's correct. This temperature is always warmer in the winter than top soil temperature and it's always cooler in the summer than top soil temperature. So, when you circulate the water, basically you are able to cool or heat the root zone with very little technology. Sometimes we add to the basic circulation pump, a heat pump if you want to have more cooling or more heating. And sometimes in places where you cannot dig because you have rocky soil or a higher water table. We use just the heat pumps in a closed cycle.

Well, that sounds pretty simple, even I can understand that. The other thing you're doing is condensation based irrigation system, how does that work?

BW: Well, if you imagine you have an iced coffee in your hand, you lift up the cup, you have a puddle. The reason you have a puddle is of course the cold water in the cup meets the hot humid environment of the air and the humidity is condensed on the

surface of a cup. What we do is we chill water either with conventional or solar energy, we chill water in an insulated water tank to below chill point and we circulate the water mostly at night because at night even in the desert areas there's high humidity. During the day there's very little humidity. We irrigate at night, we circulate in the closed cycle.

You fill in the system just once and with a circulation pump at night you circle the water and we were able to prove through a series of experiments here in Israel that it's possible to sustain agriculture, just from humidity in the air and that is, we think, a major breakthrough in agriculture which has social and economic ramifications in many parts of the world.

How much water do you get over a night in the desert air of say, Israel? How much water do you achieve?

BW: Well, it changes. When we started we didn't do it in the desert but we are now starting collaboration with the Israeli University in the desert to prove the fact, which is if we are able to do it then we can start the food chain even in very arid areas. But basically you can get 20 mm or sometimes more or less, it depends on the humidity level, for one plant. You can get the condensation either if you install horizontal pipes and then the plant just enjoys the irrigation on the segment that is next to him or we do it vertically, meaning we have a line of pipes that goes up and down along the row and it drips not just from 10 centimetres of a pipe with condensation, but with a metre or two metres of condensation that flows by gravitation into the plant.

We think it will be good for most food crops grown and we eventually aim it also to be able to produce condensation for trees. It's a standalone system, off water and electricity grid and it could revolutionise, as I see it, food production in many parts of the world that today do not have access to good quality or water or don't have access to water at all.

Sharon, perhaps you can explain to us the business model? What exactly is the company selling?

SD: The company actually sells – we call it a kit which comprises of our proprietary pipes. Part of them are embedded in the ground, as you said before, in the hose, a 7 metre hose. Part of the upper, what becomes then the root zone temperature area where

there are several types of pipes to be embedded in the roots, some of them segmented, insulated, which is proprietary, produced by our partners, Weisman Friedman. On top of it we have a console system which you can monitor online what's going on and you can control the activation of the system. The system should not be performed throughout the day, 24 hours. Sometimes 10 hours is enough or 12 hours is enough. It's varies between winter and summer, it varies between different types of crops.

This is part of the uniqueness of the system in a way, is our know-how, how to cool and how to heat and the condition the root zone temperature that we are cooling and heating. Heating in large areas like we are doing is not so common globally. To be modest, in a way, we are not aware of any cooling system which does this cooling system on the vast areas that we are. On top of the hardware that we have that keep this know-how. All these systems talk to the cloud which is controlled by us. This way works better with a farm. We can decide what would be their management of activation of the system, when you should cool it and heat, and to what extent?

Because in some crops it's enough, 1 or 2 degrees, and some crops need 6 or 5 degrees, some crops you get at 10 degrees. This is I think part of the unique know-how that we've obtained and we will obtain more and more as more systems are installed globally

Just to sum up there, you're selling the hardware and then you're selling a subscription or an ongoing management fee, is that correct?

SD: Definitely, yes, and some as well because in those places that we use our proprietary pipes, what we call the heat drippers, resembling a dripping system of water. So we call that the heat dripper because we heat and cool only by the roots. It will be part of our [pots 16:04.3] and the package.

So how much money are we talking? I mean, what does it cost? If a farmer wants to cool down the roots or warm up the roots, what they going to spend? What are they going to pay you?

SD: First of all, we provide them the full system. It's our thing to install there either do it with us or either do it with a joint venture with the local stores or dealers. If you're talking evenly, the cost is about AUD\$15 per square metre. For a greenhouse...

How much?

BW: \$12 to \$15.
40

\$12 to \$15 per square metre?

SD: Per square metre, but one should remember there is a big variation between crops and between type of infrastructure. Since other customers other customers have the roots, but If you have a greenhouse or only 24,000 plants of tomatoes in one hectare, so if you do it in basil it's four times more. So it depends on the crop. This is more or less, I would say the threshold. It also depends on the type of the soil, the requirement of the farmer, but more or less these are the prices around this one. Our prices is competitive in the market for several reasons. First of all, we provide heating and cooling in one system. In agricultural we are the only company at the moment which provides cooling and heating on the same system. You can find in the market different. Heating system usually heating the air or cooling, usually what you call cold [matter], some kind of another type of fogging systems to cool the greenhouse which also increases humidity, which is a big problem for the farmers. This is one big advantage we have. Second is the energy. If we're taking the current – they're cooling the earth systems in the industry, which uses about 100 fans for about a hectare, each one consumes about 2.5 kilowatts per hour. Our system is, you have a hundred of them, our system consumes about 5, maybe 6, kilowatt an hour per hectare. We are 60-80% more efficient on the energy side.

I'm just trying to get a sense of what revenue potential there is here. I mean, how much money you can make from both of the two systems that you're selling? Can you give me a sense of that?

SD: Even how much money we can [over talk] – how much money the farmer can make?

No, no. How much money you can make? Because obviously people would invest in your company, not the farmer.

BW: We have a significant profit margin on our system because it's not only selling of the basic hardware, we have a post-sale model as well, as Sharon said, selling of specific types of pipes that we've developed and patented. We have a revenue stream coming from consultation with the farmer and maintaining the communication control and inputs from the field. The market is vast for both of these technologies. Eventually our vision is to integrate them into one solution, so a farmer could have both the root zone heating and cooling capabilities and access to irrigation by water. More and more farmers around the world are going

into what's called covered agriculture because the weather is becoming more and more extreme. With our system you can mitigate the effect of extreme weather to a large extent by heating and cooling the roots.

It's a huge global market. The biggest expansion of that market is no in China. In terms of irrigation by condensation it applies also for open fields, not just greenhouses. These are tremendously huge markets on a global scale that were very thirsty for solutions and we think we have the economic solutions and technical solutions to address these problems. We're the only company also in the world that actually achieves the root zone cooling. Due to global warming the heat cycles and so forth, the heat load on plants is causing the same damages as cold spells and by cooling the roots you can get the same benefits as you get with heating, which is increased yield. You can improve quality, you can plant before the time of the season and there are many benefit for maintaining the root zone at an optimal temperature throughout the year. This is what we do.

You've recently announced a sale in China, can you tell us what you sold and what the details of that sale were?

SD: I want to elaborate a little bit about the former question just to make it easier for you. The revolution of roots is targeting the roots of the canopy, which is resembled to the innovation of the drip irrigation which came out of Israel, because the irrigation is also targeting the roots and not the sprinklers. If you can look at a similar model of ours, which is heating the roots with the drip irrigation in Israel. Israel is leading the world in irrigation, the companies valued more than a trillion dollars and a patent was recently acquired by a Mexican giant for more than \$1 billion and it's looking to a familiar model like hours, we are on the same track.

We are going with a new revolution it's very resembled to the drip irrigation, but on the climate control level we believe we can be the same as those successful drip irrigation systems in Israel. I hope that's made more clear for you with something to compare with. Coming to China, the question was what have we sold to China...

Yes.

SD: China is the first deal out of many to come in the future. We have teamed up with Dagan. Dagan is a highly reputable Israeli company with key construction projects in agricultural they have made within the last 25 years or more. They are 1,000 hectares globally, they are very known, more than 35

countries. That's why we pick them as our strategic partners for China, the most significant market. This project is the first for China because everything is shown in the pilot, so there's bigger projects to come next. There, we are in sort of a system with different heat, greenhouses for flowers, for vegetables, for any nutrient thing with technology like hydroponics, and herbs.

It's a huge project for advantage for roots and several further significant sales and we are very happy that it was even quicker than signing the agreement itself with Dagan, because they like the technology. It just started to work in partnership, we signed the agreement with Dagan. Our team's already started to visit China last week, now there is a vacation in China, they have their New Year. After the Chinese New Year we'll be onsite with our things and deliver in about six to seven weeks. We'll be able to finalise this project and go to the other project. We're already happily flooded with too much orders to the company, which is good news for a small company like ours that started, and I must admit that we have succeeded to get into the stage since we have succeeded to raise the funds in the ASX, which allowed us to increase our label and increase other capacity. That's why we can just go and start large volume sales with finances.

Just on the cash, you raised \$5 million in the IPO in December. Can you tell us how much cash you have now and also what your current cash burn rate is?

SD: We have about \$4 million cash, a little bit less than that, and our burn rate is about \$200,000 roughly.

\$200,000 per month?

SD: Yes.

In your business plan, when do you breakeven?

SD: The breakeven, we hope to have it in about two to three years from today. It depends how good we will be to establish the volume of the sales we are facing now.

BW: My thinking is that we were too conservative in the breakeven point. The rate that the orders are coming in mean that we will generate – we are already generating revenues, so the revenues will help us breakeven in less than two years. Sharon and I don't always think alike, so I think our breakeven point is less than two years, that's my thinking on the subject.

It's been great talking to you., thank you very much.

Interview conducted 19th February 2018

Ido Levanon is the CEO of the ASX listed Israeli company Dragontail Systems. It's a four or five year old company that basically set up an algorithm based technology that helps quick service restaurants (QSRs), that is to say fast food restaurants to operate, organise their deliveries, and organise the way that they run the whole store. Lately, they've added a camera to that which photographs the pizzas and determines how good they are and whether they're a mistake – whether it's the right topping.

The camera compares the topping on the pizza with the order and tells the person running the store whether they've made a mistake or not and whether the pizza's properly cooked, then sends the picture to the customer, assuming it's correct, to let the customer know, this is what your pizza looks like, it's just come out of the oven and here it is and it's on its way to you. The algorithmic system to run the store costs \$200 a month and the camera costs \$50 a month.

What they've announced is that they've got a thousand stores basically mainly in Canada I think, they've got Pizza Hut and KFC stores in Canada and I think the USA as well and they've got Domino's Pizza in Australia. The camera's going to be rolled out across these Domino's Pizza stores to check the pizzas and the algorithms are going into KFC and Pizza Hut stores overseas. It sort of looks like a very interesting business I must say. I spent half an hour talking to Ido – he was at the airport in Toronto where he's talking to the KFC franchise, or Yum – the Canada KFC company over there.

It's been listed on the ASX for since December '16, so just a bit more than one year, and the stock is currently priced at about 26 cents and has a market cap of \$60 million. A really interesting business, I reckon.

Well worth a read of the interview with Ido Levanon, the CEO of Dragontail systems.

Perhaps we could just start, Ido, with a bit of background on the business. How and when did it start?

It's a relatively young company, we started four and a half years ago. The co-founders have a long career. Each one was on his own doing mostly IT related work, also mostly related to QSR.

What did you say, QSR?

Yeah, quick service restaurant, QSR. And we got together because we realised that there is no good technology solutions that helps the restaurants to operate more effectively and in an optimised way. We all left our careers to create Dragontail to attempt to build an algorithm that basically controls the entire restaurant operation. That's how we started, we had a dream to build something that was never done before and fortunately we succeeded.

The algorithm, you say that it runs the entire restaurant operation but I thought it was really just focused on deliveries, but it's actually more than deliveries, is it?

Correct. Alan, it's mainly effective when you have some part or a portion of your business comes from delivery. But it actually controls the delivery, the takeaway and the sit down business. It optimises the entire kitchen and the dispatching in case of delivery.

Is it possible for you to explain the key element of the algorithm that does that? Is there one thing that kind of pulls it all together or not?

Yes, actually there is. Basically, our philosophy is that we start optimisation before the order shows up at the restaurant and by doing so we actually control the order that is to occur in the kitchen. Before our system, every restaurant in the world is operating what's called FIFO, first in first out. Orders come into the restaurant based on when they were placed and the cook or the kitchen prepare them one after the other. They do whatever they do for the food and when the food is ready they either dispatch it if it's delivery or give it to the takeaway customer or to the sit down customer.

What we do, our algorithm basically determines what is prepared and when is it prepared, taking into consideration dozens and dozens of factors that no

human being is capable of processing, especially during a busy shift in a restaurant. And by doing so, we basically make sure that food is prepared in the most effective way, that customers receive their food as fast as possible. And the most important thing that's also unique to our system is the fact that we guarantee that the food is always hot and fresh.

Even as a customer that placed a delivery order, if you receive your order even after 45 minutes or an hour, let's say, because there are not enough drivers – yesterday was the Super bowl here in the US and in Canada, that was actually an excellent example how during halftime people were placing orders like crazy. Although some of the orders arrived late, the pizza or the burger or whatever it is, always arrived hot and fresh because they just got out of preparation. That's the unique IT that we have that nobody else offers.

Your algorithm changes the order that things are made in, essentially, to optimise. Instead of making them in the order that the order is placed, it optimises the order that they're made in according to what's best for the restaurant, is that kind of it?

Correct, Alan. To be more precise, what's best for the customer. For example, Alan, if you live close by to another customer but you guys placed your orders – maybe there was five customers between you – your order may be pushed into the kitchen to be prepared with the other customer that lives close to you so the cook already prepared those two orders together and they get out together and a driver is there to pick it up. Your order may not be prepared is there is no driver ready to pick their order up.

The thing is, Ido, customers are used to standing in line, right? Everyone understands standing in line. You are served in your order, the order in which you arrive at the restaurant, that's the kind of thing that everyone understands. If somebody comes in and gets served before you, that's pushing in.

That's a very good point. That won't happen. If you sit down in a restaurant and you sat down before another couple, of course your food will be served first, okay? But think about it, let's say you come to a restaurant, you sit down, then there are like 10 people waiting to pickup their food and 30 customers waiting to be delivered, okay? How do you juggle all of this?

For example, one of the things we do, if you sit down we even space the appetiser and the main dishes – we'll give you your appetiser relatively fast and while you eat your appetiser the kitchen may be processing some delivery orders, especially if there were five drivers waiting in the restaurant, waiting for food to pick up.

On the other hand, let's say if there were no drivers right now waiting to pick up food because they were all out of our delivery, our system will push more sit down orders or more takeaway orders, does it make sense what I'm saying?

Yes, of course. How does the system communicate to the chef or the cook? Does your system then sort of tell the cook basically what to do with a screen or something? Is that how it works?

Exactly, it's called KDS, which stands for kitchen display system. In a way, Alan, we take over the point of sales system. Every restaurant today has a point of sales system but all it does is just process orders. When it shows them for preparation, most of the time those are printers that print the orders, I'm sure you've seen that. So what we do is we put a flat screen, what's called kitchen display system, and we usually show one to two orders at a time. We don't show more than two orders because anyway, the kitchen can prepare only one or two orders at a time.

Meanwhile, all the other orders are being reshuffled in the background and going to be displayed when the other orders have been prepared based on what our system determines is the optimised way to prepare.

Let's just go back to the history of the business. You started where, was it Tel Aviv?

Correct.

How many people were involved in the start-up?

We were four co-founders and we had about seven people all together, and what was so unique when we started and still as of today, although we are a tech company, half our people are actually operation people. If you come from offices, you'll see engineers and mathematicians sitting side by side with – it's all per restaurant operators and area codes and things like that. That combination allowed us to build that kind of system that was never done before. Answering

your question, we started with seven people. The first thing we did, we went to Yum! Brands, the largest US operators of Pizza Hut, KFC and Taco bell, in Dallas – that's where they headquarter.

We showed them the concept, they loved it. They came to Israel to see a prototype in one of the Pizza Hut stores and then they started testing us in Canada. The first customer was Pizza Hut Canada, actually.

And that's where you are today?

Correct. Pizza Hut Canada is still our core...

When did you get the first customer, when was that?

November 2015 is when the first store was installed in Ottawa, and it took Pizza Hut almost a full year to determine that that is the system that does what we were telling them was going to do. It was only towards the end of 2016 when they decided to rollout our system into all their stores. They took a whole year of testing the impacts of the system on the restaurant team, on customer satisfaction, label cost, all of that. Because, the system is – and I know you've heard the term many times – game-changing technology, but it really is. It completely changes the way they even operate inside the restaurant.



It wasn't straightforward for a large company like Pizza Hut to listen to a small start-up. At that time we were an Israeli start-up that tells them, 'Listen, forget the way you've been operating for 30-40 years, there is a better way to operate.' So they took their sweet time to test it.

End of 2016 is when you listed on the ASX. How much money had you raised at that point?

We raised \$6 million Australian Dollars and the reason we did the IPO then is because at that point when Pizza Hut saw the results and determined that this is a winner, that's where we knew that that's not anymore a dream, but that's really something that we can go all over the world with. That's when we decided to IPO on the ASX.

Why did you choose ASX?

For several reasons. We did get some term sheets from local Israeli [resales [14:44.7]. We heard from some other Israeli company that they had some initial success with the listing on the ASX. At that time, which was about a year ago, there were only eight Israeli technology companies listed and they were all backdoor listings. We heard some good things, we came to Australia, we actually met with the Innovation Minister in Victoria and he actually also came to Israel and visited one of the Pizza Hut stores and saw our system in action.

We figured out that it's probably going to happen to us in Australia and in Asia, which turned out to be true, that that's going to be the market that we're going to focus on, so the ASX just made sense for us. We, by the way, Alan, didn't just raise money on the ASX, we in return opened an R&D office in Melbourne.

Tell us how you get paid? What do you charge the restaurants, how does it work?

We charge a flat fee per month, it's about USD\$200 for the base system.

Is there an ongoing service for that? You don't just sell the system and then leave them alone? To get money per month you must keep doing things for them?

Yeah, you're right. We also monitor the store performance, we give them feedback, we train them, we make some enhancements as needed... And by the way, so far we've been talking about our flagship system which is the algo and that's the \$200 a month. I do want to point out that we also developed a complementary system which is our camera control system that Domino's Australia is now about to use.

Well I was just going to ask you about that, because it's quite interesting looking at your operating metrics and the growth in store numbers, you had in 4Q2016, 115 stores contracted. 1Q2017, last year, 425. Then 2Q, 490. Then 3Q, 1,030. 4Q, the same number, 1,030 – but on top of that, 700 stores contracted for QT Camera. So, obviously it looks like in the 4Q last year you were focusing on the camera rather than the algo platform?

It looks like that from looking at the data, you're absolutely right. But actually a lot of work was done in the last quarter, in Q4, related to the algo. You don't see an increase in contracted sales because we didn't sign any additional customers. We're still a relatively small company, we're now 39 people running really thin with an office in Singapore and Australia and Canada, in the US. So we're running around like crazy and trying to stay focused on our two major customers at Q4, were KFC, which potentially could be our largest customer, and Domino's Australia.

With both of them, especially with KFC, we started the pilot in Singapore and it's still ongoing, so you're right that there is no increase in contracted stores but everything we have done in the last quarter and this quarter for example with KFC will lead hopefully to a major increase in contracted stores. It takes time. With Pizza Hut it took them a whole year to test us before they committed to rollout. With KFC it's not going to take a year, it's going to still take a few months but we were very much focusing on adjusting our algo system to a KFC operation in Asia. Plus, we've been working with Domino's on the camera and possibly other things that are yet to be announced.

Firstly, tell us about the camera, how does that work? Are you saying that you're offering the camera for free when you say complementary? Is that for free?

No, complementary, I meant...

Additional?

Additional, yeah, not for free.

So what is the camera, how does it work?

The camera, in the case of Domino's, it takes a picture of every pizza that comes out of the oven and within two seconds it recognises all the toppings, whether

they're on top of the cheese or below the cheese. It checks the quality of the crust, the quality of the cheese and then checks it against the orders on the point of sale and compares the toppings to the order. If there is a mistake, and there is always mistakes – there is no shift goes by that somebody didn't forget something – it stops it right there instead of sending it to the customers.

One of the pain points for Domino's and actually many quick service restaurants is mistakes in preparation. If you deliver the wrong pizza to the customer, then you have to go again and deliver another pizza, I don't have to tell you the implication of that. We eliminate it completely with the quality control camera and it also, by the way, sends the picture of the pizza with the temperature and the time it got out of the oven. The customer can actually see the meal and know exactly when it got out of the oven. That's a complete transparency and a new type of customer service, if you may.

What do you charge for the camera?

The agreement that we have with Domino's that was announced, the unit itself cost about \$650 dollars, that's a one-time and the monthly fees are about \$50 dollars.

In the Q4 announcement you say you've got 700 contracted stores, are they Domino's Pizza stores and they're actually contracted, are they?

Correct, they're contracted with actually a very aggressive timeframe to rollout this year and it's actually already more than that number, they're already upping it up, they're going into New Zealand as well.

Are you going to end up across the whole Domino's network with the camera?

Correct.

And you're talking to other pizza suppliers both here and overseas?

With the camera, no, because we gave Domino's exclusivity in their market, in the Australian market. Plus, they have one year exclusivity also for the other Domino's markets like the US and Canada. They have one year to determine if they want to take it to all over the world, to all their 13,200 locations. If they do,

Dragontail Systems (ASX:DTS)

then we cannot sell it to any other pizza chain with 20 stores or above. So we can sell it to non-pizza and to smaller chains with less than 20 stores.



How much do you think you'll end up making from the camera? I mean, if it was all the Domino's Pizza stores, that's \$650,000 per month.

You did \$50 times 13,000, okay?

I did, that's right.

Yeah, that by itself obviously puts us way over breakeven and that is the...

You could sell it to other single or small operator pizza stores, but not big chains?

Correct, and we can also sell it to, for example, I'm not saying necessarily there is something solid yet, but let's say flower deliveries. This is a machine learning camera, that's how it manages to recognise what's inside the pizza. It's actually now it goes through hundreds of pizzas and learning. So it can recognise flower arrangements, make sure no mistakes there and also send a picture of the flower to the sender, so they see what was sent. It also works great with sushi or Asian type foods. There are other potentials besides pizza.

You could sell it to florists? How about that.

Yep, absolutely. You see, again, the interesting thing with a florist, Alan – if you order a pizza to yourself and you get a picture of the pizza, it's nice to have and it is really good. But if you send flowers to somebody else, usually you don't even know how it looks like. That will enable the sender to see what was the recipient getting.

I see. Back to algo platform, the original technology. Firstly, is Domino's likely to buy that as well or just stick to the camera?

We cannot discuss that because nothing was announced. Let me just discover a scenario for you. Assume that you're a customer that receives a picture of the pizza from Domino's with the time it got out of

the oven and the temperature. You've got that picture and if you didn't get your pizza – let's say only half an hour after that, you are not going to be happy. That camera also requires the restaurant to do what we call just in time baking, or making sure that pizza is prepared in conjunction with drivers availability and so on and so forth.

If they don't use our algo system they'll need something else for the camera to really be fully effective, if you know what I'm saying. Right now, we haven't announced anything with Domino's Australia when it comes to our algo system.

It's interesting because Don Meij has always been very proud of their technology in Domino's Pizza, in fact he's been saying and the analysts has been saying Domino's is actually a technology company, not just a pizza company. I would have thought they had their own technology for just in time baking and all that stuff inside?

First of all, Don, by far, and Domino's Australia is the most advanced technology QSR, I can vouch for that. What they have is basically GPS system that enables the customers to track the driver and also for the store manager or the shift manager to the store, to track the driver. However, our system actually brings science and algorithm and optimisation into the store, so it makes all the decisions that are currently done manually let's say by Domino's, it automates and does them in the most optimised way. To clarify, there is no other company right now that offers what we do. Yes, Domino's has a lot of technology, but they don't have that part, yet.

I bet Don wants exclusivity with the algo platform for pizzas but it's too late already because you've already done a deal with Pizza Hut.

You're absolutely correct.

[Laughs] It's too late. Are you talking to Pizza Hut about Australia as well as America?

No, we are not talking to them about Australia because we are in discussion with Don.

Okay, very interesting. Obviously things are at a delicate point then?

It is, because after all there are only a few major players in the QSR world. Yeah, it is a fine line. After

all, they need to trust us also with the information, that it's secured and all of that.

Yes.

But we believe, Alan, that eventually every restaurant in the world, that at least some of its business comes from delivery. We'll have a system like this either from us or for somebody else, if there will be from somebody else, like that. Otherwise, if they're going to rely on the manual decisions in the restaurant, they are not optimised. So, it's going to be tough to stay competitive.

Does the system operate well with Uber Eats and other such delivery services? Does it integrate with them in some way?

It can. Our system has the ability to, at any given time if there are not enough drivers in the store, if the restaurant uses its own employees or its own drivers, if there are not enough drivers in the store our system has the ability to connect to third parties or freelancer drivers and pull them into the store. Right now, however, we do not have any agreement with Uber Eats for example.

And could the algo platform operate with florists and other delivery services as well as the camera?

Absolutely. In a way our system can optimise any type of delivery. It's just that food delivery is the most sophisticated one because, as opposed to let's say FedEx and UPS that also have optimisation systems, they deliver a package and that package can arrive second day or next day, but we have to deliver food that should arrive within half an hour. Every second counts, so the amount of calculation is way more, plus we are delivering food and when it comes to food it also has to be hot and fresh, not like a package or whatever. That adds another whole dimension and that's what makes our system more sophisticated. But absolutely, our system can apply to other types of deliveries. Right now we are very much focused on quick service restaurants.

Do you compete directly with Last Mile Delivery or courier delivery technologies like GetSwift?

Like you said, they are last mile, so they are maybe 5% of our system. They're doing the path from

the moment the order is ready to be dispatched. Remember, we start before the order even shows up at the restaurant. So we offer a much more comprehensive solution, much more. But we can also offer the part that let's say GetSwift and others offer. There are many last mile technology solutions out there, many.

But they're cheaper than you of course, so if you only wanted last mile service, that's what you would take. The question whether they are cheaper or not is an interesting one. You see, our system, the return on investment, no restaurant actually has to have our system. They have to have a refrigerator, an oven, a point of sale, whatever... But they don't have to have the algo system to operate. If our system is not paying for itself and then some, it's not going to last. We don't even sign the customer for one or two or three years agreement. It's a month to month. If they don't like it they can get off it. But after they go on the system they don't understand how they operated without it and the results are – some of them, immediate, like reduction in customer complaints. This is an immediate impact that more than pays for the system.

Then there's the ongoing benefits of reduction label cost because you can do more deliveries with less drivers and the food is always hot and fresh. All of that adds value. I'm not very familiar with all the last mile pricing. I know they charge per transaction, we don't do that. It depends on the volume in the store. Not necessarily they'll be less expensive.

I guess that's right, if they're charging per transaction and they're doing a lot of transactions, they might be better off with \$200 a month.

Exactly, absolutely. The math is quite simple, this in good stores, busy stores where they deliver 100 deliveries a day, on the weekend they can deliver 150, maybe even 200. So it depends on how much you charge for a transaction, it can cost you more.

That was Ido Levanon, the CEO of Dragontail Systems, an Israeli ASX listed company

Interview conducted 6th February 2018

Sam Marks is the CEO of Vivid Technology. Now, a disclaimer to begin with, which is that I own a fair few shares in this company. I've been a believer in it for a couple of years now. I think the story is terrific and therefore I'm biased, which doesn't mean that the interview was all that soft, but it was certainly – I think it's a fantastic business, I like it, I've invested in it and I think it's got a great future now that the business, for those who don't know already, is selling lighting but it's smart lighting.

The lights actually collect data and they do lots of things including, of course, turn off when there's no one there and turn off at times when they're not supposed to be on. They're saving customers – and we're talking about warehouses, shopping centres and so on, big customers – they're saving them 80-90% of their lighting bills just from using smart technology to run it.

They're also collecting a lot more data and doing other things with it and they're moving from what they call the capex model where they just sell the lighting and that's it, to a recurring revenue model, firstly, where they service it for a fee each month and secondly, which they're now moving to, which is where they give the equipment away, they install the lighting for free and then they share in the savings. That's the model going forward, probably about 50/50 in the savings.

That seems to be getting some traction, so I reckon it's probably got a future. The shares popped up at the end of January from 4.5 to 6.5 cents after they disclosed that they'd gone cash positive in the December quarter, so obviously a part of the interview was to determine from Sam whether they're going to stay cash positive or slip back into negative again as they ramp up their sales team and so on, and go for broke now.

The other thing about this company is it's got an investment in a thing in Israel called New CO2 Fuels where they turn carbon dioxide into burnable gas, SimGas, they're calling it. They've got a partnership or at least an MOU, memorandum of understanding, and a term sheet for a deal with Sinopec, the big Chinese energy business and the way I look at it as an investor in this business is that what you're paying for with Vivid, the 5 or 6 cents or whatever it is per share is the lighting business and that's a good investment in my view, and you're getting a free option over this other thing in Israel called New CO2 Fuels which looks very interesting and probably worth a fair bit of money.

That's the way I'm looking at it and I reckon it's worth investing in myself.

Here's Sam Marks, CEO of Vivid Technologies.

Obviously you went cash positive in the December quarter which announcement caused your shares to pop up from 4.5 to 6.5 cents, and now they're back down to 5.5 or so. Before we get into that and what happened in the December quarter, perhaps we could just take a step back and understand the technology that you're selling and a bit of the history of the company.

Because you started off as Green Earth Energy, which was, I think, a geothermal business, and have now transferred into a lighting business. So can you give us a sense of the history and lead up to the product that you're selling now?

Yeah, sure. Maybe a very quick pottered history. I came onboard about four or five years ago to restructure and turnaround, as you said, a Green Earth Energy geothermal play. The business has evolved quite a bit and changed since then. I'd say, really, Vivid Technology which we rebranded last January, evolved probably about two and a half years ago in the current state it's in today. What we started to develop with the team on board was a very intelligent lighting platform. We saw an opportunity in the space where lighting – effectively it's ubiquitous, it's everywhere. Everywhere you and I look, you'll see lights.

We sat back and thought, if we can come up with an idea that the lighting can, a) save a lot of money for customers, and b) make their offices, warehouses, manufacturing plants more intelligent at the same time, then it's a really interesting opportunity. We're at a stage now where what we've built and developed – and we've reached out and partnered with some big groups here and overseas. One of the biggest partners probably in Australia for us is CSIRO, who's helped us develop some of the tech which we own. Effectively, what we've developed is a lighting platform that has light as an output for our customers.

But behind it is effectively a multiple number of computers which are developing or spitting out about 3.3 million pieces of data per year, per light, to achieve extraordinary energy savings for our customers, but also a lot of intelligence they can use to improve how they run their business. In saying that, to give you some light examples, we've consistently seen independently verified energy savings well north of 80% for most of our industrial customers. We had actually Coca-Cola Amatil put out a piece on LinkedIn, who's one of our customers, that they're seeing savings north of 90%. That's fantastic, that's exactly why we're here.

From a sustainability perspective, they're saving energy, they're reducing their CO2 emissions. And from a productivity perspective they're starting to learn more about what goes on within their businesses in relation to sensors understanding who's moving where, when; when certain items are being used or utilised more than they thought they were; and effectively providing a lot of data intelligence.

How do the savings come about exactly?

There's no silver bullet. The savings is a combination of smarter and better lighting technology at a base. But also, really, what we would say, only putting the light where you need, when you need it. A really simplistic answer. We would probably almost every time put in daylight sensors and motion sensors into a facility. What that means is, if there's enough light coming in from either the cargo bay doors or through the roof through clear glazing, then do you need the lights on? If there's enough light and our sensors pick up that there's enough light for them to do what they need to do, then our lights don't need to be on. On the flip side, if there's no one there, why do you need the lights on?

These seem like really simplistic things, but historically lights tend to be left on or sometimes turned off and I think it even comes down to what you or I might have at home where the wife and kids, in my case, leave the lights on all the time. From our perspective, we've setup a system that if there's no one there or there's no one home, there's no lights on. That's what we do, but on a very big scale, across these large warehouses and manufacturing facilities.

It seems a simple thing to do to achieve 90% plus savings in cost?

Look, there's a lot more intelligence behind it than what I just put forward. But we get effectively 86 pieces of data per second from every light and from that data we can start to analyse a lot more information than people have done before. I think the other pieces that make this very smart is we manufacture our own light fittings here in Australia. Believe it or not, when everyone else is offshoring with relationships, like CSIRO, as I said and some local manufacturers in Melbourne and Sydney, we've actually made technology that means we can actually sell a lot less lights than our competitors because we've designed them in a way that are fit for purpose.

We're selling less lights and we're using less electricity to do it at the same time. There's a lot of ways we achieve these savings of north of 90%. As I said, there's not one silver bullet.

How do you charge? Do you just sell the lighting system or you sell it and then charge a subscription? What goes on?

We've got effectively three business models. One is, what we've done predominantly and historically, which we would call the capex model. We sell it to a customer and they pay their capital expenditure upfront and they own the system. That's been traditionally the way that the light industry has worked and so, as we build and evolve this, that's been the model that we did to prove what we could do. We're now at a stage where we have really, two other models. One is a service level agreement where we will service, maintain and run those capex models or those capex sales for our customer so we can improve their savings and improve the longevity of the system, and provide them reports and insight that they didn't previously know.

In the third model, which is something that we've launched and we're looking to launch that in a bigger way this year actually and hopefully make a big splash marketing wise, is what we would call lighting as a service. That one, we back ourselves 100% and we effectively go to our customers and say, 'We'll install this whole system for free and of those, say, 90% energy savings we will take 'x' per cent and you get 'y', and we only get paid when you get the savings, so it's a win-win for everyone.

What's 'x' in that situation?

It depends on the customer, it depends on the usage. There's no flat rate. There'll be a combination of savings for the customer based on energy and also maintenance. We don't have an exact number, we'd like to say it comes out roughly 50/50 each time. But it really depends on the usage patterns and the energy cost for the customer. But I'd say 50/50 is about right.

Has anyone bought that yet?

We've got a few models that are in process. I would say we can't really talk about any formal announcements yet, but watch this space.

You've been basically operating two or three years now with this new model, this new business of lighting, selling lighting. What's been the process over that period? Have you had a big job persuading people to do it?

Yeah, it's a good question. I think one of the guys on our team coined the phrase last year. We originally went through, 'Why me?' and 'Too good to be true.' To now, 'Me too.' I think if we sit down and tell people that we can save them 90% of energy costs, they don't believe it and they're probably not very polite in telling us that they don't believe it, because it's a big number, so we've had to prove ourselves and we're doing something that's never been done anywhere else in the world. I think there's not really many, if any, competitors that we see globally doing really what we do and how we do it. So, it's been an education process. What we've done is focused on working with the biggest blue chip customers that we respect them and their brands. To prove to them we can do it with the hope that if they liked it not only would they buy it, but then other people would realise that if the big guys are doing it, it must be real. And I think that's what we've achieved over the last

12 months, which is what we're starting to see come through with the cash flows, which I can come back to later. But it was really a challenge of going out there to some of these customers saying, 'Give us the first aisle of your warehouse for free, let us trial it, let us prove to you we can get north of 80%.'

Once we'd proved that, we'd convince them to then buy a system for a whole warehouse and see the savings well north of 80% hopefully for the whole warehouse, and after that, say, 'Look, you've got another 100 warehouses, why can't we do the rest of those? It makes sense both from a financial and sustainability tick.' That's what we've been working through over the last 12 to 24 months.

Who was the first big customer you got across the line?

I think Linfox was probably the first big one, which was a fantastic customer. These guys are smart, they're tough, they've got a very big business and if you think about the size and scale of that business, one of the biggest costs for them in their facilities is energy. Obviously they've got trucks on the road, but day to day operating the warehouses, one of the biggest costs if not well north of 50% of those costs outside of people, is lighting costs for electricity. So, we've proved ourselves with them, they've been a fantastic partner. I think they've helped us and we've helped them along the way.

What did you do for them first? Did you install your system into one of their warehouses and that was a test, is that what happened?

Correct. We did a trial, they run a lighting trial – it must have been a few years ago now – in a site in Victoria. They brought in a lot of different lighting companies, we were one of them and we won the trial based on performance and long term cost. Return on investment for them is the way they look at it. After proving ourselves for the first one, we then won the first facility, which is a site – and I've got to be a bit careful, I won't talk about all their sites, but it's a site up in Brisbane. That's tracking very well, it's now been installed for about two and a half years.

And we've been able to prove time and time again that we can win and install more sites for them and it's been a very good relationship. We're in the process of doing a few more sites as we speak.

They've decided to install your technology into other sites?

Absolutely, we've now got sites for them. I think it's probably somewhere between 10 to 15 sites across Australia. Literally, Perth, Darwin, South Australia, Victoria, New South Wales, Queensland.

Who else have you picked up? I think you said in your quarterly that you've got 732,000 square metres of client area under your lights. What sort of companies does that include?

We've got an industrial and a commercial focus. Our industrial focus is very intelligent lighting. Our commercial focus is getting more intelligent. So that 700-plus square metres includes commercial and industrial. On the industrial side we're now doing work for groups like Coca-Cola Amatil. We're the preferred supplier for Coca-Cola in Asia-Pacific. We've done some work for the Port of Melbourne. You're obviously from Melbourne as well – Appleton Dock, Station Pier where the Spirit of Tasmania comes in, a lot of those light fittings are ours as well. From a commercial side we worked with Honeywell, which is also one of the groups that we've got a strong relationship with, to upgrade the Boroondara Campus for RMIT, and we're also doing hospitals. So it started to really expand the platform quite a bit outside of where we started two and a half years ago.

Tell us what you charge for it, what does it cost to fit out a warehouse with your lighting? Leaving aside the percentage one that you're moving to now. Either if you sell the whole thing or you sell it and you service it later, what's the price?

We don't have a cost per fitting. What we've really tried to move away from is – quite often we'll sit down with other groups and they'll say, 'Well, how much is one of your lights?' and we say, 'We don't actually sell lights, we sell a system.' What we try and look at is a cost per square metre. If you look at a 20,000 square metre warehouse, which is not big but is not small, we would on average say, \$15 per square metre is the cost to the customer. That can range from between \$10 to \$20 per square metre for what they want and how bespoke and tailored they want it. But \$15 per square metre is probably around the right cost.

Just getting into the quarterly now, your cash flow for the quarter was receipts from customers, \$4.84 million. This is for the quarter. How much of that was recurring revenue and how much of that was simply sales of the equipment?

Predominantly they were simply sales of equipment. That was pretty much, I would say about 99%, not quite 100% of capex. The recurrings just started so there's a few trickles coming through there but an immaterial amount. It's really a toe in the water on the recurring piece. That's predominantly capex.

But you are moving towards recurring revenues, you hope? Is that the business plan?

Correct. Look, that's the holy grail. I think again it becomes an education for customers as much as other people that we work with. Where we sit and I think we're getting very good feedback from customers and potential customers that if you look at a lot of – let's say a warehouse today, you don't own the forklifts, they don't own the racking, they don't own a lot of the other equipment. Why do you want to own lights that are a commodity, that you have to therefore service and maintain? Let us service and maintain it and the customer can then do what they want, whether that's making widgets or biscuits or whatever it is.

It's becoming certainly more attractive with the information we can provide to help them improve running the business as well. That's where we'd like to go, I think it will take time. I don't think it's going to happen today as a 100% flip from capex to annuity, but that's certainly the model that we're pushing.

Your net cash in the quarterly was \$2.38 million – this is positive cash flow, which was quite a big turnaround from the negative of \$1.7 million in the previous quarter. Is that turnaround to positive cash flow now permanent do you think? Or are you going to ramp up the business in particular on sales and possibly slip back to negative? Or are you going to stay in positive territory now?

It's a good question. I think realistically as a business, we're still an early stage business. I think we're well past start-up and I'd say – and I think we talked about this at our AGM – we're in the growth phase, so it's going to be a bit lumpy. Firstly, from an ASX perspective and what we're telling the market, we're not giving guidance formerly, so I can't sit here and

tell you exactly what the next few quarters are going to be for those different reasons. But what we are communicating to shareholders is that it is a bit of a lumpy business at the moment. It's still going to be a little bit up and down over the coming quarters. It is certainly trending in the right direction but I don't expect it to be cash flow positive every quarter for the next few quarters until we get a little more scale and a little more smoother growth in these customer sites.

I suppose what I'm asking you, Sam, is how are you going to approach it? Do you see this that there's sort of a pot at the end of the rainbow, that if you really kind of go for it and spend more, that you'll get it? That the return on your investment will be there or can it just now grow by word of mouth of something?

I understand. I think two fantastic examples that we're certainly not there yet are I guess, Amazon and Netflix. Amazon and Netflix I don't think ever has been cash flow positive and Amazon has only gone cash flow positive in the last 12-18 months after 15 to 20 years of exponential growth. It's an interesting business model. From our side of things, we certainly don't have the pockets of an Amazon or a Netflix, but we consistently have that conversation internally. It's a little bit of an arms race or a land grab. The opportunity is certainly there for us while we believe we're – let's call it number one/two in the world for what we do, that we should really go very hard on marketing and sales today to own the customers in the sites while we're ahead of the curve.

On the flipside, as an early stage business I use the term quite a bit internally that we have to earn the right to grow. We've got to be able to prove and justify to our shareholder base that we're actually doing it. We've got to prove to our customer base we're actually doing it and of that we can either raise the capital or preferably just get large sales that will pay for the growth. It's an ongoing challenge. At the moment we're a long way ahead today than we were I think when you and I last caught up probably 12 months ago at this stage of the business, and it's trending the direction of growing as fast as we can.

Speaking of Amazon, are you talking to them about selling them lighting for their distribution centres?

We have spoken to them. They've got some requirements in Australia that are hard to meet at the moment given some of the US pieces that they require around it, but we have met with them before and it's an interesting conversation. We're working with other groups that are like Amazon as well. From our side of things there's a lot more that have bigger footprints today – even though Amazon has a great brand, we'd certainly be happy to take it. There's a lot more that we're embedded with and proving ourselves with that can help us grow quicker than that in our region at the moment.

You mentioned that when you bid for the original trial with Linfox you were up against others and you won it obviously, but that suggests that at the time, two years ago, there was some competition, people doing something similar to you or they were just selling lighting. I'm just wondering whether anybody has caught on and is now doing or trying to do what you're doing. Just give us a sense of your competitive landscape?

I don't know exactly who was in the trial – well it was a few years ago now – originally. There's one competitor that we would see globally as a real competitor who does some very smart intelligent lighting. It's a group out of Boston called Digital Lumens. They actually just got bought by Osram late last year, I think. Osram's one of the biggest lighting companies in the world. Digital Lumens were private, so I don't know exactly how successful they were in the sale process, but they're a good product and they're interesting. I would say probably they're our closest competitor.

We still do thing differently. They sell intelligent lights. A lot of the rest of the competition is what I would probably say is substitute goods. People can put in lights, they're not networked, they're not smart, they're not intelligent, they're not coming up through the internet and effectively – you probably know the term, 'The internet of things.'. We would say we're part of the industrial internet of things, we were doing it before it was called the internet of things. But that connectivity piece where it's monitored 24/7 and spitting out data, I would say there's probably only

Digital Lumens that can do that. Everyone else is really selling otherwise, as harsh as it sounds, dumb lights. Not that they're stupid lights or they're bad lights, but they're not intelligent. And that's still a competitor based on cost.

What did Osram pay for Digital Lumens?

I don't know, but if you can find out I'd love to know.

What do you think? Have you heard any whispers?

No, we obviously would love to know. I don't know, is the honest answer. I think based on the size of that business, I think it'd be well into the millions, whether it's well into the hundreds of millions, I don't know, I don't have an answer.

You're also talking about that you're collecting lots of data obviously and you're the internet of things and so on. Are there uses for the data that you're collecting that doesn't just apply to saving money on lights?

Absolutely. I think the big piece for us is understanding the data and finding the points that effectively provide opportunities for the customers to make their businesses run smoother or better or safer. With a lot of the information you see with the internet of things today I think a lot of people, including myself, I don't know about yourself, but I get spammed pretty regularly with lots and lots of reports that mean nothing, because they're just more information to tell you the same as what you had yesterday and you get sort of report burn out, I guess.

What we're trying to do, conversely, is only send through exceptions. Some of the information we're gaining has been able to help out, and I won't mention customer names but live examples on a security basis. When we install our systems, we put our control system in through or back through the alarm system in facilities. I'll explain the reason why, the logic is from an alarm perspective, the example I talked about before with the wife and kids at home saving money, everyone remembers to turn the alarm on when you leave home. It's the same as when you leave your warehouse or manufacturing facility.

We program our lighting system that when you turn the alarm on the warehouse, all the lights go down internally and they turn off because you don't need them, there's no one there, and all of the external ones come on as a security measure. You get the energy savings straight away. What it also means though is if the alarm is triggered, the alarms switch onto an operating mode. Because of the motion sensors within it, if someone breaks into a facility, the lights will track where that person is going and for how long they were there.

We had that situation with a customer where we saw someone come in through a side door in a facility, that was about 1 in the morning. At about 1:30 in the morning they left the facility, we sent a report through to the facility owner and said, 'Something happened between 1 and 1:30, this is where the person went and they stood about here for 23 minutes of that time. I recommend you go and check it.' They went and looked into it, it turned out it was security person and the security person had probably done some things they shouldn't have done and they no longer work there. You start to get a lot of really interesting information and data that previously if you think about any other lighting that was in there, you can't get.

You also told me the other day, you were able to tell somebody that their roof was coming off?

Correct. That's a really interesting example. We have a customer, a very big global brand, they've got their biggest distribution centre for Asia-Pac in Melbourne. It was middle of the week, one of our operations guys happened to be in Perth and he got a notification that the light levels, the amount of light that was being picked up on our system in a square metre of a facility that was almost 40,000 square metres was very high, unusually high in just a small corner of the warehouse.

He rang the Head of Operations and said, 'Look, I'm over in Perth but I don't know what's going on in your facility but it looks like there's something wrong in this square metre and we're seeing very high light levels.' And the Operations Manager said, 'If there's a storm it's probably just lightning or some other issue.' He said, 'No, it's bigger than that, I don't know what it is, but can you go down and check, I'll stay on the phone.' So he went down and had a look and in the corner of the warehouse the roof was peeling back and it was a bit of an older part of the warehouse.

Literally, as the roof was peeling back with the wind and the storm, the light level coming in was being picked up by our systems as an anomaly and reporting that back. What that meant was they could tie it down during the storm and when the storm finished, they went up and fixed the roof. It's hard to quantify dollar value savings to the customer but if that roof had come off I would have thought it would have cost them millions just in fixing the roof, let alone, product damage downtime for their biggest distribution centre and other occupational health and safety issues.

That sort of information is invaluable. What we're now working through with customers is how to do that on a regular basis. Obviously they're a little bit extreme in their own right, those two examples, but they're very interesting.

Before we end, if we can talk about the Israeli investment that you've got in something called New CO2 Fuels, what is it and how much do you own of it?

Sure. New CO2 Fuels is a fascinating concept. It's a business or really, a technology development, that came out of an institute called the Weizmann Institute in Israel. The best way to compare that is probably like the CSIRO here in Australia. We own a third of it, 33%. Our number one shareholder, the [Yerdi [27:46.3] Family, also owns a third, and the balance is held by the Weizmann itself and some of the tech team who developed it. What that technology does is takes carbon dioxide, which is one of the world's biggest problems, and turns it into fuel.

What sort of fuel?

Effectively it takes CO2, carbon dioxide, and H2O, being water, and disassociates the particles using heat – we can use 100% solar or excess or waste heat from facilities and it makes CO, carbon monoxide, Hydrogen, H2, and oxygen, O, as the products that come out of it. If you put together CO and H2, combine those, you get a product called SimGas. SimGas is the precursor to methanol and diesel fuel. It also is the precursor to Urea, plastics and a whole lot of other interesting things that we need. Basically, you take a whole lot of waste products and turn it into usable products. It's a fascinating concept.

What stage has it got to? Is it up to pilot plant stage or just the laboratory?

No, it's been proven at a pilot – demonstration level, I guess is what we would call it. The laboratory was the initial bench testing which was completed quite a few years ago. From there, the team in Israel built a full scale model, operating model, using excess heat and using solar, two different models. The excess heat model is basically like a very large oven and the solar model is actually a full scale model that was working in a solar tower within the Weizmann. That scale model is about 1.5 metres by 1 metre in size and it's modular.

To build the full scale pilot plant, which is what we're looking at at the moment with partners, you just need to make more modules and you need to connect them to the right facility, whether that's a coal fired power station, whether that's a gas field, whatever the situation is. Where we're at today is we've been working with a lot of different large international players who are the right commercialisation partners. Vivid Technology is not, [Yerdi] Family is not, we need to find someone like a Sinopec as an example who we're working with at the moment to commercialise this on a global scale.

By way of background and – I know, Alan, you know about it, but for those listening, Sinopec is, I think, today the second biggest company in the world. It's a Chinese state-owned enterprise oil and gas company. They are well into the billions if not, I think, almost half a trillion of revenue. We've signed a MOU and we're working through a formal and final commercialisation agreement where Sinopec will actually partner with New CO2 Fuels to commercialise the technology on a full scale basis out of China.

The technology itself, the core technology will still be built and developed in Israel, but the component and largescale construction and engineering will be built with the partnership of Sinopec Engineering Group out of Beijing and Ningbo, which Ningbo is effectively the Silicon Valley of China, just outside of Shanghai.

To sum up, it's a technology that can bolt onto say, a coal fired power generation plant and turn the carbon dioxide emissions into a burnable gas fuel, is that right?

Correct. That's correct, in the simplest way put. The other one, which is really interesting is, there's a huge opportunity for Hydrogen. If you look at hydrogen cars it's a big push coming through from Japan, but also into Australia now. Hyundai and a few others are doing it. We can make hydrogen out of people's waste product from, as your example there, off a power station. The other one which is really interesting in Australia, we've got huge gas deposits. In those gas deposits, when you drill a gas well three things effectively come out of the gas well. One is natural gas, the other is CO2 and the other is H2O.

Gas comes out and it's sent down a pipeline and off its merry way. But then the CO2 is vented into the atmosphere and the water or the H2O is either put back down the well or left on the surface. We can take the CO2, we can take the H2O and we can turn it into more gas, so it becomes a really interesting opportunity to utilise and make that well substantially more profitable but probably just as important, make it sustainable and not vent the CO2 into the environment.

Is it your intention to sell your third of this thing or to take it through to being commercial and a business in partnership with someone? What's the plan?

I think for us we need to at some stage – and it's not going to be today – but we need at some stage to find a home outside of Vivid and probably the [Yerdi] Group as well that gives it the best chance of success. The way we've structured it at the moment within Vivid Technology is there's a separate entity called NCF Global, New CO2 Fuels Global. Of that, we own 50% of that entity and the [Yerdi's] own 50%. Both our holdings sit in that entity. The intention is, with the right partners and the right financial backing we would probably – and we don't know the answer yet, it will depend on what happens – we would either sell it, we would either list it, or we would just maintain a percentage of holding of that while it has a leadership team of its own outside of our business. It's a very different business from the Vivid Technology piece which I've touched on and it needs a big partner like a Sinopec or someone else of that size to take it forwards.

What do you think it's worth?

Great question. What someone's prepared to pay! [Laughs] From our side of things, you look at the valuation on what it can do and it's huge. I mean, we look at plants that are \$3-400 million dollars in size. If you've got a technology that works, that is literally making these companies substantially more profitable and giving the sustainability tick, which is why it all aligns so well with Vivid Technology, it's a really interesting opportunity. I think it's worth a substantially higher amount than what it's valued at on our balance sheet today, but time will tell. I don't have a number off the top of my head but I think the opportunity for what you could do with that is very, very big.

Do you think that your third of it is worth as much as your market cap is now?

That's a good question, again. I think it's worth a lot, but it will come down to who's going to back it and what valuation they put behind it. I don't think that's an unrealistic comment, but time will tell. I also don't want to sit there and say that our third stake is worth more than our market cap today, because when you look at the balance sheet, the value is what the value is. But raising money behind it off the back of some strong relationships who are going to actually back it, it becomes a really interesting proposition.

I suppose the question is whether you market cap and whether the company's value on the stock market is basically your lighting technology and in a sense, you're getting this investment in the New CO2 Fuels business for nothing, if that makes sense to you.

100%. I think actually when you and I spoke 12 months ago, you used the analogy which I've subsequently used, so thank you, which is Vivid Technology is what you invest in and New CO2 Fuels is a free option. I would say that's a very good way to look at it still. If we see NCF work the way we think it does, the opportunity is huge. But today the main focus – we've got 25 people in Vivid Technology and the main focus for Vivid Technology and all the staff here is to build a truly sustainable and global, smart, intelligent, energy efficient lighting company. That's our day to day focus. The other piece is more of an opportunity in the future and it takes up a bit of my time but other than that the rest of the team is focused on Vivid Technology.

Great to talk to you, Sam. Thank you.

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