

Ray Keefe



Engineering Success Podcast

You Can't Design a Solution to a Problem You Don't Understand

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What I'm looking at is that my grandchildren are eventually going to inherit the current mess we are making, and they're going to end up in charge and they're going to want to do something about it, and I'll want to leave them a functioning economy full of value creation capability and full of capacity.

Rick Merten: Welcome to Engineering Success, a show for industrial and engineering leaders. Whether you're leading an engineering firm, a manufacturer, or an industrial service provider, you'll hear actionable insights from your peers on how to beat the odds and create a sustainable business and the life you've dreamt of.

I'm Rick Merten and I've spent over 25 years building businesses and working with technical companies to solve their toughest challenges.

Today's guest is Ray Keefe, founder and managing director of Successful Endeavours. Australia's award-winning electronics design and manufacturing consultancy that he started in 1997. Ray discovered early that an engineering degree didn't give him the business skills he needed to build a successful company.

Over 28 years, he's had to learn those skills the hard way while building Successful Endeavours into a business that has now won over 60 awards, including a business of the year IOT innovation of the Year and Manufacturer of the Year with a first class honours degree in electrical engineering and additional studies in physics, chemistry, and an MBA Ray, a senior member of the Institute of Electrical Engineers.

He founded Successful Endeavours to create electronic manufacturing opportunities in Australia because he believes successful modern economies need advanced manufacturing as a strategic part of their commercial operations.

Ray's passionate about creating electronics manufacturing opportunities in Australia and has some fairly strong views about why Australian business struggle compared to the rest of the world, particularly our last place ranking globally for business collaboration and research commercialization.

Hi Ray.

Welcome to the Engineering Success Podcast, and thank you for joining us today.

Ray Keefe: Hi Rick and thank you for the opportunity.

Rick Merten: We might just get straight into it and we'll start with that unbelievable statistic that you've said that Australia ranks dead last in the world, 181st out of 181 countries for business collaboration and commercializing research. That's a shocking statistic. What's broken for us?

Ray Keefe: It is where I first heard it was at the Australian Manufacturing Symposium, which was being held in Dandenong in 2016. And Senator Kim Carr was the keynote speaker. He released a bunch of statistics. 181 is where we were out of 181 in 2016 for business-to-business collaboration, university-to-industry engagement and publicly funded research commercialization. But we've ranked right up the top for problem solving, creative thinking, for being really good mavericks. That's the other half of this coin, we are very resourceful, but that also means we don't think about partnering very well. Because 'I'm going to try it myself first' is very much the Aussie spirit. That has not served us well. If a problem's too big and you need partners, then we actually start to struggle. Some other stats from the same session. We rank a hundred and sixth in the world for commercialization capability. Basically, turning good ideas into money. We also rank very low for access to finance and very low in management competence.

I'm an engineer by training. I believe you can only reliably solve a problem you fully understand. Otherwise you're just trying to get lucky. If I want to solve this problem, then that means I've got to do something different. So as a business, we try to be high collaboration. We try to be good partners. If I want to change the economy by creating local opportunities, that means a lot of other buildings have got to be busy, not just mine.

So I've also got to think in terms of how much of this pie can I give away? How much can I grow the total pie?

Rick Merten: Then from your own business perspective, does that collaboration deficit impact your ability to scale either with research institutions? Or larger manufacturers, or even with industry to drive, not just the growth of Australian manufacturing, but for your own business. I'm really trying to dig into here, how has that deficit really impacted you on a day to day?

Ray Keefe: It definitely affects the universities and groups like the CRISO's ability to engage with businesses in Australia. If I look at the projects we have done over the years, only one of them has come out of research done at a university. And only one of them has come out of research done at the CSIRO. In that particular case, they engaged us to build the prototypes because while they had the science chops, they didn't have the engineering chops to actually do that bit.

Then they quickly pulled as much of it back in house as they could because they're trying to keep the money inside their walls. While I understand that because they went from being an organisation that's designed to 'work on problems of national importance' to, 'you've got to go and feed yourselves now'.

That shift under the Howard government was pretty tragic from my perspective in terms of Australia's capability. So an IP startup out of university is really hard in Australia. It also means that some of the key places that we've invested in facilities like scientific instrumentation, laboratories, equipment, minds capable of working on difficult problems; it's almost impossible for them and the commercial world to intersect. So I think that really does hold us back a lot.

Rick Merten: And specifically for you, do you think it's been impediment for your ability to drive growth? Obviously you've been around for 28 years, so it's not that you're a young company, but has it impacted your growth?

Ray Keefe: if we're in the US we'd probably be a hundred times bigger than we are now because they've got a very different attitude to growth, and to leverage. They've also got a very different size of economy. The argument is that Australia's too small of a domestic economy for us to build globally, starting at home. I think that's wrong. We've got the same population as Taiwan and they wouldn't think like that about the problem. I think it's how you think about the problem that drives this position rather than the problem itself.

Are we more spread out? Yes.

Is a logistics project in Australia harder than a logistics project in Germany? Absolutely.

So some of these stats are a bit unfair if you dig into them, but I think the general trend they point towards is not good at partnering and not good at commercialization. The solution to that requires us to put time, effort, and energy into those areas. The government can fund as much of this as they like in terms of individual businesses. If they don't change the way the ecosystem behaves, it's not really going to change the overall direction of the economy.

Rick Merten: We will come back to some of these issues and how after 28 years of being in industry, I'm sure you've learned a lot.

Let's just go all the way back to 1997. What made you think I'm going to start my own electronics company? At that time, I imagine most engineers were just pleased to get a comfortable job in business.

Ray Keefe: I might actually go back a bit further than that, because that will help put that answer in context. In 1978, I joined a pub band, and learned to play guitar. What it did do is, it got me using electronics equipment that was absolute rubbish. I started to think in terms of 'surely someone can design something better than this'? I went back to the university and said, 'if I want to learn how to design electronics equipment, what do I study'?

They pointed me in the direction of doing electrical engineering. During my four years at university, I was designing, building and selling professional audio equipment and customized audio equipment to musicians and recording studios. Not to try and make money, but to actually build my craft. The thing about education is if people give you knowledge, that's one thing.

If you engage with that knowledge and use it to solve real problems in the real world, that's where you build intuition and that's where you build wisdom.

I did 10 years at a business called Invetech. It was at the end of that 10 years that I set up Successful Endeavours and I set up Successful Endeavours because Invetech decided that I could take my services elsewhere.

I wanted to do something of import. And when I looked at their clients and I looked at how much they charged, I thought nobody can afford this. It's very expensive. Australia is the land of the small business. At the moment, 96.7% of all businesses in Australia are five or less employees and under a million dollars in turnover.

That low management acumen keeps those businesses there.

Successful Endeavours was set up because we suddenly had free time and an opportunity and I thought, I'm tired of working for idiots, I'm going to do it myself, not realizing that I was going to be the idiot that I was working for from a business perspective.

You must have seen a fair bit of this Rick with your business and trying to help people like me.

Rick Merten: We see that all the time especially when it goes to the other extreme where you end up, you are working for yourself, but actually, or you've got a job, not a business per se.

Ray Keefe: That's right. Job with tax benefits. I had a job with tax benefits for the next six years.

At the end of that period I thought to myself, I want to make a bigger difference than this. I want to do something of substance. What do I change? That's where it stopped, because I didn't have an answer to that question.

Rick Merten: So just to for clarification, when you set it up at the beginning, was it primarily a consultancy or was manufacturing already part?

Ray Keefe: It was a consultancy. We were going to design other people's products for them, and they were going to make them, and a hundred percent of our clients initially were manufacturers. So Australia had a lot more businesses then that did design, manufacturing, international sales, and distribution all out of the same entity.

I was always intent on doing stuff for manufacturing, but I never saw myself as a manufacturer.

In the early days, people paid us to produce IP. We're a manufacturing business, but we manufactured IP and they did stuff with it. Whereas now we've got some people pay for IP, some people don't pay for IP, they only want product. And so we amortize the IP into the product cost. We've got other people who just want to license stuff from us.

We've got other people who don't want to pay for anything. For instance, there's a number of products that we've developed over the years where we did all the investment because nobody else would. And those have been very successful products. We've had other products where we've on-shored stuff from Asia back to Australia to actually drop costs. So there can be ways of doing that, particularly if the costs are there because the product's not been designed very well.

Also, what's a job? How many people work versus how many people are contracting agencies versus how many people get remunerated via other mechanisms.

Rick Merten: Just to go a bit more about you and your own journey and referencing a little bit what you said. I know you went in and sold the audio, electrical equipment to, as you said, learn some chops, but fundamentally you started Successful Endeavours because you thought your engineering degree would be enough to run a business.

And how wrong were you? What was the first real lesson you learned, or was there a specific moment that you realised you were slightly over your head?

Ray Keefe: I'm smart and I can do the maths for business and all of that sort of stuff. But I started off initially, if I look at the lens I looked at business through, I started off with the view that if I made it cheap enough, then that would make it easier for people to buy it. And there is a truth to that.

Rick Merten: The last thing you want to do is come second in that race.

Ray Keefe: correct.

The other thing that happens is if you make it too cheap, people are also not buying. And if you don't explain the value proposition, they're still not buying. And if you give them what's called cognitive dissonance, if you give them any reason to doubt any part of that value expression, they're still not buying.

Or the ones that are buying are the absolute cheapskates who are going to be the worst, most difficult people to deal with because they're trying to save money every time you transact anything with them.

What I didn't understand is that branding, positioning, and pricing policy are actually where you start a business, not where you actually try and eventually end up.

The other thing I didn't understand is that businesses have systems and processes running inside them. When I was at Invetech, they had a lot of business processes and systems running around me that were invisible to me because magically it just meant everything happened. When I stepped into my own business, I stepped into a vacuum.

Rick Merten: I find it a little bit disheartening that in 28 years of you running your own business, the insight of not understanding the role of pricing and positioning, which are fundamental marketing principles that drive how we think about the work we do, are still misunderstood in the market. Business owners don't understand that if you start with the customer and the positioning and a pricing approach, not pricing from the inputs of cost, et cetera, or just looking what the market charge is.

If you start from a position and then work a price approach, that way you can actually build a much better product and then take it to market far more successfully.

Just to dig a little bit deeper into that, from your perspective, do you think there was any specific skill gap? And you mentioned too the way you thought about the business at the beginning and then the systems, but there could be something else that really fundamentally cost you money or opportunities in those early years and then when you rethought it, you restart it or kick started the business again.

Ray Keefe: Yeah. So as I said, if I look back at those early years through the lens I've got now, I can see lots of missed opportunities. I didn't even recognise them as an opportunity at the time because I was thinking that my business did a certain something and that wasn't that certain something. Therefore, my business didn't do it.

If I step back now and I ask, what is a business? Business is the modern partnership to change the world together in partnership with each other because it provides you with that package of, legal processes, financial processes, employment, accounting, ... all of those things.

Making the world a better place is a big job and you need help. You're either going to employ that help if you're running the show or you're going to partner with other businesses to get that help. If I look at business through that lens, I see something very different to: 'how many more products can I design', 'how much more efficient can I become'?

The model I use now is: you've got the branding, positioning, pricing piece; you've got sales prospecting, channel, deal making, you've got that area; then you've got technology people, business systems.

Most people do the Michael Gerber E Myth thing, which is they're a technician. They start a business, they start in the technical box down the bottom, and they try and work their way around to improving their sales. Eventually they realise the problem is that they don't have a brand or a position or a price. They don't have a defined customer segment they're going after. They don't know why the last person bought from them. So they're relying on luck the whole way. The business isn't being designed. Here I am as an engineer saying, you can only design a solution to a problem you understand?

The problem I didn't understand was business, how to actually put a business together.

A business has to have every area operating adequately. The area in your business that's operating the worst is going to set the floor. That's going to set the base for what's possible in your business, and you're not going to be able to get far off that base.

Rick Merten: We've thought about a business that it has to have all of those competencies inside the business by employees. So you need to build out the capability in the business with your own people. I think the big shift today is actually if I focus on what I am best at, I can bring in expertise to augment the business with specific domain expertise.

Obviously we believe that because that's our how we think about marketing. And yes, you do need marketing chops inside your business, but actually you can bring that in by having somebody embedded in your team to help you drive that.

Ray Keefe: Yeah, I think it's very difficult to build a business without having a marketing mind, sufficient marketing mindset inside it, because asking somebody else to tell you who your customer should be and who your market segment should be and what you should offer and stuff like that, it's a bit like what happens when people ask a web developer to make them a nice website and they go, what do you want it to be like?

'I don't know, what do you think'?

I think you've got to own certain bits of it yourself. You've got to have that vision and you've got to have the drive and you've got to have the reason for being, and you've got to have that stuff that's part of your DNA, but you can fill in the gaps.

If you think about one of those 'Jack and Jill went up the hill' wooden piling buckets. The amount of water that bucket can hold is dependent on the shortest piece of wood in the side of it. What most of us are doing, and I was doing this, is I've got this really long piling called technical capability, and I'm making it longer.

I'm wondering why my bucket's not holding any more water.

Rick Merten: I really like that analogy. I would push back a little bit. I agree that it needs to be inside the business. What I don't think it needs to be is there needs to be a direct employee of that company. So we embed marketing people inside the business, so they're integrated into the team and they're there for a long-term perspective, but they bring the expertise.

Often what we see is when you try to go to market is, especially as a small business, is that you'll bring in somebody junior and go 'you can do my marketing', and they think of marketing as social media or advertising on Google, et cetera, rather than the strategic principles, which is where you alluded

Ray Keefe: I agree. When I say you need it in your business, you need to own it. You don't necessarily have to do all the doing, but you also have to believe that if we bring your embedded person into my business,

that's actually going to fill that out. So that's part of the value proposition that you have to demonstrate is that person planted there that way is going to do what you want.

And you have the leverage of course, that if that person's got expertise in that area and that's what they're doing, then they can probably function across multiple businesses simultaneously doing that same role. So all of those businesses are benefiting from that expertise without the cost base of it having to be a fulltime employee.

Rick Merten: Correct. And that's exactly what it is.

We work specifically with entrepreneurial engineers and industrial businesses, and we bring that breadth to the table so we can see it. But less about me, more about you. Just to go back to a little bit about you, and one of the things that you're obviously obsessed with is made in Australia manufacturing, but most people say, it's just too expensive.

And over the last sort of 30 years, a lot of that has been shipped overseas. Why are you fighting that trend? What do you see that most people don't see?

Ray Keefe: If you look at Japan, if you look at Germany, if you look at Northern Europe if you look what the USA is doing today, whether you like the way they're doing it is a different issue. What are they doing? They're trying to make sure that they've got a large amount of high value add local manufacturing as part of their economy.

Why are they doing that? Globalisation was a great idea and the ability to move things to the lowest transactional cost to try and save money. What it doesn't do is it doesn't look after your home base very well. If we just focus on money, on transactional cost, then there will always be a cheaper offer somewhere.

We are not trying to do that. We're not trying to compete with that. What I'm looking at is that my grandchildren are eventually going to inherit the current mess we are making, and they're going to end up in charge and they're going to want to do something about it, and I'll want to leave them a functioning economy full of value creation capability and full of capacity; so they've got the resources to be able to do that.

Rick Merten: Just to drill into that a little bit more, and really from your own business perspective, how do the economics for you stack up? And I understand the premium perspective, but I mean manufacturing out of, let's just take China as the example. It used to be that China had poor manufacturing with a reputation. Now they're a global leader, especially in some of the technical manufacturing. So how do the economics work out and I'm not looking at a national level, I'm really looking for your business, when you are talking to a customer of yours, how do you explain to them the proposition of local manufacturing?

Ray Keefe: Let's do some case studies. Security product company in Pakenham has got a product that they're getting out of China that's a circuit board that goes into a system that they make. This is a fantastically good deal. The factory in China did all of the engineering for free. They did all the tooling for free. You've got to order enough of these things. And so it's actually cost them no R&D and the product is 70 US dollars a board. They're thinking great, this is great, except that the products are all failing inside the warranty period. And also the product is a pain to actually build.

This board doesn't have facilities to help them do that better. They came and they got quotes from three businesses. We weren't the lowest quote. We got the job in the end because they believed we could do it. And they believed that the lower quote was from somebody who didn't know what they were getting themselves into.

Their financial controller said to me is, you are telling me that this \$70 board getting made in China is now got to be a \$200 board made in Australia. I said, it can't be done less than \$200 in Australia, but it's not the same board. For starters, this one's not going to fail inside the warranty period.

I said, we've also had a look at your production process and if we add up what it takes you to take this board, put it into your product and get your product working. It costs you about \$1,200 worth of labour to do that. We are going to change the design of the board and we are going to provide you with some software systems for configuring it to take most of that \$1,200 off the table. He's saying it doesn't matter because we are already losing money with a \$70 board and I can't afford to pay more for the board.

I said to him, okay, how about this for the deal? We'll design the hardware for the board. You can own the design, you can get anyone to make it, you can get it made offshore if you like. We'll do the software at our expense and we'll charge you a fee per board to program test, calibrate and make sure they're a hundred percent working and provide you with a full warranty.

We do this deal with them where we did, we took risk, they paid more and they retrofitted all of the units in the field with the new boards.

This is all cost at this point to them. They've already had their sales revenue, this is all cost, and they all start working. Then they start making new ones, and they work out that they can actually make them at three times the rate with the same labour force because they've got operational efficiencies.

When you design a product, you're not just designing for the transactional cost of the PCB, you're designing for the total cost of ownership. That's the piece that we focus on.

The moment their sales team knew that the product was good to go, the other thing that took off was their sales.

Every aspect of this business is now kicking goals. They've got a product they can afford. It's more than the one that was killing them, but they can afford it. They've got customers starting to come around and they've got new sales going through the roof.

That's what you can do with a more expensive 'Made in Australia' product. That's just one example. We've got a bunch of the rest of them. And we do have some examples where the Australian factories beat the Chinese factories on price.

Rick Merten: That was really enlightening for me. Again, just specifically in your business. How would you explain your competitive moat? Is it based on your ability, speed to market, is it customization, IP protection or something else?

What's your protection for your own business to continue to drive growth and stability?

Ray Keefe: If you go through our values, the very first one is that we care about the customer's success. This might sound funny, but there's a lot of businesses that are not so fussed about their customer success and it hurts them. If their customers aren't successful, then eventually, that flows backwards.

We pick up - one in three of our new clients has already tried to get something done by somebody else and failed because they're not collaborative, they don't get help.

That's the first part of it. The second part of it is that if they're not that fussed about the customer, they might not be trying that hard. The worst one was, we were the fifth business someone came to, and that one was technically challenging. We had the technical chops in all the tricky bits.

That's part of it. In terms of why our business succeeds I'm not worried about competition because the more businesses out there functioning like my business kicking goals, like my business, the better from my perspective because I'm trying to change the economy and they're on my team. I don't see them as competition. The competition I'm fighting is the idea in people's heads that you can't do this at all.

Rick Merten: That's built on the principle of a rising tide, rises all boats.

Just to go a slightly different direction, and over the years of the business, you've won 60 plus awards, but you are still a relatively small team where most business owners in the same environment would've scaled up possibly quite aggressively. Is there a reason why you've chosen to remain small or did you scale up and now you've scaled back? Tell us a bit more about that journey.

Ray Keefe: The Harvard Business School has quite a collection of team models that they run with. So the one that I like from them is what they call the hot team.

The hot team is a small group of domain specialists working on difficult problems. Their thesis is a small group of domain experts working on specific problems will outperform almost any size of team. That's part of it. There's a lot of leverage.

The other is finding the right people. It is hard because I'm not just after a brain, I'm also after a set of values. I'm after trustworthiness, I'm after dependability.

The other is that I tried for a long time not to be a manufacturer, and that was a mistake. As of September 2023, we've now got a factory as well. Not to compete with anyone locally, but to pick up all of the business that they don't want. If you are a startup or if you're a small business, or if you want two R&D prototypes to test, the contract manufacturers don't want to know you. This is not their core business.

Whereas we want to know you and we want to get those back to you in two weeks' time.

Rick Merten: Just to push a little bit deeper into that, hypothetically if a private equity firm offered you capital to really scale up and you might decide you don't want to, but assuming you did, what do you think would be your biggest constraint? Would it be the talent systems market demand or something else that would be a constraint to scaling up?

Ray Keefe: Our current constraint is systems.

If I was to put the hat of the investor on and asked the other question, which is, why should I give Ray money? What would Ray do with it? Would it be a good investment? I'd be wanting to see us taking our systems up to the next level because the growth I would like to have actually needs better processes, more comprehensive processes, more business automation than we've got at the moment.

It also needs me not available for everything as much of the time as I am at the moment. So I've got to actually take the business and make it more resilient against loss of Ray, because I'm a key man risk at the moment.

Rick Merten: One of the comments you've made previously is that Australian business manager is rated about 30% of OECD average for management competency. And again, that might be part of the reason why you are so depended on in your own business, but that's a pretty brutal fact.

At an Australian level, what do you think we're getting wrong?

Ray Keefe: That figure comes from BRW. It's a decade old. It's done based on data available from projects which have to publish public stats. We may be doing better in some areas than that.

Nevertheless, what it says is that our management acumen is not strong if we're to put in the more favourable term.

If we look at what they do in the US, Asia, and Europe that's different to us; we could learn a few things. In the US you work in a business. You look like you've got potential. They get you to do an MBA to fill out your domain expertise. Then you come back into the business with that and then they start to leverage that and they start to move you through the business.

If you go to Europe, they actually move people through every division of the company over time. They actually get their hands dirty in each aspect of the business, and they get to understand the business as a whole by moving around it that way.

If you go to Asia, they're inherently more collaborative than we are and they have a different attitude. Business is a bit like a family. To do something bad in business is to dishonour the family.

We are not doing it the Asian way, we're not doing it the European way, and we're not doing it the American way. I think it's time we started to think a bit more about how do we want this to work?

Up until now we've been coasting, rather than following a direction.

What I've decided, my business has values. We have that care about the client. We have that open and transparent communication. If there's a problem, we may work out a solution or an action plan before we talk to the client about it. But we don't want to be opaque that way. We want to be adventurous in our use of technology. They start to give us an idea of what life in the business should be like.

Rick Merten: Just to drill it back into your business, and we were broadly talking about fostering and creating management competency. When you think about your team, you've been in business for 28 years, so I'm sure over that period, you've built a reasonably powerful and high performing team.

How do you approach talent acquisition and retention of the right staff?

Ray Keefe: That's changed over the years. LinkedIn for a while offered anyone who wanted to, to do the Korn Ferry C-Suite executive online test package. I thought this will be interesting. And so I did it. The point that test made to me was that I'm so capable that I believe I can carry lesser people, and I'm inclined to settle for a less talented team thinking that I could actually carry them on my back.

That's where my journey towards, this needs to be a business that doesn't need Ray by taking everything that Ray brings to the business and building it into the business itself. That journey really started about 2015.

We are 10 years into that journey, and I'm still guilty of wanting to carry the business and being the rescuer. The businesses needed reaction is for me to guide and mentor the person to fix it so that the next time it happens, it doesn't need me.

In 2008, I found a business coach. He asked me two questions. The first question is, 'are you any good'? To which he then said, 'and by the way, I don't believe your answer'. And so he said, 'I want you to prove it'.

That's where we started to think about how can you prove it. That's where the award strategy comes from. We started off by applying for technical awards, and three months after that, we won two national awards. 15 months after that, we won Business of the year for Casey, because we'd learned to tell our story. One of the things about branding is you have to think about who you are, why you're there, why you're doing this.

Rick Merten: That change that you went through must have taken a significant amount of courage. And just as a simple example, one of our regular starting advice when we work with a new client is put up your prices. Even today, companies go for years without putting up any prices. But just, that's a simple example. And you said you put up yours three times, but you reconfigured your whole business. That must have taken a reasonable amount of courage. Where did that come from and talk us through the story you were telling yourself, or was it a situation of your back was against the wall and if it was either do this or die.

Ray Keefe: It wasn't that, look, we could have limped along forever the way we were doing it before I was good enough. It's because I wanted to make a difference. That dream required something to change. And one of those things was me.

There's his story in the Old Testament of the Bible where Jacob steals his brother's birthright. Then later on he has to actually fight with God. When he is fighting with God, he doesn't ask him for anything extra. The reason that he's not asking God for anything extra is because he already has the thing that he wants. The birthright. What he's not is the person who can live it. That's what he has to become.

That was that moment in my life when the person I am today is not sufficient for my dream. So I have to change. Getting educated in business principles was one of those changes. One of the things that my business coach said to me, is, 'you are such an engineer, I don't know if you can do this'. Now, was he just pushing my achievement buttons? Was that an intentional strategy? Probably. Because he challenged me really with that statement. One of my jokes now from that period is 'As a business owner, I made a very good engineer'.

The thing that he did that then helped me with the business pricing, the business positioning, the business branding stuff, he said, 'every time you don't explain to the other person what you bring to the table and how it'll benefit them so that they understand that, you've not just robbed you, you've really robbed them'.

Rick Merten: we have a same sort of attitude that if you market appropriately, it's actually a gift for the people that you're marketing to, and that's how it should be perceived. It's not about a hack or trying to trick them into doing something.

Ray Keefe: Correct. Really good marketing is not convincing eskimos to pay more for premium ice. It's actually just telling the truth so that the other person gets it.

Rick Merten: Just to do a reasonably hard left turn. If you use a sort of vernacular that we're in industry 4.0 in the world of automation and AI and not that it's suddenly come on. I appreciate that automation and AI has been around for a while, but in terms of everyday use and understanding in the general community, it's obviously very prevalent now.

How is that changing electronic manufacturing and specifically at a company your size?

Ray Keefe: AI is really fantastic at what I would call information triage. You can throw a lot of stuff at it and it can filter through it, and sort through it really well. What we are not seeing much of yet, but is going to become a big thing, is you can actually get AI to learn from your operations, understand them and then start to help you see where the improvements can come from. It can also track stuff and spot things earlier because it can pay attention all the time. People's attention wanders.

We had a PCB come back last week that we made six months ago that had been behaving unusually in the field.

Turns out there was one resistor that was soldered it at one end, but not at the other end. This didn't mean the circuit wouldn't work, it just meant that there might be occasions when it didn't. And our tester didn't pick that up because it worked on the tester. What we have learned from that, we are going to train an AI system to actually go through our boards with us showing it where the known problems are, and for it to start to actually augment our production inspection operations.

I see AI as going to become an intrinsic tool within the business environment at every part of the business.

Rick Merten: We're seeing lots of visualization checks using AI just every day in the supermarket. It's using an AI to check that you're not pocketing stuff

just to dig a little bit deeper from your own perspective, and you've talked a lot about, how you're thinking about AI specifically, but technology generally, in terms of your own technology adoption strategy, do you see any emerging technologies that you are prioritising?

More for a competitive advantage rather than operational efficiency. So your example of scanning circuit boards is really around building out your operational competency and removing error, et cetera, which Yes gives to a, ultimately a competitive advantage. But are there specific technologies that you are reviewing to really amplify your own competitive advantage?

Ray Keefe: Electronics as an industry changes gear about every 18 months, so we continuously get the need to stay near the bleeding edge. It's the same with software development systems, they continue to get more complex. That's a necessary component to remaining relevant and therefore competitive.

The thing that we've been getting better at, that is our primary competitive advantage is the process we use for helping a customer go from their idea, through to a fleshed out, commercially viable version that can then be developed and manufactured. That front end process is something that we are taking from Ray's intuition into something that's actually the business's process.

Rick Merten: You've talked a lot about your own personal journey and you obviously gone through, dare I say an epiphany at different stages in terms of your own self-reflection and capabilities and competencies.

Thinking back again, over the 28 years of running your business, what's the hardest business lesson that you think you've had to learn?

Ray Keefe: The first one was obviously that I was insufficient for my dream and that I had to do something about me.

I think the second one is that after you've gone and done that, your dream grows and then guess what? You're insufficient for your dream again. That's a cyclical process. One of our most interesting times was we were developing a product that had an app running, connected to a phone via Bluetooth.

The app developers who were also doing the web services were struggling with the project. They told our client that the reason that their app didn't work was because our hardware was wrong. We went through a situation where the client eventually was going to take us to the Supreme Court of Victoria for failure to deliver. That can be quite a scary moment.

The conclusion I came to, and this turned out to be a really good thing for the business in the end, was that this client doesn't get to choose who we are. This client doesn't get to choose how we behave. And this client doesn't get to decide what our values are. I sat the team down and I said, this is actually an opportunity. To which they looked at me quite puzzled, because it feels like a risk more than an opportunity. I said, this is the moment we get to prove that 'who we say we are, is who we really are', and we are going to continue to treat this client with respect and we are going to continue to treat this client honouring our obligations and we will work through this stuff. In the end it came out that the problem was the app after all, and not us and we ended up on very good terms with that client.

We went through a couple of cycles of that. The first time we went through it I didn't sleep that well. The second time we went through it I slept really well.

I'd learned how to not let somebody else attempt to control my life,

Rick Merten: yeah, I'm sure that's a very tricky scenario to navigate. And again, it's a strong personal reflection to understand that. How do you take that lesson from being something that you can remain strong and clear on and live your values to ensuring that when you are not in the room the rest of the business and your leadership team can retain that lesson and that strength of character.

Ray Keefe: That's the nature of the conversations we have around the office. A lot of people think that your mission, your vision and your values are those things up on the wall. Your values are the things you live. If your stated values and your lived values are not aligned. People notice that. I've worked for businesses where I see the values up on the wall and then I see how they behave and there's almost no correlation.

Rick Merten: Just thinking broadly again and bringing the conversation all the way back to some of the topics at the beginning. If you project yourself 10 years from now, what do you think needs to be different about Australian manufacturing for us to really compete globally?

Ray Keefe: The last time Australia had an industry policy for any industry was the Hawk and Keating Button plan for the car industry. Since Paul Keating lost to John Howard, we haven't had a government that's

articulated a clear vision. To put that flag on the hill and said, this is where we are going. If we don't paint that picture; 'without a vision, the people perish', if you don't paint that picture, then everybody's just transactionally trying to survive. The first shift we need to have is not for manufacturing only, but for Australia as a whole, to actually start to get a picture of what forward gear looks like for the country. Then you can have the conversation about, okay, and so what does that mean in terms of industries?

There's a broad range of things that are getting manufactured. I would say that manufacturing needs to have a reason for existence for Australia as well as a reason for existence for itself. Its reason for existing for itself is that it creates that fundamental value that the service sectors can leverage off.

It creates more jobs around it than any other industry. If you run the stats with 870,000 direct manufacturing jobs in Australia, 84% of those are full-time, there's only 9.4 million full-time jobs in the whole economy. If you run the multiplying factors, more than 20% of all of the jobs in Australia's economy are dependent on local manufacturing for their existence. Another thing it does is spread wealth through a community more evenly than any other industry because it employs people at every level. Then we've got to have the strategic importance. Our dependence on the US and the UK for defence, and the ability to defend ourselves that we should be thinking about and we should be growing our local capacity to do.

If everything we need is coming in from somewhere else, that's a big problem. So defence is an area; transport and logistics, we should be the clean energy capital of the world. We've got land is the thing that we do have. We should be using that to build both generation capacity as well as storage capacity.

Rick Merten: Obviously that's a strong policy driven response. In a more practical perspective and personal perspective, what role do you think Successful Endeavours can play in that future?

Ray Keefe: Our focus is on designing products that are going to be made here, from the get go. 90% of all of the electronics products we design end up Made in Australia. We do it by intent and we are pretty upfront.

We do influence the conversation at government level. I had a state MP here last Friday looking through our operation and talking about some of the kinds of stuff we've been talking about in terms of what does forward gear look like for Victoria?

Rick Merten: Ray, thank you very much. That was my final question, and I really appreciate you allowing us to explore Successful Endeavours and sharing your experience and lessons around building and a manufacturing business in Australia.

Your insights about Australian business culture, the challenges and the journey from engineer to entrepreneur will be invaluable. For our listeners who are facing similar transitions.

To all our listeners, if you found value in today's conversation, I'd love to hear from you. Feel free to connect with me on LinkedIn or visit our website insideoutgroup.com.au.

And remember, building a sustainable business is a journey, not a destination. The challenges Ray shared are ones that we've all faced, but as you've heard today, they're absolutely solvable. I'm Rick Merten, and thank you for listening to Engineering Success.

Ray Keefe: Thanks, Rick. It's been a pleasure.

Rick Merten

Ray Keefe

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