

We won't wake up tomorrow as Microsoft, but how will we pioneer the mining industry into the 21st Century?

**J-S Jacques, chief executive
IMARC, Melbourne**

30 October 2018

****Check against delivery****

It's great to be here in Melbourne to open IMARC.

This is an important event, at an important time.

As an entire industry, we need to transform to stay relevant in the 21st century. There is absolutely no doubt about it, we have a long, proud history. But as we gather here today, we have a great chance to focus on our future.

Let's open our minds to how we re-invent our industry, but before I say more let me acknowledge that we meet today on the lands of the traditional owners, the Wurundjeri people. Our industry works with Indigenous groups from the Pilbara to the far corners of Mongolia, and I would like to thank all of our partners and Traditional Owners for making what we do possible.

Now, there is absolutely no doubt in my mind that we meet today at a crucial time in the development of our industry.

- A time when protecting our air, water and land matter more than ever.
- A time when technology and digital is disrupting mining, and certainly creating new challenges – but many more new opportunities.
- A time when a lack of trust in business is creating even more questions around the benefits of the corporate sector, including mining and the contribution we make.
- A time when current and future employees want, and demand, us to have a clear purpose, strong values, and to be a cool place to work.
- A time when growth is harder to come by and tougher to execute;
- And when a rising China will be an even more dominant force in our industry.

My view is that our industry is strong. But are we strong enough to face some of these challenges in the new ways that this era demands? And are there different opportunities for our industry we have not yet explored? Maybe. Maybe not. But it is definitely worth thinking about. As Peter Drucker said, "the best way to predict the future is to create it."

Now, I don't know if any of you in the audience are Lord of the Rings fans? But in the movie, Gandalf (that's the older, wiser wizard, for those of you who don't know) said something that stuck with me. He said "It is not for us to decide the times we live in. All we have to decide is what to do with the time that is given to us." Let me repeat, "All we have to decide is what to do with the time that is given to us."

My challenge to every person in this room – including myself, by the way – is this: what will we do with the time that has been given to us? What legacy do we want to leave for those that will lead our industry in the future?

In my view we need to respond to the changes we see, and quickly. First by reinventing our industry and then by how we partner with society.

Our industry has been around for centuries. Many of the companies in this room have a heritage stretching back over 100 years. But at the heart of everyone's history, young or old, is a pioneering spirit. It takes guts and grit to work 24 hours a day, 7 days a week constructing any of our mines.

Think about the Pilbara 50 years ago. Think about Escondida 25 years ago. Think about Oyu Tolgoi (our copper mine in Mongolia) today. Every single mine, every single metric ton, is a story of grit and endeavour. This did not happen by accident. Or luck. It happened because we stand on the shoulders of the generations upon generations of miners who have worked hard, every day, for decades. Often without the benefit of the technology we take for granted now.

We thrived because of their work, their dedication, and their vision. For all of us to thrive in this century and beyond, we need that same hard work, pioneering spirit, and vision. But – the vision must be fundamentally different in a world where cars drive themselves, where machines already think faster than humans, where there will be two billion more people on the planet putting more strain on our finite resources and where data will be the new oil – or new iron ore, as the case may be.

So let's make a pledge – to pioneer the mining industry into the 21st century.

And let's not wait. Let's start now.

So, as we kick-off IMARC, let me share my thoughts on the top three things we need to do collectively.

First and foremost, we need to reinvent ourselves. I've mentioned this a few times already but this is key. We are an old industry and there is no doubt we have changed, and modernized – for example, to using automation and artificial intelligence. And we deserve credit for that.

But we have not changed to the same extent that we have seen other industries reinvent themselves: The car industry (although, it took them some time to get there). Aerospace. Healthcare. Media. I could go on and on.

And I suggest to you, this transformation may need to start with ourselves - what we do, and more importantly how we think. Especially in a world of urban mining, where the materials we produce will be recycled.

Let me give you an example. Our technology partner Apple, has a goal to recycle 100 per cent of the metals and minerals that go into our iPhones, iPads etc. And where Apple goes, others will follow. It may take some time to get there, of course, but it is coming.

What does this mean for our industry? This may mean we need to pioneer new ways to mine or think seriously about our business models at some point in the future. There's no question. This will be difficult,

and it will take a long time, and as the saying goes, we will need to break a lot of eggs to make the omelette. But that's okay.

I like to think nothing is impossible for an industry that can find and bring to the surface metals 1.2 km underground – safely and responsibly.

As we speak, there are scientists from Boston to Perth, inventing materials to replace those that are mined today – including cobalt. Companies like Renault, Nissan and Mitsubishi are already investing and supporting these types of projects. Should we all be doing the same? And as an industry are we doing enough, in a world where China has launched its Belt Road Initiative?

We took a group of around 60 Rio Tinto leaders to China two weeks ago to meet with a mix of SOE's and private companies, I can tell you what we saw was very impressive. China is moving fast and breaking new ground every day. And they may not be the only players that disrupt our industry, which takes me to my next point.

Digital.

I have absolutely no doubt in my mind that digital and data will be the fundamental game changer in our industry. New digital technologies from AI to the Internet of Things, and new biotech, will force us to be more imaginative. From drones that perform in-situ scanning, to deep-sea robots that mine underwater, to water-neutral processing that removes the need for slurry ponds.

Across industries, digital technologies are removing the barriers to entry and making it harder for incumbents. Think about Google's experiment in energy kites. Or the Fintech industry. Tech is introducing game-changing business models that upset old ecosystems.

Why would our industry be immune to these changes and how will they re-shape the way we operate?

In our view, digital and data will touch every part of the industry's value chain. From exploration to marketing – and re-shape the way we work.

Look at exploration: in the future, exploration innovation won't only be about engineers and geologists but be about computer scientists and bioengineers. Even now the huge amounts of data being collected means we can create "digital twins."

Look at mining and processing: we already have remote operations and haul trucks with connectivity so we can use predictive maintenance. And will 3D or 4D printing mean we no longer need to procure spare parts from miles and miles away. Will they be made on-site?

Look at supply chain and logistics: we already have autonomous trains, and maybe not far off, will be autonomous ships. This will change the ball game on supply chain optimization and customer intimacy.

And lastly let's look at marketing and trading: digital and big data will play a very big role here. And blockchain will help our customers from governments to consumers check the ethics and value of all our products. As well as their environmental credentials.

Of course, the challenge for us all is how to apply AI and IoT in an industry where the introduction of new tech has often meant big capital outlays.

And clearly we are not going to get out of bed tomorrow and become Microsoft, or another software company, that isn't the point. The point is how do we move into the digital age in a way that means we retain a competitive advantage?

The key to this is to start small, with technology and digital pilots and scale up, and also more fundamentally, adopt a brand new spirit of partnership. Which brings me to my next point.

Second. We must re-define the way we partner.

I remember a conversation I had with a senior executive in Rio Tinto when I started seven years ago. The conversation went a bit like this, "there is no way we can partner with XYZ because we don't want to give away any value. You need to understand – in the mining business we do everything by ourselves."

Well, those days are over. Our industry needs to re-define the way we partner with communities, customers, suppliers and governments. Here's why I say that. Wherever I travel, I often hear the same requests. Let me give you two examples. From our communities, 'give us a greater share of the benefits of our resources.' Or from stakeholders in our markets 'how do we have a more balanced trade – so you sell to us but also buy from us'?

These are fair questions by the way, and in a world where we also must answer to shareholders, these questions don't have easy answers. We need to start to have honest and grown-up conversations with all of our stakeholders on some very challenging topics like; the trade-off between creating jobs, and economic and social progress versus doing an activity that does impact the environment. So, sure, we can stop mining, but then we would need to stop consuming the things we use every day. And who really wants to give up their iPhones? Or air travel?

Surely the best way forward is to accept mining is an absolutely necessary and valuable activity but hold all of the industry to account for making sure we operate in a responsible way with care for the environment, our people and society, while remaining economically viable. The important point here, is a level playing field.

Or the one we should debate more; the trade-off between profit and risk taking. If a community or government wants a bigger share of the pie, they may need to be willing to take on more of the risk, that's a really important part of our very capital intensive industry.

So, maybe there needs to be a new way of funding mining projects. As an industry, perhaps, it is time to think about a different business model – where we provide mining as a service and let other people finance projects that need billions in upfront investment, before the benefits can be shared.

At Rio, we are keen to have these debates and we are open to all ideas, and we do not have all the answers. In fact, we would like to kick off a piece of work with partners like the World Bank, like Harvard University and others, to really get to the bottom of this: what is the best way to share value from mining projects in a way that preserves and grows investor returns, creates lasting value for host governments and communities and provides the metals the world needs in an environmentally sustainable way?

And new forms of partnering won't be just about governments, society and communities. It will also be about partnerships with customers, suppliers and even, competitors.

If you take the example I mentioned before on autonomous ships, the best way to really make this happen and to get full value, may be through a partnership between competitors, to introduce a global platform for the benefit of many. Our tech partnership with Alcoa and Apple, is an example of competitors working together to advance the industry – maybe this is a blueprint for the future in some key areas.

And we may need to partner with suppliers in a different way. Some mining companies have shifted to leasing heavy equipment, instead of buying it from OEMs (original equipment manufacturers). Paying by the hour. Could we ever move into a world where OEMs might also take over maintenance?

Third. We need to change the barbeque conversation. Mining is absolutely vital and this won't change any time soon. But I hate to tell you, our industry is one of the least trusted on the planet. And unfortunately, it is a mainstream idea. You only have to take a look at how mining is portrayed in the Avatar movie. What the heck? And it makes me sad – or, depending on the day, mad.

It is a simple fact that mining is essential to human progress and has been for the last century and more. So, the world needs us and it is about time we stopped punching below our weight. We need to be better at telling our story. So how do we do that?

There's not just one answer. First we need to take a page from our friends in Silicon Valley. We shouldn't be talking about the hardware or software of our products – the iron ore and the copper – but rather how they help people to live better lives.

We need to change our language and stop talking like technocrats and start talking in everyday language. Less about “utilizing automation” and more about “driving robots.” Less about our “optimising productivity” and more about “making our mines run better.”

Look, Rio Tinto is as guilty as any of us at using this kind of language, so I'm not pointing the finger anywhere at all – we are working to change too. And you know what, we need to use 21st century channels to communicate. Today, who you are on social media is who you are to stakeholders. That's how they know us. So the culture we project online is incredibly important.

It is essential to make mining an attractive industry for the employees we have now and those that we need to attract to thrive going forward. The war for some of our talent is going to be fought with the likes of Google, Facebook and other industries. Some of our future workforce will want different things – and we really need to think about how we compete for the best talent.

So, let me close. I have been working in heavy industry for almost all of my life. I am very proud to be a miner. And I am optimistic about the future of our industry because I have seen us all tackle far tougher challenges, and come out on top.

We are a real business, producing vital materials but we have to act now to make sure we are future fit. And there is no better place to have this conversation in the birthplace and in many ways, the innovation hub for the industry, Australia.

The mining industry employs 242,000 people in Australia on a full time and part time basis (according to the Australian Government's labour statistics). It is the largest contributor in terms of taxes and underpins the pensions of thousands of Australians. In fact, it is the bedrock of the past, present and future of this great country.

And this is why we have decided to launch Rio Tinto's new pioneer lab concept in Brisbane, the home of our Growth and Innovation team. On Sunday we sent an open invitation to the best and the brightest in Rio to nominate a colleague to join the lab for 12 months or more to think through some pilots we can run to help move Rio into the 21st Century. We will also look even more to external sparring partners as well, in the very near future.

We know that it is important to remain competitive, and this applies to countries as much as to industries, complacency can be the enemy. So, as we kick off this conference, let's not focus on the micro and technical elements of what we do, let's elevate the debate to how we, collectively, pioneer the industry into a very different 21st century.

Thanks for listening and enjoy the event, let's take the industry forward.