Thank you, Jason for the introduction and for inviting me to present at the conference.

I am speaking to you from Brisbane in Australia. Before I begin I'd like to acknowledge the traditional custodians of Brisbane, the Jagera and Turrbul people, and pay my respects to their elders past, present and emerging.

As Jason said, I lead Safety, Technical & Projects at Rio Tinto. It's made up of 4 key areas that work together to protect, build and innovate our business globally: Health, Safety, Environment & Security, Communities & Social Performance, capital projects and Group Technical.

Group technical holds our key technical capability across processing, surface and underground mining. Our Bundoora R&D facility in Melbourne also sits within my team.

Before I talk about how we're applying technology to answer some of our ESG challenges, I wanted to recap on a little of our history.

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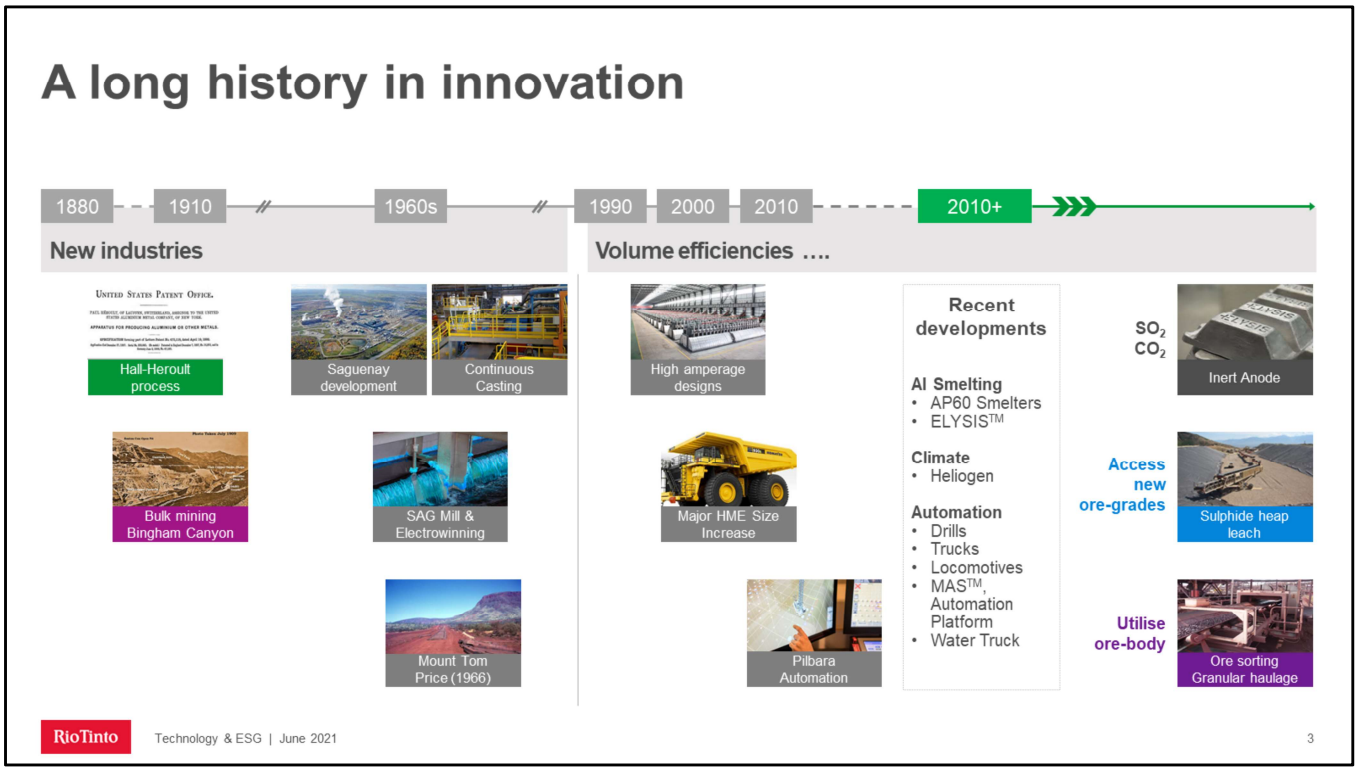

Rio Tinto has a strong pedigree in innovation and some of the best technical minds in our industry. We have invested in technical capability and technical innovation over the last 50 years, breaking through barriers to deliver step change technologies such as:

AP60 – low energy, low emission smelter technology

AutoHaul – the world's first automated heavy haul rail network that spans more than 1700 kms and services 16 mines

Autonomous trucks – more than a decade of operation in the Pilbara with approx. 260 unmanned trucks in operation today - with a pathway to around two thirds autonomous trucks by end of 2021

Historically we have invested approximately $200m per year on R&D and had over 400 people working on technology and R&D. We expect this to increase in the coming decade to help solve many of our emerging challenges, particularly across ESG.

Linking our technology approach to ESG

A structured delivery approach is being built out in a phased way:

- Technology and R&D Framework
- Appointment of a Chief Scientist
- Partnerships
- Skills and Resourcing

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Building from the strongest technology foundation in the industry means we're well placed to help the company advance today and deliver against the four priorities our CEO, Jakob Stausholm, recently shared: Best Operator, Impeccable ESG credentials, Excel in Development and Social Licence.

We have a detailed technology roadmap to support these priorities. We're expanding our approach beyond the productivity focus of the last decade - which was largely centred around automation - to also focus on technology and innovation to deliver Health & Safety improvements, address ESG challenges, reduce carbon emissions and drive growth.

Some of the steps we're taking to support success in this next phase include:

Developing a Technology and R&D Framework, leveraging best practice to ensure a consistent, rigorous approach.

Recently appointed a Chief Scientist, Nigel Steward, to lead delivery of the roadmap.

Strengthening of existing and developing new partnerships with Universities, technology companies, governments, suppliers and customers

Enhancing existing internal skills and resourcing to be able to deliver the next phase of innovation

I'll now share some examples of the ways we're applying technology in the ESG space, split into Health and Safety, Sustainability and Climate

Reducing the risk to our frontline through technology

Health & Safety

Safety

Reducing front line exposure to live energy

Vehicle collision and fatality avoidance

High risk task automation

Health

Improving the wellbeing of our people

Personal monitoring in hostile environments

Underground mobile fleet electrification

Well Developed

- Virtual reality for training
  - OT underground
  - Gudai-Darri
- Autonomous vehicles
  - Trucks
  - Drills
  - Trains
- Remote inspections
  - Drones

Under Development

- Improving the atmosphere for underground workers
  - Battery electric underground vehicle trial at Kennecott
- Personal monitoring in hostile environments
  - Proof of Concept at Resolution
- Vehicle collision and fatality avoidance
  - Brockman pilot underway and planned rollout at OT
- High risk task automation
  - RT Aluminium tank cleaning proof of concept

Health and safety is at the heart of everything we do.
Technology solutions have already delivered significant improvements in our business. From the use of virtual reality for safety training at the Oyu Tolgoi underground project in Mongolia and at Gudai-Darri in Western Australia; to autonomous trucks, trains and drills in the Pilbara which reduce fatality risk; to the use of drones for high risk inspections.
Beyond this, there is some really exciting work we have underway to address some of our health and safety challenges.

Health:

Many of our operating environments pose risk to our people in terms of fatigue and heat stress – some of our operations see temps of 45 degrees C in the height of summer as well as high levels of humidity. We will be investing in personal monitoring technology to help to manage this risk and will begin with a proof of concept at our Resolution copper project in Arizona.

Safety:

Driving is a critical fatality risk for Rio. We have more than 1500 trucks, graders, loaders and other vehicles in motion each day. Technologies to help eliminate collisions have continually been improving and we are excited to be running a pilot of a proximity detection system with Komatsu at our Brockman mine in the Pilbara with a complementary rollout plan at the Oyu

Tolgoi mine in Mongolia.
Finally our automation journey continues with a focus on the automation of high risk tasks to reduce our people's exposure to live energy sources and confined spaces, two critical fatality risks in our business. The Aluminium product group will be running a remote tank cleaning proof of concept, which will significantly reduce the risks of people doing work in a confined space.

Technology solutions helping to overcome key sustainability challenges

ESG

Orebody Knowledge & Processing
Capture more of our orebodies potential

Extracting the full value from the asset for the community

Under Development
- Extraction of tellurium from waste streams at Kennecott
- Extraction of Lithium from tailings at Boron
- Production of scandium oxide at Rio Tinto Fer et Titane

Closure Base
Improving the base from which we close

Designing and operating an asset with closure in mind

Well Developed
- Filter press technology at Vaudreuil alumina refinery

Under Development
- Dry stack tailings: Jadar and Winu

A Challenge
- Future of tailings, reduction of waste: University of Western Australia partnership

Circular Economy
Improving the base from which we close

Converting waste into valuable products and services

Well Developed
- Smelter waste recycling: 88% of RTA Atlantic waste recycled

A Challenge
- Circular economy profitability, technology solutions to reduce cost

Water
Reducing water draw and consumption & closing more effectively and efficiently

Water treatment

Well Developed
- Water recycling: Oyu Tolgoi water was continuously recycled at an average rate of 87.7% in 2020

A Challenge
- Water treatment in operations & closure

When looking at ways we can apply technology solutions to meet our sustainability challenges, we have four key areas of opportunity: Ore Body Knowledge & Processing, Closure, the Circular Economy and Water.

A key part of our role is as custodians of the orebody, which contains the minerals or metals that we mine, process and ultimately supply to our customers – iron ore that becomes steel, bauxite that becomes alumina and then aluminium, copper, titanium, etc. We have a critical responsibility to make sure we are extracting the full value from the orebodies we mine for the communities in which we operate.

It's really important that we mine in a way that's efficient and maximize the minerals and metals we extract. We have some key technology solutions under development that are enabling us to extract minerals from our previously classified waste streams, these include:

Extraction of tellurium from waste streams at Kennecott in Utah
Extraction of Lithium from tailings at Boron in California
Production of scandium oxide at RTFT in Canada

Next I'll speak to projects that relate to Closure. A strong focus in both our development projects and in operations is designing and operating an asset with closure in mind. Technology is playing a key role in this, particularly with respect to our approach to tailings.

Many of you would be familiar with the catastrophic human and environmental

impacts of tailings dam failures in our industry, largely due to inundation of surrounding areas by what looks like liquid mud.
In 2019 we commissioned new filter press technology at our alumina refinery in Vaudreuil in Canada, which has enabled us to start dry stacking bauxite residue rather than storing it as red mud in tailings dams. This is a huge step forward and eliminates community and environmental risk.
We have built off the learnings from Vaudreuil and are now working on technology solutions to enable dry stack tailings as part of both our Jadar lithium project in Serbia and our Winu copper / gold project in Australia.
The final area I'd like to discuss with respect to Sustainability is Water, which is a significant challenge and opportunity for our business going forward.
Technology solutions to date have focussed on water recycling, giving us great success with water at Oyu Tolgoi in Mongolia, where this operation achieves some of the best recycling rates of any copper mine worldwide – In 2020 they achieved an average rate of water recycling of 87.7%.
We are looking at technology solutions for water treatment both in our operations but also at our current and future closure sites, with early work underway to understand how we can more effectively and economically manage water and technology solutions that will enable a step change in the next 5-10years.

Exploring technology solutions to support decarbonisation goals

Carbon

Green Equipment
Eliminate carbon emissions from mobile fleet

Battery electric haul truck

Under Development
- Partnership with BHP and Vale in the "Charge On" innovation challenge
- Right size trucks

Green Power
Powering our operations through renewables

De-carbonising our power supply

Well Developed
- Gudai-Darri solar farm under construction

Under Development
- Partnership with Heliogen to pilot breakthrough solar technology at Boron
- ARENA grant: Feasibility study into replacement of natural gas with hydrogen at Yarwun

A Challenge
- Renewable grid for Gladstone and the Pilbara

Green Products
Position for a decarbonised metal industry

Low and zero carbon routes for metal making

Under Development
- ELYSIS™: commercial pilot at Alma smelter for first installation and demonstration of inert anode technology

A Challenge
- Green steel: partnering with customers such as Baowu and Nippon Steel; Paul Wurth and SHS MoU

Green Processing
Eliminate carbon emissions from processing

Hydrogen, Biomass and Biological processing

A Challenge
- Potential decarbonisation pathway
- Wide suite of applications ranging from aluminium smelter off-gas concentration to direct combustion of CO gas

The resource industry's future – indeed our planet's future – rests on our ability to operate in a de-carbonised landscape. This is an area where we cannot achieve the required progress without technology solutions, and we cannot achieve it alone, it will require the collaboration of many.

Our focus is on four key areas; equipment electrification, renewable power supply to our operations, green products and green processing.

The "Charge On" innovation challenge is a partnership we entered into earlier this year with BHP and Vale. It is facilitated by AustMine, and is a global initiative challenging technology innovators to develop concepts for large-scale haul truck electrification systems. Due to the size of these trucks – imagine a two-storey house driving down your street – electrification is not a simple matter, as the batteries required (if for example scaled from commercial applications) would be enormous and not last long.

Given electrification of large haul trucks require technology breakthrough particularly related to in-cycle charging, we are also working on options for use of smaller trucks with battery solutions that are going to be available in the near term.

With many of our operations in remote locations and requiring large, stable power supplies we have various projects to solve the challenge of a green power supply.

At our new mine in the Pilbara, Gudai-Darri, we currently have a solar farm under construction. We also recently announced a partnership with Heliogen to pilot their

solar technology at Boron in California.
Although early days we also received an Australian Renewable Energy grant of $580K to complete a feasibility study into replacing natural gas with hydrogen at the Yarwun Alumina Refinery in Gladstone.
We are making good progress but solutions to the challenge of fully renewable grids for regions such as the Pilbara and Gladstone in Australia are still not clear and will be key focus areas for us and potential partners.
End product manufacture of metals is carbon intensive and we are working on solutions that support carbon reduction in these processes, in particular across our aluminium and steel value chains.
We are committed to reduce our absolute emissions by 15% by 2030, in support of this we recently announced a commercial pilot of ELYSIS™ at our Alma Aluminium Smelter in Quebec – this is smelting technology that eliminates all direct greenhouse gas emissions and instead produces oxygen. We are also partnering closely with customers such as Baowu and Nippon Steel in our journey to achieve Green Steel. In Q1, we entered a partnership with Paul Wurth and SHS to explore the production of a low-carbon steel feedstock using green hydrogen generated from hydro-electricity in Canada.

Entering a new era: expanding our focus beyond productivity

Heliogen
Target Deployment 2022 - Boron, California

Tailing filter press
Operational 2021 - Vaudreuil, Quebec

Scandium from waste
Demonstration plant 2021 - Sorel-Tracy, Quebec

You can see that we have many opportunities for applying technology to help to address ESG challenges facing our business.
We have more than five decades of experience in using technology and innovation to improve our business.
Today, our technology and R&D portfolio spans delivered solutions, many that are in development and also some areas where the technology solution is still unknown.
We're emerging from a period where our technology focus was on solving productivity challenges, into a new era where we have expanded our focus to encompass ESG considerations as well as growth.
Thank you again for the opportunity to present, I'm looking forward to answering some of your questions.