**Empowering a sustainable future.**

START uses blockchain technology to provide transparency, traceability and provenance on our aluminium products across environmental, social and governance metrics so you can make a more sustainable choice.

**Paramita Das** | Head of Metals and Minerals, Marketing and ESG at Rio Tinto

“A digital transformation and partnership with aluminium end-users is the only way the aluminium industry can be fully transparent along the entire value chain. To help meet this imperative, we created START—the first digital sustainability label for the aluminium industry.”
Paramita Das is a global executive with extensive experience in the commodities sector (metal, oil, and gas). She leads market development for aluminium globally and the establishment of a more customer-centric approach in the Americas. Before her work in the aluminium marketing and development space, Paramita was the Chief of Staff to the CEO of Rio Tinto and Chief Transformation Officer for the Atlantic Operations for the Aluminium segment with Rio Tinto. Paramita joined Rio Tinto in 2015, before which she worked with companies including Sumitomo Corporation and BP. She is a passionate advocate for ESG and inclusion.

**AlCircle:** Why digital transformation is the key to sustainability? What is Rio Tinto’s aluminium business doing to make progress towards this?

**Paramita Das:** Aluminium undergoes many transformations from a red bauxite rock to the metal found everywhere in life—from mining, refining, and smelting to transportation and final transformation. So, how can consumers be confident the product they have just purchased was made responsibly?

By understanding—and being able to trace—the full process. A digital transformation and partnership with aluminium end-users is the only way the aluminium industry can be fully transparent along the entire value chain.

To help meet this imperative, we created START—the first digital sustainability label for the aluminium industry. START tells the entire story of sustainable aluminium
orders—including key environmental, social, and governance criteria (ESG criteria). With this platform, Rio Tinto is leading the digital transformation of a 150-year-old industry.

**AlCircle:** Can you tell us how Rio Tinto’s first sustainability label for aluminium, START, is performing? How have customers responded?

**Paramita Das:** We created START to help our customers—and the consumers who buy their products—make informed decisions. Our goal is to support increased transparency and traceability across the aluminium supply chain. To that end, START is setting a new standard for aluminium sustainability.

On the START platform, our customers (and their customers) have access to a revolutionary and secure blockchain-based platform that delivers key ESG criteria for every step of the aluminium process. Users can manage all their aluminium orders in a central location. Then, by scanning a unique QR code, customers can instantly access detailed information on the aluminium provenance and fourteen essential ESG criteria—from mine to market.

Since START™ was launched last year, we have received overwhelming positive support, and many customers have signed up for this programme. The high level of interest further corroborates the demand for traceability, provenance, and sustainability in the industry.
AI Circle: Is ELYSIS technology commercially successful? How has ELYSIS helped Rio Tinto in sustainability gains? Is there anything the world can gain from this technology usage?

Paramita Das: Since 2018, when we launched ELYSIS™, a partnership with Alcoa, supported by Apple and the governments of Canada and Québec, we have seen strong interest across various industry segments. We recently announced an MOU with Ford Motor Company that includes aluminium produced using the ELYSIS smelting technology. In the beverage industry, Corona Canada ran a pilot program in Ontario with ELYSIS. And in March 2022, Apple announced that they would purchase the first batch of commercial-purity aluminium produced to manufacture their new iPhone SE.

Work is now focused on scaling up the ELYSIS technology for larger commercial-size cells, which should become operational in 2023. Construction of these prototype cells is now well underway at our Alma smelter.

ELYSIS technology has many benefits:

- It eliminates GHG emissions and seven other by-products of the aluminium production process: Perfluorocarbons (PFCs), carbon monoxide, sulphur dioxide (SO₂), carbonyl sulphide, nitrogen oxides, polycyclic aromatic hydrocarbons (PAHs) and benzo(a)pyrene.
- It provides a unique solution for a drastic reduction of the carbon footprint of aluminium.
• The use of the ELYSIS technology in Canada only has the potential to reduce GHG emissions by approximately 7M metric tonnes, equivalent to removing 1.8M cars from the road.
• The technology features newly developed, breakthrough, proprietary anode materials increasing the process efficiency and enabling higher productivity. While a traditional carbon anode is typically replaced every 25 days, the ELYSIS anodes are expected to last several years without needing replacement.
• The ELYSIS technology’s unique vertical anode/cathode geometry results in higher productivity for the same surface area.

AlCircle: What role has digital transformation played in Rio Tinto Aluminium’s production sphere?

Paramita Das: The digital transformation at Rio Tinto Aluminium starts with our operations. We use virtual reality at New Zealand’s Aluminium Smelter (NZAS) to keep our people safe and improve productivity. Using a simulated 3D version of the smelter, our NZAS team recreates safety incidents for training and improves project planning.

The Saguenay – Lac-Saint-Jean operations are supported by our Aluminium Operational Centre, which develops tools and systems using predictive mathematics, machine learning, and advanced data modelling to make our operations safer and more productive—processing more than 5M pieces of data every hour, 24-hours-a-day.

Our British Columbia operations comprise a newly modernised aluminium smelter and the Kemano
Powerhouse, a hydropower facility supplied by the Nechako reservoir. Our state-of-the-art facility uses AP Technology, making it not only more efficient and commercially competitive but also cleaner: We now produce twice as much aluminium as we did previously, with half the greenhouse gas emissions.

And now, with START, we can bring this efficiency and sustainability to the end user—with traceable metrics that use a secure, intelligent, and trustworthy digital record repository system powered by blockchain technology.

**AlCircle: Rio Tinto and Corona Canada pilot Canada’s first specially marked low carbon can leveraging ELYSIS technology.** Can you share the success story of this product? How digital transformation is putting an impact on it?

**Paramita Das:** Currently, around 70% of the aluminium used in cans produced in North America is made with recycled aluminium. Pairing recycled metal with Rio Tinto’s low-carbon aluminium, made with renewable hydropower and the direct greenhouse gas emissions-free ELYSIS™ smelting technology reduces carbon emissions by more than 30%.

These cans are the first step to a fully traceable, transparent beverage experience leveraging START insights. START’s ability to track and trace complex and convoluted value chains opens a world of opportunity.
It gives the world an assured and secure way to provide transparent information from the mine all the way to the consumer. With START and cooperation partners, we'll be able to connect the information in the value chain transparently.

START will help to transform the world so that one day when you buy something with a START logo, you’ll know that it’s the one to get for its sustainability practices, backed by transparency and traceability credentials.

**AlCircle: Can you tell me what additional exponential technologies Rio Tinto plans to adopt in the current fiscal year?**

**Paramita Das:** Every year, Rio Tinto sponsors our Pioneer Portal. We want innovative ideas and solutions to some of our current business challenges. Through this programme, we work with start-up entrepreneurs and existing businesses to bring their small-scale ideas or proven solutions and technology into the industry. In fact, our Bell Bay aluminium operation has been pioneering a coating for carbon anodes to help reduce consumption and therefore waste. Through the Pioneer Portal programme, companies offered solutions ranging from immersion to spraying. The Bell Bay team is now working with a company to introduce robotic manufacturing technologies—like those used in the automotive industry—to apply the protective coating on their anodes.
We have released to the market RioTrack. RioTrack provides our customers with the ability and power to track and trace their truck, rail or container deliveries. It is the next part of our digital tool kit designed to improve operational efficiency by enabling our customers to track shipments from the moment they leave our assets and, through machine learning, provide estimated ETAs to their production locations.