



**OREXPLORE**  
TECHNOLOGIES

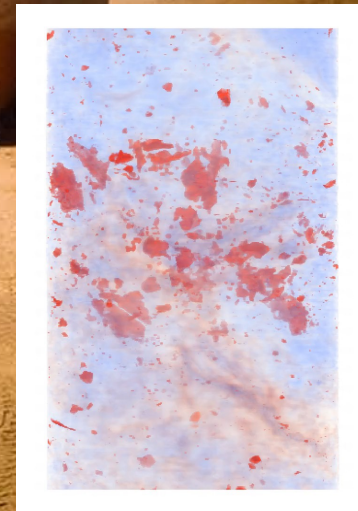


**Brett Giroud**  
Managing Director

October 2023

Perth | Santiago | Stockholm

[www.orexplore.com](http://www.orexplore.com)



**australian microcap  
investment conference**

12th Annual Australian Microcap  
Investment Conference

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## About Orexplore Technologies

Orexplore Technologies Limited (ASX: **OXT**) is a globally focused mineral technology business concentrating on advancing the commercialisation of its Technology Platform across the mining value chain within the global metals and mining sector. The Company's Technology Platform consists of the GeoCore GX10® hardware product and Orexplore Insight user interface software, that is continually advancing through its in-house multi-disciplinary research and development team based in Stockholm, Sweden.

Orexplore's first product, the GeoCore X10®, is a transportable X-ray rock mass scanning technology that converts drill core samples into a three-dimensional data set to provide a "through the rock" image of internal structures and texture in addition to elemental detections, and density.

The Company maintains core-scanning laboratories in Stockholm, Perth, and Santiago. Orexplore's talented global team includes consulting geologists, engineers, data scientists and physicists, and technology delivery experts. The Company continues to advance its solutions through development and delivery of customer solutions powered by its Technology Platform.

### For further information:

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# Corporate Structure | ASX: OXT

Well positioned to accelerate solution adoption across a growing customer footprint.

## Capital Structure

Shares on issue <b>171,045,922</b>	Share Price (23.10.23) <b>A\$0.042</b>
Performance rights <b>13,583,071</b>	Market Cap (23.10.23) <b>A\$7.18m</b>
<b>No debt</b>	H1FY23 Revenue <b>~A\$1,486k</b>
	Cash position (30.06.23) <b>~A\$3.06m</b>

## Led by Experienced Board & Management

**Alan Bye**  
Non-Executive Chairman

**Brett Giroud**  
Managing Director

**Kent Swick**  
Non-Executive Director

**Stefan Sädbom**  
Non-Executive Director

**Stuart Carmichael**  
Non-Executive Director

**William Randall**  
Non-Executive Director

**Frank Campagna**  
Company Secretary

## Top Shareholders

## % Shares on Issue

<b>Kent Jason Swick</b>	<b>17.51%</b>
<b>Circle 5 Management Pty Ltd.</b>	<b>17.27%</b>

## October 23 - completed successful \$4.2m capital raise

- fully underwritten rights issue
- strongly supported placement
- strong backing from existing shareholders



# Who

A globally focused mineral scanning technology company delivering solutions across the mining value chain for customers as they navigate global transitions.

We believe in the sustainable extraction of minerals and metals creating value for all stakeholders to power a better world.

We are...

**300+**

YEARS EXPERIENCE  
ACROSS THE MINING  
VALUE CHAIN

**3**

CONTINENTS

**25+**

EXPLORERS, GEOLOGISTS, PHYSICISTS, DATA  
SCIENTISTS, ENGINEERS, MATHEMATICIANS







# Why

**Navigating multiple global transitions, the mining sector is under pressure to deliver future minerals and metals more productively and sustainably.**

**Orexplora's technology platform is solving entrenched and emerging pain points and creating new value across the mining value chain.**

**From decreasing exploration returns and project techno-economics, to operational challenges, accelerating ESG expectations and beyond, Orexplore is delivering new solutions every day.**



# Business

**Differentiated technology delivering unique solutions**

**10+ years and >\$50m of investment**

**Accelerating validation**

- ✓ a growing range of customers - including BHP, Gold Fields, Northern Minerals and others

**Growth and Pipeline**

- ✓ H1FY23 revenue **+52%** vs H2FY22. (+627% H1FY23 v H1FY22)
- ✓ growth pipeline - geographies, customers, solutions, minerals & metals

**Experienced board and management**





# Journey



Currently transitioning from the commercial traction phase into the scaling phase.

Our technology platform powers a unique solution suite that supports miners across their whole life of asset – from exploration to closure.

The Company is now experiencing accelerating interest and adoption of our solutions across multiple regions, and we are now **looking to scale and advance solutions** across these regions.

## Current Pipeline



Australia



Latin America



Europe

## Further growth opportunity



Asia Pacific



North America

## History

- 2009** Founded - Stockholm Sweden
- 2018** Swick 100% - Perth opened, field trials commenced
- 2022** Swick demerger > ASX
- 2022** **OZ Minerals** \$2.35m
- 2023** **Gold Fields** Chile \$430k
- 2023** **Critical Minerals**
- 2023** **BHP** Carrapateena \$1.55m

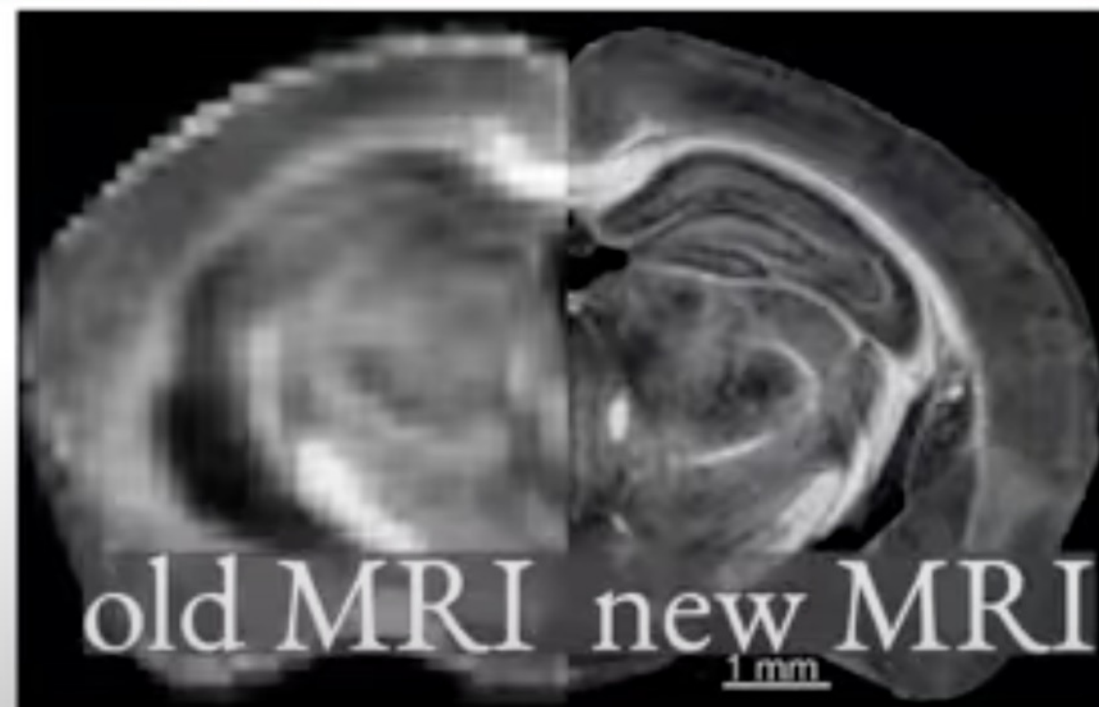
# Look far ?





# Look deep ?

A new MRI from Duke University can image the entire mouse brain at a resolution 64 million times better than the MRI in your doctor's office.

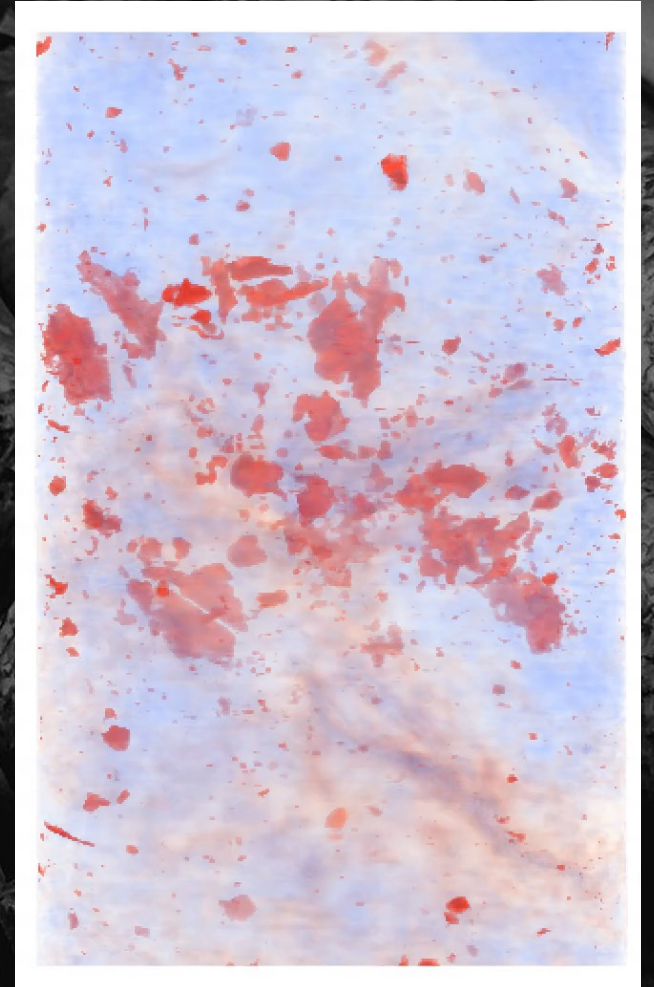


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MORE VIDEOS

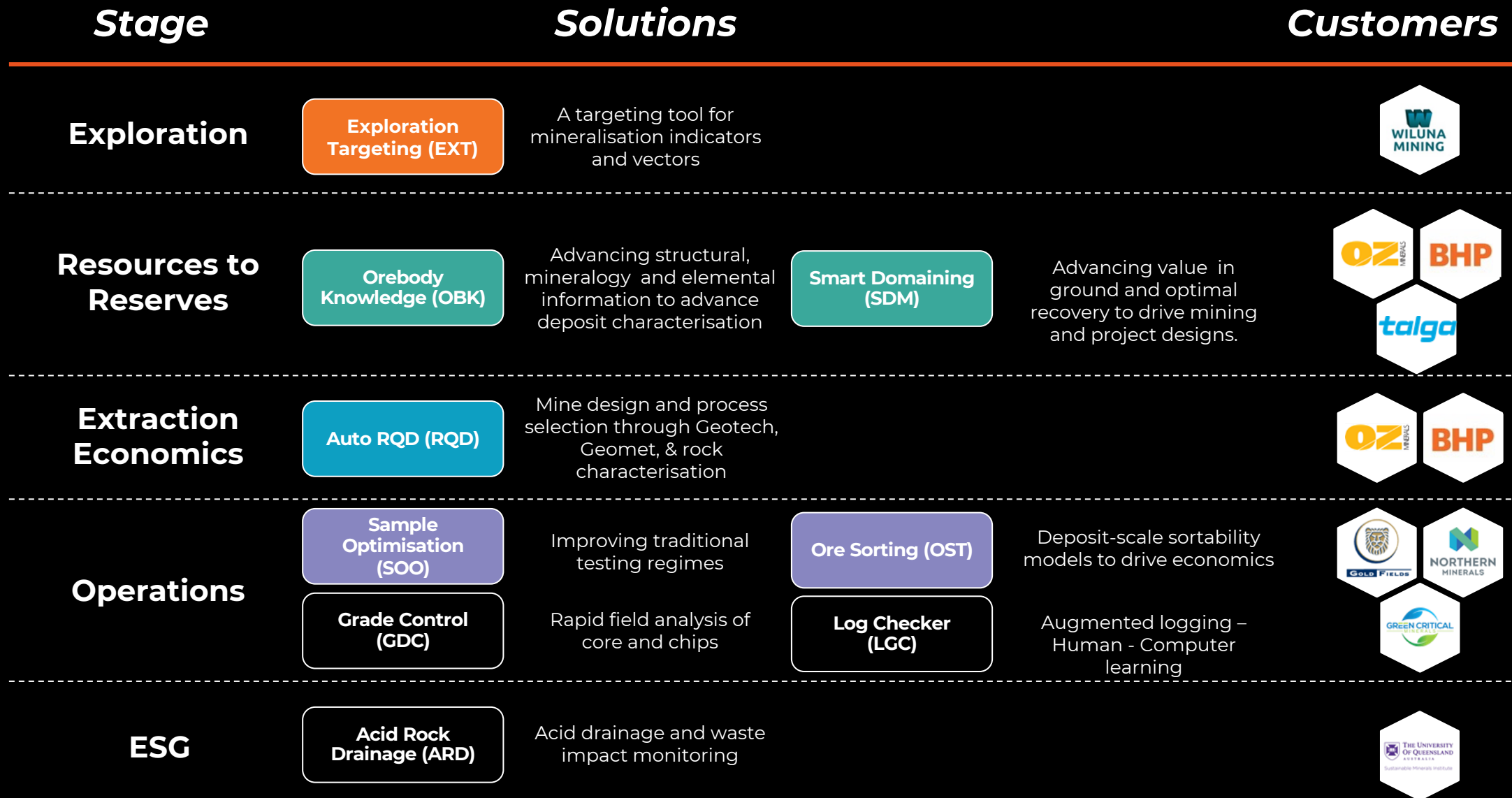


# Technology



# Solutions across the mining value chain

**Solutions** – linking scanning to value for customers to support premium pricing over time through competitor differentiation



Key – Solution

13



Solution in feasibility phase

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# Solution traction



## Operations

RQD

OBK

SDM

### BHP – Carrapateena \$1.55m

Orexlore enters an operating mine focusing on integrating the technology into workflows and delivering operational solutions  
~ **15,000 metres of core to be scanned**



## Operations

SOO

OBK

SDM

### Gold Fields – Salares Norte

Orexlore enters the South American market with its first commercial deployment into a mining operation.  
~ **3,000 metres of core to be scanned**



## Resources to Reserves & Extraction Economics

OBK



RQD

SDM

### OZ Minerals – Kalkaroo \$2.35m

In a harsh remote environment, Orexplore safely digitised core 24 / 7 to advance Orebody knowledge and accelerate mining and operations options analysis  
~ **20,000 metres of core scanned**



## Extraction Economics

GDC

OST

### Northern Minerals – Project development

Building ore sorting models to drive project techno-economics and developing operational grade control solutions for future operations  
~ **900 metres of core scanned**



# Carrapateena

## Integrating into operations

Through embedding three (3) GeoCore X10® machines into the operational workflows, Orexplora will help the site team unlock advanced rock mass characterisation and geometallurgical information to improve operational performance and longer-term planning of the mine.

The Company's "Smart Domaining" (SDM) and Orebody Knowledge (OBK) solutions, powered through its unique technology will additionally drive improved modelling, with potential value drivers across downstream mining, processing, and reconciliation outcomes.

Initial \$1.55m agreement for the scanning and analysis of approximately 15,000m of drill core and associated geo-science integration services.

**Auto RQD (RQD)**

Mine design and process selection through Geotech, Geomet, & rock characterisation

**Orebody Knowledge (OBK)**

3D field information supporting accelerated conversion and techno-economic reviews.

**Smart Domaining (SDM)**

Advancing value in ground and optimal recovery to drive mining and project designs.

**BHP**



**"Delivering rapid advanced rock mass characterisation and Orebody Knowledge can create significant new value for the operations team"**

Stephen Coward – Principle Geoscientist

# Salares Norte

## Entry to mining operation

Integrating the technology into ongoing mine operations, through an installation at the Gold Fields Salares Norte gold and silver mine, in Chile.

Initial \$430k agreement for the scanning and analysis of approximately 3,000m of drill core as part of the larger scale annual exploration program.

Roll-out of Orexplore's new sample optimisation solution (SOO), optimising the downstream laboratory testing, and Orebody Knowledge (OBK) advances.

**Orebody  
Knowledge (OBK)**

Advancing structural, mineralogy and elemental information to advance deposit characterisation

**Sample  
Optimisation  
(SOO)**

Sample support for improving traditional testing regimies



**“Working with our in-house team of geologists, data scientists, physicists, engineers and mathematicians, the options to innovate and combine data products into unique solutions are endless.”**

**Heidi Pass - Chief Geoscientist & Chief Product Officer**





SOO



# Solutions

## Sample optimisation

Explorers and operating miners are under pressure to do more with less and delays associated with receiving sampling results often have significant schedule and cost impacts.

Orexplorer's technology platform allows customers to pre-screen the entire 3D core volume and then sample to optimise the overall sampling process, saving time, money, and the associated emissions from cutting, transporting and destroying core through traditional processes.

### Common Current Processes

- Routine continuous sampling of all / most core = **excess \$, processing, transport and time**
- Geologist uses *surface-only, visual inspection* of core to subjectively select samples for assay = **sample bias, possibility to miss element-bearing samples**
- Core transport and assay processes = **emissions, cost, delays, destruction of core**



SCAN CORE



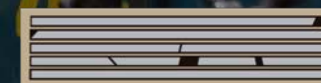
SAMPLE SELECTION MODEL



SEND TO  
CORE FARM



SUBMIT  
TO LAB







## Case Study

# Gold - Deportment and Sampling



**Problems:** While grade is king... it is not enough.

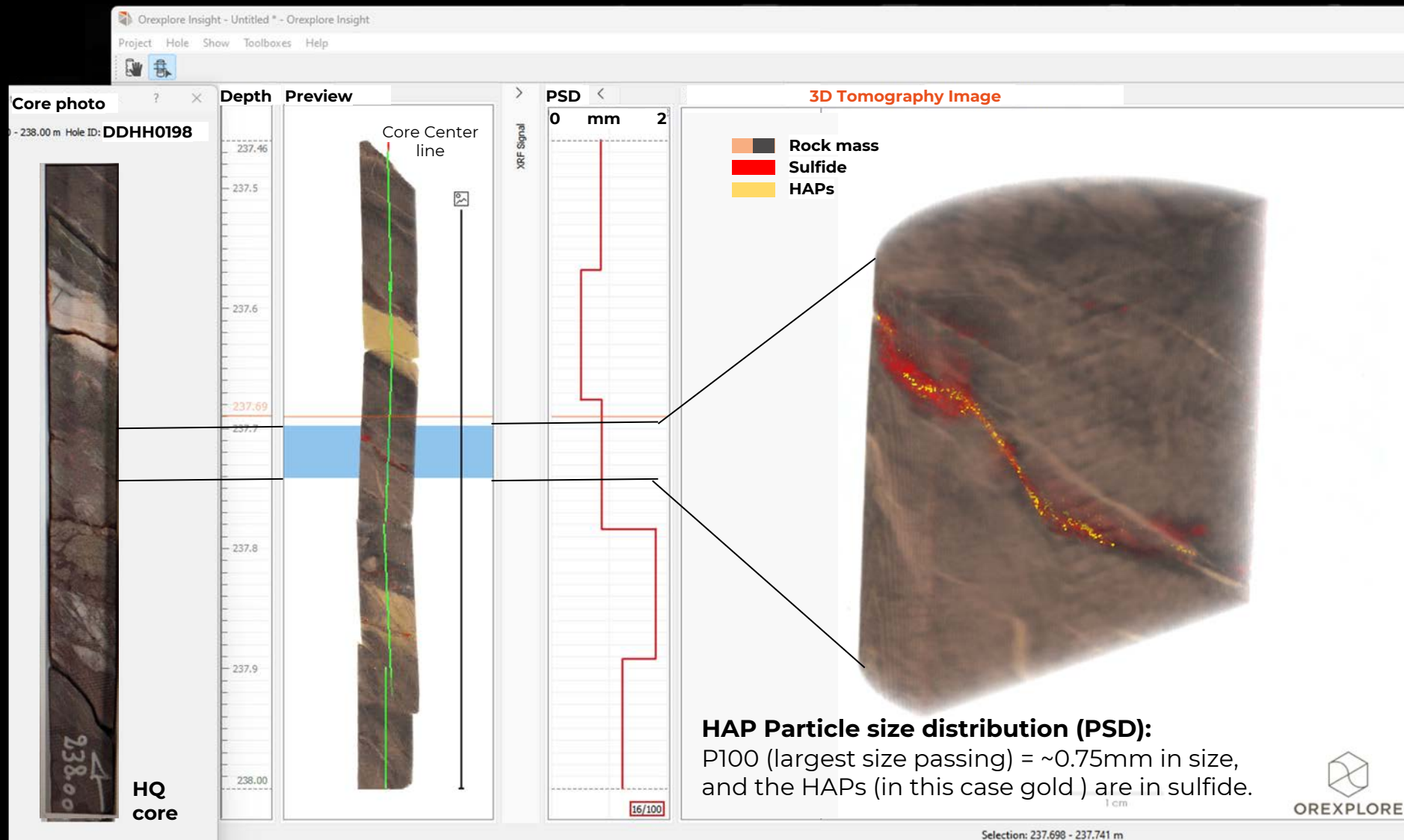
1. A single # does not reveal the personality of the rock.
1. Estimating gold abundance by VG or assaying half core is prone to bias.
  - Whole core assay destroys the core, and with it the important rock information key to making significant decisions.
1. Gold by pXRF is limited to higher grades and only provides 1 # per spot.



# Case Study

## Gold - Deportment and Sampling

ersonal use only



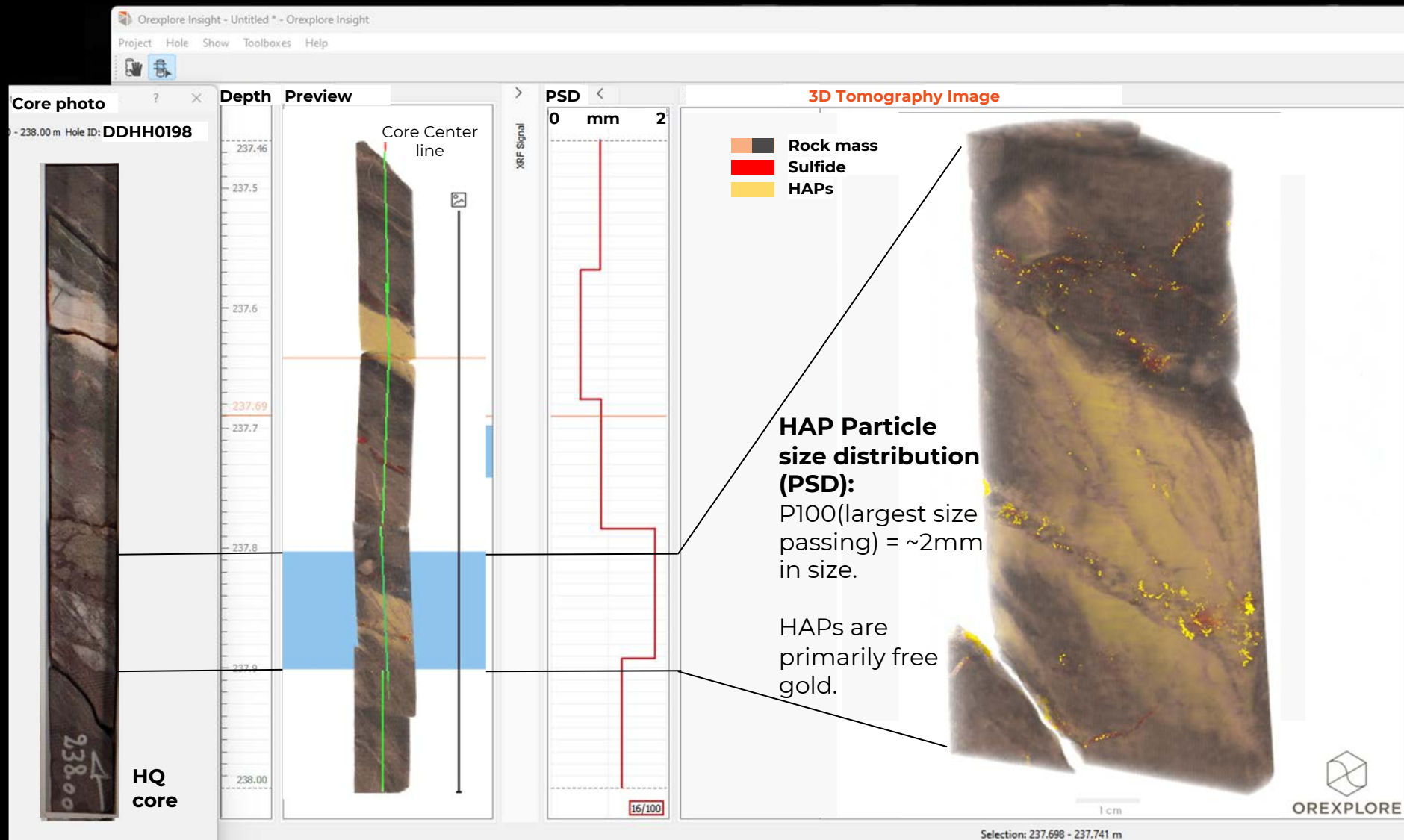




# Case Study

## Gold - Deportment and Sampling

ersonal use only



## Case Study

# Gold - Deportment and Sampling



### Solutions:

1. HAPs (High attenuation particles), like Au stand out well in high energy X-ray Tomography
2. Identifying HAPs in 3D digital core volume + particle size tool revealed:
  - free gold *AND* gold-in-sulfides present
  - different gold mineral assemblages (= different timing)
  - free gold is coarse

### Outcomes & Implications:

1. particle characteristics + abundance = correct assay method selection = ↓ costs, ↓QAQC (time & \$ )
2. de-bottle neck assay ↔ modelling workflow
3. objectively model gold deportment domains
4. could choose not to assay barren core (!!)
5. informs smart capital spend, early !
  - a. coarse gold → gravity circuit
  - b. gold in sulfide → flotation circuit
6. grade control decision support



HQ Core  
photo



GDC

OST



# Critical minerals

## Unique Technology - Market intersection

**Dual Energy** – a step change in the power of the results from the CT scanner, unlocking in-field ore sorting solutions for critical minerals customers

**High energy XRF** – delivering excellent REE discrimination compared to other technologies

**New solutions** – ore sorting, grade control and others

**Project enabling** – proving orebody sortability and ability to undertake operational grade control

Mining is critical to decarbonisation. Solar plants, wind farms and EVs are more minerals intensive than hydrocarbon equivalents



# Case Study

## Graphite flakes



Photo credit: Miriam Doerr Martin  
Frommherz / Shutterstock  
<https://www.azom.com/article.aspx?ArticleID=1630>

**Problems:** Most tonnes  $\neq$  most value

- Graphite flake size is related to graphite purity - both determine product \$\$:
  - >300um flake size = ~US\$2000/t  $\leftarrow$  *least abundant in market*
  - <200um flake size = ~US\$1000/t
  - <100um flake size = ~US\$450/t  $\leftarrow$  *most abundant in market*
- Assaying graphite is time consuming and the extraction and preservation of size distribution is difficult.
- JORC 2012 requires the competent person to ensure exploration samples are tested for appropriate parameters (i.e. market-related specifications) in addition to basic assay tests for graphitic carbon content.



# Case Study

## Graphite flake

### Solutions

Initial tests show Graphite stands out well as a low attenuating particles (LAP) in XCT data

### Outcomes

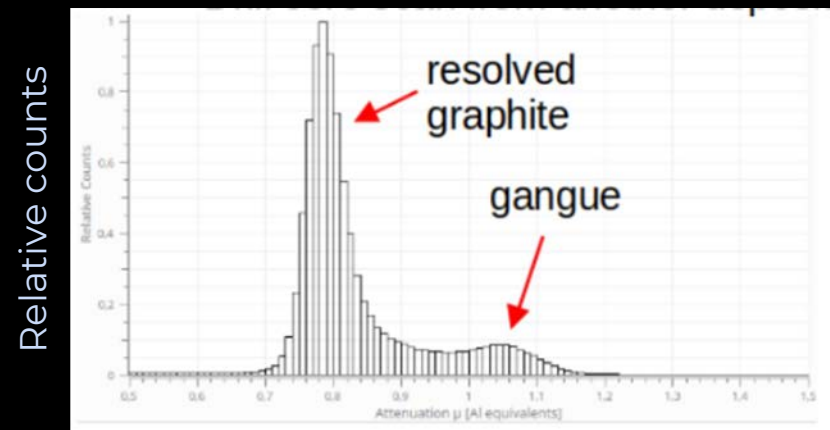
1. large graphite flakes resolved
2. demonstrated some correlation of vol. concentration of LAP in XRT data with graphite assay concentrations → graphite grade proxy
3. possibly amenable to ore sorting

### Further Implications

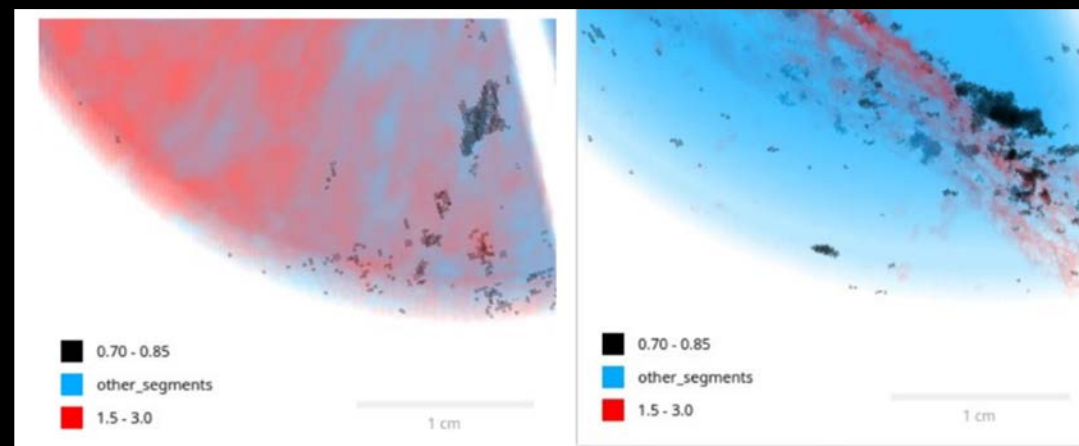
1. detailed textural data is a key intelligent and informed selection of drill samples and potential DEPOSIT VALUE
2. if the value is present, defining (domaining) the geometallurgical characteristics of a deposit.



XRT Attenuation Histogram From Core Sample



Attenuation (Al units)



**Orexplora Insight 3D core images** - large graphite-like particles (black) and rock-forming minerals (red, blue).

# Increasing Market



South America



Australia



Europe



ersonal use only



- Gold
- Base metals 26
- Other metals





“ Our solutions are now rapidly advancing and starting to be pulled into new regions by our customers.

1.

### Latin America

Entering the region and accelerating pipeline flow

- Gold Fields Chile
- Regional tier-1 miners - deep engagement and scoping
- Initial core scanning for multiple potential customers starting through Santiago office

2.

### Australia

Accelerating sales outreach and critical minerals

- Multiple tier-1 and other operators scanning core in OXT laboratories and validating solutions
- Multiple critical minerals customers scanning in laboratories - developing new industry solutions
- Leveraging solutions from existing projects

3.

### Rest of World

Responding to Tier-1 customer pull and defining the pipe

- Engagement through commercial lab trials with tier-1 on African sites
- Project scoping post commercial lab trials with European customer
- Multiple European customer commercial lab trials in Stockholm
- Early North American partnering out-reach



**Brett Giroud**  
Managing Director



# Performance

- Strong revenue growth since initial ASX listing in January 2022.
- H1FY23 revenue growth of 52% compared with H2FY22.
- H1FY23 revenue 23% higher than full year FY22.
- Resultant increase in cash receipts. (Q1FY23 receipts include ~\$327k of receipts in advance.)
- Revenue increases driven by new contracts wins – both on-site operations and solution delivery and larger lab-based commercial projects.
- Future revenue growth to be driven by recently announced new contract wins and strong sales pipeline across operating regions.

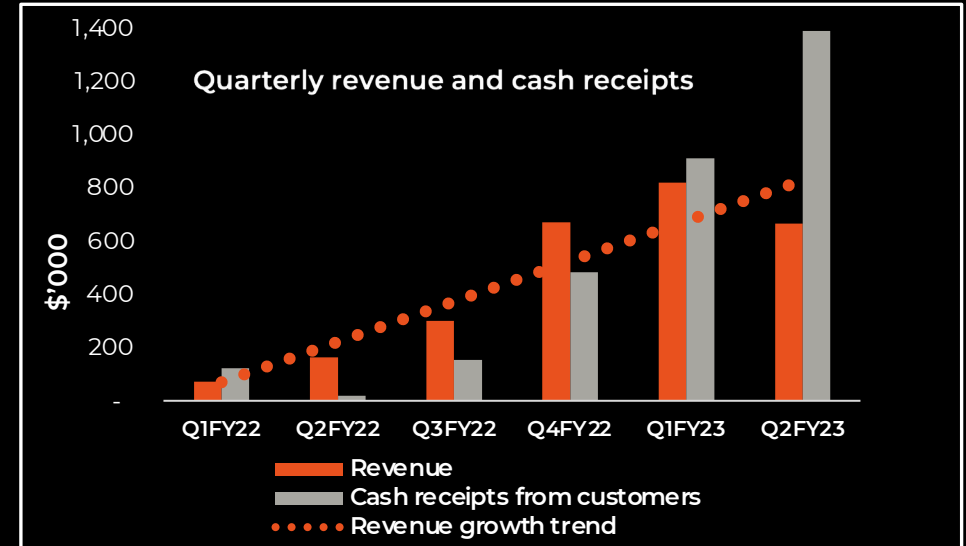
Increased business capability introduced across geology, sales, data-science and operations - supports solution development and customer delivery.

Improving operating margins expected on new projects.

Capex directed at GX10 machine manufacture and operational infrastructure.

Cash at 30 June 23 of \$3,056,000.

No debt in capital structure.



<b>\$'000:</b>	<b>H1FY22</b>	<b>H2FY22</b>	<b>H1FY23</b>
Revenue	237	975	1486
Net operating cash outflows	(3,160)	(2,818)	(3,100)
Capital expenditure	(707)	(440)	(625)

<b>\$'000:</b>	<b>31 Dec 22</b>	<b>30 Jun 23</b>
Cash	7,039	3,056
Debt	NIL	NIL



# Investment highlights



## Transformational technology

**True 3D** – CT scanner maps the entire 3D core volume, compared to surface only sensing

**Non-destructive** – drill and scan once to create digital twins for collaboration and future proofing

**Fast & simple operation** – results in an hour anywhere in the world

**Human-Machine automation** – Insight® platform enables machine learning powered automation and analysis



## Scaling

**Contracts** – Gold Fields, Oz Minerals, BHP and 10+ commercial OXT laboratory engagements

**Pipeline** – accelerating across three global regions

**Globally significant team** – industry leaders delivering transformation

**Hub and spoke** – centralised geoscience and support

**Reliable, simple to operate** – GeoCore X10® field units



## Solutions adoption

**Solution suite** – exploration, studies, operations, critical minerals, ESG

**Solving industry pain points** – structural, persistent opportunities

**Creating customer value** – as they navigate global transitions

**Data-Geoscience powered** – scan once, create and capture value multiple times – SaaS future revenues



## Global growth

**Large Total Available Market (TAM)** – drilling, core farms, base and precious metals – broad suite of minerals and elements

**Critical minerals enabler** – uniquely suited technology unlocking deposits and projects

**Global transitions enabler** – ESG, energy, digital, automation, and workforce

**Macro-resilient** – creating value through the cycles



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# Appendix - Technology & Business

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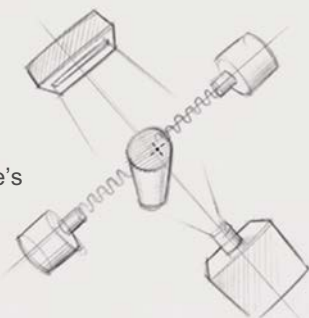
## GeoCore X10 ®

### High Energy X-ray Source

XRT (X-ray transmission) CT provides 'through-the-core' structural 3D imaging used to estimate potential elemental composition, geological structure, texture & density.

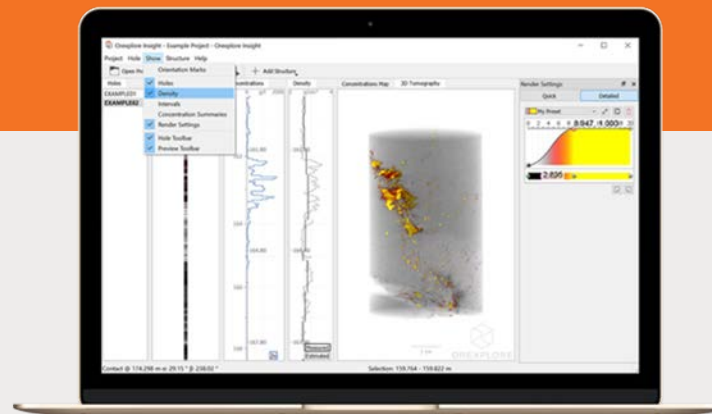
### Spectrometers

XRF Spectrometers provide elemental detection at the core's surface.



- **Fast:** scans four x 1m cores at a time, in less than 15 minutes per metre.
- **Versatile:** non-destructive scanning of both core & non-core (chips etc.) material.
- **Easy:** requires minimal skill set to operate. One technician can operate up to 3 machines.

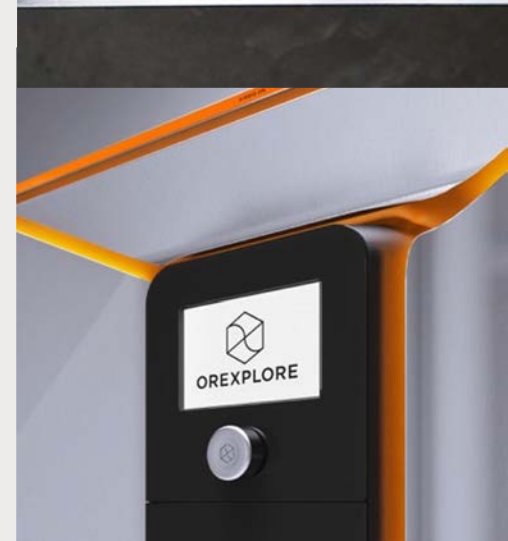
# Technology offering



## Insight software platform

Orexplore's software system, **Orexplore Insight®**, provides users with the ability to interact and analyse the scan results obtained from the GeoCore X10®. It allows for 3D-visualisation of the core and the ability to further analyse the resource and physical information, providing rich capability to understand, interpret and extract key information contained within the sample such as:

- Geological structures
- Lithology / texture
- Density – high resolution
- Rock mechanics & physical characteristics e.g. RQD
- Particle detection
- Detected elements
- Emerging geochemistry



# Mining transitions

Sustainable pain-points are combined with transformational new solutions to guide the strategic focus of Orexplore



## Digital Transformation



## Sustainability



## Business



## Automation



## Metals Demand



## Workforce Evolution



## Accelerating Value Chains



### Exploration

- Diminishing discoveries
- Campaign efficiencies
- Pressure to become a producer quickly



### Stakeholders

- Continually expanding
- Accelerating expectations
- Demonstrating leadership across domains – ESG, Carbon



### Operations

- Productivity pressures
- Skills shortages & changing ways of working
- “Do more with less”



### Projects

- NPVs under pressure
- Challenging techno-economics
- Technology adoption
- Evolution of engineering



### Corporate

- Evolving business models
- Global competition
- Complex dynamic value chains
- Synch to accelerating markets
- Access to capital



**Orexplore provides traction through transitions**

- Decision support
- Operational transformation
- Corporate value
- Risk and Sustainability



# Your challenges, our solutions

**✗ Diminishing exploration returns**



## **Exploration** Targeting tool

Mineralisation vectors derived from mineral indicators, alteration states, and rock characterisation.

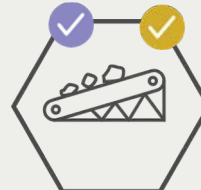
**✗ Slow resource to reserve conversion**



## **Resources & Reserves** Accelerating developments & acquisitions

Unique 3D insights from the field supporting accelerated conversion and techno-economic reviews.

**✗ Mining blind**



## **Mining** Don't mine blind

Operationally embedded units for grade control improvements to assist dynamic mining decisions.

**✗ Project techno-economics**



## **Project Economics** Matching plants to deposits

Ore sorting and rock characterisation to “best fit” process plant design with orebodies to drive NPVs.

**✗ Production efficiencies**



## **Operations** Production & Analysis

Optimising core sampling and analysis through pre-filtering and driving operational efficiencies

**✗ Assay delays & costs**



## **ESG** Environmental controls

Dynamic field based environmental risk controls – such as acid drainage and waste impact monitoring.

**✗ ESG value creation & risk control**



# Drill for information

## Field based sensing devices (IIOT)<sup>1</sup>

01 The digital mining trend is increasingly driving the collection and use of data in field-deployed devices and technologies.

Orexlore's Technology Platform<sup>®</sup> has the potential to harvest data from these devices, integrating it with the core sensing data stream generated by the GeoCore X10<sup>®</sup>.

## Edge compute<sup>2</sup>

02 Processing and computation of field-generated data is increasingly occurring closer to its source.

Field deployments of our GeoCore X10<sup>®</sup> paired with our Orexplore Insight Platform allows immediate access to data for direct action, analysis and interpretation with adaptable levels of expert support.

The conclusions and output can be readily broadcast back to field devices for tactical execution and to advise senior stakeholders with medium-term and strategic decision-making.

## Orexlore Laboratories

03 Our laboratory scanning capability provides customers with the opportunity to collaborate with our expert team to swiftly configure our product solutions to address their most pressing needs.

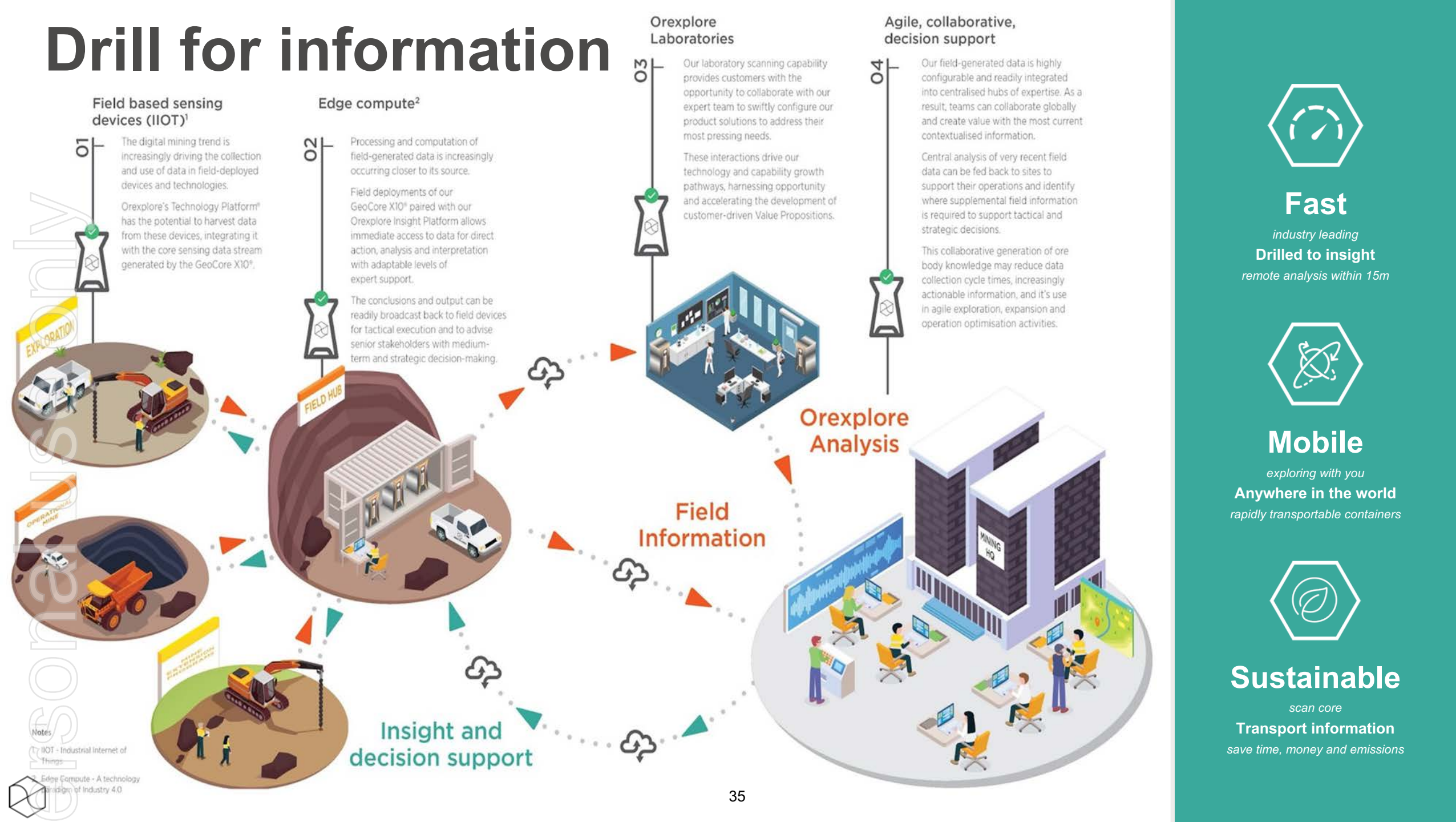
These interactions drive our technology and capability growth pathways, harnessing opportunity and accelerating the development of customer-driven Value Propositions.

## Agile, collaborative, decision support

04 Our field-generated data is highly configurable and readily integrated into centralised hubs of expertise. As a result, teams can collaborate globally and create value with the most current contextualised information.

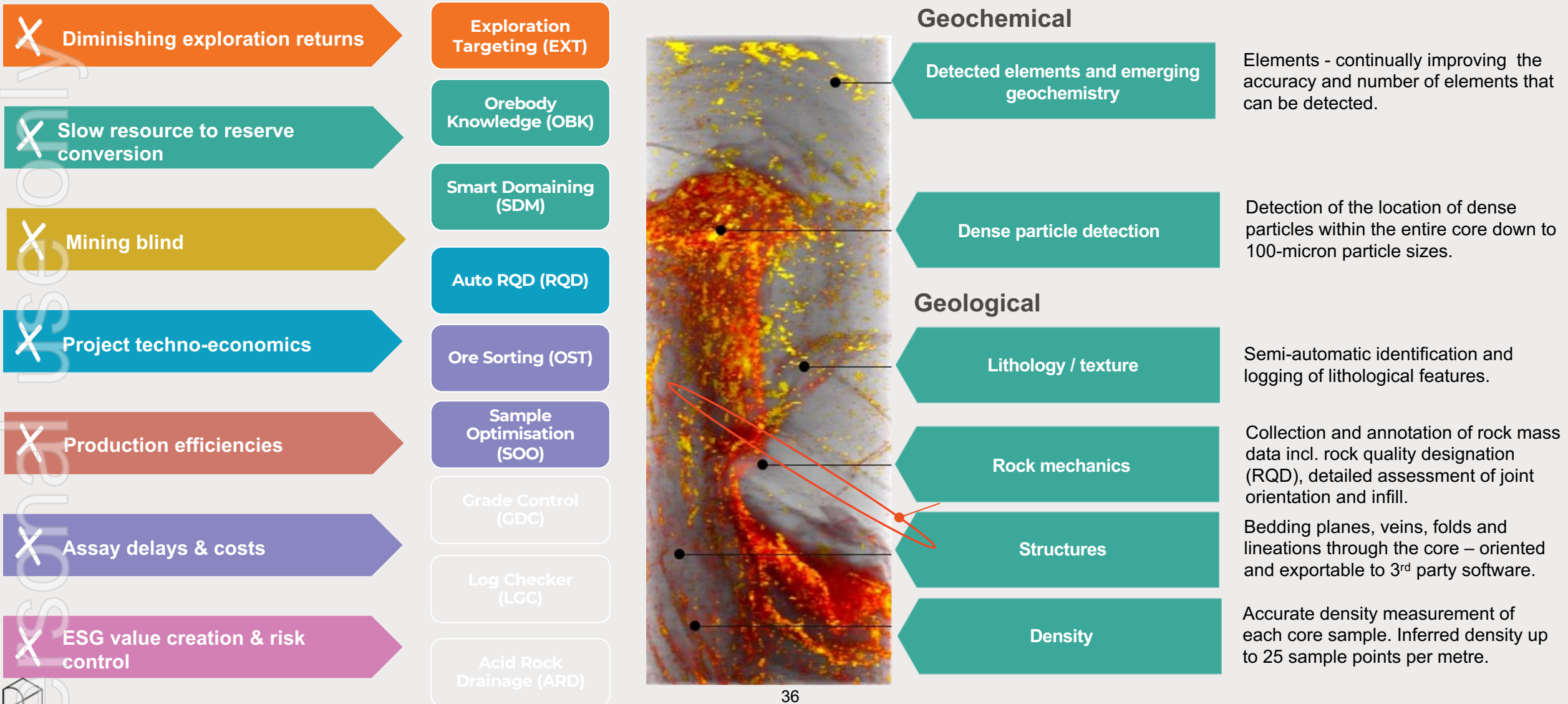
Central analysis of very recent field data can be fed back to sites to support their operations and identify where supplemental field information is required to support tactical and strategic decisions.

This collaborative generation of ore body knowledge may reduce data collection cycle times, increasingly actionable information, and it's use in agile exploration, expansion and operation optimisation activities.





# Technical capabilities & applications



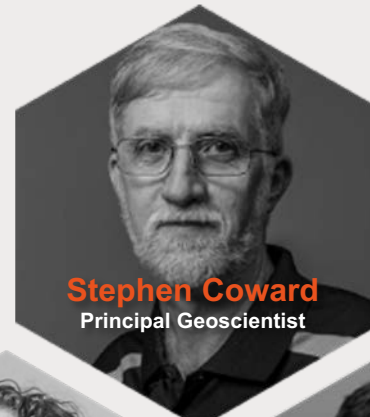
# Key Personnel



**Heidi Pass**  
Chief Geoscientist &  
Chief Product Officer



**Thomas Drage**  
Engineering Manager



**Stephen Coward**  
Principal Geoscientist



**Alexander Hansson**  
Principal Researcher



**Brett Giroud**  
Managing Director



**Kath Hodgson**  
Operational sales



**Mikael Bergqvist**  
Chief Technology Officer



**Greg Haskis**  
Chief  
Financial Officer



**Elvis Stansvik**  
Product lead - Insight



**Christian Häggström**  
Product lead – GX10



# Board of Directors

## Kent Swick Non-Executive Director

Kent is a Mechanical Engineer with over 30 years' experience in civil construction, mining maintenance and surface and underground mineral drilling. Kent successfully founded and has led (Managing Director) Swick Mining Services Ltd since its inception. Kent has a Bachelors of Engineering from the University of Western Australia and has completed the Owner/President Management program at Harvard Business School

## Stuart Carmichael Non-Executive Director

Stuart is a Chartered Accountant with over 20 years' experience in the provision of corporate advisory services both within Australia and internationally. Stuart is a Principal and Director of Ventnor Capital Pty Ltd and Ventnor Securities Pty Ltd which provides corporate and financial advice to small-cap ASX listed companies. Further, Stuart acts as a Non-Executive Chairman / Director for a number of other ASX listed companies



## Alan Bye Non-Executive Chairman

Alan is a highly respected industry figure with strong expertise on the innovation of the resource industry – covering both digital and extractive innovation technologies. Alan is the co-founder and Managing Director of Imvelo Pty Ltd, a Non-executive Director at Scitech, and holds council positions at SmartSat CRC & CSIRO. Alan has a Ph.D. in Mining from the University of KwaZulu-Natal.



## Brett Giroud Managing Director

Brett brings over 24-years of technology delivery, creating and leading large high performing teams. He has driven mining industry transformation and delivered systems and technology across over \$15B of capital projects. Brett has created and led business units, lectured on future systems and is a sought after advisor to start-ups. Brett was previously the Chief Engineer (ICT) for Jacobs (SKM) Engineering, and APAC head of Strategy and Transaction Services for Worley (Advisian). Brett has a Bachelor of Engineering & an MBA from the University of Western Australia



## Stefan Sädbom Non-Executive Director

Stefan is a senior exploration geologist with over 35 years' experience in exploration and underground mining. Through various entities, Stefan has been deeply involved in several Swedish and European innovation projects relating to the improvement of the mining industry. Stefan sits on the board of a number of other Swedish listed and non-listed entities. Stefan holds a Bachelors of Geology from Uppsala University



## Will Randall Non-Executive Director

Mr Randall has over 25 years of operational and executive experience in the Global Commodity and Mining Industries, operating across cultures, geographies, products and supply chains. Mr Randall was based in Asia from 1997 to 2020 with a critical focus on business development and supply chain strategies. He has served on the boards of various listed and private companies over this period.



RRR

OBK

SDM

OVX

RQD

# Recent progress

## Solutions

**Auto RQD** – linking structures to processing options

**Smart domains** – challenging established block model boundaries

**Digital test proxies** – expanding limited slow and expensive test work across ore bodies

**Density** – high resolution automatic density reducing the inherent risk of “tonnes in the ground”

**Recoverability** – particles, elements, mineralogy and more driving optimised process options to maximise recoverability and study techno-economics

ENVIRO  
COPPER  
THE INVISIBLE MINE

Think & Act  
Differently

OZ  
MINERALS



“

“We are building brand new solutions for the Industry - fed directly from near-real-time field sensed data and connected directly to a rapid study team”

Stephen Coward – Principal Geoscientist Orexplore



# Recent progress Technology

**HQ machine** – now scanning up to HQ core size – circa 40% serviceable market increase

**Dual Energy CT** – a step change in the power of the results from the CT scanner, unlocking in-field ore sorting solutions for critical minerals customers

**Core engine** – major advances in the digital core models driving rapidly improving near-real-time elemental and mineralogical outputs direct from the field

**Orexplore Insight®** – customer driven quarterly releases of new functionality

**Future horizons** – advancing in-house designed next generation sensors

