

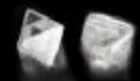


# De Beers Leading Through Technology

David Noko  
Managing Director  
De Beers Consolidated Mines

And

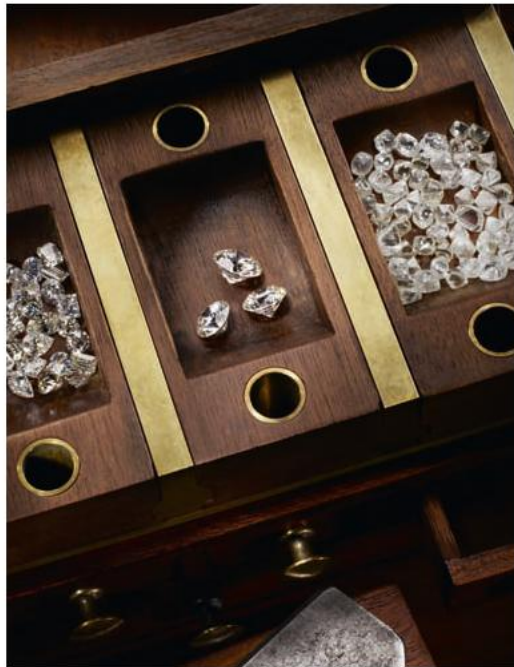
Domingos Valbom  
General Manager  
DebTech



# Diamonds and De Beers

DE BEERS  
A DIAMOND IS FOREVER

## Quality



Only a handful of diamonds will be selected.  
Chosen for their natural radiance. Singled out at every step.  
These are the few. These diamonds are Forevermark.

**FOREVERMARK**



Forevermark is part of the De Beers family of companies. Forevermark.com

## Precious Moments



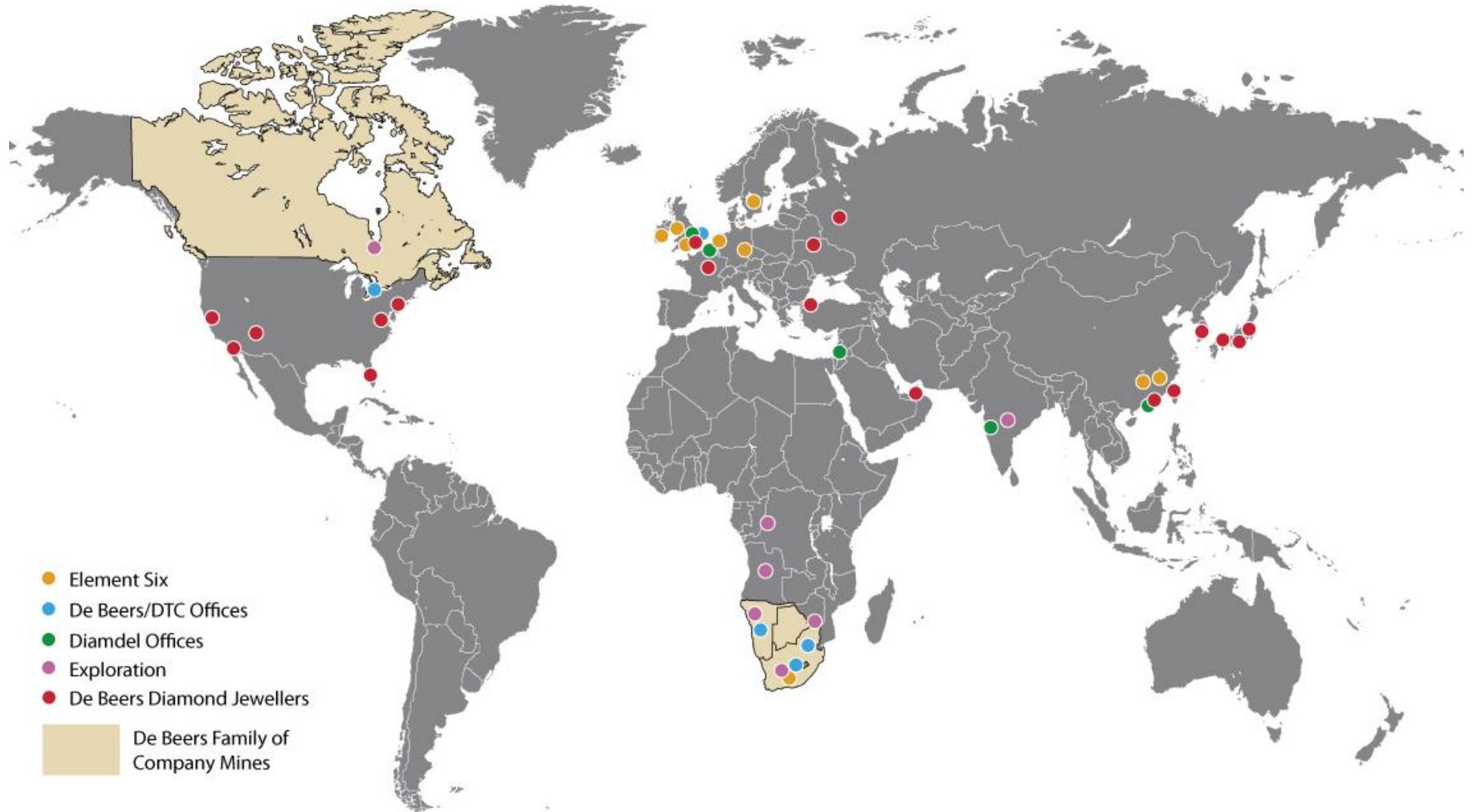
# The Diamond Pipeline

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# De Beers' Worldwide Footprint

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# Global Economic Crisis

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Economist.com

# Consumers still want diamonds

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Research shows women want “fewer, but better things”



Diamonds are a store of value

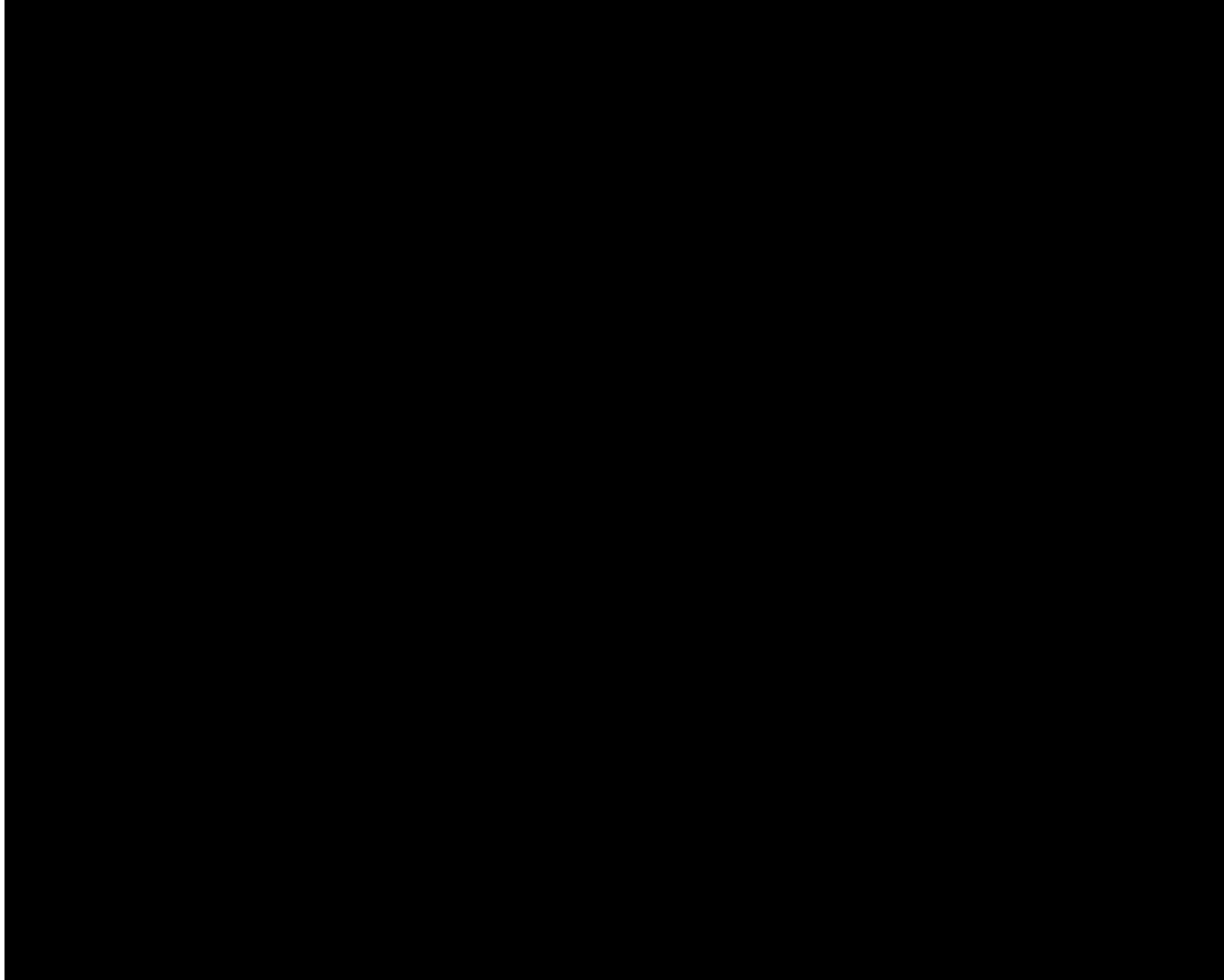
Here Yesterday ♦ Here Today  
♦ Here Tomorrow

Couples still get engaged and married



Two things in life last longer than time...

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A DIAMOND IS FOREVER

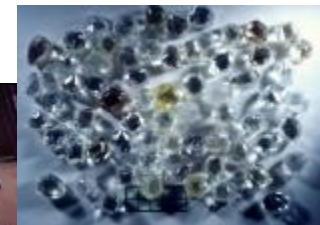
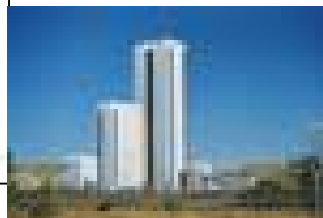
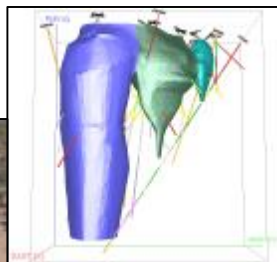




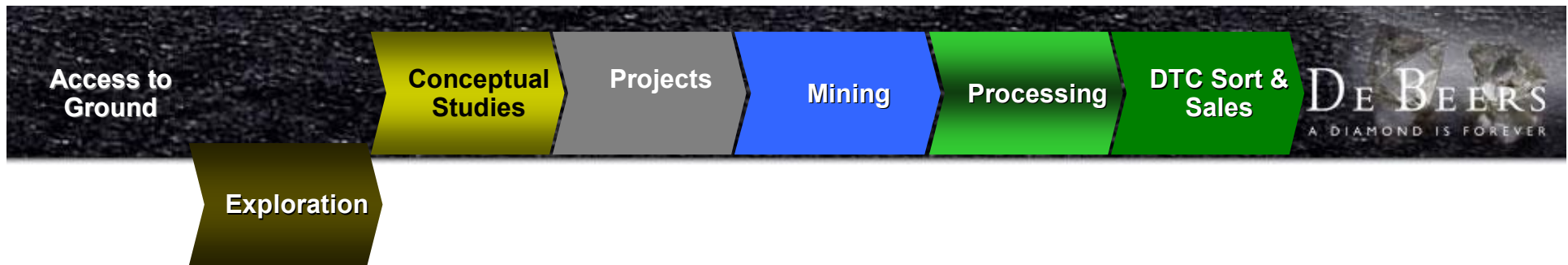
Access to  
Ground

## Leveraging technology to attract and enhance partnerships and facilitate access to ground

- Market De Beers' differentiating technical capability:
  - Geophysics
  - Mineral chemistry
  - Expertise in plant design and construction
  - World class diamond sorting technology
  - Proven record with efficient plant operation and sweating assets
  - DTC diamond sorting, sales and marketing



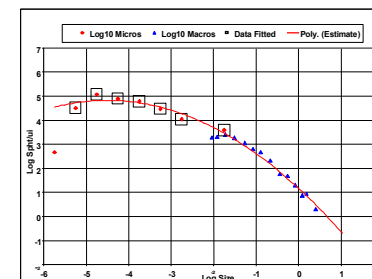
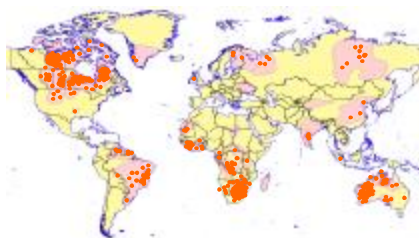
Successful government partnerships in Africa

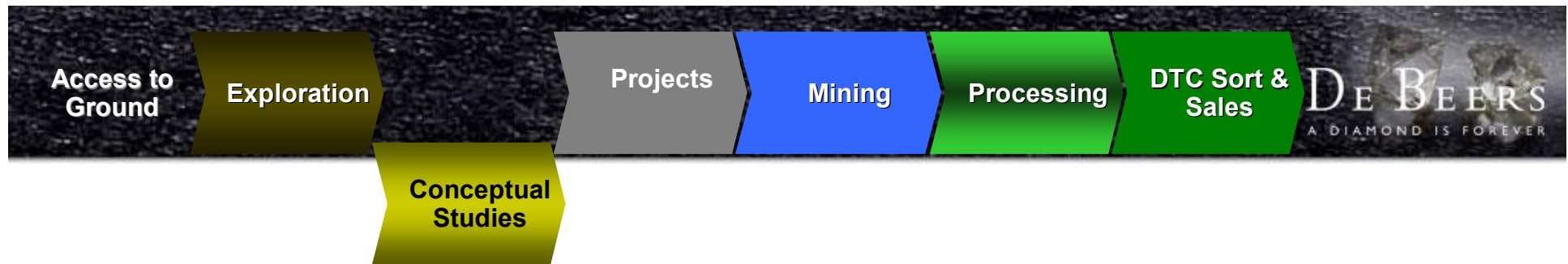


## Identification of potential deposits and speed up the evaluation of deposit

Most kimberlites in Central Africa have high sediment cover and therefore poor accessibility - airborne geophysical technologies such as magnetics and gravity are critical to the successful detection of kimberlites in these challenging areas.

- *Targeting* - World cratonic targeting map
- *Discovery* – applying latest geophysical and drilling techniques to discover
- *Deposit assessment* – Sample treatment to assess content and grade, size distribution, value and size of ore body
- *Resource definition* – apply economic model, stay or walk away

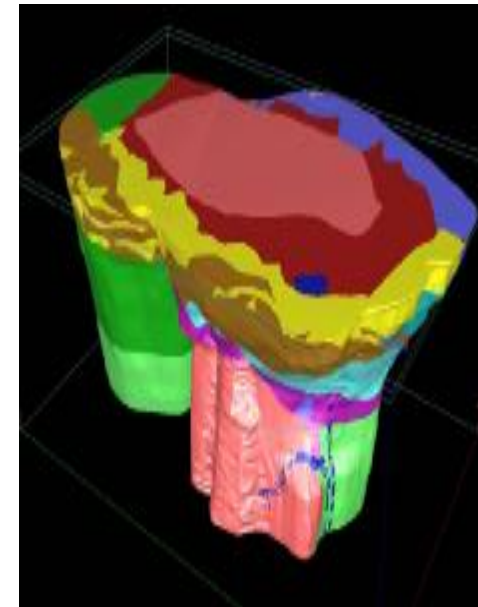


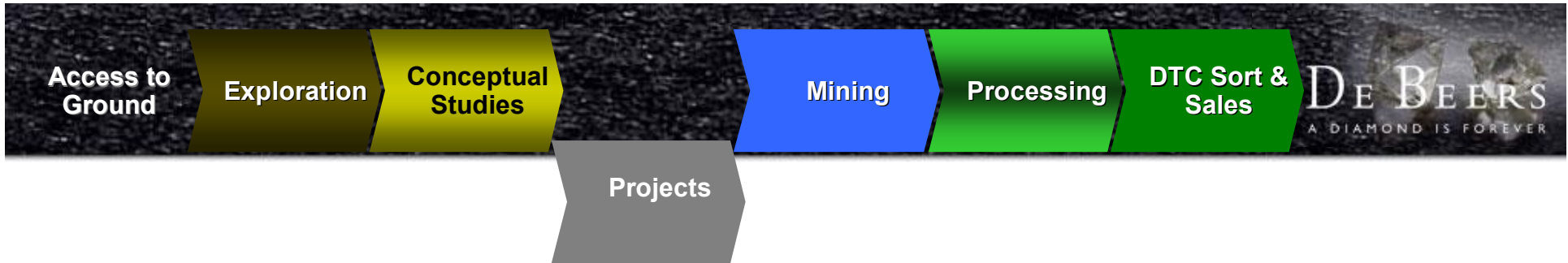


## Mineral Resource Management

Focus is on reducing the total time and expenditure required to take a project from discovery to an operating mine by optimising sampling, estimation and evaluation processes

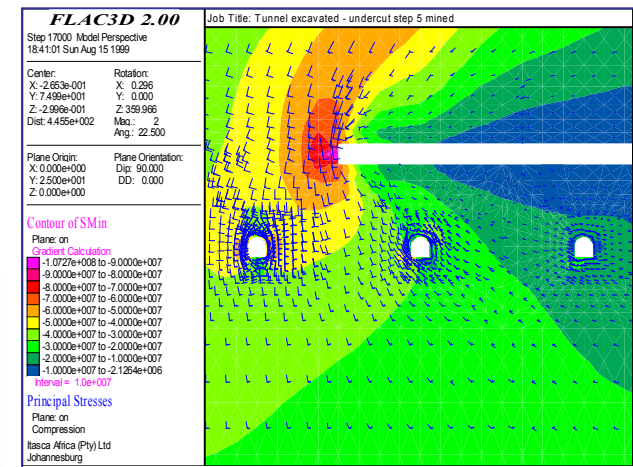
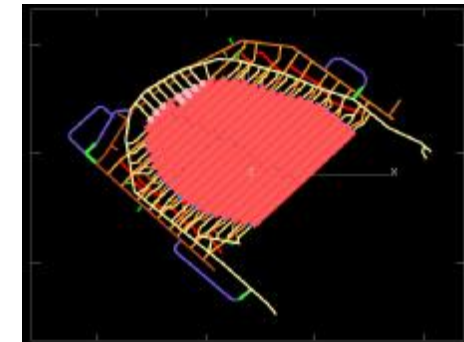
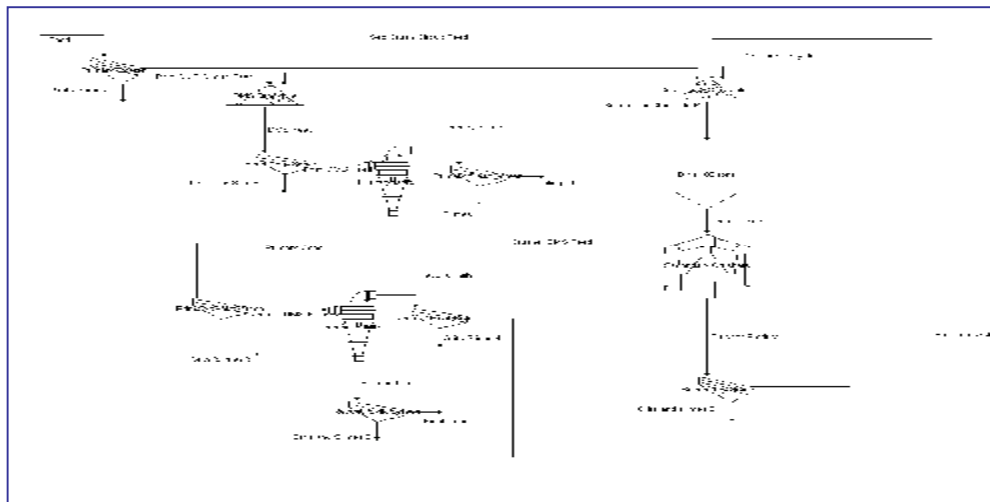
- Development of new and advanced analytical techniques.
- R&D efforts concentrated on:
  - Geological characterisation
  - Diamond content
  - Diamond characterisation and valuation





By applying mining and process simulation technology the optimum plant design can be obtained.

Ore Dressing Studies predict the liberation and ore handling characteristics

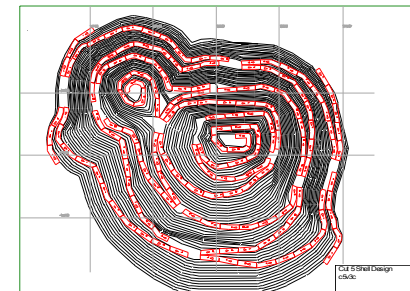




## Kimberlite

Mine designs which meet the challenges of deep mines in weak rock..

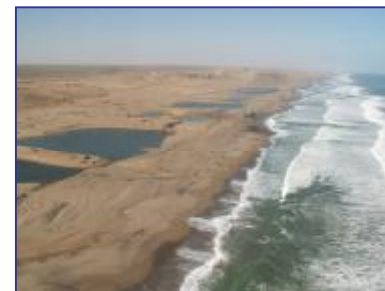
- Safety – collision avoidance, slope and ground stability
- Block Caving – rapid tunnel development, blasting technology
- Support – membrane support
- Automation – Finsch automated vehicles
- Open pit to underground conversion
  - research into ‘Mine of Future’



## Alluvial

Meeting the challenges of estimating diamond concentrations and mining deeply buried and inter-tidal deposits

- Seawalls
- Dredging
- Large scale earth-moving challenges
- Surf Zones

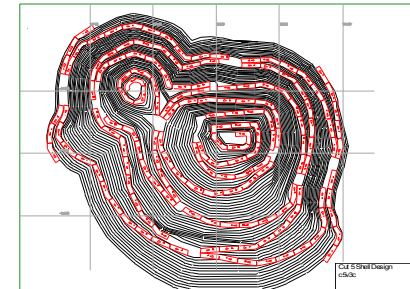




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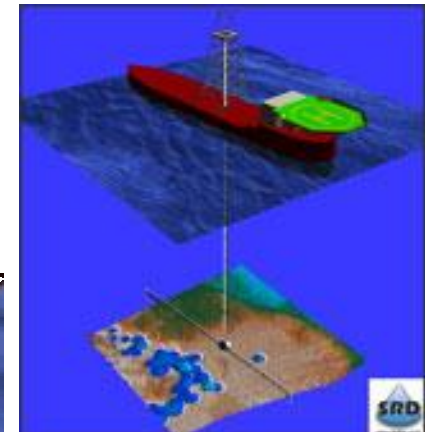
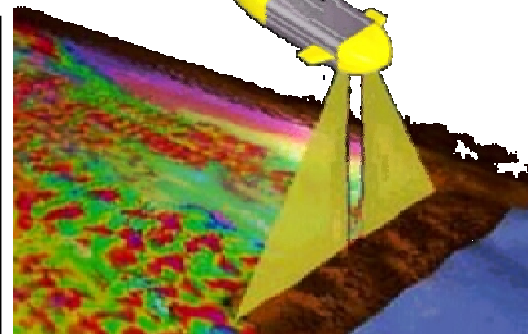
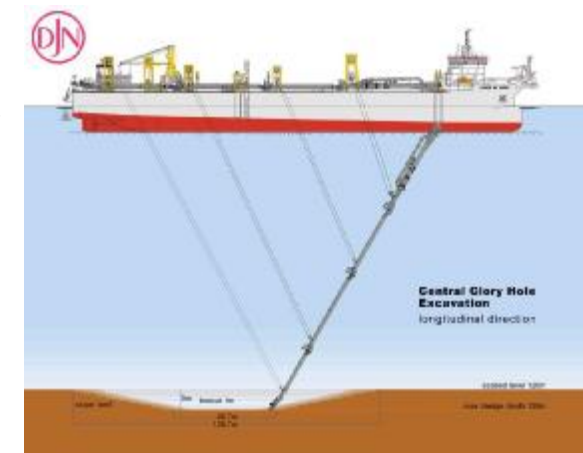


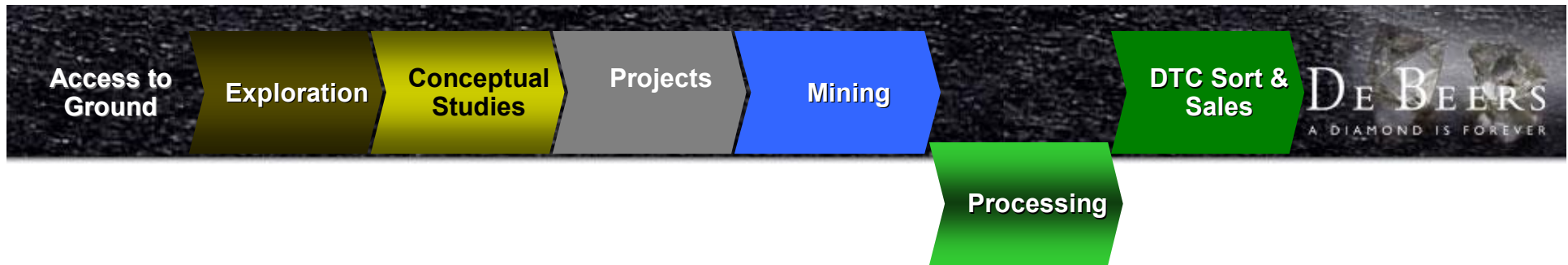


## Marine

Meeting the challenges of locating, estimating and mining deposits at 120 meters depth

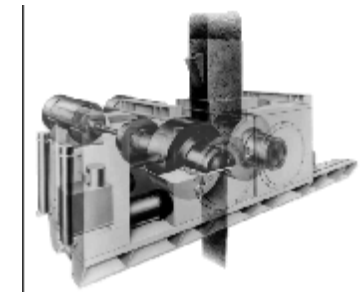
- Autonomous Underwater Vehicle, Sampling, drill bit, crawler and dredging development
- **Production Efficiency** - Reaching production target without increasing fleet (2 vessel = R4 billion saving)
- **Increase mineable reserve** - Doubled mineable reserves by reducing cut off grade from 0.5 – 0.2 cts/m<sup>2</sup>





## Meeting the challenge of extracting the maximum value from the resource using appropriate technology

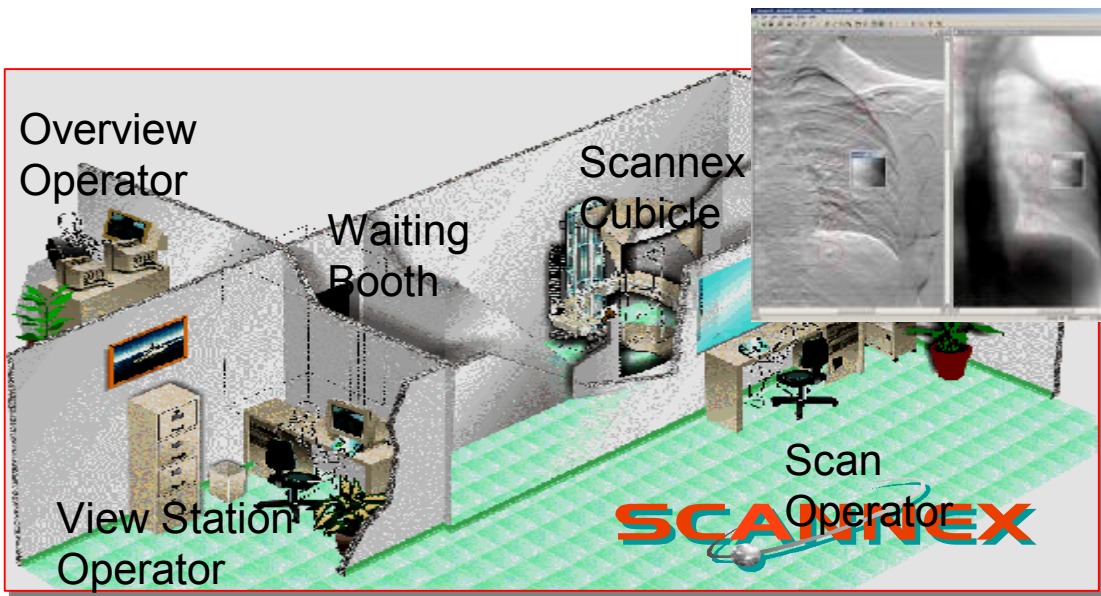
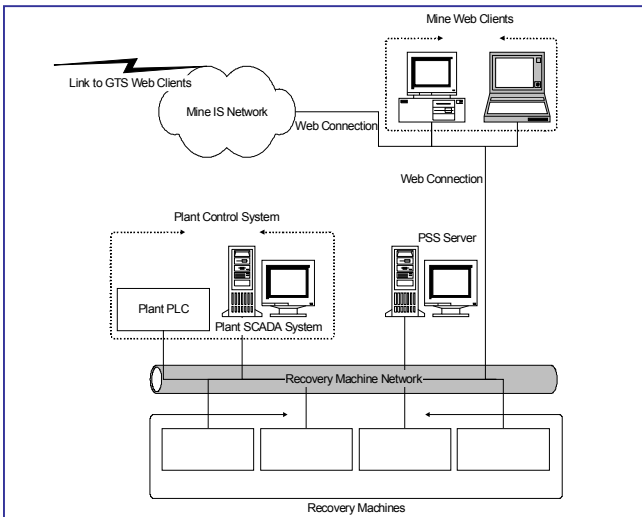
- **Liberation:** Technology that delivers smart no damage liberation
- **Concentration:** Applying Diamond Wizard simulations to optimise concentration processes
- **Recovery:** Supply integrated diamond recovery and sorting technology delivering 98% of all +2 mm diamonds
- **The development of effective Rapid Deployment Plants**

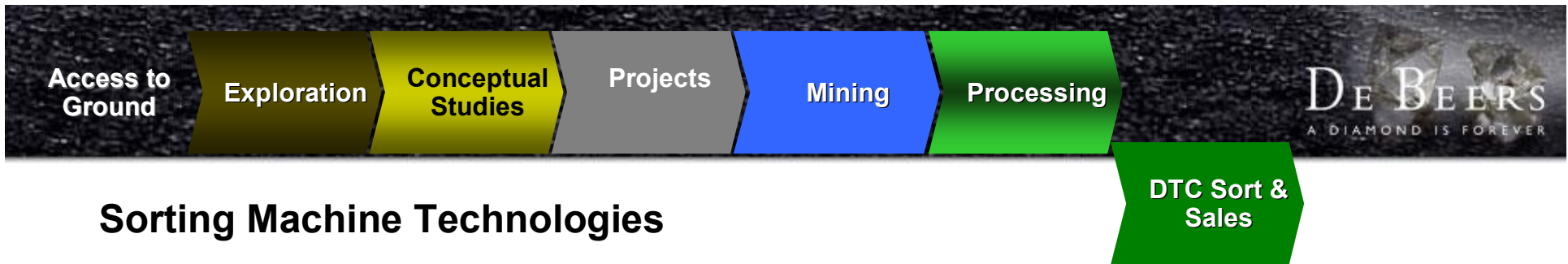




**Automation & information:** Technology that applies process rules to optimally control plant equipment

**Diamond control:** Technologies that will contain 100% of diamonds through secure sorting and information as well as reliable body scanning deterrents

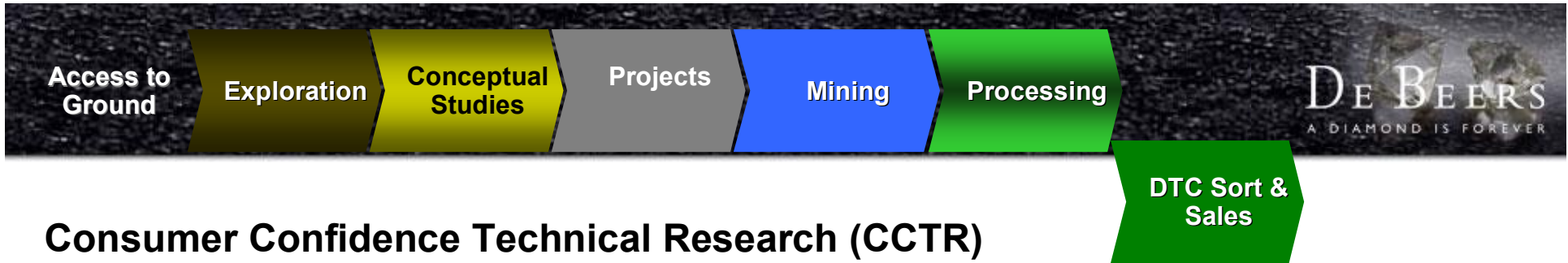




## Sorting Machine Technologies

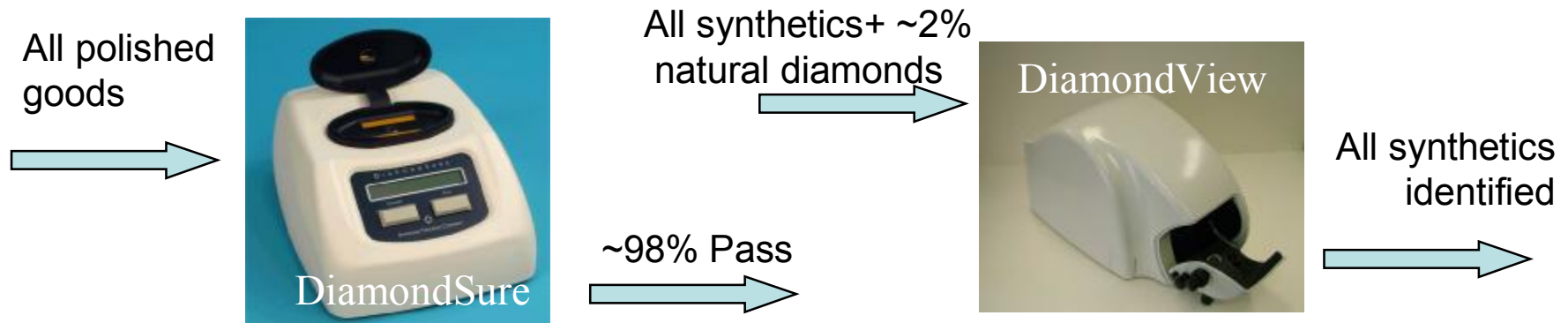
- **Development aims:**
  - Efficiency gains and responses to changing requirements in sorting
  - Support for the Producer and Client Value Proposition
  - Proprietary advantage for DTC
- **Presentation sorting in producer countries:**
  - Will increase the need for standardisation in model, colour and quality
  - Machines will underpin standards across all producers
  - Essential for aggregation

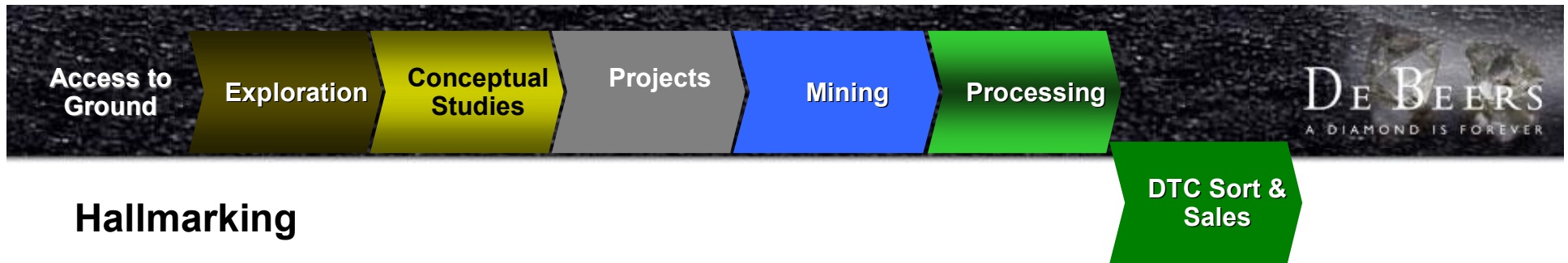




## Consumer Confidence Technical Research (CCTR)

- To maintain consumer confidence in natural, untreated diamonds
  - identification of synthetics and treated diamonds
- Development discrimination techniques and instruments
  - DiamondSure, DiamondView etc.
- Laboratory/Trade engagement and communication
  - Trade presentations/educational materials

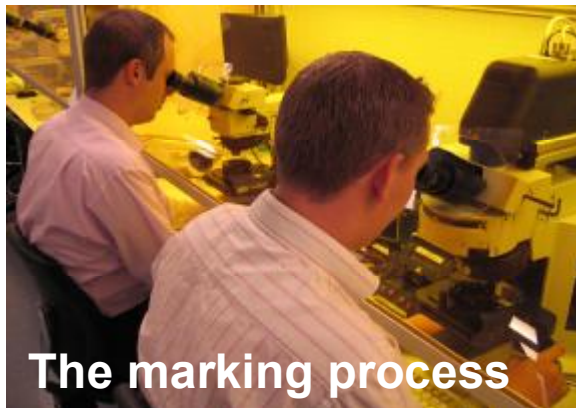




## Hallmarking

To support integrity of natural diamonds via Forevermark - Increased consumer confidence

- Proprietary advantage for DTC goods
- Development of low cost, high volume proprietary hallmarking techniques
- Forevermark marking facilities in Antwerp and Maidenhead
  - c.100,000 stones marked to date



The marking process



Forevermarked stone



## People Strategy and Talent Development Process

**Creating challenging assignments to develop the competence of technical talent across the value chain**

**Process Peer Groups taking ownership of talent development across the diamond mining process**



**Integration and coordination by IGT Committee**

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