

Developing  
communities of interest  
around Harsco's  
innovation agenda



# Introduction to Harsco



## Harsco Corporation

- High-value services and products to worldwide industries that are fundamental to global economic growth – infrastructure, metals, minerals, railways and energy
- #1, 2 or 3 leadership position in all major markets
- \$3bn+ sales; operating in 50 countries; 20,000 employees
- Fortune 1000 company; listed on the New York Stock Exchange
- Founded in 1853; headquartered in Camp Hill, PA USA



## Harsco Metals and Harsco Minerals

### **Harsco Metals: Engineered Solutions**

We provide logistics and resource recovery solutions, principally for the metals and mining industries. We offer customers tailored solutions in which we specify and operate our own plant and equipment.

Our expertise is in applying material science and engineering to designing the operational solution, and then applying best operating practice around the globe to continuously improve our efficiency and process technology.

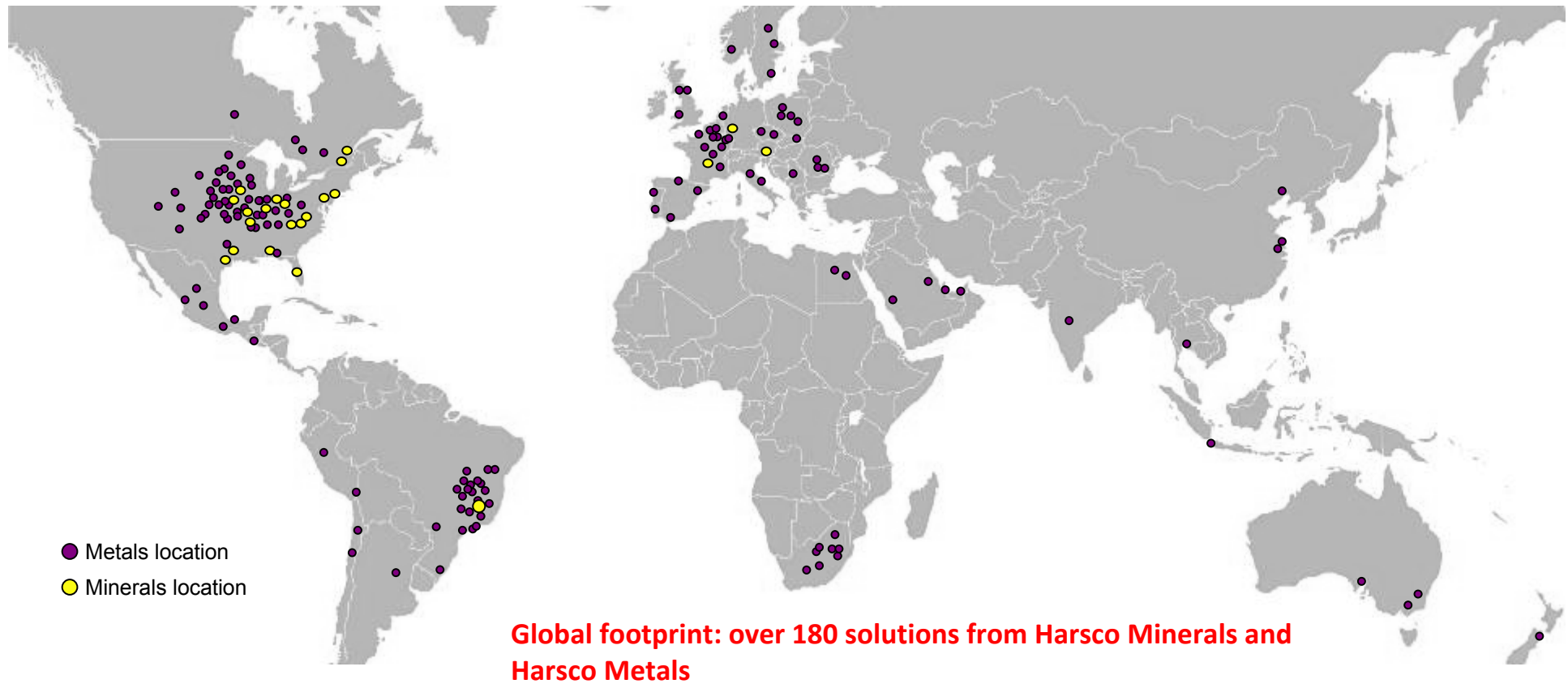


### **Harsco Minerals: High-value Products**

We sell high-value mineral products to the metals, mining, utilities, construction, shipping, and agriculture industries, derived and re-processed from industrial by-products generated by the metals and energy sectors. We also extract the metallic elements from the by-products, for recycling primarily back into metals production.



## Globally Engineered, Locally Delivered



## Solving today's Metals and Mining Challenges

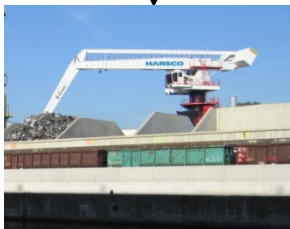
How can we minimize raw material and energy costs?

What methods are open to us to optimize logistical efficiency?

What is the most cost-effective route to achieve the right product quality?

How do we comply with environmental regulations, and maximise the value extracted from by-products?

### Value-Creating Solutions



Logistics



Product Quality



Resource Recovery

## Our Operating Model

**Sustainable value creation for customers**

**Continuous improvement in cost efficiency and process technology**

### Innovate

External network  
Research and Development  
Chief Technology Office  
Best available technology



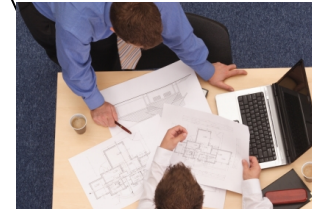
### Transfer Knowledge

Global benchmarking  
160 sites in 30 countries  
Group Best Practice  
Site Audits  
Knowledge Transfer Seminars



### Support

By-product commercialisation  
Engineering services



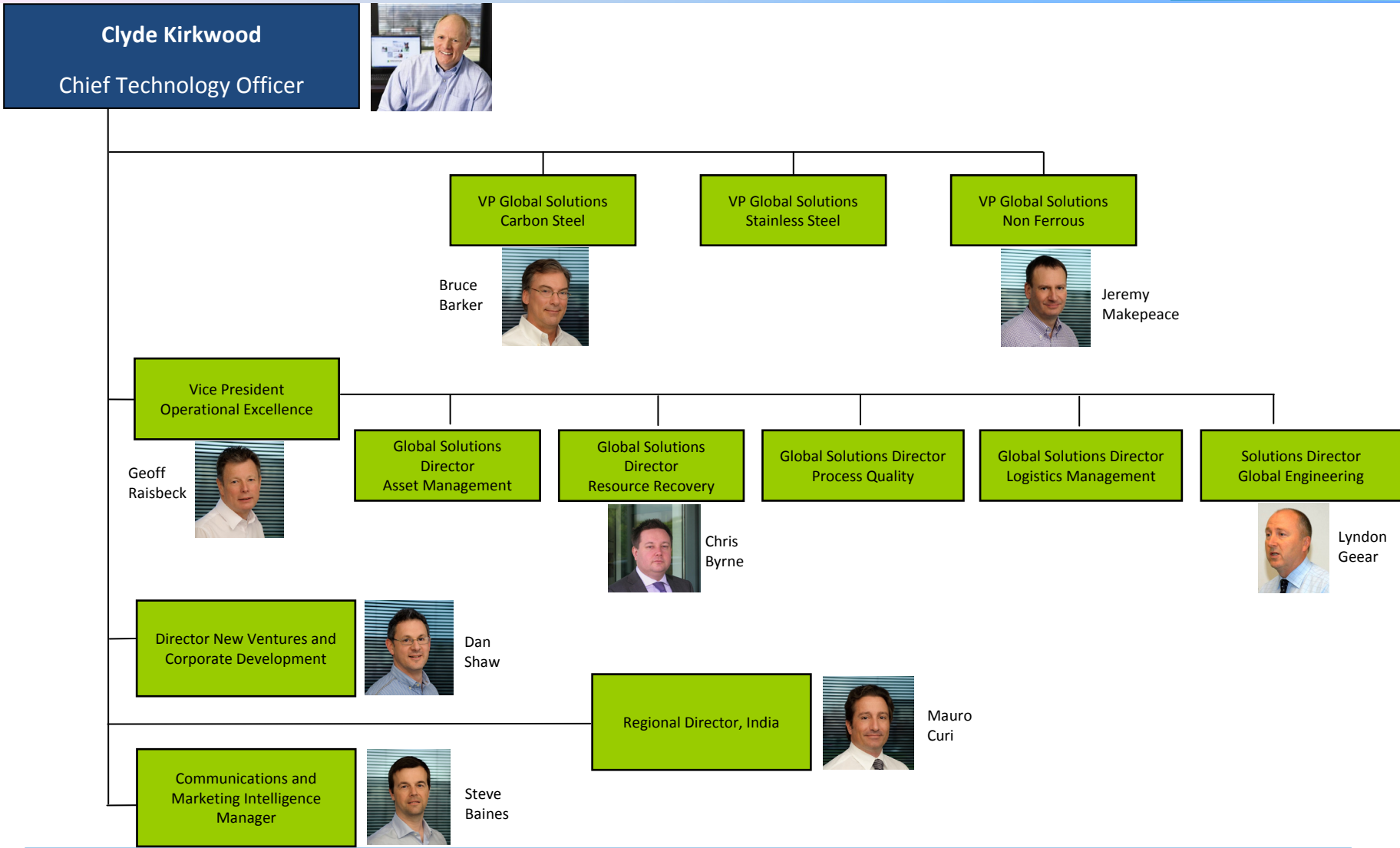
### Operate

Site operations  
Build/own/operate  
Long term contract  
ISO Certification



## Our Innovation Organization





## Harsco's Innovation process



## Harsco Global Solutions Centers (GSC)

- Dedicated meeting space for Co-Developing solutions with customers and partners
- Discuss current R&D projects and future solutions
- Technology Showroom (Harsco solutions)
- GSCs Located at leading universities/research institutes
- Harsco sponsorship of research
- Network of subject matter experts connected virtually via the internet



## Our Innovation Agenda



# Research and Development

## **Our Research and Development Focus**

The application of science and technology to challenges in the metals and mining industries, especially in the fields of materials science, energy and logistics.

## **What does Harsco bring?**

Marketing and scale (operations at 160 metals production sites in 30 countries)

Capital to build and operate material processing plants

Engineering expertise for product development and process analysis

Recycling waste materials across adjacent metals industries

## Target Technologies

### By product recycling technologies

- Waste stream processing
- Metal & Mineral recovery to reduce raw material costs
- Automation of material sorting
- Metallic separation and extraction
- Residual material recycling or disposal

### Clean technologies:

- Energy recovery
- Renewable energy sources
- Energy use minimization (freight reduction)



# Learn More

**Follow Our Innovation Journey**

[www.harsco3D.com](http://www.harsco3D.com)

