DASSAULT SYSTEMES

NATURAL RESOURCES

OPERATIONAL EXCELLENCE IN MINING

LEVERAGING THE INDUSTRIAL INTERNET OF THINGS

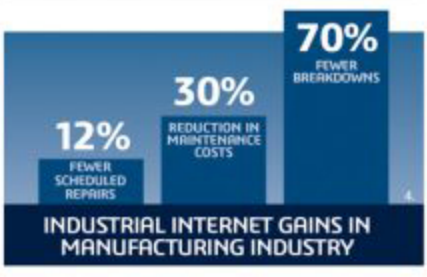
THE FACTS

LOWER GRADES, LOWER PRICES, AND DECLINING PRODUCTIVITY

COPPER MINE GRADE 1900-2010

IRON PRICE PER TON 2011-2016

PRODUCTIVITY DECLINE 2000-2016



INDUSTRIAL INTERNET GAINS IN MANUFACTURING INDUSTRY

STEPS TAKEN BY MANUFACTURING INDUSTRIES TO INCREASE PRODUCTIVITY

IMPROVING PRODUCTION MGMT

DIGITALIZATION ACCELERATION

ACCELERATED IMPROVEMENT FROM DIGITALIZATION IN 21ST CENTURY

THE INDUSTRIAL INTERNET OF THINGS

OPERATIONAL EFFICIENCY *Operational cost reduction* → **AUTONOMOUS DEVICES** *End-to-end automation*

NEAR-TERM → LONG-TERM

Integrate and leverage data from across the mine to drive productivity

Autonomous shoveling and hauling based on a virtual version of the mine site

HOW WILL IIoT IMPLEMENTATION CHANGE WORKING PROCESSES?

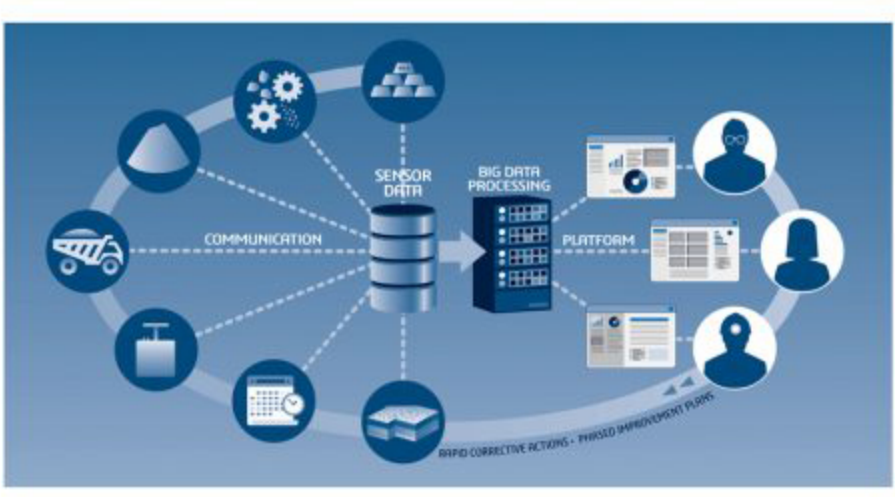
How will it work?

Benefit: Less waste

IMPROVEMENT BY IMPLEMENTING SHORT INTERVAL CONTROL

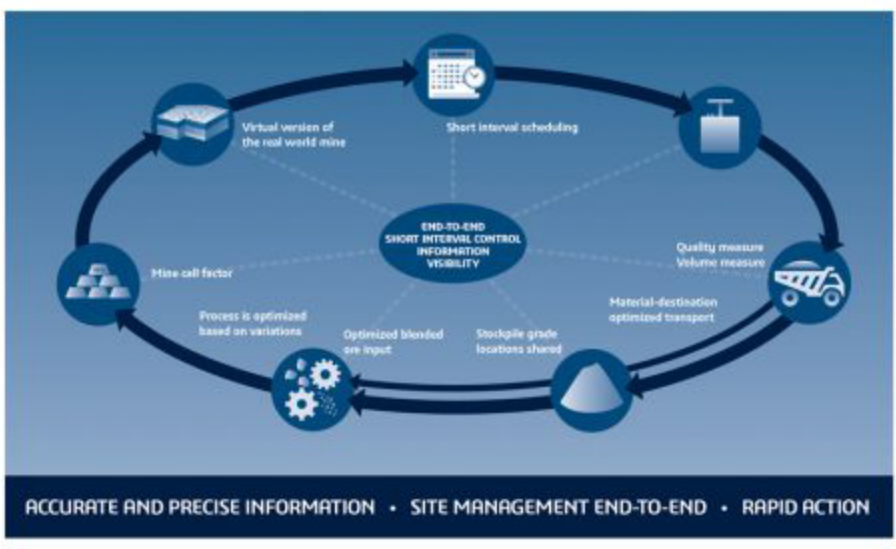
IIoT IMPLEMENTATION

GATHERING SENSOR INFORMATION AND PROCESSING THE DATA FOR RAPID ACTION



THE BENEFITS

MINING OPERATIONAL EXCELLENCE



ACCURATE AND PRECISE INFORMATION • SITE MANAGEMENT END-TO-END • RAPID ACTION

HOW TO BEGIN

THE FOUR KEY STEPS TO IIoT SUCCESS

1

DEFINE A STABILITY TARGET

Define measure(s) required to achieve it.

2

IMPLEMENT IIoT TECHNOLOGY AND A BUSINESS PLATFORM

Operation with short interval control

3

CAPITALIZE ON LESSONS LEARNED TO CONTINUOUSLY IMPROVE

Understand the mine unit process interface and impacts

4

LEVERAGE THE VIRTUAL MINE TO ATTAIN ENTERPRISE AGILITY

Rapidly re-adjust operations according to changes in demand and prices

Sources:
1. Brook Hunt - a Wood Mackenzie Company 2. S&P Global Market Intelligence 3. US Bureau of Labor Statistics 4. World Economic Forum/Accenture

For more information visit: http://www.3ds.com/industries/natural-resources