



Trimble®

Geospatial Data in Mining

Nathan Pugh
GM Mining

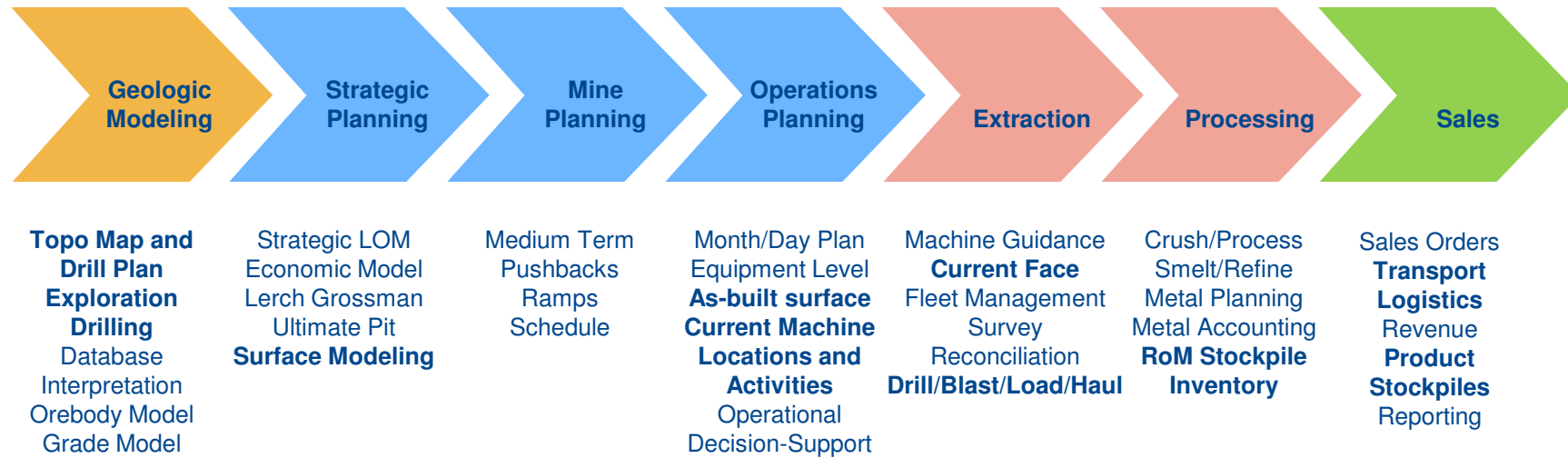
Mining vs Construction

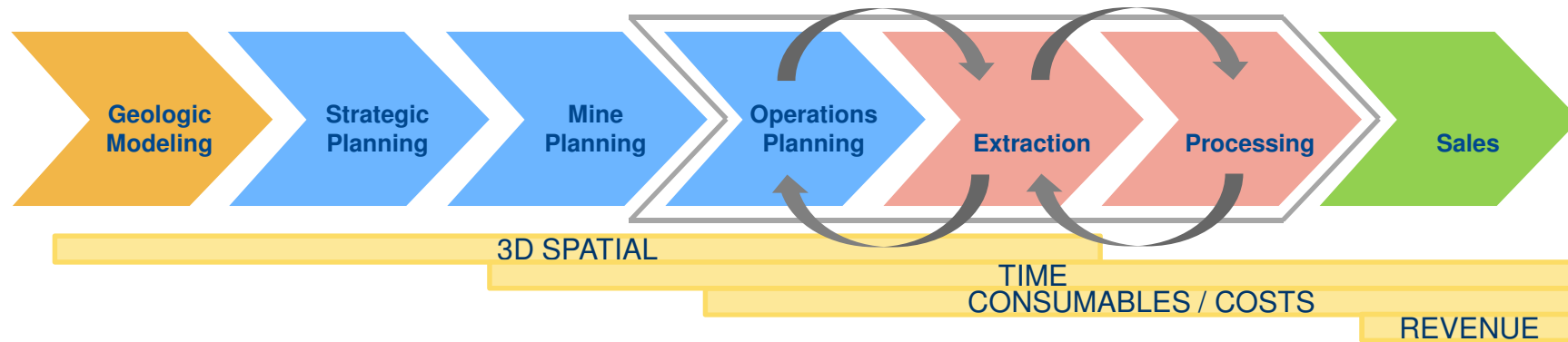
- Drilling and Exploration Information
- Ore and Waste
- Variable grade of ore
- Processing
- Mining Process is complex – need for actuals to optimize



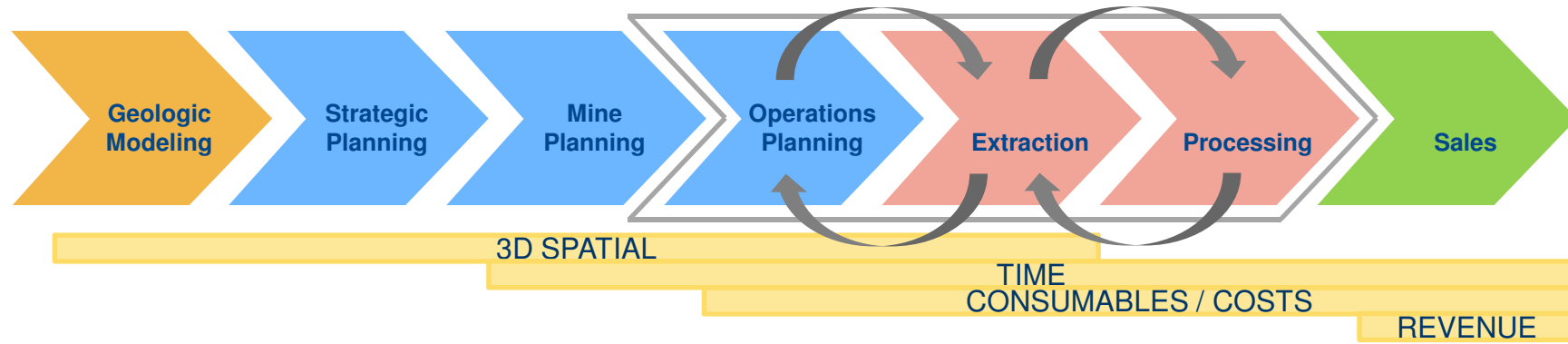
Trimble Connected Mine™

One trusted source of information for decision support across global operations.





- All functions require “AS IS”
- If “AS IS” is not accurate process can not be optimized
- Destroyers of Value:
 - Sending ore to waste dumps (loss)
 - Sending waste to the processing plant (dilution)
 - Mining in a sequence different from the optimal sequence
 - Sending the improper blend of raw material to the processing plant (lower recovery)



Sensors

GPS

OPTIC

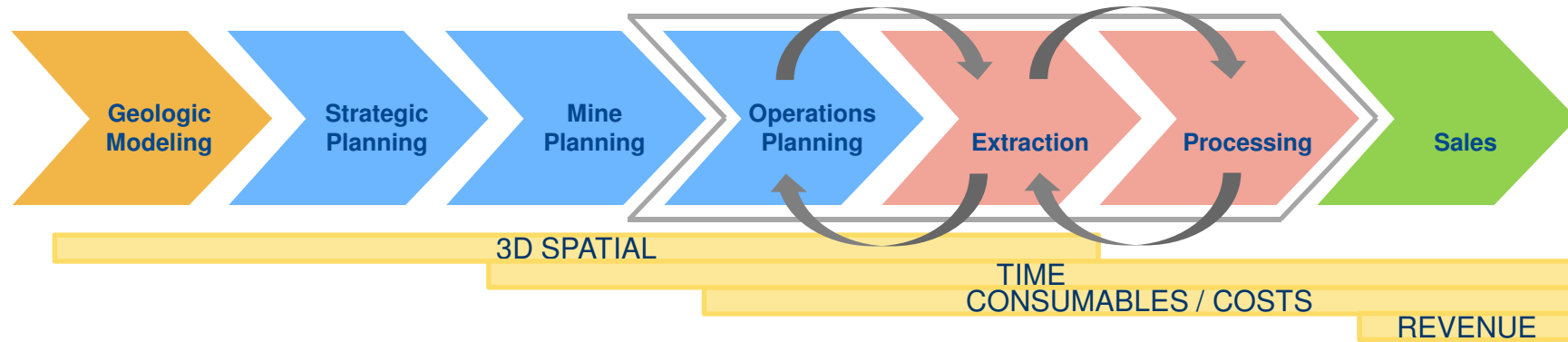
RADAR

LIDAR

PHOTO

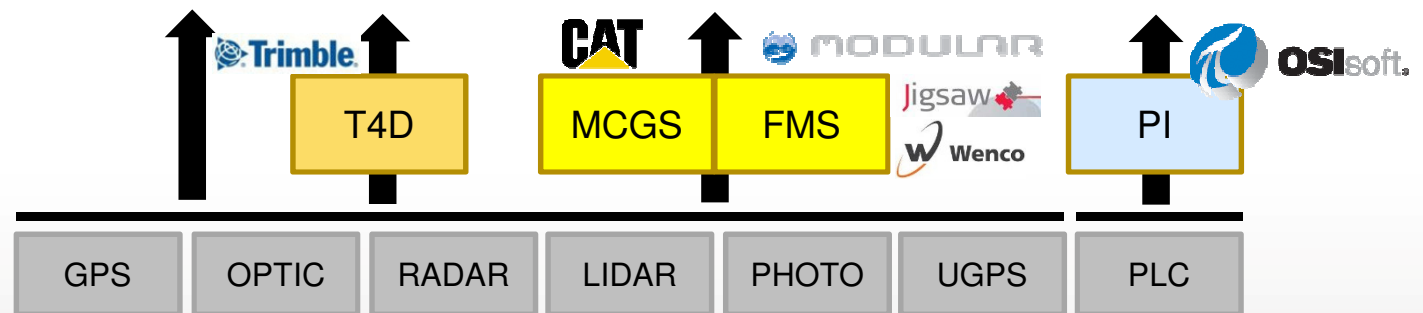
UGPS

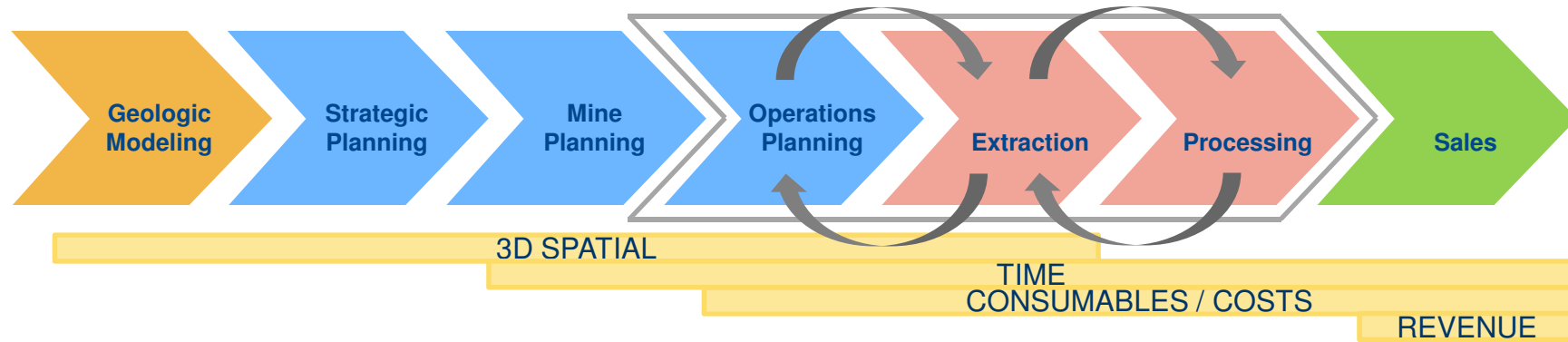
PLC



Control

Sensors

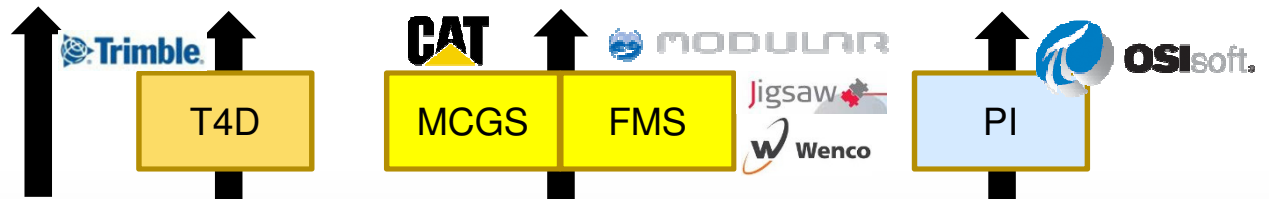




Spatial

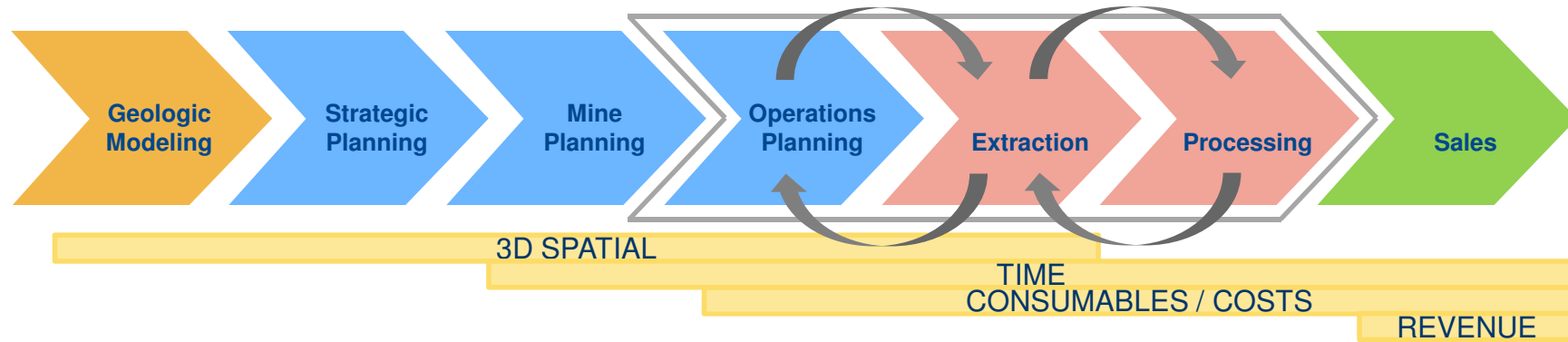


Control



Sensors





Business Intelligence

MMRS / PRMS
 Prodstats / Opstats
 Plan / Actual
 Production Accounting
 Reporting / Dashboard



Spatial

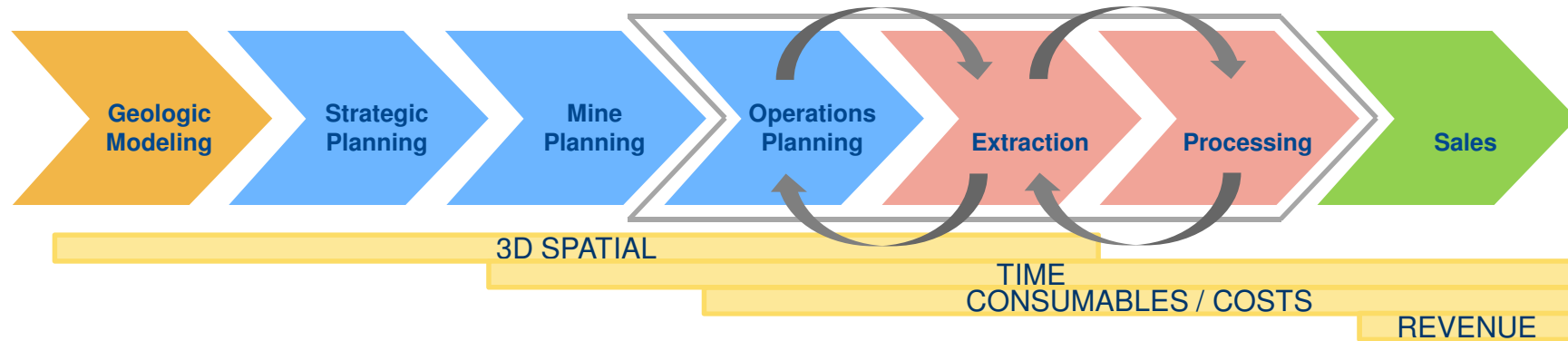
Real-time 3D Geospatial Platform
 Mine Surface Database
 Visualization
 Survey Processing
 Spatial Intelligence

Control

Control layer components and their associated logos:
 - **T4D** (Trimble logo)
 - **MCGS** (CAT logo)
 - **FMS** (MODULAR logo)
 - **PI** (OSIsoft logo)
 Additional logos for Jigsaw and Wenco are also present.

Sensors

Sensors layer components:
 GPS, OPTIC, RADAR, LIDAR, PHOTO, UGPS, PLC



Enterprise



Enterprise Business Systems : ERP BW BI FIN

Business Intelligence

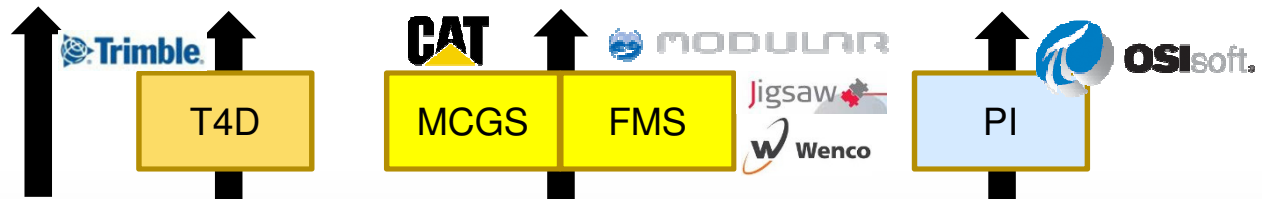
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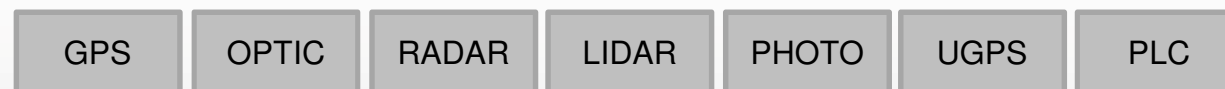
Spatial

Real-time 3D Geospatial Platform
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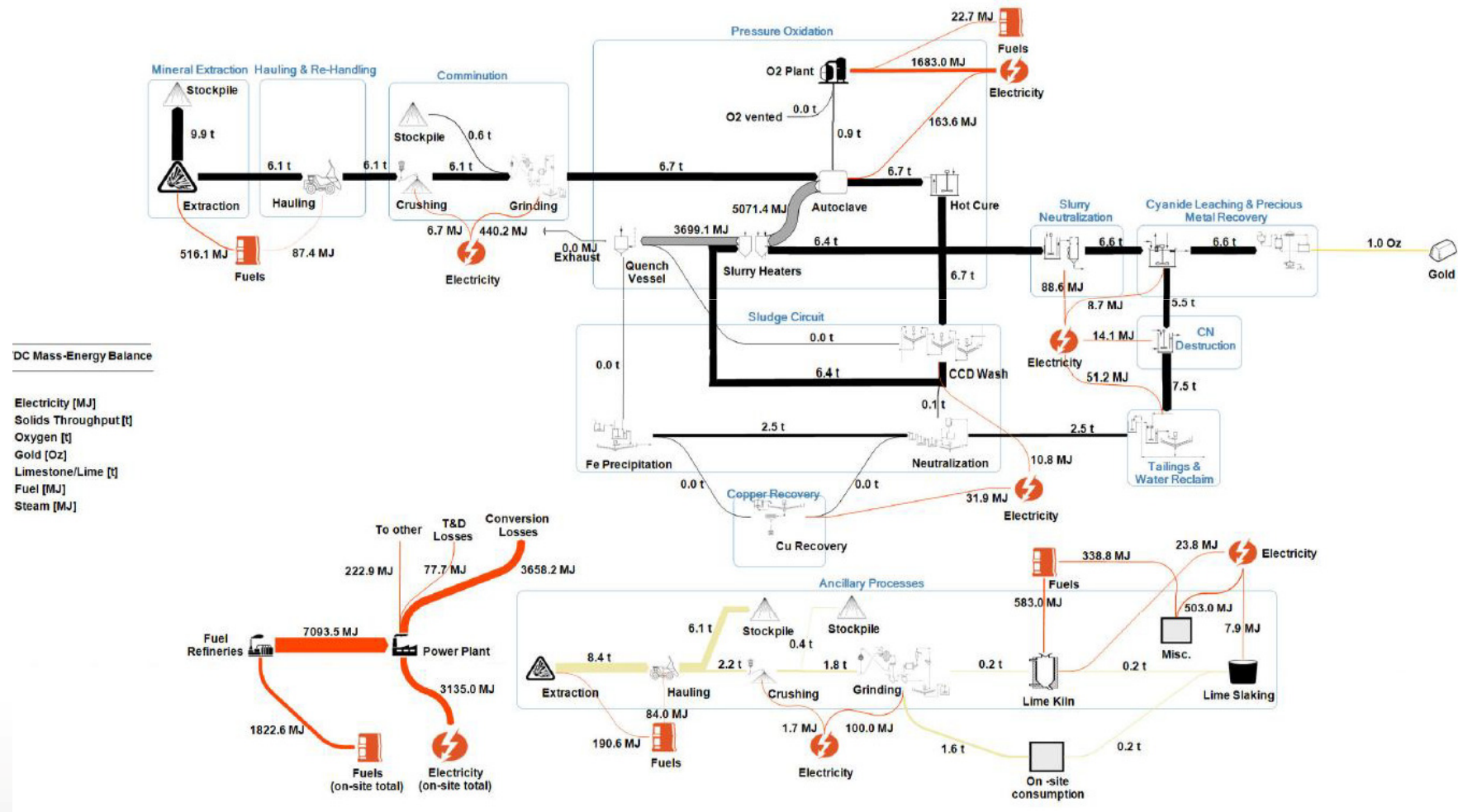
Control



Sensors



Energy Optimization in Gold Mining Operation





Trimble®



Questions?