



P&H MINING EQUIPMENT  
A Joy Global Inc. Company

# Reducing Overburden Removal Costs Is IPCC the Answer?

**Scot Szalanski, P.E.**

**P&H Mining Equipment**

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# Existing Overburden Excavating



**Dragline**



**Shovel-Truck**



**Bucket Wheel**



# In Pit Crushing & Conveying Option



- Various options of IPCC



# Focus on Large IPCC Systems



- Move more than 15MBCMA



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## Large IPCC Market Experiencing a “Rebirth”.

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- Better use of valuable assets
  - Equipment
  - Manpower
- New environmental regulations
  - Reduce carbon foot print
  - Minimize dust and noise
- Minimal dependency on weather
- Easily automated
- Improved Safety

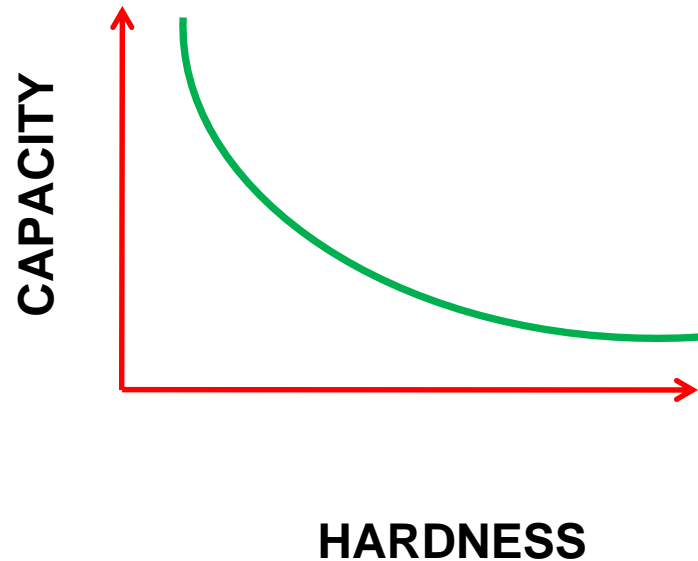


- Higher capital cost compared to truck fleet
- “System” availability
- IPCC and Shovel do not operate together
  - Difficult to perform ROI analysis for large “Systems”
- Geological Make-up
  - Incline of Commodity
  - Commodity Thickness

# Large IPCC Disadvantages



- Material Property
  - Stickiness
  - Moisture
  - Hardness

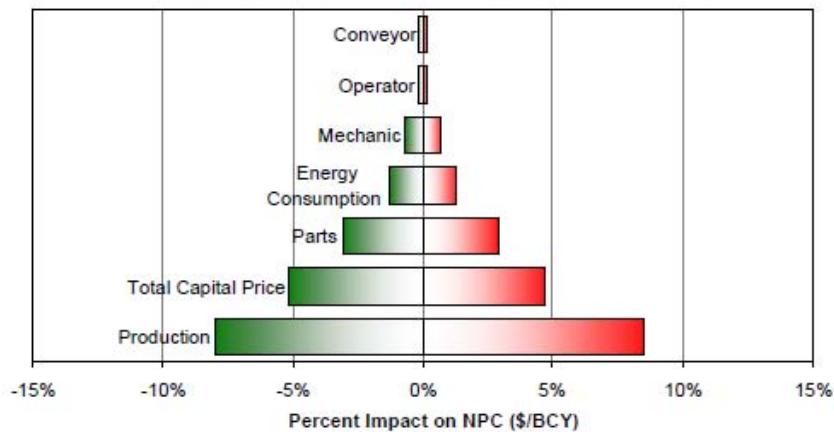


# Perform Total Cost of Operation Analysis

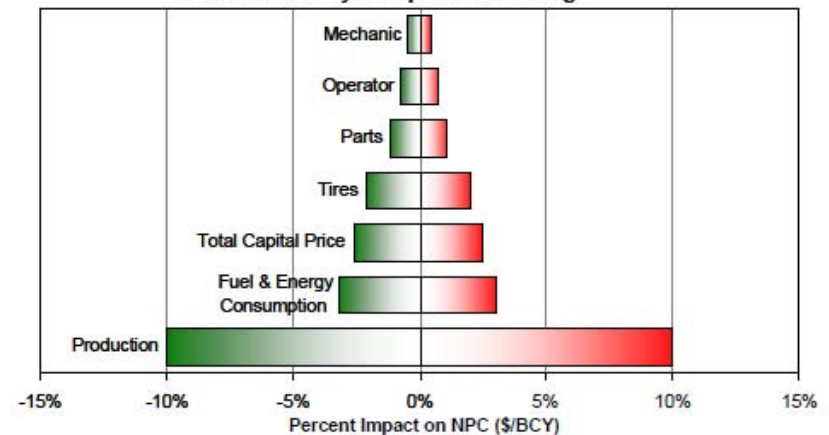


- Understand sensitivity or weighting that each operating parameter has on TCO for IPCCS and Truck/Shovel.

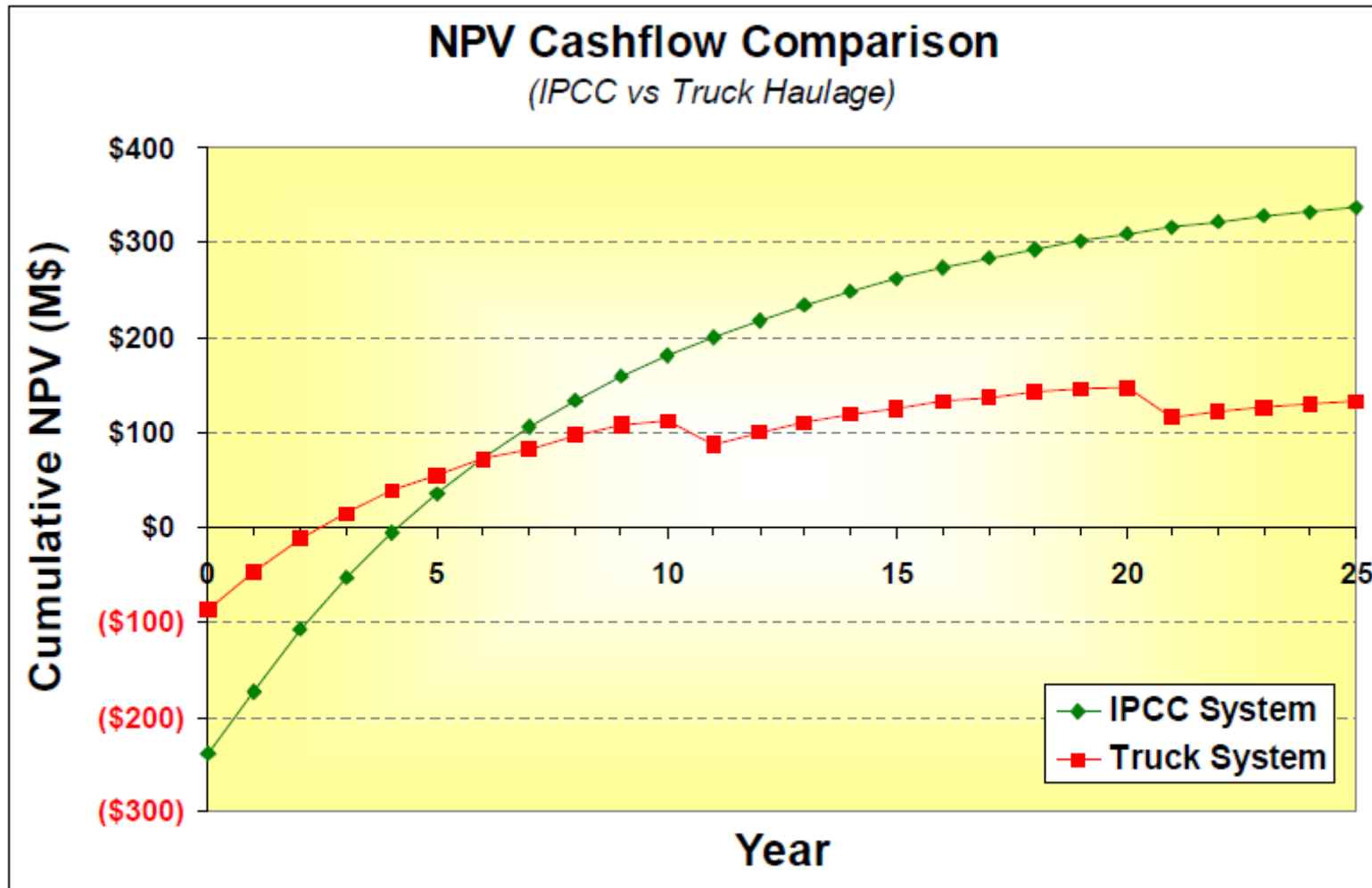
IPCC W/O Shovel Sensitivity Component Ranking

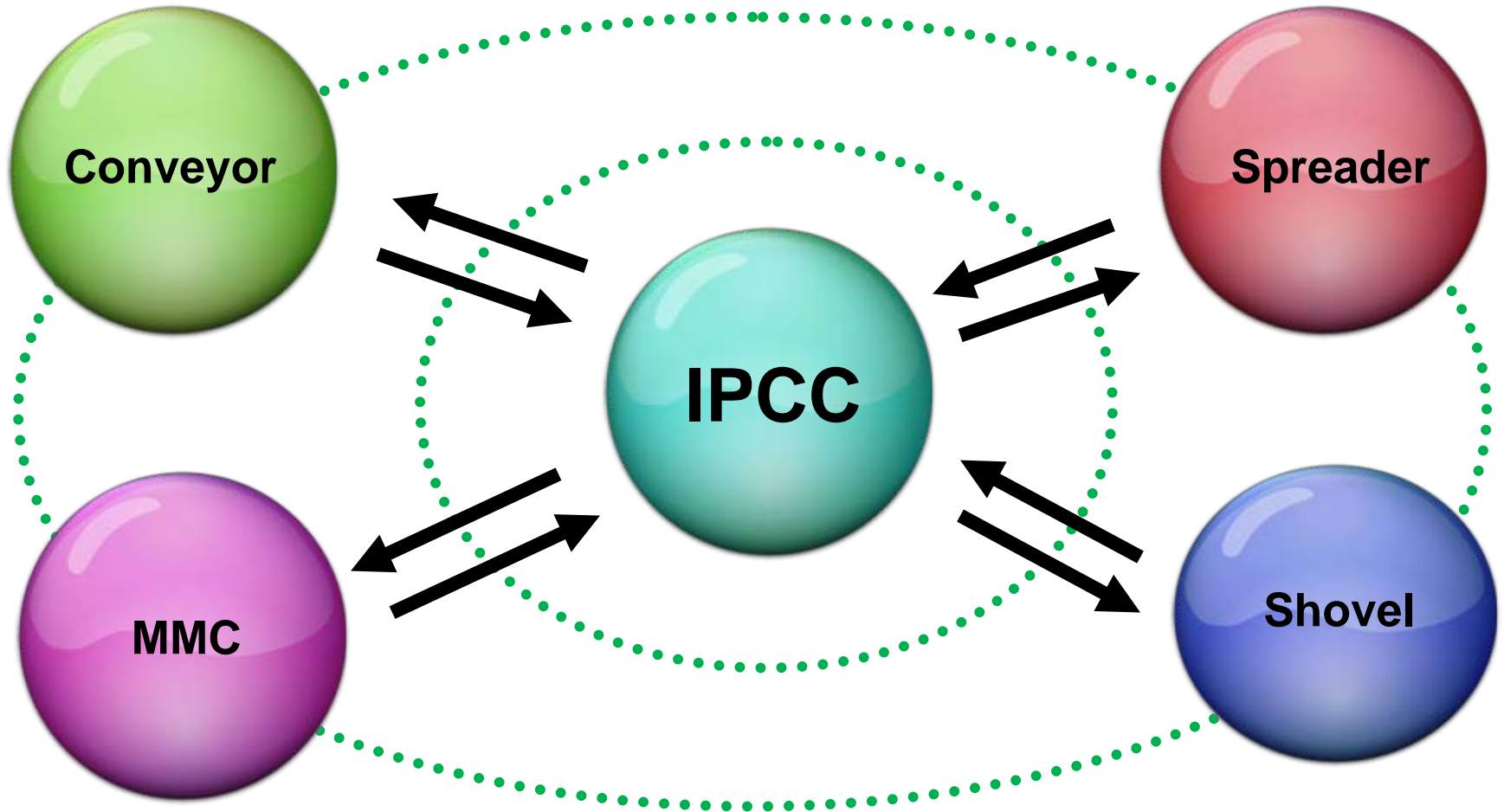


Truck Sensitivity Component Ranking



# Create Cash Flow Analysis





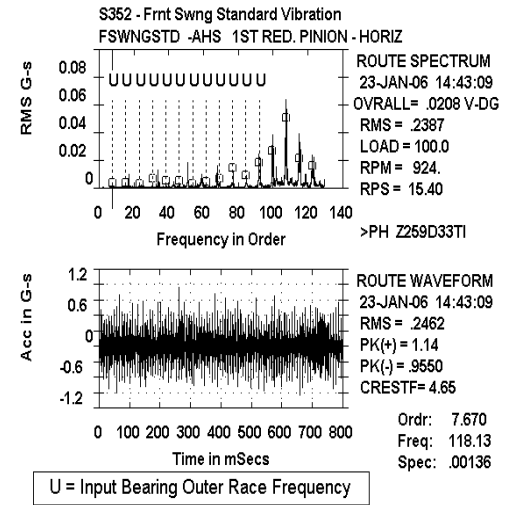
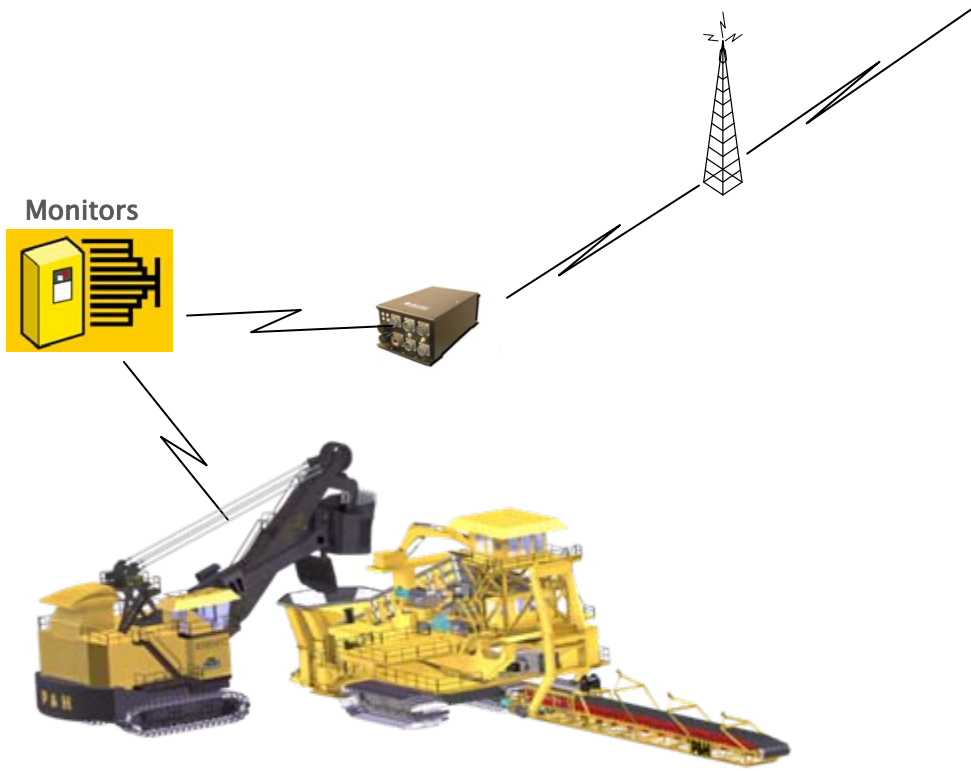
# Real-time "Health Monitoring" of complete "System"



- On-board Analysis
- Data Collection Continuous



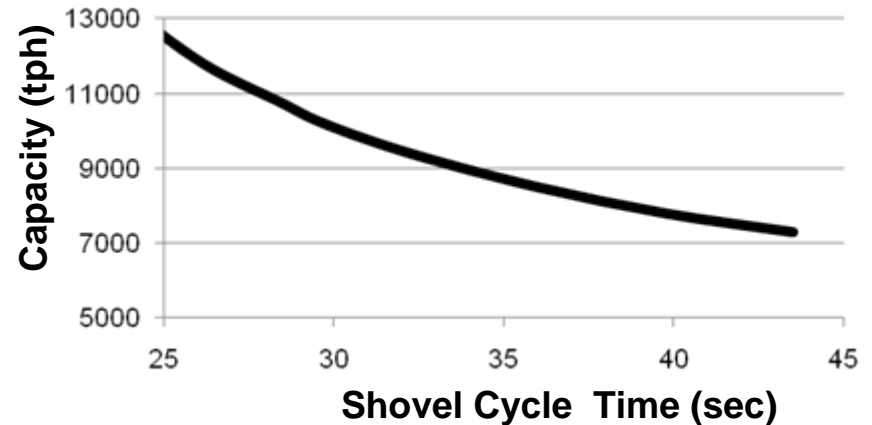
## Application Server





***If you can't measure it, you can't improve it.***

- Swing Time
- Swing Angle
- Cycle Time
- Production Rates



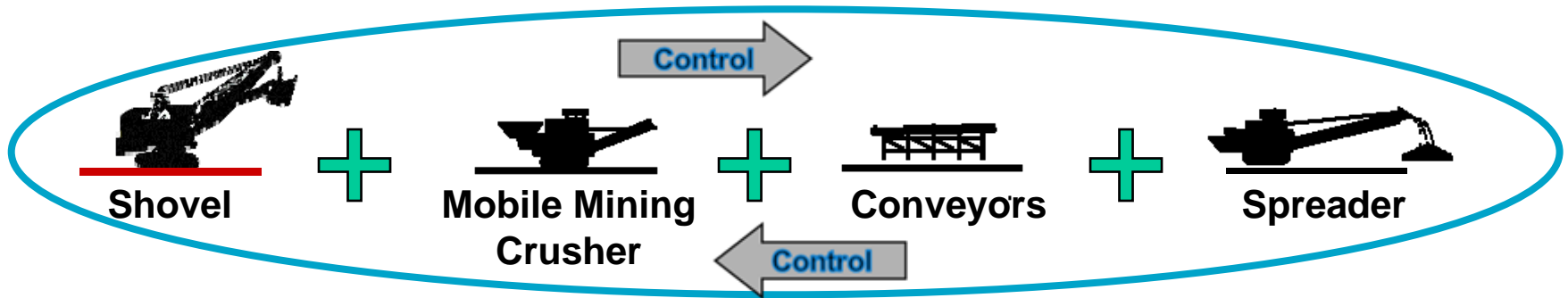
## Synchronize Maintenance Schedules

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- Enables Remote Access to Multiple Users
- Supports Comprehensive Analysis and Reporting
- Provides Links to Support Tools
- At-a-glance status
- Fault logs and histograms
- Interactive flowcharts
- Electronic manuals, schematics, & parts books

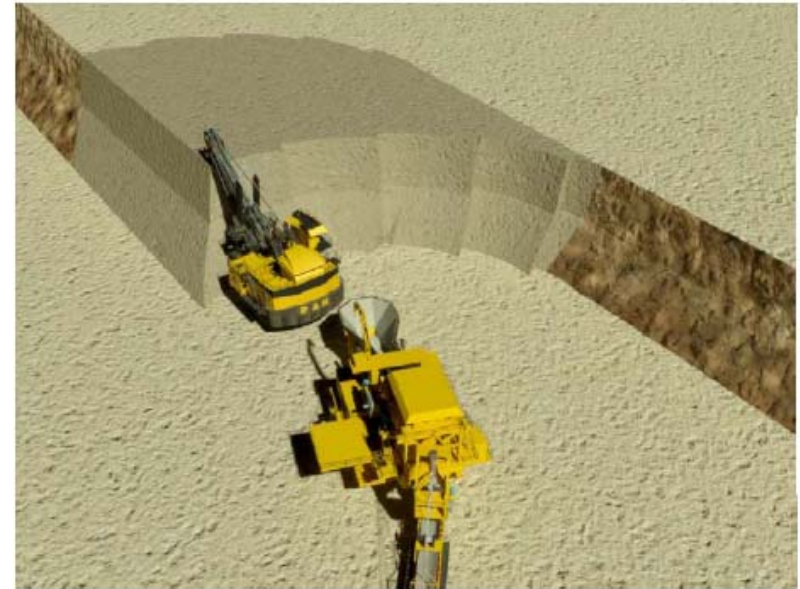
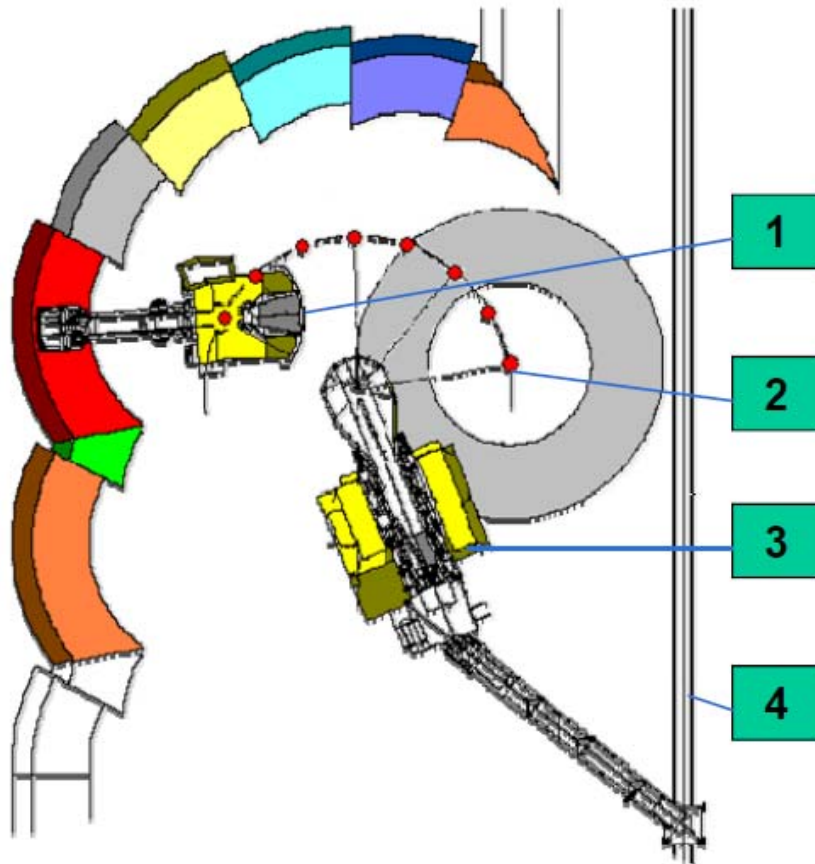
# Complete Integrated Monitoring System



# Ability to Justify Return on Investment



# Application Optimization using 3D Animation



1. Electric Mining Shovel
2. Shovel Loading Positions
3. Electric Mining Crusher
4. Overland Conveyor

# Develop Customized 4D Mine Plans



- Incorporate “time” with movement of equipment in customer’s actual 3D topography map to show optimized production potential for customer’s unique mine site



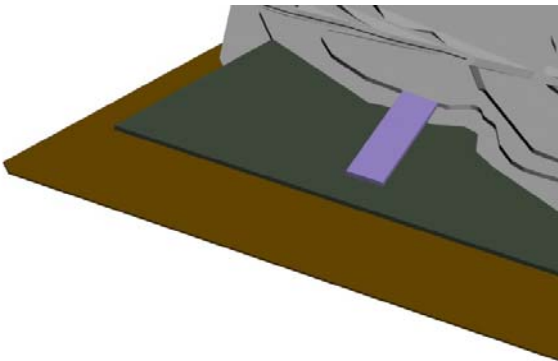
# Develop Customized 4D Mine Plans



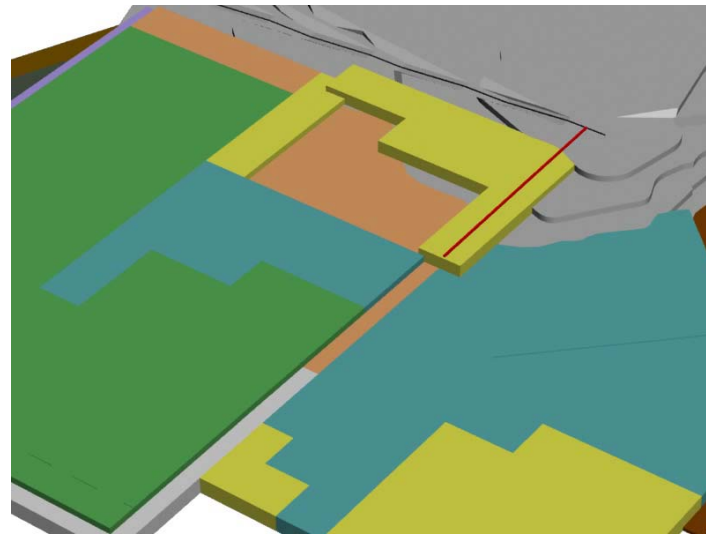
- Spreading “4D” using 3D customer topography is just as critical as loading “4D” analysis
- Have to be able to have area to dump what is being loaded



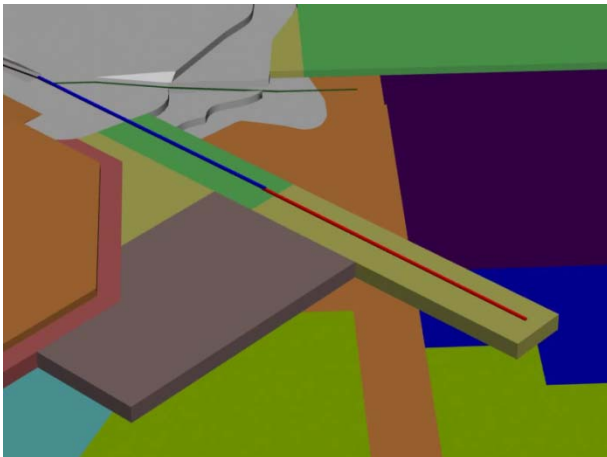
# 4D Visualization shows development of mine plan



**Year 1**



**Year 7**



**Year 16**

# P&H MinePro Status with Large IPCC Systems



- Assembled two (2) 10,000 tph IPCC Systems



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## Is a Large IPCC System the Answer?

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- Completely Integrate IPCC System from Shovel to Spreader
  - Maximize “System” performance on a continuous basis
  
- Synchronize “System” Maintenance Schedules
  - Optimize “System” availability
  
- Complete “System” After Market Service and Support
  - Shovel to Spreading

# Questions

