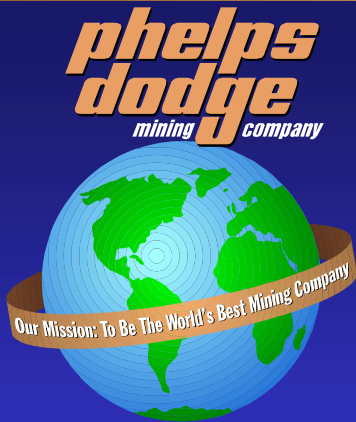


phelps dodge

mining U company

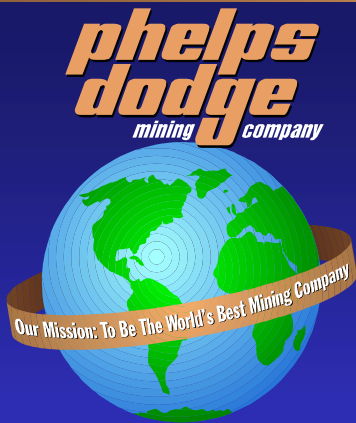




Presentation to:

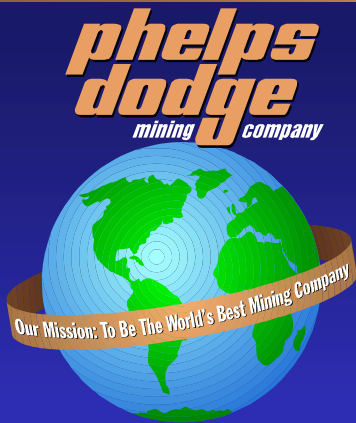
Electronic Commerce 98

- Applying Technologies to Optimize Supply Management



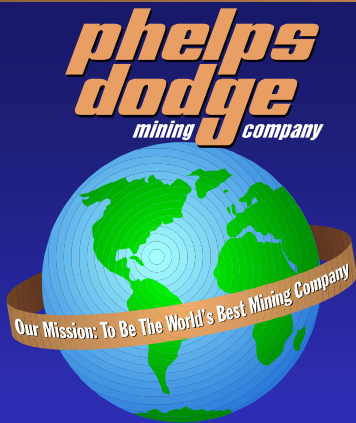
PDMC Strategic Supply Management

Thinking Outside the Box;
A Process, Not a Project



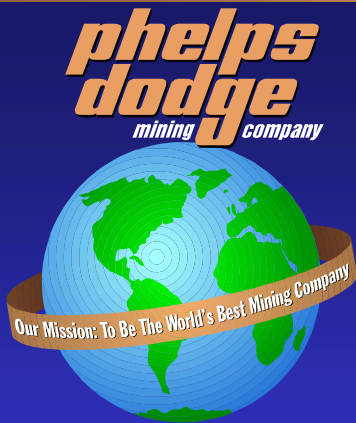
Phelps Dodge Corporation

- Phelps Dodge Mining Company
- Phelps Dodge Industries
 - Columbian Chemicals
 - Phelps Dodge Magnet Wire
 - Phelps Dodge High Performance Conductors
 - Phelps Dodge International



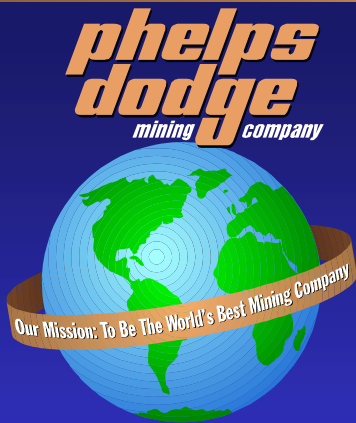
Phelps Dodge Corporation

- Corporate Profile
 - Mining and Manufacturing Company
 - 164 Year Old Organization
 - \$3.9 Billion Revenues
 - Fortune 500 Company
 - 15,000 Employees
 - 27 Countries



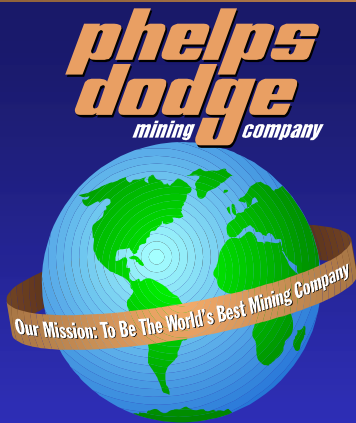
Phelps Dodge Corporation

- Phelps Dodge Mining Company
 - Mining Production Data
 - 1.97 Billion Pounds Copper
 - 2.12 Million Pounds Molybdenum
 - 3.25 Million Ounces Silver
 - 139 Thousand Ounces Gold
 - 2.53 Million Pounds Sulfuric Acid



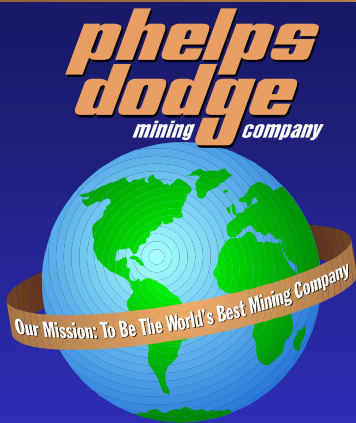
Phelps Dodge Corporation

What Have We Done To Earn The
Privilege To Present Our Successes and
Failures At This Conference?



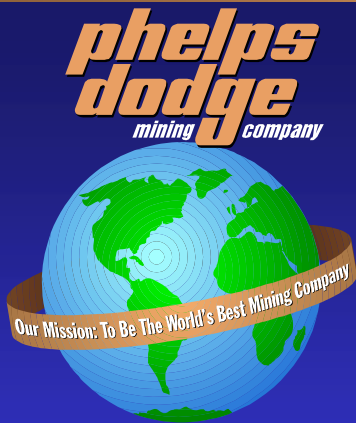
Phelps Dodge Corporation

- We Are in the Middle of A Major Business and Cultural Transformation
- Philosophies, Principles, and Beliefs are
• 164 Years Old
- Historical Investments Oriented Towards Production Oriented Capital



Phelps Dodge Corporation

- Business Processes Were Not Important
- Computer Technologies Dramatically Lagged Mining Technologies



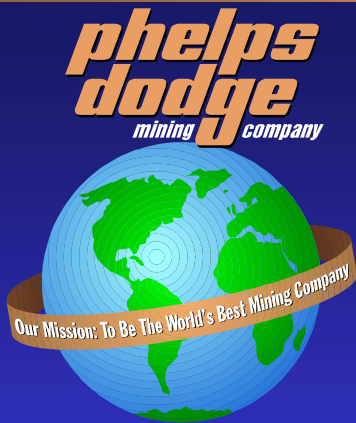
Mining Company Profile

- MRO Procurement
 - One of the 100 Largest MRO Procurement Organizations in the US (Purchasing Magazine)
- PDMC Materials Management System is the Single Largest Computing Activity in PD Corporation
- Maintenance Department Is Single Largest Customer for Supply Chain Activities



Our Plan

Replace Materials
Management
System



The *Legacy* System

- Materials Management System
 - Technology circa mid 1970's
 - Implemented in 1982
 - Mainframe Based
 - Lots of Bailing Wire and Bubble Gum
 - EDI, RF, Bar Coding, Automated Fax

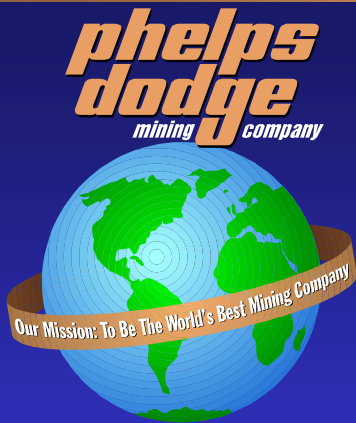
**phelps
dodge**
mining company



Our Mission Opportunity

ERP/CMMS





The *Legacy* System(s)

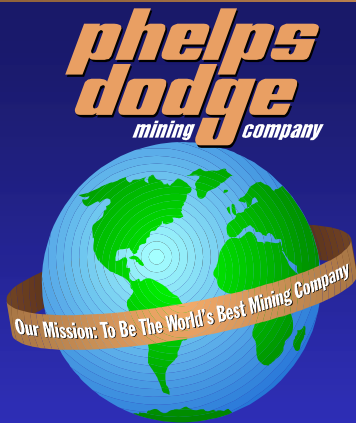
- Maintenance Management System(s)
 - Developed/Purchased in the mid 80's to 90's
 - Not Connected to:
 - Inventory Management System
 - Purchasing System
 - Other Mining Company Locations
 - Different (Unique) Systems at Each Location



Our Revised Plan

ERP/CMMS

Materials
Management

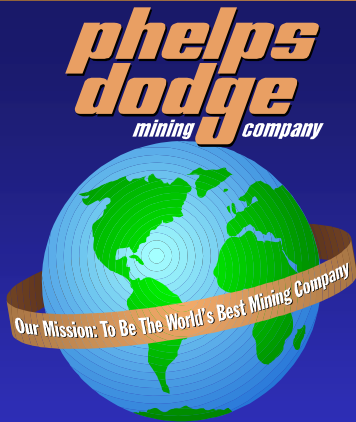


Our Challenge

“If you implement the new system and it works perfectly, you have failed. What I want you to do is fundamentally change the way that the Mining Company does business.”

Steve Whisler

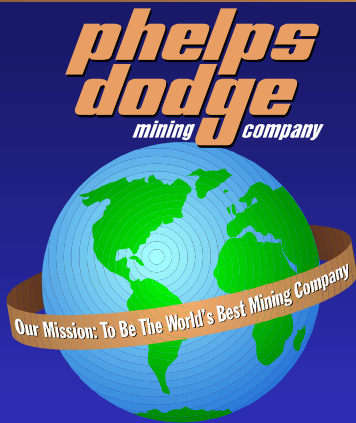
President - PDMC



Our Charter

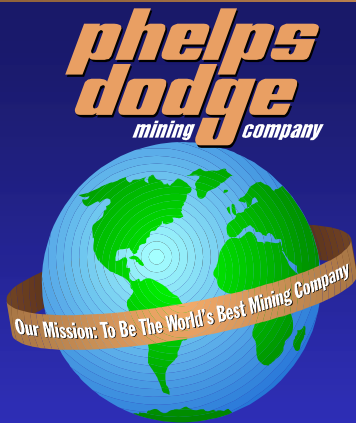
“If we are to achieve results never before accomplished, we must expect to employ methods never before attempted.”

Sir Francis Bacon (1561 - 1625)



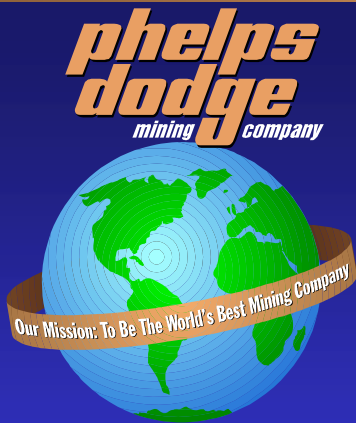
Benchmarking Analysis (Industrial Tourism)

- Competitor & Dissimilar Company Visits
 - Other Natural Resources Companies
 - Equipment Manufacturers
 - Automotive Manufacturers
 - Heavy Industry Companies
 - Services Companies
 - Distribution Organizations



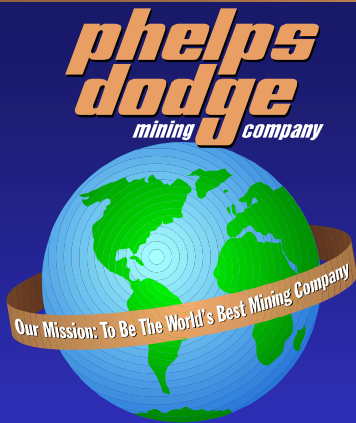
Software Selection Process

- Process Review Team
 - Process Flow Diagram of Current Operations
 - Requirements Definition
 - RFP Generation & Analysis
- Software Evaluation Team
 - Review Functionality of Short List Vendors
 - Select Software



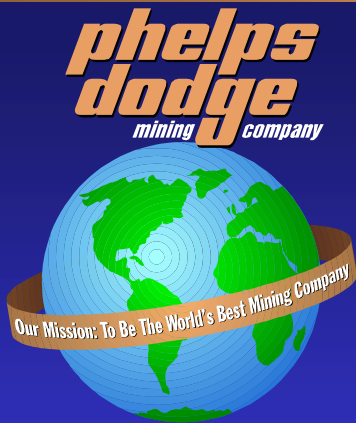
Our Selection

- Best of Breed Approach
 - Client Server Technology
 - Incorporation of Best Practices
 - Windows Look and Feel
 - Electronic Routing and Approvals
 - EDMS Integration
 - Near Paperless Environment or “Paper light”
 - RF / Handheld / Barcode Application



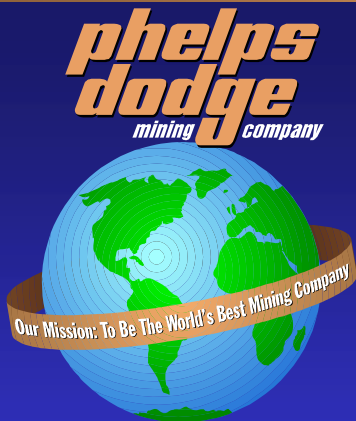
Our Expectations

- Reduce Cycle Times
- Electronic Commerce
- Increase Wrench Time
- Quick ROI/Payback
- Reduce Unit Cost of Production
- Gain Additional Competitive Advantage



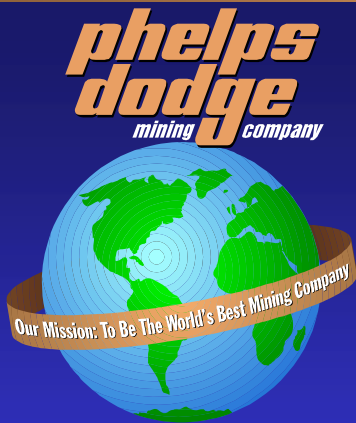
“Changing the Way the Company Does Business”

- Business Process Redesign Team
 - Business Unit Leaders
 - Core Team Members
 - Minimal IS/IT Involvement
 - Consultant Facilitator
- Six Week Process.....
 -That Lasted 6 Months



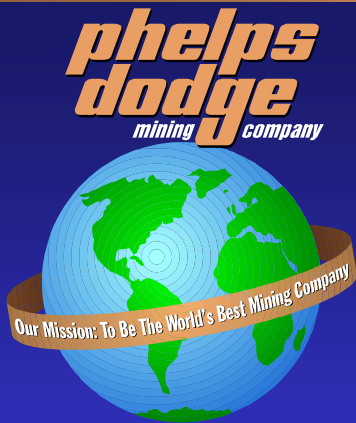
“Changing the Way the Company Does Business”

- The “Yellow Book”
 - 50,000 Foot Process Flows
 - Standard Business Processes Across SBUs
 - Adoption of Best Practices
 - Streamlined Activities
 - Reduced Paper Flows
 - Reduced Approval Requirements
 - Empowerment, Trust & Flexibility



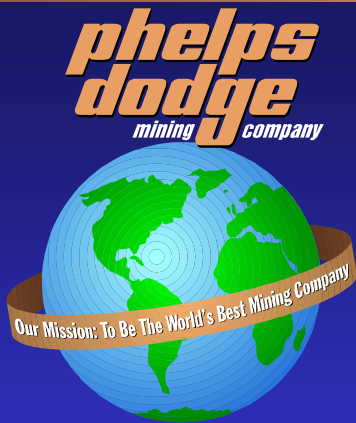
What Had To Be Done

- Justify \$16 Million Capital Investment
- Develop a Core Team That Took the Best Craft & Knowledge Workers Out of Their Normal Jobs for 2 Years
- Create SBU IT Support Groups



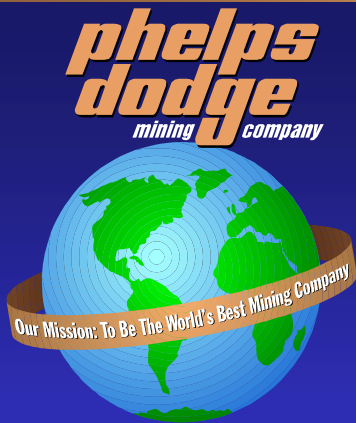
What Had To Be Done

- Justification of Training
 - Conduct 49.3 Man Years of Training
 - \$3.2 Million Labor Investment
 - Build 12 Training Facilities
 - Identify and Develop 32 Internal Trainers
 - Taken Out of Jobs for 6 Months



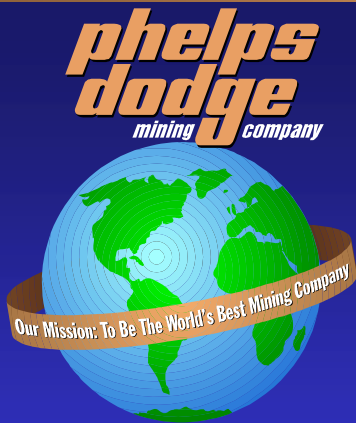
What Had To Be Done

- Infrastructure
 - 250,000 Feet of Fiber Optics
 - 150,000 Feet of Twisted Pair Wire
 - 950 New PC Installs
 - 200 New Network Printers
 - The 17 Mile LAN
- 8 Servers Installed & 4 More Planned



What Had To Be Done

- ~40 Person Per Site Implementation Teams
 - 6 Sites
- Data Preparation
 - Single Largest Project Task
 - 118,000 Stock Items
 - 20,650 Assets
- 3 ½ Year Planning & Implementation Cycle



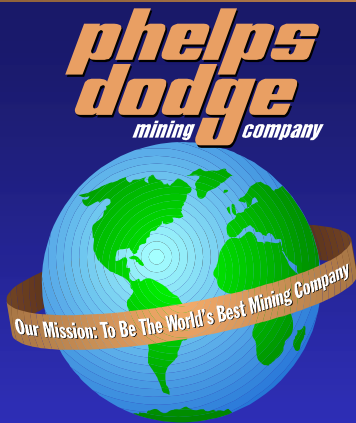
How We Got There

- Created a Lab Environment
 - Developed a Project Management Team
 - User Led, Self Managed
 - Developed Implementation and Training Templates
 - Developed Data Scrubbing Model
 - Fleshed out Detailed Business Process Flows
 - Validated “Yellow Book” in Simulation Model



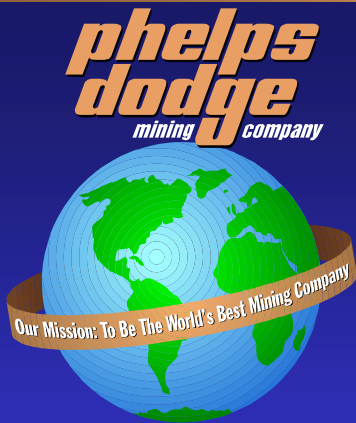
Cultural & Business Changes

- Effected Major Organizational Changes
- Core Team Broke Down SBU Barriers
- Concurrently Adopted Self Directed Work Teams
 - Elimination of Foremen/Supervisors
 - Use of Facilitators and Coaches
- Planners/Coordinators “Manage” the Maintenance Organization



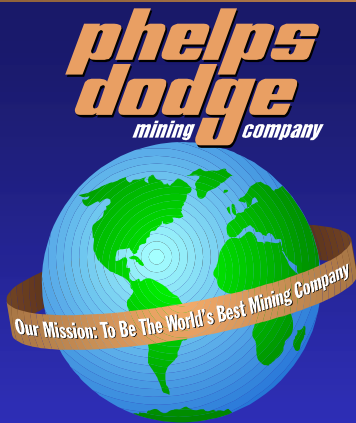
Cultural & Business Changes

- Delivery of Parts at Point of Use
 - Non Linear Flow and Demand
 - Increased Wrench Time
 - Increased Craftsman Accountability
- Maintenance, Not Operations, Owns Asset
- Closer Monitoring of Contractor Labor
- Lowest Level Employee has Requisition and Work Request Authority



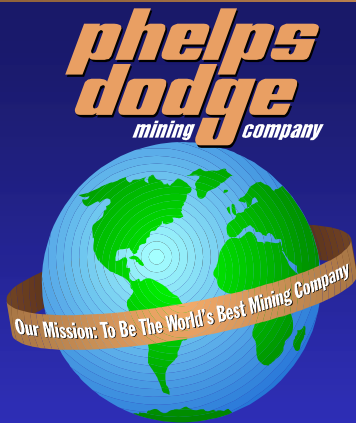
Cultural & Business Changes

- Intelligent Scheduling; Materials, Personnel and Equipment
- Cycle Time Reduction
 - Inventory Analyst Replaced by System
 - Data Entry Role Eliminated
 - Electronic Routing & Approvals
 - Immediate RFQ and PO Delivery to Vendor



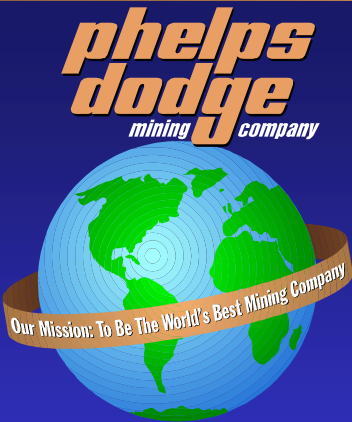
Where Are We Today ?

- Seven Locations Implemented
 - 4,500 Users
 - Refining Our Processes
- Developed Internal User Group
- Co-Developed Spanish Language Version
- Two EDMS Implementations
 - One new pilot site in test



Where Are We Today ?

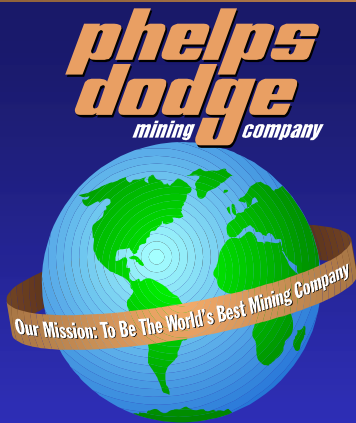
- Conducting Advanced QA Testing of Product and New Releases
- Assisting with New Process Designs
- Revisiting “Yellow Book”
- Establishing RCM Team
- Integrating 3rd Party Products
- Initiating Post Completion Evaluation/Audit



Skinned Knees & Flat Out Failures

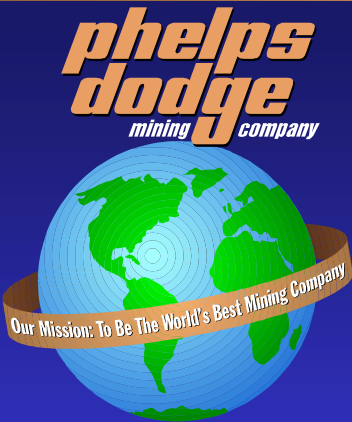
(Slide 1 of 50)

- Data Scrubbing
 - Wrong People
 - Duplicated Efforts = Non Standard Results
- Training from Vendor
- Everyone Couldn't "Get Out of the Box"
- Manpower Resource Commitment



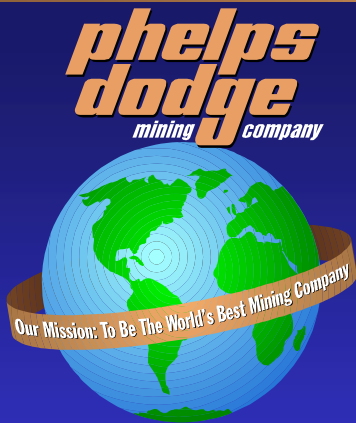
Skinned Knees & Flat Out Failures

- New Technology Blues
- Bleeding Edge Software Defects
- Failure to Conform to New Processes
- Non Belief That We're Really Doing This
 - Amazed That We Were Spending Money



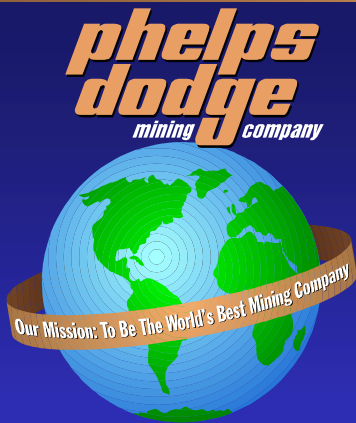
Skinned Knees & Flat Out Failures

- Sequence of Events We Should Have Used
 - Process Flow - current state
 - Process Flow - future state (after BPR)
 - Develop Requirements Document
 - RFP (bid & analysis)
 - Product Selection



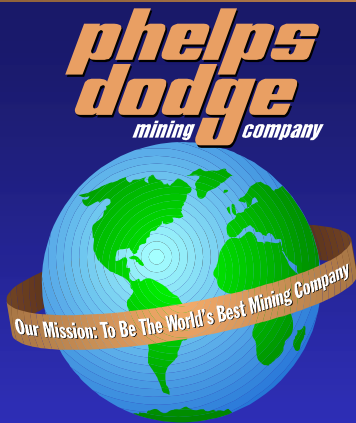
Beyond CMMS “The Future”

- Co-Design of Future “EMPAC” Releases
- Strategic Warehousing
- Implementation of Workflow
- Enhanced Electronic Routing/Approvals
- Best Practices Implementation Teams
- Contracts Integration



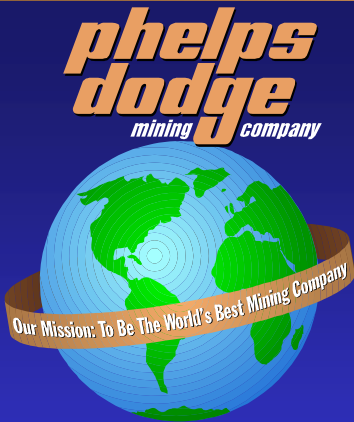
Beyond CMMS “The Future”

- Reliability Centered Maintenance
 - Predictive Maintenance
 - Automatic Work Request Generation by Asset
 - Automated Scheduling and Planning
- Mobile Computing
 - Virtual Office With Full Data Access
 - Full Capability Local Wireless Terminals



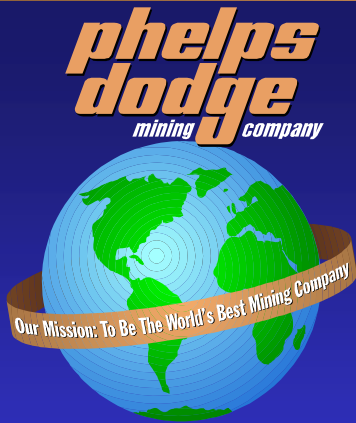
Beyond CMMS “The Future”

- Robust Bid Analysis & Vendor Evaluation
- Full Range Electronic Commerce
 - Web Based Technologies
 - Electronic Catalogs
- Graphical Warehouse Display
- Digital Imaging Technologies
- Warehousing Storage Optimization



Beyond CMMS “The Future”

- Visual Navigation
 - Hot Spotting & Hyperlinking
 - System Navigation
 - Touch Screen Technology
- Embedded Video and Voice
- RF/Barcode Application for Assets
- Full Text Search



In Summary

Just Begun,etc

***phelps
dodge***
Mining U Company