Leveraging Wireless Technology to Improve Plant Maintenance

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Project Background - Computerized Maintenance Management System

- Eastman has several thousand analyzer devices on the plant floor
- Instrument Service Technicians from multiple groups/plants perform preventative and reactive maintenance
  - Preventative maintenance service tasks assigned at the beginning of the shift
  - Reactive orders are assigned (via radio pagers) as they occur
  - Benchmark tests, calibrations, and repairs
  - If parts required, must return to workstation to order
  - Some results captured in log books and entered in system the following morning
- Data Recorded Includes
  - Benchmark test results
  - Replacement parts to be ordered
  - Any calibration required
  - Time taken to perform function
- Data collection and analysis done by a legacy system
Issues

- Minimal information capture
  - Unable to predict when to benchmark an analyzer
  - Wasted effort servicing perfectly functioning analyzers
  - No analytical capability to identify chronic recurring problems
  - No ability to do failure analysis
  - No reliable data on actual service time or functions performed

- No integration with SAP, no access to
  - Part numbers, availability, cost
  - Purchase requisitions

- Human error during manual data capture and entry was very high
Drivers

- Automate data capture through handheld devices
  - Labor savings
  - Improve completeness, timeliness, and quality of data

- Implement a predictive maintenance process
  - Cost savings by rationalizing service on analyzers
  - Minimize analyzer failures and process disruptions

- Integrate with SAP and sunset legacy systems

- Improve safety by providing access to procedures via handheld devices
Technology Considerations

➢ Buy vs Build vs Leverage
  ❖ Buy an out of the box solution
  ❖ Extended current system
  ❖ Build a solution from scratch
  ❖ Leverage SAP and customize to fill gaps

➢ Wireless Device Selection
  ❖ Intrinsically Safe
  ❖ Barcode vs RFID
  ❖ Wireless Operating System
  ❖ Onboard Memory & Expandability

➢ Wireless Availability
  ❖ Online vs Offline Capability

➢ Technology Maturity
  ❖ Cutting Edge vs Proven
Technical Architecture

- Mobile Internet Explorer
- Web Server
- MI Client

Enterprise Portal

- SAP Web Application Server

Net weaver Mobile Infrastructure

- SAP Web Application Server

SAP ERP, Plant Maintenance, Mobile Asset Management
Challenges

- The magic device combination is hard to come by!!
  - Intrinsically safe
  - Lots of storage capacity
  - New operating system

- MI does not support Secure Digital Storage
  - Only Compact Flash support
  - Secure Digital cards are more commonly used
  - Most devices do not have Compact Flash slots

- Development environment and transports
  - Multiple sets of code
  - New development environment

- Data synch can be time consuming when dealing with lots of data
  - Intelligent application design to minimize data transfer

- Unicode issues on SAP versions
Opportunities

- Wireless is becoming pervasive!
  - Mobile applications can drive major improvements in business processes

- Relatively easy to implement
  - Most of the infrastructure pieces are already in place
  - Most of the master data is already in SAP
  - Interface is out of the box and very straightforward

- Ability to run SAP transactions directly from a handheld device

- Major improvements in data quality
  - Higher reliability of plant assets
  - Lower maintenance costs by leveraging statistical modeling

- System consolidation can lower ownership costs
Thank You!