REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE

RtPM

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PI Utilization: Strategies for Leveraging Existing Technologies in Refining.

ConocoPhillips

John D. Ropp

- 12 years with refinery

- 9 years in Process Controls

- Assistant PI Administrator since 1998

- PI Administrator since 2000

- PI graphics/reports/programming

Patrick Ziegler

- Assistant PI Administrator

- Assisted with the initial rollout.

- 19 years refinery experience

- 10 years in process control

- Developed custom PI interfaces with both the API and SDK

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Introduction

- 1997 was the year the refinery started looking for a new plant historian.

- The old plant historian consisted of 1 hour average data stored in a database.

- We considered Honeywell PHD and OSI PI.

- We installed PI in 1997 and migrated data from the old historian.

- We have data online from 1995 till present.

Rodeo Architecture
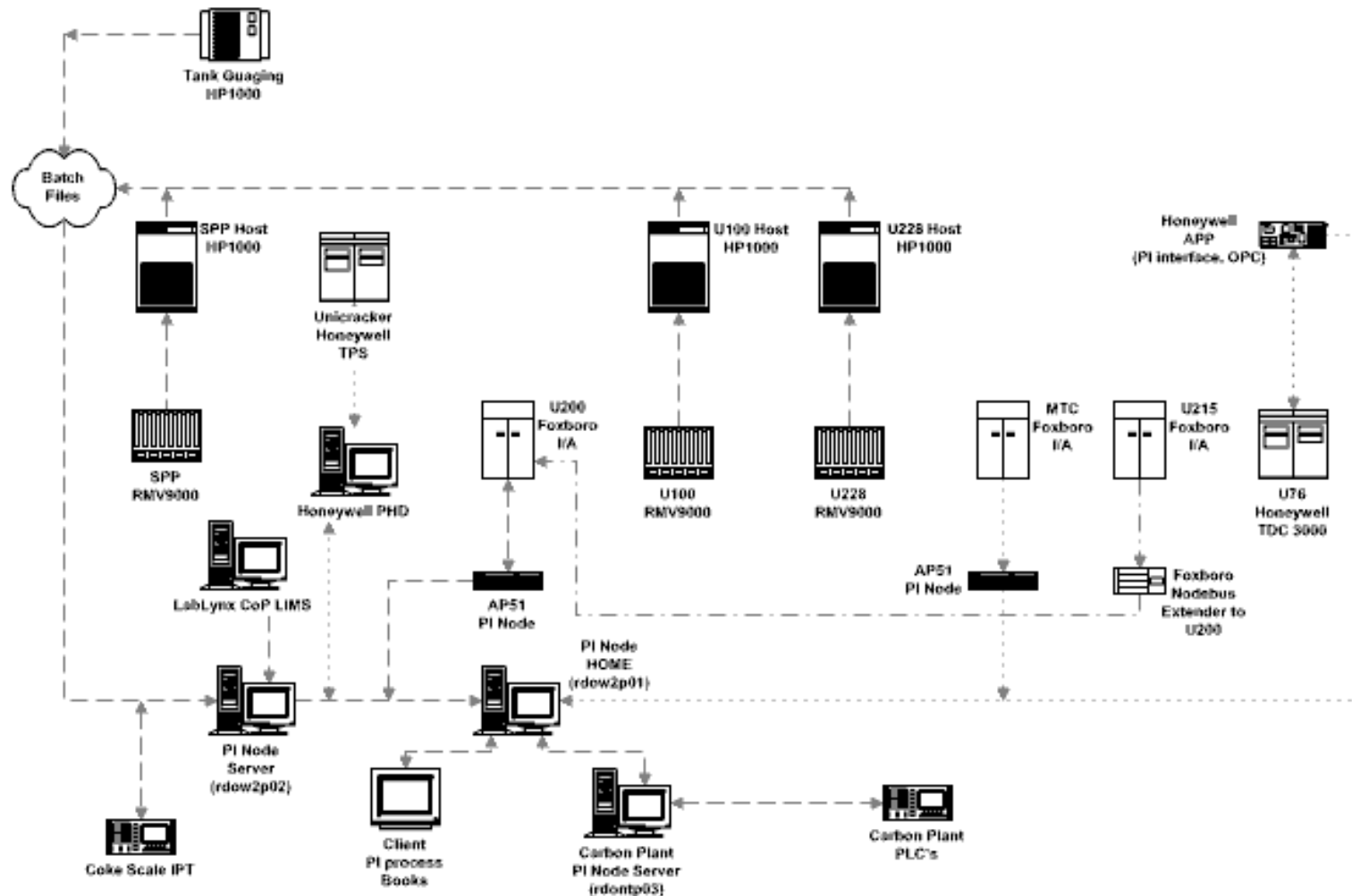
Hardware

- ## PI Server

  - Windows 2000

- ## PI API Node

  - Windows 2000

  - Batch File Node

- ## PI API Node

  - Windows NT 4.0 Server

  - Modbus Node

Software

- PI UDS 3.4.363

- ProcessBook 2.x

- PI DataLink 2.x

- PI ACE 1.x
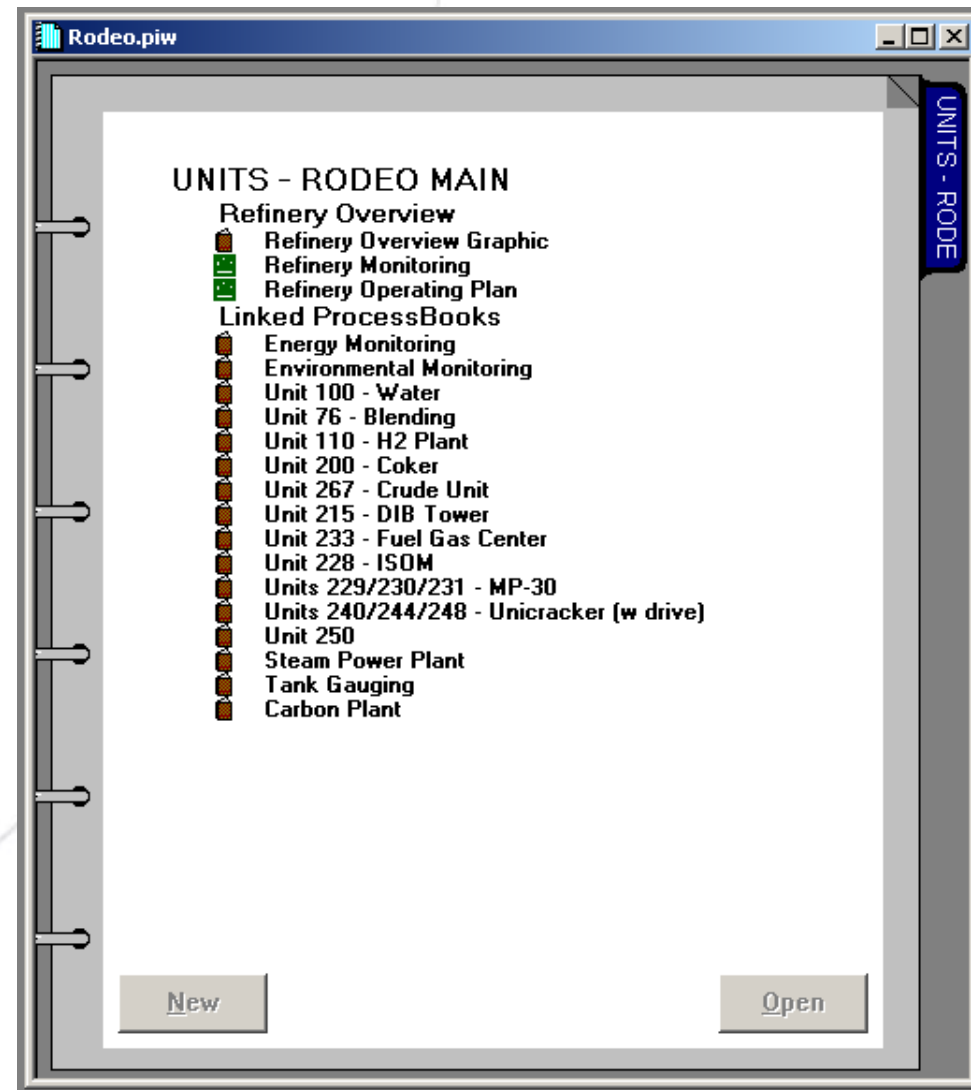
- PI SMT 3.x

- PI API

- PI SDK

Interfaces in use

- Batch File
  - Flat files generated from HP-1000's

- Honeywell PHD

- OPC

- Foxboro I/A

- LabLynx

- Modbus serial (Custom)

- Manual Entry

- Coke Scale (Custom serial port)

Improvements

- Graphics/Navigation Before

PI Graphics/Navigation before

- Used PIW TreeView interface

- Linked PIWs and PDIs

- Refinery culture attributed everything to PI Administrators (no ownership)

- Majority of users didn't see PI's value

Improvements: PI Graphics/Navigation AFTER

- Graphical overview representation

  – Key flows between units displayed

  – "invisible button" hyperlinks on process units

  – "web-like" feel and behavior

  – Key operating values shown on display

- Hierarchical structure

  – Overview, key graphs, and submenu

- ASM-like graphics standard

Improvements

- Area Ownership

  - PI Administrator owns the basic unit overviews.

  - Detail pages are owned by the operations.

  - Unit engineers and operators create and maintain the detail pages.

  - Every page has an associated owner.

Owner: Patrick Ziegler

Expanded Scope - Before

- Only operations was using PI as a tool.

- Some unit engineers saw the value and used it.

- Operations saw PI as "Big Brother" watching their every move.

Expanded Scope - AFTER

● Environmental

– Title V compliance recording

– New tools to monitor compliance

– PI Datalink used to create a colossal spreadsheet to aid in monitoring

– ACE use

– Module database benefits

Expanded Scope - AFTER

- Planning
  - Operation targets are input into PI using manual entry
  - Manual entry uses Excel and the PI SDK
  - Now check to see it their plan has been followed.

- Mechanical Engineering & Inspection
  - Monitor heaters, exchangers, cooling towers, etc.
  - Use PI to predict problems and be pro-active

Expanded Scope - AFTER

- Laboratory

  - Lab data is stored in PI

  - Operations pulls in lab data to update APC inferentials.

    - Custom DCS graphic to accept or reject sample

- Accounting

  - Instead of reading strip charts, now use PI data

  - Greatly reduces time spent creating end of month reports.

Expanded Scope - AFTER

- Upper Management
  - They like the new overviews
  - In process: creating metrics that show the health and profitability of the refinery by glancing at a few numbers.

Future Plans…

- Refinery Report

  – Management (Tier 1)

  – Daily Shift Supervisor Report (Tier 2)

  – Engineering Report (Tier 3)

- Mass Balance

  – Simple with use of ACE

  – Reconciliation with Sigmafine

Future Plans… continued

- Training

  – Needs assessment

  – Needs-based training modules

    • PI system overview

    • ProcessBook basics

    • ProcessBook advanced

    • DataLink basics

    • DataLink advanced

Summary

- Two examples of an increase of usefulness and scope.
  - Improvements in licensed product use.
    - Made graphics user friendly
    - Gave ownership to appropriate people
  - Expanded Scope
    - Demonstrated the usefulness
    - Showed the benefits
  - Future Plans

THANK YOU!

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