REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE
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REAL-TIME PERFORMANCE MANAGEMENT FOR THE ENTERPRISE
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Migrating Operations Applications to PI: How Much Do You Gain?

By
Rayan Hafiz
Saudi Arabian Oil Company

OSIsoft User Conferences
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Outline

- Introduction about Saudi Aramco “SA”
- Extend of PI use in SA
- Data flow to Operations Coordination Center “OCC”
- Business case to migrate applications from SCADA to PI
- Mapping SA Solution to OSIsoft technology offering
- Examples of applications migrated to PI
  - Tank Monitoring Application “TMA”
  - LinePack of sales gas system Application
- Technical challenges & solutions
- Benefits
- Future enhancements

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Saudi Arabian Oil Company

- Leads the word in crude oil production and export
- Major natural gas producer
- Top explorer of Natural Gas Liquids (NGL)
- Responsible for about 1/4 of the worlds proven oil reserves
- Five Refineries, seven gas and NGL plants, and four joint ventures with two main refiners and lubricants companies
- Number of joint ventures around the word in oil & gas refining business
- Headquarters in Dhahran – Saudi Arabia
- +50,000 employees

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Extend of PI Use in Saudi Aramco

- SA is one of the major users of PI-UDS & applications in the Middle East
- Over 100 PI installations.
- Number of tags is close to 0.9 million tags.
- Hundreds of PI clients/applications licenses (ACE, ProcessBook, DataLink, DAP, etc.)
- Central PI server for Operations Coordination Center “OCC” that monitors -on real time basis- the critical operations of oil, gas and refined products for:
  - Production
  - Distribution
  - Storage
  - Exportation

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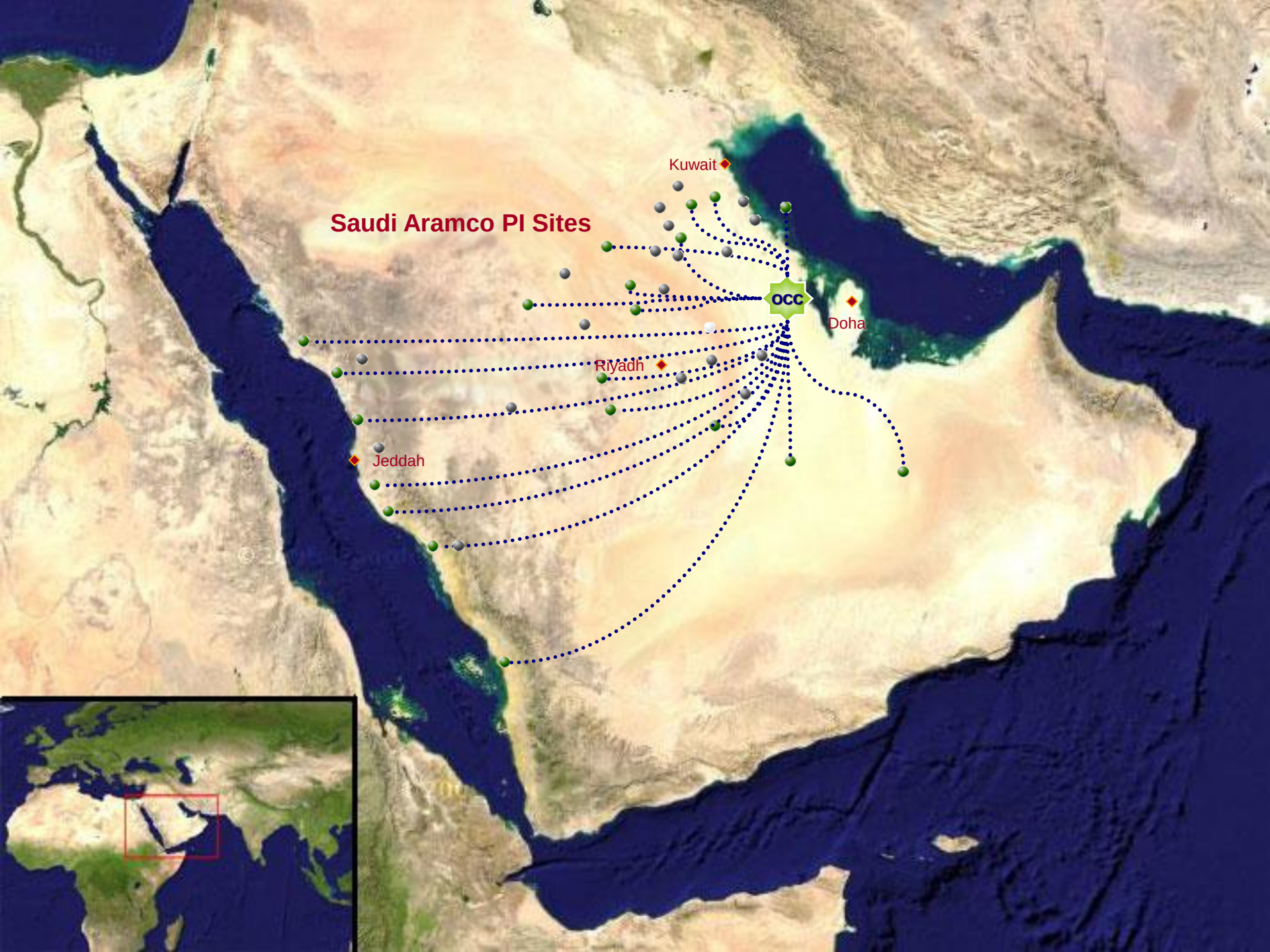
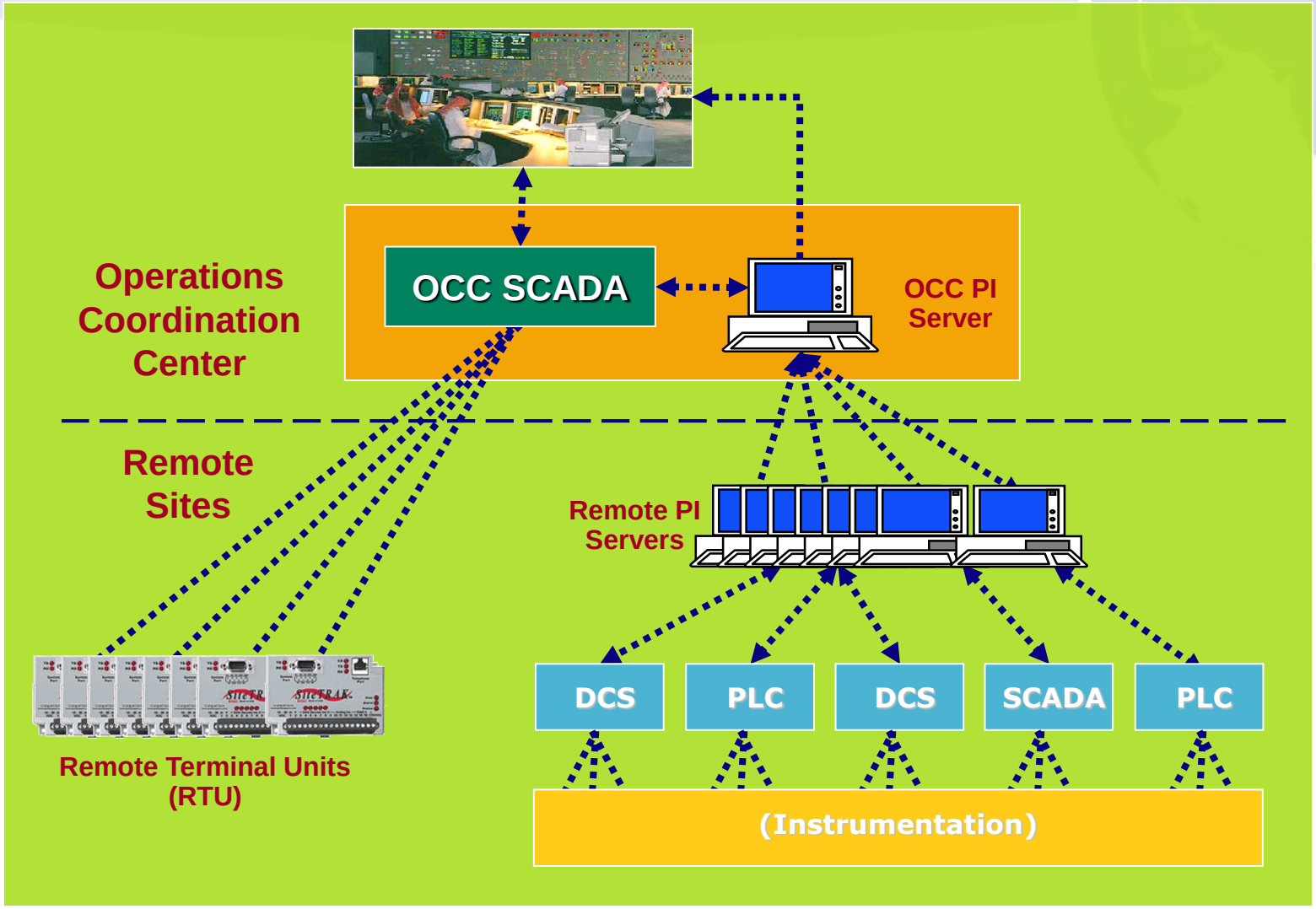

Saudi Aramco PI Sites
Kuwait
OCC
Doha
Riyadh
Jeddah

Data Flow to OCC



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Business Case

- Why do we need to migrate applications from SCADA?
  - High & additional costs on planned SCADA upgrades
  - Hard to maintain & modify
  - Difficult to manipulate data
- Why do we need to use PI software?
  - Off the shelve Systems don't meet operational requirements
  - High cost of the ready made systems with (not needed) addition functions
  - Need for real-time & historian data
  - Need to store static information (PI-ModuleDB)
  - Need to develop DB with hierarchical structure & store static information (PI-ModuleDB)
  - Need to develop on-line calculations (PI-ACE)

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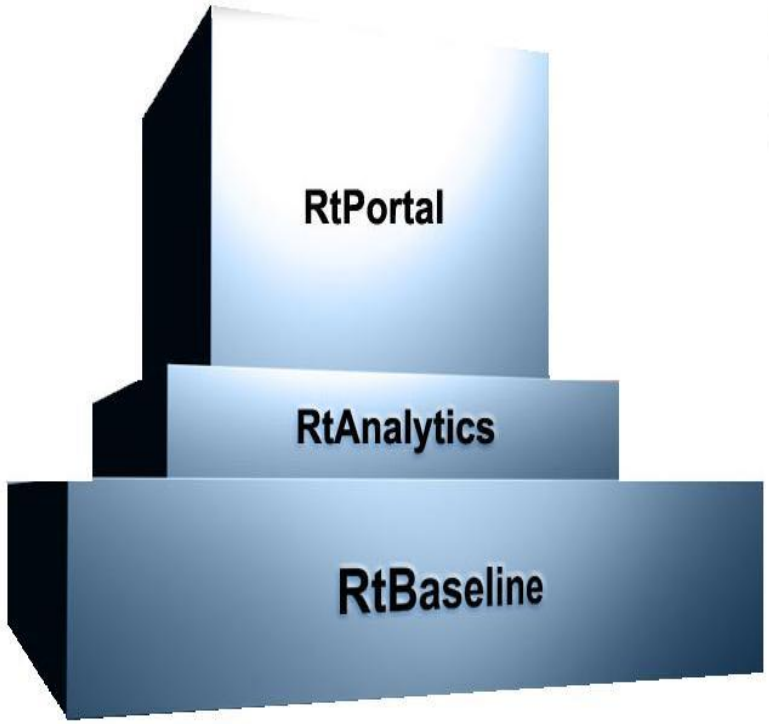
Mapping SA Solution to OSIsoft Technology Offering

3 Information to People / GUI

2 Calculations & Analysis

1 Rt Data Collection, Archiving, & Modeling

SA Solution Architecture



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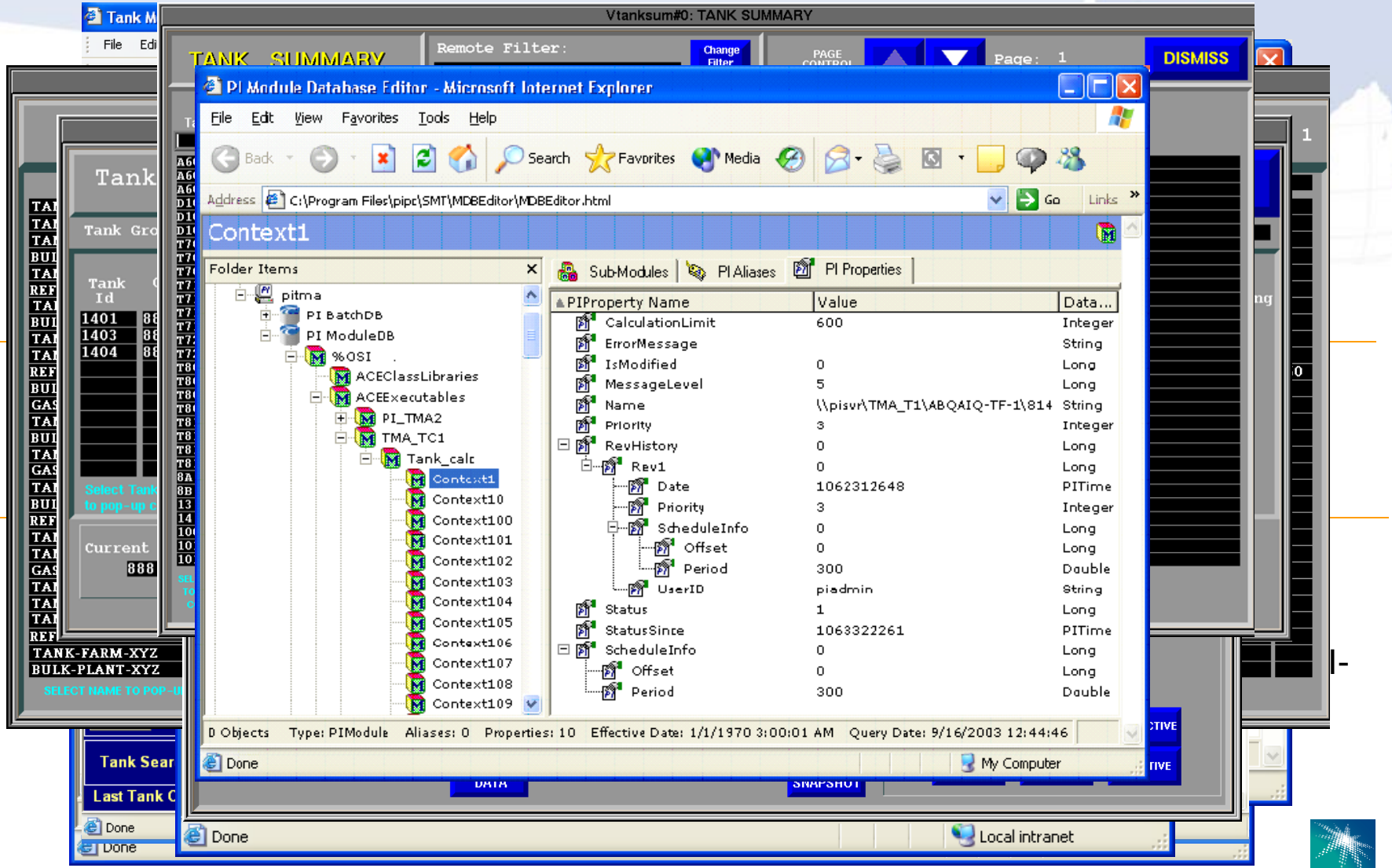
Tank Monitoring Application

- Customized application residing on the top of the central SCADA
- Used by OCC planners and engineers to monitor oil & gas storages and movements
- Contains essential information about major tanks of terminals, refineries, gas plants, gas & oil separation plants, & tankfarms

Tank Monitoring Application



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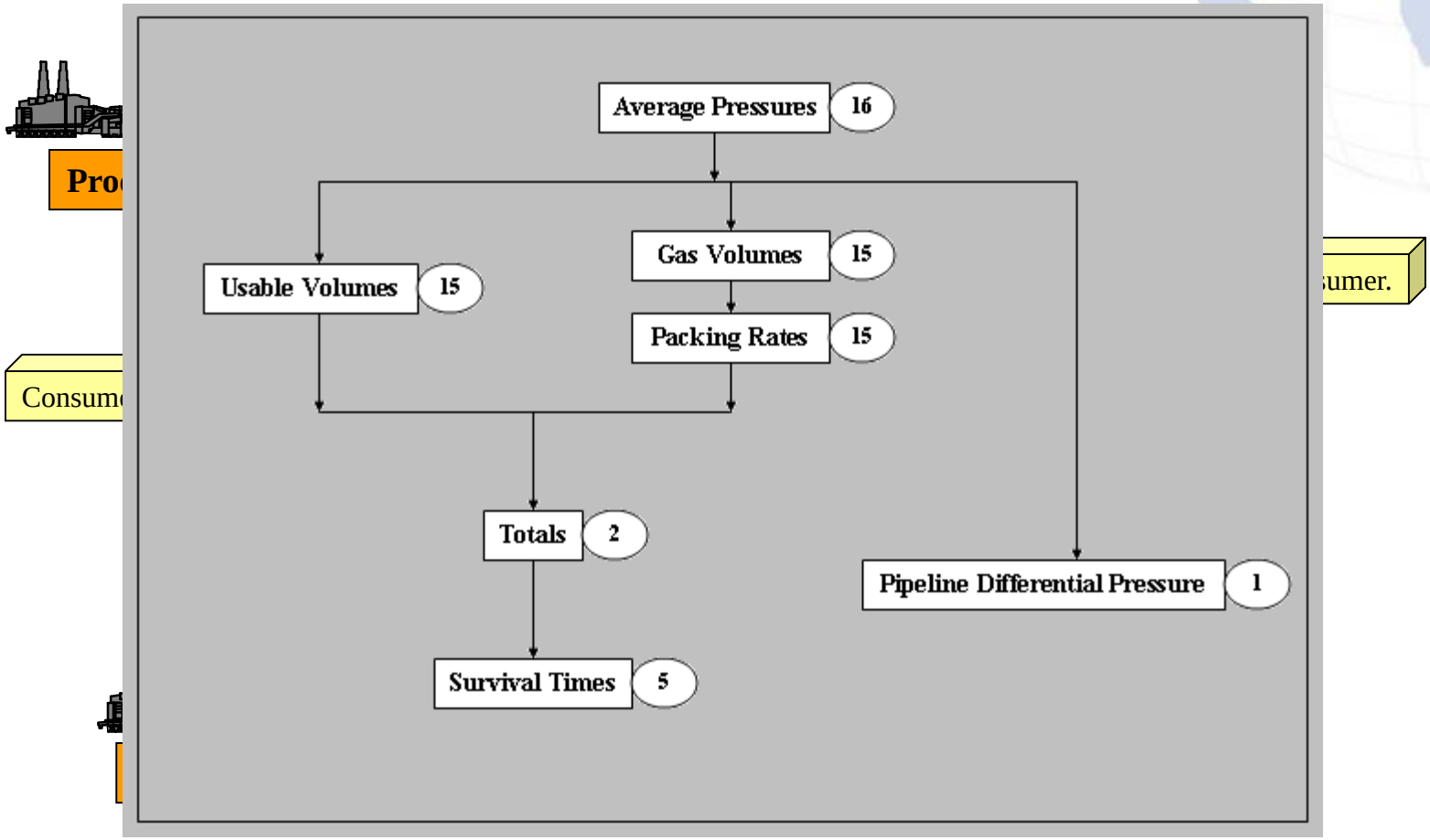
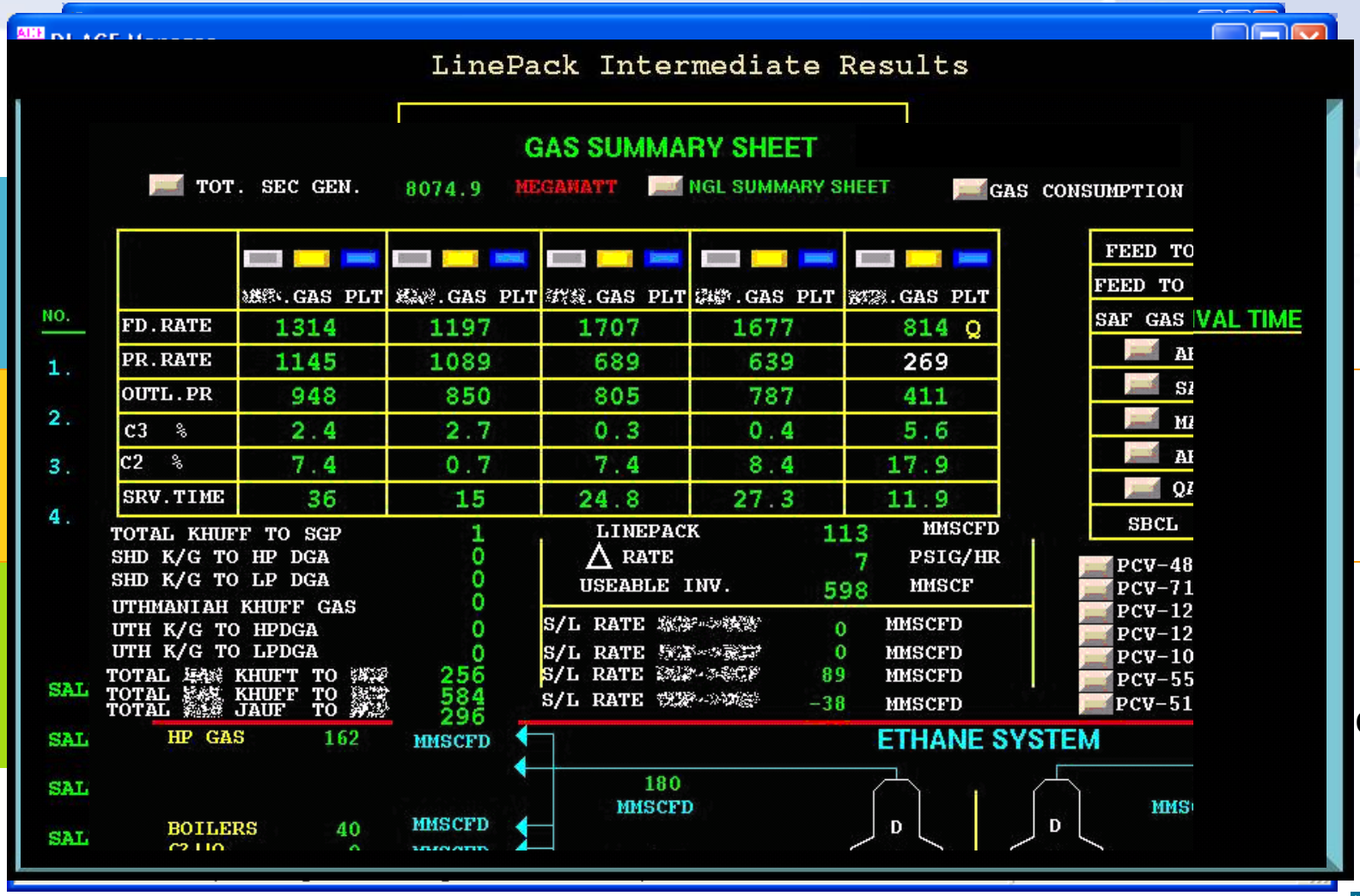
LinePack Application



LinePack Application



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Technical Challenges & Solutions

Problem

Difficult … r ease node or … , CP, or Tank

•Large r … PI-Ace calculat … r

•Contin … ns in number … minutes

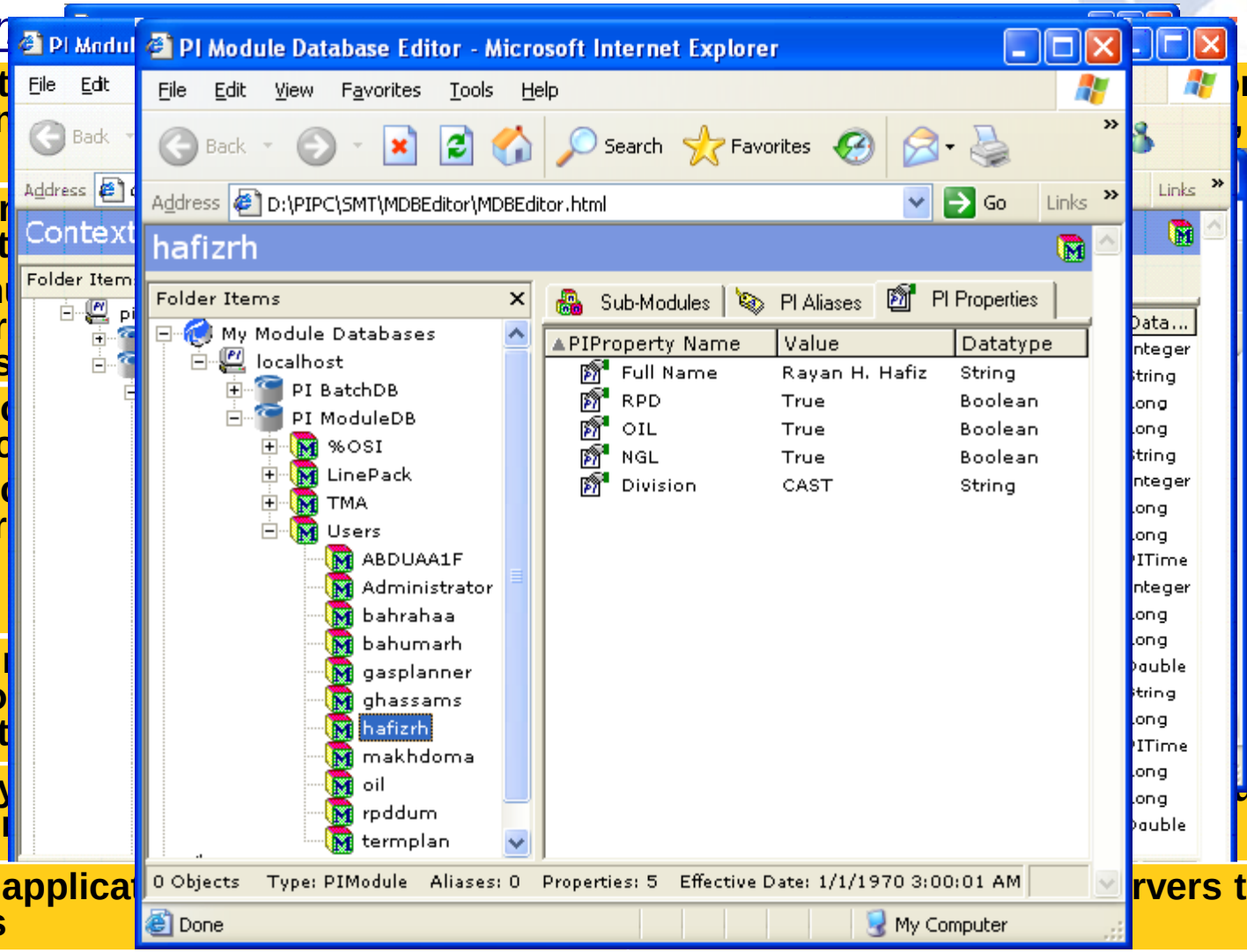
•Need t … with pro

•Signific … es with number …

Switchi … ng tank and pro … calculat

Security … leDB change

Switch applicat … rvers to Servers



Benefits

- General
  - Reduce the scope of future SCADA upgrades that will save cost and ensure ease of execution (up to $0.5M)
  - Avoid high cost of other COTS Software (up to $1M)
  - Ensure ease of software support by the in-house expertise within SA
- TMA
  - Provide ease of access through Web Based GUI on every PC.
  - Provide accurate results using field strapping tables instead of the minimized strapping table used in the SCADA-TMA
  - Provide less data interface layers
- LinePack Application
  - Provide on the fly Modifications & Additions of new Segments
  - Save the cost of purchasing not needed SW packages

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Future Enhancements

- Moving the GUI from PI-ProcessBook & PI-ActiveView to thin client web application
- Replacing the PI modules structure with new version of PI-ModuleDB that is SQL based (To be done by OSI)
- Re-implement all calculations on PI-ACE
- Implement successful applications at all sites as corporate solutions (i.e. TMA)

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