

A decorative graphic on the left side of the slide, consisting of a large, irregular shape made of many small blue triangles with white outlines. The triangles are arranged in a way that creates a sense of depth and movement, with some triangles pointing up and others pointing down.

Implementation of PI Data Historian for CPOC Asset & Volume Management System

Presented by

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OSIsoft.

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A P A C

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Agenda

- About CPOC
 - Background and Goals
- About CPOC AVMS - Asset & Volume Management System
 - System Architecture
 - Development Plan
 - Why PI?
 - PI applications to be used
- Implementation
 - Functions implemented
 - Applications link & integration
 - Issues
- Lessons learned
- Next steps

About CPOC

“Carigali-PTTEPI Operating Company Sdn Bhd”

- Exploration & Production Company
- Joint operating company
 - Petronas Carigali (Malaysia)
 - PTTEPI (Thailand)
- Location
 - Petronas Twin Towers (Malaysia)
 - Joint Development Area - JDA (Gulf of Thailand)



CPOC



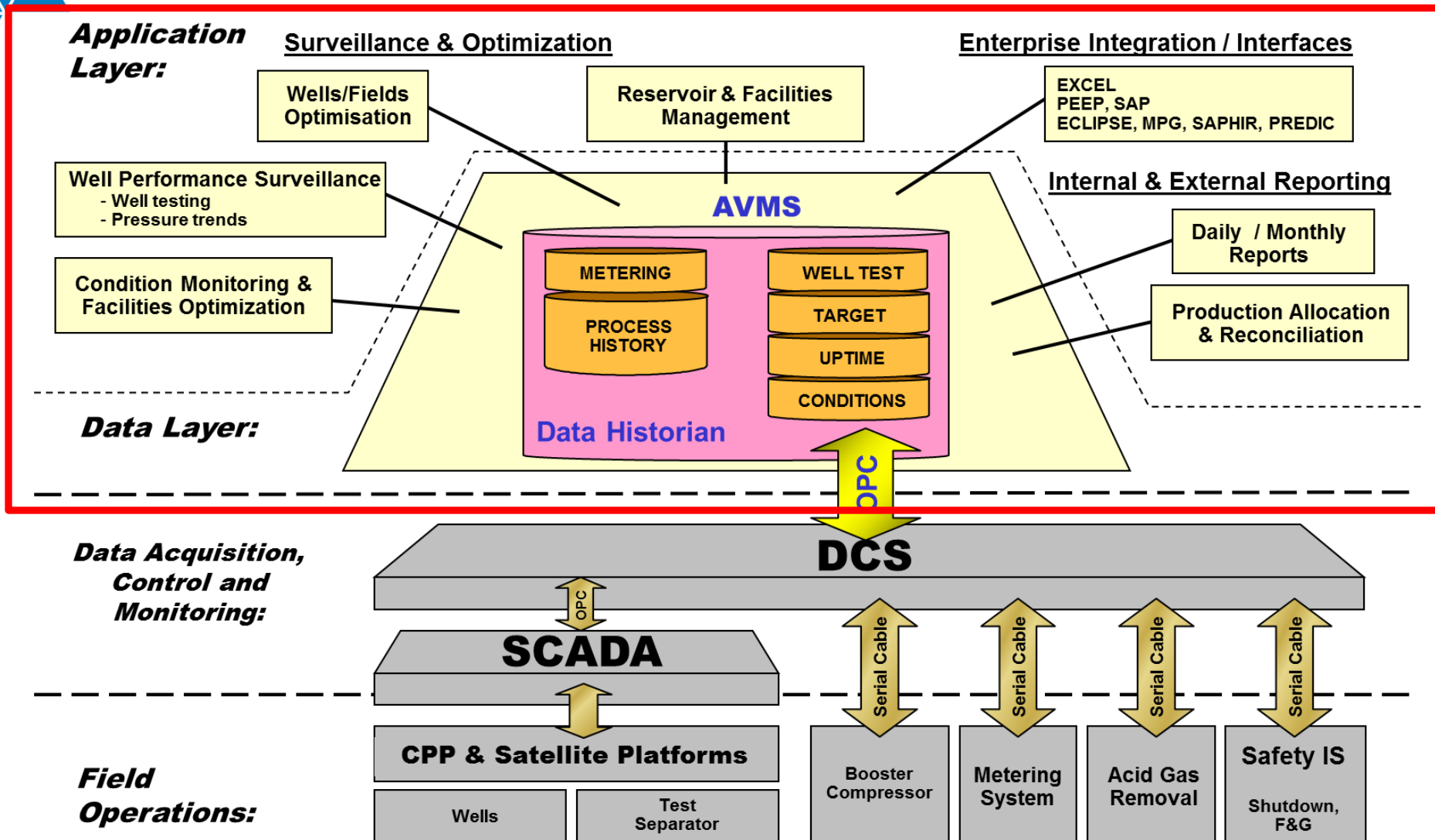
About CPOC

“Background & Goals”

- Re-activated in 2005
- Deliver Committed amount of Petroleum Gas to buyer
- Operating company for MTJA (Malaysia-Thailand Joint Authority)
- Platform startup in February 2009
- Approximate production 330 MMSCFD (in 2009)
- Apply enhanced technology for exploration & production
- Apply automated solutions as much as possible
- Production Operations, and Engineers tasks
- Offshore & Onshore communications via slow-speed Satellite link
- New Field – new resources and management

About CPOC AVMS

“Asset & Volume Management System”





About CPOC AVMS

“Asset & Volume Management System”

A generic term identified by CPOC. The main function of this system is to facilitate:

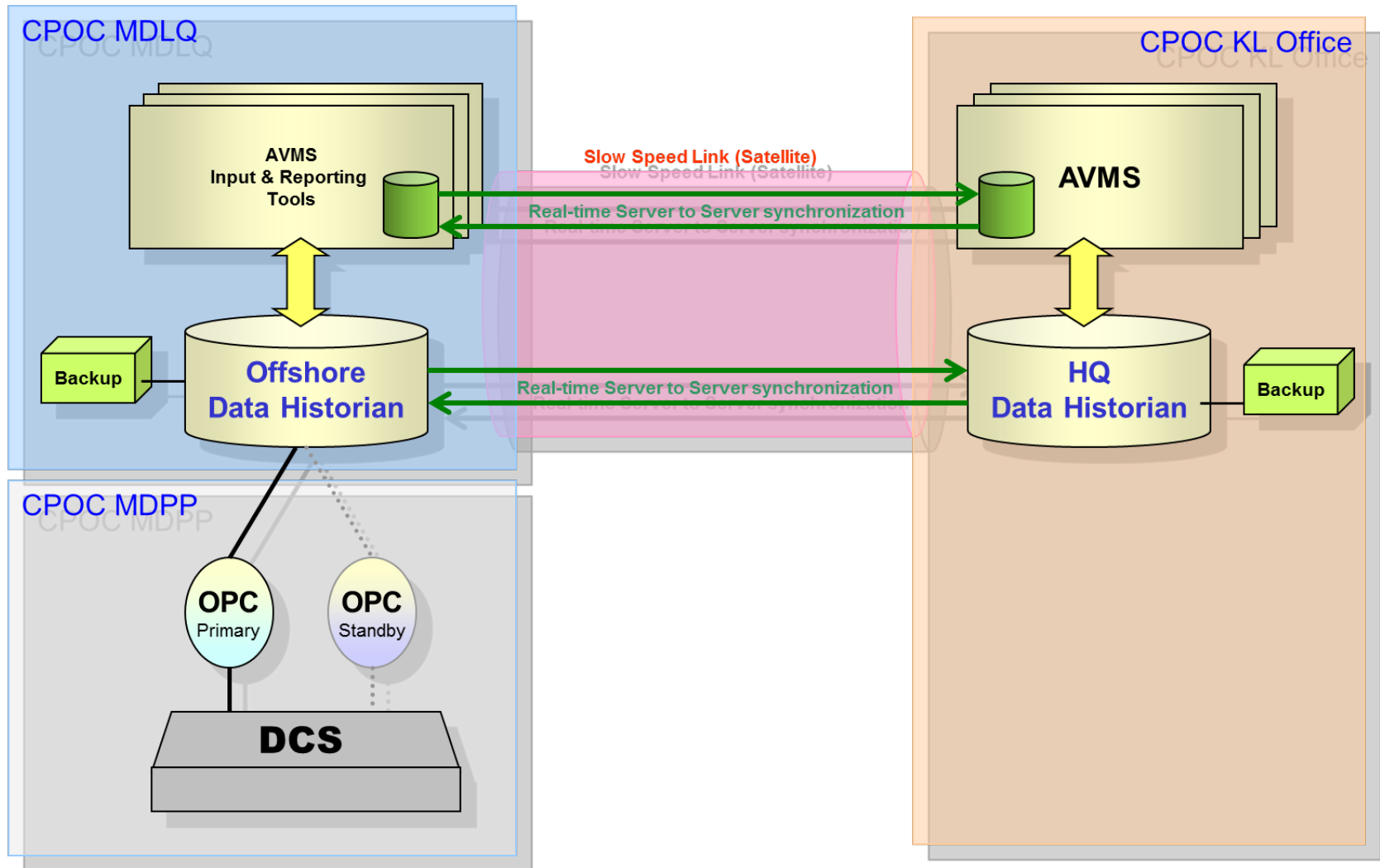
- Production Allocation
- Reporting & Visualization
- Performance monitoring and optimization
- Reservoir and Facilities management

Scope of work include:

- Supply of Connectivity to Control system (DCS & SCADA)
- Supply of Real-time data repository
- Supply of Aggregated & Low-frequency data repository
- Supply of applications based on functions required

About CPOC AVMS

“System Architecture”





About CPOC AVMS

“Development Plan”

- Multiple layers integration
 - Main Contractor provide turn-key solutions
 - Total solutions based on each vendor’s proposal
 - Project Management done by awarded vendor
 - Project related vendor
 - OPC Server – Yokogawa (Thailand)
 - Data historian – OSIsoft (Singapore)
 - Integration & Applications – ISS Group (Australia)
 - Data Standard & Procedures controlled be CPOC staff
- Multiple Phases Implementation Plan
 - Essential systems: OPC Server & Data Historian by First Gas
 - Interim Solutions



About CPOC AVMS

“Why PI?”

- Independent data historian solutions
 - Minimize risks in integrations with other Control systems
 - Any connectivity mechanism can be provided
 - Reduced implementation man days for future expansion
- Industrial standard data historian provider
 - Major used in many businesses
 - Power Generation
 - Chemical industries
 - Oil & Gas companies
 - World wide support with big communities
- Well known data historian software
 - Many users already knew how to use the software
 - Ease of programming & Implementation



About CPOC AVMS

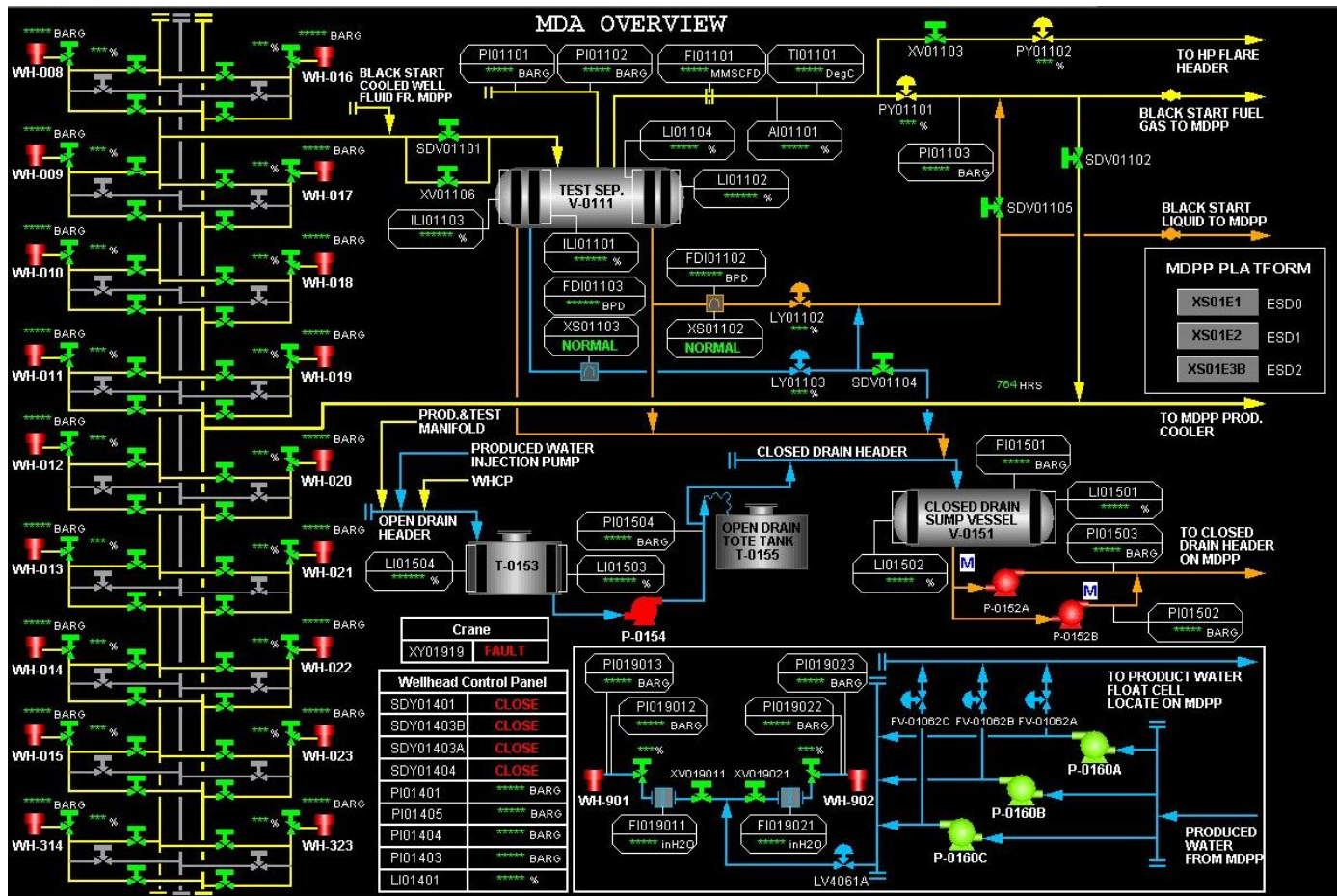
“PI Applications to be used”

- **PI Processbook and PI Webparts**
 - Ease of Implementation
 - Can be created after Data Historian Server installed
 - Allow users to view process data (Duplicated from Process Control System displays) via Web browser
 - Interim solutions for basic used until full applications system is implemented completely
- **PI Datalink**
 - Extensively used by Engineers, Production Operations, and Maintenance Team
 - Production & Operations Daily report generation
 - Interim Solution for Well Performance Monitoring

About CPOC AVMS

“PI Applications to be used”

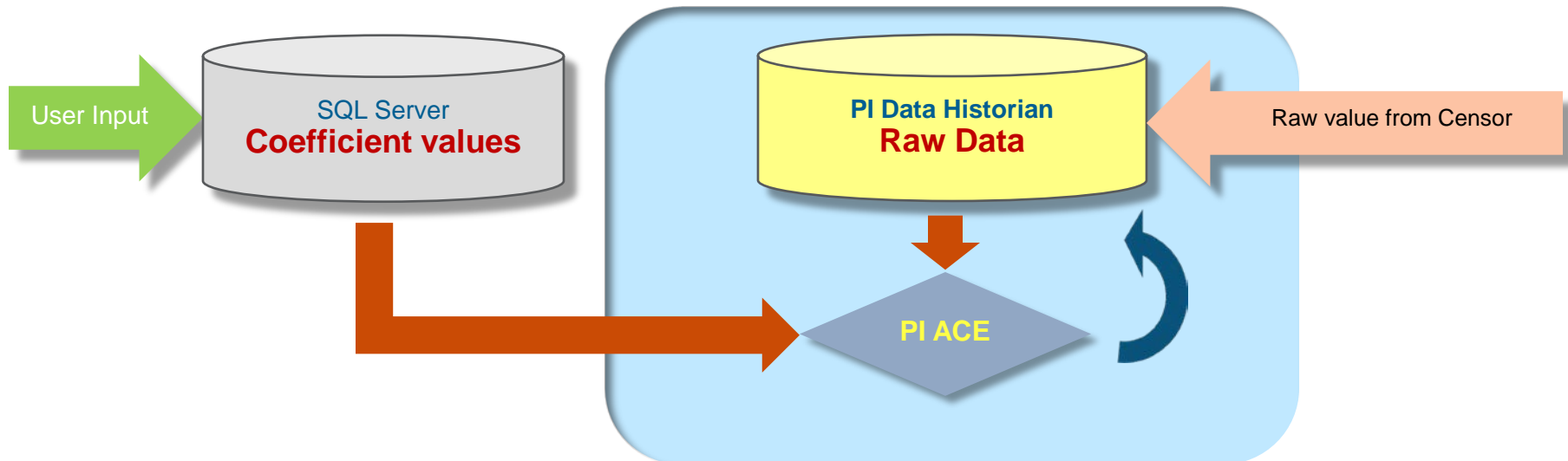
- PI Processbook and PI Webparts



About CPOC AVMS

“PI Applications to be used”

- PI Advanced Calculation Engine (PI ACE)
 - Used for real-time calculation requirements
 - Reduce load on applications system
 - Powerful engine to retrieve data from any sources using VB programming
 - Currently used for Sand Monitoring real-time calculations





Implementation

“Functions Implemented”

- **Control System Connectivity**
 - Using Yokokawa® ExaOPC
 - Higher data transmission compared to others
 - Mitigate risks on incompatibilities Very fast implementation when using the same vendor who provides Control System
 - Network Firewall configuration required
 - Two (2) OPC servers installed for preparing redundancy function
 - Installed PI Interface(s) and Buffer System(s) into the same machine as OPC Server(s)
 - Used PI Interfaces to manage redundancy functions



Implementation

“Functions Implemented”

- Data Layer repository
 - Using OSIsoft® PI Server
 - Place one server offshore (in Platform) and another one onshore (in KL)
 - Using PltoPI for data synchronization
 - Apply all available PI system functions purchased (IT Monitor, PI ACE, e.g.)
 - Trained all required personnel on each applications usage level (4 users courses and 2 admin courses due to resource rotation)
 - Provide PI Datalink as the main data layer application
 - Apply data standard into tags names & descriptions



Implementation

“Functions Implemented”

- Data Layer repository (cont'd)
 - Users used PI Datalink extensively
 - Using PI Webparts for schematics copycat from Control System
 - PI ACE for Real-time Sand Monitoring calculations
 - IT Team remotely monitors the system through PI IT Monitor function



Implementation

“Application Link & Integration”

- AVMS applications layer
 - Link to PI Server using PI ODBC
 - Designed based on standard data management approaches
 - Successfully tested using demo license on each software
- Other Users functions applications
 - Link to PI Server using PI ODBC
 - Real-time calculation using PI ACE
 - Real-time data integration using PI OPC Server



Implementation “Issues”

- Procurement Process
- Multiple software providers
- Timeframe
- Data Standard
- Operating Procedures
- Users expectation
- Support



Lesson Learned

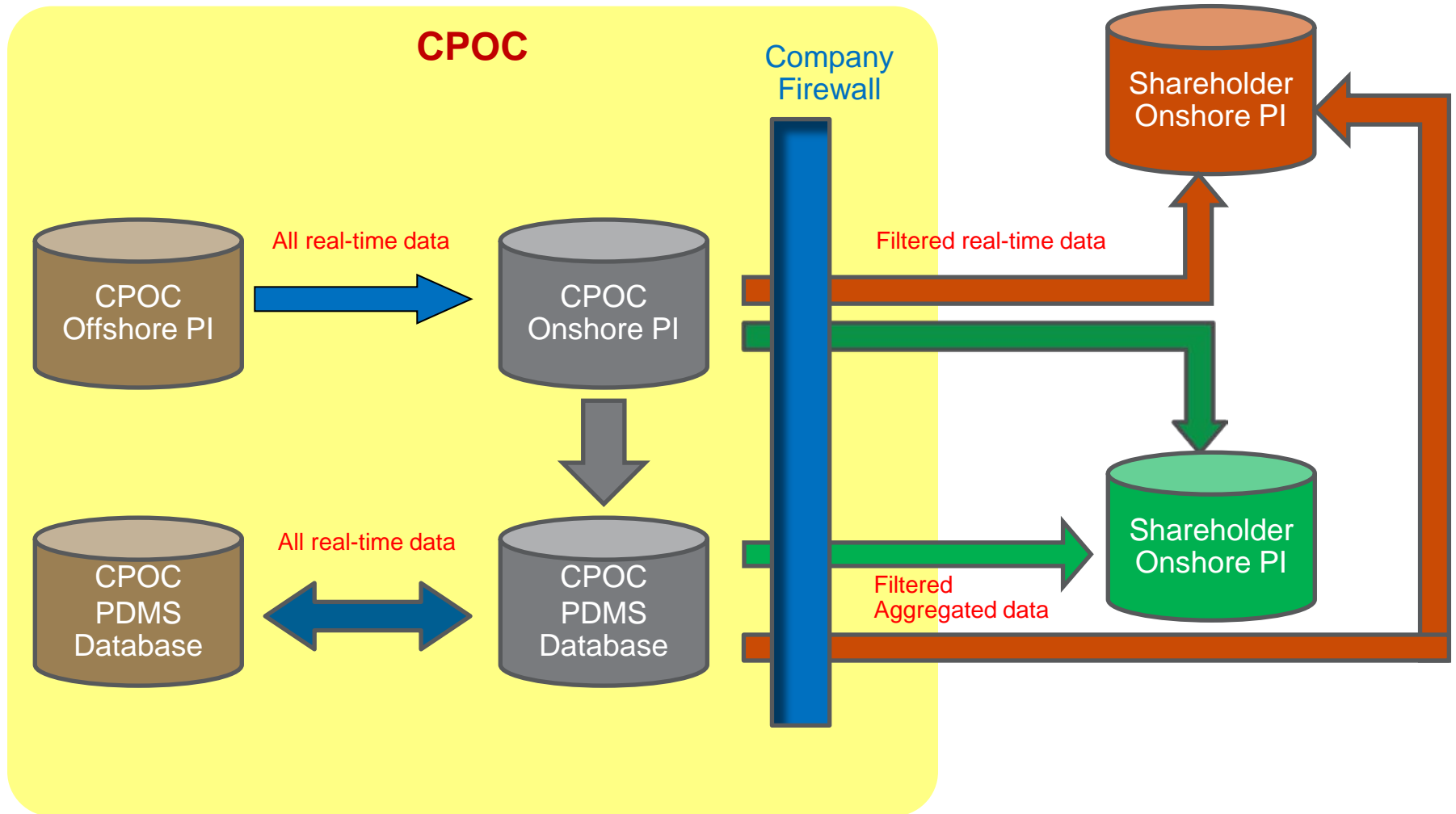
- Plan _{vs} Actual
- Users interactions
- Trusted vendors
- Functional identification
- Resource turnover
- Software selection
- Why PI?
 - Productivity
 - Data Integration
 - Reliability
 - Compliance



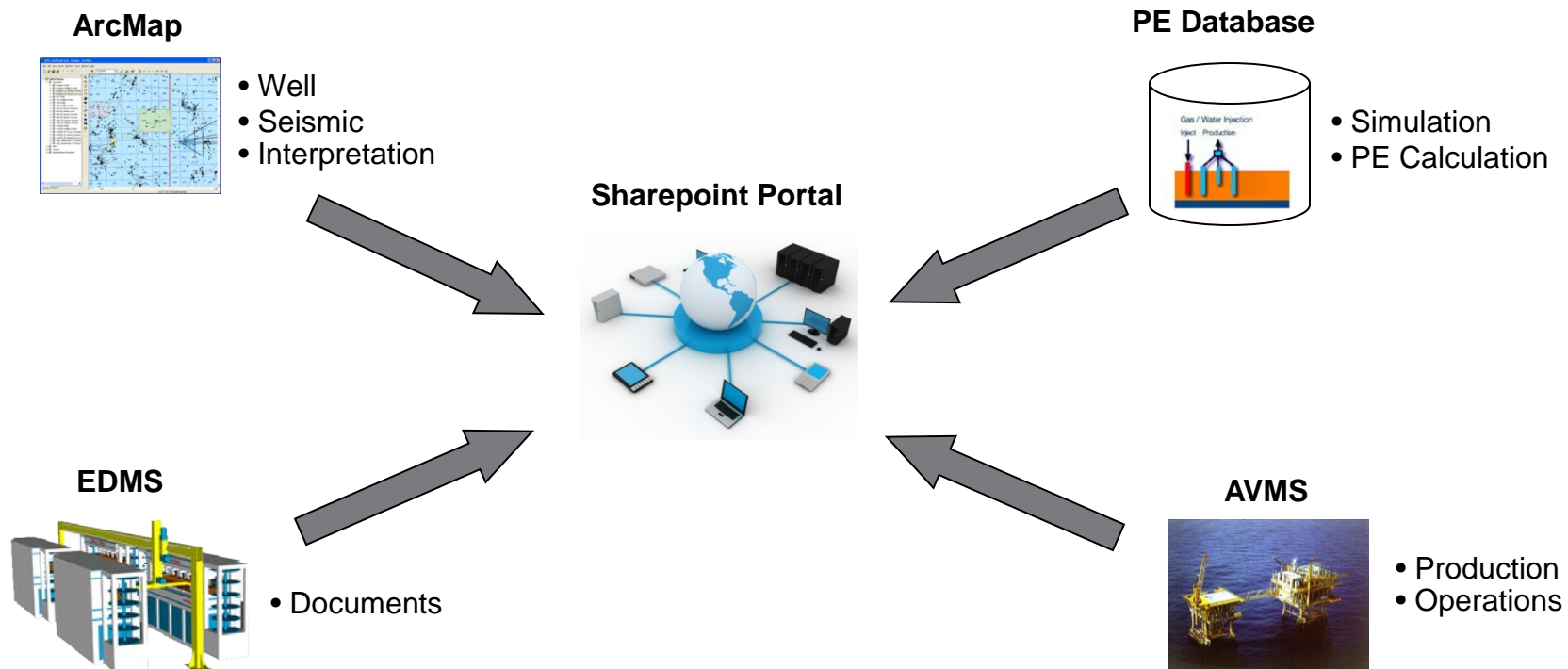
Next Steps

- Use PI as real-time database and real-time interactions
- Increase usage of PI client tools (Datalink) for linking with other applications for real-time optimization
- Create real-time data submission to relevant Shareholders as per request

Next Steps



Next Steps





Questions

- Contact information

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Thank you

