



Enhancing Deep Water Production Surveillance with PI Coresight

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Shell Global Solutions
Shell Exploration and
Production Company

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Reserves: Our use of the term “reserves” in this presentation means SEC proved oil and gas reserves.

Resources: Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves. Resources are consistent with the Society of Petroleum Engineers 2P and 2C definitions.

Organic: Our use of the term Organic includes SEC proved oil and gas reserves excluding changes resulting from acquisitions, divestments and year-average pricing impact.

Resources plays: Our use of the term ‘resources plays’ refers to tight, shale and coal bed methane oil and gas acreage.

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Shell Company Profile

- Shell is an innovation-driven global group of energy and petrochemical companies
- We are active in more than 70 countries
- Worldwide, we employ 94,000 full-time employees
- Our fuel retail network has around 43,000 service stations
- In 2014 we produced 3.2 million barrels of oil equivalent each day
- In 2014, we generated earnings* of \$19 billion
- We had \$24 billion of net capital investment in 2014
- We spent \$1.2 billion on R&D
- Royal Dutch Shell plc is a UK company, with its headquarters in the Netherlands

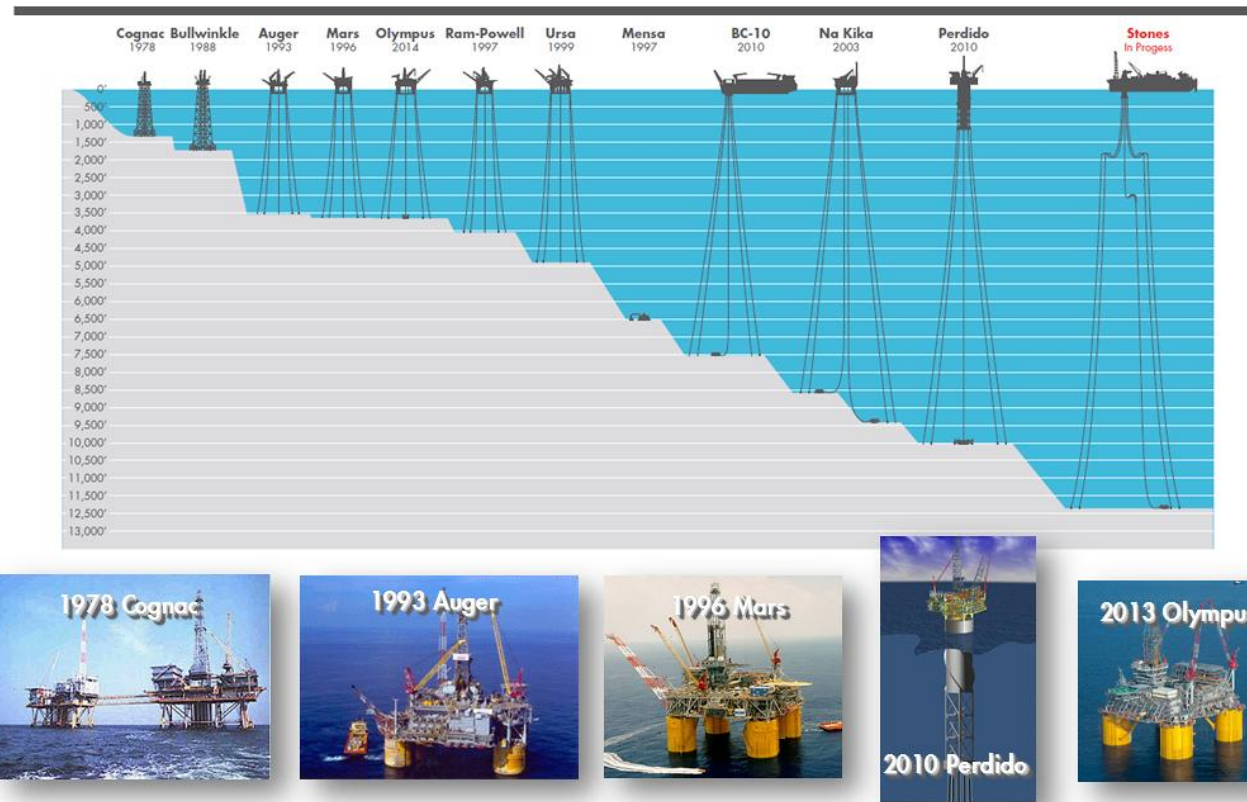


*On a current cost of supplies basis attributable to Royal Dutch Shell plc shareholders
Source: 2014 Annual Report and Form 20-F

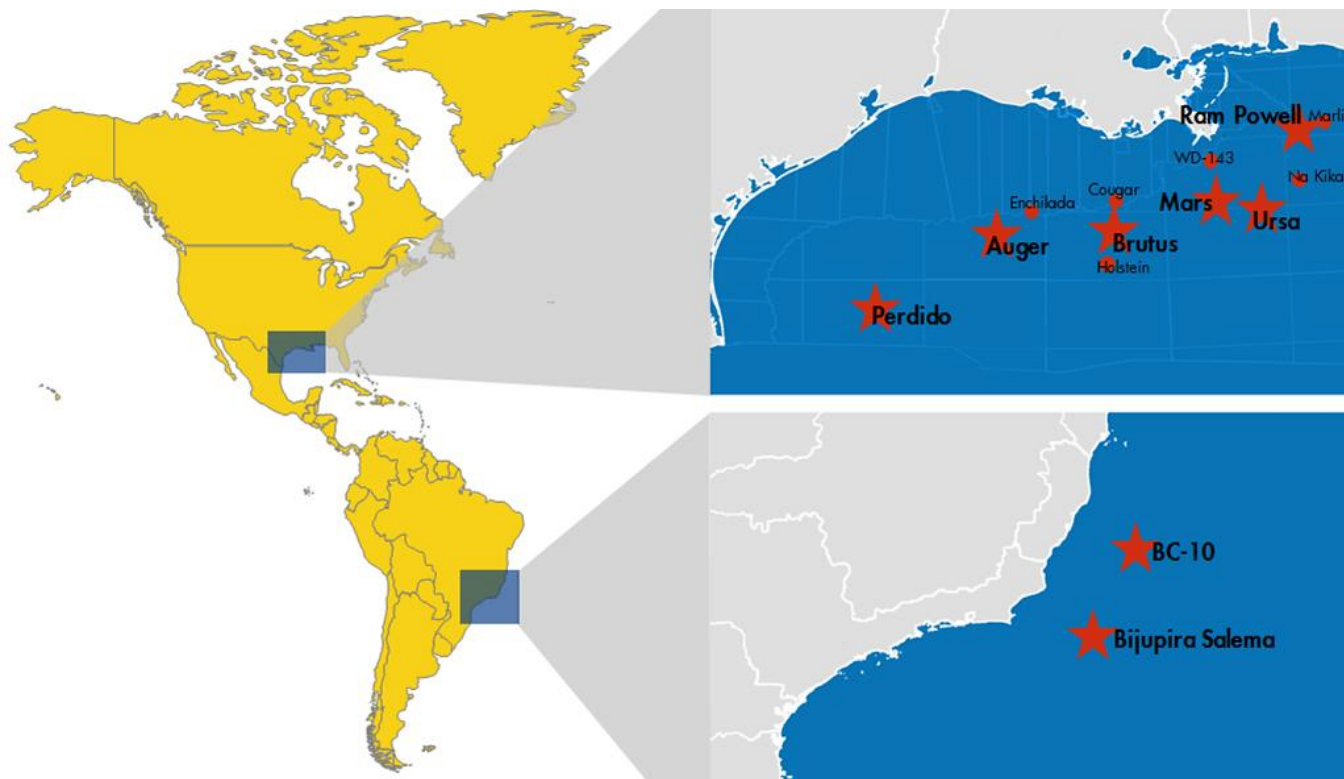
Shell Deep Water Americas Business

Deep Water fuels the growth of Upstream Americas by:

- safely developing new reserves
- maximizing the potential of existing producing assets



Shell Deep Water Americas Assets



- Assets in Gulf of Mexico and Brazil
- Several floating structures and manned platforms, a few unmanned
- A number of non-operated Joint Ventures
(not all assets shown)

Deep Water Surveillance – The Bridge

- Open collaboration area in New Orleans to connect operations and engineering communities
- Automated Exception Based Surveillance on Gulf of Mexico and Brazil Deep Water assets
- Focused on medium-term surveillance to contribute to the goal of:
 - deferment reduction
 - asset integrity
 - increased operational performance



Shell SmartSolutions EBSBridge
Informed Decisions about Assets

BRIDGE My Bridge Surveillance Catalog Alerts Services Search Tools Reports Support

UoM system: SI
Time zone: (UTC+01:00) Brussels, Copenhagen...
Locale: English (United States)

System Health
Last Heartbeat Detected: 2/6/2015 7:05:34 PM
Time Since Last Heartbeat: 9 minutes
Missing Services: 0 Service(s)
Service Missing for: 0 Second(s)

No events selected: False, No Action Valid, No Action Visible Columns Selected view:

| | Priority | Action Taken | Active | Date | Category | Area short name | Asset short name | Description |
|---------|----------|---------------------|----------|---------------------|-------------------------------------|-----------------|-------------------------|--|
| Actions | 2-High | Vetting (Automatic) | Active | 2/6/2015 3:25:24 PM | Process System Surveillance | West Delta 143 | MAK-670 Fuel Gas Filter | Potential PSV Lift: Local PT exceeded P Setpoint::Local PT exceeded SP of 44 p tolerance of PSV set point) |
| Actions | 3-Medium | Vetting (Automatic) | Inactive | 2/6/2015 6:18:24 PM | Compressor Reliability Surveillance | Mars | CBA-901 Compressor | VRU901 Comp LR vib tolerance exceed change more than 0.5 m/s from a -5.0 |
| Actions | 3-Medium | Vetting (Automatic) | Inactive | 2/6/2015 6:24:56 PM | Compressor Reliability Surveillance | Mars | CBA-901 Compressor | VRU901 Comp RR vib tolerance exceed change more than 0.5 m/s from a -5.0 |
| Actions | 4-Low | Vetting (Automatic) | Active | 2/6/2015 6:57:09 PM | Annulus Pressure Surveillance | Perdido | GreatWhiteGA12 | The A annulus::pressure of 3999.3 p of 3845 psi |

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Deep Water Integrated Operations Center



IOC = Onshore facility that collocates field development, asset support and operations personnel

Effective Integration and Alignment
People, Work Processes and Technology that optimizes asset activity and decision-making

Collaborative Work Environment (CWE)
Technology ranges from simple teleconferencing to high-end video conferencing and real-time data sharing

IOC Benefits

The IOC is providing a wide range of benefits to its occupants and associated assets.

Better, Faster Decisions:

- Collocation of asset support staff around a central remote control room
- Reliable connectivity enables team members to see the same data at the same time

Reduced Cost and Asset PoB Relief

- Remote collaboration capability reduces the need for trips offshore, reducing transport time, waste, cost, and HSE exposure

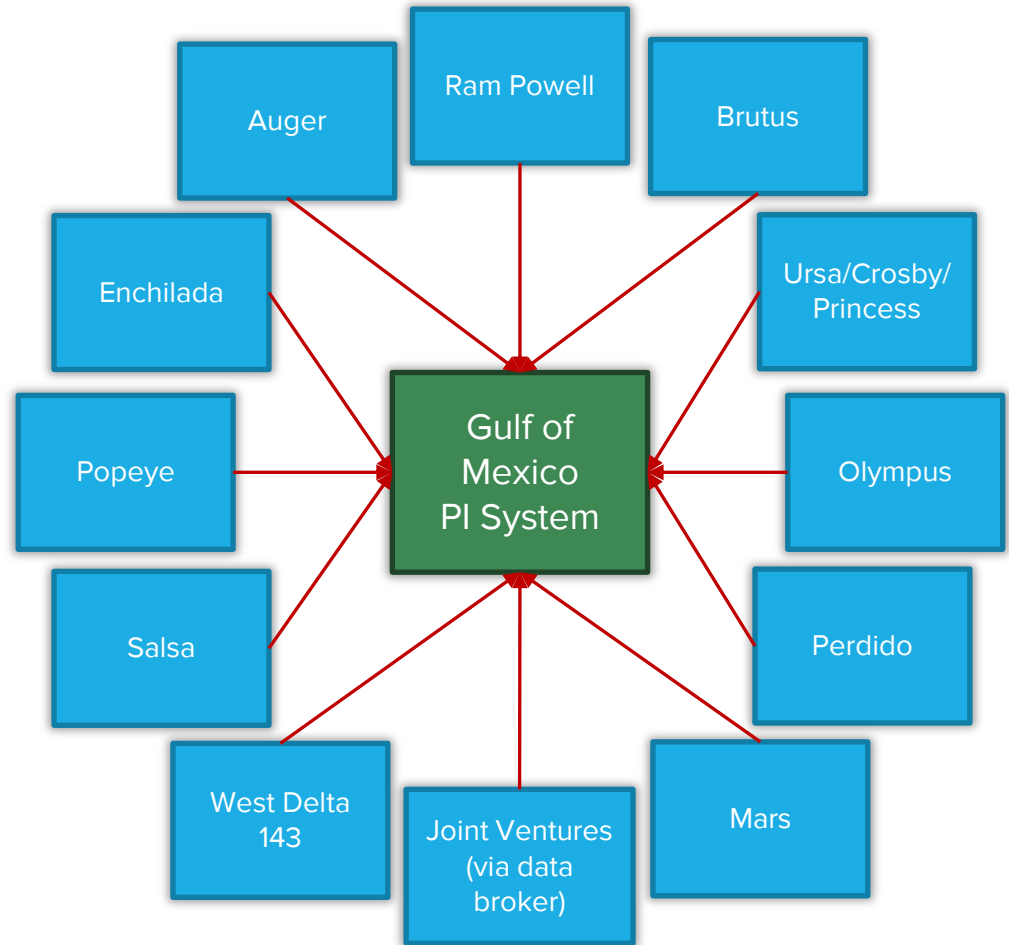
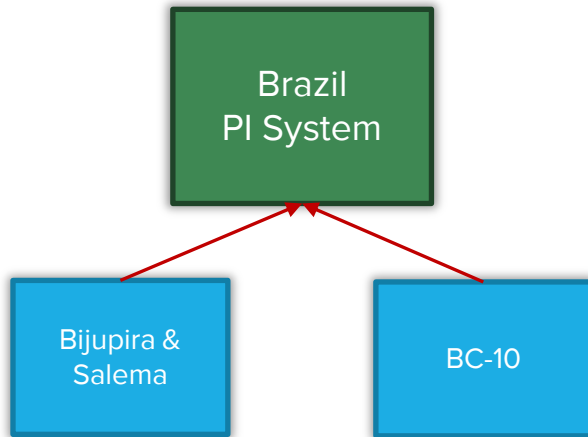
Deep Water PI Systems

PI Interface Types:

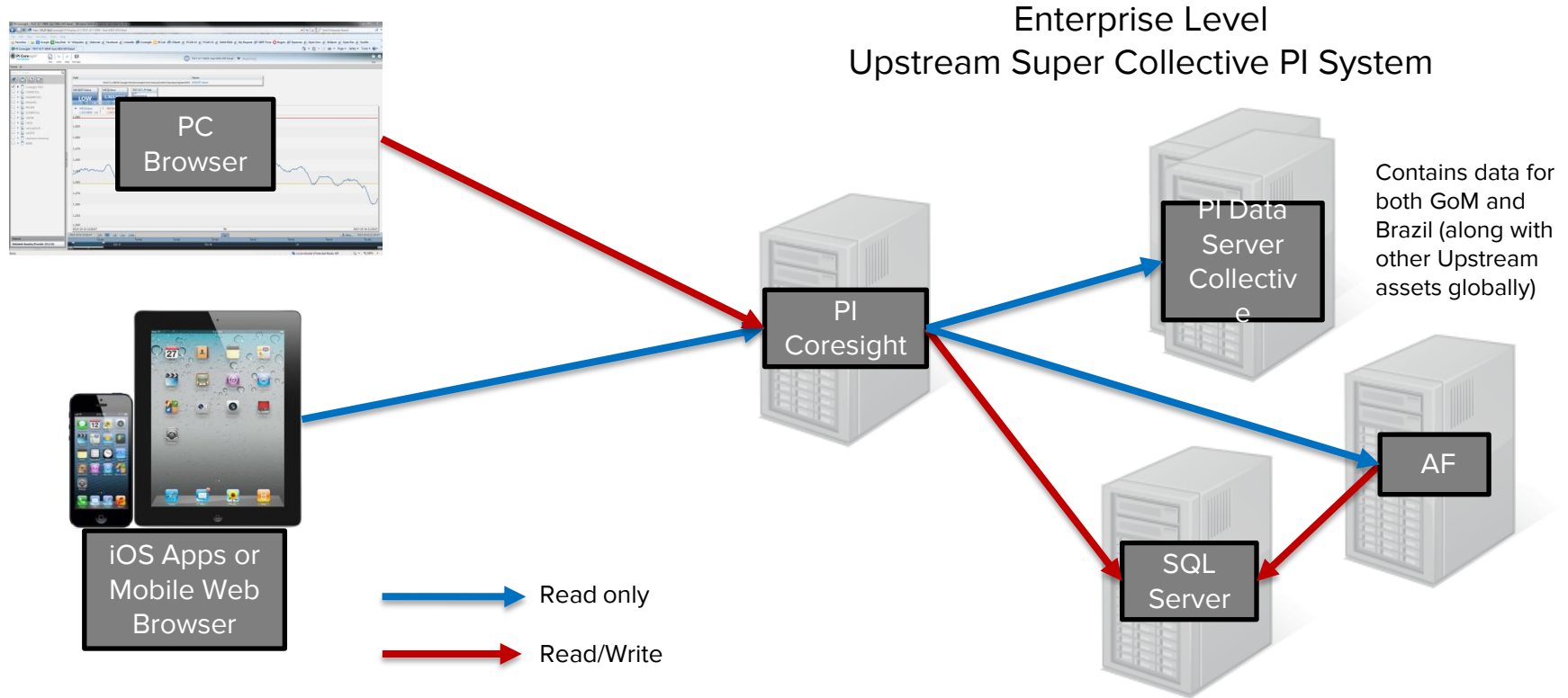
- PI OPC DA & HDA
- PI IntFix
- PltoPI
- PI UFL
- PI RDBMS

Data Source Types:

- EXAOPC
- Wonderware
- KEPServer
- Intellution iFix
- DeltaV
- Foxboro
- FastScan SQL



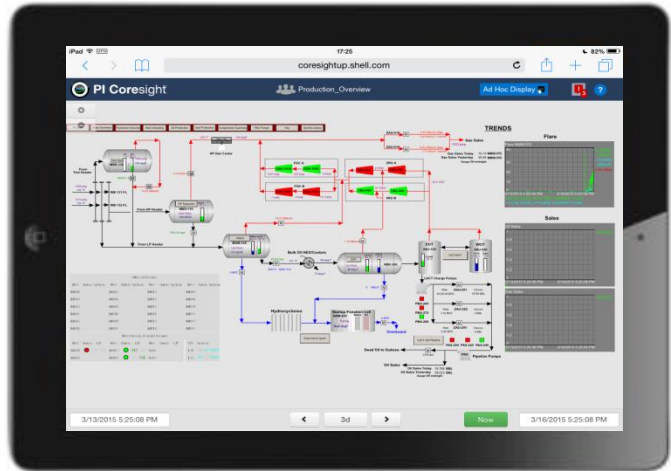
PI Coresight and the Upstream Super Collective



PI Coresight Pilot Project

Project was run from an industrial mobility standpoint

- Achieve higher ROI from previously deployed mobile devices
- Deep Water was one of the pilot businesses for PI Coresight



Move in industry and Shell towards mobility

- More device platforms in use – need more generic solution (not device-specific)
- PI Coresight provides solution in any HTML5 compatible web browser



Business Use Cases

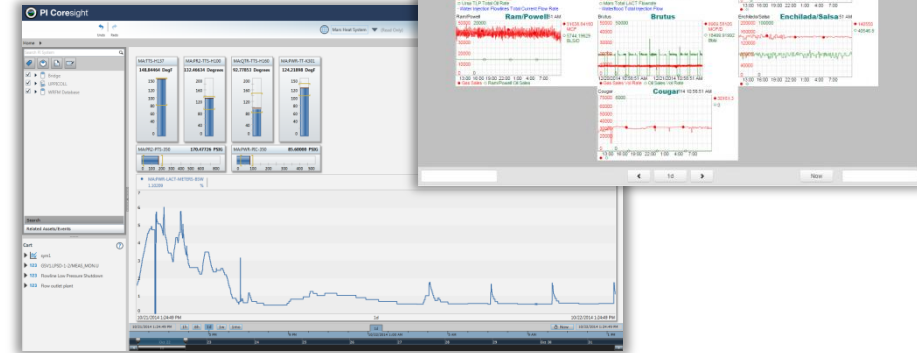
- Shell is beginning to use PI Coresight for surveillance at its Mars asset in the GoM
 - Initially focused on Rotating Equipment
 - Facilities Surveillance, Well and Reservoir Surveillance, Alarm Analysts
 - Shell Brazil users are deploying as well
- Mobile access to Shell's PI System data and displays is allowing a new level of portability and accessibility
 - Asset engineers now have the ability to see their PI System data while traveling or even when they are just away from their desk
 - Being able to send a link to ad-hoc displays or built ones is helpful, especially directed to management
 - Tracking daily oil and gas production



Business Value

User Feedback:

- Improves real-time monitoring and surveillance of assets' safety and production performance
- Can track daily production and monitor system performance from anywhere with a cellular or wifi signal
- Provides the opportunity for increased surveillance, allowing staff to perform their job better, and add to the 'bottom line' for Shell



Business Challenges

- A. Business decisions and analysis based on inaccurate or stale data
- B. Difficult to share/manage PI ProcessBook displays or get access to PI System data away from workstations
- C. Provide increased PI System functionality with minimal cost

Solution(s)

- A. Provide flexible and quick access to real-time PI System data on the spot
- B. Provide easy access to viewing and sharing PI System data anywhere, including PI ProcessBook displays
- C. Leverage Enterprise Agreement to add PI Coresight to our landscape

Results and Benefits

- More informed business decisions and improved data quality for analysis
- Employee job satisfaction - ease of access to data, more flexible work location, improved collaboration between teams
- Increase ROI in existing PI System

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Questions

Please wait for the **microphone**
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State your
name & company





THANK
YOU

