



# Operational Intelligence to Deliver Smart Solutions

Presented by John de Koning



**Shell Global Solutions**

# DEFINITIONS AND CAUTIONARY NOTE

**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.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this presentation “Shell”, “Shell group” and “Royal Dutch Shell” are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this presentation refer to companies in which Royal Dutch Shell either directly or indirectly has control. Companies over which Shell has joint control are generally referred to as “joint ventures” and companies over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

This presentation contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “objectives”, “outlook”, “probably”, “project”, “will”, “seek”, “target”, “risks”, “goals”, “should” and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this presentation, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including potential litigation and regulatory measures as a result of climate changes; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional factors that may affect future results are contained in Royal Dutch Shell’s 20-F for the year ended 31 December, 2014 (available at [www.shell.com/investor](http://www.shell.com/investor) and [www.sec.gov](http://www.sec.gov)). These factors also should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, 29<sup>th</sup> April 2015. Neither Royal Dutch Shell nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation. There can be no assurance that dividend payments will match or exceed those set out in this presentation in the future, or that they will be made at all.

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# 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
- We are listed on the stock exchanges of Amsterdam, London and New York

\*On a current cost of supplies basis attributable to Royal Dutch Shell plc shareholders

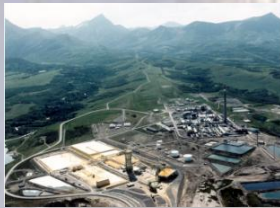
Source: 2014 Annual Report and Form 20-F

# PI System History at Shell

Shell has been using the PI System for almost 20 years  
~250 PI Systems globally, ~2000 servers, ~20.000 users

## ■ Upstream:

- >200 assets/sites (incl. Heavy Oil, Integrated Gas, Unconventionals, Deep Water, Wind, Drilling, etc.)



## ■ Downstream:

- >20 Refineries and/or Chemicals Plants, Trading, Pipeline



# BUSINESS CHALLENGES

Operational Performance

Asset Integrity & Reliability

Disciplined delivery

Empowered People





# VISION & STRATEGY

An aerial view of a large offshore oil rig in the middle of the ocean. The rig is a complex of steel structures, including a tall derrick, various platforms, and a helipad on top. It is surrounded by deep blue water.

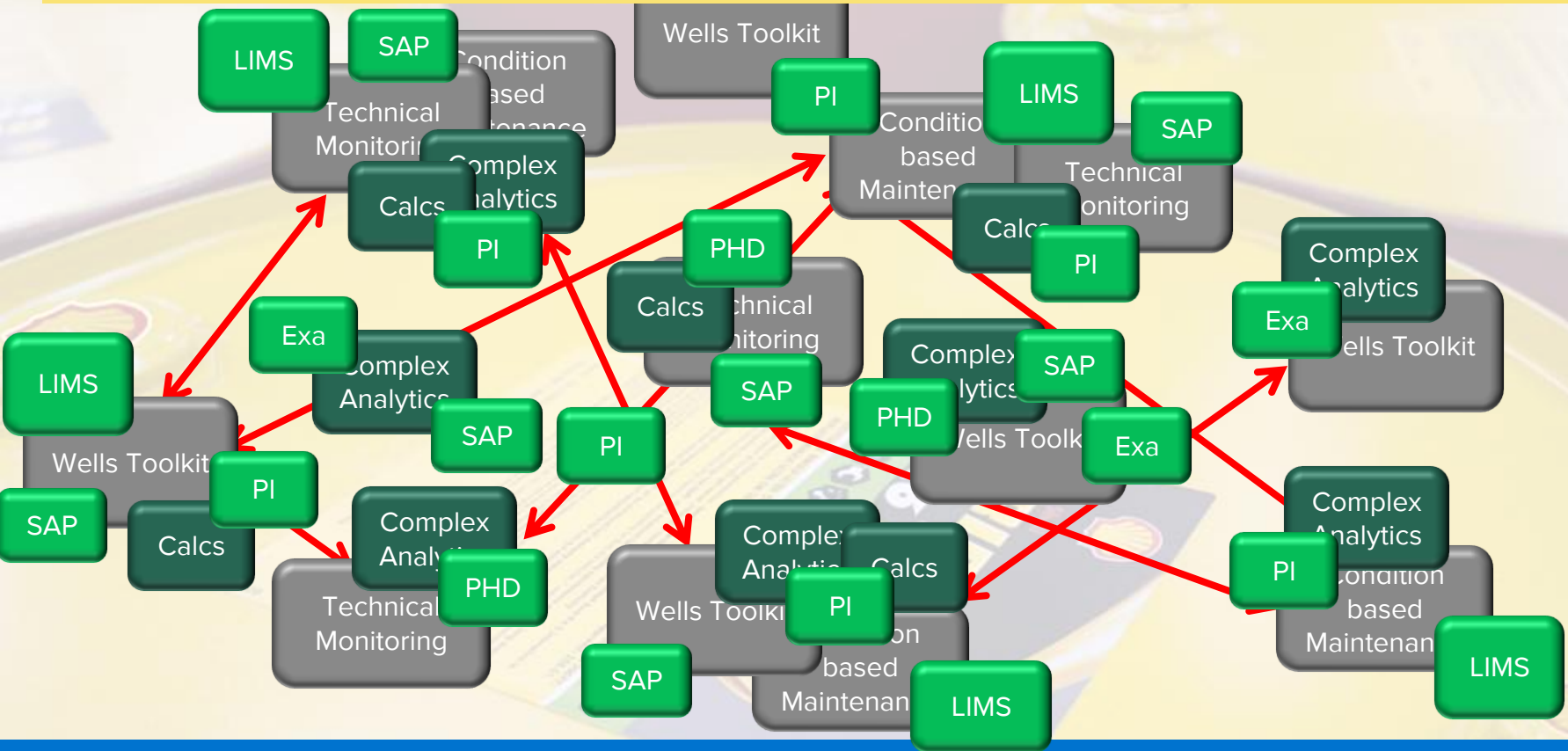
DATA as an ASSET

SINGLE PLATFORM

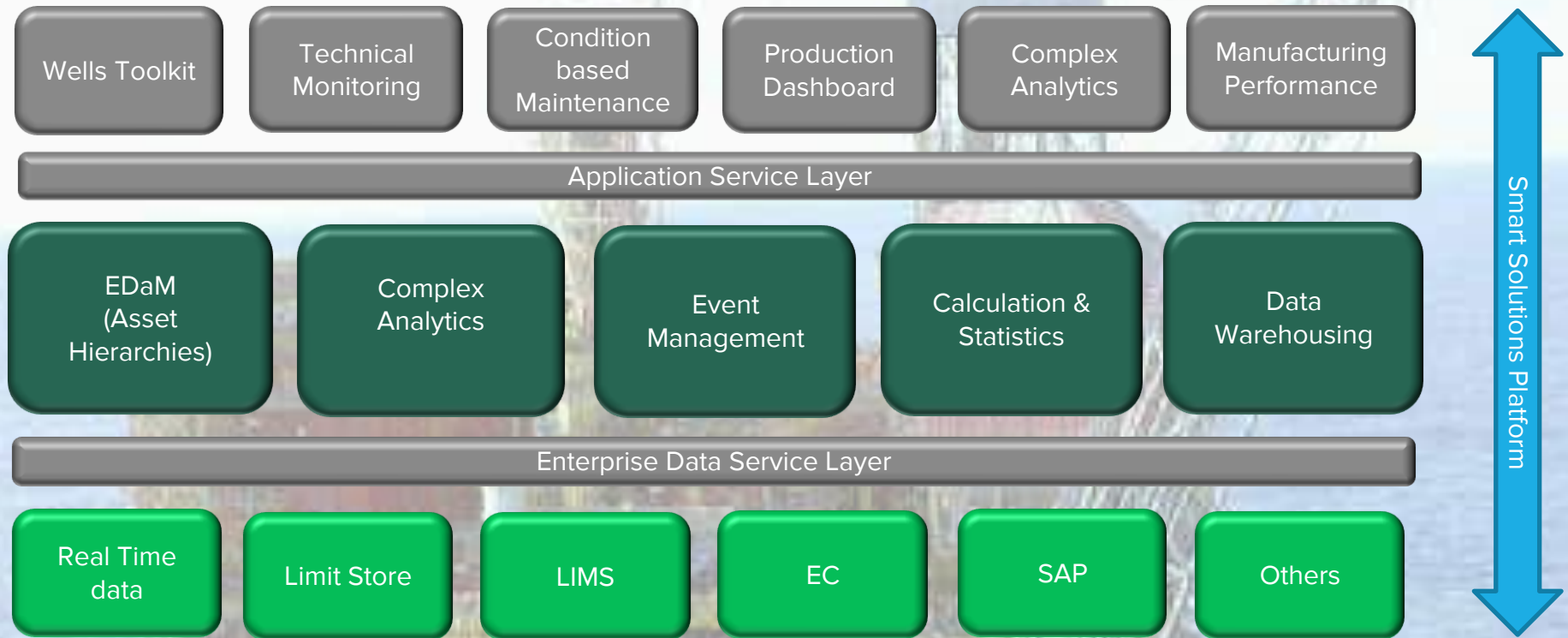
SMART SOLUTIONS

BUILD ONCE – DEPLOY GLOBAL

# Case for Change

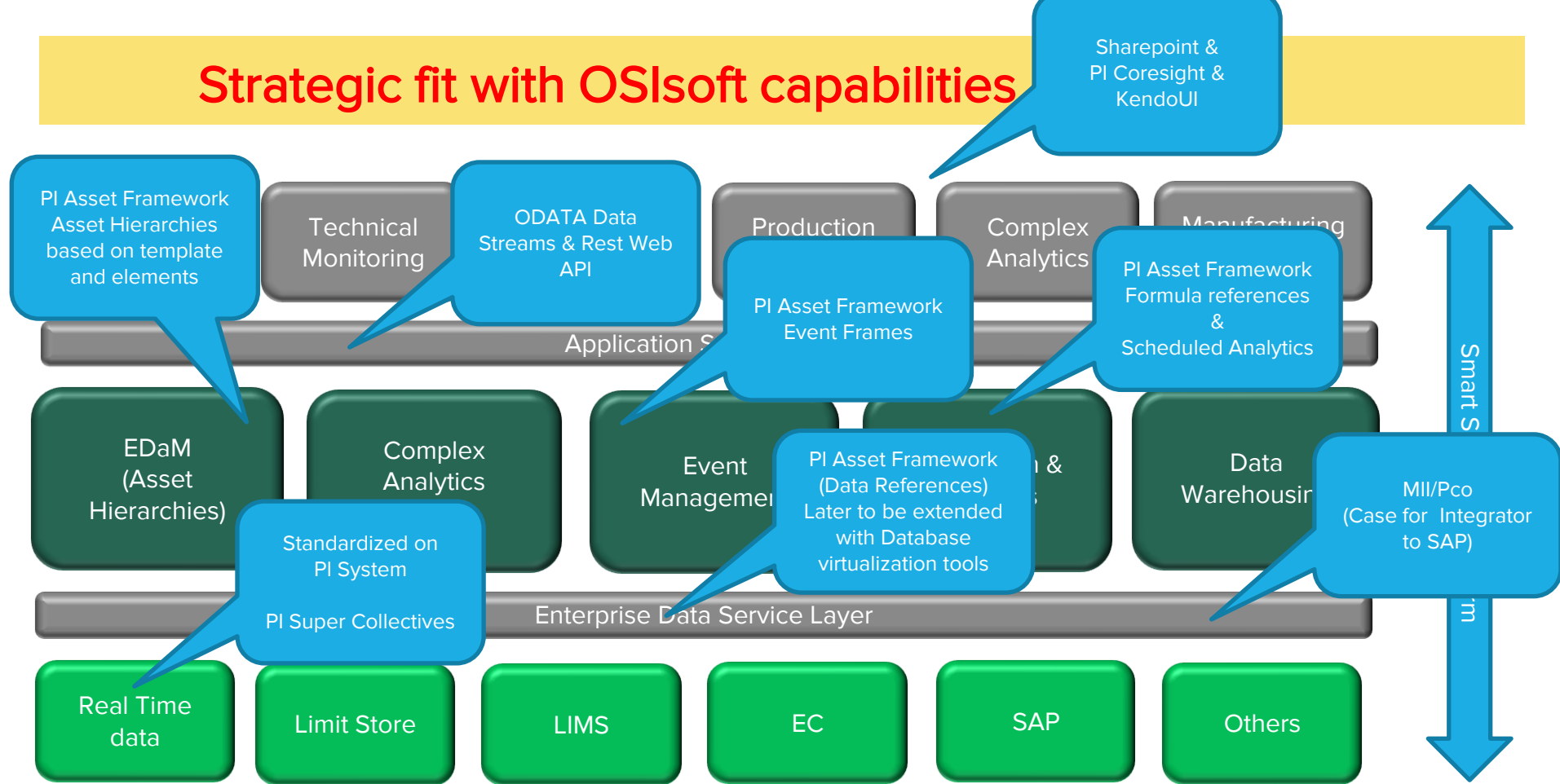


# Target

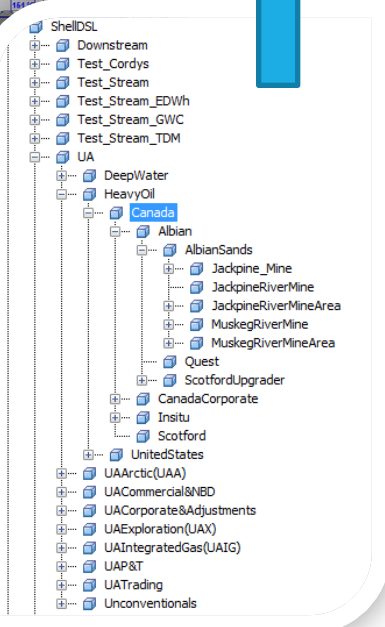
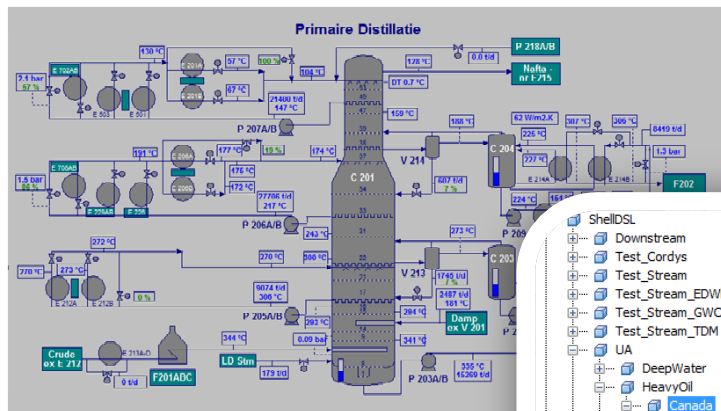




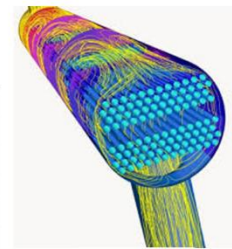
# Strategic fit with OSIsoft capabilities



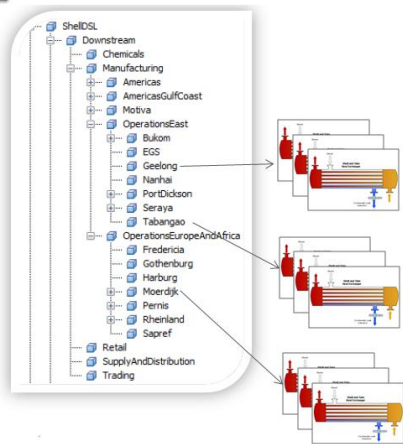
# PI Asset Framework: Data Integration & Standardization



- Input Temperature hot Flow
- Input Temperature cold Flow
- Output Temperature hot Flow
- Output Temperature cold Flow
- High Temperature
- Low Temperature
- Debiet
- Shells/Passes
- Surface
- Type Heatexchanger



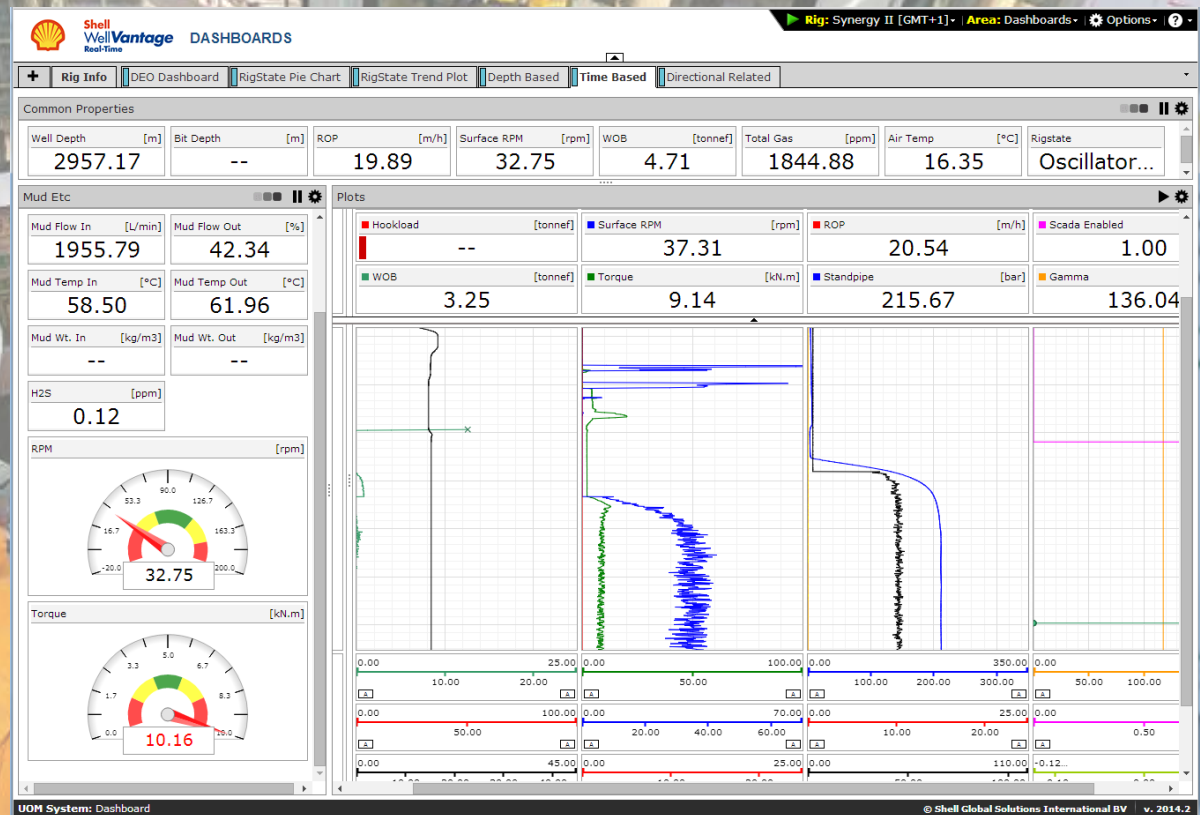
- OHTC – Overall Heat Exchange coefficient
- E-Factor
- Power Capacity Heatexchanger



# How does this change our business in the coming years?



# Use Case: Drilling Optimisation





# Use Case: Proactive Monitoring

Internet Explorer

http://sspp/sites/portal/jsp/StaticPages/Treemap.aspx

Treemap

Template Management Plan Management Activity Management Monitoring Configuration Reports Search

### Treemap

UTL@Convent				HTU1@Convent			
Steam System				ChargingAndHeating			
MP to LP Letdown Valve Position - MP Overpressure	Steam Flow to Flare - #2	LP Steam Flow Rate to FCCU Overpressure	LP to LP (50#) Overpressure	Firebox Temperature	Heater Outlet	Heater Outlet	Heater Outlet
MP to LP Letdown Valve Position - MP Overpressure	Steam Flow to Flare - #2	LP Steam Flow Rate to FCCU Overpressure	LP to LP (50#) Overpressure	Firebox Temperature	Heater Outlet	Heater Outlet	Heater Outlet
Steam Flow to Flare - #1	Steam Flow to Flare - #3	LP Steam Flow Rate to FCCU Overpressure	LP to LP (50#) Overpressure	Firebox Temperature	Heater Outlet	Heater Outlet	Heater Outlet
Fuel Gas				Water Pretreatment			
Natural Gas Input to HP RFG	Hydrogen Content of Fuel Gas - East System	Demin Water Flow Rate to Demin Desalinator		Heater Outlet	Heater Outlet	Heater Outlet	Heater Outlet
East LPFG Heating Value	West LPFG Heating Value	Total RFG to Users	pH - Demin Water Desalinator	Heater Outlet	Heater Outlet	Heater Outlet	Heater Outlet
Raw Water Total Rate of Change - (32V-4, 32V-5, 32D-101, 32D-301)				Heater Outlet	Heater Outlet	Heater Outlet	Heater Outlet
High Pressure Warm Separator Outlet Temperature - Kero Train				Heater Outlet	Heater Outlet	Heater Outlet	Heater Outlet
Boler water treatment				Compressed			
Combined Solvent Total Outlet Flow Rate - (31C-808, 31C-809, 31C-810, 31C-811, 31C-856)				Hydrogen to feed ratio - Kero Train 3C-402			
Condensate Tank Level - Tank Level				Nitrogen			

Time range: 24-Mar-2015 11:00 to 25-Mar-2015 11:00

Color: Within limits, Cleared, Out of inner bounds, Out of outer bounds, No limits

Size by: % Time out of bounds

Limit type: Plan

167 Variables

### Filters

▼ Data

Site: ConventRefinery

Custom group: (No filtering)

Unit: 2 selected

Subsystem: (No filtering)

Functional owner: (No filtering)

Equipment type: (No filtering)

Category: (No filtering)

Priority: (No filtering)

Due date: All

Time range: Last 24 hours

Status: Active

Limit type: Plan Events

▼ Display

Condition: 5 selected

Group by: Subsystem

Color by: Momentary values

Size by: % Time out of bounds

Search text:

Zoom out, Zoom to, Reset zoom, Trend, Edit Activity, Edit Variable, Edit Assessment, Add Notification

# Use Case: Production Meetings

Generate Report

Start date/time:

24-Mar-2015

11:02

End date/time:

25-Mar-2015

11:02

E-mail addresses:

developer ;

Type:

Trend Report

Configuration:

Monitoring Report

Generate report

Provide the above options to generate the report, then click 'Generate' to generate the report.  
This will generate the report with the defined options and settings.  
  
The resulting report will be sent to you as an email attachment.  
  
Report delivery time is dependent upon **number of variables** and selected **time range**.

Generate

Cancel

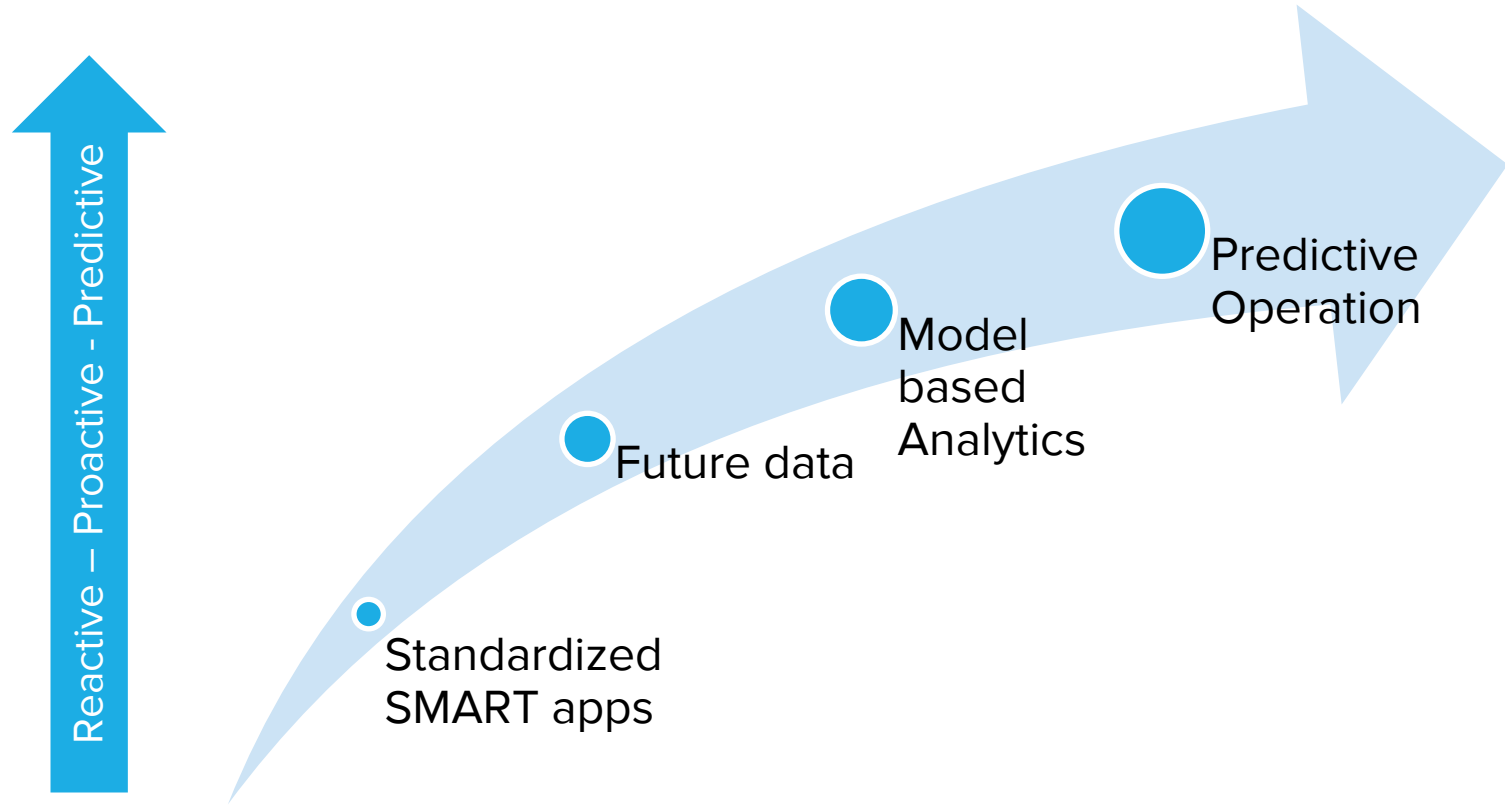
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# Road to the Future



# Operational Intelligence to deliver Smart Solutions

Centralization and standardization of data access and toolkits to deliver a one-stop-shop for data and solutions



## Business Challenges

- Operational Performance
- Asset Integrity & Reliability
- Disciplined Delivery
- Empowered People

## Solution(s)

- Treat data as an Asset
- Platform approach to integrate data and capabilities
- SMART solutions to support business processes

## Results and Benefits

- Change operating model from Reactive – Proactive – Predicted
- Increased reliability
- Higher performance



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Shell Global Solutions



THANK  
YOU



The background of the image is a complex, abstract pattern of blue and white triangles of various sizes, creating a mosaic-like effect. The triangles are arranged in a way that they seem to flow and shift, giving a sense of movement and depth. The colors range from light blue to dark blue, with white used for the negative space between the triangles.

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