OSIsoft.

REGIONAL SEMINAR 2012

APAC

The Power of Data

OSIsoft and the Quest for Value

Presented by **Don Smith**
VP Customer Support

Quest for Value, Navigate to New Frontiers

- Capture Information
  - Get instruments, laboratory, manufacturing data
  - Collect a lot of manufacturing data into a common format
  - Provide data access to as many stakeholders as possible
- Create analysis and actionable strategies
- Keep the system highly available (trustable)
  - Weyerhauser paper operators experience

Typical Early PI deployment

- Focus on collecting data, more interfaces broader scope
- Become overwhelmed with data, lack of enabled users, where do I start!
- Feeling is restricted by staffing and priorities
  - Kennecott copper commissioning
- Some value but many more opportunities?

Suzlon, wind farm

Define Operational Imperatives

- Investors want to know production vs expected, investment performance
- Vendors warranty management
- Service, Maintenance
- Prediction of future power availability for scheduling
- Investors seem nervous ($1MM/Mw)

Value Propositions

1. **Turbine Manufacturer Warranty Management**
   - "Fox Watching the Hens"
   - "Bathtub Curve" Implications for LTSA Concept
   - Need: Focus on Top-Ten Sources
2. **Increasing kWh produced – Wind Farm Operations**
   - Turbine Availability
   - Turbine Operating Efficiency

Value Propositions

3. Increasing value of kWh produced – Utility Operations

- Improving utility integration (forecasting and scheduling)
- Improving market value of power (real-time info to power marketing/trading floor)
- VAR/Grid Stability Management

4. "Intangibles" – Corporate Requirements

- Enterprise Integration,
- Separation of Process Control Network from User/Enterprise
- Regulatory & Reporting
- Technology Risk Management – Perception and Reality

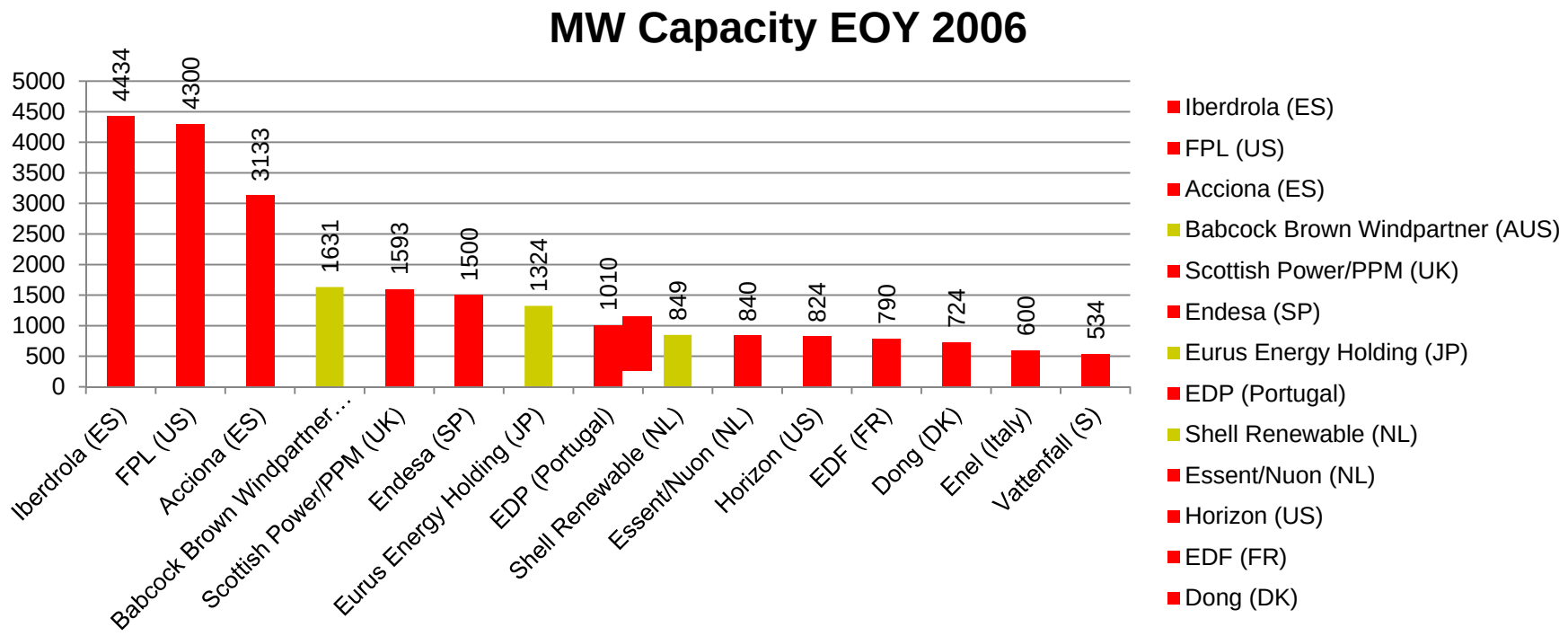
Performance affects Investment

- A typical utility scale wind farm may have 30 to 200 Turbines
- Large owners (e.g. Iberdrola – 3500MWs) may have thousands of turbines
- **A single percentage point gain/loss of "in-market" availability** (e.g. turbines available to operate when the wind is blowing) for
  - Iberdrola **Total Fleet** would result
    - in a 1st Year ROI/loss of **$4.3MUSD**.
    - NPV over 5 Years = **$13.5MUSD** @ 18% Discount Rate
    - Based on US prices, power rate in Spain is .07 to .10/kWh produced
  - For a **Single Wind Farm of 150MWs**:
    - In a 1st year ROI of $185,000
    - NPV over 5 years = $576,000 @ 18% Discount Rate

Some Suzlon Results

- Asset availability
  - 92% -> 98%
- Rapid deployment
  - Owner operator relationship
  - Vendor warranty relationship
- Technology guided by clear objectives

13 of top 15 Owner/Operators using PI to Manage Wind Farms

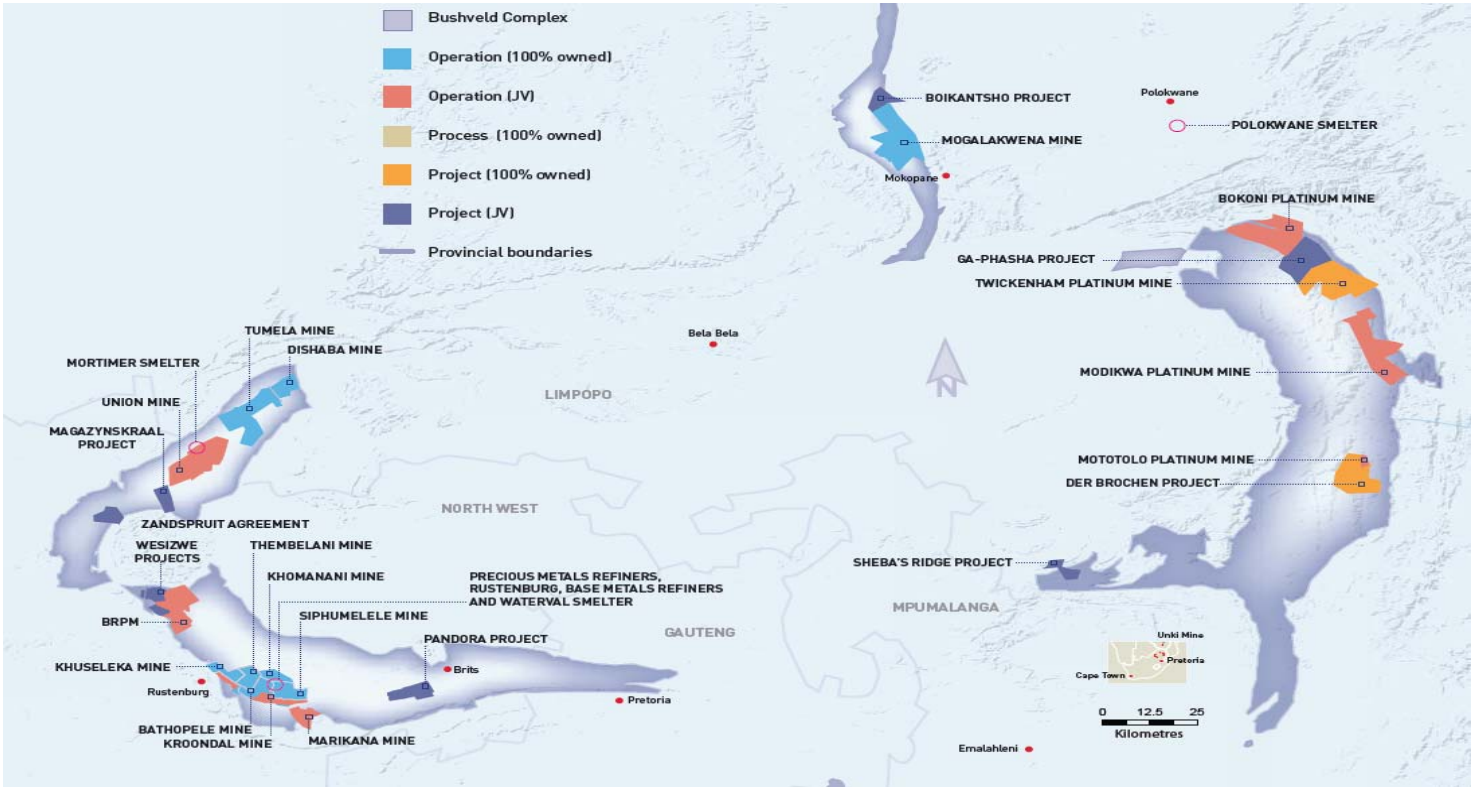


Source: Emerging Energy Research

Resources for the Value Quest

- Technical Support
- Field Service
- Learning (Training team)
- vCampus
- OSIsoft User Community
- Seminars, Regional, Developer Global UC
- OSI partners, OSI Partner Portal
- OSI Enterprise Relationship

Anglo American Platinum



Anglo American Platinum

Anglo American Platinum is the world's premier Platinum producer, supplying approximately 40% of the world's newly refined Platinum.

Process Division:

- 14 Concentrators
- 3 Smelters
- 1 Converter
- 2 Refineries
- 9 Geographic operational areas

Anglo …. Before view

- Individual Installs
- “PI 3” with ACE/MDB
- Little AF
- Corporate PI Pilot
- …..

Step 1 – Get PI Done Right!

- Designed Transition
  - Spot PI Systems
  - New Goals for PI Systems
  - PI 2010 Technology

- Migrate/Upgrade Sites
- Remote and Onsite Installs
- mPI (Managed PI) Install
- Corporate Roll-up PI Server
- Added more data sources

➢ Integrated Real-Time Infrastructure

Roll Out - "Licensed Assets"

Site Name/Location	Site Survey Received	Site Survey Finalized	Installation Scheduled	Site Readiness Validation	Installation Completed
PMR Precious Metals Refinery	●	●	●	●	●
Waterval Smelter Complex	●	●	●	●	●
RPM Mogalakwena North Concentrator	●	●	●	●	●
Mortimer Smelter (Union Smelter)	●	●	●	●	●
RPM (R) Waterval UG2	●	●	●	●	●
OPM - Central role up "site"	●	●	●	●	●

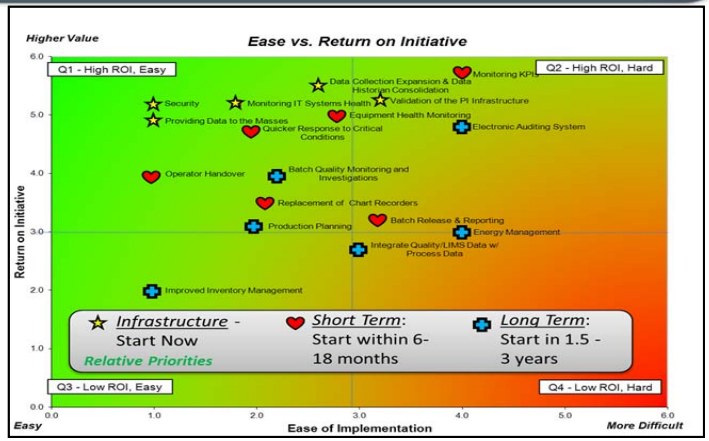
1 Value now. Value over time.

Step 2 – Get More Value From PI!

- Value Realization Plan (VRP) – Jan 2010
  - Business Leaders
  - Central & Site PI
  - IT
- Process To Draw Alignment
  - Industry Trends
  - Corporate Vision & Goals
  - Individual Customer/Group Needs
  - OSIsoft Product Roadmap
- Value Now
  - Identify Immediate Activity
  - Value Over Time
  - Align Long-term Activity with Goal Oriented Results

Value Targets

- Energy Monitoring
- Production Reporting
- Downtime Analysis
- Furnace Monitoring
- Pump Conditioned Based Maintenance
- Asset Optimization



OSIsoft monitors Power & Energy

60% of USA Generation

100% of the ISO's

75% of nuclear power

17 of the top 20 wind producers world-wide

50% of the Concentrated Solar Plants

The PI System –A "Defacto" Standard in Power Generation

Smart Grid + Renewables

Regulate Supply

Modify Demand

Accommodate Renewals

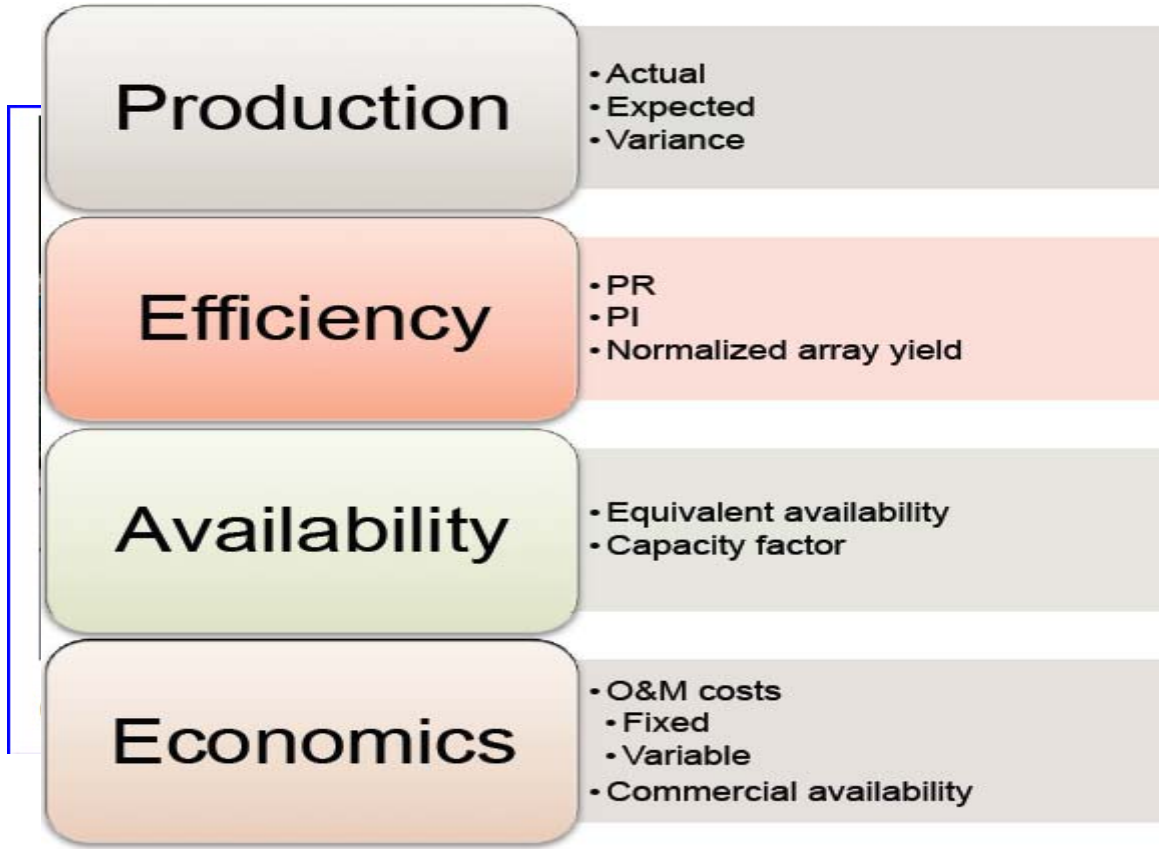
- Wind (forecasting)
- Solar (forecasting)

Accommodate Alternate Uses

Maintain Reliability

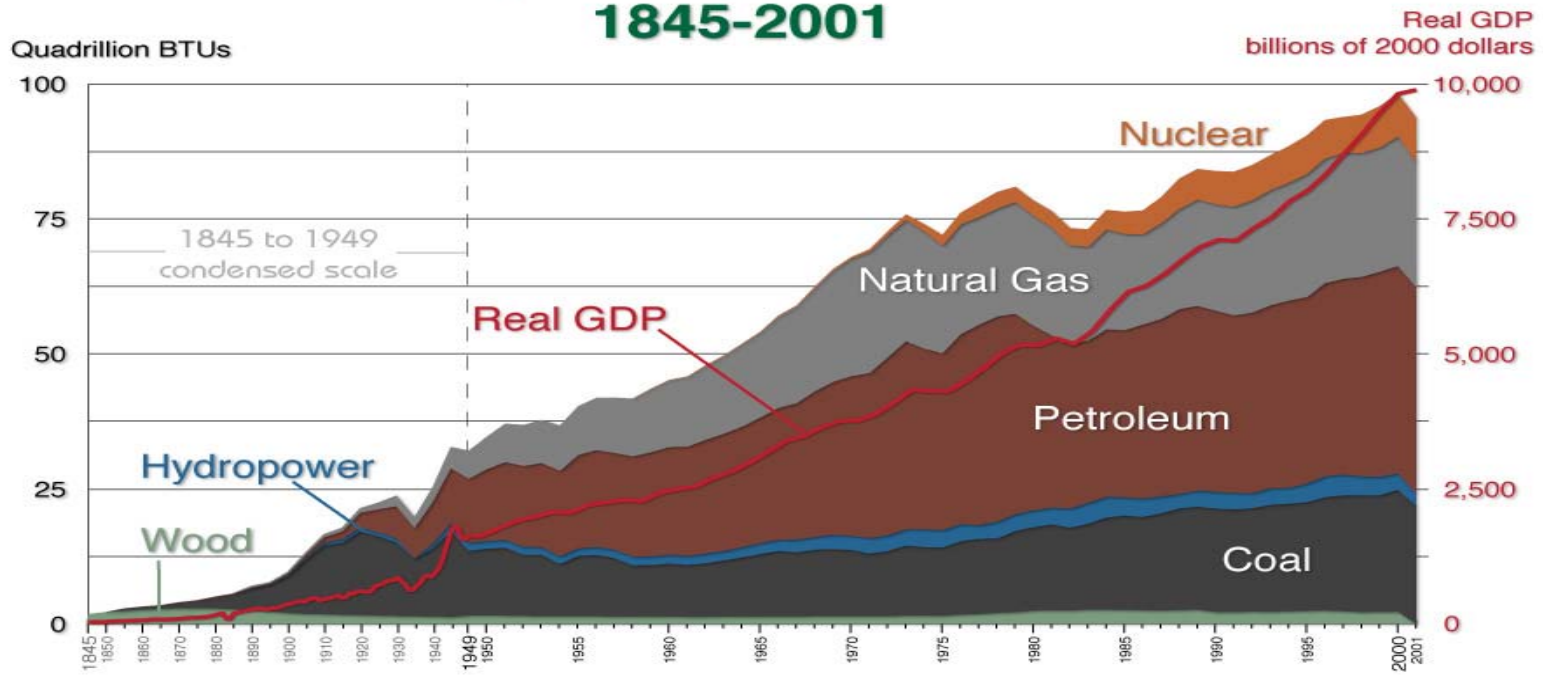
Solar Power

- Rooftop Systems
- Commercial Systems


Production
Actual
Expected
Variance
Efficiency
PR
PI
Normalized array yield
Availability
Equivalent availability
Capacity factor
Economics
O&M costs
Fixed
Variable
Commercial availability

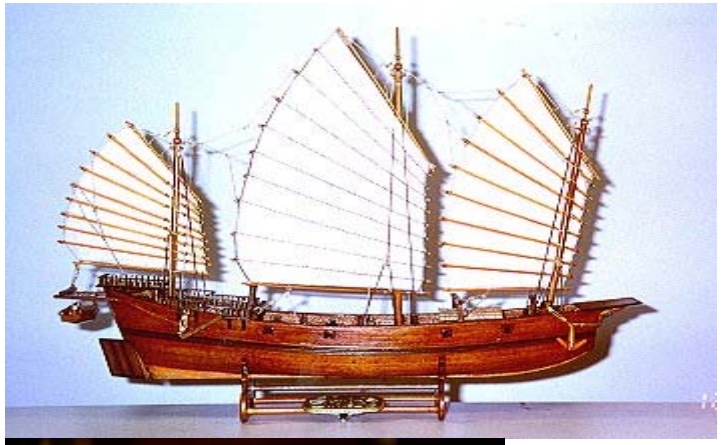
ENERGY

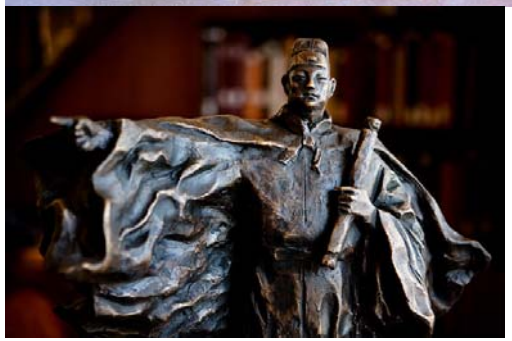
US Consumption by Source v. Real GDP 1845-2001



Sources: USDOE, EIA, Annual Energy Review 2001, Table F1a, F1b; and Real GDP data: Louis D. Johnston and Samuel H. Williamson, "The Annual Real and Nominal GDP for the United States,1790-Present" Economic History Services, Oct. 2005, http://www.eh.net/hmit/gdp

Technology determines who wins

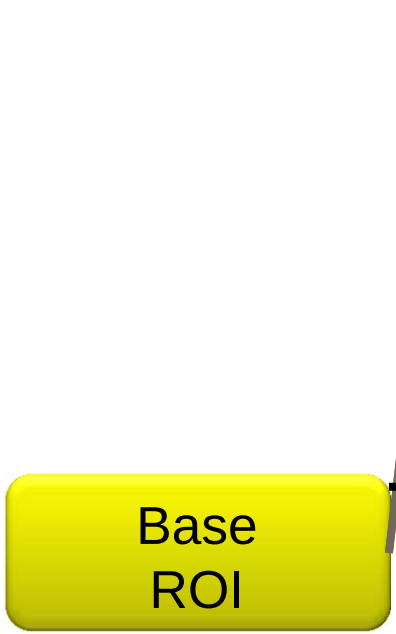




Zheng He

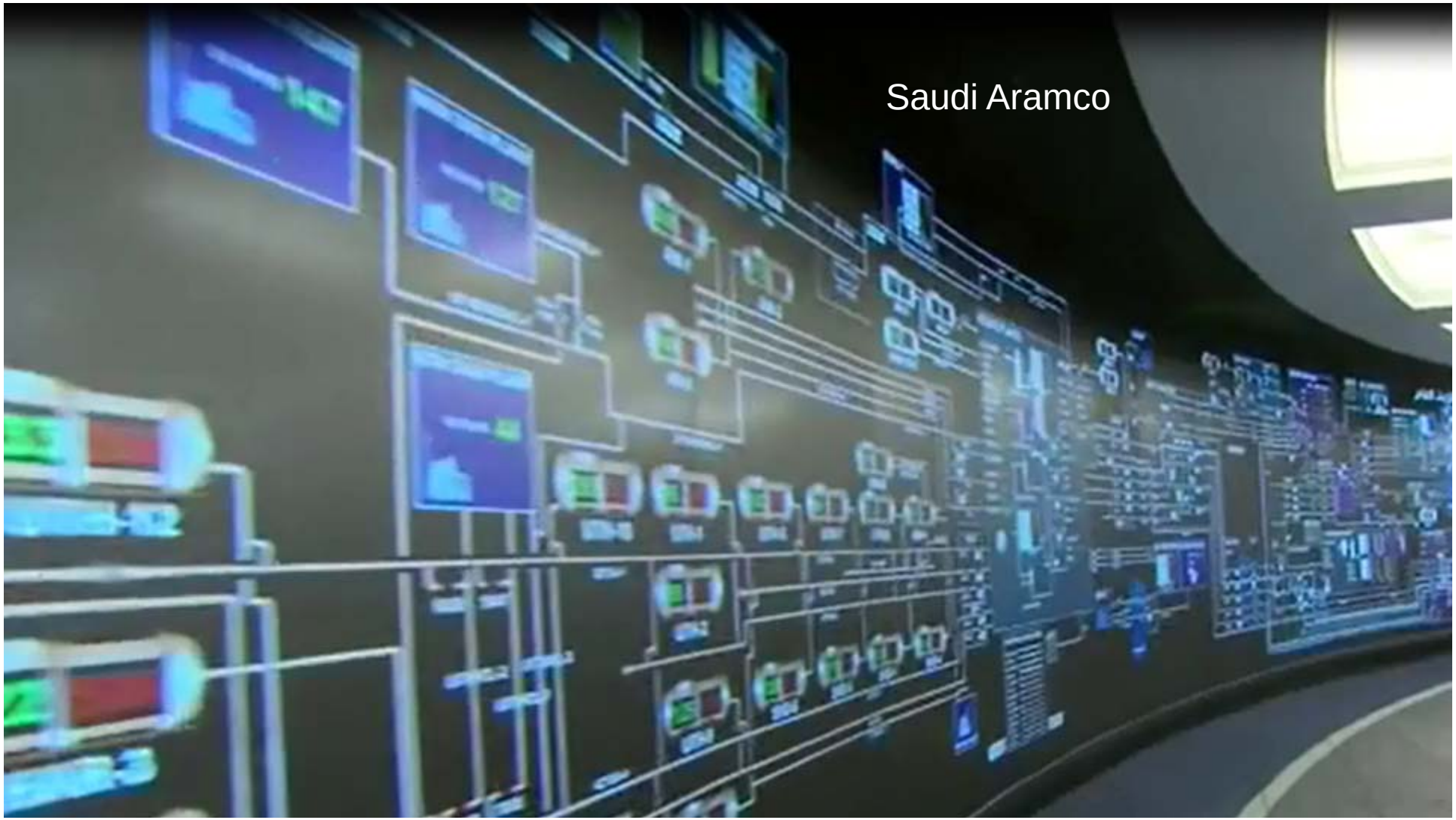
California ISO – Monitoring Center

Step Change in Value



- Expansi
  Renewal of
  Infrastructure
- Real-time Enterprise Connectivity
- Common Substrate for Solutions

Increased ROI


Saudi Aramco

Questions?

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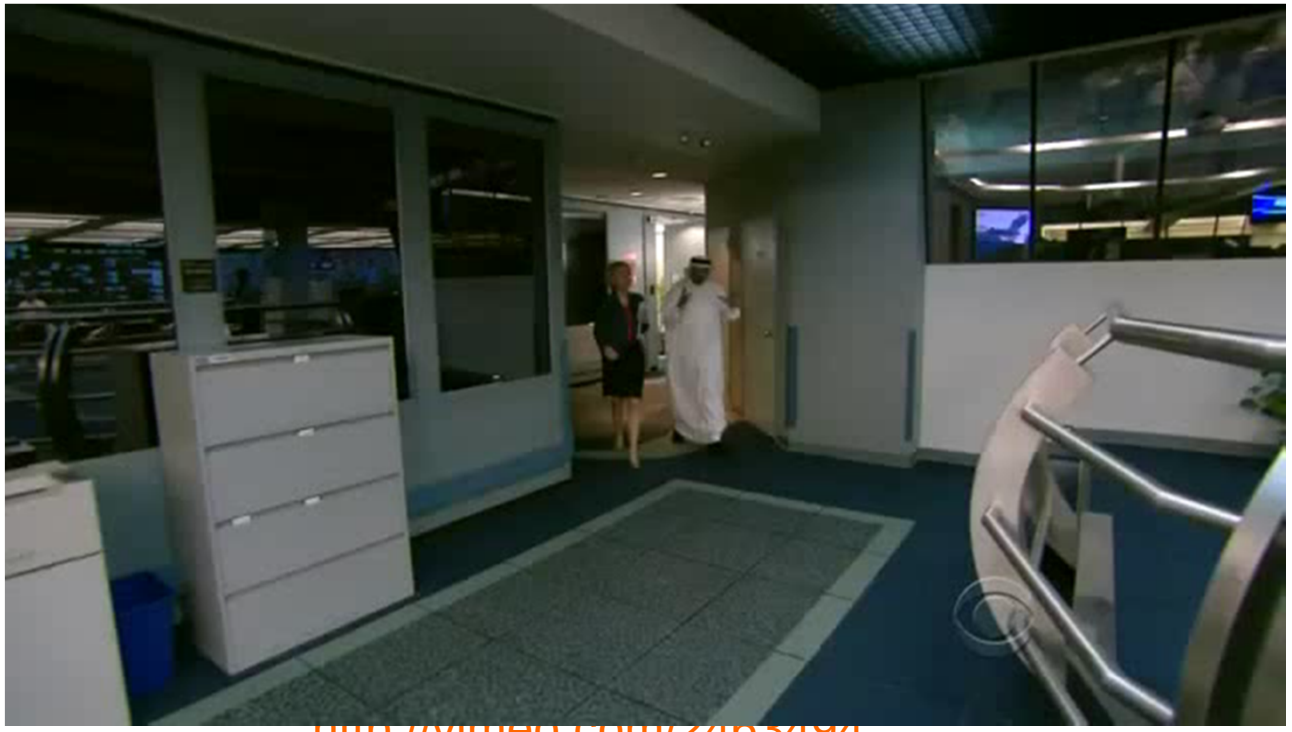

http://vimeo.com/2463494

THANK YOU

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