



# **RtPM for Asset and Environmental Monitoring**

**Dave Wilson - National Grid**

**Paul Verey - Capula**

# Capula - Background

## Company Overview

- Capula employs over 200 professional staff located at our Gloucester, Stone, Battersea and Cumbria Offices
- Capula has over 30 years of experience of successfully delivering real-time control, automation and information systems to our chosen markets
- Capula's solutions control about 50% of the electricity in the UK Transmission Network
- Capula provides information and control systems to the largest coal fired Power Stations in Europe
- Capula provides systems and services to the majority of the plants at British Nuclear Groups Sellafield site

## RtPM Capabilities

- OSIsoft Value Added Reseller for the United Kingdom
- Consultancy, Implementation and Project Management Services for RtPM and PI Systems
- Architecture and Integration Design, software development, Value Added Products
- Management Information Dashboarding Systems
- 24/7 Software Reliance Program for software update and maintenance
- Training Courses to complement OSIsoft and Capula products

[www.capula.co.uk/pi.html](http://www.capula.co.uk/pi.html)

**VALUE NOW, VALUE OVER TIME**



# National Grid - Background

## National Grid Transco - National Grid plc

- October 2005, Transco plc became National Grid Gas plc
- July 2005 National Grid Transco plc changed its name to National Grid plc.
- 21 October 2002 - Lattice Group plc merged with National Grid to form National Grid Transco plc

## British Gas Corporation - Lattice Group

- October 2000, Transco became a part of the Lattice Group plc. Two years on, Lattice Group plc merged with National Grid to form National Grid Transco plc - the UK's largest utility
- July 2005 National Grid Transco plc changed its name to National Grid plc
- October 2005, Transco plc changed its name to National Grid Gas plc

## National Grid Group

- December 1997 - Energis demerged from National Grid
- December 1995 - The Regional Electricity Companies, floated the company on the stock exchange

[www.nationalgrid.com/UK](http://www.nationalgrid.com/UK)

VALUE NOW, VALUE OVER TIME

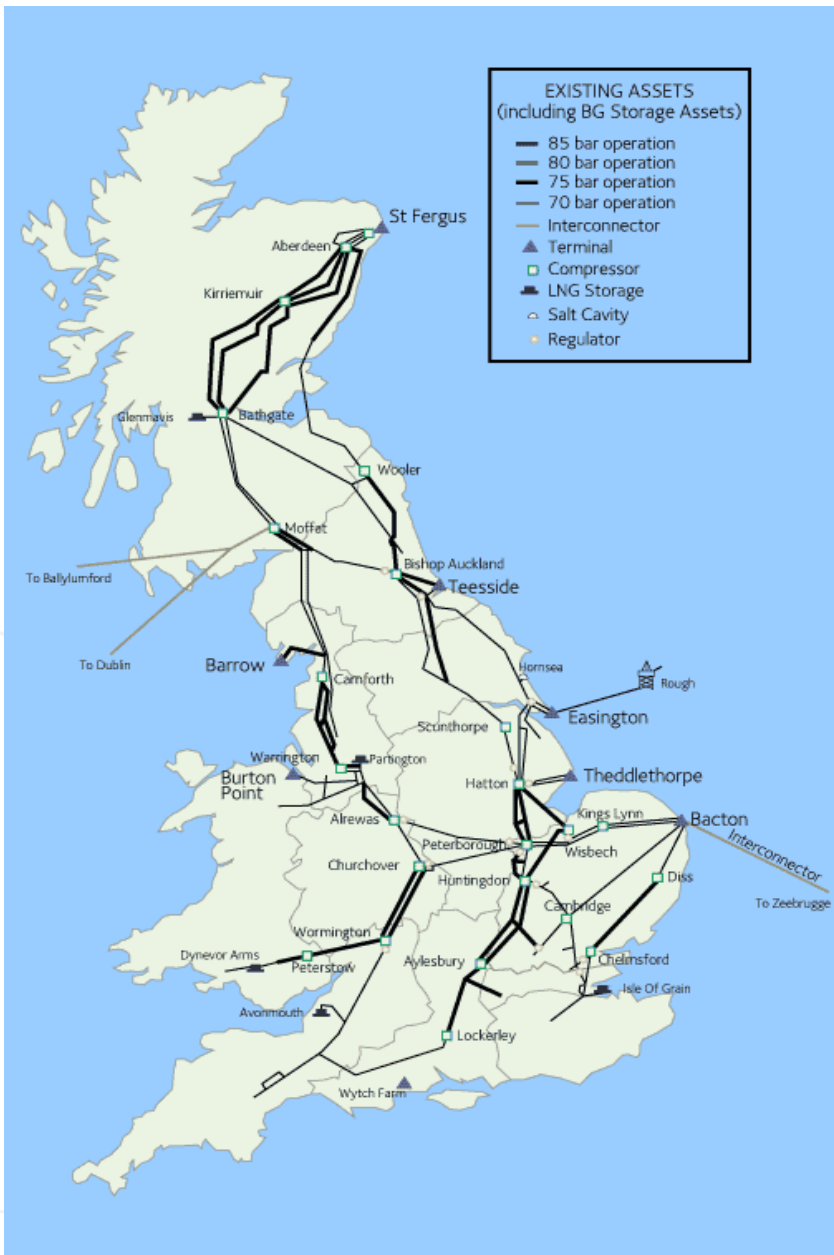


# Transmission Statistics

- In the UK, we own and operate the high-voltage transmission system in England and Wales which consists of approximately:
  - 4500 miles of overhead line
  - 410 miles of underground cable
  - 341 substations
- We own and operate the high pressure gas National Transmission System in Britain consisting of approximately:
  - 4200 miles of underground high pressure gas pipelines
  - Pressure 45 – 100 BarG
  - 27 compressor stations

VALUE NOW, VALUE OVER TIME



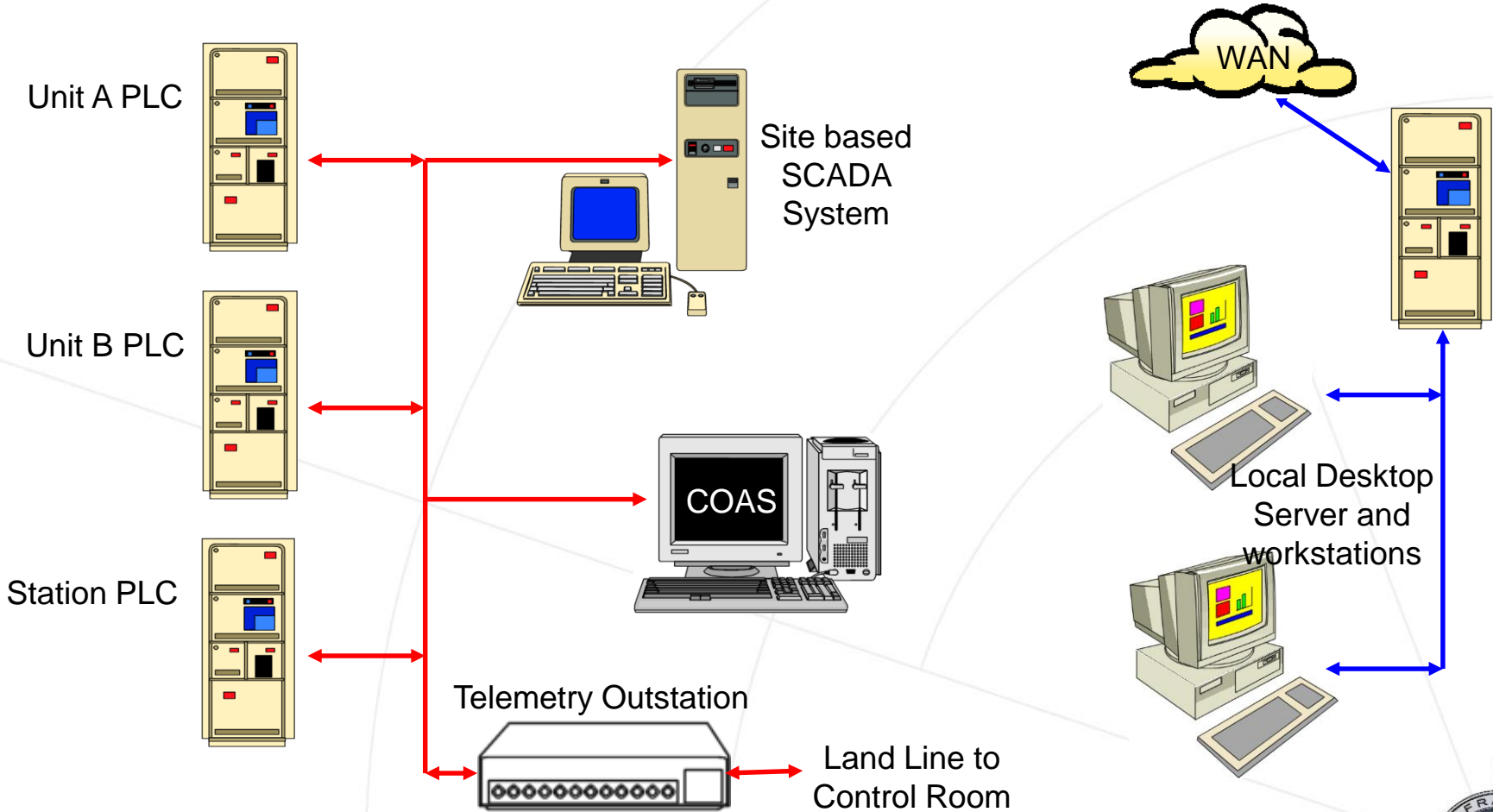


- 7 Network Entry Points
- 27 Compressor Stations
- 74 Compressor drives
  - 69 Gas Turbines
  - 5 Electric Motor
- 4200 miles HP pipe work
- 150+ Off takes

VALUE NOW, VALUE OVER TIME



# Typical Site Infrastructure

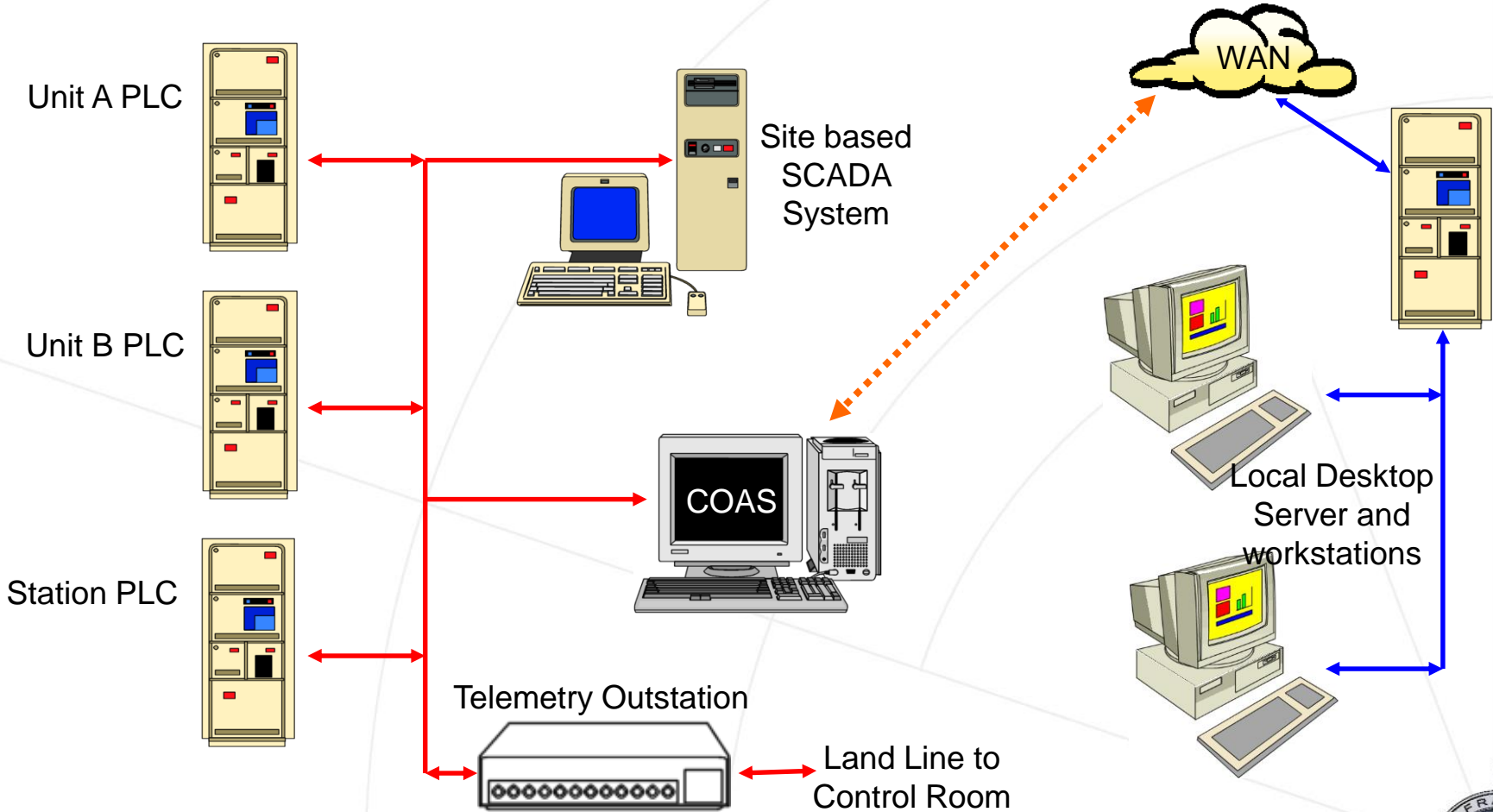


VALUE NOW, VALUE OVER TIME





# Typical Site Infrastructure 2



VALUE NOW, VALUE OVER TIME



# Why PI ?

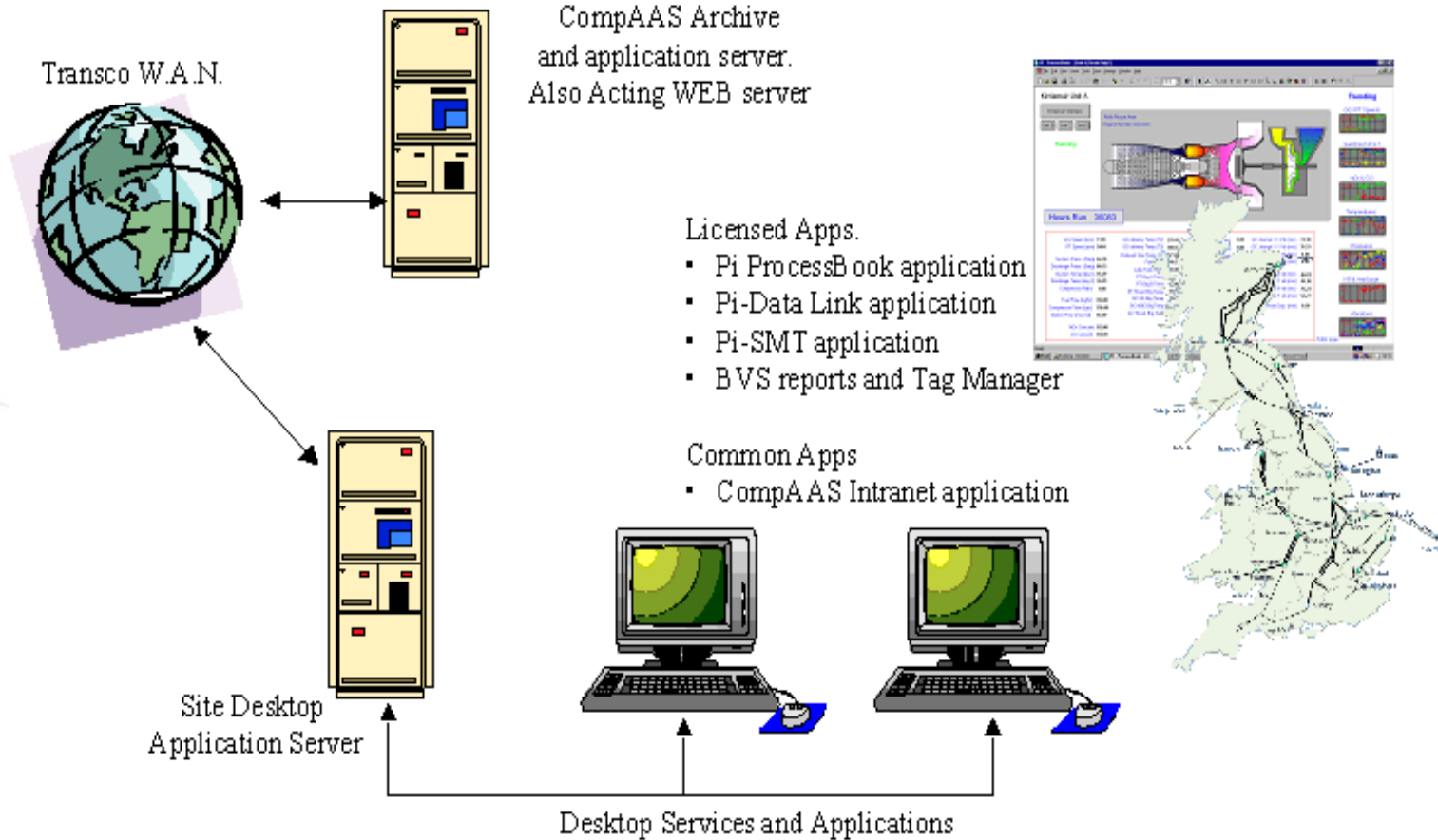
- No bespoke software – all off the shelf
- Compact storage solutions
- Ease of setup
- Support from Vendor
- Ease of Self Support
- Full Microsoft Compatibility

VALUE NOW, VALUE OVER TIME





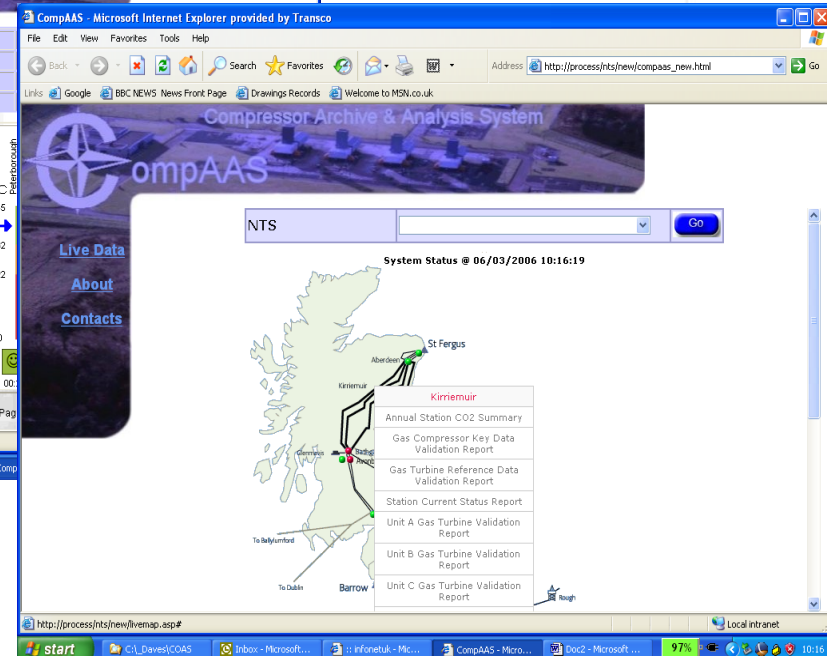
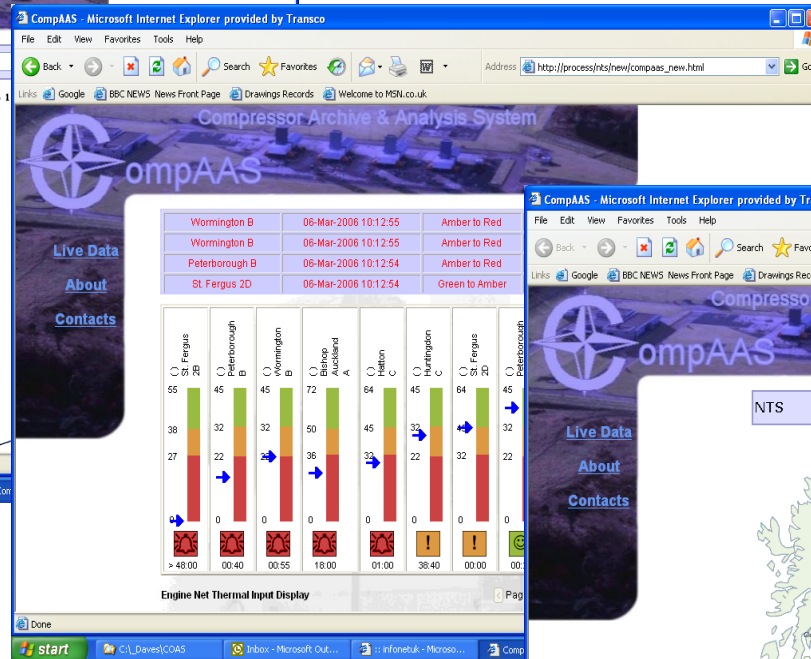
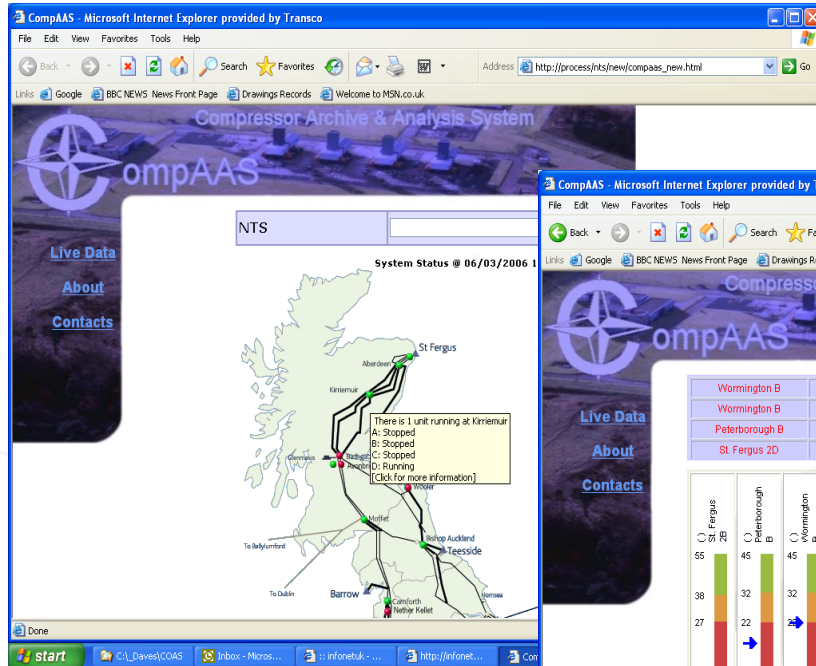
# User Infrastructure



VALUE NOW, VALUE OVER TIME



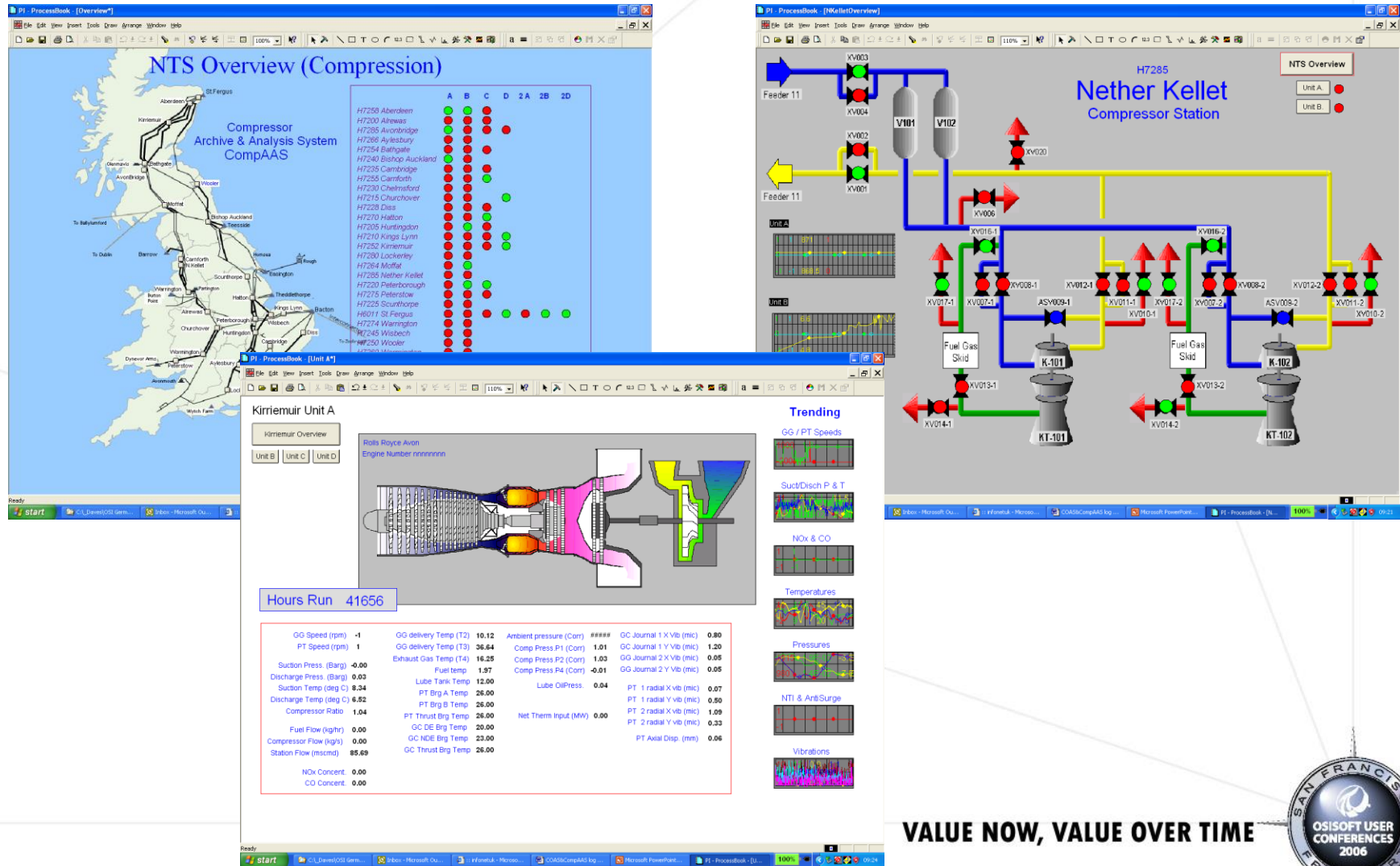
# Sample Intranet Web Pages



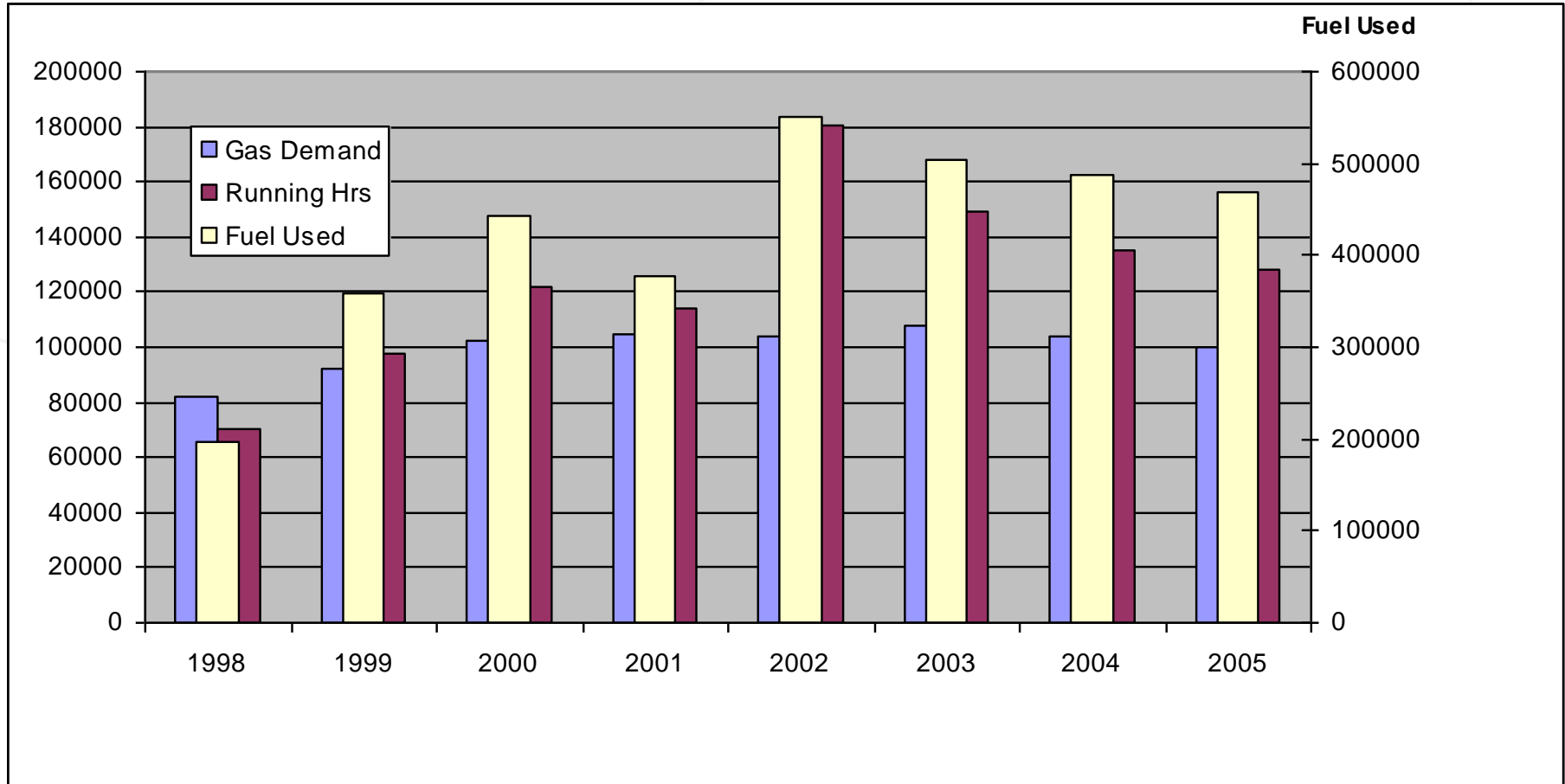
## VALUE NOW, VALUE OVER TIME



# Sample Processbook Pages



# Emmissions reductions?



VALUE NOW, VALUE OVER TIME



# Business Benefits 1

- FUEL SYSTEMS

- Fuel usage comparisons unit/unit and unit/test-bed show areas for improvement
- Savings to be made on fuel & credits with EUETS @ £20/tonne
- Possible savings in region of 5% of total fuel bill plus equivalent in credits from EUETS equated to £2M in 2005, excluding any penalties which would have resulted from data loss etc
- Identified areas where Electric Drives could be utilised in place of traditional Gas Turbines

VALUE NOW, VALUE OVER TIME





# Business Benefits 2

- Compliance (EUETS & IPPC )
  - Difficult to quantify, but having access to live data allows us to see where we could be non-compliant. i.e. loss of data for more than 24 hrs. or exceeding maximum limits for site emissions
  - Non compliance results in fines and improvement notices, making for more work
  - Continuous stack monitoring quoted at £3M annual, with £3M hardware costs across the fleet

VALUE NOW, VALUE OVER TIME





# Business Benefits 3

- Network Management
  - Visibility of data in the Control Room results in new rules for compressor availability
  - Education of Control Room staff on issues with low speed running of Gas Turbines
  - Reduction of fuel and emissions

VALUE NOW, VALUE OVER TIME



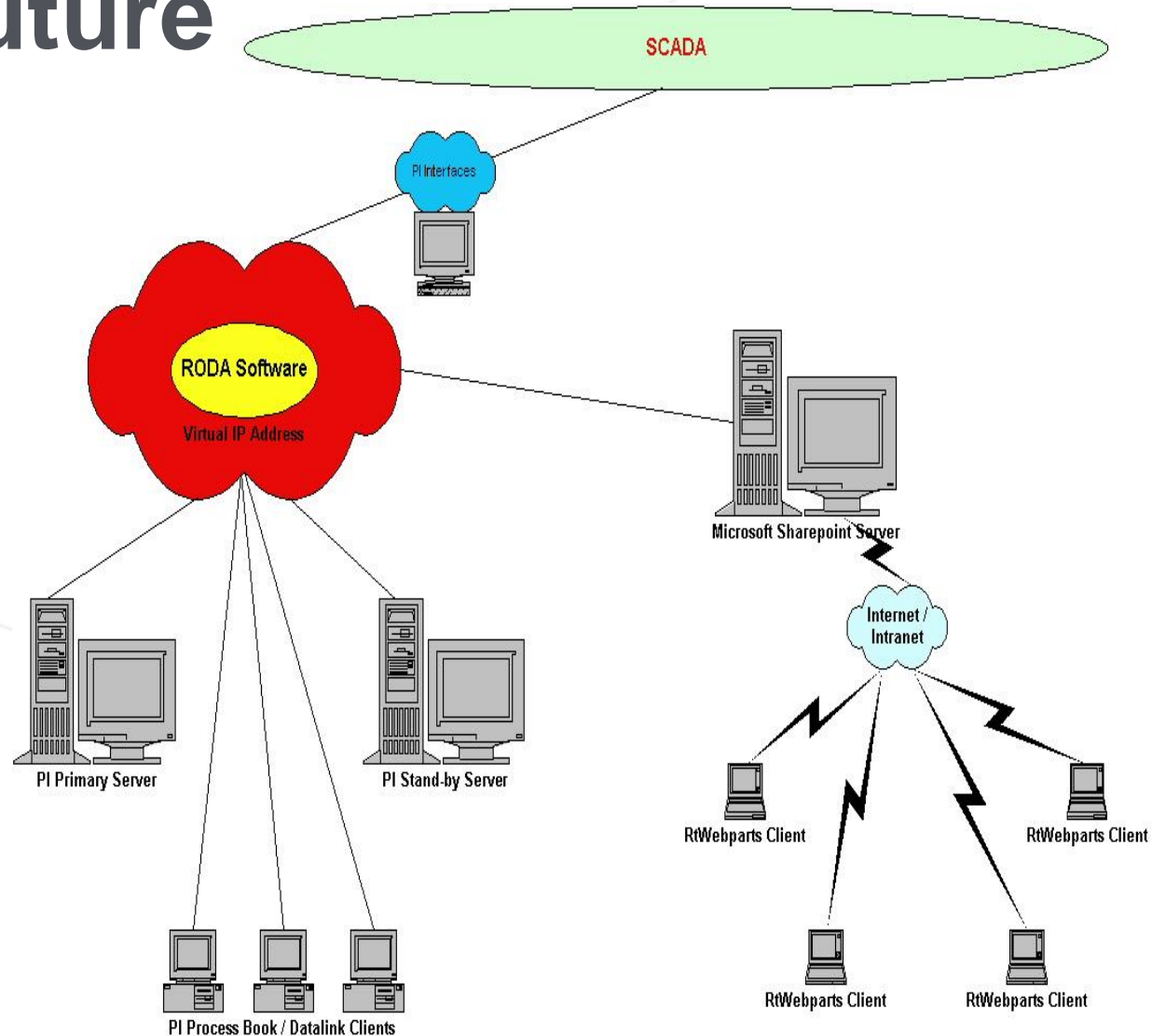
# Where Next?

- Resilience of data for Compliance
  - Data servers and separate Web server
  - RODA Software
  - RtWebParts
- Centralised systems
  - One central core application
  - Centralised reporting
  - Control of calculations etc.
- National Grid Electricity Substation Monitoring

VALUE NOW, VALUE OVER TIME



# The Future



**VALUE NOW, VALUE OVER TIME**

