Process Management

Network Power

Climate Technologies

Appliance Solutions

When the stakes are high

Industrial Automation

Motor Technologies

Professional Tools

Storage Solutions

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Process Performance Management …..

…..The Bigger Picture.

Presented By: Steve Coulson

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Acknowledgments

- Global Data Management Survey 2001 PricewaterhouseCoopers
- “Delivering Key Performance Indicators” by Hubert Goodman Jr., DM Review
- “Event-Driven Process and Performance Management” – Michael Scofield, DM Review
- Business Intelligence – The Savvy Managers Guide by David Loshin
- Information Strategy: Defining High-Quality KPIs for the organisation as a Whole by Jane Griffin – DM Review
- Supporting KPIs with the Data Warehouse by William McKnight
- Many Emerson Colleagues
- The kind permission of TransAlta and ESB in the use of some of their data.

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Main Topics

- Key Performance Indicators (KPIs) What and how?
- Case Study 1
- Case Study 2
- KPI’s the Broader Perspective of VARs
- Summary

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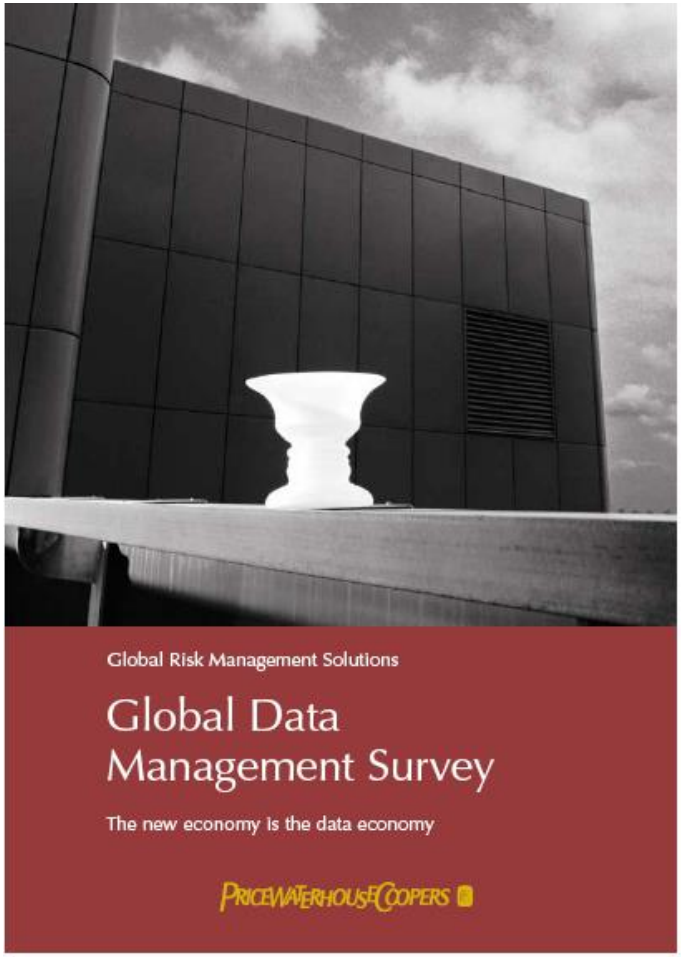
PWC Global Data Management Report



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PWC Report Statistics –

The Down Side

- 75% suffered significant problems
- 1/3 fail to bill or collect receivables
- 40% have board approved data strategy

The Up Side

- 3/4 reported delivered improved bottom line
- 60% cut processing costs
- 40% boosted sales

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PWC Report Summary

- Critical to the future of business
- Substantially influence the bottom line
- Data value and extraction high on board agenda

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PWC– A Final Note

- “Companies that manage their data as a strategic resource and invest in its quality, are already pulling ahead in terms of reputation and profitability, from those who don’t.

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Key Performance Indicators

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What is a KPI?

- “A business calculation that allows macro-level insights into the business process, to manage profitability”……Hubert Goodman Jr.

- “Truly relevant KPIs, regardless of their orientation, provide a benchmark by which you can judge the performance of the entire business, within the context of the success or failure to meet its goals and objectives”…….Jane Griffin

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Key Performance Indicators

- Identify operational performance information
- Clear understandable financial elements
- The Finance Department is the ultimate arbiter
- Work with Finance and process owners
- Process measures should be integrated with KPIs
- Automated
- Use a top down base up approach

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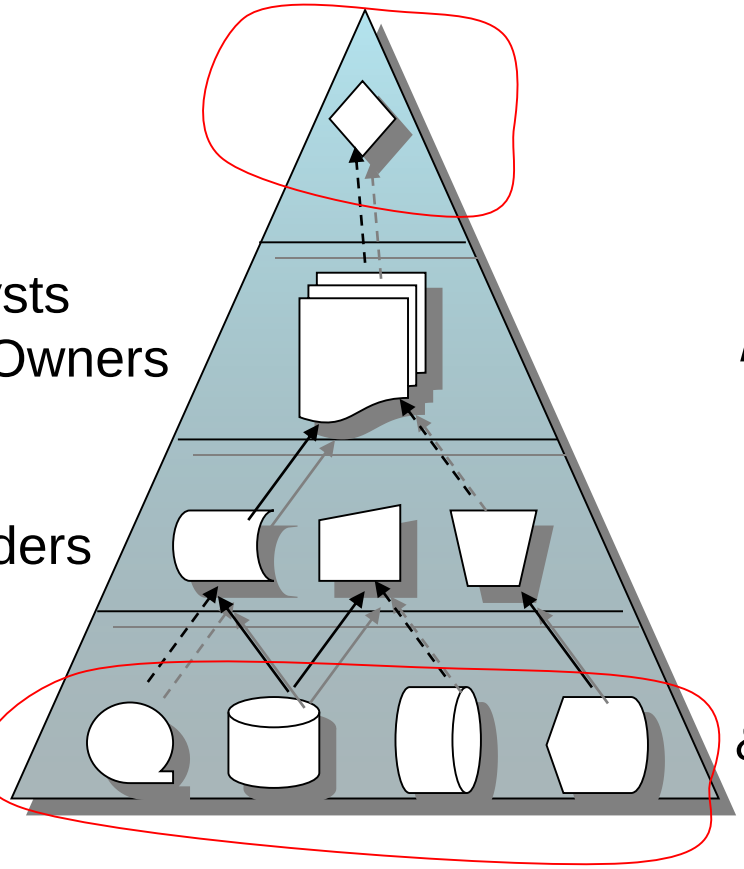
Key Performance Indicators

Executives

Financial analysts
Business Process Owners

Business
Operations Leaders

Supervisors
& end users



KPIs

Management Reports
/ Performance Metrics

Production Reports &
Data Mart Analysis

Real time Information
&Transaction Systems

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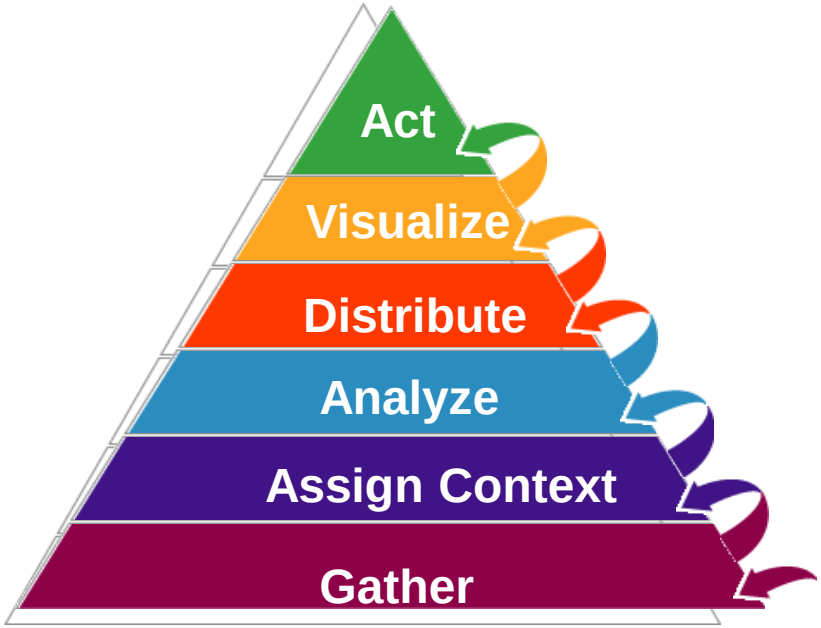
Key Performance Indicators



Is this the Power of Pi??

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Case Study 1 – ESB - Background

- Irish Electricity Supply Board
- Vertically integrated generation to distribution.
- 8000 employees, 1.5M customers
- capacity 5000 MWs, peak load 4300 MWs
- Deregulated market.

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Case Study 1- ESB - Objectives

- Real time loss data on a monetary basis
- Real time monitoring of equipment run hours and warm / cold shutdowns / start ups.
- Optimise boiler soot-blowing
- Desktop provision of pertinent data to facilitate better decisions at station and corporate level
- Present availability information.

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Case Study 1 – ESB - Measures

PI Performance Equation based measures

- Rolled Up Station Capacity
- Operating Efficiencies at station level
- Time averaged boiler efficiency
- Time averaged boiler load

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Case Study 1 – ESB - Measures

RTO & Model based measures

- Thermal Efficiency
- Fuel Flow
- Current Unit Cost
- Steam Turbine Efficiency
- Excess Oxygen Loss Cost
- Boiler Fouling Cost
- +others

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Case Study 1 - ESB - Measures

Asset Management Functions

- Run Hours
- Current Operating State
- No of Start / Stops
- Unit / Station Run Hours
- Number of stops, cold / warm / hot starts.

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Case Study 1 – ESB - KPIs

RTO+ Inferential Measurements

- Cost of operating at current versus target conditions
- Fuel consumption for each generating station
- Flue gas temperatures in the boiler

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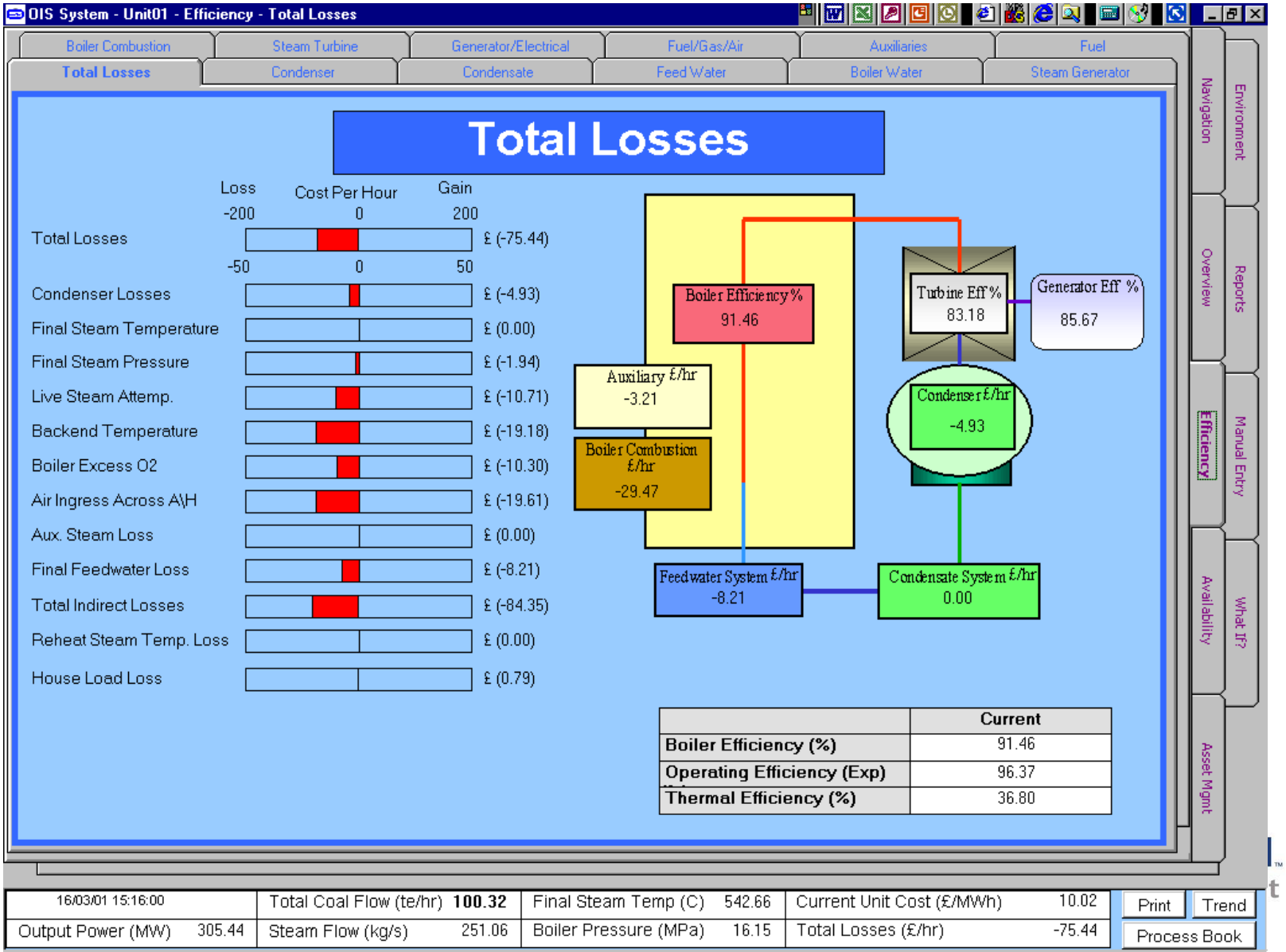
Case Study 1 – ESB - KPI Displays



Case Study 1 ESB – The Results

- Real Time plant data and information available to people across the organisation
- Improvement in operating efficiency
- Improvement in Plant Availability and Reliability
- Better Asset Management
- Reduction in Chart Recorders
- More data assisted in lower staffing level situations
- Improved productivity of Hydro operation

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Case Study 2 – TransAlta – Background

- Canada's largest non-regulated generation company – In 2000

  7.3 Gigawatts capacity

- Industry Changes

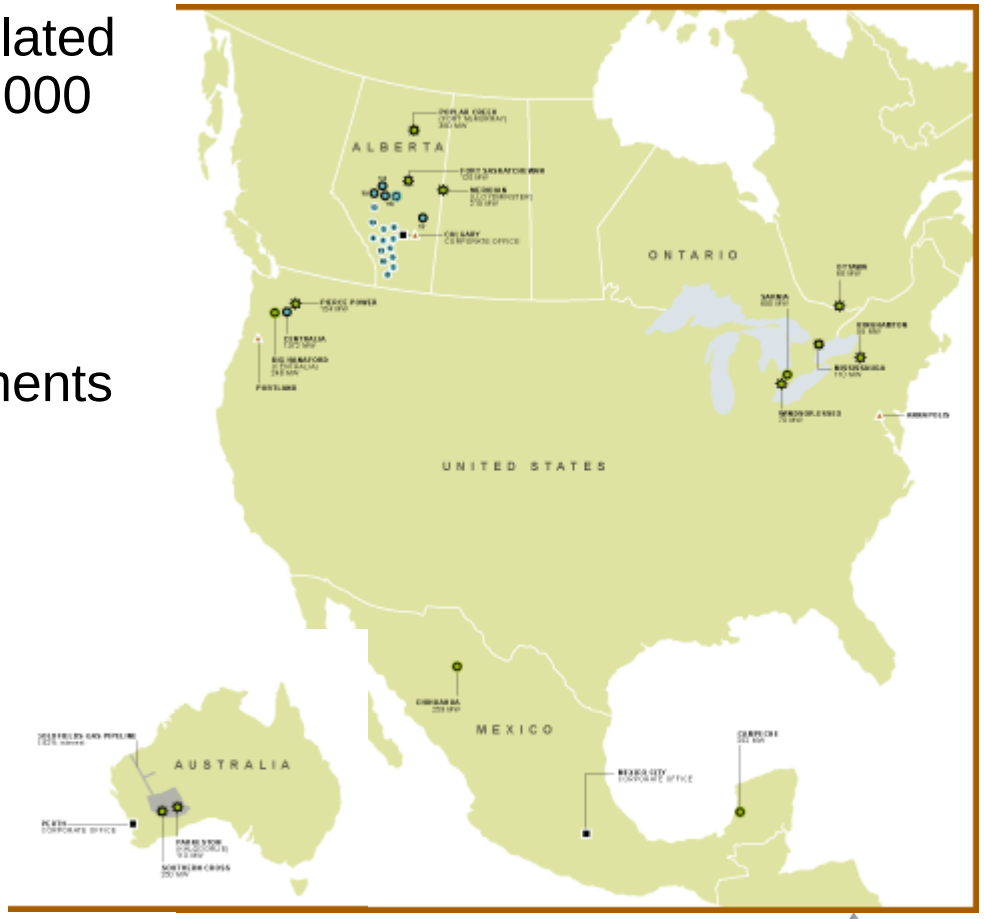
  Jan 01 – Purchase agreements

  Apr 02 – Generation focus

- Growth Strategy

  2002 – Capacity = 10GW

  2005 – Capacity = 15GW



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Case Study 2 - TransAlta

- Optimize plant equipment operation in Real Time
- Optimize plant equipment operation in Unison
- Provide a direct assessment of business impacts of change (markets, equipment status, customer)
- Make consistent KPI's visible to all
- Develop technology for rapid deployment and change

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Case Study 2 – TransAlta - Objectives

- To significantly minimize the cost of the operation of the utilities plant
- To provide advisory information on how the utilities plant should be run to increase the overall economic benefit to TransAlta / host site

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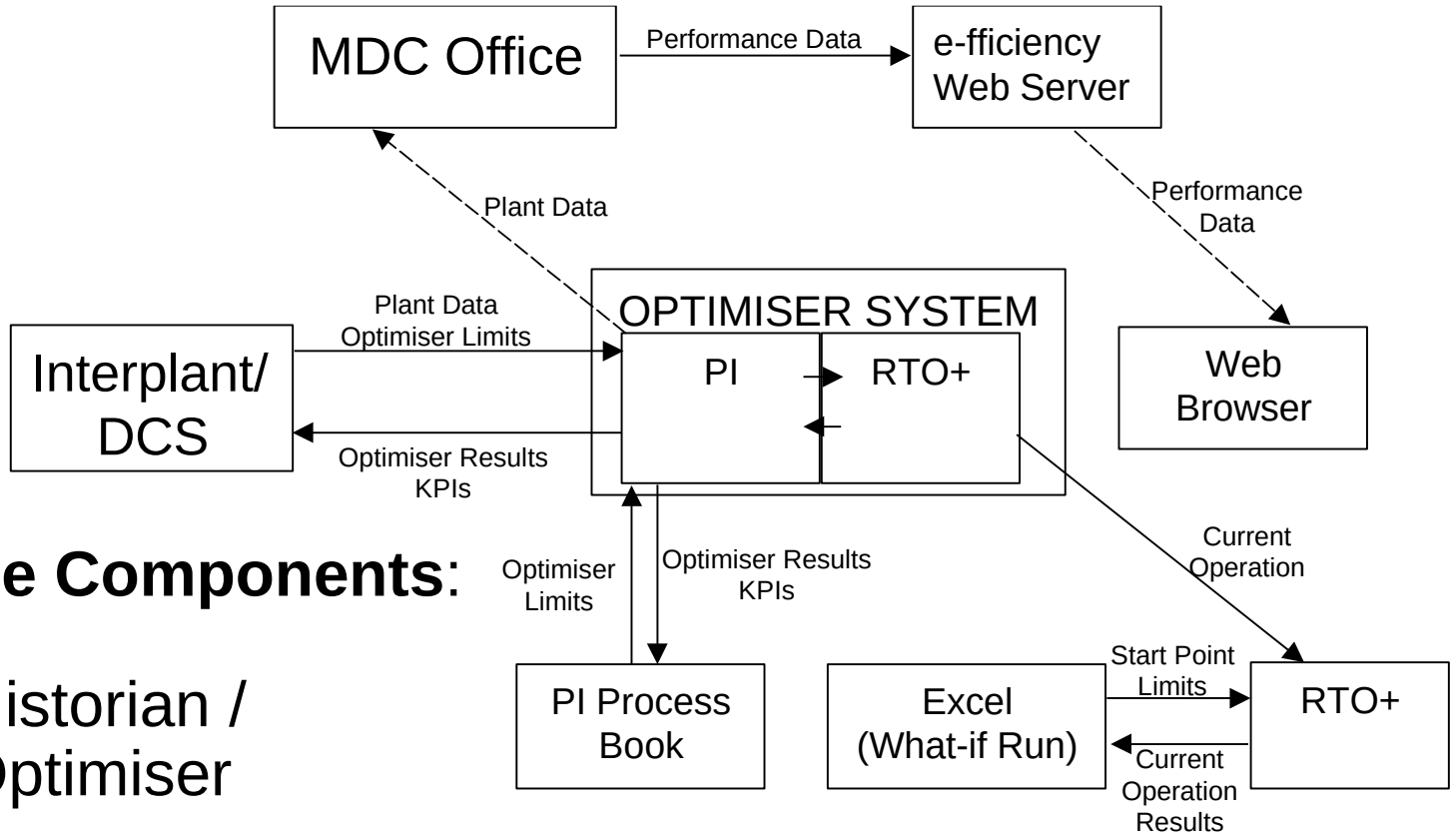
Case Study 2 – TransAlta - Deliverables



Three Components:

- Historian / Optimiser
- E-fficiency
- KPI Calculations

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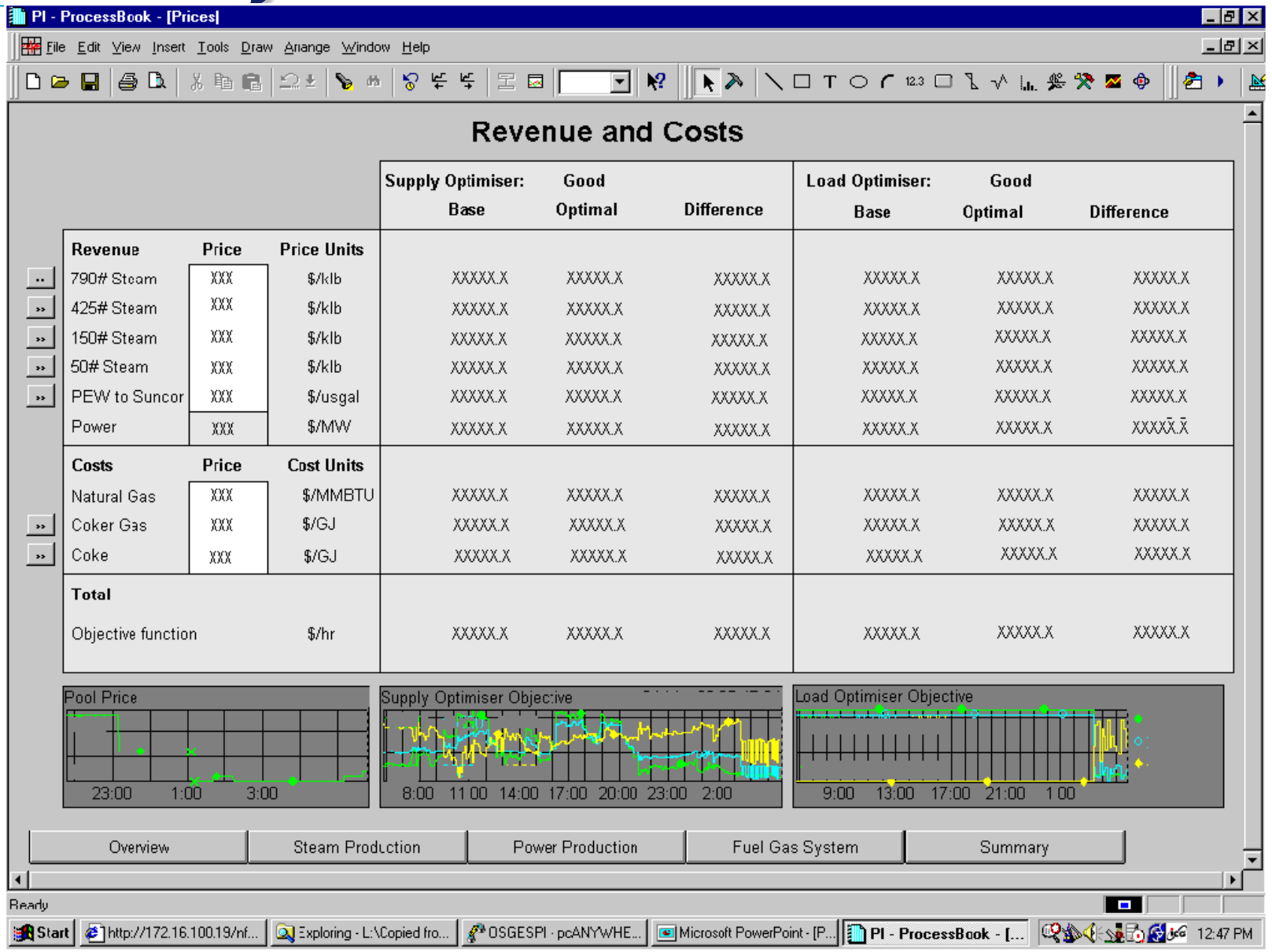
Case Study 2 – TransAlta – KPIs



Case Study 2 – TransAlta – Results

- Benefits
  - Estimated Annual Benefit > CA$10 M
  - Project cost $450k
  - Payback period 2 months
- Benefits Breakdown
  - Offline Benefits
    - Optimisation of fuel usage ~55%
    - Change in GT operation at low pool price ~25%
    - Management of steam let-down ~10%
  - On-line Benefits
    - Tracking current operating conditions & prices ~10%
  - Open-loop to Closed Loop
    - By closing the loop (additional) ~30%

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Case Study - Conclusions

- The Value of Data
- Information Gap Bridge
- Key Performance Indicators
- People make the difference

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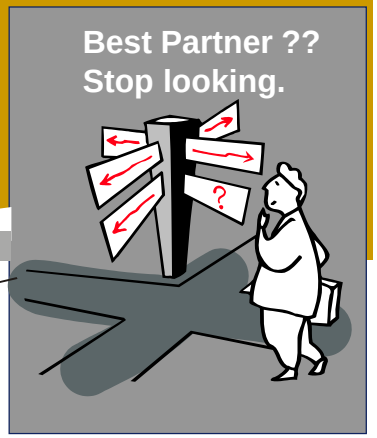
Partnership Between OSI and Emerson

Emerson : OSI Strategic Global Business Partner

Our partnership with Emerson delivers superior value to our common customers through integrated development.

PLATINUM **V**alue **A**dded **R**eseller (VAR) and OEM (DeltaV)

We are recognized as strategic global partner for your Services



What the VAR brings to the table:

- Comprehensive Offering
- Enhanced Operational Excellence
- Service Contract Experience
- Product Based Solutions

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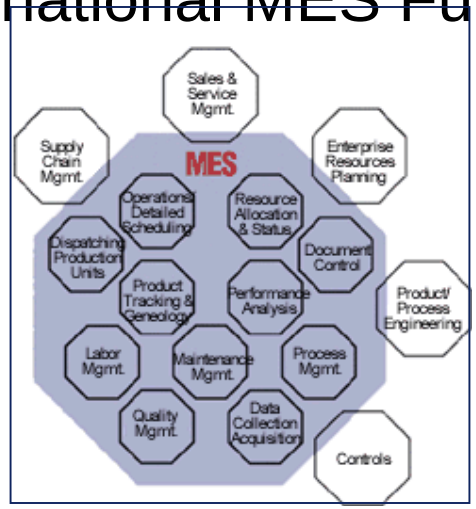
MESA Model : Be aware for every entity in the organization

- The 11 areas under the MESA International MES Functional Model are:
- Data acquisition,
- Dispatching production units,
- Document control,
- Labour management,
- Maintenance management,
- Operations/detailed scheduling,
- Performance analysis,
- Process management,
- Product tracking and genealogy,
- Quality management, and



- Reduced lead time
- Lower work-in-process inventory levels
- Reduced cycle time
- Improved product quality
- Productive, empowered employees
- Enforce regulatory conformance
- Rapid process upgrades
- Reduced paperwork
- No lost paperwork/blueprints
- Reduced data entry time
- Informed decision support

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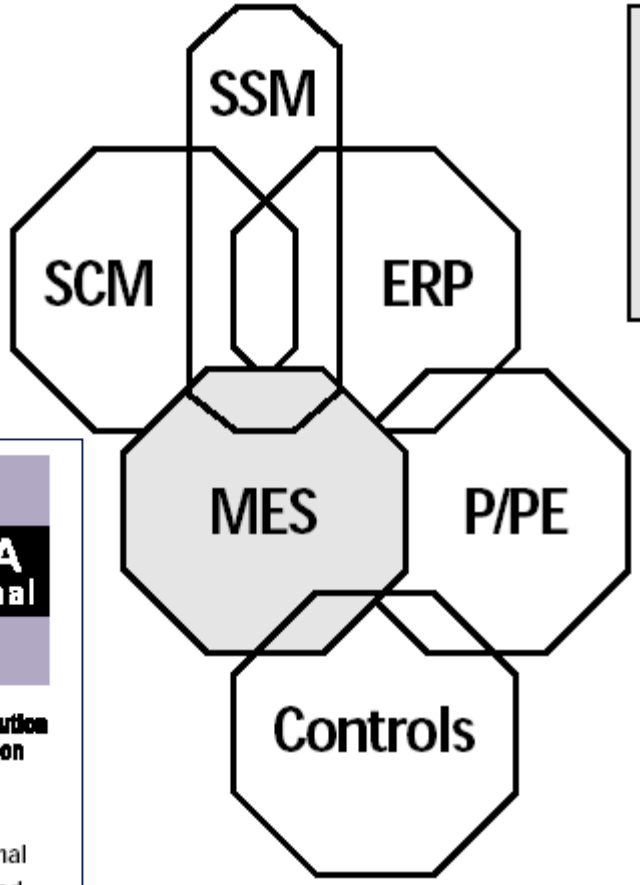
MES Context Model



Key:
MES = Manufacturing Execution System
SSM = Sales & Service Management
SCM = Supply Chain Management
ERP = Enterprise Resources Planning
P/PE = Product and Process Engineering
Controls = PLC, DCS, line and machine control

MES provides an information hub that links to and sometimes between all of these systems. MES overlaps with other manufacturing system types, which also overlap with each other. For example, scheduling may appear in both MES and SCM; labor management in MES, SSM, and the HR function of ERP; document control in MES and P/PE; and process management in both MES and Controls. Degrees of overlap vary by industry and implementation.

ref

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Manufacturing Execution Systems Association

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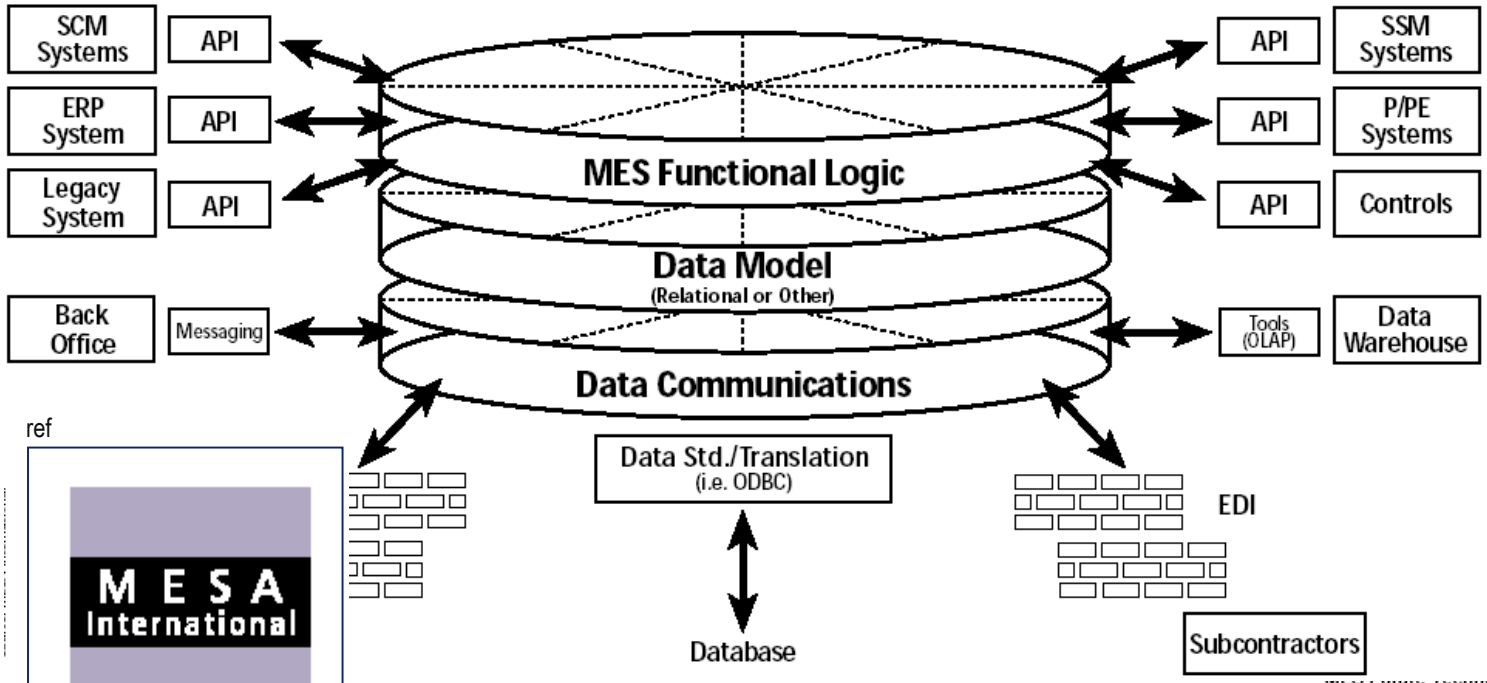
MES Current Technology Model



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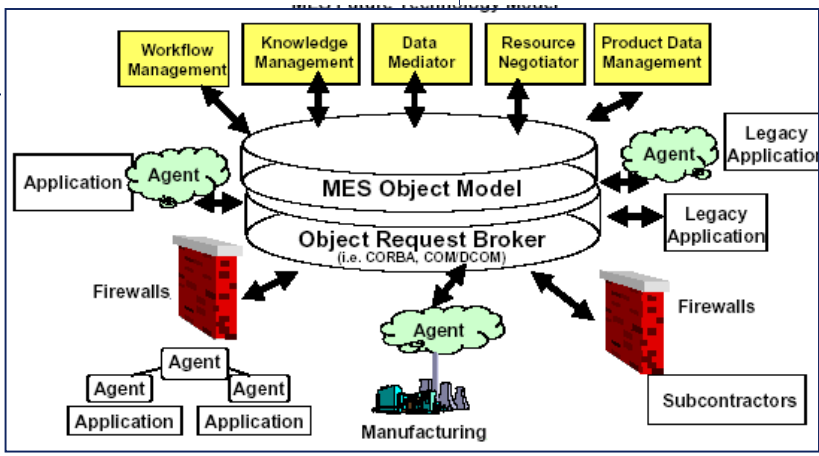
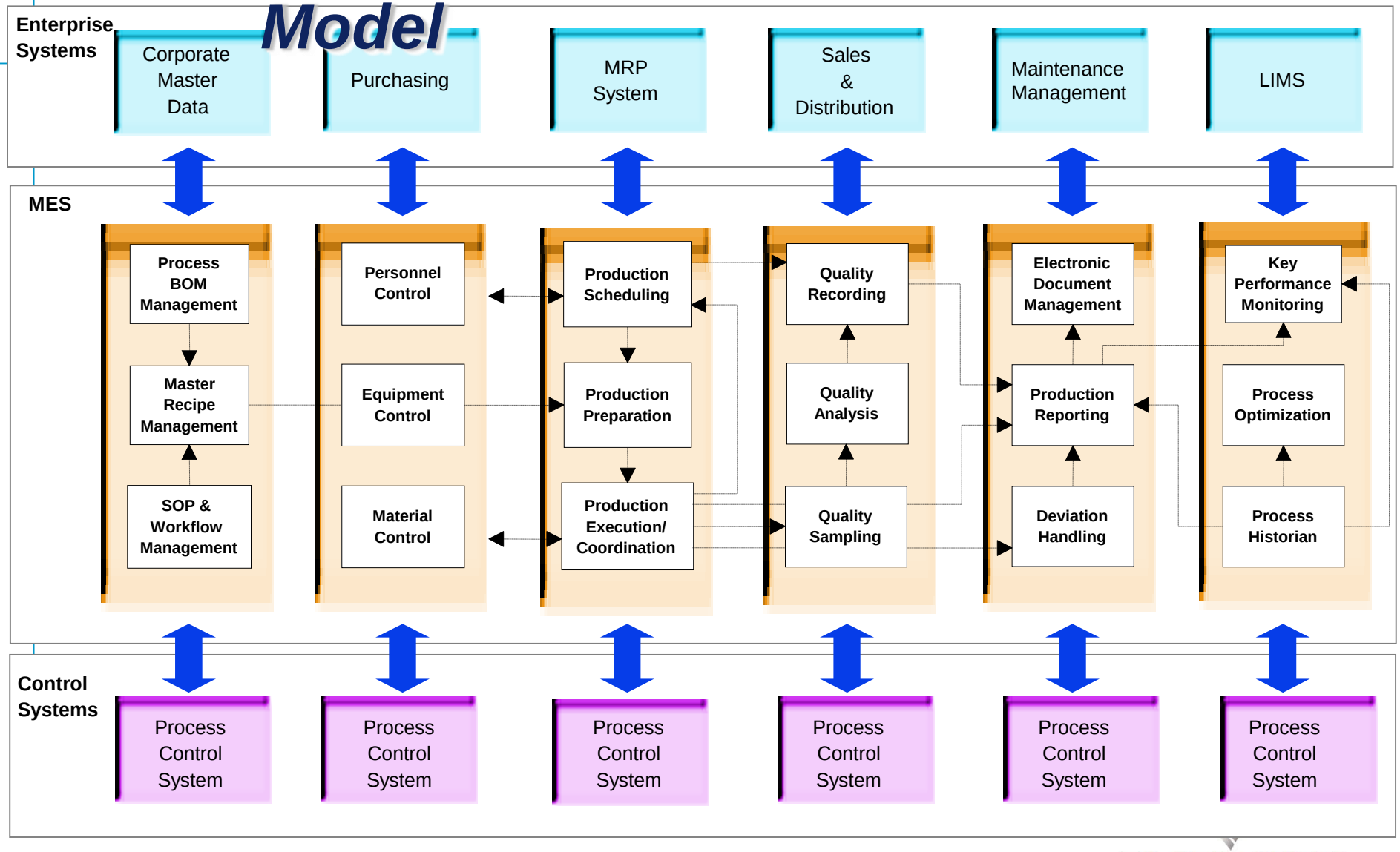


MES Functional Reference Model



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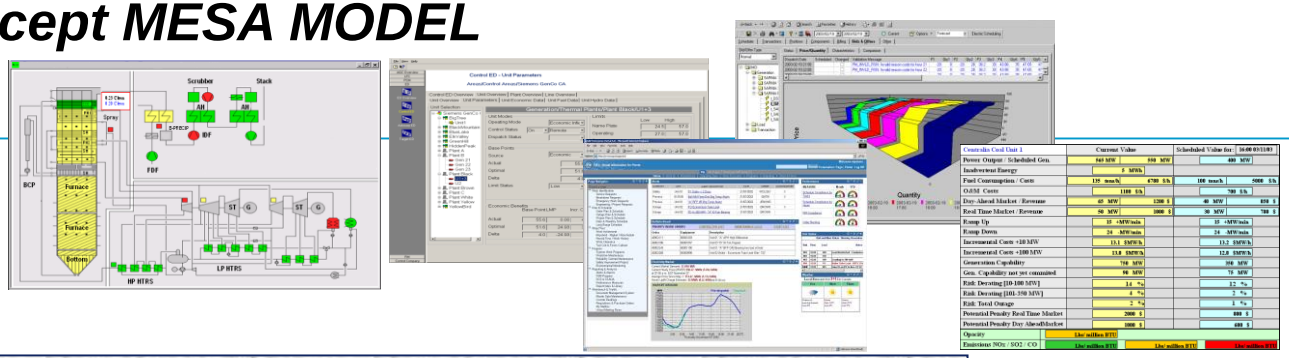
Concept MESA MODEL

TOOLS



RULES

∑ business rules

DATA

SQL

PI

Bailey

Intellution

YOKOGAWA

MOORE

A-B QUALITY

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SIEMENS

FOXBORO

TOSHIBA

GSE SYSTEMS

Honeywell

Wonderware

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350+ Others, BES

Value based maintenance strategy

Service modules fit into ITIL

Capacity Management Performance Monitoring Auto Alerting Assistant	**Availability Management** PM0, PM1 Back-Up Services Virus Protection Regular Health Check Auto Alerting Assistant	**Continuity Management** System Life Plan Maintainability Forecast Keep (workstation) current services Disaster Recovery Plan
Release Management incorporated in Control System Management and Application Management	**Change Management** incorporated in Control System Management and Application Management	**Configuration Management** Documentation Service Drawing Update Service System Asset Management
Problem Management For Emerson Products incorporated in Emerson Technical Support For Customer Applications several systems exists	**Incident Management** Customer Service Desk Emergency Response	**Security Management** Virus Protection Service Network Security Service

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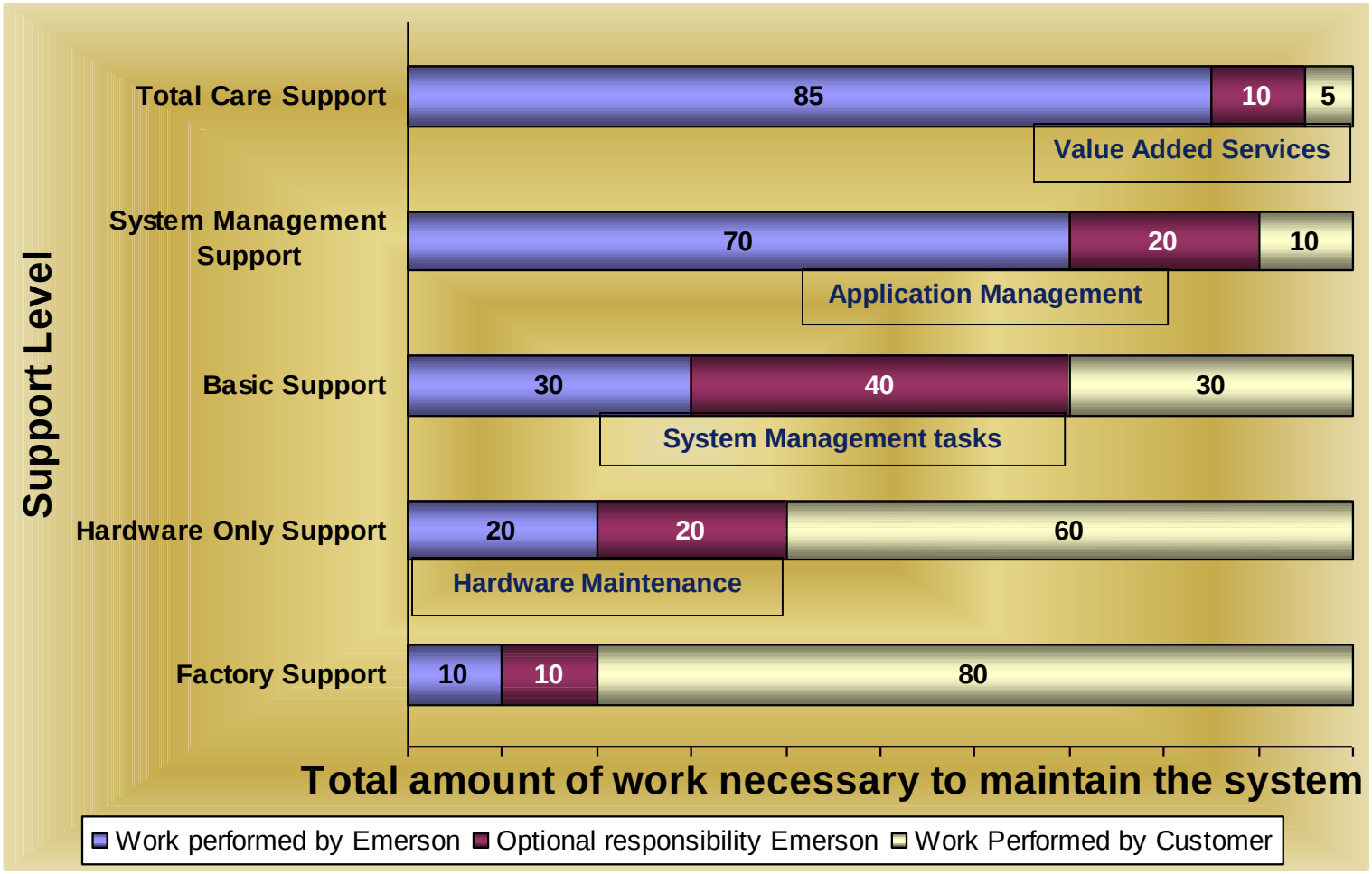
Service level steps



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KPI Based – Service Management Contracts

- ConocoPhillips SNS
- ConocPhillips CNS
- British Gas Armada
- Amerada Hess
- Talisman

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KPI Based – Service Management Contracts

- System Availability
- Size of Mis-measurements
- Clearance of Mis-measurements
- Personnel Availability
- Compliance
- Data Validation
- Maintenance Routines
- Audit Actions
- Annual Budget

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KPI Based – Service Management Contracts

- Reduction in audit actions by up to 60%
- Completion of all maintenance as per schedule
- Annual budgets maintained or reduced
- Full personnel availability
- Full compliance with no dispensations
- All data validated in a timely manner
- Enhanced Operational Performance

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KPI Based – Service Management Contracts

- Personnel Comittment
- Enhanced operating profit
- Bonus payments against attainment of KPIs
- Integrated, long term working relationship

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