



EFFECTIVE ENGINEERING'S CONTRIBUTION TO MANUFACTURING EXCELLENCE



EFFECTIVE ENGINEERING

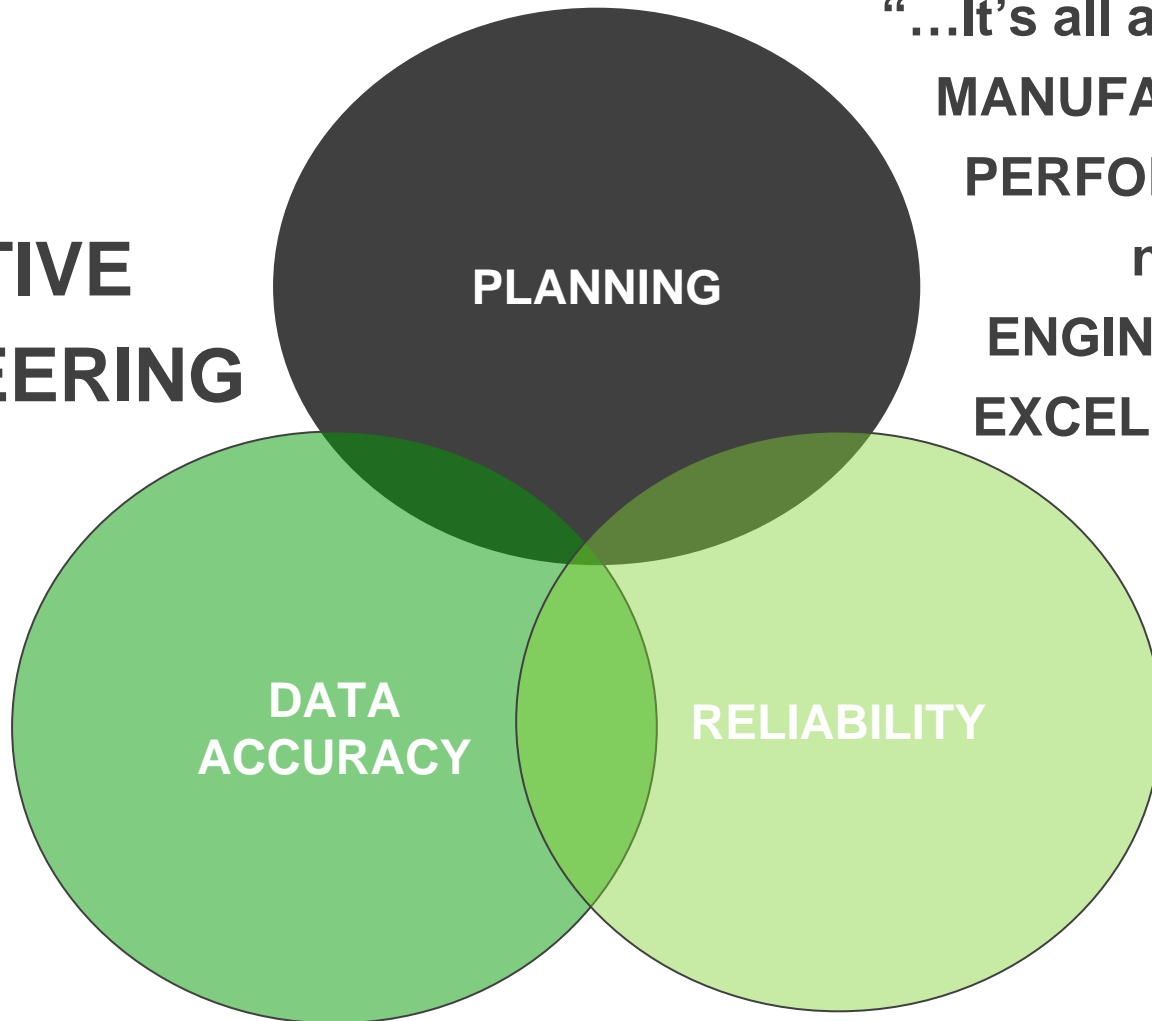
DRIVING MANUFACTURING PERFORMANCE

- ✓ Responsive supply
- ✓ Underpin / expand capacity
- ✓ Reduce product costs
- ✓ HSE compliance

THROUGH PEOPLE

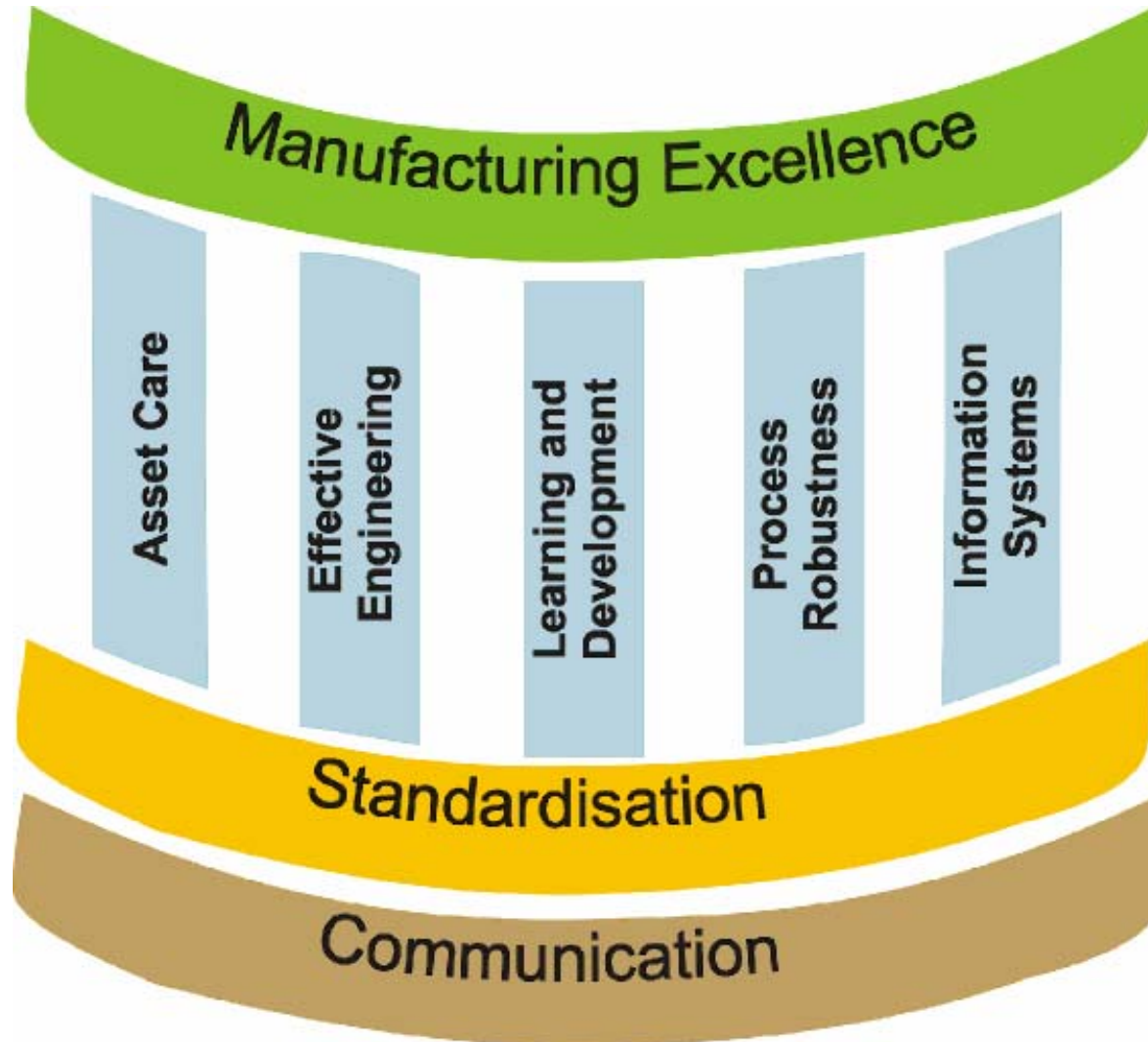
KEY THEMES

**EFFECTIVE
ENGINEERING**

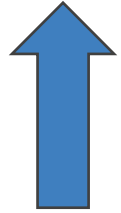


**“...It’s all about driving
MANUFACTURING
PERFORMANCE
not
ENGINEERING
EXCELLENCE.”**

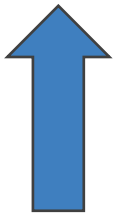
WHERE DID EFFECTIVE ENGINEERING COME FROM?



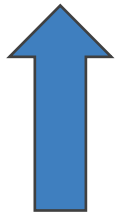
BUSINESS BENEFITS



Robustness



Responsiveness



Supply Chain confidence



Product Inventories

RESULTS

- Computerized Maintenance Management System is now valued and being continuously improved
- Dramatic swing towards Planned and Scheduled work
- Product driven, plant specific outage philosophies
- Enhanced robustness of compliance and pro-active routines.
- HSE IIR performance improved to 0.45 in 2006 from >1.9 in 2004
- Revenue spend reduced by 26% over 2 years
- Capital spend avoided or minimized

Observations

- It's not a "quick fix"
- It's been predominately a people thing
- Delivered by a 'virtual' project team
- We under estimated the need for regular communication and the value of value of regular engagement with everyone
- The importance of 'Guiding Coalitions'
- The importance of the multi-functional manufacturing team
- The importance of people being able to understand how their contribution adds value
- Visitors remark on the pride and enthusiasm shown by the teams