

# Smiths Aerospace Mechanical Systems

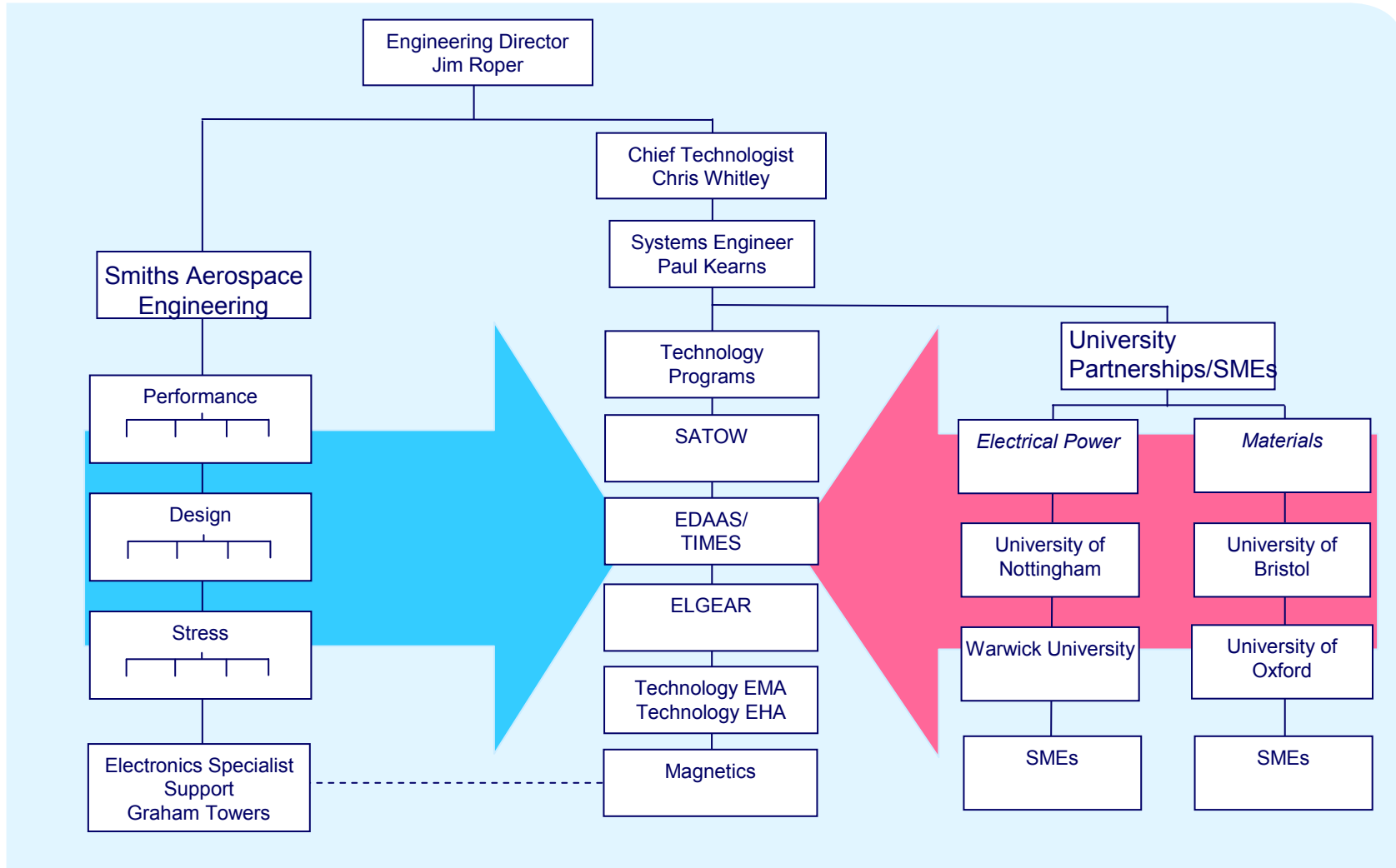
ELGEAR – Technology Programme

Location: Midland Aerospace Alliance

**Presentation by:** Malcolm Diplock – Chief Materials Engineer  
Smiths Aerospace Mechanical Systems - Wolverhampton



# Research & Technology Team



# Purpose of Team



**To Identify future Technologies applicable to Flight Controls**

**To Conduct Research and Technology Demonstration to bring identified technologies to a point where they can be developed for product**

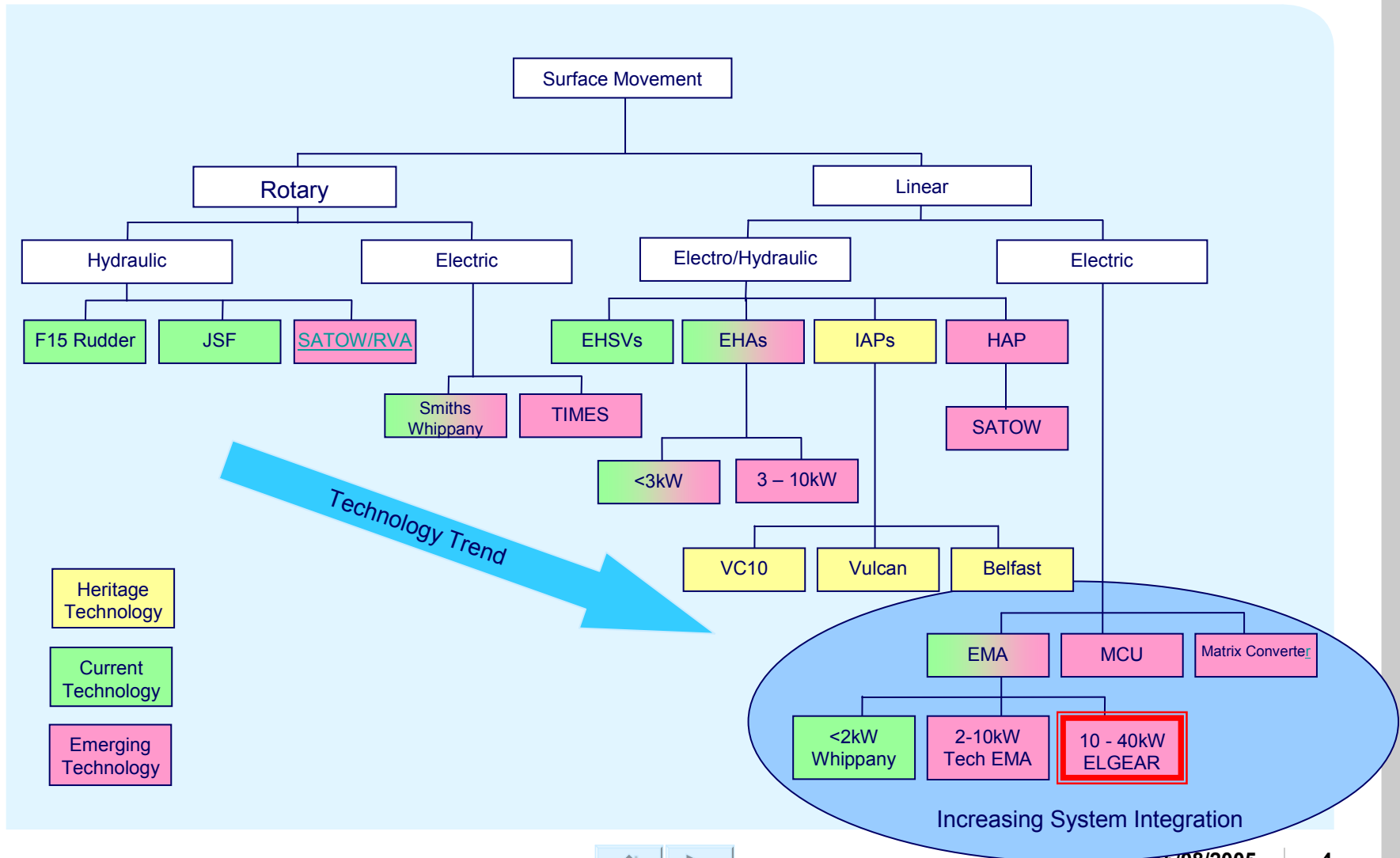
**To identify funding opportunities to minimise cost of technology acquisition to Smiths Aerospace**

**To Disseminate information within the Smiths Engineering community and to be aware of work carried out in other Smiths and competitors sites**

**To support bid activities by demonstration Smiths technological capabilities to customers, present & potential**



# Surface movement topologies



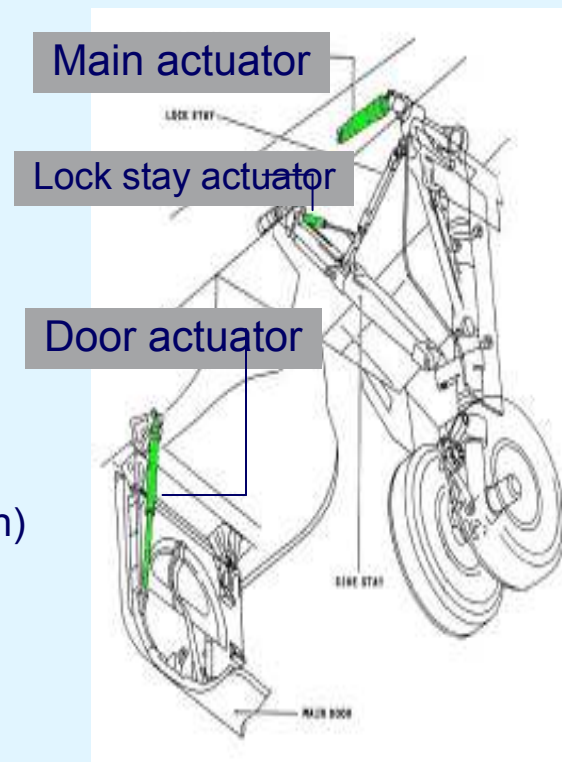
## Technology programs - ELGEAR

smiths

- ELGEAR – Electric Landing Gear Extension And Retraction

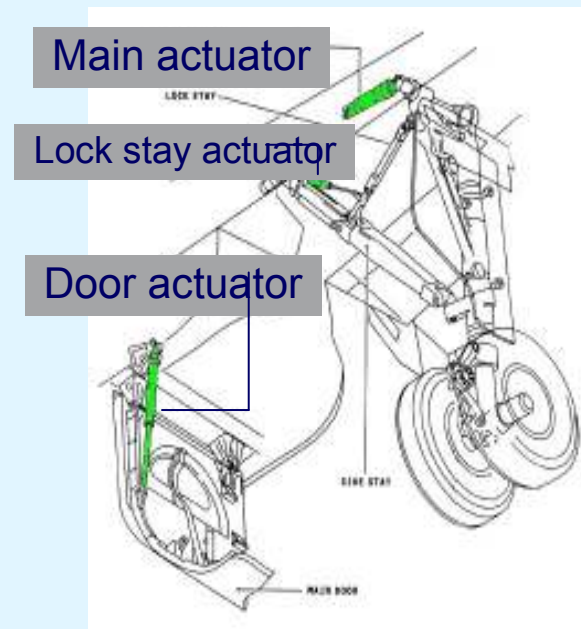
- Programme is part funded under DTI Technology programme
- Programme start 01/02/06, Duration 3.5 years
- ELGEAR has four major Industrial Partners:
  - Airbus (Filton)
  - Smiths Aerospace
    - Mechanical Systems (Wolverhampton)
    - Electronic Systems (Bishops Cleeve)
    - Mechanical Systems (Arle Court)
  - Goodrich Actuation Systems(Wolverhampton)
  - Messier Dowty (Cheltenham)

- Total Cost of Programme c£11M



### •ELGEAR – Electric Landing Gear Extension And Retraction

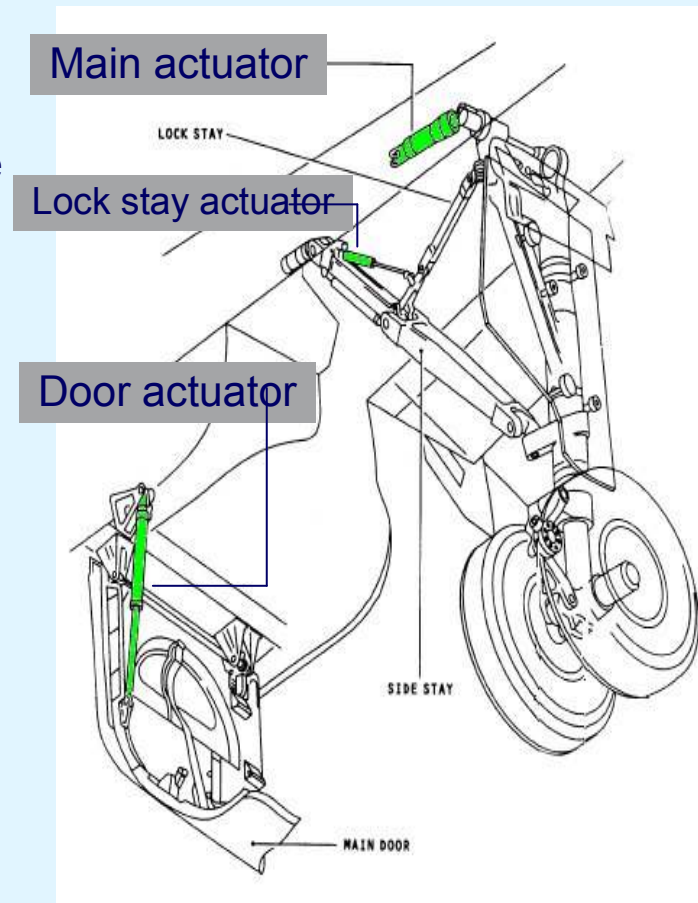
- Aim of Programme
- To design and model a complex electrical system for control and actuation of an all electric Landing Gear system for A320
- To validate the complex system model by design and manufacture of a full scale Landing Gear system
  - Leg extension & retraction electrically powered actuator
  - Electrically powered door actuation
  - Sequencing and control Electronics
  - Electric Nose wheel steer/Bogey Trim
- Validation on Full scale undercarriage rig



# Technology programs - ELGEAR

- ELGEAR – Electric Landing Gear Extension And Retraction

- Workshare
- Airbus:
  - Programme lead
  - Integration Rig & Landing gear structure
- Smiths
  - Nosegear actuation
  - Door Actuation
  - Control & Sequencing
  - Steering actuation
- Goodrich
  - Maingear(1) Actuation
  - Bogey Trim
- Messier Dowty
  - Maingear(2) Actuation
  - Bogey Trim



# Technology programs - ELGEAR

- ELGEAR – Electric Landing Gear Extension And Retraction

- Deliverables to programme

- Model of complex electrical system
- Validation of system
- Design of full Electric Landing Gear system
- Manufacture of full Electric Landing Gear Demonstration system
- Demonstration of viability of Electric Landing Gear
- Exploitation of Results

