

# Influencing Culture in Design: The 'First Eleven'

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# Overview



- Why culture is important in design organisations in managing maintenance HF risk
- How do design outcomes affect maintenance performance
- Introduce the RAeS HFG:E developed:  
*‘First Eleven – Design Organisation Guidance for Delivering Enhanced Human Performance in Maintenance’*

<http://www.raes-hfg.com/>



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If your organisation does any design *whatsoever*

– no matter how **BIG** or **SMALL** –

(or if you use products designed by others)

this presentation is for

YOU



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# Safety Culture – It's not just for Operators & MROs

- Design organisations play at least as important role in managing HF risk safety as operators
- Obvious from an engineering perspective
  - Also true for **maintenance HF risk**
- As business models change to offer more lease / full service contract, some manufacturers have started to understand this link



# Safety Culture for Design Organisations

- Recognise the influence of design on safe and effective maintenance performance (for the aircraft and the maintainer)
- Take responsibility for taking appropriate steps to manage that risk
  - Own organisation
  - Supplier organisations

**Technical Failures**



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**Maintenance HF  
Contribution**



**HF Contribution**

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# Culture: It's what we DO

What we have  
done in the  
**PAST**

What we do in the  
**PRESENT**  
Traditions

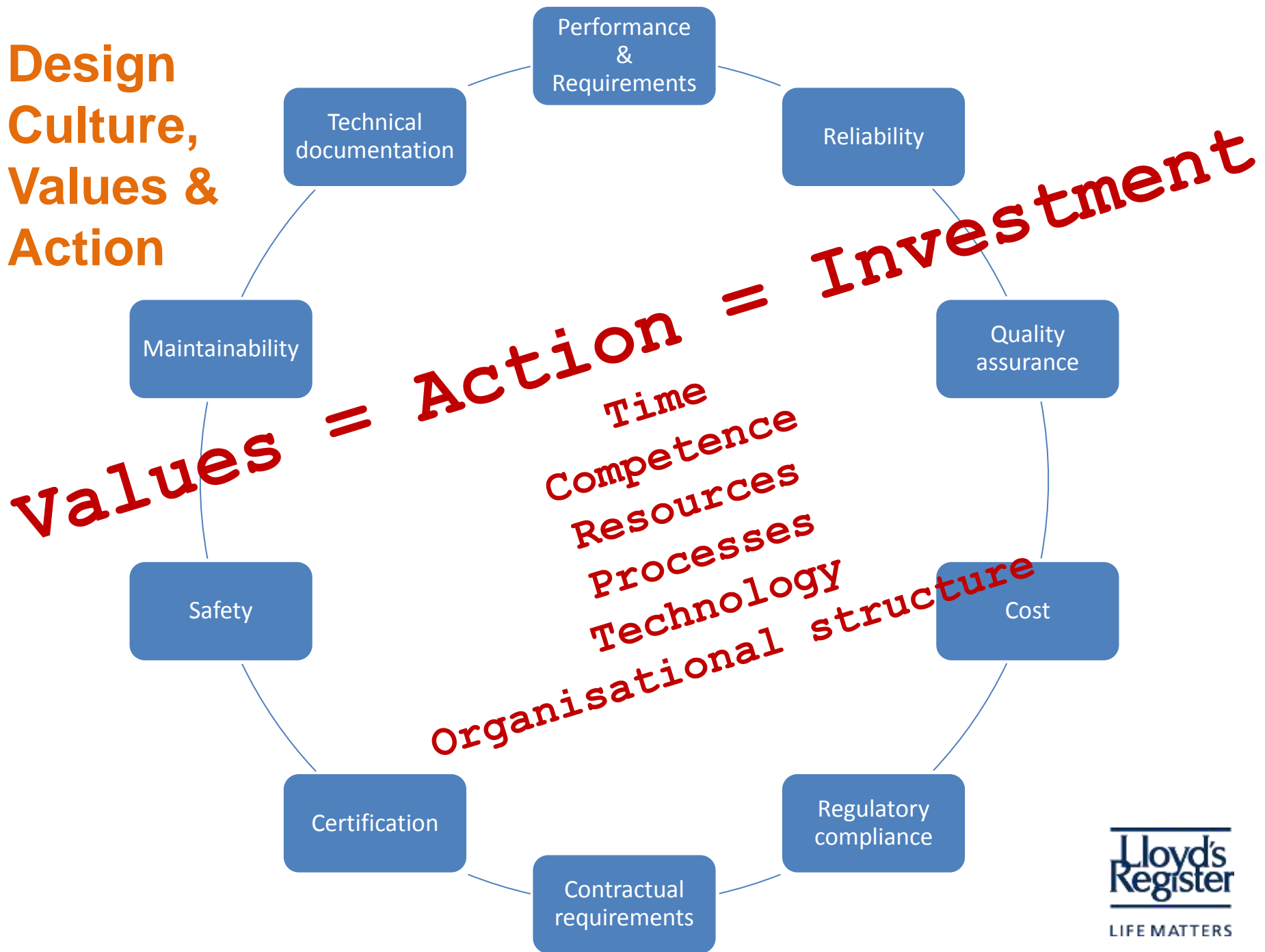
WHAT WE WILL  
DO IN THE  
**FUTURE**

Behaviours

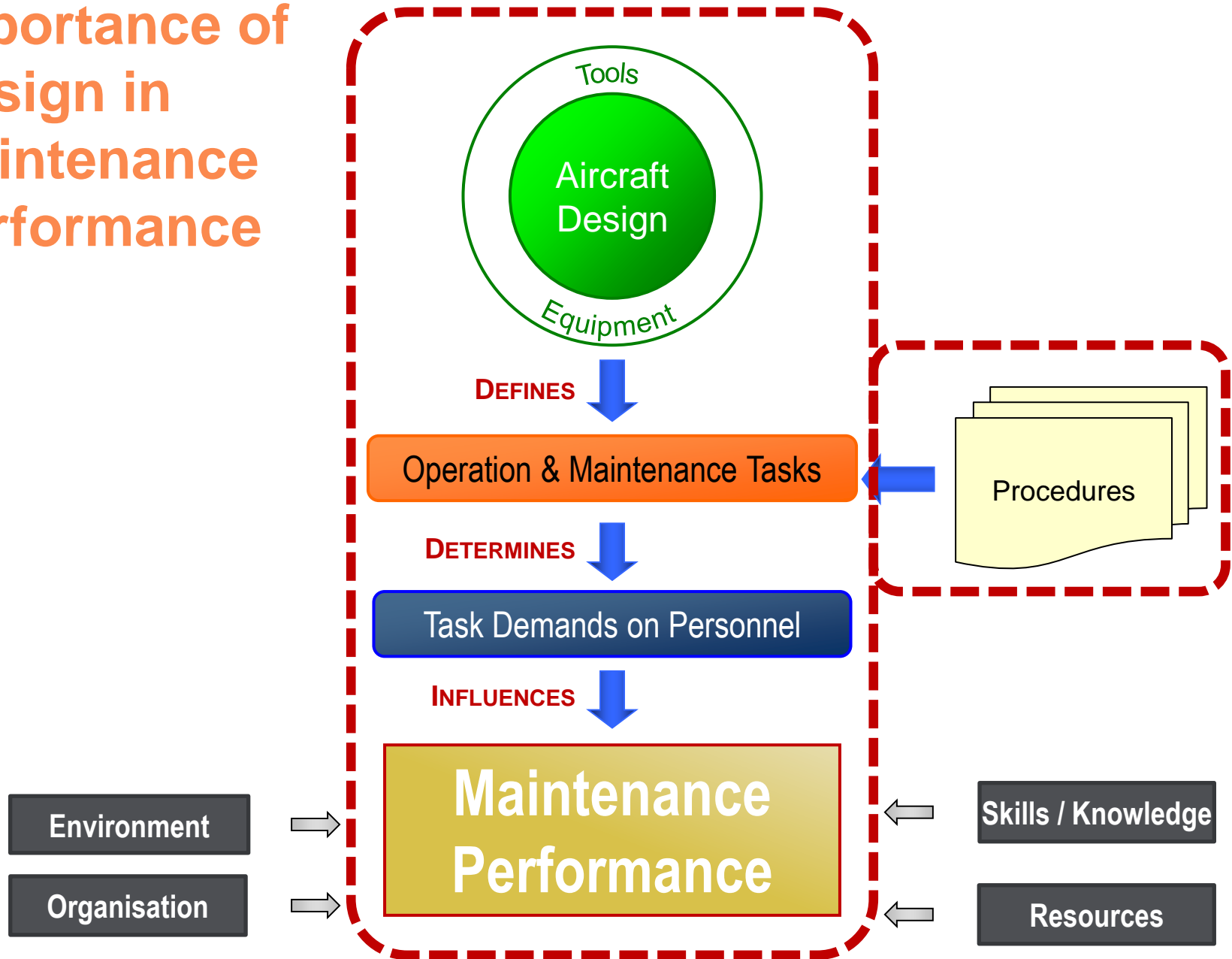
Expectations

We show what we **VALUE** by what we **DO**

# Design Culture, Values & Action



# Importance of Design in Maintenance Performance





**Every design decision that changes a  
maintenance task affects maintenance  
performance**



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# What should you do? **Adopt the First Eleven!**

- A culture that values **safety, efficiency** and **effectiveness** values **HF**
- A culture that values **HF** will value the '**First Eleven**'
- The First Eleven guidance is there to help :
  - Identify what you need to do
  - Understand what capabilities you have
  - Put in place effective processes from Day 1
  - Build a strong foundation for effective maintenance HF integration throughout the supply chain



# What is the First Eleven?



A set of practical and pragmatic steps developed by the industry, for the industry

- Enables aircraft design and supplier organisations to deliver **safer**, more **effective** and **reliable** aircraft through improved design for maintenance
- Principles are ordered in a general sequence for implementation **starting with foundation activities**
- Maximum benefit is possible if all principles are adopted
  - However, most activities can be implemented independently

# First Eleven: Principles



# First Eleven & 'The way we do things around here'



# Principle 2: Design For Maintainability Policy Development

## Your stake in the ground

- Defines how maintenance HF will be integrated into the design stream for products and supporting documentation
- Identifies:
  - Applicable standards & regulations
  - Process owners, stakeholders (including customers)
  - Compliance with policy by suppliers
  - Processes and tools
    - User-centred design process
    - In-service feedback process



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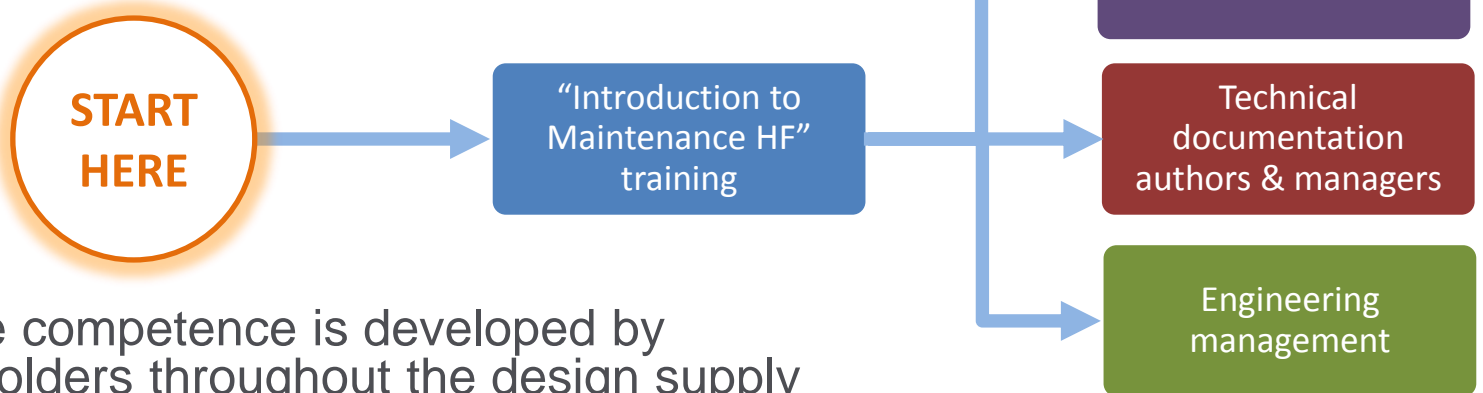
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# Principle 5: Maintenance HF Design Training

## Value and develop maintenance HF competence

- Introductory training tailored to different levels and roles within the organisation
  - Owners & stakeholders of maintenance HF integration and technical documentation



- Ensure competence is developed by stakeholders throughout the design supply chain

# Principle 7: Maintenance HF Hazard Prioritisation

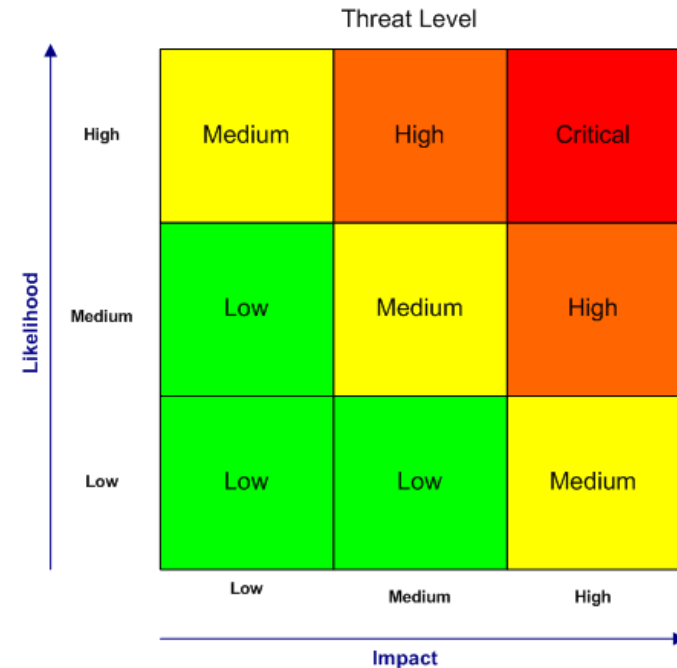




# Principle 7: Maintenance HF Hazard Prioritisation

**Value information that helps you understand risk, and use it!**

- Develop a shortlist of critical systems and frequent / high-hazard maintenance error types
  - What does your internal and industry data say?
- Use these to prioritise maintenance HF activities



AND ...

# Principle 7: Maintenance HF Hazard Prioritisation

- Understand the underlying reasons for reliability

TELL ME WHAT'S  
REALLY BEHIND OUR  
MTBF!?



HOLY FISCAL  
RESPONSIBILITY!  
WITH ALL THESE  
WARRANTY CLAIMS, WE  
MIGHT HAVE TO SELL  
THE BATMOBILE!!!



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# Principle 11: Human Factors Integration (HFI) Promotion

## Promote what you value

- Make investment in maintenance HF work for you ...
  - This is your **Unique Selling Point**
- Promote the positive link between maintenance HF integration in design and operational performance
- User-centred design = Customer focussed design
  - Reduced error rates and consequences during maintenance
  - Reduced aircraft lifecycle costs



# WHY ADOPT THE FIRST ELEVEN?

# Why Adopt the First Eleven?

- Enhanced reliability and in service performance
- Right first time design
  - Reduced design iterations
  - Fewer modifications in service
- Differentiates your organisation from the competition
- Demonstration of a strong values & Safety Culture



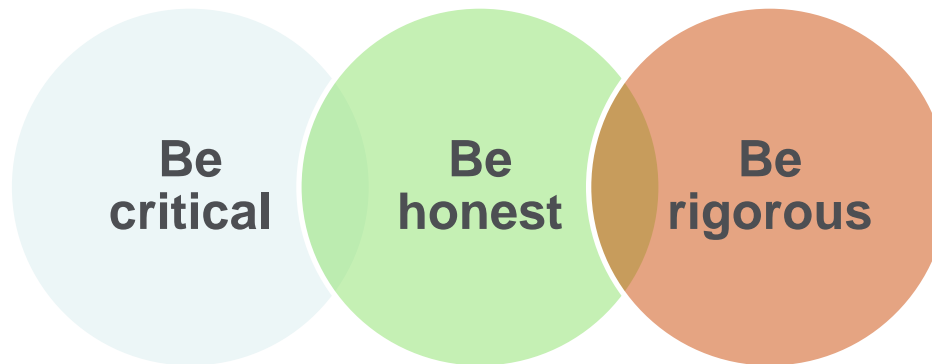
“Right thing to do”

What to do when you get back to the office

# **NEXT STEPS**

# Audit Your Maintenance HF Capability

- **The First Eleven is also a simple audit tool too!**
- Determine the maturity of your organisation's maintenance HF capability



- Then ... ask your suppliers to do it too – work together to strengthen the supply chain and build maintenance HF expertise
- **Get help!**
  - Bring in the expertise you need

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