

Richard Baker

Rolls-Royce

Supply Chain Collaboration

Delivering success to our customer



Richard Baker – Head of Supplier Engineering

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2012 financial highlights

order
book

£60.1bn

underlying
Group revenue

£12.2bn

underlying
profit

£1.4bn

original
equipment

48%

services

52%



Underlying Group revenue by business segment

Civil aerospace	53%
Defence aerospace	20%
Marine	18%
Energy	8%
Engine holding	1%



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Rolls-Royce Aerospace Supply Chain

Key facts

Supply chain output	£3.7bn
Employees	~15000
Suppliers	650
Manufacturing sites	20
Joint Ventures	6
Active Parts	33,500
Parts delivered per annum	~260m



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The Designer

- The word “engineer” covers a variety expertise....the *crème de la crème* of these are the designers.
- They are enthusiasts who seek something more than wealth and power.
- Not only must they create the drawings which can be explicitly interpreted into instructions which can be manufactured...but they must liaise with other designers to ensure that their parts will match exactly ..and that the whole can be manufactured and assembled as an engine .
- [Designers] are the “Keepers of the trade”They are indeed an elite body.
- At the end of the day, they have the most satisfying and rewarding job of all. They can look at an engine and say, “ I created those parts and they are exactly as I saw them in my mind....and they work!”

Sir Stanley Hooker (1907 -1984)
from his book “*Not Much of an Engineer.*”



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The competitive challenge



Competition no longer takes place between individual businesses, but between entire value and supply chains.



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Rolls-Royce Supply Chain Collaboration

Direct

- Sharing success with our Partners (Risk & Revenue Sharing)
- Helping train our supply chain future workforce.

Through Government initiatives

- Technology Catapult Centres (Advanced Manufacturing)
- Sharing in Growth (supporting our UK Supply Chain)
- National Aerospace Technology Exploitation Programme

With Independent Organisations

- Design Council (Developing Supply Chain Design capability)



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Sharing Partners



- Partial sharing partner
- Full sharing partner

1		2	
3		4	
5		6	
7		8	
9		10	
11		12	
13		14	
15		16	
17		18	
19		20	
21		22	

Rolls-Royce Apprentice Academy

199 apprentices recruited in 2013

748 apprentices in total

49 apprentices trained for
the supply chain



Network of Advanced Manufacturing Research Centres



**Network of
Advanced Manufacturing
Research Centres AxRCs**



Sharing in Growth



 Regional Growth Fund

Industry sharing best practice to provide intense improvement

National Aerospace Technology Exploitation Programme (NATEP)

£40M to deliver 100 novel technologies for the supply chain in four years

- Part of the Aerospace Growth Partnership's *"Lifting Off – Implementing the Strategic Vision for UK Aerospace"* announced March 2013 by Nick Clegg
- Conditional offer received from the UK Government AMSCI fund.



- The co-applicants are key primes and systems suppliers :
Aero Engine Controls, Airbus, Bombardier, GKN Aerospace, Rolls-Royce, Spirit

Design Capability Improvement

Rolls-Royce is working in partnership with the Design Council, to improve the design capability of suppliers

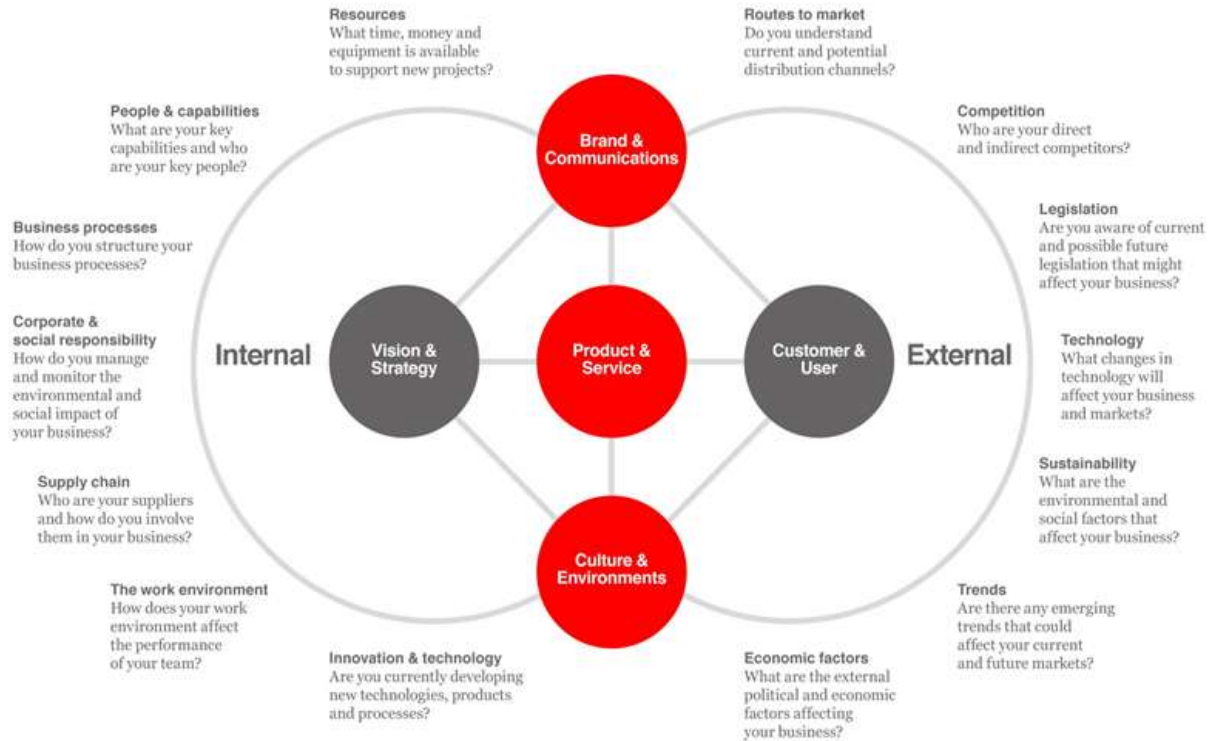


Rolls-Royce proprietary information



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Defining a world class design process



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Measurement & Analysis of design capability

GLOBAL SUPPLIER OVER SIGHT SUMMARY REPORT		Rolls-Royce	
The audit standard accounts for applicable requirements of European Regulation EC/1700/2002 as and where appropriate to the supplier's scope of business with Rolls-Royce. For record retention purposes this document is a Rolls-Royce OJT's record.			
Audit / Assessment Scope Design & Development Audit	Applicability RR Energy	Report Number AAF_DD0audit_2013	Report Issue Issue 1 - Dec 2013
Supplier Name & Address AAF Power and Industrial Limited Bassington Lane, Cramlington Northumberland, United Kingdom, NE23 5AF			Vendor Code 202174
Audit Team Member(s) Boris MULL, Vasantharao, Alan Hanson, Robin Whiteleg		Report Author & Signature Not signed - forwarded electronically	Audit Date Nov 18th, Nov 19th 2013
<p>AAF's current scope of supply to RRE is: Acoustic enclosure, Inlet filtration system and Exhaust Stack System</p> <p>Summary of Findings: A design development audit at AAF revealed the following GAPS (in their design capability) and risks (in their design process).</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>SKILLS & METHODS</p> <ol style="list-style-type: none"> 1 - Method (RAF Exempt) 2 - as written 3 - Built systems 4 - Pressure vessel code based rules 5 - code compliant design 6 - CAD 7 - After analysis selection, integration, testing 8 - control for global mechanisms 9 - awareness of manufacturing methods 10 - material selection 11 - Simulate <p>Experience</p> <ol style="list-style-type: none"> 1 - prior experience designing complexity 2 - prior experience designing complexity 3 - prior experience designing complexity 4 - awareness of certification requirements 5 - Supplier's RPT experience profile 6 - energy master 7 - Supplier's RPT experience profile 8 - Supplier's RPT experience profile </div> <div style="text-align: center;"> <p>Risk Management</p> <p>Configuration control</p> <p>Change management</p> <p>DRRs</p> <p>Design systems</p> <p>Design Sub-systems</p> <p>Design Sub-systems</p> <p>Verification</p> <p>Legend: ■ Not process or grossly ineffective ■ Process is ad-hoc (inconsistent) or Process exists but not very effectively ■ Process is effective</p> </div> </div> <p>Summary of the audit findings along with the opportunities for improvement that AAF agreed to act on are listed below:</p> <ul style="list-style-type: none"> • Design Process <ul style="list-style-type: none"> ◦ Risk Management <ul style="list-style-type: none"> • Q&E (opportunity for improvement): AAF to identify which of the design risks translates into a safety risk and consider handing over residual safety and technical risks to RRE as going forward. AAF should consider how often the DFMEA is updated to capture any new modes of failure from the service experience. 			
GDF X&T Summary Report Template Issue 3.0 August 2008		Page 1 of 2	
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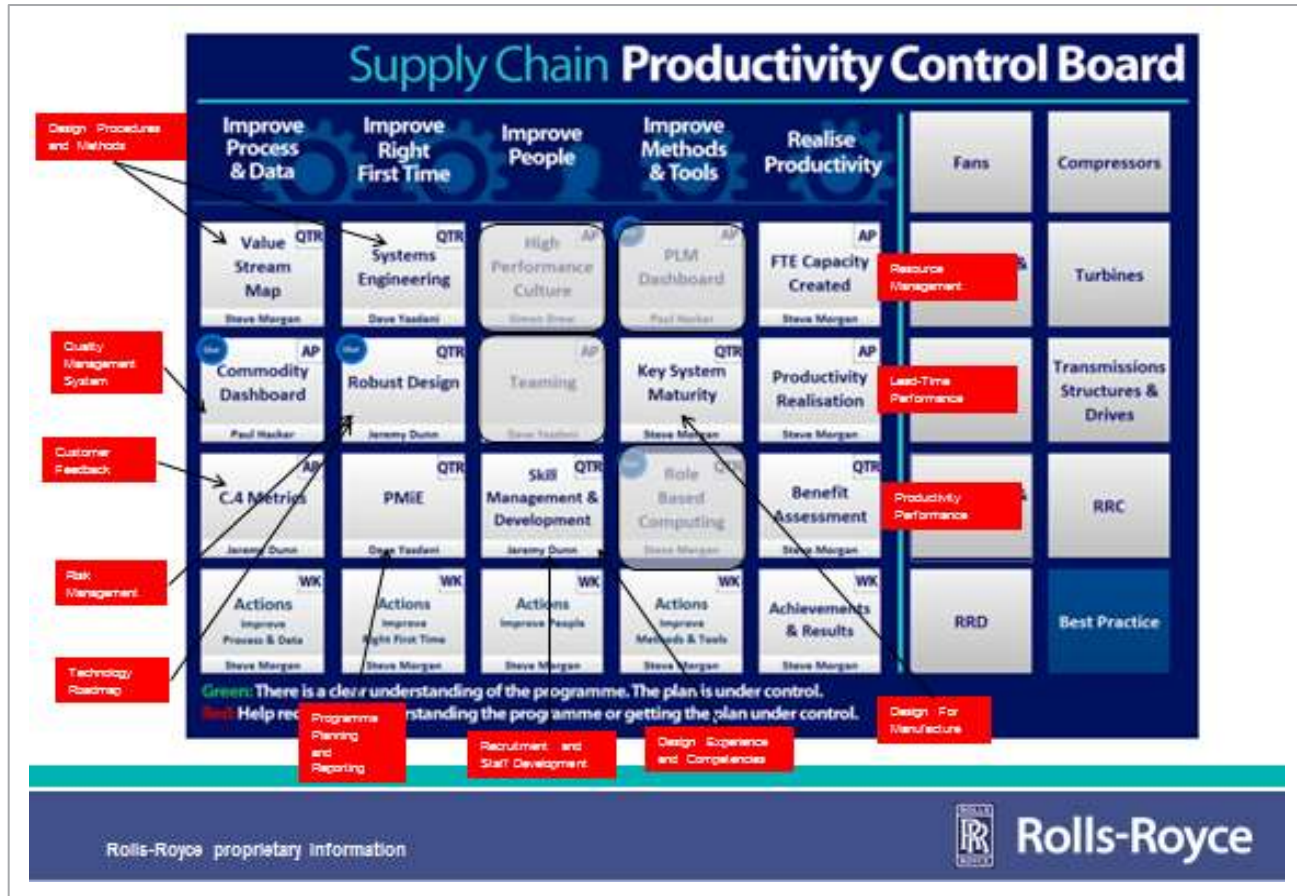


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Improvement of an organisations design capability



Capability Control Board





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