

Is there a future for Western commercial aircraft industry?

Of course there is a future. The question is: what will it be?

This piece aims to explore the current industry situation, take lessons from history and put forward a reasonably probable future if things do not change radically. It puts the case for massive change in western commercial aircraft industry if it is to avoid contraction on a massive scale. Throughout this piece, we concentrate on Boeing and Airbus but the futures of a vast interconnected web of partners, suppliers and subcontractors are inextricably tied to these two big names.

Introduction

In order to implement real change in today's organisations it is critically important to first establish compelling reasons why it is impossible to continue without change. A base axiom of the Gestalt school of psychology is that people will remain in the same place until it becomes too uncomfortable to remain there. From a global perspective, the current success enjoyed by German and Japanese industry can be traced to the immediate post-WWII period. Indeed, a noted Japanese industrialist, when questioned in Australia about how Australian business could become world-class, advised that it should not even try – with the climate, quality of life and relative economic success they enjoy, Australians would never be in the absolute “backs to the wall” situation of Japan and Germany in the late 40s and early 50s. He recognised the importance of the burning platform – jump and maybe die or stay and certainly die. As we have seen with recent global events and particularly the war on terror, fear, while an extremely negative emotion, is a powerful motivator.

Western industrial history since the 1960s is littered with examples where industry leaders either failed to recognise, or at least were unable to get their companies to recognise, that a burning platform was present. The result was the slow, painful death of key industries. Part of this reason for lack of recognition is the very slow burning of the platform – from the initial spark to the death of an industry takes upwards of 10 years. For many industries the platform is well and truly burnt, the companies involved now merely ghosts and the painful memories of their decline a distant recollection. But for many more, the platform has only recently begun to warm up. Like the proverbial frog in a saucepan of water, if the temperature rises only slowly it is much more difficult to recognise and react appropriately, than if dropped suddenly into boiling water. It is this insidious, creeping threat that industries have failed to understand until too late. Will the currently successful Western aerospace industry be able to react appropriately, or will it too suffer a grinding, groaning, protracted decline before succumbing to the final curtain?

Lessons from History: Swiss Watch Industry

In just a decade from 1970 the Swiss watch industry was decimated. In a ten-year period, the industry shrank by two-thirds. The cause of this decline was the rapid growth in market share of Far-Eastern watches.

It would be easy to dismiss the Swiss Watch debacle as irrelevant to the current aerospace situation as it was caused primarily due to discontinuous product technology development catching the industry unawares.

However there is a key lesson to be learned for aerospace: Japanese companies specifically and Asian ones generally have been growing their component and sub-assembly rapidly. This mirrors the 1960's for the watch industry when Japan and Hong Kong began supplying components and sub-assemblies to Swiss and US watchmakers. They were learning the craft.

Boeing / METI Pole survey of Japanese produced content of Boeing programmes (2003):
 15% in Boeing 767 programme
 21% in Boeing 777 programme
 35% in Boeing 7E7 programme (predicted)

Another underlying message here is that the new entrants saw an un-met need and filled it. The need was for a timepiece that kept accurate time. Quartz was the enabler for this. The Japanese companies clearly identified the dissatisfaction of customers with having to reset their mechanical watches regularly.



Seiko's 1969 Astron watch – the world's first commercially available quartz watch

Swiss Watch Industry Timeline

- 1960s Japanese and Hong Kong companies begin supplying components and sub assemblies to Swiss and US watchmakers
- 1967 Prototype quartz watch developed, Swiss Horological Electronic Centre, Switzerland, an industry research body funded by Swiss watchmakers. Swiss watchmakers ignore the new technology, preferring to concentrate on mechanical watches
- 1969 Seiko, Japan, launches the first commercial quartz watch
- 1973 Seiko launches the first commercial LCD watch
- 1974 Swiss watchmakers export 84.4m watches
- 1975 Swiss watchmakers export 63.3m watches (25% less than previous year)

Swiss Watch Industry	1970	1980
World Market Share	50%	15%
Number of manufacturers	1620	600
Number of employees	89,000	32,500

Time Marches On: The Worldwide Watch Industry. Thunderbird International Business Review, Vol. 42(3) 349–372, May–June 2000 John Wiley & Sons, Inc.



Lessons from History: British Motorcycles

In the early 1950s the world motorcycle market began rapidly expanding, led by the US. As established producers, the British motorcycle manufacturers were well placed to capitalise. But within ten years many had crumbled. In those same 10 years, Japanese companies had gone from nothing to a 75% share of the US import market while the British companies totalled only 6%.

The British motorcycle industry at that time was characterised by cottage-industry methods, late model launches, production delays and spiralling warranty costs. Within a few years it would change to in-fighting, government interventions, mergers, consolidations and failure. In the meantime, customers flocked to the lower-cost, much more reliable products offered by the likes of Honda, Suzuki and Kawasaki.

In this example, there is no excuse of discontinuous product technology development – simply that these Japanese companies understood what customers wanted and delivered it with ruthless efficiency.

In this example, the Japanese companies eased themselves into the market with a 100cc motorcycle. The British laughed at it – failed to recognise it as real competition even though it sold tremendously well, while the British continued to manufacture unreliable machines that customers were unhappy with. By the time Honda launched the CB750, British Industry was so far behind it could not catch up.



Honda Sport Cub C110 from 1960

British Motorcycle Industry Timeline

- 1903 – Triumph motorcycle business established in UK
- 1948-1955 – Honda Motor Company, Suzuki, Kawasaki and Yamaha established
- 1950s – Honda C100 Super Cub starts production to become the world's best-selling powered vehicle before production stopped over 50 years later
- 1958 – 500,000 motorcycles are registered in US.
- 1965 – Of the 1.4million motorcycles registered in the US, 609,000 are imported including 33,406 from UK, 465,000 from Japan
- 1965-1967 British motorcycle closures include: Ariel, AJS, Matchless, Panther, Royal Enfield
- 1967 – Triumph exports its peak number of 28,700 motorcycles to US. The same year almost 2million motorcycles are registered in US
- 1968 – Honda CB750 launched, reckoned by some to be the first superbike
- 1969 – Honda sells 30,000 CB750s in the US of its total production of 1 million motorcycles this year. A total of 32,271 British motorcycles are exported to US this year.
- 1970 – BSA and Triumph new models suffer production delays, existing models' production shut down for 3 months due to lack of parts.
- 1971 – BSA group loses GBP8.5m. Key executives resign.
- 1971-1983 – Series of mergers, consolidations, strikes, government interventions and defaulted loans leads to the eventual liquidation of the company in control of Triumph and BSA in 1983
- 1983 – Peak year of sales for motorcycles worldwide. Approximately 5.4million motorcycles registered in the US alone.
- 2005 – Honda produces its 150-millionth motorcycle

There are many other examples of industries destroyed by a failure to act quickly and decisively in response to smouldering platforms. Among others there are steel production, shipbuilding, and the way things are going these are soon to be joined by the Western automotive industry.

So, with just these two examples, what can we interpret from the present state of the commercial aircraft industry...

Recent history of performance in the commercial aircraft industry

Every recent product development programme has been late, over budget or both. EADS' Airbus has suffered well-publicised delays to the A380 and now the A400M. Will the A350XWB be on-time, on-budget? Meanwhile Boeing has managed the media somewhat better, but is suffering serious delays in the 787 and 747-800.

The key message from the analysis of other industry declines is the failure to deliver what the customer needed. So are Boeing and Airbus currently delivering what their customers need?

The easy answer is 'of course we do or we wouldn't be in business,' but hang on a minute. Let's consider the question with a little less defensiveness and a little more rationality: Had executives in the Swiss Watch industry in 1970 or the British motorcycle industry in the 1960s been asked the same question, they would probably have responded in the same way: 'of course we do'. Understandably so – when you are on the inside of an industry it is very difficult to place yourself in the position of your customers; very hard to really understand their true needs. Often, over the course of a few years, a business can become deaf to the needs of its customers, even to the point of ignoring their complaints. When a complaint is made repeatedly about an issue, it becomes dulled. Company responses tend to be 'heard it all before', 'customers bleating again' and people in the business begin to believe their own repeated excuses 'our suppliers aren't up to it', 'we're doing the best we can', 'it's impossible to make such a complex machine more reliable'.

So in the light of this, let's ask the questions again but this time look at what the existing customers are saying:

Do Airbus and Boeing meet their customers' needs today?

Richard Branson has created Virgin Galactic, a company which "aims to bring space travel within the reach of ordinary people by pioneering space flights at affordable prices." Guardian Unlimited, 10 June 2004. It is doing this by developing its own spacecraft. Branson, through

his Virgin airline brands, has a long exposure to the performance of the commercial aircraft manufacturers. He has chosen to completely ignore both of them for this project, arguably the next great technological advance in the industry. What does that tell us about his perception of them?

There are innumerable statements made by key airline executives who are clearly not happy with the performance of one or both of the airframe manufacturers. Here are just a few examples:



3 Feb 2009, Seattle Post Intelligencer: 'All-Boeing' Ryanair considering Airbus order. The article reports that even after publicly stating in 2002 "Our message to Boeing today is, you keep building 'em, we'll keep flying 'em and together we will beat the crap out of Airbus in Europe," Ryanair CEO O'Leary is now considering purchasing Airbus.



2 May 2008, FlightGlobal.com: "[Emirates] president, Tim Clark... says: 'We're waiting for Airbus to complete its evaluation. The A380 deliveries are crucial to what we want to do, so if we don't get them as planned, then we'll have an acute problem.'" This statement was made after Emirate's first 5 A380's, originally scheduled for delivery in 2006 had already been delayed to 2009.

THE WALL STREET JOURNAL.

23 Dec 2004, Wall Street Journal, quoting Harry Stonecipher, CEO of Boeing "The long and short of it is we are not engaging with the customers. We don't seem to have a strategy."

The New York Times

10 May 2007, New York Times, quoting Steven Udvar-Hazy of International Lease Finance Corporation, the world's largest buyer of commercial aircraft for the airlines: 'Mr. Hazy says he is not shy about telling Boeing and Airbus what to build: "We are saying to the manufacturers, 'Here's what the plane should look like.' Our loyalty is to the airline industry that serves the public, and the product has to be optimized for the airlines and not for the manufacturers" ... Before a

stunned crowd at an industry gathering last spring, Mr. Hazy lowered the boom on the A350 and, almost overnight, killed the design. This followed months of private discussions with Airbus executives in which Mr. Hazy complained that the proposed A350 was just a “warmed up” version of an existing plane, and that its wing design made it too slow... “I felt Airbus was paying attention, but was not embracing our ideas. I was so frustrated with Airbus because they were stalling”... He has warned Boeing and Airbus that the days of their control may be numbered by the growth of the Chinese, Russian and Japanese aviation industries.’



On 10 February 2009, Aero-News.net reported: ‘Udvar-Hazy, Branson Predict Rough Times For Planemakers

‘Both Chide Boeing For Strike-Related Delays. Two of commercial aviation’s biggest names had sobering comments about Boeing Commercial Aircraft last week, marring what should have been the cheerful occasion of the delivery of a new Boeing 777 to V Australia...

‘Sir Richard Branson, chairman of the Virgin group of airlines, appeared conscious his comments would reach both execs and workers at Boeing, and did not mince words. He commented on his new 777, which was supposed to have been delivered last year: “It was a horrible mess that Boeing was on strike,” he said. “We messed up tens of thousands of passengers over Christmas. We had to buy tickets on other airlines and scramble to get seats which weren’t available. The financial damage in an industry where the margins are minute is catastrophic.”...

‘Regarding Branson’s comments on Boeing labor woes, Udvar-Hazy added “You can’t deal with companies that are unreliable.”

Notice how Udvar-Hazy’s choice of wording has strengthened over the 2 years from 2007 to 2009; compare ‘optimized for the airlines not for the manufacturers’ and ‘I was so frustrated...’ alongside the 2009 statement ‘You cannot deal with companies that are unreliable’.

Summarising this information: The airlines are not satisfied with the performance of either Airbus or Boeing. Our pre-requisite test for the future failure of an industry is most definitely met.

So are there signs of sparks? Actions from potential upstarts which are likely to develop into all-consuming infernos?

We need to go 25 years back to see the origins of a spark:

Japanese Aerospace industry timeline

- Mid 1980’s – Toyota changes its legal documents lodged with the government of Japan outlining its current and proposed activities. This submission adds a new activity: development and manufacture of commercial aircraft
- 1996 – Boeing contracts Toyota Production System experts (the originators of Lean Manufacturing) to turnaround their failing B717 Longbeach Final Assembly line. Lead time cut by 60%, Work-in-Progress cut by 60%, on-time-deliveries approaching 100%. Toyota’s production system experts now had first-hand experience of how complete the final assembly of large commercial aircraft.
- Late 1990’s - Toyota begin recruiting aeronautical engineers in California
- 1997 – Michimasa Fujino sketches first designs for a Honda jet
- 2002 – Toyota single-piece composite fuselage TAA-1 test flies over Mojave Desert
- 2003 – First flight of the HondaJet, a ground-up Very Light Jet with fully composite fuselage and performance figures around 30% better than the competition. “HondaJet fulfils one of [Soichiro] Honda’s long-standing dreams” Michimasa Fujino, President & CEO, Honda Aircraft Company, Inc.
- 2003 – Toyota is reported as having cash reserves of over US\$30bn. This is more than the combined reserves of the ‘Big 4’ US automotive companies at the time.
- 2006 – Honda Aircraft Company now accepting orders for 2010 delivery of the HondaJet
- 2007 – Mitsubishi Heavy Industries launches the MRJ (Mitsubishi Regional Jet), direct competition to offerings from Embraer and Bombardier at 70-96 seats. First delivery scheduled for 2013
- 2007 – 2008 – Toyota displaces GM as the world’s number one auto-maker, a position GM held unchallenged for 70 years.
- 2008 – Honda celebrates 60 years, its 200-millionth motorcycle and is now the world’s largest manufacturer of engines.
- 2008 – Toyota become joint venture partners in the MRJ

But of course Boeing and Airbus will discount the HondaJet – it's only a VLJ (Very Light Jet) for 4 passengers. One of the relevant issues with the HondaJet is that it is powered by Honda's first aerospace turbofan engine. So the world's largest engine manufacturer, which for the last forty years has expressed a desire to become involved in aircraft production has now not only developed a highly efficient engine, but also made advances in wing and structure design. It makes one wonder where they are heading...

The initial reaction to the MRJ is that it is not real competition for Boeing and Airbus – maximum capacity is only 96 seats. Those who wish to remain in a state of denial about industry developments can also point to the statement from Mitsubishi Heavy Industries that it does not intend to become involved in the Large Commercial Aircraft (LCA) business. Toyota have not said this, nor have Honda and nor have any of the other Chinese, Japanese or Russian organisations currently developing commercial aircraft. Was this just a political statement to reduce Boeing's fear of placing such a large piece of work with MHI? Possibly, but even if MHI hold true to their word, any new organisation, say a joint venture of several large organisations, that included MHI would not be so constrained by MHI's stated reluctance to enter the LCA market – a market estimated to be worth some US\$2.5trillion over the next 20 years...



Branson, Udvar-Hazy and a reporter at Boeing to pick-up V Australia's first 777 300ER.
Credit Reuters



Europe was this week devastated with the news that Airbus is to close all its European plants except its A380 superjumbo line. The economy of Hamburg will be badly affected, but less so than that of Toulouse where Airbus has been the only large employer since the late 1990's. People are predicting a ghost-town in Toulouse, a city that already suffered from the wholesale outsourcing of IT to India and China during the last decade. Already a spate of strikes and civil unrest has been plaguing the city. The social consequences of this latest news are frightening – the extra 3000 job losses in Toulouse will raise the city's unemployment figure to over 30%. But Toulouse is just one casualty of Airbus downsizing – aerospace is known for the complex network of organisations involved in the supply chain. Nearly every aerospace and defence company in Europe has been, and will continue to be badly hit by Airbus' failures. The ramifications across Europe are enormous.

And this is not just a European issue; Boeing is dealing with similar woes. It has only one reasonably successful aircraft in the 787; the workforce of the Commercial Aircraft Group has dropped by 80% in the last 10

years. Seattle, the long-time home of the Chicago-headquartered firm is suffering similar though less extreme troubles to Toulouse.

From employing 55,000 people and producing a full range of commercial aircraft only 12 years ago, to 10,500 people and a single aircraft today, how did Airbus get into this state – we chart the history of the industry to find out.

The defining event to which most industry observers point was the launch of the MRJ in 2007. This was the first aircraft for a newly formed Mitsubishi-Toyota joint venture, the organisation which subsequently became Associated Aircraft Producers (AAP), and significantly was the first commercial aircraft delivered on time in over 20 years. Not only that, but it met all its performance guarantees. Though denied by both Tom Enders and Jim McNerney, contemporaneous CEOs of Airbus and Boeing respectively, observers believe that executives of both organisations did not realise the threat posed by the MRJ. The

MRJ, at 70 to 96 seats was smaller than either company's smallest product. It did however make a significant impact in the fortunes of both Embraer and Bombardier who had directly competing products.

In fact, most believe that Airbus and Boeing woke up to the threat in the spring of 2011 when AAP announced the AAP20 with deliveries to commence in 2015. The AAP20 has become the world's fastest selling, and by all accounts profitable, commercial aircraft. At 120 to 200 seats it was direct competition to the aging B737 and A320 families, the airline industry's workhorses. With composite fuselage and wings, teamed with Honda's new generation engines it offered seat-mile costs way below its outdated competition, in addition to passenger comfort only dreamt of a few years prior. On launch, order books for the 737 and A320 almost completely dried up – even though the commercial aircraft industry was on its upswing after the credit crunch of 2008.

At launch the AAP20 reportedly had costs of production unmatched by the A320 and 737 (even taking account of the learning curve advantage of over 20 years in production) which meant that Boeing and Airbus were unable to match the price. AAP is quoted as saying that its advanced production techniques, which had been drawn from AAP's member companies' automotive experience, resulted in build costs of around 60% of those of its competitors.

The once mighty GE is widely blamed for enabling Honda's entry into the jet engine marketplace. In the early years of the century, GE teamed with Honda to produce the engines for Honda's VLJ, the HondaJet, thereby giving away its decades of experience of aero engines. GE's current CEO accepts that the short-termism prevalent across GE in the late

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1990's and early this century was the major factor in his company's subsequent decline. It delivered good quarterly financial performance, but cut into the meat of the organisation; its capabilities to develop new products, and its capabilities to ensure the reliability of its existing products were severely damaged.

Now with the benefit of hindsight we can see the effects of the blinkered views of Boeing and Airbus executives around the turn of the century: They clearly believed they were in a two-horse race – the Airbus strategy had for some time been “Beat Boeing”, Boeing responded to the upstart Airbus by bleating to its government about subsidies being given to Airbus, almost causing a trade-war between the USA and EU. Neither recognised the real threat coming from new entrants to the industry.

Very early in the new century, with Forgeard heading up Airbus, it decided to beat Boeing at its own game – develop its own superjumbo. A rational decision based on market understanding or an ego boost for the franco-german executives? History shows that it never came close to being the commercial success predicted by executives of the time, nor was it an abject failure. What it did do was to consume massive resources at a time when the organisation arguably should have been thinking about updating its A320 workhorse – an update that could have harmed its competitor's order book and to some extent mitigated the impact of the soon to be AAP20. While Airbus was consumed with its superjumbo, Boeing had an uncharacteristic

flash of inspiration and launched its 787 Dreamliner from the still-born Sonic Cruiser. This caused a knee-jerk reaction from Airbus to launch development of the A350 which, after a faltering start, diverted resources from the troubled A380 programme. Both Boeing and Airbus seemed oblivious to the coming threats to their mid- to late-life workhorses, the 737 and A320.

With Airbus attempting to develop more programmes than it could manage, Boeing was set to reap the returns from the 787. What happened next is the stuff of legend: development and production problems beset the 787 like no programme before it. Some Airbus executives have claimed that Boeing tried to do with one giant leap what Airbus had

spanners in the works to delay the introduction of the 787 into service, damage Boeing's reputation, tie-up its staff in problem resolution and divert attention of its executive from the forthcoming AAP program. Whether the cause was incompetence or sabotage, the results are clear: first deliveries delayed by over 3 years, production ramp-up much slower than expected, massive penalties paid to the airlines, and thus little return on investment.

By the time the first AAP20 was delivered, neither Boeing nor Airbus were in a fit state to respond, both dealing with lacklustre sales/deliveries of their new aircraft and their cash-cow workhorse market decimated.



Vacant aerospace facilities in Toulouse falling into decay

gradually been stepping through over the previous 20 years. Other commentators have tended towards the conspiracy angle that some Asian political influence was exerted over Boeing's “3-heavies”, namely Fuji Heavy Industries, Kawasaki Heavy Industries and Mitsubishi Heavy Industries. The heavies were Boeing's risk-sharing partners making up over 30% of the development and production of the new aircraft. Some have suggested that influence was exerted on them to insert a few

Leaving aside the global strategic and political issues, could Boeing and Airbus have done anything themselves to reduce the future damage? Most industry commentators suggest that they could, but it was a case of too little, too late.

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It was well known that Airbus had the advantage over Boeing in production methods during the late 90's and first decade. Boeing was suffering from legacy sites, union troubles and its own highly bureaucratic management style which limited its improvement capability. It made a lot of noise about Lean, and with the advent of James McNerney began looking at its design/development processes, but as some insiders reported "it was like wading through syrup".

Meanwhile, Airbus wasn't suffering much better, hampered by EU employment law and a lack of transparency of performance from and within its operating divisions, its improvement efforts suffered a series of stop-starts – more stop than start.

The majority of improvement efforts were top-down initiatives such as Route'06 and Power8. These were characterised by consultant driven 'strategic reviews' which set up a number of 'workstreams' focused on reducing costs, rather than improving operational performance. These workstreams, while seemingly important to the executive levels, were at best meaningless and at worst a fatal distraction to the frontline staff dealing with the day-to-day operational issues. Now widely recognised to be of marginal value, such attempts at micro-managed, top-down controlled change are rarely used by leading companies

Various other initiatives were tried, often focused on Lean and

Six Sigma, but the sheer number of change initiatives simply confused people as to what was required. People involved at the time report that the major barrier to improvement in Airbus was not the will of the frontline employees. It is reported that they, in the main, felt the pain of operational problems daily and desperately wanted to change things, but were stymied by an apparently indecisive and unconcerned management and executive. It is possible that while the executive were concentrating on larger political issues, not least the battle for control of the organisation by the French and German co-owners, they left operational performance in the hands of management who either did not feel empowered or were too risk averse to drive real change.

Both organisations suffered from an unwillingness of engineers to learn from other industries. Major advances had been made during the second half of the 20th century in design/development and production methods, but relatively few had been effectively implemented in the aerospace industry. While the technical skills and capabilities of engineers in Airbus and Boeing are without peer, their organisational and

operational capabilities were distinctly lacking. Time after time designs were released into production only to find they were impossible to manufacture. One involved in improvement efforts at the time says that he had to stop using examples from the

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automotive sector as he was unable to get people to see past the arguments of 'but we don't make cars!'

By the time a real understanding of the troubles facing both organisations was recognised by a significant number of people, it was way too late. To transform these monolithic organisations with such entrenched cultures required a lot more than the 4 years from 2011 to 2015. They were starting from too far behind to catch up. Even by 2016 when the new competition was agonisingly painful in order books, profitability and turnover, the messages from executives about the urgent need for change were



One of Boeing's engineering office buildings in Seattle

by no means universally understood throughout the employed base, or if they were understood, the required actions were not taken. Instead of becoming coherent, focused powerhouses of change, both Airbus and Boeing were beset by industrial relations issues. It has been reported that frontline employees and middle managers had for so long suffered under wave after wave of so-called improvement initiatives, they had either stopped listening, or were actively engaged in promoting the message of non-confidence in the organisations' leaderships. In a near photographic repeat of the 'great auto begging' of 2008, the executives of Boeing and Airbus likewise turned to their governments for assistance. European and US governments were in a no-win position – the pain of losses from supporting the automotive industry before its collapse in the early teens were still raw; but they could not let such a strategically important industry fail without some desperate last-ditch measures. Unsurprisingly, history has repeated itself... yet again. The interventions have not worked and another industry is on its knees waiting for the bullet (or guillotine).



Evidence of civil unrest as a result of mass aerospace redundancies

What will it take to shape a different future?

Let's be clear about this

There is massive waste across the entire Western Aerospace industry supply chain. While there are pockets of adequate performance, most frequently found in manufacturing or assembly operations, the majority of the processes across the industry are unorganised, chaotic and incapable of delivering the required outputs on-time, on-cost or on-quality.

Right-first-time and aerospace are oxymoronic. Process capability (where it can even be measured at all) is woefully inadequate. The resulting first-time outputs must be revised, reshaped, reworked, often several times before the eventual outputs meet the thankfully rigorous regulatory requirements. This causes massive 'hidden factories' to deal with the disruption and lateness.

Leaders of western aerospace businesses seem to be more intent on covering up the inadequacies, managing shareholder confidence, than in resolving pathetically poor processes. In one instance the author was advised by a senior executive of a major aerospace company to avoid writing down any such comments in case the external media got wind of it and publicised the issue.

The first thing that needs to happen if the industry is to significantly improve its performance, and it must if it is to survive more than a few years, is to become brutally honest about the dangers of its wasteful practices. Aerospace businesses need to recognise and publicise the real threats to their very existence if they are to galvanise their employees into focused, directed performance improvement action.

While Western business leaders seem to be intent on delivering positive messages to shareholders, it is interesting to note recent comments from Toyota's president, Akio Toyoda, as reported by Bloomberg on 2 October 2009:

'The automaker is one step away from "capitulation to irrelevance or death," Toyoda said... Toyota has forecast a record loss of 450 billion yen (\$5 billion) in the year ending March...

The company has gone through the phases of "hubris born of success," "undisciplined pursuit of more" and "denial of risk and peril," according to Toyoda, who cited Jim Collins, the author of "How the Mighty Fail"...

"The salvation for the company isn't me," he said.

Toyota shares fell 3.7 percent to 3,380 yen in Tokyo trading...'

Compare this with comments from the leaders of the US automakers in the 'great auto-begging scandal.' The Wall Street Journal of 4 December 2008 reports the submissions from the automakers to Congress: After blaming their need for funding on foreign competition, their own high wage, health and pension costs, then attempting to justify their recent decisions to build large gas-guzzling vehicles, they then attempt to bluster that the world will be fine if only the government will bail them out.

On 11 May 2009, The Guardian reported an interview with Ford's boss Alan Mulally, previously CEO of Boeing Commercial Aiplanes: "Everybody... knows Ford is in a different place. That they're managing their business as a business and they're on the way back to profitability, which is again different from most of our competitors"... The company was in the red by a relatively modest \$1.4bn in the first quarter of the year – compared with GM's eye-watering \$6bn deficit and a mammoth \$7.8bn loss at Japan's Toyota. Mulally says: "Did you see our \$1.4bn compared to Toyota and GM? Gee, well, I mean ... write that stuff down!"

Let us be clear about how much Ford is suffering: Business Week, 5 March 2009: 'Of course, Ford remains a very sick company. It lost \$14.8 billion in 2008, the most in its 105-year history, and burned through \$21.2 billion, or 61%, of its cash hoard.'



So on the one hand we have Toyoda stating that his company is 'one step away from... irrelevance and death,' that 'the salvation for the company isn't me' after his company lost only a third of the money that Ford lost in 2008. On the other we have Mulally, apparently joyful that his company only lost \$1.4bn in the first quarter of 2009.

Toyoda knew his comments would result in a short-term drop in the value of his company's shares, but he said it anyway. His reason was to establish the urgent need for change within his organisation. It is clear he recognises that without these somewhat dramatic statements, his organisation has no real drive to do things differently; that without these statements he could be facing a 37% drop in the value of his company's shares in a few years.

Leaders of Western Aerospace businesses must elucidate the dire consequences of business-as-usual if there is to be any chance of generating sufficient appetite within those businesses for significant, substantial and sustained operational performance improvement.

Recognise the need

While it may at first seem very negative, the purpose of this article is to establish the need for change within the Western Aerospace industry on a massive scale. A commonly-held and deeply-emotional understanding of the need to do things differently is a necessary precursor for effective, large-scale change. The preceding 'future news' article provides a template for current and future leaders and change agents to develop compelling cases adapted to their own unique businesses.

There is no doubt that many in the industry will pooh-pooh the 'future news' case presented here, some will deny its factual truths, others will argue that there are many other possible outcomes, yet more will attempt to distract the message by focusing on trivia. This form of denial is a common human response to new information that challenges the status quo – in fact some have argued that denial is a necessary stage in the transition from ignorance to internalisation.

Leaders and change agents need to develop compelling cases, founded in fact, that make the hairs on the back of the neck stand up, that create involuntarily shivers through the people when they realise the implications.

Simply stating the case for the need for change is not sufficient. A few power-point slides will do little. The need for change has to be relevant in the minds of the people to their own situation; it needs to be felt in their hearts. This means open discussion, debate, probably modifying the case for change with additional facts or alternative interpretations.

Be aware there will be a variety of dysfunctional responses from people in the business – recognising real threat to our own livelihoods is a difficult emotional hurdle that will initially result in a range of excuses mainly aimed at avoiding the need to consider such a new reality.

The first step is to ensure the facts of the situation are accepted, next that the likely future is a reasonable prediction. This takes time. One must listen to the arguments and excuses, deal with each one-by-one. The alternative futures have to be explored. People need the space and the chance to counter the case for change before they can begin to feel and really recognise the consequences of continuing on the current path.

Done well, in a consultative environment, these actions to establish the credibility of the case for change can result in a commonly accepted need to change.

Let's be in no doubt about this: unless and until each person in the business recognises the need for change no significant change will happen, and Western Commercial Aerospace industry must change on a massive and unprecedented scale if it is to survive in the face of the coming powerful, competent and capable competition.



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Future articles in this series will explore alternative routes to eliminating the waste, getting things right the first time and achieving step-changes in operational performance...

The next question that must be dealt with quickly is 'So **what** are we going to do?' To draw an analogy with the donkey, the stick and the carrot: if you only use a stick, the donkey will certainly move but you have no control over the direction. The carrot is also necessary to provide direction and then to maintain momentum. Very soon after establishing the need for change, leaders and change agents must work with the people on establishing the vision (the end goal) and the concrete and direct steps to get to that goal. If there is no common vision or direction for action, it will likely result in different people shooting off in different directions. One of the worst possible effects is that it creates a greater division between 'management' and 'workers'; all recognise the need for change but the workers/managers feel powerless to influence the managers/workers in whom they have no confidence. In many other industries, this has manifested itself in industrial relations disputes. The pre-cursor to such damaging splits in businesses is a response of helplessness from the individuals: managers saying 'I know we need to change but my workers won't/can't/don't want to' and at the same time the workers saying 'I know we need to change but the management aren't acting/won't listen/I can't do anything.'

About the author

Jeremy Tranmer is a consultant in operational performance improvement to international aerospace and defence businesses. Confidentiality clauses and probable reader disbelief prevent him from publishing specifics of his experiences within the industry. He is a partner with Game-Change, an operational performance improvement consultancy.

Acknowledgements and references

Specific references are given within the text of this article.

General background information on Airbus and Boeing was drawn from John Newhouse's 'Boeing versus Airbus' 2007.

British Motorcycle Industry timeline was drawn from several sources including 'Whatever Happened to the British Motor Cycle Industry?' by Bert Hopwood, 1981 and totalmotorcycle.com

Japanese Aerospace Industry timeline was drawn from the author's own notes and various news and OEM sites such as boeing.com, hondajet.honda.com and mrj-japan.com