FORECASTS 2016: WHAT'S ON APPROACH FOR THE YEAR AHEAD?

News / Airlines, Manufacturer

1 Will Cirrus Vision SF50's entry into service kick off a personal jet craze?

In a word, no – the personal jet frenzy has been and gone. The idea of a small, fast, low-cost and versatile jet was compelling in the heady boom years of 2007-8, when sales and deliveries of turboprops, pistons and lower-end business jets hit record levels and the appetite for private flying – be it as an owner-flyer or a paying passenger – looked insatiable.

A handful of ambitious companies sought to capitalise and we saw a slew of small single-engined jets: the Diamond Aircraft D-Jet, Piper Altaire, Cirrus Vision, and the now-defunct Eclipse Aviation's Eclipse 400 and the Stratos 714.

With financial crisis, most were suspended or outright cancelled. Although Stratos has not given up hope with its 714, the aircraft is unlikely to come to market any time soon. Piper, a 90-year old manufacturing goliath, has no intention of resurrecting the Altaire and Diamond recently hinted that its next project would be a twin jet rather than a single.

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Speaking to *Flight International* at the NBAA convention in November, Diamond Canada boss Peter Maurer, suggested that there is no longer an appetite for small personal jets: “These are very different times. When the D-Jet made its first flight in 2007, the market was receptive. Perhaps a twin is more applicable in the current climate.”

Cirrus disagrees, and its enthusiasm for the Vision project continues unabated. After nine years, certification and first deliveries of the $2 million aircraft are imminent. The Duluth-headquartered company has 500 orders for the five-seater, and is building up a Vision fan base in the thriving US air taxi market.

Coming down the line in the next couple of years, too, is the Flaris LAR-1, another five-seat single introduced in 2013 by Polish engineering company Metal Master. Whether either model succeeds remains to be seen, and for the foreseeable future they should have their tiny market segment to themselves.

2 Will airline travel be safer in 2016 than in 2015?

Security issues, rather than operational or technical safety concerns, will be the big worry for airlines in 2016.

According to former chief inspector of flight operations at the UK Civil Aviation Authority Mike Vivian, “the airlines are going to have to put in extra resources as, arguably, governments in many parts of the world do not have the resources or abilities to provide the input that is going to be required in the ‘new order’".

But the industry also has to examine itself to discover whether there is an “enemy within”, in the light of events like the loss of the Germanwings Airbus A320 in March 2015 and Malaysia Airlines Boeing 777 flight MH370 the previous year.

The most blatant recent evidence that airlines are faced with a “new order” in security terms was the sabotage of a Russian MetroJet Airbus A321 at Sharm el-Sheikh, Egypt, with the loss of all 224 people on board. It was the self-styled Islamic State (IS) that claimed responsibility for bringing it down, but whether that claim is borne out by forensic evidence or not, there is sufficient political, religious and ethnic instability in the Middle East and elsewhere to justify a more intelligent look at airport and airline security globally. Industry experts agree it is not sufficient for governments just to declare higher national security states, because in the states most at risk they are already high.

Vivian warns that any immediate or longer term security review must consider include all those who have access to aircraft airside: pilots, cabin crew, caterers, refuellers, baggage loaders, cleaners, maintenance and operational staff, police and customs – even passengers. He calls for making better use of all these peoples’ skills and knowledge, and their personal vigilance, to highlight areas of security risk and poor practice.

But, he notes: “Security is only as good as the weakest link, and that weakest link may well be the airport staff member who, whilst passing all appropriate checks and screening, is secretly radicalised.”

Meanwhile, we’ve seen examples of another risk, if not a trend: deliberate malign action by a crew member on board the aeroplane. The clearest example is the Germanwings crash in the French Alps last year, a deliberate suicidal act by the co-pilot; similar questions hang over the still-

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mysterious disappearance of Malaysia Airlines flight MH370 and the crash of an LAMMozambique Embraer 190 in 2013.

Existing security systems, assiduously applied, could cope with all these risks except the one posed by the crew. The question remains then, what, if anything, can be done about the threat within?

3 Will Comac's C919 make a maiden flight?

In November 2015 Comac rolled out its C919 airliner to great fanfare. The jet looked sleek in its white, green, and blue livery. Thousands of guests and workers were ecstatic to see it finally come to life.

Unfortunately a roll out ceremony is the easiest part of a successful aircraft programme. Comac has committed to a first flight in 2016, followed by service entry in 2018, but some involved with the programme warn that these targets are "aggressive."

Comac apparently learned a great deal from its ARJ21 regional, which – years late – reached the first delivery mark late in 2015. But the ambitious C919 remains a major test for its nascent systems integration and engineering skills. Where there is a will there is a way, and Beijing is determined that the C919 will be a success. First flight – and the related national prestige – beckons.

4 How many orders will Mitsubishi chalk up for its MRJ?

The last time the orderbook for the Mitsubishi Aircraft MRJ regional jet grew was January 2015, when Japan Airlines firmed an order for 32 aircraft. This brought the type's firm orderbook to 223 aircraft, but no other orders were recorded throughout the year. Meanwhile, the Embraer E-Jet E2 series has racked up 325 orders since its official launch at the Paris air show in 2013 – three years after the launch of the MRJ.

As it watched orders for the E2 steadily mount, Mitsubishi stoically maintained that once airlines actually saw the MRJ flying, then the orders would start flowing again. Following the aircraft's first flight in November 2015, the world will be watching the MRJ test fleet in 2016. Will it be enough to kick-start MRJ orders this year?

5 Can Southeast Asia's low-cost titans really stick to their jet orders?

Flightglobal's Fleets Analyzer shows that the Lion Group has 232 aircraft in service, with orders for 491 narrowbodies. Arch-rival AirAsia Group has 185 jets in service, with orders for 387 more – 307 A320 and A320neo family aircraft, and 80 Airbus A330s and A330neos.

The year 2016 will see Lion take 74 new aircraft (31 A320s, 39 Boeing 737s, four ATR 72-600s). AirAsia, however, will take just seven A320s. It had been due to take more, but in early 2014 decided to defer seven aircraft in 2014 and 12 in 2015.

Both airline groups face similar macroeconomic challenges: rising borrowing costs and a collapse of commodity-dependent economic growth in their back yard. ASEAN open skies, previously touted as justification for all these jets, has yet to take off, so cross-border growth opportunities remain restricted.

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In sum, there is a lot of metal headed to Southeast Asia, but the macroeconomic environment is just not as hopeful as it used to be. Perhaps it is not a question of if orders will be deferred, but when.

6 Is it finally time for an Airbus A380neo?

There was speculation ahead of November's Dubai air show that Airbus might launch a re-engined A380, or even an "A350-1100" on the back of a launch order from Emirates or Qatar Airways. When neither transpired, the questions are now being posed for 2016.

Airbus faces a growing chasm between its expectations for the A380 – it thinks it can sell 30 a year, and must do so to break even – and apparent reality. As *Flight* closed for press there had been zero sales for the superjumbo in 2015. In fact, due to the collapse of A380 customerTransaero, net demand was negative. Airbus does have a history of pulling deals out of the hat at year-end, but Toulouse's dilemma is whether to sit tight with its shrinking – and very Emirates-dominated – backlog and bet on the concept finally catching on big time beyond Dubai, or to design a re-engined, and possibly stretched, A380.

Emirates Airline president Sir Tim Clark is the biggest advocate of an "A380neo", or an A380-900, and has hinted strongly that the carrier would order the variant if it were launched although, on the downside for Airbus, it would probably convert some of its existing orders for Rolls-Royce Trent 900-powered A380-800s. So far, few other airline chiefs have expressed enthusiasm for an A380neo. While Airbus might decide to take a massive roll of the dice and gamble on a revamped superjumbo re-energising sales – perhaps based on a commitment from Emirates for 100-plus incremental orders – all indications are that sense will prevail and the A380 will continue its slow progress to oblivion sometime early in the next decade. The worst case scenario – a failure to convince the market of the benefits of flying a 550-seater – has, in effect, already happened and Airbus will have quietly planned for the consequent write-off.

There might be better news for the middle sister in the Airbus widebody family. At the Dubai show, Airbus's chief operating officer for customers, John Leahy, said the airframer is studying the potential market for a version of the A350 with 50-60 more seats than the -1000. Although Airbus insists it is not a response to the Boeing 777-9X, Toulouse may face a problem if its rival begins to win significant sales in a capacity segment between its largest twinjet and the slow-selling A380. A larger A350 would require a modified wing and possibly a new engine if Rolls-Royce cannot squeeze more performance from the Trent XWB-97 that powers the -1000. Based on Leahy's confidence – "We think we could come up with a very good airplane" – expect at least a firm indication, by Farnborough, of Airbus's intentions. But Rob Morris, head of Flightglobal's Ascend consultancy, believes Airbus may want to wait to assess the performance of the A350-1000 once it flies, and possibly even the 777-9X, before committing its engineering resources to plugging the 350 to 550-seat gap in its portfolio.

7 Will the Gulf carriers place mega orders?

Much was made of the fact November's Dubai air show saw no order activity from Emirates, Etihad or Qatar Airways after their $170 billion spending spree in 2013 (which included business from Emirates sibling Flydubai). Was this a sign the Gulf trio had over-reached and were consolidating? Far from it. The 2013 air show was a one-off and there was certainly an element of anything you can do, I can do better bravado among the three rivals. With deliveries stretching into the 2020s, the Gulf trio simply do not need many more aircraft for the moment. However from a network point of view, they continue to expand aggressively including, controversially, into the

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USA; 2016 will see them add many more new routes.

That said, there will be at least one major order from the Gulf. Having ruled out an announcement at Dubai, Emirates has said it will finalise a deal for Airbus A350-900s or Boeing 787-10s in 2016. Emirates' Clark said in October the carrier had “all the data we need” to choose between the two widebodies and a decision to opt for one or the other type would definitely be made in 2016. Emirates cancelled an order for 70 A350s in 2014, but Clark says he is happy with revised performance figures from Airbus. He also says he has been impressed “on paper” with the largest Dreamliner variant.

There are those who will argue, of course, that the Gulf airlines’ growth curves cannot continue exponentially, and that the carriers and their financial underwriters recognise that. At some point the market for air travel through one of three neighbouring Gulf superhubs may reach saturation, especially given the emergence of another regional rival, Turkish Airlinesand its Istanbul hub. There is also the great unmentionable – regional conflict spilling over into the Gulf and scaring off passengers. Given the circumstances of these particular countries, that remains unlikely.

Other than the expected Emirates decision, the three carriers appear to be biding their time on the orders front. That is not to say Singapore or Farnborough will not see any activity, but do not expect another Dubai-style order splurge in 2016.

8 How will Lockheed Martin develop its new Sikorsky division?

On a lot of levels Lockheed Martin’s acquisition of helicopter maker Sikorsky makes a great deal of sense. It brings it closer to its major customer – the US Department of Defense – and adds a number of products to its military lineup that – as with the MH-60R – it already had considerable involvement with. To that end, there’s a clear rationale for the company to pump cash into Sikorsky’s ongoing efforts to modernise its military helicopter range, notably its involvement in the US Army’s Joint Multi-Role Technology Demonstrator programme, that seeks to validate the systems required for a future high-speed rotorcraft.

But questions linger on the future of the civil lineup. Sikorsky has two commercial products: the S-76D and the S-92. Both are struggling to sell, albeit for different reasons. The S-92’s big rival in the offshore market is the Airbus Helicopters H225, and the France-headquartered manufacturer is working to add new capabilities to the platform from 2017. And this year it additionally launched the concept study phase for the X6 – the eventual successor to the H225. If Lockheed is serious about maintaining Sikorsky’s long-term presence in the segment, it needs to kick-off the investment process now to match Airbus Helicopters’ plans for the X6 to arrive in the early 2020s. However, a short-term, relatively low-cost solution would be to modernise the existing S-92 – turning it into a B-model, in Sikorsky parlance, with improved engines, avionics, and even airframe, but without the need for an all-new programme. This is likely to be the route Lockheed chooses, which would also give it some breathing space to mature the technologies on the S-97 Raider and evaluate their applicability for the commercial market.

9 Will AgustaWestland persist with its AW609 tiltrotor?

All had seemed to be progressing steadily on the AW609 tiltrotor, with AgustaWestland preparing for the third and fourth prototypes to join the test fleet in the coming months and activities continuing apace using the two existing airframes. In March it additionally secured the high-profile backing of Bristow Group on the programme. Although there is no commitment on the operator’s part in terms of firm orders, it will work to shape the AW609 for the offshore oil and gas market.

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All seemed set fair for certification in 2017 and service entry the following year. Then came the fatal 30 October crash of the second flight-test aircraft in northern Italy. Both pilots were killed in the incident, which is still under investigation. Although it is too early to speculate on the causes of the accident, it has still thrown a large question mark over the programme.

AgustaWestland has maintained its commitment to the tiltrotor – and was further boosted by a tentative deal struck at the Dubai air show with the United Arab Emirates Joint Aviation Command for three firm orders and three options. The manufacturer now has the backing, and as far as can be ascertained, is fully behind the continued development process. But, and it is a big but, if the accident report attributes the crash to an inherent flaw with the design as opposed to a simple engine fire, for example, then AgustaWestland will have a tough decision to make. Our money is on it persisting with the tiltrotor technology – it has too much riding on it not to.

10 Has the offshore transport market changed for good?

In short: yes. However there is a longer, more nuanced answer to the question. With the price of oil still in the doldrums and showing no sign of recovery any time soon, the helicopter operators in the sector have taken a pummelling. Spending by oil and gas producers has been reined in as rigs are decommissioned and exploration axed. As a consequence, both the helicopter operators and their customers have had to become more creative in how they support the offshore workforce, through sharing of equipment or right-sizing aircraft.

What is clear is that the days of treating helicopter transport like an ad-hoc taxi service or sending a half-full 19-seater out to a rig are long gone. However, a consequence of this is that flight activities are down by around 25% compared with a previous high point. Pilots have inevitably been let go, and operators have also used the opportunity to de-fleet older aircraft.

The feeling in Aberdeen, the operational heart of the UK oil and gas sector, is that even when oil prices rise again – as surely they must – there will be no return to the operational practices of the past. Producers will be slow to relinquish the savings the changes have brought. Yes, the sector will grow again, but whether we will see a return to the good old days is doubtful indeed.

11 Will there be a 2016 Moon landing?

Certainly not – but the first private sector trip to our natural satellite may happen by 31 December 2017, the latest deadline for completing the $30 million Google Lunar XPrize challenge. What 2016 promises is preparation by the two teams in the running.

“May happen” is a good way to put it, because the prize challenge is hardly trivial. First, the Moon really is a long way away. And, once there, the goal is to land a rover on the surface, travel 500m and send back high-definition video and images, all with no more than 10% of the money coming from government. First team to succeed gets $20 million, second gets $5 million; a short $6 million has been awarded already for demonstrating enabling technologies like optics, landing and descent navigation guidance, avionics, etc.

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In October and December 2015, two teams – SpaceIL, from Israel; and California-based Moon Express – formally booked flights to the Moon, on a SpaceX Falcon 9 rocket and a Rocket Labs Electron, respectively. Both will be busy if they're actually going to fly next year; apart from having hardware and software ready, SpaceIL's flight needs a bevy of secondary payloads for what is by any measure a peculiar mission profile, and Rocket Labs talks the talk but its Electron has yet to fly.

Don't be too surprised if the X Prize people decide to stretch their deadlines and accept further entries beyond the 31 December 2015 cut-off or even extend the completion date into 2018; deadlines have been moving for a couple years now.

And, don't make too much of the whole thing beyond the thrill of doing it. Notions of exploiting lunar resources for the good of humanity, or even just for pure personal profit, seem a bit far-fetched. Even the $20 million prize won't begin to cover costs, and the potential value of any resources on the Moon could not, surely, approach the cost of getting at them.

12 Any chance of Virgin Galactic finally getting into space?

To what is becoming a perennial question, the answer remains "no". The much-delayed company – still recovering from the fatal test flight crash of its SpaceShipTwo in October 2014 – may get its second, and improved, SpaceShipTwo off the ground this year. But much testing lies ahead, with a new rocket fuel; as of the crash, the highest they'd reached was 70,000ft, which is so far short of the 300,000ft-plus needed to clear the 100km boundary between Earth and space as to raise the question, does VG really have the technical capacity to get its six-passenger, two-pilot space glider into suborbital territory?

Presumably the engineers have it worked out, but there is a lot of power involved so nothing is straightforward. VG and boss Richard Branson are going cautiously – understandably so, given the implications of the sadly real prospect of killing a spaceship load of billionaires.

A better question to ask might be, "who among the private sector contenders will be first to suborbital space?"

It is a distinct possibility that the much less-well PR'd Blue Origin could take the prize. A late 2015 test flight of its "conventional" rocket-and-capsule arrangement made it above 100km (or so the company claims). The New Shepard capsule – much smaller and vastly simpler than VG's moving-wing spaceplane – was recovered to plan by parachute, and the BD-3 rocket booster even managed a vertical, powered return to its West Texas flight facility.

Blue Origin is rather inscrutable, but while a human-carrying flight would appear to be a 2016 possibility, it has to be unlikely. Like VG, the Jeff Bezos-backed operation appears to be in no huge hurry

13 Will the LRS-B award trigger a new round of industry consolidation?

McDonnell Douglas faced many challenges in the mid-1990s, but losing the opportunity to compete for what would become the Joint Strike Fighter contract in 1996 was the final straw. Shortly after the Department of Defense shortlisted Boeing and Lockheed Martin for a competitive fly-off, McDonnell agreed to a merger with Boeing.

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So major contract decisions often have consequences for the industrial base, especially at the prime contractor level.

At the beginning of 2015, several analysts openly speculated that the looming contract award for the long-range strike bomber (LRS-B) contract could mean the end of Northrop Grumman. Without access to the only combat aircraft programme planned until at least 2030, Northrop seemed unlikely to survive as an independent manufacturer. By the same logic, Northrop also appeared vulnerable to acquisition if the company won the deal, as Boeing might be provoked to take over the company to remain a player in the combat aircraft business.

The contract award to Northrop in late October did little to resolve the situation. Boeing's pending protest over the US Air Force's decision is not likely to be decided until mid-February.

But there are already signs that industry consolidation talk is waning. The Pentagon's acquisition czar, Frank Kendall, had made clear the Pentagon would not support further consolidation at the top of the defence industry.

The limited production run for the bomber programme also mitigates the impact of the contract award through the supply chain.

14 Will the commercial supply chain be able to keep up with rising production levels?

By the end of 2016, Boeing plans to deliver 65 commercial aircraft of all models every month, including 42 737s and 12 787s. Airbus has not yet clarified rates for A350 and A380 production next year, but it is likely the manufacturer will be delivering similar numbers of aircraft overall.

For several programmes, the rates are only going higher. Airbus has announced that A320 output will rise to 60 per month before 2020. Boeing has committed to building 52 737s per month by 2018 and continues to explore increasing the pace even further. Monthly deliveries for the 787, meanwhile, are rising to 14 per month by the end of decade, as Airbus continues to push the A350 toward a steady rate of 10 deliveries per month.

All this activity has put unprecedented pressure on a supply chain straining to keep up with commercial demand. The cracks are already visible, with aircraft deliveries delayed due to a lack of what might effectively be industrial afterthoughts, such as premium cabin seating.

The trends have forced Airbus and Boeing to consider extraordinary actions. Some customers, including Qatar Airways, have called on the manufacturers to in-source a greater share of the supply chain, so Airbus and Boeing are not beholden to a small pool of highly specialised suppliers.

In the end, market forces will probably force a rebalancing of supply and demand. If airlines and lessors prove they can sustain such increased rates for an extended period, more companies will be able to justify the capital spending required to keep delivering equipment at such rates. Most of the major contractors have already made such commitments, with Airbus and Boeing using extra volume to drive pricing discounts from suppliers in the process.

15 Will Embraer launch an ultra-long-range business jet?

Unlikely. The Brazilian airframer has made it clear such a jet is part of its future product strategy, but don't expect a programme launch over the next 12 months.

Embraer, however, can't be accused of slacking where product development is concerned. Since

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its Executive Jets (EEJ) division was launched in May 2005, it has introduced six new models, including four clean-sheet designs.

The superlight Legacy 450, certificated in August, completed the line-up. This is a major achievement for a company whose only product in the sector until 2005 was a VIP version of its ERJ-135 regional airliner. That type has since morphed into the popular Legacy 600 series.

With nearly 1,000 deliveries behind it, Embraer now has its sights on a top-three spot on the business aircraft manufacturing leaderboard. To compete at the top – and most lucrative – end of the business jet sector, an ultra/long range type will eventually be part of its product offering.

“Of course we would like to have an ultra-long-range product,” EEJ president and chief executive Marco Tulio Pellegrini told *Flight International* recently. But the sheer volume of innovative programmes already embedded or being introduced into this sector over the coming five years, such as the Gulfstream G650ER, Dassault Falcon 8X and Bombardier Global 7000 and 8000, are preventing such a bold move.

“With our existing products, we have been able to bring something unique which has enabled us to leapfrog our competitors,” Pellegrini says. “But this isn’t the case in the high-tech, ultra-long-range sector. We need to find the sweet spot.” Given Embraer’s success so far in each of the niche business jet sectors, it will be only a matter of time before it moves. Watch this space.

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