AESA Radar for Eurofighter
The first, fitted to a test aircraft, was unveiled yesterday.

AirBaltic First for Bombardier CS300
Latvia’s airBaltic is to become the first operator of Bombardier’s 160-seat CSeries CS300 airliner, the manufacturer announced yesterday. The airline will take delivery of the first of 13 aircraft in the second half of 2016. It also has options for a further seven of the aircraft.

A new high-speed unmanned aircraft, manufactured almost entirely by 3-D additive manufacturing, was unveiled at the Dubai Airshow yesterday by Stratasys and Aurora Flight Sciences. The unprecedented reliance on additive manufacturing helped take it from initial idea to first flight in under nine months. Dan Campbell, aerospace research engineer at Aurora Flight Sciences, is seen here with the high-speed UAV during testing in Utah in September.
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Emirates Unveils Fleet Expansion Strategy

Emirates wants more airline operational data for the Airbus A350 before making a decision about an order for the type, or Boeing 787s, Emirates Airline President Tim Clark said at the Dubai Airshow.

The airline isn’t announcing any orders at the show because its medium-twin campaign isn’t ready for a decision yet and because Airbus has not launched the A380neo, which Clark has been pushing for.

Emirates canceled an earlier order for 70 A350s because the aircraft were “out of contract” by then in terms of some performance criteria. Now it is looking into finding a sub-fleet that will replace the A330s, A340s and 777-200ERs the carrier operates. “Going south in size is not so smart,” Clark says, so Emirates is looking at a combination of 787-9s and -10s as well as A350-900s and -1000s.

The airline no longer demands further changes to the 787-10 as it “will do most of the world that we want it to do.” But if Boeing wants to have a chance of winning the contract, it will have to include the criteria in its performance guarantees.

On the Airbus side, Clark is urging Airbus to ramp up A350 production rates faster so that the type becomes established more quickly. Emirates will wait with its decision for up to a year until the operational fleet of A350s has reached around 20 flying with various different airlines and in different mission profiles. However, Clark points out that he is “not doubting that it is a good aircraft.”

Clark confirmed that Emirates can convert the last 25 orders of the batch of 50 it bought at the 2013 Dubai Air Show into A380neos and pick an updated version of the Rolls-Royce Trent XWB engine for the type, should Airbus decide to launch the new variant. Emirates is not only keen for the type to be built but also for it to become available by 2020. Then, the first leases of its existing A380 fleet are expiring and Emirates, ideally, would like to replace them with the A380neo.

Clark points out that “it does not necessarily have to be made a stretch.”

—Jens Flottau

Elettronica Reveals ‘Growler in a Pod’

ITALIAN DEFENSE ELECTRONICS firm Elettronica has unveiled a pod-mounted active-phase-array jammer for fighter jets.

The ELT568 Escort Jammer is being developed in conjunction with the Italian defense ministry and has been designed to provide an electronic jamming capability for groups of aircraft.

The 4-6 meter long pod would be initially integrated onto the Panavia Tornado but could later feature on the Eurofighter Typhoon.

Enzo Benigni, Elettronica’s president, who revealed the pod at the Dubai Airshow said: “The systems in the pod are fully matured, we have decided to re-package them in a pod.”

“We want to make a pod that can be fitted to all the European fighters,” said Eugenio Santagata, the EVP for marketing and strategy.

The pod is yet to fly on an aircraft; company officials say they are waiting for test aircraft to become available. Benigni said the pod is free of any International Traffic in Arms Regulations (ITAR), making the pod highly exportable.
Thanks to the wonders of modern aviation, we’ve conquered distance—more or less. Our Q400—the world’s most technologically advanced turboprop—is doing more to connect bustling metropolises and far-flung communities than any other aircraft in the skies. Able to handle both urban approaches and rugged landscapes, and to shuttle varied passenger loads with greater frequency, it’s bridging the gap between town and country, toughness and comfort, with more speed and less cost.
Boeing Works Fast on Midsize Maritime Recon Jet

A vivid example of the way off-the-shelf elements can help speed up aerospace programs can be seen on the static display here. Here, two years ago, Boeing announced it had selected the Bombardier Challenger 605 business jet as the platform for its MSA (Maritime Surveillance Aircraft) program; this year, the demonstrator aircraft is at the show.

“It’s kind of a difference for us,” says James Detwiler, VP of business development for Boeing’s maritime surveillance platforms. “In the past, we’ve relied on a major U.S. program, like the U.S. Navy’s P-8, then we go and sell it internationally. For this one, we took a commercial off-the-shelf solution for the midsize part of the market, built a demonstrator, and now we’re taking it around the world.”

Unlike the weaponized P-8, the MSA does not deliver a comprehensive sub-surface capability and cannot prosecute strikes. “The armed ASW [anti-submarine warfare] is the discriminator between the two,” Detwiler said during a presentation at Defence IQ’s Maritime Reconnaissance and Surveillance conference in London earlier this year. “MSA is more geared toward anti-piracy, anti-terrorism and border security.”

The mission systems leverage experience from across Boeing’s airborne surveillance platforms, with elements of the 777-based AEW&C (Airborne Early Warning and Control) and P-8 finding their way into the MSA’s cabin. There are three crew workstations, one of them in a closable clamshell configuration that can be stowed when not in use. The workstations feature high-resolution multi-touch dual screens. The mission system will run the same software as the P-8.

The sensor fit includes active, electronically scanned array radar, an electro-optical/infrared turret, electronic support measures, communications intelligence equipment and automatic identification system. The demonstrator uses a Selex Seaspray 7000 AESA and a Star Safire 380 EO/IR turret.

Bombardier C Series

First flown just over two years ago, the C Series began making itself better known to the public only in June of this year with a debut appearance at the Paris Air Show. Dubai is, therefore, only its second showing on the international circuit. That might have been different had the airliner’s certification program not been interrupted by a grounding order after a failure of its Pratt & Whitney PW1500G turbofan. Now playing catch-up against a background of company financial austerity, the C Series is flying in both CS100 and long-fuselage CS300 forms, seating between 108 and 160 passengers.

Diamond DA62

Now in production following its certification in Europe, the DA62 can easily be confused with the better-known DA42. It has two diesel engines and is built mainly of composite materials, but the differences begin there, with seating for six adults. Maximum takeoff weight is 5,070 lb. Powerplant is the Austro Engine E4P-C (AE330) turbocharged, 2.0-liter diesel, rated at 177 hp with MT three-blade, scimitar-shape, constant-speed propellers.

Embraer Legacy 500

It was just a year ago that Embraer received certification for one of its two latest business jets and began deliveries. The Legacy 500 is the larger of a pair of aircraft launched together, both with the ambitious goal of bringing fly-by-wire flight control to this sector of the executive aircraft market. After some tribulations, it has turned out well for the manufacturer and the smaller Legacy 450 has now also been certified (this August). With two Honeywell HTF7500E turbofans and a price ticket of about US$20 million, the Legacy 500 will accommodate two crew and between eight and 12 passengers.

Embraer Lineage 1000E

New models don’t always give more. The “E” version of the Legacy 1000 large business jet is recognizable by the fact that some of its cabin windows, and one door, are removed. This helps differentiate it from the Embraer 190 airliner from which it is descended and also saves 500 lb. (227 kg) in weight – equivalent to another 200 nm (370 km) of range. For the crew, there’s optional autoland and the Embraer Enhanced Vision System.

Embraer Super Tucano

The stretched version of the Tucano turboprop trainer has been around for two decades, although it was adopted by the home air force in Brazil as a light attack aircraft only in 2001. After this slow start, it has enjoyed orders from several Central and South American countries and more diverse contracts in Africa and the Far East. Wing hardpoints are available for 133 different external stores configurations including machine gun pods, air-to-air missiles, rockets and bombs.

Gulfstream G650ER

An “Extended Range” version of the established Gulfstream G650 was announced in May last year, some time after that aircraft was first shown in Dubai. Gulfstream moved quickly and the ER received its certification the following October. There’s no external difference between the two, and crew and passengers will notice nothing from the inside. However, range is increased by a very useful 500 nm to 7,500 nm, thanks to an extra 4,000 lb. of fuel.
The AW189 is a brand new 8.3 tonne, twin-engine helicopter, designed to answer the growing market demand for a versatile, affordable, multi-role platform.

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A new high-speed unmanned aircraft that was printed almost entirely by 3-D additive manufacturing was unveiled yesterday at the Dubai Airshow. Stratasys and Aurora Flight Sciences say the unprecedented reliance on the new technique helped take it from initial idea to first flight in under nine months. The aircraft can be seen on the D2M/Stratasys Stand 206.

"Aurora wanted to look at the feasibility of producing a vehicle tailored to unique mission requirements," says Scott Sevcik, aerospace and defense business development manager at Stratasys. "They identified a set of performance parameters, then designed the outer mold line of a vehicle that would be ideal for meeting those mission parameters.

"We looked at that outer mold line and asked, what is the optimum structure internally?" he continues. "Not ribs and spars, but a more organic structure that enables the vehicle to be as lightweight and stiff as possible without compromising the outer geometry. The ability to mass-customize the aircraft rather than mass-produce them was the underlying driving demonstration."

Design collaboration took place in the second quarter of the year, with the final phase - manufacturing and flight - taking around two months. The 3-meter-wingspan, 150-mph, 15-kg (33 lb.) aircraft made its first - and so far only - flight in Utah in September. "We believe it to be the fastest, largest and most printed aircraft ever to fly," says Sevcik.

The only parts of the aircraft not produced by 3-D printing were the engine (a 22-lb.-thrust King Tech turbine), the electronics and the tires. Stratasys used three different additive manufacturing techniques to produce the rest. The wings and fuselage were built in plastic via FDM - fused deposition modeling. Direct metal laser sintering (DMLS) produced the thrust-vectoring metal exhaust nozzle, while laser sintering was used for the highly complicated fuel tank.

"It is conformal to the engine, so the turbine actually slides right through the fuel tank," says Sevcik. "It's fully sealed, with complex pathways printed through the tank for wire routing."

Flight duration is only 5 min., and, to comply with U.S. regulations, it flew at a relatively low altitude and within line-of-sight of its ground-based pilot. But the underlying concepts the UAV validated have potentially revolutionary implications.

"We believe the demonstration highlights that there is an evolution in the way aircraft can be designed and manufactured, and that design and manufacture can become tightly coupled," Sevcik says. "With continued improvement in materials and process, the scale of these vehicles could get larger and larger. We’ll be able to redesign interior structures to support optimal shapes, and speed the design and manufacturing process along with it. So vehicles can be tailored to mission requirements and be of ideal performance, rather than having a basic performance applicable to multiple missions."

—Angus Batey

The fastest, largest and most printed aircraft ever to fly"

—Scott Sevcik, aerospace and defense business development manager, Stratasys

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U.S. Aids Embraer Super Tucano Sales

Fresh off completing the sale of six A-29 Super Tucano to Lebanon, Embraer and its partner Sierra Nevada seek to expand the aircraft’s inroads in the Middle East and Africa with its first-ever Dubai Airshow display of the light attack aircraft.

“We believe there is great potential in the Middle East area,” says Gilbert, VP of business development for Embraer.

Deliveries of the US$173 million Foreign Military Sale to Lebanon have been announced by the U.S. Air Force as lasting through 2019. But the delivery schedule and further details will be established as the contract is finalized, according to Taco Gilbert, VP of business development for Sierra Nevada’s intelligence, surveillance and reconnaissance (ISR) business area.

The deal will expand the ability power of the Lebanese air force to conduct counter-insurgency missions. It will provide close-air support to meet “internal and border security threats,” according to the U.S. Defense Security Cooperation Agency. Lebanon is struggling to deal with the spillover effects of the Syrian civil war along its border – a flood of refugees and recent bombing attacks.

When the U.S. State Department approved the sale in June, it was predicted to include eight Pratt & Whitney Canada PT6A-68A turboprop engines, eight ALE-47 countermeasure dispensing systems, eight AN/AAR-60(V)2 missile launch detection systems, and other equipment and support.

The Super Tucano, which flew across the Atlantic for its Dubai debut, has already been sold to 12 countries. Two contracts announced during the Paris Air Show have been signed – to Mali and Ghana. Embraer hopes to wrap up another contract with Senegal before the end of the year, Gomes says. Meanwhile, Embraer continues to upgrade the Super Tucano, which has racked up more than 230,000 flight hours, including 33,000 hr. in combat.

Two to three years ago, it had 130 different weapons configurations. Now, it has more than 150, according to Gomes. Along with a suite of sensors, the Super Tucano can expand its playbook beyond its role as a trainer or close-air support aircraft to provide intelligence, surveillance and reconnaissance for internal security.

Sierra Nevada, which assembles the aircraft in Florida, for Embraer, will also continue deliveries of the A-29 to the U.S. Air Force under its Light Air Support contract for training the Afghan air force. Sierra Nevada has delivered 13 of the 20 aircraft to date and will continue to deliver them at a rate of one per month, according to Gilbert.

The U.S. Air Force Training began training Afghan pilots early this year at Moody’s AFB in Georgia. The Air Force declined to comment on testing progress to date.

The light air support contract has been the subject of controversy from the very beginning. Embraer and Sierra Nevada initially won a 2011 competition for the Afghan air force training program, over Beechcraft’s AT-6. Beechcraft protested, leading to another victory by Embraer and Sierra Nevada – and another protest – before the contract was ultimately granted to Embraer and Sierra Nevada.

—Jen DiMascio

Beechcraft Wolverine Bares Its Claws

The Beechcraft AT-6 Wolverine on static display at the show has had an eventful recent history. In September, the aircraft flew to Namest and Oslavou in the Czech Republic to take part in NATO’s Ample Strike 2015, the type’s first involvement in one of the coalition’s exercises. The purpose of the exercise was to train Joint Terminal Attack Controllers in conducting close air support missions in a live flying environment.

The Wolverine flew seven operational missions during the exercise. These included 35 successful engagements of live adversary forces.

“This was an important mission for the Beechcraft Wolverine,” says Russ Bartlett, president of Beechcraft Defense. “It was the first participation in a major day/night operational exercise, as well as the first overseas operational demonstration. The Wolverine was a crowd-pleaser both in the NATO exercise and the demonstration flights we conducted while in the region.”

Although a derivative of the T-6B Texan trainer, some confusion persists about the aircraft’s designation. The U.S. Department of Defense has used both T-6C and AT-6C since February 2009 to describe aircraft in the Foreign Military Sales program. The designation T-6C+ has also been used by Beechcraft to refer to armed aircraft sold to Mexico. The U.S. Army is operating four aircraft it calls T-6D. Beechcraft officials and press releases have called the aircraft the AT-6 Wolverine, since the name was announced at the Paris Air Show earlier this year, but the company’s website refers to it only as the AT-6 Light Attack.
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Imagination at work.
Adcom Goes Global

At the Dubai Airshow in 2013, Adcom Systems’ exhibit was dominated by a full-scale model of the UAE-based airframer’s latest creation - the 12-tonne Global Yabhon unmanned aircraft.

This year the focus is not on the Global Yabhon but on Adcom’s global expansion. As well as showcasing two new aircraft, the company announced yesterday that it is to start manufacturing and flying its aircraft in the UK, in one of the blocks of airspace in Wales created to permit flights of UAVs. Subsidiaries in other countries will follow.

“Adcom Systems is a world champion now in UAVs,” says Adcom’s founder and chief designer, Dr. Ali Al Dhaheri. “I am very impressed with the Welsh government and the people there. They’re eager to have the technologies of unmanned aircraft. It’s progressing very well.”

Adcom’s UK operation is already up and running via a partnership with the British company DO Systems. DOS offers a range of airborne surveillance solutions based around DA42 manned aircraft from a base at Bournemouth Airport, which is where Adcom’s UK operation is headquartered.

A final manufacturing location has yet to be decided, but an initial facility is under construction in Wales. The Adcom-DOS partnership has opted for a higher set of certification and regulation standards than required.

“A lot of UAV operators don’t understand things like EASA [European Aviation Safety Agency] standards,” says Ian Griffiths, AOS’s CEO and Adcom UK’s manager. “The work is at a Part 145 facility. It’s not required by law – but that’s because nobody has made that law yet [for UAVs]. Ali said, ‘Aim for the highest standard,’ and that’s what we’ve done.”

Flights will take place from Qinetiq’s facility at Llanbedr Airfield, with a first UK flight of Adcom’s signature aircraft, the S-shaped, twin-winged United 40, perhaps as soon as February. Work done on the Thales-led Watchkeeper program has helped inform Adcom’s plans for flying in Britain.

“We’ve been watching [the Watchkeeper team] pave the way with airspace allocation, usage and acceptance by general aviation,” says Griffiths. “Obviously this will be the largest unmanned aircraft to be seen in those skies.”

Al Dhaheri is also targeting expansion in two other territories - India and Saudi Arabia. “India has a big interest in all our products,” he says. “We are now in the process of creating the company and working with the government there. And Saudi Arabia is coming along very well. These technologies have to be established in the country, and it’s not simple. We need to educate and train people to set up manufacture. But we are very fast – we can set up manufacture in six months.”

As befits a company that is keen to do it all - Adcom builds not just aircraft but ground control stations, sensor turrets and data links - plans are in train to equip the aircraft with a sense-and-avoid capability.

“We have a system to install,” says Griffiths. “There’ve been trials done in another country on a Diamond platform. It’s a matter of finding which one is best for each aircraft.”

The proposed mission sets for the Flash 20 are as distinctive as Dhaheris’s eye-catching designs. He is keen to see Adcom’s business come primarily from non-military customers, and the aircraft is being marketed for wildlife protection applications.

“I call that aircraft a whale tracker,” Dhaheri says. “It flies for 60 or 70 hours, which would be nice for whale tracking.”

Dhaheri also is hoping that other UAV manufacturers answer a call he is issuing at the Airshow to establish a consortium to promote a better public image for UAVs.

“We’ll be more than glad to communicate with everybody,” he says. “We can even release some of our technology. Our objective is to improve the reliability of UAVs. It doesn’t matter who makes them.”

—Angus Batey
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Superjet International has found a second customer for the Superjet 100 and the aircraft’s first operator in Western Europe.

Irish regional carrier Cityjet last month signed an agreement to take up to 25 of the aircraft, with 15 of them on firm order. The airline plans to take an initial four aircraft next year and another 11 in 2017. The Superjets will initially be used for charter flying but will move onto the London-City scheduled network in the second year.

Cityjet has a major base in London-City and needs to replace its aging fleet of Avro RJ-85s, which are between 15 and 18 years old. The airline is only the second Western operator of the Superjet following Mexico’s low-cost carrier Interjet. Cityjet plans to fly the aircraft in a 98-seat configuration at a 32-in. pitch.

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Cityjet had been owned by Air France until last year when it was acquired by German airline investor Intro Aviation, which used to own DBA and LTU and is currently in the process of selling Intersky, its other regional carrier. —Jens Flottau

Rockwell Collins announces on Booth 1434 today that local airline flydubai has selected a suite of its avionics, including head-up guidance system, MultiScan ThreatTrack weather radar and data-link communications system for 11 Next-Generation Boeing 737-800 airliners to be delivered during 2016 and 2017. A comprehensive communication and navigation suite is also included.

HGS-4000 equipment for the first part of the contract features manual guidance to touchdown, allowing for Category III approach and landing down to 600-ft. (200 meter) runway visual range (RVR), low-visibility takeoff as low as 300 ft. (75 meters) and lower-than-standard Category I approach minima of 1,400 ft. (350 meters). Numerous safety features include specific symbology for tailstrike avoidance, TCAS alerts and awareness, and recovery from unusual attitude and windshear.

MultiScan ThreatTrack is the only commercial airborne radar offered by Airbus and Boeing that delivers market-first capabilities, including two-level turbulence detection and predictive overflight protection, while enabling inferred hail and lightning prediction. Also included is GLU-925 MMR, the first certified GPS Landing System receiver, which enables high-integrity navigation, including RNP AR, Category III ILS and Category I approaches. The MMR also enables GPS position and availability requirements for ADS-B Out mandates.

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Lufthansa Technik Open for A350 XWB Business

Lufthansa’s technical services subsidiary, Lufthansa Technik (Stand 12434), is ready to work on both commercial and VIP customers’ A350 XWBs. The company has built its service offering on a lengthy involvement with the type, with engineers taking part in Airbus’ A350 Customer Focus Groups and an entry-into-service team preparing for the arrival of the first of Lufthansa’s 25 XWBs in November 2016.

The company holds Part 145 approval from the European Aviation Safety Agency and is supporting different airlines with MRO services for the type. Its 350 XWB portfolio includes on-wing support on composite structure and overhaul and maintenance on the auxiliary power units. This experience has helped put the company in a strong position to offer services to business and VIP customers.

“Through our intensive, long-standing cooperation with Airbus, our participation in all the expert symposia and our ongoing experience with the first commercial customers for this aircraft type, we are also able to offer all the engineering, completion and technical services for the ACJ350 at the highest possible level,” says Carsten Wortmann, corporate product manager for Lufthansa Technik’s A350 market entry. The company’s Hamburg facility will handle VIP completions and their creative design department is working on an exclusive interior concept.
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PARIS, FRANCE
Dassault Falcon 10/100†
Dassault Falcon 20/20-5†
Dassault Falcon 2000/2000EX†
Dassault Falcon 2000EX EASy/DX/LX/S/LXS†
Dassault Falcon 50†
Dassault Falcon 7X†
Dassault Falcon 8X†
Dassault Falcon 900/900B/900C†
Dassault Falcon 900EX EASy/DX/LX†
Embraer Legacy 600/650†
Embraer Lineage 1000

ST. LOUIS, MO
Bombardier Challenger 850
Embraer Legacy 450/500†
Embraer Legacy 600/650†
Embraer Lineage 1000
Saab/leiner 40/60/65/75A/80

LAFAYETTE, LA
AgustaWestland AW139
Bell 206
Bell 407
Sikorsky S-76C+/C++
Sikorsky S-92

LONDON FARNBOROUGH, UK
Beechcraft Beechjet 400A
Beechcraft King Air 200/200C
Cessna Citation Bravo
Cessna Citation CJ2
Cessna Citation Mustang
Cessna Citation Sovereign
Cessna Citation XLS/XLS†
Gulfstream G550
Hawker 400XP
Hawker 750/800/800XP/850XP/900XP
Sikorsky S-92

LONG BEACH, CA
Beechcraft King Air A90 Series
Beechcraft King Air 100/100C
Beechcraft King Air 200/200C
Cessna Citation I/II/SII
Cessna Citation V
Gulfstream G350/450
Gulfstream G550
Gulfstream G650
Gulfstream G600†
Gulfstream G650†
Gulfstream GV†
Gulfstream G500†
Gulfstream G550†
Gulfstream G650†
Gulfstream GV†
Gulfstream G300/G400†
Gulfstream GV†

SHREVEPORT, LA
Airbus Helicopters AS350
Airbus Helicopters H135

SINGAPORE, SINGAPORE
Sikorsky S-76C+/C++†
Sikorsky S-92

ST. LOUIS, MO
Dassault Falcon 900EX EASy/DX/LX†
Dassault Falcon 900/900B/900C†
Dassault Falcon 2000EX EASy/DX/LX/S/LXS†
Dassault Falcon 2000/2000EX†
Dassault Falcon 20/20-5†
Dassault Falcon 900C†
Dassault Falcon 900EX†
Dassault Falcon 900EX EASy/DX/LX†
Gulfstream G100†
Gulfstream G130†
Gulfstream G200†
Gulfstream G280†
Gulfstream G350/450
Gulfstream G550
Gulfstream G560
Gulfstream G570
Gulfstream G650†
Gulfstream G600†
Gulfstream G650†
Gulfstream GV†
Gulfstream GV/G300/G400†
Gulfstream GSTream GV†
Hawker 750/800/800XP/850XP/900XP†

TORONTO, CANADA
Pratt & Whitney Canada Engine Training

WICHITA, KS (EAST)
Beechcraft Baron
Beechcraft Beechjet 400/400A
Beechcraft Bonanza
Beechcraft King Air A90 Series
Beechcraft King Air 200/200C/200GT/250
Beechcraft King Air 300/350
Cessna Caravan I/II/SII
Cessna Citation CJ3†
Cessna Citation CJ4
Cessna Citation M2
Cessna Citation Mustang
Hawker 400/400XP
Hawker 750/800/800XP/850XP/900XP†

WICHITA, KS (LEARJET)
Bombardier Learjet 250†
Bombardier Learjet 35A†
Bombardier Learjet 4D/40/40XR/45/45XR†
Bombardier Learjet 55†

WILMINGTON, DE
Beechcraft Premier IA
Bombardier Challenger 300/300C/301
Bombardier Global Express/XRS/5000†
Dassault Falcon 900/900B†
Gulfstream G200
Gulfstream G550
Gulfstream G650†
Gulfstream GV/G300/G400†
Gulfstream GV†
Hawker 750/800/800XP/850XP/900XP†
IAI Astra/Astra SP†
IAI Westwind†

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Pratt & Whitney Canada Engine Training

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WICHITA, KS (HAWKER BEECHCRAFT MX)
Maintenance training for P&W engines and for all Hawker and Beechcraft aircraft that FlightSafety provides pilot training for.

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*Maintenance training also available at this location. †Upcoming.

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AVIC Begins FC-31 Export Drive

China’s Aviation Industry Corporation (AVIC) has stated plans to fly a production version of its FC-31 Gyrfalcon fifth-generation fighter by 2019.

Although reluctant to take questions, company officials also stated they are in negotiations with the Chinese government to offer the aircraft to the Chinese People’s Liberation Army Air Force, despite previous reports that the fighter would only be offered for export.

Speaking in Dubai, where the company is displaying a model of the FC-31 outside China for the first time as the company begins the export push for the Gyrfalcon, Li Yuhai, deputy general manager at AVIC, said the aircraft was demonstrating the “technological and management progress” of the program.

Lin Peng, the FC-31’s chief designer, hinted that the company was looking for an international partner for the aircraft rather than the relationship it has with Pakistan’s Aeronautical Complex on the JF-17. He said that international customers would be able to customize their aircraft in terms of communication systems, sensors and weapons, something that would likely only be done outside China.

He added that the aircraft would be low-observable against a number of multi-spectrum sensors, and claimed the aircraft would be stealthy against L-band and Ku-band radars.

Peng said the aircraft’s primary armament would be the PL-9 short-range missile, the SD-10A medium-range air-to-air missile and small-diameter bombs. He said the aircraft would be able to carry 2,000 kg (4,400 lb.) of weapons in its single internal bay and 6,000 kg (13,220 lb.) externally.

The company would not say which engine would power production aircraft but that it would be an “advanced medium-thrust engine” producing 88.29 kN. (20,000 lb./9,000 kg) of thrust. The demonstrator aircraft is currently powered by the Russian RD-93, which powers the Mikoyan MiG-29.

With a first flight planned for 2019, an initial operating capability would occur sometime in 2022/23 and the aircraft would become fully operationally capable two years later.

—Tony Osborne
GainJet Hopes to Show Long-Range 737

Athens-based VIP charter operator GainJet Aviation is fitting a state-of-the-art quick-change auxiliary fuel tank system to its Boeing 737-400 Classic (SX-ATF) and has flown it here to the Dubai Airshow.

The cargo bay auxiliary system by Long Range AG of Switzerland allows for quick and easy installation of the fuel tanks without having to take the aircraft into an MRO facility. The initial plug-and-play installation, performed by a qualified maintenance center, consists of fitting tank rails in the cargo bay, fitting fuel line connections and connecting new instrumentation. The six new fuel tanks increase the aircraft’s flight endurance by up to 3.5 hr. to around 9 hr. with reserves, bringing Dubai-London or New York-Paris well within range.

“Certification test flying is currently underway in Canada where the installation was installed by KF Aerospace,” says GainJet CEO Capt. Ramsey Shaban. “The STC [supplemental type certificate] is expected by year-end.” According to Long Range AG CEO Karl Lang, the system will be certified by way of an FAA STC plus subsequent EASA and other STCs. Boeing certification is not required since it is an aftermarket product. The time taken to mount the quick-change tanks for long-range missions is about 3 hr., with the same time for removal.

“As a private jet charter operator, it’s important to provide our customers with mission flexibility, and in Long Range’s system we have found exactly what we’re looking for,” says Shaban. “Our Boeing 737 Classic is a popular aircraft and is utilized by rock bands or football teams carrying plenty of equipment while on regional travel, or by highly affluent individuals traveling long distances with a small group of family or friends. With this system we can accommodate our customers’ needs on a case by case basis by offering total mission flexibility.”

The six-tank installation in the Boeing 737-400 takes up about 50% of the cargo hold, leaving room for around 100 bags depending on the mission duration. Shaban plans to have the aircraft designated as the Boeing 737LR, and it will complement GainJet’s (Stand 800) other executive airliners – a VIP Boeing 757-200, which has a flight endurance of 9.5 hr., a stateroom, and accommodates up to 62 passengers.

Long Range’s Lang says the auxiliary fuel tank system is already attracting interest from other operators, including airlines. That company is also at Stand 800.

—Mike Vines

GainJet Grows Managed Fleet

Business jet operator GainJet Aviation (Stand 1700) of Athens last month added a Challenger 604 and a Gulfstream 650 to its managed fleet of business jets, and is expecting two more aircraft by the end of the year, according to CEO Capt. Ramsey Shaban.

It now has a fleet of 12 managed aircraft, with eight commercially operated and four privately. The flagship is a Boeing 757-200 (SX-RFA) that can carry up to 62 passengers, has a stateroom and en-suite. Next is a 64-seat Boeing 737-400 (SX-ATF) that is having quick-change auxiliary tanks fitted. Other aircraft include Gulfstreams, Global Express XRS, Legacy 600 and a medevac Challenger 604.

The company has sales offices in London and Berlin and is establishing another at Shannon, Ireland, where it is planning further expansion.

Shaban believes the demand to put business jets under management will increase next year as the European Aviation Safety Agency (EASA) implements a rule to limit noncommercial complex aircraft operations to approved operators.

Falcon Aviation Starts Scheduled Flights

Falcon Aviation Services, a corporate jet and helicopter service provider, is now offering offshore transportation to Abu Dhabi Marine Operating Co. (ADMA-OPCO), from its base at Al Bateen Executive Airport, the region’s only dedicated business aviation airport.

Falcon (Stand 714) will fly nearly 400 ADMA-OPCO employees daily, to and from Das Island and Zirku Island, the main industrial bases for the emirate’s Upper Zakum, Umm al Dalkh and Safat fields. There will be three flights per day on each of Falcon’s two newly acquired Dash 8 Q400 aircraft, taking off from Al Bateen, with passengers clearing security through the Sheikh Zayed Terminal.

Capt. Ramandeep Oberoi, COO, Falcon Aviation Services said, “This is a momentous achievement for Falcon as we had a short timeframe in which to set up and deliver this service. However, with the help and cooperation of Abu Dhabi Airports, we are able to support the oil and gas sector by using our two Dash 8 Q400’s to transport 400 passengers daily to their work.”

Al Bateen has recently undergone several upgrades to its facilities and lounges. A new VIP terminal was scheduled to open in late October, and enhancements are being made to the existing VIP terminal. The taxiway, airfield, and apron also have been upgraded.
Synergies for success: four days of ILA Berlin Air Show

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Sharjah a More-Intelligent Gateway, Says Gama

Gama Aviation’s Sharjah fixed base operation (FBO) has tightened up its business aviation ground-based costs and can now offer services 20% below the regional market average, says Gama Managing Director for MENA Martin Ringrose.

“We’ve done a lot of work over the summer to tighten up quality and price,” says Ringrose, who assumed his post six months ago. Now he’s promoting Sharjah’s proximity to downtown Dubai and its advantages over Dubai International Airport (DXB) or Dubai World Central (DWC), which is farther away from downtown.

“The strapline we use is ‘Sharjah is the intelligent gateway to Dubai and the northern Emirates,’ so we’re focusing on getting that message across internationally,” he says.

Ringrose notes DXB is getting more difficult to use by business aviation because of its near-saturation by airline movements. “We believe that DXB will be effectively closed to business aviation soon. There are some clients based there and they have effectively two choices – go to DWC or come here to us at Sharjah. We are less than 30 min. from Dubai’s business hub and social center, and it takes a good 45 min. to get there from DWC when the traffic is reasonable.

“At Sharjah, we are actually closer to the heart of Dubai than Dubai’s future business aviation airport at DWC.”

Since midyear all Gama’s MENA personnel have moved to the Sharjah headquarters where the company offers aircraft management, charter, line maintenance and FBO, aircraft parking and handling. The current managed fleet of seven aircraft includes Globals and Challengers, and two more potential deals could be in process before year-end. “Gama in the Middle East has never lost a managed aircraft to another operator; we’ve only ever lost aircraft management because owners have sold their aircraft,” says Ringrose.

Gama Middle East offers two Embraer 600s for charter, but one of these aircraft was on extended maintenance this year. “Sub-charter is quite difficult to predict. We sold over US$1 million worth of sub-charter in September, which is a record for us,” he notes.

Gama has plenty of hangarage available at Sharjah, including the exclusive rights to a very large Russian-owned hangar. “We’ve got a couple of Gulfstreams shortly,” Ringrose says.

Gama (Chalet B14) recently leased more ramp space from the airport and now has around 15,000 sq. meters in front of its hangars. The company also has plans to grow from line maintenance to a greater depth in capability; plans include building a bigger hangar that could come to fruition next year.

Gama MENA’s parent company is Gama Aviation plc, headquartered at Farnborough, UK. It was formed in January by the merger of Gama Aviation Ltd. and Hangar 8 Plc, becoming one of the major business aviation service providers in the world. It has around 144 aircraft under management, operating from 44 different locations in 15 countries across five continents with a strong presence in North America, the UK, Europe, Africa, Middle East, Asia and South America. It operates and supports aircraft from all the major manufacturers.

—Mike Vines
Bombardier opened its high-tech Global 7000 assembly facility in Toronto to press scrutiny Nov. 3, inviting onboard inspection of its first flight test vehicle, but sharing little information about the flight test schedule, the order book or the follow-on Global 8000. David Coleal, president of Bombardier Business Aircraft, said the company, whose liquidity has come into question, had “enough resources and capital to get the program done” and that the 7000 would enter service in the second half of 2018. He said the 7000 project was “the number one priority” for his division, which now has 2,000 employees assigned to it. He alluded to Bombardier’s recent trials in developing the CSeries and cancellation of the Learjet 85, saying “we’ve overcome a few problems.” Since inception of the two new Global programs, the longer-range Global 8000 was scheduled to enter service a year after the larger 7000. But Michael Ouellette, the senior vice president in charge of the two new models, declined to comment on the 8000’s target service date. The two models are to be assembled in Bay 10 of Bombardier’s Downsview Airport facility; the Global 5000 and 6000 and Q400 turboprop are also assembled at Downsview. All Globals are completed at Dorval Airport in Montreal.

There are approximately 100 Bombardier Learjet, Challenger and Global business jets in operation in the Middle East. Its display at the Dubai Airshow includes this Global 6000.

Business jets crowd the ramp at Jet Aviation’s operation at Dubai International Airport.

The Dubai Airshow is the major event in most Middle Eastern aviation business’s calendars, but for Jet Aviation’s Dubai operation it is of particular significance. The fixed base operator and maintenance facility at Dubai International Airport was opened in May 2005 but officially inaugurated at that year’s Dubai Airshow, so this year’s event marks the local company’s 10th birthday.

The General Dynamics subsidiary opened a second FBO facility, at Dubai World Central’s Al Maktoum International Airport, in December 2012. The company is an authorized service center for maintenance and warranty support to a wide range of business jets and holds approvals from aviation authorities in Afghanistan, Bahrain, Bermuda, Cayman, India, Pakistan, San Marino, Saudi Arabia and the UAE. “Ten years ago, Jet Aviation Dubai was established to strengthen the company’s global network for its clientele in the Middle East,” says Stefan Benz, senior vice president of Jet Aviation’s MRO and FBO operations for Europe, the Middle East, Africa and Asia. “Today, it is our major MRO hub for the Middle East and a leading FBO and MRO service provider in the region. We thank our valued customers for their trust.” The celebrations get underway at Jet Aviation’s chalet (A11 & 12).
**Alpha Aims to Be ‘Star of the Show’ – in 2019**

“We aim at stars” is the motto of Saudi Arabia’s Alpha Star Aviation Services. But, more to the point, as the VIP charter operator is advertising on Stand 1150 this week, it is also aiming for the distinction of flying the Middle East’s first Airbus ACJ319neo corporate jets.

Even so, it will be the second quarter of 2019 before the new aircraft takes its place in the current Alpha Star fleet of six A320s, an ACJ330, an ACJ340, and other aircraft types. Although the modernized, more fuel-efficient “neo” is already flying, Airbus has a large backlog of airline customers to satisfy first.

The inevitable delay after being the first to announce a commitment for an Airbus ACJ319neo means Alpha Star can take its time deciding which engines (CFM International LEAP or Pratt & Whitney PW1127G) to have installed and what style of luxury interior to adopt.

Airbus’ ACJneo family currently comprises the ACJ319neo, which can fly eight passengers across 6,750 nm (12,500 km), and the longer-fuselage A320neo, taking 25 passengers up to 6,000 nm (11,200 km). If the engine cowlings are not a good enough recognition aid, the “neo” also has new-style wingtip devices known as “Sharklets.”

Alpha Star is the region’s largest VIP charter operator. Says CEO Salem bin Obaid al-Muzaini: “Middle East customers already recognize and appreciate the greater comfort, capacity and capability of Airbus corporate jets, so new and improved versions are a natural next step when it comes to investing for the future. Being first in the region with the Airbus ACJneo Family will also help us to maintain our lead in VIP chartering.”

Airbus has sold more than 8,000 airliners to over 500 customers and operators, 170 of them for executive use. “Airbus corporate jets already have the best cabins, so the greater range of the ACJneo Family will allow Alpha Star’s customers to take their lifestyles even farther,” adds Airbus Chief Operating Officer, Customers John Leahy.

—Paul Jackson

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**Gulfstream Approved for FANS 1/A+ on GV**

Gulfstream Aerospace Corp. has received FAA approval to install the soon-to-be required communication and surveillance system known as Future Air Navigation System (FANS) 1/A+ on Gulfstream V aircraft. FANS 1/A+ was developed to address the ability of air traffic control to handle a dramatic increase in aircraft traffic. The avionics system uses automation and satellite-based technology to improve aviation communication, surveillance and traffic management. Gulfstream (Stand 1360), with Honeywell (Chalet A6) is pursuing a similar STC from the FAA for the GIV and GIV-SP.

**Abu Dhabi to Deliver VIP Premier Transfer**

A limited-edition Rolls-Royce Phantom and five BMW 7 Series sedans are now available at Abu Dhabi International Airport’s VIP terminal, to chauffeur passengers to and from their flights. Daniel Cappell, acting chief commercial officer at Abu Dhabi Airways said, “From a dedicated check-in point, baggage services and immigration counters, to the exquisite privacy and hospitality of the majlis, the VIP terminal is fast becoming known as a haven of unsurpassed luxury and exclusivity.” The cars are provided by Abu Dhabi Motors, the official BMW Group importer in the capital.

**DC Aviation Al-Futtaim Adds Challenger 604**

DC Aviation Al-Futtaim (DCAF) has expanded its aircraft management fleet with the addition of a Bombardier Challenger 604. The aircraft will be based at the DCAF facilities at Dubai World Central. The management contract will see DCAF (Stand 2119) provide a comprehensive service package including aircraft maintenance.

The DCAF facility at Dubai World Central offers an exclusive lounge area that caters to the needs of VIP customers. Customers benefit from a dedicated ramp parking area spanning over 7,700 sq. meters, on-site security processing facilities and the shortest distance between limousine drop-off and the aircraft steps.

**Jeppesen to Provide Trip Planning for NasJet**

Jeppesen has signed a multi-year service contract with Saudi Arabian private jet operator NasJet to provide international trip planning services that will increase flight department operational efficiency. Jeppesen International Trip Planning professionals are available 24/7/365 to manage all aspects of planning international flight operations. This includes itinerary and route planning, flight plans, filing, charting, weather and NOTAMs, overflight and landing permits, airfield slots, customs notifications, ground handling, fuel, security, hotel, ground transportation, catering, EU ETS support, international rules and regulation compliance for passenger and cargo flight operations.

**Jet Aviation for Singapore Customer Demos**

Jet Aviation Singapore has been appointed the exclusive handling agent for business aviation customer demonstration flights at Singapore Airshow 2016, to be held at Changi Exhibition Centre on Feb. 16-21, 2016. The show will feature a new Business Aviation Zone, providing a unique opportunity for the entire spectrum of the business aviation industry – from aircraft manufacturers, equipment OEMs and MROs, to FBOs and parts suppliers – to showcase their products and services. This includes the demo flights, which will be conducted at Seletar Airport.
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Rockwell Collins Brings Next-Gen Close Air Support

Digitally assisted close air support (DaCAS) technology is coming to the Middle East. Rockwell Collins already supplies its FireStorm system to customers in the region, including the United Arab Emirates. But a new iteration of the widely used product has been successfully trialled with the F-35 Joint Strike Fighter, and will bring an enhanced digital capability, as well as a touch-screen interface and reductions in size, weight and power consumption, to customers in the region.

"Last February we took this system to Eglin Air Force Base and did ground tests with our equipment with their F-35s," says Graham Davenport, marketing director for Europe and the Middle East at Rockwell’s surface solutions division in the UK. “We then had 90 minutes of dedicated flight time with an F-35 to prove that the VMF [variable message format – a U.S.-defined communications protocol] – communication worked with that. We did several simulated targetings and missile launches."

The previous generation of FireStorm consists of a tripod-mounted targeting unit, a ruggedized laptop computer, a video downlink receiver, a radio, a laser range finder and other targeting devices. The user (known in U.S. military parlance as a JTAC - Joint Terminal Attack Controller; the UK military refers to this role as FAC - Forward Air Controller) analyzes data on the laptop to obtain coordinates of the target, then produces a standard document known as a “nine-line.” This package of information is radioed to the strike aircraft, enabling a precision weapon to be deployed.

The key difference with DaCAS is that the nine-line is transmitted from the JTAC’s computer directly to the aircraft. The pilot and the JTAC still have to speak on the radio to confirm that the nine-line is being sent, but digital transmission of the data reduces the risk of misunderstandings and thus ensures the accuracy of the strike. This can be of particular importance during coalition operations, where the JTAC and the pilot will speak to one another in English, which may not be either’s first language.

“DaCAS removes the doubt as to what some of the data is, which you may have to repeat over the radio,” Davenport says. “Also, when you move toward a type of operation where you have peer-to-peer opposition, you need your aircraft to come in quick and clear off – as opposed to many of the current activities, where the aircraft can stay overhead, decide what he’s going to hit, and talk about it.”

The new FireStorm iteration has miniaturized most of the component parts of the system and has reduced both the number and types of batteries required, as well as dispensing with much of the associated cabling. The laptop has been replaced by a touch-screen tablet computer: Associated software changes enable target packages to be put together in a more streamlined way.

The system uses two main software packages – one mapping and mensuration tool, which can be chosen from a small range of alternatives by the customer, and Rockwell’s own Rosetta software. Initially conceived as a tool to translate different software functions from the various peripheral devices linked together in the system, Rosetta is now FireStorm’s fulcrum.

“Rosetta is the baseline of our software,” Davenport explains. “The earlier version was called Rosetta Joint Fires, but now we’ve moved forward to two instantiations of the technology. One is called Network Joint Fires, which provides for a level of planning and targeting. We also have JTAC Mobile, which is based on the same thing, but the GUI [graphical user interface] on it provides for a three-click kill. With the touch screen, the JTAC has a relatively simple, straightforward ability to get the nine-line and other messages out, just using the touch screen and without having to enter any additional data.”

As well as reducing power consumption generally, Rockwell Collins (Stand 1434) has ensured the various parts of FireStorm can be powered from a single battery type, which can be worn in the JTAC’s vest. The tablet is carried in a zipped pouch on the front of the vest, making it much quicker and easier to access than the laptop, while a clip-on monocle adds a head-up display mode.

“We’re doing a lot of demonstrations around the Middle East as well as in Europe,” says Davenport, who says that interest in the system is coming both from nations with an extant close air support toolset and those looking to acquire the capability. “We already have an established customer – the UAE – and clearly they’re going to be looking to upgrade.”

—Angus Batey

The FireStorm system integrates portable laser range finders, radios, video downlinks and GPS receivers with targeting devices, a tablet computer and software.
Unmanned Systems

There are few hotter topics in the world of automated systems than unmanned vehicles and data fusion. During a demonstration flight in Dubai in September, Lockheed Martin showed how the two cutting-edge technologies could be combined to provide a powerful tool to aid one of the UAE’s most crucial business sectors: the construction industry.

The Indago – developed by Lockheed’s Procerus subsidiary – is a small (5 lb./2.3 kg) fold-up quadcopter that has been trialled in firefighting roles in the U.S. and used by an Australian company during cyclone relief work in Vanuatu. Despite its size, the aircraft is capable of work at some range from its ground controller and, according to Lockheed, at altitudes up to 18,000 ft. (though functionality at this range would probably require an improved antenna and military-grade data link).

The demonstration involved video data from the aircraft being fed into a suite of 3-D mapping software developed by CDL Systems, a company acquired by Lockheed in 2012. The system creates computer models that accurately model the terrain, complete with natural and man-made objects.

The demonstration, which took place at the Meydan Hotel as part of the second Robotics Technology Exhibition, was for the time being a one-off. Restrictions on UAV flights in the UAE meant that the demonstration was largely restricted to horizontal mapping, but 3-D modeling of buildings via flights alongside tall buildings would be possible.

With Indago easily capable of reaching the top of every high-rise building in the Emirates, Lockheed believes that the system could be used to inspect tall buildings, and to produce accurate and easily updatable models of them while under construction. Clearance to use the aircraft on construction sites remains a challenge, but Lockheed is looking for in-country service providers to operate the service once the legal obstacles have been negotiated. – Angus Batye
Abu Dhabi’s Passenger Boom Continues

Passenger traffic at Abu Dhabi International Airport (AUH) over the first three quarters of this year increased by 18%, with a total of 17,473,063 passengers. The top-10 busiest routes for the first nine months of 2015 included the UK, U.S., Saudi Arabia, Australia, Qatar, Thailand and Germany. Total aircraft traffic was up 14.3% in the first three quarters of the year, in which AUH successfully facilitated 129,703 aircraft movements. The airport moved 621,191 metric tons of cargo during the first nine months of the year, with overall cargo traffic up 7.2%.

EASA Certification for ATR 72-600 ‘Combi’

ATR (Stand 816) has obtained European Aviation Safety Agency certification for its passenger-cargo “combi” version of the ATR 72-600. The new cabin configuration allows combining increased cargo volume for over 19 cubic meters in volume and nearly 3,000 kg in weight with up to 44 passenger seats. By replacing the forward seven rows with a cargo section that can accommodate four containers, the aircraft load-carrying capacity can be almost doubled. The combi design is also offered for retrofit on existing aircraft. The delivery of the first unit is scheduled by year-end to Airlines PNG of Papua New Guinea.

Oman Air’s 787-8 Dreamliner Enters Service

Oman Air’s first Boeing 787-8 Dreamliner entered scheduled service on Oct. 25. The airliner will be deployed on service to Saudi Arabia and Europe. Oman Air ordered six 787-8s in November 2011 as part of its expansion plans. “Our decision to invest in this gamechanging airplane underlines our confidence in the 787 and the value it will add in terms of reliability, operational efficiency and comfort,” said Paul Gregorowitsch, CEO, Oman Air. Since entering service in 2011, the 787 family has opened more than 50 new nonstop routes around the world.

DXB Wins World Routes Marketing Award

Dubai International Airport (DXB) has won the World Routes Marketing Award 2015 (50 million passengers category) at the 21st World Route Development Forum, which was held in Durban, South Africa, in September. Created in 1997 to recognize excellence in airport marketing, the annual Routes awards provide airlines with the chance to choose which airport they think provides the best overall marketing services. In June of this year, Dubai International was named overall winner of the Routes Middle East & Africa Marketing Awards.

Emirates Brand Value Up to US$6.6 Billion

Emirates has reached the top 200 of the world’s biggest brands for the first time, according to the 2015 Brand Finance Global 500 report. Now sitting at No. 196, an increase of 38 spots in 12 months, the airline attributes its success to a strong commitment to product and service excellence, as well as investments in its brand. Emirates’ estimated brand value has grown more than 21% from US$5.48 billion to US$6.6 billion. The airline also retains its long-standing position as the most-valuable brand in the Middle East and most-valuable airline brand.
Out of the Deserts, Airports Bloom

Across the Middle East, the region’s airports are expanding, but nothing quite on the scale of the development to be seen here in Dubai.

Over the next decade, the desert to the northeast of Dubai’s Al Maktoum will blossom four additional runways, ramps and giant new terminals capable of handling 200 million passengers and hundreds of Airbus A380-size aircraft at any one time.

The Dubai government plans to spend $32 billion on the super project, part of the Dubai World Central economic area development, it announced in September 2014.

Emirates Airlines could begin to move its vast operation from Dubai International to Al Maktoum over the next decade in order to grow its vast hub-and-spoke network.

The airline is already in the process of establishing its Flight Academy at the airport, close to the Dubai Airshow site.

Marking its fifth year of operation in June, Al Maktoum Airport is now Dubai’s primary air freight gateway, but the pace of passenger operations has been somewhat slower.

Since passenger traffic began back in October 2013, only a handful of airlines, mostly low-fare carriers, have moved in and many airlines have decided to remain at Dubai International Airport, preferring to operate alongside Emirates. Dubai Airports has decided to invest in the passenger facilities at Al Maktoum, to absorb Dubai’s passenger growth. Improvements to the existing terminal will push capacity from seven million to 26 million. Construction on the upgrade is due to be completed in the first half of 2017.

Meanwhile, down the road in Abu Dhabi, the city’s airport has invested in a second runway and work is well underway on a new midfield terminal, which will push the capacity of the airport – the home base of Etihad – to 45 million people. The new terminal is expected to be 70% complete by the end of 2015.

Muscat’s international airport at Seeb has also been undergoing expansion with a new midfield terminal and a second runway, while Kuwait International Airport is planning to develop a new terminal building at the southern end of the facility initially capable of accommodating 13 million passengers per year and 25 million passengers later.

—Tony Osborne

Where Are We?

Two years ago, when Airshow-goers gathered for the first time at this new site for Dubai’s international air event, we were calling it Dubai World Central. The local airports authority now prefers the longer title “Al Maktoum International Airport – Dubai World Central” although in airline parlance it is plain DWC, while air navigation databases assign the four-letter code OMDW. Those happier using proximate geographical names call it Jebel Ali.

Recently, an FBO based on the field itself has begun referring to home as “Dubai South (formerly Dubai World Central),” possibly suggesting an intimacy of knowledge not shared with the airports authority. Is there, perhaps, some overlooked ICAO rule that stipulates the larger an airport the more names it should have?

—Paul Jackson

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As combat aviation evolves, the plethora of sensors and subsystems fielded on individual platforms increases. Today’s fighter jets carry more intelligence, surveillance and reconnaissance (ISR) capabilities than specialist recce platforms of the past, while gesture- or voice-controlled cockpits are no longer the preserve of science fiction.

Every advance brings a measure of risk, not just by increasing the complexity of the overall system, but by extending the attack surface for an adversary looking to degrade capability or carry out digital espionage. Current cyber-security thinking is that a determined attacker will always defeat the most thorough defense – the main task is to make sure that they can’t steal any useful information or do any damage once they get inside.

Encryption is vital to ensure that data in both onboard systems, and that which goes off-board the aircraft, will be useless to an adversary even if they were to gain access. But hard-to-defeat encryption requires complex keys, which need to be changed frequently.

“The number of keys is linked to the platform and the role. So the more sophisticated the platform – such as the F-35 – there’s a likelihood it would have more keys to be filled,” says Peter Grogan, head of business development for cyber security at Airbus Defense & Space” in the UK. The company supplies key-management systems to the UK’s Typhoon fleet, and in September announced it had won the contract to supply the same service on British A400Ms.

Airbus’ key-management system is primarily software-based, but requires a piece of hardware called an electronic transfer device. The device is common to different aircraft types. Platforms such as the A400M and Typhoon have a single ingestion point, enabling cryptographic keys for all onboard subsystems to be managed through a single interface.

“You divide the secure systems into three categories: aeronautical systems, mission systems and weapons,” Grogan says. “So before a mission, to load keys meant people going to different parts of the airframe with different key-fill guns, putting in the radio frequencies, air-defense codes, and all those sorts of things. Some of these things are pretty damned important, some of them are very classified, some of them less so. The aircraft could be on the ground for as long as three hours while that was being done. Now, with a single injection point, all of the keys can be transferred in 20 minutes.”

Single-access-point key-management also minimizes another risk: that of incomplete key loading, or mistakes during the laborious and subsystem-specific process.

“What happens if, in the heat of battle, a busy person misses one?” Grogan asks. “All the self-checks the aircraft goes through should in theory alert. And in coalition warfare there are a lot more dynamics: You might be flying with the Qatari Air Force on Tuesday and the French on Wednesday, and what if you’ve got the wrong radio frequencies in and you need one that’s not loaded?”

The contract announced in September will see Airbus provide key-management and cryptography solutions for the UK’s A400M fleet in two phases. The first, worth GBP3.3 million (US$5.1 million), lasts 15 months and covers design, development, certification and delivery of hardware and software; options, if exercised, will extend the second phase up to 2020.

Platform-specific contracts are let as and when a type’s initial operating capability date approaches. Although the F-35 will have American crypto systems, each different national operator will have a requirement to put its own sovereign keys into them: The UK’s solution has not yet been finalized and a competition is anticipated.

There would be advantages for a customer who chose a single provider for key-management systems and services across its entire fleet, Grogan argues. And with the increasing complexity of all combat platforms, this doesn’t just mean fixed-wing aircraft. Increasingly, single-point-of-access key-management systems are being enabled by platform manufacturers ensuring the vehicles are equipped with the necessary interfaces and onboard system architectures.

“Most platform manufacturers are going down this route, including in the land domain and in the rotary space as well,” Grogan says.

As fleets are rationalized and legacy platforms phased out, the benefits of a single key-management solution increase.

“It just makes the complexity of managing dynamic keys simpler,” he says. “The amount of equipment that you’re required to have throughout the supply chain can be reduced, so there’s a financial saving. The scope for errors is reduced because everything – including training and support – becomes standardized. It would make little sense to retain a different supplier with a different methodology for a shrinking number of platforms.” —Angus Batey
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