Celebrating 30 Years of Innovation

In 1982, Universal Avionics unveiled its first product – the world’s first Flight Management System – the UNS-1, at the National Business Aviation Association (NBAA) Convention and Meeting in St. Louis, Missouri.

Just a year old at the time, the company went on to develop a deep-rooted tradition of introducing innovative technology and commemorating milestones at the annual NBAA Convention. From company anniversaries and the delivery of the 10,000th, then 20,000th FMS, to the certification of the first Synthetic Vision System and more recently, the first WAAS-enabled FMS. This year is no exception as we celebrate our 30th anniversary at NBAA Convention hosted by none other than the celebratory capital of... Las Vegas, NV.

This special expanded issue of The Universal Flyer features an excerpt from our 30-year history book, an interview with a locally-based operator and little-known facts about the company. We hope you, our valued operator, is intrigued about Universal Avionics’ unique history and inclined to find out more. The 30-year book in its entirety can be found on our website at: www.uasc.com/history/.

Product News and Highlights

Spotlight Announcements from the Show

Introduction of SVS with Runways

Approved by the FAA on over 20 aircraft types, the proven technology of Vision-1® Synthetic Vision System (SVS) has been now been expanded. Its successor, Vision-1+, includes runway depictions and a higher resolution terrain database for a complete picture of outside the window from takeoff to touchdown.

Updated hardware and software combine to enable the high-resolution display of runways for origin and destination airports. Runway symbology includes threshold and identifier information, plus a 7.5 NM extended centerline to assist in orientation in the terminal area.

The high-integrity database presents terrain and runways in 15 arc-second data resolution, with three times the coverage of 6 arc-second data in the vicinity of airports. Availability is expected next year. For more information, visit: www.uasc.com/products/vision1plus.aspx.

Delivery of FANS 1/A+ UniLink to Begin

Development of UniLink® UL-800/801 airborne data link system is complete and submittal for FAA TSO approval and STC issuance is scheduled to occur in October. Approval of the system is imminent and deliveries will begin shortly. Universal’s latest data link system supports Future Air Navigation System (FANS) operations, which enables more efficient routing that saves time and fuel. For more information, visit: www.uasc.com/FANS/.
Data Link Use of The Future Air Navigation System

As far back as 1983, industry officials concerned about the rise in air traffic sought to address an aging infrastructure unable to effectively handle increasing congestion. Responding to the issue, the ICAO Council established the Special Committee on Future Air Navigation Systems (FANS), which was tasked with identifying new technologies for the future development of navigation systems that would aid in the management of air traffic. The FANS committee recommended the use of data link technology in what would become known as the CNS/ATM concept. The transition to digital Communication, Navigation and Surveillance (CNS) technologies is essential to a seamless global Air Traffic Management (ATM) system.

Data link technology enables the digital transmission of short, relatively simple messages between aircraft and ground stations via VHF radio and/or SatCom. Aircraft capabilities enabled by data link include:

- Controller Pilot Data Link Communications (CPDLC) uses data link to permit the exchange of text-based messages between Air Traffic Control (ATC) ground systems and aircraft. It is intended to supplement traditional voice over VHF and HF radio frequencies and free up voice radio channels.
- Data link is used by AOC (Airline Operational Control) areas of various commercial airlines to send and receive messages relating to operational information affecting a particular flight, such as the passing of updated weather or flight plan information.
- Automatic Dependent Surveillance (ADS) is a datalink technology enabling exchange of digital information between the ground system and aircraft, intended to replace radar as the primary surveillance method for tracking purposes.
- The “-Broadcast” part of ADS automatically transmits messages containing position and velocity information that makes the aircraft visible, real-time, to ATC and to other appropriately equipped ADS-B aircraft. This is most beneficial during flight over areas without radar coverage (e.g. oceanic and polar), where reports are periodically sent by an aircraft to the controlling air traffic region.
- The “-Contract” (ADS-C) part of ADS requires a “contract” between the aircraft and ground facility for messaging.

Mandates

FANS-1/A+ technology is being implemented in oceanic and domestic airspace around the world. The North Atlantic Track Data Link Mandate requires ADS-C and CPDLC equipage by February 2013 (phase 1). Phase 2 requires equipage by February 2015. EUROCONTROL’s Link 2000+ programme mandates ATN-based data link capability for FL285 and higher by February 2015. Aircraft that are FANS-equipped and have operational approval by January 2014 are exempt from this rule for the lifetime of the aircraft. Visit www.uasc.com/FANS/ for more.

Update: RNP AR vs WAAS LPV

Some compare the minima achieved using RNAV (GPS) LPV procedures to that of RNAV (RNP) Approval Required (AR), formerly Special Aircraft and Aircrew Authorization Required (SAAAR) procedures. Both provide significant benefits to operators, but as the article in our April 1, 2009 issue summarized, obtaining RNP AR approval tends to be a costly and complex process with limited availability for most business jet operators.

Here is the latest analysis to the RNP AR vs RNAV (GPS) LPV statistics last updated in our October 1, 2009 issue. Data was supplied by the FAA as of May 5, 2011.

- Number of runways with RNAV (GPS) approaches containing an LPV minimum Decision Height (DH): 2,677
- Number of runways with an RNAV (RNP) AR procedure: 291
- Of the 2,677 runways with an LPV procedure, 1,707 of them are to a non-ILS runway.
- Number of RNP approaches to non-ILS runways: 81
- Approaches with LPV with a DH less than 250’: 560
- RNP approaches with a DH less than 250’: 0
- Of the 291 runways with RNP SAAAR procedures published, 210 (72%) of those RNP approaches are to runways that also have an RNAV (GPS) approach containing an LPV with a lower minimum
Notes from Product Support

Getting Started with UniNet Mobile: Update the FMS Navigation Database Remotely

UniNet Mobile, an application (app) for the Android platform, is a mobile version of the UniNet website. It allows operators to browse account information, view current and past orders/invoices, download database subscriptions and access Customer Support contact information.

The free app is currently available for devices using the Android platform (mobile phone or tablet with SD card) and can be downloaded from the Android Market. Released late last year, over 850 users have downloaded the app to date.

Remote operators benefit from being able to update FMS navigation data remotely, immediately after release of the latest cycle. With UniNet Mobile, there is no need to return to an FBO to use a computer. Here’s the step-by-step on how to update Navdata remotely.

**Step by Step Navdata Update**

Navigation databases are updated by downloading the Navdata to the phone, then connecting it to the Solid State Data Transfer Unit (SSDTU) via the USB port. Navdata is then loaded into the FMS from the SSDTU.

1. Log-in to the app with your UniNet username and password.
2. Select Subscription/Navdata to view all subscriptions you receive.
3. Select the subscription to download and tap “Download Navdata” to view all available files.
4. Once selected, the files are downloaded to the SD card and listed in the Download Manager.
5. From the Download Manager, select the file to “expand” or unzip.
6. Connect the device to the SSDTU via the USB port and the navigation database automatically uploads into the FMS.

Software and Hardware Updates

**CVFDR**

Firefly Version 3.0 released September 2011. The PC-based program for data download and maintenance added the following enhancements: support for Windows XP, Windows Vista, and Windows 7; quality evaluation tools in the audio Player; download ability for text file of data link data; auto-detect feature for connected recorders and recorder connection test.

**UniLink UL-80X**

SCN 30.0 scheduled to receive TSO approval and STC certification in November.

**FMS**

SCN 1000.6/1100.6 expected November 2011. This minor software change allows the testing of LOS discretes via the CDU among other improvements.

Service Bulletins are published for all software releases and hardware modifications. Visit [www.uasc.com](http://www.uasc.com) to view the Service Bulletin for the software and hardware updates listed here, in addition to associated Service Letters and archived Bulletins.
Did You Know?

In 1989, Universal entered the CVR market with the introduction of the CVR-80. Dismayed by reliability of tapes technology, it developed the world's first solid-state CVR (CVR-30) in 1990.

Universal Avionics has 20 employees with tenure over 20 years. It has 7 employees with tenure over 25 years. The longest tenure is 29.1 years.

The List Price of the UNS-1 was $47,500

Universal Avionics introduced the world's very first "FMS", the UNS-1, in 1982.

The first Synthetic Vision System certified by the FAA was Vision-1® in 2002. Display was supported by the EFI-550, EFI-600 and MFD-640 and later, the EFI-890R.

The WAAS/SBAS-FMS is certified on over 50 aircraft types. Vision-1 is certified on over 20 aircraft types.

During World War II, after being captured by Russian soldiers, company founder Hubert Naimer stole a Russian tank and drove to the American line.

Universal Avionics owns four aircraft: a Beechcraft King Air F90, Beechcraft King Air 350, Bombardier Challenger CL-601 and a Cessna Citation VII.

Universal Avionics delivered its 1st FMS in 1983, its 10,000th FMS in 2000 and its 20,000th in 2010.

Universal Avionics has 20 employees with tenure over 20 years. It has 7 employees with tenure over 25 years. The longest tenure is 29.1 years.

35: Number of licensed pilots employed by Universal Avionics

Use of Standards Essential to Continuous Quality Management

Imperative to maintaining a robust quality system, Universal Avionics uses numerous configuration management, quality management, process improvement and manufacturing standards. Conformity to AS9100 and IPC are just two examples of standards Universal Avionics complies with company-wide. Our pledge is to manufacture high-quality and reliable products for your aircraft.

**AS9100**

The AS9100 standard is a widely accepted Quality Management System model based on continuous improvement and customer focus. It supplements and clarifies certain areas of the ISO 9001:2000 standard specifically for the aerospace industry.

Universal Avionics has obtained certification in AS9100 and is currently working toward registration in AS9100"C" as well.

**IPC**

Universal Avionics has been a member of the IPC (Association Connecting Electronics Industries) since January 1999. IPC standard is associated with nearly every step of the manufacturing process of printed circuit board production and assembly.

From design and purchasing to assembly and acceptance, the IPC standard ensures superior quality, reliability and consistency in electronic assemblies that go in Universal Avionics products.

With a Certified IPC Trainer on staff, training is provided in-house to over 140 employees working as quality control inspectors, manufacturing operators and assemblers, quality engineers, design engineers, process engineers and test technicians. Most notably:

- 50 Certified IPC Specialists in IPC-A-610: Acceptability of Electronic Assemblies
- 21 Certified IPC Specialists in IPC J-STD-001: Requirements for Soldered Electrical and Electronic Assemblies
- 32 Certified IPC Specialists in IPC-7711/7721: Rework, Modifications, and Repair of Electronic Assemblies
- 9 Certified IPC Specialists in IPC/WHMA-A-620: Requirements and Acceptance for Cable and Wire Harness Assemblies
Customer Highlight Series: Straight Shooter Buys Time

Time is precious to Buz Mills.

As the owner and CEO of Gunsite Academy, Inc., the world’s largest, most successful and longest running, private, tactical firearms training facility in the world, he works to conserve the time of his clients. And, preserving his own time is the reason he is a Cessna Citation owner and Universal Avionics equipment operator.

“When you’re an entrepreneur, the one commodity that you cannot get any more of is time, and the Citation buys you time,” Mills says. “You can fly commercial and you can conform your schedule to somebody else’s schedule by doing that. But you can never get to where you have to be when you have to be there, and then get to the follow-on appointments unless you have the flexibility to move yourself at will.”

Mills’ philosophy extends from his own life to how he runs the academy for the thousands of individuals who flock every year to Gunsite Academy, about 20 miles out in the desert, north of Prescott, Ariz.

Precious Commodity

A number of years ago, Mills was quoted in American Handgunner: “Time in business is like time in a fight, your most precious commodity. Time is always against us, you just can’t get any more of it.” Consequently, he sets Gunsite's class training schedules to impart the most knowledge about gun safety and proficiency in the most efficient manner, respectful of his clients’ schedule limitations.

In all, Mills has about 6,000 flight hours since learning to fly in 1966. Mills got his first airplane in the 1970s and flew a succession of piston singles, including a Cessna 182. “The Citation was my first multi-engine aircraft and my first turbine aircraft,” he says. So far he has logged about 2,000 hours in the popular Cessna business jet.

When Mills bought his Citation, it was not equipped by Universal Avionics. So, around four years ago, he worked with the Citation Service Center in Orlando to install the UNS-IL FMS with 4” CDU display and DTU.

Universal Data Loader

Just this past year, he had the Citation Service Center in Mesa, Ariz. update the airplane’s data loader. He likes going to the Cessna-owned Citation Service Centers.

“They’ve always been great. When we have planned maintenance coming up, I always try to schedule it out far enough so that it doesn’t create a problem. Then, for things that come up, they’ve been very accommodating. I’ve never had a problem getting anything in, fixed, and out.” He also likes his recently-added SSDTU with the thumb drive and SD card.

“It’s nice. I like it a lot better than the old system, certainly, from the standpoint of downloading the data. It’s a whole lot easier than fooling with those old zip drives.”

Competitive Shooter

Gunsite was founded in 1976 by Marine Lt. Col. Jeff Cooper. The late colonel was an author, columnist, professor, WWII and Korean War combat veteran. The Marine colonel built the facility, just west of Paulden, Ariz., in the high Sonoran Desert. Located in rolling hills at 5,000 feet, the sun and wide-open landscapes are a visual delight and contribute to a relaxed western atmosphere.

Mills first linked up with Cooper years before he bought the business. “I was a competitive shooter and I was shooting in the world championship matches in 1980, and that’s where I met him.” Mills is passionate about the academy’s mission and he has grown the facility considerably.

“It was 265 acres then, and now we’re over 2,100, so I managed to grow it and grow the business. In ’76, Col. Cooper was training about 60-70 people a year, now we do 2,000.

We do a lot of military special operations classes. We do a lot of law enforcement training,” Mills says.

The academy has 10 full-time people involved in maintenance and marketing, and an additional 75 adjunct instructors that come from all over the world. The instructors all have a military or law enforcement background.

“What we’re able to do by using this particular cadre is to stay above of the threat landscape around the world, and we integrate that into our training so that we’re state of the art – state of the moment, if you will,” Mills says.

Citation Helps Market Gunsite

The company uses its Citation in marketing and to service clients around the country.

“We go to clients and trade shows. We do a lot of work in the mid-Atlantic, and some down South, along the Gulf Coast, some in Texas, and some in Southern California,” Mills says. His customers come from all over the world and he is passionate about the academy’s mission and his time with clients.

“The ones I really love are the mothers and daughters that come as a high school graduation or college graduation present to the daughter. The cost for an entry-level five-day class is about $1,500.

“What we give these folks is peace of mind, and they have a life-changing experience when they are here. Their lives will never be the same again. And they will never, ever, be a victim of a crime, because they have learned how to avoid those kinds of situations.”

And that translates to time that you just can’t put a price tag on.

– Article submission by Cessna Citation Service Center.
Chapter 1: A Sense of Direction

At three o’clock in the morning on September 22, 1981, a Falcon business jet taxied to a ramp at the Seattle-Tacoma airport. The engines spun down and the cockpit went dark but no one emerged. Dim lights emanated from the cabin where an Austrian entrepreneur and a mechanical engineer-turned-business man were mixing martinis in celebration. The Austrian often broke out his “emergency kit” late in the day, and the two had definitely earned the drink. Just three hours earlier in Los Angeles, they had settled a lawsuit and gained the right to start a new business. The day’s events had taken them closer to a known destination, but there was still some distance to go. The path had been straight so far, but then it should have been: their intent was to provide a top-notch flight management system for corporate aircraft. It was their business to have an unerring sense of direction.

In 1972 Hubert L. Naimer was fifty years old. For fifteen of them he had been criss-crossing the globe building up the sixty-five-year old family business. It started in Vienna in 1907 as an electrical switch making shop. Kraus & Naimer prospered during the 1920s but was shattered by the war. As Lorenz Naimer kept the business going, son Hubert was drafted into the German Army and taken prisoner by American forces. Lorenz died in 1944. A year later allied bombs leveled the factory.

... After the war, Hubert hoped to build his career from the ground up, studying electrical engineering in Graz. But in 1947 he dropped everything to rebuild Kraus & Naimer. By 1960, new products—many designed by Naimer—and the early use of plastics had fueled expansion, with factories and outlets on five continents. [...] and by 1972 he was flying a Dassault Falcon 20 once around the world every year to visit his factories – often far from VOR signals.

... Gathered around Edmondson’s kitchen table the next evening, the three nursed a grudge and crafted a plan. They would start a company to realize Naimer’s design. And they were determined, Edmondson recalled, that “it’s got to be bigger than Global.” The name “Universal” seemed self-evident thereafter. On March 11, 1980, Edmondson incorporated Universal Navigation and set up an office in a spare bedroom at home.

Chapter 2: Building Blocks

In the fall of 1981, Universal may have been an upstart, but it did not act like one. Hubert Naimer had spared no expense, and the uninitiated visitor to the Cervantes Convention Hall in St. Louis would never have suspected that Universal was any smaller than Rockwell Collins or Honeywell. In fact, the big blue “Universal” banner across the top of the booth gave the company an even higher profile.

Chuck Edmondson, Don Berlin, and even Hubert Naimer and his son Ted stayed busy showing off the UNS-1. Some of the auxiliary equipment was not quite up to...
speed, but no one noticed. “People were so interested in the CDU and engrossed in what the system could do that they didn’t see that,” said Berlin. One day at lunch, Edmondson encountered a pilot for Southland, the company that owned the 7-11 chain. Southland had just ordered three Falcon 50s, Edmondson learned, and was considering outfitting them with Global or Litton navigation systems. As he had at Hershey Foods, Edmondson made his best pitch and got a verbal commitment – this time he wrote it out on a napkin.

Chapter 3: Beyond Navigation

Naimer had little trouble deciding to move the company to Tucson; he had more trouble with the decision to get into CVRs – or at least with how it was made. The process was very corporate – and very unlike Universal. Naimer was an intuitive decision maker who dealt in facts, but he did not belabor them. Edmondson and Berlin believed that this decision was different, however. It was risky moving beyond the core product, and they also worried that their boss, mostly focused on improving the FMS, might take some persuading. They did research, calculated return on investment, and made a formal presentation on the CVR initiative in the Tucson conference room. Naimer said little at the time; it was only later that he fumed, “Don’t ever do that again. We could have talked about this at dinner and made the decision,” he told Edmondson and Berlin.

Chapter 4: A Clear View

Hubert Naimer covered many subjects in the 1976 letter that became the blueprint for Universal, but none as extensively as CDU display technology. Naimer was not impressed by CRT displays, however, so Universal hung back as other manufacturers moved beyond the CDU to create ever larger “cockpit displays.” Then, at an Aircraft Electronics Association show, Don Berlin encountered an exhibit by a small firm that was producing a sharp, high-resolution active matrix liquid crystal display (LCD) using glass that cut glare to a minimum and allowed a wide field of view. “They were incredible,” Berlin recalled. Soon Universal was working to realize Naimer’s old idea – it had taken more than twenty years, but Naimer had a clear view of what he wanted and was willing to wait.

The certification of TAWS enabled Universal to step up its efforts to capitalize on its newfound display expertise. Hubert Naimer [...] was convinced that if Universal could develop a realistic, animated flight display – already dubbed “synthetic vision” – it could win over the naysayers. Naimer previewed “Vision-I” at the 2000 NBAA Convention and announced that Redmond was on the “fast track” to developing it. “The future is approaching far more quickly than we ever would have imagined,” he insisted. “I ask... what are we waiting for?”

Chapter 5: Turning into the Wind

In late 2004, Universal Avionics faced an uncertain future. More than most, the company had always been the lengthened shadow of one man, and Hubert Naimer had done little to smooth the succession. At the same time, the breeze that had seemed to be at Universal’s back during the 1990s had shifted. Big competitors were locking up more and more of the cockpit, it took more time and more money to certify new products, and a recession had put too many plans on hold. From 2004 to 2011, despite strong crosswinds that still have not subsided, Universal built on old strengths and steadily swung into a new position, ready to meet the future of aviation. Led by a new generation of management, Universal was turning into the wind.

Ted Naimer: Reimagining Avionics

A 9,800-hour pilot with ATP certification for both jets and helicopters, Ted Naimer knows the cockpit better than most.

“So much is possible,” he insists, “that it’s unlikely we’d even be able to imagine a flight deck 20 years into the future.”
If 2,677 LPV Procedures Isn’t Incentive Enough, Here’s One More

Expanded Upgrade and Exchange Program Increases Trade-in Credit

The benefits of WAAS/SBAS GPS navigation are numerous. The FAA has published 2,677 LPV procedures, 2,600 LNAV/VNAV procedures and 5,244 LNAV-only procedures.

The widespread availability of WAAS in North America and the growing implementation of APV/LPV EGNOS procedures in Europe, combined with Universal Avionics 2011/2012 Trade-In Program makes this a good time to take action.

The Trade-in Program includes an aggressive portfolio of incentives that offer up to $20,000 USD off list pricing for legacy Universal FMSs or competitor’s FMS/GPS systems when installing Universal’s WAAS/SBAS-FMS system. Bonus credit above and beyond standard trade-in allowance for the Super FMS series is also offered.

Plus, up to $100,000 trade-in credit is available when the EFI-890R flat panel displays are included in the installation.

Offer valid until February 3, 2012. Consult an Authorized Dealer for information specific to your aircraft installation. For more information, visit: www.uasc.com/ads/ad_incentive.aspx

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