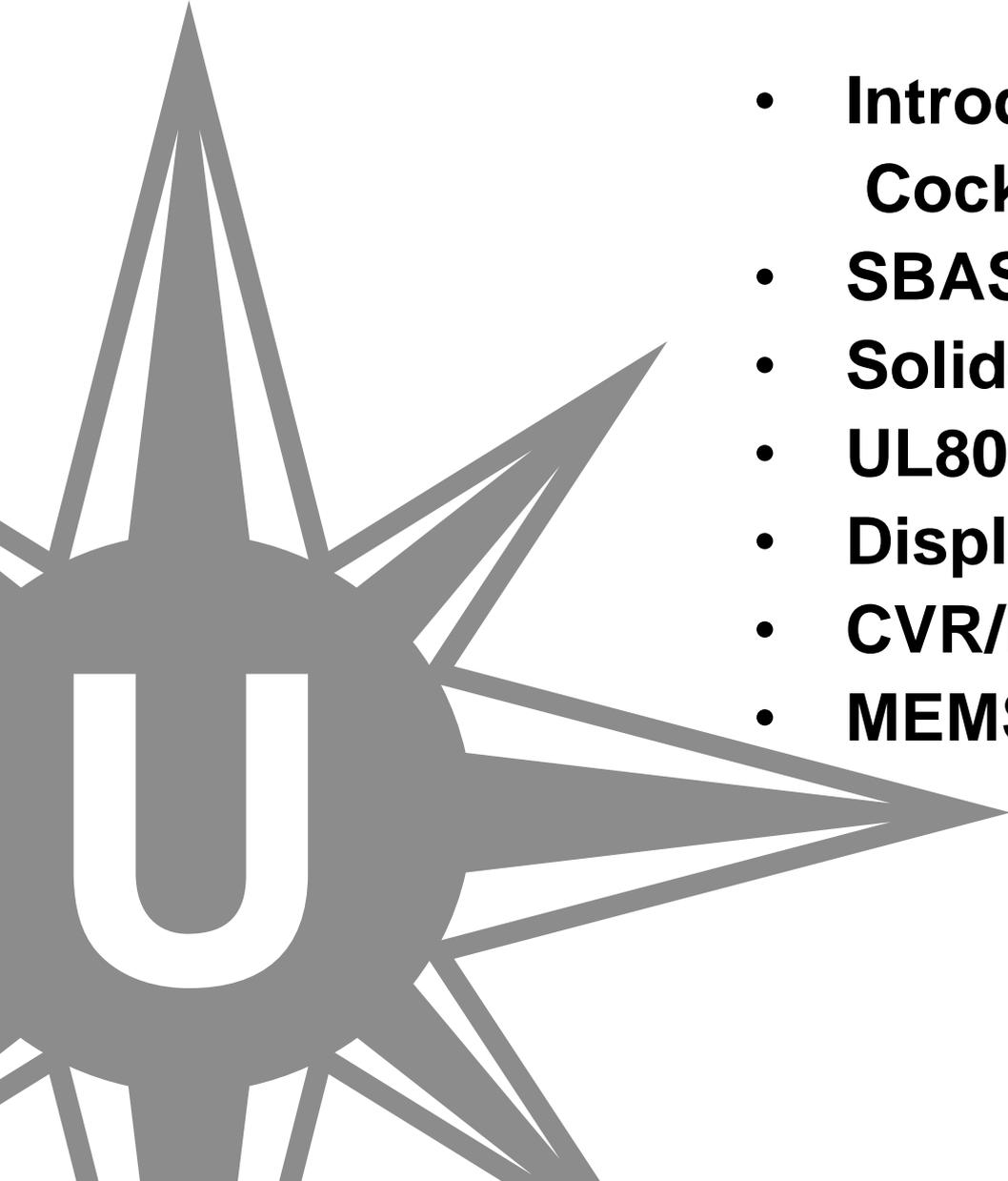


Universal Avionics Presents

- Introduction to Universal Cockpit Solutions
- SBAS FMS - LPV / APV
- Solid-State SSDTU
- UL801 Unilink Datalink
- Displays EFI 890 and Insight
- CVR/FDR
- MEMS AHRS

Ross Dickey

UNIVERSAL[®]AVIONICS
SYSTEMS CORPORATION



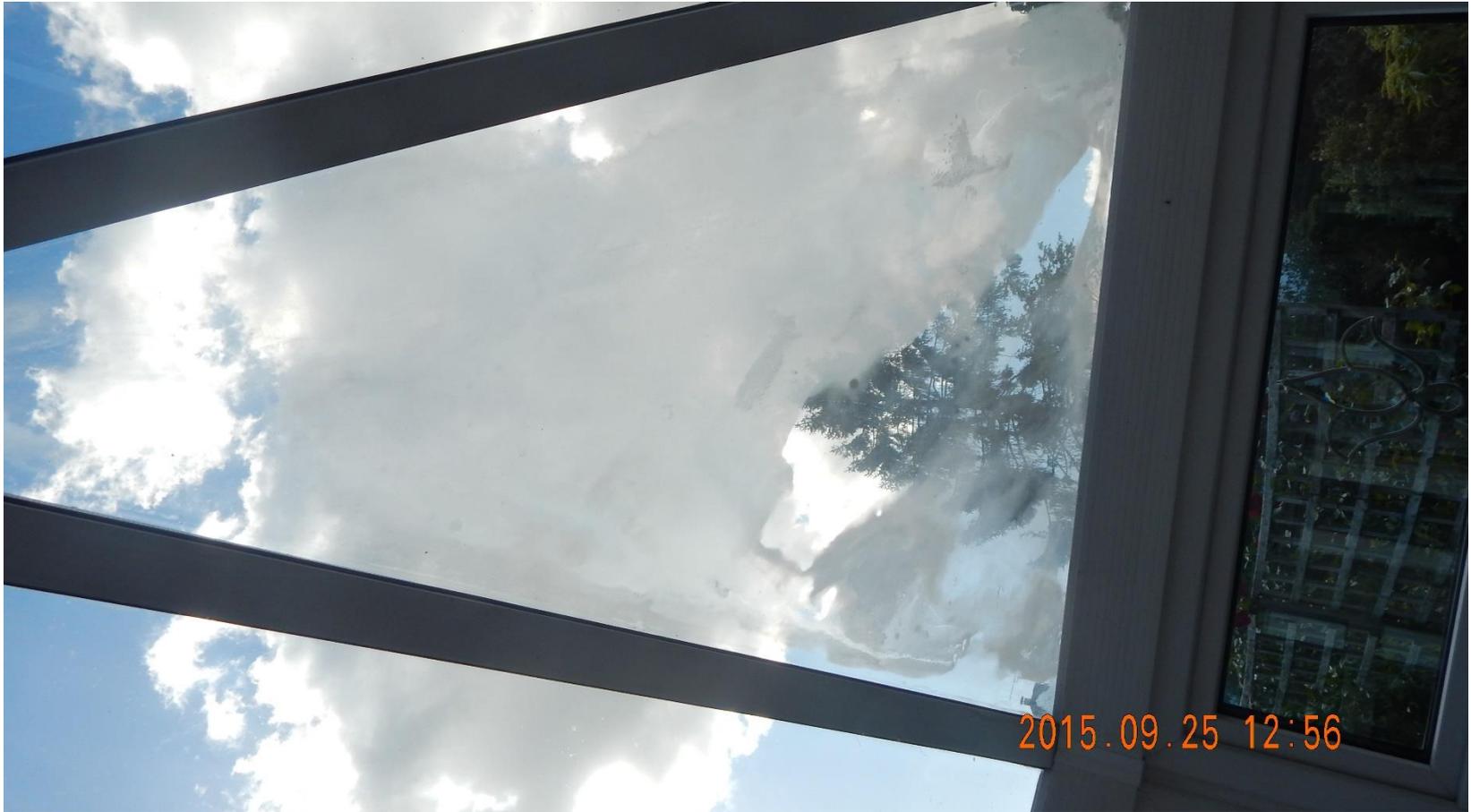
What Happened to Me!

- In March I suffered an impact to my personal Operational Performance and Capability.
- I adopted available proven technologies to resolve.
- I used available funding to “enable” and reduce cost – FOC via UK NHS.
- Restored my Full Operational Capability with minimal retraining.
- I embraced the solution with brilliant results.

Hey, that sounds a bit like LPV?

- Airlines have a Operational requirement with benefits.
- A proven technology is available.
- Enabling Funding is available via our friends at EGNOS.
- Resulting in the airlines Operational capability being maintained and extended with access to new customers.
- Minimal crew retraining.
- The path to ADS-B.
- ***So why wait?***

Looking through an Eye with a Cataract



What you see during the Cataract Operation



And then in just 12 minutes your world returns
as if someone has taken the lens cover off your
camera.
Full Operational Performance Restored.



Introduction to Universal Avionics



**Universal Avionics Systems
Corporation
3260 E. Universal Way
Tucson, AZ 166,000 Sq. Ft**

Proprietary Information

MANUFACTURING - Tucson, AZ



Key notable points about Tucson

- It is super hot in the summer.
- Home of the USAF “Bone Yard” with 5200 aircraft in desert storage.
- The locals say the best sight is the “Tucson” sign in your rear vision mirror as you leave!



R&D
Redmond, Seattle
WA



Marketing / Support
Basel, Switzerland

Total Employee Count ~468

Company Flight Test Aircraft



King Air F-90



Citation VII

Proprietary Information

Universal SBAS – WAAS Flight Management Family



UNS-1Lw
2 MCU LRU
4 CDU

UNS-1Ew
Pedestal Mount
5 inch CDU

UNS-1Fw
2 MCU LRU
5 inch CDU

UNS-1Lw System Components



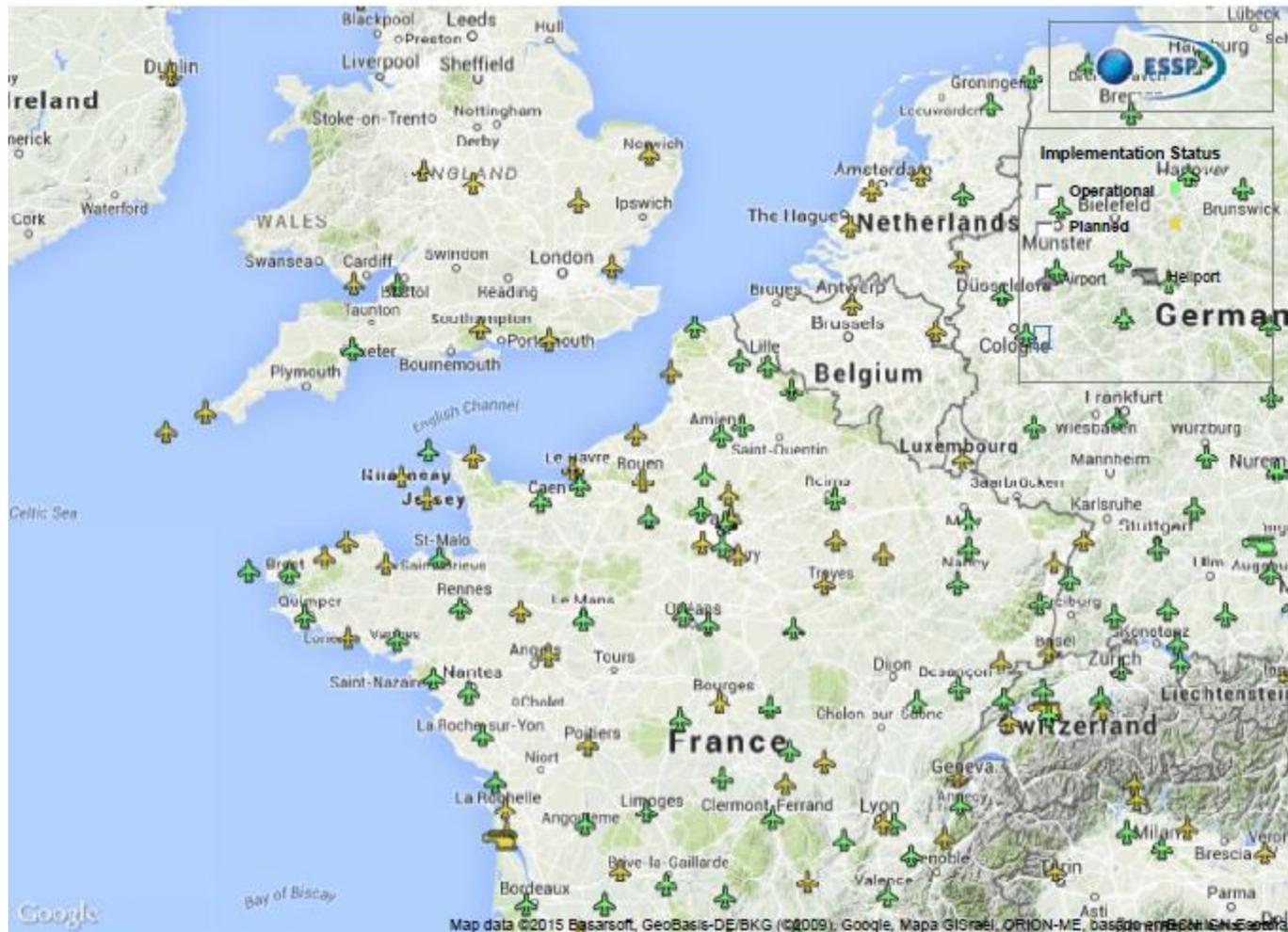
Flat panel LCD CDU &
Remote NCU



Solid State
Data Transfer Unit
(SSDTU) – Fixed
Mount or Portable
versions available

European LPV locations

Expanding rapidly



http://egnos-user-support.essp-sas.eu/egnos_ops/lpv_map/map.php

Universal Avionics Solution for PRNAV, ADS-B Out and LPV-APV Approach

- Install UNS-1Lw system
- Single System with 4" CDU provides:
 - PRNAV Compliance
 - ADS-B Out capability
 - NPA Approach capability and APV Baro (with Baro VNAV)
 - 3D Coupled capability
- Dual System or single with LPV Monitor provides:
 - APV SBAS Approach capability including LNAV / VNAV & LPV approach using GNSS vertical path

LP/LPV Monitor



- Fly RNAV (GPS) LP and LPV Approach Types With a Single FMS Installation
- Internal SBAS Receiver Compatible with WAAS, EGNOS and MSAS
- Eliminates the Need for RAIM Prediction
- Embedded Precision Approach Subsystem (Level B)
- FAA TSO C-146b and C-115b Certified

Benefits of the UNS-1Lw FMS

- WAAS/SBAS allows you to plan alternate airports served by LPV
 - *Benefit:* Closer alternate airport means less required fuel onboard and overall aircraft weight
- LPV Approach as back up to ILS
 - Ensures a safe, on time arrival even when ILS is down
- Stabilized LPV approach eliminates intermediate step-down fixes
 - *Benefit:* Added safety and fuel savings

LVP STC's using UASC FMS

- ATR 42 and ATR 72 Series
- ATP
- BAE 146
- Jetstream 41 series
- SAAB 340 and SAAB 2000 in work.

Training

- Minimal LPV Approach training
 - Covered in GPS NPA training
- Universal FMS Training Software
 - Provides full emulation of FMS system
 - Integrated into simulated 'generic' cockpit
 - Can simulate enroute, terminal, and approach segments anywhere.
- Training available in Tucson or Wichita

FMS Trainer



- Interactive FMS Training Software
- Fully Interactive Keyboard and Display
- World-wide scenarios
- Generic EFIS Flight Displays for SA
- Simulates Flight Guidance for full Flight regime training
- Can use real CDU for input with accessory harness

FlightReview™

(FMS Flight Data Reduction and Playback Software)

- Internal data reduction and export tool for advanced data analysis
- Intuitive, easy-to-use interface
- Useful for:
 - Demonstrations
 - Training
 - Flight Operations Quality Assurance (FOQA)
 - Analysis of flight test results



FlightReview

Problems with LPV Implementation

- Aviation is slow to embrace new technologies unless it is for the passengers.
- Airlines are cost averse unless it is for the passengers.
- Aircraft are often leased hardware and airlines have a mixed group of leasing companies to seek approval from.
- Airlines struggle with the EGNOS application documentation.

Other Universal Products

- BIG Displays and Integrated Display System.
 - EFI 890 and EFI 1040 Insight
- TAWS (Terrain Avoidance)
- Synthetic Vision
- Unilink Data Link
- CVR / FDR (Voice and data recorders))
- MEMS AHRS (Attitude Heading Reference)

Four Display Architecture



The Cockpit Upgrade for the Saab 340





Integrated Flight Deck

UNIVERSAL® AVIONICS
SYSTEMS CORPORATION

Primary System Components

Data Concentrator Unit



EFI-1040 Display

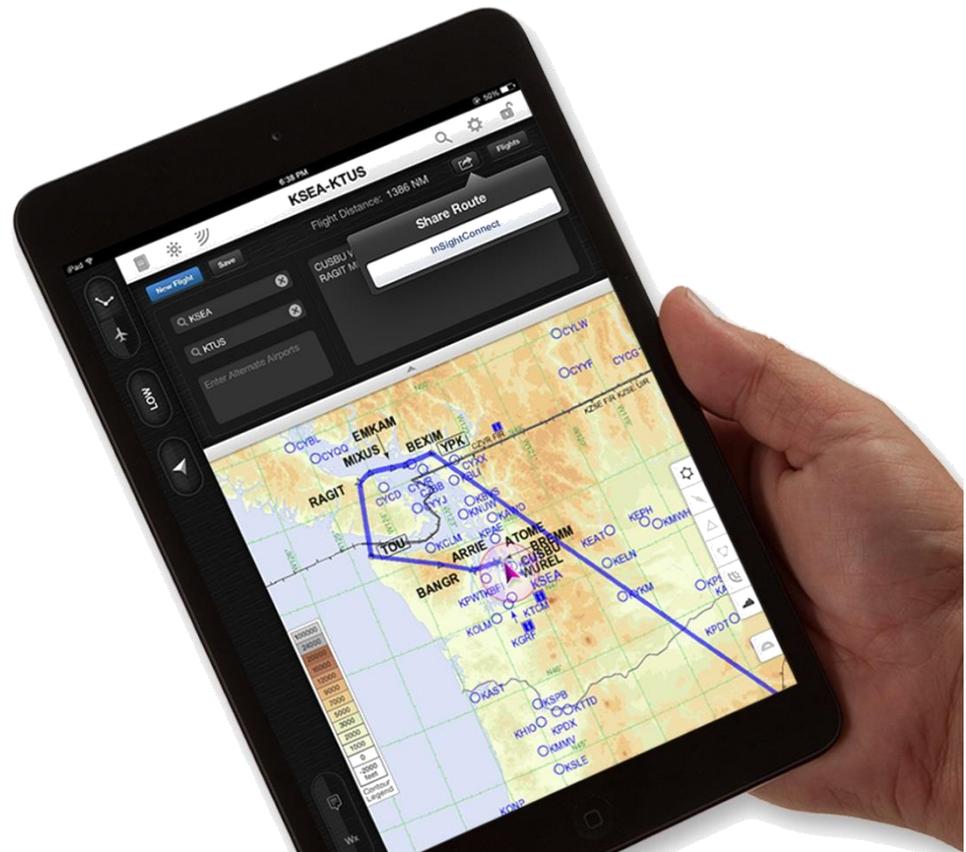


Electronic Control Display Unit

Alpha Numeric Keypad

InSightConnect™

- Wireless Flight Plan Transfer
- Multiple App Support
 - Jepp FD
 - Foreflight
 - Wing X





TAWS (Terrain Avoidance)



Proprietary Information

Vision 1 Synthetic Vision System



Proprietary Information

UniLink CMU

Airborne data link Communication Management Unit (CMU)

- 1 MCU Box
- Internal VDR
- Multiple Media Interfaces
 - VHF
 - SatCom
 - Telephone
- *FANS 1/A Compliant*
- *ATN / Link 2000+*
- Air Traffic Services
 - D-ATIS
 - PDC
 - Oceanic Clearance
 - Taxi Clearance
 - Push Back Clearance



CVFDR

- **Latest TSO Standards**
- **CVR, CVFDR, FDR**
- **Internal RIPS**
- **Small Form Factor and Lightweight (8.7 lbs)**

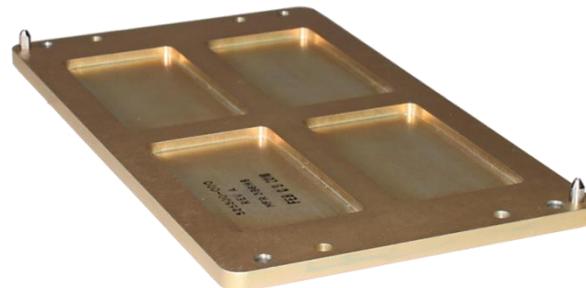


Proprietary Information

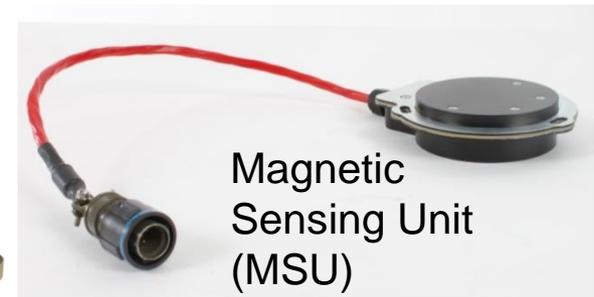
AHRS MEMS – AH-600 Replacement

- UASC AHS-525
 - ARINC 429 Interface to Display System
 - Analog Synchro to Radar
 - ASCB to AFCS provided by InSight DCU

AHRU



Aircraft Mounting Plate



Magnetic Sensing Unit (MSU)

Thank you

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