FLIGHT TEST NEWS

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SFTE Welcomes Ulyssix

In May, SFTE welcomed Ulyssix as a corporate member. This small company was founded by Glenn Rosenthal, a telemetry enthusiast. After graduating from Carnegie-Mellon with a degree in electrical engineering, Glenn kicked off his career with Texas Instruments in 1981 working on the HARM missile. Then, 1988 had him learning telemetry with Metraplex, and by 1999 he was with SBS (Berg). Glenn started privately owned Ulyssix Technologies, Inc. with the primary motivation of supporting and mentoring telemetry engineers. He is also a subject matter expert for GMD program of MDA for support of STARS target telemetry tracking. Glenn's experience includes the Shuttle program TM, the ORION capsule PCM telemetry in the RPS lab in the LCC at KSC and supporting all sounding rocket telemetry and many DoD programs including the High Velocity Projectile and Rail Gun. He helped design telemetry hardware (PCM encoders, signal conditioners, DSP Implemented FM Modulators/Demodulators, Digital Bit Syncs/Frame Syncs, Decoms, PCM simulators). On the hardware side, expertise includes DSP VHDL FPGA (Altera) design, baseband analog circuit design, sampling and reconstruction circuitry, and C programming driver development. Above all, Glenn's strength is knowing where to get answers. Those familiar with the bi-annual DATT (Defense & Aerospace Test & Telemetry) Summit will know Glenn as the instigator who brought it all together.

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29th European SFTE Symposium Report

Jesús Javier Fernández Orío

The 29th symposium took place 29-31 May 2018 at the Faculty of Aerospace Engineering of the Delft University of Technology (the Netherlands). This year's theme was: *The Fewer Aircraft To Flight Test, The More Reason To Share Experience*, with two days of technical sessions and a technical tour to the Air Force Base Leeuwarden.

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USAF FTE wins SFTE-EC's Best Paper

US Air Force FTE, Major Jeff "Data" Newcamp is a PhD Candidate at TU Delft. His technical presentation earned Best Paper honors at the EC Symposium: attached to this newsletter is his paper, "Control Room Lessons Learned - A Perspective from F-35A Testing," for your edification.

SFTE's VP visits 50th SETP Europe and AIAA's Aviation 2018

Panos Vitsas

I had the opportunity to present a paper at the 50th SETP European Symposium in Turin, Italy, June 8-10. The conference committee members hailed from Leonardo S.p.A., the main sponsor of the event. Papers spanned from testing of feathered wingtips to helicopter weapon certification and F-35 testing, with the best paper awarded to an Airbus presentation detailing a new Vmu test technique. Technical tours included a visit to the Leonardo facilities, as well as some presentations of the Ducati team talking about their approach to testing racing motorbikes, while the Gala dinner was held in a magnificent hall of Venaria Reale. The Society of Flight Test Engineers was represented by myself as well as Members Kaan Ay and Guven Korucu from Turkish Aerospace Industries.

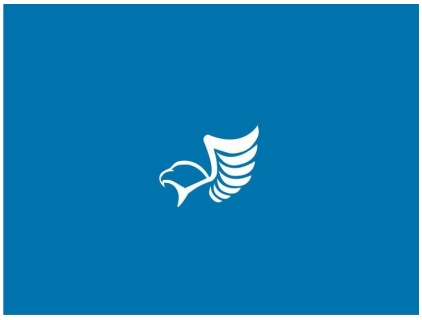
(continued next page)

Flight Test News

Mark Jones Jr, editor@sfte.org
facebook.com/groups/SFTE1/
facebook.com/FlightTestEng
SFTE YouTube channel
linkedin.com/groups/1164057/profile

Ulyssix (continued)

Never one to sit back, Glenn will once again pass along his passion with a subset of his full course at the upcoming training day at this year's SFTE symposium. But wait, there's more….as part of his passion for the TM side of our profession, he began sharing an extensive training presentation with college students and has recently given SFTE permission to post his work in the FTI section of the members-only Digital Notebook: https://www.sfte.org/members-only/community/sfte-forums/ft-instrumentation/752-all-about-telemetry.



Read more here:
https://www.dattsummit.com/
http://www.ulyssix.com/

Ulyssix Technologies, Inc. is dedicated to providing high quality, innovative DSP-based communications products to the telemetry and satellite communications markets. Our skilled staff has been pioneering creative DSP based solutions since 1982. Ulyssix is committed to providing leading edge hardware and software solutions and exceptional long-term support. In recent years, we have seen a disturbing trend in the telemetry community. Suppliers have decided that certain segments of this market are not worthy of their time and effort. The result is that test engineers are forced into implementing technologies and products that do not perfectly satisfy their requirements. Ulyssix Technologies was founded in 2000 on the guiding principle that the test engineer should be the one who defines the products needed and Ulyssix will provide the solution.

The following outlines the topics covered in the Ulyssix presentation.

1 – Telemetry Definitions and Standard Introduction
2 – TM Data Acquisition System Concept
– Sensor types
– Signal Conditioning
– Data Digitizing Method
– Sampling Theorey and Aliasing
3 Data Modulation– Methods
– FM
– Pulse Code Modulation (PCM)
–Encryption
4 – TM Transmission
–RF Bands
–Modulations (FM/BPSK/QPSK/OQPSK/SOQPSK/Multi-h CPM)
5 – TM Ground Station Concept
– Antenna / Receivers (downconverter RF to IF, demodulation, Pre vs. Post-D recording)
– Bit Synchronizers (clock recovery, bit recognition, eye pattern, decoding, noise rejection, bit error)Noise
– Frame Synchronizers (major/minor frame sync criteria, frame archive)
– Decommutators (channel sampling, bit concatenation, frame format identifier)
– Simulator
– IRIG Time Code Reader
6 – Data Analysis
– Realtime Analysis (displays, sampling/commutation effects on displays)
– Post Analysis (mathf functions, data storage)
– Recording (archive .tad files, Chapter 10 recording)
7 – Telemetry Market Products
– Airborne PCM Encoders, Transmitters, Antenna
– Ground Based Antenna, Receivers, PCM Processing, Ground Station Testers
8 – Future Advancements in Telemetry Data Transfer
– CH10 Ethernet UDP packets
– TMoIP
– iNET
– Software Defined Radios

Message from Glenn

Summit 2018 totally exceeded our expectations on many levels; our attendance was over double from DATT Summit 2016 and the response to the workshops in the Educational Tracks went way beyond our forecasted participation. The overwhelming workshop attendance gave us that big, warm confirmation that Robert Lightfoot (former Acting NASA Administrator) was right, we needed to execute a strong educational program to secure attendees.

Wow – what a week – our Keynote Speakers (Charlie Blackwell-Thompson, Dr. David Van Wie and Dan Dumbacher) were phenomenal! We are so grateful that Charlie, Dave and Dan took the time to come to DATT to share their insights on their respective expertise and we are so humbled that each one took the time to visit the Demonstration Lab and meet with some of the Demonstrators. Charlie, Dave and Dan were totally astonished by the technology being demonstrated and they were extremely impressed by the technical caliper of the demonstrators they met in the Demonstration Lab. I hope you were able to experience the same.

Although we all went to Orlando to work last week, most of us did have some fun; the Opening Welcome Reception was delightful, we had 14 children and adults rave about their kayaking adventures with the manatees and the reception at the Atlantis Museum at the KSC Visitor Center was emotionally inspiring! The

success of these events sets up new challenge for DATT Summit 2020 – how do we make it bigger and better.

The DATT Summit team has worked diligently since DATT Summit 2016 to make our 'product', DATT Summit, to be better to support the needs of our industry and marketplace. It is our goal to continue to listen to the needs of our demonstrators and attendees in order to expand, tweak and create a stronger DATT Summit for 2020. We are all in the same position when it comes to improving our products; it's not easy to keep ideas fresh, to be innovative and/or to make a lasting impression on your industry friends (or even our competitors). To that extent, we need your feedback. Christina will be sending out a survey this week to all demonstrators and attendees. We hope you will take the time to give us your opinions, KIND criticisms and most especially your ideas for the improvements for the future.

Please know that the first objective for DATT Summit 2020 is to create a schedule to provides for more Demonstration Lab time for our attendees. We didn't anticipate the conundrum that ensued where, we (as the DATT Staff) were overwhelmed by the attendance to the workshops, and, where we (as Ulyssix, a Demonstration Lab demonstrator) were horrified by the silence in the Demonstration Lab during the workshops. You can be assured that we will resolve this issue by creating more open time for the workshop attendees to come to the Demonstration Lab.

The ball is already rolling for DATT Summit 2020 (Rev C if you will). The DATT team hopes to finalize by the end of next week the contract for DATT Summit 2020 to be at the Rosen Centre May 11-14, 2020. Please add this date to your schedule early. We are currently in the process of negotiating a block of government per diem rooms (beyond the normal block of rooms) at the Rosen Centre for our government attendees. Although the Rosen Centre doesn't as a matter of policy have per diem rates (as does the Rosen Plaza), the Rosen Centre staff (who are great to work with) have now witnessed DATT Summit and realize the benefit to the Rosen Centre and DATT Summit by offering per diem rates to those government attendees. Negotiating this per diem room block is another way to prove to our attendees that the DATT team is doing everything we can to help with your test and telemetry training and networking.

In all honesty – fundraising to support DATT Summit sucks, but we do it because we believe in the purpose of DATT Summit. The DATT Summit team is constantly on the lookout for new and innovative methods to attract sponsors from our marketplace and to grab the attention of prime contractors who have yet to fully discover the great possibilities that DATT Summit has to offer. The DATT Summit team is also on the hunt for more outside organization (like AIAA) to help DATT Summit achieve its goal to support the entire test and telemetry community in the defense and aerospace marketplace. Any support or suggestions of help in this area is greatly appreciated.

For those of you who participated in DATT Summit 2016 and now DATT Summit 2018, we hope you can appreciate how serious our commitment is in creating a product that is in the best interest of our industry, the customers that we all service and ultimately what is in the best interest of our country. DATT Summit would not have be possible without a significant investment from Ulyssix and the generosity our current sponsors! To be totally transparent, DATT Summit is not a revenue stream for Ulyssix; all DATT Summit revenue generated above costs will be rolled back into the next DATT Summit to make the next DATT bigger and better than the previous.

SFTE's BOD Nominees

SFTE has announced Nominees for the Board of Directors, to serve 2018-2020. For more information, see the full announcement here: https://www.sfte.org/services/publications/sfte-news/651-2018-2020-board-of-directors-preliminary-roster-of-nominees.

Nominees appear below.
President:
Mr. James Sergeant
Dr. Panos Vitsas
Vice President:
Mr. Kevin Welch
Secretary:
Mr. Richard Starke
Treasurer:
Mr. Jeffrey Canclini
Mr. Kirk Kloeppel
Directors:
Mr. Andrew Gibson
Mr. Jake Kiehlmeier
Ms. Margaret "Peggy" Swassing
Dr. Vanessa Bond

29th European SFTE Symposium (continued)

This year the event was supported by the Delft University of Technology, the Netherlands Association of Aeronautical Engineers and the Netherlands Aerospace Centre NLR. On the first day, after the inauguration address by the conference chair Christophe Hermans, three keynote speakers delivered very good presentations that got the attention of the audience:

Col. M. Kievit Royal Netherlands Air Force Head of F35 project Office: "The F-35 Program: Providing the 5th generation fighter aircraft for the RNLAF"; Airbus Experimental Test pilot, H. van der Stichel: "Flight Testing the Airbus A350"; and NLR VP M. van Venrooij: "The Future of Flight Test Research: Expect the unexpected".

The symposium was a feast for both the mind and the palate.

During the lunch break of the first and second day the Delft University of Technology treated the flight test community with lunch tours to the flying teaching laboratory, the Cyber Zoo (small scale RPAS designs) and its flight simulator Simona. The first day finished with a technical session

with three presentations. At the end of the day, we enjoyed a welcome reception at the faculty bar.

The second day was devoted to technical sessions, presentations covering a wide variety of topics. The level of all the presentations produced interesting exchange of comments and questions between the presenters and the audience. At the end of the sessions the SFTE EC Business Meeting took place. The chapter board addressed the audience, presenting the usual topics and asking the non-members on the audience to pursue the membership of the Society. A small alteration in the "bylaws" of the chapter was submitted to the members and accepted. The board announced that for the first time, the JMR award ceremony will be organized during the 2019 Symposium in Toulouse. The board encourages our colleagues to submit proposals of candidates for the JMR awards. Information will be published on the SFTE EC website.

In the evening we had the symposium dinner at the restaurant Van der Dussen. During the meal we enjoyed an interesting address by the dean of the faculty of Aerospace Engineering, Prof. dr. Henri Werij. Afterwards the jury announced the winner of the best paper prize, being Jeff Newcamp from Delft University of Technology for his presentation "Control Room Lessons Learned- a Perspective from F35A Testing".

On 31st of May, we visited the Air Force Base Leeuwarden. The Air Base is the location of the Fighter Weapons Instructor Training and the annual multinational NATO exercise "Frisian Flag". It is also the location of the Air Force flight test office.

June #flighttest News

This month FTN experiments by republishing an unedited summary of the month's headlines, as seen on twitter, via @FlightTestFact. Click on any hyperlink to read more.

A tragedy and a blow to electric aviation: @Siemens aircraft crash #flighttest http://ow.ly/jPD730klooY #avgeek

RT @CurtissWrightDS: We're at the #DATT show this week in Orlando showcasing our total system solutions for the flight test industry. http://ow.ly/cD1430klKjt #flighttest

RT @dytrani: Join us today at 2:40, Dytran's Director of Sales presents at the DATT Summit 2018: "Airborne Piezoelectric Sensor Technology" in Salon 15.
Details: http://ow.ly/SvYB30kkJDh #sensors #dytraninnovation #DATT #DATT2018 #teamdytran

RT @GenAtomics_ASI: "We were able to move the test date forward by two months" David Alexander regarding the test of the @PrattAndWhitney PW815 jet engine #MQ25 #avgeek http://bit.ly/PWGASI

The "sled track" at Holloman AFB http://ow.ly/GrQj30knqZ0 via @airmanmagazine #flighttest #avgeek

GippsAero GA10 crashed doing spin testing with external "stores." http://ow.ly/D7uY30knswz #flighttest #avgeek

ONERA and @DLR_en perform Beluga XL ground vibration testing #video http://ow.ly/88E030kodMG #flighttest #avgeek cc @DLR_de

UAVOS, a company specializing in flight controls for drones of all sizes, has created a tandem-wing, tri-tailed High-Altitude Psuedo Satellite (HAPS) called ApusDuo. http://ow.ly/jaHH30kpiz3 #flighttest

RT @CurtissWrightDS: A customer required a high speed camera that could withstand harsh conditions to gather accurate data confirming position and velocity to validate models in an FTI study. http://ow.ly/Ub1130koRUV #flighttest

RT @DytranI: The Dytran/Sage CAN-MD® development team announces successful results from a testing campaign at GE Aviation Czech--system for full time vibration health monitoring (VHM) in small turboprop applications. http://ow.ly/LyfT30kmVjs

RT @HQ_AFMC: The @AFResearchLab AgilePod made its first test flights aboard an MQ-9. The #sensor is the 1st fully government-owned, open architecture ISR system adaptable for multiple @usairforce missions & systems. https://go.usa.gov/xQMeb

RT @Olavml: Norway's first electric flight carried out today! Pilot: Avinor CEO Dag Falk-Petersen. Passenger: Minister of Transport Ketil Solvik-Olsen. Project Partners: @SAS @Luftsport @FlyWideroe @zeronorge @avinor #flighttest

RT @GEAviation: #NASA has selected GE's F414 engine to power its new #supersonic X-plane. The plane will cruise at 55,000 feet at a speed of about 940 mph and create a sound about as loud as a car door closing.

NASA's James Webb Space Telescope's Two Halves Powered for the First Time in One Building at Northrop Grumman http://ow.ly/xALd30kAJaV #avgeek

In 1938, the Michigan Alumnus magazine, Vol 44, reports on Clarence Kelly's work as a Flight Test Engineer. http://ow.ly/XcxG30kATVb #avgeek #history #flighttest

"It was not until 1933 that #flighttest began on a truly comprehensive scale" (Popular Aviation). http://ow.ly/7yLY30kATZb #avgeek

In 1918, the War Department began publication of "The Bulletin of the Experimental Department, Airplane Engineering". Here is Volume 1: http://ow.ly/MQI630kAUSC #flighttest #avgeek #history

First ever tow with a Grob Egrett http://ow.ly/Rghe30kBOJj #flighttest #avgeek

RT @NASAaero: From the 70s–90s, we collaborated w/ @usairforce on Intelligent Flight Control System to develop adaptive and fault-tolerant flight control systems leading to unprecedented levels of safety for #military aircraft https://go.nasa.gov/2tp71z8

First Landing on an Unpaved Runway for the PC-24 #flighttest #avgeek https://t.co/aw6kN81dJj

A-29 crash at Holloman AFB | @a29foramerica @sierranevcorp http://ow.ly/jf2Y30kD9Va #flighttest

RT @defense_news: Experimental #helicopter Raider cleared for full flight test program: https://trib.al/JFq25kr #flighttest

RT @NASAArmstrong: #OfficialNews @NASA's Experimental Supersonic Aircraft Now Known as X-59 QueSST http://go.nasa.gov/2KtugQ5 @NASAaero #flighttest #avgeek

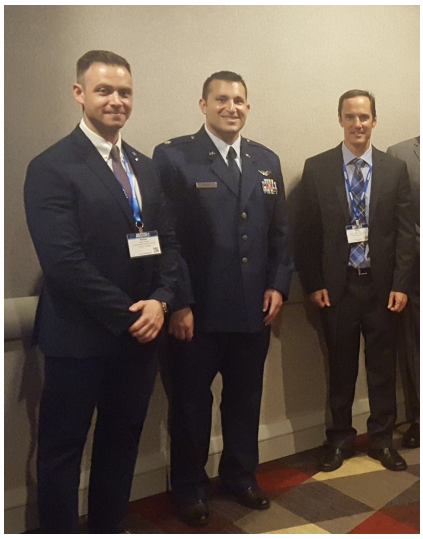
SFTE's VP visits SETP and AIAA (continued)

SFTE VP Panos Vitsas, with SETP President Art 'Turbo' Tomassetti at the 50th European SETP Symposium.

SFTE Members at the 50th European SETP Symposium (From L to R: Kaan Ay, Panos Vitsas, Guven Korucu)

A few weeks later, from June 25 to 29, SFTE's VP and presidential candidate, Dr Panos Vitsas, participated in the AIAA Aviation 2018 conference in Atlanta. The conference gathered more than 2,500 attendees from all over the world. Panos chaired a session and joined the AIAA Flight Test Technical Committee (FTTC) meeting. The FTTC hosted 7 different paper sessions ranging from flight test education and training to UAS testing and hosted a Forum 360 discussion under the title "Rapid Spiral Development from Ground to Flight." Lockheed Martin was one of the main sponsors and had a significant presence in the event, with a series of F-35 flight test papers on all test disciplines presented for the first time, demonstrating the outstanding size and depth of the F-35 test program.

SFTE members (right to left) Brian Kish, LtCol Daniel Montes, and Panos Vitsas at AIAA Aviation 2018.



The conference expo hosted many booths, mostly on design and analysis tools as well an F-35 simulator operated by LM test pilots. During the event I had the chance to meet several other SFTE Members attending it, including James Sargent (Lockheed Martin), Libin Daniel (Gulfstream), Borja Martos (Embry-Riddle), Brian Kish (Florida Institute of Technology) and Lt Col Daniel Montes (USAF TPS).

See you all in the 49th Annual International SFTE Symposium in Savannah, GA.

Editor's Note:
I first met Panos Vitsas when we both served on the Board of Directors in 2014. During that time, he first served as a Director-at-large and chaired the Membership Committee. Now, during his second term, he serves as the Vice President and continues to labor as the Membership Committee chair. He has written many articles for the FTN and has spearheaded several initiatives, including the membership certificates. Few members have contributed as much to these pages as Panos. I personally thank him and wish him the best as candidate for SFTE President.