# FINAL PRESENTATION DAYS

# PAYLOAD TECHNOLOGIES AND PRODUCTS

**03-05 February 2015**

**ESA/ESTEC**

***The Radio Frequency Equipment and Technology Section (TEC-ETE) , Payload Engineering Section (TEC-ETP) and Product Payload Section (TIA-TTP) have scheduled these Final Presentation Days.***

***The event includes 26 final presentations from a wide range of R&D activities including ARTES 5.1, ARTES 5.2, ARTES 3.4, TRP, ITI and EGEP***

**TOPICS:**

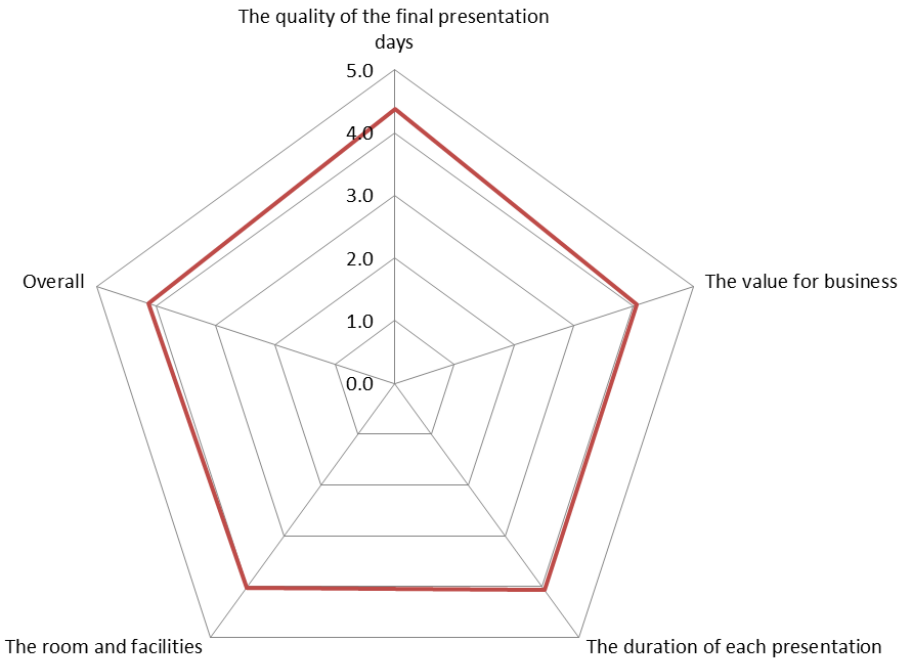
- Isolators / circulators
- Thermal compensated Ka-band channels (narrow and wideband).
- Compact Dielectric Ku-band OMUX
- High power LPF filter
- Ka-band Circular Waveguide Quadruplexer
- LNA for Ka-, Q- and V-band
- LNA for radar applications
- MEMs
- High power investigations
- Anti-multipaction treatments
- Atomic clocks
- Dual Polarization payload
- On-board calibration
- On-ground beamforming

# EVALUATION

The evaluation has been sent to all the attendants, 50 of them has sent their feedback.

The 4 main questions were related to the quality of the presentation days, room and facilities, duration of each presentation and value for business, giving the possibility to select the score between 0 (bad) and 5 (excellent).

The final result together with the overall value is shown in this graphic.




Additionally two open questions were included in the evaluation with the following comments and suggestions:

- room too small
- The drawback of these events is that some information cannot be presented due to **confidentiality aspect**
- Unfortunately I was only present for 1/2 a day. So don't consider my evaluation as important as others. Overall: very good concept!"
- Excellent organization of this relevant event !
- Gracious hosts and a well ran event. ESTEC are well placed to offer this type of event. No other entity has such an international reach or breath of topics.
- A very well organized event. I really enjoyed attending these presentations, high quality work very useful.
- Very good

- the plugs for charging the laptop
- please do it again
- Excellent, keep up the good work
- Nice work. These days were really interesting.
- please **stick very strictly to the schedule**, start time should be observed allowing for a selective attendance to individual presentations
- it should be interesting and helpful to have **b to b meeting among participants**
- try to better to **stick to the agenda** so that people who want specifically to join only for some presentations can do it in an easier way (and do not miss the beginning of the presentations when it is ahead of schedule)
- I would try to **separate by R&D activities and product developments** and I would try to avoid parallel sessions.
- I appreciated a lot these 3 days for several reasons:
    - some presentation very interesting
    - opportunities to discuss with competitors or customers
    - opportunities to meet key people from ESA"
- to try to have the same speaker for two following sessions
- **Timing of the presentations could be controlled more closely** or allow for over-runs in the timetable.
- Are these days organized on a yearly basis ?
- To collect the executive **summaries of Artes activities in a periodic magazine** (paper or on line, but easily accessible) to be shared at least with all the ESA partners. The presently available ""project web pages"" are useless, because they are not listed from a start page or easily reachable.
- I was very pleased to attend the Presentations and have the opportunity to listen and discuss experiences with other individuals involved in TRP / ATRES / ITI programs.
- The time is adequate for a summary overview on the activity touching just the highlights. For a deeper discussion, especially for long lasting activities the time should be longer.
- I am working in a narrow field, MEMS reliability and the presentations were very interesting because they showed the different point of view of each consortium
- Showing what is being developed is interesting although there are several studies which results are not really useful for business.
- Provided that the subjects were all interesting I’ve found the sequence on the Multipactor too much long.
- Try to mix more the different subjects. In addition I believe that such a meeting should be done each 6 moths rather than 1 year. This will give more tracking and more evidence on the different activities even if they are not completed and will allow to have a two days meeting (more accessible for everybody) instead of a full immersion three days (not always affordable for various reasons).
- Those related with filter design (OMUXes ) with different mode configuration
- apart from the technical side presentation from the PI of the project, **some comments from ESA side should be valuable**, even to address activities fall-out. In other words, also a short description and judgment on the overall activity from ESA people should be helpful for all (clearly being as open as possible).
- Presentations for active components and passive components to separate in different sessions
- Maybe the room was a bit too small. Having table for all attendees would be a plus.
- I recommend to keep doing these presentations. I found them very interesting.

ATTENDANTS

**Canada:** 1
**France:** 14
**Germany:** 7
**Greece:** 1
**Italy:** 7
**Spain:** 12
**Switzerland:** 1
**United Kingdom:** 9
**Netherlands:** 5
**ESA:** 33

| Name | Email | Institution | Country |
|---|---|---|---|
| **Mr. GEHRING, Ralf** | Ralf.Gehring@astrium.eads.net | Airbus Defence and Space | Germany |
| **Mr. BOOTH, Paul** | paul.booth@astrium.eads.net | Airbus Defence and Space | United Kingdom |
| **Mr. HARVEY, Mark** | mark.harvey@astrium.eads.net | Airbus Defence and Space | United Kingdom |
| **Mr. LE MAUFF, JOEL** | joel.lemauff@altertechnology.com | ALTER TECHNOLOGY TUV NORD | France |
| **Dr. VICENTE, Carlos** | carlos.vicente@aurorasat.es | Aurora Software and Testing | Spain |
| **Dr. REZAEE, Payman** | pre@tf.uni-kiel.de | CAU of Kiel, Technical faculty | Germany |
| **Mr. DUMON, Patrick** | patrick.dumon@cnes.fr | CNES | France |
| **Mr. JEROME, PUECH** | jerome.puech@cnes.fr | CNES | France |
| **Dr. FARHAT, Léo** | leo.farhat@cobham.com | COBHAM MICROWAVE | France |
| **Mr. LAROCHE, ERIC** | eric.laroche@cobham.com | COBHAM MICROWAVE | France |
| **Mr. MCLAREN, Colin** | colin.mclaren@comdev.co.uk | COM DEV International | United Kingdom |
| **Mr. PETIT, John** | john.petit@comdev.co.uk | COM DEV International | United Kingdom |
| **Mr. FITZPATRICK, William** | Bill.Fitzpatrick@Comdev.ca | COMDEV | Canada |
| **Prof. MONTERO, Isabel** | imontero@icmm.csic.es | CSIC (Spanish National Research Council) | Spain |
| **Mr. DE MEIJER, Onno** | onme@dare.nl | DARE | Netherlands |
| **CASTELEIN, Jos** | jos.castelein@esa.int | ESA | Netherlands |
| **CHOWDHARY, Amitabh** | amitabh.chowdhary@esa.int | ESA | United Kingdom |
| **Dr. AYLLON, Natanael** | natanael.ayllon@esa.int | ESA | Netherlands |
| **Dr. BRINGER, Charlotte** | charlotte.bringer@esa.int | ESA | Netherlands |
| **Dr. ERNST, CHRISTOPH** | CHRISTOPH.ERNST@ESA.INT | ESA | Netherlands |

ATTENDANTS

| Name | Email | Institution | Country |
|---|---|---|---|
| **Dr. HARVERSON, Michael** | michael.harverson@esa.int | ESA | United Kingdom |
| **Dr. MIQUEL ESPANA, Cesar** | Cesar.Miquel.Espana@esa.int | ESA | Netherlands |
| **Mr. ANGEVAIN, JEAN-CHRISTOPHE** | Jean.Christophe.Angevain@esa.int | ESA | Netherlands |
| **Mr. CAMINO, Octavio** | octavio.camino@esa.int | ESA | United Kingdom |
| **Mr. DE PAOLIS, Fabrizio** | fabrizio.de.paolis@esa.int | ESA | Netherlands |
| **Mr. DERDERIAN, ARMEN** | ARMEN.DERDERIAN@ESA.INT | ESA | Netherlands |
| **Mr. DONADIO, Roberto** | roberto.donadio@esa.int | ESA | Netherlands |
| **Mr. EL-DALI, Wael** | wael.eldali@esa.int | ESA | Netherlands |
| **Mr. LACOMBE, Denis** | denis.lacombe@esa.int | ESA | Netherlands |
| **Mr. MALMODIN, Olof** | olof.malmodin@esa.int | ESA | Netherlands |
| **Mr. MARTIN-IGLESIAS, Petronilo** | petronilo.martin.iglesias@esa.int | ESA | Netherlands |
| **Mr. MULLER, Paul** | paul.muller@esa.int | ESA | Netherlands |
| **Mr. PERAT, olivier** | olivier.perat@esa.int | ESA | Netherlands |
| **Mr. RABOSO, David** | david.raboso@esa.int | ESA | Spain |
| **Mr. STEPHANE, pirio** | stephane.pirio@esa.int | ESA | Netherlands |
| **Ms. GALDEANO, Jaione** | jaione.galdeano@esa.int | ESA | Netherlands |
| **Ms. SILVIA, Teixeira** | silvia.teixeira@esa.int | ESA | Netherlands |
| **Ms. FOLIO, Benedicte-Marie** | Benedicte.Marie.Folio@esa.int | ESA | Netherlands |
| **Mr. MIDTHASSEL, Rolv** | rolv.midthassel@esa.int | ESA | Netherlands |
| **Dr. WITTIG, Sarah** | sarah.wittig@esa.int | ESA | Netherlands |
| **Mr. LIA, Enrico** | enrico.lia@esa.int | ESA | Netherlands |
| **Dr. SIMEONI, Massimiliano** | massimiliano.simeoni@esa.int | ESA | Netherlands |
| **Dr. TESCH, Andreas** | andreas.tesch@esa.int | ESA | Netherlands |
| **Dr. TOPPING, Christopher** | christopher.toppping@esa.int | ESA | Netherlands |
| **Mr. BELLONI, Marco** | marco.belloni@esa.int | ESA | Netherlands |
| **Mr. PAQUAY, Maurice** | maurice.paquay@esa.int | ESA | Netherlands |
| **PIMM, Ian** | ian.pimm@esa.int | ESA | Netherlands |

ATTENDANTS

| Name | Email | Institution | Country |
|---|---|---|---|
| **Dr. PETROLATI, Daniele** | daniele.petrolati@esa.int | ESA | Netherlands |
| **Mr. JOER, Jean-Pierre** | jjoer@eutelsat.com | EUTELSAT | France |
| **Mr. SERRANO , jose Luis** | jserrano@eutelsat.com | EUTELSAT | France |
| **Mr. MARGESIN, Benno** | margesin@fbk.eu | Fondazione Bruno Kessler | Italy |
| **Dr. KOTIRANTA, Mikko** | mikko.kotiranta@iaf.fraunhofer.de | Fraunhofer IAF | Germany |
| **Dr. MCKAY, Mark** | mark.mckay@meslmicrowave.com | MESL Microwave | United Kingdom |
| **Mr. VILASECA MIRÓ, Roger** | rvilaseca@mier.es | Mier Comunicaciones, S.A. | Spain |
| **Dr. BELHAJ, Mohamed** | Mohamed.Belhaj@onera.fr | ONERA | France |
| **Mr. DROZ, Fabien** | droz@spectratime.com | Orolia Switzerland SA (Spectratime) | Switzerland |
| **Mr. GIANANI, Mohit** | mohit1225@hotmail.com | PoliMi | Italy |
| **Dr. ARREGUI, Iván** | ivan.arregui@unavarra.es | Public University of Navarre (UPNA) | Spain |
| **Dr. LASO, Miguel** | mangel.gomez@unavarra.es | Public University of Navarre (UPNA) | Spain |
| **Mr. BERENFELD, Olivier** | olivier.berenfeld@radiall.com | RADIALL SA | France |
| **Mr. GALAZ, Juan Sebastián** | juangalaz@rfmechanics.com | RF Mechanics | Spain |
| **Dr. PELLICCIA, Luca** | pelliccia@rfmicrotech.com | RF Microtech Srl | Italy |
| **Mr. GARCIA, Rafael** | rafael.garcia@rymsaespacio.com | RYMSA ESPACIO | Spain |
| **Ms. GONZÁLEZ, Beatriz** | beatriz.gonzalez@rymsaespacio.com | RYMSA ESPACIO | Spain |
| **Dr. BAST, Jeanette** | bast@stcorp.nl | Science and Technology corporation | Netherlands |
| **Dr. NORRIE, Callum** | callum.norrie@space-network.net | Scottish Space Network | United Kingdom |
| **Mr. GABELLINI, Piero** | piero.gabellini@space.it | Space Engineering SpA | Italy |
| **Dr. CAMPA, Claudio** | campa@space.it | Space Engineering SpA | Italy |
| **Prof. BORIA, Vicente** | vboria@dcom.upv.es | Technical University Valencia /VSC | Spain |
| **Dr. PARLEBAS, Jean** | jean.parlebas@tesat.de | Tesat Spacecom | Germany |
| **Mr. ABELE, Meinrad** | meinrad.abele@tesat.de | Tesat Spacecom | Germany |
| **Mr. ARNOLD, Christian** | christian.arnold@tesat.de | Tesat Spacecom | Germany |
| **Mr. WOCHNER, Ulrich** | ulrich.wochner@tesat.de | Tesat Spacecom | Germany |
| **Mr. BRENNAN, Michael** | michael.brennan@astrium.eads.net | TESAT SPACECOM UK | United Kingdom |

ATTENDANTS

| Name | Email | Institution | Country |
|---|---|---|---|
| **Mr. PARKER, Steve** | steve.parker@astrium.eads.net | TESAT SPACECOM UK | United Kingdom |
| **Dr. FEUDALE, Marziale** | marziale.feudale@thalesaleniaspace.com | THALES ALENIA SPACE - ITALY | Italy |
| **Mr. MADER, Philippe** | philippe.mader@thalesaleniaspace.com | THALES ALENIA SPACE - FRANCE | France |
| **Mr. LEBLOND, Hervé** | herve.leblond@thalesaleniaspace.com | THALES ALENIA SPACE - FRANCE | France |
| **Mr. BRANCA, Federico** | federico.brancaroncati@thalesaleniaspace.com | THALES ALENIA SPACE - SPAIN | Spain |
| **Dr. PACAUD, Damien** | damien.pacaud@thalesaleniaspace.com | THALES ALENIA SPACE France | France |
| **Mrs. BRIAND, Aline** | aline.briand@thalesaleniaspace.com | THALES ALENIA SPACE France | France |
| **Mr. VAN DER BENT, Gijs** | gijs.vanderbent@tno.nl | TNO | Netherlands |
| **Mr. VAN DIJK, Raymond** | raymond.vandijk@tno.nl | TNO | Netherlands |
| **Prof. GALÁN, Luis** | luis.galan@uam.es | UAM (Universidad Autónoma de Madrid) | Spain |
| **Prof. LIMITI, Ernesto** | limiti@ing.uniroma2.it | Università di Roma Tor Vergata - EE Dept. | Italy |
| **Dr. GUGLIELMI, Marco** | maglova.microwaves@gmail.com | Universita Polytechnica de Valencia | Netherlands |
| **Prof. PPAPAIOANNOU, George** | gpapaioan@phys.uoa.gr | University of Athens | Greece |
| **Dr. MAYOCK, Jim** | jim.mayock@viper-rf.com | VIPER RF | United Kingdom |
| **Mr. MARCHIVES, Yoann** | yoann.marchives@etu.unilim.fr | XLIM | France |

**FINAL PRESENTATION DAYS – PAYLOAD TECHNOLOGIES AND PRODUCTS – 03-05 February 2015, ESA/ESTEC.**
**Daily Programme: Tuesday 03 February 2015**

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|---|---|
| **09:00-09:30** | WELCOME TO THE FINAL PRESENTATION DAYS – INTRODUCTION (ESA/ESTEC) |
| **09:30-10:15** | TRP – Integrated circulators for TR modules (TNO - Netherlands) |
| **10:15-11:00** | ARTES 5.1 - 300 W Ka-Band isolator (Cobham Microwave - France) |
| **11:00-11:15** | COFFEE BREAK |
| **11:15-12:00** | ARTES 5.1 - Input Filters for L-, S-band applications (RF Microtech Srl, Italy) |
| **12:00-12:45** | ARTES 5.1 Temperature Compensation Techniques for Waveguide Filters, Manifold and OMUX (TESAT Spacecom – Germany) |
| **12:45-13:05** | Space Debris Mitigation requirements and CleanSat programme (ESA/ESTEC) |
| **13:05-14:00** | LUNCH |
| **14:00-14:45** | ARTES 5.2 - Compact High Power Ku-Band Output Multiplexers (COM DEV International -Canada) |
| **14:45-15:30** | ARTES 5.1 - High-Power Ka-Band Output Multiplexers (COM DEV International -Canada) |
| **15:30-15:45** | COFFEE BREAK |
| **15:45-16:30** | ARTES 3.4 - Qualification of Ka-Band Medium Power Thermally Compensated (TC) ODMUX (THALES ALENIA SPACE FRANCE) |
| **16:30-17:15** | ITI – Compact High-Power Spurious-Free Low-Pass Waveguide Filters (AURORASAT – Spain) |
| **17:15-18:00** | ARTES 5.2 - Ka-band Circular Waveguide Quadruplexer Development (Airbus Defence and Space Ltd – UK) |

**FINAL PRESENTATION DAYS – PAYLOAD TECHNOLOGIES AND PRODUCTS – 03-05 February 2015, ESA/ESTEC.**
**Daily Programme: Wednesday 04 February 2015**

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|---|---|---|---|
| **09:00-09:45** | ARTES 5.2 - Development of a Low Noise Amplifier for Application in Future Multi-Beam KA-band Payloads (Airbus, Space & Defence - UK) | | |
| **09:45-10:30** | ARTES 5.1 - DUAL REDUNDANT LOW NOISE AMPLIFIER FOR Q/V BAND APPLICATIONS (Fraunhofer Institute for Applied Solid State Physics IAF, Germany) | | |
| **10:30-10:45** | COFFEE BREAK | | |
| | TRP - Single GaN chip HPA/LNA for High Power Radar Applications ( VIPER RF Ltd ) | | |
| **11:30-12:15** | TRP - Single GaN chip HPA/LNA for High Power Radar Applications (Microwave Engineering Center for Space Applications (MECSA) – ITALY) | **11:30-12:15**<br>**EF008** | TRP - Very Large Order Switch Matrices using MEMS Technology (THALES ALENIA SPACE - Italy) |
| **12:15-13:00** | ARTES 5 - Advanced front end RF units based on non hermetic packaging (THALES ALENIA SPACE FRANCE) | | |
| **13:00-14:00** | LUNCH | | |
| **14:00-15:15** | TRP - EVEREST: Evaluation and validation of electromagnetic software, test facilities and test standards in Europe to predict and test RF breakdown and passive intermodulation (CNES - France) | | |
| **15:15-15:30** | COFFEE BREAK | | |
| **15:30-16:15** | ITI - Optimization of Surface Roughness of Anti-Multipactor Coatings - (Tesat Spacecom - Germany) | | |
| **16:15-17:00** | TRP - Multipactor effect with fringing fields and large gaps (AURORASAT - SPAIN) | | |
| **17:00-17:45** | TRP - Multipactor in Multicarrier operation CCN (20 gap crossing) - (AURORASAT - SPAIN) | | |

**FINAL PRESENTATION DAYS – PAYLOAD TECHNOLOGIES AND PRODUCTS – 03-05 February 2015, ESA/ESTEC**

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|---|---|
| **09:45-10:30** | EGEP - Design, Development and Validation of Robust RAFS Design (Orolia Switzerland SA (Spectratime) - Switzerland ) |
| **10:30-10:45** | COFFEE BREAK |
| **10:45-11:30** | ARTES 5.1 - Dual Polarization payload for higher capacity utilization ( SPACE ENGINEERING - ITALY) |
| **11:30-12:15** | ARTES 5.1 - On-ground beamforming and multi-user detection demonstrator proof-of-concept ( SPACE ENGINEERING - ITALY) |
| **12:15-13:00** | ARTES 5.1 - Payload On-Board Self Calibration Techniques (THALES ALENIA SPACE FRANCE) |
| **13:00-14:00** | LUNCH |
| **14:00-14:45** | TRP - High Reliability MEMS Redundancy Switch (Fondazione Bruno Kessler - Italy) |
| **14:45-15:30** | TRP - High Reliability MEMS Redundancy Switch (CEA-LETI (France)) |