

# H2020 EPICEA PUBLIC WORKSHOP 13 JUNE 2019





ELECTROMAGNETIC PLATFORM FOR LIGHTWEIGHT  
INTEGRATION/INSTALLATION OF ELECTRICAL  
SYSTEMS IN COMPOSITE ELECTRICAL AIRCRAFT

## EPICEA PLATFORM DEMONSTRATION

OFFICE NATIONAL  
D'ETUDES ET DE  
RECHERCHES  
AEROSPATIALES  
(ONERA)

Toulouse, France

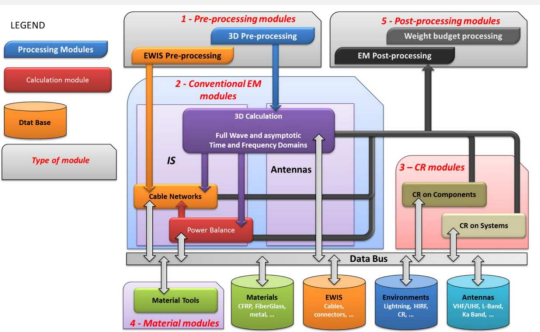
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## EPICEA PLATFORM


- Partners collaboration on EPICEA numerical test cases, the need for common tools has emerged for :
  - Share data between partners
  - Interoperability of modules
  - Mutualization of works
  - Results comparisons
- EPICEA platform:
  - Collaborative tool
  - Allow integration of heterogeneous modules
  - Based upon a standardized format for scientific data : Amelet-HDF format



The diagram illustrates the EPICEA platform architecture. It is organized into five main functional areas:

- 1 - Pre-processing modules:** Includes EWIS Pre-processing and 3D Pre-processing.
- 2 - Conventional EM modules:** Includes 3D Calculation, Full Wave and asymptotic Time and Frequency Domains, Antennas, Cable Networks, and Power Balance.
- 3 - CR modules:** Includes CR on Components and CR on Systems.
- 4 - Material modules:** Includes Material Tools, Materials (CRF, Fiberglass, metal...), EWIS (Cables, connectors...), Environments (lightning, HIRF, CR...), and Antennas (WiFi/4G, LiBand, KaBand...).
- 5 - Post-processing modules:** Includes Weight budget processing and EM Post-processing.

A central Data Bus connects all modules. A Legend defines the symbols: Processing Modules (blue box), Calculation module (red box), Data Base (orange cylinder), and Type of module (grey box).




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## IS SCENARIO : MIX DOMAINS

- Presentation of scenarios based upon the barrel. Results obtained for :
  - Full Alice with no MTLN ;
  - MTLN with CRIPTE with fields from ALICE and Galileo
    - Mono-wire
    - Harness
- Involved modules are :
  - Cable pre-processing : CableSim (Axessim)
  - FDTD Mesher : Nash (Axessim)
  - 3D code : Alice (ONERA) and Galileo (IDS)
  - Network : CRIPTE : (ONERA)
  - Results analysis : Kawa (Axessim)



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## COLLABORATIVE WORK ON THE BARREL

- Results obtained for the barrels are the results of a collaborative work between the partners to generate the data and simulations.

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# THANK YOU FOR YOUR ATTENTION! ANY QUESTION?



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# THANK YOU



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 <http://www.nserc-crsng.gc.ca>

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