

From antenna design and placement to RF propagation and Co-site interferences: meet the latest challenges with Altair

Abstract:

Antenna design and placement is becoming more and more challenging topic with latest platform technologies using light and complex materials, in addition to the complexity of the structures. Dealing with such situations, needs also fast and accurate optimization methods that will require machine learning and data analytics approaches to handle and explore large number of scenarios.

On the system level, the propagation channel is a key parameter to be considered with precise numerical methods before going toward network planning.

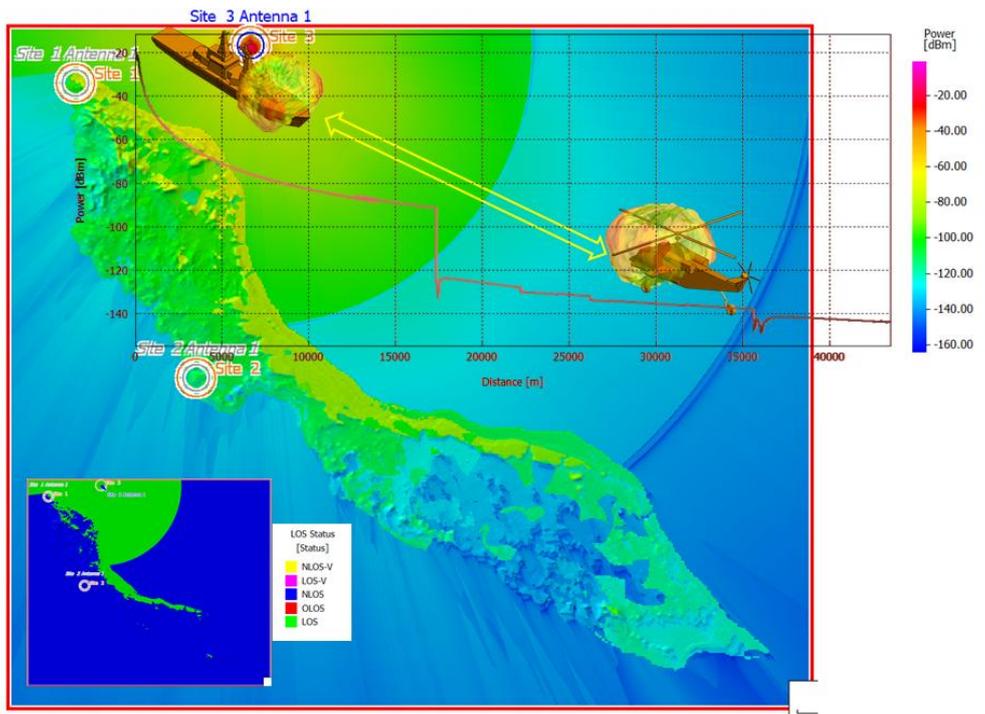
Other EMC aspects are also explored when using several adjacent radiocom systems on the same platform to validate the cohabitation of these systems.

Workshop outline:

This workshop is dedicated to the new techniques used to accelerate antenna placement scenarios on complex and/or electrically large structures (vehicles, ships, airplanes, drones, etc.).

The first workshop part exposes workflows and examples of antenna design and optimization and placement scenarios using CadFeko. In addition, the latest features using machine learning and data analytics are exposed as powerful solutions to meet the challenging scenarios. Demonstration and examples of several features will be shown with the latest manufacturing aspects (eg: additive manufacturing and 3D printing)

The second workshop part is dedicated to RF propagation aspects with the review of the numerical methods to fulfil RF coverage aspects in different situations (Indoor, outdoor, rural and mixed scenarios). Detection and transmission of moving targets is also considered in the radiocom and radar scenarios where we have a mix of complex propagation scenarios and complex structures such as drones or helicopters.



Example of ship to helicopter communication in sea and close rural scenario

The last workshop part exposes EMC aspects and Co-site interferences of several radioCom/radioNav systems mounted on the same platform.

After PHD studies and seven years of antenna design and integration for automotive radars, Eddy JEHAMY joined Aeronautical company to work on antenna placement and integration on several helicopter classes. Civil and military aircrafts, require more than 20 antennas linked to the several communication and navigation systems. He worked on complete scenarios to meet the latest aeronautical standards and to avoid severe interferences between the different systems. He also patents a new idea to adapt the radar altimeter to complex integration scenario on helicopters (Publication number: 20160097848). Then he worked on weather and tactical radar integration behind radome structures, before he joined ALTAIR company as EM application engineer. His current research interests are in developing fast and useful process for antenna placement and integration for several applications and RF propagation aspects beyond the Co-site interferences aspects.