





MARITIME COMMUNICATIONS

- **OVERVIEW** Maritime radiocommunications enable governments and agencies accomplish their missions. Beyond environmental safeguarding and vessel traffic management, state of the art radio communications are essential to guarantee border security and safety at sea.
- **CHALLENGES** Over the ground electromagnetic radio waves are affected by absorption, refraction, reflection and diffraction while over the sea radio transmissions are impacted by **meteorological conditions and swell**. Furthermore, long unobstructed sea paths and anomalous radio propagation make frequency planning challenging in a maritime environment.

ATDI : SIMULATING RADIO PROPAGATION OVER THE SEA

With over **three decades of experience** in radio wave propagation, ATDI offers advanced network planning and optimization to simulate maritime radiocommunications networks up to the range of 350GHz. ATDI's flagship software, ICS Telecom EV provides **unmatched precision and reliability** to networks ensuring maritime communications are responsive to need.

Research and development into **propagation modelling in maritime** environments has provided ATDI an **in-depth understanding and expertise** in this field. The solution also has application for maritime transport critical communications as well as for cross-border surveillance and emergency response communications.

ATDI's industry leading software ICS Telecom EV can plan and model :

- **DIGITAL AND ANALOG RADIO COMMUNICATIONS systems:**
 - HF, MF and VHF radio-telephony, AIS, EPIRB, Navtex technologies, with multiple technologies simulated in the same project.
- **MARITIME RADAR COVERAGE SIMULATION**
 - S-band and X-band radars are often used by governments and military agencies for ship traffic surveillance and for coastal surveillance. Accurate coverage is critical to guarantee that security and safety missions endorsed by these agencies are effective.
- **RADIO NETWORK OPTIMIZATION OR CONSOLIDATION**
 - ICS telecom Ev reduces network operating costs by decreasing the number of sites required while maintaining the same level of reliability and robustness. Optimization algorithms automatically select the most effective sites and fine tune radio parameters ensuring networks meet the safety grades required.
- **AUTOMATIC FREQUENCY RE-PLANNING AND ANALYSIS OF NEW TECHNOLOGIES INTRODUCTION**
 - The future VDES system (VHF Data Exchange System for maritime applications) will use aggregated channels from the existing VHF radio-telephony. This means that existing frequency plans of coastal stations will need to be modified and coexistence with land radio systems ensured;
 - ICS telecom Ev features an automatic frequency planning functionality which reduces the need to re-farm spectrum and accelerates system deployment through modelling coexistence issues and improving the rollout of the VDES system.
- **GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) COMMUNICATIONS SIMULATION**
 - ICS Telecom Ev can simulate simultaneously satellite and land based systems which are used for distress alerts and model the coverage of A1 to A4 sea areas from MF, VHF and satellite;
 - Advanced functions determine the best site locations and radio parameters to ensure A1 and A2 sea areas are served efficiently.
- **EFFECTS OF WINDFARMS AND OFF-SHORE PLATFORMS ON RADIO COMMUNICATIONS**
 - Wind turbines and offshore platforms can create reflections or shadowing effects on marine radars and communication systems. ICS telecom Ev allows network designers to model these effects and minimize their impact.