



TT&C, Navigation and Mission Analysis



Company Profile

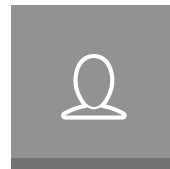
History



Mission



Team





History

Arpsoft boasts a long-standing experience in deep space navigation and TT&C systems, consolidated in prestigious Italian and foreign institutions like NASA Jet Propulsion Laboratory, Sapienza University of Rome and INAF.

We have worked on some of the most important ESA and NASA space projects, like Cassini, Juno, BepiColombo, JUICE, SMART-1, Dawn as well as on Flight Dynamics and deep space tracking systems ESA ITT.

Mission

is to provide High Quality Consulting Services in TT&C and Navigation



TT&C Systems



Space Navigation



Mission Analysis

Team



Alessandro Ardito

CEO & Founder

Alessandro is an aerospace engineer with strong expertise in S/C navigation, consolidated in a three years work at NASA-JPL. Together with Gabriele, he developed the first ESA Delta-DOR S/W correlator in 2005. He was Deputy Experiment Manager of 3GM Experiment on JUICE mission in 2012-2013.



Francesco Barbaglio

CTO & Partner

Francesco is a Ph.D.-holder aerospace engineer skilled in tracking systems (Delta-DOR, Doppler and Ranging). He participated to the enhancement of Delta-DOR package in 2010-2012, and supervised the USO procurement for 3GM Experiment in phase A/B of JUICE mission. He joined Arpsoft in 2013.



Gabriele Rapino

Founder

Gabriele is an aerospace engineer with deep knowledge of Delta-DOR software, developed together with Alessandro in 2005. He was Deputy Experiment Manager of MORE Experiment on BepiColombo mission.



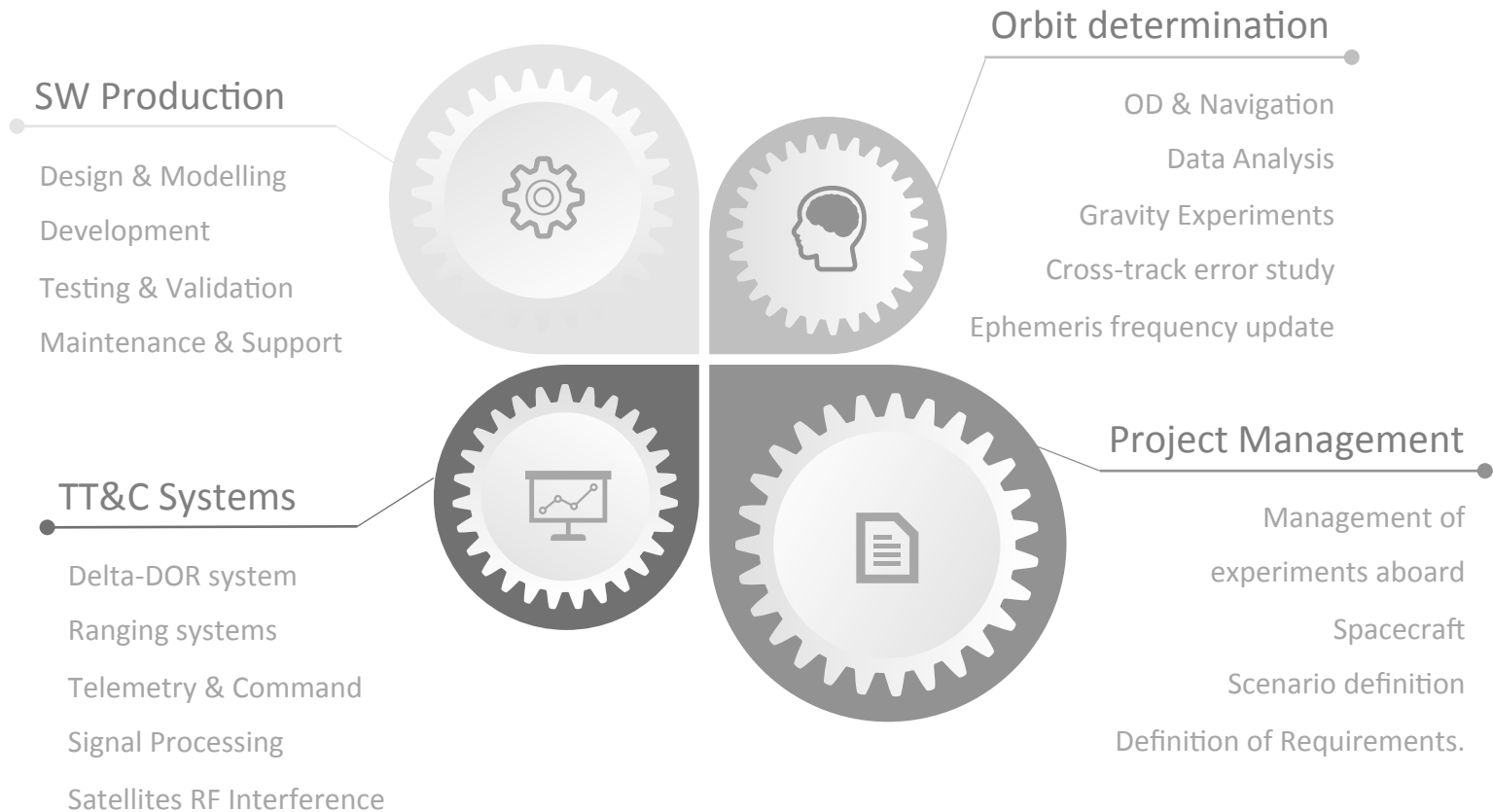
Stefano Finocchiaro

Senior Engineer

Stefano is a Ph.D.-holder aerospace engineer with strong expertise in navigation and orbit determination. He supported for five years the radio-science team of NASA Juno mission. He joined Arpsoft in 2015.

Skills and Expertise

High Quality Standards



Projects

Delta-DOR S/W correlator

Development of ESA operational SW

Since 2005, Arpsoft staff has been playing a major role in the development of the first European S/W Delta-DOR correlator and in its following upgrades.

ESA has been using it operationally since 2006 for the navigation of its deep space probes.

Arpsoft is currently responsible for the maintenance of ESA Delta DOR SW package.

IDE-ONE

Improvement of Delta-DOR performances for 1 nrad accuracies for precise landing support

CONSORTIUM: Arpsoft, Sapienza (University of Rome), Thales-IT and British Aerospace (BAE)

IDE-ONE study started on 2014 in an attempt to improve Delta-DOR system accuracy at least to 1 nrad. This accuracy will meet the needs of future ESA's exploration missions.

In particular, it focuses on using Spread Spectrum signal in order to reduce phase ripple effect introduced by on-ground electronics.



Projects

Protocol-A.3

Prototype of off-line Correlator for Arraying of Large Aperture Antennas

CONSORTIUM: Arpsoft, Zelinda, UCL, CNIT

Arpsoft, as prime contractor, started in 2016 an ESA study concerning the development of an off-line correlator (prototype) for arraying of large aperture antennae.

In particular, the bread-board will be actually tested with real data acquired from a flying mission on a subset array configuration comprising two Deep-Space antennas, which are widely separated by approximately 10000km.

V-SHARK - SW

V-SHARK image stabilizer

Arpsoft started in 2016 a collaboration with INAF based on the development of the control SW prototype of V-SHARK instrument to be accommodated onto Large Binocular Telescope (LBT).

Projects

RFIAT Maintenance

Maintenance of ESA RFIAT tool

From 2015, Arpsoft is responsible of the maintenance of the ESA Radio Frequency Assessment Tool (RFIAT).

This software tool allows for a detailed interference analysis for a number of space science missions. It enables assessment of the general impact of interference from new systems that are proposed for introduction into an already allocated frequency band as well as the specific coordination of two or more systems, for which precise interference calculations in terms of occurrence, duration and levels are required.

Delta-DOR Maintenance

Maintenance of Delta-DOR SW packages.

From 2015, Arpsoft is responsible of the maintenance of the ESA Delta-DOR SW package.

The operational SW, currently involved in several deep space missions, is planned to be improved, besides the ordinary maintenance activities, with several functionalities.

Moreover, occasional support on Delta-DOR data analysis is foreseen.

Projects

RadioMetOp

Ka Band Operations Planness

CONSORTIUM: Sapienza (University of Rome), Arpsoft, Himet

In 2012-2013 Arpsoft was part of a ESA pioneer study of the Radio Meteorological Operations Planner at Ka-band (RadioMetOP) tool for the BepiColombo deep space mission and, more generally, for ESA Ka-band spacecraft telemetry.

The study proved the feasibility of using weather forecast to improve the data volume in deep space missions.

RESCUe

Reliable TT&C During Superior Solar Conjunctions

CONSORTIUM: Arpsoft (prime), Thales-IT, CNIT

Arpsoft, as prime contractor, started in 2015 an ESA study concerning the communication degradation caused by plasma scintillation during superior solar conjunctions.

In particular, the study aims to investigate possible solutions to this issue in terms of alternative modulation schemes, coding techniques or system architecture/methodologies.

Projects

DDOR for landing support

Consultancy service to Callisto Ltd.

In 2016, Arpsoft provided a consultancy service to Callisto Ltd regarding the opportunity in using interferometry for EDL phase to Mars (orbiter and lander)

In particular, Arpsoft investigated the feasibility and performance of VLBI techniques (DDOR and SBI) in such sever scenario in terms of SNR and dynamics.

Training

Training on OL processing and navigation.

Arpsoft provides training sessions in TT&C and navigation.

In 2014, Arpsoft provided, together with Sapienza (University of Rome), a 1 month course to Beijing Research Institute of Telemetry (BRIT) employees.

In 2015, Arpsoft provided a seminar focused on tracking systems and navigation (orbit determination) to Callisto Ltd staff.

Clients and Partners



BAE SYSTEMS



SAPIENZA
UNIVERSITÀ DI ROMA



Callisto



cnit consorzio nazionale
interuniversitario
per le telecomunicazioni

UCL

Université
catholique
de Louvain






Get in Touch

www.arpssoft.it

arpssoft 

Via Stazione S. Pietro 65
00165 – Rome - Italy

 info@arpssoft.it

 +39 (06) 21127663