SPACE

SATELLITE NAVIGATION SYSTEMS

Satellite communications, earth observation, navigation and positioning and control stations

indracompany.com
SATELLITE NAVIGATION SYSTEMS

Indra contributes with technology and expertise to the development of the European programs for satellite navigation

**Introduction**

The field of satellite navigation, and its applications, has experienced a continuous growth since the commissioning of the American GPS system in 1993, up to present European initiatives like EGNOS, and more recently Galileo.

Since its beginning Indra has contributed significantly to those European programs, performing its activities in the field of satellite navigation thanks to the use of state of the art technology and to its highly qualified team.

**Capabilities**

In the field of satellite navigation systems, Indra has as main activity the development of navigation and positioning systems and applications based on the initial satellite positioning systems (the American GPS and the Russian GLONASS), as well as on the new systems EGNOS/GNSS-1 and Galileo.

To this end, Indra provides:
- Navigation systems engineering
- Project development
- Reference stations
- Control and processing centers
- Navigation applications (differential systems, assisted navigation, integration of sensors, search and rescue, fleet management, railway security applications...)
- Consultancy and technical assistance for navigation systems

**Products**

Indra has developed, through its satellite navigation systems area of activity, several products that are a part of most of today’s navigation systems and applications. These products are built around the following basic product lines:

- Reference stations
- Monitoring and archiving centers

**Reference stations**

Based on a product initially developed for the European satellite navigation systems EGNOS and Galileo/GIOVE, Indra provides a versatile and modular reference station.

- Several versions with different mult constellation/multifrequency receivers including GPS, GLONASS, EGNOS/WAAS, and Galileo/GIOVE
- Atomic clock (rubidium or caesium) frequency reference
- Robustness against interferences and multipath
- Remote or local monitoring and control
- Optional meteorological station

Main applications:
- Reference station for GNSS systems
- Differential station
- Monitoring station

**Monitoring and archiving centers**

Key part of the control center, the monitoring and archiving center allows to know in real time the state and the performances of satellite navigation systems, as well as to archive all the information generated by the systems.

Its main characteristics are:
- Real time visualisation on a map of the different performances of the system
- Prediction capability of the future state of the system
- User friendly Man-Machine interface
- Selective retrieval and archive of the information

**Clients include:**
- European Space Agency
- European Commission
- AENA
- Eurocontrol
- Main companies in the space field (Thales Alenia Space, EADS Astrium, Thales...)