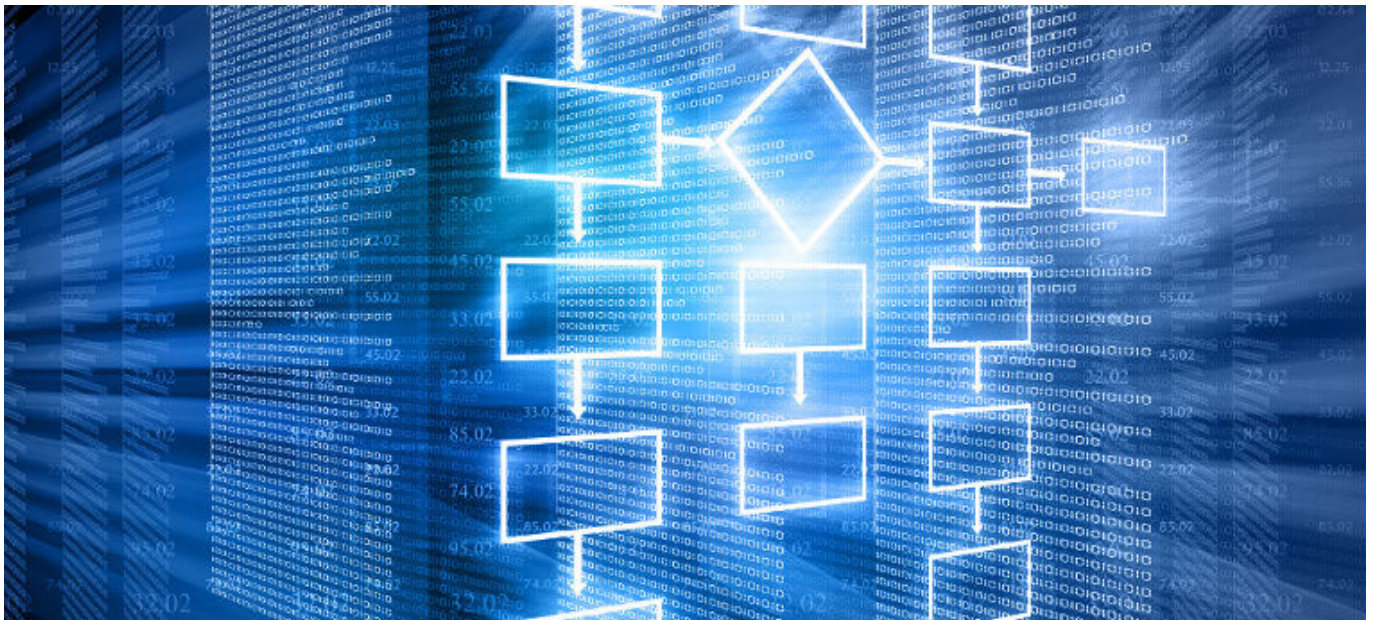


# Ecole Nationale de l'Aviation Civile

## [Logiciels](#)

Retrouvez l'ensemble de l'offre de logiciels développés à l'ENAC.



[GeoTitan - Design de procédures \(en.\) ///](#)

[Logiciels ILS ATOLL-LAGON \(en.\) ///](#)

[Logiciel OpenSource Paparazzi - hardware et software Drones \(en.\) ///](#)

## [GeoTitan - Instrument Procedure Design \(en.\)](#)

GéoTITAN® is a software tool designed by experts, for experts. GéoTITAN® manages, displays and records all information required to design flight paths, and the associated protection areas, quickly, accurately and in compliance with DOC 8168-OPS/611. It operates in a geo-referenced aeronautical environment. GéoTITAN® uses a Digital Terrain Model to compute the safe altitude associated with flight paths. GéoTITAN® is developed in close partnership with and under the control of the ENAC PANS-OPS unit. GéoTITAN® is owned by ENAC, and marketed by [CGx AERO in SYS](#).

Thanks to the automation of low-level tasks, the procedure designer can focus his/her attention on

the important decisions of the analysis. The design process is under the designer's full control at all times, which guarantees reliable and coherent choices, but the designer is never alone: exhaustive documentation reminds him/her of the regulation criteria and describes the manner in which GéoTITAN® calculates the protection areas.

[More information on GeoTitan website ///](#)

## ILS SOFTWARES

### **LAGON - Learning About Glide for Overall Needs**

LAGON is a simulation software package concerning the Glide Path (GP) station of the ILS (Instrument Landing System). It can simulate the transmitter's adjustments, the antenna systems and the radiated signals of a Glide path as seen from the ground engineer point of view as well as from the flight inspection plane.

A large number of GP types from many manufacturers (Indra, Thales, Thomson, SEL) can be selected.

LAGON was primarily designed as a training tool for ILS ground technicians and flight inspectors but it can also help solving issues arising on GP stations.

It is possible to simulate reflections of the GP signal from surrounding objects using the method of Physical Optics on rectangular plates. Terrain unevenness can be simulated using the method of the Uniform Theory of Diffraction (UTD)

The GP system is not easy to handle because one needs to take into account the radiated signal in 3D and because of lack of good measurement points on the ground. LAGON is therefore very helpful for ground technician and flight inspectors in order to anticipate the reaction of the system during adjustment or when some errors occur.

LAGON requires an off-the-shelf Windows OS computer.

So this software is valuable for:

- ILS Teachers by providing a tool to illustrate the theory behind the GP system
- Students by allowing them to do training exercises and by helping them to get a better understanding of the GP system
- Engineers and maintenance technicians for tracking down system errors, assessing issues from changes in the surroundings of the antenna systems and for their own continuous education.

[Visit the website ///](#)

LAGON is available in English and in French

[More info about LAGON : atoll@enac.fr ///](mailto:atoll@enac.fr)

### **ATOLL - Advanced Trainer On Localizer**

ATOLL is an ILS (Instrument Landing System) simulation software for the Localizer ground station.

ATOLL is a simulation software package concerning the Localizer station of the ILS (Instrument Landing System). It can simulate the transmitter's adjustments, the antenna systems and the radiated signals of a Localizer as seen from the ground engineers point of view as well as from the flight inspection plane. A large number of antenna arrays from many manufacturers (Indra, Thales, Thomson, SEL) can be selected. Users can add other antenna system which are not provided in the package or customize existing once.

ATOLL was primarily designed as a training tool for ILS ground technicians and flight inspectors but it can also help solving issues arising on ILS stations. It is possible to simulate reflections of the Localizer signal from surrounding objects using the method of Physical Optics on rectangular plates.

The INDRA maintenance software (RMM) can communicate with ATOLL in the same way as with a connection to real cabinet. Maintenance teams can thus be trained at all levels. ATOLL requires an off-the-shelf Windows OS computer.

So this software is valuable for:

- ILS Teachers by providing a tool to illustrate the theory behind the ILS system
- Students by allowing them to do training exercises and by helping them to get a better understanding of the localizer system
- Engineers and maintenance technicians for tracking down system errors, assessing issues from changes in the surroundings of the antenna systems and for their own continuous education

[Visit the website ///](#)

ATOLL is available in English and in French

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## [Paparazzi](#)

Paparazzi est un projet hardware et software développé en OpenSource et conçu à l'ENAC en partenariat avec plusieurs laboratoires à travers le monde.

Paparazzi UAV (Unmanned Aerial Vehicle) is an open-source drone hardware and software project encompassing autopilot systems and ground station software for multicopters/multirotors, fixed-wing, helicopters and hybrid aircraft that was founded in 2003 by ENAC. Paparazzi UAV was designed with autonomous flight as the primary focus and manual flying as the secondary. From the beginning it was designed with portability in mind and the ability to control multiple aircraft within the same system. Paparazzi features a dynamic flight plan system that is defined by mission states and using way points as "variables". This makes it easy to create very complex fully automated missions without the operators intervention.

[More info about PAPAARZZI ///](#)

Documents

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