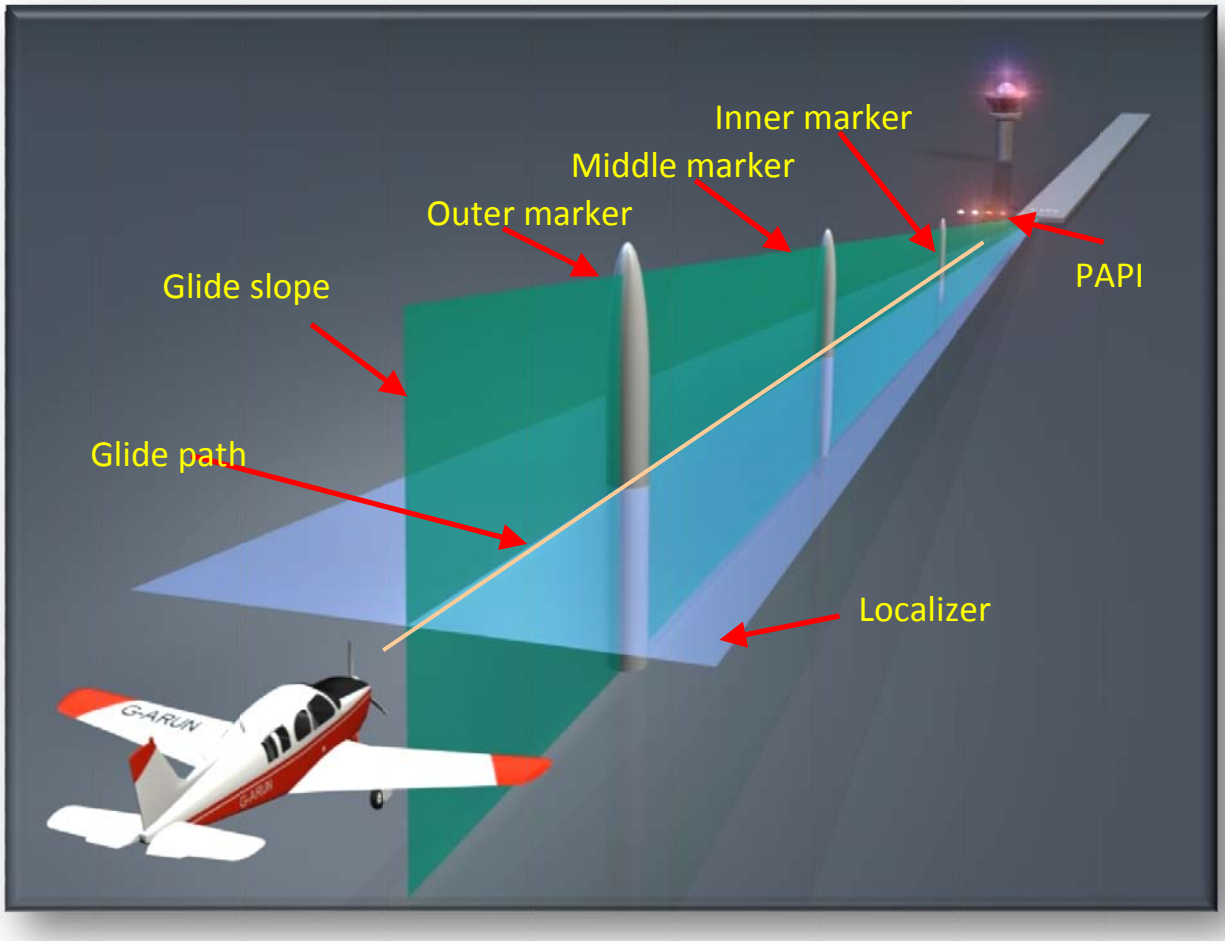
Instrument Landing System (ILS)

The Instrument Landing system (ILS) is a ground based instrument approach system providing precision guidance to an aircraft approaching a runway. It uses a combination of radio signals and high-intensity lightning arrays.



An ILS consists of two independent sub-systems:

The Localizer for lateral guidance (left / right)
The Glide slope or Glide path for vertical guidance (up / down)

The Marker beacons activate a tone on the pilots audio panel

- The Outer marker is located between 3.5 and 6 nm from the runway threshold

- The Middle marker is located at the critical point for the missed approach. Here you have to decide....shall I land...or declare a missed approach and go-around.
- The Inner marker (when installed) is ideally at a distance of approximately 100 ft from the threshold.

VASI

The **Visual Approach Slope Indicator** (VASI) is a system of lights on the side of an airport runway that provides visual descent guidance information during the approach to a runway.

Types of VASI:

Standard VASI	2 sets of lights. 1 set at the beginning of the runway and 1 set 7 meters further.
PAPI 4	Precision Approach Path Indicator with 4 sets of lights in a line along the runway
PAPI 2	Precision Approach Path Indicator with 2 sets of lights in a line along the runway.
T-VASI	Three colored light sets shaped in a T.

Flying an ILS approach

- Lookup the ILS frequency of the runway in your GPS.
- Transfer the ILS frequency in your radio stack NAV 1
- Select you APP (approach) ON in your Master control panel
- Select the MKR (Marker) in your Audio control panel of the Radio stack

- Start your approach turn to intercept the ILS at an angle of intercept of 30 degrees (approach speed)

For example: the runway heading is 180 degrees

The runway is on your right side: start your turn at heading 180-30 = 150°
The runway is on your left side : start your turn at heading 180+30 = 210°

- Descend below the Glide path to intercept

- When the Localizer indicator in your VOR1 indicator starts moving, your aircraft will turn on the ILS automatically and line you up.

- When the Glide slope indicator in your Primary flight display starts moving your aircraft will automatically start its descend towards the runway.

- When passing the Markers you will hear a tone from your Audio control panel. An indicator will light up.

- when runway in sight ...switch off auto pilot and stay on the glide slope.

- Keep visual on the runway and decide if it's safe to continue your manual approach to land or declare a missed approach and go-around.

Practice your ILS approach / Landing at any airport and even better .....in other aircraft types.

Approach types:

There are 2 different types of approaches:

- non-precision approach
- precision approach

A runway equipped with NDB or VOR (or both) as the only navigation aid is called a non-precision approach runway;

if it is equipped with ILS it is called a precision approach runway.

reports:

When a pilot performs a precision approach he will report "established" when the localizer in his MFD becomes active. This is the moment when the aircraft picked up the localizer signal and starts to turn to the final runway heading. It could however very well be that the aircraft is not yet descending!

If ATC instructs the pilot to report on the glide, the pilot will wait with his report until he is on the localizer (fully aligned with the runway) and starts to descend on the glideslope.

For non-precision approached the pilot will report "established localizer" and "runway in sight".
This is essential! because VOR or DME approaches are only allowed to be performed in IMC (Instrumental Meteorological Conditions)