But it is only when the glider reaches about 5 km from an object not integrated in the O file of the airport that the files of the object is loaded in the simulation. This can be interesting because it allows the loading times of these objects to be diluted over time as the glider approaches the airport.

It may be therefore interesting to separate the static objects common to several airports from the O file of the airport and to keep for the O file only airport-specific objects such as hangars, administrative buildings, workshops, fuel stations, control tower and windsocks. In principle, all objects that are static by destination have to be modeled first.

In our opinion, you must always integrate the complementary airport objects (isolated trees, static gliders, various devices, runway pickups, glider trailers, cars, characters) once the airport is perfectly integrated into the scenery and only after the main tests have been performed, and that the loading time to 24 km is very low for an average PC configuration. Never put an object in the axis of the runway and avoid that they are collided by the tow plane while the tow plane is moving at the airport.

Otherwise it is best to put all objects in the "World/Objects/" folder of the scenery and their corresponding textures in "World/Textures/" folder. This has the advantage, in addition to the spread loading times of these objects, to have only one C3d file per object that will not be duplicated for each airport in which it will be integrated.

The Tow planes ballet

Tow planes are special aircraft, since these flying objects do not cause any collision and pass through everything without damage: mountains, buildings, objects of all kinds, except that they can put the towed glider in delicate situations.

We conducted several experiments in the absence of data provided by the software developer, not exhaustive, but sufficient to understand the trajectories of the tow planes around the airport, on the runway and in the air.

Tow planes take-off towing a glider, in Condor 2:

We used a Duo Discus with a maximum weight of 750 kg with two pilots and full ballasts towed through a 50 m rope, without wind or thermal activity, and the undercarriage remains lowered in all the experimentation.

In these conditions, the tow plane will follow a fixed trajectory, in a plane perpendicular to the ground on the center line of the runway up to 100 m above the altitude of the airport (AGL). The distance traveled will be given by the integration of all the forces exerted on the entire glider and tow plane. The trajectory can be lengthened only by unwanted maneuvers of the glider pilot who creates excessive drag.

For the setting of the airport options, 3 elements are interesting to know:
- Distance SA traveled by the glider so that it reaches its take-off speed, the yellow index on the speedometer.
- Distance SB traveled by the glider when the tow plane has taken off, with the disappearance of the dust raised by the wheels on a grass runway.
- Distance SC traveled by the glider at the moment when the tow plane reaches the altitude of 100 m above the airport altitude (AGL, Above Ground Level), and where the tow plane will start its first turn, led by artificial intelligence.

If the tow plane is too close to a mountain wall at point C and turns in the wrong direction, it will cross the mountain without any difficulty while drawing the glider into a probable crash if no evasive maneuver is made.
Here is a schematic diagram that summarizes the situation:

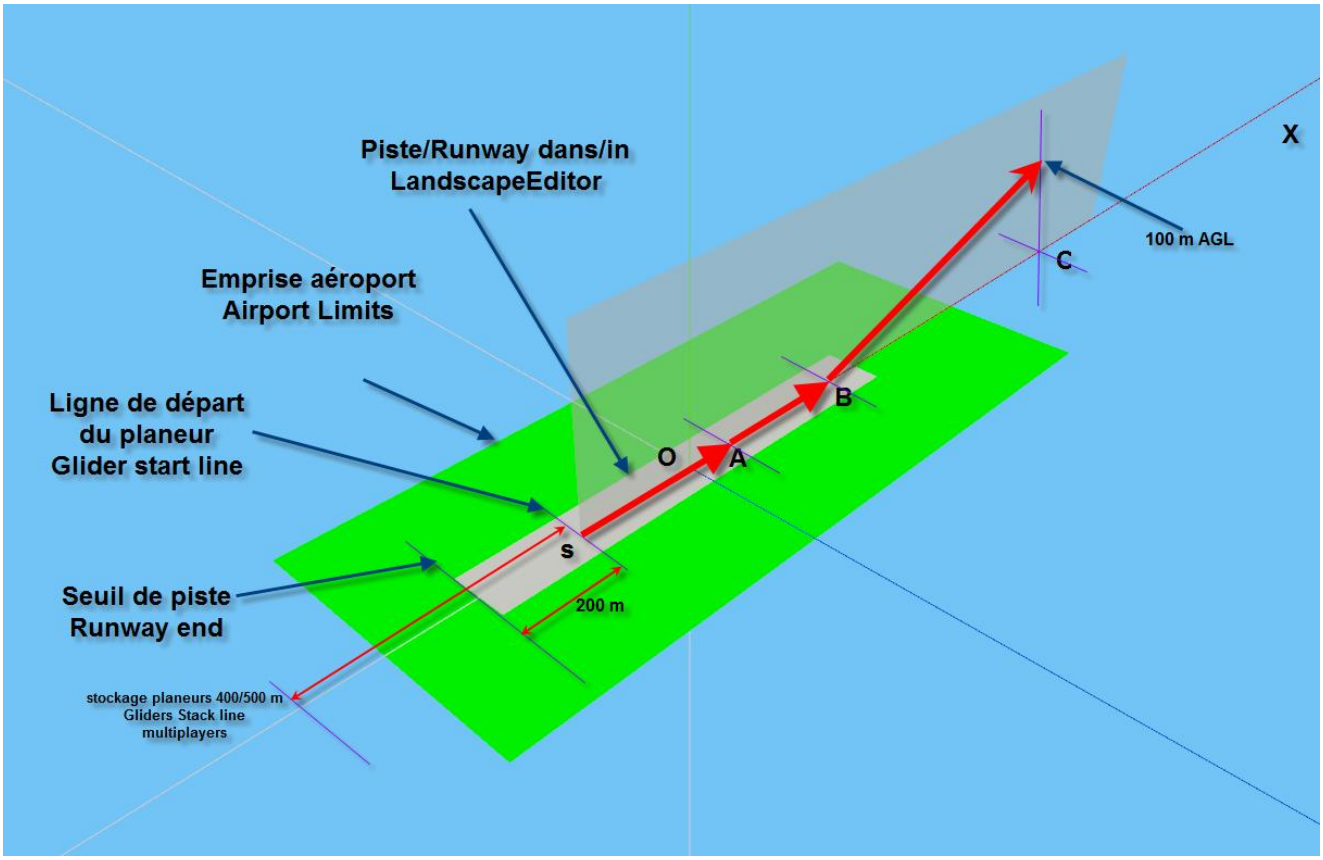

Figure 12 - Schéma du décollage/Take-off chart.

And here are the results of the experiment in meters at ± 10 m:

Tow plane	SA	SB	SC
DR400	190	390	1600
Dynamic	260	450	1690
Super Cub	370	670	2000
Wilga	150	330	1450
Z-226	250	390	1500

By changing the length of the runway, in Landscape Editor, we will be able to adapt the operation of the airport to the imperatives of the topography, especially in mountains landscapes.

Tow plane landing and taxiing on the airport towards its parking place.

For a fixed configuration of airport width in Landscape Editor, the following factual elements can be easily ascertained, regardless of the type of tow plane: