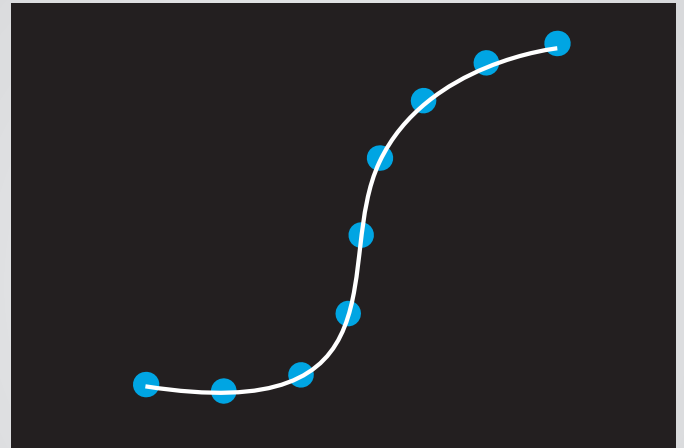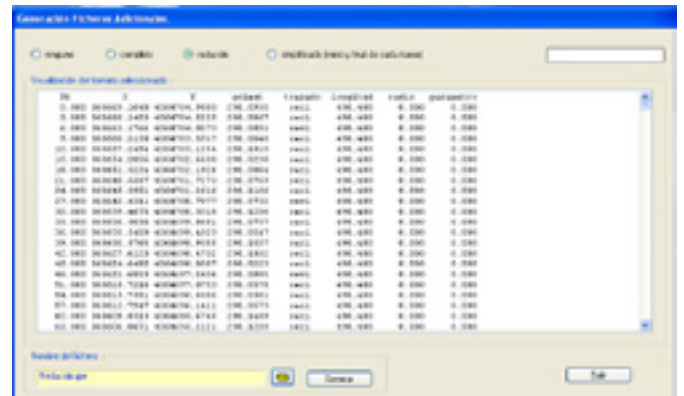# SETTOP REGRESSION AXIS

## A RELIABLE WAY TO OBTAIN AN AUTHENTIC LAYOUT.

- Analysis of existing layouts of all types of rails.

- Obtaining the project axis with just one click.

- Determining all parameters of the state of the alignments.

- Generating layout and exporting to multiple formats.



Settop Regression axis is a software that can analyze any axis by means of reverse engineering for the purpose of studying the layout of existing roads and rails. Thanks to a potent calculation algorithm, Settop Regression axis will carry out the analysis without any kilometer limitation, of any rail, with results that can only compare to the work of a layout specialist.

This new application is the new module to be incorporated onto the Data Convert axis conversion software.



- **Convert single points to real alignement.**
- **Suitable for UAV and RAIL Data.**

SETTOP

# SETTOP REGRESSION AXIS

## OBTAINING THE PROJECT AXIS

There are now layout programs with which one can obtain a plan axis by means of radius concatenations calculated on the basis of three points or simply by aligning individual points with straight lines. Unlike these programs Regression Axis will try to find the full layout of the respective elements an axis is composed of. For this purpose, whether it be a straight line, a curve or a clothoid, even if there exist small variations, it will fit them as one single element, subsequently adapting its parameters to the points it is composed of. Thus, in all cases in which this is possible, it will lay out a single element without any need to subdivide it into different disparate elements, resulting in a normalized axis.

## THE ADVANTAGES OF WORKING ON A LAYOUT AXIS
At present, when projects for improving road layouts and surfaces are becoming increasingly more common, it is essential to determine the alignment state of existing roads. By obtaining the axis, we can analyze the more closed curves, checking the elements that fail to meet the norms, modifying horizontal and vertical signage, among many other applications derived from acquiring the layout axis.

## A MATTER OF FITTING
It is important to point out that the fitting tolerance will be determined by the users themselves, although the accuracy will be obviously influenced by the quality of the points taken, whether directly on a white line or railroad axis, or by default, by means of digitalizing axes on the basis of Cartography and/or Orthophotos. On average, the application is designed in such a way that, in the case of a white line, the fitting does not exceed the width of the line itself, and in the case of a railroad, the width of the rail, thus obtaining a true axis without discontinuities or disparate radiuses.

## FULLY AUTOMATED CALCULATION SYSTEM
One of the premises of this application is that the user will not have to constantly intervene in defining the axis. Thus, the user must only enter the initial parameters and the software will indefatigably work, modulating parameters until finding the best possible fitting.

## MODE OF USE
On the basis of a *.txt format polyline that defines the axis to be studied, this file is selected, previously assigning the fields of each column, imposing the precision of the fitting and selecting the output format. Once these parameters have been assigned, the file is processed by initially displaying a previous fitting. This fitting will serve as the basis for carrying out a second layout fitting from the recognition of straight lines, radiuses and clothoid longitudes of the initial file. During this phase, sthe parameters of radiuses and clothoids will be readapted until the minimum quadratic value is found that will adjust to the best possible layout. If the distance between the points and the layout is below the precision assigned by the user, the layout will be displayed in accordance with a real project axis. However, if the fitting were below that required or the software were unable to fit very disparate elements, it will insert a set of straight lines linked with small circular curves that will reproduce the original polyline.

Finally and in accordance with the output format selected (Rxl, Inroads, LandXML, Clip, Ispol, MDT…), we shall obtain the axis sought.

## REGRESSION AXIS

| Characteristics | Details |
|---|---|
| Input formats | ASCII with editable fields. |
| Output formats | TRIMBLE ROADS (RXL/DC) <br> TRIMBLE TUNEL (TXL) <br> CLIP <br> ISPOL <br> INROADS <br> MDT <br> LANDXML <br> SPECTRA SURVEY PRO <br> GEODIMETER CU-ROAD 2D <br> GEODIMETER CU-ROAD 3D <br> DATACONVERT |
| Intermediate calculation formats | Full list of inteporlated points, prior to the final fitting, with smoothing of the model, determination of straight lines and approximate parameters of curves and clothoids (*.gre). <br><br> Short list of interpolated points with the assignation of straight lines, curves and approximate clothoids. (*.gre). <br><br> Simplified list of initial project axis (*.gre). |
| Tolerance | Determination of the maximum fitting tolerance. |

## SYSTEM REQUIREMENTS

Operating system
· Windows XP
· Windows Vista
· Windows 7

Langauges
· English
· Spanish

2016/09

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