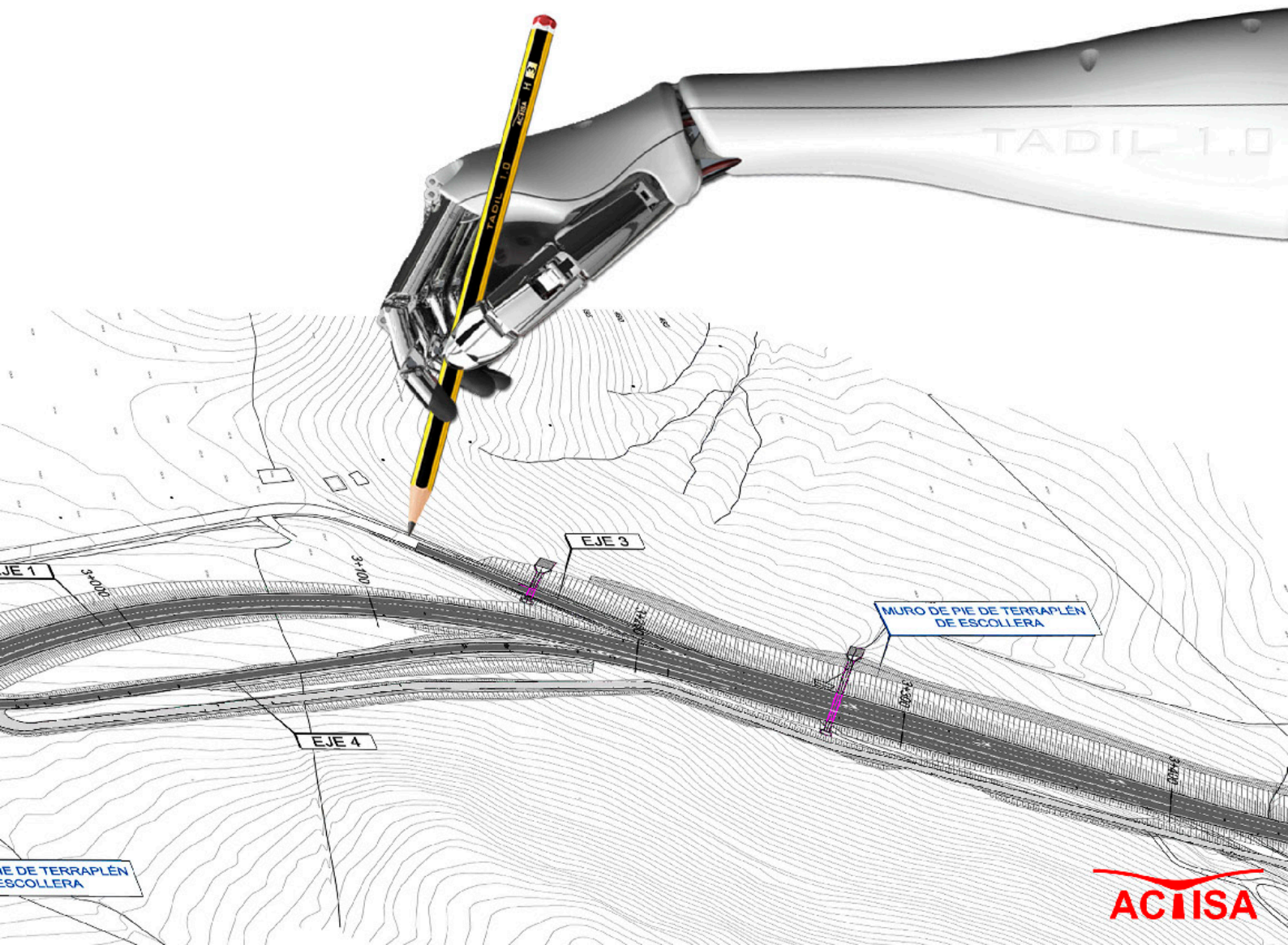


TADIL 1.0

TECHNIQUES FOR THE AUTOMATIC
DESIGN OF LINEAR INFRASTRUCTURES



TADIL 1.0

ACTISA

WHAT IS TADIL?

TADIL is an artificial INTELLIGENCE SOFTWARE applied to the automatic elaboration of layouts of linear infrastructure.

The currently available module is orientated to the study of roads and highways infrastructures.

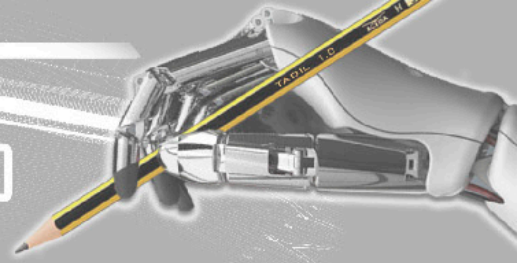


WHAT DOES TADIL DO?



This program allows to obtain in a very fast way the layout of several alternative infrastructures obtaining the plan axis and profile according to the regulation, the cross sections and its measurement, the earthwork plan, expropriations, earthwork balance, the budget, the public or private profitability and the subjective evaluation of the alternatives.





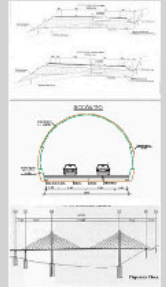
SOME QUALITIES OF TADIL

TADIL AUTOMATICALLY INTERACTS WITH THE TERRITORY CONSIDERING ALL THE VARIABLES OF THE GEOGRAPHIC INFORMATION SYSTEM (GIS).



THE USER CAN ENTER IN THE GIS THE GEOTECHNICAL VARIABLES APPLICABLE TO:

- THE TYPE SECTION OF THE EARTHWORK (FILL, CUTS, SCALING AND SCALING STEPS MATERIALS, USES OF EXCAVATION MATERIALS, SLOPES).
- TYPE SECTION OF PAVEMENTS.
- TYPOLOGY AND CHARACTERISTICS OF TUNNELS (WHEN ITS USE IS AVAILABLE TO USERS).
- TYPOLOGY OF STRUCTURE FUNDATION.



THE CONSIDERATION OF ENVIRONMENTAL, PATRIMONIAL, SOCIOECONOMIC OR CLIMATIC VARIABLES ALLOWS TO OBTAIN RESPECTFUL AND INTEGRATED SOLUTIONS WITH THE TERRITORY.

THE INTRODUCTION OF PARAMETERS, SUCH AS THE MAXIMUM HEIGHT OF THE CUT SECTION OR EMBANKMENT, GUARANTEES THE BEST ENVIRONMENTAL INTEGRATION.

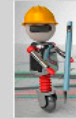


THE USER INTERACTION WITH TADIL IS DIRECT:

1st THE USER DEFINES THE GIS, HIS PREFERENCES, THE DESIGN CRITERIA AND THE VALUATIONS



2nd TADIL AUTOMATICALLY GENERATES ALTERNATIVES IN A COMPLETE WAY



3rd THE USER CAN MODIFY THE CRITERIA, ENRICHING THE STUDY AND IMPROVING THE PROPOSALS.



TADIL CONSIDERS THREE TYPE SOLUTIONS OF TUNNELS:

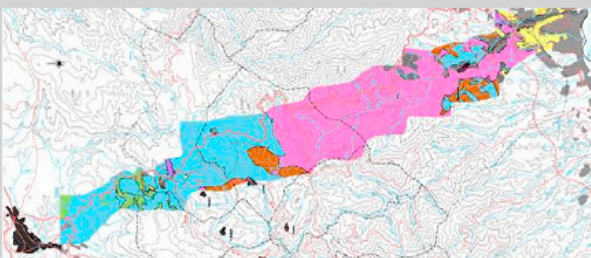
- HORSESHOE.
- VAULT.
- CIRCULAR (WITH OR WITHOUT VOUSOIRS)..



TADIL HAS A WIDE GALLERY OF TYPE SECTIONS OF STRUCTURES AND TUNNELS. THE PROGRAM AUTOMATICALLY ASSIGNS THEM TO THE CROSS SECTIONS ACCORDING TO THE USER PREFERENCES.



REGARDING THE GIS, THE USER CAN CREATE THE THEMATIC PLANS AT THE SAME TIME THAT ENTER THE AREAS AND ITS VARIABLES.



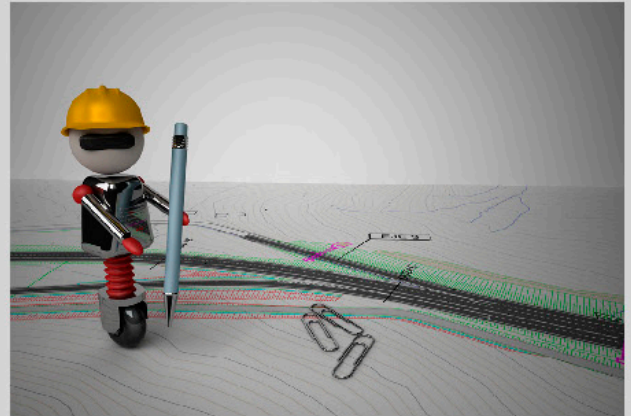
THE TREATMENT OF STUCTURES AND TUNNELS ALLOWS AN INTEGRAL VIEW OF THE PROJECT SINCE THE FIRST MOMENT THE ENGINEER STARTS THE DESIGN.

THE CAPACITY OF TADIL

SOME EXAMPLES:

It generates a feasibility study with 10 alternatives (completely calculated) of a new 45km dual carriageway connection in just **three hours** which includes the information introduced in the GIS (such as protected areas, fauna, socio-economic sectors, geotechnical, climatic, etc.). The actual study lasted eight months.

It generates an alternative route of 75km obtaining the plan axis, the profile, the cross sections, the earthwork plan, the earthwork balance, the budget and the profitability in just **6 minutes**. Obtaining of this route, including the budget and the profitability, could have lasted two or three months.



TADIL IS INTENDED FOR:

It is a software program very interesting for:

ADMINISTRATIONS OR PUBLIC COMPANIES WITH RESPONSIBILITIES IN THE INFRASTRUCTURES INVESTMENT STUDIES.

PRIVATE COMPANIES IN THE FIELD OF INFRASTRUCTURE EXPLOITATION.

CONSULTANCY COMPANIES THAT ASSIST TECHNICALLY THE AFOREMENTIONED.



TYPE OF STUDIES:

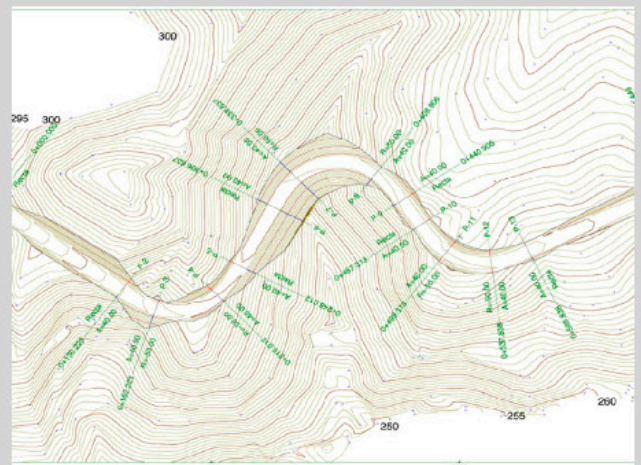
TADIL ELABORATES TWO KINDS OF STUDIES:

- PREVIOUS STUDIES.
- INFORMATIVE STUDIES.

In the **previous study**, it is analysed the capacity of reception within a territory. It is obtained the cartography, the plan axis and the longitudinal profile.

In the **informative study**, it is implemented the prices database, the GIS and the type section. It is also obtained the axis and the profile, the cross sections, the earthwork plan, the earthwork balance, the budget, the profitability and the evaluation of the alternatives, that is, a complete definition of the alternatives.

We can say that the previous study is a fast way to check the possibility of fitting routes, when the informative study requires a higher knowledge about the territory to obtain rigorous solutions.

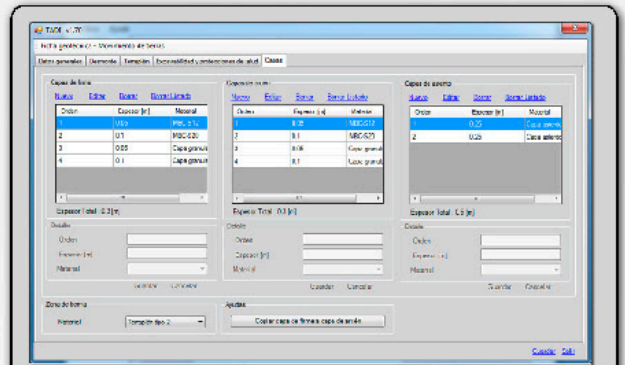


THE INTERFACE OF TADIL - THE MODULE TDB

THE MODULE TDB INCLUDES:

- CONSTRUCTION UNIT DATABASE.
- MACRO-PRICES DATABASE .
- TYPE SECTION.
- GEOGRAPHIC INFORMATION SYSTEM (GIS).

ONLY APPLICABLE IN THE INFORMATIVE STUDY.

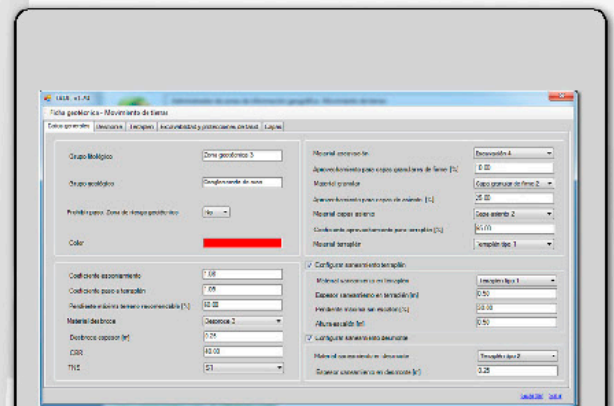


Example of module TDB, GIS. Pavements

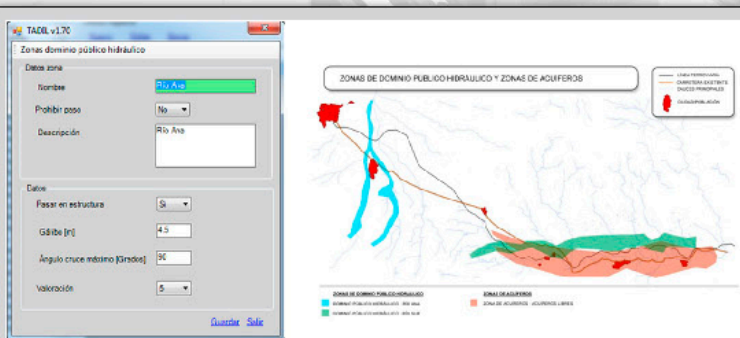
THE GEOGRAPHIC INFORMATION SYSTEM:

INCLUDES:

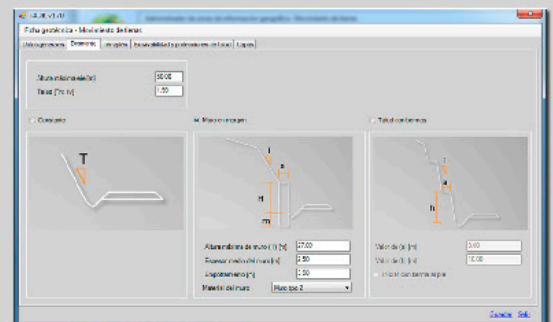
- GEOTECHNICAL VARIABLES.
- BRIDGES AND VIADUCTS TYPOLOGY.
- ENVIRONMENTAL VARIABLES.
- CLIMATIC VARIABLES.
- SOCIOECONOMIC VARIABLES.
- PATRIMONIAL VARIABLES.



Example of module TDB, GIS. Geotechnic

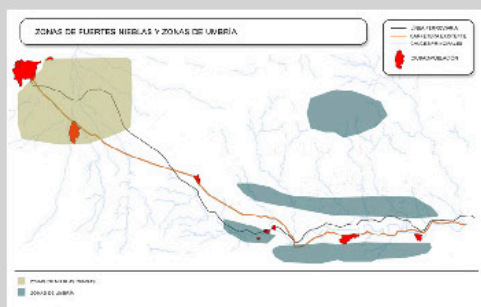


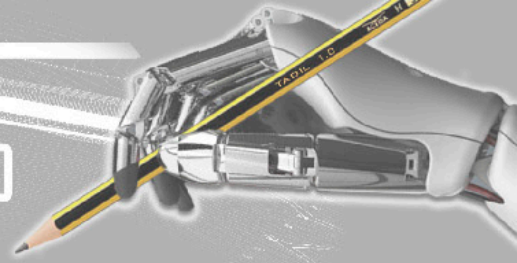
Example of module TDB, GIS. Environmental variables



Example of module TDB, GIS. Geotechnic

Example of module TDB, GIS. Climatic variables

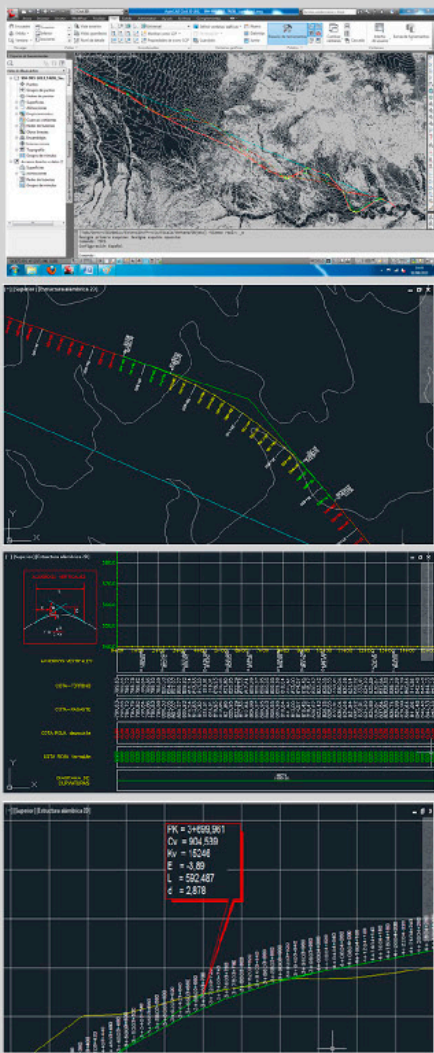




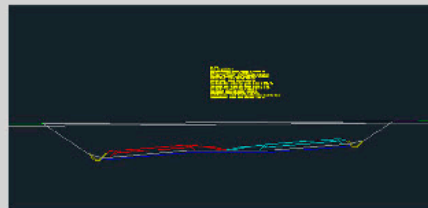
THE INTERFACE OF TADIL - THE MODULE TDI. GENERATION OF ROAD LAYOUTS

- THE MODULE TDI IS DIFFERENT FOR THE INFORMATIVE STUDY AND THE PREVIOUS STUDY.
- IN THE INFORMATIVE STUDY, THE USER SHOULD INDICATE THE DATABASE.
- IN THE TDI MENU OF THE PREVIOUS STUDY, THE USER SHOULD ENTER THE DATES FOR A DYNAMIC CALCULATION OF THE BASIS AXIS; IN THE TDI MENU OF THE INFORMATIVE STUDY, A LARGE PART OF THIS DATES ARE TAKEN FROM THE TDB DATABASE IN A GEOREFERENCED WAY.

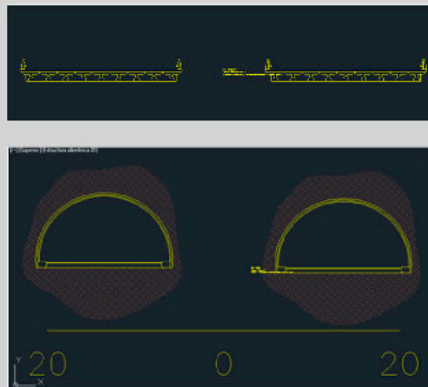
TDI. GENERATION OF ROAD LAYOUTS LONGITUDINAL PROFILE



TDI. GENERATION OF LINEAR CONSTRUCTION WORK



Cross section of dual carriageway in curves with its measures



Automatic introduction of sections of structures or tunnels where the user allowed it.

TDI. SOLUTIONS EDITOR

Inicio	Fin	Pista	Velocidad	Importe
Grupo 1 (20-25)	25	20	20	20
Grupo 1 (25-30)	30	25	25	25
Grupo 1 (30-35)	35	30	30	30

TDI. DECISION MATRIX

Línea	Búsqueda	Eje	V	V2	V3	V4	V5	V6
Grupo 1 (20-25)	20	25	20	25	20	25	20	25
Grupo 1 (25-30)	25	30	25	30	25	30	25	30

TDI. REPORTS

FUTURE VERSIONS

FUTURE UPDATES:

- FFCC VERSION.
- A NEW MODULE TO DESIGN STRUCTURES AND TUNNELS.
- DISPLAY OF AUGMENTED REALITY (AR) MODELS. .

AR EXPORT:

- AR VIRTUAL MODELS (VIRTUAL MINIATURES ON THE TABLE)
- VIRTUAL VISION IN SITU E 1:1.



Movarec wrote about Artificial Intelligence:

"In a quite fast way, we could be out of place and existence... Like the biological children of the previous generations, machines represent the best hope of the humanity for a long term future. It is up to us to offer them all the advantages and how to retire us when we cannot contribute."