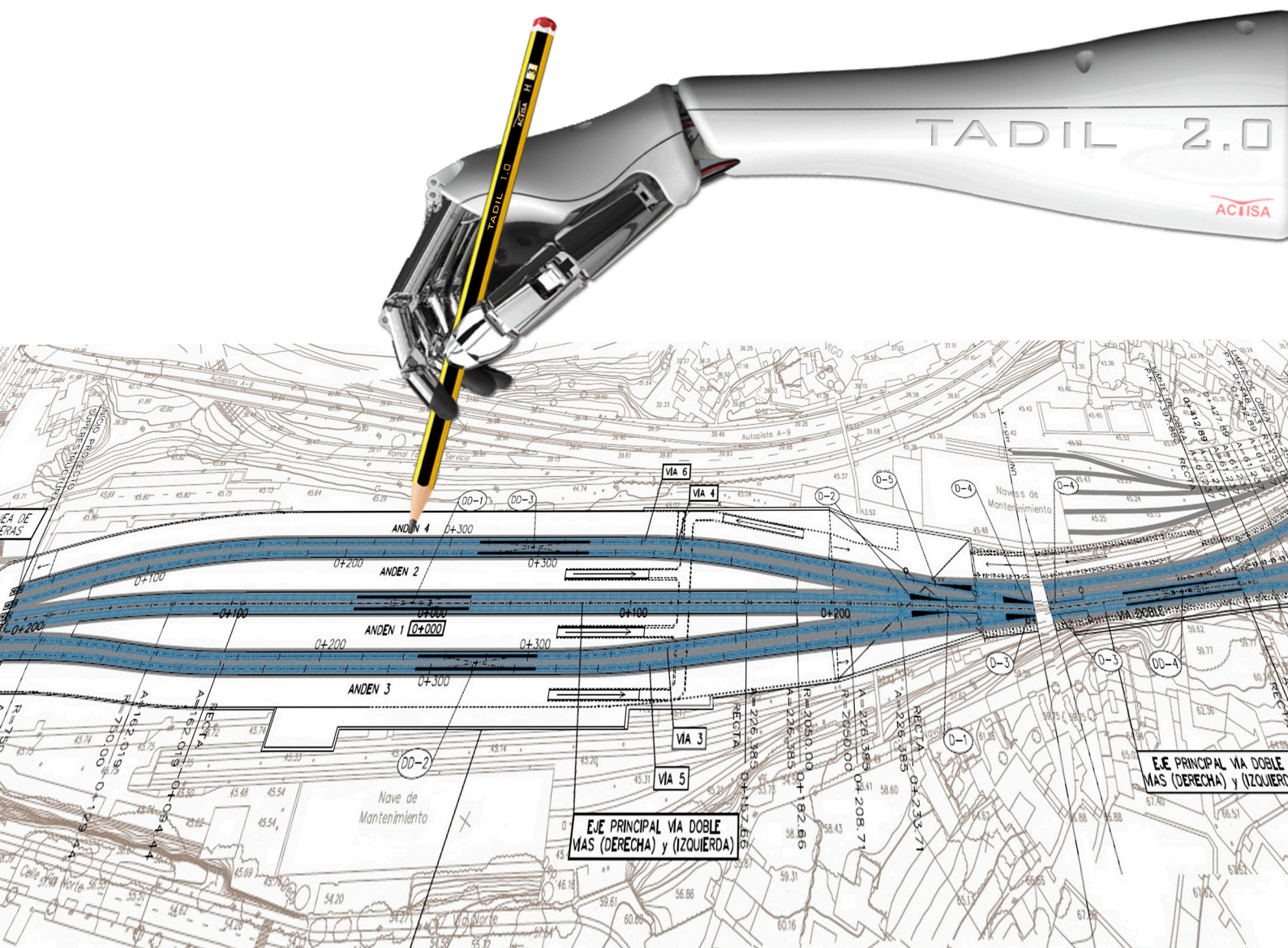
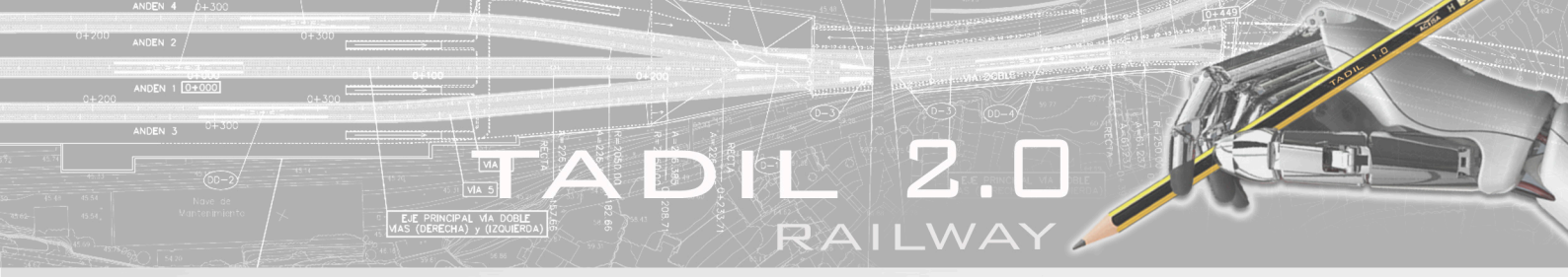


TADIL 2.0

RAILWAY

TECHNIQUES FOR THE AUTOMATIC
DESIGN OF LINEAR INFRASTRUCTURES





WHAT IS TADIL?

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

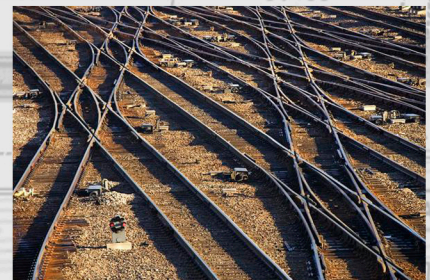
The TADIL Railway module is orientated to the study of railway infrastructures.



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.





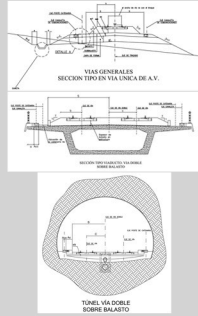
SOME QUALITIES OF TADIL

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 LAYERS.
- 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:

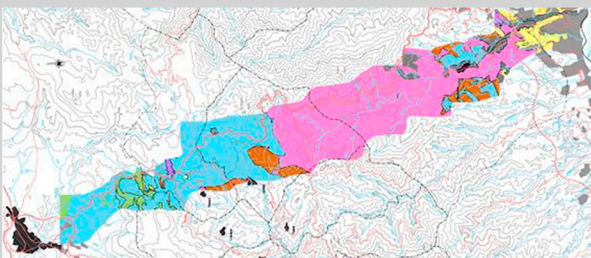
- HORSESHOE.
- VAULT.
- CIRCULAR (WITH OR WITHOUT VOUSOIRS)..



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 THE AREAS AND ITS VARIABLES.

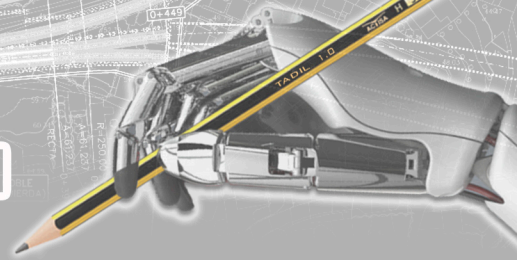


THE TREATMENT OF STRUCTURES AND TUNNELS ALLOWS AN INTEGRAL VIEW OF THE PROJECT SINCE THE FIRST MOMENT THE ENGINEER STARTS THE DESIGN.

VIA 3
VIA 6
VIA 5
EJE PRINCIPAL VIA DOBLE MAS (DERECHA) y (IZQUIERDA)

TADIL 2.0

RAILWAY

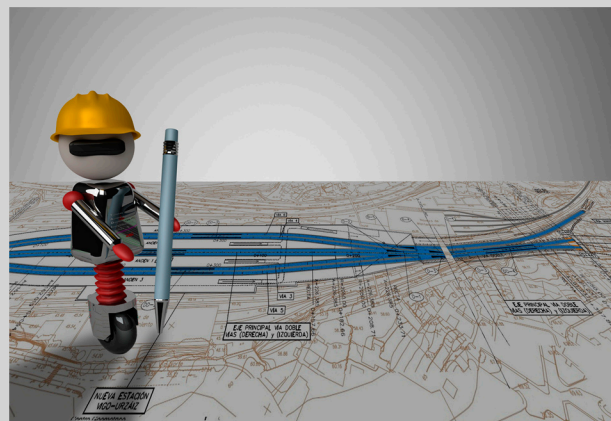


THE CAPACITY OF TADIL

SOME EXAMPLES:

It generates a feasibility study with 5 alternatives (completely calculated) of a new 100km double track railway line 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 140km obtaining the plan axis, the profile, the cross sections, the earthwork plan, the earthwork balance, the budget and the profitability in just **15 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:

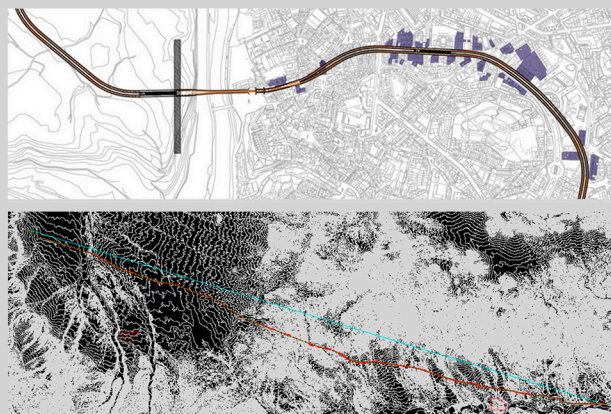
TADIL ELABORATES TWO KINDS OF STUDIES:

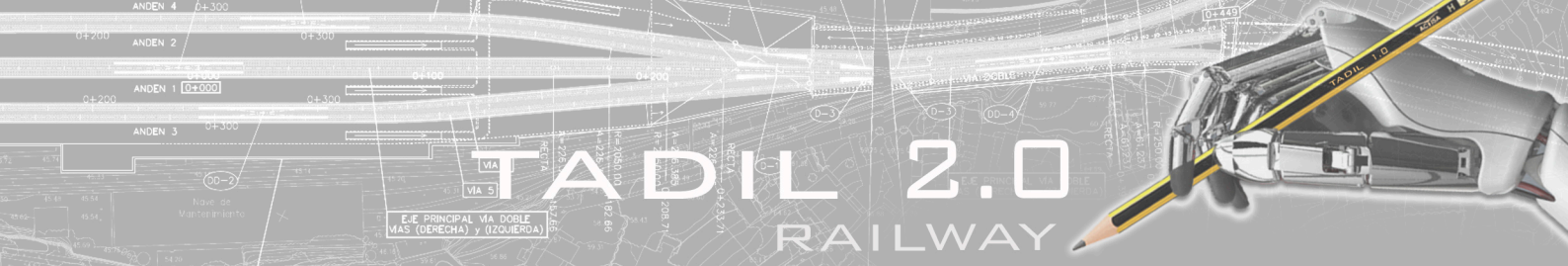
- PREVIOUS STUDIES.
- INFORMATIVE STUDIES.

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.



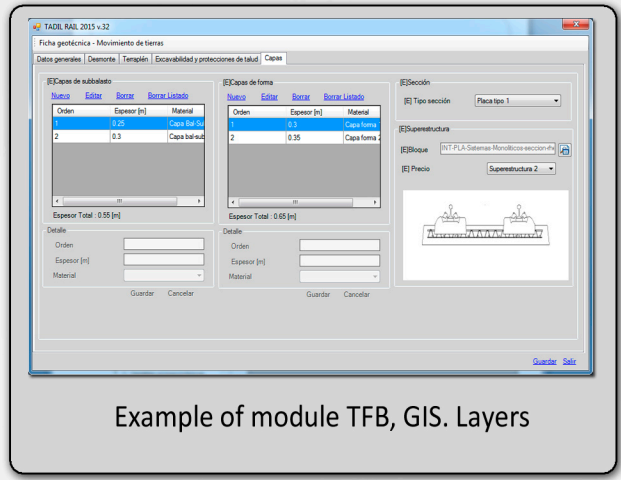


THE INTERFACE OF TADIL - THE MODULE TFB

THE MODULE TFB INCLUDES:

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

ONLY APPLICABLE IN THE INFORMATIVE STUDY.

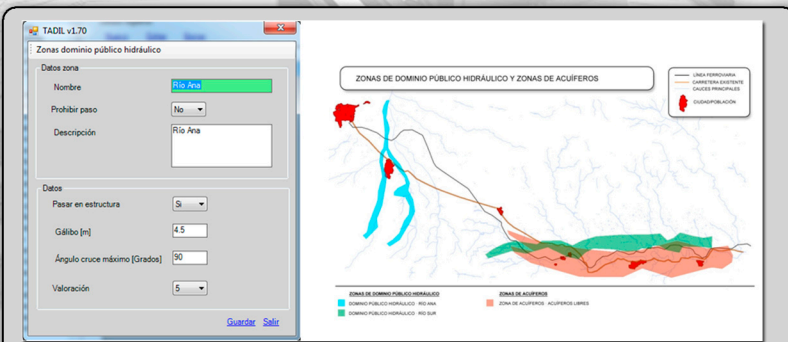


Example of module TFB, GIS. Layers

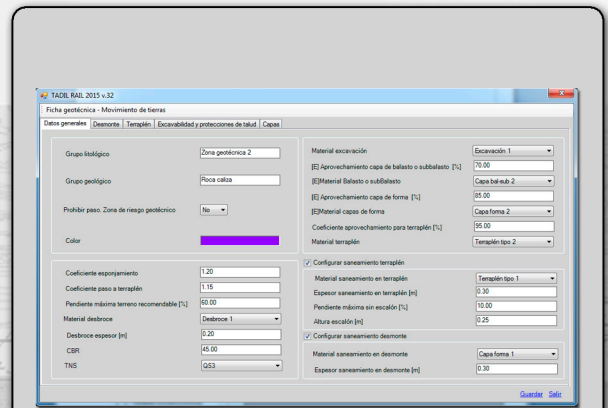
THE GEOGRAPHIC INFORMATION SYSTEM:

INCLUDES:

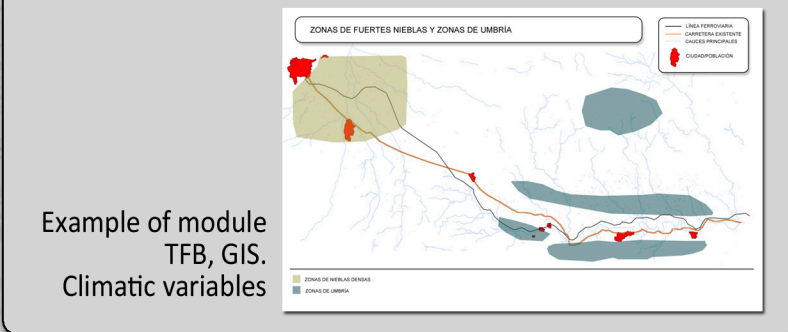
- GEOTECHNICAL VARIABLES.
- BRIDGES AND VIADUCTS TYPOLOGY.
- ENVIRONMENTAL VARIABLES.
- CLIMATIC VARIABLES.
- SOCIOECONOMIC VARIABLES.
- PATRIMONIAL VARIABLES.



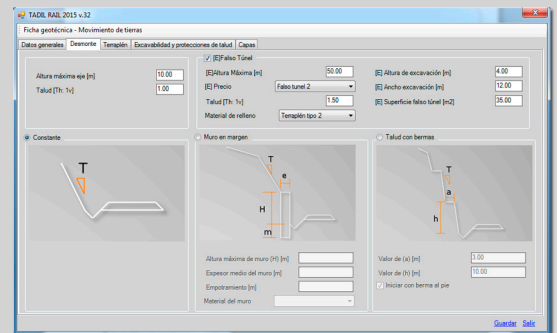
Example of module TFB, GIS. Environmental variables



Example of module TFB, GIS. Geotechnic



Example of module TFB, GIS. Climatic variables



Example of module TFB, GIS. Geotechnic



THE INTERFACE OF TADIL - THE MODULE TDI. GENERATION OF RAILWAY LAYOUT

TDI. EARTHWORK PLAN AND EXPROPRIATIONS

TDI. GENERATION OF ALTERNATIVES

TDI. SOLUTIONS EDITOR

Nombre	Eje	Eje	Perfil	Obras lineal	Exportar
Máscara	trazado	longitudinal			
FFCC-V200-R2200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FFCC-V200-R2200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FFCC-V200-R2200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FFCC-V200-R2200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TDI. DECISION MATRIX

Listaado	TRA	GEO	ETM	MED	CLI	SOC	PAT	ECO
Hipotesis001	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Hipotesis 002	20	10	10	10	10	10	10	20
Hipotesis003	8	10	10	10	10	10	12	30

TDI. REPORTS

Id	Descripción	Cantidad	Unidad	Valor
1	Terminaciones y Saneamientos	2217889	€	2217889
2	Excavaciones	5096426	€	5096426
3	Emplos	4138204	€	4138204
4	Materiales Tierra	1332027	€	1332027
5	Cunetas	1418100	€	1418100
6	Túnel	3600000	€	3600000
7	Perfil longitudinal	4000	€	4000
8	Superestructura	37817	€	37817
9	Obra lineal	330765	€	330765
10	Reposición bñovones	34447	€	34447
11	Conexiones ferroviarias	330765	€	330765
12	Desvío tipo 2	4000	€	4000
13	Adaptación tipo 1	24186	€	24186
14	Medidas correctoras	1000	€	1000
15	Identificación	2400	€	2400
16	Instalaciones de Seguridad y Señalización	146207	€	146207

Id	Descripción	Cantidad	Unidad	Valor	Subvención por ejido	Subvención por merca
1	Terminaciones y Saneamientos	2217889	€	2217889	0	0
2	Excavaciones	5096426	€	5096426	0	0
3	Emplos	4138204	€	4138204	0	0
4	Materiales Tierra	1332027	€	1332027	0	0
5	Cunetas	1418100	€	1418100	0	0
6	Túnel	3600000	€	3600000	0	0
7	Perfil longitudinal	4000	€	4000	0	0
8	Superestructura	37817	€	37817	0	0
9	Obra lineal	330765	€	330765	0	0
10	Reposición bñovones	34447	€	34447	0	0
11	Conexiones ferroviarias	330765	€	330765	0	0
12	Desvío tipo 2	4000	€	4000	0	0
13	Adaptación tipo 1	24186	€	24186	0	0
14	Medidas correctoras	1000	€	1000	0	0
15	Identificación	2400	€	2400	0	0
16	Instalaciones de Seguridad y Señalización	146207	€	146207	0	0

TADIL 2.0

RAILWAY



FUTURE VERSIONS

COMPLEMENTARY SOFTWARE

- ROAD VERSION.
- DITEL: SOFTWARE TO DESIGN STRUCTURES AND TUNNELS
- VOS & CADIOP: SOFTWARE FOR VIRTUAL VISION ON SITE.

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."