



## ORGANIZATION



Sociedad de Tasación  
[www.st-tasacion.es](http://www.st-tasacion.es)

## ORGANIZATION SIZE

200 employees & 700 independent appraisers

## COUNTRY/REGION

Spain

## INDUSTRY

Real Estate and Finance

## BUSINESS NEED

Improving Business Processes & Operations  
through Artificial Intelligence

## THE CUSTOMER

Sociedad de Tasación is an organization which works in the field of asset valuation -particularly real estate properties. Sociedad de Tasación was the first authorized real estate valuation company, according to the guidelines of the Bank of Spain, in 1982. Throughout these years Sociedad de Tasación has gathered an experience of close to 4 million real estate valuation reports performed; over 3 million AVM (Market Automatic Valuations); and more than 4 million of market data audited. From the business point of view, Sociedad de Tasación is the second most important real estate valuation company in Spain regarding yearly turnover.

## THE NEED

Owing to the increasingly more usual requests by the Bank of Spain to the real estate asset holders - mainly banks- to value their real portfolio to both have this financial information updated, and to avoid any undesired episode of real estate bubble in Spain, some operational bottlenecks were being produced between the valuation and the control departments inside Sociedad de Tasación.

These inefficiencies were impacting in the business performance of the organization.

## THE SOLUTION

In May 2017 Sociedad de Tasación and hAlta signed a 6-month project to use artificial intelligence in order to optimize the real estate controllers' efficiency and productivity, either avoiding or diluting these bottlenecks which were impacting in the company turnover.

After the traditional stage of solution definition and preliminary data analysis, hAlta decided to develop a dataset which included not only the features which were taken into account in a valuation file, but also further features which might impact on the accuracy of the price allocated to the real estate asset.

During six months hAlta was creating a machine learning-based model which would be embedded between the valuation and the control department, so that it could help controllers be more efficient and provide a swifter answer upon an unforeseen increase of workload from the valuation department.

In the feature engineering stage of the machine learning project, hAlta created more than 500 features to be considered and coped by the artificial intelligence model.

With respect to the particular technical approaches followed during the whole length of the project, different algorithms were tested: SVM, MLP ANN, Gradient Boosting, DT (CART), Random Forest, etc.

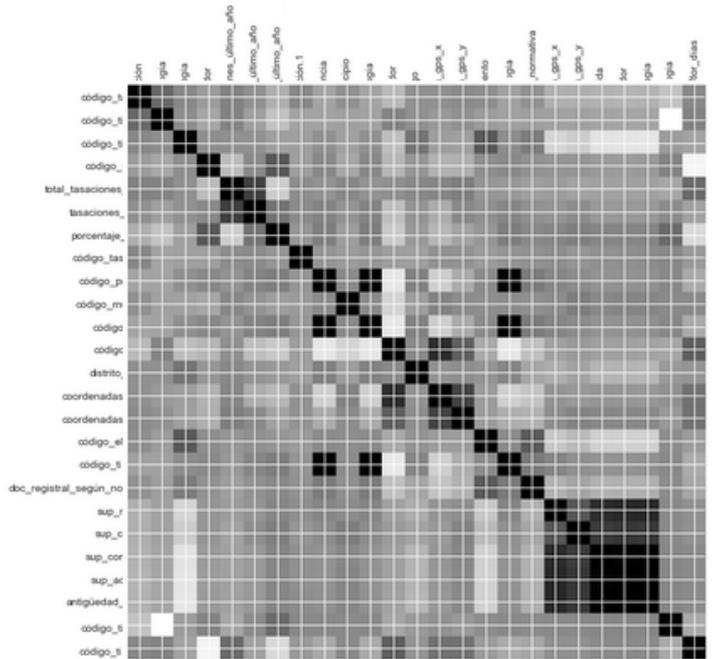


Fig. 1. Correlation amongst variables.



Fig. 2. Real estate valuation PCA

## THE BENEFITS

From the work performed by hAltta, Sociedad de Tasación has extracted two positive lessons:

1. It is enjoying the chance of having a customized machine learning-based controller, which definitely is helping the organization tackle the gradually more common valuation workload increase.
2. Thanks to the several deep exploratory analyses performed by hAltta, Sociedad de Tasación has been able to apprehend what key features are more heavily pondered by the controllers upon deciding whether a real estate valuation should be approved. This has as a result as well a collateral improvement in the work developed by the valuers and controllers.

hAltta's dedication and focus on the problem surpassed the customer's expectations: it has provided Sociedad de Tasación with a top-notch machine learning-based model to improve processes and operations, thus allowing the real estate valuation firm to keep on shaping the PropTech industry and being a reference in the sector.

*“In this AI project with hAltta I would distinguish two different aspects: firstly, the performance of the machine learning-based controlling solution which is ideal regarding the level of complementarity with our own internal solutions and procedures; and secondly, hAltta's attitude throughout the length of the project: always trying to help us understand the technological approach followed and the rationale behind. Summing up, a great experience having worked and instructed by hAltta.”*

Gustavo Fernández Calvo.  
Operations Director at Sociedad de Tasación

## TECHNICAL INFORMATION



hAltta used the so-called 'Python Data Science Toolkit', which is formed by open source tools and libraries such as:

- Numpy
- SciPy
- Pandas
- ScikitLearn
- Keras
- Matplotlib
- SeaBorn
- ...

Experiments and visualizations were shown to the client in early stages, using Jupyter Notebooks.



For source code versioning purposes, hAltta made use of private Git repositories.

There was neither special needs for infrastructure in order to run experiments or to operationalize the model in this project.

In the implementation phase of the model, hAltta developed an API -Flask + Gunicorn + Nginx- to allow ST to query the model and integrate it into its current application.