Using and harnessing Artificial Intelligence in the cadastre

PCC Conference and Plenary Meeting, Bruges, 17 – 19 June 2024
Plan

1. Overview of the project « Foncier Innovant »
2. Inconsistency processing chain
3. IA for property tax: swimming pools
4. IA for cadastral map
5. 2024 – Industrialisation
Overview

Goals:

1. Optimising local authorities’ tax bases
2. Increasing the efficiency of our real estate mission and providing tools to combat fraud
3. Providing agents with enhanced information and modernised tools
4. Provide users with an up-to-date cadastral map
Overview

Inconsistency detection processes

- Property tax inconsistency
- Topographic and property tax inconsistency
- Topographic inconsistency

Tax adjustment

Updating the cadastral map
Inconsistencies processing chain

Loading source data
- Shapes from aerial images
- Cadastre
- Tax data

Parcel intersection
- Assigning a parcel to an AI shape

Contour correction
- Geoprocessing of AI contours to correct potential imperfections

Position correction
- Georeferencing (adjustment) of contours to correct the position of AI shapes

Croisement géographique avec le cadastre
- Identifying topographic inconsistencies

Croisement avec les données fiscales
- Identifying property tax inconsistencies

Declaration on impôts.gouv.fr

Update of local direct tax bases

Sending an e-mail to the user

Contour correction
- Georeferencing (adjustment) of contours to correct the position of AI shapes

Position correction
- Correction of the information for the parcel affected after recalibration

Human control of inconsistencies:
- Control of tax information
- Contours checking and adjustment if needed

Topographic inconsistencies

Updating the cadastral map
IA for property tax: swimming pools

Illustrations of the detection and data cross-referencing steps

- **Detect a pool on the orthophoto**
  - In both cases, the swimming pool is well detected on the orthophoto

- **Cross with the cadastral plan**
  - In both cases, the topographic intersection makes it possible to consider an absence in the cadastre plan

- **Cross-reference with tax data**
  - In case 1, the swimming pool is not consired in the tax bases.
  - In case 2, the swimming pool is well assessed but absent from the cadastre plan
IA for property tax: swimming pools

In 2022:

96 départements

208 800 Swimming pools detected and sent for human control

148 700 (+70%) Validated as taxable

Potential property tax revenue of 40M€
IA for property tax: swimming pools

« Foncier Innovant », a national and regional impact:

➤ TADEUS 2022 _ Tax Administration European Union Summit
France received 1st award for innovative use of data and AI to fight real tax fraud

➤ Le Figaro (septembre 2022).
AI for cadastral map

HISTORICAL PROCESS:
AI for cadastral map

**HISTORICAL PROCESS:**

Urban planning authorisations
HISTORICAL PROCESS:

Cadastral surveyor’s tour
AI for cadastral map

HISTORICAL PROCESS:

Conservation sketches
AI for cadastral map

HISTORICAL PROCESS:

Cadastral map integration
AI for cadastral map

« FONCIER INNOVANT » PROCESS:

1. Orthophotography
AI for cadastral map

« FONCIER INNOVANT » PROCESS:

2. Artificial Intelligence
AI for cadastral map

« FONCIER INNOVANT » PROCESS:

3. Human analysis
AI for cadastral map

« FONCIER INNOVANT » PROCESS:

4.
Cadastral map integration
2024 – Industrialisation

96 départements

Swimming pools (new vintage) Buildings

5 Départements et Régions d'Outre-Mer (DROM)

Swimming pools (first time) Buildings

Property tax Inconsistencies
Topographic Inconsistencies
Thank you for your attention

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