

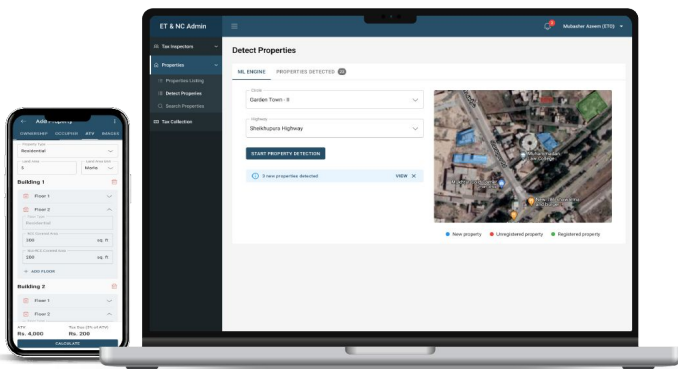


Navigating the Future of Property Taxation

Digitization Of Highways Immovable Properties Tax Recovery Processes For Excise, Taxation & Narcotics Control (ET&NC) Department Of Punjab

The project aims to automate the property tax collection process by using computer vision and machine learning techniques. An instance segmentation model (Detectron 2) is used to identify different types of properties (commercial, residential,

and combined) in Mapbox images. The pipeline updates the property information every 6 months to reflect changes and uses a custom IOU calculation system to estimate new properties. The model was trained on custom labeled data from Mapbox and optimized for fast and accurate results. In addition to the computer vision component, a field application/web dashboard was developed to digitize the work of field staff and increase their efficiency. The application allows field staff to avoid redundant data entry and reduce errors by using a smartphone to capture data in the field. The use of the application is expected to streamline the field activity and make it more efficient, reducing the time and effort required to complete the task.



CUSTOMER

PROJECT TO DIGITIZE TAX COLLECTION PROCESS OF ET&NC.

ET&NC (Gov. of Punjab)

Country: Pakistan

Industry: Public Sector

Customer Size: 500 - 5000

Publish Date: 30/03/2023

The property tax in Punjab is underutilized, only accounting for 6% of the total provincial tax, despite being the second largest source of income for the Excise and Taxation Department, contributing 28% of total revenue. The ineffectiveness of property tax collection is due to poor execution and a lack of employee enthusiasm, leading to underestimation of taxes. Inefficient property detection and tax collection, lack of technology support, and inadequate monitoring and reporting systems are major challenges. The absence of digital support makes interactions between taxpayers and the ET&NC department difficult, leading to a lack of understanding of the property tax and reluctance to pay taxes.

The objective of capturing the digital signature of properties was achieved by building a capacity to add location coordinates, view the location on a map, and upload pictures inside the field application. This included features such as geo-location, pictures, and navigable addresses.

The field application was further developed to include an assignment module that allows Excise Tax Officers to assign newly detected properties to the relevant ETI of the circle. This module was built with the capability of manual assignment and system-generated actions based on machine learning algorithms. This allows for tasks to be assigned when new properties are detected, construction activity or other changes are spotted, making the process more efficient and streamlined.

**STEP
01**

Property detection using satellite imagery and computer vision.

Tax inspector visits detected properties and registers them

**STEP
02**

**STEP
03**

Automatic tax calculation and challan generation.

Tax payer can view his property details, cahllan history and raise objections.

**STEP
04**

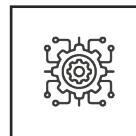
**STEP
05**

ET&NC has reporting module and track record of tax collection.



Property Detection

The goal of the project is to automate the Property Tax Collection(Commercial - Residential - Combined).



Workflow Automation



Analytical Reporting

Improve reporting, monitoring and performance of E&T field staff.



Operational Transparency

Make ETNC field operations tech-enabled & efficient by building internal capacity to create digital footprint of detected properties.