

SERVICE DESCRIPTION

NQM Business Rates Analytics

Using data to optimise Business Rates Collections



Version 1.00 09/06/20

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Nquiringminds Business Rates Analytics

1. Overview

The Business Rates Analytics helps strategically manage and plan the collection of business rates. It provides tools for workflow management, inspection prioritisation, and mobile workflow. Sophisticated AI analytics processes are applied across a large set of datasets to intelligently predict properties that are likely to be misclassified, this leads to an increase in the accuracy of information on the occupiers of properties and helps to identify uncollected rates revenue.

1.1. Features

- Data merging and cleaning: The BRA combines data from multiple sources using interoperable APIs and schemas
- Triaged list of properties: Inputs from many data sources are combined and analysed to produce a prioritised list for inspection
- Opportunistic inspections: During job creation the system automatically suggests other nearby properties that may be suitable for a batch of inspections
- GIS/charting overview: Map and graph views are provided for analysing high level metrics
- Team based workflow: A comprehensive workflow system includes all aspects of the inspection process, from job selection, to the completion of inspections
- Mobile workflow: Designed to work on mobile devices the BRA is suited for use by operatives in the field, featuring device-based geolocation
- Audit Logs: See the complete history of a property, in a transaction style log of changes
- AI analytics and machine learning: The BRA uses AI analytics to make estimates about key information for properties, such as probability of fraudulent vacancy claims. Machine learning techniques are used to iteratively improve these estimates in real time as the system is trained by the input from inspection results.
- Data Integrity: User friendly visualisations of data completeness and accuracy.

1.2. Benefits

- Targeted Inspections: Optimise rates collected by prioritising properties where revenue is most likely to be missing
- Operational Efficiency: Maximise the number of inspections performed with intelligent neighbourhood based inspections
- Improved Data Quality: Digital workflow captures data at the source, minimising errors during transcription
- Dynamic Scheduling: Planning may be altered on the fly as new data is collected from inspections in the field

2. Modules

2.1. Data Import

The data import module is a back-end system that enables the import of data from diverse data sources into the BRA. It includes data cleaning and matching functions which allow different input datasets to be mapped to a standardised format (or schema) which powers the underlying application and analytics. The system supports both automated and manual data imports, from either APIs or file uploads.

2.2. Estimators

Estimate Details

Estimator Id	Estimate Date	Evidence Label	Evidence Value
no recent inspection	11/05/2020	Last inspection date	No recorded inspection
license	18/05/2020	License data address	[REDACTED]
license	18/05/2020	License active at address	20/10/2001 - 20/09/2030
building control	18/05/2020	Building control address	[REDACTED]
building control	18/05/2020	Building control reference	FP/2019/0810/ B
building control	18/05/2020	FP/2019/0810/ B received on	20/05/2020
building control	18/05/2020	FP/2019/0810/ B started on	05/04/2019
building control	18/05/2020	FP/2019/0810/ B completed on	20/05/2019

In order to allow users to prioritise properties for inspection the system is designed to allow estimation of various different parameters associated with a property. The initial goal of this module was to allow the estimation of confidence in a vacant property actually being occupied, however it has been designed such that new estimation algorithms can be inserted to infer additional information about a property. The estimator system is more than just a black box, information on the evidence that was used to arrive at conclusions is stored alongside estimated values so that inspectors and managers can have confidence in the value of the provided data.

The estimator system is supervised in the background by a learning process that utilises the results of inspections to fine tune the confidence it places in different pieces of evidence. This means that the system's performance will improve over time.

2.3. Job Management/Prioritisation

The main tool for managers, this module provides a list of every rateable property in the system. Properties are presented in a sortable, searchable table that supports export to CSV. From this view properties can be prioritised based on inferred properties, such as occupancy confidence, as well as their inherent values. The full details of a property can be viewed, as well as a complete audit log for all changes to that property.

Assigning jobs can be done on a property by property or batch basis. Jobs can either be assigned to individuals or work groups, a job assigned to a work group will be available to all members of that group until it is explicitly accepted by a member.

Welcome to the Live Property Red List

ivan@nquiringminds... Admin

Assign Jobs

START A NEW SEARCH

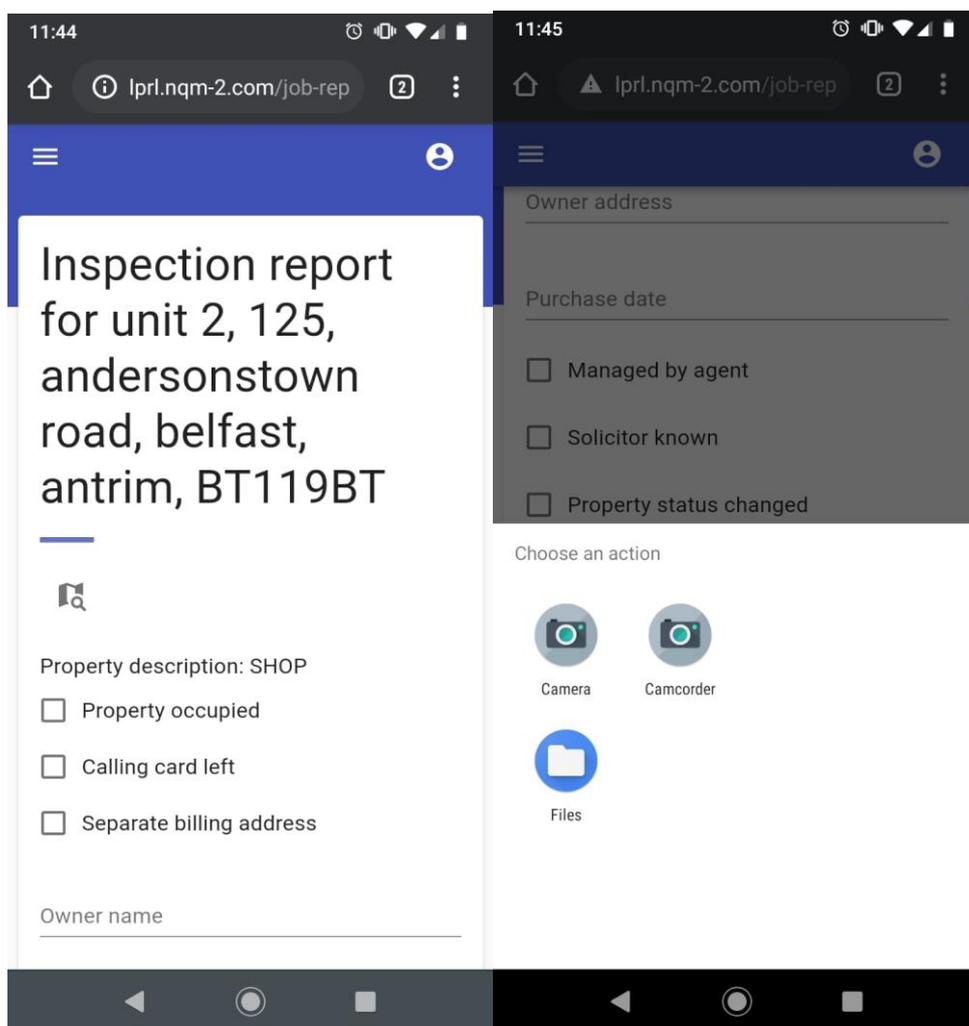
ASSIGN FOR INSPECTION

Property Number	UPRN	Address	Status	Sector	Payable Rate	Ratepayer Name	Ratepayer Class	Description	Occupancy Confidence
<input type="checkbox"/>	225351	Unit 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	Vacant	Non-Domestic	£269.45	Other Ratepayer - Vacant	Vacant	offices and stores (ground and first floor)	76
<input type="checkbox"/>	248781	110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200	Vacant	Non-Domestic	£269.45	Other Ratepayer - Vacant	Vacant	STORES	76
<input type="checkbox"/>	771532	Unit 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	Vacant	Non-Domestic	£167.5	Other Ratepayer - Vacant	Vacant	office (2nd floor)	88
<input type="checkbox"/>	1015099	11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	Vacant	Non-Domestic	£473.36	Other Ratepayer - Vacant	Other Ratepayer - Vacant	Offices (3rd Floor)	88

5 rows | 1-4 of 4

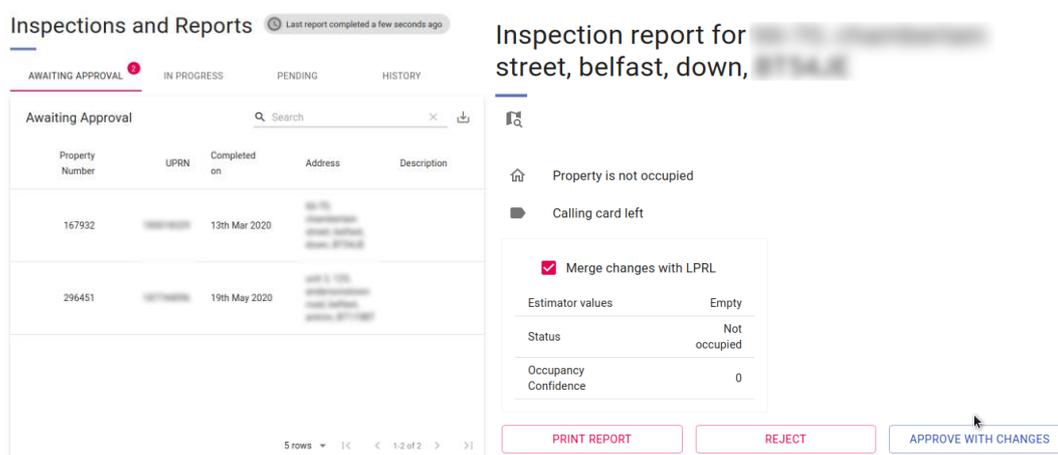
2.4. Mobile Workflow

The mobile workflow module allows inspectors to easily capture data while in the field. Designed to work on all mobile devices it integrates directly with phone features such as camera and location to speed up the process of data capture. Furthermore, once a report is submitted it is available immediately to managers, allowing decisions to be made on the results of inspections in real time. The workflow module works equally well on desktop, if inspectors prefer to collect results and enter them later.



2.5. Reports and Approval

The BRA allows managers to review the results of inspections before accepting the suggested changes into the system. When viewing a report all of the information collected by the inspector, and associated evidence, is presented to the manager, who can then choose whether to accept, or reject the report, optionally merging the resulting changes into the BRA. A history of all completed reports is also available for auditing purposes.



2.6. Audit Log

When viewing the details of a property it is possible to view an itemised list of all recorded changes to the property's record, as well as the source of the change, whether it was an import or an inspection. This allows an inspector or manager to investigate the source of potential discrepancies in a property's status.

Audit Log

LPS Import - Property Updated - 8 months ago ▼

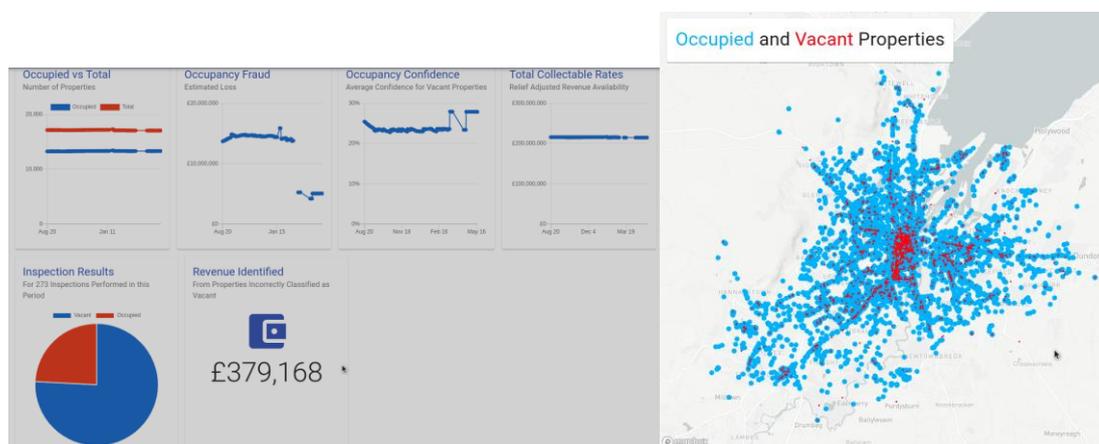
LPS Import - Property Updated - 8 months ago ▲

Building Name changed to methodist college

LPS Import - New Property - 10 months ago ▼

2.7. System Metrics and Logs

The system module includes information on the status of the data in BRA over time, helping to evidence KPIs as well as inform strategy. The logging function also provides an insight into the health of the system and any errors reported from back end modules.



Settings

USERS AND GROUPS SYSTEM SETTINGS **SYSTEM LOG**

System Log			
Timestamp	Source	Message	Error
2020-03-13 10:54:37	Auto Importer	Started	FALSE
2020-03-13 10:54:37	Auto Importer	Running for Commercial Waste Estimator	FALSE
2020-03-13 10:54:39	Auto Importer	Started databot Commercial Waste Estimator	FALSE
2020-03-13 10:54:39	Auto Importer	Running for CRM Estimator	FALSE
2020-03-13 10:54:51	Commercial Waste Estimator	Started	FALSE
2020-03-13 10:54:56	Commercial Waste Estimator	Made 0 estimates on properties	FALSE
2020-03-13 10:54:56	Commercial Waste Estimator	Added estimates to system	FALSE
2020-03-13 10:54:56	Commercial Waste Estimator	Finished	FALSE
2020-03-13 10:56:27	Auto Importer	Started databot CRM Estimator	FALSE
2020-03-13 10:56:27	Auto Importer	Running for Water Estimator	FALSE

10 rows |< < 1-10 of 669 > >|

2.8. Data Integrity

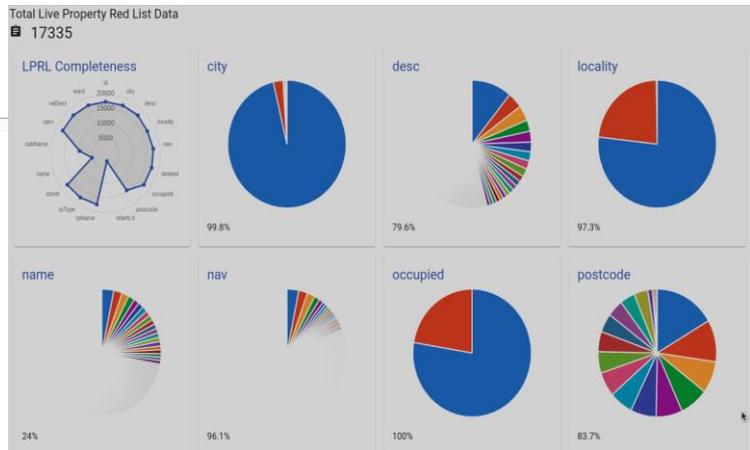
A key factor in improving operational efficiency is the quality of data available. The data integrity module includes charts and statistics that indicate the completeness and accuracy of data within the system. By understanding where gaps exist in the underlying data, teams can work to improve their data quality with targeted strategies.

Property Geolocations

Total GeoJSON Data
16755
 Percentage of LPRL with Geocoding
96.65%

Audit Logs

Total LPRL Audit Data
37732
 Properties inspected in the last year
66
 Properties inspected in the last month
0
 Uninspected properties
17124



3. Background

Business Rates Analytics has been built in consultation and partnership with UK local authorities with funding from Innovate UK. The features have been developed specifically address problems and issues faced by both senior management and staff on the ground.

Nquiringminds is a British company specialising in Smart Cities, Secure IOT, and AI Analytics. Established in 2010, our solutions focus on digital transformation, using our expertise in IoT and data analytics to unlock efficiency and cost savings. We have won multiple awards for our work.

4. Further Details

If you are interested to learn more about BRA please do get in touch. We would be happy to talk in more detail or provide a demonstration account so that you can explore the features described in this document.

Email - info@nqminds.com

Website - <https://nquiringminds.com>