User Guide

Enhanced Real-Time Rule Building

2022

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1. Introduction

This document aims to provide guidance on how to create rules using the Enhanced Real Time (ERT) ruleset.

2. Background

The ERT ruleset is the rule set type that is available as a result of the new rule engine – that aims to be the single rule engine that runs all batch, manual entry and real time enquiries.

This means that the system has a single rule building experience, for Luminate FraudIQ Manager based rules, in order to make the user journey consistent for rule building.

As a direct result of the purpose for which the engine was built, the rule building journey is an amalgamation of the legacy batch and Real-time (RT) journeys.

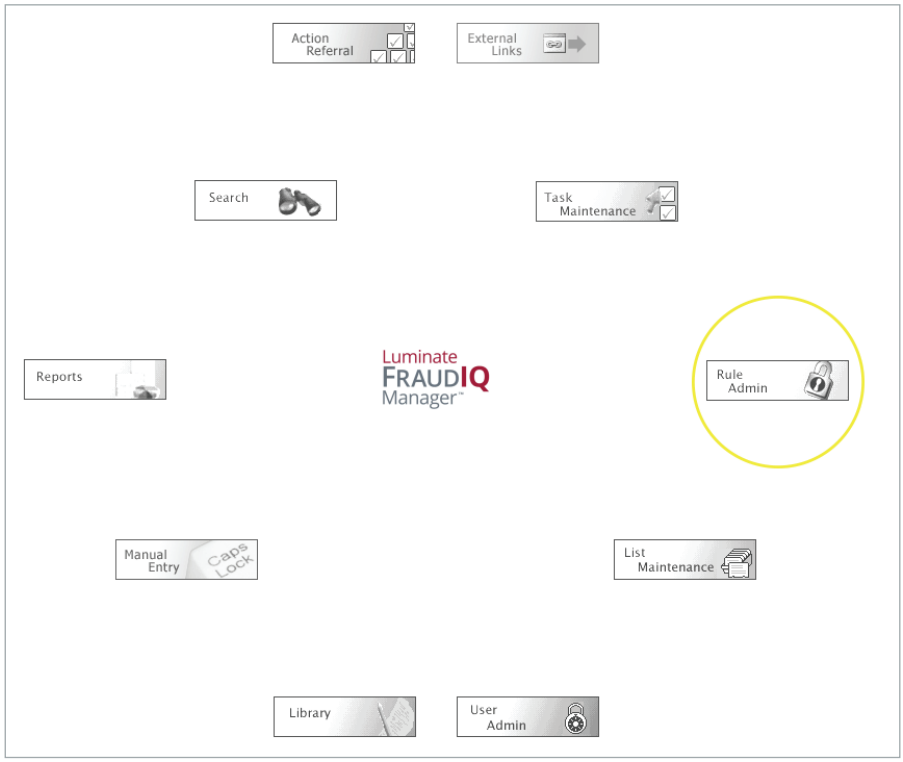
Similarly, with the existing rule engine, it hinges on data being consistent. If the data being sent to Luminate FraudIQ Manager to run against rules is inconsistent and poor quality, the performance of the rules will be impacted. There is the expectation that clients try to send the highest quality data into Luminate FraudIQ Manager to ensure that rules are as effective as possible and understand the impact of poor and inconsistent data on rule performance.

3. Rule Building – Fundamentals

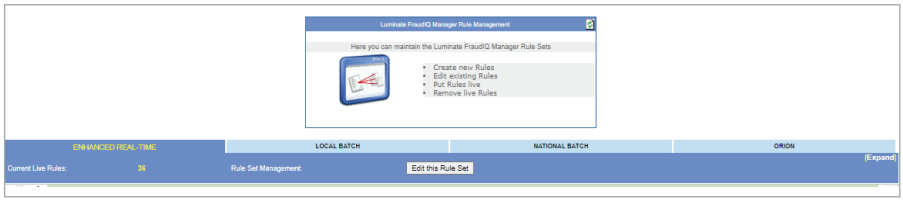
This section will aim to cover the basic prerequisite knowledge required prior to starting rule building. If you are comfortable as a user with how to build a rule already – skip to the enhanced functionality section for an overview of the new functionality that the ERT engine provides.

4. Rule Administration – Navigation

The rule administration page, which houses ERT rule tab, can be located from the clock face on the Luminate FraudIQ Manager home page.



The ERT rule set tab will then be available within the other rule sets configured for the domain:



This tab will display all the current live rules within the rule tab.

If the Luminate FraudIQ Manager system has multiple domains, the domain selector can be used to navigate to the domain's rule sets.

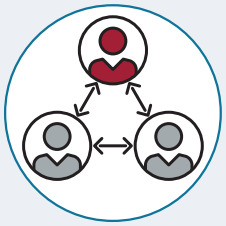
5. Types of Rules

There are two types of rules that are available within the Luminate FraudIQ Manager system to be built.

Validation Rules

- Focus on information contained on the new enquiry **only**
- Does **not** compare against any existing enquiries
- Examines different elements of the enquiry in order to highlight characteristics which are aligned with suspicious profiles

Main Applicant has stated an income of $80,000 and is only 18 years old



Match Rules

- Compares elements of the new enquiry with those of existing enquiries, looking to highlight similarities and/or differences
- Comparisons can be made against the local or National data sets

Main Applicant has the same first name, last name and DOB as an individual previously marked as fraud

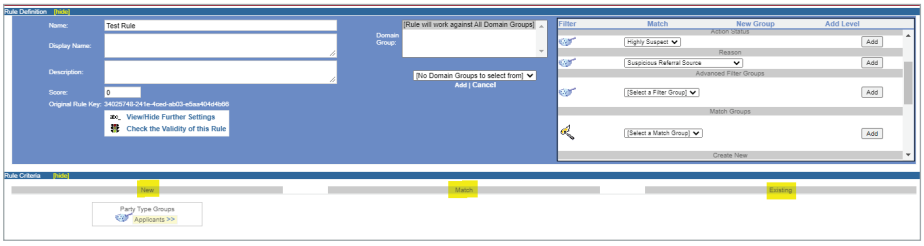
When building rules, they are split into 3 main components; new, match and existing.

New – Defines the criteria and logic on the incoming application to be considered as part of the rule.

Match - Defines the data items and logic on which the rule will compare against the incoming and existing enquiry.

Existing – Defines the criteria and logic to refine the existing applications to be considered as part of the rule.

The rule build screen is split into these three sections. This will be explained in more detail further on in this guide.



Validation and **matching** rules can be recognized by their underlying logic and their iconography within the ruleset.

Validation rules *only* have filters in the 'New' column of the rule i.e. filtering on the incoming application. Matching rules *must* have some form of matching criteria in the 'Match' column. Filters in the 'New' and 'Existing' columns are optional.

When viewing a ruleset within rule administration – it is possible to quickly understand which rules are validation rules or match rules based on their iconography.

Validation Rule	Matching Rule
	

New	Match	Existing
The left hand side of a rule focuses on the enquiry which has been submitted Only filter groups can be applied Acts as a sieve filtering high risk anomalies within the clients application Example: Main Applicant, age < 25, income > 40K	Blank	Blank

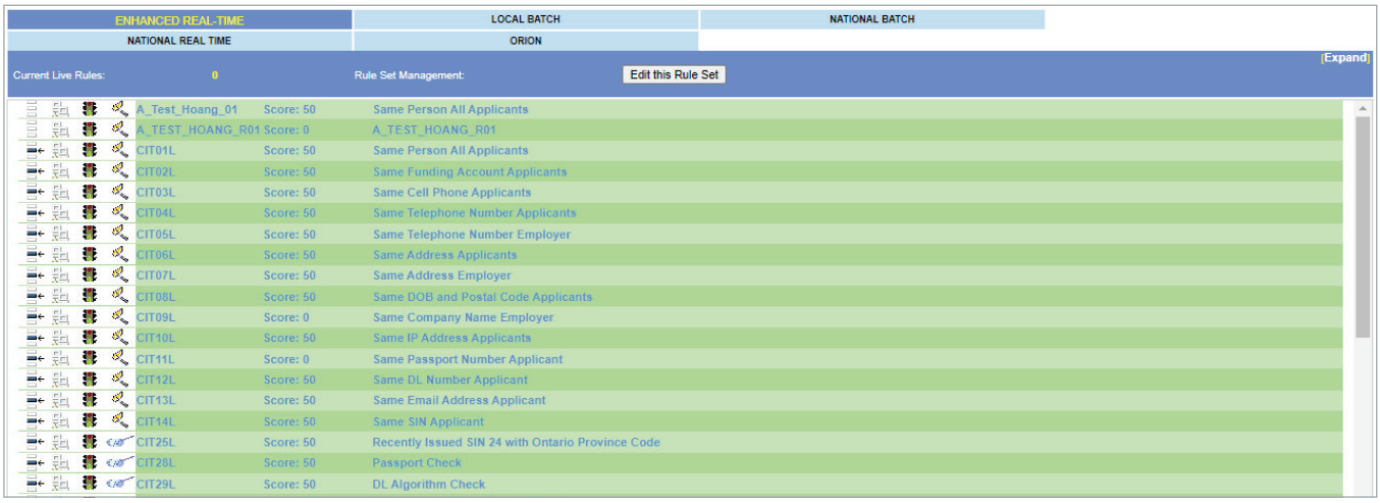
New	Match	Existing
The left hand side of a rule focuses on the enquiry which has been submitted and can be used to filter out unwanted data items or enquiries from the rule process Only filter groups can be applied Examples include "Party Type = Main Applicant" and "Address Type = Current Address"	The middle of a rule focuses on the criteria which will be used to compare new enquiries with those which already exist Only match groups can be applied Examples include "Same Person", "Different Address"	The right hand side of a rule focuses on the enquiries which already exist with the matching data set and can be used to filter out unwanted data items or enquiries from the rule process Only filter groups can be applied Examples include "Party Type = Main Applicant", "Action Status = Highly Suspect"

6. Rule Building – Primary Rule Screens

Following the steps outlined in section 4 of this document will lead to the following screen, which displays the rule sets available for the domain. Clicking on each rule set tab will display the live rules for each rule set.

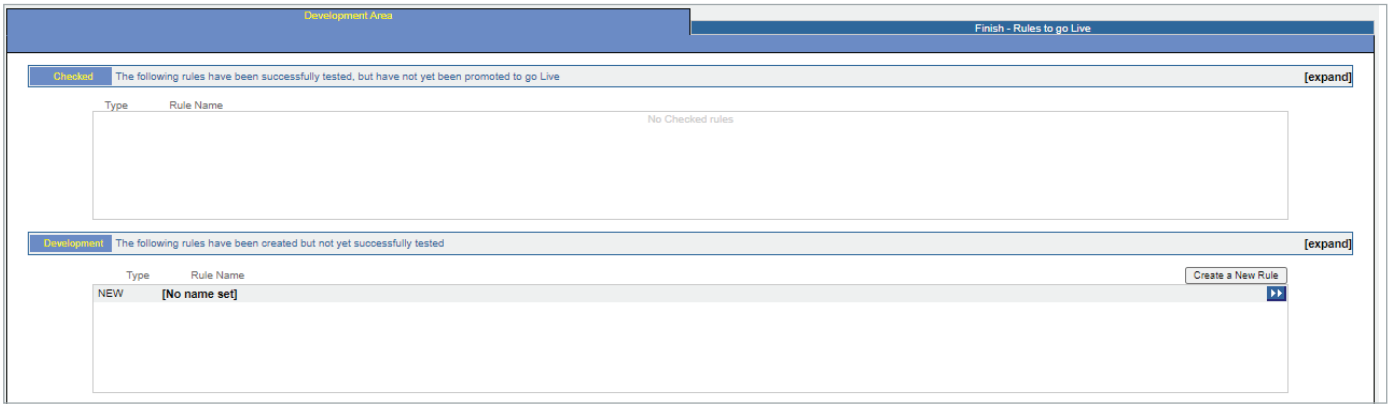
The page names below are referenced in the URL of the page, for example:
https://fraudiqmanager.equifax.com/**RTRuleSetDefinition**.aspx

RuleSetManagement



RTRuleSetDefinition

Clicking on the button 'Edit this Rule Set' leads to the RTRuleSetDefinition page. This is the page where the rule creation process starts.



This page has two main areas:

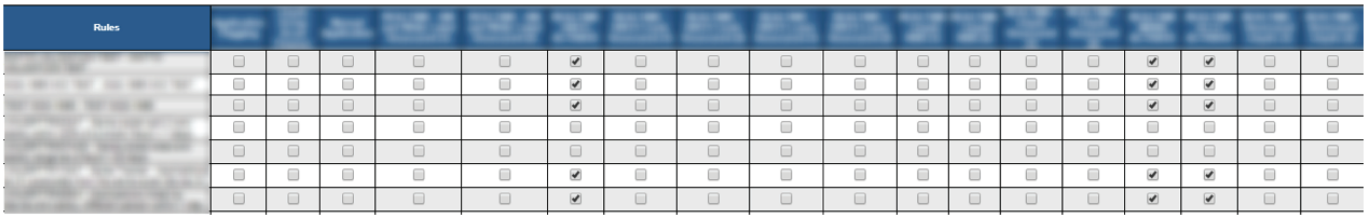
- **Development** – This area is where any new and untested rules will reside
- **Checked** – This area is where any rules that have been successfully tested will reside

Rules that have a status of 'working' will be in the development area of the screen, those with the status of 'tested' will be in the 'Checked' area of the screen. Splitting this screen into development and checked allows the user to quickly see which rules are ready to be promoted to live.

Clicking the tab at the top 'Finish – Rules to go Live' will navigate the user to the RTRuleSetDefinitionPending page.

If the user has the relevant permission, there will be a link to the 'Rule Loading Priorities' page.

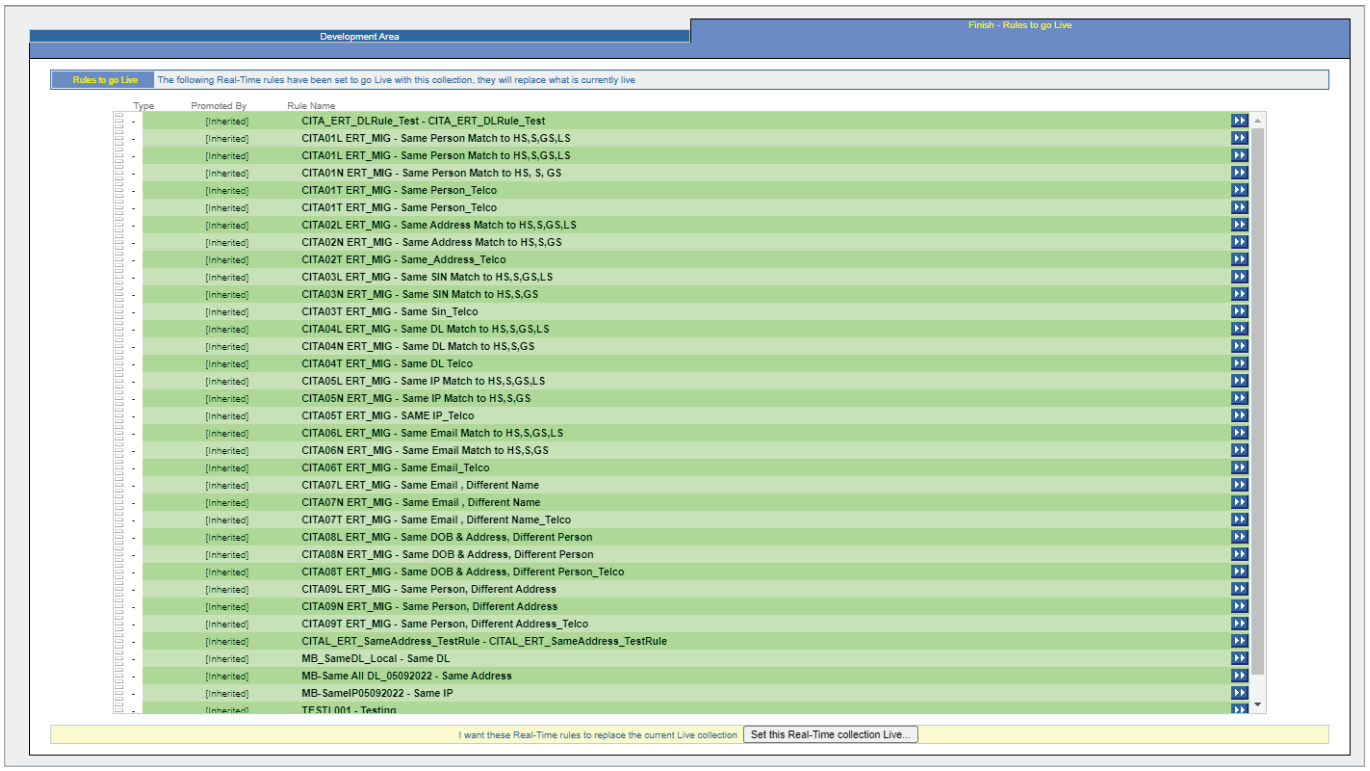
This page allows the users to map the rules to specific RT workflows.



This allows fully control of each workflow's rule strategy, enabling configurability at each call to the Luminate FraudIQ Manager system.

RTRuleSetDefinitionPending

This page will display the current live rule set. Here it is possible to copy live rules to the working area in order to be edited and promoted, in order to replace the live rule. It is also possible to remove the rules from the live rule set.



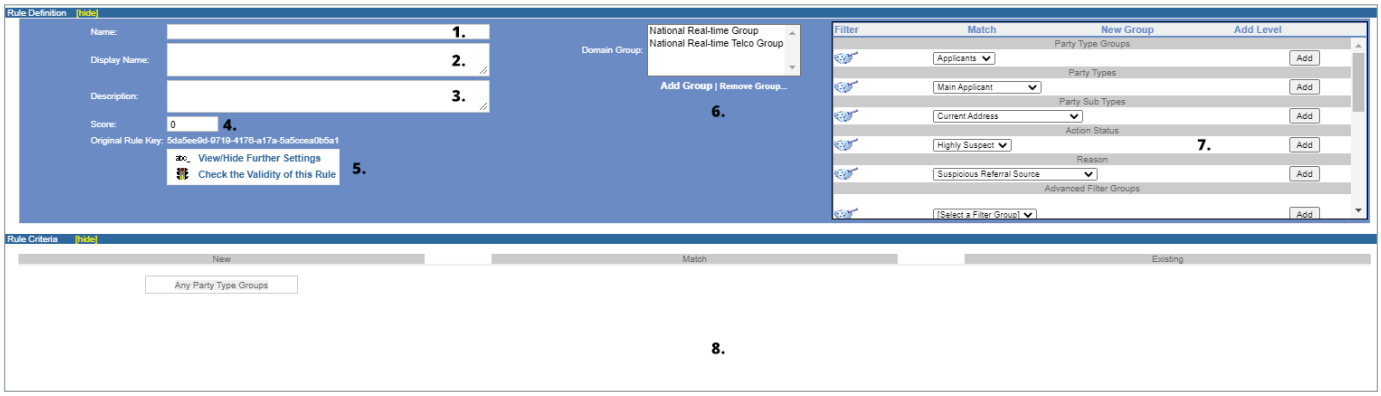
Changes are not committed to the system until the 'Set this Real-Time collection Live' button is pressed.

7. Basic Rule Building

Following the steps above, navigate to the RTRuleSetDefinition page and click the 'Edit this Rule Set'.

Then click the 'Create a New Rule' button.

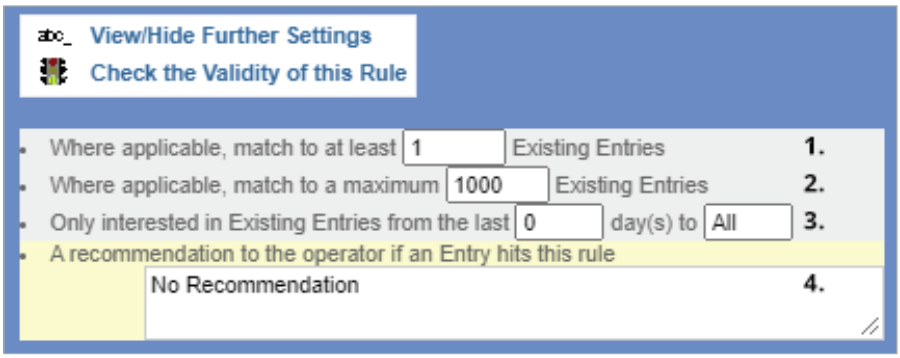
+-*You will then be presented with the below screen:



1. **Name** – This box should be populated with the name of the rule. Generally, it is advised to have this as a short form e.g. MRT001, CC001. These names can then be used to group rules together, and will help with MI & reporting.
2. **Display Name** – This should be populated with a description of the rule's behaviour. For example, 'Same person as Highly Suspect', 'Same telephone number, different address within 90 days'.
3. **Description** – This can be a more detailed overview of what the rule is doing, and isn't displayed anywhere else within the system. Usually this is populated with the display name of the rule for completeness.
4. **Rule Score** – This is the score attributed to the rule, generally, the higher the score the higher priority the rule hit is deemed to be. This score can then be used to drive referral priority within tasks.
   a. It is recommended instead to use the Dynamic Rule Score functionality, provided as part of the core Luminate FraudIQ Manager solution – so that the rule score is changed automatically based on the fraud propensity of the rule. This means that the rule score associated with a rule doesn't have to be manually changed every time. Luminate FraudIQ Manager learns the performance of the rules and automatically adjusts the score over time.
5. **View/Hide further settings** – This section expands to allow for additional settings and configuration to be made. This will be explained in more detail below.
6. **Domain setup** – These options can be added and removed from the selection in order to define which pots of data the rule will fire against e.g. Local data or National Luminate FraudIQ Manager data.
7. **Preset Filter Groups** – These options are available from the drop-down lists as predefined filters which can be selected and dragged to the 'New' and 'Existing' parts of the rule.
8. **Rule configuration sections** – This part of the screen is split into three columns, 'New', 'Match' and 'Existing', which is where the filter and match groups are created or dragged onto to build up the rule.

8. Rule Advanced Settings

Upon pressing the 'View/Hide Further Settings' button the below will be displayed on the screen.



This allows the user to further refine the rule to behave more specifically depending on how it's been set up.

1. **Where applicable, match to at least x existing entries** – Leaving this value at 1, means that the rule will fire if the incoming application matches to at least 1 existing enquiry. Changing the number to, say 3, will mean that the incoming application has to match to at least 3 distinct existing enquiries before firing. This is particularly useful for detecting multiple enquiries over a time period such as '3 or more applications from the same device within 30 days'.
2. **Where applicable, match to a maximum x existing entries** – This value defaults to 1000 to protect the system, when opening RHS matches, from performance issues. As having to load potentially thousands of matches could cause a significant performance degradation for the Luminate FraudIQ Manager system.
3. **Only interested in Existing Entries from the last x day(s) to x** – These values define the age range of the matching enquiries. This can be particularly useful when optimizing rules in order to define the recency of the matching enquiries.
   a. The first box defines how far into the **future** the system should look i.e. enquiries with application dates in the future. For example, a policy could be incepted into the system with a policy start date (which is used as application date) in the future. **This value should be prefixed with a '-' e.g. -120 will look at dates 120 days into the future from the incoming application's date.**
   b. The second box defines how far into the past the system should look i.e. enquiries with an application date in the past. **This value should be just a number. e.g. 30 for 30 days**
4. **Recommendation** – This allows for a small description to be entered that should be used to guide the investigator on how to treat the rule hit e.g. 'possible ID fraud, refer for additional ID checks'.

9. Basic Rule Building – Continued

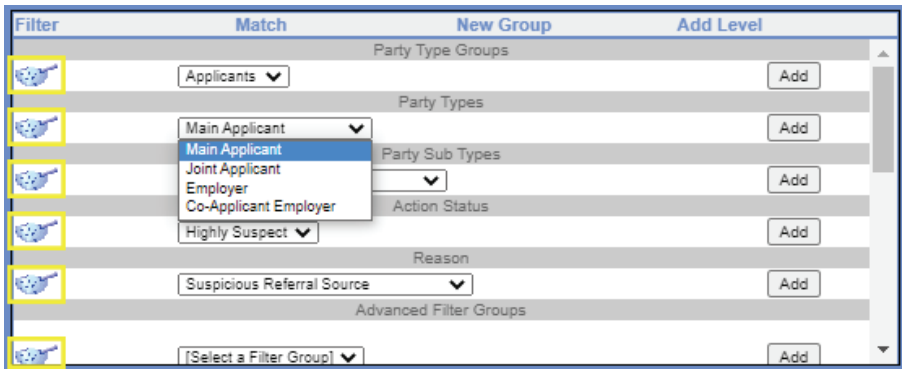
When creating a new rule, it is useful to bear in mind the following structure when creating and interpreting a rule:

Any incoming application that ...

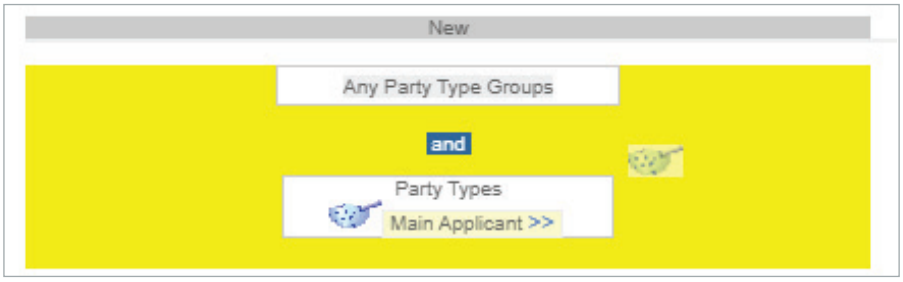
- *Meets all the LHS filter criteria defined*
- and matches based on ... *the matching criteria defined*
- Where any existing application meets the ... *RHS filter criteria that are defined*

If all the above conditions are met, the rule will fire

Using the preset filter groups, seen below, you can select system defined filter groups. These are generic and are configured the same for all Luminate FraudIQ Manager systems.

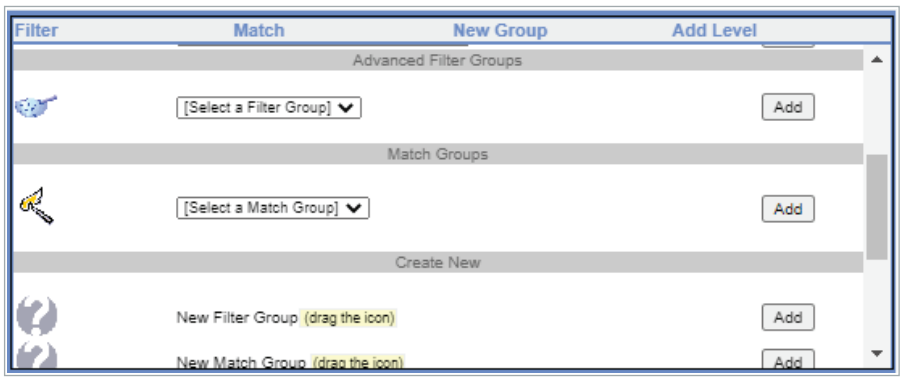


By clicking and dragging the filter icon, highlighted in the image above, it is possible to create the filters within the rule by dragging the icon onto the LHS or RHS of the rule. When the screen displays a yellow highlight, it means the user can let go of the click and the filter will drop onto the screen.



Once the icon is dropped it will be displayed in the column:

Scrolling down in the Filter and Match group selection area of the page will present the user with an 'Advanced Filter Groups' and 'Match Groups' section:



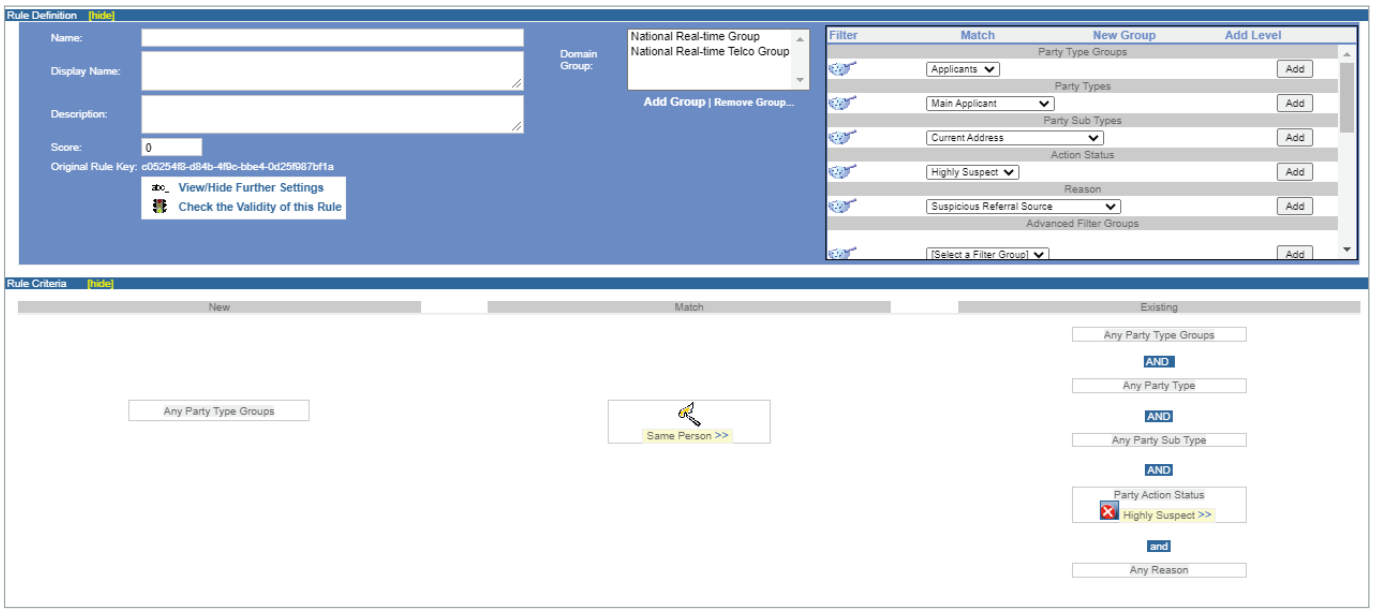
These filters and match groups are those that have been configured by Luminate FraudIQ Manager users to serve a specific purpose. Furthermore, they will have been purposefully chosen to be reusable across multiple rules, this means that if a group is used commonly it doesn't have to be created repeatedly across multiple rules.

These groups are sometimes referred to as 'global filters' or 'global match groups'.

10. Defining a Basic Rule

Putting all the aspects of the above section together, putting together a basic rule is simple.

For example, trying to create a rule such as 'Same Person as Highly Suspect', across National, would look like this:



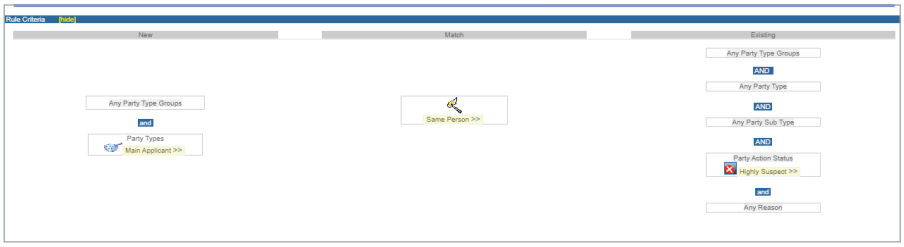
Using the format outlined above ...

Any incoming application that ...

- *Looks at any Party Type/Groups*
- and matches based on ... *Same Person*
- Where any existing application meets the ... *Action Status of Fraud*

If all the above conditions are met, the rule will fire

Building upon this further, if the enquiry in question had multiple Party Types/Groups on the incoming application (left most column) – adding an additional filter to target specific Parties to look like:



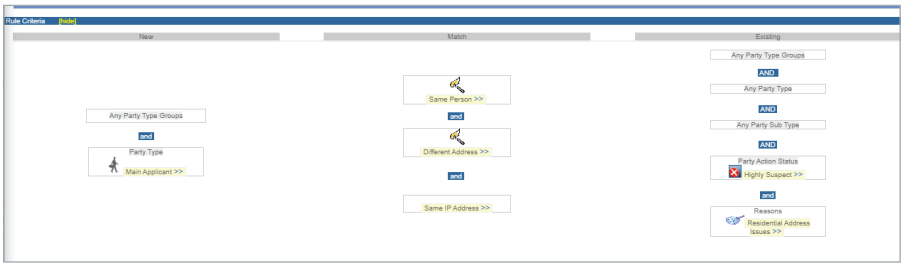
Any incoming application that …

- *Looks at Main Applicant only*
- and matches based on … *Same Person*
- Where any existing application meets the … *Action Status of Highly Suspect*

If all the above conditions are met, the rule will fire

This level of configurability allows the rules to be defined to target specific party types or sub party types which is particularly useful when trying to refine rulesets and referral rates.

Further building upon this concept, adding additional criteria to the match group and 'Existing' column (right hand side) can further increase the complexity of the rule.

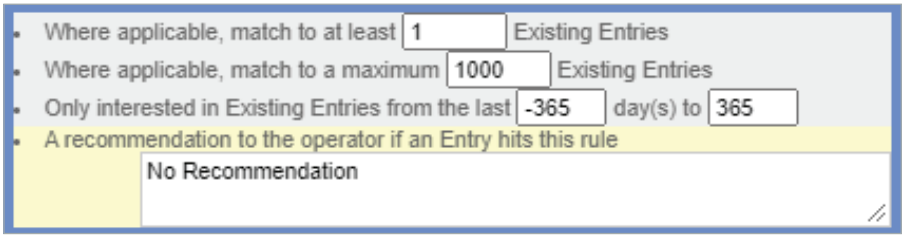


Any incoming application that …

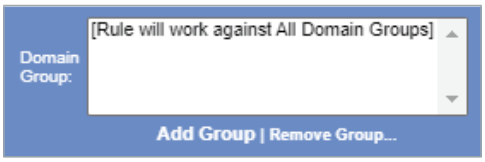
- *Looks at Main Applicant only*
- and matches based on … *Same Person AND Different Address AND same IP Address*
- Where any existing application meets the … *Action Status of Highly Suspect AND Reason code is Residential Address Issues*

If all the above conditions are met, the rule will fire

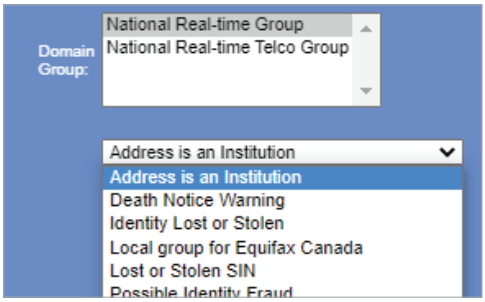
To further refine the rule, it may be worth reviewing the options available in the 'Further Settings' section. For example, if the rule should only look at existing enquiries that have a date within 1 year of the incoming enquiries' when evaluating whether to fire the rule:



To finalize the rule, ensuring that the rule only targets National data using the domain groups is required. This is done via the 'Domain Group' selector at the top of the Rule Definition block.



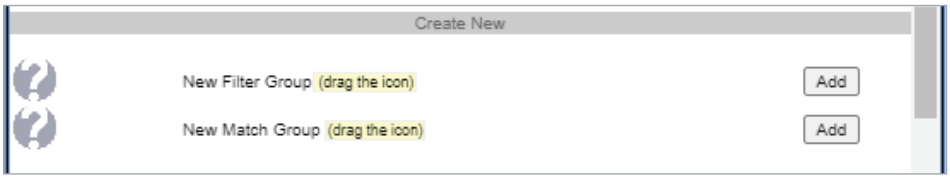
Clicking 'Add Group' provides a drop down of other domains that are available for selection when creating the rule. This list will provide all the available options for the domain that are available for the Luminate FraudIQ Manager system. This will include other local domains (if a multi-domain client) and separate domains within National. By default, these are 'National Luminate FraudIQ Manager – Finance' and 'National Luminate FraudIQ Manager – Insurance', but can also include other data sets, if the system is configured to match those data sets.



11. Creating New Filters or Match Groups

If a filter group or match group isn't available as part of the predefined lists – it may be necessary to define them as part of the rule building process. Whilst Equifax Canada sets up a standard list of criteria, this flexibility allows users to create unique filters and match groups in order to fully optimize their rule sets.

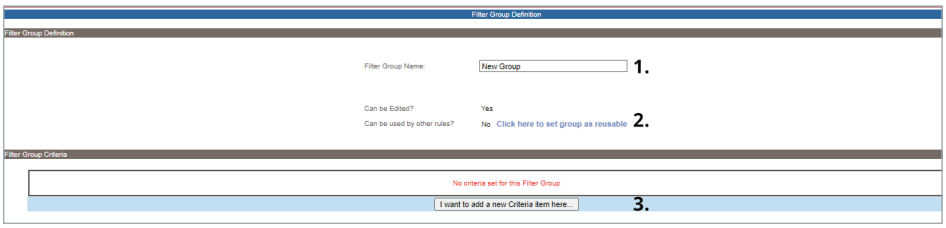
In order to do this – scroll down in the top right-hand setting box in the Rule Definition (top half) of a new rule to see the below:



Clicking and dragging the icon (the question mark symbol) into the required section of the rule i.e. 'New', 'Match' or 'Existing'.

For example, dragging the 'New Filter Group' icon, will present the following screen to the user:

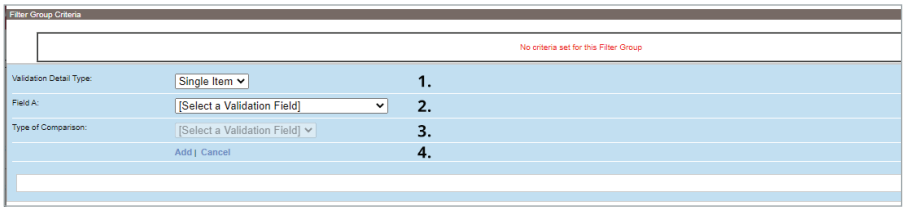
N.b. the screen for a new match group is the same but the terminology is different i.e. 'Match Group Definition'



1. **Define the Filter/Match Group Name** – This is the display name for the group that will be displayed as part of the rule build. If the rule is set to be shared, then this is the name that will be displayed in the drop-down lists. Best practice is to ensure that the group name is indicative of what the group is doing so that anyone that builds rules can easily understand what the group is doing – without having to drill into the group.
2. **Can be used by other rules?** – This option dictates whether the group is available as a shared group so that it can be used by other users when creating other rules. Whilst it is possible to create the groups individually each time, usually groups may be reused across multiple rules – this function allows the system to make groups available for reuse. Once the rule has been set to be shared for use in other rules, it can no longer be edited within this screen.
3. **I want to add a new Criteria Item here** – This button opens up the options to begin building the group criteria, this will be described in more detail below.

12. Defining Group Criteria

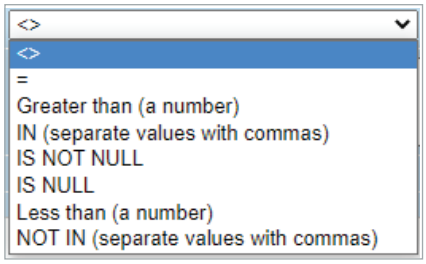
After selecting the 'I want to add a new Criteria Item here' button the user will be presented with the below screen:



1. **Validation Detail Type** – This has two options, for a normal rule build this will remain as 'Single Item'. The other option that may be available depending on the Luminate FraudIQ Manager set up is 'Dual Item' which is used for advanced rule building using transpositions etc. (this will not be detailed in this user guide)
2. **Field A** – This dropdown allows the user to select the data item that will have a comparison performed on it i.e. an item of data the group should be looking at specifically
3. **Type of Comparison** – Depending on the data type of the field that has been selected, such as an Integer or text, the type of comparison options will be reflected accordingly so that the user can define the comparison to undertake on the data item.

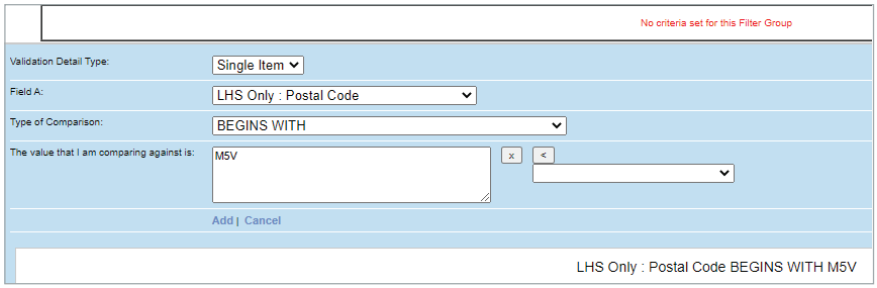
String Comparisons

The available list of operators that can be used against string i.e. text data items are shown below:

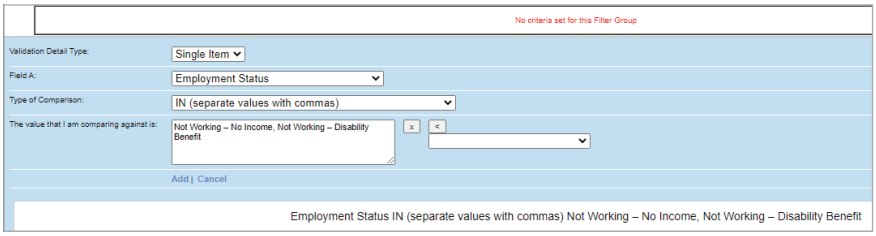


Examples

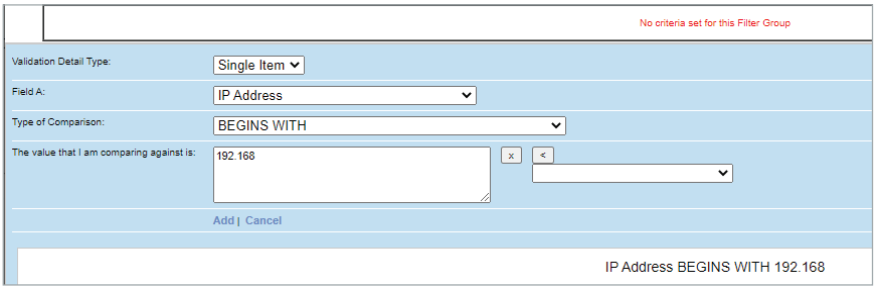
Postal Code BEGINS WITH M5V



Employment Status IN Not Working – No Income, Not Working – Disability Benefit

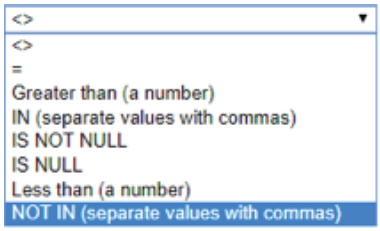


IP Address BEGINS WITH 192.168



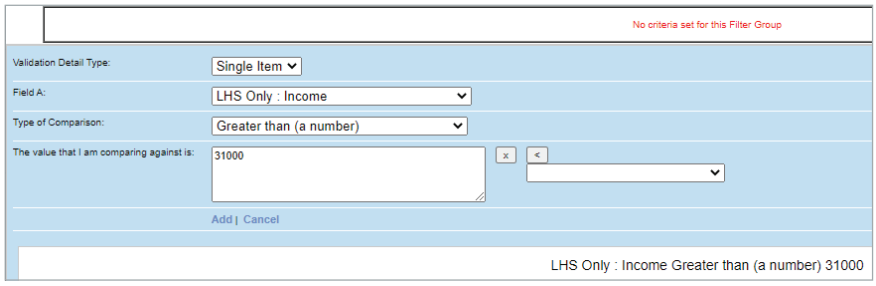
Numeric Comparisons

The available list of operators that can be used against numeric data i.e. numbers are shown below:

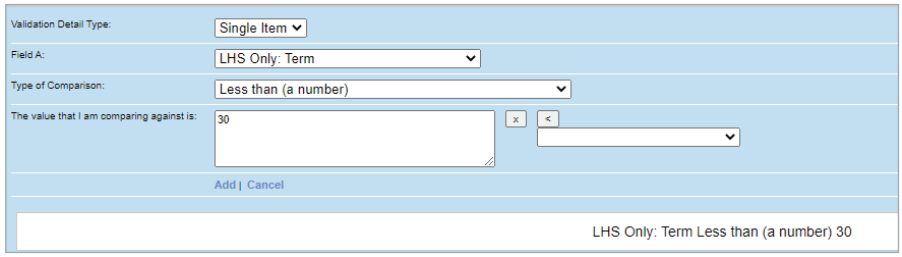


Examples

Income Greater than (a number) 31,000



Term of Loan less than (a number) 30



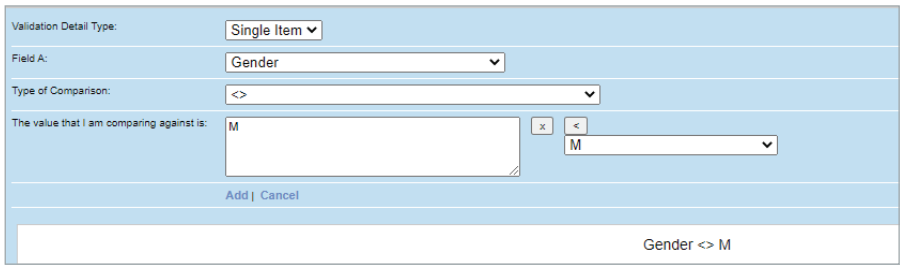
Selecting from a lookup list dropdown

For some data items, the values that are going to be used in the filter are made available in a dropdown list for selection.

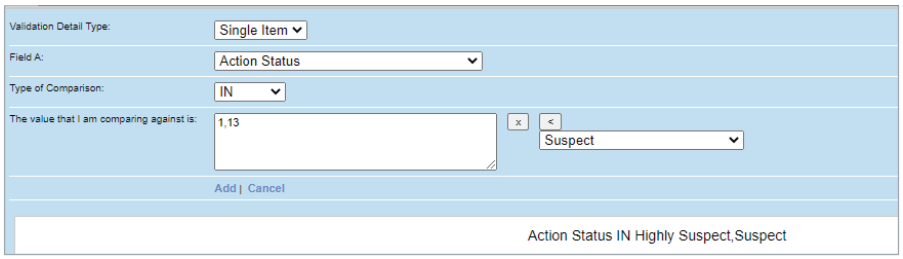
This is done by selecting the value from the dropdown and clicking the button shown below:

Examples

Gender = Male



Action Status IN Highly Suspect, Suspect



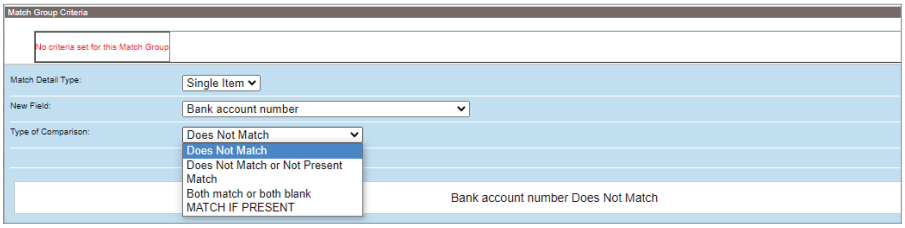
13. Enhanced Rule Functionality

The ERT engine provides additional functionality that is available for users to create more complex and refined rules in accordance with their organizational risk strategy.

Does Not Match or Not Present (match groups)

In order for a successful match to be generated, information has to be available on both the incoming and existing enquiry. Data has to be present.

ERT can now treat data not being present on either the incoming or existing enquiry as a 'do not match' argument. This helps remove gaps in data matching where data quality may be an issue.



Date Tolerances (match groups)

Being able to match enquiries that are within a certain time frame adds an additional layer of refinement above and beyond those available within the advanced settings of the rule build. This functionality can be applied to any date data if requested.

There are four options provided when using date tolerances:

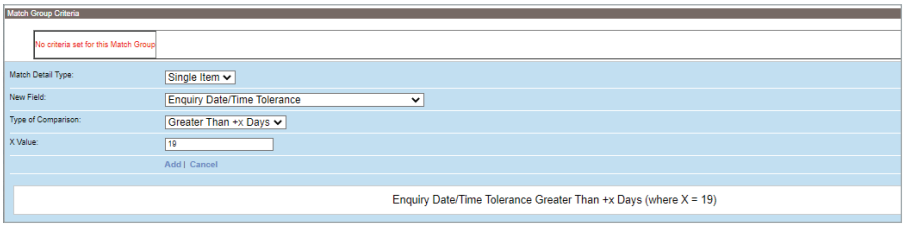
1. Greater than +X Days
2. Less than +X Days
3. Greater than -X Days
4. Less than -X Days

This allows the user to create a single timeframe …

For example, *claim date is less than 10 days from policy inception date*

…. or use them in combination to define a specific time period …

For example, *claim date is less than 31 days and greater than 19 days (between 20 – 30 days) from policy inception date*



Postal code wildcard (match groups)

The previous rule engine could support exact matching on postal codes only. The ERT engine allows for matching on postal codes using wildcards to refine the matching criteria accordingly. This is particularly useful when matching on postal code areas as opposed to specific postal codes. This functionality can be applied to any string data item if requested.

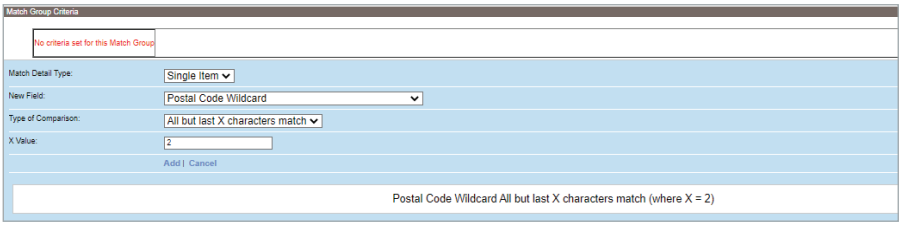
There is one option to select from for this comparison:

- All but last X characters match

Where X is the number of characters that should be ignored when doing the matching, shown in the example below.

For example:

Same person and postal code where all but last 2 characters of the postal code match



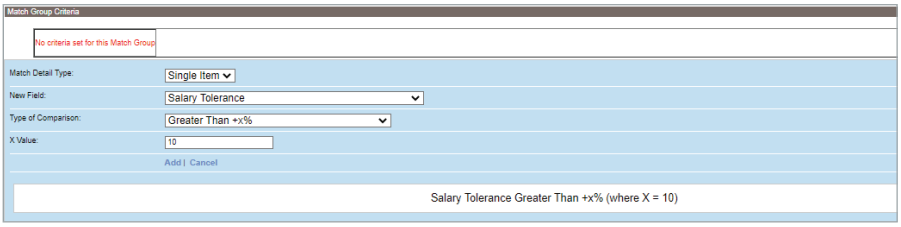
Numeric Tolerance (match group)

This function operates in a similar way to the date tolerance match groups. It is possible to compare the incoming enquiry to a matching enquiry and calculate the difference between a number, usually salary/income etc. This is particularly useful when trying to detect income manipulation across products/services or across enquiries as they're updated. This functionality can be made available for use against any number data item if requested.

There are four options to select from when doing numeric tolerance difference:

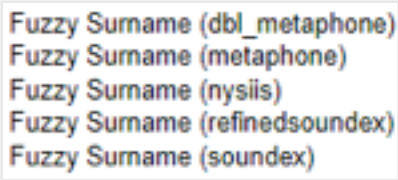
1. Greater than +X%
2. Less than +X%
3. Greater than -X%
4. Less than -X%

The four options can be used individually or in combination with each other in order to form boundaries, as some tolerance between a salary, for example, may be acceptable.



Fuzzy Matching (match groups)

ERT now supports fuzzy matching capabilities in order to help improve match rates across data. Currently the data items that support fuzzy matching are forename and surname. Equifax Canada will continue to review additional data items to see if there would be value to add fuzzy matching to other data items such as company name.



It is possible to select multiple or single phonetic functions in order to create the match criteria. This allows for further refinement of the rule to only match using certain matching functions.

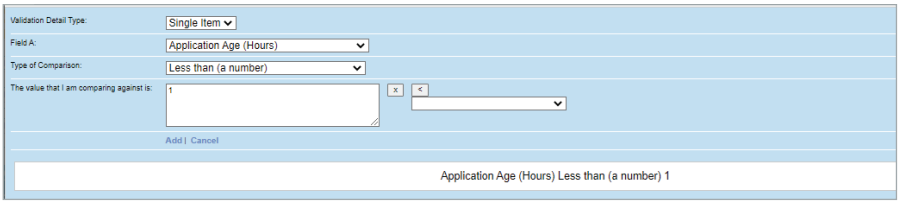
Rules can be built using these criteria in the same manner as you would a normal match group.

Application Age

It is possible to create a filter in order to define the age of application at the point of inception.

For example:

Same person as clear within 1 hour, matching to at least 3 enquiries



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