



The State University of New York

New MD Editor Series: Normalization Rules Overview

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Normalization- Roles

One of the following rules is required to create normalization rules:

- Cataloger
- Catalog Manager
- Catalog Administrator

The following role is required to create a normalization process:

- Catalog Administrator



Normalization (Norm) Rules

- Normalization (norm) rules are used to change and/or update metadata in MARC21 bibliographic (bib) and holdings records
- Normalization rules are created in the MD Editor
- Normalization rules require a normalization process for normalization rules to be run as a job or applied to import and integration profiles that import MARC records into Alma
- Normalization rules can only be applied to NZ records by the Network Zone Coordinator
 - When previewing a rule for a Network record, the following message is displayed: "*Note that the rules will be applied only to local fields when the normalization process is run.*"



Normalization Rules - Roles

Normalization rules can be applied to MARC records:

- In the MD Editor on individual records:
 - Applying norm rule changes from the norm rule preview when testing a norm rule on a MARC record
 - "Enhance the record" (***Editing Actions>Enhance the record***)
- To a set of records
- In import and integration profiles used to import MARC records into Alma

Normalization rules can be applied by a SUNY institution to:

- Institution Zone (IZ) only records
 - MARC21 bib records
 - MARC21 holdings records
 - Holdings records are inherently local and are managed at the institution level even when bib is linked to the NZ
- To add local extensions to Network Zone (NZ) linked records



Placement of Normalization Rules

- The placement of new rules is very important when creating normalization (norm) rules because it will impact what processes and functionality can use used:
 - The "Placement of new rules" should be configured to local when creating or duplicating norm rules
 - A Network (network icon) or a local (house icon) norm rule can be used on a bib record in the MD Editor, but a Network created norm rule cannot be used in a norm process
 - Local rules can only be used on IZ only records when using "Enhance the record" in the MD Editor
 - Network rules can only be used on NZ linked bib records when using "Enhance the record" in the MD Editor



Placement of Normalization Rules

To change the “Placement of new rules”:

1. Open the MD Editor
2. Click on the Records or Template tab
 - Currently Placement Options is not under the "New" menu when the Rules tab is selected
3. Click ***New>Placement Options***
4. Click the **local** radio button under "Placement of new rules"
5. ***Click Save***



Normalization Rule Steps

The following steps are required to use a normalization rule on a set of records as a job, in an import or integration profile, and/or "Enhance the record" in the MD Editor:

1. Create a local norm rule
2. Test the norm rule in the MD Editor
3. Create a norm process
 - MARC21 bib
 - MARC21 holdings
4. Apply the norm process to:
 - A set of records
 - An import or integration profile
 - A bib record In the MD Editor using "Enhance the record"



Normalization Rule Syntax

- Normalization (norm) rules are written using drools logic
- Normalization rules contain:
 - A rule or multiple rules
 - At least one condition
 - Conditions are applied to record elements in a MARC record such as fields, indicators, subfields, field/subfield content
 - Conditions can be defined at the entire rule level (WHEN), or at a specific action level (IF)
 - An action or actions
 - Actions are what tell the rule to do to a MARC21 bib or holdings record

The screenshot shows a web-based interface for creating or editing a rule. At the top, there are navigation buttons: 'Save', 'New', 'Rule Actions', and 'Search & Browse'. Below this is a header for the rule: 'NEW - Add 590 Note with local Extension*'. A note explains that the rule name is in quotes and tags and subfields are separated by a pipe character. Below the header are three tabs: 'Rule', 'Normalization', and 'Drool'. The main area contains the following Drools rule code:

```
rule "590|a|LOCALNOTE|9|local"  
when  
not exists "590.a.Local note\\" AND not exists "590.9.local"  
then  
addField "590.a.Local note\\"  
addSubField "590.9.local"  
end
```

Annotations with arrows point to specific parts of the code:

- A red arrow points to the rule name: "Rule name is in 'quote' and tag and subfields are separated by a | (pipe)".
- A purple arrow points to the 'AND' operator: "A rule can have one or more Conditions that need to be met for the actions to be applied.".
- A green arrow points to the 'AND' operator: "Boolean terms are used between conditions. AND and OR can only be used".
- A blue arrow points to the 'addField' and 'addSubField' lines: "A rule can have more than one action. Actions will be applied in the order they appear in the rule".
- A red arrow points to the 'end' keyword: "All rules are complete with 'end' after the action(s)".

Normalization Rule Syntax

Norm Rule Format & Order	Notes
<ul style="list-style-type: none">• rule (followed by name of rule)• when• Condition or Conditions separated by Boolean terms• then• Action(s)• end	<ul style="list-style-type: none">• All rules must start with rule in the first line• Rule name must be in “quotes”• The rule name cannot use delimiters (\$\$), instead use a pipe ()• “Quotes” go around the MARC record information in the condition and action• When, then, and end must be on their own lines• Limit of 200 Boolean terms can be used in a rule• Actions are performed in the order they appear in the rule• Priorities can be applied when a rule contains multiple rules that apply actions to the same MARC fields

Normalization Rule Conditions

Condition	Applied to Record Elements
containsScript	Fixed list of languages
exists	Data fields: <ul style="list-style-type: none">• MARC fields/subfield• Not applied to fixed fields
existsControl	Control fields (fixed fields): <ul style="list-style-type: none">• LDR• 00X fields
not exists	Data fields: <ul style="list-style-type: none">• MARC fields/subfield• Not applied to fixed fields
not existsControl	Control fields (fixed fields): <ul style="list-style-type: none">• LDR• 00X fields
existsMoreThanOnce	Data fields: <ul style="list-style-type: none">• MARC fields/subfield• Not applied to fixed fields
TRUE	True is a condition used at the record level <ul style="list-style-type: none">• Is an absolute condition• "If" statements in the action are used to limit when the action is applied



Normalization Rule Elements

- Elements are used in conditions and actions
- Control (fixed) fields and Data fields have different elements

Control Field Elements	Definition	Notes
Tag (MARC Fixed Field)	Three-letter or three-digit number assigned to fixed fields <ul style="list-style-type: none">• LDR and 00X fields	<ul style="list-style-type: none">• The condition and action element begins with the tag• A beginning "quote" precedes the Tag• "Quotes" surround the tag if the MARC Field is the only record element• * wildcard used to find any number in the 2nd and 3rd number in the tag
Position	The numeric value for the position in the control field <ul style="list-style-type: none">• Encoding level in the LDR is in position 17• Date 1 in MARC 008: is in position (7-10) -use the first number as the position	<ul style="list-style-type: none">• Control field and position are separated by a period (.)• The position and length of a control field are enclosed in {brackets}
Length	The length is the number of characters in the position <ul style="list-style-type: none">• Encoding Level 17 length would be 1 because only one value is used to define the field• Date 1 in MARC 008 length would be 4 because the date takes 4 positions	<ul style="list-style-type: none">• Control field, position, and length are separated by a period (.)• The position and length of a control field are enclosed in {brackets}
Value	The content of the control field and position <ul style="list-style-type: none">• Encoding level of "I" in the LDR is the value	<ul style="list-style-type: none">• Control field, position, length, and value are separated by a period (.)



Normalization Rule Elements

Data Field Elements	Definition	Notes
MARC Tag (MARC field)	<ul style="list-style-type: none"> Three-digit number assigned to each MARC field 	<ul style="list-style-type: none"> The condition and action element begins with the tag A beginning "quote" precedes the Tag "Quotes" surround the tag if the MARC Field is the only record element * wildcard used to find any number in the 2nd and 3rd number in the tag
Indicator	<ul style="list-style-type: none"> Are the two digits following the MARC tag 1st indicator tells the computer how to process the field 2nd indicator gives information about the content of the field 	<ul style="list-style-type: none"> Indicators are surrounded by {brackets} A comma is used between the 1st and 2nd indicator * wildcard can be used to indicate any indicator A period (.) separates the MARC field and the indicator
Subfield	<ul style="list-style-type: none"> Contains information about the field Breaks the field into machine readable sections Subfield codes is an alphabetic code that specifies the type of information in the subfield 	<ul style="list-style-type: none"> A period (.) is between the MARC field, indicator, and subfield
Value	<ul style="list-style-type: none"> Content contained in the subfields 	<ul style="list-style-type: none"> A period (.) is between the MARC field, indicator, subfield and value Values are case specific Values are exact Use * for values that may have different spelling or punctuation



Normalization Rule Element Examples

Record Element	Example in a Condition	Example in an Action
Control Field	existsControl "007"	<ul style="list-style-type: none"> changeControlField "007" to "008" removeControlField "003"
Control Field_Position_Length	existsControl "007.{0,4}"	<ul style="list-style-type: none"> N/A – requires a value
Control Field_Position_Length_Value	existsControl "007.{0,4}.v"	<ul style="list-style-type: none"> replaceControlContents "007.{0,1}. " with "v"
Control Field_Value	not existsControlField "007.vd cvaizm"	<ul style="list-style-type: none"> addControlField "007.vd cvaizm"
MARC Field	exists "986"	<ul style="list-style-type: none"> removeField "986"
MARC Field_Indication	exists "650.{*,0}"	<ul style="list-style-type: none"> N/A - requires a subfield and value
MARC Field_Indication_Subfield	not exists "650.{*,0}.a"	<ul style="list-style-type: none"> N/A – requires a value
MARC Field_Indication_Subfield_Value	not exists "650.{*,0}.a.Graphic novels"	<ul style="list-style-type: none"> addField "650.{ ,1}.a.Graphic Novel"
MARC Field_Subfield	exists "100.a"	<ul style="list-style-type: none"> replaceSubFieldContents "245.c" with "100.a"
MARC Field_Subfield_Value	not exists "650.a.Graphic novels"	<ul style="list-style-type: none"> addField "650.a.Graphic Novel"



Normalization Rule Actions

- Actions tell the rule what to do when the conditions are met
- Actions can contain “if” statements
- Actions should **Only** be applied to local fields for Network (NZ) linked records
 - Some actions will not be used in NZ linked records
- IZ only records have more flexibility on what fields actions can be applied to



Normalization Rule Actions

Rules Actions	Definition	Examples
changeControlField	<ul style="list-style-type: none"> Changes the MARC tag for control fields only Does not change values of the control fields NOT USED IN SUNY for NZ linked records 	<p>changeControlField "<Fixed Field MARC Tag>" to "<New Fixed Field Tag>"</p> <p>changeControlField "007" to "008"</p>
changeField	<ul style="list-style-type: none"> Changes the MARC tag for data fields Does not change indicators, subfields, or values ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeField "<MARC Tag>" to "<New MARC Tag>"</p> <p>changeField "500" to "505"</p>
changeSubField	<ul style="list-style-type: none"> Changes the subfield only Will change all duplicate subfields to the new subfield Does not change the value in the subfields ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeSubField "<MARC Tag>.<Subfield>" to "<New Subfield>"</p> <p>changeSubField "597.a" to "b"</p>
changeSubFieldOnlyFirst	<ul style="list-style-type: none"> Changes the first subfield only Will not change duplicate subfields Does not change the value(s) of the first subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeSubFieldOnlyFirst "<MARC Tag>.<Subfield>" to "<New Subfield>"</p> <p>changeSubFieldOnlyFirst "597.a" to "b"</p>



Normalization Rule Actions

Rules Actions	Definition	Examples
changeSubFieldExceptFirst	<ul style="list-style-type: none"> Changes all subfields except the first subfield with duplicate values Does not change the values in all subfield except the first ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeSubFieldExceptFirst "<MARC Tag>.<Subfield> to "<New SubField>"</p> <p>changeSubFieldExceptFirst "597.a" to "b"</p>
changeFirstIndicator	<ul style="list-style-type: none"> Changes the value of the first indicator only ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeFirstIndicator "<MARC Tag>" to "<Value>"</p> <p>changeFirstIndicator "597" to "0"</p>
changeSecondIndicator	<ul style="list-style-type: none"> Changes the value of the second indicator only ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>changeSecondIndicator "<MARC Tag>" to "<Value>"</p> <p>changeSecondIndicator "597" to " "</p> <ul style="list-style-type: none"> The space between the "quotes" represents a blank
combineFields	<ul style="list-style-type: none"> Combines duplicate MARC fields Excludes copying subfields after the first occurrence of the excluded subfield(s) have been copied ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>combineFields "<MARC Tag>" excluding "<Subfield>"</p> <p>or combineFields "<MARC Tag>" excluding "<Subfield,Subfield>"</p> <p>combineFields "597" excluding "c"</p>



Normalization Rule Actions

Rules Actions	Definition	Examples
addControlField	<ul style="list-style-type: none"> Adds a fixed field to a MARC record Requires the Control tag, indicators, and value to be part of the action NOT USED IN SUNY for NZ linked records 	<pre>addControlField "<Fixed Field Tag>.<Value>"</pre> <pre>addControlField "007.vd cvaizm</pre> <ul style="list-style-type: none"> The space in the "quotes" of the value represents a blank
addField	<ul style="list-style-type: none"> Adds the MARC field Requires indicators or subfields and a value to be a part of the action in order to add the MARC field ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>addField "<MARC Tag>.{<Indicator 1,Indicator 2>}.<Subfield>.<Value>" or addField "<Marc Tag>.<Subfield>.<Value>"</pre> <pre>addField "597.{1, }.c.Gift</pre> <pre>addField "597.c.Gift</pre>
addSubField	<ul style="list-style-type: none"> Adds a subfield and value to an existing MARC field Requires the MARC tag, subfield, and value to be part of the action ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>addSubField "<MARC Tag>.{<Indicator 1,Indicator 2>}.<Subfield>.<Value>" or addSubField "<MARC Tag>.<Subfield>.<Value>"</pre> <pre>addSubField "597.{*,*}.9.local"</pre> <pre>addSubField "597.9.local"</pre>
addSystemNumber	<ul style="list-style-type: none"> Adds the system number from one field to another field Requires ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>addSystemNumber "<MARC Tag where the System Number will be added><Subfield to place the System Number>" from "<MARC Tag where the System Number is being copied from>" prefixed by "<MARC Tag with the Prefix>"</pre> <pre>addSystemNumber "035.a" from "001" prefixed by "003"</pre>



Normalization Rule Actions

Rules Actions	Definition	Examples
copyField	<ul style="list-style-type: none"> • Copies the field to another field • Creates a separate field if it already exists • The original field, subfield, and value are retained • Adding subfields will only copy the defined subfield to the new subfield • Requires removeField to remove the original field • ONLY use for local MARC fields for NZ Linked records • Can be used with IZ ONLY records 	<p>copyField "<MARC Tag>" to "<MARC Tag>" or copyField "<MARC Tag>.<Subfield>" to "<MARC Tag>.<Subfield>"</p> <p>copyField "597" to "590" copyField "597.c" to "590.a"</p>
removeControlField	<ul style="list-style-type: none"> • Removes all occurrences of the fix field • Alma will automatically replace 008 if it is removed, suggest to immediately adding an 008 in the rule after removing it • NOT USED IN SUNY for NZ linked records 	<p>removeControlField "<Fixed Field Tag>"</p> <p>removeControlField "003"</p> <p>removeControlField "008" addControlField "008.180620s2019 ncu a b s001 0beng c"</p> <ul style="list-style-type: none"> • The spaces represents a blank
removeField	<ul style="list-style-type: none"> • Removes all occurrences of the field • ONLY use for local MARC fields for NZ Linked records • Can be used with IZ ONLY records 	<p>removeFied "<MARC Tag>"</p> <p>removeField "986"</p>



Normalization Rule Actions

Rules Actions	Definition	Examples
removeSubField	<ul style="list-style-type: none"> Removes all occurrences of the subfield from the indicated MARC field ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>removeSubField "<MARC Tag>.<Subfield>"</pre> <pre>removeSubfield "590.b"</pre>
replaceControlContents	<ul style="list-style-type: none"> Replaces fixed field values Replaces only fixed field values that match the action NOT USED IN SUNY for NZ linked records 	<pre>replaceControlContents "<Fixed Field Tag>.{<Position,Length>}.<Value>" with "<New Value>"</pre> <pre>replaceControlContents "LDR.{17,1}.I" to " "</pre> <ul style="list-style-type: none"> The space represents a blank
replaceContents	<ul style="list-style-type: none"> Replaces all occurrences of the matching values with the new value ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>replaceContents "<MARC TAG>.<Subfield>.<Value>" with "<New Value>"</pre> <pre>replaceContents "597.c.Gift" with "Purchase"</pre>
replaceContentsOnlyFirst	<ul style="list-style-type: none"> Replaces the contents of the first matching value only ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<pre>replaceContentsOnlyFirst "<MARC Tag>.<Subfield>.<Value>" with "<New Value>"</pre> <pre>replaceContentsOnlyFirst "592.a.Thesis" with "Dissertation"</pre>



Normalization Rule Actions

Rules Actions	Definition	Examples
replaceContentsExceptFirst	<ul style="list-style-type: none"> Replaces matching value occurrences for all but the first matching value ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>replaceContentsExceptFirst "<MARC Tag>.<Subfield>.<Value>" with "<New Value>"</p> <p>replaceContentsExceptFirst "590.a."committed to retain" with "condition reviewed"</p>
replaceSubFieldContents	<ul style="list-style-type: none"> Replaces all occurrences of the subfield with the contents of the defined subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>replaceSubFieldContents "<MARC Tag>.<Subfield>" with "<MARC Tag>.<Subfield>"</p> <p>replaceSubfieldContents "500.a" with "590.b"</p>
prefix	<ul style="list-style-type: none"> Adds a prefix to the value of a subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>prefix "<MARC Tag>.<Subfield>" with "<Value>"</p> <p>prefix "035.b" with "(OCoLC)"</p>
prefixSubField	<ul style="list-style-type: none"> Adds the prefix of the value in one subfield with the prefix value of another subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>prefixSubField "<MARC Tag>.<Subfield>" with "<Source MARC Tag>.<Source Subfield>"</p> <p>prefixSubField "035.b" with "035.a"</p>



Normalization Rule Actions

Rules Actions	Definition	Examples
suffix	<ul style="list-style-type: none"> Add a suffix to the end of a value ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	suffix "<MARC Tag>.<Subfield>" with "<Value>" suffix "953.a" with "-NEW"
suffixSubField	<ul style="list-style-type: none"> Adds the suffix of the value in one subfield with the suffix value of another subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	suffixSubField "<MARC Tag>.<Subfield>" with "<Source MARC Tag>.<Source Subfield>" suffixSubField "935.a" with "035.a"
splitSubField	<ul style="list-style-type: none"> Splits the subfield to the new MARC Tag/subfield based on the action The original field remains intact The whole subfield will be copied if the "to" subfield does not exist The "to" part of the action is not required The "to" statement will create a field/subfield for each occurrence of the defined punctuation Indicators or optional addSeq will place the order of the of the split subfields addSeq is optional ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	splitSubField "<MARC Tag>.<{Indicator 1,Indicator 2}>.<Subfield>.<Punctuation>" to "<MARC Tag>>.<{Indicator 1,Indicator 2}>.<Subfield>" addSeq "<Subfield>" splitSubField "520.a.," to "590.a" splitSubField "520.a.," to "590.a" addSeq "8"



Normalization Rule Actions

Rules Actions	Definition	Examples
correctDuplicateSubfields	<ul style="list-style-type: none"> Keeps the first occurrence of the duplicate subfield Deletes the subsequent occurrences of the duplicate subfield ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>correctDuplicateSubfields "<MARC Tag>" "<Subfields>"</p> <p>correctDuplicateSubfields "690" "z"</p> <p>correctDuplicateSubfields "690" "x,y,z"</p>
moveSubfieldsToTheEndOfField	<ul style="list-style-type: none"> Moves the subfield to the end of the field Removes other occurrences of the same subfield More than one subfield moved to the end, they will appear in the order of the action Subfields do not contain commas between them "If" statements are not supported with this action ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>moveSubfieldsToTheEndOfField "<MARC Tag>" "<Subfield or Subfields>"</p> <p>moveSubfieldsToTheEndOfField "690" "z"</p> <p>moveSubfieldsToTheEndOfField "690" "z2"</p>
correctDuplicateFields	<ul style="list-style-type: none"> Removes duplicate fields First occurrence is retained, and subsequent duplicate fields are deleted Commas are used between the MARC tags in the action ONLY use for local MARC fields for NZ Linked records Can be used with IZ ONLY records 	<p>correctDuplicateFields "<MARC Tag>,<MARC Tag>"</p> <p>correctDuplicateFields "650,655"</p>



Wildcards and Special Characters Used In Indication Rules

Wildcards/Special Characters	Definition
# (hash tag)	<ul style="list-style-type: none">• # (hash tags) are used at the beginning of a comment line.• The rule ignores lines starting with a # (hash tag)• Do not use # (hash tags) for blank indicators
* (asterisk)	<ul style="list-style-type: none">• (asterisk) is used to match a string of any length or value including fields, indicators, subfields, and values• * (asterisk) can be used before, after, or both to match a string
\ (backslash)	<ul style="list-style-type: none">• \ (backslashes) are used to replace content, except when search for text string with a period at the end• \ (backslash) must be used in odd numbers, except when searching for a period at the end of a text string• If the value of a subfields ends with a period (.), use two backslashes to match the period, \\.
. (period)	<ul style="list-style-type: none">• . (period) is used between fields, indicator, subfields, value (text string)
"" (quotation marks)	<ul style="list-style-type: none">• Rules are written between "quotes"• Record elements in conditions are written between "quotes"• Actions are enclosed in "quotes"
Boolean Operators	<ul style="list-style-type: none">• AND and OR can be used between conditions in indication rules
Spaces	<ul style="list-style-type: none">• Spaces are used to represent a blank which are typically used in Fixed fields in rules• # (hashtags) represent blanks in the MARC record, but a # (hashtag) in a rule is used for comments and will be ignored by the rule<ul style="list-style-type: none">○ Example; replaceControlContents "LDR.{17,1}.I" with " "
(Pipe)	<ul style="list-style-type: none">• Indication rules cannot contain delimiters (\$\$) for subfields in the rule name• It is recommended to use another character to represent a delimiter, such as (pipe) in the rule name• Pipes cannot be used in conditions or actions



SUPPORTING DOCUMENTATION

SUNY Library Shared Services
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Supporting Documentation

- SUNY
 - [SUNY Normalization Rules LibGuide](#)
- Ex Libris
 - [Working with Normalization Rules](#)
 - [Normalization Rules Examples](#)

