# Business Rules Taxonomy and a Standardized Syntax
## (Listing Maintenance focus)

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## RESO R & D Business Case Worksheet

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|---|---|
| **Title:** | MLS Business Rules |
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| **Date:** | 11/15/2010 |
| **Summary:** | Enhance the RETS validation functions to encompass all MLS business rules. Outreach to MLSs to encourage business rule documentation. Vendors may need to improve capabilities to facilitate this. |
| **Stakeholders:** | MLS Vendors, MLS Executives, MLS Staff |
| **Value Proposition:** | MLSs with well documented business rules can move to a new MLS system, add additional front ends, or integrate other software that requires use of business rules - without manual work and innacurate results. This will result in smoother conversions, more software choice, and enhanced competition and innovation. |
| **Detailed Synopsis:** | To facilitate the update transaction, field level |

6 What fields should be auto
Is an agent allowed to ch
them? There is no mechanism to
7 auto-pop.
8 Should the system note if a
9 Is listing auto-population re
Is square footage allowed
10 source to be given? For ex
Is lot size allowed to be en
11 For example: tax records,
What are the rules as to v
12 markup prohibited? Is cont
13 Can listings be created in a
14 Define auditing – who, wha
Which fields, when chang
15 what categories do each fa
16 What fields are tracked for
Should listing history alwa
17 changed?
18 What data is shown in the
19 What roles can create new

BUSINESS CASE

**It's six years later and:**
- MLSs are still manually describing BR to new vendors
- Some MLS vendors (and individual MLSs) have developed nice BR engines. *Some* can *export* BR - but typically the export is **incomplete** even for listing maintenance – and ***very* incomplete** in the grand scheme of *all* MLS BR!

*None of the existing MLS BR Engines –*
*let alone BR consuming platforms -*
*"talk the same language" and*
*can <u>exchange</u> <u>BR</u> <u>data</u>.*
*Hence the need for RESO standards!*

**MLS Business Rule Breakdown**:
1.   Back-end
     a.   Listing Maintenance (validation)
     b.   Transformation in MLS / Repository
2.   Front-end display and uses

**The focus has been on #1 for now. The process**:
- **FULLY UNDERSTAND** entire scope *and* complexities, via creation of "taxonomy" – a business rule breakdown.
  - Created initial taxonomy documentation                    (12-2015)
  - Collected feedback via reso.org                           (1-2/2016)
  - Interviews with some MLS vendors                          (2-3/2016)
  - Obtain many MLSs' BR for analysis                         (2-3/2016)
  - Refinement of initial taxonomy                            (3/2016)
- **CONSIDER** Existing Standards                             (2-3/2016)
- **Syntax Drafting** - Collab w/ stakeholders                (3-4/2016)
- **Engage R&D sub-group**                                    **(when formed)**

- No need to entirely re-invent the wheel
- MANY BR standards were looked at for consideration and inspiration, including **but not limited to**:
  - Avro
  - Schematron
  - Easyb
  - Xpath
  - BRML (deprecated)
  - RuleML
  - Business Rule Language Definition Framework (BRLDF)
  - Business Action Language (BAL)
  - XPDL
  - Node-rules
  - JSON Rules Language
  - **RuleSpeak**
  - **Semantics of Business Vocabulary & Business Rules (SBVR)**

- **Selection Criteria:**
  - Understandable by non-technical stakeholders
  - Software language and platform agnostic
  - Easy to learn and use
  - Detailed enough to be unambiguous – can be translated to an easily interpretable form … and software code.
- **Results:**
  - The current proposal uses **SBVR** (http://omg.org) **compliant RuleSpeak**® (http://www.rulespeak.com) to create Structured English expressions. **RuleSpea**k is longstanding, well-adopted set of guidelines for expressing business rules in concise, business-friendly fashion. It's a set of best practices. **The proposal focus is creating example syntaxes** for MLS BRs.
  - A set of shorthand syntax expressions of the Structured English is *also* proposed.

**It's *important* to think clearly about business rules in order to document them correctly!**

The following tips are from "Basic RuleSpeak Guidelines"
by Business Rule Solutions, LLC:

**Business Rules must not be inscrutable!**

- *Sample from the restaurant menu:* "These items may or may not be available at all times, and sometimes not at all and other times all the time."

**INCONCEIVABLE!**

# Rules should be "declarative", _not_ <u>procedural language</u>

**NO:** "If the news is bad, then shoot the messenger."
**YES:** "The messenger of bad news must be shot."
_**Still, not great, as business rules go!**_
Does the messenger need to be shot _dead_?
Does the messenger actually need to be shot, or
  is just killing him sufficient?

- Pick a clear <u>subject</u>, <u>then</u> use  a rule <u>key word (**must, only**</u>) as fast as possible. Put the heavy lifting ("if" <u>condition</u>) toward the end of the sentence. _IT people / programmers usually hate this but it makes things much more readable to business people._

# Finally: enforcement and evaluation are separate concerns

A **Business Rule should express only the 'what'**, _**not**_ anything about:

- _**How**_ it is to be evaluated or enforced.
- _**Where**_ it is to be evaluated or enforced.
- _**Who**_ is responsible for evaluating or enforcing it.
- _**When**_ (what events cause) it to be enforced.
- **Why** it needs to be evaluated or enforced.

**40 rule types in the taxonomy converted to 12 (with variations):**

1. **ALLOW_EDIT** – Whether a user can alter data field(s)
- Syntax 1: Single Field OR Single Listing,
- Syntax 2: Group of fields OR Group of Listings

2. **REQUIRE_VALUE** - Whether a field must have a value
- Syntax 1: Single field   • Syntax 2: Group of fields

3. **REQUIRE_EMPTY** - Whether a field is required to have no value
- Syntax 1: Single field   • Syntax 2: Group of fields

4. **DERIVE_VALUE**  - How a data field value is derived
- auto-population from another source
- computed [i.e. Days On Market], or
- system generated [i.e. database key])

5. **CONSTRAIN_VALUE** - A field constraint that must be met by …

• 1: User Enters Data - Specific value, Value Offset

• 2: User Enters Data – Value Range

• 3: User Enters Data – Inclusion/Exclusion List or Pattern

• 4: User Enters Data - Prohibited values

• 5: *User Chooses from List* - Inclusion/Exclusion List or Pattern

6. **CONSTRAIN_DATE_TIME** - A field constraint that must be met by a specific date/time constraint, with or without offset.

• Syntax 1: Specific date, or Date Offset, Syntax 2: Date Range

MOST MLS BUSINESS RULES ARE ADDRESSED BY THE ABOVE **SIX** RULE TYPES AND THEIR VARIATIONS, THEN…

**7. MEDIA**

- Ensures media can be accepted – file types and size, pixels for images.

**8. ALLOW_CROSSLIST** – Cross-listing rules

- Cross Listing - Multiple listing types for same property

**9. CLONE_LISTING**

- Clone field values and media from existing listing into new listing

**10. DELETE_LISTING**

- Manual listing deletion

**11. PREVENT_DUPLICATE_LISTING**

- Prevent duplicate listing

*Finally, a rule about what happens in a repository; not input:*

**12. AUTO_UPDATE**

- Time triggered listing status change

## ENFORCEMENT

**ENFORCEMENT** = {**STRICT | WARNING | OVERRIDE**}

  // Strict: "This rule is strictly enforced"

  // Warning: "Rule may be overridden with a warning"

  // Override: "Rule can be overridden with no warning"

**[ALWAYS | IF <condition> ENDIF]**

**..**

  // The enforcement statement may be repeated.

**For example:**

– **ENFORCEMENT** = WARNING IF UserRole INLIST ("MLS STAFF", "SUPERUSER") ENDIF

– **ENFORCEMENT** = STRICT IF UserRole INLIST ("AGENT", "BROKER") ENDIF

**RULE SCOPE**

"Applies to listings of transaction type X and Property Type Y"

- **Listing Transaction Type:** <u>ALL</u>, Sale, Lease, etc.
- **Listing Property Type:** <u>ALL</u>, Residential, Commercial, etc.
- **Listing Property SubType:** <u>ALL</u>, SFR, Mobile, Condo, etc.

  **SCOPE** (

  ListingTxnType=ALL,

  ListingPropertyType=INLIST (Residential, Lease),

  ListingPropertySubType=ALL)


**TRIGGERING**

"This rule is triggered when the listing is [saved]."

- **TRIGGER** (<u>OnSave</u> | OnInput)

ALLOW_EDIT

**Structured English:**
Field "Must Accept User Input"
Listing "Must Accept User Input"

**Interpretable Form:**
ALLOW_EDIT
{ FIELD *<aFieldName>* | LISTING *<aListing>* }
[ YES | NO ]
[ ALWAYS | IF *<condition>* ENDIF]

**PublicRemarks must accept user input.**
 ALLOW_EDIT PublicRemarks

**ListingId must not accept user input.**
 ALLOW_EDIT  ListingId NO

**CloseDate must accept user input only if MlsStatus is Sold.**
 ALLOW_EDIT CloseDate YES IF MlsStatus="Sold"

*Field Group level example:*

**Each of the following fields must accept user input if CommissionYN is "Yes": BuyerAgencyCompensation. SubAgencyCompensation, and TransactionBrokerCompensation.**

ALLOW_EDIT FIELDGROUP CommissionFieldGroup
IF CommissionYN = "Y" ENDIF

DEFINITION
CommissionFieldGroup = INLIST ("BuyerAgencyCompensation", "SubAgencyCompensation", "TransactionBrokerCompensation")
ENDDEFINITION

REQUIRE_VALUE

**Structured English:**
Field must have a value.

**Example:** Field GarageSpaces must have a value if GarageYN has a value of "Y".

 **Interpretable Form:**
REQUIRE_VALUE
FIELD *<aFieldName>*
[ <u>ALWAYS</u> | IF *<condition>* ENDIF ]
[ DEFAULT (*<aValue>*) ]

**Example:** REQUIRE_VALUE FIELD GarageSpaces
REQUIRED IF GarageYN = "Y" ENDIF

**Structured English:**
Field, out of this group of fields, must have a value.

**Interpretable Form:**
REQUIRE_VALUE
FIELDGROUP *<aFieldGroup>*
[ ALWAYS | IF *<condition>* ENDIF ]
[ MINCOUNT [ 1 | *<aInteger>* ] ]
[ MAXCOUNT [ MAX | *<aInteger>* ] ]

DEFINITION { *<aFieldGroup>*} ENDDEFINITION

## Structured English:

Exactly 1 data field in the following list must have a value if CommissionYN has the value "Yes":
BuyerAgencyCompensation
SubAgencyCompensation
TransactionBrokerCompensation

## Interpretable Form:

REQUIRE_VALUE
FIELDGROUP CommissionFieldGroup
IF CommissionYN = "Y"  ENDIF
MINCOUNT 1 MAXCOUNT 1

DEFINITION  CommissionFieldGroup =
INLIST (BuyerAgencyCompensation,  SubAgencyCompensation,
TransactionBrokerCompensation)
ENDDEFINITION

# Other Rule Examples

ReserveListPrice must have no value if SpecialListingConditions is not equal to "Auction"

**REQUIRE_EMPTY** FIELD ReserveListPrice
IF SpecialListingConditions NOTEQUAL "Auction" ENDIF

Autopopulate the value for ParcelNumber. CoreLogic is the data source If State is "NY". LPS is the data source if State is "NJ". CRS is the data source if State is "PA".

**DERIVE_VALUE** ParcelNumber
ALWAYS
AUTOPOP CoreLogic IF State="NY" ENDIF
AUTOPOP LPS  IF State="NJ" ENDIF
AUTOPOP CRS IF State="PA" ENDIF

MlsStatus of an Active Listing of Residential Property Type may only change to one of the following: "Active", "Cancelled", "Extended", "Under Agreement", "Temporarily Withdrawn". MLS Staff or SuperUser may override this restriction.

**SCOPE** (ListingPropertyType="Residential")
**CONSTRAIN_VALUE** MlsStatus SUBLIST INLIST("Active","Cancelled" ,"Extended", "Under Agreement", "Temporarily Withdrawn") IF MLSStatus="Active" ENDIF
**ENFORCEMENT** = STRICT IF INLIST ("AGENT", "BROKER") ENDIF
**ENFORCEMENT** = OVERRIDE IF INLIST ("MLS STAFF", "SUPERUSER") ENDIF

A property may be cross-listed only in Property Types Residential and Farm.

**ALLOW_CROSSLIST**
XLISTFIELDNAMES (PropertyType) YES IF
XLISTFIELDVALUES INLIST (RES, Farm) ENDIF

ContractStatusChangeDate must be a date on or after ListingContractDate.

**CONSTRAIN_DATE_TIME** ContractStatusChangeDate
ONORAFTER ListingContractDate

Listing Status must be set to Expired on or after Expiration Date if Current Listing Status is not in (Expired, Pending, Sold, Leased).

**AUTO_UPDATE** LISTINGSTATUS "Expired" WHEN Date GE ExpirationDate ENDWHEN
IF ListingStatus NOTINLIST ("Expired", "Pending", "Sold", "Leased") ENDIF

*Many of the preceding rules seem simple (only 12 simple forms!) but there is much advanced syntax possible and the rules combine to be very powerful and cover a wide array of MLS business rules!*

# Next Steps:

**1.** Form Business Rules sub-group in R&D workgroup.
2. Evaluate and iterate on proposed syntax.
3. Package BR as payloads, reference from transport.
4. As vendors adopt this for MLSs, it will enable increased innovation and competition – and make system implementations *much* better for MLSs.

# Thank you!