



Prime2 Data Quality Rules

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Prime2 Data Quality Rules

- Why
- Where
- How



Ordnance
Survey
Ireland

Why?



Prime2 Data Quality Rules

- To ensure data capture specifications are adhered to
 - *As much as it is possible to do so*



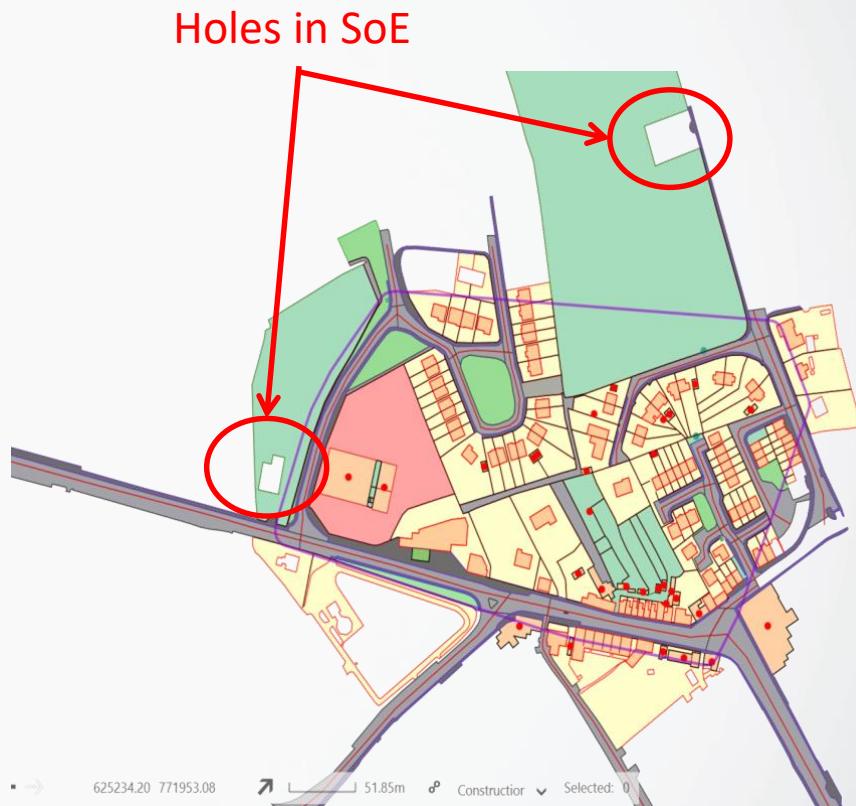
Ordnance
Survey
Ireland

When?



Prime2 Data Quality Rules

- As early and as often as possible
- Only on new or modified objects
- *Running data quality rules on all objects in offline jobs will produce a plethora of 'false negatives', depending on how big your job is!!!*





Ordnance
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Ireland

How

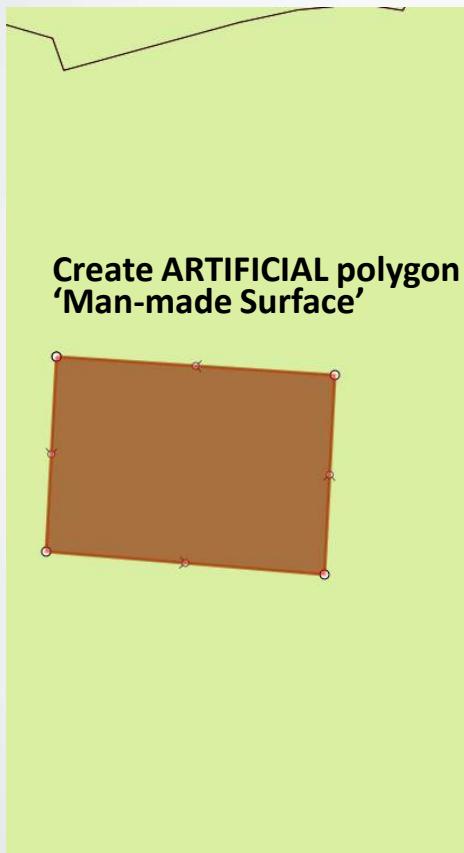




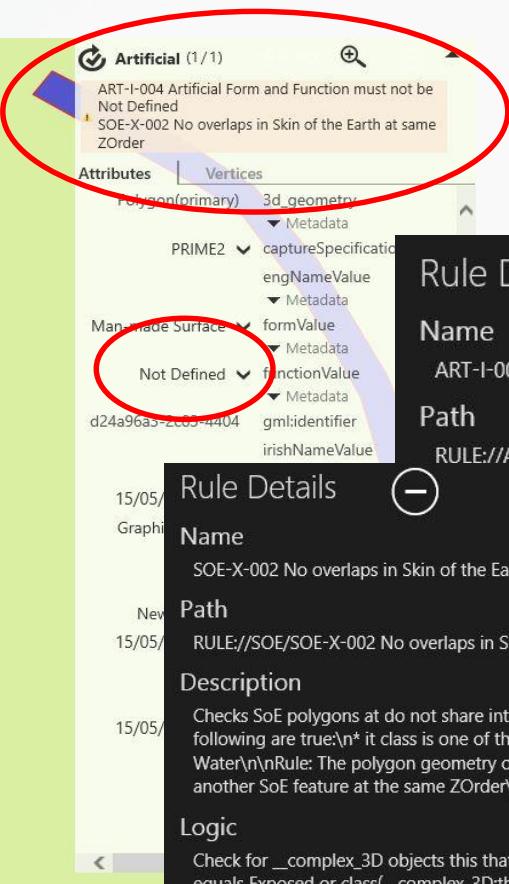
- Through local data validation in 1Edit
 - On the fly
 - By selection
 - En-block
- At job upload – server validation (*always performed*)
 - All validation rules are executed at this stage

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



Create ARTIFICIAL polygon
'Man-made Surface'



Broken Data Validation Rules listed

Rule Details



Name

ART-I-004 Artificial Form and Function must not be Not Defined

Path

RULE://Artificial/ART-I-004 Artificial Form and Function must not be Not Defined

15/05/2023
Graphical
New

15/05/2023
New

Description

Checks SoE polygons at do not share interior.
Rule: A feature is considered an SoE feature is all of the following are true:
* it class is one of the following:
- Artificial
- Exposed
- Vegetation
- Way
- Water

Rule: The polygon geometry of an SoE feature must not share interior with the polygon geometry of another SoE feature at the same ZOrder

Logic

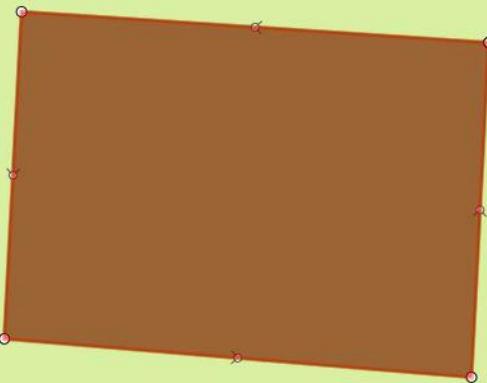
Check for __complex_3D objects this that if class(__complex_3D:this) equals Artificial or class(__complex_3D:this) equals Exposed or class(__complex_3D:this) equals Water or class(__complex_3D:this) equals Way or class(__complex_3D:this) equals Vegetation then (there are no __complex_3D objects overlapping for which __complex_3D:overlapping.geometry intersects __complex_3D:this.geometry and (class(__complex_3D:overlapping) equals Artificial or class(__complex_3D:overlapping) equals Exposed or class(__complex_3D:overlapping) equals Water or class(__complex_3D:overlapping) equals Way or class(__complex_3D:overlapping) equals Vegetation) and it is not the case that __complex_3D:overlapping.geometry touches __complex_3D:this.geometry) and __complex_3D:overlapping does not equal __complex_3D:this and __complex_3D:overlapping.zOrderValue equals __complex_3D:this.zOrderValue)

652

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit

Create ARTIFICIAL polygon
'Man-made Surface/Build Environment'



Artificial (1/1)

ART-X-100 Built Environment must have Building or Structure

Attributes Vertices

Polygon(primary) 3d_geometry

PRIME2 captureSpecification

engNameValue

Metadata

Man-made Surface

Built Environment

d24a96a3-2c83-4404

Rule Details

Name: ART-X-100 Built Environment must have Building or Structure

Path: RULE://Artificial/ART-X-100 Built Environment must have Building or Structure

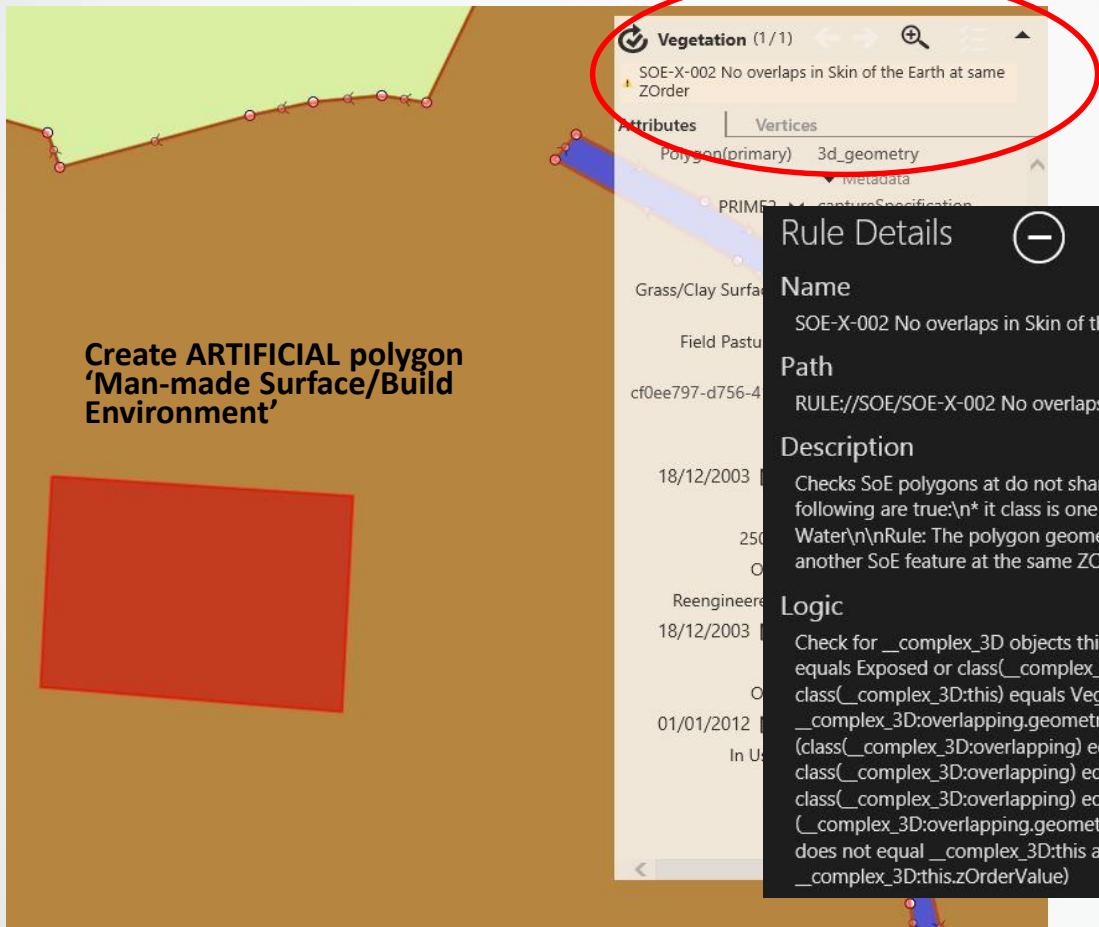
Description: RULE: Built Environment polygon geometries must be covered by Building or Structure
"Man-made Surface"\nFunction.Id 544 = "Built Environment"\n\nThe following is the list of Structures which need Built Environment - this should be expanded later as required.\nForm.Id 6 "Air transmitter beacon"\nForm.Id 83\nChimney\nForm.Id 228 "Mast"\nForm.Id 241\nMonument\nForm.Id 272\nOpen Terrace\nForm.Id 283\nPier Solid\nForm.Id 332 "Ruin"\nForm.Id 305\nRail Platform\nForm.Id 397\nTank\nForm.Id 436\nTower Water\nForm.Id 423\nTurntable\nForm.Id 427\nUtility Box\nForm.Id 70 "Canopy" FunctionId 641\nBicycle Shelter

Logic: Check for Artificial objects Built Env that if area(Artificial:Built Env.geometry) is greater than 0 and Artificial:Built Env.formValue equals 462 and Artificial:Built Env.functionValue equals 544 then (there is exactly 1 Building object for which (Building.geometry equals Artificial:Built Env.geometry or Building.geometry covers Artificial:Built Env.geometry) and Building.zOrderValue equals Artificial:Built Env.zOrderValue) or (there is exactly 1 Structure object for which (Structure.geometry equals Artificial:Built Env.geometry or Structure.geometry covers Artificial:Built Env.geometry) and (Structure.formValue equals 6 or Structure.formValue equals 83 or Structure.formValue equals 228 or Structure.formValue equals 241 or Structure.formValue equals 272 or Structure.formValue equals 283 or Structure.formValue equals 305 or Structure.formValue equals 332 or Structure.formValue equals 397 or Structure.formValue equals 436 or Structure.formValue equals 423 or Structure.formValue equals 427 or Structure.formValue equals 70 and Structure.functionValue equals 641) and Structure.zOrderValue equals Artificial:Built Env.zOrderValue)

Broken Data Validation Rule listed

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



**Create ARTIFICIAL polygon
'Man-made Surface/Build
Environment'**

**Broken Data
Validation Rule listed**

Rule Details -

Name
SOE-X-002 No overlaps in Skin of the Earth at same ZOrder

Path
RULE://SOE/SOE-X-002 No overlaps in Skin of the Earth at same ZOrder

Description
Checks SoE polygons at do not share interior.
Rule: A feature is considered an SoE feature is all of the following are true:
* it class is one of the following:
- Artificial
- Exposed
- Vegetation
- Way
- Water
Rule: The polygon geometry of an SoE feature must not share interior with the polygon geometry of another SoE feature at the same ZOrder

Logic
Check for __complex_3D objects this that if class(__complex_3D:this) equals Artificial or class(__complex_3D:this) equals Exposed or class(__complex_3D:this) equals Water or class(__complex_3D:this) equals Way or class(__complex_3D:this) equals Vegetation then (there are no __complex_3D objects overlapping for which __complex_3D:overlapping.geometry intersects __complex_3D:this.geometry and (class(__complex_3D:overlapping) equals Artificial or class(__complex_3D:overlapping) equals Exposed or class(__complex_3D:overlapping) equals Water or class(__complex_3D:overlapping) equals Way or class(__complex_3D:overlapping) equals Vegetation) and it is not the case that __complex_3D:overlapping.geometry touches __complex_3D:this.geometry) and __complex_3D:overlapping does not equal __complex_3D:this and __complex_3D:overlapping.zOrderValue equals __complex_3D:this.zOrderValue)

Prime2 Data Validation Rules



Typical data capture of a new building in 1Edit

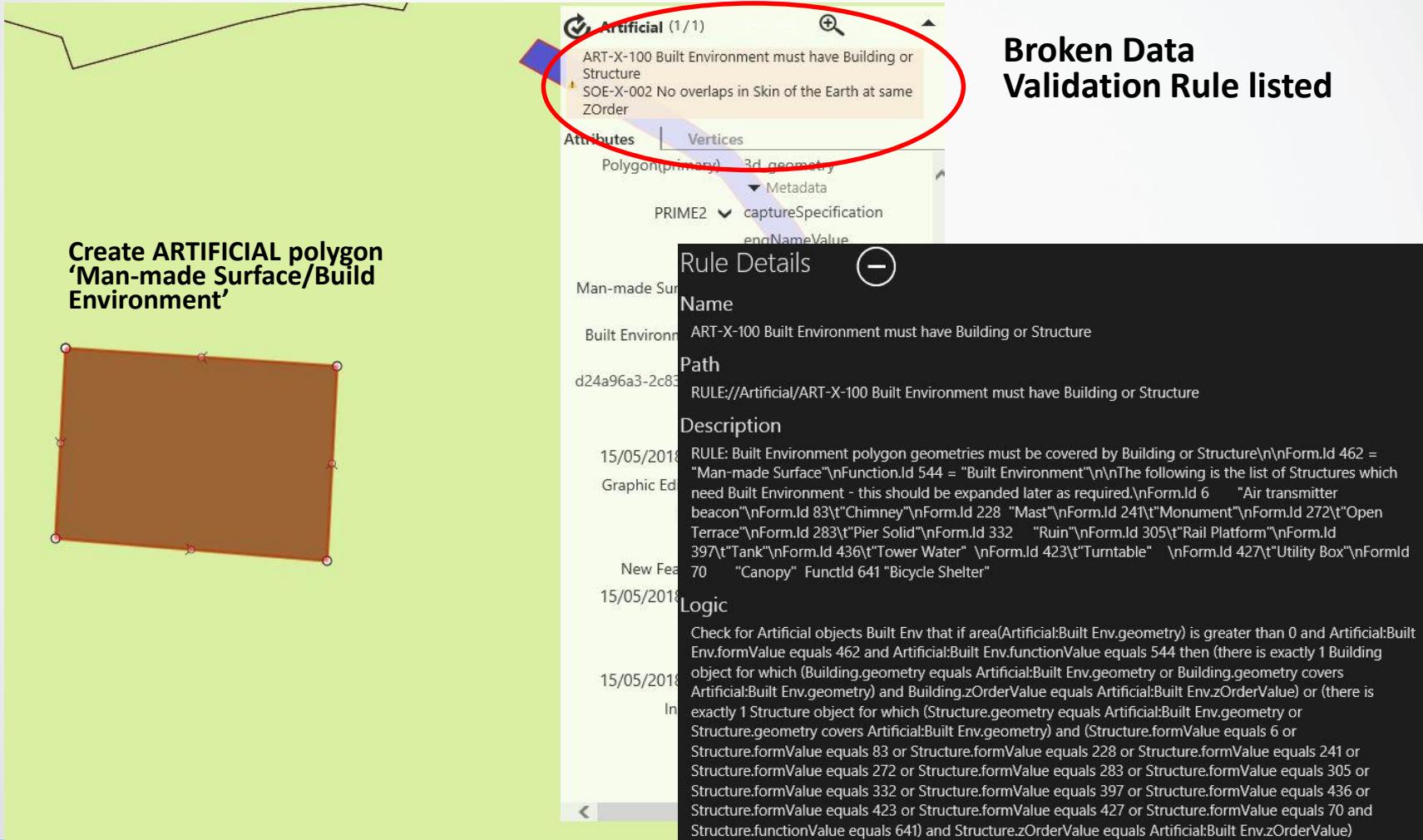
The screenshot shows the 1Edit software interface. On the left, a green background displays a red polygon representing a new building. On the right, the software's data entry interface is shown, specifically for a 'Vegetation' record (1/1). A red oval highlights the 'Attributes' tab, which lists various metadata fields for the polygon. The fields include:

- Polygon(primary) 3d_geometry
- PRIME2 capturespecification
- engNameValue
- Grass/Clay Surface formValue
- Field Pasture functionValue
- cf0ee797-d756-41ff-9 gmlIdentifier
- irishNameValue
- 18/12/2003 polyGeomCaptureDate
- polyGeomCaptureMethod
- 2500 polyGeomCaptureResolution
- OSi polyGeomCaptureSource
- Reengineered polyGeomChangeCode
- 15/05/2018 polyGeomChangeDate
- polyGeomHeightErrValue
- OSi polyGeomValidationAuthCode
- 15/05/2018 polyGeomValidationDate
- In Use statusValue
- 0 zOrderValue

No Broken Data Validation Rule listed

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



Create ARTIFICIAL polygon 'Man-made Surface/Build Environment'

The screenshot shows a 1Edit interface with a green background. On the left, a brown polygon representing a new building is being drawn. On the right, the 'Artificial (1/1)' details panel is open, showing two validation rules:

- ART-X-100 Built Environment must have Building or Structure
- SOE-X-002 No overlaps in Skin of the Earth at same ZOrder

A red oval highlights these validation rules. A modal window titled 'Rule Details' provides more information about the selected rule (ART-X-100):

Name
ART-X-100 Built Environment must have Building or Structure

Path
RULE://Artificial/ART-X-100 Built Environment must have Building or Structure

Description
RULE: Built Environment polygon geometries must be covered by Building or Structure
Form.Id 462 = "Man-made Surface"
Function.Id 544 = "Built Environment"
The following is the list of Structures which need Built Environment - this should be expanded later as required.
Form.Id 6 "Air transmitter beacon"
Form.Id 83 "Chimney"
Form.Id 228 "Mast"
Form.Id 241 "Monument"
Form.Id 272 "Open Terrace"
Form.Id 283 "Pier Solid"
Form.Id 332 "Ruin"
Form.Id 305 "Rail Platform"
Form.Id 397 "Tank"
Form.Id 436 "Tower Water"
Form.Id 423 "Turntable"
Form.Id 427 "Utility Box"
Form.Id 70 "Canopy"
Function.Id 641 "Bicycle Shelter"

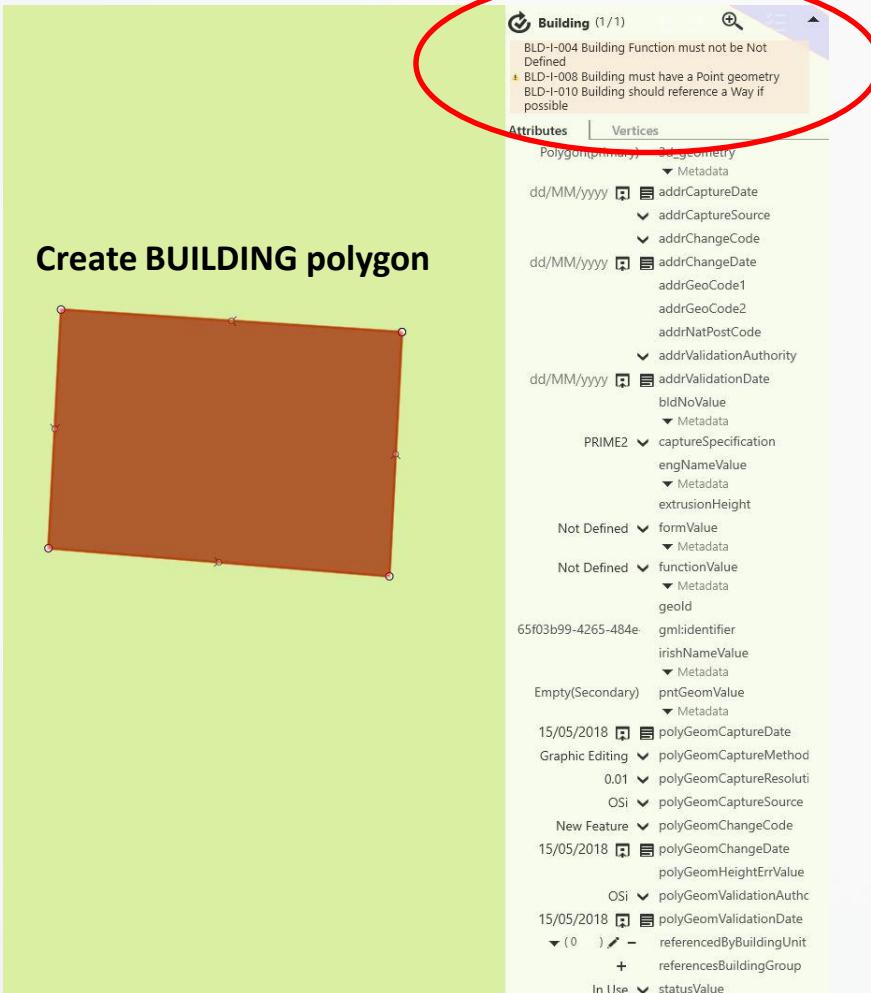
Logic
Check for Artificial objects Built Env that if area(Artificial:Built Env.geometry) is greater than 0 and Artificial:Built Env.formValue equals 462 and Artificial:Built Env.functionValue equals 544 then (there is exactly 1 Building object for which (Building.geometry equals Artificial:Built Env.geometry or Building.geometry covers Artificial:Built Env.geometry) and Building.zOrderValue equals Artificial:Built Env.zOrderValue) or (there is exactly 1 Structure object for which (Structure.geometry equals Artificial:Built Env.geometry or Structure.geometry covers Artificial:Built Env.geometry) and (Structure.formValue equals 6 or Structure.formValue equals 83 or Structure.formValue equals 228 or Structure.formValue equals 241 or Structure.formValue equals 272 or Structure.formValue equals 283 or Structure.formValue equals 305 or Structure.formValue equals 332 or Structure.formValue equals 397 or Structure.formValue equals 436 or Structure.formValue equals 423 or Structure.formValue equals 427 or Structure.formValue equals 70 and Structure.functionValue equals 641) and Structure.zOrderValue equals Artificial:Built Env.zOrderValue)

Broken Data Validation Rule listed

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit

Create BUILDING polygon



The screenshot shows a software interface for editing geographical data. On the left, a large orange polygon representing a building is being drawn on a light green background. On the right, a list of validation rules for the 'Building' feature is displayed. A red oval highlights the top section of the list, which contains the following rules:

- BLD-I-004 Building Function must not be Not Defined
- BLD-I-008 Building must have a Point geometry
- BLD-I-010 Building should reference a Way if possible

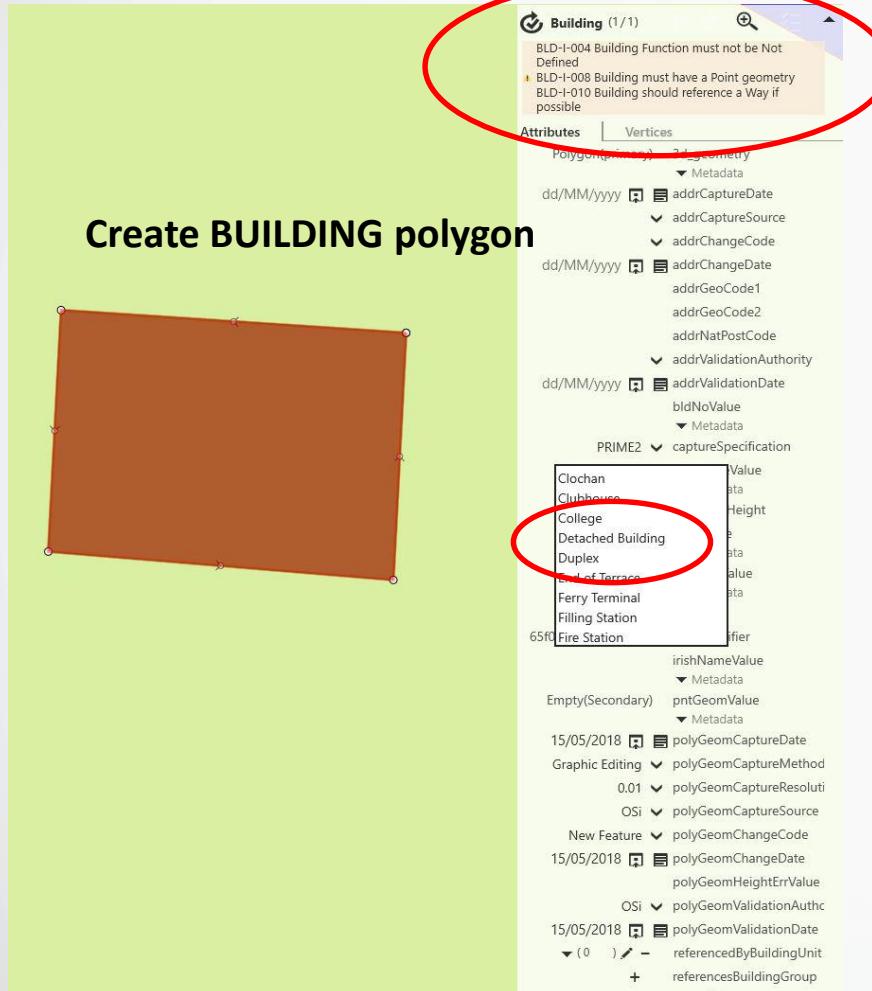
The list is organized into sections: Attributes and Vertices. The Attributes section contains numerous validation rules, many of which are collapsed under dropdown menus. Some visible rules include:

- dd/MM/yyyy (multiple fields): addrCaptureDate, addrCaptureSource, addrChangeCode, addrChangeDate, addrGeoCode1, addrGeoCode2, addrNatPostCode, addrValidationAuthority, addrValidationDate, bidNoValue, captureSpecification, engNameValue, extrusionHeight, formValue, functionValue, geold, gmtIdentifier, irishNameValue, pntGeomValue, polyGeomCaptureDate, polyGeomCaptureMethod, polyGeomCaptureResoluti, polyGeomCaptureSource, polyGeomChangeCode, polyGeomChangeDate, polyGeomHeightErrValue, polyGeomValidationAuthc, polyGeomValidationDate, referencedByBuildingUnit, referencesBuildingGroup, statusValue.
- Empty(Secondary): pntGeomValue
- 15/05/2018: polyGeomCaptureDate
- Graphic Editing: polyGeomCaptureMethod, polyGeomCaptureResoluti, polyGeomCaptureSource
- OSi: polyGeomCaptureSource
- New Feature: polyGeomChangeCode
- 15/05/2018: polyGeomChangeDate, polyGeomHeightErrValue
- OSi: polyGeomValidationAuthc
- 15/05/2018: polyGeomValidationDate
- In Use: referencedByBuildingUnit, referencesBuildingGroup, statusValue

Broken Data Validation Rule listed

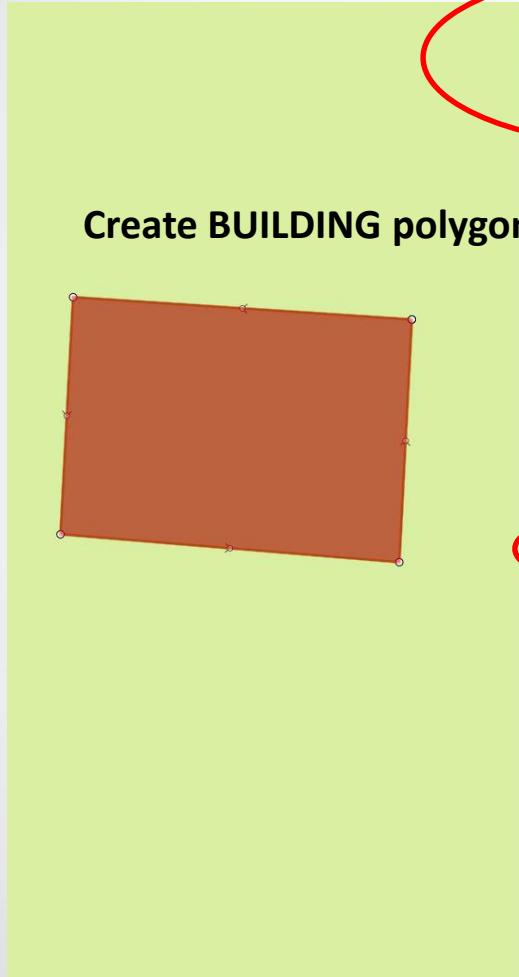
Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



Broken Data Validation Rule listed

Prime2 Data Validation Rules



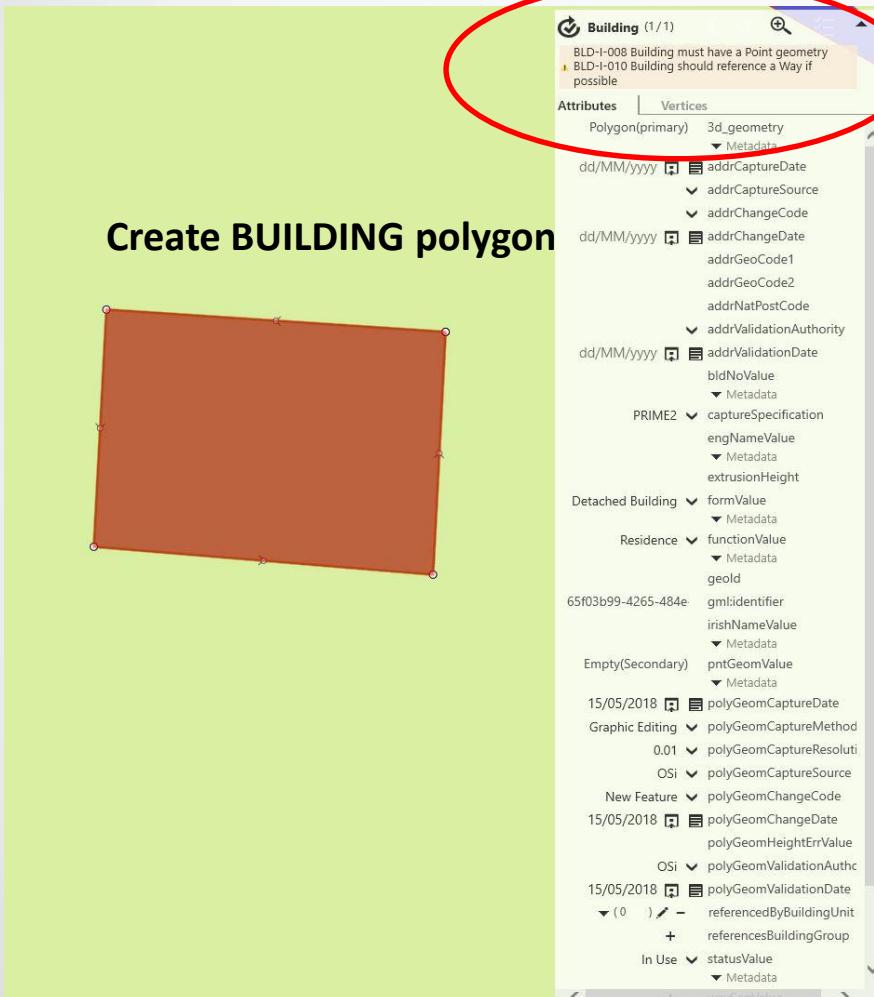
Typical data capture of a new building in 1Edit

Building (1/1)	
BLD-I-004 Building Function must not be Not Defined	
BLD-I-008 Building must have a Point geometry	
BLD-I-010 Building should reference a Way if possible	
Attributes	Vertices
Polygon (1/1)	3 Vertices
	▼ Metadata
dd/MM/yyyy	addrCaptureDate
	▼ addrCaptureSource
	▼ addrChangeCode
dd/MM/yyyy	addrChangeDate
	addrGeoCode1
	addrGeoCode2
	addrNatPostCode
	▼ addrValidationAuthority
dd/MM/yyyy	addrValidationDate
	bldNoValue
	▼ Metadata
PRIME2	captureSpecification
	engNameValue
	▼ Metadata
650	Research Institute
Def	Research Laboratory
	Research Station
	Residence
	Restaurant
	Retirement Home
	Secondary School
	Sheltered Accommodation
	Special Needs School
	Current Value
	Empty(Secondary)
	pntGeomValue
	▼ Metadata
15/05/2018	polyGeomCaptureDate
Graphic Editing	polyGeomCaptureMethod
	0.01
	OSi
	polyGeomCaptureSource
	New Feature
	polyGeomChangeCode
15/05/2018	polyGeomChangeDate
	polyGeomHeightErrValue
	OSi
	polyGeomValidationAuthc
15/05/2018	polyGeomValidationDate
	▼ (0)
	-
	referencedByBuildingUnit
	+
	referencedBuildingGroup
	In Use
	statusValue

Broken Data Validation Rule listed

Prime2 Data Validation Rules

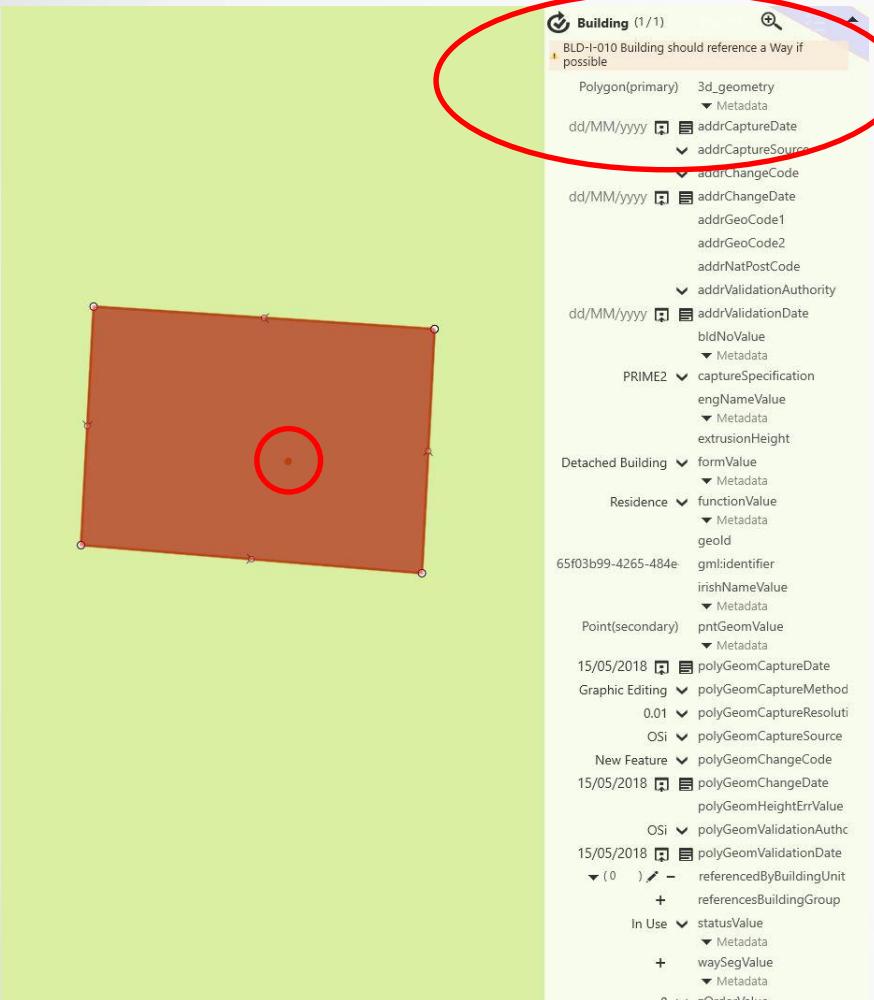
Typical data capture of a new building in 1Edit



Broken Data Validation Rule listed

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



Broken Data Validation Rule listed

Prime2 Data Validation Rules

Typical data capture of a new building in 1Edit



No Broken Data Validation Rules listed

Prime2 Data Validation Rules



1Edit / Server Data Validation Rules

1Edit	Server	Description
1_SoE_overlap.JPG	SOE-X-002 SoE must have no overlaps at same ZOrder	<p>Checks SoE polygons at the same ZOrder do not share interior</p> <p>Rule: A feature is considered an SoE feature if the following is true:</p> <ul style="list-style-type: none">* its class is one of the following:<ul style="list-style-type: none">- Artificial- Exposed- Vegetation- Way- Water <p>Rule: The polygon geometry of an SoE feature must not share interior with the polygon geometry of another SoE feature</p>

Prime2 Data Validation Rules



1Edit / Server Data Validation Rules

1Edit	Server	Description
1a_Validation_rule.JPG	ART-I-004 Artificial Function must not be 'Not Defined'	In 1Edit the Artificial Function defaults to 'Not Defined'. This rule ensures that features no longer have that value.

Prime2 Data Validation Rules



1Edit / Server Data Validation Rules

1Edit	Server	Description
2_Artificial.JPG	ART-X-100 Artificial 'Built Environment' must have Building or Structure	<p>RULE: Built Environment polygon geometries must be covered by Building or Structure</p> <p>Form.Id 462 = "Man-made Surface" Function.Id 544 = "Built Environment"</p> <p>The following is the list of Structures which need Built Environment - this can be expanded later as required.</p> <p>Form.Id 6 "Air transmitter beacon" Form.Id 83 "Chimney" Form.Id 228 "Mast" Form.Id 241 "Monument" Form.Id 272 "Open Terrace" Form.Id 283 "Pier Solid" Form.Id 305 "Rail Platform" Form.Id 332 "Ruin" Form.Id 397 "Tank" Form.Id 436 "Tower Water" Form.Id 423 "Turntable" Form.Id 427 "Utility Box" Form.Id 70 "Built Environment" and Func Id 641 Bicycle Shelter"</p>

Prime2 Data Validation Rules



Server Data Validation Rules

Rule	Server	1Edit	Why
BLD-I-001 Building geometry must be a polygon	No	Yes	The Exchange GoPublisher policies will only accept a polygon in the Building primary geometry column
BLD-I-002 Building pntGeomValue must be a point	No	Yes	The Exchange GoPublisher policies will only accept points in the Building secondary geometry column
BLD-I-010 Building should reference a Way if possible	No	Yes	This is only a local <u>1Edit warning</u> rule as there will be cases where the editor will not be able to select the way to reference the building to as it is not in the job

Prime2 Data Validation Rules



Server Data Validation Rules

Rule	Server	1Edit	Why
ALL-X-001 Edited features must be contained within or intersect the PRA	No	Yes	Only required locally inside 1Edit as the rule flags when a user in 1Edit edits outside of the job extent (PRA)
WSS-I-212 WaterSingleStream lines must not have Spikes	Yes	No	The has_spikes built-in function is not implemented in 1Edit so this rule, across all relevant classes, cannot be run as part of local validation



1Edit / Server Data Validation Rules

There are currently 492 Server Validation Rules run on each job on upload to the database

There are approximately 300 1Edit Local Validation Rules

Other data quality checks:

Remove duplicate vertices using Oracle spatial function

New rules are being added and verified to both the Local & Server environment.....as we speak



Thank You

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