ASHRAE RP-1810 gbXML Progress

Improving the workflow between BIM to BEM using gbXML

What is RP-1810 project about?

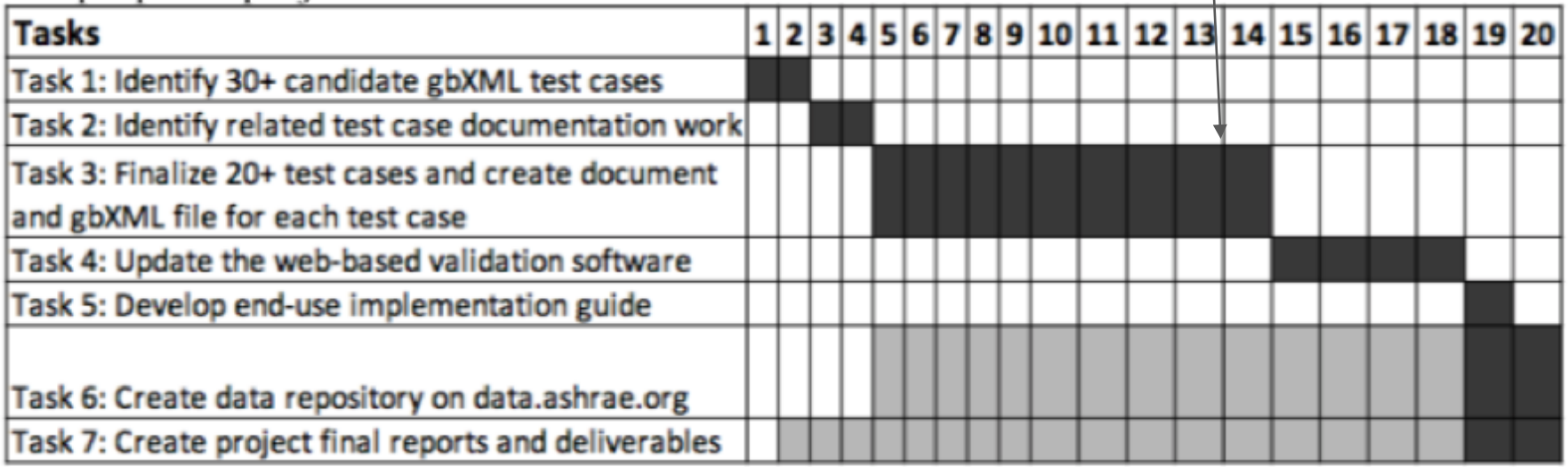
The RP-1810 will adding more geometry test cases, expand the categories by including HVAC and internal loads, as well as establishing a cloud-based workflow to help BIM software developers creating unit tests for the **gbXML export function.**

Task 1: Identify 30+ candidate gbXML test cases
Task 2: Identify related test case documentation work
Task 3: Select final 20 test cases, create 20 test case documents
Task 4: Update the existing web-based validation software
Task 5: Create an end-user document
Task 6: Create data repository on data.ashrae.org for gbXML test case and gbXML files

Where are we now?

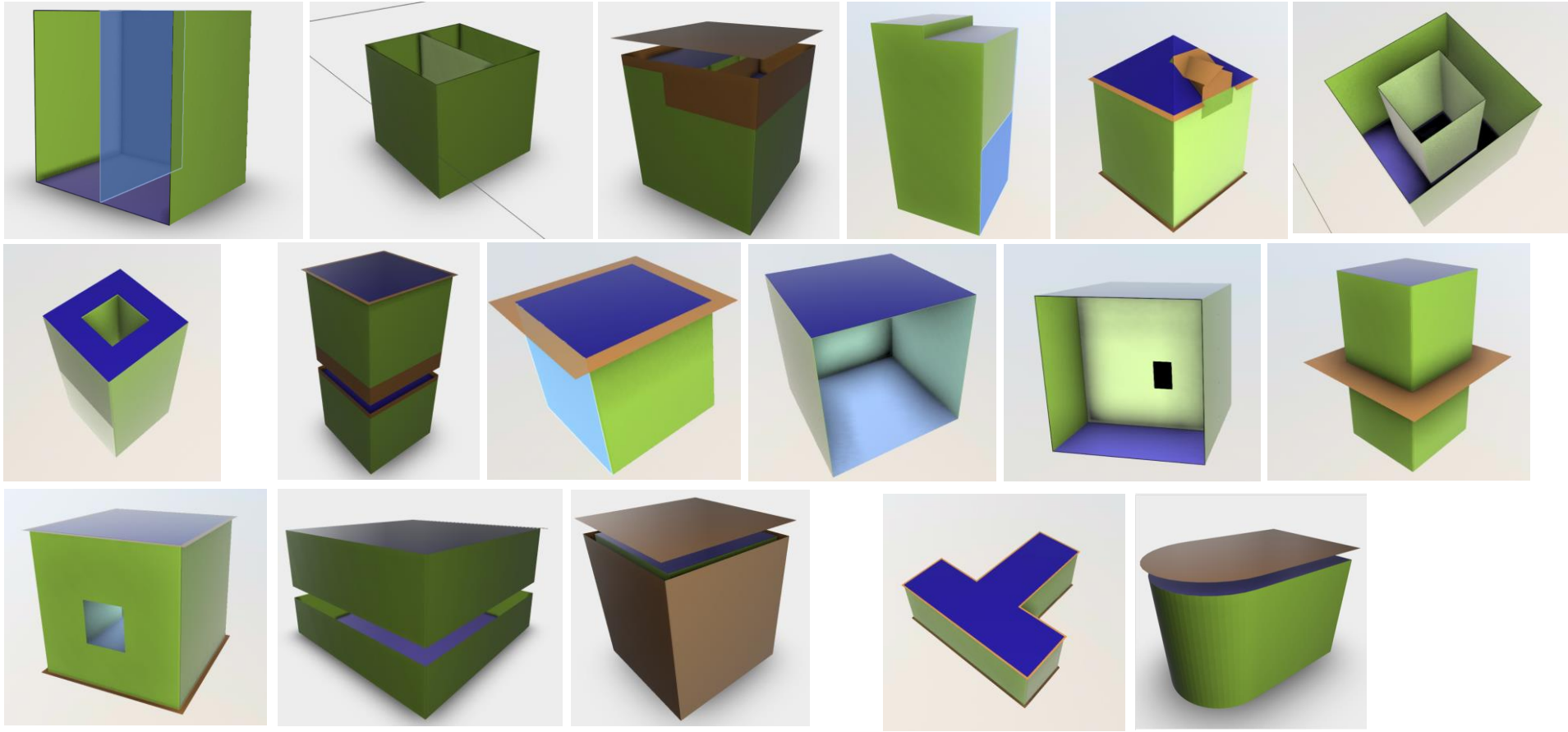
Current State

The proposed project duration is 20 calendar months from the start date.

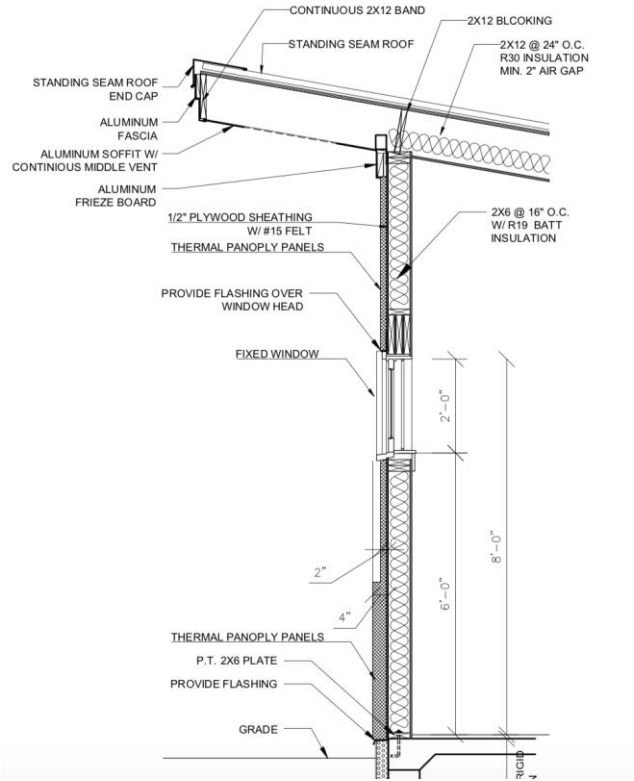


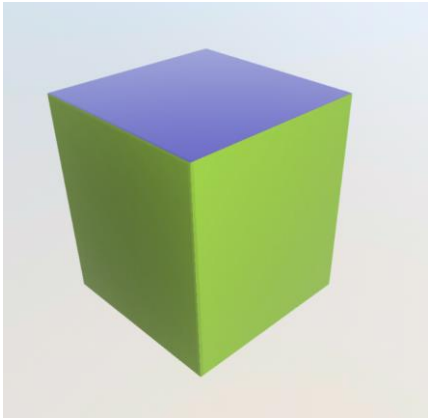
Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Task 1: Identify 30+ candidate gbXML test cases																				
Task 2: Identify related test case documentation work																				
Task 3: Finalize 20+ test cases and create document and gbXML file for each test case																				
Task 4: Update the web-based validation software																				
Task 5: Develop end-use implementation guide																				
Task 6: Create data repository on data.ashrae.org																				
Task 7: Create project final reports and deliverables																				

17 Geometry Related Test Cases



1 Structure Assembly Test Case





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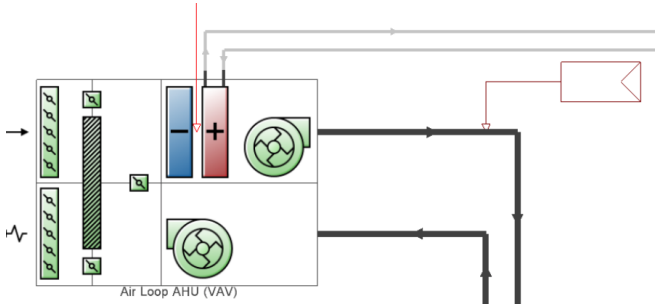
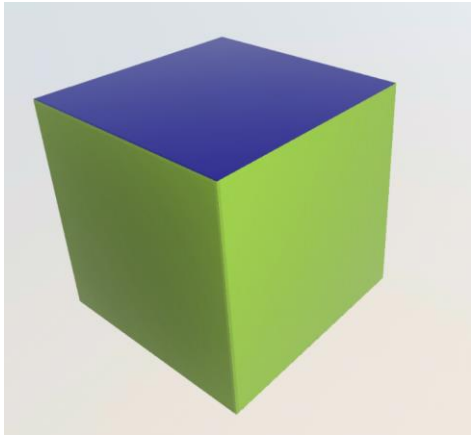
  <MaterialId materialIdRef="eifs"/>
  <MaterialId materialIdRef="airgap"/>
  <MaterialId materialIdRef="substrate"/>
  <MaterialId materialIdRef="structure"/>
  <MaterialId materialIdRef="finish"/>
</Layer>
```

1 HVAC system test case





Fan

Property	Unit	Value
Motor in Air Stream	-	1
Air Stream Fraction	-	0.9
Delta P	Pa	75
Control	-	Cycling
Efficiency	-	0.7

Cooling Coil

Property	Unit	Value
Efficiency (COP)	-	3.0
Capacity	kBtu/h	85

Heating Coil

Property	Unit	Value
Efficiency	-	0.8
Energy Type	-	NaturalGas
Capacity	kBtu/h	102

Operation Schedule

Schedule Type	Time period	Value
Year	All weeks	Week schedule type
Week	All days	Day schedule type
Day	1-5 AM	0
	6 AM – 10 PM	1
	11-12PM	0

Testing criteria

Geometric

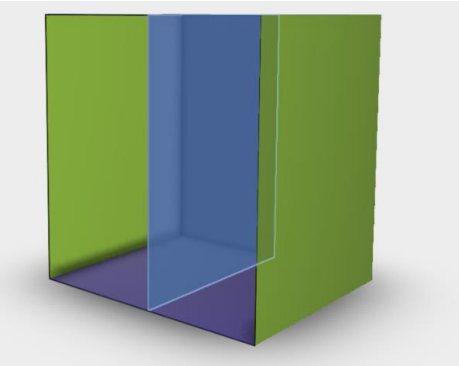
Building Area,
Space Count,
Building Story Count,
Building Story Z Height
Building Story Polyloop RHR
SpaceId Match
Structure Surface Name Match
Space Area
Space Volume
Exterior Wall Surface Area
Underground Surface Area
Interior Wall Surface Area
Interior Floor Surface Area
Roof Surface Area

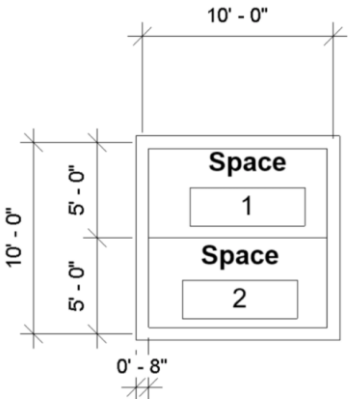
Total Surface Count
Exterior Wall Surface Count
Underground Surface Count
Interior Wall Surface Count
Interior Floor Surface Count
Roof Surface Count
Shading Surface Count
Air Surface Count

Special Test

MaterialTest
MaterialAssemblyTest
SurfaceAdjacentTest
AvailabilityScheduleTest
OASettingTest
AirLoopTest
FanTest
CoolingCoilTest
FurnaceTest
Fixed Windows Count
Operable Windows Count

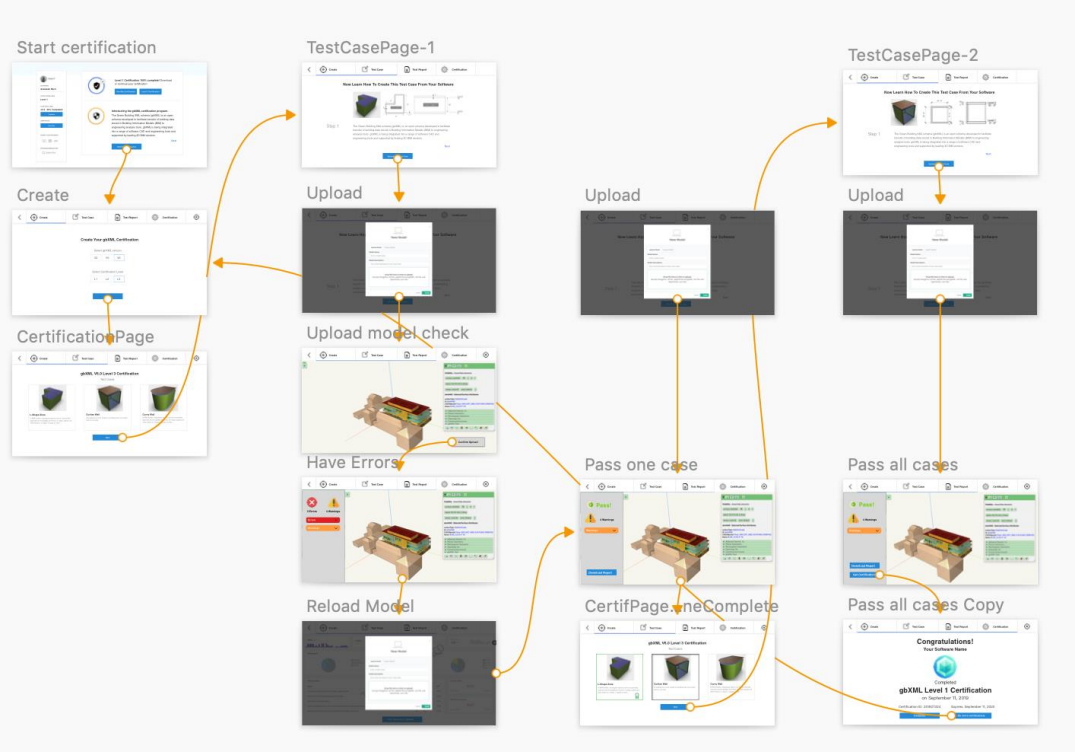
Example: Zoning with separator line

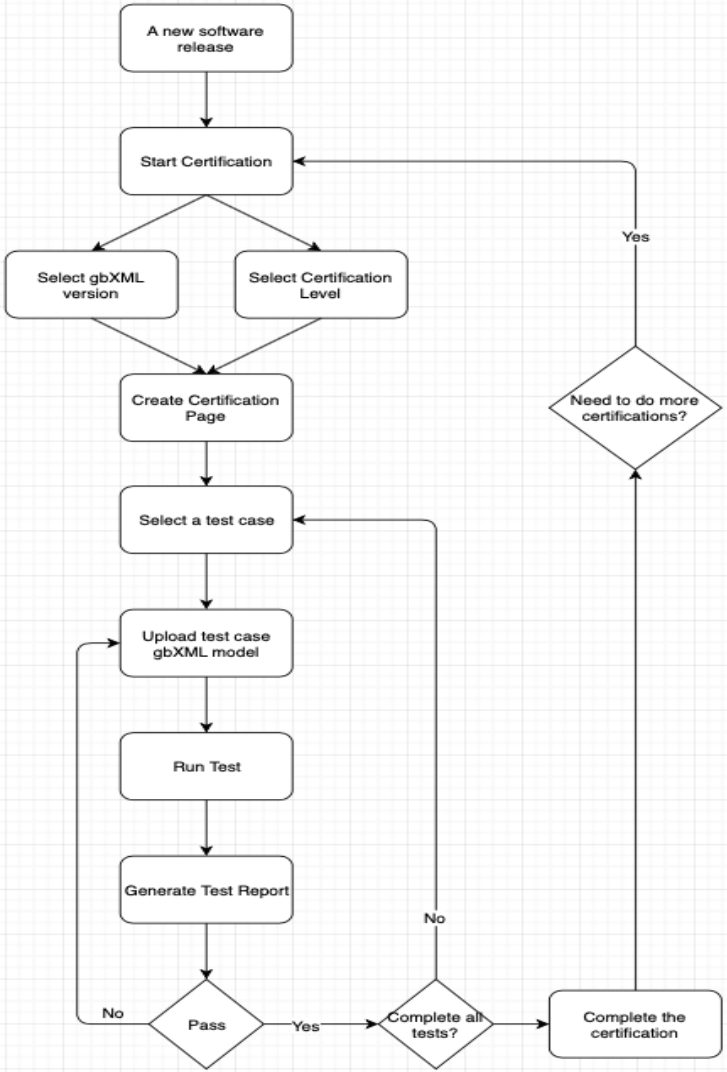




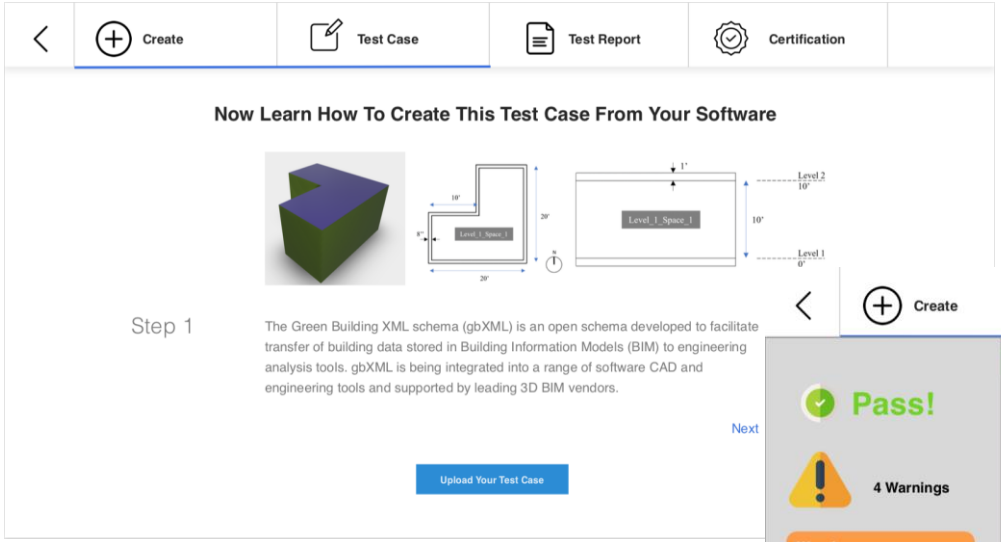
Building Area = 100 SQFT
Space Count = 2
Building Story Count = 1
Building Story Z Height = 10’
Space Area = 81 SQFT
Space Volume = 729 CFT
Total Surface Count = 11
Exterior Wall Surface Area = 400 SQFT
Exterior Wall Surface Count >= 6
Underground Surface Count = 0
SlabOnGrade Surface Count >= 2 (criteria)
SlabOnGrade Surface Area = 100 SQFT
Interior Floor Surface Count = 0
Interior Floor Surface Area = 100 SQFT
Roof Surface Count >= 2 (criteria)
Air Surface Count >= 1
Air Surface Area = 100 SQFT

Certification process

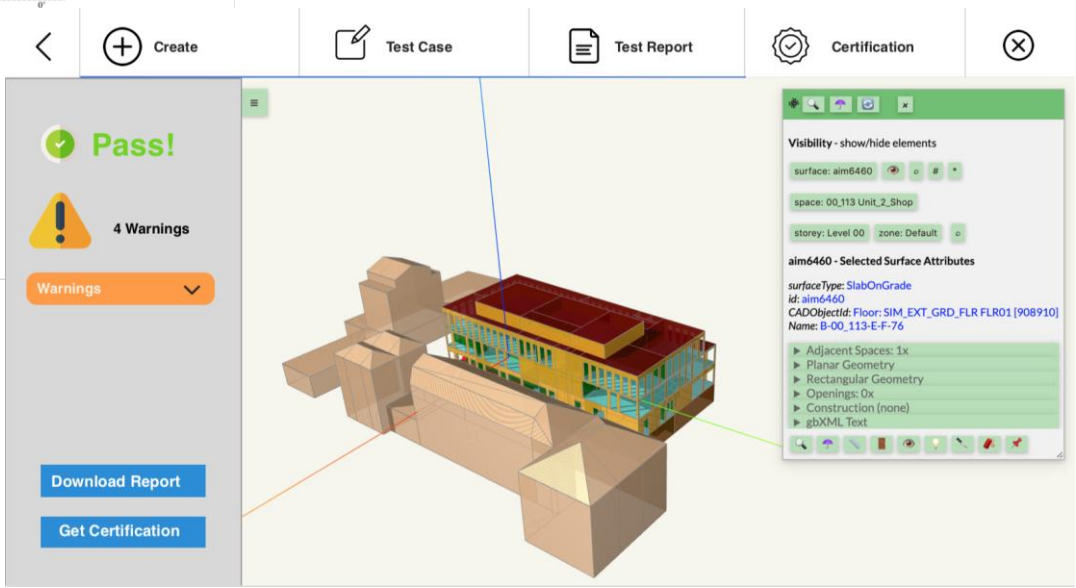




Certification



- Step-by-step test tutorial
- Certification sessions – complete the test at anytime, any where.



- Incorporate the Spider gbXML viewer
- Instant validation feedbacks
- Detail report download

Thank you!

Tracks / Research Summit / Paper Session 10 - "Building Energy Modeling" / Improving the Interoperability of gbXML Data Model through Redefining Data Mapping Rules of HVAC Systems.

LIVE Q&A CHAT:
June 30, 2020, 11:20 AM (EDT)

Presentation 27092 "Obstacles That gbXML Is Facing: Analysis on BIM Software Interoperability Survey" in Paper Session 10, "Building Energy Modeling".

Winter Conference in Chicago

Questions?
Contact: weili.xu@buildsimhub.net