

gbXML From a Developer's Point of View

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Wrightsoft Applications

Right-Suite Universal (RSU)

- Integrated HVAC design – loads, ducts, radiant heating, parts list, proposal, operating costs ...
- ASHRAE and ACCA methods
- Users: HVAC contractors, some engineers
- C++ w/ MFC (Windows)

CAD formats

- Import + trace
- Export mechanical layout

Interoperability?

What we hear from our users ...

- Energy codes
- AutoCAD / high end houses
- Uptick in "green" interest -- link to energy model(s)

Recently 1 (one) customer inquiry about gbXML

Not surging demand!

Use Cases

Capabilities of interest

- Import building geometry
 - Project author = BIM
 - With or without constructions
- Export geometry (project author = RSU)
- Export HVAC design
- Export domain-expert data
 - Zoning
 - Constructions
 - Loads / air requirements

Start with gbXML

- www.gbXML.org / Yahoo group
GreenBuildingXML-35.xsd
- Supported at some level by many apps
(Revit, Bentley ... Trane TRACE, Carrier
HAP)
- Implementation ease (?)

XML Parser

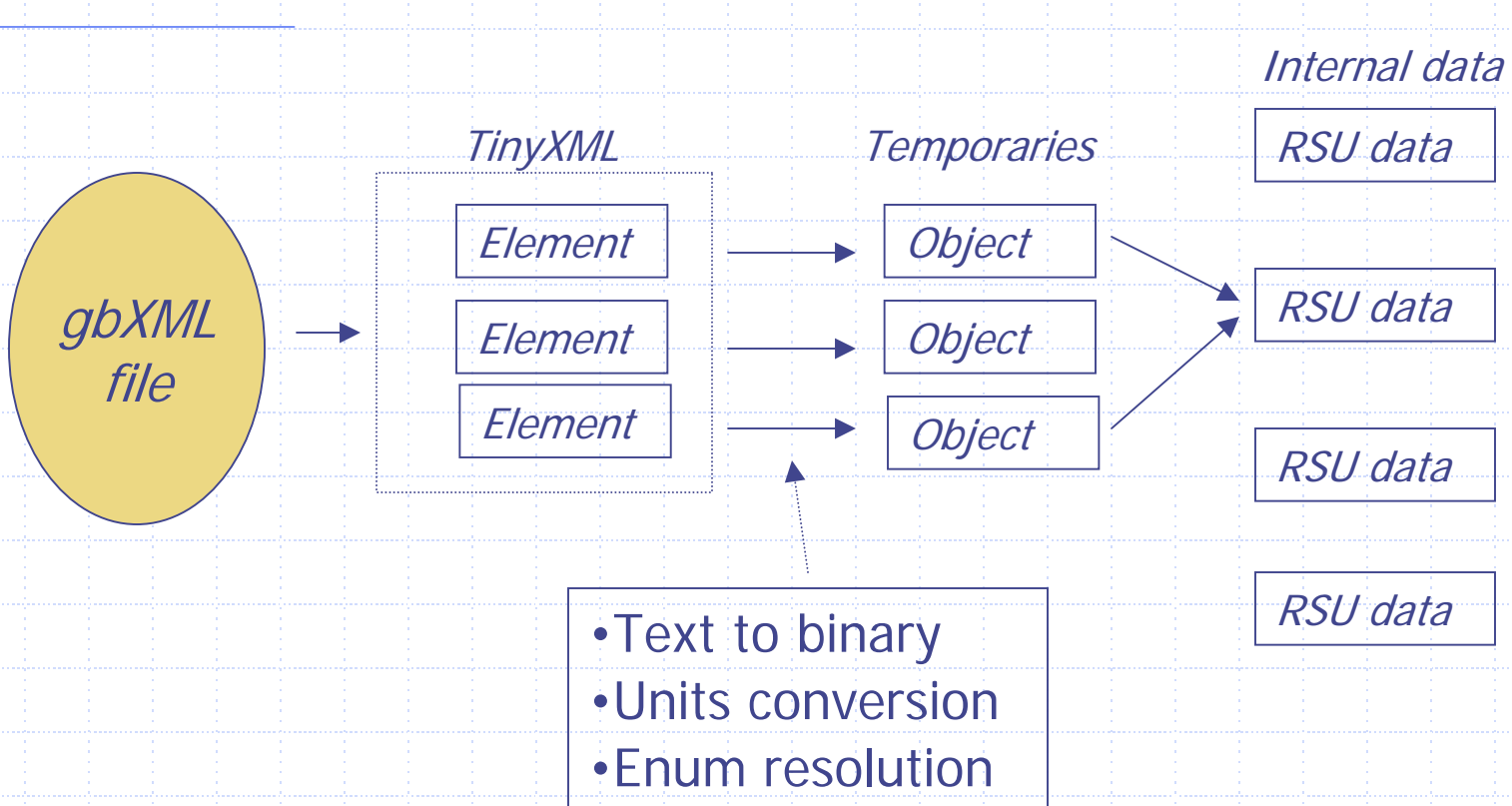
MSXML obvious choice, but ...

- Big
- COM w/ attendant complexity

TinyXML

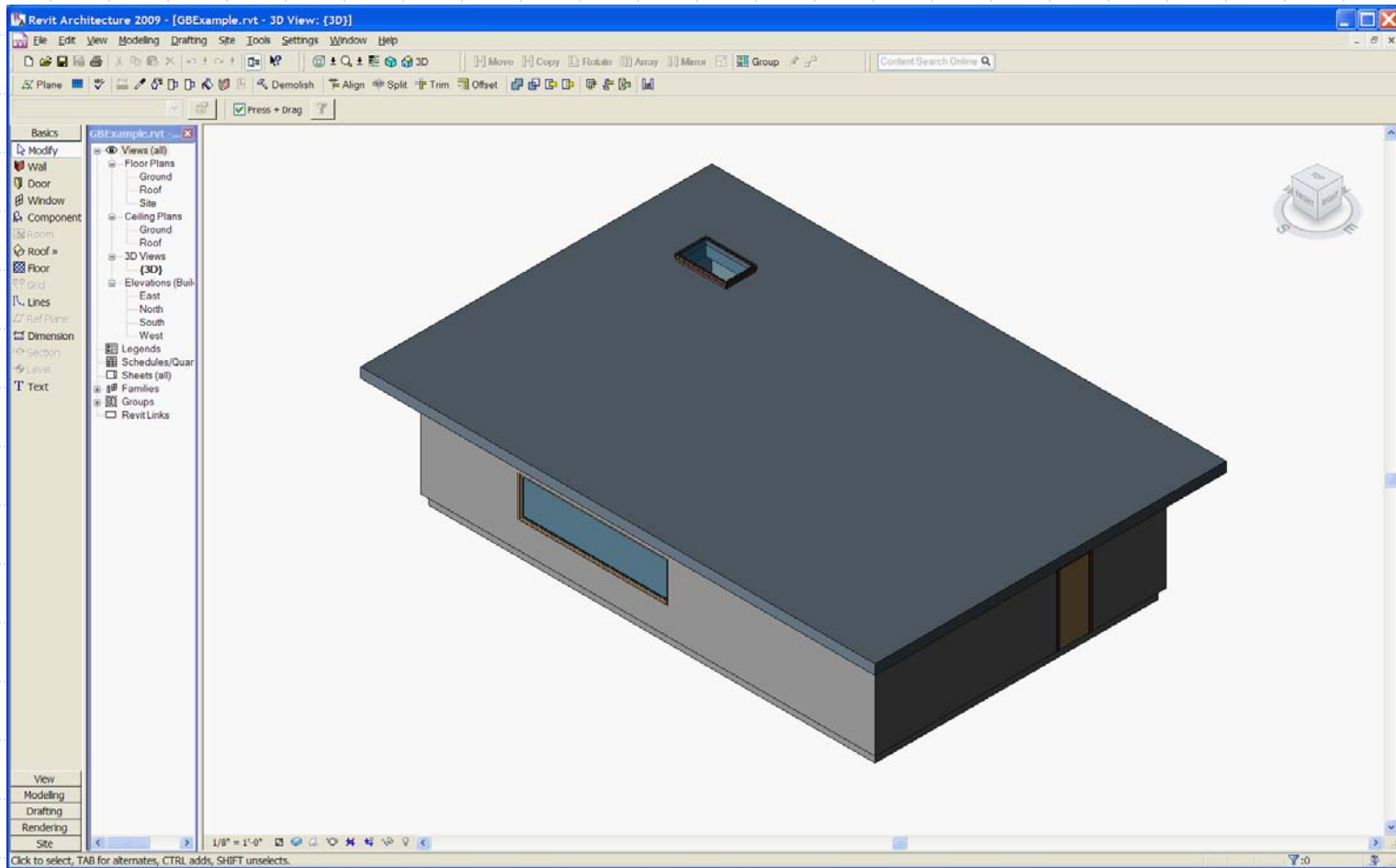
- Tiny (!)
- Source code
- Static link

Architecture



Reverse for export

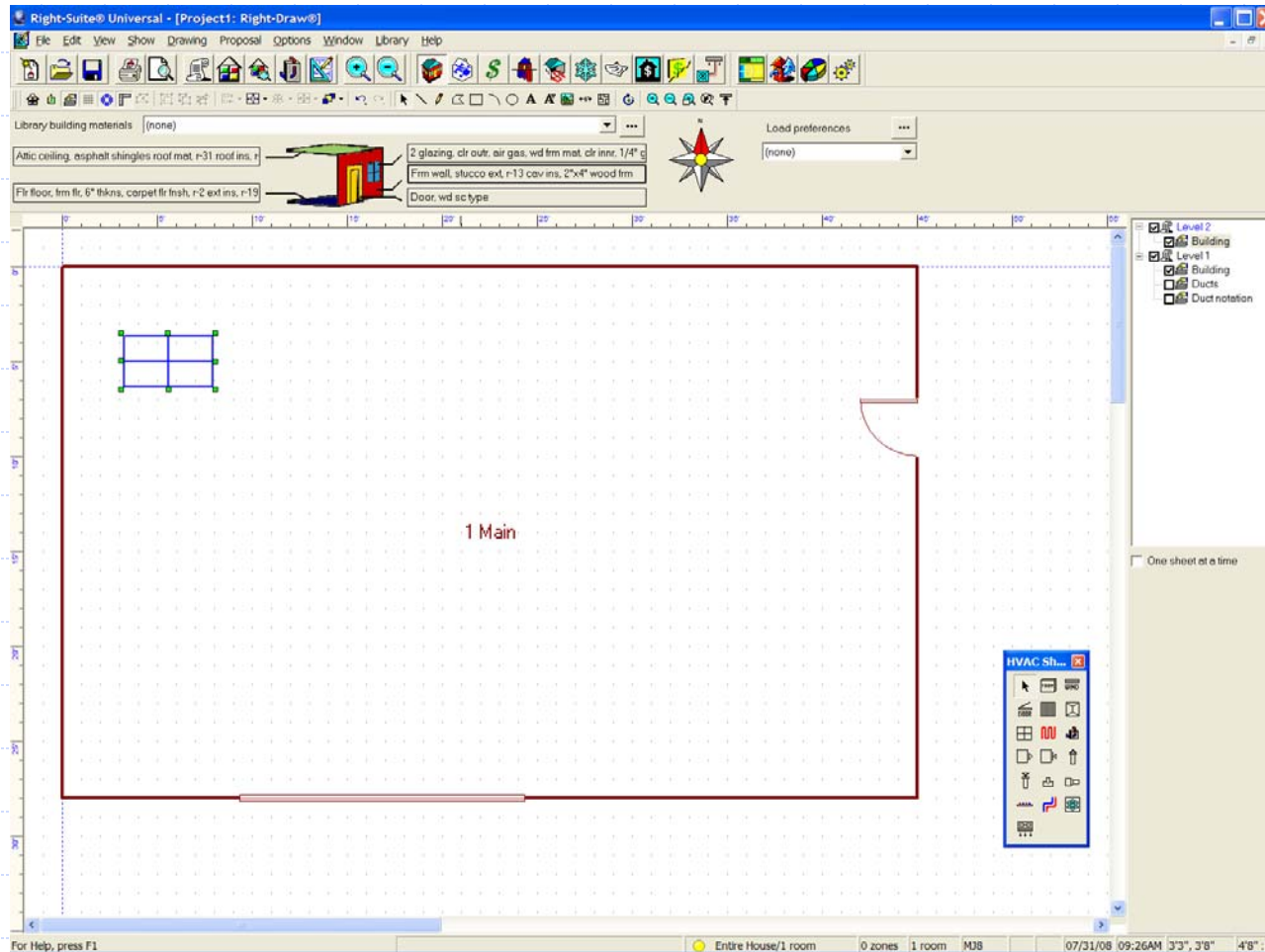
Test Building (Revit) ...



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... loaded correctly in RSU



Issues and Observations

- Lack of overview
 - All documentation in schema
 - Understand by poking around
- Hence risk of alternative interpretation by source applications
- Consumer beware!
- Element-level documentation uneven
 - Less than clear
 - Tilt = “The number of degrees from up that the outside of the surface is tilted in relation to the bottom-left corner.”
 - Typos

Data Model

Shell description

- List of polygons
- Closed?
- Why not shared points?

Example

```
<CartesianPoint>  
  <Coordinate>61.2850844490772</Coordinate>  
  <Coordinate>71.6118912839891</Coordinate>  
  <Coordinate>0</Coordinate>  
</CartesianPoint>  
<CartesianPoint>  
  <Coordinate>61.2850844490772</Coordinate>  
  <Coordinate>55.9521646886887</Coordinate>  
  <Coordinate>0</Coordinate>  
</CartesianPoint>
```

More Issues

Gratuitous categorization ...

FixedWindow =

“Opening in a surface with a tilt between 45° and 149.99° with a non-operable glazed opening in it.”

But CEC defines tilt $< 60^\circ$ as roof

“Just the facts”

Future?

- Little activity on Yahoo group
- Current schema 1.5 years old
- Not really open
 - Never was
 - Now owned by Autodesk
- Where's the momentum?

Conclusions

- Pragmatic value
 - Easy to implement (technically)
 - Model transfer works
- But not ready for long haul
 - Not sufficiently rigorous
 - Not sufficiently general
 - AutoDesk control
- Needs
 - Rigorous documentation
 - Validation tests for export