Team Work: BIM Success with IFC Interoperability

Brian Hores, AIA, LEED AP BD+C
Flansburgh Architects, Boston, MA
Case Study
Holbrook Pre K-12 School
Holbrook, MA
Case Study
St. John’s Prep Wellness Center
Danvers, MA
Areas of Focus

- modeling
- collaboration
- integration

Inter-office framework

file exchange

model checking

project communication

* BIM Framework

#BIMForumED
IFC Components

Objects with encoded data created or brought into the BIModel

a 3D object-based model with embedded relationships and objects carrying encoded data

the BIModel is a database that embeds, displays and calculates graphical and non-graphical information

#BIMForumED
IFC data exchange

• Geometry – includes vectors, solids, surfaces, and components.
• Data
  • Semantics – identity of a collection of geometry related to building objects.
  • Relationships – how the geometry is related to each other
  • Properties – definition of material
Combining Models
Round Trip File Exchange

export  import  reference

reference  import  export
Export IFC from Vectorworks
Import IFC into Revit
Export IFC from Revit
Import IFC into Vectorworks
Vectorworks – IFC import
Model Checking

1. **Model Review**
   quickly access model data for manual review

2. **Model Checking**
   comparison, validation, clash detection & object analysis

3. **Model Communication**
   track design issues
Model Review
Model Checking
# Model Comparison

**MEP Model Comparison**

<table>
<thead>
<tr>
<th>Model Name</th>
<th>SJP Wellness MEP Compare Version: 9.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checker</td>
<td>Joe Marshall</td>
</tr>
<tr>
<td>Organization</td>
<td>Flansburgh Architects</td>
</tr>
<tr>
<td>Time</td>
<td>2016-02-09 21:56:52</td>
</tr>
</tbody>
</table>

- **added**
- **removed**
- **modified**
Model Communication
PDF Report

MEP Coordination

Duct Conflict

Adjust duct accordingly

(S) LEVEL 1 PIER, (MEP) Basement CORRIDOR[001], EQUIPMENT ROOM[010], CORRIDOR[011], RESTROOM[125], STAIR "C"[000], POOL MECH[005], RESTROOM[126], MECHANICAL ROOM[009]

Stack Coordination

Tracking ID: MEP294
<table>
<thead>
<tr>
<th>#</th>
<th>ID</th>
<th>Project</th>
<th>Date</th>
<th>Responsible</th>
<th>Task/Issue Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>44</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Lights in area way must be surface mount to foundation walls</td>
<td>billbeatrice, 2016-02-29: &quot;Ceiling&quot; in this area is an open grate - see arch details dwg: L/94.26 and 4/AS.11</td>
</tr>
<tr>
<td>13</td>
<td>45</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Beam Penetration shown for fresh air boiler piping.</td>
<td>billbeatrice, 2016-02-29: MEP / LEM - please review. Can this piping be lowered to avoid the beam?</td>
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<td>14</td>
<td>46</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Susp Cig / basement corridor 001</td>
<td>Suspended ceiling in basement has been removed per VE</td>
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<tr>
<td>15</td>
<td>48</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Susp Cig Equip Rm 010</td>
<td>Cig has been deleted per VE</td>
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<tr>
<td>16</td>
<td>49</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Basement Corridor 001</td>
<td>Duct / Beam conflict</td>
</tr>
<tr>
<td>17</td>
<td>51</td>
<td>(S) SJP Wellness - LEM</td>
<td>29-Feb-2016</td>
<td>billbeatrice</td>
<td>Beam Pen / Basement &quot;P&quot; line</td>
<td>Ducts penetration beam along</td>
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<tr>
<td>18</td>
<td>52</td>
<td>(S) SJP Wellness - LEM</td>
<td>1-Mar-2016</td>
<td>billbeatrice</td>
<td>Lights in Area Way</td>
<td>Fixture type conflicts with grate above.</td>
</tr>
</tbody>
</table>

| Excel Report |
BIM Collaboration Format (BCF)
MEP Coordination

Duct Conflict

Adjust duct accordingly

Tracking ID: MEP294

Stack Coordination

Tracking ID: MEP295

(S) LEVEL 1 PIER, (MEP) Basement CORRIDOR[001], EQUIPMENT ROOM[010], CORRIDOR[101], RESTROOM[125], STAIR “C”[000]. POOL MECH[005], RESTROOM[126], MECHANICAL ROOM[009]
Construction Progress
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