

ACI Committee 131
Building Information Modeling
Meeting at ACI 2019 Spring Convention – Cincinnati, OH
Tuesday, October 22, 2019 – 3:00 pm to 5:00 pm

Unapproved Minutes

Members Attending:

Allan Bommer	Bentley Systems
Christopher Brown	SOM
Pete Carrato	Ellis Global Group
John Dolphin	CADS-USA
Dennis Fontenot	CMC
Dave Grundler	Applied Systems Associates
Robbie Hall	HRC
Ron O’Kane	Leigh and O’Kane

Associate Members Attending:

Asit Baxi	Baxi Engineering
Dick Birley	
Ernesto Ng	MAVEANG
Bob Phare	Command Alcon
Ricardo Rodriguez	BASF
Richard Ryon	RMD Kwikform

Guests Attending:

Tim Christle	PTI
Oliver Ernst	Fischerwerke
Maryam Hojati	University of New Mexico
Khashayar Jafari	Pennsylvania State University
Alan Vaesa	GCP Applied Technologies

1. Introductions

Chair Chris Brown welcomed the attendees, followed by self-introductions.

2. Agenda

The agenda by Chair Chris Brown was approved as proposed.

3. Meeting Minutes

The 2019 Spring Convention meeting minutes were approved as written.

4. CRSI / ACI 315 Update

Grundler reported that CRSI expects to finish their BIM technote next week. The technote has an educational goal. Nothing in the technote is thought to conflict with what 131 committee has been discussing (particularly related to LODs).

Birley reported that the new ACI detailing manual is expected to be released in February. This manual is mostly authored by ACI staff, with input from 315. The manual consists of 3 parts:

1. The traditional rebar detailing manual (SP66)
2. Example/standard/recommended details
3. *Detailing Corner* Q&A from Concrete International

The standard details being developed are rapidly improving (the first drafts didn't look very good...).

5. BIMForum Changes

Carrato reported his observations from BIMForum in September.

BIMForum has been reorganized. It is no longer a joint effort of AIA and AGC. It is now the US chapter of buildingSMART. Ian Howell is now "US Representative" for buildingSMART International and is heavily involved in restructuring buildingSMART and working to get the US market to value IFC.

BIMForum's LOD document has been updated; the most significant change is the addition of landscaping. The document seems to evolve mostly based on initiatives that come from outside. Carrato spoke with Will Ikerd (one of the leaders of the LOD document). Ikerd acknowledged that the Omniclass organization of the document was not always optimal and they might move away from that organization strategy.

There were 3 presentations at BIMForum related to BIM for Reinforced Concrete. One highlighted a workflow from Revit to text to Excel (!). 131 should consider presenting our views; a previous proposal we made (or ACI made on our behalf) was not accepted, but that may have been related to not matching the theme of the conference. Perhaps we should resubmit that previous proposal.

6. buildingSMART International Adoption of 131.2

Bommer provided an update on the discussions between ACI and buildingSMART International (bSI). Ann Masek (ACI Foundation) has been the ACI point person for the dialog with bSI. ACI has offered to license 131.2 to bSI free of charge, and (after numerous conversations) bSI promised to propose an MOU outlining how the organizations should work together. bSI has not delivered the MOU and has generally been non-responsive. Ian Howell (new bSI US Representative – see above) has been more engaged, but bSI does not seem at all flexible in their working arrangements.

Masek, Bommer, Brown, Carrato and Grundler met before the 131 meeting to discuss what to do next. It was decided to present bSI with a (friendly) LOI-style email ultimatum. ACI will tell them how we would like to work with them and leave the ball in their court. Masek will send drafts to 131 and ACI staff for review.

7. Industry Adoption of 131.2

Bommer and Brown presented a summary of the adoption of 131.2 by software vendors. Currently there are 2 implementations (SDS/2 has export, and an aSa field tool has import). aSa/Bentley's ProConcrete export implementation is nearing completion. Other vendors (Autodesk, Nemetschek, Trimble, etc.) have expressed support, but have not delivered. Dolphin reported that an Autodesk/CADS debate over who should write the implementation has delayed their implementation; Autodesk now reports that they will have a "3rd party" write the implementation – that might be CADS.

Bommer expressed that we need to show some clear productivity-enhancing workflow to push the vendors to implement.

8. PTI Collaboration Update

Bommer reported on the collaboration with PTI to extend 131.2 to include post-tensioning. The PTI BIM committee has discussed the extension for 2 PTI committee meetings (Bommer attended the first one) and is now ready to start drafting content. Bommer and Jon Hirsch will create a draft (likely November) which the PTI BIM committee will discuss in virtual meetings in December.

If all goes well, there will be content for a 131 ballot before the ACI 2020 spring convention. That ballot item will be a general description of the content (not the final wording of the 131.2 document). The plan is to follow-up with a ballot of actual text of the extended 131.2 before the Fall 2020 convention.

Bommer requested (and received) permission to work with Laing O'Rourke and the Europeans on their requested (small) 131.2 changes to coupler modeling simultaneously. Bommer requested that Brown submit to TAC a formal request for a 131.2 update.

9. LOD Update

Bommer reported on the LOD "text descriptions" that he distributed to the committee earlier in October and the responses he received. The goals for this effort are to influence BIMForum's LOD document, and to - perhaps - create our own 131 LOD document.

Bommer reviewed a few of the high-level responses he received:

- *What does "correct position" mean?* The committee agreed there should be some note regarding appropriate tolerances.
- *How is scope determined?* (e.g. a concrete model will not always include embeddings, regardless of the LOD). The committee agreed the different categories of items are separate, and noted that a single model does not need to have everything at the same LOD.
- *What is "structurally significant"?* The committee agreed that at different stages in the workflow, significant information will not yet be created or will not have been reviewed by the required participants.

The committee decided to create its own LOD document (probably a technote). This will have a good side effect of adding weight to 131's requests to BIMForum (*our document has gone through an ISO consensus process...what process has yours gone through?*)

Given Bommer's commitment to then PTI effort, and the desire to move quickly on the LOD document, Bommer requested that Carrato take the lead on the LOD document. Carrato accepted.

10. EM-20 Update and Pour Modeling

Carrato is now leading the EM-20 (Concrete Contractor's Coordination Model) effort. Carrato described that the information previously gathered is very good, but some of that information needs to be associated with a pour, and there is nothing to define how a pour is modeled. Carrato reached out to Bommer to work with the software developers to define how a pour is modeled.

Bommer discussed the software vendors' different views, presenting modeling diagrams (see attachments) and giving live demos of IFC models using Solibri to show the two different approaches.

The two approaches presented can be summarized as:

- Option 1:
 - Pour Units (IfcElementAssembly) are the primary object:
 - Pour Units own Pour Objects (IfcBuildingElementProxy) (the concrete regions)
 - Pour Units own reinforcement
 - Pour Units own embeddings, etc.
 - Beams, columns, slabs, stairs, etc. are replaced by Pour Objects
 - Splitting or joining may occur
- Option 2:
 - Beams, columns, slabs, stairs, etc. remain in the model
 - Pours (IfcGroup) are groupings of:
 - Beams, columns, slabs, stairs, etc.
 - Sub-pours (IfcBuildingElementProxy), which are portions of:
 - Beams, columns, slabs, stairs, etc.

The committee did not feel that they could decide between the options (“too technical”), but expressed two comments:

1. There is value in keeping the members (Beams, columns, slabs, stairs, etc.) in the model.
2. There is value in having the pours clearly associated with everything that is cast within them.

The committee asked Bommer to see if the software vendors could agree on something and come back with a recommendation. They specifically mentioned that Bommer, Butler, Northcutt and Cochrane should be in those discussions.

11. EM-6 Update

Brown has limited time to report but gave an overview of the status of EM-6 (engineer’s design model). The Saturday meeting went well with good discussions; the entire time (full day) was used. Many small improvements were made to the plan.

The committee was supportive but suggested that more structural engineer participation or review would be helpful, and that something should be brought to ballot soon.

12. New Business

There was no new business.

13. Adjournment

The meeting adjourned at 5:06 pm.