BIG BIM Bang - Enterprise BIM and BIG Data - Sharing Data
Questions and Answers

Q: How do you foresee integration of LEED data into these systems? [Alexandra Hussey]

A: There is a place to track LEED goals and a checklist. There are many approaches to this. One example would be to start to fill out the LEED checklist and make it part of the project and accessible to the entire team and then to design toward those goals. As the project progresses more concrete decisions of how to address those LEED goals could start to be integrated into the BIMs. The bigger picture would be to start tracking actual performance in buildings and compare that actual performance to calibrate it to the original goals. This tracking capability is already starting to happen in BIMStorms and elsewhere as these facilities start to "talk" and become more intelligent. [Kimon Onuma]

Q: Are all CCC campuses and facilities group aware of the Fusion+GIS+OPS platform they have? On a scale of 1-10, how much do they leverage these capabilities in their daily duties? [Mo Haidar]

A: This system became available to the 72 college districts in March 2011. Since then 15 districts have completed or begun their first F+G+O projects, several of which are very large master-planning activities. Two others have recently defined specific requests for district-wide modeling, and several others are working with me to explore possible projects. All this in about 13 months, which is remarkable within such a large public organization. I am thrilled with the districts rate of adoption [John Roach]

It is not an all or nothing approach. The adoption rate and the way the systems are used by each district can vary and that is ok. It can be organic how it it implemented, and how it connects to other systems. What is key is creating an open standard connection and making that accessible and easy to connect to. This becomes the foundation for other systems to connect, and is ultimately why we are seeing rapid adoption in ways we would not have imagined. [Kimon Onuma]

Q: Any political legislation necessary for the California Community Connectivity collaboration (FUSION)? [AIA Columbus TAP]

A: No. The system exists because the college districts had common needs and a shared vision. Sixteen districts paid for the original development of FUSION, and districts pay annual fees for its operation and management, but no direct state funding in involved. Operating policies from the California Community College Chancellor's require districts to provide annual updates about their facilities, and that is helpful in keeping the data up to date, but it is not legislatively mandated. For new owners looking to develop their own systems, I recommend starting a pilot effort with a small group of motivated individuals who recognize the value. My experience has been that implementation by such early adopters make the opportunities more tangible to a larger audience [John Roach]

Q: Besides the huge investment in developing and learning how to use this software, can people really process all of this data? Would you trust making decisions based on a system as complex as this? You may be looking at data that is the equivalent of the building floating in the air that was shown (due to software incompatibility) [Robert Bernstein]

A: The FUSION+CCCGIS+Onuma Collaboration Platform is used by a range of users with different needs, and no single user has a need for all data streams. For example, we have accounting staff that only use a few pages of just the FUSION system to submit financial reimbursement claims. So our data contributors and consumers only work in the data sets they need and understand, but because the different data streams can be overlaid and recombined, it is easier for a specialist in one area to answer questions for one another.

Furthermore, because we strive to link to systems already in use, there is less cost and energy that goes into developing and learning how to use these features. We adopt the systems they already use to exchange complimentary data so that legacy systems can continue. [John Roach]

In BIMStorms we often talk about creating train wrecks. We want to see a lot of train wrecks very early and be able to adjust decisions on the spot rather than going on for weeks or months without realizing there is a problem. Just like in charrettes, participants are able to interact on the spot and adjust decisions. The reason that charrettes work is that we are all in a room together addressing problems as they happen. The BIMStorms are 21st century charrettes that allow this interaction. Mixing tools together and letting each user work from their angle of expertise lowers the barrier and cost. The concept of garbage in garbage out does not apply here. We want to see the garbage or errors (buildings floating in the air) and correct them. The old method is that garbage gets put in and swept under the rug. Here we pile it on top of the rug, and clean it up. In the end it is not about the tools, but about the participants with their knowledge making decisions. [Kimon Onuma]

Q: Can you speak more about operations cost? [Marc Teer]

A: To which speaker or section of the presentation is this asked? This question may be easier covered via phone call to a specific presenter. If an owner's perspective helps, I am happy to take calls or emails to start that conversation. [John Roach]

If the question is about operational costs, then the response from a BIMStorm perspective is: BIM is used throughout a project, from early planning of the owner putting in requirements for a new building and the desired energy use or performance, through the design process when AEC teams work on responding to the requirements and then to the delivery of the building. Once the data from BIM goes into operations, open standards such as COBie and IFC are used in the BIMStorm to pass this data on to other tools that would be used to track operations. The goal is to use the same data and then to even make this data live and breathe while the building is being used. This data then becomes useful to future renovations or analysis of how the building is performing for the whole life cycle. Many owners are going through this right now. They are requiring BIM but once BIM is delivered how do they use the data from the BIM for the life-cycle. [Kimon Onuma]

Q: Where did primary MiraCosta BIM model live? Was it located in central offsite location for team access? [Alexandra Hussey]

The MiraCosta BIM models were created in Onuma System. These were copied by others into SketchUp and Revit for further model development, primarily fenestration and sun shading, so that the different environmental analysis programs could be effectively operated. [Tim Blatner]

The "BIM Model" or the "i" of BIM included data that lives in many other places. The program requirement data, how many square feet, what type of space etc. lives in the FUSION server. The existing condition of other buildings is also in FUSION. The utility lines and GIS data is in the FUSION CCC GIS System. The maps and 3d Google Earth are in the Google Server. There is also another GIS server from ESRI with mapping data. BIM and data associated with BIM along with COBie are in the Onuma Server. Then this same data moves to the SketchUp, Revit, Vasari, VICO and other BIM tools from Onuma during the design process. The completed design data BIM is imported back in and made accessible again in the FUSION CCC GIS ONUMA System. The main point is that there is no "Primary" model, or one BIM. It is a mash-up of many systems creating the BIM. [Kimon Onuma]

Q: Can the work flow of design / analysis software be clarified? e.g.: which programs were used for which facet of design/construction, and in which order (understanding that some are simultaneous in the charrette environment). [Allegra Kochman]

The MiraCosta College project started in Onuma System with program data as disconnected spaces. The program was copied to a new project and then spaces were reshaped and arranged into floor plans and model. Other participants copied the models and developed them further in SketchUp and Revit. These models were then analyzed in Vasari and Ecotect, by Autodesk products, for environmental analysis, and in Vico Software for cost and constructability analysis. Although the BIMStorm is a charrette in nature, it suggests that this is a real workflow in which key decisions can be informed early in the design process with simple modeling when numerous options can be explored. [Tim Blatner]

The KP Glenlake project the Balfour Beatty worked on went through the following parallel workflows:

For one leg of the effort that focused on civil design, we went from (1) the Onuma system for conceptual building footprint layout, to (2) SketchUp for conceptual building massing, to (3) Civil 3D for site design and evaluation.

For another leg of the effort that focused on building design, we went from (1) an Excel spreadsheet of program spaces, to (2) Onuma system, where the spaces were converted to tangible, workable objects and arranged roughly, to (3) Revit Architecture where the spaces were arranged more precisely and other elements were designed, like shell, interior partitions, etc., to (4) Revit Structure where the structure was designed, to (5) Quantity Take-Off where a structure take-off was performed. [Jesse Whalen]

For the KP Gwinnett COBie specific effort BIM was authored or augmented by various tools, Revit, Onuma, NavisWorks with Vela Sync, or EcoDomus- then exported to COBie format. COBie is then consumed by a CMMS (Computerized Maintenance Management System) or IWMS (Integrated Workplace Management System). During the BIMStorm, we did not push to a CMMS/ IWMS. [K. Maldovan]

Q: How long would it take an architect not familiar with BIMStorm to get up to speed incorporating this in their work flow? [AIA Columbus TAP]

One can learn and utilize basic aspects of Onuma System within minutes as has been demonstrated in numerous BIMStorm activities. Deeper understanding of the tool and its potential use and data management will take hours to days. [Tim Blatner]

Q: Can you explain COBie edits to account for equipment outside user program area? Can this be done ahead once you know COBie needs help? [Allegra Kochman]

The data for COBie can start before any modeling starts. It can be initiated by an owner putting together program requirements for spaces such as were done for the Mira Costa Project. Once this data is imported into COBie capable tools then an export of COBie can occur to check the data. For equipment, the actual type of equipment a project may need is not known at the start of a project, but the owner requirements of needing air conditioning in the building could be entered as a "system" requirement and tracked in COBie. The idea with COBie is to continually add and edit the data as the project progresses not only at the end of the project. At the end of the project the air handling unit that is part of the air conditioning system could have additional data, such as warranty info, SKU number, install date etc. that would make end up in COBie. [Kimon Onuma]

Q: How strict must Revit standards be for such complex data exchange to work? Who sets the standards that all team members will accept? [Paul Ashley]

A: As an owner, I feel it is my responsibility to establish standards requirements. For basic exchange across the FUSION+CCCGIS+Onuma Collaboration Platform, BIM tools are to be IFC compatible. However, that does not preclude more stringent methods or standards be implemented in detail design tools, such as Revit. However, within the California Community Colleges, we are not standardized on a single detail BIM toolset, and this decision would fall to individual project owners. [John Roach]

Coming up with the standards by which the team will model has to be a joint effort between those creating the models and those using them downstream. It's hard to talk about universal modeling standards, because the way in which a model should be built to be most useful depends entirely on how the model is going to be used. There are many, many different ways to use models, and each of those uses has a different perspective on how the model should be built to be most useful. [Jesse Whalen]

Q: Andreas, how did GBS do compared with the more detailed analysis? [David Scheer]

The Green Building Studio daylighting numbers seem to be accurate in terms of an average or a point in the center of the space – so it provides a nice approximation. However, if you want to understand how the edges of the space will perform or if there is too much daylight at times, then you really need the more in-depth analysis. Also, GBS does not seem to be able to evaluate interior and exterior shading/light shelf effects. We didn't investigate it in great depth during the two days, but those are some of the issues that we uncovered. In summary, I think that GBS is a good schematic design tool, but really needs to be complemented with more robust analysis programs to take ideas beyond that point. Not sure how Ecotech or Project Vasari stack up comparatively. [Andreas Phelps]

Q: Do you have an owner input on use of the FM solutions? Is there a front runner FM based on BIM? [David Stone]

A: Local college facilities directors have different preferred approaches, and we do not have a 'front runner.' A key to our approach with the FUSION+CCCGIS+Onuma Collaboration Platform is that may tools can be used for linking FM data. [John Roach]

I don't know that there is a front runner FM platform that works best for BIM. The goal is to establish a design, construct, turn-over workflow that works for whatever system the owner plans to use. What's important to note is, there is no one-size-fits-all solution to FM. It has to be customized for the owner's needs. There are so many variables involved…what FM or CMMS platform the maintenance staff will use, how they use it, how extensively they use it, what specifically they use it for, what data is important to them, what other software do they interface with for other things, like generating work-orders, ordering supplies, tracking assets, etc. You absolutely need to get owner input to find an FM solution that will work for a project. [Jesse Whalen]

I agree, there is or should NOT be a front runner. The front runner is the owner requiring their data be stored in open formats that allows all data to move in and out of any system that is used to be imported to other competing systems. Owners are starting to realize and demand that more now and tools that support this should be the front runners. [Kimon Onuma]

Q: Other than as images, is there a way to incorporate conceptual models, such as a 3d max, maya, modo, or rhino model that may provide very important information about intended look, feel, materials, etc.? These are unifying around the alembic file format type for sharing data. [Joe Manganelli]

In BIMStorms other tools are used that produce very valuable data. The results can be posted and attached to the project or the entire model can be attached. This includes tools such as paper and pencil which produces great ideas and are attached to and made accessible to the teams. In other BIMstorms, 3D Max, Maya, and Rhino along with other tools have been used. [Kimon Onuma]

Q: Not being familiar with BIM storm can this vast array of team members be assembled for projects without that platform? [David Mayer]

A: Yes, I think that is possible conceptually, but you would need to identify a open-source or low-cost set of web-based tools to facilitate that. As an owner, from a practical standpoint, I am not sure why to bother with reinventing the wheel. It may seem a bit intimidating, but participating in a BIMStorm is free and easy to do, and there is no risk.

Even though the BIMStorm originated with Kimon Onuma's team, I know that he encourages all participants, including other web-BIM companies. This is one of the key reasons it is well suited to a large diverse owners group such as the California Community Colleges--there is room for everyone with useful data to participate [John Roach].

Yes. The Onuma system is a platform that enables collaboration. It does so in many ways. It's web based so is readily accessible. It leverages open standards so is highly interoperable. It's relatively inexpensive so is easily attainable. But when it comes down to it, collaboration is about behavior. It's enabled by technology, but it's

inherently about behavior. Collaboration is not tied to any one platform. What's far more important than the technology a team uses to collaborate is their commitment to collaborating. [Jesse Whalen]

We invite other tools and system to connect in BIMStorm. The more the better. This is not something that can be accomplished by any one tool or person. [Kimon Onuma]

Q: So is there one keeper of the final model? [Alexandra Hussey]

A: That begs the question of what is the 'final model' and what is the customer's objective. In the BIMStorm campus master planning scenario we discussed for the California Community College, there are many authors of pieces of the overall campus tapestry that emerges. In the course of implementing a master plan, a campus owner will need to declare that a version of the master plan is 'final,' and in doing so may work with the FUSION+CCCGIS+Onuma Collaboration Platform to freeze future changes to that version--at least temporarily. However, as a master plan is built out, it also makes sense that an owner wants to reflect ongoing changes as they occur so that the campus model remains current. In most cases, the best individuals to update the model are the army of authors that created the original tapestry. It becomes a living model or campus map that is maintain my many different specialists. [John Roach]

See responses above. There is no one final model. This is a big, big problem and misconception in the industry that everything should be or can be in one final model. In theory it is possible to jam everything into one model. I can use BIM to open up a room, and find a person and put that person's name and phone number in the BIM etc. In practice it makes no sense at all, and I believe is a myth and one that we are working very hard to dispel in BIMStorm. ;-) [Kimon Onuma]

Q: From a construction operations perspective, what is the lowest hanging fruit that would allow (say me) to start using and becoming familiar with Onuma. Which processes make the most sense right now? [Nathan Ducote]

A: The easiest place to start is to look to the data tools you are already using and ask what features you want or that your customers want. Then brainstorm with members of this group for the easiest way to get there. [John Roach]

Join the next BIMStorm ;-) [Kimon Onuma]

Q: If someone is using an alternative BIM modeler, such as ArchiCAD or V8i or Tekla, does that really create data exchange and collaboration problems? I know you kind of already addressed it, but it was unclear whether it is a minor nuisance (that might not be important if the BIM package has other advantages) or is it such an issue that it can really wreck the process? [Joe Manganelli]

I cannot speak to the specific capabilities of the named programs with regard to data exchange and collaboration, but one of the goals of BIMStorm is to push for open collaboration by all programs so data can be shared between them, and not recreated or re-entered each time a different program is utilized. Although not discussed in the webinar, the participants in BIMStorm BIG BIM BANG also had access to explore Gehry Technologies GTX Sync, like Onuma System, a cloud-based collaboration program. So if the native modeling program does not support collaboration, there are other programs that do. [Tim Blatner]

Many tools have been used in BIMstorm, including Archicad, Tekla, Revit, Bentley, SketchUp, Google Earth, and many more. Each has pluses and minuses, but the bottom line is there is always a way to get data in and out and hopefully with more tools opening up things will get easier. The message of the BIMStorm is jump in and start pushing for more connections. There is no time to wait until everything is perfect and there is an amazing amount that is already possible today. If we waited for the Internet to be 100% perfect or "complete" we would never use it. [Kimon Onuma]

Q: What if changes occur during construction, how is the change control process implemented? [Satyavani Andey]

Because there is a significantly different look to the tools we're using today, there's a natural inclination to think the processes have to change significantly as well, which is not necessarily the case. Say you encounter a change under traditional circumstances. You might think about things like: What or who caused the change? How does the change impact current state of design and is there a cost associated? If so, who bears the cost? Do the design documents need to be updated to capture the change? How does the change impact current state of construction and is there a cost associated? If so, who bears the cost? New technology and closer collaboration will hopefully reduce the occurrence of changes, but if they happen, the change control process is really not much different than it has been in the past. [Jesse Whalen]