

One City's Experience with Using Open BIM Standards in 2021

by Deke Smith

Thank heavens for the brave pioneers back in the early 2010's because today we are able to share information across the facilities and infrastructure industries across the facility lifecycle throughout our city. The storm we had last week proved the point again. The city was yet again hit by massive power outages and general utility system failures from the storm surge. Housing near the shore was simply wiped out and the number of homeless number in the hundreds of thousands. The decision the city made to capture information about all new buildings being built in 2016 and to also capture information from building permits and fire inspections of existing facilities has led to cutting the loss of life nearly zero. They started out using some of the early open standards based BIM based on ISO standards implemented back in 2013. That has given us 8 years of data collection that is all usable in a situation like this. The city's infrastructure /disaster recovery center using IFCXML was able to link many of our existing data sets so that we have had reasonably good situational awareness since even before the storm hit. This allowed us to pre-position emergency assets out of harm's way, but close enough to the areas we anticipated would be hardest hit.

When the 30 story apartment complex was in danger of collapsing we were able to evacuate nearly all of the residents. Those who refused to leave were able to be located quickly and evacuated as it actually began to collapse. Our appreciation to the emergency workers who, using augmented reality hand held devices were able to quickly get to those residences we knew were still occupied and get all the people to safety.

Life for those who were affected by the storm is certainly not back to normal, and won't be for some time but damage assessment was quickly accomplished based on even some of the minimal information we had available to us about all the buildings in the city. This coupled with the model of the storm provided a very quick analysis of the anticipated and actual damage. Having that baseline before the storm and then using drones to fly the affected areas the next morning after the storm was over gave use near real time information of before and after situations which allowed us to make very accurate assessment of usable facilities. It also allowed us to prioritize the roads that needed be cleared first. We noted that since the bridge was out at first street, even clearing the road would not be of value until we could get a new bridge floated into place from the prefabrication plant up river.

We have now also made an assessment of the impact to the tax base of the city from the people and businesses that were affected. The prefabricated modules we invested in in 2014 will be able to be brought in and erected on existing foundations not affected by the storm and we should have most of those businesses again operating and the people in permanent homes by the end of the month. The return on investment of that decision is nearly immeasurable in both financial impact to the city and the inconvenience to the residences. The fact that the business manufacturing those was hugely responsible for getting a lot of our cities construction workers back to work was also a huge plus. It even increased our tax base as it attracted some new residences, which also increased demand for new houses and increasing real estate values, and along with that increased tax income for the city.

I would have to say that we dodged a social and financial nightmare because we planned for the inevitable events that we should anticipate in living in a community close to water and near the capital of our country. If it had not been Mother Nature that caused the problem then it could have been from some man-made event. Not planning for the future is just plain foolish.

I would say that we are able to come out of this as we did because of our city making the decision to store its information in BIM's for each building and infrastructure asset. The decision the building permits office made to use AutoCodes in 2017 was also a lifesaver. Certainly as new facilities and structures were built we captured all the information in the BIM's when the building permits were issued, but even as renovations and expansions of existing structures were being issued building permits we collected the available information in an international standard format (ISO 16739). It is quite amazing how much information we were able to pull together in these past 8 years using the consultant we hired to coordinate our information resources. But simply making the decision by our enlightened mayor to capture information for re-use instead of only for a specific tasks as we used to do was brilliant and certainly played a big role in his re-election because he was able to leverage the information about the residents of the city in his campaigning. Using the National BIM Standard-United States version 2 in 2013 started the ball rolling. Now we are using version 5 and the content is significant and enabling us and our citizens to do so much more with facilities information.

I know for a fact, there is no going back and this event only reinforced our commitment to continue collecting and storing information. The city council is relishing being able to provide our cities residences and businesses with factual up to the minute information which makes the citizens believe that they actually elected the right people for the job this time around. It has restored confidence in our government that was quite honestly flagging back in 2013 when these decisions were starting to be made. It took a while to make the transformation, but now that it has occurred everyone is happy with the outcome.