

## AI is used to Create a Building Information Model

In a first-of-its-kind demonstration, artificial intelligence established a BIM with data that can be used in asset management for the entire lifecycle of a building and equipment inside.

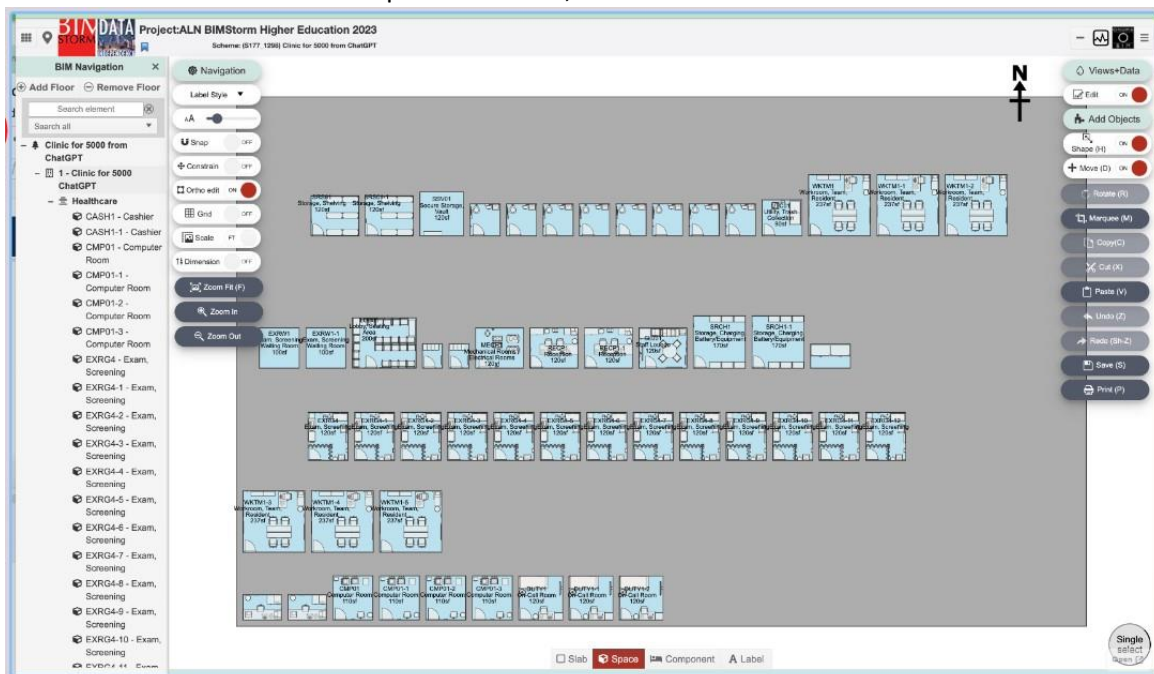
March 22, 2022

Artificial intelligence was used to create a Building Information Model in what may be the first public asset management process demonstration of its kind. At an Asset Leadership Network web workshop on Wednesday 22 March, Kimon Onuma showed how interaction with artificial intelligence created a building program table with rooms and equipment. The table was imported to the ONUMA System to create a Building Information Model. The next presentation is on Wednesday 12 April at 4 pm Eastern. Register [here](#).

ONUMA, Inc. President, Kimon Onuma, demonstrated the company's processes for interacting with different systems developed by OpenAI. ChatGPT, GPT 3.5, and GPT 4.0 were communicated with to derive a space program for a higher education campus healthcare clinic with a customer base of 5,000 people.

Combined with other proven technologies and the advanced business processes they enable, the 9-step interaction with the OpenAI software provided a Building Information Model ready for planning, design, design development, licensing, financing, construction, equipment, staff, operation, maintenance, and for meeting other owner requirements.

This basic model for a women's health clinic was generated after working the Artificial Intelligence to determine the proper number of rooms and types of rooms based on equipment in the rooms. The information in this model can be imported to Revit, ArchiCAD or other information for refinement.



Whether or not any other Models have been generated from AI, attendees expressed they had seen something very different than what they have seen before. One attendee called the new processes she saw “Shocking.” Attendees were all experienced professionals working with building owners on high-level activities. The attendees are aware of standards, and clearly understand how AI is a new, powerful tool for owners to use in managing their assets.

The program was recorded and shows Mr. Onuma interacting with leaders of many key institutions and associations including the National Institute of Building Sciences; National Academies of Science, Engineering, and Medicine (NASEM); Academic Interoperability Coalition; ISO; and APPA, which started as a higher education facility asset management organization and is now open to all facility asset managers.

A guest commentator was **Jack Dempsey**, President, Asset Management Partnership. He is on the NASEM Board on Infrastructure and the Constructed Environment, is an ALN Board of Directors member, has worked with Mr. Onuma, and has known him for more than 20 years. “AI is going to touch everything we do...it is exciting to see what we can do with it,” Mr. Dempsey said referring to the unprecedented workflow transparently presented by Mr. Onuma.

Mr. Dempsey went on to say, “Governance . . . the management system . . . defines the framework for how decisions get made.” He indicated that as we use AI tools and processes to provide owners tremendous benefits, we are going to accelerate the use of internationally vetted and proven ISO management systems. He continued pointing the way for owners combining human-defined asset management structures driving use of AI tools as a way of gaining dramatic benefits for asset owners. “ISO has dozens of management systems that use the same harmonized structure,” he said.

**Roger Grant**, Program Director, National Institute of Building Sciences, saw the exercise as a demonstration of how owners can get increased value using advanced technology. “Owners pay the bill but they haven’t gotten full value yet,” Mr. Grant stated referring to the consistent problem of information being trapped in Building Information Models and owners having to pay to recollect the information. “They have been left out of the equation of how we apply technology to building industry. So it is great to see where AI is going and how we can express requirements in a way that allows information to be reused. Having the information structured and accessible is really important because then you can better match it for your different uses.”

**Deke Smith**, Executive Director Academic Interoperability Coalition, said, “The owner has a tremendous amount of information, but it is disconnected at this point. What is nice about this collaboration environment being demonstrated is that you are getting the authoritative sources of information and providing it,” in an accessible way that people can trust.

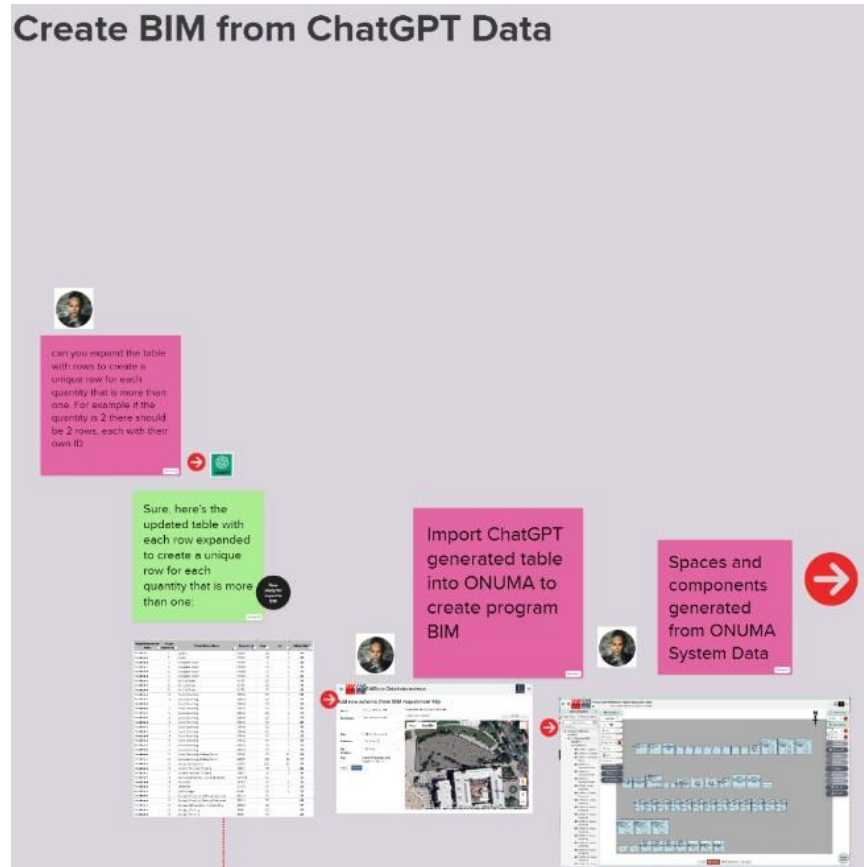
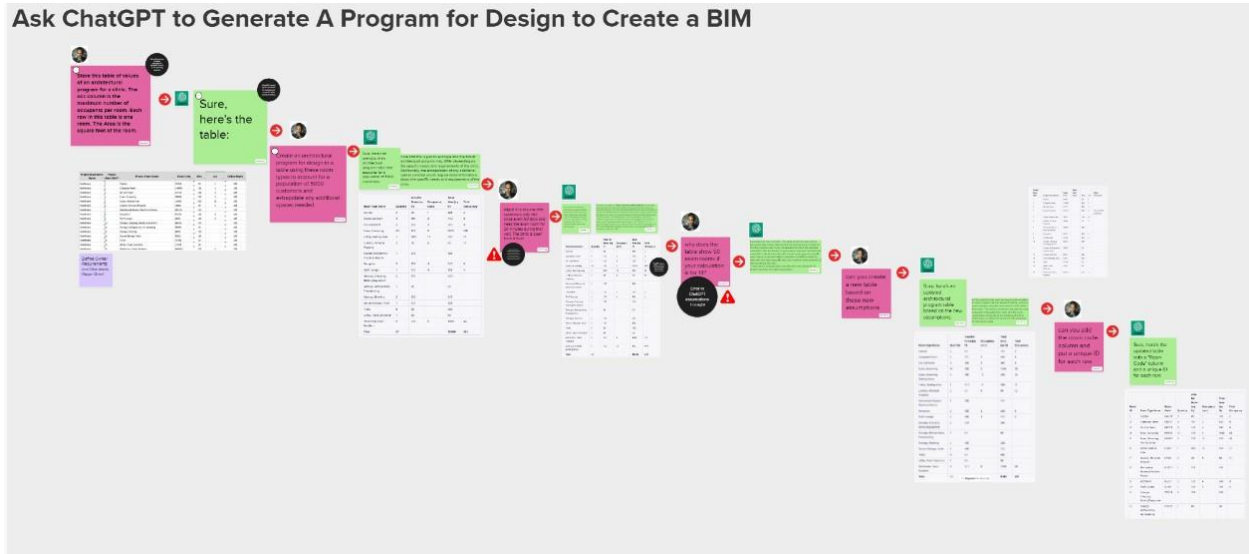
Mr. Smith went on to say. “In the design and construction industry, we look at first costs, but most cost for a building occur after handover. If we are going to be sustainable, we need to engage the owner and then make sure we can track and understand all of the costs involved with the facility, and not operations and maintenance, but using the information about employees and then the societal impacts. You are talking about a women’s health clinic. What is the societal benefit of having that type of facility?”

Mr. Smith ended by saying, “I think that we need to look at the big picture and recognize that most of the decisions made in design and construction are going to have huge impacts in not only operation and

maintenance but in society also. You have to have a good asset management system to calculate Total Cost of Ownership.”

Jack Dempsey pointed out that he has conducted general, interactive sessions with AI and it required consistent reframing of questions and challenging the system when there was an obviously wrong answer. “But what was just demonstrated shows the ability to get AI to provide levels of specificity and calculations of the amount of space and number of rooms is almost limitless and is very exciting,” Mr. Dempsey said.

Below is the sequence of exchanges with ChatGPT to create the program for a Building Information Model.



# Design the Clinic Using BIM



Use the Program Requirements BIM to resolve the design



Open the API

Export to COBie

Track BIM Deliverables for Owners NBS



COBie Validator



# Make the BIM Data Open with API



ID	Name	Category	Level	Area	Volume	Material	Color	Texture	Notes
1	Room 101	Office	1st	100	100	Concrete	White	Smooth	Office space
2	Room 102	Office	1st	100	100	Concrete	White	Smooth	Office space
3	Room 103	Office	1st	100	100	Concrete	White	Smooth	Office space
4	Room 104	Office	1st	100	100	Concrete	White	Smooth	Office space
5	Room 105	Office	1st	100	100	Concrete	White	Smooth	Office space
6	Room 106	Office	1st	100	100	Concrete	White	Smooth	Office space
7	Room 107	Office	1st	100	100	Concrete	White	Smooth	Office space
8	Room 108	Office	1st	100	100	Concrete	White	Smooth	Office space
9	Room 109	Office	1st	100	100	Concrete	White	Smooth	Office space
10	Room 110	Office	1st	100	100	Concrete	White	Smooth	Office space

# Use BIM for the Facility Lifecycle

