



EXPERTS TALK

Bridge Information Modeling (BrIM) with Robert Allen

Bridge information modeling can smooth transitions between project phases and improve data-driven decision making.

Each bridge project brings with it its own complex design idiosyncrasies that are nearly always reworked by different users using different platforms. With increased demands for expedited delivery and limited resources, BrIM allows for streamlined data transfer between designers and contractors by coordinating project information for application throughout the program lifecycle. Using advanced technologies to develop and design the bridges of today means delivering them to communities quicker and more efficiently for stakeholders.leaders make better-informed decisions.



Based in our Manhattan office on 7th Avenue, Robert Allen is about 20 miles down the Hudson River from a mega project he helped design: the Gov. Mario M. Cuomo Bridge. He is our roadway and bridge department leader in New York and a

licensed professional engineer in five states. Besides the Gov. Mario M. Cuomo Bridge, his innovations and leadership have influenced more than \$6 billion in alternative delivery projects that include corridor upgrades, transit and freight rail structures, and Pennsylvania's innovative **P3 rapid bridge replacement program**. Contact **Robert Allen** for more information on Bridge Information Modeling (BrIM).

Q. What does BrIM make possible that is not possible without it?

A. When done right, BrIM optimizes workflows and eliminates the costly time and labor of repeatedly generating the same information each time a model needs to be created in a different platform or by a different user, which frequently happens as complex projects enter new phases. It's a tool that lets us harness information at its origin to drive decisions, create better visualizations and improve communication between designers and contractors — throughout the life cycle of a project.

Q. Let's say you're on an elevator with a client who asks what's innovative about BrIM. You have three minutes before you get to your destination. What's your elevator speech?

A. The "I" in BrIM is for "Innovation" as well as "Information." Both words start with an "I" for a reason. Bridge Modeling (BrM) has been successfully accomplished for decades, evolving into a standard for complex bridges. The "I" introduces a process to maintain information for the full life of any bridge project, small or large. Imagine being able to start with a simplified bridge model that consists of rough shapes and becomes the basis for smart, analytical decisions — for example, when to maintain components of the bridge. The information collected and shared with BrIM models is not new information to the design or construction industry. It is just the collection of the appropriate information at the optimum time of the project. Investing in the development of "I" in the beginning of the BrIM process has endless applications throughout the design, construction, and operation and maintenance phases of the project.

Q. How does the use of BrIM influence the outcome of the project?

A. Developed correctly, BrIM influences all aspects of a project. During design, it allows engineers and architects to apply greater intelligence using better quantitative data to help drive the process. During construction, it reduces conflicts and aids in construction sequence and adaptability to site-specific conditions. The influence is greatest in the operations and maintenance phase of the project, where a properly developed model with the correct data-driven

analysis can provide an owner with the optimum maintenance program. The information can drive smart rehabilitation and routine maintenance so that dollars are spent on the right components at the right time.

Q. What are significant projects you've worked on where BrIM made a big difference? Describe how.

A. The Gov. Mario M. Cuomo Bridge. We have used Bridge Information Modeling throughout design and construction. In the design phase, we used it to coordinate large sections of the bridge that were assembled off-site. This included routing mechanical systems throughout the bridge and reinforcing mega precast concrete substructure elements in order to avoid conflicts during construction. There's a great video on YouTube that explains in detail: [New NY Bridge - Building Information Modeling](#).

Q. What impact/s will BrIM make on the industry? And in what time frame?

A. It has already allowed designers and contractors to make more information-rich decisions about constructability, staging and safety throughout design and construction. Project leaders have greater access to information and consequently can improve construction phasing, fit-up and pre-evaluation of worker safety. Using BrIM also compels designers and contractors to think more about operations and maintenance. When designers and contractors think about the full life cycle of each component of a project as it is designed and constructed, the collection of information will paint a more accurate picture of the future operations of the bridge.



Inspiration & Advice

Q. What inspired you to become a bridge engineer?

A. As a child, I loved building structural things. I used to play out in our back yard, in a large dirt pile near my dad's shop. I would take my dad's leftover construction materials from his crew's day out on the construction site and see how I could use them to build bridges to carry my toy trucks and replica Caterpillar equipment. I was always looking for ways to make my structures better using new construction-site leftovers. Early in my career, I tried many things but my mind always

came back to being a structural designer; and now, as an engineer in New York who's working on the Gov. Mario M. Cuomo Bridge, I'm kind of still building structures in my back yard.

Q. What advice do you have for bridge designers who are new to the profession?

A. Always remember that most beautiful bridges are some of the simplest structural forms, tailored to play off of their surroundings.

Experts Talk is an interview series with technical leaders from across our Transportation program. Each interview illuminates a different aspect of transportation infrastructure planning, design and delivery. Contact HDRTransportation@hdrinc.com for more information. Visit www.hdrinc.com/insights regularly to gain insights from specialized experts and thought leaders behind our award-winning, full service consulting practice.