TRANSPORTING TECHNOLOGY

The US transportation system is forever grateful to the Eisenhower Interstate System and transportation advances made throughout the 20th century. If the 21st century is to carry a similar legacy, it must sustain that system for today and future generations, says **Ron Gant.**

What is technology's role for transportation infrastructure?

Ron Gant. Technology improves the work we do on a day-to-day basis. It affects productivity, quality of deliverables and the project continuum. Technology is not new to the transportation industry. Early on, the civil engineering industry readily adopted IT; however, much of this knowledge is now taken for granted. Departments of transportation (DOTs) and organizations such as the American Association of State Highway and Transportation Officials (AASHTO) and the Highway Engineering Exchange Program (HEEP), were forerunners in the willingness to share technology, ideas and promote software development of tools not yet commercially available. These industry leaders envisioned the ways in which technology could bring about productivity gains, improved design capability and workflows, and process enhancements — better sustaining the transportation life cycle through conception, preliminary design, final design, construction, maintenance, operations and back to conception.

What is the biggest deterrent to adopting new technology and seeing the benefits thereof?

RG. The first primary deterrent is the failure to repurpose information. Information created in one part of the lifecycle often ends rather than being carried forward. For instance, roadway designs created in preliminary and final design are often archived and are not carried forward into maintenance and operations. We recreate information that should already be in an existing data stream.

Secondly, lack of industry standards make it difficult for us to move through the transportation lifecycle. Most agencies have their own standards. In the US alone we have 50 DOTs, which means there are at least 50 design standards. Time and money could be saved if agencies shared CAD and design standards for final contract deliverables. We need to optimize our data for design, maintenance and operations.

How can we best eliminate such deterrents?

RG. A good start is to look at the efforts of building and plant industry leaders regarding building information modeling (BIM). The civil transportation industry has lagged behind other industries in 3D modeling, as well as creating information around those models.

Bentley has been doing 3D modeling for over 20 years, which is essential for civil engineering. Our work must be cognizant of buildings, utilities and other features around us. We construct in 3D, we model in 3D, but what happens to the data? We must combine 3D modeling with information modeling to create the civil information model (CIM). If data flow issues are resolved, the need to recreate data will be eliminated, vastly improving our workflows.

What progress is being made at this time?

RG. Efforts should not be directed towards simply constructing a single model that incorporates all data into one massive, unmanageable database. Rather, models are being constructed that are data aware of one another and each object within each individual model. A cohesive civil information model, similar to BIM, is required to provide the relationships and repurposing of data to support the needs of transportation. CIM should not be misconstrued as just a project model, but instead a systematic association of data that reaches across multiple models, fully aware of their dependencies on one another to serve the entire transportation lifecycle.

What trends support sustaining transportation infrastructure?

RG. Civil engineers, construction professionals and technology providers are becoming involved in BIM and BrIM. These concepts are good, but need to be expanded for road, drainage and wastewater – all aspects that make it civil. Bentley and Autodesk have agreed to share data and work toward interoperability, taking the first steps toward integrating data across vendors. Today we stand on the threshold of CIM; however, by being attentive and taking advantage of the groundwork laid by BIM and BrIM leaders, the civil industry should be able to move forward more quickly to facilitate the life cycles of transportation projects. ■

Ron Gant has been involved with Bentley Civil products for 19 years and currently serves as Global Marketing Director for Civil Engineering at Bentley Systems.