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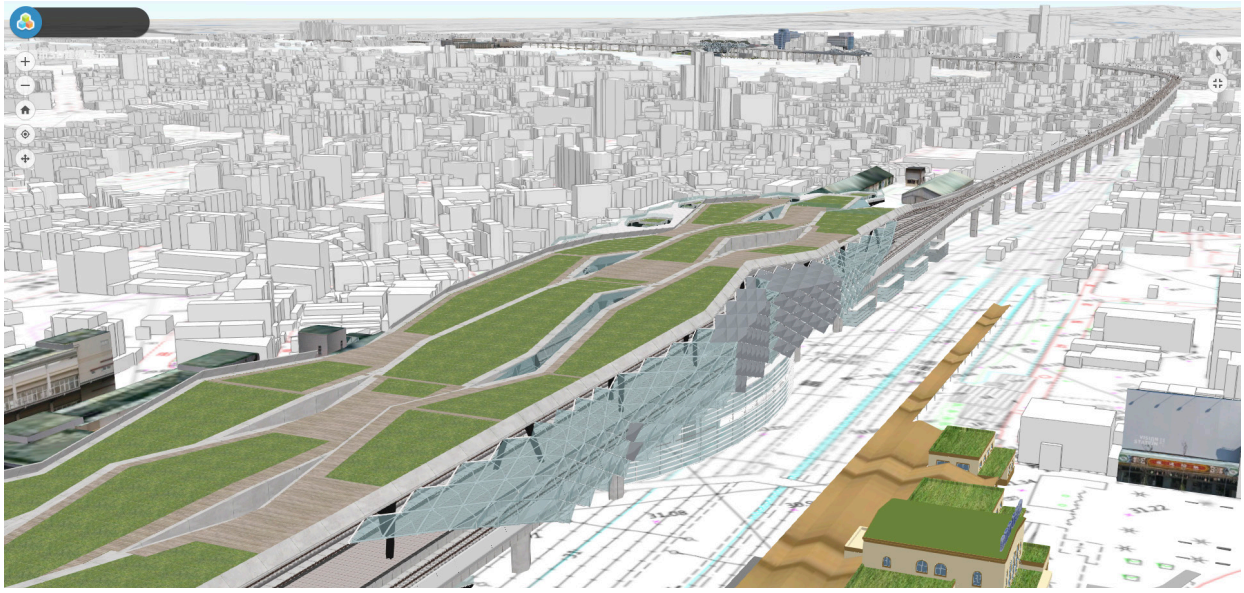
GIS SOLUTIONS

New AEC Industry Report on GIS and BIM Integration



As the intensity and frequency of extreme weather events grow—while social disparities and inequities are examined—urbanization, industrialization and increasing investments in infrastructure worldwide continue at a rapid pace.

The importance of sustainability, resiliency and equity in AEC services is critical as the industry is one of the largest consumers of natural resources and is key to the delivery of our built and natural world. Studies show that the AEC industry consumes 50 percent of the world's raw material resources, consumes 40 percent of its energy and is responsible for 50 percent of total waste. Subsequently and rightfully so, the AEC industry is focusing on sustainability, and stakeholders worldwide are adopting technology and new systems-thinking to achieve their "people, planet and profit" objectives.

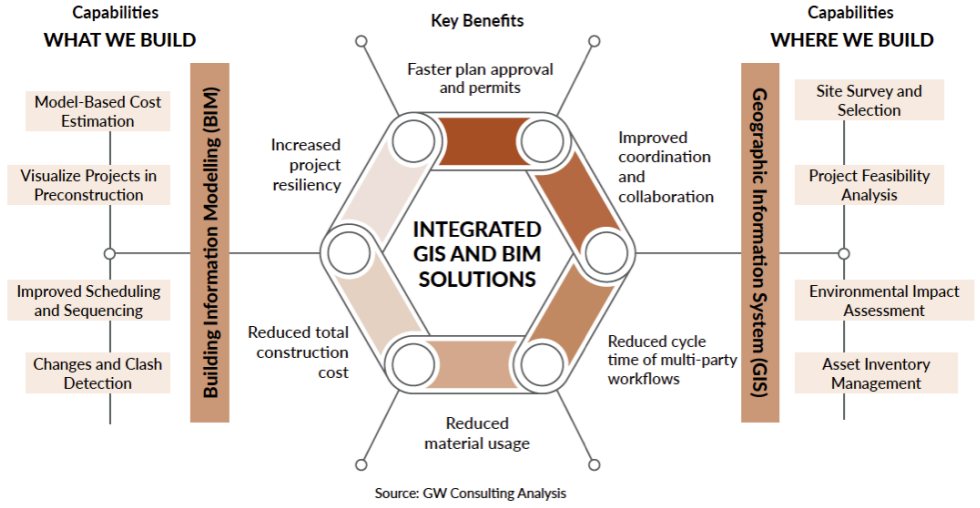
COVID-19 brought to light and accelerated industry-wide digital transformation, and made resiliency and sustainability everyday industry topics. In response, geospatial technologies, BIM, reality capture, digital twin concepts and robotics across projects provided measurable benefits to stakeholders adapting to new ways and locations for work. As a result of their adaptation, teams successfully and repeatably deliver AEC work while meeting social, environmental and economic performance goals. And the role of integrated GIS (Geographic Information Systems) and BIM solutions in this process-based approach is significant!

GIS and BIM integration isn't new to the AEC industry: it's the process of blending BIM project data into layers of geospatial context, leading to effective and efficient design, project management, and improved coordination and collaboration among stakeholders.

In an effort to understand the state of integrated geospatial technologies and model-based AEC work, Esri undertook a global research and report effort with Autodesk and Geospatial World. The findings present several insights from design consultants, construction professionals, and owners and operators on their use of GIS and BIM for project delivery with sustainability in focus.

Key Findings

Supported standards and improved interoperability among technologies will drive the demand of GIS and BIM solutions. The plan and design stage of a project's lifecycle holds enormous potential for applying integrated solutions for site selection, energy design, structural design and



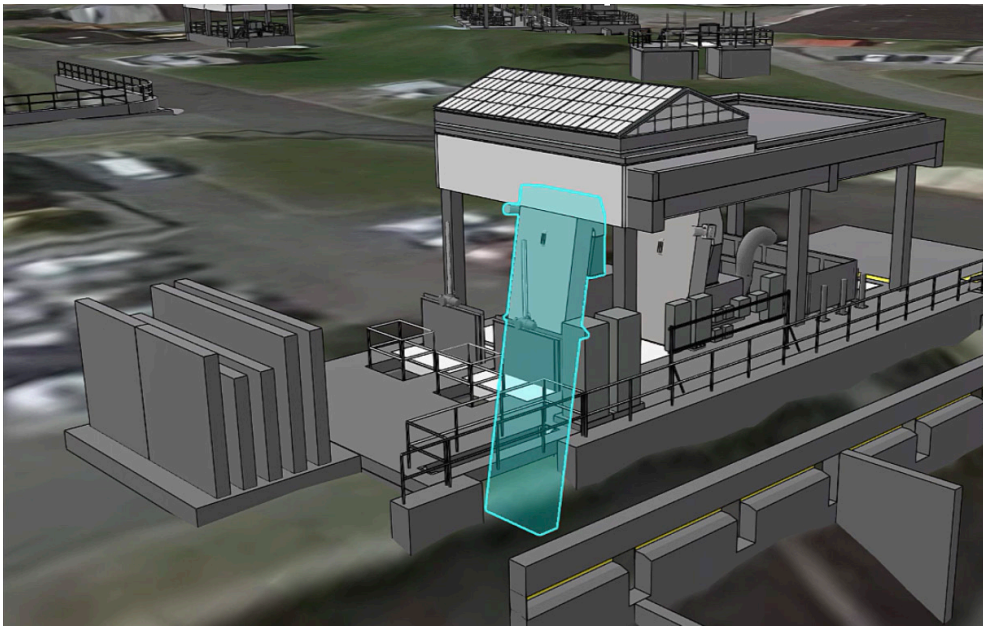
Source: GW Consulting Analysis

performance evaluation, among other things. GIS has proven to be beneficial to assess site conditions to identify optimal designs.

In the construction phase, application of GIS and BIM solutions yields benefits during clash detection, site logistics, 4D planning and schedule management. After the project has been handed over, owners and operators use integrated GIS and BIM solutions to extract and analyze project lifecycle data.

Return on investment (ROI) from GIS and BIM solutions is seen at the project level through reduced waste and risk, improved design quality, improved safety, reduction in errors, and improved and timely project delivery. Contributing to the impression of delivering a positive ROI, the costs and complexity of GIS and BIM continue to drop as the importance of accessing the information continues to grow.

In the plan and design stage, 65 percent of design professionals foresee positive ROI in integrated GIS and BIM solutions. Meanwhile, 60 percent of construction-services professionals currently see positive ROI in integrating GIS and BIM to improve construction progress, track assets and improve logistics management.



In a user interview during the report's research phase, Zachary Jaffe, GIS analyst, LandTech Consultants, explained, "With the integration of geospatial data (like point clouds) and BIM during the construction phase, projects are able to eliminate a huge percentage of errors, approximately 10 to 30 percent. It has allowed faster completion of the construction process and eliminated a lot of waste of cost."

In America, 90 percent of stakeholders (all groups) see positive ROI when deploying GIS and BIM solutions. In Europe, 58 percent of stakeholders see positive ROI when deploying such solutions. In Asia-Pacific and the Middle East, only 48 percent of respondents believe positive ROI is achieved through the integration of GIS and BIM solutions.

Adoption of GIS in Construction Project Delivery by Non-GIS Users

Non-GIS users (across all stakeholder groups) also believe in the tremendous potential of using integrated GIS and BIM solutions in their workflows, particularly to achieve improved collaboration across multi-disciplinary project teams. Subsequently, enhanced client satisfaction is one of the benefits non-GIS users foresee driving integrated GIS and BIM solutions in their workflows.

Undoubtedly, the integration of GIS and BIM is a critical component for the end-to-end digitalization of AEC. Across the industry and in all phases, firms realize that the application of GIS and BIM solutions enables stakeholders to be better as they plan, design, build, operate and maintain the built world. II

Want to Know More?

Download the complimentary copy of the entire report, and discover the benefits and challenges of integrated GIS and BIM solutions in sustainable AEC industry practices.

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