Bentley

The Year in Infrastructure

2024 Going Digital Awards

IMPORTANT NOTE:

USE THIS DOCUMENT TO FILL YOUR NOMINATION INFORMATION AS A DRAFT. WHEN DONE,
DO NO FORGET TO COPY-PASTE YOUR INPUTS ON THE OFFICIAL ONLINE SUBMISSION WEBSITE.
YII.AWARDSPLATFORM.COM

One-minute video guide to the submission process

Category

Category
Select a Category

Name of the project
Click or tap to enter text.

In which language are you completing your submission?
Select a language.

Applicant Information

Salutation (Example: Mr., Ms., Dr.,)
Click or tap here to enter text.

First Name
Click or tap here to enter text.

Last Name
Click or tap here to enter text.

Job Title
Click or tap here to enter text.

Professional Accreditation (if applicable)
Click or tap here to enter text.

Phone Number
Click or tap here to enter text.

Email Address
Click or tap here to enter text.

Address
Click or tap here to enter text.

City
Click or tap here to enter text.

Post Code
Click or tap here to enter text.

Country
Click or tap here to enter text.

Project Details

Please type each item as you would like it published in the 2024 *Infrastructure Yearbook*

Name of the organization nominating the project
Click or tap here to enter text.

Are you submitting this application on behalf of another organization?
Choose an item.

Nominating on behalf of: (organization name)
Answer only if you've answered "Yes" to the previous question.
Click or tap here to enter text.

Project Name
Please type the name as you would like it published in the 2024 Infrastructure Yearbook
(limit to 80 characters with spaces or max. 20 words)
Click or tap here to enter text.

Project Owner
Click or tap here to enter text.

Project Type
Example: building design, feasibility study, track alignment.
Click or tap here to enter text.

Project Location: City
Click or tap here to enter text.

Project Location: State/Province
Click or tap here to enter text.

Project Location: Country
Click or tap here to enter text.

Which phase is your project currently in?
Choose an item.

Actual or estimated completion date (YYYY/MM/DD):
Click or tap here to enter text.

Project Cost: Please select the most relevant option

☐ Actual
☐ Estimated

Please enter the actual or estimated project cost

Please mention the overall value of this project. E.g., if it is a USD 3 million project, please state that as the project cost.

Click or tap here to enter text.

Currency

Click or tap here to enter text.

Please enter the number of work hours required to complete your infrastructure project

Please provide an accurate figure of the work hours required/estimated to complete your infrastructure project. Enter "Not available" if you do not have this information or are unable to share it.

Click or tap here to enter text.

Please enter the number of work hours saved by *going digital*

Please provide an accurate figure of the work hours saved due to the use of Bentley software for your infrastructure project. Enter "Not applicable" if you do not have this information or are unable to calculate it.

Click or tap here to enter text.

Bentley brands used

Please select all Bentley (or Seequent) brands used for the project being nominated for the *Going Digital Awards in Infrastructure*. If you cannot find the Bentley (or Seequent) software in the list, please select "Other" and type it in the form.

Choose at least 1 option.

☐ AGENT	☐ iTwin Platform	☐ OpenRoads
☐ AGS	☐ LARS	☐ OpenSite
☐ AssetWise (Energy)	☐ Leapfrog	☐ OpenTower
☐ AssetWise (Transportation)	☐ LEGION	☐ OpenTunnel
☐ AutoPIPE	☐ LumenRT	☐ OpenUtilities
☐ AutoPLANT	☐ MAXSURF	☐ OpenWindPower
☐ BCDE	☐ MicroStation	☐ PlantSight
☐ Central	☐ MineCycle	☐ PLAXIS
☐ ComplyPro	☐ MOSES	☐ PLS-CADD and PLS-GRID
☐ CUBE	☐ MXDeposit	☐ Pointools
☐ Descartes	☐ nPulse	☐ ProjectWise
☐ DYNAMEQ	☐ Oasis montaj	☐ Promis.e
☐ EMME	☐ OpenBridge	☐ ProStructures
☐ GeoStudio	☐ OpenBuildings	☐ Raceway and Cable Management
☐ Imago	☐ OpenCities	☐ RAM
☐ Infrastructure Cloud	☐ OpenCities Planner	☐ SACS
☐ iTwin	☐ OpenComms	☐ sensemetrics

☐ iTwin Analytical Synchronizer	☐ OpenFlows	☐ SPIDA
☐ iTwin Capture	☐ OpenGround	☐ STAAD
☐ iTwin Experience	☐ OpenPlant	☐ SYNCHRO
☐ iTwin IoT	☐ OpenRail	☐ Other

Please list the other Bentley brands used in your project.
Answer only if you've selected "Other" as an answer to the previous question.
Click or tap here to enter text.

What types of modeling did you use in your nominated project?

☐ Analytical Modeling
☐ Asset Performance Modeling
☐ Construction Modeling
☐ Design Modeling
☐ Lifecycle information Modeling
☐ Reality Modeling

Project Description

Please provide details describing the important aspects of your project.
Answer the following questions in approximately 200-500 words.
For any fields that do not apply, mark "Not-Applicable" or "N/A".

Important Tip: Most often, the nominations that provide specific details and quantifiable, measurable, and numeric data go on to qualify as the Winners and Finalists. The jurors need to understand the specifics of your project in order to evaluate it fairly against other submissions.

Project Overview and Challenge Description
Please describe as applicable:

- Describe the project and the scope of work. (Where is the project located/ Who was involved in the project?
- Describe your organization (What kind of company is it? How long has it been in business? What kind of work does it do?)
- Describe your organization's role in the project. (What part of the project were you involved with? What were you tasked with doing?)
- Describe the project objectives and expected outcomes (What did you want to achieve with this project?)
- Describe the key reasons that make this project important to the world, or why it matters to society or the local community
- Describe the challenges faced by the project and the project team or teams (What were the internal and/or external challenges faced?)
- Did you use or try other non-Bentley applications in the past? If so, what were they and why were you not satisfied with them?

Sample Answer:
This project in a rapidly growing region will offer people more travel options, including public transport and a shared path, and greater safety on their journey. This project is important to support economic development and population growth. Ground conditions and the need to coordinate project stakeholders indicated this would be a challenging project requiring new approaches to the development of a transportation design. Stage One, estimated at USD 655 million, is a 6.8-kilometer four-lane expressway between two cities that will replace a busy highway with a very poor safety record. The new design for the highway includes a separate walking and cycling path, four bridges crossing a river and gulley, an overbridge interchange, two underpasses, a new westbound single lane connection, a northbound flyover and southbound bypass lane. We also needed to address 3 million cubic meters of earthworks.

The underlying geology of the project area is challenging. The area is largely volcanic in origin, but the subsurface materials encountered along the alignment vary considerably, and range from fill, alluvial clays, silts, sands, and weathered volcanic ashes. Groundwater levels are shallow in low-lying floodplains and deepen in the higher-elevation areas. Both perched and regional water tables have been encountered in some cuts. Project designers needed to contend with the stability and settlement characteristics of

large fill embankments on very soft alluvial soils, large cuts through ridges and escarpments, loose liquefiable sand, and fill settlement adjacent to existing roads and utilities. We needed to find solutions to rapidly create a road design in these challenging conditions, meet the needs of the community, and communicate and collaborate with the construction partners while minimizing risks to the project. Though the project involved rapid changes during development as we gathered information about the project area and received requests from the client, we still had to meet a tight deadline.
Answer this question in 200-500 words.

Breakthrough Description

Please describe as applicable:

- What did you do to try to solve the project's challenges before choosing Bentley? Were there any reasons that it did not work?
- Why did you choose Bentley applications to complete this project?
- What Bentley applications did you choose to complete this project?
- How did you use Bentley technology to help meet the unique engineering challenges of the project? What approaches were used to meet the goals and address the project challenges?

Useful Tip: Focus on the aspects of this project that were unique and how your response was innovative in terms of processes and/or the use of technology.

Sample Answer:

We determined we could transition to 3D modeling and digital delivery, as well as meet all project requirements, with the help of Bentley applications. Our first step was to establish an open, connected data environment with ProjectWise, ensuring all information accessed by teams was always up to date and readily available, even during the strict pandemic lockdown. Next, we used Leapfrog to create 3D models of the ground conditions to inform road and drainage design, earthworks, and structure design, as well as to optimize and model volumes for the mass haul of fill material. With clear knowledge of ground conditions and the delivery risks involved, we determined how to make as many ground cuts in the volcanic ash layer as possible, as it was the strongest material and could be cut to a steeper slope.

Then, our designers used MicroStation, OpenBridge, and OpenRoads to establish a model-based approach for designing road elements. The road team quickly made changes as designers received new requests and determined how to improve the road alignment and optimize the drainage system. At the same time, the bridge design team could keep up with the rapid road changes and adjust the bridge models without adversely affecting their design, as bridge models were linked to the road alignment model. With the iTwin Platform, the teams unified all elements into a single digital model accessible by all stakeholders, enabling us to deliver the project efficiently. Lastly, to present our work to the tender evaluation team and keep them informed of any changes, we created an animated presentation with LumenRT to provide an immersive view of the proposed designs. Option selection during the tender phases needed quick, realistic visualization so that the designers, constructors, and our client could understand the evolving plan and make changes in real time.
Answer this question in 200-500 words.

Results Description

Please describe, as applicable:

- Did Bentley technology help improve efficiency or the project completion date? What areas were improved?
- How will the project positively impact the local or global community?
- How did using Bentley applications help you reduce risk on the project?
- How did Bentley solutions help increase return on investment (ROI)? What was the increased ROI? Use specific numbers or percentages where possible.
- How did Bentley applications help reduce the project's environmental impact? Quantify figures including but not limited to carbon emissions saved, amount of energy saved, and size of natural habitat spared where possible.
- How did you share information or data among different disciplines and between stakeholders?

Useful Tip: Successful submissions provide specific answers. For example, don't just say that an innovation increased ROI; tell the jurors how it helped increase ROI, and by how much.

Example: Product X reduced design time by XX resource-hours saving XX amount of costs; the new work processes provided by the combination of products X, Y, and Z, enabled us to deliver the project XX days/months ahead of schedule.

Useful Tip: Non-quantifiable benefits of the projects should also be described, as applicable. For example, to address local regulatory and compliance issues, improve project or asset safety, etc.

Sample results answer:
By using 3D design and enabling close coordination among teams, we reduced the time to completion by 15% and improved the quality of the deliverables. As one example of the benefit of digital collaboration, the drainage team switched from an unconnected third-party application to OpenRoads Designer, enabling them to work together with the team designing the road and incorporate automatic updates, leading to productivity gains of over 15%. Modeling eight of the bridges within OpenBridge resulted in a cost savings of USD 500,000 compared to previous manual methods. The streamlined workflows allowed teams to consider more options, which reduced tender costs and improved design efficiencies by 20%. Total cost savings during the design phase reached USD 2.9 million.

By optimizing the horizontal and vertical alignment of the road in a 3D design environment, we eliminated the impact of construction on two properties and lowered the impact on several others, which will save significant construction time and USD 6 million in costs. Having detailed geological insight will allow the construction team to reuse all excavated material, eliminating the need to use heavy equipment to remove material or import fill to the site. The design will eliminate 22,000 truck movements during construction, equivalent to 900,000 kilometers of travel, lowering carbon emissions by 560 tons. The project is now under construction, and we anticipate the more accurate design will greatly reduce the amount of rework needed. We are also exploring how their model could be used to support maintenance after construction.
Answer this question in 200-500 words.

Please select the measurable or projected results achieved using Bentley technology:
Please use the "Other" option if you would like to specify an outcome not listed here.
If you are unable to quantify the outcome of your project or are unable to share it, select the "Other" option.

☐ Carbon footprint reduction
☐ Community benefit (economic)
☐ Cost savings
☐ Energy saved/reduction in energy consumption
☐ Improved collaboration across the supply chain
☐ Improved workflows/process
☐ Improvement in quality (of deliverables)
☐ Productivity gains
☐ Reduction in downtime/failures
☐ Reduction in material costs
☐ Reduction in the environmental footprint of the project
☐ Reduction in travel/onsite visits/in-person team meetings
☐ Schedule acceleration
☐ Work hours saved
☐ Other

Please specify the measurable or projected results achieved using Bentley technology:
Enter "Not available" if you do not have this information or are unable to share it.
Answer this question in 200 words or less.

Please provide a quantitative measure/metric for the above results:
Examples include, but are not limited to:
• 50% more efficient data federation process
• 70% more efficient data exchange process
• 90% reduction in operational inspection activities
• Better design saved 16,000 tons of concrete
• Eliminated 6,905 metric tons of CO_2 emissions
• Identified and eliminated 3,530 collisions in the design phase potentially saving USD 750,000
• Reduced construction schedule by 97 days saving USD 1.2 million

• Reduced survey time by 25 days and saved USD 250,000
• Reduction in modeling time by 95%

Or

The use of Product X reduced design time by XX work hours saving XX amount of costs; the new work processes provided by the combination of Bentley applications enabled us to deliver the project XX days/months ahead of schedule.
Answer this question in 200 words or less.

Please indicate if your project included work with any of the following:

☐ Bentley Systems Acceleration Fund
☐ Blyncsy
☐ DCW (Digital Construction Works)
☐ Microsoft Azure
☐ NVIDIA Omniverse
☐ Siemens
☐ The Cohesive Companies
☐ Topcon
☐ None of the above

Please articulate the role and impact of "going digital" in your project.

Please describe, as applicable:

- How you used digital building blocks (digital components, digital workflows, digital context, benchmarking/dashboard, digital twins) in your project
- Share the benefits realized by *going digital*

If your project is a capital project, describe how the digital twin (project digital twin) helped you gain useful insights (i.e., understanding the impact of change and design alternatives, highlighting the issues with the quality of project data, etc.), to collaborate with the extended project team more effectively, or to model the performance of a project and its construction.

If your project is related to operations and maintenance, explain how the digital twin (performance digital twin) helped you gain useful insights to improve the performance of an operating asset (i.e. throughput, safety, compliance, maintenance, etc.), to evaluate the relative impact of different operational strategies, to support training of operational staff, and/ or to support remote operations of an asset.

Sample Answer:

We set out to supplement conventional bridge inspection processes by using digital twins. Using drones, we captured over 13,000 images and processed them in ContextCapture, generating a high-fidelity 3D model of the bridge that was then uploaded to the cloud. Bridge inspectors in the field could then access the digital twins via tablets and record their inspection information directly on the models. Traditionally, inspection notes were recorded and communicated using pencil and paper, accompanied by photos, that lacked the necessary detail to make definitive decisions that would help them both timely and safely complete the project. However, working with the 3D digital twin means that the field team could inspect the bridge remotely, record their findings directly on it, and accurately pinpoint the areas in need of repair.

The digital twins not only provide valuable data and information but also function as a communication tool, enabling real-time collaboration and problem-solving among the team without disrupting current processes. By enabling inspection engineers to directly document their findings on the models through tablets, we save 20% in field inspection time while also improving the quality and quantity of data. Bentley's integrated technology combines disparate data into a federated environment that allows us to track and visualize changes, facilitating more informed decision-making to reduce risks and costs associated with conservative decisions based on a lack of information. Making the digital twin available to contractors provides more detailed information and insight into the structural condition of the bridge, allowing for more accurate construction bids that will save the department of transportation 10% to 15% in construction costs.
Answer this question in 200-500 words.

Empowering Sustainable Development Goals [ES(D)G]

If appropriate, please select the core sustainability category that best aligns with your project goals (select a topic only if the project is actively aligned with it. Please refer to the guidance text for more details):

Definitions/environmental subtopics

- **Clean energy transition:** renewable energy production; energy efficiency in production or consumption; carbon capture, usage, and storage; energy distribution/grid digital twins.
- **Climate action and resilience** (excluding clean energy transition, which is in the above category):
  - *Mitigation: sustainable construction practices; embodied carbon footprint analysis and lifecycle assessment; green buildings; green infrastructure*
  - *Resilience and adaptation: increasing infrastructure and communities' resilience to floods, landslides, storms, heatwaves, droughts*
- **Healthy cities & communities:** public transportation; active transportation and micromobility (e.g., biking, walking); multimodal transportation; traffic congestion reduction; safe and accessible sidewalks or street crossings; safe roads; air quality; noise reduction; holistic management of city areas; smart, digital cities; green spaces.
- **Land and water resources:** reducing waste, water, and material consumption; mitigating land contamination; landfill management; responsible and sustainable mining; water quality/clean water; sanitation; water supply; water cycle management; groundwater detection; biodiversity.

Choose an item.

Please select the sub-topic that best aligns with your project goals (based on the core sustainability category selected above).

Clean energy transition OR
Choose an item.

Climate action and resilience OR
Choose an item.

Land and water resources OR
Choose an item.

Healthy communities OR
Choose an item.

Briefly describe the net positive impact of your project on environmental and social sustainability, highlighting how Bentley software contributed to that outcome:

Briefly describe and quantify, if possible, with environmental or social indicators, the:

- positive impact of your project
- adverse environmental or social risks associated with the project implementation, and how those risks were mitigated, compensated, or balanced

This would include:

a) **Maximizing handprint**: Describe succinctly the positive environmental or social impacts in your design, construction, or operating asset performance; and how digital solutions helped empower those positive impacts (handprint). Be as specific

and concise as possible, and focus primarily on measurable indicators, e.g., reduced energy consumption by X kWh/year, or by Y%; reduced carbon footprint by X CO2eq per year, or by Y%; reduced water consumption by X m3 /year, or by Y%; reduced waste by X tons/year, or by Y%; increased tons of material recycled; improved air or water quality; increased protection of terrestrial and inland freshwater ecosystems; increased resilience to climate-related disasters; increased proportion of population with access to clean water and sanitation; reduced soil contamination; increased access to public health; reduced community exposure to health risks; reduced traffic congestion; convenient access to public transport for X people; reduced mortality risk from mobility accidents, climate-related hazards or natural disasters; capacity building support for digital technologies for X people; increased proportion of rural population who live within 2km of an all-season road; reduced proportion of urban population living in inadequate housing; protected natural or cultural heritage; built-up area that is green, open space and accessible for public use for all; etc.

b) **Minimizing footprint**: Highlight the potential environmental and social adverse impacts and risks and how those were taken into consideration and eventually mitigated, compensated, or avoided (if applicable), e.g., involuntary population resettlement; air, water, and soil pollution; water, energy, and material consumption; environmental hazards; carbon footprint; impact on biodiversity. Mitigation or compensation measures: environmental impact analysis, carbon offsets, compensation measures, monitoring program, environmental compliance, social programs, etc.

Please avoid overclaiming, unsubstantiated claims, vague, and broad statements. Also, avoid describing your corporate sustainability commitments, pledges, or achievements. The focus should be on the infrastructure project only.
Answer this question in 300 words or less.

Founders' Honors

Projects recognized with Founders' Honors represent both excellence and advancement in a way that is emblematic of Bentley's mission of Advancing Infrastructure. The achievements in such a project must transcend the narrower focus of any individual category in the standing awards. While there is no fixed criteria for this, we are always interested in innovative uses of technology, including, but not limited to, digital workflows, business intelligence, mixed reality, cloud services, and mobility, as well as process advancements like industrialization, virtualization, and institutionalization of standards, and advancements in terms of sustainability, safety, or benefits to society that empower sustainable development goals.

The exact number and names of recipients of Founders' Honors will be decided at a later time.

Media interview at the Conference

If selected a Finalist, are you interested in participating in a one-on-one media interview with a journalist from an industry publication during the *Year in Infrastructure* and *Going Digital Awards* event?
Choose an item.

(IF YES FOR ABOVE QUESTION)
Would you like Bentley to share your email address and phone number with the interested journalists for easier coordination of the one-on-one interview at the event?
Choose an item.

Quotation (required)

Please provide a brief statement, including the name and title of the spokesperson, about how the use of Bentley software/services on this project provided a beneficial result.

Note: This statement may be used in Bentley press releases and promotional materials.

Example: "Bentley ProjectWise provided the tool to coordinate over 3 million documents totaling 5 terabytes of data to give 500 participants the latest controlled information on which to base confident action. The repository provides the base of documents for ongoing asset management."

Note: All projects selected as finalists will be required to be accompanied by a quotation from a representative of the company submitting the project.
Click or tap here to enter text.

Please type the name and title of the person to be attributed to the statement you provided as it should appear in print. (required)
Example: James Conway-Juarbe, Maintenance and Operations Standards Coordinator
Click or tap here to enter text.

Credits

Please list any Bentley colleague(s) who assisted you with your submission.
Here you can mention the name of a Bentley Account Manager, product sales consultant, or a technical team member who helped you with this submission.
Click or tap here to enter text.

Please list any Bentley Channel Partner who assisted you with your submission.
Here you can mention the name of a Bentley Channel Partner who helped you with this submission.
Click or tap here to enter text.

Please name the Bentley User Group that encouraged you to submit this project (if applicable)
Click or tap here to enter text.

Image and Video Upload

To complete your 2024 *Going Digital Awards in Infrastructure* submission, please provide us with at least **3 supporting images** that best represent your project and any other **supporting video** that you may have. If you have created a digital twin for your project, then you should upload images of the physical asset and its digital twin.

If you are selected as a finalist, your project images will also be used in large-scale print (such as posters), which requires high resolution / pixel dimensions to look good on display. To make sure your images still look great on that scale, make sure that you provide them at the **highest resolution possible.**

Image Guidelines:
Make sure your images are as high in resolution as possible:
Minimum: 7200x5400 pixels (or 24x18 inch at 300 dpi or 1 MB)

Keep in mind that an image or rendering of the actual (or nearly) finished project grabs people's attention faster and is often more visually appealing than screen shots of software interfaces, charts, PowerPoint slides, etc.

Video Footage Guidelines:
We welcome any video footage you might have to accompany your project submissions as well!

Make sure your video footage meets all of these standards:
Screen resolution: 1920 x 1080 (16:9 aspect ratio)
File formats: .mov, .mp4, or .avi are all supported
Bit rate: minimum 4000kbps - 8000kbps

Click to view detailed instructions.

The independent jury will review these images / videos in conjunction with your responses in the nomination form. Your animations, videos, image files and models will be used in the 2024 *Going Digital* Awards in Infrastructure marketing and promotion, as agreed to in the Participation Agreement that authorizes Bentley to use the materials supplied.

Please give your files a descriptive name to help the jury understand the content. Make sure you name your files by using your company name and use a numbering sequence – limit to 30 characters (*companydescription1.jpg*).

Please also provide a suitable caption for each image that best describes it.

To submit additional or different file types please email InfrastructureAwards@bentley.com for further instructions.

Participation Agreement

Read and accept the terms of the participation agreement.