

## QUESTIONS AND ANSWERS

Question Category	Question	Response
AASHTOWare	5.b - does the RFI response need to include any AASHTOWare products currently license dby the DOT? Can the responder assume that the DOT will continue to license those products?	AASHTOWARE products currently licensed by the DOT do not need to be included within a supplier's response. The supplier can assume those products will remain licensed by the DOT. ODOT currently does not have a data dictionary. However, should a contract be awarded in the future sample data can be provided.
Asset Management	Related to Part 4 – f. Inclusive Digital Delivery Tools (Page 8) IV. Asset Management Tools Is the requirement to describe our solutions for adding Asset Management functionality across all stages of a project, including delivery of Digital Twin? Will ODOT provide Data Dictionary or Asset definitions sample data?	Agile Assets, DTIMS, BRM, ProjectWise, SiteManager, ODOT currently does not have a priority list of assets that are seen as high value.
Asset Management	Which Asset Management and Maintenance Management systems are currently in place at ODOT?	ODOT currently does not have a priority list of assets that are seen as high value.
Asset Management	Does ODOT have a priority list or grouping of assets today that are seen as high value assets when it comes to digital project delivery and asset management?	ODOT is currently investigating challenges during site grading/earthworks and has not compiled this information. Real world conditions, as it relates to site conditions prior to let are not integrated with design data currently. ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to Digital Delivery initiative.
Construction	For new and existing projects, what challenges does ODOT encounter during site grading/earthworks and how are real conditions of the site integrated with design data?	ODOT is currently investigating challenges during site grading/earthworks and has not compiled this information. Real world conditions, as it relates to site conditions prior to let are not integrated with design data currently. ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to Digital Delivery initiative.
Construction	Trimble has solutions in some key areas that may or may not be of interest to ODOT. Is ODOT interested in solutions that are AI or Machine Learning based for survey, construction, as built or existing conditions analysis? Is ODOT also interested autonomy or autonomous solutions for construction?	Model Authoring tools include: OpenRoads, OpenBridge, Civil3d
Construction	Our field tracking and inspection software focuses on recording bid item progress and tracking critical execution measurements against their design estimates. We also manage onsite and offsite Quality Control.  What are the different models / systems used by ODOT (like Bentley's ORD/OBM model) that we would need to integrate with to provide a seamless solution?	Model Authoring tools include: OpenRoads, OpenBridge, Civil3d
Content Management	As a follow-on to the question above, are there existing data repositories which would need to be migrated into the common data environment as part of the engagement?	ODOT has not determined the need for data migration at this time.
Content Management	Does the department envisage that the Cloud-based common data environment will have a homogenized data structure or is there accommodation for data to be ingested in different formats and brought together for specific purposes?	ODOT's information silos are heterogeneous in character and an accommodation is desired to surface, and subsequently link the data within a connected data environment.
Coordination	How does your current design process contribute to conflicts and coordination problems during construction are there any specific examples that have occurred in the past you can share?	-ODOT's current design process is 2D centric and shifting to model base deliverables. Information is currently being developed through our Gap Analysis to document the coordination problems that can potentially be resolved through technology.
Coordination	What challenges have you faced in multiparty communication and collaboration, and how do you envision leveraging 3D visualization to address them?	ODOT's communication and collaboration can be improved with modern technology as 2D plans are less detailed and prone to inaccuracies. Leveraging visualization will allow the designer to convey design intent and identify conflicts earlier.
Coordination	How does ODOT perform roadway inspection, progress tracking and data delivery to relevant stakeholders? (Please include any software used, relevant roles and communication practices)	ODOT uses AASHTOWare SiteManager, Excel, and Adobe. Inspection of pavement is done visually and documented. Some lidar and photogrammetry is being collected. Roles include Engineers, Inspectors, and contractors. The primary communication practice is email.
Data Analysis	-On Page 5, What real-time data is being requested? In what format does the real-time data need to be in? How many stakeholders will need access to this real-time data ?	Through openAPI's ODOT's desire is to create a pipeline of information from the Design model through construction, asset management, maintenance, and back into planning. Currently, ODOT does not have a data exchange standard. However, ODOT expects to move data through a number of exchanges such as IFC, LandXML, JSON, XML, RDF, LAS and through other openAPI standards identified by FHWA, buildSMART, or J-STAN. Design Models can be in formats developed by AutoDesk and Bentley. The supplier can assume stakeholders needing access to the data pipeline are estimated within the total of GIS users found in Section 5.A "Financial Considerations".
Data Analysis	Visualization Tools: Will visualization tools be included in this section of Oklahoma DOT's RFI to create visual representations of traffic scenarios to understand the potential impact of different traffic design proposals?	ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to the Digital Delivery initiative.
Data Repository	There is reference within the RFI to a "Cloud-based common data environment". Options for this might be to have a SaaS-style cloud-based environment where the suppliers manage and maintain the environments or the alternative might be that the department would like to host the Cloud-base common data environment within their own infrastructure estate. Does the department have a preference about which approach they would prefer?	ODOT's preference is cloud based hosted/managed by the supplier.
Digital Twin	Is ODOT looking for Digital Twin solutions to encompass solely horizontal infrastructure, or is there a need for a Digital Twins solution to encompass ODOT buildings as well?	ODOT has not identified a need for a vertical solution.
Drainage Design	Related to Part 4 – f. Inclusive Digital Delivery Tools (Page 8)  I. Design Authoring Tools 5. Roadway Design Tools We would like to know if Drainage Design and Analyses tools capability are requested as part of this RFI? In that case, should our responses related to Drainage Design and Analyses tools capability be included under responses for Roadway Design Tools?	Drainage and Analysis tools are desired. Please include those tools within the Roadway Design Tools.
General	-On page 12, The amount of Users is broken into three Groups. Will there be 3 separate solutions? Or will all of the users be using the same solution? Do all these users need constant access? Or will some users need periodic use?	ODOT desires an inclusive environment of applications to advance and connect digital resources that facilitate data-driven decision making. As such, the DOT understands the full breadth and scope of an enterprise wide digital delivery environment can not be done in one application. The estimated users found on page 12 will have varying use depending on their role.
General	-On Page 9 What does "Application Programming Interface First" mean?	ODOT desires configuration versus customization. Therefore, ODOT's preference is to move data through an API rather than creating a customized connection to surface data. Examples of such an API would be but not limited to: buildingSMART openCDE initiative, AASHTOWare OpenAPI, and REST API.
General	-On Page 9, 4.g.1.6 is participation in these programs a requirement?	Participation in these programs is highly suggested by ODOT.
General	Transportation Planning Methodologies: Will criteria for evaluation also include Transportation Planning Methodologies and guidelines (i.e. standards for road width, signage, pedestrian walkways, bike lanes, etc.)?	ODOT is reviewing responses to better understand what tools are available for Digital Delivery. ODOT is interested in compliance, safety measures, capacity analysis, environmental impact, multimodal, sustainability, traffic flow, cost effectiveness, performance metrics, and emerging technologies.
General	How does ODOT drive adoption of new processes/tools and whats the typical timeline for adoption?	ODOT is developing a change management and communication plan for Digital Delivery to drive adoption. Timeline for adoption depends on complexity or tools.
General	What specific inefficiencies, such as rework and technology-related costs, are you looking to address through the consolidation of technology and project costs?	Non inclusive tools soloing data or multiple tools doing the same task.

General	Your statement of need says you hope to gather information about statewide, transportation-related collaboration, design, data management, and model authoring solutions. And we understand that you have received a USDOT grant (congratulations!) for Advanced Digital Construction Technologies that could fund part of this effort.	Implementation of any solution will follow State and ODOT policy. ODOT desires information on any tool the supplier believes will benefit the ODOT Digital Delivery initiative. Tools should align with section 4.f "Inclusive Digital Delivery Tools".
	That leads to a two-part question related to the USDOT grant:	
	(a) Do you expect the implementation of these collaboration, design, data management, and model authoring software solutions to follow the USDOT systems engineering process for traceability, change control, and requirements management?	
	(b) Are you interested in learning about solutions that could streamline the tracking and reporting requirements that come along with the grant?	
	We hope to understand how ODOT is thinking about the "process" it will go through to configure and customize solutions that may come from multiple vendors, and whether it is open to technology solutions that could make that process more efficient.	
General	Thank you! Are there particular financial metrics or key performance indicators (KPIs) that are especially important to your evaluation?	Transparency in pricing, minimal year over year price increases or adjustments, scalable and affordable models, and ability to get on Oklahoma State Contract.
General	Is ODOT open to collaborating with a company to jointly build out the full digital solution or is the preference for the solution to be pre-configured/off the shelf?	ODOT desires off-the-shelf solutions, with open data exchanges.
General	With this type of enterprise solution, do you have an idea of the number of years you would commit to a partner for this type of digital solution?	ODOT has not determined a commitment timeline.
General	What is the expected timeline for delivery from the award of the contract to the delivered system?	As stated on page one (1) of the RFI, "This is not a solicitation and will not result in an award of contract". As such, no timeline is available.
General	In light of the above, what would the department see as the longer term BAU operating model of the system. Would the department wish to run the system themselves in BAU mode or would the department prefer this to be achievable by a supplier?	In general, any system ODOT deploys for the long term is administered by ODOT. ODOT understands there is a knowledge transfer during implementation.
General	Given that there is a requirement to strategically work with other suppliers to ODOT is there an assumption that the system will be extensible either through bespoke software development or advanced configurability? Is the department looking for more of a bespoke solution tailored to their long term needs or more of an off-the-shelf offering?	ODOT desires off the shelf solutions with advanced configurability and/or API integration.
General	Does the department wish for the tooling to be accessible to contractors as well as department staff or will it only be department staff accessing the system?	ODOT has not determined the licensing need, however does understand potential growth may include external partners.
General	Can you further define what BIM means to you as an organization and for this RFI?	Open standards based collaborative work method utilizing data throughout the lifecycle of the assets.
General	As stated, the RFI is not a solicitation and will not result in an award of contract. What should the Supplier expect as a result of the "Preparation of Response" from the Supplier to ODOT after the January 12th deadline?	ODOT will review all RFI responses and decide how to proceed next.
General	ODOT lists sets of users by department, should vendors assume that the core departments interested in this RFI response are design, survey, construction, maintenance, and asset management? Are there any other groups such as planning that are also involved?	Core departments listed are correct.
General	ODOT lists users baselines in the RFI, should proposed vendors assume that the use of the digital project delivery data would extend to a much larger set of ODOT users (potentially all DOT users, legal, HR, etc.)?	ODOT's data can potentially extend to a larger set of users as noted in the question.
General	Does ODOT have a priority list of internal systems today that are seen as high value interoperability system opportunities for digital project delivery (example would be ESRI Arc GIS)?	ODOT's list includes, but not limited to: AASHTOWare, ESRI, and ProjectWise.
General	What is the timeline for this initiative / implementation?	ODOT is taking a phased agile approach in implementation of Digital Delivery. There is no set timeline for total implementation.
General	Would you prefer links or attachments for reference documentation?	Preference is attachments
General	Did any outside party assist in the creation of this RFI?	ODOT's Digital Delivery Technical Committee assisted in drafting this RFI.
GIS	•On Page 5, Can we get requirements to be compatible with ESRI Enterprise Systems?	Any connected system or data needs to be formatted in an Open and Modern way. The system would need to be able to consume and/or produce REST endpoints for data transfers. Would need to be able to directly interface with Oracle or SQL Databases. Would need to be able to interact and interpret Spatial data in either the native ST Geometry, Oracle SDO Geometry, or ESRI SDE Geometry types. Would need to be able to interpret LRS data fields and metadata, such as a unique RouteID field and Start and End Measures.
GIS	A large amount of users at ODOT seem to utilize GIS in their roles, can you expand on what data is being visualized, how often data is updated in GIS, and what role GIS plays from a value perspective to ODOT overall?	Almost all Agency data is being visualized in one form or another. The most typical way is the location of that data. Where is every Road, Bridge, Project Extent, Facility, etc. We do this through static PDF maps, web maps hosted with an ESRI Portal, or ESRI's ArcGIS Online. GIS plays a pivotal role from planning and design, through construction, and on to continuing maintenance for our roadways, bridges, and facilities. GIS data, maps, and apps are used to evaluate potential project locations, current conditions that need addressed, roadway history, mapping maintenance operations, and presenting all relevant information to the traveling public and the Agency's stakeholders.
Hardware	•On Page 6, What mobile configurations will be required? What mobile configurations will be used most?	ODOT uses iPads, iPhones, and Windows enabled tablets within different disciplines throughout ODOT. The use of the mobile devices vary depending on the role. Android enabled devices are not permitted on the State Network.
Hardware	In Sections 4 and 6 of the RFI solicitation, ODOT states that proposed vendors should include details of any technology that would complement ODOT Digital Delivery. Is this in reference solely to software technologies, or does this also include hardware (MX9, SX12, tbc, real works etc.)?	ODOT desires information on any tool the supplier believes will benefit ODOT's digital delivery initiative, including hardware, which aligns with section 4.f "Inclusive Digital Delivery Tools".
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Hardware	The requirement for adaptive displays suggests a requirement for a different types of users accessing the system for different purposes from different locations. Does the department currently have a list of personas that the system needs to support and what their physical working conditions will be like? This is relevant when it comes to understanding what sort of device form factors will be used for which purposes and what kind of users the system will need to support.	ODOT maintains an active list of devices deployed throughout the agency. The list does include personas, and working condition information can be derived from the same. ODOT estimates 15-20 users with ADA hardware requirements. ODOT cannot publish the deployment list unless a supplier is awarded a contract.
Open Data Standards	•On Page 5, Please define "open data standards" as it could be taken different ways?	Open Data Standards as it relates to describe objects that represent the physical and functional characteristics of infrastructure projects promoting interoperability to benefit projects and assets throughout their lifecycle. ODOT aligns with buildingSMART's definition of openBIM, FHWA's definition of open-data exchange, AASHTO Joint Subcommittee on Data Standardization (J-STAN),
Open Data Standards	The RFI mentions leveraging open data standards. Are there particular standards that the department is currently aligned with?	ODOT does not currently have list, however, identified data exchange standards include, but not limited to: IFC, LandXML, JSON, XML, RDF, and LAS. Using such standards ensures the data created during these phases provide interoperable and technology-neutral content for the information models
Open Data Standards	Understanding that IFC as a data standard is important to ODOT today, does ODOT have a priority list of other data standards ODOT is looking for the proposed technology to support today (Design, GIS, etc.)? Examples would be DWG, DGN, etc.	ODOT does not currently have a priority list, however, identified data exchange standards include, but not limited to: IFC, LandXML, JSON, XML, RDF, and LAS
Other	Form a technical point of view and as discussed, I will be responsible for Oklahoma DOT's Traffic Design Tools under section f (Inclusive Digital Delivery Tools), sub section 1 (Design Authoring Tools), part 3, Traffic Design Tools (Page 8 - Oklahoma DOT's Transportation RFI)	ODOT does not see a question in this statement.
Other	We cannot agree to k. Confidential Terms, Non-Disclosure Agreement (NDA). Will ODOT be willing to sign an Bluebeam's NDA?	ODOT will not enter into a separate NDA with a supplier. Please refer to section 4.K "Confidential Terms, Non-Disclosure Agreement (NDA)" and section 6.D "Response Submittal" in steps on marking your response as confidential.

Other	EarthSoft is registering for this site in order to upload our RFI response. We will also post any questions prior to the due date of 8 December 2023.	Message delivered, Thank you!
QA/QC	What is the anticipated process for reviewing and validating the financial model?	ODOT has not determined this process.
QA/QC	When compiling the financial model, are there specific risks or uncertainties that you consider particularly relevant to this project?	ODOT has not determined the process for reviewing the financial model.
Traffic Design	Simulation Software: Do Traffic Design tools include microsimulation of vehicles and pedestrians to simulate the flow of traffic under different conditions and scenarios managing solutions before they are implemented? Will assessment be based only of Levels of Service, Queue Lengths and Average Delays?	ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to the Digital Delivery initiative.
Traffic Design	GIS (Geographic Information Systems): As part of this section, does Oklahoma DOT plan to include GIS tools used for mapping and spatial analysis in traffic design?	ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to the Digital Delivery initiative.
Traffic Design	Data Analysis Tools: Will Oklahoma DOT provide critical data such as traffic counts, speed data and accident reports to understand current traffic conditions and plan for future improvements?	ODOT does not have any plans to share such data without an active contract and scope of work with a supplier.
Traffic Design	Traffic Modeling: Do Traffic Design Tools as stated on the RFI refer to tools for creating detailed models of traffic flow, considering factors like vehicle types, traffic volume, road capacity, and intersections?	ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to the Digital Delivery initiative.
Traffic Design	Software: As part of this section, is Oklahoma DOT referring to software tools used for traffic simulation, modeling, and analysis? (i.e. Designing road layouts, Traffic Signal timing, groups, phasing, cycles, microsimulation of vehicles and/or pedestrian flow analysis, etc.)	ODOT is interested in any solution the supplier provides in which the supplier feels would be a value add to the Digital Delivery initiative.
Traffic Design	We would like to know if Traffic tools refer to transportation engineering, urban planning, and traffic management.	Yes.
Traffic Design	In the context of an RFI (Request for Information), do "Traffic Design Tools" refer to the software, methodologies, or systems used for designing and planning traffic systems and solutions?	Yes.
UAS	If ODOT utilizes drones, how much is spent approximately on pilots, equipment, insurance and software for data captured by drones annually?	ODOT Project Delivery does not have an internal UAS program. However, ODOT Strategic Communications does utilize UAS equipment for photo and video projects. ODOT does not have dedicated pilots, however pilots do exist within Strategic Communications.
UAS	Does ODOT currently utilize drones during any part of the digital delivery process, if so, what are drones used for?	ODOT Project Delivery does not have an internal UAS program; however, some consultants do utilize UAS equipment for delivery of survey.