IHEEP 2018
Confirmed Presentations

BIM for Infrastructure Panel

This will be a moderated panel discussion for the general audience on Monday, September 24. It will be led by Sasha Reed from Bluebeam, and includes panel members from the US (George Lukes- Utah DOT, Lance Parve- Wisconsin DOT and TRB Co-Chair for BIM, Phil Bell- NYSDOT, and Ben Constable- Kiewit) and members from the UK (Kenneth Park- Aston University Birmingham UK, Wil Baron- Keysoft Solutions). The focus will be on sharing lessons learned from BIM implementations and strategies from the different perspectives (DOT, UK, Academia, Contractor). Don't miss this opportunity to engage in this conversation!

Educator and Student Participation Program

Presenters: TBD (University students)
Watch as Engineering students from across the US and Europe present and compete for awards. This is part of HEEP's continued support of education and the students who will be leaders of the future.

FHWA Focus Group: A National Implementation Roadmap for BIM for Infrastructure

Presenter: David Unkefer, Connie Yew & Katherine Petros - FHWA
'BIM for Infrastructure/CIM' technologies and practices have great potential to profoundly improve project and program delivery. In fact, the move to digital delivery and asset management in the U.S. is already underway, but is not well coordinated. FHWA will host a focus group session at the 2018 IHEEP conference to gather input from stakeholders (e.g. DOTs, consultants, contractors, vendors) as we look to facilitate a more coordinated national deployment of BIM within the transportation industry. FHWA would like to solicit various perspectives and insights on key issues that will support our future efforts and help them to be more complementary of other ongoing work.

FHWA's National Plans for BIM for Infrastructure Deployment

Presenter: Connie Yew - FHWA
Overview of FHWA's ongoing work to advance BIM for Infrastructure and how FHWA is looking to facilitate a more coordinated national deployment of BIM within the transportation industry.

Unmanned Aerial Systems (UAS) Workgroup

Moderated by: Moderated by J.D. D'arville - Alabama DOT
Roundtable event open to any attendee for a discussion on the latest advancements and applications of using UAS in transportation workflows.

The Future of Construction: No-hype Technology Overview

Presenter: David Boardman
The evolving relationship between workers and technology in construction – from robots to drones to pre-fabrication.

The Business Value of BIM for Transportation Infrastructure

Presenter: Stephen A Jones – Dodge Data & Analytics
Dodge Data & Analytics recently completed a comprehensive, quantitative study of the current and future usage and the top benefits of BIM for transportation projects in North America, UK, France and Germany. It includes valuable comparisons to Dodge's US study done in 2012, and also examines the objections and triggers reported by parties not yet engaged with BIM, Stephen Jones, Sr. Director of Industry Insights for Dodge Data & Analytics, will present highlights of this landmark study as well as show examples of what industry-leading practitioners are doing to generate benefits.

Breakout Sessions:

2020 Vision: Lincoln's AV Future
Presenter: Lonnie Burklund - City of Lincoln, Nebraska

The City of Lincoln is on the move! Understanding the direction and anticipating how new transportation technologies can be utilized, the city is embarking on one of the largest deployments of autonomous microtransit vehicles into a mixed traffic environment anywhere in the US. The presenter will describe the vision as well as the opportunities and challenges in making this dream a reality.

3D Hydrology Design with Direct Output to DGN/DWG
Presenter: Bruce Carlson

New innovations from Carlson will demonstrate powerful 3D hydrology design tools with automated design documentation in DGN or DWG formats.

AASHTO Innovation Initiative (AII) Project PS&E C-Rev, Real-Time Collaborative Milestone
Presenter: John Wilkerson, Michigan DOT, WisDOT & Montana DOT representatives

Representatives from the AII Lead States Team (LST) will explain the benefits and cultural change necessary to develop a real-time collaborative milestone review process that results in minimizing potential construction-related problems, including contractor claims by involving the construction team and other stakeholders in the review process. The proposed, Project PS&E C-Rev process leverages software technology and review process improvements to improve bid-ability, constructability, and plan quality of projects. It brings to forefront the true benefits of the design review process by making it easier and more convenient for people with diverse skill sets, roles and responsibilities to interact early and often during design. This AII LST is planning to assist several states with the adoption of this innovative culture.

Agency e-Construction Solution for Contract Submittals and Contract Documents
Presenters: Janet Wasteney - Iowa DOT & Gavin Diaz - InfoTech

DOTs are working to improve efficiency, workflows and transparency for construction and contract documents through e-Construction's various initiatives. Pain points include getting documents in the appropriate hands, tracking documents, providing audit trails, locating the correct documents in a reasonable time frame and sometimes not at all, establishing correct workflows for review and approvals, and communicating with stakeholders. This presentation will provide a brief overview of Info Tech's Doc Express and Iowa Department of Transportation's implementation of Doc Express, improvements seen in signing contracts, managing change orders, and other best practices learned and challenges they overcame. Iowa DOT will also discuss how this interconnects with their contracting community and the Local Public Agency (LPA) program. The solution has improved efficiency and provided consistent workflows for construction submittals, contract documents and other shared files for state contracts, creating a paperless, productive process to track and communicate the status of documents among all stakeholders. The presentation will include how several other DOTs are using the Doc Express service, a cloud-based, easy-to-implement and use, digital filing cabinet specifically-designed for construction.

Best Practice--Meaningful Deliverables--Design to Construction Surveying and/or AMG-Automated Machine Guidance
Presenter: Bruce Flora, PLS - Flora Surveying Associates

This course teaches that there are proven means and methods available today to transfer electronic design data to all construction surveyors/contractors/stakeholders no matter what equipment and/or software used on the project that can greatly increase Field Construction and Inspection Productivity while REDUCING Risk and Liability. Presentation is based upon actual real world highway construction projects.

BIM for Irregular Surfaces

Presenter: Ben Shinabery - Qk4 Inc. & Kevin Martin

Much of our world is designed at even distances and perfect 90 degree angles, but existing conditions are never square and plumb. Laser Scanning and Reality Capture now provide tools for measuring and modeling exact digital replicas of interior buildings and exterior spaces from underground culverts to volume calculations on existing rock cut transportation projects.

Bridge Design Project

Presenter: Jakup Vujtech

CIM, BIM, VDC and other TLAs You Should Know

Presenter: Devin Townsend - Nebraska DOT & Ron Gant - Infotech Inc.

The transportation community has seen a proliferation of acronyms and buzzwords over the past few years as technology and new processes have advanced rapidly. Some of them apply to us and some don't. Some may even be regurgitations of similar terms but changed slightly to protect the innocent or not so innocent. The reality is that we are working toward a more automated, technologically-advanced design and construction environment that will improve our transportation assets and be done with a whole lot less paper. This co-presentation between Nebraska DOT and Infotech will look at real-world applications within a DOT of e-Construction initiatives for construction management, electronic bidding, document and workflow management. We will discuss which of these three letter acronyms (TLAs) are applicable to transportation and what they really mean to us. We will also discuss how software like AASHTOWare® Project™ lend themselves to a more productive and collaborative e-Construction environment. We will wrap up with a glimpse of what we think the immediate and not too distant future holds for the industry.

Collaboration in Practice - Voices of the Michigan Industry

Presenters: John Wilkerson (Michigan DOT), Rachelle VanDeventer (MITA), Cathy Cassar (Michael Baker International), Michigan Contractors

The Michigan DOT in partnership with ACEC, Michigan Infrastructure and Transportation Association (MITA), Contractors and Consultants have formed the Digital Delivery Work Group (DDWG). This panel discussion will feature a cross section of members of the committee sharing lessons learned, impacts and challenges associated the Bluebeam collaborative review process and moving the state to contractual digital data.

Common Data Environment: The New Information Highway

Presenter: Mike Boyle **- InEight**

Using a 3D model as the central hub to connect all sources of your project data for construction and maintenance is a revolutionary concept that unlocks the power of truly unifying the wide range of project information by coupling it to a location in the model. A model-centric common data environment enhances and extends the value of project information to DOT Maintenance Operation teams, both in the office and field by leveraging data collected during design, construction, and maintenance phases, (regardless of the source), and making available directly through the model.

Connected Barriers for Connected and Autonomous Vehicle Crash Safety

Presenter: Mehmet C. Vuran & Jennifer Schmidt - University of Nebraska-Lincoln

Today, in the US, more than half of the fatal vehicle crashes are run-off-road (RoR) crashes and the roadside barriers are the last means to mitigate their severity, which is directly related to preserving the human life. Yet, vehicles of tomorrow are slated to operate on roadside infrastructure designed decades ago. In this talk, a novel vehicle to barrier (V2B) communication and networking paradigm, i.e., connected barrier (CB) concept, is discussed to bridge this gap by establishing wireless connectivity between vehicles and roadside barriers. CBs will (1) complement on-board sensor technologies and existing physical barriers; (2) avoid RoR crashes; (3) minimize the severity of a crash when it is inevitable, and; (4) help develop mutual collaborations between the roadside safety and vehicular communication and networking communities, which will lead to robust technology solutions. Another discussion revolves around MwRSF, what we do, why we do it, MASH crash test standard and roadside safety hardware.

Construction Inspection for Digital Project Delivery

Presenter: Alexa Mitchell - WSP USA

The use of digital data and paperless workflows in project delivery has increased with growing market-led adoption by the transportation construction industry. This rapid adoption of digital technology for construction inspection has created the need to change established workflows and align entrenched practices to more effectively achieve desired outcomes. This presentation provides an overview of the research sponsored by FHWA to document notable best practices for managing, disseminating, and integrating digital data in inspection activities.

Constructioneering

Presenter: Mo Harmon - Bentley & Ron Oberlander - Topcon

The flow of information is transforming away from plans towards digital data delivery across all phases of a project. Bentley and Topcon have been working together to help reduce data loss, improve quality, and accelerate delivery to assist the transportation industry meet new requirements. Mo Harmon and Ron Oberlander will highlight our vision of Constructioneering.

Contract Requirements for BIM

Presenter: Francesca Maier - Fair Cape Consulting

Creating contract requirements for BIM involves navigating an intricate web of existing contract language, statutes, policies, guidance documents, and even disclaimer statements. A recent FHWA research project took an in-depth dive into the issue of contract and specification language for BIM for bridges now and in a future utopia in which we have open data standards. This talk will arm you with the subject matter expertise so you can work with your contracts and specification experts to craft effective BIM requirements.

Creative CIM implementation at Montana DOT

Presenters: Mike Dyrdahl & Jen Jewett - Montana DOT

MDT is in its second year of implementing CIM. This presentation describes MDT's continued process using internal CIM teams. We will provide an update on how our teams have investigated and implemented business changes for: As-Builts, Asset Management, Bridge Design, IT Conversion, Models for Bidding & Specifications, Model Review, Roadway Design, Survey/Real Time Verification and New Technologies. MDT has a goal to have intelligent models and e-construction as standard business practice by 2022.

Data Governance and Asset Management

Presenter: Dan Belcher - Michigan DOT

Presentation on Michigan DOT's Data Governance Council efforts and TAMS (Transportation Asset Management Systems) IT project. The department has formed a Data Governance Council with high level managers from across the department responsible for setting policy and managing enterprise data. TAMS is rolling out ESRI Roads & Highways along with DTS VUEWorks and Transcend Road Analyzer (straight line diagraming).

Detailed QTO from 3D Models for Contractors

Presenter: Eric Cylwik & Lance Parve

3D models of infrastructure projects are LOADED with data -- but the construction industry has yet to identify and leverage it. This topic will be an in depth dive to the process and value created by leveraging value in models created by DOTs.

Developing DOT Arterial Highway Assets: Signs & Lines into usable 3D Models

Presenter: Martin Quigley – Transoft Solutions

During the planning and design stages of large arterial freeways, a great deal of data is generated and used. From the UK experience, there are limited ways of tracking this data during the design cycle and post-deliverable handover. In the UK, BIM has been utilized extensively to manage that data without which a significant amount of useful data would not be accessible or useable. Additionally, individual assets would not be tracked and future maintenance issues would not be easily identified BIM ensures that each object and its lifecycle is tracked and its data readily available for decision-making purposes. BIM provides a means to manage this information via 3D digital building to save DOT's money in the long run.

Digital Construction Inspection

Presenter: David Unkefer - FHWA

Digital Construction Inspection - using advanced sensing, modeling and surveying practices for more effective inspection, including: providing models to contractors and the 'model of record', specifications when using digital inspection and automated machine guidance, examples of state and contractor practices and benefits and lessons learned.

E-Construction: Transforming Operations with Photos

Presenter: David Boardman & Paul Reiger

The challenge of digitizing tangible objects has now been solved and will be changing the way we manage construction projects forever. Capturing data through photographs from devices with cameras allows for full-agency utilization for various roles and scenarios. What started with simple measurements is quickly expanding to agency-wide efficiencies resulting in as much as a 95% reduction in resources, even enabling routine measurements where none were possible before.

Evolve your Design Practice

Presenter: Jennifer Steen - WSP USA

Learn how to generate buy-in and improve stakeholder communicating using streamlined workflows, lean strategies and 3D modeling technology to develop integrated designs and models during the project life cycle.

Failure: The Key to Innovation

Presenter: Miki Esposito - Public Works Director, City of Lincoln, Nebraska

This short presentation will encourage leaders to embrace failure as an outcome of calculated risk-taking in order to create a culture of innovation in their organizations.

FDOT Civil3D Customization Development

Presenter: Michael Robertson - FDOT

The CADD Office at FDOT supports design and 3D modeling on both GEOPAK and Civil3D platforms. FDOT has developed several custom applications to automated design production and 3D modeling in the Civil3D environment to parallel traditional FDOT tools developed for GEOPAK.

FHWA Support for e-Construction & Partnering

Presenter: Kathryn Weisner - FHWA Resource Center

Outlines opportunities available for States and LPAs under the EDC-4 activity for e-Construction & Partnering. Also provides highlights of past activities that are available as resources to states and insights into funding options.

Future of Making Things - Transportation

Presenter: Drew Olsen - AutoDesk

We will discuss how industry and technological trends are converging to bring BIM to linear infrastructure projects. We will cover how emerging technologies are being implemented for a changing project delivery landscape. We will touch on the importance of a BIM approach to the design and construction processes as we are seeing today, but maybe more importantly, how information tied to 3D models is the future of Operation and Maintenance.

How Heavy Civil Teams Boost Productivity in the Field

Presenter: Pete Schoot & Robert Ridgell (VDOT)

As the need for new and updated infrastructure such as roads, bridges, and ports becomes increasingly critical, improving the efficiency of that work is more essential than ever. Today, the governments and organizations that build these projects are investing in mobile technology to help teams complete projects more efficiently and under budget. In this presentation, we highlight how technology is changing heavy civil construction, and share real stories about how it can be used in the field.

Integrating BIM into the Project Lifecycle

Presenter: Luke Grebe & Dan Prokop - HDR

The objective of the presentation is to show the audience different BIM uses that are being used on actual projects at various stages of the project lifecycle. For each stage, example projects/case studies will be presented showing an innovative use of BIM. For each BIM example, the benefits, lessons learned, and challenges will be discussed.
The project stages/BIM use examples will be along the lines of:
1. Information gathering: California example project that used ContextCapture to build a 3D model from photographs. The model was then used for design reviews and preliminary modeling.
2. Design: Project showcasing ConceptStation and/or OpenRoads designer and how it efficiently modeled a project.
3. Design Reviews: The LinkUS project created federated 3D models of the project for review meetings with the client. Having all the disciplines combined into one model and being able to spin/review it at the meetings was critical for stakeholder coordination.
4. Construction: UDOT – Redwood Road had the 3D model as the controlling document for the project. Various file formats were exchanged with the contractor as the design progressed and feedback received for what worked and what didn't work.

Interactive Maps to Facilitate Decisions and Modeling Future Bridge Needs

Presenter: Kent Miller & Mike Munson - Nebraska DOT

A two-part presentation by Mike Munson and Kent Miller about some current uses of bridge data by NDOT Bridge Division. Part 1. Using a public facing GIS platform to communicate about weight-restricted bridges, bridge program funding opportunities, and upcoming bridge inspection scheduling. Part 2. Modelling future bridge system conditions at various funding levels with various allocation strategies (replace vs preserve).

Key Trends Driving Future Computer and Machine Learning

Presenter: HP Inc

There are major trends involving CPU development, cloud development that are going to impact future compute as we know it as well as drive where Machine Learning takes place. This presentation starts with those trends then dives into Machine Learning and its use.

Leveraging Augmented Reality for Highway Construction

Presenter: Hoda Azari - FHWA

Report on FHWA's ongoing research into potential uses of augmented reality in highway construction.

Leveraging Mobile Mapping Intelligence

Presenter: Bradley Adams, P.E.

With Mobile Mapping exploding in acceptance, the use of the intelligence from the technology is spreading from construction to design to maintenance. Mobile mapping data can be combined with many traditional survey methods including static scanning and new technologies like ground penetrating radar or UAV. Extracted intelligence is easily shared between design packages, maintenance systems and even Over Size/ Over Weight programs. This presentation will show examples of how mobile mapping is integrating into many, unique applications.

Michigan DOT Partnering with Industry for a Digital Tomorrow

Presenters: John Wilkerson (Michigan DOT) & Cathy Cassar (Michael Baker International)

The Michigan DOT in partnership with ACEC, Michigan Infrastructure and Transportation Association (MITA), Contractors and Consultants have formed the Digital Delivery Work Group (DDWG). The DDWG has been working on improving the methods and requirements of digital data delivery in the state with the ultimate goal of incorporating contractual digital data on state trunk line projects. Level of Development of the digital data was identified as key step to achieving that goal.

Level of Development (LOD) pertains to the categorization of the overall quality, density and confidence of collected and created digital data. Digital data LOD categories also specify the acceptable uses of digital data as well as the inherent risk passed on to the next consumer of the data such as the hand offs between Survey and Design as well as Design to Construction.

This presentation will provide an overview of status of Digital Delivery and Level of Development in the state as well as how national involvement with the AASHTO Joint Technical Committee on Electronic Engineering Standards (JTCEES) is helping to shape the details.

Michigan DOT's Transportation Asset Management System – Culverts

Presenter: Taylor Snow, PE

Michigan DOT has implemented a pilot program to develop methods to better manage culvert assets. Given the limited resources available, emerging technology and ever-aging infrastructure of the State Trunkline Highway System, MDOT is proactively conducting data collection efforts and condition assessments to develop a statewide inventory to more effectively manage these many assets. This presentation will discuss the scope of the program, obstacles, results to date and future plans for implementation.

Model-Based Design/Construction Pilot – No Plan Sheets, Mobile Use Only

Presenter: George Lukes – Utah DOT

Utah DOT recently awarded a bid-build project with the model as the legal document and no plan sheets. This session will review how data are being managed in the field, lessons learned and as-builts.

Monitoring MSE Walls with LiDAR

Presenter: Jim Brinkman - Kiewit

Case(s) where we have successfully used LiDAR to measure lateral and vertical movement of MSE walls over time.

Ohio DOT - New Electronic Risk Based Quality Inspection Format

Presenter: Janet Treadway - Ohio DOT

Ohio DOT implemented a new electronic Risk Based Quality Inspection format. Through predetermined inspection requirements aka "attributes", applications provide guidance and a mechanism for the electronic reporting of the Quality of Construction. This allows ODOT to focus inspection activities on areas of importance using the predefined requirements. The attributes inspected are the identified portions of the work that represent Quality of Construction, in addition to the typically reported Progress. The information is collected in a purely electronic format, promoting the field inspection staff to use mobile devices with or without connectivity. The Department is able to perform analysis of the data collected.
To be able to determine priorities based on risk, an Inspection Priority Table was created. Typical inspection priorities and documentation frequencies were established to provide a consistent approach utilized by project construction staff. This allows the Department to identify critical attributes and to establish frequencies for electronic quality documentation of work in progress. The goal is to provide enough project oversight with accurate and timely documentation; effectively utilizing engineering and inspection staff in a process which responds to changes in priorities and risks.

PennDOT: The Electronic Highway

Presenter: Michael Lentz & Debbie Reihart - PennDOT

For 5 years, Pennsylvania DOT has been developing several E-Construction initiatives, which include a nationally-recognized Engineering and Construction Management System (ECMS) which includes project site activity reports; automated force accounts and source of supply processes. PennDOT Project Collaboration Center helps expedite construction project submittal requests; and stores construction records anywhere there is internet access. PennDOT utilizes Electronic Construction Materials Management System to manage material testing. They utilize Mobile Construction Applications to access many of their systems creating an efficient workflow from the palm of the hand.

Projects, Programs, STIP, and MAPS: Sharing your Project Info with the Enterprise

Presenter: Mitch Stephens – PMG Software Professionals

South Carolina DOT implemented a new map-based solution, the Project Programming Solution (P2S) which is used for managing projects, programs and funding. P2S is the next generation project programming solution which replaced a 20+ year-old mainframe application. In addition to the P2S solution, the Department also went from managing their STIP in Excel to a web-based tool, pmgSTIP. The presentation will focus on how SCDOT uses both these spatially-enabled software tools to get a clear picture of their project life-cycle, from planning stages to project close-out. Project conflicts, fiscal constraint and real-time phase, schedule and budget information are all available to users across the SCDOT enterprise.

Quantitative Program Management: Collection>Modeling>Prioritization>Selection

Presenter: Dwight Otwell & Ric Cruze

Emphasis on safety program project selection process being transparent/usable for all – the people making the decisions, the public looking at the decisions, those running the models, those collecting the data by implementing effective technology and process methodology.   The goal is to optimize the use of limited funding to improve rail safety through system reliability.

Role of the Road Operator in Cooperative Intelligent Transport System

Presenter: Ivaca Jujnovic- Ministry of the Sea, Transport and Infrastructure; Republic of Croatia

Cooperative intelligent transport systems (C-ITS) in road transport is one of key element towards vehicle automation. C-ITS technologies allow road vehicles to communicate with other vehicles (V2V) or road users and roadside infrastructure (V2I). By increasing the quality and reliability of information, C-ITS can improve road safety and traffic efficiency as well as reduce energy consumption and emissions from transport. The European Commission has put forward a strategy outlining the path towards commercial deployment of C-ITS in the EU by 2019. The strategy addresses key issues such as data protection and cyber-security, systems interoperability and technical specifications.

In the meantime, several ongoing pilot projects are testing and implementing cooperative intelligent transport systems (C-ITS) services in light of cross-border harmonization and interoperability along with consolidating the experience to be shared through C-Roads Platform (Croatia is involved in the platform). The goal is to achieve the deployment of efficient and reliable interoperable cross-border C-ITS services for road users. The C-Roads Platform approach will pursue cooperation on a holistic level in order to cover all dimensions linked with the deployment of C-ITS, such as sharing experiences and knowledge regarding deployment and implementation issues, as well as user acceptance. This approach will form basic elements for a later pan-European C-ITS implementation.

Implementations of C-ITS services on large scale, including necessary support for autonomous driving, assume a significant engagement of road operators which will be elaborated in presentation.

Signed and Sealed 3D Digital Design Deliverables

Presenter: William Sharp - HDR, National Director of Highways

Nationally, we are seeing an increased emphasis in providing 3D digital design information as part of the letting process to improve design understanding and construction efficiency. Directly using 3D digital design information in highway construction has been part of the FHWA "Every Day Counts" Program for many years, and has been instrumental in providing faster more efficient construction operations with Automated Machine Guidance (AMG) grading and paving and faster inspection using real-time verification.

This presentation will provide an overview of the current status and challenges of providing consultant signed and sealed deliverables for roadway and bridge design projects in the US. The presentation will highlight several recent projects underway or recently completed with Utah DOT and Iowa DOT that involved signed and sealed 3d deliverables. The presentation will include a discussion of the key challenges and proposed solutions to providing consultant signed and sealed 3d digital deliverables, including 3D data formats, QA/QC of 3D models, process to sign and seal 3d data, consultant potential liability concerns with contractual 3D deliverables, and proposed specifications to include in contractual plans requiring 3D deliverables.

The presentation will include a summary of the keys finding and recommendations of the Iowa DOT, Iowa AGC, and American Council of Engineering Companies "Engineered 3D Electronic Deliverables Partnering Committee" efforts, which was co-led Will Sharp and Mike Kennerly (Iowa DOT – Office of Design), including a proposed framework for a Level of Development Specification for the Model Deliverables.

State of CADD 1998 to 2018 (twenty years of change or not)

Presenter: Rande Robinson - North Carolina DOT

At look at the current state of Computer Added Design and Drafting in 2018. The presentation will look at the progress (or lack of) that we have made over the past 20 years. Not only will the presentation look at CADD today but look at where were in 1998 based on a HEEP presentation in Colorado Springs, Colorado.

Subsurface Utility Design & Analysis: Lessons from a Practical Example

Presenter: Jodi Kocher - Felsburg, Holt and Ullevig

Subsurface Utility Design & Analysis, or SUDA, allows 3D modeling and analysis within the Bentley OpenRoads design software. SUDA was used to model and analyze the storm sewer system on the 14th/Warlick/Old Cheney Intersection Improvement project for the City of Lincoln, Nebraska. The project will transform the intersection into an elevated roundabout above an at-grade T-intersection. The overall project plan has over 120 inlets and over 2 miles of new storm sewer pipe. The model allowed dynamic analysis of the system and how it interacted with other roadway features. Many lessons learned during the process can be applied to improve both the process and results of a SUDA project.

The Digital Twin - Delivery of an Asset Information Model for Infrastructure

Presenters: Connor Christian, Director of Product Services with InEight, & Andy Kayhanfar, Executive Vice President of Virtual Design & Construction with InEight

During this presentation Connor and Andy will share their experiences leading to the successful delivery of an asset information model on one of North America's largest infrastructure bridge projects. Together, they will discuss the vision and challenges of this project, which earned HDR a Building Smart International award in the "Operations & Maintenance" category. They will also share the role-open standards, a common data environment and the practical application of industry leading technologies played in the project delivery.

The Future of 3D Models in Construction, including Creation of Intelligent As-Built & Mixed-Reality Applications for Maintenance, Operations & Verification

Presenter: Adrien Patané - Trimble Inc.

With the growing push for using 3D models as part of a construction workflow, the question remains as to how these models might be used during and post construction. DOT's & owners are investing significant time and money into developing 3D workflows, so the natural next question is how can we better use this data to improve efficiencies and maximize use of the model throughout the entire construction lifecycle. New, innovative tools as a result of technology partnerships, are allowing for mixed-reality applications for existing and as-built infrastructure with significant cost and safety benefits incorporating outdoor high-accuracy spatial data viewing leveraging GNSS and augmented reality.

True As-Builts from Drone Collection

Presenter: Ben Shinabery - Qk4 Inc.

Many times there exists a breakdown of information from the initial mapping stage through design to the final as-built mark-ups. Design changes, field updates and other differences between design and construction are inevitable. One of the best ways of confidently identifying all project changes is by collecting the finished project through high definition drone flight. Horizontal and vertical changes to the plans are evident and documented through this new and innovative process.

UAS Demonstration

Presenter: J.D. D'Arville - Alabama DOT

Experience a live flight of two different UAS and learn how data was captured earlier in the week of an area in Downtown Lincoln Nebraska.

Unmanned Aerial Vehicle (drone) Bridge Inspection

Presenter: Babrak Niazi, Dillon Dittmer & Justin Kyser – Nebraska DOT

Unmanned Aerial Vehicles show great potential as a tool in Civil Engineering which includes bridge inspection. All bridges in the nation are required to be inspection every 24 months. UAVs increase safety for the public and inspectors, allowing for less time per inspection and less cost. Nebraska DOT piloted a project to further evaluate UAVs in Nebraska.

Via Drone Patrol

Presenter: David Stankic - Bina Istra Motorways- Republic of Croatia

The Bina-Istra teams implemented a complete system for recording road conditions on a 30 km long test section. The system sends a drone on a predetermined route based on default coordinates steering it by means of a GPS signal. The high-resolution image delivers great insight into the smallest details of road conditions thus enabling detection of possible anomalies. While a patrolman is at other motorway locations, a drone can continue to monitor the motorway considerably raising the probability of fast detection. All images are displayed in a real-time in the Control Room where the operators are alerted to road hazards and can then activate intervention procedures. The VIA DRONE PATROL system operates autonomously and does not require manual control during take-off or landing. The landing pad is equipped with a special platform for automatic battery charging with the use of inductive wireless charging technology. The drone model used is DJ MATRICE 100. The time required for a motorway section control is 20 minutes. It is worth noting that the aircraft is never directly above the road. The system has defined "no fly" zones that restrict the flight path of the aircraft.

Visualizing Your Project

Presenter: Matt Taylor- Alabama DOT

The presentation will consist of ALDOT sharing different methods for visualization deliverable's. We will discuss several different software's and how to utilize them to give the best results.

Workflow for a 3D Audit of Surface Grading and Construction Models

Presenter: Johann Flores – Transoft Solutions Inc

It is standard practice to evaluate designs in 2D, but there is no mandated check of how the design performs in 3D. A good example is roundabouts where DOTs and practitioners reached out for a way to evaluate their roundabout grading design prior to going to construction against vehicles such as lowboys and their low-ground clearance and the chording effect of their trailers. Failure to perform this check could mean costly maintenance or remedial work after construction.