Connect BIM 360 With Aerial Data to Create Intelligent Digital Twins & Reduce Rework

We provide interior and exterior visual data, with various altitudes and angles, together in an all in one deliverable set
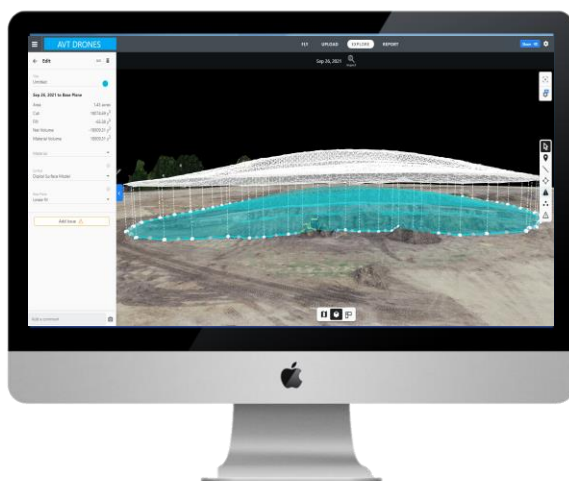

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Building Information Modeling (BIM)

A foundational, intelligent model-based process for business and industry transformation, consisting of multiple input data sources centralized into a single sharable platform

Uses 3D models to capture, explore, maintain consistent coordinated planning, design, construction, and operational data

Provides greater project insight for cost, scheduling, constructability reporting, and analysis

Uses and shares the same consistent data whether you're at the office or with boots on the ground in the field

BIM enables prompt responses to change with processes that are smarter and faster than traditional methods
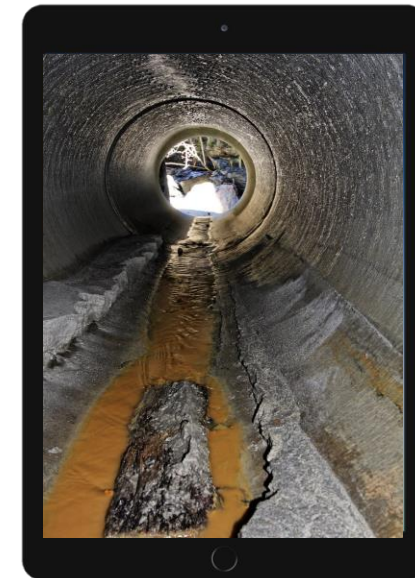
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Problems Faced by Project Owners

Over 60% of major capital programs fail to meet cost and schedule targets

30% of construction cost is rework
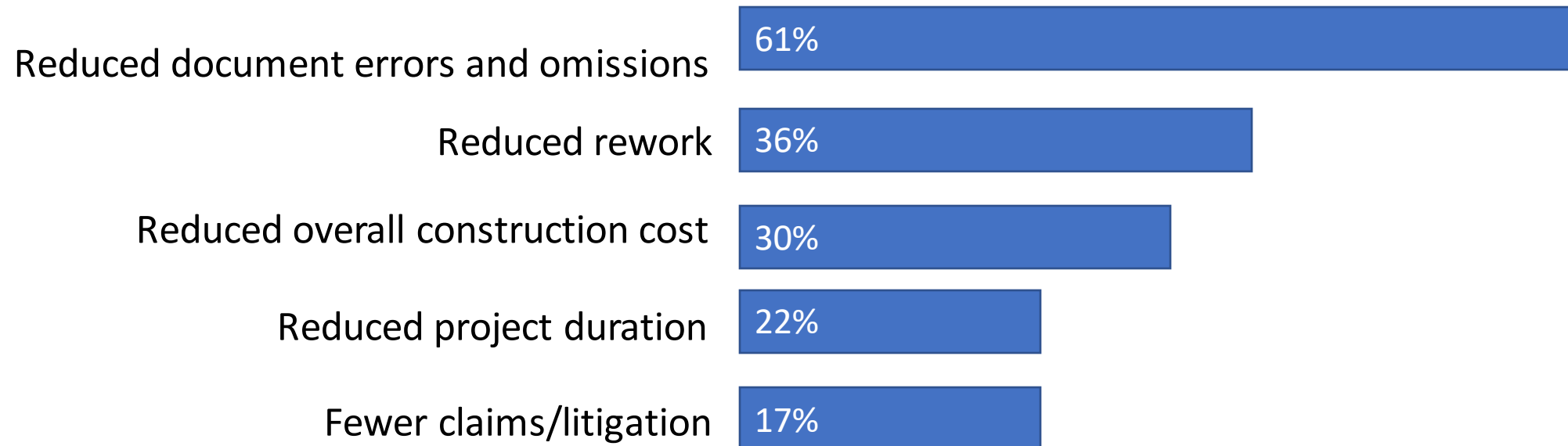
55% of maintenance remains reactive

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Why Use BIM and Drone Integration?

- Virtual walkthroughs

- Access curent information modeling

- All project and asset data located in one place

- AR/VR capabilities

- Accurate digital data management

- Increased productivity and accountability

- Facility management and building handover

- Clash detection

- Preconstruction project visualization and rendering

- HD digital data is easily manageable and storable in the cloud

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Top BIM/Drone Integration Benefits for Owners

Some of the top internal business benefits for using BIM with drone data intergration for project owners include:

Benefit	Percentage
Reduced document errors and omissions	61%
Reduced rework	36%
Reduced overall construction cost	30%
Reduced project duration	22%
Fewer claims/litigation	17%

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How BIM and Drone Integration Save Owner's Time and Money Throughout the Building Lifecycle?

Design

Construction

Management

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BIM With Drone Integration Saves Time and Money in The Design Phase

Area	Description	Example
Conceptual design	Quickly iterate on design elements including building form, sustainability, client request municipal regulations, budget constraints, and more.	Architecture Firm Bialosky used BIM and drone firm AVT Drones to assist in preconstruction design and 3D rendering for a multi-residential apartment complex expansion. Aerial data mapping and BIM integration saved hundreds of hours in design and preconstruction analysis time
Design Documentation	Create a virtual building model and a complete set of design documents in an integrated database, where all data is interconnected providing real-time self-coordination of information with both terresterial and aerial data.	

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Exploring Pre-construction Conditions

- Stay connected to your project life cycle with drone imagery and Autodesk BIM integration

- With BIM you can bring features and functionalities that once lived in separate solutions into one unified platform

- Make instant on-the-fly changes using digital platforms that integrate both terresterial and aerial data for a complete project solution
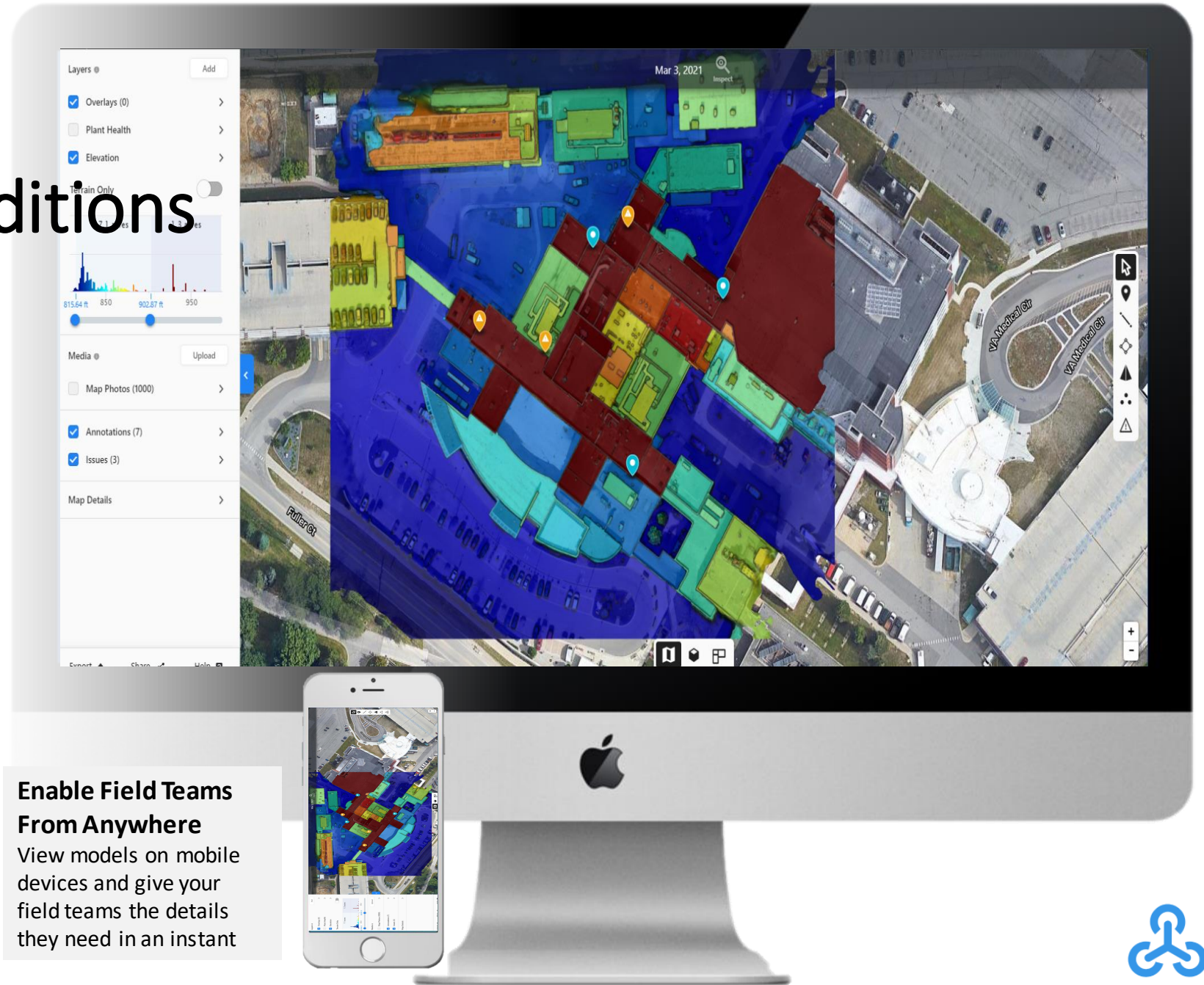
Enable Field Teams From Anywhere
View models on mobile devices and give your field teams the details they need in an instant

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BIM With Drone Integration Saves Time and Money in The Construction Phase
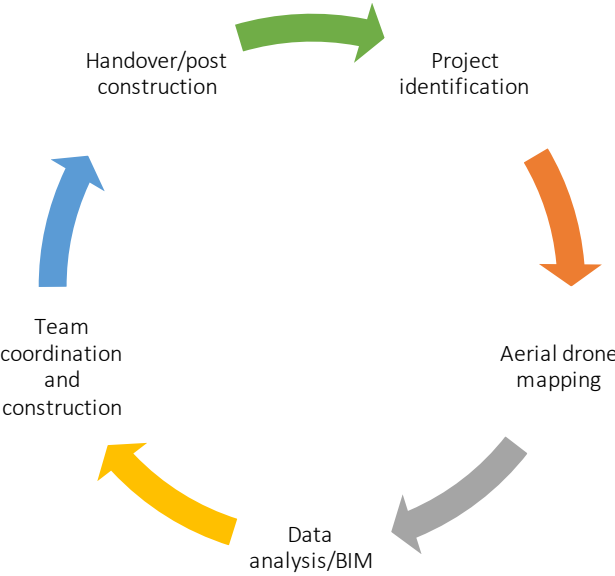
General Construction

- Links project planning to construction planning, virtual simulation, visualization during construction, and digital fabrication

- Enhances project communication and collaboration with project teams

- Creates more accurate cost estimates

- Deliver more projects on time and under budget with cost saving tools like BIM and drone-2-scan integration

Pre-fabrication/modular construction

- Pull information from BIM to pre-fabricate building components to improve project scheduling and reduce overall cost

- Improve site safety with greater combined aerial data provided by drone integration

- Drone workflow integration produces greener construction pratices and provides on demand digital materials cut/fill and stockpile measurments thus reducing material waste

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BIM With Drone Integration Saves Time and Money in The Construction Phase

Area	Description	Examples
Lifecycle cost 	• Reuse drone created building models and data to better manage facility operations • Analyze data rich drone models to optimize resources and reduce waste and lower lifetime maintenance and operational cost • Use intelligent 3D models to help manage space and perform GIS validation for tenant chargebacks	• U.S Government agencies are using and creating a database of 3D models to inform operations and maintenance along with guiding future projects • Additional specialized software will leverage the power of 3D modeling to use its data for updating security, analysis reporting, and emergency management services

Handover/post construction

Project identification

Aerial drone mapping

Data analysis/BIM

Team coordination and construction

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# Drones and BIM Improve Collaboration and Operational Efficiency

- Access the latest project information quickly, overlaying the engineering design with a georectified aerial ortho to compare as-build conditions

- Link field with office leads to improve collaboration among multiple steakholders

- Overcome the siloed approaches with AECOO while maximizing the value of available data to enhance project delivery and digital output

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The Adoption of BIM and Drone Integration is Increasing Through Mandates, Smart Building Initiatives and New Technology Acceptance

Most Common Use of BIM Models by Those Not Creating Them (According to Engineers and Contractors Using BIM)

Dodge Data & Analytics,

- Interdisciplinary Project Collaboration
- Aid Production of 3D Deliverables to Owner
- Deliver Design Intent to Construction
- Visualizations
- Communication With Clients and Stakeholders
- Aid Production of 2D Deliverables
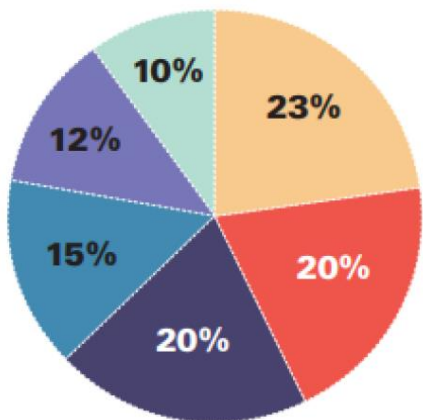
Use of BIM on 50% or More Transportation Infrastructure Projects (According to Engineers and Contractors by Country)

Dodge Data & Analytics,

- 2015
- 2017
- 2019

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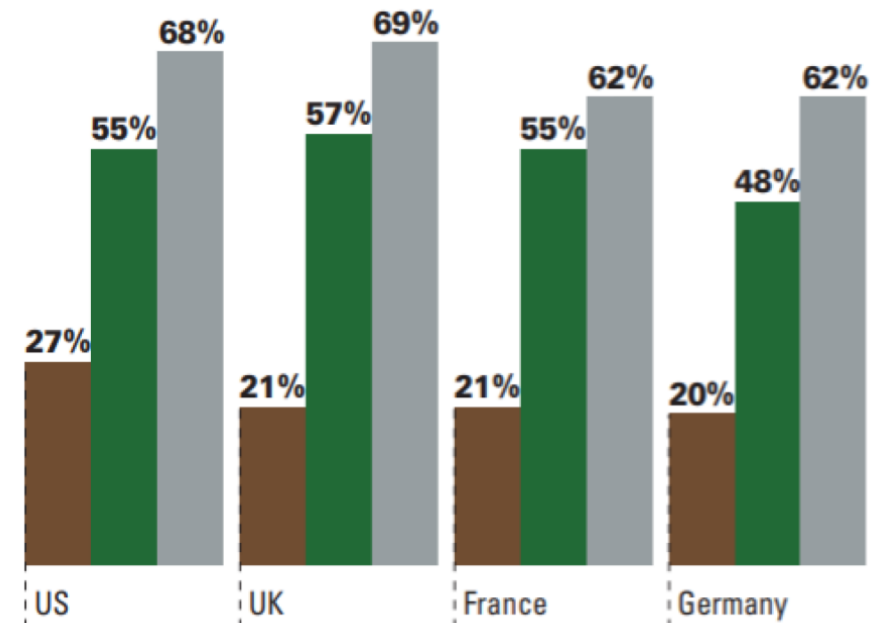
Experience of Overall Business Value from BIM

- The United States has the highest percentage who report experiencing any value (93%), but also have the highest percentage who report experiencing 25% or less of the total value of BIM has to offer (43%)

- 87% of all BIM users in the four countries included in the study
report acknowledge they are experiencing value from BIM applications

- Engineers and contractors account for the biggest success in BIM integration into project workflow

Experience of Overall Business Value From BIM (Engineers and Contractors by Country Using BIM Who Experience Value)

Dodge Data & Analytics, 2017

■ Yes
■ No/Not Sure

	US	UK	France	Germany
Yes	93%	76%	89%	87%
No/Not Sure	7%	24%	11%	13%

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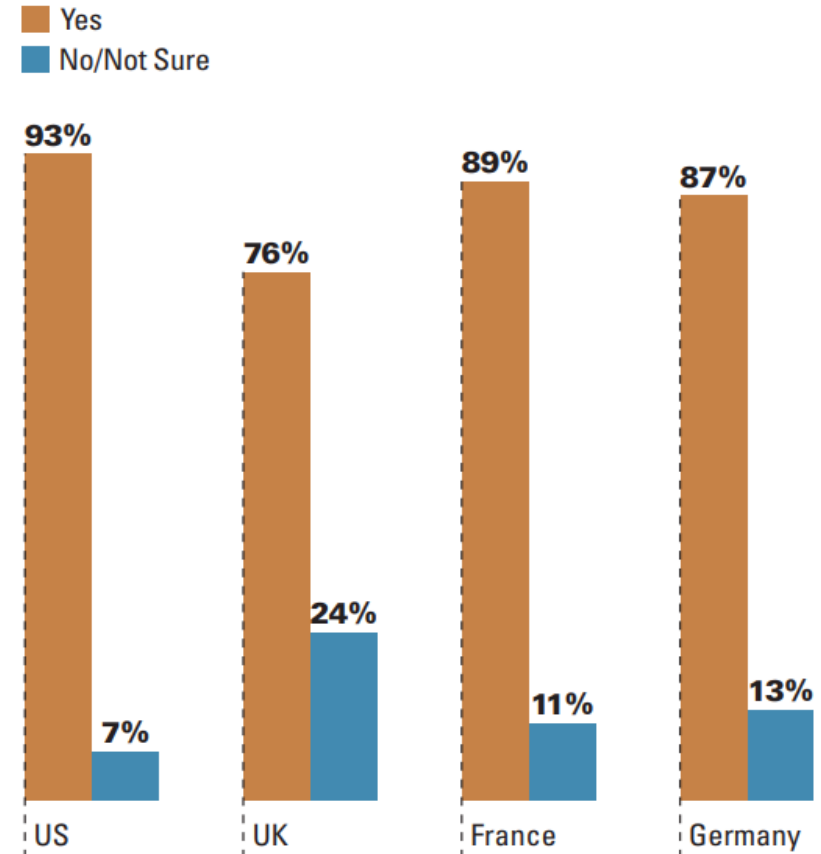
Use of BIM by Type of Company

- **Interdisciplinary Project Collaboration**: Studies demonstrate that the ability to support increased collaboration on projects is a critical benefit of BIM

- **Deliver Design Intent to Construction:** BIM with drone integration supports the sharing of real-time information across the project team

- **Aid Production of 3D Deliverables to Owners:** 3D interactive deliverables created by real-time drone imagery enhance an owner's understanding of how a project is designed, is constructed, and how it will function after completion. Studies show that owners now expect these deliverables

How BIM Is Used
(By Type of Company)
Dodge Data & Analytics, 2017

■ Using Models Created by Others   ■ Authoring Models

82%
71%
29%
18%

Engineers   Contractors

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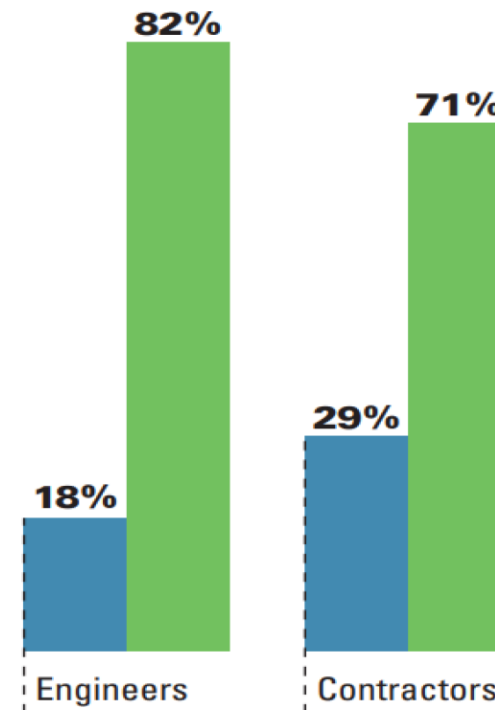
Top Project Process and Outcome Benefits From BIM (Selected Among Their Top 3 by 20% or More of BIM Users)

Dodge Data & Analytics, 2017

Reduced Conflicts, Field Coordination Problems and Changes During Construction
38%

Better Multiparty Communication and Understanding From 3D Visualization
30%

Reduced Errors and Omissions in Construction Documents
29%

Reduced Construction Cost
22%

Reduced Rework
21%

Greater Client and/or Community Engagement
20%

Reduced Overall Project Duration
20%

Top Project Process and Outcome Benefits from BIM and Drone Integration

- Top three most frequently ranked benefits include reduced conflict, field coordination, and positive reduction in change-orders

- By Role: A higher percentage of contractors (41%) rank BIM among their top three processes and outcome benefits as compared to engineers (29%)

- By country more US respondents (54%) rank BIM as a top benefit to their workflow

- Data suggest that BIM factors better multiparty communication and understanding from 3D visualization and reduces errors and omissions in construction documents

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Conclusion

BIM Usage in The United States

The use of BIM has increased dramatically among respondents between 2011 and 2017, results from Dodge Data & Analytics. In 2011 just 55% of respondents were actively using BIM, by 2017 that number had increased to 76% authoring models and using BIM in workflow integration.

We have seen the greatest increase by role among engineers authoring models and more contractors using BIM and drone integration for transportation infastructure. With the current acceptance of drone technology into the BIM process we are seeing a steady rise in usage request among architects, VDC and PMs to assist in rendering, preconstruction-post construction, and overall aerial data integration.

Comparisons with the Dodge study on the business value of BIM conducted in 2011 reveal important trends in the use of BIM for infrastructure in the US. The findings of the current study also suggest that US engineers see greater benet from BIM use than do U.S contractors in relatable areas.

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