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Number of Division Employees:
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Building Information Modeling (BIM) For Infrastructure (BIM4I)

Caltrans primarily develops and constructs transportation improvement projects by creating 2D plan sheets to represent a given project's design intent to be built in the three-dimensional, real world. Although Caltrans Surveying and Mapping has provided 3D data for approximately 20 years, recent advances in engineering and project management software programs enable the transportation industry to utilize the BIM approach applied in other civil engineering projects, including the design and construction of office buildings and industrial facilities. Data and products developed for capital improvement projects used in the BIM4I approach become transportation assets to be maintained by the owner and operator of the State's transportation system.

Implementing BIM4I will require sharing information from various programs in a 3D virtual world. This visual and digital representation of the proposed design, over time, will establish an environment that enables decision makers to have access to higher-quality information on which to base their decisions. Furthermore, at the end of the project, Caltrans will obtain a high-quality digital asset that will provide continuous value for the 75–100-year operational lifetime of the transportation infrastructure by providing the key information on the existing asset for maintenance, rehabilitation, and safety improvements. As such, projects can be designed, built, and operated/maintained more safely, in less time, and for less money.
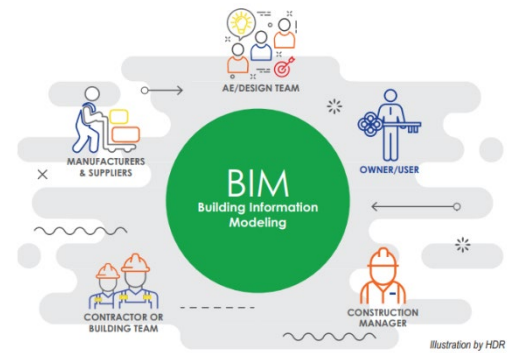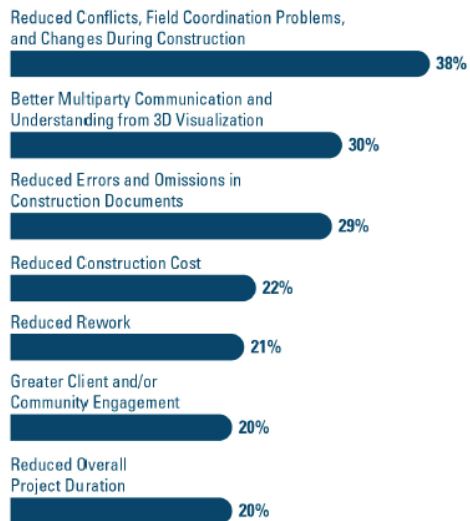

BIM Overview
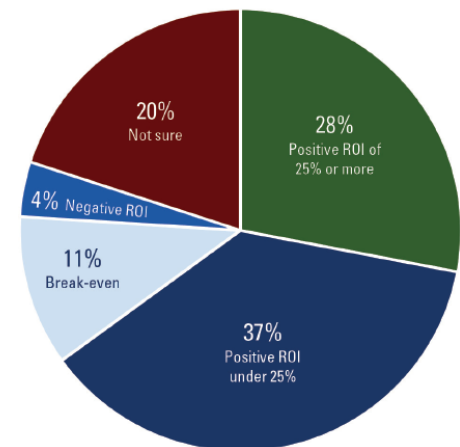
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Figure 5. Chart. Perceived ROI from BIM processes among users in the transportation sector (Jones and Laquidara-Carr 2017).

Return on Investment (ROI) from FHWA on Implementing BIM4I

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%

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Figure 6. Chart. Reported benefits of BIM for Infrastructure among users in the transportation sector (Jones and Laquidara-Carr 2017).

Areas where benefits are seen from implementation of BIM4I