

Reseller companion guide of the BIM Pilot Deployment Workbook



BIM Pilot Deployment Workbook

Organizational BIM deployment plan

Project BIM deployment plan

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The intent of the BIM Pilot Deployment Workbook is to provide a framework that architects, engineers, surveyors, civil engineers, contractors, and owners can reference to deploy Building Information Modeling (BIM) processes and best practices. This is a companion document to the Autodesk BIM Pilot Project Getting Started Guide. This template can be used to help build a plan for implementing a BIM process. Each section provides guidance and examples to complete this editable template.

This document makes suggestions on the roles and responsibilities of each party, the detail and scope of information to be shared, relevant business processes, and supporting software. This Deployment Workbook will also help you identify project teams, define key processes and dependencies throughout your project, assign roles and responsibilities, and select software solutions that use collaborative communication to help reduce your project costs.

The BIM Pilot Deployment Workbook is divided into two sections: the Organizational BIM Plan and the Project BIM Plan. The Organizational BIM Plan helps companies implement BIM methodology at the organizational level; while the Project BIM Plan helps project teams implement BIM on a pilot project.

For stakeholders in building, infrastructure and construction projects, the potential benefits of applying the framework and suggestions include:

- Improved communication and collaboration among all project team members
- Fewer problems related to overruns in cost, schedule, and scope, or quality concerns
- The ability to more reliably deliver projects faster, more economically, and with less environmental impact

Organizational BIM Deployment Plan

The implementation of BIM can have a large impact on the operations of your organization. In this section you'll define your organizational BIM vision, including goals, objectives, and alignment with your overall organizational vision.

Alignment with organizational vision

In the space provided below, list your organization's vision statement and specify how you believe the implementation of BIM enhances and or alters that vision. The first lines show examples.

Organization vision statement
<i>To be the premier general contractor for complex construction projects, in which meeting challenges through technology sets us apart from our competition.</i>
BIM enhances vision
<i>BIM practices help us differentiate our company by offering expanded services to our clients.</i>
BIM alters vision
<i>BIM will enable us to compete for more projects.</i>

Goals for BIM

List your goals and objectives for adopting BIM below. Also note how you would like to measure the achievement of these objectives and their targeted timeframes. The first row shows an example.

BIM goal	Measureable objective	Achieved if	Projected timeframe
<i>Improve operations management on all new facilities</i>	<i>Obtain an as-built model on all new construction showing mechanical systems information</i>	<i>A model is collected or updated by the project team after each project or WO</i>	<i>April 2015</i>

Current authoring tools

In the table below, outline the authoring tools that your organization uses in a typical project. Check your industry focus area, and then specify which authoring tool you currently use in each phase of your project. For industries that are not covered by your organization, leave the row blank. The first row offers an example.

Industry focus	Project phase	Authoring tool
<i>Architecture</i>	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	1 – <i>Revit, AutoCAD</i> 2 – <i>Revit</i> 3 – <i>Revit, AutoCAD</i> 4 – <i>Other (Fill in Name)</i> 5 – <i>NA</i>
<input type="checkbox"/> Architecture	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	
<input type="checkbox"/> Civil/Infrastructure	1 – Planning and Conceptual Layout 2 – Survey and Data Collection 3 – Preliminary Engineering 4 – Final Design 5 – Project Documentation 6 – Bid 7 – Construction administration/Build	

<input type="checkbox"/> Construction	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build 6 – Estimate 7 – Planning 8 – Coordination 9 – Detail design 10 – Layout 11 – Lift	
<input type="checkbox"/> Mechanical	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	
<input type="checkbox"/> Electrical	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	
<input type="checkbox"/> Plumbing	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	
<input type="checkbox"/> Structure	1 – Schematic design 2 – Design development 3 – Construction documentation 4 – Bid 5 – Construction administration/Build	
<input type="checkbox"/> Other (Fill in)	Other (Fill in)	

Planned models

In the table below, outline the models that your organization may create in a typical project. List model name, model content, the project phase when the model is typically delivered, and the model authoring tool currently used. For models that might not be created by your organization, leave the row blank; add rows for model types not already listed that you anticipate needing. The first row offers an example.

Model name	Model content	Project phase	Authoring tool
<i>Coordination model</i>	<i>Architectural, structural, and MEP components of main building and parking garage structure</i>	<i>Design development and construction documents</i>	<i>Autodesk Revit</i>
Civil model			<input type="checkbox"/> AutoCAD Civil 3D <input type="checkbox"/> InfraWorks <input type="checkbox"/> Other: _____
Architectural model			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Structural model			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Mechanical			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Electrical			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Plumbing			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Construction model			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Coordination model			<input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> BIM 360 Glue <input type="checkbox"/> BIM 360 Field <input type="checkbox"/> Other: _____
As-built model			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Schematic design model			<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Other: _____
Other			

Planned analysis tasks

List the types of analysis tools that your organization plans on implementing. Select the checkbox and type the name of the desired tool, if known. For analysis tasks that will not be done by your organization, leave the row blank.

Analysis	Description	Recommended tool(s)
Visualization	Visualization tools enable the project team to view the design or construction of the project in 3D, giving a more accurate perspective on the end product. These tools are highly useful in submitting proposals to help win more business.	<input type="checkbox"/> Autodesk 360 Rendering <input type="checkbox"/> 3ds Max Design <input type="checkbox"/> InfraWorks <input type="checkbox"/> Navisworks <input type="checkbox"/> Other: _____
Structural	Structural analysis tools use the model to analyze the building's structural properties. Structural analysis programs typically use the finite element method (FEM) to measure the stresses on all structural elements of the design. For structural analysis to work smoothly, the original structural modeling tool must be compatible with the structural analysis tool, and the original structural model property data must include information about the structural elements.	<input type="checkbox"/> Structural Analysis for Revit <input type="checkbox"/> Robot Structural Analysis <input type="checkbox"/> Other: _____
Clash detection	Clash detection analysis is done to check for interferences between the designs of one or many models. To help reduce change orders during construction, clash detection should be performed early and continue throughout the design process. For clash detection to work properly, your project's models must have a common reference point and must be compatible with the clash detection tool.	<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Navisworks Manage <input type="checkbox"/> BIM 360 Glue <input type="checkbox"/> Other: _____
Quantity takeoff	The objective of quantity takeoff analysis is to use modeling property data to automate or simplify the quantity takeoff process. The information from the quantity takeoff tool can then be imported or tied to cost estimating software. For the quantity takeoff process to work smoothly, the original modeling author must include the relevant property information in the design.	<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> Other: _____

Scheduling/4D	Scheduling analysis enables the project team to use the project model to analyze the timeline and sequencing for construction. This information can then be used to modify or adjust the construction schedule. While tools do exist that enable project team members to visualize construction over time, no such systems yet interact automatically with scheduling tools.	<input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> Other: _____
Cost analysis/5D	The construction of 5D models helps the various participants (architects, designers, contractors, and owners) in any construction project to visualize the progress of construction activities and their related costs over time. This BIM-centric project management technique has potential to vastly improve project management and the delivery of construction projects of any size and complexity.	<input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> Other: _____
Energy/LEED	LEED (Leadership in Energy and Environmental Design) rating/energy analysis tools help the project team evaluate the impact of design decisions on sustainability and energy consumption. This analysis model is usually based on the main architectural model, after which material and building system inputs can be used to evaluate the project's sustainability and energy consumption.	<input type="checkbox"/> Energy Analysis for Revit <input type="checkbox"/> Green Building Studio <input type="checkbox"/> Other: _____
Geospatial	Geospatial analysis tools enable the project team to leverage GIS data throughout the project lifecycle. For example, this could include environmental concerns like avoiding poor soils and wetlands. It could also involve overlaying zoning or land use information. Finally, it can provide a mechanism where relevant project information can be exported and shared with the city when a project is complete.	<input type="checkbox"/> AutoCAD Map 3D <input type="checkbox"/> Other: _____
Storm Water	Storm Water analysis tools enable the project team to model complex hydrology, hydraulics and water quality. This can include designing and sizing drainage system components and detention facilities for better flood control and water quality protection.	<input type="checkbox"/> Autodesk Storm & Sanitary Analysis <input type="checkbox"/> Other: _____

Sanitary Sewer	Sanitary sewer analysis tools enable the project team to analyze simple and complex sanitary and combined sewer systems. Typically used for master planning, rehabilitation, new design and accommodating future growth in the sewer model.	<input type="checkbox"/> Autodesk Storm & Sanitary Analysis <input type="checkbox"/> Other: _____
Vehicle Swept Path	Vehicle swept path analysis tools enable architects, engineers and planners to predictably evaluate vehicle movements on transportation or site design projects. This is important to ensure minimum standards are maintained as well as consideration can be given to factors like sight lines and potential safety concerns.	<input type="checkbox"/> Autodesk Vehicle Tracking <input type="checkbox"/> Other: _____
Other		
Other		

Current skills

In the space below, fill in your organization’s current skills by listing personnel type, number of employees of each type, and average skill level. (In other words, when it comes to skills, where is your organization today?) The first row shows an example.

Skill	Personnel type/Number/Average skill level
2D CAD design	<i>Administrative assistant / 5 / None</i> <i>Associate architect / 37 / Expert</i> <i>Project manager / 8 / Novice</i> <i>Civil Engineer/ 3 / Novice</i> <i>Executive / 3 / None</i>
<input type="checkbox"/> 2D CAD design	
<input type="checkbox"/> 3D BIM design	
<input type="checkbox"/> Visualization	

<input type="checkbox"/> Simulation	
<input type="checkbox"/> Analysis	
<input type="checkbox"/> Other: _____	

Required skills

In the space below, fill in desired skills by listing personnel type, number of total employees, the desired average skill level, and the number of employees with the desired skill level. (In other words, when it comes to skills, where are you targeting to improve?) The first row shows an example.

Skill	Personnel type/Number/Desired skill level/Number with skill level
2D CAD design	<i>Administrative assistant / 5 / Novice / 0 Associate architect / 37 / Expert / 10 Project manager / 8 / Intermediate / 2 Civil Engineer / 3 / Intermediate / 2 Executive / 3 / Novice / 0</i>
<input type="checkbox"/> 2D CAD design	
<input type="checkbox"/> 3D BIM design	
<input type="checkbox"/> Visualization	
<input type="checkbox"/> Simulation	
<input type="checkbox"/> Analysis	
<input type="checkbox"/> Other: _____	

Existing Training plan and requirements

Do you have an existing training process for your personnel? (i.e. Leverage Instructor led sessions, In-house training, attend conferences, attend webcasts...) If so, please describe the types of training your employees have received as well as the forms it is typically delivered. Please also include any areas of training that you feel may be required.

Support plan

What types of support do you currently have in place? Please list the support that you are using for the software that you currently use, as well as the software that you are interesting in learning more about. Please refer to the following link to get more information on support services: <http://www.autodesk.com/subscription/maintenance>.

System	Support type	Contact information	Support hours
<i>Autodesk Revit</i>	<i>Autodesk Premium Support</i>	<i>1-800-555-5555</i>	<i>8 a.m.–6 p.m. EST</i>

Project BIM Deployment Plan

In this section of the Test Drive BIM Deployment plan, you'll establish a planning framework for your projects and discover information about different kinds of technology that can help you work more efficiently:

- Solutions that help project teams create, adapt, and reuse information-rich digital models during every stage of the project, including design, construction, and operations.
- Analysis tools that deliver greater insight into the constructability and potential performance of buildings and infrastructure before they are built. Using this analysis, your project teams can make more informed decisions about geometric layout, building materials, energy, and sustainability—and better detect and prevent costly clashes among elements such as pipes and beams.
- A collaborative communication platform that helps reinforce business processes while enabling all team members to share project information in a structured manner.

With these solutions, you can help keep BIM data intact throughout all phases of development. At the beginning of a project, the team can work together to resolve design problems before breaking ground. When a project is completed, instead of delivering unwieldy rolls and boxes of paper documentation, the team can present the project owner with a comprehensive digital model that can provide all information necessary to manage and operate the project.

Project teams can use the BIM Deployment Plan as a collaborative, working template for establishing project standards and alignment early in a project. The BIM Deployment Plan will also help your teams define roles and responsibilities for each team member, what types of information to create and share, and what kind of software systems to use and how to use them. Your project teams will be able to streamline communications and plan more effectively—helping to reduce costs as well as concerns about quality, scope, and schedules across all phases of construction.

Project description

Enter key information about the project below. Include the project name, owner's project number, address, project description, and areas of the project that will and will not be modeled.

Project name	
Owner's project number	
Project address	
Project description	
Areas modeled	

Core collaboration team

List the core collaboration team members for your project below.

Contact name	Role/Title	Company	Email	Phone

Project goals and objectives

Below, list your objectives for using BIM on this project. Also note how you will measure the achievement of each objective and its target timeframe. The first row shows an example.

Project Goal	Objective	Achieved if	Projected timeframe
<i>Streamline structural steel procurement</i>	<i>Include the steel supplier in the modeling process in order to start fabrication earlier</i>	<i>Steel is ready and delivered to site when needed</i>	<i>April 2015</i>

Project phases/milestones

In the table below, outline the phases of your project, their estimated start dates, and the stakeholders involved. The first row shows an example.

Project phase/milestone	Estimated start date	Estimated completion date	Project stakeholders involved
<i>Conceptualization</i>	<i>2/1/2015</i>	<i>4/1/2015</i>	<i>Owner, A/E, subconsultants, CM</i>

Model managers

For each model type that you'll be making, list the model managers for the project in the table below. This will be helpful as you plan review meetings.

Stakeholder company name	Model manager name	Email	Phone

Planned models

In the table below, outline the models that will be created for the project. List the model name, model content, project phase at which the model will be delivered, the model’s authoring company, and the model authoring tool to be used. For models that will not be used or created in your project, just leave the row blank; add rows for any model types not already listed that you anticipate a need for. The first row offers an example.

Model name	Model content	Project phase	Authoring company	Authoring tool
<i>Coordination model</i>	<i>Architectural, structural, and MEP components of main building and parking garage structure</i>	<i>Design development and construction documents</i>	<i>ABC Designers</i>	<i>Autodesk Revit</i>
Civil model				
Architectural model				
Structural model				
MEP model				
Construction model				
Coordination model				
As-built model				

Contract documents

List the models that will be considered part of the contract documents in the table below.

Models to be considered part of project contract documents

Detailed analysis plan

For each type of analysis that may be performed for your project, list the models used for the analysis, which company will perform the analysis, the file format required, the estimated project phase, and the tool to be used for analysis. If there are other instructions associated with the analysis, mark the Special instructions column and list the details in the Special instructions table in the next section.

Analysis	Analysis tool	Model	Analyzing company	Project phase(s)	File format required	Special instructions
Visualization						
Structural						
Clash detection						
Quantity takeoff						
Scheduling/4D						
Cost analysis/ 5D						

Energy/LEED						
Daylight/lighting						
Geospatial						
Storm Water						
Sanitary Sewer						
Vehicle Swept Path						

File/model naming convention

If there are files with special naming requirements, list them in the table below. If you currently have your existing naming conventions documented, use the table to enter them below. The first row shows an example.

File type	Naming convention
<i>Progress photos</i>	<i>Location, hyphen, authoring company initials, hyphen, description (e.g., Parking deck-ABC-Cracking)</i>

Design review

What does your project review process look like? In the table below, list the model(s) requiring review, the reviewers (internal or external), estimated design review start and completion dates, and how many days the authoring company has to respond to the design review comments. An example has been provided.

Model	Reviewing companies	Estimated review start date	Estimated review completion date	Days to respond by authoring company
<i>Schematic design model</i>	<i>ABC Owners Acme Contractors</i>	<i>1/21/2015</i>	<i>2/11/2015</i>	<i>14 days</i>

Other construction management business processes

List the modules the project team plans to use, including any special instructions and processes, in the table below.

Additional business process modules to be used	Description	Recommended tool(s)
Construction site utilization planning (CSUP)	Using BIM models to evaluate the locations of both permanent and temporary facilities on site during multiple phases of the construction process	<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> BIM 360 Glue <input type="checkbox"/> BIM 360 Field
Project review, scheduling, and visualization		<input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> Other: _____

Project quantification		<input type="checkbox"/> Autodesk Revit <input type="checkbox"/> Navisworks Manage or Simulate <input type="checkbox"/> Other: _____
Field management		<input type="checkbox"/> BIM 360 Field <input type="checkbox"/> Other: _____
Construction layout		<input type="checkbox"/> AutoCAD Civil 3D <input type="checkbox"/> Point Layout <input type="checkbox"/> Other: _____

As-built model

List any inclusions or exclusions from the as-built model content in the table below.

As-built model inclusions	As-built model exclusions
<i>[List special items that will be included in the model above and beyond the Level of Detail specified in section 1.2.3.2.]</i>	<i>[List items that will be excluded from the model above and beyond the Level of Detail specified in section 1.2.3.2.]</i>

BIM coordination

Select the components and specific software you will use and list them below for easy reference.

	Software component	Model	Software system	Version
	Model creation	Architectural design		
	Model creation	Civil design		
	Model creation	Structural Design		

	Model creation	MEP Design		
	Model creation	Coordination		
	Model creation	Construction		
	Model creation	As-Built		
	Model integration			
	Model mediation			
	Model visualization			
	Model sequencing			
	Model quantity takeoff			
	Collaborative messaging and communication			
	Document management			
	Design management			
	Bid management			
	Construction management			
	Cost management			
	Facility/operations management	As-built		

Additional resources

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