

STRATEGIC PLANNING GUIDE FOR ADOPTING BIM

IN LANDSCAPE ARCHITECTURE WITH VECTORWORKS LANDMARK



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LANDMARK

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PART 1 – THE STRATEGIC BIM PLANNING GUIDE

The Strategic Planning Guide is a tool to help assess your organization's existing processes and procedures to align your BIM goals with your defined uses for BIM. The guide will help your organization, develop a transition plan for BIM implementation, and will discuss useful considerations as you follow through with this process.

The BIM Implementation Planning Guide (part two of this document) will provide structure for assessing your organization's current use of Vectorworks software and how changes for BIM will need supporting. We provide questions to ask yourself as you carry out this assessment and determine how to make office-wide changes for BIM integration.

UNDERSTANDING BUILDING INFORMATION MODELING (BIM)

For architects and building-focused designers, Building Information Modeling (BIM) means creating and managing a digital representation of a building. The model contains physical properties, functional characteristics, and specific information such as manufacturers' and fabrication specifications.

For landscape architects and other site-focused designers, landscape-specific BIM is not so different in that objects remain information-rich. With BIM, you understand sizes, placements, and other object parameters in relation to the site, considering both its data and its geometry. Regardless of focus, BIM lets project stakeholders make well-informed decisions early in the design process, which is when choices can most impact project costs, schedules, and sustainability. Some benefits of BIM include:

- Creation of a 3D modeled site (potentially including the surrounding context) to improve understanding of design intent
- Creation of a 3D model as a source for construction documents and site information
- Reduction of re-work or re-drawing
- Improved productivity through change management and drawing coordination
- Increased resource- and cost-efficiency with the ability to query data from the model and produce schedules
- Coordination of all discipline models through clash-detection software
- Collaboration with consultants and contractors by creating various types of analysis such as performance, scheduling, cost estimates, etc.
- Production of a fully coordinated, as-built model for the owner, who use the model for landscape management

PART 1 – THE STRATEGIC BIM PLANNING GUIDE [CONT'D]

The process encompasses early phases of design through installation of the landscape, and possibly even the landscape's management. Because of its complexity, firms may find it challenging to jump on a BIM project without an implementation plan. This document addresses that.

BIM IN VECTORWORKS LANDMARK

Vectorworks Landmark is a BIM solution that supports your creative process instead of replacing it. With Vectorworks Landmark, BIM workflows allow you to deliver more accurate documentation with increased efficiency while remaining true to your vision as a designer. Unless you are new to Vectorworks, you may already be using many of its BIM capabilities. Whether it is by using plug-in objects for a 2D plan or generating a full 3D model, many users will find they have already begun delving into the BIM arena and are now ready to move on to greater collaboration with their consultants. This means understanding how your site design team will use the model internally, as well as how consultants will use the model externally.

Determining how to use your modeled site for collaboration — internally or externally — will be covered in part two of this document: The BIM Implementation Planning Guide.

BIM AND YOUR ORGANIZATION

Since BIM is often a required standard for building project delivery, the mandate is transferring to public site projects as well. Before implementing a BIM process, it is important to discuss with your firm's leadership if they are interested and willing to invest in BIM and, if so, what the implementation strategy may be.

WHAT STOPS YOU FROM ADOPTING BIM?

A firm may be reluctant to adopt BIM for many reasons. The process is a different approach to design and collaboration. It will take time and several attempts before you see the full benefits. The biggest hurdles are:

- **Time and money:** How will this process affect the bottom line?
- **Hardware and software:** Can the current equipment support this new process?
- **Training:** Do we have the knowledge and skill level required for BIM?
- **Change and comfort:** Do we have the motivation to venture into an unfamiliar process?
- **Content:** How might our existing firm standards/libraries translate?
- **Commitment:** Do we have clear expectations and goals to make this a successful change?

PART 1 – THE STRATEGIC BIM PLANNING GUIDE [CONT'D]

This shift is similar to transitioning from hand drafting to 2D CAD drafting. The change cannot happen overnight. It will take time, it will need planning, and it will need proper management to ensure a successful transition and continuity in the firm's output.

MANAGING CHANGE: ACHIEVING A SUCCESSFUL IMPLEMENTATION

There are six essential elements that must be in place to achieve successful implementation.

1. VISION:

Establish a clear goal for everyone to work toward. This will help convey confidence in your vision for a successful BIM implementation. Your organization's leadership should clearly communicate the expectations for the use of BIM.

The first step is to establish SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals. Other aspects that should be established are:

- A BIM vision statement specific for your practice.
- The firm's expectations for BIM projects, such as how many projects per year, expected or required level of detail, etc.
- Leadership's commitment to provide proper support and resources.
- An implementation timeline, including progress expectations, i.e. where you want to be in one year, two years, and five years.

2. SKILLS:

Staff must have the proper skills, passion, and motivation to succeed in achieving your goal. You will need to provide the required training to reduce stress and anxiety for the staff responsible for implementing BIM on a project.

3. INCENTIVES:

Without an incentive or motivation for staff, implementation may be slower. This new process will take more time at first and, as deadlines approach, you will face challenges. You run the risk that the established goals may fall behind or be abandoned altogether. To mitigate this risk, we recommend you reward your team for the additional time and effort necessary to carry out your BIM vision.

4. RESOURCES:

The firm must be prepared to provide resources to support this new process. Creating the proper template and libraries, purchasing software and hardware, and providing support for these various tools will reduce your staff's overall frustration.

PART 1 – THE STRATEGIC BIM PLANNING GUIDE [CONT'D]

5. ACTION PLAN:

Identify a potential BIM project in an early stage (possibly before winning it) and team up with consultants interested in collaborating on your endeavor.

Determine if you will need additional software (for example, clash detection or model validation software) and plan for training as needed.

Instead of waiting for a project with owner requirements, create your own internal BIM requirements. This will help your firm prepare for when a future owner requests a BIM project.

6. EVALUATION:

Create an ongoing evaluation to assess your progress. Be sure to adjust as you go because, without this assessment, the firm may face a plateau in implementation.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE

The first step in executing a BIM workflow for landscape architecture is to formally specify what BIM means within your organization. The goals should reflect BIM's applications to your organization's vision, design philosophy, and business practices. To assess your organization's current perceptions of BIM, you must ask yourself and your team:

- What does BIM mean to each team member?
- What does BIM mean to the organization?

Answers to these questions will help determine whether your BIM vision and goals align with existing processes and services your organization provides, or whether it will alter them. Before using responses to determine how BIM fits into your organization, be aware of the realities of BIM. Ensure that staff members are well-informed about what landscape-specific BIM technology means and how it can be used.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

Use the following table to outline answers to these potential questions (examples are given in the first, gray row).

WHAT DOES BIM MEAN TO THE ORGANIZATION?	WHAT IS OUR ORGANIZATION'S VISION STATEMENT OR BUSINESS PRACTICE?	WILL BIM ALTER OR ENHANCE THIS VISION?
BIM means greater collaboration with consultants beyond project documentation.	We are inspired by innovation in design and technology, the craft of construction, and a collaborative approach that places our clients' needs at the center of the design process.	BIM will enhance our vision by allowing us to improve our collaborative approach and help us meet clients' requirements without compromising their needs or desires.
BIM represents the virtualized site in not only 2D but 3D representation.	We have already integrated schematic modeling into our site design workflows and expect that a more formalized BIM approach could enable a carryover into later phases of our design and documentation process.	BIM will allow our vision for each project to be more connected through each design phase and help us to include performance-based design throughout the project design process.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

GOALS TO MEET BY IMPLEMENTING BIM

Defining your firm's goals will help you outline manageable changes to your workflows. BIM goals will not only provide incentives for implementation, but they will also create measurable objectives for each project to meet your expectations and then further refine your implementation approach.

Rather than beginning with office-wide goals, start by listing your objectives for each individual project (for example, pilot projects). This approach allows the BIM goals to be specific, measurable, and considerate of a project's characteristics and the participants' capabilities.

Examples of BIM goals include:

- Improve general project performance, such as decreased cost and duration.
- Improve the performance of an installed landscape by making your design more resilient and sustainable.
- Improve the efficiency of specific tasks, such as developing cost estimates through automatic material takeoffs and plant lists from the landscape model.
- Meet and document jurisdictional code requirements, such as site use, tree preservation, water budgets, etc.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

Upon a project's completion, assess your results and incorporate all lessons learned into your next project's implementation plan.

BIM GOAL	MEASURABLE OBJECTIVE	ACHIEVED/LESSONS LEARNED
Reduce project schedule	Project completed in 10% shorter timeframe than non-BIM project of similar scope.	Yes/account for learning curve when assigning new members to the project.
Meet development cover requirements per local design standards/codes.	Building and impermeable surfaces do not exceed 50%, per local development code.	Documented adherence to code enabled swift passage in early DD stage (saving client added fees; firm earns new projects sooner)

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

Keep in mind that your team lead or project manager does not necessarily manage all BIM goals. For example, the general contractor will most likely manage a goal like tracking progress through the construction phase. Other goals, such as eliminating field conflicts, will involve input from the entire project team.

ASSESSING YOUR CURRENT USE OF VECTORWORKS LANDMARK

It is necessary to introspectively assess your current use of Vectorworks Landmark software to determine how to move forward with BIM implementation. You will need to assess your use of additional software, existing skills and those still needed, necessary training, and resources to ease the move to BIM.

First, consider whether you have already initiated a BIM workflow. There are three possible responses: yes, no, and yes without realizing it. For example, by using the Hardscape object, which modifies the Site Model in Vectorworks Landmark, you have initiated a BIM workflow even if you are not using those tools to create a 3D model.

It is important to record the impacts BIM workflows have had on your projects. What has BIM enabled you to do differently, and to what benefit? Identify and document your current use of Vectorworks Landmark. This will help inform how to move forward with office-wide BIM implementation.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

The table below will help you compile some of your firm's existing collaboration, 3D, and landscape BIM workflows. It will help you recognize the benefits your current efforts bring you (examples are given in the gray rows).

EXISTING WORKFLOW	BENEFIT
Use Vectorworks Landmark's Hardscape and Site Model objects	Increased efficiency in grading and layout
Use Vectorworks Landmark's Create Section Viewport command	Increased efficiency with pavement section drawings generated from the model

If you have not yet attempted a BIM workflow, site-specific or otherwise, don't worry — a clean slate is a great place to begin. You have still established where you are and where you want to be. As you read this document, consider things that will change as you move forward. Evaluation should be ongoing, just as current BIM users should still consider what aspects of their implementation can expand or improve.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

ASSESSING YOUR CURRENT TOOLS AND THEIR USE

Most firms do not limit themselves to a single software or tool. Therefore, it is important to identify which tools you are using at different points in design. This will help determine how BIM can streamline your workflow by reducing the number of tools to just those necessary to accomplish the project requirements. A BIM workflow can also inform new analyses to be conducted with your landscape models.

The following tables will help you identify how to use a Vectorworks Landmark BIM model and what types of analyses your firm can begin to implement (examples are given in the first row in gray).

TYPE OF MODEL/ANALYSIS	DESCRIPTION	TOOL(S) USED
Schematic design model	3D urban context model created from GIS files	Vectorworks Other: SketchUp with Placemaker
Schematic design model		Vectorworks Other:
Presentation/visualization model		Vectorworks Other:
Planting Design		Vectorworks
Site model/Slope Analysis/Cut and Fill		Vectorworks
Water Budget		Vectorworks Other:
Coordination model		Vectorworks Other:
Quantity takeoffs		Vectorworks Other:
Construction model		Vectorworks Other:
Construction sequencing/ scheduling		
As-built model		Vectorworks
Landscape Maintenance		

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

ASSESSING REQUIRED SKILLS AND TRAINING

Moving to BIM may require additional training for your team. An internal skills assessment will help identify how to augment the team's current skill set and where additional training may help.

Use the following table to assess your organization's current skills (examples are given in the first gray row).

SKILL	CURRENT SKILL LEVEL/ PERCENTAGE OF STAFF	DESIRED SKILL LEVEL/ PERCENTAGE OF STAFF
2D drafting	Novice/75% Intermediate/15% Expert/10%	Novice/50% Intermediate/25% Expert/25%
2D drafting		
3D modeling		
Terrain Modeling		
BIM modeling		
Rendering, visualization, and presentation drawings		
Analysis		
Consultant coordination and clash detection		
Other		

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

Note how BIM modeling is separate from terrain and 3D modeling — they are different skill sets, because BIM modeling requires an understanding of basic site elements and their construction/installation.

Based on your organization's skills assessment and BIM goals, you may determine changes in staff, titles, and roles to move toward a more efficient BIM workflow. Think about who will lead the BIM effort in the office as a BIM manager and who can lead each project.

- How will these roles vary from existing ones?
- Is there a need for additional training or additional team members?
- What types of training might be necessary (for example, software, workflow, IT, etc.)?
- Who will perform the training, and who will attend?

There are two prominent roles when working with BIM: the office BIM manager and the project model manager. In smaller organizations, one person may assume the responsibilities of both roles, with tasks assigned in a way that fits the current organizational strategy.

The office BIM manager's role is similar to the role of a CAD manager. They both oversee the development of standards and workflows for the entire office.

The project model manager is responsible for implementing those standards and workflows on specific projects. The model manager also takes on the responsibility of model coordination with consultants and QA/QC of drawing output. As a result, in many instances a project's team lead will serve as the model manager.

A role that is not formalized or given a specific title is that of the "BIM champion." This person is an enthusiast who keeps the site design team motivated in the face of obstacles or resistance to change. The BIM champion is passionate about the advantages of implementing BIM and is interested in expanding his/her knowledge and skills. Along with the BIM manager, this person often receives training first and should share what he/she has learned with others in the office. You may find that your office's BIM champion is also your BIM manager.

Along with any initial classroom or on-site training, your organization should also have an ongoing continuing education effort. This will include an onboarding program to ensure all new employees are familiar with the BIM processes, office standards, and how to adhere to them. To begin developing an in-house training program, compile a list of available resources.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

Use the following table to help identify and use various types of training programs (examples are given in the gray rows).

TRAINING RESOURCE	HOW TO USE
Vectorworks custom on-site training	Once every 36 months for all staff using Vectorworks products
Webinars	Once a month — watch as a team as a Lunch and Learn
Online videos and tutorials	Self-paced materials
In-house training curriculum	Developed by the BIM manager and given to all new employees as part of the onboarding process
Ongoing office-led training	Led by BIM manager with each employee sharing “tips or tricks” they learned.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

When thinking about training, it is also a good idea to evaluate the types of available support. Use the following table to list the support you currently receive or are considering for the future (examples are given in the first row in gray).

SUPPORT TYPE	CONTACT INFORMATION
Vectorworks Tech Support	443-542-0411 techsupport@vectorworks.net
Vectorworks Service Select Premium Tech Support	Login to Service Select Portal at: serviceselect.vectorworks.net
Local User Group	vectorworks.net/community/usergroups
Community Board	https://techboard.vectorworks.net/

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

MOVING FORWARD

So far, this document has walked you through the major considerations involved in establishing a BIM strategy for your site-design organization. The information presented serves as a guide for drafting your initial (or further developing an existing) BIM Implementation Plan. We recommend implementing BIM on a pilot project of simple-to-moderate complexity.

It is much easier to start a project in BIM than to convert one. Therefore, an office typically manages both a 2D workflow and a landscape BIM workflow until completing pre-BIM projects. Use this pilot project to develop a BIM Implementation Plan using project-specific information. From there, you can extract a template to adapt for future projects.

Your BIM workflow is specific to your practice. It will continue to evolve. You will learn much through experience, a lot of which comes down to trial and error, which is why it is important to document your processes and the results they yield, as well as conduct a BIM debrief upon completing each project.

As you consider moving your firm to a BIM process, please use this document to support your implementation.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE [CONT'D]

TERMS TO KNOW

Strategic Planning Guide — A guide to help identify your organization's BIM goals and develop your own BIM Implementation Plan.

Landscape BIM Project Implementation Plan — A document that outlines the overall vision along with implementation details for the entire team to follow throughout the project.

Building Information Model — The data-rich, multi-dimensional model created as a **virtual prototype** of the building project.

Landscape BIM (aka Landscape Information Model (LIM) or Site Information Model (SIM)) – a virtual representation of a site in multiple dimensions which includes site-specific, data-rich, and performance/material reports used to test and inform the landscape project for installation.

Building Information Modeling — The process of developing and sharing digital information for a building and/or site project with all stakeholders to improve collaboration during design, construction, and operations.

Building Information Management — Another permutation of **BIM** that concerns managing the data, process, and communications over creation. It is often applied to what the owner or facility operator does after finishing all other work and the building project is on place.

Little BIM — Also known as **desktop BIM**. This refers to the creation of a building information model within a particular software platform and leveraging the model to directly create necessary documentation and information.

Big BIM — See **Building Information Modeling** and **Building Information Management**. This term can also refer to **open BIM**, where data can be exchanged with any number of stakeholders through open data exchange standards.

LEARN MORE

about how Vectorworks can help you maintain
a more collaborative BIM process.

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