STRATEGIC PLANNING GUIDE
FOR ADOPTING BIM

IN VECTORWORKS **ARCHITECT**

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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 BIM uses. The guide will also help your organization develop a transition plan for BIM implementation and will discuss "things to consider" as you follow through with this process.

The BIM Implementation Planning Guide (part two of this document) is meant to provide a structured procedure for assessing your organization's current use of Vectorworks® software and how changes for BIM will need to be supported. We provide questions to ask yourself as you carry out this assessment and determine how to make office-wide changes to integrate BIM.

UNDERSTANDING BIM

Building Information Modeling is the process of creating and managing a digital representation of a building containing physical properties, functional characteristics, and specific information such as manufacturers' and fabrication specifications. BIM lets project stakeholders make well-informed decisions early in the design process when choices can have the most impact on project costs, schedules, and sustainability. Some of the well-known benefits of BIM include:

- Creation of a 3D model to improve understanding of design intent
- Creation of a 3D model as a source for construction documents and building 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 energy, scheduling, cost estimates, etc.
- Production of a fully coordinated, as-built model for the owner that can be used for facility assets management

The process encompasses the early phases of design through the life cycle of the building. Because of its complexity, firms will find it challenging to jump on a BIM project without a plan for implementation.

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BIM IN VECTORWORKS ARCHITECT

Vectorworks Architect is a BIM solution that supports your creative process instead of replacing it. Using BIM workflows with Vectorworks Architect provides you with the opportunity to deliver more accurate documentation with increased efficiency while remaining true to your vision as a designer. You may already be utilizing many of Vectorworks' BIM capabilities to enhance your process. Whether it is by using plug-in objects for a 2D plan or a full 3D model, many users will find they have already begun to delve into the BIM arena and are now ready to move on to greater collaboration with their consultants. This means understanding how your model will be used internally among your architectural team, as well as externally among your consultants.

Determining how your model will be used for collaboration (internally or externally) will be covered in part two of this document — The BIM Implementation Planning Guide.

BIM AND YOUR ORGANIZATION

BIM is often a required standard of project delivery and is being adopted by many government agencies in both the U.S. and abroad. Before implementing a BIM process, it is important to have a discussion with your firm's leadership to help decide if they are interested and willing to invest in BIM and, if so, what the strategy for implementation 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 can see the full benefits of using BIM. 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 to do BIM?
- Change and comfort: Do we have the motivation to venture in an unfamiliar process?
- Commitment: Do we have clear expectations and goals to make this a successful change?

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

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MANAGING CHANGE: ACHIEVE A SUCCESSFUL IMPLEMENTATION

Six essential elements must be in place to achieve a successful implementation of change.

1. VISION

Establish a clear vision for everyone to work toward to help convey confidence in the successful implementation of BIM. Your organization's leadership should establish and 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
- The firm's expectations for BIM projects, such as how many projects per year, what level of detail is expected, etc.
- Leadership's commitment to provide the proper support and resources
- An implementation timeline, including progress expectations and where you want to be one year, two years, and five years from now

2. SKILLS

Staff must have the proper skills, passion, and motivation to succeed in achieving your goal. You will need to plan 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, you may face a slower implementation process. This new process will take more time at first and, as deadlines approach, . you will face challenges and the risk that the goals established may fall behind or be abandoned altogether. To mitigate this risk, we recommend you think of a way to 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 the proper resources, such as software and hardware, to support this new process. Creating the proper template and libraries, purchasing software and hardware, and providing the proper support for these various tools will reduce the overall level of frustration among your staff.

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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 an additional software will be needed (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 BIM requirements. This will help your firm to be prepared when a future owner requests BIM for a project.

6. EVALUATION

Create an ongoing evaluation process to assess your progress and adjust as you go. Without this assessment, the firm may face a plateau in its implementation.

PART 2 – THE BIM IMPLEMENTATION PLANNING GUIDE

The first step in executing a BIM workflow 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 the current perception of BIM in your organization, 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 the existing processes and services that your organization provides or whether it will alter or change them. Before using these responses to determine how BIM fits into your organization, be aware of the **realities** of BIM. Ensure staff members are well informed about what BIM technology means and how it can be used.

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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 CHANGE, ALTER, OR ENHANCE THIS VISION?
BIM means greater collaboration with consultants beyond project documentation.	We're 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.

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GOALS TO MEET BY IMPLEMENTING BIM

Defining your firm's goals will help you outline manageable changes to your workflows when creating an implementation strategy. 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 this process 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 quality of a project by making your design more energy-efficient
- Improve the efficiency of specific tasks, such as developing cost estimates through automatic material takeoffs from the model

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

BIM GOAL	MEASURABLE OBJECTIVE	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.

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Keep in mind that not all BIM goals are specific to, or led by, the project architect. For example, a goal like tracking progress through the construction phase will most likely be managed by the general contractor. Other goals, such as eliminating field conflicts, will involve input from the entire project team.

WHERE ARE YOU ON YOUR BIM PATH?

After establishing goals, it is important to be honestly introspective and assess the current state of the use of Vectorworks Architect, the use of additional software, current skills and those needed, training necessary to boost skills, and resources available to support the move to BIM.

ASSESSING YOUR CURRENT USE OF VECTORWORKS ARCHITECT

It is necessary to assess your current use of Vectorworks Architect software to determine how to move forward with BIM implementation. First, consider whether you have already initiated a BIM workflow within your practice. There are three possible responses: yes, no, and yes, without realizing it. For example, by using the Wall tool or the door and window plug-in objects within Vectorworks Architect, 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 have these BIM processes enabled you to do differently and to what benefit? Identifying and documenting your current use of Vectorworks Architect will help inform how to move forward with an office-wide BIM implementation.

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

EXISTING WORKFLOW	BENEFIT
Use Vectorworks Architect's door and window plug-in objects	Increased efficiency in construction drawings
Use Vectorworks Architect's Create Section Viewport command	Increased efficiency with section drawings generated from the model

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If you have not yet attempted a BIM workflow, don't worry — a clean slate is a great place to begin. You've still established where you are and are determining where you want to be. As you read this document, you can begin to consider the things that will change as you move forward, just as those who have initiated a BIM workflow can consider what aspects of their implementation can be expanded or improved.

ASSESSING YOUR CURRENT TOOLS AND THEIR USE

Most firms do not limit themselves to a single software or tool to help them convey their design ideas. Therefore, identifying what tools you are using at different points in the design process will help determine how a BIM workflow may begin to either eliminate the need for multiple tools or inform you of different or new types of analyses that can be conducted with your models.

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

TYPE OF MODEL/ANALYSIS	DESCRIPTION	TOOL(S) USED
Schematic design model	3D model used for design exploration and visualization	Vectorworks Other: SketchUp Warehouse
Schematic design model		Vectorworks Other:
Presentation/ visualization model		Vectorworks Other:
Architectural model		Vectorworks
Site model		Vectorworks
Energy analysis		Vectorworks Other:
Coordination model		Vectorworks Other:
Quantity takeoffs		Vectorworks Other:
Construction model		Vectorworks Other:
Construction sequencing/ scheduling		
As-built model		Vectorworks
Facility management		

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

ASSESSING REQUIRED SKILLS AND TRAINING

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

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		Vectorworks Other:
3D modeling		Vectorworks Other:
BIM modeling		Vectorworks
Rendering, visualization, and presentation drawings		Vectorworks Other:
Analysis		Vectorworks Other:
Consultant coordination and clash detection		Vectorworks Other:
Other		Vectorworks Other:

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Note how BIM modeling is listed separately from 3D modeling; they are considered different skill sets, because BIM modeling requires an understanding of basic building elements and their construction.

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

Two prominent roles when working with BIM are 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 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 a specific project. 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 lead architect 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 team motivated in the face of obstacles or resistance to change. The BIM champion is passionate about the advantages of implementing BIM and interested in expanding his/her knowledge and skills. Along with the BIM manager, this person is often the first to be trained and is tasked with sharing what he/she has learned with others in the office. You may find your office's BIM champion is also your BIM manager.

Along with any initial classroom or on-site training your team may receive, 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 and office standards and how to adhere to them. To begin developing an in-house training program, compile a list of available resources.

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

TRAINING RESOURCE	HOW TO UTILIZE
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

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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, gray rows).

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/

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MOVING FORWARD

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

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 BIM workflow until the completion of pre-BIM projects. Use this first pilot project to develop a BIM Implementation Plan using project-specific information. From there, you can extract a template to be adapted for use on future projects.

Your BIM workflow is specific to your practice. It will continue to evolve. Much will be learned through experience (and 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 each project's completion.

As you consider moving your firm to a BIM process, please use this document to support your implementation process. You can also refer to the onboarding checklists, which provide detailed lists of specific Vectorworks workflows, training videos, tutorials, and other resources to help you assess where you are and what steps you need to take to make the change to BIM.

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TERMS TO KNOW

STRATEGIC PLANNING GUIDE
A guide to help identify your organization's BIM goals and develop your own BIM Implementation Plan.

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.

BUILDING INFORMATION MODELING
The process of developing and sharing digital information for a building project with all stakeholders to improve collaboration during design, construction, and operations.

BUILDING INFORMATION MANAGEMENT
Another term, or permuation of **BIM**, that addresses managing the data, process, and communications over creation. It's often applied to what the owner or facility operator does after all other work has ceased 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 needed documentation and information.

BIG BIM
See **Building Information Modeling** and **Building Information Management**. This term can also refer to **open BIM**, where the data is able to be exchanged with any number of stakeholders and their tools through the use of open data exchange standards.

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