INTRODUCTION TO PROJECT SHARING:
THE MULTIUSER ENVIRONMENT

IN VECTORWORKS **ARCHITECT**

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INTRODUCTION

Project Sharing is a multiuser environment that streamlines project management and execution. It was developed to help Vectorworks users manage projects involving multiple users, fostering effective collaboration and communication within a project team.

Project Sharing is a single-file structure providing a mechanism that allows multiple users to work within - and access parts of - a file, simultaneously **(FIGURE 1)**. This type of multiuser environment offers all team members the opportunity to act together – sharing their knowledge and expertise to the overall design and documentation of the project. It allows for the entire team to think of a project holistically. More importantly, a multiuser environment means a single source of information that can be used for automation and quality checking in drawing production and data extraction – one of the greatest benefits of BIM.
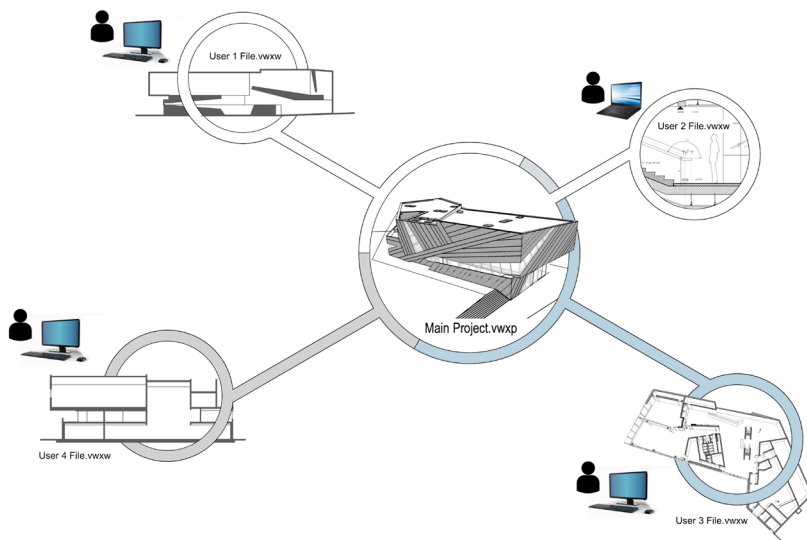
FIGURE 1
Project Sharing in Vectorworks Architect

Management in Project Sharing is done through a robust, permission-based system with options to control access and rights among the design team. Team members are granted access to either layers (design and sheet layers), or to a specific object or groups of objects. They have the ability to **check out** those layers or objects, to work on them, and then **release**, or check them back in. Vectorworks communicates the status of the changes being made by project members along the way, keeping the entire team informed during the project.

UNDERSTANDING **PROJECT SHARING**

TERMINOLOGY

The functionality of Project Sharing brings some terminology that is necessary to understand.

PROJECT SHARING – the multiuser environment within Vectorworks. Project Sharing creates an environment that streamlines project organization and management by allowing design teams to work concurrently in the same Vectorworks document.

PROJECT FILE – a single file that serves as the **hub** for sharing or collaborating on a project. All team members can access the Project File by way of their Working File. A Project File will be designated with the file extension .vwxp. When a Project File is opened, a Working File is created. This means that the Project File is always accessed through a Working File. The Project File should be kept either on a server or in a cloud-based storage folder that can be accessed by all team members.

WORKING FILE – a local copy of a Project File specific to the user who has created it. The Working File is used to add to, subtract from, or modify the Project File. In essence, all modeling and drawing creation is done in a Working File and then is committed back to the Project File. A Working File is designated with the file extension .vwxw. When a Working File is open, the title bar on the file will include **WORKING FILE** to indicate that you are currently in a Working File **(FIGURE 2)**. The Working File is kept on the hard drive of your local computer.
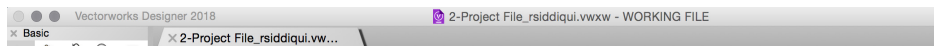

FIGURE 2
Working File Title Bar

CHECK OUT – reserving an object(s), design layer(s) and sheet layer(s) for exclusive use. Once a person checks out an object or layer, they become the owner. That object or layer becomes unavailable to other team members until it is **released** – see below. Multiple objects and layers can be checked out at once.

COMMIT – saving changes made in a Working File back to the Project File.

RELEASE – relinquishing your **reservation** on, or exclusive access to, objects or layers that were previously checked out by you. This will make the objects and layers available for others to check out.

UNDERSTANDING **PROJECT SHARING** [CONT'D]

REFRESH – an update of all out-of-date parts of your Working File. A refresh is performed after another team member commits their changes to the Project File, which will make parts of your Working File out-of-date. A refresh does not commit your Working File; nor does it affect any of your uncommitted work.

REVERT – discards any changes in the active Working File and reloads an exact copy of the Project File in its current state. This should be used only when changes to your Working File are to be discarded and not committed to the Project File.

MASTER LAYER – a designated, **special** layer that changes infrequently over the life of a project. A Master Layer may contain critical information that should not be changed or overwritten. An example of such a layer may be a design layer that holds a project's structural grid. You can have multiple Master Layers in a project.

OFFLINE MODE – when a Working File is disconnected from the Project File while maintaining exclusive access to the checked-out layers. Offline Mode allows you to continue working without access to the server where the Project File is saved. Layers must be checked out before using Offline Mode to maintain exclusive access to them. Once the Working File is reconnected to the server and the Project File, changes made in Offline Mode can be committed back to the Project File.

PERMISSION LEVEL – one of the unique features of Vectorworks' Project Sharing is the ability to assign a Permission level to each member of a project team. Permission levels range from **Administrative** to **Read Only**, and allow for greater control and management of resources and editing of the Project File. More about the various permission levels can be found in the **How to Set Up for Project Sharing** section.

FORCE RELEASE – when an administrator releases objects or layers that are checked out by another user.

UNCOMMITTED CHANGES – changes that are made to a Working file but have not been committed to the Project file.

UNDERSTANDING **PROJECT SHARING** [CONT'D]

OVERVIEW OF PROJECT SHARING

Any existing or new Vectorworks document can be shared as a Project File by simply designating it as a Project File through the Project Sharing command in the **File** menu (FIGURE 3). Once a Vectorworks document has been marked as a Project File, all subsequent file opens on that file will effectively open a **clone** of the Project File. These clone files are called Working Files.

> This means that the Project File itself is never actually opened. Consequently, all changes, edits, and adjustments are done through a Working File.

When a Working File is created you can check out objects as needed, or an entire layer, which will include all objects on that particular layer. Other team members may check out different layers or objects and work on those in their own Working File. This happens concurrently with the work you are doing in your own Working File.

Each Working File will contain all information, geometry, and data from the Project File, however, users will be restricted in the types of changes they can make in each Working File based on the objects and layers they have checked out and whether they are permitted to make certain changes according to their Permission level.
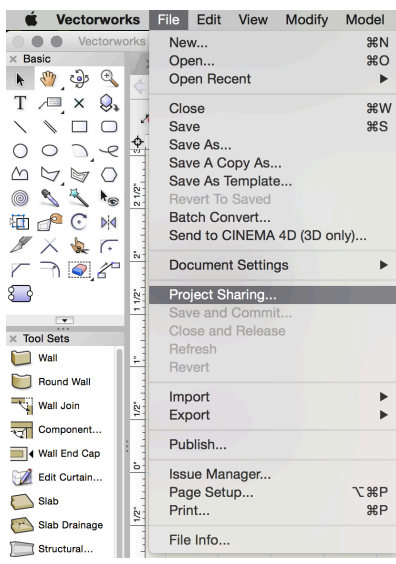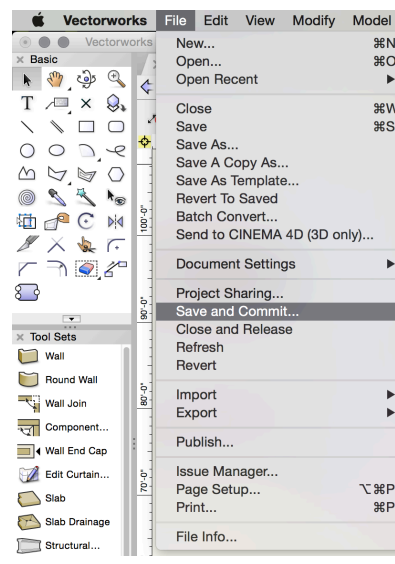

FIGURE 3
File-Project Sharing

FIGURE 4
File-Save and Commit

UNDERSTANDING **PROJECT SHARING** [CONT'D]

Once you reach a point where you want to merge your changes back into the Project File, you will perform a commit through the **Save and Commit** command in the **File** menu (FIGURE 4). Changed objects and layers will, in essence, be **inserted** back into the Project File, and other, non-drawing data such as resources, will be merged into the Project File. Once you have performed a **Save and Commit**, others can see your changes by **Refreshing** their own Working Files.

After you've performed a **Save and Commit**, you can continue to make changes to your Working File, as you still have exclusive access to your checked out layers. If you have no more changes to make, you can perform a **Close and Release**, which releases the exclusive access that you have on the checked out layers (FIGURE 5).
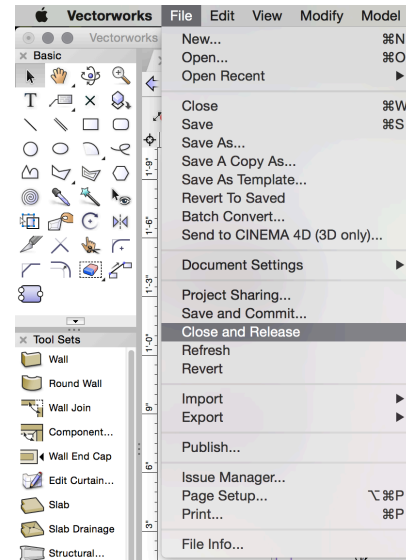

FIGURE 5
File-Close and Release

FREQUENTLY ASKED QUESTIONS

1. **WHEN SHOULD I SET UP MY VECTORWORKS FILE FOR PROJECT SHARING?**
   Because Project Sharing does not change any fundamental aspects of
   Vectorworks, it can be implemented at any time during a project using
   any Vectorworks document that will require multiple users.

   There are no preset rules or requirements for changing a Vectorworks
   document to a Project File and therefore requires no special setup.

2. **CAN I STILL USE LAYER AND RESOURCE REFERENCING?**
   Yes.

   When you share project files and use referencing, keep in mind the following rules:

   · Project files can be referenced into other project files and regular Vectorworks
     files; resources referenced from the file cannot be modified.
   · Regular Vectorworks files can be referenced into project files. For example, a symbol library
     can be referenced into a project file; resources referenced from the file can be modified.
   · Working files cannot be referenced into any other files since they are
     considered temporary files that can be deleted at any time.
   · Place the reference file in a location accessible by the project
     file and all users working on the project.
   · Relative reference paths are relative to the location of the project file, and the referenced file
     must be on the same volume as the project file.

3. **WHAT IF I NEED TO LEAVE THE NETWORK THAT THE PROJECT
   IS ON? CAN I STILL WORK ON THE PROJECT?**
   Yes, Project Sharing includes a Work Offline mode in case you need to take a laptop on a
   trip or you temporarily lose access to the network containing the project file. When in this
   mode, changes will ONLY be saved to the working file directly and any layers or objects
   you have checked out will not be available to other users until you reconnect to the project
   file and release them. Online mode will also prevent you from accessing the Project file
   to check out new objects or to release objects. So be sure to check out all information
   that you want to work on before disconnecting from the server or the internet.

    If Vectorworks detects a loss of connection to the server, it
   will prompt you to begin working in offline mode.

FREQUENTLY ASKED **QUESTIONS** [CONT'D]

4. **WHAT IF I WANT TO SEE WHO MADE CERTAIN CHANGES TO A PROJECT?**
   The History feature within the Project Sharing dialog box will let you search not only for users, but by specific layers to either focus on ALL of a specific user's changes, or to focus on which users made a change to a particular layer. Since you can add comments when checking out layers and objects, or when editing or releasing layers and objects, you can also search the comment history. So including useful keywords in the comment is advised.

5. **WHAT SHOULD I DO IF MY WORKING FILE HAS BECOME CORRUPTED**
   OR I CAN NO LONGER COMMIT TO THE PROJECT FILE?
   · Do a Save A Copy As (not just **Save As**) of the working file
     and turn it into a regular Vectorworks file.
   · Have the administrator force release the objects or layers that were checked out.
   · Delete your working file (you should have your changes in the **saved as**
     regular Vectorworks file).
   · Create a new working file from the project file.
   · Check out the necessary objects and/or layers.
   · Copy and paste the changed elements from the regular Vectorworks file to the new working file.
   · Commit the changes to the Project File.

6. **CAN I SEE CHANGES MADE BY OTHER USERS LIVE, IN REAL-TIME?**
   Not yet. Currently only after another user Commits changes to the project and you Refresh your working file will you see their new changes.

7. **CAN A USER WITH FUNDAMENTALS USE PROJECT SHARING?**
   No. Project Sharing is only available in Architect, Landmark, Spotlight or Designer.

8. **CAN I CONVERT A PROJECT FILE BACK TO A REGULAR VECTORWORKS FILE?**
   Yes. You can use File → Save a Copy As (not just **Save As**) in order to change your Working file, into a regular Vectorworks file. The original project can then simply be archived or removed at your discretion.

   Make sure that when using Save a Copy As, you then select the vwx file format to save as, not the default vwxw format.

9. **CAN I STORE AND SHARE THE PROJECT FILE ON CLOUD STORAGE?**
   Yes, you can put project files (.vwxp) in Google Drive, Dropbox, OneDrive, or Box folders.

FREQUENTLY ASKED **QUESTIONS** [CONT'D]

10. HOW DO I DECIDE IF I SHOULD USE A CLOUD-BASED STORAGE FOR PROJECT SHARING OR VPN TO CONNECT TO MY PROJECT FILE ON MY SERVER?
Even though a cloud-based storage folder and VPN are both dependent on your internet speed, connecting to a server via VPN is much slower in general.

11. CAN I CREATE A PROJECT FILE ON THE SERVER AND THEN MOVE IT TO CLOUD STORAGE FOR OTHERS TO ACCESS?
Yes. You can move (not copy) your Project File to cloud-based storage for sharing with others. You should share a Project File either on the server or on a cloud-based storage system – not both.

12. CAN I CHANGE THE PERMISSIONS FOR USERS THAT CURRENTLY HAVE LAYERS CHECKED OUT?
Yes, but you should ALWAYS make sure that a user releases any objects or layers and commits any changes before their permissions are altered to prevent a situation where a user is attempting to commit a change in an area they no longer have access to.

13. WHAT HAPPENS WHEN I CHANGE THE PERMISSION LEVEL OF A PROJECT TEAM MEMBER?
If a user's Working File contains uncommitted changes and their permission level has been modified, they will not be able to commit to the Project File. It is essential that all changes to permissions be communicated appropriately to prevent the loss of information.

14. WHAT HAPPENS WHEN I DELETE A USER WHO HAS OBJECTS OR LAYERS CHECKED OUT?
Nothing. The objects and layers will remain checked out. If there are uncommitted changes in the user's original Working file, they will have to open a new Working file (which will add them back to the project), return to their original Working file and commit changes and release all information.

As with all other administrative responsibilities that include forced changes for users, communication is key.

15. CAN A USER HAVE MORE THAN ONE WORKING FILE AT ONCE?
Yes. However, it is not recommended for a single user to create and use more than one working file at a time. The objects or layers you have checked out are restricted to the working file that you have checked out in. You will not be able to modify any of those objects in your second working file. This can lead to confusion and problems.

FREQUENTLY ASKED **QUESTIONS** [CONT'D]

16. HOW IS MY USERNAME DETERMINED?

The Project Sharing user name is determined by your computer's login name.

17. CAN THERE BE IDENTICAL USERNAMES?

No. If your office is utilizing a generic computer login such as **User** or **Architect**, this will create identical or duplicate usernames since the username is determined by the computer login name. Office protocol will have to change to give each computer a unique login to avoid this problem.

18. WHAT NETWORK PERMISSIONS ARE REQUIRED FOR USERS TO ACCESS THE LOCATION WHERE A PROJECT FILE RESIDES?

Users should have Full access. Read, Write, Rename, Delete, Create, etc.

Vectorworks uses a **safe save** technique for saving files, in which the previous version of the destination file is maintained until the last possible moment, to avoid potential file damage during save, such as by a hardware or network failure. To support this in a networked environment, permissions must be correctly set to handle the required file operations.

IN PARTICULAR, THE FOLLOWING TWO CONDITIONS MUST BE FULFILLED:

1. The user must have permission to delete files in the destination folder. This is usually the case when the user has write access to the folder. However, some network server configurations using fine-grained control (e.g. with Access Control Lists) may need to be specifically configured to allow this, by assigning **delete_ child** permission to the folder. See (https://support.apple.com/en-us/HT201416) for more information.

2. Files created in the destination folder must inherit the permissions of the folder itself. Server installations that use Access Control Lists may need to ensure that **file_inherit** permission is set on the destination folder. (Note: On OSX Server, ACLs may need to be explicitly enabled. See (https://support.apple.com/en-us/HT203574).

19. WHAT ARE THE SYSTEM REQUIREMENTS FOR USING PROJECT SHARING?

The system requirements for Project Sharing are the same for your regular Vectorworks use. The most current System Requirements can be found here.

Project Sharing does have Network requirements for both LAN sharing and Cloud sharing. These requirements can be found with the system requirements.

20. WILL CHECKING OUT A LAYER AFFECT FILE PERFORMANCE DIFFERENTLY THAN CHECKING OUT AN OBJECT?

Working in the project sharing environment is the same as working in a regular Vectorworks file. The only time your working file transfers data to the project file is

when you are committing changes or you are refreshing your working file. Checking out objects or layers or releasing them does requires only a small amount of data to transfer. It does connect to the project file, but generally these actions don't require much time, regardless of how many objects or layers you are checking out. This is true for working over a server or through a cloud-based storage folder.

If you check out an entire layer but only modify one object on that layer and then commit the changes to the project file, that is the only object whose data gets transferred to the project file. Not the entire layer. So whether you check out the entire layer or that one particular object, it will still take the same amount of time to commit the changes to the project file. In terms of performance, there's no real difference between the types of check out.

21. **HOW DO I DECIDE IF I WANT TO CHECK OUT AN ENTIRE LAYER OR JUST A FEW OBJECTS?**
It's a matter of management. The main reason that you may want to check out a whole layer rather than just objects, is to lock the layer and prevent anyone else from checking out any related objects on that layer. This is recommended if you are making large, sweeping changes that may require manipulation of objects related to those changes.

22. **SHOULD I CHECK OUT THE OBJECTS I NEED AHEAD OF TIME, OR SHOULD I CHECK THEM OUT "ON THE FLY" AS I NEED THEM?**
Project Sharing supports both an explicit upfront check out and an on-demand or **on-the-fly** check out. There is no real recommendation for one over the other, but it is highly encouraged that teams set a protocol for check outs in order to avoid repeated alerts of unavailable objects.

23. **HOW DO I DECIDE IF I SHOULD USE THE SMB OR AFP NETWORK PROTOCOL?**
If you are using a Mac OSX server, you should use the AFP protocol and should turn off SMB on your server.

If you are using a Windows-based server, you should use SMB.

You should never mix SMB with AFP – meaning each user should be using the same network protocol. More information can be found here.

24. **HOW OFTEN SHOULD I COMMIT MY WORKING FILE TO THE PROJECT FILE?**
Each office should set their own standards or protocols for when to commit changes from a Working file and when to Refresh their Working files. It is highly recommended that for large projects with many users, a schedule should be created for committing and refreshing Working files Committing should only take place after significant changes have been made or milestones met. All other work should be saved locally to the Working file.

FREQUENTLY ASKED **QUESTIONS** [CONT'D]

25. HOW OFTEN SHOULD I REFRESH MY WORKING FILE?

Working files should be refreshed when any new and significant information has been committed to the Project file by other team members.

As with committing, for large projects with many users, a schedule for refreshing Working files should be created.

26. WHY DOES COMMITTING OR REFRESHING MY WORKING FILE SEEM TO TAKE LONGER WHEN I HAVE REFERENCES?

When you refresh references in your Working file, this is committed back to the Project file as a change. If there are a lot of references that have all been updated, your commit to the Project file will take longer. Since the updated references are recognized as changes, a refresh of a Working file will also take longer. It is recommended that references should only be updated when needed in a Working file.

27. WHAT HAPPENS WHEN TWO PEOPLE TRY TO COMMIT THEIR WORKING FILES AT THE SAME TIME?

Only one person can commit their Working file at a time. The second person will receive an alert and will have to wait to commit their Working file.

28. HOW DO I DETERMINE WHAT PERMISSION LEVEL TO ASSIGN TO DIFFERENT PROJECT TEAM MEMBERS?

Implementing Project Sharing will mean a few new responsibilities for the project team. These responsibilities include the creation of the Project File itself as well as management of the Project File and its shared information. This and other tasks that need to be completed for a project should help inform the Permission level that each team member will require. Understanding the Permission levels and what tasks they allow you to complete, will help you understand how they can coincide with project tasks and roles. More information the on Permission Levels can be found here.

29. CAN I HAVE MORE THAN ONE PROJECT ADMINISTRATOR?

Yes. As a matter of fact, we highly recommend that there should be two or more users with Administrator permission levels.

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