# The Autodesk® Revit® Worksets Workshop

Paul F. Aubin – Paul F. Aubin Consulting Services
Mathew Dillon – The D|C|CADD Company, Inc.

**AB3728-L** Most projects require the efforts of many individuals. If you are working in Revit, one of the first things you need to learn about is Revit worksharing. Worksharing enables multiple users to make edits to a single central file and coordinate those changes across the entire project team. The trouble is that worksharing can be complicated. There is lots of terminology to learn and special procedures to follow. To make matters worse, you can't really learn about worksharing effectively on your own—you need a team. This is where the Worksets workshop comes in. In this hands-on lab, we will break into teams, create our local files and learn how to work together in a live worksharing project. You will learn to make changes, synchronize with central, reload latest and relinquish. We will also look at all the new 2012 goodies. You will learn best practices for working together in Revit and how to avoid common pitfalls. If you are new to Revit and worksharing, this lab will be just what you need to get up and running quickly.

## Learning Objectives

At the end of this class, you will be able to:

- Understand key Worksharing terminology
- Learn Worksharing procedures hands-on
- Know what to expect on your first team project
- Help you avoid common pitfalls of team projects

## About the Speakers

***Paul F. Aubin*** *is the author of many CAD and BIM book titles including the widely acclaimed: The Aubin Academy Mastering Series: Revit Architecture, AutoCAD Architecture, AutoCAD MEP and Revit MEP titles. Paul has also authored video training both on his Web site and for lynda.com www.lynda.com/paulaubin. Paul is an independent architectural consultant who travels internationally providing Revit® Architecture and AutoCAD® Architecture implementation, training, and support services. Paul's involvement in the architectural profession spans over 20 years, with experience that includes design, production, CAD management, mentoring, coaching, and training. He currently serves as Moderator for Cadalyst magazine's online CAD Questions forum, is an active member of the Autodesk user community, and has been a top-rated speaker at Autodesk University (Autodesk's annual user convention) for many years. This year Paul is speaking at the Revit Technology Conference in both the US and Australia. His diverse experience in architectural firms, as a CAD manager, and as an educator gives his writing and his classroom instruction a fresh and credible focus. Paul is an associate member of the American Institute of Architects. He lives in Chicago with his wife and three children. You can reach Paul at: www.paulaubin.com (click the contact link).*

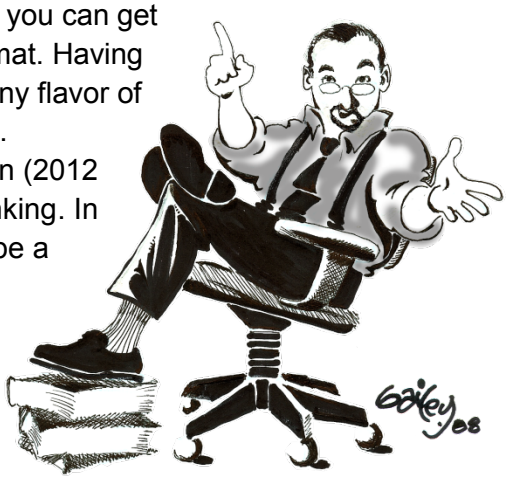
***Matt Dillon;*** *Having been a registered architect with over 20 years of experience in Autodesk® architectural applications, Matt has worked with AutoCAD® Architecture since its initial release and Revit® Architecture since its purchase by Autodesk. Matt is an Autodesk Certified Instructor at an Autodesk Authorized Training Center. In addition to assisting customers in implementing Autodesk Revit platform products, he has also consulted with Autodesk development staff in product design and usability for AutoCAD Architecture. He co-authored "Autodesk Architectural Desktop 2007—An Advanced Implementation Guide (Second Edition)" and assisted with completion of Paul Aubin's "Mastering Autodesk Revit Architecture 2011". In 2010, Matt was honored to be one of the recipients of Autodesk's "Distinguished Speaker Award" and has consistently been a highly-rated instructor at Autodesk University since he began presenting in 2000.Matt lives in San Antonio, TX with his wife and two children. You can reach Matt at mattd@dccadd.com (click the contact link).*

# Introduction

The term “Worksharing” applies collectively to the various techniques used in Revit Architecture to work in teams of multiple individuals and firms. Worksharing can utilize various techniques including linked Revit (RVT) files, linked AutoCAD (DWG) files, and the internal segmentation of a project using Worksets. Worksets is the Revit toolset that allows a single project file to be divided into smaller pieces with which team members can work independently and simultaneously without impeding the work of others. Care must be taken when enabling Worksets to ensure that a strategy appropriate to the team dynamics is established. In this session, we will introduce the concepts and key terminology used in Worksharing as well as briefly discuss general Worksharing issues and strategies.

## Getting Started with Worksets

Architectural projects usually involve teams of professionals either within the same firm (under the same roof) or dispersed among several companies and/or physical locations. Whether you simply need to load a CAD file as a background for your own design work or you need to manage a fully-coordinated Revit model among several members of your firm, Revit has tools and capabilities suited to the task. While linking to CAD files does help bridge the gap between your firm and those not using Revit software, it is always better if you can get the entire project team working in the same software and file format. Having all team members using Revit is preferable. They can be using any flavor of Revit including: Revit Architecture, Revit Structure, or Revit MEP. However, it is critical that all team members use the same version (2012 for example). You can still work in separate models and utilize linking. In fact this is often the preferred workflow. So linked files will often be a part of any Revit project and workflow, but it is important to understand that linked files do not require Worksets, and Worksharing tools do not require linked files. They are two different toolsets that enable teams to work together and are often both used on the same project.



## Enabling Worksharing and Creating a Central File

Before you can use Worksharing, it must be enabled and a Central File must be created and saved to an accessible network server location. The aim of this workshop is to familiarize you with the Worksharing methodology with a focus on the user experience. Setting up a Central File is a one-time operation that is best performed by someone experienced in the task. As such, we will not do a detailed tutorial on how to create a Central File. You will be provided with access to an existing Central File for the exercises in this lab. If your job requires that you create Central Files for your team, then you are encouraged to search the online help for “Enabling Worksharing”. This will present you with detailed instructions for enabling Worksharing and creating a Central File. Many articles on the topic are included in the WikiHelp. Additionally, you may want to download the supplemental Worksharing Whitepaper for this class. It includes information and step by step instructions on setting up and maintaining a Central File.

## Getting Started

In this lab, you will be divided into teams of three users. Small Cards are included at each workstation in the lab. This card will tell you which **user** you are and the name of the **Central File** you should access. If you did not see an instruction card at your station, please ask for one before proceeding. **There are some very important points to note before we proceed:**

- You must use one of the provided (networked) machines in this lab to participate. You CANNOT participate in this lab on your own laptop! (*If you are reading this after AU, please see the last page of this paper*)
- This is NOT a self-paced lab. We will ALL perform our respective tasks at the same time as directed by your instructors (us). Please Do **NOT** work ahead. Only perform tasks when instructed to do so.
- Do **NOT** Synchronize with Central until asked to do so.

This lab is introductory. We will explore some of the new features introduced in the 2012 version, but if you have been using Worksets already on real projects, then the content of this lab may be review for you. If this is your situation, We won't be offended if you decide to attend another session at this time. Thank you for participating.

Instructions are shaded in gray throughout this handout. Perform *ONLY* the steps for your user assignment (such as "USER 2") AND steps labelled "ALL".

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## Task 1. — Setup.

**ALL:** From the Application menu (big "R") and choose **Options**.

Before you begin using Worksets, you should check a few basic settings. In Revit Options we have the following Worksharing options:

- Check Save and Synchronize Times
- User Name
- Update Frequency
- Verify Local Files path

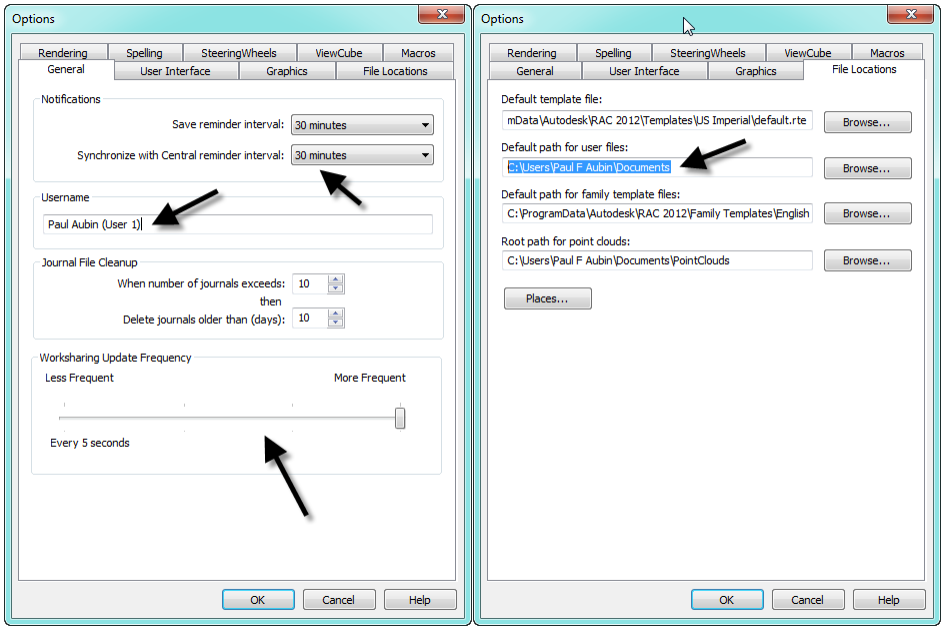
*On the **General** tab:*

- ***Save and Synchronize times:*** The default is 30 minutes. We can leave it at this setting, but in some cases, you may wish to adjust it.

- ***Worksharing Update Frequency:*** Determines how frequently Revit looks for changes in the Worksharing state. We'll also leave the default here. See Task 5 below.
- ***Verify User Name:*** It is very important that each user have a unique value for the Revit user Name field. Please input your **First** and **Last** name plus **User X** (1, 2 or 3) i.e. **Paul Aubin (User 1).** (On your real machine back at the office, please check with your IT/BIM Manager for the correct setting here).

*On the **File Locations** tab:*

- ***Default Path for User Files:*** This is where local files will be created. (See the next task). Many offices have a standard location for this. Check with your IT/BIM Manager. We can accept the default.




**ALL:** Close the Options dialog.

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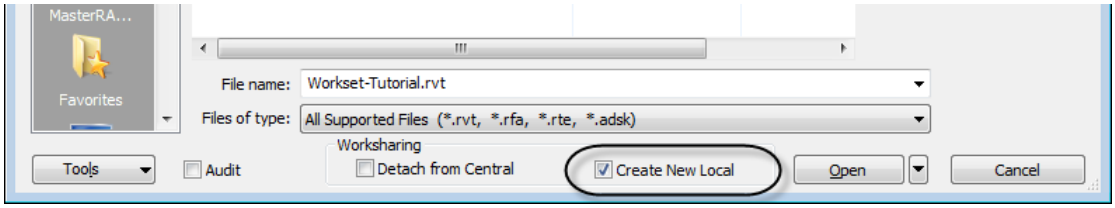
## Task 2. — Create and Open a new Local File

Workshare enabled projects have a single **Central File** that ALL users access. Each user creates their own **Local File** from this Central File.

*In this task, we will create our Local Files.*

**ALL:** Browse to the Central File (shown onscreen in PowerPoint), select it and make sure the "Create New Local" box is checked. Click Open.




**ALL:** In Windows Explorer: Browse to location indicated in Task 1 for "Default Path for User Files" and note the newly created Local File.

It will have your user name appended to the end.

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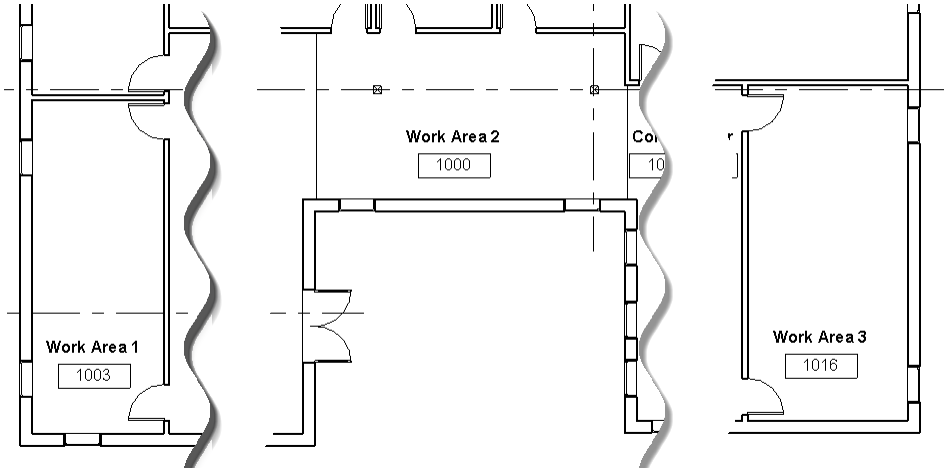
## Task 3. — Working in Different Areas

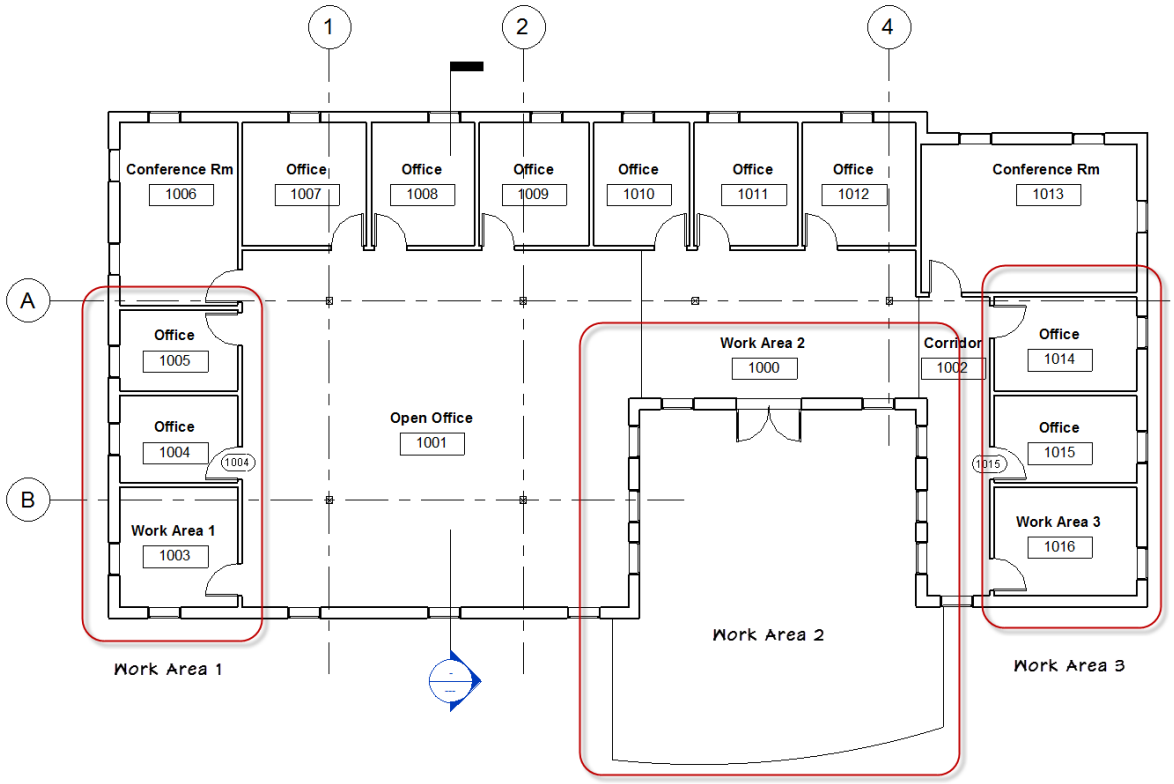
Work performed in separate physical locations can be done by multiple users at the same time WITHOUT issues or conflict. Let's try an experiment to see for ourselves.




**USER 1:** Subdivide Work Area 1 into three offices. (Walls, Doors, Rooms)

**USER 2:** Move front door to Work Area 2 (use Pick New Host) and add a patio entrance (Floor object)

**USER 3:** Subdivide Work Area 3 into three offices. (Walls, Doors, Rooms)




**ALL:** Synchronize with Central, Reload Latest.

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## Task 4. — Working in the Same Area

When more than one user tries to edit elements in the same area, we can start seeing issues. In this task, we will explore this scenario.

ONLY USER 1 first:

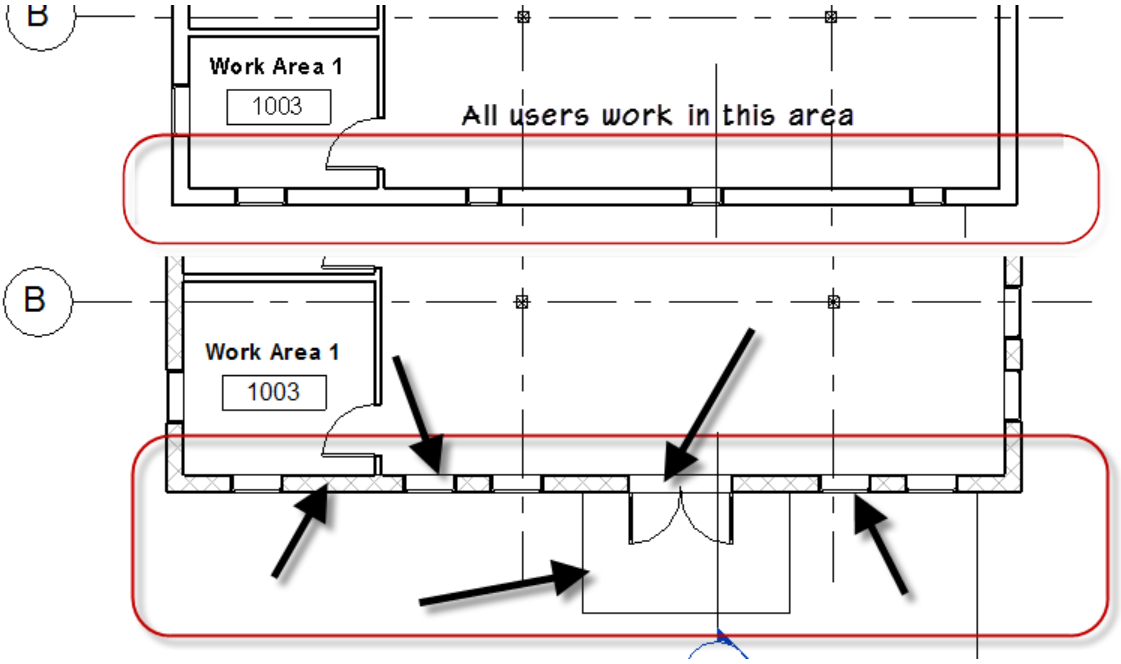
**USER 1:** Move and resize left and right Windows on the south Wall. (Allow space in the middle for a new exterior Door). Add some new windows as required.

DO NOT SYNCHRONIZE YET!

USERS 2 & 3:

**USER 2:** Add a new exterior Door (Create Similar from main entrance) and small patio. (Floor)

**USER 3:** Change all exterior Walls to *Generic-12" Masonry*.




**ALL:** Click Cancel in response to all errors. Discuss with team.

Revit will not allow more than one user to edit the same elements at the same time. What may not be completely obvious, is why Users 2 & 3 were prevented from modifying the Wall since all User 1 did was modify the Windows. What could cause this?

**ALL:** Do NOT Synchronize with Central, move to next task.

Windows are hosted elements. When you modify their size and/or position, you are also modifying the hole they create in the Wall, therefore the error. In the next task, we'll try the new 2012 Editing Requests feature.

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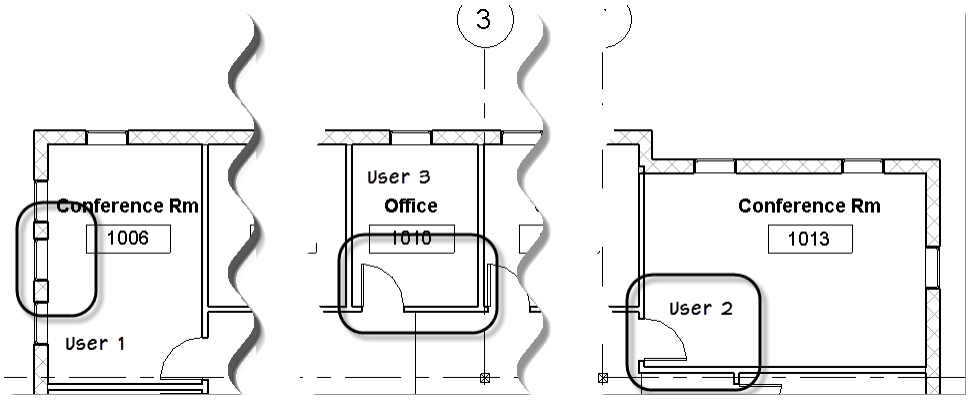
## Task 5. — Understanding Editing Requests & Borrowing

In the previous task, we ran into errors when two users tried to access the same elements at the same time. When you begin editing an element, Revit first checks to see if anyone else is editing that element and if not, it grants you instant access to edit. This is referred to as "Transparent Borrowing," "Element Borrowing" or just "Borrowing."

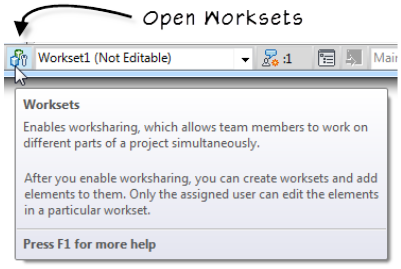
**USER 1:** Move or delete a Window in Conference Room 1006

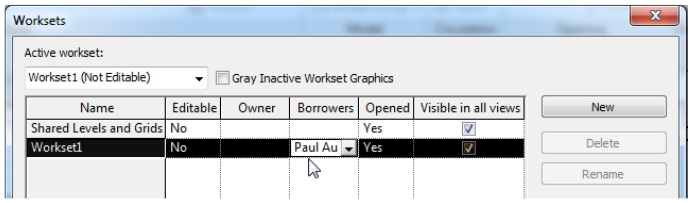
**USER 2:** Move or flip the Door in Conference Room 1013

**USER 3:** Move or flip the Door in Office 1010




**ALL:** On the Status Bar, click the Worksets button to open the "Worksets" dialog.




In each case, the Door was transparently borrowed and assigned to each respective user. You can see all users' names listed in the Borrowers column of the "Worksets" dialog.

**ALL:** Close the "Worksets" dialog.

DO NOT SYNCHRONIZE YET!

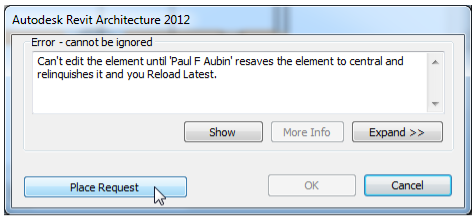
If the element you wish to edit is already owned by another user, you will receive an error message (see the previous task). This dialog will include a "Place Request" button. You can click this to send an alert to the owner of the element. The owner can grant or deny your request. Let's try it out.

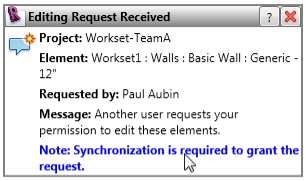
**USER 1:** Move or flip the door in Office 1010

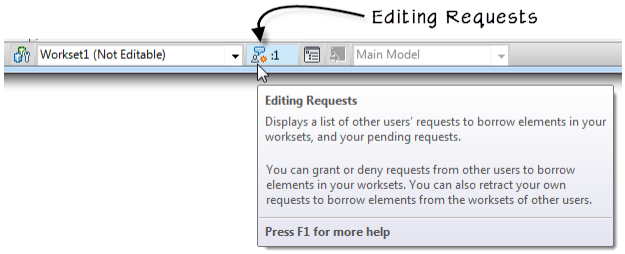
USERS 2 & 3 Re-attempt previous edits (Refer to the illustration in Task 4):

**USER 2:** Add a new exterior Door (Create Similar from main entrance) and small patio. (Floor)

**USER 3:** Change all exterior Walls to *Generic-12" Masonry*



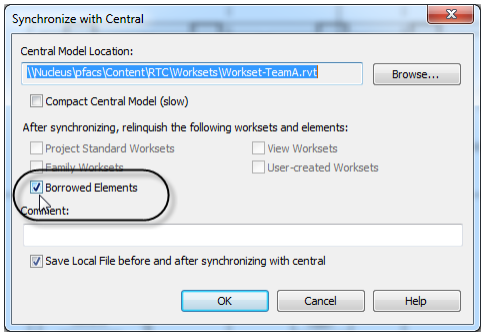




**ALL:** In the warning dialog, click the Place Request button.

**ALL:** Follow the instructions in the "Editing Requests Received" message alert. In some cases, you can go directly to Editing Requests using the icon on the Status Bar, in others you will have to Synchronize first.

If you Synchronize and leave the box checked to relinquish borrowed elements, then requests will be automatically granted. If you uncheck it, you will have to manually grant or deny requests.



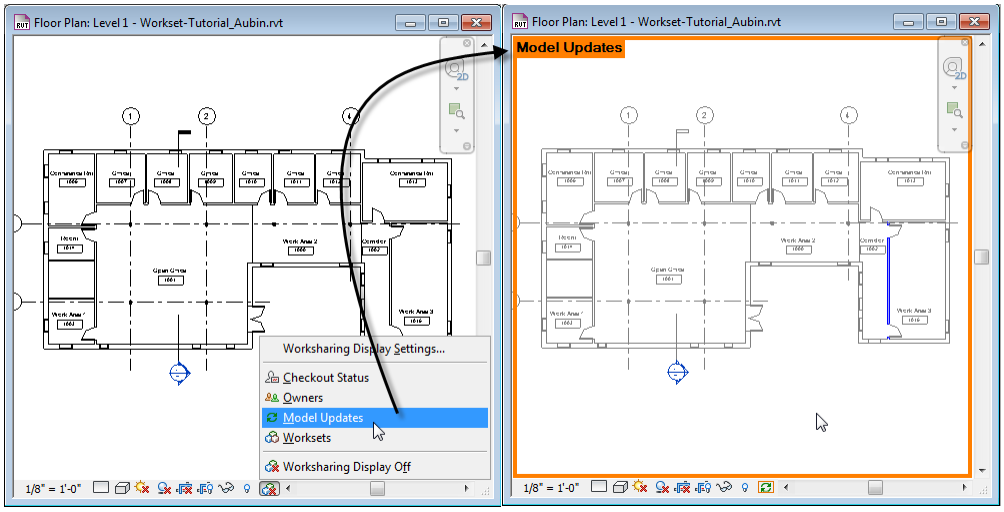

Another alert should appear once a request is granted or denied.

**ALL:** Synchronize with Central, Reload Latest.

## Task 6. — Using Worksharing Display

New in this release, we have many tools to help us visualize what is happening with our Workshare connected team.

**ALL:** On the View Control Bar, click the Worksharing Display icon and choose **Model Updates**.




ONLY USER 1:

**USER 1:** Select the vertical Wall between Corridor 1002 and Office 1014 and press the left arrow key to nudge it slightly.

Synchronize with Central.

Users 2 & 3 should immediately see the affected element shaded in color on their screens.

ONLY USER 2:

**USER 2:** Select the long horizontal Wall between Open Office 1001 and Office 1007 and press the down arrow key to nudge it slightly.

Synchronize with Central.

Users 1 & 3 should immediately see the affected element shaded in color on their screens.

ONLY USER 3:

**USER 3:** Select Column Grid Line B and using the up arrow key, nudge it up slightly.

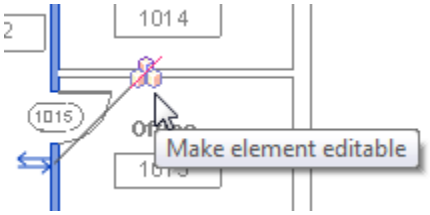
Synchronize with Central.

Users 1 & 2 should immediately see the affected element shaded in color on their screens.

**ALL:** On the View Control Bar, click the Worksharing Display icon and choose **Owners**.

**ALL:** Select the same element you just edited (different for each user) and then click the small Make Element Editable icon.

All Users should immediately see the affected elements shaded in color on their screens. Each user will be assigned a different color.




**ALL:** Synchronize with Central, Reload Latest.

There are other modes as well. Feel free to experiment later. You can also choose the Worsharing Display Options item to change the settings for colors and which conditions display.

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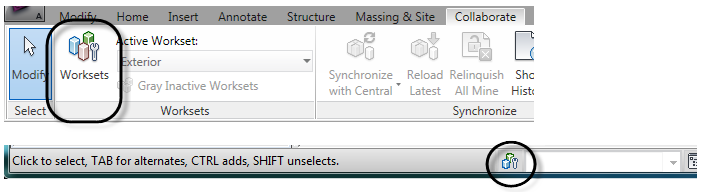
## Task 7. — Creating New Worksets

Before Revit included Element Borrowing, a “dedicated” Workset was required for each user on the project team. Each model element is assigned to a dedicated Workset. You can “check out” a Workset and all of its elements in the “Workset” dialog. In some cases, this can be desirable, but often it will create bottlenecks and borrowing is preferable. In modern versions of Revit, dedicated Worksets are typically used to organize large projects and help manage computer performance. By grouping large portions of the model into logical Worksets, it is possible to hide and show only those portions of the model that you are actively editing and thereby improve performance. Although such techniques can be used on any size project, the extra management overhead introduced by maintaining multiple Worksets is often only justified on large projects. Smaller projects can often get by quite successfully with just the default Shared Levels and Grids and Workset 1. In this task we’ll explore dedicated Worksets.

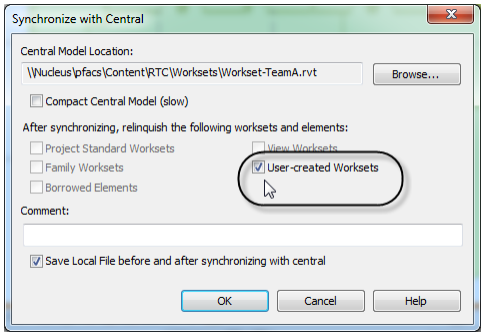


**USER 1:** Open the "Worksets" dialog and Add a Workset named: **Furniture** and then click OK.

**USER 2:** Open the "Worksets" dialog and Add a Workset named: **Exterior** and then click OK.

**USER 3:** Open the "Worksets" dialog. Select *Workset 1* and then click the Editable button. Select *Workset 1* click the Rename button and change the name to: **Interior**. Click OK to finish.

**ALL:** Synchronize with Central, in the "Synchronize with Central" dialog, check the "user-created Worksets" checkbox and then click OK. Reload Latest.




If you reopen the "Worksets" dialog, everyone should have both new Worksets and Workset 1 should be renamed.

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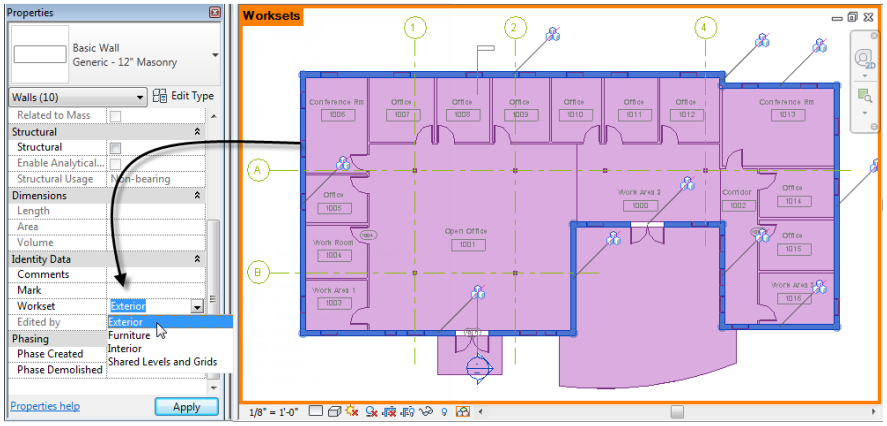
## Task 8. — Working with multiple Worksets

Now we'll explore some of the features available when you have many user-created Worksets.

**ALL:** On the View Control Bar, click the Worksharing Display icon and choose **Worksets**.

The only noticeable change will be that the grids are a different color than everything else. Even though we added new Worksets, at the moment they do not contain any objects.

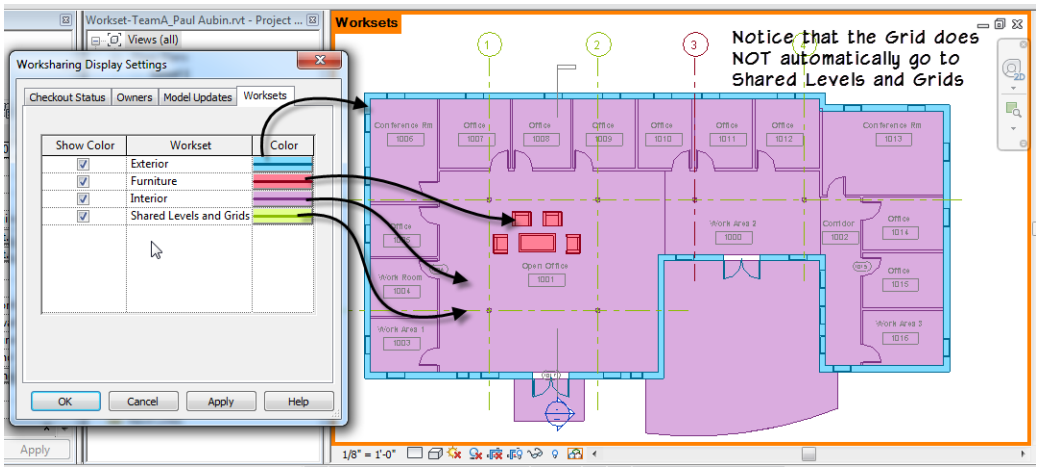



**USER 1:** Select the entire exterior Wall, Windows and Doors and on the Properties palette, change the Workset to: **Exterior**

**USER 2:** From the Active Workset pop-up, choose **Furniture** to make it current and then begin adding Furniture.

**USER 3:** Add a new Grid Line 3 at entrance area.

On User 1's task, notice that unless explicitly select the Windows and Doors, they do not move to the Exterior Workset. With User 2's task, you must first make the Furniture Workset active before newly added elements will appear there. Otherwise, you would have to edit them after placement. The same is true for User 3 and adding a new Grid. Even though there is a Workset named "Shared Levels and Grids" Revit does NOT automatically place Grids there. You must make this Workset active or move the item using the Properties palette later.




**ALL:** Synchronize with Central, Reload Latest.

**ALL:** Respond to errors. Coordinate efforts.

## Task 9. — Understanding View Worksets

It is important to note that everything we have done till now applies to model elements. View-specific elements like text, dimensions, detail components and tags belong to their respective view. Each view has its own Workset which is automatically managed by Revit. Let's take a look.

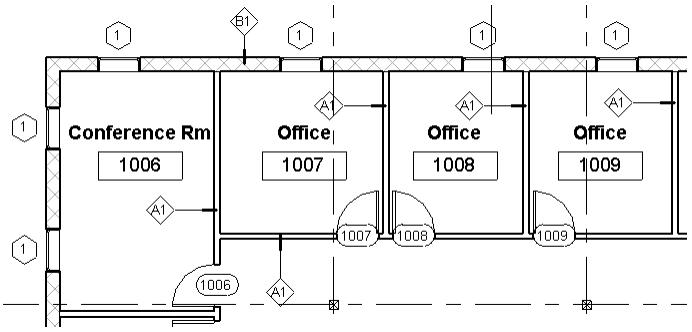
**ALL:** On the View Control Bar, click the Worksharing Display icon and choose **Worksharing Display Off**.

**ALL:** On the Annotate tab, click the Tag All button. In the "Tag All Not Tagged" dialog, do the following:

**USER 1:** ...Select **Door Tags:Door Tag**, be sure that the "Create" checkbox in the Leader area is not checked. Click OK to add all Door Tags.

**USER 2:** ...Select **Window Tags:Window Tag**, be sure that the "Create" checkbox in the Leader area is not checked. Click OK to add all Window Tags.

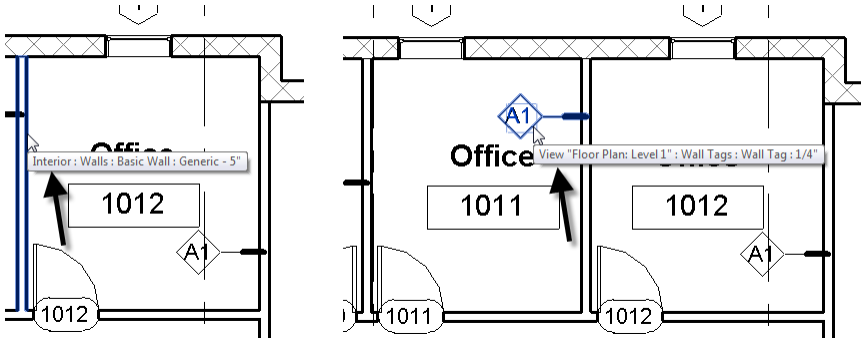
**USER 3:** ...Select **Wall Tags:Wall Tag ¼"**, in the Leader area, check the "Create" checkbox and then set the Length to **¼"** to add leaders to the tags. Click OK to add all Wall Tags.




**ALL:** Synchronize with Central, Reload Latest.

**ALL:** Respond to errors. Coordinate efforts.

In a Workshare enabled project, the tooltips you see onscreen will include information about the Worksets. Place your mouse over any model element such any Wall and wait for the tooltip. In the tooltip message, the customary *Category:Family:Type* message will now include the Workset as well: *Workset:Category:Family:Type*.




Now try pre-highlighting any tag instead. Notice that the Workset indicated by the tooltip includes the name of the View. This is the "View Workset" that is maintained automatically be Revit.

**ALL:** Respond to errors. Coordinate efforts.

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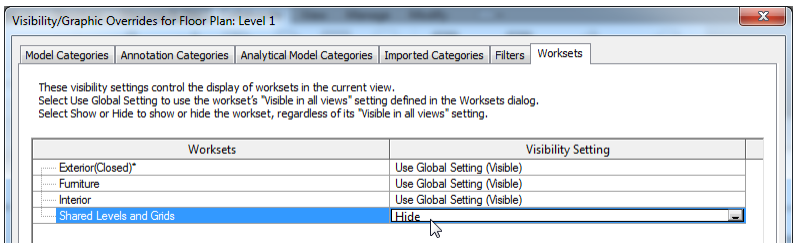
## Task 10. — Understanding Worksets Visibility

As our final exploration in this lab, let's take a quick look at Workset visibility. You can hide Worksets globally across the entire project or on a view by view basis using VG. However, it is very important to note that if you hide a Workset using VG, this change is saved with the model and will appear that way to other users when they synchronize and reload latest. If you use the "Worksets" dialog and close Worksets, it only affects YOUR Revit session. This is an important consideration when deciding how to manage Workset visibility. There can also be a difference in how it affects performance. Closed Worksets can improve performance, but hiding in VG would have little performance benefit.

ONLY USER 2:

**USER 2:** Type VG to open the "Visibility/Graphic Overrides dialog. Click the Worksets tab and then from the Visibility Setting column next Shared Levels and Grids, choose **Hide**. Click OK to see the result.

Synchronize with Central.




**USER 1:** Reload Latest.

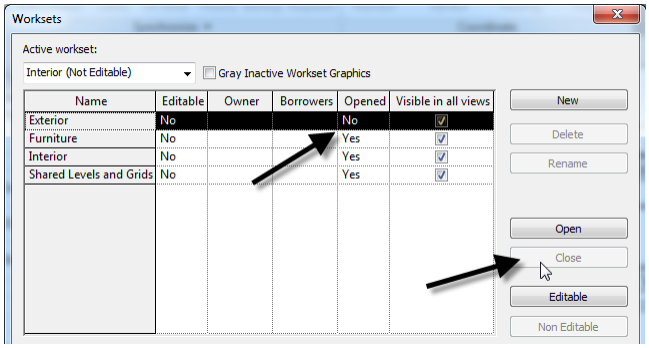
**USER 3:** Reload Latest.

Notice that the Grid lines disappear in the plan view. This change affects ONLY Floor Plan Level 1.

**ALL:** On the Project Browser, double-click to Open Elevation: South.

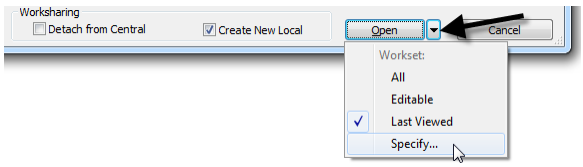
Notice how the Grids and Levels still appear in this view.

**ALL:** Open the "Worksets" dialog. Select *Exterior*, click the Close button and then click OK. Open other views to see the results.




The most noticeable thing we see is perhaps the fact that the Roof is not on the Exterior Workset! But this is simply because we performed all steps from a plan view so far. The important thing that this task shows us is that you can control visibility globally (in all views) or view by view. Both methods have their utility. Choose carefully and remember, if something seems "missing" from your model, it might just be hidden!

**A final note:** you can also Open and Close Workset at the time you open the project using the drop-down in the "Open" dialog.




**ALL:** Synchronize with Central, Reload Latest.

**ALL:** Close the Project File.

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Please feel free to experiment further. Thank you for attending.

## Further Study

You can find more information and tutorials in *The Aubin Academy Master Series: Revit Architecture*. Chapter 15 is devoted to the subject of Worksharing. (Worksharing is Appendix B in the 2011 edition)



Worksharing is also covered in my MEP book: *The Aubin Academy Master Series: Revit MEP*. This book is co-authored with Darryl McClelland, Martin Schmid and Gregg Stanley. Chapter 3 and Chapter 9 both include coverage of Worksharing with an emphasis on setup issues and issues related to sharing files between disciplines. You can learn about both books at my website.


I also have Revit video training available on my website and at: **www.lynda.com/trial/paubin**.

If you have any questions about this session or Revit in general, you can use the contact form at **www.paulaubin.com** to send paul an email.

lynda.com

Matt can be reached through The D|C|CADD Company website: **www.dccadd.com**.

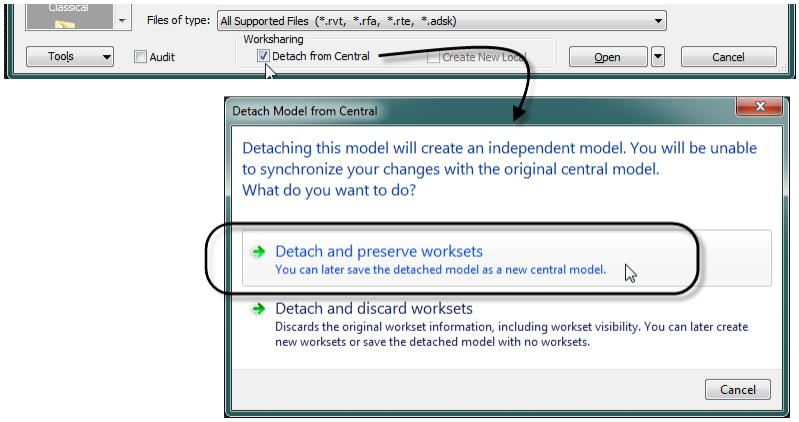
D|C|CADD

Thank you for attending. Please fill out your evaluation.

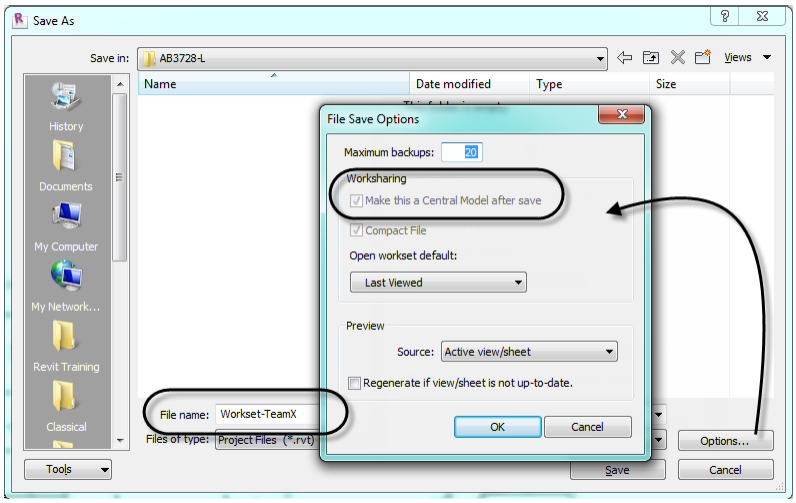
## How to set up the Dataset for use after AU

If you are following along on your own after the live session in Las Vegas, or on your own laptop, you will have to recreate the Central File before you can continue. To do this, download the files for the lab from my website at **www.paulaubin.com/au**. You will also need at least one partner to work through the lab with you (two is better) and a location on a network server to create the Central File. You and each of your partners need to have read and write access to this server location. Ask your CAD/BIM Manager for assistance if necessary.

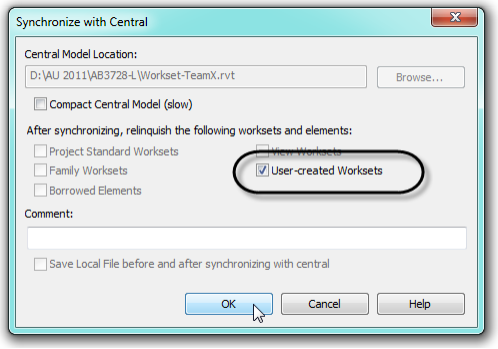
1. In Revit, from the Application menu, choose **Open**.
2. Select (do not double-click) the file named *Workset-TeamX.rvt*.
3. At the bottom of the dialog, check the "Detach from Central" checkbox and then click Open.




4. In the dialog that appears, choose the "Detach and preserve worksets" option.
5. From the Application menu (big "R"), choose **Save as >Project**.
6. Browse to the location where you want the Central File to live. This MUST be on a network server that is accessible to both you and your partner(s). You must all have read/write access to this location.
7. Click the Options button (bottom right corner). Verify that the "Make this a Central Model after save" checkbox IS checked. Click OK.




8. Click Save to create the new Central File.
9. On the Collaborate tab, click the Synchronize and Modify Settings button. In the “After synchronizing” area, be sure to check the “User-create Worksets” checkbox. Click OK.




10. From the Application menu, choose **Close** to close the Central File. This is VERY IMPORTANT. You must not continue working in the Central File.

You are ready to return to the start of the paper and complete the steps as indicated.