Vault Ahead Of Your Competitors with Autodesk® Vault Collaboration AEC

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Class Summary

- **CI1785**
- Autodesk Vault software is an often-overlooked tool that can provide remarkable benefits for the infrastructure design community. This class will explain exactly what document management software truly is and how it can benefit the civil design firm, and cover the steps for creating your own Autodesk Vault software environment. From the initial decision to implement document management, and all the way through development and final production rollout, we will review how Maser Consulting P.A. came to use Autodesk Vault Collaboration AEC in all 14 of its regional offices as well as the benefits gained from doing so.

Learning Objectives

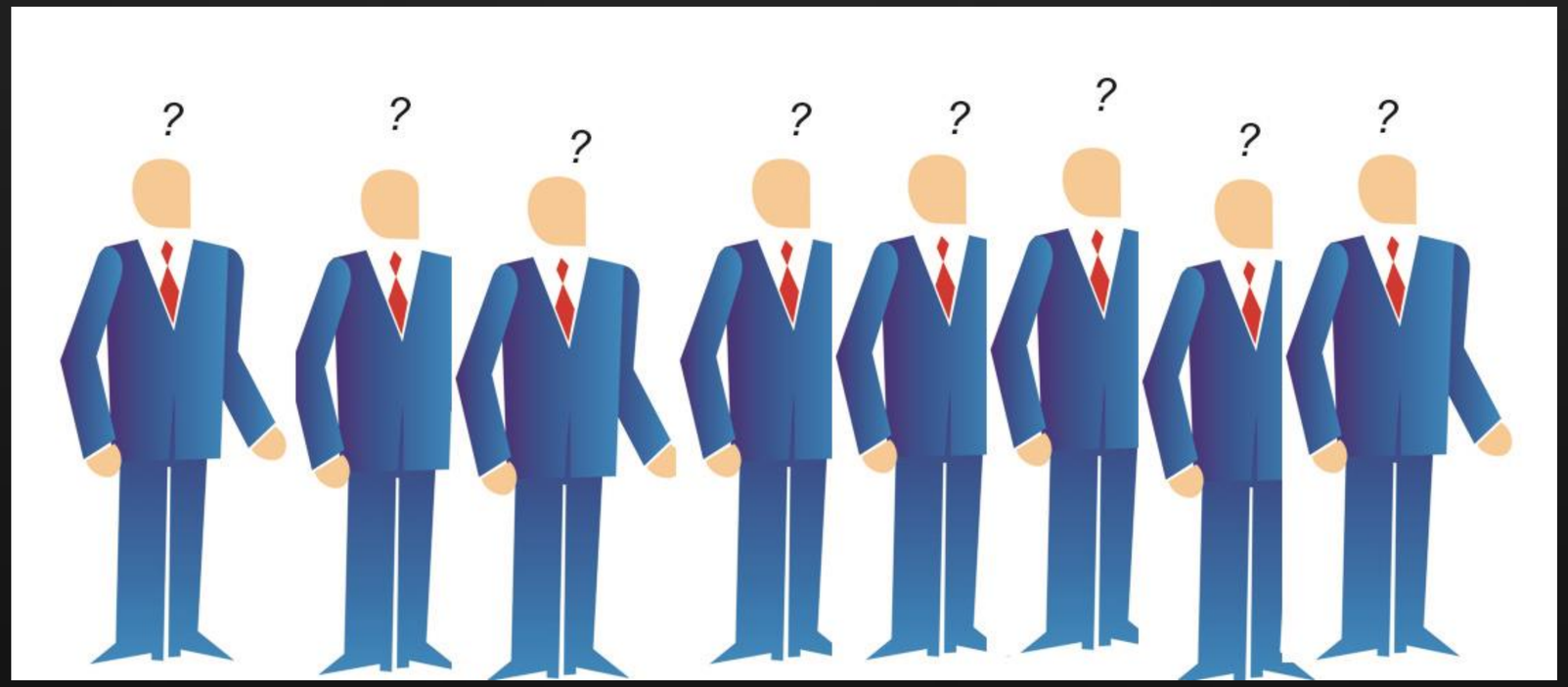
At the end of this class, you will be able to:

- Explain what document management is and how it can improve your firm's bottom line
- Describe the workflow considerations to be addressed before implementing Vault Collaboration AEC
- List the potential problems and predict the learning curve for a Vault Collaboration AEC implementation
- Determine the hard and soft costs of a large firm that wants to implement Vault Collaboration AEC

What document management is and how it can improve your firm's bottom line

What exactly is document management?

Ask ten design executives what type of document management process they use and eight of them will stare at you with a completely baffled expression.



One of the remaining two will say: “*We don’t use it; it’s a waste of time*!”

The last person will tell you document management is the best business investment they've ever made and their firm couldn't survive without it.

What exactly is document management?

- Most people think of Engineering Document Management Software (EDMS) as software that lets you organize your files and add some extra metadata to them
- The real strength of any EDMS is the control it gives you over who can do what/when/where to every single file in your firm
- How many times have you lost time or missed deadlines because of a careless save or unintentional change to your design?

What exactly is document management?

- EDMS lets you restrict the ability to delete, or move, files to a handful of your best trained employees
- It lets you open older versions of your files, without having to wait hours for I.T. to find and restore them from archive
- EDMS packages move your files into a restricted database. That removes standard OS file access from the equation, so users can’t bypass all the controls you put in place

What exactly is document management?

- EDMS creates archived revisions of your plans that can be accessed without the need to refer to backups
- With Vault AEC Collaboration you can select the files you need to revise, or keep record copies of, and simply “Change State” on them. This makes an archived, read-only, copy (*along with all of its attachments*) so that you can refer back to it at any time right from inside Vault.
- You can convert an archive drawing to a “current” version of the file. When clients change their minds on what design they want every time you turn around, that can be a true time and cost saver.

That sounds nice, but how does document management make us money?

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- Before instituting a document management program at Maser, we were constantly running up against the problem of our staff designing off of incorrect and/or out of date files

- Vault Collaboration ensures that everyone is working on the most current version of a design. Since the Vault database controls access to every file, from a central location, there can never be an instance of your users modifying the same file in different locations, or inadvertently working on out of date information.

That sounds nice, but how does document management make us money?

- Even in a simple two team design scenario, the potential for serious loss of time and money is immense. When controlling 14 regional offices and 16 different design disciplines as I do at Maser Consulting, the problems grow exponentially.
- Vault has given us a dynamic interface between all our offices, which lets us make use of all the in-house design groups we have to best effect. Vault AEC gives us a simple system that allows everyone involved immediate access to current and reliable data throughout our entire firm

Describe the workflow considerations to be addressed before implementing Vault Collaboration AEC

Determine how your firm works

- You may be saying: "*I already know that*!" It's your firm after all; you should know how it works, right? Actually, you probably have no idea how things work, regardless of your position.

Determine how your firm works

Very few of us have a solid grasp on the day-to-day processes that our design staff goes through to get their job done

- What version of AutoCAD software they work on?
- What package are they using to do pressure pipe analysis?
- Which server on your network are they saving files to?
- How is your data backed up and how often?

Determine how your firm works

- Having an intimate understanding of the daily work process of every group in your firm is a necessity when you begin a project of this scope
- Before you start laying out new standards and processes, you'll need to get input and buy-in from both users and senior management
- Nothing will de-rail your best intentions faster than frustrating the very people you're trying to help

Determine how your firm works

- I began this process by sitting down and interviewing the director of each department in my firm to get their input on their existing processes

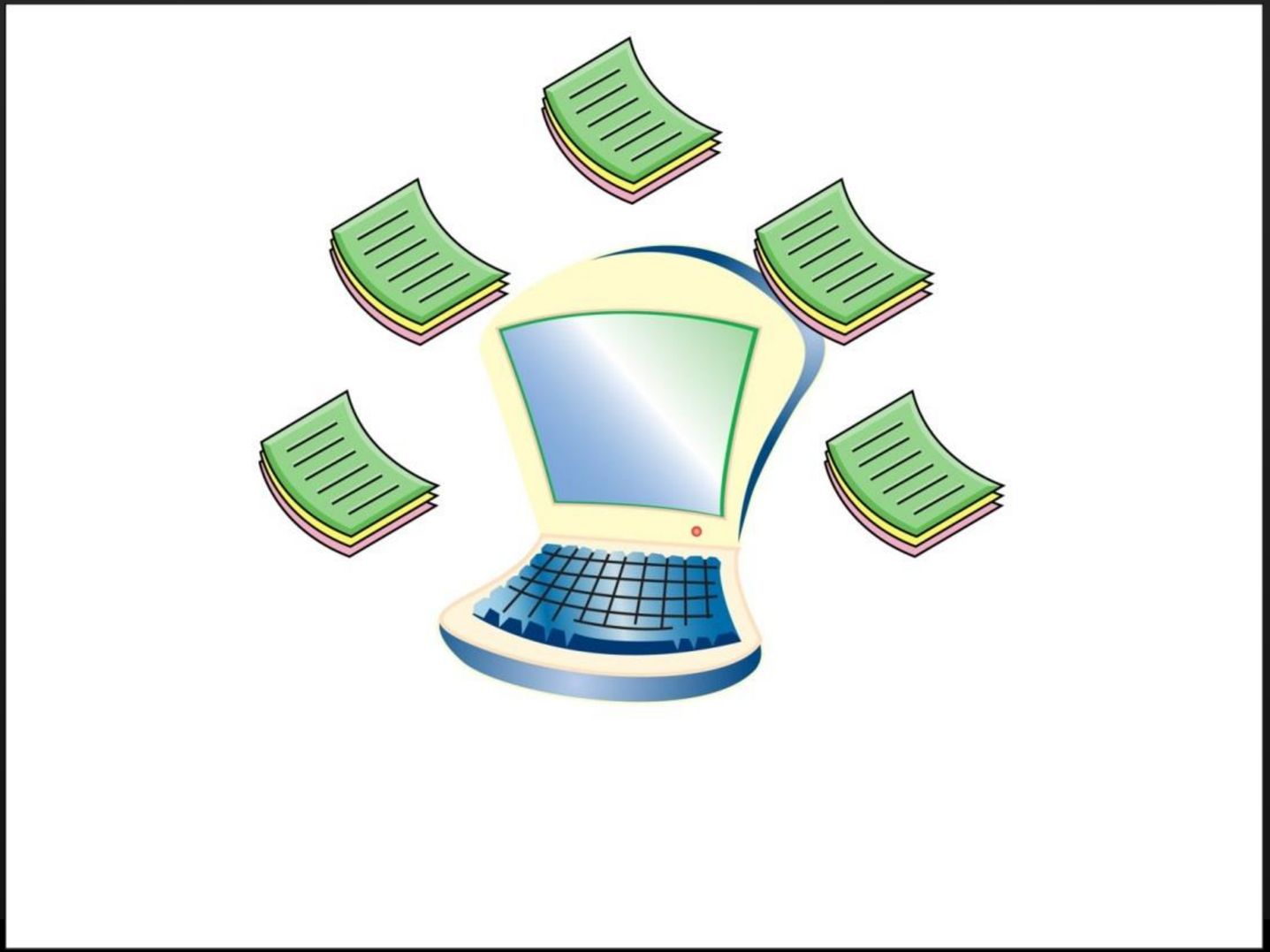
- Next, I asked each director to recommend one of their best “users” that I could talk to about the nuts and bolts of their workflow

- Management level personnel have a “large picture” vision of what their staff does. For a project implementation like Vault Collaboration, you’ll need specifics on the how, when, and where of file access which you can only get from the people that do the actual work

Determine how your firm works

- Once you understand what your staff needs to accomplish, you'll want to start looking for common areas between your group processes that Vault can simplify
- Use flowcharting software to graphically layout the workflow for each group and start searching for commonalities
- Look for areas of overlap that will address as many of those common functions as possible within your new Vault Collaboration environment

Determine what changes you need to make to your workflow



Determine what changes you need to make to your workflow

- Put together a steering committee: a small but highly representative group of people from all levels of your firm that you can get input from while you're developing new processes

- Keep this group small, with both senior management and everyday users on it for balance. In Maser's case, we put together a group consisting of myself, the Directors of I.T., Site Design, and Transportation, along with two designers and two CAD drafters from differing disciplines

Determine what changes you need to make to your workflow

- Your steering committee should be just that. They are there to listen to your ideas and steer you away from potential problems they see with regard to their own groups. Do not try to use this committee to make actual decisions

- The steering committee should meet only a few times throughout the development phase of your process and the meetings should be kept short to avoid getting bogged down in specific processes that are best left in the control of you project leader.

Determine what changes you need to make to your workflow

- The true decision making will have to be done by a small team of no more than four people. The key people you'll want are: the project leader (myself at Maser), the Director of I.T., one Principal of the firm and one other technically skilled person from your design staff
- The team is to decide between items of similar functionality, not to revisit steering committee issues or second guess the project leader's recommendations
- Your project leader will be the one to determine the details of your workflows and how they can bet be controlled and improved upon through Vault AEC Collaboration

Determine what changes you need to make to your workflow

- Focus on answering questions about your workflow in this initial phase of the implementation
  - How will we name files: with a standard system controlled by the software, or do we let users decide?
  - What levels of file control will we need, do we give all users full access or restrict most users from moving/deleting files?
  - How do we need to archive and revise files? Should we keep file access restricted on a per group basis or do we share all data?

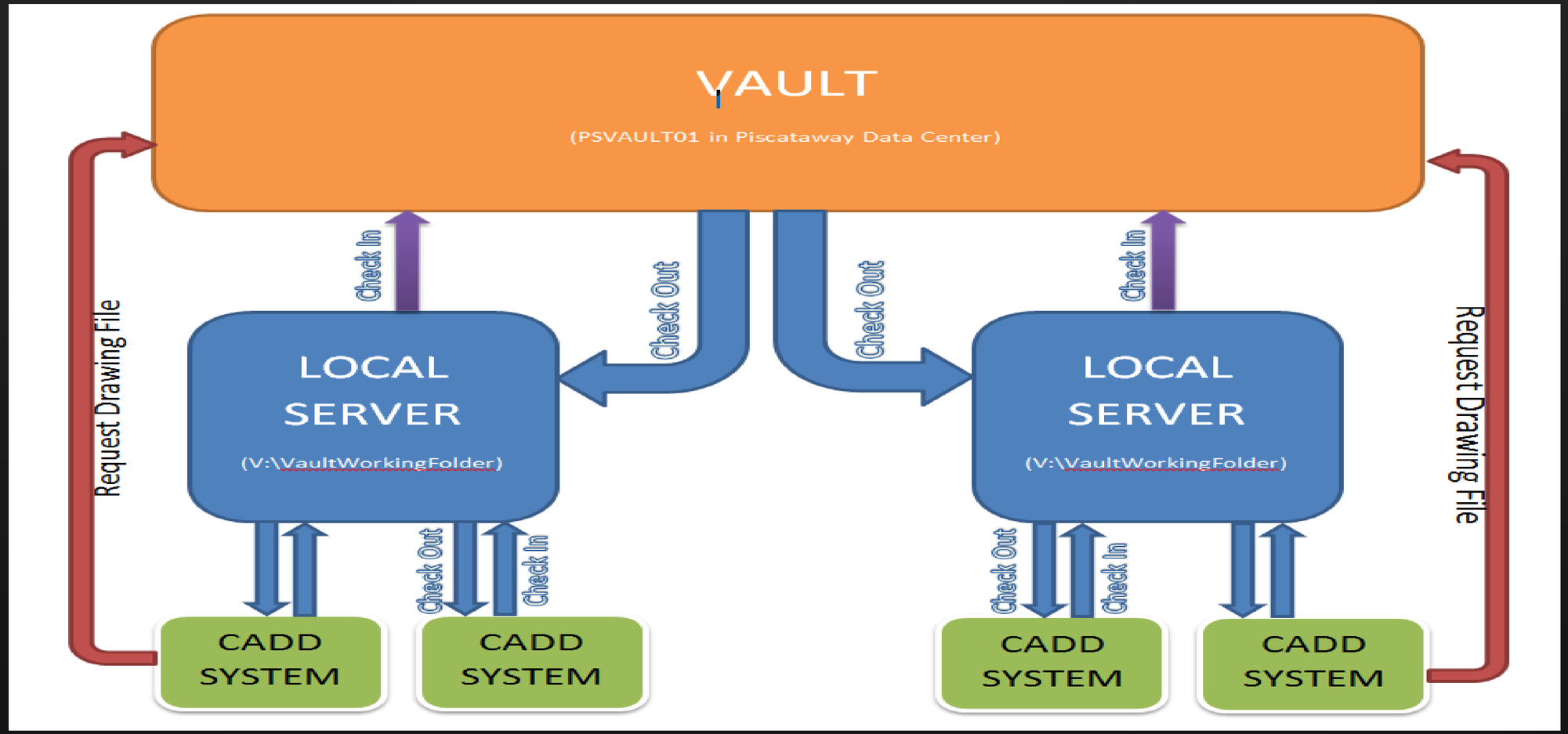
Determine what changes you need to make to your workflow

- How do we handle print processing?
- Do we need to set up a system such as Buzzsaw to enable external file sharing with clients?
- Do we shift from paper plotting to electronic (PDF/DWF) media?
- A project of this scope is not undertaken lightly nor quickly, it will require weeks of dedicated time for your project leader to develop the new workflow processes that you'll need to make conversion to Vault AEC Collaboration the revenue generating process it should be.

Determine what Vault Collaboration structure will work best for you

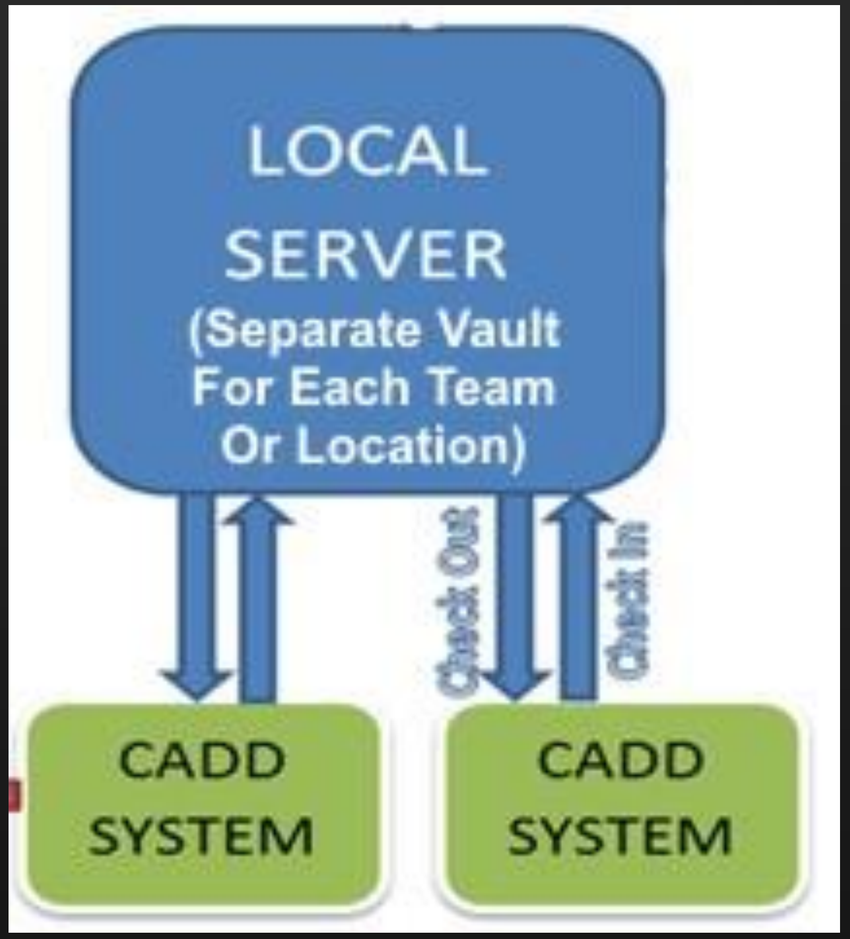
- Vault AEC Collaboration can be set up in two basic structures: as a central database install or as a replicated database. In a central install, you create a single database for your entire firm that all users can access files through, regardless of location.

Determine what Vault Collaboration structure will work best for you



Central Database Structure

Determine what Vault Collaboration structure will work best for you



Replicated Database Structure

Determine what Vault Collaboration structure will work best for you

Central Database: Concerns here are bandwidth and connectivity. In order to make it work, you'll need fast and reliable WAN connections to the Vault database. You'll want to address what happens in case your network goes down. Fortunately, Vault has a workflow process to address that. This structure simplifies file sharing between offices, you don't need to keep separate servers and SQL licenses for each location and all your administrative functions are controlled from a single location. This structure also has the benefit of having file changes propagated to your users in "real time" instead of waiting for periodic updates, as you would in a replicated structure

Determine what Vault Collaboration structure will work best for you

- ***Replicated Database:*** The concerns with this structure are the time lag between updates of data, plus the extra costs of hardware and required SQL licensing. You may also need to manually force updates back to the central database to ensure your users are working on the current version of your files. The benefits lie in the increased access speed to your files, since you're working off a local server, and the consistency of your database in case of network outage.

Determine what type of infrastructure you need to support Vault Collaboration

- Here is where your I.T. Department plays such a critical role. Your office's WAN connections, server size and speed, backup processes, data storage and transfer rates, and a few hundred other technical hardware items need to be carefully considered
- Maser Consulting has a minimum of two bundled T1 lines running into our smaller offices and several T3 connections to our headquarters. The cost of upgrading our WAN connections between offices was offset by not needing to purchase 14 new SQL servers. We run our database out of a protected datacenter with UPS capabilities and guaranteed uptime connections

List the potential problems and predict the learning curve for a Vault Collaboration AEC implementation

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- The learning curve itself is, without a doubt, the single largest problem you're going to face with Vault Collaboration AEC. If your firm is new to using EDMS, your users are going to have a tough time adjusting to the new process.
- Your users will require formal training to understand the basic concepts behind EDMS.
- You are going to need to allow for a productivity hit when you roll out Vault AEC Collaboration

Ok, how much downtime should I expect?

It’s hard to give exact numbers for this question. There are a lot of variables involved . . .

- Training: you’ll want to hire a skilled trainer, who is very familiar with your Vault setup. The amount of training you’ll needed will vary, depending on the complexity of your workflow process, but allow for at least one full day of training
- Conversion of existing projects into Vault AEC Collaboration: At Maser, I set a benchmark on our existing projects of 50% completion. Anything that was more than 50% complete would not be moved forward into our Vault structure but finished out in our existing formats

Ok, how much downtime should I expect?

- Allow at least an hour for each project that you're moving into Vault. That may not sound like much but for a large firm those hours can add up quickly.

- Allow time for your first half dozen projects that are being worked in Vault AEC to be written off to training. At Maser Consulting I found that the first few projects for each user required an additional 10% - 15% of set up time.

What are the biggest problems we're likely to encounter with this implementation?

- The largest concern I ran across when implementing Vault AEC Collaboration was in making sure my staff understood the concept of Check In/Check Out of files
- Vault AEC is accessed primarily through the parent design application (*Civil 3D in Maser's case*) and the interface between the two packages is the one area where Autodesk still needs to do some work.
- Another issue we ran into was in dealing with files: "Edited Out Of Turn." This can occur when someone opens a file directly from the local working folder (*a network location*) and saving them without working through Vault AEC

What are the biggest problems we're likely to encounter with this implementation?

- You may also run up against circular and/or broken reference concerns. Vault does not work well with missing data links of any kind (*neither xrefs of drefs*). If you have a file checked out that has a missing or broken link to an image or drawing inside it, Vault will not let you Check In the parent file
- In cases where a surface, or other Civil 3D object, is deleted from a parent file, without first removing the link to the child, Vault can actually get caught in an extended circular reference loop that can cause dramatic slowdown of your system

Determine the hard and soft costs of a large firm that wants to implement Vault Collaboration AEC

The Hard Costs:

SQL Server that will house your Vault(s):

- Hardware
  - ✓Intel Pentium 4 or AMD 64-bit Dual Core Processor, 3 GHz or higher
  - ✓8 GB RAM
  - ✓2 TB 7200rpm HDD
  - ✓DVD Drive

- Software
  - ✓Microsoft Windows 2008 Server OS
  - ✓Microsoft SQL Server 2008 R2 Standard or Enterprise Edition (64-bit)
  - ✓Microsoft® Internet Explorer® 7.0 or later

The Hard Costs:

- The setup we are using for our central Vault AEC Collaboration server cost us approximately **$13,500.00**, not including additional backup and power requirements. If you choose a distributed setup, with a separate Vault at each location, you'll need to multiply that figure by the number of locations you have.

- High speed WAN connections between remote locations and your central Vault server. The pricing varies widely, depending upon your location and available infrastructure, but expect to spend several thousand dollars each month for dedicated lines

The Hard Costs:

- I also recommend hosting your Vault Server in a protected Datacenter with UPS and guaranteed uptime. These facilities aren't cheap, but think of how much money you lose if your server goes down or loses power and you lose access to all your design files
- Licenses for Vault AEC Collaboration, which are currently running at about $1,300.00 each and you'll want to keep those under subscription with Autodesk, which is approximately $700.00 per license/year.

The Soft Costs:

- Hire a consultant to handle the actual installation and back end development of your Vault AEC database
- A trainer for your staff who is very familiar with your firm's Vault setup. If you have someone in house with solid training skills, you may want to involve them deeply in the rollout process
- The largest soft cost of all is going to be development time. Putting together a fully developed plan for implementing Vault AEC Collaboration is not a simple matter. Your project leader will need to devote full time effort towards this project for at least 6 – 8 weeks in order to make sure that you're addressing all the needs and work processes of your staff

Summary

- Updating your firm to Vault AEC isn’t necessarily a quick or simple one but it’s definitely worthwhile. At Maser, Vault’s integration with Civil 3D was one of our primary motivators in moving to this system and it has already saved us hundreds of man-hours over the manual process of data referencing done through standard AutoCAD
- We’ve also seen tremendous savings in the integration of our workflow process between design teams. We no longer have long waits as files are copied or printed between remote offices and we no longer have the loss of time and money associated with working on out of date files.

Summary

- The final question to ask is: "*Is it worth implementing Vault AEC Collaboration in a large, multi-discipline, firm environment*?" The answer: it's not just worth doing; it's a must for any company that has more than 30 employees or more than one regional office. For Maser, Vault has become one of our most valuable design and management tools and as I said at the beginning: I don't know how we could survive without it.

QUESTIONS?

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