BU21489

Upgrading the Life-Support System for Your Facility

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Learning Objectives

- Understand how the traditional design and coordination process can be blended and made more efficient.
- Learn how facility managers and staff can have ownership and management of their BIM process.
- Discover how workflow steps, over the entire lifecycle of the project, are reduced to enable faster project delivery.
- Understand how the BIM model and BIM data are transferred and managed in a post-construction environment.

Description

Facility Managers of buildings, campuses, and organizations are constantly trying to seek out ways to streamline and effectively manage the overwhelming amount of data that they are required keep up with and maintain on both the building and building systems.

The future of Facility Management is at a fast-changing pace, and the traditional way of doing things is requiring Facility Managers to retool and upgrade their management processes. Facility Managers are having to look "outside the box" to allow for faster project deliveries, cost savings, and long-term facility building data management.

Technology has ushered a new era that is bringing an unlimited amount of data that you can easily have in the palm of your hand, on your desktop or tablet and which can connect you across the room or around the world in real time. This is blurring the lines between the digital world and the real one.

In this class, I will explain how being the third-largest pediatric hospital in the United States was led to decide to change our "cradle to cradle" process to be more streamlined and efficient. We illustrate how we have gone through this process, what has worked, what has failed, and where we are heading. I will also show how we are using various Autodesk products, Revit, and other third party application programs to automate our facility management process.

Can all stakeholders work together, and can you as the facility manager or owner take ownership of your process, all the while reducing costs along the way? The simple answer is – Yes!

Your AU Expert(s)

Dave Branch is the Facility Documentation Manager for Children's of Alabama. He has over 23 years of commercial design, construction, and project management experience. Prior to coming to work directly with Children's of Alabama, he worked in various architectural firms in Georgia and Alabama. He also worked for a large-scale general contractor in Birmingham. It is this experience that has enabled him to develop the customized Children's of Alabama Facility Documentation Management process, and the integration of Building Information Modeling (BIM) with their ongoing facility management process. Dave manages the design and construction process of the various capital projects ongoing at Children's of Alabama, manages the integrated facility management communication software integrated with the BIM process, and also trains the maintenance staff on using a fully digital environment. He is a passionate advocate of sharing and networking with other professionals from all sectors of the industry to discuss BIM and Facility Management integration and implementation. He has spoken at various healthcare events, and written several articles on how other organizations can follow the same process.

"911, What's Your Emergency?"

This is your facilities 911 call. You need to realize that what is shown here in this handout right here, right now, carries with it the top level of urgency and importance for your future as an effective facility manager.

Even if your facility data management process is in critical or, even worse, a non-existent "flatline" condition, you can quickly recover and have a strong and viable process in place.

As we begin to explore what it takes to make this "recovery" or "rehab" process there are four major steps that we will focus on.

I.   Assess the Risk
II. Rethink Your Processes
III. Implement the Processes
IV. Cultivate, Nurture, and Preserve the Processes

Each of these major steps play critical role in creating or doing major overhauls to your facility documentation management processes. You cannot overlook or skip any of these without risking potential failure of your plan.

Before we explore each major step, I will briefly explain an overview of the major steps.

Assess the Risk

We are all at a major crossroads in how we go about the process of developing, constructing, and maintaining buildings that become a part of our everyday work lives. As facility managers, we are bombarded with glossy ads, emails, or other marketing strategies that promise once you start using BIM all your Facility Management issues will be a thing of the past. It is almost too good to be true. The reality is that this is not the movie Field of Dreams, where "if you will build it he will come". It is more like the soap opera General Hospital where the organ music is queued constantly for every road block and issue that you encounter along the way in making this transition.

The first step in improving your facility management process is to assess the risks that your facility is taking in their current facility data management processes. Do you have any risk of duplicating services, losing or not even capturing pertinent facility data?

Rethink Your Processes

Making a transition into a comprehensive facility data management and integrated BIM program is going to require time and change with numerous departments and people within your entire facility. It will require all stakeholders to be involved in this process.

The second step is often the hardest step in the process. Because it requires potentially changing the way you and others work. This step requires you to take a serious look at what works, but more importantly what does not and be willing to change both for the better. Refusing to go through this step will ultimately have you working to make your integrated BIM process work, rather than allow the integrated BIM process to work for you.

Additionally, you will have staff and team members who are not going to want to embrace this new approach and technology. Some of these naysayers are valuable resources of information that you need for collaboration and information gathering. How you encourage and transition these people into your new processes will be critical to your overall success. Careful thought and consideration of how you mix "old school" ideals with this upgrade to how you do business cannot be overlooked.

Implement the Plan
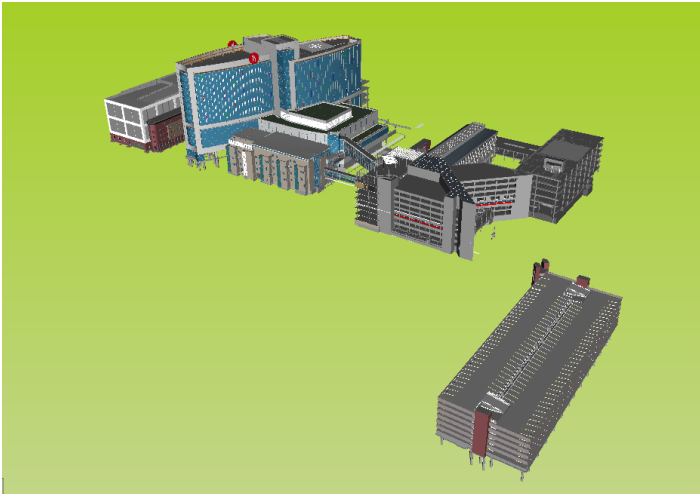
Having a clear assessment and having candid discussions with all stakeholders will lead you into the third phase of transforming your facility documentation management program by allowing you to implement your new strategies and plan.

This step will be the most time consuming and require the most eff ort by you and your staff. It is in this major step that you as the Owner will take complete "ownership" all phases of your buildings lifecycle and lead the overall team through this new effort.

New processes, data capturing, and collaboration methodologies will be tested. Some will be successfully, and others will fail miserably. This step requires that you be flexible in making changes to your plan "on the fly". Having this mindset will allow your "bigger picture" goals for facility documentation management to become a permanent reality.

Cultivate, Nurture, and Preserve the Process

Implementing your new or revised plan is the first step of a reoccurring process. Once things are implemented, you and your staff should begin to look at new and better ways to develop or cultivate information gathering and project collaboration methods regarding your facility documentation management processes.

This cultivating process is done by nurturing all stakeholders as they become accustomed to your new processes. Additionally, nurturing includes your ability to educate stakeholders on the importance of the process and what their role is in the program, team build with stakeholders to improve collaboration, and form newer and better processes that ultimately allow you to improve your facility documentation and integrated BIM management programs overall.

Finally, your new facility documentation processes along with Revit, other Autodesk, and third party software programs will allow you to complete the lifecycle in preserving valuable data, not only for immediate use, but long term global facility management.

I.   Assess the Risk

Learning Objective: Understand how the traditional design and coordination process can be blended and made more efficient.

Unless you have been living in Middle Earth with the Hobbits, you cannot escape the amount of technology that has invaded our everyday lives. It is changing how we live at home and how we work with others in our professional environments.

Whether you are an Architect, Engineer, Contractor, Subcontractor, or the Facility Manager technology is now a part of how we document, collaborate, and maintain our facilities. With technology advancing at such a rapid rate the lines of reality and the virtual world are colliding. Additionally, the traditional design delivery methods of days gone by are in a major paradigm shift which challenging "the business as usual method".

If you are at a crossroad with considering changing your facility documentation process, planning a major capital construction project, or wanting to convert that dusty old plan archive room and create a virtual digital archive and integrated BIM model of your as-built conditions, then Step One – Assessing the Risk of the current state of your facility and operations is mandatory.

How are you Doing Really?

In our culture when you ask people how they are doing, they're nearly always "fine". If you want to convey that you're interested in hearing the truth about what's going on in that person's world, you want to give the other person permission to answer honestly, then you should pose the question just a bit differently: "How are you doing……really?"

So, when you are poised to start either revamping or setting up your facility documentation management program, you need to ask the question to your team a bit differently as well: "How effective are we doing in developing, collaborating, and maintaining our facility documentation data……really?"

If all facilities and buildings were alike, then it would be very simple to answer the question. However, not all buildings are alike, some are rather complex in design, and others have vast and complex building systems. The good news is that whether your facility is small or covers

multiple locations globally, the simple framework of this methodology can be tailored to your specific needs, and allow you as the facility manager to have complete and total ownership of your process, and lead the entire team to work together.

Gathering the key stakeholders together to seriously examine how you "do things" can be difficult. Culture will eat strategy for breakfast every day when stakeholders get complacent and are not willing to grow or challenge themselves with new ideas or solutions. Real growth and real change come when people are willing to be objective and look for ways to improve. Does your facilities culture eat strategy for breakfast?

When asking the question of how your facility is doing regarding your facility documentation management processes consider the following:

- Do we duplicate services?
- Is our current process too complicated or becoming archaic?
- What are the "pitfalls" of our current process?
- What are the "successes" of current process?
- Do all the stakeholders communicate and collaborate effectively together?
- Are there stakeholders that refuse to work with others?
- Do we update information as it changes?
- Where would someone go to find information on the facility, if needed?
- Is the data on our facility current?

We could fill up multiple pages of potential questions about what should be asked, but the key here is to sit down prior to meeting with your key stakeholders and develop a series of questions like shown above, and allow the discussion to evolve. Encourage everyone to actively participate in this discussion by explaining that they have been invited to a "grass roots" meeting that allows them opportunity to make effective change that allow not only them more time, but their team members or departments as well. We will cover how this applies to the process change later in the handout in Section II.

If you answered yes to any of those questions above – keep reading!

You are always in a Season

Another key factor as you assess your facility documentation process is to have an understanding that your facility is always in a season. It sounds cliché, but there is truth to it and it applies to how you strategically plan and implement your facility documentation management program.

When meeting with the stakeholders, you as the facility manager(s) should know what season your organization is in, to name it, and then to communicate the implications of that season the organization is in to the group of stakeholders.
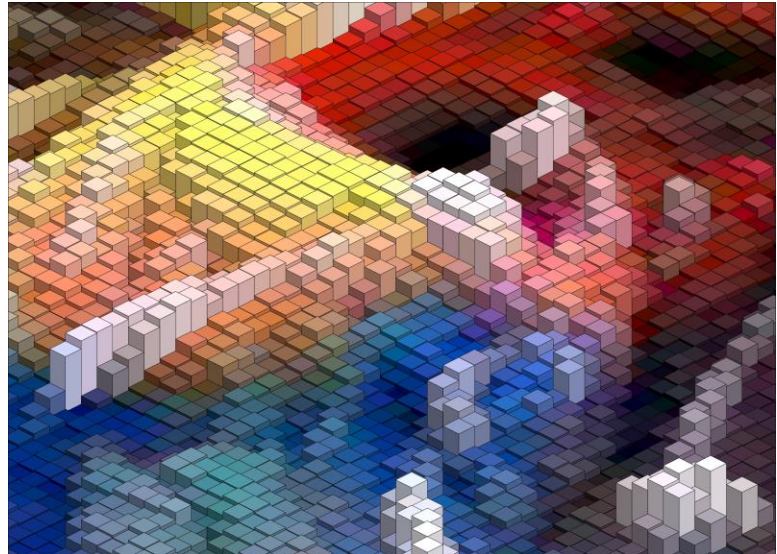
The easiest season to identify is the season of growth. In the growth season, everything is rosy. Projects are being approved, designed, or in construction, the future looks great! As the Facility Manager(s) you should be aware enough to say "We're going through a major growth spurt here. Let's pour all our energies into fueling this growth, but let's also consider what will happen when this growth slows down." This season of growth with your facility and how data is assembled, managed, and turned over needs to be carefully planned with information coming to you in a uniform and consistent manner. If not, then you could be either missing critical information, or spending valuable resources of your staff time and money to recreate something that should be handed to you to use immediately.

Another season of your facility is the season of consolidation, which is usually following the season of growth. The goal during consolidation is to assimilate the data that was obtained in the growth season to your Master Facility Documentation Management and Integrated BIM files. You will need this season for your facility documentation management to allow data to be correlated and updated for the availability of all stakeholders

Another season that your facility may be experiencing is a season of transition. This may be a period when you have key staff members who have the "whole world of knowledge" about your facility in their heads, and they either are getting ready to retire or planning to leave your organization. Without capturing this critical data now, you could be facing large gaps about your building and building systems.

The season every facility manager dreads is the season of malaise. In this season your facility is in an unusually somber, stale, or just plain stuck phase. It is business as

usual, information is not being updated, staff are following the wrong processes and nothing is being done to correct it. Usually in this phase you lose critical building data that should have been captured, and once you realize that it is gone, you cannot recreate or get access to it. This is where a lot of facility documentation without the proper leadership and support end up, and the program typically fails because too many stakeholders will not commit to making a change.

Finally, there is the season of reinvention. This is when the facility manager announces to the stakeholders that it is time to put every part of the facility documentation management process under the microscope and discern whether it needs a face-lift, and overhaul, or a funeral – a necessary pruning exercise to make your program grow.

Most facility managers will neglect to let their stakeholders know what season they are in when they are trying to make a change. Based on experience, unless you let them know what season you are in, they have no clue.

What season is your facility in at the present moment? growth, consolidation, transition, malaise, or reinvention? As you plan your new facility documentation management program, you should give voice to the realities of the season you are in as an organization. You need to assign appropriate language to it, designate parameters that will allow you as a group to succeed in it, and confidently offer solutions for moving through it.

Beware of the Dangers of Incrementalism

When you start the process of creating or revamping your facility documentation management process, and meet with your stakeholders and agree to implement the changes, you will often have sky-high idealism. Everyone gets excited and looks forward to what was discussed and the potential for change.

That is until reality sets in. Over time, facility managers and stakeholders can become discouraged to learn just how much time and effort will be spent to get this process moving forward. They may become frustrated and say that they do not have adequate staffing or resources. Often, that "We can do anything" feeling fades, people can lose the desire to develop the system.

Incrementalism has become an issue when innovation is no longer welcomed in your environment. Do you find yourself saying "We don't do that anymore!"

Very slowly, and quite subtly, you find yourself increasingly satisfied with nothing more than incremental growth. From there, things will go downhill.

To keep your facility documentation management system growing and expanding you should let the stakeholders know upfront: what is going to be required from them, who is doing which tasks, and basically how the overall workflow will look like. This is done in Step II, but failure to acknowledge this up front in Step I, and give everyone a realistic expectation will lead to incremental thinking, incremental planning, and incremental outcomes – it's the kiss of death. Don't fall for it!

Make the Big Ask

Leadership is a lot about asking. Having your stakeholders come to a conference room to listen to your vision and accept taking on the challenge is a big ask. As a facility manager, you must describe the pressing problems that are imperiling mission achievement. then ask the stakeholders to devote their best thinking and most innovative ideas to solve them.

This is a simple framework in making the bid ask to your staff.

Direct the Rider - What looks like resistance is often a lack of clarity. So, provide crystal-clear directions.

Motivate the Elephant - What looks like laziness is often exhaustion. The Rider can't get his way by force for very long. It's critical that you engage stakeholders emotionally – get their Elephants on path and cooperating.

Shape the Path - What looks like a people problem is often a situation problem. We call the situation (including the surrounding environment) the "Path". When you shape the Path, you make change more likely, no matter what's happening with the Rider and Elephant.

The nature of human beings is such that we tend not to drift into better behaviors. We usually must be asked by someone to consider taking it up a level.

If you want to make a bold change with your facility documentation management program, one of the greatest gifts you can give your stakeholders is get in front of them, eyeball-to-eyeball, and ask them to step up and help you make this change.

Bold Move

Finally, after you have asked how you are really doing, determined what season your facility is in, committed to not falling into the dangers of incrementalism, and ultimately made the big ask of your stakeholders – it is time to make the Bold Move!

You are now ready to start working on rethinking your process and moving closer to implementing your plan.

What I have found to be true in the process I have implemented, more than likely will be true for you too: you will never take big hills without making bold moves. The alternative is incrementalism, which is dangerous and often deadly to the project. Incrementalism says "Hey, let's just get a BIM model and we will deal with it after we get it." That seldom works.

Incrementalism and innovation make terrible bedfellows. Make a few bold moves, or you'll breathe your last facility documentation management breath far too soon.

Your move.
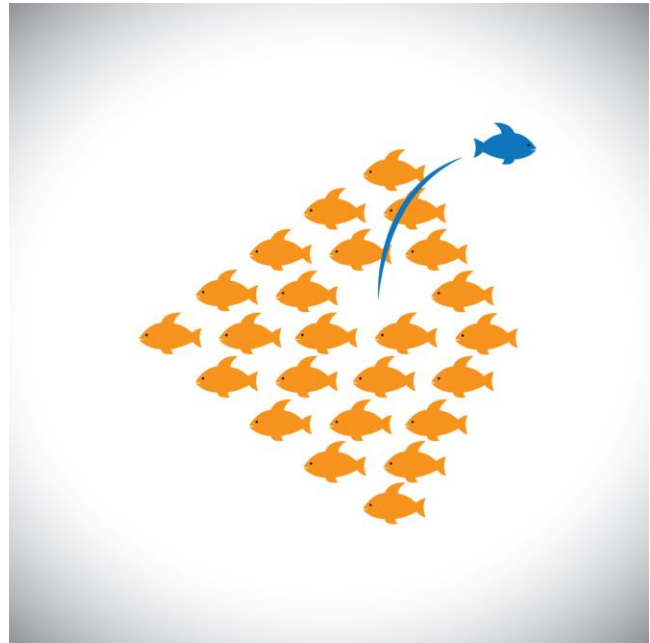
II. Rethink Your Processes

**Learning Objective: Learn how facility managers and staff can have ownership and management of their BIM process.**

Know Who's Driving

Have you ever attended a staff meeting and asked the question, "Who's driving this meeting?" The discussion is going nowhere; the purpose of the meeting is not being discussed? It is just down right counterproductive.

As you begin to rethink your processes, you need to determine who is going to be driving this change and take control of the processes. It is a critical question to ask as you begin this process, and to revisit during implementation of the plan, and even more important as you grow your facility documentation management program. If no one claims to be driving the process, then seldom will anything of consequence occur.

First, you must examine how your organization typically has projects delivered. There are two basic types of delivery methods: Design – Bid – Build or Design – Build. Each of these methods could have different drivers such as Program Managers or Construction Managers, but the overall premise is the same for what we are talking about in this session.

Using the typical industry standard method of project delivery of Design – Bid – Build, the illustration below using grain silos represent the four major categories of the traditional DBB process: documentation, coordination, construction, closeout
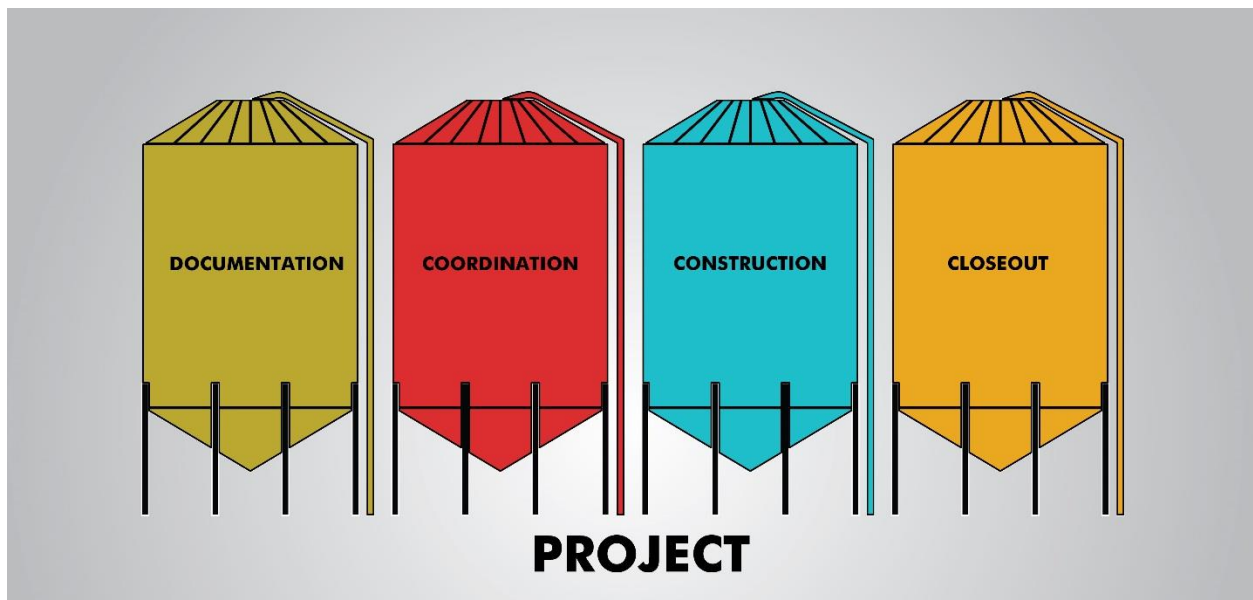
Each of the "silos" in the traditional delivery process contain valuable stakeholders and information, but often each of the "silos" are working independently, and not in a collaborative manner.

The documentation silo represents the architect who typically is hired by the owner/facility manager. The architect independently selects their consulting team (engineers, specialty consultants, etc.) to develop the project. During this phase, the architect leads the team and presents "filtered" information back to the owner/facility manager. The "filtered" information being the three-major traditional design submission categories: Schematic Design, Design Development, and Construction Documents.

The coordination silo represents the exchanging of design information and ideas about the project design with design team. It could range from architectural design details, ceiling plans, products being specified for the project, mechanical system designs, or notating items on the drawings that are Not in Contract (NIC) or Owner Furnished Contractor Installed (OFCI) items. This silo is often the silo most overlooked, and not managed properly. This allows everything that happens downstream to go wrong. Additionally, the owner/facility manager is typically minimally involved in this in a traditional design, build, bid process.

The construction silo represents when the project has been bid and the contractor has been brought on board. As with the two previous silos, the architect is typically overseeing and leading the effort in monitoring the project for the owner/facility manager and assisting the contractor in interpreting the project construction documents correctly, and that the

construction of the building is being built in the way that has been documented and specified. Again, the owner/facility manager typically is remotely involved in this process, and usually updated during a typical owner/architect/contractor (OAC) meeting or coordinated site visits.

The closeout silo represents when both the contractor and architect review all the closeout documents that will be turned over to the owner/facility manager at the end of the project. Traditionally, the architect and contractor "sign off", saying that the information being transmitted is complete and ready for the owner/facility manager to use for their facility management maintenance and operations. In most cases, the owner/facility manager accepts the information and it finds its home on a dusty shelf of the "plans room", never to be used or seen again.

Although this method has a proven track record, it has also been a colossal failure for others. With the emergence of BIM the silo method of working is being replaced to a more "cradle to cradle" process, where the thought process is to begin with the end in mind.

The traditional Design – Build - Bid, process is not compromised in this methodology. It is enhanced, allowing you to ensure project delivery is on time, in budget, and information is given to you in a better manner that can be used immediately by all stakeholders.

Utilizing BIM and other applications, along with organizing and developing a new set of facility documentation guidelines, places you, as the owner/facility manager, in the center of this process. This allows you, as the facility manager, to have complete control and coordinated involvement in all aspects of the project(s).

The second delivery method mentioned is the Design-Build method. This is becoming a popular delivery method and the one we are currently using at Children's of Alabama. In this method, the design team and contractor are selected up front by the owner/facility manager. In this concept the facility manager, the design team, and contractor work together through the entire project. This method is like the other, but allows all stakeholders to be involved throughout process, so that important decisions are made early. It streamlines the overall project timeline and helps control project costs.

With a carefully thought-out facility documentation management program integrated with BIM, you, as the owner/facility manager, are distributing your datasets (BIM Models, Specifications, BIM Families, etc.) to the stakeholders, outlining at the beginning the project the expectations and deliverables you require, actively participating in the coordination of the project making decisions as the project develops utilizing BIM coordination methods, and finally taking the final digital information (BIM and closeouts) and merging them back into your facility documentation management program(s) for accurate and immediate access to maintenance and operation information.

There are four major segments in this process: optimization, connection, delivery, and assets.

Optimization replaces the documentation silo in the former methodology. With a comprehensive facility documentation management and integrated BIM program, the documentation process is streamlined, because you are distributing the portions of your master BIM models to the design team to utilize for the project. This includes your BIM families, guidelines, and standards. If it is a completely new project that is not part of your existing building or structure, then the same thought process works, except distributing your master model. This is explained further in Section III.

Connection replaces the coordination silo. With this new methodology, you are collaborating with all your stakeholders in all phases of the project. You, as the owner / facility manager, constantly have your finger on the pulse of what is going on with your project in real time. You can see the status of the project design at any given time, run quality assurance checks on the BIM model integrity, review coordination models, run coordination clash detection reports to see what potentially could be a construction issue, and communicate any changes you request "on the fly" and everyone is aware of it instantly.

Delivery replaces the construction silo. Although, the traditional construction method of building the actual building has not changed yet with technology, this segment of the process is where the project is constructed. As the owner/facility Manager, you are actively engaged in working with all of the stakeholders in this segment, looking at methods to streamline construction methods, reviewing and monitoring the BIM model as it is being updated to match the As-Built Conditions along with data that is being populated into the model that will eventually be part of your long term facility documentation management system. Delivery allows the traditional "closeout" process in the DBB to be integrated and done as the project is in construction, which ensures that your closeout guidelines and standards are maintained.

Assets replaces the closeout silo, and project closeouts in this methodology are done during delivery. Assets is where the project is completing the "cradle to cradle" process. The BIM models and other datasets are "handed" back to the facility manager as the project is completed. At this point, you are incorporating the final information back into your facility documentation management process for your internal staff and team members to utilize and maintain. This segment also includes the process that is outlined in Step IV – Cultivate, Nurture and Preserve phase. This allows your BIM model and facility documentation information to remain up to date and current. When future renovations or expansions occur, you BIM model will contain and reflect the true "as-built" conditions. Therefore, when you begin the next lifecycle for your building's construction efforts, you are streamlining your future project in both time and money.

We've Got to Do This Together!

The point of rethinking your process delivery method is, as the owner/facility manager, you must assemble the players and meld them into a cohesive team that communicates and delivers the results you want and desire. You are "Directing the Rider"

No matter what project delivery method your organization desires to follow. With an effective, well developed facility documentation management plan you will be able to do the following:

- Streamline the Process
- Avoid Duplication of Services
- Receive a more comprehensive and coordinated deliverable
- Reduce any "pitfalls" of unforeseen Change Orders
- Enhance and Improve your Facility Documentation Management Program

III.   Implement the Plan

Learning Objective: Discover how Workflow Steps over the entire lifecycle of the project are reduced to enable faster project delivery.

This step is where the "rubber meets the road" with revamping your facility documentation management process. As discussed earlier in this handout, this is where you will spend the most time and energy, for both you and your staff in setting up the new processes. In this step, you combine all the ideas and discussions from both Step I and II and setup your actual guidelines, create your master BIM models, master BIM families, and other BIM related items. In this phase you will revamp or setup your facility documentation management communication programs to supplement your facility documentation management processes.

Motivate the Elephant

In Step I, we discussed that the second part of the framework of Making the Big Ask, or getting your facility documentation management program implemented, is to "Motivate the Elephant". To motivate your "elephants" (stakeholders) through this process, you need to have a well-developed and comprehensive set of guidelines on how you want your process to work, and for what each stakeholder involved in the processes is responsible.

• Facility Documentation Manual or Guidelines

This facility documentation manual or guideline should cover your entire "cradle to cradle" process, and outline each step along the way. This allows you to have a continuity on all projects, regardless of size and scope.

For example, at Children's of Alabama we have setup what we call the Project Redbook. This is our comprehensive facility documentation manual for all projects. It covers eighteen sections of the project lifecycle: (listed below are the seventeen sections and what is covered in those sections.

1. Overview
   Purpose of the manual
   Model Ownership
   Terms of Use
   Project Redbook Disclaimer
   Acceptable software platforms
   Model sharing disclaimer
   Communication regarding the model

2. Project Development
   Project Teams
   Project Process and Roles
   Project Development Phases
   Project Team Coordination Meetings

3. Project Development and BIM
   BIM Model Path
   BIM Standards
   Project Team BIM Training Guidelines
   Project Team Coordination Guidelines

4. BIM
   As-Built Model Use Guidelines

5. Level of Development
   COA Level of Development Guidelines

6. BIM Families
   Walls
   Doors
   Finishes
   Casework
   Plumbing Fixtures
   Light Fixtures
   Specialty Equipment (Toilet Partitions, Grab Bars, Toilet Accessories, Furniture)

7. Standard room sizes
   Typical Room Templates of the standard room types used in our facility.

8. COA construction communication software system
   Guidelines and the "how to use" our customized construction communication software system.

9. A360
   Guidelines on how to use A360 for project collaboration

10. Navisworks
    Guidelines on what specific clash detection reports that are required.
    Explanation of how files are to be published to the stakeholders.

11. Alabama Department of Public Health Submission Guidelines
   Guidelines for plan submittal to the State of Alabama Health Dept. Plan Review

12. Local Building Code Submission Guidelines
   Guidelines for plan submittal to the City of Birmingham Plan Review

13. Existing Facilities Inventory
   Plans showing the existing departmental layouts of our buildings on campus

14. Campus Master Plan Phasing and Vacancy Plans
Projected areas of growth with tentative start dates
Locations of current areas on campus that are vacant and available for growth

15. Children's of Alabama Infection Control and Risk Assessment Guidelines
Guidelines on permitting procedures to prevent construction contamination in patient care areas.

16. Barrier Management and Life Safety Code Plans
Current Life Safety Code Plans and code study guidelines.

17. Project Closeout Procedures
Procedures on what is required during a typical closeout procedure during the delivery segment.

18. Shared Parameters
Explanation and guidelines on the custom COA Shared Parameter file to be used on all projects.

Each of these categories in our facility documentation manual allows all stakeholders to have a precise understanding of our entire process and what is expected. As the facility documentation manager, at Children's of Alabama, it is my role to be that facility manager in the center of the segmented design wheel.

I guide all the stakeholders at our facility through each segment the segments of the project; manage the master facility BIM models and families, the construction communication program, design and construction coordination with the teams, and all the other associated tasks we have discussed.

As the manager of this process, I am the person that steers the team as to which part of our facility documentation process needs to be updated, removed, or added. Additionally, depending on the scale and size of the project deciding if we need to go through all the segments of the DB process.

** BIM Execution plans from your stakeholders are something to consider, if you do not have a consistent design team and contractor. This will allow you to "vet" their ability to comply with your facility documentation manual. At Children's of Alabama, I have a unique dynamic where we exclusively use the DB project delivery method. We use the same design teams and contractors consistently. Therefore, the "vetting" is not needed. This is advantageous because we are able to get consistent deliverables.

There are two pieces of advice that you need to keep in mind as you make this transition:

1. Be accessible to stakeholders as they present issues that need to be addressed in your guidelines. When you first launch this process, you will quickly discover what needs to be changed, added, or removed.

2. Stay consistent and update the guidelines, yearly at a minimum. Every six months is ideal, unless your facility does not do much construction. Things will change as you work with your models, update facility information, or create new processes for your stakeholders, it needs to be documented.

- Project Roles

Within your facility documentation manual or guideline, you should clearly outline the roles of each of the stakeholders and in what phase(s) they will be involved with the project.

We have these roles outlined in the Project Development section of our facility documentation manual. An example of how we have it outlined is as follows:

TASK	COA BIM MGR	Arch	Mech Eng.	Elec. Eng.	Struc. Eng.	Fire Protec	Cont. BIM Mgr.	Cont Sub BIM
Children's Master Model of all Facilities	X							
Laser Scanning of all Children's properties and projects	X							
Master Family Library development, review, and maintenance	X							
Project Redbook development and update	X							
Project As-Built Model Preparation, Development & Distribution	X							
Project As-Built Model Verification	X	X	X	X	X	X	X	
Design Model - Architectural	X	X					X	
Design Model - Mechanical & Plumbing	X	X	X				X	
Design Model - Electrical	X	X		X			X	
Design Model - Structural	X	X			X		X	
Design Model - Fire Protection	X	X	X			X	X	
Design Model Coordination & Review	X	X	X	X	X	X	X	
Design Model Clash Detection	X						X	
Design Model Redbook Review	X						X	
Design Model Redbook Corrections	X	X	X	X	X	X	X	
Design Model Coordination between Contractor(s)	X						X	
Design Model Family Creation	X	X	X	X	X	X	X	
Design Model Family Creation review	X						X	
ADPH Submittal	X	X	X	X	X	X	X	
City of Birmingham Submittal	X	X	X	X	X	X	X	
ADPH Comments incoporated and coordinated with Design Model	X	X	X	X	X	X	X	
City of Birmingham Comments incoporated and coordinated with Design Model	X	X	X	X	X	X	X	
Design BIM to Construction BIM Kickoff Meeting	X	X	X	X	X	X	X	X
Construction Model - Architectural As-Built	X	X					X	
Construction Model - Electrical As-Built	X			X			X	
Construction Model - Mechanical & Plumbing As-Built	X		X				X	
Construction Model - Structural As-Built	X				X		X	
Construction Model - Fire Protection As-Built	X					X	X	
Construction Model Coordination Meetings with Subcontractors	X						X	X
Construction Sub-Contractor Navisworks Models	X						X	X
Construction Submittals for Master Model Review	X						X	
Construction Submittal Digital Preparation for Master Model	X						X	
Project Model Closeout Review Meeting	X	X	X	X	X	X	X	X
Project Closeout - Architectural	X	X					X	X
Project Closeout - Mechanical & Plumbing	X		X				X	X
Project Closeout - Electrical	X			X			X	X
Project Closeout - Structural	X				X		X	X
Project Closeout - Fire Protection	X					X	X	X
Project Closeout - Navisworks Coordination Models	X						X	X
Project BIM Closeout	X						X	
Project BIM Closeout to Master Model	X							
Master Model Update	X							

Legend:
- LEAD
- SECONDARY
- TEAM MEMBER
- COA REDBOOK COMPLIANCE

- Master BIM Models

  The development of your facility master models is critical if you are working with an existing facility. If you are starting a new building on a project site, then setting up the parameters ahead of any design work will allow you to control the model "path" through the DBB or DB project delivery method.
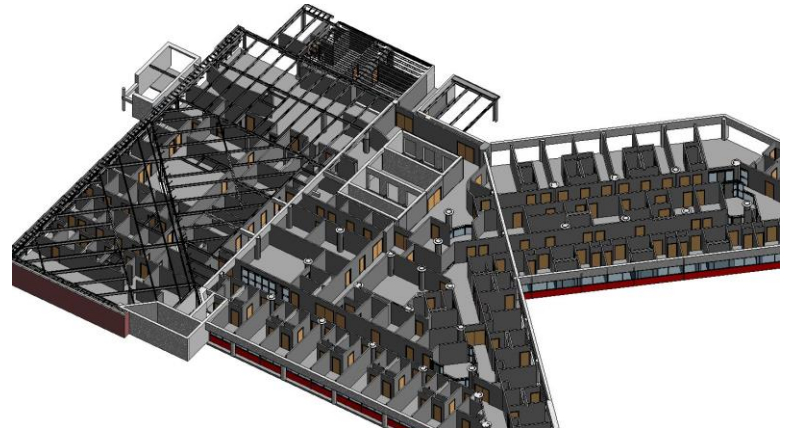
  If you have a large campus such as ours at Children's of Alabama, you will need to break the model down in specific segments and link them together. Our campus has over 2,000,000 square feet, covering multiple blocks, and multiple buildings, we broken it down as follows:
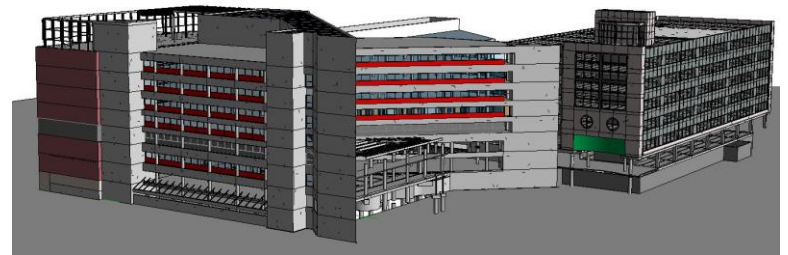
  Building
  > Structural Model (a model for each floor)
  > Interior Model (a model of each floor)
  > Exterior Model (a model of each floor)

  These models are then linked to create the master building model. The master campus model is created by linking each of the master building models into one file. This allows for faster and more efficient use of your BIM models.

- Master BIM Family Library

  There are so many resources that you can utilize to download families into your BIM model. Manufacturers and other vendors are readily making BIM families available for project design.

  The only "catch" to this is that often these families do not contain the

PROJECT TOOLBOX

Revit Families in model to create plan
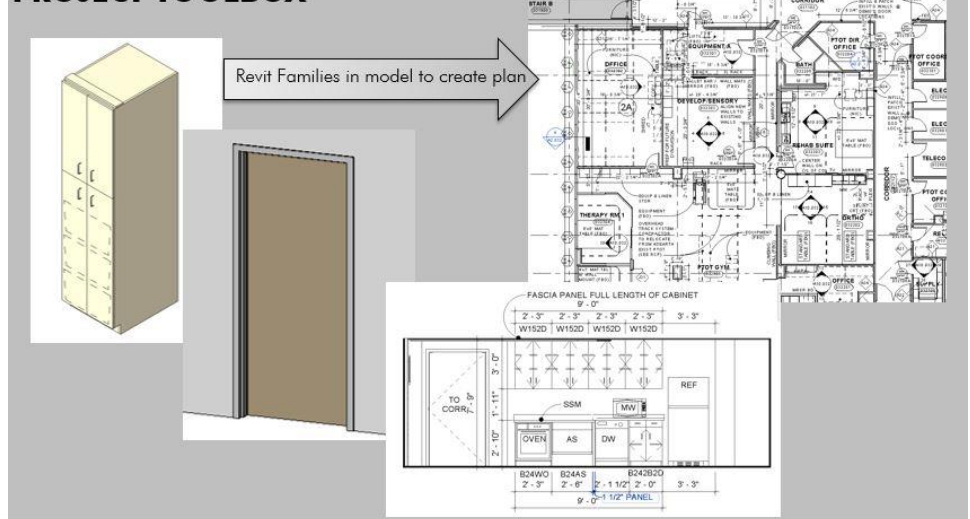
"smart" information that is needed, do not meet the Level of Development that you want in the model, or are nothing more than an imported CAD 3D geometry file.

We chose to develop our own BIM Family Library that is made available to all stakeholders. These families contain the correct geometry, the right parameters, and will schedule automatically with our project templates and schedules when used. Our master BIM Library has over 25,000 customized elements that allow stakeholders to basically do a "drag and drop" design and documentation process.

- Life Safety Code Data

Life Safety Code Data is critical information that should be contained in all your building models and be tied to your wall types, to allow stakeholders to know where these walls are located.

We have incorporated all of Life Safety Code and Barrier Management into our master BIM models so we can see graphically where these

walls occur. We have also developed filtered views that allow you to see in a 3D isometric view of where these wall occur.
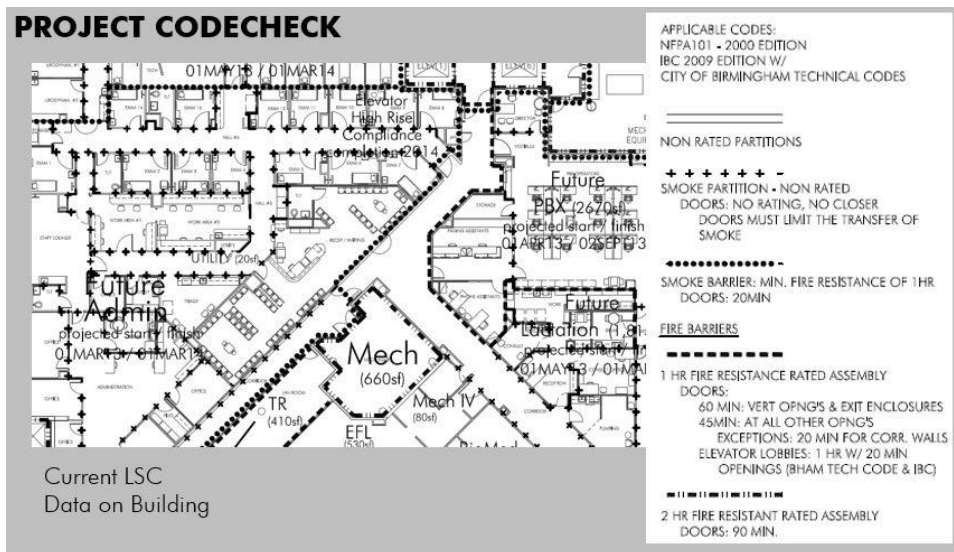
- Existing Facility Inventory Plans

Space Management and what departments or suites are in your building is another critical component of data tracking with your BIM models.

We utilize this in tracking departments, department square footages, and types of occupancy along with about 40 other items not only for internal real estate management, but also as a graphical reconciliation method for insurance and Medicaid reimbursements for patient care.

- Master Plan and Vacancy Plans

Another functional use of your BIM master model is keeping up with your campus or building Master Plan and Vacancy Plans.

We utilize our BIM master models to allow us to track areas of proposed growth and renovation, which allows us to change these "on the fly" to do "what if" scenarios. Additionally, it allows us to track areas in our building that are currently vacant and have room for potential growth.
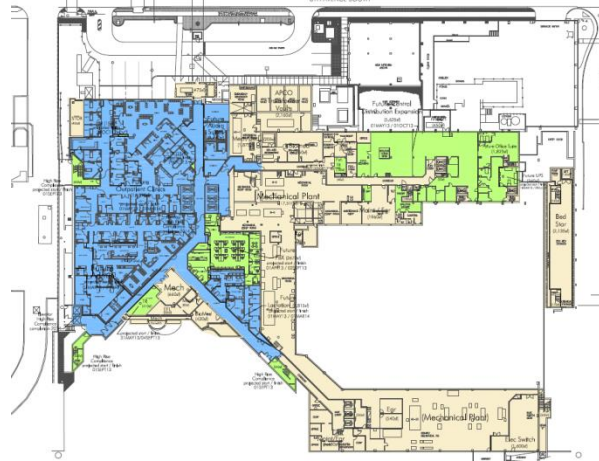
- Construction Communication Software
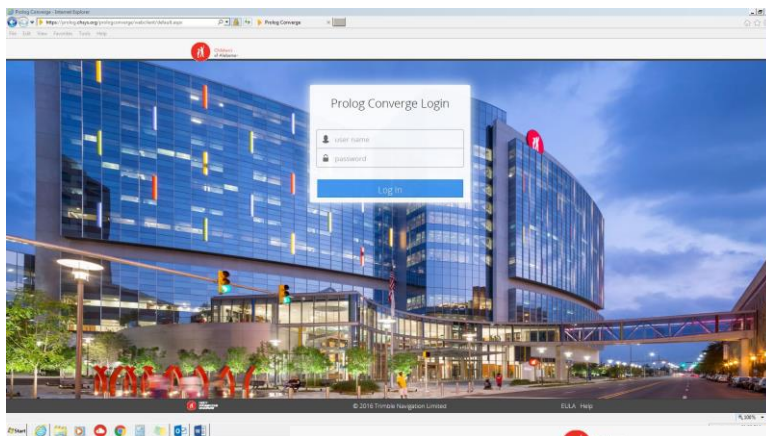
The investment in a software program that allows you to maintain your construction communication information and data such as: budgets, cost estimates, schedules, RFIs, Change Orders, and closeout in one location is not only a good investment in your facility money, it also allows you to link this data back into your BIM model.

We are utilizing a third-party application that allows the program to reside on our internal servers, but is accessed through a web portal for all users to access, both internally and externally. Users access the information through graphical windows base interface, but

behind the scenes it is not more than a SQL database that allows us to provide links to information which we tie into the BIM model using a shared parameter. This is illustrated in Section IV.

The biggest advantage is that as information is exchanged between stakeholders, automatic notifications are sent out when information is uploaded, exchanged, or modified.

- Typical Room Sizes and Standards
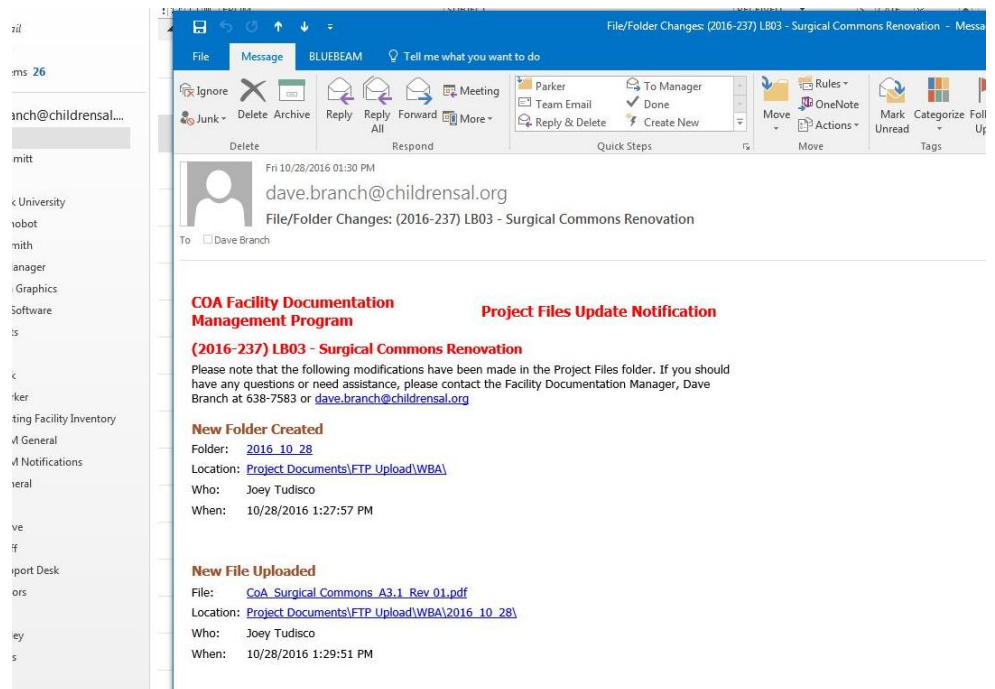
We have setup each of our typical room styles fully modeled in BIM so that each room contains all of our standard families and other pertinent data for stakeholders to quickly develop their design projects.
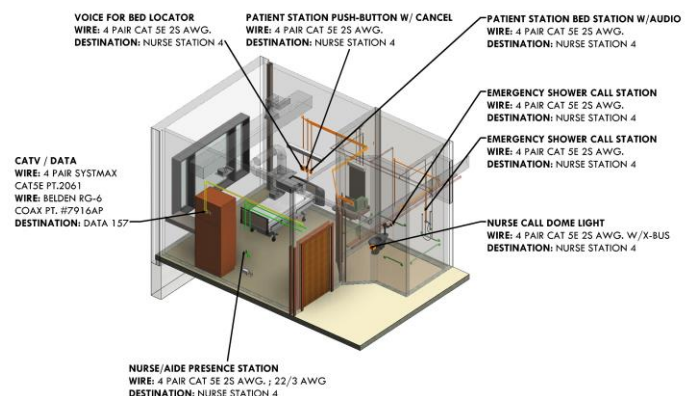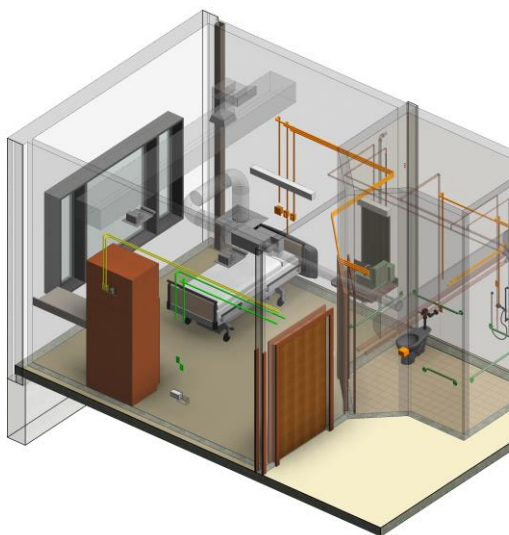
- Shared Parameters

Having a master shared parameter file is where you leverage the "I" in BIM.

We utilize a master shared parameter file that all stakeholders have access to downloading and using when they are working on one of our project files. Our master shared parameter file is maintained and updated by me. When items need to be added, stakeholders notify me, the parameter file is updated and it is re-distributed through our construction communication software program.

IV.   Cultivate, Nurture, and Preserve the Process

Learning Objective: Understand how the BIM model and BIM data are transferred and managed in a postconstruction environment.

The project is over, the building or space is occupied, and your BIM files and other data are completed. Now what? You have finally reached the last segment of the facility documentation management lifecycle – Assets.

This last segment does not end with the project completion, but you will actually take your process into a "perpetual care mode". Key stakeholders in this segment of the lifecycle will continue to monitor and update the master BIM models as needed, so information and data are current.
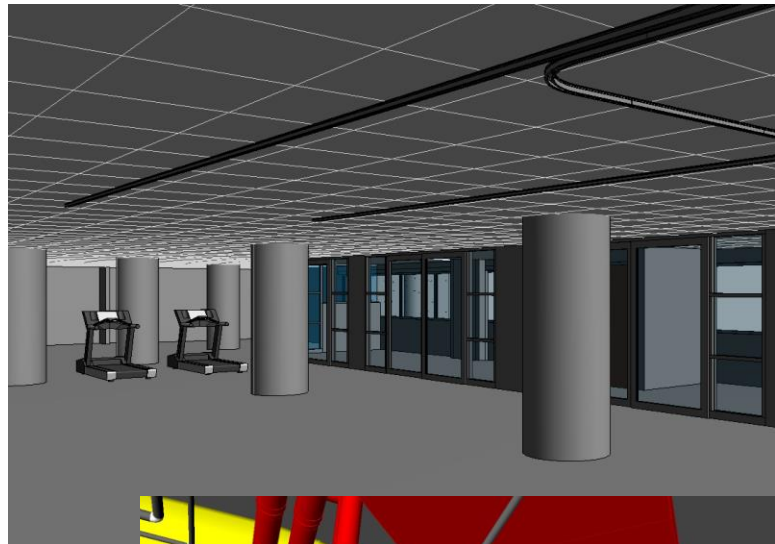
Cultivate the Process

 As your building ages so do the systems, finishes, assets, and other components of the building. Things will change or need to be replaced. As these situations occur you will need to replace or "cultivate" the data and families within the model with the newer information.
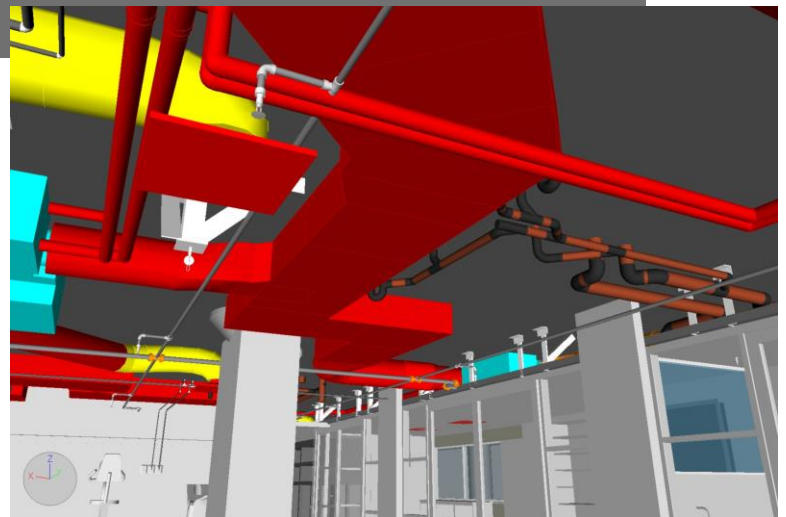
Nuture the Process

In addition to replacing or "cultivating" data as it is needed to be replaced, you want to "nuture" or educate your stakeholders on the data that you have and ensure that information, such as warranties or preventative maintenance data, is being followed.

One of the primary ways the whole process comes together is by setting up ways to allow stakeholders to review written data with the BIM model graphics.

Having the ability to have your maintenance staff use their iPad or tablet to scan a simple QR code that accesses not only the BIM model and the written data while at the equipment is very beneficial. It allows the worker to save time by having the information immediately available.

Preserve the Process

As your building or space is reaching the end of its current lifecycle and either renovation or additions are on the horizon, you want to ensure that you update your master BIM models and archive or "preserve" this data. Even though the model will change and new information will be replacing old data, it is good to keep an archived copy of what you currently have.

This is important as you modify existing building systems, or in the future need to troubleshoot areas that are renovated and are trying to determine how systems were originally in place before the most current project shown in your BIM model(s).

Conclusion

Upgrading or creating a customized facility documentation management program and all the processes that are associated with it, is both time-consuming and labor-intensive. However, the benefits that you will reap from doing this outweigh any of the cons associated with it.

Understanding that once you begin this process, it will require you to be constantly aware that you need to change as technology changes, your needs changes, or as growth occurs.

If done correctly, you will quickly update the life support system of your facility documentation management program.

Always remember **Begin with the End in Mind**

About Children's of Alabama

Since 1911, Children's of Alabama has provided specialized medical care for ill and injured children. Ranked among the best pediatric medical centers in the nation by US News & World Report, Children's provided care for youngsters from every county in Alabama, 41 other states and eight foreign countries last year, representing more than 677,000 outpatient visits and more than 15,000 inpatient admissions. With more than 2 million square feet, it is the third largest pediatric medical facility in the U.S. Children's offers inpatient and outpatient services across its Russell Campus on Birmingham's historic Southside with additional specialty services provided at Children's South, Children's on 3rd and in Huntsville and Montgomery. Primary care is provided at more than a dozen medical offices in communities across central Alabama. Children's of Alabama is the only medical center in Alabama dedicated solely to the care and treatment of children. It is a private, not-for-profit medical center that serves as the primary site of the University of Alabama at Birmingham (UAB) pediatric medicine, surgery, psychiatry, research and residency programs.

Benjamin Russell Hospital for Children

Quick Facts

- $400 million dollar construction project
- $25 million dollar donation from Ben and Luanne Russell founder of Russell Corporation
- 12-story building exceeds 760,000 square feet, making it the largest medical facility expansion in the history of Alabama.
- The Benjamin Russell Hospital for Children is LEED-Gold Certified.
- Bed license will increase from 275 to 332, plus 48 NICU bassinets.
- The Benjamin Russell Hospital for Children accommodates projected growth in patient volume, anticipated medical technology needs, planned consolidation of pediatric services and a family-centered design that will enhance patient and family comfort.