JOSHUA M. LANNEN: All right. We'll get started. They closed the door so. How is everybody doing today? Good? Survive last night? No bruises? Didn't pass out like the woman next to me at the bar? It was kind of interesting.

AUDIENCE: [INAUDIBLE]

JOSHUA M. LANNEN: So I'm Josh Lannen. I am quality control manager and quality assurance manager for Bond Brothers in the Northeast region. We're based out of Everett, Massachusetts. We do work pretty much all over. So

I'm going to talk today about transition from building ops-- or from Field into Building Ops. I'm not going to get really into the weeds on some of the finer details. It's more of a higher level, just lessons learned of what we went through and the things that we learned mostly by mistake and also by not asking the right questions.

So the Class Summary, you guys all got that. It's in the hand-out. I will be posting all of these slides after the presentation. So you don't have to take screenshots if you don't want to. I will upload this whole presentation for everybody.

So the things we want to talk about today, just how to ask the right questions upfront. The project that I'm going to highlight, we didn't know that we were going to do Building Ops at the start. So we just kind of randomly set it up, and then all the pain and suffering that went through that. And the thing I would stress with that is, just in general, it doesn't matter if you're using Building Ops or something else, these are questions we should be asking anyway of our clients before we give that.

So, just show of hands, do we have [INAUDIBLE] contractors, architects? OK. I only get to pick on one person. Owners? OK. Anybody else that doesn't fit in those categories? What do you guys do?

AUDIENCE: Engineers.

JOSHUA M. LANNEN: Engineers? Oh, architects, engineers, kind of same thing. [LAUGHTER] I'm a civil-- I say that as a civil engineer, but with a contractor perspective. We all need the information from the design team. I'll put it that way.

AUDIENCE: [INAUDIBLE]

JOSHUA M. LANNEN: What's that?

AUDIENCE: [INAUDIBLE]

JOSHUA M. LANNEN: I do a lot of stuff with different groups, so I have to know how to recover quickly. We're going to talk about the equipment matrix and how it transfers from Field into Ops. And then just again learn how to engage your clients and your design teams. Talk to them and just kind of understand some of those basic elements that our clients may find important.

About Bond, here's my-- this is what happens when the marketing team gives you slides that you have to man, so I'm going to go through these really quick. But just what we do. These are markets for a civil infrastructure company. We do electric and gas transmission. We do district energy, which are small power plants. We do health-care work, anywhere from $5,000 jobs for replacing a door up to $80-$90 million lab facilities. So we do quite a bit. Education between universities, elementary schools.

We're a family owned company. We've been in existence for about 104 years. We're on the fourth generation of ownership. So we all take a lot of pride that we actually interact with the owners and their family. This is a map of just where-- I pulled this actually out of BIM 360 Field. This is where we have a project ongoing right now. Every one of those dots represents a project that we have. Some of them are big. Some of them are just tiny.

And I'll just skip through these. This project, actually that's the first one I worked for at the company. I've been there for five years. That was on the campus for Harvard Business School. So these are kind of the type of education projects we do. Health project. This is a hospital that we did. Oops, wrong one. Hospital and then just renovation of inside some other hospitals.

We do work on-- being in Boston area, we have a lot of power plants and different maintenance, central utility buildings for all the universities. We work on quite a few of them. We also do big transmission lines and gas work. So we have a pretty broad portfolio of work. And me being the single person, I get to take all that knowledge and apply it and spread out. I'm the single person in my department for a company of about 1,000 people, and it does $500 million worth of work. We do our own laser scanning. We have a quality control system.

We pretty much exclusively use BIM 360 Field.

So how do we get into this, and what we're talking about? We started with the equipment matrix. That Harvard Business School project, they said, hey we want to have a fully populated equipment matrix to go into our RFMS system when we're done. That was about the scope of work they gave us. They said, here's what we want.

And they wanted the equipment to be barcoded and they didn't give us any kind of standards. So we kind of went on our own. We had probably over 400 hours worth of time spent building and populating this matrix. We had design changes that never caught up to the matrix because it got so big. And it made information inaccurate.

One thing were locations. They changed all the locations on us at the end of the project. So everything we had in there didn't line up anymore. And if there's one thing you know about Field, you cannot change the locations after they're set without re-assigning them to everything.

And the design information, we never did a model that as built that just didn't keep up with everything. So we ended up with a lot of discrepancies.

We also had information overload. Six hundred and-- almost probably more like 700 pieces of equipment we put in there. We had 256 equipment custom categories in there. We probably had for each equipment type, we had probably over 150 equipment types, each with 10 to 15 different categories under that. So it was a mess. I'll just put that. We loaded in over eighteen hundred attachments, between ONM manuals, photos, submittles, everything.

And what do we get? This is showing my equipment types. We had this. I mean, look at these numbers. They're going up to 72. And that's just for that-- that we had this for everything.

So we went and said, we can't do this. And how do we get there is the design team and construction team, we learned that we didn't talk to each other. We didn't know what the client wanted. They didn't know what they wanted. And we tried to rectify that.

We had too many custom fields. We had too many types. We unloaded unnecessary pieces of equipment in there. We put it in light fixtures because we thought, OK, if they want to track that, we know at least what the model number is. But this job, I think, had over 150 different types of light fixtures. And they changed constantly. We had things in there like panel boards. There's not really much to maintain on a panel board or a terminal box. Some of them are just

a simple hand volume damper.

We had a single source of input, meaning we only a one person putting all of this in. So it was very, very labor intensive. And the person doing it, she was very smart, but at the same time she was a co-op, and she was kind of making it up as she went, with little input from anybody else. She did a fantastic job. If you look at the detail that she put into it, it was remarkable. But it limited what we did, and it limited the focus of information we could gather from it.

And we also started way too late in the project. So you'll actually see that the case study that we did is kind of the same thing.

And then we made equipment-specific QR codes. And a lot of you will say, well, you want to have that. The problem with that was, is it was very labor intensive to place them. You went up to a piece of equipment, you searched through your sheet of barcodes, you put it on the piece of equipment, you mapped it. It took a very long time to go through that process. If you imagine 665 pieces of equipment, and you're trying to do that times that. If it takes 10 to 15 seconds or even 20 seconds per, you can see the manpower. You can do the math. It adds up very fast.

Custom fields. All those 256 custom fields we put across there, a lot of them were redundant information. There were things that you can find in an ONM manual. There were things that if you did a proper commissioning checklist, that information would've already been there. You didn't need it as a field, a custom field put it in there.

So we took that, and we went round two. We're going to scale this back, and this is going to be a proof of concept that we can keep it small, manage it, and then we'll scale it up from there. So this now is another residential building for a university client in the area.

We scaled back the custom fields a lot. We still had too many, but we did scale them back. We focused on mechanical equipment with moving parts only. So things that we could say need maintenance, or it could break down, that someone would be interacting with.

We started the building matrix when we were doing excavation on the project. So we started very small. So we weren't scrambling and trying to get that information in. We created random, nonspecific QR codes. So we could just walk up to a piece, stick it on there, map it to the equipment, be done.

Keep in mind that we did this as we were going do it for construction only. We had no real intent to turn this over to the client. We were doing this for our own education, our own learning experience, to see how we could actually maybe potentially someday sell this to a client.

And we started populating the matrix as soon as the equipment was installed. Boiler shows up on site, we tag it, we put in that information, we start recording information. So then we could have-- we had a series of co-ops that would actually do that work. And then we would track the progress of installation. So instead of trying to just grab everything at the end of the job and put it into a matrix, we were doing it as it came on and as it was put in place. Because once it's in place, we were pretty sure it wasn't going to move, and it'd be accurate.

So then came the question from our client. Autodesk sold them this great product. And they said, this will work with Field, and your client's one of our great Field users so-- So the client came to us, and we said, yeah, we did. We can do that.

And the way they sold it, as they said, well, here's why you can do it. Your traditional turnover, it's paper, it's CDs, DVDs, flash drives, big PDFs. It's static documents. It's all that. You know, they say, it's a mess. We all know the boxes, and reams of paper, and trees, and forests that we destroy just to give paper to our clients. It's a lot. So this was sold as, hey, we can just take that and-- we all know what the owner filing system looks like. We do this.

Initially we put it nice and neat like this, and then eventually they store it in a basement of a building somewhere like this. This is an actual project we're working on right now. So you can see that it's been water damaged, who knows, the rats or mice have probably chewed at it. So this is basically a little loading dock off the side of a parking garage. It's where they're holding their ONM manuals and their project documents for the building that was done 50 years ago. So it's static. You can't find anything in there.

So the end result, you end up with waste. You end up with somebody-- you know, how do you lose money? I found this statistic from 2010. $89 billion in the industry is wasted on people trying to find something. So when you look at back here, you know, that's a lot of money you're losing that you can do it.

So with the sales pitch from Autodesk, you know, they said, well, we can streamline it into this process. I show the slide here because it's one thing that-- to get this set up, you actually have to go and enter a code that gets texted to your phone so you can access it via the web. So you

get in here, you have your nice little project. I went backwards again.

You click on this little button here to generate an export code. It gives you that export code. You go into Field, and you click on Building Ops. You take that export code, you put it in there, you hit Export, and they said, hey, we'll send you an email. So they sold it to us like this, and we said, yeah, we'll do it. We got the matrix set up. Believe it or not, we actually were prepared for this, and you're in luck because we have it set up already. It's not going to cost you anything. We're going to use it as a learning experience, proof of concept, because we are already doing the work. We probably could have been charged for it, but at this time we didn't We were seeing it as a future service we could sell to all of our other clients.

So we did our first test. They gave us their code for their system and their test project. We went to Building Ops, and bam, just like that. Minutes later on their screen, it showed up. They had all of the equipment that we did on the first trial. So this was very early on in the-- we were still doing very much in construction, but we had the information. We could see it. We're like, wow, this is fantastic.

We have our fan coil units. It's there. Get down into it. Huh, show you a picture. There's pictures. We got PDFs, ONMs. It's all there. This is great. And it's on the mobile app. This is the solution to all of our problems. Now there's the ONM. We have the nameplate. So we were all very excited. The client, us, like, this could be a game changer for all of us.

Hit the easy button. We're just going to keep going. Well then, we've got to wait. We started getting down and looking at the data that came over. And it wasn't terrible, but at the same time we had things for construction like this that showed up in their database. It's stuff that doesn't make a lot of sense to them. They will never use it.

If you go back to that previous project I showed you, this is what it looks like. There are actually six screenshots I had to take on my phone to capture all of the custom fields that migrated over into Building Ops. So one thing I will caution you on with Building Ops, and if there's Autodesk people in here, I'll pick on them. You can't get rid of this. So you have to be very careful. You have to work with Autodesk to have this scrubbed out of it. And that's what the client's doing right now.

And it's also-- this is kind of what I was talking about before though. If you look at some of these things, these categories of-- you know, the gallons per minute. This is all in the ONM manual. This was all done during commissioning. So it didn't need to be there. So when you

look at it in aspect, there's a lot of things that we can handle in different ways. So if you are setting a job up for Building Ops, keep this in mind. It gets ugly, and it gets ugly fast if you get carried away with it.

So the other thing we found is that the properties don't always align within Field and Building Ops. There are things that are, here's what it's called in Field, and then it's called something different in Building Ops. So that was a point of frustration for us. Some of that alignment has changed, but some of it hasn't. So there's still some things that really need to be worked out. But it is still better than the alternative.

So some other factors we had. Design locations. They didn't match. We did it off of the drawings. The programming, the end users for this space, they have it. As we all know as builders, you get to the probably halfway point in the job, and the signage package finally comes out, or it comes even later. And it's because they're still trying to figure out what to call their room numbers based on the programming. So we had everything that did not match the end user. To this day, actually, when we finally do our data dump into the client's system, they're going to have to go and rename all the locations within Building Ops because we didn't set it up that way. Because we set it up off the drawings.

We use general asset ID tags, because we were going to use it for a contractor. We didn't care what it was called. We just knew what was on the drawings, and we pulled it off. The client, they have very specific things. One thing they learned in this process is they actually weren't as sophisticated and organized as they thought they were. As we started flushing some of these things out, they really had to ask themselves some hard questions about how they named things, how they tracked their assets. But those generic tags we did, they all had to be changed.

The QR codes. We didn't use a campus standard. I bought a QR label from avery.com. I used a free app. We put them on a sheet, and we just made them. So it didn't apply to anything. We do have some clients-- I'll use Brown University for one, where we're doing a renovation job. They actually had pre-barcoded all of their equipment and even their rooms. So we were able to use the equipment matrix, and Field actually mapped things through that. So the nice thing about Field is it will map barcodes and QR codes. It's just how you set it up. It's very important to understand, though, what your client has for a standard because you'll either have to remap it or rechange it.

One part that came out of the conversation with them, though, is that you could actually-- they can change the name. So as long as the equipment tag is there, they can change it. But it doesn't look right to them.

And then we-- that's what I said earlier. They had the realization of inconsistent processes and standards. What they were using in one building was not what they're using in another. So they had to rethink their entire portfolio out of this. Which was good. They did a lot of self-reflection of how they were going to go forward with their systems and how they were going to do their management.

So, the big questions of why I think, or how do we avoid this? Where do we start? You want to attack the root causes of the problem. And really the root causes that I have-- anybody that does Lean-- you've got communication problems. There's barriers. There's silos. There's not the right people in the right room at the same time. And there's variation. There's so many different things between changes and different groups, especially when you meet with these big institutional clients. What the end user in one department does, they don't even talk to somebody else there.

And then the construction, they're just focused on, let's get the job done for the price that was agreed to so I can move on to my next one, and nobody will complain about my budget getting more money. But that's where one of the biggest problems is because you end up with something like this. I think we've all seen this. This is my favorite ones. I use it for my quality control. Nobody is on the same page with anything. You know, this is how everybody says we-- just tell them what they're going to get. This is how we understood it. You know. Here's how the owner thinks they get billed for it. They always say, hey, how come I paid for this and I'm getting this.

And then they talk about support. And then this is what you really need. So the more people you can get into the room and actually drill down to what that need is going to be, that, I think, is where you get your best starting point and you're going to be your most success with any kind of project with this. You know, just not being on the same page. You're going one way, going another. And then you end up at the same point in time but with completely different results.

So, the first thing I would say is just engage your teams. Start asking questions. Get with the facilities guys. Get down all the way to the level of the people that are doing the maintenance,

doing that work, and find out what they actually think their need is and what they're going to do. We had a-- I'll get to that in a minute. They're the guys that are going to tell you. They're the workers that have the information of what's important and what they need. And it'll save you a lot of time too, because if you can cut out all of the unnecessary stuff that people don't want to have and they're not going to use, you don't have to deal with it either, so it saves you time.

So some of the initial questions you ask is, does your client have a campus standard, a building standard? Is there anything that they have that they should follow? If they don't, ask them have they looked at it or are they looking at it? Maybe you can help them develop it? But if you don't even have that simple starting point, you're immediately not even talking the same language with them.

Do they have a current system for CMMS, or FAM, whatever you want to call it? Forgive me. I'm just a dumb contractor, so I don't know the technical terms, but-- Find out what they are. You can do all of this work, and when you take Field and you export it out as a CSV file, you get all of the tablet information, but you don't get all of the attachments. So you may load all these attachments in there, and they have something like Maximo, and it doesn't come out in the spreadsheet. So that could be a bunch of extra work that you do unnecessarily.

What are the parameters? What does their system receive? How does the data have to be formatted? One thing nice about the equipment matrix within Field is you can put it in CSV. You can manipulate the columns, move them around, rename them. And that can work with almost any management software. With that understanding, you can figure out how to populate your matrix ahead of time.

And then again, who is ultimately going to be using it? Now what is that person? What is their capability? How are they going to use it? And what does that person find value in? We've talked to people, would it be really good to have the model? No, I'll never use the model. I don't even have a smartphone. I walk around with a flip phone all day long. So giving them that access, will that be of benefit to them? They'll probably tell you it won't. Somebody will say, yes, I want that. I need that. And make them prove it out. Talk to them. Is it a nice to have or a need to have?

Again, talk to the owner. Find out what they're actually going to be doing preventive maintenance on. Some things, like air handling units, they're going to have a set schedule for

doing their maintenance. Boilers. Fan coil units. Pumps. These are all things that when they break down, everything hits the fan, no pun intended. And they need to know information, and they need to know it fast. So these are the things that you want to probably focus the most on.

Because when some professor at MIT who's got a Nobel Peace Prize or a Nobel in something, in physics, and his laser breaks down because the chilled water pump broke, it goes crazy. Or when classrooms in June can't get air conditioning, and all these kids are sweating their brains out, it gets ugly. I was actually on campus when the chiller went down, and it was nuts. It wasn't even because of us. We just happened to be there, and it was departments calling all over.

What are they not going to perform maintenance on, but still want to have information about? Things like switchgear, expansion tanks, panel boards. I know I said panel boards earlier, you wouldn't, but that be may be information they need where they could put the breaker schedule in or they know the type. Some panels aren't that good at telling what kind of breakers they are. It is an option, but just find out from the facilities people what they actually want.

Besides the standard data, ask about each asset. What's your asset ID system? What is you're tagging system? What do you actually need? Do you want the model number? The serial number? Who to call when it breaks? If it breaks, where do I get my spare parts from? What are the model numbers of the spare parts I need, or what should I have on site? All of these different things. For each asset, it's going to be different. For each model or each piece of equipment, it will be different. So knowing that ahead of time, again, will help you populate this with the information that the client actually needs and not what you think they need.

So there's some other things that go into that can really mess us up is locations. I can't stress that enough. The locations are probably the biggest thing you cannot change. So once they're in there, they're in there. And it's the battle we're having right now. We actually, because of this project, we have another project for another university, where we preached this to them ahead of time. And they said, OK, great. We've got it locked down. And then about two weeks ago, we got a very apologetic email saying, we kind of changed all the room numbers on the third floor. Is that going to be a problem? Luckily it's a small building. There weren't that many rooms on it. And we hadn't gotten too far in the process, so it wasn't a problem.

But just keep that in mind. If you can get that set up and locked in, it'll also help you with simple things like your architectural-- help you with your punch list. I don't know how many

times you guys have done punch lists where you're going through and about punch list time, the new signs come in and none of the room numbers matched up. So you send a co-op around putting paper on every door. So room number 305 is now 406.

All the contractors know what it is. If you can locked that down, it'll save you because then your door hardware will match up. Your equipment will match up. Your punch list matches up. Your drawings. Your model. All of that goes in there, and it doesn't change.

All these slides here are questions that my client was going to present with me, and they couldn't do it. So these are questions that they actually were asking themselves internally. And this is from their perspective. I should point that out. But are there specific codes that they want to see? Do they want a QR code or do they want a barcode?

This is what we did. Here's just a basic one that we threw on another project. We just put our logo, and we put the room number on it. That's good for us. It may not be good for the client. And the client may not want our logo on there. We actually did one with this one with their logo, and now it's whatever.

The other thing, too, to about it is the material you want the barcodes made of. We only wanted these to survive construction, so we didn't care what happened. They were paper barcodes. If you're going to actually sell this as a service, find out what kind of environment it's going to be. Down in your boiler room, where it's really hot and humid and steamy, you're probably going to want a PVC-coated one that has some durability to it. You may even need to spring for something more than that.

There are some manufacturers, if you get some of these things figured out ahead of time, you can have them pre-barcoded for almost no charge from the factory. That saves you a lot of time. So when it comes in, that's already built into the piece of equipment. You can get that information in the submittle with it. So there's all kinds of steps you can take on that.

It seems very simple, but we had a lot of-- some of these codes didn't survive construction because a pipe let go, and you know, it was paper. It was done on a laser jet printer. But like I said, we didn't care. Because we never [INAUDIBLE].

Does the owner have any specific naming conventions? I was in a session before this where, you know, we go by what's on the drawings. What the engineer gives us. It's a fan coil unit. They may call it something different, or they may want it to be called something different. So if

we just go through the equipment schedule, FCU one through 20, that's all it's going to be. They may have their own little prefix to that that tells you what building, what floor, what room it is. So it could be a really long number that gets truncated down to something. But it is information to have. They may have, again, spatial data where it is.

So do we include the model or not include the model? This was actually a really big discussion that we had. The facilities people said, we want the model. We want it. We want to be able to tag it. We want our guys to navigate around it. And the guy in facilities said, my guys can't even use a smartphone. No knock on them. They're really good at fixing things. But they don't use a smartphone. They're not going to be going around in a model, especially with building ops because it only works on a phone. So you think of a guy that maybe he's in his 50s, starting to lose his sight, and he's trying to navigate around in a model like this, it's not going to work.

So we've actually internally had this conversation. We've kind of pumped the brakes on it saying, we don't think the model's necessary. It's a good tool to turn over to your client. But I don't think the pre-populated views are worth it at this time. That will probably change as more people get more tech savvy and the interface gets a little bit better.

But for now, I wouldn't recommend it. Because really, everybody says they want the model, but do they actually need it. How are they going to use it? Will they use it? I mean, yeah, this is great. But a picture, you know, what does that really tell me? If I can maybe touch on it and see what the asset tag is, but pretty much if I'm standing that close to it and I got the view of how it was modeled, it's probably not how it was built nine times out of 10. And I'm also standing right in front of it, so I already know what it is from the barcode.

So that's my personal opinion. I don't think at this time the model is worth it. It's good for everything else it does. It's good for populating this. But I don't think a lot of times [INAUDIBLE] doing the view ports for it.

When you look at a picture, the picture is so much better. You can take an as-built picture of it. The guy actually sees how it was built. You see everything that was in there, especially before walls go up. We can't put it in here, yet but we've started using the Ricoh Theta S 360 camera on a lot of our projects. We set it on a tripod. It takes a single picture of absolutely everything in the room in one shot on a JPEG right before we board up the walls.

So if you look at the model, they may have that pipe go straight down. You'll see that-- the one

I'm thinking of for this lab, all the electrical conduit, if the outlet was there, it actually went up and over and down and across the wall. And it crisscrossed all over the place. They weren't home runs down from the ceiling. It went all over the place. Those simple pictures tell a lot more because I guarantee we didn't model anything like that. We don't model blocking. We don't model small pipe. So those pictures provide a heck of a lot more information to your clients and to your end users than I think the model ever will.

If they can start getting laser scanned data in there, that I think would be a big game changer.

AUDIENCE: What was that camera? name?

JOSHUA M. LANNEN: It's just a camera. It's called the Ricoh Theta S. I can show you afterwards if anybody wants to know about it. But it's a $300 camera. It's about this big. And it's amazing. It's one of the best pickups we've ever had.

So in the absence of all these things, when I look at this, in the absence of direction from your client, the things I would tell you, these are the things that I think are the most important. And all the clients I've talked to and the information that we're going through right now, is when they want to scan that, here are the things that the end user really wants, what they think is important to them. Who manufactured it? What's the model number of what I have? What's the serial number for what I have? What date does the warranty end? What is the suggested preventive maintenance schedule for it? What are the intervals I should be performing work on this? And who do I call when it breaks? What is my customer service? What's my customer support number? And can I have the ONM manuals and the submittals? And how can I quickly find that information? No submittle

And so I'm actually-- I told you I would be quick. I didn't expect to fill an hour and a half, but-- Start your communication early. Engage your client, especially the end users. I know I've that quite a few times, but it's really important. You've got to know who your real customer is. The construction team you face every day, they're really not your client. The end user is the customer that you're trying to serve.

And when that customer can't find information, they're going to bark up the chain that, don't hire Bond Brothers, don't hire [INAUDIBLE], don't hire Turner. Don't hire them because the last package of turnover we got from them was garbage. We couldn't find it. But on the flip side, if you give them a very organized and detailed thing that meets their needs, they speak highly of you. Hey what we got from them was fantastic.

Some of the turnover packages we've done for clients because of using BIM 360 and the equipment matrix, they've made it their campus standard for how they do certain projects. Like, when you do it, you must put it in this format. And it's good. It's actually a good marketing thing.

Publish your spreadsheets and agreed upon fields and properties and naming conventions. Have a dialogue. We've done this on our current project. We sat down, we came up with everything, we put it into a spreadsheet before we imported it into the project. We then sent it to everybody, saying, guys, based on the drawings, based on our conversations, this is what we're going to use. Is that going to be a problem? That opened up the dialogue about, no we need to change this. We need to have this property added in. The number needs to include this sequence. It's really important.

Redo it, send it out again, have a conversation. That project, I just got an email a couple days ago from the project team saying to the client, all right, we haven't heard anything from last two weeks. Now we're going to assume that nobody wants anything to change. You're fine with the standard we've set up. We're going to move forward with this.

And despite your best efforts, things are going to change. It's the nature of the industry. We had that job. We thought all the locations were locked down. They changed the third floor. They're going to change a model number on you. They're going to change a manufacturer because it's cheaper. But don't get bogged down on that. It is kind of, it is what it is. I hate that saying. But things will change. But if you keep moving and keep it positive, it it will work out. And your client will recognize that effort. All of ours have so far, and it's been good.

That actually is all I have. So if you were expecting to spend an hour and a half in here, I am sorry. If you're happy to get out of here, you're welcome. But I am available. If there's any questions that anybody has, I'll be more than happy to answer them. I will be posting these slides, too. Yes?

AUDIENCE: Can you transfer this stuff over to Building Ops. Like, you can have attachments and checklists and things [INAUDIBLE].

JOSHUA M. LANNEN: The checklists do not transfer. And that's a problem that I've talked to them about. Because the checklists don't transfer, you don't get all your commissioning documents, which I think is a problem. So what you have to do with those is run the PDF report of them, and then set them

as a separate attachment. But you can put-- all the PDFs do come over with them. Yeah?

AUDIENCE: [INAUDIBLE]

JOSHUA M. LANNEN: It is just a phone app. You can run it on your iPad. But it more mimics-- yeah, it's weird. And I can show you what it-- it's meant for the phone. And you have to do the same kind of log in as if you're logging into the website. You got to get a code to do it. And it will run on it, but it just doesn't function that-- yeah.

AUDIENCE: It's a great thing for phones. I have it on mine.

JOSHUA M. LANNEN: Yeah, it's--

AUDIENCE: [INAUDIBLE]

JOSHUA M. LANNEN: I had a different answer. Yeah, that's what it looks like.

AUDIENCE: They recommend we use the internet interface if you're going to use it.

JOSHUA M. LANNEN: Yeah. But then you can't really use the barcode scanner, which to me is one of the biggest values to it, is that barcode--

AUDIENCE: [INAUDIBLE] doing like you would an issue in Field, [INAUDIBLE] scan it, and get it started, then go back to the web interface to--

JOSHUA M. LANNEN: To clean it up?

AUDIENCE: Yeah. Put in more data, you know, [INAUDIBLE]

JOSHUA M. LANNEN: Yeah. I mean, the tickets are-- yeah, it's meant to generate-- really what is, it's meant to-- I mean, I'm talking about all the set part of it. The stuff is really designed to manage tickets and manage maintenance. It's not really meant for full tracking. Do you have another one?

AUDIENCE: Yeah. Once you have all the information in, would you export that token more than just a statement of work. Get that back out of there. Some sort of spreadsheet, or--

JOSHUA M. There is. I don't have access to the owner side of it. But they are playing around. I've got a test

LANNEN: sample, that prep project I've been playing around with because I'm the contractor. They do have it. My client actually has been working on setting up the reports, setting up those metrics, and scheduling preventive maintenance items, building it in there so it sends notifications to people to do the work. Yeah. Oh. Go ahead.

AUDIENCE: [INAUDIBLE] transfer information from Field to Ops. You said locations of [INAUDIBLE] There's no--

JOSHUA M. LANNEN: You can change them once-- you can change anything if you really want. But as anybody that's used Field knows, if you change the location partway through, it breaks that link and it goes up to the next level of hierarchy. So if you go and, let's say some room number changes, it breaks that link to the asset in the [INAUDIBLE] that goes up. So if you had something in room 305 and now that's 406, you delete that. It goes back to it. It was on the third floor. So you have to go and remap all of those locations back.

They can fix it on the client end within Ops, and that's what our client's doing. But it's kind of a frustration for them because they're having to go through that process of changing everything. If we had just had the locations right-- it's not our fault because we didn't intend it that way. We went off what the drawings were, and they changed their program. Any other? Yep?

AUDIENCE: When you set up Ops, did you initially put yourself as owner? And if you pay initial [INAUDIBLE] fee or whatever, did you do that? How do you then switch that over to somebody else as co-owner for awhile?

JOSHUA M. LANNEN: So for this project, we did it under their license. They signed on to start using it. And we did everything to them. You can actually, I believe it's still the case, you can take Building Ops, and we're setting up portfolios for some of our clients, and they can go in there and view all of this for free. It's not until they start generating tickets on it that they have to pay for it.

So even if they're not going to use Ops, you can give them a lot of the function and power of it for nothing as a deliverable. Because you can take your matrix, put it in that, and they can view it. And then that electronic data transfer, that literally takes about 10 seconds to get the code and copy and paste it into the export. It takes a while to download into Ops and populate it, but it's probably the quickest transfer of information I've ever had to do. Yep?

AUDIENCE: If you were going to price it, how would you do that?

JOSHUA M. If I were going to do it, I would call up my Autodesk rep and ask them what the price was?

LANNEN:

AUDIENCE: I mean for a client. If they want you to deliver this, [INAUDIBLE]

JOSHUA M. LANNEN: I'm not sure. Because for tracking, there is a value to it. But some of the efficiencies that we've saved in working with the matrix and figuring out how it uses a tracking tool and getting our subcontractors and our commissioning agents and our engineers and everybody working in that database, I've kind of taken the position so far that I think it's a cost savings to the project. And we could potentially bill for it. But I don't think we figured out enough to do it. But it saves us. There's a lot of value.

In this project, when the pipe fitter foreman, we had to give him a different permission, but he went and did all of his checklists. He put in-- when they put the fan coil units in place, they started putting some of the model numbers and serial numbers in there. They were taking pictures of the placards, you know, the equipment tags, and putting it on the equipment for us. We had somebody go back and check it. But if you think about that staff that we would've had, it was a lot easier for them to do it right as they were unpacking and putting in place.

So there probably is something you would-- I mean, I think our proposal for that first job was several thousand dollars that we put on it. And I don't think we charged enough for when we did it that way. But when you get more people collaborating in it and more people doing it, the cost does drive down because you're spreading across multiple parties.

AUDIENCE: Were you talking about [INAUDIBLE]

JOSHUA M. LANNEN: Yes. Yeah, but that that's where you're upfront is. Everything that you would have to gather, you're gathering it in small bites and small pieces across the project as it's going on and as it's active. As opposed to, all right, end of the project, you want your retainage, I need all your ONMs, and I need everything. So OK, here's this big pile of junk that now we have to sort through. It was going in little tiny bits as they were going. Yes?

AUDIENCE: [INAUDIBLE] Autodesk rep. You can go get it right now. You can pull it down. Use it on your building. [INAUDIBLE] license per building. But also, it only tracks so many tickets. And then they stop falling off the back end. It's free to use if you only want to do, like, 50 to a hundred tickets. But it won't have the information stored. Feel free to use it how you see fit for free.

JOSHUA M. So for the data dump, that's how we're looking at it is, our client may never use it, but we can

LANNEN: give them as a service to show that this is what we can provide. And they see it because they can see all that information. The look on our client's face when-- I was sitting in a room with about 20 of their facilities guys. And when they watched us do the data dump, and all of a sudden you can see on the screen, it populating. There's the ONM manual for that. It was a big selling point to them. So they just have to figure out some of the other parts to it. Yep?

AUDIENCE: In your market, are the owners specifying the use of Building Ops, or are you going to clients and saying, this is a great for you guys? Or the client is like, we don't want it. We don't need it.

JOSHUA M. LANNEN: Yes, yes, and yes. So this client specified it because they bought it. Other clients--

AUDIENCE: Was that their first time using it?

JOSHUA M. LANNEN: It was. And they're still not sure they're fully going to do it. And they really do like it, but they have their own hiccups with it. Some of it's just their internal battles with it. Some of them say, we don't care. This is what we use. The university system in Massachusetts, they have their own system. They don't want it. But we can still provide it to them. As they see it, they're saying, we want to learn more about it because it is very simplistic. But then we have others that just, no, this is what we want. Give it to us the old fashioned way. I want my big roll of paper and my binders and boxes that I'm going to let the mice chew up over the course of history. So any other questions? Comments?

Well, I hope it was informative and--

[APPLAUSE]

If you have any questions, I'll be around. Feel free to come talk to me. Reach me on LinkedIn. Grab a business card, whatever. Please go on the website. Rank how I did. I'd like the feedback to see-- this is the first time I've presented. But All right. Have a nice day. Have fun tonight.