Thomas Schmidt: OK. Hello everyone. Can you hear me? OK. Now let's start with my session, "Clash Detective on Fire."

I have to apologize for the screen resolution. It doesn't fit. We have some problems with our computer here. I don't know why, but there are some technical issues. And you guys told me that there are also problems in some other classes. So we have to use this weird resolution here.

What's this session about? So today, I want to talk about firestop and how to solve firestop problems in the BIM models. So I will use and show Navisworks for that. I will show you how to use Revit, CADmep, and AutoCAD MEP, combine this into a Navisworks model, and run a clash detection specialized for fire protection.

So what are the main takeaways from today? So I will start with setting up the BIM model. So bring in all the needed information to a Revit file, to an AutoCAD file. Then, run the specialized clash detection, solve all these clashes related to firestop.

And later on, show you to bring this to our total station-- we have one here in the room-- to export the data to the total station, bring this to the construction site. And the last step, how to use the documentation system and the web to document all these penetrations.

Let me say a few words to the company I'm working for. So I'm with Hilti. We are located in Central Europe. We have a border to Austria and Switzerland. Also, Germany is not far away. Munich's two hours by car.

So we started 75 years ago, so we had a big anniversary party this summer. And this is how it really started, so this an original picture from Mr. Hilti in his garage 75 years ago starting his business with five people.

Now, we have more than 23,000 people worldwide. So in only 75 years, he built up this big company. We have a presence in more than 120 countries. We are one of the world market leader for professional fastening and demolition.

We are a family-owned company. So the son of Mr. Martin Hilti, Michael Hilti, is now leading the company.

Next one. OK, and I think this is what you all know Hilti for. If you come somewhere on the construction site, you see these red boxes-- two boxes.

We also have different business units. One business unit is our electrical tools. Here you can see this drill hammer. But we also have some direct fastening.

We can also use our tools in extreme situations, like this one, for example. We have also some chemical anchors, also one part of the Hilti business. Also, we have insulation systems, pipe hangers, for example. You can see a channel. This is pipes connected, or pipes hangers collected.

We have also some measurement tools. Here, laser, rotating laser. The total station, you can also see is standing there. And we have, last but not least, firestop. And here, you can see one guy firestopping a penetration.

So what's firestop all about? You may know this. We have a fire-rated wall here, for example. And there's a penetrating item, this plastic pipe, going through this wall. In the case of a fire, this pipe melts away, and this silicone expands and closes the gap again, so that the smoke cannot go through.

We also have some cast-ins. Also, this would be shown later for the total station, how to place these cast-ins on the construction sites. Also for fire protection. Here, these guys placing all our cast-ins on the foam work.

But we also have some software beside our hardware. So we have roundabout 50 people working in our software department. We have, of course, a website. You can download Revit content, for example, from our website. But we also have standalone software for our anchor systems and insulation systems.

Now, today, I want to talk about our first plug-in solution. First, I have to talk about firestop in general. So why is firestop so important?

As you see here in these numbers from 2015, we have half a million structure fires in the US. 2,600 civilian died because of fire. We have a lot of money lost, 10.3 billion here. So this is why firestop is really important, not only to sell our products, but also--

Thank you.

So what is really the killer in fires? So it's more or less the smoke. So visibility goes down-- you cannot see anything.

You cannot breathe because you have all the smoke. Smoke is spreading very fast, and maybe you lose directions and you cannot find the exit. So it's very important to firestop a building correctly, so you don't have all these problems.

So how can we safeguard this? So we can see here for an example of our cast-in Speed Sleeve. There you can put cables through. On one side, there is a fire. You can also see the smoke. At the other side there's no fire, and this is what our firestop device does-- it closes the gap between these two rooms here.

How to safeguard all these different things when it comes to firestop? So we need to safeguard the proper insulation, the correct product selection, the pre-design planning. This is what I show today, mainly, but also to make a professional installation, to have comprehensive approvals and the proper documentation.

If you think about firestop, it's like an airbag in your car. So if you don't have an accident and you're driving with a car, you don't even know that there is an airbag in your car, but you don't need it.

But in the case of an accident, you need to know is there an airbag? Is it correctly installed? Is it working? And the same with the firestop. If there's no fire, you don't recognize it. But in the case of fire, hopefully it works right.

And we do our best to make good products, innovative products for firestopping. But also not only making these products-- we have to safeguard that they are installed professionally. So we have our engineering services. So if you have any question about how to firestop a special situation, you can ask our engineering team.

If you have a need for engineering judgment, you can ask our engineering judgment team. We help you and support you on the construction side. But also, we have our software that recommends you suitable tested penetration systems. And this is all based on a BIM model.

So as I said, first time that Hilti has software besides standalone solutions. We have also solutions that plug in to different auditor softwares. So at the moment, we plug into Autodesk Navisworks. We have a plug-in for Revit, for AutoCAD MEP, and also for fabrication.

So all these plug-ins communicate with our software, see here in the center. That's what we call the Firestop Manager. All data comes in or out through this Firestop Manager.

I would like to present you the four tasks in this workflow to firestop a BIM model. So I will start with preparing the model, then run the firestop clash detection. Then assign UL systems and products. And the last step will be to auto-populate the Revit objects and AutoCAD blocks back to the CAD models.

So let me jump into the demo. And again, sorry for this bad resolution. But somehow, the guys here had a problem to set this up properly.

For this, I start with Revit. So let me open the Revit file. I also had to close this down before, because we had really problems to set this up. So I didn't have time to open this before. Sorry for that. So I have to go to my hospital. And I open an architectural file.

You can see in here Revit opening up. See the first floor, but I also want to show the full building.

And I open the 3D view of the whole building. I think some of you will notice this hospital. It's a demo set from Autodesk that I use here also for my demonstration. And let me open this model.

It's combined from different Revit models. So this is the architectural part. So let me open the structural part of this model. No, not this one. It must be this one.

So here, we have the structural part, mainly the floors. And we also have an MEP file. Sorry. Should be also here. Clumping file, this one.

Also in this model, we have later on some AutoCAD files. After the Revit part, I will open AutoCAD.

OK, so let's start with the first part of the workflow. We need to make sure that all information that we later need for firestop is inside the model. So if it comes to floors, we need some fire rating in the floors.

I don't know how you do this in your modeling. For bolts, there is this Revit parameter for firestop. For slabs, there's nothing, so you have to introduce a new attribute or a new parameter here. Or you can simply use our tool.

So if you go here to our Hilti tab. And we have here some functionality that we call Qualify. So we bring information to the slabs. I have selected nothing here, so I just hit the Qualify button.

No, I don't want to save this form. Brings up a new dialog, the dialog from the Hilti Firestop button. Let me start with the beginning.

First screen, we have in this model, in the background, we have 28 walls and 75 slabs. So I want to set up the fire rating of the slabs, so I open this here.

Double click, and you see here three different areas. So we have the screen areas saying "ready for firestop." So if an element is inside here, every information that we need to firestop later the penetration is already set.

If it's here in this red area, then some information is missing. So maybe the material is missing, or the fire rating time is missing. Or you don't want to firestop these objects at all because we have, maybe, here some foundation slabs. And these foundations slabs must not be fired rated.

So how can I set the fire rating if not ready here? So I can click on this group of elements. So we have here a Revit family from floors.

And I can set on the right side the parameters about the barrier type. So I can choose between concrete floor, floor-ceiling assembly, [INAUDIBLE] floor-ceiling assembly, or none if it's not fire rated. And also, I can set the fire rating here to 1 2, 3, 4, or it's not fire rated, to none.

So if you start with a new drawing, there's no new model, and there is no information inside the slab. It would be down here. And I have to set up now these concrete six-inch slabs. So I just highlight this here and say OK, this slab is a concrete floor.

So it jumps up one area here into this red. It means still some information is missing. It's still highlighted and I click on one hour, and it jumps up here into the green area and says, OK, everything is fine. You defined all your slabs and you're ready for firestopping them.

This is one way you can do it. So let me close this. Another other way you can also do is maybe see this from the left side, and you want to fire rate the top four floors here with two hours. And you just highlight these four, go to the Hilti tab, hit the Qualify button.

The dialog opens again. And I can change this from one hour to two. And also this one from one hour to two. And I hit Yes. And it did the setting for all these slabs. So now we have here one hour, and then these slabs, two hours.

So this is the qualification for slabs. Next thing we also need to qualify are the walls. So I just minimize this here. And I go to my Revit architectural file. Open this architectural file.

And I want to present this today on one floor. So I open the first floor. And I want to define the fire rating of these walls.

In this example, the fire rating parameter of Revit is not set, so it's not used. If you go to the Type, you see that here, the fire rating is not used.

I think most people are doing this differently in different models. Sometimes, they're using this fire rating. Sometimes they don't use it. Sometimes they just have this in the name of the type.

So here, it's saying two hours fire rating, but it's just the type name. If you have this situation, what you can do-- it's very easy to go to the Vault family. And you're looking for this one hour. And you can select all instances, for example in this view, or in the whole project.

Now it selects all the two hours fire-rated walls. Or one hour, sorry. And I can go to our Hilti Qualify. And say, OK, this is one hour-- it's already set. It's a Gypsum board wall, one hour.

Same for two hours. Select everything, in the entire project or in the view. All these are the two hour fire-rated walls.

Again, it's just the naming at the moment. But if you start our tool, hit on Qualify. Say OK, this is two hours, and it's also the Gypsum board wall.

So this is how you can set up the fire rating of the walls. You also can use our tool if you now want to know, you have this floor and I want to know which of these floors are fire rated with two hours. You can also use our tools here.

You can select everything. Go to our Hilti tab, Qualify, click on anything here, and switch from

Qualification to Selection mode. I want to see which walls are two hour fire rated. So I select Gypsum board walls and two hours.

I see it's 10 elements. I can select them, say OK. And I see here these walls are highlighted. All walls with two-hour fire rating are highlighted.

So I can also use this for selection. I can now change if I want to the family type or whatever. But I see how many walls are fired rated for two hours.

Good. Next thing would be, you have to also set up the piping. Let me make this smaller and open the plumbing model. Also here, you can choose one element and change it. Or you can go to the Pipe Types, you have here a copper pipe and a PVC pipe.

And you can just check, saying OK, I want to select all instances in the entire project. This takes time because these are some.

Let's see how many there are. These are 2,386 elements. And I also go into our Hilti Qualification and say OK, I want to qualify these objects as copper pipes.

So the Objects dialog opens. I have these 2,386 objects here. I can click on this and just make sure that we have bare metallic pipes and it's a copper pipe.

Click on OK, and I have specified all the needed information for firestop. As I mentioned, you can use this in AutoCAD. So let me quickly open AutoCAD. AutoCAD Fabrication CADmep, for example. Start with this one.

Let's start up Fabrication CADmep.

I can open here the file.

Cable tray file. So I have here some CADmep elements. These are cable trays. And also inside this AutoCAD application, we have our Hilti Firestop tab.

And also here, I can qualify fab elements, so I hit the Qualify Fab button. I open my plug-in. And the same dialog shows up like before in Revit.

So also, I can say here, OK. These cable trays are steel cable trays. Everything is set. OK.

I also can do this in AutoCAD MEP. Let me also open AutoCAD MEP here. And here we have some HVAC files in AutoCAD MEP. And I also can define here the needed attributes and the needed information for firestop.

This is the file. I open it here. We have here some HVAC. I hit on the Qualify MEP. Opens the same dialog, and I can set up these round ducts as sheet metal duct.

Good. Now, the first part is done. I have all the information which are needed for firestop in my model. Next part would be, I go into Navisworks and run the clash detection of fire.

So let me minimize this here and open Navisworks Manage. Navisworks Manage is used because we need the clash detection. If you only have Navisworks Simulate, then you don't have these clash detection functionalities. So we need Manage for this.

So let me open the combined file. So I open the two DWGs, one coming from AutoCAD Fab MEP, and the other one coming from our AutoCAD MEP. What's missing is the architectural file. So I go back to Revit, go back to my architectural file.

Go here into the first floor, first floor. And I export this as an NWC. So I go to Revit, Export, NWC. I make sure that I have the right settings in Navisworks.

So I need to convert the element properties. So I make sure that I've highlighted this one. I only want to export the current view. I click Yes, I just want to export the current view.

For the coordinates, I choose the Project Internal Coordinates. This is how this project is set up. If you have set up this as Shared Parameters, you go to the Shared Parameters. This project has these internal coordinates.

I hit on OK. Save this file. Yes, I can overwrite the existing file. And Revit now exports this view to an NWC.

Back into Navis, I can append this file here. So I go to Append. I don't want to append an NWF, I want append an NWC.

And I hit here, this file I just exported. So now we have these two DWGs and we have the architectural file imported into Navisworks.

Let me close the Selection Tree. We have here also our Clash Detective already opened. Also inside of Navisworks, we have our Hilti tab here. And we have here our Calculate Clashes. I will save this file and I will hit the Calculate Clashes file.

So now what it does, it generates automatically for you a new clash rule called Firestop. What you can see in this rule-- you have 30 clashes.

If I go here to the results, you have here the list of all clashes. Clashes are mainly [INAUDIBLE] because I set all these walls for firestop. And we have these cable trays running through these walls. So the clashes. Also, we have some ducts running for fire-rated walls and here you have also some clashes.

What you may recognize now is that we have here these little red marker objects. This comes as our plug-in. So these little red markers highlight wherever firestop is needed. So if I go to the Viewport and I just de-select Text, Lines, and also the Faces, you will only see our marker objects. And here you can see in all these places, firestop is needed.

Looks like an universal firststop here. If we bring back the faces, you see, again, our boards and our cable trays. And you see here, firestop needed. So this is the first thing that the software tells you. Here you need to place some firestops.

Next thing you'd like to know is, OK, I have these firestops. How can I solve these firestop problems? Again, I go to my Hilti tab here, and I click on the Start Firestop Manager. All it does-- it transfers these clashes to our application.

Let me make this a little bit smaller. So we can see here a list also of 30 clashes. So this is the same clashes you see in Navisworks, we have here also in our application. Let me make this bigger here.

And on this side here, you also have the different clashes. We have here, for example, you can see clash number one. It's a clash between the Gypsum board wall and a cable tray. The fire rating was set to one hour. The size of this cable tray is 12 by 3 inch.

Still empty is the UL system and the product. If I now want to know which firestop is needed, I can hit this Assign button. The software assigns all the solutions to these penetrations.

So now I know I have a Gypsum board wall with a cable tray as a penetrating item, and I need this firestop block to solve this problem. Here you can see an image of this firestop block, and I

need this W-L-4011 UL system to solve this problem.

Some more functionalities is, if you don't want to use the firestop block, and you think you want to use another product from Hilti, you can also choose here on the right side to another product. So we can also solve these penetration with FS-ONE MAX or silicone here. You can switch this to silicone. And if you want this for all the same situations here in your project, you just hit the Match button. And it updates all these penetrations to FS-ONE MAX.

I think these these firestop blocks are the better solution, so I switch this back. But I have to hit the cable trays. So I hit Back to Blocks. And I say, Match again. And now I have the blocks as a firestopper for all my cable tray penetrations.

What I also can open is if I want to see the UL system. So this W-L-4011, I click on one of the penetrations here, and click on Systems. It opens up a PDF with this UL system.

And you can go inside this PDF, read more details out of this PDF. If you want more information about the product, itself, you can hit the Product button. It brings up our products slide.

Here's a firestop block. And you have some more detailed information, or some pricing, directly all of this here. What you also can do-- you can sort this by subcontractor. So we had one file from the cable tray, and we had one file from the duct. So you can select if I only want to see the files from the electrician subcontractor.

So I can go here on Subcontractor and Sort by Subcontractor. I can also see everything coming from the HVAC sub. Or I can see everything. So I have all combined here.

If I now need a combined submittal, one document where all this information about UL systems and products is combined, I can simply hit this Submittal button. I can save this as a PDF. Let's give it a name, "submittal123." Save this.

It sends now all the information to our website, it gathers all the different PDFs and makes this into one big PDF. And here it opens up. It's digital. I can change the project name for it. Sample, so let's call this "Demo Hospital."

I can change the Project Name, I can change the Product Address, if I scroll down, I have a table of contents. And here I can see these are all the UL listings I have to use in my project,

and these are all the information I get about my product. So I have one combined submittal document with all the needed information.

No, I don't want to save this. If I close this, because this is what the software does mainly. It defines which UL systems, which products do I need. I can close this now.

Maybe I've done the submittal of one thing more, maybe. I can hit the Quantities button. And I see also the quantities, so how much FS-ONE MAX sealant do I need and how much firestop blocks do I need.

If I close this here, this information is transferred back to Navisworks. And you see now that these little red markers turn into green. It means everything is OK. These could be firestops, this could be solved.

Down here, I have opened the Command tab from Navisworks. And if I click on one clash here, it also tells me this clash [INAUDIBLE] was solved with a firestop block and this UL system. So all the information from our Firestop Manager is transferred into Navisworks.

And I can go here if I want to, clash by clash and look at the information, which firestop products I used to solve these clashes. Or I can see here the status of all these clashes switched from from first New, then to Active, now to Reviewed, and now Approved.

So everything is done. Everything is approved. You can go ahead with the next step.

This is a part of Navisworks. I have the clashes here. I can save this file. Close Navisworks. And then, next part, I would like to see all my firestops in my Revit model.

So I'm back here in Revit, for example. And I hit the Insert button. Now it updates my model with these 30 clashes. So what it does, is it inserts all the different Revit families. It takes some time, here we go.

If I zoom closer, all our Revit families needed for firestop are placed. You don't need to place them manually. You don't need to attach the files from AutoCAD, for example, to find the right place to place these objects. This does the software for you.

These are standard Revit families. So you can also schedule them later on. You can also, if you want this in the AutoCAD file, you can go to AutoCAD. Also insert here the firestops, if you want.

So if you've got this from your sub, you can see here our silicone is surrounding these pipes here. You can do the same in CADmep, of course. So depending where you want your information, you don't have to insert this manually. You can let the software insert this. Here it inserts, so we maybe change the view here.

And you can see here, it inserted our firestop blocks into the CADmep files. So this was the second and third part. After putting the information in, clash detection's part is then to place these objects into Revit or into CADmep or AutoCAD MEP.

I also prepared a file for these labs. So let me open this labs file again.

I think it's this one. Yes, and I also prepared this, because this takes some time. You're seeing the 30 penetrations took roundabout 20 to 30 seconds. Here, we have 100 elements placed into this slab. This would take roundabout four to five minutes. So I did this one upfront.

And here you can see it places all these objects, for example, cast-ins. If you have a closer look at these cast-ins. Let me make a selection box around this. And we zoom into these cast-ins. And you can see not only the cast-ins are placed, but also some measurement points.

So here, you also don't need to place the measurement points if you need this for the total station. Also, these points are automatically set. And you don't have to do this manually.

We have two kinds of points. We have this cubical points and we have here this cone. The reason for this, we have two different applications for the point layout. You can use the AutoCAD Point Layout to do this. Let me get a license for AutoCAD Point Layout.

And you can later then-- let me switch off the Selection Box again-- you can export the coordinates from all these objects using AutoCAD Point Layout. So you go to Export, choosing the Export Order, and save these as a file to your computer. And later on, you can then turn this file to a PLT.

My colleague now will show you how to lay out a cast-in with this PLT. So I save this file on a USB stick. Yes, I can overwrite these 48 penetrations, 48 cast-ins that have to be placed.

Save this on a USB stick, put this into a total station. And my colleague over there shows now how this works on the construction site.

PRESENTER 2:   If someone walks by that didn't want an auto-calibrated [INAUDIBLE]

The tool's tracking it at all times. We can do a couple things. We can either [INAUDIBLE] where I want.

Import a point or [INAUDIBLE] I can actually get some guidance on it, so your client is now [INAUDIBLE] the controller.

I can pick a point, cast in an anchor at any point. And it will actually guide me to the numbers directly to the point until I zero out [INAUDIBLE]

Thomas Schmidt: OK, thank you--

PRESENTER 2: [INAUDIBLE]

We actually have a punch that goes on here, so I can just-- [CLICKS]. I can push it and it will punch in and hold sturdy.

AUDIENCE: [INAUDIBLE]

PRESENTER 2: Yes. I can take this off and put a punch on here. It's just a spring-loaded pin. As I push it, it will release the pin, puts pressure on the point, and marks it.

Thomas Schmidt: Good. So now, we had the first part, designing, using the BIM model for choosing the right firestop. We brought this to the construction site. Third point would be OK. Now I want to also maintain this firestop and install this correctly.

So also for this, we have a solution. It's a web-based solution called the Documentation Manager. So I have to log into this web application, giving my name.

I have set up here the same project. So we have here the demo hospital project. If you go to the hierarchy of this building, I have the same hierarchy like in our Revit model. Maybe I showed you before, the floor, again in Revit so it's a little bit clearer. No, I don't want to save this.

So back here, what I did-- I have a floor plan from the first floor. Here on this first floor, we have some rooms. For example, room 76, 75, and room 74. Use ultrasound in this hospital, and I exported this first floor to our Firestop Documentation Manager web application.

And I have the same structure here. So we have here the same floor, 1.74. This is already set up with one penetration because one of these cable trays-- if you go back to Revit, you can see it-- one of these cable trays is going through this room.

Let me open this. Right view of this. Just side by side.

So if I click here on this wall, highlight here this wall. So we have here one cable tray going through this wall from this room. So we set this up before in our Documentation Manager, in this room, 1.74, I have one penetration.

So the next thing would be the guy on the construction site. He's using an app like this. So now I'm on the construction site. I open first my Hilti Document Manager.

I open the correct project here. It's the same, it's the AU26 project. I go to penetration. Sorry this is in German because I'm using a German version of this. But here, again, we have the same floors like we had in Revit.

So we have here Floor 1 to 5. Let me open Floor 1. Our room is 1.74, Ultrasound Room. I have here the list of all rooms coming from Revit.

I have here this one penetration. This penetration can be saved as a firestop block. So the guy on the construction site knows exactly, in this room he has to install the firestop block.

Sorry, wrong direction, let me go back-- 1.1 and 1.4. And for this penetration. If he wants to know where this is on a map, he can open this on the map.

And here you can see the exported file from Revit. So if I zoom a little closer, you see here also the room 74, and you see here this little circle with a 30 here. This firestop block should be installed here on this wall. And it's penetration number 30.

But you also can see, down here, connected with this, is a QR code. So after installing this, the installer makes a photo of this, like this. Let's say he installed it here.

So he makes a photo to document that he's done this. Next thing he would do is place a QR code that comes with the software. So let me place this QR code here on the wall. Hopefully, it gets.

So I place this here. Here I have installed my firestop block. Everything is documented. He makes a photo, saves this, and back in the back office, you can see this documented.

So I switch back now to the back office. And if I open here my Penetration List-- I Update first. So I go to Penetrations again, Items, search for the room, 1.74.

And if I open this, you can see, after some loading, the picture he has done. So you can control, OK, this job is really done. And you have a list of all penetrating from the whole construction site.

Next step would be, OK, this guy installed everything. And switch back. And now, I'm the inspector. I want to control, is everything correctly installed?

So I want to do an inspection of all these firestops. So what I do, I open the same project on my-- I don't even have to open this, I just have to download the same project. I go from room to room and search for these little QR codes from the penetrations.

I click here on the QR code scanner, I scan this. Boom, and it brings me to the correct situation and the correct penetration. This one is a firestop block, and the room, 1.74, floor one.

So he just goes from room to room and scans these blocks, or scans these QR codes. What he also can do is then go here on inspection and say, OK, this inspection has passed.

He can also add a photo saying OK or some text to this photo, saying OK, everything has done. Thumbs up.

Say OK, this is after install. I also save this again to my project. I do this now for all penetrations in my whole building. Coming back, I want to have a document of all of these. I want to have a report.

So I update here my view. And as you can see, this was live in the web. You can see this was good. We have a good internet connection here. And you can see here, thumbs up. This is controlled inspection passed.

What you also can do is then go one higher and make a documentation out of these. So I can make a report. Create a New Report.

I can say, OK, for example I want only the first floor on this report. I Generate this report. Now, again, like in the Firestop Manager, it generates one report of all my penetrations here.

Let me search for number 30. Here we go, so thumbs up. Everything is fine. This is room 1.74, firestop block. So everything is under control. Everything is defined.

So this was the last step. In my journey for firestop, what we first saw was how to bring the needed information into the Revit models, into the AutoCAD models. Then bring these files into Navisworks, run a specialized clash detection based on these parameters we brought into Revit. Then let the Hilti software define the needed UL systems and firestop products.

Next step was to place automatically all the Revit families. With these Revit families, also the measurement points come into the model, and we could export this to the PLT.

Then on the construction site, we lay out our cast-ins, or we installed our firestop blocks in some rooms. Next step, we wanted to make sure that this is correctly installed and really installed. So we placed our QR code there, sent this to the back office. And ready for documentation of all these situations.

So this was the whole workflow that we at Hilti think to make firestop more secure. It's a task with a lot of stakeholders. It's a task with some steps. But I think with this chain of software, you have a good chance to control these parts.

OK. Any questions? Yes, please.

AUDIENCE: The Hilti software, was it creating a DWG and and an RFA going back to the other programs?

Thomas Schmidt: No, it's creating a PDF at the moment.

AUDIENCE: Oh really, OK. Did you say a 3D PDF?

Thomas Schmidt: No, it's only the floor plan. We saw these little circles. This is what it gets back. But it's a good thing, next step would be to get the floor back into the BIM model and also update the Revit model with this information.

AUDIENCE: And then that QR code, does that stay permanently?

Thomas Schmidt: Yes.

AUDIENCE: So the owner gets it after--

Thomas Schmidt: Yes. It also says on the sticker, "don't remove." So it's not allowed to remove the sticker, because inspection comes maybe after one or two years.

Before you leave, I have a little present. We have a little quiz. Could be maybe interesting, don't know. So we have here some firestop tools. Let me ask some questions, maybe simple questions.

Where's the the headquarter of Hilti? Somebody knows?

Yes? Who was the first one?

AUDIENCE: Liechtenstein.

Thomas Schmidt: Liechtenstein. So I have two presents, one for you. Liechtenstein is correct. Liechtenstein is a very small country, 36,000 people. [INAUDIBLE] for you.

AUDIENCE: Thank you.

Thomas Schmidt: OK, if you don't have any questions anymore, I would like to thank you for your attention. If you have more questions, also for the cast-ins, come to our booth.

[APPLAUSE]