**[HVT][WS-04] Verification & Validation-20250430\_093429-Meeting Recording**

0:02  
Software development, most of the things are happening on the tool side.

0:05  
However, if we are doing some bench testing, hill testing, so those details who would like to understand and how you capture the results if there are any defects, how you log the defects, then if you are raising some kind of change requests on top of verification and validation results.

0:25  
So how you are doing that?

0:27  
So overall, we would like to understand end to end process, what are the typical challenges you are facing on your day to day life, how you are trying to handle it and so on.

0:38  
So you are open to give suggestions what is your expectation from the future, how your pain point should be resolved?

0:47  
So something like that.

0:49  
So your inputs are greatly appreciated.

0:52  
And I will let Vijay continue the session and we will have the interaction interactive session.

1:00  
And of course, if you want to show something on your application or a tool, you can definitely present and you can walk us through the operational overview.

1:13  
And again, if you have something available with you, like some presentations or maybe some PDF documents, you can also share it.

1:22  
If not possible today, you can definitely share it later as well.

1:27  
In fact, Stephen will Stephen will circulate one questionnaire.

1:32  
What is you are seeing seeing on the screen.

1:34  
It will be in the form of Google Forms.

1:36  
And you can definitely respond to that questionnaire if you do not have the question right now.

1:43  
OK, with that, I will hand it over to Vijay.

1:47  
Yeah.

1:48  
Thanks, Yadi.

1:50  
OK.

1:51  
So Stefan, from this verification, validation point of view, maybe if you just quickly introduce like who are going to participate and provide this information.

2:00  
So that will be helpful us.

2:02  
So we have today mainly my colleagues from validation team.

2:16  
They make the tests, they plan the test and also they make the validations and prepare the the reports.

2:29  
And also we have again blog way because he is interested in this in this topic.

2:40  
Because on their side, if you remember from yesterday, they made they, they are making some meal validations before delivering the the the Simulink model.

2:54  
And in the future we would like to also include this meal validation in the ALM.

3:02  
OK, got it.

3:03  
Yeah, yeah, sure.

3:07  
So first, like who would like to start with the explaining a high level overall the process like how you create the test cases further kind of how you manage per for review, finalize those who is the responsible in a different, different areas and how you perform the test execution then the capturing those results.

3:30  
So maybe that flow we will go and these questions specifically maybe get answered during that flow explanation and maybe we'll just ask if any specific question and at the end we'll just go through this questionnaire quickly and if anything is missed out, Yeah, we'll discuss on that part.

3:57  
Yeah.

3:57  
So maybe who would like to start with explaining that test case management process, overall verification, validation like how it starts and proceed further process wise at least mill validation precedes the Hill validation.

4:17  
So if it's OK, we could start with that if it helps.

4:23  
Yeah, Yeah, sure.

4:24  
OK.

4:24  
So in yesterday's meeting, it was mentioned that indoors we also store valsys.

4:29  
So the system validation plans normally according to process, those should come between the SCDR one and SCDR 2 steps.

4:40  
So then when we have defined our specification, so the concept that we are implementing, we also have the means to validate it.

4:51  
Oh, so that's our starting point.

4:53  
We take the textual description of the test case and we define the inputs in the Simulink.

4:59  
We use the signal builder to define the simuli for our model, and we perform the validation.

5:07  
Those results are then synthesizing.

5:09  
And I have some SCDR 2 presentation to show you.

5:14  
Yeah, please, you can share your screen just to see if it has everything that it needs to have, OK.

5:20  
I think it's a good one immediately.

5:31  
OK, So this would be the input that we get from system, which is the system requirements.

5:37  
And here as we discussed yesterday, we complete the software requirements here they're not completed, but we know what it is about.

5:44  
And there's an additional document to get an extract from doors containing devices.

5:49  
So from that point on, we do our design, OK, We then OK, this is where the Cdr 2 is, OK.

5:58  
So we have done our design.

6:01  
We put a brief snapshot saying, OK, this is what we have changed.

6:05  
And then we perform the validation.

6:07  
So we have the inputs and we put all relevant variables to the modification.

6:12  
So this testing you are doing in the Simulink, right And that model at slide 16 that is also SIM link model, yes.

6:21  
So this will be the this would be the implementation in the specification and our so our model in the loop is maybe I can show you just briefly what it looks like.

6:33  
I if it's OK, I think it's about OK.

6:38  
I have an example.

6:48  
Uh, just a moment here.

6:49  
Matlab is a bit sluggish.

6:51  
So this is our model in the loop we have, we can have a close regulation where the inputs are passed to a simulated environment and then fed back.

7:04  
So we have outputs from the model into a simulated environment simulating an actuator.

7:09  
Any other system doesn't matter and then fed back to the mill as inputs or we can have also stimuli.

7:17  
So our stimulator are taken from the signal builder where we can define them based on our understanding of the valsis or based on actual vehicle data that we may have available.

7:29  
For example.

7:29  
This as you see is obviously a vehicle recording.

7:32  
Yeah.

7:33  
So we either request data that will let's say the valsis says drive the vehicle with the speed over 100 kilometers per hour, for example.

7:43  
So we either to find the signal as we want to say, OK, we have passed that speed or if we need a more accurate set of data, we request vehicle recordings and we just import it in the signal builder and run.

7:59  
That's the most common approach I would say.

8:05  
So we just run the simulation.

8:10  
We have several scenarios per meal.

8:12  
So there can be anything between one and many scenarios.

8:15  
We have some with over 50 and we present the results.

8:19  
So in the SCDR specific validation for the technical fact, we do not perform what we call a full meal validation and we just demonstrate that the concept that we have implemented in the symboling specification works OK.

8:34  
So that's the justification of the design.

8:37  
And we passed the SCDR too after we passed the SCDR 2.

8:42  
And here it's a bit maybe counterintuitive, at least for me it was, we performed the full meal validation after delivery most of the time.

8:53  
Often the the time between SCDR 2 and the delivery deadline is short and we cannot perform the full meal validation.

9:03  
So what the full meal validation means is that here, as you see, I have several scenarios and I need to perform all of them and to then analyze all the regressions that have occurred and justify them, if any regressions of course in the behavior.

9:21  
So we always compare behavior in the current, the MIL version versus the previous MIL version.

9:30  
Once we perform the delivery, we have 2 documents that we complete.

9:38  
So for the final mill validation.

9:40  
So that is when we execute all scenarios, just open the documents.

9:49  
Sorry.

9:50  
So there is the first document that is the description of the evolution and validation results for each scenario.

9:58  
So here we put brief description of the modification if necessary and justification.

10:08  
So this is by executing the full set of scenarios, which scenario put some snippets and describe the test results.

10:16  
OK.

10:19  
And normally for every iteration of the meal we have just to see at the end it was a tape.

10:26  
So this is basically what was added to this version.

10:29  
So for this modification that was made the in the last version of the mill and this is the closed loop environment that we have in here, it's related to it relates each scenario to system requirements.

10:45  
So which system require, which simulation scenario validates which system requirement or which technical fact, OK.

10:54  
So here kind of you are just checking that the coverage for these requirements, this particular test case scenario is conducted and this is passed off field.

11:05  
So it's a kind of summary that you are maintaining here.

11:07  
OK, yes.

11:09  
And there is another document which is an Excel file which is a sort of validation plan, let's say just to open it.

11:25  
So this is the software component file in which we write the scenarios in the test case format which you'll see also from the heal validation team.

11:35  
So this was the pre silk format that we use.

11:38  
So before we adopted silk or all our test cases were following this format.

11:43  
So it gives us the.

11:47  
So we have test cases that are covered by.

11:50  
So one scenario can cover one or more test cases in this file.

11:54  
So we take here normally that's not noted correctly.

12:01  
It should just be number of tests like this one, for example X664004, something like that.

12:07  
So it points to the software components.

12:10  
So the module, the software, the software unit, so the specification.

12:15  
And then here we add information relevant to what comes from system.

12:20  
So we have the valsis.

12:22  
So which scenario validates which valsis.

12:24  
It's not always the case that this is completed.

12:27  
We lack here traceability and so is there nothing but your test case, right to just reconfirm.

12:34  
So the valsis is what we get from system it's extracted from doors.

12:37  
So each LEXIS can have one or more valsis related to it.

12:42  
So the LEXIS is the need of the system.

12:45  
What is the functionality that we need the valsis is how do we validate it?

12:49  
OK.

12:51  
And here it would be in the follow the same format, the naming format of the LEXIS.

12:56  
So if we have here, so if I go to this extract from doors, you have let's say this axis COM design 549 it should be valsis ignition ECOM design some number.

13:10  
OK, OK, so then we have the LEXIS information that we had.

13:14  
So it's just copy pasted from doors and so descriptive.

13:22  
So this would be the software requirement.

13:24  
It's not completed correctly here.

13:26  
This is not where this should go.

13:29  
So this is related to the software requirements.

13:33  
So here we put everything that we write from the software requirements.

13:36  
So as you see it in this table here.

13:40  
So these 2 columns are added to just a moment are added to this part here.

13:48  
So everything related to the software requirement, I think some columns were deleted from this file and everything was shifted to the left in some cases.

13:56  
Yeah, it happens.

13:58  
And here we start with the test description.

14:00  
So what do you need to have ensured during the throughout the duration of the test?

14:05  
What are the calibrations that we have?

14:07  
What actions do you perform in order to validate?

14:09  
So this is based mostly on the valsis.

14:12  
And if we need the additional test cases, we define them on our own.

14:17  
Often, let's say the valsis doesn't provide us good enough coverage, so we add a few additional steps to improve the coverage in the specifications, the expected behavior, what do we expect to see?

14:30  
And here we define variables to be monitored.

14:32  
So this is helpful when we prepare the report.

14:35  
We don't have to look variable by variable what to add to the record to the snippet that we put.

14:44  
So from the test results, we just copy paste these variables, add them to the graph and print it out.

14:51  
And the last one would be the means of validation.

14:55  
So even if here it says he'll vehicle for us it's always meal.

15:00  
So we do not have other means of validating and in theory when we deliver the meal or the tests are considered, they are executed and the status can be OK, not OK because we can't discover issues.

15:22  
And the problem is that we discover issues after delivery.

15:26  
So ideally we would like to execute the full meal validation before delivery so then we can correct if any regression appears.

15:35  
At the moment we always do that after delivery and then we have to correct these bugs that are discovered during the final mill validation in the next delivery cycle.

15:48  
OK, So here what I understood is like after CR 2, you are kind of a delivering this to the and then you're performing the full mill testing.

16:02  
So in this particular case, how many are like approximately how many bugs normally it get reported and how much time you need to spend to fix those.

16:13  
If you just take a one small example, I do not have a good summary of such examples.

16:19  
So most of the time actually, so the issues that come after delivery most of the time are related to some unitary tests that we perform that are performed automatically by workstation.

16:33  
So the code thing I think is responsible for those where we just test for overflow, underflow variables.

16:41  
And if honestly don't remember exactly what all test they perform, but that is related to other things.

16:47  
They're not so much the meal valuation.

16:49  
So such bugs that appear after during the full meal validation might be related to incomplete downstream impact analysis, for example, So that we performed the modification that it affects specifications further downstream.

17:10  
But we did not take this in consideration it we missed it, I don't know.

17:15  
And then we see a regression because it didn't show you the regression report just a moment.

17:26  
So because we do not perform the full meal validation, we do not know often whether regressions will appear.

17:36  
So this tells us for each scenario, if it gives us anything different than zero, that something happened.

17:41  
And we have a dedicated application that we use that prints us the results or from the previous version against the results from the current version to see visually what happens.

17:53  
So then we can investigate better.

17:55  
So which software you are using for that?

17:57  
It's an internal application.

18:01  
I'll give you quick example.

18:05  
So everything that we have is in this GUI, OK, everything that we use to manipulate mill.

18:12  
So creating a meal, updating a meal, verifying, validating and preparing the delivery package.

18:20  
So this is the internal application that we have for comparison.

18:23  
It has all scenarios.

18:25  
So if I load here, I have the old results, here I have the new results and I can perform.

18:33  
I'll just run it on one.

18:38  
And here as you see, it found the regression which is not convenient for this meal.

18:47  
So we thread it gives us the variables that we have a difference.

18:51  
So you see here that the new Redis new blue is old.

18:56  
So in the new build version, we have a regression here.

18:59  
So if we haven't performed the full meal validation before we deliver, then we would probably introduce a bug in the software because the behavior is not the same and we need to see why the causes can be different.

19:16  
Either specification problem or a MIL problem.

19:18  
If it's a MIL problem then we can just correct it before archiving the MIL.

19:24  
But if it's a specification problem, then of course we have to retake the delivery process to correct the bug in the next possible in with the next possible delivery cycle.

19:38  
OK.

19:38  
And normally how you receive these bugs reported back to you?

19:43  
Is there any mechanism or so normally the designer would be performing this whole meal validation.

19:50  
So I have one or more persons working with me who do this.

19:55  
They would come back to me and tell me that we have a regression on this point, and then we analyze together to see what's the cause.

20:02  
Let's assume that it's a specification problem.

20:04  
So something we modify does not work.

20:06  
Well, then we take it through SBM.

20:08  
In SBM, we open an issue and tweet it throughout the whole process that is defined in SBM.

20:15  
OK, so in SBM you keep record of all the bugs reported during this validation process?

20:23  
Yes.

20:26  
OK.

20:28  
And just Excel that you've shown so that Excel you're creating manually, right.

20:34  
So for a particular project or particular function, how much time you are spending to prepare this kind of Excel that you need to it depends on the complexity or size that's of the modification.

20:50  
If it's just 12 scenarios, it can be done in or maybe per day, 2 days.

20:56  
So anything between let's say a day and a week is I think reasonable estimate for the completion of this file.

21:08  
OK.

21:08  
And you, you need to manually go get the data from doors then additional data you need to copy and paste line by line.

21:18  
So that is what currently it is getting performed.

21:21  
OK, exactly.

21:22  
So the it's it's mostly copy pasting from this Cdr presentation.

21:28  
So because there we have most of the information that we need, we have the extract from doors.

21:32  
So if I go back to that Cdr here you see we have the export from doors.

21:40  
So here we have all the information that we need to copy paste and that's why it is good to have this extract in the PPT.

21:48  
And additionally, either they would attach another file or make another sheet where they also put the valsis, the system people that is.

21:58  
And then yeah, we take everything, copy paste by hand and then the only part that the designer would actually write is here.

22:13  
So from this point on, so this is the actual test writing that also the heal team does.

22:19  
So I would say it's very similar in terms of workloads.

22:22  
So what they, what time they spend in writing their tests, we also spend.

22:28  
So it can be considered per test case how long it takes, I guess.

22:33  
And again, based on the complexity plus sometimes we have to do multiple revisions of the test.

22:39  
The designer writes it gives it to me for review, we check correct and based on the numbers, number of review cycles that we have, it can last a while.

22:50  
So I think the Hill validation guys have a better estimate on this and we can consider it exactly the same duration, OK.

23:00  
And here when you created this test cases for validation for how that review process, finalization of that maintaining that test case version, how that process is maintained or managed?

23:15  
It's a bit difficult currently with those these files, of course.

23:25  
So in terms of versioning, we are supposed to follow the same process that they have in hue validation where if a test is modified, we increment this version.

23:35  
So if I have, if we call you know this file.

23:41  
So this is the an older iteration of this file because the IT has the revision story.

23:47  
OK, So let's say this test, the first revision will be 001, I'll enable here.

23:55  
OK, let's say the last one.

23:56  
So I wrote this one with version one.

23:59  
So in the next delivery cycle, I have some modification that invalidates this one or modifies the behavior covered by this one.

24:08  
So then I will just copy it here and I would put it as version 2.

24:12  
And then I say just to find the OK.

24:17  
So the first release will tell me in which version was this test added.

24:21  
Let's assume in version one zero.

24:24  
And with that I close this.

24:28  
Let's say that the in version 2I have in version 3, let's say I added somewhat some logic that modifies the behavior.

24:36  
So we say that a 660 Gen X call t in version 2 is the last version in which I can run this test and starting with version 3I say that this test starts to become valid and until it becomes invalid again I say I leave this empty and it's the same for the specification I do until when was it introduced?

25:04  
Until when it is valid and start with version 2.

25:08  
Once this one is no longer valid in terms of approval of these tests and giving the results, it's my responsibility to say yes.

25:20  
The test covers what we want to validate and so it's based on my understanding of how the test should be written and also my understanding of the functionality that is to be implemented, whether it is validated OK or not.

25:39  
OK.

25:40  
So it is a completely based on like you performed the review, but it is not a formal review where you captured who reviewed what date it is reviewed and when it is finalized or released.

25:52  
So that activity is currently not happening.

25:56  
You simply go update, modify that release, review it and accordingly finalize, right?

26:01  
And it's in same Excel, correct?

26:04  
OK.

26:05  
And there is just because we were talking about reviewing, there is also here I have the global approval of the mail validation.

26:16  
So this is I need to give here the OK saying yes, the mail validation, the final violation has been completed and everything is OK.

26:31  
I give the OK or if you have not not OK results, I give the I'm not OK here.

26:36  
OK, OK.

26:38  
It's completely document based either Word Excel.

26:41  
That way it is managed.

26:44  
Yes, OK.

26:46  
And when you perform the revisions that Excel sheet that you've shown so you keep that older versions also in the same Excel and it is a centralised Excel file like let let's say you updated or added that test case if any other group or any other function needed the similar functionality.

27:04  
So how they will come to know OK, this new test case is added.

27:08  
We do not have that.

27:10  
So we do not share test cases between functions, OK.

27:15  
Each function performs their validation independently at least the mill validation and here the heal guys can also I think relate to this one that we also heal validation, we perform the same which I think is not ideal and the same for meal violation.

27:34  
I would say we can have it was that we had some efforts to communalize let's say the some inputs that we use to validate some functionalities, but we did not reach the conclusion still.

27:47  
So we are all independent.

27:50  
OK, One thing I can mention is that often at least I have requested from other functions to generate me some input.

27:57  
So if I have a variable coming from another function, I would ask them for test results which illustrate how that variable behaves under certain conditions.

28:08  
Let's say we have some common inputs that would up to a certain degree, I would ask them to run a validation on their module to generate me the input that I need from them with the same inputs that I want to use more or less.

28:24  
And that way I can have a better approximation of some variable that I do not have available at the moment.

28:31  
And I need it simulated, not drawn by hand by me.

28:36  
So I think that's pretty much the only type of collaboration that at least I have had with other functions.

28:46  
OK, not it.

28:46  
And that the test case result part you're maintaining in this particular document that Word document that you just showing, right.

28:54  
So you're performing that testing and from there you're capturing those images, the results and that you're documenting in this Word document.

29:04  
And the Excel document is kind of your validation plan where you have all your the test cases for mill and accordingly you perform the testing.

29:14  
But overall, from the test planning point of view, are you maintaining any specific dates, OK.

29:22  
This is a target date to complete these many scenarios or test cases.

29:27  
So is that a document is available or how you manage that part?

29:32  
We have our delivery cycle planning.

29:35  
So the delivery cycle planning gives us of, I guess I can show you that mail as well.

29:40  
Yeah.

29:41  
So just to find the mail, OK, OK.

29:48  
So this is our upcoming delivery cycle which is to be completed on the 18th of July, OK.

29:55  
For me the dates are of interest are the starting of the Cdr zero, the ending of Cdr zero.

30:02  
So the start and end of each Cdr step 012.

30:05  
So it gives us as a date.

30:07  
So starting from 17 weeks before the delivery deadline, we have we start everything.

30:11  
So we have 17 weeks to complete all modifications as per the Cdr standard.

30:19  
So the deadline would be given here.

30:24  
So this is when we archive the specifications and dimensions and from this point on we have one another additional week to finalize the mill validation.

30:40  
So that would be the only planning.

30:42  
We do not plan per test case because for us the validation is you run all scenarios and wait for them to finish.

30:51  
Yes, so it can be run.

30:53  
We leave the laptop on during night if it's a long one and it performs them in the morning, we can start working on our reporting.

31:03  
OK, so now you came to that archiving and reporting part.

31:08  
So can you explain that how you perform the archiving of these documents?

31:14  
It's stored on a SharePoint.

31:16  
So we have just a second at the moment we have our dedicated SharePoint for my team in which we are separated by functions.

31:28  
So from one to 5 and 789 R functions.

31:33  
OK, so I'll give you an example from my function.

31:35  
I have my dedicated mil folder and here I have them separated per module and here I have each version.

31:43  
So whoever wants to let's say see results or work on a branch based on the module version would need to come here and take the milk that they are interested in.

31:59  
So we do not everything is SharePoint based for this everything share and here of model based you have the separate Excel files and the similar way the result files that you just shown so that you maintain model wise, right.

32:13  
So that is my understanding, correct?

32:14  
Yes.

32:14  
So the word files and the Excel files follow the versioning of the module normally.

32:18  
OK, perfect.

32:23  
And it is on all SharePoint.

32:24  
OK.

32:24  
Is there any scenario happen by any chance that let's say the other function member or team member they referred incorrect file or incorrect version and due to which some rework activities or some that kind of incidents happen.

32:40  
So is that a a scenario or cases there or no?

32:45  
I vaguely remember something of the kind.

32:47  
And in this case we just rework the meal.

32:52  
So we take whatever version has the problem and we just rework it and rearchive it.

32:58  
But there is no notification to anyone for this.

33:01  
We just not there, OK, we might open an IS in SBM for traceability and we open it, correct the mail and then say the issue has been corrected and it remains and it's traced only in the Word file in the header.

33:16  
So if I go here, I will trace such an issue in this table, but I would not, that means that I would not increment the version here.

33:30  
I would just say that is 1234 something, something impacts version 5.

33:38  
So in order to give a incremented version that means I have redelivered my module and that goes under the regular delivery cycle and the Cdr.

33:52  
OK.

33:52  
So here that process is more person dependent where person need to understand where exactly the accurate or correct documents are placed.

34:02  
He need to go there check that correct document and then within that document based on the references or the details provided, it needs to be proceed further.

34:12  
So if he incorrectly open the any incorrect version or so that may cause the further defects or rework correct.

34:24  
Yes.

34:25  
OK, then reporting part, can you now let us know about reporting how you perform that report dashboarding part?

34:38  
So is there any specific document that you manage dashboarding?

34:44  
Yes, it's like an Excel.

34:50  
So here in this file I monitor all the I have my road map.

34:55  
So what I am planning to deliver for the specific delivery cycle and I have all my technical facts plus I can which at the moment I don't do sadly is also trace the.

35:12  
So here I have is the mill archived.

35:15  
OK, so if I have a module, for example, this module is open for modification in the in one of the upcoming delivery cycles.

35:24  
And I have the possibility here to give it a status where what state is it in at the moment?

35:32  
Here I have the possibility to select who is working on it.

35:36  
We also have the option to just a moment select reviewer.

35:41  
So this is just for these parts are for the design process to this point.

35:45  
Starting from here, then I can say mill archive this or no.

35:49  
This is a remnant from when my team was writing the validation plans.

35:54  
So now it's with the Hill team.

35:57  
But see here is the same thing yes, no and then the other relevant data.

36:02  
This file is something I've been trying to get rid of for the past 2 years, but it persists because we just don't have a good tool for planning and many dashboard.

36:19  
And I have here at the end some some data that I can plot so it can give me here it can give me specifications per delivery and modules per delivery.

36:33  
So it helps me when I prepare the actual delivery and archiving.

36:38  
And here I have some synthesis.

36:40  
So there are some dashboards made but not something I have been using extensively in the past 2 years.

36:50  
And it's data also requested from our collaborators to know.

36:57  
So they can then basically bill us for what the work they have done.

37:03  
And here also there is dashboarding also about how they modified, which meals they have delivered and how many, how much they validated and so on and so forth.

37:16  
So this is my dashboarding tool.

37:17  
Yeah.

37:19  
OK.

37:20  
So are you, you're not creating any kind of visuals graph bar chart or that status graphical representation.

37:29  
So it's completely in this Excel, the format that you shown that we only get manager, OK.

37:39  
And in this particular process like, yeah, we understood that tool is like you're not using any specific tool.

37:45  
It is Excel based.

37:47  
So all test cases planning it happened in Excel.

37:50  
Then the review approval cycle is also there is a not a workflow within any tool that simply this particular review approval happens but that is within Excel or the manual activity and then the capturing the test results that you perform on the Word document.

38:11  
After once you run the mill testing that you capture the results in Word document and the complete report dashboarding part is also happen in this tool and you have some that macro that internal develop macro which will provide you the different comparison of different function testing like what was data previously created.

38:33  
What is the difference in that in regression testings and then archiving part also you are performing on the SharePoint.

38:40  
So this is what I understood.

38:42  
OK, let me check if any specific question is left from mill side that test planning.

38:49  
Yes, it is a black one.

38:54  
One question.

38:55  
So this reporting and dashboarding you are saying is it only for you or everyone is using the same template?

39:03  
It's not common.

39:04  
We have 3 approaches at the moment.

39:08  
I think I can show you another dashboard just a moment.

39:13  
So it is me, 2 people work on this one with the same dashboard and another one works on this function with the same dashboard.

39:21  
So it's 4 of us out of 10 using this specific dashboard here in this function, just to find where they store their dashboard, maybe here.

39:35  
This one is a dashboard done done by a different person.

39:38  
So we just kind of inherited certain documents from France.

39:43  
So the dashboard I use was made by someone and this one was done by someone else.

39:50  
The approach is not but for the same same kind of activities, right?

39:55  
Different words, exactly the same position.

39:57  
Yeah, same position, just persons working on different functions.

40:00  
So here they like to have their evolution on the same sheet.

40:05  
And they just go column by column for each delivery cycle, whereas I had it one sheet per delivery cycle.

40:12  
And in theory they put the same data.

40:19  
It's not very different than what it is, just organised differently.

40:24  
So here in this particular case that you are creating that version or archiving for, for per delivery cycle, you are creating one file and you are archiving that.

40:33  
And in this particular scenario, they maintain only one file.

40:37  
But that kind of a difference or the different different cycles, they are just putting different columns, correct?

40:44  
Correct.

40:45  
And this is the 3rd approach.

40:48  
This one is only one person out of 10 working.

40:51  
So we have 4 people working with my dashboard.

40:54  
We have 5 people working with this other dashboard that they showed you or no dashboard and there is one working with OneNote.

41:04  
So he found it more convenient to make his own organization in OneNote and trace things like that.

41:13  
So it's something that I tried to address 2 years ago actually, but we never reached anywhere to have a common solution.

41:23  
One, it was resistance from collision to just not having the means to have to develop something quickly or to develop and adopt something quickly enough.

41:35  
So yeah, we are split at the moment.

41:38  
OK.

41:39  
And what about that test cases test plan that the other format that you shown where that traceability and all other details are captured including test types.

41:49  
So is that format is also different?

41:52  
That is common, That is common.

41:54  
Only dashboard format is different, yes.

41:57  
So in terms of format documents are common.

42:00  
In terms of content, we like a bit of standardization, but that's more our internal process and not so much to related I would say.

42:10  
And what about the review approval process?

42:12  
Is it the same or that is?

42:17  
No, it is common.

42:18  
It is common.

42:27  
OK.

42:27  
Yeah, maybe Jaivi, Pranav, Sushant or anyone else is having any other questions specifically for mill testing that we just understood nothing from side which.

42:47  
OK.

42:48  
Yeah.

42:48  
And just one question related to the pain area.

42:55  
So we understood the pain areas or the challenges that you just mentioned.

43:01  
But apart from this, is there any further points or any specific requirement you have in your mind or any other pain area that you would like to highlight?

43:12  
Like because of this current process, it is a very time consuming and lot of time is getting it up just for the formatting or capturing those things manually.

43:23  
So something any specific point is there.

43:27  
So to me it's, it's also relates to the 2 documents, the word file and the Excel file.

43:34  
I would like to have an alternative to them.

43:36  
So that's the major pinpoint.

43:39  
As you saw, copy pasting information, yes, creating reports and all that.

43:44  
Yeah, it's difficult.

43:46  
Second would be the dashboarding.

43:49  
And beyond that, no, at least in terms of what we use.

43:54  
So here, this tool that we have in MATLAB is, I would say, functioning well enough to meet our needs.

44:03  
So in terms of what we do in MATLAB in order to modify specifications and validate, it's I would say quite a robust solution.

44:14  
And no, it's an internal tool developed.

44:17  
I don't know if you will still have it available.

44:19  
Theoretically, yes.

44:20  
So, so here we are covered.

44:22  
So outside MATLAB is where all the problems happen.

44:26  
So the lack of link between software requirement, system requirements and then everything that follows past that point is just, yeah, difficult and very time consuming.

44:40  
OK, got it.

44:42  
You have any question?

44:47  
Yeah, actually we have seen Dhaman, your voice is coming from very low, very far.

44:56  
OK, Yeah.

44:59  
Can you speak little bit louder?

45:01  
Yeah.

45:01  
Is it, is it better now?

45:03  
Yes, Yeah.

45:05  
Actually we have seen different activities starting from disk case creation, trace linking, validation, reporting working.

45:13  
So what is the common channel for communication between the cross function teams or the different stakeholders.

45:21  
So how do they manage like currently in the current process?

45:26  
So is it all through emails or they have any standard practice of all of the in terms of the SCDR process?

45:37  
The communication is done either in the SCDR meetings or via mail.

45:41  
So if we have a technical fact that impacts more functions, then the sort architect ensures that everyone is invited to the SCDR meeting where then we can exchange.

45:53  
The second exchange of information happens in the Vermont meetings where each system has their own dedicated meeting and we can invite people from other systems or from other teams that can then collaborate in order to the in the part of development or technical fact or in during the validation part of the technical fact.

46:15  
So meetings and mails, I would say exchange of information.

46:22  
Sure.

46:22  
Thanks.

46:23  
Thanks so much.

46:25  
Sushant, you have some questions, right, related to the mail process.

46:31  
It was like for the functional side you are creating the mail hardness first right?

46:40  
So it is the closed loop mail testing.

46:45  
It can be either closed loop or open loop.

46:50  
I saw that closed loop you you have shown the model and I didn't saw that hardness for the test like modeling loop testing.

47:02  
I can show you.

47:04  
So just to remember how it went just a moment again to submit in for some reason they made the subsystem a bit funny.

47:22  
OK, so here we have the inputs coming from the signal builder and this is from the close loop and and then how did it go?

47:35  
We have a selector file that tells us which system will come from the signal builder and which one will come from the closed loop.

47:41  
So then the selection I think is based made in this bus selector so telling us what comes from signal builder and what comes from closed loop.

47:51  
So that is a just show you the file.

48:05  
OK, so here as you see, we have all the potential inputs in our mill and here we can select whether it's close loop or signal builder based.

48:17  
So everything that is with the plus comes from the signal builder and everything with the next.

48:21  
If I check for this variable in that bus selector, then it comes from the closed loop.

48:28  
That is how we perform our selection at the moment and we do not use.

48:36  
From what I understand, we do not use test harnesses in our mills.

48:42  
It is actually, I think it, it was actually forbidden based because it I think it interferes with the with the with this tool with east, but I might be wrong here.

48:54  
I do not know exactly why we are not allowed to use test harnesses.

49:07  
It's it's so it's based on the requirement or based or based on input outputs update component test cases I'm asking.

49:17  
Yeah, it is based also on my judgment, I would say whether I find it more suitable to have an open loop signal or if I want to have something in the closed loop instead.

49:35  
When and how you are getting the coverage for each test case, you are achieving the almost 90 or 100% coverage or you have to like give some justification for each test case then.

49:52  
So in terms of coverage, this is our report for the specific module and I think here we had.

50:02  
So we have thresholds, they're not written here, but I think this one has a 7080 and 70.

50:07  
I think it might be wrong.

50:11  
So in yeah, if we do not reach the threshold, we must ensure that it is reached.

50:18  
So we add additional test cases to increase the coverage.

50:23  
And I'm not sure, honestly, I'm not sure I'm answering the question and we have drifted a bit, OK.

50:31  
But like I was asking about the coverage only.

50:35  
And do you have any like standard percentage that you have to be at that level, this storage level?

50:45  
Let me see if I have another meal that has that level.

50:48  
I'll show you the thresholds.

50:49  
We have them maybe in this one.

50:56  
So at the end the table, so the coverage report, we get it from MATLAB, we just copy paste it in the file.

51:03  
And here we have for this criteria we have 8080 and 70.

51:07  
So in we often don't meet it.

51:10  
But at the moment I think it's something that we need to pay more attention to definitely.

51:17  
So in theory, I would need to redo this validation to ensure that we are within the given threshold.

51:26  
So this meal validation at the moment is not sufficient as an example.

51:32  
So you are you are redoing the model model or giving simply a justification to reach that level?

51:43  
Yes.

51:44  
So I would add additional either another scenario or update an existing scenario to improve.

51:52  
OK.

51:53  
Is that a standard practice for each test case?

51:59  
I would say it should be.

52:02  
So it should be standard practice.

52:09  
At the moment I don't think everyone does it.

52:13  
So still the coverage is something that we do not pay enough attention to.

52:25  
So any other questions Sushant you have or you are OK?

52:27  
No, no, it's about coverage only.

52:31  
OK.

52:32  
Yeah, thank you.

52:35  
Yeah.

52:35  
So I think yes, we are good from the mill protesting point of view.

52:41  
So thank you.

52:42  
Thank you for your input and this information.

52:46  
So, Stefan, do we have a Hill team also because the similar way Will, I would like to understand how they perform their testings and how they manage the document.

52:56  
Yeah, yes.

52:57  
The rest of the colleagues are on the HL validation team.

53:05  
Maybe similar way if they provide some input that will be helpful, we'll able to get the complete idea of the process.

53:13  
Is there any difference or any variation is there between the sites or the groups that also please highlight that as well.

53:22  
Yeah, I can try to explain sure a little bit.

53:27  
We are not so far as the process from the what we said we receive the in the requirements as at SDR zero, the system requirements, we receive the system validation requirements between SDR one and SDR 2.

53:55  
So these are our inputs to develop the validation plan, the test for heal validation.

54:05  
So we started like them back in the days with the same format for the test cases.

54:16  
But at some time we migrated the test development and the the way we manage the validation in silk, just this is silk.

54:43  
So most of the job we done, we are doing with this platform, OK, let's say.

54:56  
So we have the tests, we have the testing cycle for each software, we can have some reports, but not but I don't know if many of us using this type of report.

55:23  
So if you have questions, yeah, yeah.

55:26  
So here maybe can you just show us that test like what parameters you manage, then the test cycles, the execution, how you capture that results, the version management of those test cases?

55:40  
Yeah, the idea is what is in silk is a mire of the the same file.

55:49  
So we have the the test number, the version functions of function OK, the requirement reference, the policies reference sum.

56:11  
So here you also your master file is Excel file or a silk test case.

56:18  
I just show you from what we started.

56:22  
Now we are all in this, but the idea is the same information that Blackway show you.

56:29  
So yes, OK just is in silk.

56:38  
So if we go to to a test till somewhere I don't know, we can you can see the same information.

56:52  
OK, so this is the pulse, this is the technical fact, the module, the specification version, the delivery cycle and so on.

57:05  
That requirement reference is just text or it is actually it's a text.

57:12  
It can be a link, but we often don't have the requirement in time to have this link ready when we write the the test.

57:27  
OK, so we do the test writing here.

57:35  
We can have a history on the on the test, what was modified by who, when and so on.

57:47  
The versioning is done by creating a copy and I don't have here just version one, version 2 of the test.

58:06  
OK, So this is about test writing.

58:12  
OK, when it comes to validation, we can create a testing cycle for each software software loop by function.

58:23  
We are splitted in several perimeters.

58:27  
The the hill teams are.

58:31  
So I have 5 teams.

58:33  
Based on the functional aspect, I don't know how to say.

58:40  
So we are splitted by function.

58:44  
Let's see.

58:44  
OK, so for that particular software based on the function, you divide that testing like you divide those test cases.

58:53  
So for function A, these 1520 test cases are there or function B these remaining test cases.

59:01  
So that way you divide and.

59:02  
OK, yeah.

59:04  
And here we have a SXX function the.

59:14  
So these are the testing cycles for this loop for this function.

59:21  
So we go to the each testing cycle.

59:26  
You can see here progress in some cases.

59:36  
OK, so these testing cycles is are the same set of test cases you are executing multiple times.

59:42  
So that is what you are capturing here.

59:45  
OK, depends on the which team, how they manage their validation.

59:52  
The idea we can add here the tests, the same database, we can filter by technical fact, by MD, by delivery.

1:00:11  
By I don't know vehicle variant by test type we have regression tests that column there.

1:00:23  
So filter we can have detailed design regression tests and what is that CR number MW technical fact that CR is a change request or how is it?

1:00:43  
Yeah, change request.

1:00:46  
OK, so for this particular testing you are creating a change request or how how that process start?

1:00:53  
We are we are linking the test with a change request with the requirement.

1:00:59  
So, OK showed you that they are delivering some functions.

1:01:08  
OK, so there you keep that link.

1:01:10  
So for that function new function created or any requirement change happen.

1:01:14  
So for that one change request is already created.

1:01:18  
So to validate those functionalities you are just simply referring this particular test case or this suit is linked with this particular change request.

1:01:28  
OK, yes and and how you are linking the requirements over here.

1:01:41  
So as I said earlier, it's not manually like they're adding manually in that table thing.

1:01:49  
Yeah, just one moment, the idea we can link the change request by searching it and I something.

1:02:05  
So this change request is from this search you are SVN tool, right?

1:02:12  
No, the change request is added in Silk, there is no with external, I don't know management tool, they are little, they are added here just to create the link with the test.

1:02:30  
OK.

1:02:30  
So the change request is the one that we follow the process in the progress in SBM.

1:02:39  
And here they write just the request number, the ID number because there is no direct link between them.

1:02:49  
OK, OK, so that's what I was wondering whether you have an integration between SVM and C?

1:02:55  
No, no, the change request are added based on the software.

1:03:02  
OK, there you need some change request.

1:03:05  
They will add the request, the change request ID here so we can access later when we have a test.

1:03:16  
So the same is for.

1:03:19  
So we have the change request but we can have the requirement in the same way.

1:03:28  
But I told you that often we don't have the requirement.

1:03:33  
The system required policy is requirement on time to read this link with the test.

1:03:42  
OK, OK.

1:03:46  
And we have on each testing cycle, we can add several validation specialists who will manage the validation and they can put the status on the test when they performing the validation on hill benches.

1:04:15  
OK.

1:04:16  
And how you plan those hill bench testing?

1:04:20  
So let's say this, you added the testers then which test cases they are going to perform and what is the time slot or date or duration?

1:04:29  
So how you manage those activities?

1:04:37  
OK, Yeah.

1:04:39  
So we are receiving estimation for the for the future software loop in this estimate.

1:04:53  
In this estimation, we can see what change request will be added and we can create the testing cycle based on this information.

1:05:12  
So we can Add all the tests meaningful test for the validation of the software.

1:05:23  
So this is the plan so that you track in a silk or OK, this execution execution plan itself OK.

1:05:47  
Here is there any dates are getting tracked because I can see only the test cases, the users who are the testers who are going to perform those test cases.

1:05:58  
OK, the idea is if you see here we are having naming convention on the testing cycle, the software software loop function and the week of the OK, OK, this is one thing.

1:06:15  
And the second we actually have a date just to and we create a testing cycle we can set.

1:06:30  
OK, execution setup.

1:06:33  
Yeah, the starting day and the ending day of the testing cycle, one week practically 5 days.

1:06:44  
And while creating this help test, are you creating any test execution like request to get the resources like your bench or the availability of lab?

1:06:56  
This is a separate process.

1:06:59  
We each week we ask for, I don't know, one day of bench for specific software.

1:07:09  
So it's a separate process.

1:07:11  
So which tool you use for requesting that Excel and mail?

1:07:17  
Oh, OK, excellent mail.

1:07:19  
OK.

1:07:25  
And here the review approval for Hill test cases.

1:07:29  
So is there any workflow available or you manually do the review?

1:07:35  
Each team has a separate way of doing things.

1:07:43  
There are 3 roles.

1:07:44  
Let's see like there is a function responsible senior specialist, validation specialist and validation specialist S ref.

1:07:59  
I support the team to write the test.

1:08:03  
Any of us can write the test can be reviewed by others.

1:08:09  
I don't know issue has issue on the way of working.

1:08:18  
OK.

1:08:18  
And if a test case get failed, how you record the defects?

1:08:25  
We so algo team we open an is in SB SBM in SBM you open that issue or defect, right?

1:08:37  
Yeah, yeah, OK.

1:08:39  
The same the same processes.

1:08:42  
OK, OK, mail validation, the similar process you follow.

1:08:46  
OK, got it.

1:08:48  
And here OK, that dashboard reports part that you just shown on this the left side.

1:08:55  
So or do you have any other dashboard available or this is the one you use for we?

1:09:04  
I can, I don't know, follow the progress on each right on each week looking and this but is not the easiest way.

1:09:20  
The idea is that all the status is in the validation can be viewed in a separate tool.

1:09:35  
Just OK is a spot fire is linked with the the Silk database and reads all the data from from Silk and is generates the status of the test of the change request of the software.

1:10:04  
OK, this is a spot fire, OK this spot file tool OK for reporting dashboard purpose OK yeah.

1:10:10  
But usually this tool is used by the project, the SPL and SPLD to can you repeat that?

1:10:22  
Who who use project?

1:10:25  
Yeah, the projecting project managers.

1:10:29  
Yeah, OK.

1:10:31  
The one who ask us the validation, basically the the software leader, for example, can use this kind of reports from spot fire to see the validation progress.

1:10:48  
So this Spot Fire and your Silk database and SBM, those are integrated.

1:10:57  
So somewhere, yes, Silk and Spot Fire, yes, but SBM, it's integrated with Silk only for issues.

1:11:05  
Yeah, we can.

1:11:07  
And also this was done because a spot fire has was developed because there weren't many licenses for Silk for the software project leaders.

1:11:19  
This was the reason because also we can do some report in Silk, The same reports are available also in Silk, OK.

1:11:30  
And because of that license limitation, you are using spot fire to exactly just switch the report, OK.

1:11:37  
And this spot fire is the tool which is sell by vendor.

1:11:41  
It is not internal developed, right?

1:11:46  
I don't know by whom it developed, sorry.

1:11:53  
OK.

1:11:53  
Yeah, no issue.

1:11:55  
And one one more question related to the test results.

1:12:00  
So in Silk you are in which format you are uploading those test results.

1:12:07  
So yeah, OK, each which team member has this dashboard, when a validation campaign testing cycle starts, they will have all the tests here.

1:12:27  
So we can play the test and we can read the test, we can perform the test and we can add any type of comment about the test and how was performed.

1:12:48  
And here we can see a link to the recordings done or list this.

1:12:55  
OK, so you actually capture the results or the recording or that particular parameters Excel PDF and that you are keeping on the SharePoint and the SharePoint link you are adding into the silk.

1:13:08  
OK, Yep, Yep.

1:13:18  
Now just from the maybe before going to the pain areas, maybe anyone have any further questions related to the Hill testing, any point that we would like to understand?

1:13:39  
Yeah, if not maybe then.

1:13:40  
Now Paul, can you provide your maybe requirements for future tool like what you are expecting new tool should do, which will reduce your current pain area challenges?

1:13:56  
Yeah, I want to get rid of Excel, OK.

1:14:00  
Yeah, that is definitely a big pain area because a lot of manual activities that we observed Yeah, like like don't I haven't told you about how I can manage all manage all the I don't know the softwares that will come to in validation.

1:14:27  
It's not all things have this Excel.

1:14:31  
What I I have all the change request and ICS that are delivered and put in this excel to keep track of how when they will when they are delivered and if I need to write the test or not for each taking effect.

1:15:02  
So this is how I track the the way the tests are covered.

1:15:14  
The change request are covered by test.

1:15:18  
OK, so this is another.

1:15:25  
Yeah.

1:15:25  
OK.

1:15:26  
Got it.

1:15:26  
And any other point that like maybe we missed to ask you, but you would like to provide some input on the testing side?

1:15:35  
Yeah, I want to have access to requirements in time to see the validation requirements in time.

1:15:43  
OK.

1:15:45  
Yeah.

1:15:46  
And from tool point of view like here we understood that you're using the silk tool to capture or manage the requirement, but in actual you're the hill testing.

1:15:57  
What are the tools that you are using for the testing point of view, so in which you are in doing the actual testing.

1:16:04  
So maybe will you able to provide the names of those tools for hill testing that you are using for hill testing?

1:16:13  
We are using for example, control desk for from this space in order to simulate the driving behaviour that it's on the car like acceleration breaking, flopping the engine, making some electrical failures, sensors, actuators, everything that's simulated how it is on a real vehicle.

1:16:38  
And then for the data acquisition, we are using data.

1:16:41  
So tools like Inka and measurement of data analyzer for analyzing the recordings in order to have clear view that the test is complied with what we need to validate and many, many other tools depending on the necessity.

1:17:02  
For example, Canalizer if we need to record the CAN messages inside the inter acquisition or some automation tools for Google IT process that we are using.

1:17:25  
And right now other I do not know if there diagnostics tools, Yes, diagnostics tools like DDT for reading failures, reprogramming sessions and DDA for OBD.

1:17:42  
OK, So George, is it possible like since that tool list is bigger, so is it possible to share that list either in that the Excel or maybe you can send us through email also like which area which specific tool that you are using like you mentioned that this space, but in this space I think only control desk or any other model that you are using or Enka or the can analyzer the so that maybe you will have some more tools.

1:18:09  
So if you share that list that will be really helpful.

1:18:12  
Yes.

1:18:13  
Are you, I can make a list with all the tools names, the purpose and maybe we can ask other colleagues what tools they are using.

1:18:22  
Because as Paul explained, we are divided by different functions and parameters and some of them more use something and others may maybe not used as many as many times that software.

1:18:37  
Yeah, yeah, sure, sure, definitely.

1:18:38  
So that will be really helpful.

1:18:42  
And for Stephen, mill testing only the similink you use, right?

1:18:48  
Yes.

1:18:55  
So Sushant or Jaydeep or Pranav, do you have any question related to the mill testing, Hill testing, what to say?

1:19:06  
Sorry, Hill testing.

1:19:06  
Yeah, sorry, my bad.

1:19:13  
But I'm good.

1:19:15  
Yeah, I think we covered, yeah, most of the question.

1:19:18  
But yeah, still, if you apologize, if you feel that any specific topic or point is not discussed and you won't like to provide that information, please feel free to provide that and that will be really helpful.

1:19:29  
I have a small remark regarding the validation process that was not covered.

1:19:35  
Yeah, we are using 2 different kind of software.

1:19:39  
So in our validation, the first one presented by Paul, it's a Ms software which are using Silk Central to manage and have all the validation campaigns for the testing cycle.

1:19:52  
And for the other software, it is ARAM software which we are using an old version of our methodologies.

1:20:00  
Using Excel for validation plans that were were written by Metier for each parameter and the reporting for that software, I can share my screen.

1:20:14  
Yeah, it is done inside the one internal tool called Mindset which covers all the function like a system after treatment combustion for the applicative model and interface and for the pivots we have also divided by each function, each validation plans that we are currently working on the software loop.

1:20:40  
So show them some plan, sorry, show them a validation plan, yes.

1:20:55  
OK, so here we have a validation plan which we validated in excel format and this validation plan contains multiple tests and depending on the applicability of each test we need first to make a filter of each test.

1:21:15  
For example, we can close deselect the test that cannot be done because the software was evolved and the test is not necessary to be done.

1:21:29  
We have the mandatory criticity, which are practically a regression test that need to be covered if the module and specification are updated in order to be sure that the functionality of the software or the function it's properly behaved.

1:21:48  
Other informations like state of requirements, requirement reference, if it is what type of the requirement it is, if it is nominal dysfunctional regulation or BD then we have the actual test with initial condition, our action to be done, expected behaviour and some comments provided.

1:22:13  
Then it is the genetic validation like what is the validation support, HL, bench, vehicle test, mill or sill tests.

1:22:25  
Who is the executive of the test?

1:22:28  
The function, combustion or other parameters?

1:22:36  
If it is pre calibrated like a percentage tuning 75% to completely tuned, tuned intermediation, intermediate tuning something to have a visibility that the software can not be way of so well calibrated For this test.

1:22:57  
Depending on on some inputs that we need to modify and then our actual validation like which software we are using under software loop for example 0906220, what is the engine type or vehicle reference that we are validated in order to know that this test so is applied for that particular engine or vehicle.

1:23:24  
What is the device that we used?

1:23:26  
For example, is the HL bench name and the model, the HL model that we used in validation in order to to know that on this bench and this model, everything was OK where we discover some problems, then what project files we use to who was the person who validated the date and the progress and also the recording name, you know in it US format.

1:23:57  
OK, So this reference that dot dot file is a kind of your the result, yes, from that tool.

1:24:04  
OK, It is the acquisition from Inka Software and after that the whole archive with the test and the validation plan field.

1:24:13  
It is made in an archive format and then stock stocked on SharePoint and the link from that archive.

1:24:25  
It is filled inside the mindset.

1:24:28  
In order to let the project know that the validation was finished, we complete every necessary column, for example the percentage and advancement, the validation plan.

1:24:41  
Note if it is well written or not.

1:24:45  
The status, then the date is put it automatically.

1:24:49  
The assigned person for this task when was used the modified this role, it will be filled automatically.

1:25:01  
The estimation workload that we first when the software enters in campaign.

1:25:06  
We filled this based on the number of tests that we need to validate the documentation that is the actually archive link that we need to provide and comment like validated OK, validated not OK due to some problems he show up and not applicable due to missing real component.

1:25:31  
And that's the second part of the validation that is software that are not so much but we are using a different reporting tool for the validation.

1:25:41  
So here specifically like when you perform that hill testing and let's say any particular software need a calibration, so your team only do the calibration activity or there is a different team and you create a some different request to perform that calibrations.

1:26:00  
The calibration we received from the project when the software entering validation campaign and we are using the flight with the entire code for the pro for the software loop and the project the calibration and then we are performing the tool in order to check the functionality of the test.

1:26:20  
Like for example we need to create a default for canister perch.

1:26:26  
We make all the necessary check inside our Kaita Dushar for the software.

1:26:33  
We proceed to the variables, set the calibration that we discovered and then after the finish we when the default is created and they respect the test, we can put the status OK.

1:26:46  
If we discovered some problems, the default cannot be raised or there is no bad behavior or somewhere in the strategy, then we will open the issue in order to be corrected by the corresponding team.

1:27:01  
OK, got it.

1:27:02  
The paint point of paying part of this application is it is very slow and as soon as you enter in welcome page and open the validation plan monitoring, you need to wait at least 10 minutes depending on the PC.

1:27:22  
Then when you open the exactly valid validation plan for the software, we can wait 10 minutes to 5 minutes, 10 or 15 minutes.

1:27:33  
Same with the current days.

1:27:36  
If you want to see the advancement from one week to another, If we need to check, for example, the same software, it will provide the information like for each perimeter, how many days are remaining in order to finish the software.

1:27:55  
And also very slow.

1:27:56  
And also our clients complain about this.

1:28:01  
I referred to the software project leaders that want to see the status of validation.

1:28:08  
They need to, they also use this tool.

1:28:10  
And we have colleagues that are in, in Brazil.

1:28:15  
And for them, it takes one hour, 2 hours to be able to see the status or, or to open a new validation plan for us.

1:28:24  
OK, so it takes a long time.

1:28:27  
I understood it because of the servers they are in India or something like that and it OK no, no problem.

1:28:38  
Yep, we got this particular pain area also related this particular tool.

1:28:42  
And here we just want to understand this validation status like for all project you are adding those files or the details in this my M set or it is for only specific projects?

1:28:58  
Because for specific project depending on what is needed to enter in validation campaign, if it doesn't enter, we do not need to validate anything on that software.

1:29:09  
And we only work on the request from the from each project if it is a software.

1:29:15  
There are 2 types of projects AM and R EMS depending on the architecture, architecture, software architecture.

1:29:25  
What showed you what George show you is for RE Ms?

1:29:32  
OK, so you whatever you shown that is for RE Ms project, right, Yes, yes.

1:29:37  
And the George is showing what I show you for a e Ms and what George show you is for RE Ms.

1:29:47  
OK, got it.

1:29:53  
And here it's the actual days that remained for each function.

1:30:05  
OK, so here that complete tracking and details are visible with the help of this tool.

1:30:10  
OK, yes, as soon as we filled some line inside the validation plan for a given software, the data are also immediately discovered here.

1:30:25  
But we need also to after each modification to press the display button.

1:30:30  
So it's not real time, OK.

1:30:35  
But the problem as we so said first, it's that this tool, it's good in behavior and the purpose, but it's very slow performance issue.

1:30:47  
Yes, yes.

1:30:48  
The performance issue, we do not know from where this problem is, is the root cause, maybe the servers, maybe the language that the application was written, we do not have sure definitely.

1:31:04  
But yeah, at least from the pain area point, we will add this pain area with particular this tool you are facing these challenges.

1:31:11  
So that is a challenge you are having and it definitely consumes a lot of time to just see or validate that get the display of those status.

1:31:21  
Yes.

1:31:26  
Any other point or any other area that you would like to show for validation part?

1:31:33  
I think it's covered everything the first part for a Ms by Paul and the RMS or by myself.

1:31:43  
Just one more thing though I haven't mentioned, I forgot, it's about validation.

1:31:50  
We can on a E Ms, but we can perform the validation manually accessing the control list and doing all by manually all the action.

1:32:09  
Then we can request the launch of automatic tests.

1:32:19  
So Papa, can you repeat this particular point?

1:32:22  
Understood that you would like to have the launching automatic testing that scenario.

1:32:28  
No, we can do like this already.

1:32:30  
OK, not I, So we can do the validation in manual way accessing the all desk and manipulating all the artifacts on control desk and we can request a launch of automatic test.

1:32:50  
Yeah, we can.

1:32:53  
We have this platform and it's simply a an excel file.

1:33:01  
I don't know, right.

1:33:06  
We told the steps that are necessary for given some test, but they will will be performed automatically by the software without our intervention.

1:33:18  
OK.

1:33:19  
So you need to give all the input parameters and fed into the system and that testing will happen.

1:33:27  
This is the this is the file we can.

1:33:31  
OK, OK.

1:33:33  
Yeah.

1:33:33  
So here you are giving that can frame that signal parameter related to the can and other areas.

1:33:38  
OK, yeah.

1:33:41  
And you're using which tool like it's intra that I can see on that link.

1:33:48  
Yes, it's a it's a in house tool.

1:33:54  
Oh, it's a in house tool.

1:33:55  
OK.

1:33:56  
And it's just for requesting the automation test on HL benches and report the status back.

1:34:09  
OK, got it.

1:34:11  
I don't know.

1:34:12  
I can see we can see the status of the launch after a while and the ID request.

1:34:23  
What type of uh template would was used on what software?

1:34:31  
By on which branch date?

1:34:35  
Who requested?

1:34:49  
And this particular software or that server is with ran or like it is a shared server or the tool.

1:35:04  
The tool it's available on specific benches and can be used by the Nagela system tour by other person.

1:35:12  
Like if we connect to the bench, we can use the OR if we launch an automatic test overnight, we can let the HL assistant to prepare the file, send the, open the tool given the input and then the test will be launched automatically.

1:35:33  
But the downside of this testing methodology is that if we have some, for example some modification inside the HL model and the path it's modified, then for example the stimuli that is used inside the the automatic test to manipulate the control disk cannot can no longer work.

1:35:54  
So you need to be very make rechecked and this can lead to time lost.

1:36:02  
And also the test in one software loop can be OK and in the next software loop depending on the software evolution can be not OK depending on other blocking points.

1:36:18  
OK.

1:36:22  
So from a testing point of view you prefer the manual testing or it's it depends on the purpose of the test.

1:36:31  
For example, if it is something very important that we need to be sure it's working well, for example, OBD part, the first blocking point is it is very difficult to automize them.

1:36:47  
And then we need to have a reputability on the automatic test.

1:36:51  
So depending on what problem we saw in our work, so you some sometime you can help us and sometimes cannot, OK?

1:37:04  
It depends on the situations to respond to the question.

1:37:09  
I prefer the automatic way, but it's not always possible.

1:37:14  
OK.

1:37:19  
Or is like consuming Sushanta, do you have any questions related to the hill testing or any specific input that you would like to understand from the tool chain that we just discuss or the scenario flow that we understood?

1:37:37  
No.

1:37:38  
OK.

1:37:40  
Yeah.

1:37:41  
Thanks Paul George for this input.

1:37:43  
And I just request you to provide that tool names that you are using in Hill testing, create the Excel list with all the tools that we are using and then I will send to Stefan Dimitro in order to share with you with all of you.

1:37:59  
Sure, sure.

1:38:00  
That will be helpful.

1:38:04  
Yeah, thanks.

1:38:04  
And Stefan, now we and yeah, please go ahead.

1:38:13  
OK, so Stefan here we understood that mill testing and the Hill testing.

1:38:19  
So is there anyone available to just explain the sill testing software in loop or I think someone from coding team should do this.

1:38:40  
Stefan, it's not done by on our site, it's done by coding team.

1:38:47  
Yes, correct.

1:38:48  
So maybe if they are not available in a source code management workshop, maybe we can cover that part like we are.

1:38:56  
Anyway, we are going to understand the source code, how they are managing and all.

1:39:00  
So there maybe we'll have this validation topic if no one is available from that team today.

1:39:11  
OK, Stefan, do you need a contact person from coding team or it or you have it's on RNTBCA?

1:39:20  
Yes, yes, we have we have 2 colleagues from RNTBCA, but I think they they didn't connect today.

1:39:28  
OK, if you have yeah.

1:39:33  
So if you need some contact persons, I can, I can help.

1:39:39  
So maybe we should ask those questions to Navin and I don't remember the other colleagues name in the next workshops.

1:39:52  
Sure, no problem.

1:39:53  
Yeah.

1:39:54  
Harikumar.

1:39:55  
OK, Yeah, yeah, yeah.

1:40:02  
I think from yeah test case verification, validation point of view.

1:40:07  
Yes.

1:40:07  
We got the required imports specifically for mill and hill testing and still and the hill testing still testing is performed for architecture.

1:40:21  
RUMS, RUMS, right?

1:40:26  
Yes.

1:40:26  
REMS, is it OK like if you just type in a chat box?

1:40:33  
Of course, of course.

1:40:34  
I am so sorry.

1:40:35  
I am.

1:40:35  
No, no issue.

1:40:36  
Yeah.

1:40:51  
And still like we would request, like you can revisit the questionnaire that Excel Google form will be shared by the Stefan.

1:41:00  
So there any specific input or information that you would like to add or update, please update that detail so that way we can record those things.

1:41:11  
Of course, of course.

1:41:16  
Thank you.

1:41:19  
So Ajay deep, do you have any further question or should we conclude or how is it?

1:41:26  
Just let me check.

1:41:29  
Yes.

1:41:36  
So have you discussed about the change Vijay or maybe some standard libraries for discuss management?

1:41:47  
So here what I understood is that they are not maintaining any the test case library maybe George Paul, you can confirm it is a specifically based on the functions that you are managing the test cases and that is on Excel base.

1:42:03  
So is anything related to the test case library that you would like to add?

1:42:09  
I'm afraid I don't understand exactly what are you referring to this case labels?

1:42:19  
Yeah, it is a the test case reusability.

1:42:21  
So you have the set of common test cases that you may run on a multiple function or multiple projects.

1:42:28  
So normally how you reutilize those?

1:42:31  
Do you have any common repository where you have this test cases stored and you are just taking for the new project or new function?

1:42:41  
So the test cases are stored in silk or a EMS can reuse some test.

1:42:53  
In some cases the regression test are usually used.

1:43:02  
So yeah, we can reuse, we maintain the test, we modify the test if needed to be applicable for for the softwares or for the specific software.

1:43:25  
OK.

1:43:25  
And what about the mill testing is the same scenario?

1:43:34  
Sorry, I didn't follow very well.

1:43:36  
So that question is related to the test case library or the test case reusability.

1:43:42  
So in your case, you are managing the test cases in the Excel and that is based on the function, right?

1:43:49  
For each function, you are creating a different file and managing those test cases.

1:43:53  
So in this particular area, there might be some common test cases.

1:43:56  
So that can be reuse or repurpose.

1:43:59  
So how you are managing those test cases or how you handle those scenarios, we do not.

1:44:05  
We just define independently.

1:44:09  
OK, it would, it would be good if we have a way to have a library of test cases that we can then apply on multiple functions.

1:44:22  
OK, got it.

1:44:23  
And from the change management point of view, what we understood even for Mill or the Hill testing when any change get created initially, maybe it is for adding a new functionality or any requirement change.

1:44:38  
So that entire flow happens like the modification of requirement or completion of the requirement.

1:44:44  
Based on that if any requirement change you are kind of updating or validating whether the test case is still valid or any parameter need to be changed and accordingly you perform the validation and provide the results and you always refer that particular change request number for that particular test execution.

1:45:05  
So is that understanding correct or is there any other process that you follow?

1:45:12  
It's correct.

1:45:14  
OK.

1:45:14  
Jadip, you would like to ask anything specifically for change?

1:45:19  
Yeah, I will have we touch based upon the seal testing, Vijay, No, no seal that the software team is not there.

1:45:25  
So maybe in source for management we need to Yeah, OK, OK.

1:45:29  
Naveen and that his team will able to help us in that.

1:45:35  
OK, perfect.

1:45:38  
Just wanted to understand if if you are writing a new test case for the new function, is there any workflow defined for that for reviews, approvals or if you want to absolute any, any test case.

1:45:58  
So what are the rules responsible for it and who approves it?

1:46:11  
I'm not sure I was able to articulate my question properly.

1:46:14  
Yeah, it's OK.

1:46:16  
So each team has its own way of review the test or modify the test existing test based on the new functionality.

1:46:36  
There is no, I don't standard way to for flow to manage this type of process.

1:46:49  
OK, OK, theoretically we have the requirements.

1:47:04  
We try to write a test, some person will review the test, if it's OK, OK, if not, we perform some modification until they are done.

1:47:19  
So if we see that some new functionalities are modifying or based on this new function, we need to rewrite some regression test.

1:47:44  
But again, it's how we manage internally each team this type of activity.

1:47:54  
OK, OK.

1:47:55  
So if I understand correctly, Paul, that every team has their own structure and they perform these approvals and validations internally, right.

1:48:08  
So there's they have their separate ways to do it.

1:48:11  
No standard way.

1:48:12  
OK, Yeah, the validation is clear.

1:48:14  
We follow, we more or less we are following the way Silk is doing, but the right not so much.

1:48:28  
We don't have the validation is clear.

1:48:34  
We don't have the test must perform the test with the recordings, the comments and the status and this is the the way, but the writing yeah, it's free, please time.

1:48:54  
OK, perfect.

1:48:55  
And how do you make sure for both the testing, Mill Hill and Sale that it is linked to your milestone of the product development like SDR 4, SDR 5, whatever?

1:49:18  
Yeah.

1:49:19  
Sorry.

1:49:20  
Can you please repeat?

1:49:22  
Yeah.

1:49:22  
So my question is how do you link your, you know this plan, testing plan with the product development gates that is SDR 45 whatever you have the product development gate.

1:49:36  
OK, yes, I think this so systems engineering leader might be able to respond this better.

1:49:44  
So they prefer prepare the report.

1:49:46  
From what I understand, they need to provide the validation proofs for every technical fact per system requirement.

1:49:57  
I believe so they gather results from Hill validation from Mill validation based on the validation means defined for each requirement and present in the SDR process.

1:50:09  
But still at least might answer this much better.

1:50:14  
OK, OK, right, right.

1:50:18  
So maybe we can discuss with the team when we have a project management session, right.

1:50:31  
And what is what is size of validation team and where actually from where you are carrying out these activities specifically Hill testing the size, do you mean how many?

1:50:50  
Yeah, how many people?

1:50:55  
This is hard, right?

1:50:59  
My microphone wasn't working.

1:51:01  
So we are around 40 persons in our team, 40, OK.

1:51:10  
And so on her side we are 2024 and on that translate site the rest of persons, but around 40 persons.

1:51:26  
OK, So does it cover the all the locations across the world?

1:51:32  
Yes, we, we do.

1:51:34  
We manage the validation for all seats on her side.

1:51:39  
Ohh.

1:51:39  
OK, OK.

1:51:41  
So and we do validations on ECMS, HTCMS, HTVC, battery is part management and inverter.

1:51:58  
So we are different parameters for BMS and inverter.

1:52:02  
At this moment there are non Ms softwares, so there isn't a structure like you saw for IMS and RMS.

1:52:17  
They manage the the feedback and the following by by itself.

1:52:25  
OK, OK.

1:52:27  
And what are the typical roles in your in your validation team?

1:52:33  
The validation engineers could be there or maybe leads managers, something like that.

1:52:38  
Sorry, can you please repeat what are the different roles who are performing these activities, roles and responsibilities?

1:52:47  
Maybe a validation engineer or testing engineer, something like that?

1:52:52  
Ohh yes.

1:52:53  
So we have free type of jobs in our 4 type of jobs.

1:53:02  
So we have the specialist integration validation, they are the Sivs as we call them.

1:53:12  
They do the they write the validation plans and they perform the validation on HIL or automatic tests depending.

1:53:23  
We have the SIV senior and they manage on technical side the the SIV team and we have the function Rev responsible, validation responsible, the Rev that manage the communication with the project team, with the SPLD, with the software project leader delegated.

1:53:57  
They talk about the content, the planning, they make sure that the validation will end at the correct timing.

1:54:06  
Oh, OK.

1:54:08  
Which are these roles you said I forgot.

1:54:10  
Sorry, I'm I missed out.

1:54:11  
I will, I will write them to you if it is.

1:54:14  
OK.

1:54:15  
OK, perfect.

1:54:15  
Yeah, Yeah, that will be really helpful.

1:54:16  
Yeah.

1:54:17  
The roles.

1:54:17  
Yes, I will write them to you and.

1:54:20  
Sure.

1:54:23  
OK.

1:54:25  
And also we have the hill planner, this was the 4th person and he manages.

1:54:31  
So he gets from all the teams the information or how many slots they need for validation.

1:54:41  
And then he splits for each bench available, who will work at what time and everything.

1:54:51  
So he does the planning based on the needs of the of each perimeter.

1:55:02  
OK, perfect.

1:55:08  
And any, any, any automation you are doing currently in the tools, for example, there are certain repetitive activities.

1:55:18  
So generally what business do is to avoid that repetition.

1:55:23  
They write some scripts, you know those can be used which can reduce your repetitive activities.

1:55:34  
For example, reporting, just one example I am giving reporting, you can take the data, put in the excel, run the script and you will get the reports, something like that.

1:55:45  
So are you having such scripts developed for your team?

1:55:59  
If you mean regarding the activity or or the validation status or anything means I have given so so on Silk.

1:56:11  
On Silk there are some reports that we are using for each software.

1:56:16  
We can see the validation status for each change request and also we can see the what issues were opened for each test and also the the final status for a change request.

1:56:37  
I don't know on the test results we have the status for each change request if it is according to the system requirement or not.

1:56:49  
So there's some reports available in Silk regarding our activity that the software project leader can extract them from Silk and also it's a similar way for mindset for RMS.

1:57:08  
OK, OK.

1:57:10  
So I hope that is a functionality of Silk, right?

1:57:13  
So what you are explaining, but my question was little bit different that apart from the functionalities which are provided by tools, are there anything extra developed or custom applications, custom scripts which can give you a specific different result.

1:57:32  
Maybe you got some reports from Silk and now I need to do some additional work on that.

1:57:38  
So for that purpose I have written some scripts or something like that.

1:57:45  
I know there was developed some scripts in the past for different activity, but they were done by team members for black, black like you, you did it, you know, to extract some information from the CDC.

1:58:00  
So yeah, we had the, we made some efforts to simplify some task here.

1:58:05  
So in the part of the building of the validation plan, for example, we made the Python script that parsed PDF files to extract technical facts.

1:58:16  
So for each, we will take 2 software loops, content of 2 Sofs, let's say, and we will just do a delta between them to extract what we need to validate for the current loop.

1:58:28  
So what has evolved And Paul, I think then advanced that a bit more.

1:58:33  
And so such things here.

1:58:35  
And we do them also in currently in my team or an automation of tasks in MATLAB that are not covered by East or all sorts of other small Python scripts.

1:58:48  
But anything, everything is just in team.

1:58:50  
So team members develop all that.

1:58:53  
Yeah, we have outside of, we have the support of the tool team in RTBCI who maintain East, who maintain SBM or Obama.

1:59:10  
Should we do a list of do you need a list of these scripts and what is their purpose?

1:59:17  
Yeah, that will be helpful because the purpose is OK, we can when we are validating or doing the assessment of the tool, we would like to see whether that functionality is offered by tool or not.

1:59:32  
For example, I show you, I showed you dashboard for AEMS project.

1:59:40  
I told you that we receive a list of change request for more Excel for each software just in big.

1:59:58  
So we receive a list of change request or a list of ICS.

2:00:04  
I will be paste in here and I have a little synthesis of what was added in this particular software room so.

2:00:21  
For my parameter I have 4 ISS, 2 on PS MG, one on PTSP, one on WTSP.

2:00:32  
This is done in Excel.

2:00:35  
OK, Yeah.

2:00:36  
So this script you written and based on that you are extracting that information?

2:00:41  
Yeah.

2:00:42  
OK.

2:00:44  
So this block said we have some Python script to parse the PDF, struck some detailed content about the evolution of the software.

2:00:59  
OK, yeah.

2:01:00  
So yeah, yeah, Please wait.

2:01:04  
No, I was thinking perhaps we could implement in the new tool something that would help us in something similar that yeah, could could help us.

2:01:16  
OK, So I'm going to talk with all my colleagues and we'll see what scripts we have and perhaps you could help us and make the link to the to the new tool.

2:01:30  
Yeah, sure.

2:01:30  
So we are going to check if that tool offers this functionality or not.

2:01:35  
So if it is offered, then definitely you don't have to use the script.

2:01:39  
You can use the exactly same functionality.

2:01:41  
Yeah, correct.

2:01:42  
It's a very good idea.

2:01:43  
Thank you.

2:01:45  
And I saw also that Naveen has connected.

2:01:49  
So yeah, one time information.

2:01:51  
Yeah, yeah.

2:01:52  
Hello everybody.

2:01:55  
Hello, everybody.

2:01:55  
Hi.

2:01:55  
So Naveen, just to give you a quick background, we were discussing maybe let me quickly share the screen.

2:02:05  
Is my screen visible?

2:02:06  
Yeah.

2:02:07  
OK.

2:02:08  
So today we are discussing mainly verification, validation related points and we had a discussion, very good discussion on the mill testing and the Hill testing.

2:02:21  
So we in that we covered like how the test cases manage like overall process, how that execution happens, how they maintain the traceability version or the test cases, the review approval cycle.

2:02:33  
Then the next part is like the baselining or the report dashboard part, how the test results are managed and any template or workflow, any customization or integration is available in pan area.

2:02:47  
So this is what we discussed specifically for the Hill and the mill testing.

2:02:53  
So similar way we would like to understand about the sill testing.

2:02:57  
So I think you are the right person to provide that information, right?

2:03:01  
Or do you need to pull someone from your team to talk on that particular area?

2:03:07  
Yeah, yes, yes, I I can.

2:03:09  
I can view and also.

2:03:15  
So maybe is it a good time like will you able to provide that information in this call itself or how is it?

2:03:21  
OK, I'm just reading the question.

2:03:24  
Yeah, maybe with okay, test case management plus, yeah, so maybe still point of view if you just explain the process, how the cell testing is performed and yeah, maybe I will pitch in the specific questions or specific.

2:03:41  
Yeah, so, yeah, sure.

2:03:43  
So the cell process is because we do the cell at the specification level like kind of a model level.

2:03:51  
So we have an automatic tools to generate the test cases from this specification and the same test cases we will give it to the model and get an expected outputs and the same thing we will give it to the code and compare the results.

2:04:08  
OK.

2:04:08  
So may be tool wise like from which tool you get the input, which tool you process.

2:04:13  
So if that way if you explain that will be helpful.

2:04:16  
Yeah, we will.

2:04:17  
We use a market tool called BTC, OK, BTC embedded tester.

2:04:22  
So with this tool we give the model as an input.

2:04:26  
We also give a kind of workspace like a kind of a dictionary information and and the tool automatically generate the test cases by reading the model and the and the dictionary.

2:04:39  
So here model means Simulink model the that that.

2:04:42  
OK, yeah.

2:04:47  
So you give that Simulink model the to this BDC tool and with the specific you have that some standard library, right.

2:05:01  
When you say like I mean in the inside the sibling you mean no, no, that that model.

2:05:08  
And what is the next what other input that you provide Dictionary.

2:05:12  
Dictionary.

2:05:13  
Yeah, OK.

2:05:18  
And based on that automatic test cases are generated for that particular software model, right?

2:05:23  
Yeah, exactly.

2:05:26  
And I mean, what is that dictionary exactly the dictionary means?

2:05:30  
So we we have the inputs and outputs.

2:05:33  
So what are the inputs and what are the outputs and what is that?

2:05:38  
Sorry, somebody is it is it SLDD of that component only?

2:05:46  
So sorry, what is SLDD may be not sure milling data dictionary.

2:05:53  
Yeah, it is, yes.

2:05:54  
It is kind of a sort of I mean, so the basically when we want to generate the test cases, we have to feed it to the tool that what are the inputs and what are the outputs and what are the data types and what is the range of each, each data.

2:06:10  
And if there are any calibrations also inside we need to feed it to the tool.

2:06:18  
Yeah.

2:06:18  
Is that a Excel file or its a dot SLDD file We have in the.in file 40 M OK OK its its kind of SLD only within M script.

2:06:34  
In our case Jaydeep its like interface control document, but we didn't MATLAB its an M script.

2:06:44  
OK, OK, OK.

2:06:51  
Then once that test cases.

2:06:54  
Sorry Vijay, Vijay.

2:06:55  
Yeah before before going to that just one more question that we who creates that dictionary, It is created by the designer, the person who in charge of the make in charge of making the model makes this dictionary.

2:07:12  
OK.

2:07:13  
So you mean someone like software architect Yeah kind of a referent what we call referent or the the specification designer.

2:07:27  
OK, OK, OK it's from from the team where Blago is yeah on algo side, on algorithm side, sorry.

2:07:43  
So so for example, the the role that Blago has is the person that will update the dictionary.

2:07:52  
Ohh.

2:07:52  
OK black book.

2:07:53  
OK, Yeah, yes, he had to leave the meeting, but he can help also on on which part if you need.

2:08:03  
OK, more information.

2:08:06  
OK, good to know.

2:08:07  
Yeah, so and Naveen these all test cases are maintained in the SIM link only if I understand correctly, correct.

2:08:23  
Yeah.

2:08:25  
OK.

2:08:26  
And there there is no excel sheet and such thing you are maintaining for that No to OK to record the results and all those things, right?

2:08:38  
No, the the in I mean in between of the steps the tool generates in the excel also the inputs, the test cases and the results, the expected outputs, it comes in the excel file.

2:08:51  
Ohh, OK, right, perfect.

2:08:56  
And how it is linked with your requirements, OK.

2:09:01  
So when it comes to the SIL, we do not do any requirements based test, OK, Because we do only the structural test cases.

2:09:08  
So that is why we we use an automatic test generation tools.

2:09:13  
It is just based on the dictionary information.

2:09:17  
But the requirements based test, it is mainly done on the mill part in the mill during the mill validation.

2:09:24  
OK, OK.

2:09:34  
So your requirements are going to similink somewhere you are managing those requirements again in similink the requirements yeah, the require I mean when we do the mill I mean yeah, yeah.

2:09:53  
So when while doing the mill validation, each specification designer will write the test cases based on the requirement and they will they will see the output based on the requirement whether the output is behaving as it is expected or need.

2:10:10  
OK and how you are taking it to SIM link?

2:10:15  
Is it manual way or how it is?

2:10:18  
So they are maintaining a kind of an excel file and then automatically there are some tools to load it into the SIM link.

2:10:27  
Ohh.

2:10:27  
OK.

2:10:30  
So are those tools provided by MATLAB or is it a custom scripts?

2:10:35  
Yeah, it is.

2:10:36  
Here it is in house scripts.

2:10:38  
OK.

2:10:40  
I think Naveen is referring to the tool that George mentioned earlier for the meal.

2:10:49  
OK, OK.

2:10:50  
Yeah.

2:10:51  
So in SIL they are not running the functional test cases that you saw in meal.

2:10:57  
Yeah, exactly.

2:10:59  
And there are new test cases automatically generated by BTC.

2:11:08  
So the functional test cases that you saw in Mail are not run at all in SIL.

2:11:13  
Yeah, you are right.

2:11:15  
Yes, Yeah, thanks.

2:11:18  
Yeah, no problem.

2:11:27  
So Naveen, maybe you joined late because of your other other meetings, but do you want to highlight few things from the seal?

2:11:37  
And of course we got the overview of mill testing, but if you want to give any additional input, I think that is that will be good for us.

2:11:47  
Yeah.

2:11:47  
The the basically the process is like this in the seal.

2:11:50  
I mean there is a, I mean we don't have a lot of tools.

2:11:55  
We use only one tool called BTC which which does 2 things which does the test generation as Welland also it does the back to back testing.

2:12:05  
I mean the mills will comparison so both the things it performs that.

2:12:09  
So it is a single tool.

2:12:12  
So, OK, good targets are also 100% to reach the targets coverage.

2:12:24  
OK, so Naveen here like we have the questions related to that like test case, version, review approval.

2:12:33  
So since this is automated generated and parallel, once it is generated like you performing the testing, so how this the version or review approval?

2:12:43  
So is that process followed for sale or how is it?

2:12:46  
Yeah, yeah.

2:12:47  
Because does the test cases are generated based on the SIM link.

2:12:52  
So the SIM link has the version in it.

2:12:56  
So this same version only it is used for that SK generation and and to store the artifacts.

2:13:03  
So we also maintain the same version than the Simulink.

2:13:07  
OK.

2:13:07  
So Simulink whatever Simulink model version you are having.

2:13:11  
So that same version will be maintained to generate the test cases and those test cases are get stored in the same model version.

2:13:21  
Is that understanding correct?

2:13:23  
Yeah, stored with the same version.

2:13:25  
Yes, same version.

2:13:26  
OK.

2:13:28  
And is there any review approval cycle happens before running those automatic?

2:13:33  
Yeah, Yeah, of course.

2:13:33  
I mean before we make the delivery.

2:13:36  
So there is an internal review.

2:13:37  
I mean it is just to ensure that the test cases are properly generated and the coverage targets has been met, the reports are well, well stored.

2:13:47  
So some kind of a review mechanism?

2:13:50  
It's an internal review mechanism.

2:13:52  
So who is the responsible normally like from role point of view if we see who normally does that you mean the review you mean Yeah, review approval.

2:14:01  
Yeah, it is the same.

2:14:02  
the IT is the same thing.

2:14:03  
But only thing is that the example if we have a 6 members, so the review will be the person makes the testing will give the artifacts to other person and that other person will do the review.

2:14:22  
So it and and same and the same thing.

2:14:26  
The other person Artificax also will be reviewed by other person.

2:14:29  
So OK, got it.

2:14:30  
So it will be within the same team whoever generate the test cases.

2:14:34  
So, yeah, apart from that other whoever is available to perform the review that person do the review and kind of peer, peer.

2:14:43  
Okay, OK.

2:14:46  
And then this requirement to test case, you mentioned that yes it is for SIL, you are not tracking the requirement directly.

2:14:52  
It is linked to the mill side and mainly for this SIL testing, this is a specifically for your that SIL model and the dictionary based on that test case is generated.

2:15:08  
OK then yeah.

2:15:11  
So this the test case planning or when exactly this testing is happened like in which gate, between which gate, Yeah, testing is, yeah, yeah.

2:15:26  
Testing is by default whenever there is a specification is delivered by the designer.

2:15:31  
So we do the coding, we do the testing.

2:15:34  
It is an automatic way.

2:15:38  
There is a process that for each specification coding and sill has to be performed.

2:15:43  
OK, so for this particularly coding related part.

2:15:47  
So I think you are not 100% doing the coding on a model.

2:15:54  
Are you developing any external codes or are you using any external libraries and then merging to your model code or how how how that process happens?

2:16:03  
So that part I would like to understand.

2:16:06  
So we are making a code and there are some supporting files are needed.

2:16:11  
It is only for the sleep testing, because sometimes the supporting files comes written by the supplier.

2:16:16  
So we make our own code just to proceed the validation example, there are something related to the mathematical functions, something related to the BS basic software development.

2:16:29  
That that is our easy supplier is in charge of it, but we need it in order to do the back to back testing.

2:16:38  
So we make our own thing, but we don't deliver these things to the suppliers.

2:16:42  
Yeah.

2:16:43  
OK.

2:16:44  
So mainly you are responsible for application level software development, right.

2:16:48  
So in a application level software development when that model is created in a Simulink.

2:16:53  
So from Simulink you are once that software architecture got created.

2:16:57  
So you are extracting the code from Simulink itself or?

2:17:00  
Yes from Simulink.

2:17:02  
Yeah.

2:17:02  
OK.

2:17:02  
And is there any further modification or addition you are doing on that code or the 100% code is from Simulink only?

2:17:09  
It is from the Simulink.

2:17:10  
We don't do because it is a one to one mapping.

2:17:17  
Yeah, OK, got it.

2:17:18  
So that part is clear now.

2:17:24  
Yeah, baselining part how you handle like I think it needs to be handled through that model baselining itself, right, Since it is test cases are captured and maintained in SIM link only.

2:17:37  
So, yeah, how you perform the baselining?

2:17:40  
Yeah, it is based on the versioning control.

2:17:42  
I mean, whatever the version will have, we make the baseline for each specification because the specification and the version is unique.

2:17:52  
So using that we make the baseline.

2:17:56  
OK, perfect.

2:17:58  
So that is clear.

2:17:59  
Then the reporting part, so Similink is providing you the good reports related to the testing coverage and execution and all or you need to generate that separately.

2:18:13  
Is there any manual effort involved?

2:18:16  
Yeah, suppose sometimes if the test cases are not generated 100% by the automatic tool, then the person has to put some effort to add some additional test cases.

2:18:28  
If it is, if it is possible to improve the coverage, OK, OK.

2:18:34  
But that report that you are getting automatically right is whether it is the 100% coverage or it is not, OK, Yeah, that is automatic.

2:18:43  
That is again in similar module.

2:18:46  
Yeah.

2:18:48  
OK.

2:18:48  
Then the next question is related to the result management.

2:18:52  
So once you perform the testing, your results are getting recorded in SIM link.

2:18:57  
So is there any specific separate files get generates or for the results?

2:19:05  
I mean for the sill sill testing, yeah, results execution, we get a results for the comparison and to share that we also get a report saying that all the test cases are passed if anything failure.

2:19:20  
So that report also we will get it.

2:19:22  
So are you extracting that report in Word, Excel or any other format?

2:19:28  
It comes with HTML format.

2:19:31  
So are you storing somewhere else or?

2:19:33  
No, Yeah, it is just for record.

2:19:36  
It is stored along with the artifacts of the reports, I mean verification reports.

2:19:42  
OK.

2:19:44  
In the yeah, the tool wise, yes, it's a SIM link only the template since it is a automated, I think there is no like whatever standard template is available from in that or do you have any custom template created for in simmilling to generate this test artifacts for sale?

2:20:04  
No, there is no specific template, OK.

2:20:10  
And workflow point of view it is a manual, right?

2:20:14  
Like you mentioned that that.

2:20:17  
Validation, the review approval, it happen within a team and it's a manual, yeah, OK.

2:20:25  
And integration point of view.

2:20:27  
So are you do you have any integration with symlink related to the testing or any other purpose to just face the information or face some further inputs or pass those testing result to any other tool?

2:20:42  
No, we don't lose OK.

2:20:45  
And any automation APS or the custom script development within a SIM link to perform these sill related testing.

2:20:54  
Yeah, yeah, it is maybe to to to automate the steps.

2:20:58  
We have some inter in house scripts in the MATLAB.

2:21:03  
OK, perfect.

2:21:03  
So will it possible for you like we requested that Mill and Hill team also like if they have this kind of script maybe if you just list down what is the script name purpose and which team is using that, that that will be helpful.

2:21:22  
OK, yeah.

2:21:25  
And from pain area point of view any improvement or anything challenges that you are currently facing and that you would like to see improvement in it?

2:21:38  
No, exactly.

2:21:38  
I think the for the sill we don't have any, I mean difficulties at the moment because we are doing this process I think from 2017 for this process, OK.

2:21:53  
And this I think you your O team only perform this cell like throughout there is no other location performing this cell verification validation.

2:22:04  
So process wise the the whatever activities you are doing, it is same there is no deviation in it, correct.

2:22:09  
Yeah, OK.

2:22:14  
Yeah, maybe Sushant, Jaideep, do you have any question from cell testing point of view?

2:22:23  
No.

2:22:26  
So Naveed any any specific pain areas you have today or you would like to improve in that particular activity or maybe in future what you would like to see?

2:22:46  
So can you please?

2:22:50  
Yeah, currently because the process is more standardized because we had a lot of difficulties before because now the now the tools and also from the market tools also has been improved even the in house scripts also has been improved.

2:23:06  
So the all the challenges were were overcomed actually as I said because we started this process since 2017.

2:23:14  
So it is a quite big time when we started this process.

2:23:20  
So it is, but now it is it's a very more standardized I can say this process.

2:23:27  
OK.

2:23:28  
So only the thing I can see is that entire testing process or the test cases are not traceable with the requirements.

2:23:40  
Is that correct understanding?

2:23:41  
Yeah, yeah, yeah.

2:23:44  
So if you can do that, I think that will be kind of good thing for you.

2:23:51  
Yeah, because currently I mean our our point is that the requirements based test should be done only at the model level and the structural test cases should be done at the code level and that too as we are in charge only for the QMQM level because we are not doing for the ASIN lender.

2:24:15  
OK.

2:24:21  
And generally how do you get the inputs for the functional safety and cyber security aspects?

2:24:29  
No, in that actually for the cyber security, no, because this is done by this is managed by our VC suppliers.

2:24:37  
Then when it comes to the safety, because it is only from the designing point of view and then these designs will be sent to our ECU supplier, they perform the coding and the testing.

2:24:53  
Ohh OK so so I am bit confused here.

2:24:57  
So you said your supplier will do the coding and testing right?

2:25:03  
So that and you are only doing the validation.

2:25:07  
Is that correct again?

2:25:10  
Yeah, When it comes to the mail cell, OK.

2:25:12  
When it comes to the mail cell for the ASIL part, it is completely done by the supplier itself.

2:25:19  
Ohh.

2:25:20  
OK.

2:25:20  
For the SIL part you said?

2:25:22  
Yeah for the mill cell including coding it is done by ECU supplier and for for the meal part, I believe you are doing in house, right?

2:25:41  
Yeah.

2:25:45  
Interesting.

2:25:51  
So your supplier come comes up with with the software and the issue and directly supply supply to your product line.

2:25:59  
Is that the reason behind this?

2:26:02  
It is very historical reasons.

2:26:04  
I mean when we started from the projects, it is not now, I think it is, it is following from I think it is from 2002, 1007 or 8.

2:26:16  
OK, OK.

2:26:19  
Is very historic.

2:26:20  
Yeah.

2:26:21  
So don't know the correct reason, but the conventionally it is followed like that.

2:26:27  
OK, perfect.

2:26:29  
Maybe we will discuss more in software development.

2:26:34  
Yeah.

2:26:35  
What shop?

2:26:36  
Yeah.

2:26:47  
OK.

2:26:48  
Any specific future requirements you want to mention, maybe anyone maybe nor Paul don't know I think how we can improve your process going forward, something like that.

2:27:21  
Any inputs from your side?

2:27:37  
OK.

2:27:37  
I think yeah, I think we are good then Yeah, if anything comes in your mind after this workshop also please feel free to provide that details.

2:27:47  
Maybe you can write or provide those input documentation to Stefan, so that way we will get the access for that, correct.

2:28:00  
And Stephen, have you have you started floating the question as to all the statement?

2:28:09  
Yes, we send the questions to to all of our colleagues.

2:28:15  
Ohh, OK, good.

2:28:16  
It's a Google form, right?

2:28:18  
Yes, yeah, good.

2:28:19  
Yeah.

2:28:22  
So, so please, please provide your inputs on the Google forms.

2:28:28  
I think that will really help us doing the further analysis.

2:28:41  
OK.

2:28:41  
I think we are good.

2:28:42  
To Stephen, any closing comments from your side?

2:28:46  
Yes, so we can we can stop here if there are no questions or remarks.

2:29:00  
Yeah, OK.

2:29:02  
Thank you everyone.

2:29:02  
Thanks for your time.