**[HVT][WS03 - extra] Safety-20250506\_130246-Meeting Recording**

0:10  
Hey, can I, I would like to know a little bit more details about what you want to know in terms of safety.

0:25  
So my, I'm start the meeting by asking what are your expectations?

0:32  
I mean, from, from, from everybody, because it's not 100% clear for me.

0:38  
What do you want to know?

0:44  
Yeah, sure.

0:45  
So now basically we would like to understand.

0:49  
Let us introduce ourself.

0:51  
Yeah, hi.

0:52  
So my name is Vijay, I'm from our Tata Technologies and with me Jaydeep Parke, he's also here.

1:02  
So Daniel, basically this exercise is to understand the the existing horse process of managing the requirements because hospital looking for new systems where the requirements test cases will be managed and along with that it will support the software development process.

1:26  
It will try to expedite the software development process.

1:30  
So functional safety plays the important role in that nowadays and whatever the requirements are listed under the functional safety, how that can be captured and appropriately taken care when you are implementing the project.

1:48  
So that is how the we are trying to address the address the concerns.

1:56  
However, today we would like to understand from your side is in host today how you are managing the functional safety requirements, how the imports are given to the requirements management people or system architect, software architect and so on.

2:13  
So where from where you get the inputs, how you process it and who are the people you know consume your requirements.

2:24  
So that is what you would like to understand which tools you are using today.

2:29  
If it is a Excel, doesn't matter if it is any tool you're using would like to have a walkthrough of that tool, how you capture that requirements.

2:39  
So that's a basic, basic, I would say requirement for the today's discussion.

2:47  
Does it, does it, you know, clear your yes, yes, yes, yes, it's OK.

2:57  
So maybe I think last Tuesday we had a requirements management workshop.

3:06  
Stephen has scheduled it with all the stakeholders.

3:09  
However, we did not get much clarity on the functional safety aspect.

3:14  
So he scheduled this call with you so that we can understand in detail that how we are, you know, performing your task today.

3:23  
Yeah, yeah, yeah.

3:25  
Unfortunately in the past weeks I was in medical leave and couldn't attend any any meeting.

3:32  
So OK, hope so Hope you are fine now.

3:36  
Hope you're fine.

3:37  
I I am fine.

3:38  
It was my my daughter who, who had the otitis.

3:43  
Ohh, an ear infection and I had to stay at home with her.

3:48  
Ohh, OK.

3:51  
Yeah.

3:51  
So I, I don't really have something exactly specific for your needs, but I can share you what I have.

4:03  
So can you see my screen?

4:07  
Yes.

4:08  
OK, so to start I want to present you this workflow.

4:14  
He as in horse we are using the all 53 process and this is the name of the system design and the validation is the process requirements management.

4:27  
So here we have the the the V cycle and the for each step.

4:32  
Here we have the activities and this is just a marker overview of the process.

4:40  
I will try to to explain you what's happening here.

4:43  
And I also have a little presentation which is called Kit Safety for Beginners to help you understand how we are managing the safety process in in horse.

4:59  
OK, OK, yeah, OK.

5:04  
So whenever we we start a project, we have to create the safety management plan.

5:12  
This is done by the the safety manager and it's should be created for each project and the it's a list of all the safety deliverables and safety activities which are supposed to be done for each project.

5:30  
OK, so this is the first step to develop a plan.

5:32  
Afterwards we have to develop the HARA hazard analysis can risk assessment.

5:41  
This is a so as a as a just a little observation.

5:50  
So you, you are also interested about how we are managing these, these documents.

5:55  
So for the safety management plan, this is done at Excel level.

6:00  
OK.

6:01  
So afterwards when the safety management plan is done afterwards it's the duty of each system to to perform of HARA hazard analysis can risk assessment based on the new functions which are supposed to be integrated in, in that in that project.

6:20  
So with the hazard analysis kind of risk assessment, we identified the unwanted customer events potentially safety.

6:28  
The acronym is ICPS in French.

6:33  
And for each, for each unwanted customer event potentially safety.

6:41  
I mean for, for, for each function we we assigned on unwanted customer event potentially safety.

6:46  
And to to to this one we assigned also an assail proposition based on exposure controllability and the severity.

6:59  
Yeah.

7:00  
And what is the APR?

7:03  
APR is the acronym of HARA in French.

7:06  
It stands for analyst preliminary the risk and which is hara hazard tennis can risk assessment in in in English.

7:16  
Please bear in mind that that there are no world is filled with French and English.

7:22  
So sometimes there there is a mix up acronyms.

7:26  
So yeah, I'm I'm trying to translate as much as I can.

7:29  
Yeah, yeah.

7:32  
OK, so Hara, hara is the is an excel file which is stored in.

7:38  
We have a database for for storing these important documents which is called the new PDM, not this one, not this one.

7:50  
Tools docange PDM create horse OK, can you see my screen?

8:03  
Yeah yes, see it here.

8:05  
So for example, we have a folder called STF amounts.

8:17  
And if he if he are there here they they actually are not here.

8:30  
They share it for each system.

8:33  
So in in Reno world, we are managing the the power train projects by each system just to share you system engineering, where is IT system organization systems?

8:54  
Yeah.

8:55  
So in in Reno horse world, we are managing the each system independently.

9:07  
I mean we, we work together, but it's up to each system to perform its HARA analysis and an SDF study.

9:17  
OK, I'm just giving you a highlight how which are the systems in in Reno group.

9:24  
So as 18 field circuit is 19 eve electric charging this this picture is only for Renault and dump air systems.

9:36  
The the horse systems are are not present in this picture because they they were cut out.

9:42  
OK.

9:43  
But so as I said, HARA is an excel document which is stored in this database.

9:51  
For example, I can share you the one which for for example for combustion we have it here gasoline STF APR which is HARA and we have assign my doc number.

10:11  
And here we, we, we store the the Excel files and also relevant messages or relevant information regarding HARA.

10:21  
OK.

10:22  
And this system is specifically used by horse or it is a shared with Reno.

10:27  
It's shared the it's shared with Reno.

10:31  
So what they did, for example, in collection, So it's 31 airpath and exhaust, 32 combustion and 33 after treatment.

10:41  
These are systems which are full horse.

10:44  
But for example, for DSDF amount we, we, we did the split.

10:50  
I mean this was the initial project for managing, for example, the safety management plan which should be present in this PRG.

11:03  
So in this case, we, we, we did the split and we have a PRG, a project for Ampere and Renu and we created a new one for horse.

11:16  
OK, So they, we, we did the split my disk.

11:20  
So here I can still I, I still have viewing, right?

11:25  
But I cannot do anything.

11:27  
I mean, this is locked, OK?

11:30  
I can, I can only create and modify only in the horse part.

11:36  
And this system is used only to manage the safety related documentation or there is no, no, no, no, no, no, not necessarily.

11:44  
I mean this new PDM, this database is used to, to manage, it's basically a big library where we store important documents because according to legislation we have to store safety, safety documents for 35 years or something like that.

12:00  
So this is the the system we are using to to store these these documents.

12:05  
OK, yeah, OK.

12:09  
Ms Office based system, right?

12:12  
No, no, that is inovia.

12:15  
That's system in which it is stored.

12:17  
It is Inovia.

12:18  
Ohh.

12:18  
OK.

12:18  
PDM and file R Excel.

12:21  
Yes, yes, yes, yes, yes, yes, yes, yes.

12:24  
It's my Inovia.

12:25  
I think it's by Daso.

12:28  
Yeah, correct.

12:29  
That's the older version looks like, right As they have the new version that is having different UI.

12:34  
This is, uh, the pretty old version, yeah.

12:38  
So basically in this library we can find the Excel files and maybe some important emails and that's all.

12:47  
And it's just used for for storage.

12:52  
OK.

12:52  
So afterwards we through HARA we identified the unwanted customer events potentially safety.

12:59  
We, we do on a cell quotation.

13:02  
And afterwards as Step 3, we have to check with the quality department, the cell validation.

13:10  
I mean, here with the HARA analysis, we only do an A cell proposition and this has to be approved by, by the quality department.

13:19  
And at the end they, they, they give us an, a cell validation note saying that it's OK or not OK, OK.

13:29  
Afterwards we start.

13:33  
Just just a quick question here.

13:36  
See this a cell validation, when you send the note, is it through email or something or system takes care of that?

13:44  
It's it's an, it's a PDF file which is also stored in new PDM.

13:53  
OK, normally when when we do the hara we uploaded the new PDM.

14:04  
I don't know we create version 1.0 and afterwards when we receive the acyl validation note we create version 1.1 and we should add also the the PDF file with the note from the quality department in in in in new PDM here.

14:23  
OK, so my question is more on the workflow side, whether there is any workflow triggered once you create the PDF file and then quality people approve it in the system itself or how it is how the approval happens?

14:40  
I I understand your question.

14:42  
Normally inside the new PDM here we have the possibility to to to send the a validation path.

14:54  
I mean to to send an email and to be validated directly here in, in the in the application.

15:04  
Mm hmm.

15:05  
This should this would be a, a proper way for assuring traceability.

15:11  
But unfortunately not everybody knows about sending a validation route in UPDM.

15:19  
And that's why in some cases we we keep it simple and we, we receive the validation node through email and we attach it to manually to to new PDM.

15:35  
OK, OK, on my side when I was PSV, I mean I had another position.

15:42  
I, I tried to, to make validation roots to, to have all the things in a new PDM, but it seems that I was the only one.

15:58  
OK, yes.

16:01  
So we, we received a C validation note afterwards for each safety goal for year, for each unwanted customer event potentially safety.

16:14  
We, we start developing the safety concept, meaning that we, we should assign a safety goal and in order to, to, to to develop a, a safety analysis.

16:32  
So the, the safety goal is, for example, just a second, I'm, I think it's better to assure you combustion.

16:47  
No, not this one.

16:48  
Where is it?

16:51  
Oh gosh, is TF Yes, yeah.

17:01  
So for example, ICPS 22, it stands for unwanted acceleration.

17:07  
So the safety goal is to avoid an unexpected acceleration during driving starting that could lead to loss of control.

17:18  
This is the safety goal.

17:19  
This it's a high level requirement and afterwards we should start thinking about writing functional safety requirements and afterwards technical safety requirements to to better define how we secure the system.

17:38  
OK.

17:41  
So in order to, to, to have a safety concept, we, we started developing an add it's Arbor the defiance or full tree analysis in, in, in English in which at the top we have the unwanted customer events, potentially safety.

17:59  
And we, we, we, we start thinking what could provoke that, that unwanted customer event.

18:09  
And for this one for Arbor the defiance, we use a little tool called Arbor Analyst.

18:17  
But from what I saw in the end the the they they they put copy paste of the full tree in pictures like this and uploaded in an excel in SBM.

18:36  
What is the name of the tool?

18:37  
You said Arbor analyst.

18:41  
Don't know if you spell it or the type in chat.

18:46  
Just a second.

18:48  
Yeah, this one.

18:49  
OK here.

18:51  
OK, I'll, I'll assist.

18:55  
I don't know who who who developed this one.

18:59  
It's something open source.

19:07  
Yeah, it's just a little tool which helps us do this schematics, OK, not quite complicated, OK.

19:24  
And this help us identify which component will fail and it will trigger this unwanted customer events.

19:33  
This full tree analysis should be done for each unwanted customer events potentially safety which is identified through through HARA.

19:42  
OK, OK.

19:46  
And afterwards we one question before going to for me in the HARA you shown one template, right?

19:58  
So how that function is extracting the requirements out of HARA?

20:07  
That is the point of interest means let's say you have function defined in the hara and whatever the whatever the test you are going to write for that particular hara or maybe that particular risk, then that will be a part of your test case.

20:24  
Is that understanding right?

20:27  
Just a second.

21:02  
OK, so this for example is the HARA which was done for HR 12 mm.

21:09  
Hmm, an engine we had, this is the template.

21:16  
But the most important part is this one HARA.

21:22  
Just a second, right?

21:36  
So this one is done for CVG for combustion.

21:40  
So we have here all the main functions which are used in combustion to produce torque, to realize ignition, to realize combustion injection and so on.

21:54  
And for for each function we, we started, we start to analyze what the what could go wrong.

22:04  
OK, we identified the unwanted customer events potentially safety by, by by allocating level of severity, exposure and controllability.

22:26  
Afterwards we we do want a silk quotation and this silk quotation has to be validated by by the quality department.

22:36  
OK, now these column possible action by driver.

22:44  
OK, the call of W sorry, can you please repeat I didn't understand the call of WW possible control by the driver.

22:57  
So are these are kind of a kind of, you know, remedies on this particular risk or mitigation on this risk?

23:11  
This one, it helps you define the controllability part.

23:18  
The main idea is that for each of these columns, I mean what we are doing here, it's not necessarily something we, we can invent.

23:30  
I mean all the unwanted customer events potentially safety.

23:34  
There is a standard in Reno horse world and which so we have to pick from there afterwards the severity criteria, exposure justification again there are some some grids we have to to respect.

23:52  
I mean we, we, we are not inventing anything here.

23:56  
I mean, we are just picking what it's appropriate when our function malfunctions, if you get my point.

24:09  
Yeah, yeah, I got your point.

24:11  
But what I want to understand is, for example, you have listed out the scenarios, right?

24:16  
No air mass flow.

24:19  
Sorry, I could not read that.

24:21  
But can you win sub Aya right?

24:28  
So no air mass flow in this cylinder, right?

24:32  
No combustion realization.

24:34  
So those are the scenarios you have listed out, correct?

24:37  
Yes, for those scenarios you are finding out the control actions, correct?

24:43  
So how you can control it kind of thing.

24:47  
So my question is how you are passing this information or how this information will be taken care while developing the product, how the requirements will be derived from him from this point as you can see at the end here, main action plans build full tree analysis and FMEA.

25:12  
Ohh OK, OK, OK.

25:14  
So for each of these functions, so these things go hand in hand.

25:24  
I mean, in, in the sense that first we develop HARA.

25:27  
But to to identify the root cause, we have to perform a full tray analysis to identify exactly what is the component which which could fail and trigger our unwanted customer events, potentially safety.

25:46  
And also we in parallel, we have to create the the file or FMA in in English in order to secure the system, meaning that OK, this component fails.

26:00  
What is the impact and how we can secure the system.

26:06  
That's why here at the next step we have so we have HARA a civil validation note.

26:14  
We start developing the safety concepts by doing the if add and also we have to do an FMEA.

26:21  
I mean to to list all the components, what are the failures and to specify how, what are the downgraded modes?

26:28  
We, we, we apply OK and based on SL level.

26:34  
Also you are taking decisions whether to do the fault tree analysis or FME No.

26:42  
And the, the, the the full tree analysis should be done for each unwanted customer events potentially safety.

26:49  
OK, OK.

26:51  
But at severity will be depending on the assy level, right?

27:01  
Yeah, maybe assy level depends on severity.

27:04  
Yeah, Yeah.

27:05  
So that's what I wanted to understand.

27:07  
OK, let it be.

27:08  
Maybe you can continue with your flow.

27:10  
Yeah, yeah.

27:11  
So once we we, we have all this, we, we are we started developing the the safety concept, meaning that we have to write some requirements.

27:25  
Just a second, where is it?

28:01  
Just a second.

28:07  
So for each unwanted customer events potentially safety, we we should create a safety goal.

28:16  
This is a high level requirement which is spelled something like this.

28:21  
The system shall prevent an unexpected acceleration.

28:24  
The system shall prevent an or normal external that could lead to fire.

28:29  
They should prevent the leak of hot gas and so on.

28:33  
Afterwards, For each safety goal, we should assign one or more functional safety requirements.

28:44  
I mean, what could lead to unexpected acceleration failure in the acquisition or processing of the sort of signal shall be detected.

28:52  
In case of failure, the essential reach safe state, I mean the this is related to the crankshaft position sensor.

29:01  
So we if we lose the information of the sensor, this could lead to an unexpected acceleration, OK.

29:09  
So in this case we should reach this safe state.

29:15  
And these are high level safety requirements which are translated refined into more more into technical safety requirements, which basically are more DTC requirements.

29:35  
Because in the end, at least on my systems, we are managing combustion, airpad and exhaust and after treatment inside ECM.

29:47  
So what we can do inside DCM is raise the DTC and apply some downgraded modes.

29:56  
And these are the the requirements for Dtcs.

30:00  
For example, crankshaft sensor.

30:02  
When we have an intermittent loss or information synchronization, we apply these downgraded modes and specify that, I don't know, it lights up the mill, we should apply warning lamp and so on.

30:19  
The thing is that at the end, all these requirements, what I'm sharing you here is just an export from DOORS and the, the, the links are done indoors.

30:29  
I mean, just to share you, so all the functional safety requirement managed indoors, right?

30:38  
Yes, yes, yes, yes, yes.

30:40  
So this, this is the, the management indoors.

30:43  
So at the top we have the safety goal.

30:46  
For each safety goal, we can have one or more safe states.

30:50  
But this is not a requirement.

30:51  
This is a definition and for each safety goal, we can have one or more functional safety requirements, which is refined into one or more technical safety requirements.

31:04  
This is the, the, the, the 3, if I can say so.

31:10  
OK.

31:13  
And all these links between SGFSR and TSR are done in indoors, Yeah.

31:23  
And also we, we assigned the the ASIL level for for each one because as I said, the ASIL level, we identify it through HARA for each unwanted customer events.

31:38  
And for each unwanted customer events, we can have one or more safety goals, but basically one and the, the, the ASIL level comes from from HARA.

31:50  
OK, now whatever the requirements you have shown in the in the excel sheet how they are taken to doors normally.

32:05  
Normally they they should be first written in doors and afterwards we should just do an export in doors from doors and store it in this Excel format in new PDM in in this application in this system for for traceability.

32:30  
OK, OK.

32:37  
For example, where is it collections S 32 combustion.

32:45  
We have the STF part in which we store FSC, TSC.

32:51  
This is the functional safety concept, technical safety concept is this Excel file with all the the requirements which are also present indoors.

33:04  
Here we store the the APR which is hara hazard tennis can risk assessment.

33:11  
And here we we store the on deck which is FMEA in English.

33:16  
OK, so this FMEA is also in Excel format, right?

33:24  
Yes, yes, yes, it's an Excel format and it looks like this.

33:42  
OK, yeah.

33:43  
So you're using that the standard FMEA template, Yeah.

33:56  
Which component we see what functionality it affects, what is the failure cause?

34:03  
And then we, we apply a diagnosis, we apply also downgraded modes.

34:14  
We check the downgraded modes effects on the system.

34:19  
And afterwards we, we this is called the risk prioritization number.

34:24  
I mean we, we, we, we calculate this number based on severity occurrence and detection and afterwards.

34:32  
So this is 180 and after applying the downgraded modes, we calculated again to see if it's lowered.

34:41  
I mean to to check if indeed the downgraded modes have effect on reducing the risk.

34:50  
OK.

34:50  
And this FMEA you are doing at a module level, right?

34:57  
For the functional level, function level, bad function level OK even traceability point of view.

35:06  
Also it is like linked to the function not with the specific requirements or that with right?

35:14  
No, no, no.

35:15  
It's not necessarily linked to to a specific requirements.

35:21  
Here we had another column which is called to manager.

35:26  
It's in which we added the name of the DTC in inside the course software.

35:39  
So the this this part I didn't understand.

35:42  
I mean, can you repeat Yeah, For example, the upstream turbine temperature sensor when I whenever we have a 9 unavailable data, which could be for example, a check some error from the from the sensor, we will we raise this DTC.

36:01  
But inside renal software, it's called them event ID, turbine intake temperature check some this, this we we added this column to to have a better link between the on deck, which is from functional point of view to to the DTC, which is more on the model side.

36:27  
This is present in the MATLAB specifications of the software.

36:32  
OK, OK, so from the there, there you're linking.

36:36  
Got it.

36:41  
And are you defining any boundary diagram before starting the FME?

36:46  
Sorry, can you please repeat the question?

36:49  
Are you defining any boundary diagrams before starting FME?

36:58  
No, but each system knows which are its parameters.

37:04  
I mean for for example, I I know which are the the the parameters of combustion because I, I, I I know what are the sensors which are under my my system which I manage.

37:19  
And I know what's happening on s 31.

37:23  
But there there is no clear document to to specify exactly the the boundaries of each system.

37:31  
OK, OK, got it.

37:34  
So this is based on the experience you have, right?

37:37  
It's based on yes, yeah, exactly.

37:40  
It's based on experience.

37:41  
And the the main idea is that inside the ECM at least for combustion air path and exhaust and after treatment we don't have, I don't know new sensors for each project.

38:00  
I mean things are in the end quite sorted out.

38:05  
I mean the, the, there isn't anything extremely new to to which we, we don't know how to to manage.

38:18  
I mean, for example, for the €7 pollution norm we have to introduce the the knock sensor and this was implemented on S 33 perimeter.

38:39  
OK, yeah sure we can go ahead.

38:43  
Normally the there is some identity sheet for each system and should be developed by the by the AMS.

38:52  
AMS stands for Architect System Architect because in Reno world each system has to be is managed by by a system architect which has in his team some system function leaders and some safety function leaders like me.

39:17  
And also there is another person which is called the list.

39:21  
He's the guy who who monitors the the validation of each new function.

39:27  
So for for each system there is a an identity sheet which should specify that the the limits of the system.

39:40  
I mean, OK, what does combustion do?

39:43  
As I said, realize ignition realize combustion and there there is a workflow.

39:50  
Normally it was present in in this SharePoint.

39:56  
Just a second systems at 1:00 point there was ah, you can find system ID cards here and for example, let's yeah, it's thirtytwo combustion.

40:25  
This is for diesel and this should specify the the.

40:34  
The limits of the system, who are the contributors and so on.

40:39  
5 main functions and each system should have a presentation like this.

40:51  
I don't know how up to date the these things are, but at least we we have the basis for it.

41:00  
OK.

41:09  
I mean the, this SharePoint, the the system engineering site was, was developed more for newcomers and for people trying to understand the what's happening from system engineering point of view.

41:21  
But each system here is 31323334 and so on has its own SharePoint and you can find more updated and relevant information there.

41:30  
This is more for teaching purposes and trying to understand how to to navigate among the systems.

41:43  
OK, yeah, OK, OK.

41:54  
And after the FMEA, we not, not necessarily me myself, but another step in the process is to develop a compliance matrix which is basically a gathering of all the safety related requirements.

42:15  
And here these have to be gathered in one file for each project.

42:24  
And it's the responsibility of each project to validate the the safety requirements which are allocated to to it.

42:35  
So here we, we through the compliance matrix, we specify what are the requirements which are safety for each system.

42:44  
And it's up to each system to to to validate its requirement.

42:52  
And this will be part of the global DD Nearest project.

42:58  
Dosier demonstration geometry is the risk security.

43:03  
I don't know exactly what is the acronym in, in English, but it's a it's a big file which is done at vehicle level.

43:13  
And its purpose is to prove that the the safety part is well managed and validated by each parameter.

43:28  
OK, So any further input that you would like to share or this is what process flow?

43:47  
No, this is the, the, the process flow in big in big terms, if I can say so.

43:55  
I didn't go a lot into details because and that meant we would have spent a day or no, no that this is fine.

44:07  
We would like to understand at high level.

44:10  
So this the information the way you provided.

44:12  
Yeah, that is really good.

44:14  
So Sushanta, do you have any specific point that we would like to understand from safety functional safety point of view like we capture the detailed?

44:27  
Yeah, I had one question in yeah, I have shown that FT analysis which they did in our play analyst tool, right?

44:39  
Yes, yes.

44:40  
And then HARA is based out of Excel sheet.

44:44  
So I had a question that is it totally manual or it is having any simulation in background to do the FT analysis or to do the HARA analysis analysis or is it completely manual?

45:01  
No, it's completely manual.

45:04  
Ohh, OK, OK.

45:07  
In in that tool, in that tool also that are are we analyst?

45:12  
Yes, yes, I mean we are using the tool, I mean the RBRAM medicine.

45:16  
So I don't know Excel to have a visual impact and to to put it in a in a in a form which we can read and interpret.

45:30  
Yeah.

45:31  
So that is only the graphical representation that will provide not kind of.

45:36  
OK, yes, yes, yes.

45:38  
I mean we can do the same thing at Excel level by drawing, by drawing lines.

45:42  
I mean it's the same thing.

45:45  
OK, OK, OK.

45:47  
And although if you said one more question that you define the, you define that testing, right, what it is called as a after, after you get the RPN which is crossing the threshold, then you will decide the action plan, right?

46:11  
So what test need to be carried out on their particular function and all those things right If you can go scroll to the right.

46:30  
OK, this is OK.

46:32  
OK, this is the end, right.

46:35  
So there is one test case you write on that.

46:37  
So, so to to lower the RPN of that particular risk you have identified, you carry out some action, right?

46:46  
And then your RPN gets lowered right after completion of that particular action, Yes.

46:52  
So in that case that particular action which you are going to take is kind of a some testing process or some modifications, right.

47:03  
So how do you track that whether it is completed who he's who is working on, on that and how much time he's going to take?

47:11  
Ah, OK.

47:12  
So for each diagnosis, when we try to lower the severity, we apply some downgraded modes.

47:20  
Again, these are standard and we are not supposed to, to create downgraded modes out out of thin air because it's not quite OK to, to reduce the, the, the power of the system and, or, or to penalize the, the driver without any need.

47:40  
So that's why each of these downgraded modes, it's approved in a committee.

47:45  
I mean there are actually 2 committees.

47:49  
When we want to create a new diagnosis, first of all, we have to be sure that indeed the diagnosis is relevant.

47:56  
So we go in a DIAC committee, diagnosis committee piloted by the DIAC experts and then we and there we present them the, the need and he could say, OK, this DIAC is relevant and could be implement or it could say, OK, no, it's not relevant.

48:15  
And we try find another way.

48:17  
Because the idea is that now in the vehicles we have a lot of Dtcs and Dtcs if they are, I don't know they, they are having the back of false detection.

48:31  
The client goes to the workshop and the each visit to the workshop costs money.

48:37  
So that's why we have to be very careful while implementing the, the diagnosis to be sure that they are, they are relevant and correct.

48:45  
And the same thing applies for downgrade modes.

48:48  
When we want to introduce a now new downgraded modes, we have to go in another committee, which is called commit a mode refuge, which is called downgraded mode committee, in which we present them.

49:01  
OK, we have to, we want to limit the system in this manner.

49:04  
Do you agree?

49:05  
And we again, we have a discussion trying to analyze the, the, the effect on the system.

49:12  
And if it's a grid, then we apply the downgraded mode.

49:17  
I mean, what I'm trying to say that these diagnosis and downgraded modes are, are not created by just one guy trying to, to do everything by, by, by himself.

49:33  
I mean, there, there is another process behind this one.

49:38  
OK.

49:39  
That's why the the the SDF parts it's quite well structured and for each part there is a standard in the back.

49:53  
I mean no, no STF.

50:02  
So each folder here has has a standard AMDEK, AMDEK ERPF or standard or or a procedure, OK, ARPIT, defiance and so on.

50:26  
I mean it's quite well documented this for functional safety, do you maintain the library standard libraries in the doors requirement?

50:48  
Can you repeat again the question, so for functional safety, so you manage these requirements in doors, right?

50:56  
Yes.

50:57  
So do you maintain any standard library indoors?

51:05  
Yes.

51:06  
I mean for each requirement we should assign an application scope and in the application scope we should put some specific words which are chosen from the library.

51:20  
For example, the for what we use for airpath and exhaust combustion and after treatment we have the mnemonic of pollution or an engine.

51:32  
So the requirement it's applicable for 8I don't know HR 12 engine and €60 based pollution or and if we will have we and when we'll develop, I don't know a new project HR €12 7.

51:49  
If it's the same requirement then we can modify the application scope and adding and €7.

51:58  
Does this answer your question?

52:02  
So, yeah, partially.

52:04  
So that library that you mentioned that you are taking, so is it library?

52:08  
Library means the set of requirements for the functional safety you have ordered already identified, OK.

52:15  
These are generic requirements you can say and that keeps on changing with respect to the different different functions or variants you are using.

52:26  
OK, so maybe when I will start the next project, I can use the existing requirements as it is and modify it bit based on the requirement of the new function.

52:43  
My time a lot because I need if I want to kind of for example, you are creating FMA sheet and if I use the same FMA sheet for the next project, I will have the set of requirements already defined and I will just alter or I will modify those requirement based on the new function which is coming up.

53:03  
So that is what is the library usage mainly to, not to start from the scratch, but to use the existing data available in the system.

53:13  
Yes, yes, yes.

53:14  
So that's why for for each project we, I mean, we, we are not starting from scratch for each project.

53:22  
We are starting from the previous project, OK, For example, when, when, when we created, I don't know HR €12 6 EB ebiz project.

53:34  
We know we put a filter indoors for all the HR 12 and €6 E projects requirements and see OK, what what we what we do we have for €6 E Normally it should be the same thing for each project.

53:51  
We basically add new things.

53:54  
It's not necessarily the case to to remove, remove things, but the management is done through through the application scope.

54:02  
And another thing we have some ID tags in the comments section.

54:07  
For each requirement we we develop, we have to put the NF number, new function number which was created for developing this this requirement.

54:21  
And also we have to put the the change request which is the ID on the algorithm site.

54:27  
And this is can be found in the MATLAB model.

54:31  
Ohh, OK.

54:32  
And the management of these technical facts because these are technical facts, the new function then the change request is done through another tool which is called SPM.

54:45  
SBM, yes, yeah.

54:47  
So for example, new function, I don't know, let's put 1030, this is the new function 1030.

54:54  
We have a little description and normally here we have the change request links to to this function.

55:01  
And these change request, these IDs should be found in the MATLAB model in the history part.

55:08  
For example, if I go into the CDC for C0, OK, and I search inside here, normally I should find these change requests.

55:22  
Let's see what I don't know.

55:23  
For example, this one, because I know this one because this one was created by me.

55:30  
So you follow the same change request route through SBM, SBM and based on that any the changes that needs to be done in a functional safety area that you are performing right and then completing your task, correct?

55:48  
Yeah, yeah, yeah, yeah.

55:49  
So as you can see for for traceability purposes, the the requirements are present here indoors.

55:57  
For each requirement we have the NF number and the change request.

56:01  
And if we want to see the link with the MATLAB model, we can search on the based on the change request inside the CDC, OK.

56:12  
And we can find it here in the history.

56:15  
And for example, I can download version 0.0.

56:18  
And for each version, we have a model review in which we have basically a comparison between the new part and the old part.

56:29  
She gives us the the modifications which which were done and baselining we are doing in doors only, right?

56:37  
The requirement baselining, yes.

56:40  
Version management is also put through doors, yes, normally this should be done by for each project milestone, but there isn't a specific rule about when or who should do this baseline.

56:59  
Normally the baseline if you ask me should be done by the system architect of each system for each project when needed.

57:08  
I don't know for example, if we have a contract milestone for HR 12 project, then the system market they can do a baseline to I don't know to to freeze the requirements saying that OK, this is what we had that contract level for for that project.

57:27  
OK, OK.

57:29  
In in the past it was the the the reference in at least in combustion it was the the system reference.

57:38  
Who who did this job.

57:42  
I mean he was focused on creating a baseline for each project.

57:47  
Added some comments here, but he changed position due to the split of unpaired horse and we are still trying to find the replacement for him.

58:01  
OK.

58:01  
And for this the functional safety related requirements I think yeah, the variant management or the variation, how you handle, so you have a different variance for a system.

58:23  
So from that angle, how you handle that variation?

58:28  
So can go yeah, it's basically it's up to each system how they they manage the, the diversity, if I can say.

58:41  
So yes, for, for example, for my system is 313233.

58:48  
The, the diversity is done through the application scope.

58:53  
So for if I don't know when we start a new project, we we modify the application scope and I don't know add to the the the new project, OK.

59:03  
But so then you add that projects which is in scope or which particular line item or the requirement is applicable for which project.

59:11  
OK, Yeah, yeah.

59:12  
And normally for each safety goal here, we should also put in the comments the IDOC number of the HARA for which the unwanted customer events, its output of OK.

59:29  
And this process is common throughout like globally, right.

59:33  
There is no variation in functional safety the way you are managing.

59:38  
So other sites also manage the same way.

59:44  
If we talk about horse worldwide, yes, we follow the same process in Brazil, in Spain, in Romania and so on.

59:53  
I mean the horse now is worldwide organization.

59:57  
I mean it's not something OK.

59:59  
Here in Romania, we do things in this way and the guys in Brazil do things in another, another way.

1:00:05  
We are basically linked to each other.

1:00:09  
Because if I can give you an example of in case of after treatment in System 33.

1:00:16  
The the PFS are the system function leaders are in Romania, whereas the architect is in Brazil.

1:00:27  
OK, not and from overall this functional sector process point of view, you explain the process, the tool.

1:00:36  
So from pain area point of view within a process or within a tool like can you would like would like to highlight some pain areas where you see some improvement or like you are struggling with that particular activity within a tool.

1:00:57  
It would be nice to to, to have the traceability all in one place because for example, tours is subject to human error, because for example, here the traceability is assured by by hand.

1:01:14  
I mean, if we here we have to add in the application scope, the application scope by hand.

1:01:21  
OK, here in the comments section, the name of the IDOC and the, the name of the NF for change request is done by hand.

1:01:28  
And if you, I don't know, missed the letter or missed the one number, then everything goes to waste.

1:01:39  
It would have it would be a better idea to put exactly A tag.

1:01:43  
For example how how we have in SPM I I searched on the NF 1030 and here I have direct links.

1:01:51  
I can click on it and it goes in the directs me to the the change request.

1:01:56  
And here in the change request I can see the SCDR presentations how the the change request was developed at MATLAB level.

1:02:04  
So this is something which could be improved.

1:02:07  
I mean to to have a proper link between all the the documents and all the technical facts maybe.

1:02:14  
OK, got it.

1:02:15  
Yeah.

1:02:16  
So anything else that you would like to add?

1:02:26  
What comes into my minds or maybe you can send a email to Stefan like if any additional things come in your mind so you can list down and share with Stefan.

1:02:39  
So that way we will get those requirements or pain areas.

1:02:43  
So that way is also fine.

1:02:45  
And if you would like to share some that process flow or that particular diagram, please share with us Stefan.

1:02:53  
So that will be helpful.

1:02:59  
Sushant, any other question that you would like to ask or are we good?

1:03:04  
No, we are good.

1:03:08  
I think it was good.

1:03:10  
And then another another thing which comes into my mind is the wording of the requirements.

1:03:16  
We are we are trying to to improve this part because sometimes people who who wrote indoors things are are are quite interpretable.

1:03:30  
Ohh, so requirement quality.

1:03:32  
You meant to say the way.

1:03:33  
Yes, yes, exactly.

1:03:35  
We, we, we are, we are, we are in a workshop trying to improve the quality of writing requirements because we, we have to, to, to have things clear, crystal clear.

1:03:50  
I mean when, when I, I, I am PFS.

1:03:53  
I'm working in system engineering for 2 years now.

1:03:56  
But when I took this position, the guy who trained me told me the following thing.

1:04:01  
The requirement is well written.

1:04:03  
When your wife understand this, understands it, and your wife doesn't work in system engineering when she understands it, then your requirement is written OK.

1:04:15  
And this is not the case for for for all of our requirements.

1:04:21  
So this is a thing which can can be seriously improved.

1:04:26  
Yeah, correct.

1:04:27  
And that is a one of the parameter we have in our assessment like kind of a requirement quality checking whether that tool is having that capability or not.

1:04:35  
So definitely we are considering this point.

1:04:40  
And the another thing we we tried in the past was trying to develop a new mnemonic here, because for for each new project, we have to modify the application scope by hand.

1:04:55  
I mean trying to add, I don't know, a new engine or and a new pollution norm, whereas the component stays the same.

1:05:02  
We were investigating also the the possibility of applying the the requirements by component because if the requirement does not, if the component does not change, we have the same requirement and we don't have to do anything indoors.

1:05:19  
But again, this was something which was managed by our reference and the it's something we have to take take property of.

1:05:35  
Yeah.

1:05:35  
But then in that, that's what the idea of the libraries is.

1:05:39  
You can definitely maintain your requirements as per the component level or whatever the norms you have defined and you can use as it is if you don't want to change it.

1:05:50  
So that will library will help you definitely going forward.

1:06:01  
OK, I think that was a good discussion Daniel, thanks.

1:06:03  
Thanks for your inputs and the detailed, you know explanation whatever we have given and that is really useful to us.

1:06:12  
If you have any additional information or the documents you can definitely share with the Stephen, we will we will pass it on to us.

1:06:22  
And yeah, yes, sure, sure.

1:06:26  
Thank you.

1:06:27  
And sorry.

1:06:28  
I, I have I have another thing which came into my mind just now.

1:06:34  
Yeah.

1:06:35  
Another problem we we are having is managing inter system requirements because for example, sometimes we we have to send the requirements to other systems or for example to to vehicle components.

1:06:50  
And this one is quite tricky because normally it's, it's, it's quite tricky in the sense that we are not all in the same doors database.

1:07:03  
Because for example, here you see doors horse and the some systems are are split between ampere and horse and so on.

1:07:12  
And I don't know how the guys from from vehicle part manage if they do something indoors.

1:07:21  
Normally, for example, for for systems which are in entirely in horse perimeter, we were using the the PDS to to transfer requirements.

1:07:35  
I don't know, we have here a configuration and for we allocated to the the just a second to open this part.

1:07:48  
So you're not using a recce format since it is a door to door transfer, just a second systems.

1:07:58  
So for example, here, when we have to send a requirement to let's see ES 32, where is it ES 30 and let's see here Esha pomo.

1:08:23  
So these are our requirements which are.

1:08:31  
Yes, default which are input to to these systems.

1:08:38  
So for example is 31 exhaust.

1:08:44  
So all these requirements from here are input to to airpath and exhaust.

1:08:50  
But I don't know how they are treated in inside the airpath and exhaust.

1:08:55  
Normally they should be copied in the asm folder and managed by the SM of the input system.

1:09:01  
So maybe the this traceability is something we can we can improve.

1:09:07  
OK, because there there is a way indoors, but most of the exchanges are done at the email level and the maybe it's a good opportunity to to to put this also indoors or I don't know, a new database for managing requirements.

1:09:29  
I mean to to have a clear that collaboration should be there between different functions but different level.

1:09:36  
So if there is a same set of requirement, so it should not be copy pasted, rather it should be used as a link.

1:09:44  
So that way if any changes happens, other system members will also understand what exactly?

1:09:51  
Yeah, yeah, yeah.

1:09:52  
I mean, the, the, the, the requirements exchanges between systems.

1:09:56  
Yeah, It's something we which needs to be improved, correct.

1:10:01  
And also between systems which are inside DCM and I don't know mechanical components because for example, we have some requirements which are coming from mechanical department, OK, and also vice versa.

1:10:22  
And this these exchanges are done also by by email, OK, OK, Normally the link is done through the DDMRS file to through the compliance metrics because just a second, because the compliance metrics is done at project level.

1:10:47  
And here we have all sorts of safety requirements, requirements from software department to mechanical department and vice versa.

1:11:13  
Yeah, definitely.

1:11:14  
Yeah, we have noted that point.

1:11:42  
Yeah.

1:11:42  
And then that's about which comes into my mind now.

1:11:48  
OK, sure, sure.

1:11:48  
No problem.

1:11:49  
And afterwards also if anything comes up, please share that with us.

1:11:58  
Sure.

1:11:58  
Thanks.

1:11:59  
Thanks, Daniel for your time.

1:12:00  
It was really helpful that session and that you provided the good information.

1:12:09  
Yes, welcome, welcome.

1:12:10  
Yeah.

1:12:10  
If any clarification or any like the whatever process you explain, we will plot it at a high level and just to have that flow and based on that we will just kind of reconnect with you for validation of those understanding.

1:12:31  
OK, OK.

1:12:37  
Yeah, sure.

1:12:38  
Definitely any anything from this?

1:12:40  
No.

1:12:44  
Hey, Daniel, I think that was a good discussion.

1:12:46  
Thanks for your time.

1:12:47  
Again, it required as appreciate said that we required.

1:12:51  
If any question, we'll definitely come back to you.

1:12:55  
And if you have any additional option, please, please share with us.

1:13:00  
OK.

1:13:00  
Thank you.

1:13:01  
Thank you.

1:13:01  
OK.

1:13:01  
Thank you so much.

1:13:02  
Have a good day.

1:13:03  
Yeah.

1:13:03  
Thank you.

1:13:03  
Bye.

1:13:04  
Thank you.

1:13:04  
Bye.

1:13:04  
Bye.

1:13:05  
Bye.

1:13:06  
Bye.