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SUMMARY KEYWORDS

quality metrics, project, quality, bank, requirements, software, methodologies, compliance, team, business, stakeholders, implement, research, question, incidents, problems, data, critical, approach, acceptable

00:11

Hello,

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first of all, thank you for being agreeing to be part of this research. And let me inform you about the research. So we are the University of Tartu research group. And this research is part of

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my master's thesis. And the research objective is to identify how quality software quality is being implemented in modern financial products, banks and financial industry in general, this study is aiming to develop a framework for securing data quality in the financial industry.

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So we have this consent form that we basically say that you don't want, if you don't want to be a part of research, you don't need to, it's completely open. And

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you need to be 18 years and older if you're older than 18 years, have at least one year in financial sector, as an experience, and be fluent in English.

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And this interview process will take approximately 45 minutes to one hour. And about the privacy and confidentiality.

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We want to say that, basically this research is

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of like a way to support the GDPR rules. So there is an interviews privacy, the research team will follow this procedure that we are recording the audio of the

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interview, then we will transcript the interview and anonymize the identifiers. So not your name, not your company, like nothing will be part of the research, we will just take your experience out of

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regarding to the software quality. And then after we aggregate the transcripts, we will remove the original recordings. So they will not be stored.

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By participating you agree that the inputs that you provide and the information that was gathered during the interview will be used for research and University for publication? Basically, you know, if so thoughts can use this data at least for five years. Not your identifiers, just the data about the software quality part. So and participation is completely voluntary.

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Because we don't need to sign it because we have recording. Do you agree to be part of this research?

02:58

Yes, I do.

03:01

Thank you. If you have any other question or request, you can call us write email, it will be answered and if you even need to remove your data, we will remove it without any problem.

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Thank you. Let's go to the research questions. We've already introduced introduce the topic. So I can ask the first question. So

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as far as I know, you, you are software engineer in the financial industry. So the first question is that when you are planning the project as projects in early design or or planning phase, how do you

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basically define the software quality?

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design process?

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Yeah, it's good question actually. So when we do planning phase in any of the project work, I'm working right now or I've worked in the past. There are a bunch of aspects that we believe aspect, quality of projects.

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First of all, from technical aspect, I guess these are usually the qualitative metrics. You know, that are some metrics that are

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kinda

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important in the from technical point of view in software development. For example, the reliability of system I don't know like response time, performance numbers,

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the number of vulnerabilities from security perspective and etc.

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These are very,

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very crucial metrics, especially from security side because you are in a

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In highly regulated industry

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besides, besides this as we develop software for the stakeholders, like stakeholders, like let it be external or internal, doesn't matter,

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that our acceptance criteria is that we have to establish and we have to collect. So we know what we should achieve during the development of the project.

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So this ones are developed in requirements phase, basically, early design phase. Yes, we do. Of course, they they usually change because

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you usually don't know from the very first day what will be the requirements, and

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it's pretty dynamic environment. But it's having rough, having rough ideas about requirements is very important for the, for the whole roadmap, I'd say.

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What about the priorities? Like, when you do project planning or requirements gathering? like talking to the stakeholders? What priority does software quality have over the other requirements, for example?

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Of what's priorities?

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I know that,

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for example, we have this like saying that

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in many industries, when you develop things, stakeholders only focus about like, the software should do the job. But in financial industry, it's not the case, because you need to have this quality metrics, reliability also in place, or you will get sued, or you will have problems. Like yeah,

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that's why I'm asking this question like, how like, what percentage let's say or how much you think about quality in like the requirements phase?

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I think it has pretty high priority, because yeah, as we mentioned, it's highly highly

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regulated, highly regulated industry. So, having software which is doing the job is not enough at all

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it should be it shouldn't be Lego, it should do the job in a more secure way it should it should do the job without affecting

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people's life I would say because you are you are serving a

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couple of million customers in a bank. So it should be really it should be really

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part of everyday lives people here

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also Yeah, if you have some problems, you would lose your banking license, it means that the companies that you are you are working on basically nothing from that day, because you just lost your license and you cannot do anything in that industry from

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from that day.

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On.

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Yeah, that's why I assume

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software quality is pretty high priority and projects that are being carried on in financial industry.

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Okay, what about the quality goals like how you define quality goals of the project?

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Good question. Actually, I guess it usually differs from project to projects. Because yes, there are some projects that are meant to be an internal use, but mostly the projects are meant to be used by bank customers for example. So, this can make an impact on what what kind of

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goals

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you may set. But I would say that from first day usually the you have to have some acceptance criterias for the project. So it should define it should define in what circumstances your project is acceptable from the stakeholders.

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For that, also, you have to have

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stakeholders engagement, because it's not like you just go into your room and start doing some project and just in the end, you just submitted to people that this is what I have done. And it turns out to be not, not what people expecting.

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So, you have to involve your stakeholders let it be external customers let it be other teams in the bank let it be some business organization unit in the bank, it doesn't matter much but you have to you have to engage them as much as you can in that process

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agree to have like specific methodology or framework from the beginning of the project, I know that some people use Scrum Some people use agile and they have like software quality parking sorted already.

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Yes, software development is

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yeah has already known methodologies being used for decades I would say

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in my team, currently, we are using Agile Scrum. So, we are having Sprint's we are having the more meetings with this is where actually we are engaging the stakeholders just before I mentioned

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and we are having planning sessions between the team members. So we are always on the same page what what we are trying to achieve in the upcoming sprint, this is what methodology we are

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we are using. Also we are trying to follow for example, some other approaches, let's say not making methodologies, but like we are doing test driven development, for example. So we are writing unit tests and making sure those

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pieces of code is doing what we expect it to do.

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Yet from operational perspective, we are trying to implement DevOps approach which is

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engaging developers into operation operation.

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And we, for example, we implement like CI CD, continuous integration, continuous deployment and etcetera. These are maybe not counted as methodologies, but like technical approaches, let's say,

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okay, it has like code coverage and the other tools to basically ensure the software quality. I agree. Yes, testing, testing is very important.

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Now, what about that, we already talked about this quality metrics, what kind of like functional or non functional quality metrics are generally used by your team.

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Functional metrics are usually like technical numbers here, for example, your project should have some uptime. So in our project, we have critical two classes. This is internal methodology to classify the

project, let's say. So it's a higher criticality, it means it's business critical, and it's it should it should be it should be available all the time, ideally. And small, small downtime is usually not acceptable at all.

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But if it is not, not so business critical, it means

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for most of the time, it should be operational. But sometimes there can be some downtime, for example, during their migration work or doing some upgrading machine guns, these kinds of operations.

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From non functional quality metrics, problems are usually driving by the business decisions in our organization.

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On top of my head, I can say maybe

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deadlines to match with other teams projects, because usually when we do a project, it's overlapping with some other team's requirements. So you have to have a deadline, which is matching with other people's other teams, roadmap as well

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as teams are not completely independent from each other. And that, that aspect,

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every single requested. Yeah, I agree. He already answered like the other two questions for me.

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What about, like,

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what critical aspects of software quality are generally prioritized by your company? It's like SLOs, as you said uptime, error, wrongness, like critical errors, how many critical errors you had in one day? These kind of questions.

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Or it's more like more than availability. It's like specific services need to be always up specific services.

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And without sometimes, like, not whole project, but some part of it.

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No good question, actually, just in the

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previous question I mentioned we have services classified as critical to arials.

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So if it is, again, if it's a highest credit quality level, it should be available all the time. Even a small downtime is not acceptable. So in, in most like, for example, in public cloud offerings, they are mentioned SLOs, with our minds, mines, it's called like mines. Yeah. 99.9999.

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Yeah, like 597 lines, I don't know, a couple of mines. We don't have this approach, because

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I don't know, we don't really believe that it really explains the criticality level of this service or this project, which is

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having only just uptime, it doesn't mean that the system is operational and working as expected. So we be defined as it's critical to level

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and

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yeah, generally, if it's a higher criticals, and we have an internal ticketing system that has alerting, approach, so if there is a problem with high critical systems, we immediately get incident tickets. And usually, we have

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people who are having an eye on these tickets and will show people Yeah, yeah, on call. So we have day uncle and night uncle's, who are in charge of checking alerts,

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observing system, and it's critical to level and checking incidents and trying to to act as immediate as possible

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to fix problems.

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Yes, we are also number of incidents per week and per month, and this kind of

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KPIs, let's call them KPIs, a key performance indicator or something like this. These numbers are important from business perspective. So if you are having really high number of incidents,

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a couple of months in a row, it means that you have to you have to revisit your system as a whole. And you have to, you have to make sure that these incidents are

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not something trivial, but it's

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something important. System is malfunction or not working as it should be.

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So you have for this, like integration tests and to enter status, or they are not covering this part.

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We use them as quality metrics. But I would say is

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usually a bit I would say.

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CVS, yes.

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Yes. They don't usually show the what business people are looking for. I would say, okay, yeah, that's the goal. Having unit test coverage over 80% is a meaningful number and meaningful, meaningful metric for

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software engineer. But it's not really meaningful for a business person.

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It doesn't, it doesn't say anything about

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how many people use the system in last week. And how many of those users were successful when using this system?

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So that's why we yeah, we prioritize some other metrics which are meaningful from business perspective, the more more like operational metrics Yeah, I would say yes.

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But did you have ever came in the conflict with business for example, business say some unrealistic requirements, and it's technically not possible to grow?

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Yeah, we had loads of cases like this. Business said something unrealistic, this is what usually business to

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saying realistic stuff and then stepping back when they understand that this is this is not real at all.

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And sometimes engineers are having or product teams or team managers or whoever

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have to have to spend a good amount of time to explain

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means that

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a specific feature or a specific project can't be

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achieved, for example, usually it's related to deadlines in our projects. Because, yeah, business is really driven by many aspects not only by our team, but as a whole from the bank's roadmap in certain case, for example, a bank is moving to cloud. And there is a deadline for I don't know, let's say one year.

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But yeah, some teams can move their project to cloud in one year, some teams will be

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dependent on each other, and they will not be able to do it.

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So there are a lot of aspects that can greatly affect in deadlines. And

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usually, it's,

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it's, it may be hard to explain this to business people.

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It's extremely hard.

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You already talked about some methodologies. So I will just skip this part.

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You mentioned that there is an advantage, like automated quality metrics, in the code, white code coverage, C ICD part and other things.

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For you, what's the key advantages and disadvantages of implementing automation, basically, in quality,

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recording advantages, probably the amount of time that people spent on

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example, if you, I mean, if you want to test if a feature is working, or not having a manual quality assurance process is,

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is doable. But the amount of time would be

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big, of course, depends on what the future is what that person should do, you should prepare an environment for him or her and you should maybe give him for documentation how to use this feature, then he should, you should do some testing operation and verify that this is working as expected or not. But if you are able to automate this process,

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then it may be way quicker. Of course, during automation, you have to spend some time beforehand to implement automation. And it's usually not very straightforward. Although in the industry, there are many really nice tools to automate testing, end to end testing.

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There are a lot of

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a lot of tools have been developed in the industry. But still, you have to invest

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time from first day to implement this automation.

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But after implementing this, I would say in the long term, you will greatly benefit from automation.

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Regarding this advantage,

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it's it's hard to tell actually, what is advertised the disadvantages. You just told me about actually just it takes some time onboarding tools, like me, yeah, maybe maybe there is a learning curve for people to learn a new tool and to automate, maybe there is a resource need for, for the people to I mean, if you have a couple of engineers, and they are already having a lot of

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tasks on their plates to implement. And then you ask, you ask them to also implement some automation for end to end testing, then it's it's increasing the workload in the team.

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That may be a disadvantage, but yeah, I assume advantages outweigh the disadvantage, I would say.

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I agree.

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What about like, prioritization of software quality on future rolling quake when you release new versions of your products and general future rolling? how impactful is it?

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How dangerous is it like to not have met some quality metrics?

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Yeah, I would say it's, it is as important as it was on the first day. So if you started to follow some quality metrics, you should keep the pace and ideally, you should improve it over time because you are learning during this process.

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You should not I mean, maybe because you have really tight deadlines and it's approaching. You should not

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suck

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requires his quality metrics and your overall quality of the work.

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You should always be able to keep the pace in the quality and,

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and

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yeah,

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prioritize it as it was on the first day. But can you really? Because

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it's pretty hard as you said, it's a highly regulated market. Do you have like this opportunity to, like roll future when you don't meet some parts some quality? Or it's just completely worked out?

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Yeah, if if you work in the financial industry, sacrificing some quality metrics is not acceptable at all.

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Because every project should, should go through some tests before going to production. So, for example, some penetration tests regarding cybersecurity.

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The must and also for example, you should have some

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legalization tests, you should get some, maybe some set of grades for this project, rather than example, in our payment system there is a PCI DSS

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Is it such better? Yeah, let's call it start with you should you should get the certificate compliance or let's say it's better approach, you should

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be compliant, you should be compliant with PCI DSS. And if your quality is dropping, and you are not able to make this compliant project, then there is no way that you are able to roll this project into the production.

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So I'll ask one thing, like,

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has it ever affected? Like, how's it the quality problems affected?

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Like productivity or project delivery time or deadline that you need to extend?

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Yeah, actually, this I mean, some time ago, it affected in the projects that I'm working on. So we had penetration testing

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carried by cybersecurity team. And because of yours, they they identified some not maybe well known abilities, but they identified some

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attack surface, let's say. So it had to be it had to be closed or narrowed as much as possible. So while working on the project, we had to we had to spend some additional resource in terms of time and

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capacity team capacity on on trying trying to cover that vulnerability problem. So yeah, it's real, it's real case that it's it kind of affects,

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can you describe this decision making process as you said, this example, who were the decision makers who decided that we need to extend or we need to implement this part?

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In our team, we are having product owners, maybe official title is something else, but there is always a person who is playing playing these roles. It can be like Scrum Master, it can be product owner, it can be product manager, usually, maybe one person doing all these,

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but there's usually a person who is in calls in touch with business,

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business stakeholders, and usually, these discussions are carried on by that person. So,

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that person should gather the required information from the team members and he or she should be able to express his

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or his problems, these ideas or these

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maybe

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these problems, yeah, these problems to the business business owners. And then this discussion also should end with a meaningful result. Not just discussing for the sake of discussing what we should get some meaningful results and that results should be should be doable.

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Yeah, maybe attached to the ping pong game when you start though.

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Yeah, it's not always.

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It's not always happen in that ideal case or best case scenario, but I mean, you should find a way

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To make it happen, you should find a way to make this

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feasible for all the, for all the

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both sides basically.

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I already saw that you mentioned some

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compliance and global my compliance to local regulations and global regulations.

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How does the organized organization ensure compliance with like this regulations related to the software quality, how it's happening? Who is the person that decides it?

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Actually, compliance and regulatory is a big part of financial industry works. So usually you have a separate team for that. And also, we also have this team. So team have some financial like risk specialists, maybe they have lawyers, I don't know they have this kind of specialists in a specialized in that particular field. So they really know like, all the details about regular regulations. And they work closely with

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our audits and other teams that making sure that we are not checking, you're not breaking the law, basically,

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we're about like in the requirements, phase two, they already provide their requirements to the project, or

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usually, we accept them as a written form. So when we started the project, we had some service descriptions, this service descriptions describe what that service should provide for the customer or stakeholders. And also, as a part of this description, we receive regulatory regulatory

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statement,

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what what kind of regulations, we should be compliant and etcetera.

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We didn't have contact with them from very first day. But yeah, it's in a written form, we have received this information.

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But during the end of the project, we will have

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since we will be will have this project in testing phase from that perspective as well.

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And also audit auditing as a is a must for this project, too. But is auditing happens, like once a while or it's like when you're finished project fully, then because you said you're working on my job?

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Yeah. Oh, that's a good question. Auditing happens regularly in the bank? Because, yeah, it's not a one time process, or it's not just

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if you go to production, let's do auditing. It's a regular process from the bank perspective. Okay, like some major version released, and they need to audit already, like, there are some definition when they need to audit.

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Yeah. How are they? How regular they do, I don't have information much because it's, it's usually not software engineers.

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responsibility to manage this kind of stuff. So I can't, I can't transfer. But there is a of course, regular auditing process. This is also both internal and external. Because there is, as you know, well known auditing companies are carrying out this work. And, yeah.

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As you said, like you got this written for their compliance rules, let's say, Have you ever had trouble or like challenge to meet this compliance? Like, for example, you need to re architect some part of the project, just because you need to meet this compliance when you receive it.

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Yeah, I remember one case.

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I work as a

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team of data. I work as a part of database, a team is a bank. So of course, this is the most crucial part of the bank, I would say because it stores all their customer data and whatnot, everything when it's done, bank is done. Yeah. Basically went is gone and just goes down the door and go away.

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For example, once one team had, who was the owner of the database wanted to copy from production to

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test environments the data.

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And of course, this is not acceptable, because you can't I mean, no one should see the customer data. But as testing databases for testing purpose, the software engineer or application developer can see what's inside. And this is not acceptable at all. Oh, okay. Yeah.

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This could cause a really big headache for the bank, if it would happen. And that's why, of course, we prevented this case, and there is no way to do it.

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Agree.

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That's pretty good case. Actually. Some, some smaller companies can can do this, but they have to mask the data, as is called Data obfuscation, or something like this. But we don't do it at all. So if you want, if you want a test database, and you should prepare a test data for yourself,

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likely craker, and there are some libraries that help you rate safely, book data. Yes, there are many approaches, or even I don't know, you can use touch up to generate some test data or something like this. Of course, volume of the data is important. There may be sometimes they want to do some kind of

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Yeah, yeah, it's pretty normal having a terabyte database in our bank. So if you want big volume of datasets, you should you should spend some time on it, you should you should find the tools to generate,

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but copying them from production into another non production environment is not acceptable at all.

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Got it? We already went through all the questions. So thank you. It was really useful case for me because I never touched this point that you mentioned this interview in other interviews.

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It was great to have you. Thank you so much. Thank you. Bye bye.

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Bye bye.

37:14

I will just