Researcher: In the second part of this research, in collaboration between the <CONFIDENTIAL-NAME> and <CONFIDENTIAL-NAME>, we are trying to understand the transition that occurs from architecture/ design meetings in whiteboards to the computer.

Researcher: How important are these design meetings to the eventual implementation?

Architect: In this case, the meetings are a starting point, because each architect during the meeting has the vision of the possible solution for a given quality attribute. But for you to communicate a solution faster, sometimes it is better that you are not tied to any particular model or modeling pattern. So, the free sketches are easier to draw and record, and consequently we have a greater speed in the discussion of decisions before consolidating a new decision. Because it is a phase of decision-making and it has a lot of drafts, etc., mainly at the beginning of the architecture, then these meetings where you end up generating these sketches, these abstractions for communication, they are important for this. Since you do not have to appeal to verbal discourse for someone else to understand, sometimes you make it easier with a drawing, a diagram, a flow of information, but you also do not have to come up with a complex model to model. So that's why it is important to implement in the future. It is the seminal aspect that will define the best approach to be detailed in the future and will implement the architecture.

Researcher: Do you formally or informally document what happened at the meetings and, if so, what happens to this documentation?

Architect: In general, in the agile approaches that we have adopted, we take the designs of the meetings and generally two situations occur: we register photos to discuss later or simply translating that into a more formal modeling. Not formal in the mathematical sense, it means a more standardized way. And the second option, we simply designing and in an agile way we try to translate that into a more complex model, since we understand that that vision is the most correct for a particular quality attribute. But the record is very informal, at most, a photo. However, when we want more agility, we already took that discussion, that meeting when we have more time, we translate that for a better model: from paper to a model with a more known format.

Researcher: Are these documents ever used? If so, how? If not, do you have a sense of why not?

Architect: It is related to the previous answer. They are used when you decide that that the generated document is the document to be taken as the primary solution for a particular attribute and you use it to generate a more detailed explanation. Generally, it is in this phase of detailing the architecture, of architectural description that you use it.

Researcher: Further, we are really interested in knowing what ‘sticks’ and what does not ‘stick’ from these meetings: thus, to what degree would you say that the kinds of decisions made at the whiteboard are reflected in the eventual code?

Architect: Let me try to remember some scenario in this direction. In the first experience, because it was a very large system, in this case, the whiteboard meetings

were more used to elaborate the high-level architecture. As the project was distributed and each component of the architecture was developed by a specific team, these meetings served only to delineate the scope of work of each of these teams. It also influences on the implementation. This also served as a basis for us to elaborate how these components would interoperate. It also somehow influences the implementation. In the other case, the discussions, not necessarily drawings, models, etc., these meetings, they ended up generating the document of architectural description and from that it influenced a lot in the implementation. But let's say for this second scenario this was a seminal item. We used it as a starting point for after another architectural activity we could implement. It influences a lot in the architecture.

Researcher: Can you give me examples of decisions and structures that were preserved?

Architect: A very clear example was what I said from the first experience where we ended up delimiting the components and how they interacted with each other, so we ended up doing drawings where the information flow among the components was described and in this scenario, we are specifying what the structure of the system in itself, in the case, a more structural view of the system, division of activities and assignments of tasks. So for this decision of reusability and consistency of the information among the different components, they arose from a model that we designed. We took the components that existed and exercised various scenarios within those components. That would determine how they would communicate with each other. So this is an example that directly affects the implementation by the team.

Researcher: Can you give me examples of decisions and structures that were not preserved and why?

Architect: It's hard to identify. Generally, since whiteboard meetings are pretty much draft-level, I do not have a way to go with an example, but discarding situations occur all the time. So in this example I gave, in relation to the structure of components, some information flows that we did not see that made much sense, we discarded right there, nor did it lead to detailing. And it influences the next phases. However, a specific situation of this wrong flow that we had I cannot exemplify. But to some extent, the meetings helped to identify that those were not the best ways to be followed. It happened.

Researcher: What are the kinds of things that typically change from sketch to implementation? Why?

Architect: Of course, the level of detail already changes from whiteboard to architectural description. This is one thing I learned from the training I received and the architects I had the opportunity to work with. Not every detail of implementation should be described at the architectural level. As concern usually involves quality attributes, sometimes strictly functional aspects of the architecture are suppressed because they will be detailed at the requirements and design level in the future. So it is more of the assignment of the developer itself and not of the architect. So these models do not have implementation details that are strictly functional, but only those that are non functional. Then this information is not contemplated.

Researcher: What, in your mind, was missing from the whiteboard discussions that you think should have been discussed at the time?

Architect: Let me try to identify. I think it's neither what's left out of the discussion, etc. But I think what should be discussed more. As I have always worked with the prioritization of quality attributes, I think that this prioritization should give more importance to the first items on the list, they should be more exercised than the less important items. Sometimes, we spend considerable effort trying to contemplate items that are not so important to the system being worked on, but we end up spending that time. I think that part of it could be invested in higher priority items. In this sense, there could be a reallocation of effort to be spent on this part of the meetings which is one of the highest priority items in the architecture. It I missed in some situations, because it does not map very well a certain quality attribute, it defines a solution and in the future you see that needs to detail more that. The decision is not so clear and there are points that need to be solved. So this could be identified before in the meetings or we did not have enough knowledge so we cannot say that it was because of the meetings that this necessary detailing in the future happened. It is not an effect/cause, but it is a possible related factor. Maybe less time at whiteboard meetings led to this type of situation.

Researcher: Any final thoughts? You are free to say anything.

Architect: As I mentioned in some previous answers, the meetings need to be very well conducted to optimize the discussions. That's why focusing on quality attributes, prioritizing them, this organization you do before you start the whiteboard meetings is very important. Because it is based on this that you will allocate the architects, which are not always available, and you will allocate them and you will guide the discussion based on that. It is clear that the purpose of these meetings is to be very open. However, the more effective you are at making decisions and detailing them to see the possible scenarios where decisions can go wrong, the more effective you are at it is better. So pre-organization before meetings is critical and the top priority items should always be the most spent in terms of effort and time in those meetings. So in the future, you can create a document that can be more in line with what the system is going to be implemented in reality and you can get more satisfaction from your customer. Sometimes we take quality attributes that are in the fruit salad of architectural theory, put them in the project, give some importance to them, but in practice, they do not have effects on customer satisfaction. So, for example, things that the customer determines as a quality attribute with high priority, you could spend a lot more effort on those things. So I think that's basically it: pre-organization and prioritization is essential for you to have better productivity in whiteboard meetings.