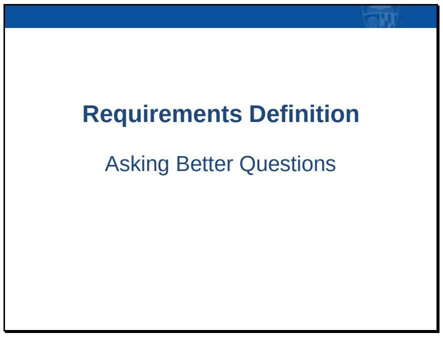
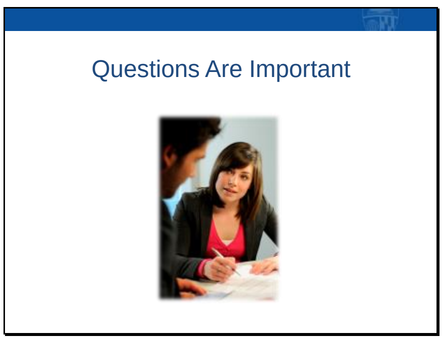
1 

In this lecture we'll discuss how to ask more effective questions during the requirements definition process.

2 

Asking effective questions are an important part of the software engineering process, especially during the requirements phase of a project. And…asking questions is usually the primary technique used to elicit information…so this is a very important skill set.

History has shown that business-side stakeholders, the source of requirements information, are generally not aware of the kinds of information and the level of detail that need to be gathered during the requirements phase. You may recall my comments from an earlier lecture regarding how different stakeholders have different understandings about what a requirement is. You may also recall that 80 percent of requirements defects are due to incorrect and incomplete requirements information being gathered…so more effective questions can significantly help to mitigate this problem.

Now, even though I'm discussing the topic of better questions in the context of defining requirements, being able to ask effective questions is a useful skill that applies to any phase in a software engineering project.

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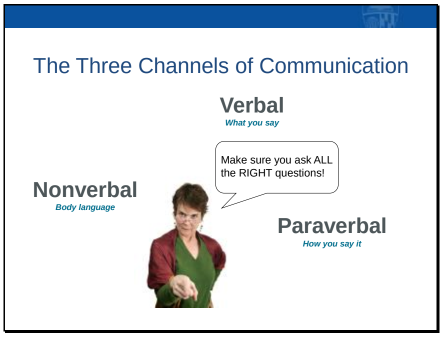

Something that's really important when it comes to asking better questions is to understand what is called the three channels of communication.

When people communicate, there are three channels that send information to someone. The first channel is the verbal channel…what you say…or what you write if the communication is in written form. The second channel is the paraverbal channel, and it consists of how you say what you say in terms of word emphasis, tone of voice, and pacing. And the third channel is the nonverbal channel…or body language.

When people communicate feelings, needs, likes, and dislikes, 93 percent of the information that is sent is sent in the paraverbal and nonverbal channels. In fact, 55 percent is sent in the nonverbal channel, 38 percent in the paraverbal, and only 7 percent in the verbal channel.

You can tell a lot just by looking at this picture. Her body language and the emphasis on the words used can make most people hear her…even though it's a static image.

So…how can we use the three channels of communication? In several ways. One way is to be on the lookout for when the three channels are not in synch with each other. For example, in this image, if the verbal and paraverbal channels went something like this…"you've made me the happiest manager in the whole darn company"…the channels would be out of synch. The verbal and paraverbal wouldn't match the body language, would they? When the channels are out of synch, the nonverbal channel is the one that people believe. So…I might have to ask some very carefully constructed questions to get to the bottom of what someone is really thinking.

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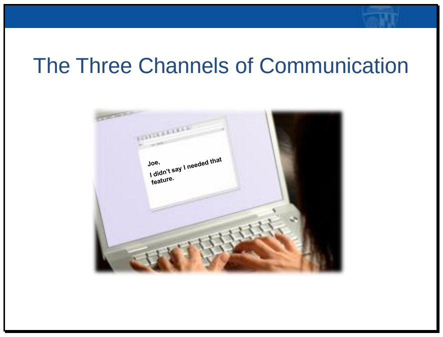

A second way to use the three channels of communication has to do with risk…particularly risk associated with getting correct and complete requirements information.

I work with a number of client organizations where the primary form of getting requirements information from stakeholders is through email. In fact, for some clients there is very little face-to-face or even voice-to-voice communication…and that presents a significant risk. We lose two channels of communication when written correspondence is used…the paraverbal and the nonverbal.

Now…take a look at this email message that my client is sending me. As a reader of that email, I may not be able to tell exactly what my client means. There's a couple of different interpretations possible.

- I didn't say **I** needed that feature. That might imply that somebody else needed it, but not my client, and she may not really care about it.
- I didn't say I **needed** that feature. She doesn't think she needs it, so why is it there?
- I didn't say I needed **that** feature. That might imply she needed something else.

One of my clients is an automobile manufacturer. I was at one of their plants talking with a group of their business analysts and I used this same example. Their eyes widened and they gave each other knowing looks. As it turns out, virtually all communication between them and their stakeholders uses email, and they constantly misinterpret the requirements. Face-to-face communication didn't appear to be an option for them, so I recommended having virtual meetings where at least the paraverbal component would be added.

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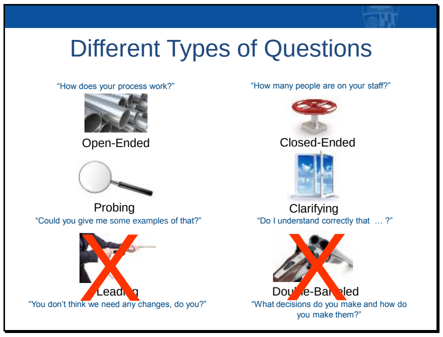

Now, let's talk about the different types of questions one might ask during the course of requirements elicitation. I'd like you to remember six different types of questions: open-ended questions, closed-ended questions, clarifying questions, probing questions, leading questions, and double-barreled questions.

An example of an open-ended question is "How does your process work?". An example of a closed-ended question is "How many people are on your staff?" A sample clarifying question is "Do I understand correctly that your process works as follows?"…then you would describe your understanding. An example of a probing question would be "Please give me some examples of that?". "You don't think the product needs any changes, do you?" would be an example of a leading question, and "What decisions do you make and how do you make them?" is an example of a double-barreled question.

So…when are each of these question types best used?

I'll start with the open-ended question. Open-ended questions don't seek a yes, no or finite response. You are asking someone to share potentially a lot of detailed information based on their knowledge, experience, or feelings. Professionals who study question methodology find that open-ended questions are the most powerful type of question for learning about things. And…they help you to get into people's heads more easily. This is the type of question you could use to really draw someone out.

The closed-ended question is useful when you need to get yes/no responses, very specific finite information, and to get agreement. The downside to closed-ended questions is that they do not promote back-and-forth conversation. So…this is a useful type of question, but its effectiveness is limited.

Probing questions are useful when you need to follow-up and get more information about something, specific examples of something, or when someone has answered a prior question with a generic word like usually, mostly, sometimes, or often. In my own work, whenever I use a probing question to get specific examples…I try to remember to use the plural…example…instead of asking for just a single example. It gets me a lot more information.

Clarifying questions are very useful when you need to confirm your understanding of what someone has told you. It’s a way of feeding back what you have heard or understood, and it can also serve as a quality control check. If your understanding is not correct, or if a stakeholder didn’t communicate something correctly…though they thought they did…then this gives us an opportunity to correct things and move on. This type of question also lets someone know that you are listening to them…and that’s important, because one of the side effects is that people will tend to open up more if they know that you’re really listening.

Leading questions should be avoided. A leading question coaches a stakeholder as to how you want them to answer, and this can offend people. So…we don’t want this one in our question toolbox.

Double-barreled questions should also be avoided. A double-barreled question is one in which several questions…two, three, even four…are asked in a single sentence. The danger of this type of question is that you may not get the answer to all the questions, particularly if the answers are lengthy…so you may have to re-ask some of the questions again. Now, the problem with that is that many times the person who answered the questions will honestly think that they’ve answered them all…because they did hear them all…and there’s a good chance you will offend them because they can feel you weren’t listening. So we don’t want this one in our toolbox either.

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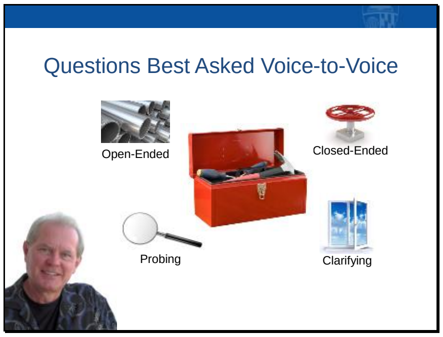

So…the four types of questions we want in our toolbox are the open-ended, probing, clarifying, and occasionally, the closed-ended question…especially if we are trying to learn about things.

Earlier we discussed the three channels of communication, so I want to bring that up once more in the context of these types of questions. Recall that if we primarily use email to elicit requirements information we are only left with one channel of communication…the written channel. Of these four types of questions, the only one that is really practical to use in email communications is the closed-ended question…but this doesn't get us a whole lot of information if we are trying to learn about things.

The open-ended question is difficult to use in emails because the response might be very lengthy, and many people don't like to write. So…many open ended questions in an email usually won't be effective…even though open-ended questions are the type that are rich in information content. The probing and clarifying questions are also not effective in emails since they are used in response to a how a stakeholder answers a prior question.

So…what I'm presenting here is even more information about why using email as the primary elicitation tool is risky. To maximize effectiveness it's best to ask the majority of questions face-to-face…or…voice-to-voice at the very least.