

# Study on decision-making and intertemporal choice in software development<sup>1</sup>

## Study protocol: Data collection sessions

This document is part of the protocol for a study on decision-making and intertemporal choice in software development. It describes how to conduct data collection sessions which yield both quantitative and qualitative data on the decision outcomes and decision-making process of participants, as well as on decision-making situations that the participants have encountered as part of their work in software development.

Each data collection session proceeds in five phases: (1) Introduction, (2) The Task, (3) CTA interview, (4) Demographics, and (5) Closure. The Cognitive Task Analysis (CTA) interview part (Phase 3, see below) is flexible and allows the interviewer to modify the interview protocol based on findings from previous sessions.

This protocol assumes that sessions are recorded for later transcription and analysis.

## Materials

For each participant, make a copy of the following. *Mark each copy with a unique identifier after the session to be able to connect the data to the correct recording.*

### Consent form

#### Questionnaire which includes

**Task scenario** (One of three versions: the focus on the self version is marked S, the focus on the unnamed other version is marked O, and the product owner version marked PO. If the participant is a product owner or similar, use the PO version. Otherwise, randomly choose between S and O versions so that half of the non-product owner participants receive the S version and half receive O version.)

**Task questionnaire** (embedded in the scenario)

**Demographics questionnaire** (separate pages in the questionnaire)

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1 While we use the term intertemporal here, we suggest to take care not to use it with participants, since that would prime them to the temporal nature of the study. We just tell them that we study how they make decisions.

## Phase 1: Introduction

<ul style="list-style-type: none"><li><input type="checkbox"/> Welcome the participant.</li><li><input type="checkbox"/> Explain the purpose of the study.</li><li><input type="checkbox"/> Obtain consent.</li></ul>	<p>Thanks for coming. Before we start, I want to walk you through what we would like to do.</p> <p>We are looking at decisions in software development.</p> <p>What is a software professional doing when making decisions? How do they make decisions? What do they think about? What information do they use and why?</p> <p>I will show you a decision scenario, and I will ask you to make a few decisions in different versions of the scenario. I would like you to talk about what you think while deciding.</p> <p>After that, I'd like to discuss decision making in your work more generally. I have some interview questions and we can talk freely around those.</p> <p>Finally, I will ask you to fill in a form with background details.</p> <p>Is it ok if I record this session? Everything that is recorded will be transcribed to text. And your name will be removed from the text. And then the recording will be destroyed. We will never reveal who said what. When we report results, we will not include any details that can identify you. We might use small portions of what you said, but it will be about decisions in general, not details about you or your company or your products or anything like that.</p> <p>Just to be clear, I'd like you to fill in this consent form to verify that you're ok with all this. Are you ok with participating? And are you ok with recording this session? Do you have any questions before we start?</p>
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## Phase 2: The Task

<ul style="list-style-type: none"><li><input type="checkbox"/> Start recorder</li><li><input type="checkbox"/> Explain TAPS instructions.</li><li><input type="checkbox"/> Give task scenario to the participant.</li><li><input type="checkbox"/> Give task questionnaire part 1 to participant.</li><li><input type="checkbox"/> Give task questionnaire part 2 to participant.</li><li><input type="checkbox"/> Take TAPS notes.</li></ul>	<p>[START RECORDER]</p> <p>Let's start with the first part. I will give you a scenario, it's like a little story. And there's a decision that has to be made in this scenario. There are no right or wrong answers. What I'm interested in is just how you think.</p> <p>Because I want to understand what you're thinking, I also ask you to <i>think aloud</i>. It's important that you just say what you're thinking, from the beginning. You can just talk to yourself, but in such a way that I can hear you. It might feel a bit strange, but it's ok, just try your best. I will remind you from time to time to think aloud. And you can say whatever you want. Whatever comes into your mind.</p> <p>Here is the scenario. Read, and go ahead and answer the first question, and talk while you are thinking. [GIVE SCENARIO AND QUESTIONNAIRE PART 1]</p> <p>[Periodically remind the participant to think aloud.]</p> <p>Ok, good.</p> <p>So now let's keep the same scenario, but let's change the question a bit. Again, think aloud while you answer these questions. [GIVE QUESTIONNAIRE PART 2]</p>
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## Phase 3: CTA interview

<input type="checkbox"/> Keep task scenario visible. <input type="checkbox"/> Conduct CTA interview.	Thanks! So let's discuss a bit. [KEEP SCENARIO VISIBLE] [FOLLOW CTA INTERVIEW PROTOCOL BELOW]
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### CTA Interview protocol

#### Guiding principles:

- *We want rich contextual detail and texture in the narrative.*
- *Follow the participant, ask follow-ups to clarify, let them explore and explain.*
- *We want to stay grounded in something that happened, concrete examples.*
- *If the participant gets abstract in terms of principles, knowledge, etc., that's fine.*
- *When they get into particulars of the organization they work in, nudge back: "How do you consider that in your decision making?"*

#### First what-if

If you think about the scenario, ... [*mirror the scenarios: choose the opposite of the shown scenario*]

- ...what if it wasn't you? If it was someone else who was affected by those options?
- ...what if it was you? If you were affected by those options?

#### The decision itself

How did you go about completing the task?

What (other) pieces of information did you consider?

Which information would you have liked to see and missed?

What else did you consider? [example follow-ups]

- Were you considering how your team handles such situations?
- Where would you find this kind of scenario in your work?
- What motivated you to settle on this number?
- What kind of principles did you consider?
- Did you follow a method to make your choice?
- "What happened next"?

What if the chance to save effort was different? Would that change your numbers?

- Say, a 74% chance of saving effort.

**Context: the environment**

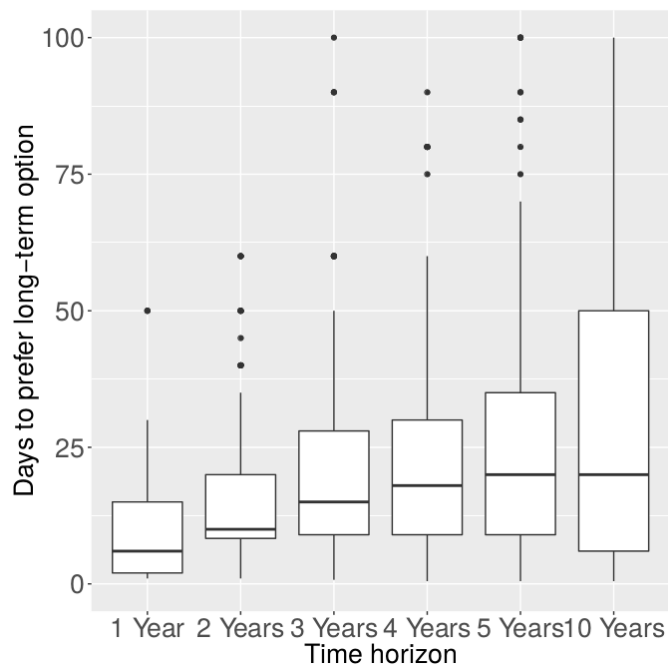
If this were a real situation, who would you ask for advice about this decision? What would you ask them?

**Experience with similar situations**

The scenario is obviously very simple compared to reality. We have been trying to develop more realistic scenarios where there is this kind of future outcome that has to be considered. Could you help us pin down some examples of those kinds of situations? Where do they come up? [follow up to get details]

**Comments on previous results**

Our previous results show that people overall want more savings when the time horizon is longer. You can see that in this figure. Do you have any thoughts about that?



**Close**

Is there something else you think would be interesting to talk about that we didn't cover yet?

## Phase 4: Demographics

<input type="checkbox"/> Give demographics questionnaire to the participant.	Ok, very good! Thank you.  Next I'd like you to fill in a bit of background information. [GIVE DEMOGRAPHICS QUESTIONNAIRE]
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## Phase 5: Closure

<input type="checkbox"/> Thank the participant. <input type="checkbox"/> Ask if the participant has anything more they want to discuss. <input type="checkbox"/> Explain what will happen next. <input type="checkbox"/> Ask the participant not to reveal too much to co-workers yet.	Thank you so much for participating! It was very interesting to see how you reasoned about all this.  Is there anything on your mind at the moment that you would like to talk about?  [STOP RECORDER]  What will happen next is that we will collect more data and then we'll analyse it. And we'll come back with a report and a presentation on this topic.  One thing I would like to ask you: we have some more interviews lined up with your colleagues. And we don't want to influence them too much. The most important thing is not to reveal the design we had in the beginning with the different time-frames. And that's an important part of the study design. So if you could keep the details of this session secret for a few days, until <DATE>, that would be great. After that it's of course fine to discuss anything.
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