

Authors

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Interview Questions

Demographics

- a. What is your role?
- b. What is your experience in that role?
- c. What is your experience with human factors knowledge?
- d. May we record this interview session?
- e. May we send you our notes later for confirmation?

This new study aims to investigate to what extent **human factors experiments** can be integrated in agile development (of systems, services, or products). In particular, we are interested in practices associated with managing continuous experimentation and we expect interviewees to either have experience with a) managing reoccurring empirical investigations, b) continuous experimentation, or c) with human factors experiments, or a combination thereof.

The core concepts for this interview have been defined in different ways in literature. For the scope of this interview, we use the following definitions, but we are happy to collect feedback on them during the interview (e.g., if you have a different view).

*Definition 1: **Continuous experimentation*** is an approach to support software development, where research and development activities are guided by iteratively conducting experiments, collecting user feedback, and observing the interaction of users with the system or services under development. The goal of continuous experiments is to evaluate and prioritize features, to assess risks, and to drive evolution.

Definition 2: The field of **human factors** in development aims to inform developers by providing fundamental knowledge about *human capabilities* and *limitations* throughout the life cycle so the product will meet specific quality objectives. Those capabilities and limitations include cognitive, physical, behavioural, psychological, social, effective, and motivational aspects.

*Definition 3: **Human factors experiments*** are specifically investigating how these *human capabilities* and *limitations* affect specific quality objectives during interaction between humans and the system, service or product under development. Thus, humans are subjects of human factors experiments and their behavior and perception/opinions (of, e.g., the system, service or product under assessment) can impact the result and consequently the design of the system.

*Definition 4: **Continuous human factors experimentation*** is an iterative process that involves conducting experiments to assess how human capabilities and limitations affect specific quality objectives during user interactions. It involves ongoing experiments, user feedback, and observations to inform the design process and enhance user experience.

*Definition 5: **Management of** (continuous) (human factors) **experiments*** relates to the planning of the initial experiments, when/how to decide to replicate/re-run them, when/how to decide to conduct a complementary study, handling the execution, and the documentation/communication of these steps or the results of the experiment.

Do these definitions resonate with your view?

1. Do you have experience with continuous experimentation? Does this experience also relate to human factors experiments as per our definition above?

Who is mainly responsible for designing and evaluating experiments in agile development? (e.g., data scientists, user researchers, teams...)

- Are there special roles included in human factors experiments?
- What does this----- role (e.g., data scientist) has to do?

Please consider a concrete scenario of managing experiments for the following questions.

Management

2. What is the most important thing to consider for the management of continuous experiments?
 - a. Is there anything special to consider when managing experiment in the context of large-scale agile development?
 - b. Is there anything special to consider when managing human factors experiments?
3. Who(role) is responsible for experiments management?
 - a. ... in agile
 - b. ... when the experiment includes human factors aspects?
4. How do you manage documentation and communication of experiments?
 - a. ... in agile?
 - b. ... when the experiment includes human factors aspects?
5. How do you manage the results and lessons learnt, especially considering reuse or evolution of experiments (knowledge management)?
6. What information must be documented in relation to experiments, e.g. for the analysis, interpretation of results and new rounds of experimentation (replication/re-run or performing complementary studies)?
 - a. Consider required infrastructure to run an experiment, setup, booking...
 - b. Can you give an example?
7. What are the criteria for deciding to replicate/re-run or conduct a complementary experiment?
 - a. When and how do you know that you need to replicate/re-run or conduct a complementary experiment because things have changed?
8. What main obstacles/challenges do you face while managing experiments?

Human Factors Experiments

9. What are the biggest differences when comparing human factors experiments with other kind of experiments?
10. What do you think is particularly challenging for this difference? Can you give examples?
11. What are the main requirements/infrastructure needs for designing, executing, analysing and documenting/communicating human factors experiments?
12. Is there any specific standard/model available for (the different phases of) human factors experiments?
13. Do you think people without human factors background can/should do the experiments with certain training?
14. Why or why not? What if they have to?
15. What would be the main challenges in conveying requirements related to the human factors' aspects of an experiment to engineers (non- human factors people) who do the experiments?
16. What type of specific training do you think non-human factors people would need to properly conduct human factors experiment?
17. Do you have any recommendations on how human factors experiments can best designed, executed, analyzed etc, in an agile setting?
 - a. For example, by training the agile teams or including human factors expert in each team? Some other way of working?
18. What are the benefits of continuous experimentation?
19. What are the current drawbacks and challenges with continuous experimentation? What needs to be fixed? Especially with respect to human factors experimentation.
20. Anything we forgot to ask?

Thank you!