**Interview instruments**

1. Instrument I: Technical founders

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| **Sections** | **Questions** |
| Opening questions | **Q1** What was the story behind your startup? how did it begin?  **Q2** What were your startup objectives?  **Q3** What was your major role?  **Q4** Is there a point of time where you completely changed the direction of your startup? If yes, what was the change? |
| Depicting the startup timeline | We present the startup evolution model based on the Crowne’s model [1] and the lean startup methodology [2].  **Q5** Approximately, how long did it take you (since the founding time) until the initial software product (MVP) is released to market?  Q5.1 What was the development process at that time?  Q5.2 Approximately, how many people in the development team at that time?  **Q6** Did you complete validating the product in the market? If yes, approximately, how long did it take you to validate the product (since releasing the MVP to market)?  Q6.1 What was the development process at that time?  Q6.2 Approximately, how many people in the development team at that time?  **Q7** Did you achieve your startup objective in a way that make your startup a mature company? If yes, approximately, how long did it take you to achieve your startup objective (since completing the product validation in the market)? If no, stage 3 is measured since validating the product in the market until the current time.  Q7.1 What was the development process at that time?  Q7.2 Approximately, how many people in the development team at that time? |
| Exploring TD decisions | * We present the definition of TD based on the Dagstuhl report [3]. * We use the TD landscape in [4] [5] to illustrate the scope of TD. * We explain the TD decision as a decision that leads to either the accumulation of TD, or the remediation of existing TD. * The discussion of TD decisions is organized based on the stages, starting from the first stage.   **Q8** What was a major TD decision you made, at the *x* stage   * For each decision identified, we used the sub-instrument **(TD CDM Instrument)** to ask some probe questions about each decision. * Before moving to the next stage, we also ask Q.8 again that if there is another major TD decision made at this stage? If yes, **TD CDM Instrument** is used to ask probe questions for the discussed decision. If no, we move to the next stage. |
| Closing | Q9 Is there anything else you would like to add? |

1. Instrument II: Technical employees

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| **Sections** | **Questions** |
| Opening questions | **Q1** When did you join the startup?  **Q2** What was your major role by then?  **Q3** Is there a point of time where you completely changed the direction of the software product? If yes, what was the change? |
| Depicting the startup timeline  *based on the involvement time of the employee* | We present the startup evolution model based on the Crowne’s model [1] and the lean startup methodology [2].  **Q4** Which stage(s) that represent your involvement in this startup? |
| Exploring TD decisions | * We present the definition of TD based on the Dagstuhl report [3]. * We use the TD landscape in [4] [5] to illustrate some examples of TD. * We explain the TD decision as a decision that leads to either the accumulation of TD, or the remediation of existing TD. * The discussion of TD decisions is organized based on the stage(s) of involvement.   **Q5** What was a major TD decision you made, at the *x* stage   * For each decision identified, we used the sub-instrument **(TD CDM Instrument)** to ask some probe questions about the decision (recur per decision). * Before moving to the next stage, we also ask Q.5 again that if there is another major TD decision made at this stage? If yes, **TD CDM Instrument** is used to ask probe questions for the discussed decision. If no, we move to the next stage. |
| Closing | Q6 Is there anything else you would like to add? |

1. TD CDM instrument: Recur for each TD decision

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| **Sections** | Questions |
| **Initial question** | Please describe how the decision was made? |
| **Decision context** | *Probes (if needed) to explicate the context of decision* |
| What were the benefits you gained from this decision?  Probes: what was the value it brought to your startup?  *Probes (if needed) to explicate the decision benefit.* |
| What were the negative consequences from this decision?  Probes: When these consequences are observed?  Probes: How did these negative consequences affect your startup objectives?  *Probes (if needed) to explicate the negative consequences of the decision.* |
| **Lessons learned** | What do you think should have been done for this decision?  Probes: Do you think this decision should have been made at a different stage of your startup? if yes, at what stage should be made?  Probes: Do you think this decision should NOT have been made during the startup stages? If yes, why not?  Probes: Should you have consulted different people, or information? If yes, what?  Probes: Should you have used different criteria when making that decision? If yes, what? |

**References**

[1] M. Crowne, “Why software product startups fail and what to do about it. Evolution of software product development in startup companies,” in *IEEE International Engineering Management Conference*, Aug. 2002, vol. 1, pp. 338–343 vol.1. doi: 10.1109/IEMC.2002.1038454.

[2] E. Reis, *The lean startup*. New York: Crown Business, 2011.

[3] P. Avgeriou, P. Kruchten, I. Ozkaya, and C. Seaman, “Managing Technical Debt in Software Engineering (Dagstuhl Seminar 16162),” *Dagstuhl Reports*, vol. 6, no. 4, pp. 110--138, 2016, doi: 10.4230/DagRep.6.4.110.

[4] P. Kruchten, Robert. L. Nord, and I. Ozkaya, “Technical Debt: From Metaphor to Theory and Practice,” *IEEE Software*, vol. 29, no. 6, pp. 18–21, Nov. 2012, doi: 10.1109/MS.2012.167.

[5] P. Kruchten, R. Nord, and I. Ozkaya, *Managing Technical debt - Reducing friction in software development*. Pearson Education, 2019.