On the Selection of Design Thinking Techniques in Software Development: a Descriptive Decision-making Model

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TABLE I: Decision-making strategies (Wang and Ruhe) adapted to the selection of DT techniques

Category	Strategy	Criteria	DT techniques context
Intuitive	Arbitrary	Based on the most easy or familiar choice	I select DT techniques by considering those that will give me the least effort to decide or those that I have previously selected
	Preference	Based on propensity, hobby, tendency, expectation	I select DT techniques based on trends in techniques that have been used or on expectations from techniques that I know of
	Common sense	Based on axioms and judgment	I select DT techniques based on other users' evaluations of techniques that are good alternatives to use
Empirical	Trial and error	Based on exhaustive trial	I select DT techniques based on several attempts to use techniques in search of the best alternative, and in some of these attempts I may not have been successful, which led me to look for other techniques
	Experiment	Based on experiment results	I select DT techniques based on the use of techniques, considering those that were successful
	Experience	Based on existing knowledge	I select DT techniques based on experience I have gained using the techniques and/or on experience of others who have also used such techniques
	Consultant	Based on professional consultation	I select DT techniques by consulting with other more experienced professionals (directly or indirectly) who use DT in software development
	Estimation	Based on rough evaluation	I select DT techniques from a rough evaluation of the result, even if I have not used them previously
Heuristic	Principles	Based on scientific theories	I select DT techniques based on scientific theories that reference the techniques
	Ethics	Based on philosophical judgment and belief	I select DT techniques based on philosophical judgments and beliefs that I have
	Representative	Based on common rules of thumb	I select DT techniques from the characteristics that represent those techniques
	Availability	Based on limited information or local maximum	I select DT techniques based on those that most quickly come to mind
	Anchoring	Based on presumption or bias and their justification	I select DT techniques based on a threshold analysis for what I need, and adapt as decision needs present themselves
Rational	Minimum Cost	Based on minimizing energy, time, money	I select DT techniques that show the lowest cost of resources, time, people, among others (without looking at the benefit)
	Maximum cost	Based on maximing gain usability, functionality, reliability, quality, dependability	I select DT techniques that are shown to generate a greater benefit (quality, meeting needs, usability, integration of participants)
	Maximum utility	Based on cost-benefit ratio	I select DT techniques analyzing the techniques that show a good cost-benefit
	Interactive events	Based on automata	I select DT techniques considering the events that can occur from this decision and following a line of thought
	Games	Based on conflict	I select DT techniques based on the theory of games, that is, from the analysis of gains and losses with the decisions that I will take, or by resolving conflicts (disagreements) with others
	Decision-grids	Based on a series of choices in a decision grid	I select DT techniques by making filters based on the alternatives they have, like, "If I select X, then I can select Y, ..."