E. Kangas, T. Kinnunen, “Applying User-centered Design to Mobile Application Development,” *Communications of the ACM*, vol. 48, pp. 55-59, July 2005.

This Paper introduced the development process of two software on mobile message. The author illustrated how they implemented the project and explained the problems they met as well as the solution they used in each step. Based on these development experiences, the author evaluated three different approaches (contextual paper prototype, realistic UI (user interface) prototype, and usability testing) used in the project and proposed his opinion on how to select among them when conducting a project.

Contribution:
The author described the user-centered design process of two mobile software developments. In these two examples, he explained the approaches used given the specific situation, provided us valuable experiences how to select way in real-word software development.

(1) Contextual paper prototype is recommended when the budget is tight. This way is effective especially before or during the process of the realization of the design. This can help the designer get the feedback from the user in front of implementation. Compared with change design after implementation, this can save a lot of money.

(2) Realistic UI prototype is required when developing a novel or complicated interaction as paper prototype is not sufficient. In this case, more expenses are spent on continuous iterations. The author claimed this can be avoided by using UI tools with implementation work simultaneously. He also tried to develop some simulation tools to replace actual coding. Admittedly, this can save time during the development, but some cases are inevitably waiting to be tested after implementation as simulation can not fulfill all the scenarios.

(3) I think we can combine paper prototype and realistic prototype together when development. At the beginning of the design, we can use paper prototype to understand the requirement of the user, which is cheap and convenient and when the design is nearly finished, we can make some modification by taking realistic prototype.