

3 Prototyping

What is Prototyping?

Prototypes are a preliminary interactive model of an idea. They are used in almost every industry that involves product design. Prototyping is essential to the concept selection process. The most useful characteristic of prototypes is that they can be thrown away. Thus, designs can be tested through hypothesis driven prototyping. Prototypes are useful for presenting designs to user, since visualizations based on written or verbal communication may be difficult, especially if the user interface is very novel. When prototyping, keep in mind that successful products in the market came from consecutive failed prototypes.

1. [List examples of when people use prototypes.](#)
2. [When have you used prototyping? How did it help?](#)

Why Prototype?

Prototyping is a great way to get feedback quickly and at a low cost. It allows engineers to experiment with alternative designs before deciding on the final one (which is nearly always a combination of multiple designs). This in itself is important because it prevents committing to a first design since less time is poured in when prototyping compared to coding, in the case of mobile app building. It is extremely important (as mentioned during last class' brainstorming activity) to not go with the first idea that comes to mind. Creating prototypes will decrease a psychology commitment that may arise from substantial amounts of (block) coding, thus increasing design freedom.

Successful Prototyping

There are different methods of prototyping that can maximize efficiency. When prototyping, exercise rapid prototyping and do so with the goal of testing a hypothesis. For example, "the user will not be overwhelmed with the number of different filters that can be applied to the photo" or "the user will know how to navigate through the menu will limited instructions." Instead of the team debating half an hour on how to design a specific aspect of the application, a paper prototype can probably be created in less than half the time. Paper prototyping also allows changes to be made to the design even during a user experience. Thus, exercise rapid prototyping to increase efficiency.

The Second Toyota Paradox shows how delaying decisions makes better cars faster. Building multiple ideas simultaneously and comparing them before selecting a single design may seem expensive initially, but is cheaper in the long run. Additionally, having alternate prototypes increases user feedback, even if it is in the form of comparisons (we will explore concept selection in the next chapter).

Things to keep in mind while paper prototyping:

- Hand-draw
- Keep prototypes sketchy

- Draw big, bigger than actual size so that both the tester and designer can see what is happening at all times. Fingers are also bigger than a mouse.
- Monochromatic – since we do not want to distract our user with superfluous details, nor do we want to sway them with pretty aesthetics.
- Iterate – prototyping combined with concept selection requires iteration, more on this next chapter.
- Always, always be ready to throw your prototype and design out

Limitations to Prototyping

Unfortunately since prototypes are not in any way the final project, they do have limitations when simulating the final product. There are two general limitations. Firstly, paper prototypes do not give the sensory experience that users experience when using a true mobile application. For example, they would not experience the acceleration of a car (due to an ability to recreate the real time responses) and they would not be able to use functionalities that take advantage of the phone's accelerometer and gyroscope. Secondly, prototypes do not demonstrate the feasibility of implementation. An application may have a simple and intuitive user interface, but be very complicated to code.

Activity:

Since, the assignment for Week 3 of the *Programming with App Inventor* is to develop your own game app. This week's design assignment will be to paper prototype your design (whether it is an original app idea or a modification of Mole Mash/Get the Gold/Space Invaders). When prototyping keep in mind what you have learned from this unit - exercise rapid prototyping, hand-draw, big and sketchy, iterate etc.