Cookie™

Figure 1

In this design, Cookie™ (Figure 1), we would like to create a MP3 player that is conventional in terms of technical aspects: a ported earphone, a Micro-USB port for charging and syncing music. This allows a broad group of users (for example, without Bluetooth headphone to pair up with the player, or without the budget to purchase a wireless charging board) to consider this product.

We designed the major interaction mechanism (Figure 3) to be a LED display with background light, a button that hovers over the LED display, and a touch layer that hovers over the button. From first sight this looks like a touch-screen based device but it is not. It has several advantages over touch-screen based players:
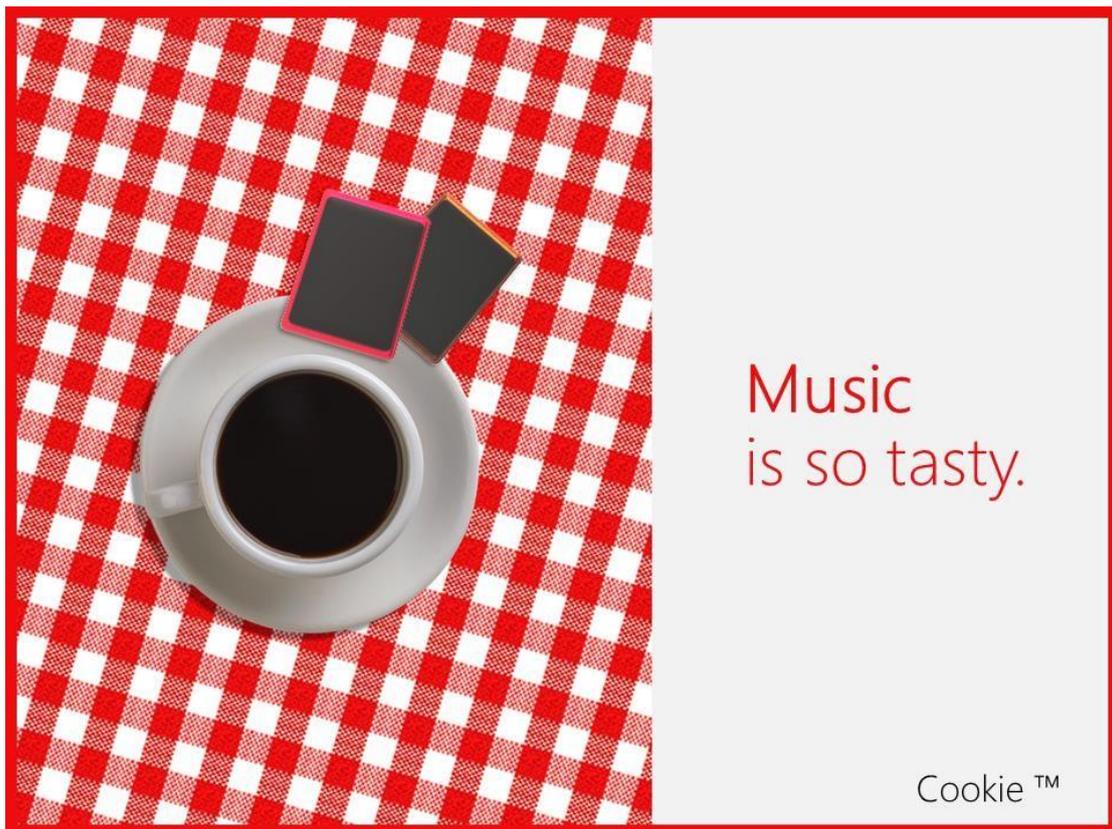

Figure 2

Firstly, it could lower the studying cost for certain user groups. It has bounce feedback upon pressing, because it is mechanically a button. Pressing a physical button can be more natural for, say, old people who are not used to touch-based devices.
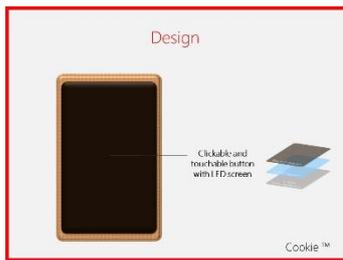
Figure 3   Figure 4   Figure 5

Secondly, it could be less costly in both software and hardware development. A system based on the feedback from pressing and swiping the button could be simpler than that based on touching. A single-color LED screen is cheaper than a touch screen.

Thirdly, it could be used in wider contexts. Physical buttons provide feedback that allow users to "blindly" touch, for shifting songs or adjusting volumes.

To fully take advantage of this hardware specification, we have imposed certain constraints, affordances and mappings, that lead the users naturally to its functionalities (Table 2):
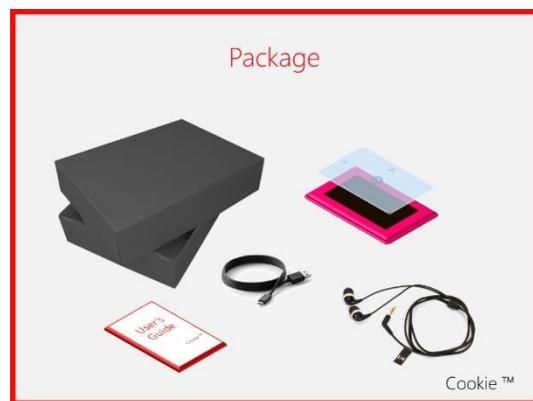

Figure 6

Table 2

Constraints	• The headphone port is placed at the top middle edge of the player (Figure 4). When the headphone is plugged in, there's only one way to hold the player, which also harmonizes with the screen orientation. This also allows the users to "blindly" control music playing without looking at the screen. • The shape and size of the player is only suitable for holding with hands, or putting in the pocket, thus limiting its context of using. • When a song is being played (i.e. in "Now Play" view, Figure 5), swiping of button is disabled while only pressing is enabled. This acts as the replacement for the unnatural design of a lock switch on many MP3 players, including iPod. No swiping, fewer chances of switching songs by accident.
Affordances	• The screen is the only clickable mechanism of the player, with five (center, left, right, top, bottom) places to press, thus inviting the users to press on it to trigger actions.

	• On the screen sticker (Figure 6) that comes with the package of player, symbols are also printed to hover over the relevant positions of the screen, in order to explicitly get users started.
Mappings	• Pressing left and right to go to previous/next songs, pressing up and down to turn up/down volumes, and pressing center to select/play an item: these are all implied in the semantic context, thus design of modern MP3 players.
	• When pressing or swiping on the screen, certain symbols appear on the screen to assure users of their intended actions (for instance, turning on player, muting volume).
	• When swiping up and down the buttons in the Playlist view, songs will scroll respectively in reversed direction at a sensitive level (like that of a laptop touch pad, or iPod spinning wheel), giving users more sense of control over a long playlist containing hundreds of songs.
	• When the screen background light is off (after sometime when no
	input is given, Figure 9), swipe randomly on the button will "wake up" the background light, just like waking a person up by touching him/her.

More details on the design: user actions and player responses.
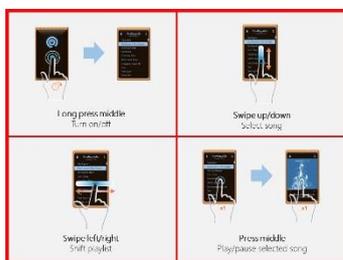

Figure 7   Figure 8   Figure 9