Project Goal: Accessibility Matters

Lexmark manufactures multifunction workstations in a worldwide market. The U.S. government, Lexmark's largest consumer, purchases equipment in compliance with accessibility standards.
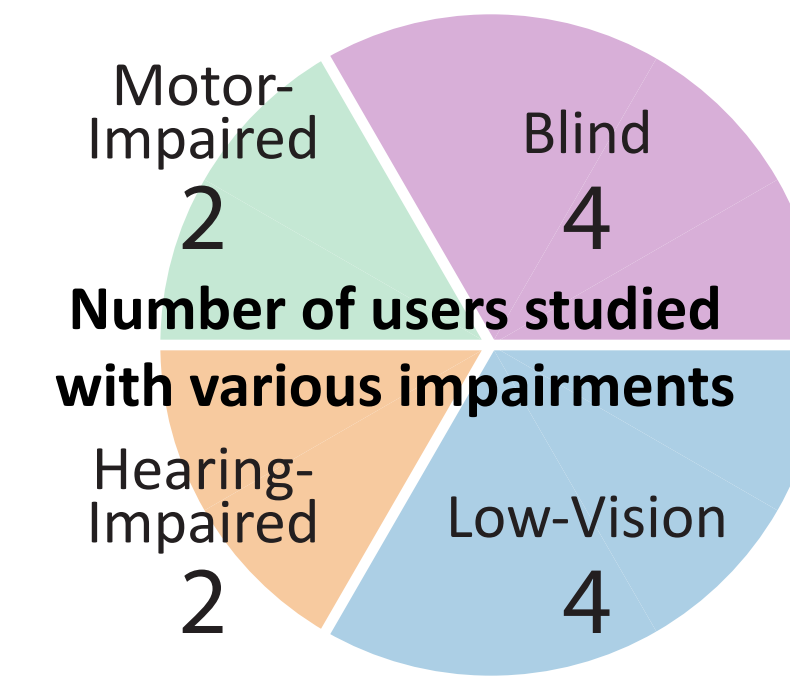
Our team sought to design an interface that would enable users with disabilities or impairments to engage effectively with next-generation Lexmark workstations.

We worked to understand how impaired users interact with multifunction devices and develop or employ appropriate paradigms of interaction to improve their experience.

Users Want Control

We interviewed a range of individuals with various visual, auditory, and physical impairments. Users identified issues with the current touch-screen interface, and cited a lack of feedback as the primary cause for confusion.

Users with impairments do not want to rely on others to do jobs for them, and want to be able to keep track of everything that occurs during interaction.
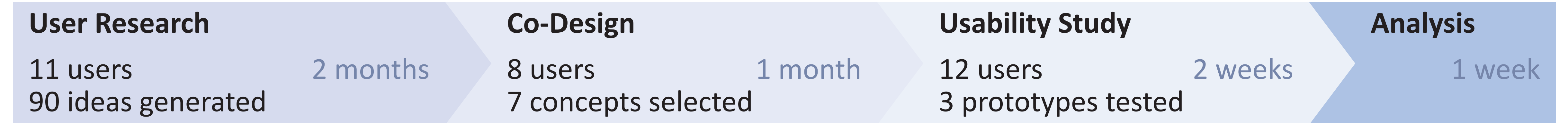
Number of users studied with various impairments

- Motor-Impaired 2
- Blind 4
- Hearing-Impaired 2
- Low-Vision 4

Tangible is Accessible

Blind users indicated that tactile feedback is crucial to a successful interaction. We determined that our concept interface should communicate its state in a tangible manner.
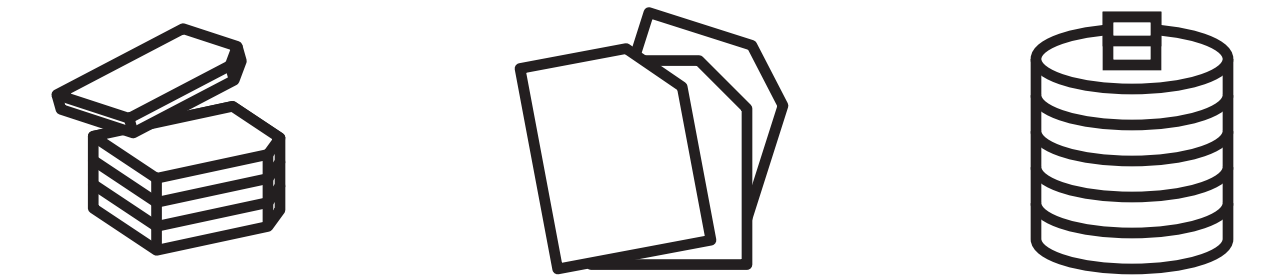
We generated several concepts to meet requirements we gleaned from our users' values. With the help of our users, and with Lexmark's feedback, we selected 3 concepts to prototype and take forward.

An **accessible** interface will...
- Maintain consistency
- Provide Feedback
- Communicate State
- Ensure Predicatbility
- Expose All Functionality

| User Research		Co-Design		Usability Study		Analysis	
11 users	2 months	8 users	1 month	12 users	2 weeks		1 week
90 ideas generated		7 concepts selected		3 prototypes tested			

COMMAND TOKENS

Tangible Interfaces for Lexmark Workstations

TEAM LEXMARK 2008-2009

Command Tokens Provide Control

Stackable Command Tokens
allow a user to send commands to a workstation by stacking labeled tokens on top of a reader.
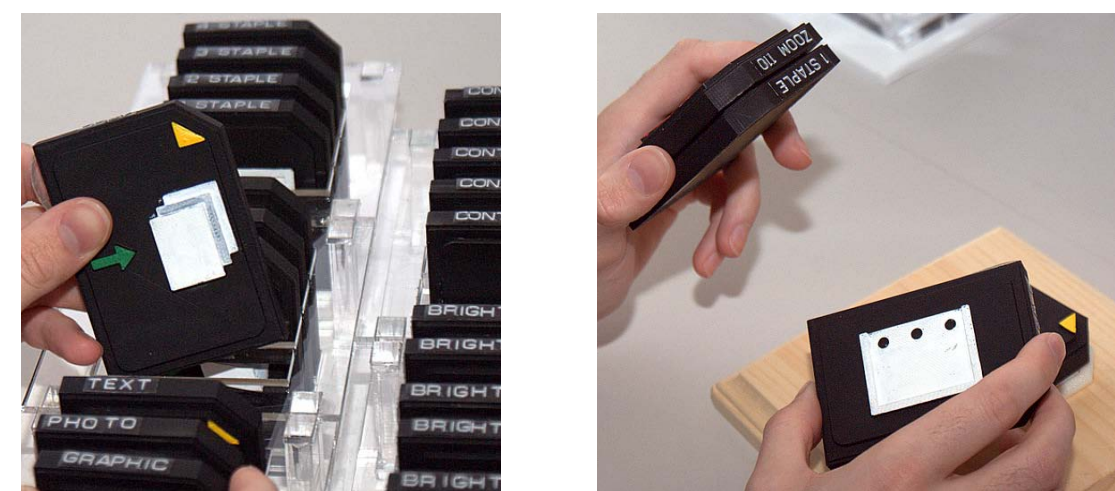
Command Sheets
run through the automatic feed tray along with the user's document and send commands to the printer.

Command Disks
rotate on a post, allowing a user to select each function from its associated group, one at a time.

1 The user selects the necessary functions to perform a copy job

2 The user places the document on the feed tray and presses Go
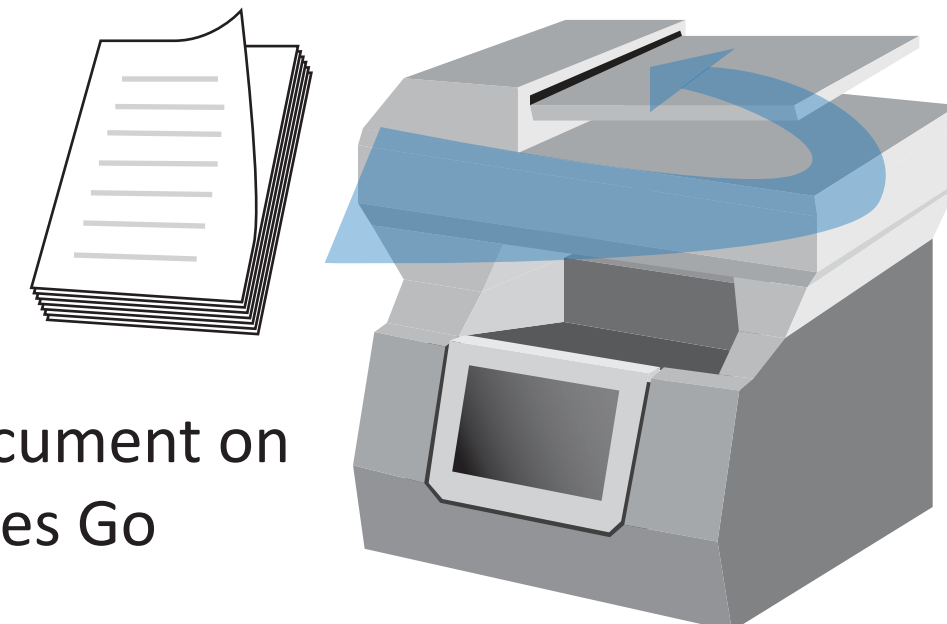
3 The workstation confirms the tokens, visually and through speech

Copy, 2-sided, 3-Hole Punch Please enter number of copies

4 The user types the number of copies on the keypad, and presses Go

5 The workstation completes the job, and the user returns to his office

A Positive Impact

Users were excited to hear that we were making multifunction workstations more accessible. They enjoyed working with our prototypes and providing feedback. We see promise in all three Command Token variants and recommend that Lexmark pursue Command Tokens as a means of increasing the accessibility to workstations.

We developed positive relationships with several users who were pleased that we were focusing on their needs. We met some extraordinary people throughout the course of this project and gained valuable experience every step of the way. We thank Lexmark for sponsoring this project and Olin College SCOPE for facilitating our work this year.
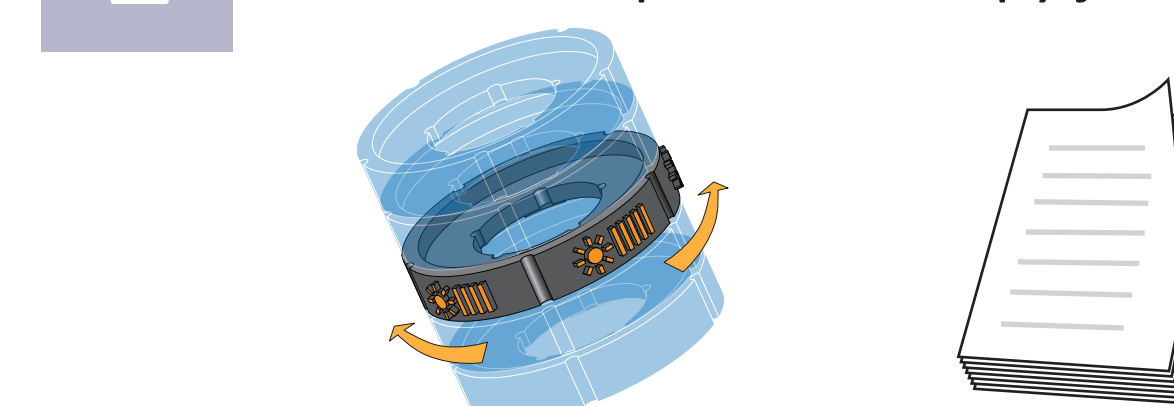
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