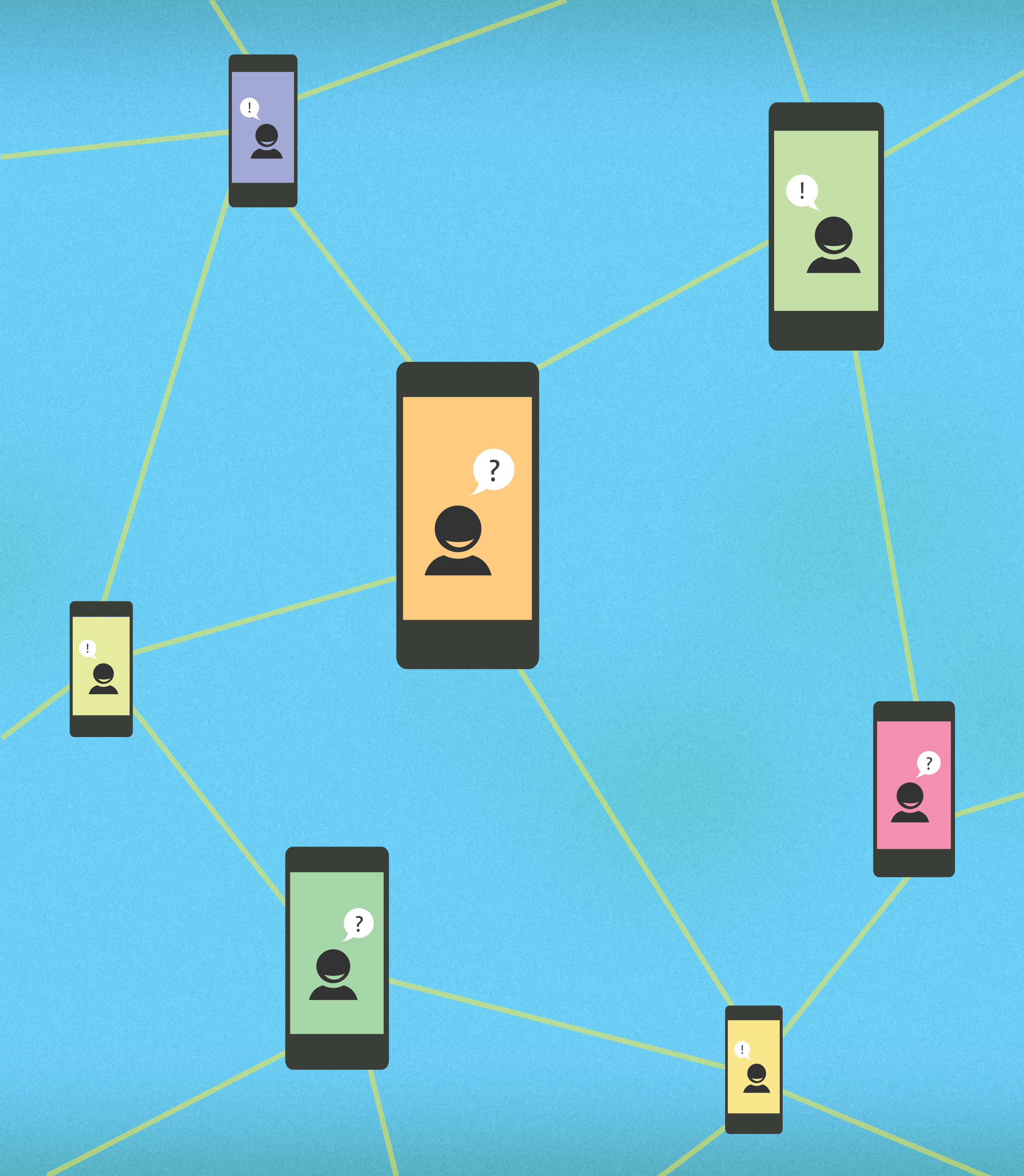
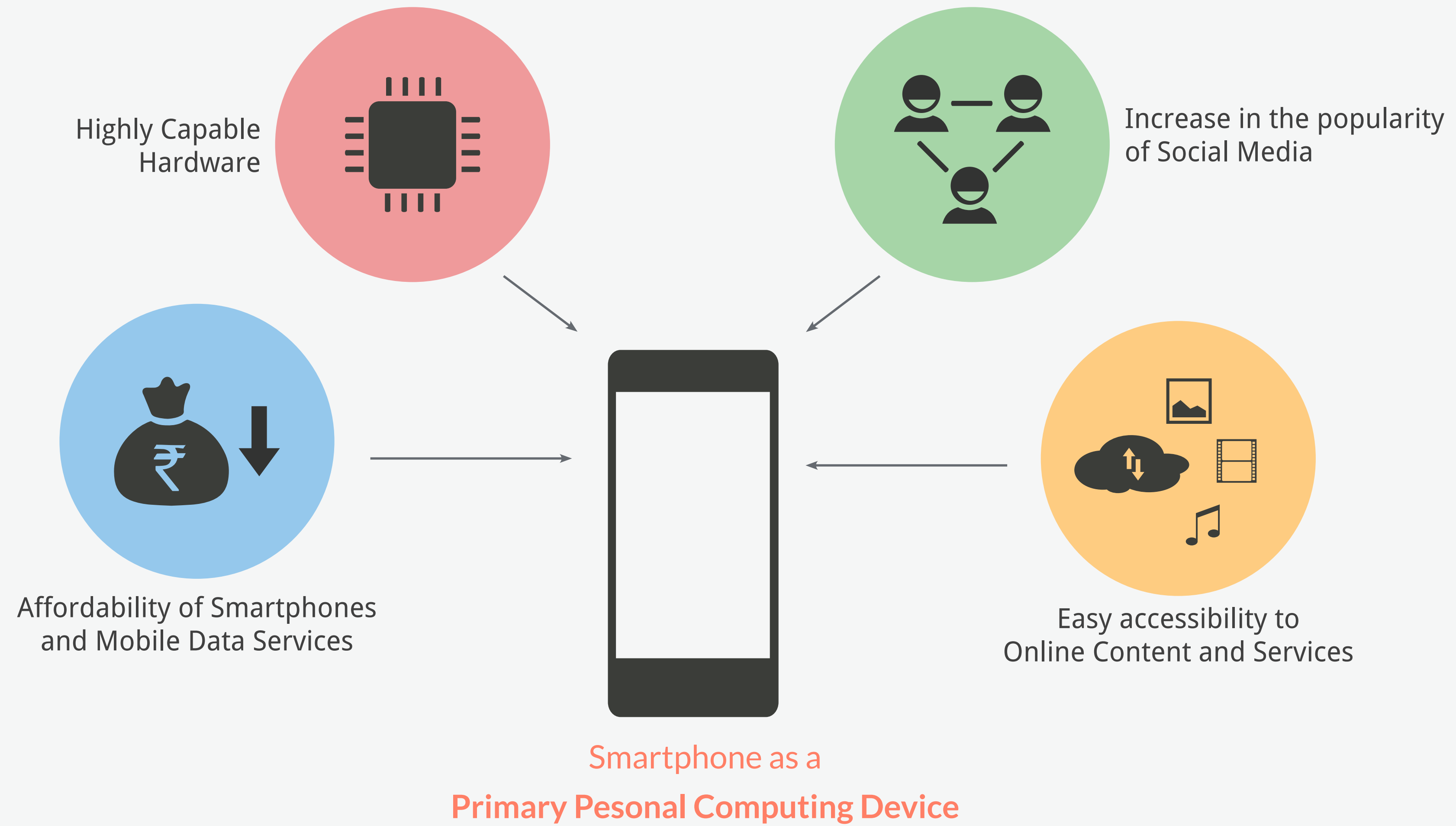


Tutorials Sharing Platform for Smartphone Users

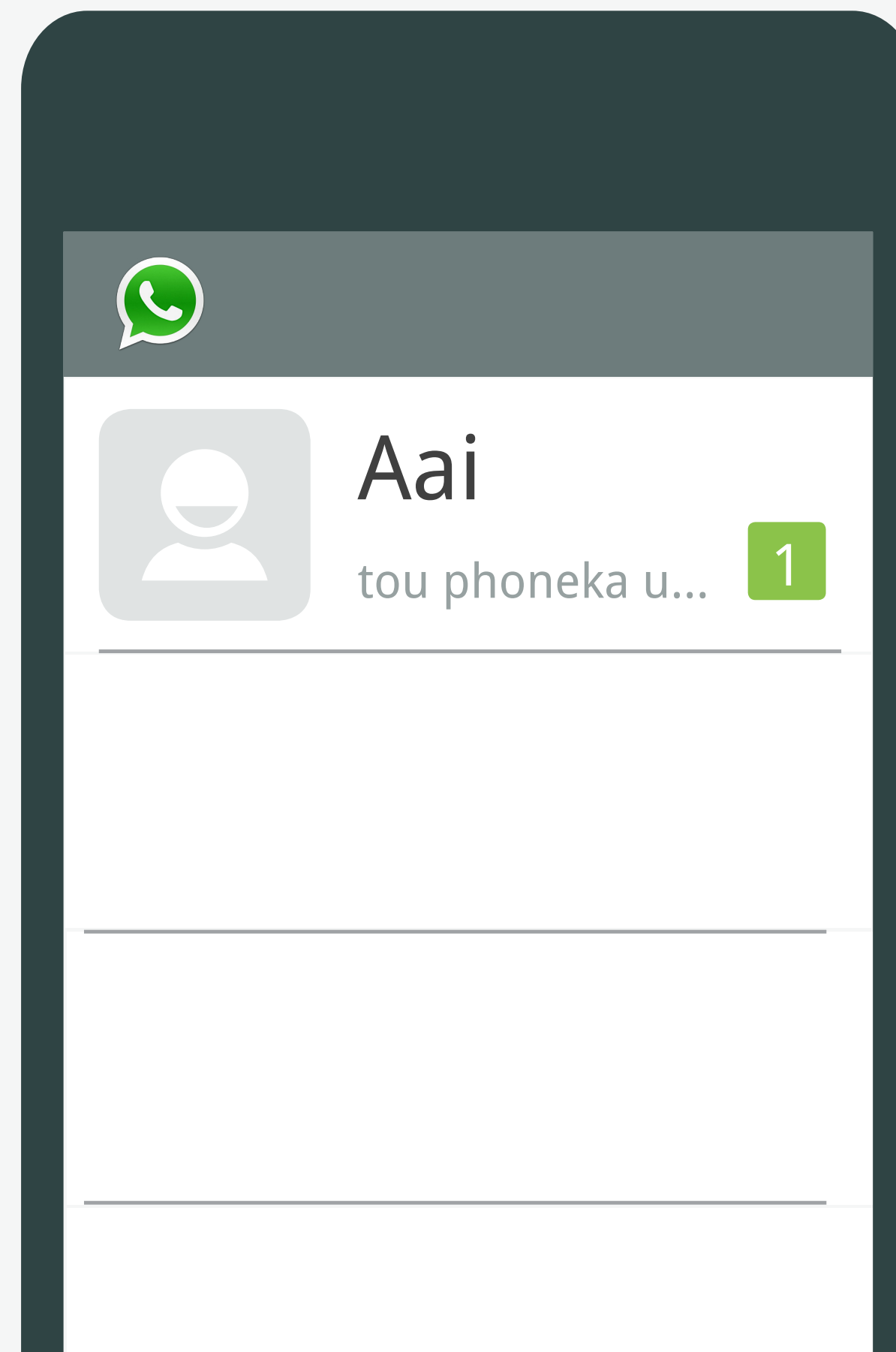
Sanket Kulkarni | 136330001

Guide: Prof. Girish Dalvi

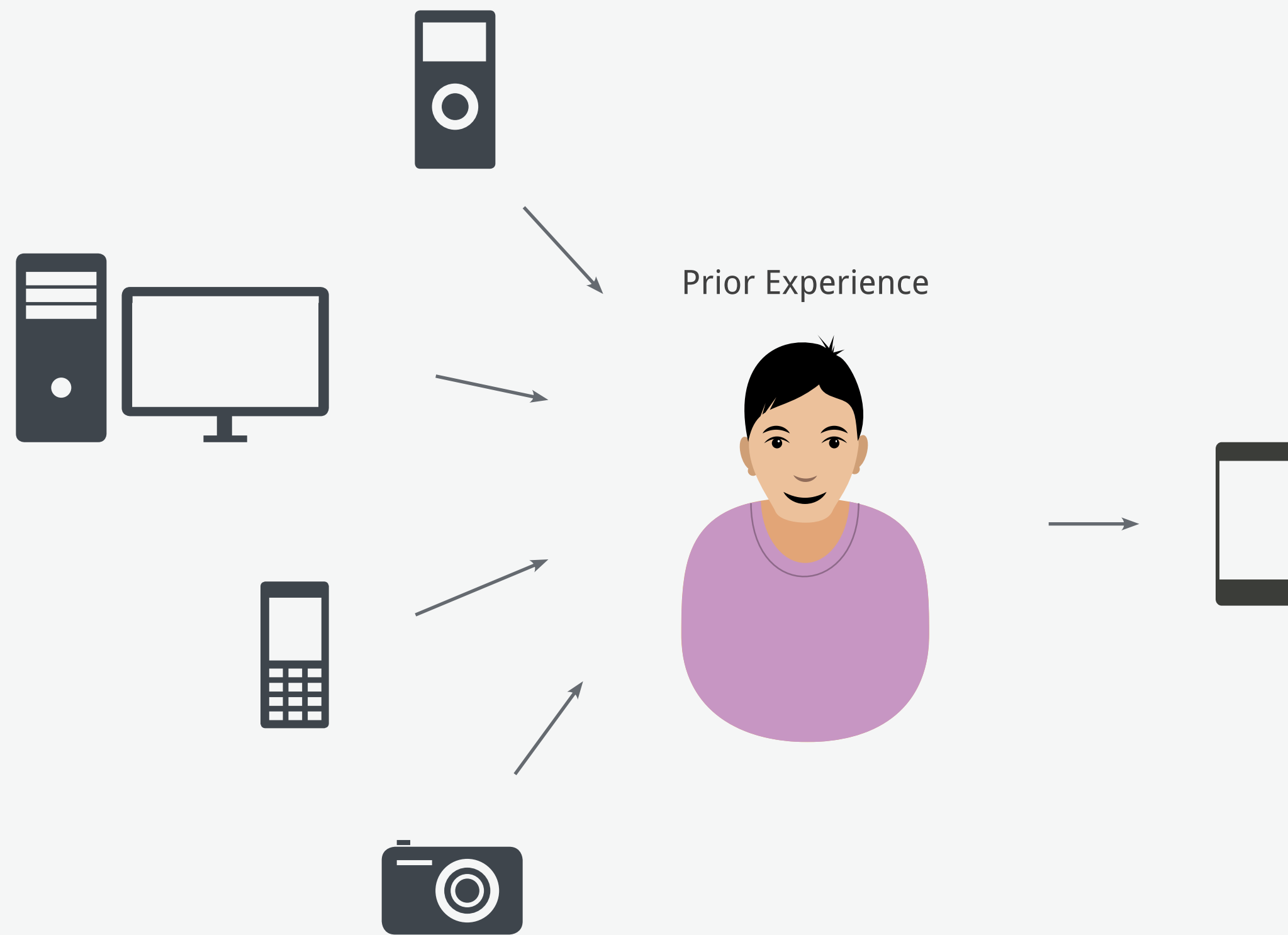




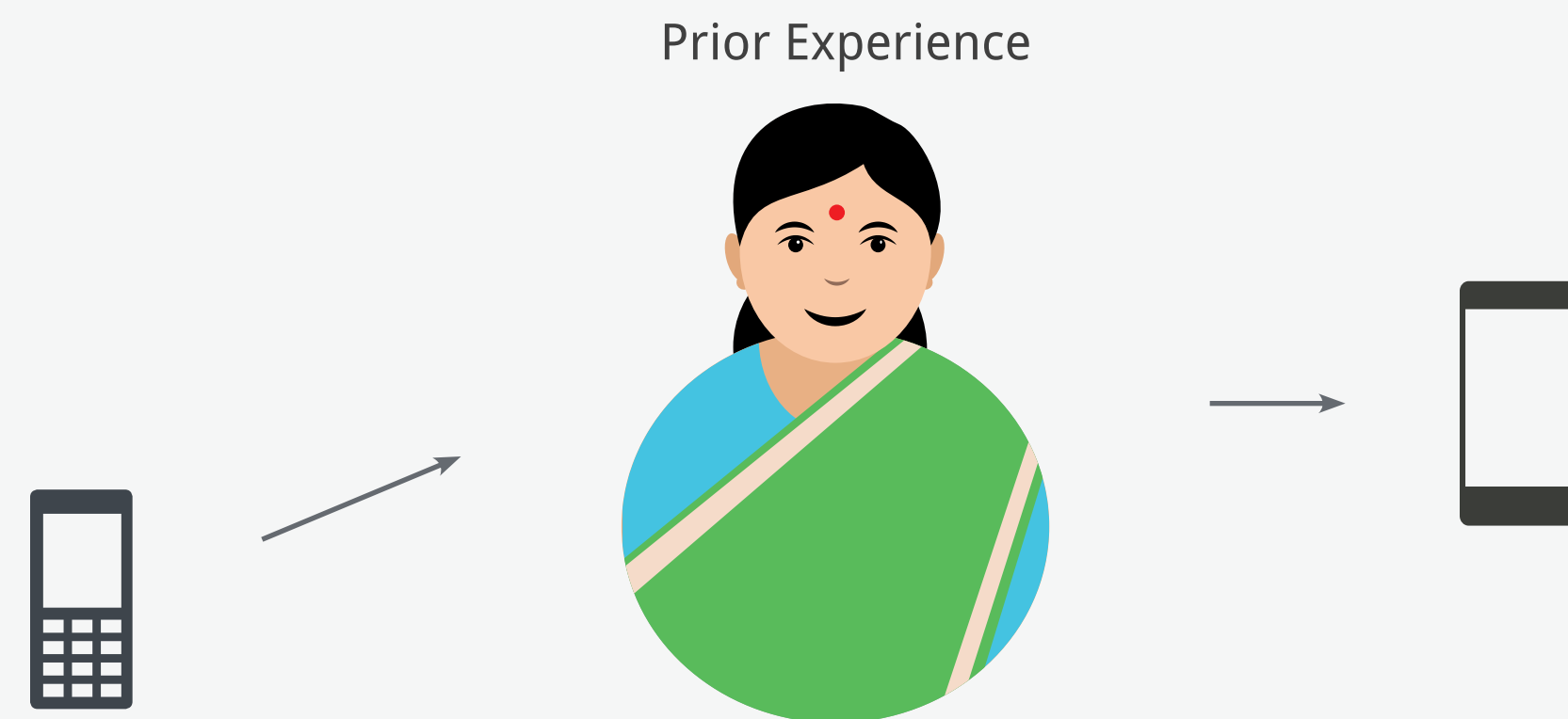
My Inspiration



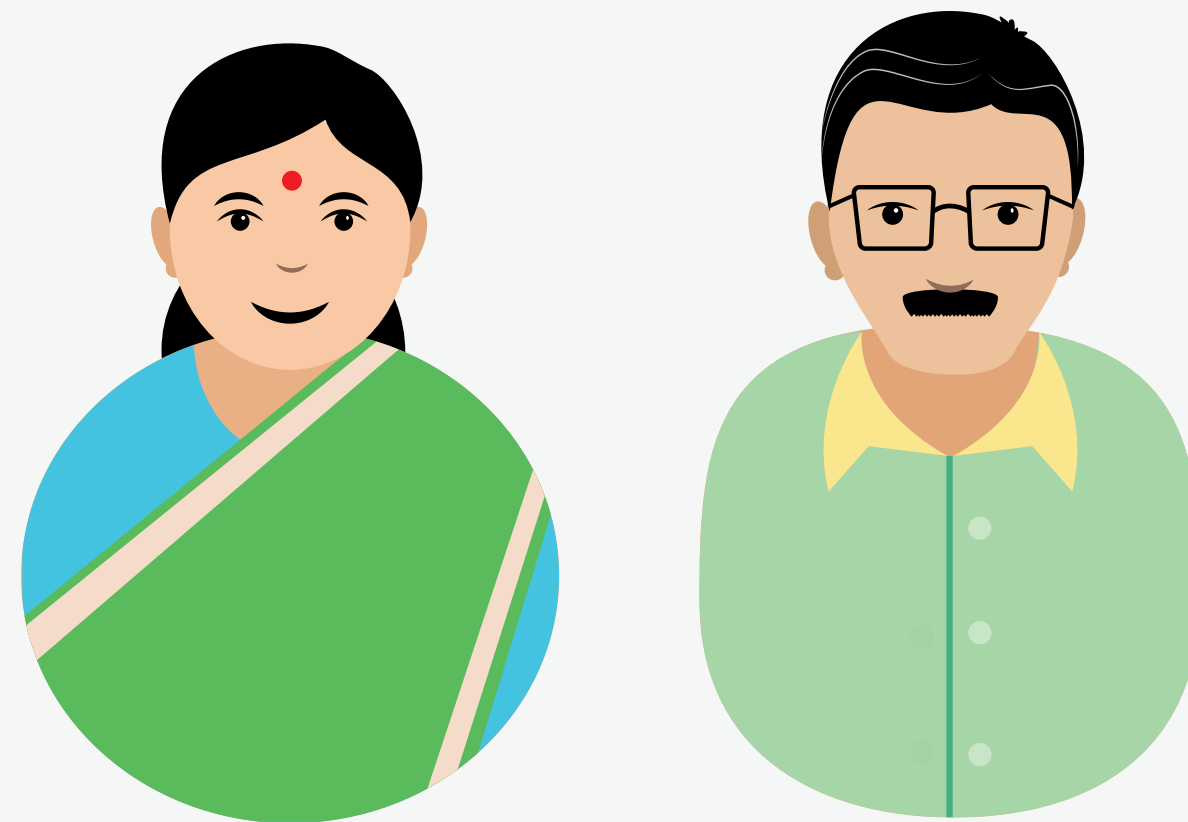
Initial Impression of the Problem



Initial Impression of the Problem



| Target User Group



- Age: 40–60
- Less proficient in English but literate in Mother-tongue
- Less exposure to computers and other digital devices

Design Process



Secondary Research



Primary Research



Analysis



Restating Design Brief



Ideation



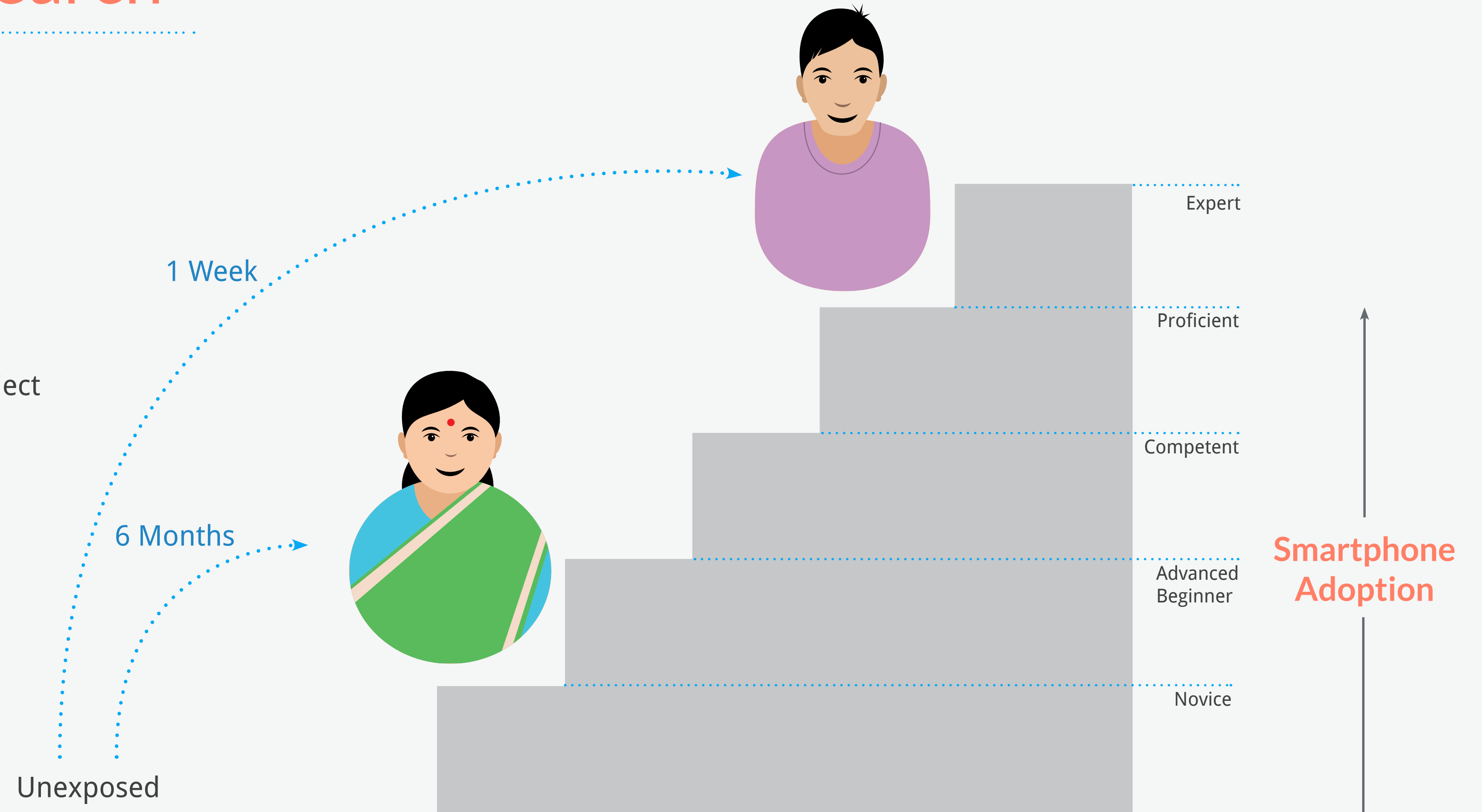
Evaluation

Secondary Research

Dreyfus model of skill acquisition

Insights

- Different levels of adoption
- Helped me defining scope of my project

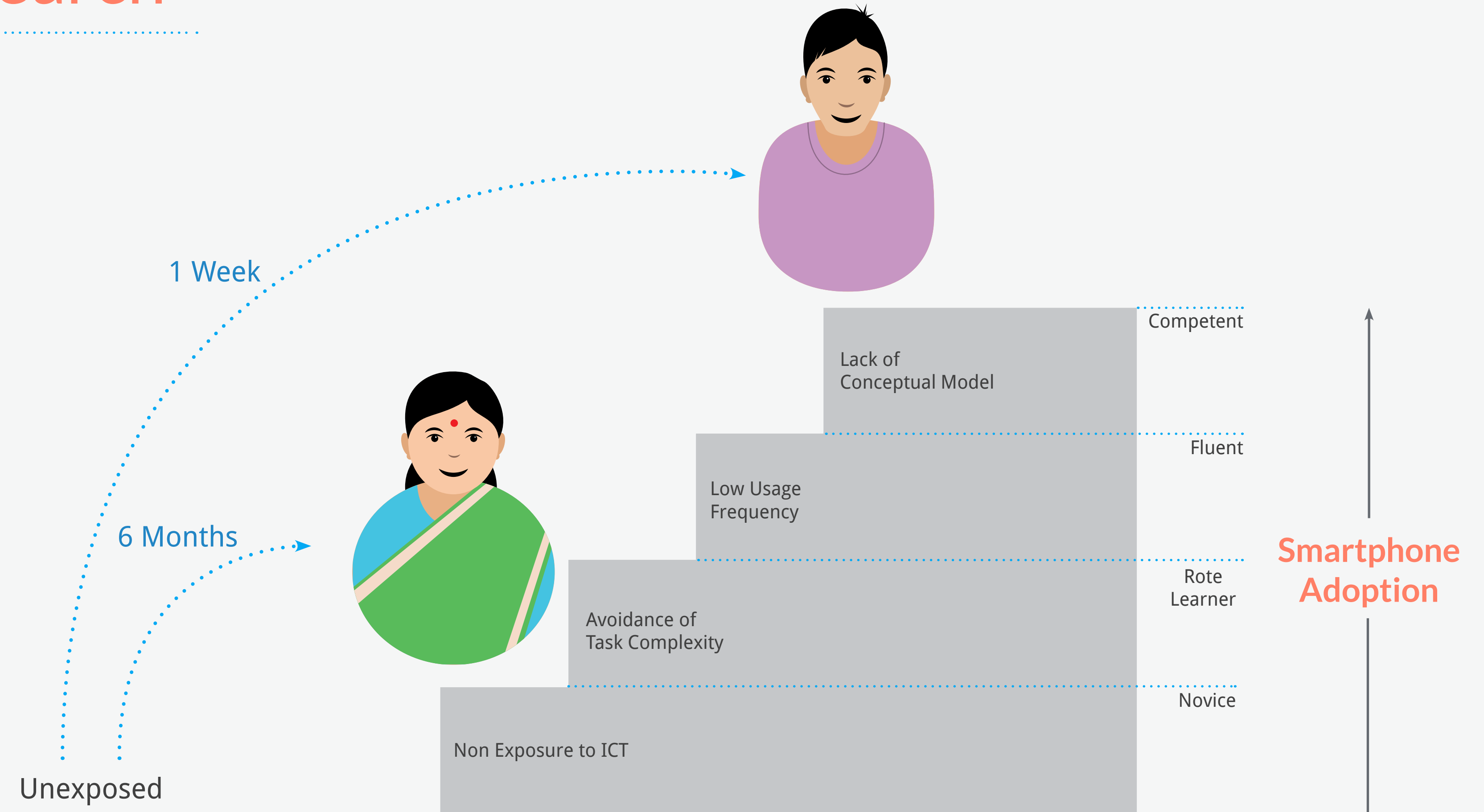


Secondary Research

User Usage Model

Insights

- Needs to cross learning barriers to move to next stage
- Not dependent on adoption of any particular application
- Dependent on complexity of task



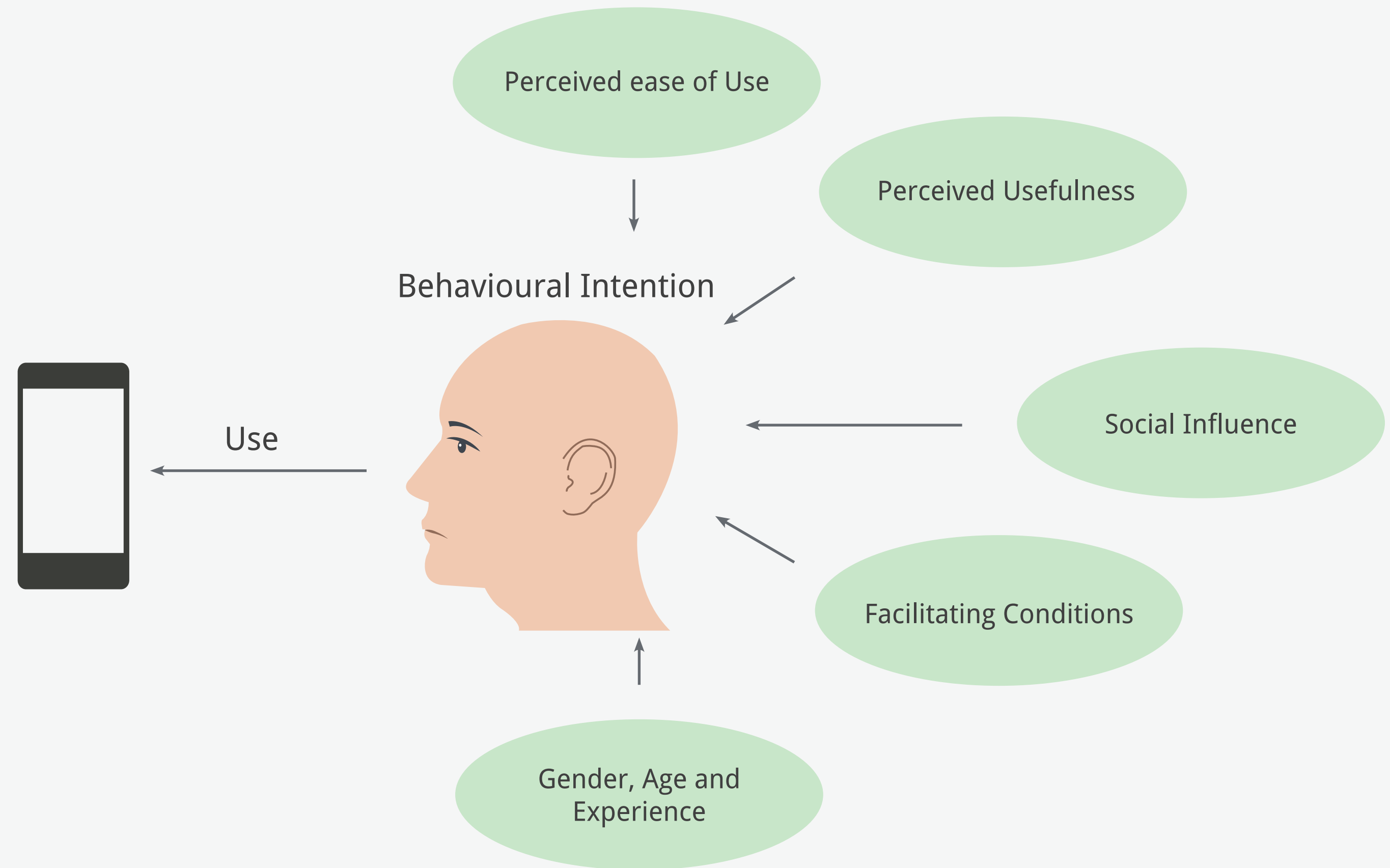
Secondary Research

Technology Acceptance Model

Unified Theory of Acceptance and Use of Technology

Insights

- Understanding how to tackle reluctance of users while designing solution



User Studies

User Study 1

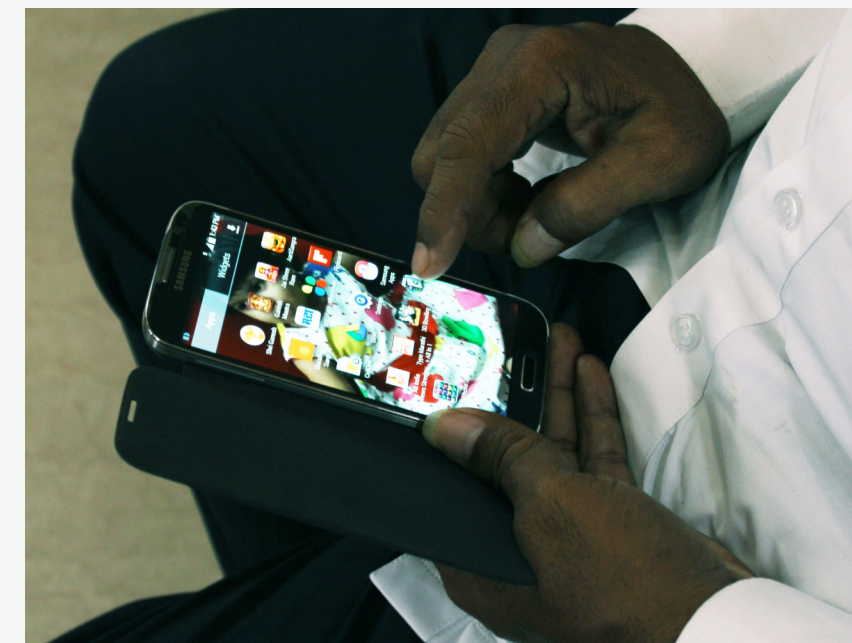
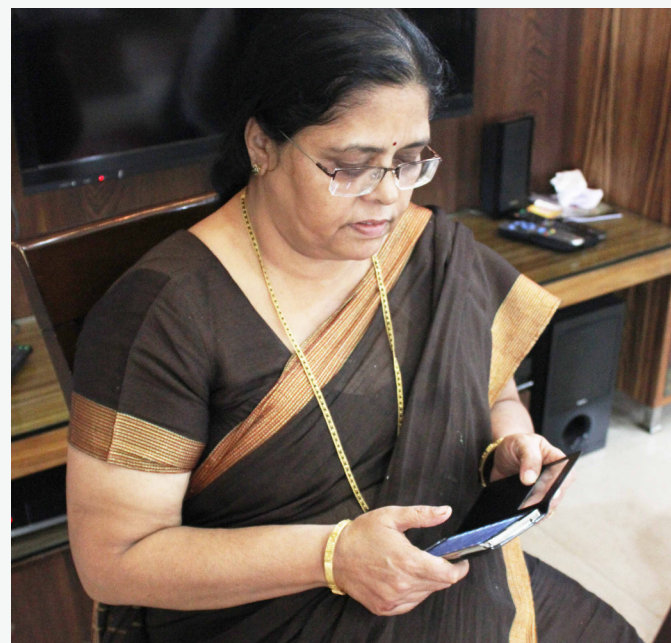
3 Semi-structured interviews

Gender: 3 Female

Age: 40–60

English Literacy: all were semi-literate

Marathi Literacy: all were literate



User Study 2

16 Semi-structured interviews

Gender: 12 Male, 4 Female

Age: 40–60

English Literacy: 3 illiterate, 7 semi-literate, 6 literate

Marathi Literacy: 12 Literate, 2 semi-literate, 2 illiterate



Phase 1 Questionnaire

Date :

Demographics

Name		Gender	<input checked="" type="checkbox"/> M	<input checked="" type="checkbox"/> F
Education		Age		
Occupation		Family Yearly Income		
Family Members				

Literacy

Language		Competency	<input checked="" type="checkbox"/> Speak	<input checked="" type="checkbox"/> Read	<input checked="" type="checkbox"/> Write
Education		Usage Context			

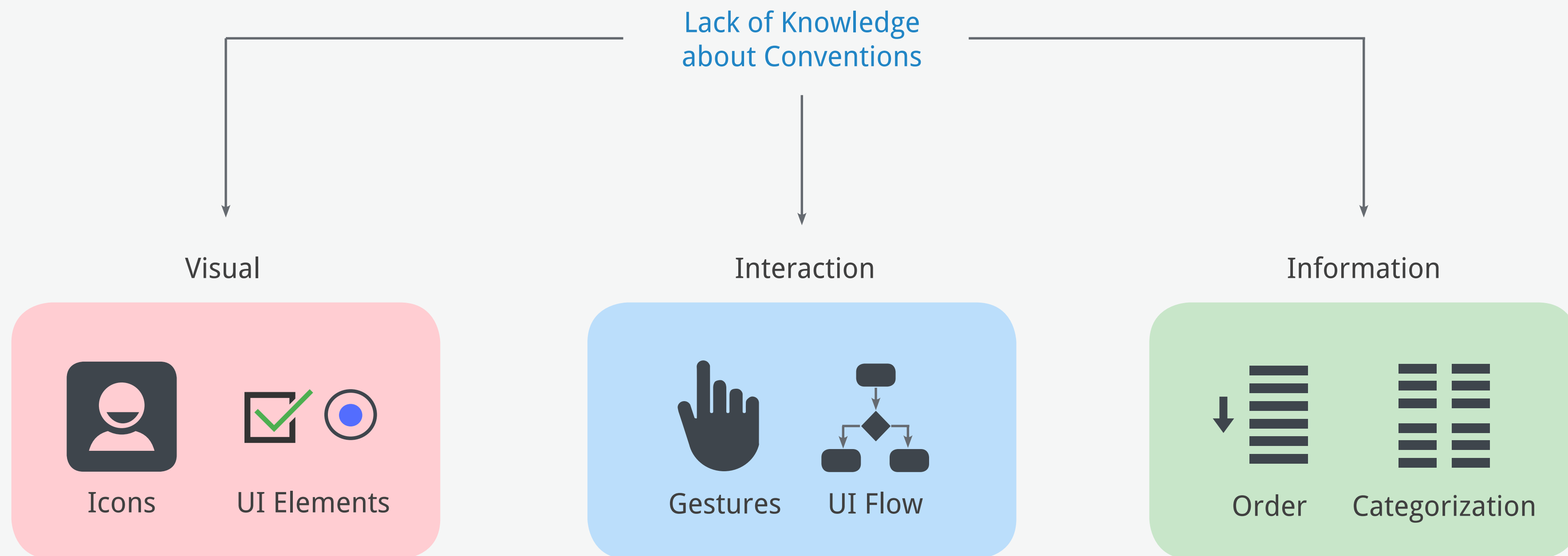
Language	English	Competency	<input checked="" type="checkbox"/> Speak	<input checked="" type="checkbox"/> Read	<input checked="" type="checkbox"/> Write
Education		Usage Context			

Exposure to Digital Devices

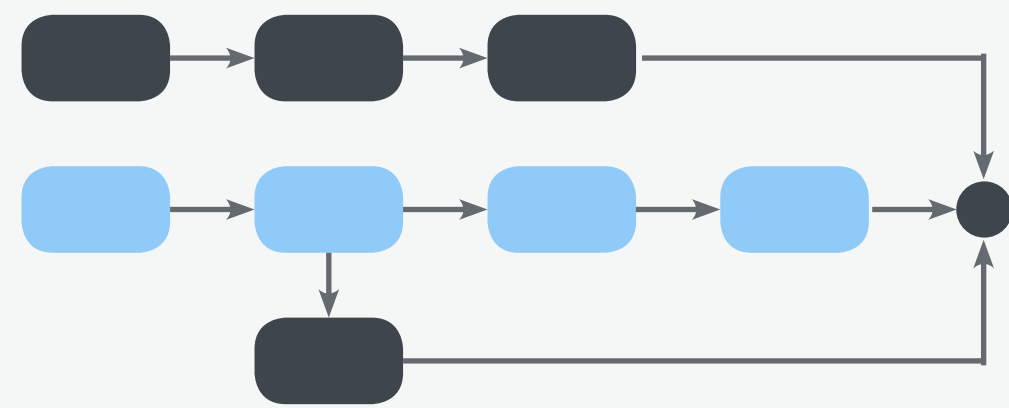
At Home	Used For	At Work	Used For
Desktop PC		Desktop PC	
Laptop		Laptop	
TV		TV	
Digital Camera		Digital Camera	
Music/ DVD Player		Music/ DVD Player	

[illegible]

Key Insights



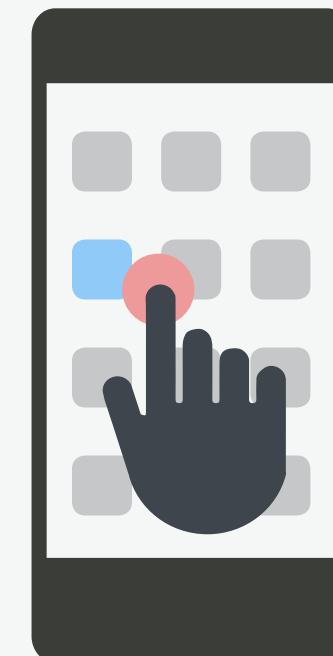
Learning Challenges



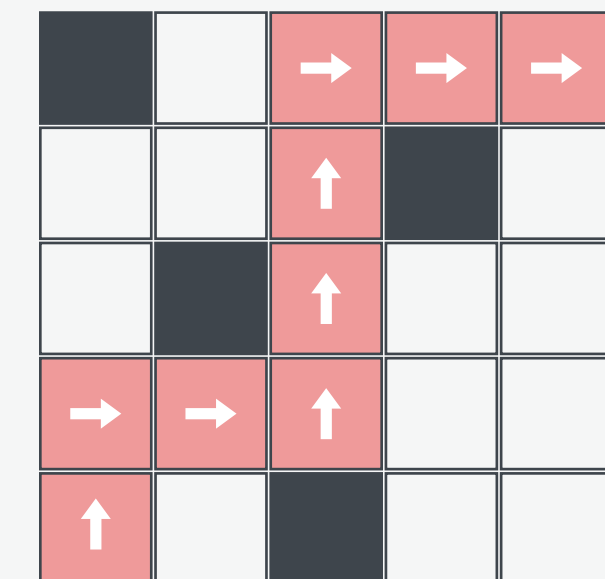
Continue to use long and non-optimal methods



Lack of knowledge about gestures



Inability to touch accurately on screen




Inability to use smartphone strategically

Learning Mechanisms

User Manuals

- Use technical or uncommon keywords
- Informative than action oriented
- Less engaging hence users are reluctant to read
- Designed for printing or viewing on Desktop
- Instructions are largely textual and less visual




एक नज़र में
पहली नज़र
मुख्य विषय

एक नज़र में

पहली नज़र

आपका नया Moto E आपके कदमों से कदम मिलाने के लिए बना है. इसमें एक टिकाऊ स्पष्ट प्रदर्शन है, नवीनतम सॉफ्टवेयर है और दिन भर चलने वाली बैटरी है. Motorola Shells की सहायता से आप अपने फ़ोन को अपनी शैली से मेल कराने के लिए इसे अनुकूलित भी कर सकते हैं.

नोट: हो सकता है कि आपका फ़ोन थोड़ा अलग दिखाई दे.



हेडफ़ोन जैक

सूचना LED

पावर की

वाॉल्यूम की

वापस

होम

हाल के एप्लिकेशन

सामने का स्पीकर

Micro USB/चार्जर

Micro SIM

कार्ड स्लॉट

वैकल्पिक दूसरा

Micro SIM

कार्ड स्लॉट

microSD

मेमोरी कार्ड

स्लॉट

मेनू

वापस

सहायता

अगला

युक्तियां और सुझाव

- **शुरू करें:** अपना फ़ोन सेट करने के लिए तैयार हैं? **“शुरू करें”** देखें.
- **मुख्य विषय:** तुरंत जानना चाहते हैं आपका फ़ोन क्या कर सकता है? **“मुख्य विषय”** देखें.
- **सहायता:** आपके नए फ़ोन के बारे में सभी प्रश्नों के उत्तर सीधे आपके फ़ोन पर दिए जाते हैं. एप्लिकेशन > **सहायता** स्पर्श करें. और अधिक जानना चाहते हैं? **“सहायता प्राप्त करें”** देखें.

नोट: हो सकता है कुछ एप्लिकेशन और सुविधाएं सभी देशों में उपलब्ध न हों.

SAR जब आप इस उत्पाद का उपयोग सामान्यतः अपने सिर से सटाकर, धारण करके या साथ ले जाते समय, शरीर से 1.5 सेमी दूर रखकर करते हैं, तब यह लागू राष्ट्रीय या अंतराष्ट्रीय RF एक्सपोज़र मार्गदर्शन (SAR दिशानिर्देश) का पालन करता है. SAR दिशानिर्देश में सभी लोगों की सुरक्षा सुनिश्चित करने के लिए डिज़ाइन किया गया महत्वपूर्ण सुरक्षा मार्जिन शामिल है, चाहे उनकी उम्र या सेहत कैसी भी हो.

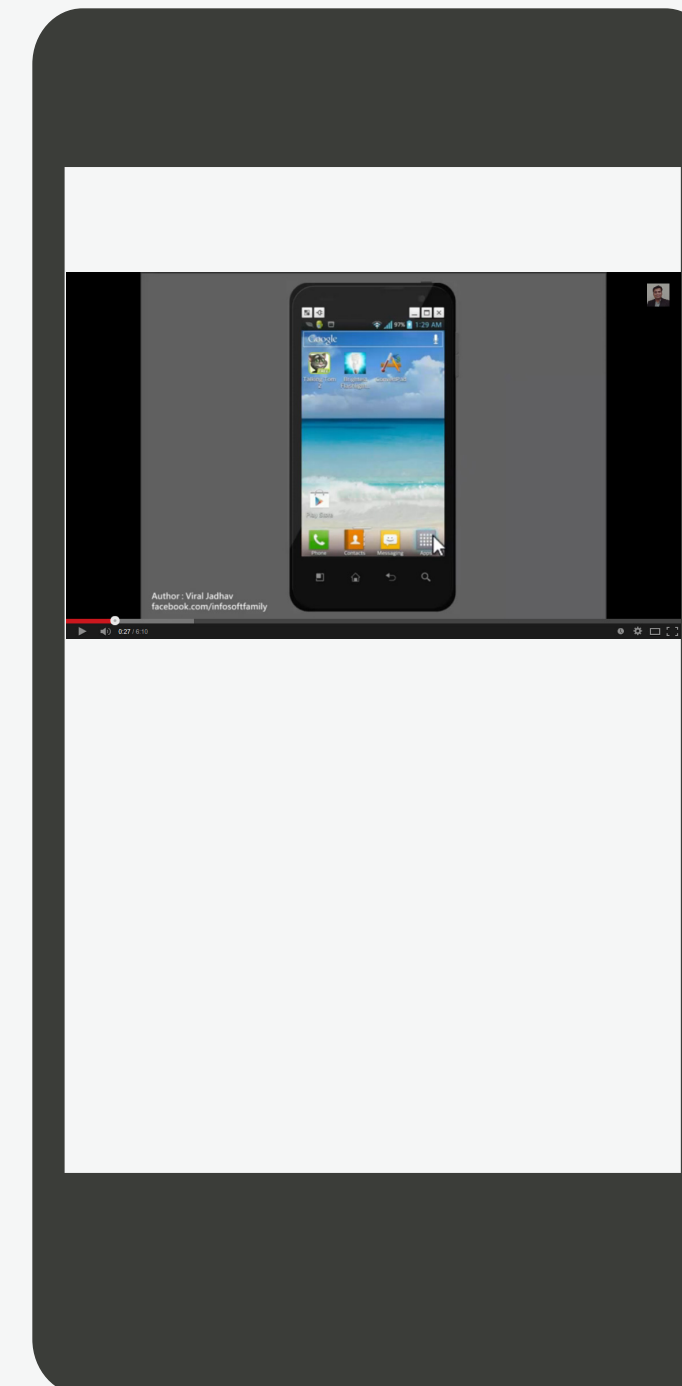
सावधानी: फ़ोन का उपयोग करने से पहले कृपया अपने उत्पाद के साथ दी गई सुरक्षा, नियामक और कानूनी जानकारी पढ़ें.

Moto G user manual

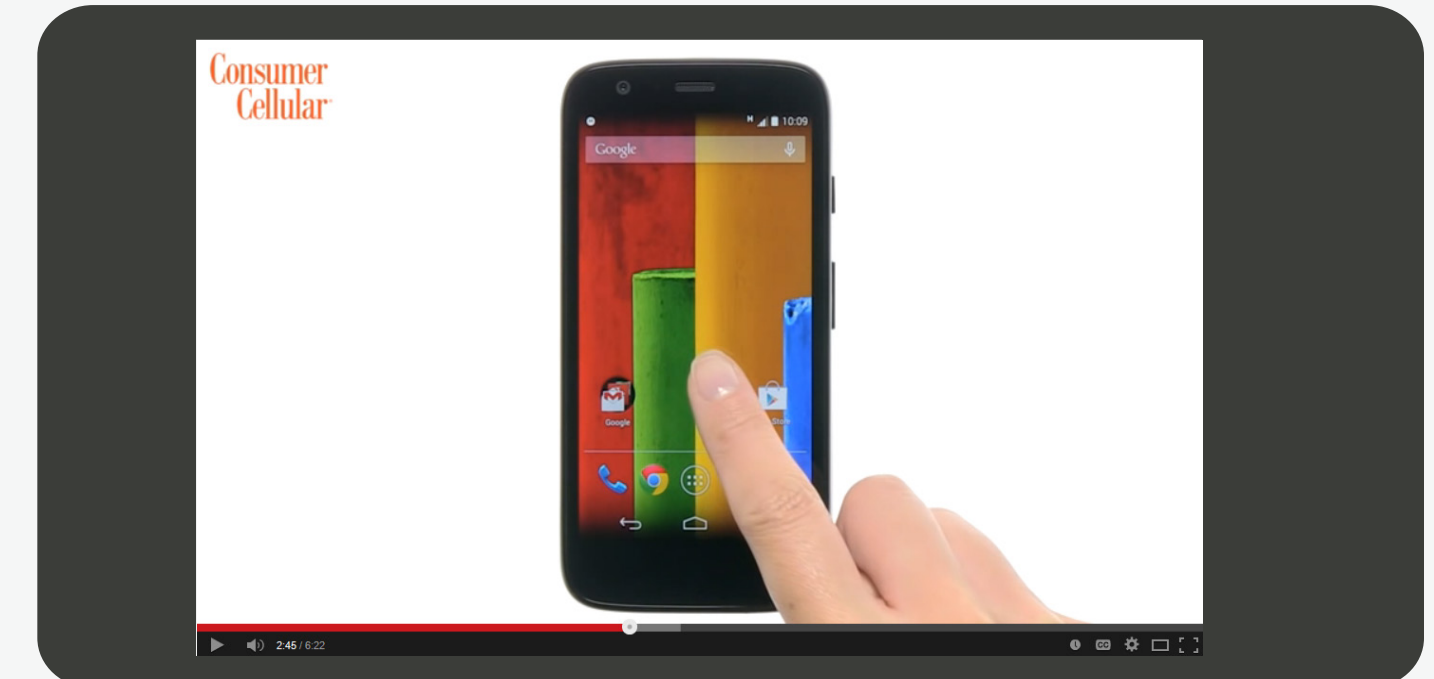
Learning Mechanisms

Video Tutorials

- Need to repeat at-least 2-3 times
- Not adaptable with different learning rate
- Majorly available in English
- Confusion between similar gestures
- Designed for viewing on Desktops
- Lack of skills and resources to access



Viral Jadhav
Hindi Android Tutorials
Source: Youtube

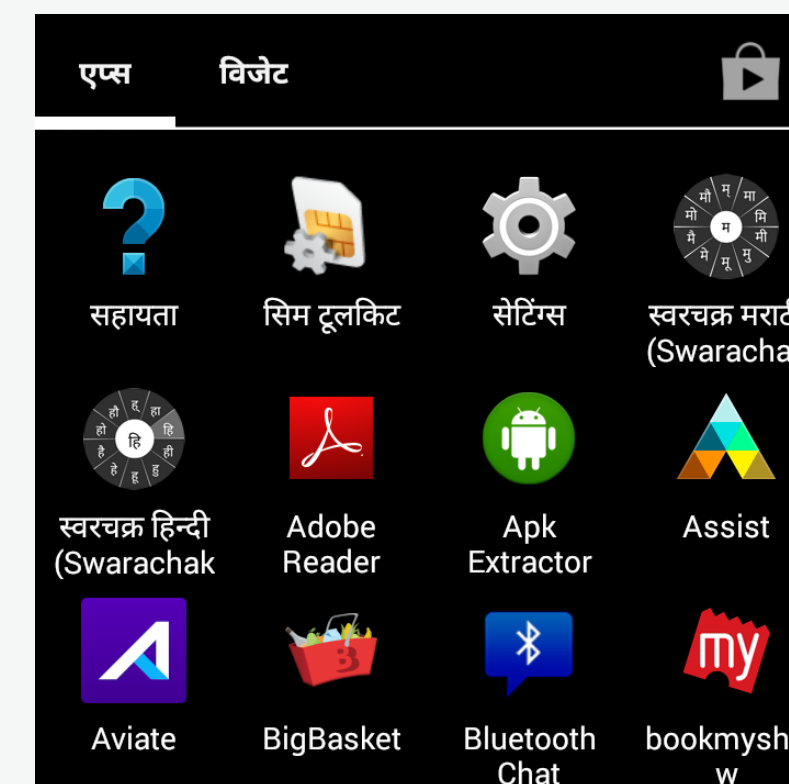


Consumer Cellular
Android Tutorials
Source: Youtube

Learning Mechanisms

Localization

- Failed to translate labels of external applications
- Icons without labels still difficult to understand
- Content in english not searchable e.g. contacts
- Use of uncommon localized words or phrases

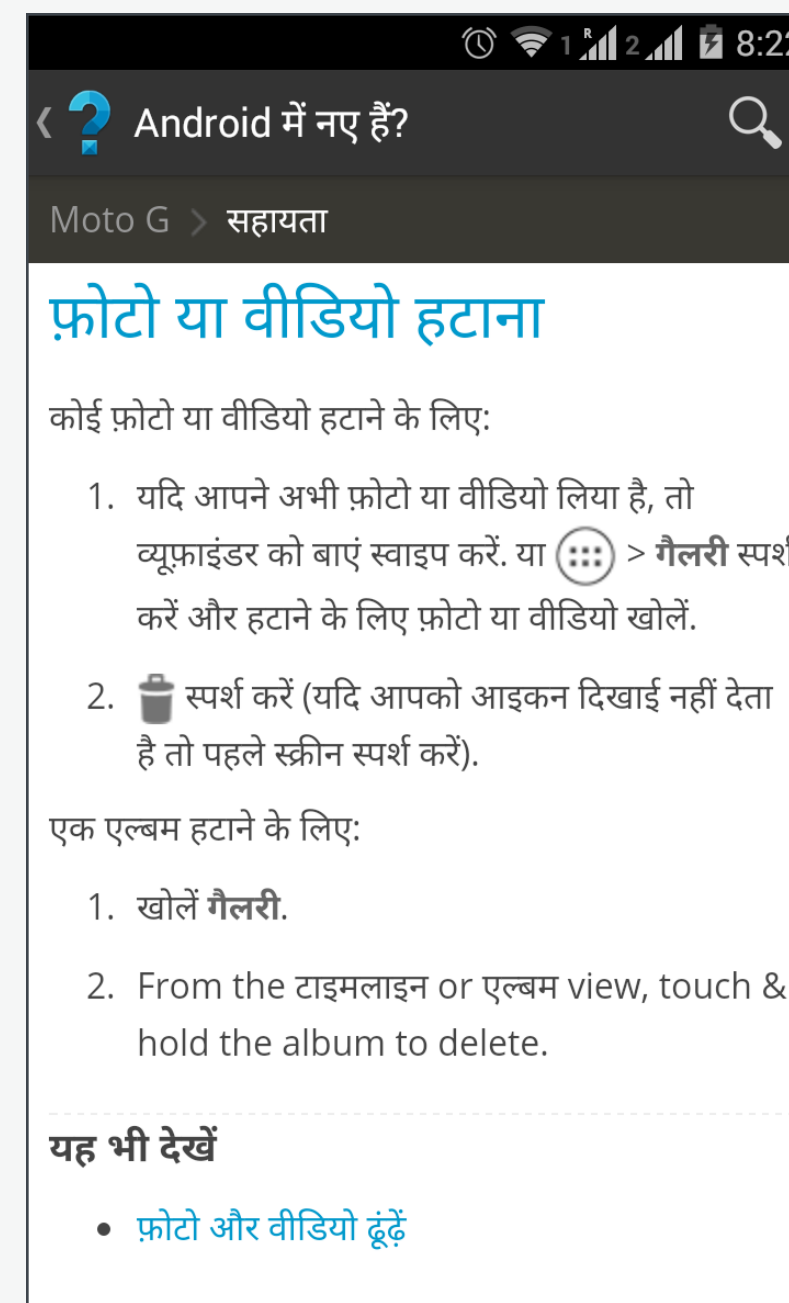


Localization in Android

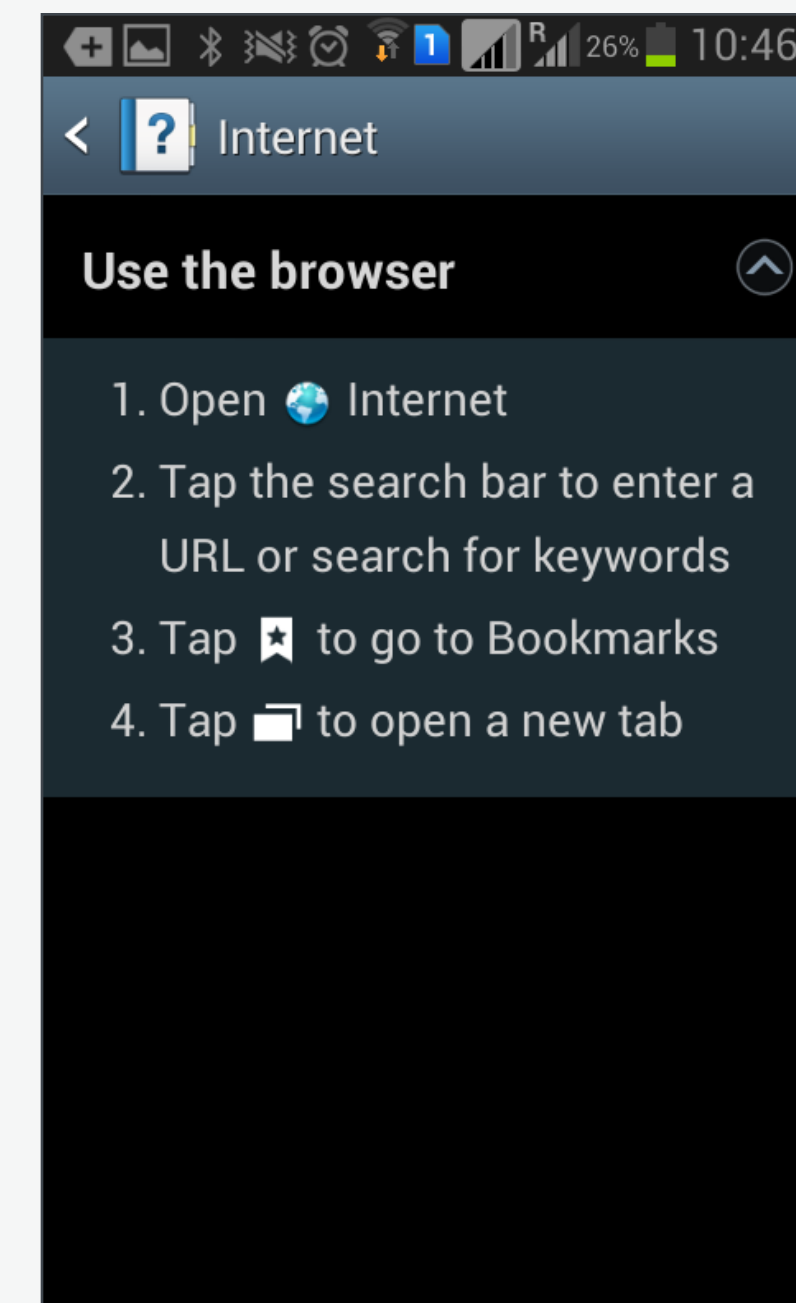
Learning Mechanisms

In-built Help App

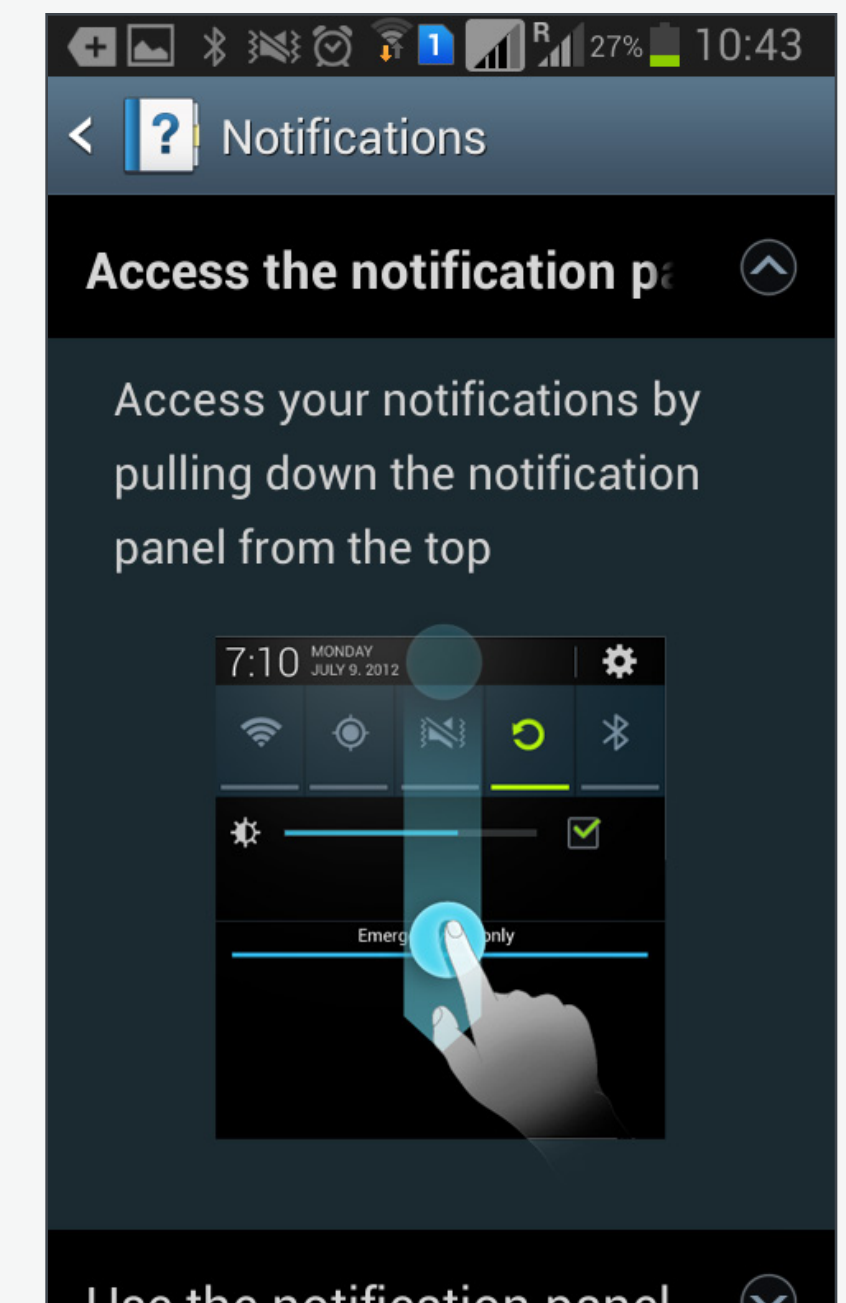
- Not available in all phones
- Available for in-built applications
- Available for limited number of tasks
- Gestures illustrations are static
- Pull approach: user has to initiate



Moto G Help App



Samsung Galaxy Help App

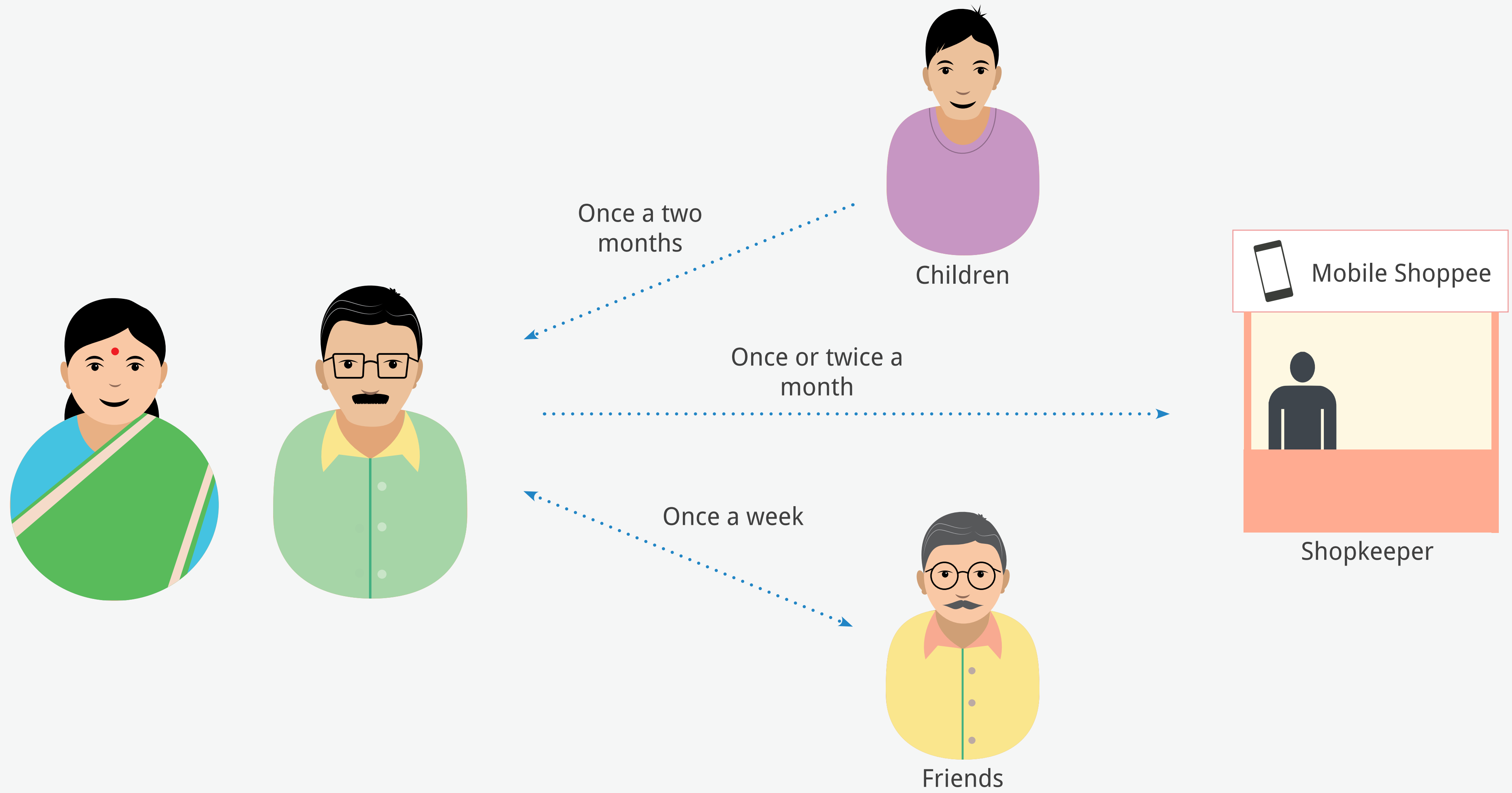


Learning Mechanisms

Human Instructor

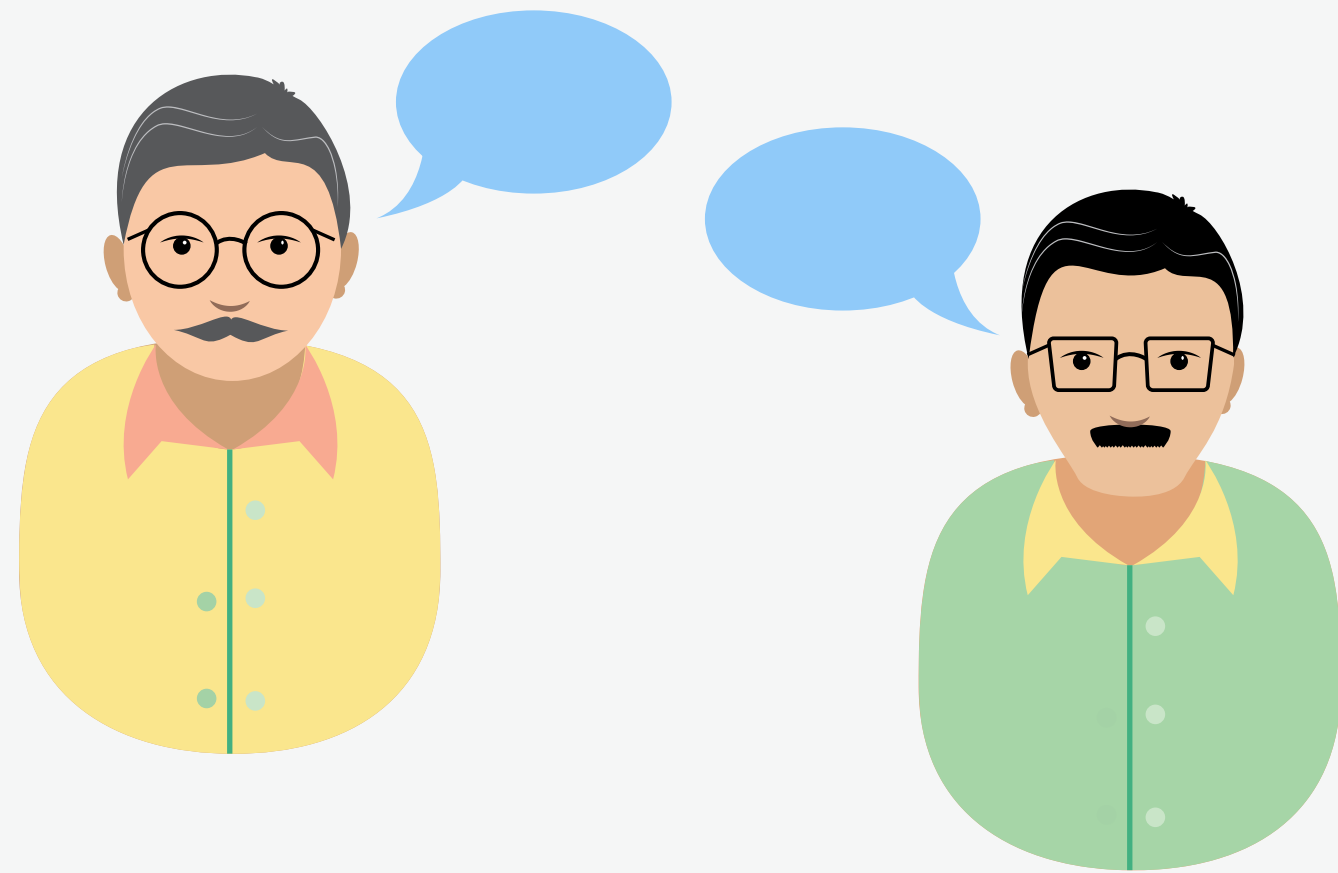
- Takes less time to learn
- Help in correcting mistakes
- One can ask doubts
- Ability to teach complex interactions
- knowledge of alternate and optimal methods
- Help in the initial setup of smartphone and apps
- Already familiar with user, hence knows what is best for him/her





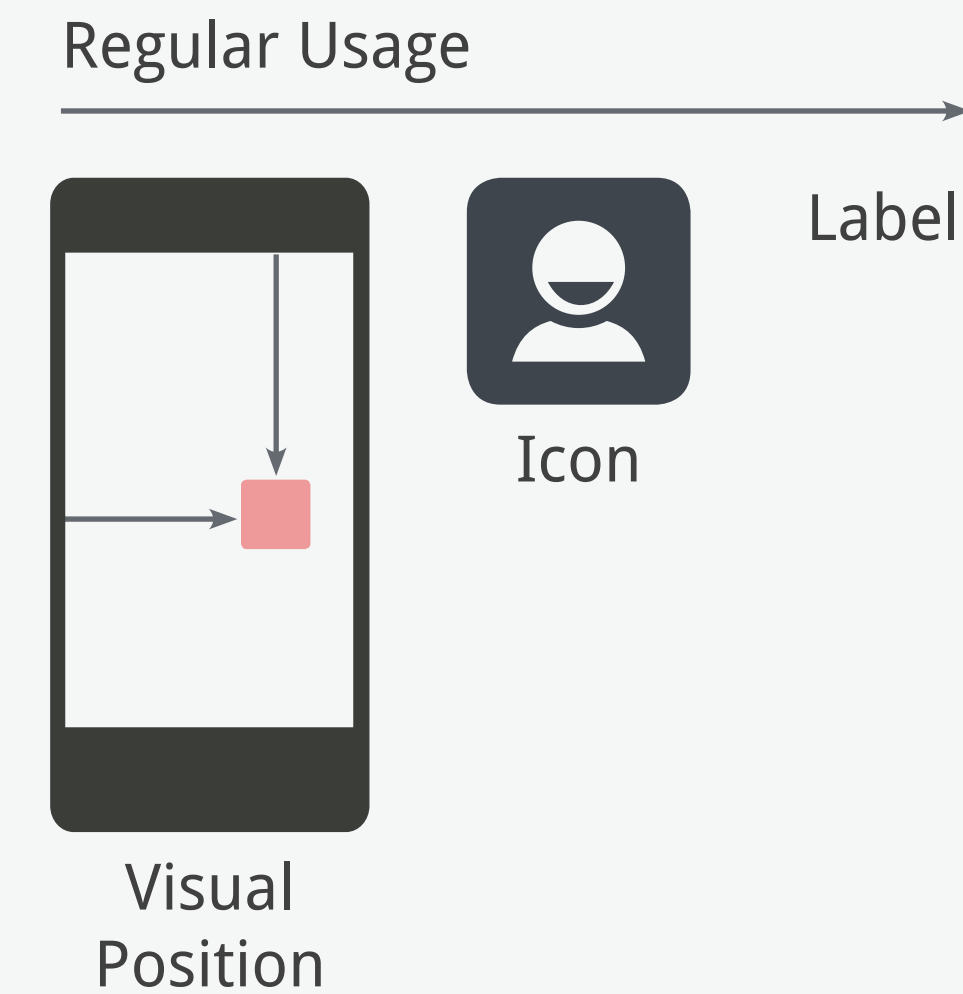
Other Findings

Experiences & Opinions motivate users to adopt technology



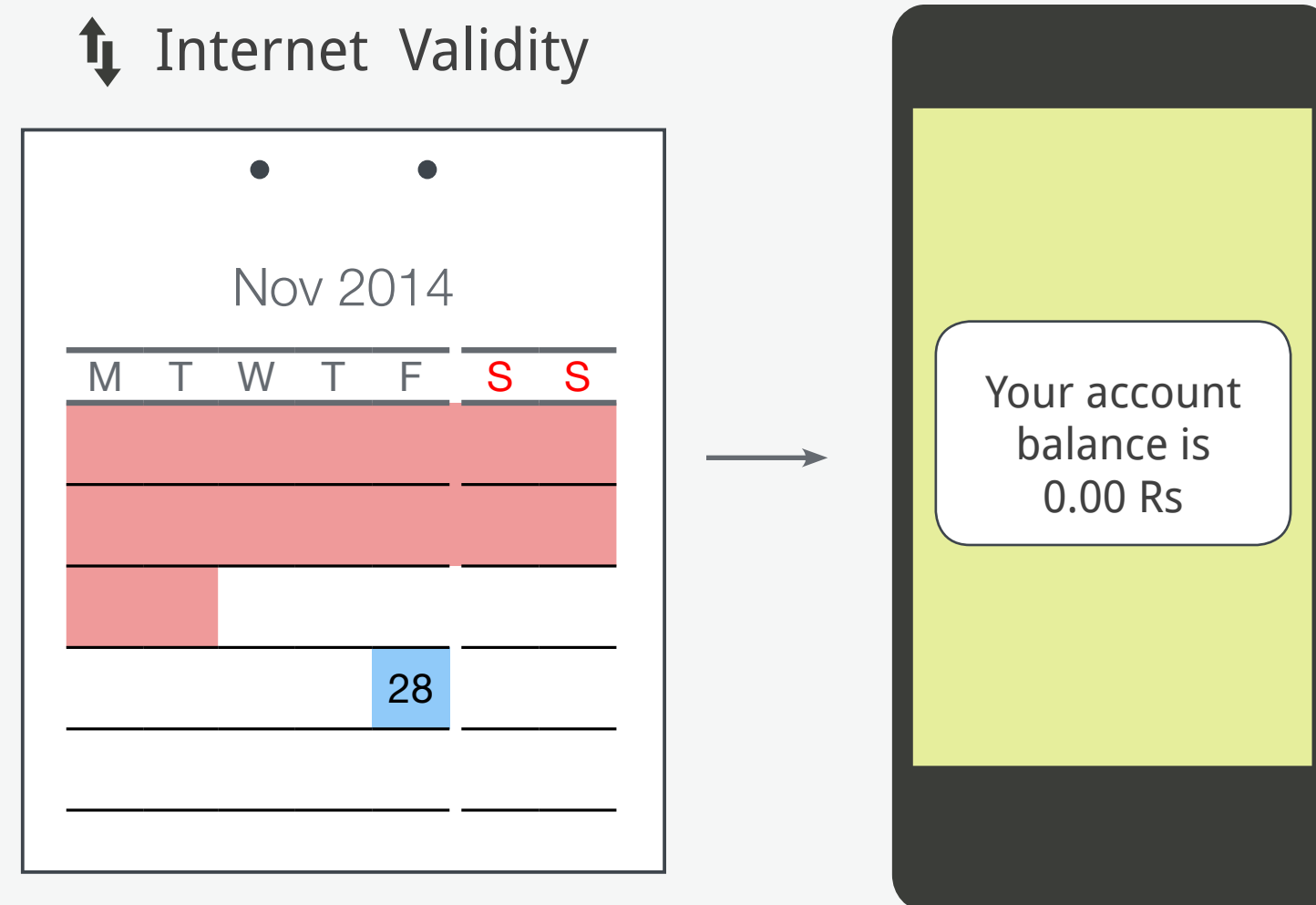
- People get exposed to technology in working and living environment
- Practical experiences of users and opinions of close persons influence user's perception of technology
- People don't adopt certain technology unless they perceive it useful

Subconscious preference of Visual Cues

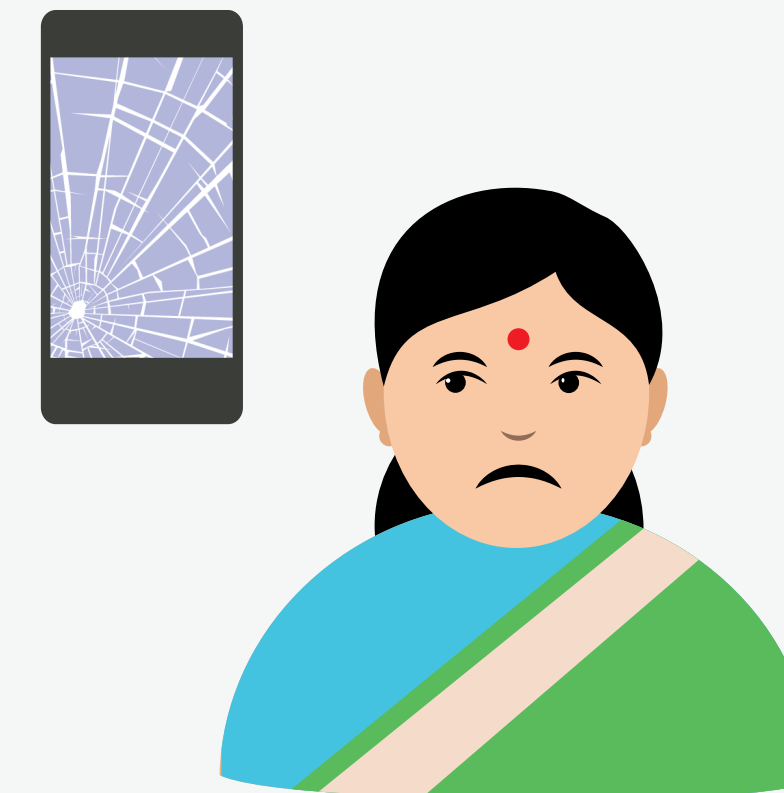


Other Findings

Inability to manage monthly internet renewals



Fear to explore without instructor



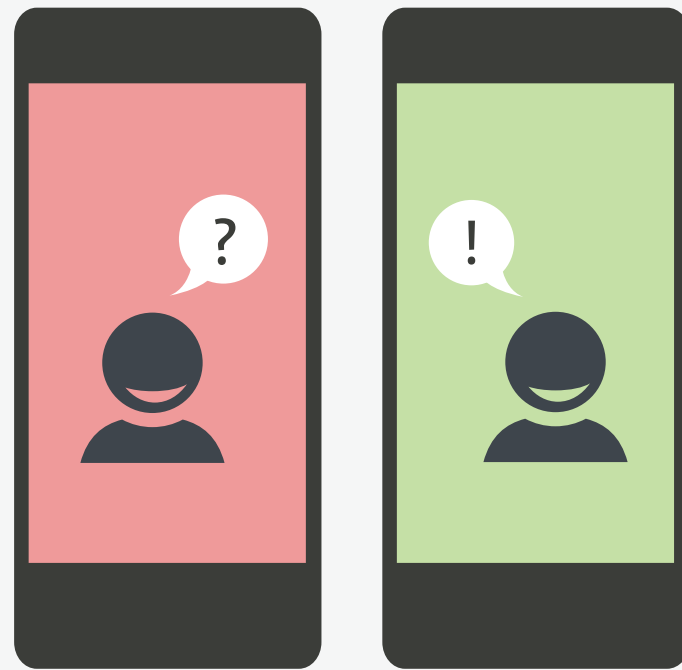
- Fear of severe mistakes like undesired calling and damage to screen
- Don't like to use smartphones while on work

Restating Design Brief

Goals

- To design a learning mechanism which is
 - available when in need
 - engaging
 - compatible on smartphones
 - not limited to set of applications or tasks
 - adaptable to learning speed of user
 - usable for novice users
- To design motivating mechanisms for reluctant users
- To promote strategic use of smartphone

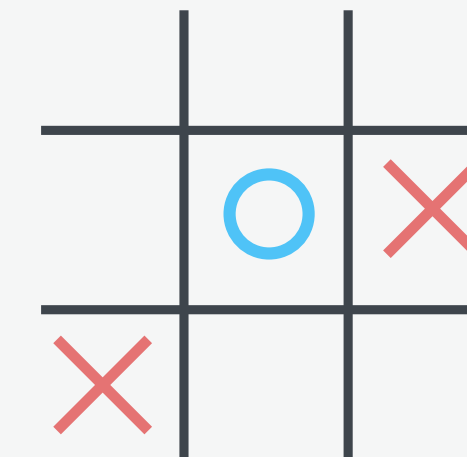
Ideation



Remote Instructor Assistance



Assistance in mobile itself



Game and Gamification

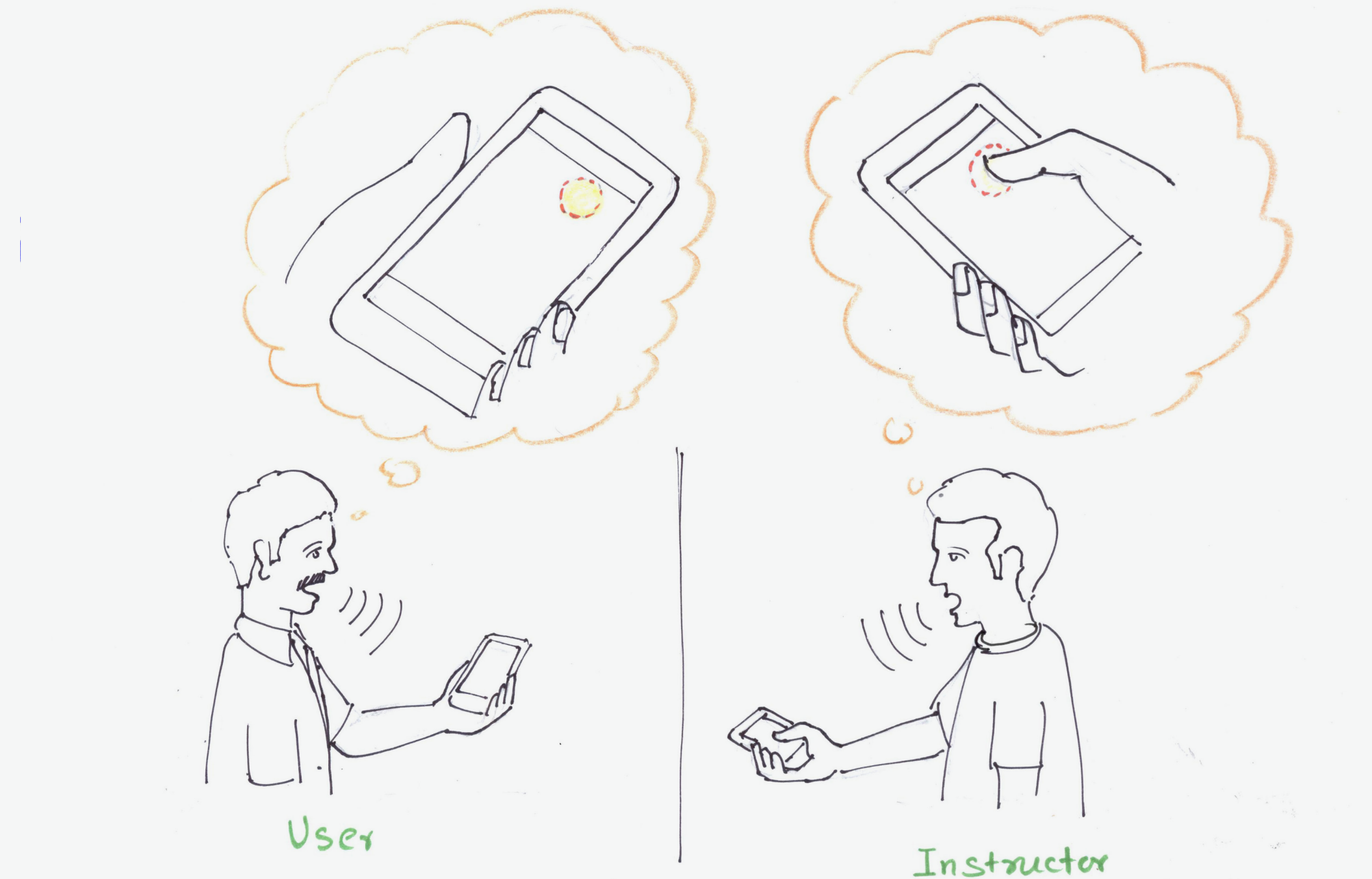
Smartphone Screen Sharing

Features

- User can share screen with instructor to discuss doubts
- Instructor can give hints on shared screen by pointing

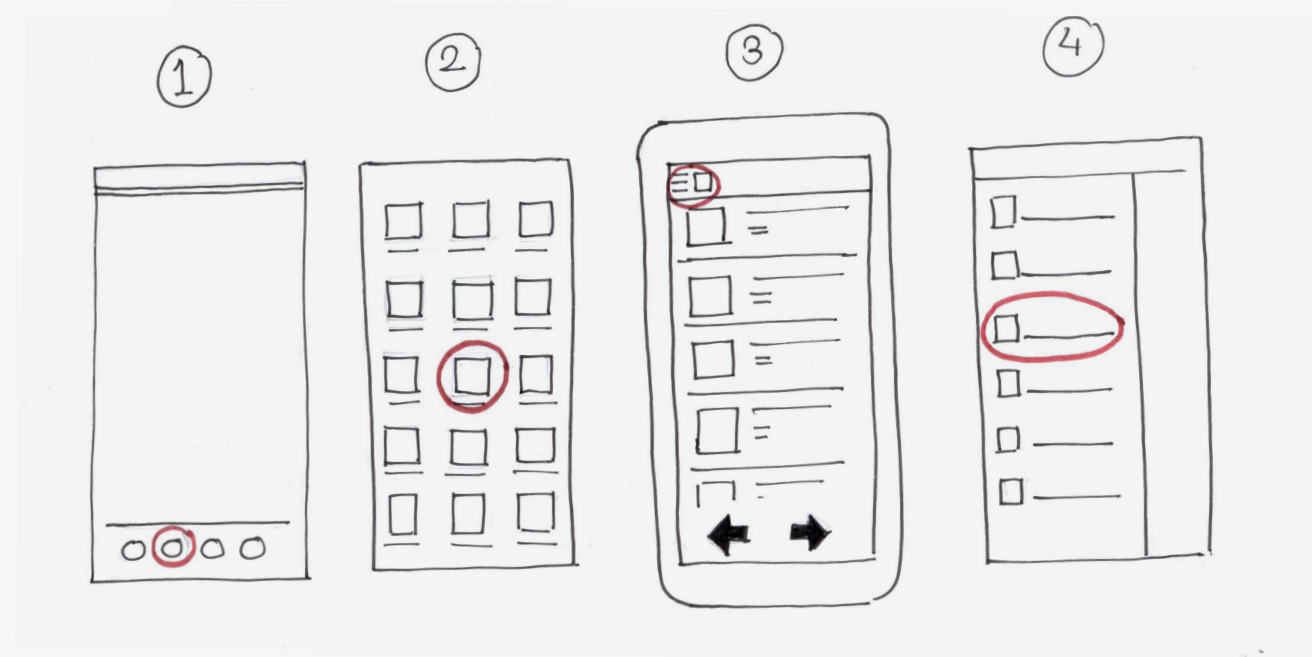
Concerns

Application requires special permission to share the screen on android.
In that case, we are expecting user to operate a desktop.



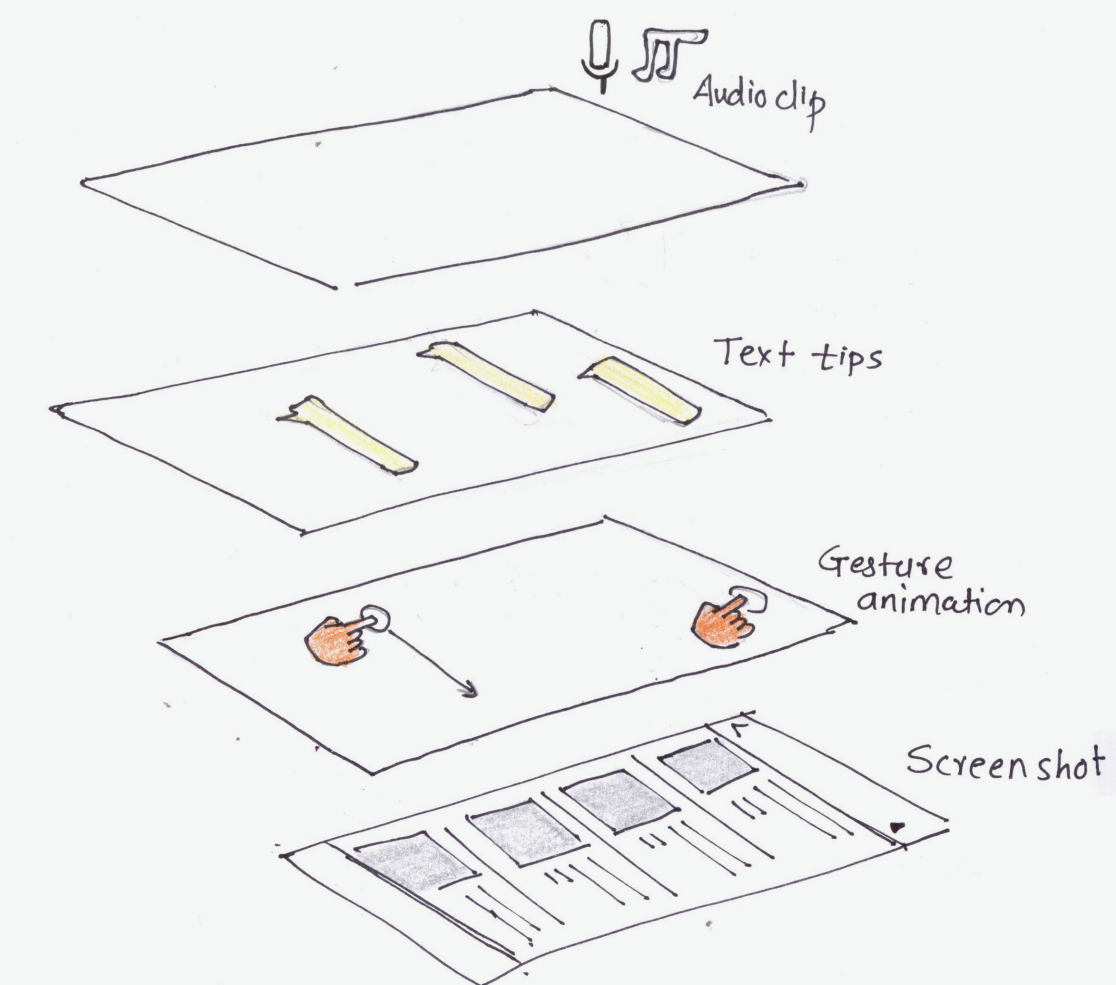
Sharing Recorded Tutorials

Tutorials as a sequence of screenshots



- Ability to navigate forward and backward
- Enough time for users to grasp the content of tutorial
- Can be created by instructor himself and can be shared with user.
- Tutorials can be created for any kind of applications (external).
- Light weight than video tutorials in terms of disk space

Different layers of Help in tutorials



Monitoring Internet Usage

Features

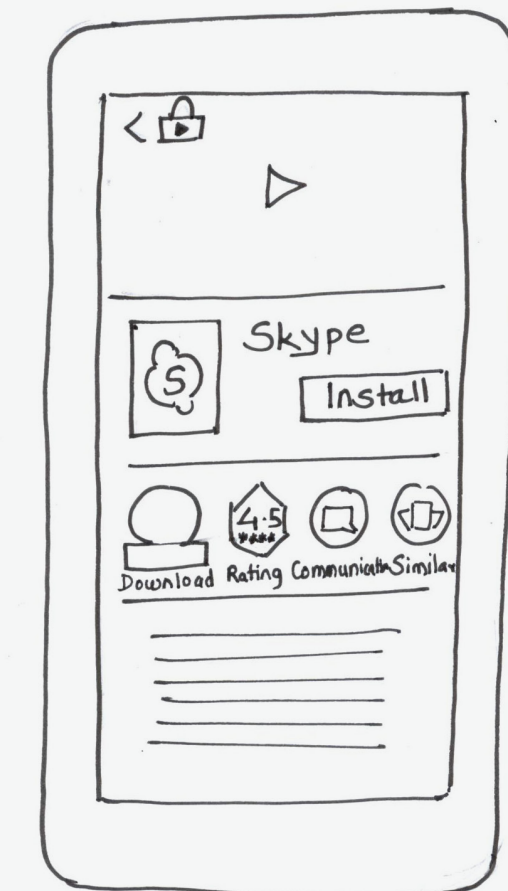
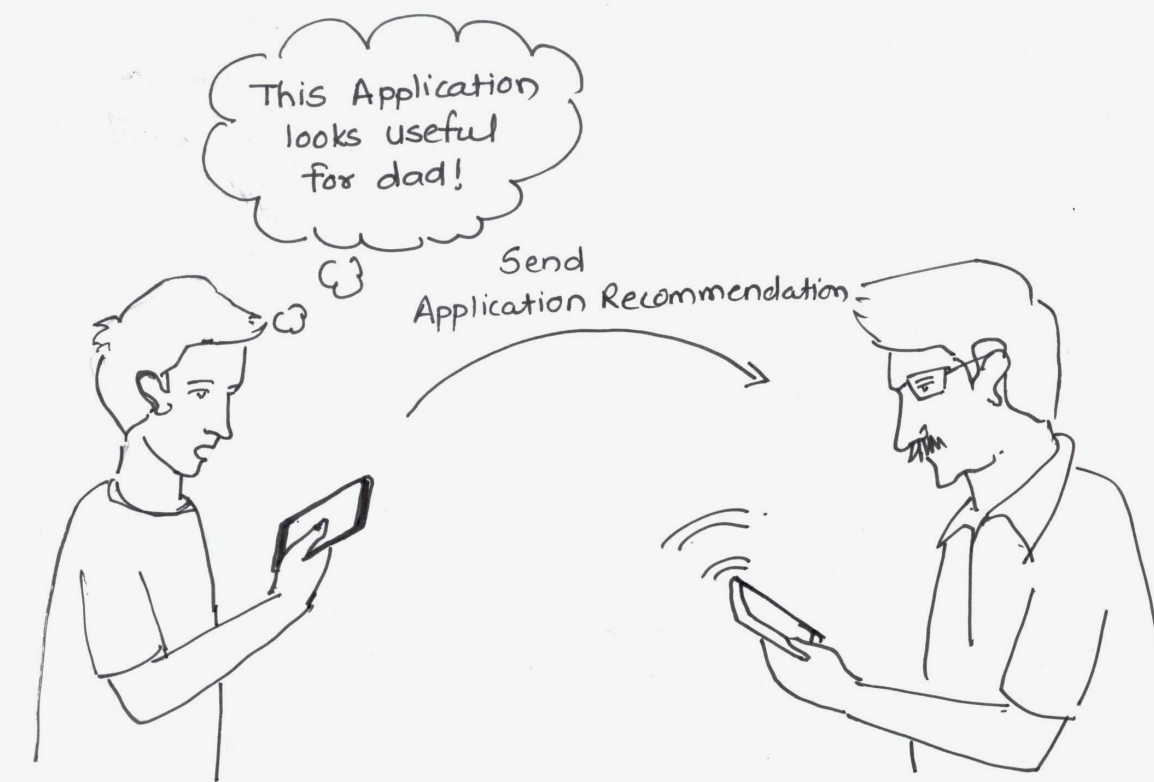
- Allow remote instructor to monitor internet usage of user
- Get notified in advance about to expiry of internet plan



Recommending Applications

Features

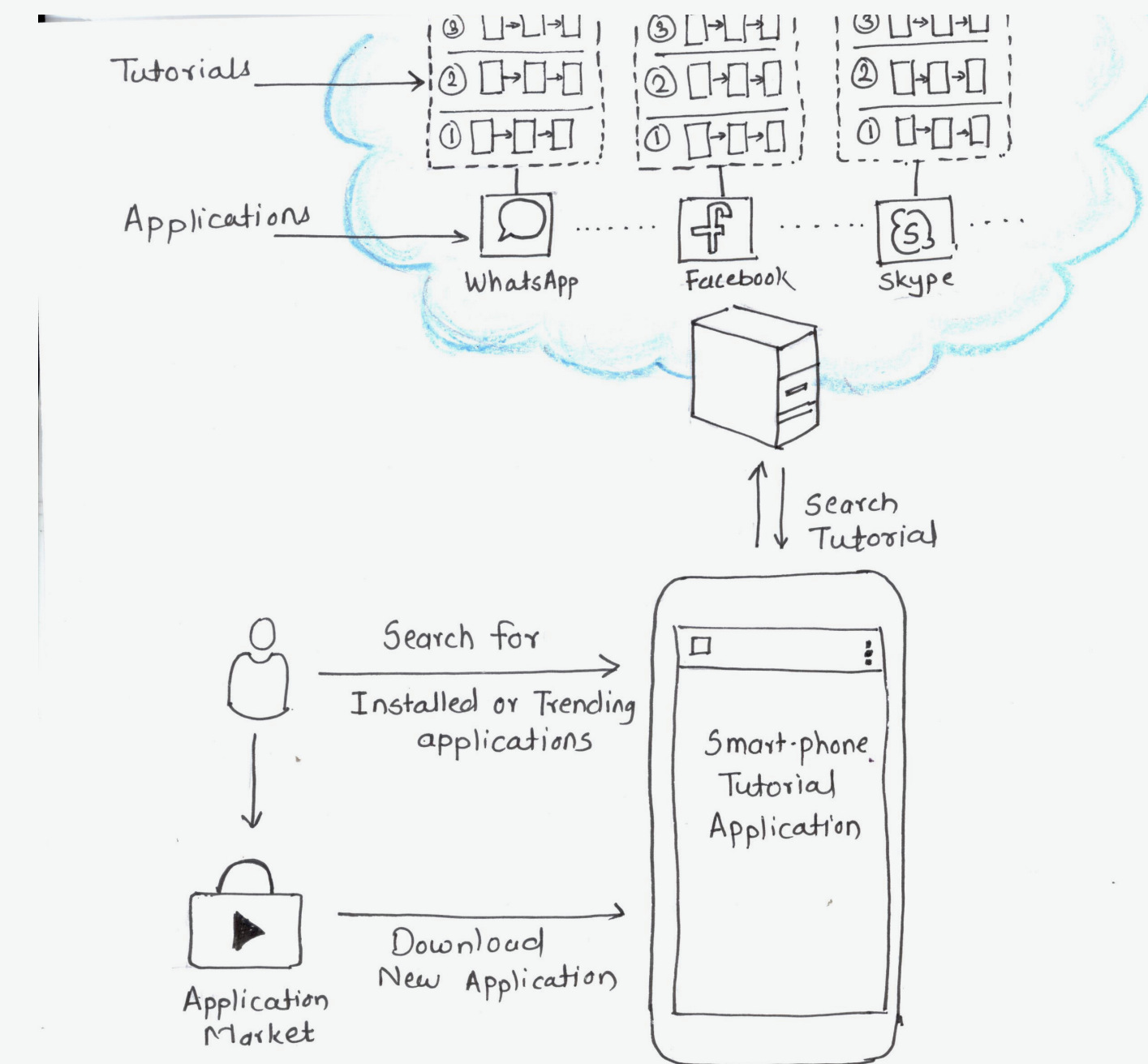
- Instructor can recommend a new relevant application to user
- Instructor knows which application might be useful for user



Online Tutorial Hub

Features

- A central place to find tutorials for any kind of application
- Application makers can upload tutorials for their application
- Push approach: tutorials will be recommended to user



Localization Techniques

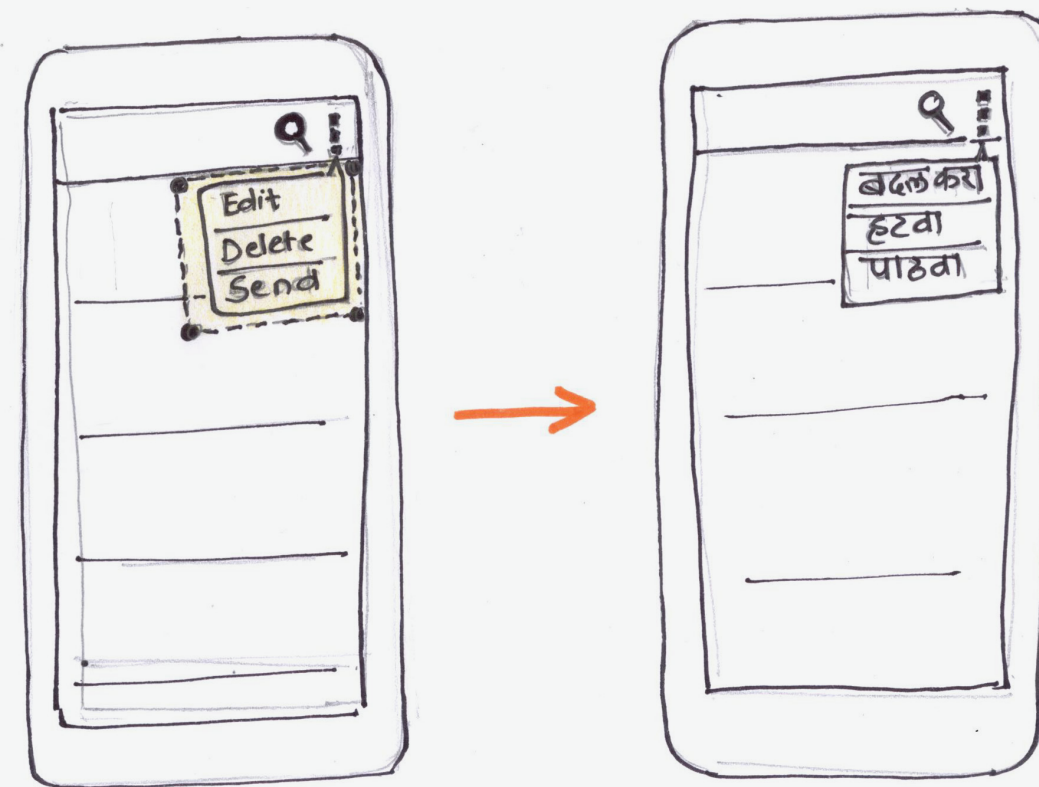
Features

- Augment the mobile screen with localized text using OCR technique

Concerns

- No open source OCR libraries for Indic scripts are available
- Feature level idea
- Lack of skillset to work on this idea

Using Image Processing

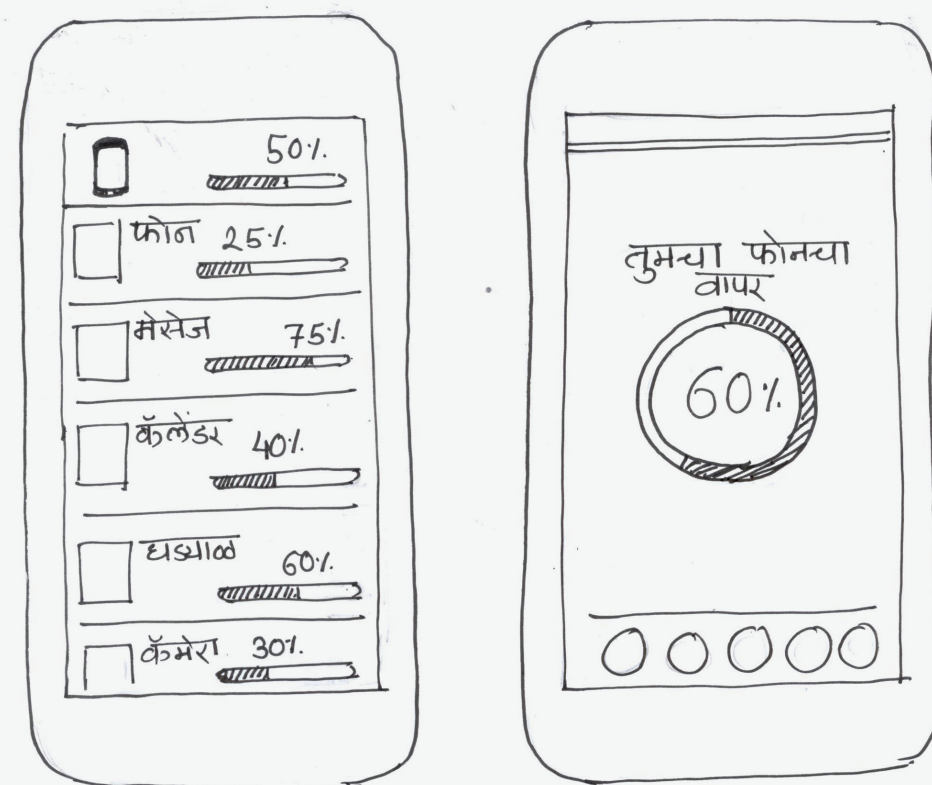


Localized tooltips using Hint-pointer



Game & Gamification

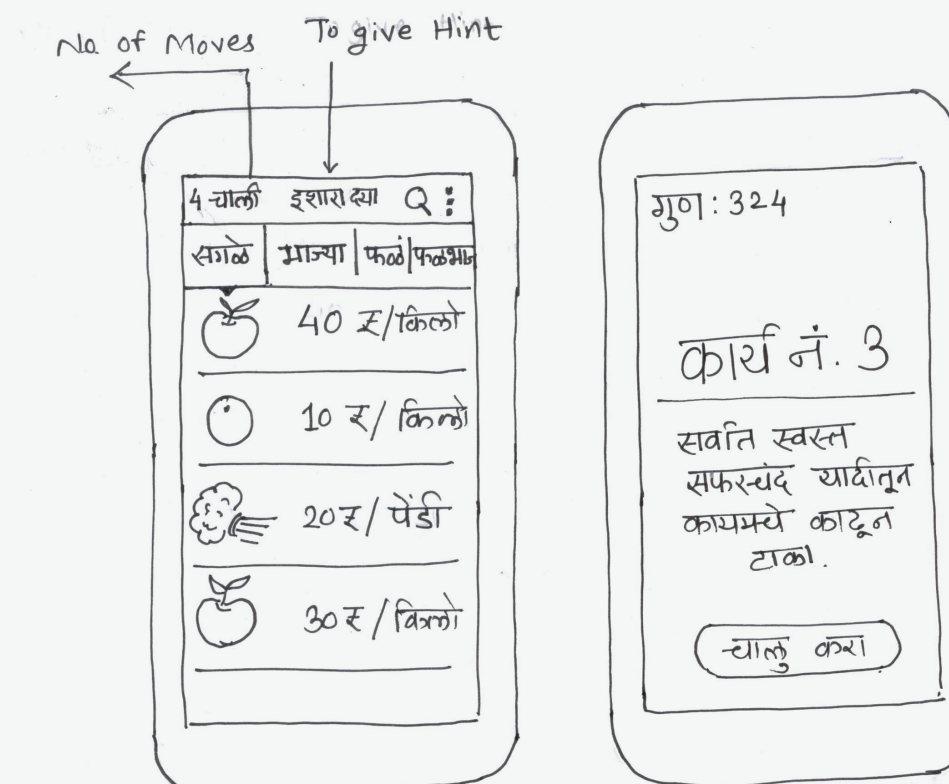
Gamifying Exploration of in-built applications



Concern

Good as motivator but still fails to help users when in need of help

Game based on a Dummy Application



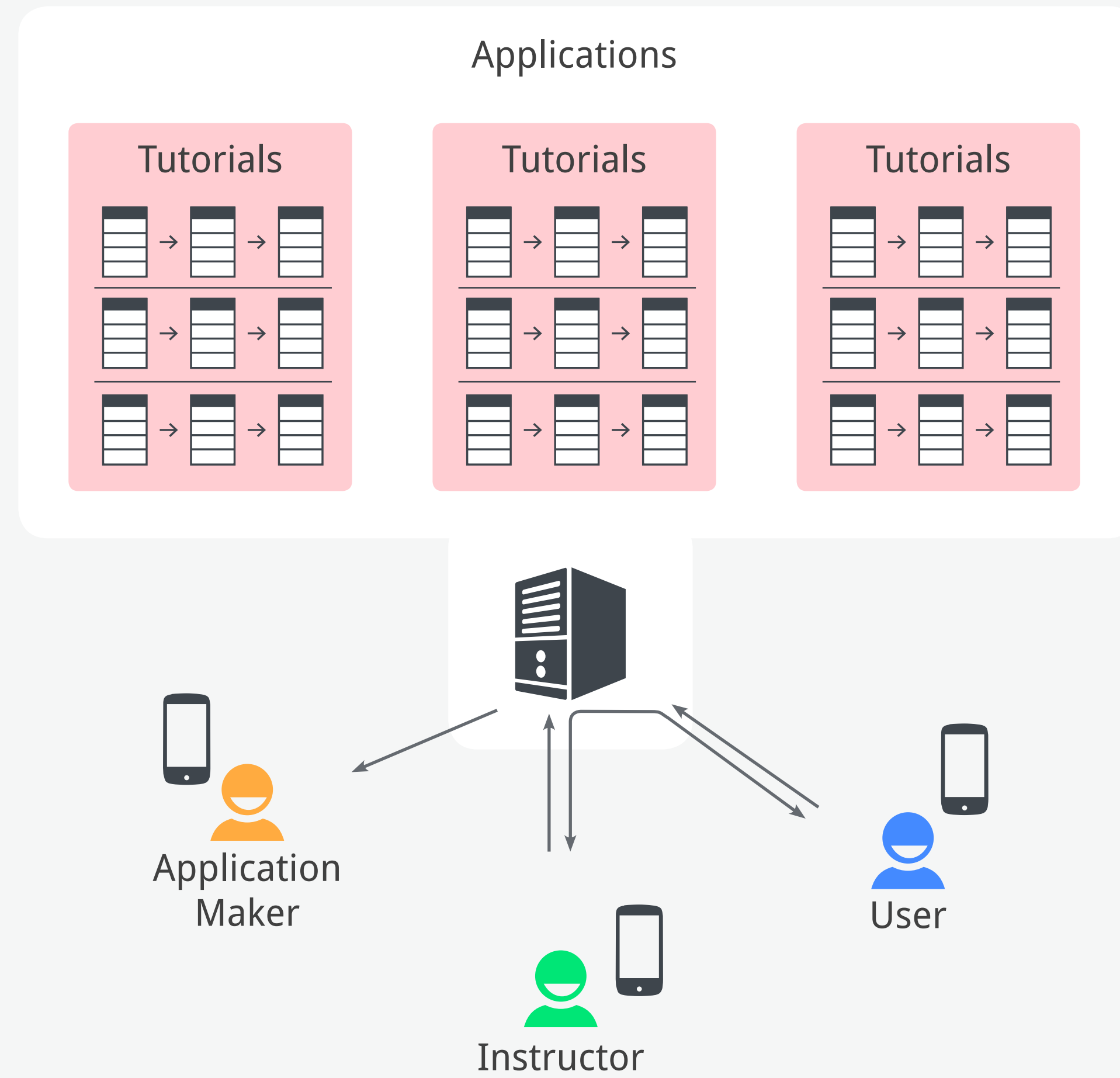
Concern

Complexity of game was similar to using an actual application.



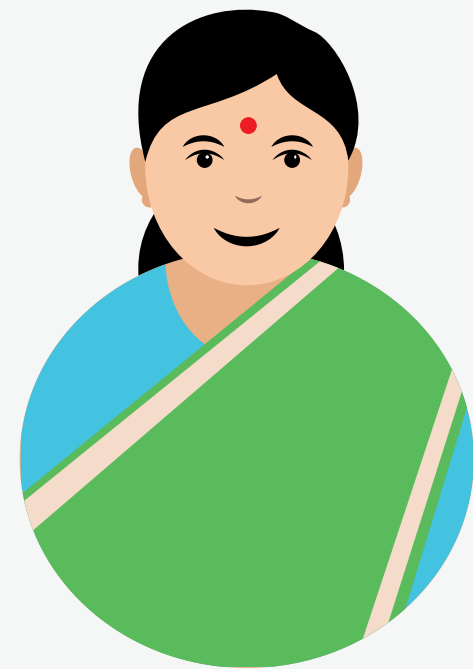
Introducing तंत्रमित्र

Ecosystem



Persona

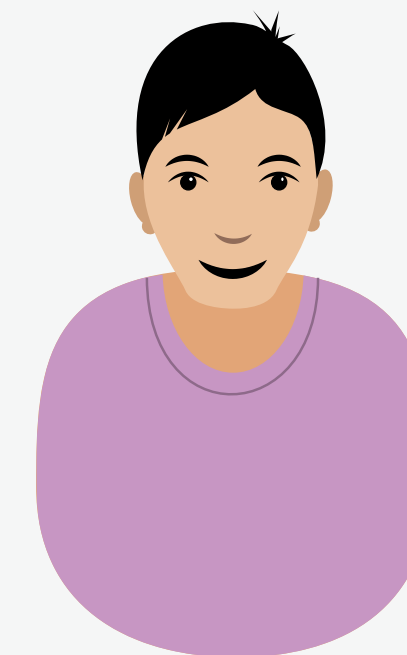
User Persona



Iravati Kore

- Age: 54
Education: till 12th Standard.
Literacy: Less proficient in English
Profession: Housewife
- She has access to computer but she has never used it
 - She used feature phone for maintaining contact with her relatives and friends.
 - She [bought a smartphone 2 months ago](#)

Instructor Persona



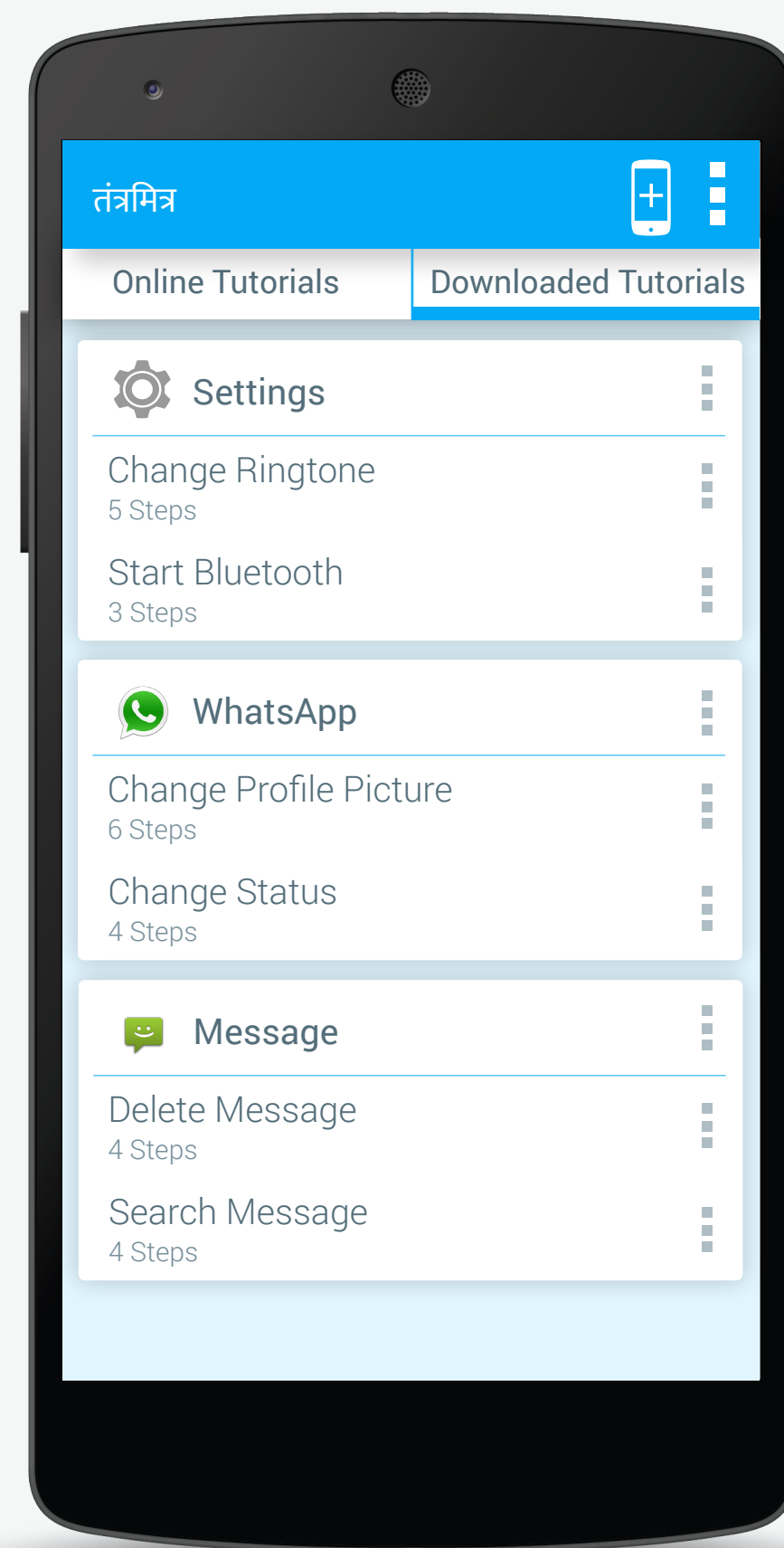
Sandeep Kore

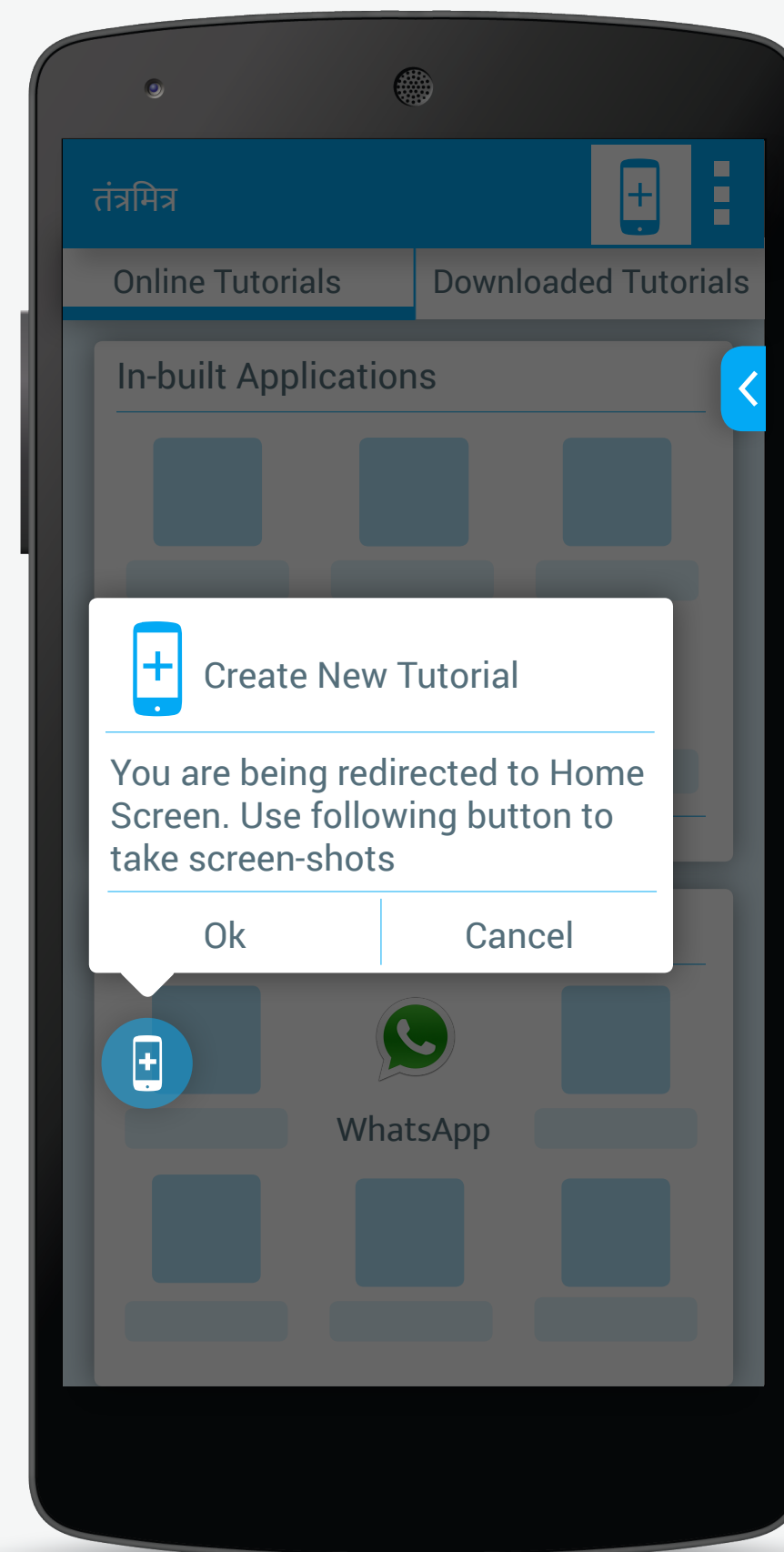
- Age: 21
Education: Ongoing Bachelor of Engineering
Literacy: Literate in English
Profession: Student
- He [lives in college hostel](#)
 - He has been using smartphone from last two years.
 - He also has laptop which he uses for doing class assignments.
 - Likes to stay connected to his friends through Facebook, Twitter and WhatsApp user.

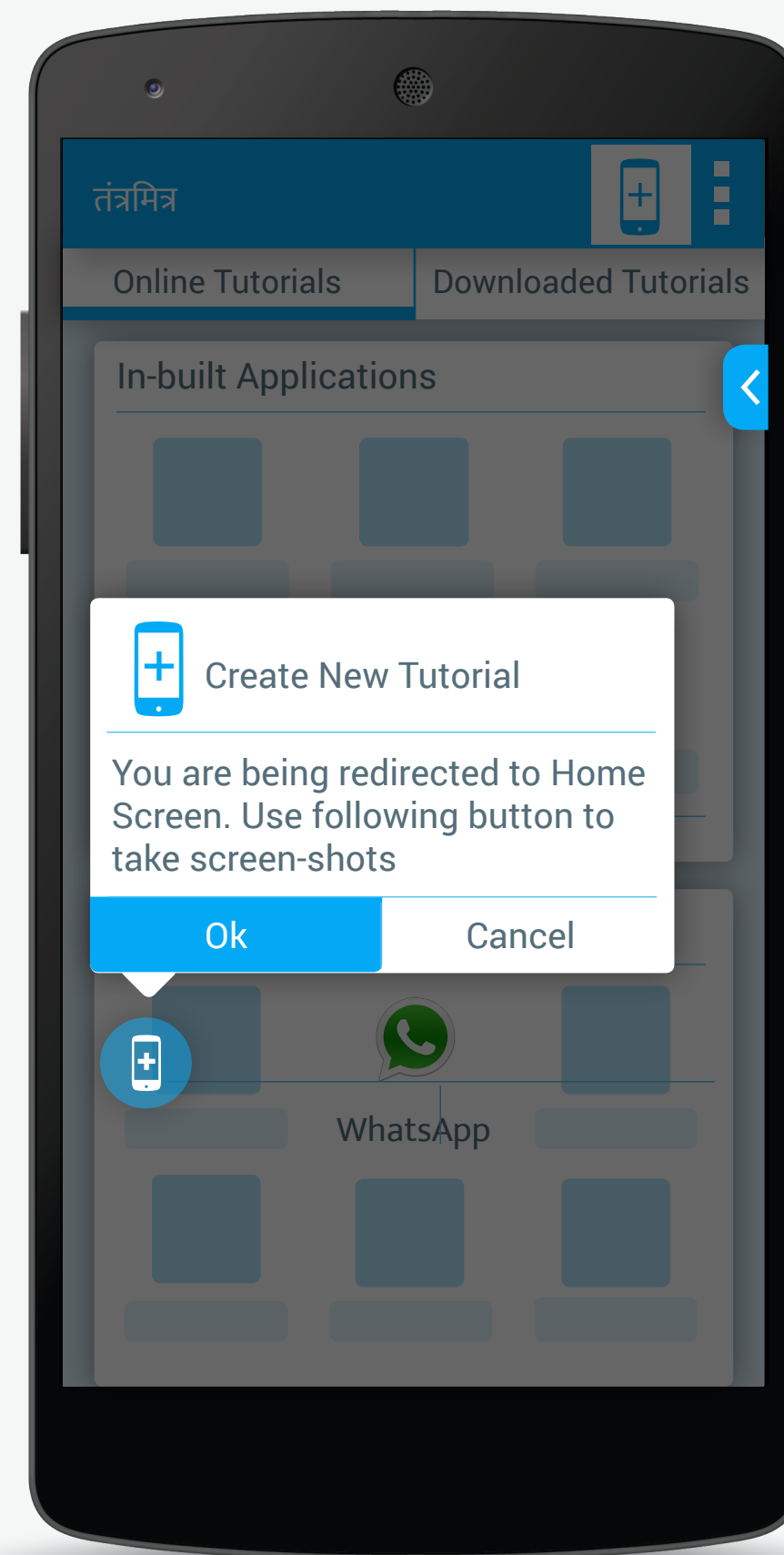
User Scenarios

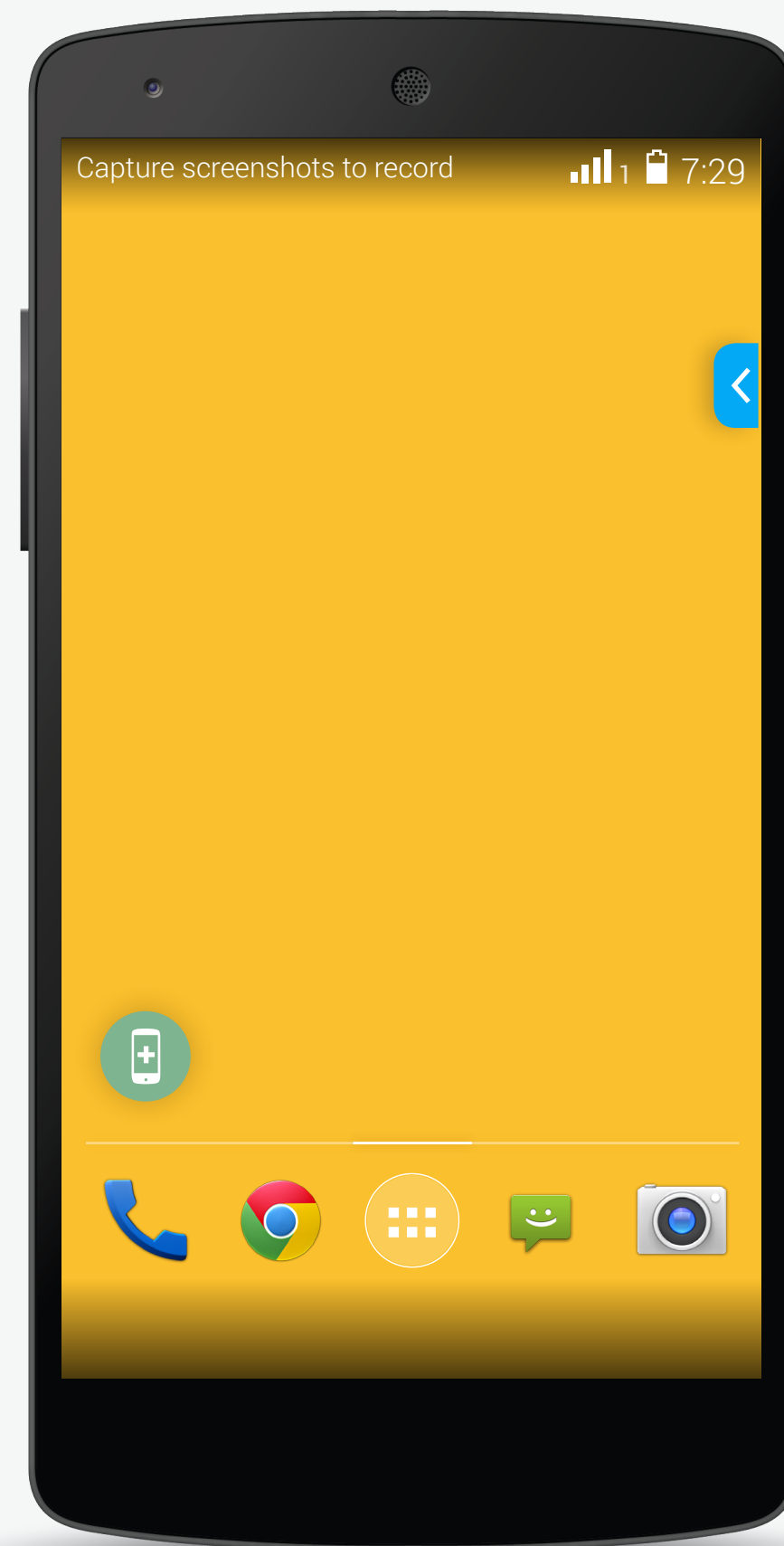


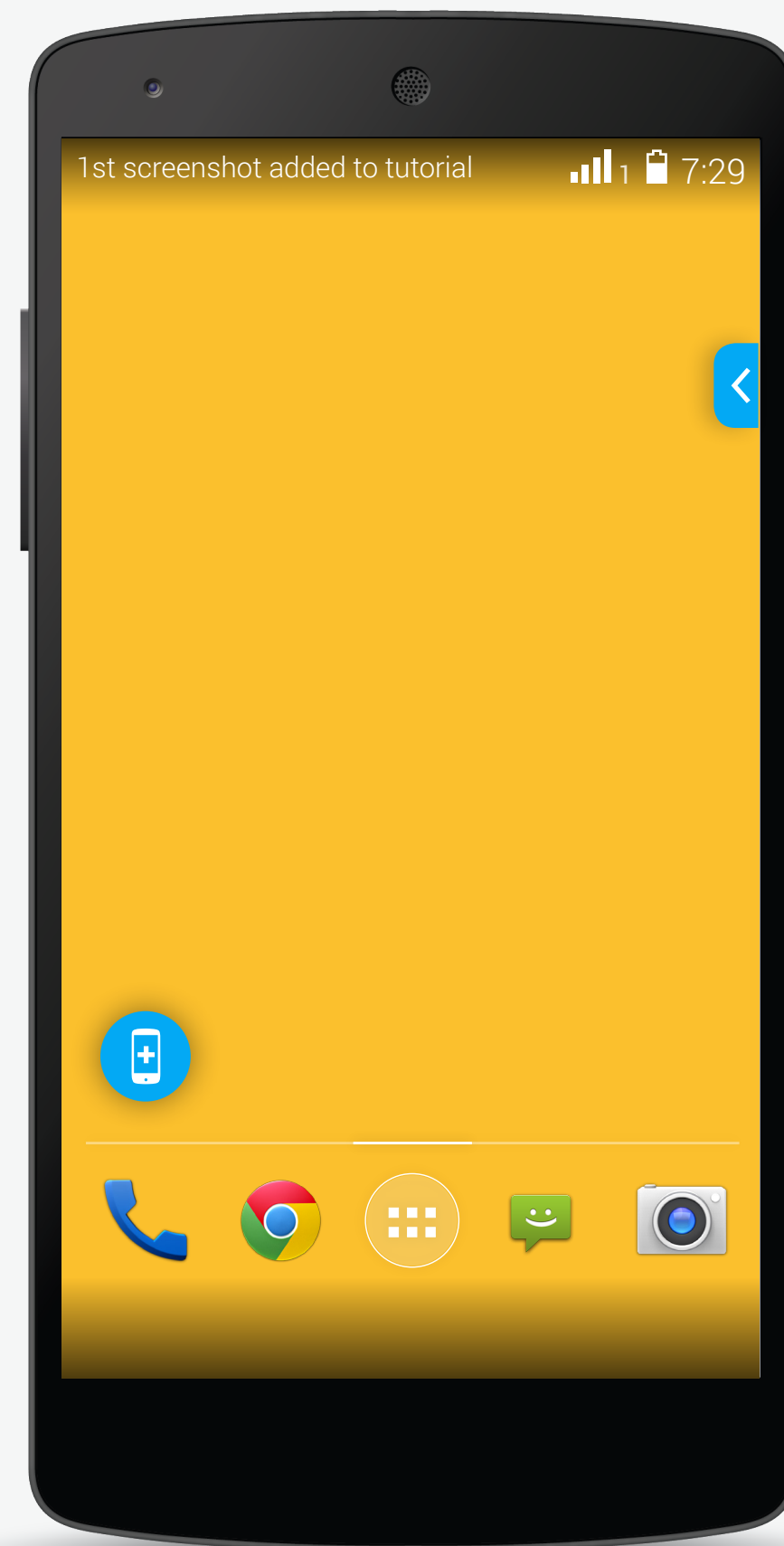
Instructor Scenarios

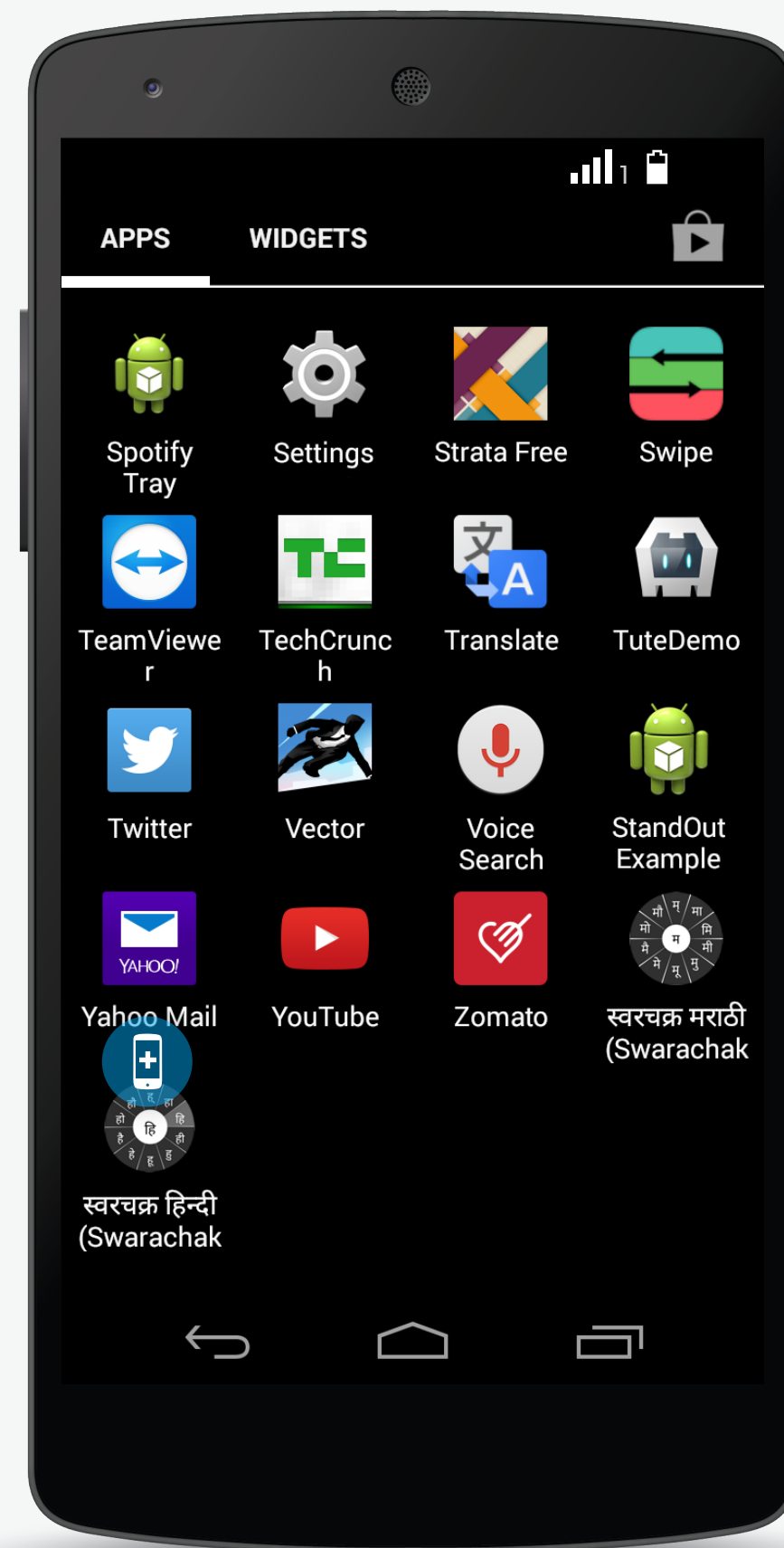


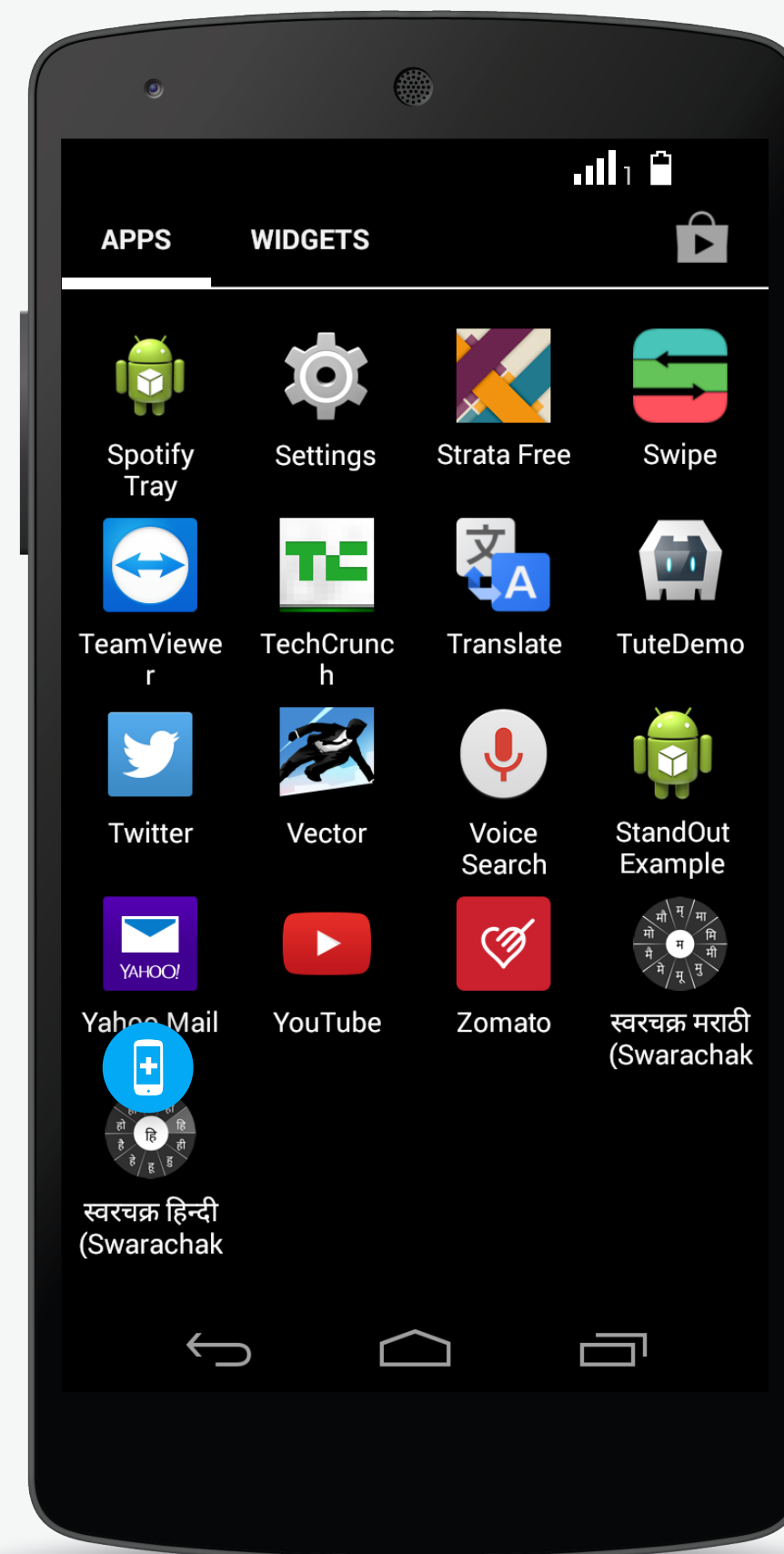


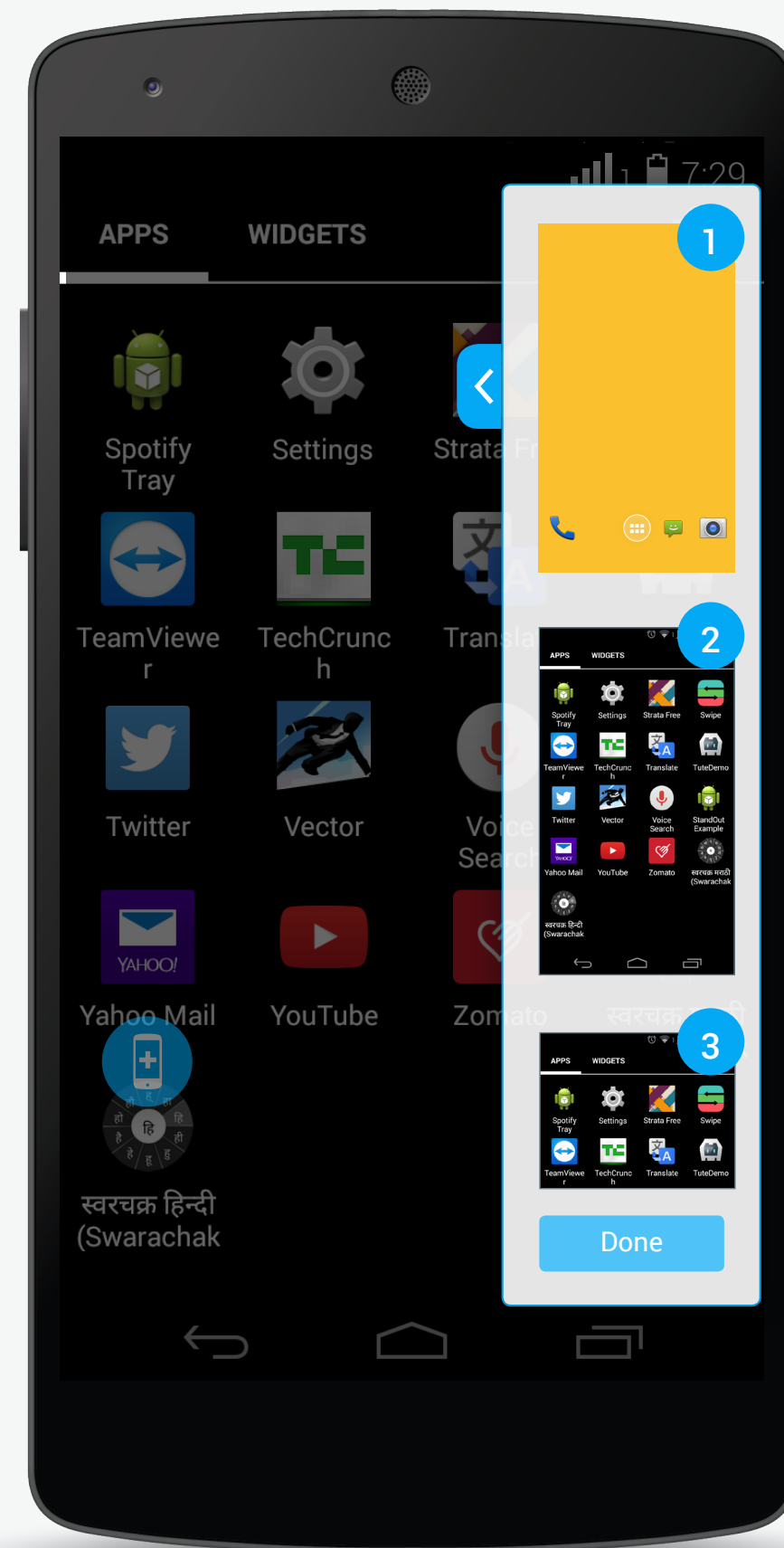


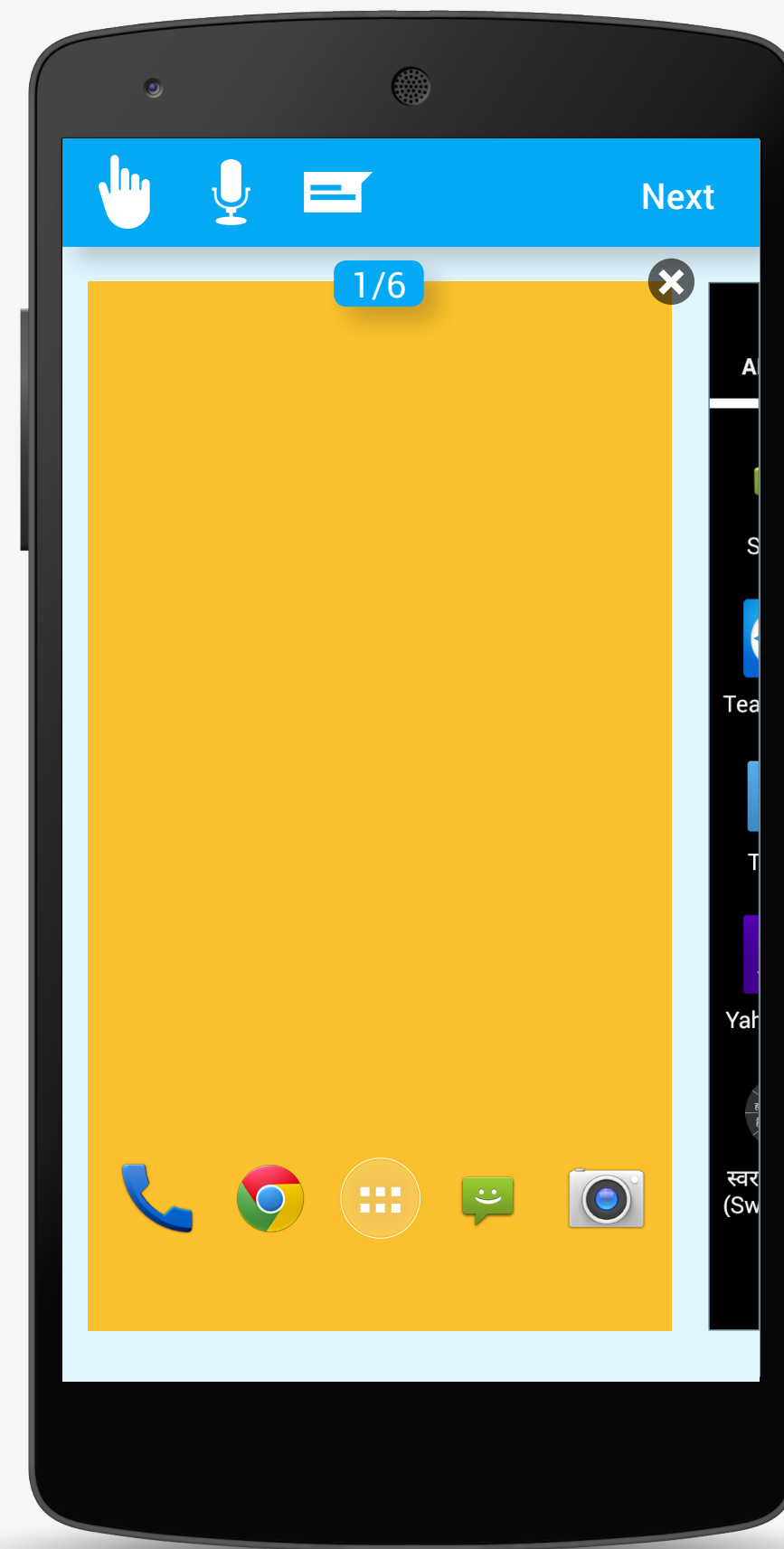


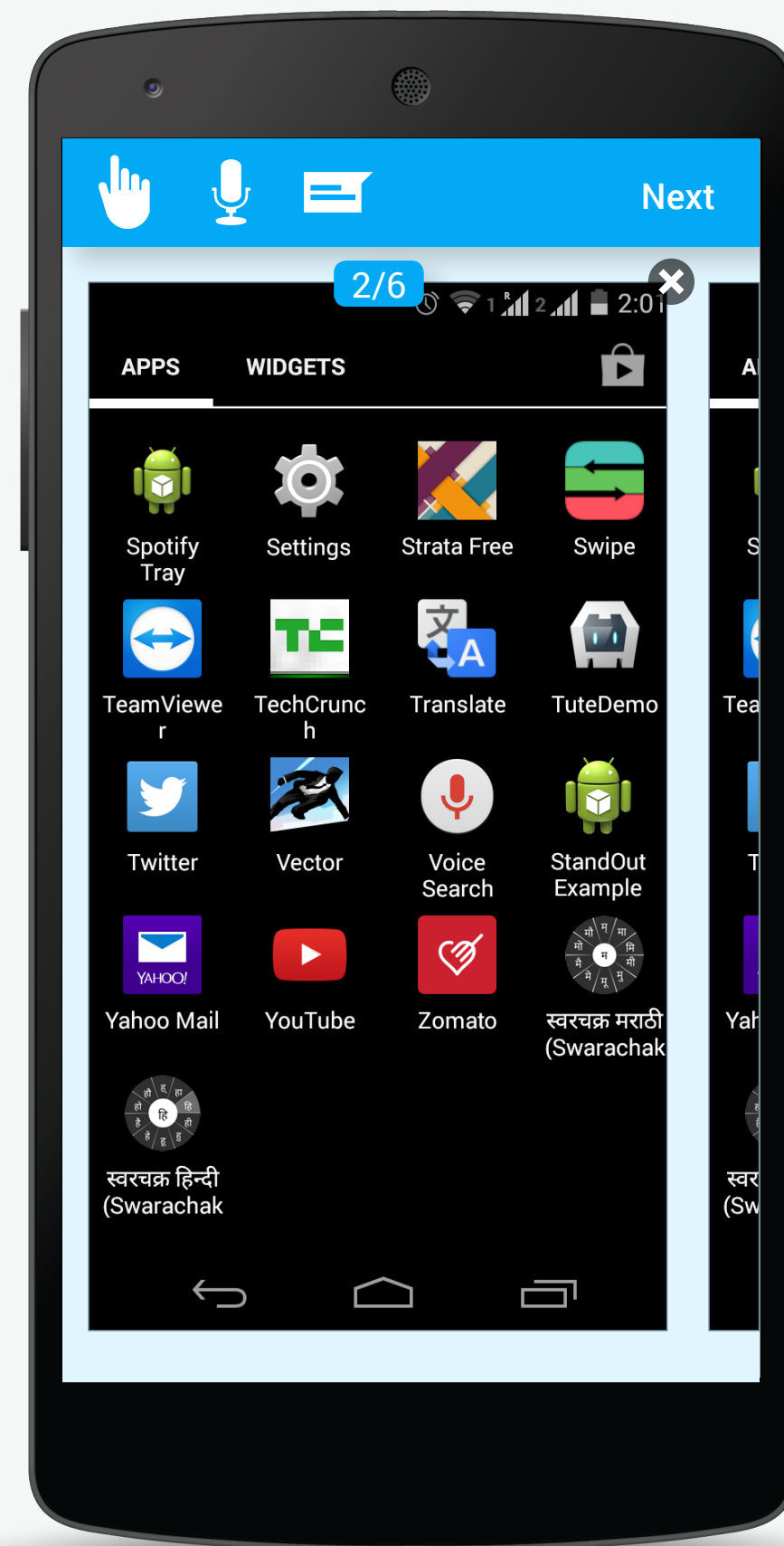


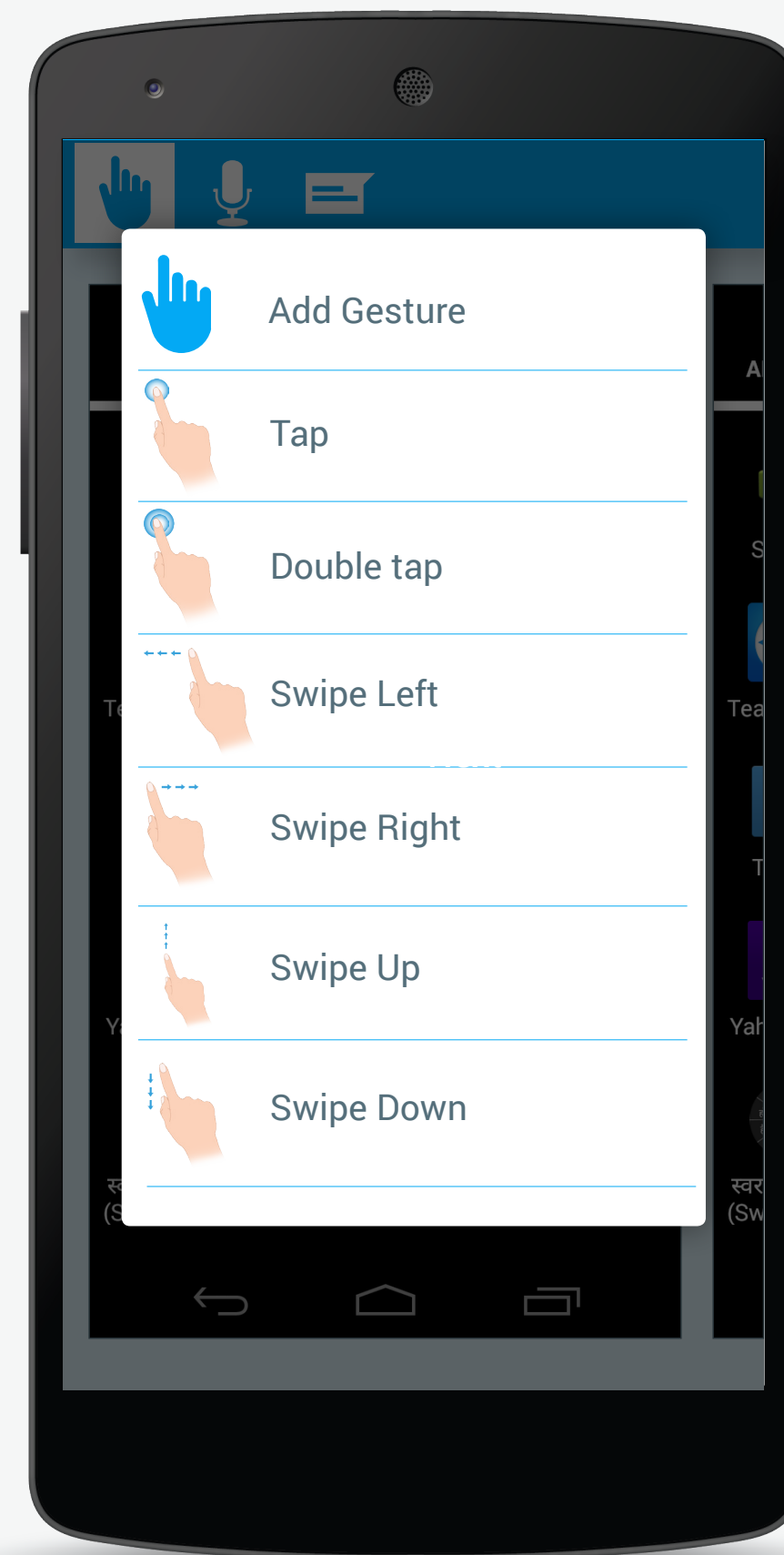


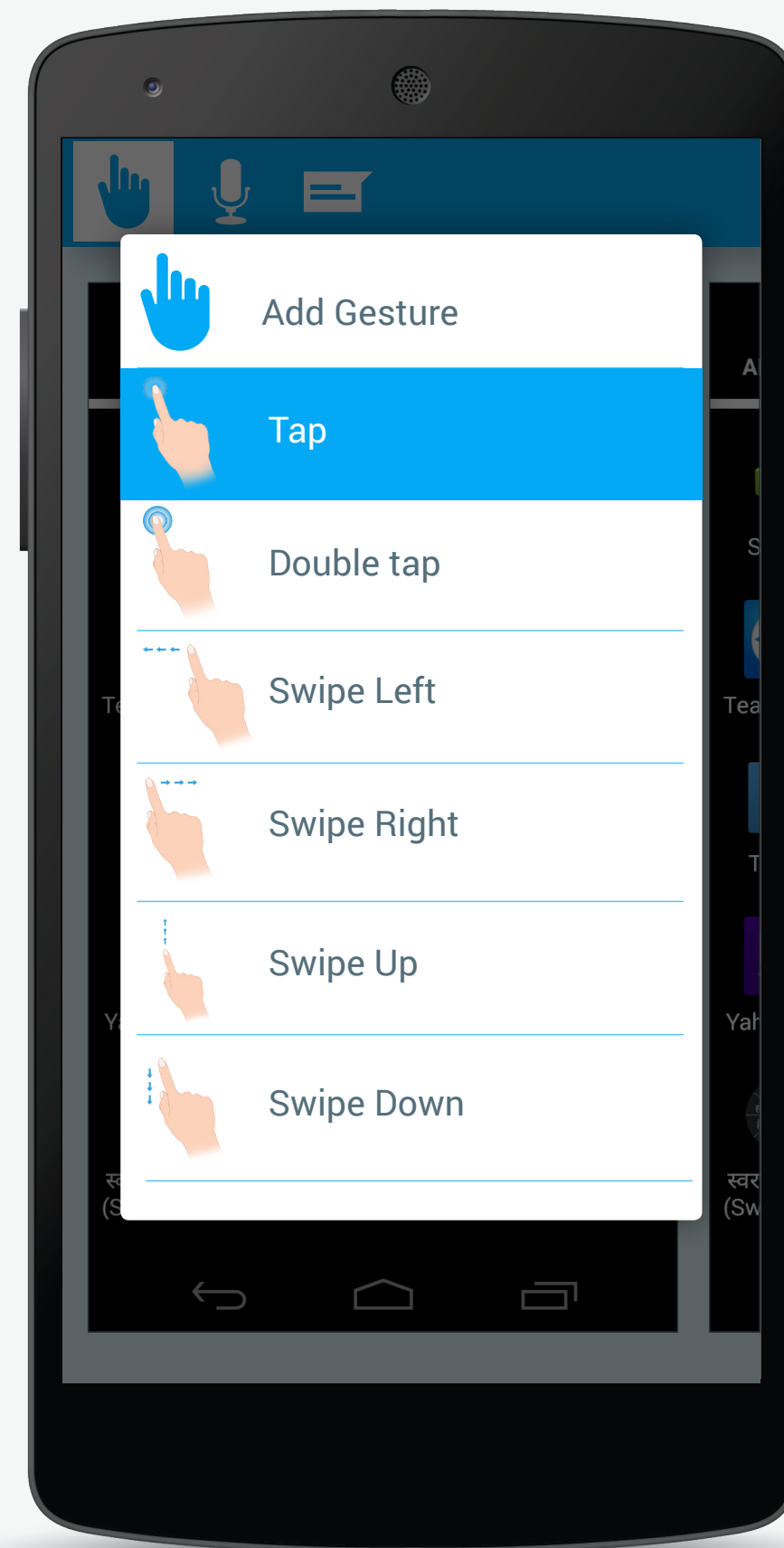


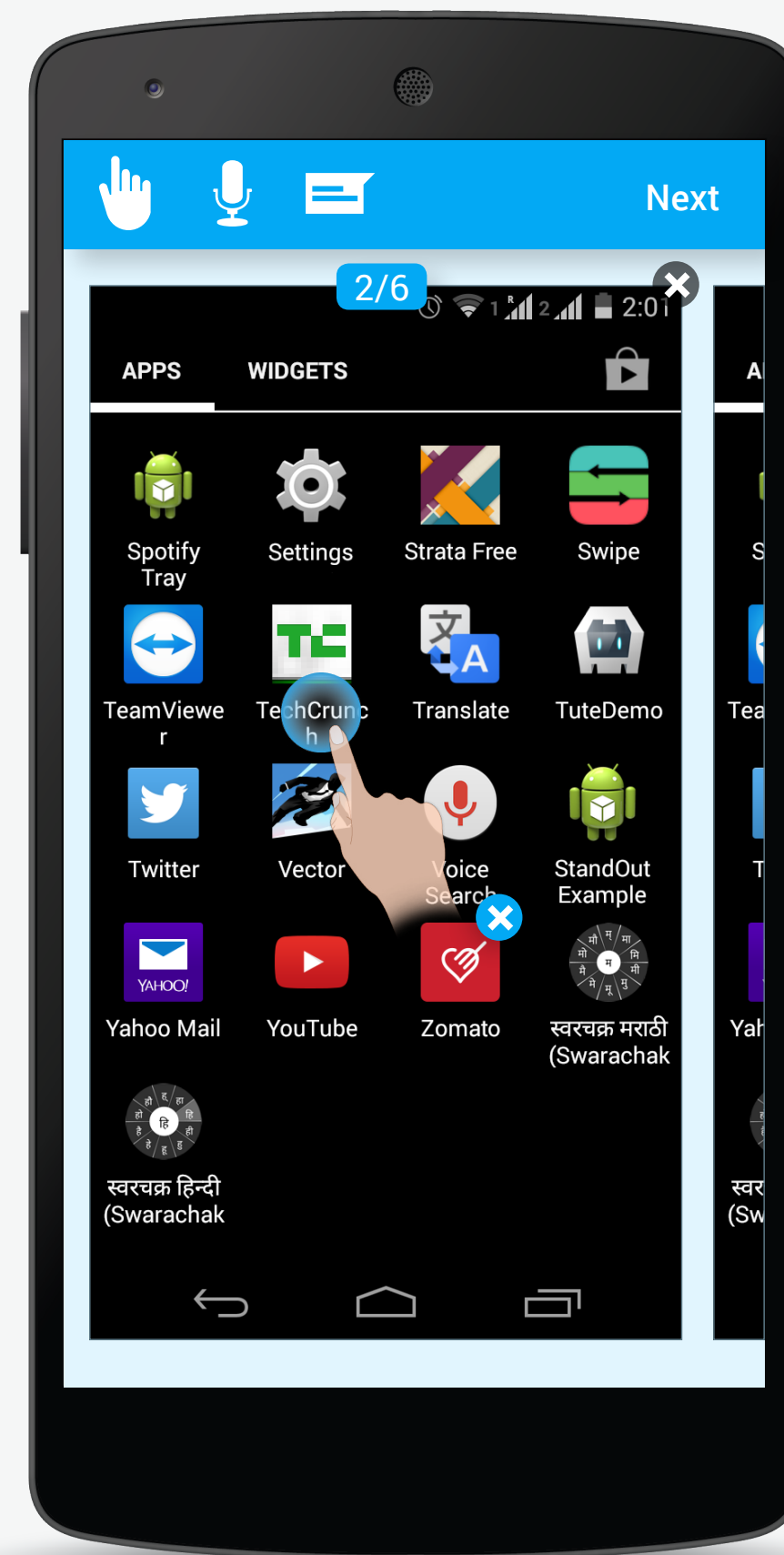


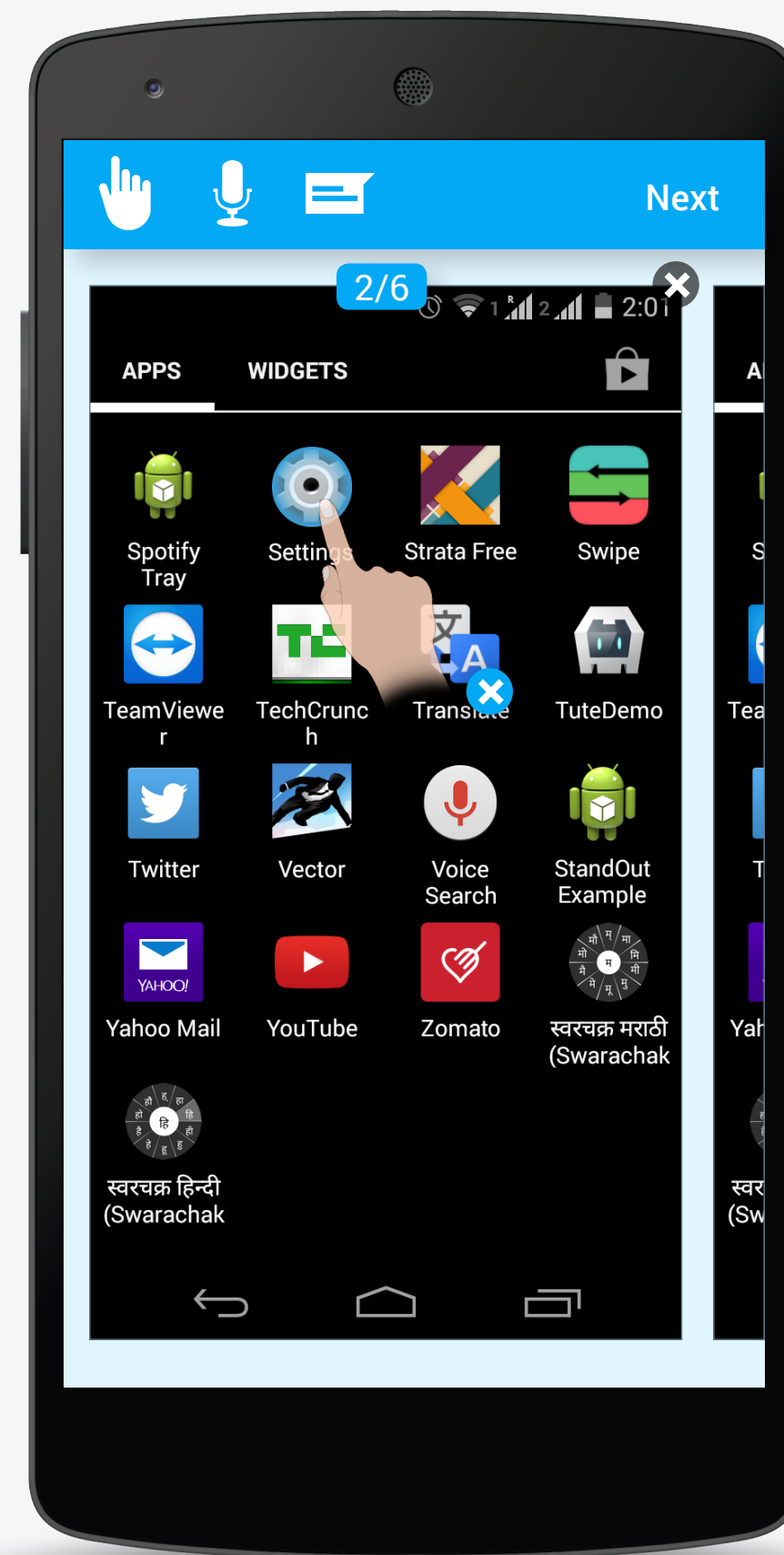


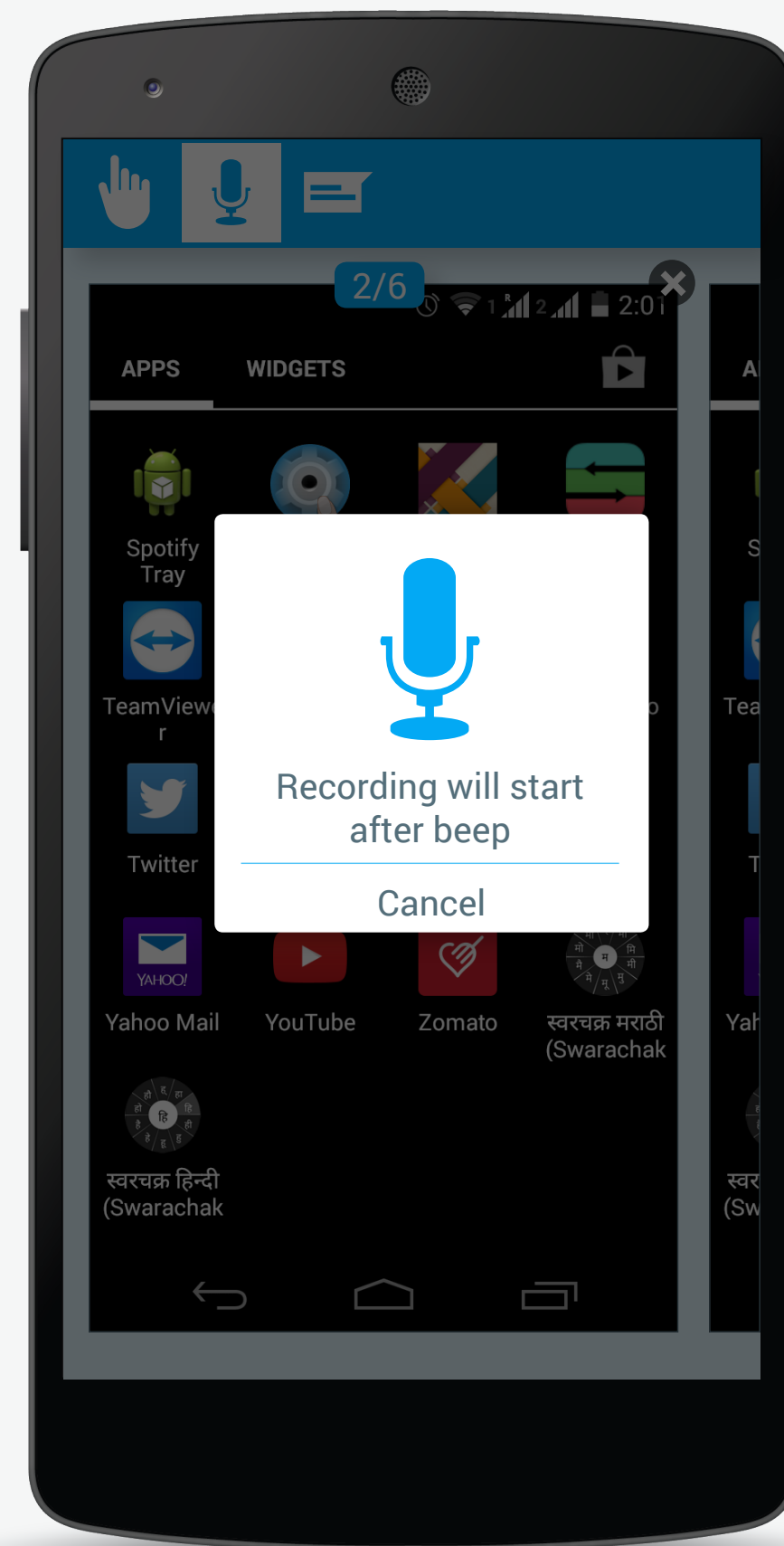




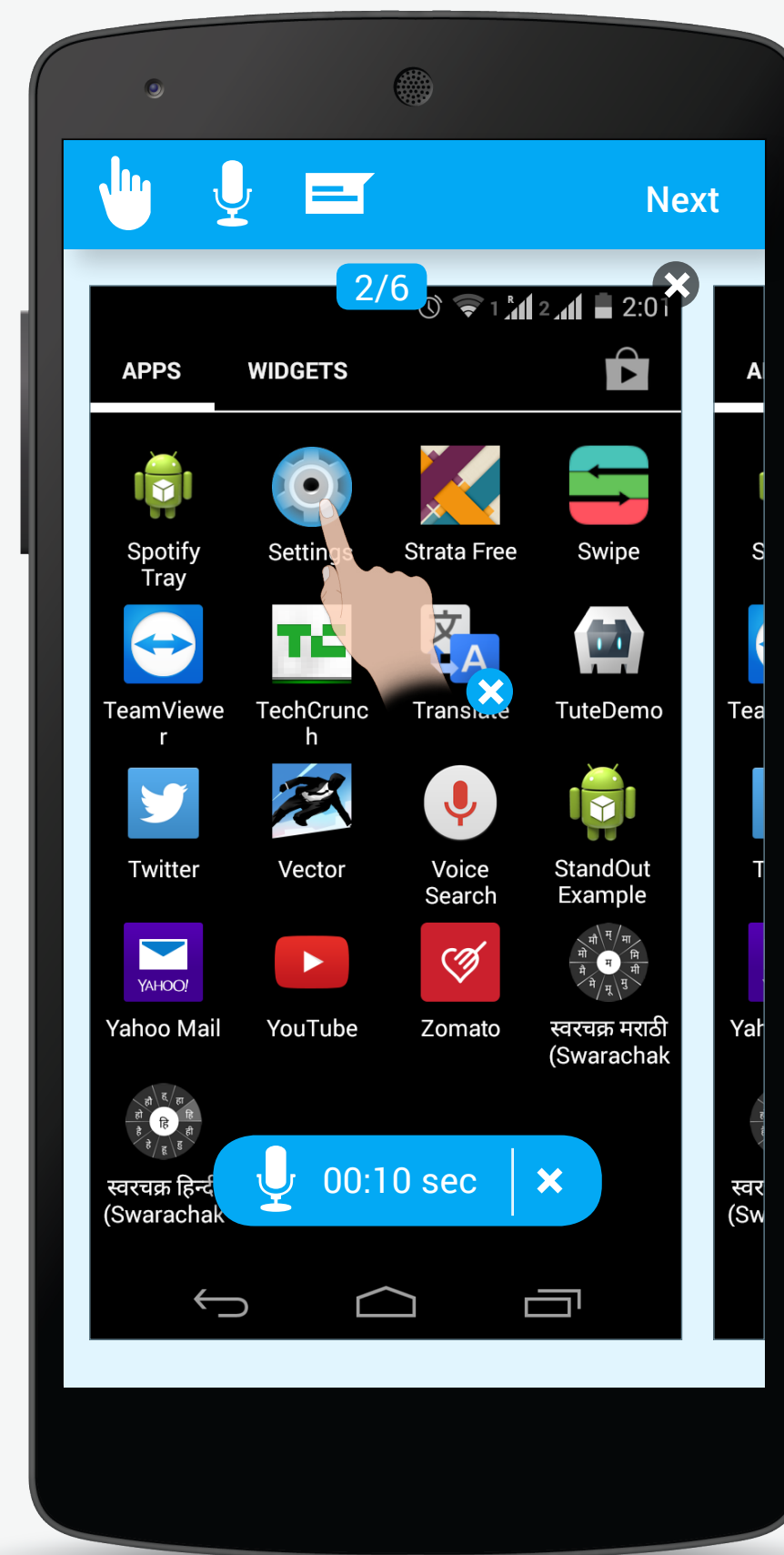


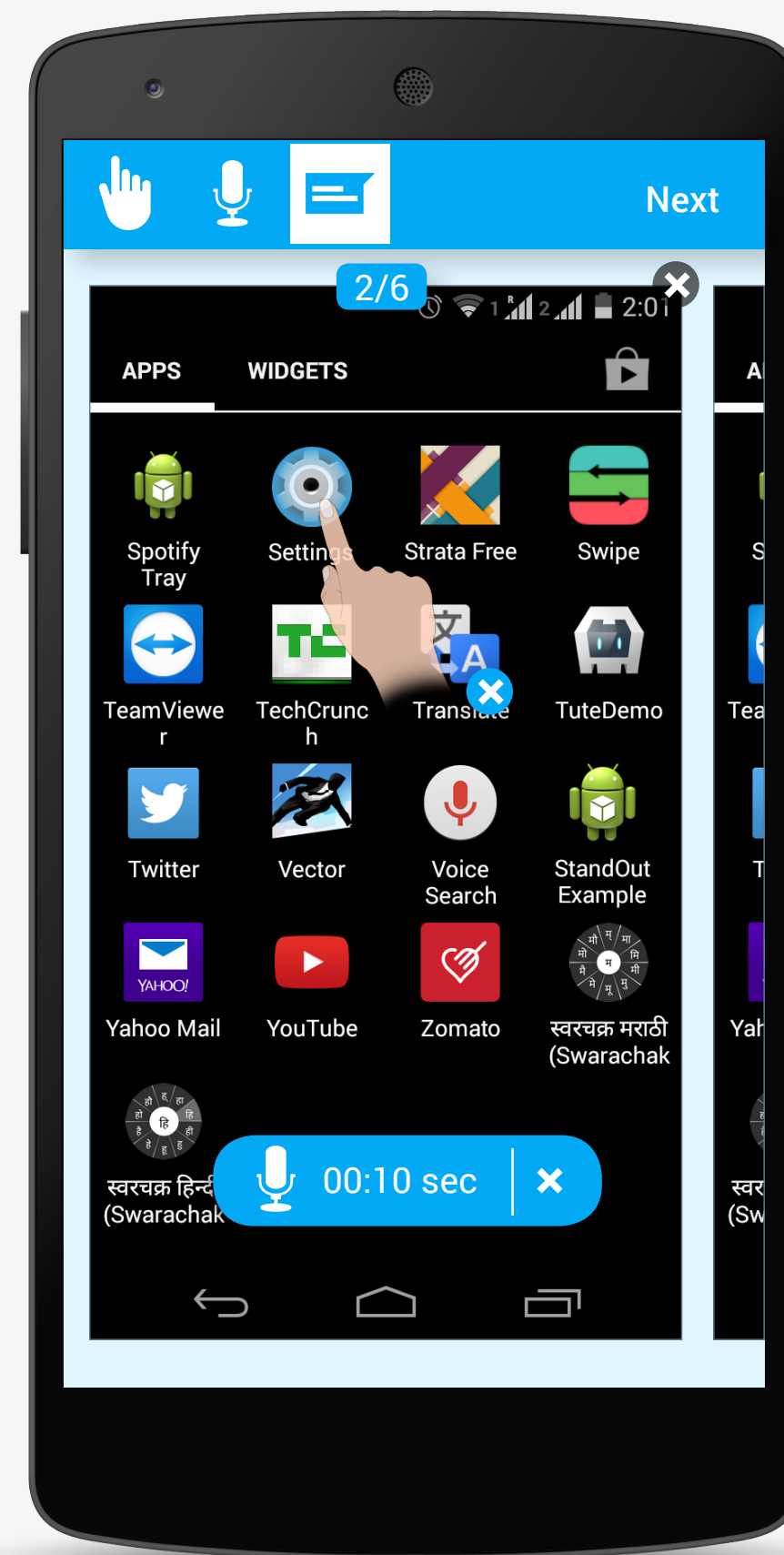




















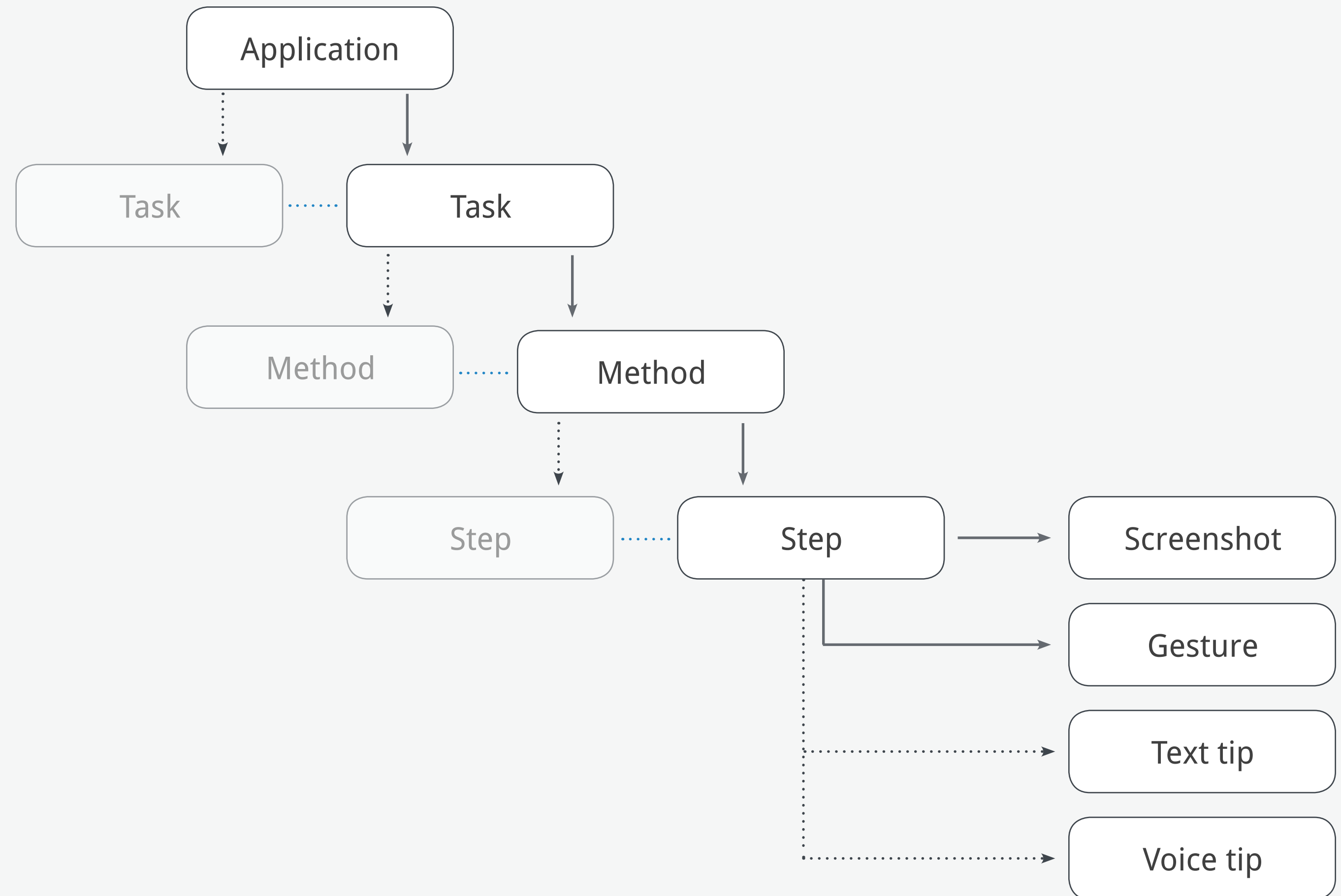




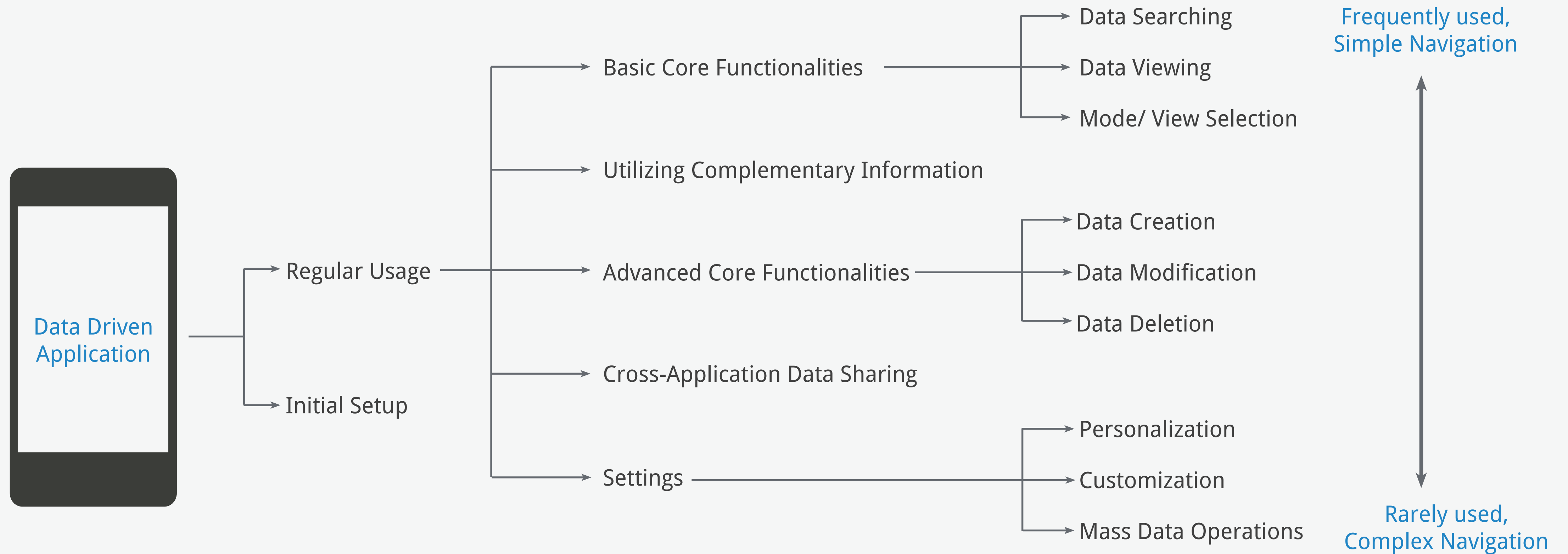
Information Model

Tutorials are saved in json format

```
1 {
2   "tutorial": {
3     "id": "1",
4     "step": [
5       {
6         "id": "1",
7         "title": "Open WhatsApp Application",
8         "img": "1.png",
9         "gesture": {
10          "type": "tap",
11          "left": "43.33%",
12          "top": "82.34%"
13        },
14        "texttip": {
15          "placement": "bottom",
16          "content": "हमि होम स्क्रीन आहे. येथून अप्लिकेशन ची यादी उपडा.",
17          "left": "23.06%",
18          "top": "64.84%"
19        },
20        "voicetip": "1.wav"
21      },
22      {
23        "id": "2",
24        "title": "Select Conversation",
25        "img": "2.png",
26        "gesture": {
27          "type": "tap",
28          "left": "6.11%",
29          "top": "45.16%"
30        },
31        "texttip": {
32          "placement": "bottom",
33          "content": "सेटिंग्स मधून तुम्ही ",
34          "left": "26.11%",
35          "top": "6.09%"
36        },
37        "voicetip": "2.wav"
38      }
39    ]
40  }
41 }
```

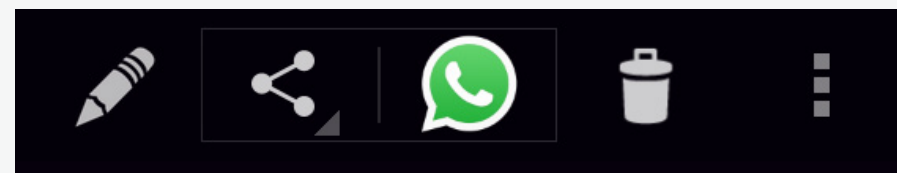


Categories of Tasks



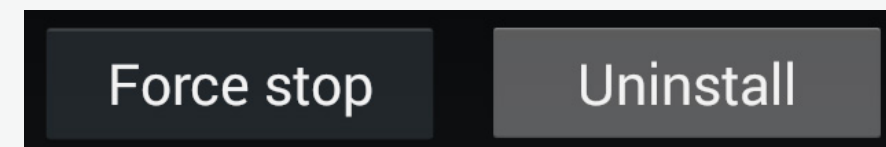
Content Guidelines

Icon



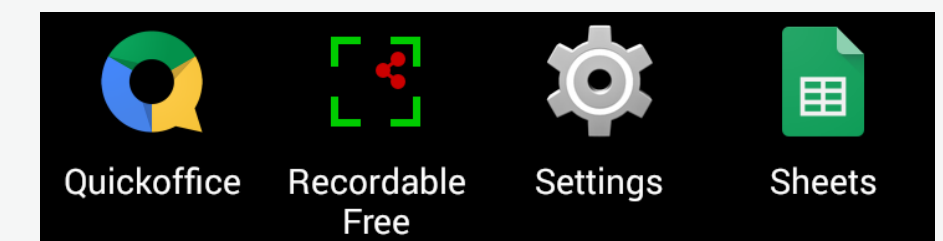
- Meaning in commonly used words or phrase
- Use of Icon
- Help in finding by describing icon in voice-tip

Label



- Meaning in commonly used words or phrase
- Use voice and text-tips for telling pronunciation

Icon and Label



- Association of label with icon

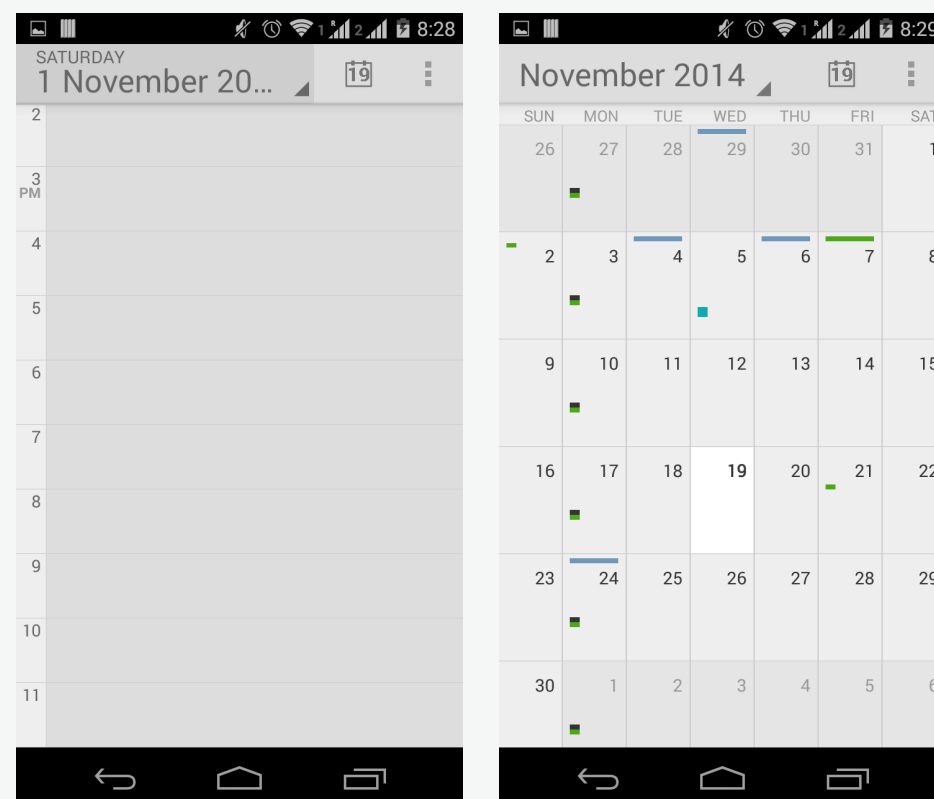
Content Guidelines

General Guidelines

- Make voice-tips more actionable, like instructions
- Use text-tips for explaining concepts and secondary information
- For repetitive tasks, no need to add same voice tips again and again
- Talk/ write only about visible and pointed UI element
- If alternate methods exist, cover 1 method per tutorial
- Difficult to understand
 - Voice-tips of more than 15 seconds
 - Text-tips containing more than 20 words(about two lines)
- Inform about consequences of performing/forgetting particular action

Content Guidelines

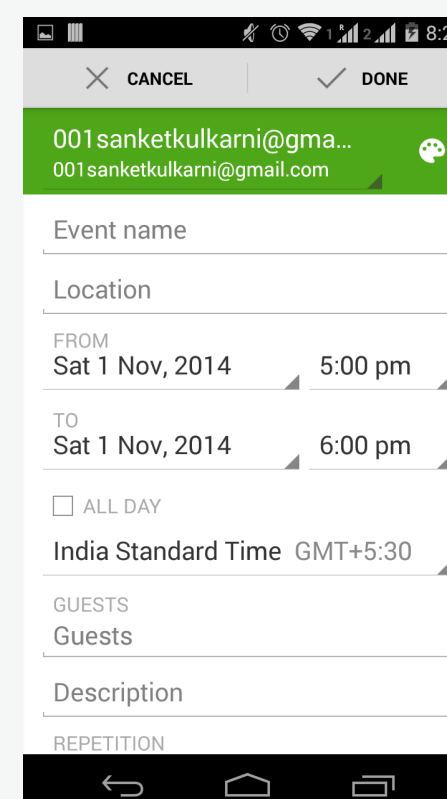
Mode/ View Change



Point out difference between states before and after changing

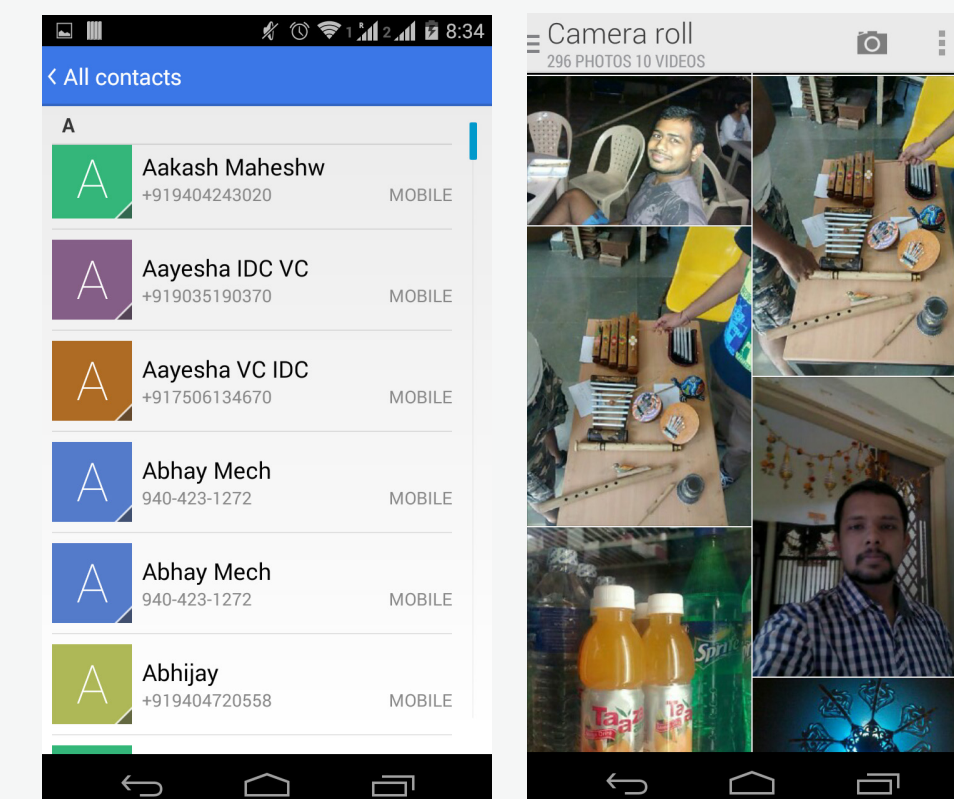
- Information organization, icons, etc.

Data Creation



Tell whether input is mandatory or non-mandatory

Data Searching



- Lists:** Explain order and organization of information
- E.g. describing the range, "oldest at bottom and latest at top"
- Filter:** Explain currently enable filter, default filter

Evaluation

Total 8 Users

Gender: 5 - Female, 3 - Male

Age: 40–60 years

English Literacy: 5 - Less proficient, 2 - Literate, 1 - illiterate

Pre-Test

- User Manuals: 6 - never used, 2 - used
- Video Tutorials: 7 - never used, 1 - used
- Last 3 tasks learnt, how they learnt it
- Any newly installed application

Training

- One tutorial was demonstrated to explain structural and navigational aspect of tutorial format

Evaluation Test

- To use existing tutorial to perform an unfamiliar task
- To use recommended tutorial
- To install recommended application
- To check internet usage
- To search a tutorial on the Hub

Post Test

- Feedback, Improvements, Suggestions

Evaluation

Evaluation Test

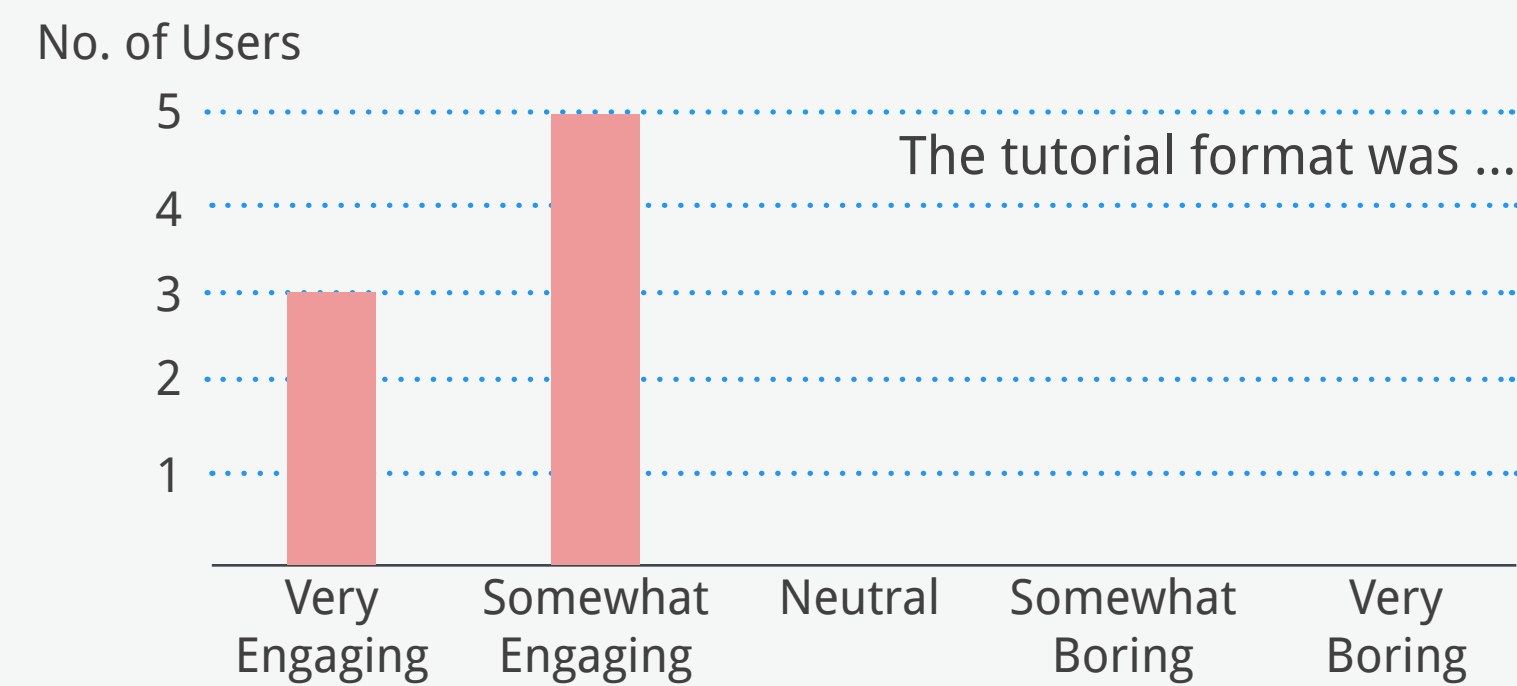
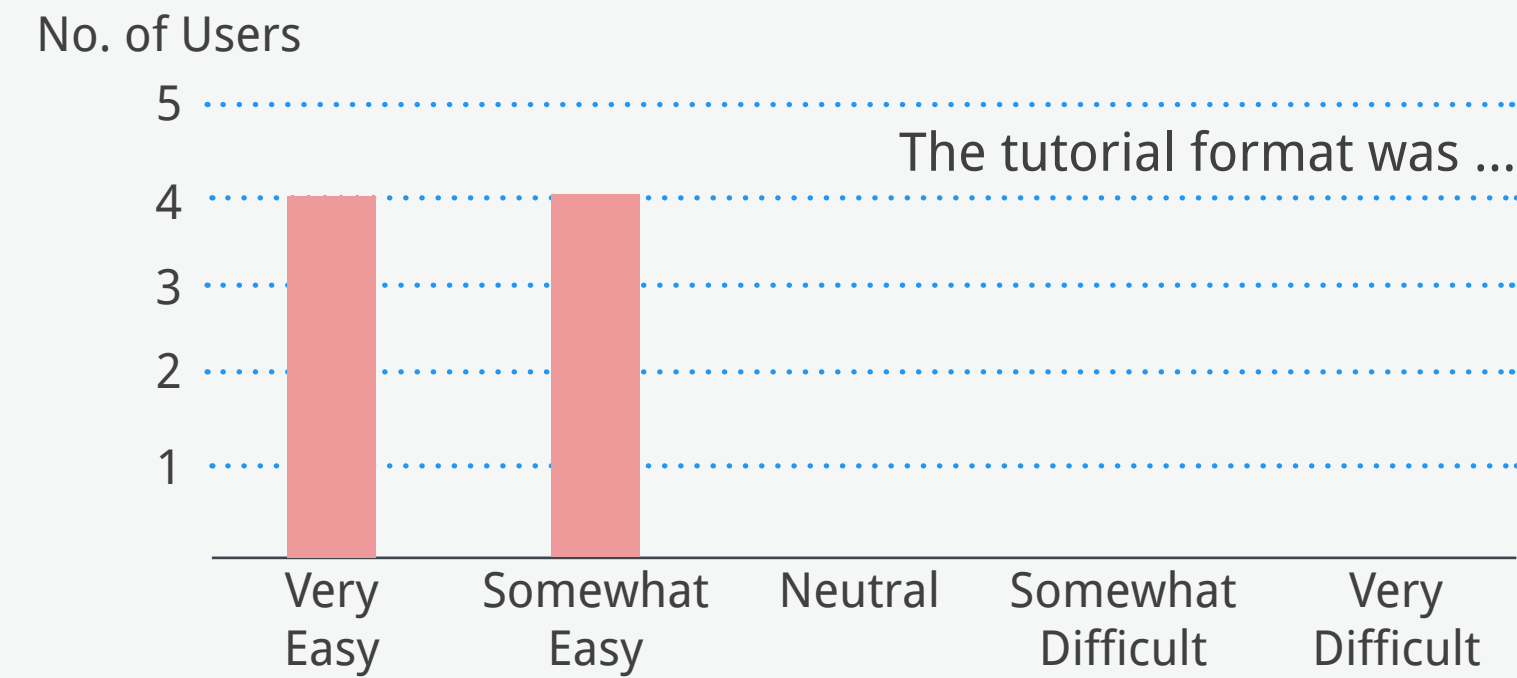
Task 1: To use existing tutorial to perform an unfamiliar task

Results: 6 successful (1 attempt)
1 partially successful (2 attempts)
1 fail (3 attempts)

Positive Feedback

- Liked because voice tips and text tips were in local language
- Able to identify visually similarities and similar text
- Even if theme of mobile was different, users were able to identify options.
- Preference gesture > voice tip > text tip
- Gesture were directly showing which option to choose
- Liked the facility of going forward and backward

Evaluation



Suggested Improvements & Observations

- Support for all languages should be provided
- Difficulty in understanding the long press gesture animation
- Gestures on lower parts are not catching attention
- To make tutorial of an application, it must be installed on the phone
- Some users demanded that they should be able to perform task from tutorial itself. Need to merge tutorials and actual screens.
- Worked perfectly for external applications but failed in some cases for In-built applications.
 - UI of In-built applications in some phone was customized

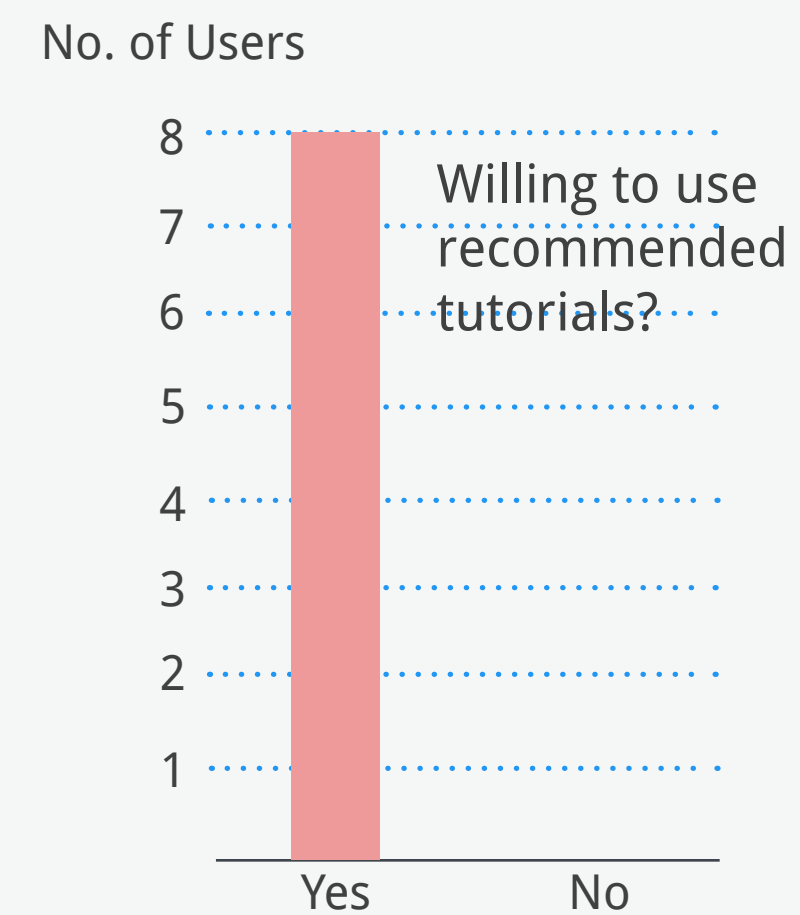
Evaluation

Task 2: To use recommended tutorial

Results: 7 successful
1 fail

Observations

- Not able to recognize the sender
- Misunderstood that instructor is asking for tutorials

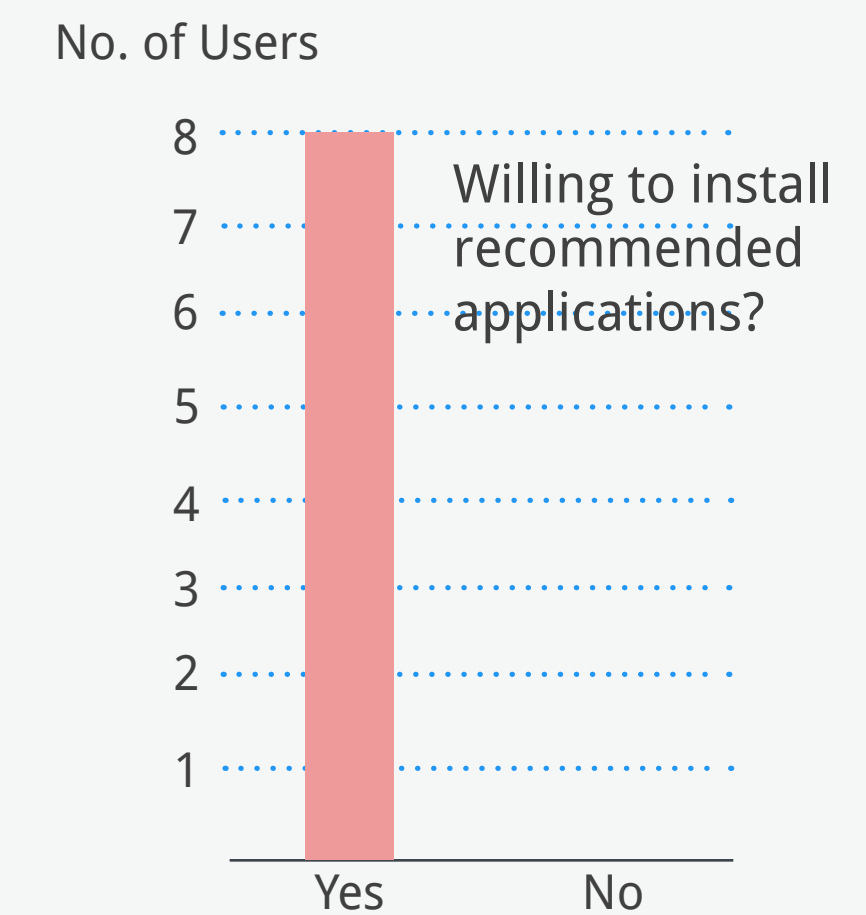


Task 3: To install recommended application

Results: 8 successful

Observations

- The word “शिफारस” was not completely visible in notification



Evaluation

Task 4: To check internet usage

Results: 5 partially successful
3 successful

Positive Feedback

- Internet usage can be shared with shopkeeper. Shopkeeper can directly recharge after expiry.

Observations

- Did not understand meaning of 81%
- Did not understand meaning of mega-byte

Task 5: To search a tutorial on the Hub

Results: 5 successful
2 partially successful
1 fail

Feedback

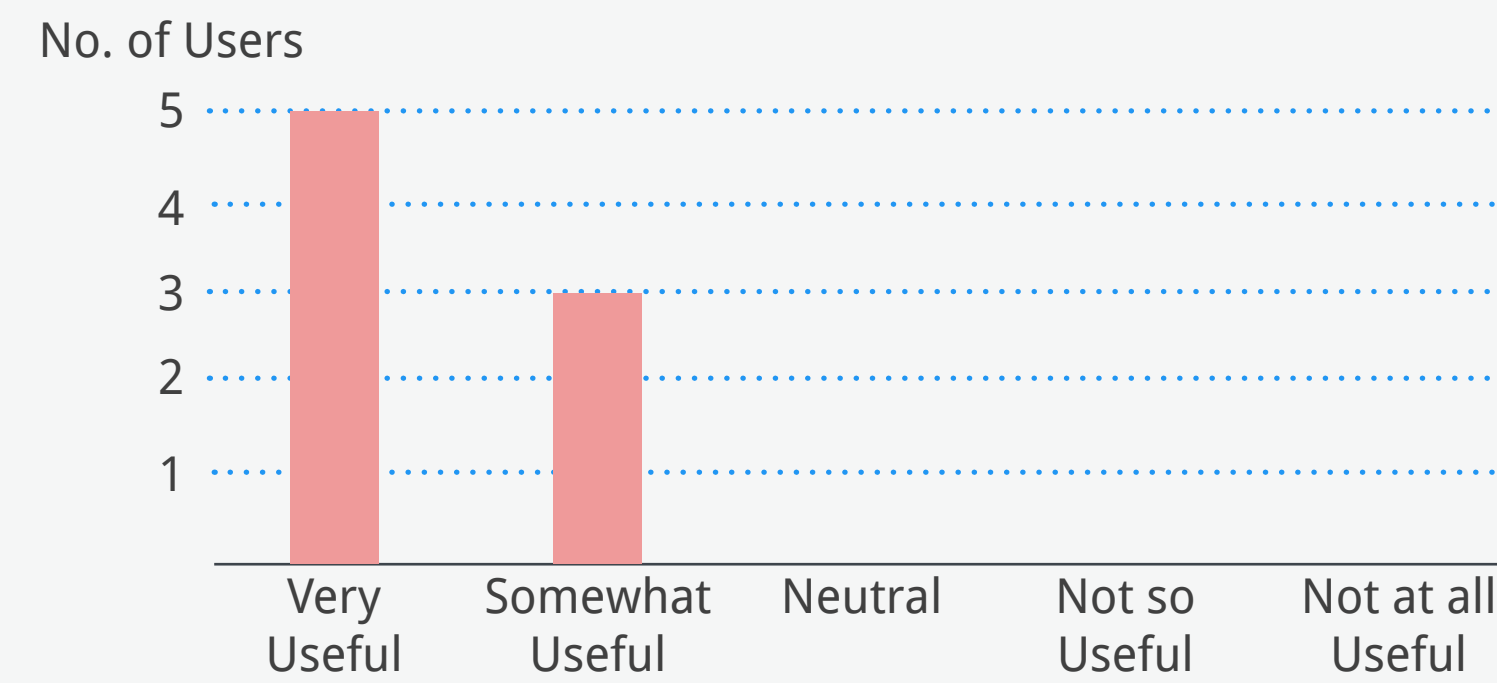
- Useful towards self-training
- One can search tutorials on independently
- No need to depend on anyone

Observations

- The difference between “शिकवणीची यादी” and “इंटरनेट वरील शिकवण्या” is not clear.
- Didn't figure out how to scroll tutorial due to horizontal scroll

Evaluation

Do you find तंत्रमित्र useful for learning smartphones?

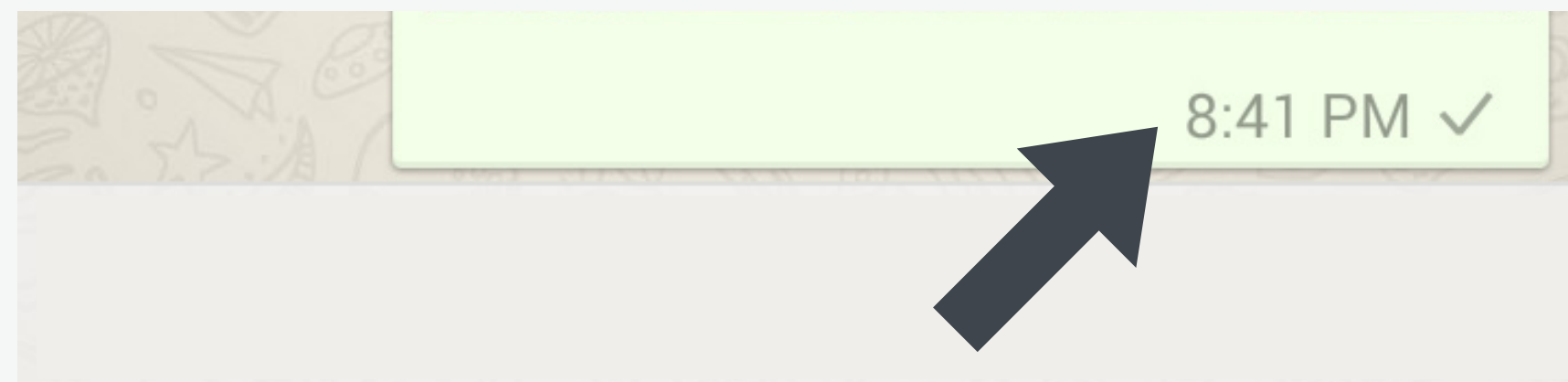


Future Scope

- Addition of elements to tutorials
 - Paths to gestures



- Arrows to point out feedback



- Design for multi-language support
- Implement Instructor's side
- Coming up with broad-level categories for tutorials
- Designing web-portal for application makers

| Learnings

Conceptual

- Introduced to the field of technology adoption
- Writing non-leading questionnaires
- Importance of different questionnaire scales

Technical

- Rapid prototyping tools and frameworks
 - PhoneGap, JustInMind, Invision and BootStrap

Design Process

- Understanding practical needs of different design methods
- Now more informed about the time and efforts different phases of project

Self

- Experience of taking responsibility a entire project alone
- Need to zoom out and look at your work through 3rd person perspective

Thank You !!!