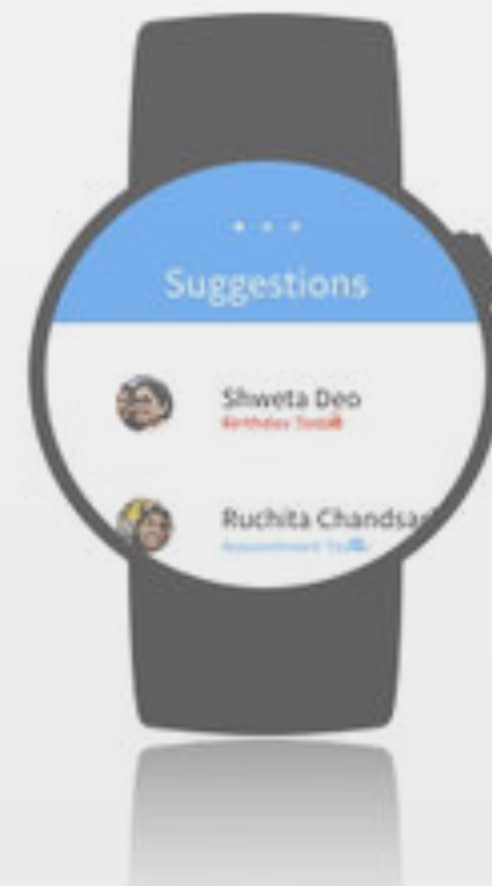
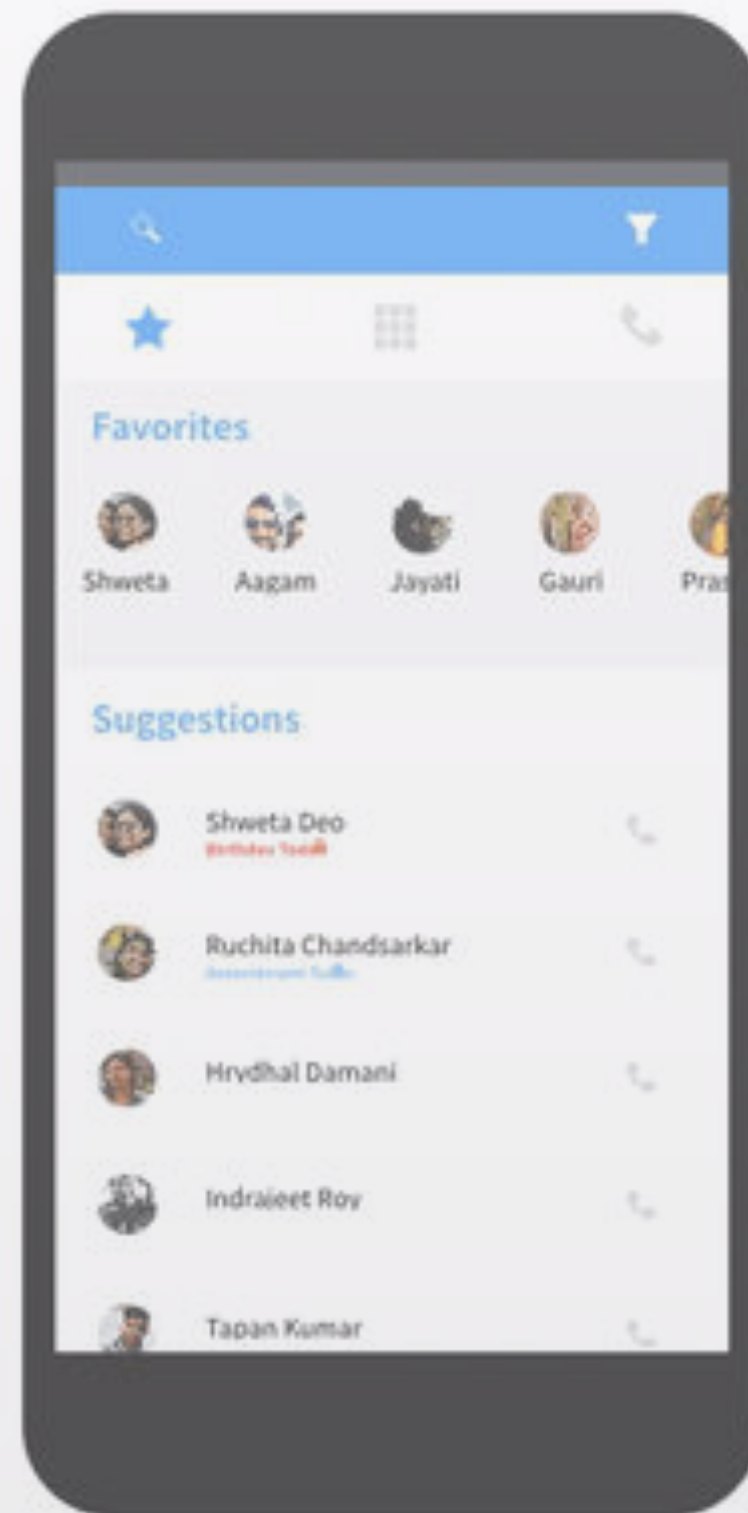


PhonBk

Design of a smarter context based Phonebook
visualization for mobile devices

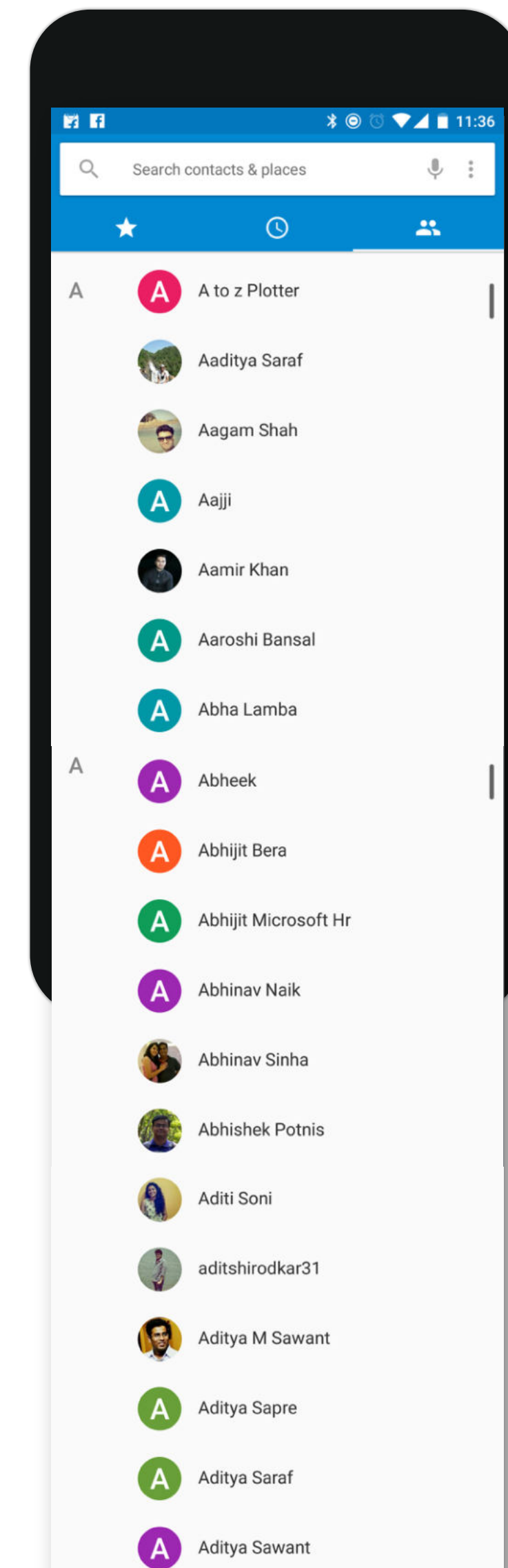


Akshay Kore
Interaction Design
M.Des (2014-16)
Guide: Prof. Anirudha Joshi

IDC IITB

> 1000 Contacts

Modern Phonebooks store more than Phone Numbers



Pareto Principle

80/20 Rule

46%

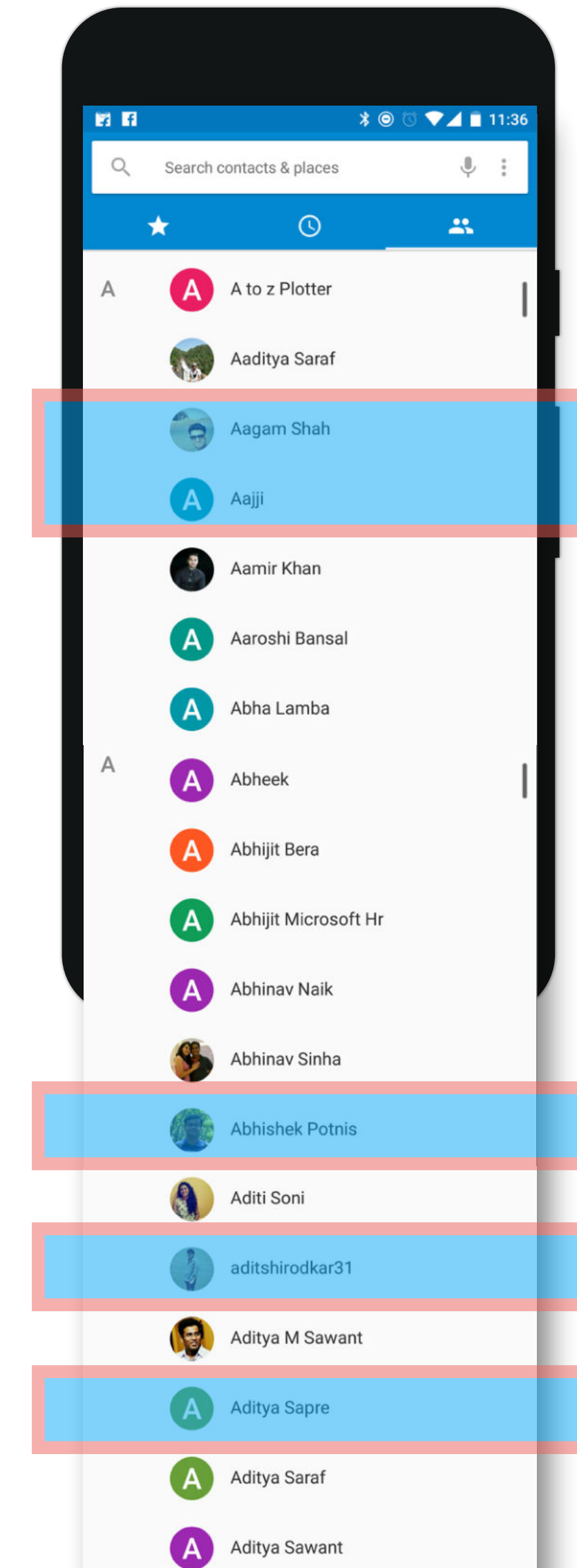
Contacts were
**not used in the
last 6 months**

19%

Contacts were
**used once
weekly**

Top 10

Only a handful of
contacts are
important at any
given time.
Ranging from
10-20.



Modern Phonebooks

Navigation and Search still based on:



Alphabetical Lists



Favorites

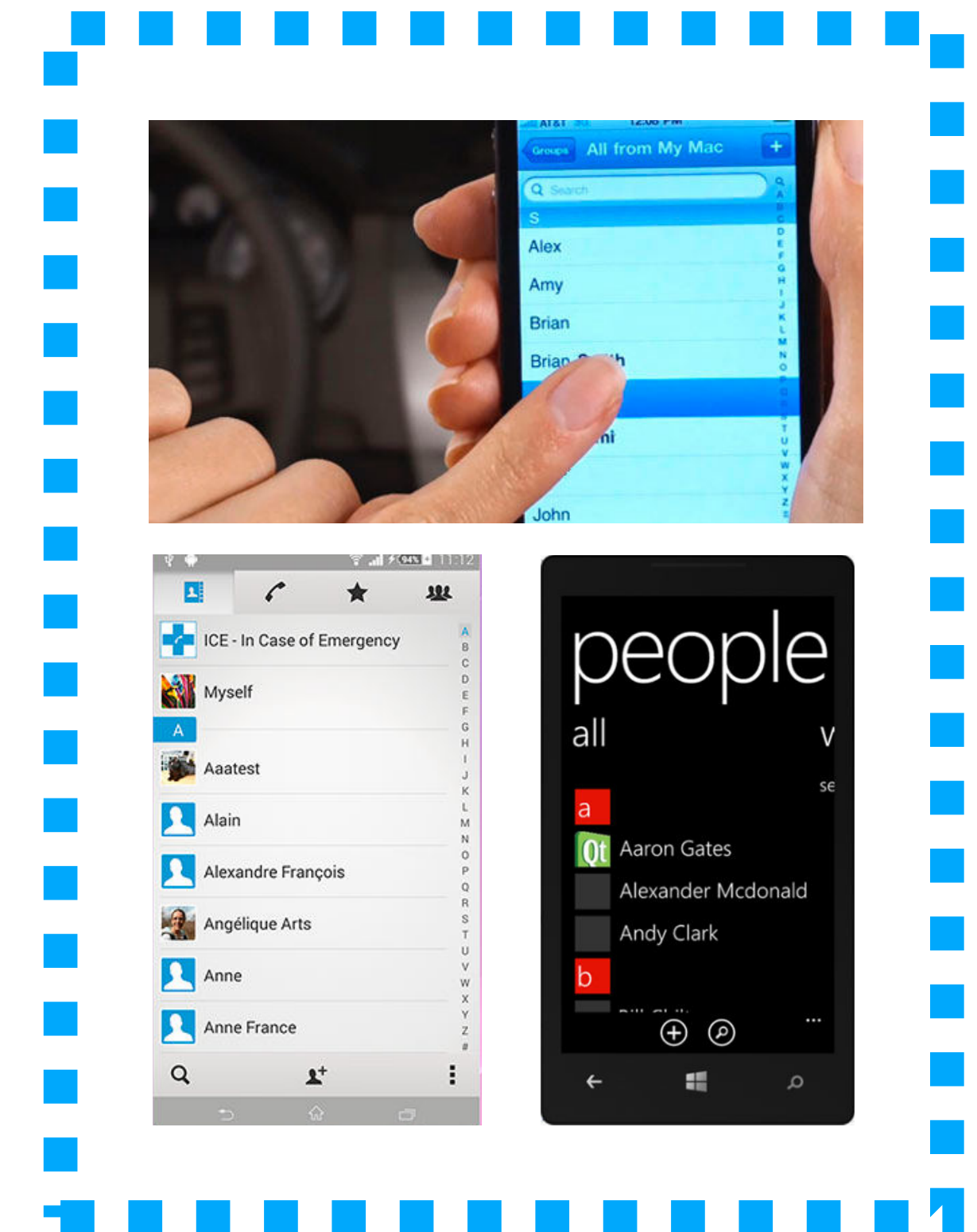
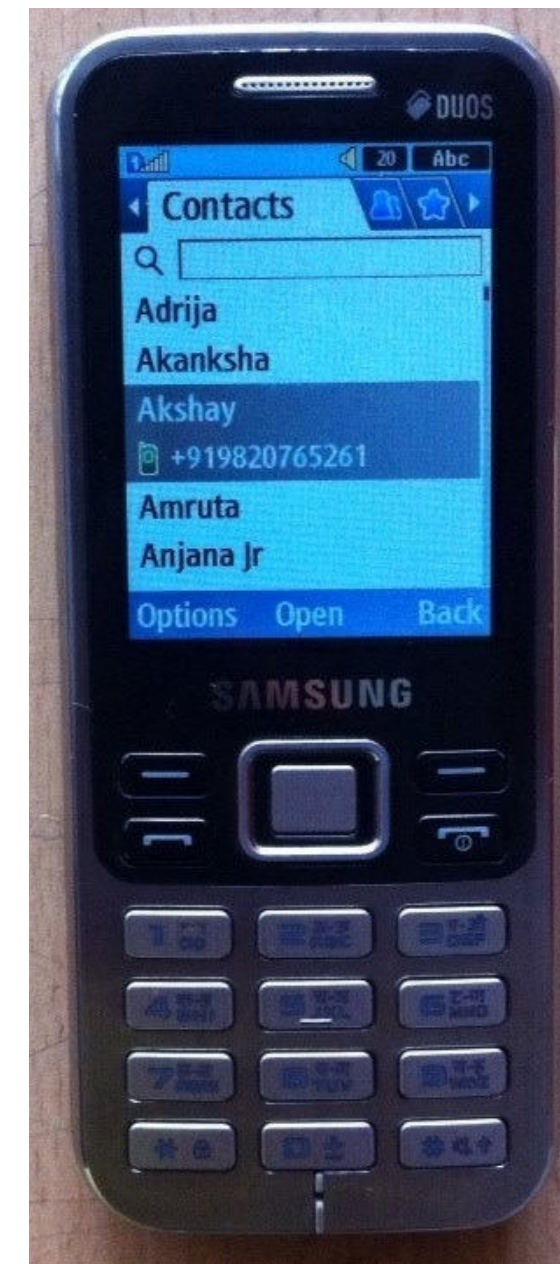


Call Logs



Text or Voice input based search

Frequency Based Suggestions in some cases



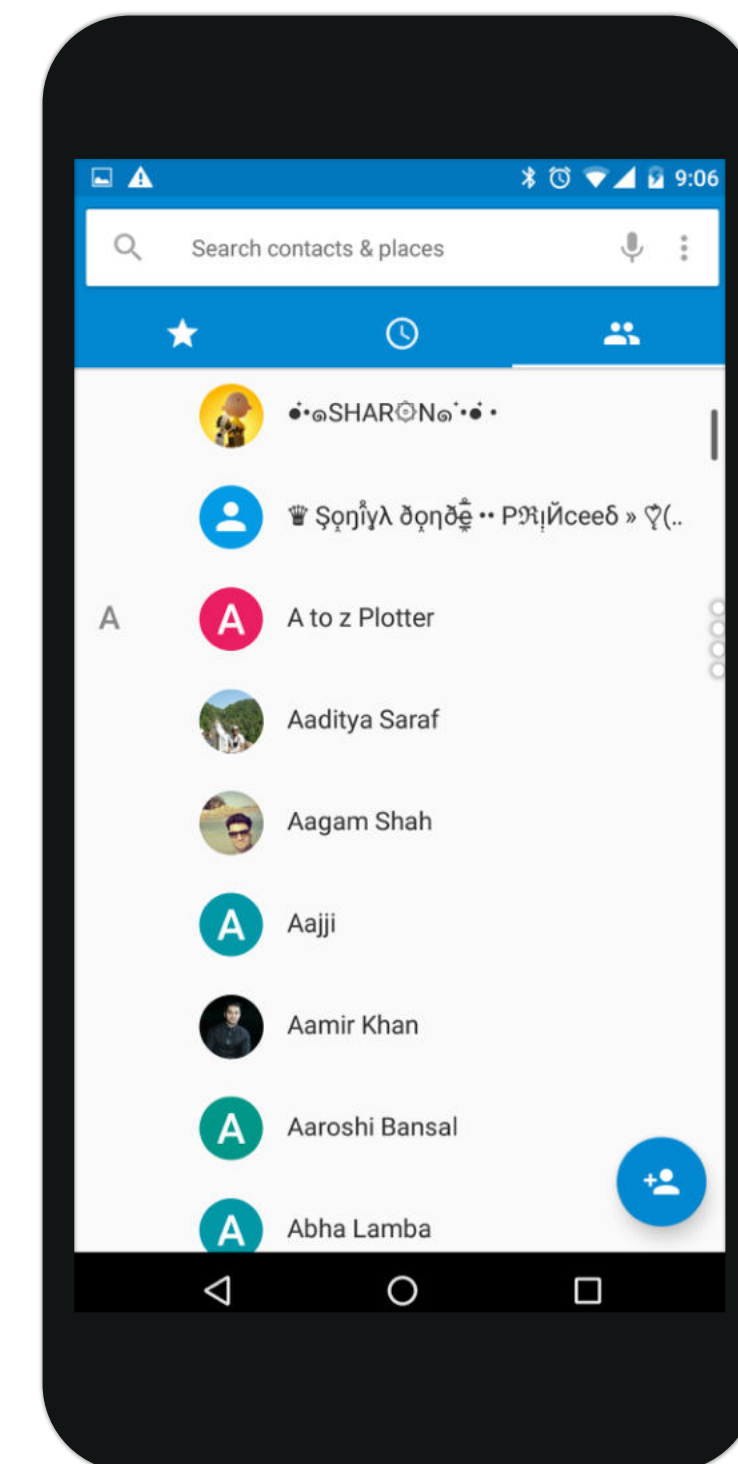
Smartphones and the Ubiquity of the Phonebook

Smartphones with good computing capabilities have become fairly ubiquitous.

Potential of getting and storing a lot more metadata about contacts. In many cases they already do.

Phonebook is a fairly ubiquitous application on all smartphones.

Re-Design of a phonebook is a Billion people problem

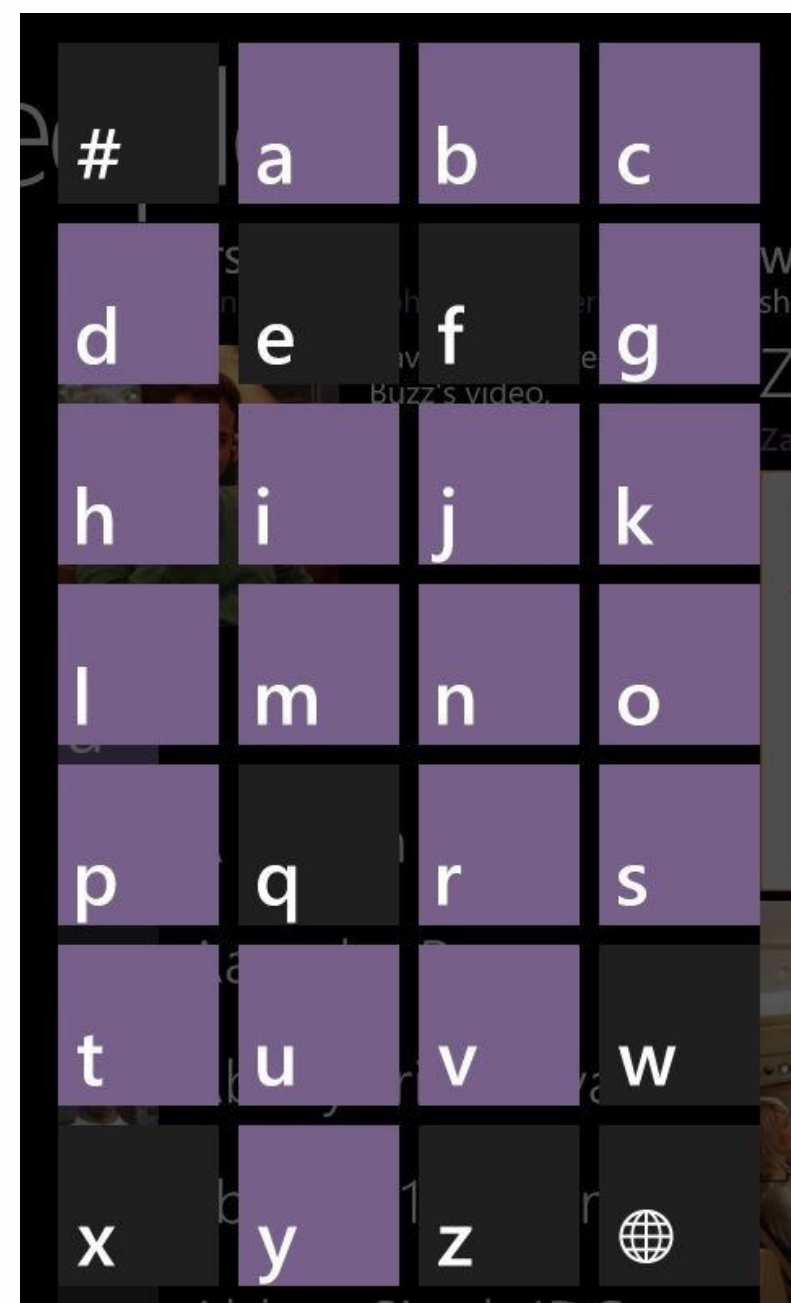


Case Studies (users > 1 lakh)

	Call Log, Alphabetical Lists, Favorites, Text Input Search	Call Frequency based suggestions	Auto groups formation	Other	Cons
Feature Phone (Tizen OS)	Yes				
IOS	Yes	Yes			
Android Lollipop	Yes	Yes			
Asus ZenPhone	Yes		Yes		Most auto created groups are empty
Windows Phone	Yes			Grid List, Social Book encourages exploration	
Samsung Phonebook	Yes				
True caller	Yes			Crowdsourced phone directory	
Drupe Caller	Yes	Yes		Quick access to multiple modes of communication, notification for special days	

Case Studies (users > 1 lakh)

Navigation

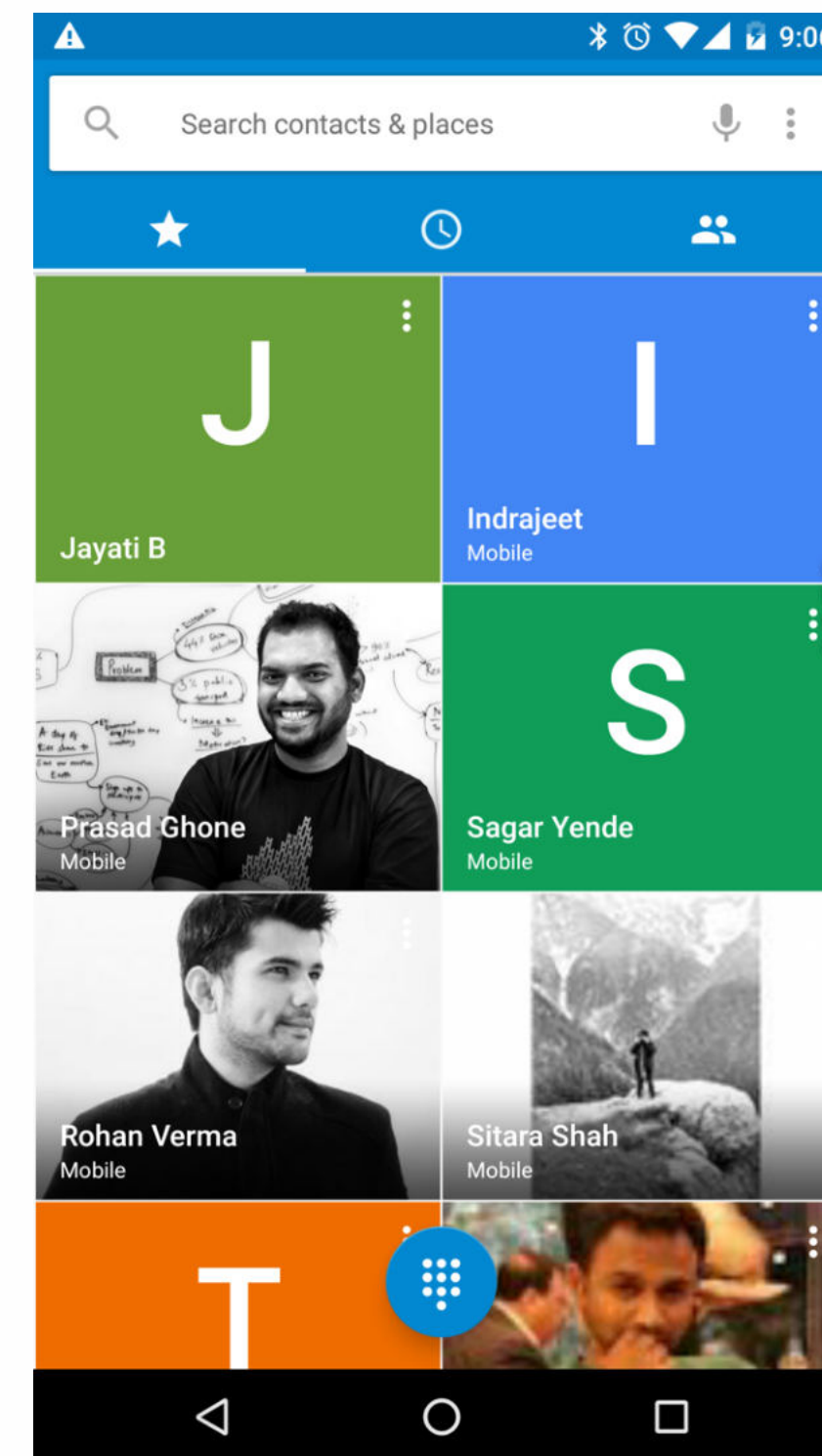


Windows Phone

Suggestion / Prediction

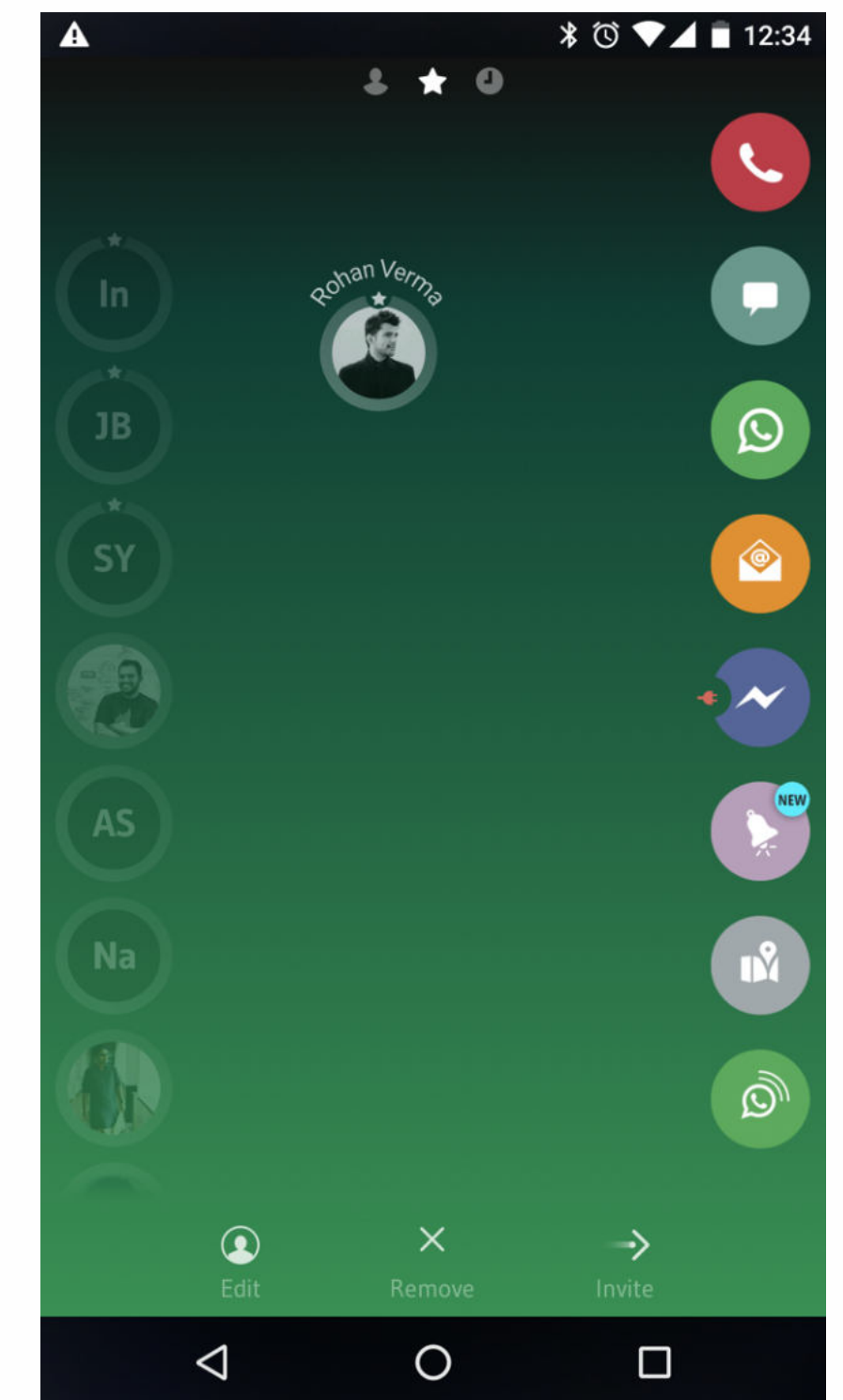


IOS



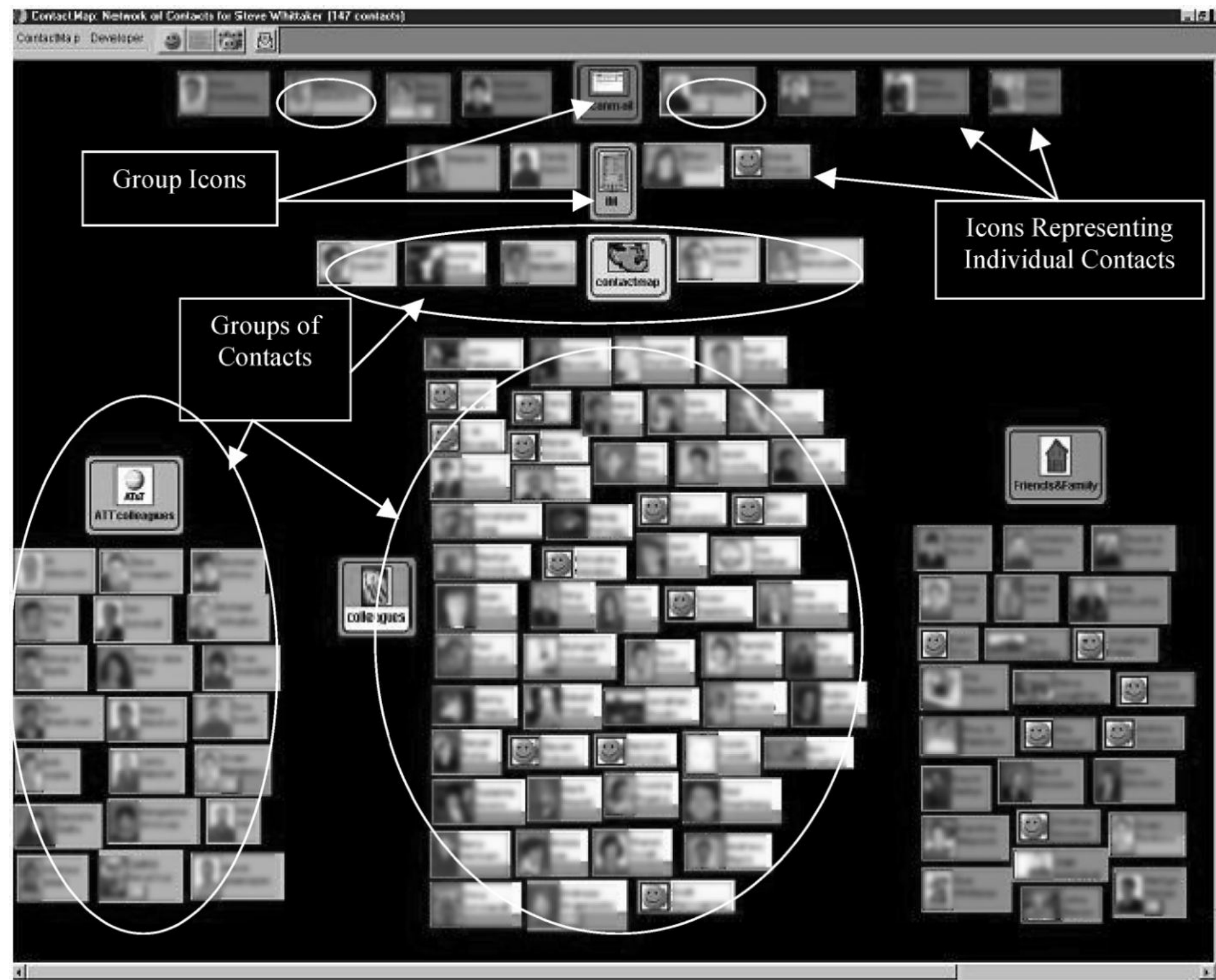
Android Contacts App

Selecting Communication Medium

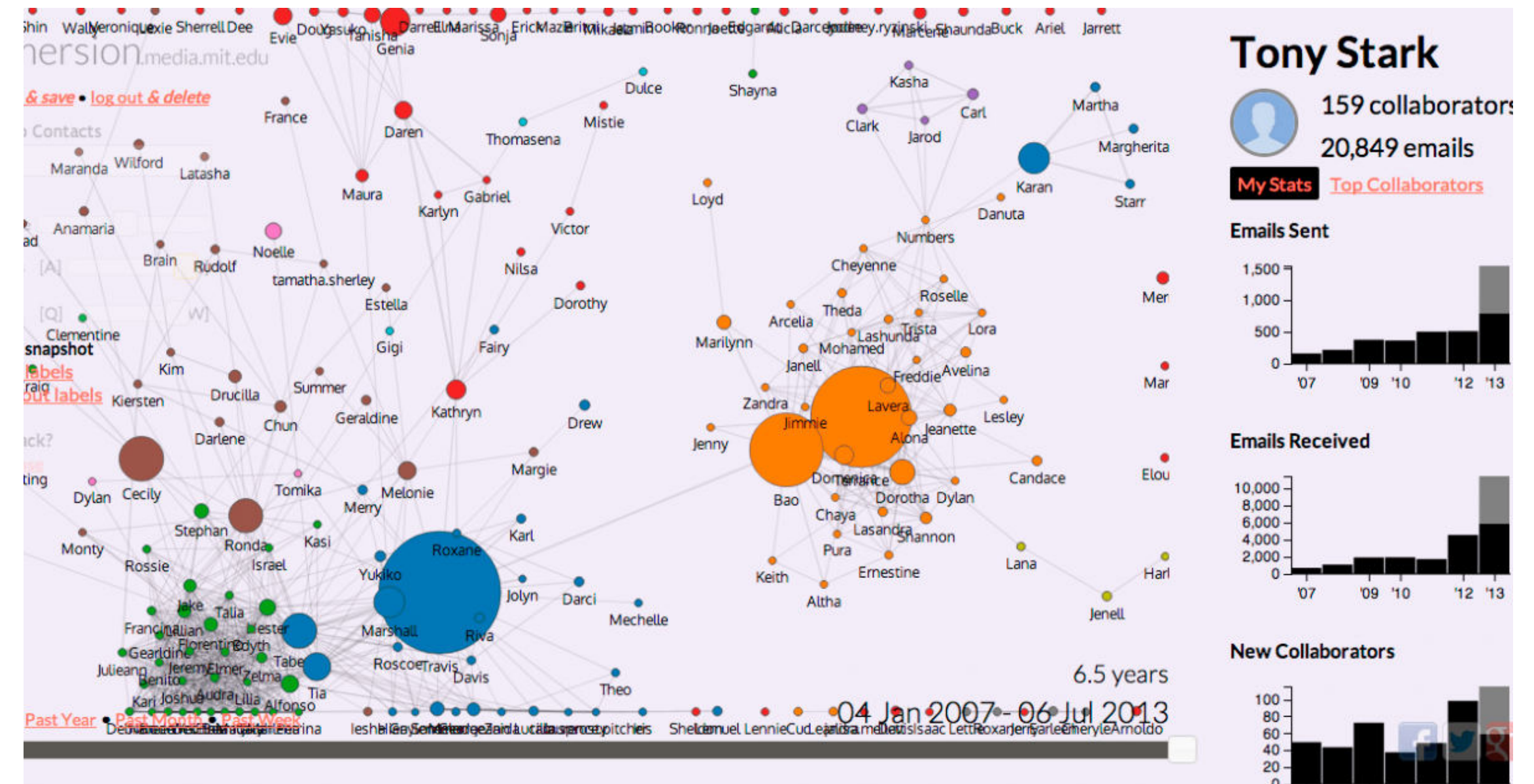


Drupe Phonebook

Case Studies (Other)



ContactMap



Immersion

Case Studies (Other)

The information of profile, current status (busy, available, using phone right now).

The application gives rise to a number of security and privacy concerns.

The amount of data presented for a contact does not justify it's utility.



Contact List



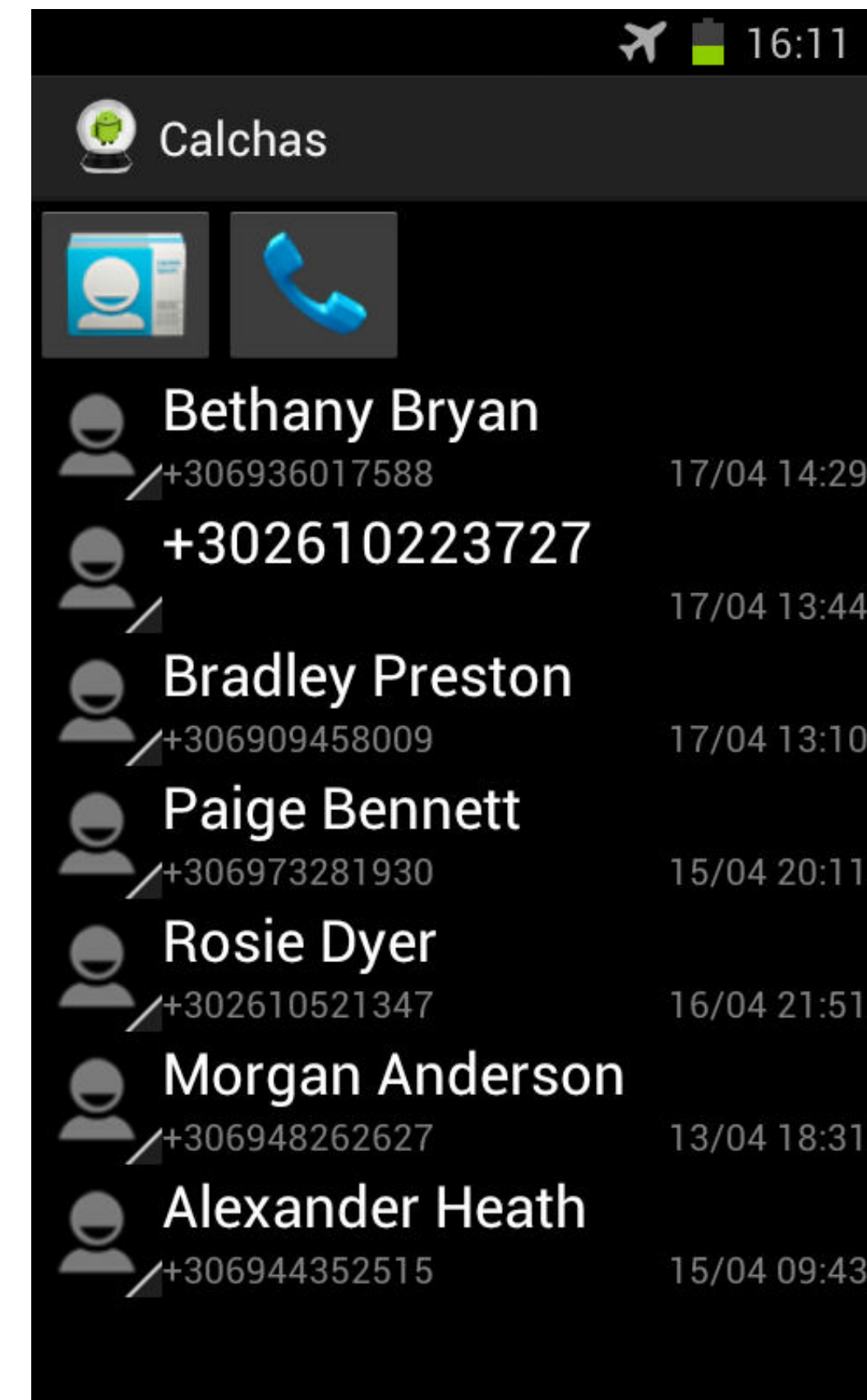
Contact Detailed View

ContextContacts

Case Studies (Other)

Calchas is a mobile contact retrieval interface which attempts to contextually predict contacts which the user is likely to access.

It was found that presentation of order of contacts (random, alphabetically arranged or chronological) does not play a significant role in the usability of the predicted list.



Calchas

User Studies

Insights

- Favorites are rarely used.
‘!mummy’, ‘!prasad’
- Contact Storage Patterns were found. The same contact was stored by different people differently.

Anirudha Joshi

Prof. Anirudha Joshi

Anirudha **IDC Prof**

Anirudha **IITB Prof**

“Boss” => Father / Wife

Students	5
Teacher	1
Working Professionals	2
Office Support Staff	2
Company Driver	1
Total	11

Redefined Brief

Enable search of important contacts at the moment.

Enable quick access to important contacts by means of design interventions in :

- Navigation
- Visualization

Encourage Exploration of Contacts

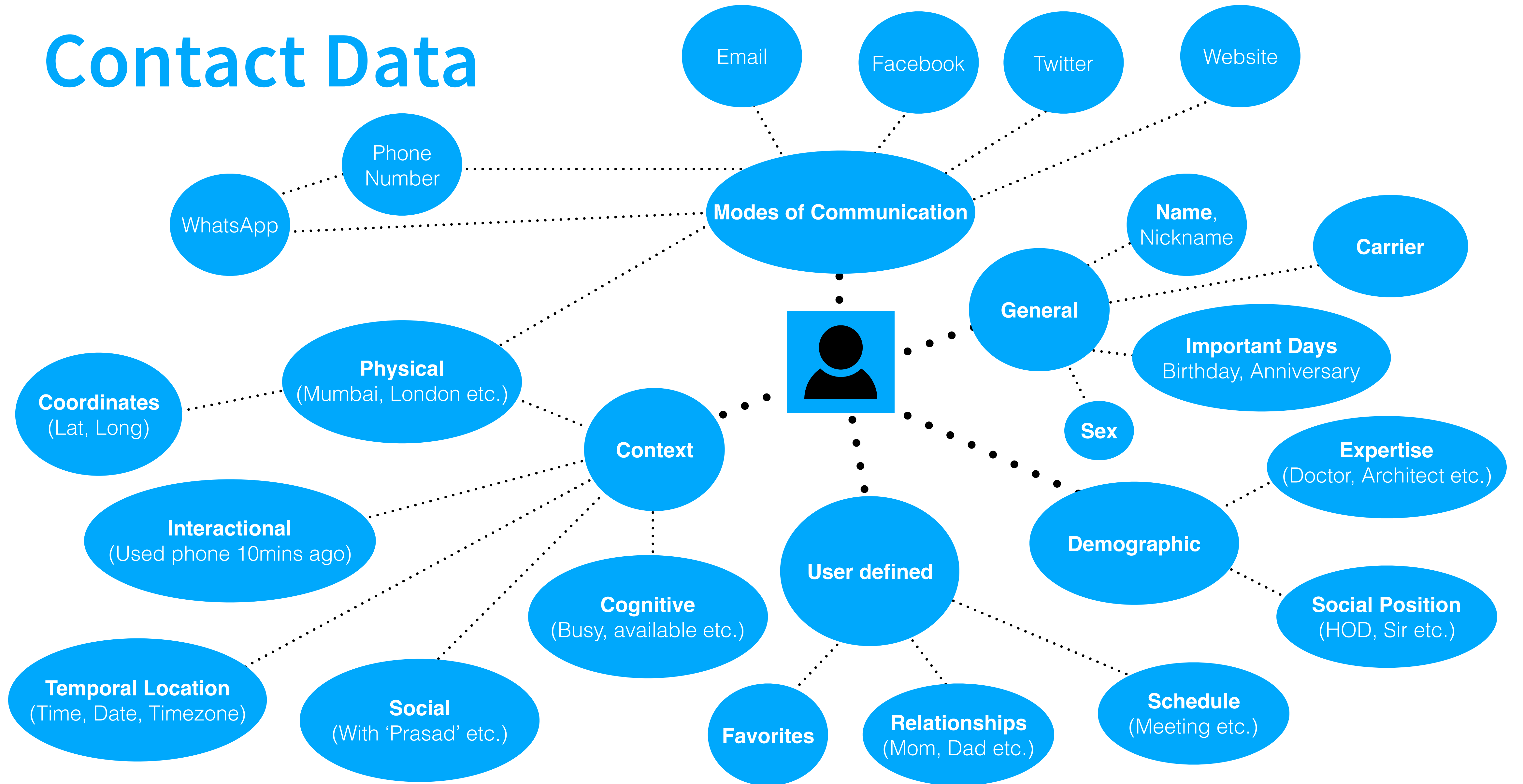
Suggesting Contacts

A list of contact suggestions can be shown by assigning an importance value to each contact.

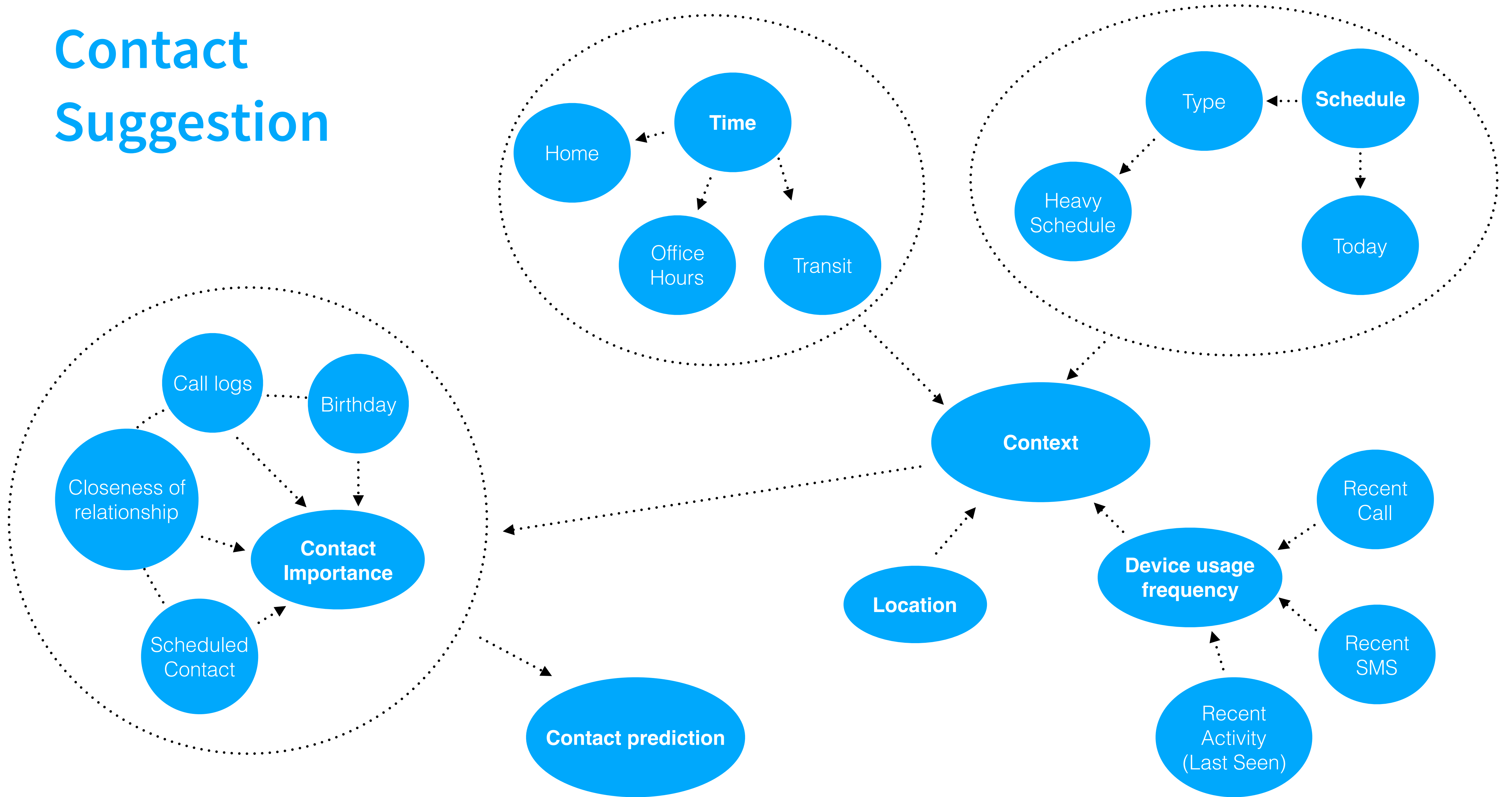
Parameters for Importance Value :

- Contact Data
- User Context (Time, Date, Day, Location, etc.)
- User Interactions

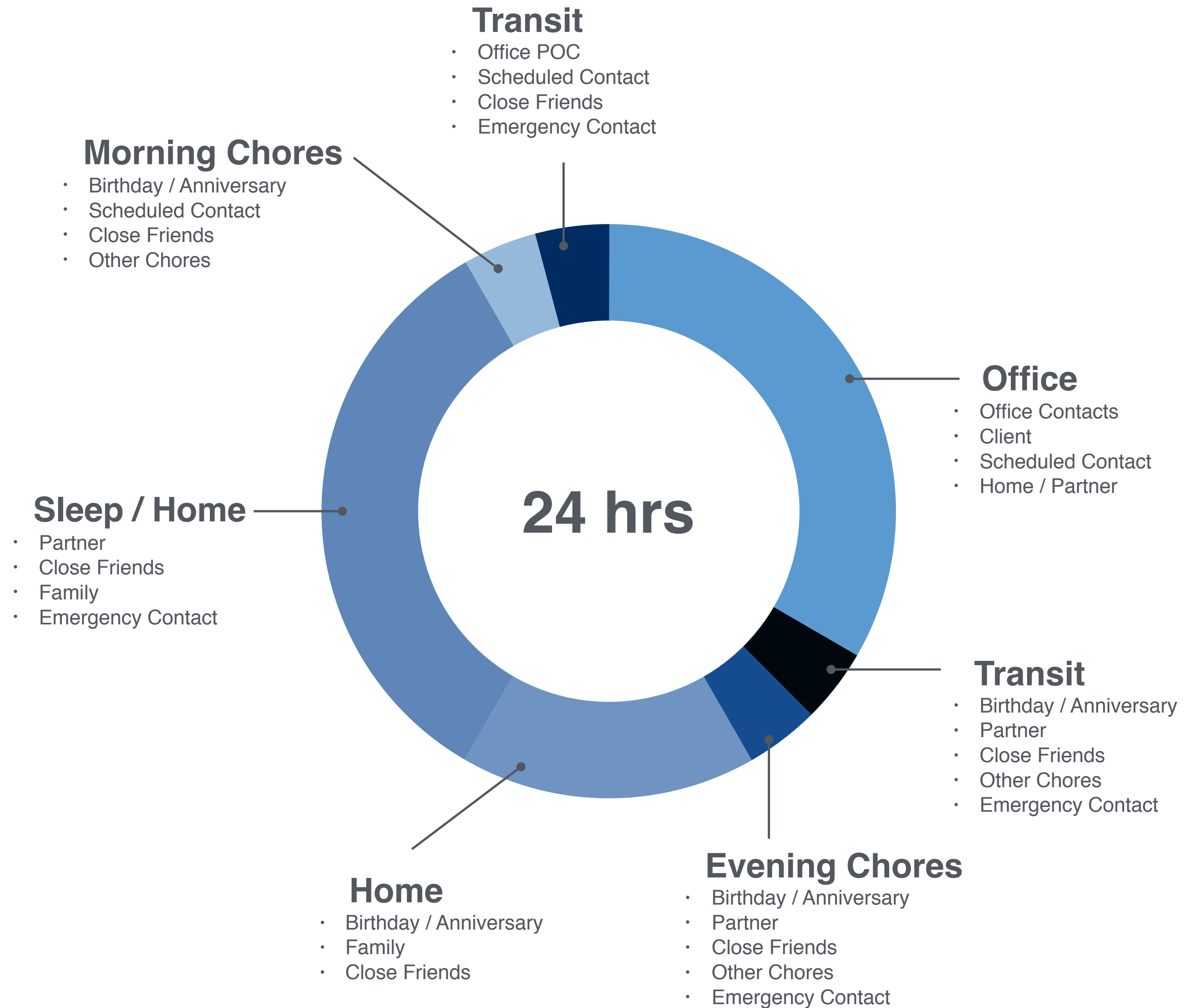
Contact Data



Contact Suggestion



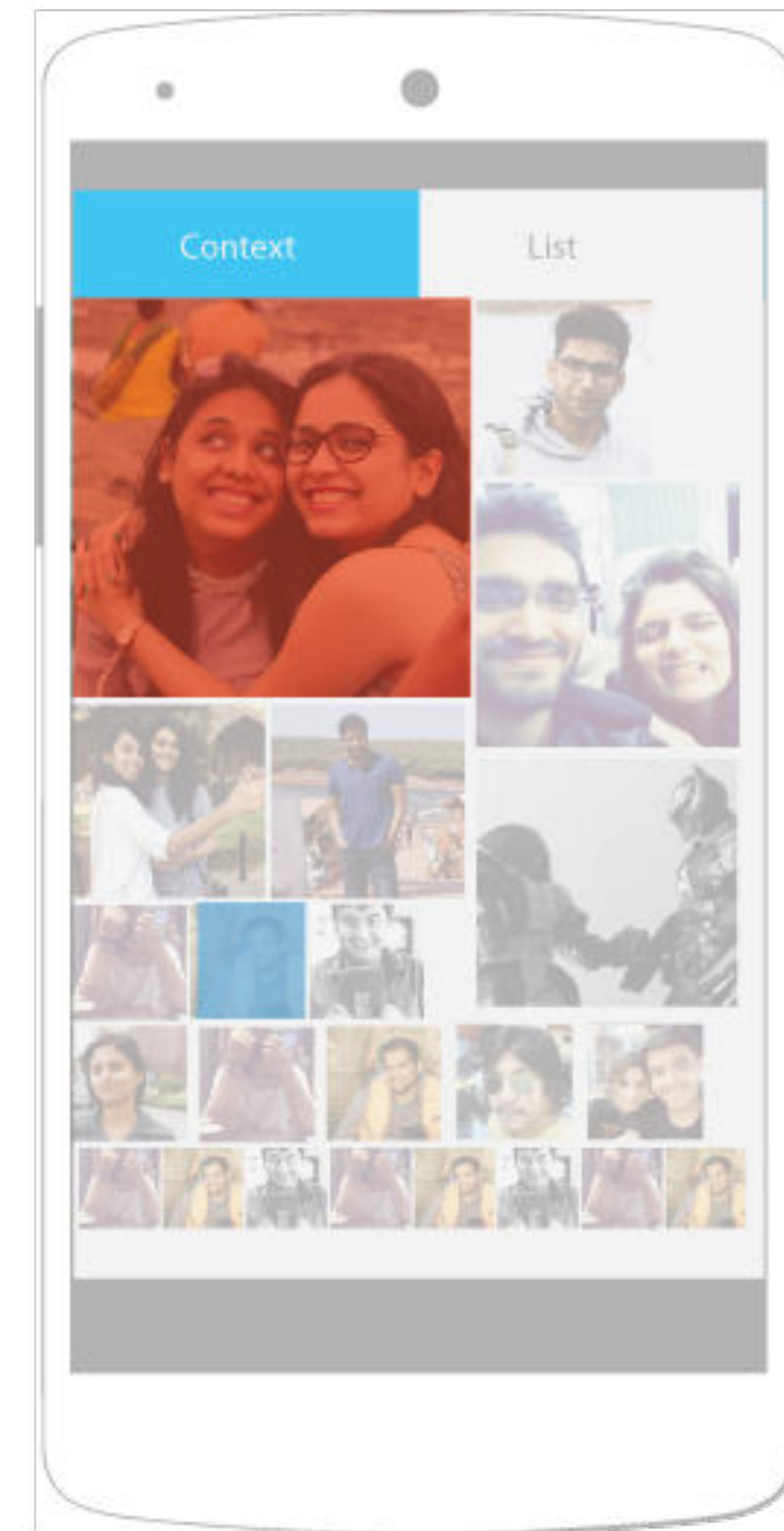
User Interactions



Preliminary Ideas

Contact Explorer

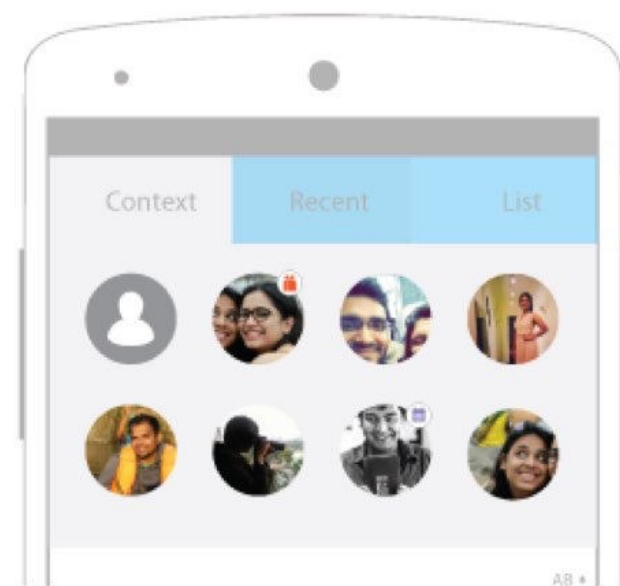
- Treetop view of all contacts based on the contacts' contextual information
- Color Codes to indicate reasons for suggestion



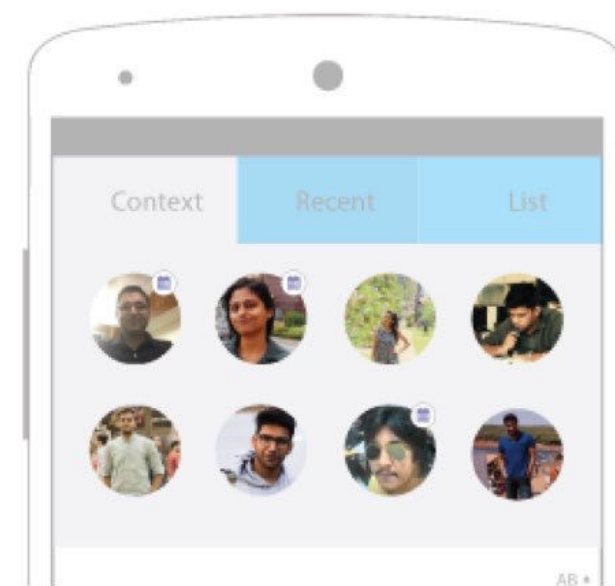
Preliminary Ideas

Contextual Widget

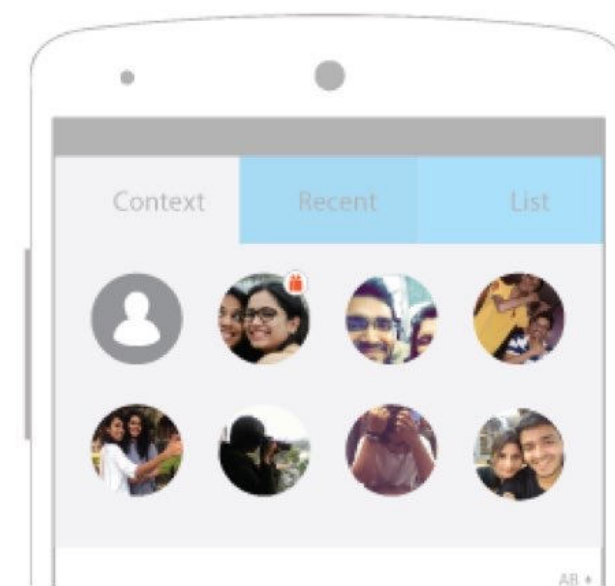
- A widget in the existing phonebook.
- Tags to indicate reasons for the suggestion of a contact
- The contents of the widget keep changing during the day depending on the user's context, past interactions and contact data.



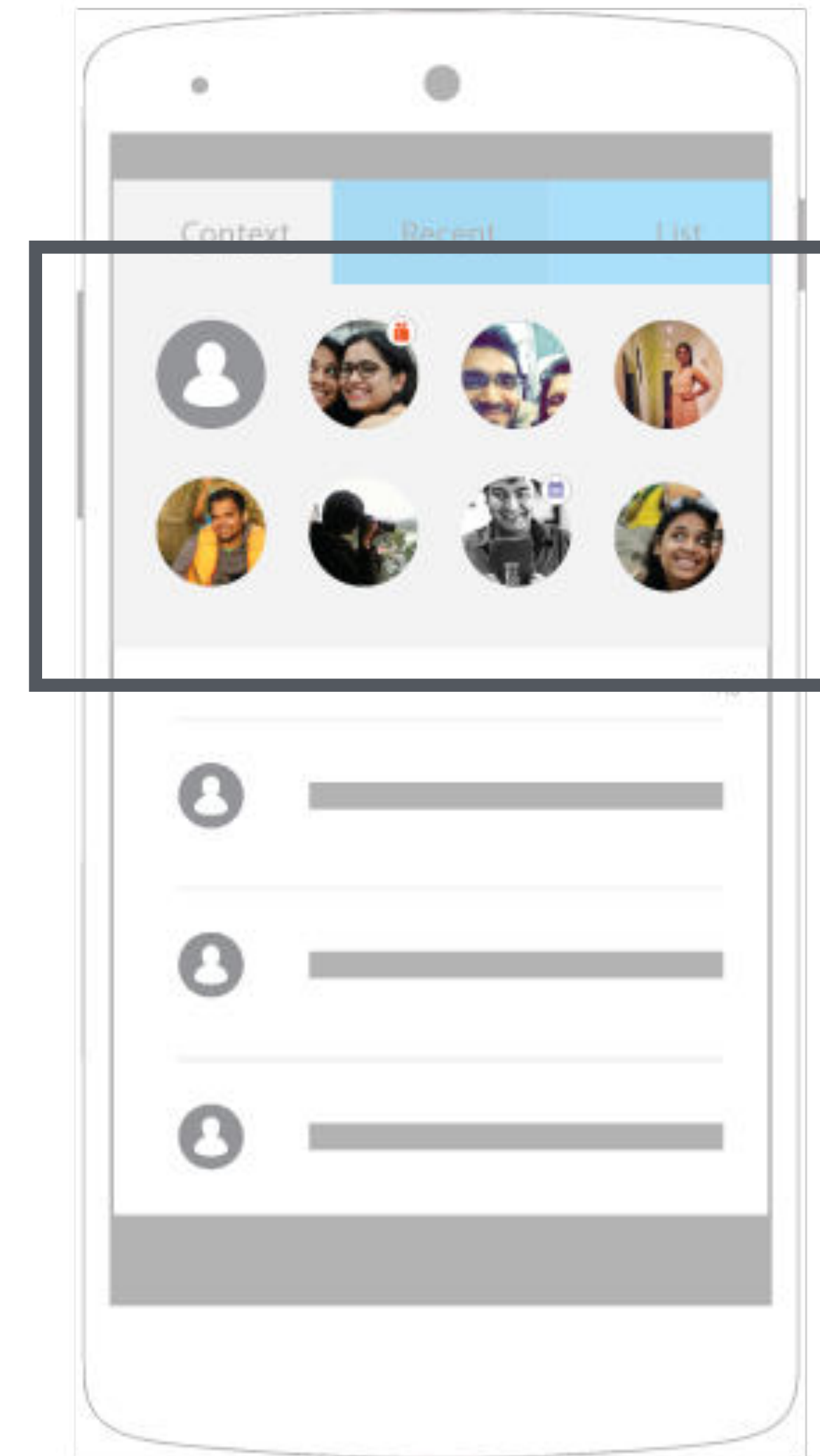
Morning / Home



Afternoon / Office



Evening / Home



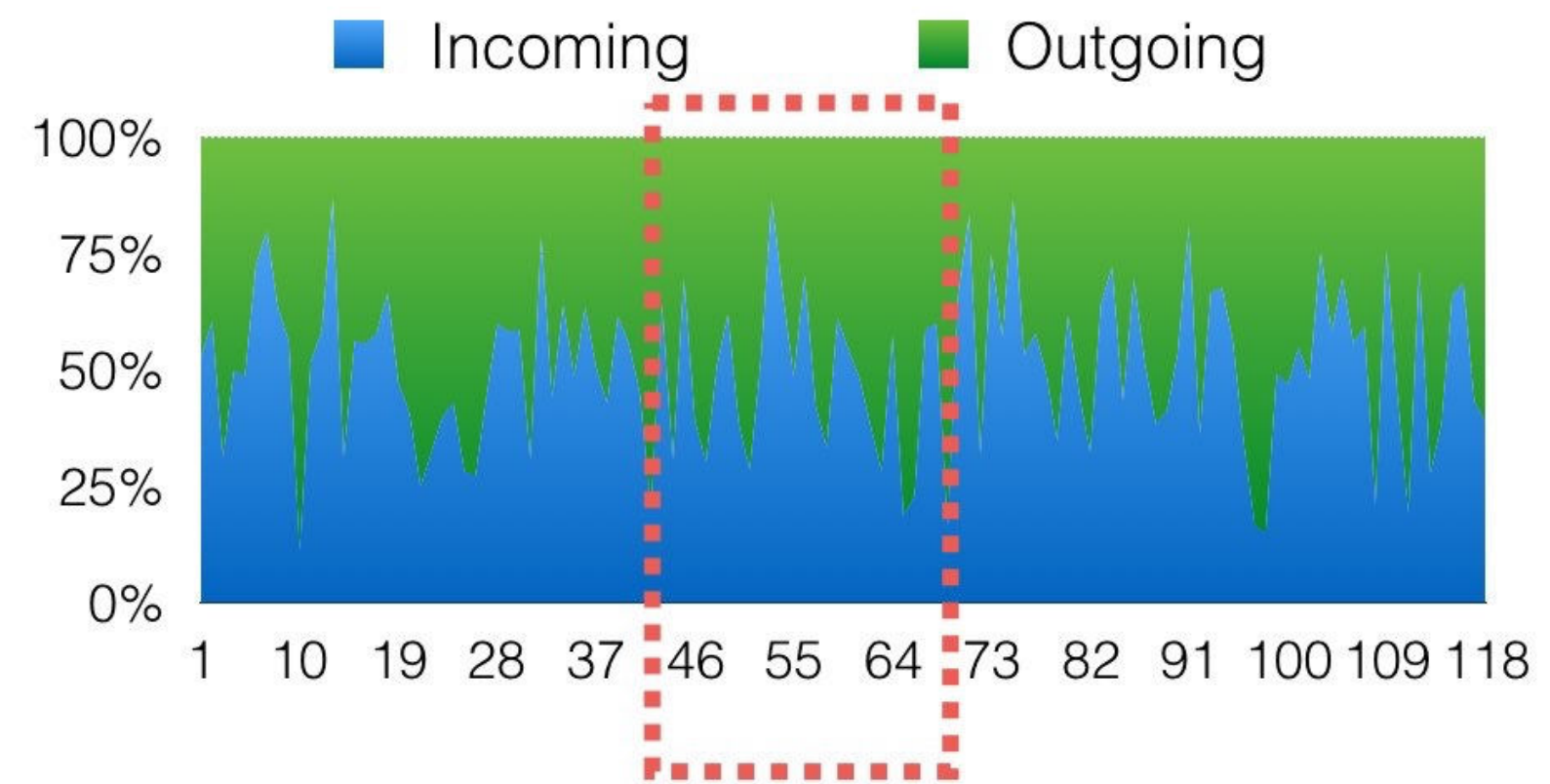
Preliminary Ideas - Heuristic Evaluation Insights

- Need to use realistic data
- Navigation of contacts through call logs
- Text input based search is highly redundant
- Smaller screen real estate use cases for contact suggestion
- Relationship exploration

Using Realistic Data

Name	Call Type	Date	Start Time	End Time
Indrajeet	incoming call with	2016-01-18	01:48:23	00:00:30
Prasad Ghone	incoming call with	2016-01-17	21:45:16	00:00:27
Prasad Ghone	outgoing call with	2016-01-17	21:23:03	00:01:26
Aaji	outgoing call with	2016-01-17	21:22:55	00:00:00
Gargi Karve New	incoming call with	2016-01-17	20:48:40	00:00:07
Gargi Karve New	incoming call with	2016-01-17	20:23:42	00:00:01
Gargi Karve New	outgoing call with	2016-01-17	19:18:05	00:00:00
Gargi Karve New	incoming call with	2016-01-17	18:34:15	00:00:03
Gargi Karve New	outgoing call with	2016-01-17	18:29:51	00:00:00
Pooja Raut	incoming call with	2016-01-17	17:34:40	00:00:12
Pooja Raut	incoming call with	2016-01-17	17:29:01	00:02:43
Pooja Raut	incoming call with	2016-01-17	17:20:40	00:00:49
Gargi Karve New	outgoing call with	2016-01-17	16:29:56	00:01:01
Mummy	outgoing call with	2016-01-17	14:40:49	00:00:00
Mummy	outgoing call with	2016-01-17	14:40:28	00:00:00
Gargi Karve New	outgoing call with	2016-01-17	13:52:33	00:00:28
Ruchita Chandsarkar	outgoing call with	2016-01-17	13:52:25	00:00:00
Ruchita Chandsarkar	incoming call with	2016-01-17	13:49:12	00:00:25
Gargi Karve New	incoming call with	2016-01-17	13:47:37	00:00:18
Adit Shirodkar	outgoing call with	2016-01-17	13:40:34	00:01:03
Gargi Karve New	outgoing call with	2016-01-17	13:39:39	00:00:00
Gargi Karve New	incoming call with	2016-01-17	13:32:55	00:00:41
Ruchita Chandsarkar	incoming call with	2016-01-17	13:06:15	00:00:28

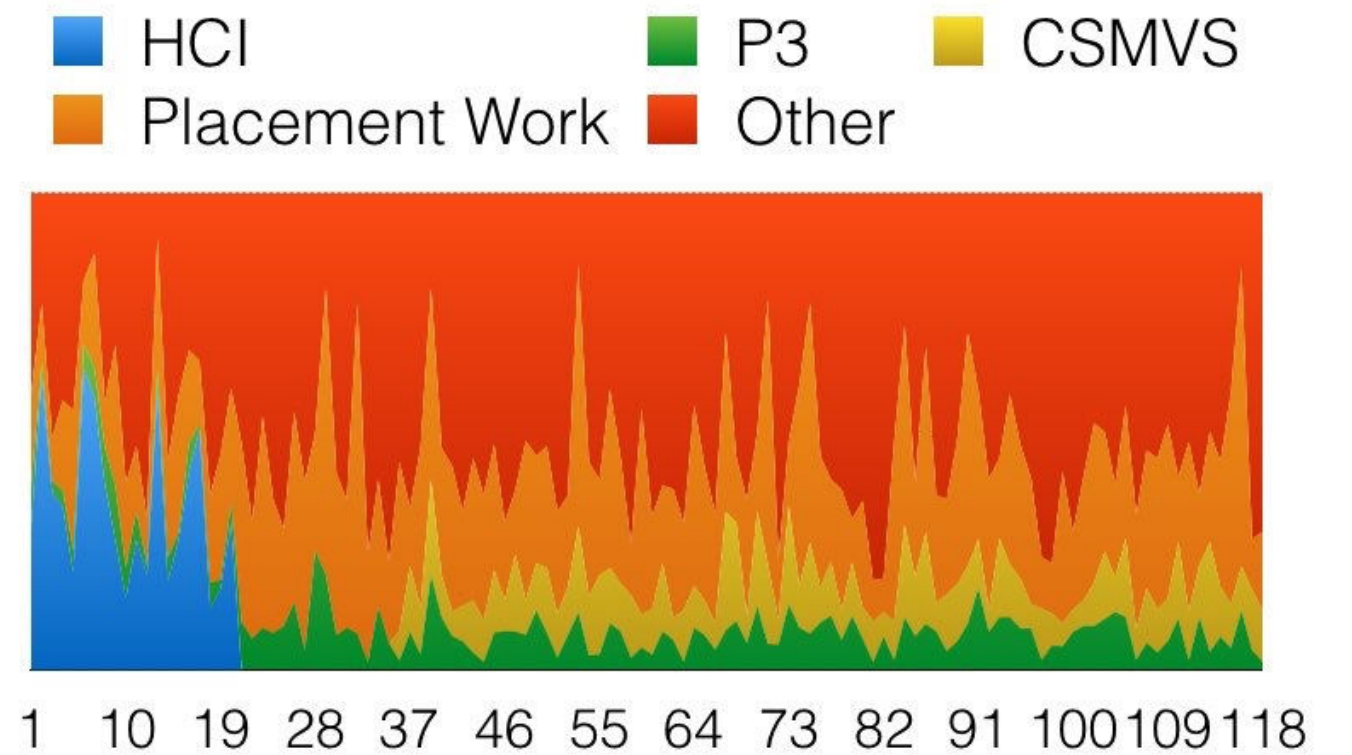
Contact Histogram - Incoming vs Outgoing



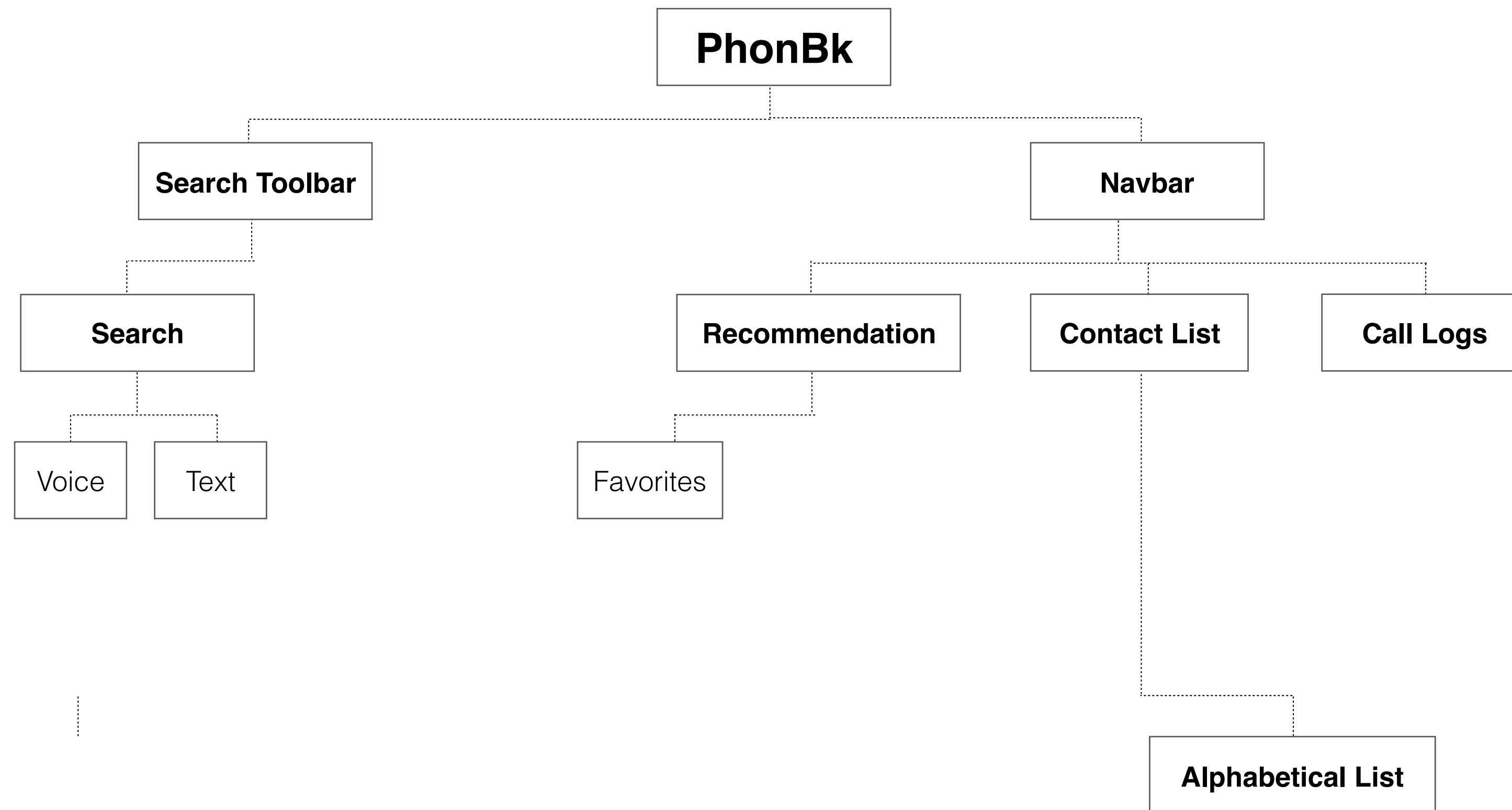
Contact List:

AJ Sir	01/02/16	11:00
Prasad Ghone	01/02/16	11:00
Indrajeet Roy	01/02/16	11:00
Atul Shukla	01/02/16	11:00
Jayati	01/02/16	11:00

Groups

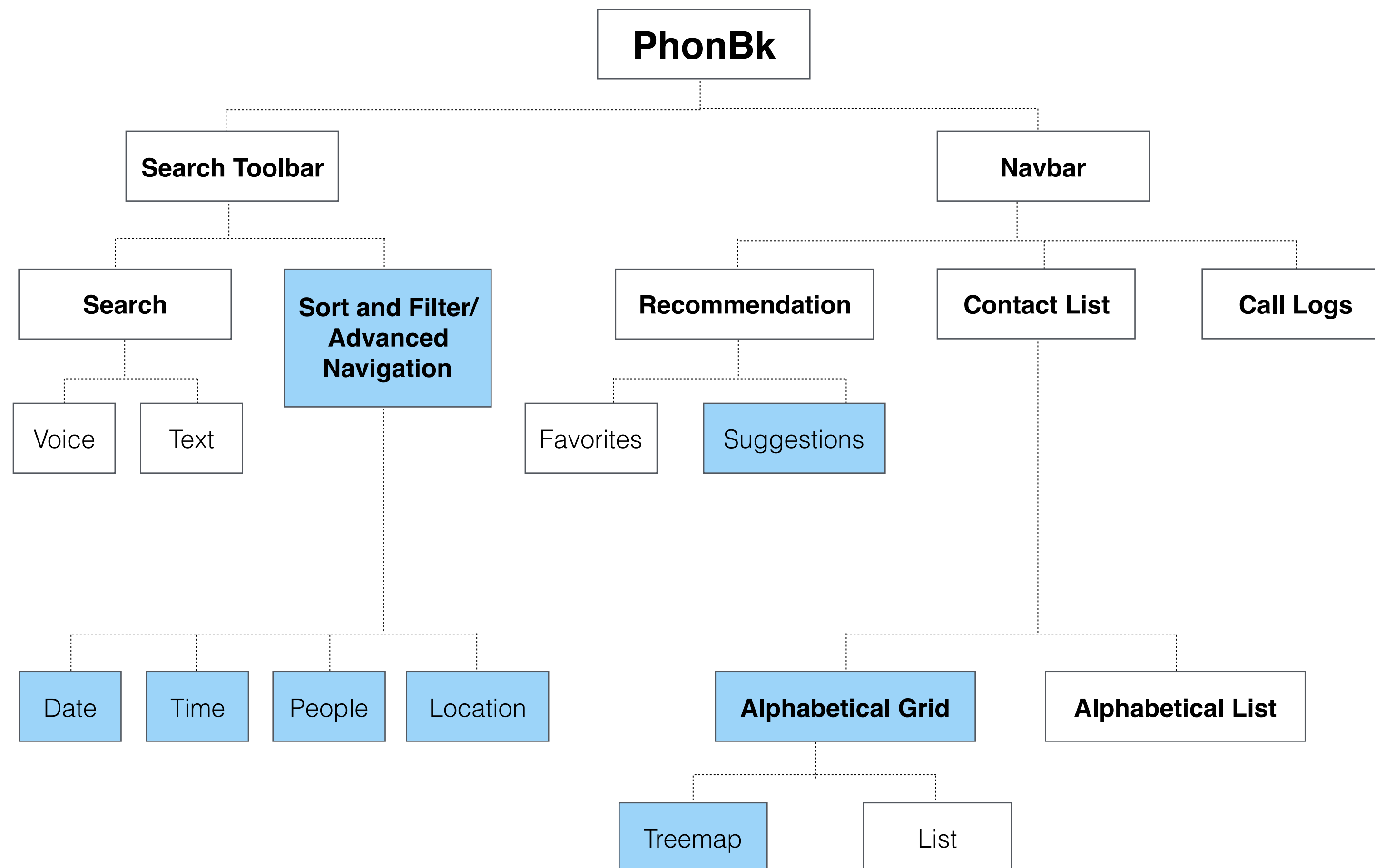


Information Architecture



Most common phonebook applications (Schematic)

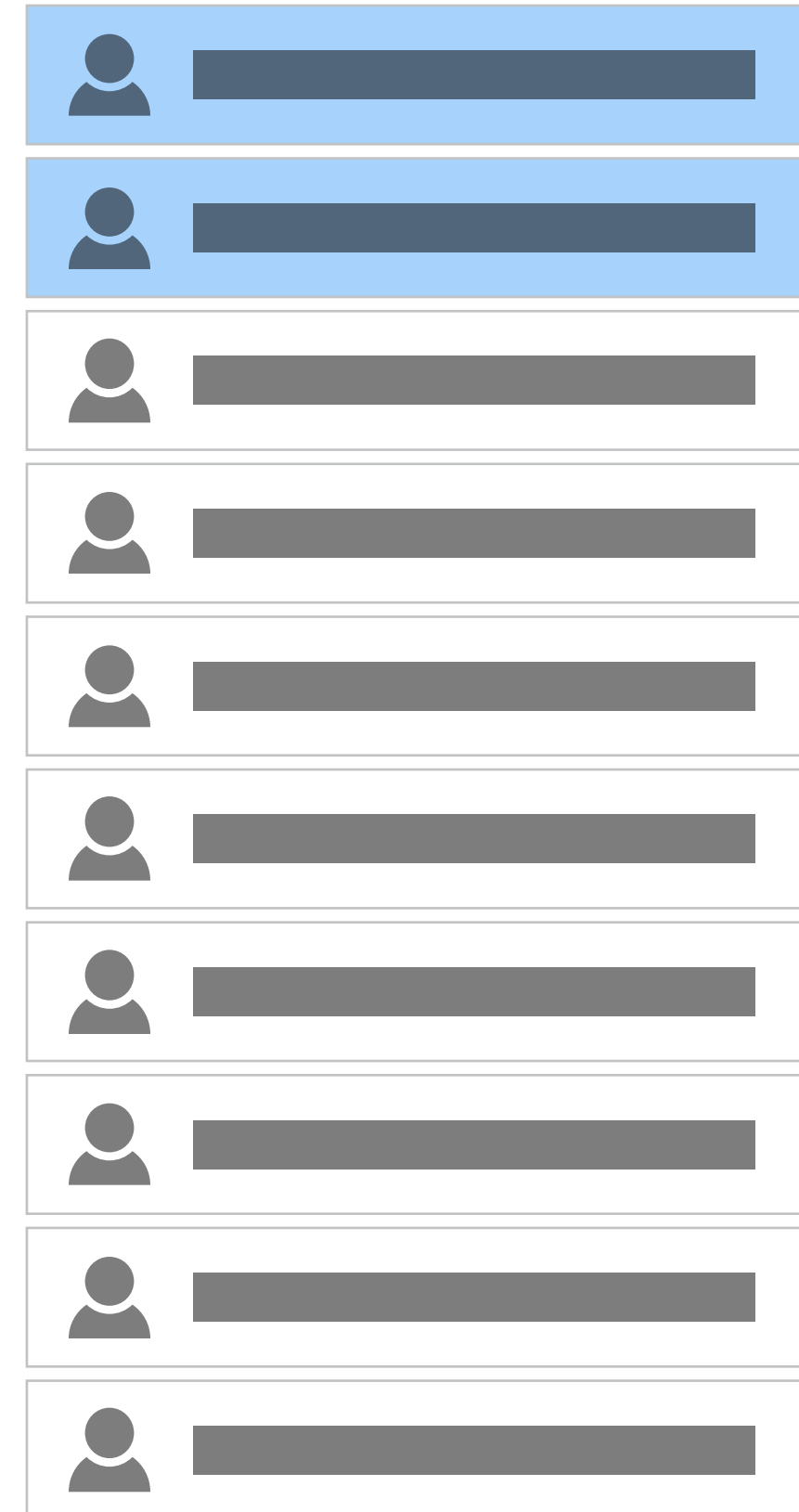
Information Architecture



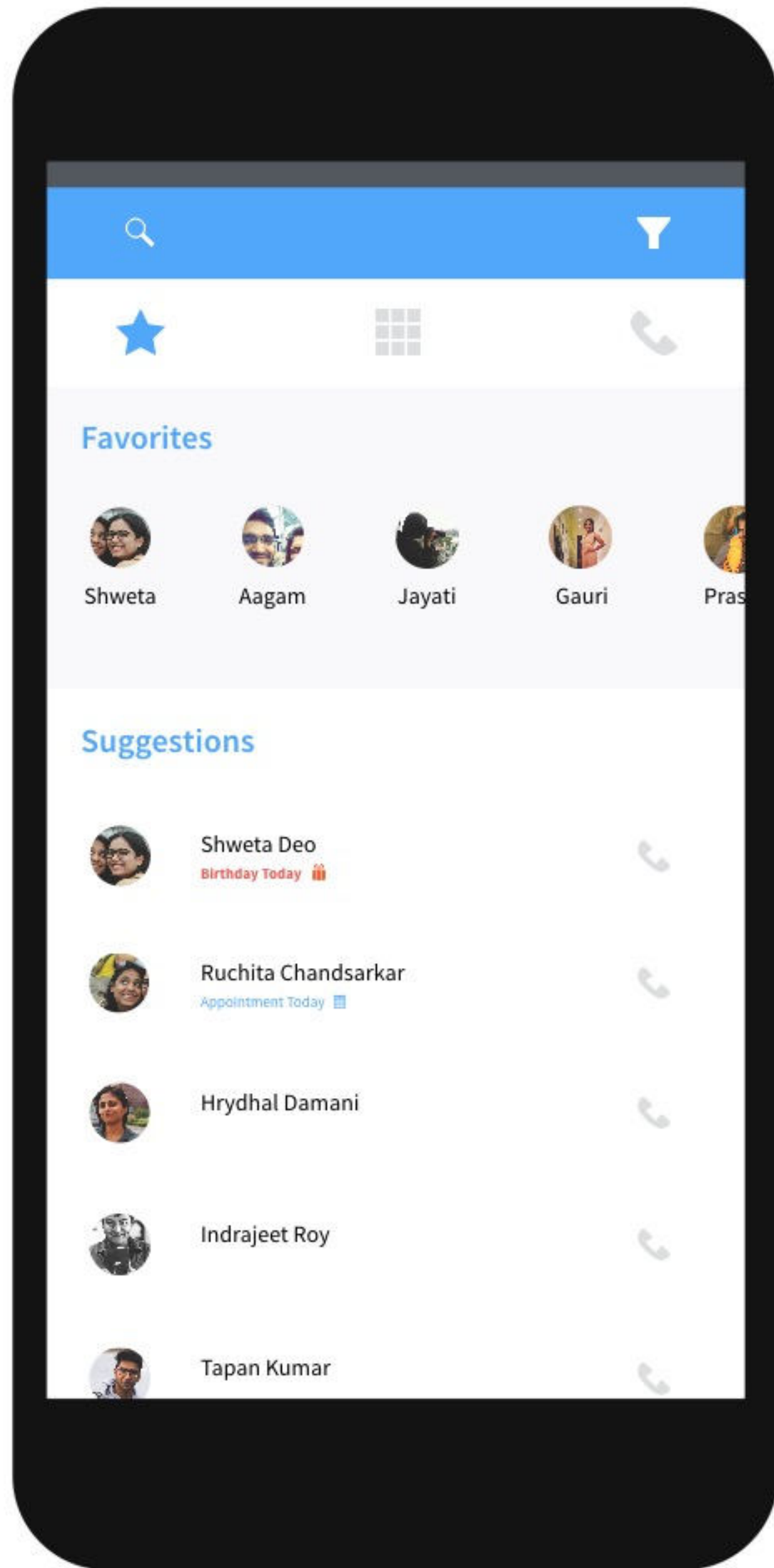
Design Intervention

Suggestion of Contacts

The Smartphone's computing power can be leveraged to derive a list of contacts suggested based on the user's calling patterns, duration of calls, time of the day, date and number of interactions through different communication mediums.



Video



Search +
Sort and Filter

Navbar

Favorites

Suggestions

Search based on past experience

Searching for a saved contact through a call log has a 73% success rate, however doing so with a search functionality has a 94% success rate.

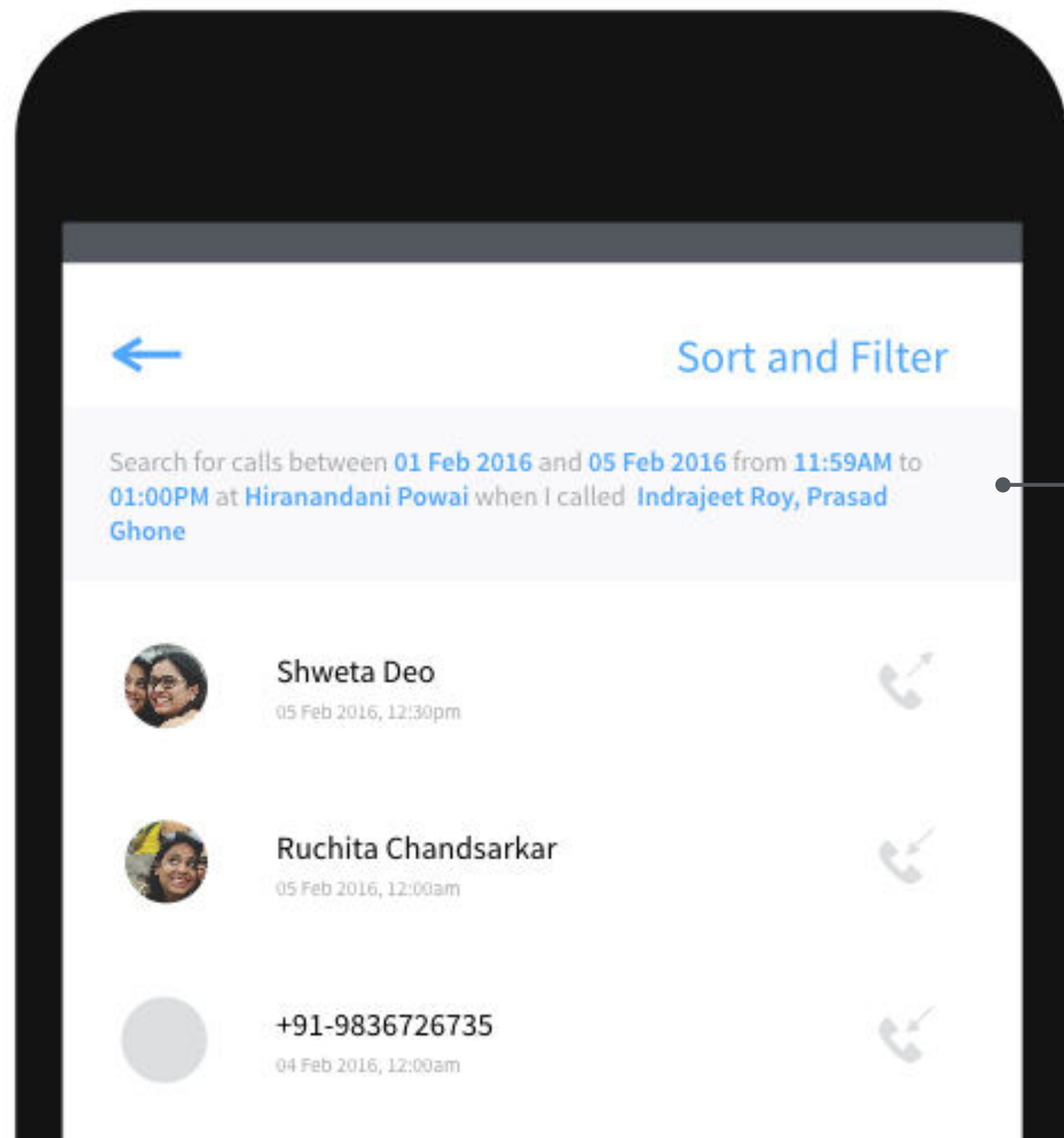
What if the contact is not saved?

Search of the user's call log

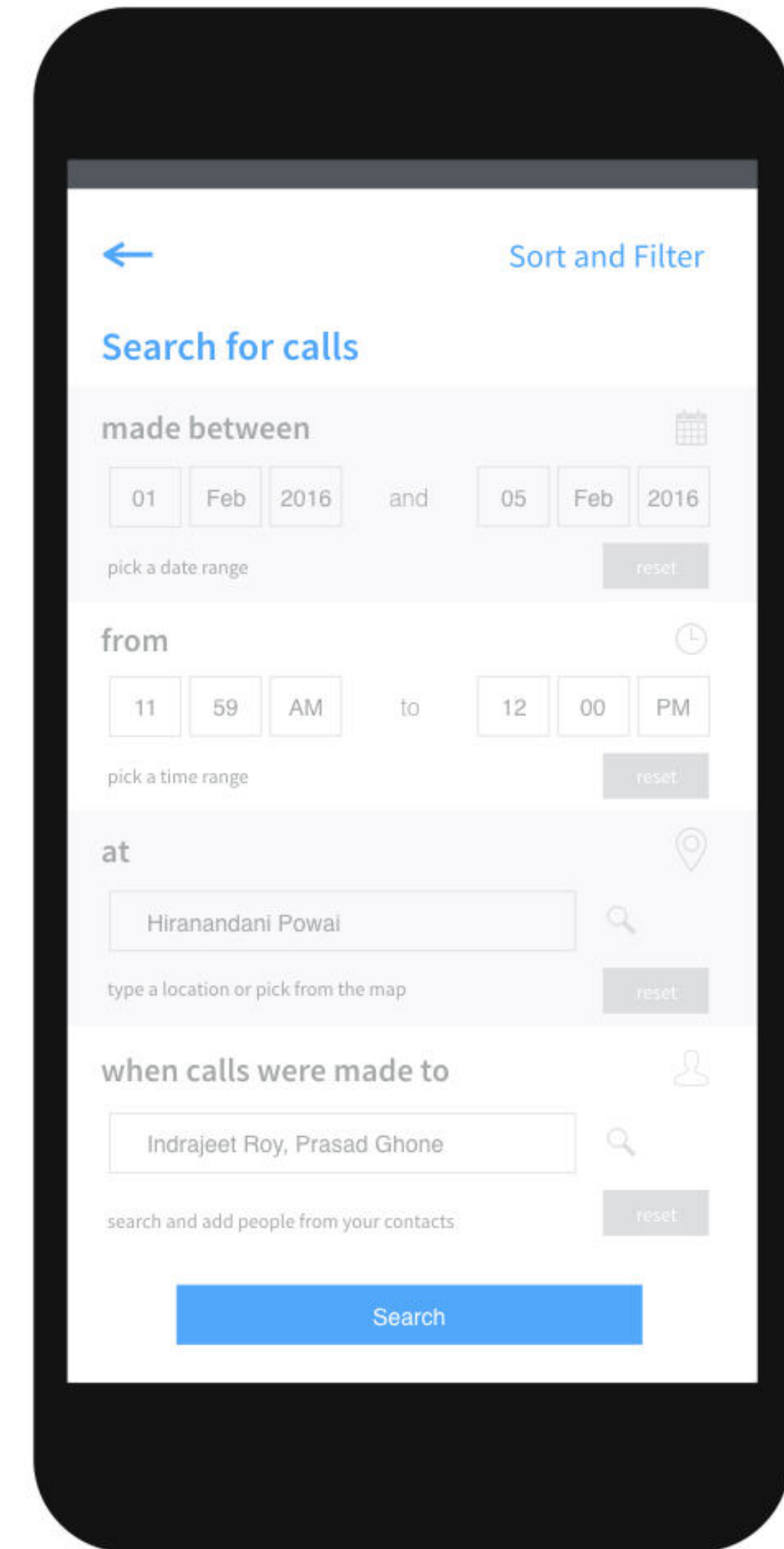


Video

Search for calls
made between (this date) and (this date)
from (this time) and (this time)
at (this location)
when calls were made to (this person or people).

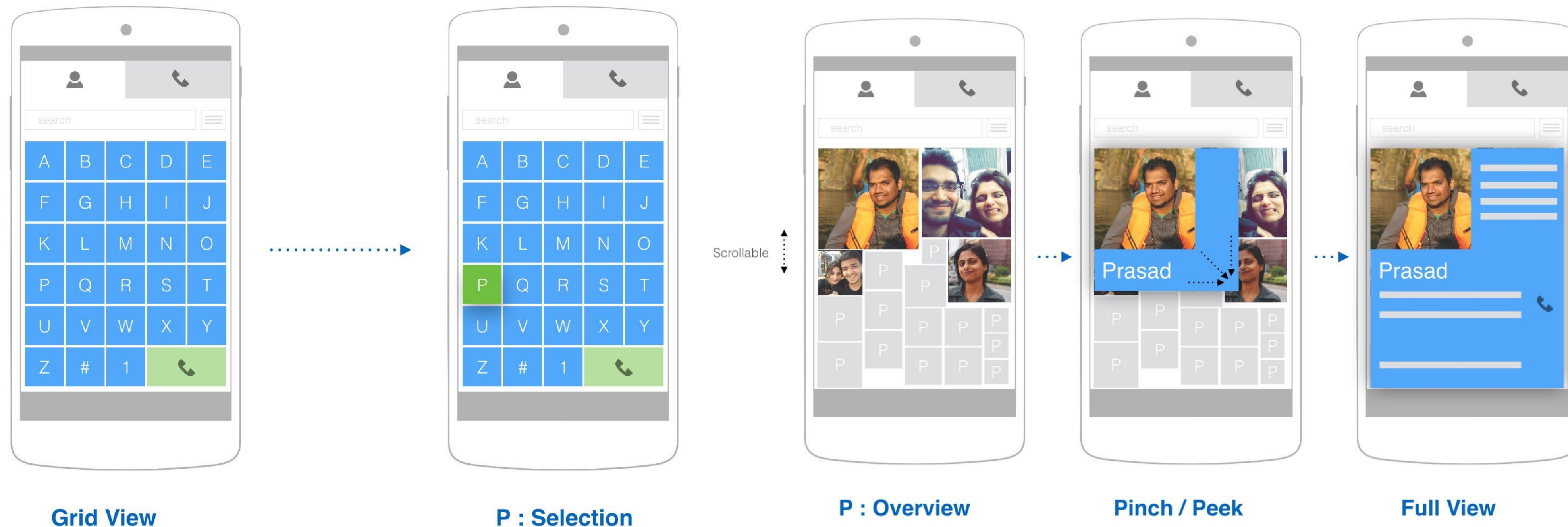


Microcopy



Contact Grid

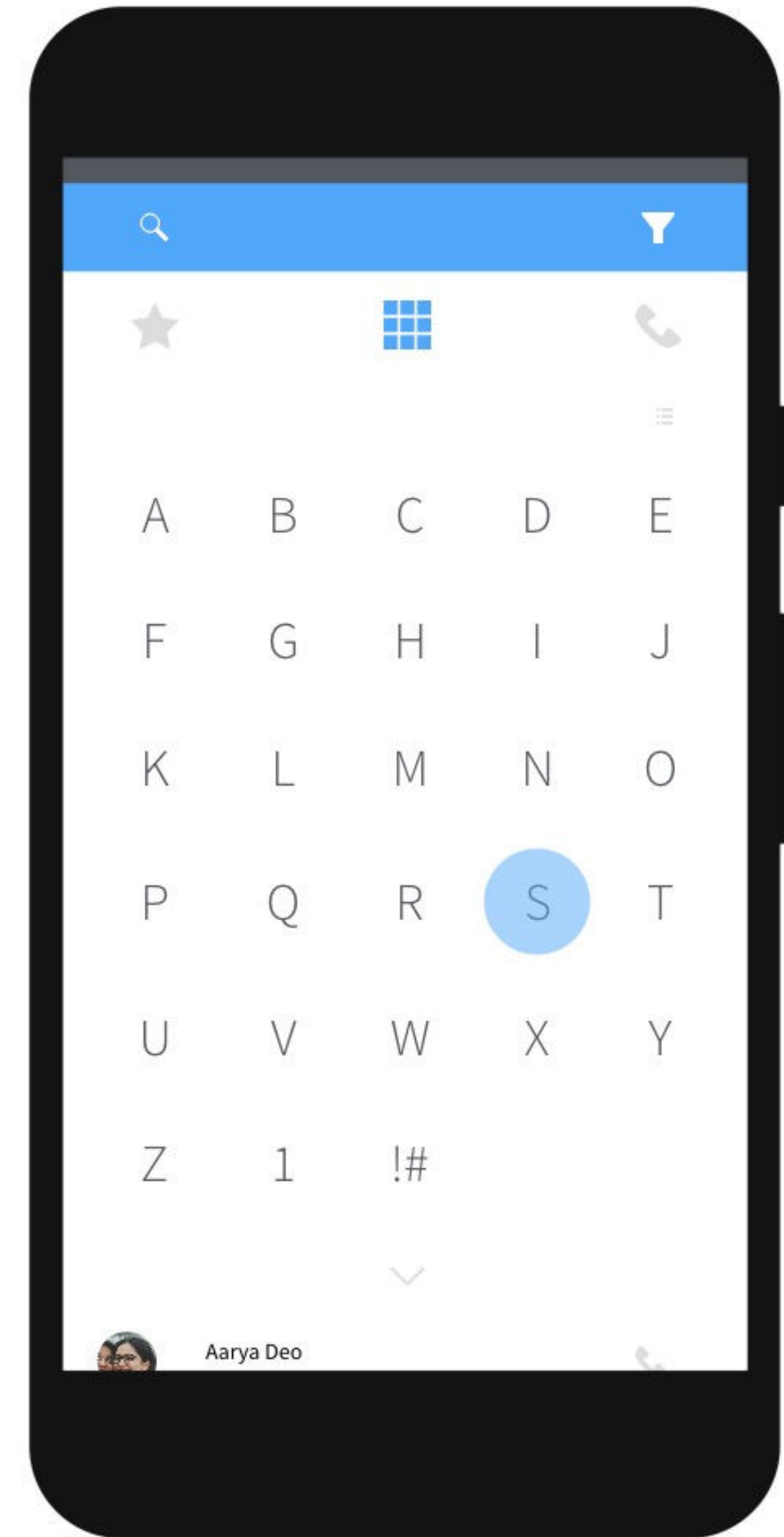
Search for a frequent contact through a text input based search is a highly redundant activity. Contact Grid is search / navigation utility based on data visualization of call frequency.

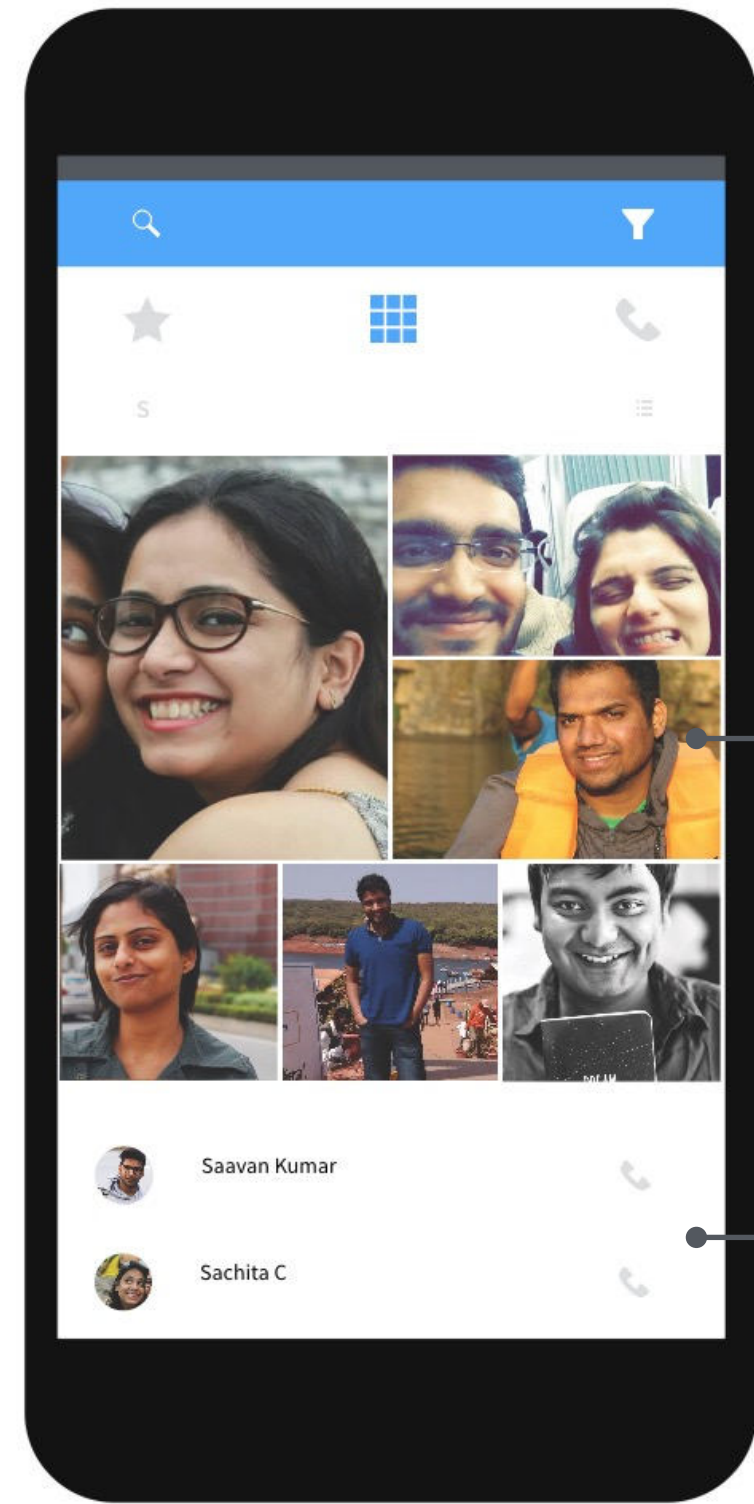
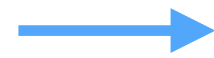
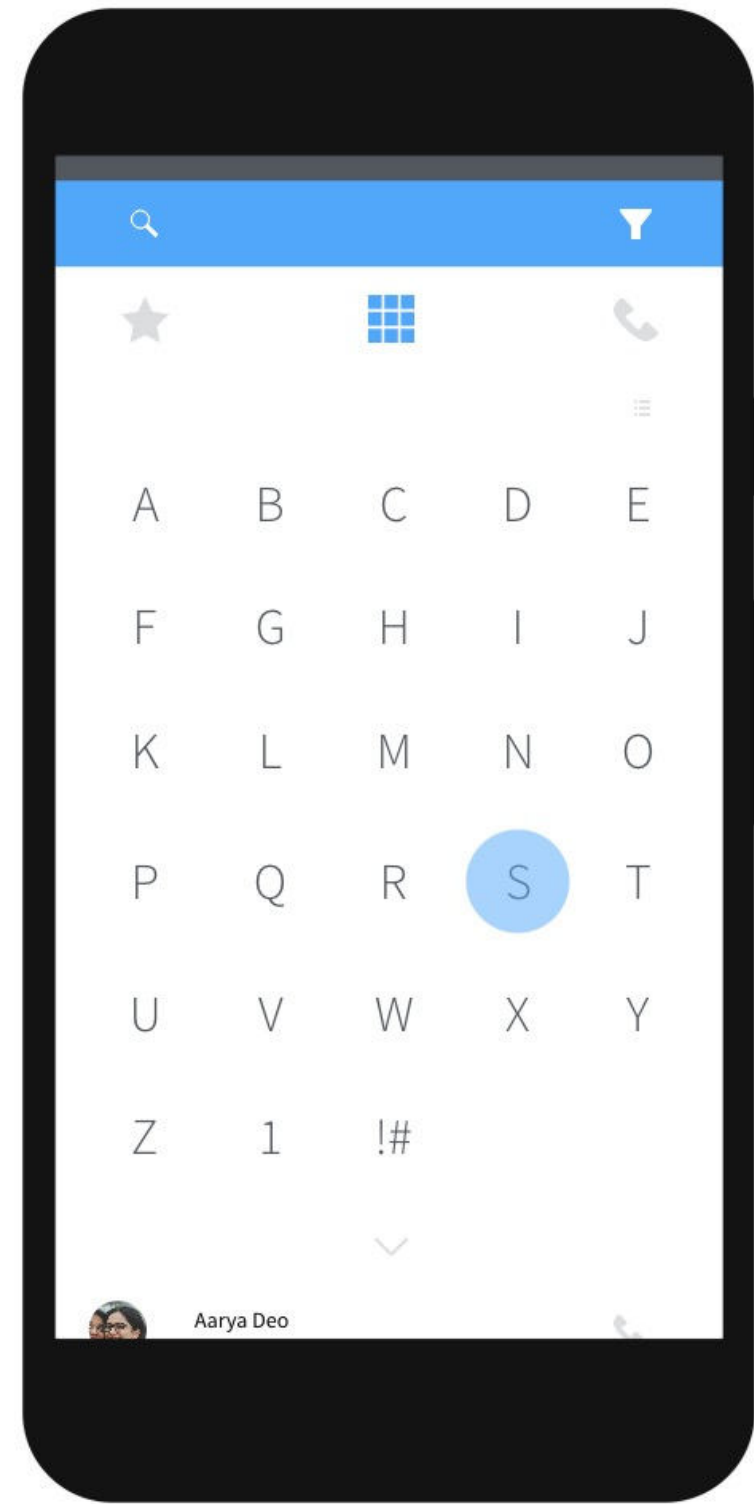


Video



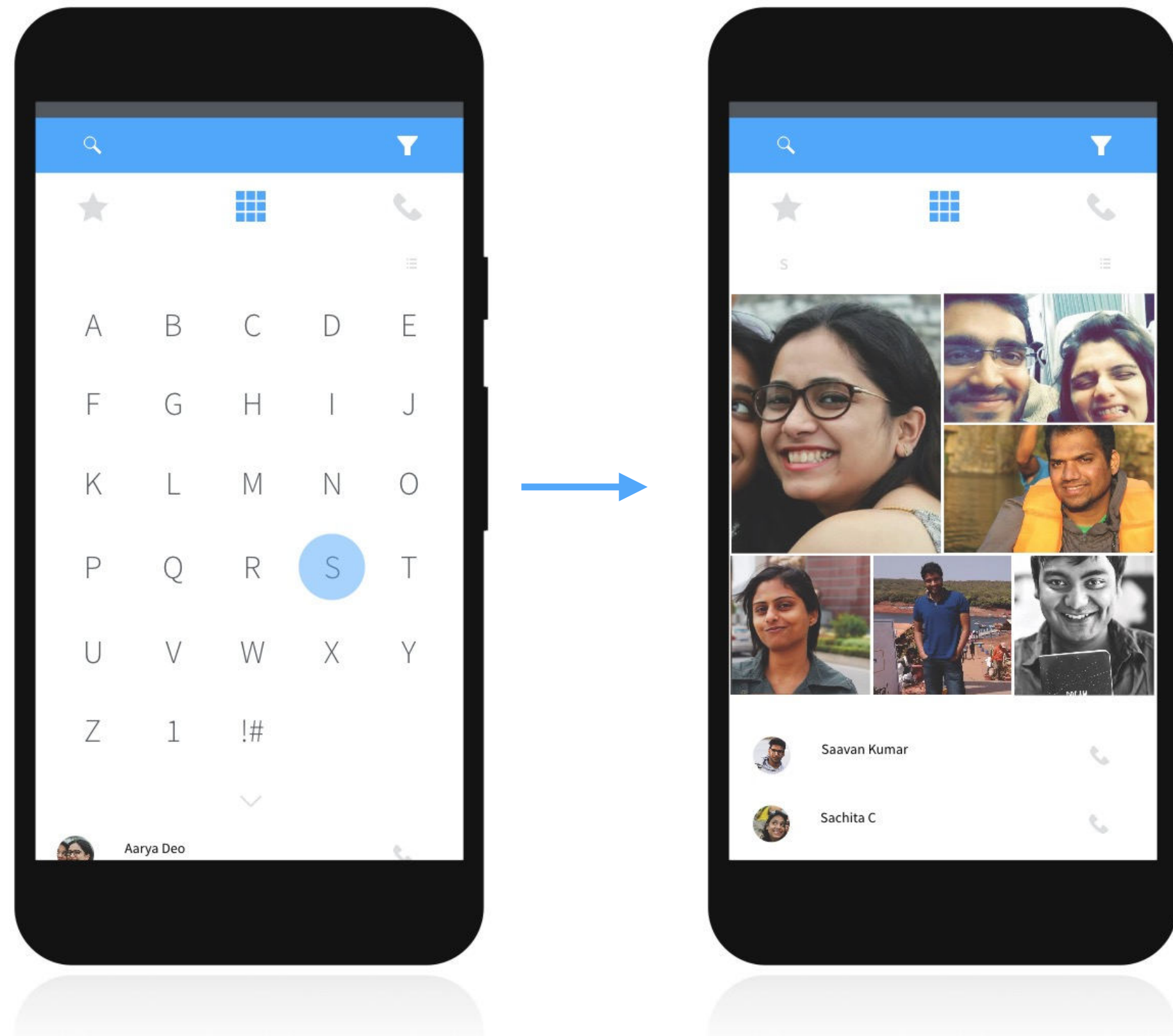
Index Tabs





Treetop of most frequent contacts

Alphabetical list Scrollable



3 taps to access the most frequent contact

VS

Text Input Based Search for current phonebooks makes no consideration for frequent contacts

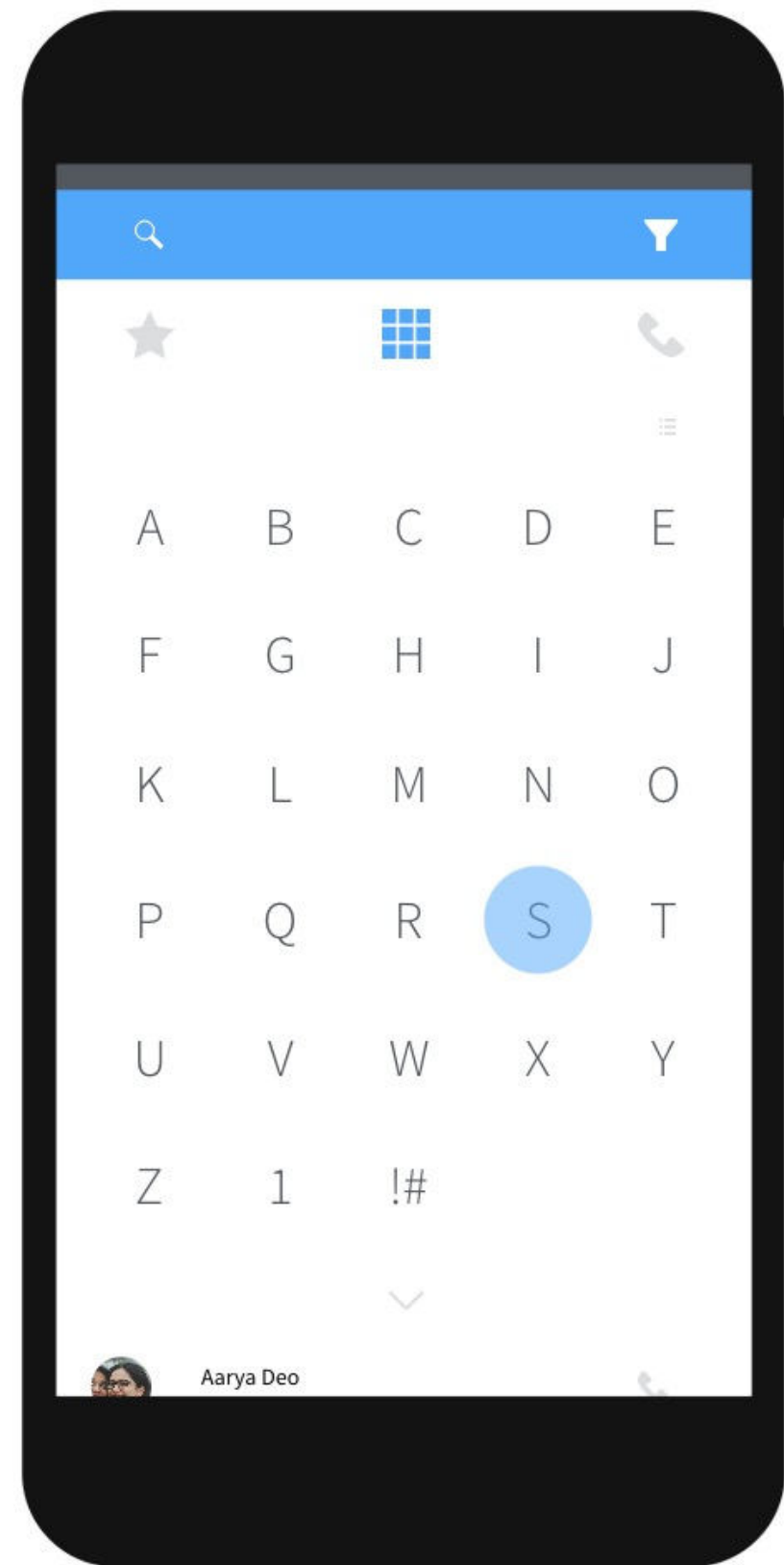
- Tap on search bar
- Type letters (No. of taps depend on the number of letters typed)
- Tap on results

Min 3 Taps

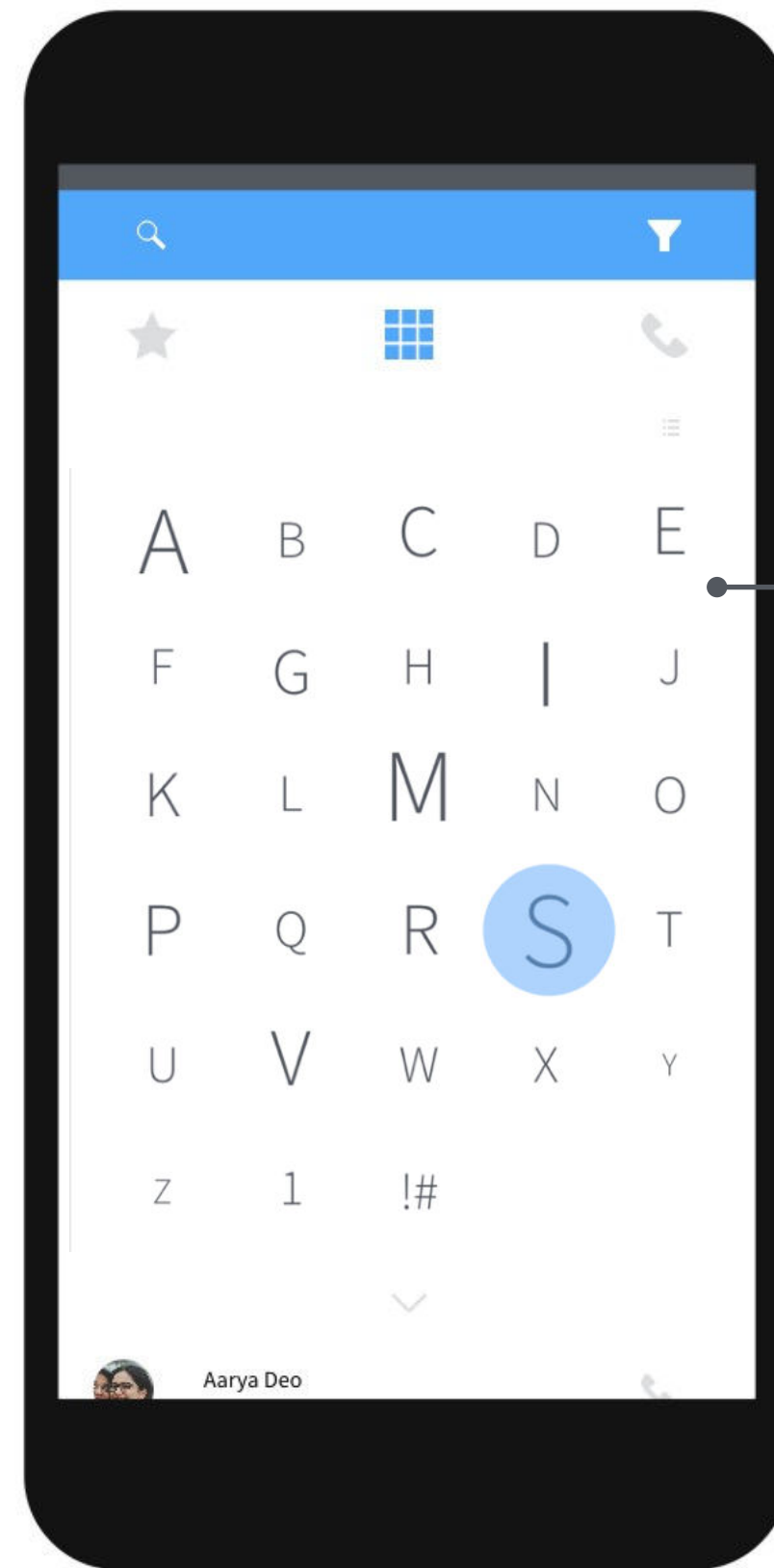
Video

Prototype Review

Prototype Review



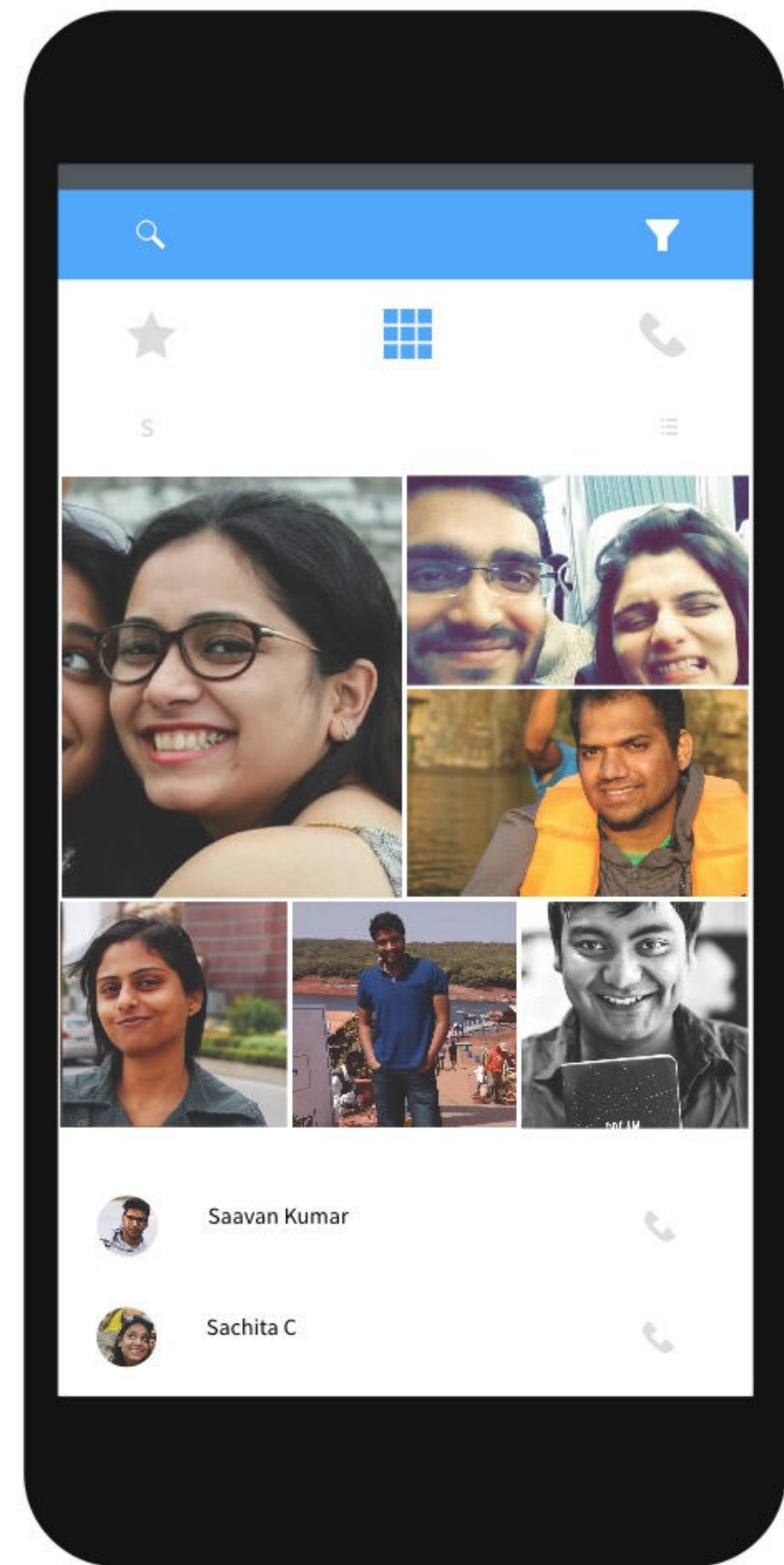
Old



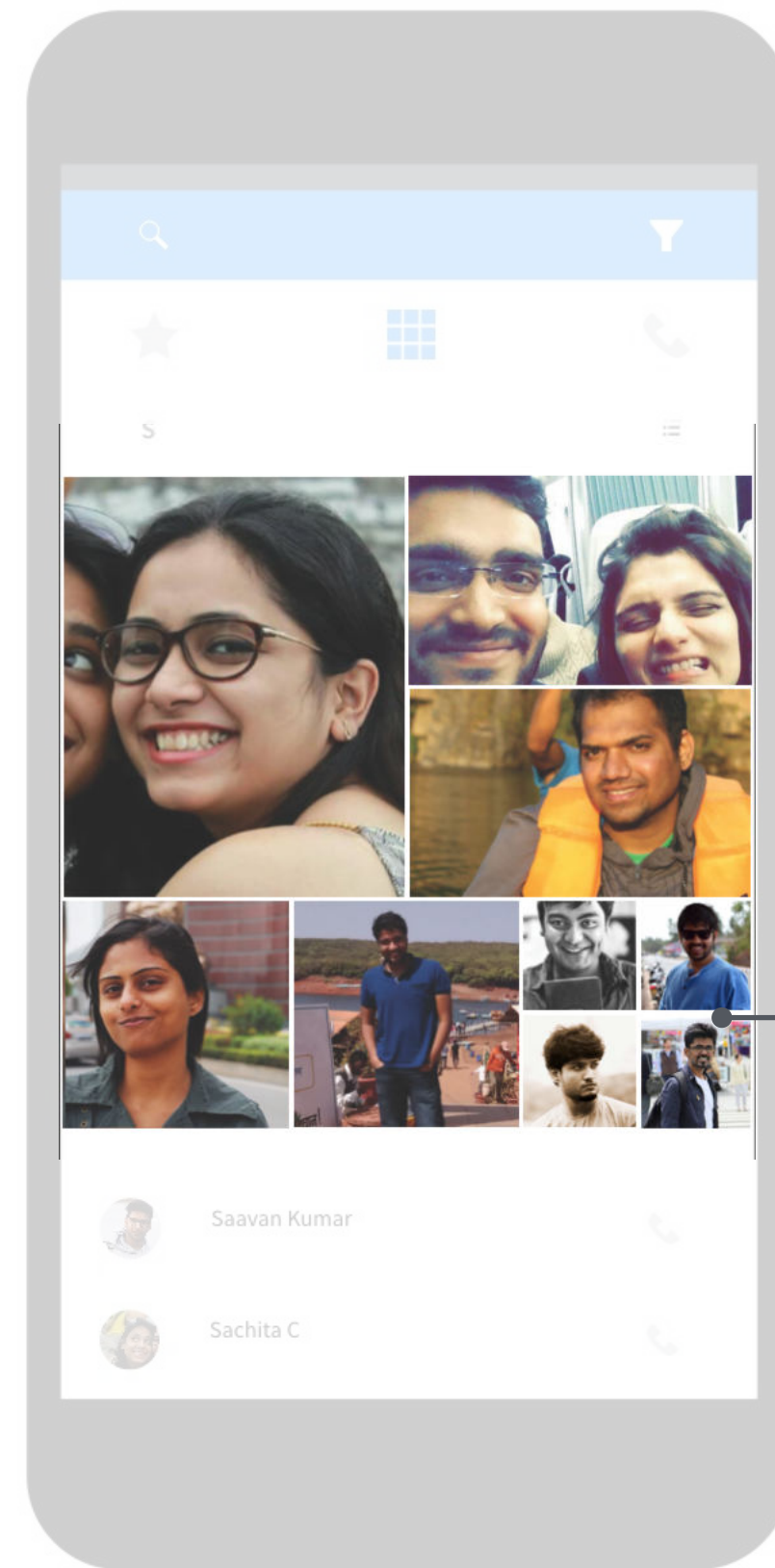
After Review

Dynamic Grid

Prototype Review



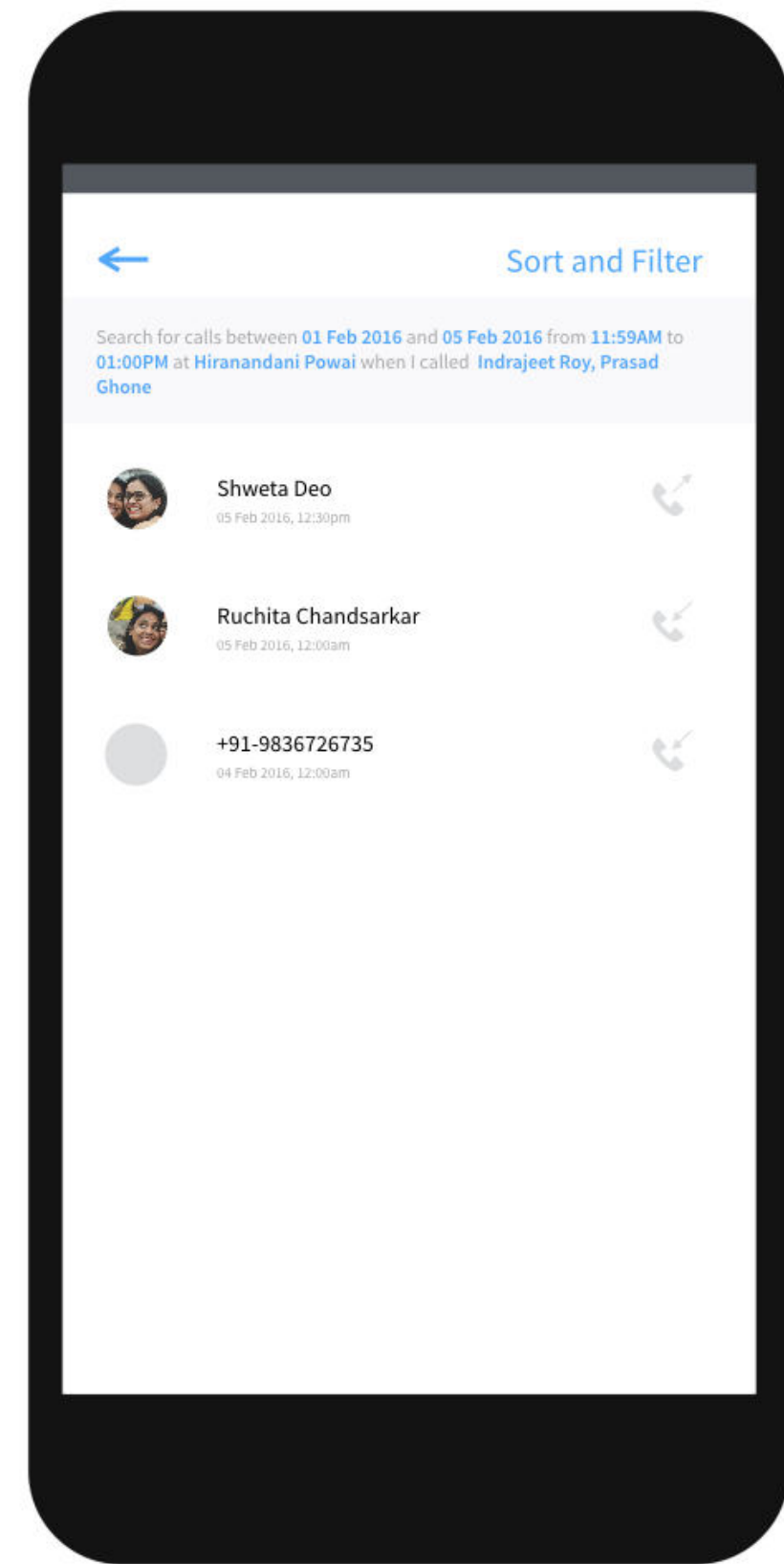
Old



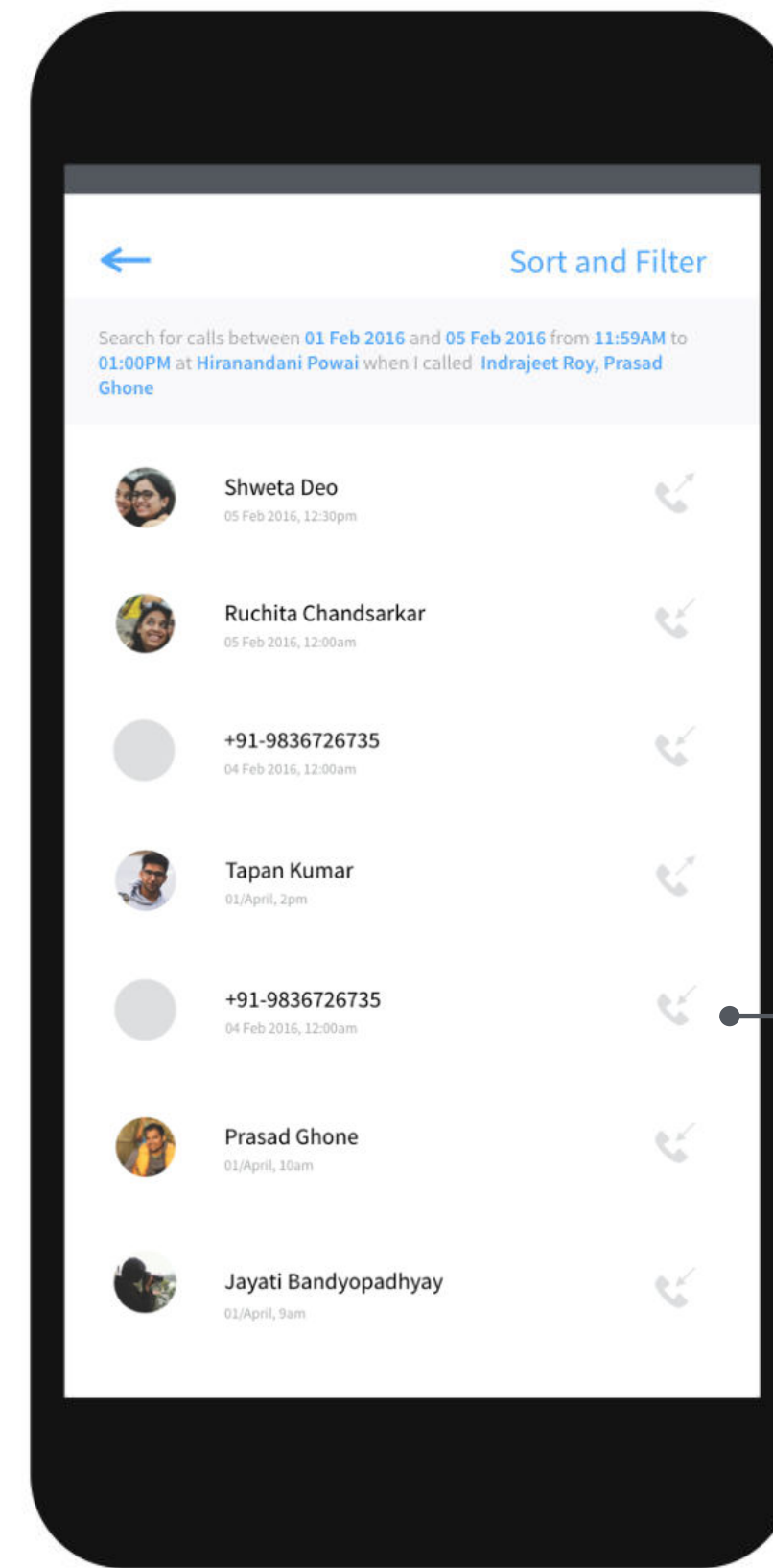
Increased number of contacts in the Treemap

After Review

Prototype Review



Old



After Review

Realistic
Sorting search

Other Features

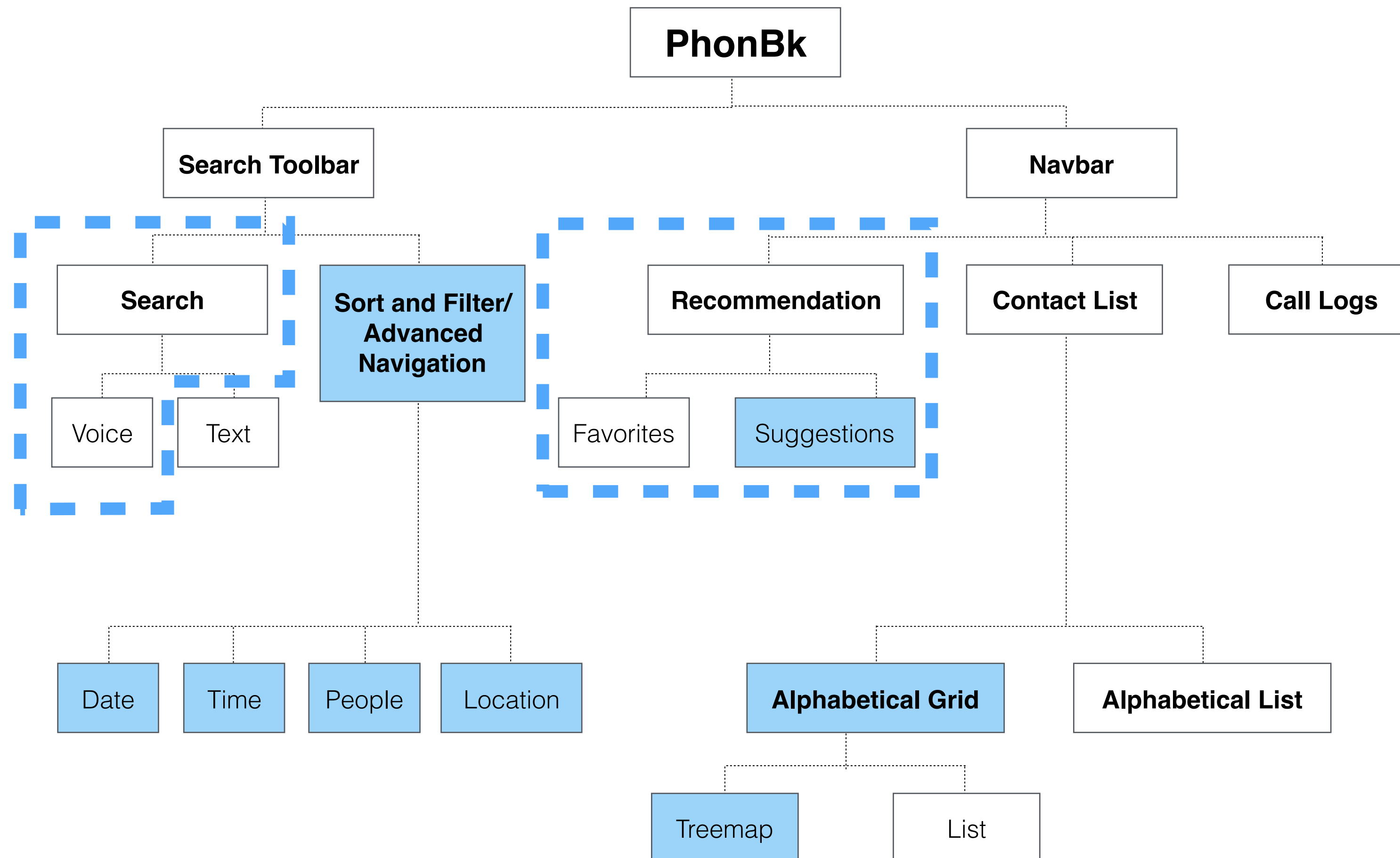
Contact Insights

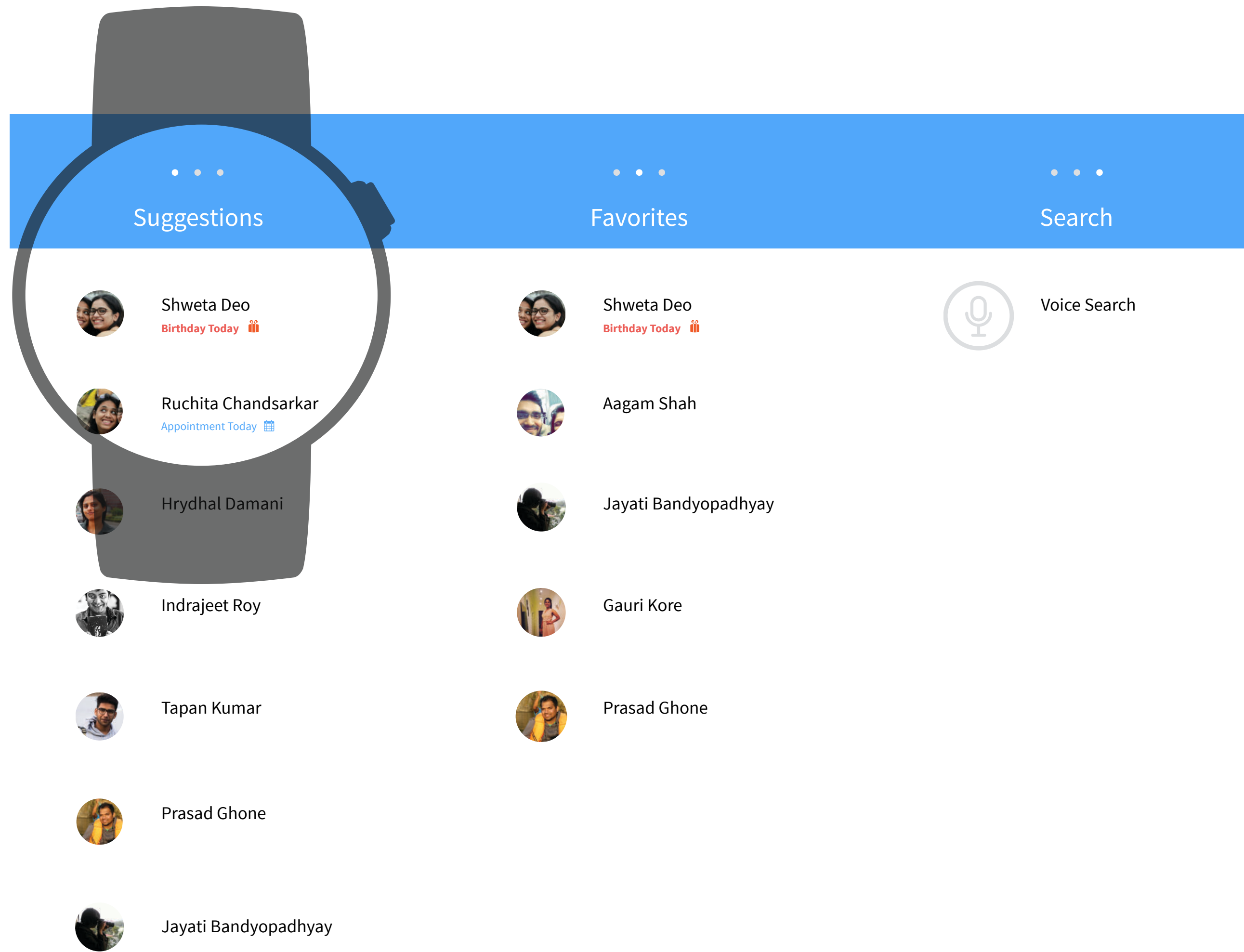
Long Press Circular Menu

Information Architecture

For Wearables

5 Sec Rule





For Wearables

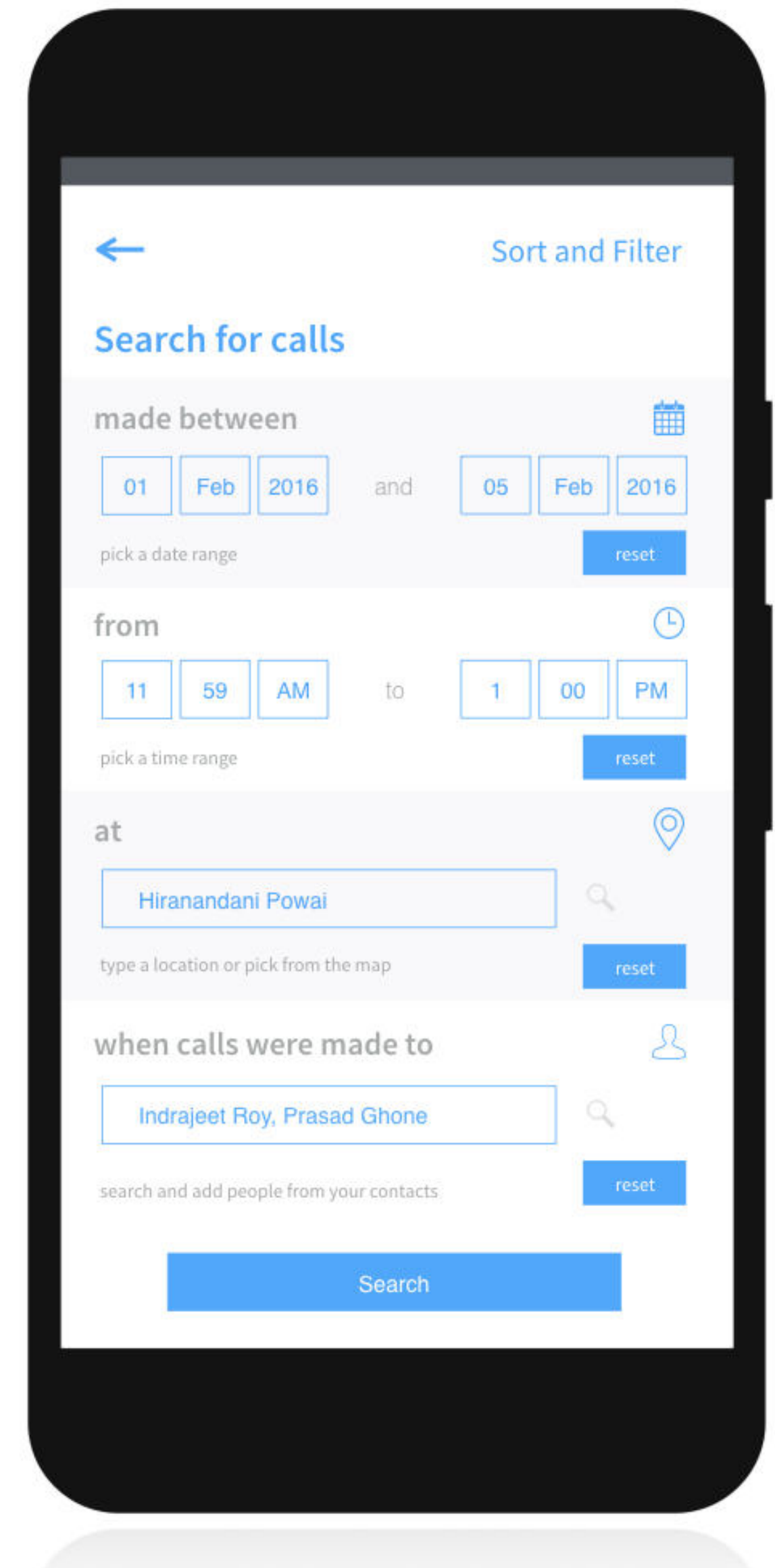
5 Sec Rule

Evaluation (Prototype)

Evaluation Protocol : Think Aloud followed by a heuristic evaluation.

Major Insights

- Filter is for filtering the dial list, it should be in the dial list and not global.
- Unclear affordances for buttons and icons in the advanced navigation feature
- Use of range terms like last day, last week, last hour, etc. for filtering by date and time.
- Most users could not guess the sentence constructor for query.



Evaluation (Suggestions)

Evaluation Protocol :

7 users were asked to use a custom suggestion application and open it during different time intervals for 2 days. They were asked the relevancy of the contacts suggested.

The underlying logic of the suggestions application was not revealed.

Insights

- For 5/7 users, the **most accurate** suggestions were during the **daytime** (2-7pm)
- The most **irrelevant** suggestions were shown during the **late night** (3-5am)
- It is **important for the call logs to be older than 2 months** for more relevancy in the suggestions.
- The suggestions did not change overtime for one user.
- On an **average 2 irrelevant contacts** were suggested during each use.



Parameter	Weightage Rank (w)
Number of Calls at this Time	1
Number of Calls at this day	2
Total Duration of Calls	3
Total Number of Calls	4
Number of Times Contacted	4
Last Called	4

Parameters and rank of weightage

$$\begin{aligned}
 & (w1 * (1 - (\text{ThisMomentTotalCallsRank}/\text{maxRank}))) + \\
 & (w2 * (1 - (\text{ThisDayTotalCallsRank}/\text{maxRank}))) + \\
 & (w4 * (1 - (\text{TimesContactedRank}/\text{maxRank}))) + \\
 & (w2 * (1 - (\text{NumberCallsMadeRank}/\text{maxRank}))) + \\
 & (w3 * (1 - (\text{TotalCallDurationRank}/\text{maxRank}))) + \\
 & (w4 * (1 - (\text{LastTimeContactedFromToday}/\text{SixMonths})))
 \end{aligned}$$

Equation for ranking contacts

Future Work

- Deployment of the application
- A Longer evaluation of the application after deployment
- Improvement of the suggestions algorithm by adding additional parameters for suggestions like location information, social data, etc.
- Extending the suggestions of contacts to other mobile devices (wear, car dashboard, etc.) and evaluating the same.

Thank You