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Development of a smartphone app for adolescents with lupus: a collaborative meeting-based methodology inclusive of a wide range of stakeholders

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ABSTRACT *Traditional challenges of creating a medical app include hearing the voices of various stakeholders as a collective rather than in a consultative process that is sequential. This report describes the development of a mobile (smartphone) app for adolescents with lupus as well as the process that was used to overcome the challenge described above. The development of the smartphone app addressed optimal ways to incorporate information about 1) lupus, including the effects of both the disease and the medications used to treat it; 2) how life choices can affect lupus patients' condition; and 3) ways to increase self-management and communication. The collaborative concept-generating and requirements-gathering methodology was used during a two-day workshop with a range of stakeholders (ages 16–59 years) that focused on leveraging user-centered design methods to generate guidance to mobile app developers. The app development process conducted during the workshop included the following steps: 1) recruiting a goal-focused collaborative group, 2) defining app objectives, 3) evaluating potential needs of users, 4) brainstorming app features and use-case modeling, 5) reviewing existing app features and prototypes, 6) refining functionalities, 7) writing user narratives, 8) visualizing navigation and feature design, and 9) identifying content. The use of creative devices such as drawing interfaces fostered fun, engagement, and sustained energy, and the use of a brainstorming technique leveraged methods that ensured an inclusive process so that even participants who were shy, quiet, or easily intimidated by "professionals" felt confident to contribute. In addition to a name change for the app, project outcomes included the selection of the following app features: symptom tracking; appointment and medication reminders; a social media component; a medical summary; easy navigation; informational content; gamification; and personalization (options for customization).*

Key words Adolescent; lupus erythematosus, systemic; information technology; informatics.

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The development of native apps[7] for smartphones and the emergence of optimized mobile websites present an important means through which patients with chronic conditions can become informed about their illness, supported in their treatment plans, and connected with others. Smartphone and tablet adoption is increasing, with recent data indicating 37% of teens in the United States have a smartphone, and 50% of them access the Internet primarily through that device (1). These trends are comparable with those found across other countries in the Americas. Based on current adoption trends, it is estimated that by the year 2020 there will be 10 billion mobile Internet devices in use worldwide—five times the current estimate of 2 billion smartphones and tablets in use today (2).

Despite this growing trend, most intervention programs for transition health (adaptation to adult care and self-management from pediatric, child-oriented care) are delivered in person or through print materials, with only occasional use of websites (3). When health care information is presented through technology, it is typically used to track and/or transmit data. Few technologies feature interactive prompts, social networking, or tools for building self-care skills (4). Research has shown that young people do not change their behavior just by receiving information (5–7), so information is likely to be helpful only when linked to advice and motivation for clinical management (8).

A smooth transition from pediatric to adult care is critical to the health and well-being of adolescents with chronic conditions such as systemic lupus erythematosus ("lupus"). Teens with lupus need reliable information about their disease, knowledge about the effects of both lupus and lupus medications on their lives, and an understanding of how life choices affect their condition (9). Strong self-management and communication skills are also recommended to enable them to manage their illness autonomously (10). Without sufficient preparation, patients have nonoptimal adherence to proposed treatment plans, deficiencies in knowledge about their condition, limited self-care skills, and decreased follow-up visits after transfer to adult clinics (10–12). Studies show that there are more negative than positive outcomes when youth with special health care needs become adults, so innovative and effective approaches to help them adapt to the transition to adulthood are essential (10, 11, 13, 14).

[7] Applications developed specifically for a mobile device, coded in the machine language of the hardware platform they are running in and used for anything from games to medical monitoring.

LUPUS SMARTPHONE APP

Given the authors' experience that adolescents with lupus make use of smartphones and associated technologies, it was felt that circumstances were optimal to develop an app in collaboration with youth living with lupus, as well as other stakeholders. This report describes the collaborative concept-generating and requirements-gathering methodology used with a range of stakeholders during a two-day workshop that focused on leveraging user-centered design methods to generate guidance to developers of a mobile app for adolescents with lupus. The methodology was based on the assumption that all workshop participants were worthy of respect and had important contributions to make and thus included the use of short, varied exercises to hold the attention of all members of the group and allow those with different styles of learning/sharing an opportunity to contribute. Another assumption of the methodology was the idea that an enjoyable process would produce better results and that successful, respectful interactions could take place among workshop participants with a broad range in age (16–59 years), technical expertise, experience, and knowledge of lupus. As iOS was the dominant operating system at the time, and financial limitations precluded the development of multiple versions of the app for different platforms, the app was designed for Apple devices only, although other versions (e.g., Android) are planned for future development.

Development process

The app development process included the following steps: 1) recruiting a goal-focused collaborative group, 2) defining app objectives, 3) evaluating potential needs of users, 4) brainstorming app features and use-case modeling, 5) reviewing existing app features and prototypes, 6) refining functionalities, 7) writing user narratives, 8) visualizing navigation and feature design, and 9) identifying content.

Recruiting the collaborative group. An interdisciplinary collaborative group composed of health care professionals (in rheumatology, transition and adolescent medicine, and psychology), collaborator youth living with lupus (who were paid a US $100 honorarium), one adult with childhood-onset lupus, and specialists in mobile technology (architects and developers) was recruited to participate in the workshop. The app development process conducted through the workshop was led by one of the coauthors (TK), an expert in the field of health care digital/mobile marketing strategy.

Prior to attending the workshop participants were given "homework" assignments, including: 1) reading a brief primer on navigation options for mobile applications and the mobile Web (Figure 1, provided as Supplementary material), designed to familiarize members with trends in mobile app architecture and encourage reflection about the user experience; and 2) completing a guided exercise that included finding an eHealth[8] application, reviewing it, and filling out an "App Profile" containing the name of the app and where it could be found online (the Web address), a brief summary of the app, a description of its notable features and strengths/weaknesses, and observations about the app visuals and user experience. This exercise helped participants gain an understanding of both the eHealth application landscape and best practices in user experience/functionalities.

The collaborative group met at The Hospital for Sick Children in Toronto, Ontario, Canada, for a 1.5-day workshop series. Twenty-three invitees intended to come to the meeting, but due to illness, only 18 participated in the workshop. All stakeholder groups were represented among the workshop participants, and ample time was allowed for this diverse group to interact informally.

Defining app objectives. The main objectives of the app (educating adolescents with lupus about their condition and helping them make a successful transition from pediatric to adult care; assisting them with medication management and promoting

[8] The use of information and communication technology in the field of health.

their autonomy; enabling symptom tracking; and facilitating communication with care providers and other teens with lupus) were presented to workshop participants, and issues related to health transition and the challenges associated with chronic disease management were discussed. Background information on lupus (associated symptoms, treatment side effects, and socioemotional factors) was also provided, followed by a group discussion of the app objectives.

Evaluating potential needs of app users. To help all participants gain a more comprehensive understanding of the end-user, one participant shared her experiences as both an adolescent and young adult with lupus. Key differences between pediatric and adult care cultures were identified. This speaker also outlined several strategies for coping with a chronic condition. Input was also received from adolescent participants with lupus.

During the presentation by the adult lupus patient, each participant was asked to 1) take notes on the aspects of the patient experience that were described and 2) classify them into eight categories: 1) physical, 2) emotional, 3) intellectual (knowledge-seeking), 4) social, 5) practical, 6) technical, 7) system (health care team, community supports, etc.), and 8) miscellaneous (personalization). These categories were selected as reasonable means of dividing and organizing information and services suitable for an effective digital health care intervention aimed at patient education and support.

Brainstorming app features and use-case modeling. Participants were divided into small groups that typically included individuals with different experiences, ages, and professional roles. Each group was asked to contribute to brainstorming potential app features classified by the eight preidentified categories. Brainstorming sheets were posted on the walls of the workshop space, and the small groups of participants circulated past them in sequence in a series of short time intervals. During each interval, each group reviewed, modified, and contributed additional concepts to the brainstorming sheets.

Following this exercise, participants were assigned to groups of two, and each pair was given a category on which to focus along with the output sheet for that category from the brainstorming session.

Each pair of participants selected what they considered the most essential feature idea brainstormed in their category and conducted an exercise aimed at defining software features, customized for adolescents living with lupus and based on the concept of "use-case modeling." A use case is a list of steps that define interactions between an "actor" and a system. For the lupus smartphone app, use-case modeling for each app feature and user included the following six steps:

1. Identifying the actor (the user of the feature), pinpointing the feature objectives, and visualizing the step-by-step process involved in its use
2. Determining potential obstacles and possible resolutions or alternatives
3. Defining the feature benefits
4. Identifying underlying assumptions and biases
5. Defining the criteria for evaluating the feature's success
6. Determining the implications of the feature for other types of users.

Upon completion of their use-case analysis, based on the steps above, each pair of participants was assigned to a different category/feature idea to further refine it using the same process.

Reviewing existing app features and prototypes. A roundtable discussion was conducted in which participants shared the app review ("App Profile") they had completed for their homework assignment in preparation for the workshop. Strengths and weaknesses in the scope, interface, and design of various health apps were considered. Two lupus app prototypes developed as part of a competition for software and health care students ("Apps for Health")[9] were also evaluated.

Refining app functionalities. Each pair of participants presented one feature idea and the corresponding use-case model analysis to the group. Input on and/or concerns about the app features were solicited from participants. Following a group discussion, a vote was taken for each feature in which participants were asked to select the degree of essentialness of each feature ("must have," "should have," or "could have") to prioritize the desired features of the app democratically.

[9] http://www.appsforhealth.ca

Writing user narratives. In pairs or small groups, participants drafted brief user narratives for selected feature ideas. The user narratives indicated the actor (e.g., a teen with lupus), their objective (e.g., "track a new symptom"), and a summary of the interaction with the device. In some cases, participants envisioned what might occur if the initial objective was not achieved, and how the user might seek to correct it.

Visualizing app navigation and feature design. Paper templates of a blank iPhone screen were distributed to the participants, who were divided into small groups. Each group selected a feature idea and sketched provisional interface designs using pencils, pens, and markers. Participants were asked to envision menu and navigation options, as well as the physical layout of features. The sketches were then posted on the wall and reviewed by all workshop participants, who evaluated and commented upon the different interface design ideas (Figures 2–4, provided as Supplementary material).

Identifying content. Workshop participants generated informational content on a series of pre-identified topics including: 1) disease information, 2) health systems/clinics/providers, 3) record-keeping, 4) staying active, 5) education and careers, and 6) coping in everyday life. These topics are consistent with information and feature categories identified in other health apps currently available and the objectives originally established for the app. Brainstorming sheets for each topic were provided to and filled out by participants and then reviewed by the group.

Outcomes

The following feature ideas for the app emerged from the workshop, classified by participants according to the eight pre-identified categories:

Physical. A symptom-tracking feature was desirable. Two different navigational approaches to symptom tracking were presented. Discussion focused on the importance of linking the tracking experience with the knowledge-gathering experience. Seventy-one percent of participants deemed this feature as "must have."

Emotional. Some participants felt that a feature outlining common myths and frequently asked questions about lupus could alleviate anxiety. Incorporation of links to more de-

tailed summaries and a quiz/gamification component were also considered. During the discussion, some participants expressed concern that this feature would not likely be revisited once initially read. Fourteen percent of the participants identified this feature as "must have" and 50% said it was "should have."

Intellectual (knowledge-seeking). Pop-up informational tips and/or summaries were viewed as key features. Two different styles of dissemination were considered, both of which were connected to symptom tracking. Participants felt it was important that users not be inundated with text and that information offered should be relevant to individual user symptoms. Different formats for conveying information were also considered (e.g., audio, video, etc.). Sixty-four percent of participants regarded this type of informational feature as a "must have."

Social. The participants felt that a social media component was important for establishing a sense of community and fostering a support system among teens with lupus. This could take the form of a link to established social media forums (e.g., Facebook or Twitter) with lupus-based groups built into the app. Concerns about privacy and abuse were raised. Fifty-four percent felt this feature was "must have" and 23% said it was "should have."

Practical. A reminder feature to help teens manage their medications and appointments independently was suggested in which users would input information about their medications (e.g., purpose, dosage, schedule, etc.) and appointments (e.g., care provider names and locations and other contact information, etc.) and set reminder notifications. This was deemed essential—a "must have" feature—by 100% of workshop participants.

Technical. The participants felt that easy navigation was an important element of the user experience. The ability to access features within three clicks was deemed ideal. Menu styles and the notion of adaptability (whereby the app could be designed to anticipate user demands based on past usage patterns) were also discussed. Eighty-six percent of participants regarded easy navigation as a "must have" feature.

System. Participants felt that it would be helpful for teens to have a record of their medical history at hand. This could take the form of a summary log or be based on MyHealth Passport (www.sickkids.ca/myhealthpassport). Various methods of inputting user information were considered (e.g., directly into the app, to a profile on a computer, etc.). The medical history could also include a log or summary of the most recent symptoms. Sixty-four percent of participants felt this feature was a "must have" and 29% thought it was a "could have."

Miscellaneous (personalization). During brainstorming, the theme of personalization emerged repeatedly. To enhance usage, the participants felt that customizability was an important component of the design. Suggested features for personalization included the option to add photos or select various sound effects, "skins," or wallpaper templates.

One additional outcome was the decision to choose a new name for the app in future, in response to the strong dislike of the original name ("MyLupus App") expressed by the younger workshop participants.

DISCUSSION

The methodology for developing a health app outlined above could be useful for the development of similar health apps. The authors believe the success of the method can be attributed to leveraging a range of respectful collaboration and contribution approaches.

Methods were chosen from the digital user experience body of knowledge and coupled with facilitation strategies intended to promote high-energy contributions and promote respect for each participant's experience and voice. Participants' knowledge base for both lupus and the digital user experience was built gradually and to a uniform level. Outputs included evolved use-case models, prioritized features with pseudo-requirements,[10] user stories (to assist software developers in the interpretation of the pseudo-requirements), and visual navigation and interface concepts. Meeting pre-engagement was achieved through the assignment of reading and other homework and contributed to a "ready-to-go" attitude on the part of participants.

Challenges and solutions

There are many ways to develop a concept for a medical app. Traditional challenges include hearing the voices of various stakeholders as a collective rather than in a consultative process that is sequential. The methodology used for this app development project resolved this by implementing a face-to-face workshop and a variety of guided exercises led by an expert facilitator.

Creating an agenda that gradually built the knowledge base of participants was also essential to effective outcomes. To better inform their decision-making during software development, the software developer participants learned about lupus from those living with the condition and from health care professionals who adhered to meeting (workshop) guidelines to maintain discussion at the layperson level. Health care professionals and patients were exposed to software architecture and planning, also at a layperson level, which helped them realize the possibilities without curtailing ideation. The use of creative devices—such as drawing interfaces—fostered fun, engagement, and sustained energy. In addition, all participants used brainstorming techniques such as "brainwalking" and similar methods that celebrate all voices (15), which helped to ensure an inclusive process so that even those traditionally shy, quiet, or easily intimidated by "professionals" felt confident to contribute.

One possible limitation of the development process was the lack of participation of a parent of a child with lupus. However, the younger participants living with lupus indicated that this might have been a strength; they wanted the app to be truly "theirs" and had concerns about parental access to their information, something that they thought parents might want included.

As the methodology described above could be used to develop apps for other health conditions, certain challenges of the process should be noted. First, quite a bit of time was spent in helping the software experts understand lupus and its treatment. Similarly, the participants with expertise in lupus were given help to better understand mobile apps and

[10] Statements of desired and undesired app functional behaviors, written from the perspective of the user, and lacking the rigor of expression that would be provided by a software architect.

their corresponding language. Although it was time-consuming, this step should not be skipped, as it was clear that neither group really understood the other's issues before these discussions. Second, app development is expensive, and development of the lupus smartphone app included professional workshop facilitation plus an honorarium for each of the younger participants living with lupus. Therefore, for financial reasons, the app was developed for use with only one operating system. For future development of similar eHealth apps, procuring sufficient funding to enable compatibility with multiple systems is recommended.

Conclusions

Despite the challenges described above, the authors consider the development of the lupus smartphone app a success. First-phase software development of the app is complete, as is beta testing at one site.

The authors hope that others will use processes similar to the one described above to develop eHealth technology in a way that is inclusive, enjoyable, and productive.

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Conflicts of interest. One of the coauthors (TK) was paid to lead the app development workshop.

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RESUMEN

Desarrollo de una aplicación para teléfonos móviles inteligentes dirigida a los adolescentes con lupus: un método colaborativo basado en reuniones con una amplia gama de interesados directos

Uno de los desafíos tradicionales durante el desarrollo de una aplicación médica es considerar las opiniones de los diversos interesados directos como colectivo, en lugar de emplear un proceso de consulta de tipo secuencial. En este informe se describe el desarrollo de una aplicación para teléfonos móviles inteligentes dirigida a adolescentes con lupus, así como el procedimiento empleado para superar este tipo de dificultades. En el desarrollo de esta aplicación se buscó la mejor manera de incorporar información acerca de: 1) el lupus, incluidos los efectos tanto de la enfermedad como de los medicamentos utilizados para su tratamiento; 2) cómo las opciones de vida pueden afectar a la situación de los pacientes con lupus; y 3) los procedimientos para aumentar el autotratamiento y la comunicación. En un taller de dos días, en el que participaron diversos interesados directos (de 16 a 59 años de edad), se empleó una metodología colaborativa de generación de conceptos y recopilación de requisitos con el propósito de aprovechar los métodos de diseño centrados en el usuario para que sirvan de guía a los productores de aplicaciones para telefonía móvil. El proceso de desarrollo de la aplicación que se llevó a cabo durante el taller utilizó los siguientes pasos: 1) captar un grupo colaborativo centrado en las metas, 2) definir los objetivos de la aplicación, 3) evaluar las posibles necesidades de los usuarios, 4) hacer una lluvia de ideas sobre las características de la aplicación y elaborar modelos de casos de uso, 5) analizar las características y los prototipos de las aplicaciones existentes, 6) perfeccionar las funcionalidades, 7) redactar distintas experiencias de los usuarios, 8) visualizar el diseño de la navegación y las funcionalidades, y 9) determinar el contenido. El uso de recursos creativos como las interfaces para dibujar fomentó la diversión, la participación y la energía sostenida; y el empleo de una técnica de lluvia de ideas permitió aprovechar algunos métodos que garantizaban un proceso inclusivo, de manera que aun los participantes tímidos, callados o fácilmente intimidables por los "profesionales" se sintieran cómodos para participar. Además del cambio de nombre de la aplicación, otro resultado del proyecto fue que se seleccionaron las siguientes características de la aplicación: seguimiento de síntomas; recordatorio de citas y medicación; un componente de redes sociales; un resumen del historial médico; navegación sencilla; contenido informativo; ludificación; y personalización (opciones de adaptación individualizada).

Palabras clave Adolescente; lupus eritematoso sistémico; tecnología de la información; informática.

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Material suplementario / Supplementary material / Material supplementar

Supplementary material to: Herschman J, Kasenberg T, Levy D, Ruth N, Taberner C, Kaufman M. Development of a smartphone app for adolescents with lupus: a collaborative meeting-based methodology inclusive of a wide range of stakeholders. Rev Panam Salud Publica. 2014;35(5/6):471–6.

Figure 1.

Understanding Navigation Options in Mobile Apps and the Mobile Web

Compiled by: Todd Kasenberg

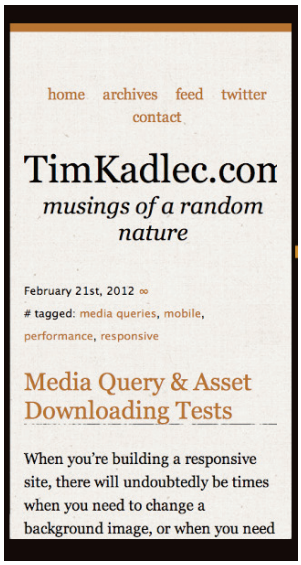
Additional Resource for Review: http://www.youtube.com/watch?v=ODx8u32lq9A

Introduction

Top and left navigations are typical on large screens and therefore websites, but lack of screen real estate on small screens makes for an interesting challenge for mobile website rendering and app implementation. Mobile navigation must strike a balance between quick access to information and unobtrusiveness. What follows are examples of navigation for mobile apps and the mobile web.

Top Navigation

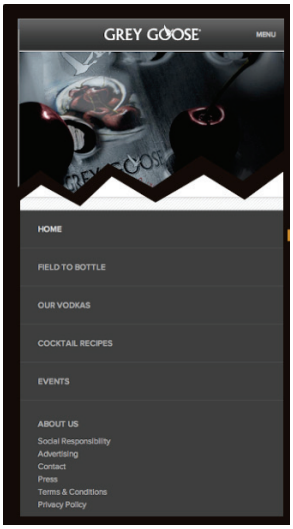
One option is to render the menu and top level navigation items across the top of the mobile screen, in a manner directly analogous to conventionally accepted navigation at normal websites.



However, this can present with several problems, not the least of which is that where there are many top-level navigation items, valuable screen real estate can be consumed. (This is inconsistent with emerging best practices for mobile design, which suggest that users prefer a content up front approach from a user experience perspective.) As well, it is not uncommon for items to render differently across different mobile devices – so while a line of menu items might look perfectly placed and constrained to a single line on a Galaxy Nexus phone (an Android phone), it might not be as "perfect" on the smaller screen of the iPhone 4.

The Menu Button

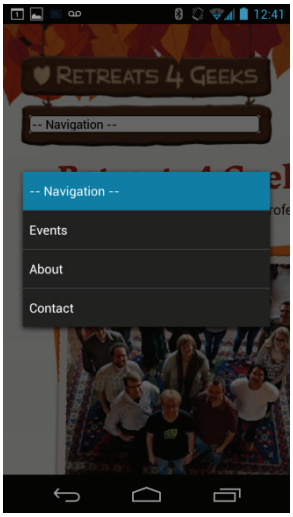
A second and simple option is to tuck away from ongoing visibility the main menu, and to rely on the user clicking a button to gain access to next menu options. This can place a range of small buttons across the top (if the number of menu items is smallish), or can float a menu item list down on top of the current screen view or even push the current screen view "down".



This approach can require a bit of coding effort, and may not perform consistently across application platforms (e.g., it may work better on iPhones than Android phones). However, it can be perceived as very classy, and when executive properly, can optimize screen real estate on small devices. Because this button is omnipresent throughout the app, it reduces the need for back buttons or other significant navigation indicators.

The Dropdown Selector

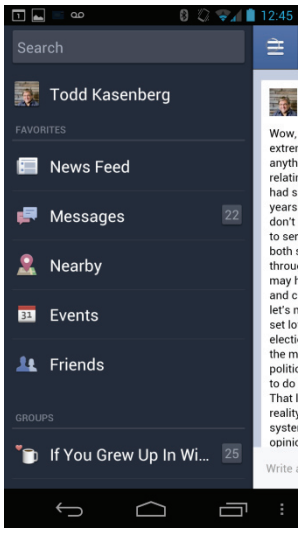
Another menu approach which really is a variation of the menu button is to use a drop-down list box to present navigation options. This nicely transforms to a list of links on activation, and saves precious screen real estate.



This approach, easily recognizable, can allow the phone to serve up native controls, which can be a boon for some devices. However, it really doesn't offer much styling control, and the management of submenu items, typically through indenting or use of dashes, can make things a bit confusing for the user.

The Left Nav Flyout

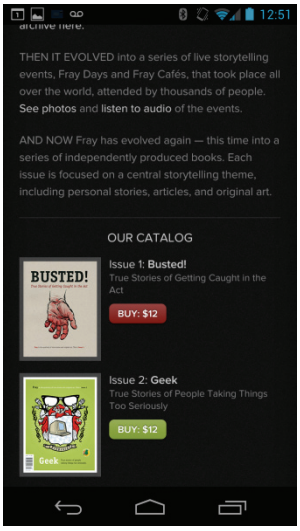
This navigational approach has been popularized by Facebook, and usually involves either pressing a button to have a menu list emerge from the left of the screen, or actively swiping across the screen with the finger from left to right to access the menu.



Again, this method provides lots of space to use for content, minimizing onscreen navigation elements. It is sophisticated, and there is a growing awareness of the technique because of the penetration of Facebook. However, some users may be potentially confused by it, and there are some tricky aspects of dealing with a list of menu items too long for the typical lengths of screen afforded by mobile phones.

Bottom Navigation

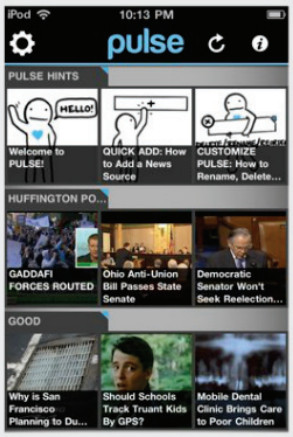
This approach pays homage to the notion that the mobile user wants lots of content on the screen, and provides navigation options through a series of menus, links or a bar that is accessible from the bottom of the screen. This approach may fix the navigation bar to the bottom of the screen, but as likely can require navigation to the bottom of the screen (screen scrolling) to access the menu items.



This approach typically frees up header space. However, depending on its implementation, it can be hard to access because it may require substantial scrolling for the user.

Gallery

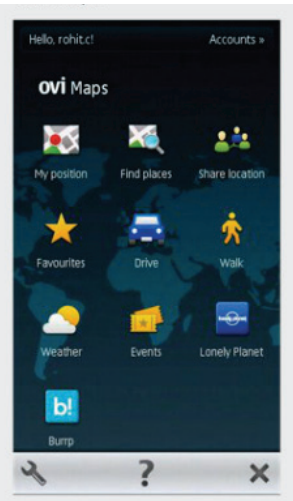
This approach arrays a series of icons across the main screen, and relies typically on the use of a “back” button, either in a fixed upper bar on the screen, or relying, in the case of Android devices, on the fixed back button. Often, the gallery icons are organized along a theme, and are sideways scrollable.



The main advantage of this method is that a great deal of options may be displayed to the user and accessed rapidly. However, users may not enjoy lateral scrolling, users might be confused by the categories used for organization, and there is a lot of drilling down then coming back to re-access the menu for alternative options. As well, this method is typically quite visual, which relies on universal recognition of the images or icons used.

Springboard

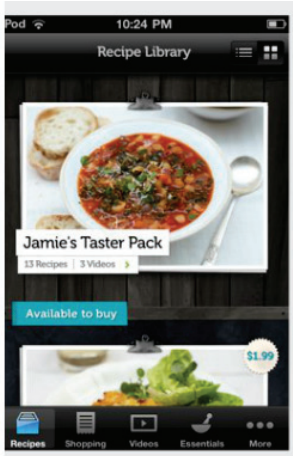
The so-called springboard navigation provides a “home screen” which demonstrates a series of icons that serve as springboards to more content.



This method may enable remarkable personalization of the app through allowing the user to configure the order and identities of the icons. However, it is typically a content-limiting approach, and users must invariably back up to this screen to access next options, which is labour-intensive.

Tab Menu

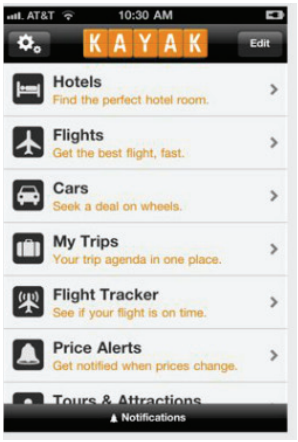
This menu system places a band of iconized buttons either at top or bottom of screen.



This method provides the stability of onscreen menus. However, unless icons used are universal, there can be some confusion on the part of the user. Also, added complexity typically arises when there are more than 5 menu items to depict through a tab menu.

List Menu

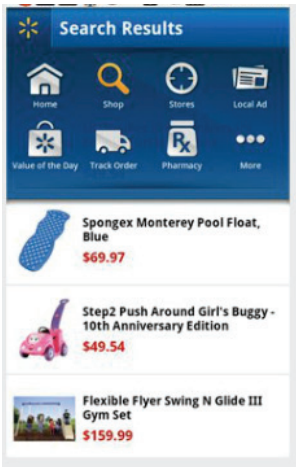
A list menu presents the user with a list of items which may be accessed through simple touch. These menus can be activated from a small button at the top of the screen, or may be the primary method of navigation when users will be drawn through lists with sublists which also have sublists.



This method is very conventional, and allows full use of descriptive text for the pages to which each menu item links. However, it must also be considered a content-reducing strategy, since it leaves very little room on the screen for any other content.

MegaMenu

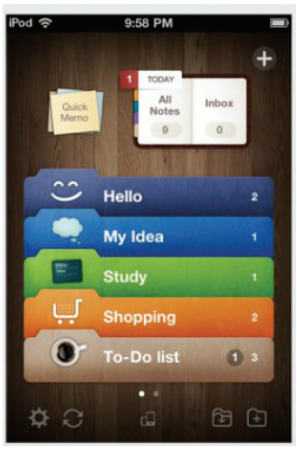
This menu approach is an adaptation of a more recently emerged approach on the web, which incorporates as much of site structure into large-ish menu lists for the purposes of reducing click burden through a website. Typically, a first level set of categories is always available, and when one of the items is selected, a list of the full next options will be presented below the top level navigation items.



This method can be of value when there is a large amount of content that should be easily accessible. However, it does quickly consume screen real estate, even when intelligently implemented so that the second and lower-levels of the navigation scheme "push down" screen content below the menu listing.

Metaphor Menu

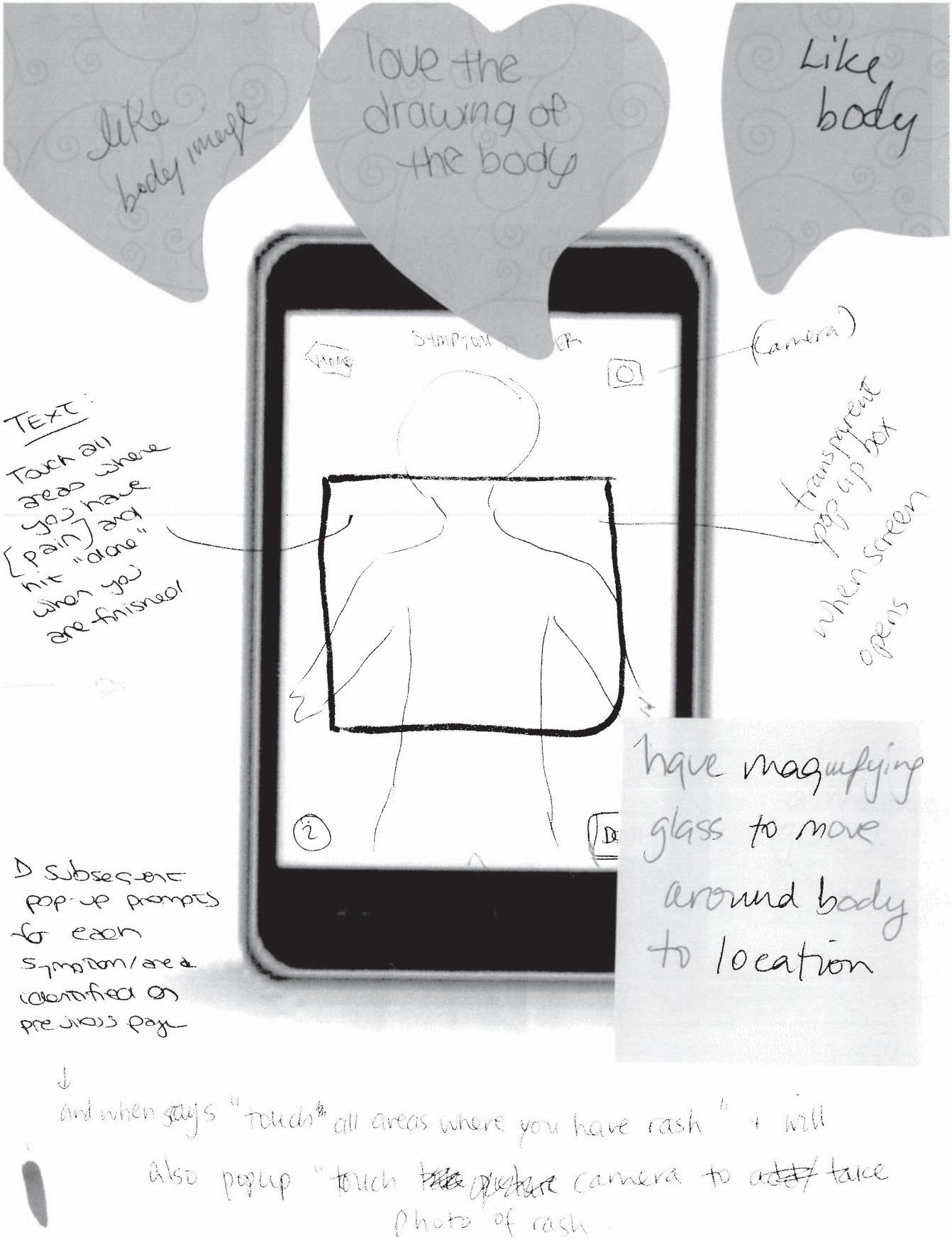
This approach, unconventional in many respects, leverages imagery to create clickable hot zones which serve as navigation elements.

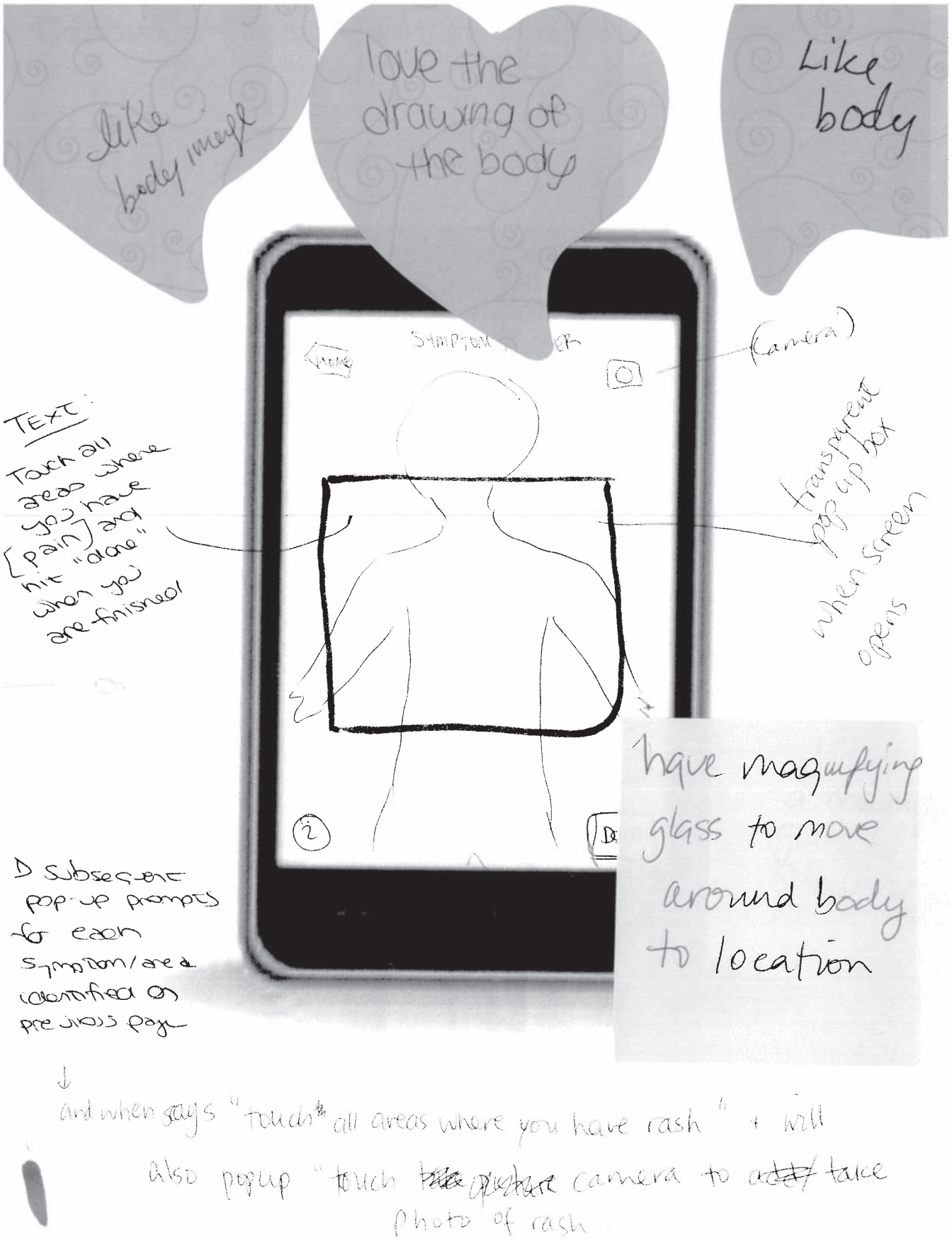


This approach can create visual interest, and help people understand the flexibility of content navigation through a familiar visual paradigm. However, this method often consumes entire screens of real estate to achieve the visual impact desired, and commonly requires app users to use a Back navigation button to return to the navigation scheme from a drill-down screen.

FIGURE 2

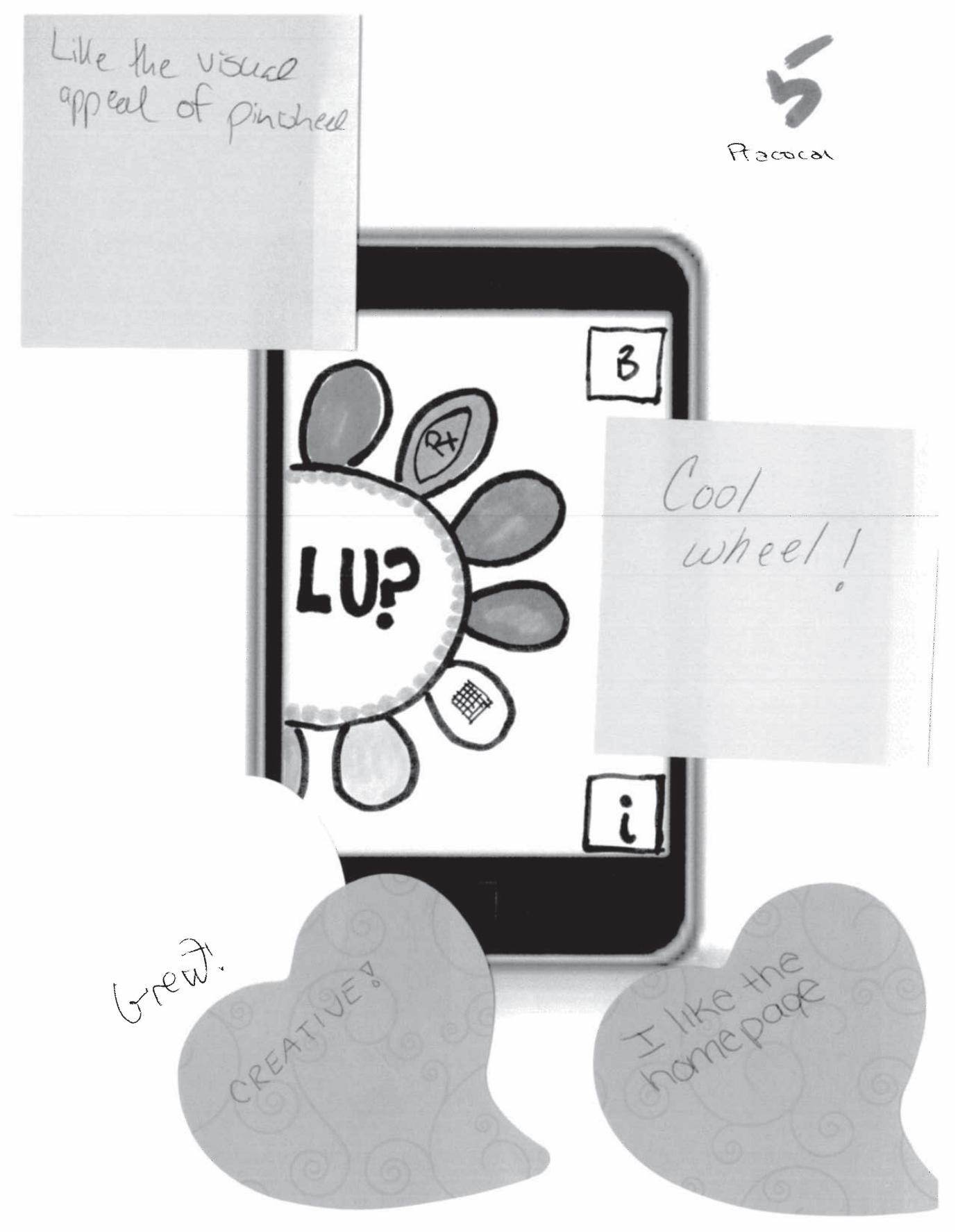

Symptoms
Scroll list
radio buttons
THEN
Like that the 'body' only pops up if you meet a certain criteria
- Physical
Home
choose all the symptoms you are having today
Fever
Rash
Joint pain
Pain
Other :
Insert here
Stress
Mood
overall well-being

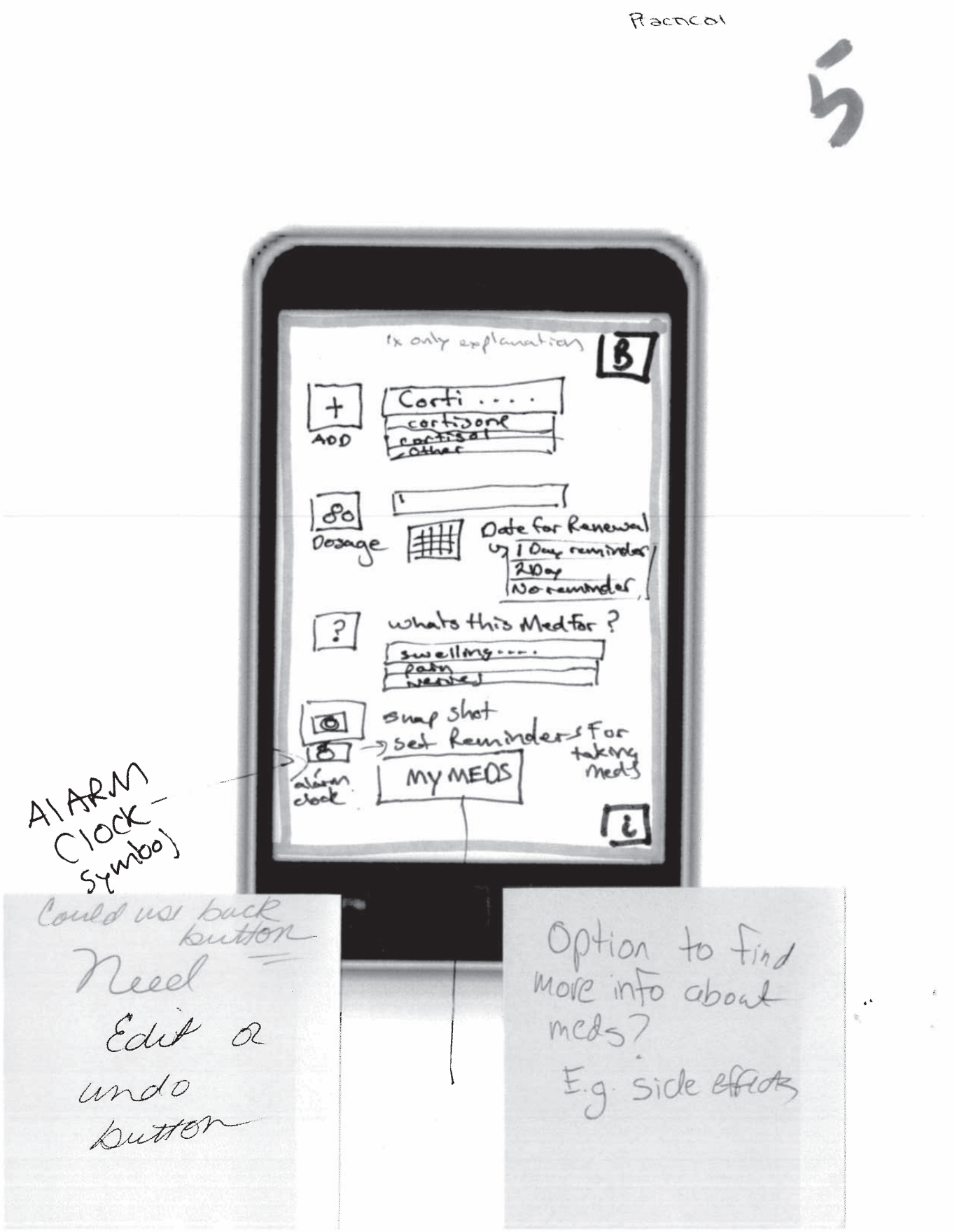

like body image
love the drawing of the body
Like body
(camera)
TEXT:
Touch all areas where you have [pain] and hit "done" when you are finished
transparent pop up box when screen opens
have magnifying glass to move around body to location
subsequent pop-up prompts for each symptom/area identified on previous page
and when says "touch" all areas where you have rash" + will
Also popup "touch camera to take Photo of rash


like body image
love the drawing of the body
Like body
(camera)
TEXT:
Touch all areas where you have [pain] and hit "done" when you are finished
transparent pop up box when screen opens
have magnifying glass to move around body to location
D subsequent pop-up prompts for each symptom/area identified on previous page
And when says "touch" all areas where you have rash" + will
Also popup "touch camera to take
Photo of rash

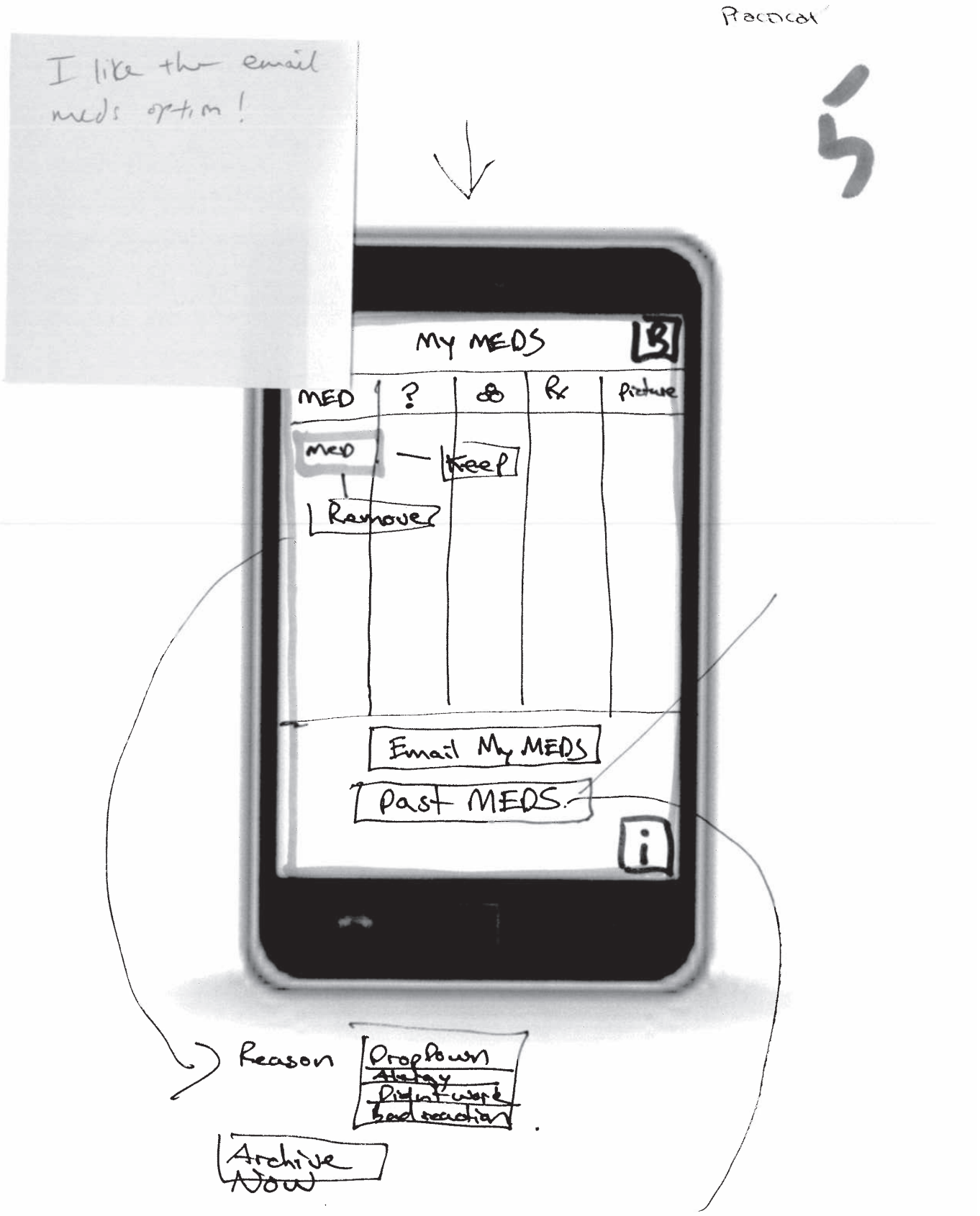

Symptom Tracker | Severity
-3-
HOME
For each of your symptoms, rate the severity:
Pain
Fever
Enter temp °C.
Fatigue
DONE
App will load the appropriate sliding scales based on chosen # of symptoms
Physical -

FIGURE 3


Like the visual appeal of pinwheel
5
Racecar
B
LUP
Cool wheel!
i
Grew.
CREATIVE!
I like the homepage

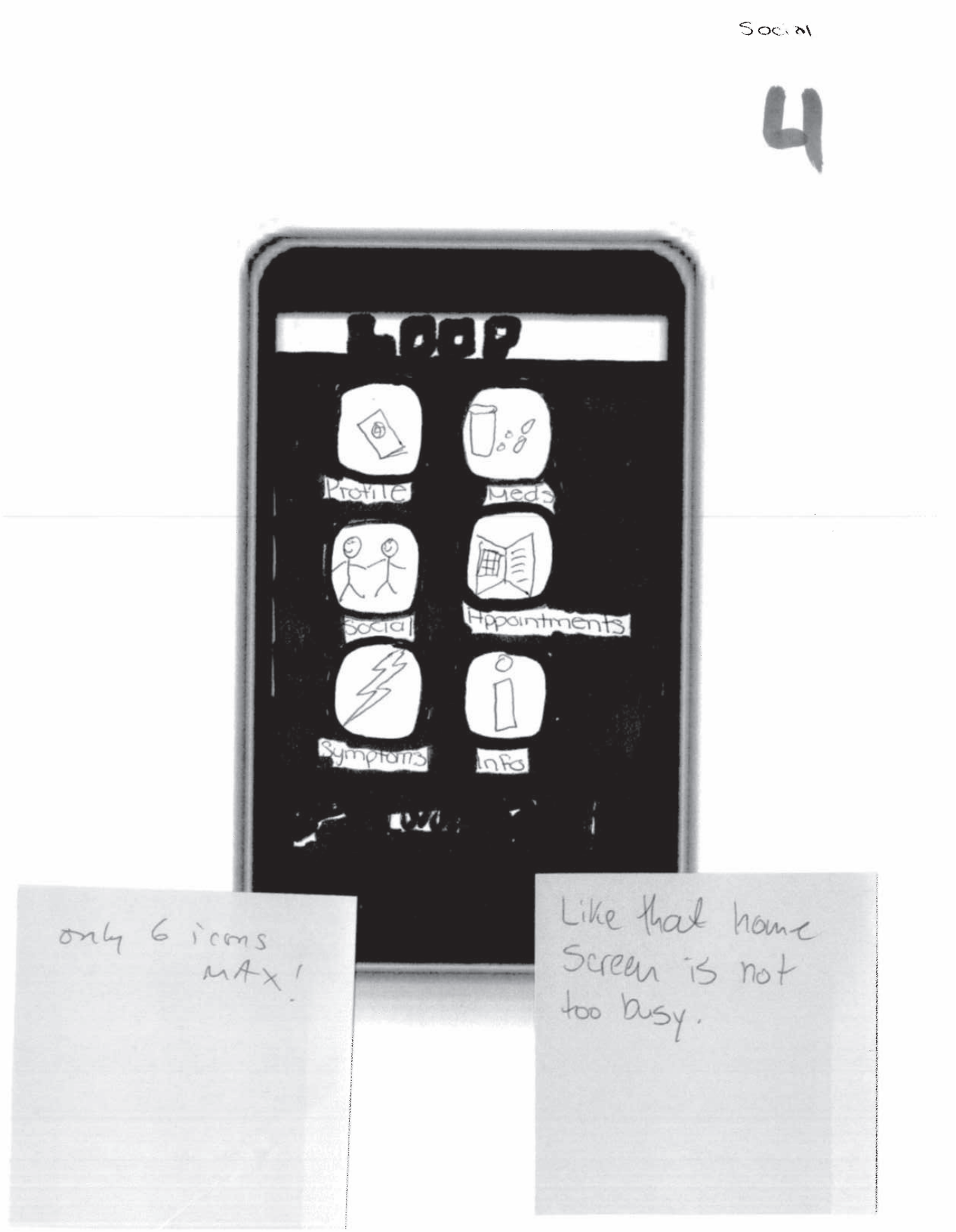

Rx only explanation
B
Corti . . . .
cortisone
cortisol
other
ADD
Dosage
Date for Renewal
1 Day reminder
2 Day
No reminder
what's this Med for ?
swelling . . . .
pain
Snap Shot
Set Reminders For taking meds
alarm clock
MY MEDS
i
ALARM CLOCK - Symbol
Could use back button
Need Edit or undo button
Option to find more info about meds?
E.g. side effects


Are you sure
Yes
No
Back End Records For research
+
ADD NEW
−
cancel
B
Date
time
event
is this reoccuring
Notes
Reminders
1 Day
2 Day
other
SHARE
contact list
Mom
Dad
Sally
Send Email
SMS
Lup msg
i
5
Practical

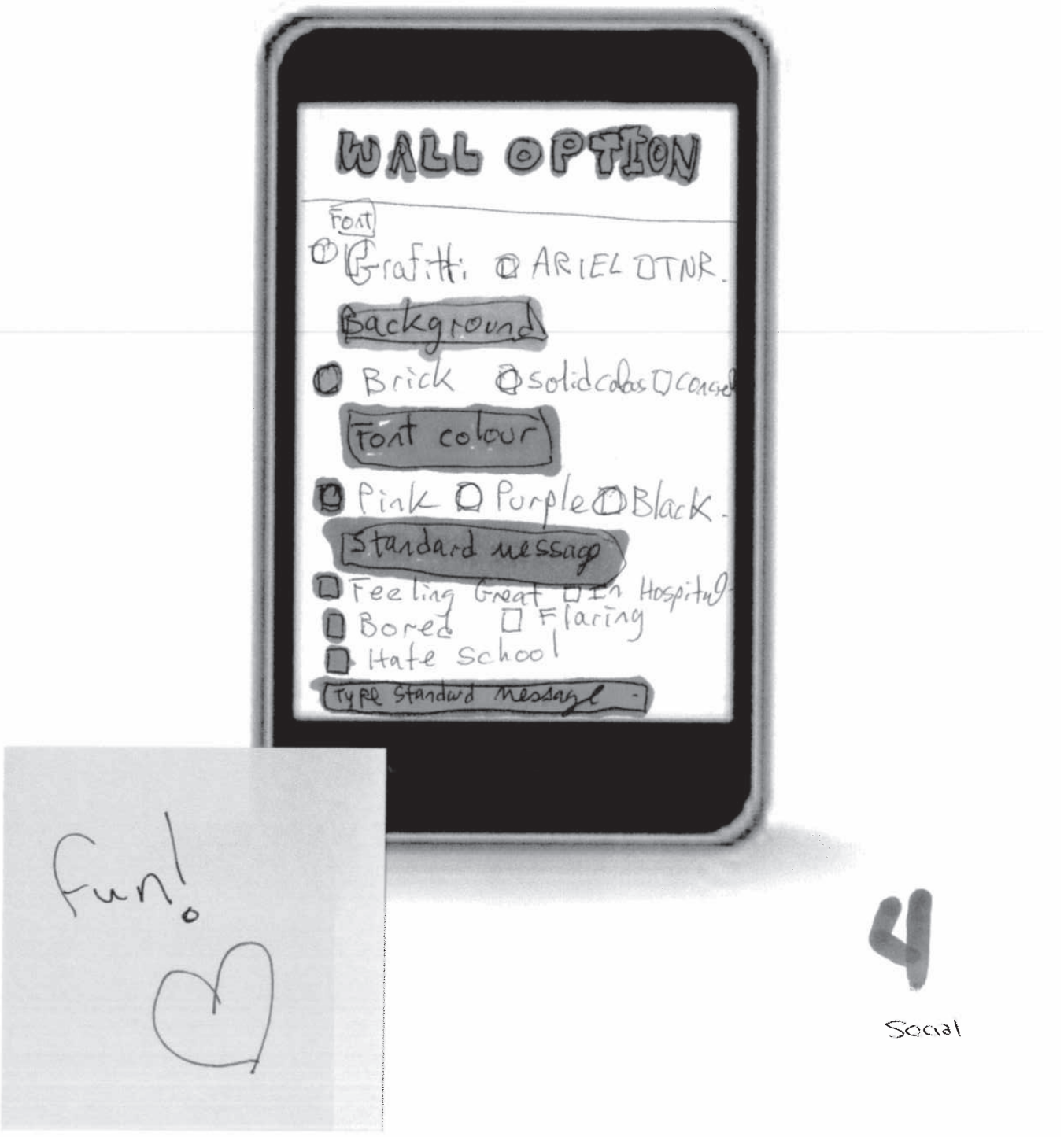

I like the email meds option!
Reason
Archive Now


Practical
PAST MED
MED
?
End Date
Reaction Reason

FIGURE 4


Social
4
Profile
Meds
Social
Appointments
Symptoms
Info
only 6 icons MAX!
Like that home screen is not too busy.


Social
4
SOCIAL
Discussion
Message Wall
Interact
Facebook
LUPUS
?
$
Love the post idea


WALL OPTION
Font
Grafitti
ARIEL
TNR.
Background
Brick
Font colour
Pink
Purple
Black.
Standard message
Feeling Great
Bored
Flaring
Hate School
Type Standard message
Fun!
4
Social


Great Idea!
great idea
Social
4
MESSAGE WALL
FLARE
(I h8 STEROIDS)
TYPE Today's Message
Flare (I h8 Steroids)
Standard message list
CAPTIONS
Love
The wall
- Graffiti
- choose diff. styles of writing
this is fun!
Love the 'wall' idea