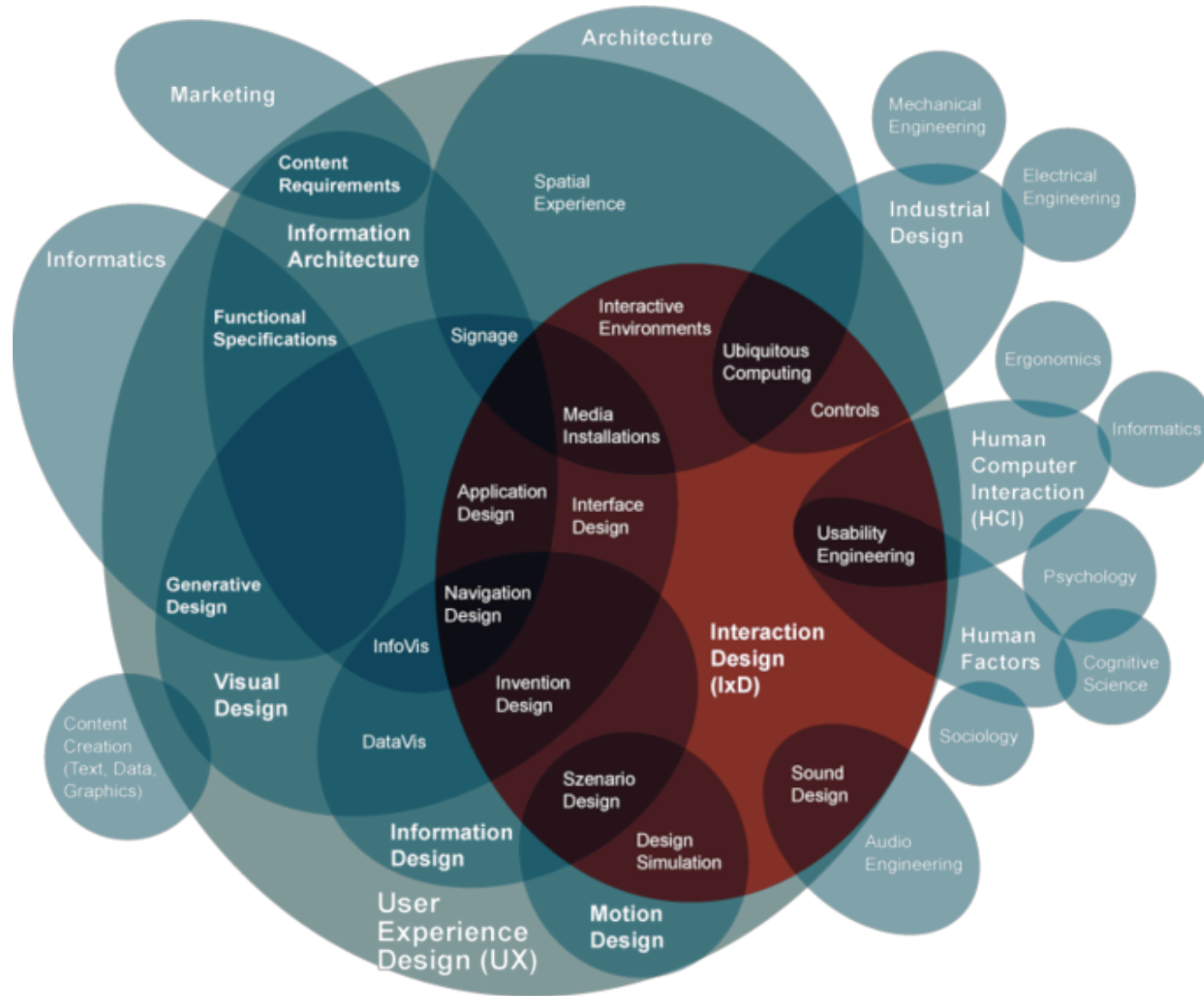


interaction design

Thanks to JoEllen Kames

Motorola Mobility | Consumer eXperience Design
for presenting earlier versions of these slides in
our on-campus version of this course

interaction design



Copyright :envis precisely (2009)
 based on »The Disciplines of User Experience« by Dan Saffer (2008)
www.kickstudio.com/blog/2008/12/the-disciplines-of-user-experience

interaction design > interface design

Structured ways for effectively taking what you have learned about people and transforming it into something that provides value + delight

Modeling

Framing the solution space

What is it? How does it connect to other things? How does it meet users' goals?

Structure...Flow...Process

Designing how the system will work

How big is it? What can I do with it?

Screen design

Designing how the screens will work

What goes where? Why?

modeling

modeling: what is it + why is it important

Modeling

Defining an visual abstraction of your solution that provides the big picture of your system

Framing the solution in context of the environment + other systems

Frames the solution in the end user' s context

Why do it?

Helps define initial scope of the system

Defines other influences on the system or on users of the system

Builds consensus among team members

Frames big ideas for stakeholders

modeling: human centered concept models

How do users think about your system?

What are the activities that they can do?

What are the different types of users that will use your system?

What are the different modes in which they might use it?

What are the different phases that your system might address?

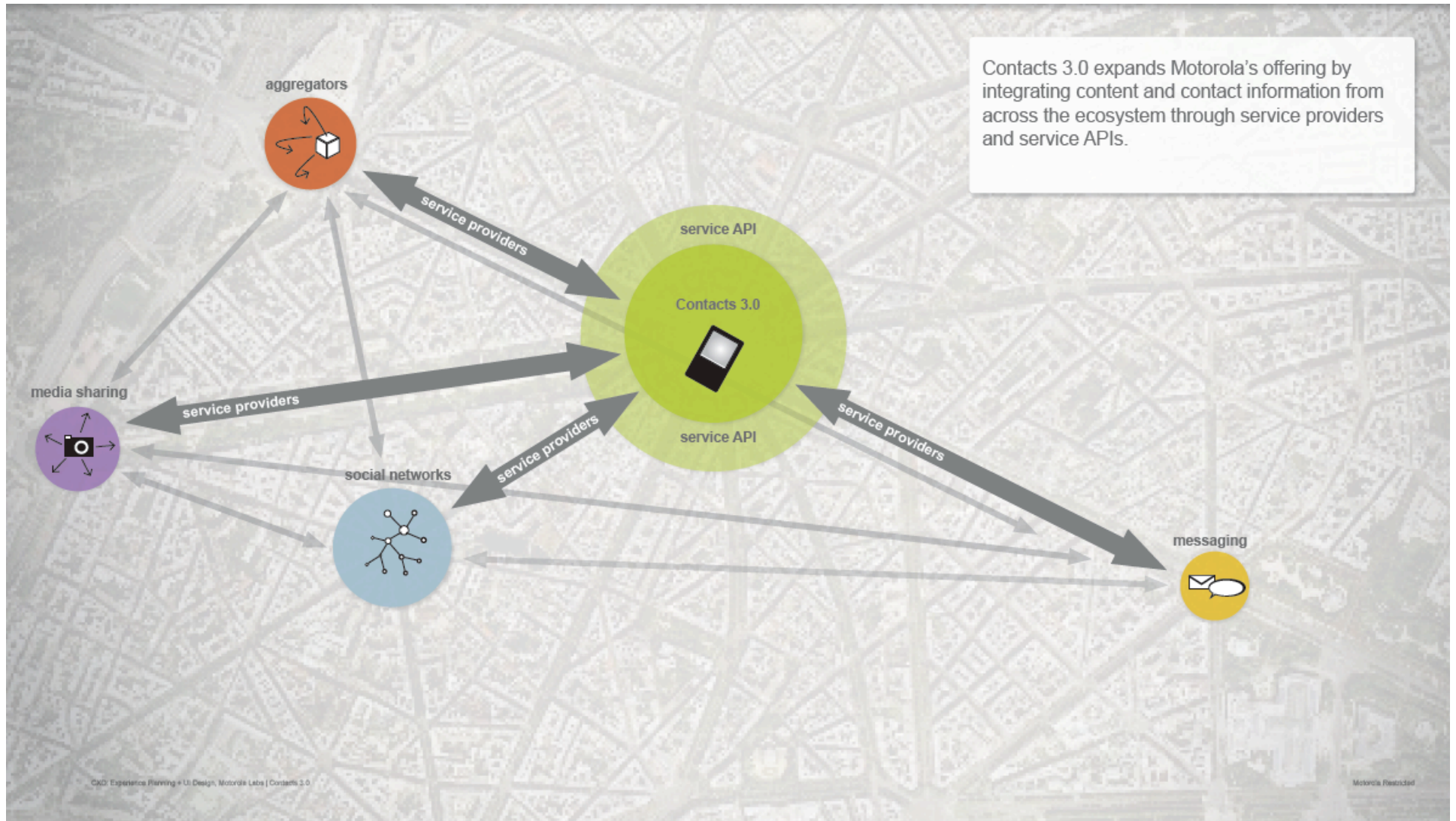
How is it different than what they used before?

Is there a familiar metaphor that will help users understand your system?

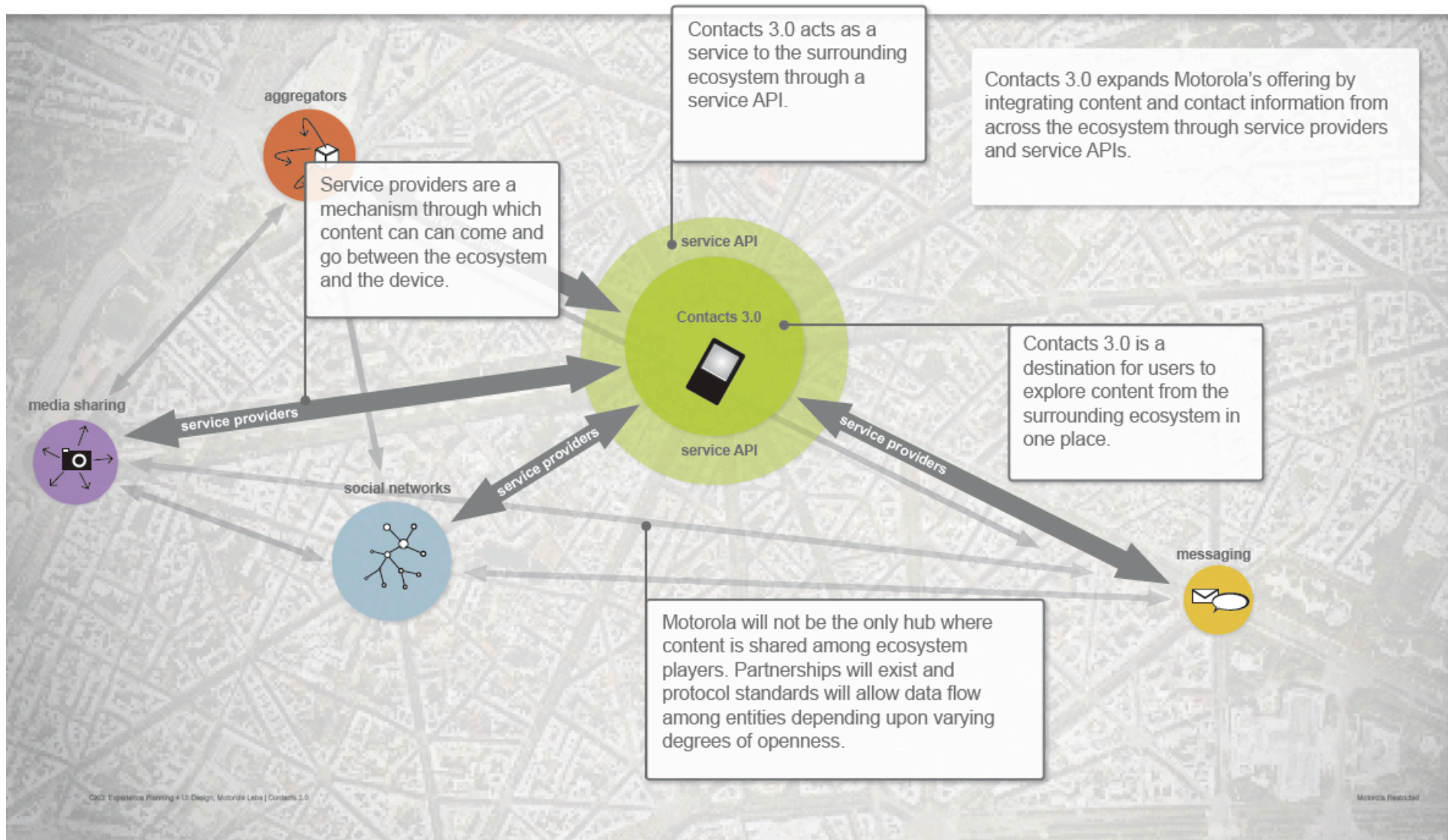
modeling: using metaphors



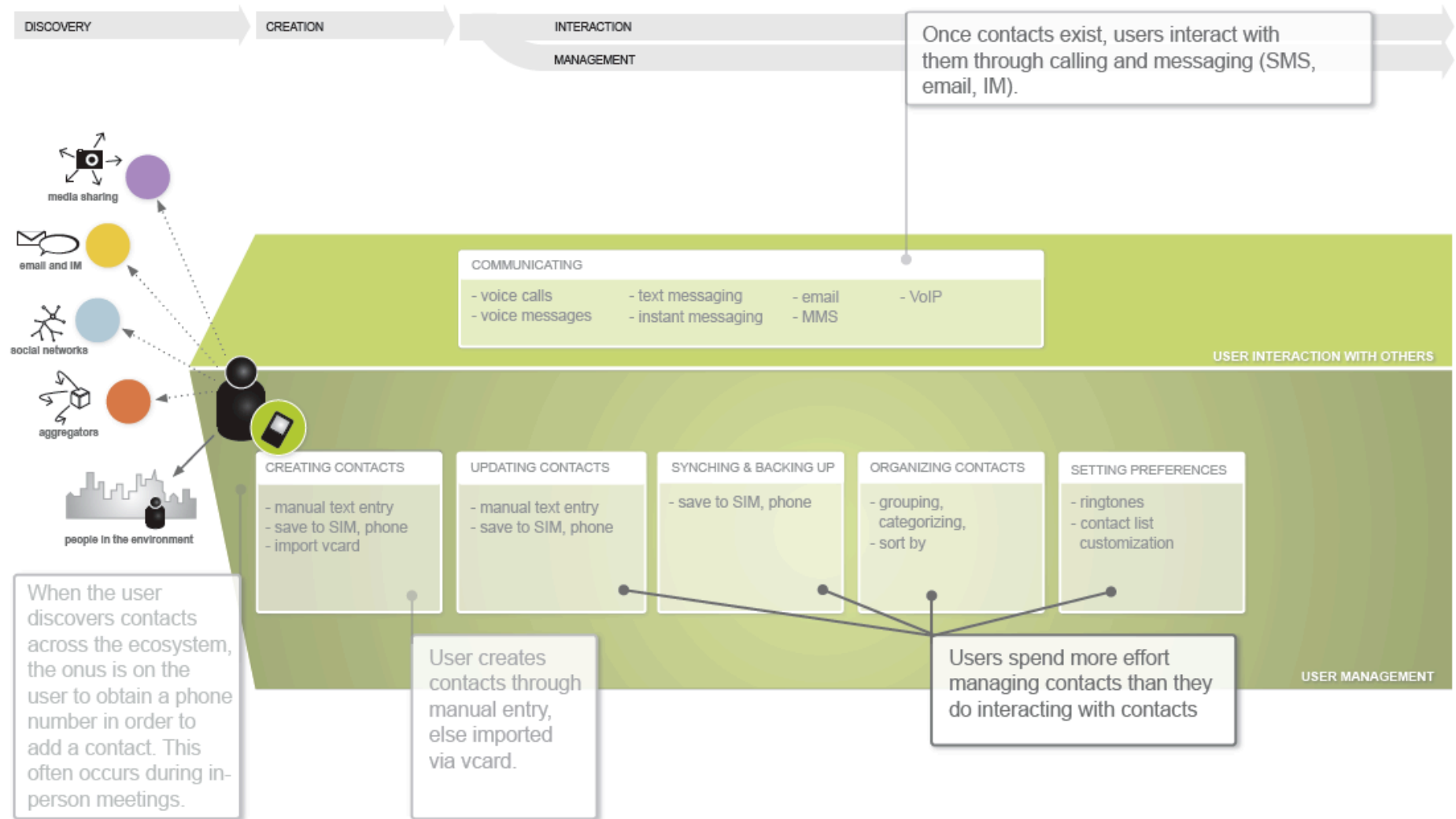
modeling: using metaphors



modeling: using metaphors



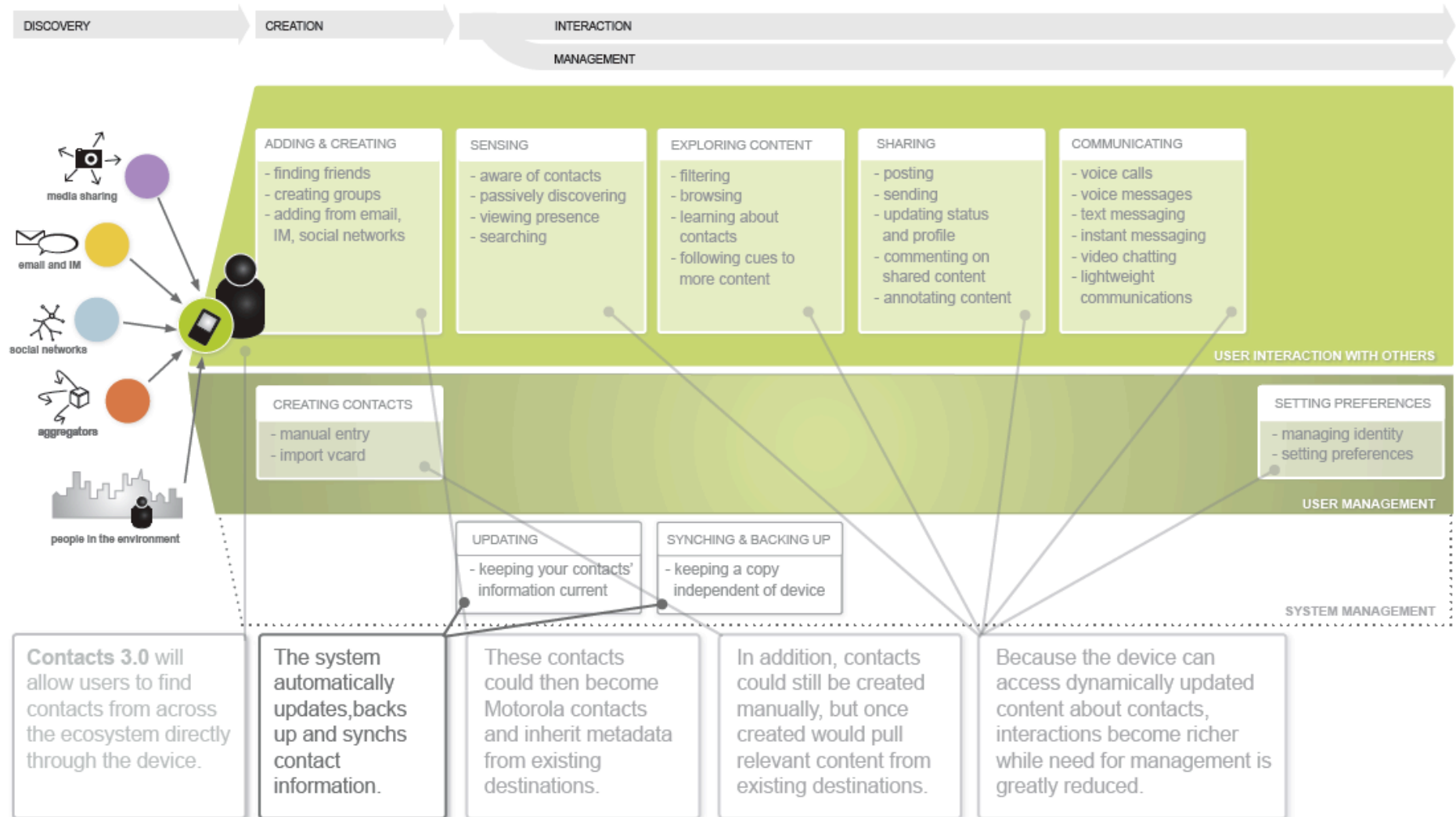
modeling: before + after



CXD: Experience Planning + UI Design, Motorola Labs | Contacts 3.0

Motorola Restricted

modeling: before + after



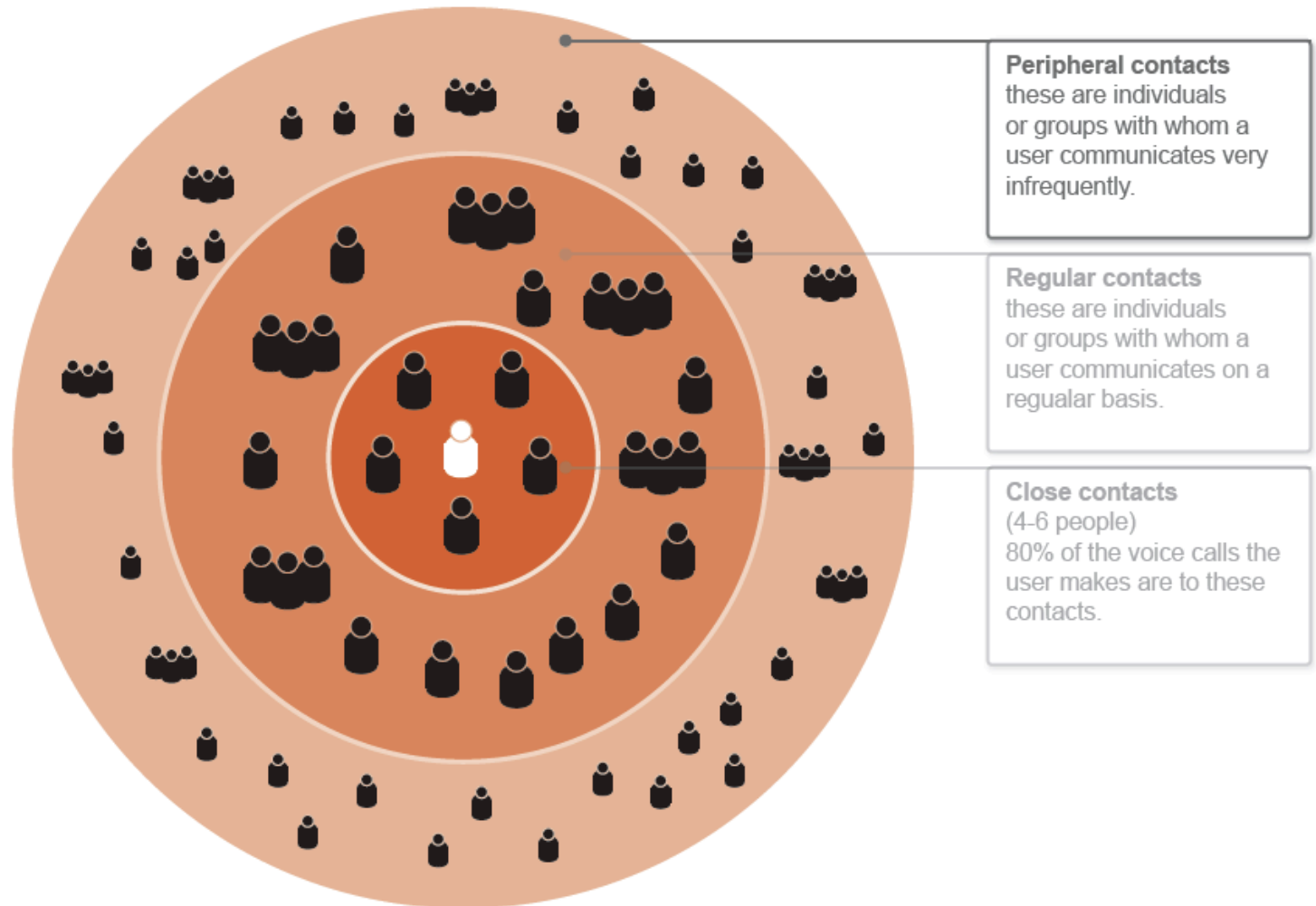
CXD: Experience Planning + UI Design, Motorola Labs | Contacts 3.0

Motorola Restricted

modeling: mental models

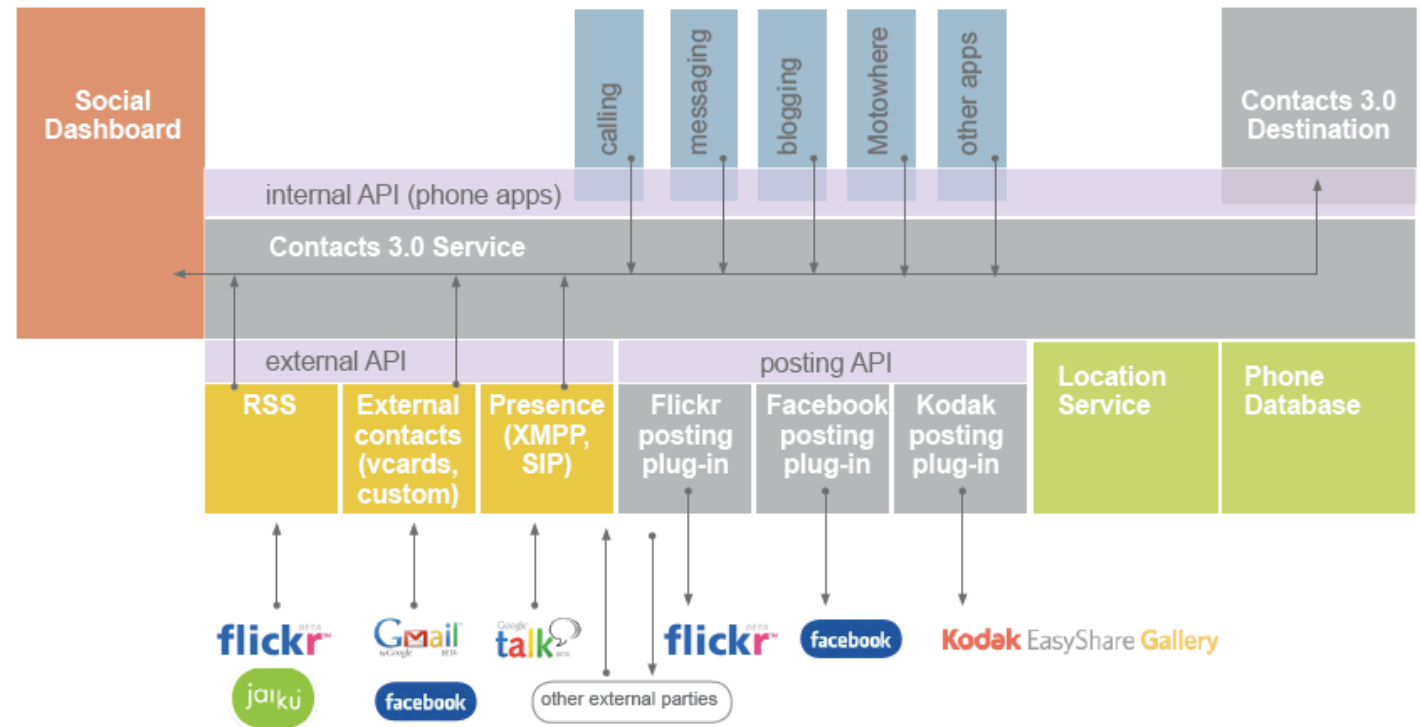
User Mental Model

- > Close contacts
- > Regular contacts
- > Peripheral contacts



modeling: system diagrams

Software Architecture: Destination *and* Service



modeling: content types

**Demanding**

You need to know about me right now!

Things I have to or should acknowledge

- Calls
- Messages
- Reminders

**Patient**

I'm here when you need me.

Tracking information

- Weather
- Call logs
- Location information
- Battery
- Patterns of use

**Collected**

I've got what you need to know and you *should* know this.

Tapping the collective consciousness: learning, connecting, discovering...

- ...with a librarian
- Structured, organized information
- News
- SN updates

**Cool**

Let's go check some stuff out.

...with a DJ

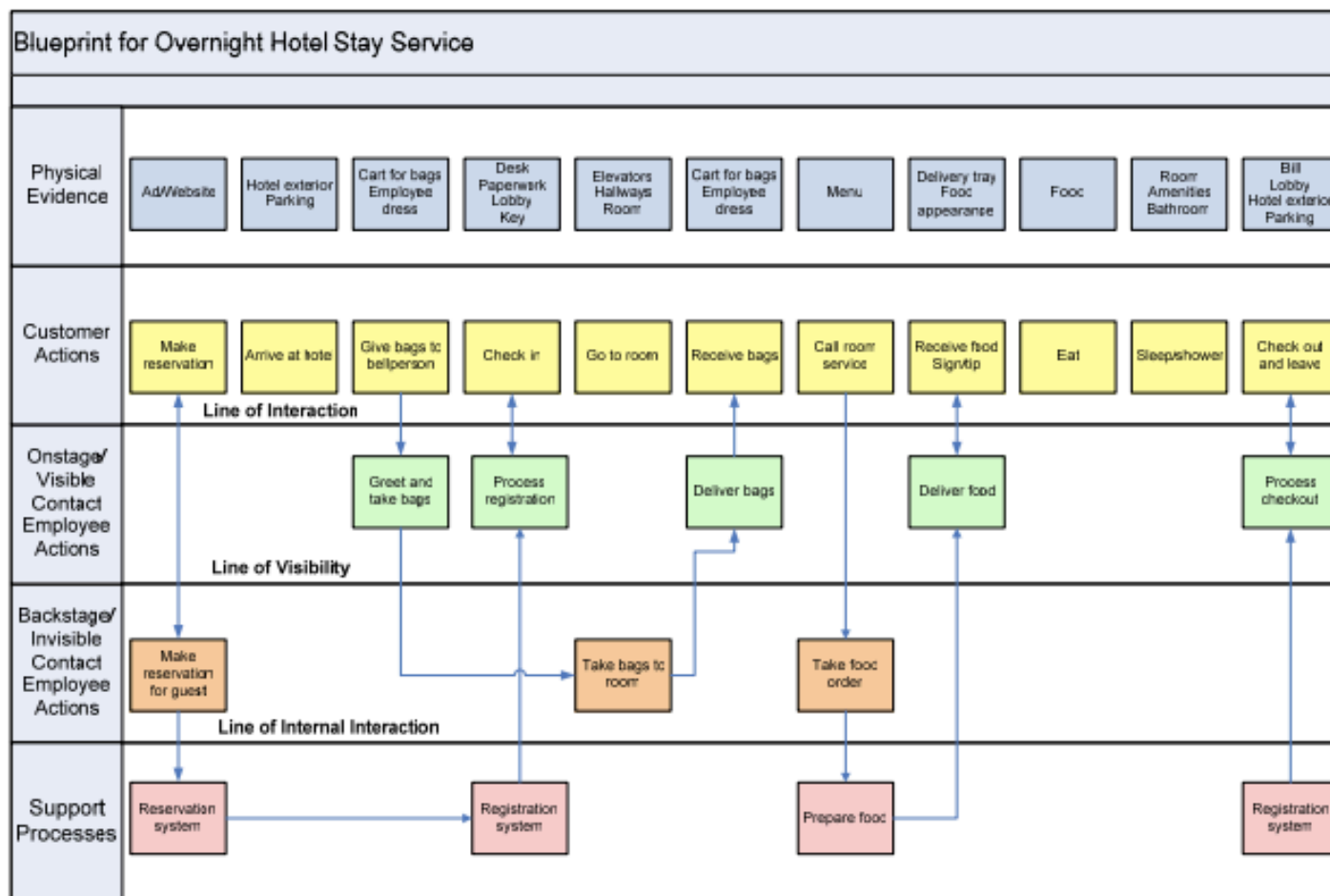
- Recommended content
- Media from friends

modeling: user types

[illegible][illegible][illegible][illegible][illegible][illegible]

modeling : service blueprints

Actions users take and steps needed to support these actions by various parts of your service



making models

Take 15 minutes in your groups and
create some simple models for
your app

before + after (how is life different with your app)

mental models (how do users think about a key part of your system)

system model (how is your system architected)

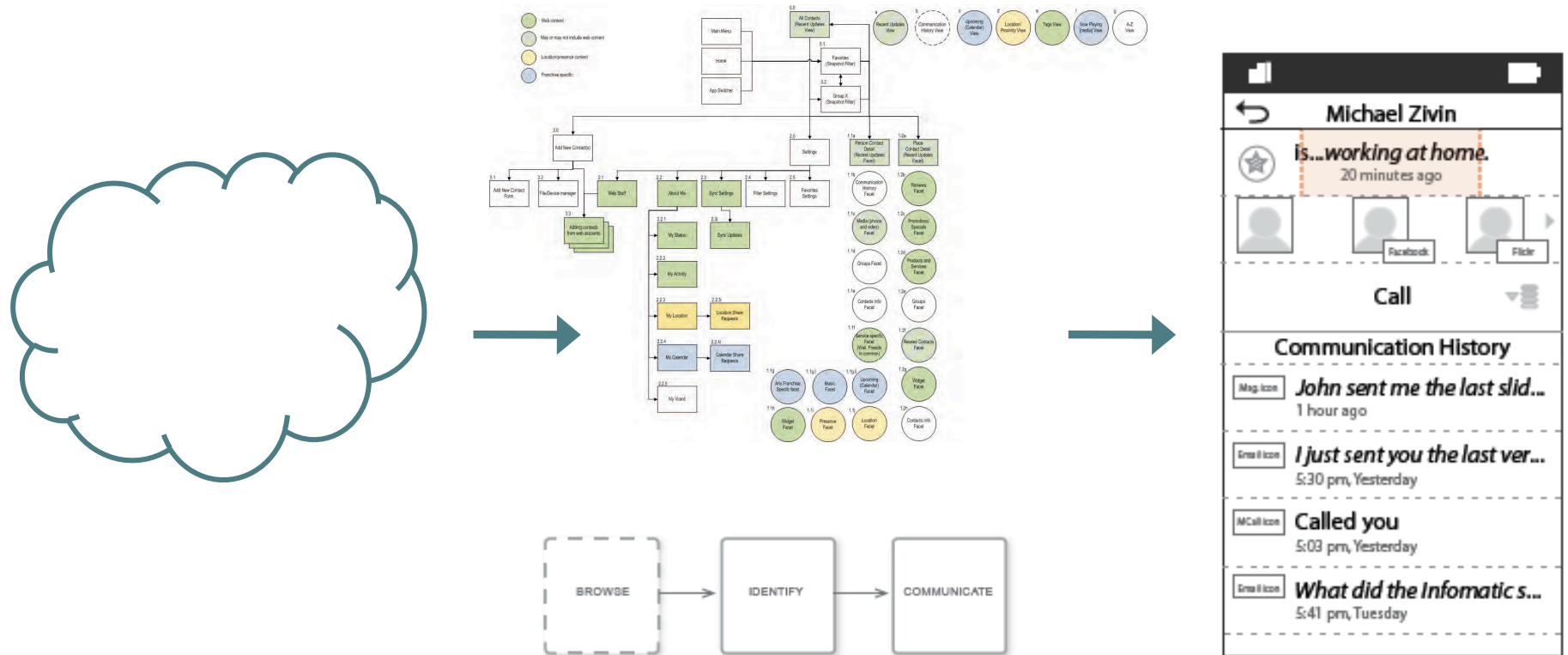
user types (what different types of users would use your app in what ways)

content types (what different types of content and interactions are in your app)

service blueprint (what are all of the user touchpoints with your system)

structure...flow...process

structure...flow...process: putting it all together



concept models

information architecture
use cases + user flows

screen wireframes

structure...flow...process: user goals

What should your system do?

Functionality should map to user goals

life goals: beyond the system, but help explain why trying to accomplish end goals

experience goals: how someone wants to feel while using the product

end goals: outcomes users expect from using the system

structure...flow...process: interaction framework

How should your system be structured?

Cooper's Interaction Framework

1. What is the form factor and input methods?
2. What are the different views?
3. What are the functional and data elements? (basically, parts of a larger key path)
4. What are the functional groups and hierarchy? (sequence, groupings of containers, functionality – based on form factor and input methods)
5. What does the interaction framework begin to look like?
6. What are the key path scenarios? (primary actions and pathways through the system, e.g. viewing and composing emails)

structure...flow...process: a few notes

It's not a linear process – iterate back and forth between user flows + preliminary wireframes

Showing user experience flows vs system/business flows

Flows demonstrate users movement through time – how the user begins, ends and the clearly marked path that they take

Demonstrating cause + effect

Consistency is key in diagramming systems – there is no “right” visual language

Visual vocabulary – borrowing and adapting to make it your own

use cases

What will a user do in your application/service?

- Aspirational/Emotional Use Cases

- Feel closer to friends and family
- Feel entertained on a commute
- Laugh

- Functional Use Cases

- See which friends are nearby
- Play/Pause a movie
- See a list of movies playing nearby
- Sort list by distance

use cases

Creating a full list helps to plan structure of your application

Keeps you focused on “core” use cases and keep feature bloat in check

structure...flow...process: use cases

Use Case Catalog

Click here to access this document on Compass.

Key

C = Core

I = Important

N = Nice to have

Communicating	Priority
Call a Contact	C
Send Message (or reply to) a Contact (SMS/MMS)	C
Send Message a Group (SMS/MMS)	C
Email a Contact	I
Email a Group	I
Send Lightweight Communication to Contact	N
Send Lightweight Communication to Group	N
Instant Message a Contact	N
Instant Message a Group	N
Send Voice note to a Contact	N
Send voice note to a Group	N
Send Message to a Contact through an online service (i.e. Facebook)	C
Post on someone's Wall on Facebook (or equivalent for another Service)	C
Request info from a contact (Location, Contact Info, etc.)	I
Comment on Contact's media	C
Learning	
View Contact's Status Message from online services (i.e. Facebook)	C
View Contact's Mood	N
View Contact's exact Location (cross-streets, address, dot on map)	I
View Contact's vague Location (City, State)	I
View Contact's user-defined Location (home, store, tag, etc.)	I
View Contact's time zone	I
View Contact's distance from me (exact - 2 mi)	I
View Contact's distance from me (general - same city, near, etc.)	I
View Contact's Motion Presence (moving/not moving; duration)	I
View Contact's preferred communication method	I
View Contact's Music Status	I
View Contact's current/recent photos	C
View Contact's comment on a photo	
View Contact's recent posts/online activities (short: eg. Twitter)	C
View Contact's recent posts/online activities (long: eg. Blog)	C
View Contact's comment on a Blog post	
View Contact's Facebook Profile update	
View Communication History with Contact (Recent Calls, etc.)	C
View Business specific data (Hours, Locations, etc.)	I
View Contact's IM Status now	I
View Contact's Calendar availability	I
View Contact's Calendar	N
View Contact's contacts, network	N
View Contact's online profiles (Facebook, Myspace, LinkedIn)	C
View Contact's weather where they are (attach Widget to a Contact?)	I
View Contact's Ring Profile (Ring, Vibrate, etc.)	N
View basic Contact information (Phone number, Email, IM, etc.)	C

Sharing	Priority
(From My Info section on the Social Dashboard)	
Set my Status (make avail. OR push)	C
Set my photo (to appear in others' Contact lists)	C
Set my Mood (make avail. OR push)	N
Share (make avail. OR push) my exact Location	I
Share (make avail. OR push) my user-generated Location	I
Share (make avail.) my Motion Presence	I
Share (make avail. OR push) my vague Location (City, State)	I
Share (make avail. OR push) my Time Zone	I
Share (make avail. OR push) my Calendar	I
Share (manage permissions for) my current media (what I'm watching, Blogs, Music?)	C
Share my preferred communication method	N
Share (make avail.) my IM Status	I
Share my online identities (url to any online profiles that a user has)	C
Share myself as a Contact (my Vcard)	I
Share my Contacts/my Network	
Make an introduction to a Contact (like LinkedIn) (sending Contact Info (like sending Vcard))	I
Send content to a contact (link to media, Blogpost, etc.)	C
Send content to a group (link to media, Blogpost, etc.)	C
Send Meeting/Event Invite	I
Share business-specific data (if Contact is a business)	N
Searching/ Finding/ Browsing	Priority
Search for a Contact on-Device	C
Search for a Contact off-Device	
Search by Tag	
Browse Contacts	C
Filter/sort Contacts Main by:	C
Tag	C
Location	I
Now (or recently) Playing [media]	I
Recency of communication	C
Recent Updates	I
Calendar (Upcoming)	
Franchise Specific activity (Now playing media)	
Group	
Favorites (suggested by frequency)	C
Filter/sort Social Dashboard Content (Device + Social/Web updates) by:	C
Group (from Contacts App)	C
Media Type (off-Device)	C
Recency (time-based by default)	C
Communication Type (on-Device: Calls, Messages)	C
Web (off-Device)	
Phone (all on-Device)	
Web Service	C

Creating	
Create a Group (from Tags)	C
Create a Group from a shared group (a Contact send/shares the Group with another member)	C
Create a Group from a Message (sending to multiple recipients)	C
Publish Group (notify Contact that they are in a Group and give option to add group)	I
Create a Group from scratch	C
Create a Contact from Web Service (custom API for Facebook, etc.)	C
Create a Contact from another Device (including "kissing" and tagging location)	N
Create a Contact from scratch	C
Create a Contact from Structured Data	C
Request an introduction to a Contact (requesting Contact Info for another person)	I
Rate Contacts (make Favorite)	N
Block a Contact	C
Block particular feeds for a Contact	C
Block a Group	C
Disband a Group	C
Syncing/Backing up/Storing	
Sync/update Contacts with Web Service	C
Sync/update Contacts with another Device (PC or second phone)	I
Save Contacts to SIM	C
Save Contacts to Phone	C
Save Contacts to Service (NGP - back-up?; carrier?; 3rd party?)	I
Customize/set preferences for Contacts Detail	C
Customize/set preferences for Contacts Main	C
Setting up	
Import Contacts from Online Service	C
Reconcile/merge Contacts across information sources (matching John on Facebook to John in Contact List)	C
Set which content sources I want from a given Contact	I
Receive notification that a Contact has edited their Contact Info and there is a conflict (following Auto-Sync)	I
Respond to conflict alerts following automatic sync/updates with online services (in background)	I
Set sync (Web services) option to manual	C
Configure Automatic Sync	
Choose who to add from a given Service	C

structure...flow...process: use cases

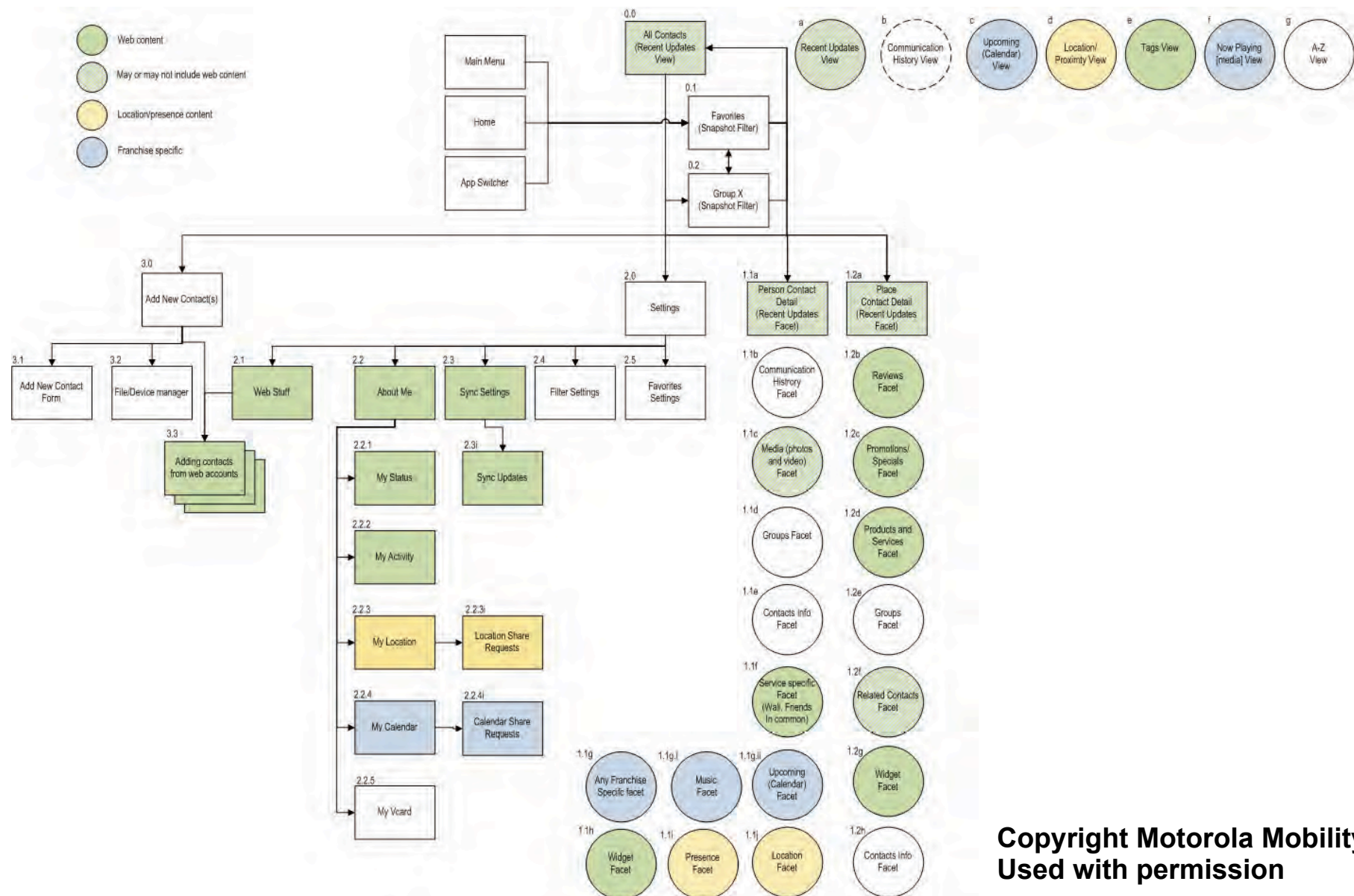
Identifier	Use Case	Priority		
<i>Communicating</i>				
A	Call a Contact	C	x	x
B	Text Message (or reply to) a Contact (SMS/MMS)	C	x	x
C	Text Message a Group (SMS/MMS)	C	x	x
D	Email a Contact	I	x	x
E	Email a Group	I	x	x
F	Send Lightweight Communication to Contact	N	x	x
G	Send Lightweight Communication to Group	N	x	x
H	Instant Message a Contact	I	x	x
I	Start a Group chat from Group Detail	I		x
J	Send voice note to a Contact	N		x
K	Send voice note to a Group	N		x
L	Message a Contact on online service (i.e. Facebook)	C	x	x
M	Communicate via service specific methods (i.e. Post on someone's wall on Facebook)	C	x	x
P	Request information from a Contact (exact location; duration, contact info)	I	x	x
	Request information from a Contact (Introduction to another Contact)			x
Q		C	x	x

use cases

Take 10 minutes in your groups and list out all the use cases you can think of for your app

If you have time, prioritize these as Core, Important, or Nice to Have

structure...flow...process: information architecture



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structure...flow...process: know your sandbox



Android

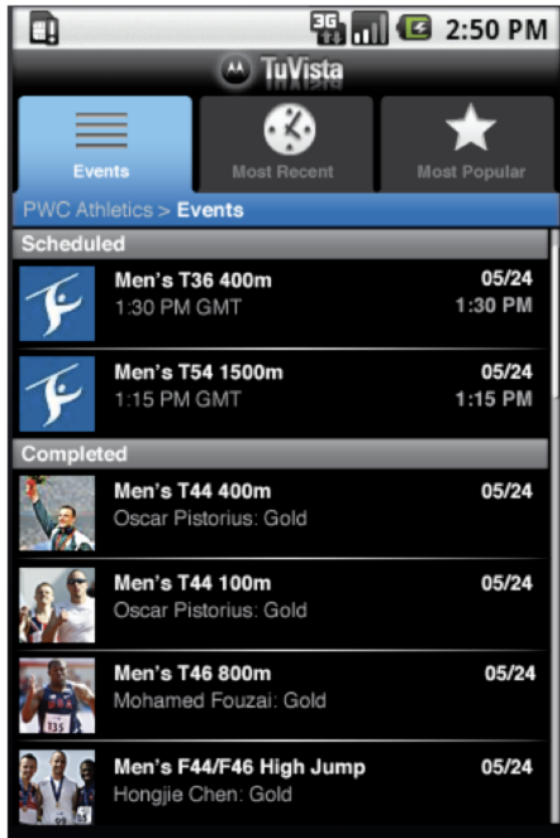


iOS

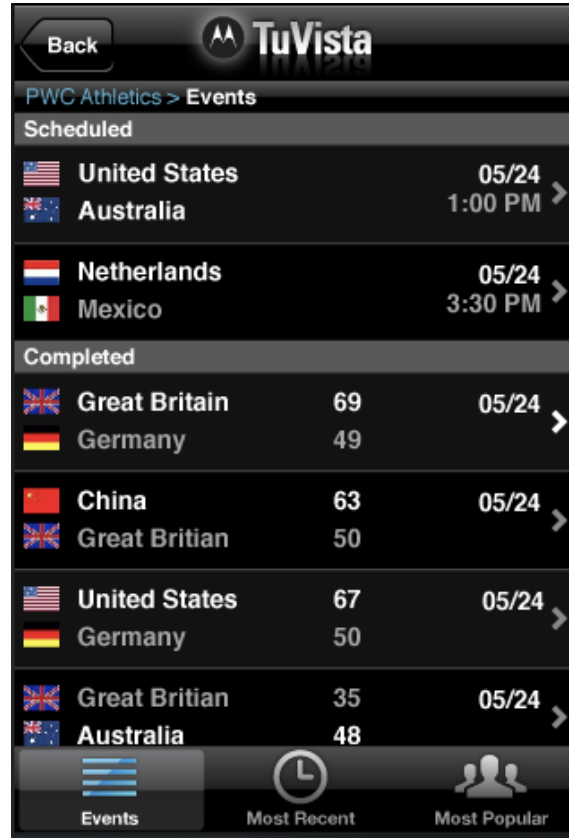


Windows Mobile

structure...flow...process: know your sandbox



Android



iOS

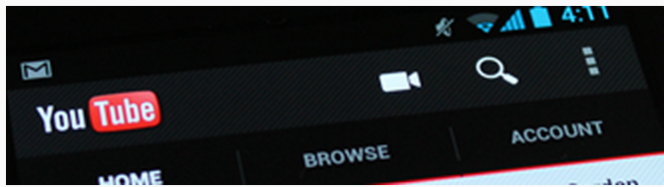


Blackberry

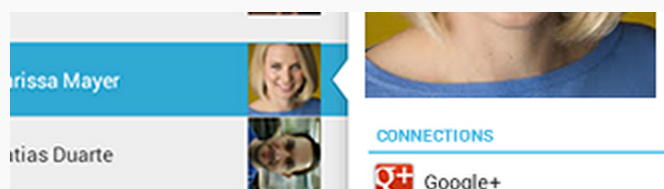
structure...flow...process: patterns + guidelines






Navigation bar



Action bar

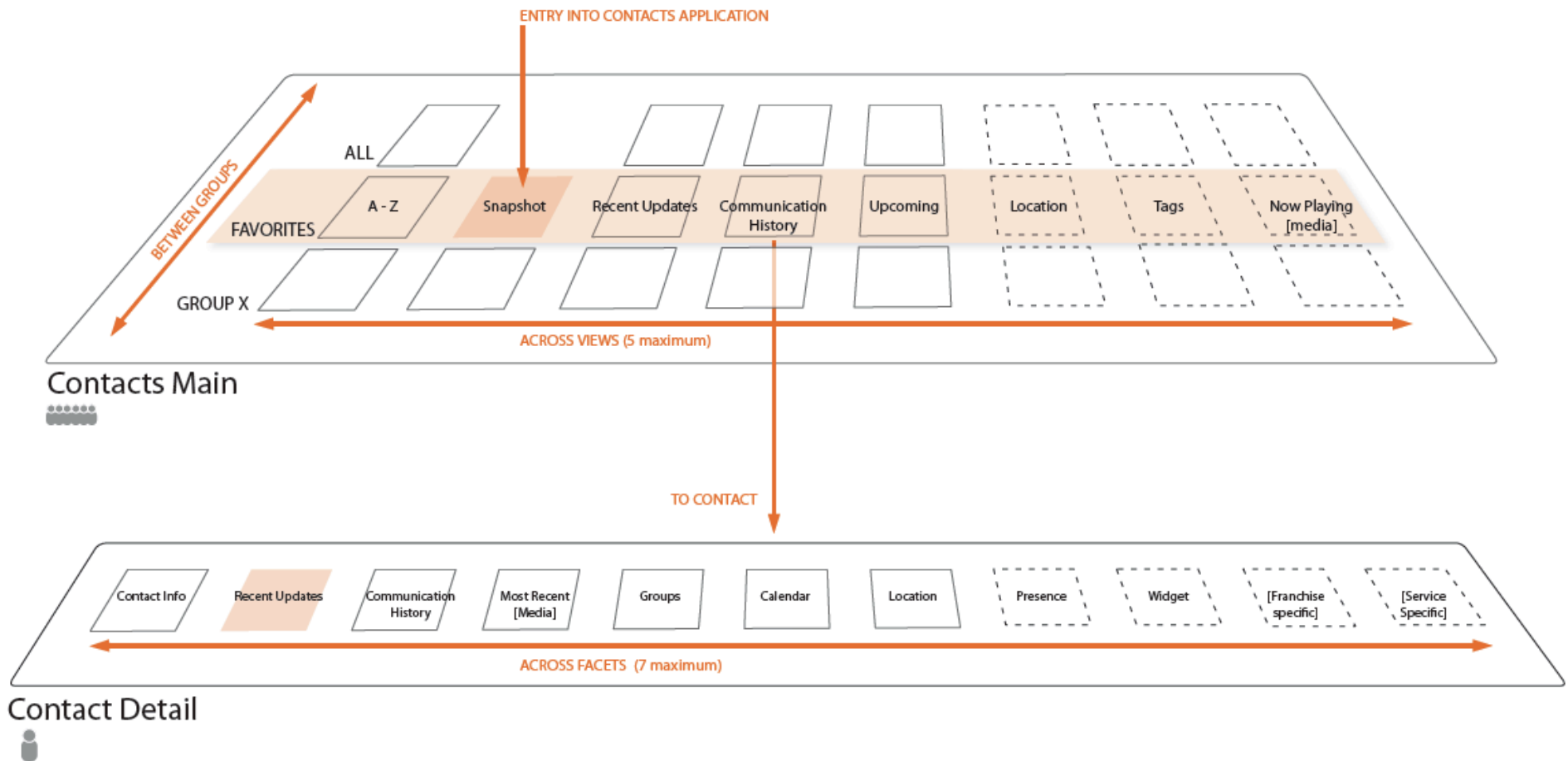


Multi-pane layout

<p>Touch</p> <p>Triggers the default functionality for a given item.</p> <p> Action Press, lift</p>	<p>Long press</p> <p>Enters data selection mode. Allows you to select one or more items in a view and act upon the data using a contextual action bar. Avoid using long press for showing contextual menus.</p> <p> Action Press, wait, lift</p>	<p>Swipe</p> <p>Scrolls overflowing content, or navigates between views in the same hierarchy.</p> <p> Action Press, move, lift</p>

Gestures

structure...flow...process: interaction model



affordances/interface design: early definition + sketches

Basic Call

A user could place a basic call directly from the Social Dashboard if a contact shows up as a result of a recent update. Otherwise, the user would go into Contacts Main to find a contact and place a call.



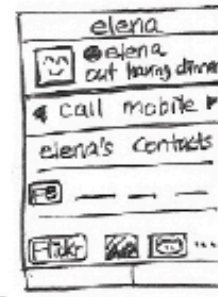
d1. Calling contact directly from Social Dashboard through send key



d2. Calling screen with presence information to provide context



d3. Contacts Main

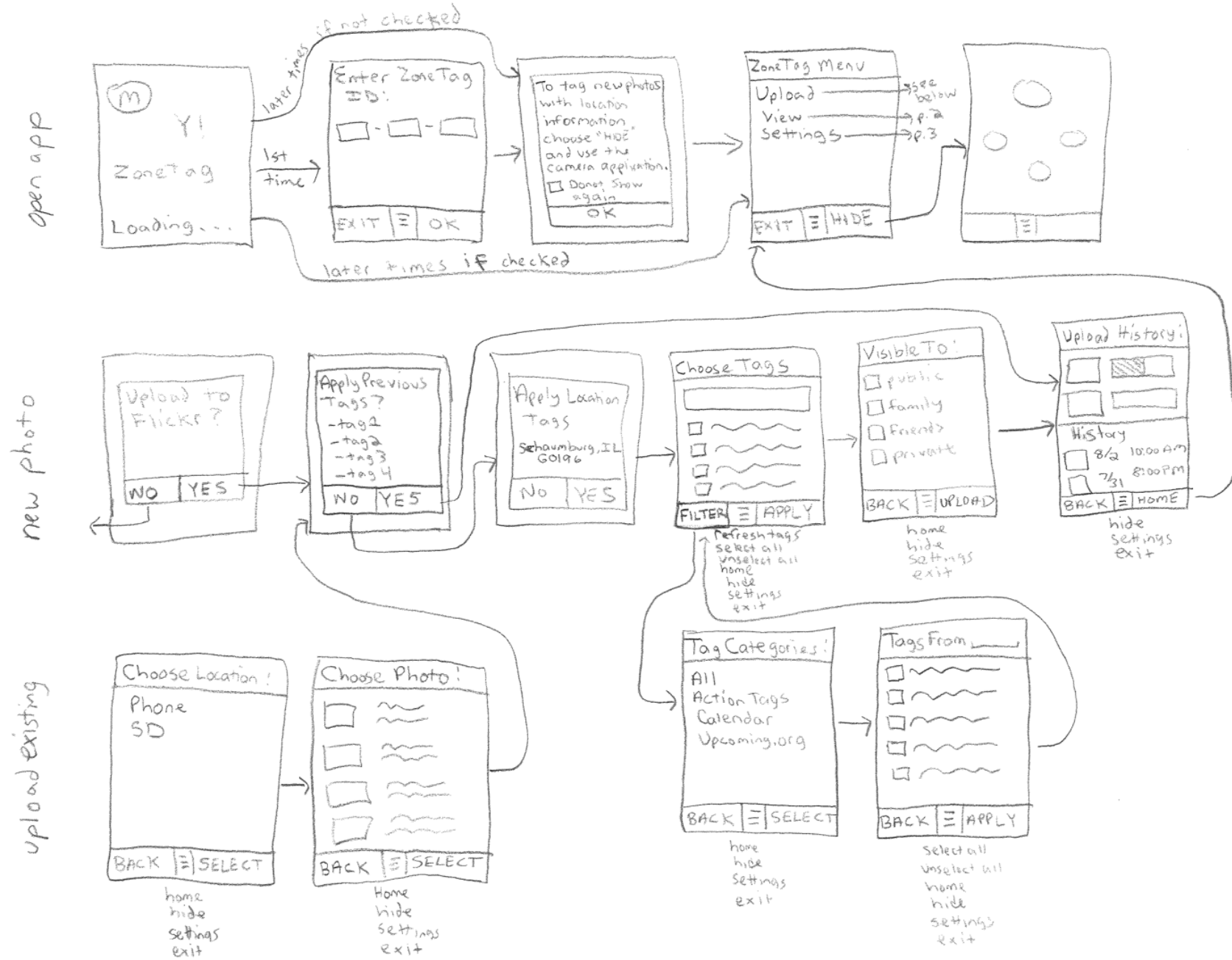


d3. Contact Detail shows a voice call is suggested method



d3. Calling screen with presence information to provide context

ZoneTag UI Rev 2



flow models

In your groups, take 15 minutes to
create a flow model for your app

What are the screens involved?

How do you move from screen to
screen to complete a task?

screen design

affordances/interface design: interface design principles

Wodtke' s 8 principles

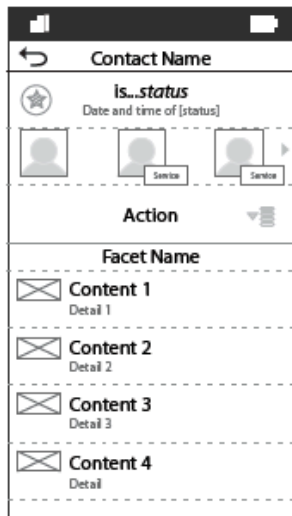
1. Design for way-finding – where you are, where you can go, how to get there
2. Set expectations and provide feedback
3. Ergonomics design
4. Be consistent and consider standards
5. Provide error support – prevent, protect, and inform
6. Rely on recognition rather than recall
7. Provide for people of varying skill levels – intermediate is fine
8. Provide meaningful and contextual help and documentation

Blueprints (or user flows and wireframes) are just good thinking written down

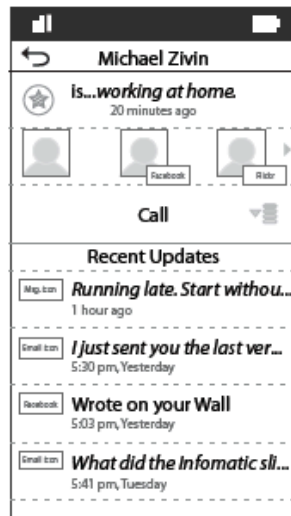
affordances/interface design: screens

Anatomy of the Contact Detail screen (for a person - 1/6)

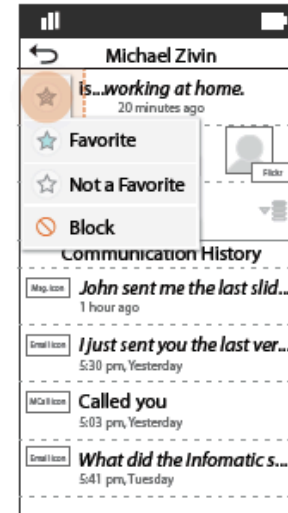
1.1 Person Contact Detail (Generic)



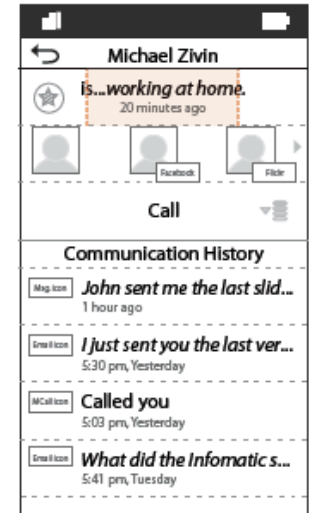
1.1a Person Contact Detail (Example)



1.1b Person Contact Detail, Favor/Block Dropdown



1.1b Person Contact Detail + Status touch area



Section 1: Favorite, Block, and Status

Basic

The next six pages will step you through the Contact Detail screen, explaining necessary widgets and interactions.

- ★ In this example, the contact has been nominated by the system as a "suggested Favorite" (striped star indicates their nomination). Go to *Groups Settings* (2.41) for more on how a contact becomes nominated a Favorite.
- ★ If the selects nominates the friend as a Favorite, they will appear in the Contacts Main "Favorite list".
- ★ If the "Not a Favorite" option is picked, the user goes back to being just an average Yoo-hoo.

Favorite/Block functionality

- ⊖ If the block option is picked, the Contact profile will grey out and only this dropdown will be accessible to the user (to Unblock).
- The icon of whichever option is picked, will remain on-screen to show what's active.
- The Favor/Block Dropdown will time-out after a few seconds of inactivity. Otherwise, closed by pressing the top of the menu (top star).
- The "Blocked" strategy requires proper investigation and design solution (see the Next Steps section).

Facebook Status

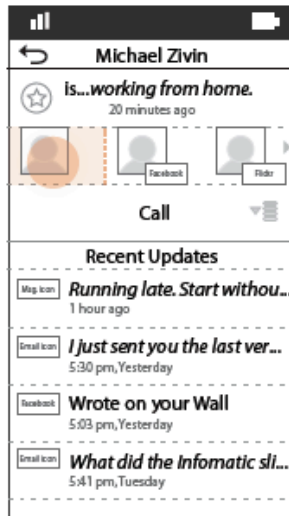
This area contains the latest update to the Contact's status (coming from Facebook, or other services that provide live presence/status information). If the Contact does not have an account with one of these services, this space will display the last contact/communication (sent or received) with that Contact or their last social update (Web activity).

affordances/interface design: screens

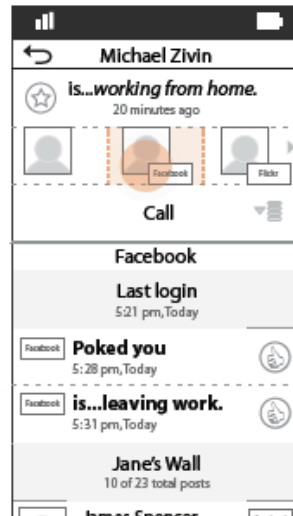
Anatomy of the Contact Detail screen (for a person - 2/6)

Section 2: Account Profile Images

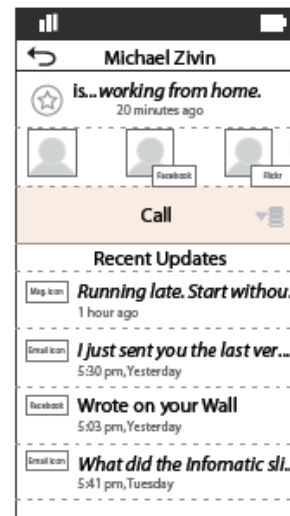
1.1a Person Contact Detail



1.1f Person Contact Detail



1.1a Person Contact Detail



1.1a Person Contact Detail, Action Dropdown



Find Contact's [x] Account

The first photo in the row is the default profile photo for that Contact (what appears with incoming communication, such as the photo you see when Michael Zivin calls).

When the first photo in the row pressed the Recent Updates Facet (1.1a default) is displayed.

Rule: The profile image of the first service added to the Contact automatically becomes the default image for that Contact.

The default photo can be changed via the Contact Information Facet (1.1e) or the Media Facet (1.1c) within the Contact Detail. This may seem redundant, but the reason for both is to keep what's familiar while providing an alternative that just makes more sense.

Account Profile

Users can scroll horizontally through multiple accounts if more than two accounts are linked to the contact.

When pressed, the Facet for that Service becomes visible (i.e. when the Facebook Profile Photo is pressed, the Facebook Facet (1.1f) appears).

Section 3: Action Dropdown

Action line item

If a phone number is stored for the Contact, the Action line item will be 'Call'; if pressed a call will be placed to the Contact in view.

If there is no phone # for the Contact but the user has an email address or is a friend on Facebook, the Action line item will be 'Send Message.'

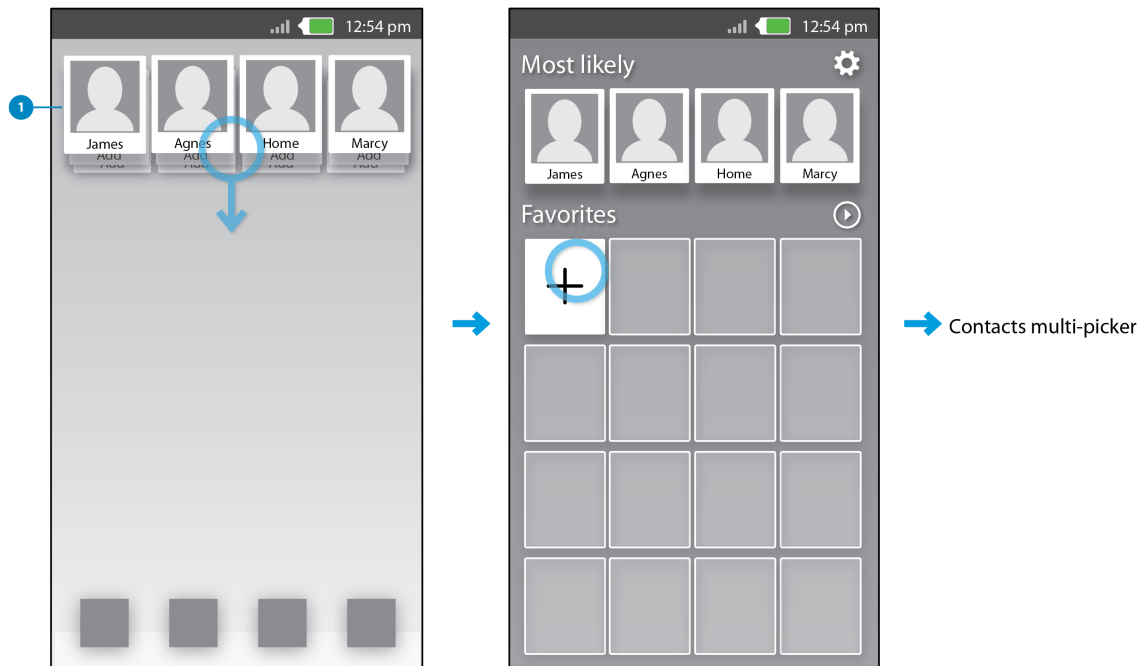
Action Dropdown

The Action Dropdown is lightly dynamic. The first option will always be 'Call' (if a # is stored) or 'Send Message'; but the remaining options will vary based on the facet that's available.

See the Action Dropdown Detail section of this document for the rules around what options will appear, when.

affordances/interface design: screens

Out-of-box experience: Contacts on device, Most likely contacts *are* appearing, no Favorites

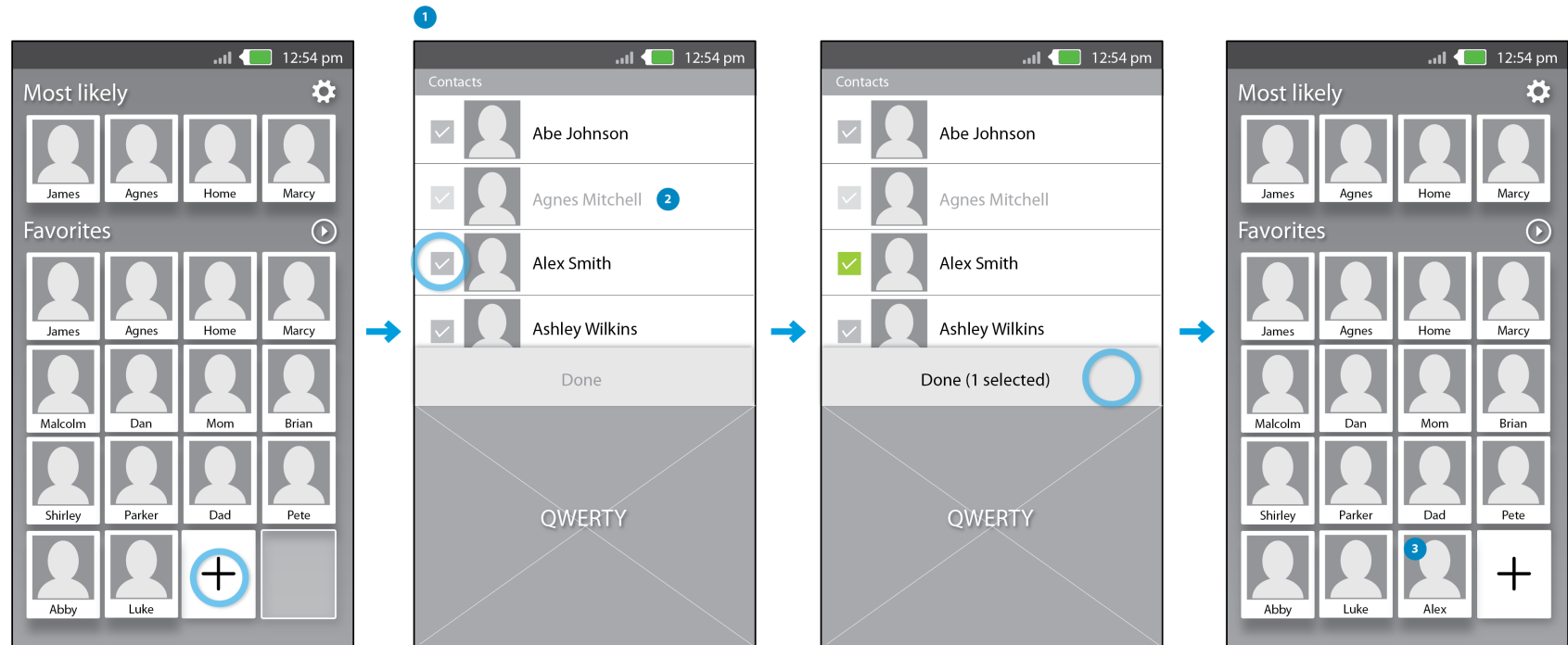


- 1 Out-of-box widget, contacts on device but no favorites, and Most likely are appearing
Swiping down on the widget invokes the quickview animation. If no favorites are selected on device, then the favorites section displays a 4x4 grid of tiles with an "Add" tile in the upper left that links to Contacts' multi-picker. Once any favorites are selected, those appear in the grid and only one "Add" thumbnail appears in the last position and the other placeholder tiles drop away.

affordances/interface design: screens

Adding a Favorite from the widget via the Contact Multi-picker

v. 17, 3/9/2011



1 Contacts Multi-picker

This is a framework element from the Contacts app

2 Current Favorites grayed out

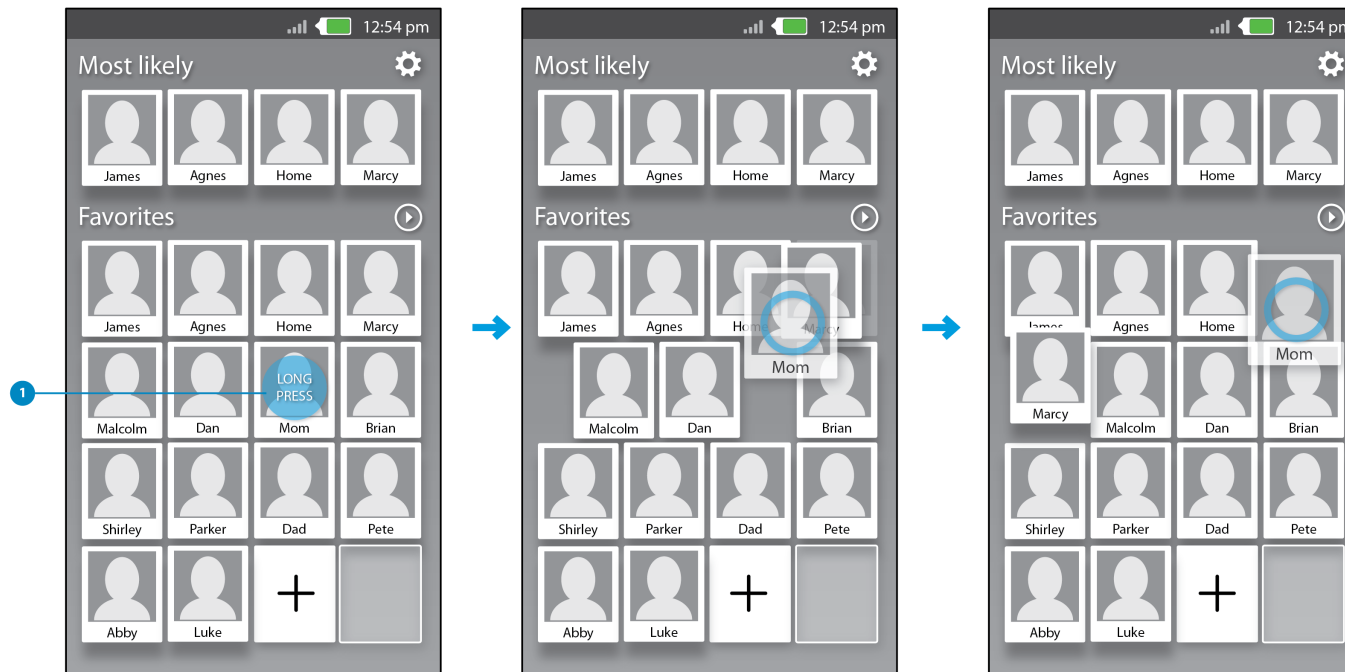
If possible, disable current Favorites. This is a nice to have feature.

3 The added Favorite shows up in the widget

If the user selects more contacts in the multi-picker than can display in the widget, then the allowable number will display in the widget (prioritized alphabetically). So if there was room for 2 more contacts, and the user selected 5, then the first 2, in alphabetical order, would display in the last 2 available slots of the widget.

affordances/interface design: screens

Primary screens: Contacts widget quickview state, rearranging Favorites



1 Longpress to reorder

Longpressing on a contact tile allows the user to reorder favorites via insert. The user cannot drag a Favorite into the Most likely row. Longpress on a Most likely contact does not allow reordering, but does allow user to add the contact to favorites.

affordances/interface design: screens

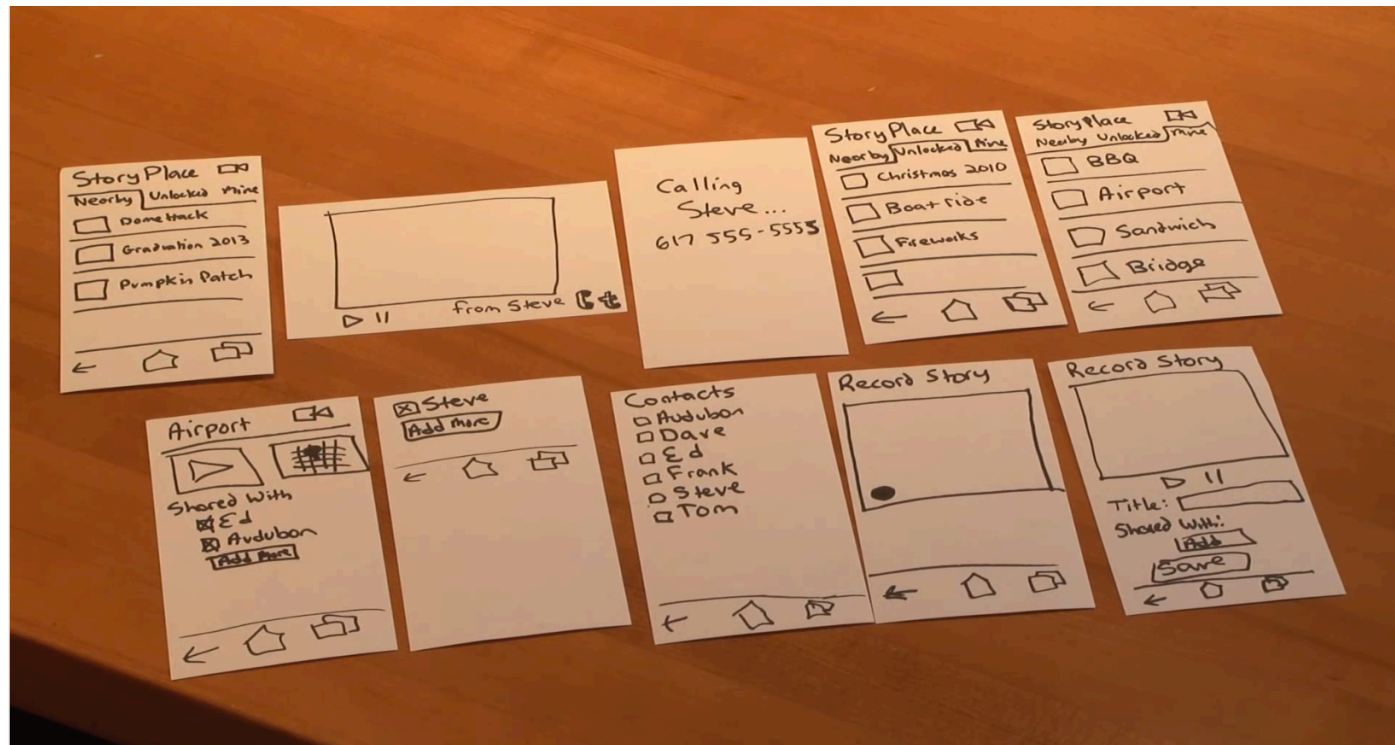


iterating with users

paper prototypes

Create every screen on a separate index card (roughly the size of a phone screen!)

If there are any overlays, places for information to be entered, create separate pieces for these



usability evaluation

Next class!

Come in with 3-4 key use cases that you want to test

Often:

- First time user experience
- Key use of the application
- 2nd Key use of the application
- 1 thing that you're not happy with in the design (strange corner case, setting, etc.)

structure...flow...process: a few web resources

Android User Interface Guidelines

http://developer.android.com/guide/practices/ui_guidelines/index.html

Android Design Patterns

<http://developer.android.com/design/patterns/index.html>

Google I/O 2010: Android UI design patterns

(older but good video for how to think about design patterns)

<http://www.youtube.com/watch?v=M1ZBjICRfz0>

iOS Human Interface Guidelines

<http://developer.apple.com/library/ios/#documentation/UserExperience/Conceptual/MobileHIG/Introduction/Introduction.html>

iOS Mobile Patterns Library

<http://pttrns.com/>

structure...flow...process: a few web resources

UX Sketching And Wireframing Templates For Mobile Projects

<http://uxdesign.smashingmagazine.com/2012/09/18/free-download-ux-sketching-wireframing-templates-mobile/>

A visual vocabulary for describing information architecture and interaction design

<http://www.jjg.net/ia/visvocab/>

First Principles of Interaction Design

<http://www.asktog.com/basics/firstPrinciples.html>

Views and Forms: Principles of Task Flow for Web Applications Part 1

[http://www.bboxesandarrows.com/view/
views_and_forms_principles_of_task_flow_for_web_applications_part_1](http://www.bboxesandarrows.com/view/views_and_forms_principles_of_task_flow_for_web_applications_part_1)

Wizards and Guides: Principles of Task Flow for Web Applications Part 2

[http://www.bboxesandarrows.com/view/
wizards_and_guides_principles_of_task_flow_for_web_applications_part_2](http://www.bboxesandarrows.com/view/wizards_and_guides_principles_of_task_flow_for_web_applications_part_2)

A few good books

About Face 3: The Essentials of Interaction Design, Alan Cooper

Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules, Jeff Johnson

Designing for Interaction: Creating Smart Appliances and Clever Devices, Dan Saffer

Elements of User Experience, Jesse James Garret

Information Architecture: Blueprints for the Web, Christina Wodtke

Designing Interactions, Bill Moggridge

Sketching User Experiences, Bill Buxton

in sections

Finish models, flows, screen design

For next week, create a full paper prototype of your system, each screen hand drawn on a separate sheet of paper with separate cut outs for overlays/menus/etc.

Have 3-4 use cases that you want to test

Next week's class will cover usability testing of prototypes