

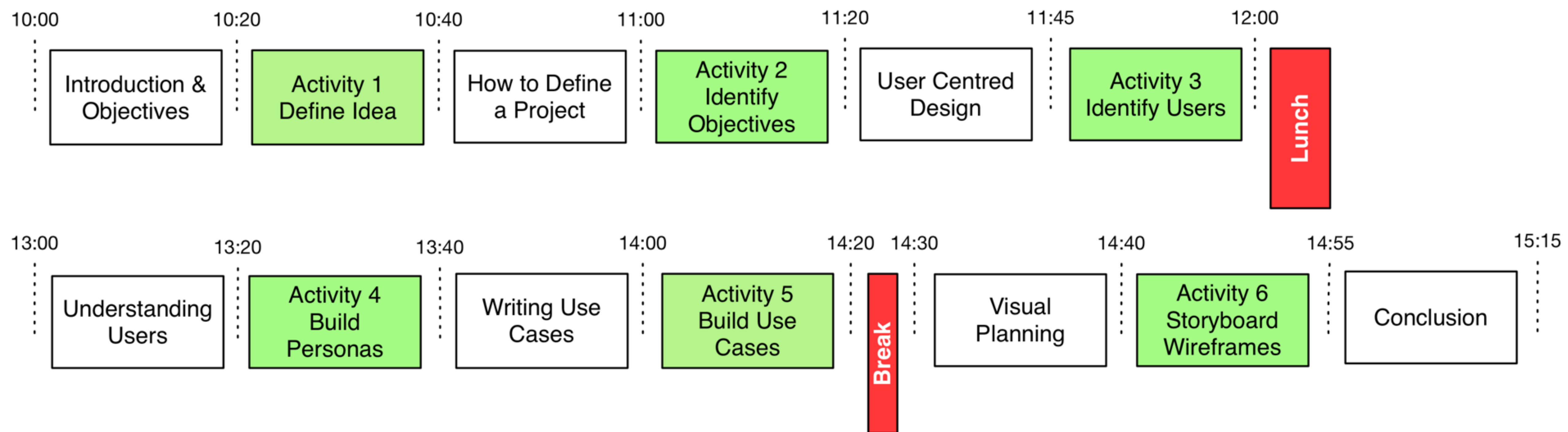


Thinking About, Building and Imagining Your Project from a User's Perspective

Conceiving and Developing Your Digital Project

December 2016

Shawn Day





What is Requirements Engineering?

The proper definition for the term Requirements Engineering is:

“...the process of formulating, documenting and maintaining software requirements”



A Working Definition

I am using a broader definition to conceptualise this within the idea of scholarly project ideation and delivery:

“...the process of imagining, defining, formulating, documenting and turning software requirements into a user-centred project.”



In Simplest Terms:

**How do you make an Idea come real in a
multidisciplinary, interdisciplinary and
multi-stakeholder collaboration?**

Even as a solitary scholar?



Even Simpler:

Some things (a way of thinking) that you can do before you begin, during and afterwards that may not be immediately obvious – or possibly implicit;

A new way of approaching digital research projects from a design thinking perspective combined with user-centred design principles.

[Standards](#)[About us](#)[Standards Development](#)[News](#)[Store](#)[Français](#) | [Русский](#)[Members area](#)[Standards catalogue](#)[Handbooks and packages](#)[Checklists](#)

There's an ISO Standard for That

[ISO Store](#) > [Store](#) > [Standards catalogue](#) > [By TC](#) > [TC 159 Ergonomics](#) > [SC 4](#)

ISO 9241-210:2010[®]

Ergonomics of human-system interaction -- Part 210: Human-centred design for interactive systems



This standard was last reviewed* in 2015.

**ISO standards are reviewed every five years.*

Abstract

[Preview ISO 9241-210:2010](#)

ISO 9241-210:2010 provides requirements and recommendations for human-centred design principles and activities throughout the life cycle of computer-based interactive systems. It is intended to be used by those managing design processes, and is concerned with ways in which both hardware and software components of interactive systems can enhance human-system interaction.

[FORMAT ?](#)[LANGUAGE](#)

PDF

English



PAPER

English

CHF

138



Add to basket



Keep up to date with ISO

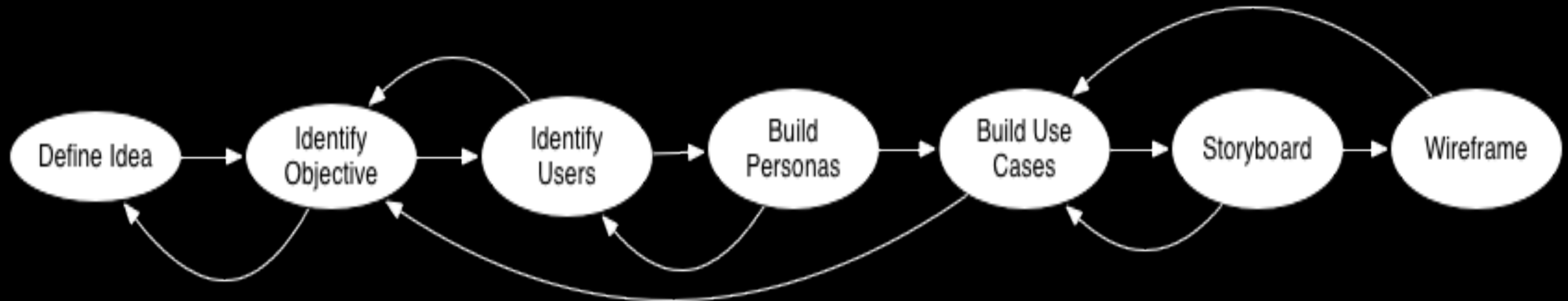
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ISO Defined Principles

1. The design is based upon an explicit understanding of users, tasks and environments.
2. Users are involved throughout design and development.
3. The design is driven and refined by user-centered evaluation.
4. The process is iterative.
5. The design addresses the whole user experience.
6. The design team includes multidisciplinary skills and perspectives.

A Simplified Look at UD-Driven Process

- Linear but Iterative



Why Consider the Users?

- People often consider the sustainability of their research and digital outcomes ...
- Funders ask for a sustainability statement ...
- Why?
- You invest a lot of time and effort:
 - → If people use your work it will be sustained;
 - → Finding sustainable funding on your own is difficult;
 - → Creating an enthused and invested user base easy.
- Release Early, Release Often ...
Involve Real Users!



Who Has Been Involved with User
Driven Design Before?



Why? // Why Not??

As a Sidenote

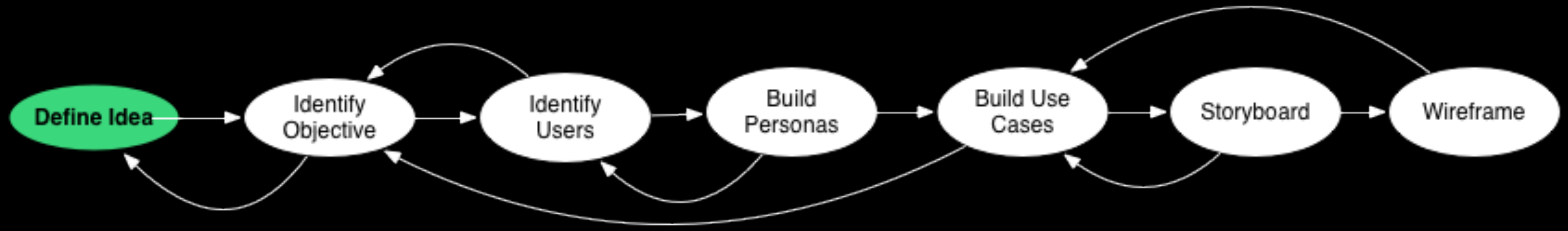
- There are a variety of useful tools to support the processes (a couple of which we will mention in due course).
- There is an ethos of transparency inherent in this process.
- A design process I was involved with can be seen at:
- <https://web.archive.org/web/20100722165014/http://tada.mcmaster.ca/Main/OldMashTexts>
- A freely accessible wiki used to document the process during the process - hint!

Ideation

- The thought cycle:
- **generating, developing and communicating new ideas**
- **innovation → development → actualisation**

So ... are we talking about?

- the Rational Unified Process
- Extreme Programming
- Scrum
- Agile
-



Activity 1 : Understand the Idea

- Choose from a few potential projects;
 - How big is project?
 - What may it involve, etc...
 - Who do you think you might be involving to bring this together? developer, researcher, etc...not as users, but as creators?
 - Have you seen anything similar?
 - Do you have the background to carry this out?
 - What Challenges to this project can you imagine?



Breakout: 15 Minutes

Understand your Big Idea

Report Back to the Group



Share the Ideas

Describing your Project

- What's an Elevator Pitch?
- What is a Research Question?
- How are these different?

- Can You Tell a Good Story?
- Funders like to be inspired in all spaces
- Can you inspire them with your idea?



So What??

Answering ...

- Clarity and precision no sweeping generalizations or irresponsible statements;
- Avoiding the use of buzzword-based terms;
- Identification of an overarching question and key factors or variables,
- Definition of the project scope;
- Identification of applicability and delivery of results into general use,
- Project/product importance, benefits, and justification - it's not trivial;
- No unnecessary jargon.

A Useful Tool - Ideation - Exobrain



A Useful Tool - Ideation - CoDigital

Dashboard

Configure Project

iridium

Settings

Help

Log out

This project is offline - only you (and other admins) have access

OBJECTIVE

What is Our Big Idea?

8 days to go

Contributors 1

Your Rating 100.0

1st

+ ADD

RANK 0

RESOLVE 0

* 1 We need to eat more beets.

Gen 1 Edits 0

Edit

* 2 Carrots would be better for us

Gen 1 Edits 0

Edit

Summary

Top Contributors

Getting Started

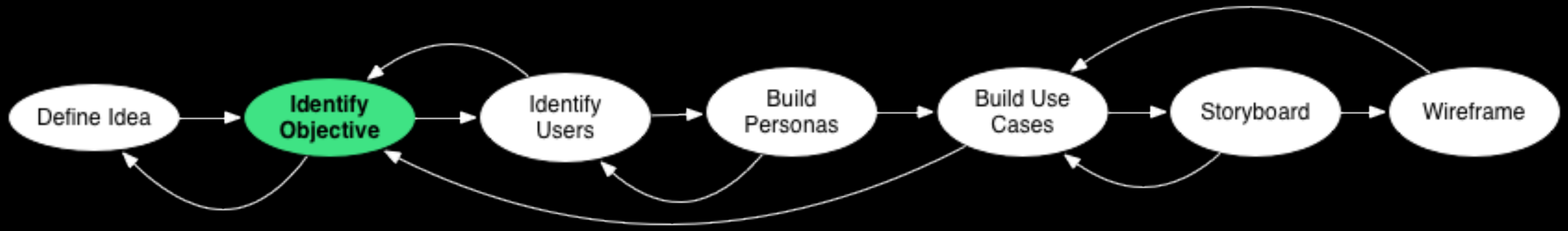
Getting Started

QUICK TOUR

PARTICIPATE

Other Tools

- [MindMeister](#)
- [Omnigraffle](#)
- [Dia](#)
- [LucidChart](#)
- [FreeMind](#) (OS)
- [MindManager](#)



Activity 2 Identify Objectives

- ▶ Consider the objective(s) of the project.
- ▶ Generate a short project statement in the form:
 - ▶ This digital project is for (target), who has (need).
(Project name) is a (category) that (key benefit), unlike
(existing services/projects), the project (unique differentiator).
- ▶ 15 – 20 minutes

User-Centred Design (UCD ;-)

- ▶ Sometimes linked with User Experience (UX)
- ▶ “User-centered Design is an approach that grounds the process in information about the people that will use the product.”
- ▶ Usability Professionals Association

An Actual International Standard

- ISO standard Human-centred design for interactive systems (ISO 9241-210, 2010)
 - Based upon an understanding of users, tasks and environments;
 - Users involved throughout design & development;
 - Design driven and refined by user-centered evaluation;
 - Process is Iterative;
 - Design team includes multidisciplinary skills and perspectives.

An Example - Website User Objectives

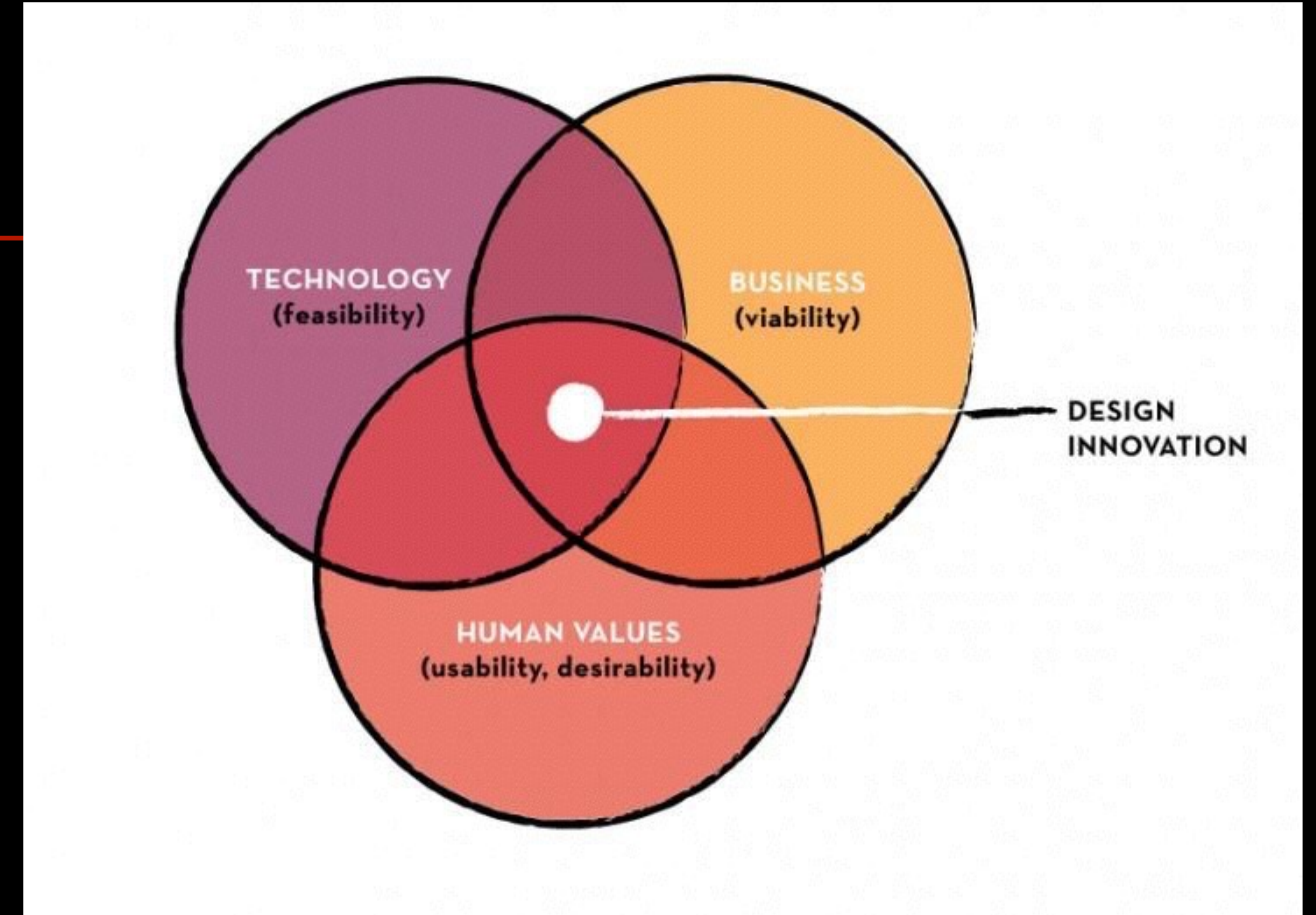
1. Who are the users of the site?
2. What are the users' tasks and goals?
3. What are the users' experience levels with the site, or sites like it?
4. What functions do the users need from the site?
5. What information might the users need, and in what form do they need it?
6. How do users think the site should work?
7. What are the extreme environments?
8. Does the interface utilize different inputs modes such as touching, spoken, gestures, orientation, mobile or desktop?

Design Thinking

- Shared objective:
- What IDEO calls design thinking, brings together what is **desirable** from a human point of view with what is **technologically feasible** and **economically viable**.
- [OPENIDEO Resources](#)

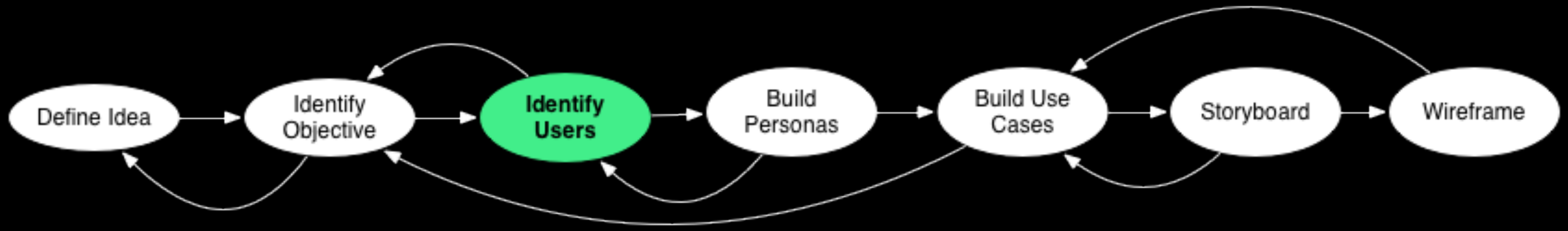
d.school @ Stanford

- Learn by doing:
- Define what the problem is.
- Start in the field.
- Develop empathy.
- Iterate to develop a range of solutions.
- Create rough prototypes to test.
- Experience measured by iteration.
- Each cycle brings stronger insights and more unexpected solutions.



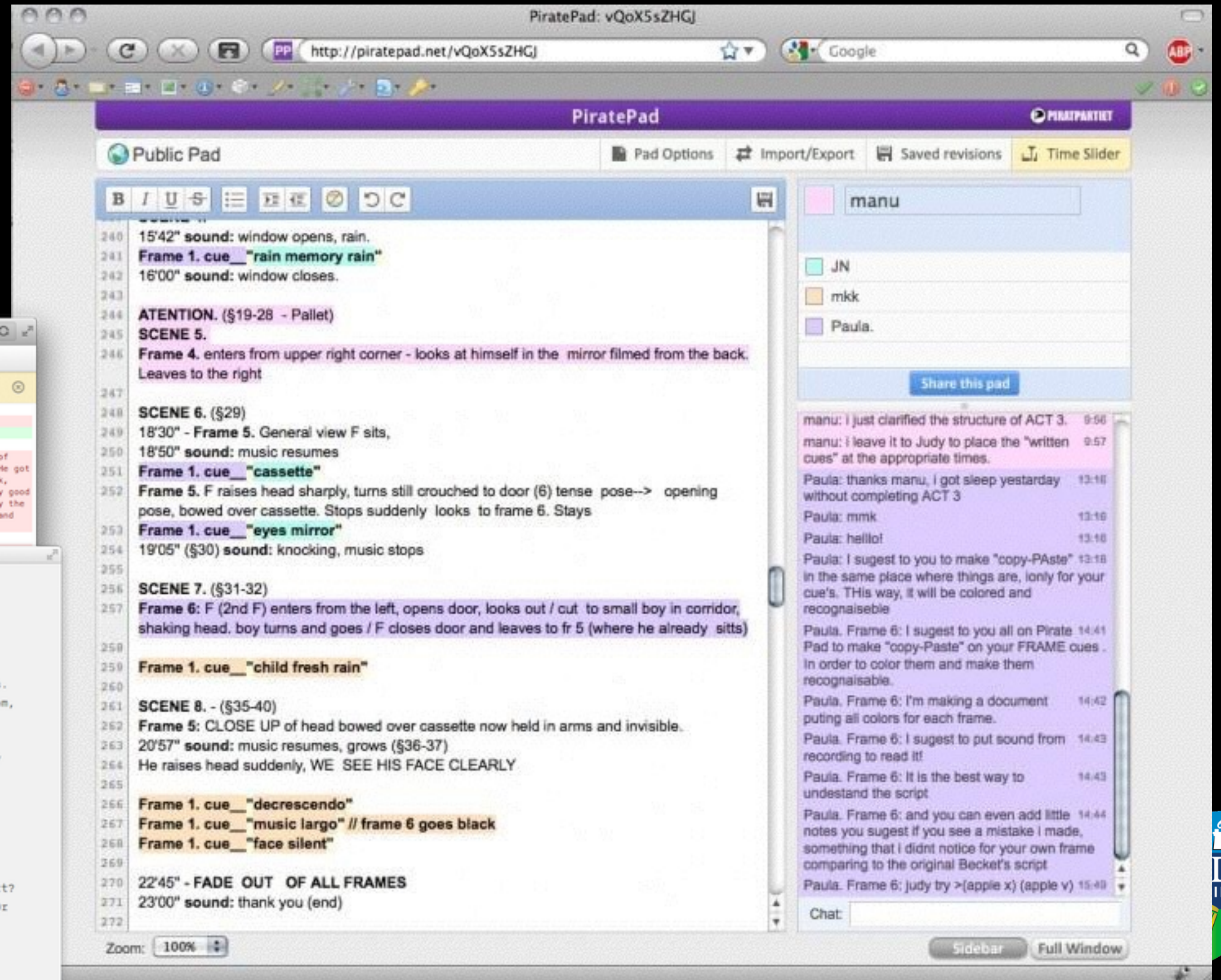
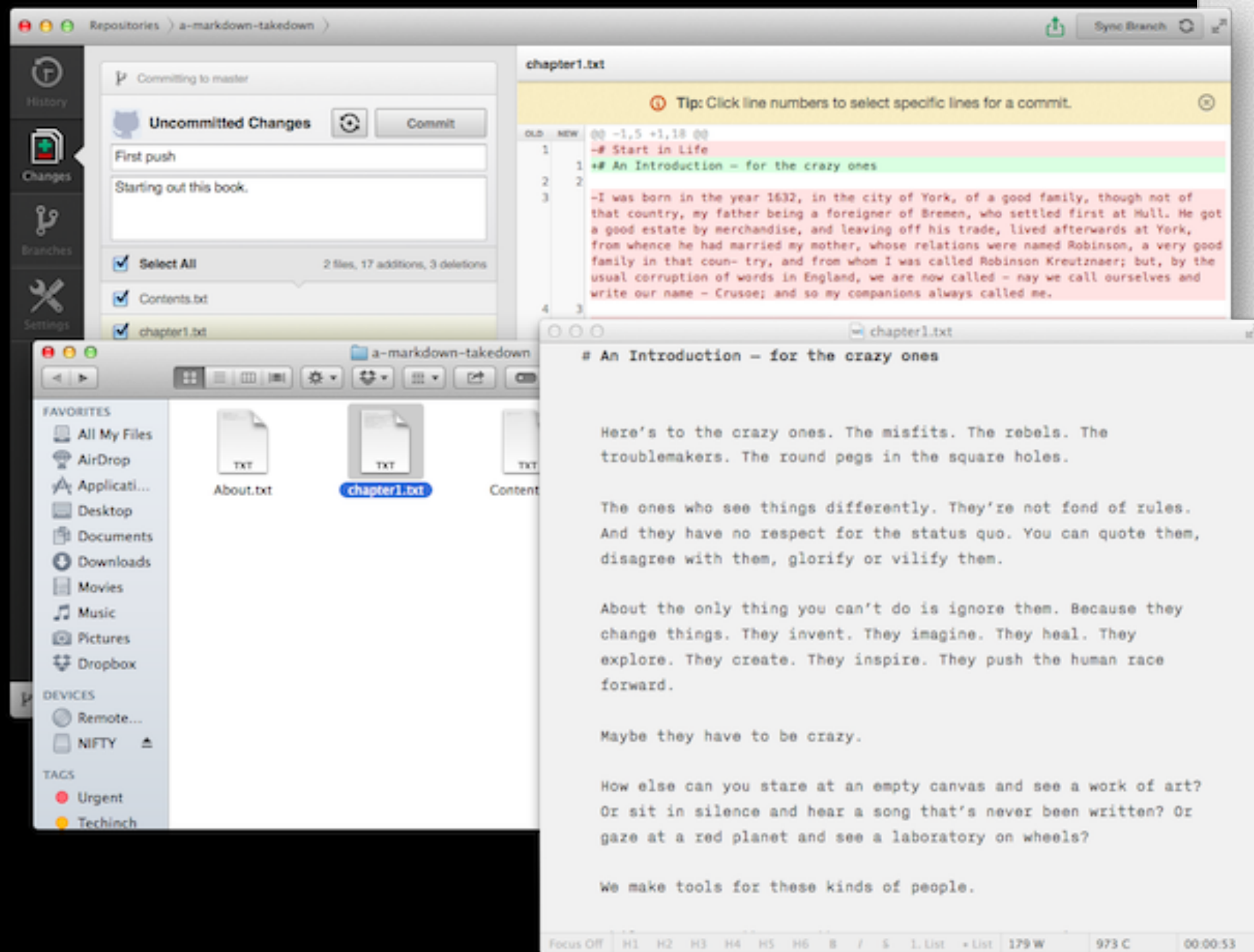
Information Architecture

- Information architecture describes the structure of a system:
 - the way information is grouped;
 - navigation methods;
 - terminology used within the system.



Collaborative Writing Tools

- ▶ PiratePad
- ▶ GitHub



Activity 3 - Identify Potential Users

- Identify of all potential users, groups, (stakeholders) that may benefit from or make use of the digital output from the project being considered.
- Be specific, be broad, think outside the box, be unconstrained. Who might stumble upon it on the web? Who might attempt to misuse it?
- 15 -20 minutes

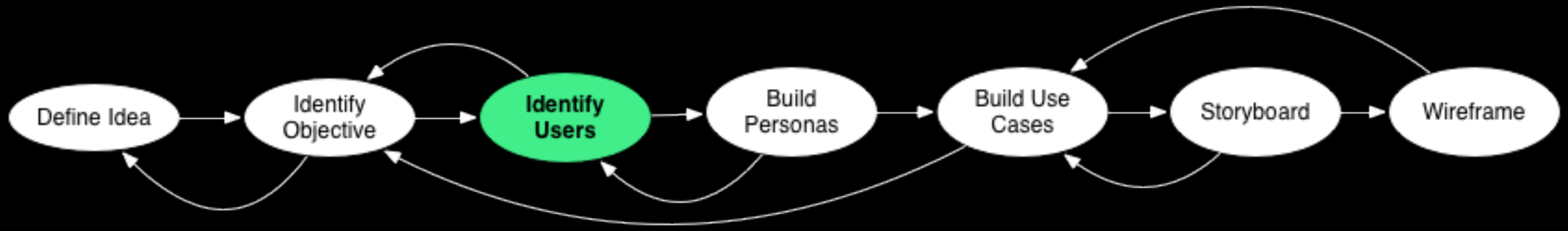


We are Going to Mine These Lists after ...



Lunch

phew ;-)



Building Personas

- Personas act as stand-ins for real users
- Archetypal users that represent larger groups;
- Represent:
 - motivations;
 - expectations;
 - goals.

Personas Contain

- Bring users to life:
 - giving them names;
 - personalities;
 - a photo
- This can become as intensive as you want to take it depending on needs/resources/time.

Not without Detractors

- A waste of time because personas are fake;
- Personas are not real user profiles;
- Personas don't talk back - can't answer questions;
- Personas silly and unrealistic as they start predicated on an imagined need.

Well ...

- Fake? - Based on real data
- Not Credible? - Avoid chosen individuals and single viewpoints
- Don't Talk Back? - Force you to engage with real people to build
- Unrealistic? - A matter of when you start thinking about users

Ultimately ... the Benefits

- Personas help prevent you designing products for yourself and your own needs
- Personas facilitate an ongoing dialog between creator and user

Sample

User Story 1: Supervising Editor



Cheryl is a contributing editor for the Orlando Project.

She needs to work with a number of entries and needs to accomplish them effectively.

As a senior editor she also helps to shepherd less experienced contributors and is able to check associates' progress and offer assistance based on requests for assistance surfaced through the dashboard.

[The Full Story ...](#)

Here you will find complete user story, along with persona information relating to this story.

Persona

Cheryl Sadiq

Department of English, University of Waterloo

Cheryl has been editing academic journals for the past twenty years and considers herself very familiar with the traditional editing process. Moreover as she has witnessed the gradual shift from paper-based markup and manila envelopes to attachments to email and Microsoft Word's track changes feature, she knows that she can accomplish collaborative editing tasks more effectively with electronic tools. Although her early academic interest in eighteenth century French literature led to her own publishing efforts, over the past years she has increasingly come to enjoy the editor's role and relishes being able to effectively apply her past experience to keep the process under control and on-time. She has come to appreciate working within a group of contributors and has developed effective managerial abilities that make her a solid team player and leader. Typical editing products have ranged from collections of 40-50 page articles with final production in a print form to more recently evolving online collections of smaller, intensively researched and thematically related. O.Canada is now the main focus of her efforts.

Challenges

Cheryl has at times past run into roadblocks in the production process arising from lost emails, overwritten versions of documents and time wasted trying to track down reference sources lost or misreferenced during the writing process.

Opportunities

Recently, she has begun investigating the possibility that her 'tried and true' toolbox of various, but not interoperative tools could be improved upon. She would like to find a way to connect communications between team members and the documents and portions of documents that they work upon. She would like to be able to find a means to bind supporting research materials to the research product. She would like to be able to ensure that changes to documents are tracked by changes, user making those changes and rationale for doing so. Given that multiple people with various roles in the process are involved in the production of single entries, task status, individual progress and streamlined communication are crucial.

What to Include

- **Basic demographics** such as age, job, family, hobbies and interests
- **What a typical day** looks like
- **Common questions** or tasks in relation to the digital project you are proposing
- **Major frustrations** when trying to achieve goals related to the what you propose to offer.

For example, inability to find material online and having to travel to archives and listen to source material on a reel-to-reel tape machine that is often broken. What frustrates the person most about researching and working with the material (online and offline)?

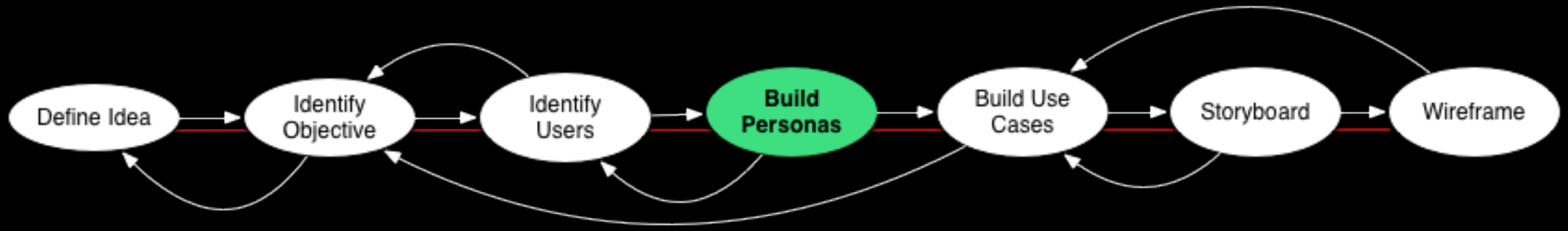
- **What the person likes best about the proposed and at this stage still imaginary product.** For example, being able to compare, collect and come back to a saved set of specific digital recordings.
- **Who does the person interact with most when completing tasks?** For example, does the person rely on the online research portal entirely or do they interact through an online forum sharing knowledge and working collaboratively.
- **Skill levels** relating to tasks as well as technology
- **Goals, attitudes, beliefs** (conscious and subconscious)

Where Can You Get User Data?

- Surveys - inexpensive and broad;
- Focus Groups - more expensive but deep;
- Contextual Interviews - €€'s but iterative;
- Metrics and Usage Data - Need past product/project

Useful Persona Tips

- Keep personas to one page - simple + memorable;
- Separate by goals, not by behaviors;
- Add personal details but avoid being phony;
- focus on covering a wide swath of audience;
- Identify the primary and secondary personas to help direct design priorities;
- 3-4 goals per persona;
- if two personas seem close in behaviours and goals, see if you can merge them into one persona;
- represent behaviour patterns, not job descriptions.



Activity 4 - Building Personas

- Create persona descriptions for 3 of the potential users you have listed;
- These should be colourful, potentially narrative and help you to imagine real world use by imagining a tangible - knowable - individual representing a use group.
- 15 Minutes



Sharing the Personnas

Let's meet your users

Developing User Cases

- Many Ways to Accomplish:
- Usability testing
- Interviewing users
- Discussions with stakeholders
- Conducting surveys
- → Building Personas and Writing User Stories

Collaborative Tools



MediaWiki

Main page
Get MediaWiki
Get extensions
Tech blog
Contribute

Support
User help
FAQ
Technical manual
Support desk
Communication

Development
Bug tracker
Code repository
Code docs
Statistics
Wikimedia engineering

MediaWiki.org
Browse categories
Community portal
Recent changes
Random page

MediaWiki.org Discussion

Read View source View history Search

Welcome to MediaWiki.org

MediaWiki is a [free software open source wiki](#) package written in [PHP](#), originally for use on [Wikipedia](#). It is now also used by several other projects of the non-profit [Wikimedia Foundation](#) and by [many other wikis](#), including this website, the home of MediaWiki.

Use the links below to explore the site contents. You'll find some content translated into other languages, but the primary documentation language is English.

For general questions about MediaWiki see the [communication page](#) or ask at the [support desk](#).

[About this site](#) | [About MediaWiki](#) | [Download](#) | [Help and support](#) | [Contribute](#)

Using MediaWiki



What is a wiki?

- Learn [how to navigate](#)
- Learn [how to edit a page](#)
- Get [more help](#)

System Administration



Install & configure MediaWiki

- [Upgrade](#) an existing MediaWiki installation
- Add features with [third-party extensions](#)
- Get [more sysadmin help](#)

Developing & Extending



Become a MediaWiki hacker

- Learn to use our [APIs](#)
- Write [extensions](#) or create your own [skin](#)
- Browse the [developer docs](#) and [class reference](#)
- Already a hacker? Visit the [developer hub](#)

Alternatives

- ▶ [PBWorks](#)
- ▶ [Docuwiki](#)
- ▶ [TikiWiki](#)

Writing Scenarios

- ▶ What is a Use Case?
- ▶ “a natural language description of a user’s interaction with a system and as such considers the users perspective or point of view.”
- ▶ “The beauty of use case is that it aims at describing a system from external usage viewpoint”

Don Norman

- Appropriate to Introduce Don Norman at this point.
- “The Design of Everyday Things”
- Good versus Bad Design
- Simplifying the structure of tasks;
- Making things visible;
- Designing for error.



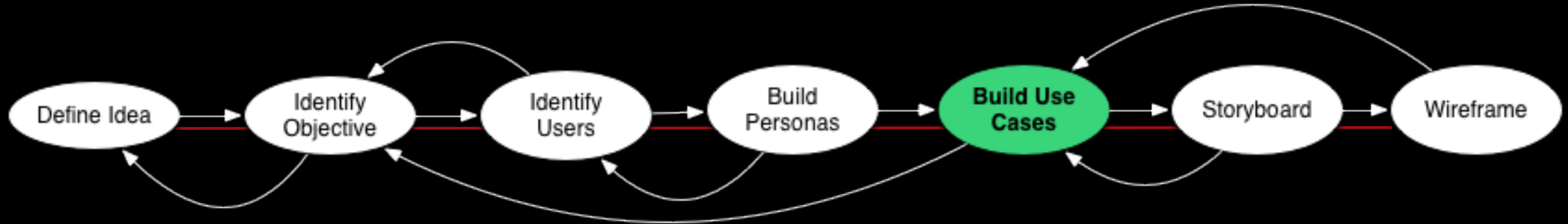
How to Write a Use Case

1. Choose a very specific objective task;
2. Express as a Verb + Noun;
3. You can chain tasks later;
4. Break down into as granular steps as possible;
5. Define what the user experiences
6. Tell a story in steps.

Example

Scenario 1 - Editorial

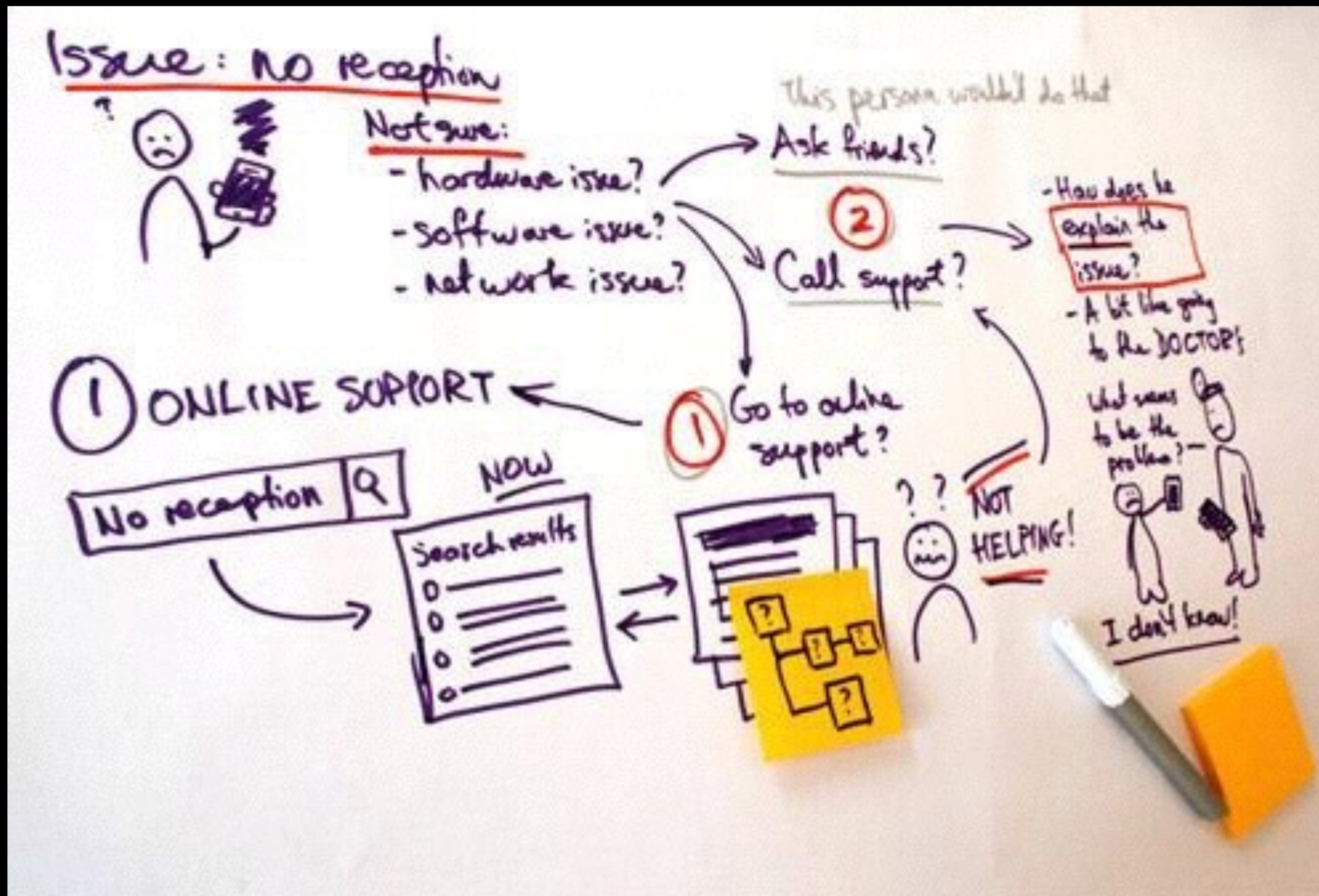
1. Cheryl **logs into the Distributed Editing Environment Platform (DEEP)**. The main pane is a Document Management Panel which has all the documents she is allowed to see, including those of the author/editors that report to her. She sees a Dashboard that tells her that there are three new documents requiring her attention. She also **sees in the notes panel** of the Dashboard that there are some general announcements about the next deadline and a note from Ian, a less experienced editor asking for help, with the entry he is working with on Rita Joe.
2. She has a number of reports that provide her with project status, activity, planning, goals and objectives. She **generates a report** on the activity of Ian, just to see what he has been doing recently.
3. She **opens the Rita Joe document**, which has the note from Ian attached to it. She could have opened the note from the Dashboard and then opened the document, or the other way around. She also could have started from the Display View of the document within the in-house version of the project, which shows the in-progress documents integrated with the entire system, and clicked on an "edit" button there.
4. When she opens a document it is locked so no one can edit that version while she works with it. She **can see status indicators** displaying what key stages the document has passed through, along with its current status. She reads the background notes that are associated with the document, including Ian's plea for ideas on how to use the date tags in a particular situation.
5. When she has **responded to notes** they are no longer relevant to her current tasks and she can make them invisible, although they stay attached to the document within DEEP, in case someone wants to consult them later. Note: They have their status changed rather than being deleted.
6. She **edits Ian's attempt to tag a date** using an XML editor that is launched when she opens the document. In typing in the date value, she inadvertently inserts an extra digit (19113 instead of 1913). When she moves her cursor out of the tag, the system's validation monitor throws up an error message (optimally in a pop-up window), highlighting the faulty portion of the text, along with context-sensitive information that would help her to figure out what the problem is. In this case, the message is something along the lines of: "This is not a valid date. For information to help solve the problem, click *here*. When you've fixed the error, click *done*. If you cannot solve the problem, click *here* to send your document to someone who can help. " Clicking on the first button provides the documentation for the problem tag. Clicking on the second one would send her document to someone designated via roles as dealing with tagging problems (this could be set to be her immediate supervisor, or to a single person for the entire workgroup).



Activity 5: Building Use Cases

- Take your personas.
- Write a series of three use cases describing in as much detail:
 1. How each user will actually work with the project/tool/website/etc.
 2. What will they see, what will they do
 3. What will they get?
 4. Are they happy, are they frustrated?
 5. Do they go down blind alleys?
- Again, no constraints.

It may help to think visually



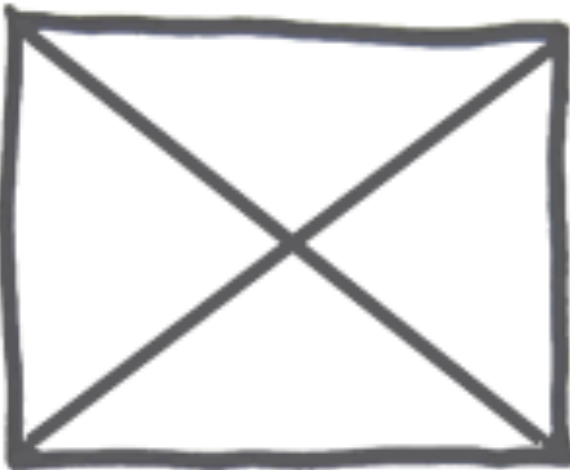


Wireframing

- Principles
- Tools
- Kind of Like Storyboarding
- “Within the process of building a website, wireframing is where thinking becomes tangible.”
- Wodtke, Christina; Govella, Austin (2009). Information Architecture: Blueprints for the Web, Second Edition. New Riders. 168.

Sample

I4F - Directory Profile Page



Profile Name

245 Blackfriars Road

Ludgate House

London, SE1 9UY

Email: firstname@surname.com

Telephone: 0207 955 3705

Categories

Lorem ipsum

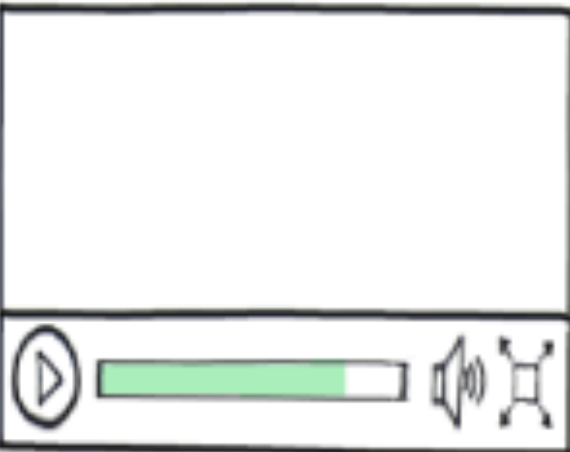
dolor sit

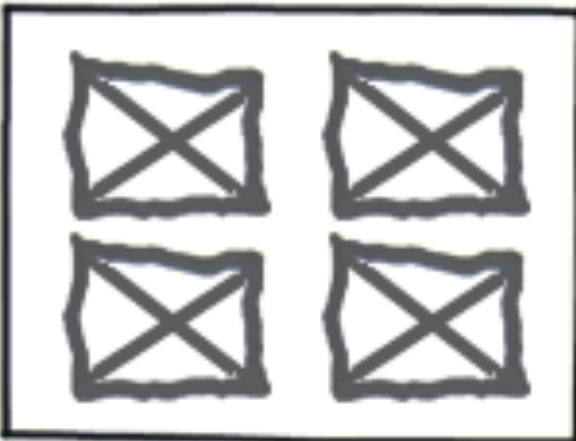
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Attachments

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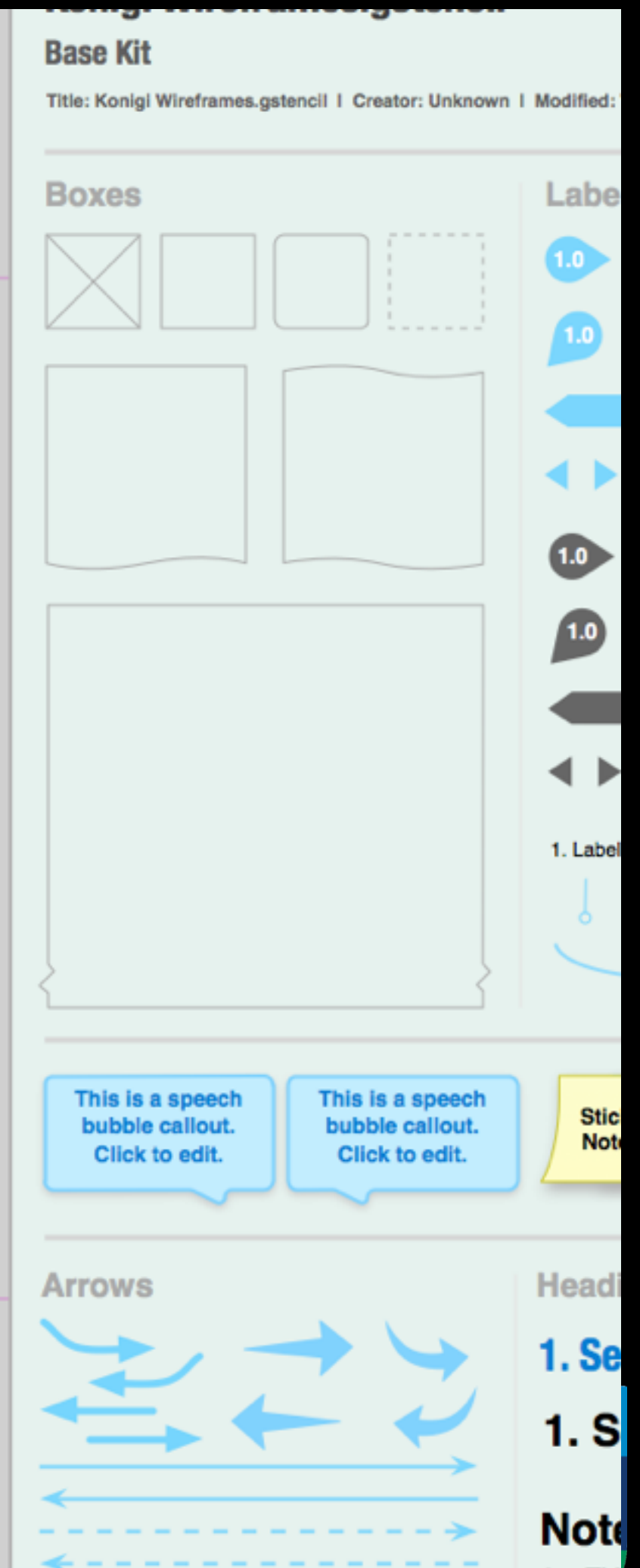
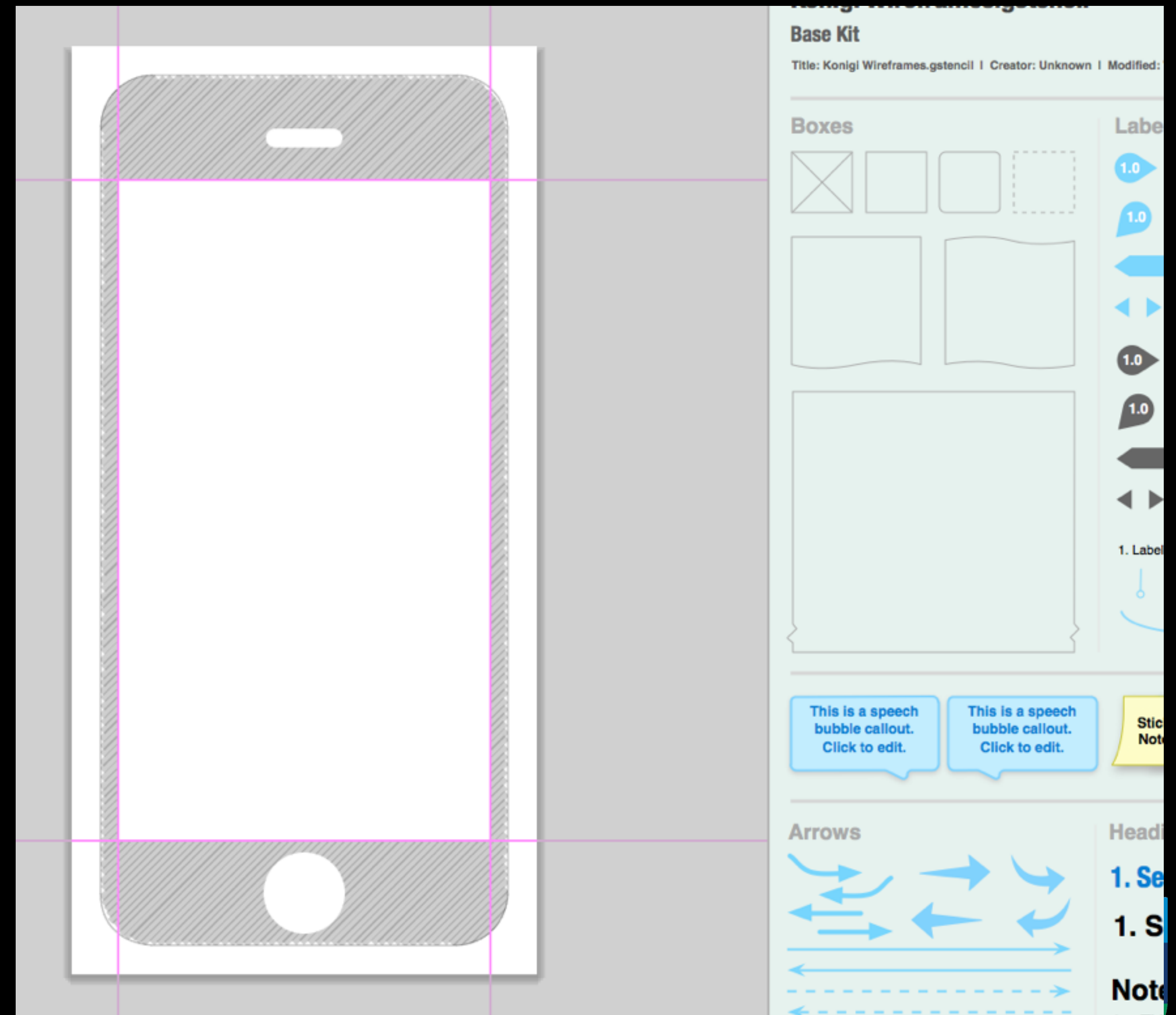
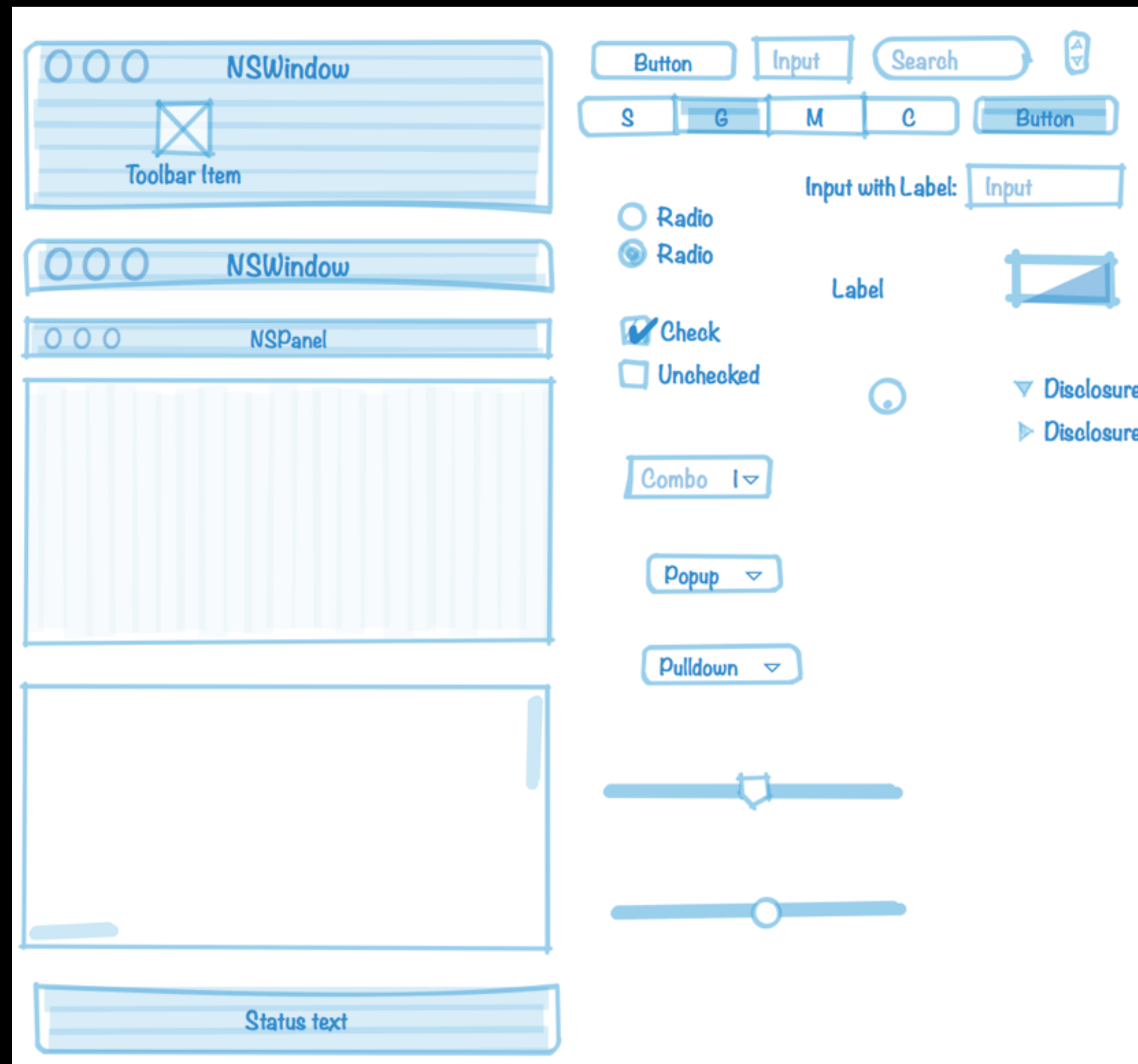




3 Key Elements of the Wireframe

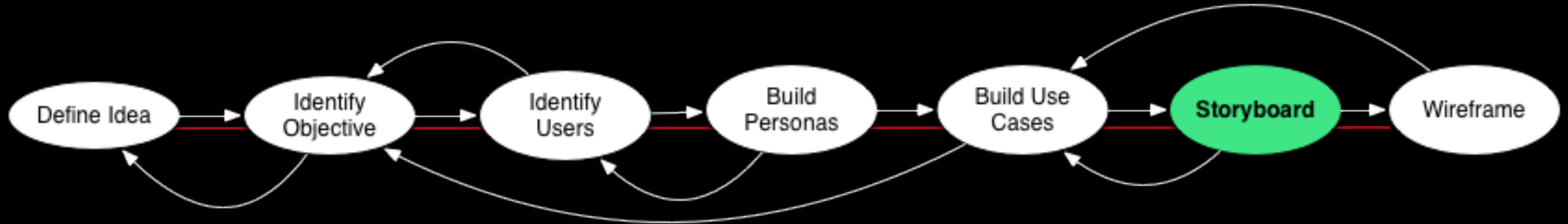
1. Information Design - What Data
2. Navigation Design - How Users will View Data
3. Interface Design - How Users Interact with System

Taking Primitives/Building Blocks



Suggested Software Tools

- ▶ Paper (OK - not digital but still a contender)
- ▶ [Balsamiq](#) (Chrome App)
- ▶ [Gliffy](#)
- ▶ [Mockflow](#)
- ▶ [Framebox](#)
- ▶ [UXPin](#)
- ▶ [JustinMind](#)
- ▶ [C.ROWE Wireframing Kit](#)



Imagining Inputs - Process - Outputs

- What Are Your Raw Materials?
- How Do You Process These?
- What are You Generating at the End?

Input

- What already exists in the area?
- In what formats do your materials exist?
- Are they digital already?
- If so are there tools that can work with them?
- Crucially, what do you have to work with? Much like users, good to write about just to get thoughts in line.

Process

- The importance of standards - input/output
- How will you transform the materials?
- What does this add to them?
- How will you capture the transformation?
- Is it reversible?
- How can you demonstrate/expose it to your audience?

Output

- How will you share your data?
- Can you share your data
- What IP issues are involved?
- How can you license it?
- How might people reuse it?
- What are the implications of these?

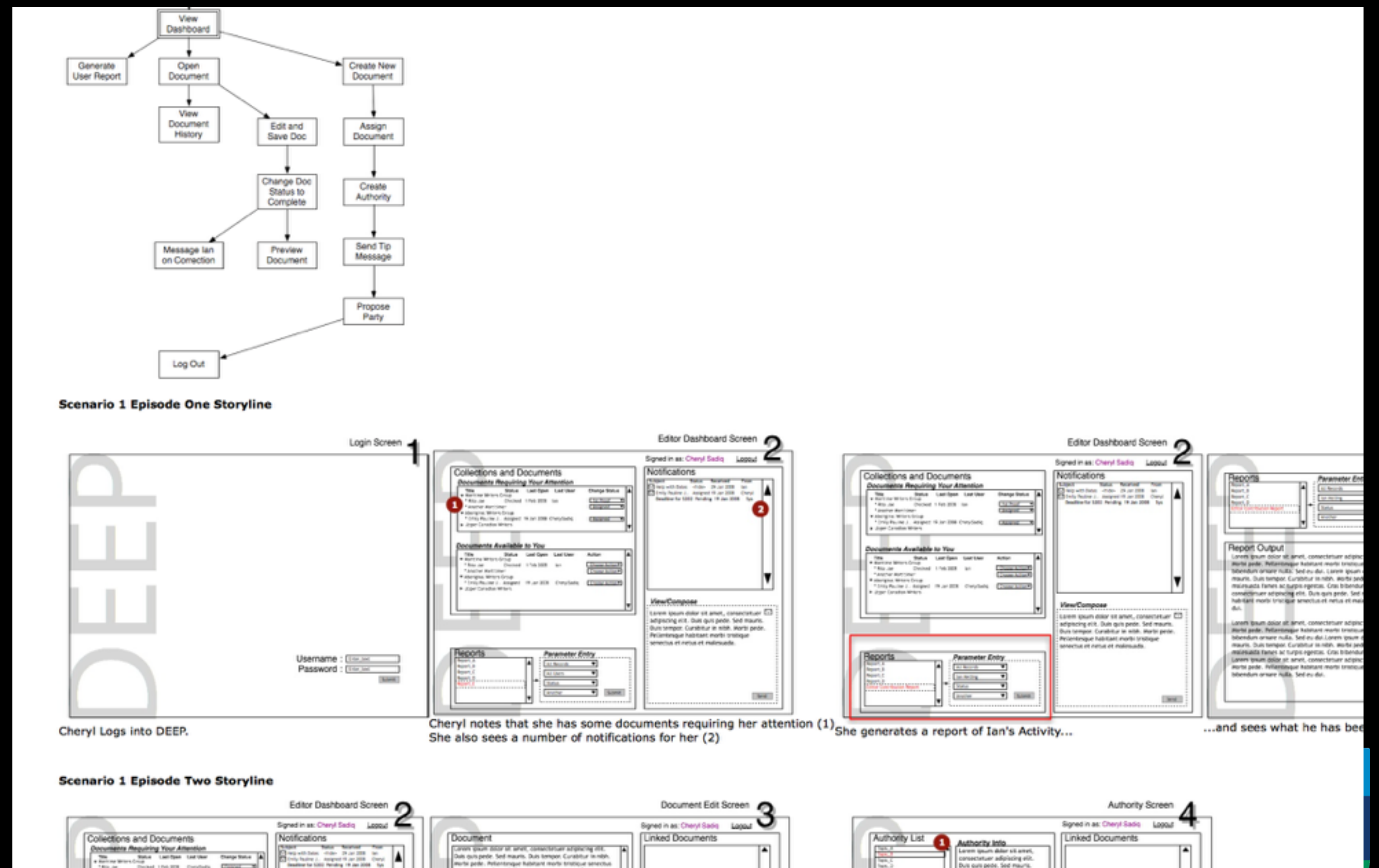


Activity 6 - Drawing Pretty Pictures

1. Visualise the stories that you have written above.
2. Imagine the digital interaction space that will support the use cases.
3. Roughly develop wireframes that illustrate what the user will see on screen...boxy, no artists, unless you really are.
4. Output a set of storyboards illustrating the use cases you have written.

Step 7 - Build a Descriptive Document

- Combine pieces into a cohesive document that will:
- Help guide us as we develop a project plan;
- Allow us to share our idea, concept with a wide audience of potential partners all speaking different languages and living in different worlds.
- Select one persona/user;
- One use case;
- One story board/wireframe.



Best Practise Technology Decisions

- There are Tools, but ...
 - Documentation
 - Transparency
 - Communication
-
- → Digital Project Management

A Good Wiki

- Reclaim Hosting
- MediaWiki
- TikiWiki
- PBWorks



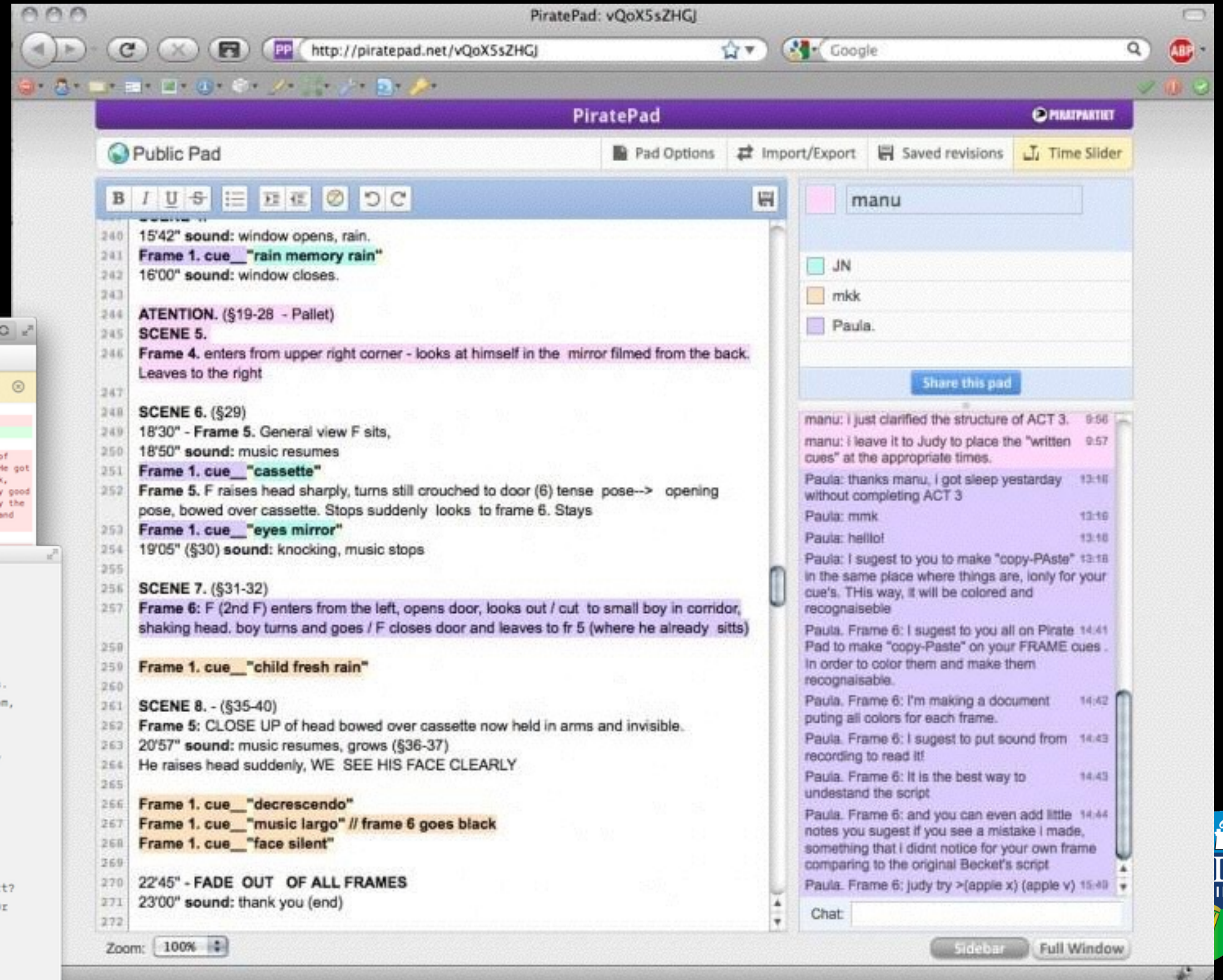
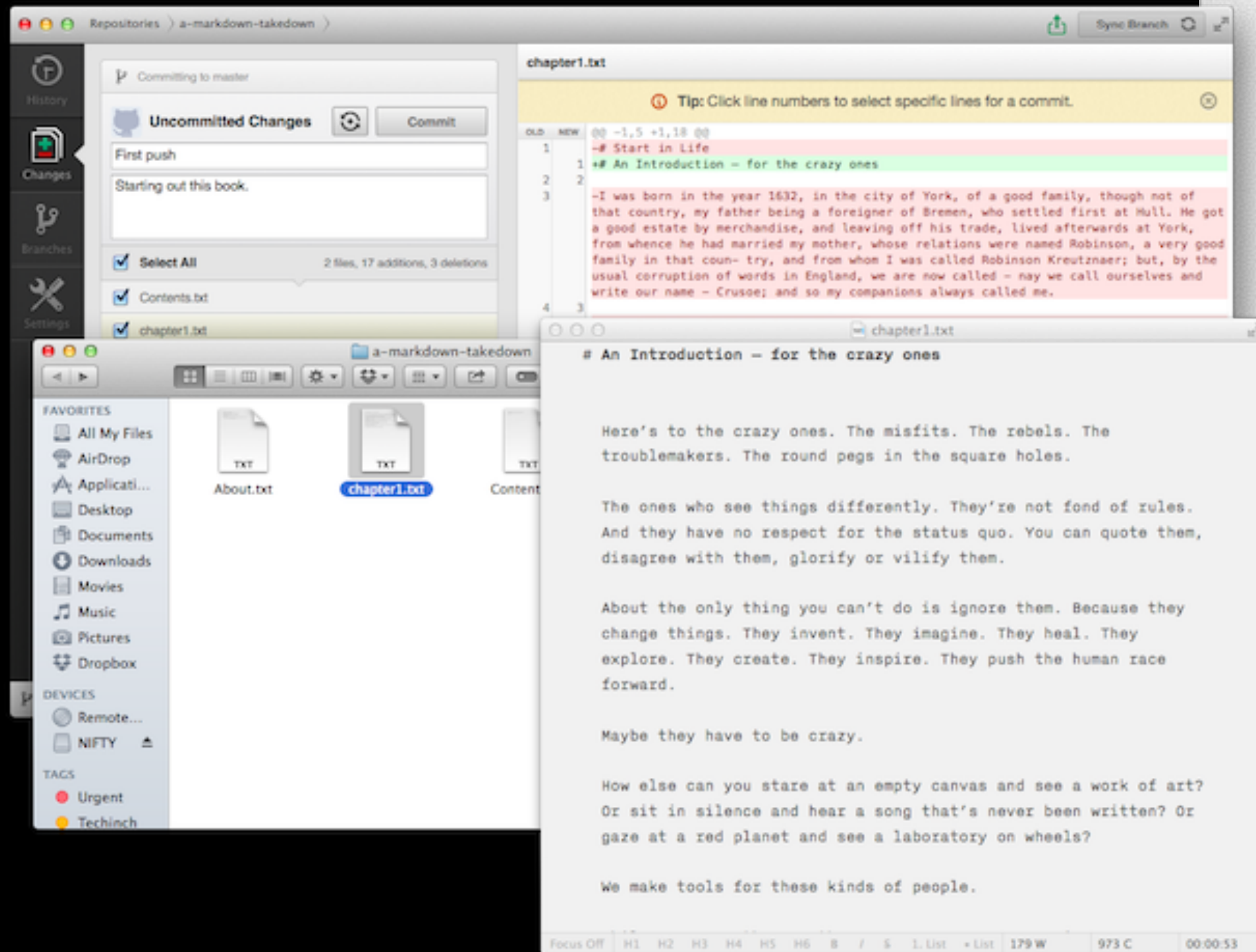
Shared Document Management

- Google Docs
- App Suite
- Zoho



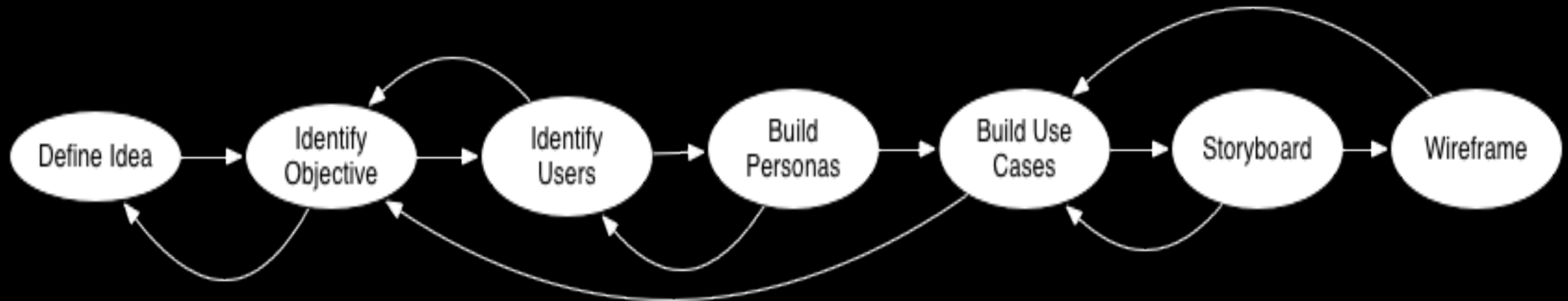
Collaborative Writing Tools

- ▶ PiratePad
- ▶ GitHub



This Simplified Look at a UD-Driven Process

▸ Linear but Iterative



▸ Fluid and Reflective



Thank You

Shawn Day
@iridium