Designing Great Maps for Web and Mobile

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About Allen and Larry

Allen Carroll, Program Mgr, Storytelling
• Family cartographer and navigator since age 5
• 27 years at National Geographic, 12 of them as Chief Cartographer
• Believer in the power of maps to inform and inspire

Larry Orman, Exec. Dir. GreenInfo Network:
• Magic marker map maker for years pre-GIS
• 19 years NGO advocacy and 19 geotech world
• Maps are a powerful lens for seeing the world
Why we’re here
About this workshop series

#1: General Overview

#2: Print/image

#3: Web/mobile
What we’ll cover in this session

1. What’s different about maps in the digital age?
2. Elements of digital maps
3. The process: it’s linear…sort of
4. CLUES to making great maps
5. Some tips on designing digital maps
6. What to remember
But first, a quiz for you
We’ll ask . . .

- **What** is this map/site about?
- Is it **appealing** to you?
- Would you **stick around** …or move on?
or 2?
or 2?
or 2?
• *First* impressions matter!

• *Attractive* designs, accessible interfaces are key

• *Simplicity* is vital
How your brain perceives

- **PRE-ATTENTION**: <1 second
- **RECOGNITION**: 1-3 seconds
- **COGNITION**: 3-20 seconds +
What’s different about maps in the digital age?
Cartography in the Digital Age

How have digital media changed cartography?

The good news...

...and the bad news
How have digital media changed cartography?

Small screens = small maps

Maps must compete in a blizzard of information…hold their own in an ADD world
Cartography in the Digital Age

How have digital media changed cartography?

Maps on the web are ephemeral (how long will our work last?)
How have digital media changed cartography?

Cartography now includes a whole range of user experiences

...maps can zoom, change, and move
How have digital media changed cartography?

Maps are *deep*
Cartography in the Digital Age

They’re a window into worlds of information

This far outweighs any shortcoming
Lesson: Turn challenges into assets

Sistine Chapel ceiling’s awkward shapes…

...are the framework for Michelangelo’s masterpiece
Elements of web and mobile maps
Elements of Web and Mobile Maps

App or framework (user experience)
Elements of Web and Mobile Maps

App or framework (user experience)

The map
Elements of Web and Mobile Maps

App or framework (user experience)

The map

Popups and map actions
Elements of Web and Mobile Maps

App or framework (user experience)

The map

Popups and map actions

Legends and other ancillary items
Elements of Web and Mobile Maps

App or framework (user experience)

The map

Popups and map actions

Legends and other ancillary items

Cartography: All elements of design and communication
Elements of Web and Mobile Maps

User Experience Vs. Cartography
Elements of Web and Mobile Maps

User Experience = Cartography

They’re inseparable
The process
It’s linear...sort of
The process it’s linear…sort of

Create initial wireframes → Refine concepts → Test → Create maps → Design and build app/UE → Refine design, UE → Test → Publish

Iteration, experimentation, trial and error is part of the process
Testing is vital!
Case Study: Tornado Dashboard

Idea:
Show tornadoes through space and time
**Case Study: Tornado Dashboard**

**Initial sketch**

**Concept:**

- Summarize tornado totals by state
- Facts and figures for each twister
Case Study: Tornado Dashboard

Mockups: First round

- First tab: State totals
- Second tab: Stats for individual tornadoes
Case Study: Tornado Dashboard

Second round

- Numbers instead of tabs
- Slide-out stat panels after click
Case Study: Tornado Dashboard

Third round

• Dynamic graph shows total twisters by map extent

• Click on tornado for individual twister stats
Case Study: Tornado Dashboard

Fourth round

• Eliminate state summaries

• Remove top banner

• Refine cartography
Case Study: Tornado Dashboard

Published app

- Removed Fujita numbers from map

Moral: iteration, modification, experimentation improved the map
Some **CLUES** to making great digital maps
Some CLUES to making great maps in the digital age

1. **C**onnects with its audience
2. **L**imits user options
3. **U**ser experience supports the story
4. **E**asy-to-read maps
5. **S**trives for simplicity
CLUES
Connect with your audience

Think of your mom
Step back and explain things
Avoid being technical
Be informal but respectful
Think about your primary audience

Lots of people may see your map, but who do you really want to convince?
The best maps and apps do one thing really well

An all-purpose map viewer may make sense once in a while…

But a focused, single-purpose app will better serve a specific audience.
User experience supports the story

There are lots of ways to interact with maps

- Locate
- Navigate
- Compare
- Narrate
- Show change

Think about the job your map is doing, and choose the means by which users will experience your story.
CLUES
Easy-to-read maps

A map for storytelling is very different from a map for analysis

Base map as context—not competition
CLUES
Easy-to-read maps

Simple, accessible thematic maps

Strip off non-essential information

Use limited color palettes
C L U E S
Easy-to-read maps

Avoid visually complex symbols and icons

Simple shapes are usually better than pictographs
Avoid visually complex symbols and icons
CLUES
Easy-to-read maps

Avoid visually complex symbols and icons
CLUES
Easy-to-read maps

Several simple maps are much better than one complex one

User experience can parse a complex story into simpler components

Crop yields
Yield gaps
Water use
Crop use
Clues
Strive for Simplicity

Eliminate unnecessary options

User Experience

Avoid “GIS-y” functions:
No arrays of little icons
Clues
Strive for Simplicity

Eliminate unnecessary options

USER EXPERIENCE
No rows of obscure icons, no long lists of options

VISUAL
Avoid unnecessary lines, rules, drop shadows, etc.

EDITORIAL
Keep text, labels, and titles clear, simple, and descriptive
Strive for Simplicity

Eliminate unnecessary options

awesome.good.is/features/011/Wanderlust/index.html
CLUES
Strive for Simplicity

Eliminate 
Edit! Shorten! Reduce! Distill!
Simplify!

Digital media = ADHD media

“Not that the story need be long, but it will take a long while to make it short.”
— Henry David Thoreau, Letters to Various Persons
1. Connect with your audience
2. Limit user options
3. User experience supports your story
4. Easy-to-read maps
5. Strive for simplicity
Some tips on designing digital maps
PC, tablets, and mobile: the challenge of screen sizes

Not just size, but context and user interaction

Your maps have to work within this variety of sizes
PC, tablets, and mobile: the challenge of screen sizes

Responsive design

PC: Click, scroll

Mobile: Tap, swipe

Tablet: Tap, swipe

…and separate functions
PC, tablets, and mobile: the challenge of screen sizes

Responsive design: separating functions

- Tabs
- Thumbnails
- Popups
PC, tablets, and mobile: the challenge of screen sizes

Responsive design: separating functions

- Tap
- Swipe
- Tap

Tabs

Thumbnails

Popups
Design tips: Minimalism

Clean, open, modern design

Is it here to stay?

Yes.
Design tips: Minimalism

Flat, 2-D design (no simulated third dimension, no drop shadows)

Is it here to stay?

Probably not.
Design tips: Minimalism

Super, super skinny type everywhere

Is it here to stay?

Hope not.
Design tips:

Think vertical

How do you make room for all that open, clean design?

Scrolling is cool.

(but are we overdoing it?)
Design tips: Simple user experience

Limited choices, intuitive design

Don’t be afraid to use overt clues
Design tips:
Simple user experience

Limited choices, intuitive design

Don’t be afraid to use overt clues

…and to parse UE into steps
Design tips: Map and context

Map and website/app should be seamlessly integrated (2-3 examples)

Example: City of St. Albert, Alberta
Design tips:
don’t be satisfied

Current Map Tour

…is starting to feel boxy and dated
Design tips:
don’t be satisfied

Future Map Tour?

More immersive
Design tips:
don’t be satisfied

Future Map Tour?

Give user choices
Design tips: Publishing isn’t a one-time thing

You can (and should) tweak, improve, enhance

You’ve created a monster—you’ll need to feed it
Design tips: 
Look around!

Be inspired by what others are doing
The process: Start fresh

Don’t stick with what you have (GIS analysis, older website)

Think anew about
- Who is your audience
- What is your goal
- How you’ll interpret and represent for your audience
The process: Brainstorm and sketch

Great digital tools: Markers and whiteboard

Outline key elements

Develop rough wireframes

Tools? Balsamiq, Photoshop, PowerPoint, Pencil!
The process: Iterate and test

Be willing to abandon “great” ideas
Digital media are flexible, malleable; try things, explore options

User testing is key (with whom?--fresh eyes, non-tech people)

- Early in process with static screens, rough implementations
- Later: Refining user experience, terminology, etc.
What to Remember
➔ Keep it **simple**; eliminate non-essentials

➔ **Single**-purpose to fit priority audience

➔ Map and context work **together**

➔ Cartography includes **user** experience

➔ Digital - screens small, but maps **deep** (it’s a new medium...take advantage of it!)
Thank you…

Please fill out the session survey:

**ID: 1382**

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Paper – pick up and put in drop box
Open Discussion

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