

GeoNode Analysis and User Research Analysis Report + Strategy Recommendations

July 19, 2016



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Executive Summary + Overview

PROJECT PURPOSE

This project was undertaken to identify opportunities for improvement to the GeoNode user interface; and to provide the GFD RR development team insight into user needs and GeoNode use cases. This document contains the research findings, recommendations and software development strategy derived from user interviews, surveys and heuristic evaluation.

ACTIVITIES

GeoNode Analysis

A heuristic analysis, comparison of page layouts of the current GeoNode demo site and other similar websites. A heuristic analysis is a method that helps to identify usability problems in user experience design. It examines the interface and judges its compliance with recognized usability principles (the "heuristics"). This analysis focused on ten key heuristics to determine that the content is:

- * Findable
- * Accessible
- * Clear
- * Communicative
- * Useful
- * Credible
- * Controllable
- * Valuable
- * Learn-able
- * Delightful

Surveys

In May and June of 2016 two surveys were conducted of GeoNode users and participants of at least three GIS conferences. These surveys covered general GIS usage and specific GeoNode activities and needs.

The GIS usability survey was taken by 28 people, 27 of whom are reflected in the charts. The 28th person responded too late to include in anything but the analysis of the open questions. The GeoNode survey was taken by 39 people.

Expert Interviews

Nine people were interviewed for this project—five GeoNode users were identified from the surveys, and four experts from both competing products and other adjacent spaces. This project set out to understand how people were using GeoNodes around the globe—from the types of files people were generating to the challenges of their work environments.

GeoNode Development Strategy

GeoNode Role and Purpose for Users

GEONODE’S ROLE FOR USERS:

- 1. **Organization:** Manage and catalog data
- 2. **Download:** Distribution of published data
- 3. **Security:** Providing defined access
- 4. **Access:** Visualizing catalog data to open data for use by a wider audience

GEONODE’S DEFINING INSIGHTS:

- 1. **Timely Library:** GeoNode is a library at the intersection of geospatial information, infrastructure, natural events.
- 2. **Poor Control:** GeoNode lacks the ability to easily evaluate and improve data and system.
- 3. **Opaque Data:** Organizations and GIS staff do not know what data is available because it is not digitally all in one location. (It is in separate departments, developed by consultants, mislabeled, or in an inaccessible format such as on paper or on a thumbdrive.)
- 4. **Novice Users:** GeoNode is used in environments where individuals with little GIS experience need to access layers, maps and content stored on the GeoNode.

GEONODE’S PRIMARY PURPOSE AND SUBSEQUENT DESIGN CRITERIA:

- 1. **Relevancy:** To make GIS data relevant and meaningful, at the time that it is needed.
 - * Meaning: GeoNode must connect meaning to documents.
 - * Control: GeoNode must support systems evaluation and troubleshooting.
 - * Discovery: GeoNode must support file discovery and tracking.
- 2. **Adaptability:** To grow with the organization.
 - * Adaptable: GeoNode should be adaptable to changes in need.
- 3. **Simplicity:** To make it easy for organizations to know and activate their GIS databases.
 - * Visual: GeoNode should provide simple views into GIS data.
 - * Simple: GeoNode must do complex GIS work for users.

The GeoNode Users

Defining Needs				
		1. SIMPLICITY	2. RELEVANCY	3. ADAPTABILITY
<div>S</div>	Super User A GIS Analyst and Developer They have developed their GeoNode, are actively managing and developing databases and scripts, looking for data to download.	<div>A.</div> Simplify knowing the content: available content; usefulness of content; relationship of content	<div>B.</div> Make it ready to do work <div>C.</div> Make it easy to connect other programs	<div>D.</div> Make it work regardless of industry or concern
<div>D</div>	Developer			
<div>A</div>	Administrator The GIS Managers manage users, databases and develop maps, upload data, creates data styles and maps, enter metadata.	<div>E.</div> Simplify setup <div>F.</div> Automate communication <div>G.</div> Enable bulk upload and editing <div>H.</div> Simplify file labeling <div>I.</div> Automate metadata capture	<div>J.</div> Make it useful to manage the data online: * to know the data in the system * to know the health of the data/ GeoNode * to improve the available data	<div>K.</div> Allow the system to grow and shrink as new needs and use patterns become apparent
<div>U</div>	GIS user The advanced user to query data and find the right data; to publish and organize data; to publish thematic maps.			
<div>P</div>	General Public/non-GIS staff The novice who uses GeoNode to visualize and find data; who need themes and styling to make sense of the data; who need to engage with thematic maps. Who wants to have simple, clear, fast visualizations of layers and maps pre-created.	<div>L.</div> Simplify knowing what answers are possible: simple, templated, and visual interface	<div>M.</div> Provide confidence that the answers are readily available <div>N.</div> Make content immediately useful and understandable	<div>O.</div> Make it adapt to my needs and concerns
<div>O</div>	Organization Uses GeoNode to store and archive data; to identify gaps in the database; to develop library of data; to activate data on demand.	<div>P.</div> Make it easy to track use of files, and users	<div>Q.</div> Allow system level analysis of data <div>R.</div> Make data usable to non-GIS users at critical moments	

Product Development

Core Product Use Cases + Features

GeoNode's Role #1 Organization: Manage and catalog data

Ex. I upload or receive 200 files that need to be published on GeoNode, but they don't have metadata. How might I batch upload the files and easily develop the metadata?

Ex. Anyone can post to my GeoNode. How might I verify their data?

Ex. I capture streaming data from Twitter, rental markets, and weather. How might I make that available to researchers and the general public?

Potential features:

- Administrator dashboard that enables
 - Health of the system
- Administrator control and customization of:
 - Category and metadata customization
 - Metadata editing
 - GeoStyling templates
- Batch processes (upload, metadata editing)



GeoNode's Role #2 Download: Distribution of published data

Ex. Anyone can download from my GeoNode. They pull the data, develop an analysis and post it to their site. How might we track the downloads and support users identifying where they get their data.

Ex. My end users' internet is slow and inconsistent. They can see that we have the data they need. How might we help them get access to the data.

Potential features:

- GeoNode Flexibility
 - Home page templates
 - CSS templates
 - GeoStyling templates
 - Extendable Plug-ins
- Layer file data targeting and downloading
 - Provide layer visualization and data visualization in the same view.
 - SEO and data analytics
- Public acknowledgment to make data sticky and knowable.
 - Automatic bibliography or tracking
 - Rewards for data reciprocity and stewardship of GeoNode
 - Show use statistics
 - Opt-in for GeoNode stewardship.



GeoNode's Role #3 Security: Providing defined access

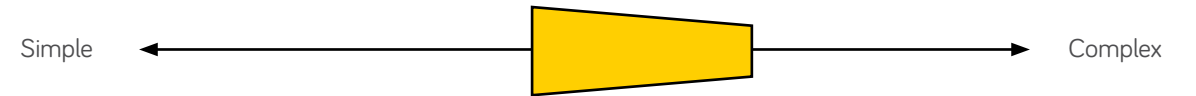
Ex. Anyone can post to my GeoNode. People post files and others access them but don't realize that they don't come from my organization. How might we indicate trusted files and unknown files?

Ex. My staff and I collaborate on files in progress. We share them on GeoNode. How might we indicate the file's status?

Ex. I need to give people access to pre-doc files—those files that aren't ready for publication. How might we limit its availability? How might we tell them when the file has been updated?

Potential features:

- Administrator dashboard control of permissions
 - Time-based access
 - Alpha file permissions
- File labeling and badging that is easily identifiable and creates trust amongst users.
 - File completion status labels
 - Organization logo label
 - Verified label



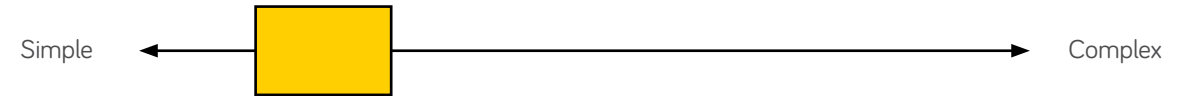
GeoNode's Role #4 Access: Visualizing catalog data to open data for use by a wider audience

Ex. The public comes to my GeoNode because someone posted zoning laws. How might I support further exploration of the GeoNode?

Ex. My users don't have any GIS experience. The thumbnails of the files don't help them. And the viewer is too small and has too many complex controls that they don't know how to use. It's also not associated with the data table, making it difficult to find a specific dataset. How might we make it easy for non-GIS users to find the information they need?

Potential features:

- Simple map composer that minimizes choices
 - GeoStyling, layer templates or themes
 - Simple layering
 - Map layer recommendations
 - Publishing and printing for novices
- Visual search and filtering
 - Large file preview
 - Multiple file overlay preview
 - Visual filtering devices
- Enable Google Translate or other translation services.
- Searchable by Google and other search engines.

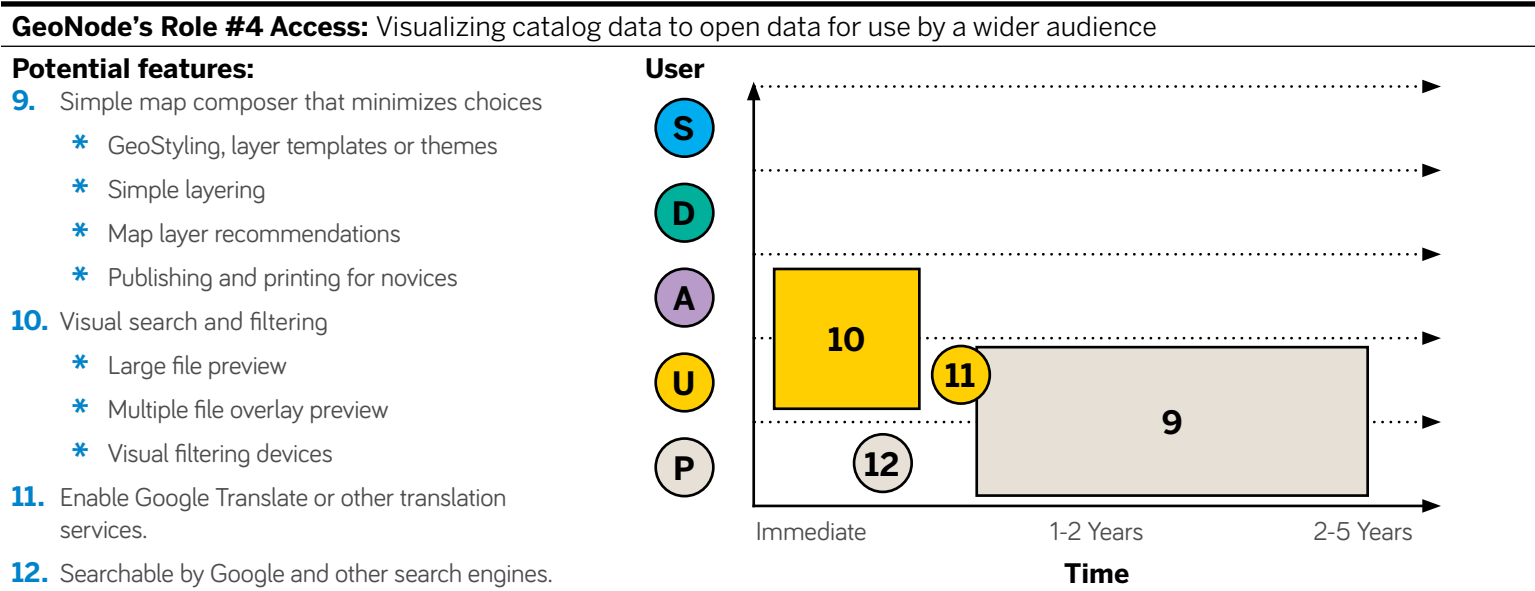
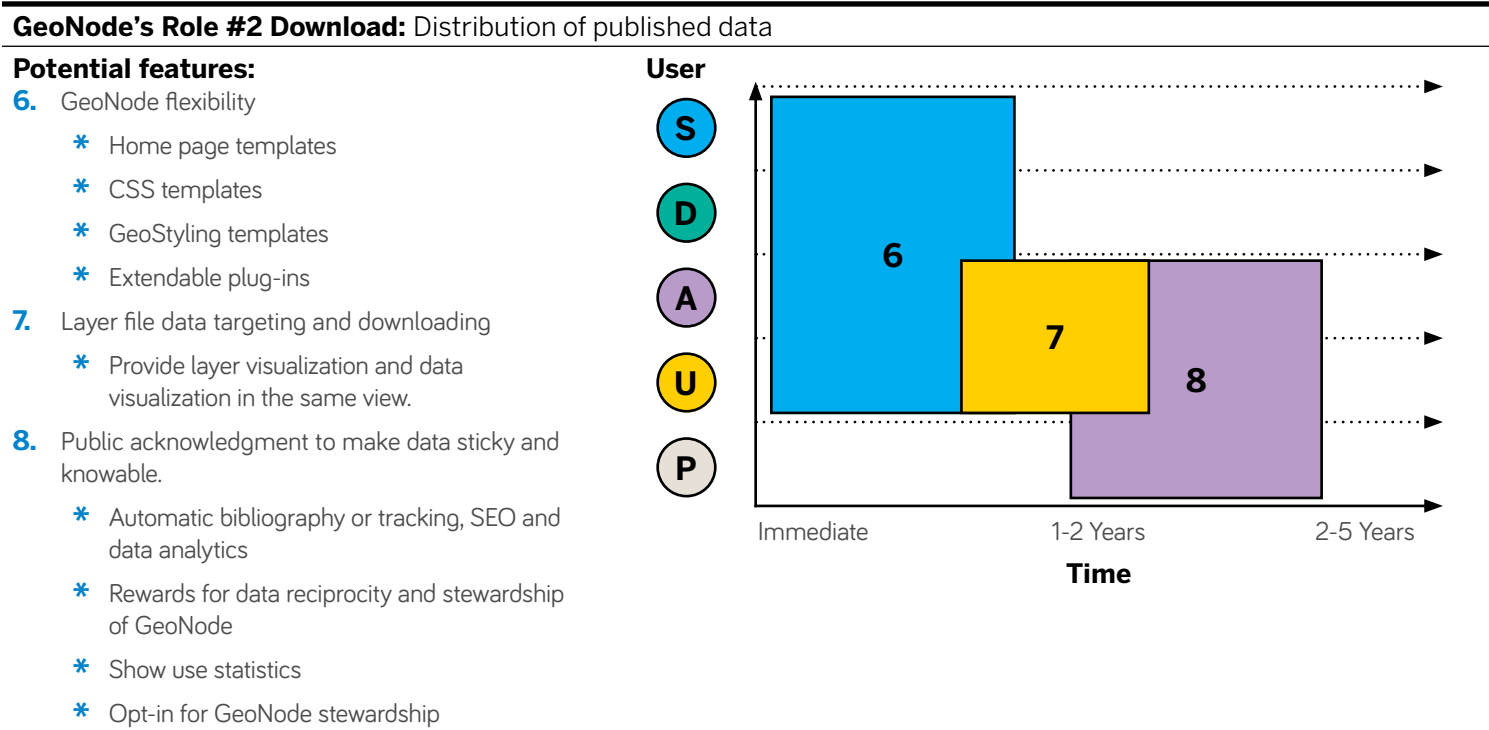
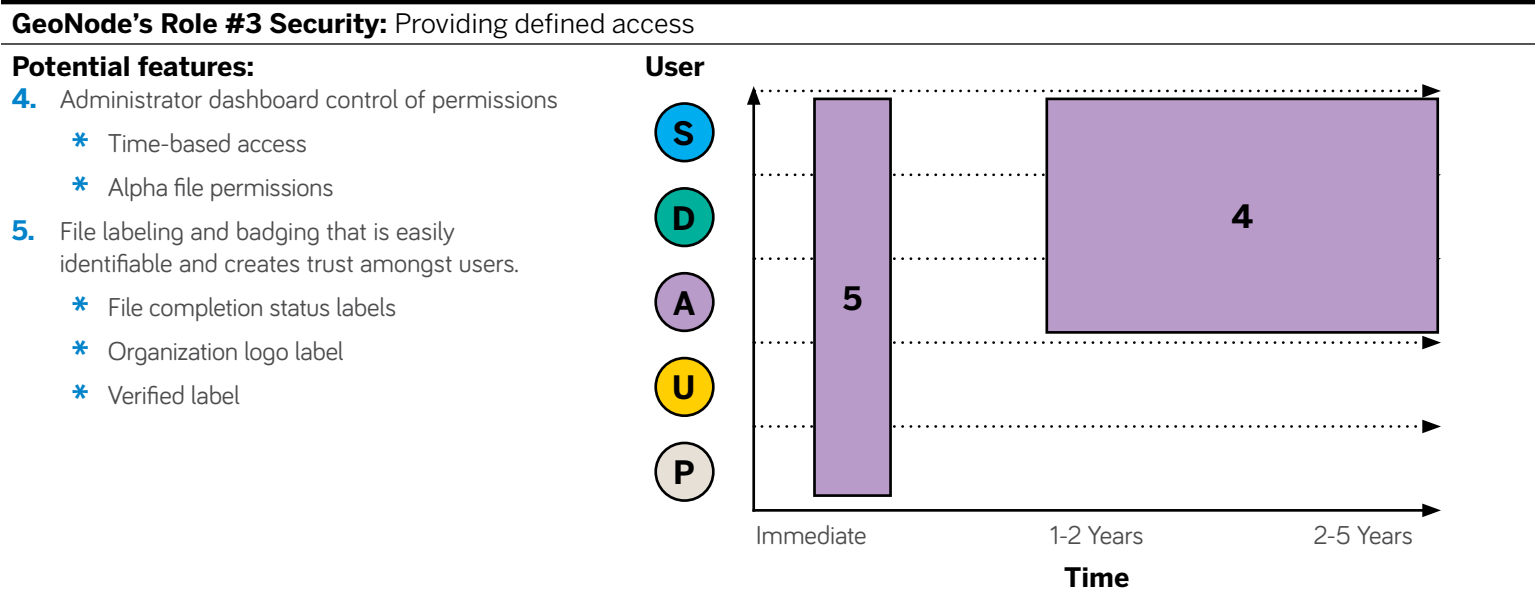
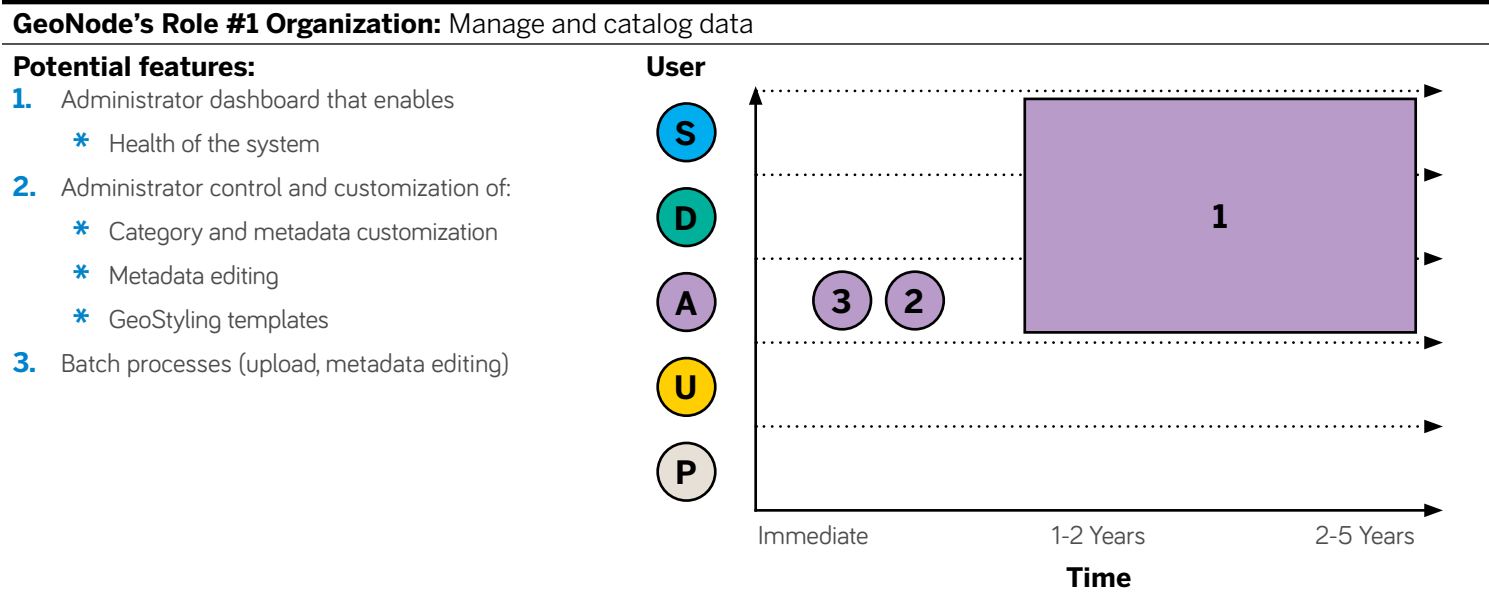


Supporting activities

Documentation

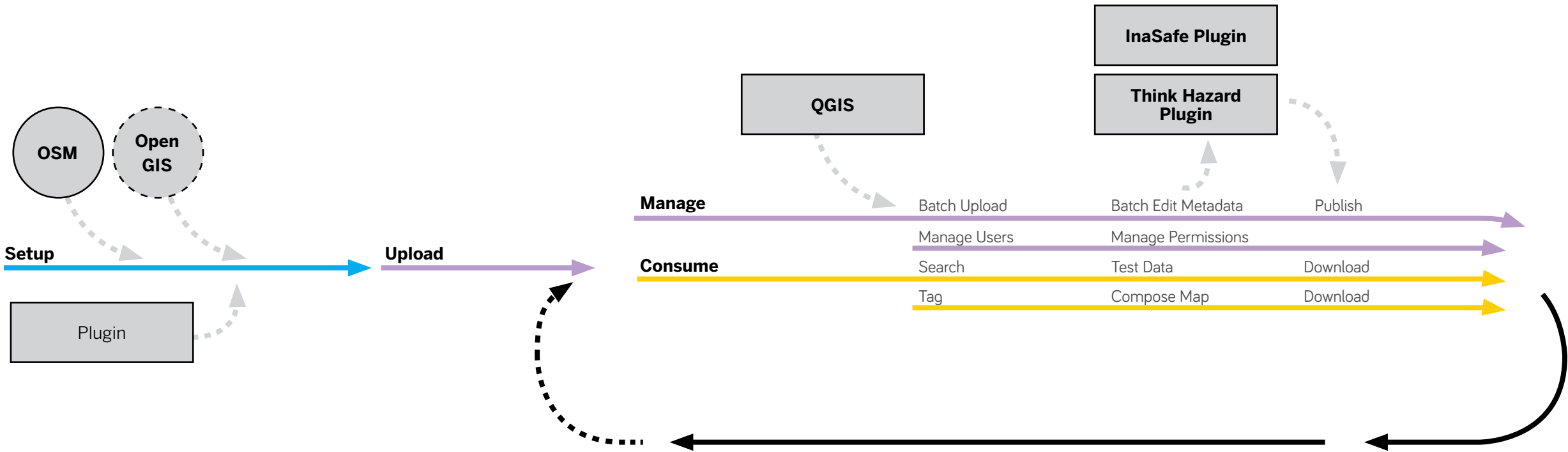
- IT white papers
- GeoNode best practices
- Real examples and case studies

Product Development Roadmap
Features Mapped to User



S	Super User
D	Developer
A	Administrator
U	GIS user
P	General Public/ non-GIS staff

Process Needs



Feature needs from pages 6-7 mapped to process.

SETUP

- 2. Administrator control and customization of:
 - * Category and metadata customization
 - * Metadata editing
 - * GeoStyling templates
- 4. GeoNode flexibility
 - * Home page templates
 - * CSS templates
 - * GeoStyling templates
 - * Extendable plug-ins

UPLOAD

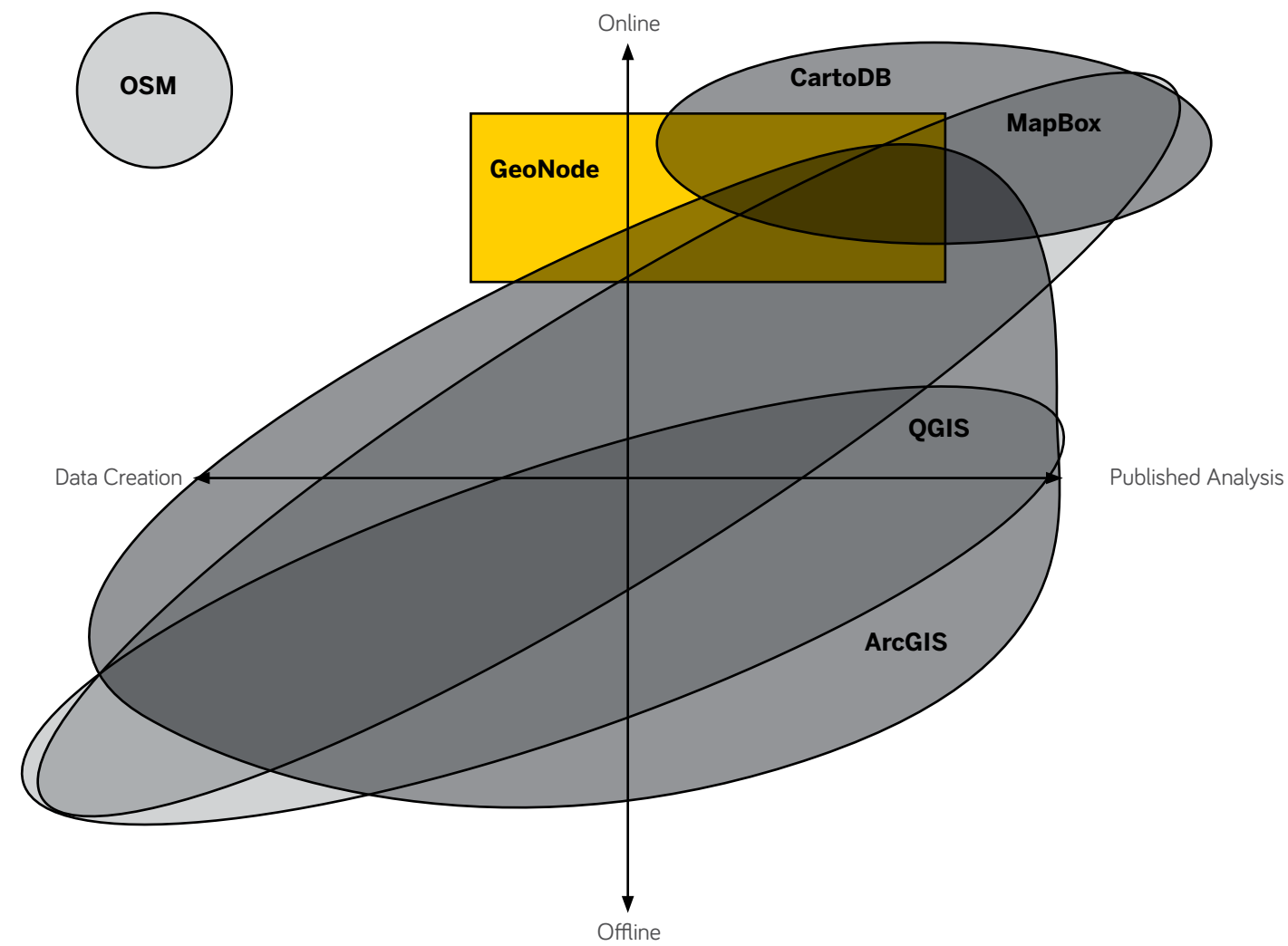
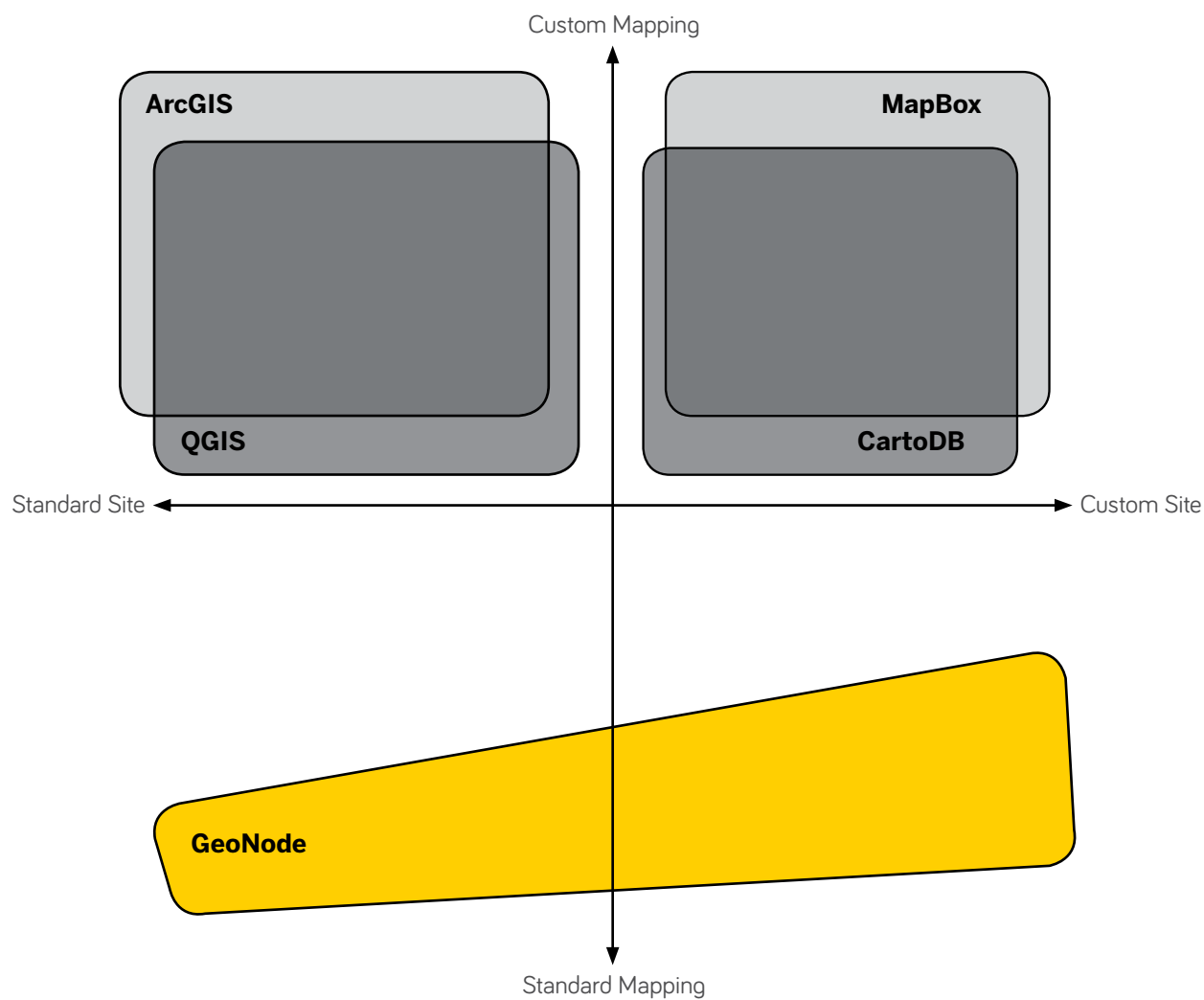
- 3. Batch processes (upload, metadata editing)

MANAGE

- 1. Administrator dashboard that enables
 - * Health of the system
- 7. Administrator dashboard control of permissions
 - * Time-based access
 - * Alpha file permissions

CONSUME

- 5. Layer file data targeting and downloading
 - * Provide layer visualization and data visualization in the same view.
- 6. Public acknowledgment to make data sticky and knowable.
 - * Automatic bibliography or tracking, SEO and data analytics
 - * Rewards for data reciprocity and stewardship of GeoNode
 - * Show use statistics
 - * Opt-in for GeoNode stewardship
- 8. File labeling and badging that is easily identifiable and creates trust amongst users.
 - * File completion status labels
 - * Organization logo label
 - * Verified label
- 9. Simple map composer that minimizes choices
 - * GeoStyling, layer templates or themes
 - * Simple layering
 - * Map layer recommendations
 - * Publishing and printing for novices
- 10. Visual search and filtering
 - * Large file preview
 - * Multiple file overlay preview
 - * Visual filtering devices
- 11. Enable Google Translate or other translation services.
- 12. Searchable by Google and other search engines.



Customization

ANALYSIS

GeoNode expects a learning curve. By offering standard website capabilities and users the flexibility to make changes GeoNode enables GeoNodes to grow into their own platform.

STRATEGY

- 1. Novice first: Prioritize novice user needs
- 2. Templates over complexity: Develop templates for complex GIS activities and website structural elements.
 - * Build basic templates for visualizing layers and maps.
 - * Build front page templates for easy customization of the GeoNode.
- 3. Customizable simplicity: allow advanced users and administrators augment and control over GeoNode.

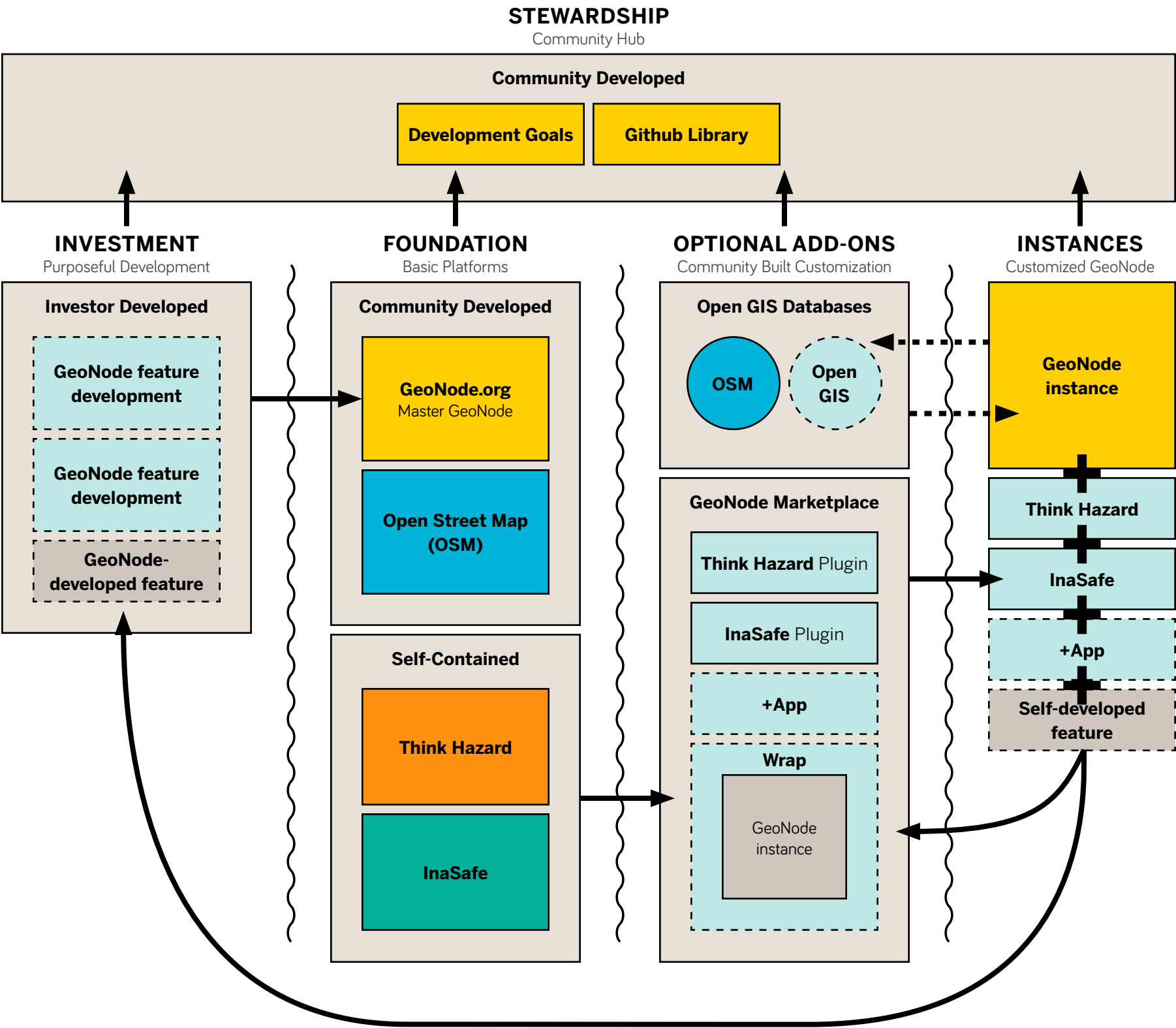
GIS Activities

ANALYSIS

GeoNode is unique from its competitors.
Keep GeoNode's focus on it's centric positioning. Allow other programs to connect and support GeoNode. Don't try to become them.

STRATEGY

- 1. Prioritize GIS Online
- 2. Focus on activating data over creating data
- 3. Simplify data visualization
- 4. Prioritize publishing and distribution
- 5. Prioritize and popularize open source databases



GeoNode System

The GeoNode community has volunteer-, investor- and proprietary-developed features and functionality. The diversity of solutions creates a vibrant platform.

THE SYSTEM:

GeoNode Investors
ex. World Bank

Develops and supports community properties (such as GeoNode, Think Hazard, InaSafe etc) as stand alone services with very clear objectives, uses and relationships with each other.

Goal: increase availability of open source GIS software solutions that support the GIS workflow.

GeoNode.org remains a community developed download-able database software. Investors fund specific features that drive software usability and functionality.

GeoNode Marketplace
(Partners, Apps, Add Ons + Plug-ins)

Developers, partners and GeoNode instances develop add-ons, apps and plug-ins to better control and customize GeoNodes. These tools allow organizations to customize their GeoNodes based on their user needs.

Goal: develop unique functionality not required for every GeoNode.

Open GIS Databases

A network of open source GIS databases that enhance mapping and analysis capabilities.

Goal: advance the use of GIS.

GeoNode instances + Add-ons

Each GeoNode instance is a stand alone application, acting independently of other GeoNodes. It can opt-out of connecting with open source databases. On setup, GeoNodes come with standard analysis apps (ex. Think Hazard, InaSafe).

Goal: provide open source GIS cataloging software to decrease silo-ization of data by making GIS data available on demand to organizations.

RECOMMENDATIONS:

- A. Each new GeoNode should be encouraged to be open by default, providing GIS data to an increasing complex Open GIS database.
- B. Each new GeoNode should be encouraged to utilize Open databases, selecting the databases that fit their region or enhance their analysis of their own databases based on comparisons with like databases.
- C. Self-developed features and functionality add-ons must return to the primary GeoNode software and marketplace, growing adoption and making a stronger platform.
- D. Develop a GeoNode steering committee to develop long-term planning, guide and track development, and build structural systems that support scale within the GeoNode community.

Recommendations

Insights

GEONODE’S PRIMARY ROLE FOR ITS USERS:

Organization: Manage and catalog data

Download: Distribution of published data

Security: Providing defined access

Access: Visualizing catalog data to open data for use by a wider audience

WHO IS IT FOR:

Novice: to visualize and find data; who need themes and styling to make sense of the data; who need to engage with thematic maps.

Advanced: to query data and find the right data; to publish and organize data; to publish thematic maps.

Organization: to store and archive data, creating a library of data; to activate data on emergency demand.

Insights:

- 1. Research participants are more concerned about novice users on GeoNode than experts. Within the respondent population, GeoNode users are more often novices or people with no GIS training.
- 2. GeoNodes follow the basic audience hierarchy: 1:9:90. 1 super user, 9 active users, 90 novice users or silent observers.
- 3. Super users are likely to be in small organizations that rely on outside resources. They are savvy builders with the ability to do anything they need to.

- 4. Having a software developer on the team is not a guarantee. Managers and user segments ranked easy deployment and maintenance higher. Some individual responses identified a lack of developer as a barrier for success. This also indicated a greater need for good documentation in multiple languages. Interviews further supported this need, suggesting that the lack of qualified IT personnel limits organizational support.

THEY VALUE GEONODE FOR:

- * Access to external databases.
- * Seamless ability to organize and provide access to data library.
- * Ease of download and upload in format of choice.
- * Ability to manage file sharing permissions.

HOW DOES COMMUNITY AFFECT GEONODE:

Open source motivates the community:

Respondents are motivated by open source software, data and tools. All user segment respondents valued open source GIS software, most use at least one type. All respondents also valued access to external data and resources—the super users and managers prioritized it.

Can it be trusted: Participants valued their access to external databases, but also need to trust the data. Help them create more value in sharing their databases by labeling their data.

Open source data creates stickiness. Data should be seen as a sticky node, and not an ownable asset. Participants from closed systems and very hierarchical systems need incentives and rewards for participating and sharing data.

Fractured development creates uncertainty:

Users need to know and participate in planning GeoNode’s future. Participants need development activities to be more clear and overt. The lack of communication and visibility into long-term planning creates uncertainty.

Needs:

- A. Build Rewards for data reciprocity and stewardship of GeoNode.
- B. Make open data, and opening your data sticky and knowable. Activate the community, by showing use of data and value in sharing.
- C. File labeling and badging that is easily identifiable and creates trust amongst users.

HOW DO THEY COLLABORATE?

Rank + share have specific use cases. Rank and share signal a value based on user need, and signals to others to conduct a desired behavior.

- * Ranking is curating.
- * Open source databases open up their data to new interpretations.

Filling out Metadata is bearable. Metadata fields are a necessary evil participants bear to make things findable and useful.

GeoNode documentation lacks individual use cases and working examples. The lack of documentation and real world examples are adversely affecting GeoNode and other GIS online software usage. Development tools and frameworks designed to speed and support GIS activities are not in use, suggesting that respondents do not know their value or how to implement them. The lack of documentation hinders hand-off. It is also causing users to make poor choices at install that create ongoing issues with their system.

User types differ in their ability to collaborate. Managers, Developers and Users value collaboration; Super users do not.

- * The super user segment does not value collaboration as much as the other segments. Open data is prioritized but for personal use.
- * This disparity between populations suggest differences in organization types.

Needs:

- A. Automatic Bibliography. Research institutions need the ability to track downloads and usage of their data.
- B. IT white papers and GeoNode best practices.
- C. GeoNode must have basic best practices and requirements for server setup.

WHAT ARE THEIR USE CASES

Emergency Use Cases: The majority of participants have emergency use cases and needs. Plan for emergency use cases, especially mobile use cases.

Unique use cases have an impact on disaster analysis and access.

- * Streaming Data Needs Automated Analysis Portals. Users are creating larger unique databases from streaming data to develop ‘day in the life’ views into localities.
- * Localized Knowledge. Social media is creating a faster route to localized knowledge.

Online and offline differ based on audience reach. Online for publishing information to a large audience; offline is solitary, for creating or working with files.

Online needs change based on work state. Emergency needs create a state change in job and activities. Respondents recognized this need change for online GIS software.

- Needs:**
- A. Ability to utilize GeoNode content in remote emergency situations.

HOW DO THEY CONTROL THEIR FILES?

Permissions are about controlling access. Setting permissions has complex motivations and situational preferences.

Administrator Control. GeoNodes need the ability to customize some search parameters to effectively organize and structure their data catalog.

Project Organization: Users need topic categories that are project and time specific based on their GeoNode and its databases.

Alpha File Permissions. Users have alpha and beta files that need to be previewed and accessed by specific teams for a specific (renewable) time period.

- Needs:**
- A. Project organization
 - B. Alpha file permissions

HOW ARE USERS FINDING THE RIGHT DATA FEATURES?

Knowing Trusted Files, Trust but Verify. Open GeoNodes need help verifying uploaded files. Badging trusted files is more important than badging users.

Data Targeting: Layer Views + Data-Subset Download. Users need a visual connection between the data and the file viewer to better target needed data and download filtered dataset and data-subsets.

Respondents did not rank social sharing and ranking highly. Tools for sharing and ranking files, and for collaboration are not effective for respondents.

The Cart does not work as users expect.

- Needs:**
- A. GeoNode should support immediate targeting of data.
 - * Provide simple geostyling templates.
 - * Provide layer visualization and data visualization in the same view.
 - * Allow for in-layer filtering and downloading of filtered data.
 - B. GeoNode must be both flexible and strict with categories.
 - * Support custom categories for deep databases in one topic area.
 - * Standardize general categories based on industry standards.
 - * Enable accessing custom categories across GeoNodes.
 - * Provide administrator controls.
 - C. GeoNode must make it possible to batch download multiple files.

WHAT ARE THEIR VISUALIZATION NEEDS?

Map Publishing Capabilities: Users desire simple map publishing capabilities with legends. This is compounded in emergency situations.

Map Composer is overly complex. Complex GIS styling and analysis should be done on desktop. Web geostyling and analysis should be ‘good enough’ to provide insight into the value of the data and its relationship to other datasets and layers.

- Needs:**
- A. Basic templates.
 - * Remove challenging workflow processes and decisions to enable easier layer evaluation and faster map publishing.
 - B. Basic map and theme publishing for novices.

WHAT ARE THEIR TECHNOLOGY NEEDS?

File Size Workarounds. People have developed workarounds for large file sizes, including command line uploading, and sending USB thumbdrives to users.

Meet them where they’re at. Language is impeding users’ ability to work within the GIS process, and within GeoNode. The public is actively engaging with GeoNodes and their content.

File Handling on Upload/Download. Internet speed and resilience impacts users ability to upload or download files from their GeoNodes. Participants are working outside of the system to upload files.

- Needs:**
- A. UI should mimic the GIS process.
 - B. Incorporate faster batch upload.
 - C. Universal Workflow. Build the software for inclusion.
 - * Language inclusion: it should handle special characters and glyphs, and by enabling Google Translate or other translation services.
 - * Public inclusion: allow GeoNodes to be searchable by Google and other search engines.

HOW DOES THE CURRENT DESIGN OF GEONODE IMPACT USE?

GeoNodes have minimal changes to their basic setup. The majority of GeoNodes in the wild will not stray from the basic template and setup provided by GeoNode.

- * GeoNodes do not appear to be active.
- * GeoNodes look exactly the same.

Users have to take their files out of GeoNode to edit and analyze. InaSafe, QGIS, Think Hazard support the GIS process.

Non-GIS staff lack the ability to constructively engage with the data.

Needs

- A. Simple templates that take the guesswork out of setup.
- B. A contained system, with basic and lean analysis tools (such as Think Hazard and InaSafe) as opt-out widgets in the software download.

HOW DOES THE CURRENT UPLOAD AND FILE MANAGEMENT SUPPORT USE?

Files are opaque. GeoNodes easily store information, creating a catalog of files. However, lacking good basic metadata these files are opaque to users.

- * Finding a useful file requires file autopsies to define their purpose and usefulness.
- * Users need to export CSVs to understand files that are unnamed or lack metadata.

Basic GeoNode statistics provide at-a-glance system health.

- * Advanced management of system files and troubleshooting is not possible within the system. Users have to do so from command lines.
- * Basic statistics do not provide timeliness of GeoNode, or insight into file types.

Needs

- A. To know file purpose when no metadata exists.
- B. To preview data without leaving the GeoNode.
- C. To develop metadata with minimal user input. (ex. Software reads file data to suggest metadata such as location, URL source and similar files elsewhere in the system.)
- A. Centralized system management and reporting
 - * Number of users and frequency of posting
 - * Value of the posted data
 - * A list or index of layers
 - * Tools for gap analysis
- B. Public reporting
 - * Content types

HOW DOES THE CURRENT FILE VIEWERS AND MAP COMPOSER SUPPORT USE?

It lacks file relationships. GeoNode does not help users understand the potential relationship between one document and a second.

- * GeoNode users don't know what to do with their data once it's uploaded.
- * GeoNode users are not creating useful maps with their data.

Jargon and visual complexity hide functionality. GeoNode's map composer looks more complex than it is. Novices encountering the system are unable to decipher meaning.

- * Features are hidden within a visual of the map (both the extent filtering, and within map composer).
- * Icons lack roll-over or connection to known tools making it difficult to understand their use.

Lacks project functionality. Files that are part of a group are difficult to find. Team collaboration on projects is not supported.

Needs

- C. Novice GIS process guidance and tool guidance.
 - * Help identify the type of layers needed for a good map.
 - * Tool tips rollovers
- D. Simple mapping and analysis.
 - * A lean, build as you need it platform for GIS development and analysis.
 - * Instant engagement with the data that matters.
 - * Easy next steps: downloading, printing and PDF'ing of composed maps. Or, connecting them within the database.
- E. Project collaboration and management.

Recommended Changes

DESIGN FOR:

Primary users: Novices and general public. Their goal: work with published datasets to quickly make meaning.

Secondary users: Advanced users. Administrators, developers and super users. Their goal: to upload and manage databases; to organize and structure databases; to assess a file's value to their project.

Platform: Desktop

STRUCTURE:

1. Combine activities and remove redundant pages.
 - * Place tools together (upload, editing).
 - * Place resources together (layers, documents, OSM).
 - * Place published maps and analysis together.
 - * Place GeoNode information together (people, about us, blog, news and help)
2. Create personal dashboards to all more individual control and engagement with GeoNode.
 - * Make user profiles GeoNode dashboards—a personal home page for all logged-in users.
 - * **Note**, more information is needed to determine if administrator dashboards can be included in the user dashboard or treated as a separate dashboard.

HEURISTIC CONSIDERATIONS:

1. **Feedback: Provide users visibility into task and system status.**

Gallery:

 - * Indicate filter results.
 - * Value of selection and the type of files selected.
 - * Provide visual change to files upon selection.

Troubleshooting:

 - * Provide more detail into problem.
 - * Indicate system status.
2. **Natural Language + Order: Connect concepts and tasks to user's real world.**
 - * Change navigation to reflect GIS process: collection > raw > mapped > analyzed.
 - * Use natural language, and multiple words to clearly identify tasks and activities. Remove jargon.
3. **Consistency + Standards**

Metadata

 - * Use standard metadata forms.
 - * Allow for industry-based customization.

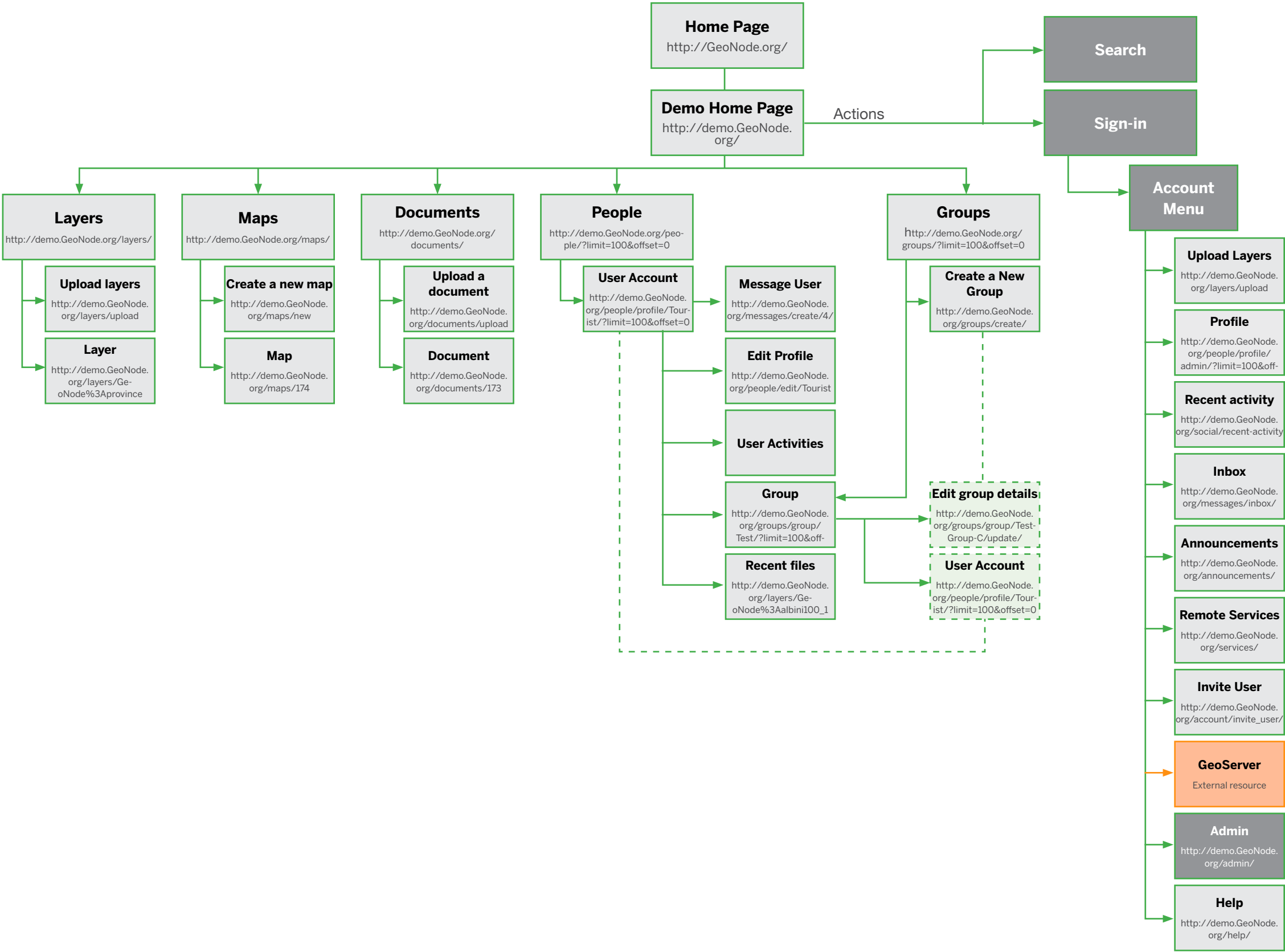
Design

 - * Allow for some customization to GeoNode, but keep a design standard that allows users to move easily from one GeoNode to another.
 - * Provide home page templates and CSS options.

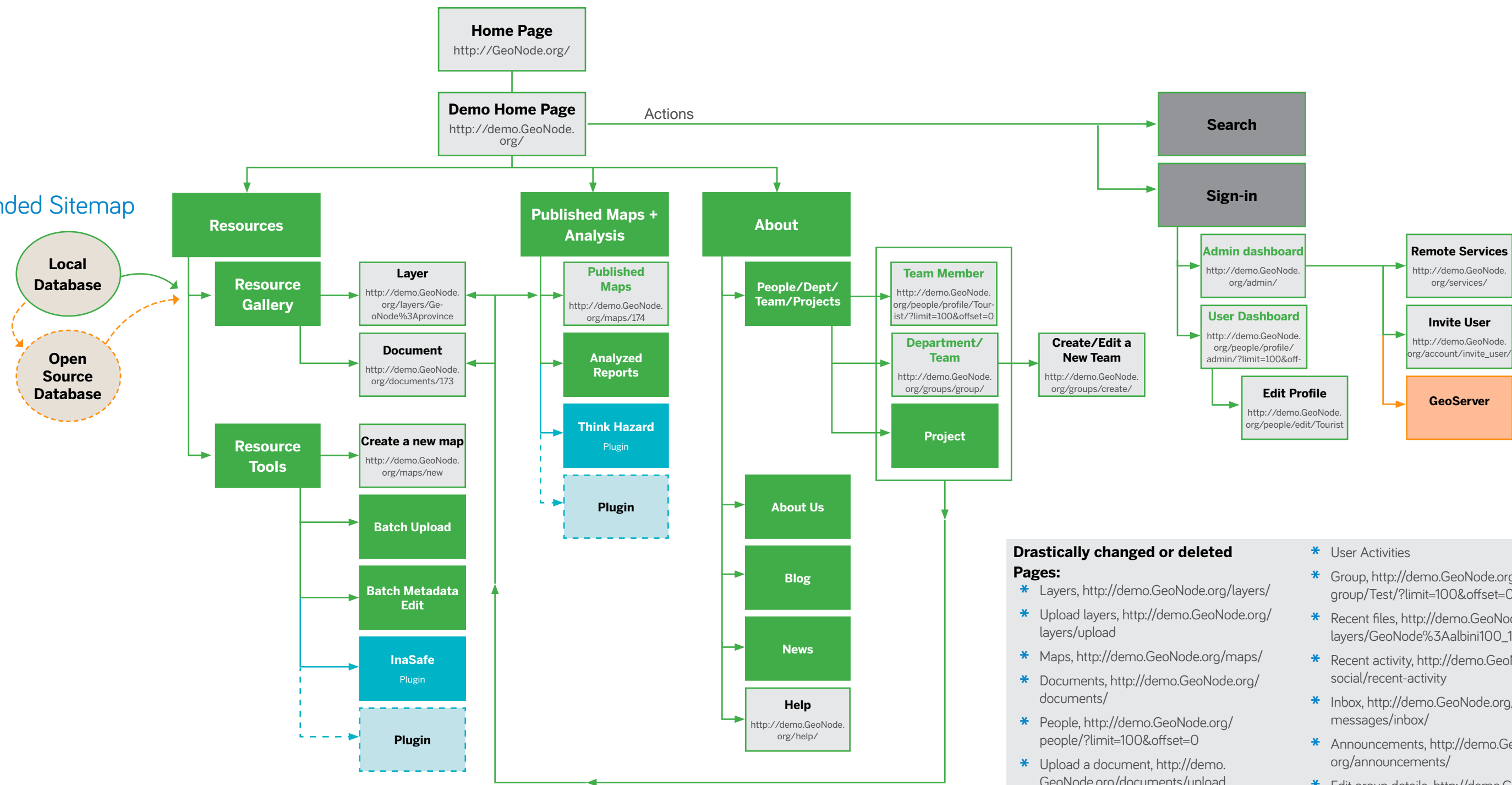
4. **Visible + Obvious: Basic tasks should be easily identifiable and recognizable, they should not rely on user recall.**
 - * Buttons should be in a contrasted color.
 - * Save buttons should be on the outer edge, lower corner (similar to a page number).
 - * Icons should be visible and obvious.
5. **Flexibility + Efficient Use**
 - * Make finding the appropriate layer the easiest task.
 - * Allow for flexible engagement with the layers.
6. **Relevance + Constraints: Focus on novice activation of GIS content.**
 - * Simplify map composition capabilities.
 - * Develop administrator controls to constrain and simplify the system, ex. GeoStyling templates, metadata toggling on/off and autofill.
7. **Emergency Exits: Provide users control and freedom within the site.**
 - * Provide wayfinding within search and gallery views.
 - * Allow users to save files to favorites or tag files to view later.
 - * Allow users to deselect files in their cart.

8. **Error Prevention**
 - * Eliminate random or uncontrollable filters.
 - * Provide visual contrast to separate fields and tasks.
 - * Cluster similar categories and tasks in the navigation bar, within filters, and within the design of the page.
9. **Recovery: Help users recognize, diagnose, and recover from errors.**
 - * Provide administrators more detail on errors.
 - * Make file selection and download obvious and simple.
10. **Help + Documentation.**
 - * Collect and organize GeoNode documentation.
 - * Indicate age, relevancy and status of documentation. ie. Is it out of date?

Current Sitemap



Recommended Sitemap



- Drastically changed or deleted Pages:**
- * Layers, <http://demo.GeoNode.org/layers/>
 - * Upload layers, <http://demo.GeoNode.org/layers/upload>
 - * Maps, <http://demo.GeoNode.org/maps/>
 - * Documents, <http://demo.GeoNode.org/documents/>
 - * People, <http://demo.GeoNode.org/people/?limit=100&offset=0>
 - * Upload a document, <http://demo.GeoNode.org/documents/upload>
 - * User Account, <http://demo.GeoNode.org/people/profile/Tourist/?limit=100&offset=0>
 - * Message User, <http://demo.GeoNode.org/messages/create/4/>
 - * Upload Layers, <http://demo.GeoNode.org/layers/upload>
 - * User Activities
 - * Group, <http://demo.GeoNode.org/groups/group/Test/?limit=100&offset=0>
 - * Recent files, http://demo.GeoNode.org/layers/GeoNode%3Aalbin100_1
 - * Recent activity, <http://demo.GeoNode.org/social/recent-activity>
 - * Inbox, <http://demo.GeoNode.org/messages/inbox/>
 - * Announcements, <http://demo.GeoNode.org/announcements/>
 - * Edit group details, <http://demo.GeoNode.org/groups/group/Test-Group-C/update/>

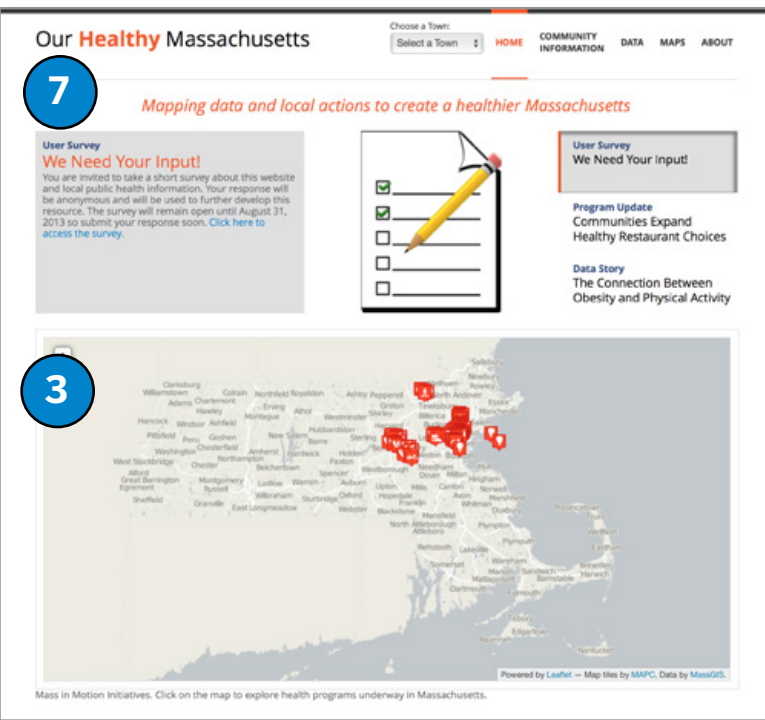
Home Page

RECOMMENDATIONS

Templates. Users need recommended and designed templates to ease development of their platforms. Emulate Wordpress and other similar platforms:

- Setup:**
- 1. Provide templates
 - * Must be responsive
 - * Must be desktop first
 - 2. Enable user-developed template ‘retail’ space.
- Content:**
- 3. Highlight the GeoNode contents, and volume of its content.
 - 4. Use human, natural language. Remove jargon wherever possible.
 - 5. Match known universal icons to behaviors; and mental models to activities.
 - 6. Make the GeoNode’s health and activity apparent to the viewer.
 - 7. Make it easy to understand what the GeoNode is about, and the opportunities inherent in the data.
 - 8. Prioritize search and data engagement.

URL Examples
http://dev.ithacaweb.org/masdap/
ourhealthymass.org
donnees.ville.montreal.qc.ca



Product Details Page

Text, Layer, Map Documents

GOALS

- * Make content easy to engage with.
- * Make it easy to capture metadata.
- * Help users find relevant data in a dataset.

RECOMMENDATIONS

- A. Prioritize engagement.
 - * Put map visual and data table in the same view.
 - * Allow immediate filtering of data.
 - * Enable download of filtered dataset.
 - * Eliminate complex mapping tools.
- B. Cluster like information.
 - * File recency: downloads, file usage, bibliography, publication and update time stamps, comments.
 - * File facts: categories, region, data era or timeframe, permissions and owner.
 - * File details: file status (published, working/ draft), title, abstract.
- C. Default to visualize display over text.
 - * Use icons to represent text (with text help on rollover).
 - * Color icons and file status
- D. Make downloading simple. Do not use a modal, use FAQ style functionality if there is more than one method of download.
- E. Allow users to capture metadata as they engage with files.
- F. Enable larger map view.

File details

File engagement

File recency

File facts

Logo/Navigation/Search

File Details

File Title

File Status

Abstract

File contents

Metadata

URL

Hazard

Region

Search/Filter Contents

Downloads

Categories

Region

Data Era

Permissions

Tags

Publication Date

Last Update

Notes

Save

Download Document

Download Filtered Results

Download Metadata

Footer

Product Detail Page Redesign

Resource Gallery
Catalog Gallery + Product
Search Page

GOALS

- * Make content knowable.
- * Make content usable.
- * Help users find layers that work together.
- * Visual display of catalog.
- * Discoverable content.

RECOMMENDATIONS

Prioritize:

1. Download
2. Visualizing single and multiple files
3. Cart functionality

Features should Include:

- * Structured
- * Obvious yet minimal metadata
- * Personal-izable view

PRODUCT CART + CART BUTTON

Current functionality does not work.

Must:

- * Capture and display selected documents.
- * Have a download all button.
- * Allow for easy removal of unwanted files.
- * Make it easy to download the layer or package the layers.

Should:

- * Help user know the files they've selected, such as: indicate the types of files selected, for example in an ordered and titled list.
- * Identify the type of layers selected to indicate what is missing or needed.

FILTERS + FILTER PARAMETERS (COOKIES)

4. Enable faceted filters in gallery

Filters should provide relevant filters that support knowing what data is available. The results of a filter selection should provide users an ability to understand what type of results it will create. Do not show all of the results immediately but allow the users to enter into the results and expand them upon demand.

- * Do not load all the files immediately. Allow user behavior to indicate need.
- * Allow users to see their filtered selections and change selections without a new search.
- * Use multiple soft and hard choices to refine search
- * Allow users to find a glossary or learn about an item.
- * Filters as selectable lists makes the selection process tedious.
- * The Extent, when rolled over changes the selections accidentally—it's too sensitive.
- * Categories and Regions are not well articulated by lists; and need to treated uniquely by each GeoNode instance.

5. Limited and controlled exploration: Allow users to catch up to content and expand on demand.

Must:

- * Enable quick, functional filtering of the file catalog.
- * Allow for administrator toggling or additions.

Could:

- * Be icons, symbols

EXTENT:

6. Move Extent to large column.
7. Change Extent to file preview over-set on a global map.
8. Enable base layer change (b/w, color).

ICON FILE REPRESENTATION

Current thumbnails do not represent the files well.

Must:

- * Provide a visual reference point for the file.
- * Allow for differentiation between file types.

Could:

- * Use icons to replace thumbnails.
- * Preview and compile files in an Extent view.

FILE DETAILS

- * Minimize the space the file name, rating scale and contents are taking up.

USER INTENT

9. Use-based display

There are two main drivers for the gallery: Exploration and discovery—'I'm looking for something new and inspiring.' Intentional search—I need to find x.' Both need to be supported in the logged-in state.

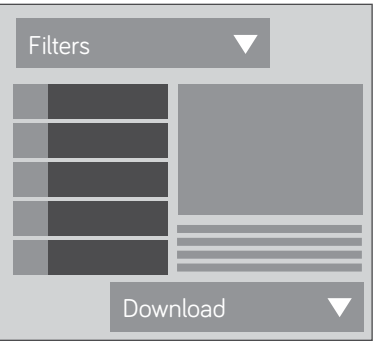
3a. Intentional gallery

- * Provide a list view
- * Provide a thumbnail card view

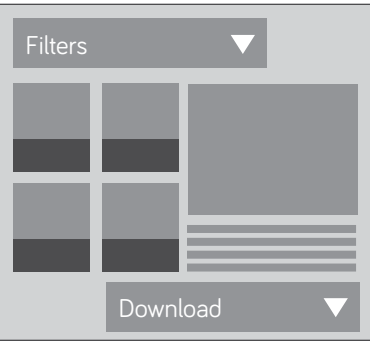
3b. Exploration gallery

- * Provide expandable details

List View



Card View



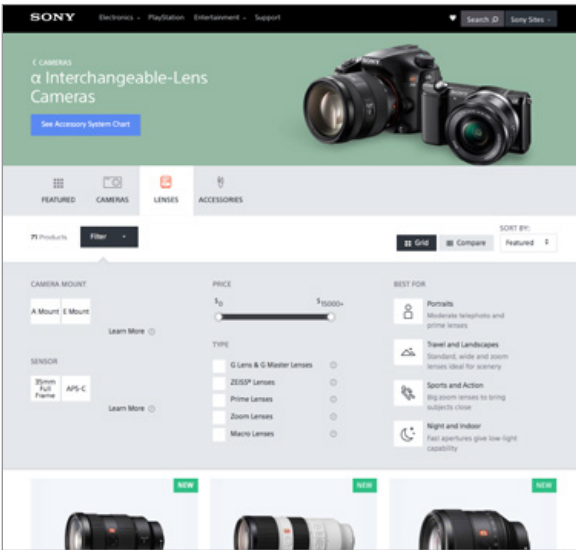
COLOR AND PROMINENCE

10. Use info graphics to describe the content
 - * Quantity
 - * Location of user within content
 - * Make tagging visible through color and placement
 - * Provide limited social sharing and usage data to provide feedback on an item's usefulness to the community.
11. Provide user control
 - * Ability to navigate back to the top
 - * Filter without going back to the top
 - * Save items to the cart, or create favorites
12. Move cart to more prominent location.
13. Use color judiciously to draw focus and enable identification.
 - * Use gray tones, boxes and clustering to provide distinctions between content types.

Faceted Navigation

Faceted navigation provides multiple filters, one for each different aspect of the content. Faceted navigation is thus more flexible and more useful than systems which provide only one or two different types of filters, especially for extremely large content sets. Because faceted navigation describes many different dimensions of the content, it also provides a structure to help users understand the content space, and give them ideas about what is available and how to search for it.

<https://www.nngroup.com/articles/filters-vs-facets/>



Logo/Navigation/Search

Categories

File Type

Region

Asia

Search

Keyword/Term/Title

Permissions

CC

Owner

Admin

Tags

House

Street

House

Publication Date (range)

Data Range

1780 to 1790

Filters

House X

1780 X

Asia X

Sort Results By

View

Order

Alphabetical

Most recent

Most downloads

Issue

Date

Results

Results

Document.doc

House X

1780 X

Asia X

Map.pdf

House X

1780 X

Asia X

Layer.shape

House X

1780 X

Asia X

Dataset.csv

House X

1780 X

Asia X

Dataset.csv

House X

1780 X

Asia X

Selected File(s) Preview

Base layer

File name.shape X

Data layer

File name.shape X

Detail layer

File name.csv X

Download

All files >

Bibliography >

Shape files >

Save to favorites

Footer

Filtered Gallery, list view

Logo/Navigation/Search

Filters

Results

Results

Dataset.csv

House X

1780 X

Document.doc

House X

1780 X

Layer.shape

House X

1780 X

Map.pdf

House X

1780 X

Dataset.csv

House X

1780 X

Document.doc

House X

1780 X

Selected File(s) Preview

Base layer

File name.shape X

Data layer

File name.shape X

Detail layer

File name.csv X

Download

All files >

Bibliography >

Shape files >

Save to favourites

60 files

You have viewed

25

<<LOADING MORE>>

Return to top >

Footer

Filtered Gallery, card view

Admin Dashboard

GOALS:

An effective administrator panel should support advanced users and administrators to exert control over their GeoNode and data, and understand the health of their system.

RECOMMENDATIONS:

1. Visuals and info-graphics that support quick understanding of the system.
- * System status
 - * System check
 - * Error identification
 - * Error fix recommendations
2. System controls that allow customization of:
- * Metadata categories (such as toggle on/off and including subcategories);
 - * Custom CSS and themes
 - * Map Composer, layer GeoStyle templates
 - * Organizational file badging/identification, such as a universal or group-based logo tag
 - * Permissions and licensing
3. Bulk management of users, data, metadata and upload/downloads.

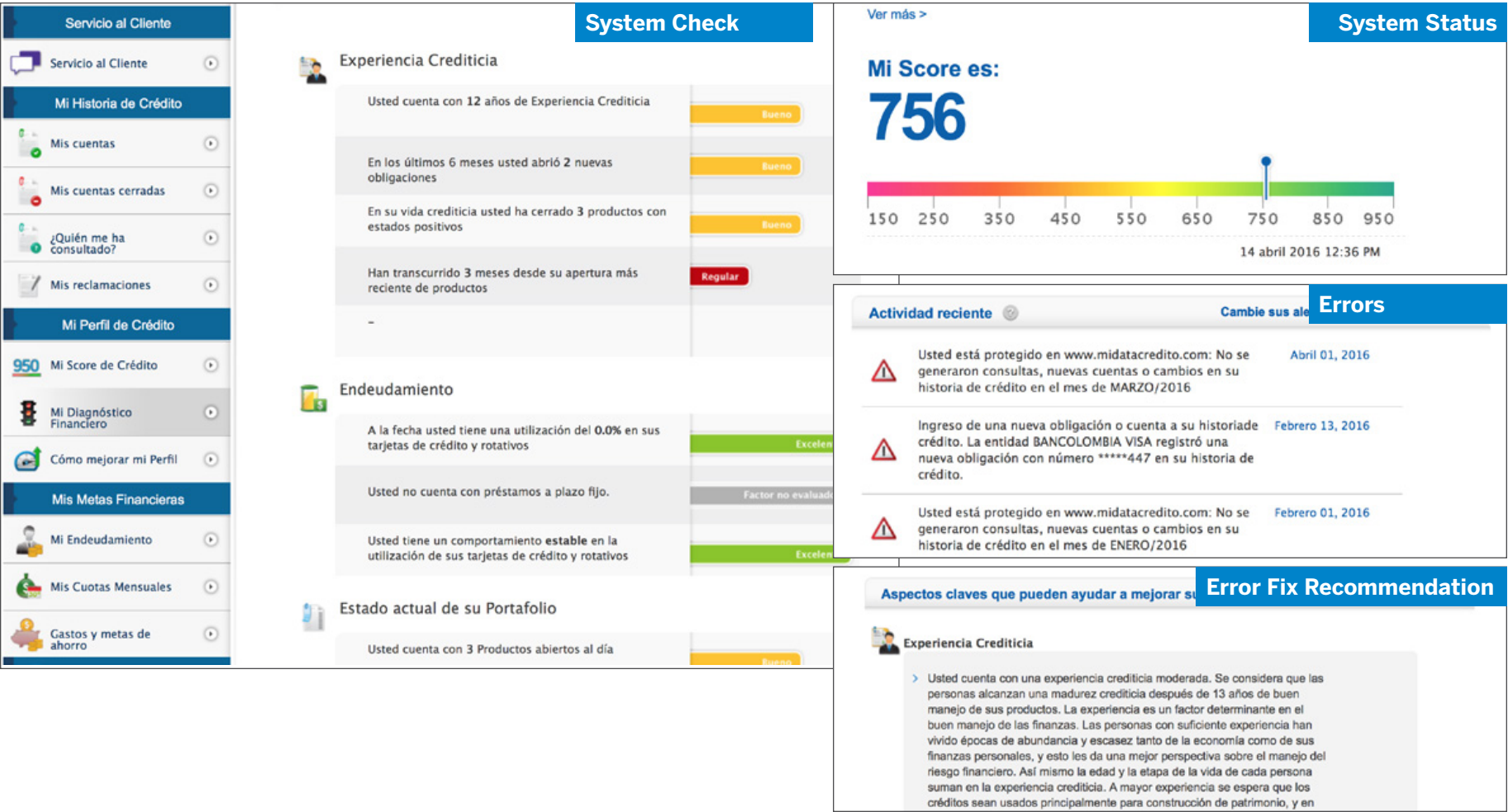
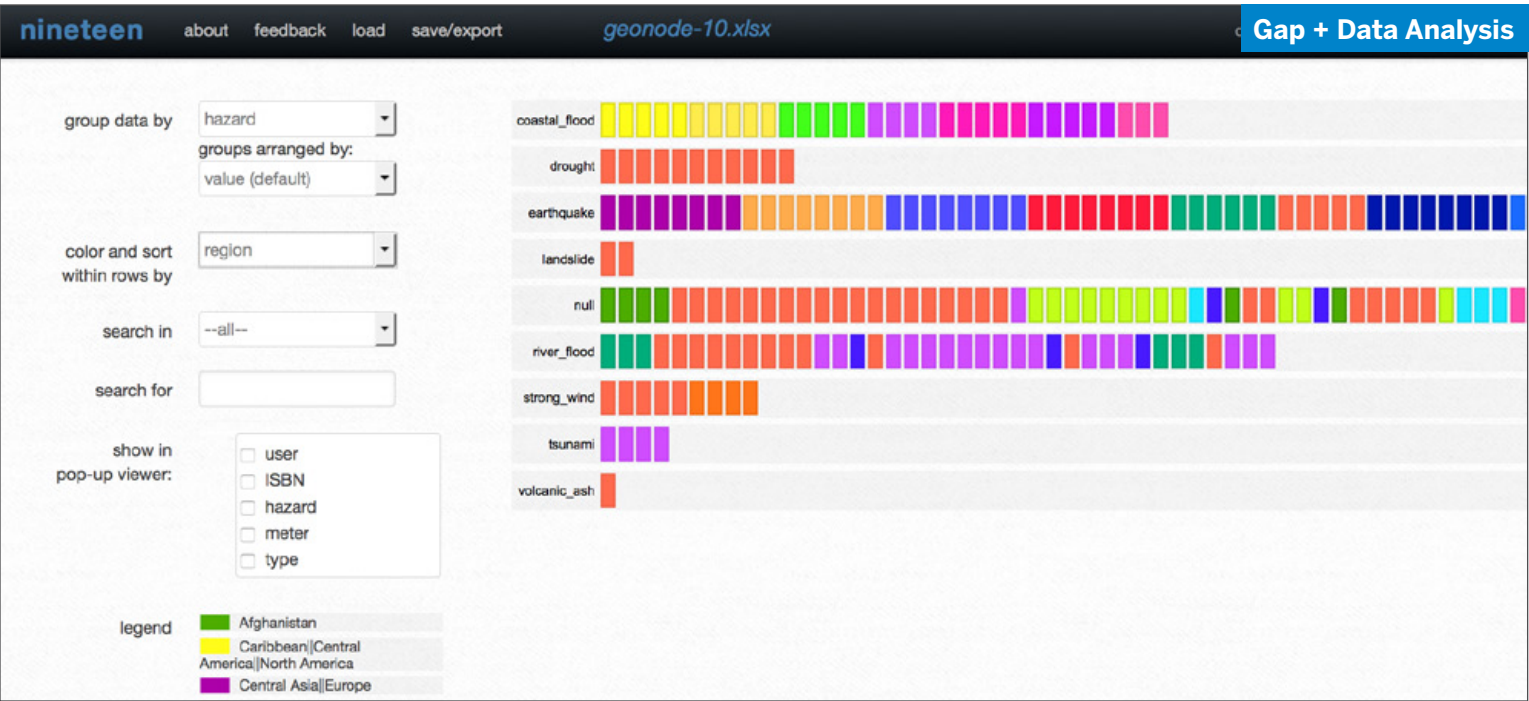
EXAMPLE DASHBOARDS:

Nineteen, data.pollari.com

Nineteen provides a view into your data, structuring it visually to identify gaps and usage. It uses Microsoft Excel data. Pictured at right: visualization showing hazard type by region.

Financial checkup, unknown provider

The images at right show how dashboards can drill down into information to help users and administrators understand their system at a glance and in detail how to fix issues.



People and Groups

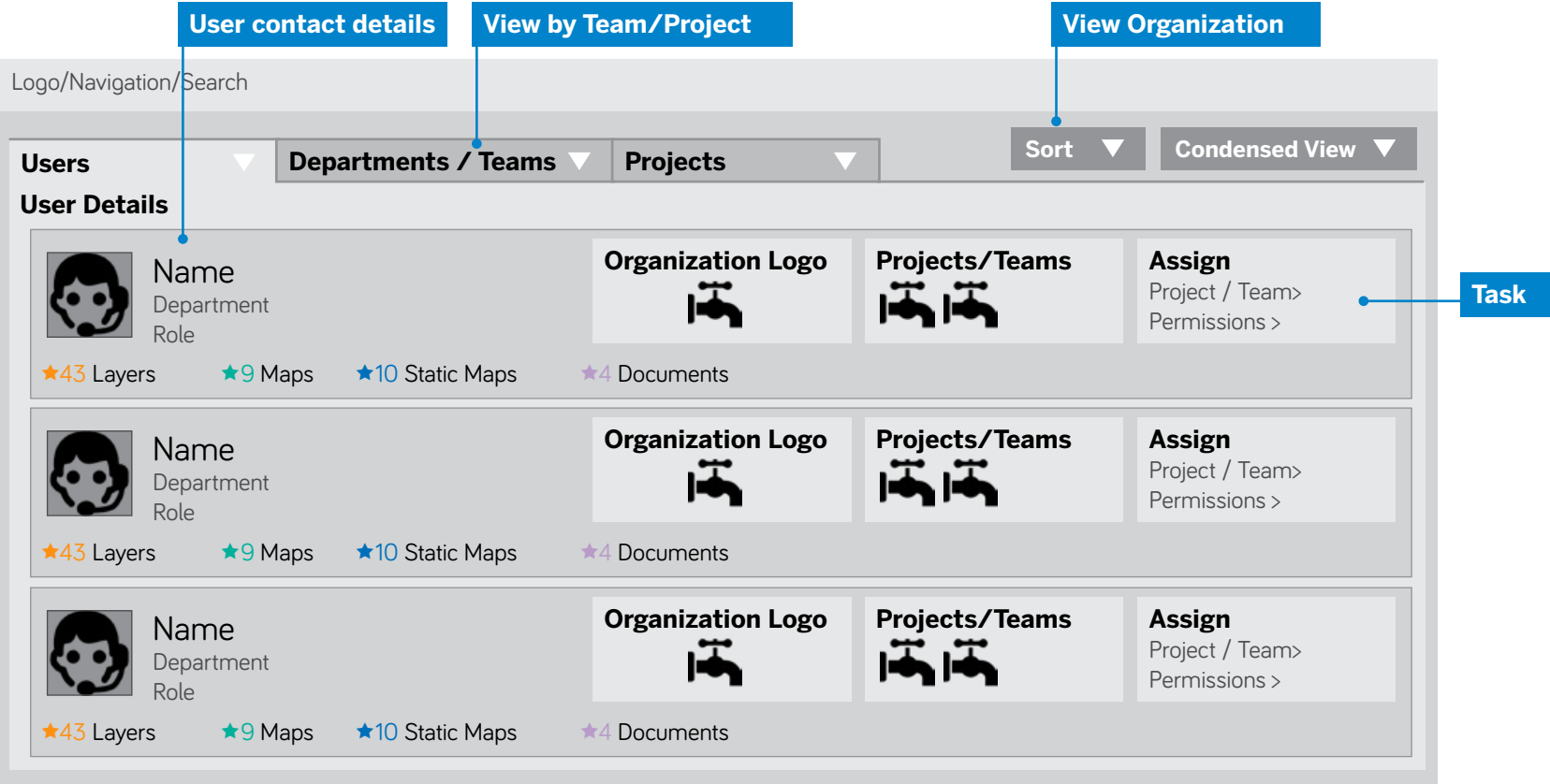
PAGE GOALS:

- A. Identify users and roles
- B. Provide contact details
- C. Provide organization

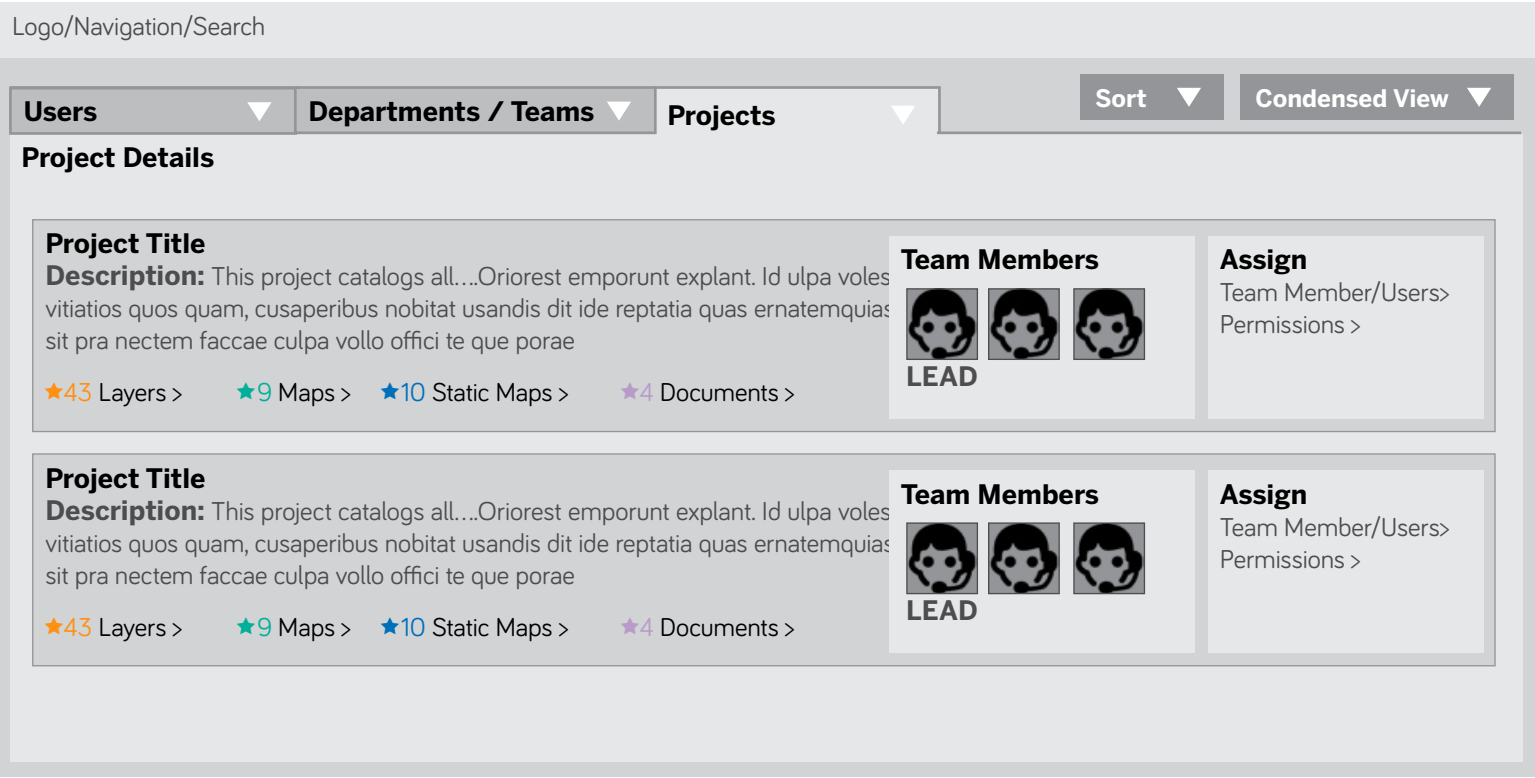
RECOMMENDATIONS

Design

1. Combine People and Groups pages into one page.
 - * Organize users: by users, by departments and by projects.
2. Provide CSS templates to allow customization but not impact readability and overall design.
3. Default to lists or condensed card views to allow for long names or department names.
4. Provide administrators the ability to assign users to groups, teams and projects.



All Users, Condensed Card View, Administrator



Projects, Condensed Card View, Administrator

User Profile becomes
User Dashboard

PAGE GOALS:

- * Identify user
- * List files uploaded by user
- * Enable team communication
- * Provide user dashboard

RECOMMENDATIONS

1. Change the profile into a dashboard and logged-in user home page.
2. Change the page style of file format for Documents. Use a list without thumbnail.
3. Provide search and filter features for users.
4. Identify file download and share statistics. Allow for track-back to identify users.
5. Visually separate user profile details with files.
6. Allow for team communication.
7. Allow users to see at-a-glance the frequency of downloads and usage of their files. Provides understanding of value.

User contact details


Quick file access

File usage

User Facts

Logo/Navigation/Search

User Details



Name

Email

Phone number

Skype

Role


Organizations

Current Projects

Past Projects


File Use Statistics

1800 downloads




See file use

Organization Logo



Department





Files

Favorites

Projects

User uploaded or working files

Condensed View

File Name	Type	Date Upload	Status	Tags	Save/View
name.shape		1/5/2016		Street	

Tasks

SMS

Assigned Tasks


Task	Date	Status
Do x	1/5/2016	OPEN

Footer

User Account View, account owner view

Logo/Navigation/Search

User Details



Name

Email

Phone number (Private)

Skype (Private)

Role


Organizations

Current Projects

Past Projects


File Use Statistics

1800 downloads




See file use

Organization Logo



Department





Files

Favorites

Projects

User uploaded or working files

Condensed View

File Name	Type	Date Upload	Status	Tags	Save/View
name.shape		1/5/2016		Street	

Assign Tasks

Task ...

SMS Message User

Message...

User Account, organization view

Metadata Recommendations

MUST HAVES:

1. Support metadata completion through preferences.

- * Capture metadata preferences ‘on the go’, when users are selecting or filling out basic details. Ex. After a user selects a metadata standard for download, ask users: ‘Do you want to save this method of download to your preferences? You will be able to change it later.’
- * During account creation invite selection.

2. Support metadata templating or organizational metadata.

- * Allow users to fill out the information once and copy and repeat as appropriate.

3. Provide visual aids to support user understanding.

- * Use hinted fields and search.
- * Include a glossary or dictionary.
- * Include a table of contents.
- * Include hover over text or provide a Question mark with an explanation for odd or difficult concepts.

4. Use existing design styling to eliminate confusion.

For example, the GeoNetwork form fields use an outlined box with a chunk missing out of it.

- * This styling is limiting and does not support user navigation or understanding.
 - * Buttons and modals should be used judiciously, there are other tools that are better suited to adjacent information.

The secondary buttons within each square compete with each other and with the save button for the user’s attention. This would be better treated as a [file folder] tab system.

- * Break it up. Put the critical elements up front and savable. Put the nice to haves in an optional section.

Treating the page as a long vertical means users have to work, that it looks like the requests are unending.

5. Use natural language.

- * It makes forms more friendly while also providing more context to the reader. If there are data points that are critical but never get an entry created an instruction or reason field next to the request. Perhaps introduce the idea of ‘usable maps’: make your map usable and findable by adding metadata. Maps with metadata get used x% more.

6. Required fields.

- * A) Users should be able to save what they’ve done and come back to something that’s required. Higher goal: capture the content first, the tags and metadata 2nd.
- * B) If it’s required provide the tags to make it easy to complete. Goal: ease of use; increase completion rate.

USABILITY OF METADATA

- 7. **Familiar:** Follow known standards and best practices.
- 8. **Return-ability:** Make it easy to save and come back to
- 9. **Kitting:** Cluster similar items and/or a predetermined set/kit of metadata for specific items
- 10. **Archive-able:** Automate Map Lifecycles. Automate processes that address the review, archival and/or disposition of information on a regularly scheduled basis can ensure both the relevance and timeliness of information. https://articles.ue.com/eight_things/
- 11. **Bank terms/controlled vocabulary:** Have a stored bank of typical terms and data points to speed data entry
- 12. **Visible:** Make selection visible
- 13. **Utility:** Eliminate metadata input areas that offer little ROI, or that are not used for search or organizational purposes.
- 14. **Valuable:** Make metadata purposeful and valuable. Give users a reason to fill it out.

BEST PRACTICES, COMPUTER HUMAN INTERFACE (CHI)

<http://www.uxmatters.com/mt/archives/2006/06/faceted-metadata-for-information-architecture-and-search.php>

15. Create two separate systems of classification for:

- * Navigating categories (taxonomy)
- * Navigating, or filtering, products/documents (hierarchical metadata)

16. Provide a user interface that allows users to:

- * Track what they have selected so far
- * Easily make changes to their selections, without affecting other selections
- * Move easily between categories and products/documents

17. Be careful to create a user interface that isn’t likely to produce empty result sets.

Metadata

Basic	Full	Walk Through

Metadata

Full Standards Form Example

RECOMMENDATIONS:

1.

Allow users to decide how much they want to fill out regardless of location in the metadata.
2.

Enable automatic saving.
3.

Turn filling out the form into making a selection.

Basic

File Name
(describe preferred naming convention)

File name







Description
(describe type of content needed)







Describe the type of layer, its location and type of content.

Keywords
(‘Tag’ your file with key words to aid discovery. Choose from the common tags below or type your own.)

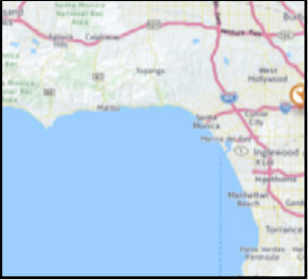
Street, House, Iquaeprovit, voluptatur, Giam
exe, essinust, quisqui, coresciis, quiditae, nis aut
vendusa, pidenihit eost, sum nonesciae porum si
dolorest

Categories





File Thumbnail



☐ Replace with new thumbnail

File Permissions and Licenses

Permissions

☐ Save to Personal Profile

File Owner

Owner Name

Contact information (URL/Phone number/Email)

☐ Upload Logo

Point of Contact

Contact Name

Email

Phone Number

URL

File Attributes
(Update the attributes to reflect their true nature.)

Attribute 1	Attribute 1
Attribute 2	Attribute 2
Attribute 3	Attribute 3
Attribute 4	Attribute 4
Attribute 5	Attribute 5
Attribute 6	Attribute 6
Attribute 7	Attribute 7
Attribute 8	Attribute 8
Attribute 9	Attribute 9
Attribute 10	Attribute 10
Attribute 11	Attribute 11

Save

Save + Continue

Cancel

Metadata

Full Standards Form Example

RECOMMENDATIONS:

1.

Show the user's progress through visualizing the content they are adding.
2.

Provide immediate feedback and support.
3.

Enable automatic saving when moving between steps.
4.

Provide a table of contents to aid finding key elements.

Full

File Name

(describe preferred naming convention)

File name

Description

(describe type of content needed)

Describe the type of layer, its location and type of content.

Keywords

(‘Tag’ your file with key words to aid discovery. Choose from the common tags below or type your own.)

Street, House, Iquaeprovit, voluptatur, Giam exe, essinust, quisqui, coresciis, quiditae, nis aut vendusa, pidenihit eost, sum nonesciae porum si dolorest

Categories

?

File Permissions and Licenses

Permissions

☐

Save to Personal Profile

Save >

Save + Continue >

Cancel >

File Thumbnail

☐

Replace with new thumbnail

Contents>

Step 1

Step 2

Step 3

Step 4

1 → 2 → 3 → 4

Metadata Visualizer

Ivory Coast Street Grid

Updated: 10/9/16

Street

House

Description:

Rore versperro dissiti tempor aliquis aruptum ipit in cora nonseruptas core veliqui bearchi litaspic testia dundam et estorpo restrumquam faccaborepel magnime pa ent arionsent es sunt lit, volupta aut as nos ex eos esecae lacea adit, sitios auda delest volorem ventia

Glossary/User Help

Term

Description: Rore versperro dissiti tempor aliquis aruptum ipit in cora nonseruptas core veliqui bearchi litaspic testia dundam et estorpo restrumquam faccaborepel magnime pa ent arionsent es sunt lit, volupta aut as nos ex eos esecae lacea adit, sitios auda delest volorem ventia

Walk Through

1

2

3

Thank you for uploading your file:
PopSL2016.cad, 03/17/16.

Give it a more discoverable name.

File name

Describe the file and its purpose.

Describe the type of layer, its location and type of content.







Select or enter the Keywords to aid discovery.







Street, House, [Iquaeprovit, voluptatur, Giam ex, essinust, quisqui, coresciis, quiditae, nis aut vendusa, pidenihit eost, sum nonesciae porum si dolorest](#)

Street

House

What is its category?





Save >

Save + Continue >

Cancel >

Walk Through

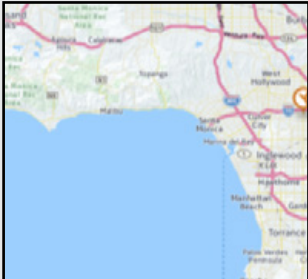
1

2

3

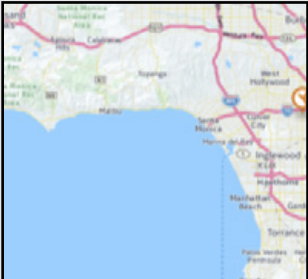
Proof the file specifications for us.

This is the Region:



☐ Revise

This is the File Thumbnail:



☐ Replace with new thumbnail

Update the attributes to reflect their true nature.

Attribute 1	Attribute 1	<div><div></div></div>
Attribute 2	Attribute 2	
Attribute 3	Attribute 3	
Attribute 4	Attribute 4	
Attribute 5	Attribute 5	

☐ This file's date range is not related to its upload date.

Go Back >

Save >

Save + Continue >

Cancel >

Walk Through

1

2

3

Define ownership and licensing for us.

The file owner is:

Profiles

?

☐ Upload logo or image

☐ Save to Personal Profile

Who should people contact if they have questions?

Profiles

☐ Save to Personal Profile

What type of License would you like to use?

Permissions

☐ Save to Personal Profile

Go Back >

Save >

Save + Continue >

Cancel >

Metadata

Walk Through (Wizard) Form Example

RECOMMENDATIONS:

1.

Use natural language to aid understanding and a sense of community. Real people are behind this form.

2.

Cluster similar items. Put the fill forms upfront, and the radial button and multiple choice items later on.

Recommendations

Page 29

GIS and GeoNode Community Research

Surveys and Interviews
Results and Analysis

Surveys + Interviews

INTRODUCTION

Surveys
In May and June of 2016 two surveys were conducted of GeoNode users and participants of at least three GIS conferences. These surveys covered general GIS usage and specific GeoNode activities and needs.

The GIS usability survey was taken by 28 people, 27 of whom are reflected in the charts. The 28th person responded too late to include in anything but the analysis of the open questions. The GeoNode survey was taken by 39 people.

Interviews
Nine people were interviewed for this project—five GeoNode users were identified from the surveys, and four experts from both competing products and other adjacent spaces. This project set out to understand how people were using GeoNodes around the globe—from the types of files people were generating to the challenges of their work environments.

“GeoNode is a way to authentic your geospatial data. There is no alternative, GeoNode really shines. Usage by users vary a lot, the core is the authentication.”

METHODS

The surveys were developed to analyze metadata, software needs and usage, and team hypotheses of future features and development strategies.

The GIS usability survey separated respondents by user tasks and provided specific questions for these tasks. Some questions overlapped but were worded to reflect their role. The GeoNode survey did not separate respondents. All respondents were also invited to participate in ongoing interviews and usability studies.

Survey responses were analyzed by task and question type. Insights, respondent needs, questions and further research were identified.

Respondents were invited to participate in follow-up interviews that dug deeper into survey responses and got more detail into the respondent’s work environment and country or end user specific needs.

Interviews of software systems designers and product managers were conducted to identify best practices in software development.

Interviews of US-based GIS specialists and administrators helped create a baseline for comparison and to identify trends and models in the GIS space.

Interviews of collaborative community specialists supported understanding motivations and behaviors, and models for supporting desired behaviors.

OUTCOME

Half of the GIS respondents do all tasks—developers, administrators, users—suggesting that 50% of GIS organizations from the GeoNode and conference population are small, tech savvy, and solutions orientated. These super users valued end-user add-ons and theming and, above all, integration with external resources. They are constrained by time and end user capabilities.

The administrators and managers focused their responses on organizational needs—security, scale-ability, theming, external resources—and software management needs—add-ons, deploy-ability and maintenance and best practices in data management. They are most concerned with the integrity of their data, and enabling a user population that has little GIS experience.

With mapping and analysis tools, developers wanted to give their users sophisticated mapping and analysis, while users and super users were less concerned with sophisticated tools, needing instead basic styling templates that supported quick at-a-glance evaluation of the files.

All respondents cared deeply about the openness of the platform and access to outside resources and tools.

Insights

GEONODE’S PRIMARY ROLE FOR ITS USERS:

Organization: Manage and catalog data

Download: Distribution of published data

Security: Providing defined access

Access: Visualizing catalog to open data for use by a wider audience

WHO IS IT FOR:

Novice: to visualize and find data; who need themes and styling to make sense of the data; who need to engage with thematic maps.

Advanced: to query data and find the right data; to publish and organize data; to publish thematic maps.

Organization: to store and archive data, creating a library of data; to activate data on emergency demand.

USER INSIGHTS:

1. Research participants are more concerned about novice users on GeoNode than experts. Within the respondent population, GeoNode users are more often novices or people with no GIS training.
2. GeoNodes follow the basic audience hierarchy: 1:9:90. 1 super user, 9 active users, 90 novice users or silent observers.
3. Super users are likely to be in small organizations that rely on outside resources. They are savvy builders with the ability to do anything they need to.
4. Having a software developer on the team is not a guarantee. Managers and user segments ranked easy deployment and maintenance higher. Some individual responses identified a lack of developer as a barrier for success. This also indicated a greater need for good documentation in multiple languages. Interviews further supported this need, suggesting that the lack of qualified IT personnel limits organizational support.

THEY VALUE GEONODE FOR:

- * Access to external databases.
- * Seamless ability to organize and provide access to data library.
- * Ease of download and upload in format of choice.
- * Ability to manage file sharing permissions.

HOW DOES COMMUNITY AFFECT GEONODE:

Open source motivates the community:

Respondents are motivated by open source software, data and tools. All user segment respondents valued open source GIS software, most use at least one type. All respondents also valued access to external data and resources—the super users and managers prioritized it.

Can it be trusted: Participants valued their access to external databases, but also need to trust the data. Help them create more value in sharing their databases by labeling their data.

Open source data creates stickiness. Data should be seen as a sticky node, and not an ownable asset. Participants from closed systems and very hierarchical systems need incentives and rewards for participating and sharing data.

Fractured development creates uncertainty:

Users need to know and participate in planning GeoNode’s future. Participants need development activities to be more clear and overt. The lack of communication and visibility into long-term planning creates uncertainty.

Needs:

- A. Build Rewards for data reciprocity and stewardship of GeoNode.
- B. Make open data, and opening your data sticky and knowable. Activate the community, by showing use of data and value in sharing.
- C. File labeling and badging that is easily identifiable and creates trust amongst users.

HOW DO THEY COLLABORATE?

Rank + share have specific use cases. Rank and share signal a value based on user need, and signals to others to conduct a desired behavior.

- * Ranking is curating.
- * Open source databases open up their data to new interpretations.

Filling out Metadata is bearable. Metadata fields are a necessary evil participants bear to make things findable and useful.

GeoNode documentation lacks individual use cases and working examples. The lack of documentation and real world examples are adversely affecting GeoNode and other GIS online software usage. Development tools and frameworks designed to speed and support GIS activities are not in use, suggesting that respondents do not know their value or how to implement them. The lack of documentation hinders hand-off. It is also causing users to make poor choices at install that create ongoing issues with their system.

User types differ in their ability to collaborate. Managers, Developers and Users value collaboration; Super users do not.

- * The super user segment does not value collaboration as much as the other segments. Open data is prioritized but for personal use.
- * This disparity between populations suggest differences in organization types.

Needs:

- A. Automatic Bibliography. Research institutions need the ability to track downloads and usage of their data.
- B. IT white papers and GeoNode best practices.
- C. GeoNode must have basic best practices and requirements for server setup.

WHAT ARE THEIR USE CASES

Emergency Use Cases: The majority of participants have emergency use cases and needs. Plan for emergency use cases, especially mobile use cases.

Unique use cases have an impact on disaster analysis and access.

- * Streaming Data Needs Automated Analysis Portals. Users are creating larger unique databases from streaming data to develop ‘day in the life’ views into localities.
- * Localized Knowledge. Social media is creating a faster route to localized knowledge.

Online and offline differ based on audience reach. Online for publishing information to a large audience; offline is solitary, for creating or working with files.

Online needs change based on work state. Emergency needs create a state change in job and activities. Respondents recognized this need change for online GIS software.

- Needs:**
- A. Ability to utilize GeoNode content in remote emergency situations.

HOW DO THEY CONTROL THEIR FILES?

Permissions are about controlling access. Setting permissions has complex motivations and situational preferences.

Administrator Control. GeoNodes need the ability to customize some search parameters to effectively organize and structure their data catalog.

Project Organization: Users need topic categories that are project and time specific based on their GeoNode and its databases.

Alpha File Permissions. Users have alpha and beta files that need to be previewed and accessed by specific teams for a specific (renewable) time period.

- Needs:**
- A. Project organization
 - B. Alpha file permissions

HOW ARE USERS FINDING THE RIGHT DATA FEATURES?

Knowing Trusted Files, Trust but Verify. Open GeoNodes need help verifying uploaded files. Badging trusted files is more important than badging users.

Data Targeting: Layer Views + Data-Subset Download. Users need a visual connection between the data and the file viewer to better target needed data and download filtered dataset and data-subsets.

Respondents did not rank social sharing and ranking highly. Tools for sharing and ranking files, and for collaboration are not effective for respondents.

The Cart does not work as users expect.

- Needs:**
- A. GeoNode should support immediate targeting of data.
 - * Provide simple geostyling templates.
 - * Provide layer visualization and data visualization in the same view.
 - * Allow for in-layer filtering and downloading of filtered data.
 - B. GeoNode must be both flexible and strict with categories.
 - * Support custom categories for deep databases in one topic area.
 - * Standardize general categories based on industry standards.
 - * Enable accessing custom categories across GeoNodes.
 - * Provide administrator controls.
 - C. GeoNode must make it possible to batch download multiple files.

WHAT ARE THEIR VISUALIZATION NEEDS?

Map Publishing Capabilities: Users desire simple map publishing capabilities with legends. This is compounded in emergency situations.

Map Composer is overly complex. Complex GIS styling and analysis should be done on desktop. Web GeoStyling and analysis should be ‘good enough’ to provide insight into the value of the data and its relationship to other datasets and layers.

- Needs:**
- A. Basic templates.
 - * Remove challenging workflow processes and decisions to enable easier layer evaluation and faster map publishing.
 - B. Basic map and theme publishing for novices.

WHAT ARE THEIR TECHNOLOGY NEEDS?

File Size Workarounds. People have developed workarounds for large file sizes, including command line uploading, and sending USB thumbdrives to users.

Meet them where they’re at. Language is impeding users’ ability to work within the GIS process, and within GeoNode. The public is actively engaging with GeoNodes and their content.

File Handling on Upload/Download. Internet speed and resilience impacts users ability to upload or download files from their GeoNodes. Participants are working outside of the system to upload files.

- Needs:**
- A. UI should mimic the GIS process.
 - B. Incorporate faster batch upload.
 - C. Universal workflow. Build the software for inclusion.
 - * Language inclusion: it should handle special characters and glyphs, and by enabling Google Translate or other translation services.
 - * Public inclusion: allow GeoNodes to be searchable by Google and other search engines.

Interviews

Government GIS Administrator

EDEJUDE JEAN JACQUES,
HaitiData.org

Currently, using GeoNode 2.0 since 2013; previously used GeoNode 1.3 (2011 to 2013).

Goal: to use data for everything in the country; to publish data; to allow people to access the data.

Edejude and his team need GeoNode for to store GIS data for research and emergencies, at which time they need simple mapping and topic-based story telling purposes. He and his team do thematic analysis.

His needs:

- * Better file viewer
- * Emergency, real-time thematic mapping
- * In-file search and download
- * Clear identification of trusted vs unknown files

His main complaints:

File page viewer:

- * The viewer does not present an attractive view of the file, it's too small, the tools available do not support knowing the file.
- * It's too complicated to filter the data, and download just the information uncovered during filtering.
- * The data table isn't directly associated with the shape file, making it difficult to see if the file has the information needed. He would like them in the same view.

Trust in user published open source documents/non-department developed files: anyone can upload files to his GeoNode, and anyone can download files. By having the files on his GeoNode he gets complaints that these files are bad, that is, file users don't know that the files are not validated by his organization.

- * GeoNode doesn't have the functionality to tell users if a file is good.
- * GeoNode doesn't have the functionality to let Admin evaluate user uploaded data easily.
- * Administrators can't tell who non-employees are, or what their purpose and goals are for publishing to his GeoNode.

Map applications: If they are developing research, they'll pull up a layer, search information about the layer, and apply other information to the layer to create more context. They would like to publish this in a map application via GeoNode.

In-file research: his team wants to be able to download just the information they've sought, not the whole dataset. "If we have a school layer and a department wants to download a shape file of schools in a specific area you can't do it. You can download all the school data, you can't download your own research, your own filters. This functionality would be good."

GeoNode lacks printing with legends: "If someone wants to print a map, the printing model is not attractive. It exists, you can only see the layer. We want some other information in the model, like a logo, and some description about the layer."

Emergency mapping scenarios: "We have to have maps that publish risk information, in case of disaster and catastrophe. We have floods—we have to be able to publish web mapping application in real time to allow the government to make decisions quickly. We lack these. We can only publish the present situation. For ex. Collivar, we don't have a map application where Collivar is located. If you have a web mapping application where the rivers are, where we have risks, where it rains a lot, we can ask move people to move because we have a map. We can publish the map application on GeoNode. It is like an advertising to go to CNGIS, letting people know what GeoNode can do. People can go directly to GeoNode to get real information. We do need this functionality."

GIS Public Services

JEAN DÉSIRÉ RAJAONARISON,
Foiben-Taosarintanin'i Madagasikara (National Geographic and Hydrographic Institute), Madagascar

His Needs:

- * Continual reinforcement of file ownership and security to create trust in system.
- * Flexible user permissions that can grow with the user as the user's role changes with time.
- * Incentives and benefits for sharing data.

Experience of building and using GeoNode:

"I use the GeoNode platform for the first time during the OpenDRI project in the South West Indian ocean risk assessment and financing initiative (SWIO-RAFI) in 2015. I have followed a training with the software made by GeoSolutions team in Madagascar. This is an advanced training as we are trained to be not a user but an administrator of the platform and to be a developer too. The training is still ongoing until now by e-learning with the GeoSolutions team."

Challenges we face with the software:

"Technically, the software is very useful. I think the challenge we are facing is most focused on the institutional arrangement and legal framework related to the dissemination of geospatial data. Especially in developing countries like Madagascar, government doesn't allow much resources to fund the production of geospatial data. So, each organization, both in the public and private sector, are not always very keen to share freely their geospatial data. And there is often a lack of legal framework to guarantee their properties right."

"So, we think, it's essential to aware all stakeholders on the advantages of setting up a platform of SDI like GeoNode and to guarantee all the stakeholders their properties right about their data even it is put in the GeoNode platform. Decision-makers need to be sensitized about it because most of times, technicians from public entities won't take the initiative to share their data without the permission of their decision-makers."

Our staff capabilities:

"Our staffs are until now just at the user level. One engineer from our institute has been trained as an administrator and developer of the platform. For the others, most of them are at the level of a user of the GeoNode platform."

GeoNode as Platform, Services Developer

AHMED OSMAN, Cartologic.com, Egypt

Ahmed and his firm develops apps for GeoNode. "You install GeoNode. We help you bring your data to life."

His Needs:

- * Community coordination of GeoNode's development.
- * More Microsoft Windows support.
- * An interface developed for non-GIS users.

Windows-based Users

Microsoft Windows is a more common platform for GeoNode and GIS users (because of ESRI). Ahmed pointed out a discrepancy: GeoNode is developing for Linux not Windows, even though most enterprise and government organizations are Windows-based and Esri-based. "We are following the developers' platform of choice. Enterprise is full of Windows computers and won't permit blackbox (Linux). Apache is not simple, it is complex for Windows administrators, it takes training. If it's not in their existing platform, IT admins will ignore. We don't have a GeoNode Mac support, there's nothing there to support you. No official installer. Same for Windows. It started but it is not on par with Linux. You would see a huge surge if you enabled better Windows support. Missing a huge market."

GeoNode needs to be expandable. The ability to skin core templates; to extend a GeoNode as a side project with better documentation.

Ahmed's clients need non-GeoServer servers. "It is extremely important to decouple GeoNode from GeoServer. Our clients are invested with other servers. GeoNode works well with existing GeoServer. A migration client is good. Having a fixed stacks is ok, but it has drawbacks—it will likely impact the growth of GeoNode." Ahmed's clients already have servers and do not see value in buying another server.

GeoNode Governance

GeoNode is a project on Github. It needs to have more of a defined direction. GeoNode should become a standard to build product, with governance to define direction. QGIS is a model.

GeoNode has a fractured community, it needs to coexist, coordination and integration. "Ideally is for the other community players, to coexist and develop, together. There is GeoShade, Exchange, Cartoza, Cartoview."

Expand the market by including more vertical businesses. He is cognizant of multiple organizations developing and pulling GeoNode in specific directions (mostly risk and humanitarian activities). He sees an opportunity to capture more vertical business that can contribute to grow GeoNode. The new GeoNode organization should reach out to all GIS markets. "No one owns GeoNode."

Uncertainty in funding. With large donors defining the future growth of the product, and no governance smaller players are uncertain about the direction of GeoNode and the long-term commitment of these large donors. His example: "MapLoom is a good attempt, though it's half cooked, the funding stopped, what is the future for MapLoom? The funding came from the military, this is why its important to do an org."

GeoNode is for Novice Users

Hide the expert features. "In the detail layer page, there are 20 to 30 clicks, lets hide the 15-20 that we rarely use. Our users are not experts in GeoNode. Organize it in a manner that is useful for someone coming there—open a map; upload data. I'm not going to open the metadata in 95% of the cases."

"GeoNode is a way to authenticate your geospatial data. There is no alternative, GeoNode really shines."

Ahmed's recommendations:

1. Simplify it. "Stop doing more intelligent stuff, target the people who don't know how to do GIS."
2. Layer styling must be much better.
3. Map labeling for prints and pdfs.
4. Better viewer, based on OpenLayer 3.
5. It needs to work on mobile (native).
6. Remove the map GeoExplorer—it is very old technology.
7. "Invest in a white paper for new admin on how to deploy on multiple servers (high availability/ high scalability), you rely on the knowledge of the head of the developer. Nothing describes how to deploy on 3 or 4 machines. What if the server goes down? Scalability is not documented or researched. No one has published."
8. "Let's make it look good. Make it look like a professional product."

GIS Research Institute

STEFAN STEINIGER, CEDEUS - Centro de Desarrollo Urbano Sustentable

Stefan works for an urban analysis research institute in Chili, South America. He has a small team to develop thematic maps and manage the system. Stefan finds relevant data, evaluates it, and uploads it. The general public gets the distributed and open source documents; by default everything is public. His ‘users’ of the documents and maps are students, professors and some government officials. Very few have GIS training, though he does give seminars on GIS and GeoNode. “My potential users, 70% have no knowledge of GIS.”

GeoNode has been running for almost three years.

His needs:

- * Easy mapping and analysis tools for non-GIS users.
- * IT documentation for non-GIS tech staff.
- * Streaming data file management and use.
- * GeoNode setup instructions for training environments.
- * File tagging to identify groups, projects, or date-specific datasets.

Access to data

Google searchable is really critical. “Lots of traffic comes from Google. It’s not researchers. Someone uploaded zoning laws to our GeoNode. I got 700-1,000 hits for one or two communities.” Stefan uses GeoNode to make data accessible and meaningful in context. “The municipalities have the zoning laws online, but it’s difficult to find. Google search is one of the most important features.”

GIS visualization is critical. Stefan’s audience is not versed in GIS. “They barely know GIS, its more data distribution.”

Multi-lingual interface. “I use English, everyone else uses Spanish.”

GeoNode documentation

Transitioning to an IT run GeoNode. “I enjoyed it the first year. I’m not qualified for it, I was the all hands position. Now they’re asking for customization, I need a professional. They invest in my labor, and we bought servers.” Stefan is transitioning to a pure GIS role and has identified a gap in GeoNode documentation for non-GIS IT staff. How does he train them? What do they need to know about GeoNode to keep it running and troubleshoot?

“I am running GeoNode 2.0 about two years for a research centre. Now I need to think about a successor who will administrate GeoNode. I am trying to document lots with my own wiki, but what I felt is missing is a book on GeoNode that I can just give to him/her. I know development is moving fast, and the customer group is probably tiny, but... perhaps many universities and municipalities will run a GeoNode at some point? We don’t have money for an ArcGIS portal license, and traveling to a FOSS4G to the US is also out of reach. But I think we would have the 50-100 US\$ to buy a good admin book that outlines the GeoNode basics/structure and how to set it up, including how to make an own welcome page/CSS, as similar to the online doc, some FAQ and perhaps tuning tips... Perhaps similar to the PostGIS & GeoServer books?”

“An important point is that my successor will more likely come from an IT background than from a GIS background. And for them it’s also a bit tricky to understand some GIS things.”

Developing software and a server “isn’t what I’m trained for.” Stefan needs to find an IT person to take over the system management side. He has two people assigned to his department: one GIS person with no programming skills; and one programmer with no GIS skills. His replacement needs “to have at least 2 years of programming experience, some Python knowledge—Django, Python, SQL. You need to figure out what’s going on with layers that disappear. One of the basemap service broke down. I had to replace that map service via command line. You have to know how to use command line. They don’t need to know the GeoNode side. Maybe just a one day course on GIS for GeoNode.”

The Chilean government has GeoNodo (<http://www.geonodo.cl/>), and GeoServer. “They distributed it to municipalities. The GIS departments didn’t know the technical side. The IT didn’t know the technical requirements. ‘What is GeoNodo composed of? What is this spatial stuff? What are the components doing—what is each doing?’ There are different types of indexing and JQuery libraries.”

Foreign language file handling. Stefan planned to make thematic maps in QGIS, but it can’t handle Spanish characters. “One plan was to develop more thematic maps. You can’t do it here. You have to export it to QGIS. But it gets hung up on characters, the Spanish characters.”

Needs recommendations for fine tuning for 100 users. “When I did a small test, 7 people in a small class, it was really really slow, and we have the server onsite.”

Troubleshooting. Stefan needs an outline of what is the minimum and maximum load. “What is the max load you can have. What is the minimum, with respect to smoothness, and tuning for images. More GeoServer tuning, with caching ... my plan is to learn more about GeoServer, what is the problem, how can I speed it up. I load and it takes forever.”

Server recommendations. “Two servers was a bit of a mistake. One is for web and one for database. They have the same processors—12 cores each—Dell servers. Power Edge 420 (web), but running GeoNode in a VM, to be able to test the upgrade, if it’s stable then I’ll try it on the running version. Has assigned 6 cores. 20 GB ram. Size is 800 GB VM. A fast copy doesn’t happen.

Vector image handling. Stefan prefers vector, but would like to store raster in PostGIS too. He finds that vector loads slowly. He’s not sure if it’s because he has two servers. “I’d probably do one big VM, but I don’t know what’s coming in the future. I prefer the VM because if I have a problem I can replace it. The Post GIS is running native on the 2nd server.”

Internet speed and resilience impacts download. “I could go into a store to get a new server. The Dell came from the Filipinos in 3 weeks. Internet speed is 1 MB per second download. Sometimes Chili has a problem. The imagery data is so big—don’t make it download. I converted to GeoTIFF. If it needs to be read, I’m sure the server probably dies for a little while.” He’ll use command line to upload large files.

Help define troubleshooting GeoNode technical needs. “If the interface is not doing anything, then I can’t see the progress—is the connection bad? Did it break down? I’ll open the tech side (command line with Apache/Tomcat log) and see if there’s any thing happening.”

Workflow problems Preview information prior to download.

- * Users can’t check the accuracy of the information and data entered without downloading the metadata file.
- * Large or long blocks of metadata text in the will not all display in GeoNode.

ECW Image upload is missing. “I don’t know how to upload just an ECW image. I convert them to GeoTIFF.”

Files without metadata. “If files come without metadata, I have to sit there for a day to fill it out. One batch for 40 images. I try to check to see if they come from the same source and then try to copy. I have them both open. I copy metadata sets from one to another.”

Metadata links disappear. “I have problem with links, they disappear. When I look a the metadata it truncates the information you can only see the information if you try to edit it.”

**Workflow with sensitive data
People and time-sensitive access.** Stefan develops access only accounts to control sensitive research documents. “Only 5 people have access to this document. I created a user account and access permissions even though it’s just a pdf—it’s a pre-doc.”

Data privacy is important. “I’d like to publish, but not give the data. I can post samples of the data and offer a contact for the data.

Trackable downloads. “If you download my people want to be able to track and see how useful it is—email and name... org.”

Unique use cases

Streaming data archive and download. He started documenting and/or plans to store bus GPS tracks; fare card transactions; air quality; water quality sensor data; rental market and construction snapshots; and emergency feeds from Twitter on earthquakes, fire, power outages and accidents— Fare transactions are 1 GB each for one week of data. He wants to make the current state live, accessible. “If I get the data for a week or a year, how do I make it available for download? Maybe it’s a couple of GB.” He is also concerned about the resolution of the data, ”then it’s day by hour... what is the resolution from the same coordinate that is necessary? Data resolution could be very important with respect to disasters. How do I store it and offer it through GeoNode; how do they download from one time span. What’s done on GeoServer.”

Disaster analysis and access. Capturing the data is the easier part—Stefan uses Python scripts on a VM—his problem is to get it analyzed and making the data and thematic maps available to researchers. Developing maps takes too much time. He doesn’t have enough trained GIS specialists to do the work needed.

Global Research Institute

JORGE DE JESUS, ISRIC - World Soil Information, Netherlands

Jorge is a system administrator for a global soil institution. His users are often researchers or the very end user trying to identify the soil they have in front of them through GeoJSONs on a mobile phone. With GeoNode the organization is able to evaluate their data for gaps. GeoServer enables cross usage across other GeoNode instances to make the data more useful.

Needs:

- * GeoStyles templates
- * Automated map legends
- * Administrator category customization
- * Project or theme organization
- * Downloads considerate of poor internet and electricity
- * Automated scripts for uploading multiple files to the server.

**Workflow workarounds
Scripting for uploading layers to GeoNode.** “I do scripting for uploading layers to server/GeoNode. I was using command line with GeoNode. I noticed a speed issue.”

Poor internet and electricity causes data users to identify their files and request delivery by mail. “We send a USB to people in Africa—we just send the data. They can see the data, but they tell us that it’s too big. They send a list, or ask for a dump of the FTP.”

Google + Linux don’t work together. Google is proprietary, very old and doesn’t work on Linux. “Currently we’re using a Java script plug-in that’s open source, CesiumJS.”

Need better versions of GeoNode packages. “GeoNode has a lot of components. It is lagging behind GeoServer. The development needs to be faster. Functionality is excellent, the speed of development needs to be faster. I’m a Python programmer, its already good enough, the door is already half open.”

Permissions Workflow. “Permissions is very interesting—the log-in capabilities and restrictions. Develop a product, upload to server, give it to our partners, and it continues to be restricted.”

Provide GeoJSONs maps on mobile. Users query mobile phone app, makes a request of the server, returns a GeoJSON that is 1kb. GeoNode is mainly for GIS services. With QGIS you don't need a strong experience.

“GeoNode is very interesting for us. The download functionality is very nice, I don't have to reinvent it. Users can download the format they're comfortable with. We're uploading one document, they download whatever they want.”

User expectations
Different user types. “I've seen with some you need to ask them if they know what a computer is; to those who know how to hack.” ”In Africa it's cultural. There is an expectation of social, human to human interaction. You need a help desk.” ”Normally people with less IT knowledge. Normally they want data analysis, carbon stock analysis, fertility and water analysis. Or they're soil people. Decision makers want to know what there is, they want analysis.”

Digital identifiers, reference link. “We're a research institution. When users publish their data, they put it in other locations. If we have an agreement, then yes it comes back to the institution. We need something more robust—a reference link that you can issue, that the data has this code. It can be traceable. The PhDs gave to say where their data comes from. Peer review is the measurement of our success.”

GeoNode features

GeoNode allows organizations to better evaluate their data for gaps. “GeoNode is organizing our data. We're [actively] going through our data. Seeing how things are.”

File associations: pictures, software, shape, GeoTIFF. “Soil profiles are not a sample, we have pictures and software associated.”

Organizing files by themes or projects. “Subsets or grouping these 20 datasets to say they come from project x. Organization by themes that could be projects.”

GIS File Validation is least important. “If the GIS data is not ok then it crashes.”

Badging of trusted user is good to have. “We only allow staff to upload the data.”

Customizable themes or CSS is a priority. “I like the display of GeoNode, but it's important that it's a GeoNode [instance] and [users] know how it works, but

get a taste of integration with our web infrastructure and brand.”

Customizable categories for search visualization is a priority. “The categories need to be customized, we can't and we don't have metadata standards. I'd like to manipulate the them, we could do more and better categories than that. It should be more customizable by administrators.”

Layer file feature templates is a priority. “It's practical, the soil is defined by classes, feature information is very important, the legend is important. If you don't work within the organization you don't know what it is. A GeoStyles file upload, and a legend.”

Non-GeoNode Users

JOE TRAVIS, Sr. Product Manager, Autodesk Knowledge Platform

New tools enable hyper real-time view into your surroundings. For example, a new weather app conveys the temperature of weather stations around individuals and peoples heat signature from crowd sourcing data.

Trust but verify. Trust upfront that the information is correct. Verify later to check the credibility of people and information. For example, sites are creating ‘expert elites’, members that sign-up to verified and tracked, they often give information away and are passionate about the product.

A pin in a bulletin board is often still the fastest route to localized knowledge. “If it's not captured or returned to the map in an instant then it's gone.” Communities log potholes on community GIS by clicking on a map while on their mobile phone. Disasters need local knowledge information on a core digital dataset.

Waze predicts the future: crowd sourcing makes it possible to see into the future. “Crowd sourced information at its best. Credibility: is something there, thumbs up, thumbs down. It goes away. Credibility comes from repetition and thanking—it talks to you.”

Skill set matters. Use the systems that are available. “My mom can run Google but not Autodesk—you need a hotshot expert onsite.”

DANNY SPITZBERG, Peak Agency, Peer Produced Platforms

Building a community of reciprocity Ladder of engagement. Users have a starting point then move up the more they engage which is a product of how high they set their expectations, and how much they see benefits coming back to them. Users build trust as they engage; show commitment when they follow through; submissions are evaluated for relevancy by their peers. This can be automated: set the initial commitment; define the role(s) and ‘good’ outcomes become assured; layer on metrics to know and validate proportion of more involvement. In community or political organizing campaigns, the big outcome (the ‘win’) is clearly understood by all, and other outcomes along the way make sense insofar as

how they increase the chances of having that ‘win’. Ex. Organizer has a number of groups they reach out to with planning activities -> planned produced - > planned completed. Building economic relationships.

Design for stewardship, not management. Stewardship: set of ethics how you manage a platform. Management: don't manage people manage the platform. It requires generosity and reciprocity—the creative commons licensing came from this.

Data isn't an asset, it is a sticky node. Everyone loves a librarian. People who engage with creative commons have a different pattern of engagement than people who think of owning data.

Reward Systems:
How this works: these super users had a really good first experience. They intended it to be good. They were told about a perk, an economic incentive. Opted in for a performance measure (x people, x host, x responsive). Participates in Meetups, training, reads some guides, self organizing.

- * Yelp: elites
- * Airbnb: super hosts
- * Quara.com: education and enlightenment: access and recognition for something

1:9:90 Audience Hierarchy. Every digital audience fits between...1% true fan; 9% active/engaged; 90% show up and move on. Case Study: https://wiki.p2pfoundation.net/Free_BSD Good practices for managing the platform (not people): <https://www.americanexpress.com/us/small-business/openforum/articles/the-1990-rule-what-you-need-to-know/>

Documenting the insider knowledge. Case example: Localwiki (<https://localwiki.org/>). Developed in Davis, CA (<https://localwiki.org/davis/>) to develop a local knowledge base of the community. It works when, users in a new wiki contribute 500 edits. This is the tipping point that users see something is going on. It takes 500 edits to make it stick. Localwiki works for the community when the community participates in a very specific activity, for example community art, and there is a fun engagement, such as a really excellent party—make it interpretive, they'll get it and the initiative. The party and simple topic make it easy, the engagement with the product and the community supports building trust. Then they'll trust the initiative, and have hope and faith in the system.

Support literature
Articles by Yochai Benkler, the grandfather of modern peer-production literature and theory. http://benkler.org/Degrees_of_Freedom_Dimensions_of_Power_Final.pdf

org/Degrees_of_Freedom_Dimensions_of_Power_Final.pdf

Decentralization-based typology of peer production: <http://www.triple-c.at/index.php/tripleC/article/view/728>

SOLOMON NIMAKO, GIS supervisor, City of Rancho cucamonga, CA

Build for their processes, not your own. “They have to be able to use it. They need 30 minutes or less of training—we're replacing paper with digital to make it easier for adoption.”

Solomon built real-time emergency management system that alerts city managers with critical location-based information; and 3D maps for fire and police. It contains weather characteristics of foothills that face the most threat of wildfire.

SOFTWARE PRODUCT DEVELOPERS

Adobe
Find the product's reason for being, define features based on high level use cases.

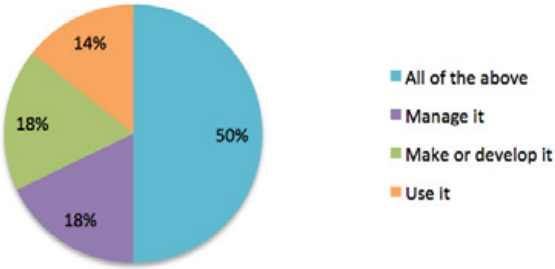
<http://blog.fictiv.com/posts/a-simple-tool-that-could-transform-your-product-development-strategy>

Autodesk
Find the core activity, define lowest entry barrier.

GIS Survey Analysis

Primary work of respondents

RESPONDENT ROLE
All User Segments, Percentage of Respondents



Describe the primary work you do.

- * Consult with students and faculty about GIS projects.
- * Create data, manage data, distribute data. Integrate spatial data systems with non-spatial data systems.
- * I deploy an develop GIS solutions for local government and private institutions as an enterprise.
- * Research, Data Management, GIS analysis, Development Supervision
- * Develop, analyze and teach others.
- * Developing
- * Develop and deploy
- * Design and implementation of geospatial infrastructure.
- * Flood management, hydrology, water resources engineering
- * Software development and project management
- * Managing a GIS company and doing technical GIS-related work across the stack.
- * Software Developer (Mapping features)
- * Design and print maps, assist with GIS and GPS use (Printing, Support)
- * Geo-statistical data acquisition, management and dissemination (Mapping features, Analysis)

Describe what is your organization’s primary and secondary purpose for using GIS software.

- * Working with Humanities scholars to get them understanding and using spatial analysis in their research and teaching.
- * Elaborate data, Organize data
- * Spatial data management and Spatial data analysis
- * Conducting GIS / Remote Sensing projects and developing applications in water resources, food security, ecosystems and disasters
- * Research focused on land use and cover change, publish research results

I have...

- * 6 respondents have ‘Developed add-ons, plug-ins and support tools to the base software’
- * 3 respondents have ‘Installed pre-existing GIS software’
- * 1 respondent has ”written bash and Python scripts to automate existing GIS software”
- * 7 respondents have ‘Written GIS software’

Job title

- * CEO
- * Chief engineer
- * Chief Technical Officer
- * Director
- * Geek
- * General Manager
- * GIS Analyst
- * GIS Analyst / Web Developer
- * GIS Assistant
- * GIS Coordinator
- * GIS Developer
- * GIS Systems Developer
- * IT Administrator and Software Developer
- * IT Analyst
- * Licensed Land Surveyor
- * Manager, Geo-Information Services
- * Observatory Coordinator
- * Operations Project Manager
- * Owner
- * Researcher
- * Researcher at governmental agriculture research agency
- * Senior Systems Engineer
- * Spatial Data DBA
- * Water Engineer

GIS / organization URL

- * CNR-ISMAR
- * Duke University
- * <http://GeoNode.state.gov/>
- * <http://kartoza.com>
- * <http://landscapeportal.org/>
- * <http://www.cgia.state.nc.us/>
- * <http://www.geobeyond.it>
- * <http://www.thehighline.org/>
- * <https://usaid.gov/>
- * <https://www.pca.state.mn.us/>
- * hydrata.com
- * init7.cl
- * [Jurukur Antarabangsa](http://JurukurAntarabangsa)
- * mastgis.org
- * [Norwegian Environment Agency](http://NorwegianEnvironmentAgency)
- * observatorio.cedeus.cl
- * rcmrd.org
- * tesera.com
- * [Uganda Bureau of Statistics](http://UgandaBureauofStatistics)
- * www.cartologi.com
- * www.cm-tavira.pt
- * www.csir.co.za
- * www.embrapa.br
- * www.greenwoodmap.com
- * www.igg.cnr.it
- * www.mapaeducativo.edu.ar

Organization

- * CartoLogic
- * CEDEUS
- * CNR
- * [Duke University](http://DukeUniversity)
- * Embrapa
- * [Friends of the High Line](http://FriendsOfTheHighLine)
- * [Geobeyond Srl](http://GeobeyondSrl)
- * HIU
- * Hydrata
- * Init7cl
- * [Jurukur Antarabangsa](http://JurukurAntarabangsa)
- * Kartoza
- * MapaEducativo
- * [NC Center for Geographic Information and Analysis](http://NCCenterforGeographicInformationandAnalysis)
- * [Norwegian Environment Agency](http://NorwegianEnvironmentAgency)
- * Private
- * [Uganda Bureau of Statistics](http://UgandaBureauofStatistics)
- * USAID
- * [World Agroforestry Centre](http://WorldAgroforestryCentre)

Open Questions

ONLINE SOFTWARE MUST

Respondents expect Online software to have an easy to use interface and user experience. They expect it to have fast visualizations and downloads. They need it to be reliable and stable. They need it to enable sharing and search; and the ability to apply themes and upgrade it.

ELIMINATE FROM ONLINE GIS SOFTWARE

Respondents recommendations for features to eliminate from online GIS software fit into two categories: software dependencies or requirements; and better tools for the task.

Dependencies for respondents included: shape files, internet availability, Adobe Flash or heavy bandwidth software. Respondents noted that the internet is not always available to them; and that Shape files are proprietary.

Respondents recommended eliminating the clutter from online GIS software, suggesting to remove features that are supported by desktop analysis tools, or data collection. However, they did recognize the value of using CartoDB to quickly visualize a dataset.

DEVELOPERS

The managers and developers that responded, showed three different and distinct populations: those with large user bases; those with diverse workflows; and those with no developers. The respondents need: simplified solution categories and cross-platform interoperability to enable a diverse workforce needs and workflow. To support user experience across these diverse tools, they asked for external user authentication.

Organizations that lack developers need deployment solutions for easy implementation, and non-specialized solutions.

DIFFERENCES BETWEEN ONLINE AND OFFLINE GIS WORKFLOW

Desktop

Respondents use desktop GIS software to create, process and validate their data, preparing it for analysis and dissemination online. Desktop is also where complex analysis takes place, including scripting. Post analysis they create printable or pdf maps.

Online

Respondents use online GIS tools to publish their clean data, layers, maps, and map applications. Their main external purpose is to distribute, share and report. Internally, their aim is to visualize, browse, search, print and archive.

What one thing must Online GIS software do well?

- * Create an easy to use interface for users.
- * Intuitive to use
- * It needs to be intuitive.
- * Upgrades
- * Data downloads
- * Display Speed
- * Fast data visualization
- * Load quickly while in use (panning, zooming, turning layers on)
- * The ability to share information
- * Search
- * Not crash, dropout or fail to load.
- * Integration of GIS data and information
- * Share geographic information and data search engine
- * Thematization
- * Render beautiful maps quickly as tiles

What feature(s) would you eliminate from online GIS? Why?

- * Data collation, the internet resources are expensive and not easily accessible here in developing country like Uganda
- * Complex analysis because its always faster with the Desktop
- * Data analysis. Desktop software is more adequate.
- * Shouldn't replicate desktop GIS. Eliminate all clutter not necessary for specific task at hand.
- * Some of the online analysis functions are unnecessary and should be kept to desktop
- * Traditional desktop functionality.
- * Dependencies (Flash, etc.)
- * The shapefile! No version control, difficult to share/ email, it's proprietary and truncates field names.
- * Online data editing and perhaps analysis, although I like CartoDB ... but here it is analysis rather for visualization purposes
- * I cannot think of one
- * None
- * None
- * Windows platform compatibility
- * SLD - there is nothing good out there to author it and there are better modern alternatives like CartoCSS.

What challenges do you face as someone who deploys, manages or purchases GIS software and tools?

- * Trying to meet the various requirements for a diverse user community
- * Find the right solution for different communities of users
- * Integrating multiple platforms to deliver a required set of features per project; data ingestion and transformation; use of external authentication mechanisms (to avoid users having to do multiple logins)
- * Interoperability between different GIS frameworks
- * Lack of developers. A solution that's easy to implement would be a nice feature, to reduce the need for specialized development

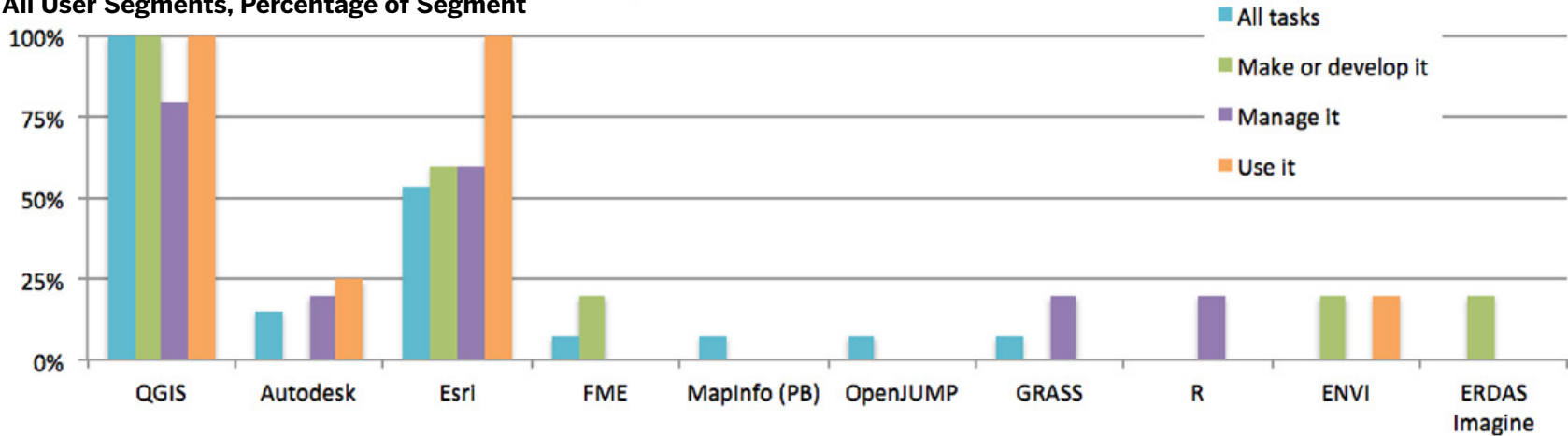
Describe the difference between the work you do with Desktop GIS and Online GIS?

Ex. I use desktop GIS software to create complex analyses, and online GIS to look for layers.

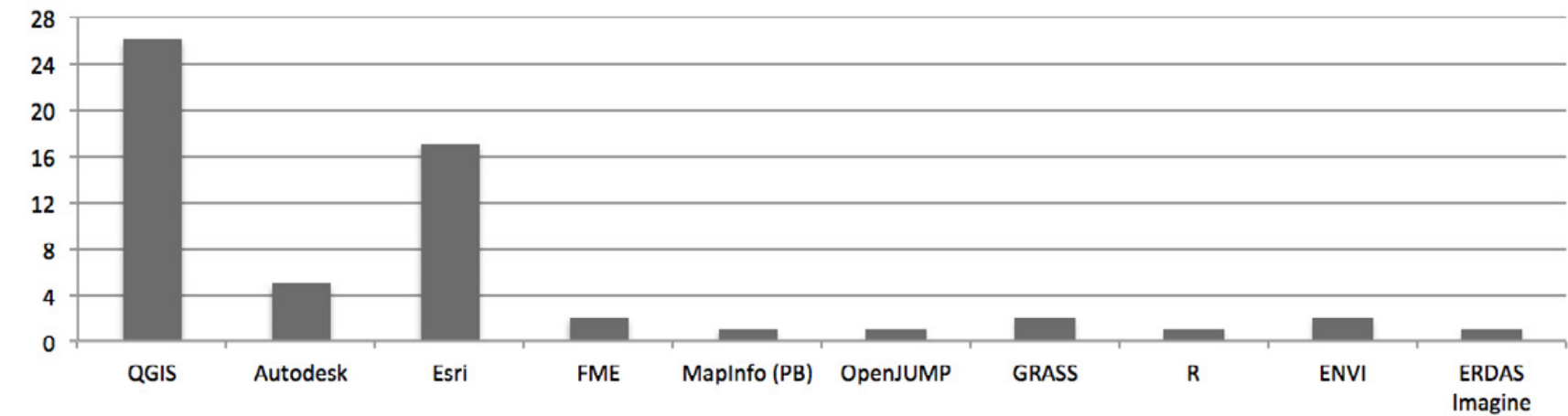
- * At this point, online GIS is used to push out public data, and provide mapping applications that are relatively easy to stand up.
- * Create data in desktop; publish online
- * Desktop for analysis, online for dissemination
- * Desktop for data analysis and Online for sharing information that had been already analyzed
- * Desktop for data analysis and webmapping for GIS visualization, search and print
- * Desktop for printable or PDF maps; online for interactive applications
- * Desktop GIS for data preparation and analysis, Online GIS for distribution (and archiving).
- * Desktop GIS for processing, preparation of data. Online for sharing and presenting.
- * Desktop: analysis. online: browsing, searching, reporting
- * Exactly: Desktop GIS for complex analysis (involving scripting), and online GIS rather for data distribution and visualization/maps. However, we also use GeoServer WPS for some ready GIS analysis workflows that are accessible as simple webpage.

- * I use desktop GIS software to do data entry, cleaning, editing and analysis and online to share and disseminate the results and the GIS data layers
- * I use desktop GIS to validate and clean raw data then to perform spatial analysis while online GIS to publish and share maps and spatial data to the web
- * I use desktop software for analysis and online to create an interactive interface for users.
- * Speed
- * Desktop: Analysis, tool development, cartography, Online: Web mapping, limited analysis

DESKTOP GIS SOFTWARE USAGE
All User Segments, Percentage of Segment



Usage by Sum of All User Segments



Desktop GIS Software

WHAT DESKTOP GIS SOFTWARE DO YOU USE?

27 people responded to this question. Respondents across all user segments are QGIS users; ESRI is a strong followup with Autodesk a distant third. The other GIS software do not have

The following are not used by respondents.

- * Bentley Systems
- * Intergraph
- * Smallworld

Respondents included additional software including: R, GRASS, FME, and OpenJump.

BREAKDOWN BY USER SEGMENT

All Tasks (Dev/Admin/User)

This segment uses diverse desktop software. QGIS is used twice as much as ESRI, with all others being used by a small portion of users. Note, three of the seven software listed were self identified, and not included in the question to survey participants.

Developers

Developers have a similar use pattern of QGIS and ESRI to the super users (All tasks segment).

Developers are not using Autodesk, Bently Systems, Intergraph, Smallworld, OpenJump, R, GRASS, MapInfo. However, they do use ENVI, ERDAS Imagine and FME.

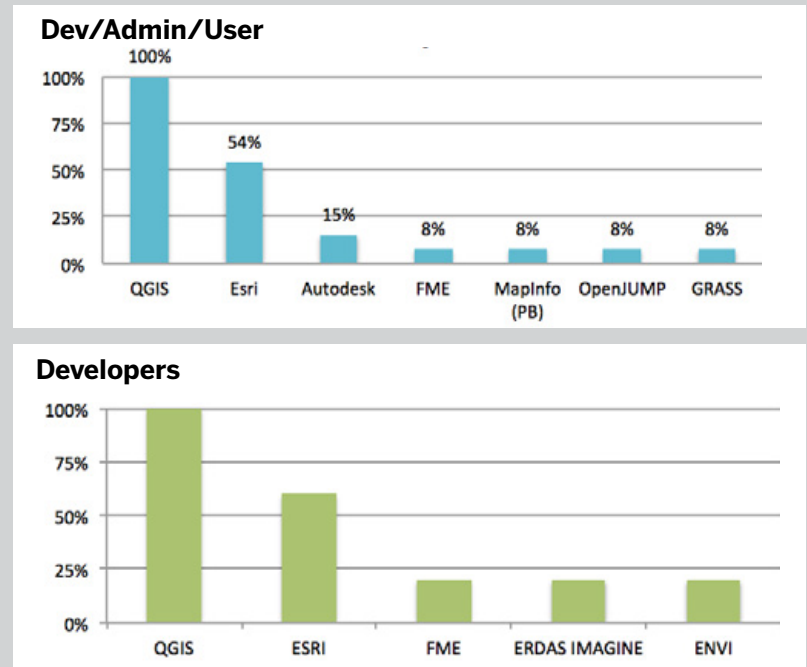
Users

This segment favors QGIS and ESRI over all other software. Each of the respondents said they used both software. Two respondents included ENVI and Autodesk.

Managers

This segment used QGIS, ESRI, R and GRASS, none universally.

BREAKOUTS BY USER SEGMENT

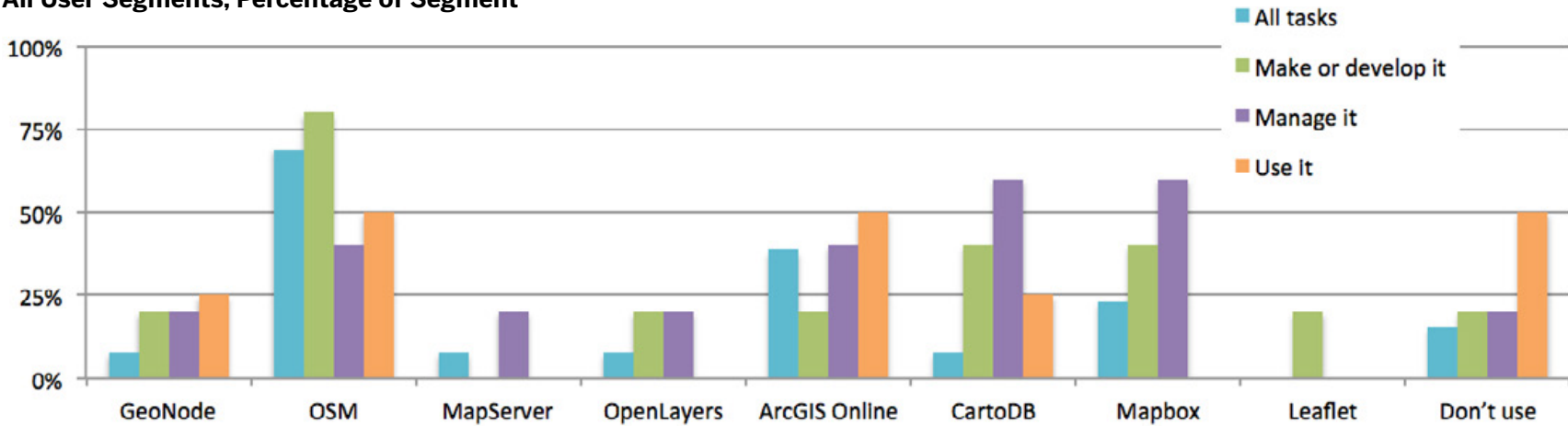


WHAT DESKTOP GIS SOFTWARE DO YOU USE? *

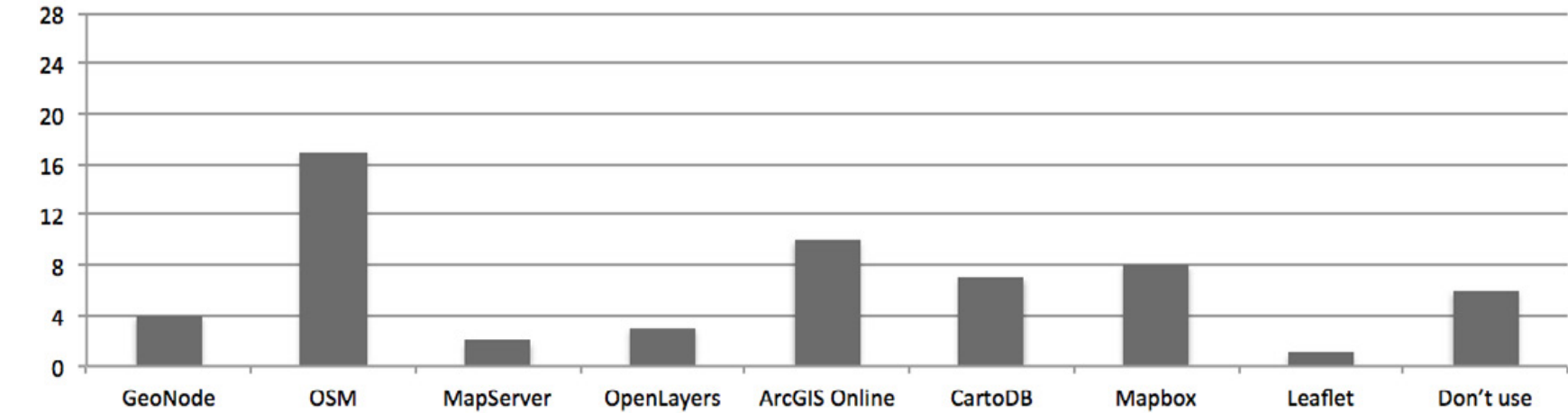
Check all that apply.

- * Autodesk
- * Bentley Systems
- * ENVI
- * ERDAS IMAGINE by ERDAS Inc
- * Esri
- * Intergraph
- * MapInfo by Pitney Bowes Software
- * Smallworld
- * QGIS
- * I don't use desktop GIS software
- * Other

ONLINE GIS SOFTWARE USAGE
All User Segments, Percentage of Segment



Usage by Sum of All User Segments



Online GIS Software

WHAT ONLINE GIS SOFTWARE DO YOU USE? *

27 people responded to this question.

Respondents were asked to identify which of four online GIS software they use, OSM, MapBox, ArcGIS, and CartoDB. GeoNode, MapServer, OpenLayers, and Leaflet were write-in selections and as such represent only those who thought to include them.

The super users (who perform all tasks), the developers and the managers added additional software tools. Overall, OSM and ArcGIS are the favored programs.

Recommendations:

The development of GeoNode needs to take these tools into consideration, and either develop to replace them or develop to augment them.

DIFFERENCES BY USER TYPES

All Tasks (Dev/Admin/User)

Compared to all other segments this group uses significantly more programs, with OSM a main program. Open source software is heavily represented.

Make or develop it (Developers)

Developers favor OSM and open source software. MapBox and CartoDB were equally in use, though less than OSM.

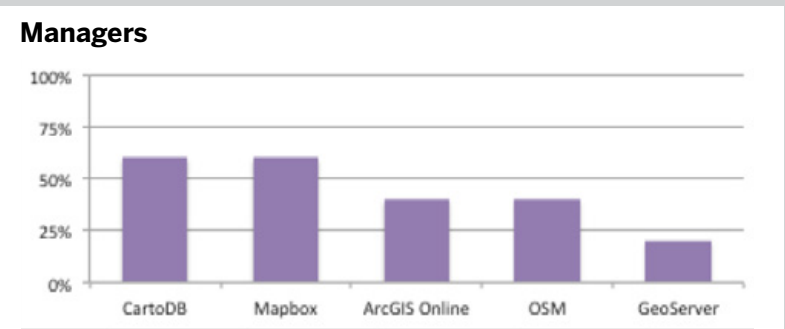
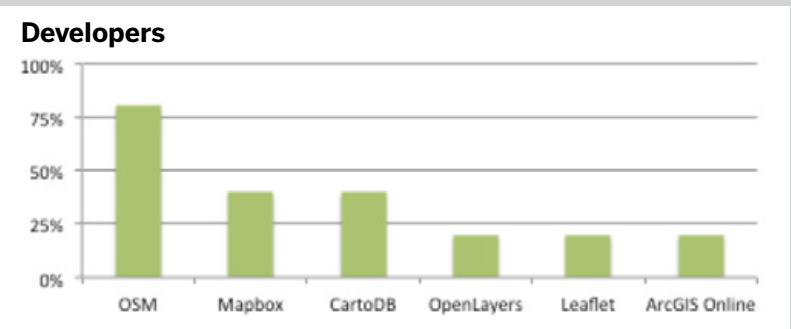
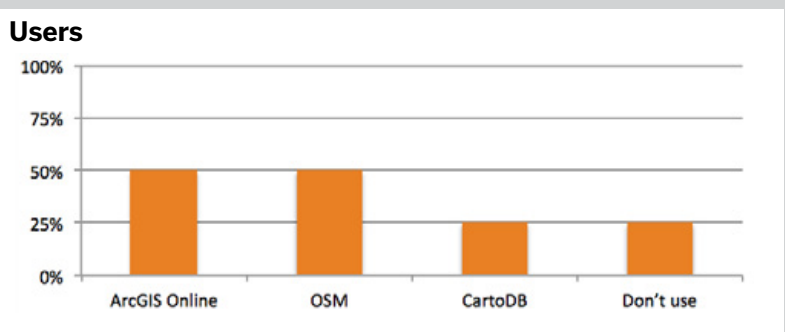
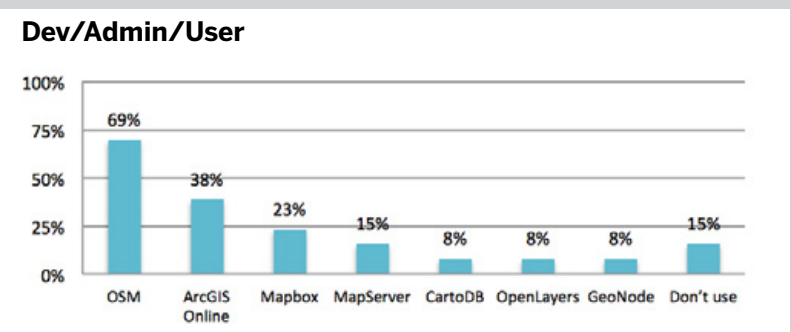
Managers

Use online GIS software equally, CartoDB and MapBox have more usage than others.

Users

This segment uses the fewest products available, ArcGIS, OSM and CartoDB. ArcGIS and OSM are used equally. None use MapBox; and no write-in selections were made.

BREAKOUTS BY USER SEGMENT



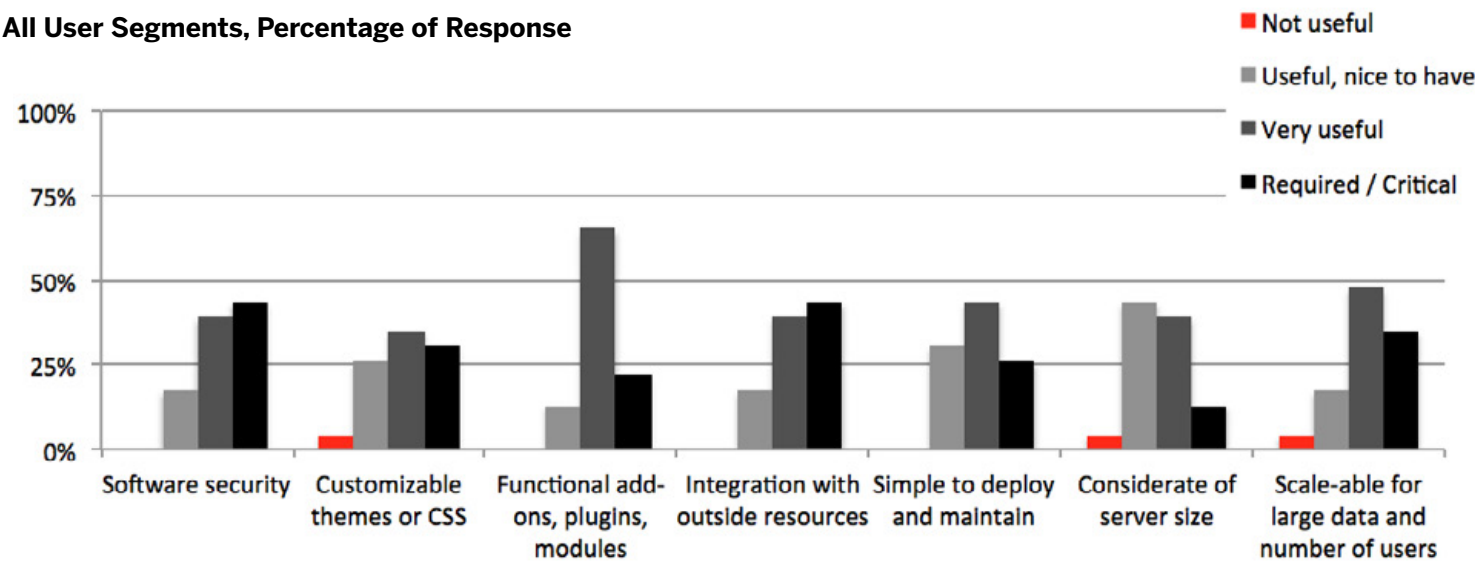
WHAT ONLINE GIS SOFTWARE DO YOU USE? *

Check all that apply.

- * ArcGIS Online
- * CartoDB
- * MapBox
- * OSM (Open Street Map)
- * I don't use online GIS software
- * Other

ADMINISTRATOR FEATURE USEFULNESS

All User Segments, Percentage of Response



Administrator Features

23 people from three segments were asked to respond to questions about administrative features. Their answers reflect their comfort level with software development and internal organizational needs. For example server size is less of an issue than security but both were identified as very useful.

Software Security

Security is important to all user groups.

Customizable Themes or CSS

Participants found these equally effective and critical.

Recommend GeoNode incorporate theming and adjustable CSS to support user needs.

Functional add-ons, plug-ins, modules

Respondents felt strongly that add-ons, plug-ins and modules are very useful, though not as required as most other features. This was a surprising display of unity across all user types.

Integration with outside resources

Integration with outside resources scored highly with all user types. Interestingly, this was ‘critical’ for the super users (all tasks) but only ‘very useful’ to developers and managers. This suggests that the segments have different goals and project needs for their online GIS uses.

Considerate of server size

The server size was more of a concern for developers than the other segments.

Simple to deploy and maintain

Managers found this feature very useful, similarly to Functional Add-ons. It was less important to the other segments.

Scale-able for large data and number of users

This feature is critical for managers—of all the features, this is the one that scored most critical for them, the other critical elements were software security and themes.

All task and developers rated this as very useful or equally very useful and critical. However it is not as important as other features.

BY SEGMENT

All tasks (Dev/Admin/User, also super user)

Having to do it all, these super users require integration with external resources. They find value in security, scale-ability, add-ons and themes.

Developers

Didn’t have many critical or required features, only security, external integration and ease of deployment and maintenance. This likely reflects their skillset.

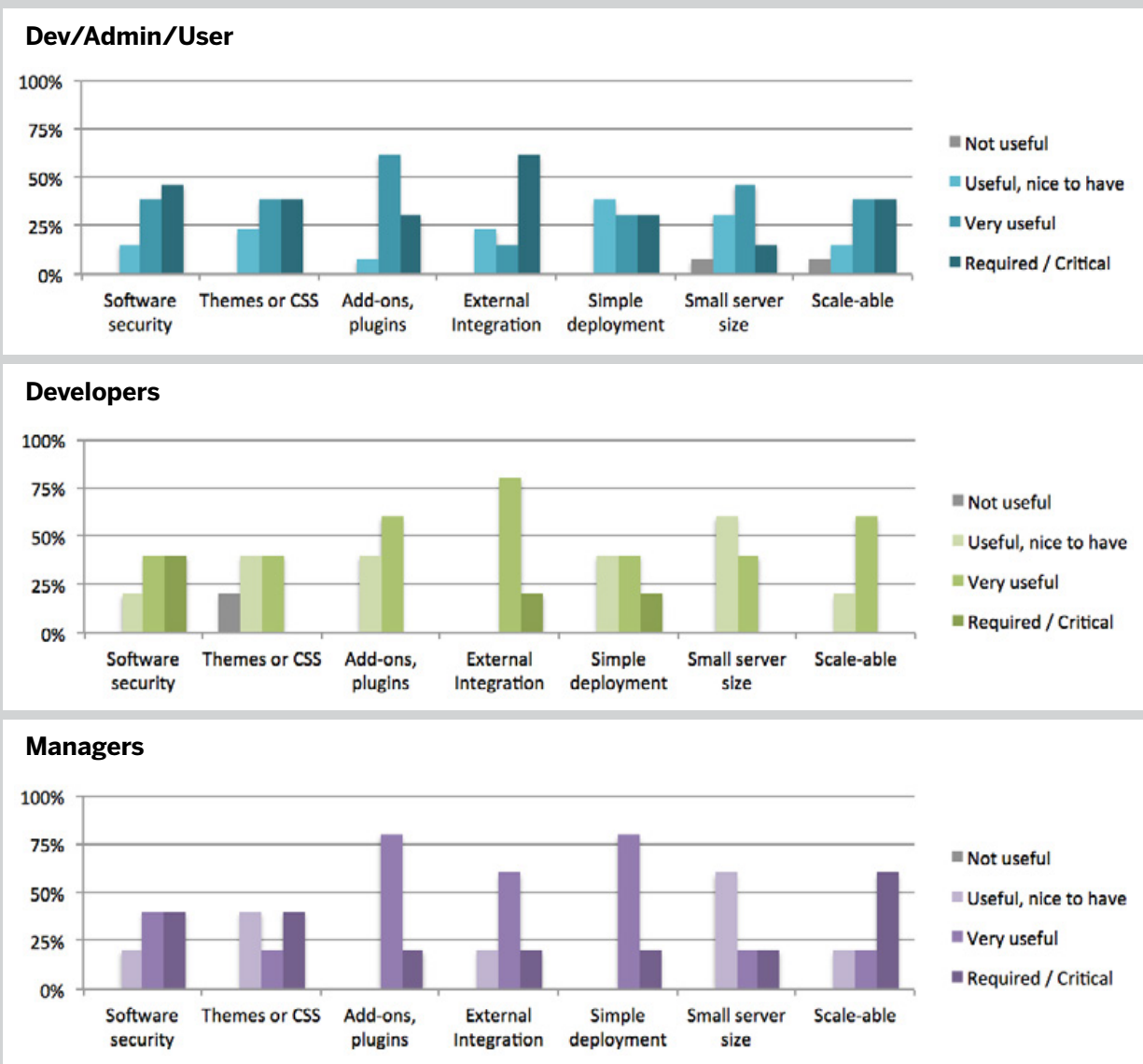
Managers

As expected tools that supported large user populations, easy install and flexibility ranked highly for managers.

Generally

Having access to open source databases and external resources ranked highly—as expected.

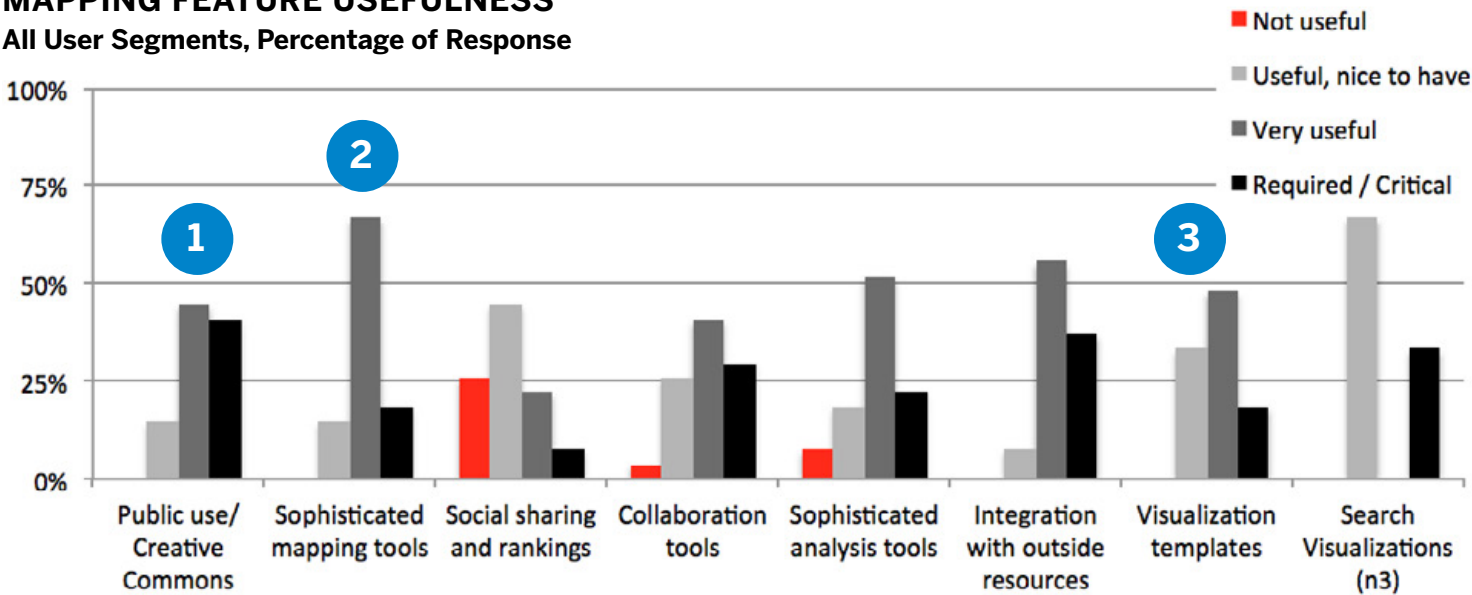
BREAKOUTS BY USER SEGMENT



WHICH ADMINISTRATOR FEATURES ARE MOST USEFUL FOR YOUR ORGANIZATION? *

	Not useful	Useful, nice to have	Very useful	Required / Critical
Software security				
Customizable themes or CSS				
Functional add-ons, plug-ins, modules				
Integration with outside resources				
Simple to deploy and maintain				
Considerate of server size				
Scale-able for large data and number of users				

MAPPING FEATURE USEFULNESS
All User Segments, Percentage of Response



Mapping Features

27 people were asked about mapping features, 3 of them were given an additional criteria, search visualization. Mapping features currently fall into three categories open data, mapping, and discovery.

- * Tools that support mapping include: Sophisticated mapping and analysis; and visualization templates.
- * Tools that support open data include public use/creative commons, collaboration tools, integration with outside resources.
- * Tools that support discovery include search visualization, social sharing and rankings.

1 Open Data

Respondents want and expect open data, finding it very useful for how they work. For many it's a critical requirement.

However, they are not expecting to collaborate with others; nor do they find the social rankings useful.

Recommend exploring the relationship between collaboration, external files and social sharing and file ranking.

2 Mapping and analysis tools aren't required, but very useful.

Respondents don't consider sophisticated mapping and analysis tools or visualization templates necessary. However they are very useful. Note, that very few chose not useful or nice to have, suggesting that for their workflow having these tools available makes their job easier.

3 Discovery tools are nice to have.

Respondents chose 'nice to have' for sharing and search visualization (n3).

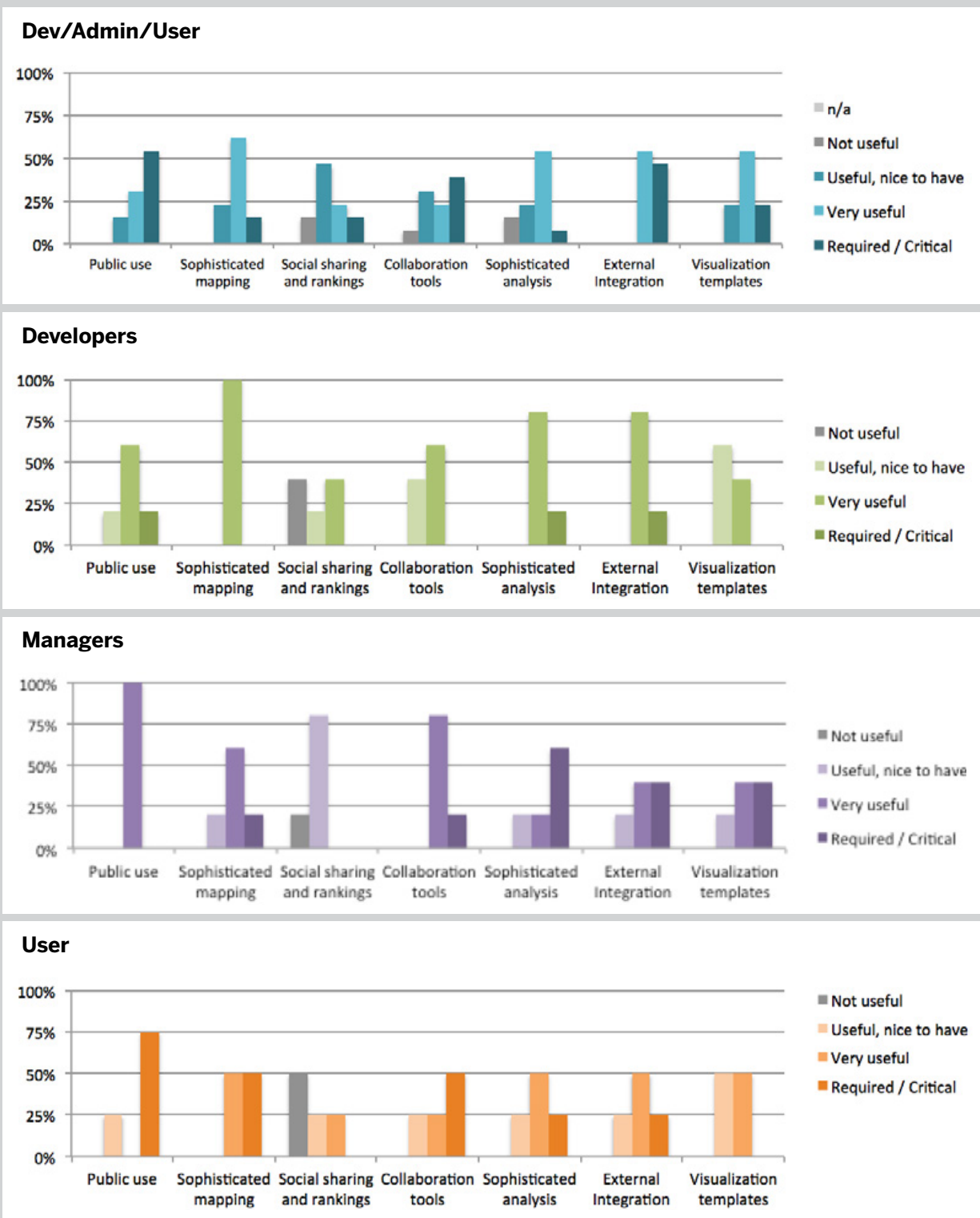
Social sharing and rankings also received the most 'not useful'. This may be due to people not using this function.

Recommend researching how people are using the sharing and ranking tools, how it supports or hinders their usage and what might improve its usefulness.

WHICH MAPPING FEATURES ARE MOST USEFUL FOR HOW YOUR ORGANIZATION USES GIS SOFTWARE?*

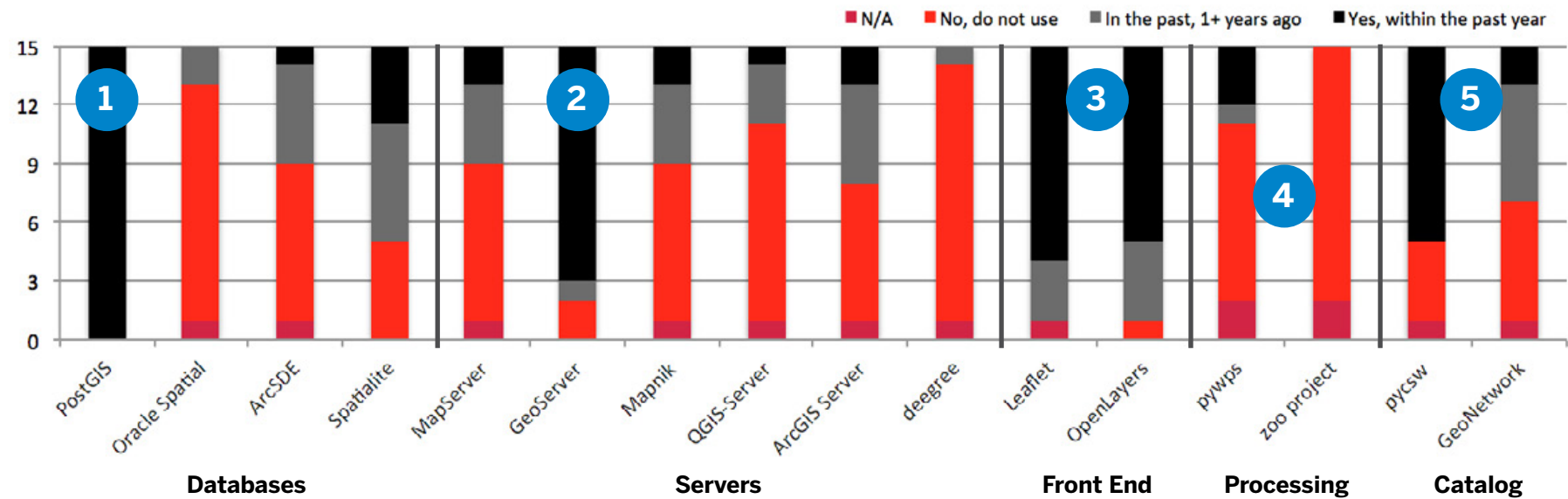
	Not useful	Useful, nice to have	Very useful	Required / Critical
Public use/ Creative Commons				
Sophisticated mapping tools				
Social sharing and rankings				
Collaboration tools				
Sophisticated analysis tools				
Integration with outside resources				
Visualization templates				

BREAKOUTS BY USER SEGMENT



DEVELOPMENT TOOLS

Two User Segments, Number of Responses



Development Tools

15 people were asked to respond to questions about their development tools and frameworks. The respondents represented two segments, the super users (who do all tasks), and the developers.

They also included other tools that were not listed, including: GeoNode, GeoDjango, FME, iPython/Jupyter for data analysis, GDAL/OGR, GeoIP, Shapely, and Fiona.

ANALYSIS

- 1 PostGIS is the primary Database tool.** All 15 participants use PostGIS, with several using multiple database tools. The data shows a decline in use of Oracle Spatial, ArcSDE and Spatialite.
- 2 GeoServer is gaining traction.** The data shows a decline in most server tools, with more respondents saying that they previously used MapServer, Mapnik, QGIS-Server, ArcGIS Server and degree than currently use these servers.
- 3 Universal use of Front End tools, no favorite.** Respondents nearly universally use front end tools in the last year. The available tools have not differentiated themselves for participants as each is used equally.

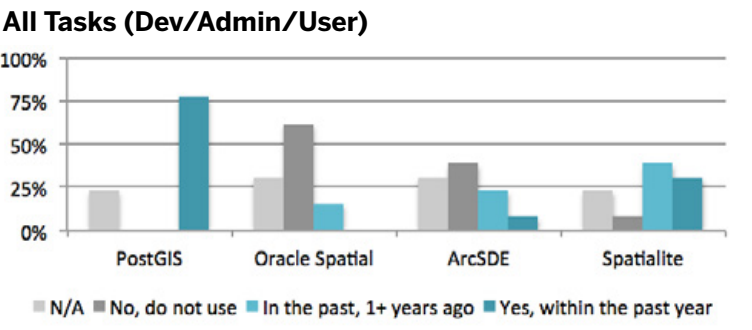
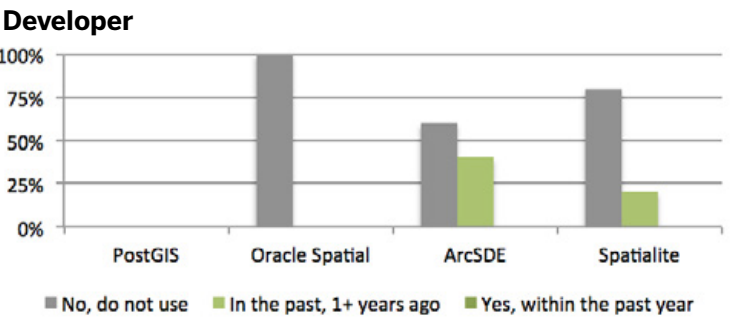
- 4 Processing tools are not in use.** Respondents are not using processing tools. More respondents reported an unfamiliarity with processing tools than any other tool surveyed.
- 5 Mixed use of Catalog tools.** Catalog tools show mixed usage with respondents opting out of using catalog tools even with knowledge of the tools.

RECOMMENDATIONS

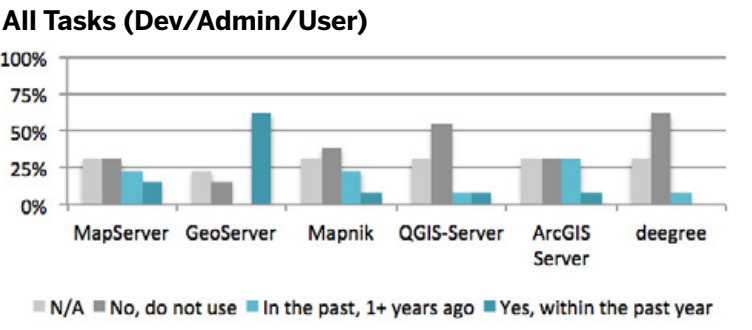
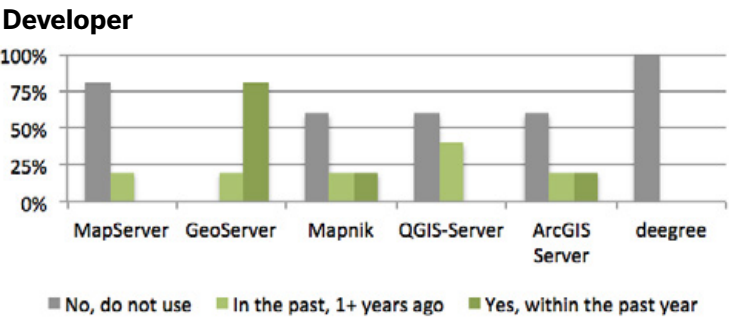
- 1** Research users' understanding of catalog and processing tools to identify reasons for non-use. Triage as appropriate.
- 2** Review priorities for server tools. Research why QGIS Server is losing favor with respondents. Adjust server recommendations and support.
- 3** Continue to support and build for PostGIS.

DEVELOPMENT TOOLS BREAKOUTS BY USER SEGMENT

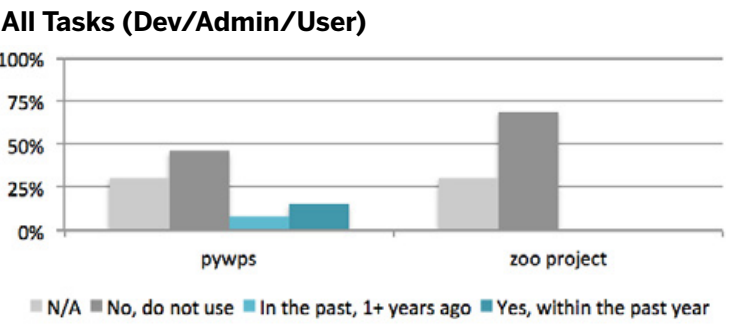
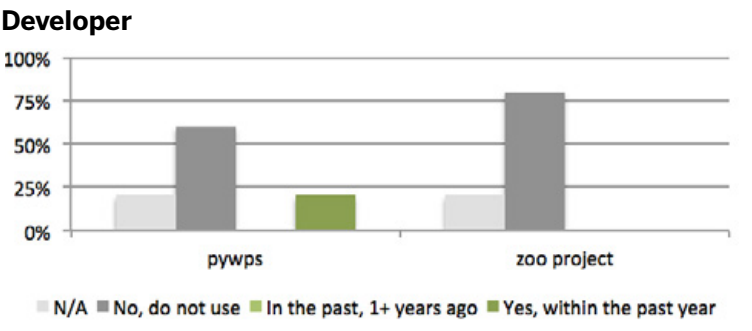
DATABASES



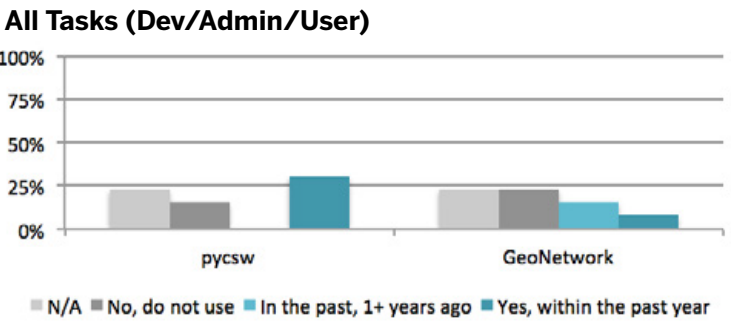
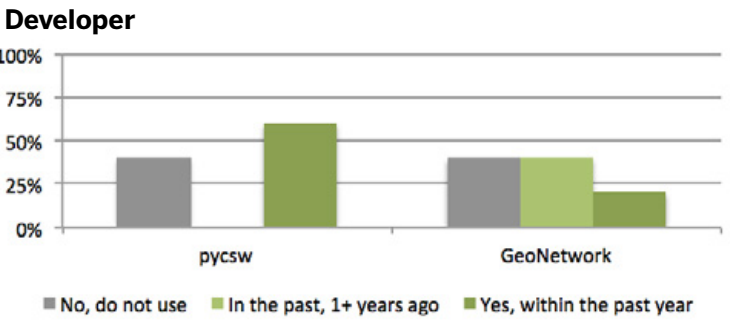
SERVERS



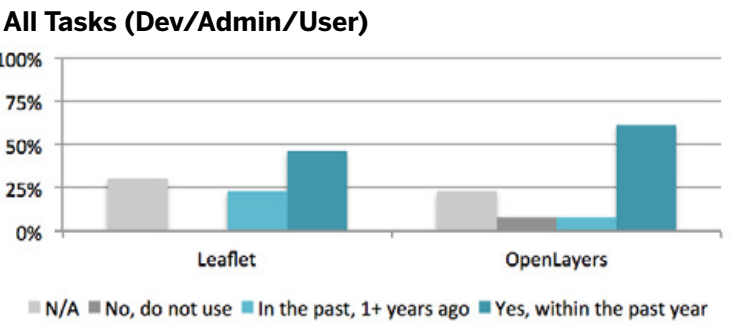
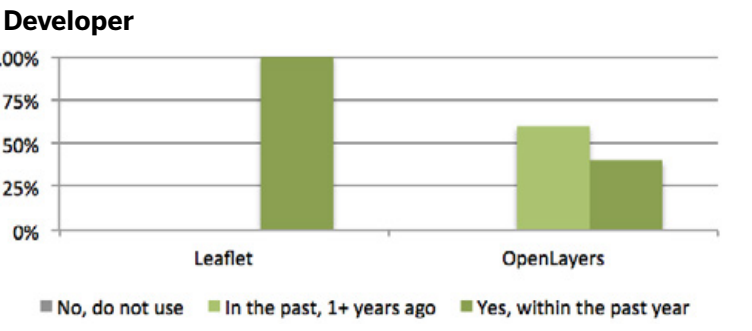
PROCESSING



CATALOG



FRONT END

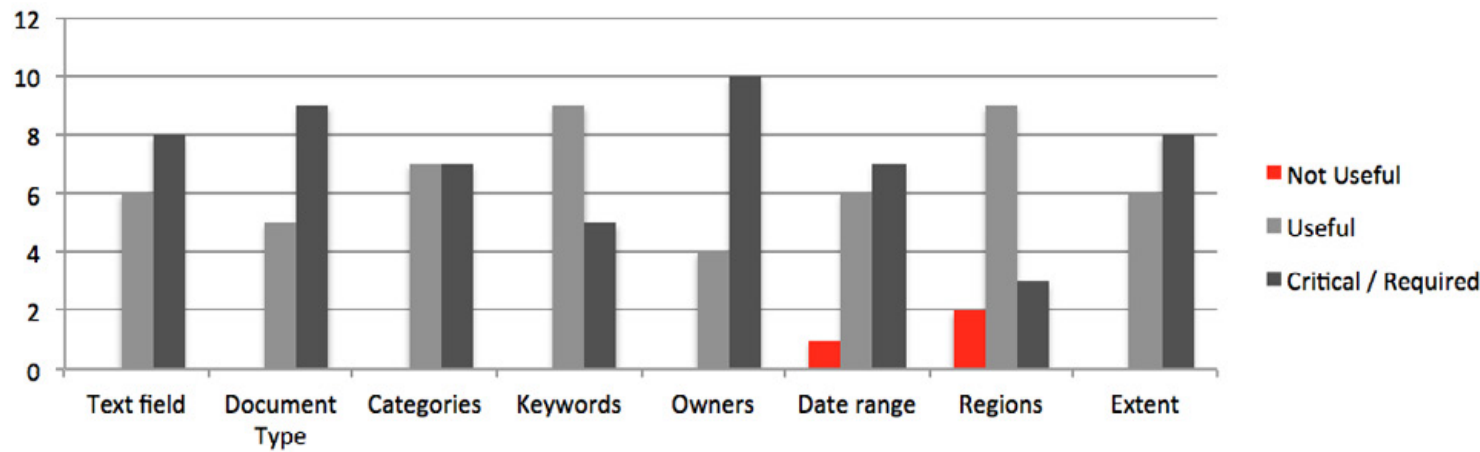


QUESTIONS

	Yes, within the past year	In the past, 1+ years ago	No	N/A
What Database tools/frameworks do you use in your development? *				
PostGIS				
Oracle Spatial				
ArcSDE				
Spatialite				
What Server tools/frameworks do you use in your development? *				
deegree				
MapServer				
GeoServer				
ArcGIS Server				
QGIS-Server				
Mapnik				
What Front End tools/frameworks do you use in your development? *				
Leaflet				
OpenLayers				
What Processing tools/frameworks do you use in your development? *				
pywps				
zoo project				
What Catalog tools/frameworks do you use in your development? *				
pycsw				
GeoNetwork				

METADATA FIELDS

Two User Segments, Number of Responses



Metadata Fields

Two segments (representing 17 people) were asked to rank metadata fields by usefulness. These segments represent the users of GIS software (User, All tasks).

ANALYSIS

- * All fields are required, however some are more critical than others for all respondents, including 'Owners', 'Document Type', 'Text Field' and 'Extent'.
- * Only two fields were identified as not useful to respondents: 'Date Range' and 'Regions'.

Text field

Respondents found it both useful and a critical element in their work.

Document Type

'Document Type' is a critical element to respondents.

Categories

Respondents found 'categories' equally useful and required for their work.

Keywords

Respondents found 'keywords' more useful than critical.

Owners

'Owners' is critical to the 'All Tasks' segment. Their file permissions are set with this filter.

Date range

An almost equal amount of respondents, split evenly across segments, found 'Date Range' useful and critical. Only one respondent found it not useful (All Tasks).

Regions

'Regions' is not critical to the majority of respondents—it is critical only to the 'All Tasks' segment. However it is very useful to all segments.

Extent

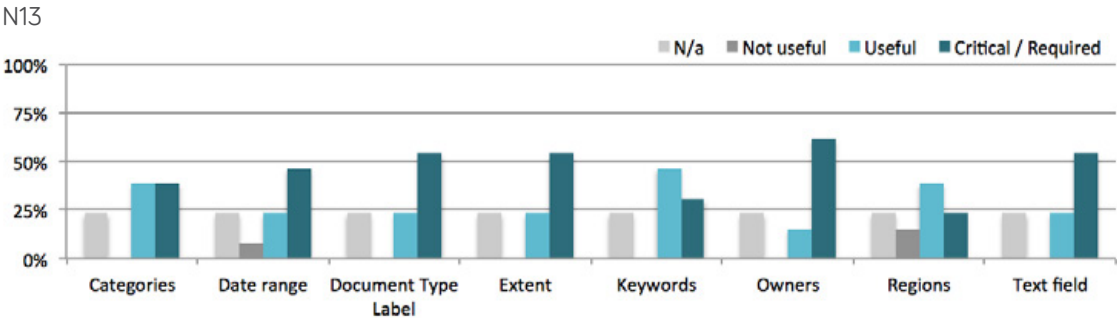
An almost equal amount of respondents, split evenly across segments, found 'Extent' useful and critical.

RECOMMENDATIONS

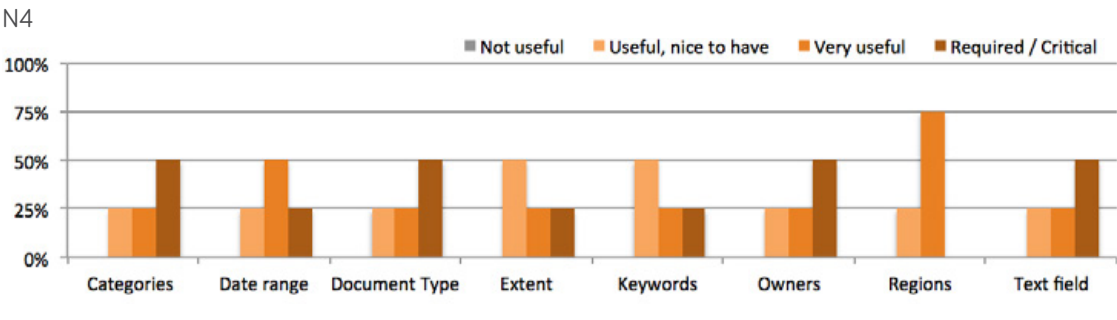
1. Recommend researching actual patterns of use to determine changes to 'Extent'.
2. Recommend simplifying 'Region'.
3. Recommend exploring a 'set it and forget it' feature.
4. Recommend prioritizing document type in the visual hierarchy.
5. Recommend simplifying selection of document type, either through pre-selection of most used document type based on all users or specifically user account.
6. Recommend testing administrative privileges for turning this feature on or off; or setting filter date range criteria.
7. Recommend researching actual date range types and usage patterns to identify modules and fields needed.

BREAKOUTS BY USER SEGMENT
SERVERS

All Tasks (Dev/Admin/User)



Users



WHICH MAPPING FEATURES ARE MOST USEFUL FOR HOW YOU/
YOUR ORGANIZATION USES GIS SOFTWARE?*

Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Public use/Creative Commons				
Sophisticated mapping tools				
Social sharing and rankings				
Collaboration tools				
Sophisticated analysis tools				
Integration with outside resources				
Visualization templates				

HOW RESPONDENTS USE METADATA AND FILTERS

Extent
It allows for efficient workflow by focusing the datasets.
It helps respondents avoid redundancy.

Search Field
In a filtered search pattern: typing layer names and keywords to pull up themes, subjects, places and dates.

Owners
It allows users to contact owners, but isn't used as a filter.

Document Type
Used to filter data.

Category
Used to filter data.

RESPONDENT NEEDS

Project grouping
Respondents need the ability to group files together as part of one project.

Efficient workflow
Respondents need metadata to support an efficient workflow.

Data lists
Respondents use metadata to create lists of like items.

Interoperability metadata
Respondents develop the metadata online and then use it within InaSafe.

Describe how you use the Extant within your work.

- * It provides the coverage of the data set that you want to use, and avoids redundancy, and it is the efficient way of working with what you require.

Choose one to describe how you use these metadata fields on a regular basis.

- * The search field of GeoNode is what I use the most, typing layer names or keywords. So I expect to find something related to keywords, that may include the subject/theme, the place name and the year - as this is also my document/layer naming strategy i.e. Accidents - Santiago - 2011. However, I sometimes also filter further by document type or category. Owners is just interesting for contacting later on. And Region is important as we have not only data for one country but also neighboring countries.
- * For querying data onto lists
- * Document Search
- * We use keywords to group hydraulic model files together, but this is a flimsy solution. Metadata to group GIS files together into a project would be useful for us.
- * In developing the catalog for SANSA (<http://catalogue.sansa.org.za>)
- * Keywords for search and we have created data extent layer (of all data) based on categories to give user an over view of data in landscape portal portal.
- * We use metadata to describe the context of layers to be used for analysis in InaSAFE.

Open Questions, Final Comments

Great future for Open Software.

Respondents saw an advantageous future for open software—with other GIS software creating closed systems and proprietary solutions. Keeping GeoNode open is a primary concern.

- * Open: Extendability, integration, customize
- * Shareable

Respondents need better documentation.

- * Spanish translations should be more complete—ESRI owns the Spanish market because of their translated documentation.
- * Real world examples, case studies, of complex integrations.
- * Tutorials, both simple setups and complex configurations.
- * Metadata procedures and best practices.

Simpler, faster visuals

Respondents want simple, faster ways to visualize data and layers.

They wanted styling, global base maps and simple publishing tools such as CartoDB.

Software reliability and extendibility

Including server branching, resolving upload issues, and PostGIS.

Advanced integrations with other open source software.

- * Data interoperability
- * Extendability

Metadata

- * Metadata management
- * Layer state and versioning

An improved user experience

- * UX
- * Visual
- * Workflow management

DO YOU HAVE ANY FINAL COMMENTS ON GIS SOFTWARE?

- * Better documentation on setting up https and integrating GeoNode with more advanced GeoServer plug-ins, like mosaics
- * Better styling interface (more like Mapcentia) or make a default GeoNode/QGIS server branch to improve styling user experience
- * Extensibility via plug-ins - this requires a GOOD guide (with 'real world' examples) for developers; allow a platform to use third-party mechanisms for authentication/authorization; installation via a simple (and extendable) Docker deployment script; modular design to avoid "tight" coupling to third-party software
- * Good documentation (tutorials and administrative for users and developers) would really help.
- * Good documentation, examples, easy and straightforward to create a dev environment are all useful things
- * Having global basemap such as google, OSM, bing, ...
- * Having worked with GIS for 25 years, increasing Free and Open Source Software for Geospatial Applications are enabling the GIS practicing babies faster than before.
- * I really look for a tool like CartoDB (but free) to publish (dynamic) online maps. We tried to install

CartoDB for that reason but failed to run it on a server.

- * I think that in the future, as ESRI moves their model to named users and a captive cloud, there will be an opening for more open source alternatives that inter-operate open protocols.
- * I would find very usable to allow workflow management for spatial data. I mean: state of layers before being published; clean procedures; version management (possible yet with geogig).
- * Metadata management, along with data interoperability, is becoming critical since there are lots of data around that can be reused.
- * Most important for GIS software to react quickly and not crash too much.
- * Normally the documentation translated to Spanish it is very poor in open source software and there is where ESRI take advantage.
- * Open source is fundamental.
- * Openness is a huge deal for me. Meaning being able to easily extend, customize, and integrate with other open services. A major part of usability is the thoroughness and clarity of documentation and examples.
- * PostGIS is a must-have for any GIS project.
- * Selecting compatible frameworks and technologies is a constant challenge. The older tools have great functionality but terrible usability, the newer tools

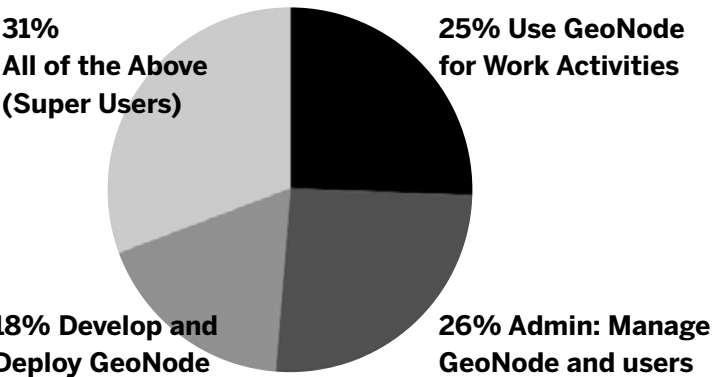
are easy to use but limp. Picking the right horse to back for development is a challenge. Examples of this would be Geoexplorer vs CesiumJS vs Maploom, whilst presenting the user with an experience that is consistent and easy to use. I think online GIS suffers from being feature-rich and user-experience poor at the moment. But things are of course changing for the good :)

- * The upload and share functionality is great
- * Thoroughly disappointed in GeoNode today
- * Visual programming like FME facilitates
- * When GeoTIFF is uploaded, something is lost in styling so the file cannot be downloaded as a GeoTIFF without adding Default Raster style (change manage style to a auto complete box rather than a list of all layers), Remove tiles as a download option or create documentation about how to configure better so as not to get error message when someone tries to download tiles
- * Death to shape files! Long live GeoPackage. Waiting for GeoPackage to be well supported and adopted as a standard interchange format.

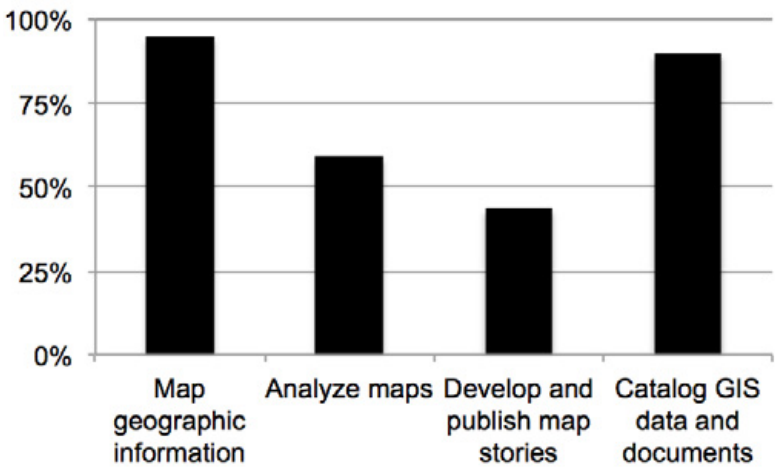
GeoNode Survey

Analysis

ROLES OF THE GEONODE COMMUNITY

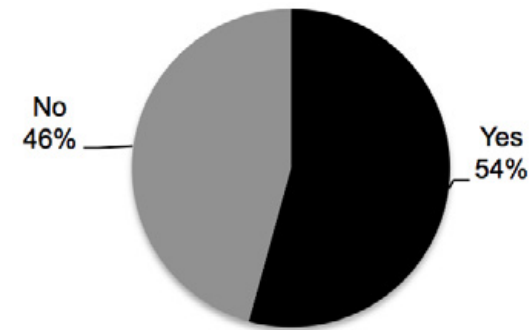


TYPE OF GIS ACTIVITIES



NUMBER OF RESPONDENTS WHO AGREE WITH THE QUESTION:

Should all GIS activities be done in the same program?



GeoNode Community Roles

70% DISTINCT ROLES IN THE GEONODE COMMUNITY

70% of the respondents have distinct roles within the GeoNode community. 30% take on all tasks and could be considered super users.

This high number of super users is indicative of institutional need to have GIS users take on many roles, or that GIS users are seeking out their own tools regardless of their IT infrastructure.

KEEP GIS ACTIVITIES ON GEONODE

Less than half of respondents use GeoNode to develop and publish map stories.

Slightly more than half of all respondents feel that these activities should be done in the same program.

RESPONDENT JOB TITLES

- * Academic researcher
- * Analyst
- * Chief Information Officer
- * Coordinator of the Software Development Unit
- * CTO
- * Developer
- * Director in Charge of Project Management Delegate of Public Services
- * GeoNode Advocate :)
- * GIS/Geospatial Consultant (3)
- * GIS Data and Linux administrator
- * GIS Developer
- * GIS developer and consultant
- * GIS officer
- * GIS Specialist
- * Head GIS development team
- * Information System Expert, GIS Specialist
- * IT Analyst, Trinity Technology Services
- * Land Surveyor

- * Managing Director
- * Observatory/IDE Coordinator
- * Open data and innovation consultant
- * Open Data consultant
- * Regional GIS consultant for Latin America and the Caribbean
- * Research ingeenier in geomatic
- * Researcher (2)
- * Senior Land Information Systems Officer
- * Senior Programmer
- * Software Developer
- * System Administrator
- * Systems Developer
- * VAM Officer
- * Water Engineer & founder

RESPONDENT ORGANIZATIONS

- * Agence d'urbanisme du Grand Amiénois (ADUGA)
- * ARM
- * Boundless Spatial
- * Capgemini France
- * CEDEUS - Centro de Desarrollo Urbano Sustentable
- * Charles Darwin Foundation
- * CIRAD
- * CNIGS
- * CNR
- * Department of Surveys
- * Duke University
- * Embrapa Foiben-Taosarintanin'i Madagasikara (National Geographic and Hydrographic Institute - Madagascar)
- * Freelance
- * Geobeyond
- * German Archaeological Institute (DAI), Berlin
- * Hydrata
- * Instituto Português do Mar e da Atmosfera
- * ISRIC - World Soil Reference
- * ITHACA
- * Jurukur Antarabangsa
- * Le Ny Conseil & OBSCOM
- * Map And IT Solutions Ltd
- * Office de Régulation de l'Electricité
- * ONN (NATIONAL NUTRITION OFFICE)
- * RCMRD
- * U.S. Peace Corps Response
- * University of Alaska, Fairbanks
- * World Agroforestry Centre
- * World Bank
- * World Food Programme (WFP)

QUESTIONS

What is your primary role in GeoNode? *

- * Use GeoNode for work activities
- * Admin: Manage GeoNode and our users
- * Develop and deploy GeoNode
- * All of the above

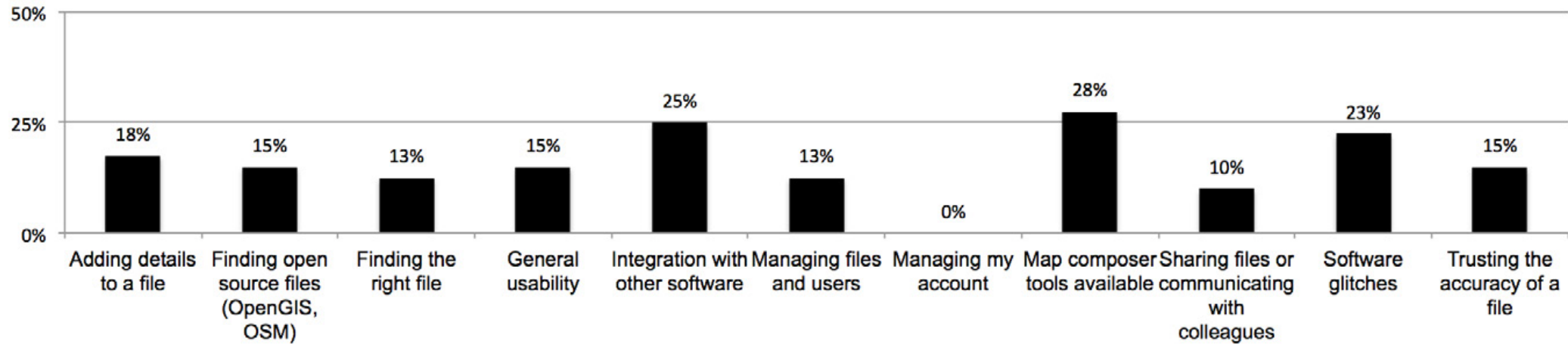
What does your organization need to be able to do with GIS data? *

- * Map geographic information
- * Analyze maps
- * Develop and publish map stories
- * Catalog GIS data and documents
- * Other:

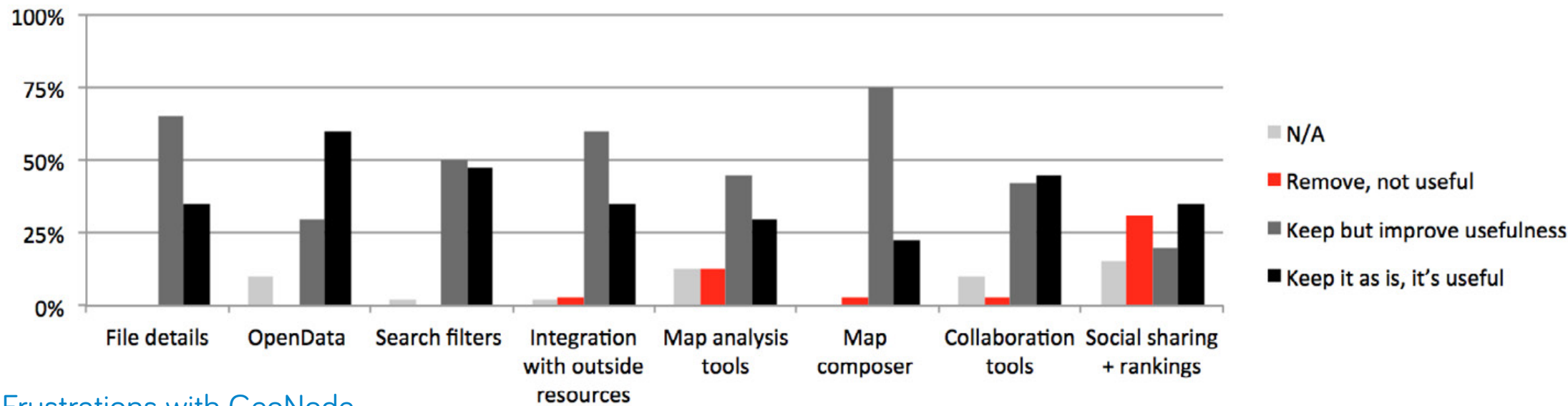
Should all of this be done in the same tool or software?

- * Yes
- * No
- * Other:

BIGGEST FRUSTRATIONS WITH GEONODE



EVALUATION OF GEONODE FEATURES



Frustrations with GeoNode

OBSERVATIONS:

Respondents need GeoNode to change:

- * Map composer
- * Map analysis tools
- * Integration with outside resources
- * File details page

Respondents need improvements to:

- * Search filters
- * Collaboration tools
- * Social sharing and rankings

Don't change:

- * Open Data

RESPONDENT OTHER CATEGORIES:

1. User interface (UI) and visualizing files

- * GeoExplorer's UI isn't intuitive for non-GIS users.
- * Clunky look and feel for high res data.
- * Missing preview after the selection of a layer/card.
- * Update MetaData for a series of imported images or shape files where most stuff is similar.
- * I really miss a "Zoom to layer" function in the data viewer.

2. Usability and user experience

- * In general usability, non-technical users find it not very user friendly.

- * Bad translation (German).

- * Metadata multilingual.

- * Sharing instruction of use.

- * Sharing files or communicating with colleagues.

3. Map composer and publishing

- * Styling in map composer.
- * Thematic analyses.
- * Styling (SLD standard implementation)

4. Search

- * Advanced search on layers
- * Filters
- * Finding the right file.

5. Permissions

- * Authorization and rights management

6. Technology

- * Only Shape file Upload
- * Java/GeoServer-related
- * Limited SRS support, profile and rights respect (bugs?), too old Django version (1.6).
- * It would also be extremely useful if there was better transparency in the handling of SRS and if important layer data (SRS, extent, ground resolution, ...) would be automatically imported as metadata. Software glitches
- * Can't get tiling download to work.

QUESTIONS

What are your biggest frustrations when working with GeoNode?

- * Map composer tools available
- * Software glitches
- * Managing files and users
- * General usability
- * Integration with other software
- * Managing my account
- * Sharing files or communicating with colleagues
- * Finding the right file
- * Adding details to a file
- * Trusting the accuracy of a file
- * Finding open source files (OpenGIS, OSM)
- * Other

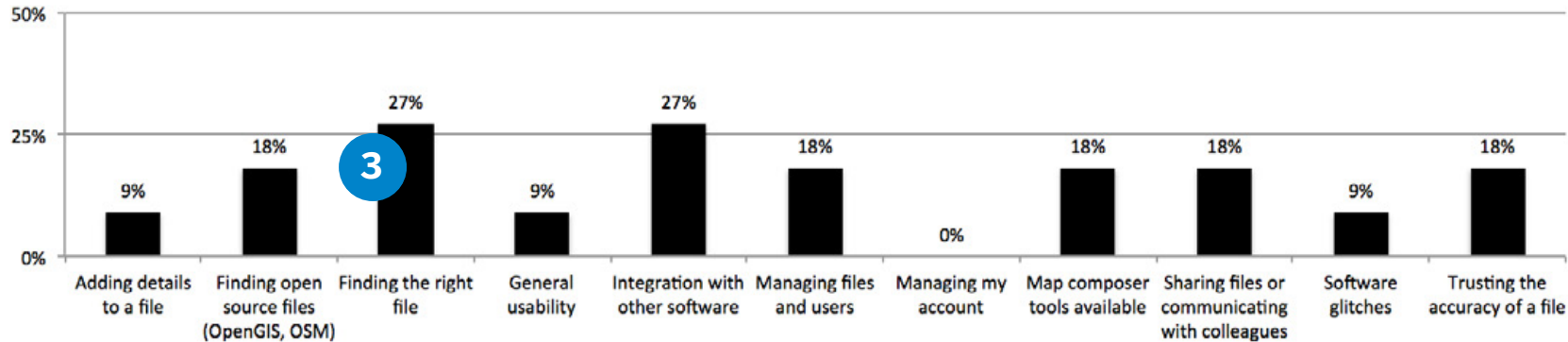
Evaluate the mapping features below by identifying which features should be removed, enhanced or left alone. *

Mark only one oval per row.

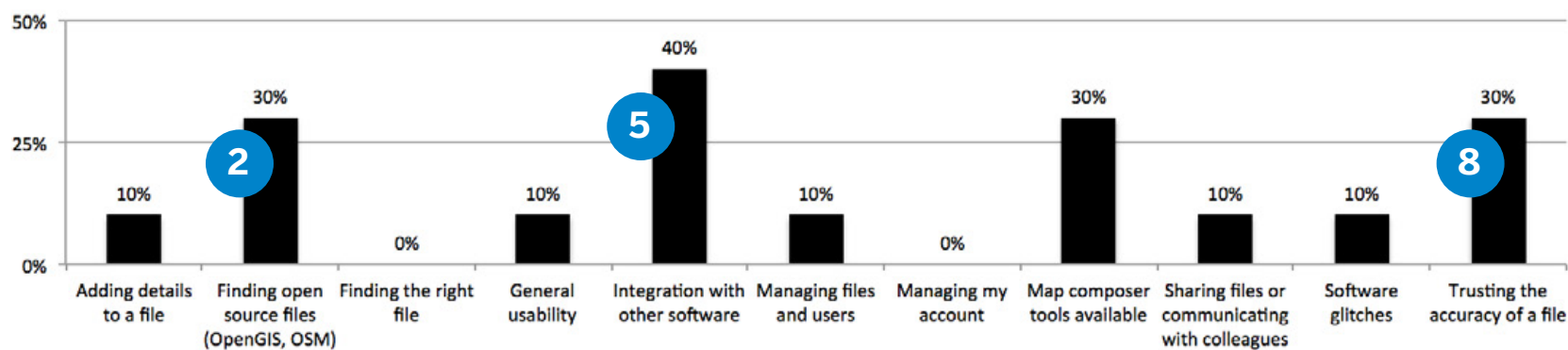
	Remove, not useful	Keep it as is, it's useful	Keep but improve usefulness	N/A
Public use/OpenData				
Map composer				
Social sharing and rankings				
Collaboration tools				
Map analysis tools				
Integration with outside resources				
File details (thumbnails, metadata, descriptions)				
Search filters				

BIGGEST FRUSTRATIONS WITH GEONODE

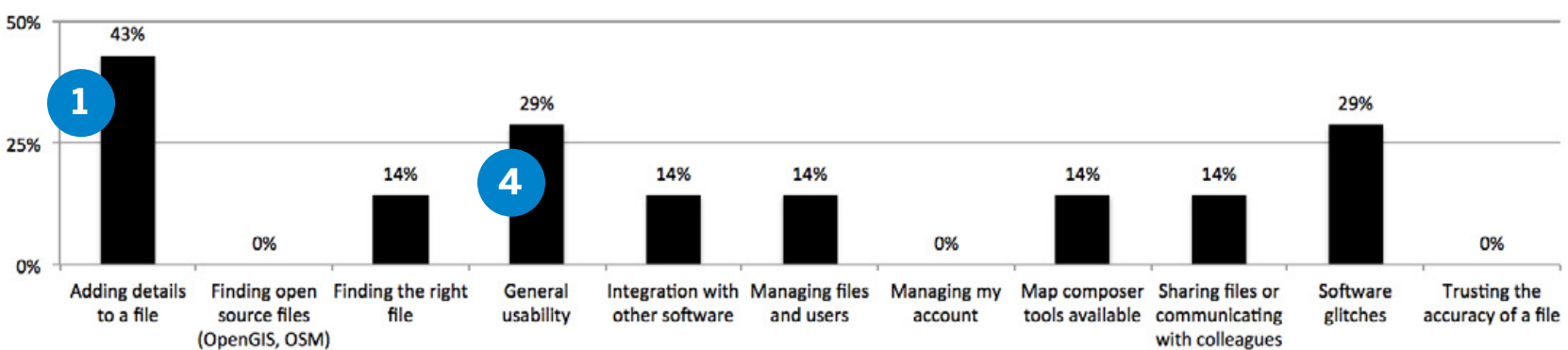
Administrators: Manage GeoNode and Users



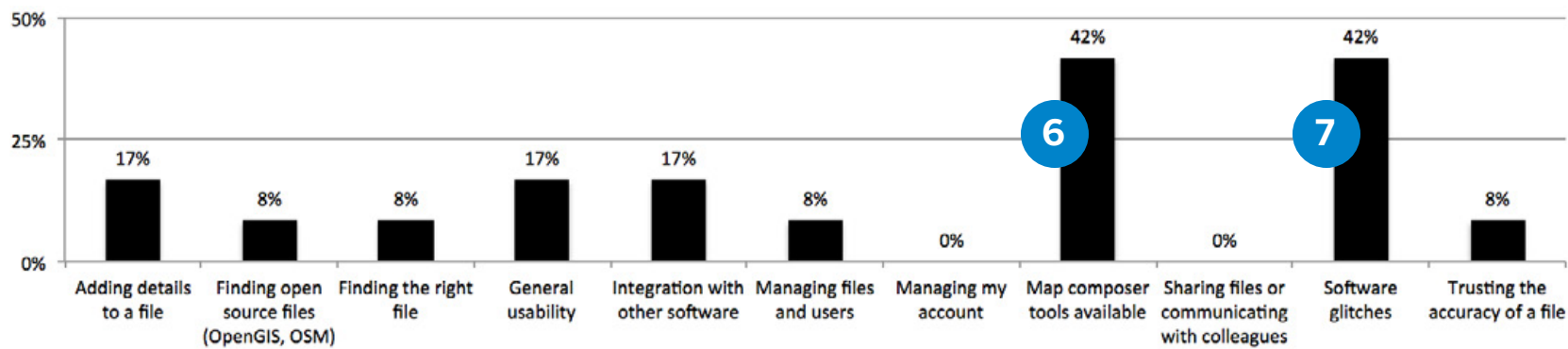
Use GeoNode for work activities



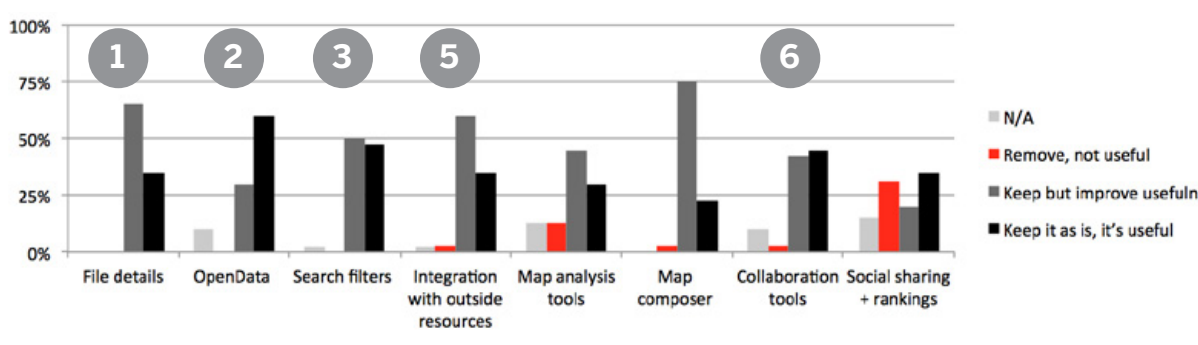
Developers: develop and deploy GeoNode



Super users, All of the above tasks



EVALUATION OF GEONODE FEATURES



Few commonalities

FRUSTRATIONS BY USER

As expected, each user group had distinct product frustrations driven by their specific goals and needs. General users work closely with GIS software and are on the front lines of the integration battle. It follows then that they would want to use the map composer tools within GeoNode to avoid switching to another tool. Similarly super users are least affected by the things they can control or fix on their own. Below are the primary feature frustrations, rank is identified, as is a tie when one occurred.

Administrators (rank order)

1. Finding the right file
1. Integration with other software

General users

1. Integration with other software
2. Finding open source files
2. Map composer tools available
2. Trusting the accuracy of a file

Developers

1. Adding details to a file
2. General usability
2. Software glitches

Super users

1. Map composer tools available
1. Software glitches

FEATURE FRUSTRATIONS

- 1 Adding details to a file**
Of the eleven items, developers ranked this as their most frustrating task. For other users, this was less of an issue. Respondents also indicated that file details was an area that needed improvement.
- 2 Finding open source files (OpenGIS, OSM)**
As could be expected general users ranked this as a major frustration. However, they did not have problems finding the RIGHT file, suggesting that search, naming, metadata and access to databases is more an issue with external and unfamiliar databases.
- 3 Finding the right file**
Administrators ranked this equally frustrating as integrating with other software. This suggests that internal file standards are difficult to maintain.
- 4 General usability**
While a highly ranked frustration for developers it was less of an issue to administrators or general users. This suggests that the frustration stems from a wish for better functionality.
- 5 Integration with other software**
General users are most concerned with this, suggesting that it impacts their workflow and ability to complete tasks efficiently.
- 6 Map composer tools available**
Respondents are very frustrated with the current map composer. Their responses suggest that it is still needed, but in a different format.
- 7 Software glitches**
This is a major issue for developers and super users, suggesting that this interrupts their workflow.
- 8 Trusting the accuracy of a file**
File accuracy and trust are issues for the individuals responsible for creating GIS documents.

COMMENT ON THE PREVIOUS QUESTIONS AS THEY RELATE TO YOUR WORK.

- * Layer File Feature Templates GIS file validation I do in QGIS, as we are very few uploaders.
- * Having our own theme for the site is important, at least logo etc. as we are a research center.
- * I would like to publish maps in CartoDB style (rather on social topics). This would be really nice.
- * Another interesting theme for me is connecting and searching streaming databases (Twitter, moving buses, etc.). A colleague of mine is actually working on Twitter/Instagram analysis for disaster information retrieval.
- * Finally, a download counter (and even better a download analysis tool as sourceforge has) would be nice.
- * A typical GeoNode map view has five menu areas. This is way too complex for an online platform where the target audience is generally non-GIS. Simple is better. Expose the complex UI only for advanced users, if necessary.
- * CMS, Gallery, 3D (open)
- * Enhancement
- * For me catalog functionality is important, however the cataloging operation should guarantee to fill-in metadata according to defined standards as well as a check of what has been compiled.
- * Customization is also a crucial point mainly for the home page.
- * Secondly the possibility to prefilter the dataset to visualize in the maps would be very valuable beside perform some simple analysis, to do this would be nice integrate some business intelligence capability (reports, charts, dashboard) to the system.
- * For science data, GeoNode sometimes has too much of a "let's have fun with maps" feeling to it.
- * Some critical aspects of GIS data, such as SRS, are not transparently exposed through the UI. The default scale range is too limited for e.g. cadastral data and it is a pity that essential metadata, such as extent and SRS are not immediately visible in the data browser. Coordinate display is also missing in the UI, as is a "zoom to layer" function. With these limitations, GeoNode can be used to browse data, then export it to a desktop GIS for more serious use; but I think that with a few small enhancements, a larger part of the workflow could be done directly in GeoNode.

- * For us, an expansive API that lets us build a different front-end to data that is primarily managed in GeoNode is a priority, and our team has contributed pieces to that development.
- * GeoNode makes it very easy to get the basic pieces in place for composing maps: it streamlines managing layers in GeoServer while allowing "good-enough" metadata so that we can drive another user interface. Our team uses GeoNode as an internal application, so we're less concerned with its look and feel for actually presenting maps.
- * Geospatial data is wildly heterogeneous and we usually find that some pre-processing is needed, so it's OK that we sometimes need to do pre-processing or do more complex configuration inside of GeoServer—but we love managing the layers and maps themselves within GeoNode.
- * Its better to have a GeoNode that developers can disable and enable certain features.
- * Map Composer is very important as most users still prefer to view maps in pdf format.
- * Maps are created by colleagues from 22 regional offices—no standard yet. Should be able to set information on originating offices.
- * Maybe I'm not experienced enough in GeoNode, but I'm not able to create dynamic integration with other data sources without causing 404 errors.
- * Metadata editor needs to be improved.
- * More adaptable to changing environment and needs.
- * Need a single tool or feature to backup the entire GeoNode website.
- * Python should make its way to the backend, i.e. replace GeoServer with new Python GeoServer
- * Right now we found GeoNode very useful as it is, a website where we can access to compose maps by using the different layers that have added to the site.
- * However, if we want to use it for an emergency context, would be good to count with plug-ins such as hotspots analytics, Google street view, open street map, geotagger, map theme manager, weather warnings, etc.
- * Search function needs to be more enhanced for better filtration of records. GeoNode cannot depend on Django Admin package it should have its own administrative interface with statistics about searches (and which search string s are mostly used), download statistics, usage statistics. Please improve print function, a client side print tool might be better than server plug-in.

- * SLD integrator, Wordpress for post and comment a map, a data, a GIS analysis.
- * This is important as it help to have various analysis tools or plug-ins that one can add and solve challenges of various activities
- * Map Composing and printout. A flexible output map composing tool that will include all basic map elements (north arrow, labels, title and subtitles, scale bar options, legends, index map, date composing, projection details, etc.).

This will prove useful when supporting decision making during disaster relief/emergency response situations, as well as when time is of the essence for publishing or presenting maps.

Of course, QGIS, gvGIS, or any another Desktop GIS can always be used to produce a final output map for presentation purposes, but this will add more to delivery time.

Either of the two ways solutions for GN software building could be use, by add-ons or mapping editing tools integration.
- * Trusting the accuracy and validation of files is also of the essence when producing a response to support decision making.
- * Themes customization or CSS ideal for front end quick page design.
- * Layer File Feature Templates will prove very useful when reducing time response. e.g. an add-on dictionary with a standardized (UN, WB, WFP, UNHCR, etc.) layer file feature templates for disaster relief/emergency response use.
- * A modular approach would be excellent, easier to maintain, as not all features required
- * CMS integration.
- * Uploaded rasters often cannot be downloaded at GeoTIFFs without adding the default raster SLD and having a list selection tool for manage styles function is overwhelming and bad user experience; better interface and features for styling and filtering shapefiles would be great; indexing on other fields than title for search would be super useful as well.
- * Most African countries still have internet connectivity problems so the offline GeoNode software which can later be linked to the online version at a time the connectivity has improved.

Community Roles and Frustrations

Heuristic Needs:

Feedback: Visibility of system status	* Automatic Metadata fill and UI feedback on missing data.
Help + Documentation	* Better translations.
Consistency + Standards	* Advanced print function.
Natural Language + Order: Match between system + the real world	* Wordpress for posts and comments
	* Need emergency situation tools.
Visible + Obvious: Recognition not recall	
Flexibility + Efficient Use	* Streamlining layer management.
Relevance + Constraints: Aesthetic + minimalist	* Ability to save composed maps as PDFs.
	* Client side print tool.
Emergency Exits: User control and freedom	* Backup tools.
Error Prevention	* Knowing the cause of a 404 error.
Recovery: Help users recognize, diagnose, + recover from errors	

Comments about their needs fell into the following areas:

- A. Visual engagement with the content
- B. A full, modern workflow
- C. Better functionality
- D. Visual, controllable experience

GeoNode must excel at:

THE BASICS:

Experience: Usability and user interface

Learned expectations: Save, upload, download, search

Software premise: Cataloging databases, open and proprietary

Usefulness: Engaging with and visualizing files

USABILITY

Respondents need GeoNode to be user friendly to ease barriers to adoption in their organization.

- * Develop a UI that follows the data processing model, allowing for staged saving and progress feedback. “Would like to see a data publication process, that is, one group can upload and describe data. Another verifies if the data/metadata is OK and approves publication.”
- * Make critical functions easy to find and use.
- * The UI should make knowing the files and their usefulness easy to accomplish by a novice.
- * Provide an end-to-end UI experience that supports primary software purposes.

Uploading and downloading files must be simple, effective and not fail.

These are critical functions that support engaging with content. “Search Data by keyword and display its metadata and a data snapshot (layers and docs). And have a big fat download button.”

- * Allow users an ability to embed maps, print maps, and share maps with specific users.
- * Allow users to query data in a specific layer or file.

Prioritize the onboarding experience.

- * Make setting up user accounts effectively simple.

Respondents expect typical functions to work as expected.

- * Zoom visualizations should not have RAM issues. “There is a challenge in zooming of the background images used eg. openstreetmap it takes too long to appear when zooming in or out.”
- * Rendering speed impacts user satisfaction and frustration.

FINDABLE OPEN SOURCE DATABASES

Open data sources are critical to GeoNode.

But providing access to data isn’t enough, respondents want and need excellent search and visualization tools that open up the data for evaluation and interpretation.

- * Help respondents know what datasets are available.
- * Make integrating external databases a defacto function.
- * Help users search the catalog easier.

Search, access, and cataloging are the same feature.

Respondents use these terms in similar ways suggesting that they are the same feature or serve a very similar function.

IMPROVE ENGAGEMENT WITH DATA

Respondents expressed their need to test and query data in GeoNode.

Respondents value a standardized catalog that makes it easy to integrate external data sources and enable easy publishing to a broader audience.

Visualizing search and file results is critical to the success of GeoNode for respondents.

- * Help users immediately explore and test data for its quality and value to their work.
- * Enable immediate engagement with data—query, visualize, interact, evaluate.
- * Help users curate datasets—project data; tag data for specific uses and users.

“For our (somewhat atypical) usage, GeoNode must act as a simple API between a web mapping framework and GeoServer. To clarify, we use GeoNode for managing simple metadata, and our external framework queries GeoNode for maps/layer information to compose a different interface.”

NOVICES FIRST

Allow the user to prepare a map that can provide enough information for decision making.

“In our organization, GeoNode should be use by people who doesn’t know very well how to performed GIS analysis, therefore, it should aim at allowing the user to combine different layers (already analyzed by someone with the capability to work with ArcGIS for example) and use the resulting map to make decisions. For example, in an emergency situation if an organization doesn’t count with a GIS expert in the country affected, then GeoNode, with remote assistance should be the solution to prepare maps and make decisions.”

Allow for simple customization for novice users.

“The ability to customize the maps and its parts (title, legend, buttons etc.).”

Features to eliminate from GeoNode

RANKING + SOCIAL FEATURES

Commenting and Social Integration (file rating systems, sharing and social media)

Con: The majority of respondents have yet to find a use for social features included in GeoNode (such as the file rating systems or commenting). “Nobody has used commenting yet.

Pro: Those that do use it see all of their staff and users using it. “Social liking features are very used in our organization.”

“Social integrations & social-like interactions. They’re better handled in their own native channels. I may have just never come across a GeoNode instance where they were used effectively. These features are not relevant for our organization.

“The social media stuff is a little over the top for my organization’s purposes. Who cares how “popular” a map or layer is? How many people bother rating the GIS data in the system? The “social” UI widgets eat up a lot of screen scape. In their stead, I would prefer a larger data view.

Need:

- * Purpose for commenting, ranking and social likes.
- * Better UI. Social media takes up too much space and is not used.
- * Social liking features.

METADATA

Change the Metadata engine.

While respondents did not want to eliminate metadata, they felt that it is necessary and would be better served with a different engine. “Eliminate pycsw and revert to GeoNetwork as default metadata engine.”

Need:

- * GeoNetwork for default metadata engine.

GEOEXPLORER

Eliminate GeoExplorer, GeoExt Viewer, Leaflet, and the use of Java.

Respondents see GeoExplorer as outdated and obsolete. “GeoExplorer / GeoExt viewer. Limited in its extendibility (adding new widgets and functions), a modern OL3 based viewer will help extend GeoNode for different mission needs for the web viewer.”

Respondents want to eliminate languages. This came up in responses to multiple questions. Here they would eliminate “Leaflet, I don’t see the use for it. I would also rewrite GeoServer in Python and eliminate all Java, including 6G Ram requirement.”

Need:

- * Maploom
- * Modern OL3-based viewer to extend GeoNode for diverse mission needs on web view.
- * Rewrite GeoServer in Python
- * Require 6G Ram

MAP COMPOSER

Eliminate complexity from the map composer to make layer styling simple for novice users.

Respondents favored simplifying the map composer. User populations on GeoNode use the platform for simple file evaluation, mapping and analysis. Complex map styling or analysis is not done by users on this platform.

“Users don’t style data. Admins do. Users ask for style changes via email. Get rid of complex styling and expose just the basics for users (transparency, colour, fill).”

“The mapping client could be less GIS-oriented. I would replace it with a mapping client, which is closer to the mentality of the non-GIS people. GeoNode is a tool that should be used by everyone.”

A small proportion of respondents requested a real map composer, “Remove Maps and add a real map composer using geoserver WMS proxy capabilities.”

Need:

- * Flexible map viewer with better features
- * Novice-based mapping client
- * A real map composer using geoserver WMS proxy capabilities
- * Styling request
- * Basic styling for non-tech users

NAVIGATION/NOTES/SHOPPING CART

Eliminate or improve random features—notes, navigation by People and Groups, About feature, shopping cart.

Some features received comments that spoke to their randomness and non-use. Respondents’ comments suggested that the features would be used if they had the appropriate function, design and required actions, or were in a better location.

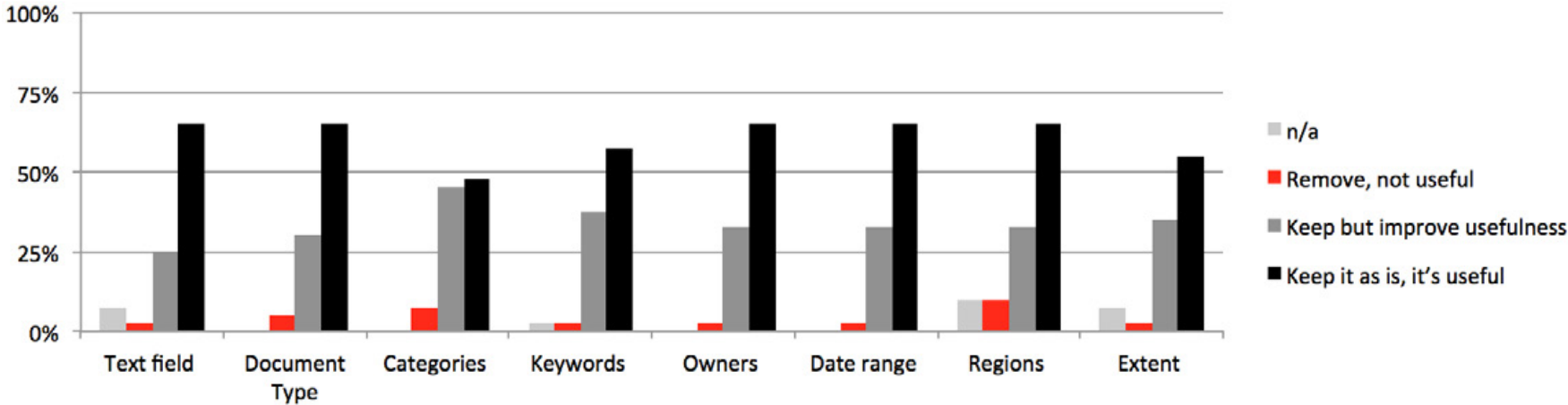
“Print..as there are no various formats to print a file.”

“About features nothing BUT ! the documentation is quite messy with too much installation possibilities from virtualbox ubuntu, pip, etc. It should need a simple and universal way for GeoNode installation for all Linux distro from Debian to openSUSE.”

Need:

- * Move People/Groups to different location.
- * Better printing capabilities.
- * Simple/universal method for installing Linux Debian/openSUSE.
- * A big button to download files.

USEFULNESS OF METADATA FIELDS



Metadata Usability
Suggestions

RESPONDENTS RANK METADATA FIELDS USEFULNESS, FIND CATEGORIES LEAST USEFUL.

The results of this question suggest that participants are able to log or search by the existing metadata fields without much problem. The results also suggest that respondents are generally happy with search and metadata entry.

Regions, and Categories had the most responses to remove them, suggesting that these can be administrator controlled features.

MAKE METADATA EASY TO FILL OUT.

Respondents offered suggestions to making it easier to fill out metadata fields. Including:

Focusing on user rewards (and a stick)

- * Incentivizing users.
- * Rating users based on the quality of their metadata.
- * Putting limits on files until the metadata is filled out. “How about a time-bomb... where layers can be uploaded with minimal metadata, but they disappear if it's not filled in after a week. Data owners can be reminded by email.”

Focus on administrator defined needs

- * Metadata dashboard to toggle on and off specific field requirements and defaults. “Provide an admin template in which I can tick on/off if a metadata field should to shown to the user that uploaded data.”
- * Customizing needed fields.
- * Enable auto fill for locally produced files.

Removing unnecessary barriers

- * Language translation.
- * Importing and exporting to a spreadsheet for batching.
- * Placing a description in each field, or a hinted example.
- * Provide a download-able metadata template that allows users to upload the data easier.
- * Email reminders.
- * Better training of best practices.
- * Make fields multiple choice—ease their ability to fill it out fast.
- * Automate through file ‘sniffing’, to auto-detect and extract the file data and represent it to the user, such as country coordinates.
- * Pre-validate the metadata to provide user feedback. “Perhaps, implementing a mandatory dataset compliance validator (by add-on or integration), such as the INSPIRE extension that allows GeoServer to be compliant with European community specifications (INSPIRE European directive protocol).”

Follow standards

- * Organize the fields following the ISO (or other standard) order.
- * Recommend regional standards. “Another issue is the needs of agreeing Regionally the inclusion of main metadata field to be filled out when creating or updating geo-datasets.”
- * “Please (continue to) support a lightweight metadata approach that minimizes required fields, or a model that doesn't try to be compliant with ISO1939 and similar heavyweight models—we've already got GeoNetwork (among others) for that.”

Enable disparate workflows

- * Allow for alternate autofills for different owners or group owners. “When I reference a data that's not from me, instead of logging into an other account, could be interesting to let ability to choose a profile for owner, contact field, etc.”

Software focus

- * “Revert to GeoNetwork instead of adding a UI to pycsw.”
- * “Perhaps use qml from QGIS information for a layer that has metadata in files that I've to rewrite in GeoNode. Also good to read field description for do not rewrite it again.”
- * “The ability to add freeform key/value pairs to layers and maps would be brilliant (CKAN does that) because it lets us more easily integrate external applications by querying a GeoNode API. (We may work towards contributing that functionality in some fashion!)”

QUESTIONS

Which GeoNode metadata fields are most useful for you? *

Mark only one oval per row.

	Remove, not useful	Keep it as is, it's useful	Keep but improve usefulness	n/a
Text field				
Document Type (raster, vector, remote)				
Categories				
Keywords				
Owners				
Date range				
Regions				
Extent				

Mimic behaviors of social media and social apps

- * Include friendly file onboarding that asks for details and checks for relevance from time to time.
- * Naturally incorporate user or file data history into metadata such as data logs or where the layer is being used.

Desktop vs online GIS

Respondents had a universal similarity between behaviors for online and offline GIS tools. Online is currently seen as a way to manage, distribute and view files. Offline is where true development of spatial data happens, and the analysis takes place.

Respondents did find new paths and opportunities for online GIS. They are moving towards more story telling online mentioning CartoDB. They also recognize the need for novices to be able to utilize GIS tools, and expect online to be the sole location for this activity. They wanted simple tools for light analysis to support these users.

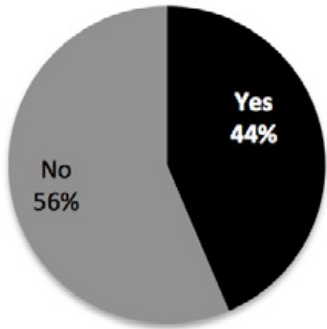
- * GeoNode is for novices, QGIS is for experts. “Our GeoNode platform serves users without proper GIS skills.”
- * GeoNode is for cataloging.
- * GeoNode is for publishing.

Online tools should not supplant desktop, nor do respondents expect expert mapping and analysis to take place online.

- * Online cataloging is also often a closed system. Respondents share data internally.
- * Online is used to promote data.

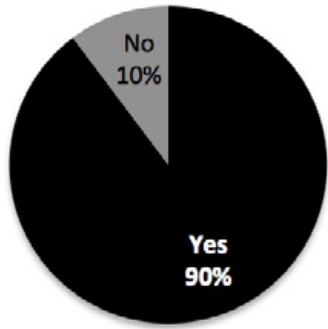
Use of GeoNode Features

USE EXTENT AS A FILTER



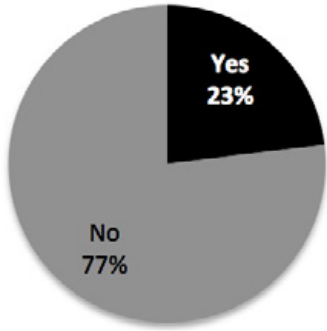
56% Do NOT use extent as a filter.
While relatively even, more respondents do not use the extent to filter files. However, the even response rate suggests that changes to extent should enable filtering. Removing this functionality would adversely affect existing behaviors.

CREATE MAPS IN GEONODE



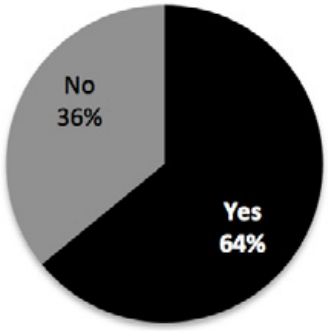
90% Use GeoNode to create maps.
GeoNode is overwhelming used to create maps. This surprising use of GeoNode reinforces the need for editing tools and layering tools in GeoNode.

ANALYZE MAPS IN GEONODE



23% Use GeoNode to analyze maps.
Less than 1/4th of respondents use GeoNode to analyze maps. This reflects the current structure and strategy of GeoNode.

UPDATE LAYERS IN GEONODE



64% Update layers in GeoNode.
The majority of respondents use GeoNode as intended.

How do you use ‘permissions’?

- ‘Permissions’ is confusing.**
- * Currently not, they are somewhat unclear to me
 - * We currently don’t.
 - * With groups but it’s necessary to improve usefulness
 - * Yes but it is quite tricky

- Permissions allow for control**
- * Control access and editing of layers and maps
 - * Data download permission
 - * Data must be available only to the right group
 - * To control who can download or visualize those files that don’t count with permission to be used externally.
 - * To prevent unauthorized downloads
 - * To protect data
 - * To restrict viewing, downloading and editing
 - * Layers restrictions

- Permissions enable file and user management**
- * Everything has public access but only resource owners can edit
 - * Granular permissions on layers (Editing, metadata, access)
 - * I use it to avoid some user to edit it with wrong data
 - * Map and layers visibility for groups
 - * On a layer basis. Some data are public (I use this as default) but some I can not make public. Using GeoNode 2.0 I would actually like to be able to create groups of users (might be in 2.4 already?). So they can share data within this group. I actually would also like to have users that can login to see more stuff, but that can not upload anything.
 - * Restricting other groups from not accessing the layer that was uploaded is my main use.
 - * To allow different access privileges for different organizations
 - * To allow groups to have access to restricted data / maps. Would like to use it for a publication workflow, that is, a group uploads with non-public permissions. Another group evaluates data/ metadata and sets permission to public if all is OK, or send data back to owner, to fix.
 - * To allow someone to download data
 - * To allow staff to access underdevelopment GIS layer
 - * To control who uploads data.

- * To specify 1- working group rights to visualize and modify (draft mode); 2- users’ right to visualize layers/cards (definitive)
- * To upload and edit
- * 3 user profiles : viewer only, create and share, admin
- * Change Layer or only read Layer
- * Easy. Public or Private
- * This is to allow who to use the data and showing a sense of openness of data to those GeoNode users
- * In general to allow users to: browse, create, modify data; browse, create, compose maps.
- * To set rights for viewing and downloading

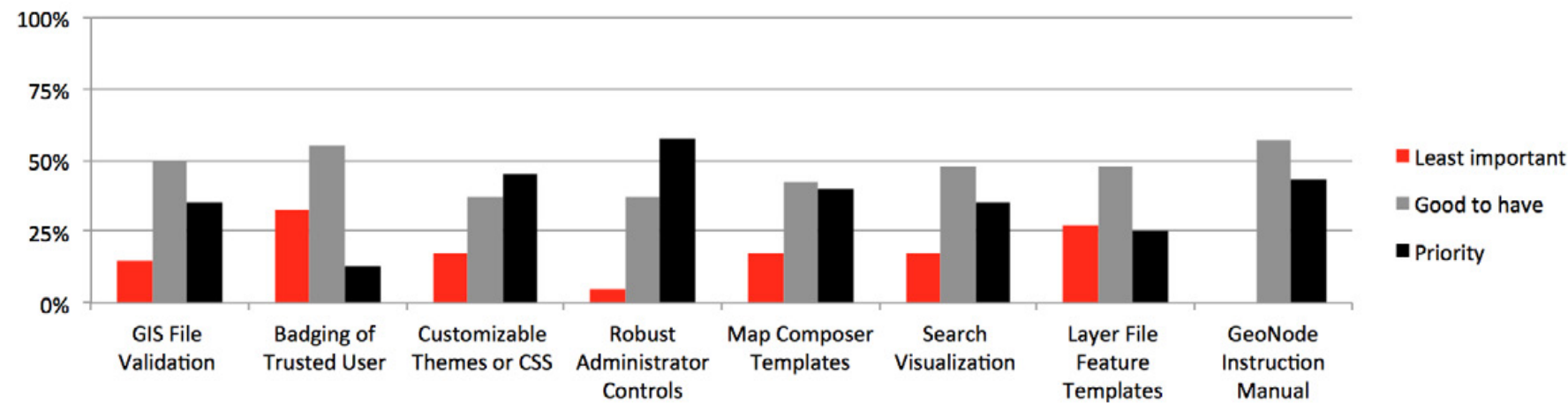
- Data is open, permissions are not required**
- * Generally my data are public, any restriction
 - * To manage and assign security to data
 - * To restrict users to some functions

QUESTIONS

- The extent is currently a filter. Do you use the extent to filter files?**
- * Yes
 - * No
- How do you use ‘permissions’?***
- Have you used GeoNode to create a map?***
- * Yes
 - * No
- Have you used GeoNode to analyze a map?***
- * Yes
 - * No

- Have you updated a layer file within GeoNode?***
- * Yes
 - * No
- Do you need to be able to print a map from GeoNode? ***
- * Yes
 - * No
 - * Yes, and/or other documents
 - * Other:

EVALUATION OF POTENTIAL FEATURES



Feature Evaluation

PRIORITIES (RANK ORDER):

1. Robust administrator controls
2. Customizable themes or CSS
3. GeoNode Instruction Manual
4. Map composer templates
5. GIS file validation
6. Search visualization
7. Layer file feature templates
8. Badging of trusted users

Of note, Badging while not a priority ranked above all other features as good to have, suggesting that this feature would support latent needs that are not being met.

DIFFERENCES BY USER

General users

- * Instruction manual is good to have but not a priority
- * GIS File validation and search visualization is more important than other features.
- * Badging is an important feature for this group.

Administrators want an instruction manual, prioritizing it above all other features.

- * Their second priority is customizable themes and CSS followed by robust admin controls and map composer templates.
- * They value GIS File validation and Layer file feature templates.

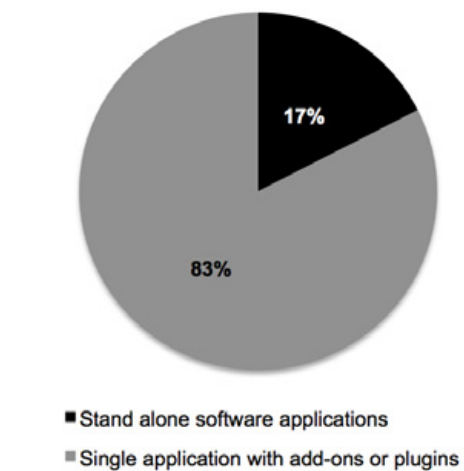
Developers prioritized robust administrator controls.

- * Search visualization, map composer templates and badging trusted users are good to have features that ranked highly for them.
- * Developers do not see value in layer file feature templates. And, as should be expected they see little value in customizable themes. We can assume that this is due to their ability to make the changes necessary on their own with little outside help.

Super users prioritized administrator controls and layer file feature templates.

- * GIS file validation and the map composer templates were highly ranked features, with 50% choosing badging, themes, and search visualization and layer file feature templates as good to have features. Suggesting that these features would support current activities and user needs within their organizations.
- * Badging was equally least important and important suggesting that super users get their data from disparate sources.

Software Strategy

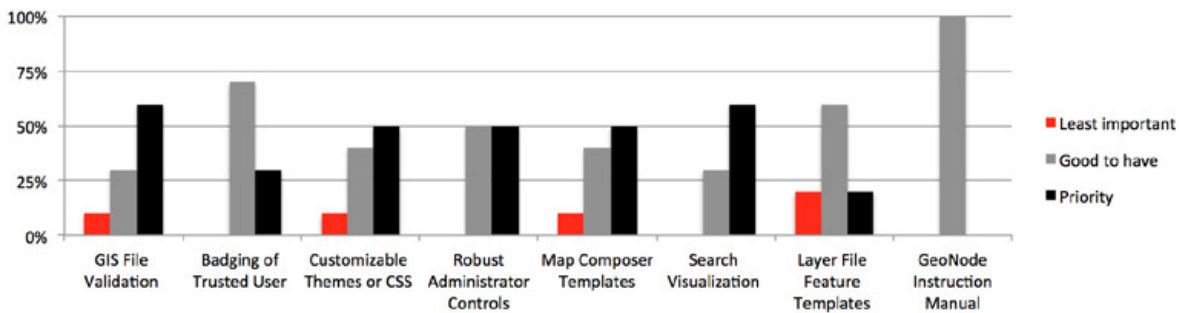


The GeoNode software can be built in two ways. Which is more effective for your organization? *

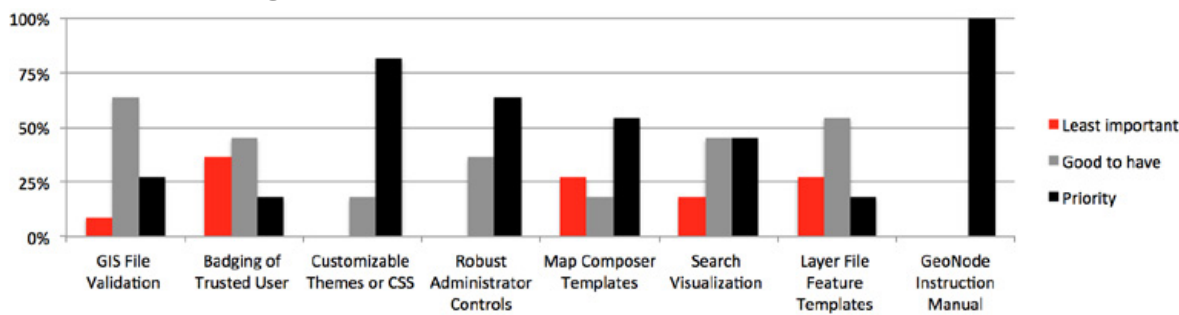
- * Stand alone software application, with supporting but separate applications. Ex. GeoNode would be similar to an Adobe or Microsoft program. What this means: GeoNode must support integration with all mapping and analysis tools.
- * Single application with the ability to add new functionality through add-ons or plug-ins. Ex. GeoNode would be similar to Wordpress or Bootstrap. What this means: Users add tools to GeoNode that are important to their workflow.

EVALUATION OF POTENTIAL FEATURES

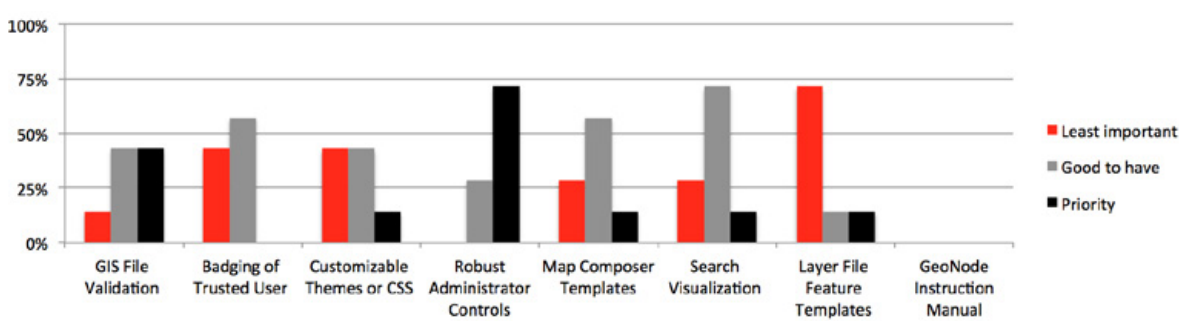
Use GeoNode for Work Activities



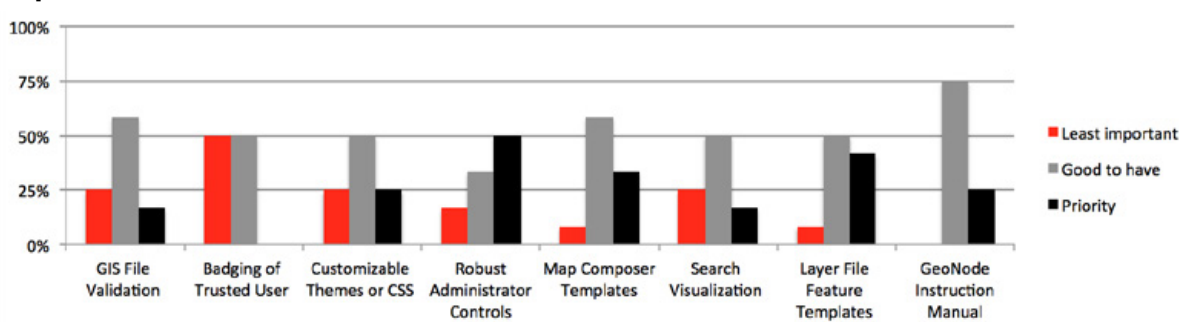
Administrator, Manages GeoNode and Users



Develop and Deploy GeoNode



Super Users, All of the above tasks



GeoNode Analysis

Heuristic and Design Analysis

Analysis Overview

INTRODUCTION

This chapter comprises a heuristic analysis, comparison of navigation and content of the current GeoNode demo site and other similar websites. The GeoNode demo website was analyzed in depth to identify the issues that affect usability. Included are high-level insights, observations, and pitfalls to avoid that can be useful during the redesign of the GeoNode interface.

METHODS

A heuristic analysis is a method that helps to identify usability problems in user experience design. It examines the interface and judges its compliance with recognized usability principles (the "heuristics"). This analysis focused on ten key heuristics to determine that the content is:

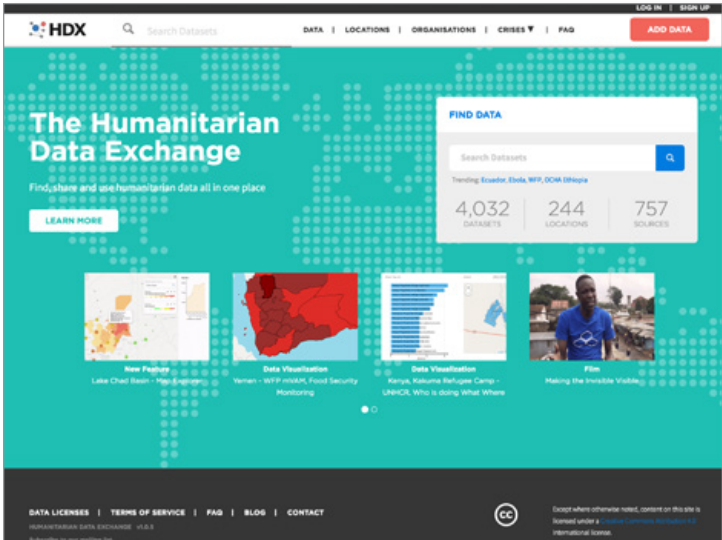
- * Findable
- * Accessible
- * Clear
- * Communicative
- * Useful
- * Credible
- * Controllable
- * Valuable
- * Learn-able
- * Delightful

NEXT STEPS

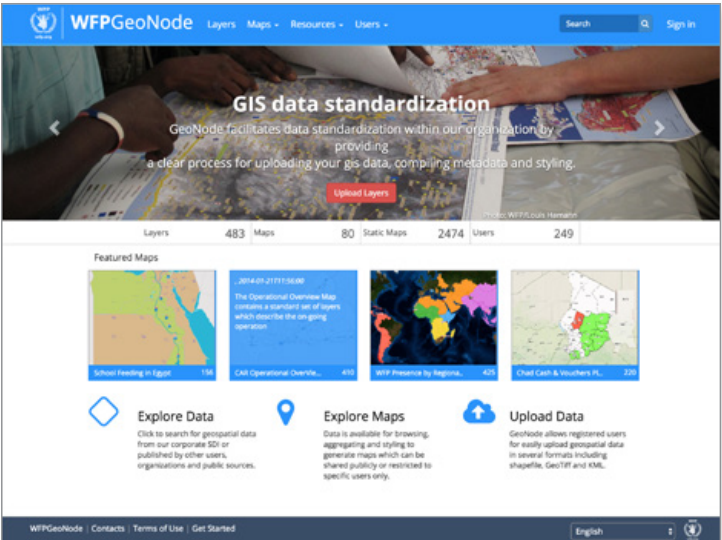
Using this information, site analytics and the result of user interviews we will propose an information architecture for the new site that best meets the World Bank's business goals and the needs of GeoNode users.

Site Benchmarking and Analysis

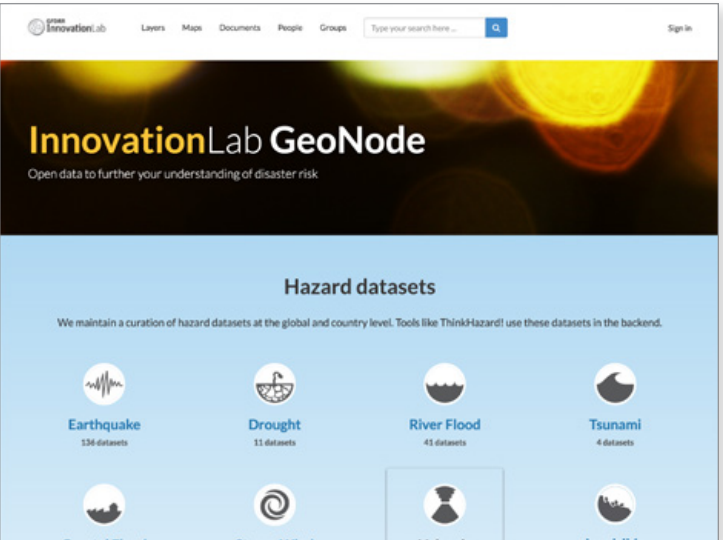
Sites Reviewed



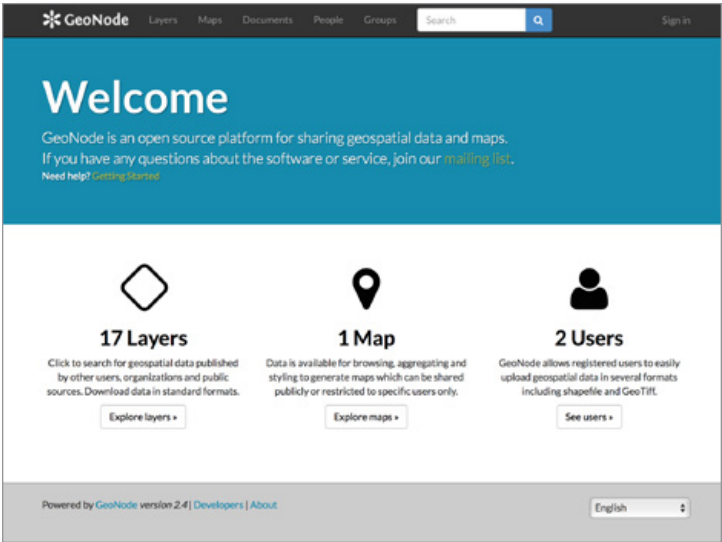
HDX, The Humanitarian Exchange



WFP GeoNode



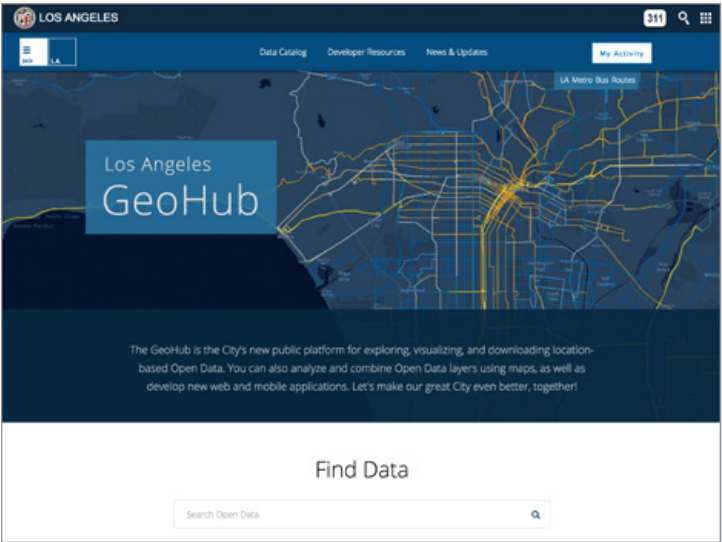
World Bank GFDRR Innovation Lab



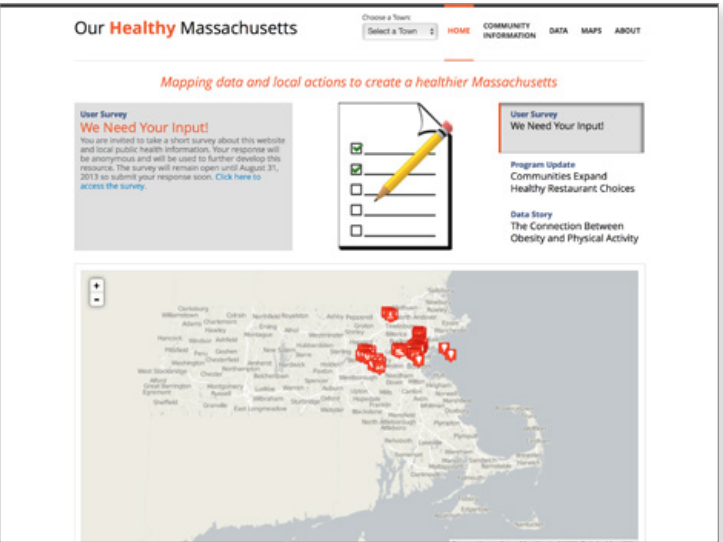
GeoNode



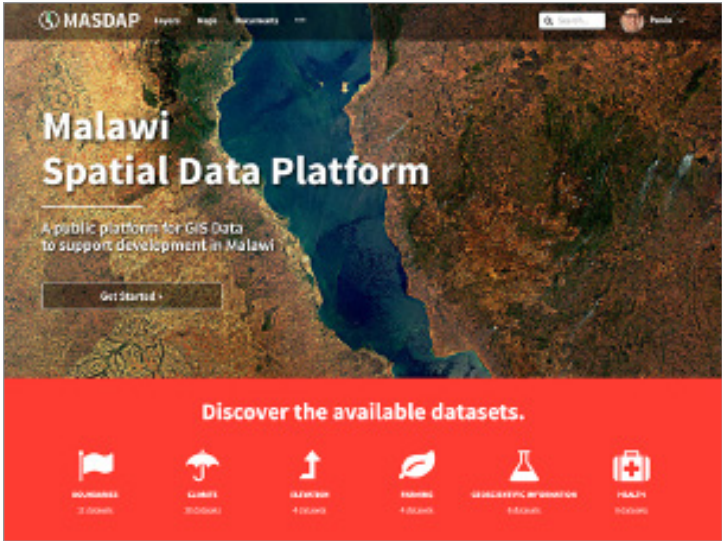
Data.gov



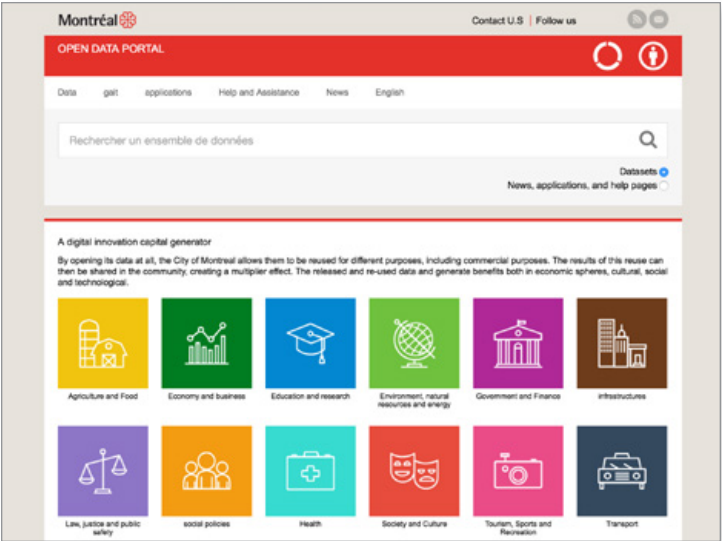
Los Angeles GeoHub



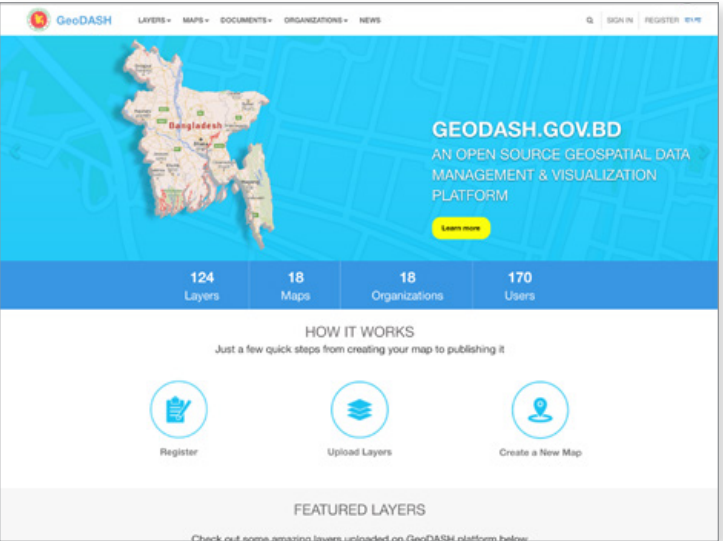
Our Healthy Massachusetts GeoNode



Malawi GeoNode, under development



Montreal GeoNode



Bangladesh GeoNode, Geodash

Site Benchmarking and Analysis

Home Page Insights

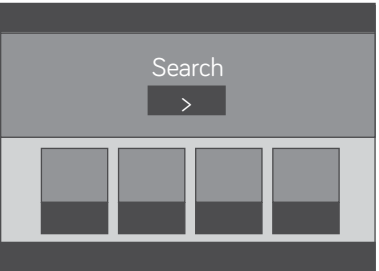
INSIGHTS

- * Customer installations of GeoNode use their home pages as front doors to their data.
- * GeoNode has taken a simple, responsive format for its design and functionality.
- * GeoNode is straight forward, using basic information architecture and language to drive use.
- * GeoNode is analogous to Wordpress: its main purpose is to be a backbone of displaying user's content; and it has diverse user population that range from novice to experienced coders.

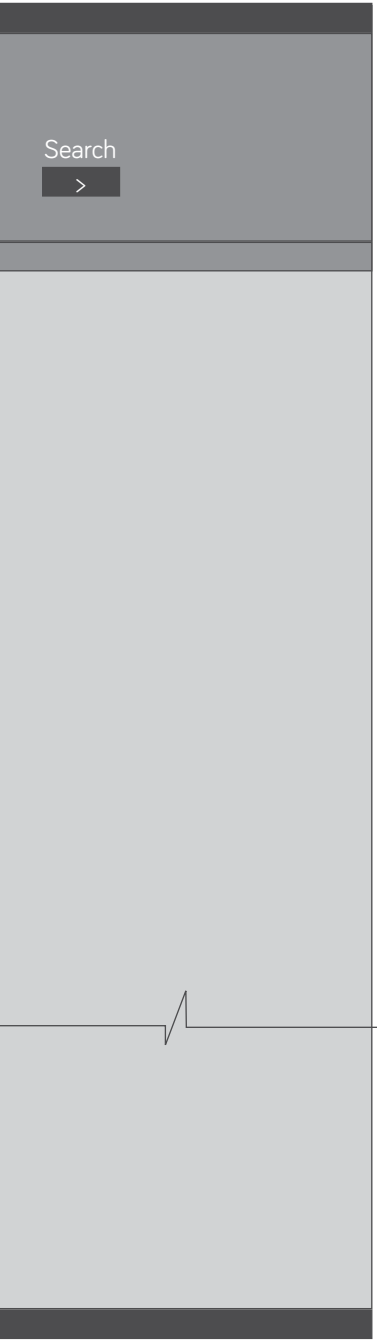
NEEDS

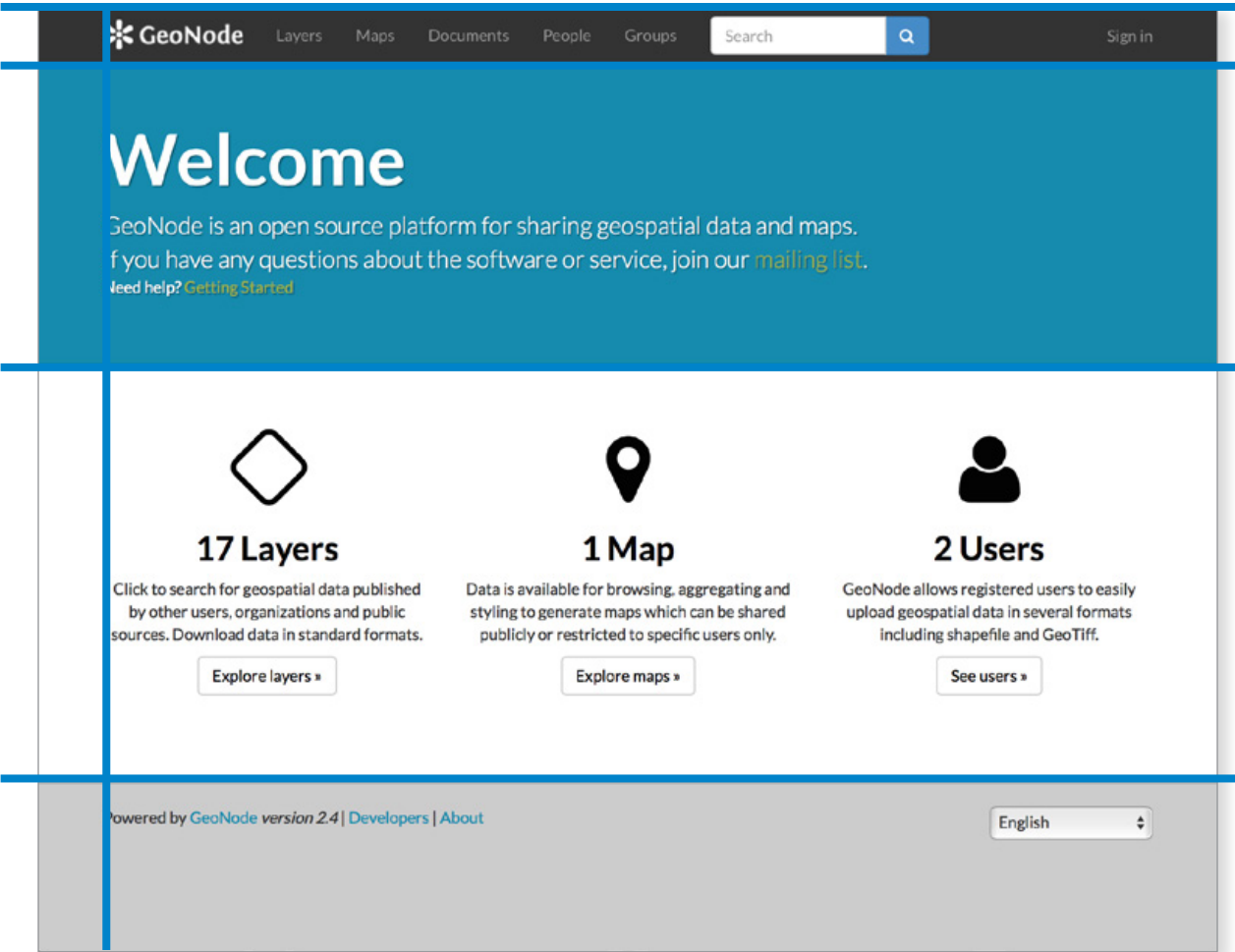
1. Design contrast: create design definition and separation between information and content types through contrast changes, color changes and line weight.
2. Eliminate modals. This isn't the best format for the content or the interface. Users primary platform is desktop.
3. Develop templates for complex workflows, such as CSS, home page customization, GeoStyles.
4. Design for the novice user.
5. Show status: system, file, user.

Intro focus, ex. GeoNode.WFP.org

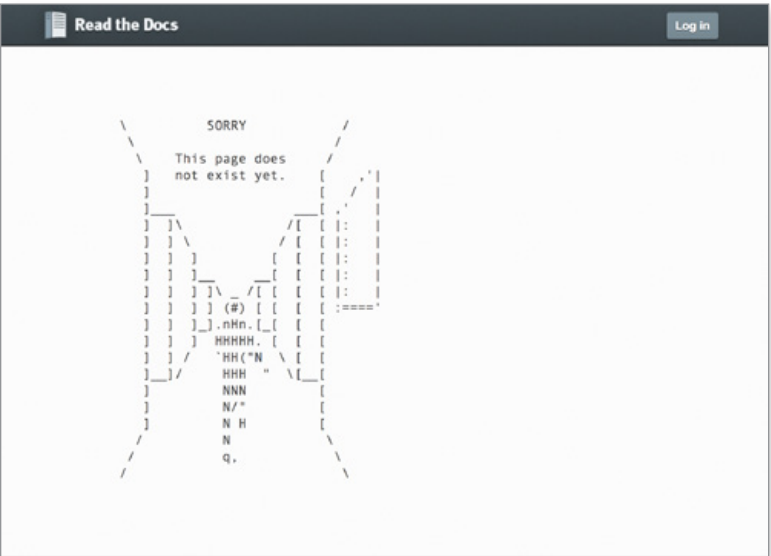


Content focus, ex. GeoDash.gov.bd





Demo home page



Getting Started page / On-boarding

Site Benchmarking and Analysis

GeoNode Grid Analysis

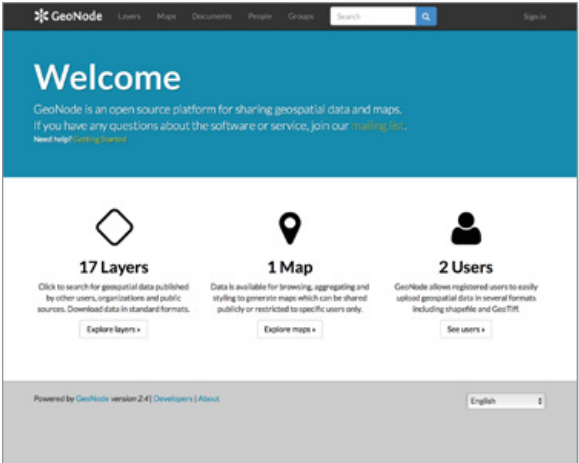
ANALYSIS

- 1 The home page utilizes a mobile first approach based on blog-style websites. All content is grouped in horizontal segments but does not use a vertical grid.
- 2 Platform status icons provide immediate details about the volume of data and individuals on the platform. This provides user enticement. These icons do not show you the quality or value in that content, just the quantity and volume.
- 3 Get Started Now and GeoNode version download immediately puts users in control of their use of the GeoNode. It eliminates barriers to getting started.

RECOMMENDATIONS

- A. Provide templates, additional interactive molecules and examples of their use for the home page. Have templates available for users to choose from when developing their own home page.
 - * Ex. Showcase new maps or documents uploaded to the system.
 - * Ex. Provide user stories.
 - * Ex. Provide a home page for departments or agencies that support it.
- B. Emphasize the main call to action: Get Started Now. Provide multiple ways into downloading the most recent version of GeoNode.
- C. Develop an initial step by step guide for getting started to start supporting user need and eliminating the 411 page.

DEMO.GEONODE.ORG

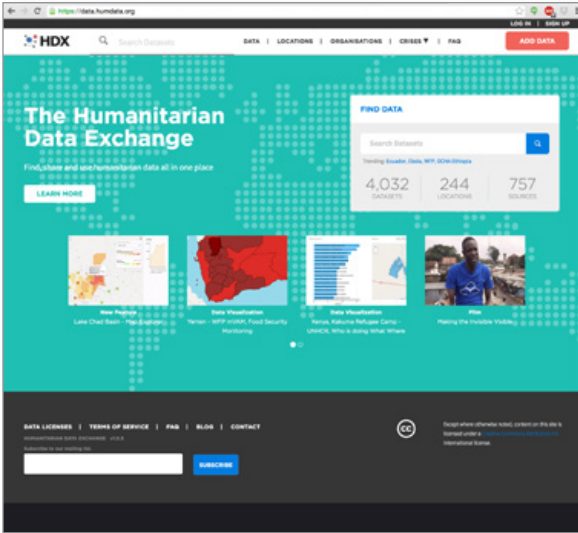


GeoNode demo home page. This home page provides users a basic introduction to the content that is available. Designed for a responsive, mobile first presentation, it reflects current website design.

Goal: provide a basic home page that supports:

- * Identifying it as a GeoNode
- * Knowing the health of the GeoNode

DATA.HUMDATA.ORG



The Humanitarian Data Exchange. The home page reflects its purpose to share data. It uses visual stories to drive interest in their datasets; and a large search field to invite exploration.

Goal: Create immediate engagement with the database.

- * Prominent search field associated with volume of datasets
- * Limited diverse visual stories

GEONODE.WFP.ORG



World Food Program GeoNode. The home page provides visual indicators to use—large picture of people using maps. It invites users to actively engage with their site by communicating typical activities that can be accomplished.

Goal: Make GIS data usable

DATA.GOV

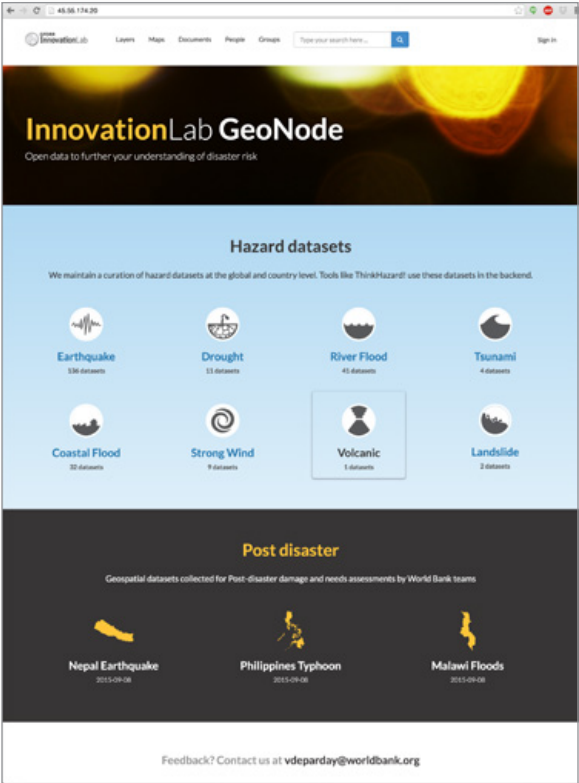


Data.gov the US government's open data portal. The site's home page focuses on search and data categories to direct user engagement. The remainder of this responsive home page is in blog and news posts.

Goal: Create immediate engagement with the data.

WB INNOVATION LAB

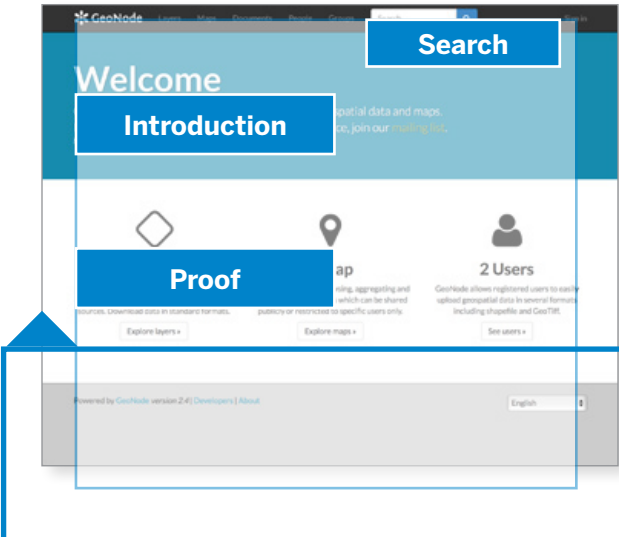
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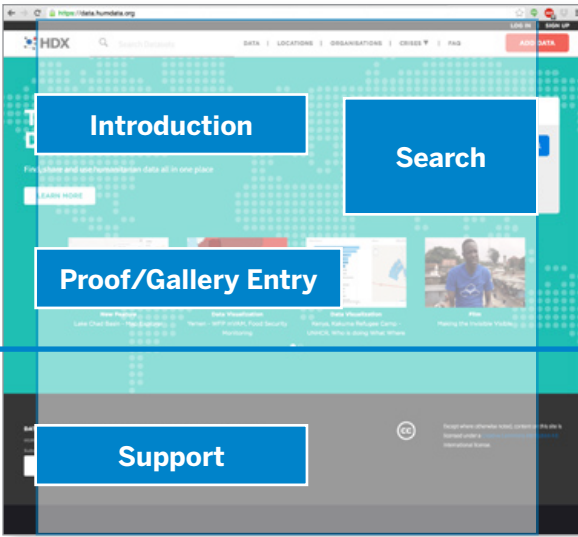
GFDRR Innovation Lab. The site focuses users on engaging with topics and historic stories. It uses icons to drive engagement.

Goal: Create engagement with topics.

DEMO.GEONODE.ORG



DATA.HUMDATA.ORG



GEONODE.WFP.ORG



DATA.GOV



WB INNOVATION LAB
HTTP://45.55.174.20/



Site Benchmarking and Analysis

Home Page Structure

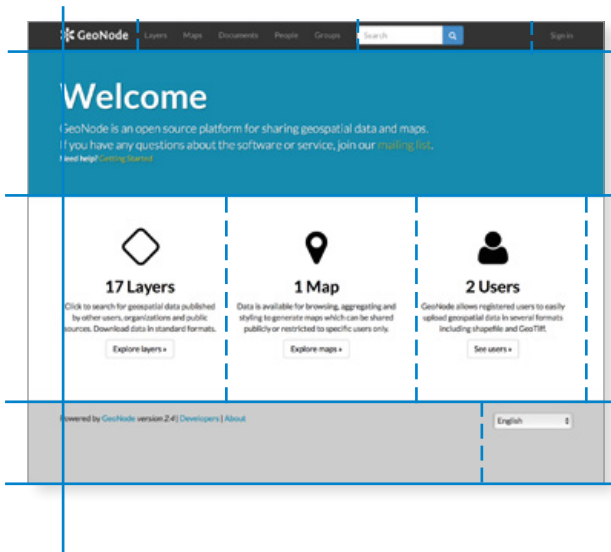
ANALYSIS

- * GIS sites are overly reliant on quantifying datasets to drive engagement.
- * International sites focus on quality of stories and simple, focused engagement.
- * Data hubs focus users on data types as the page hero. Additional content is text-based to limit distractions.
- * Sites have a clear story and focus.

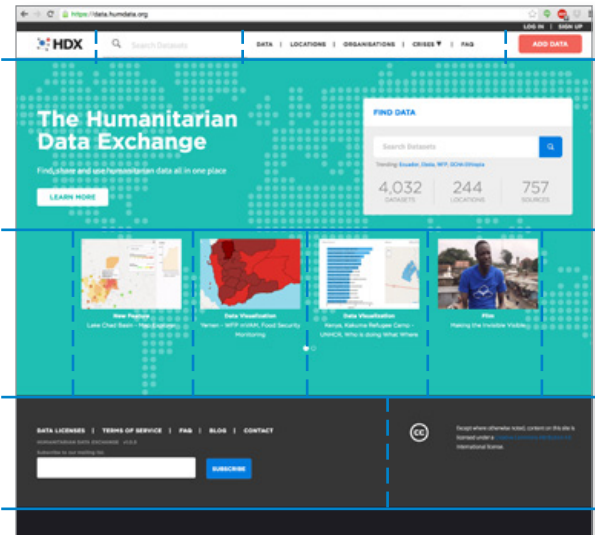
RECOMMENDATIONS

1. Focus users' attention on the data, and desired engagement.
2. Limit the quantity of content and stories on the home page.

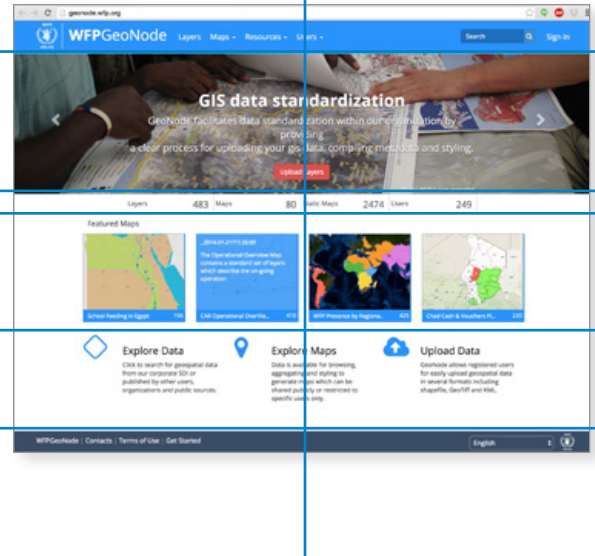
DEMO.GEONODE.ORG



DATA.HUMDATA.ORG



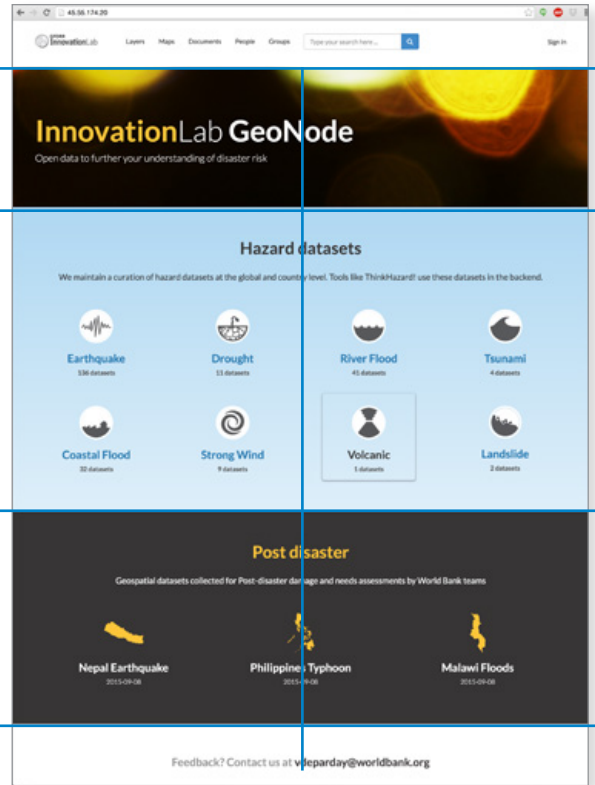
GEONODE.WFP.ORG



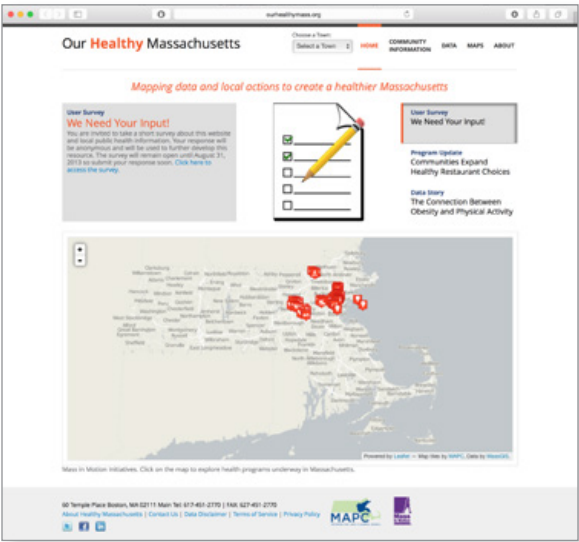
DATA.GOV



WB INNOVATION LAB
HTTP://45.55.174.20/



OURHEALTHMASS.ORG



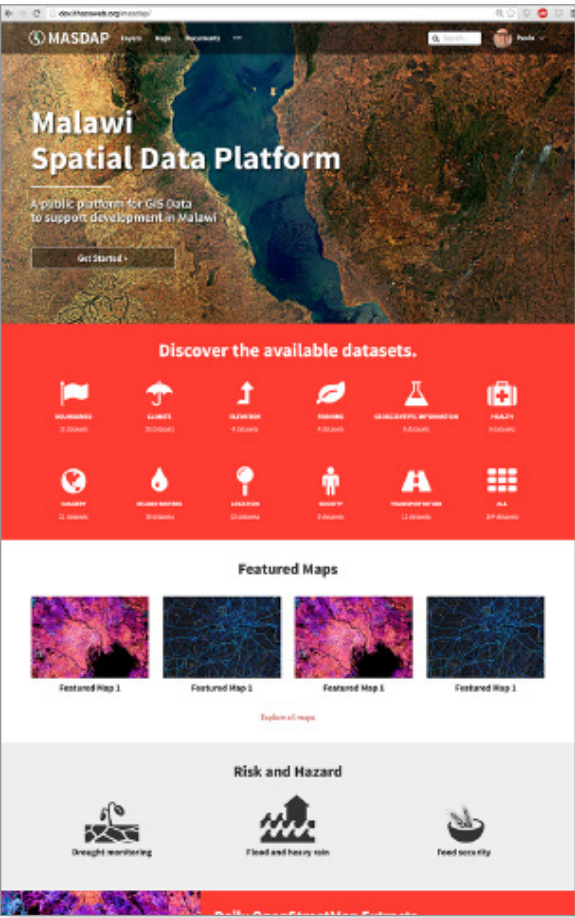
Our Healthy Massachusetts is a public health website. It "was created to provide information to Massachusetts residents on the health status of their communities, as well as high-quality data to decision makers and communities." Their home page immediately identifies the location of concern, and identifies the site's goal.

Goal: Increase community knowledge of the health status of their community. It does this by:

- * Map with pins
- * Active surveys

Customer: non-GIS users, community residents

DEV.ITHACAWEB.ORG/MASDAP/

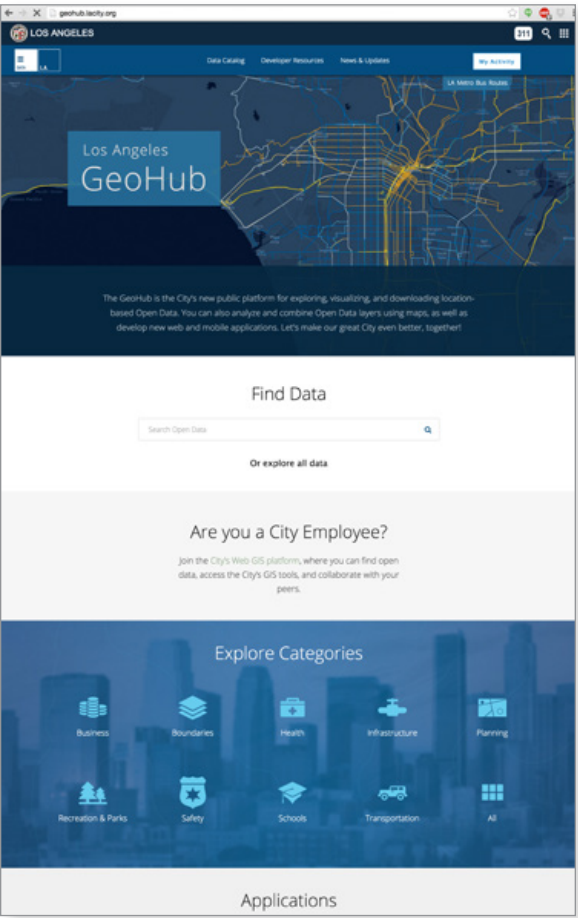


Malawi Spatial Data Platform is Malawi's GeoNode. The home page allows users to explore the data through categories, maps and risk hazards.

Goal: Provide access to GIS data.

Customer: GIS users, and general public

GEOHUB.LACITY.ORG

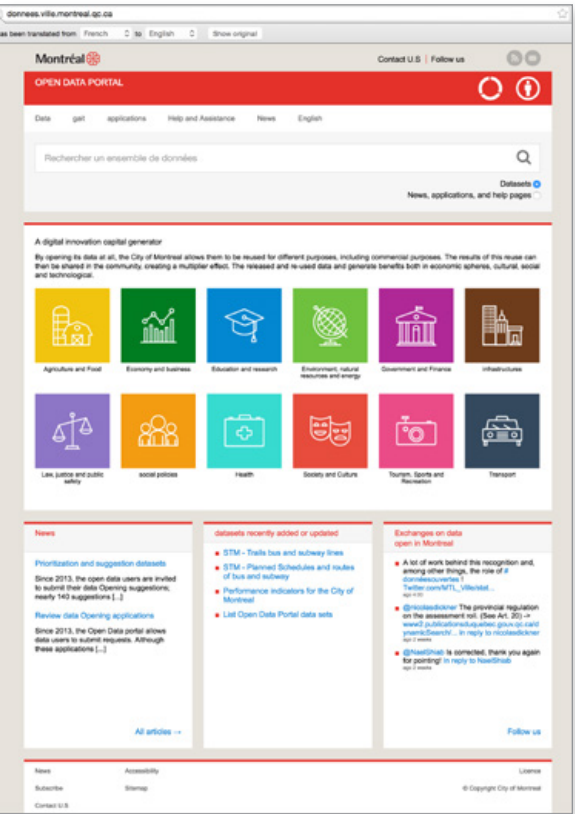


The City of Los Angeles GeoHub. This home page provides access to Los Angeles' geospatial datasets through categories, stories and applications.

Goal: Provide access to geospatial data.

Customer: city employees, residents

DONNEES.VILLE.MONTREAL.QC.CA

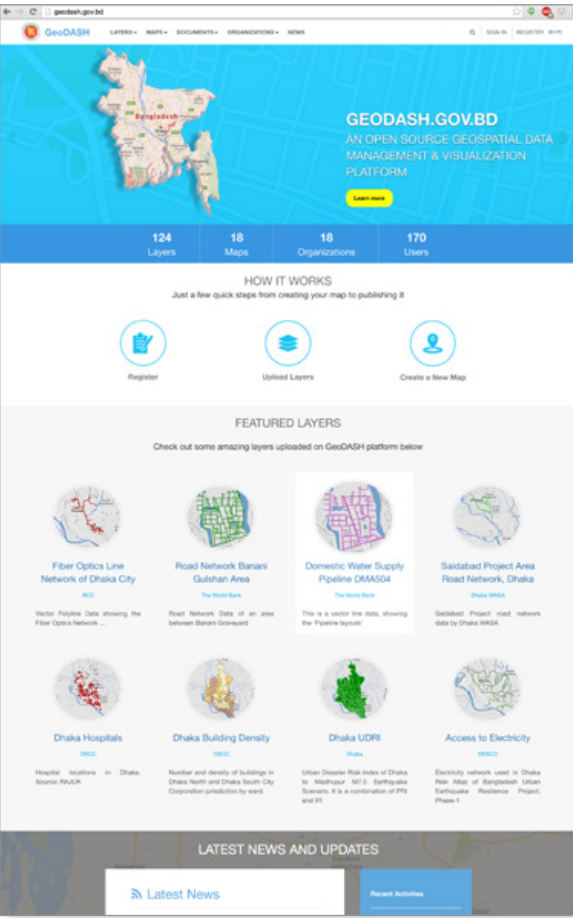


Portal Donnees Montreal provides residents access to government documents. The home page provides content by category and news articles; it also has licensing icons to immediately identify permissions to users.

Goal: provide access to government documents.

Customer: Staff and residents

GEOHASH.GOV.BD

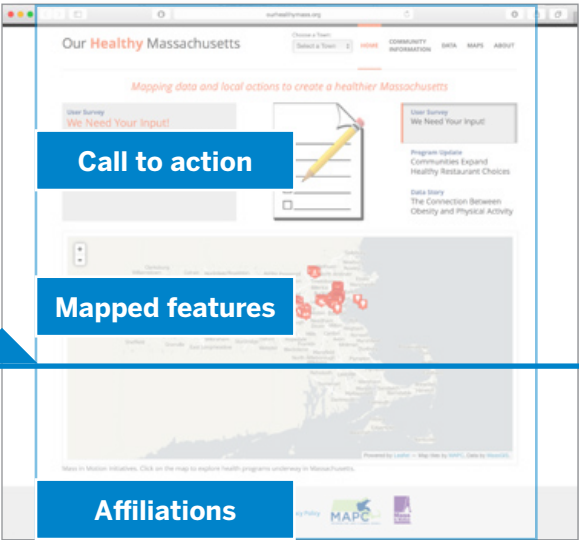


Geodash is Bangladesh's GeoNode. The home page provides an introduction, at a glance information on data volume and instructions on how to use the site. It also provides visuals and descriptions of the available datasets.

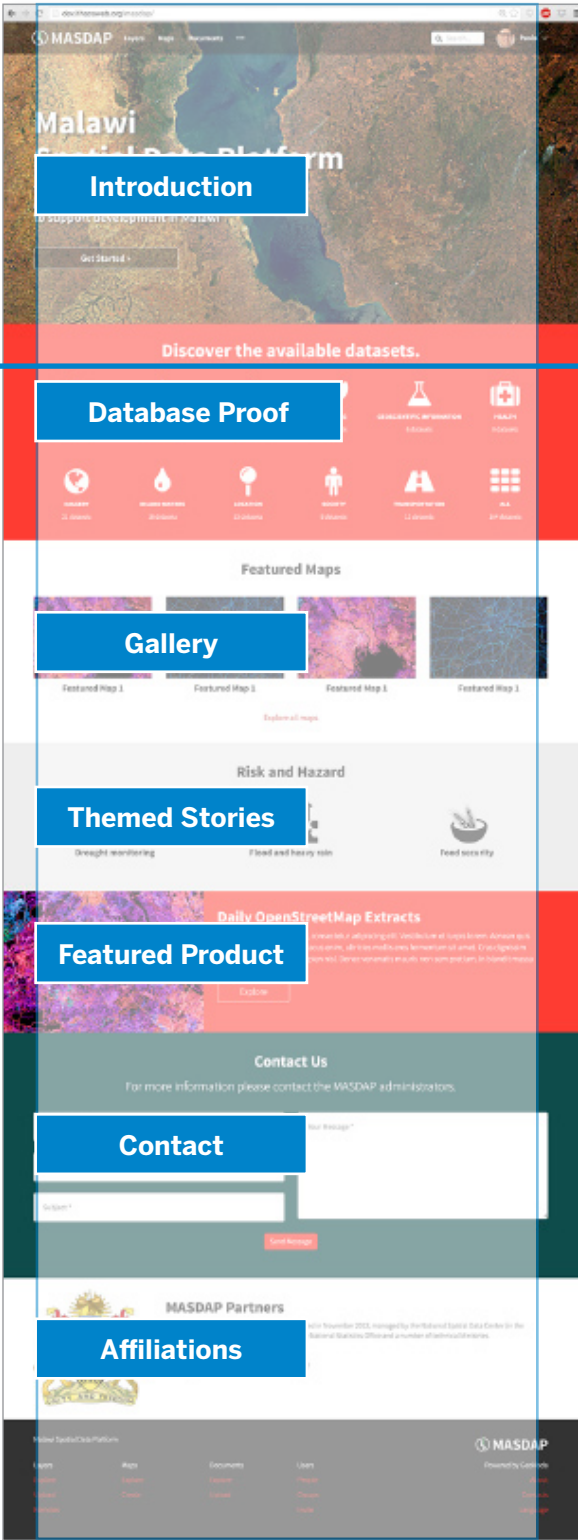
Goal: Provide access to GIS data.

Customer: GIS mappers, public

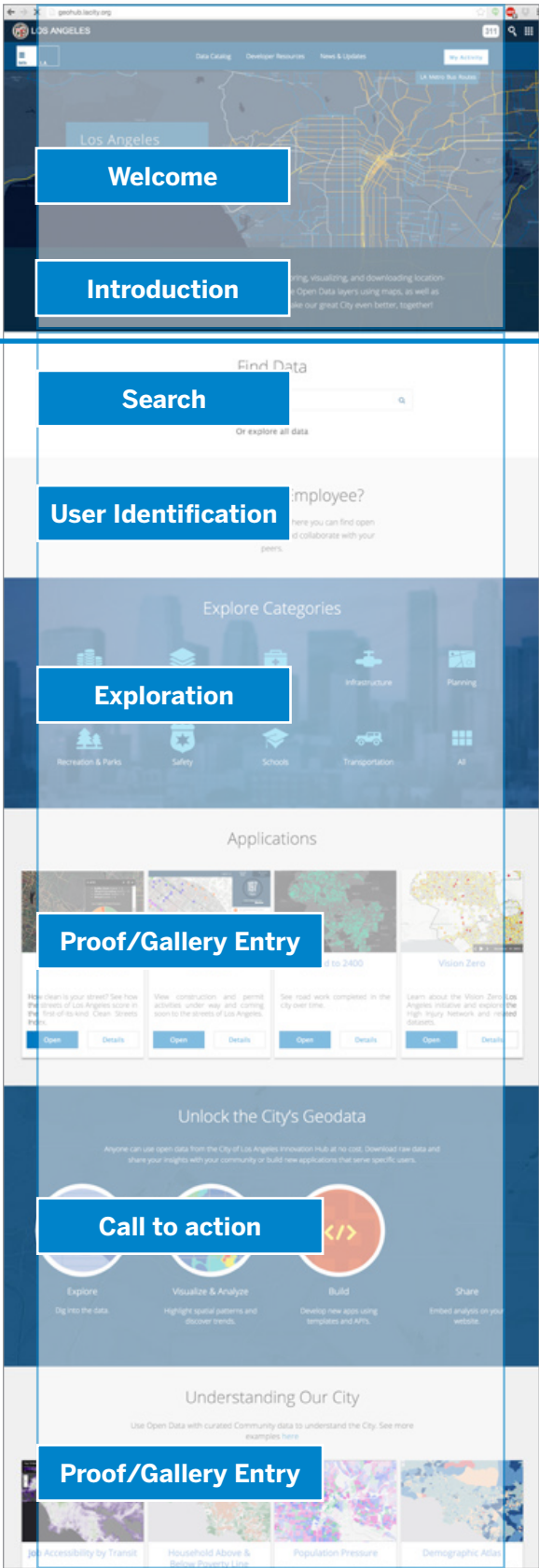
OURHEALTHYMASS.ORG



DEV.ITHACAWEB.ORG/MASDAP/



GEOHUB.LACITY.ORG



DONNEES.VILLE.MONTREAL.QC.CA



GEODASH.GOV.BD



Items "Above the Fold", visible without having to scroll.

Site Benchmarking and Analysis

Home Page Structure

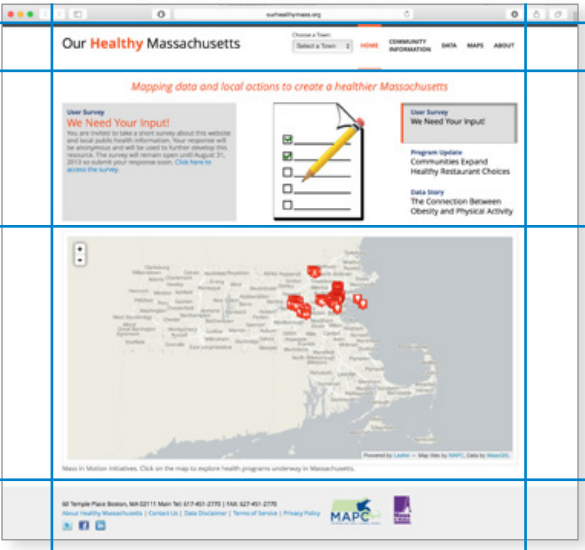
ANALYSIS

- * Pages are designed for responsive, mobile first experiences, placing all content on the home page. This runs counter to the actual use and needs of the GeoNodes.
- * Our Healthy Massachusetts (OHM) and Montreal's site are designed for desktop use. This supports GIS use cases and locations of work. OHM does not resize for mobile. Montreal's site resizes to support mobile users.
- * Only OHM allows for immediate exploration of mapped data.
- * Blogs, news and stories are important modes of communicating content and GIS features.

RECOMMENDATIONS

1. Incorporate blog and text story tools.
2. Provide an alternate template that is focused on desktop use.
3. Responsive sites should redesign page elements for mobile use when used on mobile devices.

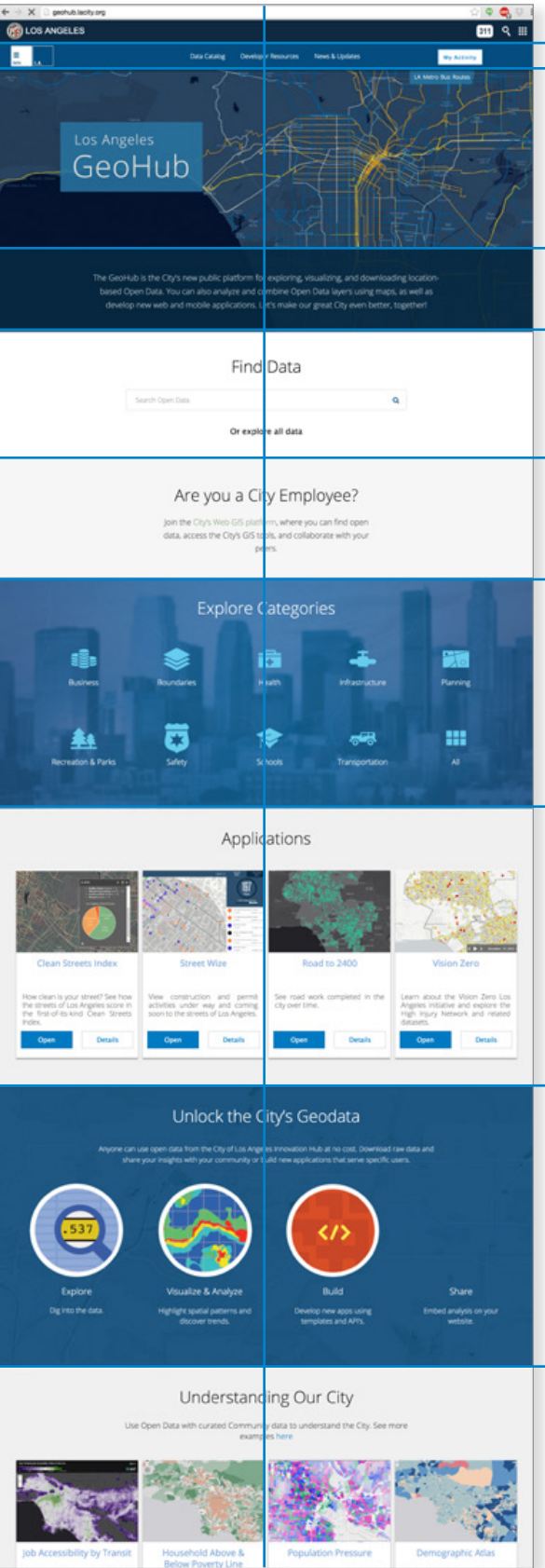
OURHEALTHYMASS.ORG



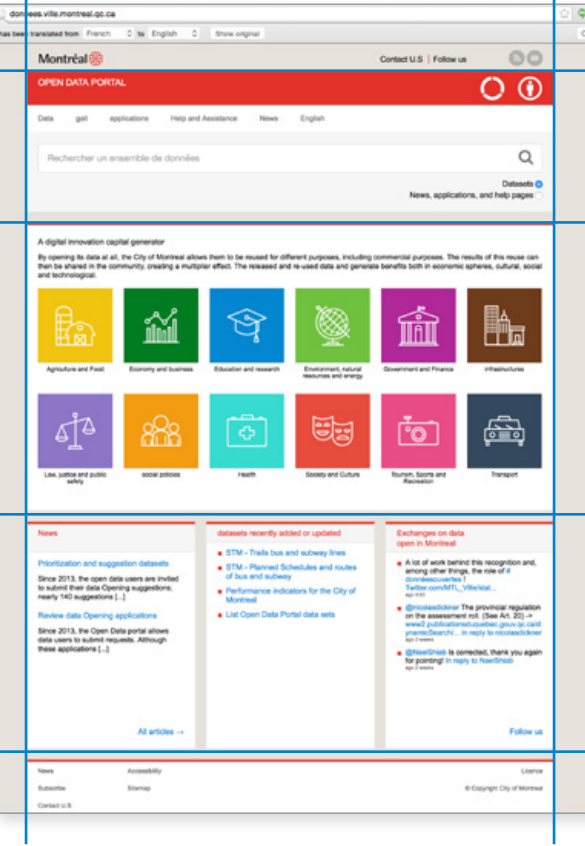
DEV.ITHACAWEB.ORG/MASDAP/



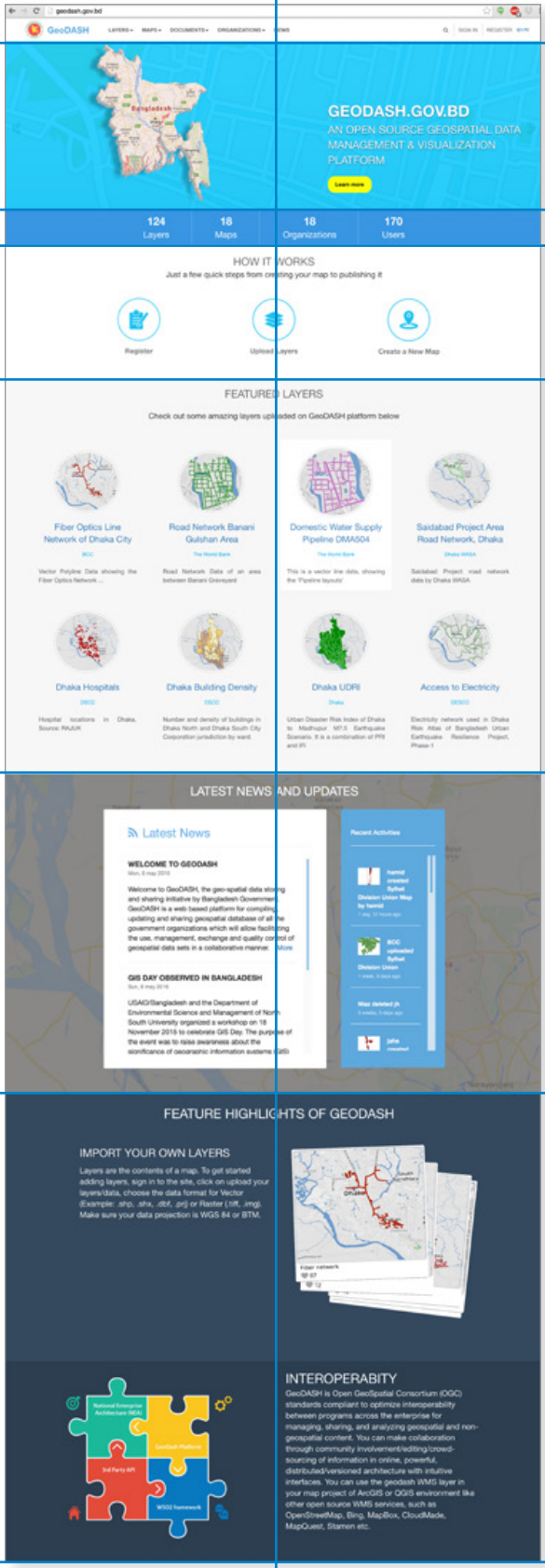
GEOHUB.LACITY.ORG

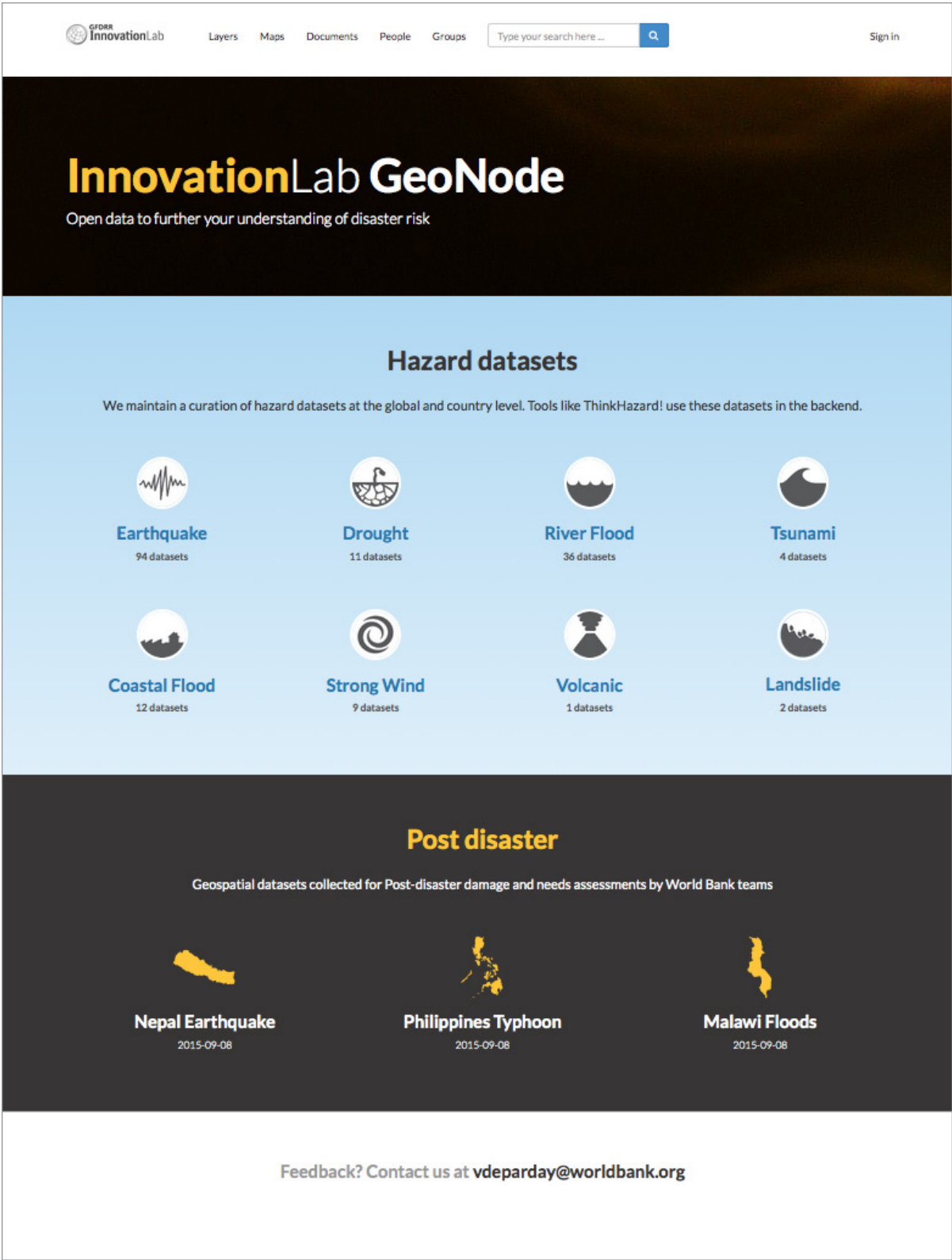


DONNEES.VILLE.MONTREAL.QC.CA



GEOHASH.GOV.BD

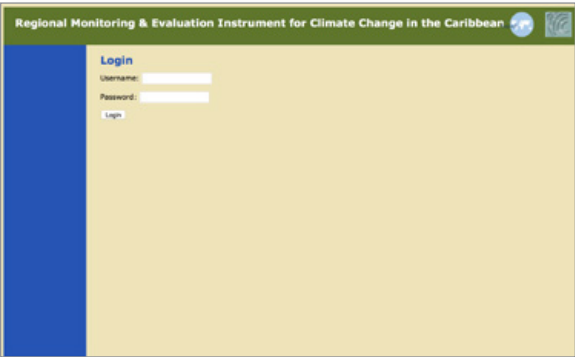




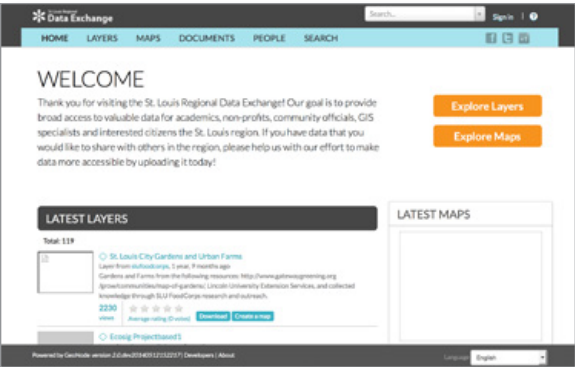
GFDRR Innovation Lab GeoNode



GeoSinager



Caribbean Climate



St. Louis Regional Data Exchange



Our Healthy Massachusetts



Risk Info

Site Benchmarking and Analysis

Alternate GeoNode Home Pages

ANALYSIS

Deployed GeoNodes take on several distinct forms that describe the ability of the GeoNode administrator's technical ability. Categorized:

- * Advanced: Going beyond what GeoNode provides
- * Managing: Manage with basic templates
- * Attempted: Barely maintained

Advanced GeoNodes

These GeoNodes have gone beyond what GeoNode provides. They have created additional tools such as blogs and map stories; and have changed the navigation and page layouts to suit their specific needs. Examples of this include Our Healthy Massachusetts and UMap.

Managing GeoNodes

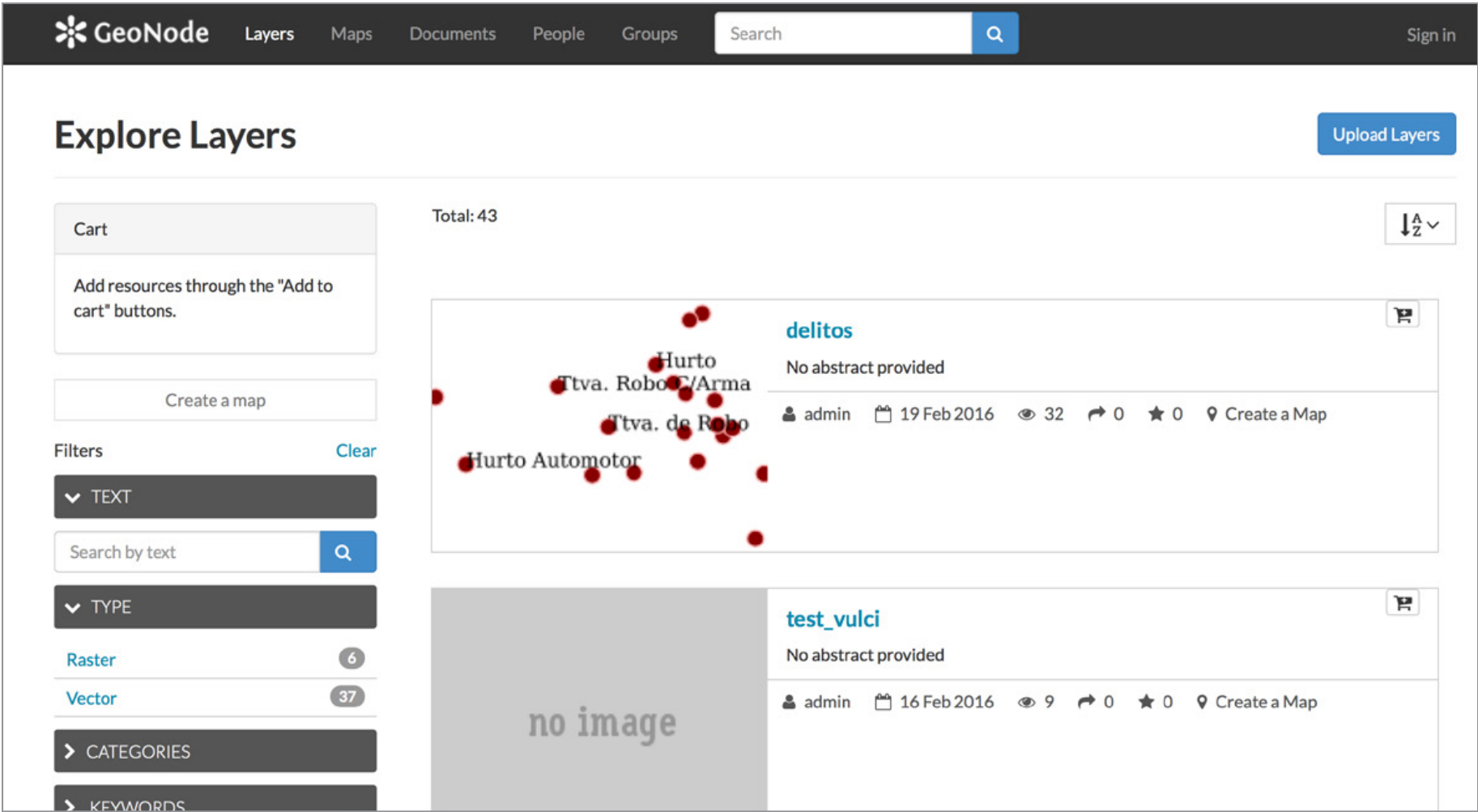
These GeoNodes focus on adding their GIS content, they are managing with the basic templates provided by GeoNode. These GeoNodes will have some changes to the home page but keep the remaining pages the same. Examples of this include GeoSinager and Risk Info.

Attempted GeoNodes

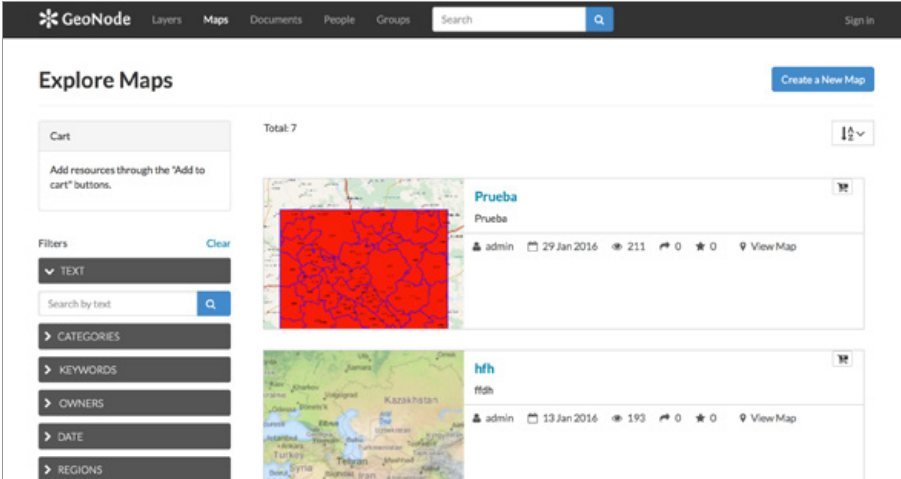
These GeoNodes have minimal content and are barely maintained. Often they have GeoNode 1.0 or 2.0 but with few changes.

Others

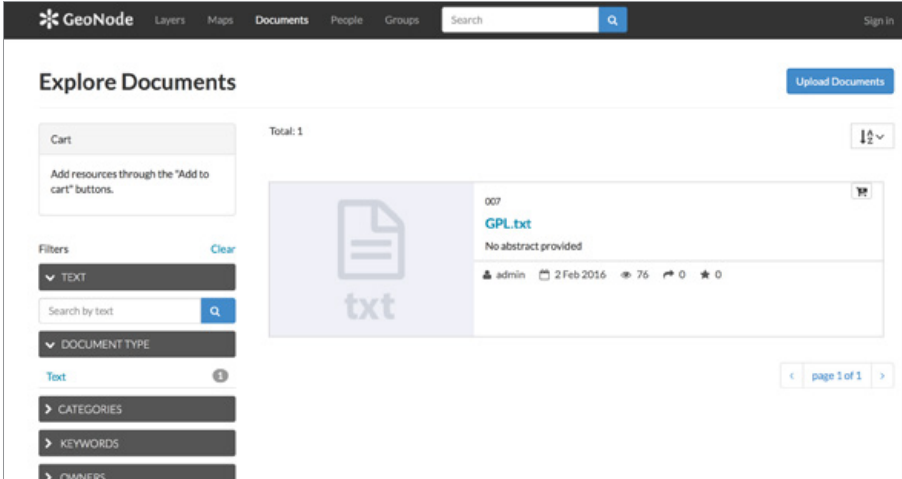
Some country GeoNodes utilize a secure front page.



Layers Main Page



Maps Main Page



Documents Main Page

Explore Catalog (Layers)

	Best practices	
HEURISTIC ANALYSIS	Yes/No	Notes
Feedback: Visibility of system status	N	Feedback from file selection does not function as user expects.
Natural Language + Order: Match between system + the real world	N	Filter titles do not have enough information to support knowing.
Consistency + Standards	N	Similar to other pages within GeoNode; Does NOT fit best practices within other catalog systems.
Visible + Obvious: Recognition not recall	N	Icons and buttons are too small, have no color differentiation and are poorly located to support easy recognition.
Flexibility + Efficient Use	N	It is not an efficient use of space.
Relevance + Constraints: Aesthetic + minimalist	Y	
Emergency Exits: User control and freedom	N	Choosing multiple files and downloading those files does not support emergency exits ore recovery
Error Prevention	N	
Recovery: Help users recognize, diagnose, + recover from errors	N	
Help + Documentation	Y	Documentation exists, but not on the page.

PAGE GOALS:

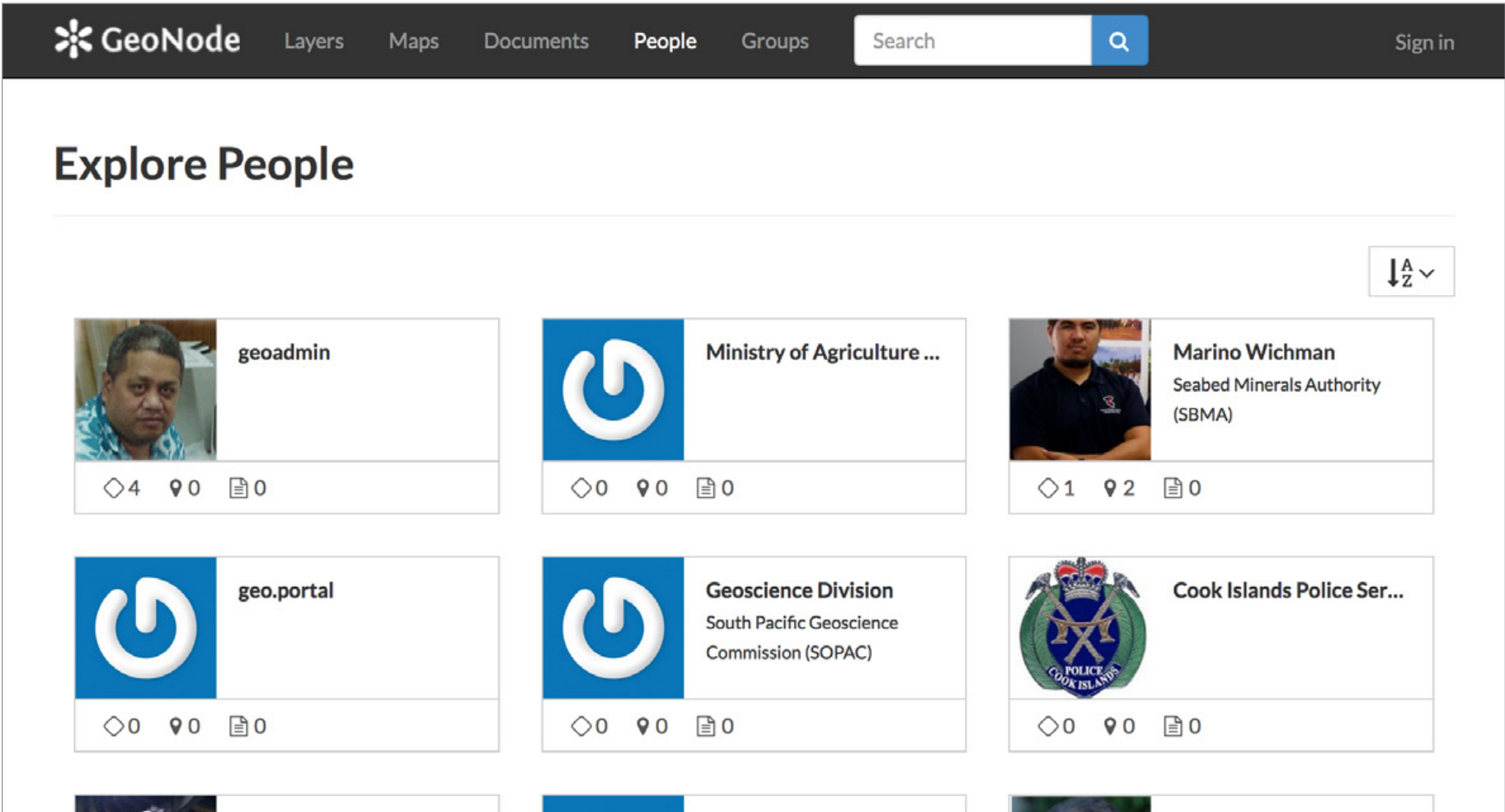
- A. Identify and select file for download.
- B. Enable browsing of files.
- C. Enable filtering of files.
- D. Enable file download.
- E. Enable knowing what files exist.

RECOMMENDATIONS

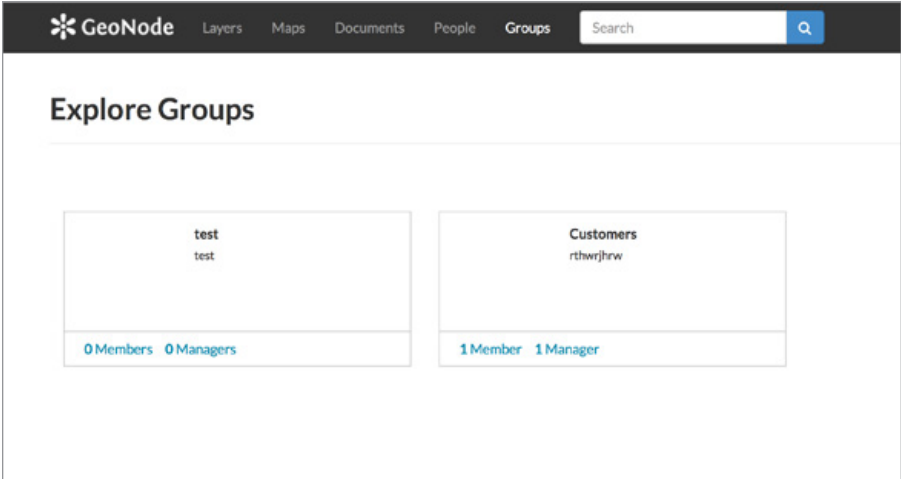
1. Provide multiple ways to view the catalog and search results (card, thumbnail, list, etc.).
2. Add differentiation between functions (filter, search, cart, catalog).
3. Provide layer templates to maximize visual understanding of the content.
4. Change the main view if there is no content in the metadata. Use a more condensed view to support user need to find their content, and eliminate wasted space.
5. Support identifying useful content through more visual metadata: add color, change the size, evaluate the icons for meaning.
6. Allow for filtering by users or groups.
7. Fix the cart functionality.

ANALYSIS

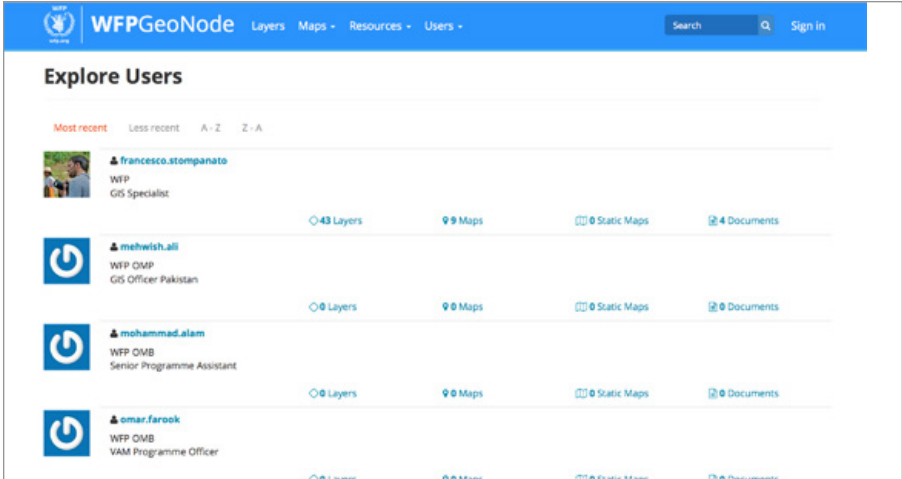
- * Color palette overpowers the catalog thumbnails. Thumbnails have the ability to overwhelm the page due to the color and parameters of the layer.
- * Thumbnails lack visual emphasis and poorly articulate the item.
- * Item metadata does not provide a significant visual impact to cause engagement.
- * The term 'cart' does not relate to the task at hand. Recommend changing terms or making connection more obvious.
- * The item takes up too much visual space without a benefit to the user.



People Main Page



Groups Main page



People and Groups

HEURISTIC ANALYSIS	Best practices	
	Yes/No	Notes
Feedback: Visibility of system status	Y	Provides details on user behavior and activity.
	N	Does not indicate lead or administrator role.
Natural Language + Order: Match between system + the real world	Y	
Consistency + Standards	Y	Fits with user expectations
Visible + Obvious: Recognition not recall	N	Icons and buttons are too small, and have no color differentiation to support easy recognition.
Flexibility + Efficient Use	N	It is not an efficient use of space.
Relevance + Constraints: Aesthetic + minimalist	Y	
Emergency Exits: User control and freedom	N	
Error Prevention	Y	
Recovery: Help users recognize, diagnose, + recover from errors	Y	
Help + Documentation	Y	Documentation exists, but not on the page.

PAGE GOALS:

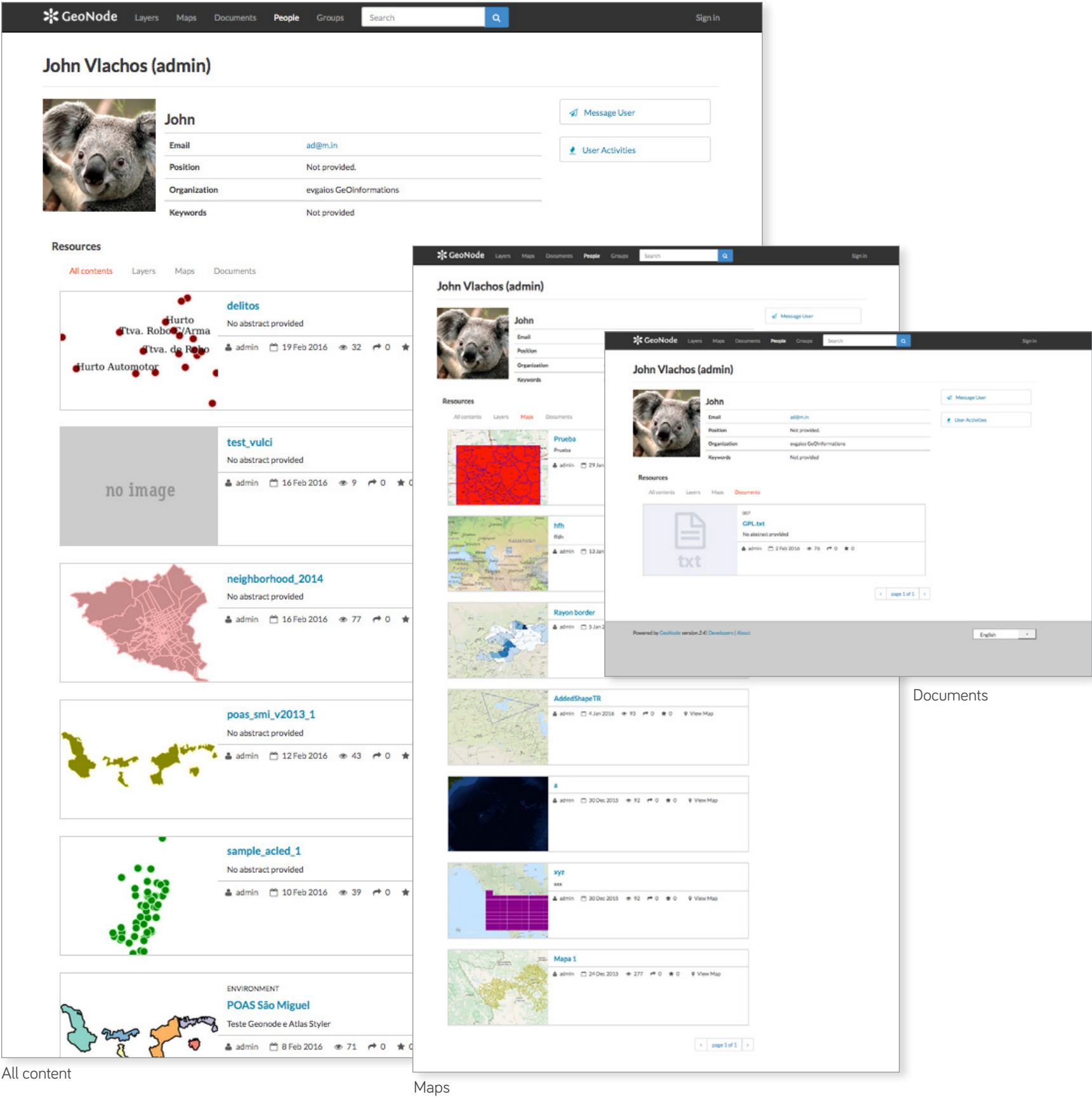
- A. Identify users
- B. Provide contact details

RECOMMENDATIONS

1. Develop a universal CSS that supports minor changes to color that enables user personalization, but does not impact readability and overall design.
2. Support users ability to affect change through several header templates that remove a user's need to know code or access to a logo that fits in the space and with the correct background.
3. Change the format of the boxes or only show the number of characters that fit in the box. Automatically resize the images to fit in the box.
4. Provide administrators the ability to assign users to groups, teams and projects.

ANALYSIS

- * When a color palette is applied it aids user comprehension.
- * Logos are impacted by the design of the header and navigation—the shape of the space available for the logo and the background color of the header.
- * The card works well when it does not have content, but does not work when content is placed in it—the size and shape changes based on character count.
- * The vertical listing of users provides a good alternative to card views.



User Profile

HEURISTIC ANALYSIS	Best practices	
	Yes/No	Notes
Feedback: Visibility of system status	Y	Provides proof of user activity. Allows for more analytics with click through
Natural Language + Order: Match between system + the real world	Y	
Consistency + Standards	N	Does not use tabbed file organization.
Visible + Obvious: Recognition not recall	Y	
Flexibility + Efficient Use	N	File organization and search is not supported.
Relevance + Constraints: Aesthetic + minimalist	N	Long thumbnail list does not support efficient use of time, or aid in finding files.
Emergency Exits: User control and freedom	Y	
Error Prevention	Y	
Recovery: Help users recognize, diagnose, + recover from errors	Y	
Help + Documentation	Y	

PAGE GOALS:

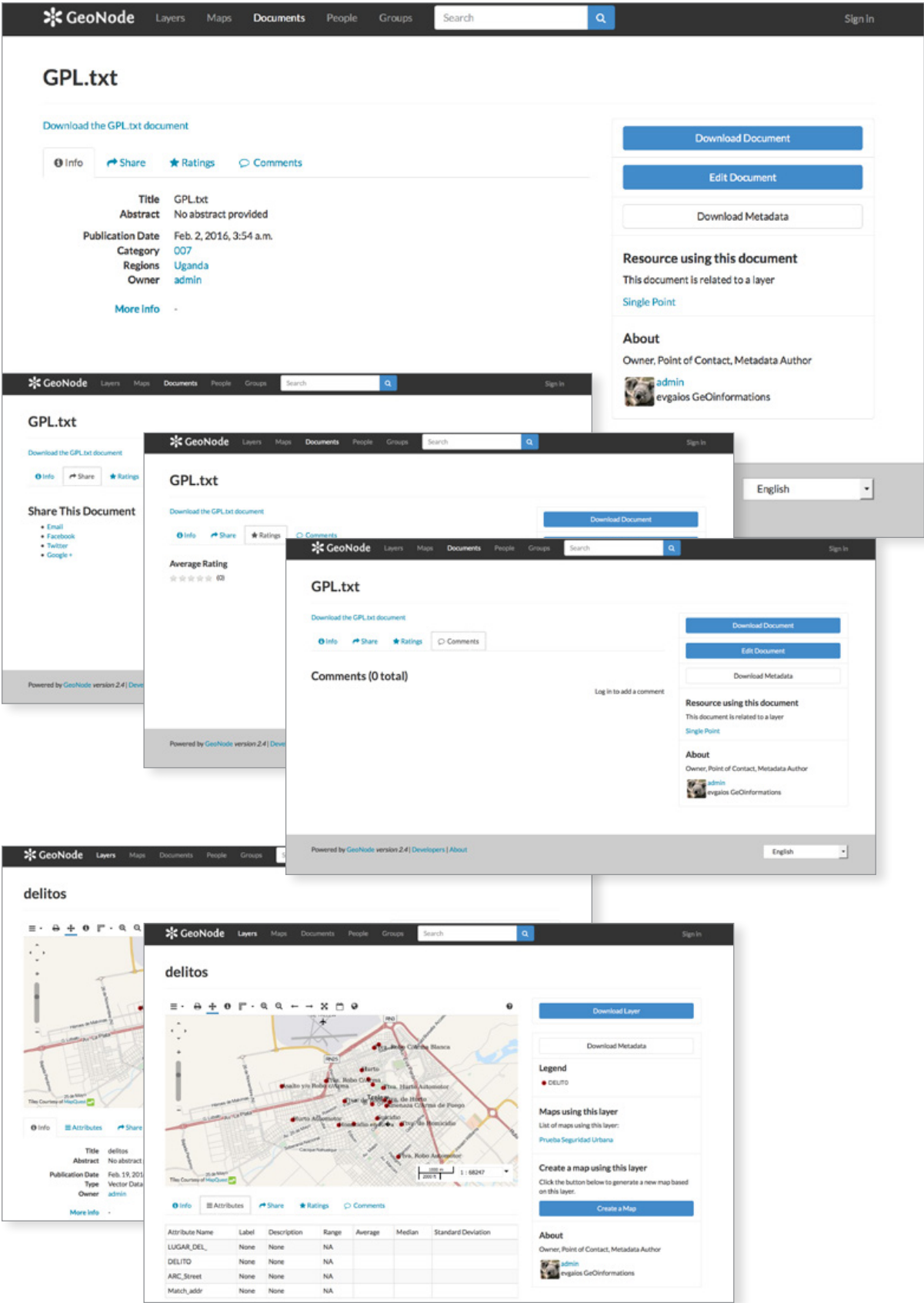
- * Identify user
- * List files uploaded by user

ANALYSIS

- * Catalog content view is treated the same regardless of document type.
- * Profile lacks separation between individual's details and content.
- * There is no feedback mechanism that tells the user how their documents are getting used.
- * The user does not have the ability to customize their presence on GeoNode. Each user is treated the same regardless of role in the platform.
- * Page design does not support search.

RECOMMENDATIONS

1. Change the page style of file format for Documents. Use a list without thumbnail.
2. Provide search and filter features for users.
3. Identify file download and share statistics. Allow for track-back to identify users.
4. Visually separate user profile details with files.



Product Detail Page

Layer, Text + Map Document Details

HEURISTIC ANALYSIS	Best practices	
	Yes/No	Notes
Feedback: Visibility of system status	Poor	File use details are difficult to find.
Natural Language + Order: Match between system + the real world	Y	Icons above file preview are not legible, read as a map composer, and do not support user needs.
Consistency + Standards	Y	
Visible + Obvious: Recognition not recall	Y	
Flexibility + Efficient Use	N	Organization through tabs does not support engaging with the content.
Relevance + Constraints: Aesthetic + minimalist	Y	Poor visual indicators and small icons create challenges to usability and understanding page purpose.
Emergency Exits: User control and freedom	N	
Error Prevention	Y	
Recovery: Help users recognize, diagnose, + recover from errors	Y	
Help + Documentation	Y	

PAGE GOALS:

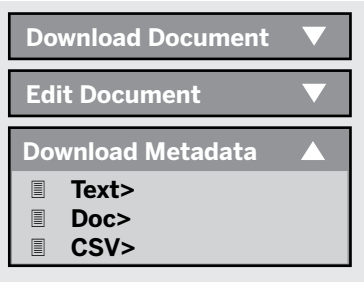
- * Describe and provide document details.
- * To provide data views.
- * To actively work with content.

OBSERVATIONS

- * Tabbed document details allows for a condensed page. This supports user need.
- * Items in tabs unnecessarily hide content that has little content, requiring the user to work.
- * 'Info' and 'About' are separated content. These two pieces of information have more in common than the 'Share' tab.
- * There is overlap in content that is separated by design. 'Resources using this document' should be in a tab and more closely related to 'Share', 'Ratings' and 'Comments'.
- * There are two Download options.
- * Map detail pages include map editing tools.

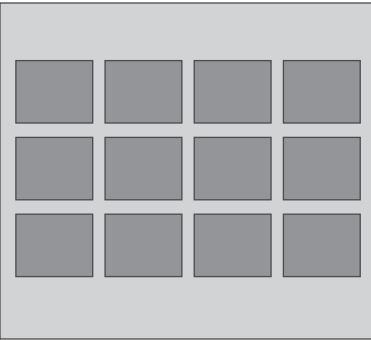
RECOMMENDATIONS

1. Combine 'Info' and 'About'; and 'Resources using this document', 'Share', 'Ratings, and 'Comments'.
2. Default to visualize display over text. Use icons to represent text (with text help on rollover).
3. Cluster similar objects/content types.
4. Make tactical actions simple and easy to find.
 - * Do not use a modal, use FAQ style functionality if there is more than one method of download.
 - * Cluster file sharing, download and similar actions within the same area.

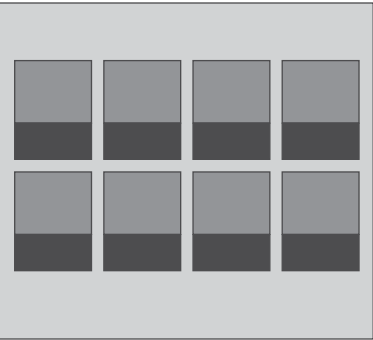


*

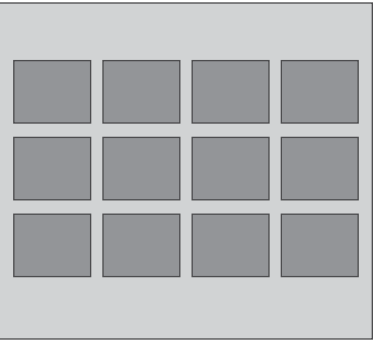
Exploration, ex. Cartodb.com



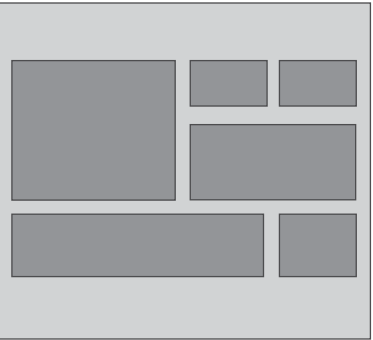
Intention, ex. Amazon.com



Structured, ex. Cartodb.com



Unstructured, ex. Ted.com



Gallery

Insights and Analysis

USER NEEDS:

- * Visual display of catalog
- * Discoverable content
- * Knowable content

GALLERY USER INTENT

Galleries are prolific on the web—found in everything from Amazon to LinkedIn. Galleries are basic content catalogs. They allow users to quickly visualize and understand site content.

User intent is a critical component of gallery display. The user’s intent will determine whether copy and metadata is necessary or if only visuals will suffice. Web galleries are designed around basic user intent, which breaks down to:

- * Exploration and discovery—‘I’m looking for something new and inspiring.’
- * Intentional search—‘I need to find X.’

GALLERY LAYOUT

Gallery designs includes unstructured and structured layouts. Structured layouts are those that follow a tight grid.

Structured layouts.

CartoDB.com uses an edge to edge square grid to display its map stories. This method works well for visuals that have disparate color palettes and an obvious start and end. This does not work well for visuals with indeterminate background and foreground colors, such as a white ground with red dots. It relies on thumbnails and the ability of the designers to control those thumbnails. This allows for exploration of random map stories.

Sony.com uses a narrow gutter within a structured grid, and adds a differentiating color ground for its retail site. Its products, headphones and camera lenses, are shown in silhouette on a colored ground. This allows for a modern display and visual differentiation between similar and paired content.

Unstructured layouts.

Ted.com utilizes a limited unstructured layout to add emphasis to trending items within its video catalog. The random structure allows for new or trending items to increase in visual prominence and new user introduction to the vast catalog of videos. They also use a gutter between images.

SHOW MORE

Galleries with extensive content are difficult to navigate and present loading problems.

- * Use ‘Show More’, and page buttons and similar tools to manage extensive galleries.
- * Allow users the option to have all the content on one page, or on multiple pages.
- * Use phased loading to minimize the amount of time users are required to wait to see content.

Gallery Filters

Filters provide users deeper access into the gallery and an understanding of what metadata exists for the content. For rich data, with multiple data points for each item, faceted filters provide the most effective filtering.

TAGGING AND METADATA

Social sharing and usage data provides feedback on an item’s usefulness to the community.

- * Use info graphics to provide at a glance ‘proof’ of document usefulness to the community.

Tagging and Categories

- * Use icons and bolder color differentiation to define categories and tags.

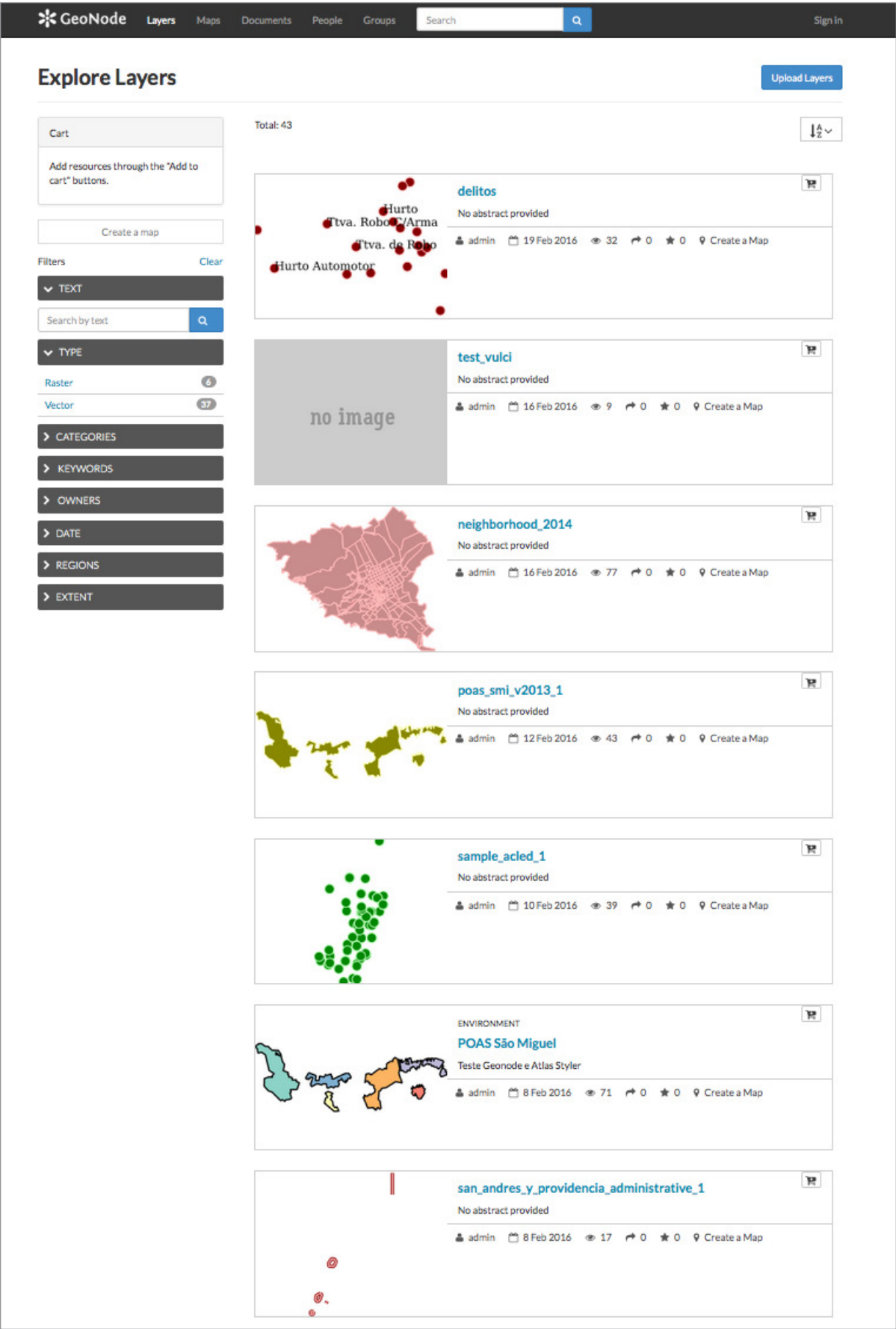
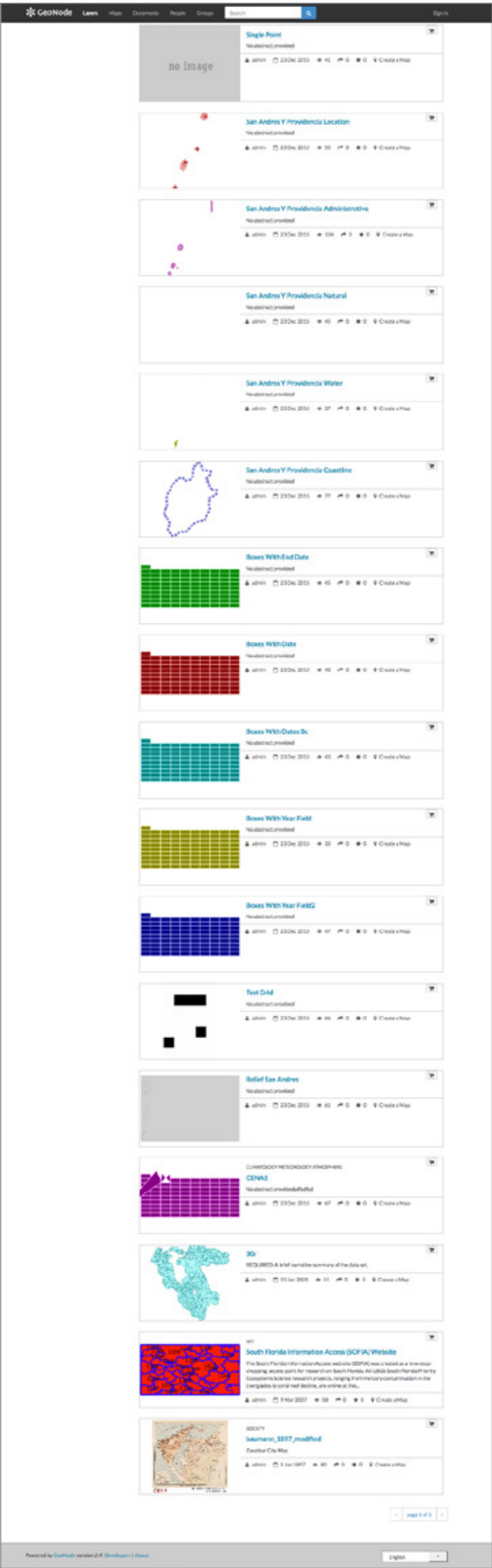
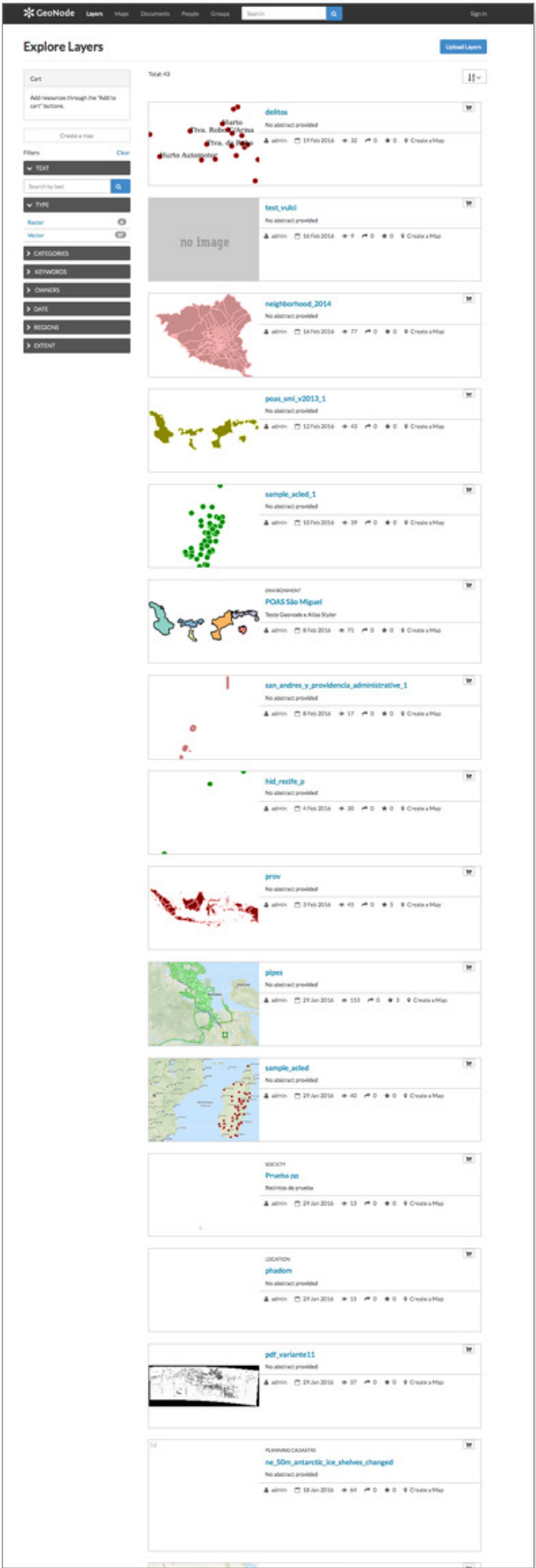
Color

- * Use color judiciously to draw focus and enable identification.
- * Use gray tones, boxes and clustering to provide distinctions between content types.

Faceted Navigation

Faceted navigation provides multiple filters, one for each different aspect of the content. Faceted navigation is thus more flexible and more useful than systems which provide only one or two different types of filters, especially for extremely large content sets. Because faceted navigation describes many different dimensions of the content, it also provides a structure to help users understand the content space, and give them ideas about what is available and how to search for it.

<https://www.nngroup.com/articles/filters-vs-facets/>



Gallery

Layers Main Page

ANALYSIS:

Format and organization

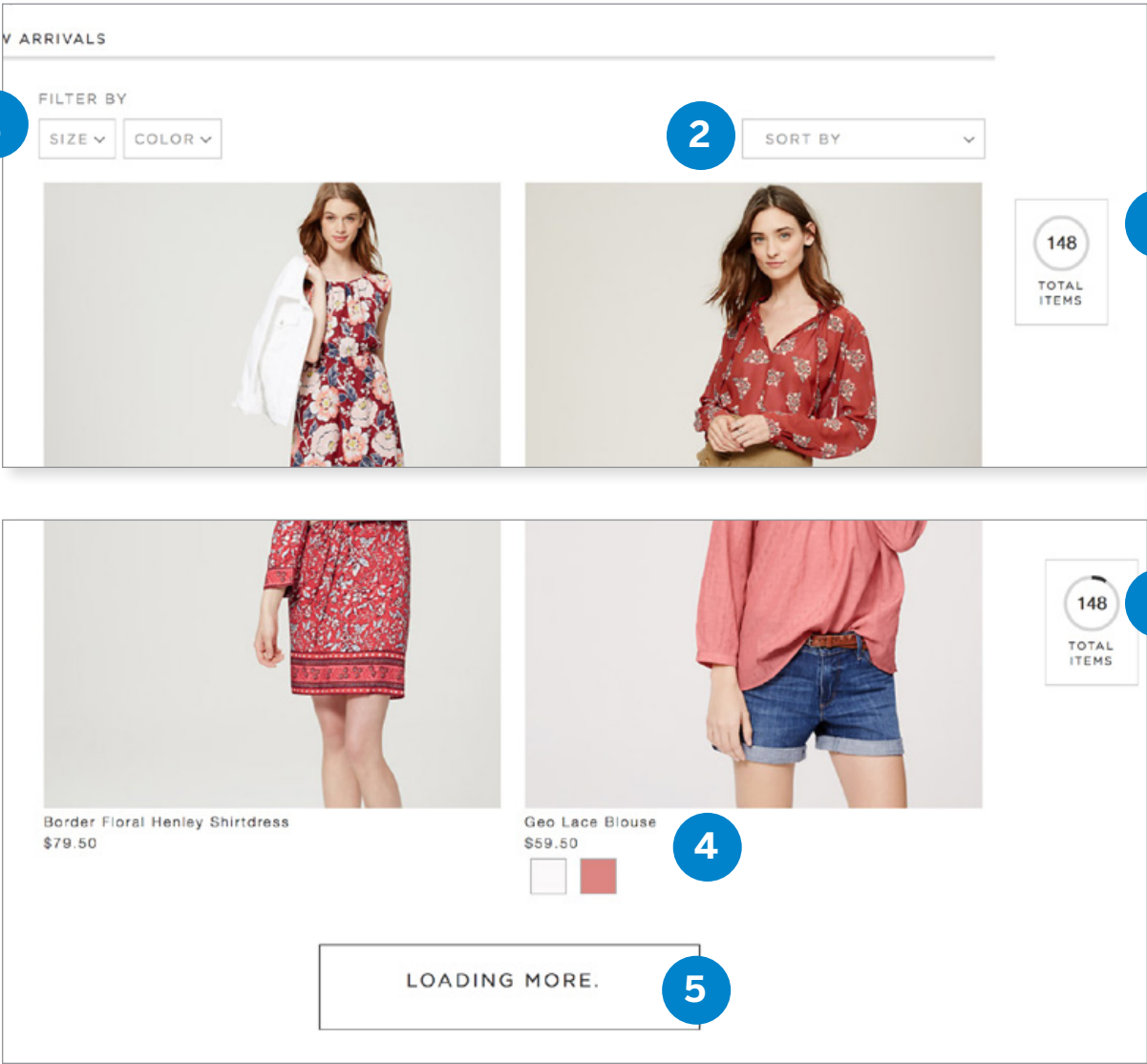
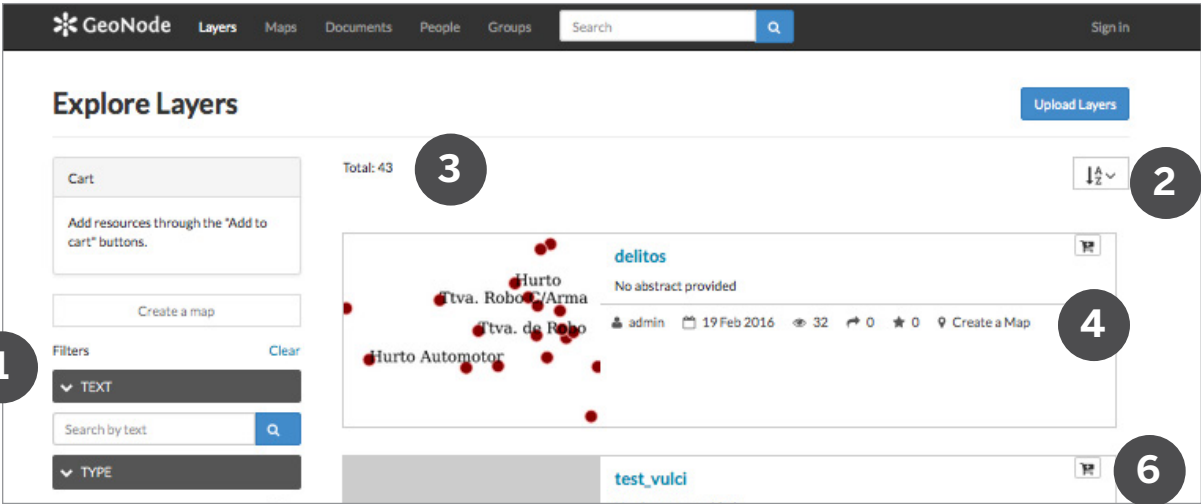
- * List format of content catalog wastes space for minimal gain. Secondary content, metadata and social sharing icons do not need the amount of room provided.
- * Main navigation content does not stay stagnant on page, resulting in multiple scrolls to re-filter and sort.
- * Unending scroll causes user fatigue especially in content that has similar properties and visuals.

Thumbnails

- * Map thumbnails lack visual impact.
- * Poor color choices for maps make ugly thumbnails.
- * Similar layer details with disparate color choices makes it difficult to differentiate between file or layer types—are they the same or not?

Visual Design

- * Minimal colors used in design elements does not support knowing.
- * Small gallery navigation (sort) icons, and gallery related text does not support navigation.

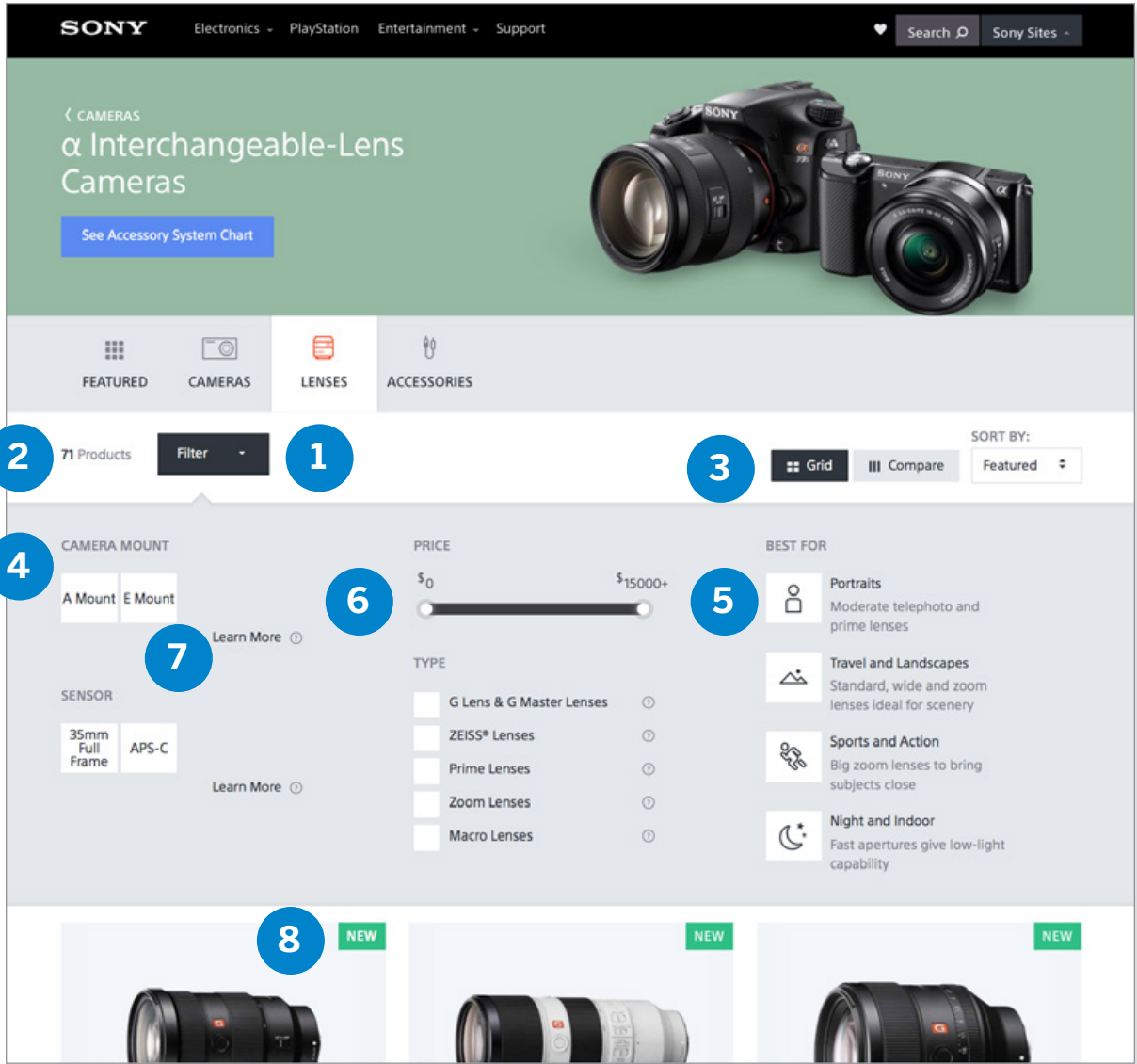
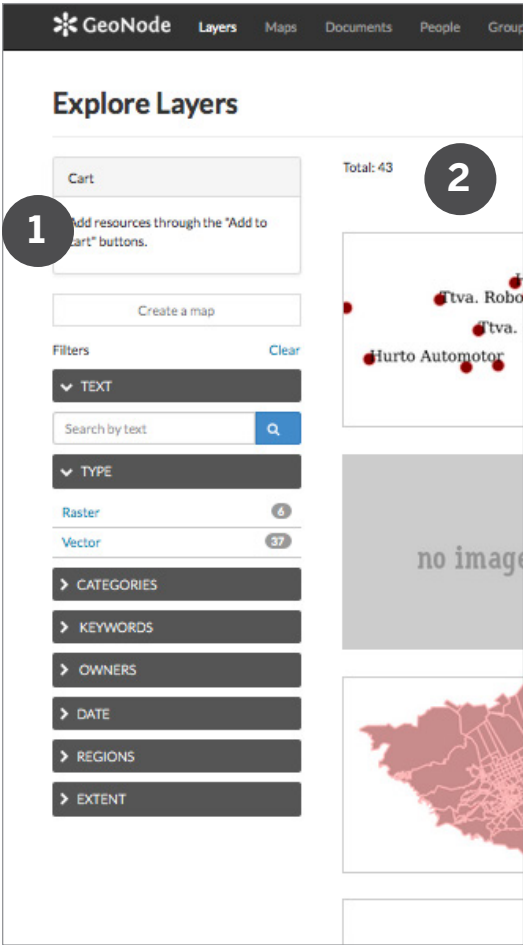


Gallery

Navigation

RECOMMENDATIONS

- 1 Minimize filter
- 2 Make sort visible
- 3 Make total files visible and location of gallery in total files knowable
- 4 Move metadata to below image and rollover.
- 5 Do not load all the files immediately. Allow user behavior to indicate need.
- 6 Move cart to more prominent location.



Gallery

Filters

RECOMMENDATIONS

- 1 Make filtering an option
- 2 Connect number of filtered files to filtering
- 3 Make visual choices obvious
- 4 Quantifiable data
- 5 Qualitative metadata
- 6 Use multiple soft and hard choices to refine search
- 7 Allow users to find a glossary or learn about an item.
- 8 Make tagging visible through color and placement

Gallery

Views Recommendations:

1. USE-BASED DISPLAY

There are two main drivers for the gallery:
Exploration and discovery—'I'm looking for something new and inspiring.'

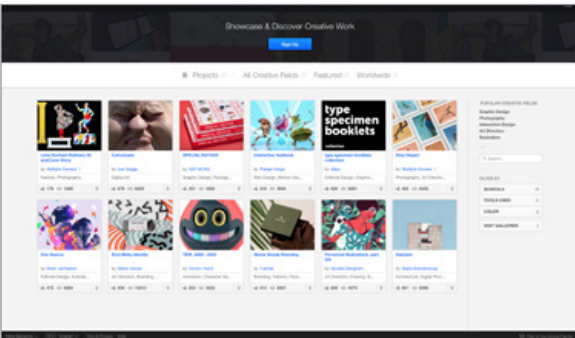
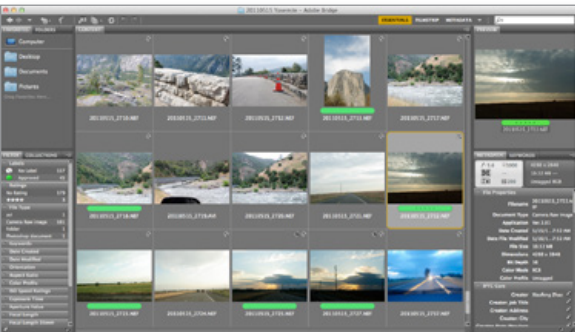
Intentional search—'I need to find x.'

Both need to be supported in the logged in state.

Features should Include:

- * Structured
- * Visible minimal metadata
- * Personalizable view

Who does it well:



INTENTIONAL SEARCH

Adobe Bridge

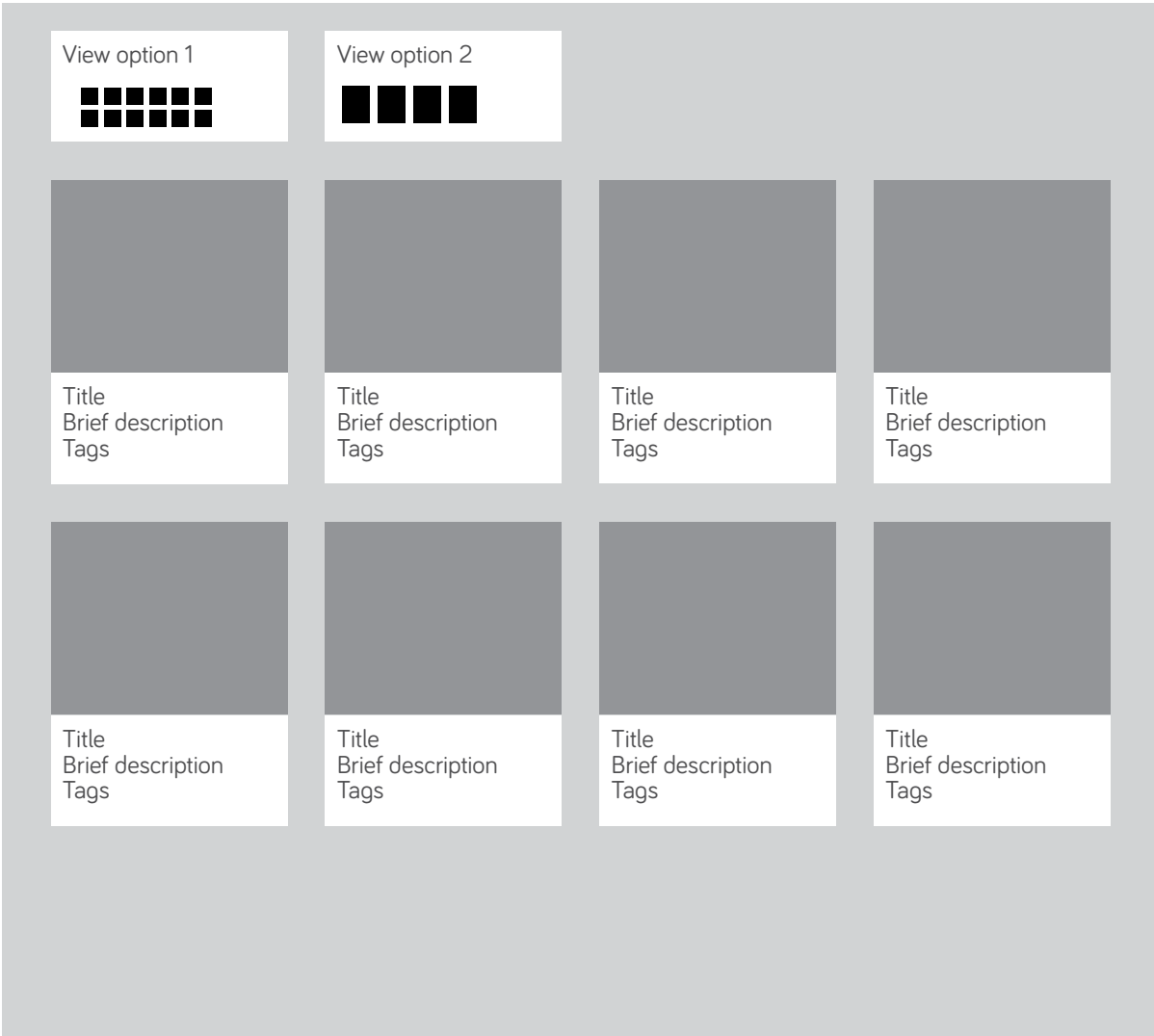
This is a file management software that allows users to visually manage their content.

Each file is indicated by location in folder, thumbnail, shortform metadata and access to more metadata.

EXPLORATION + DISCOVERY

Behance.com

Behance is Adobe's community portfolio site. The community showcases design work by individuals and teams; and offers job searches.



Gallery

Filter Recommendations:

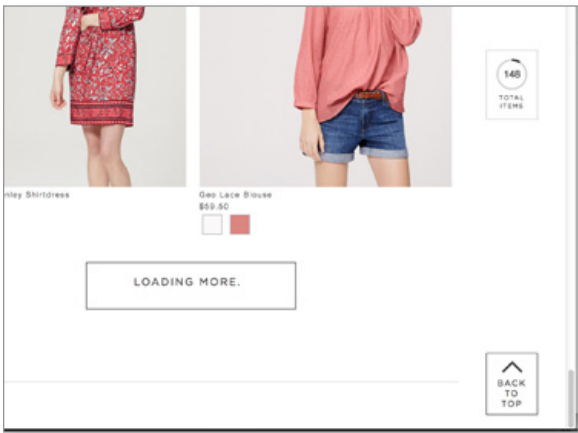
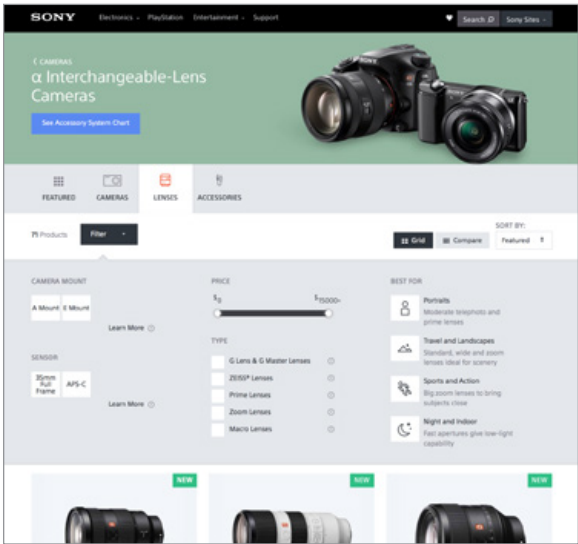
2. LIMITED AND CONTROLLED EXPLORATION: FILTER-ABLE, ON DEMAND EXPANDABILITY

Filters should provide relevant filters that support knowing what data is available. The results of a filter selection should provide users an ability to understand what type of results it will create. Do not show all of the results immediately but allow the users to enter into the results and expand them upon demand.

Features Include:

- * Relevant to user role
- * Provides user navigation cues to quantity of files that fits their criteria
- * Allows user to add more views to the page or switch to another page.

Who does it well:



Sony.com

Sony uses simple design, flat (2.0) design to effectively organize and distinguish its catalog of products.

The faceted filter is designed specifically for narrowing lenses.

- * It indicates the number of items resulting from user choices; allows for multiple views, and sort by features.
- * It is dynamic, allowing users to view results and reconfigure filters.
- * Filters offer both qualitative and quantitative choices.

Loft.com

This retail site provides users the option to see thumbnails or portraits of catalog. To support load time and user navigation it provides users an understanding of how many images a filter produced, and after the initial scroll through the loaded 10-20 items, it shows a 'loading more' indicator, and provides navigation aids to return to the top.



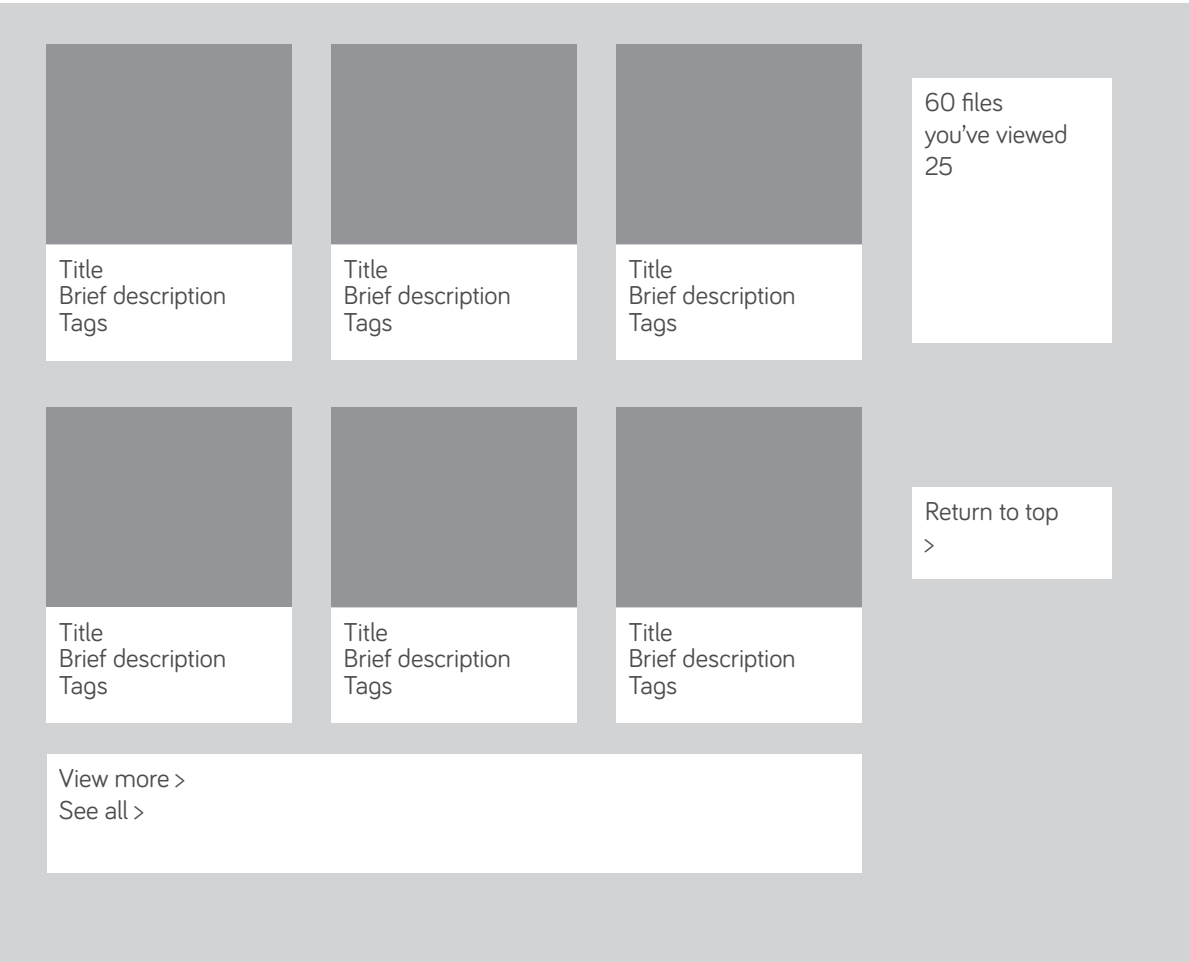
Metadata filters

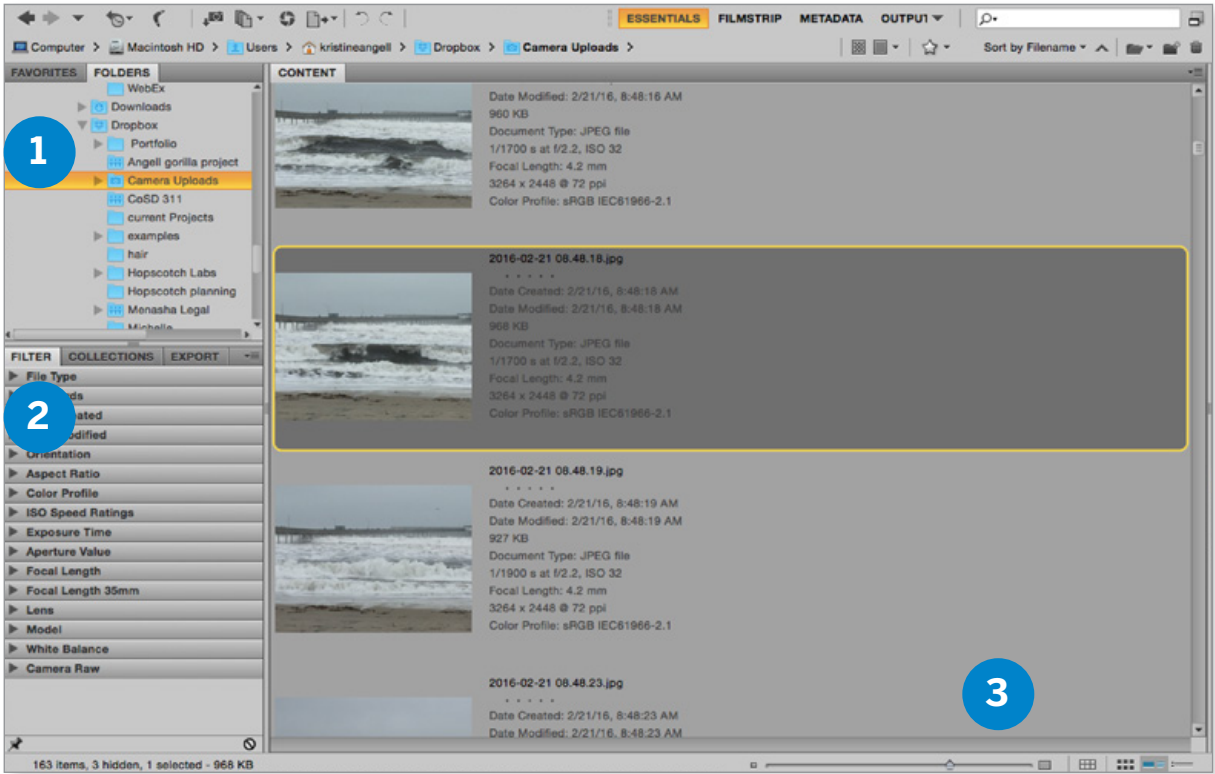
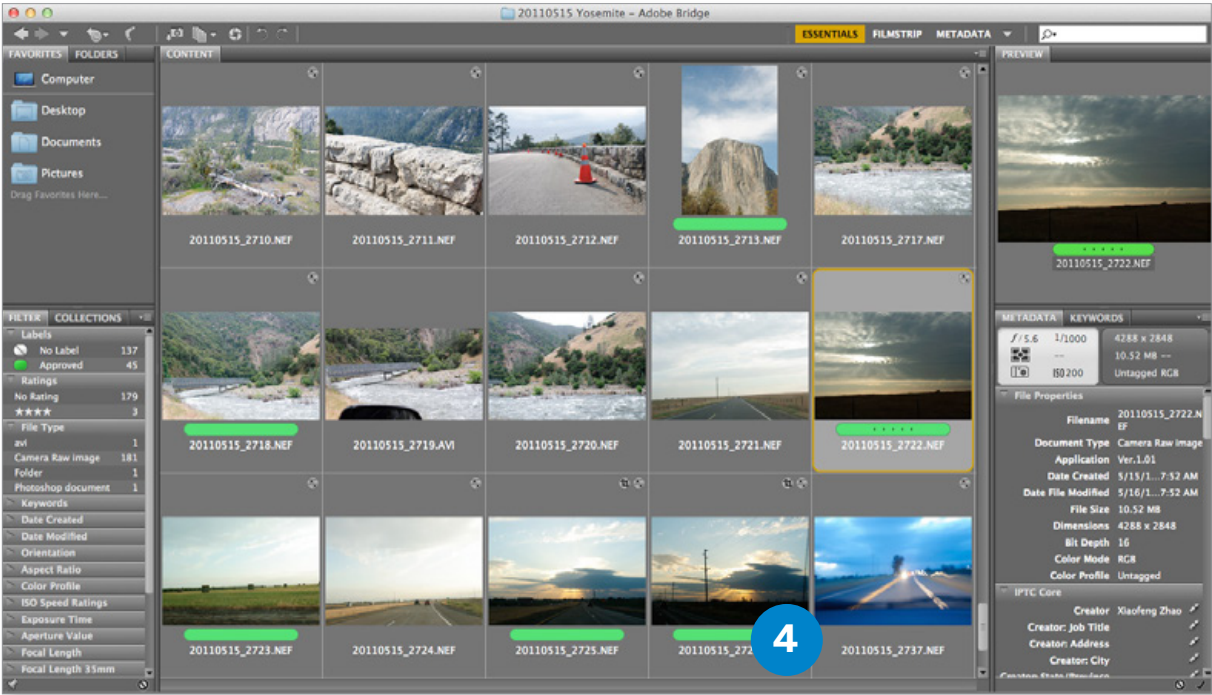
Date

Location

Type of information

Source





Benchmarking

Adobe Bridge, file management software

This is a file management software that allows users to visually manage their content.

Each file is indicated by location in folder, thumbnail, short-form metadata and access to more metadata.

INSIGHTS

- * Flexible structure enables users to engage with the content in a style and manner that fits their needs.
- * Frameworks that visualize details is best suited for working environments.
- * Flexible thumbnails support verifying good data.

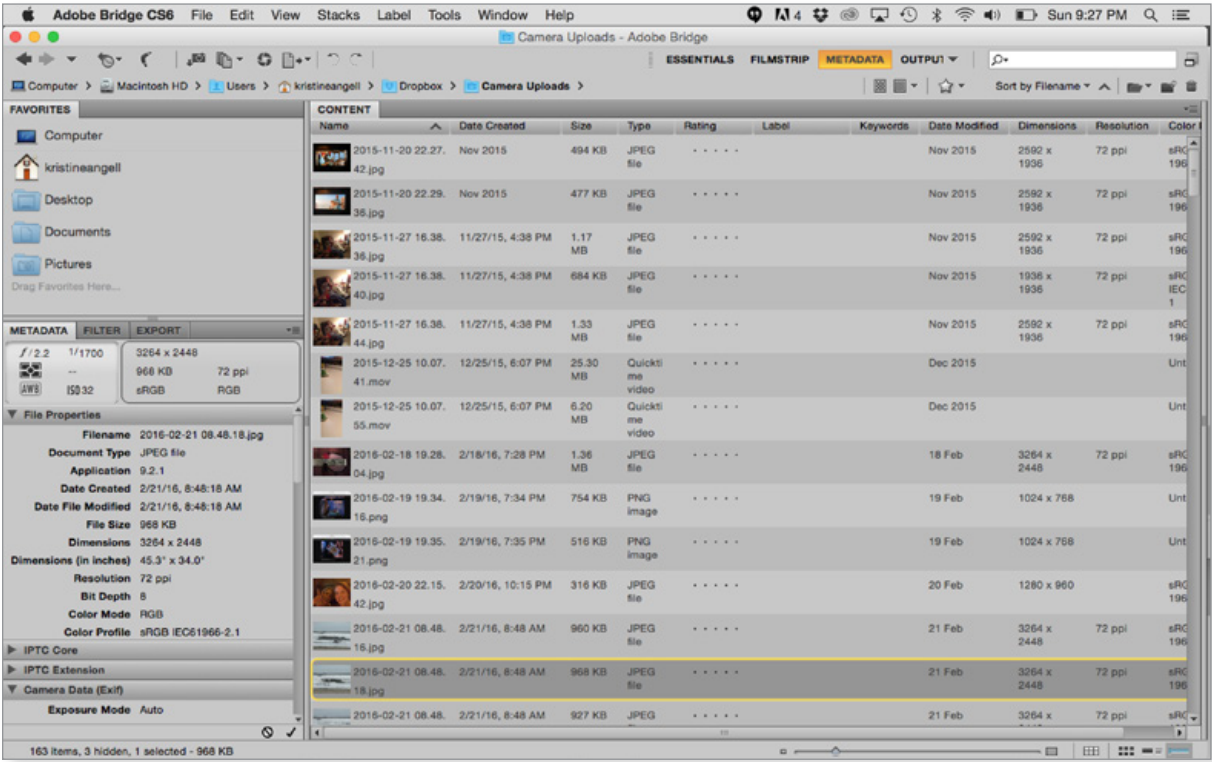
ANALYSIS

Structure

Flexible 2-3 column grid with horizontal framing navigation and content controls. Follows traditional Western layout.

Functionality

- * Provides multiple ways to view file and its content.
 - * Allows for presentation and file tagging personalization.
- 1 File location: click-able, navigable
 - 2 Metadata: editable
 - 3 View format: size and format
 - 4 File name and ranking



ArcGIS Solutions

GALLERY

COMMUNITY

SEARCH

esri

Gallery

Search Solutions Gallery

Show Me

All

Industries

Local Government

State Government

Parks and Gardens

Electric

Gas

Water

Telecommunications

Emergency Management

Defense

Command and Control

Intelligence

Operational Readiness

Cross-Country Mobility

Defense

ArcGIS Predictive Analysis Web

Defense

Range Cards

Defense

Vehicle Commander

Defense

GeoEvent Extension Components for ArcG

Defense

Sun Position Analysis

Defense

Command and Control

Intelligence

Operational Readiness

Products/Applications

ArcGIS for Desktop

ArcGIS Runtime

Collector for ArcGIS

Esri Maps for Office

GeoEvent Extension

Operations Dashboard for ArcGIS

Web AppBuilder for ArcGIS

Web Applications

Model Organization

Category

Data Management

Field Mobility

GeoEnablement

Operational Awareness

Planning and Analysis

Community Engagement

Vehicle Commander

Defense

GeoEvent Extension Components for ArcG

Defense

Sun Position Analysis

Defense

Image Change Detection

Defense

Vehicle Check Point

Defense

Patrol Data Capture

Defense

Geonames Locator

Defense

Image Observables

Defense

National Security Basemaps

Defense

Top

ArcGIS Solutions

GALLERY

COMMUNITY

SEARCH

esri

Community

ArcGIS Solutions

Connect with your peers, Esri Partners, and the teams at Esri dedicated to helping you increase the value of GIS in your organization.

Local Government

GeoNet

Blog

Videos

ArcGIS Ideas

Github

Twitter

State Government

GeoNet

Blog

Videos

ArcGIS Ideas

Github

Twitter

Emergency Management

GeoNet

Blog

Videos

ArcGIS Ideas

Github

Twitter

Water

GeoNet

Blog

Videos

ArcGIS Ideas

Github

Twitter

Esri Support

If you need help implementing one of the solution maps or apps in your organization, contact Esri Technical Support via live chat, phone, or email.

Esri Technical Support

Professional Services

Esri Professional Services can help you quickly configure and deploy solution offerings and the ArcGIS Platform necessary to support the solutions.

Esri Professional Services

Rent a Tech Services

Project Services

Partners

Explore a gallery of complementary partner applications that extend the solution, or find an implementation partner that can help you deploy one or more maps and apps in your community.

Esri Partners

Training

Browse a collection of training classes to learn more about the latest ArcGIS tools and tips to make your solution implementation go more smoothly.

ArcGIS Training Classes

ArcGIS Online Training

Instructor-Led Training

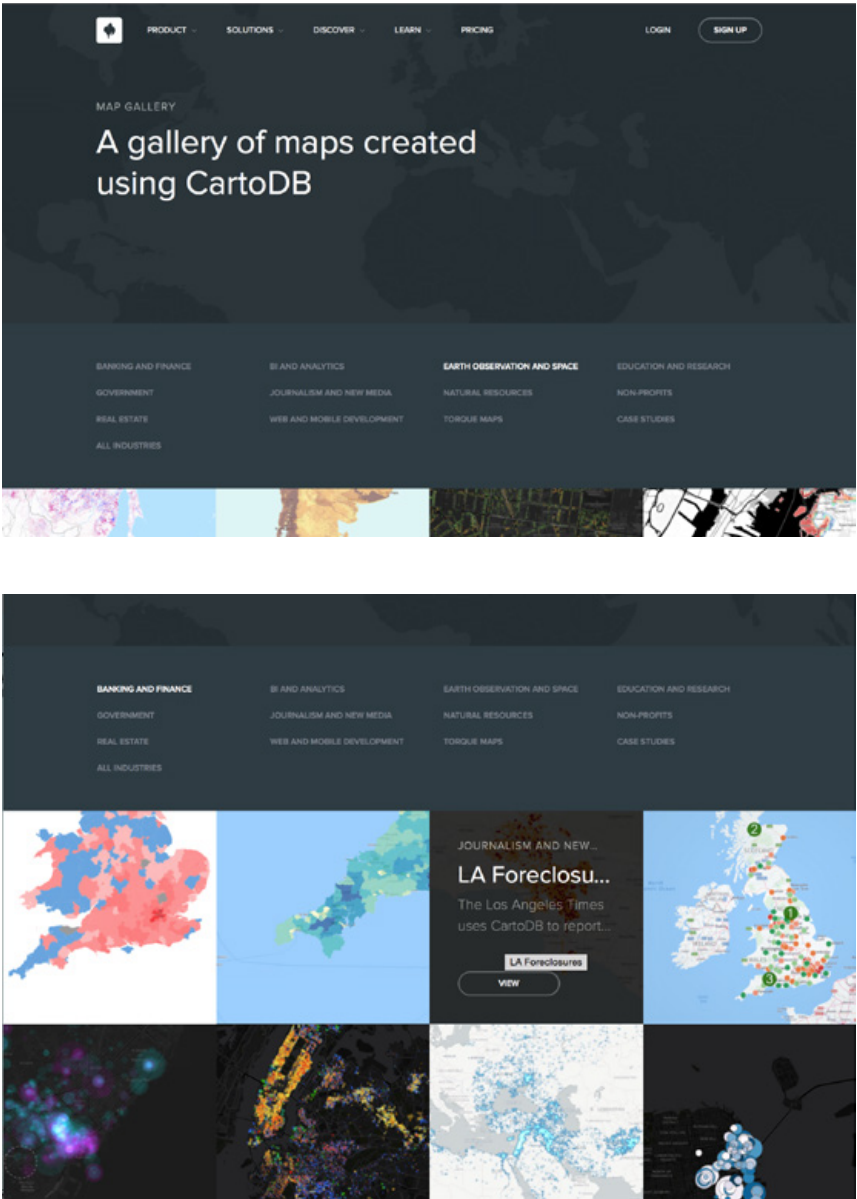
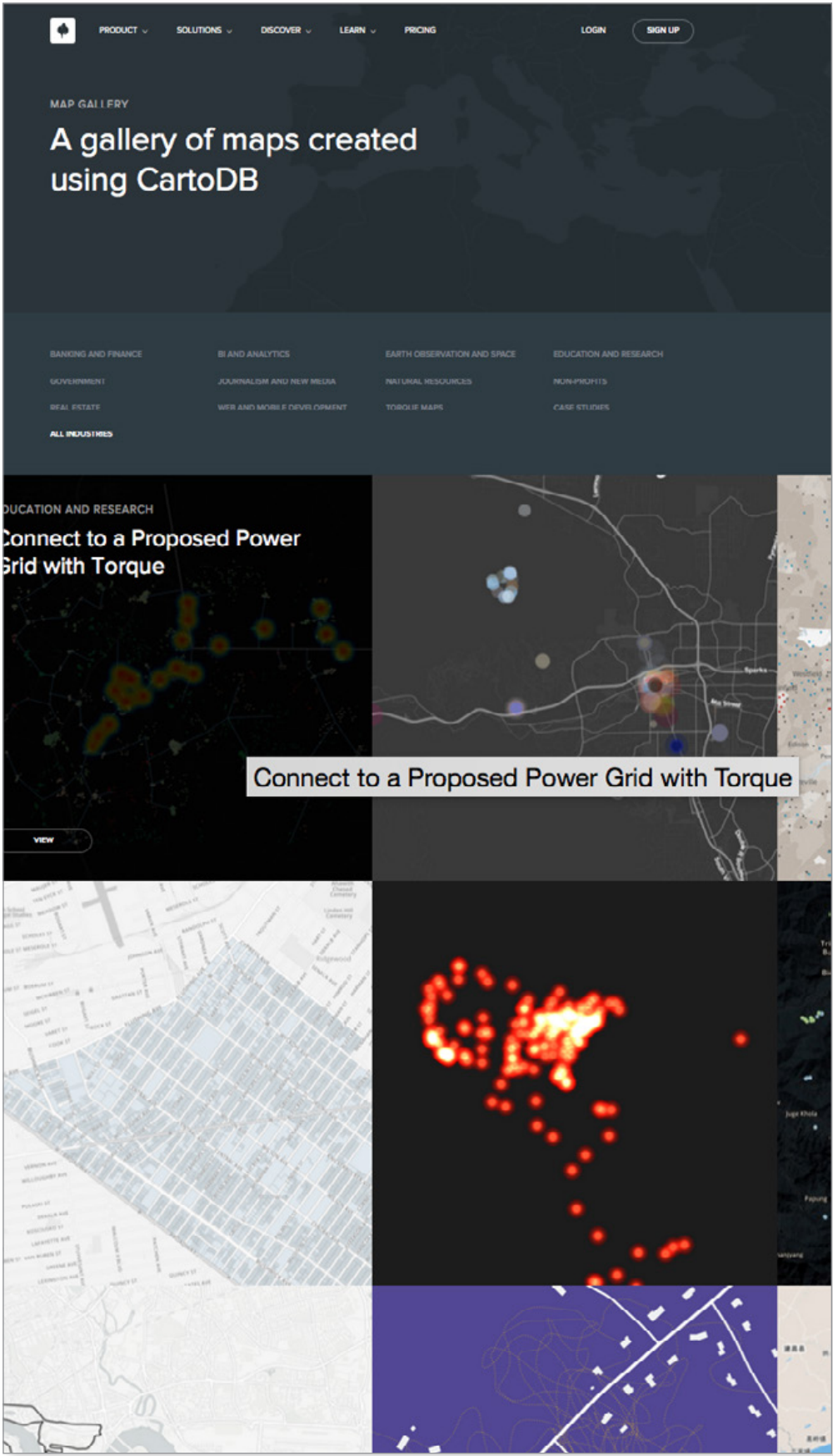
Benchmarking

ArcGIS

ArcGIS uses a structured grid with minimal product details. A left column allows for dynamic filtering.

COMMUNITY

The ArcGIS Solutions Community utilizes cards with tagged items to indicate community features.



Benchmarking

CartoDB

This online gallery for CartoDB, a mapping and storytelling tool, allows users to filter by map content, to visualize the versatility of the tool, and hover for more details.

INSIGHTS

- * Structured tiles work well with disparate visual images, poorly with images of indistinct content.
- * The lack of metadata supports general public, those more interested in exploration.

ANALYSIS

Content

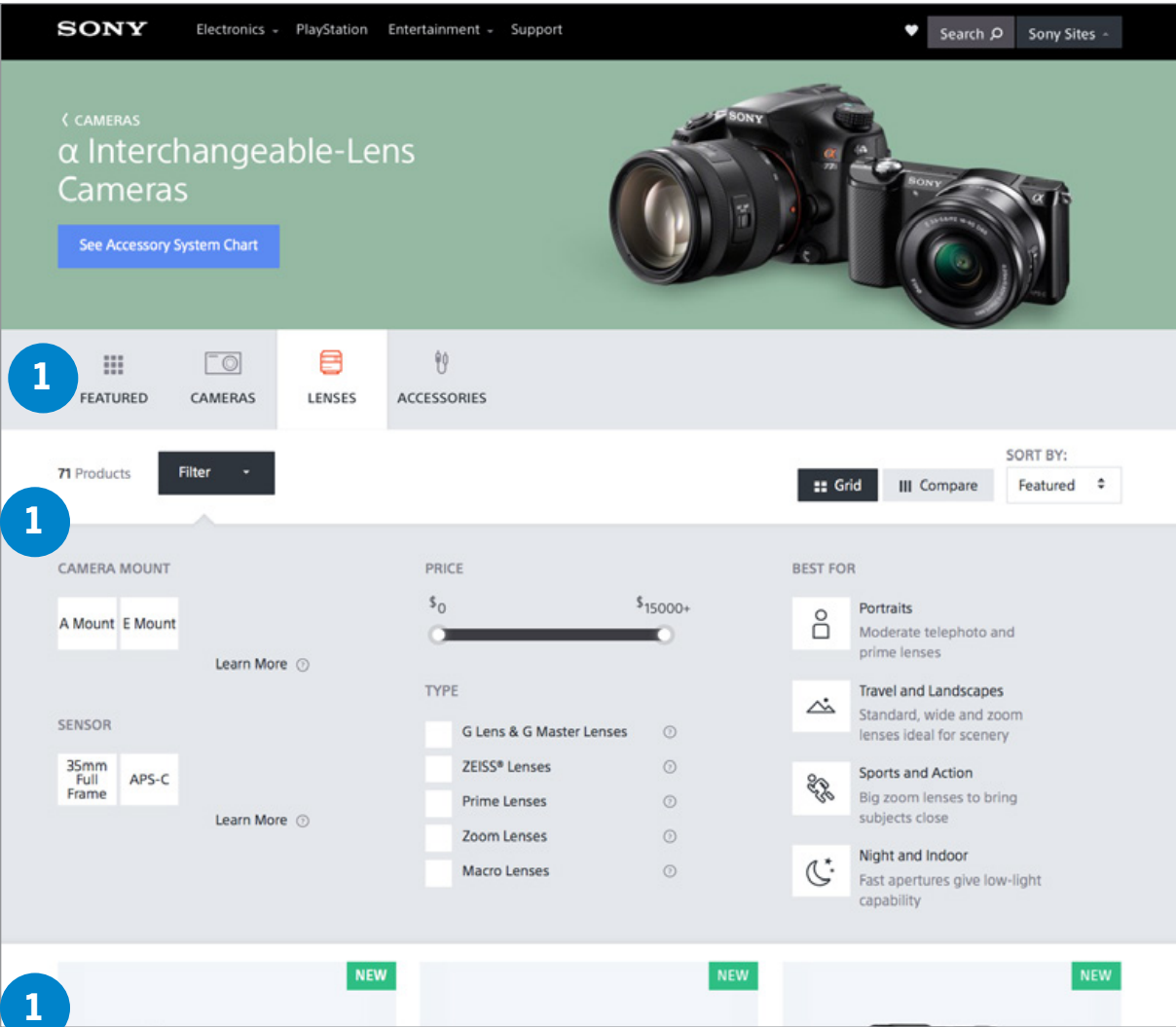
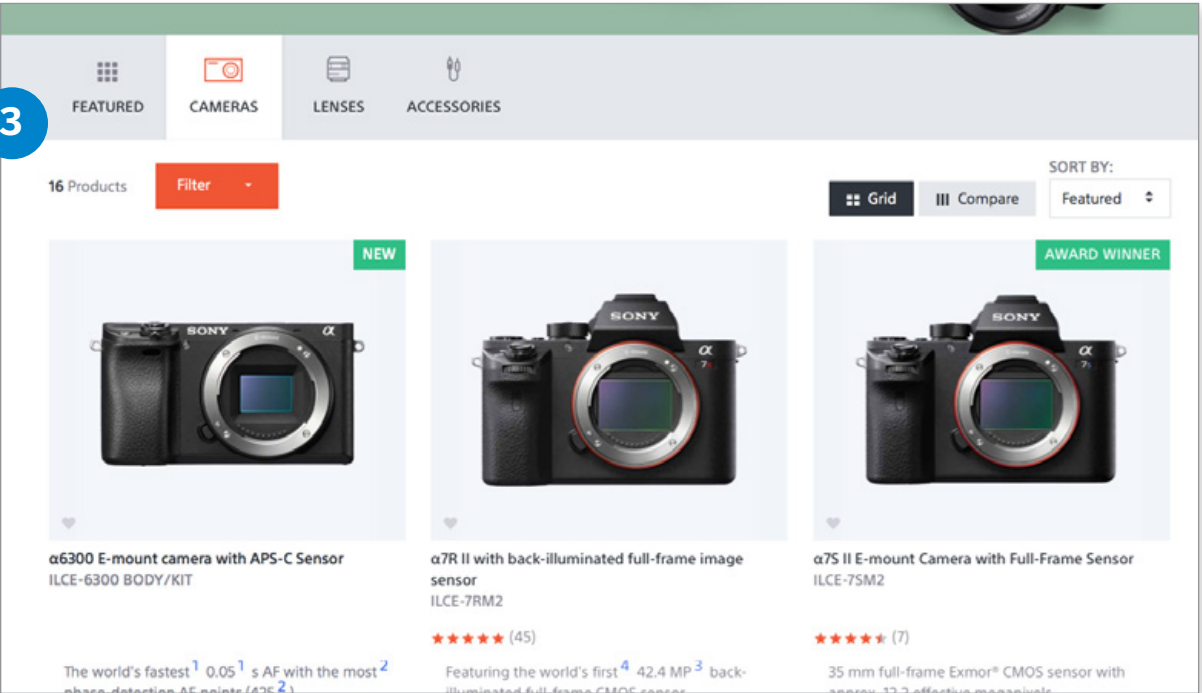
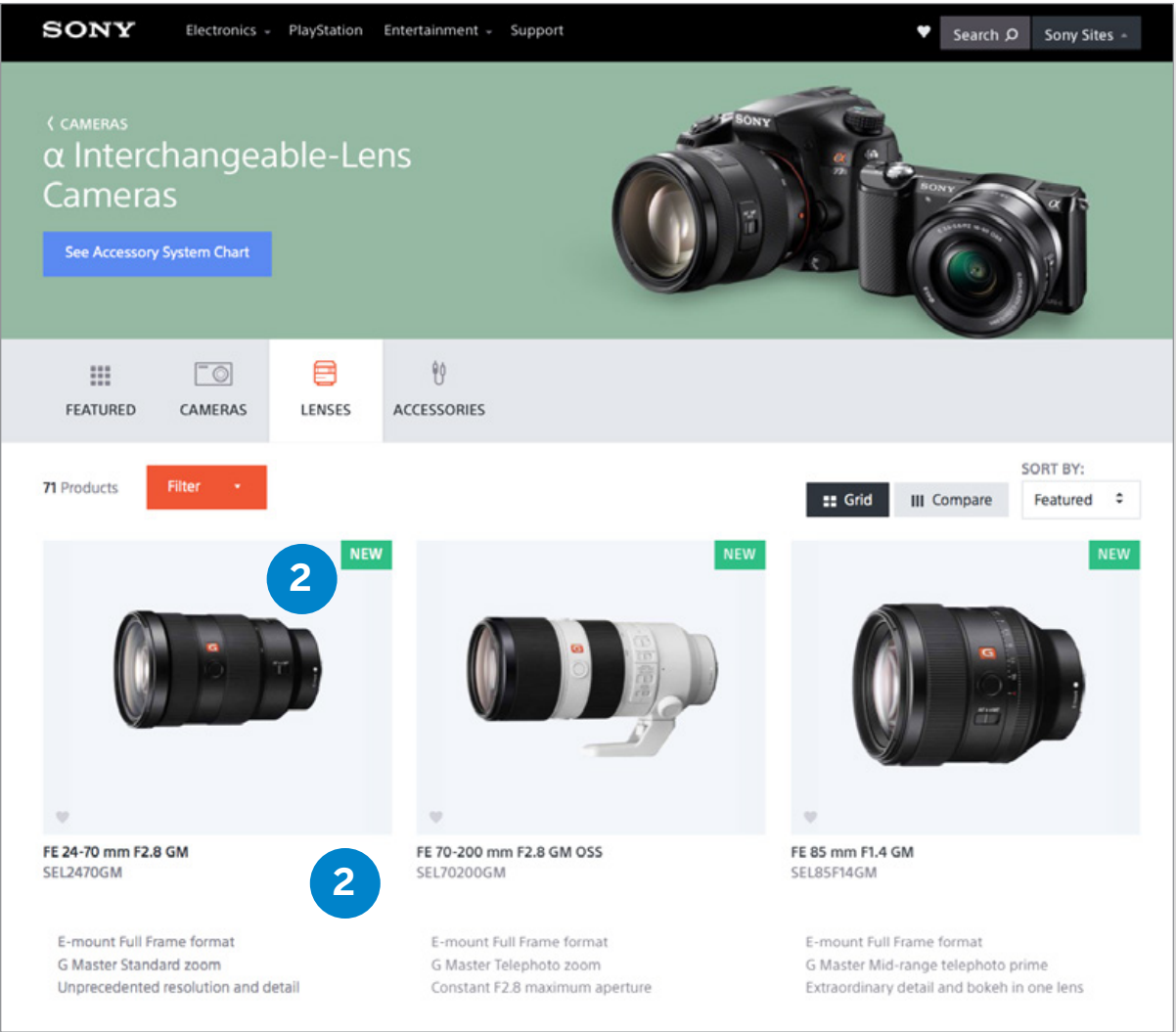
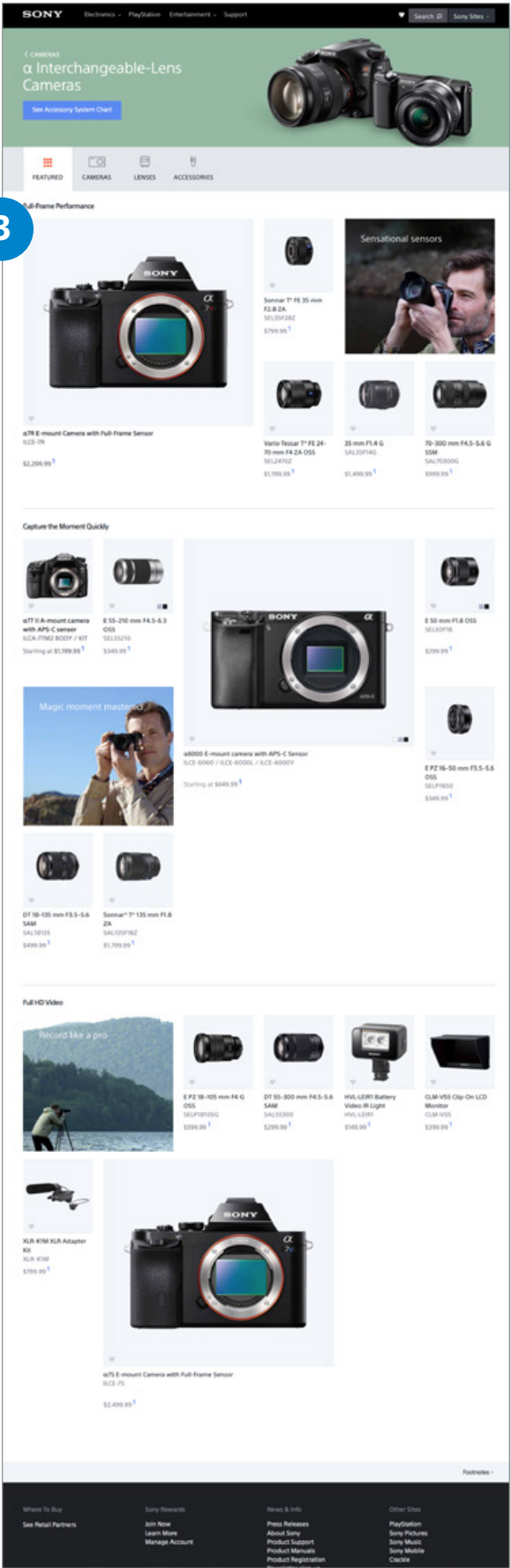
- * Content is visually striking.

Visual Design

- * Design utilizes typical Wordpress and blog tactics to display content.
- * White on dark ground increases visual interest.
- * Dark menu with gray unselected text is illegible.

Interactivity

- * Rollover metadata (name, description) rewards user for interacting with the website with minimal information about the map.



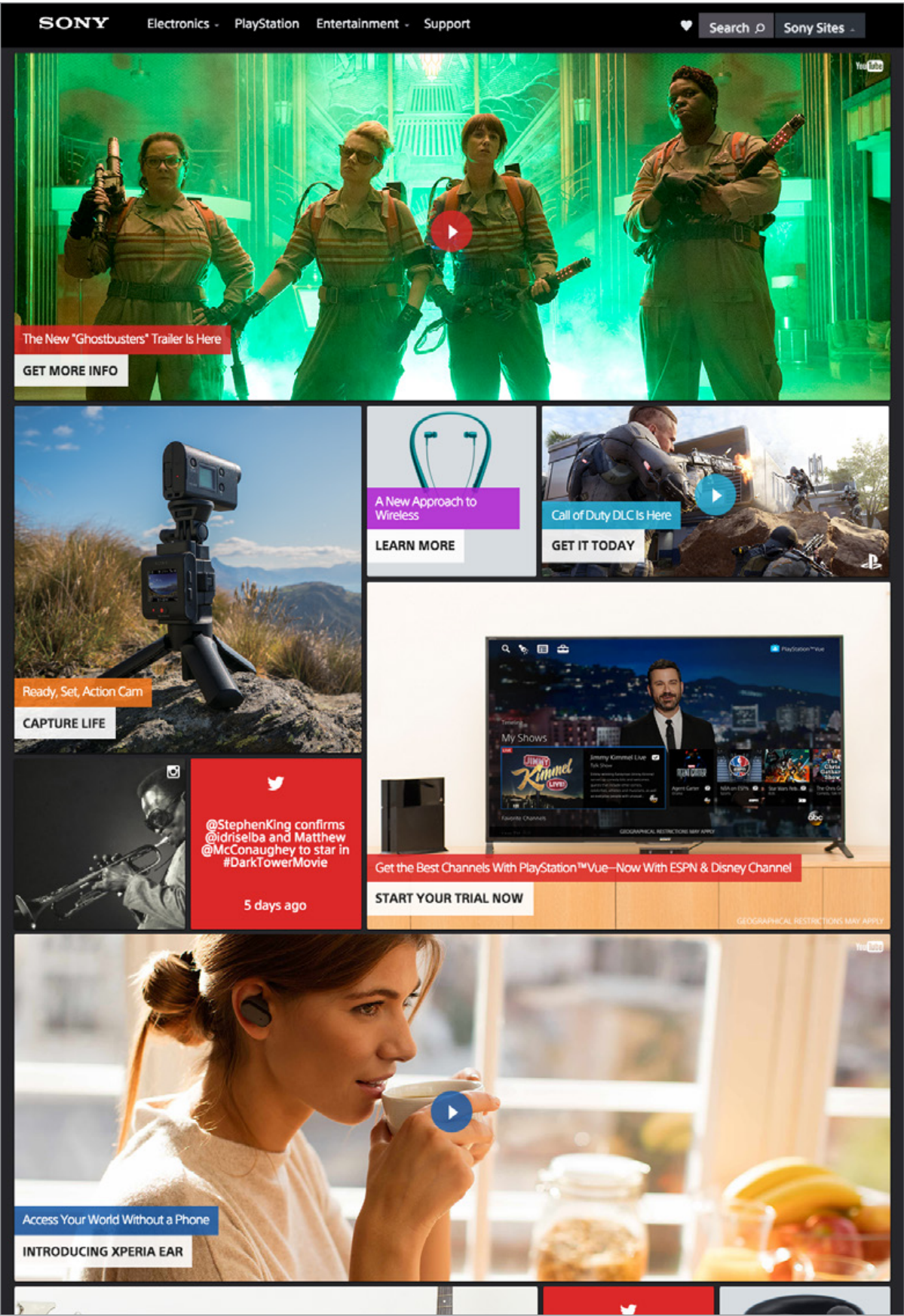
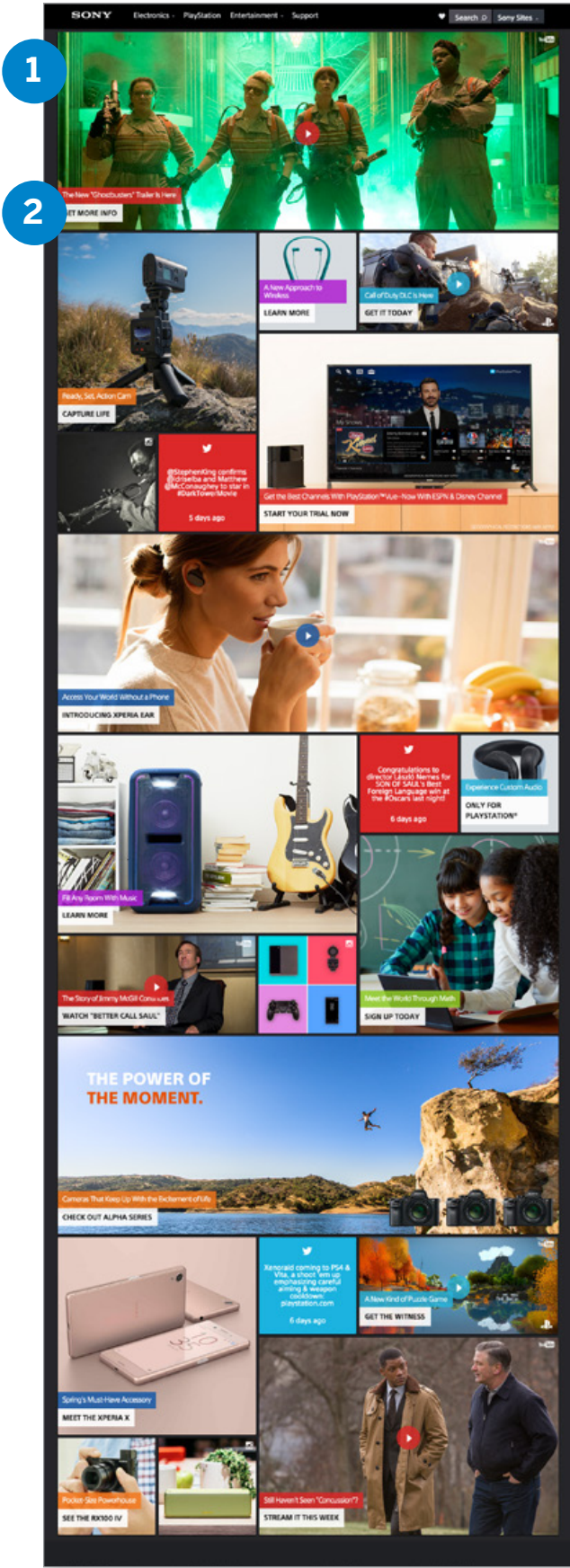
Benchmarking

Sony.com

Sony uses simple design, flat (2.0) design to effectively organize and distinguish its catalog of products.

- 1 The faceted filter is designed specifically for narrowing lenses.
- * It indicates the number of items resulting from user choices; allows for multiple views, and sort by features.
- * It is dynamic, allowing users to view results and reconfigure filters.
- * Filters offer both qualitative and quantitative choices.

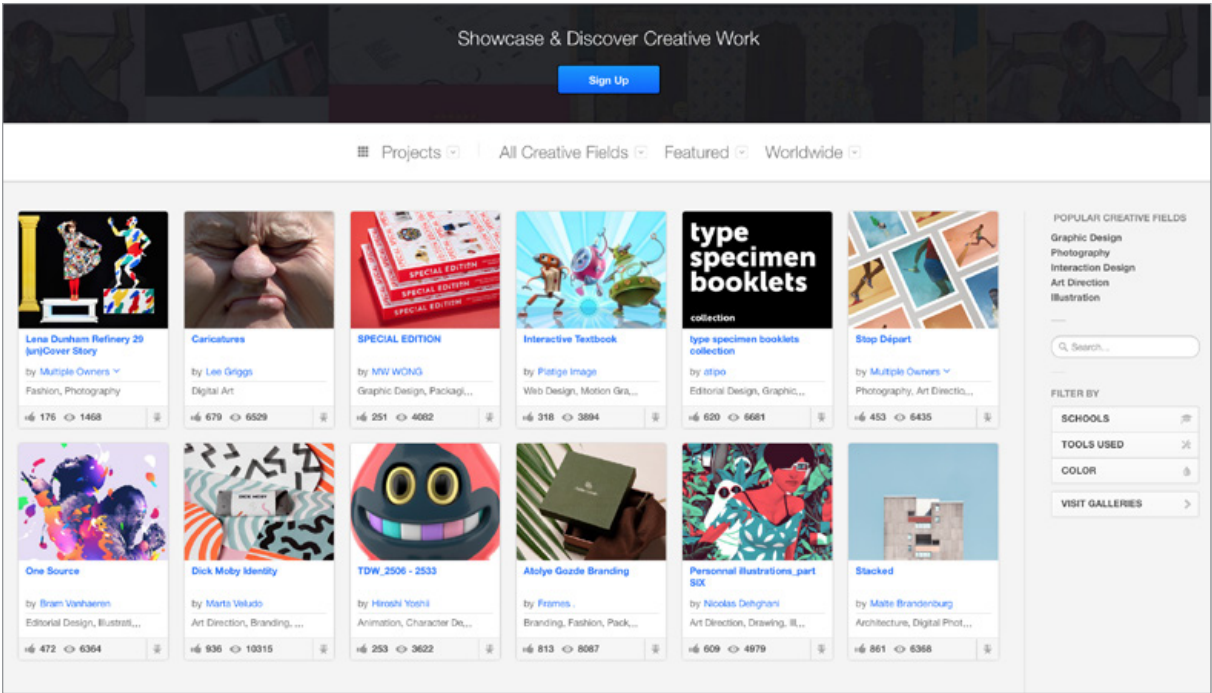
- * The filter pushes content below the filter, and stays open when users scroll away from it allowing for users to proof their choices and make changes.
- 2 Product metadata is shown in both tags and brief details.
- * Tagging is done in color
- * Product details provide the name, product code and key differentials.
- 3 Page organization and design supports navigation and changes to thumbnails.
- * Simple color palette and icons support comprehension.



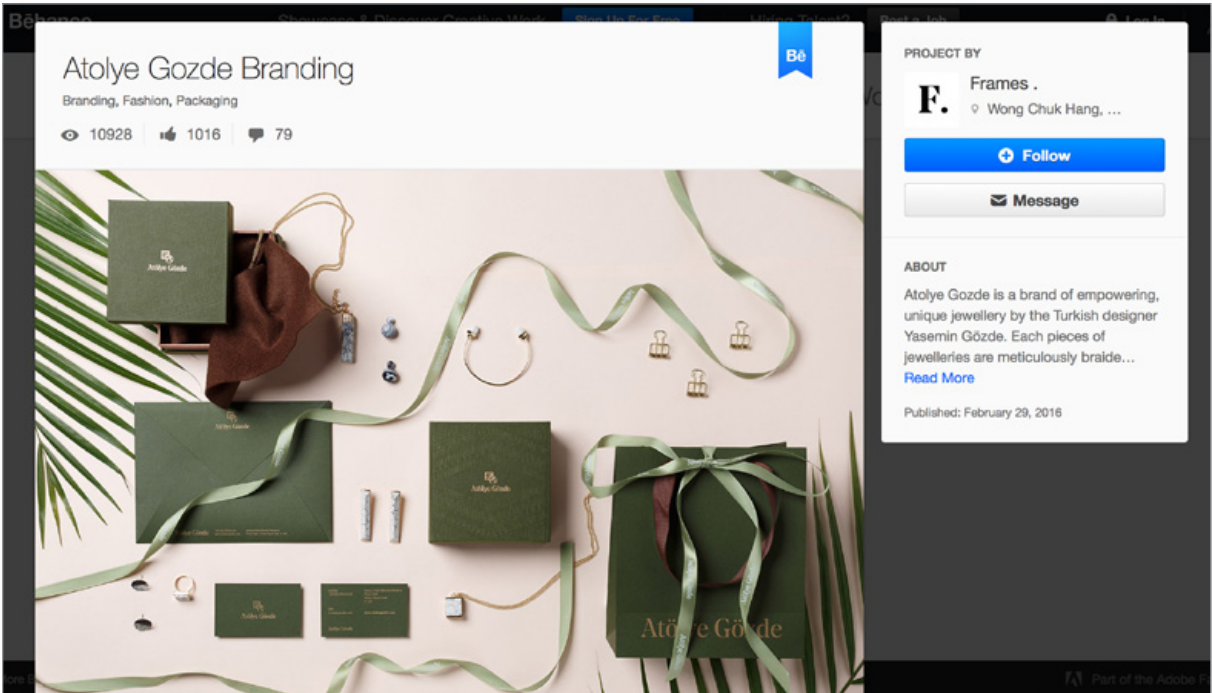
Benchmarking

Sony.com

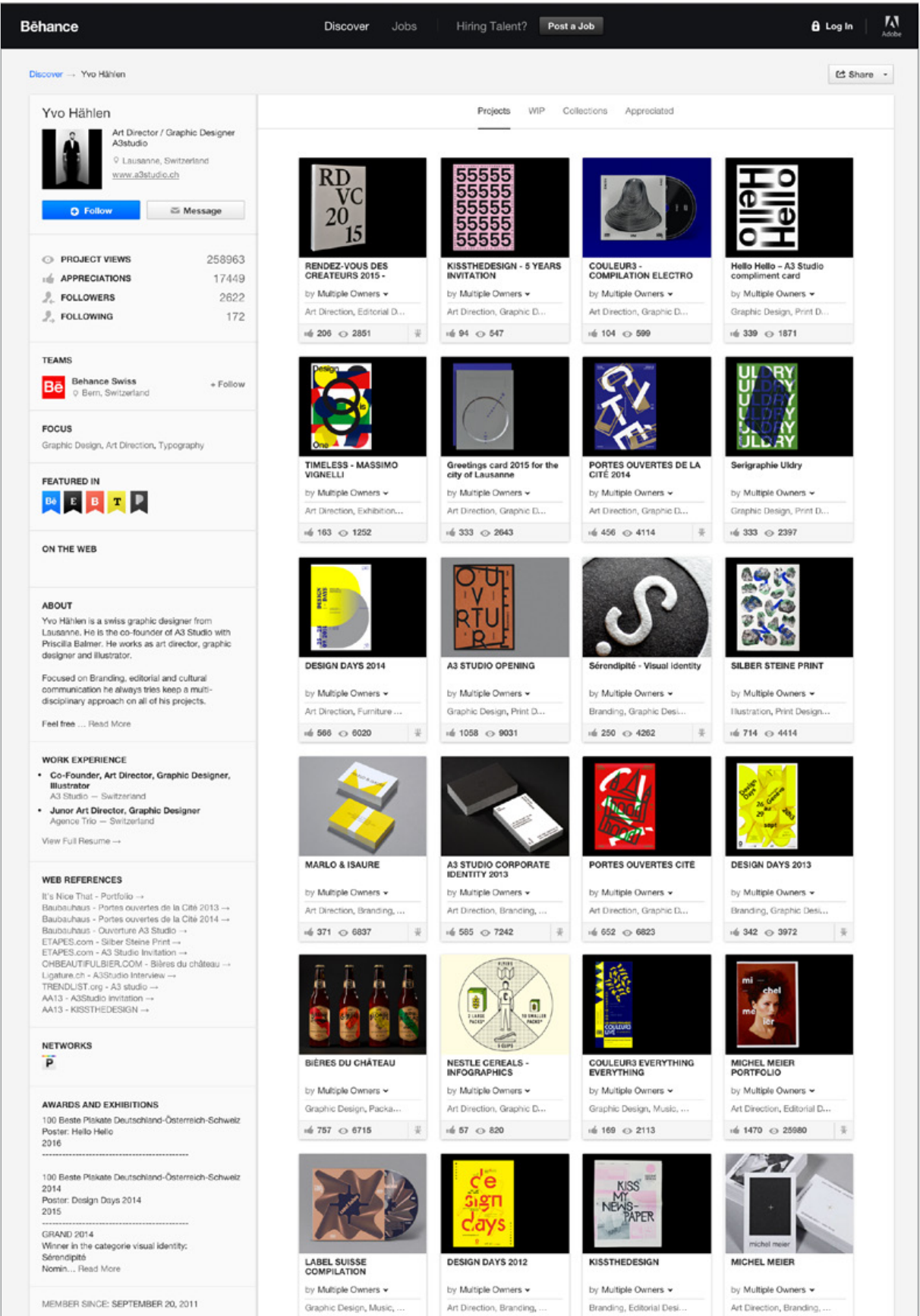
- 1 Sony duplicates the catalog grid in their home page gallery. The strength of the grid is not impacted by the change in color and imagery.
- 2 The flexible grid is supported by colored tagging that indicates link type helping make the results of a click knowable to the user.



Gallery



Project model



User Profile

Benchmarking

Behance.com
Online Portfolio Gallery

Behance is Adobe's community portfolio site. The community showcases design work by individuals and teams; and offers job searches.

INSIGHTS

- * Platform is designed to inspire communication and discussion.

ANALYSIS

Content

- * Metadata of user and project treated equally in public view.
- * Trust is built through social following, time on platform ('member since'), 'featured in', web references, awards.
- * Each project provides user feedback on community sentiment with number of views and social thumbs up.

Structure

- * Two column grid

Functionality

- * Projects display as modals.

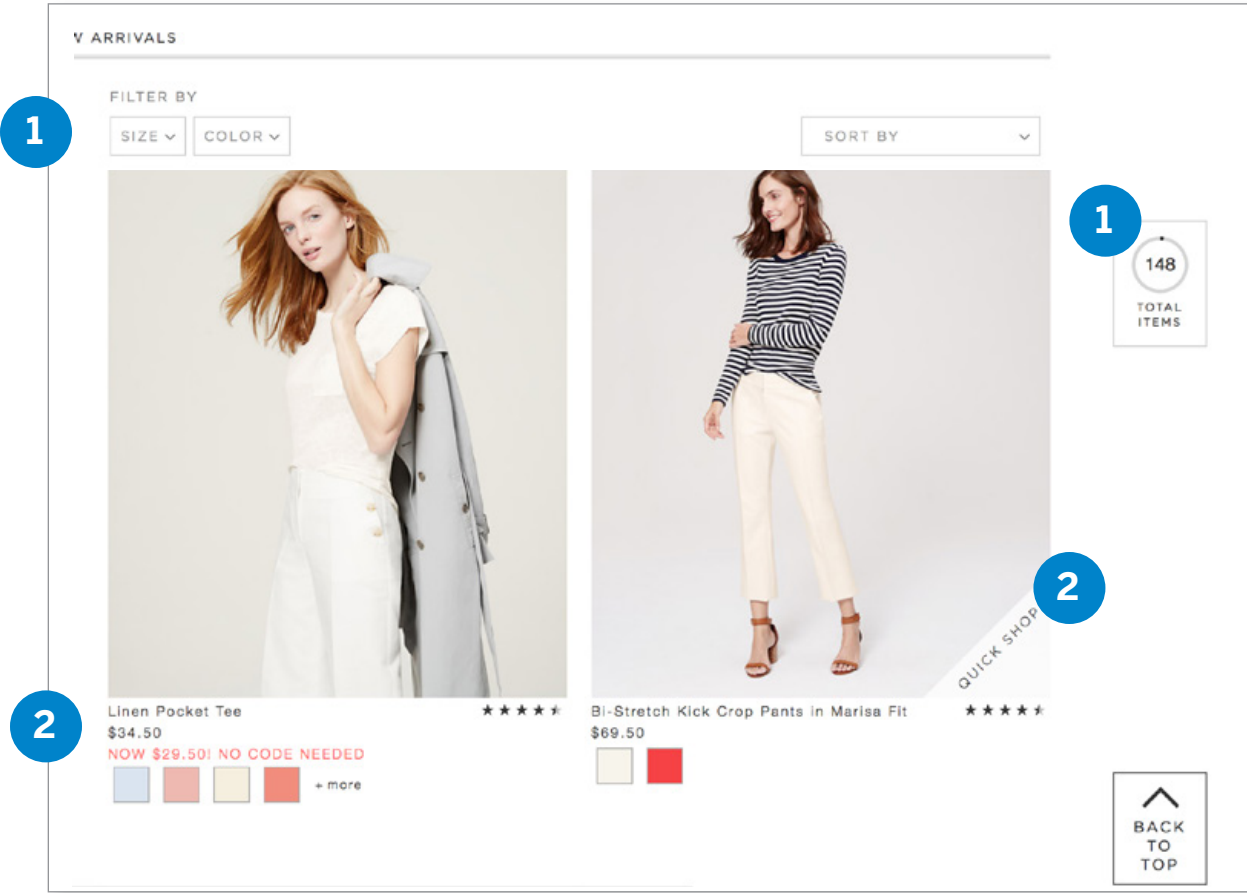
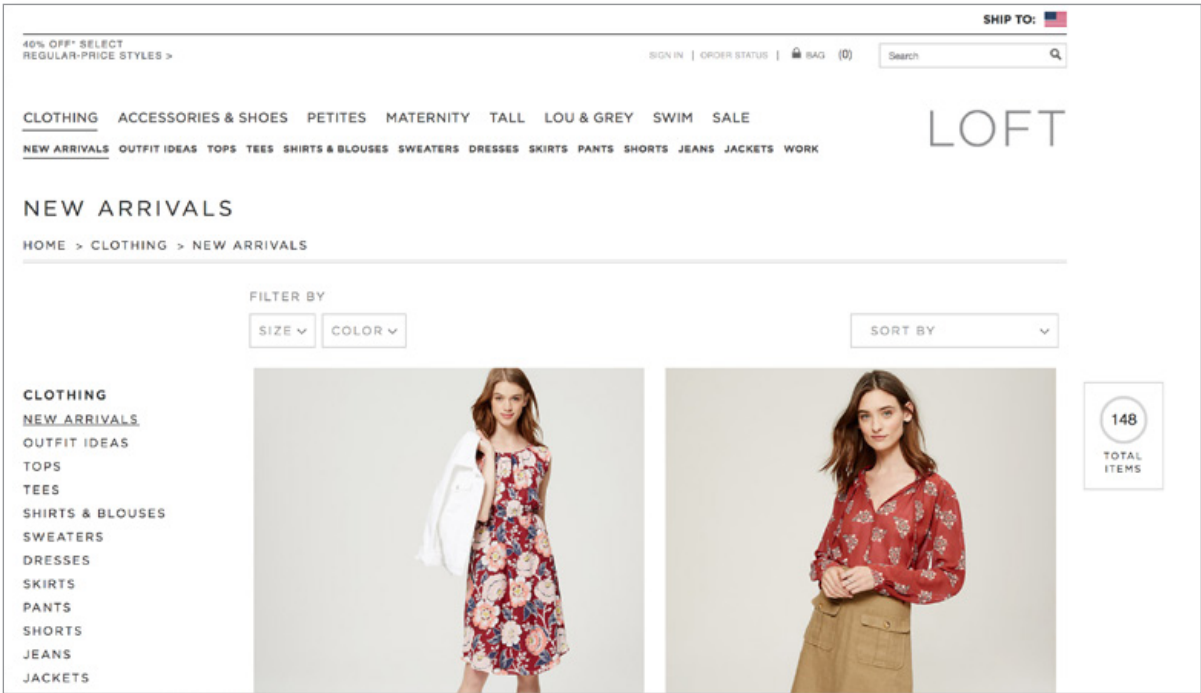
Benchmarking

Loft.com

This retail site provides users the option to see thumbnails or portraits of catalog. To support load time and user navigation it provides users an understanding of how many images a filter produced, and after the initial scroll through the loaded 10-20 items, it shows a 'loading more' indicator, and provides navigation aids to return to the top.

ANALYSIS

- 1 Dynamic filtering provides immediate catalog product count for results. Catalog count provides user location within catalog.
- 2 Limited metadata is expandable upon rollover, and click through. Click through brings up a modal, and does not move user from location within catalog.



Appendix

Surveys

Survey: GIS software usefulness

Thanks for taking part in this survey on GIS software. Jump in to tell us what’s usable, what’s useful, and what to toss.

* Required

1. Job title *
2. GIS / organization URL *
3. What desktop GIS software do you use? *

Check all that apply.

- * Autodesk
- * Bentley Systems
- * ENVI
- * ERDAS IMAGINE by ERDAS Inc
- * Esri
- * Intergraph
- * MapInfo by Pitney Bowes Software
- * Smallworld
- * QGIS
- * I don’t use desktop GIS software
- * Other:

4. What online GIS software do you use? *

Check all that apply.

- * ArcGIS Online
- * CartoDB
- * MapBox
- * OSM (Open Street Map)
- * I don’t use online GIS software
- * Other:

5. My role is primarily to... *

Mark only one oval.

- * Use it Skip to question 25.
- * Buy it Skip to question 6.
- * Manage it Skip to question 6.
- * Make or develop it Skip to question 33.
- * All of the above Skip to question 10.
- * Other: Skip to question 40.

DEPLOYING AND MANAGING GIS DATA AND USERS

6. Describe what is your organization's primary and secondary purpose for using GIS software.

7. Which administrator features are most useful for your organization? *

Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Software security				
Customizable themes or CSS				
Functional add-ons, plug-ins, modules				
Integration with outside resources				
Simple to deploy and maintain				
Considerate of server size				
Scale-able for large data and number of users				

8. Which mapping features are most useful for how your organization uses GIS software?*

Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Public use/Creative Commons				
Sophisticated mapping tools				
Social sharing and rankings				
Collaboration tools				
Sophisticated analysis tools				
Integration with outside resources				
Visualization templates				

9. What challenges do you face as someone who deploys, manages or purchases GIS software and tools?

Skip to question 42.

DEVELOPING, DEPLOYING, USING AND MANAGING GIS DATA AND USERS

10. Describe the primary work you do.

DEPLOYING AND MANAGING GIS DATA AND USERS

11. Which administrator features are most useful for your organization? *

Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Software security				
Customizable themes or CSS				
Functional add-ons, plug-ins, modules				
Integration with outside resources				
Simple to deploy and maintain				
Considerate of server size				
Scale-able for large data and number of users				

USING GIS SOFTWARE

12. Describe the difference between the work you do with Desktop GIS and Online GIS? Ex. I use desktop GIS software to create complex analyses, and online GIS to look for layers. *

13. What one thing must Online GIS software do well? *

14. What feature(s) would you eliminate from online GIS? Why? *

15. Which mapping features are most useful to how YOU use GIS software?*

Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Public use/Creative Commons				
Sophisticated mapping tools				
Social sharing and rankings				
Collaboration tools				
Sophisticated analysis tools				
Integration with outside resources				
Visualization templates				
Search Visualizations and Filters				

16. Of the following GIS metadata fields which is most useful for you and your organization?
Mark only one oval per row.

	Not useful	Useful	Critical / Required	n/a
Text field				
Document Type (raster, vector, remote)				
Categories				
Keywords				
Owners				
Date range				
Regions				
Extent				

17. Please describe how you use these metadata fields on a regular basis.

DEVELOP + MAINTAIN

18. I have...
Mark only one oval.
- *

 Installed pre-existing GIS software
- *

 Written GIS software
- *

 Developed add-ons, plug-ins and support tools to the base software
- *

 Other:

19. What Database tools/frameworks do you use in your development? *
Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No	N/A
PostGIS				
Oracle Spatial				
ArcSDE				
Spatialite				

20. What Server tools/frameworks do you use in your development? *
Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
deegree				
MapServer				
GeoServer				
ArcGIS Server				
QGIS-Server				

Mapnik

21. What Front End tools/frameworks do you use in your development? *
Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
Leaflet				
OpenLayers				

22. What Processing tools/frameworks do you use in your development? *
Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
pywps				
zoo project				

23. What Catalog tools/frameworks do you use in your development? *
Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
pycsw				
GeoNetwork				

24. Have we missed a tool or framework you find especially helpful in your work? Please tell us what it is and how you use it.
Skip to question 42.

USEFULNESS OF GIS SOFTWARE

25. Describe the primary work you do.

26. What category does this work fit into?
Check all that apply.

- *

 Mapping features
- *

 Analysis
- *

 Developing map stories
- *

 Other:

27. Describe the difference between the work you do with desktop GIS and online GIS? Ex. I use desktop GIS software to create complex analyses, and online GIS to look for layers.

28. What one thing must online GIS software do well?

29. What feature(s) would you eliminate? Why?

30. Which mapping features are most useful to how you use GIS software? *
Mark only one oval per row.

	Not useful	Useful, nice to have	Very useful	Required / Critical
Public use/Creative Commons				
Sophisticated mapping tools				
Social sharing and rankings				
Collaboration tools				
Sophisticated analysis tools				
Integration with outside resources				
Visualization templates				
Search Visualizations and Filters				

31. Of the following GIS metadata fields which is most useful for you? *
Mark only one oval per row.

	Not useful, never use	Useful, nice to have	Very useful	Critical / Required
Text field				
Document Type (raster, vector, remote)				
Categories				
Keywords				
Owners				
Date range				
Regions				
Extent				

32. Describe how you use the Extant within your work.
Skip to question 42.

DEVELOPING GIS SOFTWARE

33. I have...
- Mark only one oval.
- * Installed pre-existing GIS software
 - * Written GIS software
 - * Developed add-ons, plug-ins and support tools to the base software
 - * Other:

34. What Database tools/frameworks do you use in your development? *
- Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No	N/A
Oracle Spatial				
PostGIS				
Spatialite				
ArcSDE				

35. What Server tools/frameworks do you use in your development? *
- Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No	N/A
GeoServer				
ArcGIS Server				
MapServer				
Mapnik				
QGIS-Server				
deegree				

36. What Front End tools/frameworks do you use in your development? *
- Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
Leaflet				
OpenLayers				

37. What Processing tools/frameworks do you use in your development? *
- Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
pywps				
zoo project				

38. What Catalog tools/frameworks do you use in your development? *
- Mark only one oval per row.

	Yes, within the past year	In the past, 1+ years ago	No, do not use	N/A
pycsw				
GeoNetwork				

39. Have we missed a tool or framework you find especially helpful in your work? Please tell us what it is and how you use it.
Skip to question 6.

INTEREST IN GIS

40. What is your familiarity with GIS? *
- Mark only one oval.

Not familiar	1 2 3 4 5	Very Familiar, Professional/ Advanced
--------------	-----------	--

41. How do you use GIS data?
Skip to question 42.

ADDITIONAL COMMENTS

42. Do you have any final comments on GIS software? For example, you can tell us what you find usable, useful, and what you would eliminate or toss.
43. Would you like to participate in future research on GIS software? *
- Mark only one oval.

- * Yes Skip to question 44.
- * No Stop filling out this form.

Skip to question 44.

FUTURE RESEARCH

We are conducting research on GIS software. If you would like to be contacted for additional research please provide the your contact information. Your information will not be shared with marketers and will remain private.

44. Name (First and Last) *
45. Email *
46. Organization *
47. Phone number (Country Code + Area Code + Number) *
48. Preferred Online Video Conferencing Method

Mark only one oval.

- * Skype
- * Google Hangout
- * Facetime
- * Webex
- * Go To Meeting
- * Other:

49. Your username (if necessary) for your preferred online video conferencing tool.

Making GeoNode Useful

Thanks for taking part in this survey on GeoNode. The World Bank’s GFDRR (a GeoNode funder) is actively working to improve it. We need your input to make sure we’re going in the right direction. This survey should take you 7-10 minutes to fill out.

* Required

1. What is your primary role in GeoNode? *
- * Use GeoNode for work activities

* Admin: Manage GeoNode and our users

* Develop and deploy GeoNode

* All of the above
2. What does your organization need to be able to do with GIS data? *
- * Map geographic information

* Analyze maps

* Develop and publish map stories

* Catalog GIS data and documents

* Other:
3. Should all of this be done in the same tool or software? *
- * Yes

* No

* Other:
4. Describe the difference between the work done with Desktop GIS and Online GIS within your organization.*
- * Ex. Desktop GIS software is used to create complex analyses, and online GIS to look for layers.
5. GeoNode Features and Functions
- * Help us identify what GeoNode should be.

* What one thing must GeoNode do well? *
6. What feature(s) would you eliminate from GeoNode? Why? *
7. What are your biggest frustrations when working with GeoNode?
- * Map composer tools available

* Software glitches

* Managing files and users

* General usability

* Integration with other software

* Managing my account

* Sharing files or communicating with colleagues

* Finding the right file

* Adding details to a file

* Trusting the accuracy of a file

* Finding open source files (OpenGIS, OSM)
- * Other:

8. Evaluate the mapping features below by identifying which features should be removed, enhanced or left alone. *
- Mark only one oval per row.
- | | Remove, not useful | Keep it as is, it's useful | Keep but improve usefulness | N/A |
|---|--------------------|----------------------------|-----------------------------|-----|
| Public use/ OpenData | | | | |
| Map composer | | | | |
| Social sharing and rankings | | | | |
| Collaboration tools | | | | |
| Map analysis tools | | | | |
| Integration with outside resources | | | | |
| File details (thumbnails, metadata, descriptions) | | | | |
| Search filters | | | | |
9. GeoNode is evaluating the following for inclusion in the software, please prioritize them based on your needs. *
- Mark only one oval per row.
- | | Priority | Good to have | Least important |
|-------------------------------|----------|--------------|-----------------|
| GIS File Validation | | | |
| Badging of Trusted User | | | |
| Customizable Themes or CSS | | | |
| Robust Administrator Controls | | | |
| Map Composer Templates | | | |
| Search Visualization | | | |
| Layer File Feature Templates | | | |
| GeoNode Instruction Manual | | | |
- *

10. The GeoNode software can be built in two ways. Which is more effective for your organization? *

* Stand alone software application, with supporting but separate applications. Ex. GeoNode would be similar to an Adobe or Microsoft program. What this means: GeoNode must support integration with all mapping and analysis tools.

* Single application with the ability to add new functionality through add-ons or plug-ins. Ex. GeoNode would be similar to Wordpress or Bootstrap. What this means: Users add tools to GeoNode that are important to their workflow.
11. Comment on the previous questions as they relate to your work.
- ## METADATA
- Metadata is critical for ease of finding files and determining a file’s relevance to your work. However, filling out metadata seems to be a problem across all GIS software platforms.**
12. How might we make it easier to fill out metadata fields? *
13. Which GeoNode metadata fields are most useful for you? *
- Mark only one oval per row.
- | | Remove, not useful | Keep it as is, it's useful | Keep but improve usefulness | n/a |
|--|--------------------|----------------------------|-----------------------------|-----|
| Text field | | | | |
| Document Type (raster, vector, remote) | | | | |
| Categories | | | | |
| Keywords | | | | |
| Owners | | | | |
| Date range | | | | |
| Regions | | | | |
| Extent | | | | |
- ## SEARCH
- The search feature currently relies on metadata filters to narrow the files shown. Please help us understand how you work, that we might improve search functionality.**
14. What are the typical questions you turn to the search function for? *
- For example: I need a layer file that helps illustrate water infrastructure problems in my town. Or, what files exist for this extent during the 1800s.
15. The extent is currently a filter. Do you use the extent to filter files?
- * Yes

* No
- Appendix: Surveys
- Page 93

OTHER GEONODE FEATURES + FUNCTIONS

16. How do you use ‘permissions’? *
- * Yes

* No
18. Have you used GeoNode to analyze a map? *
- * Yes

* No
19. Have you updated a layer file within GeoNode? *
- * Yes

* No
20. Do you need to be able to print a map from GeoNode? *
- * Yes

* No

* Yes, and/or other documents

* Other:

COMMUNITY + DOCUMENTATION

21. Do you participate in the user and/or developer community?
- * Yes

* No

* Other:
22. Have your interactions with the community been helpful?
- * Yes

* No

* Other:
23. Do you utilize GeoNode documentation and training materials?
- * Yes

* No

* Other:
24. Are the available documentation and training materials helpful?
- * Yes

* No

* Other:
25. How might we improve the GeoNode support system?

FINAL COMMENTS

26. Thank you for your help improving GeoNode.
27. Do you have any final comments on how to improve GeoNode? *
- For example, you can tell us what you find usable, useful, and what you would eliminate or toss.
28. What is your GeoNode URL? *
29. May we follow up with you if we have additional questions about how you use GeoNode? *
- * Yes Skip to question 29.

* No Stop filling out this form.

ABOUT YOU

30. Name (First and Last) *
31. Email *
32. Phone number (Country Code + Area Code + Number)
33. Job title *
34. Organization

Appendix

Analysis:

- * Metadata
- * Dashboard and Data Visualization Examples
- * Marketing Home Page Analysis

ISO 19115

2003, pg 15-16, <http://sedac.ciesin.columbia.edu/data/set/energy-pop-exposure-nuclear-plants-country>

Listed below (see Table 3) are the core metadata elements (mandatory and recommended optional) required for describing a dataset. An "M" indicates that the element is mandatory. An "O" indicates that the element is optional. A "C" indicates that the element is mandatory under certain conditions.

TABLE 3 — CORE METADATA FOR GEOGRAPHIC DATASETS

Dataset title (M)

(MD_Metadata > MD_DataIdentification.citation > CI_Citation.title)

Spatial representation type (O)

(MD_Metadata > MD_DataIdentification.spatialRepresentationType)

Dataset reference date (M)

(MD_Metadata > MD_DataIdentification.citation > CI_Citation.date)

Reference system (O)

(MD_Metadata > MD_ReferenceSystem)

Dataset responsible party (O)

(MD_Metadata > MD_DataIdentification.pointOfContact > CI_ResponsibleParty)

Lineage (O)

(MD_Metadata > DQ_DataQuality.lineage > LI_Lineage)

Geographic location of the dataset (by four coordinates or by geographic identifier) (C)

(MD_Metadata > MD_DataIdentification.extent > EX_Extent
> EX_GeographicExtent > EX_GeographicBoundingBox
or
EX_GeographicDescription)

On-line resource (O)

(MD_Metadata > MD_Distribution > MD_DigitalTransferOption.onLine > CI_OnlineResource)

Dataset language (M)

(MD_Metadata > MD_DataIdentification.language)

Metadata file identifier (O)

(MD_Metadata.fileIdentifier)

Dataset character set (C)

(MD_Metadata > MD_DataIdentification.characterSet)

Metadata standard name (O)

(MD_Metadata.metadataStandardName)

Dataset topic category (M)

(MD_Metadata > MD_DataIdentification.topicCategory)

Metadata standard version (O)

(MD_Metadata.metadataStandardVersion)

Spatial resolution of the dataset (O)

(MD_Metadata > MD_DataIdentification.spatialResolution > MD_Resolution.equivalentScale or
MD_Resolution.distance)

Metadata language (C)

(MD_Metadata.language)

Abstract describing the dataset (M)

(MD_Metadata > MD_DataIdentification.abstract)

Metadata character set (C)

(MD_Metadata.characterSet)

Distribution format (O)

(MD_Metadata > MD_Distribution > MD_Format.name
and MD_Format.version)

Metadata point of contact (M)

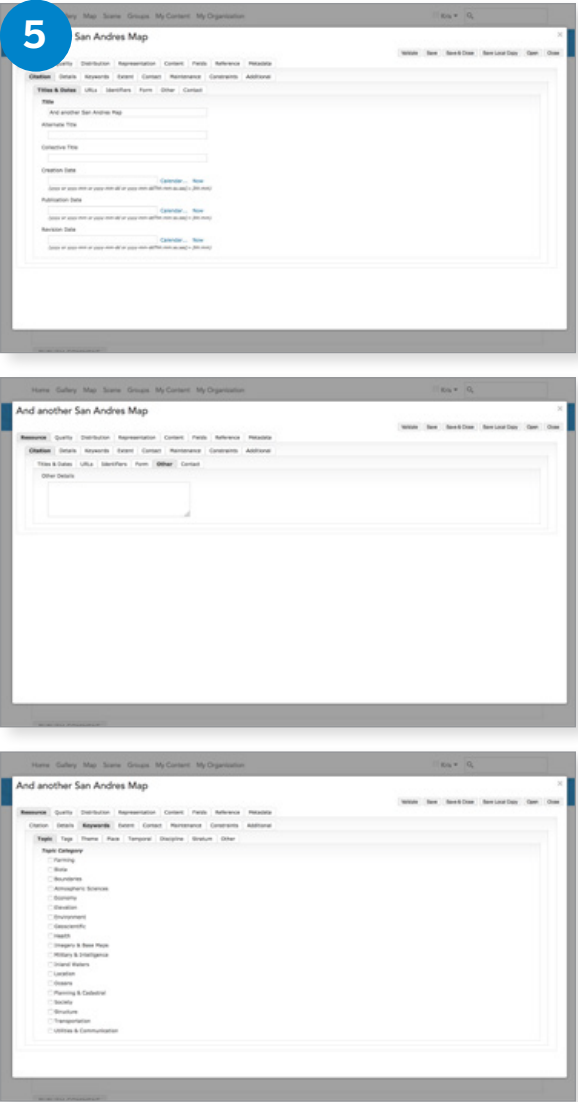
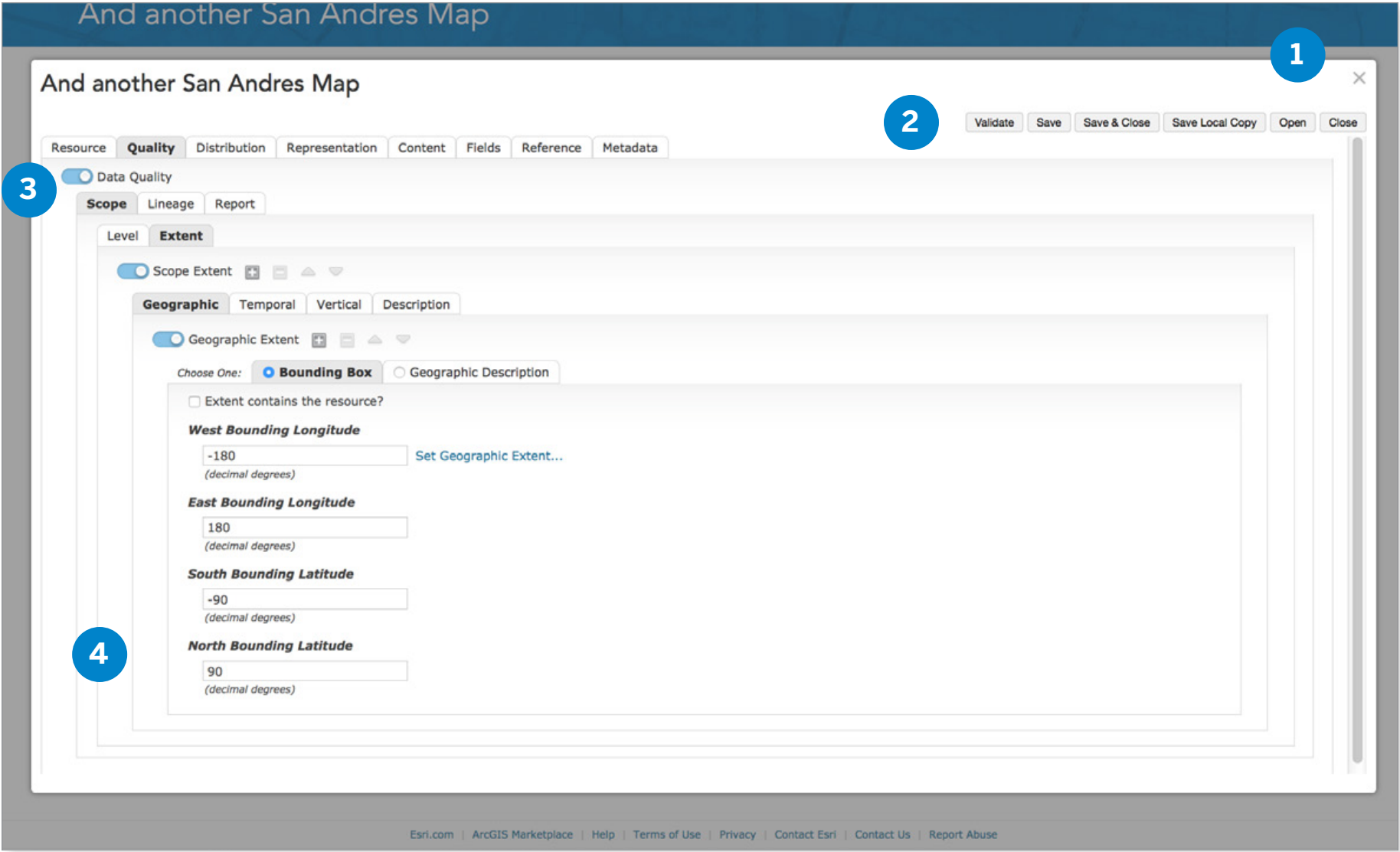
(MD_Metadata.contact > CI_ResponsibleParty)

Additional extent information for the dataset (vertical and temporal) (O)

(MD_Metadata > MD_DataIdentification.extent > EX_Extent
> EX_TemporalExtent or EX_VerticalExtent)

Metadata date stamp (M)

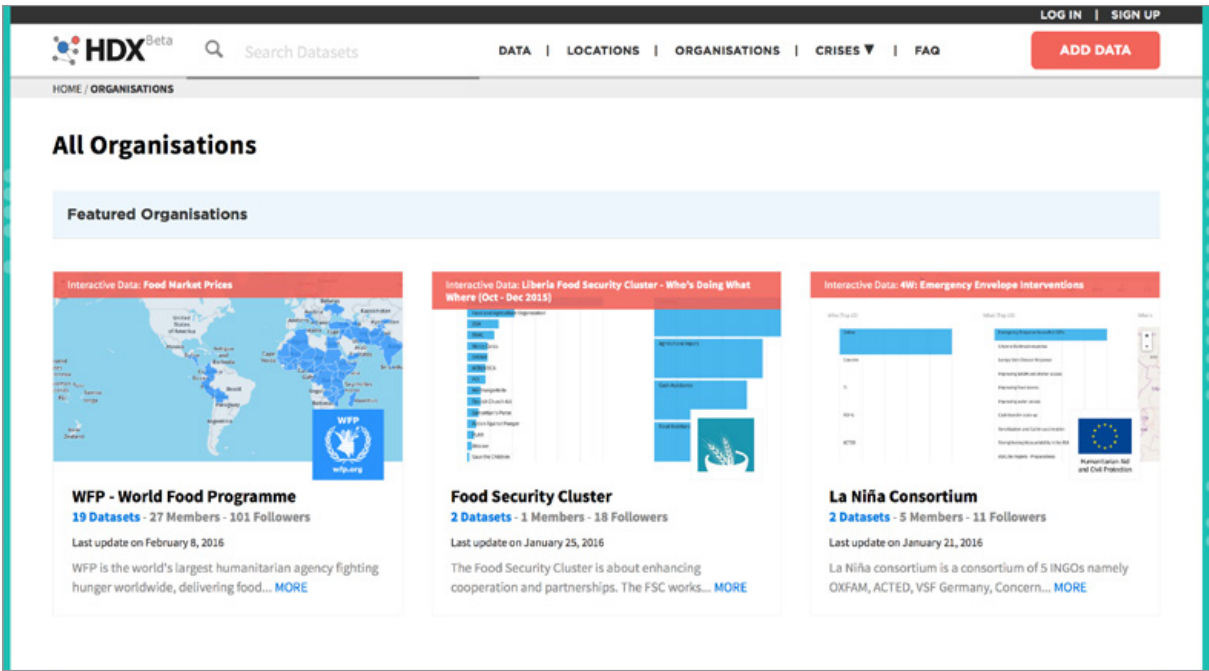
(MD_Metadata.dateStamp)



ArcGIS Metadata Forms

OBSERVATIONS

- 1 Metadata is treated as a modal.
- 2 Save, Validate buttons in an inconspicuous and unusual location; and do not include color indicator. This requires the user to look for and potentially miss an opportunity to save their work.
- 3 On/Off toggle switch allows users to expand sections.
- 4 Extensive nesting (Russian Doll) of boxes beneath tabs neatly contain contents; however, they also hide contents, making it difficult to find what a user might be looking for.
- 5 There is no visual difference between different contents.



HDX Metadata Visualization

This is a file management software that allows users to visually manage their content.

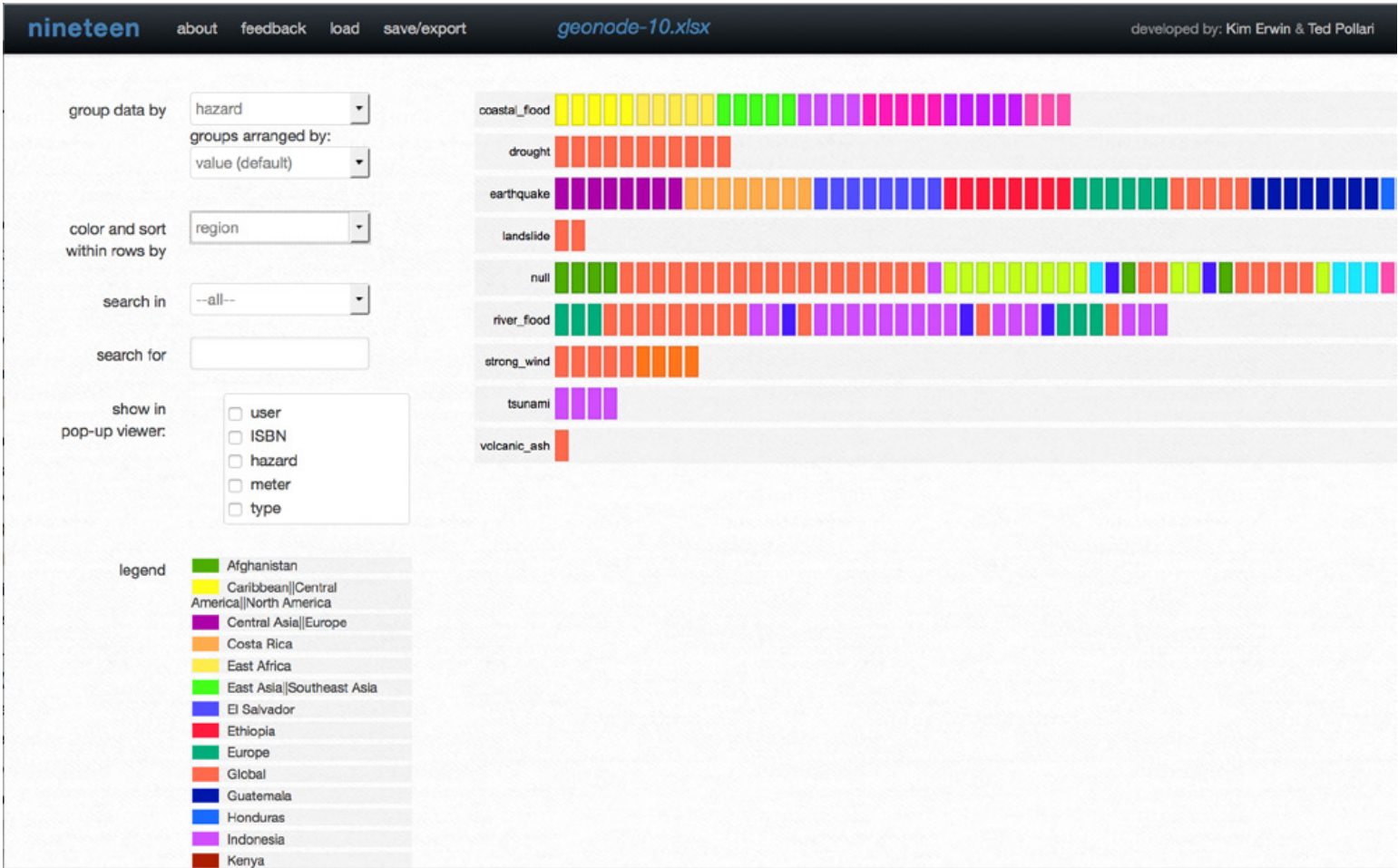
Each file is indicated by location in folder, thumbnail, short-form metadata and access to more metadata.

1	<div><div>WFP - World Food Programme</div><div>Updated November 24, 2015 Dataset date: May 14, 2015</div></div> <div><div>Coping Strategy Index (CSI)</div><div>WFP - World Food Programme</div><div>Updated November 24, 2015 Dataset date: May 14, 2015</div></div> <div><div>Food Consumption Score (FCS)</div><div>WFP - World Food Programme</div><div>Updated November 24, 2015 Dataset date: May 13, 2015</div></div> <div><div>InterAction member activities in Armenia</div><div>InterAction</div><div>Updated November 24, 2015</div></div> <div><div>Number of disasters in ReliefWeb</div><div>ReliefWeb - November 24, 2015</div><div>PREVIEW</div></div> <div><div>Airports in Armenia</div><div>OurAirports</div><div>Updated November 24, 2015</div></div> <div><div>Antenatal care coverage - at least four visits in the five years preceding th...</div><div>World Health Organization - November 24, 2015</div><div>PREVIEW</div></div> <div><div>Antenatal care coverage - at least four visits in the three years preceding t...</div><div>World Health Organization - November 24, 2015</div></div>	<div><div>listed include labor, agriculture, asset sales, and remittances, among others. It is available for 32 countries.</div><div>CSV 8 40+ Downloads</div></div> <div><div>The Coping Strategy Index dataset measures the severity and frequency of the strategies that households use to cope with acute food insecurity. The strategies vary from borrowing food or money from neighbors to selling household assets. This data is available for 31 countries at a sub-national level.</div><div>CSV 1 50+ Downloads</div></div> <div><div>The Food Consumption Score (FCS) dataset is based on the FCS indicator, which assigns a food security score based on food consumption and diets. This data is available sub-nationally for 38 countries, such as Nepal and Sierra Leone.</div><div>CSV 1 60+ Downloads</div></div> <div><div>List of aid activities by InterAction members in Armenia. Source: http://ngoaidmap.org/location/gn_174982</div><div>CSV JSON</div></div> <div><div>[Source: ReliefWeb] Number of disasters per country</div><div>XLSX CSV TXT 20+ Downloads</div></div> <div><div>List of airports in Armenia, with latitude and longitude. Unverified community data from http://ourairports.com/countries/AM/</div><div>CSV 1</div></div> <div><div>[Source: World Health Organization] The percentage of women aged 15-49 with a live birth in a given time period that received antenatal care provided by skilled health personnel (doctors, nurses, or midwives) at least four [4] times during pregnancy...</div><div>XLSX CSV TXT</div></div> <div><div>[Source: World Health Organization] The percentage of women aged 15-49 with a live birth in a given time period that received antenatal care provided by skilled health personnel (doctors, nurses, or midwives) at least</div></div>
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Nineteen

data.pollari.com

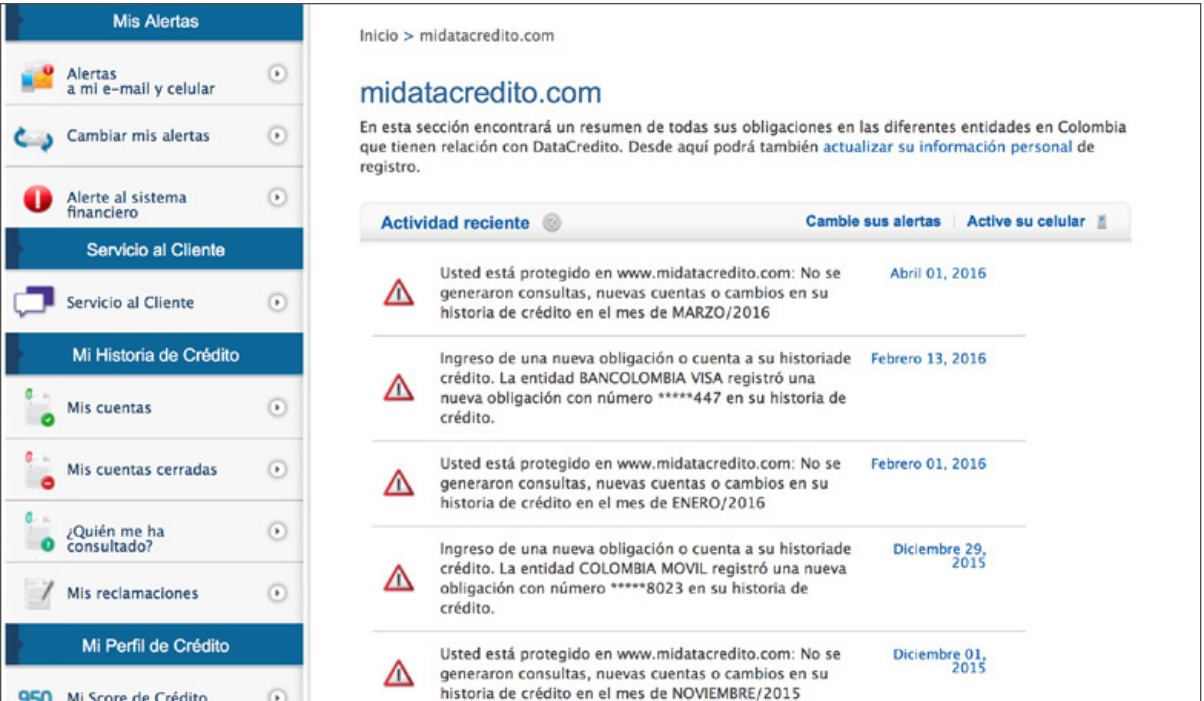
Visualization showing hazard type by region.



Dashboard example



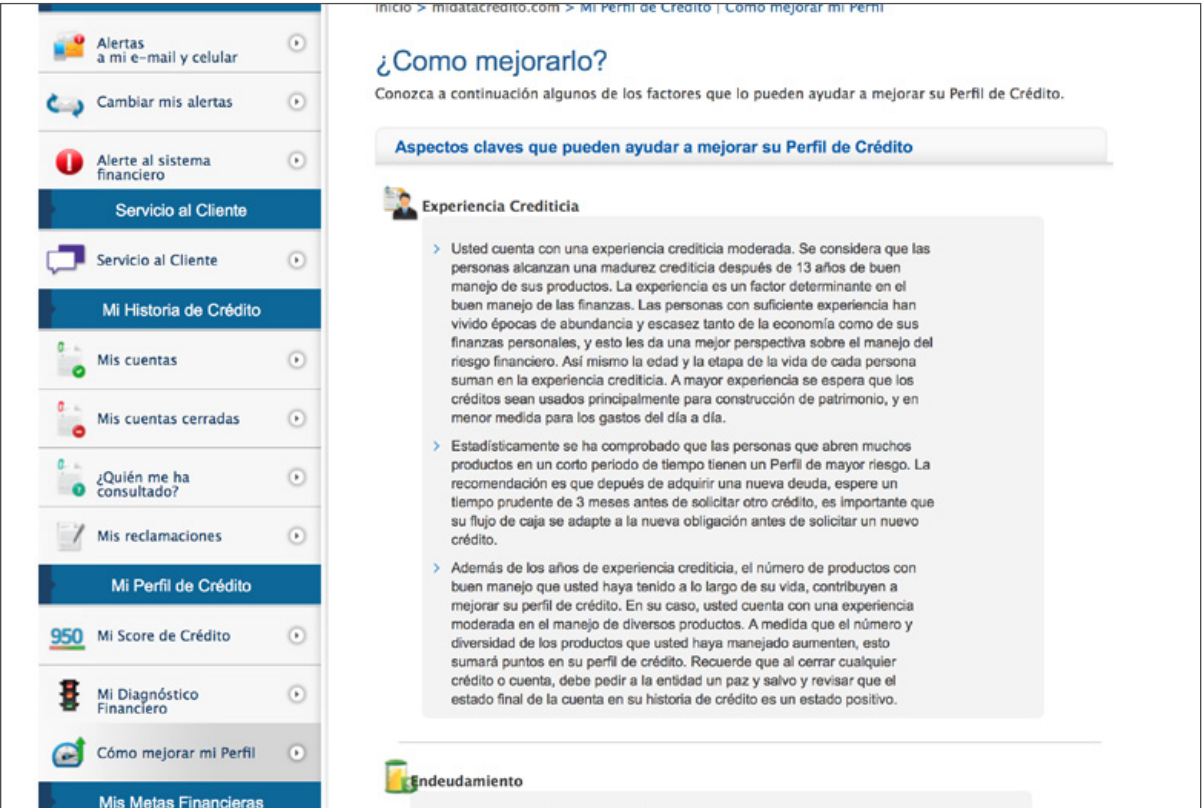
Step 1: System Status



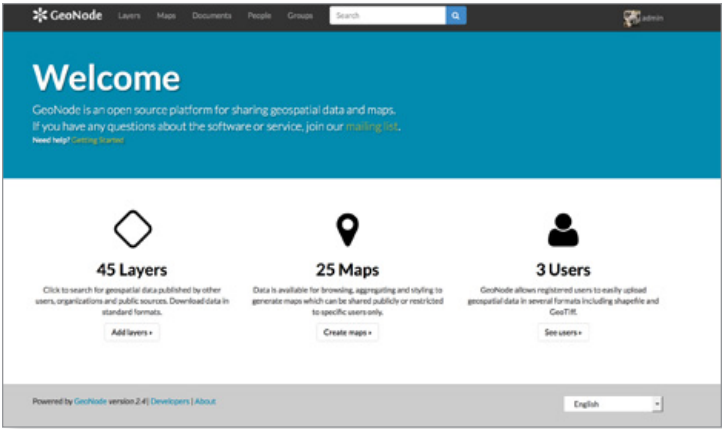
Step 3: Errors



Step 2: System Check



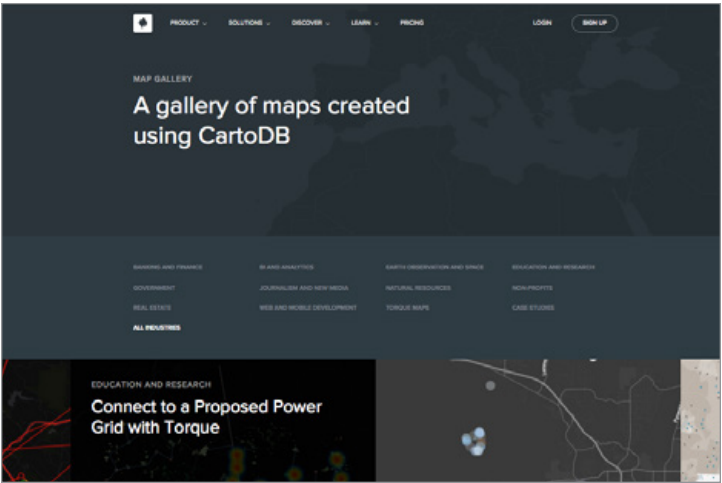
Step 4; Specific recommendation for error



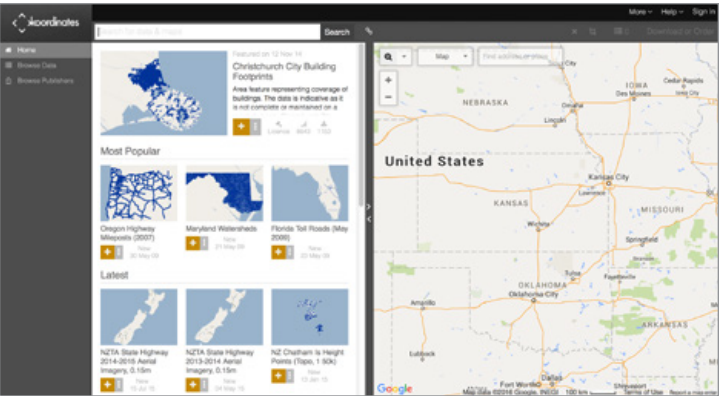
GeoNode



ArcGIS

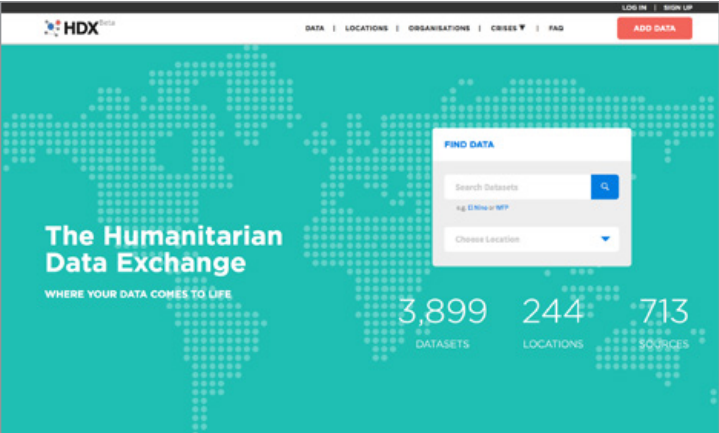


CartoDB

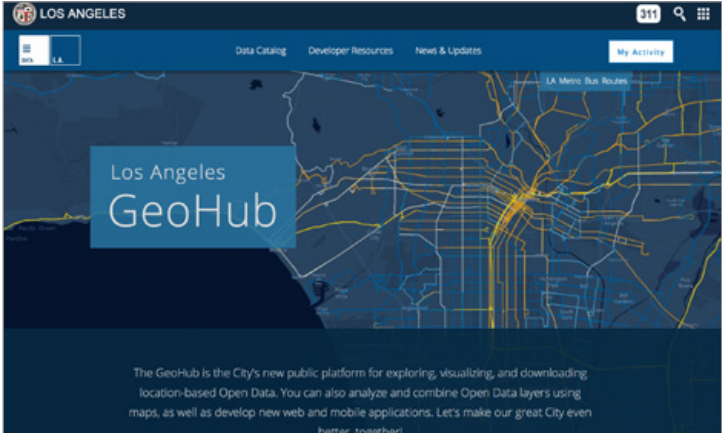


Koordinates

Sites Reviewed



HDX, The Humanitarian Exchange



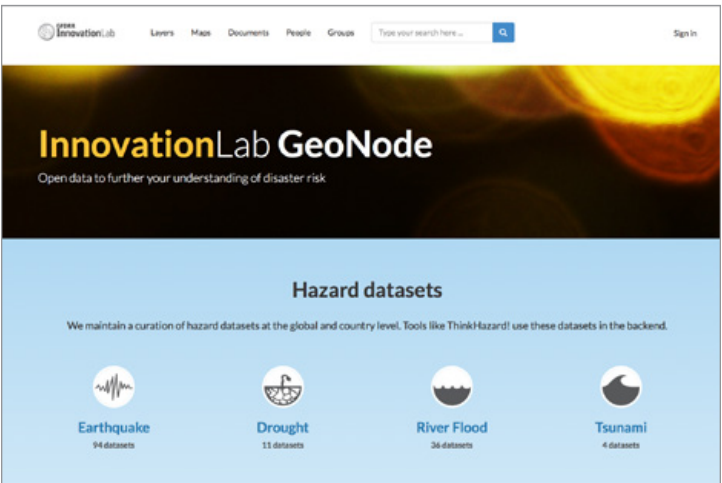
Los Angeles GeoHub



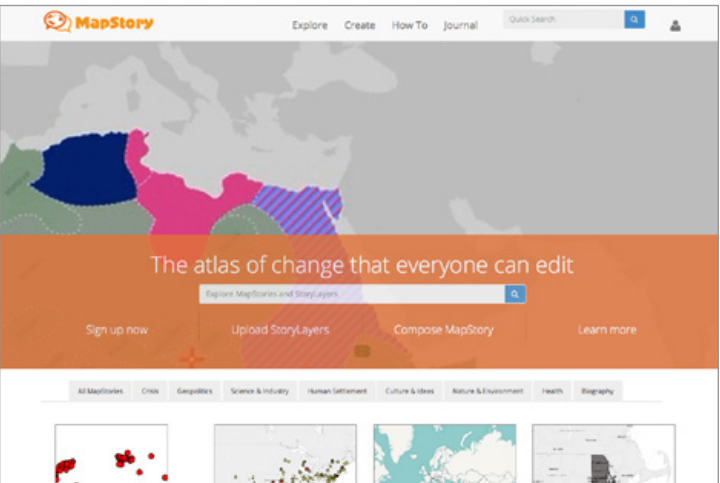
OpenGrid (Chicago)



WFP GeoNode



GFD RR Innovation Lab GeoNode



MapStory GeoNode

GEONODE.ORG



GeoNode is a peer produced open data platform. This home page reflects its goal to increase use of the platform. It provides easy access to download the product, trust in the product through clear segment definitions, and a 'how to' on the front page.

- Goal:** Increase use of product through speeding download and trial of product. It does this by:
- * Prominent placement of download
 - * How to instructions on main page
 - * Prominent placement of demo/trial option
- Customer:** GIS developer and programmers

ARCGIS.COM



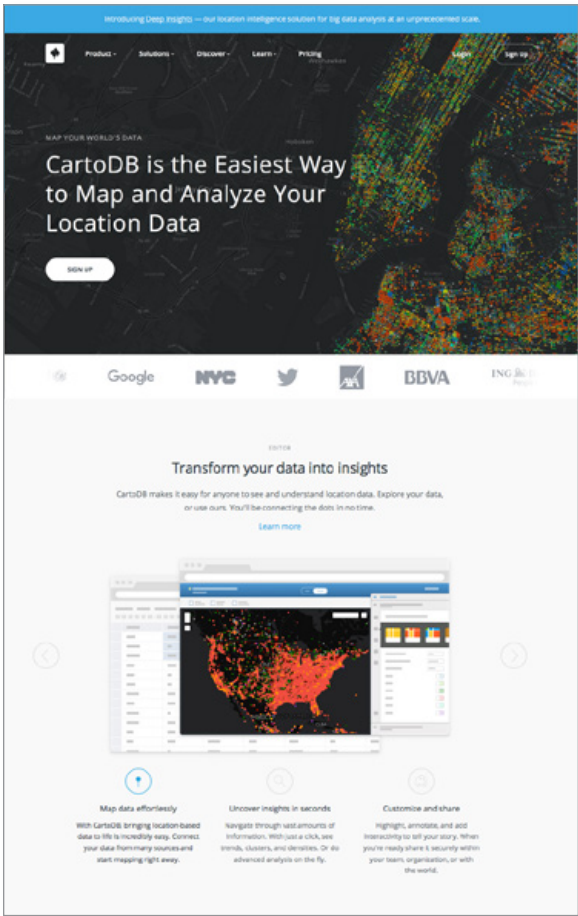
ArcGIS provides a suite of products. The home page reflects its goal to up-sell the buyer. It uses marketing messages and user visual stories to drive interest in their products.

Goal: Increase purchase size.

- * Proof in product performance, and customer stories
- * Prominent placement of feature use cases

Customer: GIS staff, and non-GIS buyer

CARTODB.COM



CartoDB provides users a visualization tool. The home page focuses on the single sales pitch. It uses client logos as proof of value, and provides product use cases for reference.

Goal: Make a sale.

- * Proof in product performance through customer logos
- * Product feature use cases
- * Strong visuals

Customer: GIS strategist, and non-GIS buyer

OPENGRID.COM



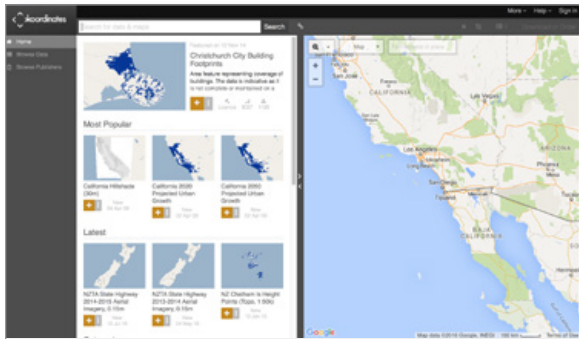
Open Grid provides city residents a way to explore open data with maps. The home page uses bold images to inspire engagement.

Goal: Inspire use and engagement with the data.

- * Marketing call to actions
- * Video story telling
- * Strong visuals

Customer: City residents and GIS programmers

KOORDINATES.COM



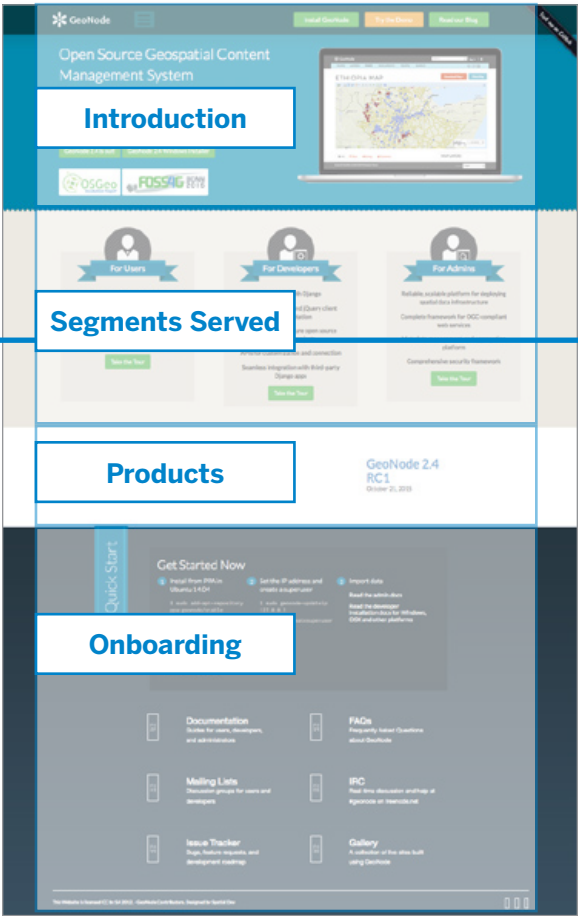
Koordinates provides users immediate access to map documents and visualizations to support exploration. The home page gets users right into the data with no explanation.

Goal: Get users mapping.

- * Simple interface that puts data files on equal footing with map visualization.
- * Is primarily a tool.

Customer: GIS mappers

GEONODE.ORG



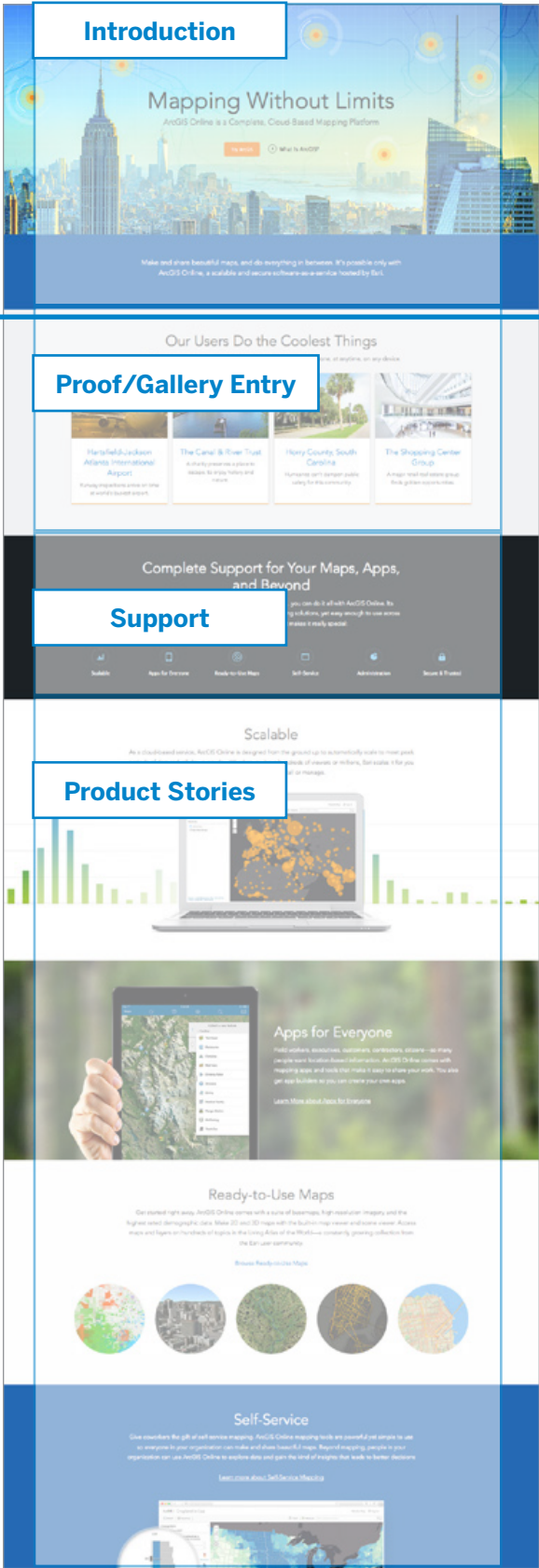
Introduction

Segments Served

Products

Onboarding

ARCGIS.COM



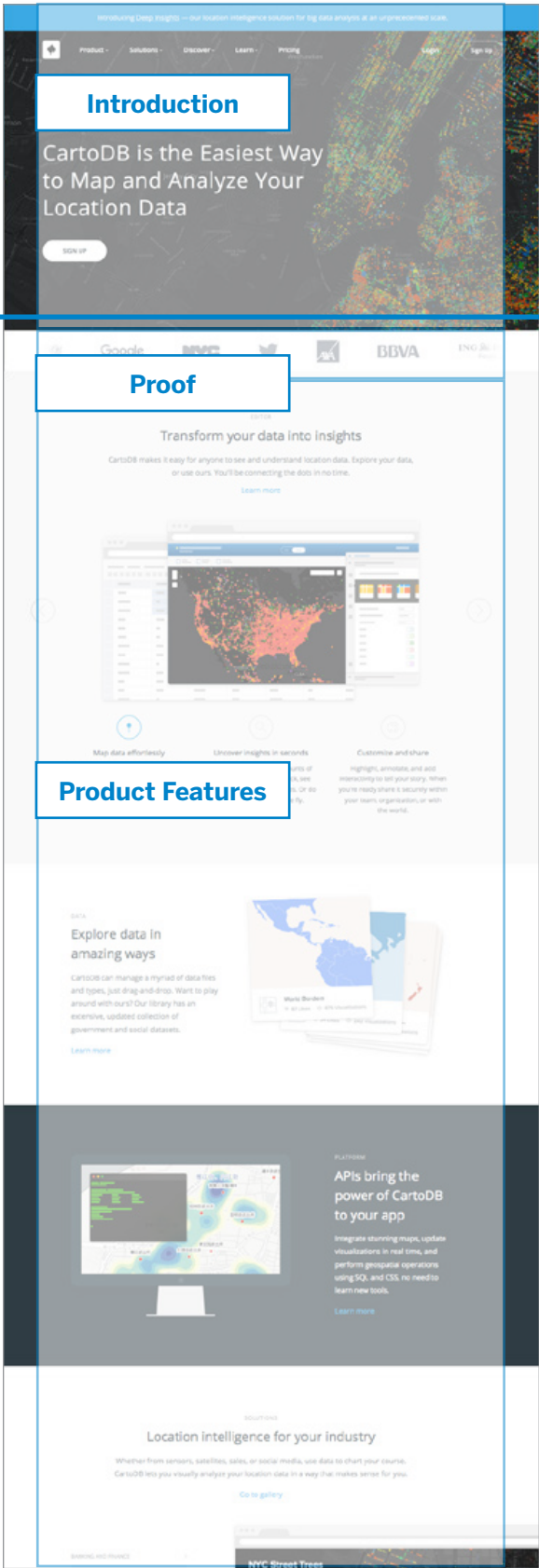
Introduction

Proof/Gallery Entry

Support

Product Stories

CARTODB.COM

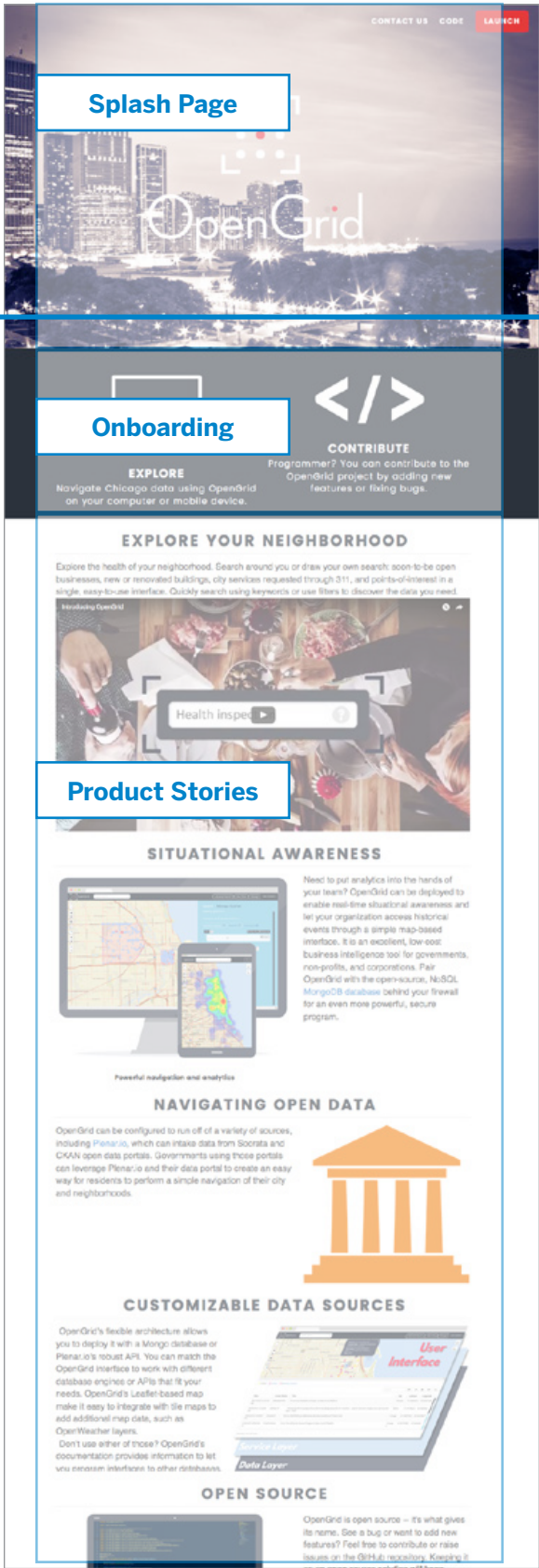


Introduction

Proof

Product Features

OPENGRID.COM

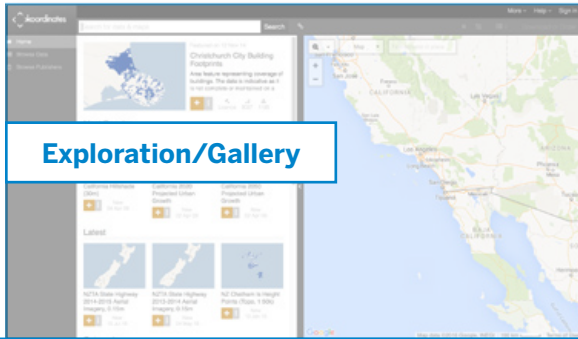


Splash Page

Onboarding

Product Stories

KOORDINATES.COM



Exploration/Gallery

Items "Above the Fold", visible without having to scroll.

Home Page

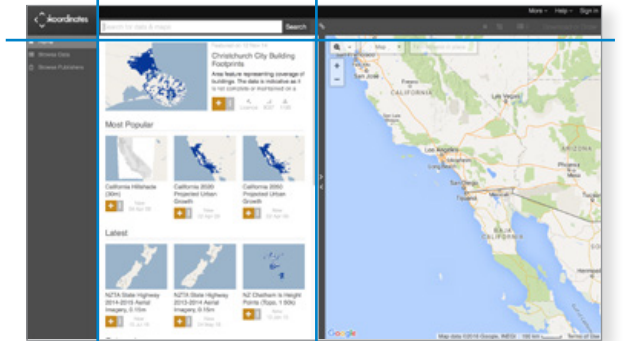
ANALYSIS

- 1 Paid/Subscription service products put the pitch up front, and support it immediately with proof of usefulness (client testimonials), following it up with product stories and features. Their home pages are designed to support and trigger the buying experience.
- 2 GeoNode uses ribbon design and icons of people to indicate proof, but are in effect describing user segmentations.
- 3 GeoNode, OpenGrid and Koordinates are all open platforms. Koordinates and GeoNode are the only platforms that allow immediate action from the home page: exploring maps (Koordinates); and downloading the software (GeoNode).

RECOMMENDATIONS

- A. Include Case Studies (similar to ArcGIS) to confirm decision and support user need.
- B. Move pitch and activation button to the main story.

KOORDINATES.COM



GeoNode Hypotheses and Wireframes

Notes from April 4-7, Puerto Colombia, Colombia

The users



Website and Data Managers
who upload data, creates data styles and maps,
enter metadata.



Power User / GIS Analyst
who are looking for data to download.






Lay Users
who wants to have simple, clear, fast
visualizations of layers and maps pre-created.

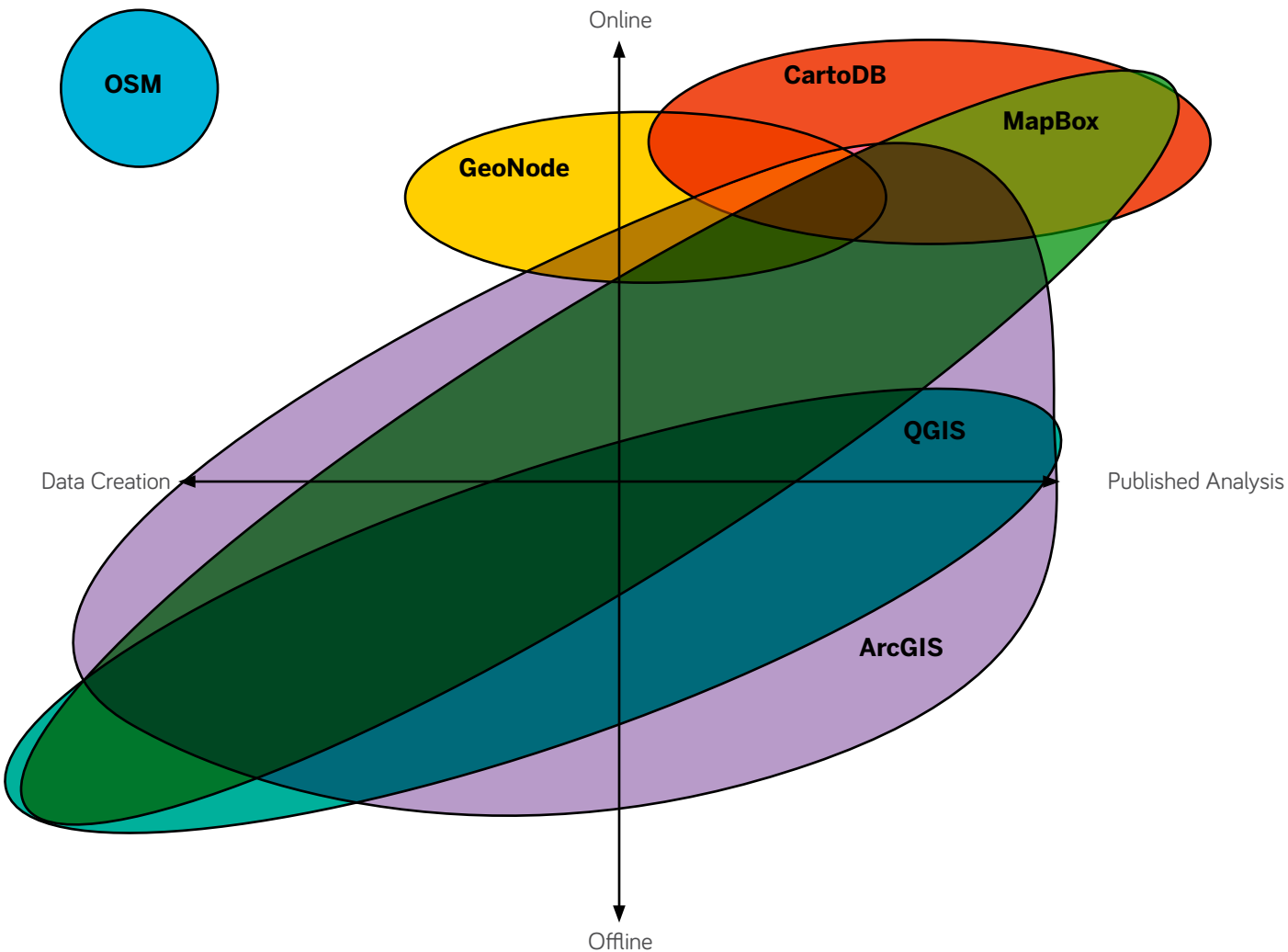
Defining Needs:

- 1. Simplicity
- 2. Usefulness
- 3. Adaptability

Defining Needs:

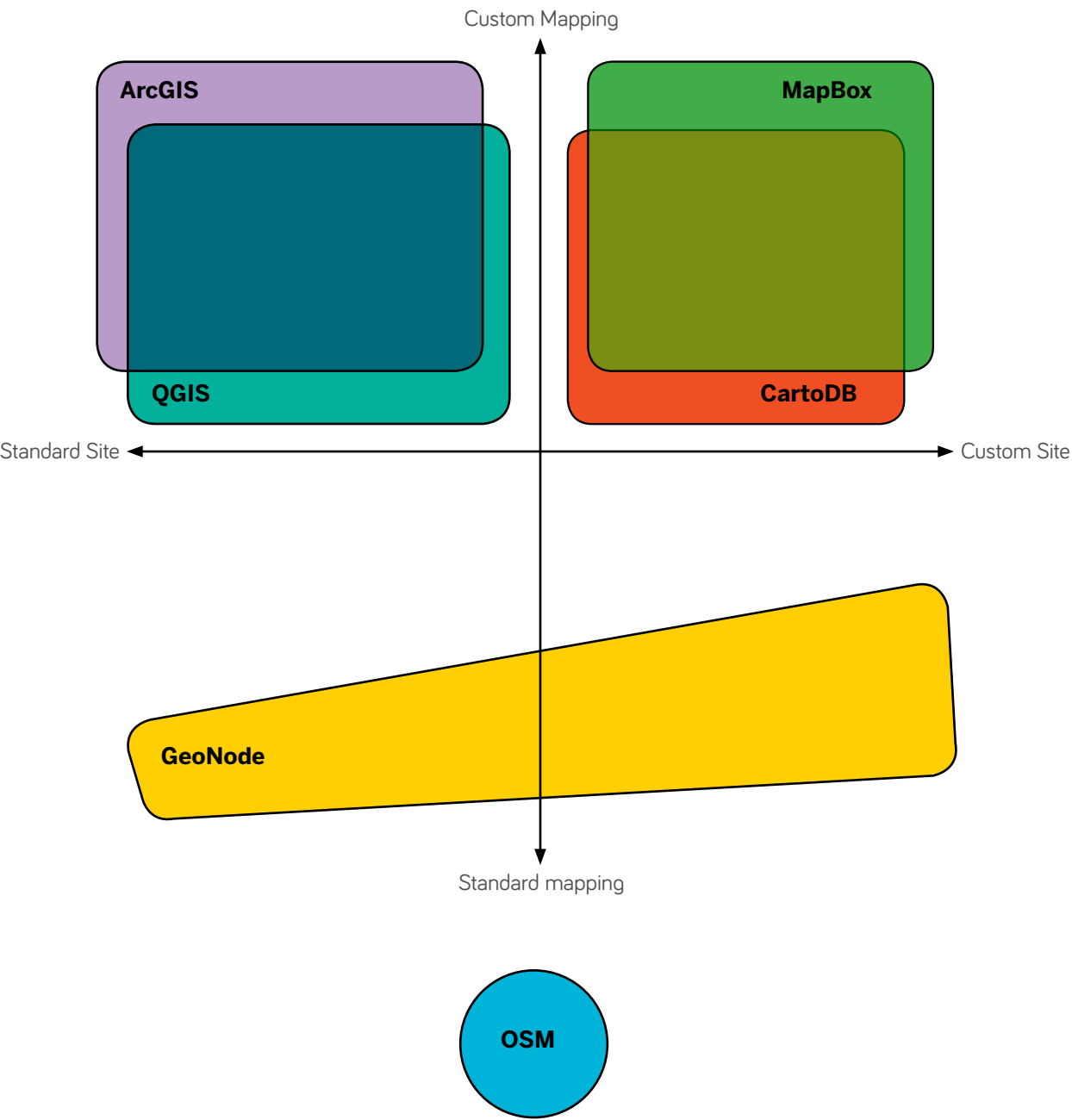
	1. Simplicity	2. Usefulness	3. Adaptability
 WEBSITE AND DATA MANAGERS NEED:	<ul style="list-style-type: none">A. Simplify setupB. Automate communicationC. Enable bulk upload and editing	<ul style="list-style-type: none">D. Make it useful to manage the data online:<ul style="list-style-type: none">* to know the data in the system* to know the health of the data/GeoNode* to improve the available data	<ul style="list-style-type: none">E. Allow the system to grow and shrink as new needs and use patterns become apparent
 POWER USER / GIS ANALYST NEED:	<ul style="list-style-type: none">A. Simplify knowing the content: available content; usefulness of content; relationship of content	<ul style="list-style-type: none">B. Make it ready to do workC. Make it easy to connect other programs	<ul style="list-style-type: none">D. Make it work regardless of industry or concern
 LAY USERS NEED:	<ul style="list-style-type: none">A. Simplify knowing what answers are possible: simple, templated, and visual interface	<ul style="list-style-type: none">B. Provide confidence that the answers are readily availableC. Make content immediately useful and understandable	<ul style="list-style-type: none">D. Make it adapt to my needs and concerns

Competitor Analysis
Mapping Platforms



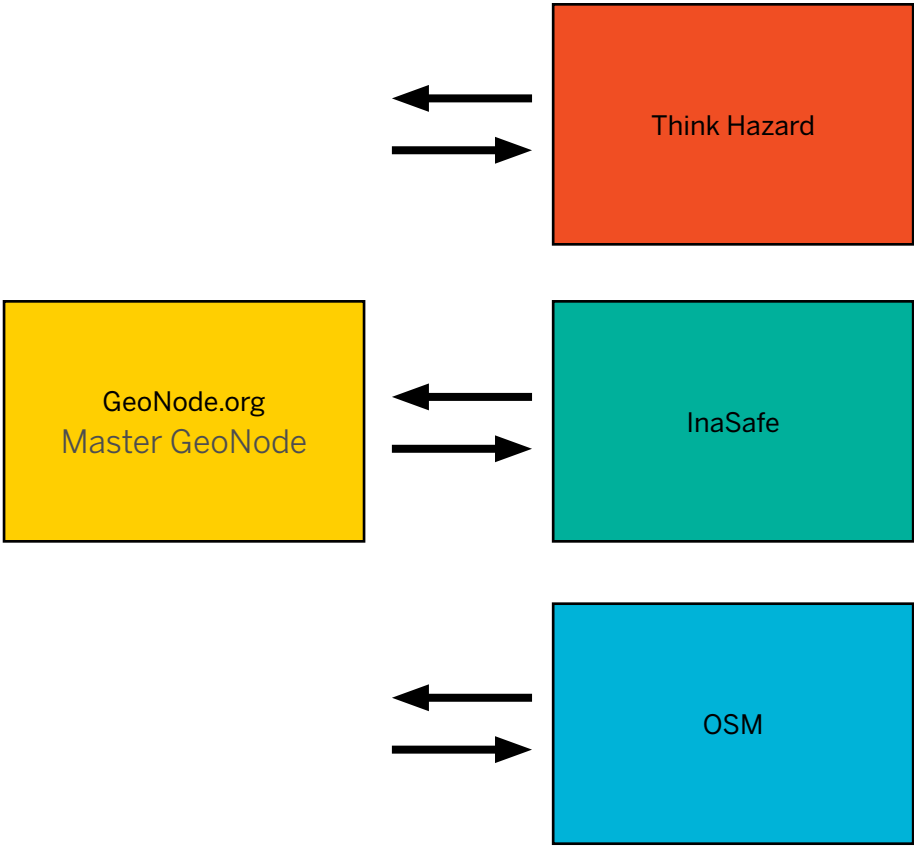
ANALYSIS
GeoNode is unique from its competitors.
Keep GeoNode's focus on it's centric positioning. Allow other programs to connect and support GeoNode. Don't try to become them.

Competitor Analysis
Customization

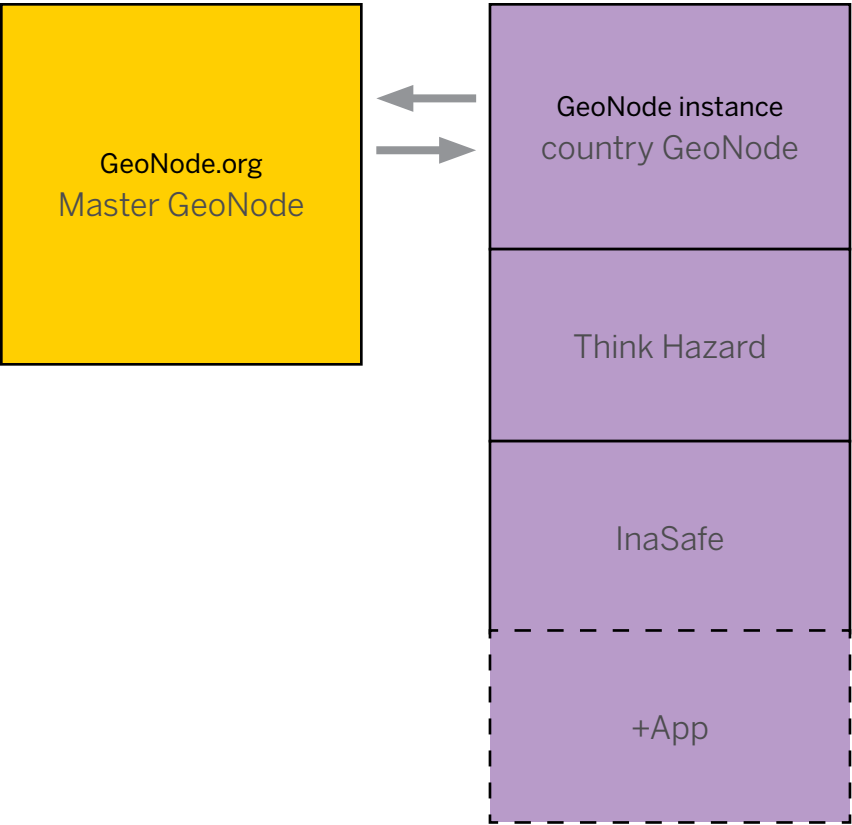


ANALYSIS
GeoNode expects a learning curve. By offering standard website capabilities and users the flexibility to make changes GeoNode enables GeoNodes to grow into their own platform.

Hypothesis
GeoNode + GeoNode Roles



World Bank
GeoNode, Think Hazard, InaSafe, OSM etc are treated as stand alone applications with very clear objectives and uses and relationships with each other.
GeoNode acts as a data clearinghouse, a library.



GeoNode instances
Each GeoNode instance is a stand alone application, acting independently of other GeoNodes. It has the opt-out option to connect with the master GeoNode database of documents and maps. On setup, GeoNodes come with standard analysis apps (ex. Think Hazard, InaSafe).

Hypotheses

1. GeoNode's primary purpose is to make data relevant and meaningful, when it is needed.
Therefore, GeoNode is a future forecasting library at the intersection of geo-spatial information, infrastructure, natural events.
2. GeoNode is primarily used by individuals with little experience building websites or developing software.
Therefore the software must do most of their work for them.
3. GeoNode users don't know what they have.
 - * The software should provide simple views into their data.
 - * The software should be adaptable to changes in need.
4. GeoNode lacks the ability to easily evaluate and improve the data and system.
Thus GeoNode needs tools for visualizing and knowing data; for editing and trouble shooting problems.

Hypotheses

Hypothesis	Currently	Needs	Meaning
1. GeoNode’s primary purpose is to make data relevant and meaningful when it’s needed. Therefore, GeoNode is a future forecasting library at the intersection of geospatial information, infrastructure, natural events.	GeoNodes easily store information, creating a catalog of files. However, lacking good basic metadata these files are opaque to users. Finding a useful file results in file autopsies to define their purpose and usefulness.	<ul style="list-style-type: none">* To know file purpose when no metadata exists.* To preview data without leaving the GeoNode.* To develop metadata with minimal user input. (ex. Software reads file data to suggest metadata such as location, URL source and similar files elsewhere in the system.)	<ul style="list-style-type: none">* GeoNode isn’t a single layer file, or the person uploading documents.* GeoNode holds a catalog of information waiting to be activated.* GeoNode is timely.* GeoNode is a safe—housing critical information digitally, making it ready for events.
2. GeoNode is primarily used by individuals with little experience building websites or developing software. Therefore the software must do most of their work for them.	<ul style="list-style-type: none">* GeoNodes have minimal changes to their basic setup. The majority of GeoNodes in the wild will not stray from the basic template and setup provided by GeoNode.* GeoNodes do not appear to be active.* GeoNodes look exactly the same.	<ul style="list-style-type: none">* Simple templates that take the guesswork out of setup.* Users need one location that simplifies the process of using the data for mapping and analysis.	<ul style="list-style-type: none">* GeoNode must provide templates.* GeoNode must have a support period (likely related to the World Bank server).
3. GeoNode users don’t know what they have. The software should provide simple views into their data. The software should be adaptable to changes in need.	<p>GeoNode does not help users understand the potential relationship between one document and a second.</p> <ul style="list-style-type: none">* InaSafe, QGIS, Think Hazard support specific user needs.* GeoNode users don’t know what to do with their data once it’s uploaded.* GeoNode users are not creating useful maps with their data.* Users need to export CSVs to understand what an unnamed/non-metadata’ed file is.	<ul style="list-style-type: none">* Simple mapping and analysis.* A lean, build as you need it platform for GIS development and analysis.* Enable in app views.* Instant engagement with the data that matters.	<ul style="list-style-type: none">* GeoNode should provide a contained system, with adjacent analysis tools (Think Hazard, InaSafe) featured, lean, opt-out widgets in the software.* The World Bank provides the full version of these Apps as a stand alone service; while countries use lean versions until greater need is identified.* GeoNode should provide a contained system, with adjacent analysis tools (Think Hazard, InaSafe) featured, lean, opt-out widgets in the software.* The World Bank provides the full version of these Apps as a stand alone service; while countries use lean versions until greater need is identified.

Hypotheses

Hypothesis	Currently	Main Task Needs:	Potential tools
4. GeoNode lacks the ability to easily evaluate and improve the data and system. Thus GeoNode needs tools for visualizing and knowing data; for editing and trouble shooting problems.		Setup <ul style="list-style-type: none">* Help identifying needed components.* Help identifying what tools are available.* Visual examples of what the data can tell them when used.* Central place to know what is going on with their data.* Tools to set permissions, and security Know the health of the system <ul style="list-style-type: none">* Reporting* Add additional tools* Content types* Number of users and frequency of posting* Value of the posted data* A list or index of layers* Tools for gap analysis	<ul style="list-style-type: none">* Nineteen to quickly visualize the type of content available* System check that provides visualizations of specific features and functions; with recommendations based on a set of requirements.

Recommendations:

1. **Focus GeoNode on:**

- * simple, templated mapping;
 - * visual, compounded search;
 - * simple setup
 - * engaging users from the start
2. **Changes to GeoNode:**

- * Remove map editing capabilities
 - * Push new GeoNodes to use the World Bank server to get started.
 - * Create automatic blog posts and user emails through user and site statistics. Have in place
- during trial and setup period, opt in after. Once a month compilation email.

- * The gallery is for maps not layers.
 - * Cluster functions within the Login/Account modal
 - * The navigation needs to focus on engaging with the content.

Current Navigation:

Layers	Maps	Documents	People	Groups	Search	Sign-in
--------	------	-----------	--------	--------	--------	---------

Proposed:

Search	Resources	Published Maps + Analysis	About	Sign-in		
	Catalog/Index	Map Gallery	People/Groups			
	Make Map	Analyzed reports	About			
	InaSafe		Blog			

Catalog Search

User: general, logged-in site user

Priority: Make the search more visual and impactful.

- * Make content knowable
- * Make content usable
- * Help users find layers that work together

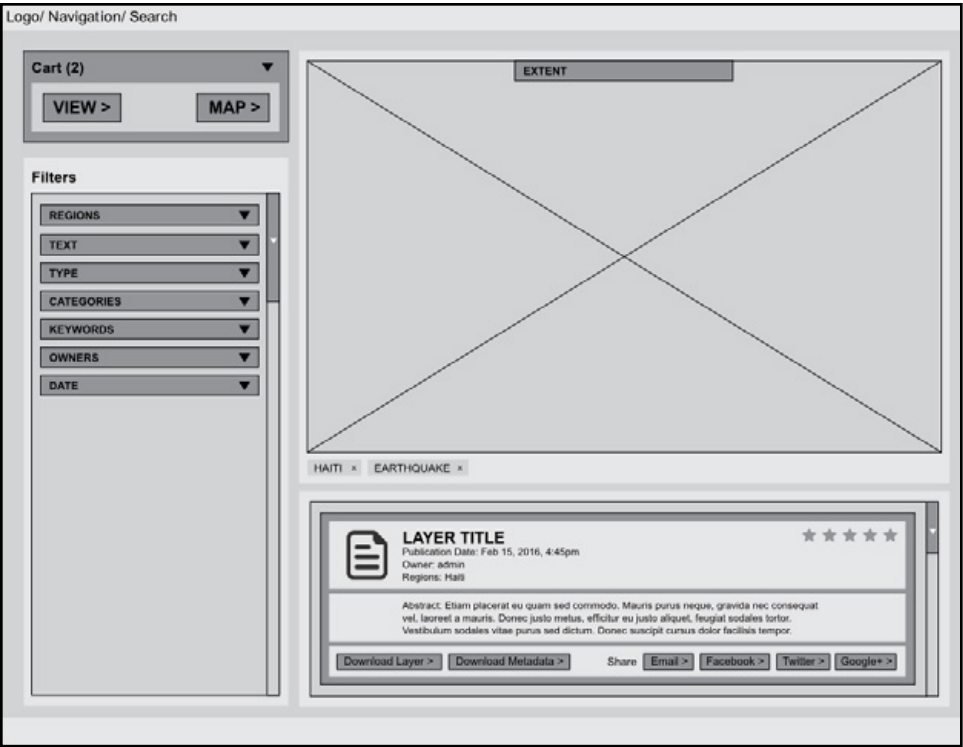
RECOMMENDATIONS

Extant:

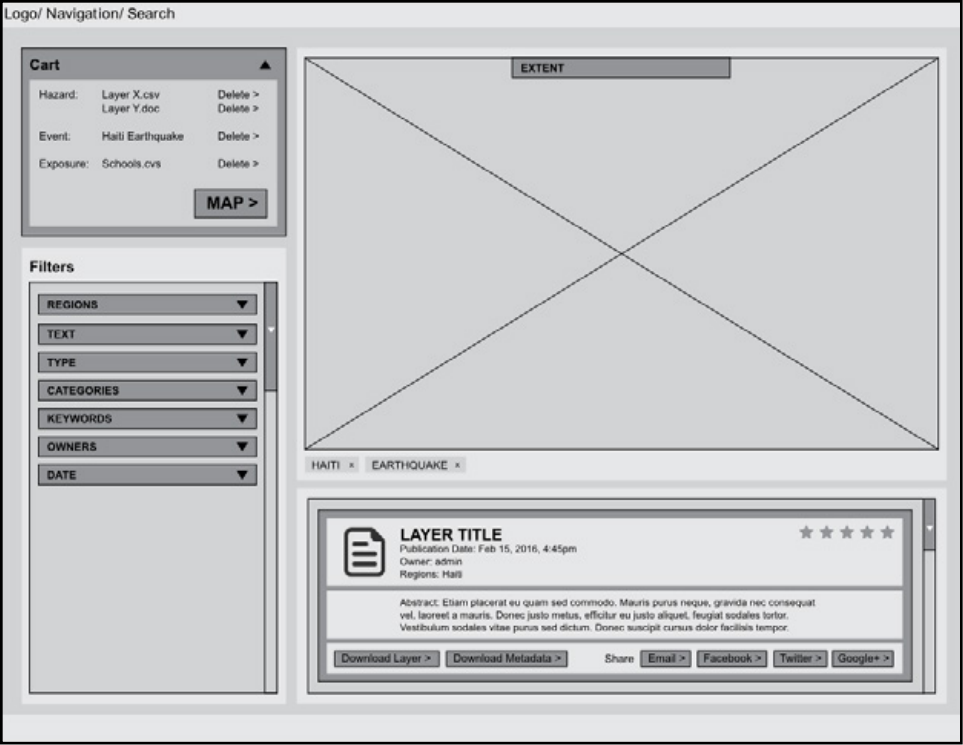
- * Move Extant to large column.
- * Change Extant to file preview over-set on a global map.
- * Enable background change (b/w, color)

Files

- * Remove thumbnail image, replace it with an icon
- * Minimize the space the file name and contents are taking up.



Search

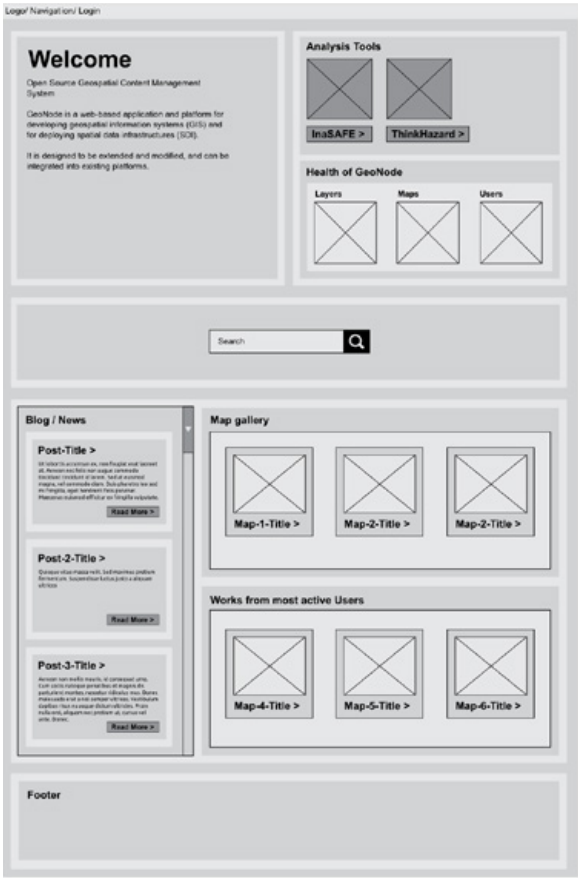


Expanded Cart View

Starter Home Page Templates

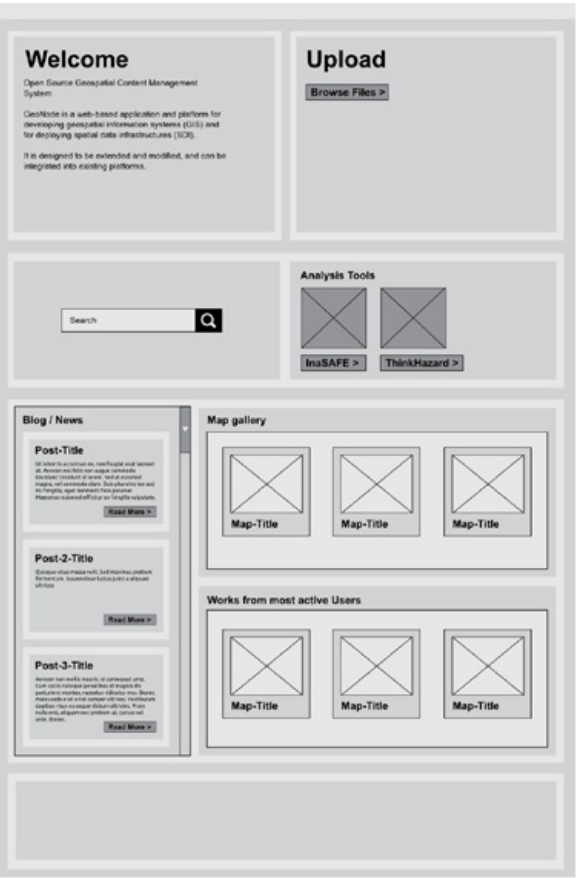
RECOMMENDATIONS

- * Make the GeoNode's health and activity apparent to the viewer.
- * Make it easy to understand what the GeoNode is about, and the opportunities inherent in the data.
- * Prioritize engagement



TEMPLATE 1: BLOG STYLE/
GEONODE SPECIFIC

- * Equivalent to a Wikipedia



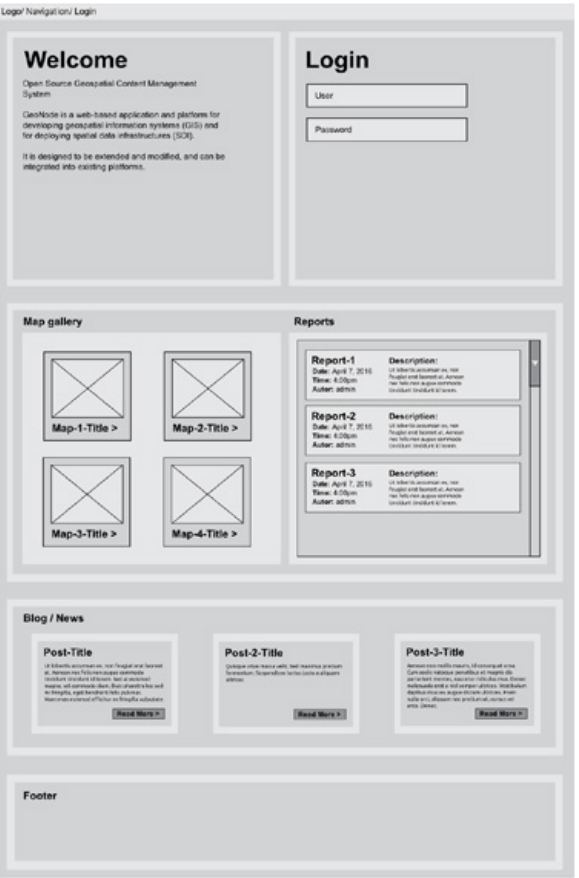
TEMPLATE 2: BASIC TEMPLATE
(EXPERT)

- * Equivalent to a Wikipedia



TEMPLATE 3: BASIC SECURE
HOME PAGE

- * Equivalent to Facebook



TEMPLATE 4: PUBLIC SECURE
HOME PAGE

- * Equivalent to HBO

Template 1:
Blog Style/GeoNode Specific

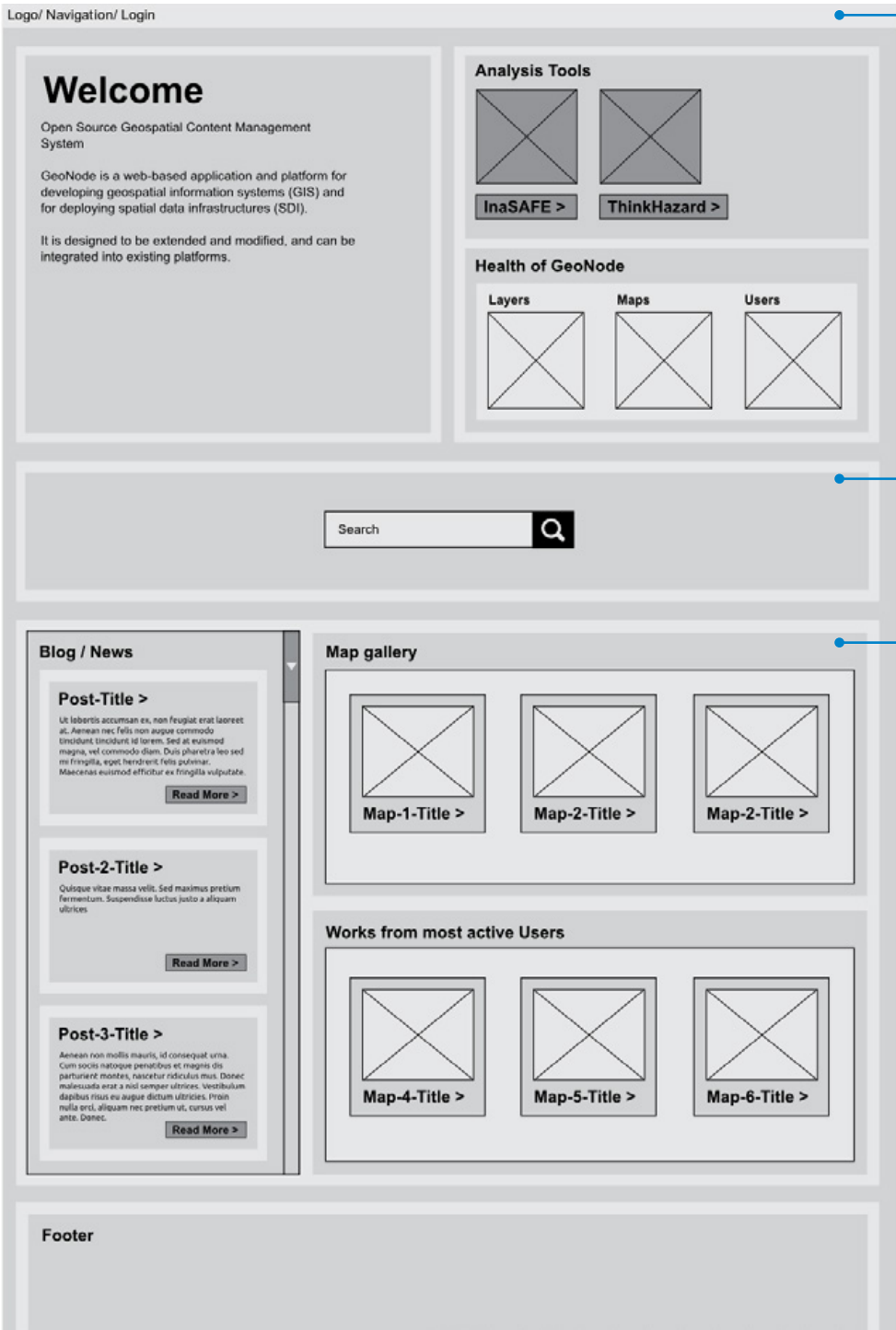
- * Equivalent to Wikipedia

Login = Admin/user

- * Upload
- * Save maps/analysis
- * Publish maps/analysis

View Only = Public

- * Search
- * Map
- * Download
- * Read



At-a-glance

Quickly know:

- * The GeoNode
- * Recent analyses
- * Site specific hazards
- * Health of the GeoNode

Search + Upload

- * Actively engage with GeoNode's content

History + News

Quickly know the GeoNode's activity over time:

- * Maps
- * Active users
- * Individual users
- * Important news

Template 2:
Basic Template (Expert)

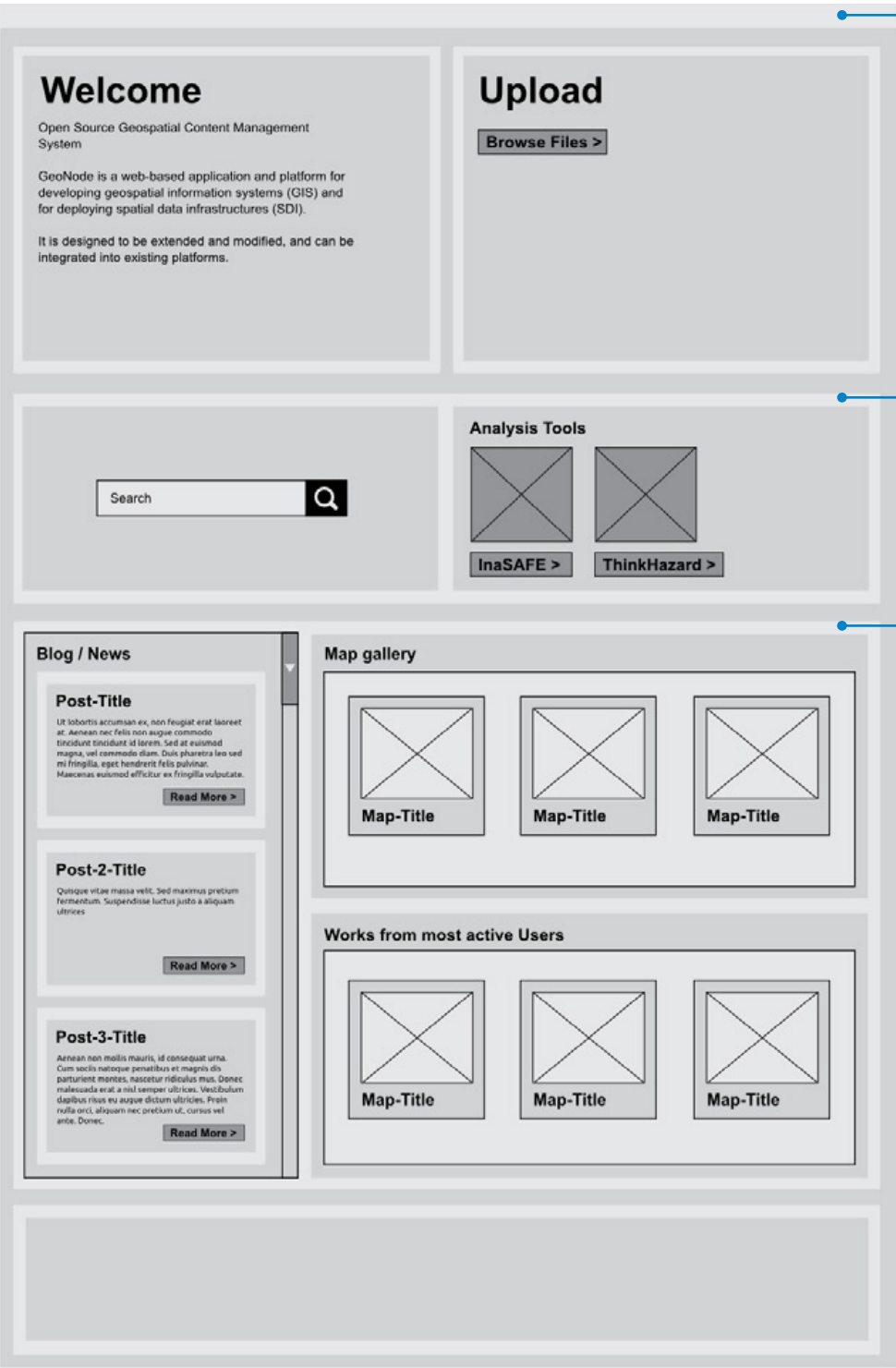
- * Equivalent to a Wikipedia

Login = Admin/user

- * Upload
- * Save maps/analysis
- * Publish maps/analysis

View Only = Public

- * Search
- * Map
- * Download
- * Read



At-a-glance

Quickly know:

- * The GeoNode

Search + Engage

Actively engage with GeoNode's content

- * Recent analyses
- * Site specific hazards

History + News

Quickly know the GeoNode's activity over time:

- * Maps
- * Active users
- * Individual users
- * Important news

Template 3:
Basic Secure Home Page

- * Equivalent to Facebook
- * Private
- Login = Admin/user**
 - * Upload
 - * Save maps/analysis
 - * Publish maps/analysis
- View Only = Public**
 - * Know a website exists

Logo/ Navigation/ Login

Welcome

Open Source Geospatial Content Management System

GeoNode is a web-based application and platform for developing geospatial information systems (GIS) and for deploying spatial data infrastructures (SDI).

It is designed to be extended and modified, and can be integrated into existing platforms.

Login

User

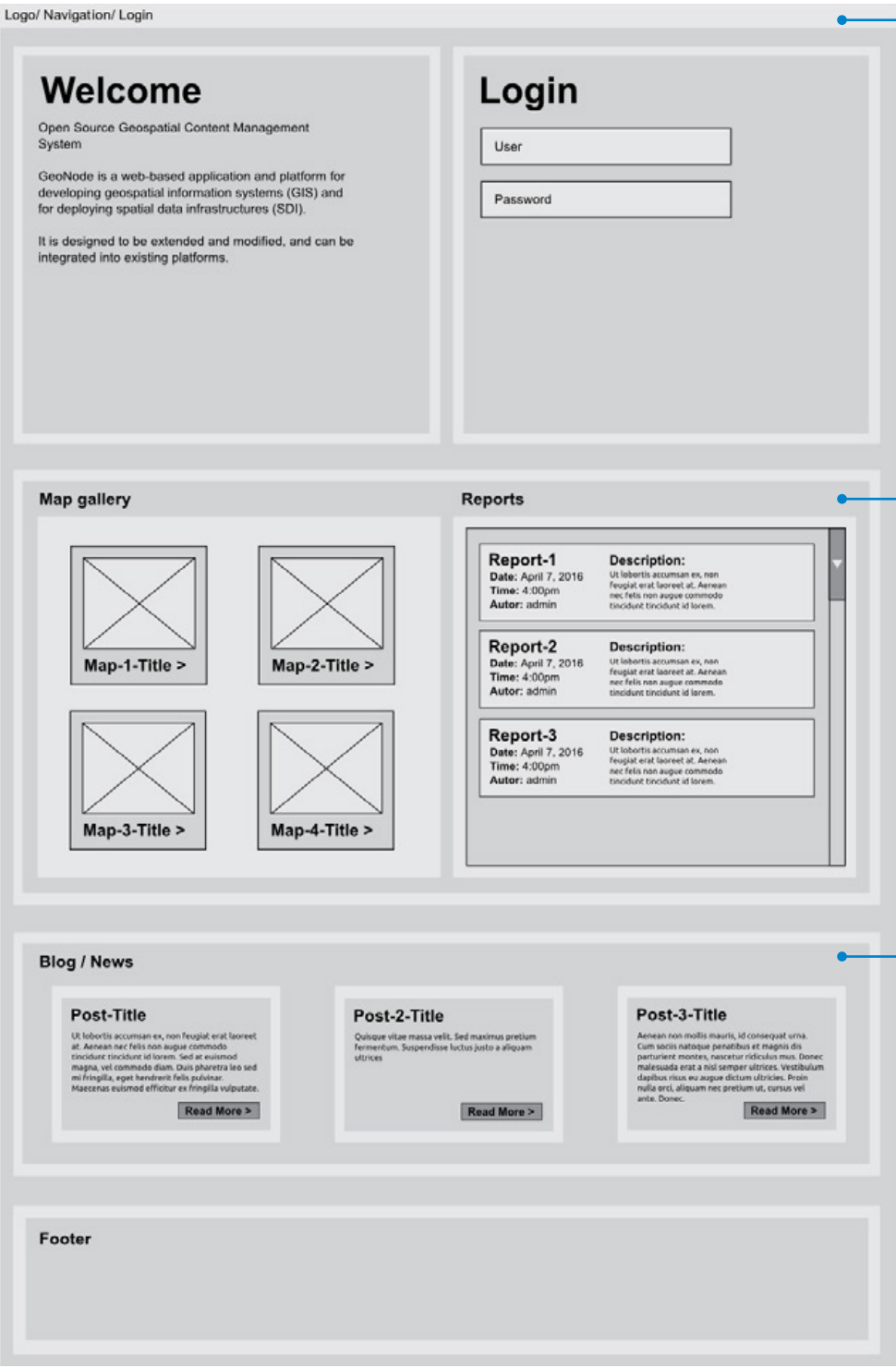
Password

Footer

- At-a-glance**
Quickly know:
- * The GeoNode
 - * Access for members only

Template 4:
Public Secure Home Page

- * Equivalent to HBO
 - * Private/Public
- Login = Admin/user**
- * Upload
 - * Save maps/analysis
 - * Publish maps/analysis
- View Only = Public**
- * Published news
 - * Published maps/analysis



- At-a-glance**
Quickly know:
- * The GeoNode
- Engage**
Engage with GeoNode's content
- * Recent analyses
 - * Site specific hazards
 - * Health of the GeoNode
- News**
Quickly know the GeoNode's activity over time:
- * Important news