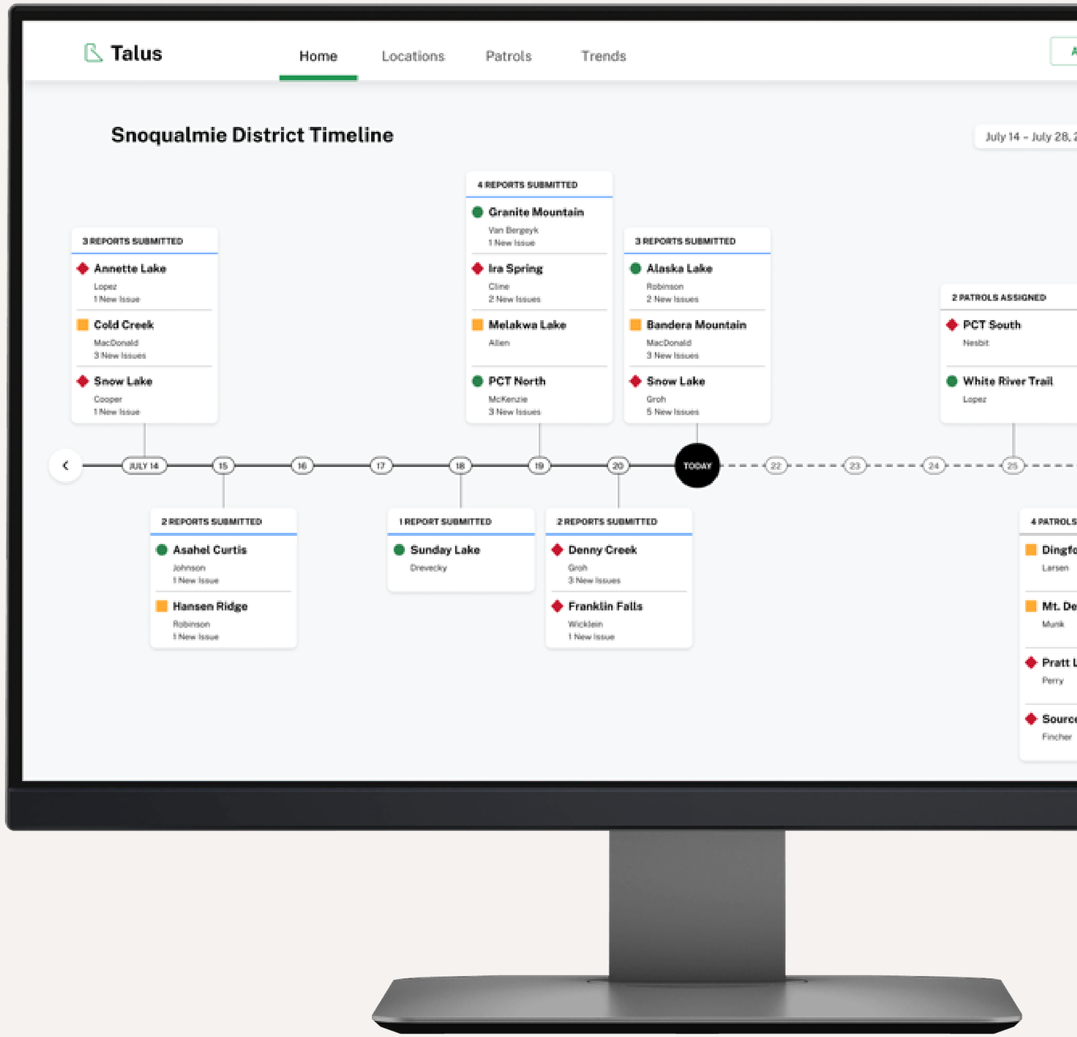
Talus

Design Specification



TEAM

Trevor Larsen
Eleanor Nesbit
Tony Tran

SPONSOR

REI Co-op

Contents

Executive Summary

The US Forest Service's mission can be summed up in their motto, "Caring for the Land and Serving People". What's not immediately apparent in this motto is the inherent tension those two missions strike. Promoting the preservation of natural environments while ensuring access, use, and enjoyment of these environments by people is a near-impossible task, one that Forest Rangers wrestle with daily.

In recent years, this tension has been exhasterbated by increased usage of trails alongside decreased funding of the Forest Service's parent agency, the US Department of Agriculture. As more people participate in outdoor activities, the individual impacts they have on the environment become apparent. Rangers help mitigate this tension by educating the public on good conservation habits and doing trail maintanence.

Our research uncovered several opportunity areas for design intervention. The US Forest Service tracks numerous metrics related to visitor traffic and trail conditions. But current technology is segmented and hard to access, creating a derth of actionable data for rangers to use to inform their decisions like which trails to visit or how many rangers to hire each season. While lots of data is collected (at the expense of ranger's time), most of it sits in spreadsheets, sometimes taking years to be turned into a report or grant proposal. Critical information — such as a tree down blocking a trail — gets treated the same way as long-term data like weekly trail counts, making it easy for rangers to miss important information. Weekly scheduling, a complex part of a station manager's jobs, currently relies mostly on institutional knowledge. This presents challenges as many rangers are employed seasonally or will rotate stations year after year.

The Skykomish Ranger Station, one of five ranger stations in the Mount Baker Snoqualmie National Forest, whose territory spans over 1.7 million acres.

What Talus Does

Talus is an application designed to bring data collected by rangers together in one place, and present it intuitively and contextually. Talus helps wilderness rangers monitor and manage trail conditions, so they can spend more time in the field doing their most impactful work. After every patrol, wilderness rangers compile a comprehensive report of their trip, their interactions with other people, tasks they worked on, and anything new that needs future planning to take care of. Its main features include:

Actionable data: time and location views

From the timeline, managers can see what's been happening in their district over the course of the season, and schedule upcoming work for the next few weeks or months. Along with this time-based view, the district overview map lets rangers see issues organized spatially so they can see where problems occur most often and where to focus their efforts.

Trail health at a glance: contextual information

Location-specific detail pages elevate the most relevant information, making it easy to see the current conditions for a given trail, and the status of any issues that need attention. Talus helps rangers prioritize the places that are most in danger of degradation.

Streamlined workflow: intuitive mental model

New issues are continuously cropping up, and Talus gives rangers a simple way to view trail reports, rank issues, and assign work in a dynamic and unpredictable natural environment.

DESIGN PRINCIPLES

Ease communication and knowledge sharing for rangers and the public.

Design to maximize both conservation and access.

Value human–nature interaction over human–technology interaction.

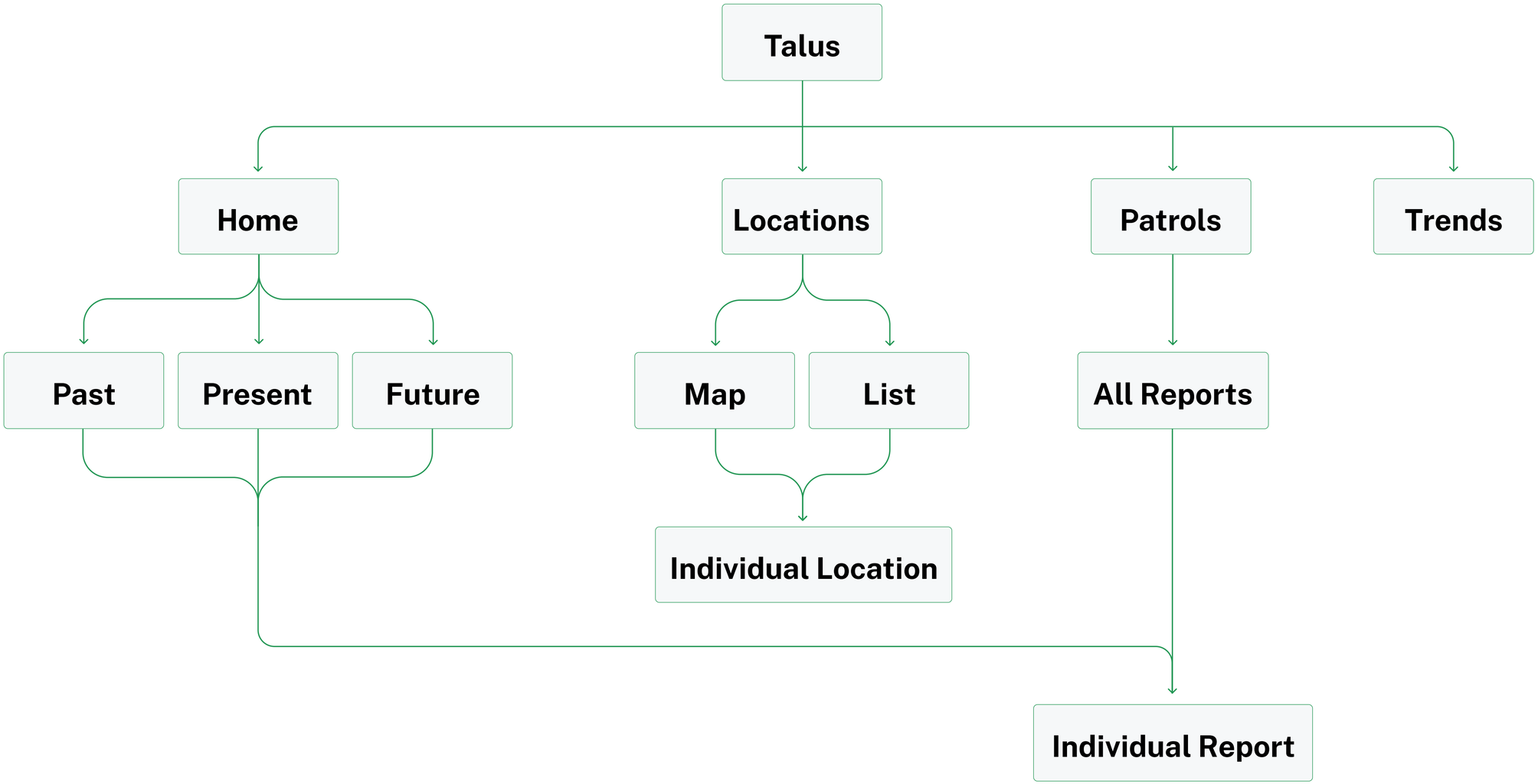
Support ranger agency to act on their first-hand knowledge.

Architecture

Site map
Workflow
Interaction Flows
Key Paths
Screen Annotations
Entity Relationship Diagram
Land Organization

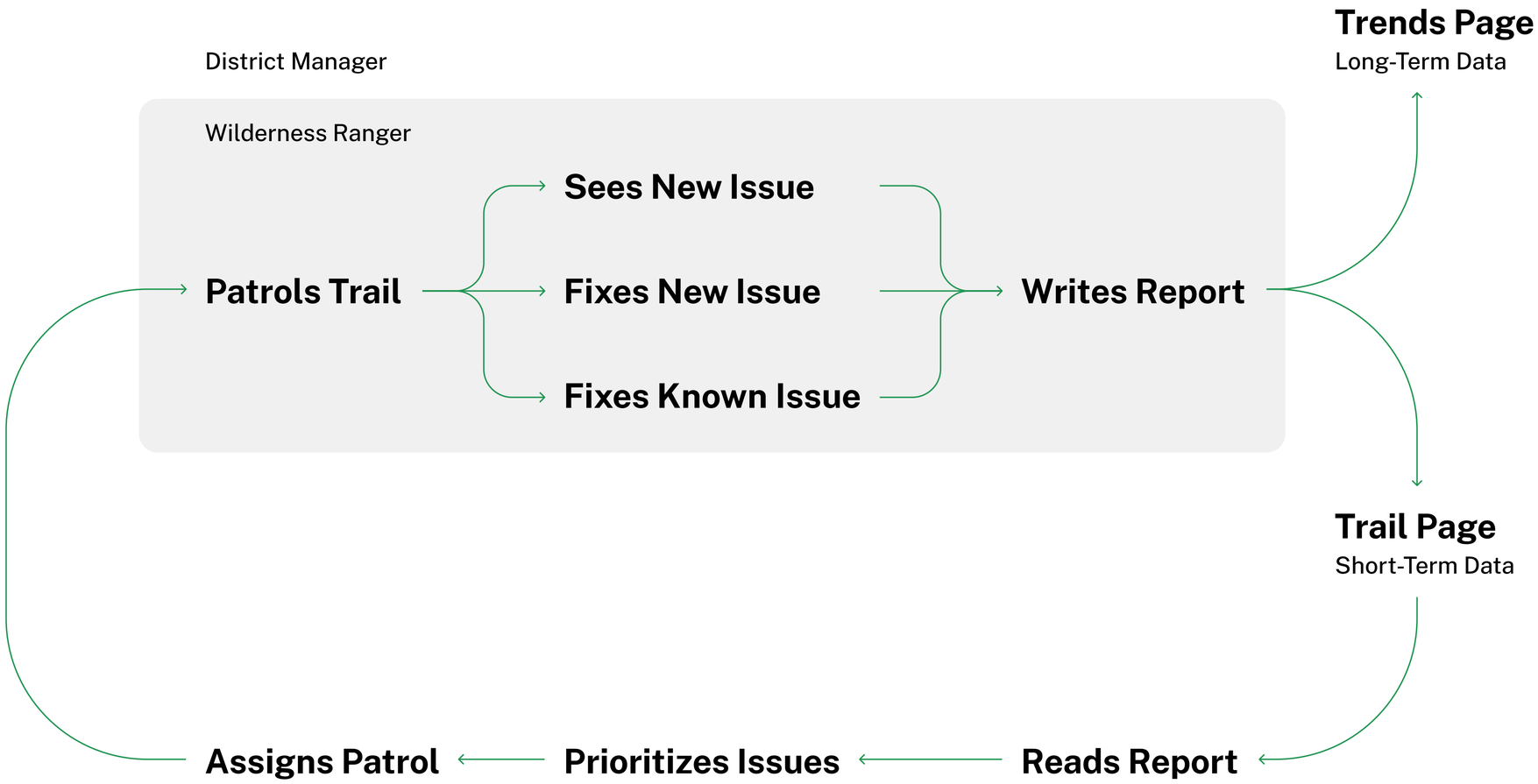
ARCHITECTURE

Site Map



ARCHITECTURE

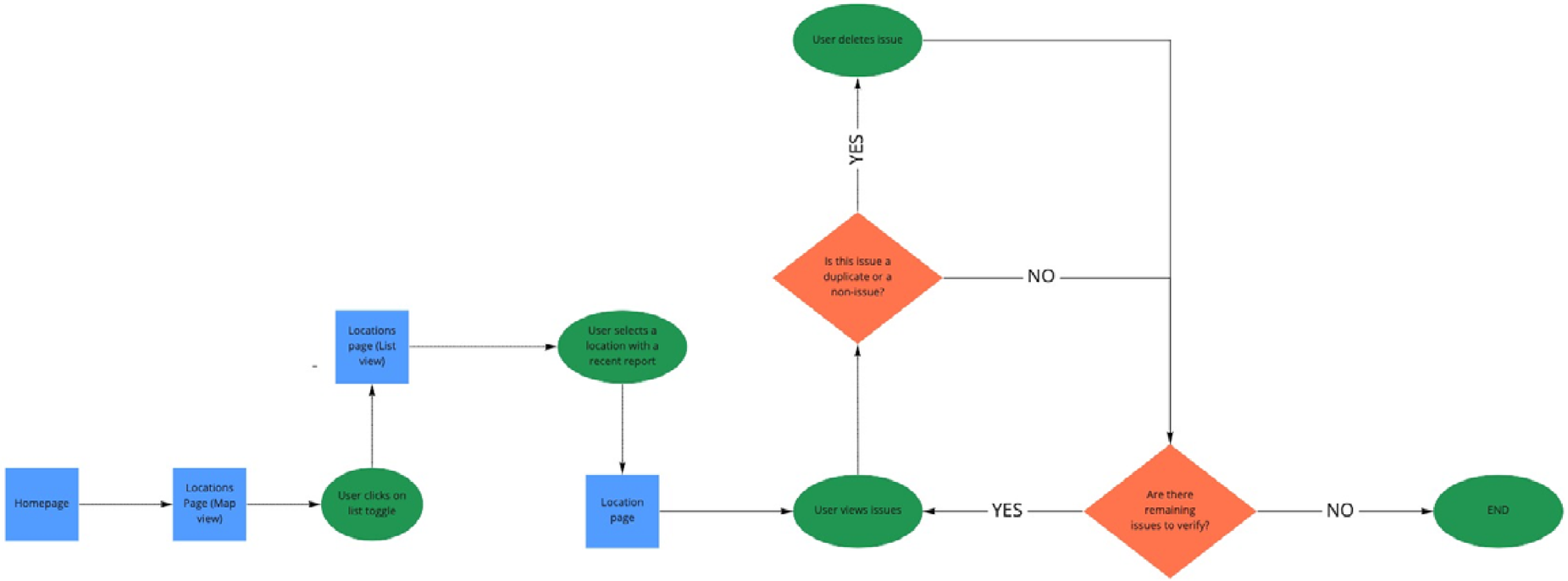
USFS Ranger Workflow



ARCHITECTURE

Interaction Flow

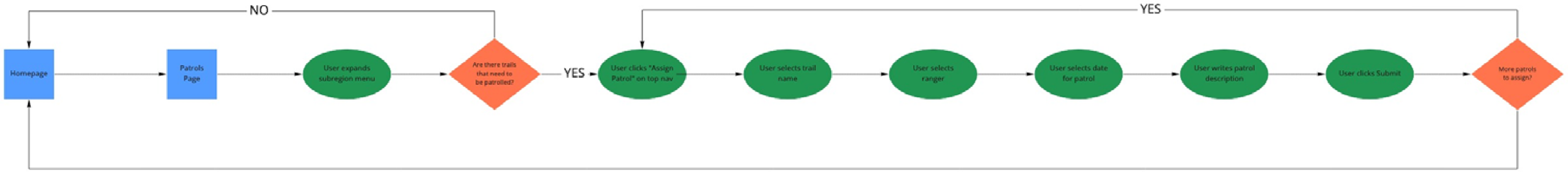
ASSESSING REPORTED ISSUES



ARCHITECTURE

Interaction Flow

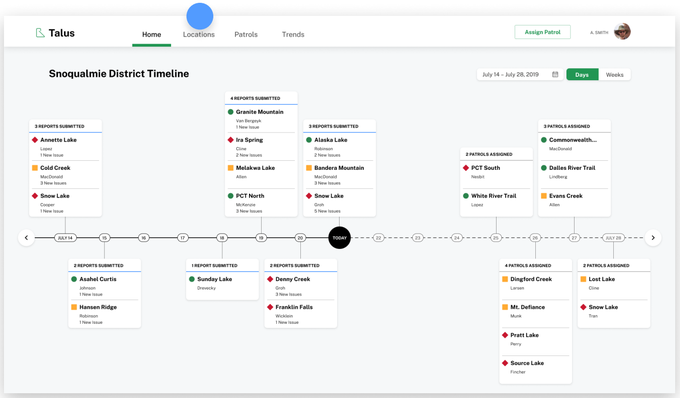
ASSIGNING A PATROL

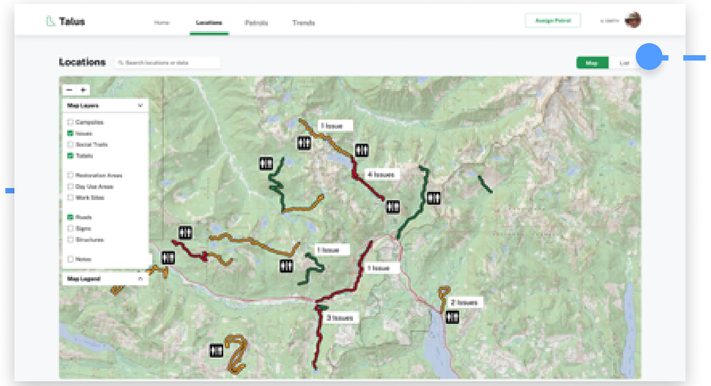


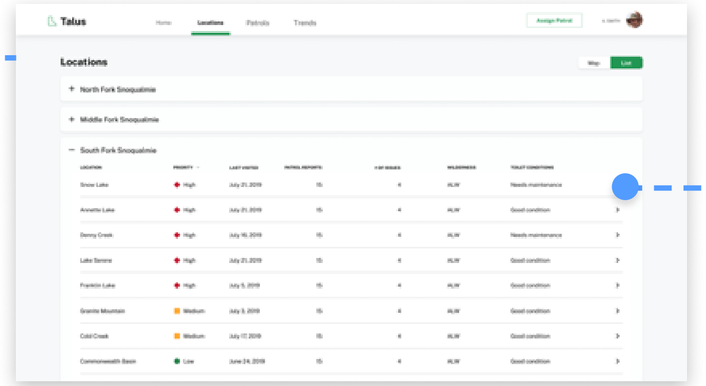
ARCHITECTURE

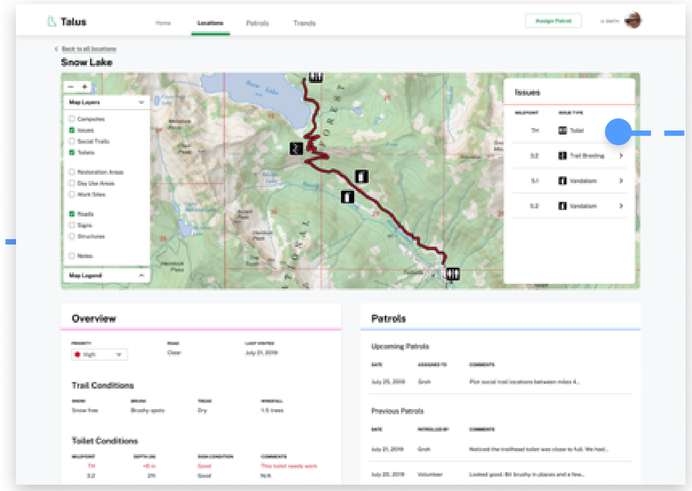
Key Path - Assessing Reported Issues

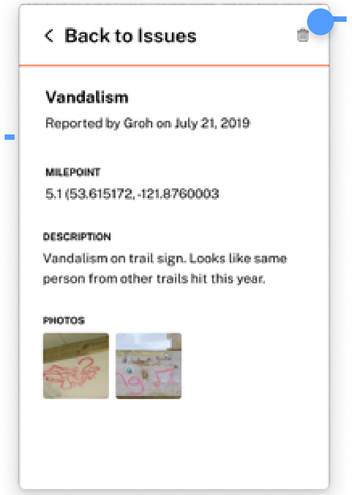
Rangers can view specific issues on a trail page and go in to view things like their GPS coordaintes or any photo evidence.
If they find a duplicate issue or a non-issue, they can go in and archive the ticket so it no longer appears on the trail page.

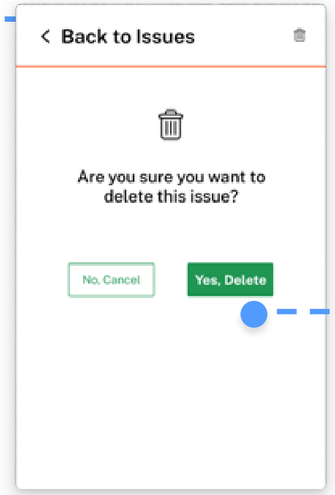


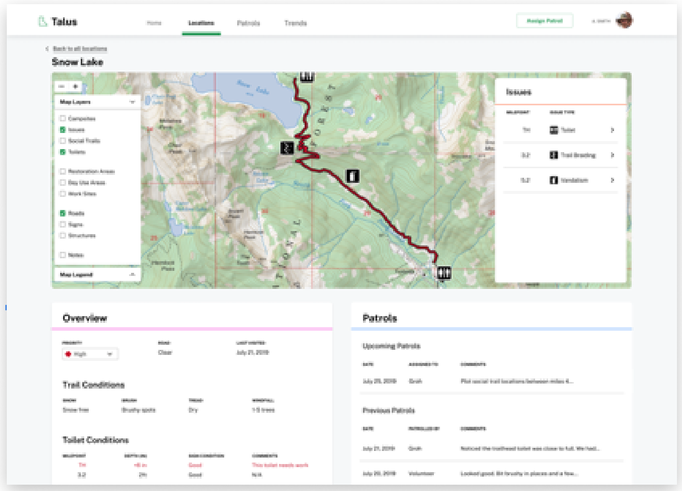








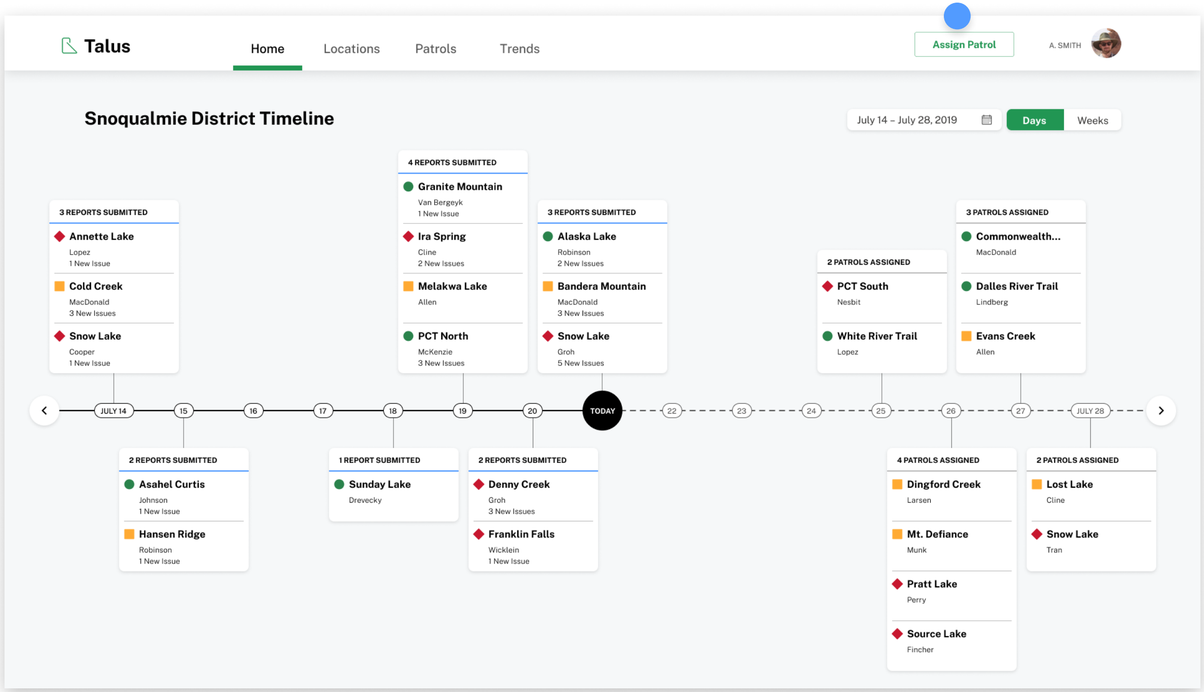


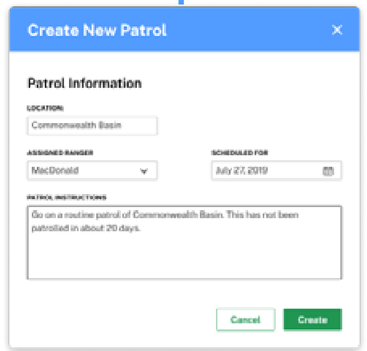


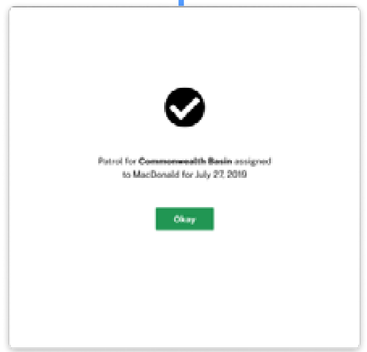
ARCHITECTURE

Key Path - Assign a Patrol

Rangers are able to assign a patrol from any screen in the system by clicking on the “Assign a Patrol” button. If a user clicks the button while on a specific trail page, the trail name will be auto-filled.



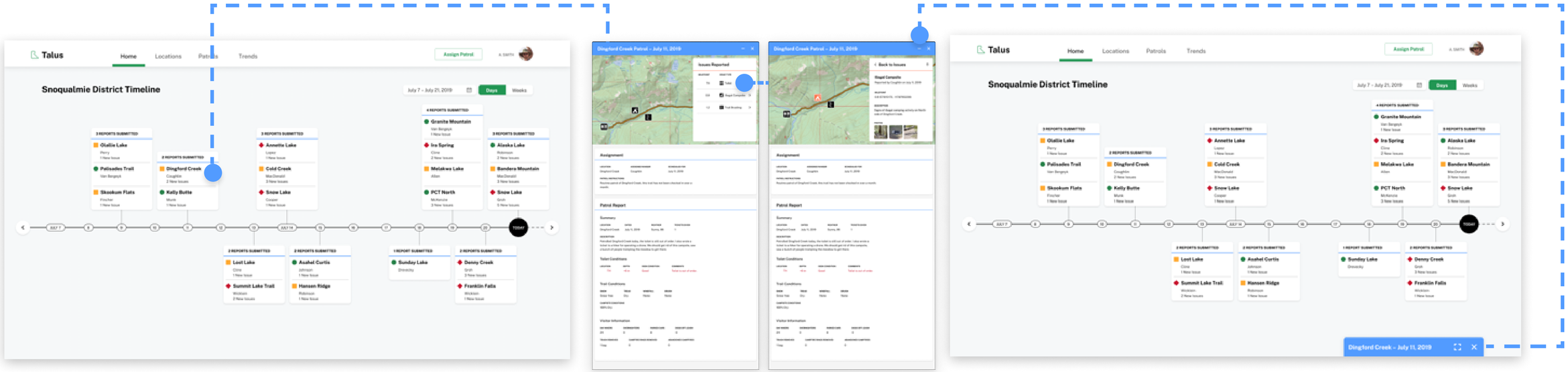




ARCHITECTURE

Key Path - View and Minimize Patrol

Rangers can view patrols from both the trail page as well as the timeline on the homepage. Patrols can be minimized and are kept at the bottom of the screen.

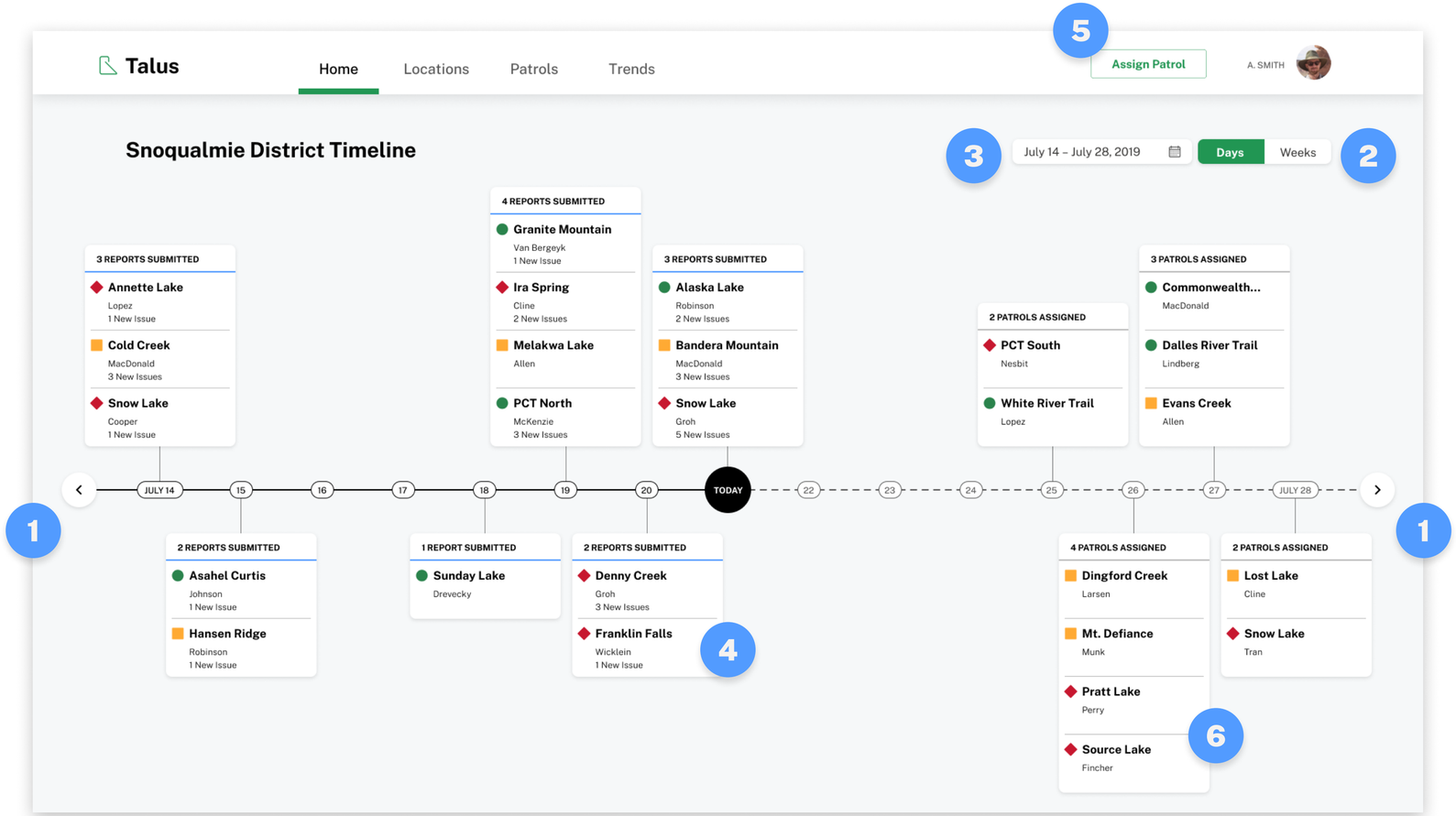


Annotation

TIMELINE

The timeline view is the homepage of Talus. Here the user can see any patrols that have occured within a set time frame, as well as future pending patrols.

1. Users can scroll forward or backwards a week or month at a time.
2. View one week's worth of patrols at a time, or zoom out to view an entire month's worth.
3. Users can also set their own date range.
4. Patrols are listed with that trail's status (red, yellow, or green), alongside the name of the ranger or volunteer who completed the patrol, and if there were any issues discovered on the patrol.
5. The assign patrol button is always available on the top nav, and gives the user easy access to assign a patrol to a specific location, ranger, and date.
6. Users can view upcoming patrols and who they're assigned to.



Annotation

LOCATION//MAP VIEW

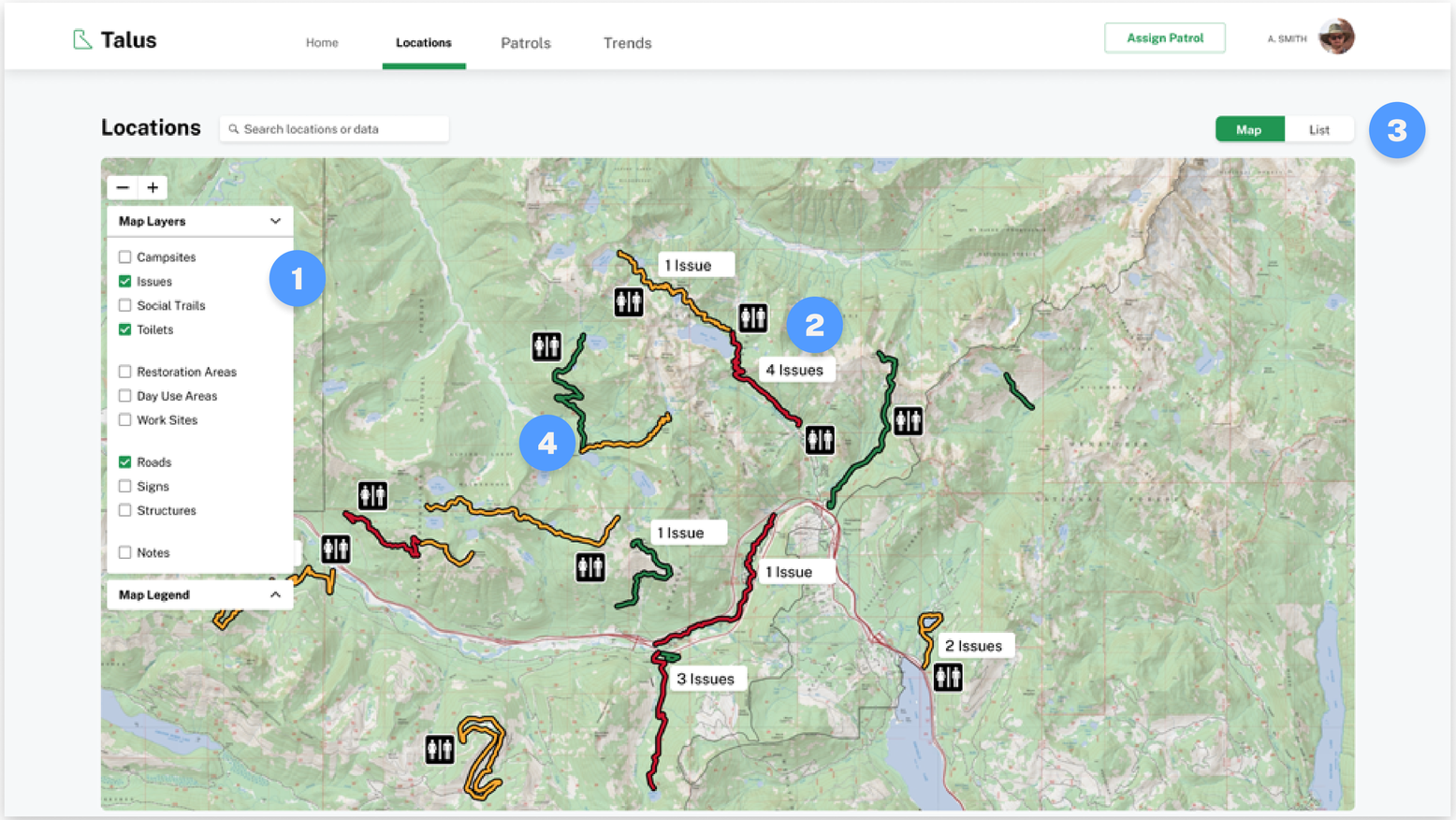
The trails page is where users can view all the trails in their district. The map contains layers for all sorts of data like wilderness toilets, open issues, social trail locations and more. The map view provides a visible representation of how the district's trails look as a whole.

1. Map layers can be turned on and off depending on what a ranger is using the map for.

2. All unresolved issues will show up next to the associated trail.

3. Quick toggle to list view.

4. Quick at-a-glance trail health with the corresponding priority-level colors:
   - high priority
   - medium priority
   - low priority

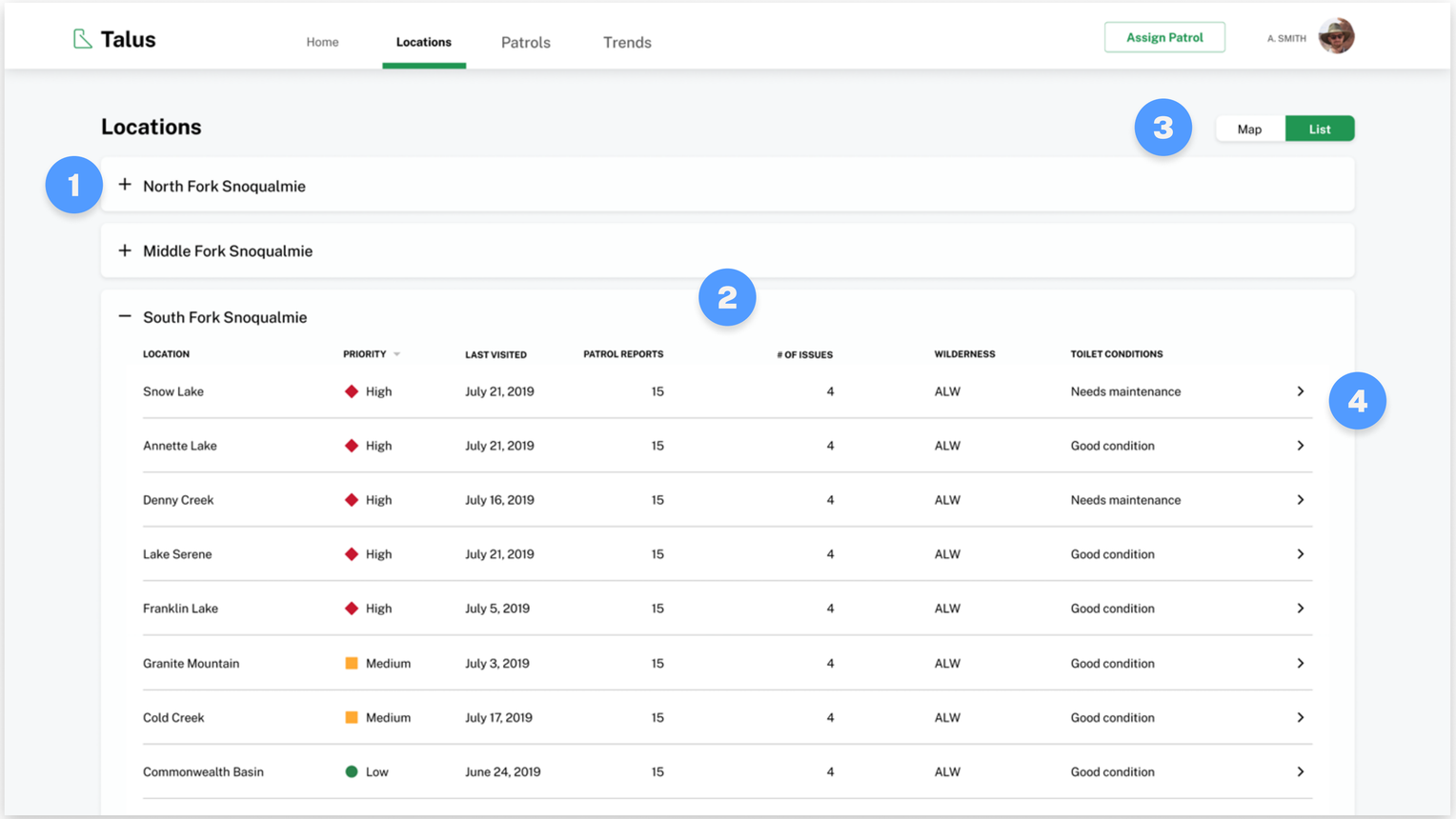


Annotation

LOCATION//LIST VIEW

The trails page contains a data table of trail information, sortable by priority status, trail name, and date last visited. Here rangers can navigate to specific trail pages for a deeper view into that trail's status.

1. Users can collapse and expand specific subregions to move quickly through the trail list.
2. The trail list is sortable by data points like the date a trail was last visited, its priority level, or number of open issues.
3. Quick toggle to map view.
4. By clicking on a trail in the list, it opens up that trail's page which contains all the data for that specific location.



ARCHITECTURE

Annotation

LOCATION PAGE

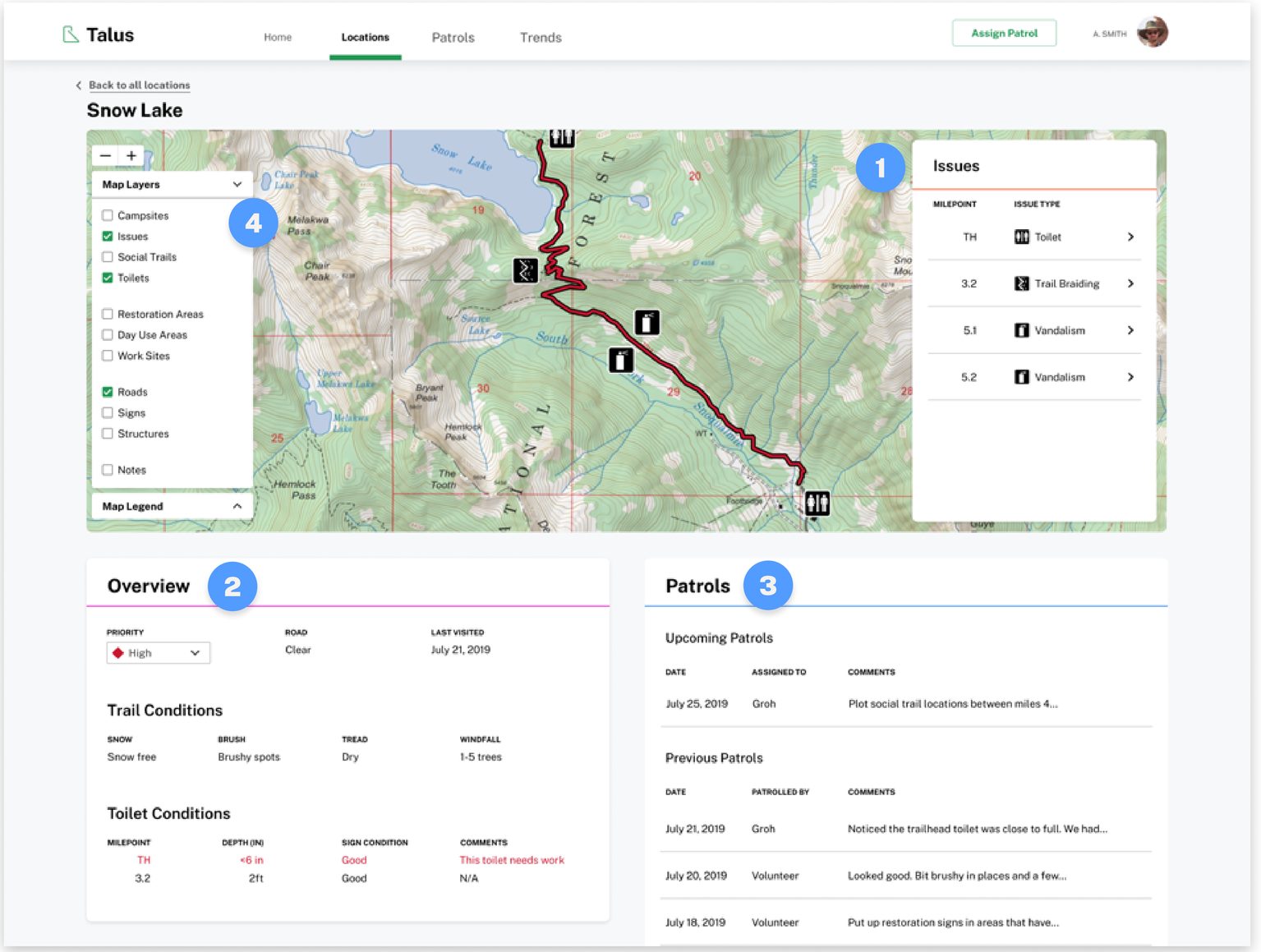
The trail page contains everything one may need to know about a specific trail—patrol reports, long-term data, and pending trail issues.

1 Unresolved issues are listed by mileage point as well as mapped onto the trail map to help decrease the subjectivity of reporting trail issues, while alerting rangers to possible duplicate issue reports.

2 The overview section contains data that concerns the overall health of a trail. This data doesn't change every day, but is vital to understanding the trail as a whole. Toilet conditions, one of the top issues for a ranger to visit a trail, are also contained here, highlighting in red if a report states a toilet will need to be moved soon.

3 All patrols from the operating season can be found in the patrols section, alongside any scheduled patrols.

4 The map contains any number of data points a ranger may want to see to help successfully plan a patrol such as wilderness areas, location of trail toilets, and common day use areas.



ARCHITECTURE

Annotation

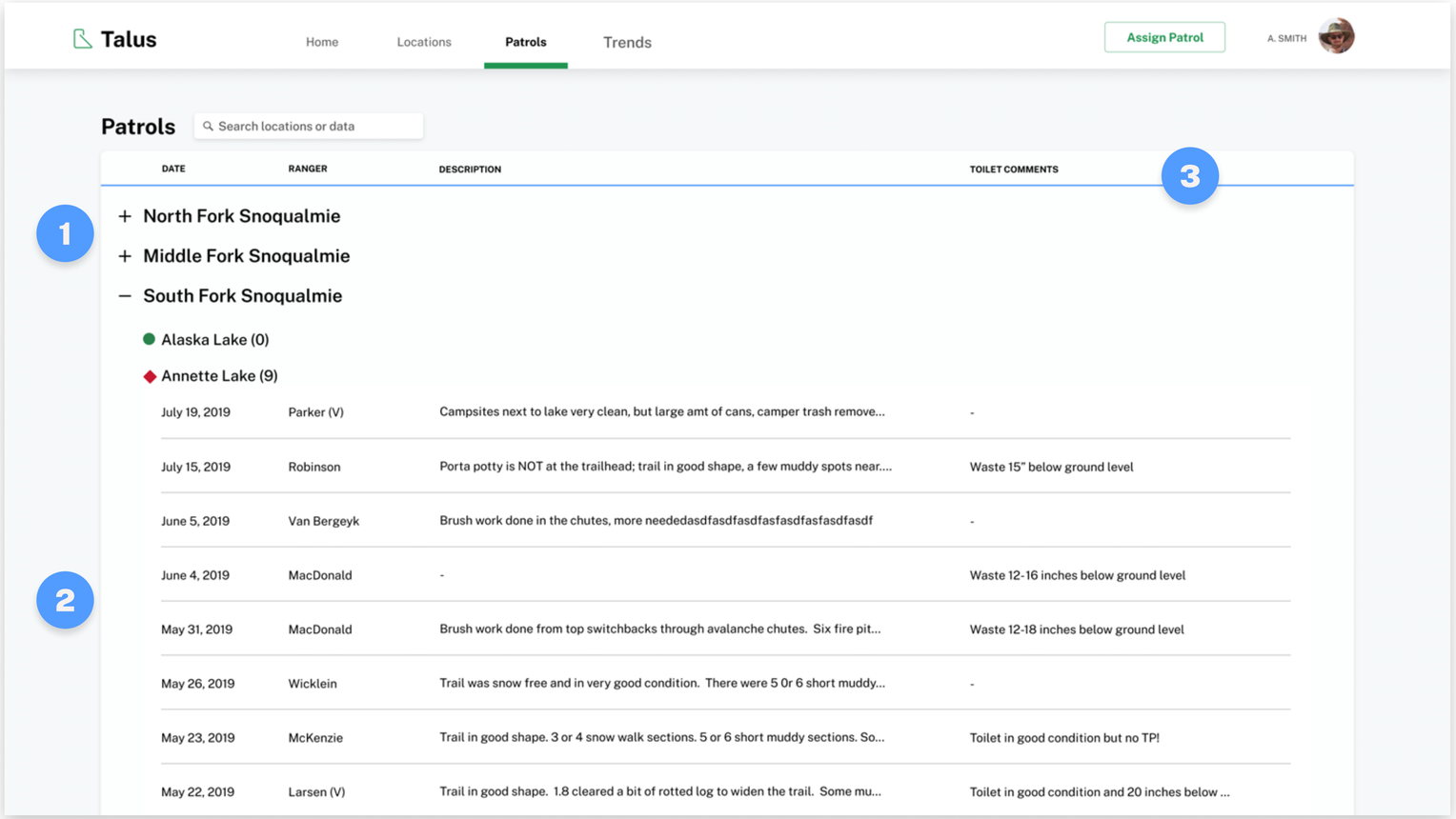
PATROLS PAGE

The patrols page offers rangers an easy way to scan through trails to see which one's have seen a lot of ranger or volunteer activity. The most important information about a trail report have been surfaced for easy access as well.

1. Users can collapse and expand specific subregions to move quickly through the trail list.

2. A list of all patrols from the current operating season let rangers see which trails have had fewer patrols by scanning through the list

3. The most important information — the general description from the ranger as well as trail toilet conditions — can be seen without clicking into the specific patrol.



ARCHITECTURE

Annotation

PATROL MODAL

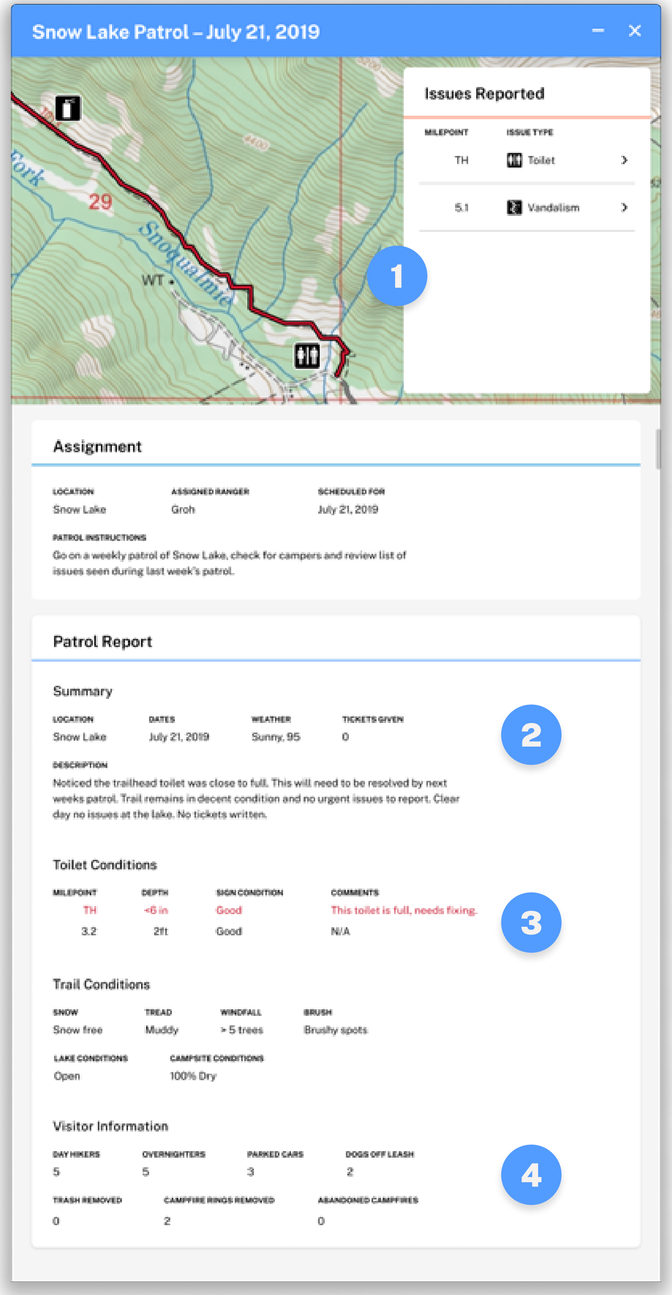
A patrol modal contains all the information a ranger filled out in their report upon returning from their patrol. Information is ordered by most important to least, making it easily scannable by other rangers.

1. Specific issues found on patrol can be found at the trail map. From here, rangers can archive duplicate issues or non-issues, while also visually seeing the issues on the trail map.

2. The most important information has been surfaced to the top of the report for easy scanning by the ranger manager.

3. Toilet conditions are shown in red if they are high priority.

4. Rangers collect important data for long term planning and grant proposals. It's important to be able to reference these numbers, but aren't as important to the day-to-day use of the application. This data can be found in the 'Trends' tab of the application to be accessed when necessary.



Annotation

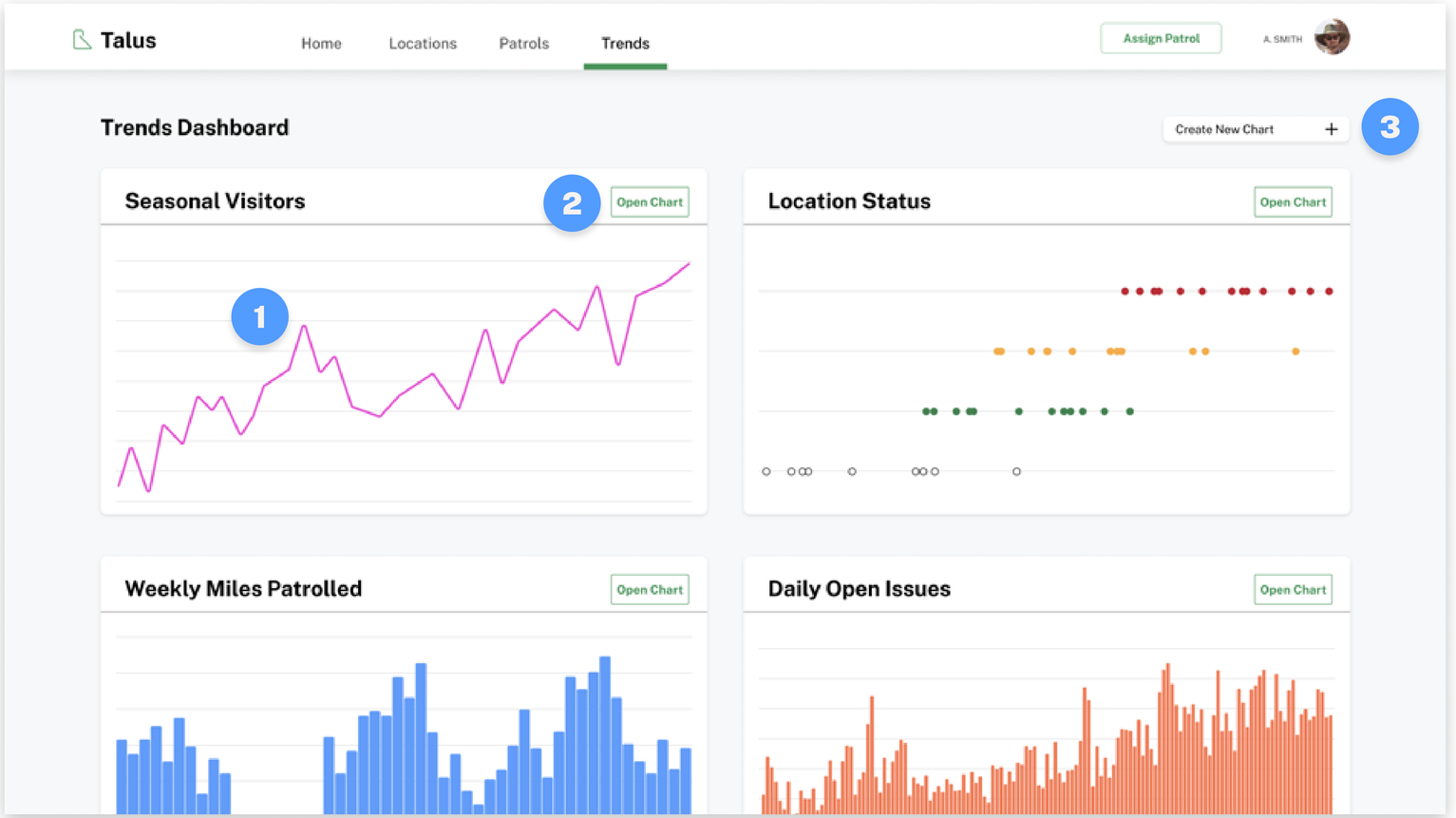
TRENDS DASHBOARD

The trends dashboard gives district managers a way to view long-term patterns in the data collected from patrol reports and visitor counters. Managers use this data to quantify their work when applying for grants and securing funding and staff.

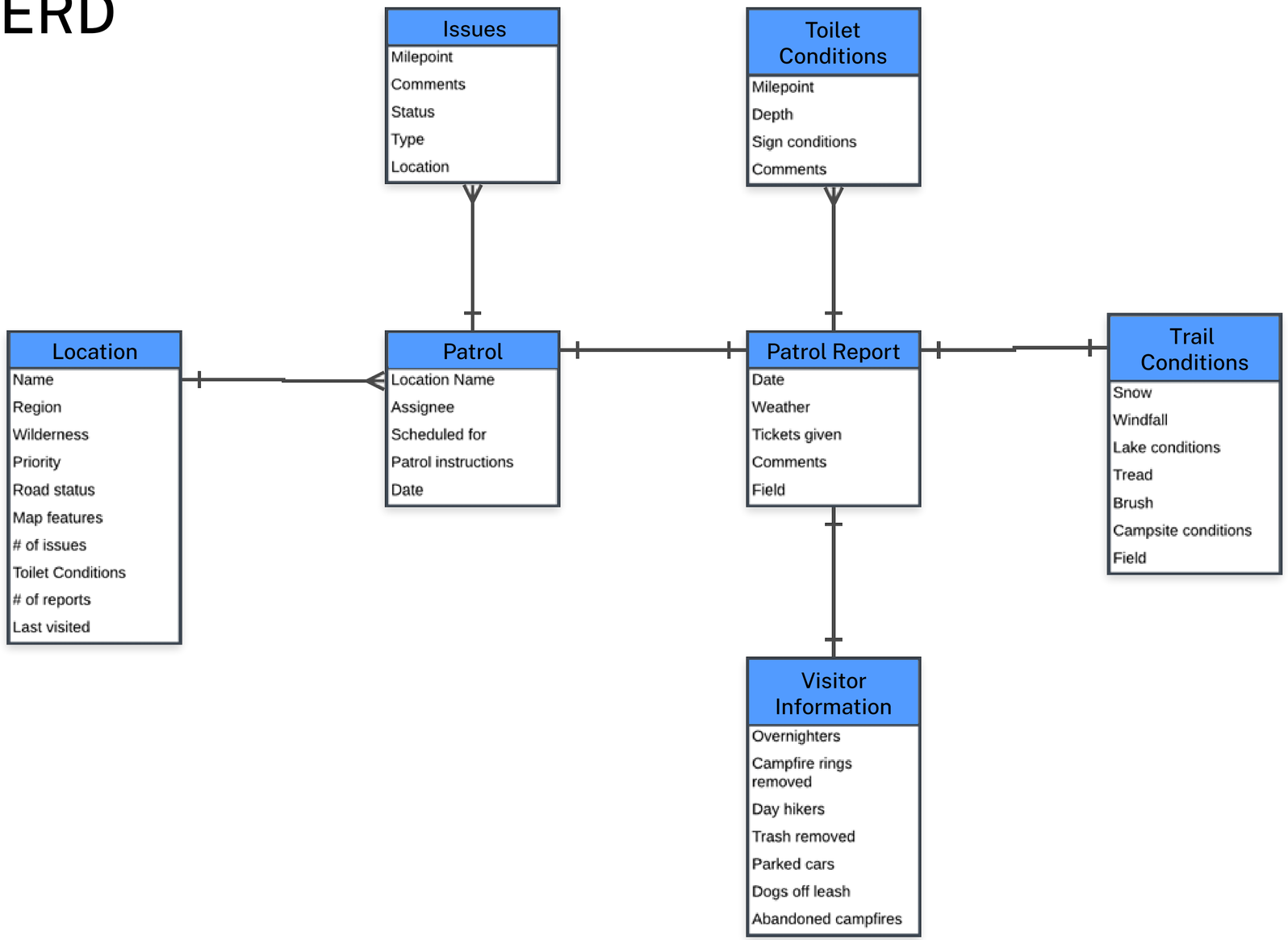
1 The dashboard gives users a quick glance at the charts they have created. Hovering on the plotted data shows the exact values.

2 Opening the chart reveals the axes labels and values, and allows users to change the scale or range of the data displayed.

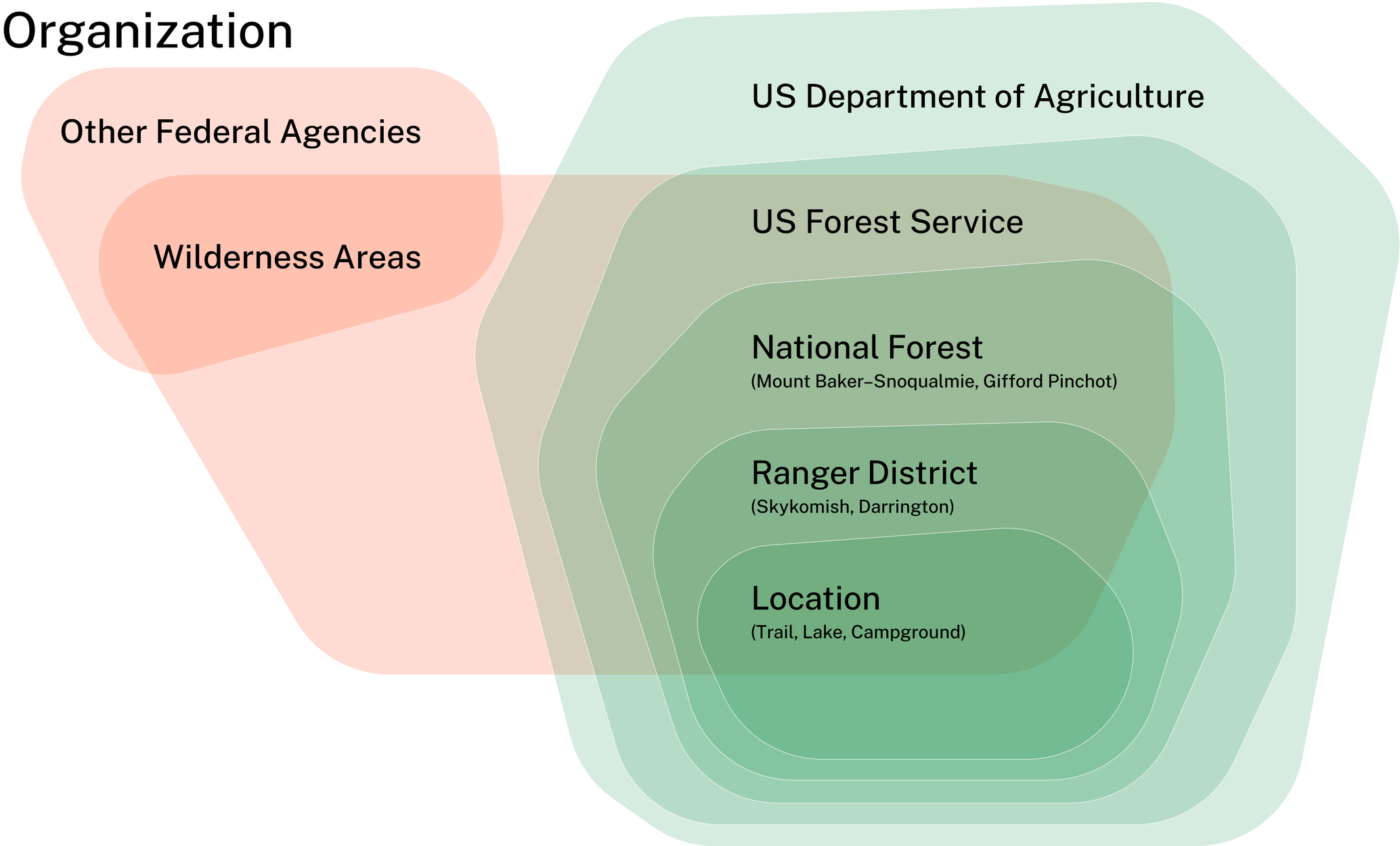
3 Users can create new charts to plot data for specific locations or different periods of time. Managers and wilderness rangers have different data needs, and Talus makes it easy for each of them to customize the display of long-term information.



Conceptual ERD



Land Organization



Visual System

Typography
Color Palette
Iconography
Motion
Components & Redlines

Typography

Our typeface is Public Sans, an accessible and legible sanserif. As an open-sourced typeface that was developed for the U.S. Web Design System to “help designers across the government sector build reliable and consistent websites,” it is a fitting tribute to our users, federal employees themselves.

H1 weight: bold font size: 29px line height 35

H2 weight: semibold font size: 24px line height: 29px

H3 weight: medium font size: 20px line height: 24px

H4 WEIGHT: BOLD FONT SIZE: 12PX, UPPERCASE LINE HEIGHT: 14PX

Body weight: regular font size: 16px line height: 24px

Subheading weight: light font size: 12px line height: 14px tracking: 1.2%

VISUAL SYSTEM

Color Palette

Our interface uses primarily neutrals to keep the focus on the data, but screens are accented with several bright colors to help maintain consistency within different data types like patrols, issues, or static data. Because our secondary colors are used sparingly, we wanted them to stand out amongst the data and chose bright hues that break from the often drab coloring of US government interfaces. Additionally, trail status is denoted across the interface by using red, yellow, or green.

Iconography 1 2

The map icons are taken directly from the Manual on Uniform Traffic Control Devices (MUTCD), a document issued by the United States Department of Transportation (USDOT) that the Forest Service also uses. Several other layers exist on each map like active restoration areas, all of which can be toggled on or off.

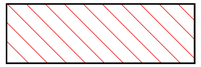
MAP LEGEND

designated trail

social trail

roadway

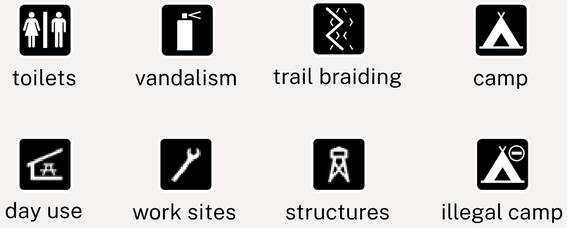
restoration area



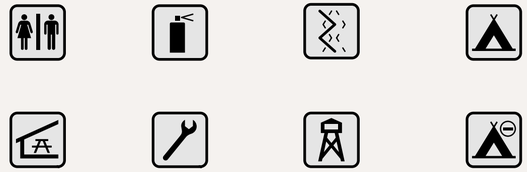
note

MAP ICONS

Default State



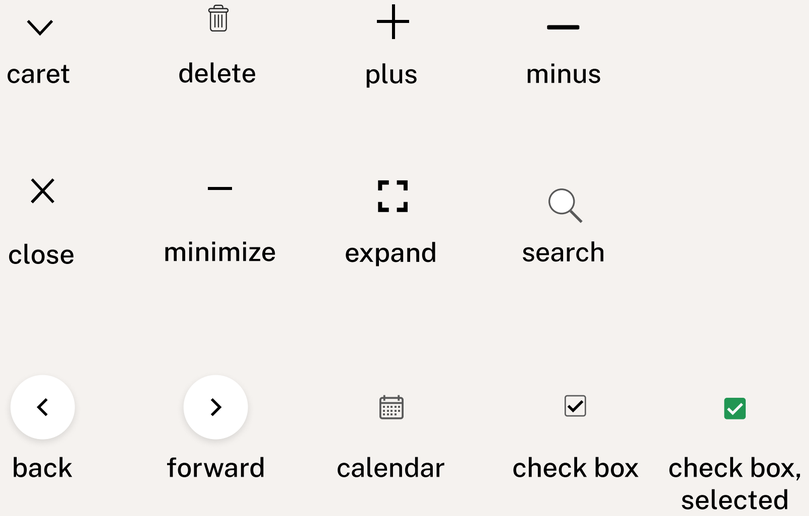
Hover State



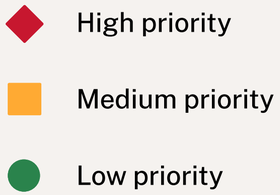
Selected State

Iconography 1 2

UTILITY



TRAIL STATUS ICONS



Motion

Elements should move naturally and fluidly. Animations are fast enough to make the application feel responsive, but not so fast as to be abrupt or confusing. Users should know where they are, how they got there, and where their inputs will take them next.

	Description	Details	Where Applied
Timeline Scroll Timeline Zoom Out	Used to scroll the timeline horizontally and to zoom the timeline out.	Trigger: tap Animation: Push left/right; expand Easing: ease both Duration: 340ms	Timeline
Timeline Zoom In	Used to zoom in the timeline.	Trigger: tap Animation: Condense Easing: ease both Duration: 340ms	Timeline
Report Open	Used when any patrol report modal is opened.	Trigger: tap Animation: Slide up from bottom Easing: ease out Duration: 220ms	Patrol modal on open
Report Close	Used when any patrol report modal is closed.	Trigger: tap Animation: Slide down to bottom Easing: ease in Duration: 220ms	Patrol modal on close
Report Minimize	Used when a patrol report modal is minimized.	Trigger: tap Animation: Minimize to tab Easing: ease both Duration: 330ms	Patrol on minimize

Components - Buttons 1 2

PRIMARY BUTTON

Default

Create

Corner-radius: 2px
text-style: Public sans bold
State: Default
fill-color: 219653
text-color: FFFFFF

Hover

Create

State: Hover
fill-color: 082213
text-color: FFFFFF

Disabled

Create

State: Disabled
fill-color: 595959
text-color: 082213

Redlines

SECONDARY BUTTON

Default

Create

State: Default
Corner-radius: 2px
fill-color: FFFFFF
Stroke-color: 219653
text-color: 219653
text-style: Public sans bold

Hover

Create

State: Hover
Stroke-color: 000000
text-color: 000000

Disabled

Create

State: Disabled
fill-color: 595959
text-color: 082213

Components - Buttons 1 2

TERTIARY BUTTON

Default

Cancel

Corner-radius: 2px
text-style: Public sans bold
State: Default
fill-color: 219653
text-color: FFFFFF

Hover

Cancel

State: Hover
fill-color: 082213
text-color: FFFFFF

Disabled

Cancel

State: Disabled
fill-color: 595959
text-color: 082213

Redlines

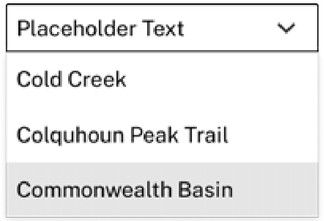
Components - Input Controls 1 2

DROPDOWN

Default

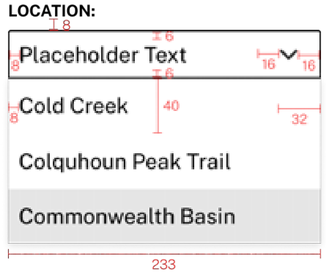
Corner-radius: 2px
Fill-color: FFFFFF
Stroke-color: ABABAB
Text-color: 323130
Text-style: Body

Selected/Expanded



Fill-color: FFFFFF
Stroke-color: 000000

Redlines

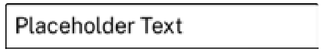


INPUT FIELD

Default

Corner-radius: 2px
Fill-color: FFFFFF
Stroke-color: ABABAB
Text-color: 323130
Text-style: Body

Hover

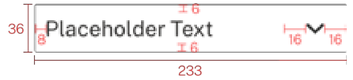


Stroke-color: 000000
Text-color: 000000

Selected

Stroke-color: 000000
Text-color: 000000

Redlines



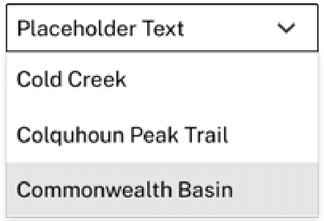
Components - Input Controls 1 2

DROPDOWN

Default

Corner-radius: 2px
Fill-color: FFFFFF
Stroke-color: ABABAB
Text-color: 323130
Text-style: Body

Selected/Expanded



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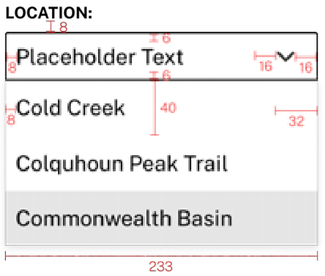
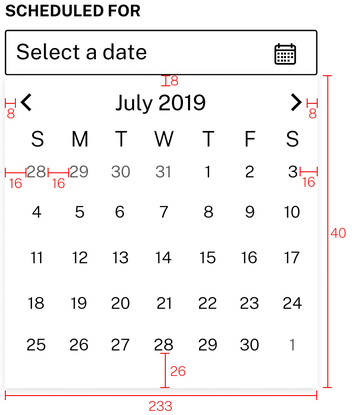
Redlines

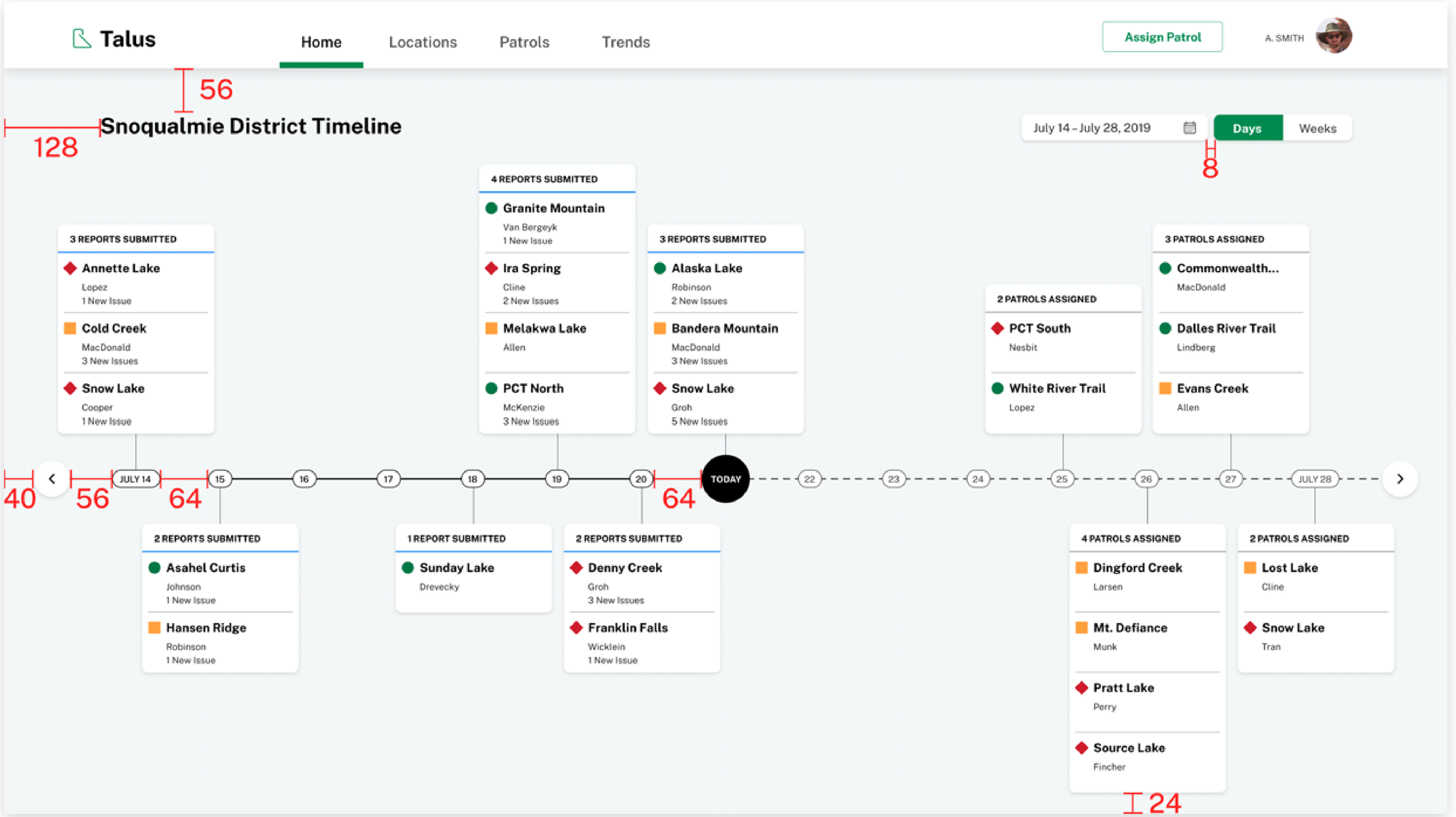


CALENDAR DROPDOWN

Redlines

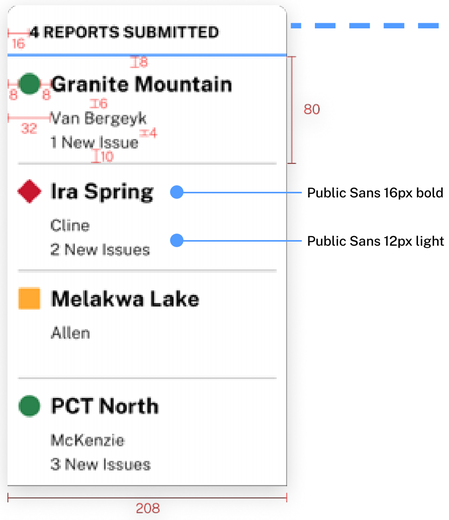


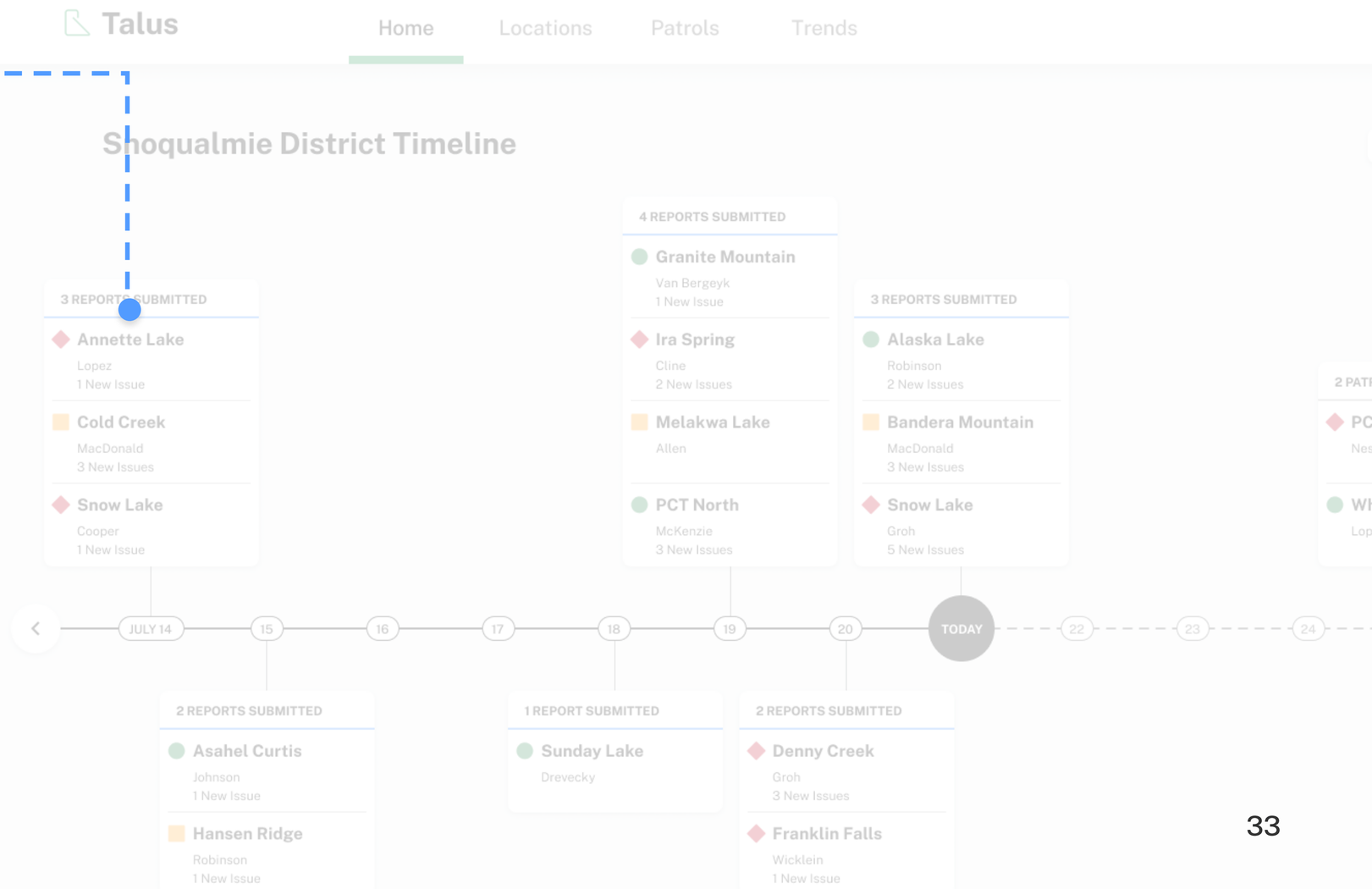
Homepage Redlines



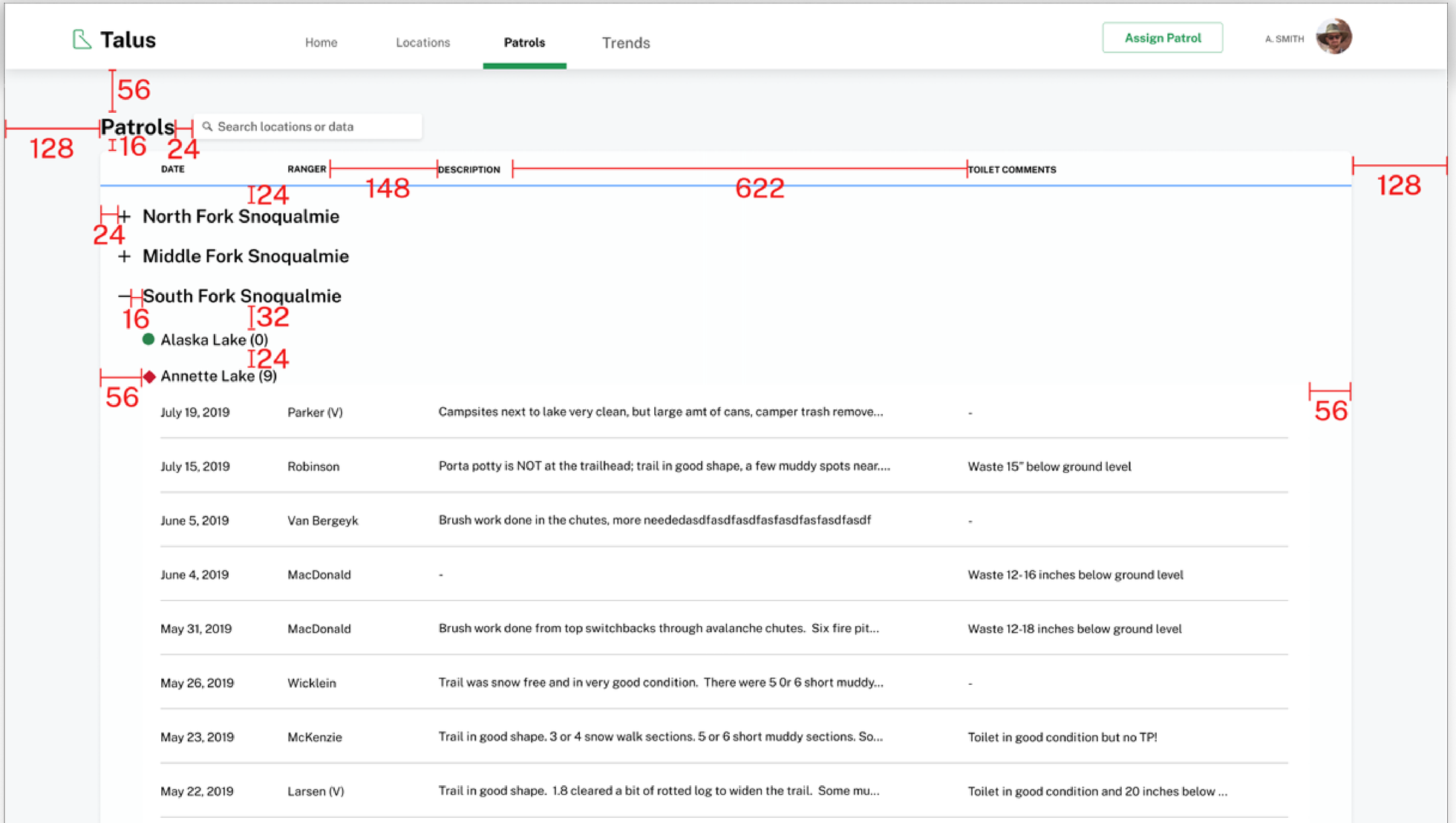
Homepage Components

TIMELINE CARD





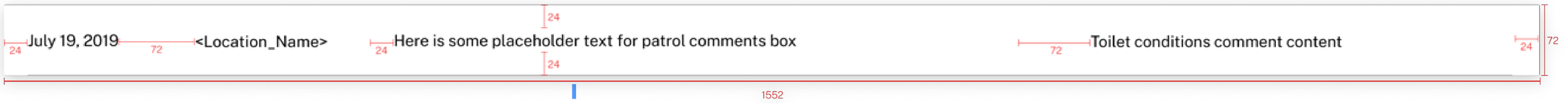
Patrols Page Redlines



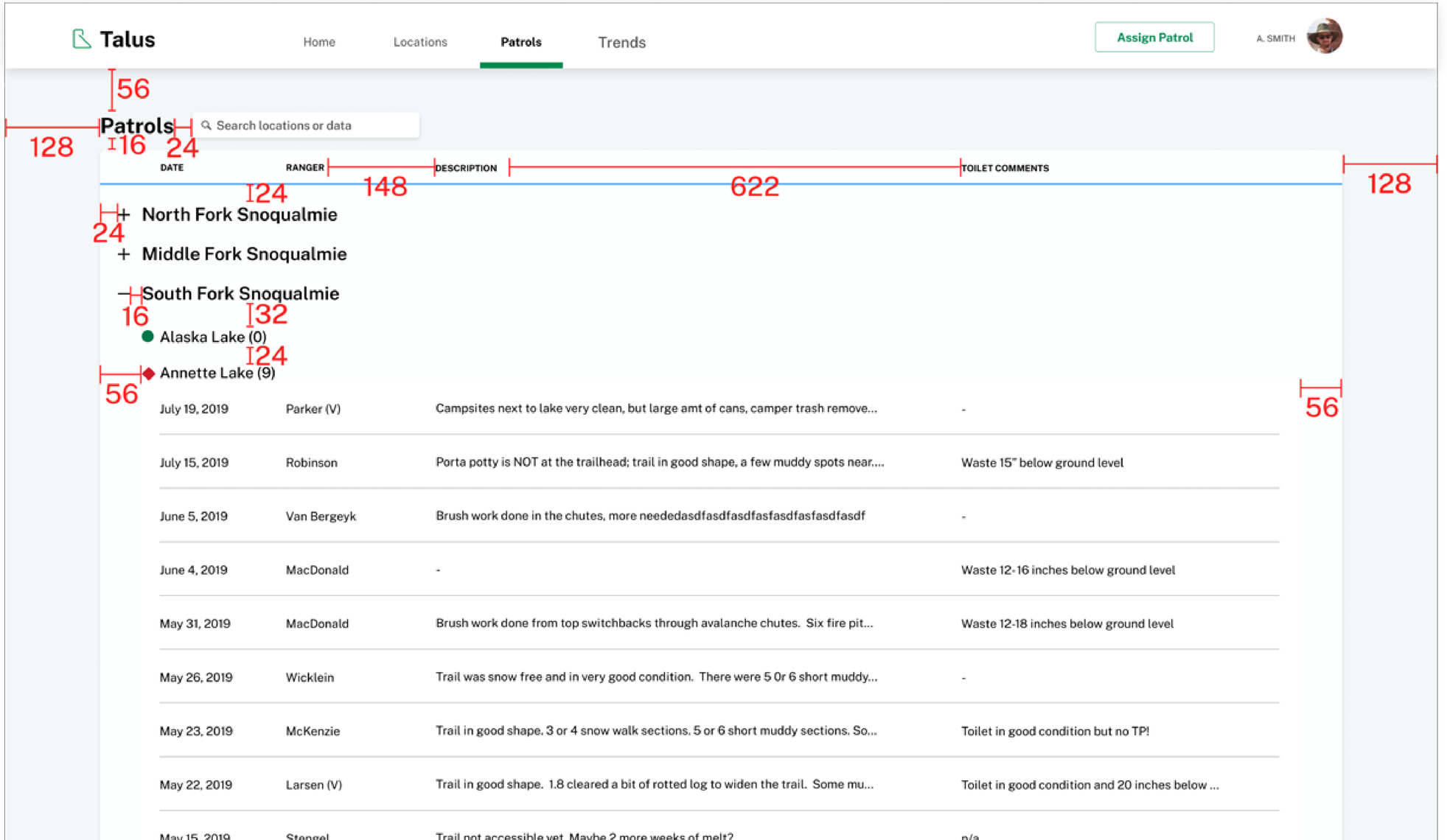
VISUAL SYSTEM

Patrols Page Components

LIST COMPONENT



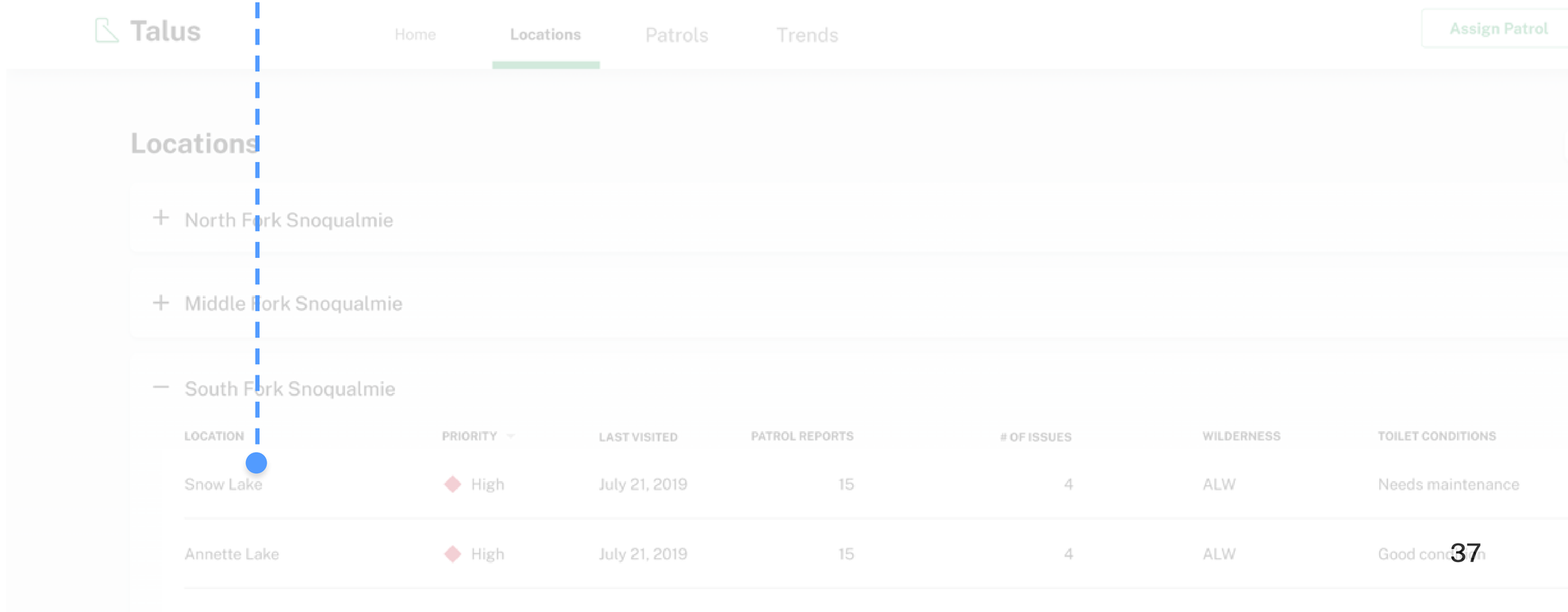
Locations Page Redlines



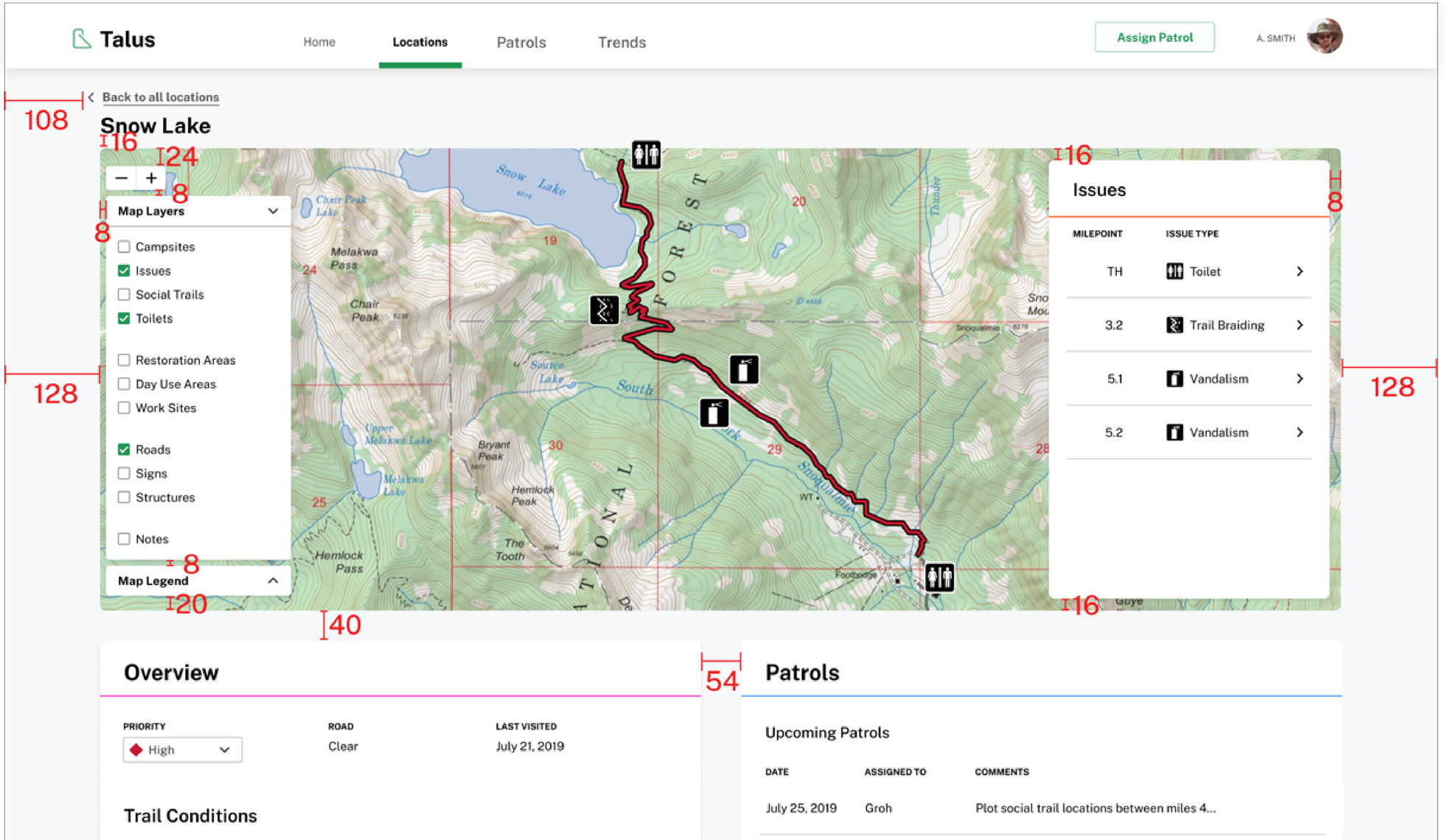
VISUAL SYSTEM

Locations Page Components

LIST COMPONENT



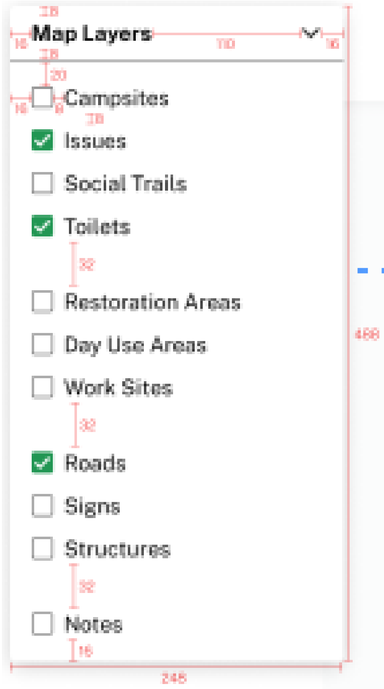
Locations>Trail Detail Page

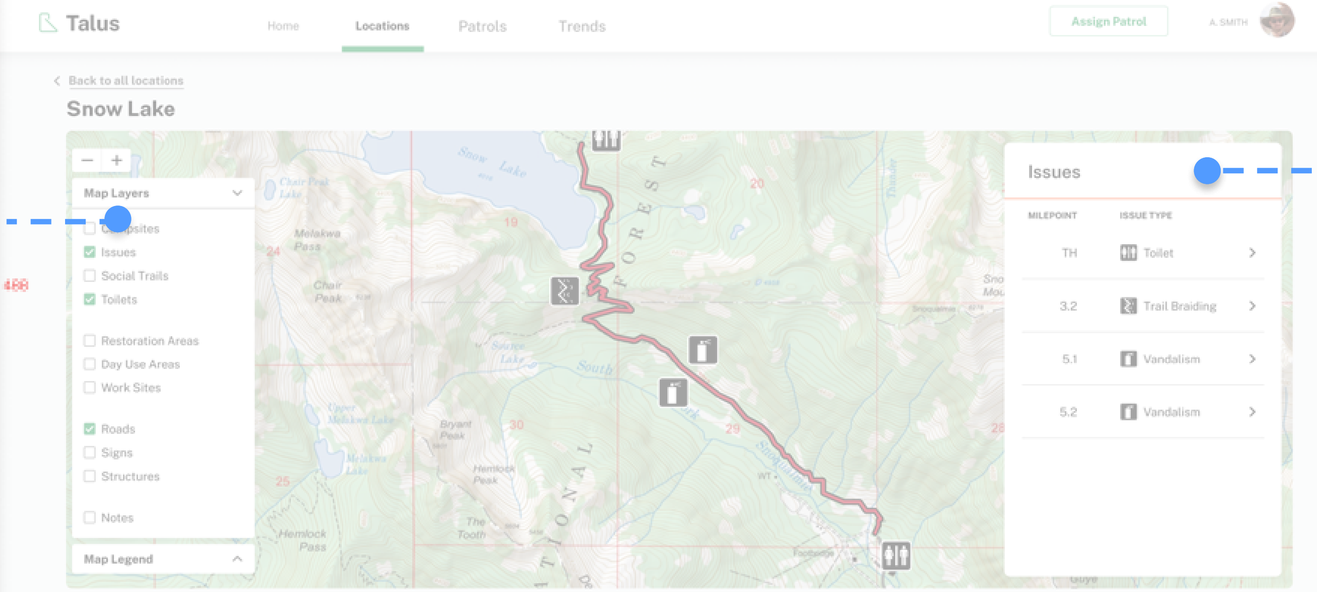


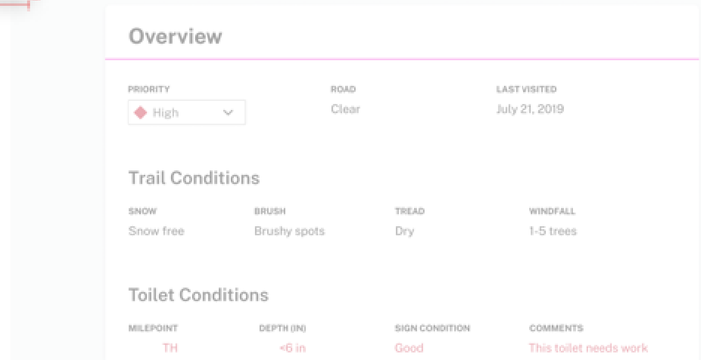
VISUAL SYSTEM

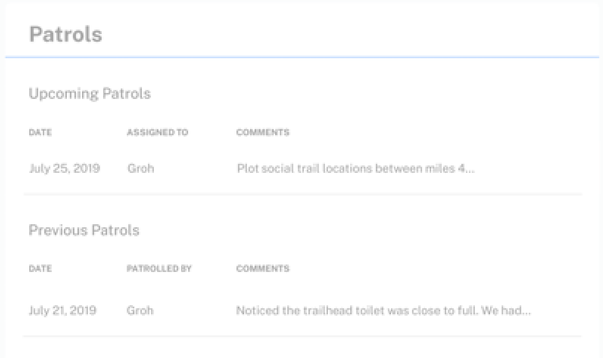
Location Trail Detail Page Components 1 2 3

MAP LAYERS COMPONENT

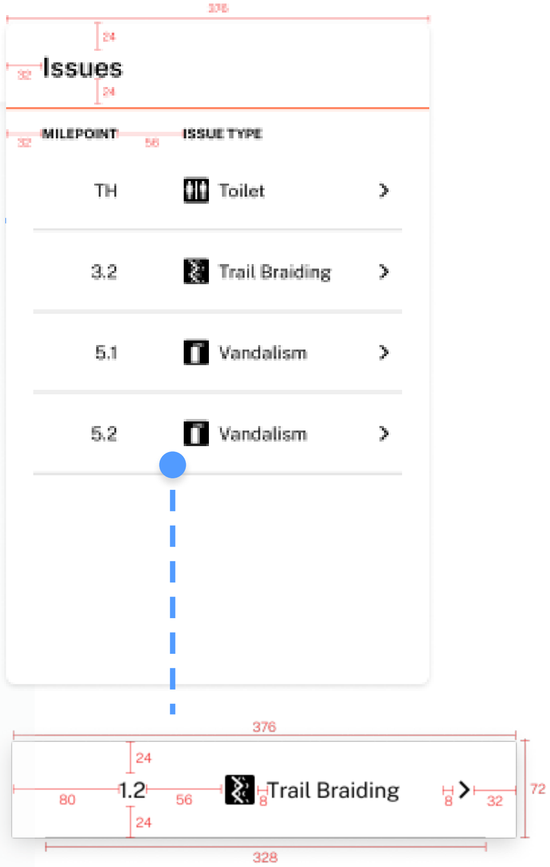








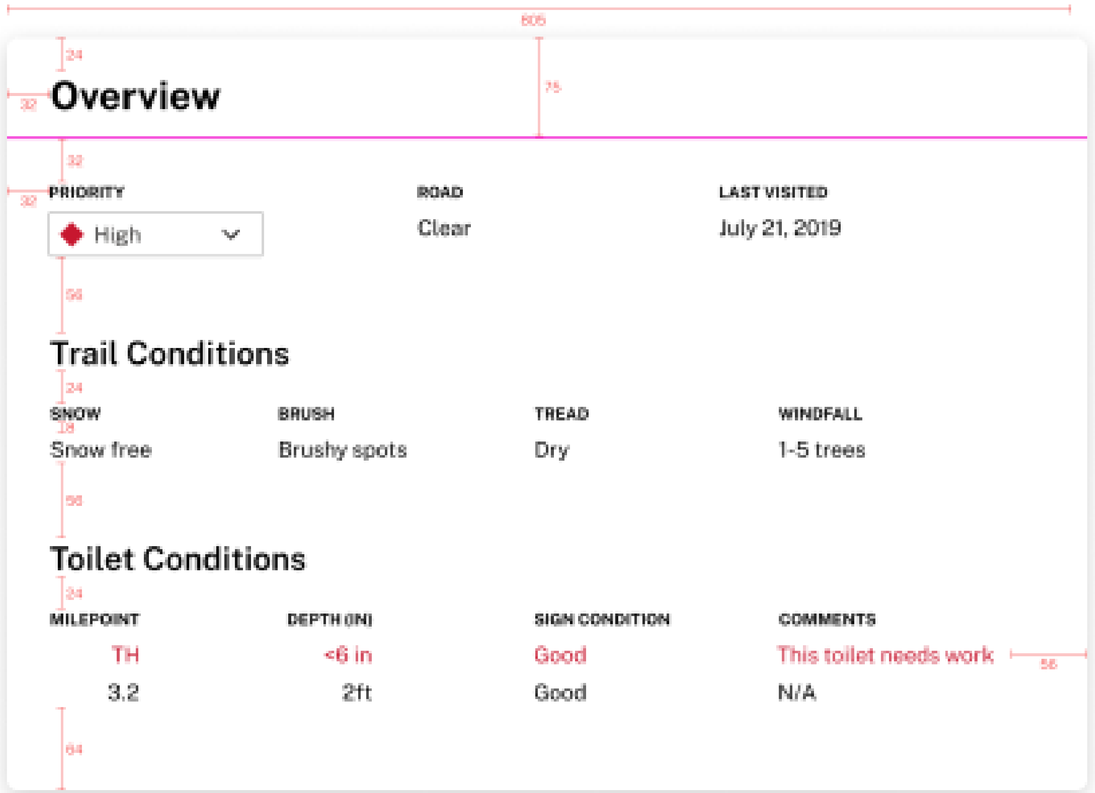
ISSUES COMPONENT

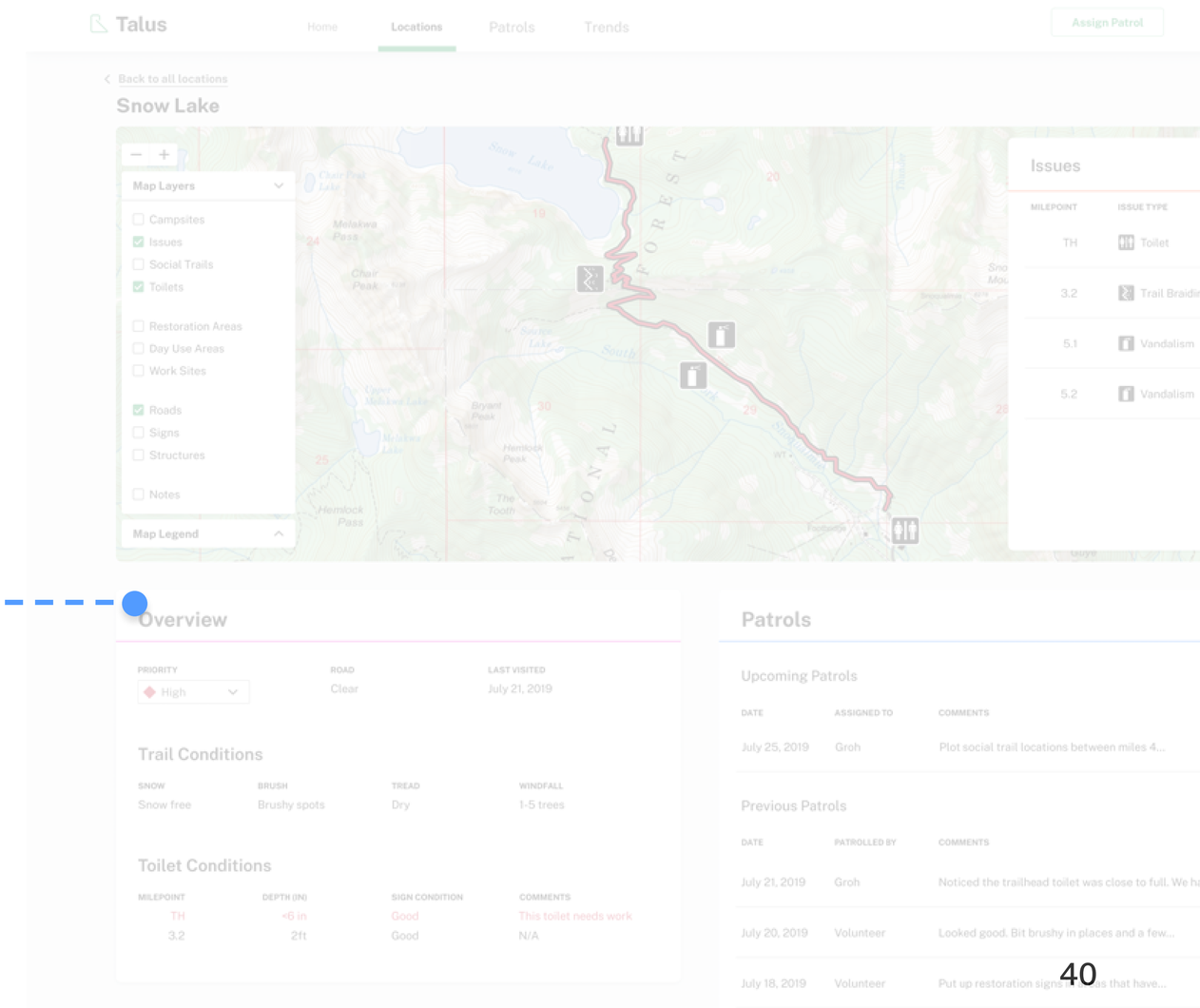


VISUAL SYSTEM

Location Trail Detail Page Components 1 **2** 3

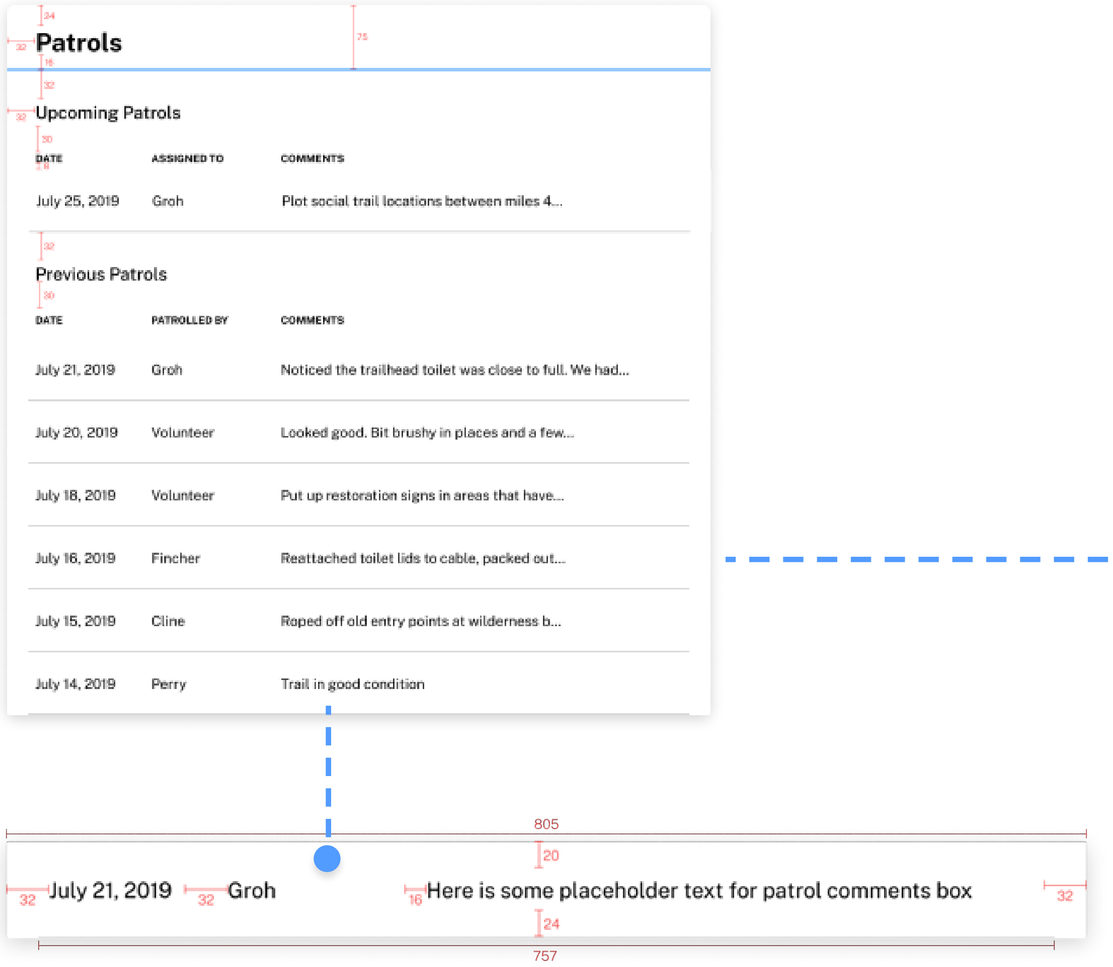
OVERVIEW COMPONENT

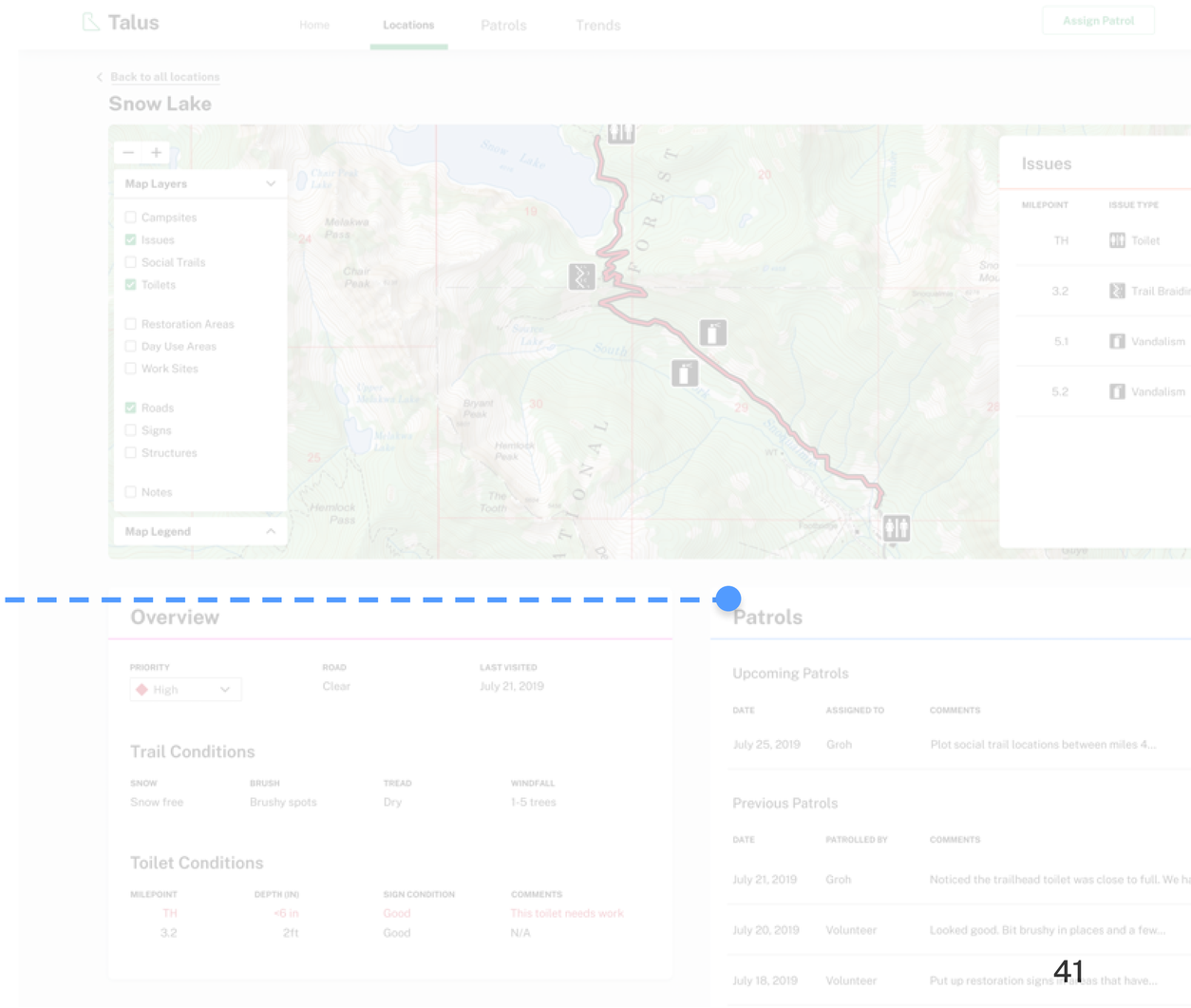




Location Trail Detail Page Components 1 2 3

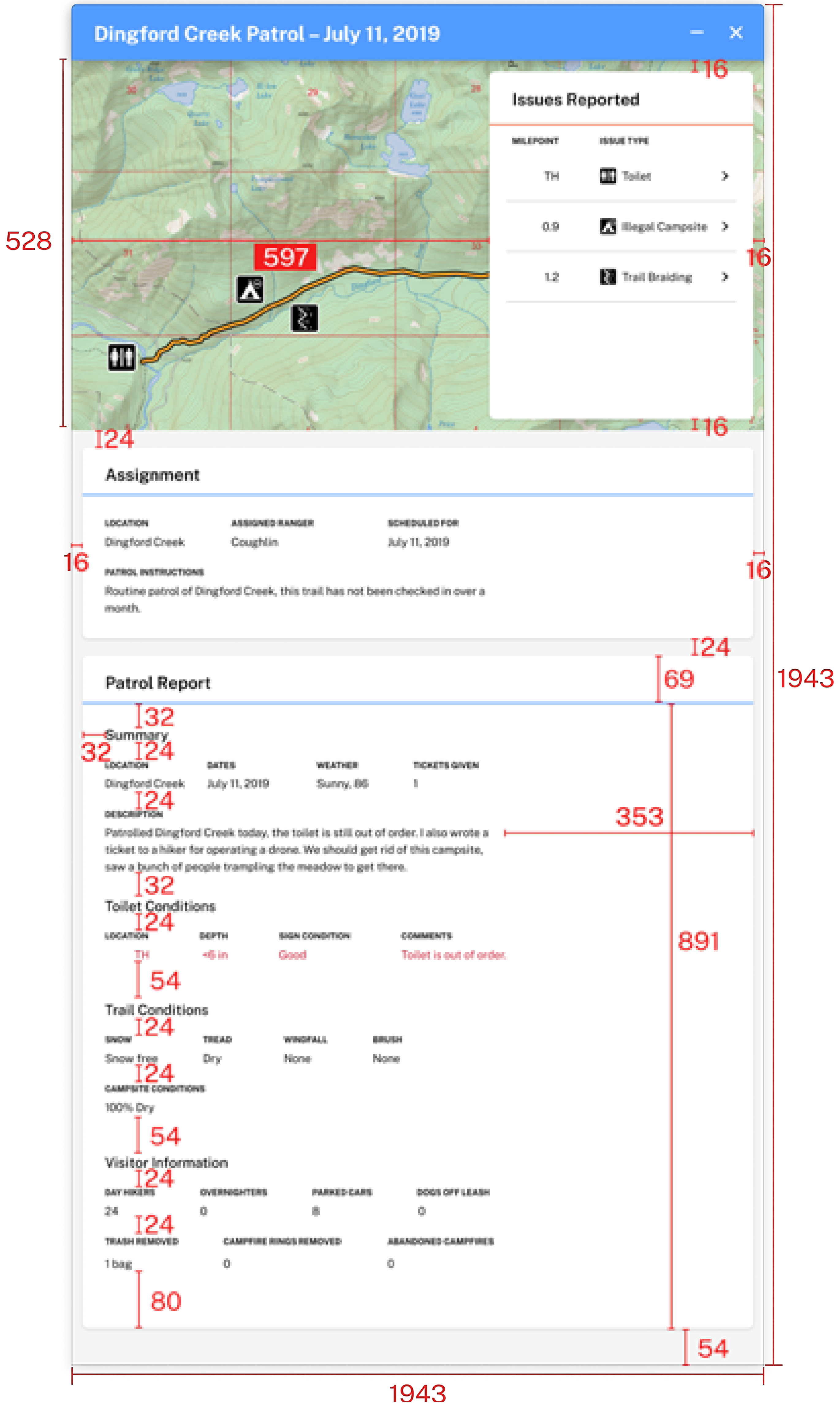
PATROLS COMPONENT

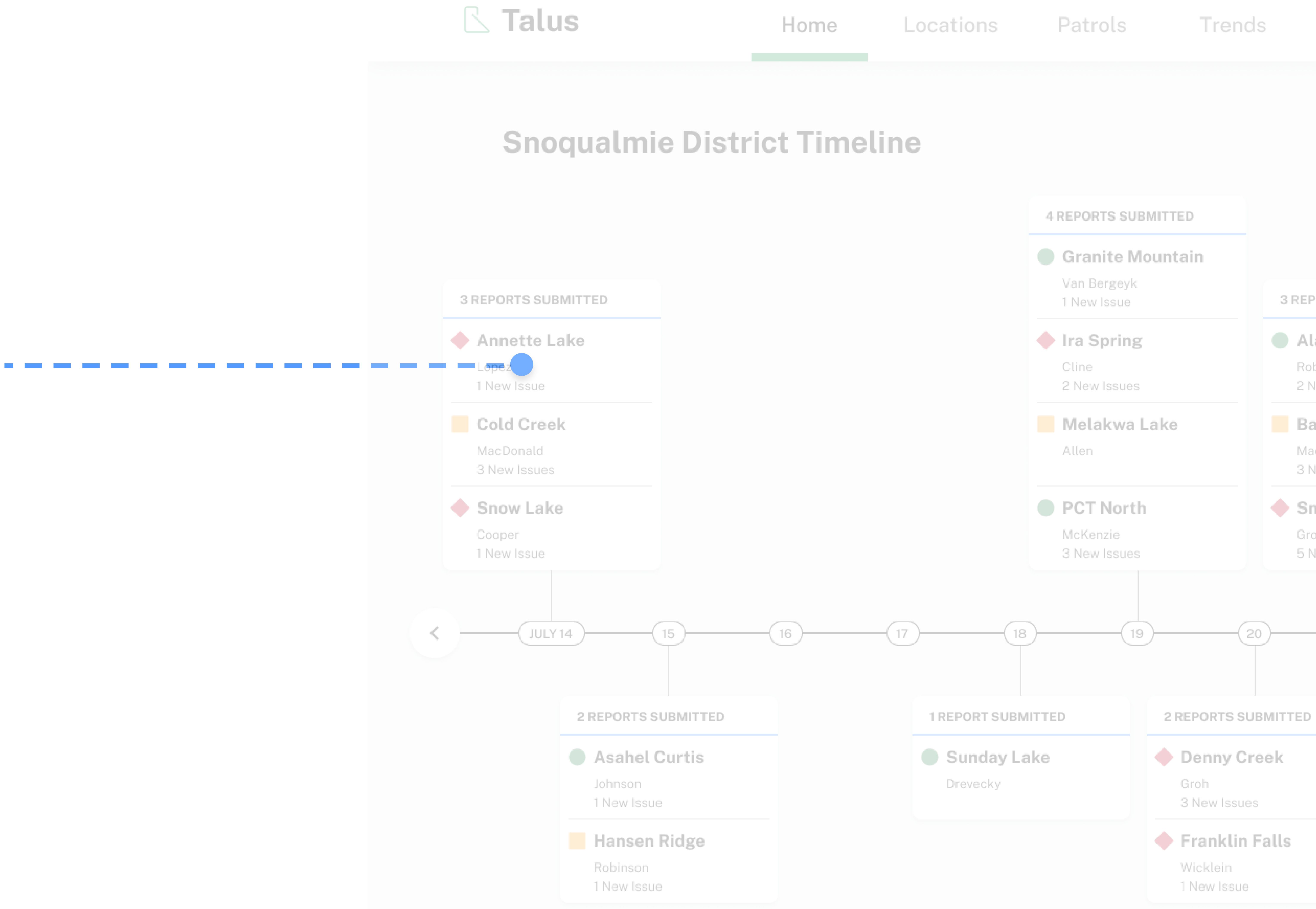




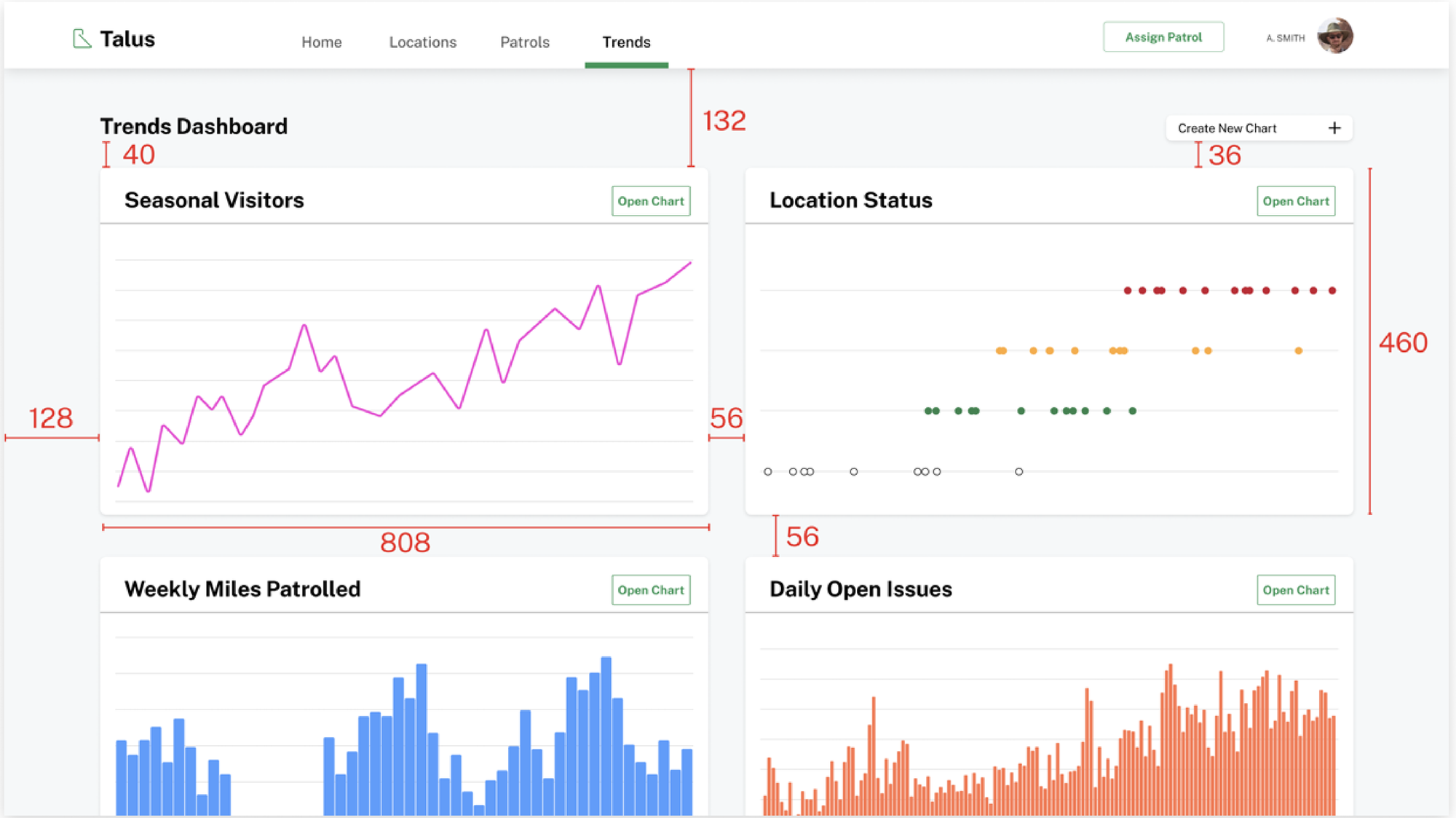
VISUAL SYSTEM

Patrol Report Modal





Trends


Talus
Home
Locations
Patrols
Trends
Assign Patrol
A. SMITH
Trends Dashboard
132
40
Create New Chart
36
Seasonal Visitors
Open Chart
Location Status
Open Chart
460
128
56
808
56
Weekly Miles Patrolled
Open Chart
Daily Open Issues
Open Chart