

Compare Overview Spec

Product description

Describe the project in 2 lines or less. By "line" I mean the default reading width of your medium (e.g., Google Docs, Confluence) on a desktop client. Sticking to limits is critical for readability.

Compare page overhaul. This project will research the current functionality of the compare page and come up with ideas to improve it, not only a general but also (mostly) on a User Interaction and Experience level.

Current/Old Compare page: <https://projects.invisionapp.com/d/main#/console/17868995/372415352/preview>

People & Roles

Help everyone know who is involved, and what is expected of them. Only include people who have the authority to veto/approve decisions, or people who will execute on the plan.

1. **Eli (CTO/Project Lead)**: Provides feedback on weekly product standups, signs off on progress, leads the project initiative.
 1. **Robert (UI/UX/Product)**: Will research the current value of the compare page and will come up with ways to improve the current product, UI and UX.
 2. **Robert (QA)**: Will QA design and product functionality to make sure everything works and looks like it's intended.
 3. **Subhi (dev/Review input)**: Provides feedback on weekly product standups, once the project moves from UX/UI Subhi will handoff the project to the development team to pick it up on their sprints.
 4. **Jerrod (CEO)**: Provides feedback on weekly product standups
 5. **Bas (Front-end) and Pierce (Full-Stack)**: Will implement new product/UX/UI design elements into the new infrastructure
 6. **Ray and Leah (Business and Customer Success)**: Will provide feedback and support design decisions with input from users, help ensure business needs of project are addressed
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Overview

Use bullets for readability. Use bold words to quickly convey the gist of each point, and limit bullets to 2-3 lines. Numbered lists can be used to refer to a point verbally.

User research

Fullstory/User findings: <https://codecovio.atlassian.net/wiki/spaces/DES/pages/3047425/Compare+page+research>

Discovered Problems

1. **Overview tab doesn't feel like an overview**: There is very little information on this page for the user.
2. **Coverage reach block is difficult to understand for the user**: The red and green blocks only indicate a color for a file and it has no (hover) states that indicate any interaction (these colors even mean less to colorblind users, since the colors are not optimized for colorblind users).
3. **Not optimized for color-blind users**: The page is not understandable to our color-blind users
4. **Comparing different commits only showing SHA**: When comparing different commits or branches the user only sees the SHAs when comparing, most users don't remember which SHA is which commit.
5. **Coverage percentage unclear**: When looking at a percentage and hovering over it a new user might not know what: `Codecov Delta absolute <relative> (change)` means, going to an external document page is another hurdle for them to figure out one of the most important elements on the page.
6. **Unclear what ...+1... means**: There is no additional information to the user what +-1 stands for between the two SHAs that are being compared.

Additional Findings and Questions

1. Able to compare different commits, PR's, branches to:
 - View an increase/decrease of the code coverage and complexity per file
 - Clicking on a file will take you to the increase/decrease coverage part of the code
2. Commits that are being compared
 - Increase / decrease percentage comparison
3. Try last 5 days comparison
 - Added value? Why 5 days? Maybe we can add a filter dropdown here so users can compare last week/ last month/ last quarter / last year comparisons?
 - I think this is just "easy" from the technical perspective.

- An inline dropdown that stated “Compare the <last/10 back/50 back> commit to HEAD of master” may be more interesting and lead to more initial engagement
4. Try manually comparing
 - Added value? More elements to compare than with the dropdown?
 - You can type in commit SHAs directly in the URL to do the “manual comparison”
 5. Improvement here may be to have a dropdown to compare tags, too.

Objective

Provide context on this project and explain how it fits within your organization's strategic goals

The objective of this project is to reduce user frustration and confusion when using the compare page by providing a more coherent design to the compare page better rooted in fundamental design principles + Increasing the usage of manually comparing references.

Assumptions

List any assumptions you have about your users, technical constraints, or business goals (e.g. Most users will access this feature from a tablet).

- **Most users will get to this page from a pull request comment:** It is very likely when a user views this page, they will be viewing it because they clicked through a pull request comment of the failed status check. This means our users maybe a little frustrated or striving to answer a particular question "why is my coverage check not passing on this PR?"
- **Users will be viewing this page to try and understand how to better improve their coverage:** Users visiting this page will be interested in the differences in coverage between the two commits being compared, but that interest likely stems from a desire to improve coverage.
- **Users will very likely be looking for quick answers to coverage questions:** If viewed from a pull request comment/status check, the user will very likely be eager to understand how coverage can be improved so they can write the necessary tests and finish the PR.
- **This page will likely be accessed from a laptop/desktop, not a mobile device or tablet:** Responsive design will take a bit of a backseat. ~7% of visits are from a mobile device

Goals & Success metrics

Project goals and the metrics you'll used to determine success. Make sure one can point to a goal and easily answer "did we hit it?". Make clear promises.

Goal (the Why)	How to meet the goal (outcome)	Success Metric
1. Compare Overview Tab doesn't really capture a full comparison "overview" since summaries of the subsequent tabs aren't really included.	We should add more summary information to this page such that the user doesn't need to search through multiple tabs for high-level information. Such as: * Showing graph for project coverage and showing which commits are being compared within the graph. * Add line and complexity coverage. * Improved Coverage Reach Chart (see goal #4)	Reduced activity on and switching to other tabs that aren't the Overview Tab when viewing a compare page.
2. Better display the meaning of the Codecov Delta widget in the UI in a way that doesn't require a hover. https://codecovio.atlassian.net/wiki/spaces/DES/pages/3047425/Compare+page+research	Many users hover over info pop up to see what percentages mean. Adding titles to the Codecov Delta widget should reduce the need to hover.	Reduced hover activity over the Codecov Delta
3. Increase accessibility: some colorblind users can't differentiate between certain colors. Accessibility: Colors	Implement colors for color-blind users to increase accessibility.	The refactored page will convey its information successfully in colorblind view modes.
4. Add more helpful user functionality to the coverage reach chart. • Coverage Reach + File/Folder Tree	<ul style="list-style-type: none"> • Filtering on increased/decreased/all/not affected files • Add and combine file tree with coverage reach chart to create a better understanding for the user what he/she is looking at <ul style="list-style-type: none"> • Coverage Reach + File/Folder Tree • Filter on files and folder structure 	These elements will be interacted with by some % of users. (Validated via fullstory)

	<ul style="list-style-type: none"> • Hovering on the blocks will create a pop-up with additional coverage info. • Adding a legend (make it more accessible for color-blind users) 	
5. Add additional context to the +- 1 between commits UI element, so user's can better understand the commit distance between the commits they're comparing: https://codecovio.atlassian.net/wiki/spaces/DES/pages/3047425/Compare+page+research	Add hover for +-1 between commits for more clarity	FullStory shows lots of hovering over this element, we should measure the change in hovers after the tooltip is added to see if adding this tooltip results in less hover behavior.
6. Provide a better mapping to the user between their intent and the commit they may be looking for: https://codecovio.atlassian.net/wiki/spaces/DES/pages/3047425/Compare+page+research	Whenever possible, replace SHA's or augment SHA's with branch/tag names to better map a commit to specific developer work.	Difficult to measure or compare, but would hope to see more clicks /interaction with commits that have branch names and/or tag names than those that don't

Requirements & Use-cases

	Requirement	User Story	Importance	Jira Issue	Team	Priority	Rationale
1	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to know the coverage percentage for the coverage block/file I'm looking at so that I know which block I need to increase coverage for.			UX	Low	Coverage reach is not a commonly noted feature
2	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to see which files have increased or decreased or are not affected between certain commits /branches so that I can evaluate coverage over time and so that I can learn from my overtime coverage changes.			UX/Dev	Low	Coverage reach is not a commonly noted feature
3	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want the file tree and coverage reach chart to work intuitively together so that the coverage reach becomes easier to understand and so that I have more valuable data to look at simultaneously (since they are directly related) instead of looking at them separately (which takes more time).			UX/Dev	Lowest	Coverage reach is not a commonly noted feature
4	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to know which color represents good or bad coverage so that I understand what I'm looking at.			UX/Dev	Low	Not a commonly noted feature
5	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to filter on an all file or file/folder structure so that I can easily filter all my files on high or low coverage and so that I can easily navigate through my files because I'm familiar with the folder structure that's already on my desktop.			UX/Dev	Highest	
6	Coverage reach blocks Coverage Reach + File/Folder Tree	As a colorblind user, I want to know which color represents a good or bad coverage percentage so that I can experience the same page as a normal user and so that I can easily detect bad /good coverage for a file.			UX	Medium	
7	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to be able to search for files so that I don't have to navigate through all the files and folders to search for my specific file.			UI/Dev	Highest	
8	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to be able to filter on Total, hit, partial and missed code lines, complexity coverage, and coverage so that I can easily find the right data that tells me where I need to improve and where I'm good to go.			UI/Dev	High	
9	Coverage reach blocks Coverage Reach + File /Folder Tree	As a user, I want to know which files and folders are newly added so that I know that if some coverage fluctuation might appear it could be because of new files or folders that have been added.			UI/Dev	Medium	
10	Loading times	As a user, I want the data to load in quickly so that I won't get impatient and leave the page. If the loading times are longer than a second I want some visual indication/feedback (loading icon) to know it's loading. Doherty Threshold (increase productivity for users by decreasing loading times).			UX/Dev	Highest	
11	Mobile-friendly /responsive	Not a priority right now (~7% of our users are on mobile atm)			UI/Dev	Low	
12	Flags/Flags				UI/UX /Dev	Highest (assuming this is Flags)	

		As a user, I want to 'filter' on certain pieces of my code so that I can test important parts of my code and see code coverage on specific pieces of my code.			@ Robert van Haaren ?)
13	FlagsFlags	As a user, I want to see which flags are selected at all times so that I'm never confused about what I'm currently filtering my data on.		UI/UX /Dev	Highest
14	FlagsFlags	As a user, I want to select/deselect all my flags so that I don't have to manually click e.g. 20 or more flags.		UI/UX /Dev	High
15	FlagsFlags	As a user, I want to be able to search my flags so that I don't have to scroll or look through a list to try and find the flag that I'm looking for		UI/UX /Dev	High
16	Coverage percentages Coverage Percentage Statistics	As a user, I want to see coverage percentages (line, selected, complexity, diff hit, coverage change, branch change) with clear titles added and additional documentation (if I might need it) so that it's clear and straightforward what my coverage percentages are and what they are when using any filters.		UI/UX /Dev	Highest
17	Coverage percentages Coverage Percentage Statistics	As a user, I want the line coverage to change to selected coverage so that I'm retrieving the right coverage data when filtering on flags.		UI/UX /Dev	@ Robert van Haaren could you clarify please?
18	Comparing References (commits /branches/tags)	As a user, I want to see and compare commits, branches, and tags and see their names so that I can review the coverage changes that happened between certain references.		UI/UX /Dev	High
19	Comparing References (commits /branches/tags)	As a user, I want to see how many commits are in between the references I am comparing so that I know.....		UI/UX /Dev	Medium
20	Comparing References (commits /branches/tags)	As a user, I want to filter between the branches/commits and tags or search for them so that I can find the reference I am looking for fast (which makes me more productive and less frustrated).		UI/UX /Dev	@ Robert van Haaren can you clarify please?
21	Project coverage Coverage Chart	As a user, I want to see which two references are selected overtime within a graph/chart and what their coverage percentages are and the increase/decrease so that I have a visual representation of what I am looking at to increase my understanding of what I'm reviewing/comparing as a user.		UI/UX /Dev	Low
22	Project coverage Coverage Chart	As a user, I want to adjust a min and max percentage for the coverage graph so that I can better see the fluctuation of the coverage (so that the line chart is moving more and the percentages in between are more accurate to see).		UI/UX /Dev	Medium
23	Project coverage Coverage Chart	As a user, I want to intuitively select a range on the chart so that it feels natural to compare and select different references with one another.		UI/UX /Dev	Low
24	Project coverage Coverage Chart	As a user, I want to hover over a commit within the graph so that I obtain additional information about the references and coverage percentages.		UI/UX /Dev	Medium
25	Project coverage Coverage Chart	As a user, I want to Filter on: line, complexity and line + complexity coverage so that I can compare and look at the information separately.		UI/UX /Dev	Medium
26	Project coverage Coverage Chart	As a user, I want to see the coverage percentage block (located above the graph) change once I adjust the graph by selecting different commits so that I don't have different compare data on the page which can confuse me and so that I have additional data for my compared references.		UI/UX /Dev	Medium

Proposal

*Describe your proposal in the most natural way you can. Depending on the project, you may also add: wireframes, user flow diagrams, form inputs/validations, data models... all the specifics needed to execute the plan. High-level summary of **what** we're changing and **why**. Two to three paragraphs.*

Given the above Goals and Use Cases, we are proposing the following high-level changes to the Compare Page:

- Refresh of overall look and feel
- Improvements to the coverage reach chart
- Changes to the Codecov Delta widget.
- Improvements to the comparing reference dropdowns
- Adding helpful functionality: Project Coverage line chart

The following paragraphs will briefly justify why each of these changes are being made.

Refresh of the overall look and feel: New branding has been created for the marketing pages which aren't applied yet to the portal. Updating of design so that we're making it feel less like a generic component library with outdated design). **Usability effect:** Users often perceive aesthetically pleasing design as design that's more usable.

Coverage Reach Chart: Combining the File Tree with the Coverage Reach chart to make it more intuitive, understandable and to provide more insight and data to our users.

Codecov Delta widget: Provide more context to our users within the delta widget to reduce confusion of what each of the percentages means.

Comparing reference dropdowns: Increasing the searchability of references by adding tabs for branches, commits, tags and adding a search bar + adding push dates, to make it easier to recognize which reference you're looking for.

Project Coverage Line Chart: A line chart for line coverage and complexity coverage to visualize the compared references overtime to help our users to understand what they are comparing and to show the increase/decrease for the compared references as well as for the commit distance references in between.

User Interaction/Experience Design & Specs

| *Add mockups, diagrams or visual designs related to these requirements. Type/image to upload a file.*

Current Overview design: This is the old design and our starting point for discussion to see where we can improve and create more value for this compare overview page:

URL: <https://projects.invisionapp.com/d/main#/console/17868995/372415352/preview>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/372415353/comments?scrollOffset=416>

Wireframes: We went through a series of wireframes to discuss and figure out the best layout and how we would improve the current functionalities and If we need to delete and/or combine current functionalities:

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/372415351/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/372896454/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/372975470/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/373066169/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/373334948/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/373510030/comments?scrollOffset=416>

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/373919027/comments?scrollOffset=416>

New Design Overview Compare page: The new design contains new colors for colorblind users, new functionalities and design (look and feel updates) that are described within the proposal section.

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/391712011/preview>

New Design Overview Compare page + Tooltips + dropdowns

URL: <https://projects.invisionapp.com/d/?origin=v7#/console/17868995/391714585/preview>

Specifications General Components:

Compare Page: Interactions / Animations: Coverage Reach + File Tree combination

[Coverage Reach + File/Folder Tree](#)

Compare page: Coverage Chart

[Coverage Chart](#)

Compare page: Flags

[Flags](#)

Compare page: Coverage Percentage Statistics

Branding Colors

Colors

Knobs for Running the Test

Given that the changes to the Compare Page are numerous and comprehensive, there is no clear test outlined at this time to determine the outcome of these changes. After these changes are made, we can use the refactored page as a baseline for future tests as we continue to iterate on and change the Compare Page.

Metrics and Reports

| *Include any metrics or reporting on the current state of the feature / page before any changes are made.*

Compare from & Compare to dropdown

On the image displayed below we see the **Compare from & Compare to dropdown** Heatmap Statistics (where users can select references to compare them) within Fullstory on 10 November 2019:

[https://app.fullstory.com/ui/ES7TP/session/6054441857482752:\(6054441857482752!6375552814055424\(4646258991595520\(39268\)\)\)](https://app.fullstory.com/ui/ES7TP/session/6054441857482752:(6054441857482752!6375552814055424(4646258991595520(39268))))



The statistics below are from the Compare from & Compare to (dropdowns). This shows us that less than 1% of our users are manually comparing references. The Metric is filtered on Past Year and Clicked on: compare from and compare to dropdowns.

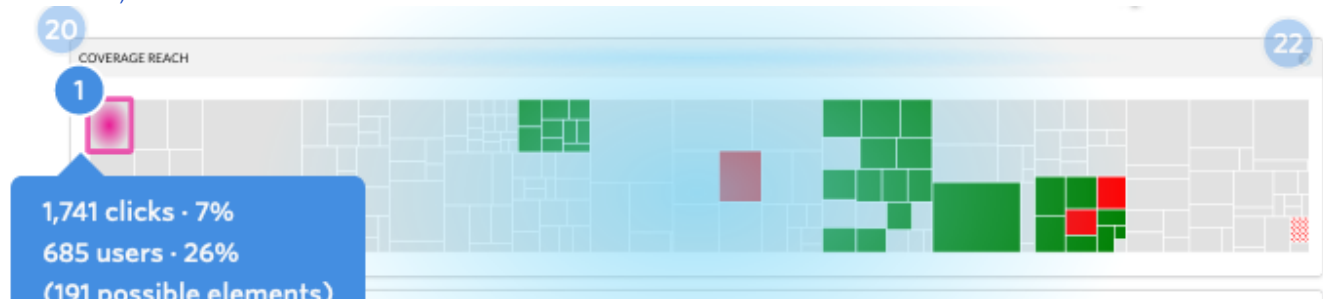
<https://app.fullstory.com/ui/ES7TP/segments/robert@codecov.io:5678366308597760/people/0>

Current Metric (10 November 2019) PAST YEAR	New Metrics
247 People of 21,788 (1%)	
312 Sessions (< 1%)	
1,740 Matching Events (< 1%)	

Coverage Reach blocks:

On the image displayed below, we see a heatmap for the coverage reach chart. Notable is that the first block is the block that has been clicked on the most. Eli and I assume this is a "bug" from fullstory that it's not able to track clicks within the svg but that the tracked item is the entire svg and not just the first block as shown below.

[https://app.fullstory.com/ui/ES7TP/session/5822196146012160:\(5822196146012160!6350354796675072\(5501680063512576\(11385:13713:15412:19192\)\)](https://app.fullstory.com/ui/ES7TP/session/5822196146012160:(5822196146012160!6350354796675072(5501680063512576(11385:13713:15412:19192)))



No flags found

The statistics below are from the Compare page Coverage Reach Graph. This shows us that 8% of all our users are clicking on this coverage reach chart. The Metric is filtered on Past Year and Clicked.

<https://app.fullstory.com/ui/ES7TP/segments/robert@codecov.io:5647988457897984/people/0>

Current Metric (10 November 2019) PAST YEAR	New Metrics
1,846 People of 21,788 (8%)	
3,503 Sessions (5%)	
5,399 Matching Events (< 1%)	

Future Work

It's always a good idea to signal where this is headed so people can think longer-term.

Due to the comprehensive nature of these changes, all future work on the Compare Page will likely be to iterate on what is provided in this specification. Future work can measure metrics on this page and use those as a baseline for improvement.

Out of Scope

List the features discussed which are out of scope or might be revisited in a later release. This is your chance to eliminate bad assumptions and correctly set expectations.

There is limited Out of Scope work on the Compare Page given that the changes are fundamental and comprehensive. This specification does limit itself to the Compare Page only, but nothing on that page is considered Out of Scope for the purpose of this specification document.

Tasks and Timeline

It's ok if you only have a rough estimate, and need more analysis to refine it. But it's still important to try and put time bounds down as early as possible to signal roughly the size and scope. Estimates must come from the builders (dev, design, etc.).

Timeline development is dependent on the engineering team and wider business-level discussion. This section will be completed once a better idea of tasks and their prioritization is known.