Enhancing the structure and usability of Anomify dashboard

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Abstract

Anomify is a startup specialising in anomaly detection in time series data using machine learning algorithms. Anomify has a novel UX problem of making its dashboard easy to understand and interact with. The project focused on improving the information architecture's usability and providing visualization on the macro and micro levels that would help users explore events.

Q1: How can we structure the data in the dashboard so that the most important information is available and digestible to users?

Q2: How can we help users explore events in Anomify?

Introduction & Background

Companies across different domains are collecting vast amounts of data in real-time. Thus, there is a growing need for tools to help in usable visualisations of the collected data. And an intelligent analysis identifies and predicts any abnormal patterns in the collected data that can signal and prevent incidents and catastrophic events.

Anomaly detection is any technique or method to identify unexpected events in data. There are different types of anomalies, including point anomalies, collective anomalies, and contextual anomalies

Anomaly detection is essential for different industries such as abnormal data in financial data, healthcare data, performance indicators such as CPU performance, page views, active users or revenue

Data visualisation is a fundamental part of anomaly detection systems. The human eye has been a main data mining tool. The saliency in visualised data helps the brain to focus on important data points and trends that could be identified as an anomaly

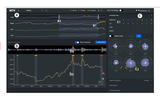
Competitor Analysis »

Avora

Anodot

Anomalies dashboards in the literature »

(AlAbdulaali et al., 2022)



(McKenna et al., 2016)

Study Methodology

Discover

- Meetings with Anomify
- Literature Review
- Semi structured interviews
- Self ethnographic
- Desk Research
- Hybrid online card sorting
- Heuristic Evaluation

Define

- Site objective
- Context
- User Needs and persona
- User journey
- Functional requirements
- Information Architecture
- Current usability issues

Develop

- Lo -Fi Design
- Evaluate Lo -Fi
- Evaluate the IA
- Hi - Fi Design

Deliver

- Prototype for the main requirements
- Usability testing with the anomify team
- Portfolio and final recommendations to anomify

Research Results

User Persona »

John David

DevOps Engineer

35

London, UK

Description

Software infrastructure engineer. His primary responsibility is running a reliable system.

A day in their life

in his daily duties, he is responsible for fixing system issues, making decisions on how problems are handled, what causes them, and how to solve them. Besides, he monitors 438 services across different servers, with around 330 thousand metrics.

Needs

- Information about what state of change is occurring and what are correlated events
- Need to browse and monitor all metrics in a centrilised service
- Needs to save time and stress and know when a thing is wrong immediately
- Need a trusted tool to definitively notify when there is an error
- Finding the cause of an issue
- Figuring out how to solve an issue or a sudden change

User Journey Map »

Phase	Before accessing the dashboard				Accessing the dashboard		
Situation	Releasing new code	Website is down and zero login	User receive Anomfy Alert	Alert is concerning, user click on investigate button	Opening the metric page to investigate the anomaly	User identified that its a true anomaly	OR User identified that its an expected behaviour	User open Dashboard home page to see other metric data
Emotions								
User Needs	Need to make sure that everyth ing is going well	Need to be notified with this abnormal behavi our so they can find the issue and fix it asap	Need to verify that the alert received is a real anomaly Need to know what could be the cause and related metrics	Need to easily open more details to investigate the received anomaly	Need to verify if its anomaly or a false alert Need to understand related metrics to investigate the root cause	User need an easy way to browse through related metrics to see how other area in the system performing	Need to flag it as false positive or normal behaviour so he dont get notified about it again	Need an easy navigation. Need an overview to gain insights and quick analysis

Impact Effort Matrix »

	Low effort	High effort

High impact	• Structure
	  • Restucture the inforfamtion architecture s
	  • Improve the dashboard navigation
		• Enable Exploratory Analysis for metrics and events
		• Explanatory Analysis - Declutter details page and add visualization for related event
		• Decision support - adding filtering options

Low impact	• Improve current Human machine interaction • Declutter the data traning process and steps	Improve user engagment in training the presented data in the dashboard

Functional Requiremer »

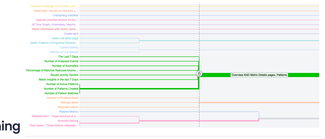
The research resulted in three main design requirements and seven subtasks. The three requirements are:
R1 – Structure the dashboard IA and improve navigation
R2 – Provide the capability for events exploratory analysis
R3 – Enhance events investigation explanatory analysis

Research Results

Online Hybrid card sorting »

Some items can be grouped under same category such as manage alert and create alert which are currently 2 different top level item

The whole frontend is considered dashboard and there are disagreement on the categories grouping and categories naming



Ofline open card sorting »

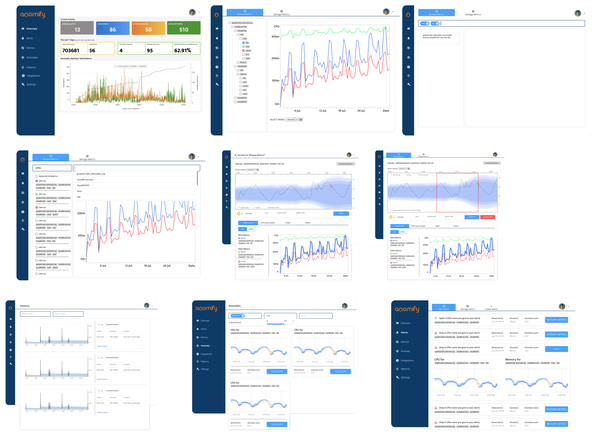
Events could be the term used to group anomalies and pattern matches as a top level navigation

Explore could be the term to group metrics, events, pattern and alerts then the user can filter which type of information want to explore

Nielsen's Usability Heuristics »

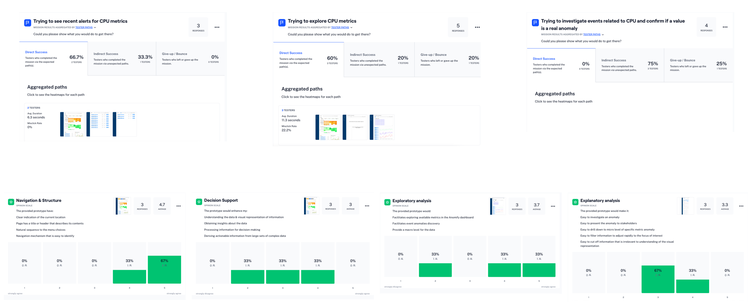
Nielsen's Usability Heuristic violations are highlighted and addressed in the design for the main requirements.

Lo - Fi Design



Design

Testing & Evaluation



Conclusions & Future Work

Conclusion »

Q1: How can we structure the data in the dashboard so that the most important information is available to users?

- Providing macro and micro levels for the displayed data
- Enhance Recognition rather than recall by providing six primary top levels (Overview, alerts, Metrics, Events, Help and Setting)
- The overview could include a snapshot of the most recent data points.
- Allow users to filter down to data of interest
- Declutter and provide any visualization and information on user request

Q2: How can we help users explore events in Anomify?

- A heatmap visualisation could be a possible option to give a snapshot of recent events.
- Providing metrics and events with their own pages with the option to filter and sort through the different dimensions for each could help the user better explore events in Anomify.

Future Work »

- This project heavily depended on secondary research and Anomify employees' input as a proxy for potential customers. Thus, the main focus for improvement is getting actual customer input on their pain points and testing possible solutions.
- Moreover, as Anomify is domain agnostic, another area of improvement for the structure and the event exploration is making the terminology less technical and fitting with the wide range of potential customers.