

# Mark Erikson

## Staff Software Engineer

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### SUMMARY

I'm best known as the **primary maintainer for the Redux family of JavaScript libraries** (Redux, React-Redux, Redux Toolkit), and I am extremely active in the React/Redux community. I spend much of my time answering questions and explaining concepts through conversations, chats, presentations, reviews, and written documentation. I am recognized by the community as a world-class expert on the React and Redux JS libraries and the modern JS ecosystem. I have written over 300K words of official Redux documentation, React/Redux tutorials and articles, and answers to questions on how to use React and Redux effectively. I have spoken at numerous conferences and taught several workshops on using JS, TS, React, and Redux.

In addition to my OSS work, I am a staff-level software engineer with 16+ years of experience. I specialize in front-end web app development, but I have experience solving problems across the full stack. I've done end-to-end web dev from JS MVC to server web framework to DB backend, desktop dev with multiple languages and GUI toolkits, low-level C algorithm optimization, and more.

### WORK EXPERIENCE

**Replay.io** *Staff Front-End Engineer* 2022 – Present

Designed and implemented full-stack features for the Replay time-travel JS debugging platform:

- Modernized Replay's front-end codebase, migrating from 140K LOC of plain JS and legacy React and Redux (from the original Firefox DevTools source), to 100K LOC of modernized Redux Toolkit, React, and TypeScript
- Implemented Replay's support for React and Redux DevTools inspection, using our time-travel backend API to extract React component tree data and Redux actions from recorded React applications
- Implemented "Jump to Code", which lets users time-travel-debug React apps by jumping to the React props that handled events
- Revamped the official React package build pipeline to generate sourcemaps for React production build artifacts
- Prototyped runtime perf analysis of React renders and Redux dispatches using our time-travel API
- Implemented backend recording processing logic to extract and cache recording paint data in S3
- Built a full-stack prototype of "Root Cause Analysis" to diff failing tests, including Postgres tables, GraphQL layer, and UI

**Northrop Grumman** *Software Engineer* 2008 – 2022

**Engineering Metrics Repository Lead** 2020-2022

Led a team developing an internal project engineering statistics dashboard.

#### As team lead:

- Planned quarterly roadmaps and bi-weekly sprint stories; worked with managers and stakeholders to gather requirements, design features, and prioritize requested features vs maintenance tasks; trained and mentored junior developers

#### As developer:

- Architected and implemented a phased migration of a 100K SLOC classic AngularJS 1.x + Express codebase to a modern React / Redux / TypeScript / Next.js client, while maintaining full app functionality and delivering new features over time
- Migrated over 30K SLOC of plain JS business logic and client code to TypeScript
- Maintained build tooling and infrastructure to support the ongoing codebase migration (CRA, Webpack, Next, Jest, and more)
- Designed and implemented code foundation and abstractions for a spreadsheet-style data entry UI

## BACN Project

2009-2019

Developed a series of mission planning and geospatial visualization / situational awareness applications based around terrain Line-Of-Sight calculation and live geodata display on 3D globes.

### BACN UI Infrastructure Lead

2019

Co-led a "UI and Infrastructure Services" team that supported BACN software feature teams in rewriting the BIB and LNCS clients in React and Redux, including project setup, implementing core foundation functionality, defining codebase conventions, and training back-end Java/C++ developers in modern web technologies.

### BACN Information Broker / "BIB" (JavaScript, Cesium.js, React, Redux, Python, C)

2013-2019

- 2013: Joined a team of 12 in a clean-slate rewrite of an existing geospatial visualization web app. Using lessons from Kontour, helped build a set of Python and Java services with JSON APIs, and a smart browser client using Cesium as a 3D globe display. Later led an effort to refactor the original jQuery client codebase to use Backbone.js for improved architecture and maintainability, then trained and directed the rest of the team in client-side development techniques.
- 2014-15: Designed and implemented a major upgrade to the LOS calculation algorithm used by both Kontour and BIB, enhancing it to allow full 3D antenna-pattern-based RF+LOS calculations, and optimizing calculation performance of the radio frequency range and LOS calculation algorithms, and implemented multiple new features for system data visualization using Backbone
- 2016: Rebuilt the Kontour web client from scratch using React and Redux to modernize the codebase
- 2017-18: Architected and directed development of a Python "server push" service that used Crossbar/WAMP and backend data diffing to replace an existing polling-based implementation for real-time data updates, shrinking bandwidth requirements by over 80%. Began migrating the existing Backbone client to React+Redux. Rewrote the full history of our Git repository to remove unwanted files and apply consistent JS syntax/formatting across the entire repo commit history. Generated multiple new image and terrain datasets using publicly available datasets and customized versions of geospatial data processing tools.

### Kontour (Java, Play 1.x, GWT, SmartGWT, Google Earth, Cesium.js, Python); BLT (C++)

2009-2012

Assisted initial development of a C++ plugin for the FalconView mission planning application that would display calculated LOS.

Sole architect and developer of a web-based LOS calculation application built around Google Earth / Cesium.js for 3D visualization, with design input from the LOS algorithm author. Progressively moved some functionality into standalone Python web services as development continued, allowing reuse of system abilities in other applications.

## Open Source

### Redux Maintainer

- Primary maintainer for Redux, React-Redux, Redux Toolkit, and Reselect, and creator of Redux Toolkit
- Implemented numerous Redux features and bug fixes, as well as maintaining package publishing and CI pipelines
- Wrote React-Redux v7, v8, and v9, and directed development of v6 and the v7.1 hooks API
- Author of the "[Redux Essentials](#)" and "[Redux Fundamentals](#)" docs tutorials, [Redux Style Guide](#) best practices page, [Redux FAQ](#) page, and usage guides like "[Structuring Reducers](#)", "[Deriving Data with Selectors](#)", and "[Writing Logic with Thunks](#)"

### Blogger, Speaker, and Teacher

- Author of numerous technical blog posts primarily focused on React, Redux, JS, and TS:
  - Extensive technical deep dives: "[A Mostly Complete Guide to React Rendering Behavior](#)", "[Why React Context is Not a State Management Tool \(and Why It Doesn't Replace Redux\)](#)", "[The History and Implementation of React-Redux](#)"
  - Redux usage and philosophy: "[The Tao of Redux: Implementation and Intent / Practice and Philosophy](#)"
  - Topic overviews: "[How Web Apps Work](#)" series, "[Using Git for Version Control Effectively](#)"
  - Migration recaps: "[Rewriting Git Repo History](#)", "[Migrating a MEAN AngularJS app to React, Next, and TS](#)"
- Worldwide conference speaker, including:
  - [ReactNext 2019: "A Deep Dive into React-Redux"](#)
  - [React Summit 2023 – "Debugging JavaScript"](#)
  - [React Advanced 2023 – Building Better React DevTools with Replay Time Travel](#)

## EDUCATION Bachelor of Computer Science

Cedarville University, Cedarville, OH

2000 – 2004