*PROJECT STATEMENT

PROJECT OPTHA, A wholesale replacement of a 3rd party vendor's web-based eink rasterization pipeline.
Visualized With Phoenix LiveView

*MOTIVE

- Existing Vendor Platform was effectively deprecated and not recieving further development, as business had pivoted away.
- Approximate vendor web technology support was that of 2012 Safari, & Developers wanted to use newer layout features.
- Rendering service was experiencing visual corruption beyond justification.
- No way to see previous rasters, Only a "live" view was available as vendor did not store history.
- Ongoing per-device costs to vendor were deemed unacceptable given the level of support.

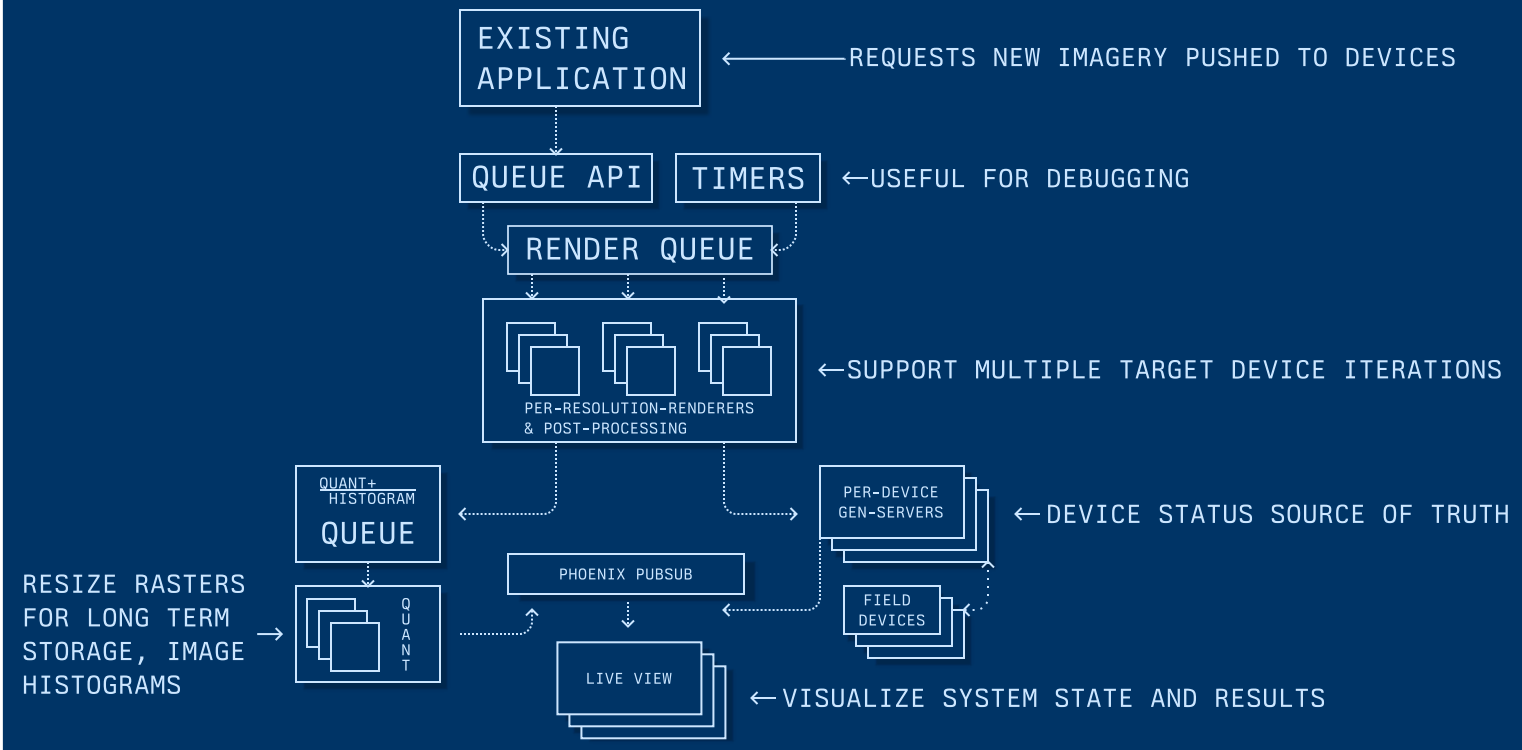
*NEW REQUIREMENTS

- Long Term Platform Support
- Allow use of modern web technologies [GRID & FLEXBOX]
- Historical Playback of Rasterized Images
- Decreased ongoing per-device costs
- Lower load on Existing Vendor in order to negotiate lower per-device rates

*IMPLEMENTATION

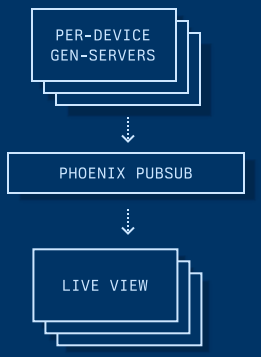
- Containerized Web Browser Fleet driven by RMQ, and queued via API by existing systems.
- Pipelines for Image Post-Processing (8bGr conversion) and Quantization for optimized long-term storage.
- Genserver-per-Field-Device for up-to-the-second tracking the deployment of images to field devices.
- Phoenix LiveView For Fleet and Device History Visualizations.
- ***Lowered ongoing Per-Device cost by*** **50%**

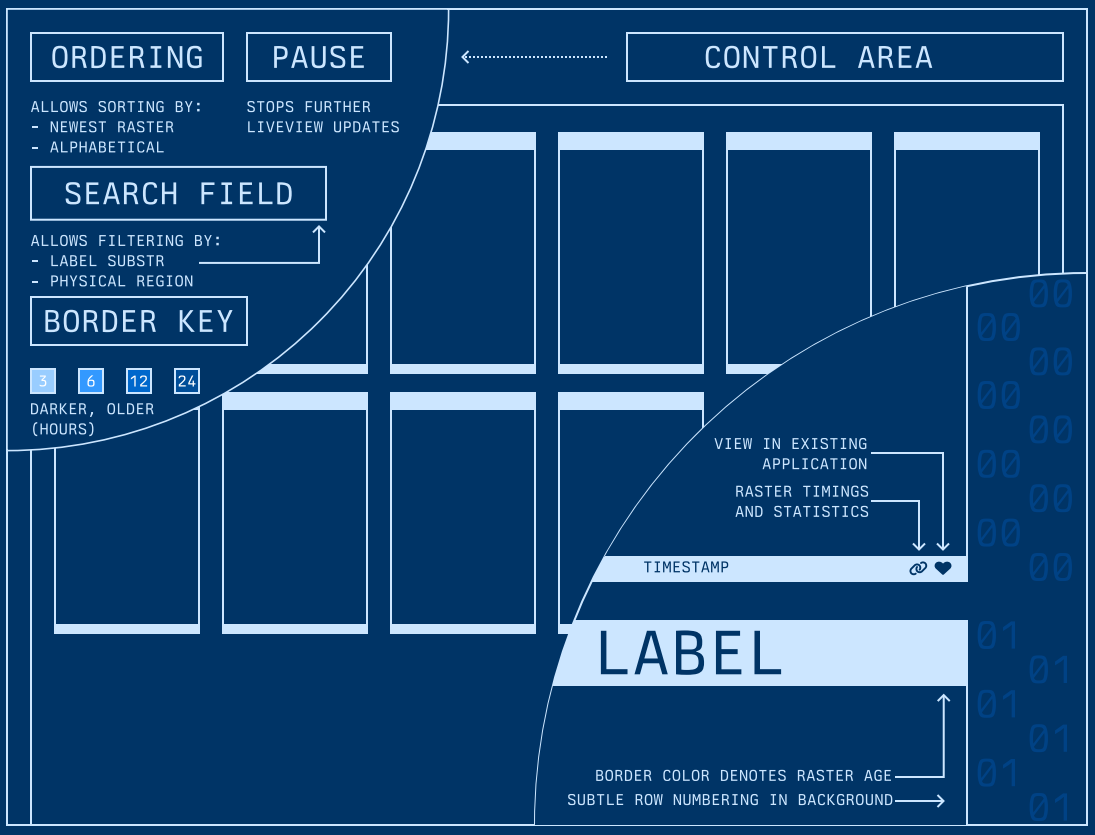
*ARCHITECTURE

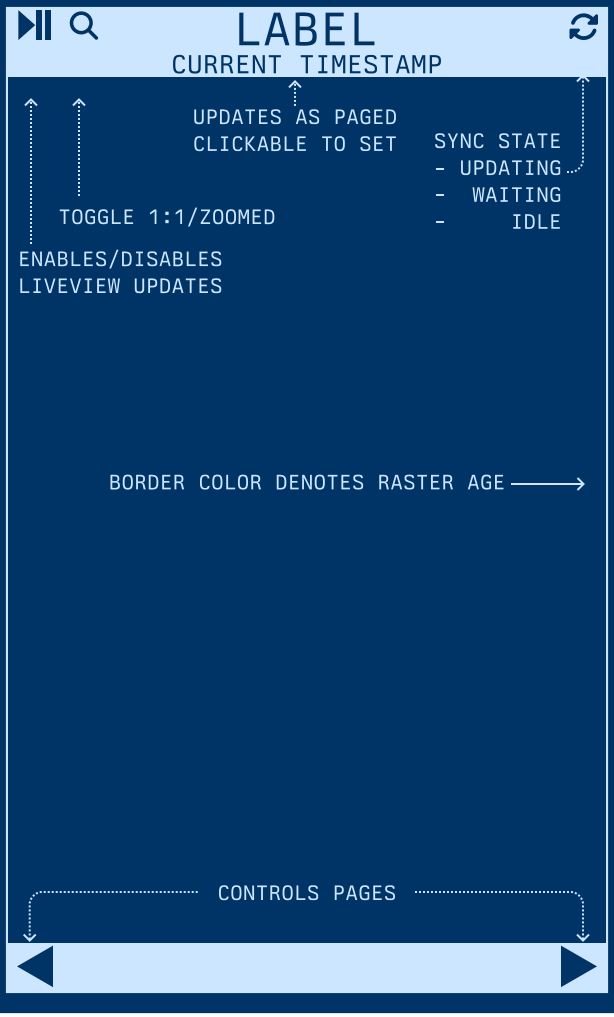


*FLEET.VISUALIZER

- Real Time Fleet Updates
- Subscriptions via PHX PubSub to recieve URL updates from per-device genservers.
- Displays Quantized PNG Images
- Allows Ordering and Filtering







*HISTORY.VIEWER

- Allows watching the live updates coming from a single device, with ability to pause.
- Reports Device Genserver Sync State to troubleshoot field issues.
- Allows paging back in time indefinitely to see images and troubleshoot renders interactively.
- Paging is controlled both via on-screen ui elements & keyboard shortcuts, and pages update HTML paths in browser.
- Deep linking enables the ability to share links to device visualization at specific points in time.
- Recieves updates to pager via Quantization worker completions,
- Loads quantized images which give an average size reduction of 96%, and allows for fast, efficient paging
- Allows viewing of rasters at fit-to-screen and 1:1 viewing modes

