



# **Optic Mart**

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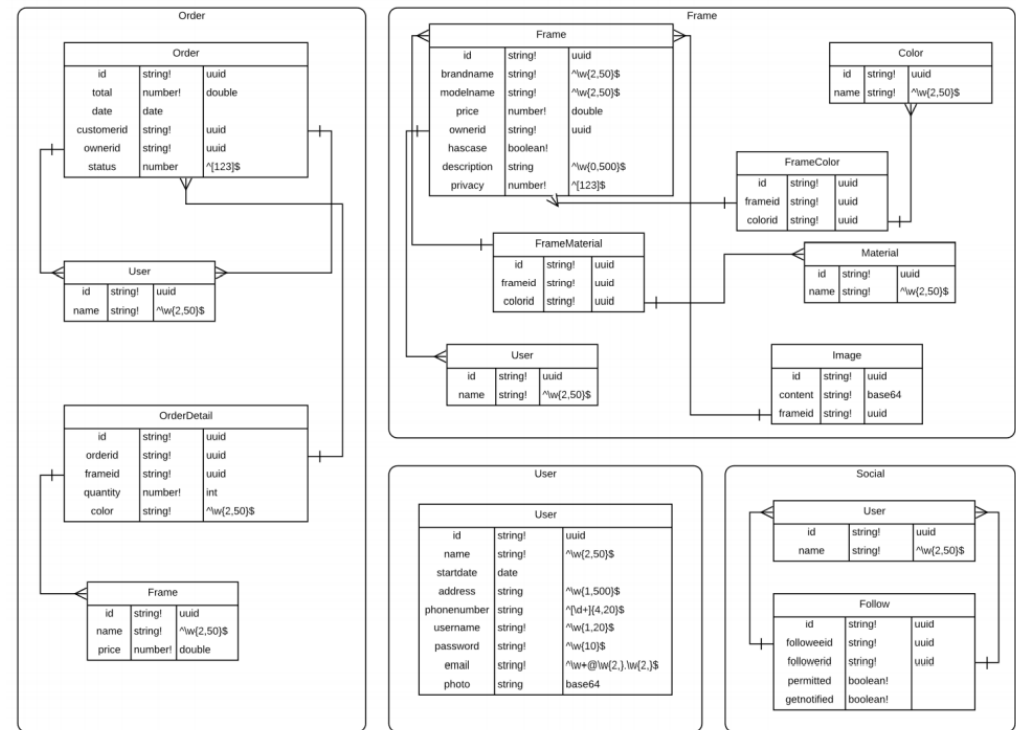
Spring 2020 – BIHE

# Outline

- Introduction
- Backend Stack
- Frontend Stack
- Architecture
- Demo

# Introduction

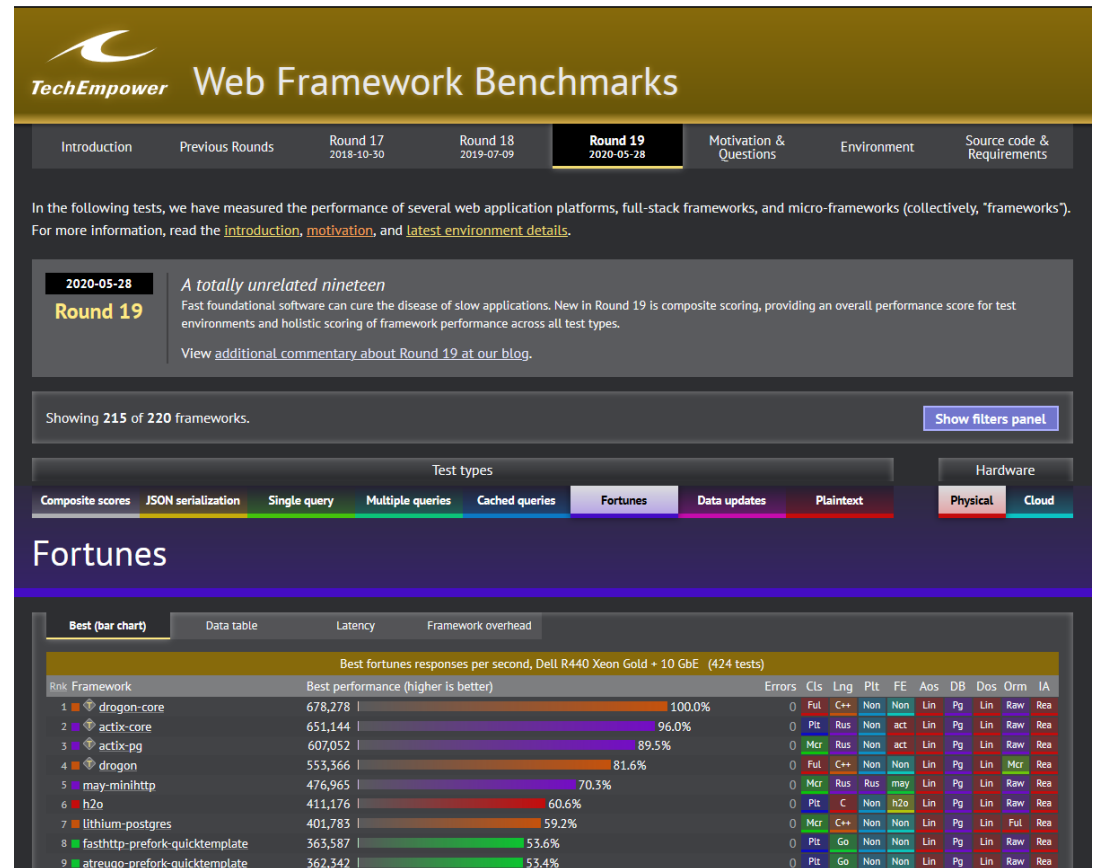
- A B2B Online Store
  - Available Solutions
- Made Specifically for the Optic Market
  - Entities
    - User
    - Frame
    - Order
  - Use Cases



Database Design

# Backend Stack

- Actix Web
  - Written in Rust
  - Fast
- PostgreSQL
  - Relational
  - Open Source



*Actix Web is the Second Fast Framework in the TechEmpower's 2020 Benchmark*

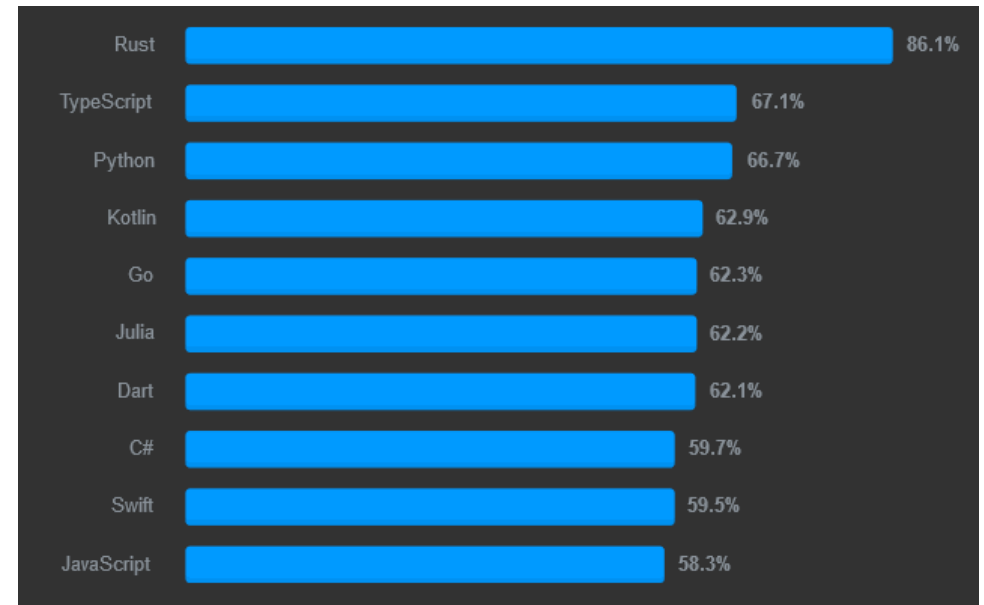
# Rust

- **Pros**

- Fast
  - No Garbage Collector
- Correct
  - Robust Type System

- **Cons**

- Steep Learning Curve
- Somewhat Immature



*Rust Was the Most Beloved Programming Language  
in Stack Overflow's 2020 Developer Survey*

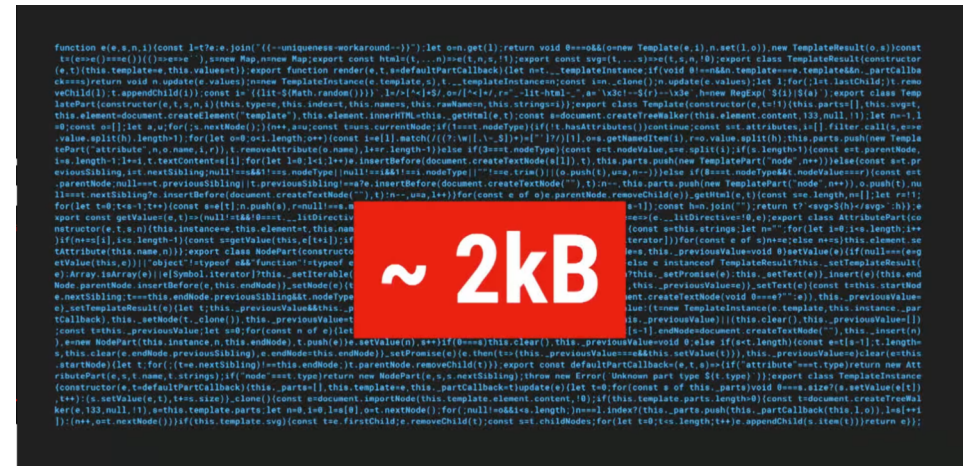
# Frontend Stack

- Lit-Element

- Written in TypeScript
- Tiny wrapper around Web Components
- Lightweight

- Dependency Management

- NPM
- Rollup



*Lit-HTML, the Templating Engine Powering Lit-Element, is Tiny.*



*Rollup Performed the Best Among Bundlers in a Recent Report Conducted by a Team of Google Web Engineers*

# Architecture

- Microservices
- CQRS
- Event Sourcing
- Microfrontends
- Authentication
  - JSON Web Tokens (JWT)

```
* | 8a2f398 (magicmonkey/db_index) Added an index to aid performance
|/
* | 40a4aed (origin/stubs-are-not-numbers, stubs-are-not-numbers) don't use json_name
|/
* | 9810699 (richsage/talk-attend, richsage-talk-attend) Update Frisby tests to check
* | 60d3d5c Update "starred" retrieval through Talks API.
* | 5b5860c Patch script changed to "star" from "attend".
* | a5ad013 Update Frisby tests for talk attending/attendee count.
* | 0f8637e Add attending and attendee count into talks-by-speaker output.
* | 87f713d Add attending and attendee count into talk output. This is for the talkBy
* | 06a8bdd Add talk attending_uri to output.
* | 1921d4a Add POST and DELETE handling for talk attendance.
* | a136cac Add talk-attendance value retrieval via GET
* | d541370 Add patch for user_talk_attend table.
|/
* | 001df9c Merge branch 'lornajane-event-user-constraint'
| \
| * | 8c0b7e3 (origin/event-user-constraint, lornajane/event-user-constraint, lornaja
| | \
| | * | 09725e1 (dbgen-dupes) making the user/event attending checks better
| | * | 3fd042f add duplicate detection for users attending events
```

*Git is One of the Most Widely Used Event Sourced  
Software Around the World*

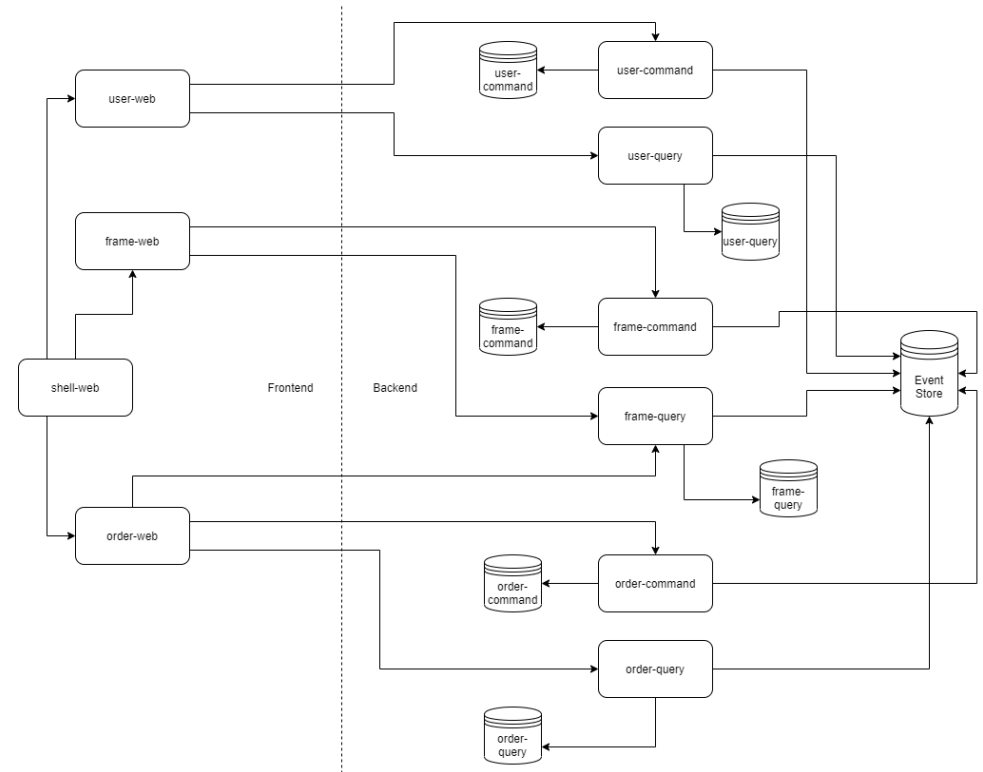
# Microservices and CQRS

- **Pros**

- Clear Bounded Contexts
- Autonomy
  - Different Stacks
  - Independent Deployment

- **Cons**

- Added Complexity
  - Integration



*Optic Mart Microfrontends and Microservices Relationship*



# Event Sourcing

- **Pros**

- Keeping Services Independent
- Rewinding
- An Honest and Complete Log

- **Cons**

- Current vs Performant
  - Snapshots

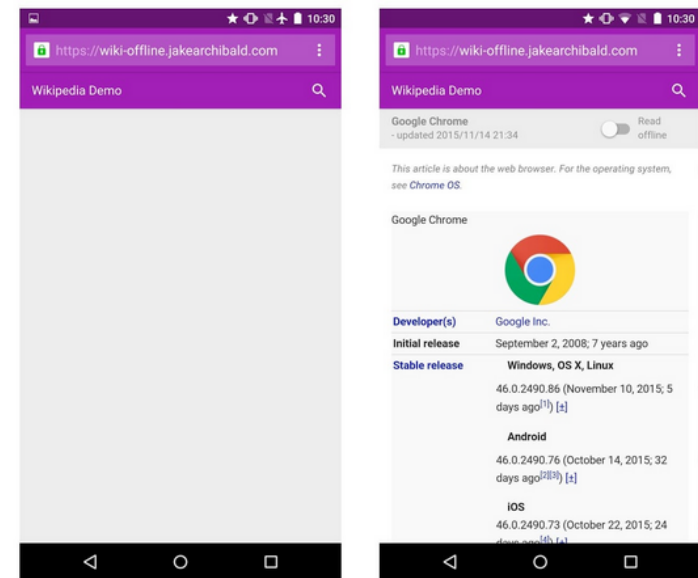
id	integer
entity_id	uuid
type	text
body	json
inserted_at	timestamp(6) without time zone

*Event Tables' Designs are Simple*

# Microfrontends

- Microservices Ideas Applied to the Frontend
- A Unique Challenge
  - UI Has to Be Seamless and Coherent
    - SPAs and the App Shell Model
    - One Design System
      - Web Components Are Interoperable

Offline Wikipedia webapp



Cached application shell

Content dynamically loaded in

*An Example of App Shell Model*



**Demo**



**Thank You!**