DDD with CQRS and Redux

Domain Driven Design Cologne/Bonn Meetup / 17.07.17

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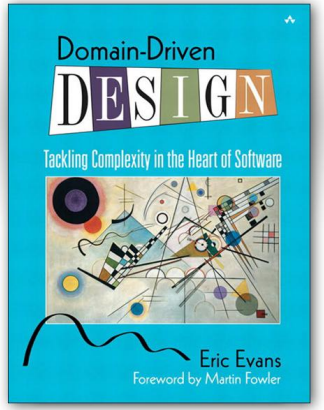
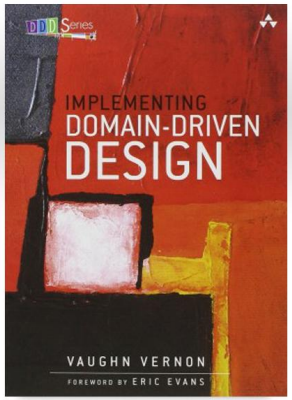




Agenda

1) Redux + live coding
2) Redux and Flux
3) React-Redux + live coding
4) React-Redux and CQRS
5) Domain driven design: Combining reducers

Redux

Redux

"My goal was to create a **state management library** with **minimal API** but completely **predictable behavior**"

Dan Abramov, creator of Redux

http://redux.js.org/

The Changelog #187

Getting Started With Redux

Redux - Three Principles

- The **state** of your whole application is stored in an object tree within **a single store**.
- The **only way to change the state is to emit an action**, an object describing what happened.
- To specify how the **state tree is transformed by actions**, you write pure **reducers**.

http://redux.js.org/docs/introduction/ThreePrinciples.html

Reducer

- “the **most important concept** in Redux”
- Inspired by Elm updaters
- type Reducer<**S**, **A**> = (state: **S**, action: **A**) => **S**
- must be **pure functions**
  - exact same output for given inputs
  - free of side-effects
  - do not put API calls into reducers!
- make state mutations **predictable!**

http://redux.js.org/docs/Glossary.html#reducer

Redux live coding

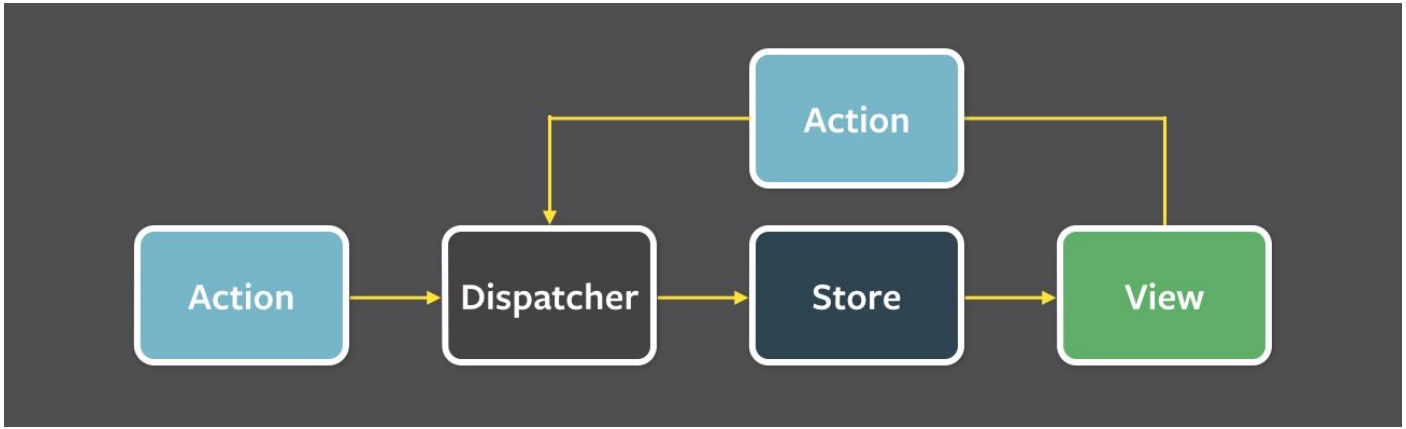
Components and concepts

- Forsyth-Edwards-Notation (FEN)
- Chess.js
- Redux

Redux and Flux

Flux

- a **pattern** for **managing data flow** in your application
- most important concept is that **data flows in one direction**



https://github.com/facebook/flux/tree/master/examples/flux-concepts

Flux and Redux

Flux	Redux
Action	Action
A single Dispatcher	**No** Dispatcher (but a (Redux) Store has a dispatch method)
Many (Flux) Stores	**A single** (Redux) Store, many Reducers
State is **mutated**	State is **immutable**
View	Listener

http://redux.js.org/docs/introduction/PriorArt.html#flux

React-Redux

Presentational and Container components

	Presentational	Container
Purpose	How things **look** (markup, styles)	How things **work** (data fetching, state updates)
Aware of Redux	No	Yes
To read data	Read data from **props**	Subscribe to Redux **state**
To change data	Invoke callbacks from props	Dispatch Redux actions
Are written	By hand	Usually generated by React Redux

CQRS and React-Redux

CQRS	React-Redux
Command	MapDispatchToProps
Query	MapStateToProps

```
connect(mapStateToProps, mapDispatchToProps)(Chessdiagram)
```

React-Redux live coding

Components and concepts

- React
- React-Redux
- React-chessdiagram
- Forsyth-Edwards-Notation (FEN)
- Chess.js
- Redux

React-Redux and CQRS

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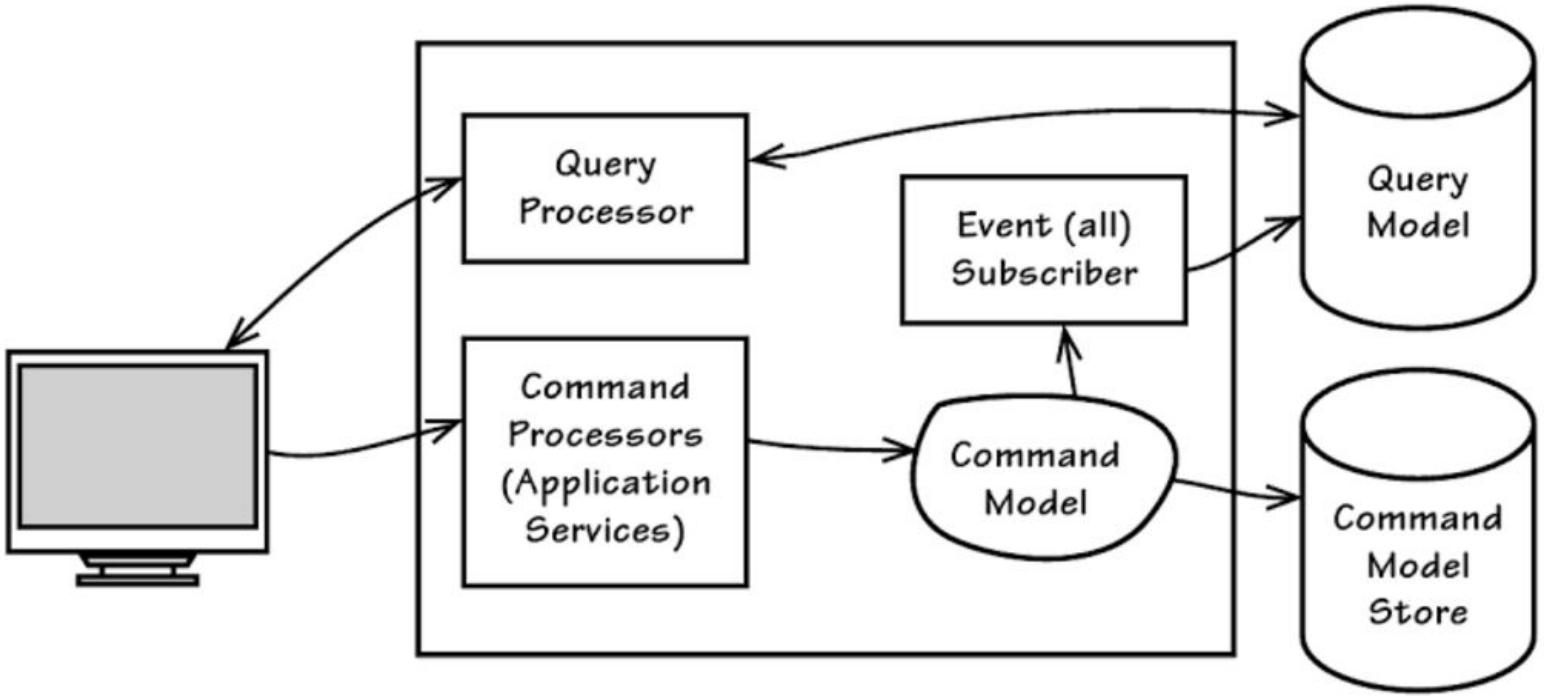
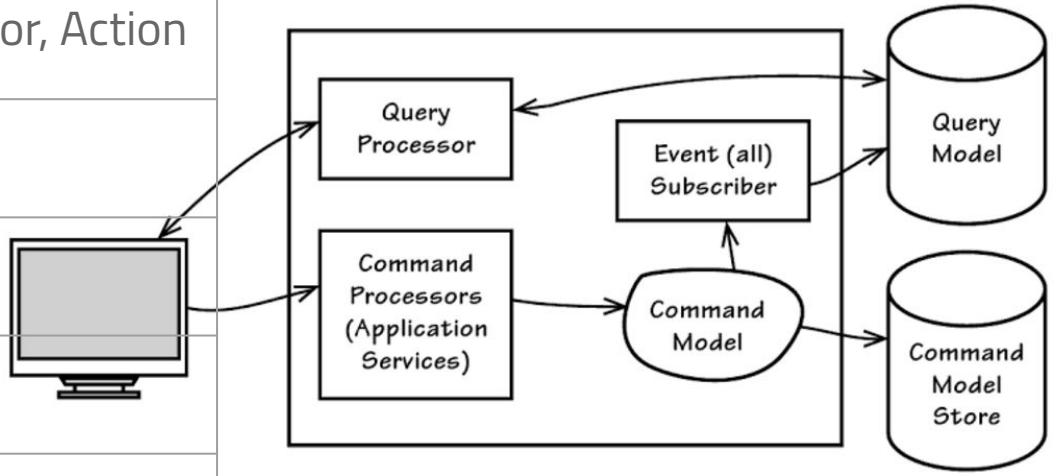
CQRS

"**Implementing DDD**", Vaughn Vernon

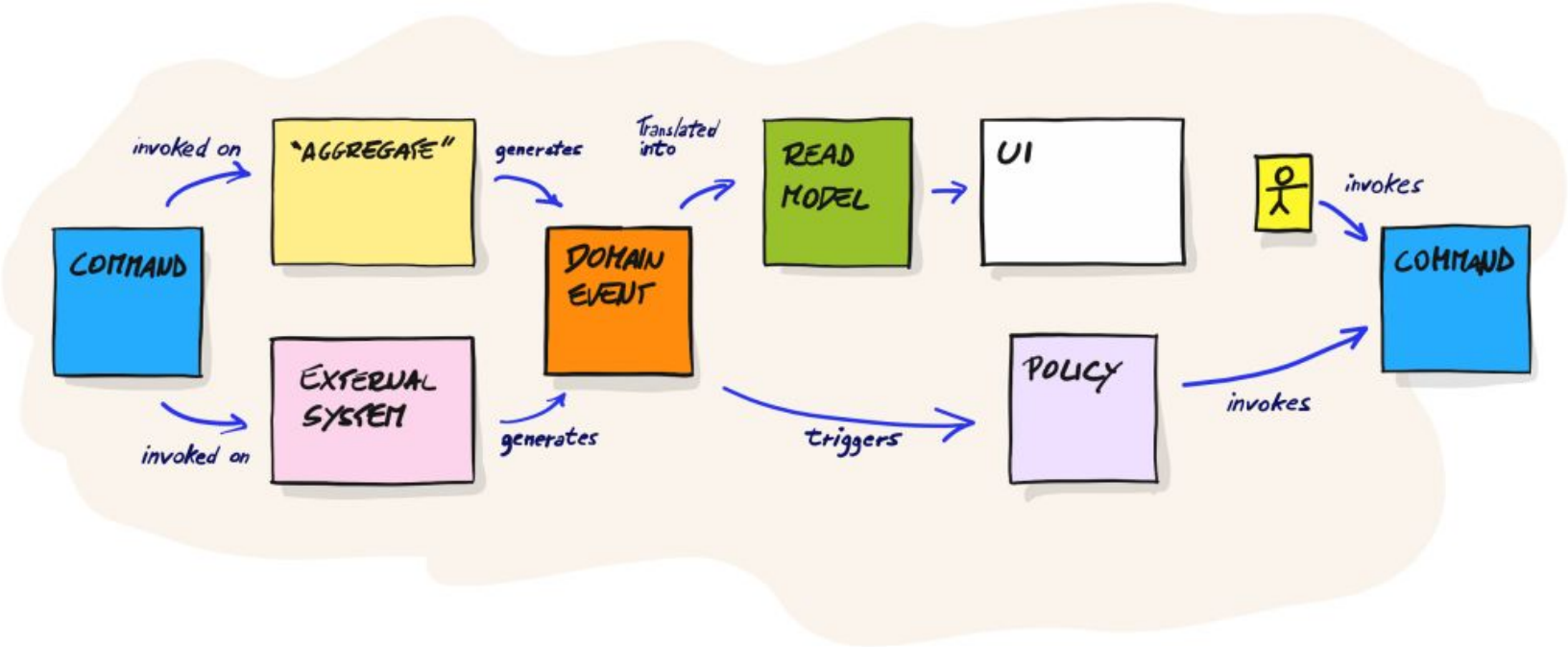


CQRS and React-Redux

CQRS	React-Redux
Command Processor	MapDispatchToProps
Command Model	Action Creator, Action
Command Model Store	Middleware
Event Subscriber	Reducer
Query Model	State
Query Processor	MapStateToProps



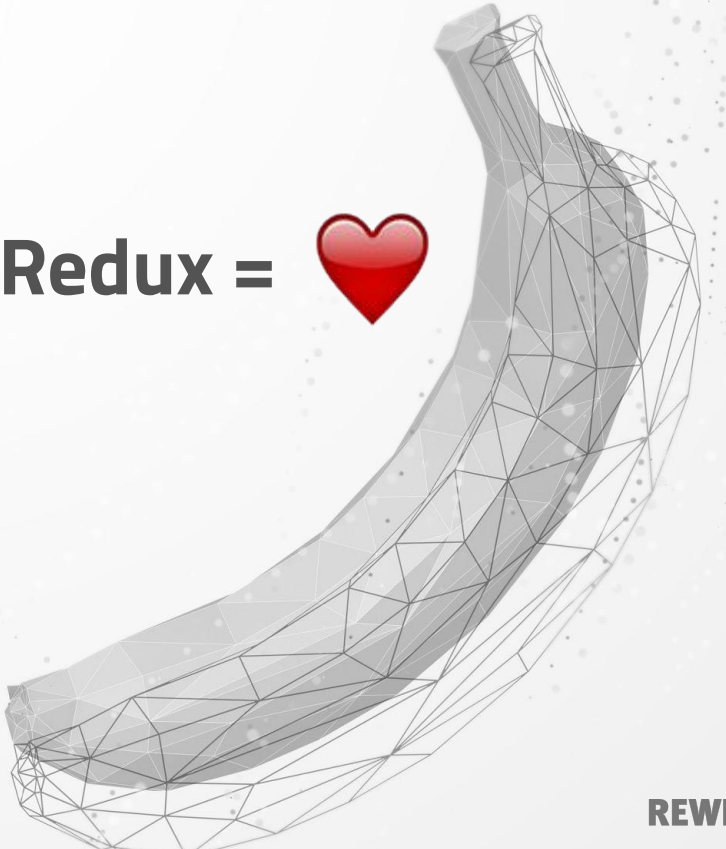
Event Storming



Event Storming vs. React-Redux

Event Storming	(React) Redux
Command	MapDispatchToProps **Methods**
Aggregate	**Action Creator**
Domain Event	**Action**
Read Model	Reducer → **State**
UI	MapStateToProps: State → **Props**

DDD: React + Redux = ❤️



Components and concepts

- Redux combineReducers
- React
- React-Redux
- React-chessdiagram
- Forsyth-Edwards-Notation (FEN)
- Chess.js
- Redux

React and Redux hand in hand

- Files grouped by bounded context in separate folders
- Domain slicing via
  - Sub-components (React)
  - combineReducers (Redux)
- Tree hierarchy with root reducer and component

Elegant and simple

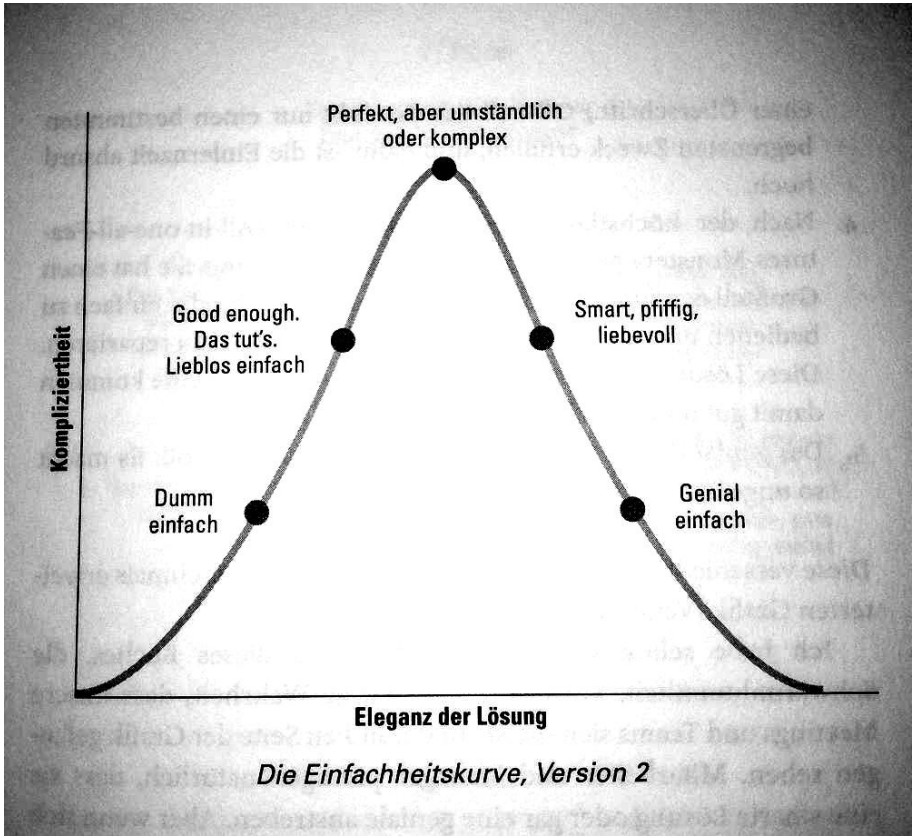
Redux is

“genial einfach”

not

“dumm einfach”

[Gunter Dueck “Schwarmdumm”]



Die Einfachheitskurve, Version 2

Vielen DDDank :)

Christoph Baudson / @sustainablepace

Demo, slides, source code at http://chess.baudson.de