

BetterProgramming

Advice for programmers.


Follow

👏332



# When to Use Event Sourcing

Event sourcing can be awesome, but it does add complexity to your system



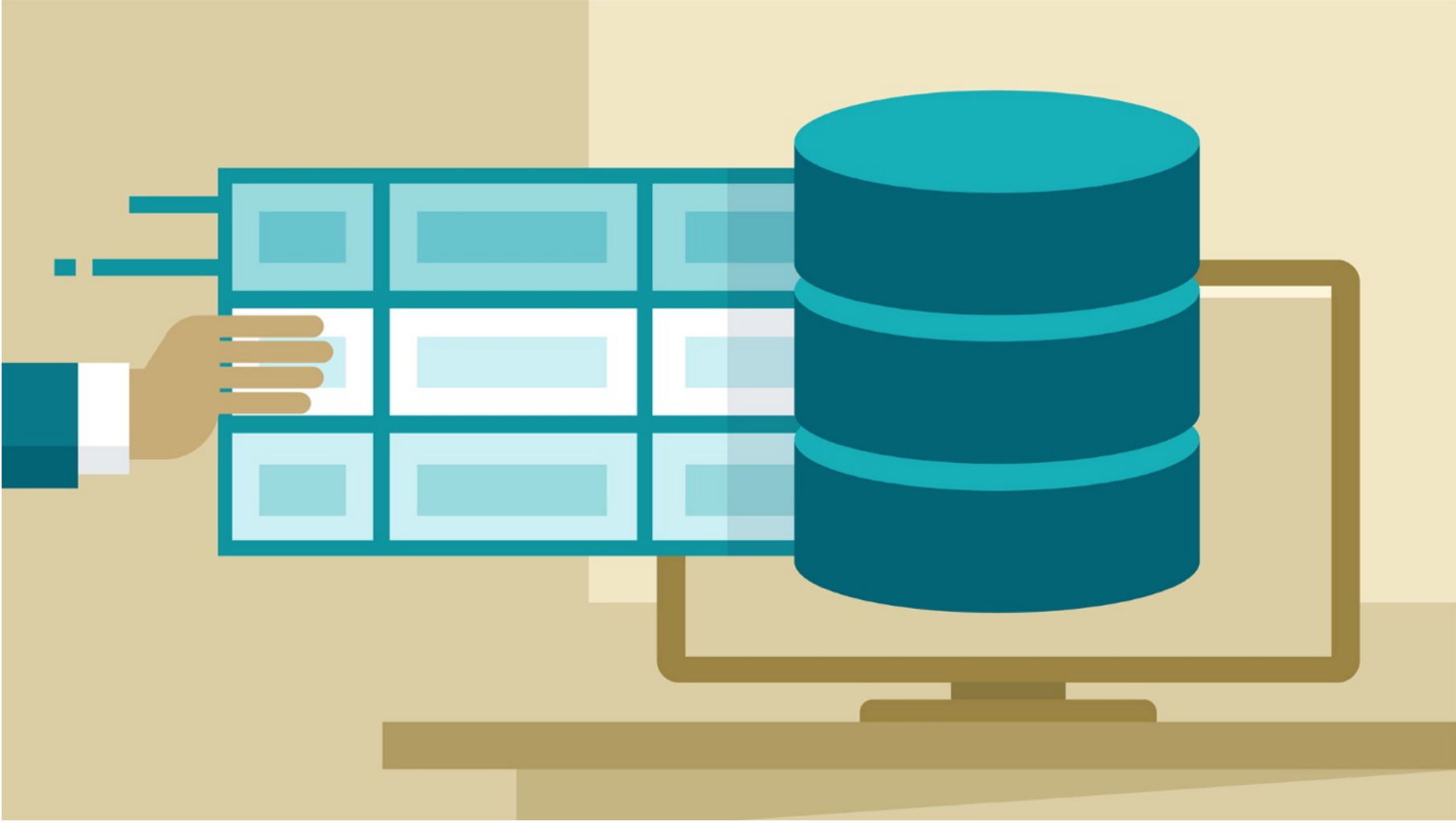
Dirk Hoekstra

Nov 11, 2019 · 3 min read

Follow

★

🐦🌐📘🔖🔗



...

## What Is Event Sourcing?

Most web applications store the *state* of a system in the database.

Suppose you're asked to design the database of a webshop. Most likely, a traditional sequel database design will have a `users` , `products` , and `orders` table — representing the *state* of the system.

Let's assume you start coding away and eventually launch the webshop. After a few weeks, the product owner would like to know how many times users update their email address, on average.

In this traditional database design, when a user updates their email address, a query looking something like this is executed:

```
UPDATE users SET email='newemail@mail.com' WHERE id=1
```

The problem is that there is no event log storing this change in a traditional sequel database.

You could build an extra column `event_log` and add a “user changed email” every time a user updates their email address. However, there are a few issues with that:

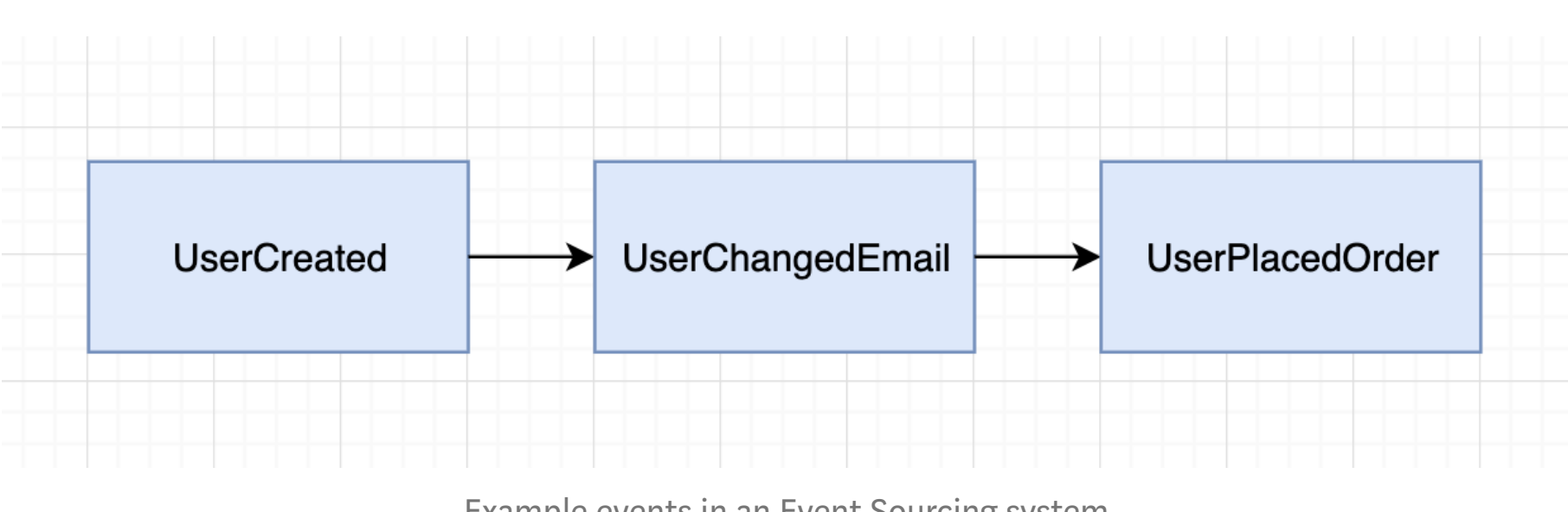
- It requires extra work to build the feature.
- It makes the database design more complex.
- You will only generate these events from the moment you implement this feature, there is no way to generate these events retroactively.

This is a perfect example of where event sourcing is awesome!

With an event sourcing design, you don't store the *state* of the system. Instead, you store the *events*.

Top highlight

For example, when a user signs up, a `UserCreated` event is stored. Then, when a user updates their email address, a `UserChangedEmail` event is stored.



Example events in an Event Sourcing system

...

## Why Use Event Sourcing

### Represents how we think

In the real world, people think in events. When somebody asks you how your day was, you will most likely tell them the interesting events that occurred. And you probably won't describe the exact state of the world at time X.

Similarly, a domain expert will probably talk about a series of events when describing a process. When you use event sourcing, it becomes easier to model this in your system.

### Generating reports becomes easy

Want to know how many times a user changed their email address? With event sourcing, you already store all this data.

Want to know how many times an item is removed from a user's cart? Simply count the `EventRemovedFromCart` events.

With event sourcing, you have way more insights into your data, and you can generate reports retroactively.

### You have a reliable audit log

You can generate an audit log that shows exactly how a system got into a state.

Think of your bank account, for example. Event sourcing generates a log of transaction events that makes it crystal clear why I'm broke at the end of every month.

...

## Why Not Use Event Sourcing

Sounds great, but what's the catch?

My personal experience with event sourcing is that it adds extra complexity to your system. More complexity means that it is harder to introduce new developers, takes longer to add new features, and is harder to maintain.

If you're building a relatively small-scale system that does not need a secure audit log, implementing this is probably more hassle than it's worth.

If you want to learn more about event sourcing, I recommend [this presentation](#) by Greg Young.

DatabaseWeb DevelopmentBackendProgrammingDevOps

👏332 claps

🐦🌐📘🔖🔗



WRITTEN BY

**Dirk Hoekstra**

Practical programmer that likes building cool stuff!

Follow



**Better Programming**

Advice for programmers.

Follow

See responses (3)

### More From Medium

More from Better Programming

#### Cracking the Google Coding Interview

The Educative Team in Be... Programming

May 16 · 14 min read

👏832🔖

More from Better Programming

#### How to Automate Your Emails With Python

SeattleDataGuy in Better Programming

May 11 · 5 min read

👏744🔖

More from Better Programming

#### How to Write Log Files That Save You Hours of Time

keypressingmonkey in Bet... Programming

May 11 · 4 min read

👏723🔖

### Discover Medium

Welcome to a place where words matter. On Medium, smart voices and original ideas take center stage - with no ads in sight. [Watch](#)

### Make Medium yours

Follow all the topics you care about, and we'll deliver the best stories for you to your homepage and inbox. [Explore](#)

### Explore your membership

Thank you for being a member of Medium. You get unlimited access to insightful stories from amazing thinkers and storytellers. [Browse](#)