



Getting started with event-driven architecture

@marcoemrich

Nuremberg







Softwerkskammer.org





Developer?

Architect?

Scrum Master?

PO?

*Project
Manager?*

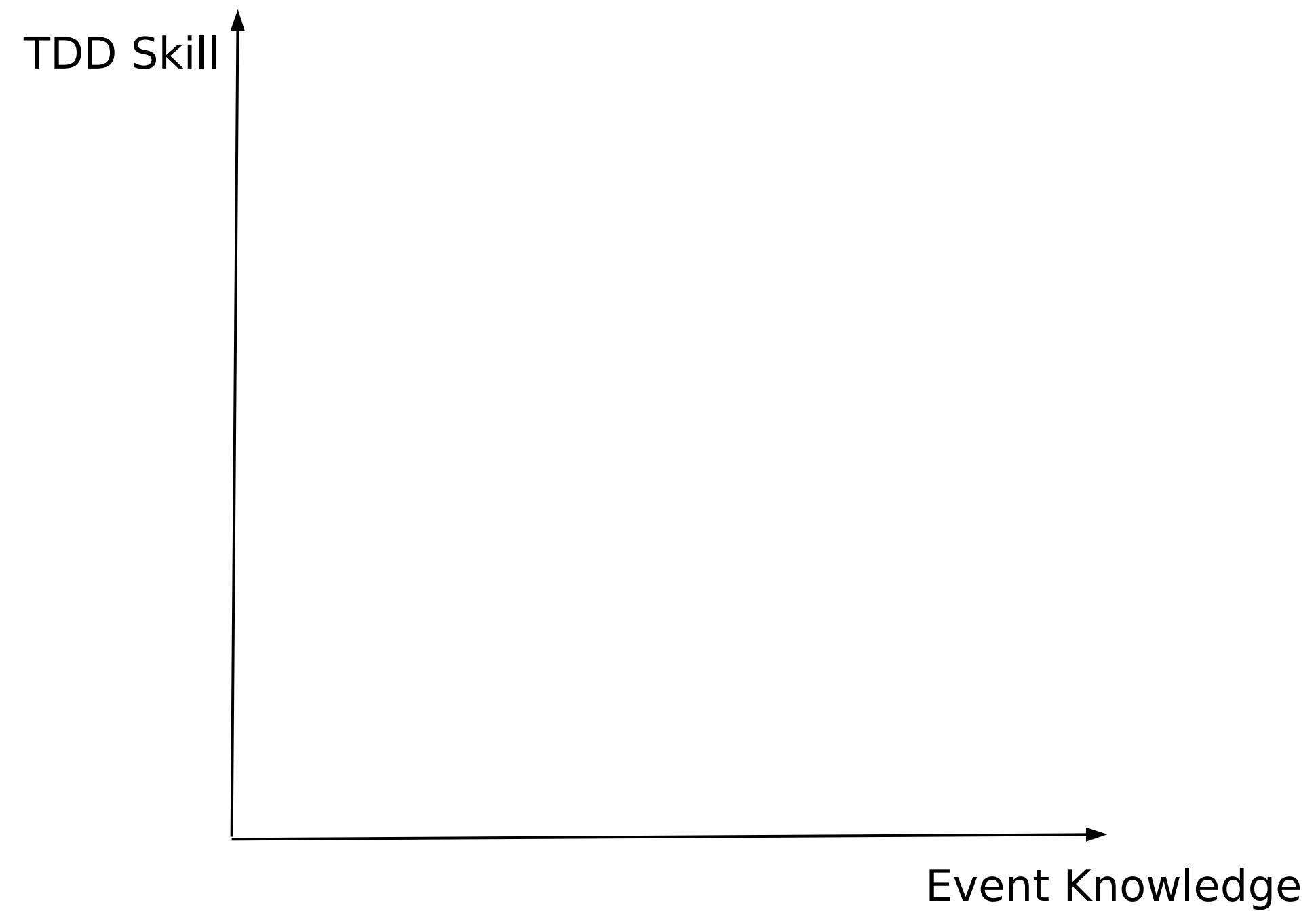
*Something
Else?*

*Programming
Languages?*

Test Driven Development?

Experience

One Rule



*What is an
Event?*

*“a social
occasion or
activity”*

- Merriam Webster's

“the fundamental entity of observed physical reality represented by a point designated by three coordinates of place and one of time in the space-time continuum postulated by the theory of relativity”

- Merriam Webster's

*“a noteworthy
happening”*

- Merriam Webster's

Where?

 Knop ingedrukt houden

BEDIENINGSKNOP

-1 BG +1

ALARM
10 sec. indrukken



HOODSTOP



Draaien om
te ontgrendelen

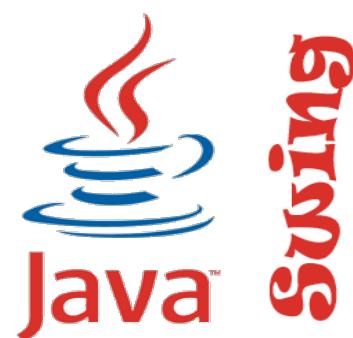
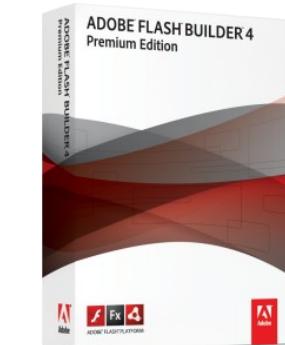
KNOP INGEDRUKT HOUDEN



OVERBELASTING



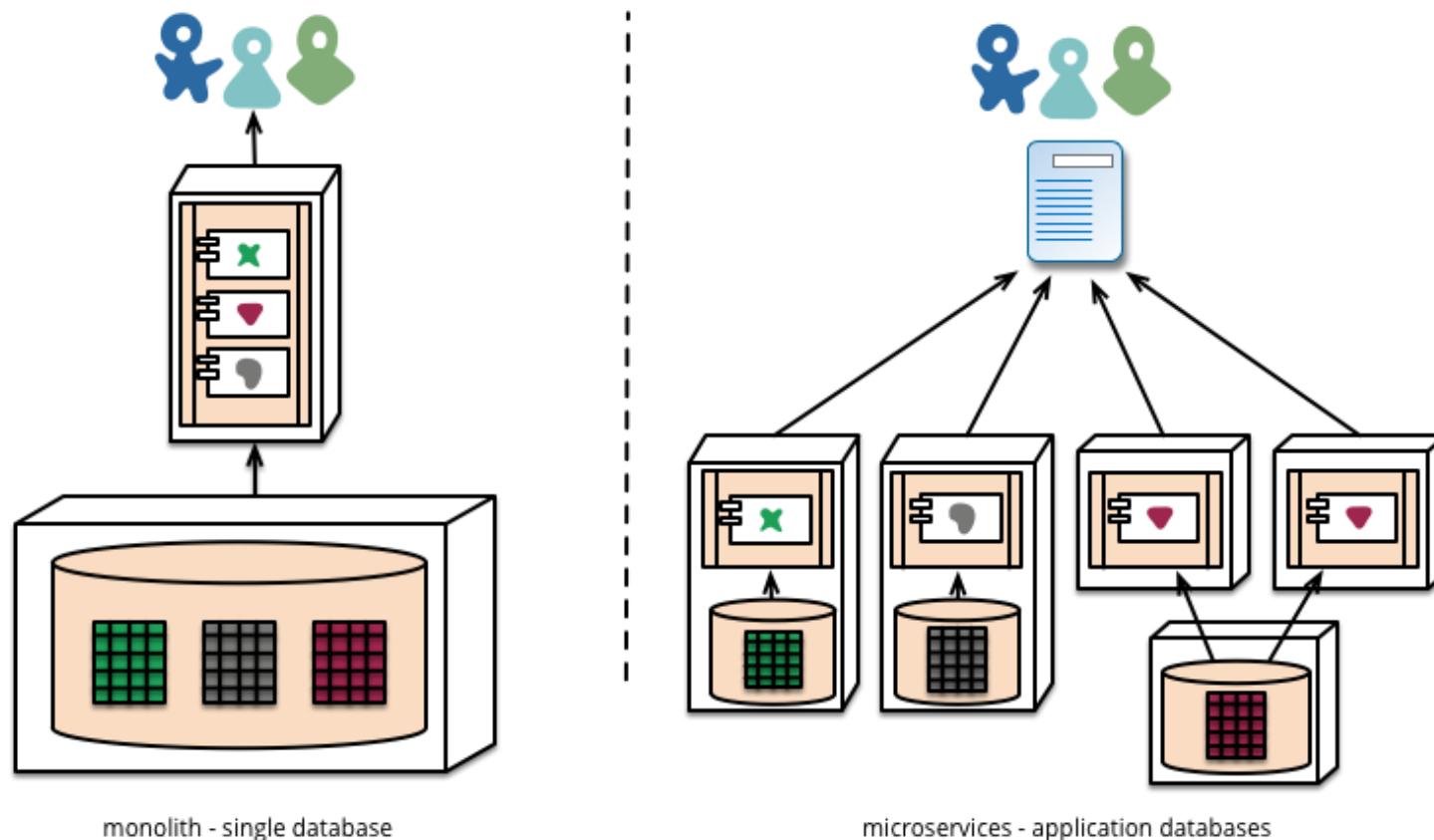
GUIs



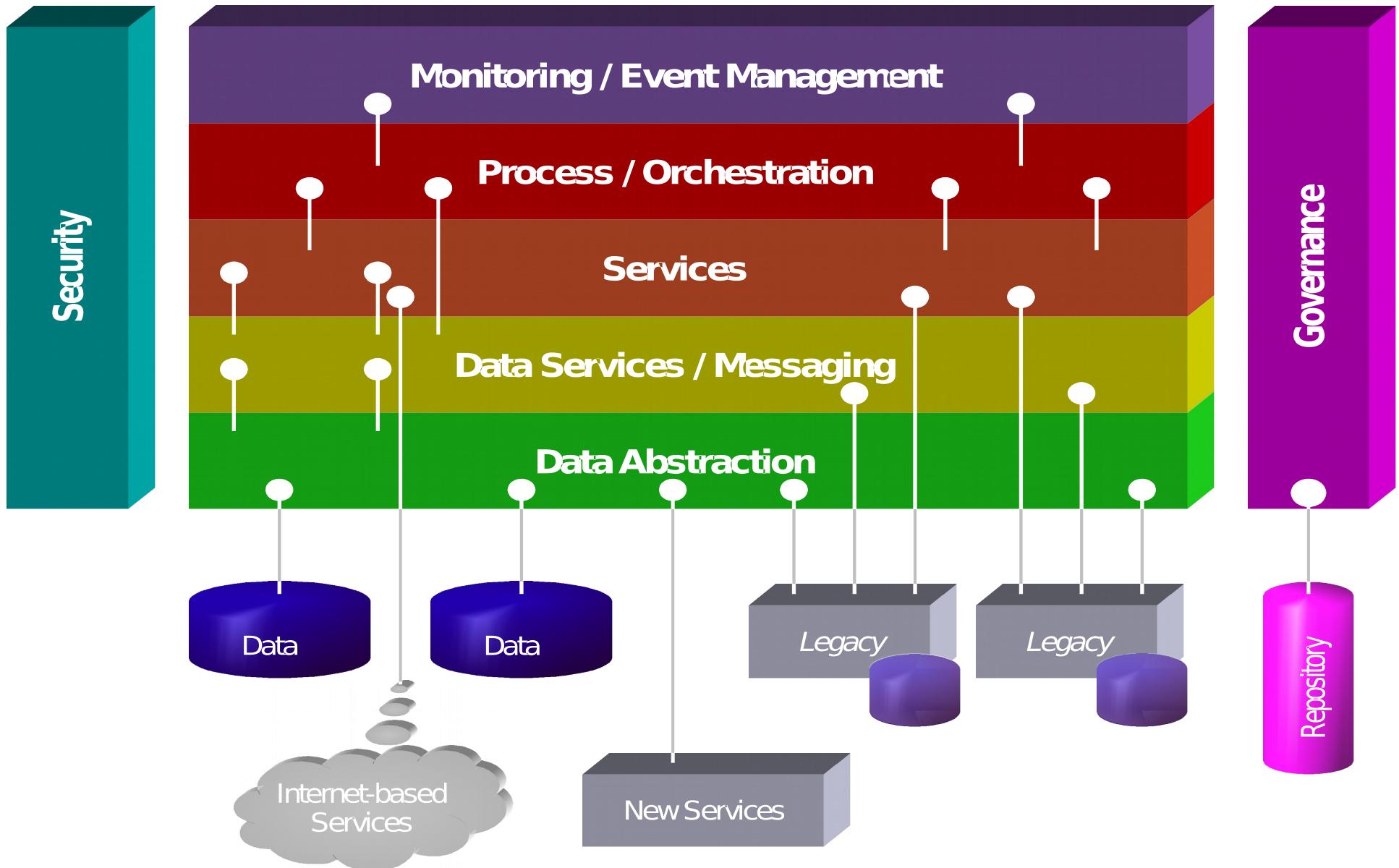
Architecture



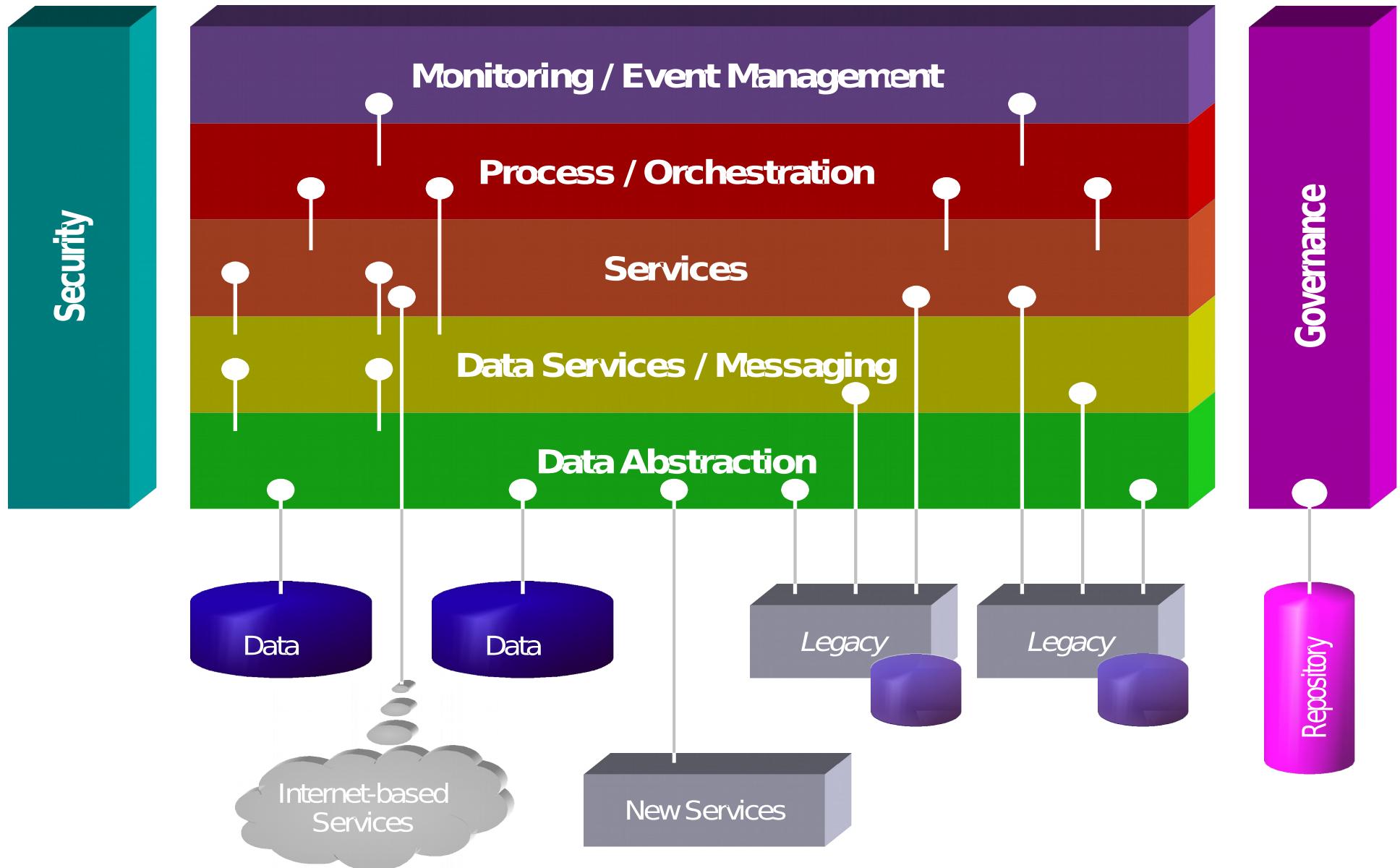
Microservices



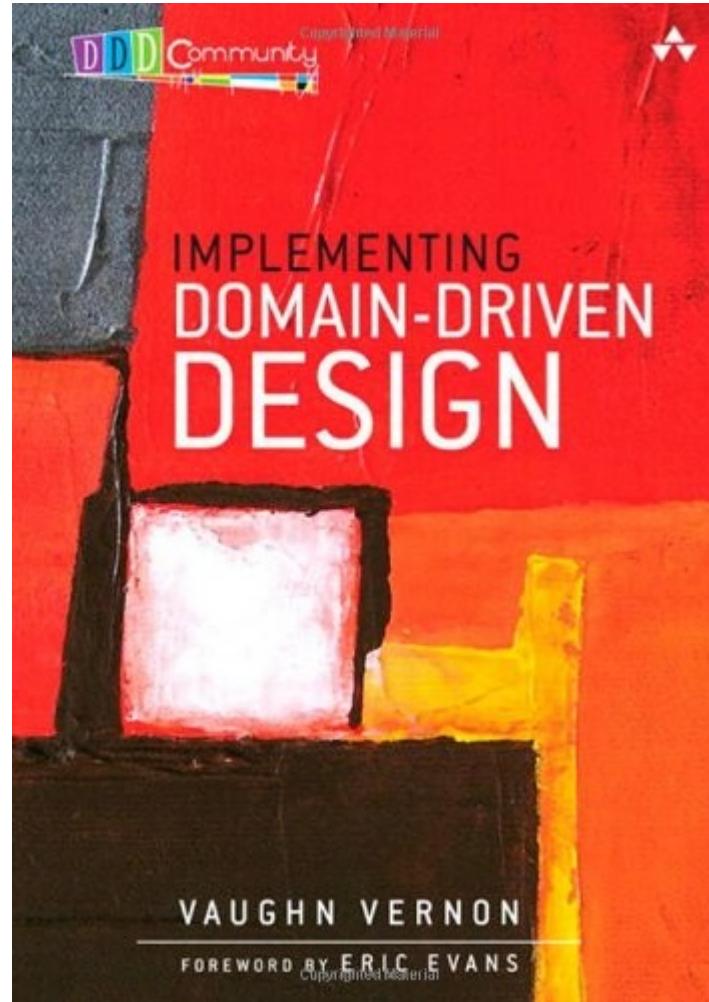
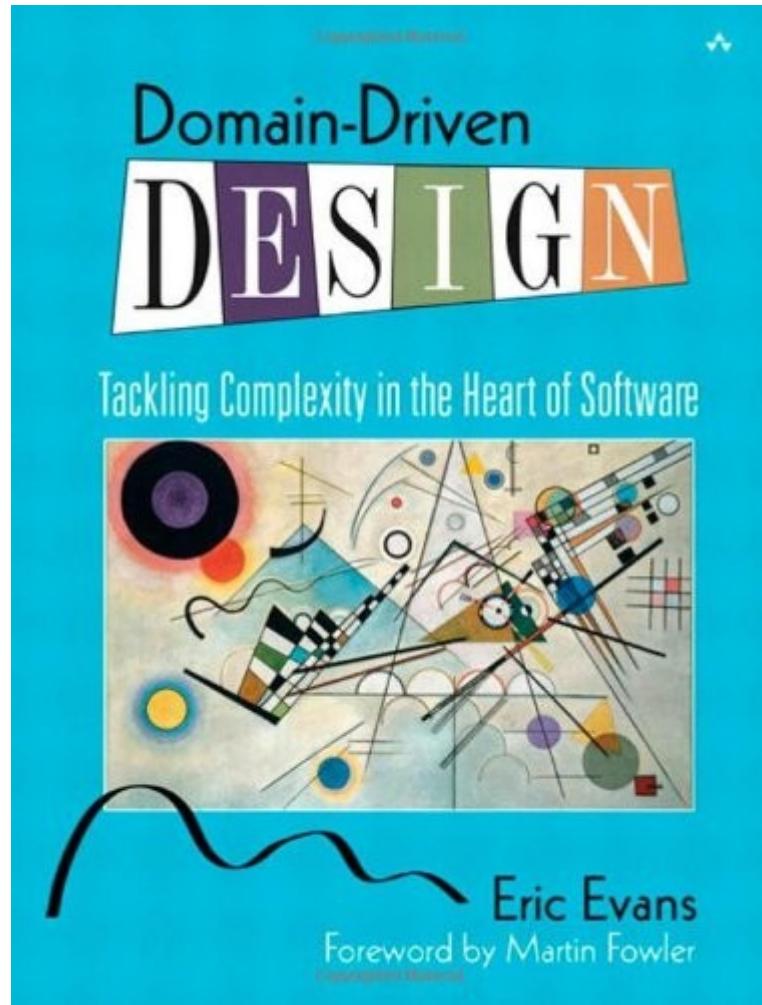
SOA



Evented-SOA



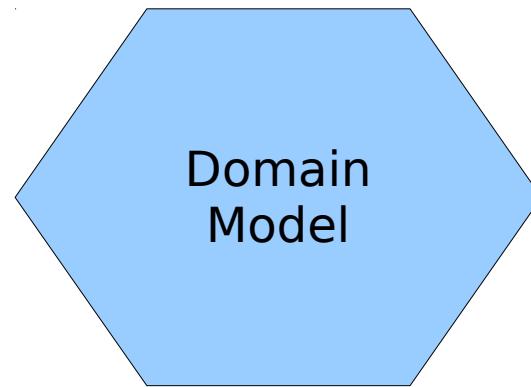
Domain Driven Design



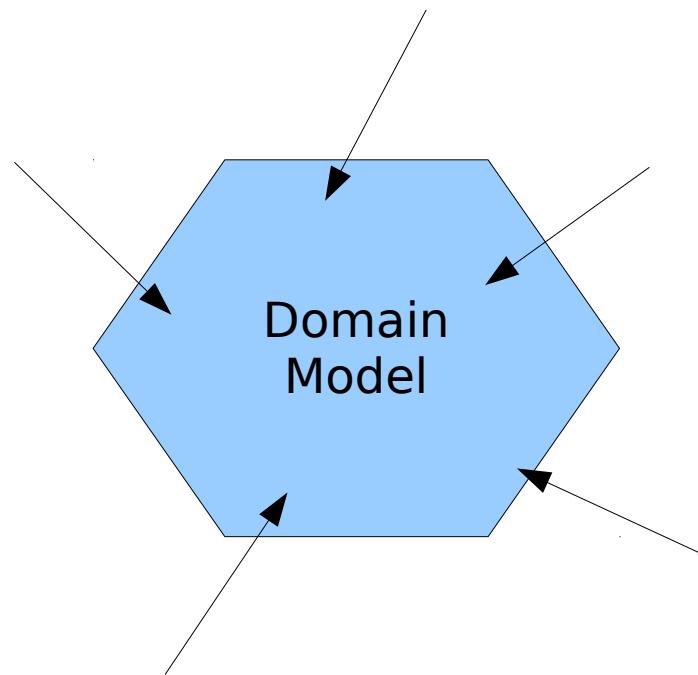
Hexagonal Architecture



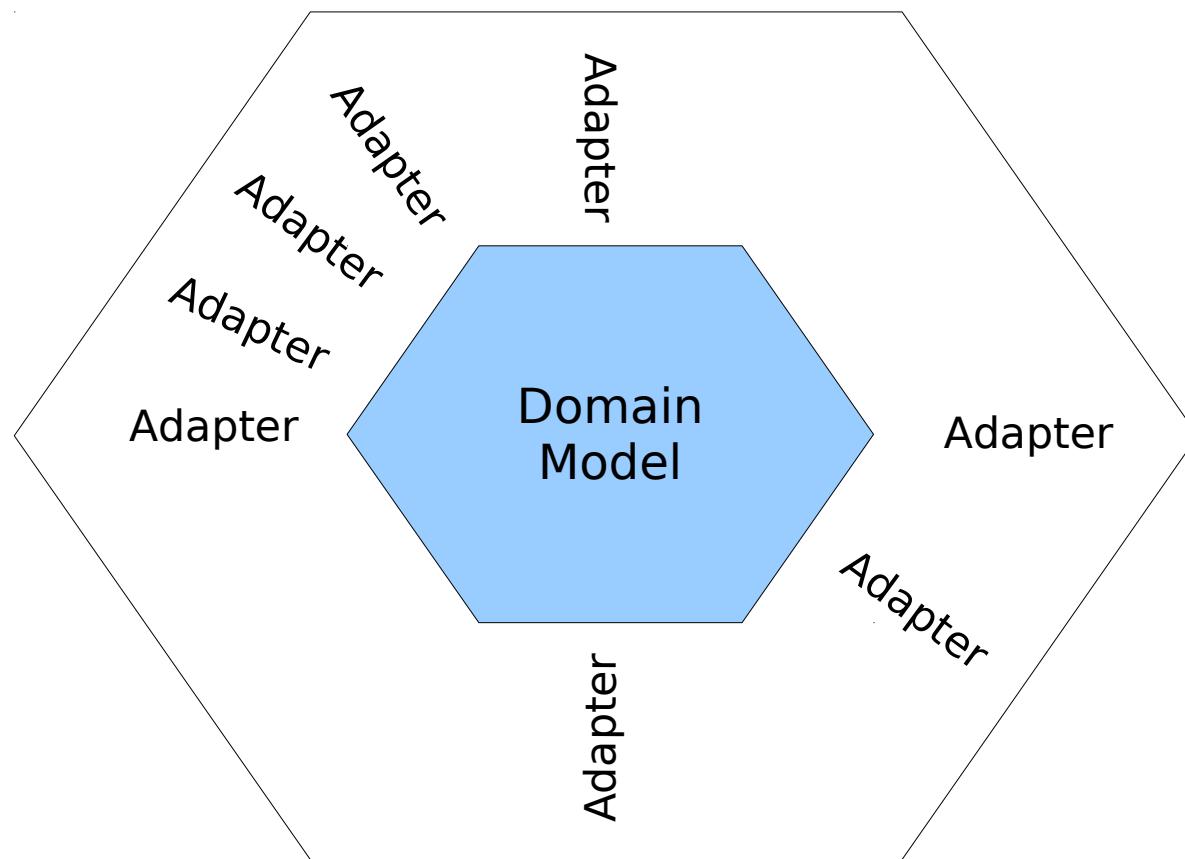
Hexagonal Architecture



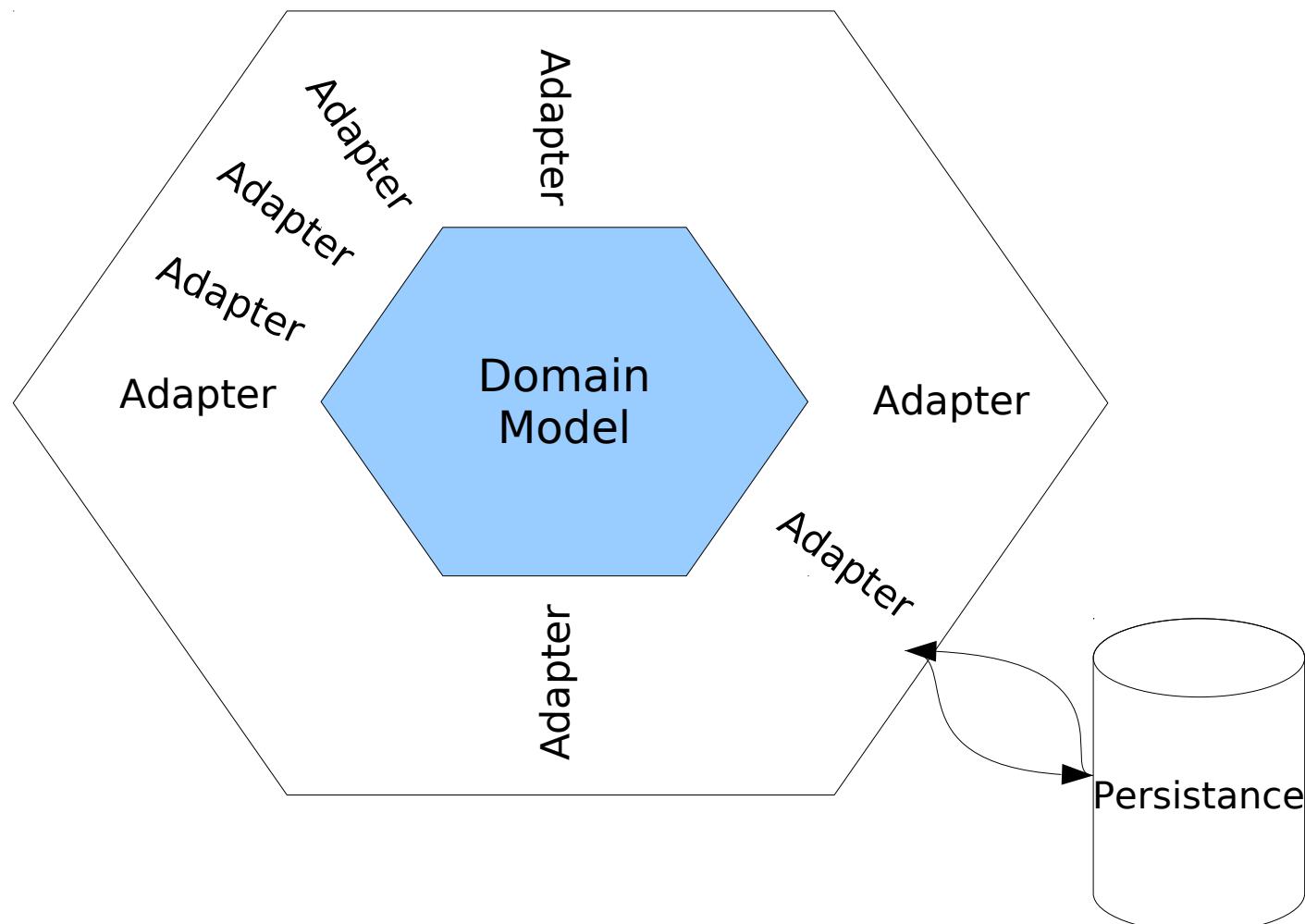
Hexagonal Architecture



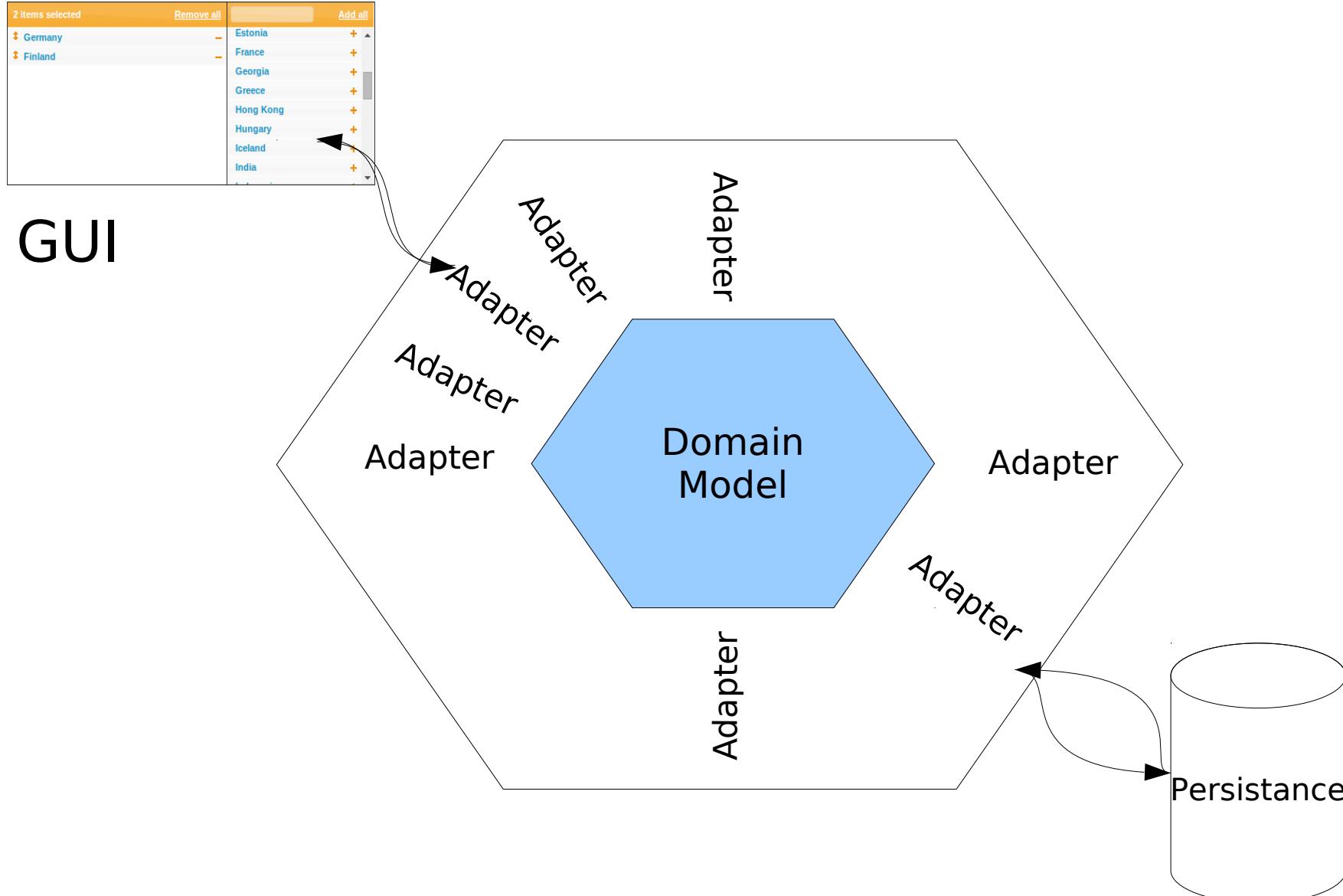
Hexagonal Architecture



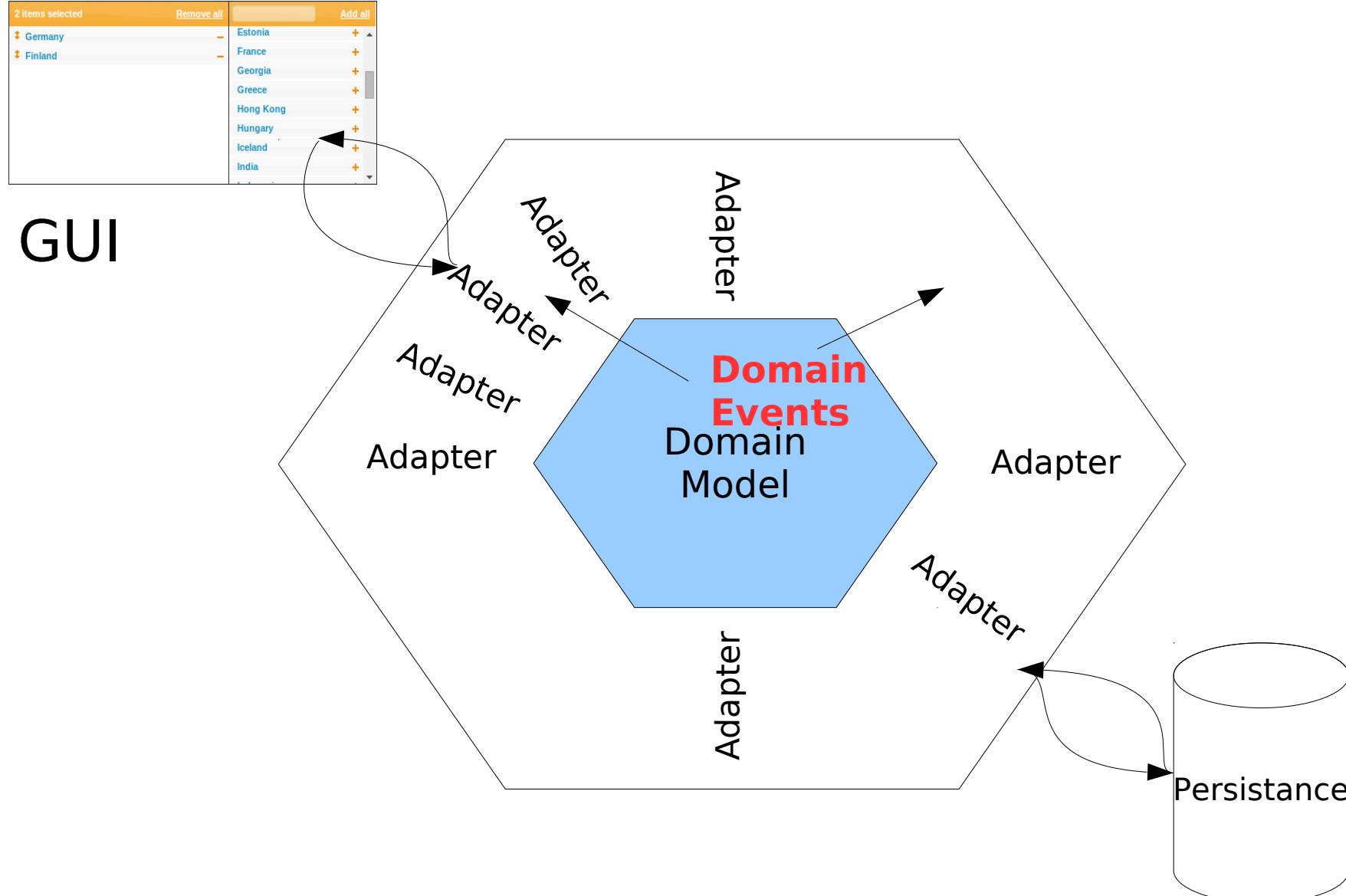
Hexagonal Architecture



Hexagonal Architecture



Hexagonal Architecture



Event Storming



What do you mean by “Event-Driven”?

- Event Notification
- Event-Carried State Transfer
- Event Sourcing
- CQRS



Martin Fowler

Buzzword Free Workshop

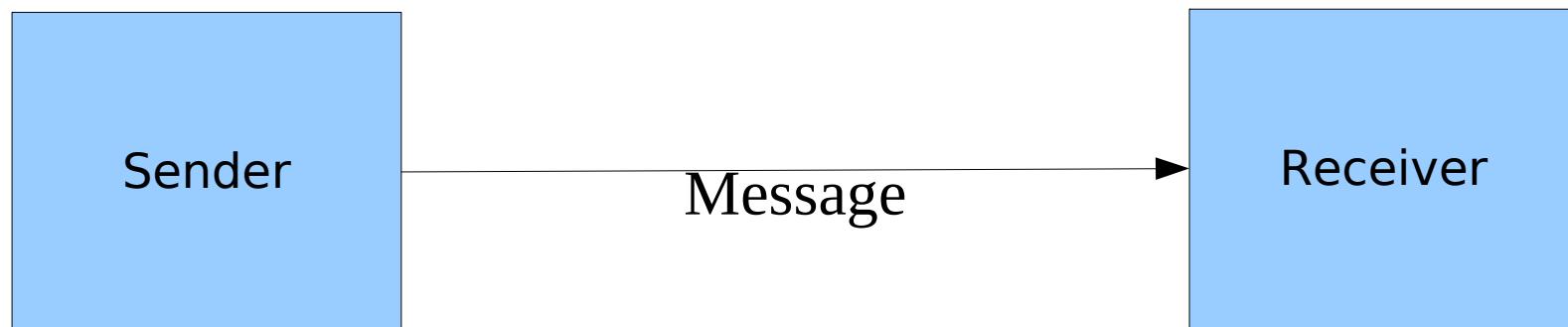
General Programming-Model

Method vs. Event



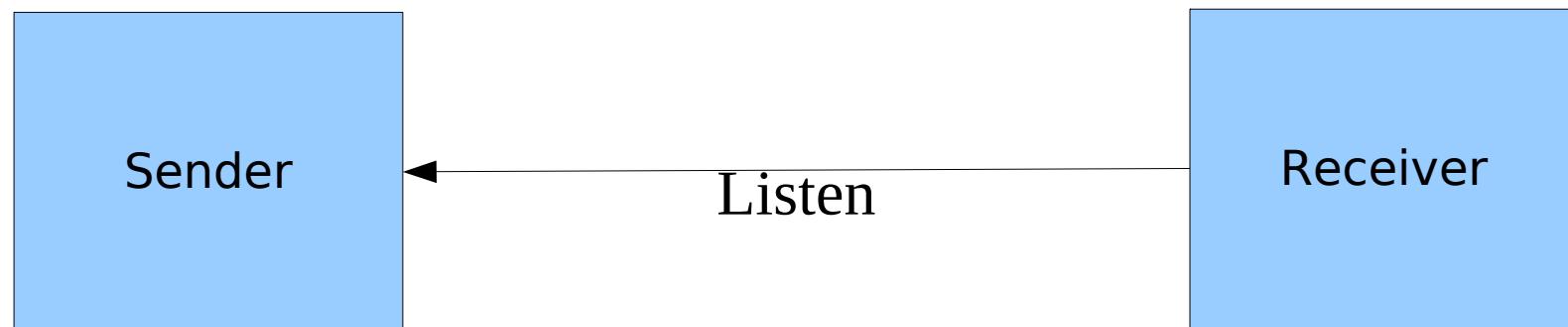
<https://www.flickr.com/photos/gen/325927418>

Method Call



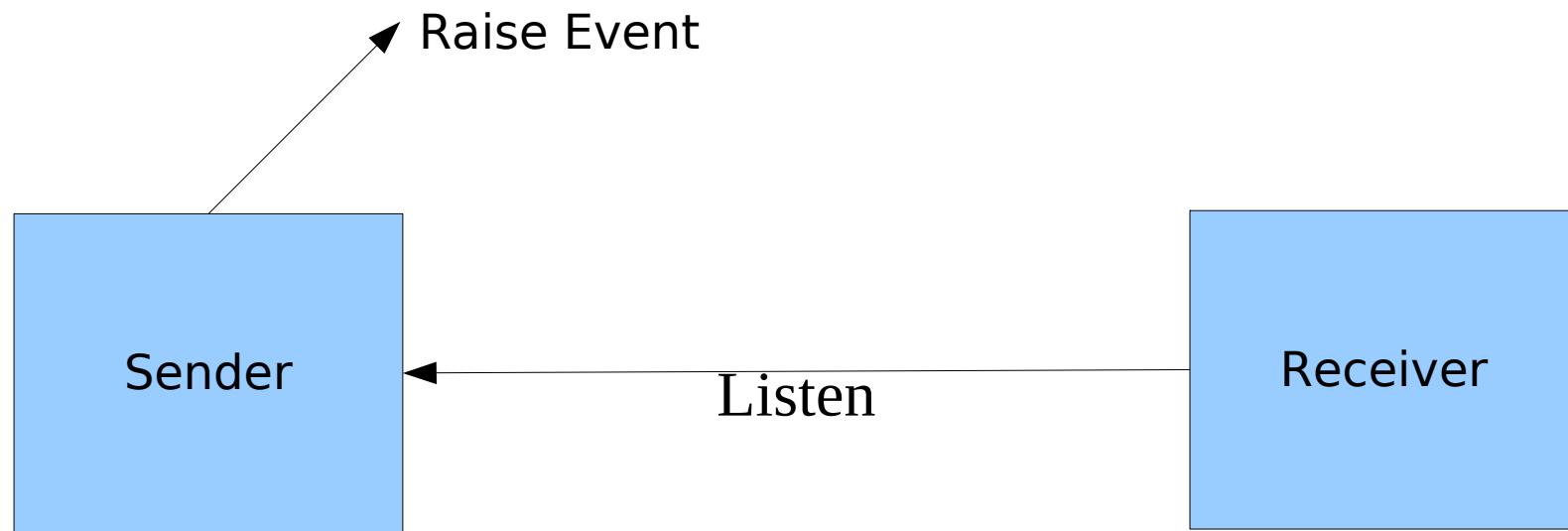
```
class A {  
    ...  
    b.someMethod();  
    ...  
}
```

Event



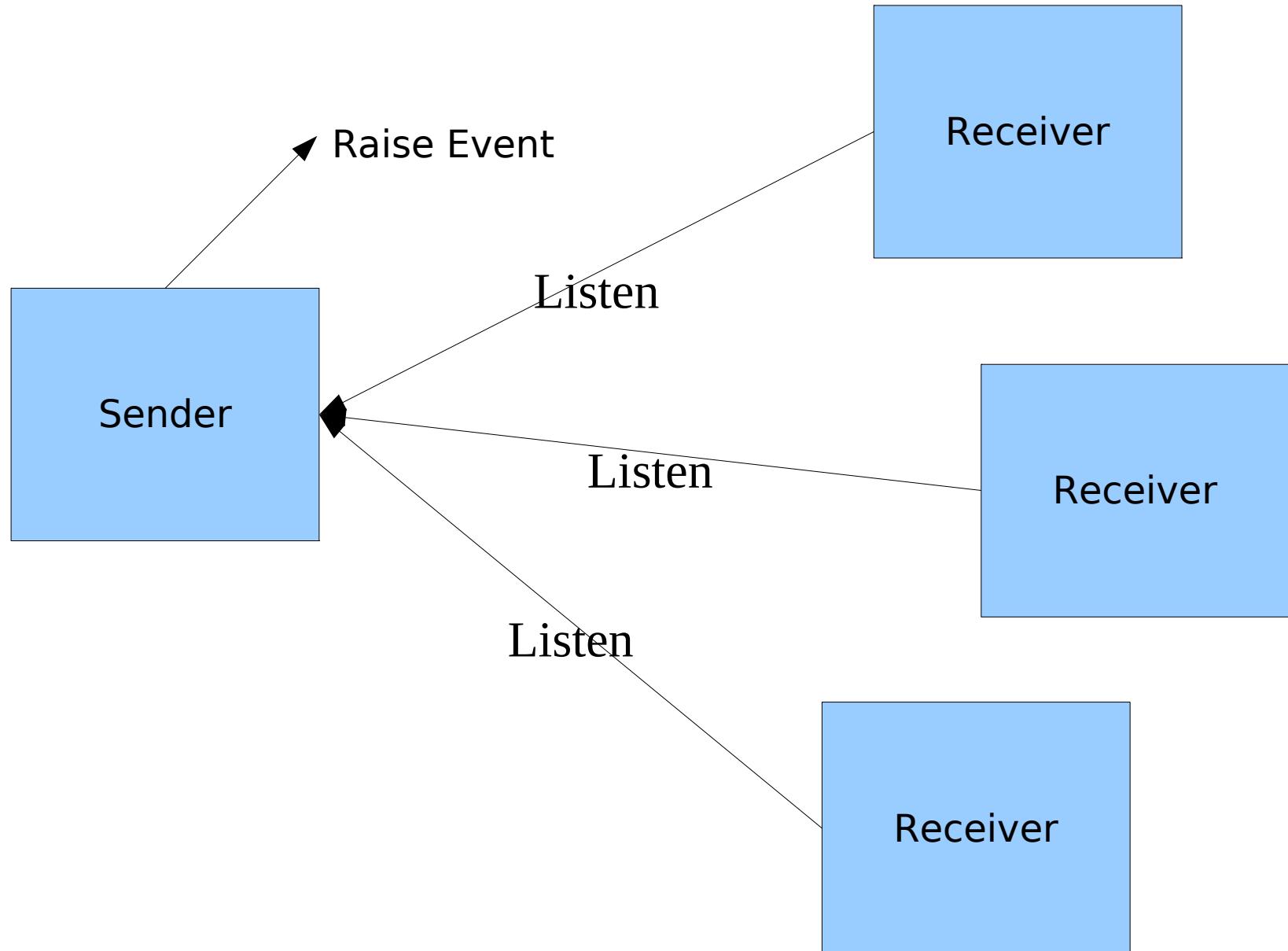
```
a.on('someEvent', b.someMethod);
```

Event



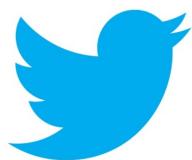
```
a.on('someEvent', b.someMethod);  
a.emit('someEvent');
```

Event



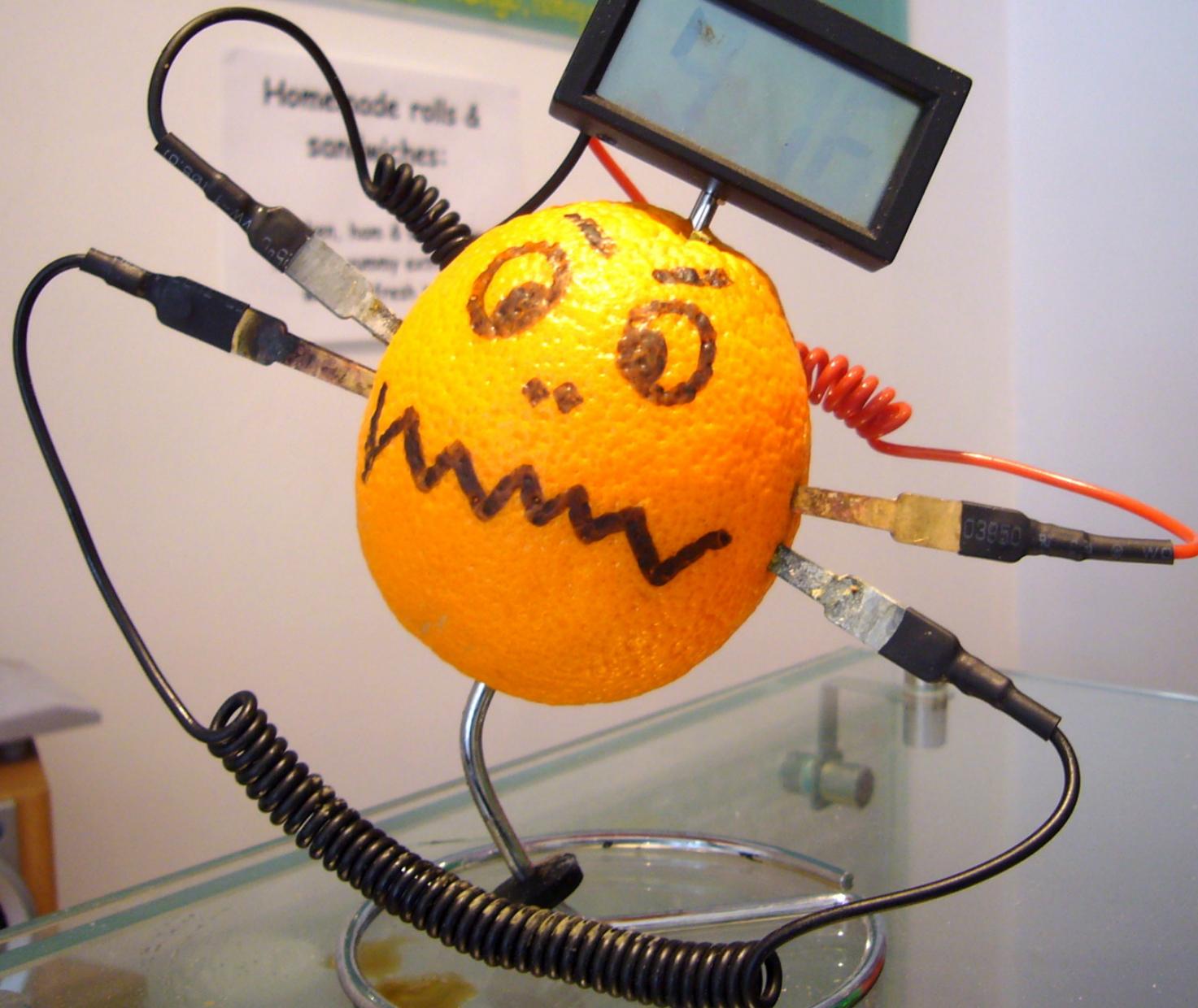


VS.

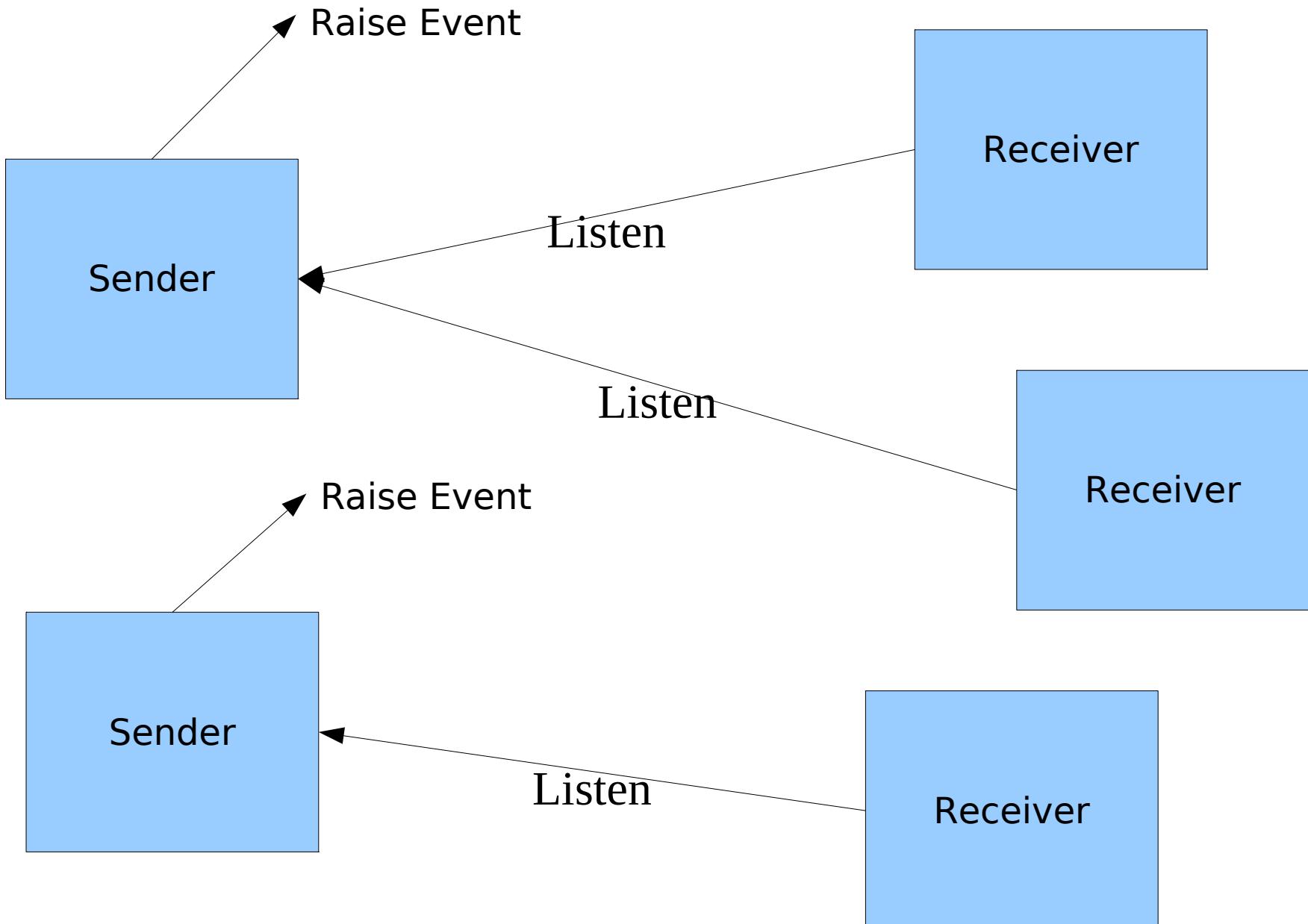


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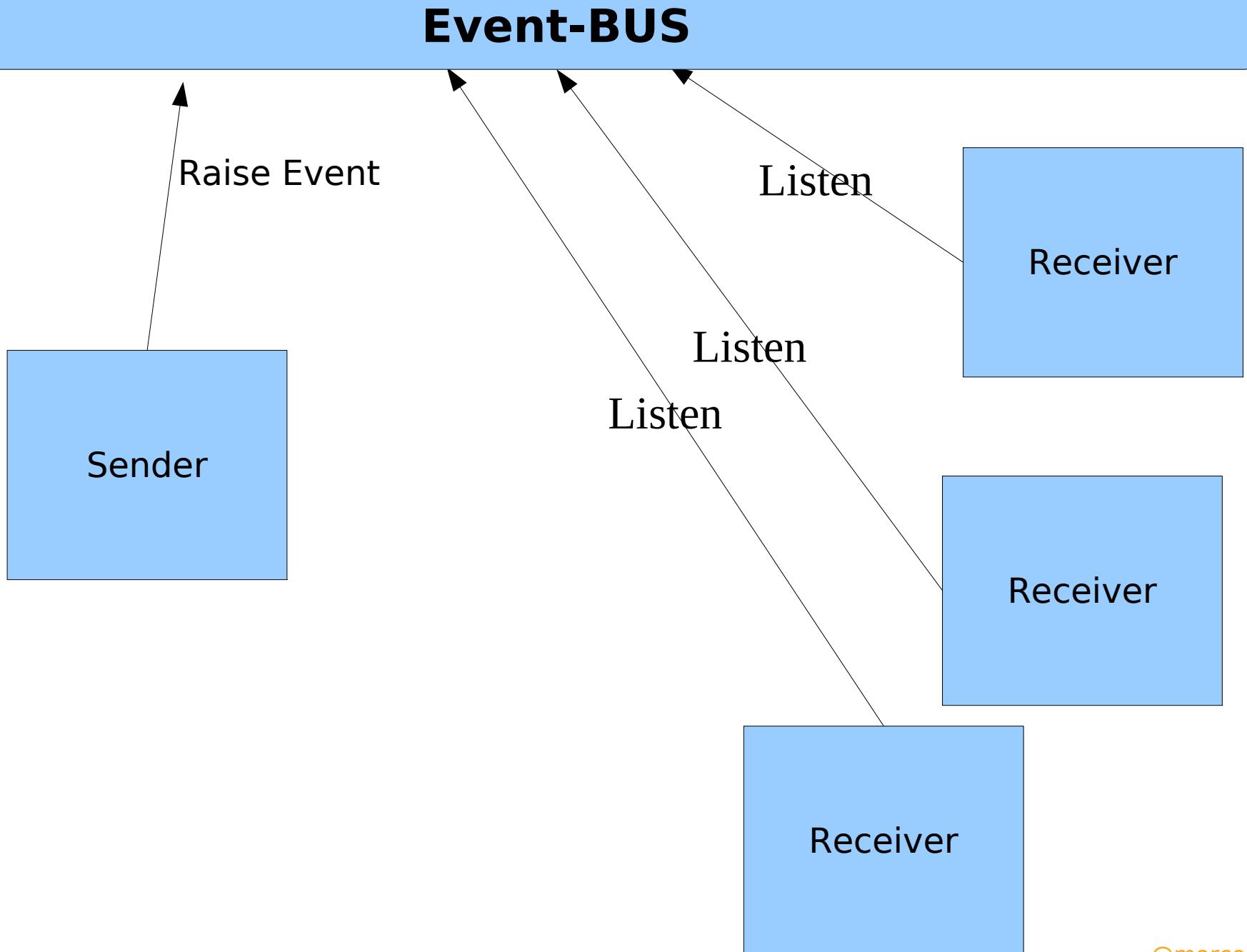
Wiring



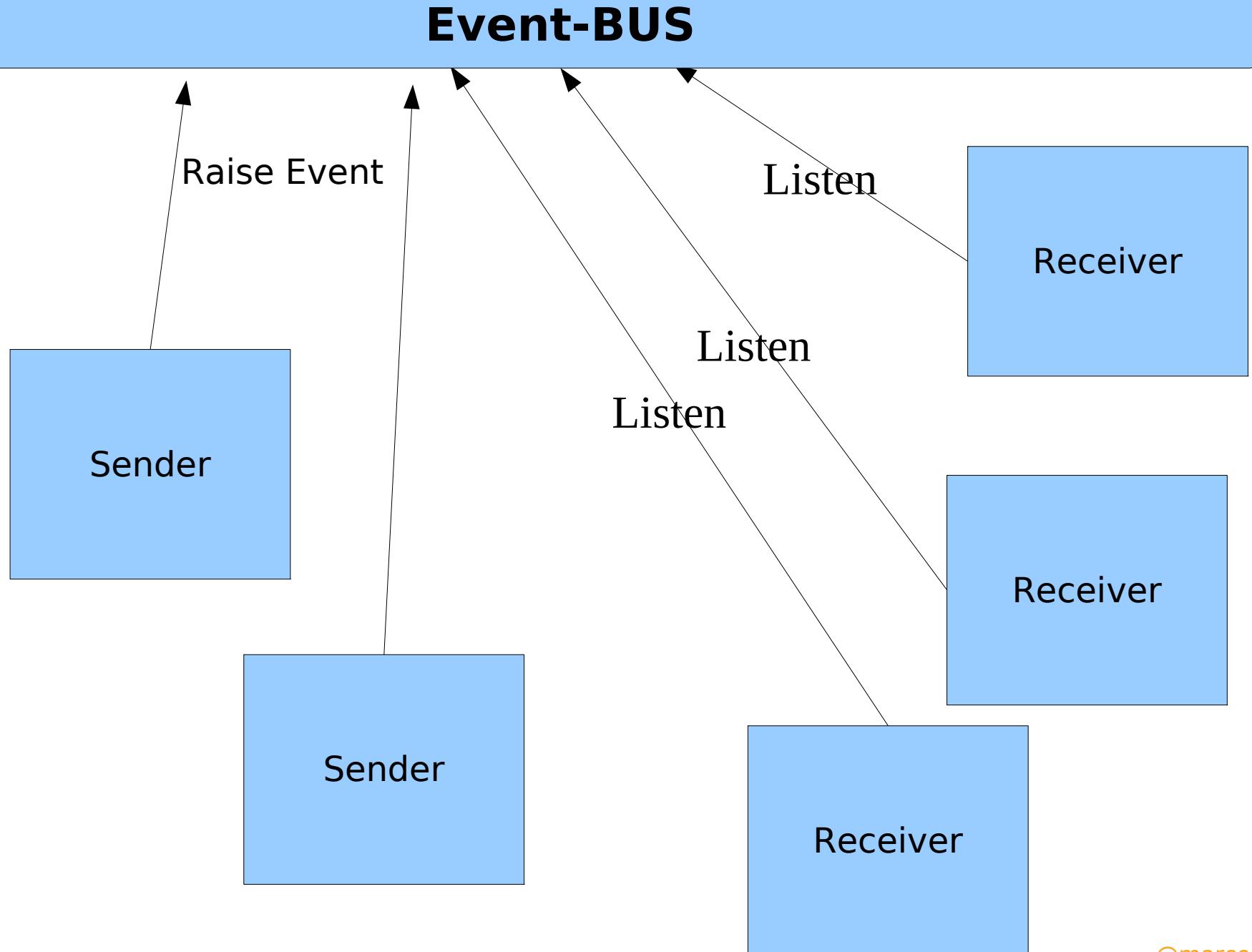
Observer



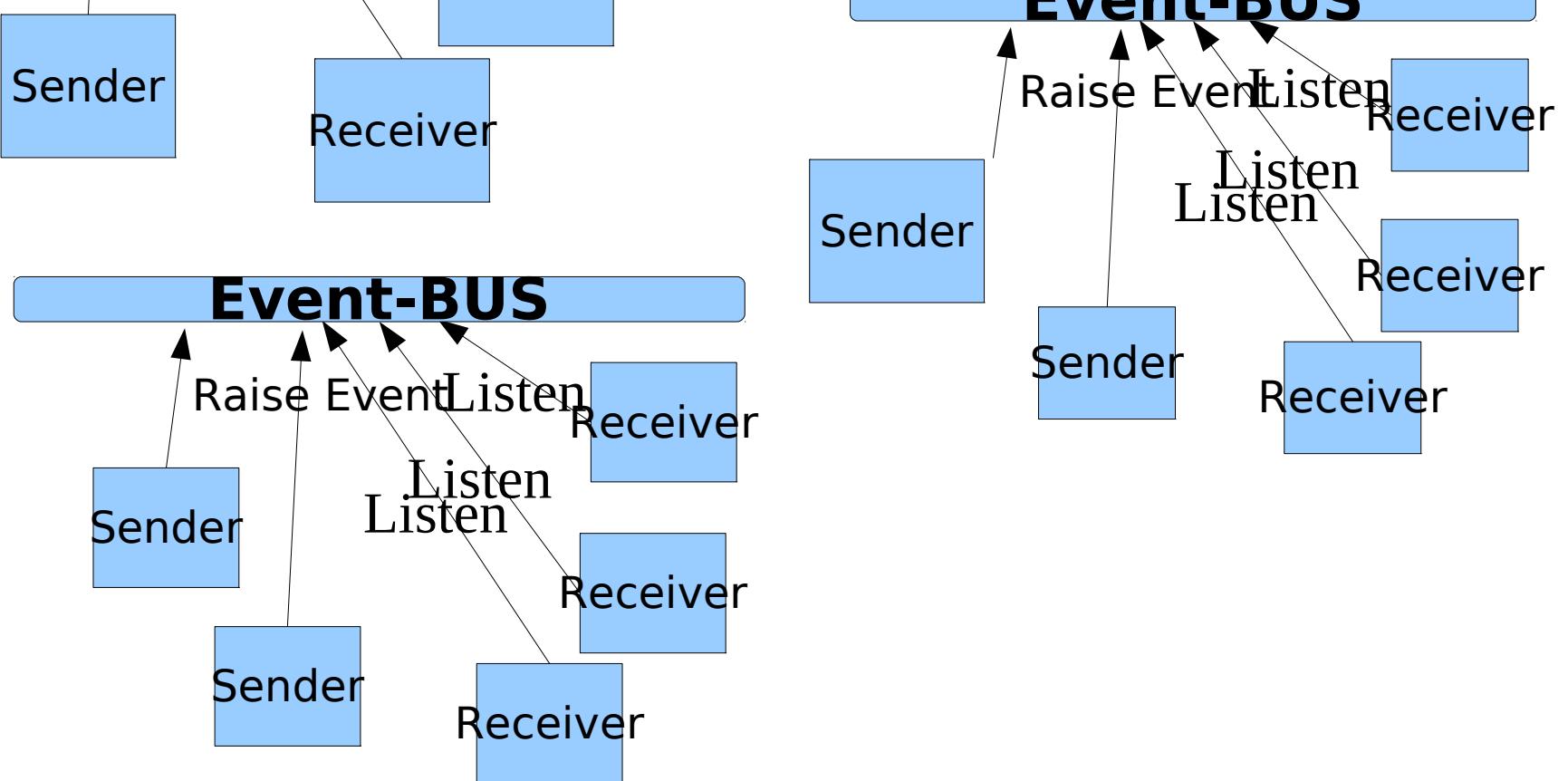
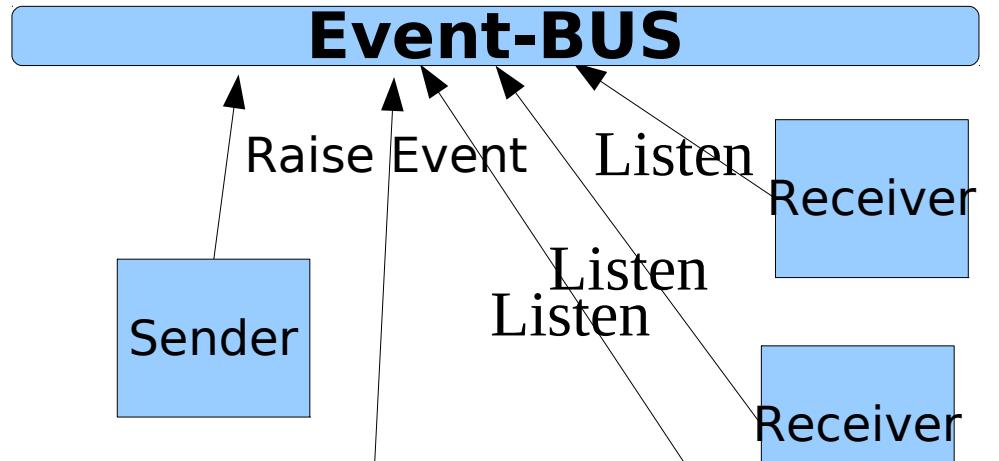
Pub/Sub

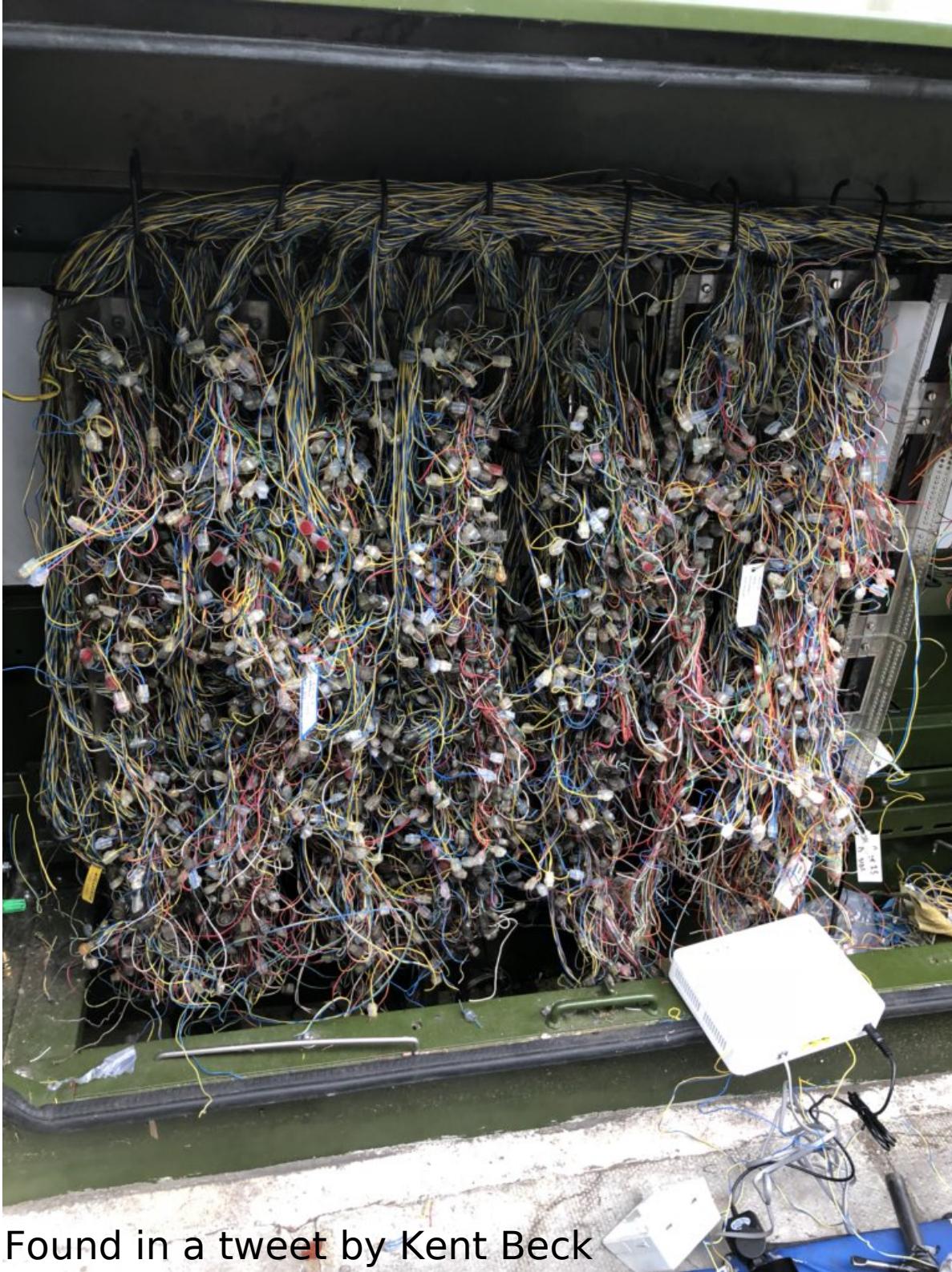


Pub/Sub



Pub/Sub





Found in a tweet by Kent Beck

Event vs. Method

Method

- Sender tells Receiver
- Usually Sync
- Fixed Coupling
- New Receiver:
change to Sender

Event

- Receiver listens to Sender
- Usually Async
- Loose Coupling
- New Receiver:
no change to Sender
- Sometimes: Hard to Debug



Testing?



Winner?

A painting of Uncle Sam, the iconic recruitment poster character. He is depicted from the chest up, wearing his signature top hat with a blue band and white stars, a white shirt, and a dark blue jacket over a red bow tie. His right hand is pointing directly at the viewer with a serious, commanding expression.

We want
you for
Kata



Kata

Call Center Kata



Phone Number / Caller ID

020/123499

029/45678

0161/3456789

....

Phone Number / Caller ID

020/123499

029/45678

0161/3456789

....

020 London

020/123499

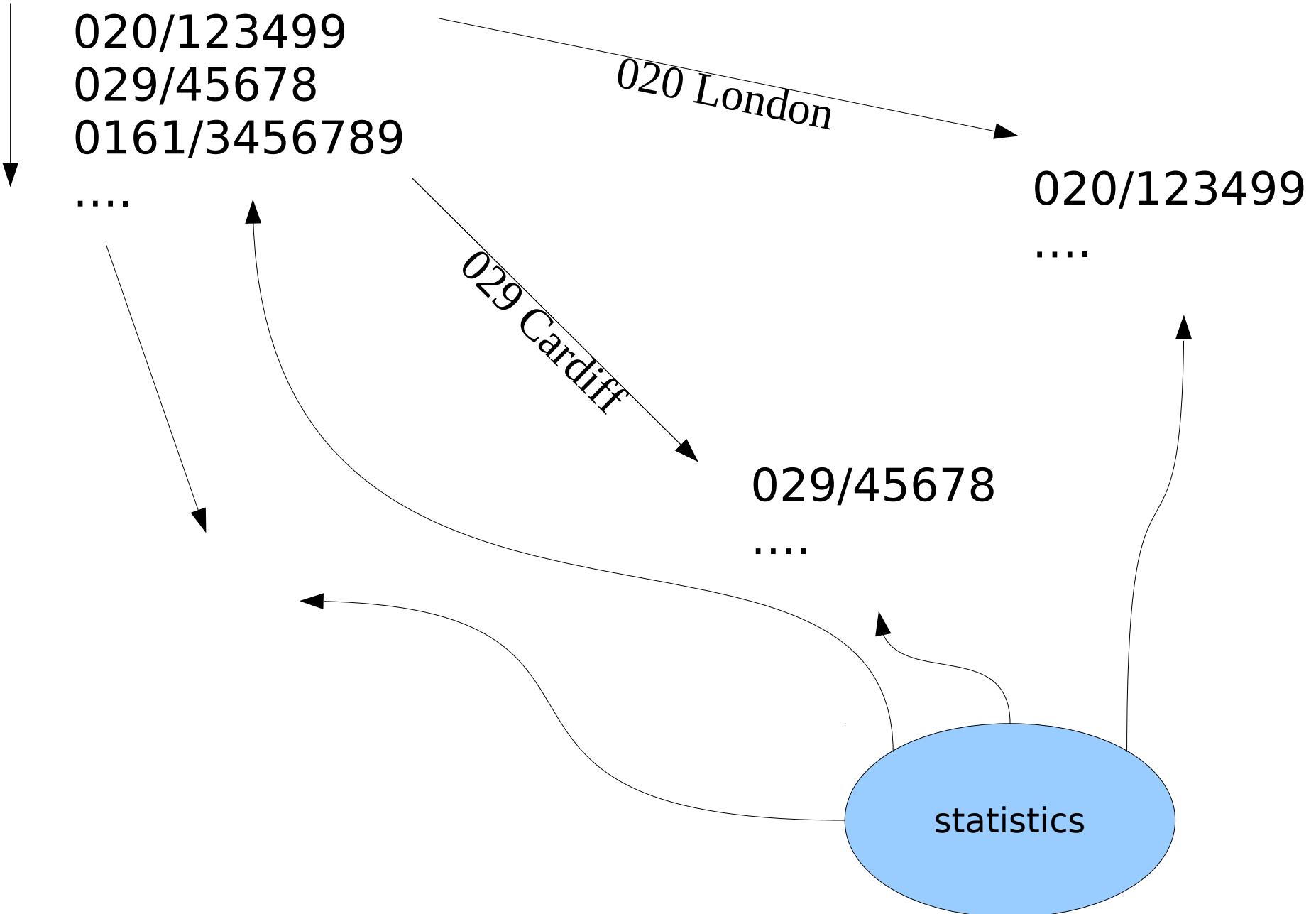
....

029 Cardiff

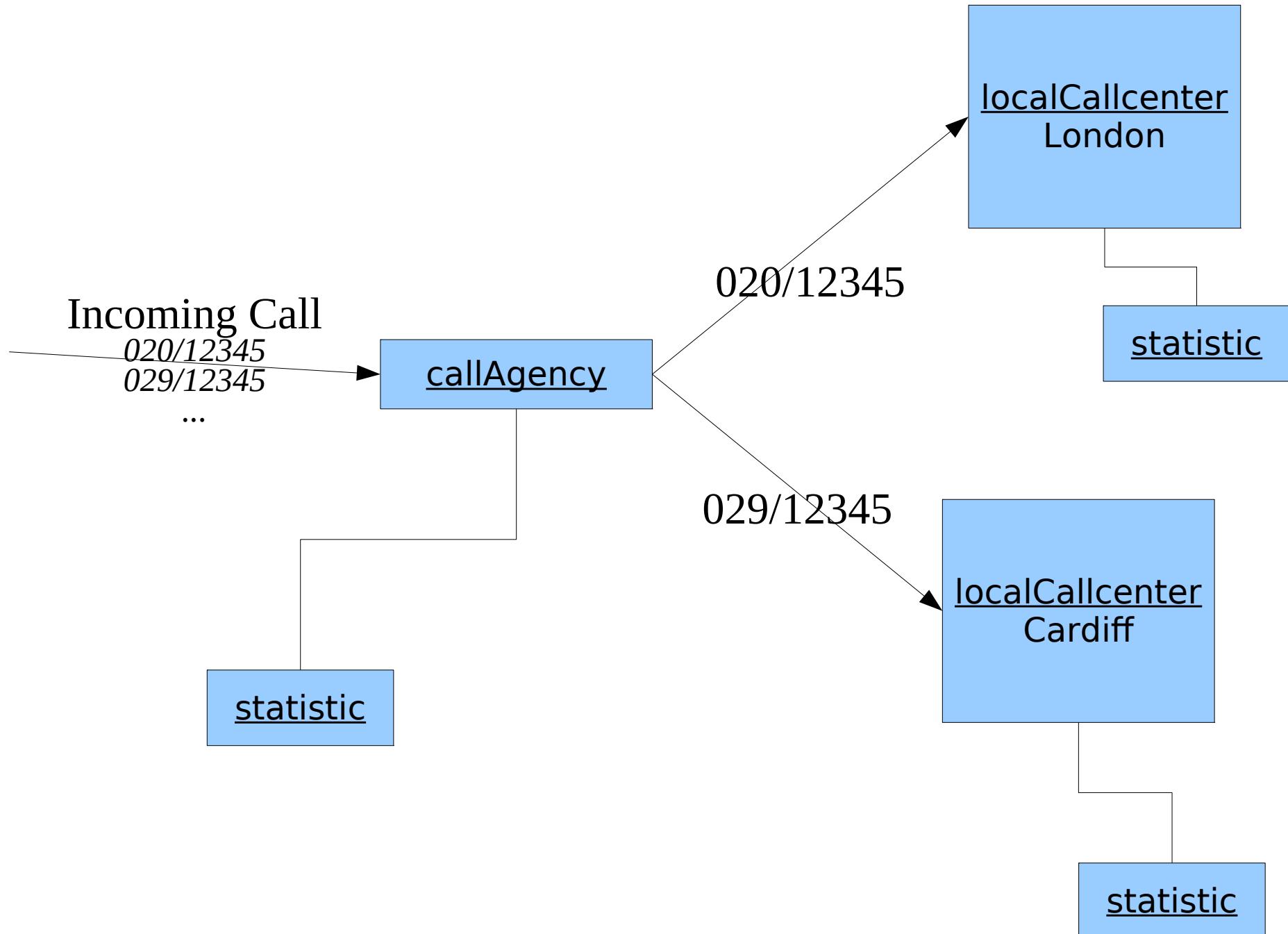
029/45678

....

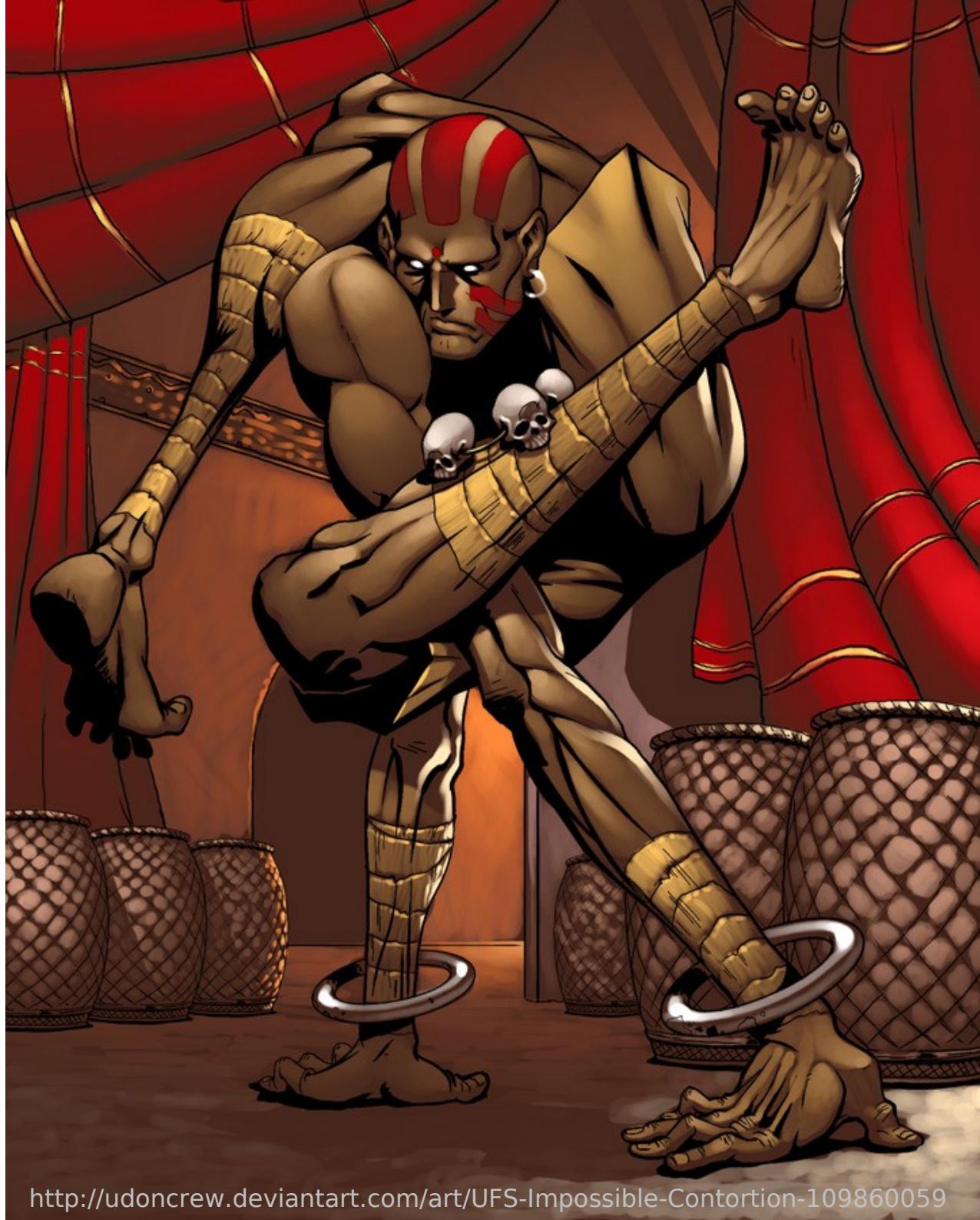
Phone Number / Caller ID



Pure OO

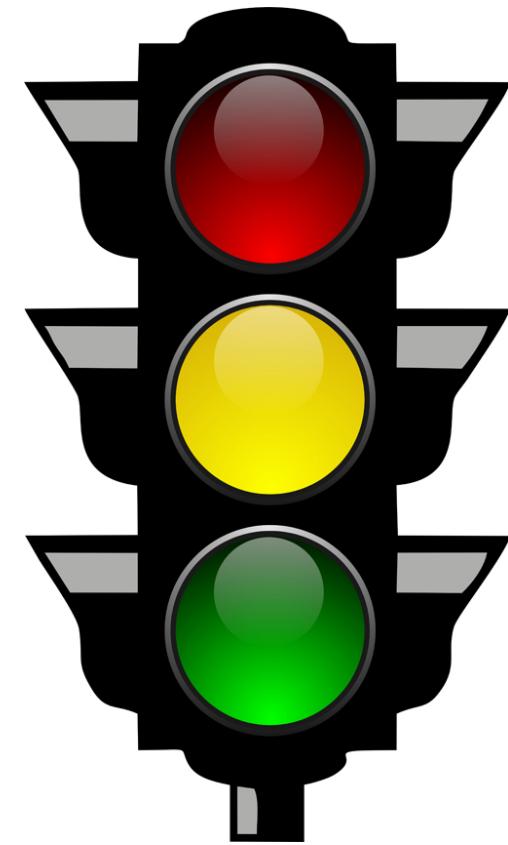
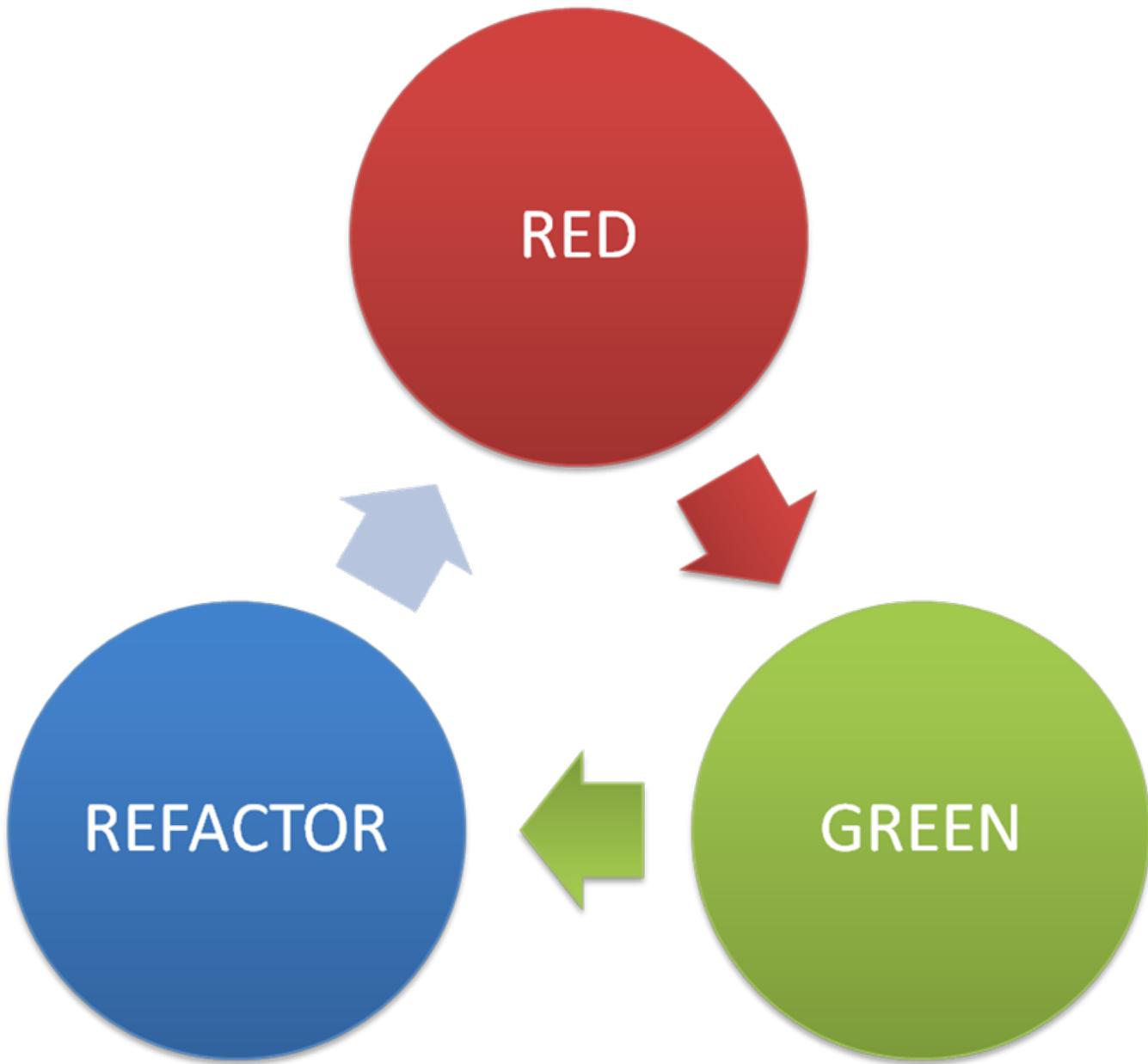


Try Extremes



Constraints

- Method-communication
no Events
- Small Classes (SRP)
max. 20-30 LOC
max. 5 Methods



TDD



<https://www.youtube.com/watch?v=8wUOUmeulNs> © 2012 Atlassian

Pair-Programming

Wizards & Bumblebees



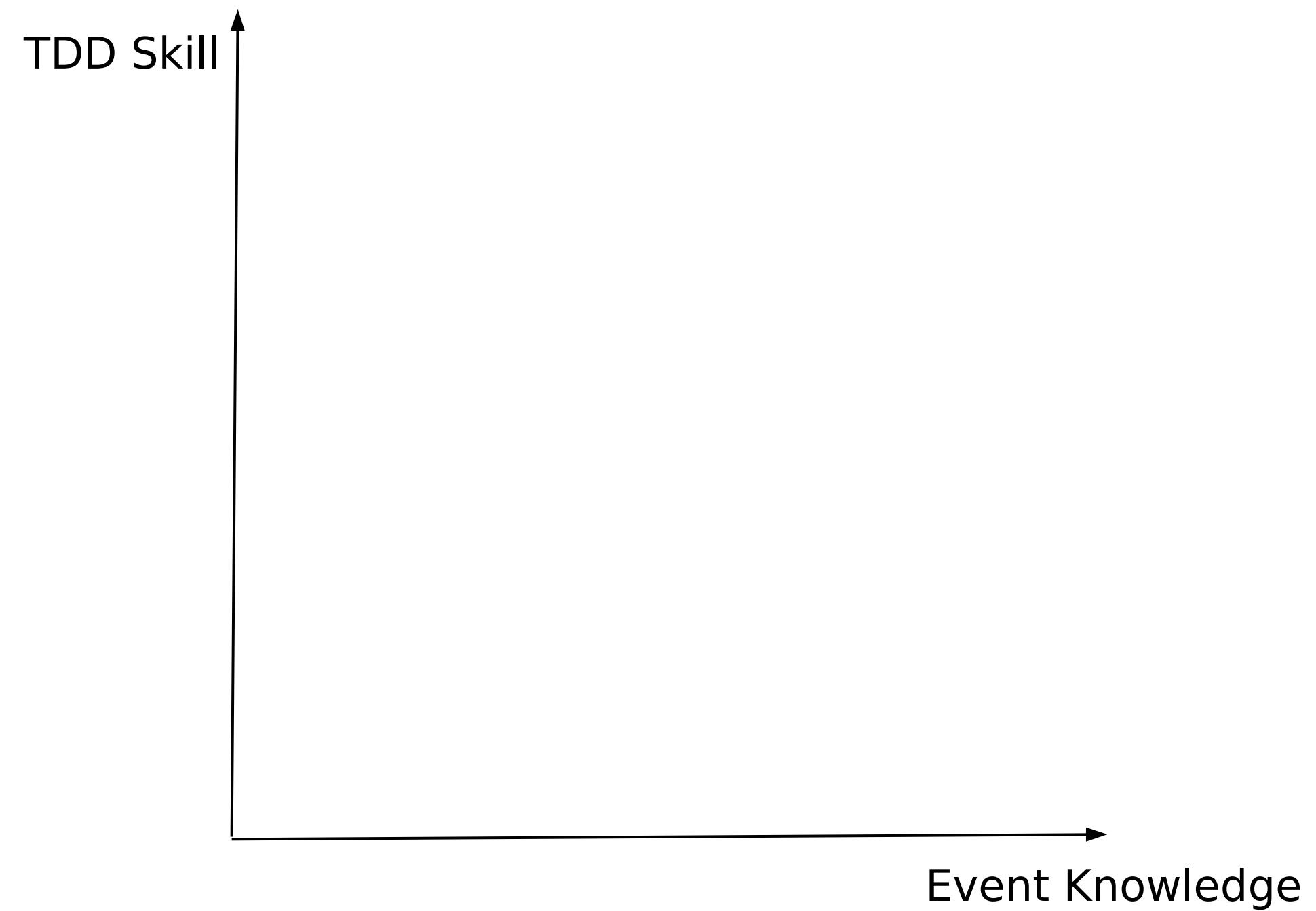
dore (old English) → male bee
Dumbledore → bumblebee





drawing by Sakura "桜" Chan







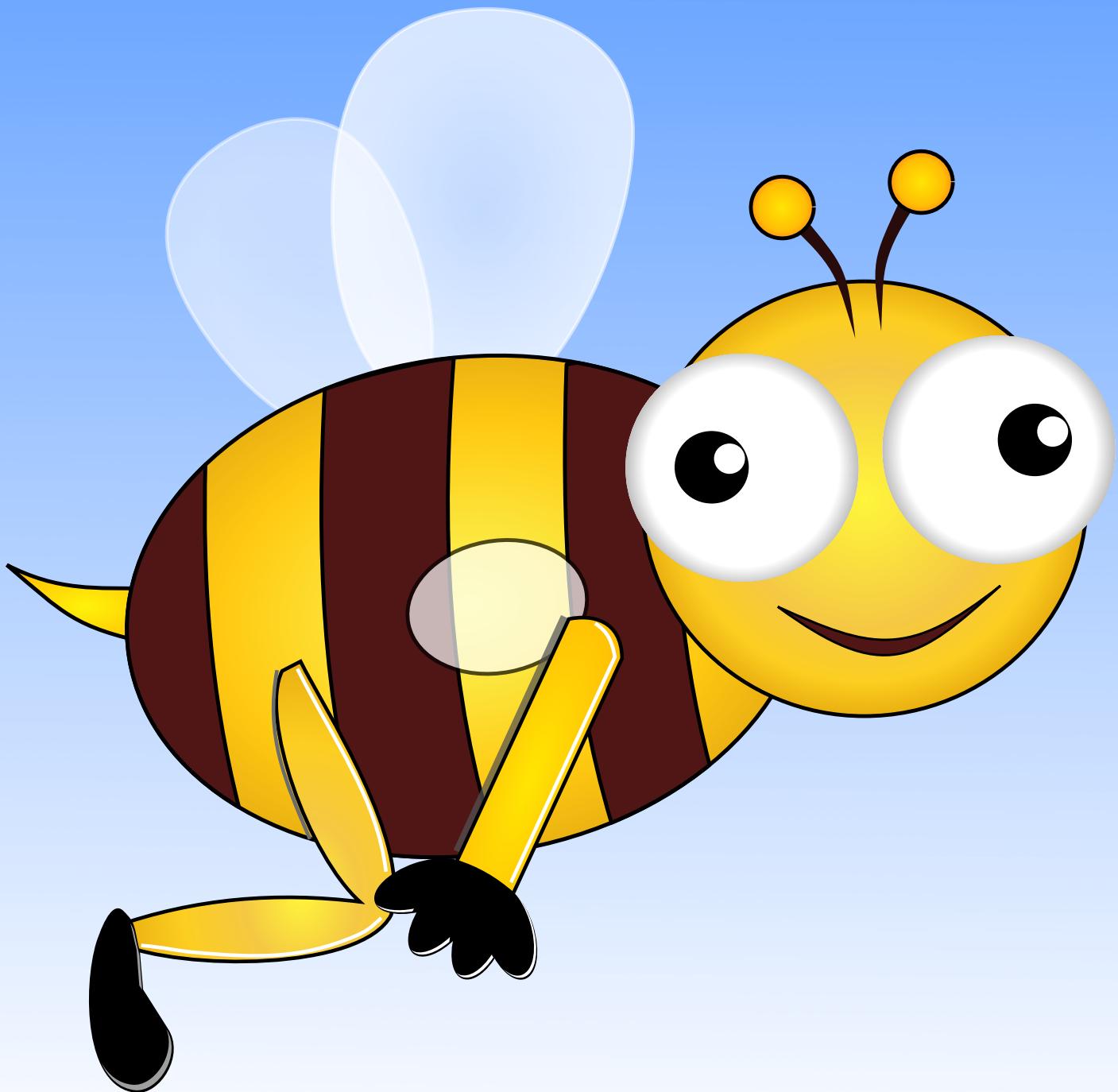
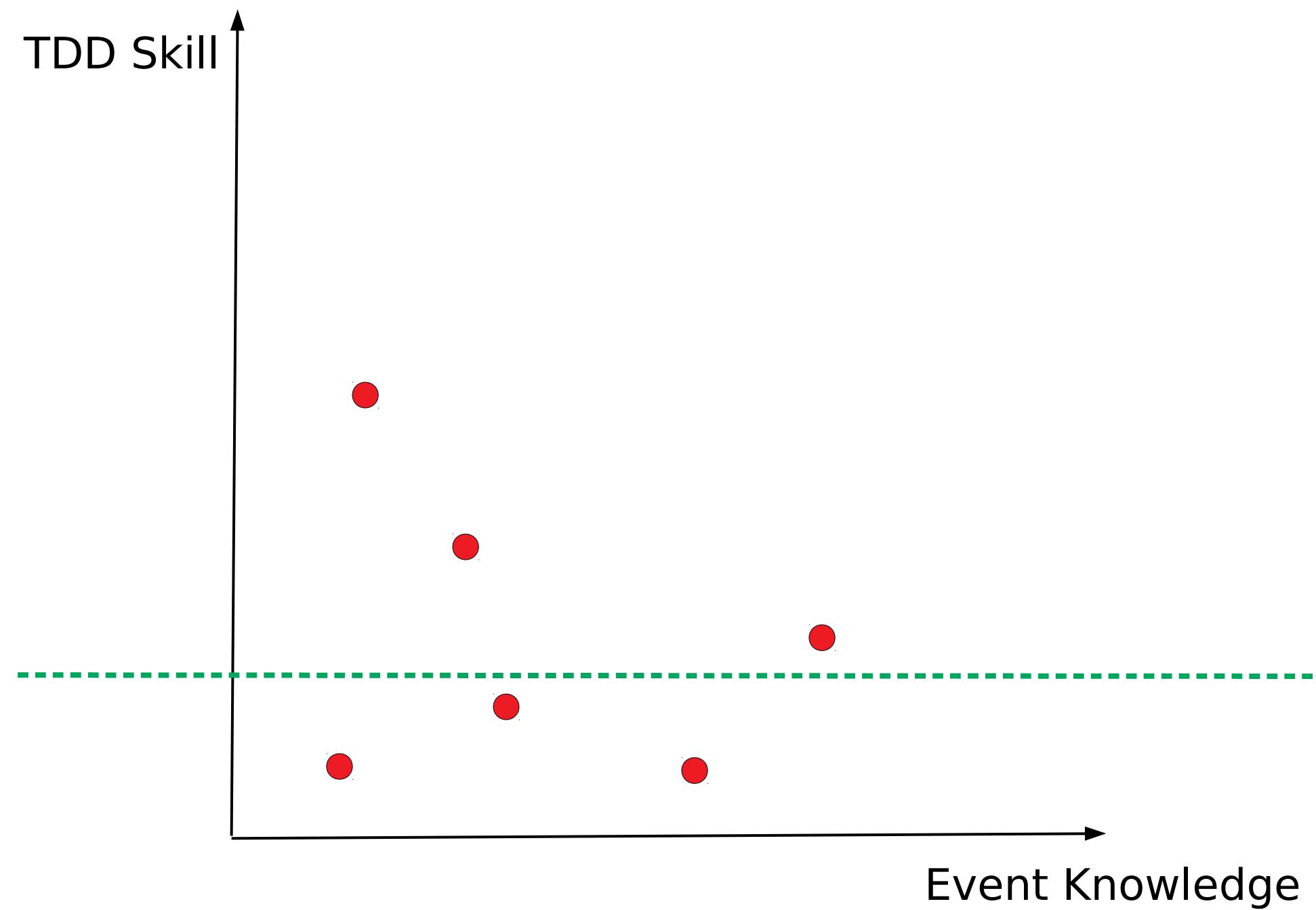


Photo by OpenClipart-Vectors on Pixabay

Languages?



A painting of Uncle Sam, the iconic recruitment poster character. He is depicted from the chest up, wearing his signature top hat with a blue band and white stars, a white shirt, and a dark blue jacket over a red bow tie. His right hand is pointing directly at the viewer with a serious, commanding gaze.

GO



Really Dangerous Numbers

029/12345

0161/9876

...



Log Alert

Retrospective

- *How was the experience?*
- *How did you solve it?*
- *What did you learn?*

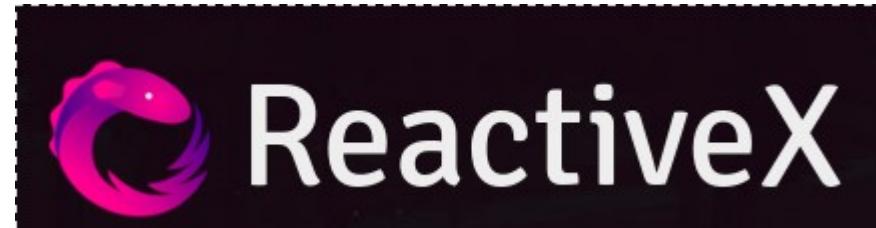
Event Frameworks



<https://www.flickr.com/photos/alebaffa/8939535066>

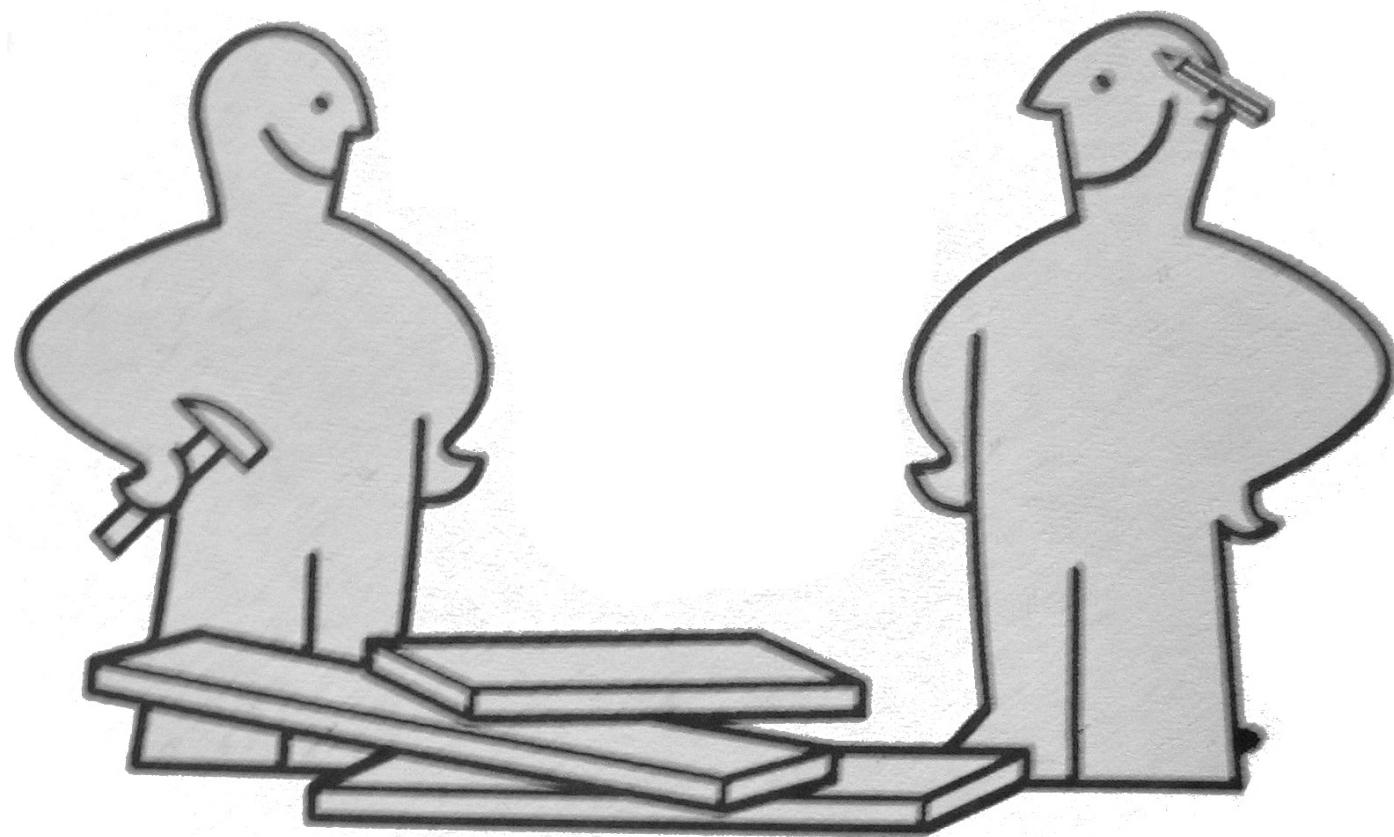


Rabbit MQ



EventEmitter





Do It Yourself



Effective meetings, for remote and local teams.

No installation

Touch support

Mobile support

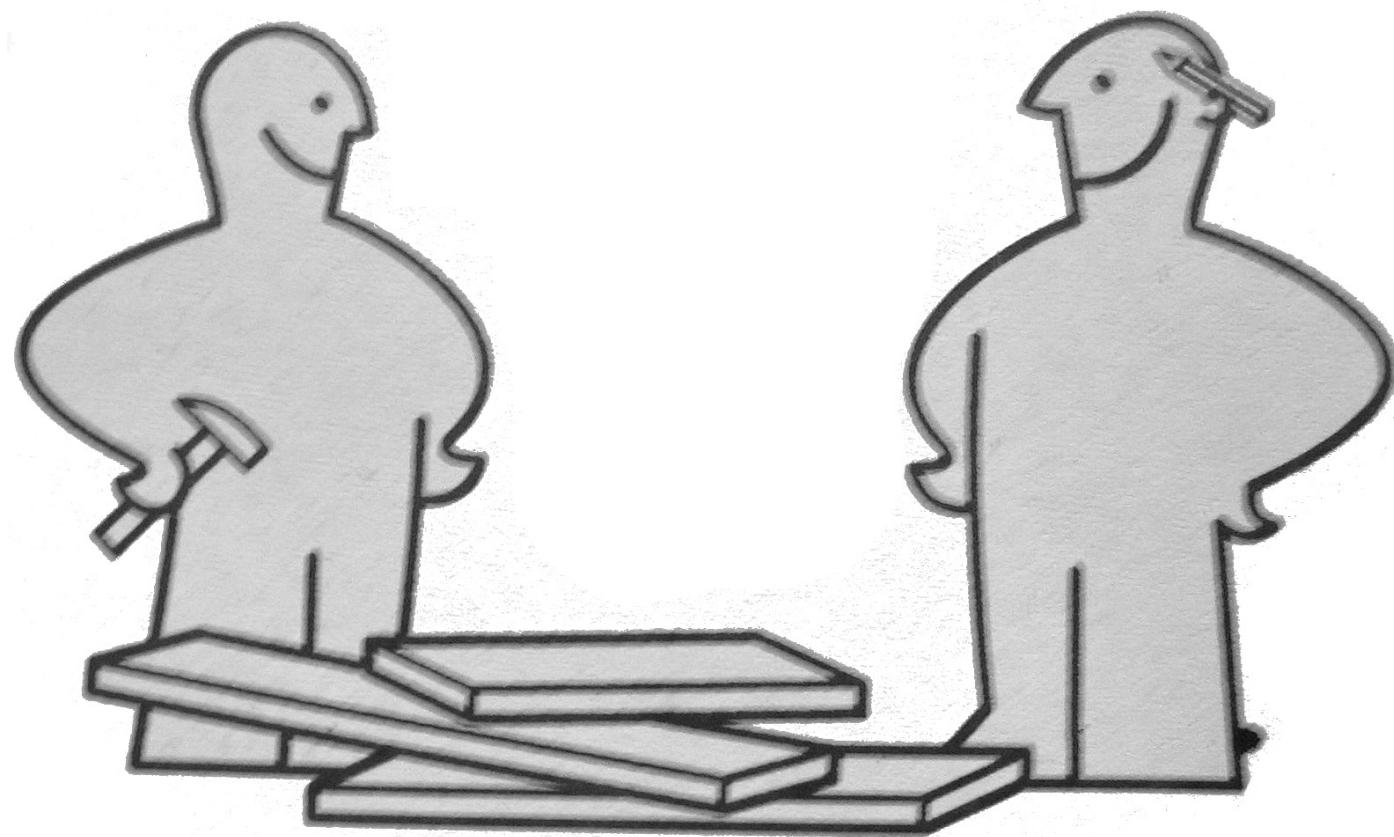
START A FREE TRIAL



eventric.js

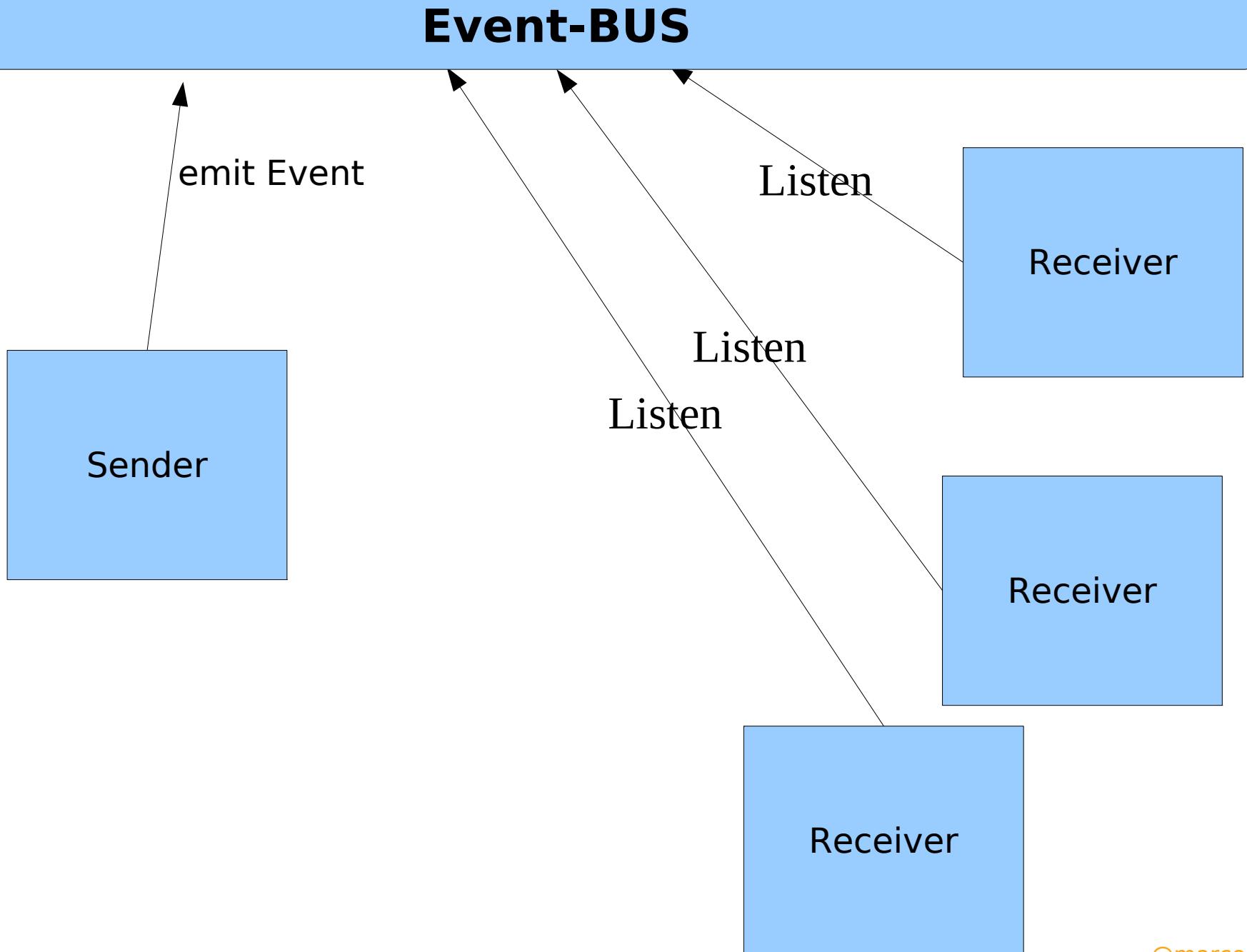


<https://www.wolkenkit.io/>

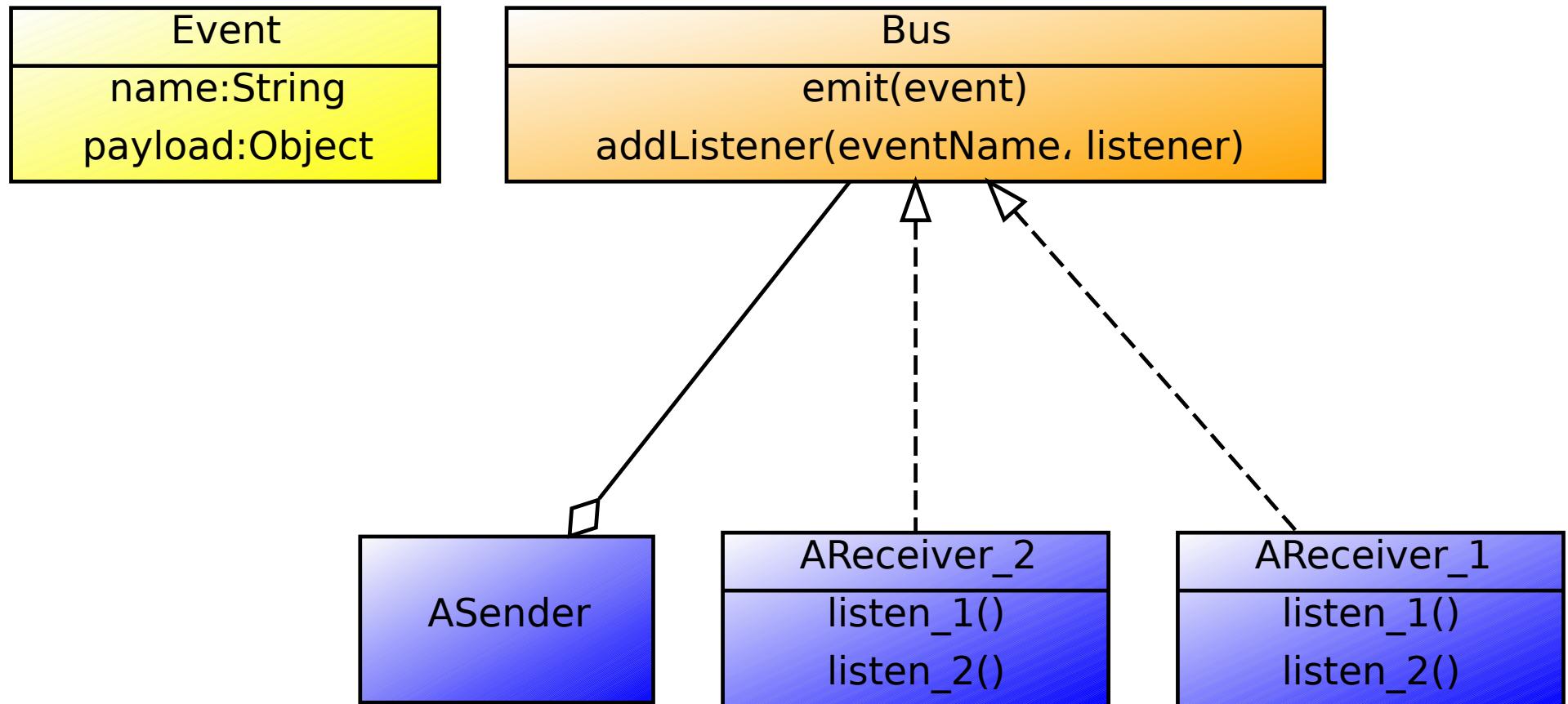


Do It Yourself

Pub/Sub



Minimal EventFramework



Event (Java)

```
public class Event {  
  
    private String name;  
    private Object payload;  
  
    public Event(String name, Object payload) {  
        this.name = name;  
        this.payload = payload;  
    }  
    ...  
}
```

Basics (Java)

```
public class ReceiverDemo implements EventListener {  
    public void receive(Event event) {}  
    ...  
}  
  
EventBus bus = new EventBus();  
ReceiverDemo receiver1 = new ReceiverDemo();  
ReceiverDemo receiver2 = new ReceiverDemo();  
  
bus.addListener("SomethingHappened", receiver1);  
bus.addListener("SomethingHappened", receiver2);  
bus.emit(new Event("SomethingHappened"));
```

Payload (Java)

```
public class ReceiverDemo implements EventListener {  
    public void receive(Event event) {}  
    ...  
}  
  
int payload = 27;  
EventBus bus = new EventBus();  
ReceiverDemo receiver1 = new ReceiverDemo();  
  
bus.addListener("SomethingHappened", receiver1);  
bus.emit(new Event("SomethingHappened", payload));
```

Basics (JS)

```
const callback1 = () => { ... }  
const callback2 = () => { ... }
```

```
bus.addListener('SomethingHappened', callback1);  
bus.addListener('SomethingHappened', callback2);  
bus.emit('SomethingHappened');
```

Payload (JS)

```
const callback = payload => {  
  ...  
};  
  
bus.addListener('SomethingHappened', callback);  
  
bus.emit('SomethingHappened', {bar: 'foo'});
```

Tests/Specs

- 1) a_Bus_can_emit_Events
- 2) a_Receiver_gets_notified
- 3) multiple_Receivers_get_notified
- 4) Events_accept_a_Payload

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GO

Retrospective

- *How was the experience?*
- *How did you solve it?*
- *What did you learn?*

Call Center Kata



Constraints

- no Method-communication,
Events only
- Small Classes (SRP)
max. 20-30 LOC
max. 5 Methods



Really Dangerous Numbers

029/12345

0161/9876

...



Log Alert

Retrospective