

Vertx

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Table of Contents

- 1 Goals
- 2 History
- 3 Vertx
- 4 vertx-effect: where Vertx meet FP
- 5 hands-on

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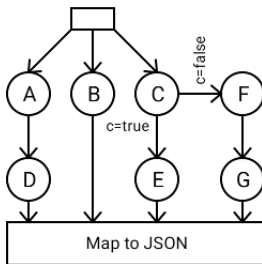
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 - **Failures are just data**

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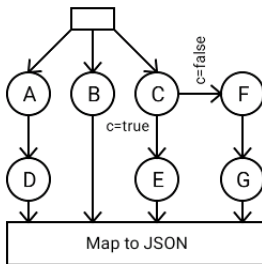
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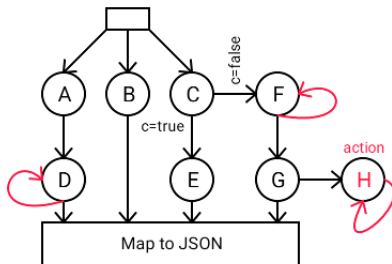
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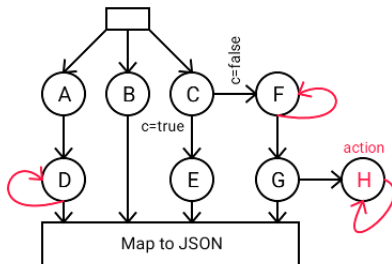
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- I'm still thinking of just one line of code

History

Actor Model (1973)

Actor Model of Computation: Scalable Robust Information Systems

Carl Hewitt

This article is dedicated to Alonzo Church and Dana Scott.

The Actor Model is a mathematical theory that treats “*Actors*” as the universal primitives of digital computation.

Hypothesis:ⁱ **All physically possible computation can be directly implemented using Actors.**

The model has been used both as a framework for a theoretical understanding of concurrency, and as the theoretical basis for several practical implementations of concurrent systems. The advent of massive concurrency through client-cloud computing and many-core computer architectures has galvanized interest in the Actor Model.

Message passing using types is the foundation of system communication:

- Messages are the unit of communication¹

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- "I made up the term 'object-oriented', and I can tell you **I didn't have C++ in mind.**"
- Download Pharo and be blown away!

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- WhatsApp and WeChat are implemented in Erlang!

Influential people



Vertx

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- EOOP just doesn't fit (**don't use Spring or try to avoid it**)
- Dependency injection == Coupling
- **Have a plan to handle complexity.**

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- **The more verticles the better**

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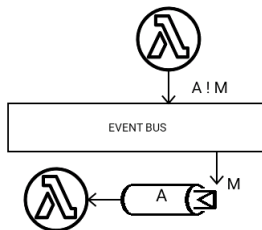
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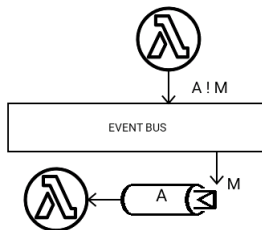
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- **send and pray** semantics. We send the message and pray that it arrives

Vertx model (I)



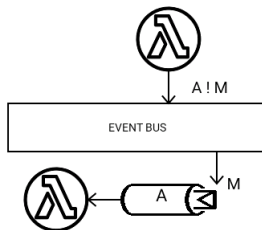
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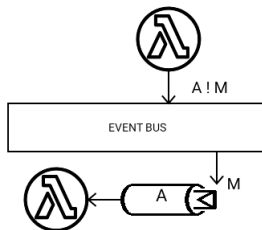
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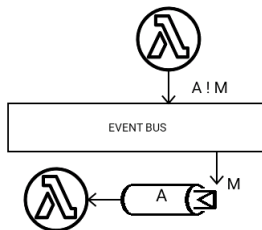
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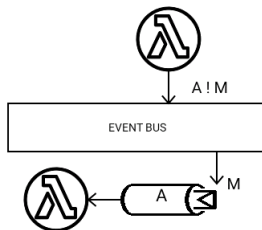
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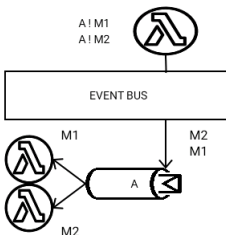
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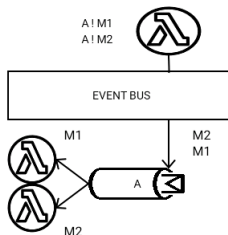
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- Verticles process **ONE** message at a time

Vertx model (II)



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Vertex model (II)

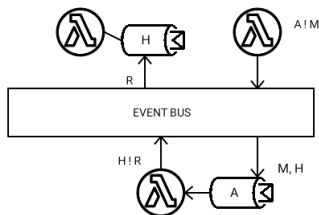


- Scale-up: deploying multiple instances of a verticle listening on the same address
- Instance that receives the message is chosen using a non-strict round-robin algorithm

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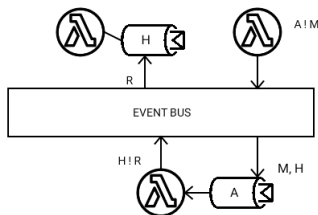
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Vertx model (III)

Imagine that a verticle **sends a message** to other verticle and has to **process the response**

- Programmatically, it's just a handler
- but in practice it's just another verticle listening on a random address



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- [imrafaelmerino/json-values](#) is a better alternative: it's persistent and provides a better api

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@Override
public JsObj transform(final JsObj obj) {
    return obj;
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vertx-effect: where Vertx meet FP

Val and λ

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import java.util.function.Supplier
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- The types **I** and **O** represent messages sent to the Event Bus
- If they are not supported by Vertx
 - Implement and register a **MessageCodec** for them

hands-on



Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The L^AT_EX Companion*. Addison-Wesley, Reading, Massachusetts, 1993.



Albert Einstein. *Zur Elektrodynamik bewegter Körper*. (German) [*On the electrodynamics of moving bodies*]. *Annalen der Physik*, 322(10):891–921, 1905.



Knuth: Computers and Typesetting,
<http://www-cs-faculty.stanford.edu/~uno/abcde.html>