# Vertx

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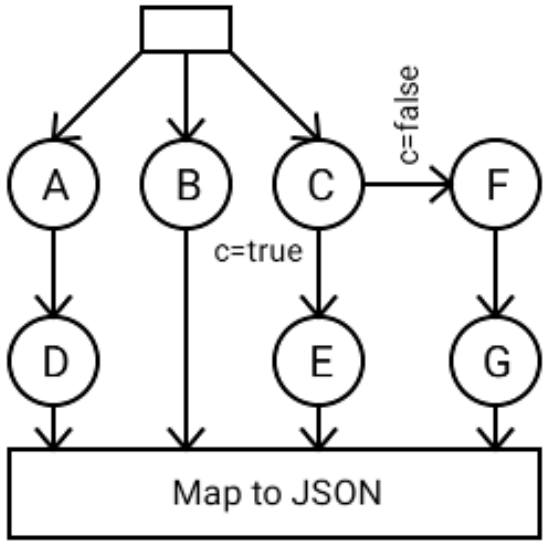

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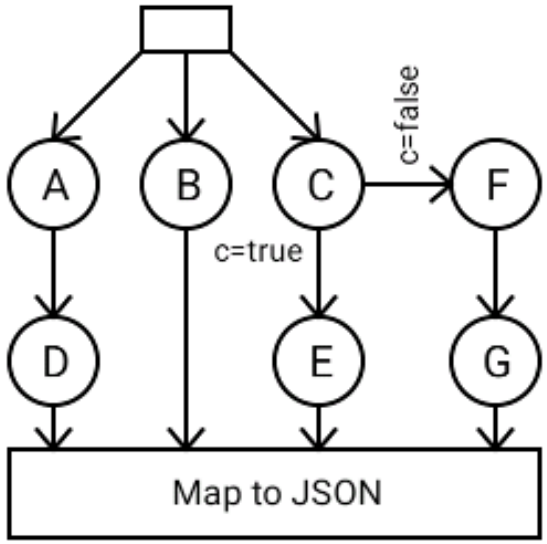


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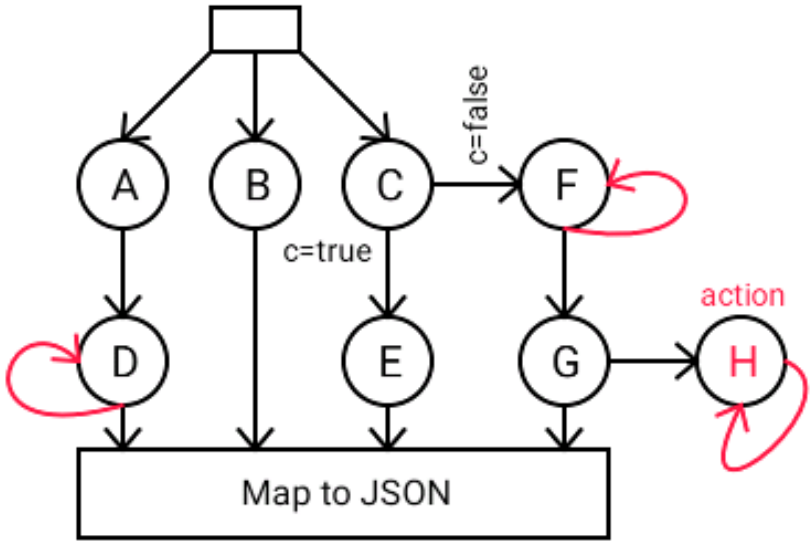

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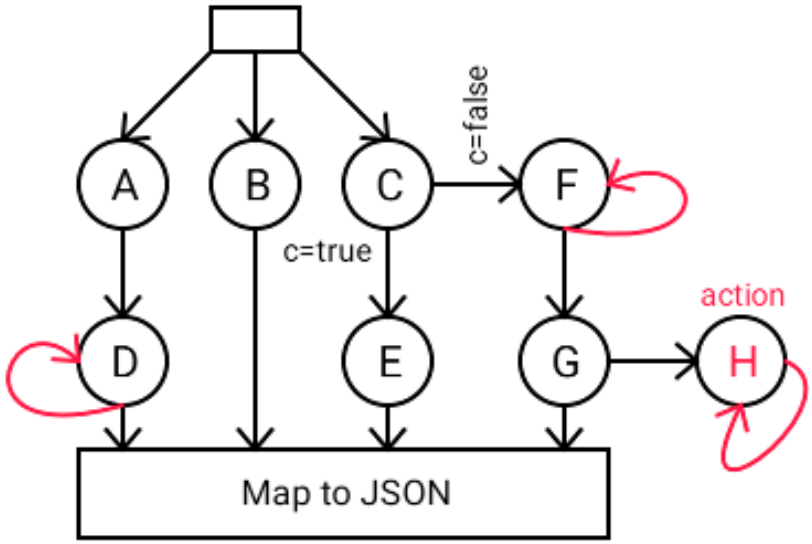


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# History

# 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 communication[1]

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- Download Pharo and be blown away!

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- WhatsApp and WeChat are implemented in Erlang!

# Influential people

# Vertx

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- Dependency injection == Coupling
- **Have a plan to handle complexity**.

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- **The more verticles the better**

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

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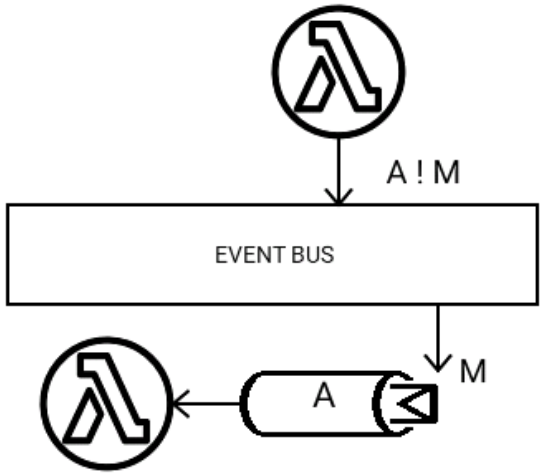


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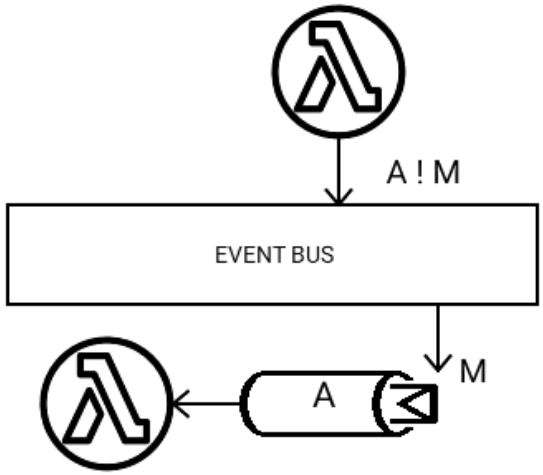


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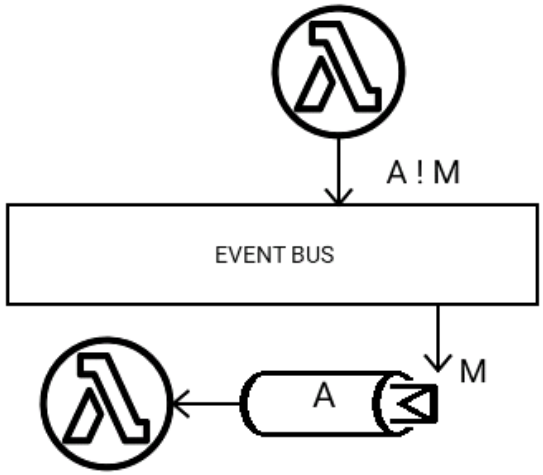


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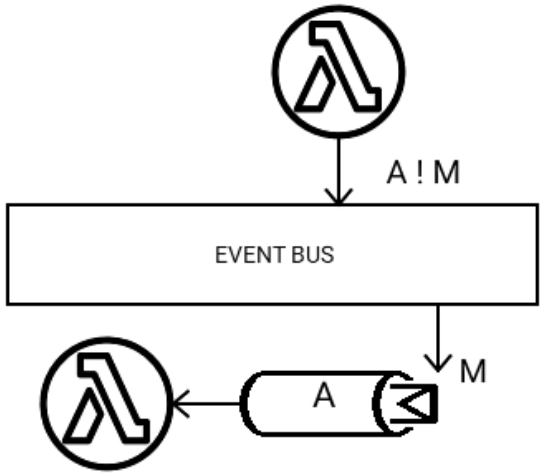


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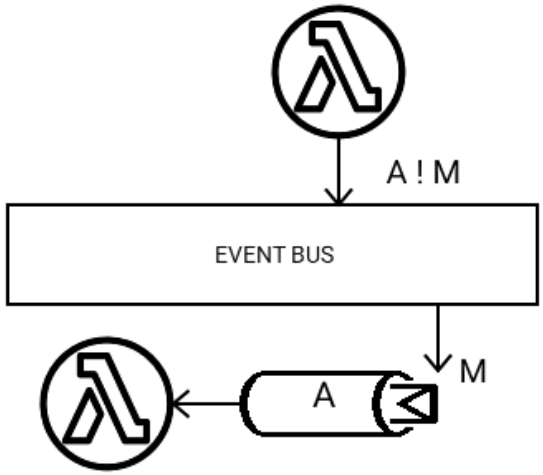


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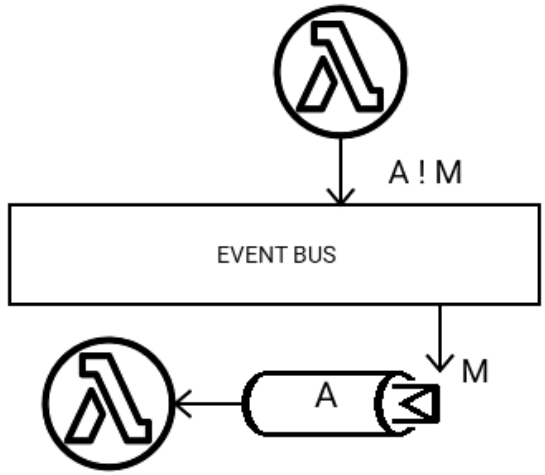


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- **Verticles process ONE message at a time**. Syncronization is implemented this way

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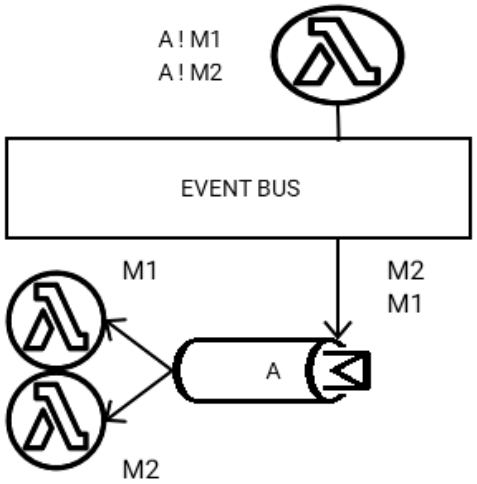


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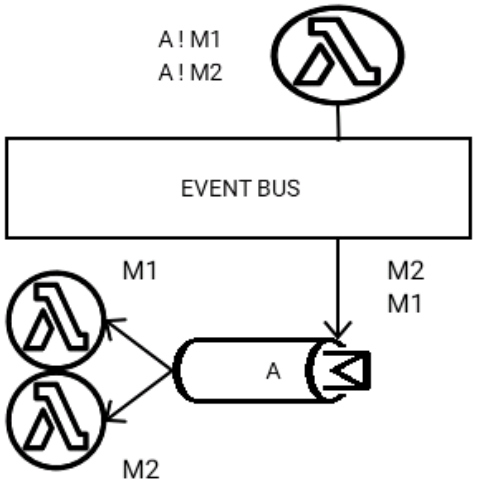


- Scale-up: deploying multiple instances of a verticle listening on the same address
- Instance that receives the message is chosen using a non-strict round-robin algorithm

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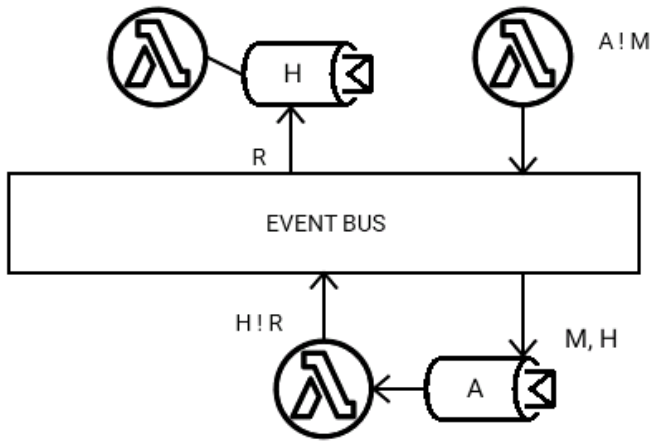

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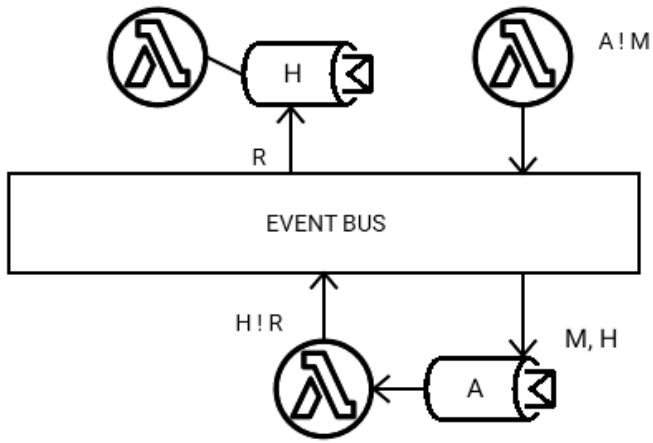

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- Verticles that are created to do computation and die after that. Why do we need an address then?

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- imrafaelmerino/json-values is a better alternative: it's persistent and provides a better api

```
@Override
public JsObj transform(final JsObj obj) {
  return obj;
}
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  - What's the right size?
- What about green threads and project Loom?

# vertx-effect: where Vertx meet FP

# Val and λ

```
import java.util.function.Supplier
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import io.vertx.core.Future

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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 LaTeX 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.


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