

Elixir and Elm – the perfect couple

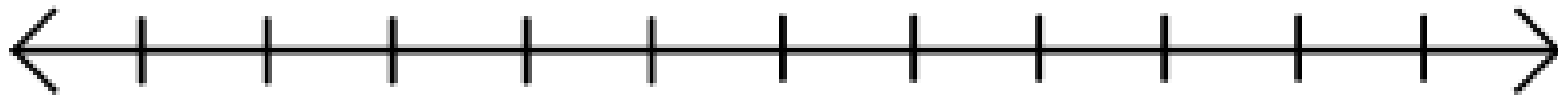
Tomasz Kowal



I hate language comparisons

The Blub paradox

Power continuum





- interactive frontend
- available backend

"it is, all other things being equal, a mistake to program in anything but the most powerful [programming language]"

- *Paul Graham*

"it is, all other things being equal, a mistake to program in anything but the most suitable language for the problem domain"

- *Tomasz Kowal*

Objective measure

„number of things, you need to keep in mind to understand given code fragment”
„programmers memory consumption”

PMC

Functional language

```
def function(arg1, arg2) do
  value = some_computations(arg1)
  another_value = some_computations(arg2)
  value + another_value
end
```

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PMC = 4

OO Language

```
def method(arg1, arg2) do
  value = some_computation(arg1 + property1)
  property2 = some_computation(arg2)
  value + property2
end
```

OO Language

property1

property2

def method(arg1, arg2) do

 value = some_computation(arg1 + property1)

 property2 = some_computation(arg2)

 value + property2

end

Building frontend

"modifying document object model by reacting to events from user and server"

Frontend programming

```
$(document).ready(function(){  
    $("p").click(function(){  
        $(this).hide();  
    });  
});
```


Frontend programming

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Everything that is syntactically legal that the compiler will accept will eventually wind up in your codebase.

- *John Carmack*

Signals



Signals

User input

Server event

User input'

HTML

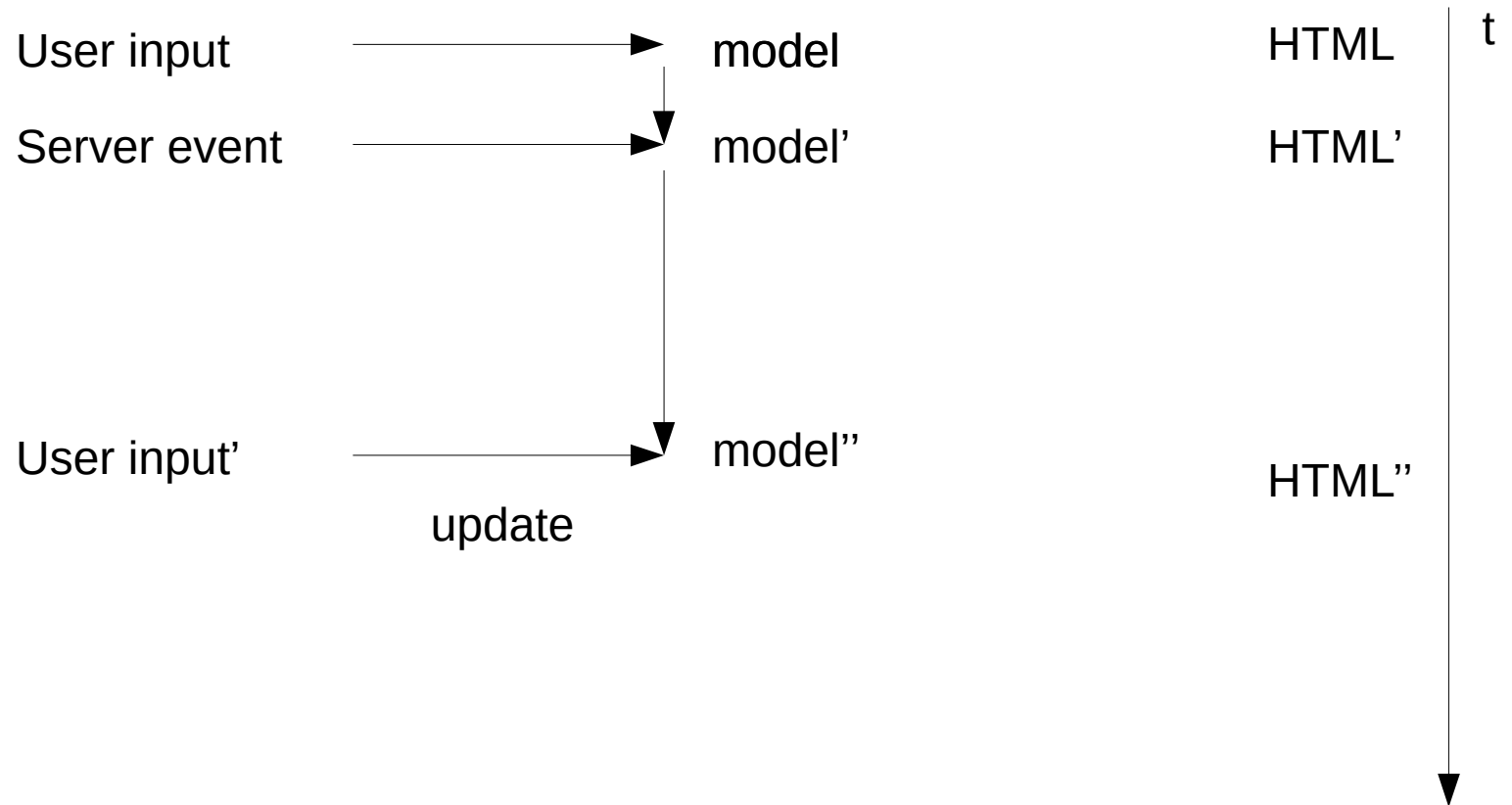
HTML'

HTML''

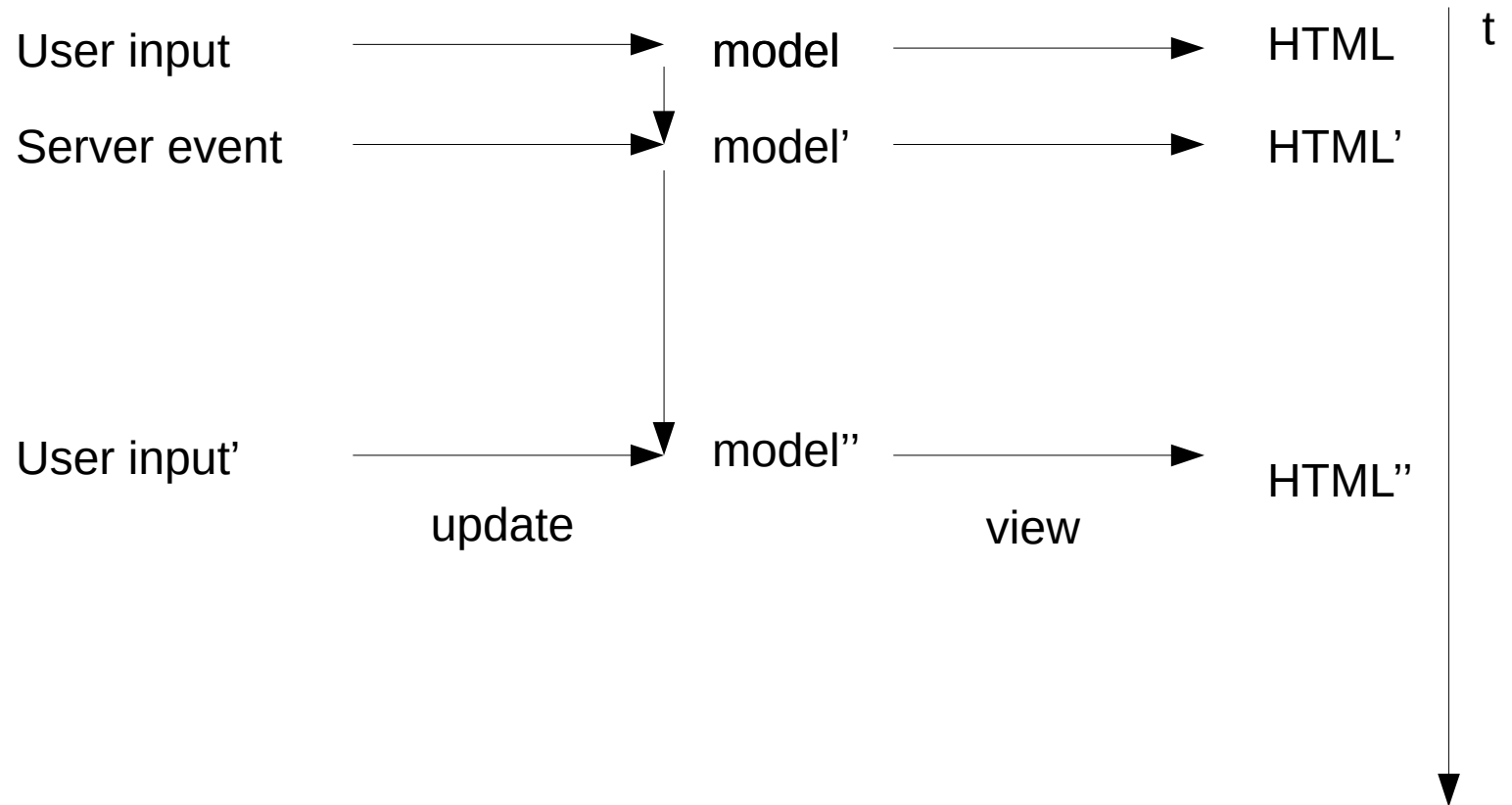
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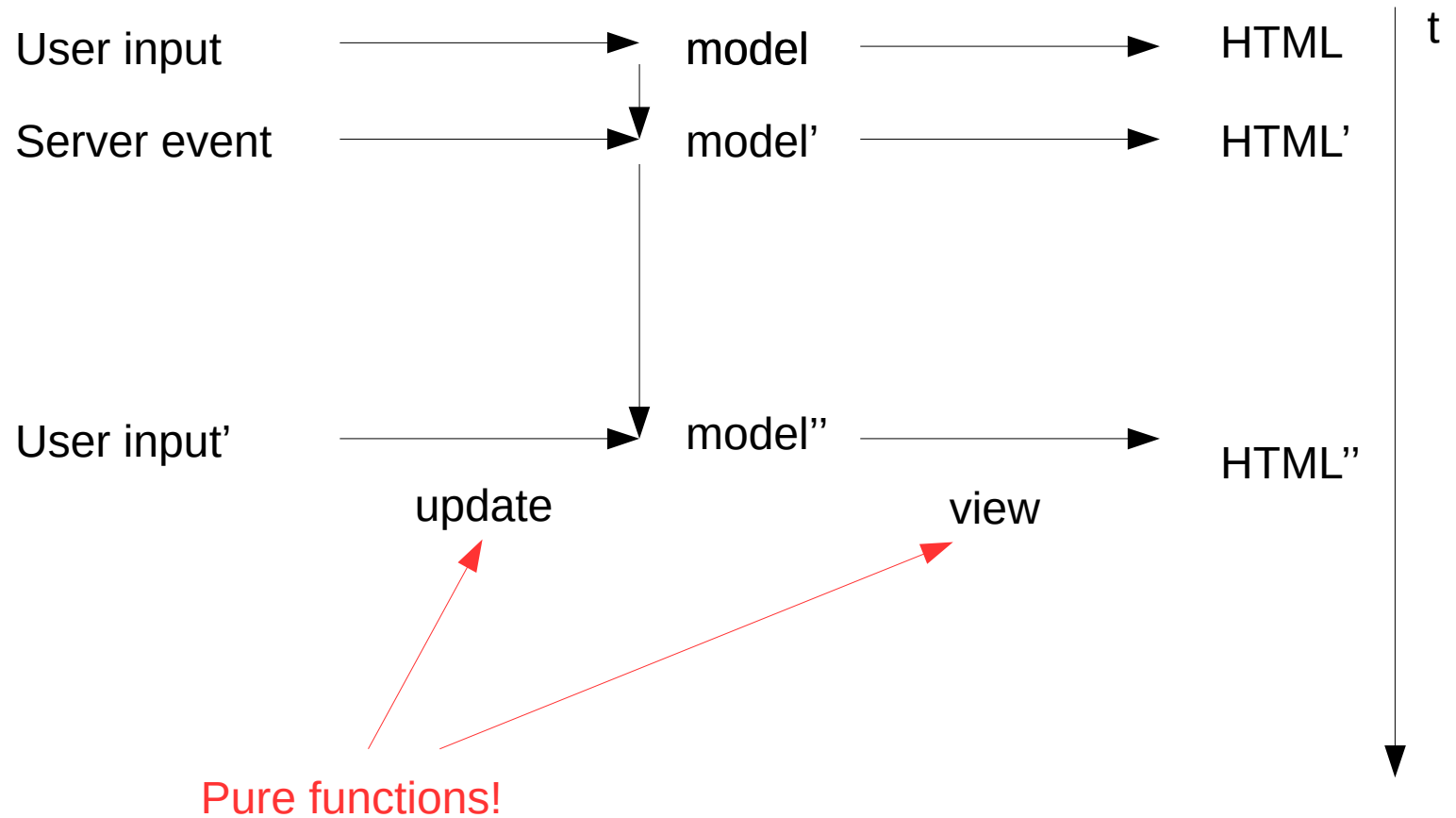
Signals



Signals

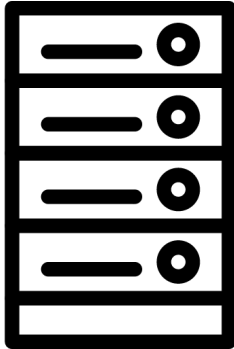


Signals

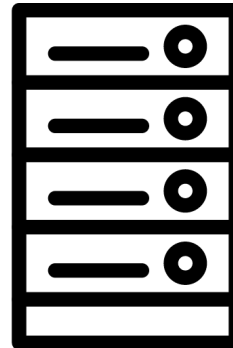
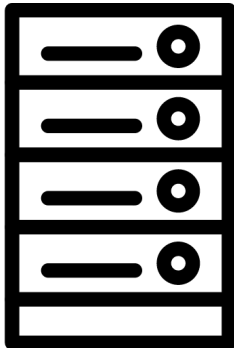
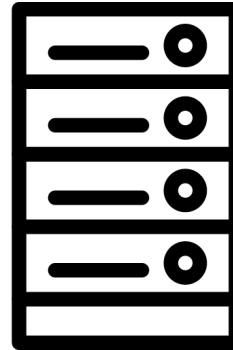
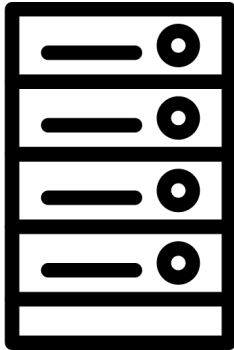


Single data structure holds entire application state.

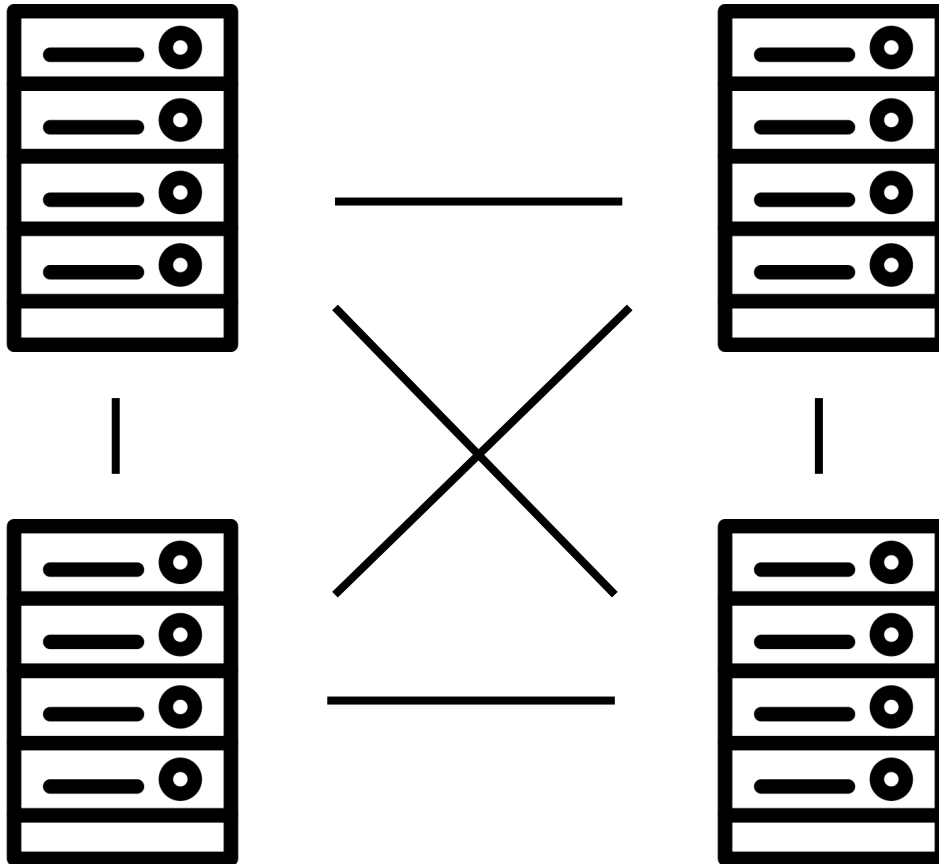
Backend programming



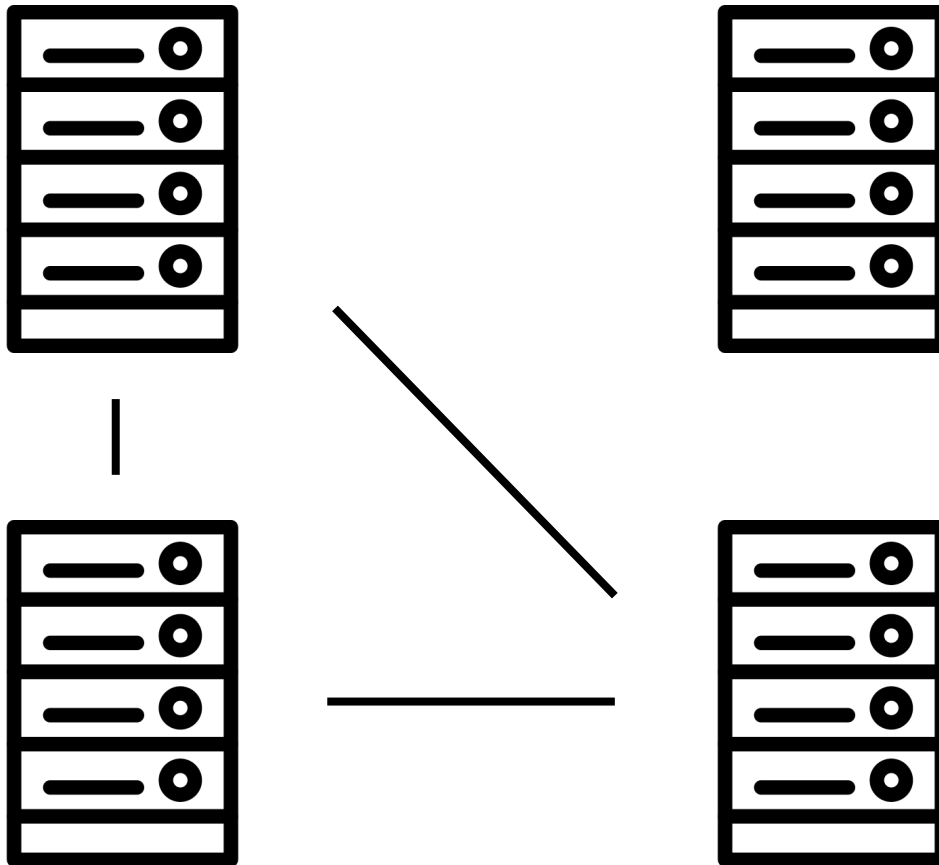
Backend programming



Backend programming



Backend programming - netsplit



Actors

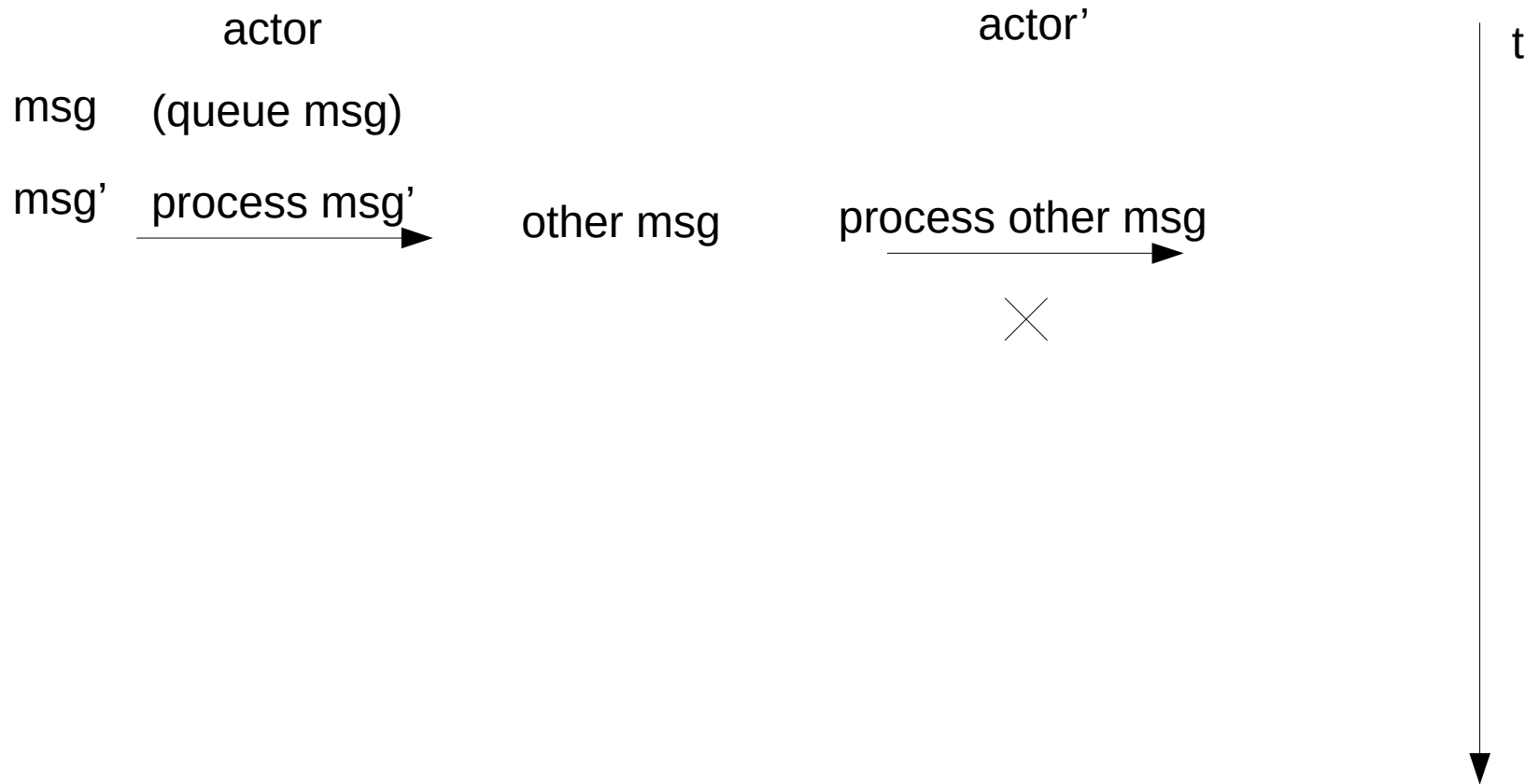
actor
msg (queue msg)

actor'

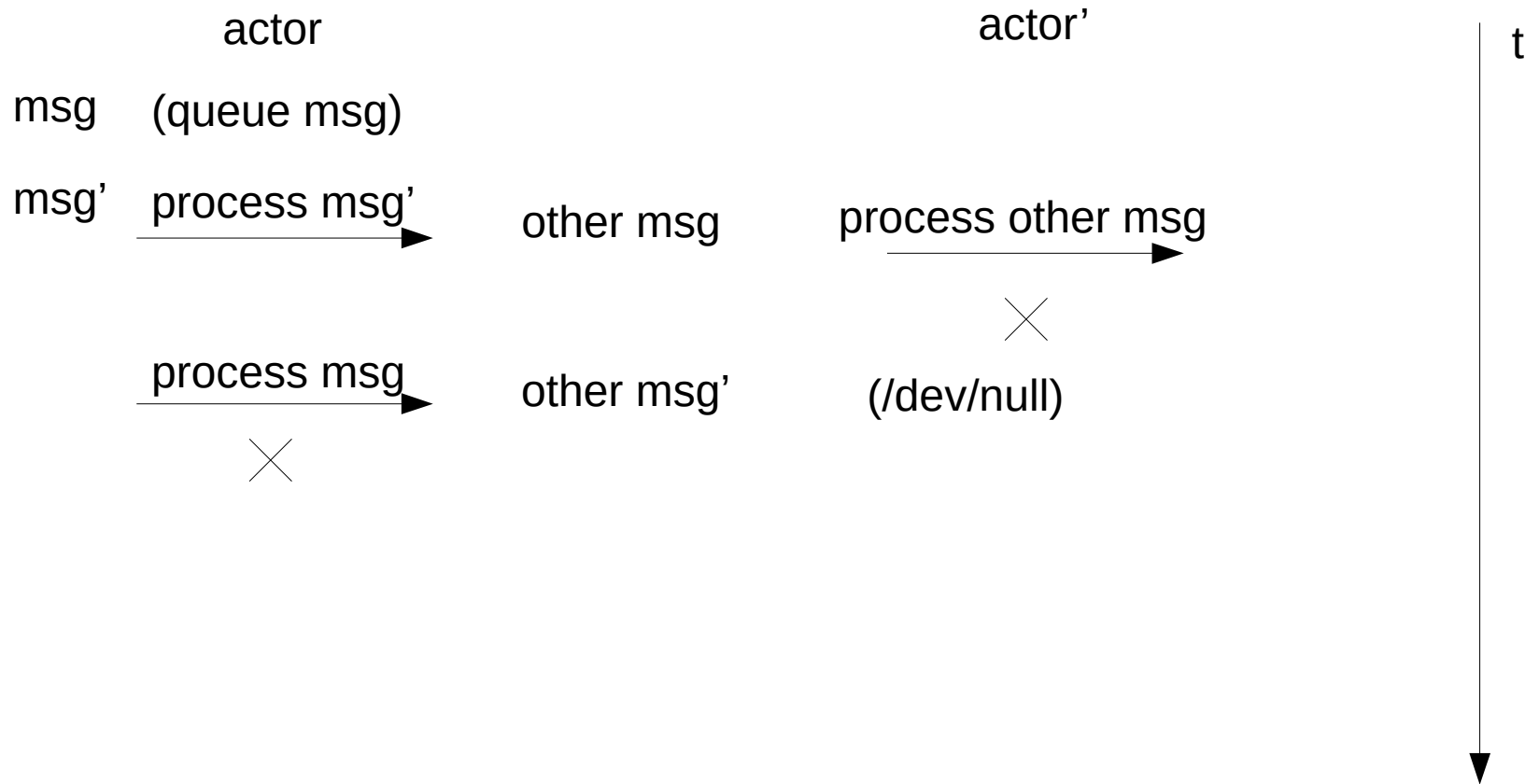
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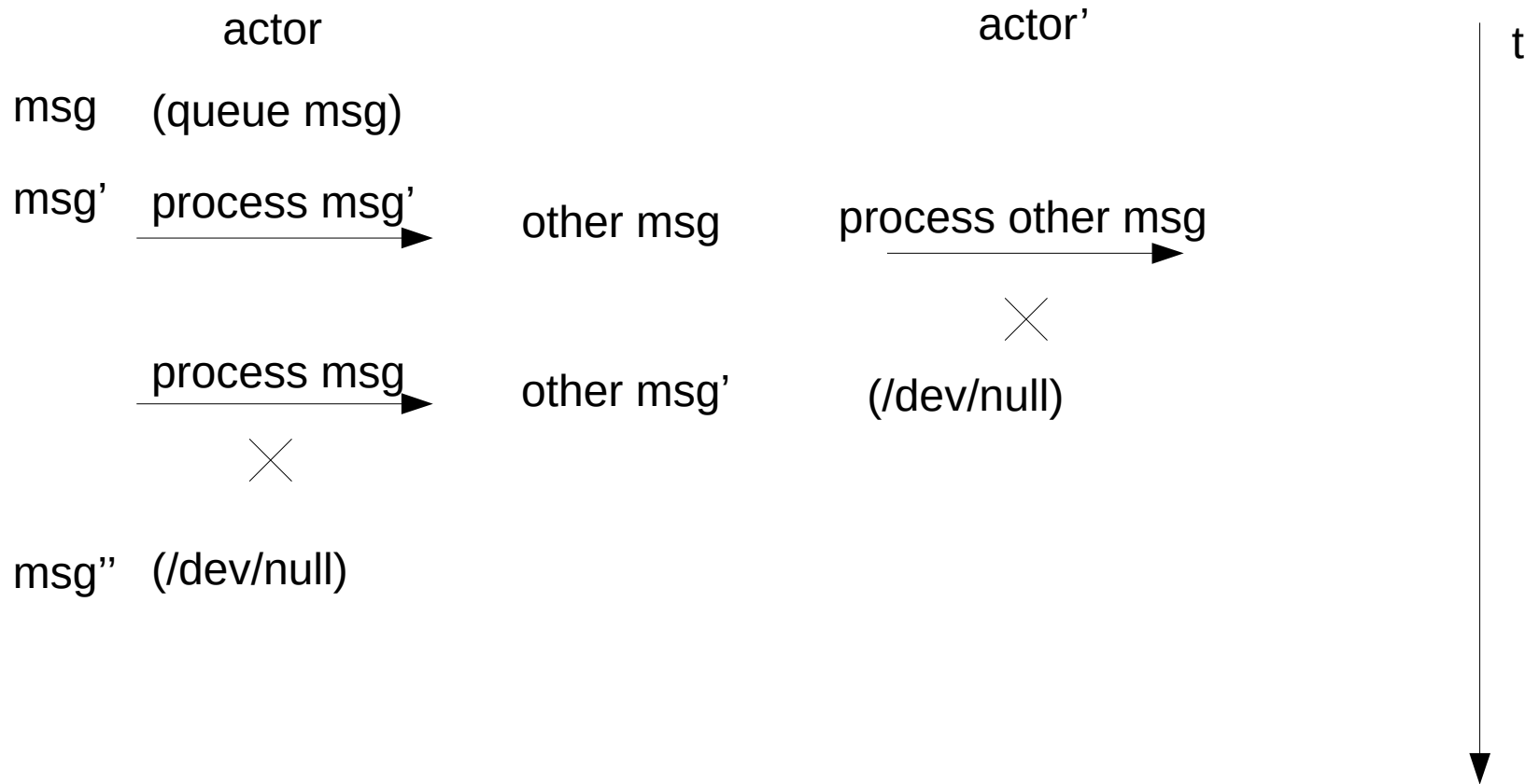
Actors



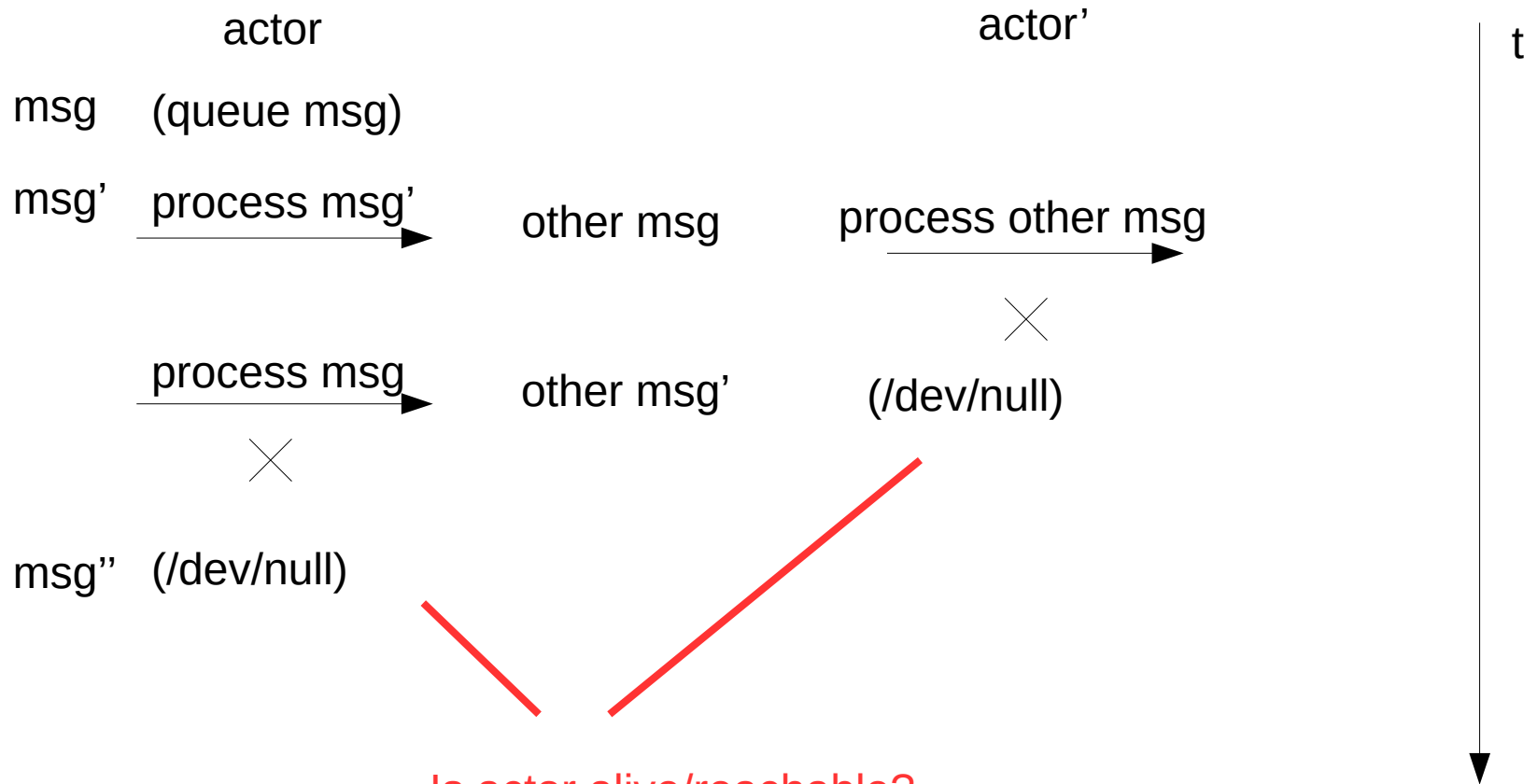
Actors



Actors



Actors



Is actor alive/reachable?
Notify on death
Kill from outside
Kill and restart group of actors

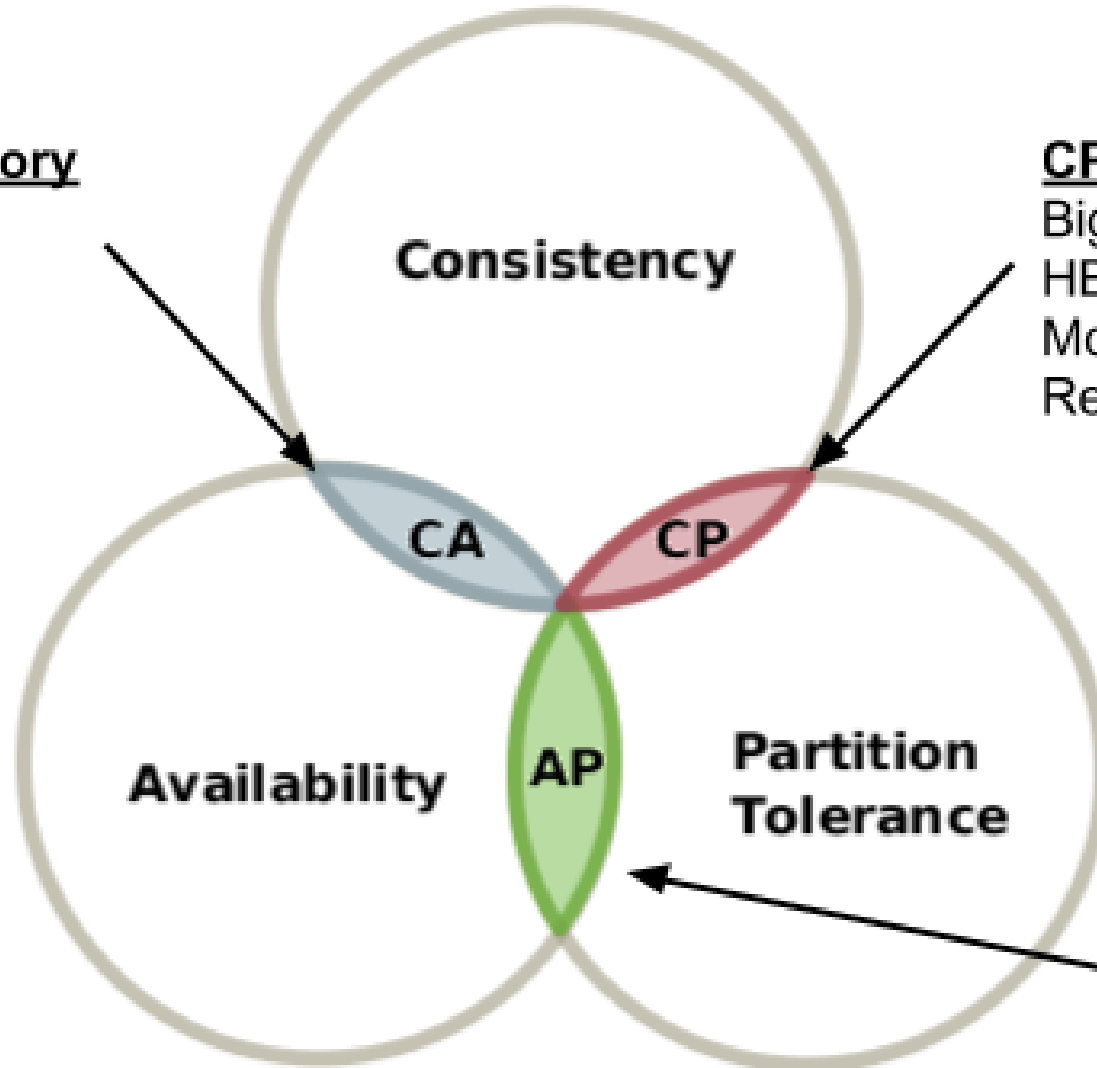
Elixir

```
def function(arg1, arg2) do
  val = receive msg of
    {:msg, msg} -> msg
  end
  val + arg1 + arg2
end
```

CAP

CA Category
RDBMS

CP Category
BigTable
HBase
MongoDB
Redis



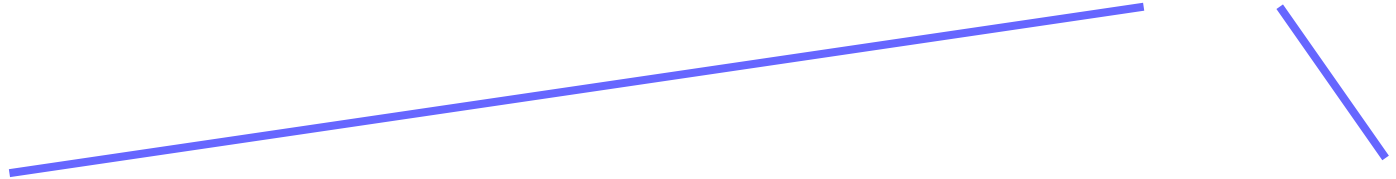
AP Category
Dynamo
Voldemort
Cassandra
CouchDB



Phoenix Framework

conn |> endpoint |> router |> pipelines |> controller

conn |> controller |> common_services |> action



- Single data structure (source of truth)
 - flow in one direction

Things to remember #1

Different programming languages solve different problems.

Things to remember #2

For interactive web applications check out both
Elixir and Elm

Things to remember #3

If you like this talk, follow me on Twitter
[@snajper47](https://twitter.com/snajper47)

Elm lang homepage: <http://elm-lang.org/>

Elixir lang homepage: <http://elixir-lang.org/>

Phoenix framework:

<http://www.phoenixframework.org/>

My blog: <http://tkowal.wordpress.com/>

Review: Krzysztof Wende