DDD-HH Domain-driven Design Hamburg # 3

Lets talk about complexity

Warming up

```
task1.setStartDate(new Date("1 Jan 98");
task2.setStartDate(task1.getTaskDate());
//then somewhere in the task class
void delay(int delayDays) {
      _startDate.setDate(_startDate.getDate() + delayDays);
}

// then somewhere
task2.delay(5);
```

DDD-HH Domain-driven Design Hamburg # 3

Lets talk about complexity

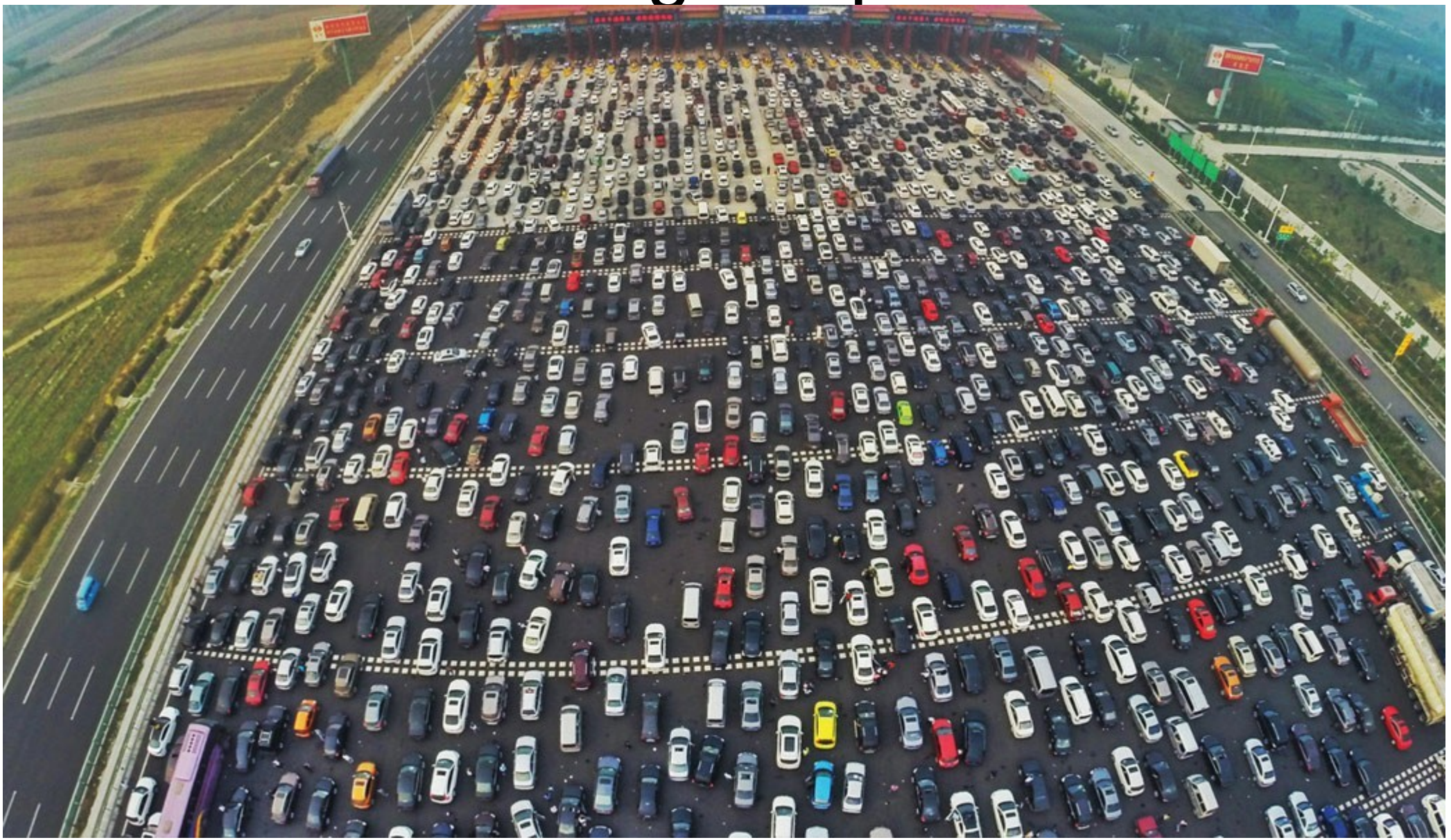
If traffic were software

If traffic were software

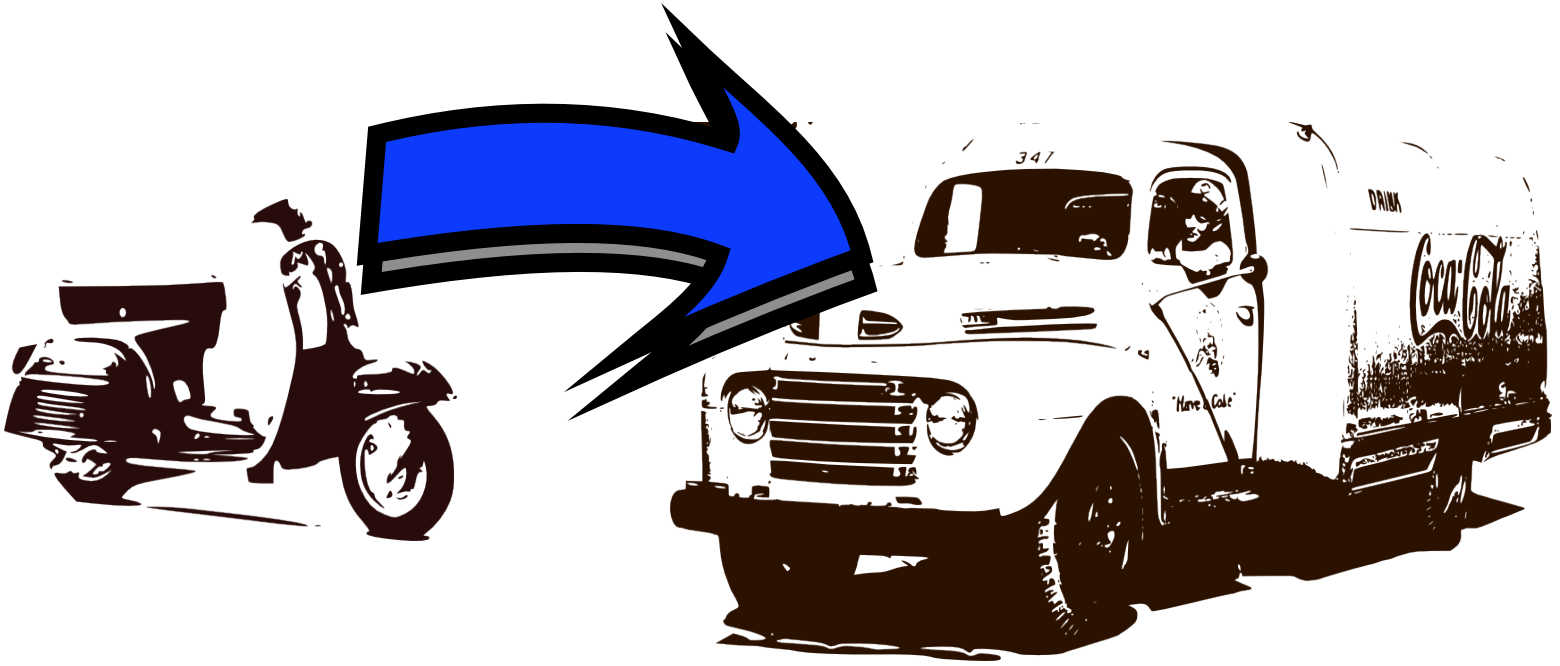
How would you reduce complexity?

Adding more connections?

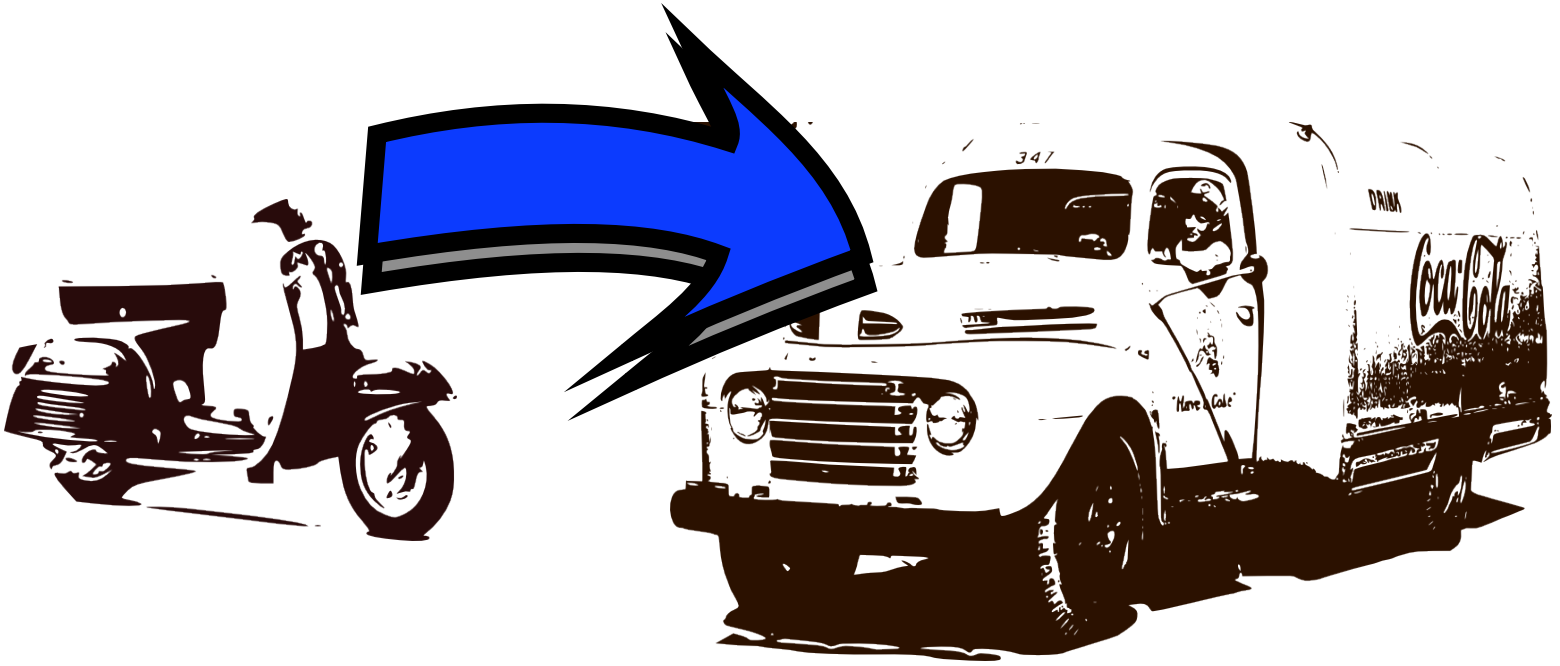
Increasing the power?



Moving from php to Java?

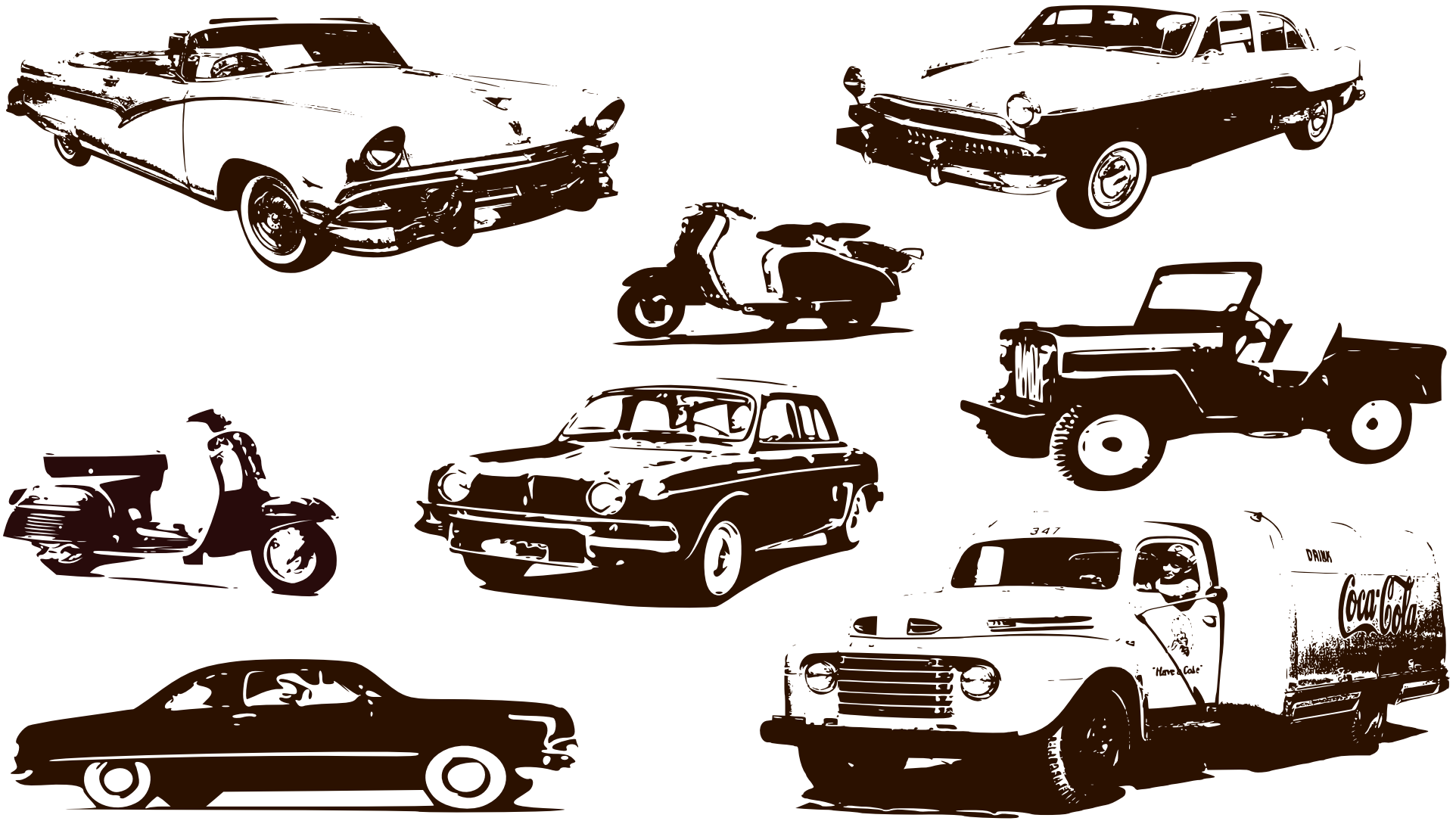


Moving from php to Java?



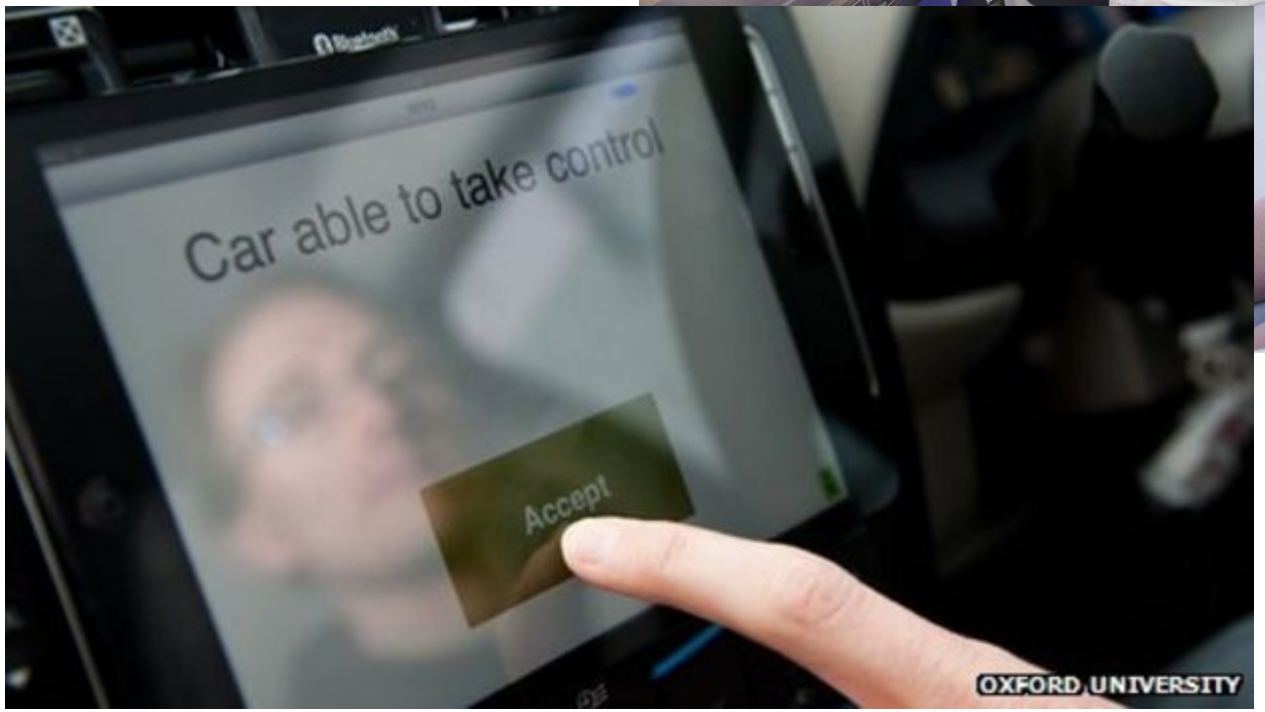
Maybe from a Complexity perspective PHP is similar to Java

And to python, go, nodeJs, ruby, etc, etc, etc.



Perhaps instead we should limit control...

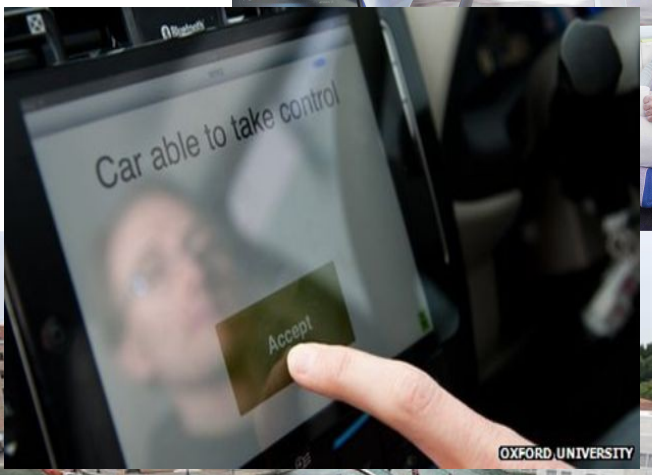
...separate control from state...



...Integrate different languages to describe different kinds of problems...

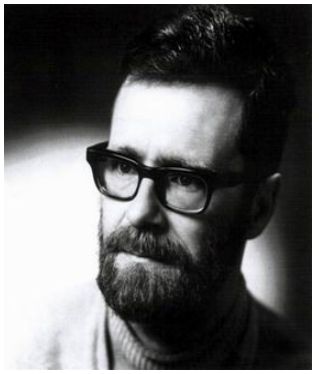
...and reduce the power of the programming languages

Those points together reduce complexity



Why?

We need a little bit of theory



Edsger W. Dijkstra
1968

Go To Statement Considered Harmful

Bertrand Meyer 1988

Object-Oriented-Software Construction
Design-By-Contract
Command Query Separation

Design-by-contract

```
{1<=n}
int f = 1;
int i = 1;
while (i < n) {
    i = i + 1;
    f = f * i;
}
{f=n!}
```

Design-by-contract

```
{1<=n}
int f = 1;
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    i = i + 1;
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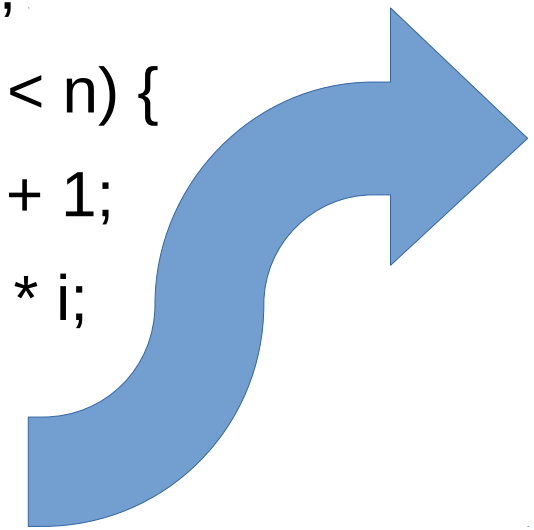
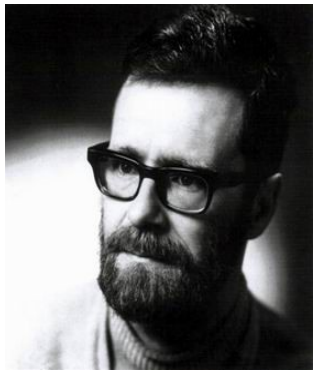


Functional

```
factorial :: Integer -> Integer
factorial 0 = 1
factorial n = n * factorial (n-1)
```

Demonstrable



tests?

Program testing can be a very effective way to show the presence of bugs, but it is hopelessly inadequate for showing their absence

Dijkstra

Language specialization

http://blog.cleancoder.com/uncle-bob/2016/07/27/TheChurn.html

“...Functional programming is not "better" than Object Oriented programming. **That's like saying that a hammer is better than a screwdriver.** Functional Programming is a technique, and a good one, that can be used alongside Object Oriented programming.

…. They address orthogonal concerns. Concerns that are present in all projects....”

Hammer vs Screwdriver

“...They address orthogonal concerns. Concerns that are present in all projects...”

Current situation

Hammer vs Screwdriver

“...They address orthogonal concerns. Concerns that are present in all projects...”

Current situation

Desired Situation

Hammer vs Screwdriver

“...They address orthogonal concerns. Concerns that are present in all projects...”

Current situation

Desired Situation

Lets try to identify those orthogonal concerns

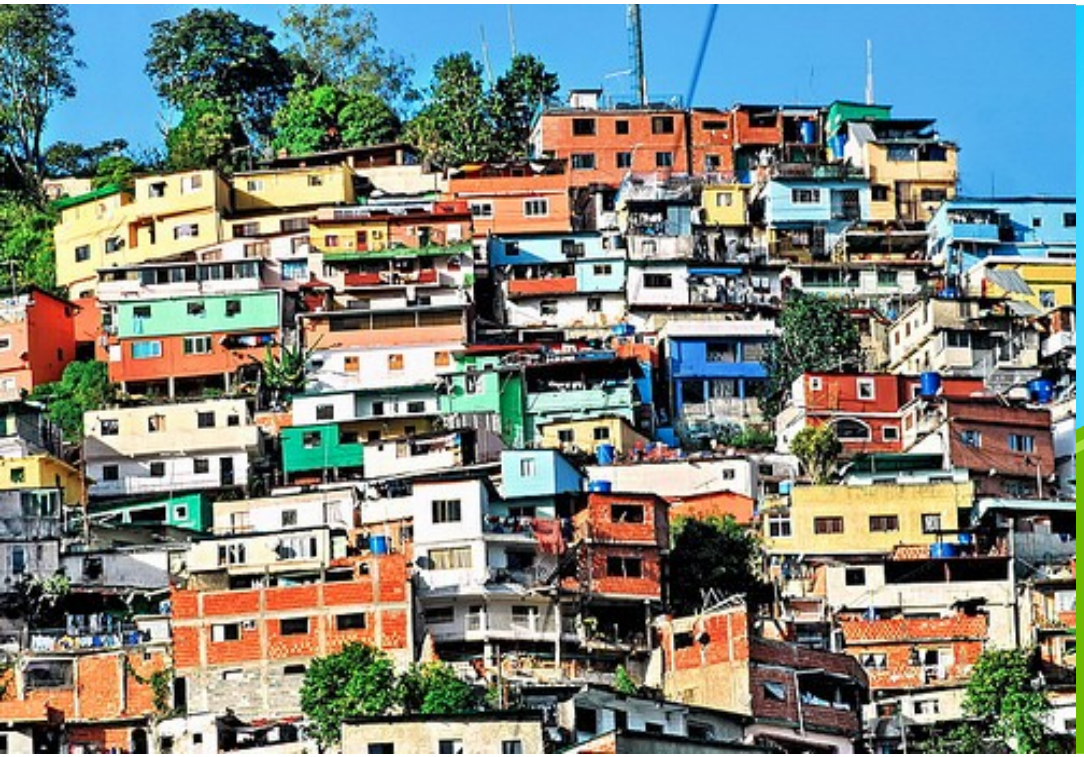
Types of complexity

Essential complexity

The problem as seen in the ideal world

Types of complexity

Added complexity

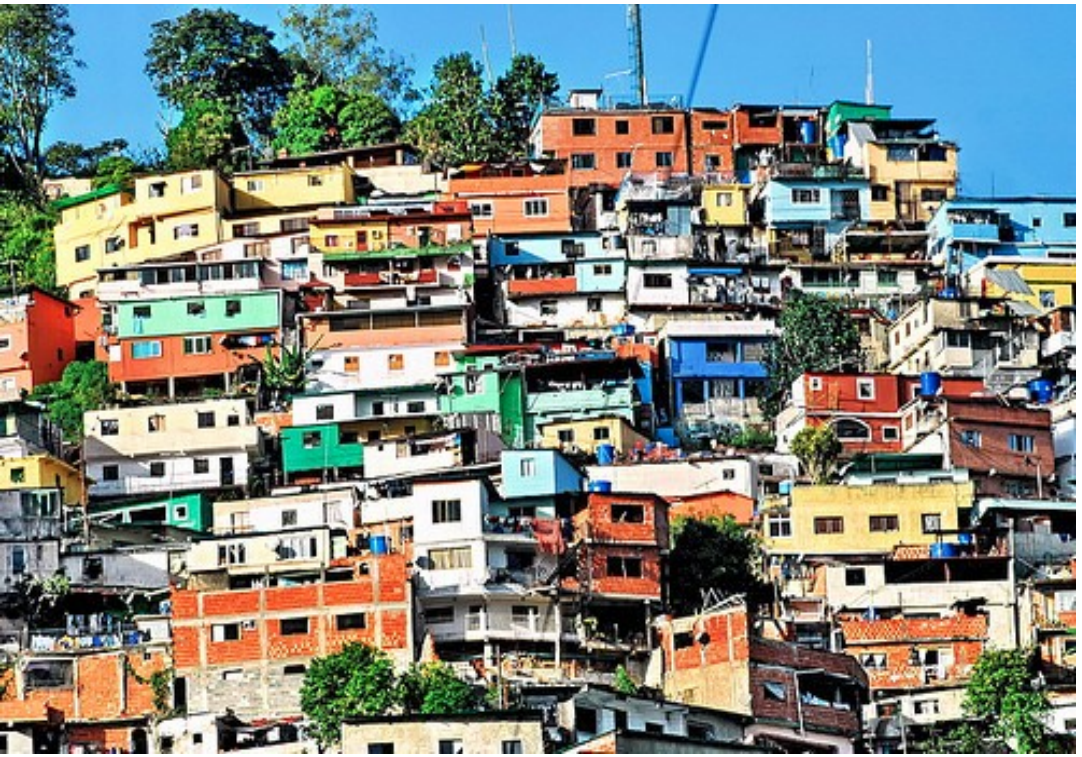


What we actually build

Essential complexity

The problem as seen in the ideal world

Added Complexity



- Performance
- Easy of expression

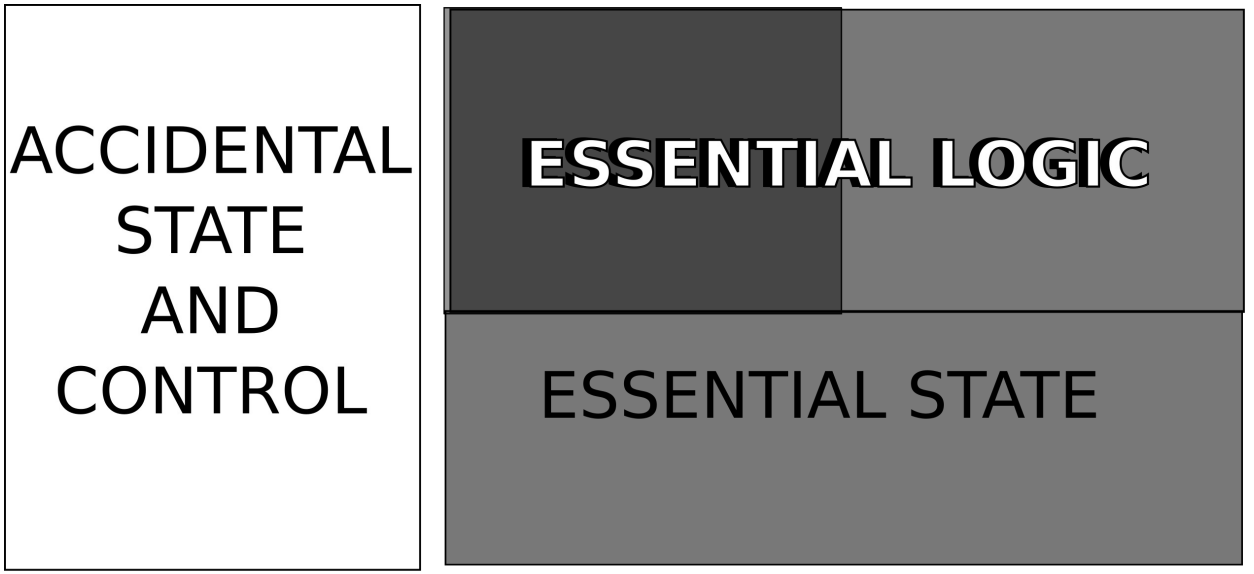
Essential complexity

|”...should still function completely correctly if the “accidental but useful” bits are removed – albeit possibly unacceptably slowly...”

Essential complexity

The problem as seen in the ideal world

FRP-Architecture



RELATIONAL FUNCTIONAL

Essential State Stateful components of the system

Essential Logic Derived-relation definitions, integrity constraints and (pure) functions

Accidental State and Control

Thanks!
DDD-HA#3

http://shaffner.us/cs/papers/tarpit.pdf

http://www.u.arizona.edu/~rubinson/copyright_violations/Go_To_Considered_Harmful.html