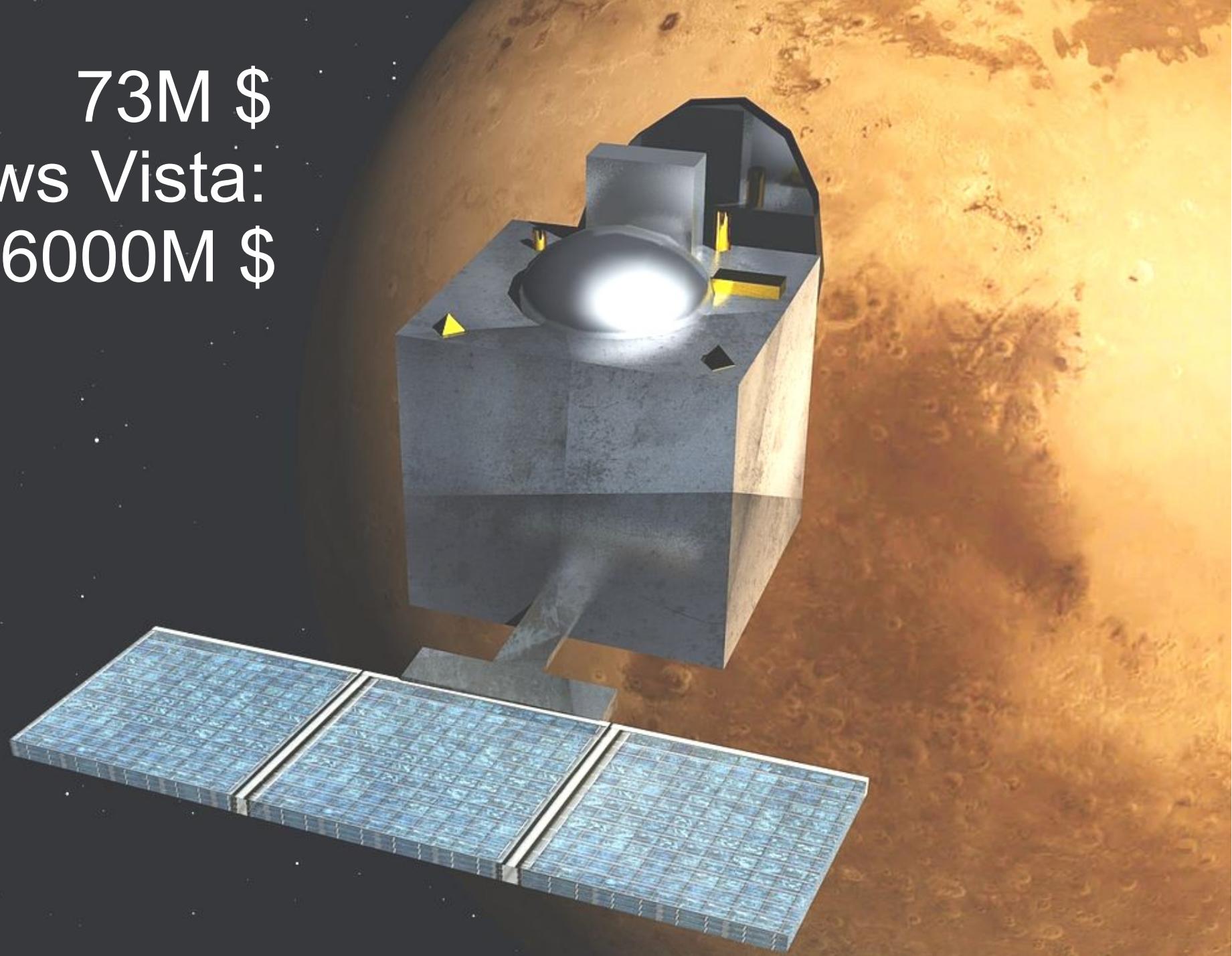

Be proud of your code - Software Design Workshop



Dawid Pytel

MOM: 73M \$
Windows Vista:
6000M \$



Nesnad

https://commons.wikimedia.org/wiki/File:Mars_Orbiter_Mission_-_India_-_ArtistsConcept.jpg

82x



Project starts ...



NASA/Bill Ingalls
<https://www.flickr.com/photos/gsfc/11827827413/>

After some time...



Steve Jurvetson "Rocket Bike"
<https://www.flickr.com/photos/jurvetson/280651657/>

LEGACY



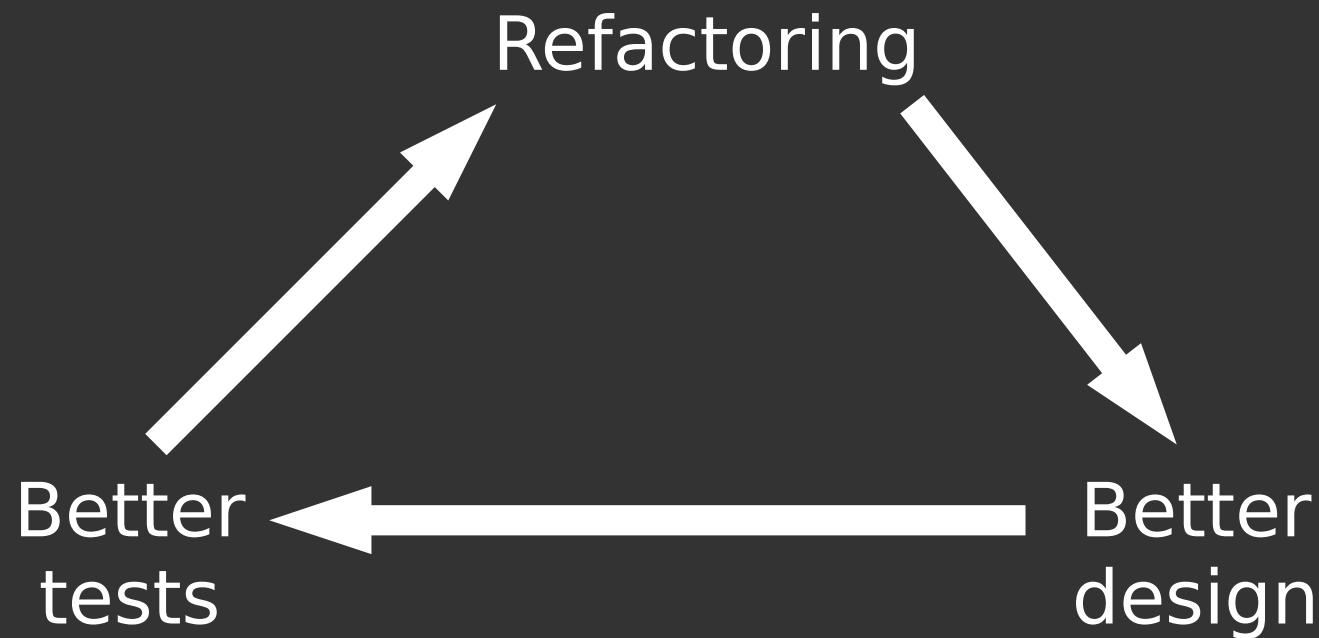
Magnus Manske "Ken Thompson (sitting)-&-Dennis Ritchie at PDP-11"

https://en.wikipedia.org/wiki/File:Ken_Thompson_%28sitting%29_and_Dennis_Ritchie_at_PDP-11_%28282876612463%29.jpg

Be Proud

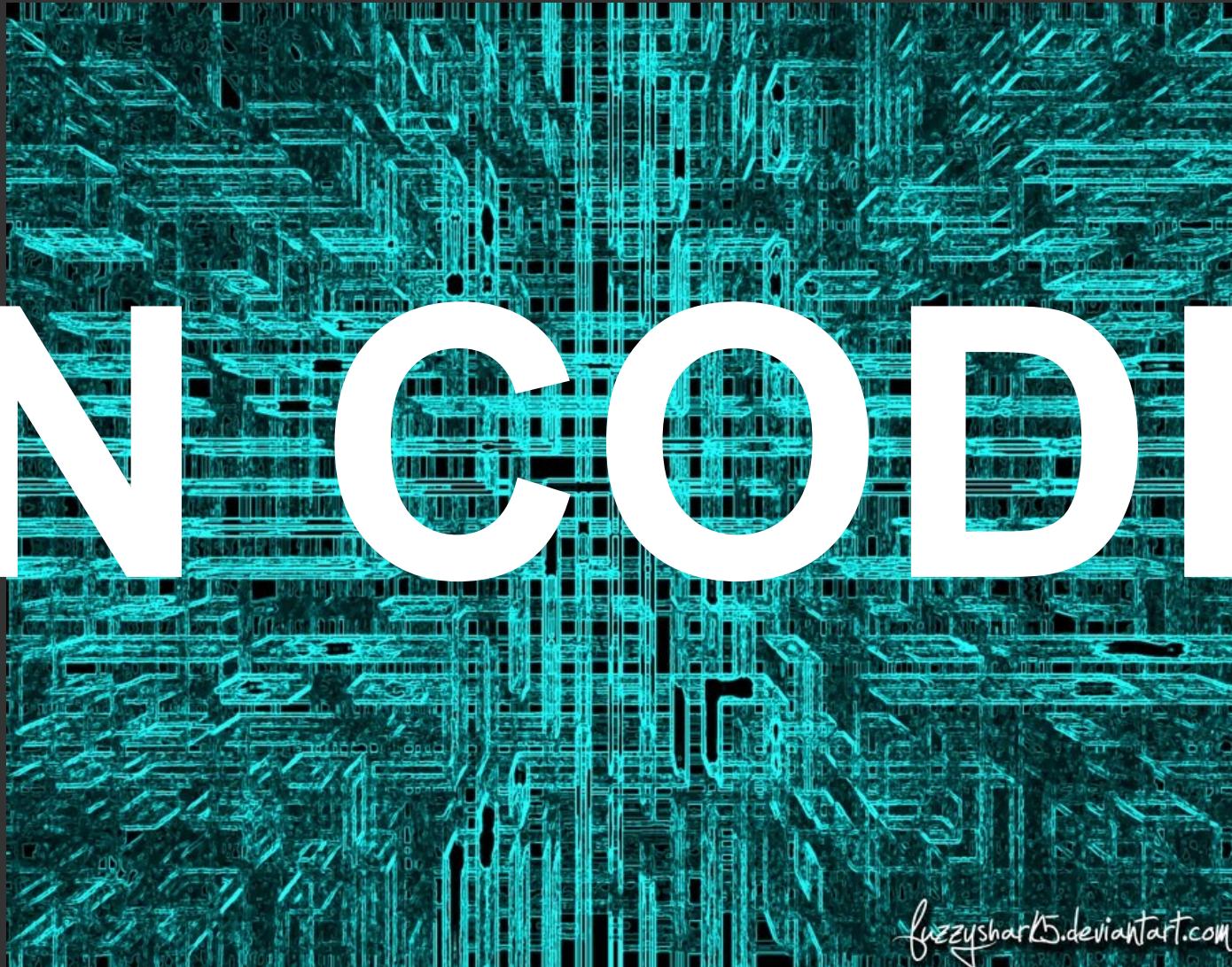


How to achieve it?



Where is a design?

IN CODE



fuzzyshark5 "Matrix-y Background"
<http://fuzzyshark5.deviantart.com/art/Matrix-y-Background-204791408>

What is a good design?

- I. Passes tests
- II. Reveals intention
- III. No duplication
- IV. Fewest elements

Symptoms of bad design



Exercises

- Problem
- Discussion in 5 person groups
- Few words on communication
- Presentation of solutions by group members
- Discussion on presented solution

Problem 1

Payment templates

Problem 1 - payment template attributes

Payment template attributes:

- template title
- addressee account number (optional)
- amount (optional)
- is international payment (mandatory)
- country (only for international)
- bank code (only for international)

Problem 1 - goal

```
void createTemplate(long userId,  
String title,  
String addresseeAccountNumber,  
Decimal amount,  
boolean internationalPayment,  
String countryCode,  
String bankCode)  
  
List<?> listTemplates(long userId)  
  
Payment createPaymentFromTemplate(long  
templateId)
```

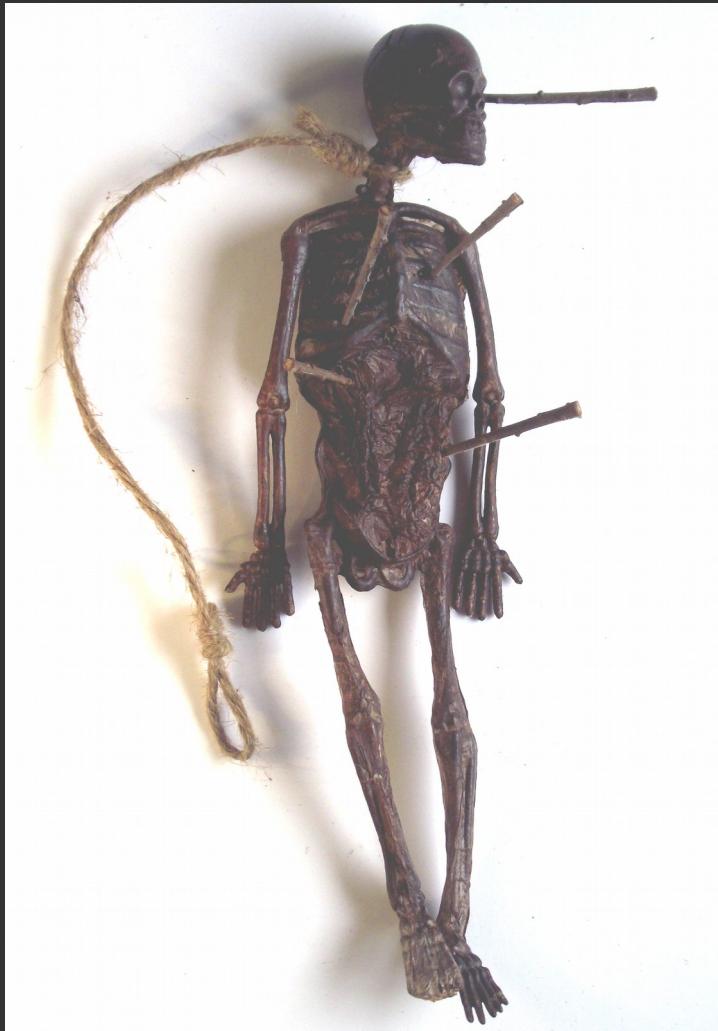
Intentionally empty slide

Why we are so hopeless at communicating?



<http://iliketowastemytime.com/epic-construction-fails>

Curse of Knowledge



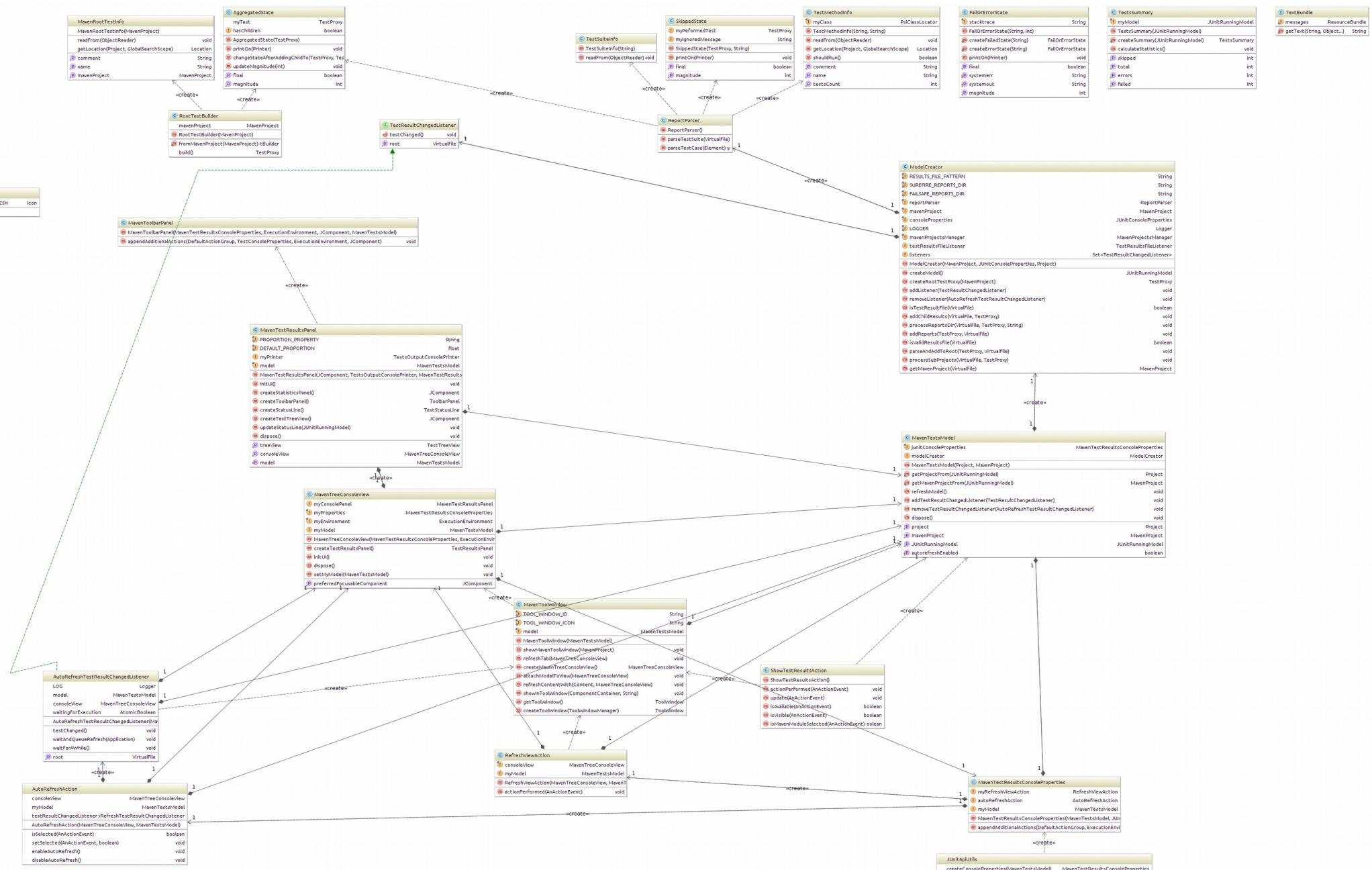
Malcolm Lidbury (aka Pinkpasty)
https://commons.wikimedia.org/wiki/File:Witch_Doll_Curse.jpg

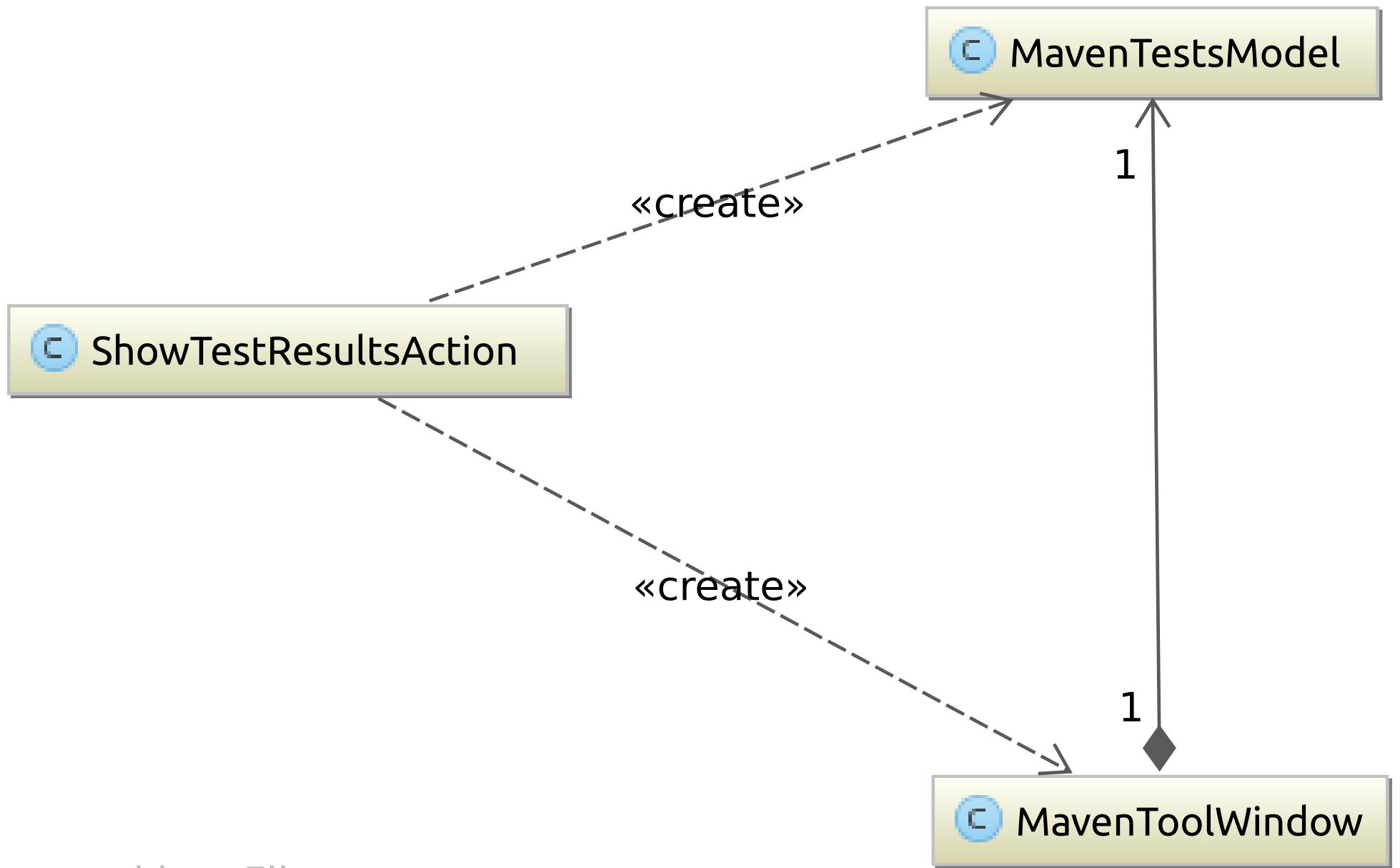
Simple message

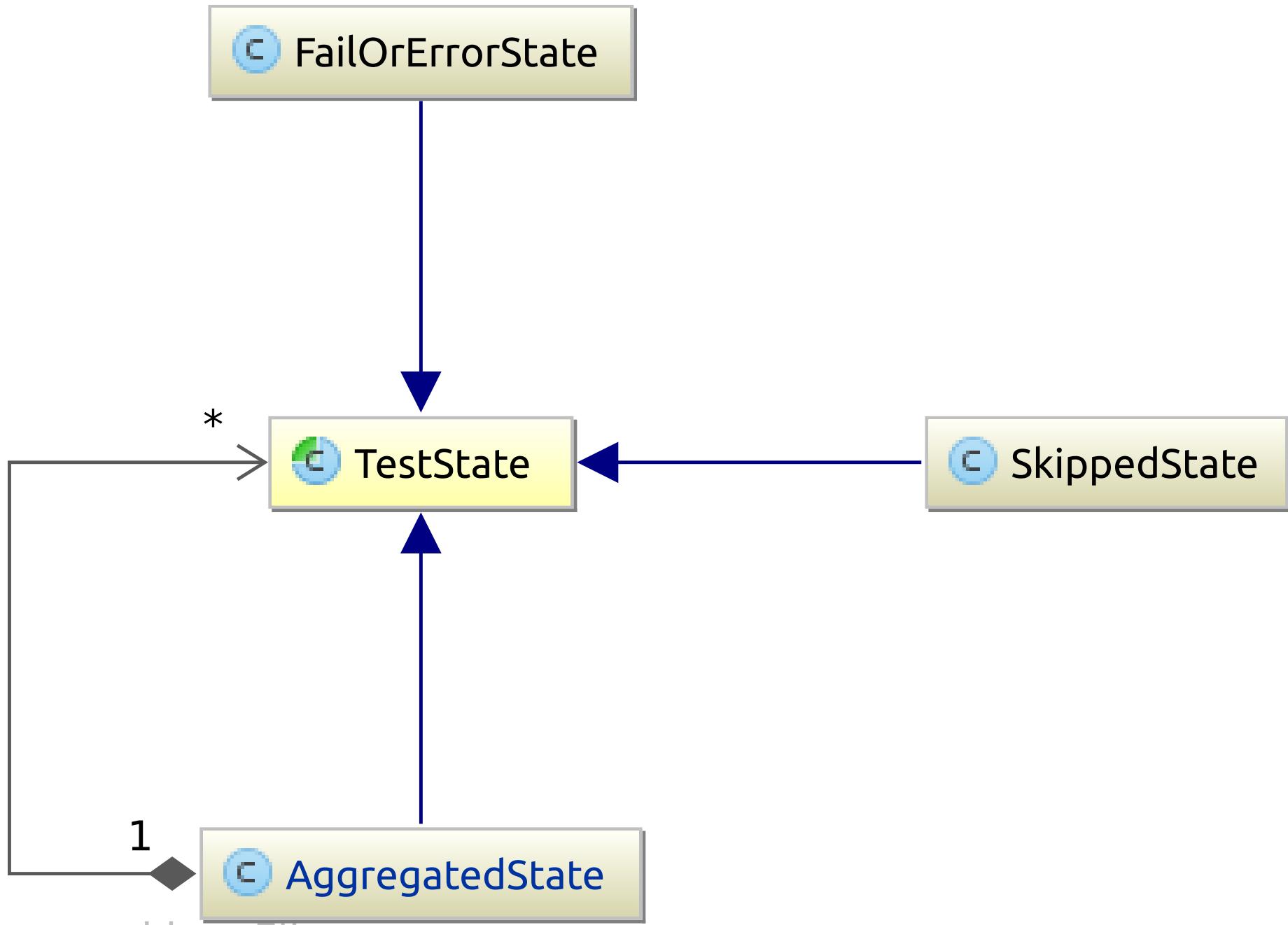


Søren Niedziella "The Count Limited Edition Medieval War Sword"
https://commons.wikimedia.org/wiki/File:Albion_Count_Medieval_Sword_13_%287310805628%29.jpg

$$7 + 2$$







Problem 1 - Solutions

Model real world



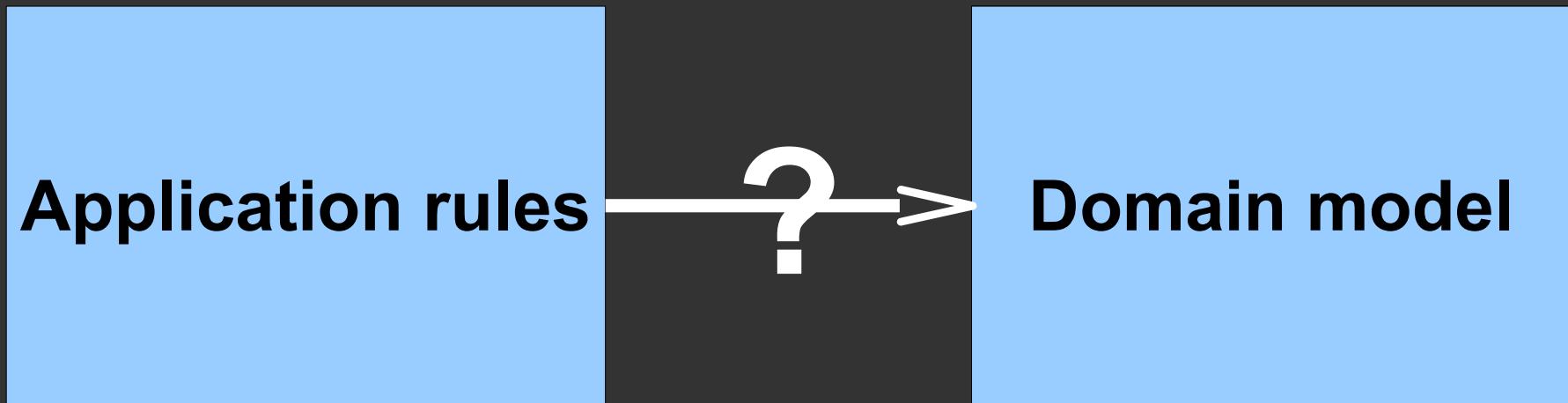
Kenneth Lu "Old Globe"
<https://www.flickr.com/photos/toasty/1540997910/>

Why to separate?



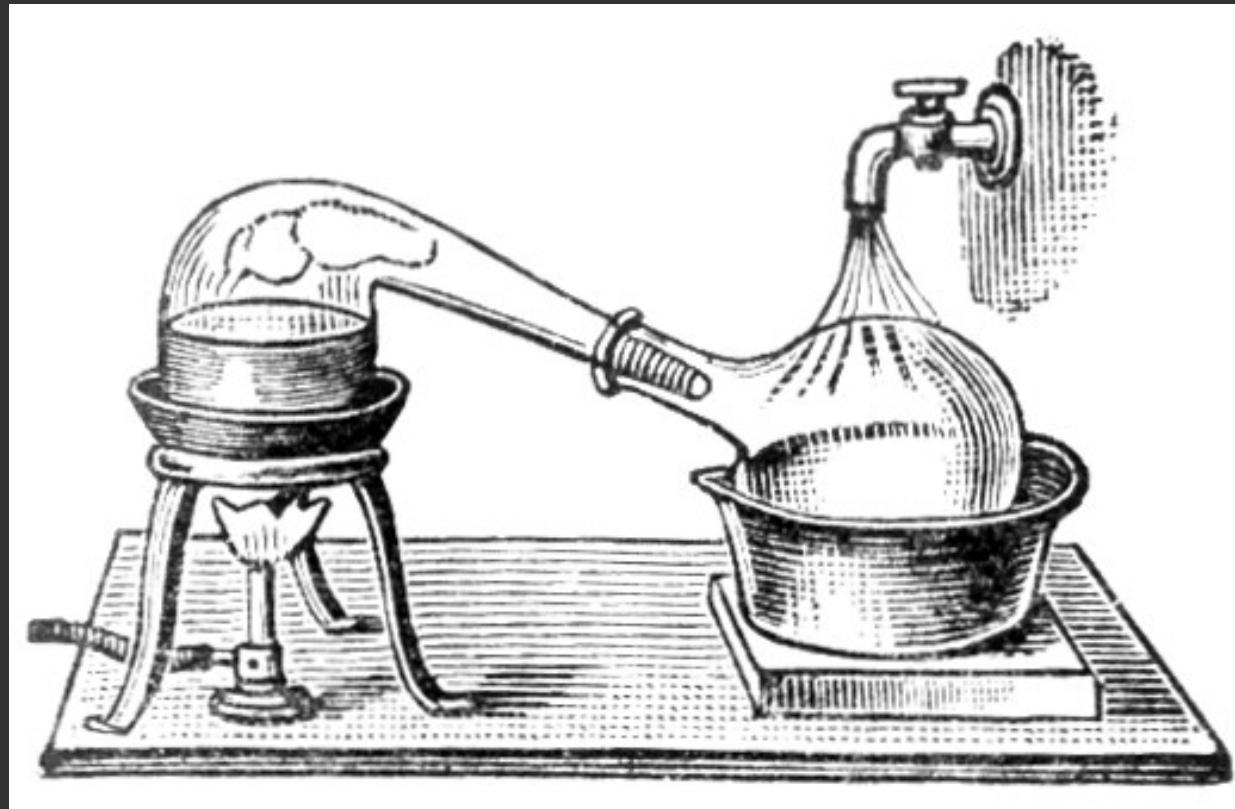
Dezidor "Čeština: Lotyšské etnografické muzeum v přírodě"
[https://en.wikipedia.org/wiki/File:Lotyšské_etnografické_muzeum_v_přírodě_\(91\).jpg](https://en.wikipedia.org/wiki/File:Lotyšské_etnografické_muzeum_v_přírodě_(91).jpg)

Dependency direction?



Mind your language

Milling, Mashing, Fermentation, Distillation,
Ageing, Blending



Distillation by Alembic 1910
https://en.wikipedia.org/wiki/File:Distillation_by_Retort.png

Problem 2

Bank accounts creation

Problem 2 - kinds of bank accounts

- Local account:
 - Created by bank administrators
 - attributes: name, IBAN, BIC, isSavingsAccount (all required)
- Addressee account:
 - Created by bank customers
 - attributes: name (optional), IBAN, BIC (both mandatory)

Problem 2 - BIC & IBAN

- BIC: BREXPLPWKRA
- IBAN (N – digit, X – character or digit)
 - Poland
PLNN NNNN NNNN NNNN NNNN NNNN NNNN
 - Germany
DENN NNNN NNNN NNNN NNNN NN
 - France
FRNN NNNN NNNN NNXX XXXX XXXX XNN

Problem 2 - BIC & IBAN rules

- Bank has database of known BICs (but not all)
- IBAN and BIC country might not match → show warning

Problem 2 - Task

```
CreationResponse createLocalAccount(  
    String name, String bic, String iban,  
    boolean isSavingsAccount)  
  
CreationResponse createAddresseeAccount(  
    String name, String bic, String iban)  
  
public class CreationResponse {  
    boolean success;  
    List<String> errorKeys;  
    boolean isBicIbanCountryMismatch;  
}
```

Problem 2 - What to expect?

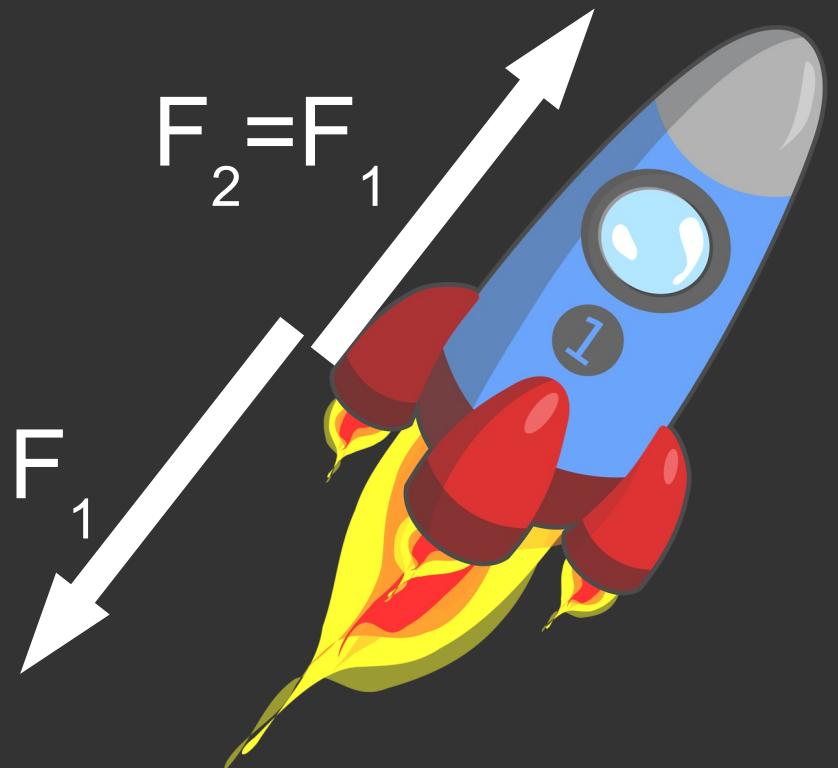
- Support for new countries
- Some banks might not want to allow for IBAN/BIC country mismatch

Intentionally empty slide

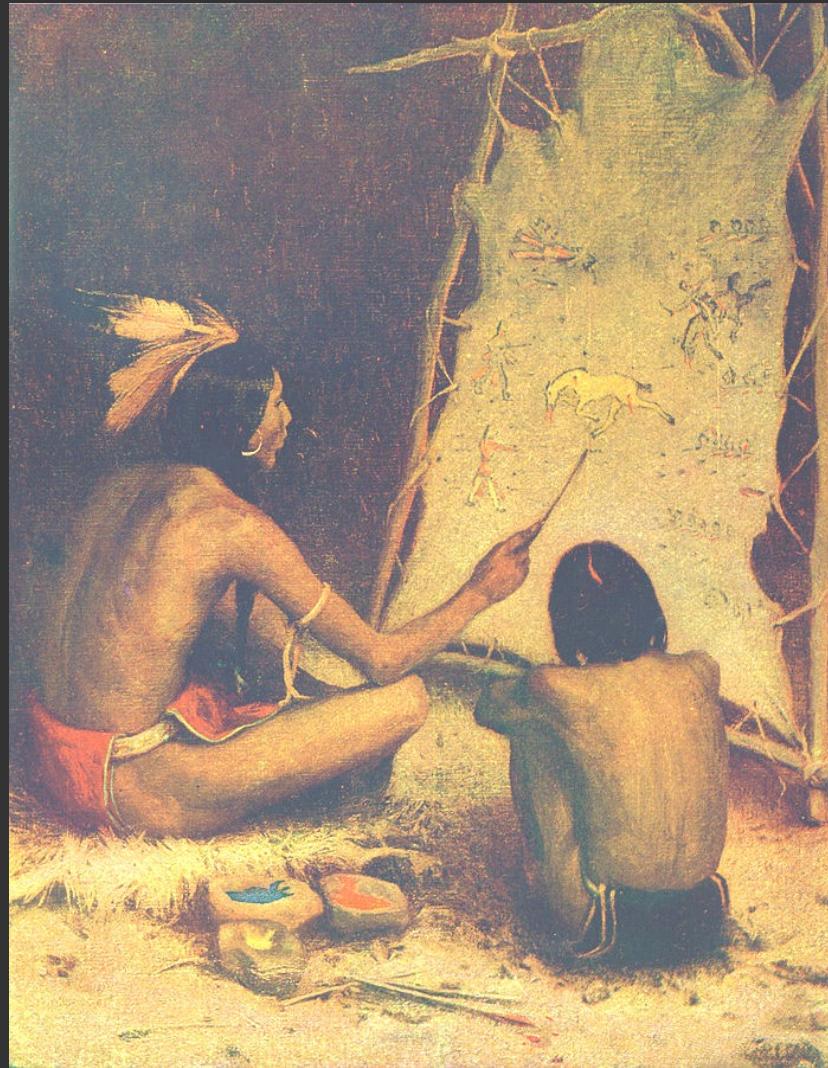
Concrete message

$F_2 = F_1$

VS



Storytelling



E. Irving Couse
https://en.wikipedia.org/wiki/Storytelling#/media/File:The_Historian_%28The_How_and_Why_Library%29.jpg

Problem 2 - solutions

BankAccount

```
transferMoneyTo (  
    anotherAccount, amount)  
  
isValid()  
  
save()  
  
delete()
```

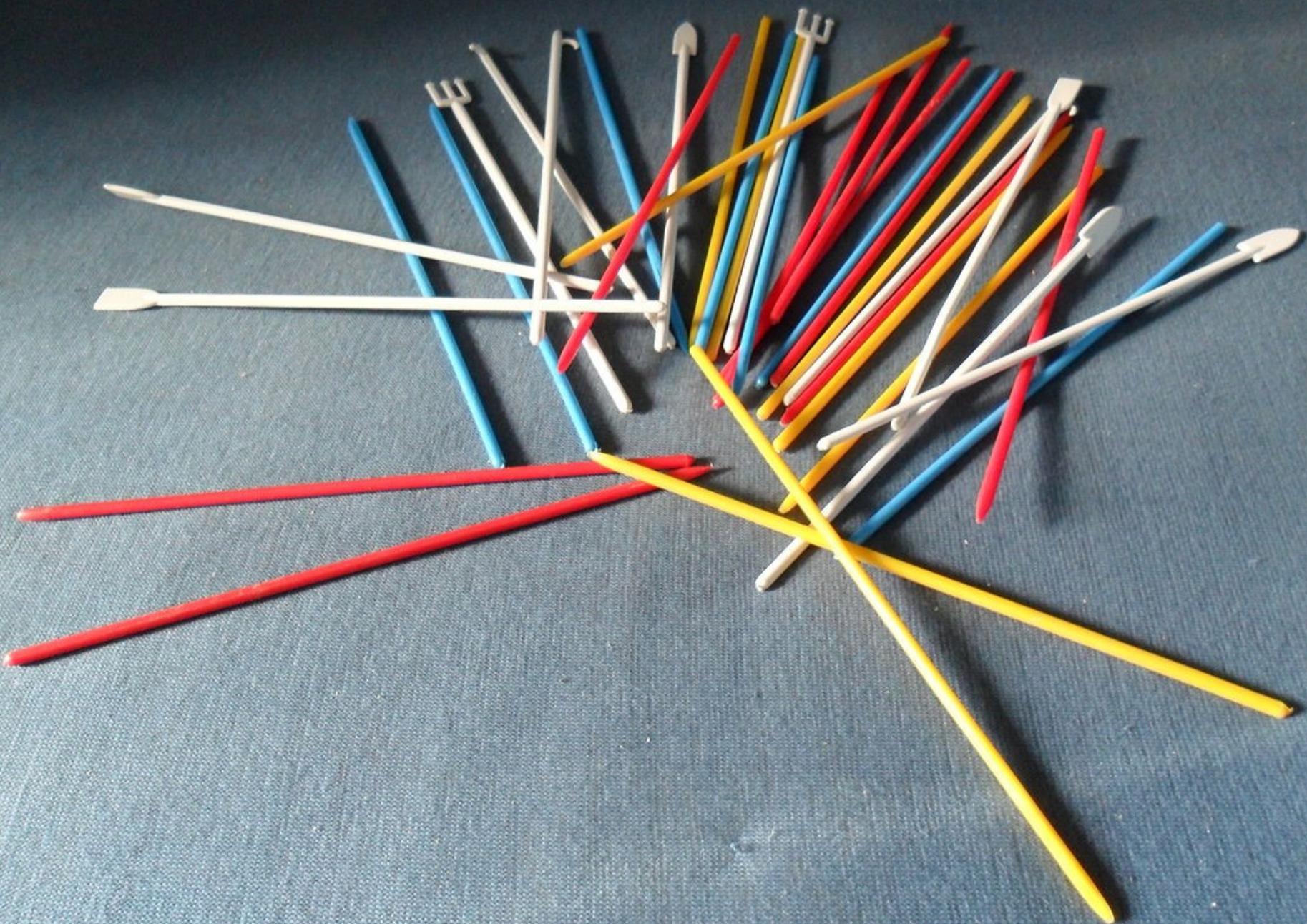
BankAccount

transferMoneyTo (
anotherAccount, amount)

isValid()

save()

delete()



Olos88 "Bierki"
<https://pl.wikipedia.org/wiki/Bierki#/media/File:Bierki.JPG>

Responsibility = Users



SP-STUDIO.DE



SP-STUDIO.DE



SP-STUDIO.DE



SP-STUDIO.DE

Problem 3

Mass payments

Problem 3 - Mass payments

User uses CSV file (e.g. exported from external application) to create multiple payments

Problem 3

System creates payments by combining data from:

- CSV file
- payment template specified by user (optional)
- addressee accounts table (matched by addressee account)

Problem 3 - example 1

Payment template

- title: “Instalment payment”
- addressee: “Example Bank Inc.”
- addressee account: “SA03 8000 0000
6080 1016 7519”

| Amount | Execution date |
|--------|----------------|
| 444 | 2015-08-28 |
| 442 | 2015-09-28 |
| ... | ... |

Problem 3 - example 2

Payment template

- title: “Salary”
- amount: 1286,16 zł

| Addressee account | Execution date |
|--------------------|----------------|
| PL 1... | 2015-08-28 |
| PL 2... | 2015-08-28 |
| ... | ... |

Intentionally empty slide



Gabe Palmer “banana in my ear”
<https://www.flickr.com/photos/gp3301/4134094086>

~~You are wrong!~~

assert !mistake;

Problem 3 - solutions

Good design is
NOT rocket
science

