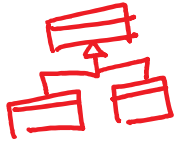
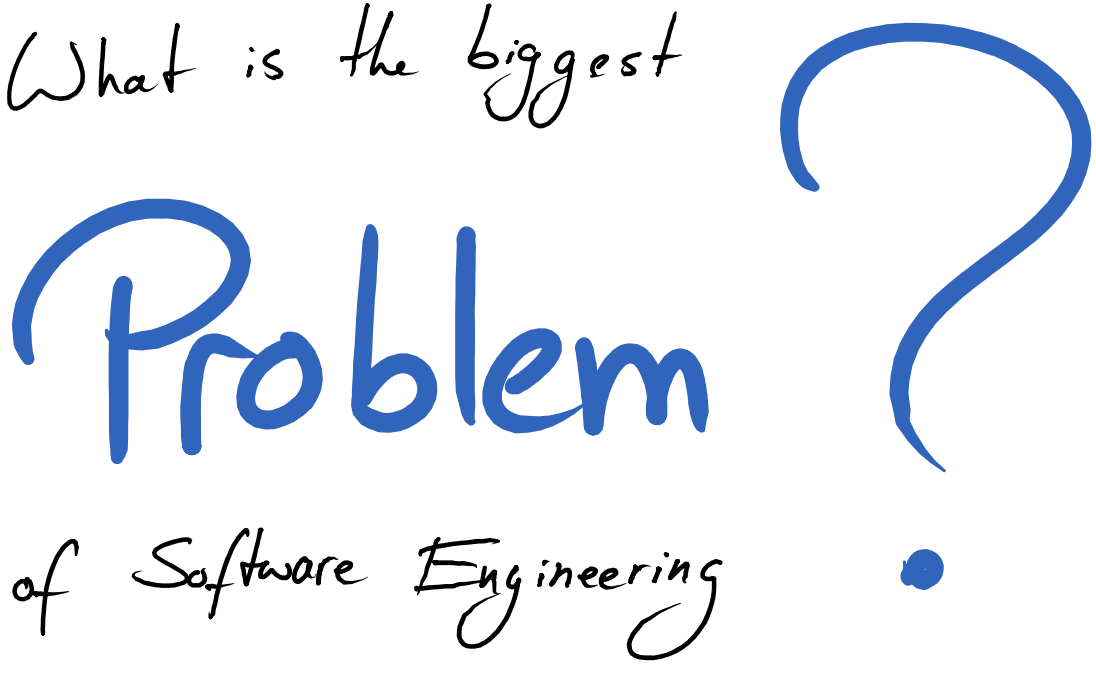
@rtens_

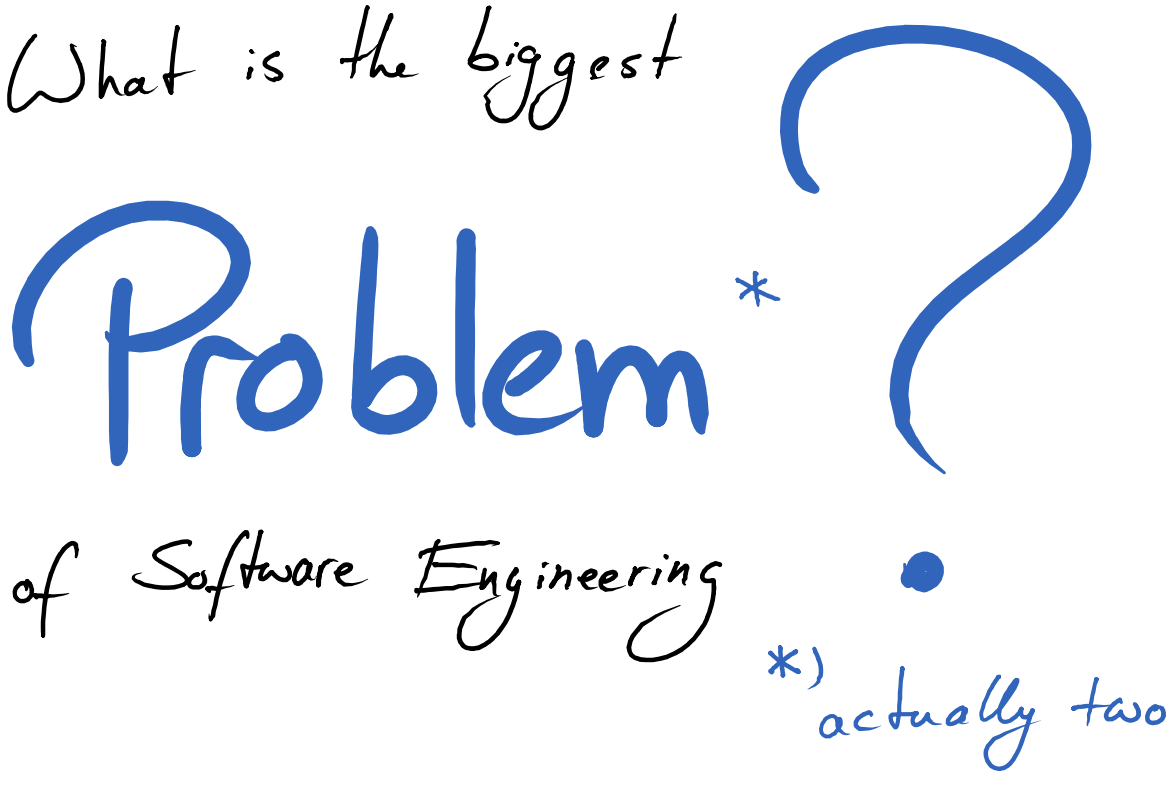
Rapid prototyping with Domain-Driven Design



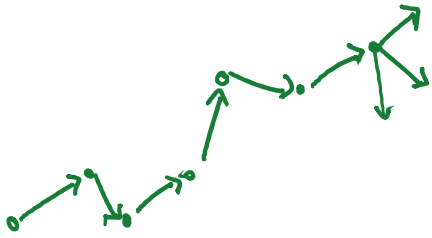
Nikolas.M@rtens.org

IPC
Berlin 2017

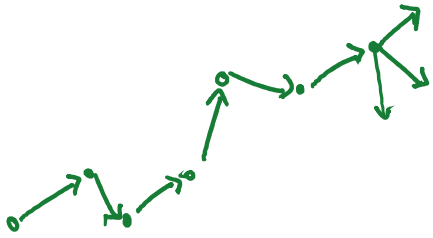

What is the biggest
Problem
?
of Software Engineering


What is the biggest
Problem*
?
of Software Engineering
*) actually two

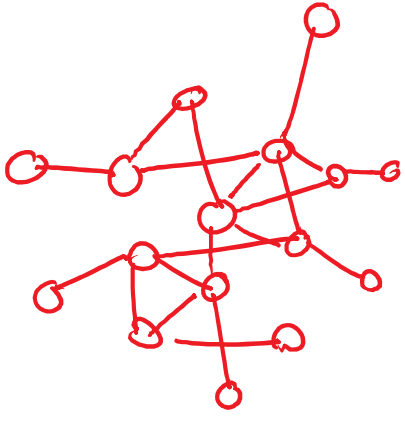
Uncertainty



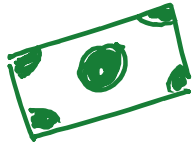
Uncertainty

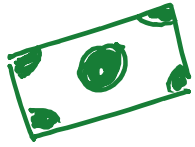


Complexity

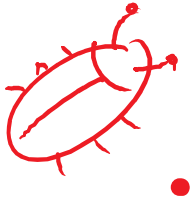


Doing the right thing

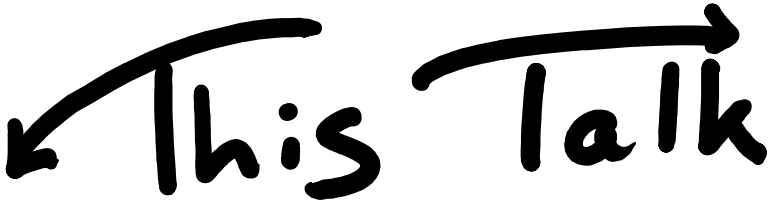




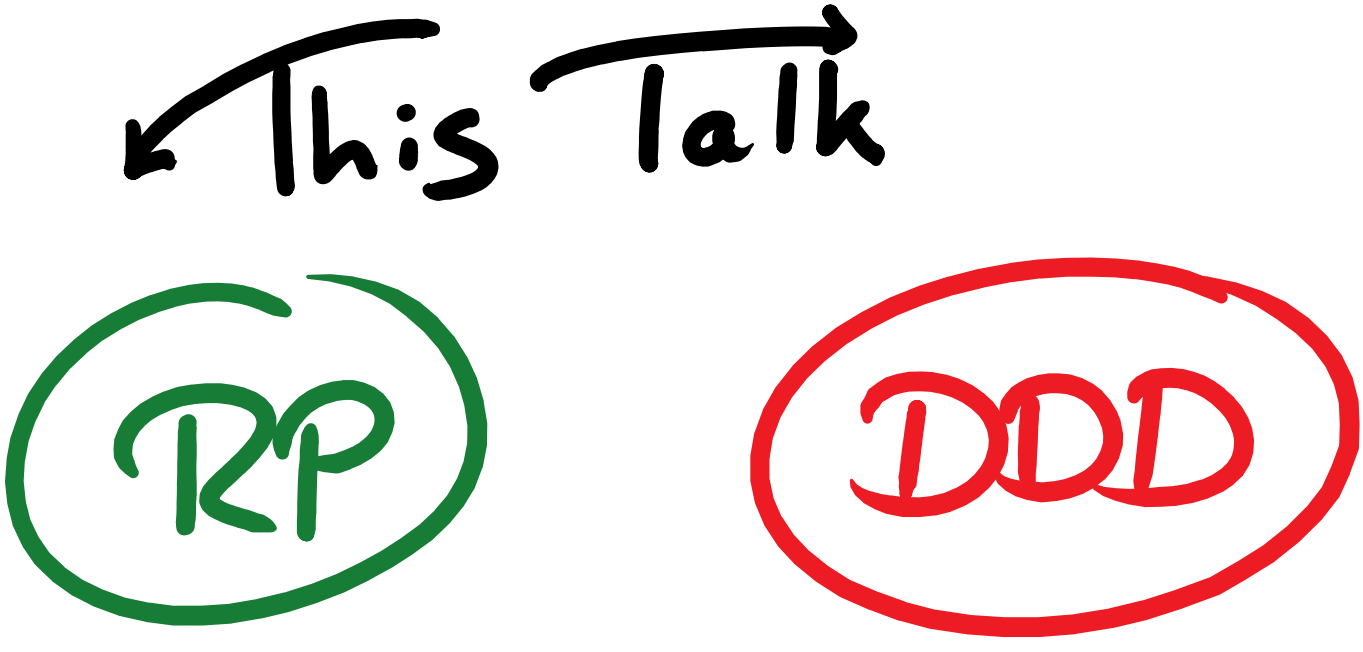
Doing the right thing



Doing the thing right


This Talk

This Talk
RP


This Talk
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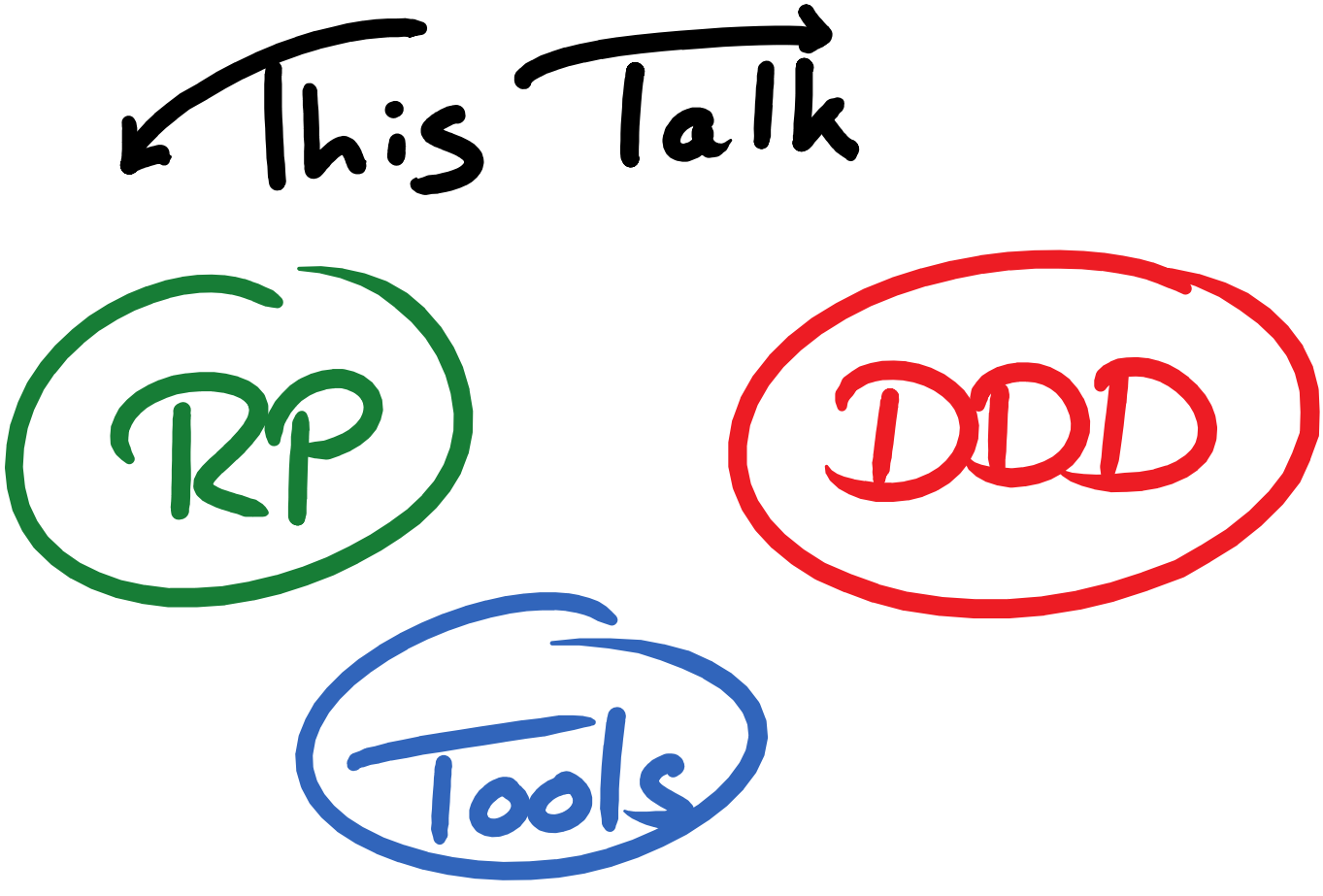
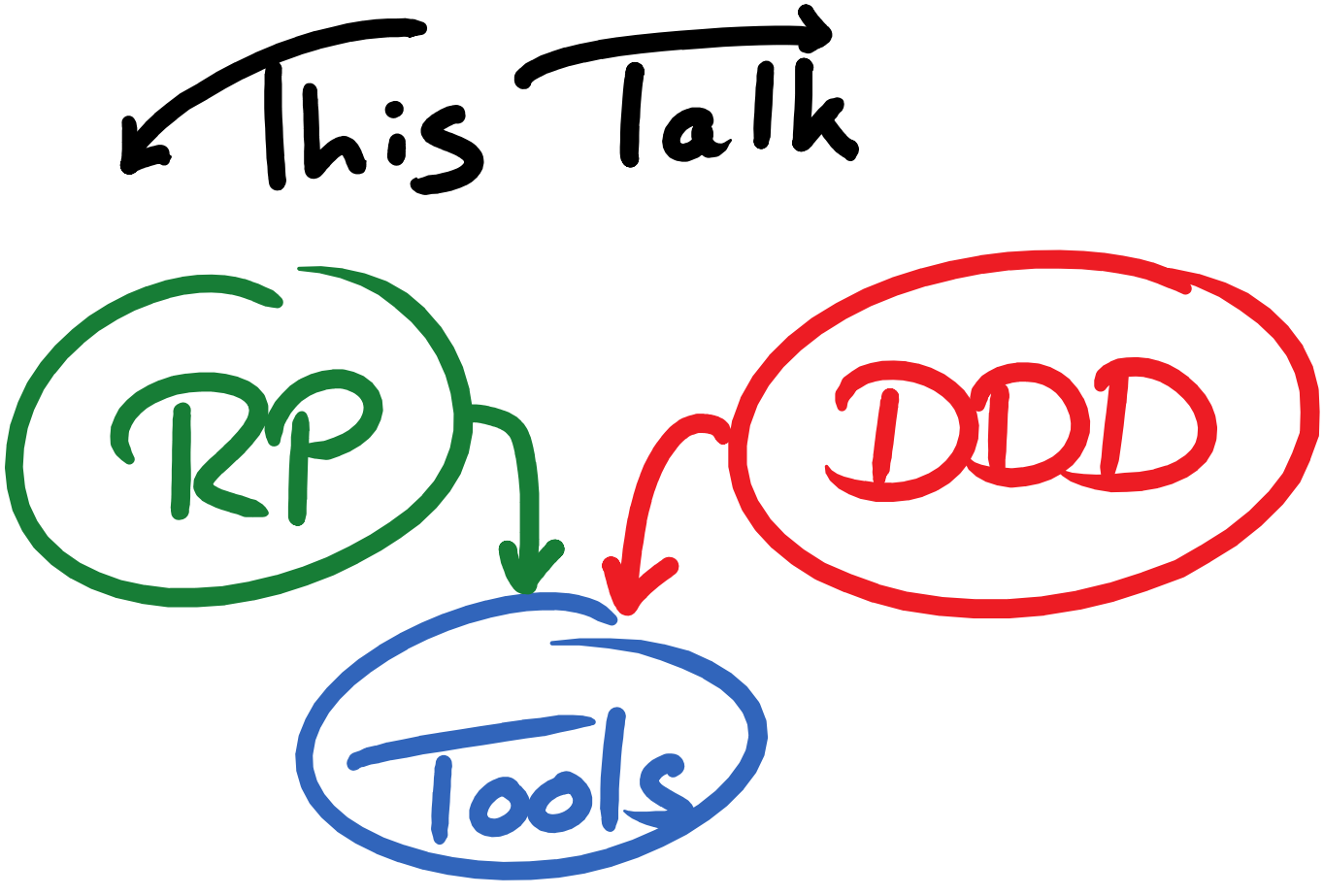
DDD


This Talk
RP
DDD
Tools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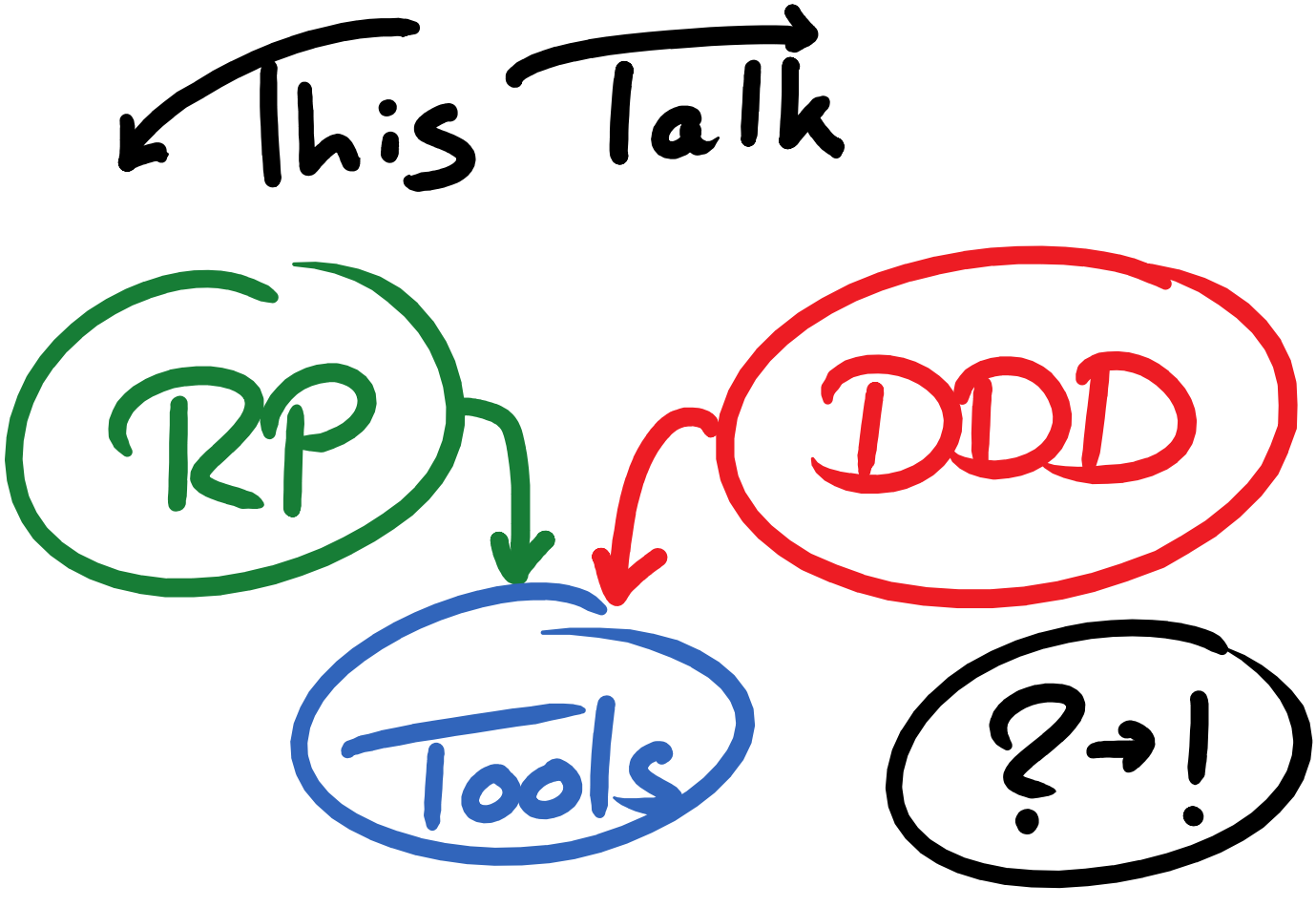
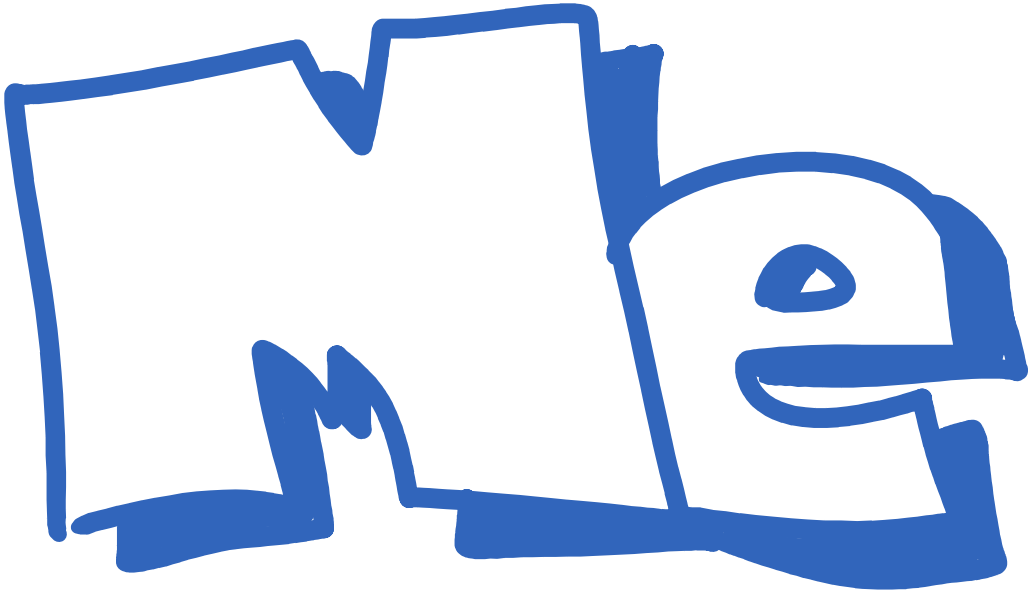
DDD
Tools


This Talk
RP
DDD
Tools
?→!



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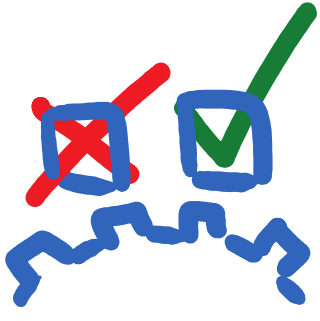
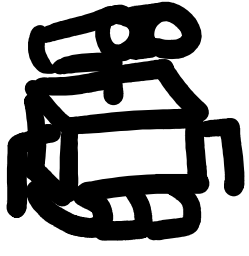
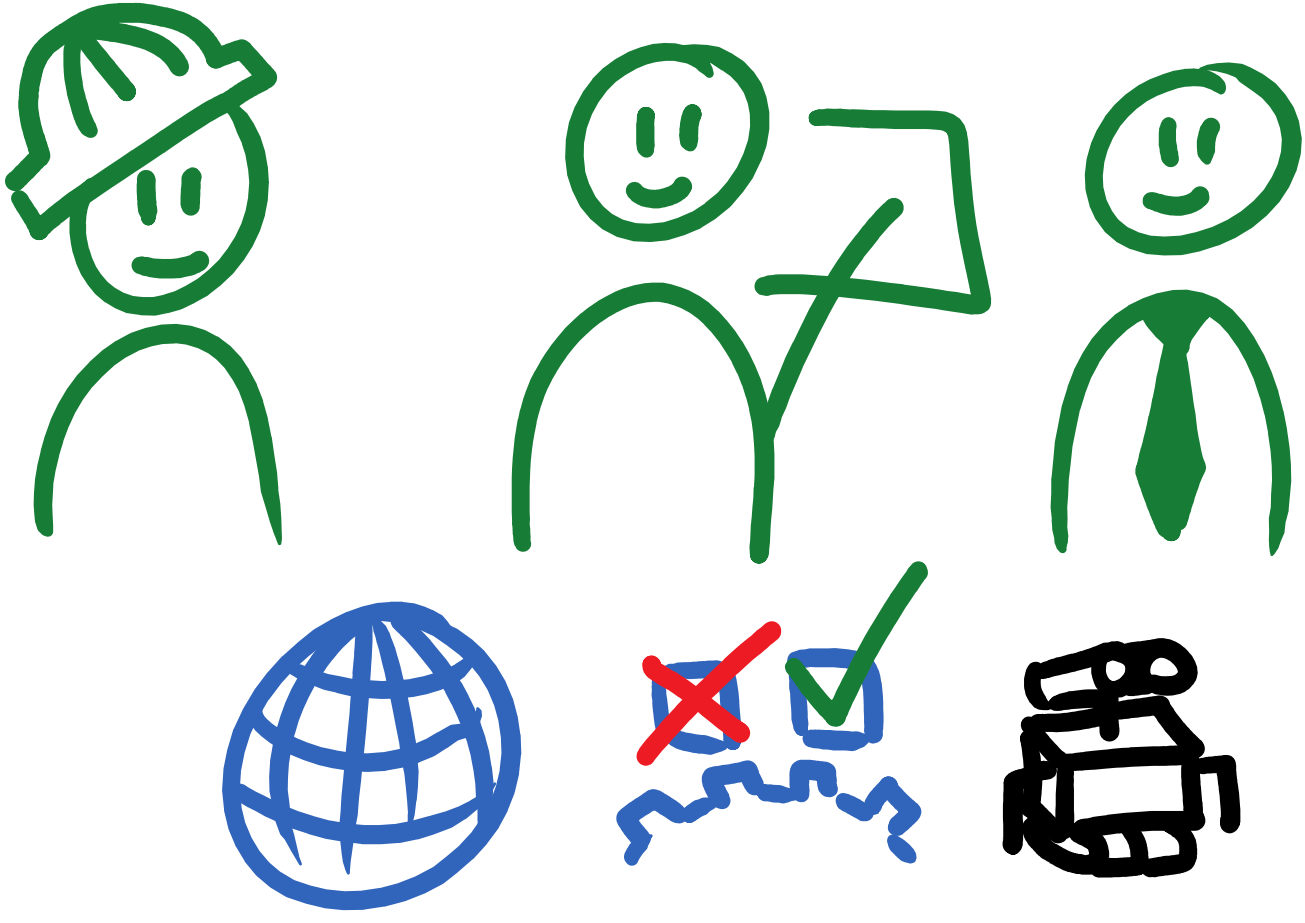


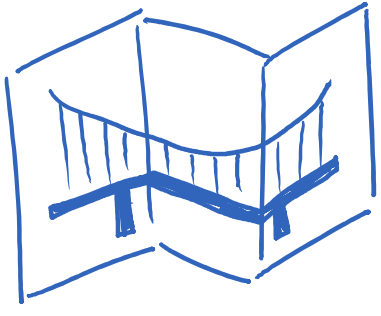




uncertainty

certainty

certainty



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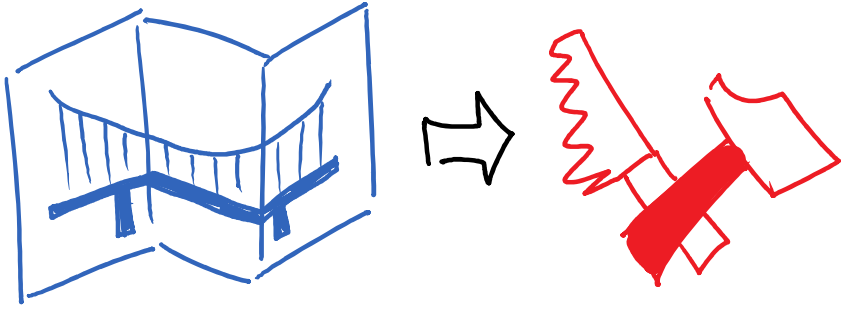

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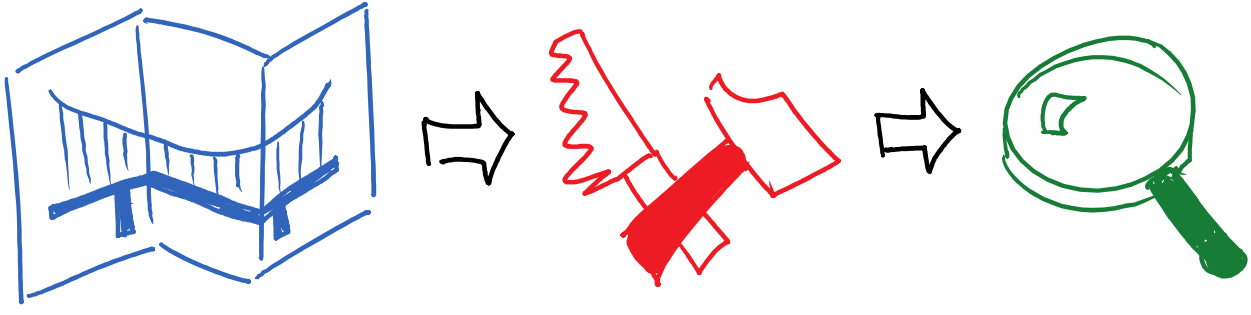
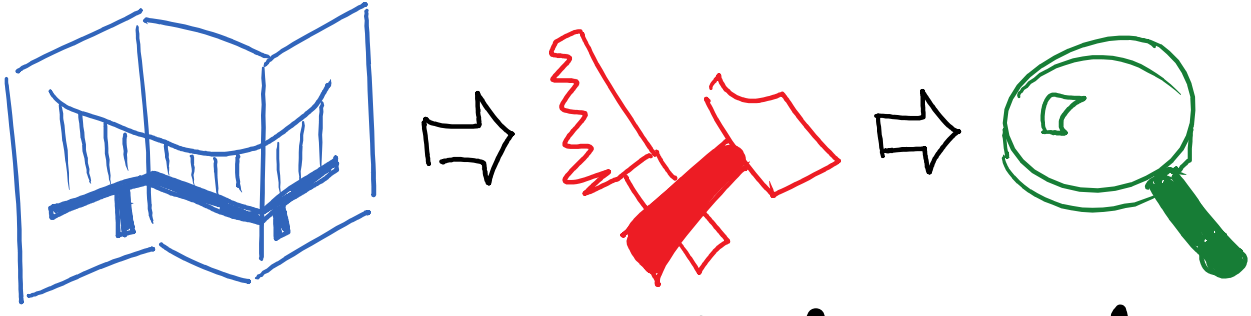


Construction



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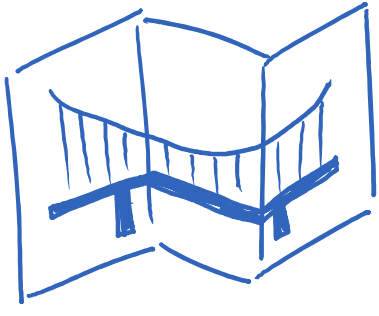
Software



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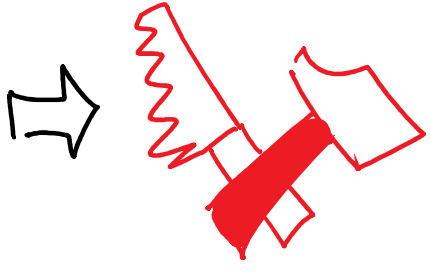
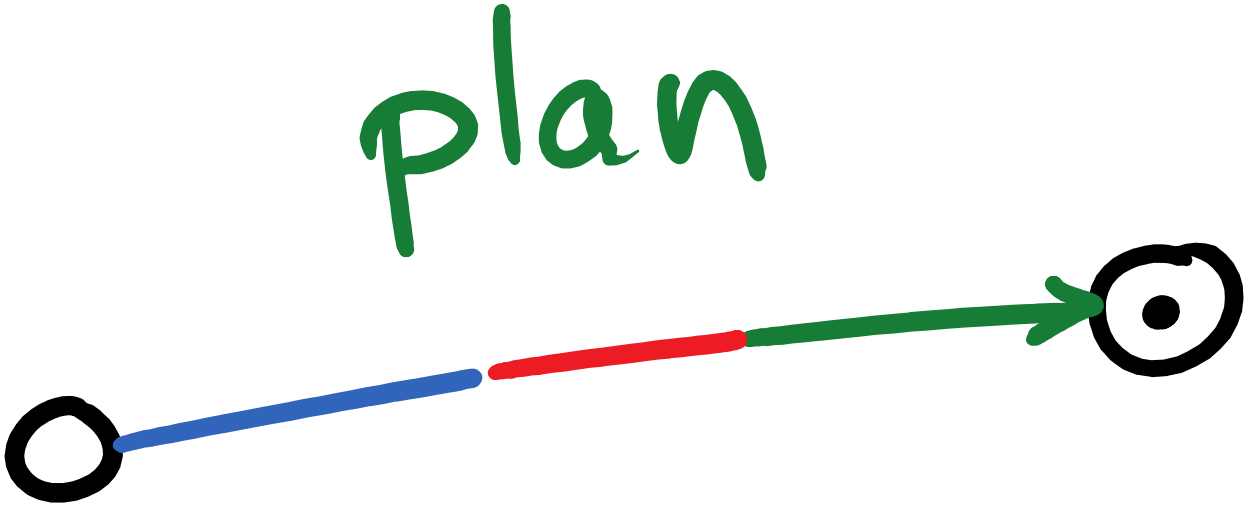


free

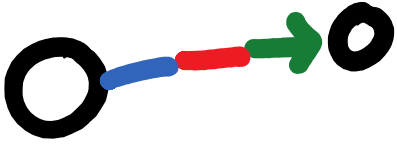
$$

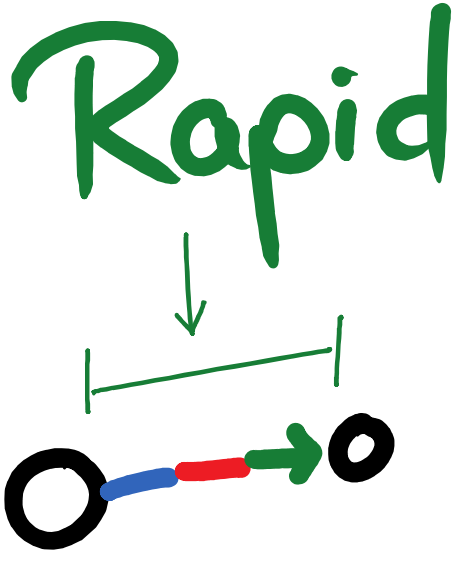
plan


plan

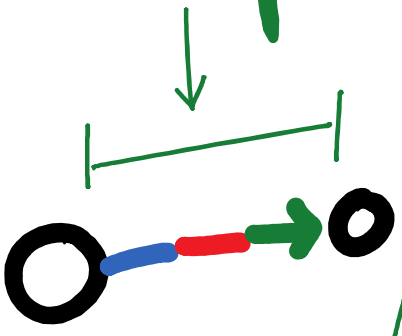
adapt

adapt




Rapid

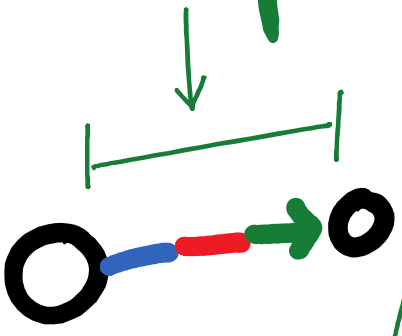
Rapid



Prototype

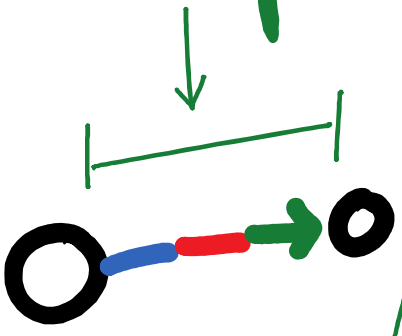
Rapid

Agile



Prototype

Rapid



Prototype

Agile

Lean

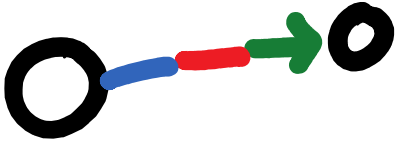
Scrum

Crystal

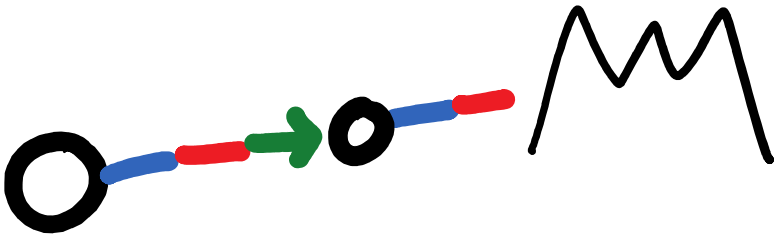
XP

...

adapt



adapt



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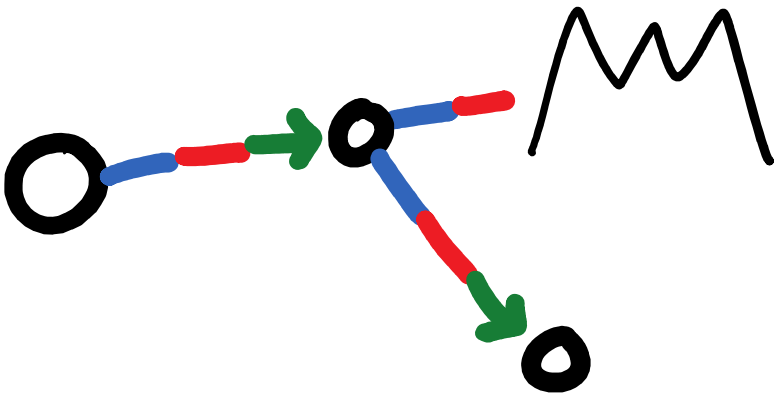

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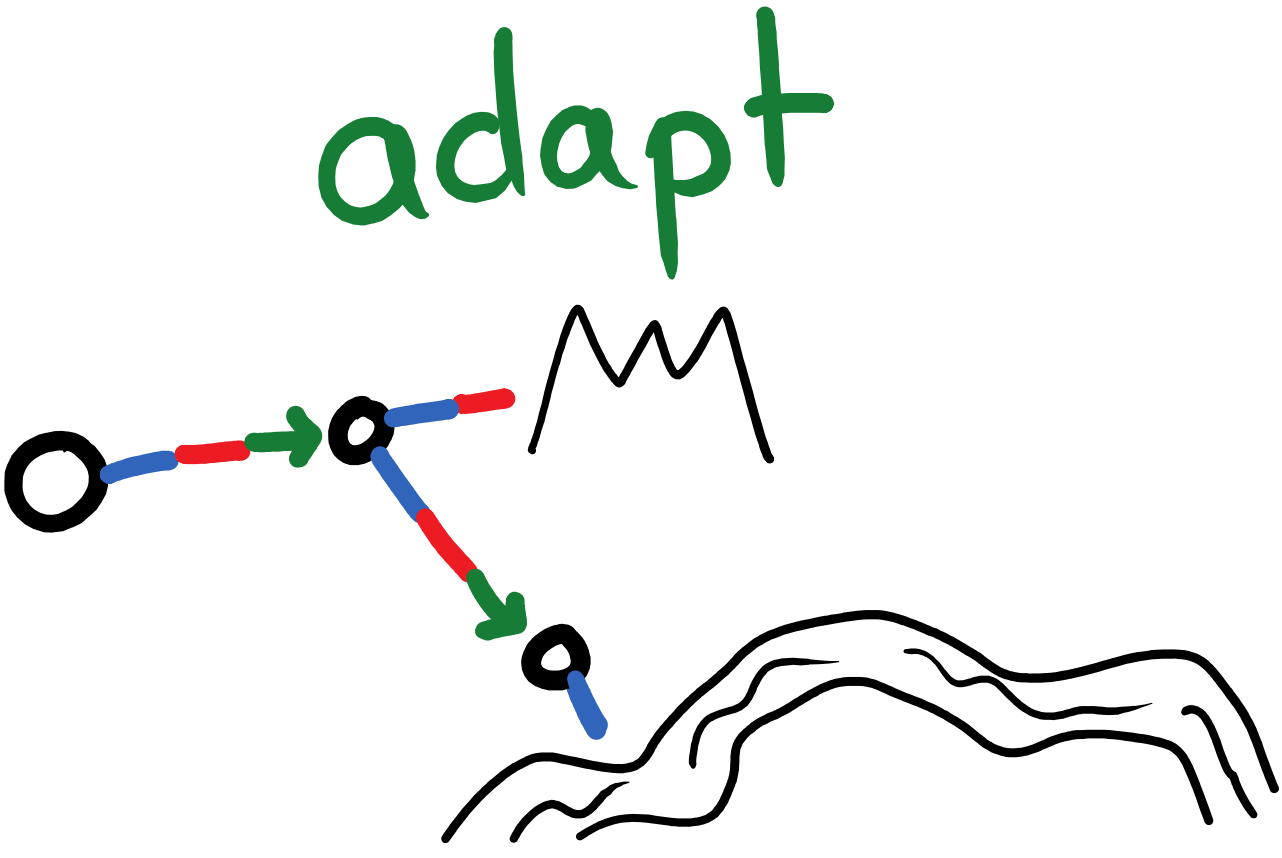

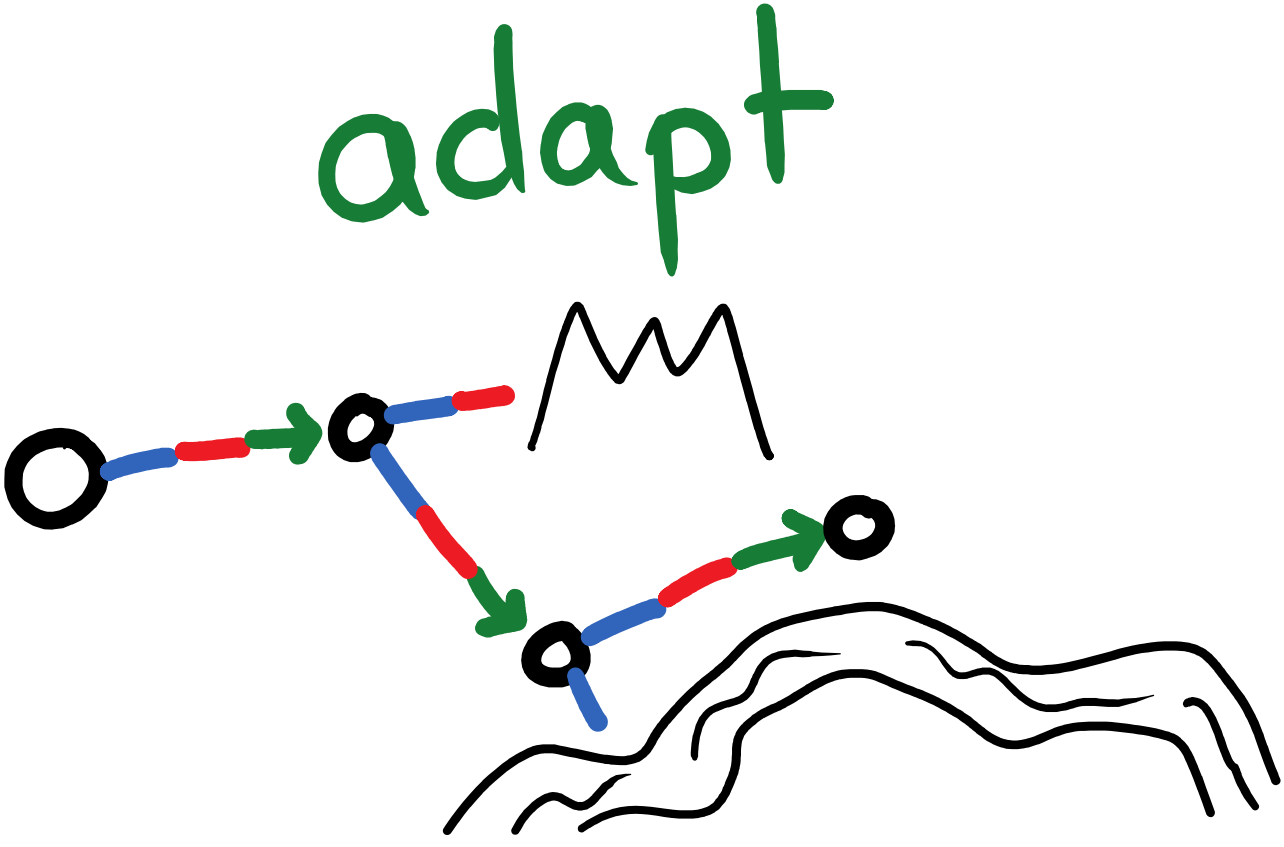
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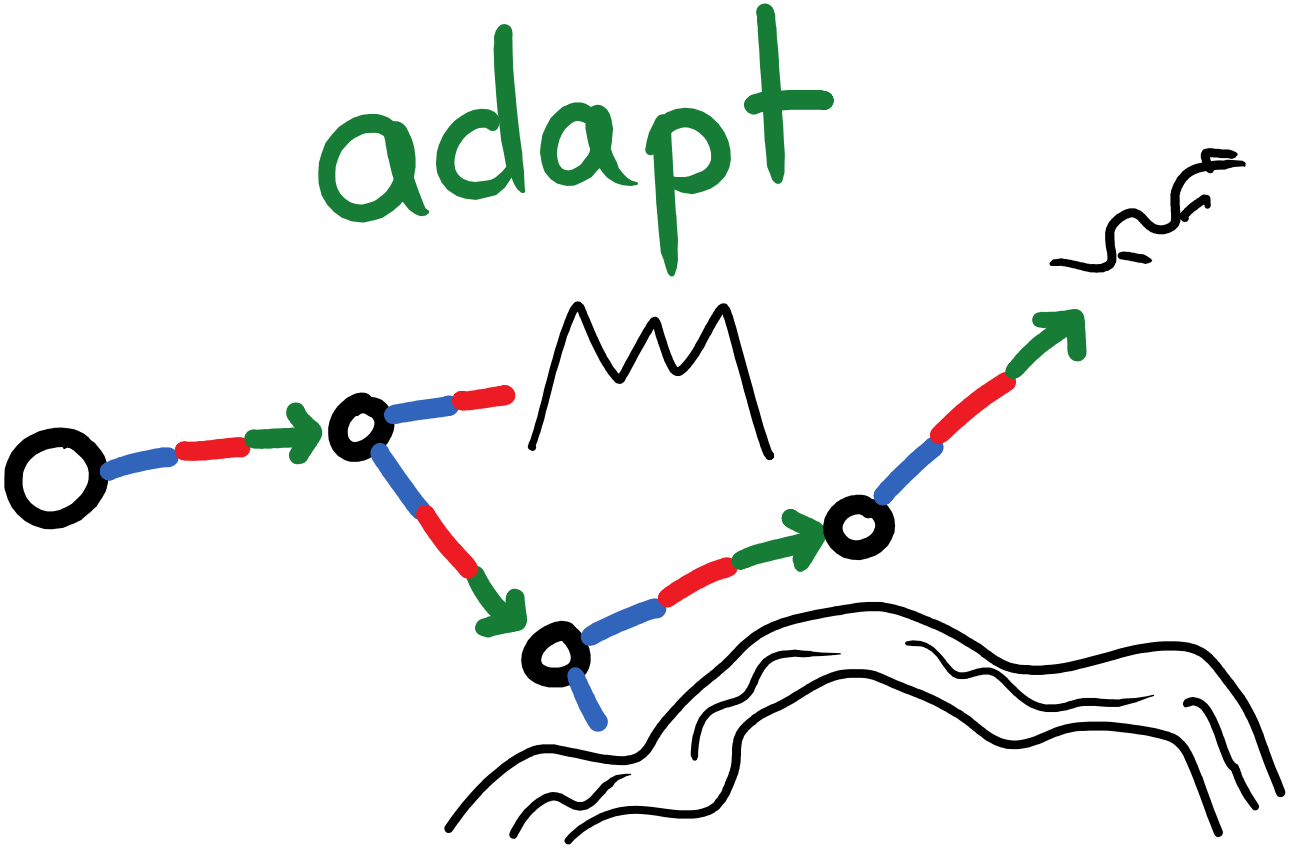
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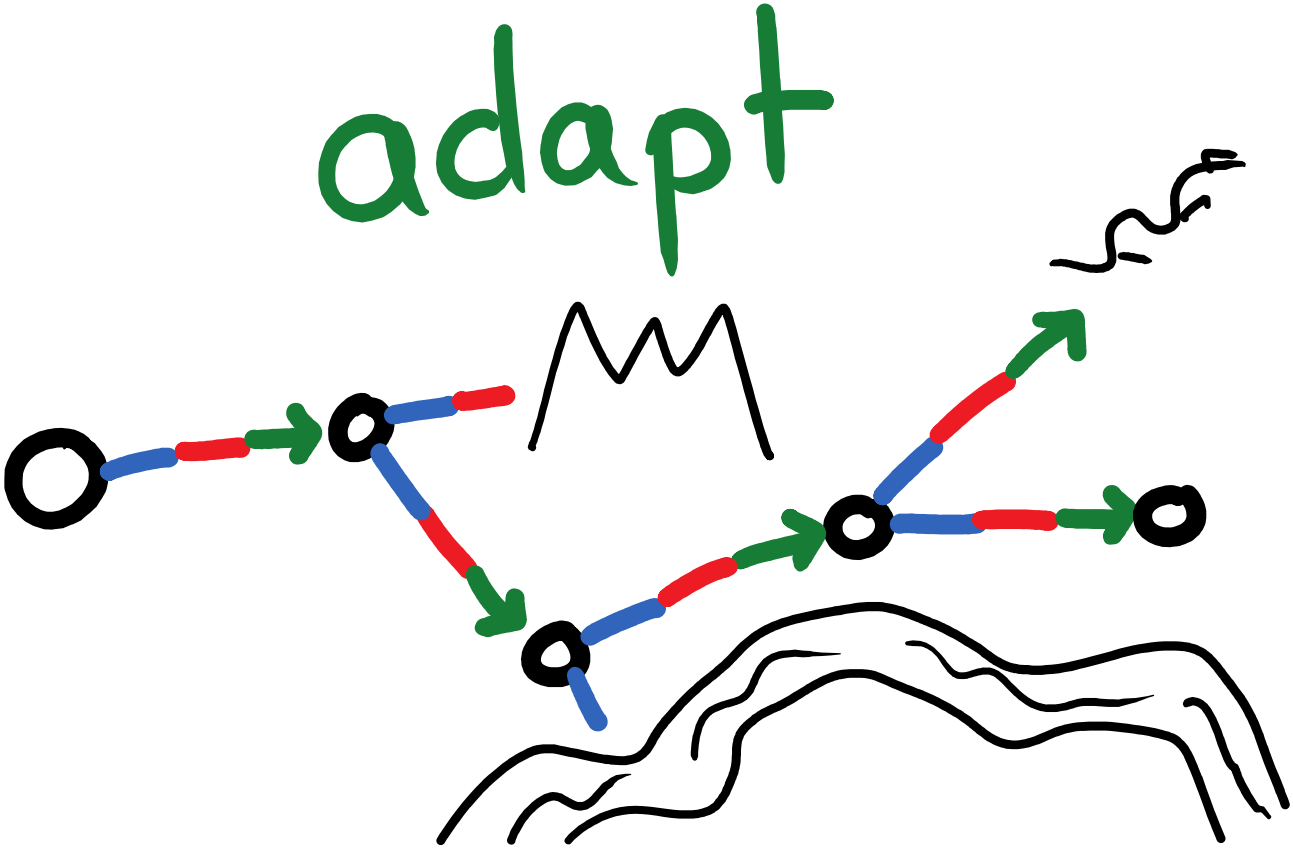
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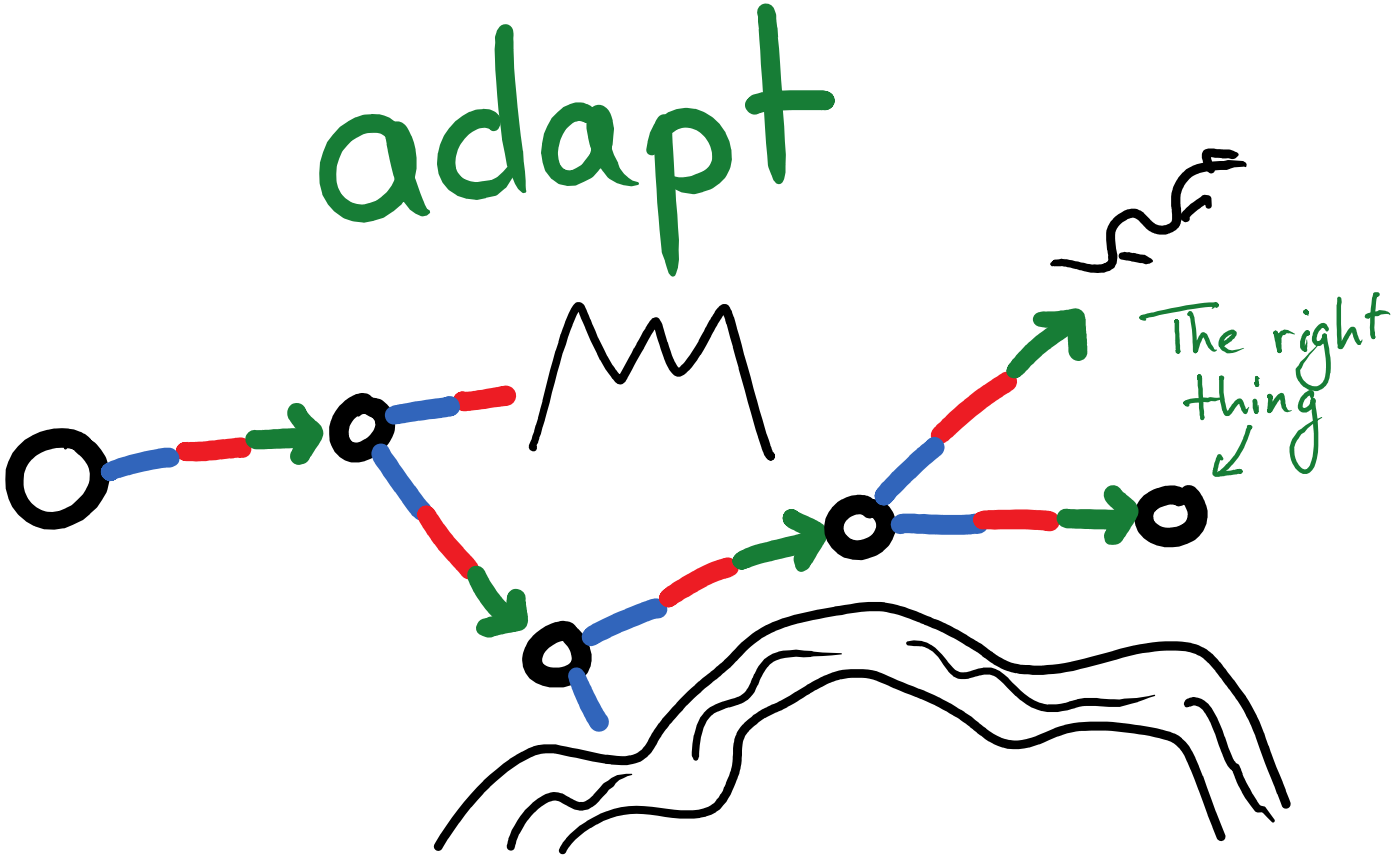
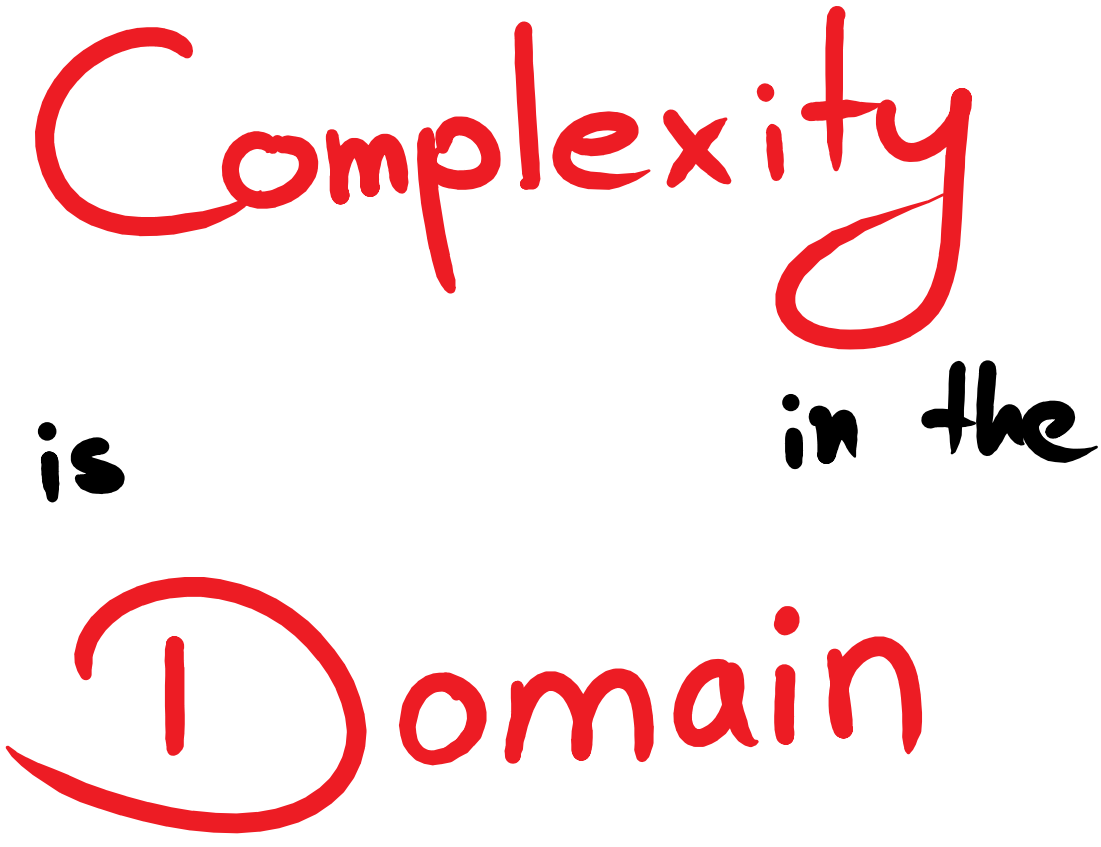
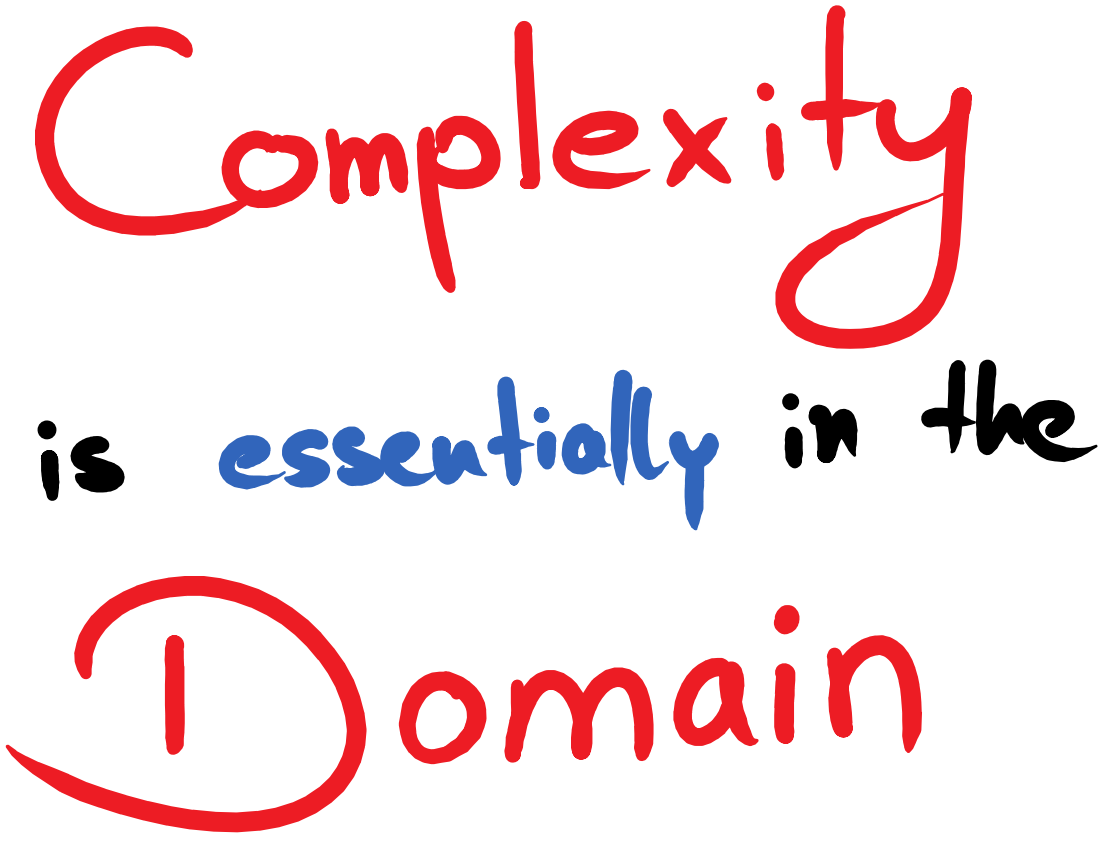
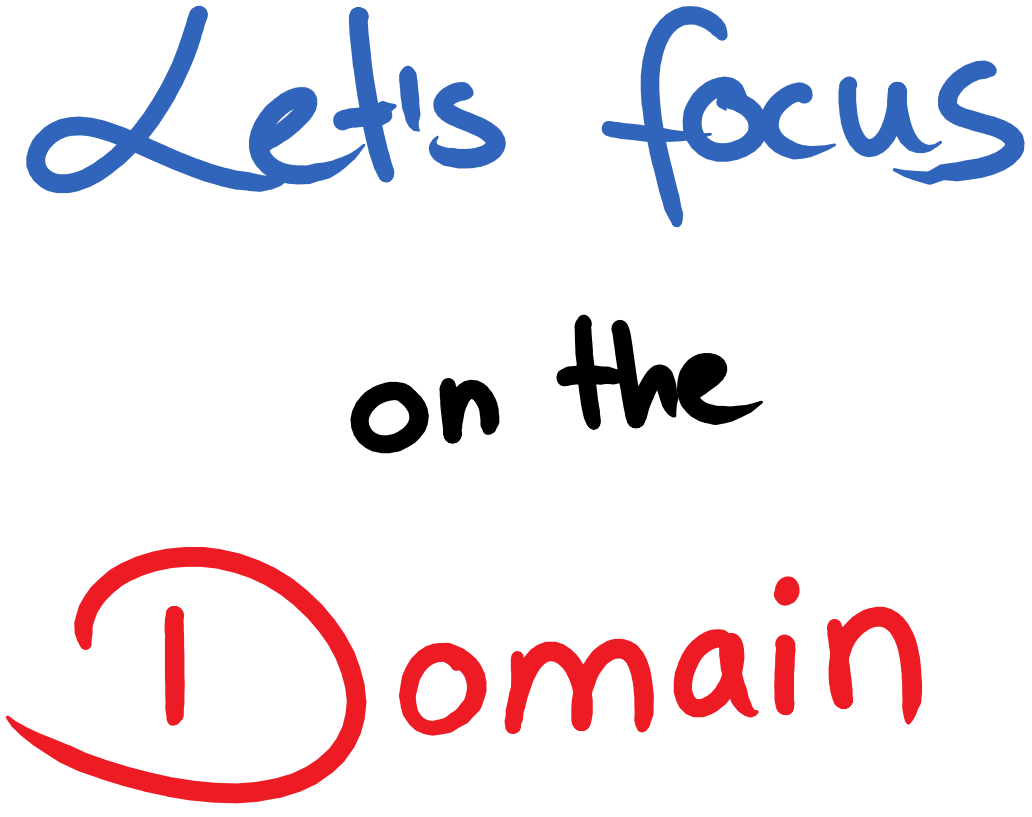

adapt
The right thing

Complexity

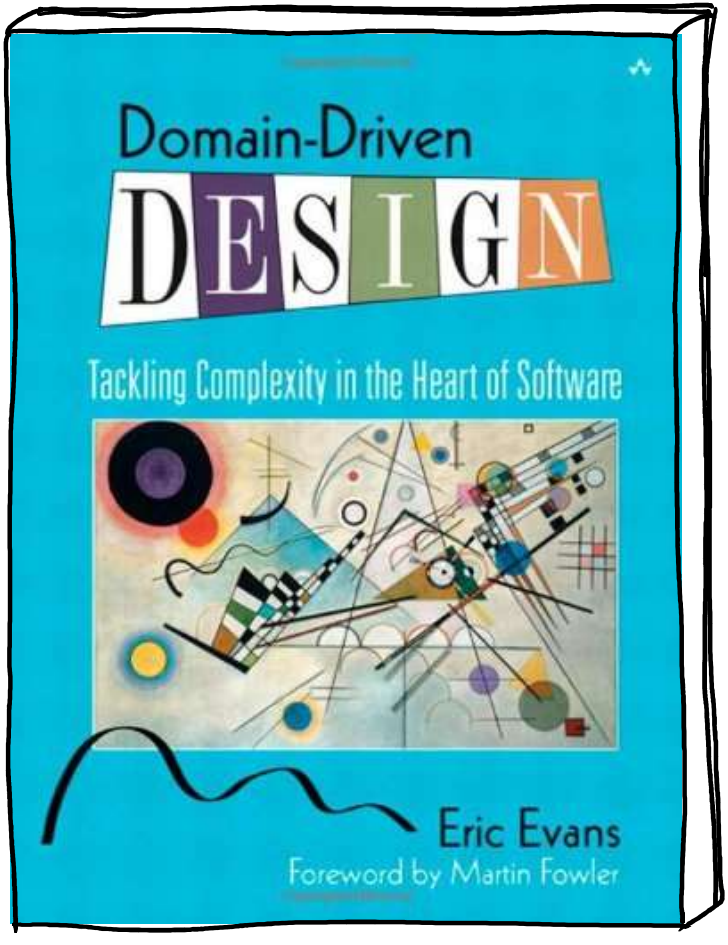

Complexity
is
in the
Domain

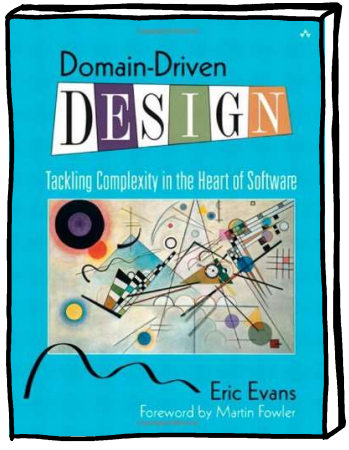

Complexity
is essentially in the
Domain


Let's focus
on the
Domain

Domain-Driven Development

What is Domain-Driven Development?


Domain-Driven
DESIGN
Tackling Complexity in the Heart of Software
Eric Evans
Foreword by Martin Fowler


Domain-Driven
DESIGN
Tackling Complexity in the Heart of Software
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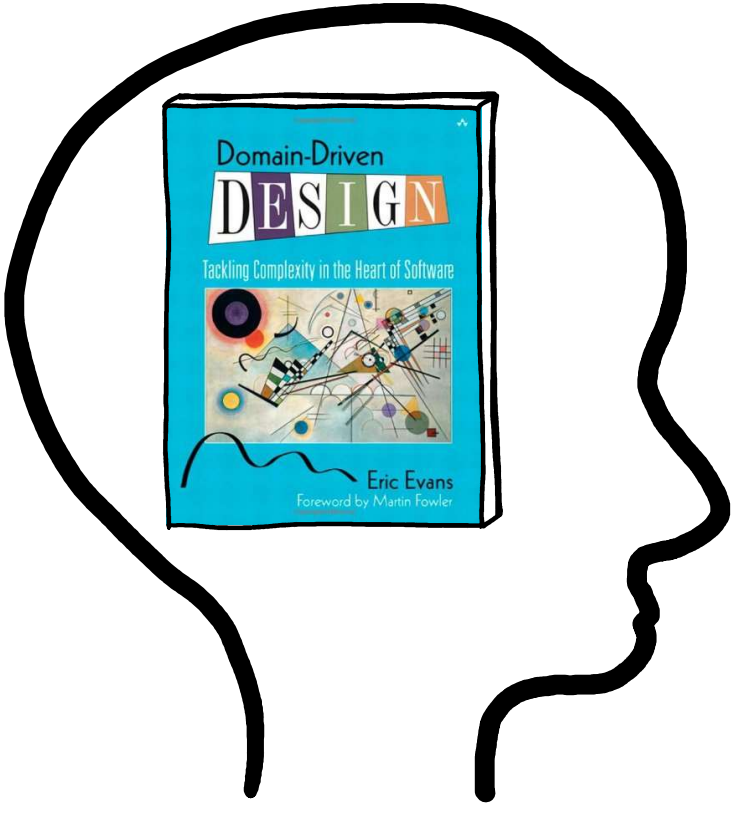
Domain-Driven
DESIGN
Tackling Complexity in the Heart of Software
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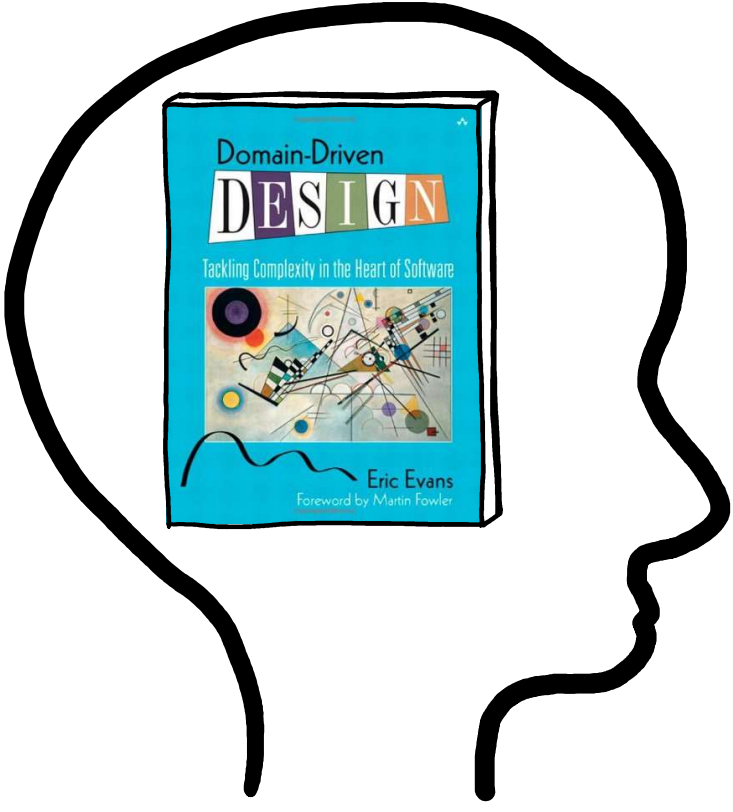
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DESIGN
Tackling Complexity in the Heart of Software
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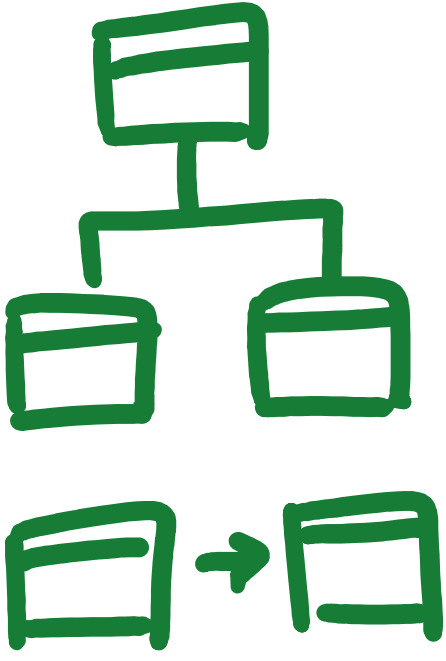
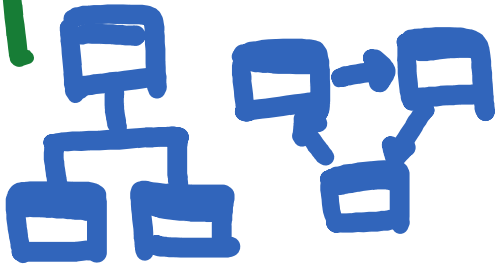


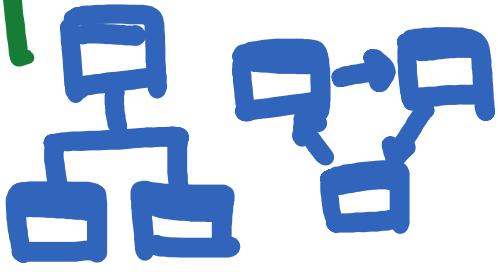
The Model

The Model



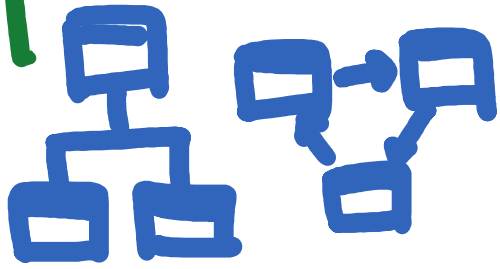
Diagram

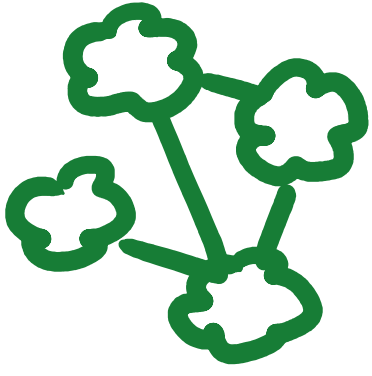
The Model



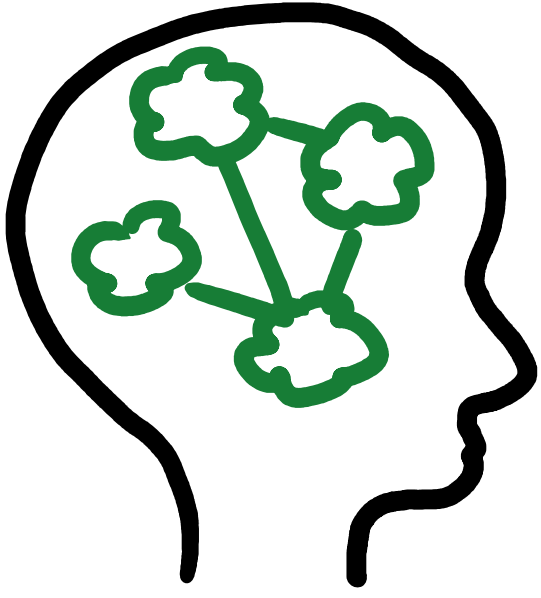
Code

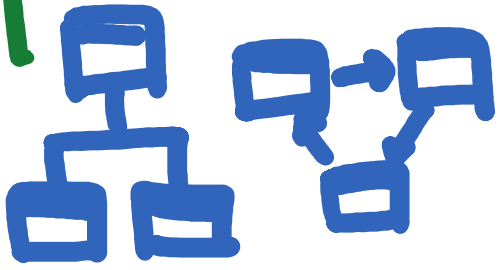
The Model



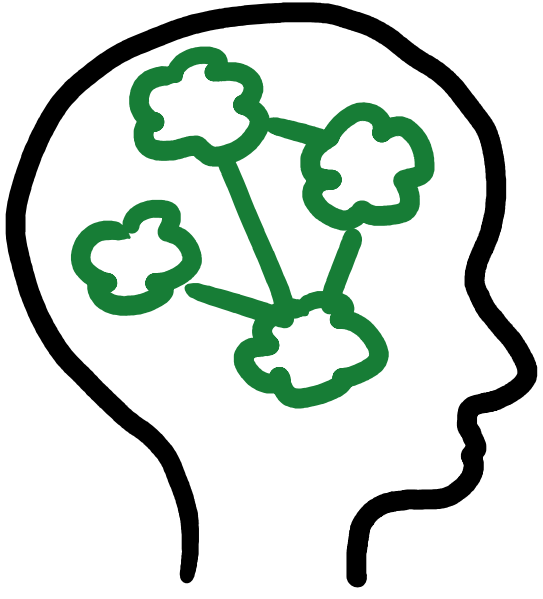


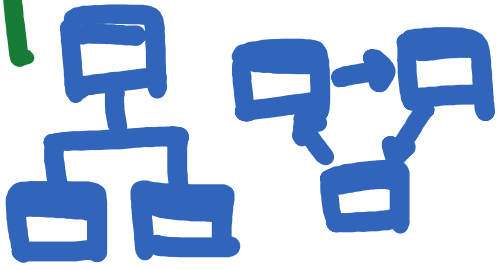
The Model

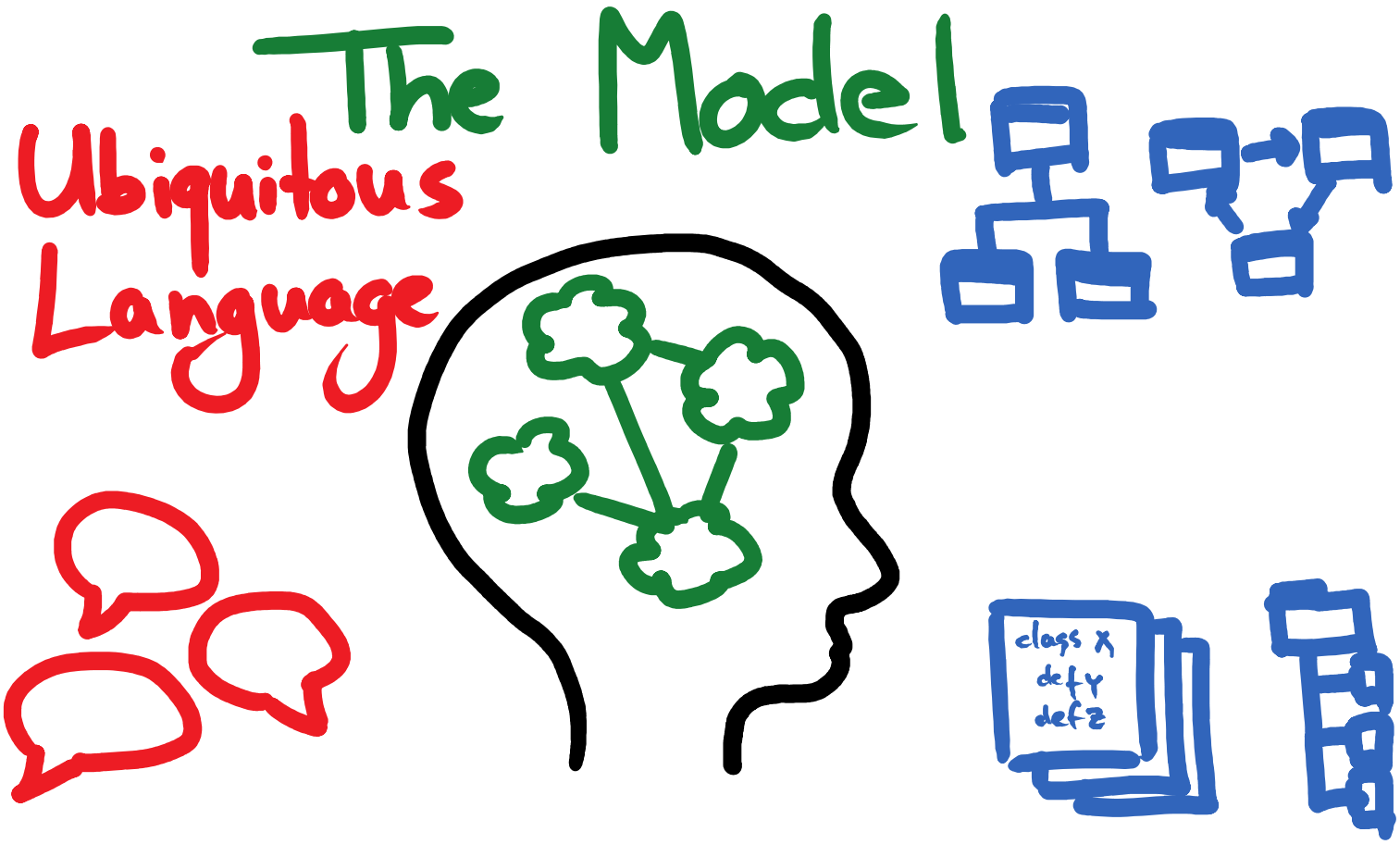




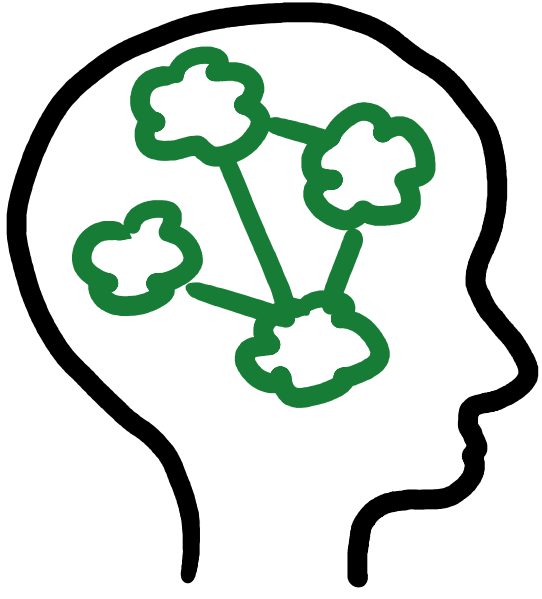
The Model

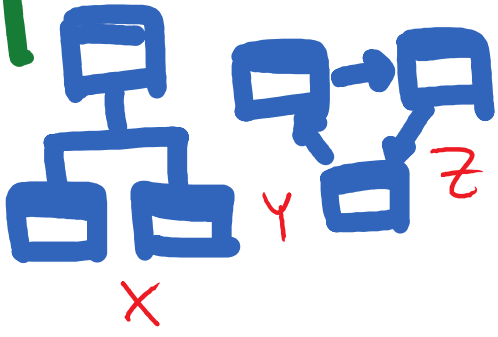


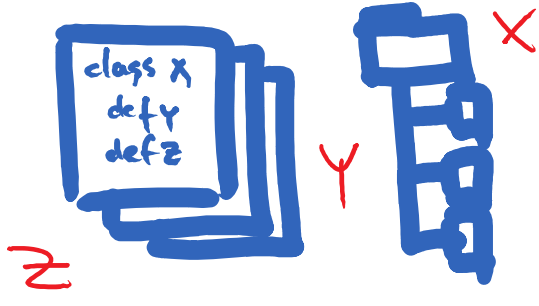


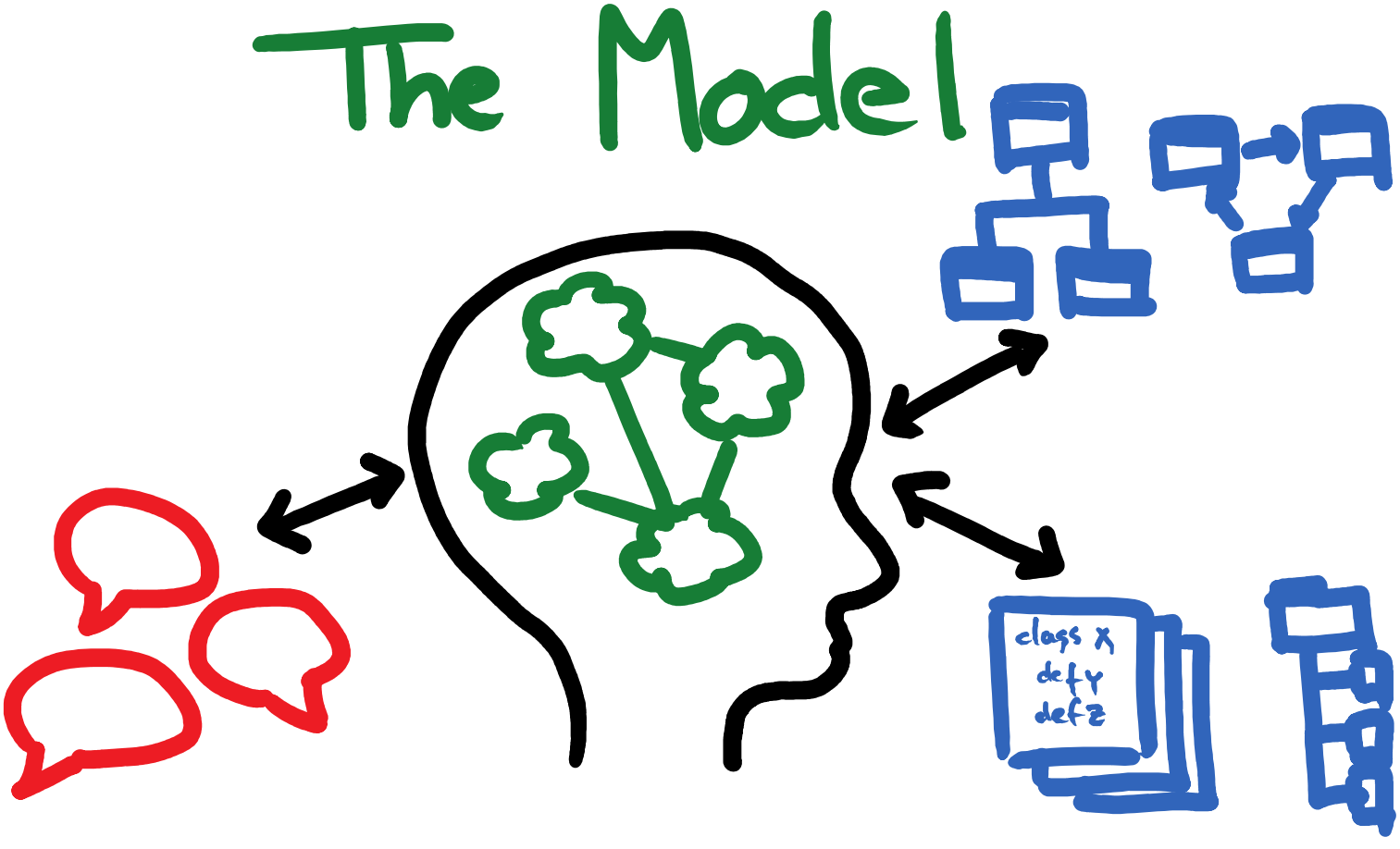

The Model
Ubiquitous Language
class X
def y
def z

The Model








The Model
class X
defy
defz

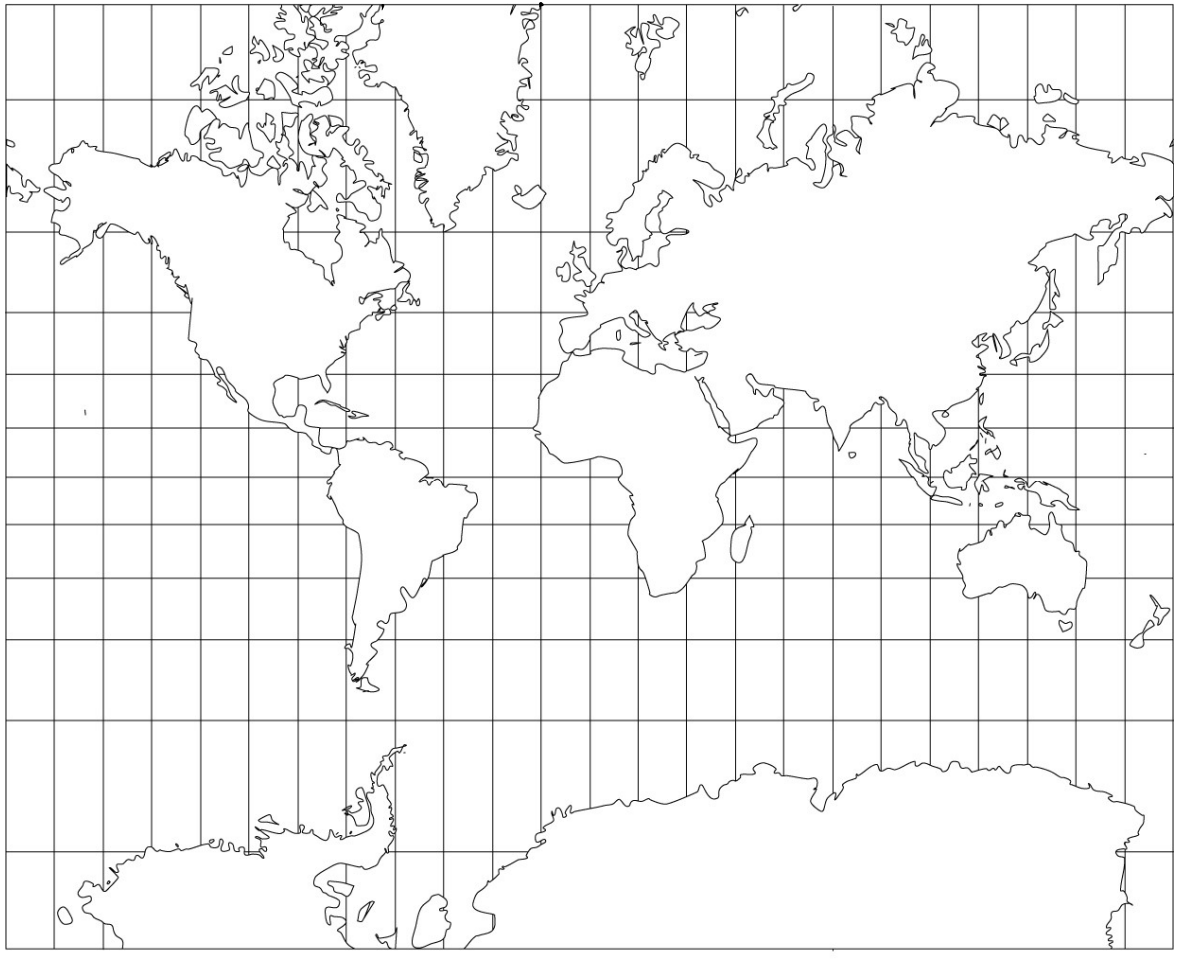
The Model

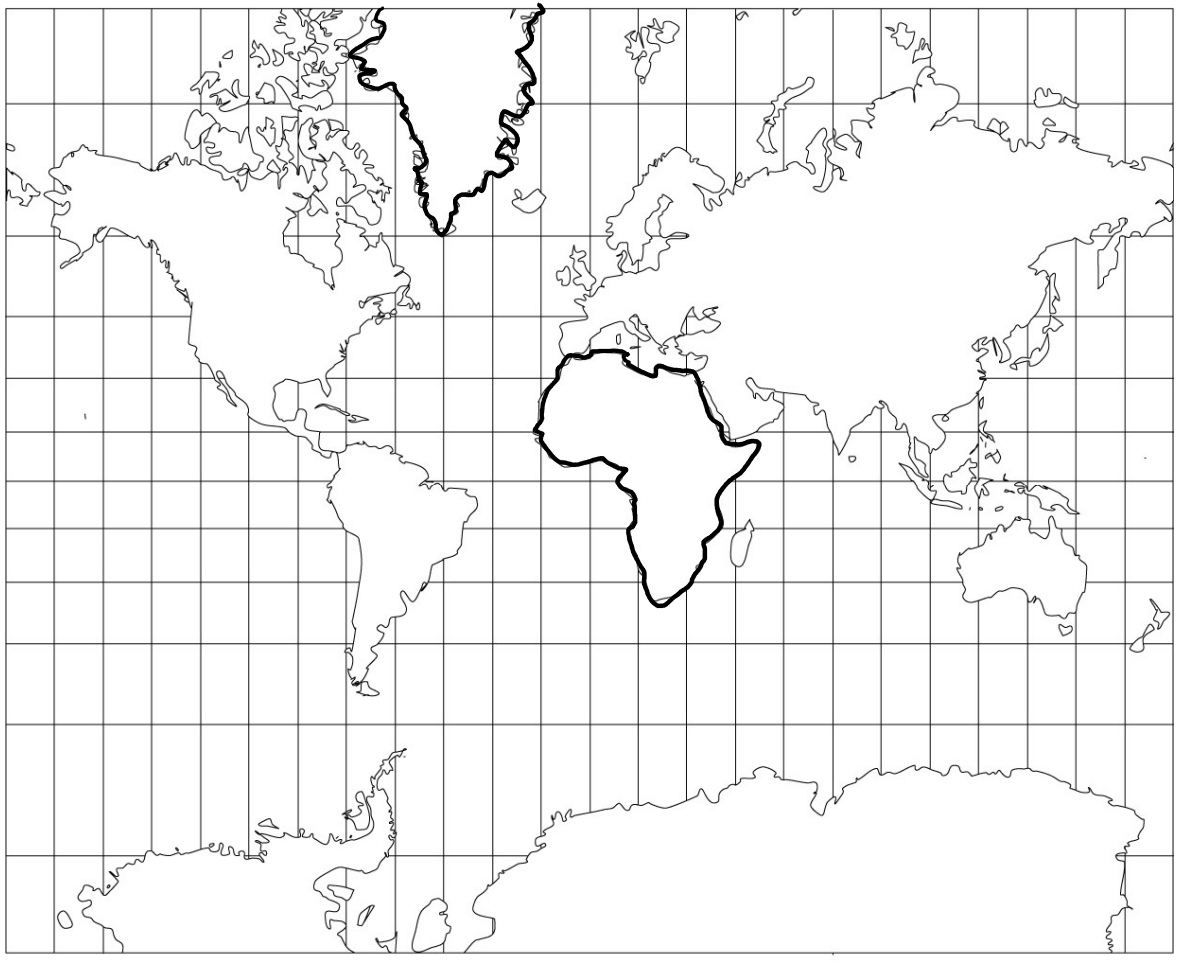
The Model

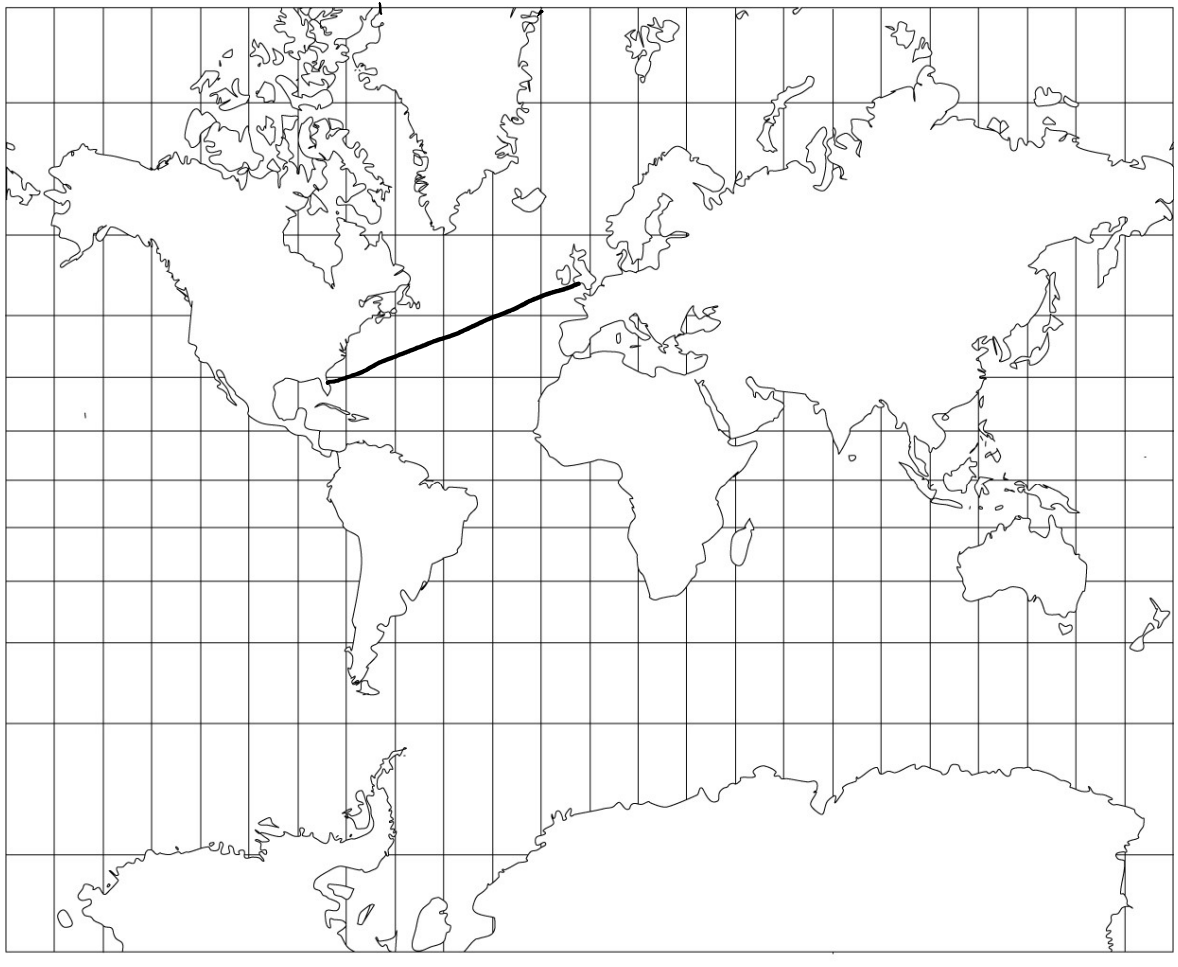
is a

useful appoximation

of the real world



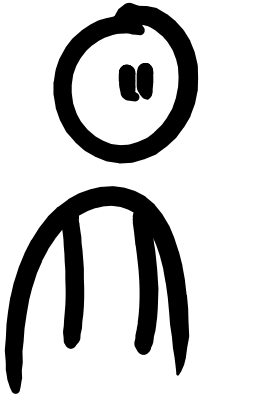


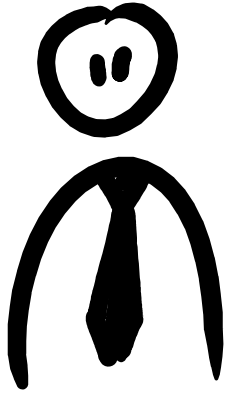


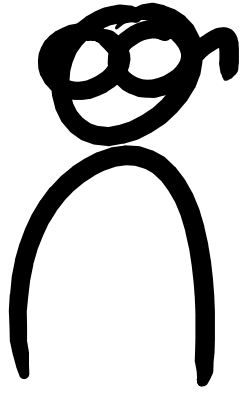
Example

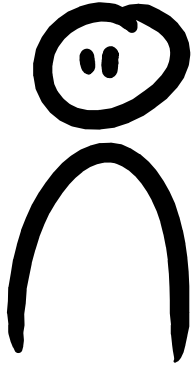
Example

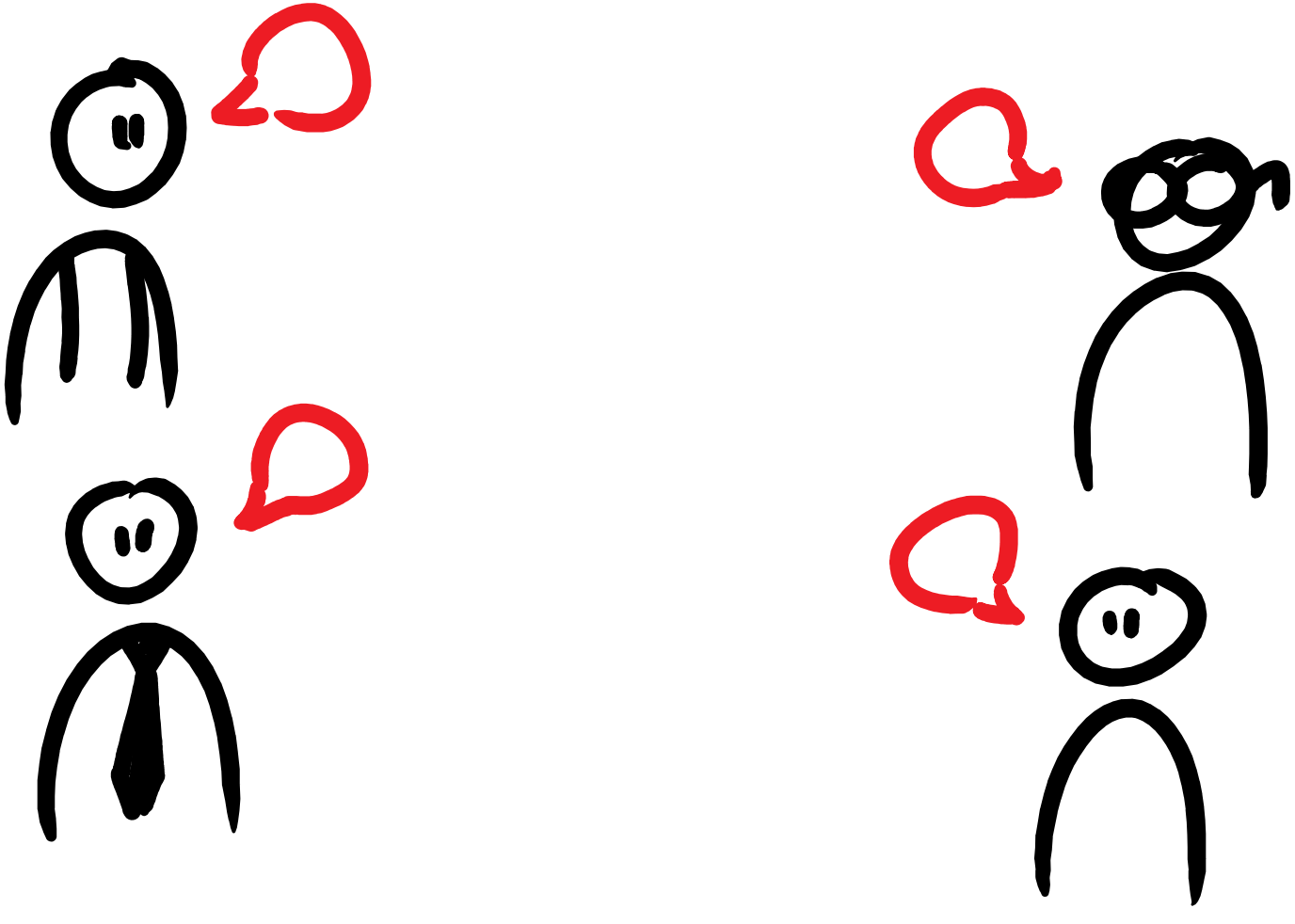
ToDo App

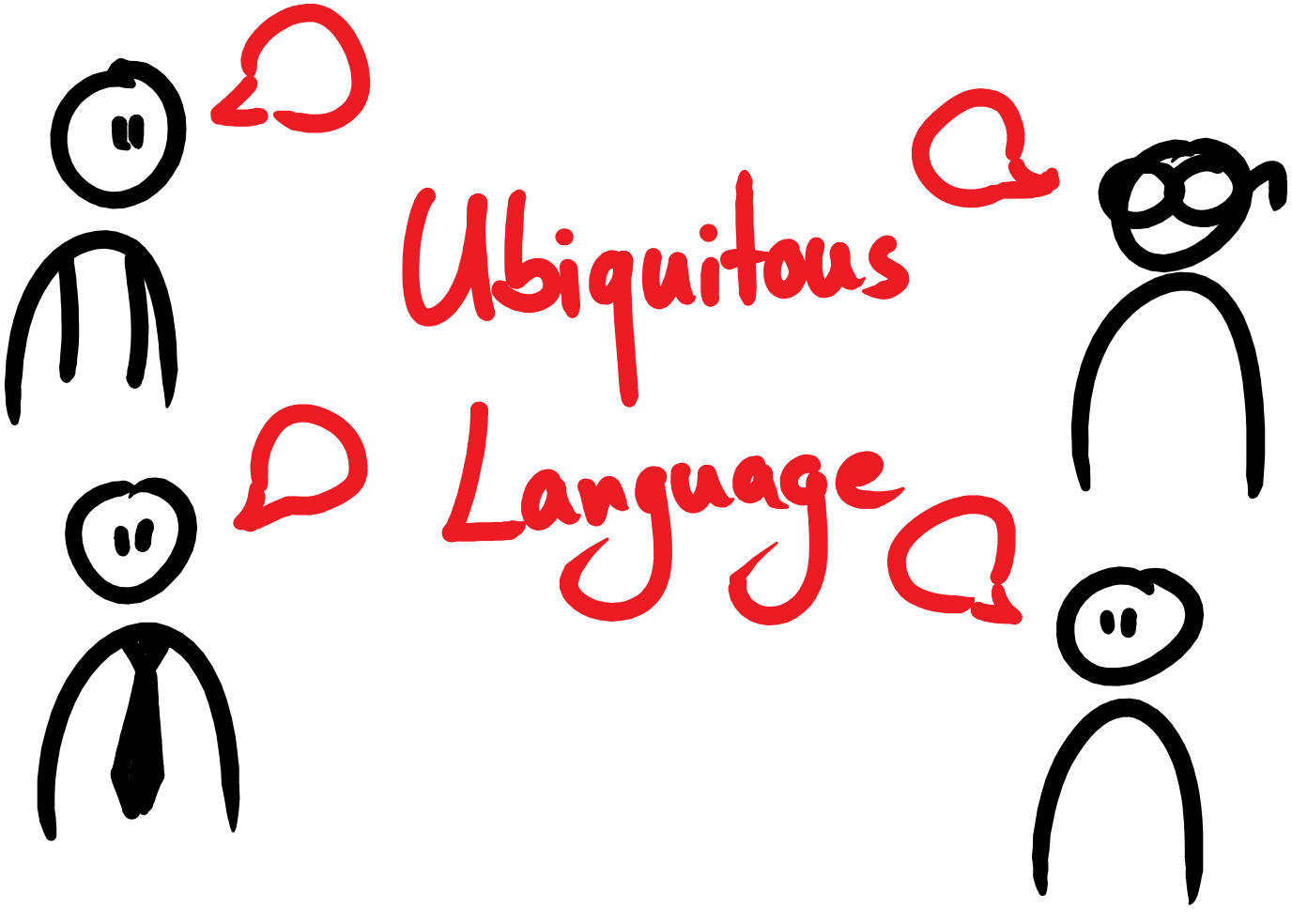


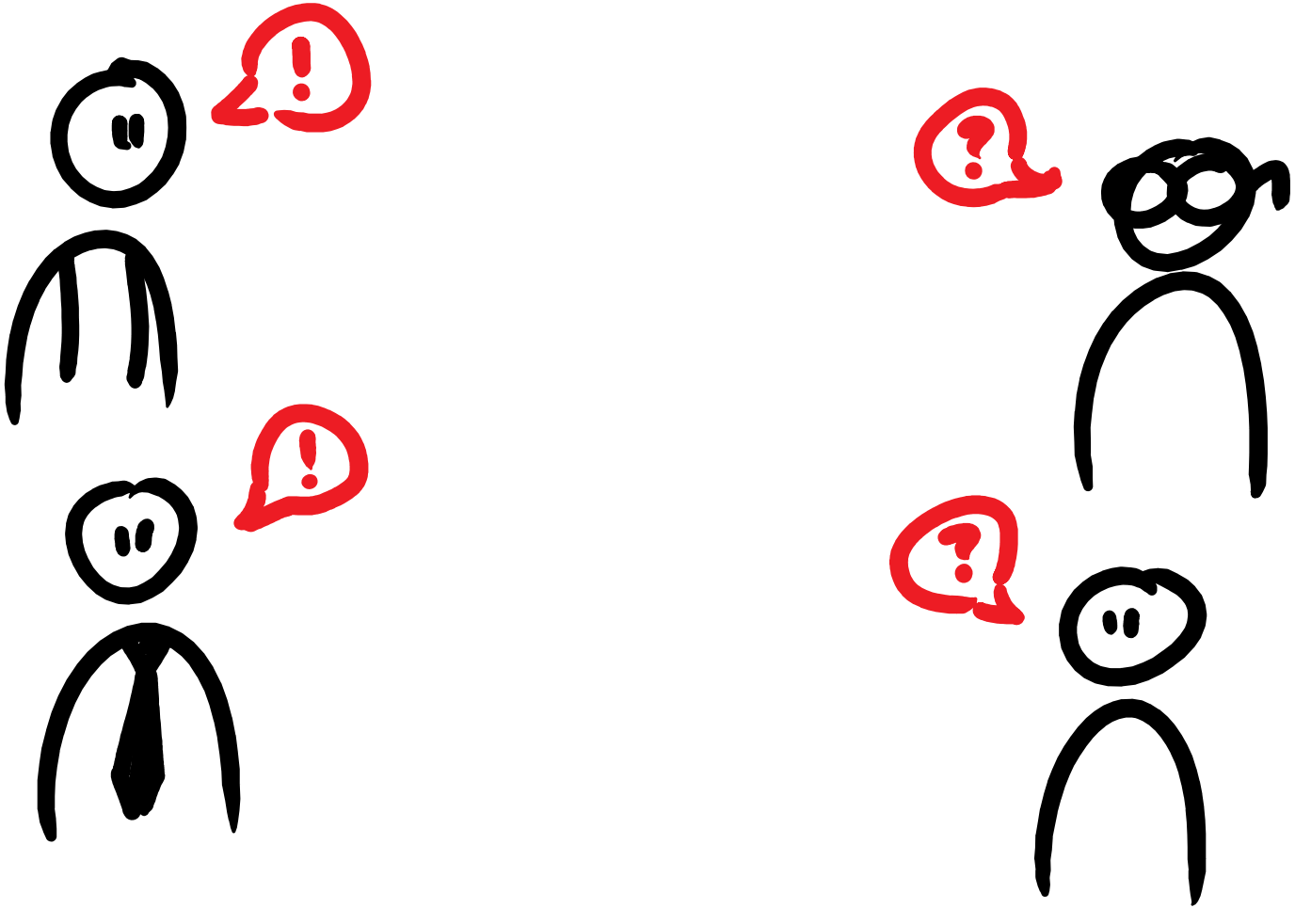


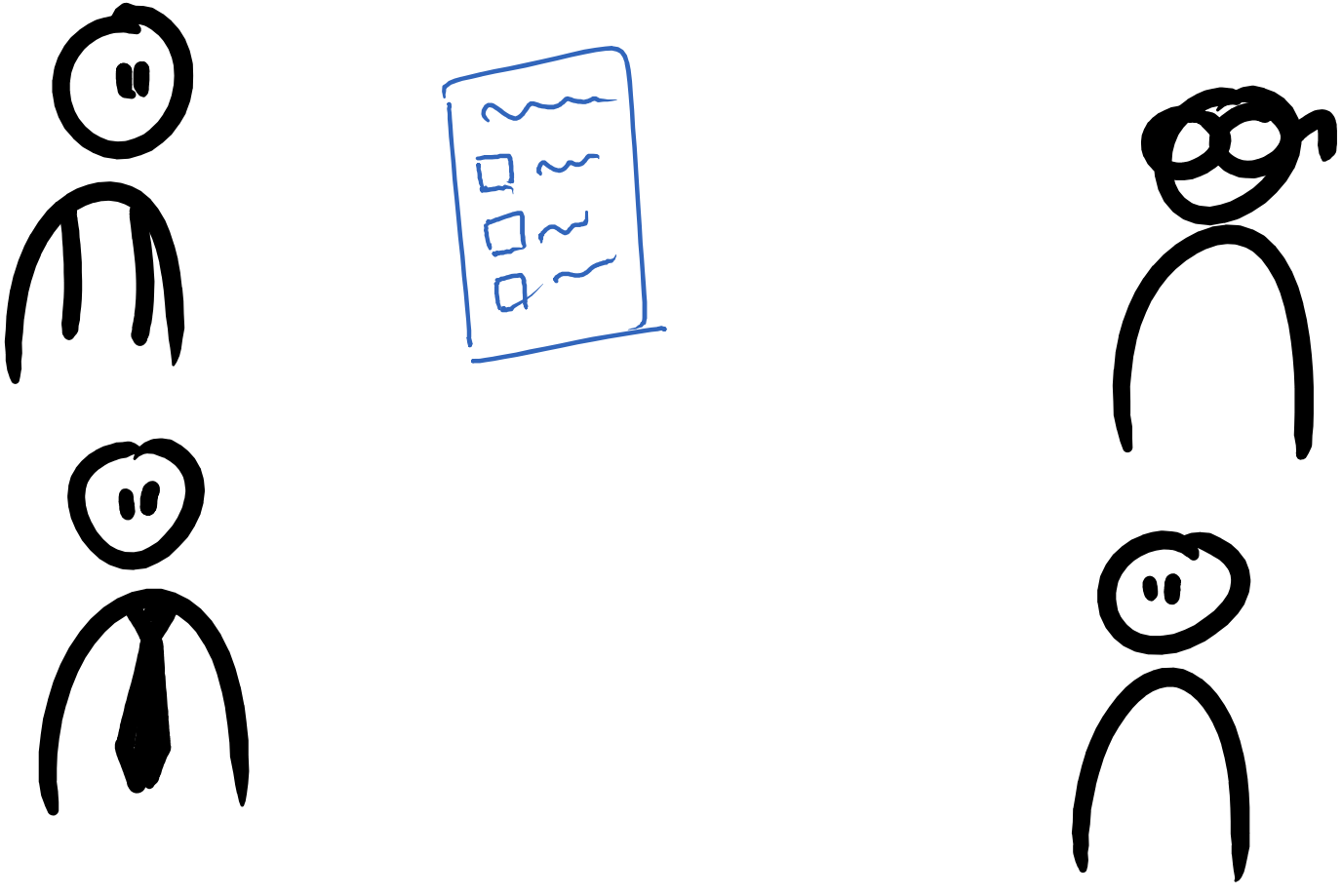


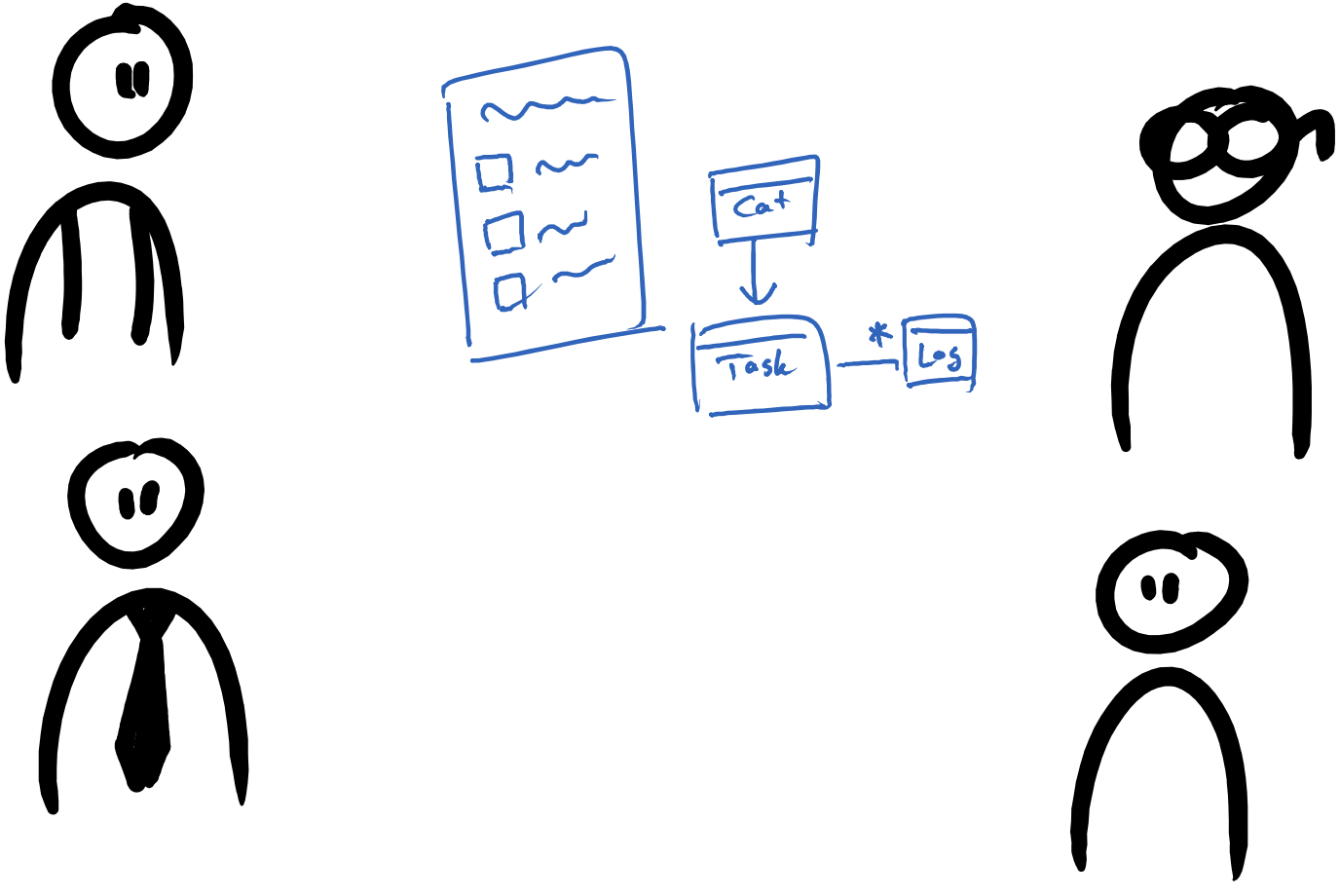





Ubiquitous
Language



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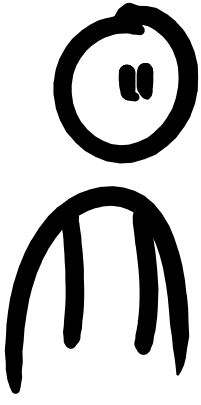
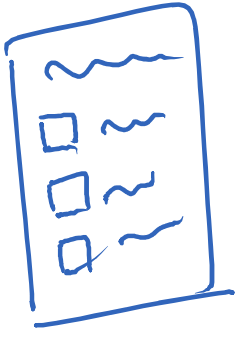
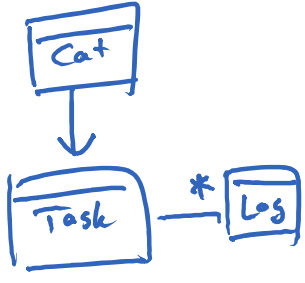
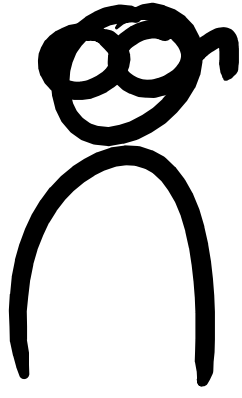
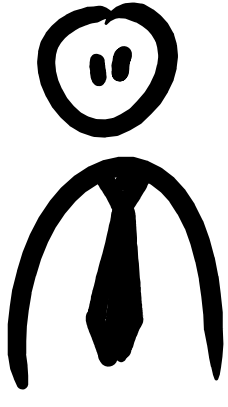
Log



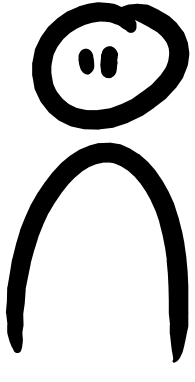


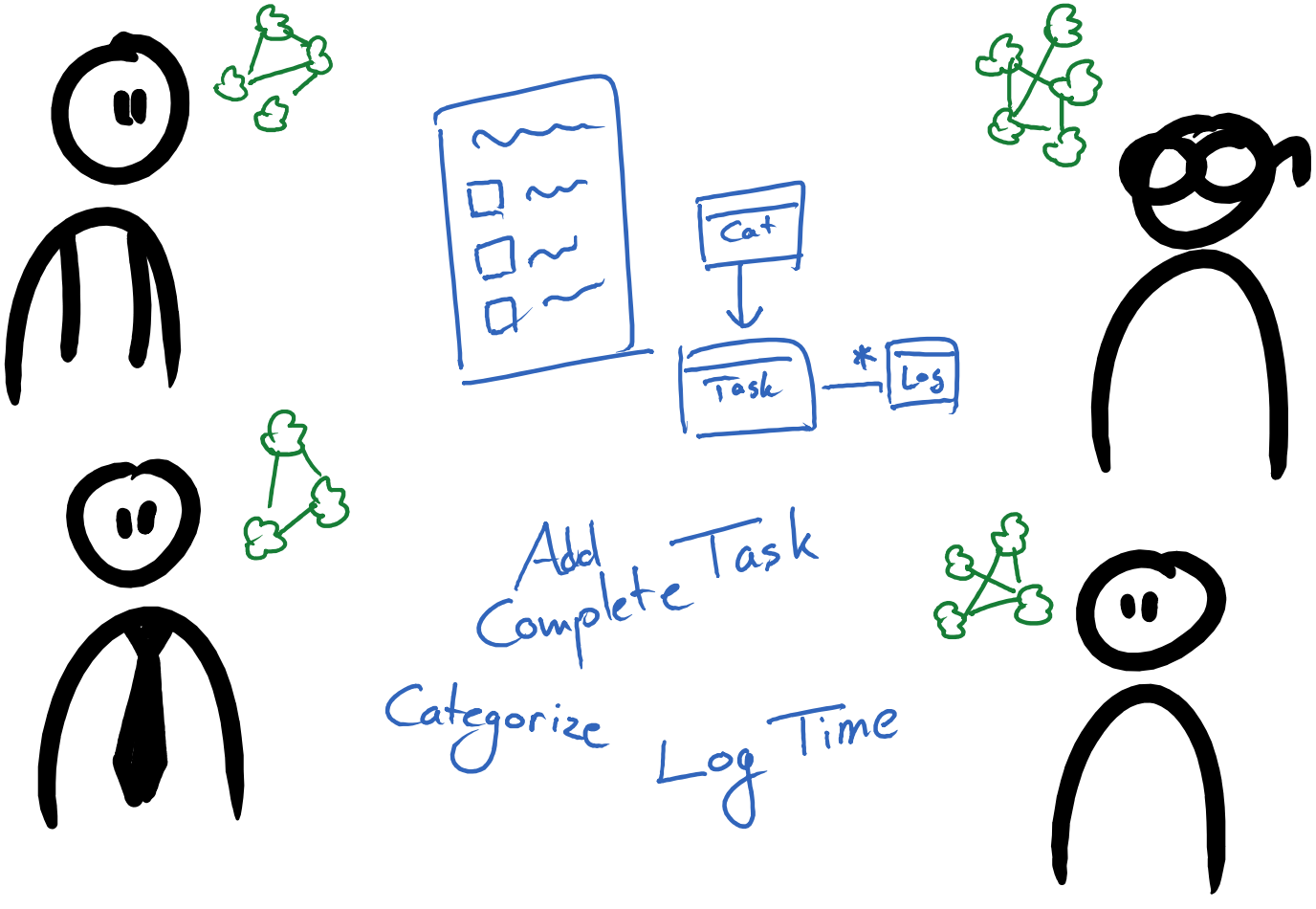


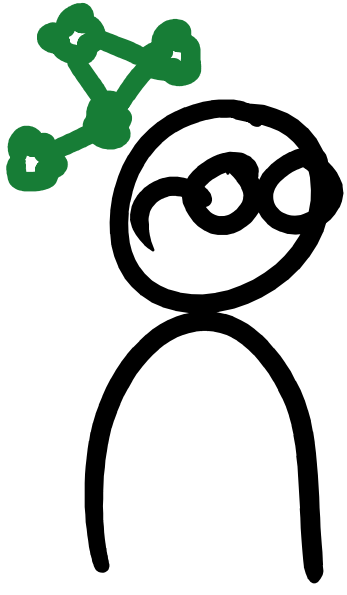


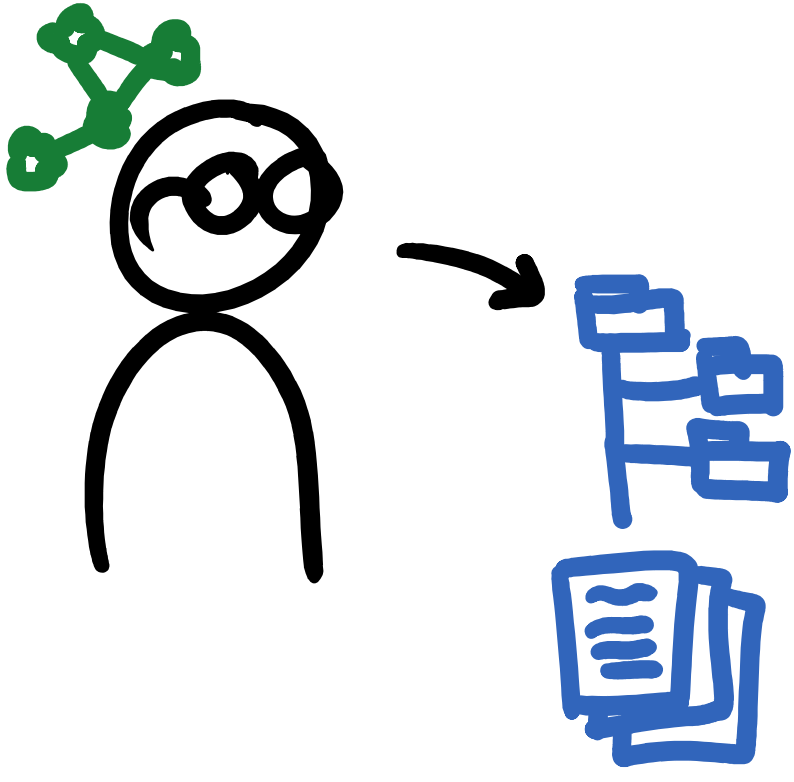


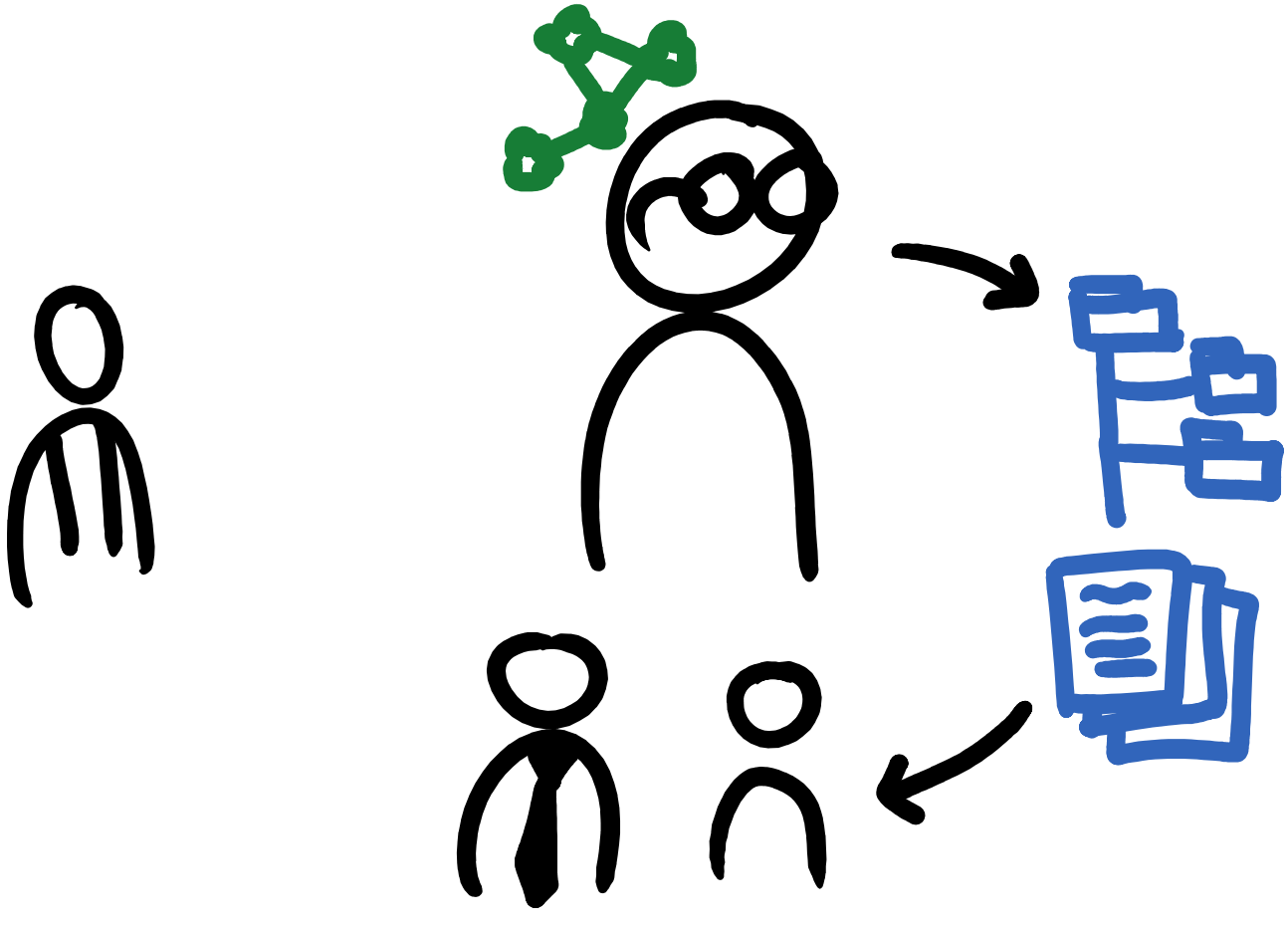
Add Task
Complete Task
Categorize
Log Time

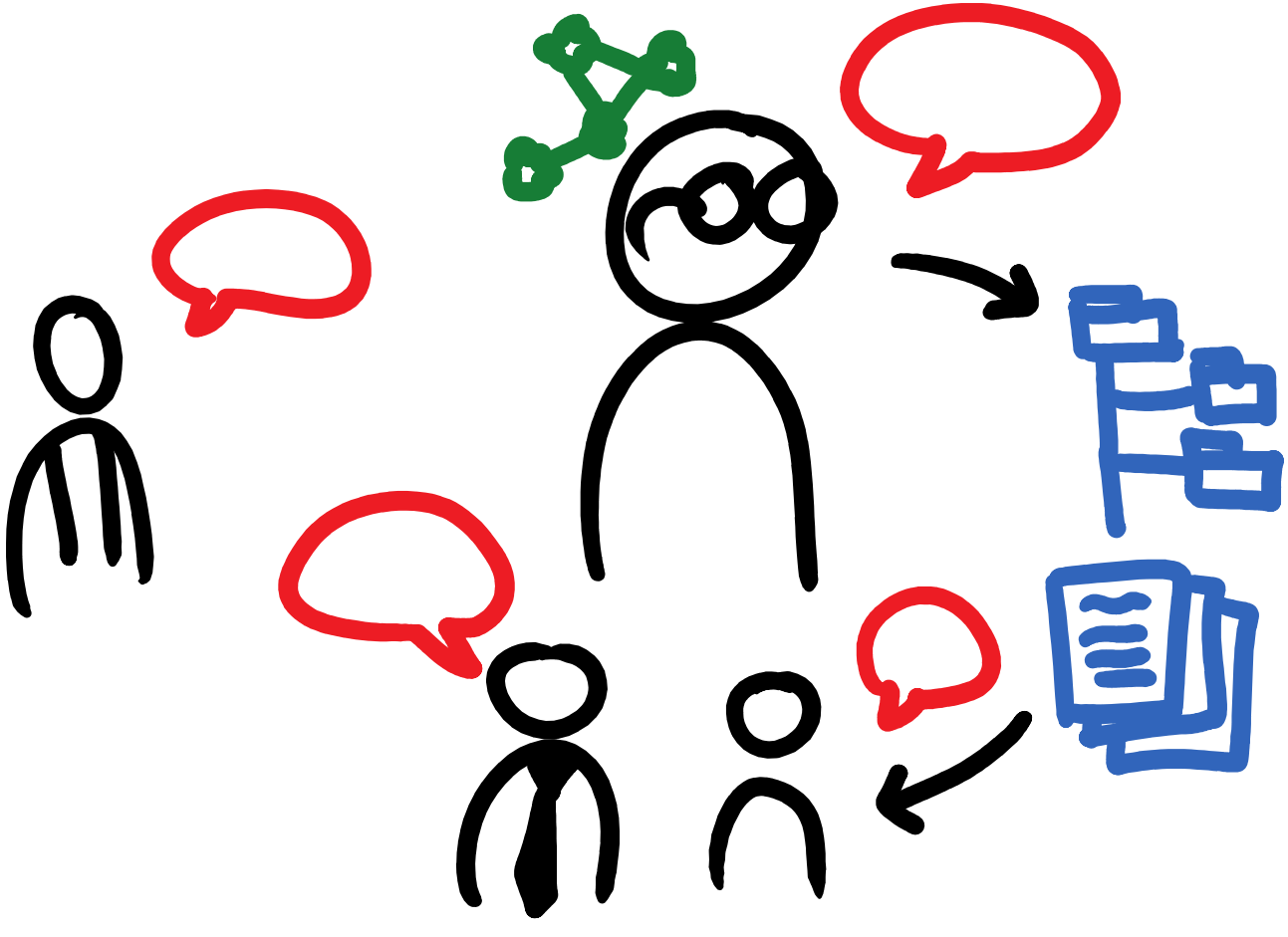


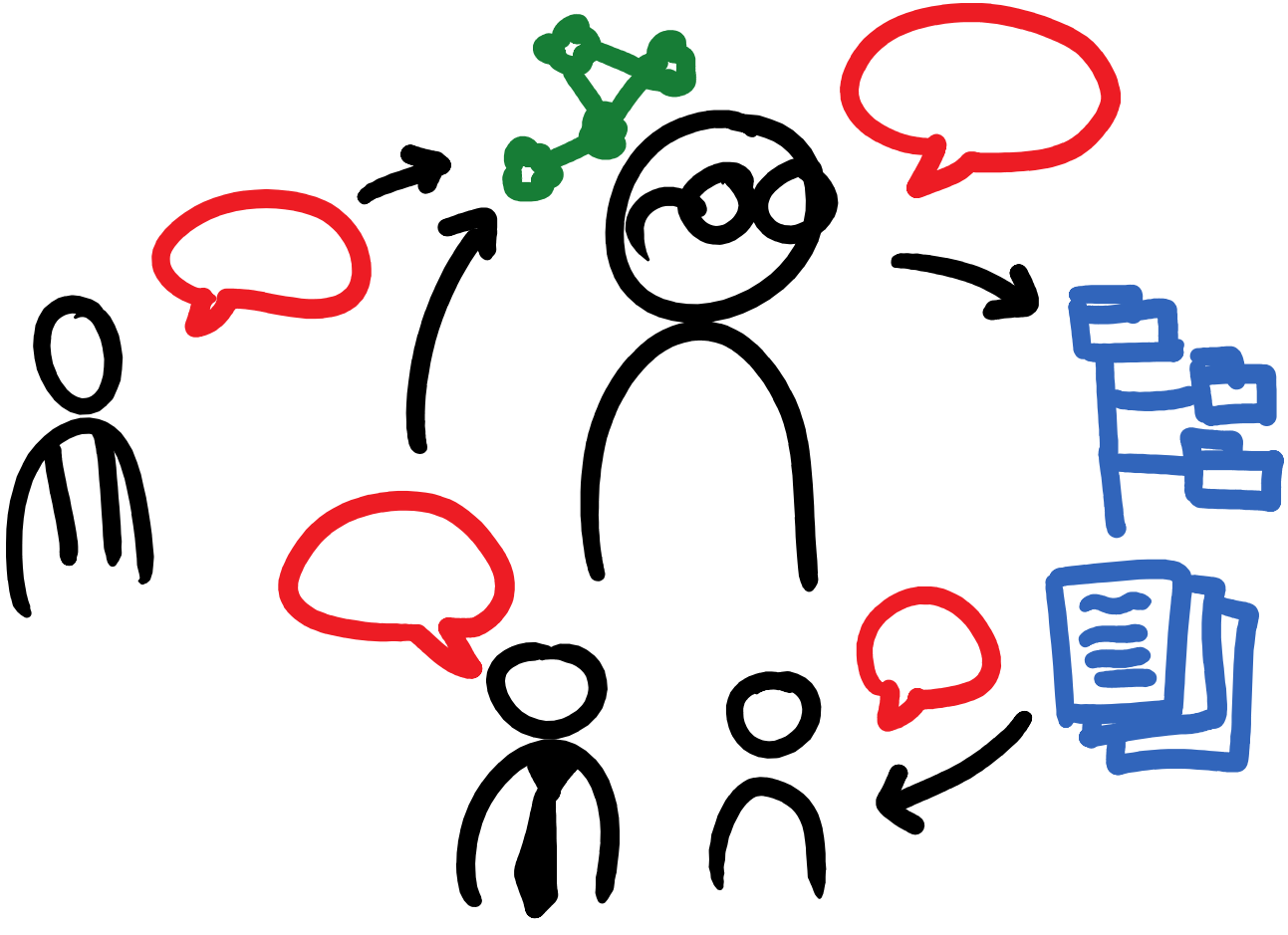

Cat
Task
*
Log
Add
Complete Task
Categorize
Log Time

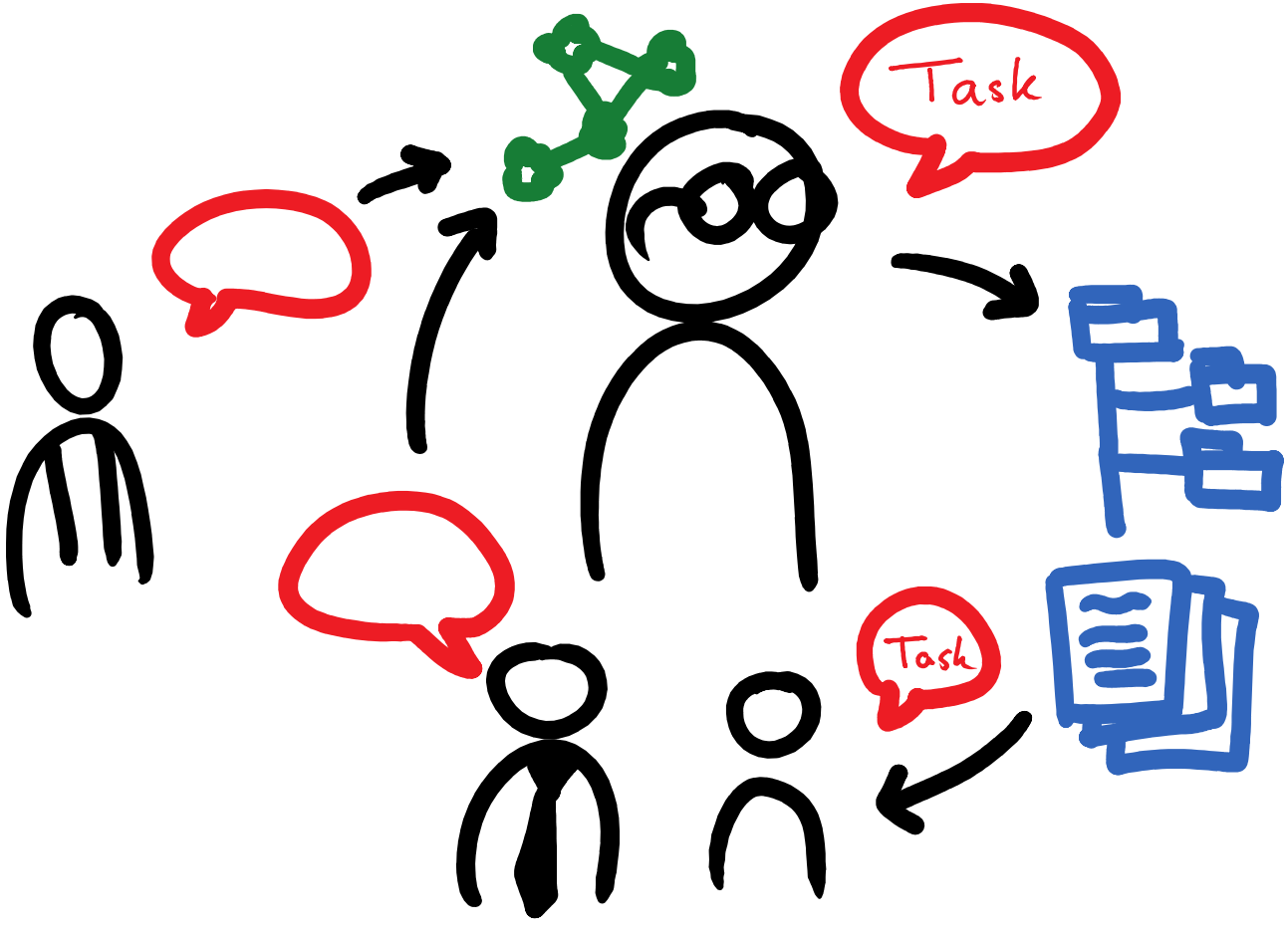








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Task

Goal
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Goal

Single Model

Single Model*

*) Way of thinking about the system

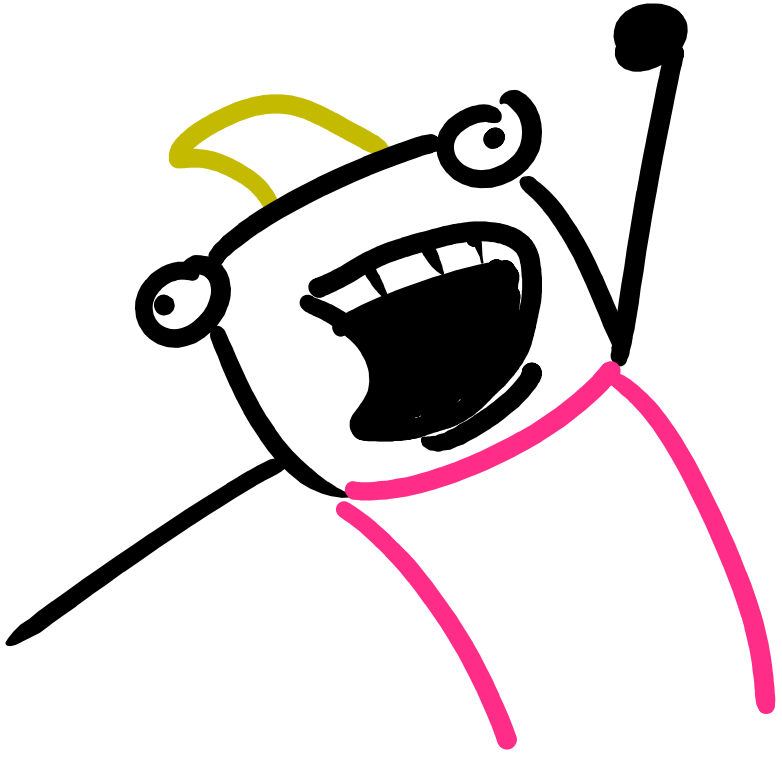
Single Model*

Ubiquitous Language

DDD

all

the things!



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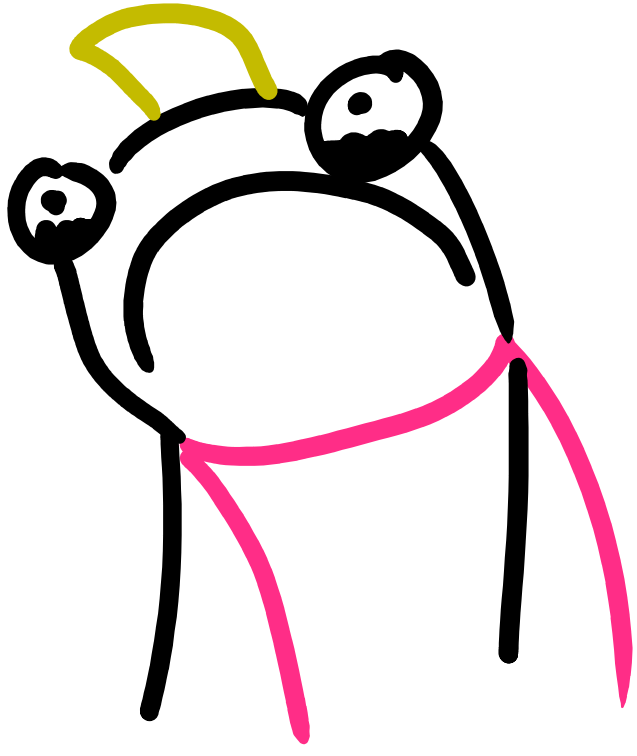
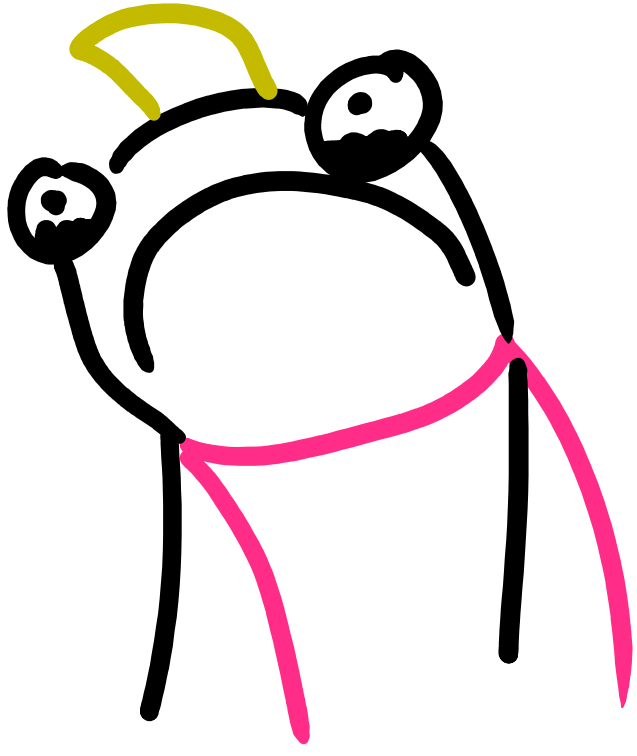


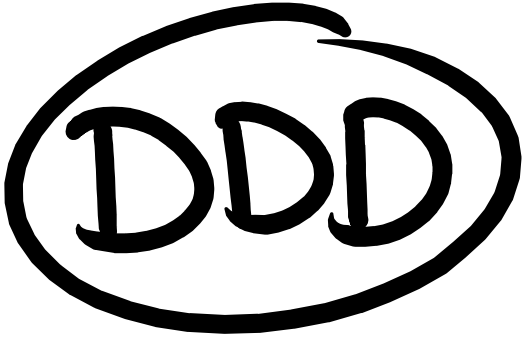
But...
is it
worth it?

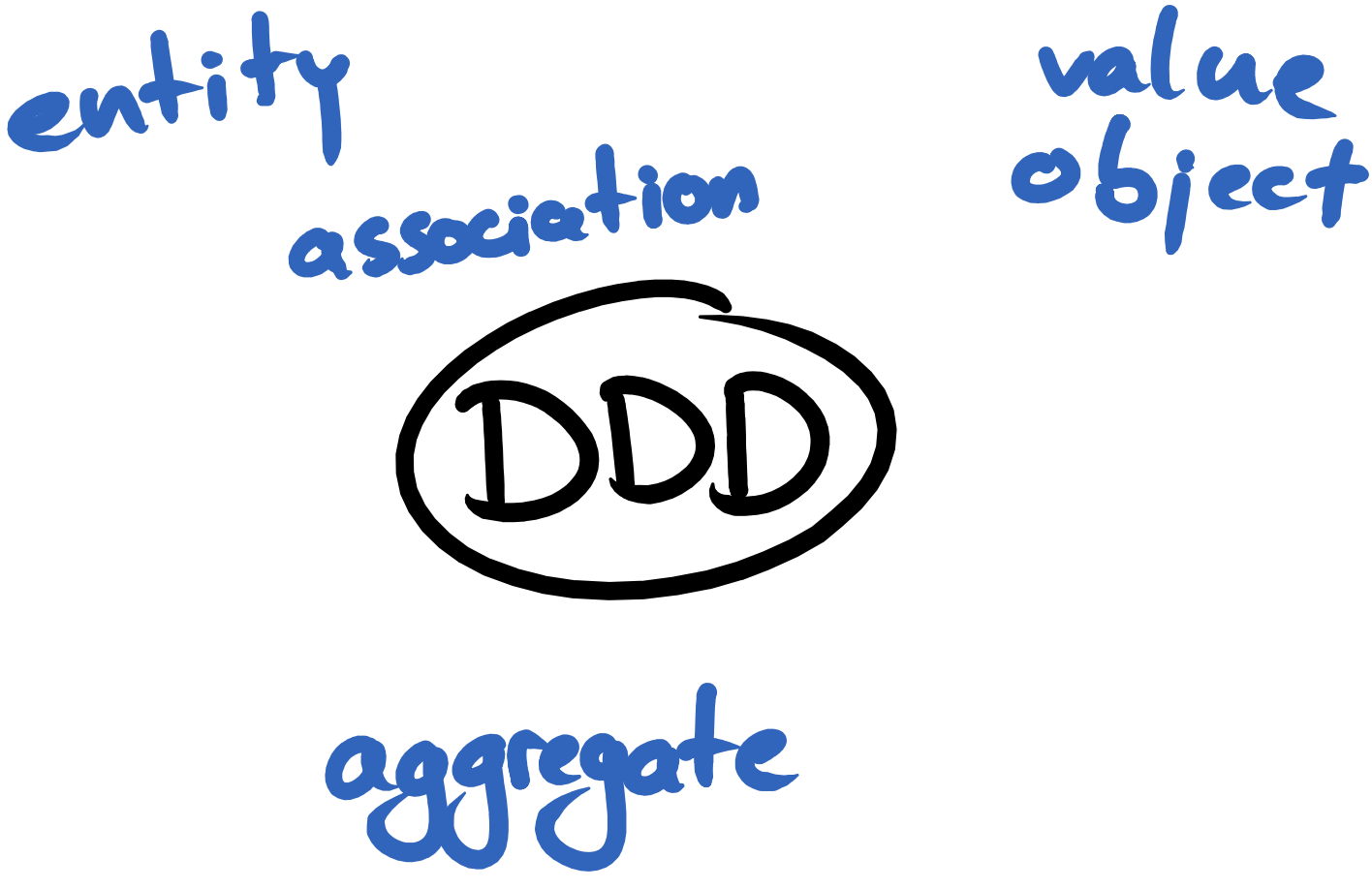


DDD

entity

value object

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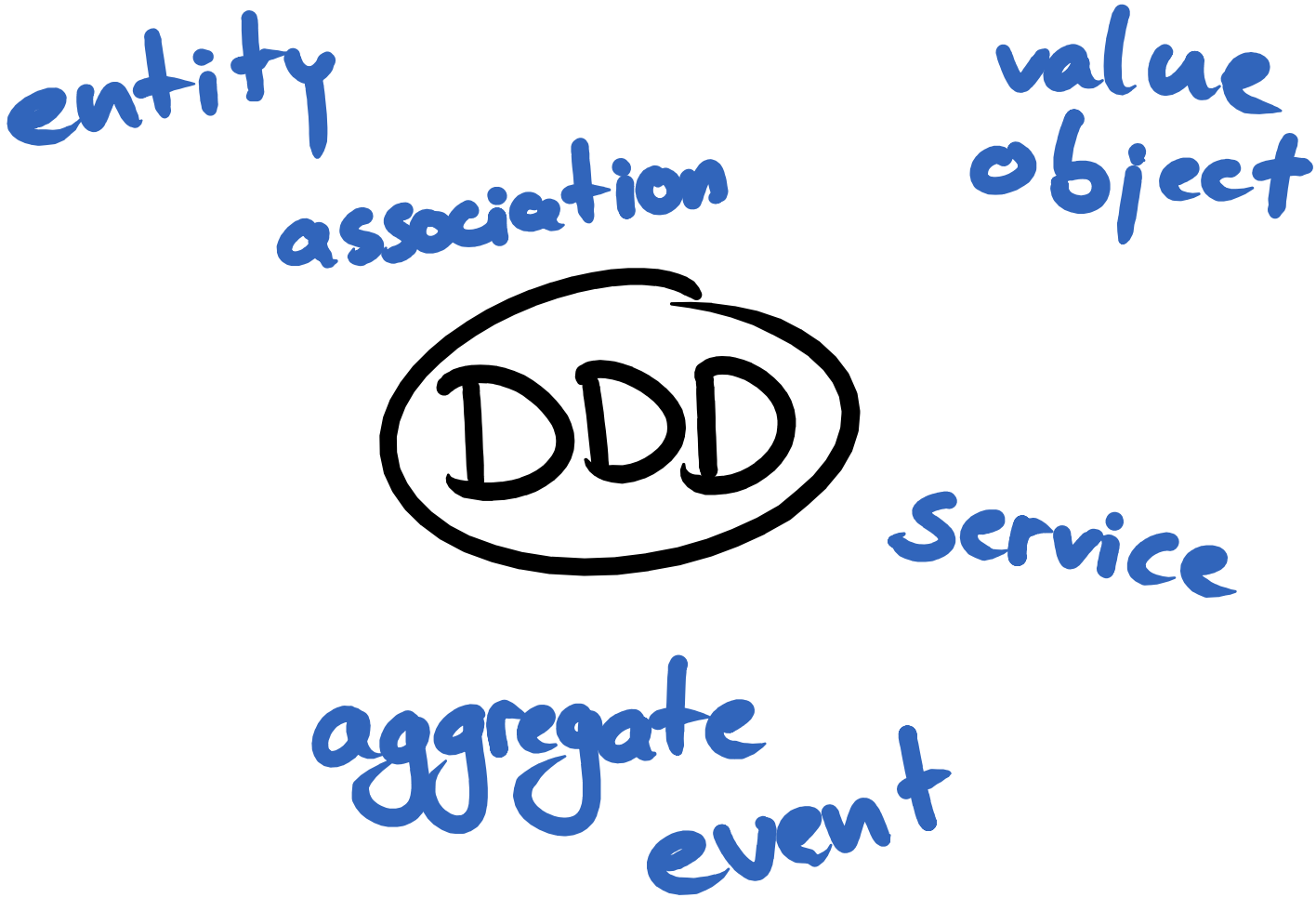
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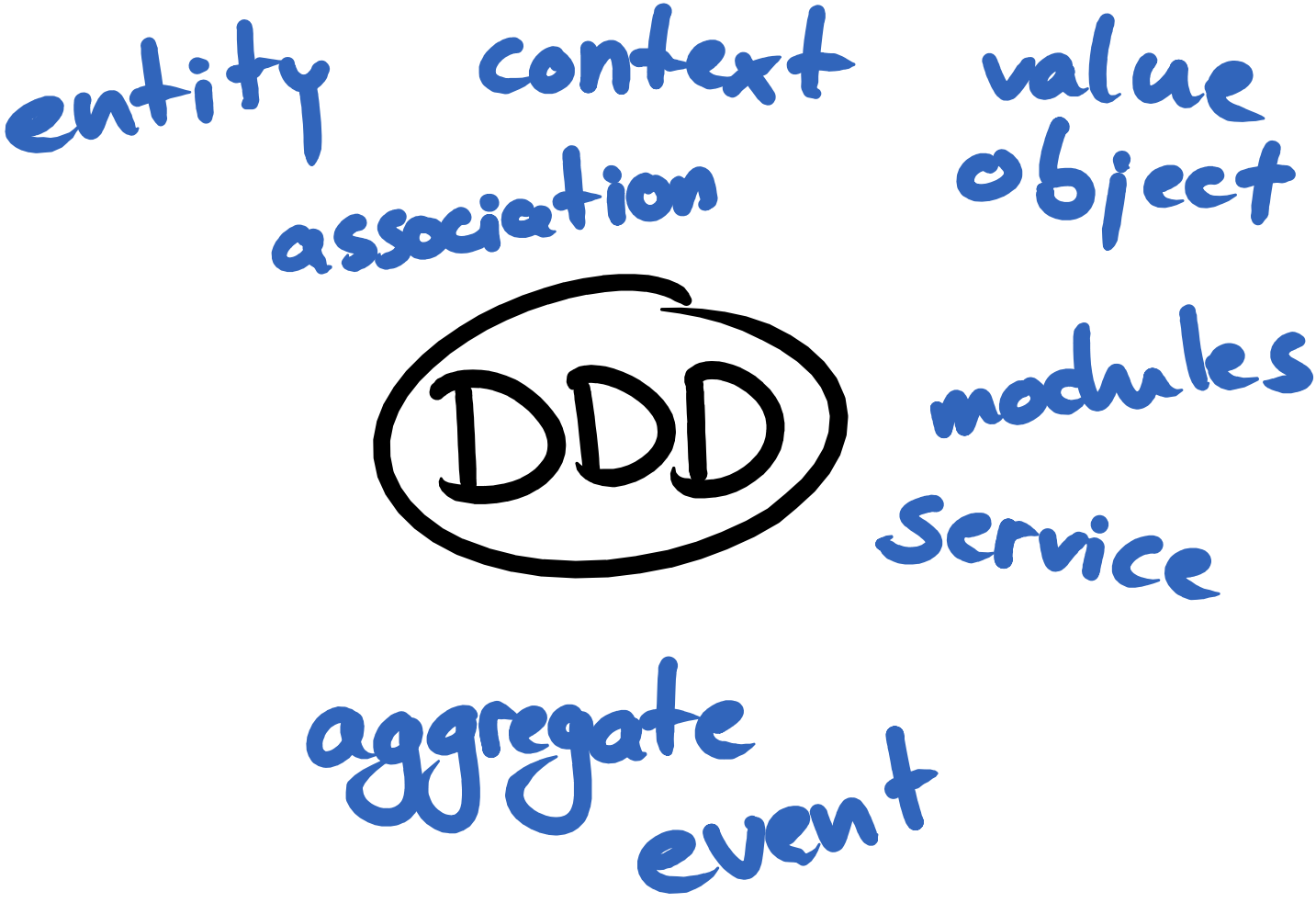
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association
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aggregate
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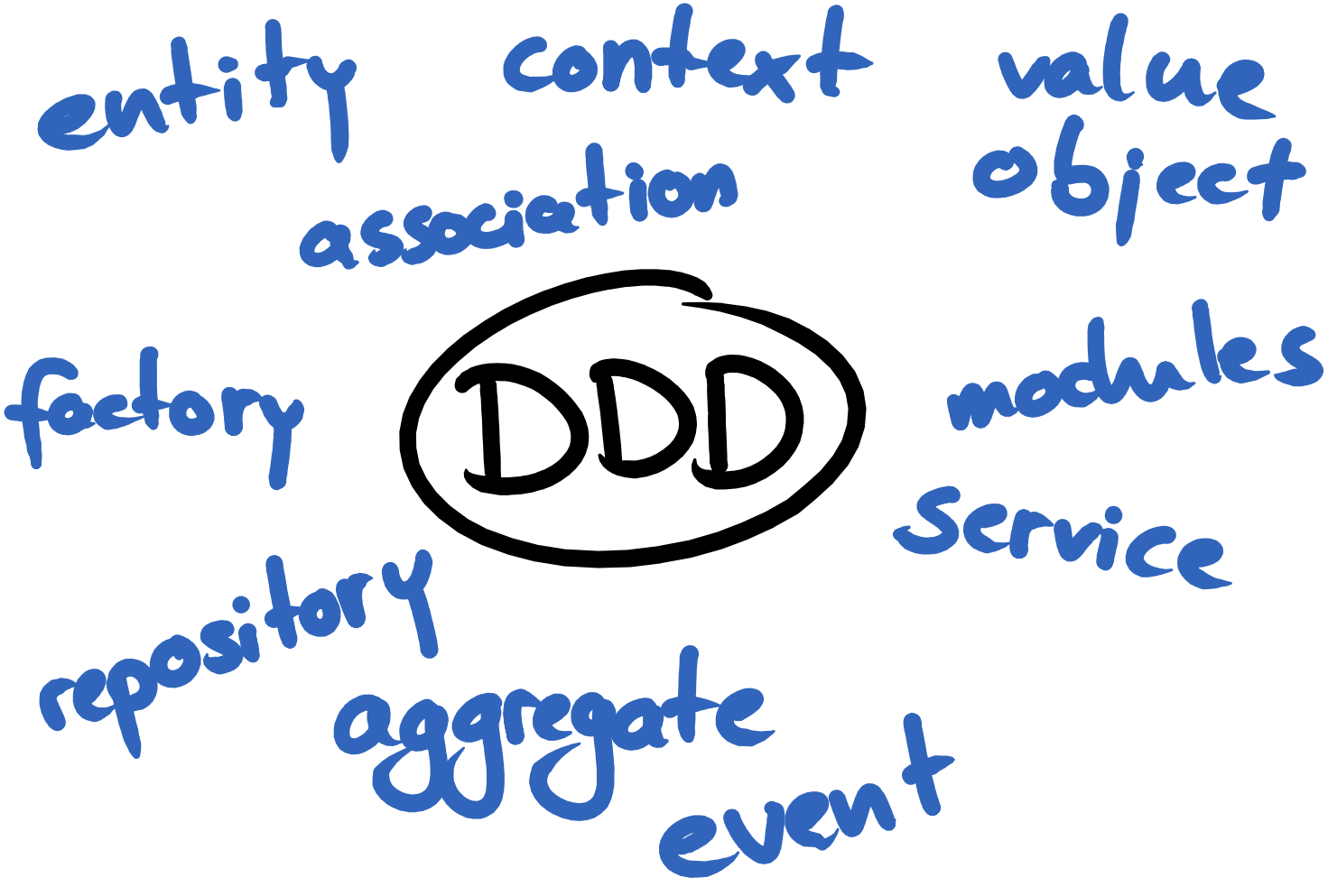
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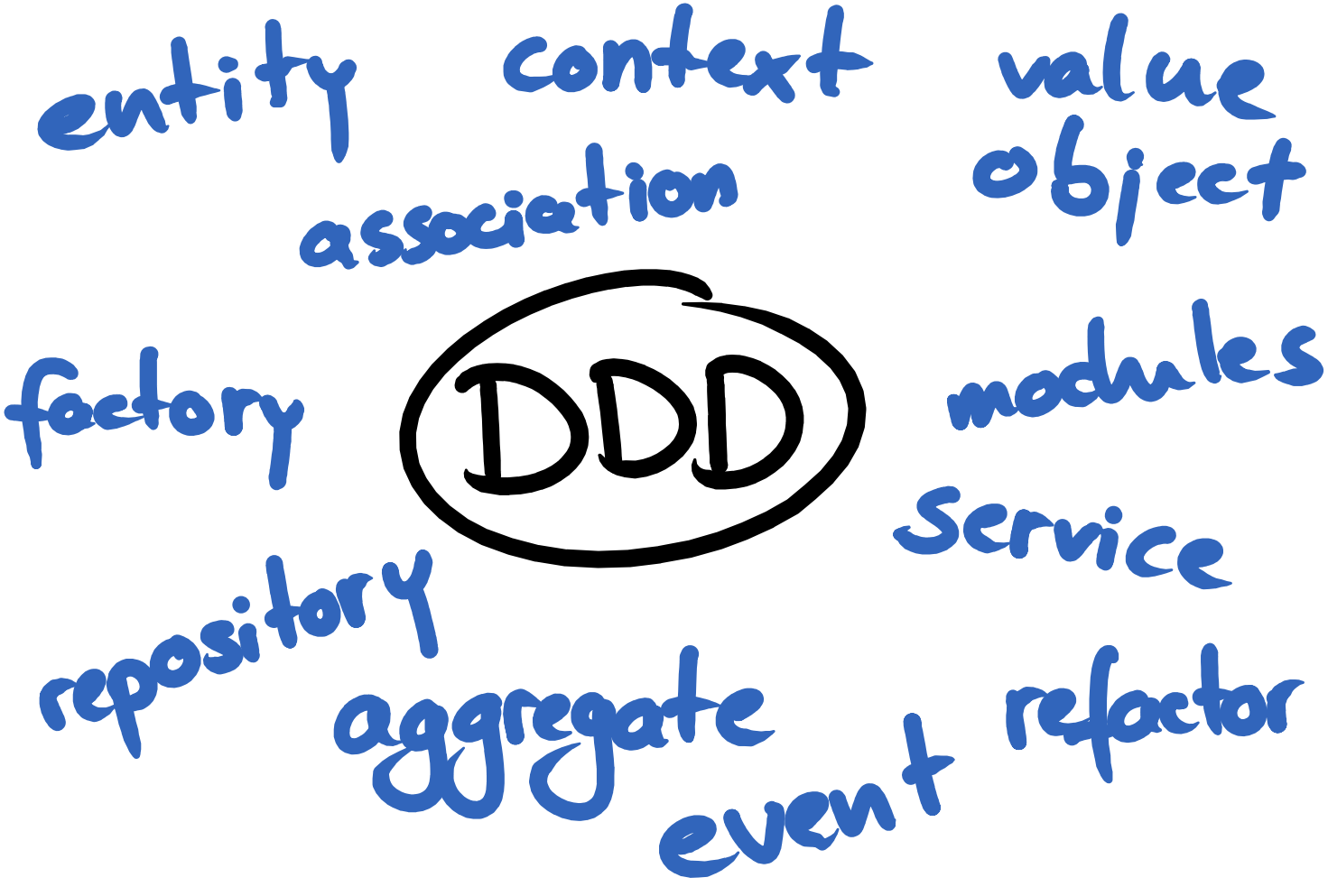
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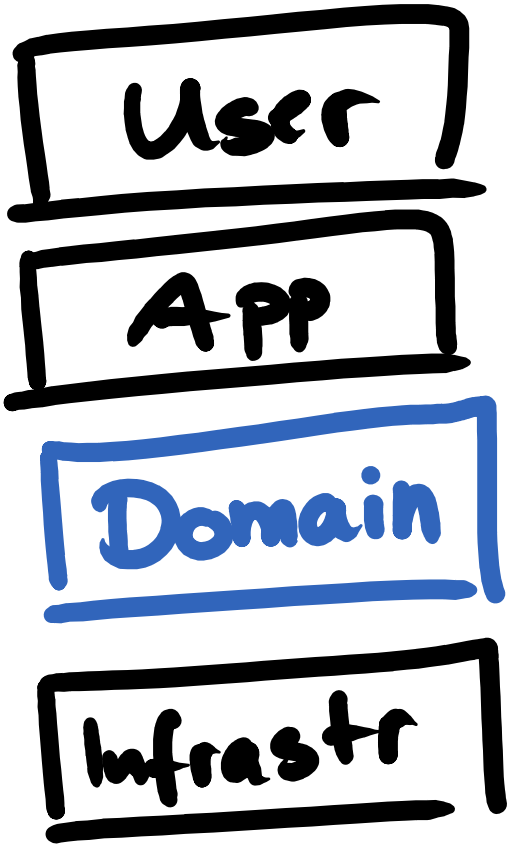
Domain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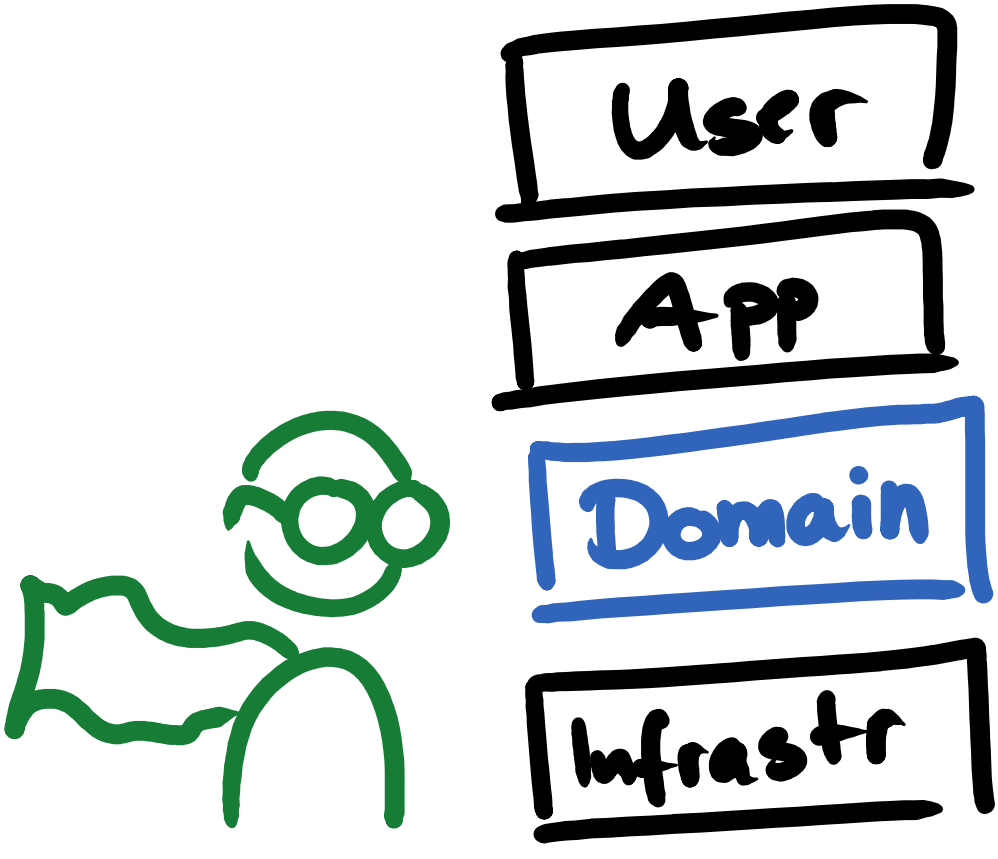
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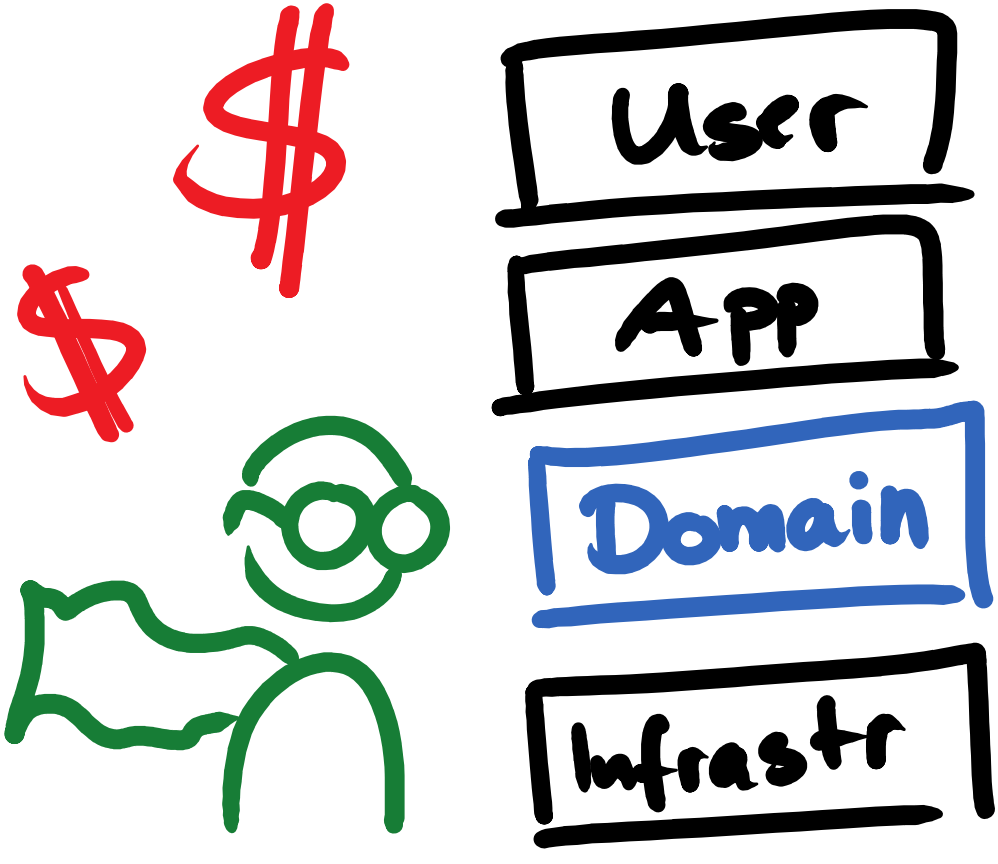
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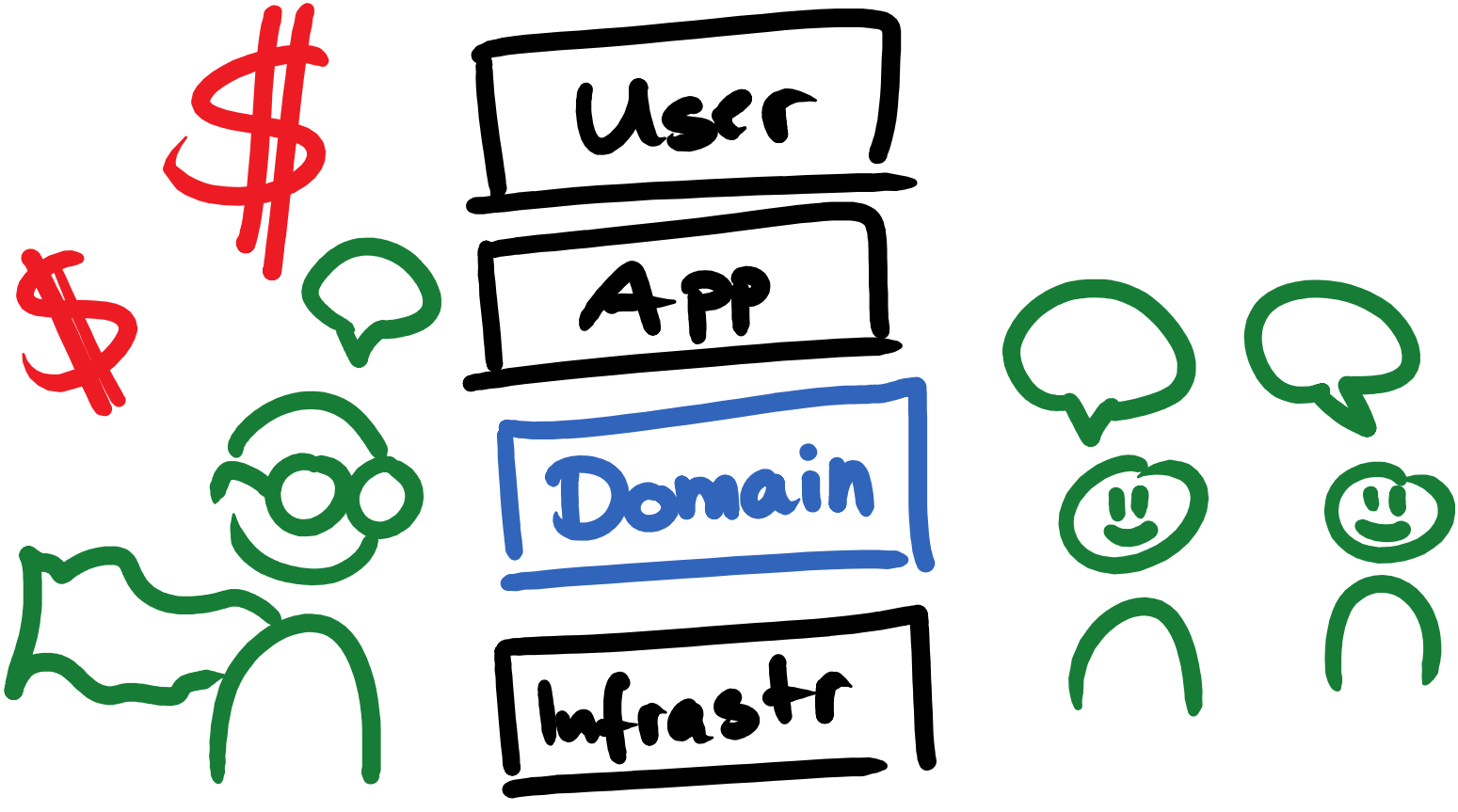
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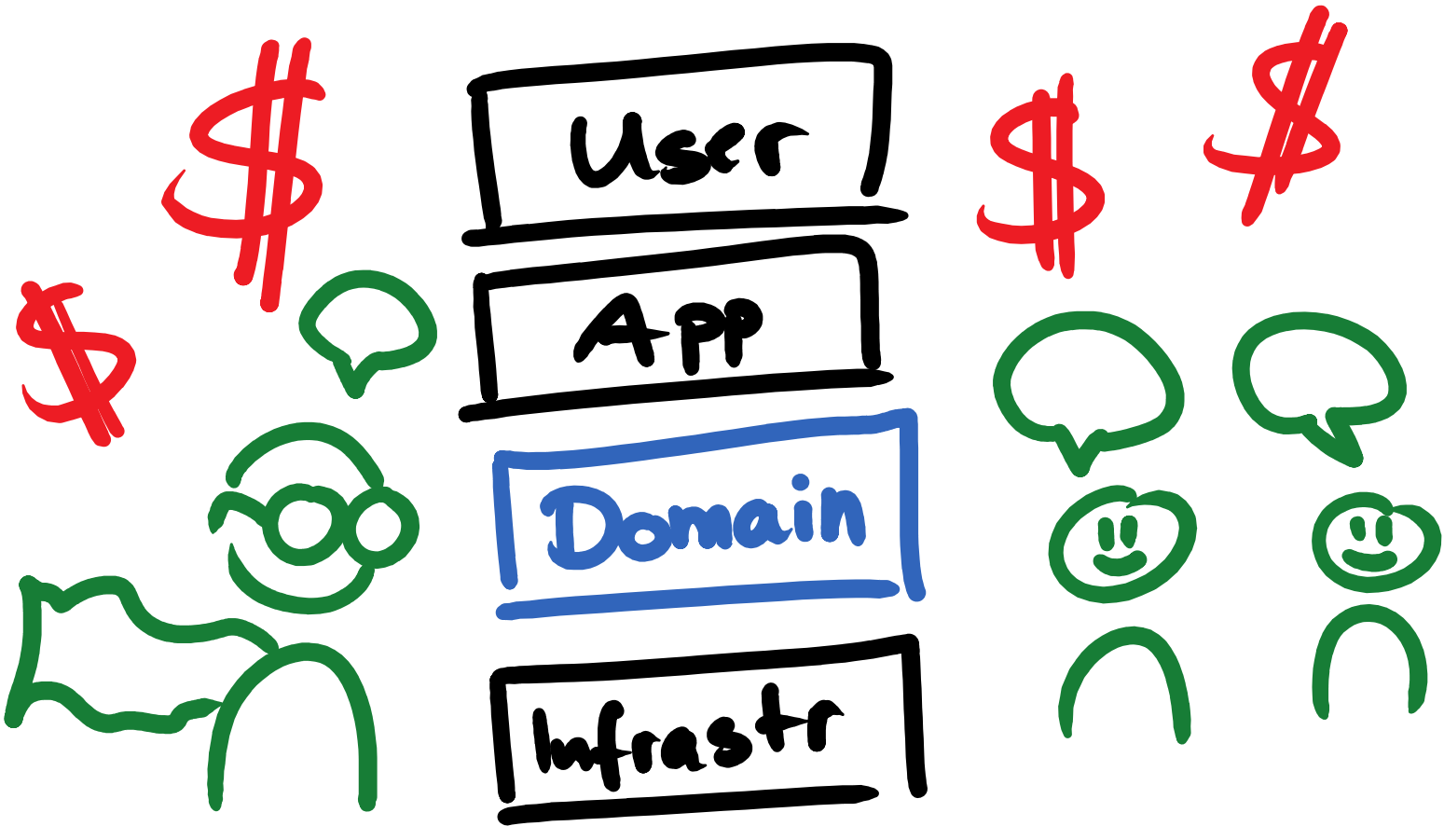
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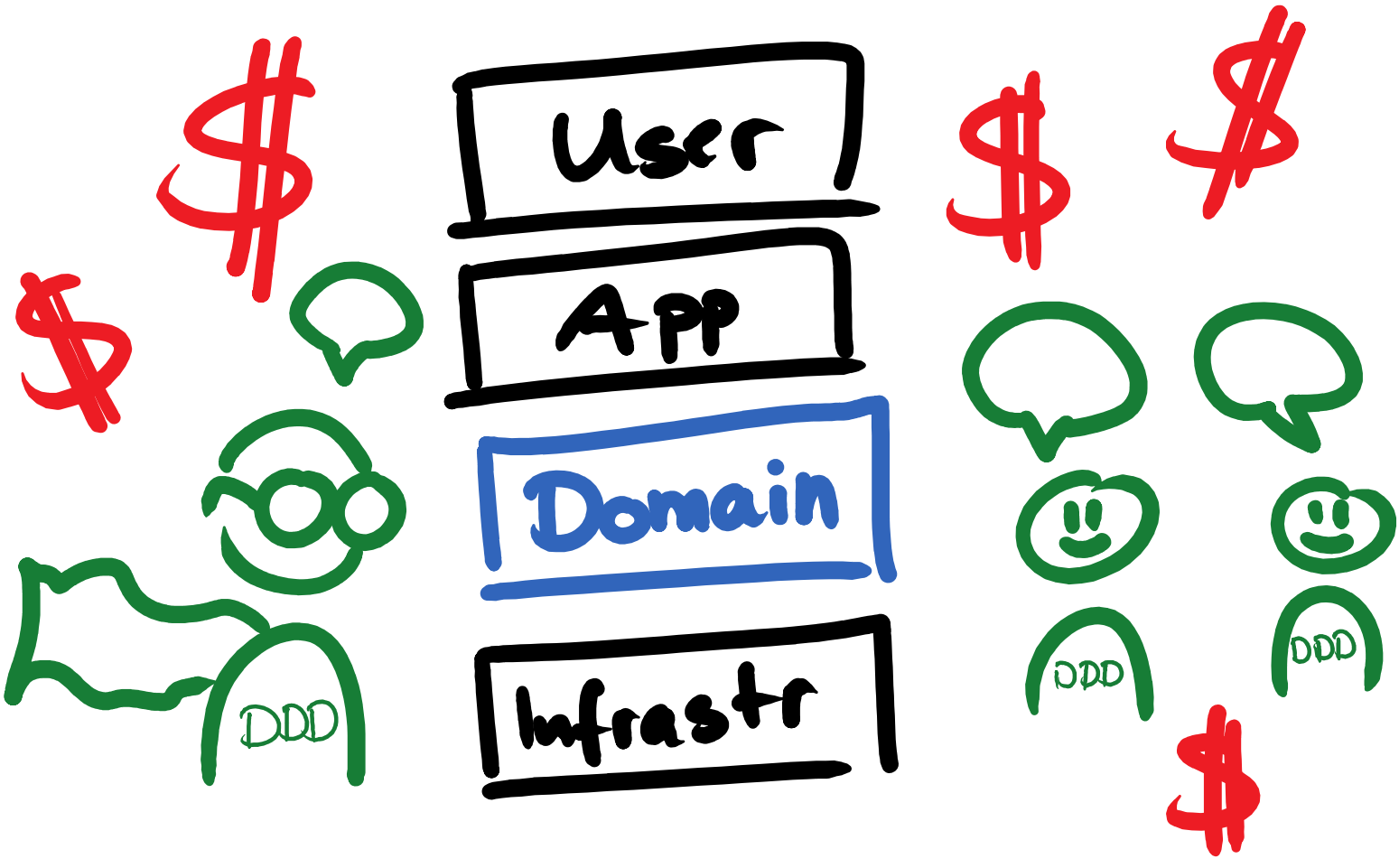
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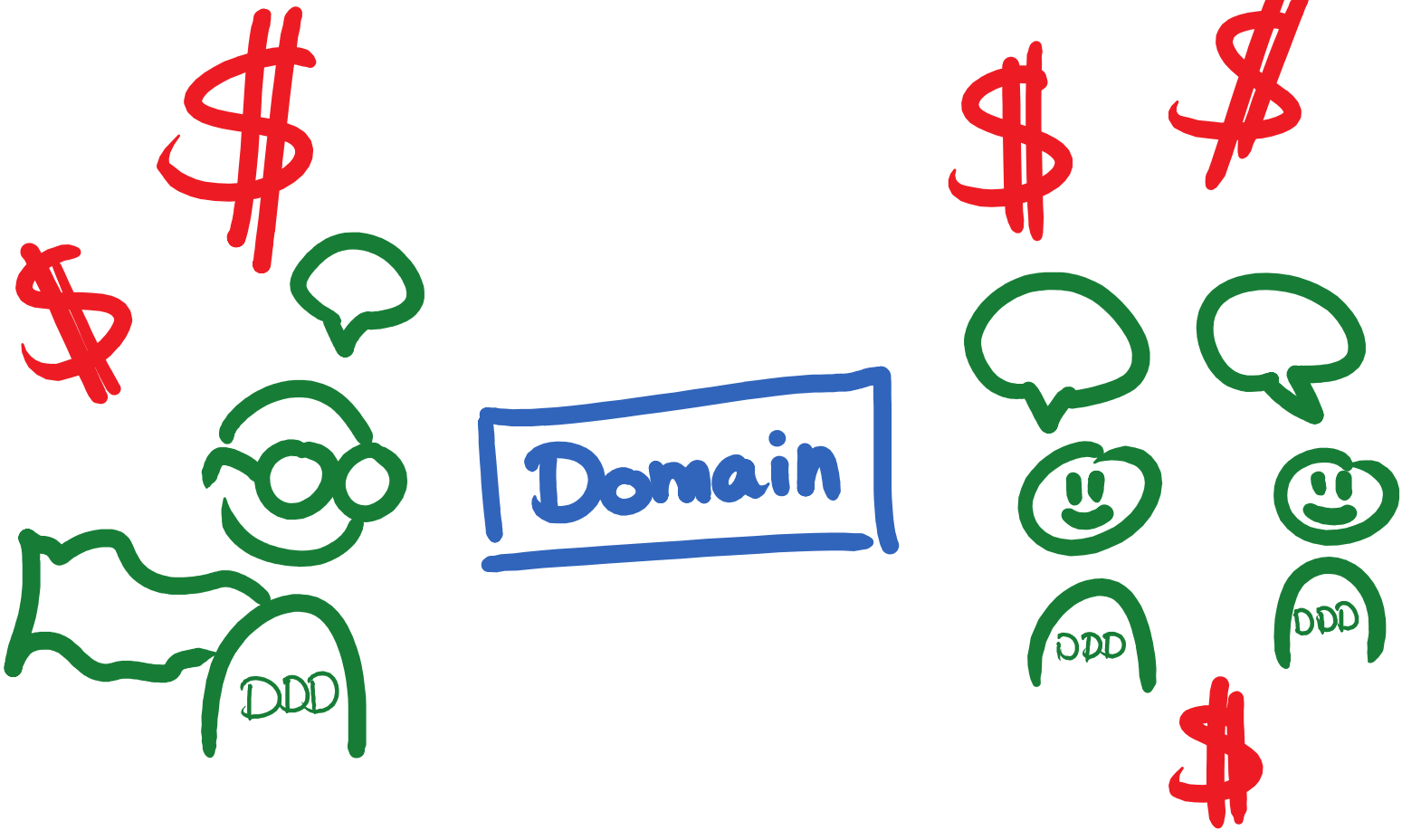
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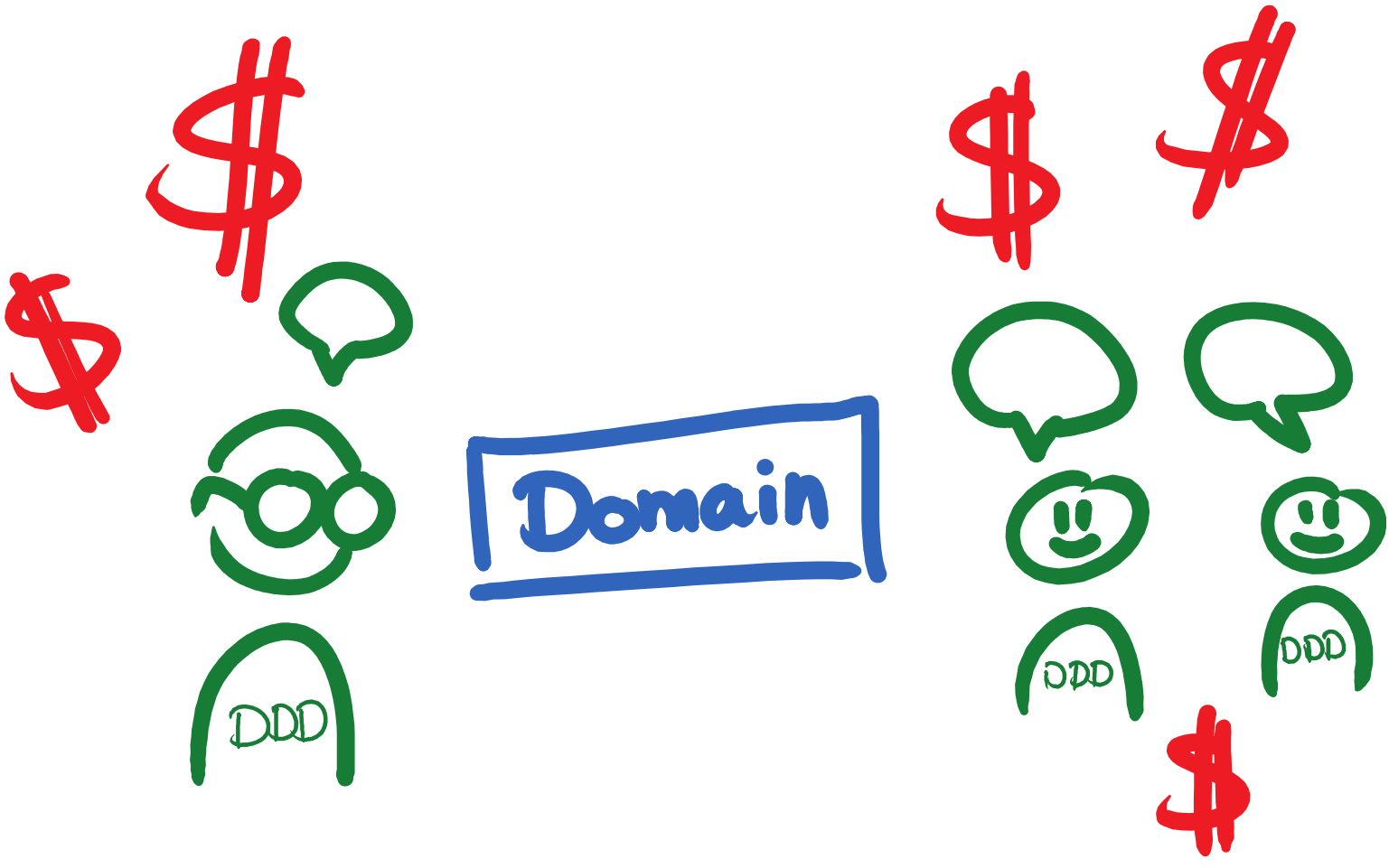
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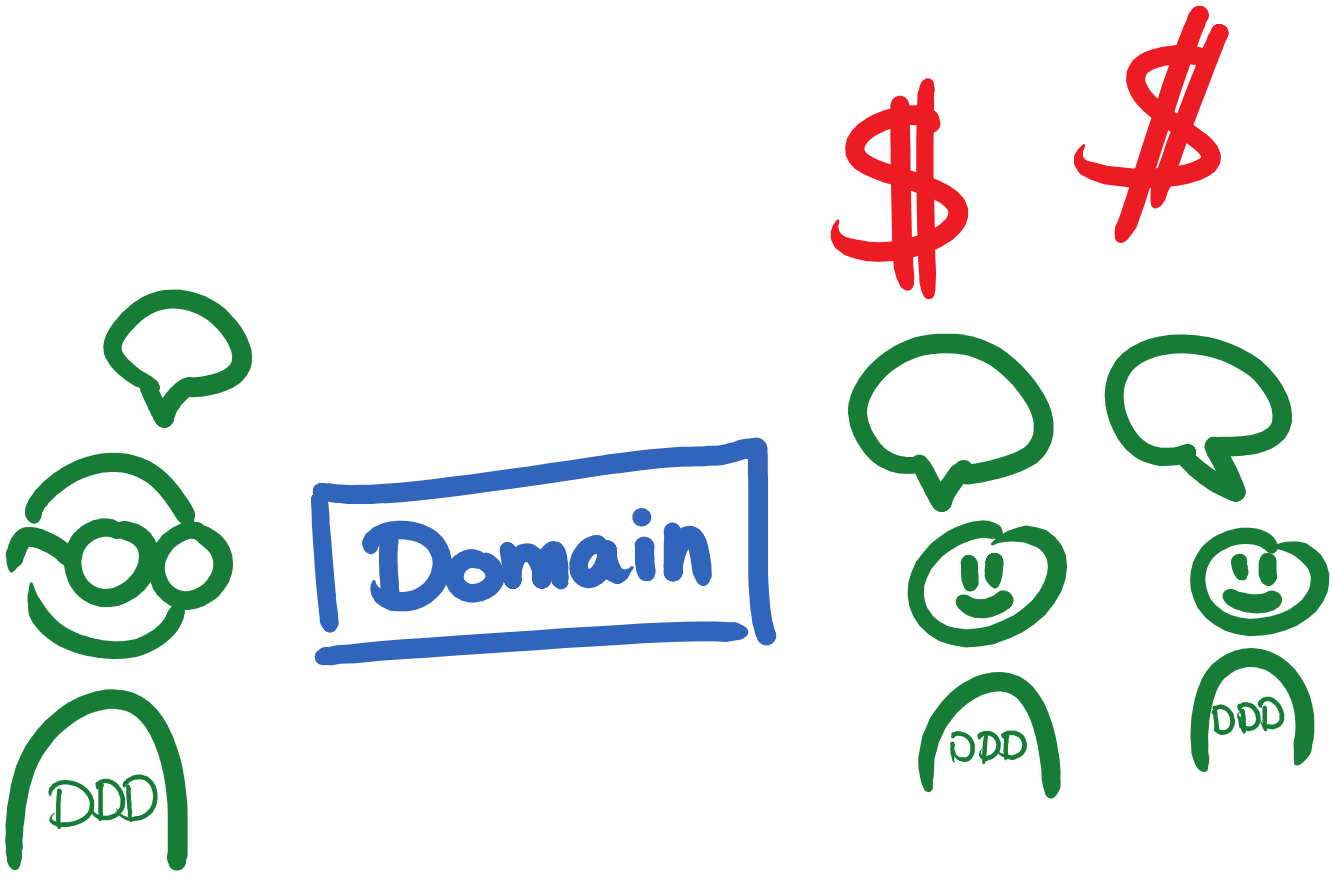
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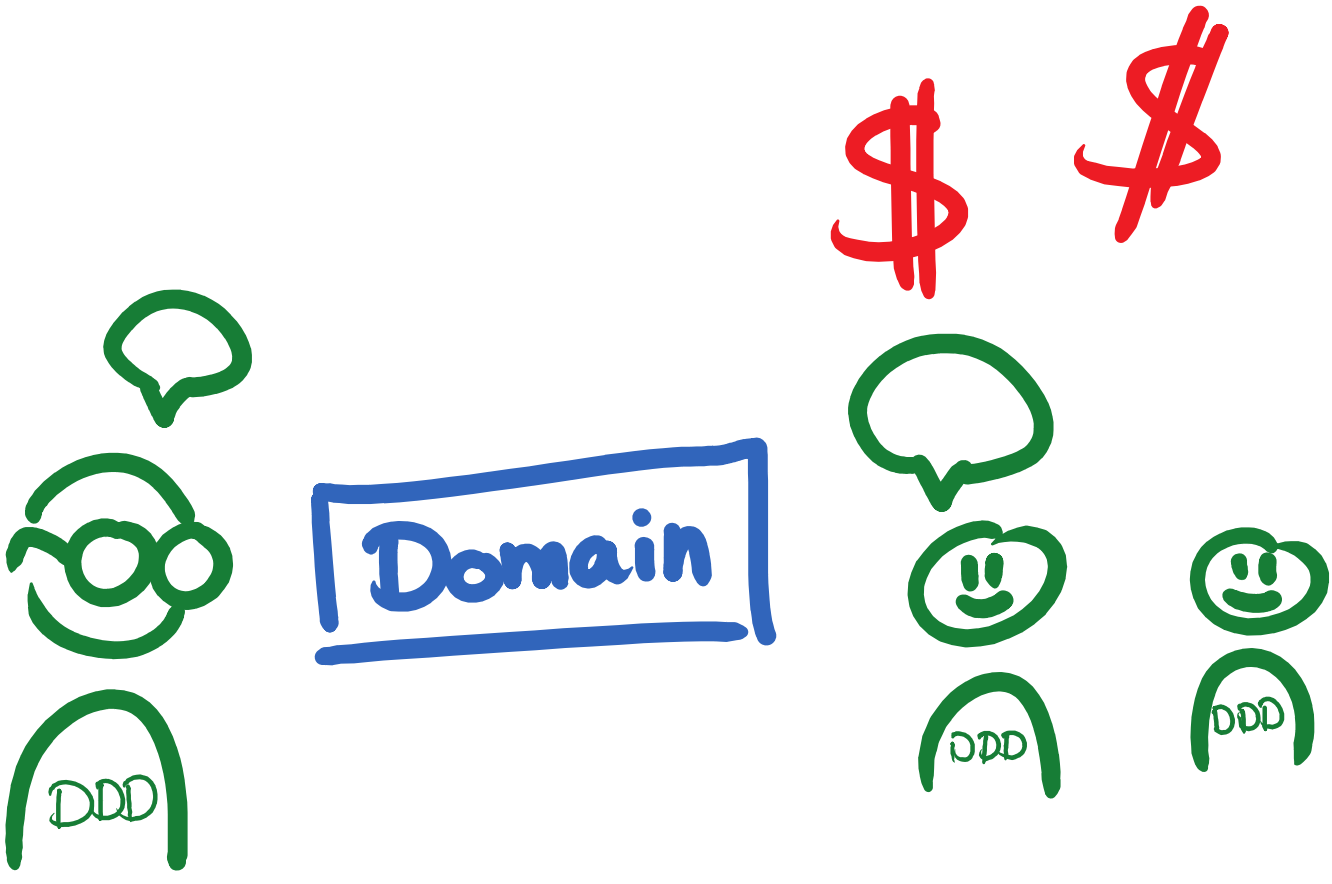
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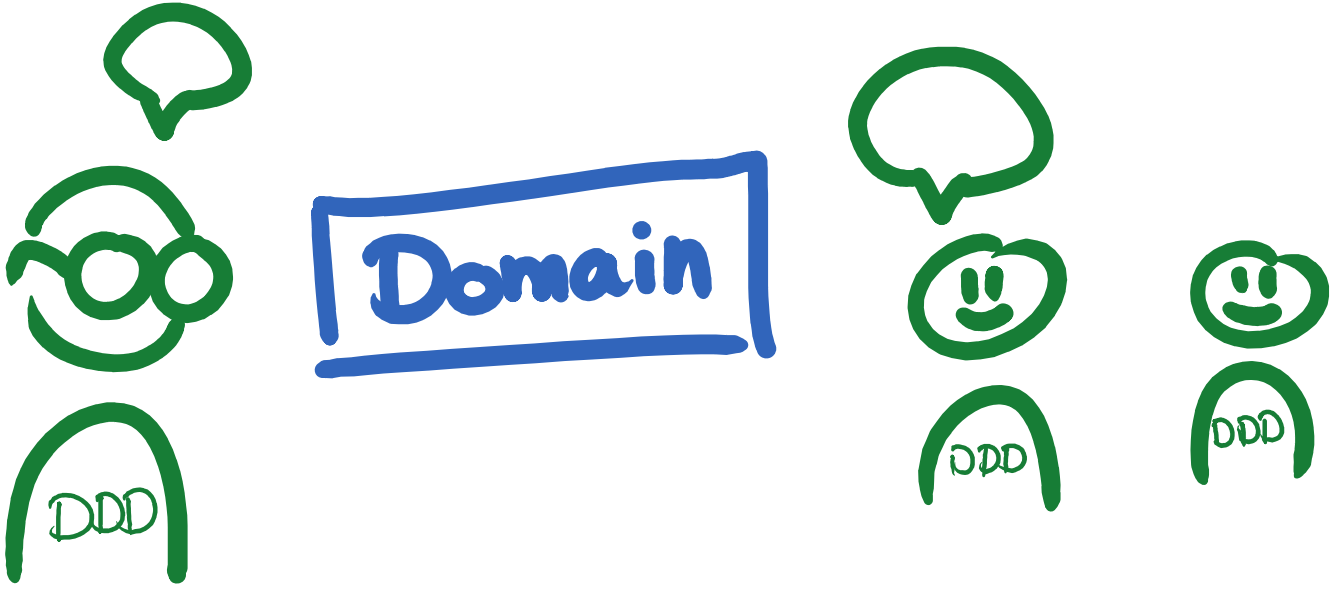
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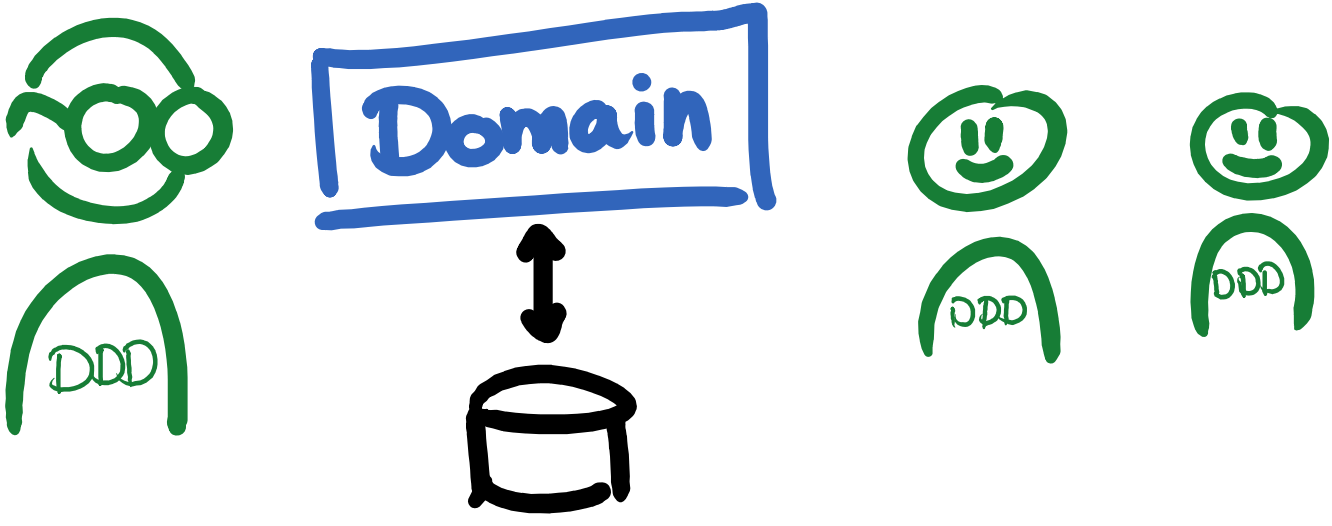
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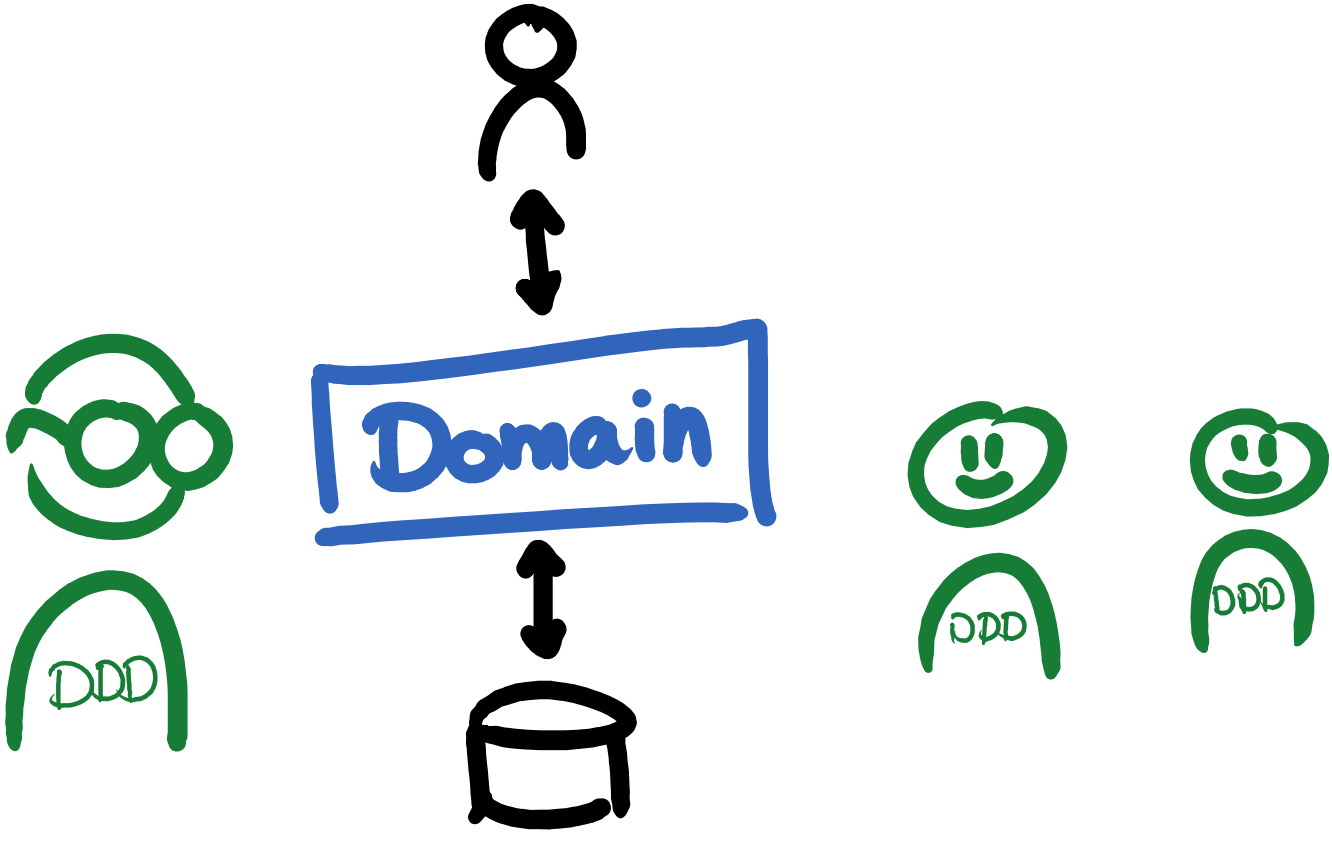
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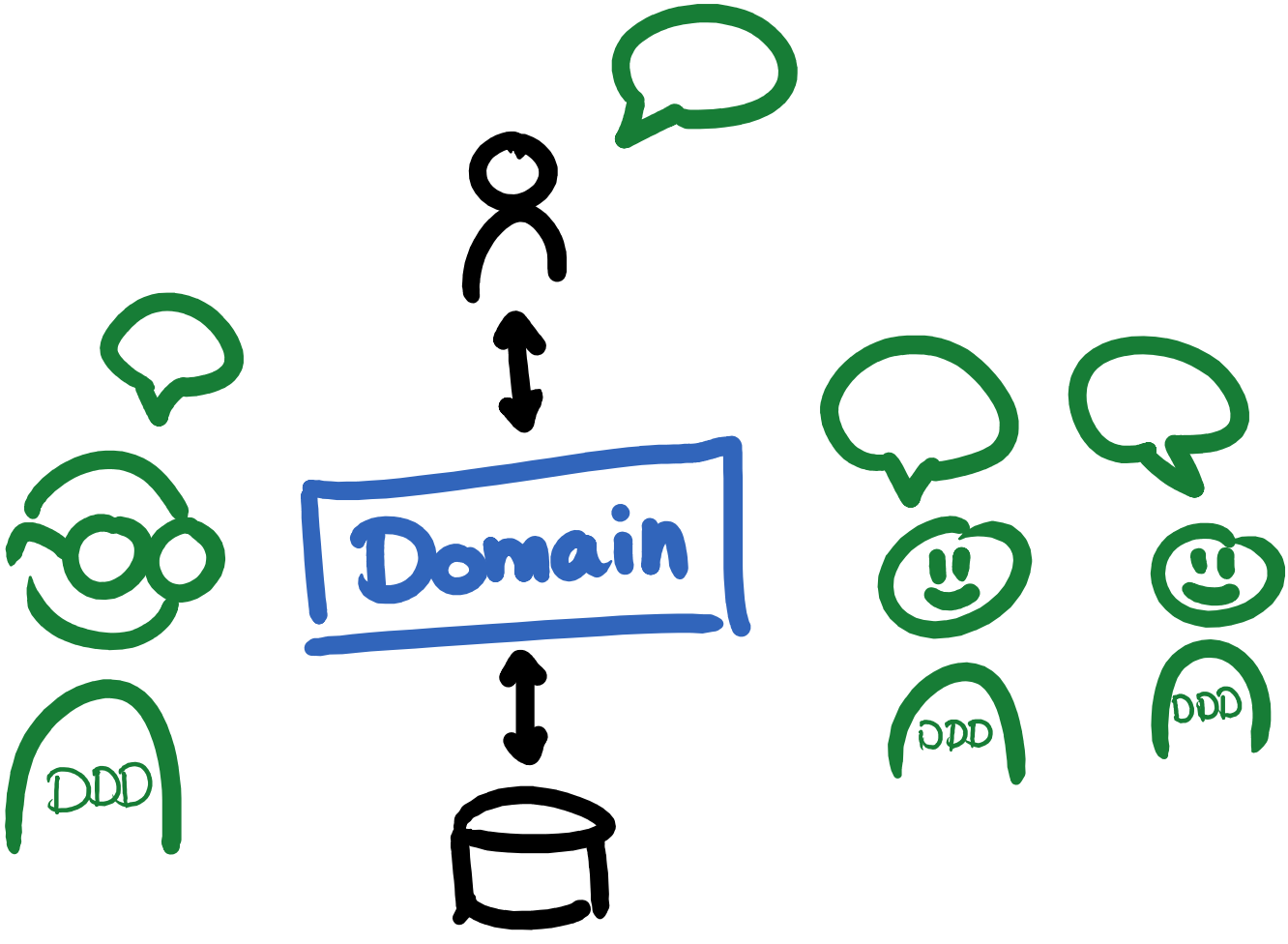
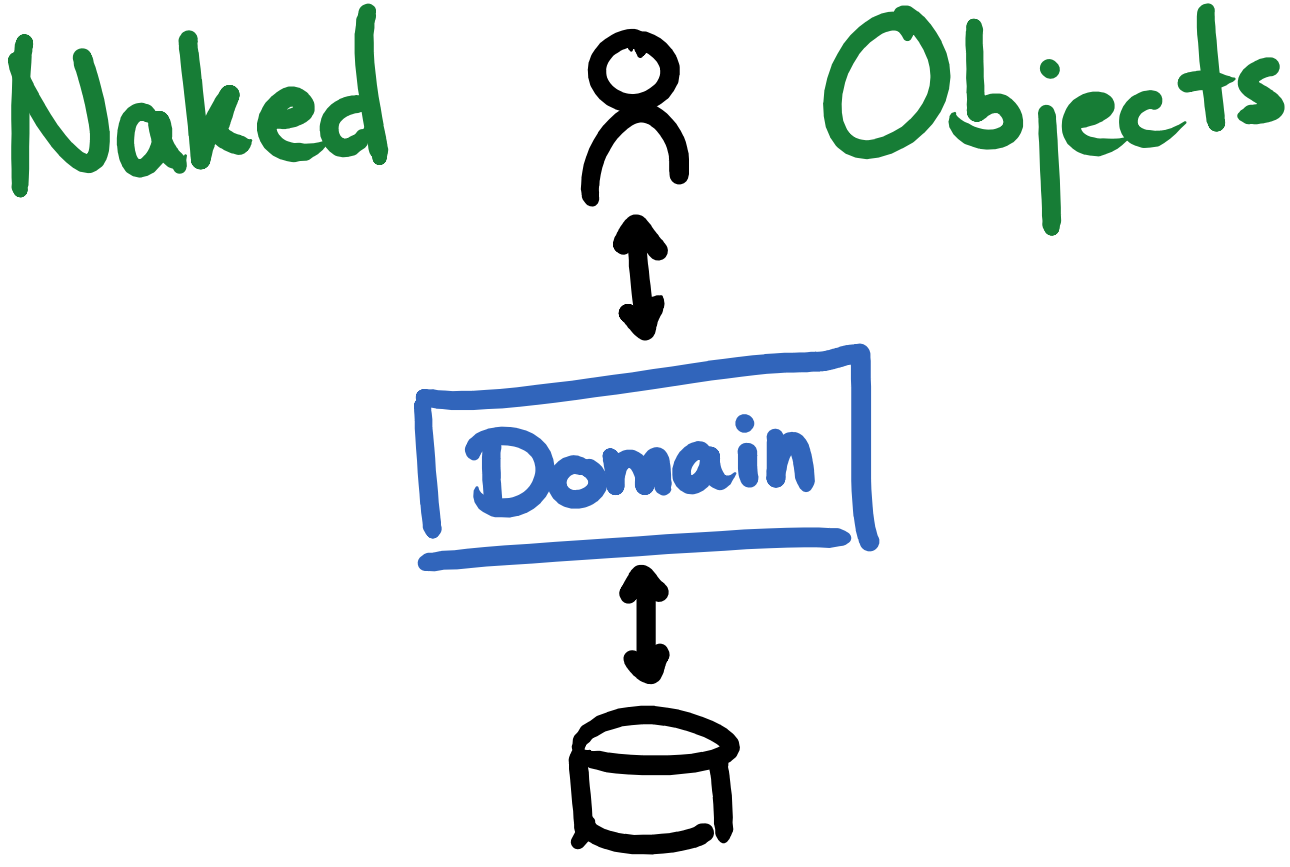
DDD
DDD

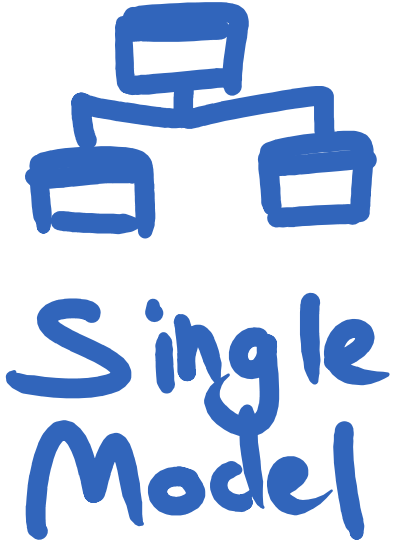

Domain
DDD
DDD
DDD

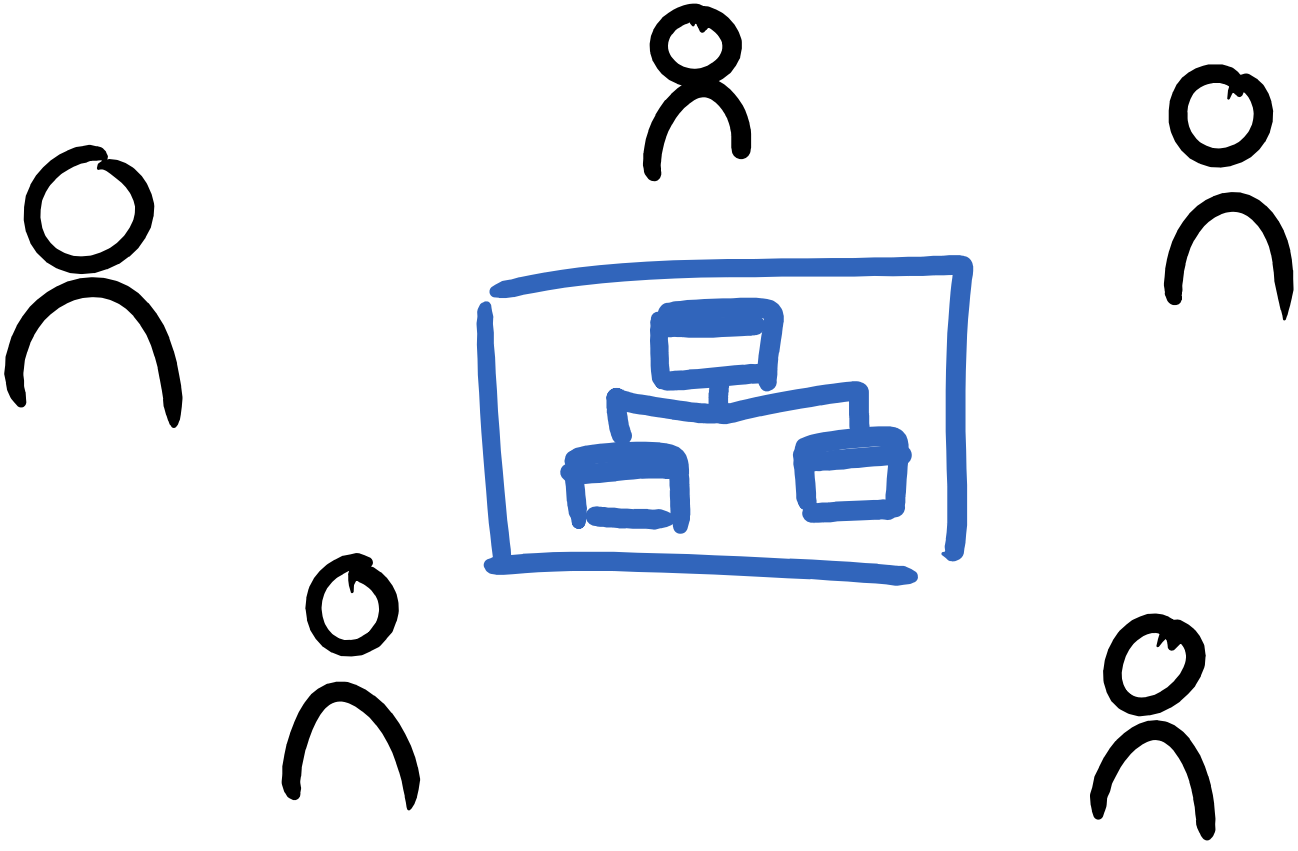

Naked
Objects
Domain

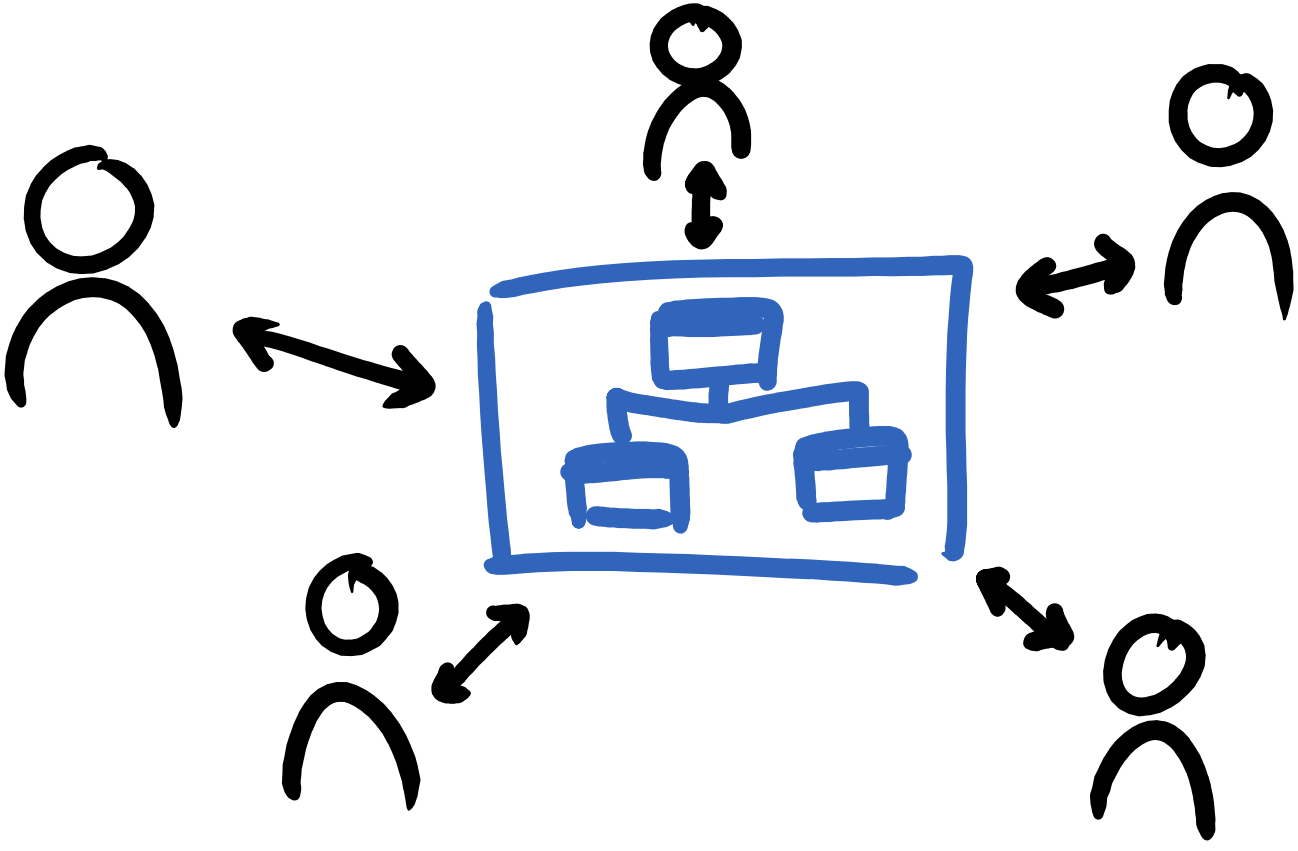
Naked Objects

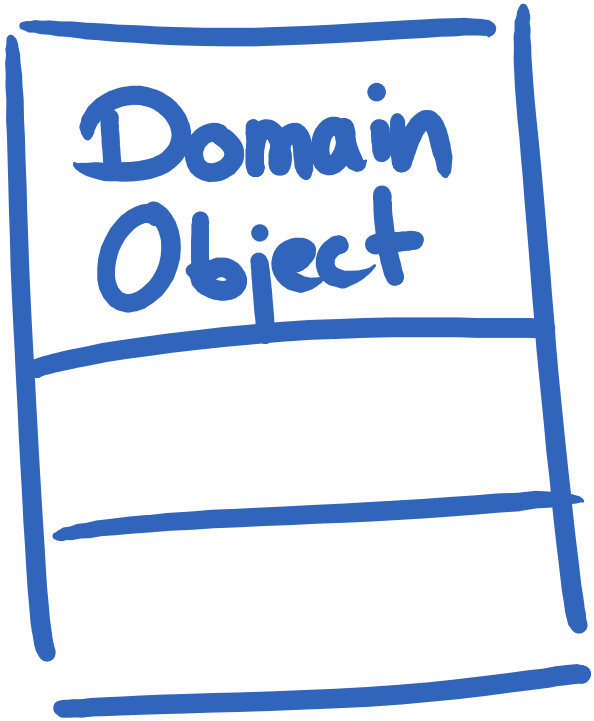
Richard Pawson

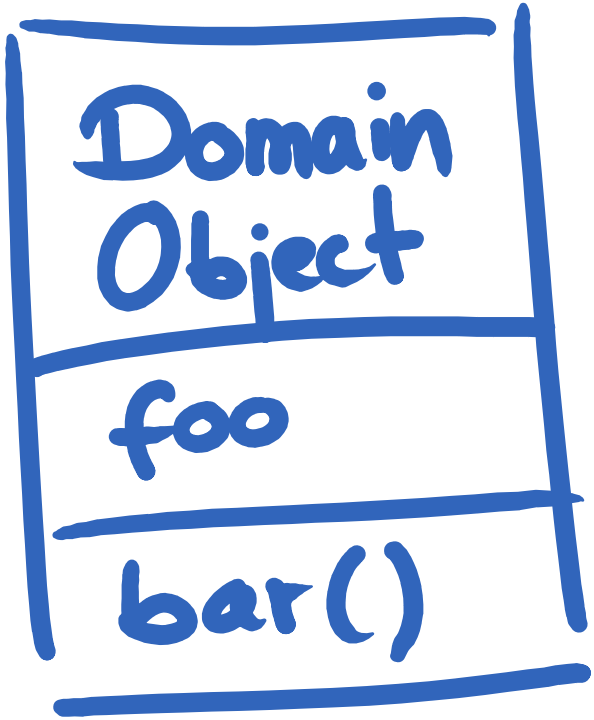
2004

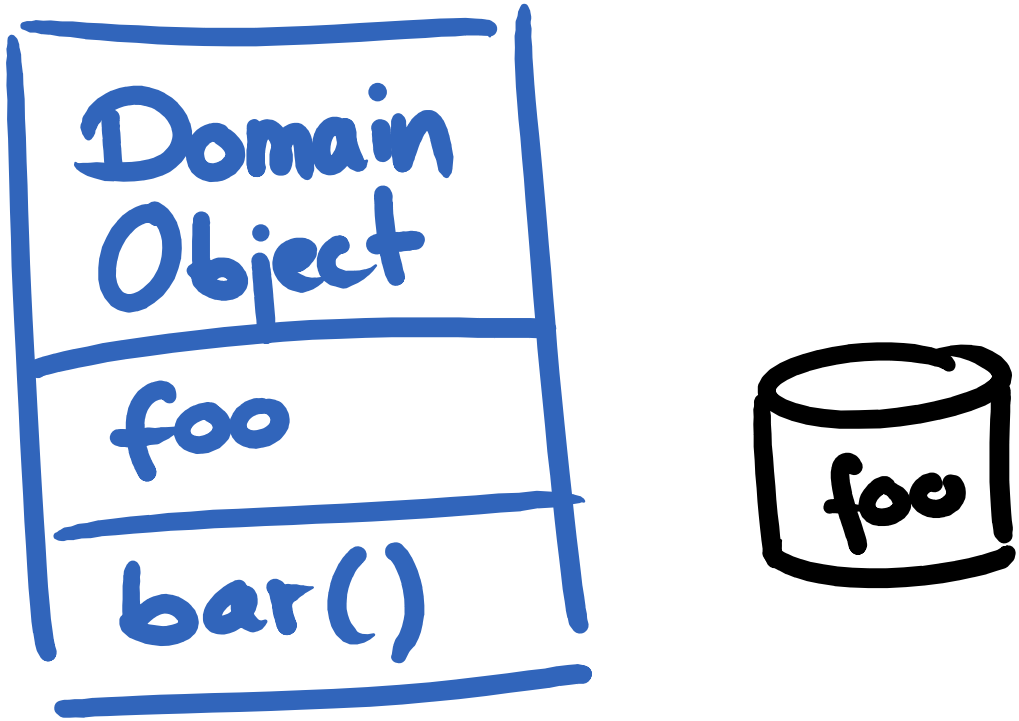

Single
Model

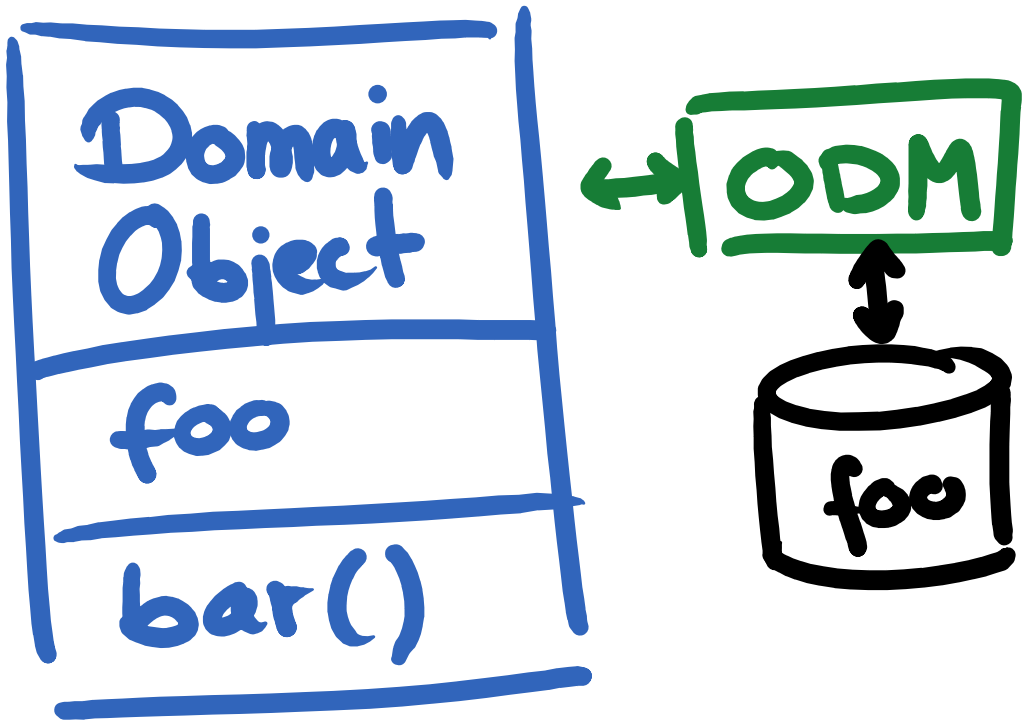


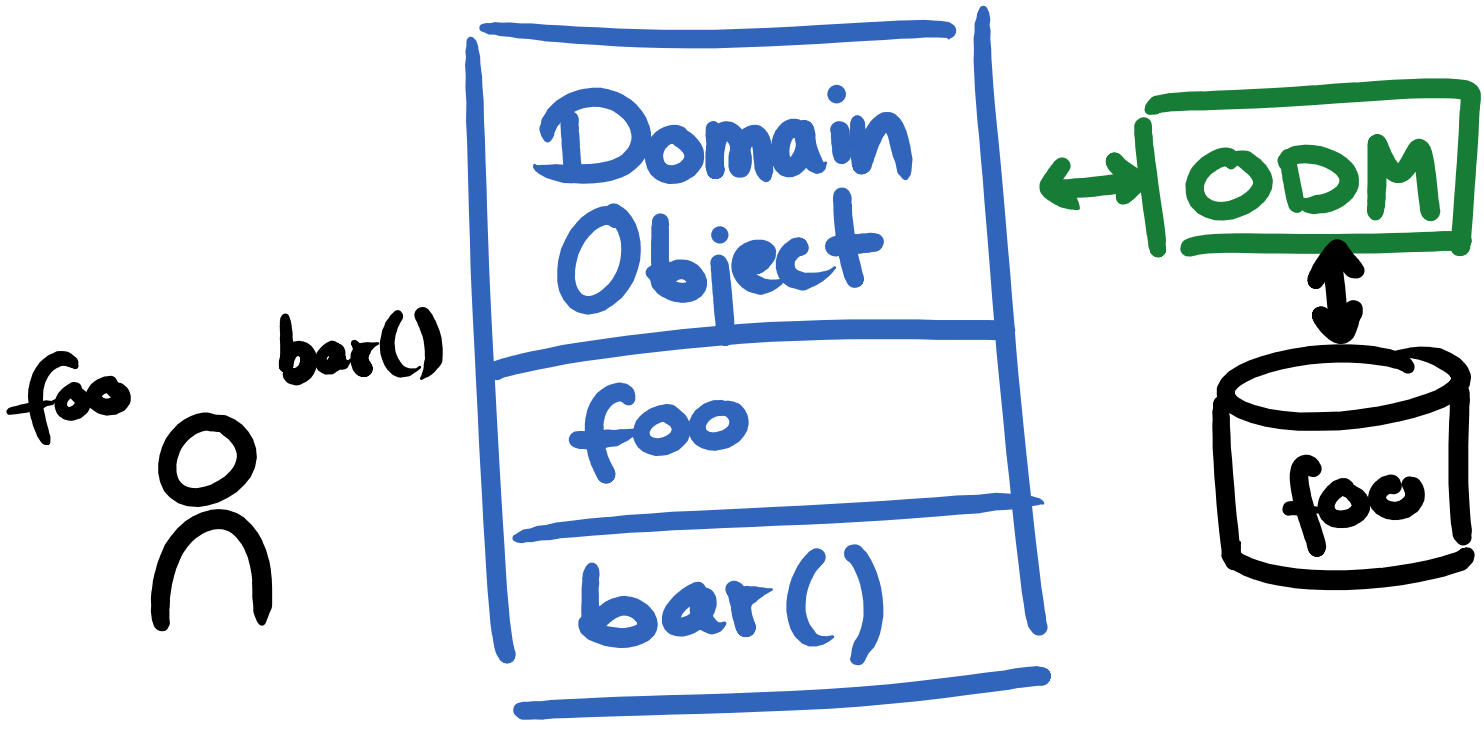


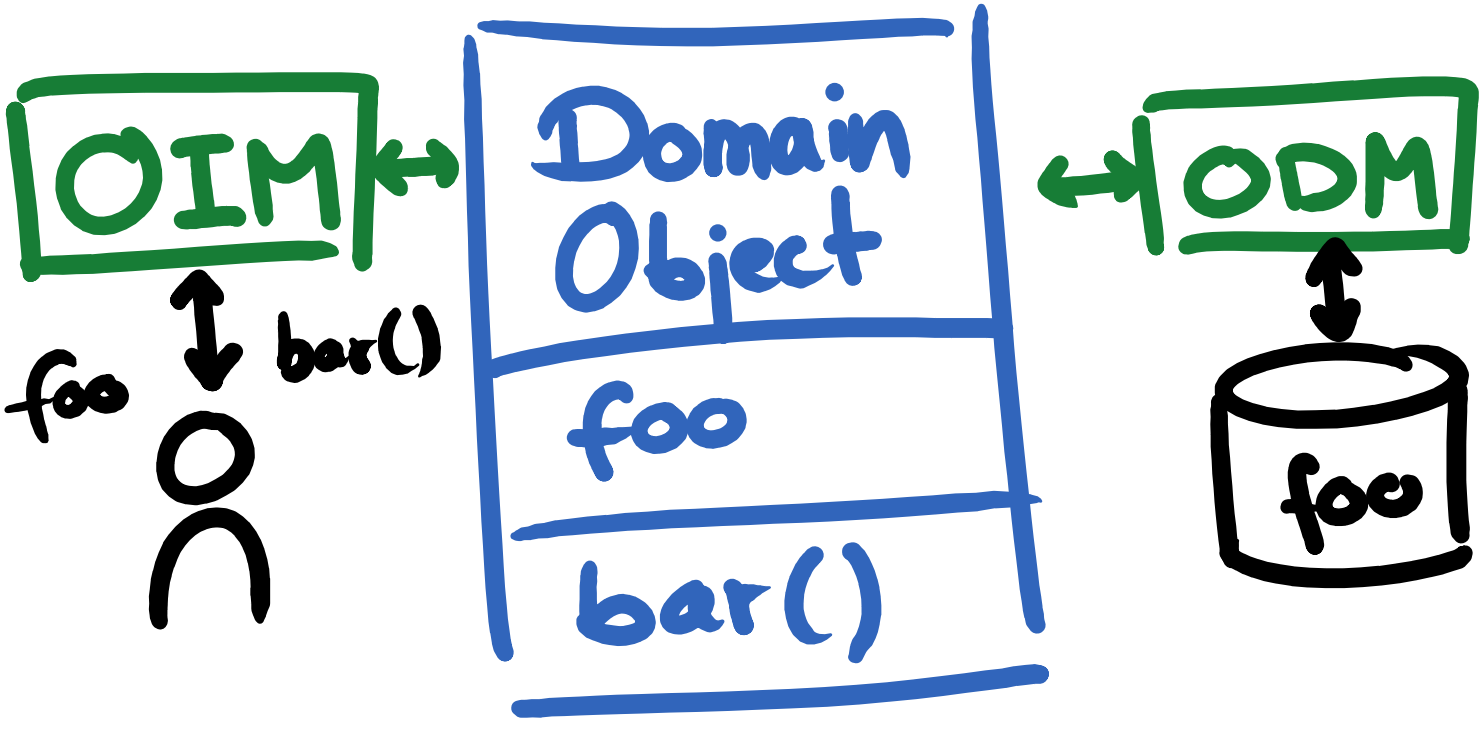

Domain
Object


Domain
Object
foo
bar()


Domain
Object
foo
bar()
foo

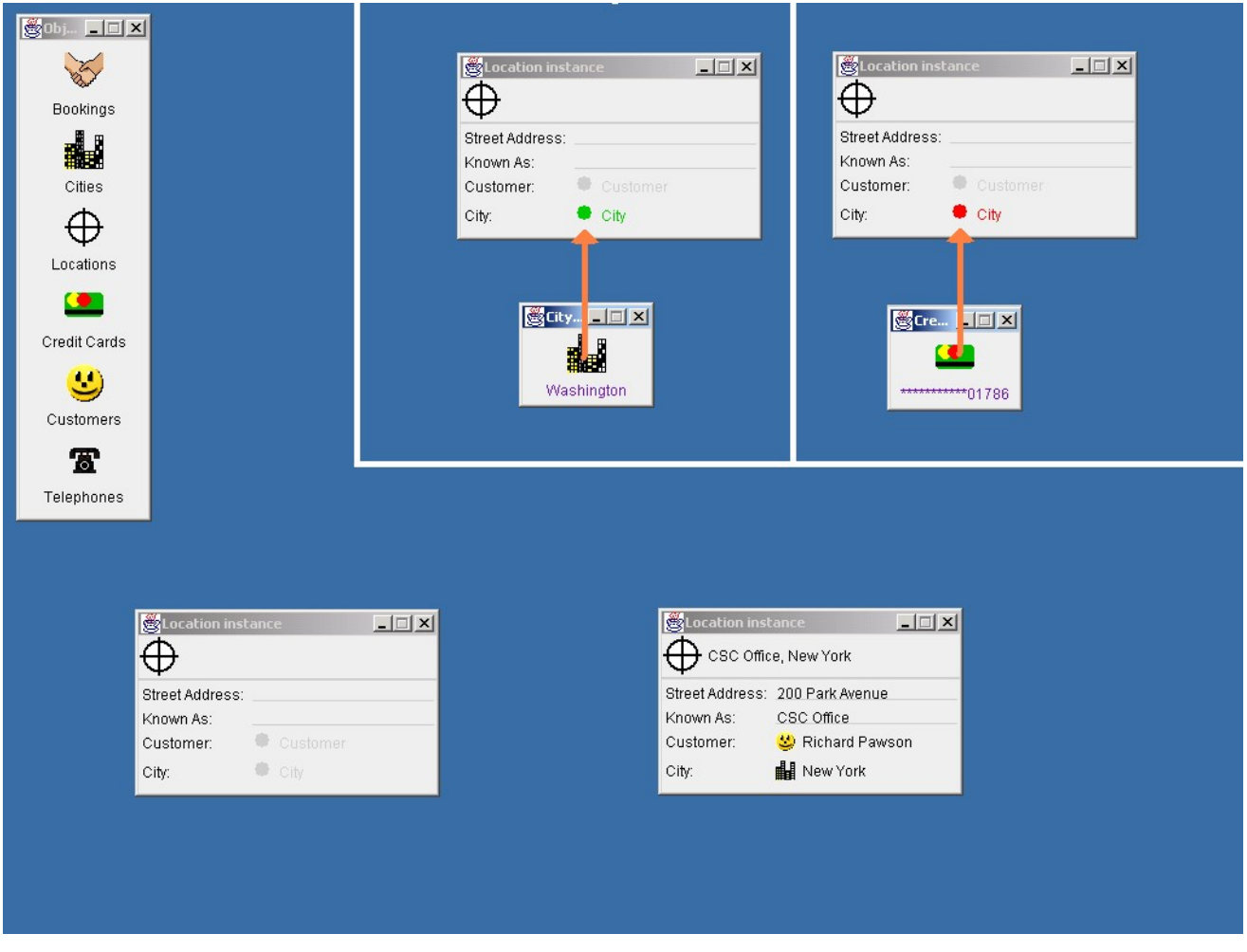

Domain Object
foo
bar()
ODM
foo

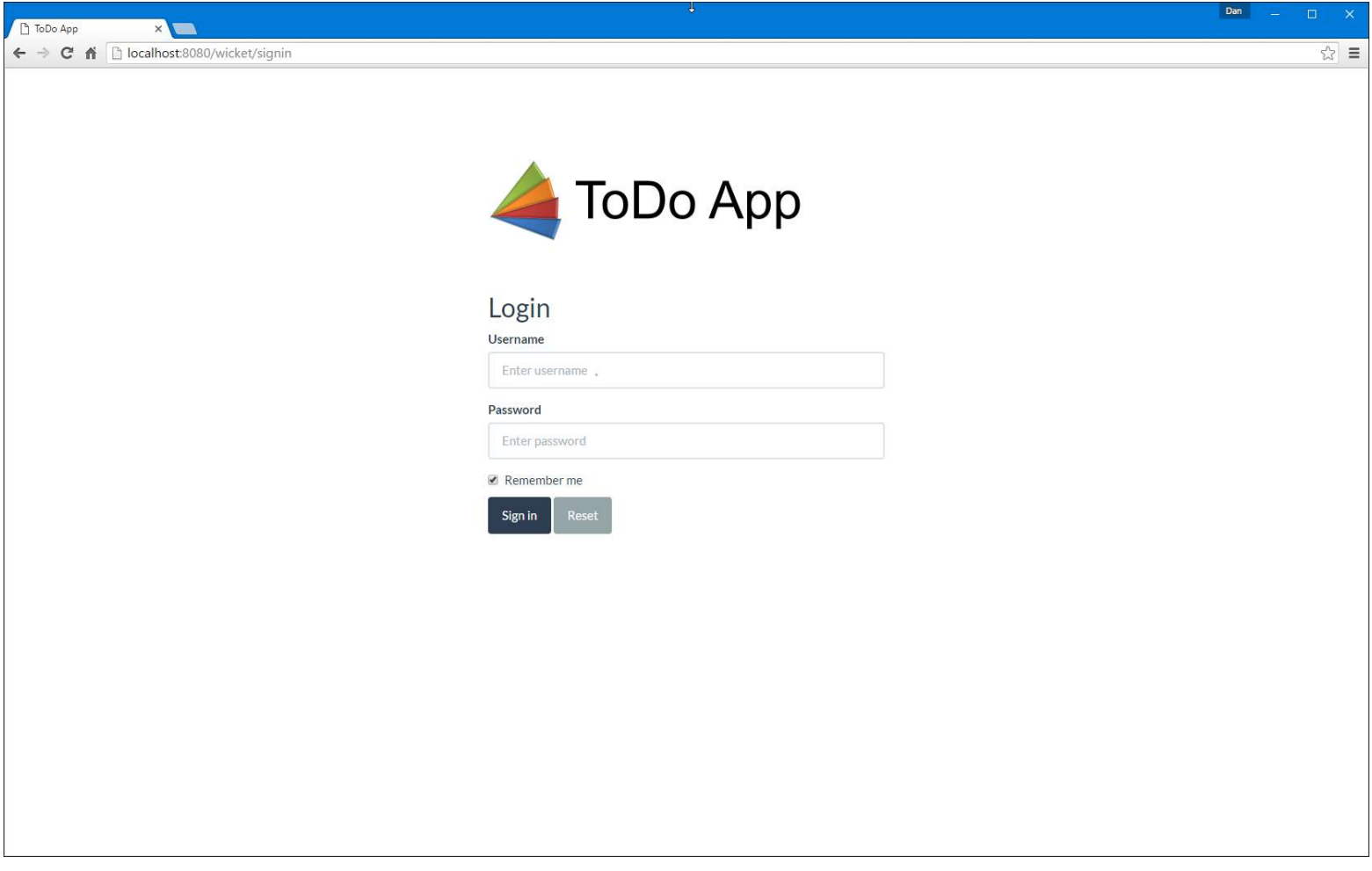

foo
bar()
Domain Object
foo
bar()
ODM
foo

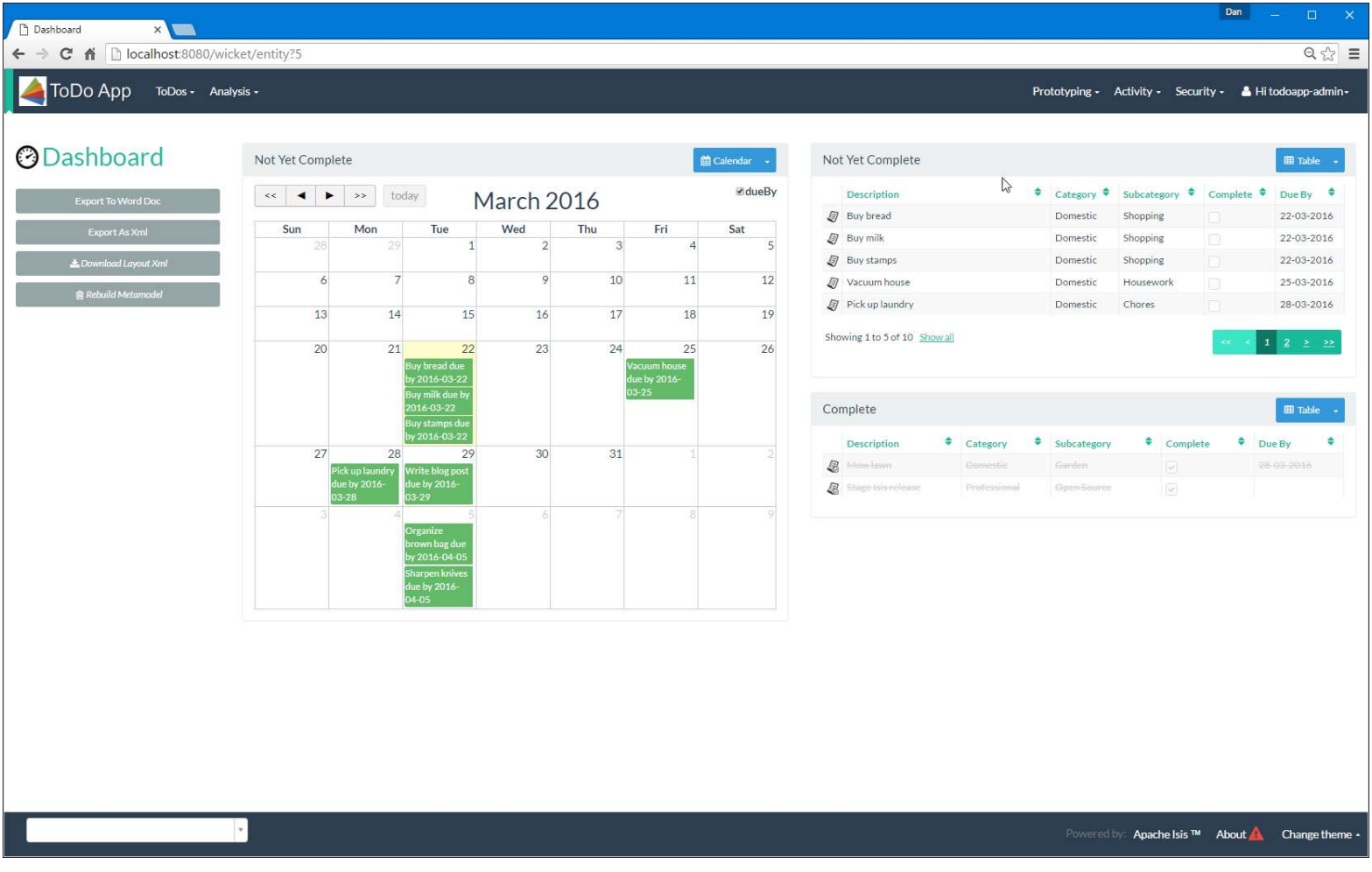

OIM
foo
bar()
Domain Object
foo
bar()
ODM
foo

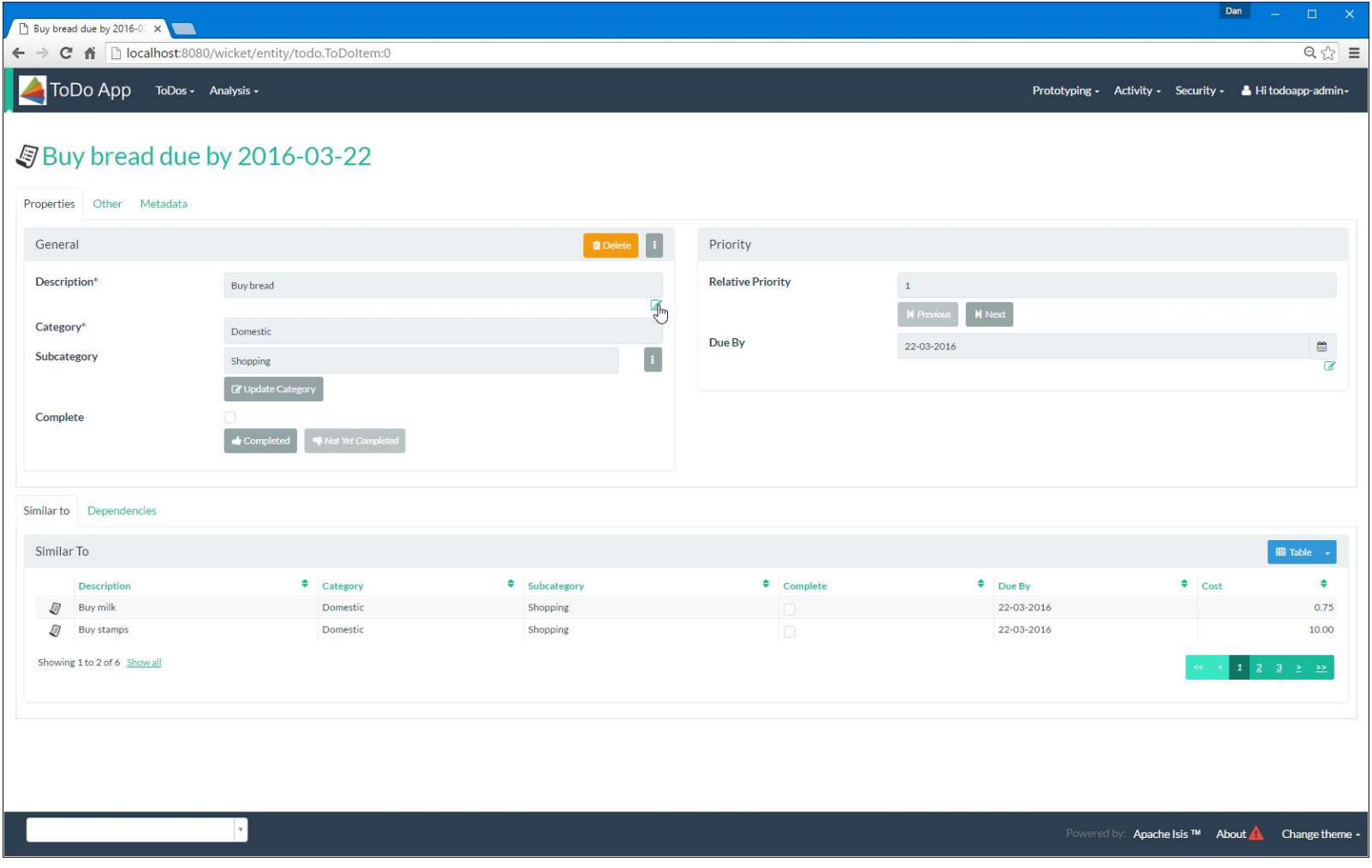
Apache

Obj...
Bookings
Cities
Locations
Credit Cards
Customers
Telephones
Customer instance
Richard Pawson
First Name: Richard
Last Name: Pawson
Phone Numbers: Home
Phone Numbers
Bookings: #1 New Booking
Bookings
Locations: Office, Boston
Home
Locations
Preferred Payment Method: **********01893
Booking instance
#1 New Booking
Reference: #1
Status: New Booking
Customer: Richard Pawson
Date: 29-Aug-02
Time: 06:50:00
Pick Up: Home
Drop Off: Logan Airport
Payment Method: **********01893
City: Boston
Contact Telephone: Home
Inst...
Cities
Atlanta
Seattle
Tampa
Chicago
Washington
Boston
New York
Location instance
Office, Boston
Street Address:
Known As: Office
Customer: Richard Pawson
City: Boston


Obj...
Bookings
Cities
Locations
Credit Cards
Customers
Telephones
Location instance
Street Address:
Known As:
Customer:
Customer
City:
City
City...
Washington
Location instance
Street Address:
Known As:
Customer:
Customer
City:
City
Cre...
**********01786
Location instance
Street Address:
Known As:
Customer:
Customer
City:
City
Location instance
CSC Office, New York
Street Address: 200 Park Avenue
Known As: CSC Office
Customer: Richard Pawson
City: New York


ToDo App
Dan
ToDo App
localhost:8080/wicket/signin
ToDo App
Login
Username
Enter username
Password
Enter password
Remember me
Sign in
Reset


Dashboard
Dan
localhost:8080/wicket/entity?5
ToDo App
ToDos
Analysis
Prototyping
Activity
Security
Hi todoapp-admin
Dashboard
Export To Word Doc
Export As Xml
Download Layout Xml
Rebuild Metamodel
Not Yet Complete
Calendar
<< < > >> today
March 2016
dueBy
Sun Mon Tue Wed Thu Fri Sat
28 29 1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31 1 2
3 4 5 6 7 8 9
Buy bread due by 2016-03-22
Buy milk due by 2016-03-22
Buy stamps due by 2016-03-22
Vacuum house due by 2016-03-25
Pick up laundry due by 2016-03-28
Write blog post due by 2016-03-29
Organize brown bag due by 2016-04-05
Sharpen knives due by 2016-04-05
Not Yet Complete
Table
Description Category Subcategory Complete Due By
Buy bread Domestic Shopping 22-03-2016
Buy milk Domestic Shopping 22-03-2016
Buy stamps Domestic Shopping 22-03-2016
Vacuum house Domestic Housework 25-03-2016
Pick up laundry Domestic Chores 28-03-2016
Showing 1 to 5 of 10 Show all
<< < 1 2 > >>
Complete
Table
Description Category Subcategory Complete Due By
Mow lawn Domestic Garden 28-03-2016
Stage Isis release Professional Open Source
Powered by: Apache Isis ™
About
Change theme

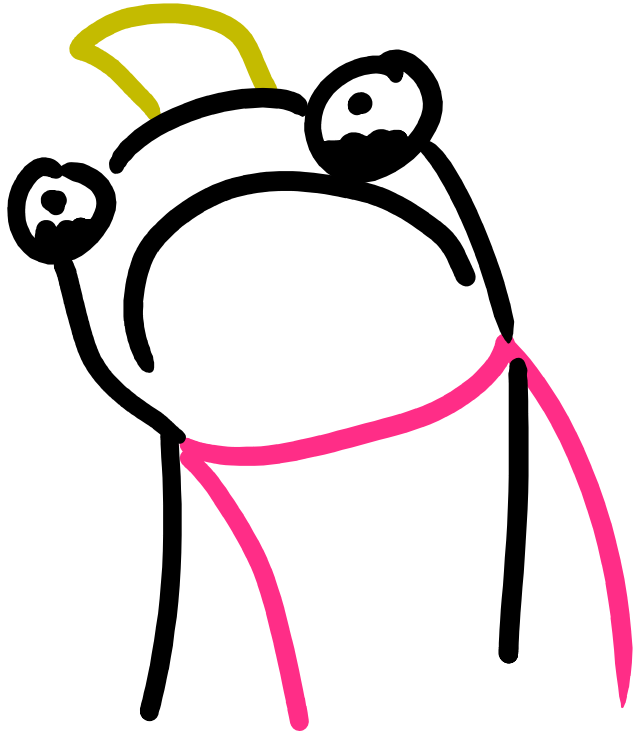

Buy bread due by 2016-0
Dan
localhost:8080/wicket/entity/todo.ToDoItem:0
ToDo App
ToDos
Analysis
Prototyping
Activity
Security
Hi todoapp-admin
Buy bread due by 2016-03-22
Properties
Other
Metadata
General
Delete
Description*
Buy bread
Category*
Domestic
Subcategory
Shopping
Update Category
Complete
Completed
Not Yet Completed
Priority
Relative Priority
1
Previous
Next
Due By
22-03-2016
Similar to
Dependencies
Similar To
Table
Description
Category
Subcategory
Complete
Due By
Cost
Buy milk
Domestic
Shopping
22-03-2016
0.75
Buy stamps
Domestic
Shopping
22-03-2016
10.00
Showing 1 to 2 of 6 Show all
Powered by: Apache Isis ™
About
Change theme

Naked Objects

all

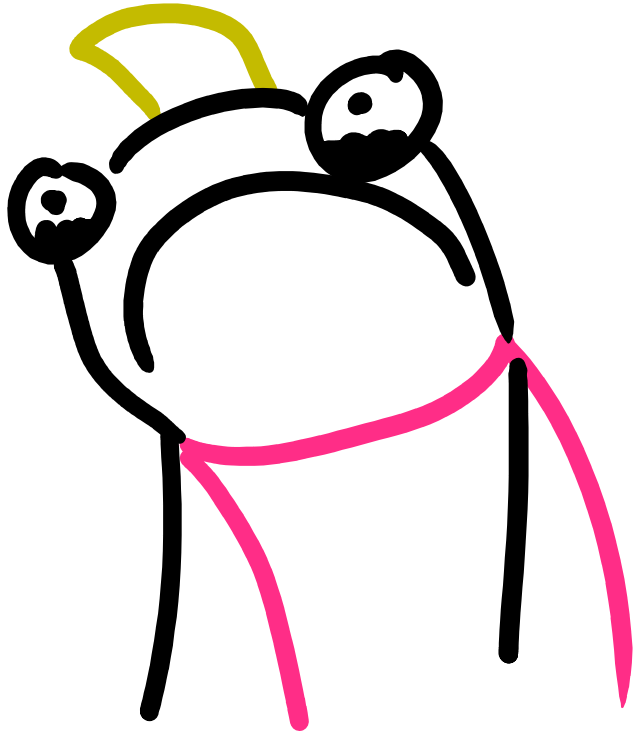
the things!

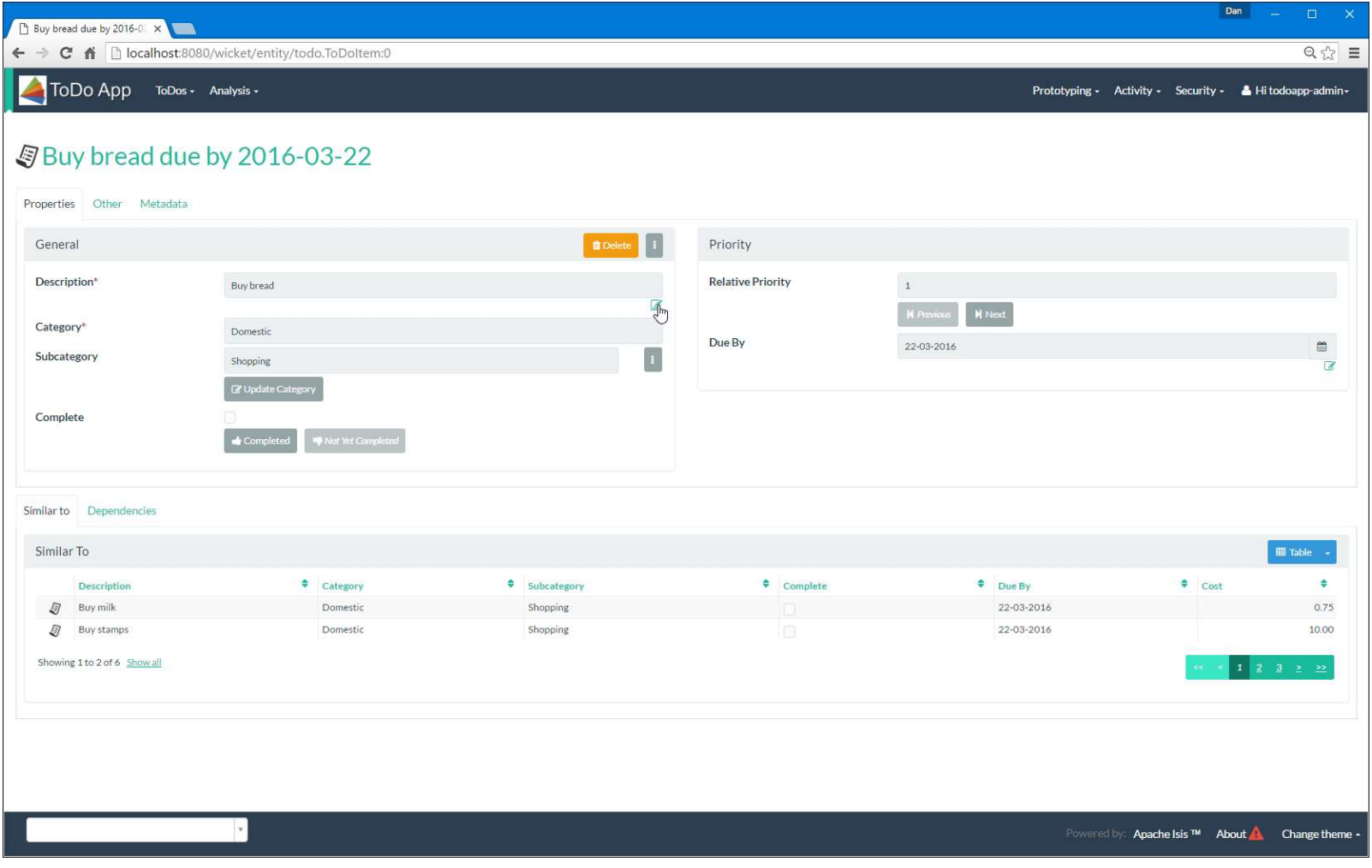
But...

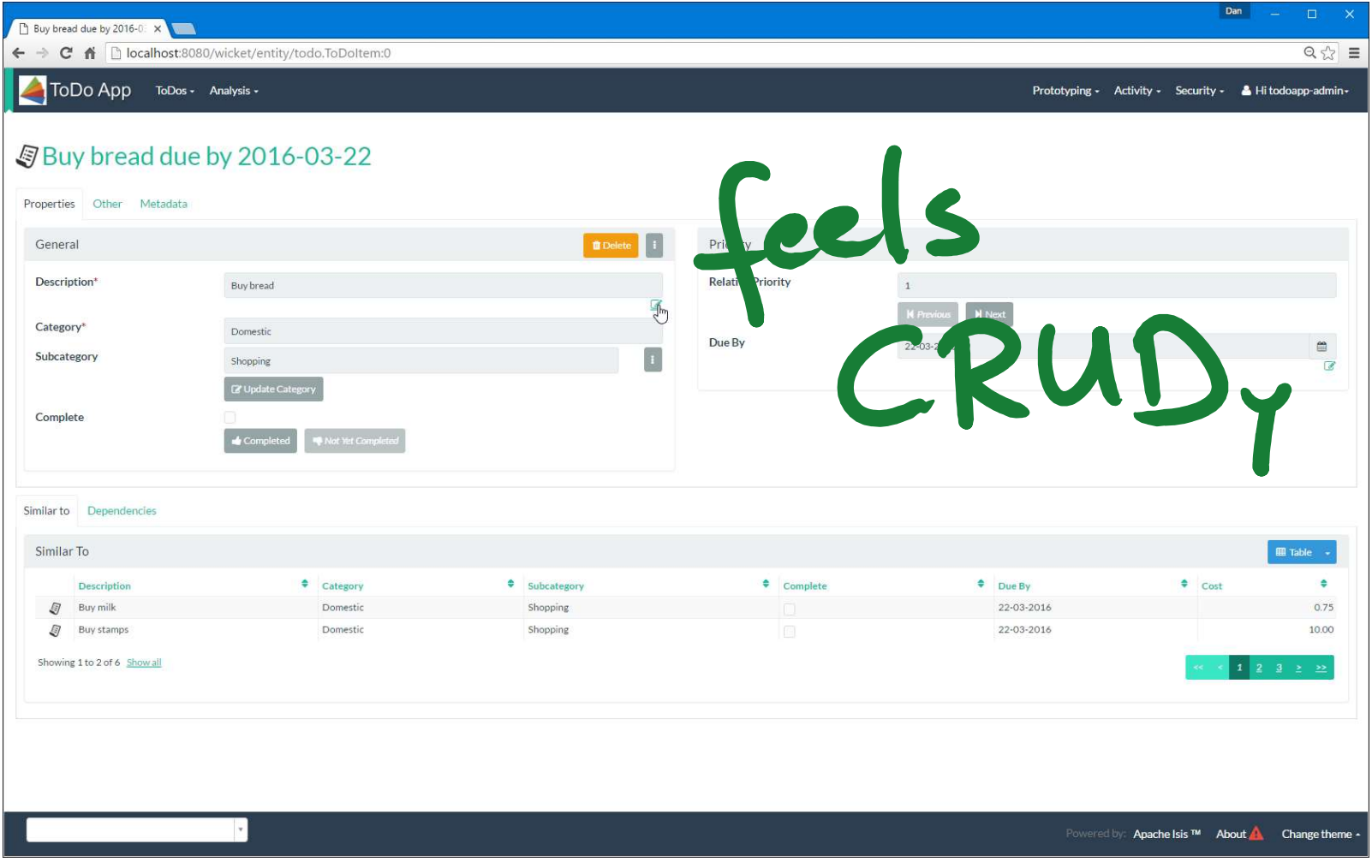


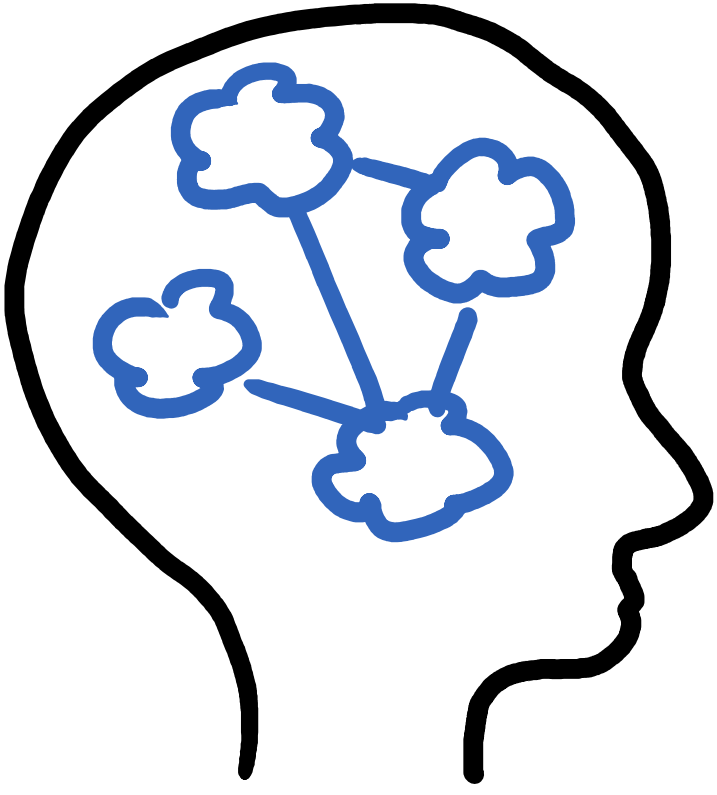
But...

work within framework?

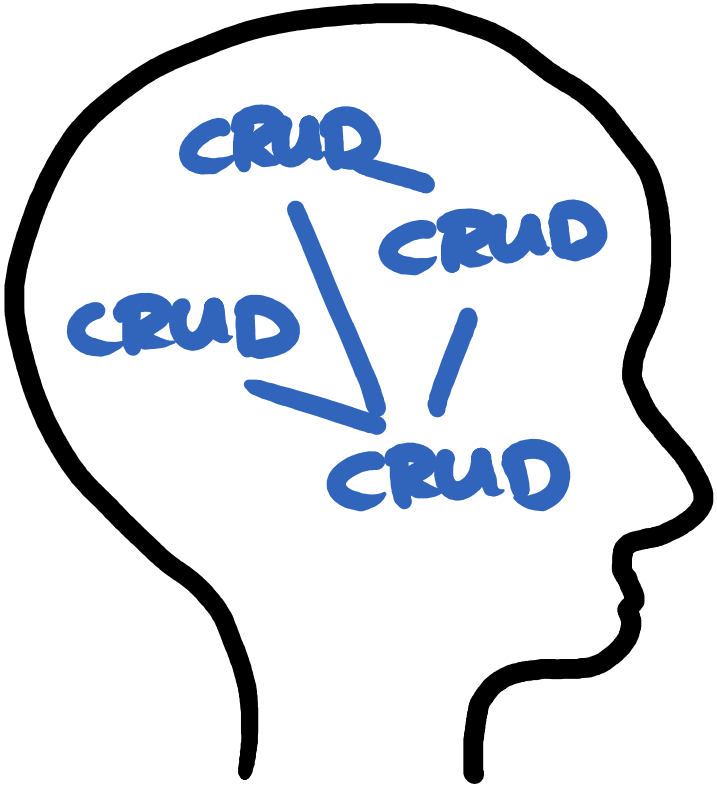



Buy bread due by 2016-0
Dan
localhost:8080/wicket/entity/todo.ToDoItem:0
ToDo App
ToDos
Analysis
Prototyping
Activity
Security
Hi todoapp-admin
Buy bread due by 2016-03-22
Properties
Other
Metadata
General
Delete
Description*
Buy bread
Category*
Domestic
Subcategory
Shopping
Update Category
Complete
Completed
Not Yet Completed
Priority
Relative Priority
1
Previous
Next
Due By
22-03-2016
Similar to
Dependencies
Similar To
Table
Description
Category
Subcategory
Complete
Due By
Cost
Buy milk
Domestic
Shopping
22-03-2016
0.75
Buy stamps
Domestic
Shopping
22-03-2016
10.00
Showing 1 to 2 of 6 Show all
Powered by: Apache Isis ™
About
Change theme

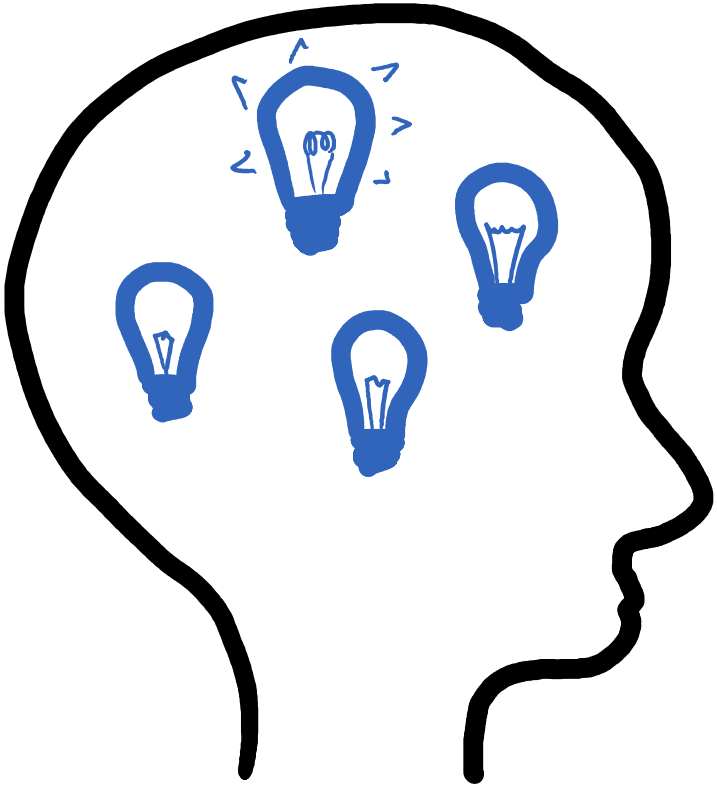

Buy bread due by 2016-0
localhost:8080/wicket/entity/todo.ToDoItem:0
Dan
ToDo App
ToDos
Analysis
Prototyping
Activity
Security
Hi todoapp-admin
Buy bread due by 2016-03-22
Properties
Other
Metadata
General
Delete
Description*
Buy bread
Category*
Domestic
Subcategory
Shopping
Update Category
Complete
Completed
Not Yet Completed
Priority
Relati Priority
1
Previous
Next
Due By
22-03-2
feels
CRUDy
Similar to
Dependencies
Similar To
Table
Description
Category
Subcategory
Complete
Due By
Cost
Buy milk
Domestic
Shopping
22-03-2016
0.75
Buy stamps
Domestic
Shopping
22-03-2016
10.00
Showing 1 to 2 of 6 Show all
Powered by: Apache Isis ™
About
Change theme



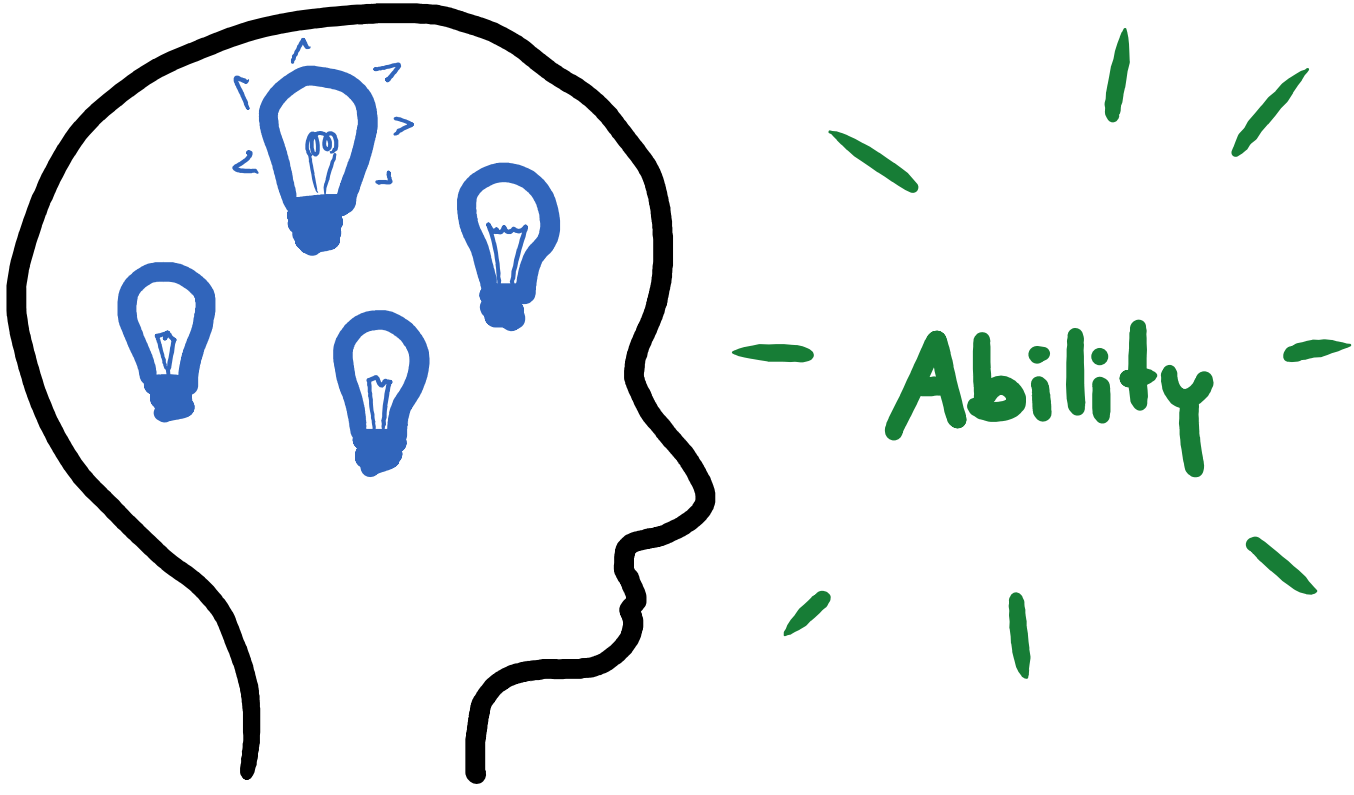
CRUD



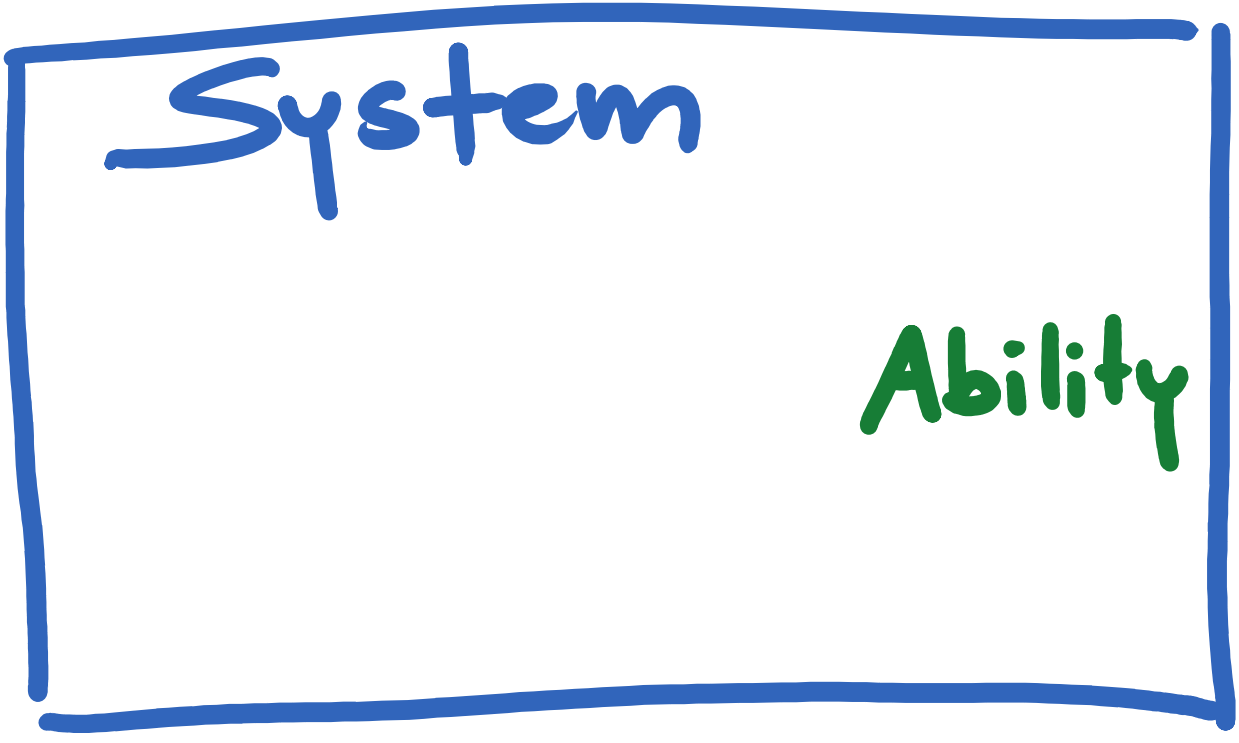
CRUD

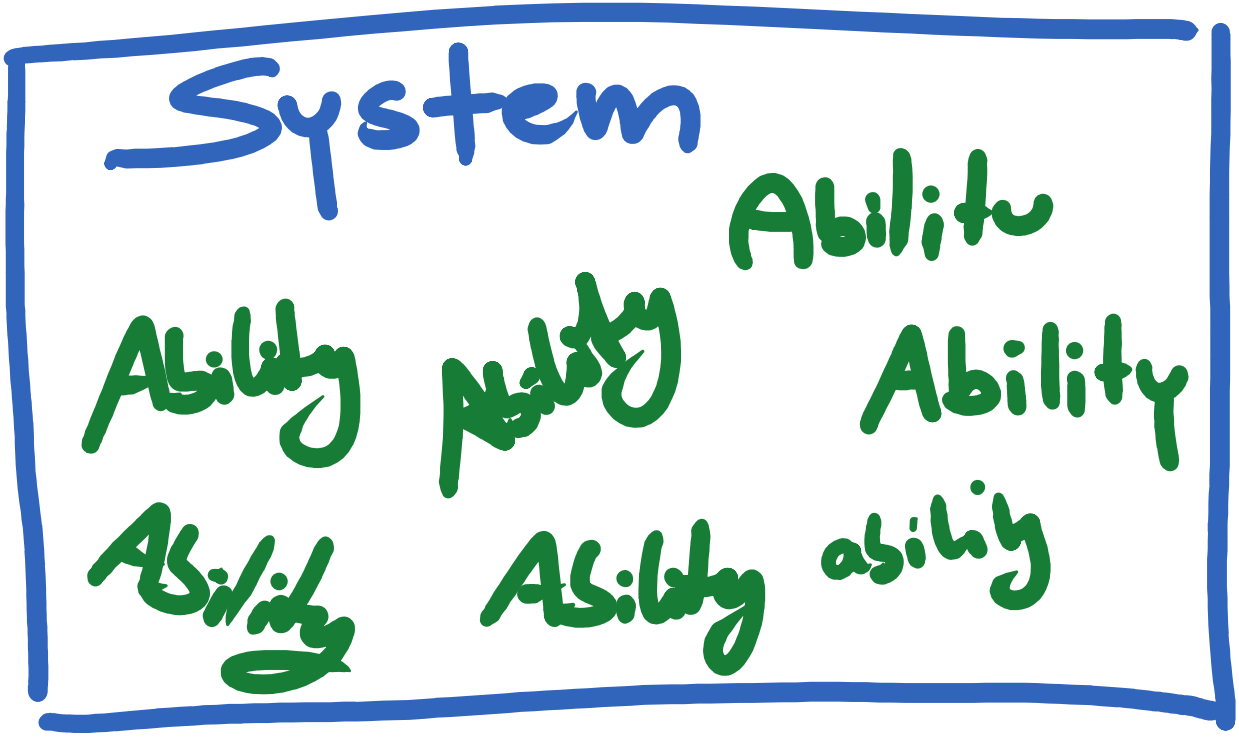


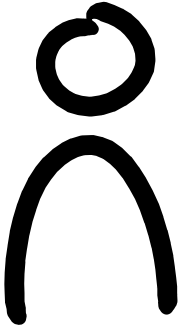
CRUD


Ability

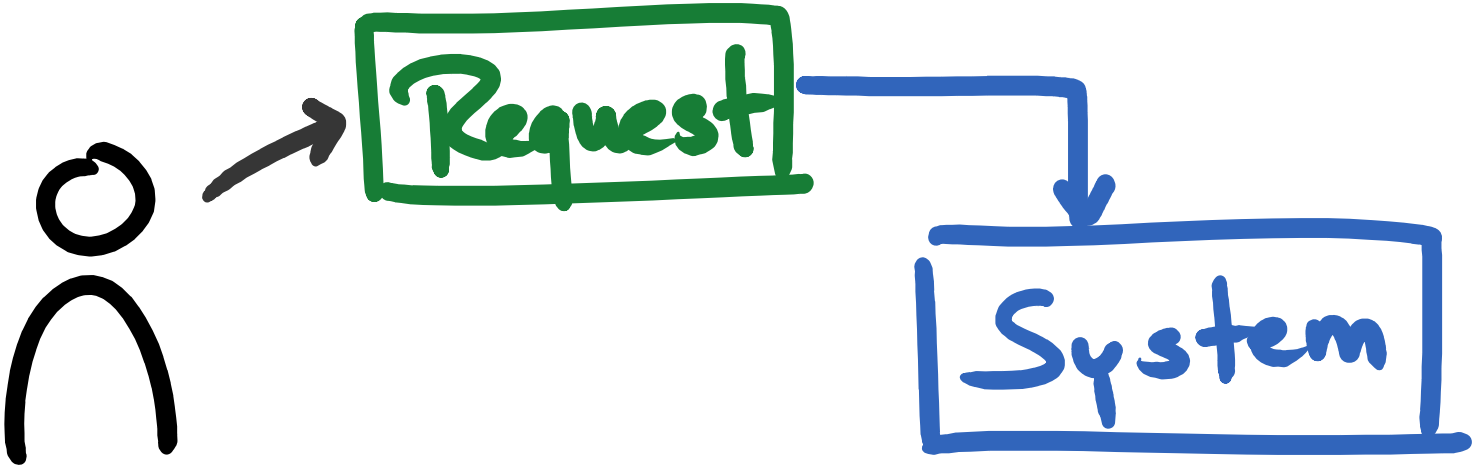
Ability

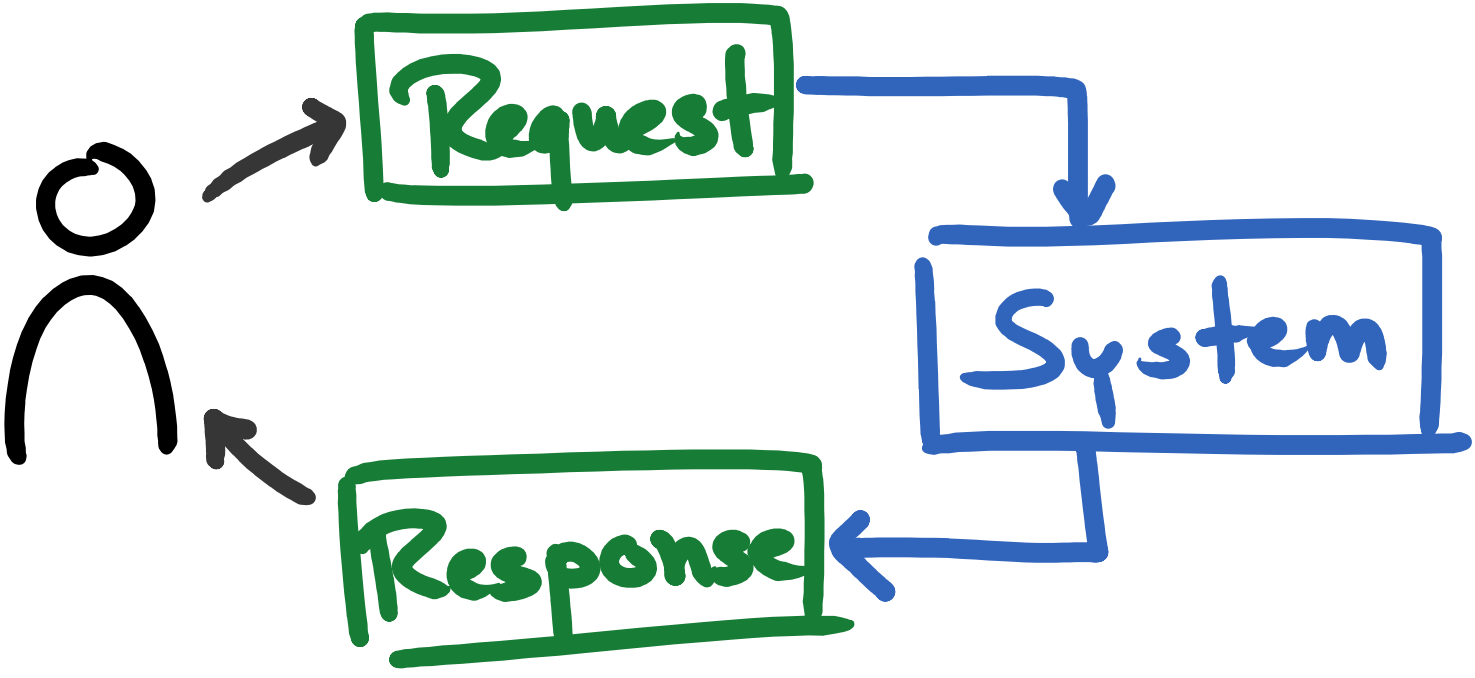

System
Ability

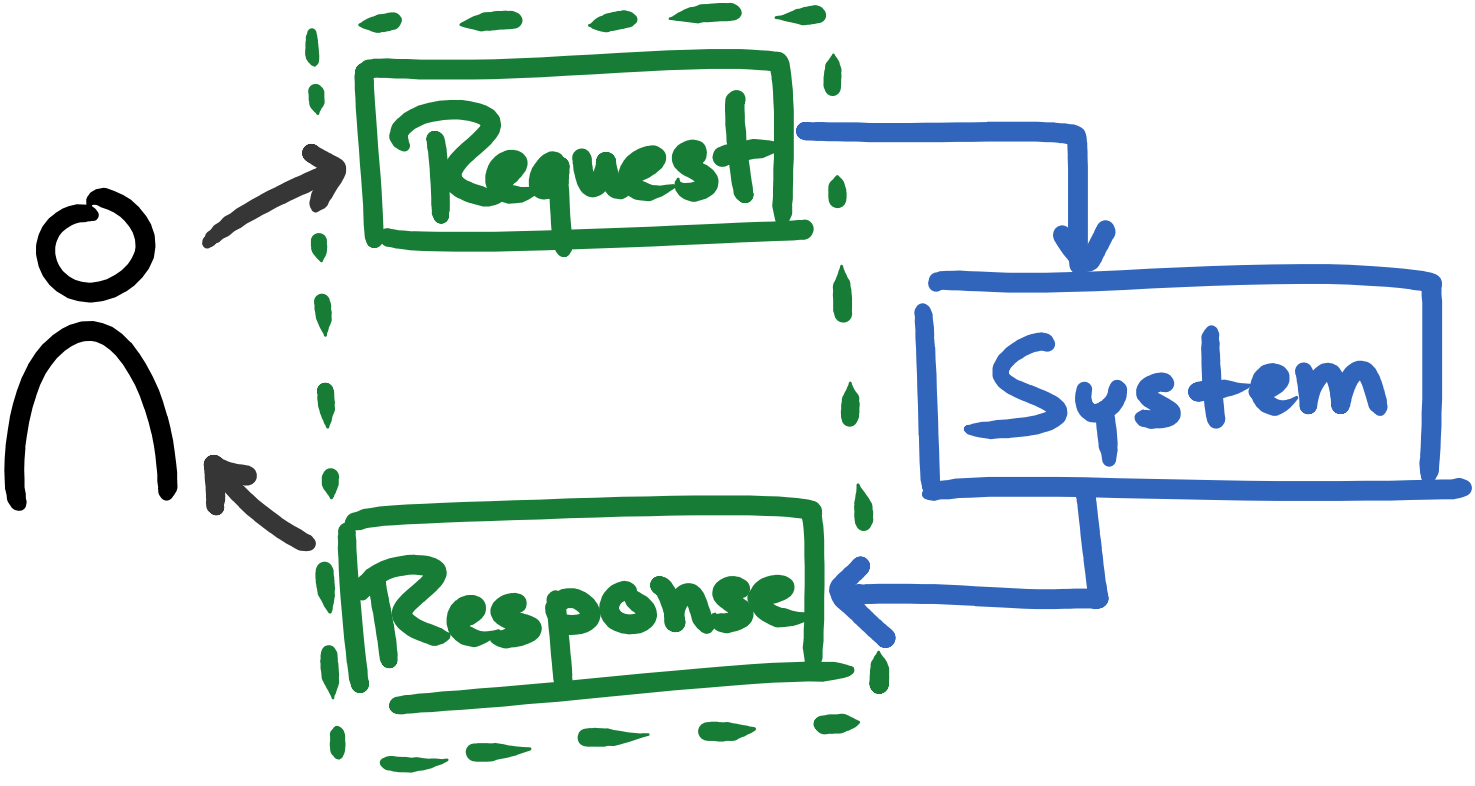

System
Ability
Ability
Ability
Ability
Ability
Ability
ability



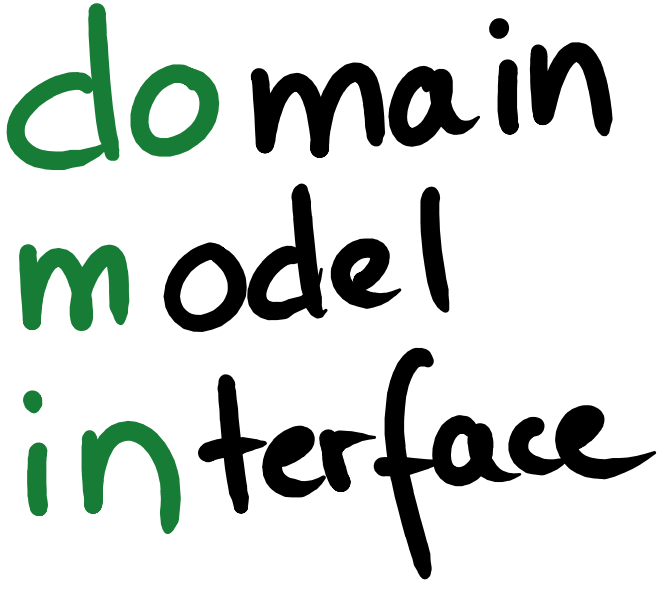
System

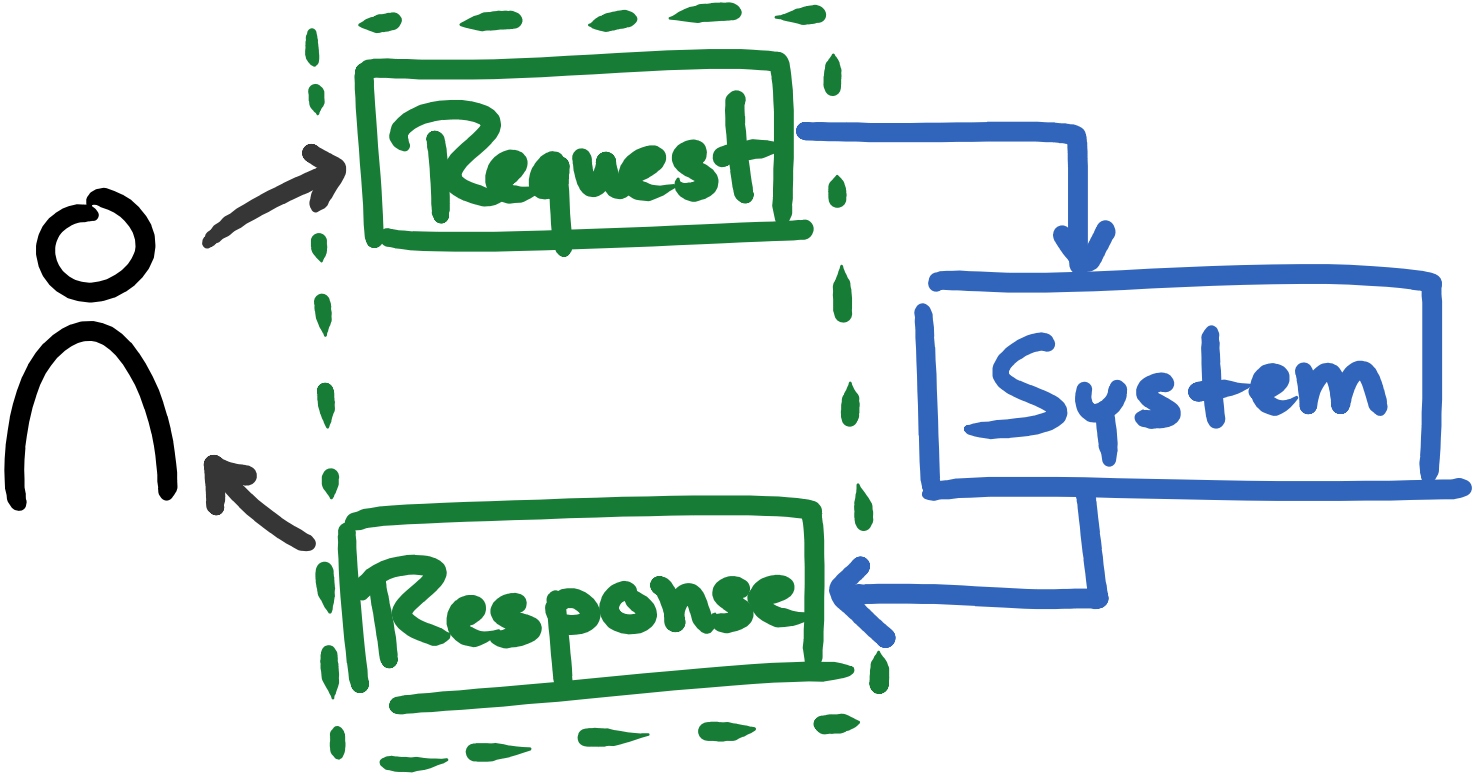

Request
System

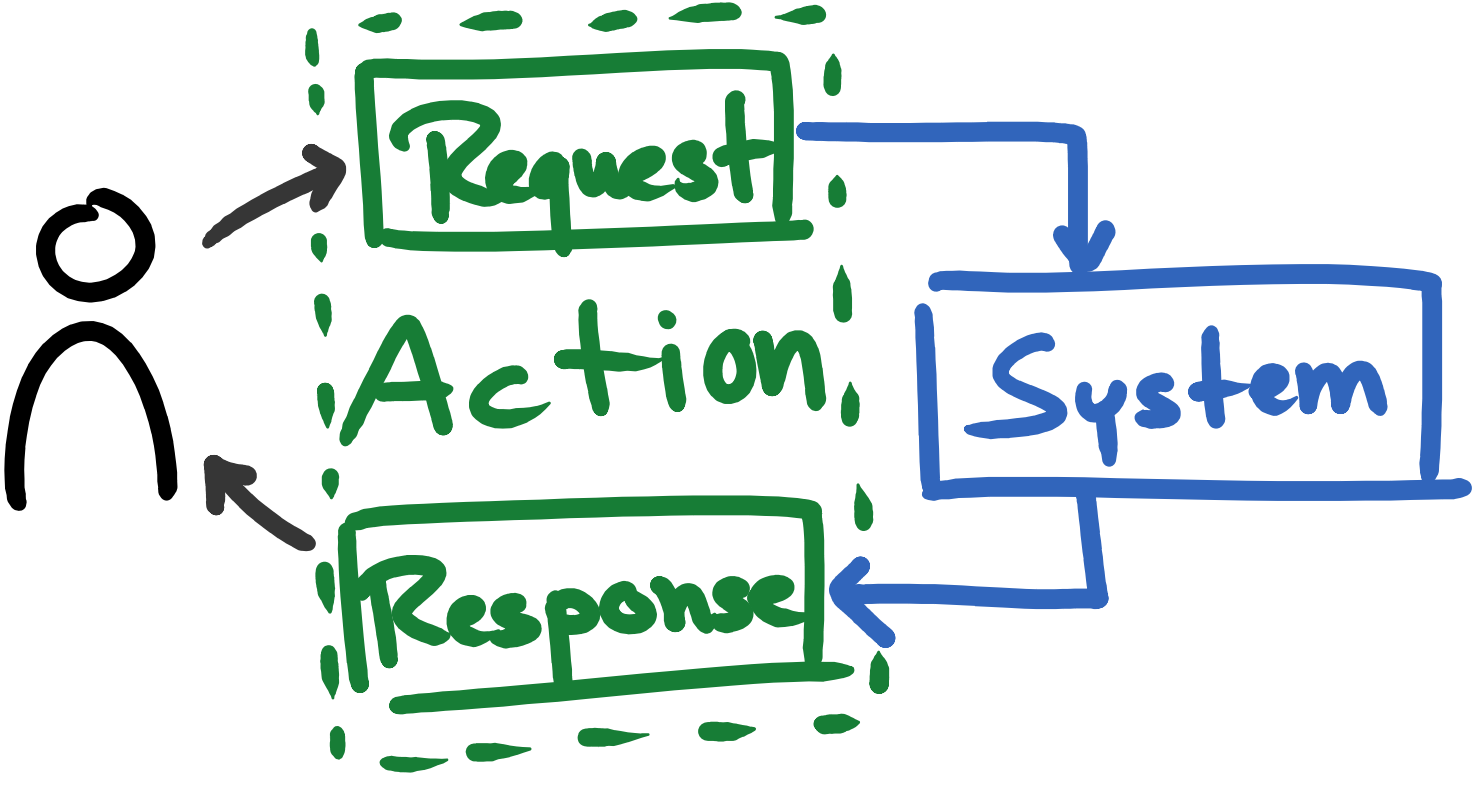

Request
System
Response

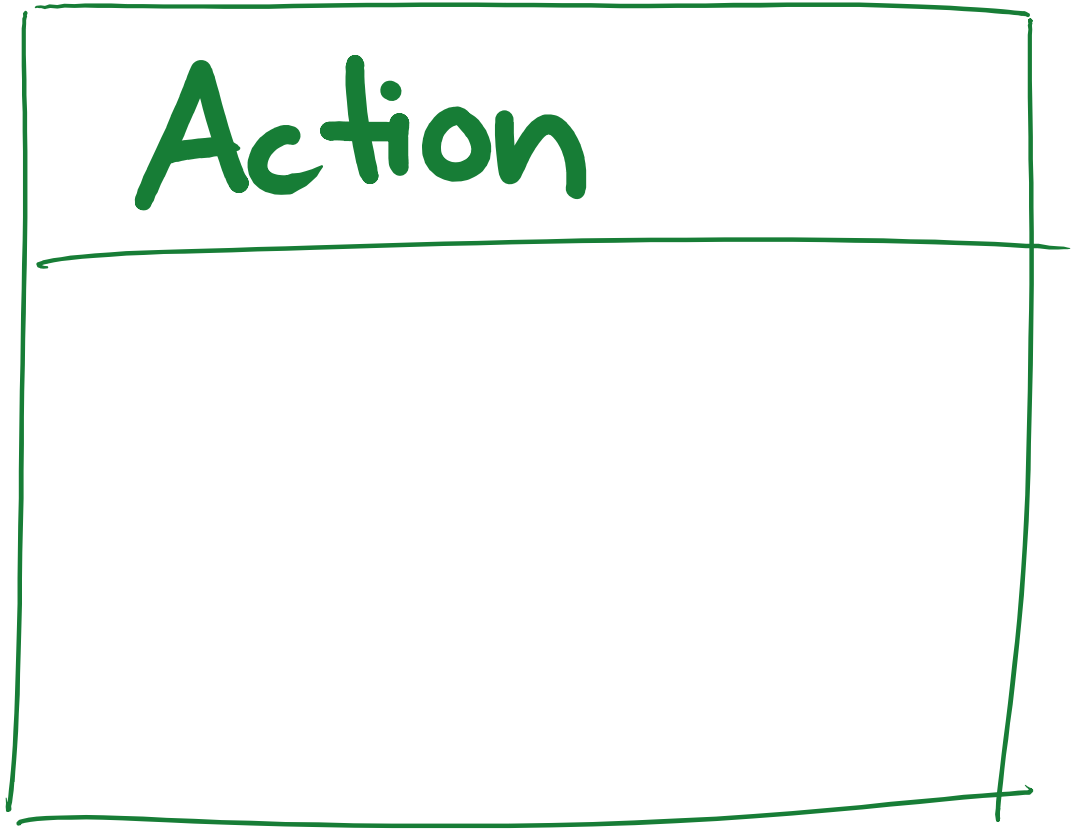

Request
System
Response

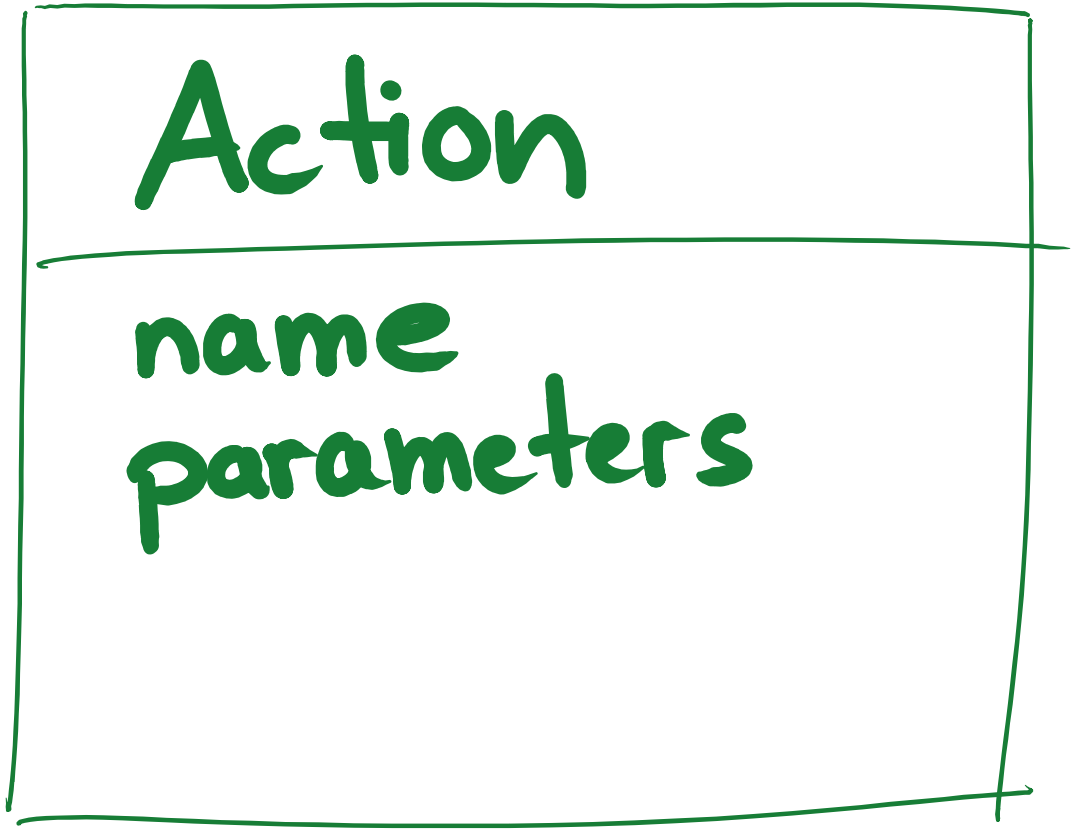
domin

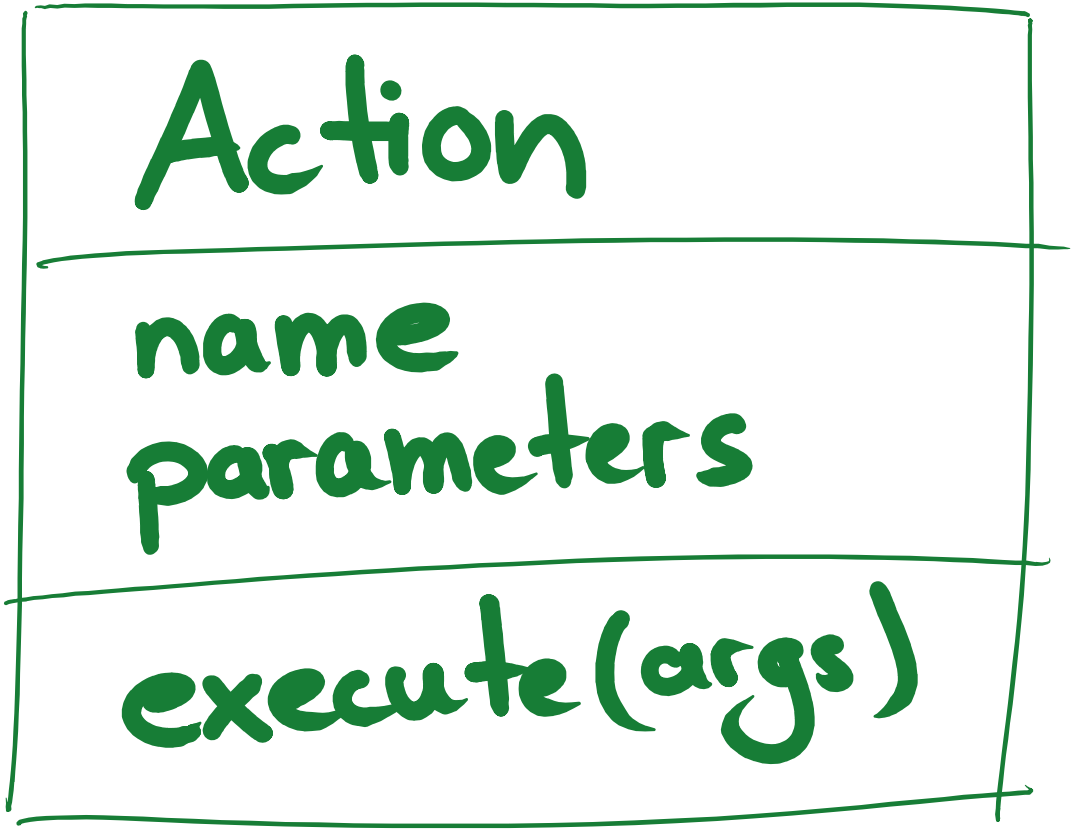

domain
model
interface

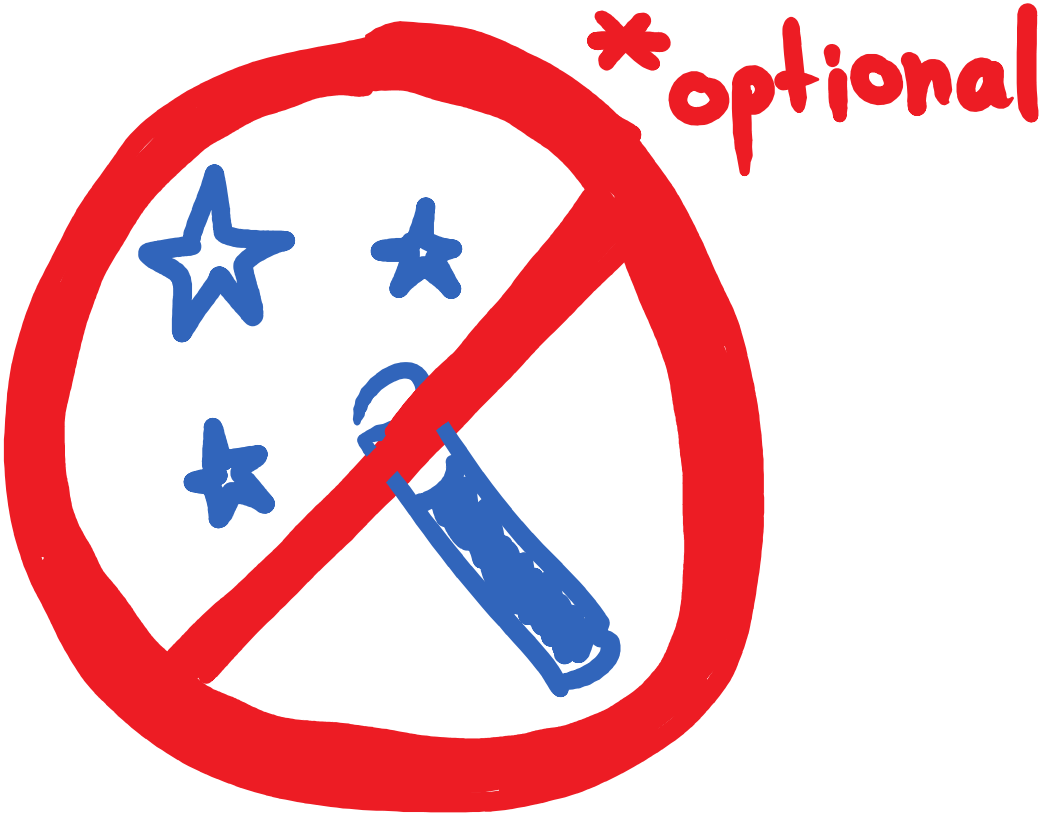

Request
System
Response


Request
Action
System
Response

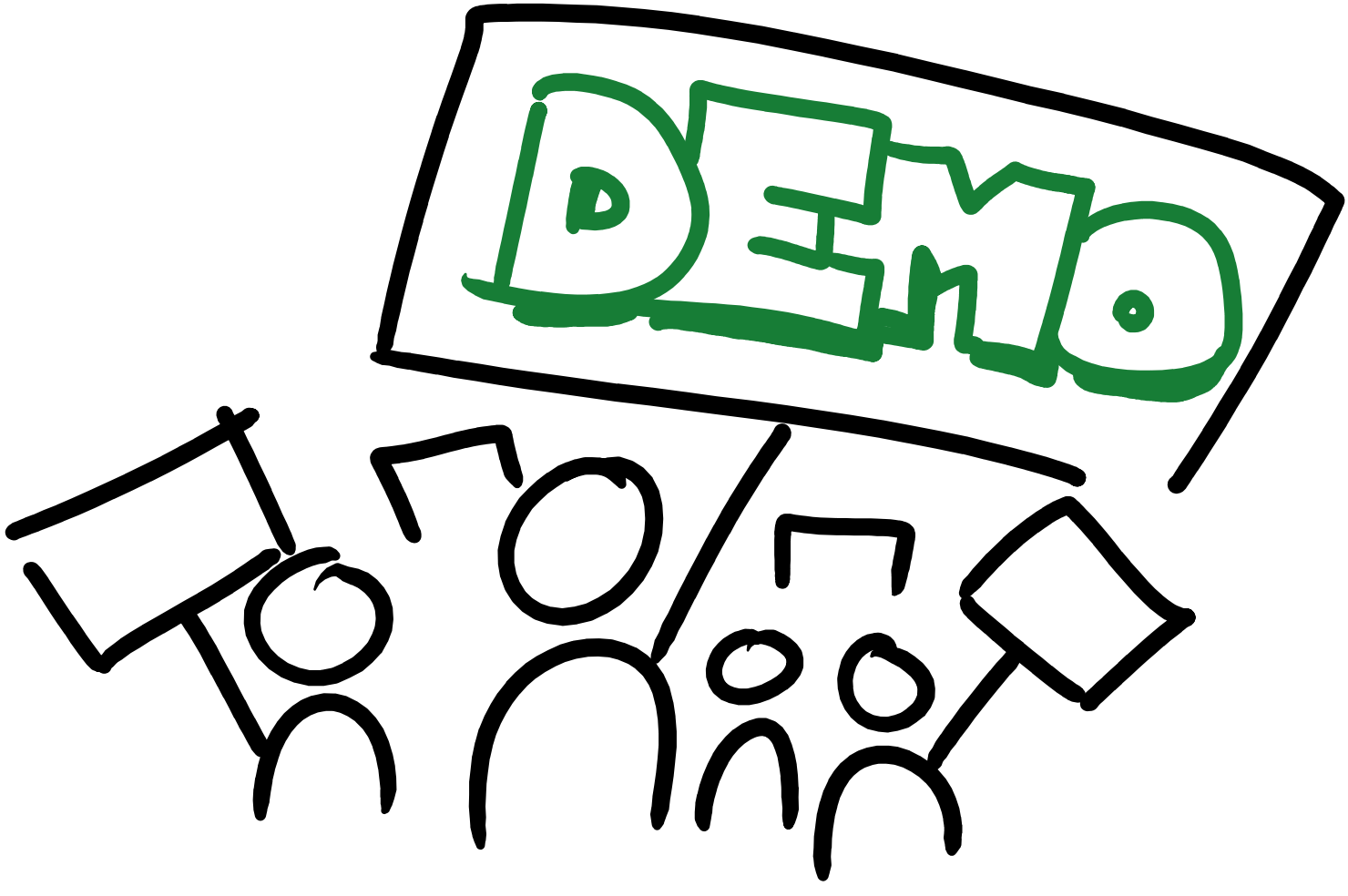

Action

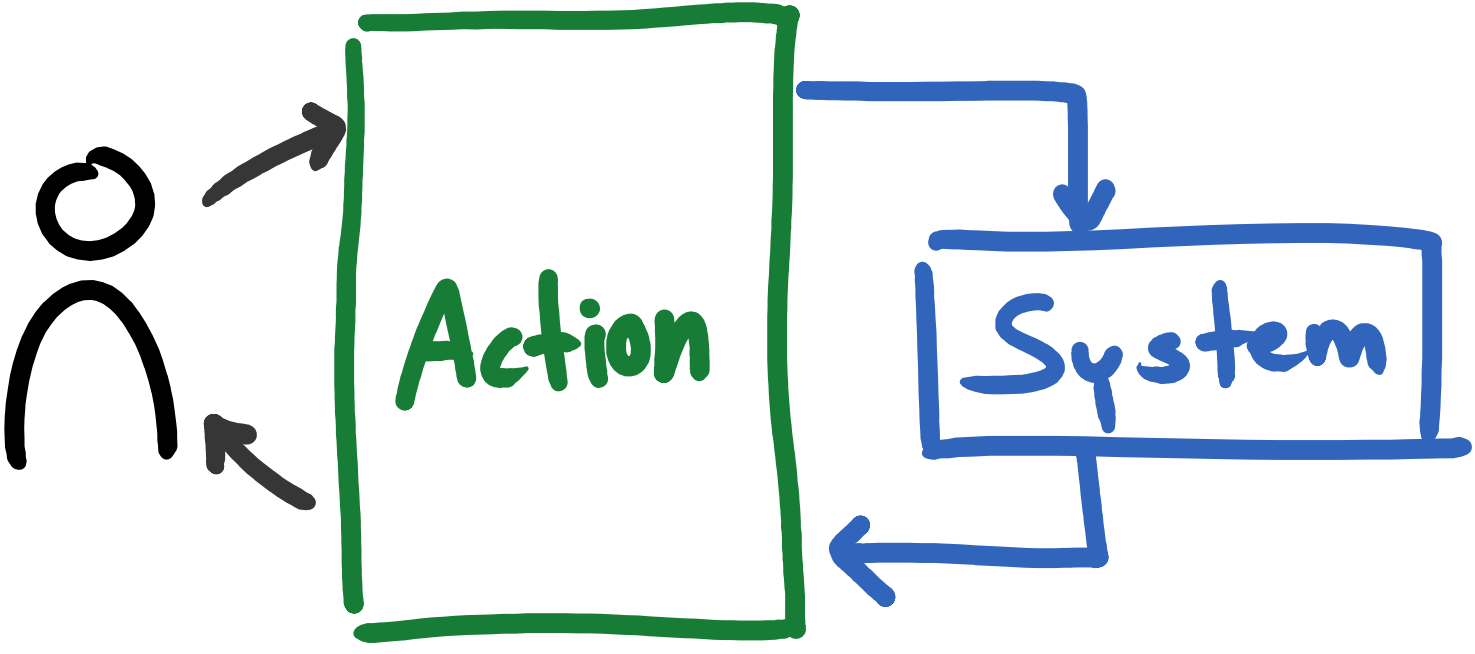

Action
name
parameters

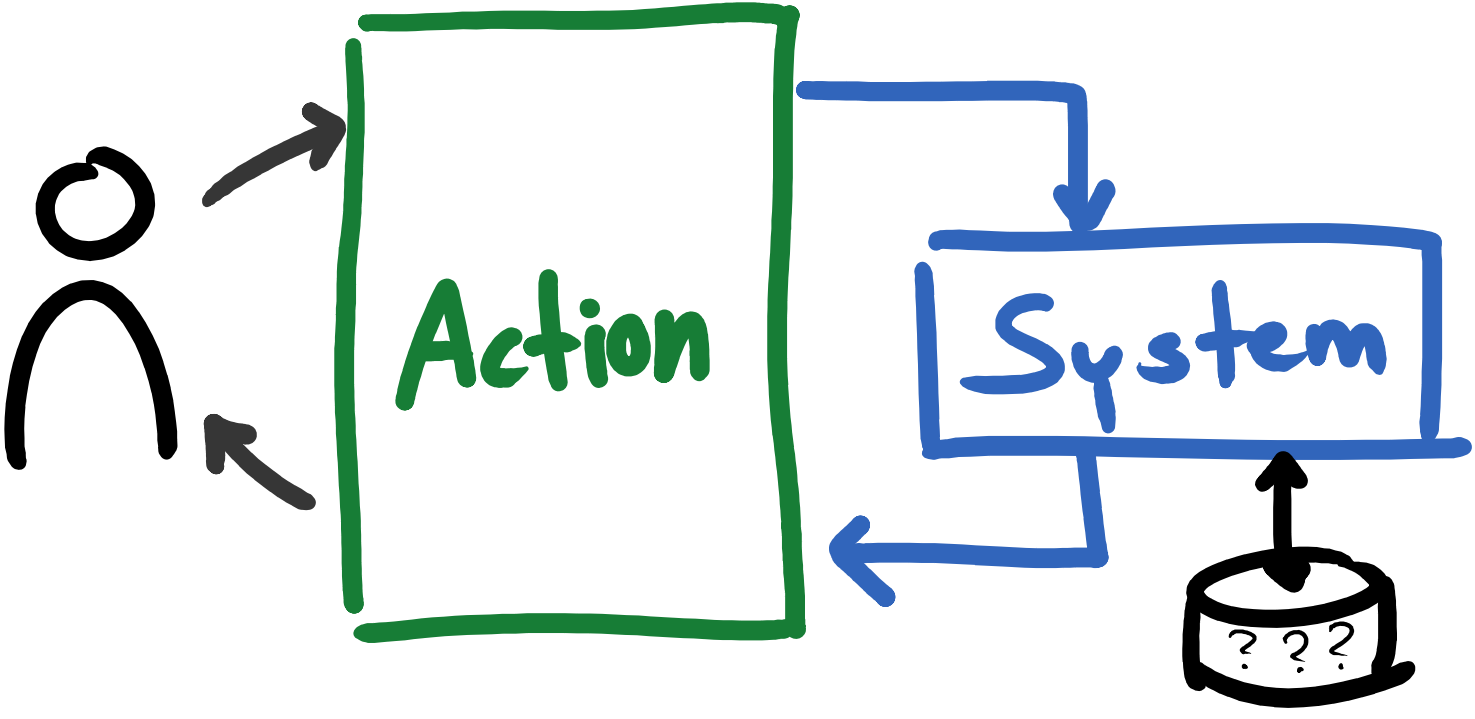

Action
name
parameters
execute(args)


*optional

```php
/**
 * Greet somebody
 * @param string $name
 * @return string
 */
public function greet($name) {
    return $name;
}
```

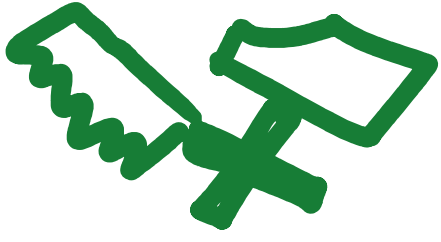

DEMO


Action
System


Action
System
? ? ?

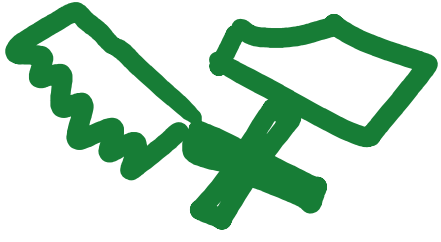
Event
sourcing

DDD



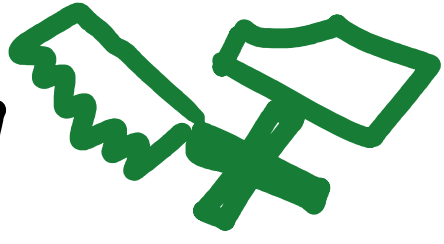
ddd

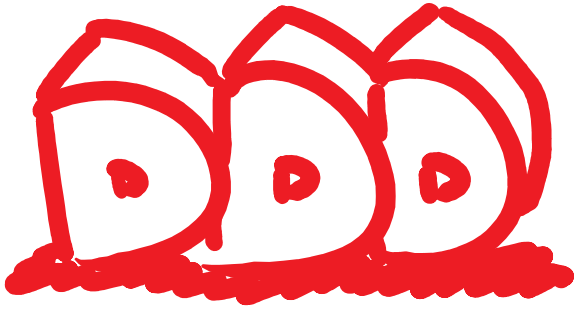
A seemingly heavy method



A seemingly heavy method

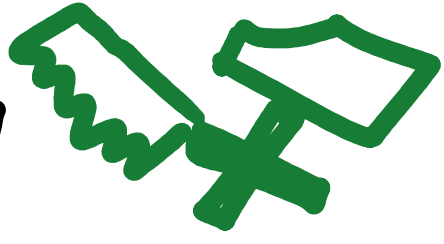
with the right tool





A seemingly heavy method

with the right tool



can become light and fast.

get in touch!

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