@brunoboucard

42skillz

@tpierrain

LA JOURNÉE DU DOMAIN-DRIVEN DESIGN (AVEC UNE POINTE DE BDD)

FEBRUARY 19 2018
AXA - WASQUEHAL

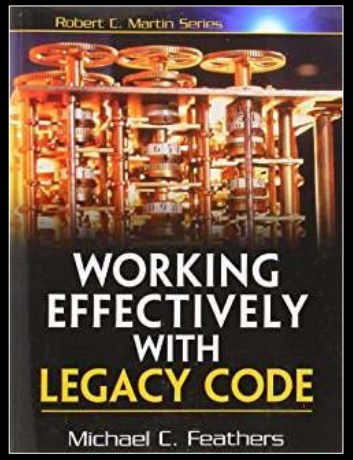
WELCOME

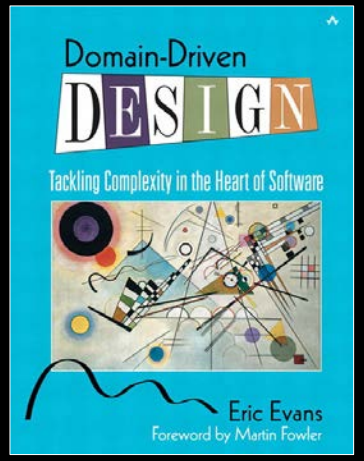
CAN YOU PLEASE SIGN THE FORM ;-)

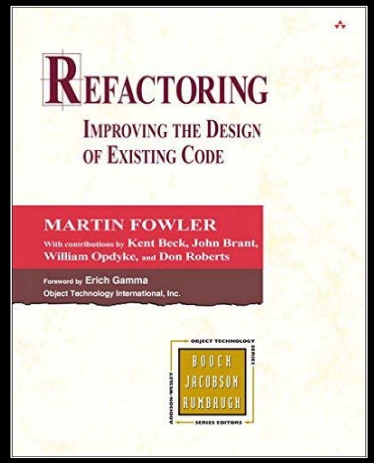
QUESTION

WHAT ARE YOUR EXPECTATIONS FOR TODAY?

WE HAVE SOME GIFTS FOR YOU







#DDDAXA

- MENU -

WELCOME

EXAMPLE MAPPING (WORKSHOP)

PAUSE

TEST HARNESS (LIVE CODING)

PAUSE

DDD ALL THE WAY (LIVE CODING)

PAUSE

HEXAGONAL ARCHITECTURE FTW! (LIVE CODING)

WRAP-UP AND GIFTS

PREAMBLE:

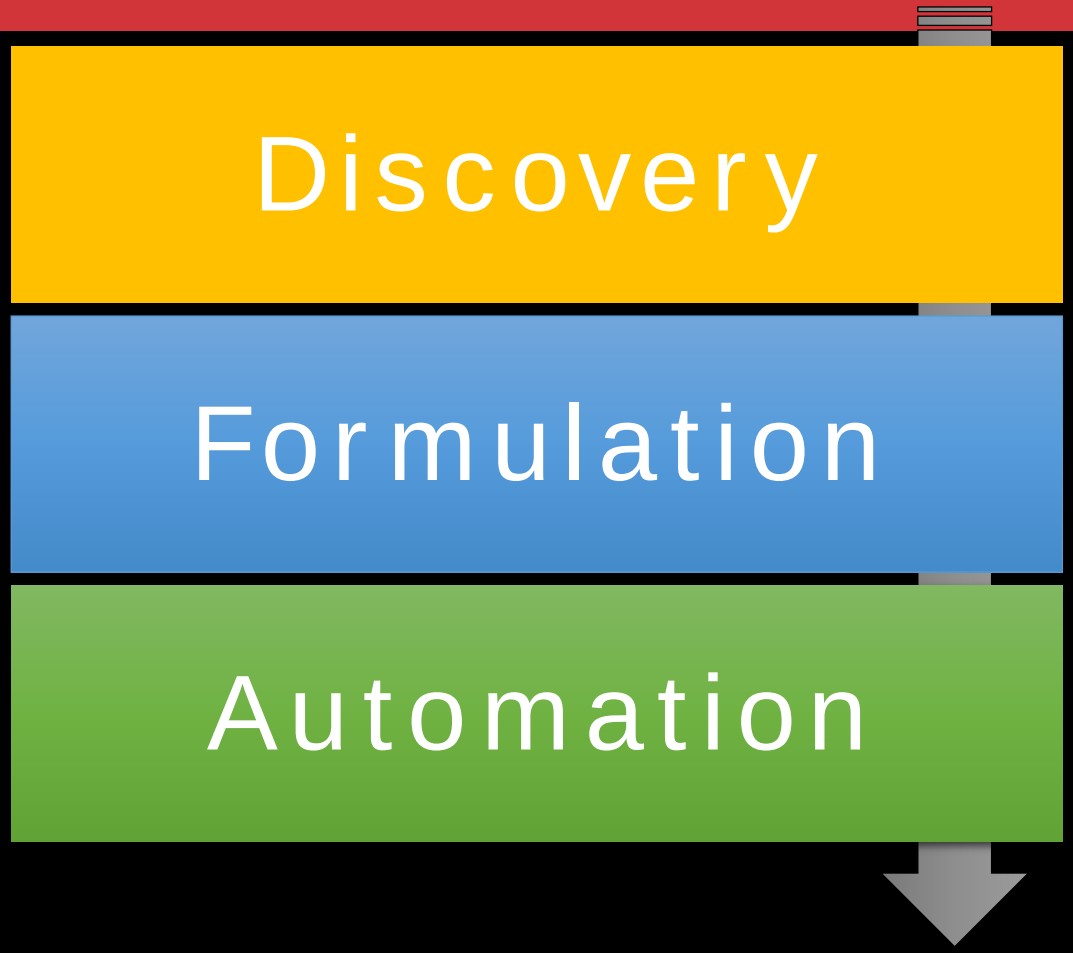
EXAMPLE MAPPING

WHAT'S BDD?

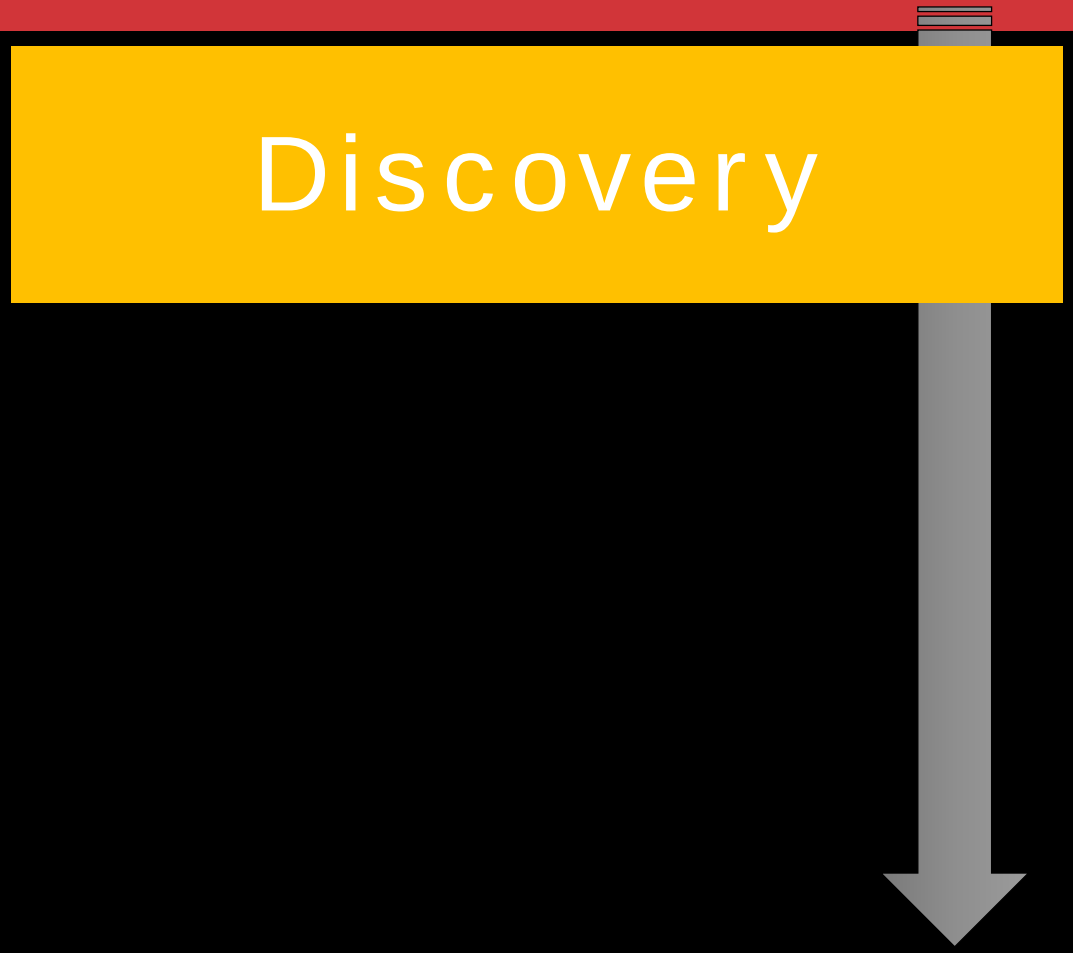
BDD PRACTITIONERS EXPLORE, DISCOVER, DEFINE
THEN DRIVE OUT THE DESIRED BEHAVIOUR OF SOFTWARE
USING CONVERSATION, CONCRETE EXAMPLES AND AUTOMATED TESTS

MATT WYNNE, THE CUCUMBER BOOK

Behaviour Driven Development Defined

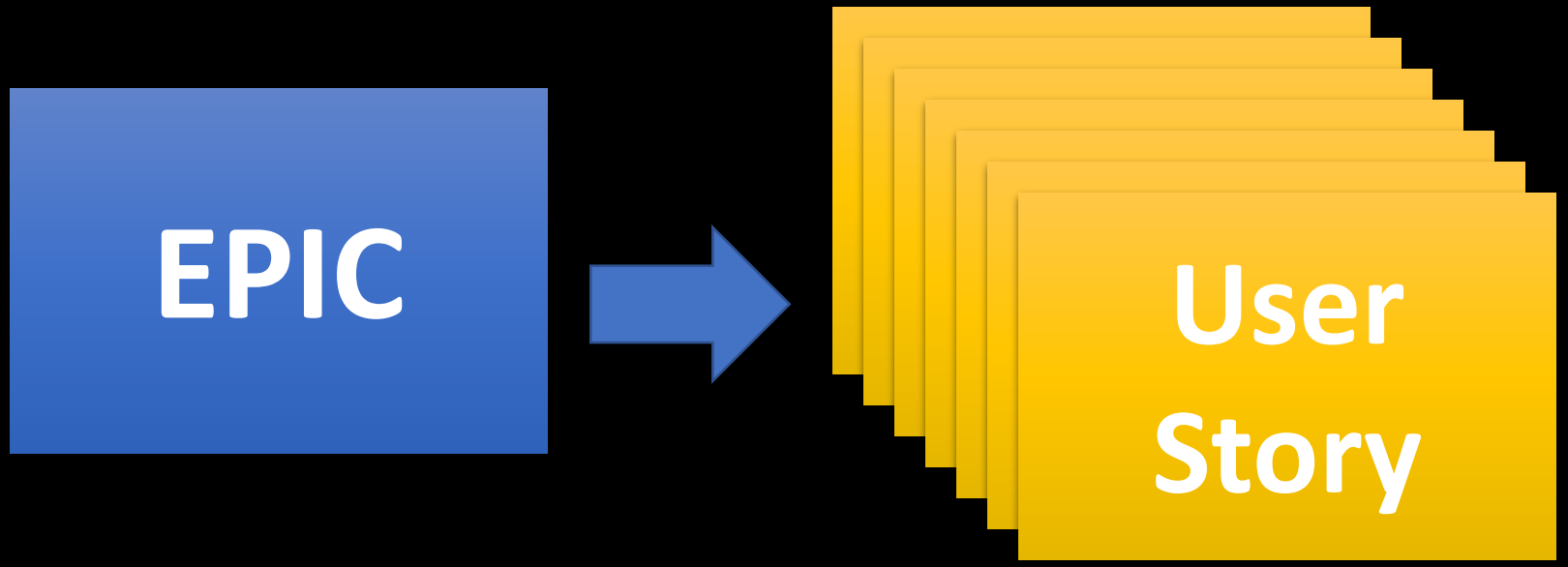


EXAMPLE MAPPING

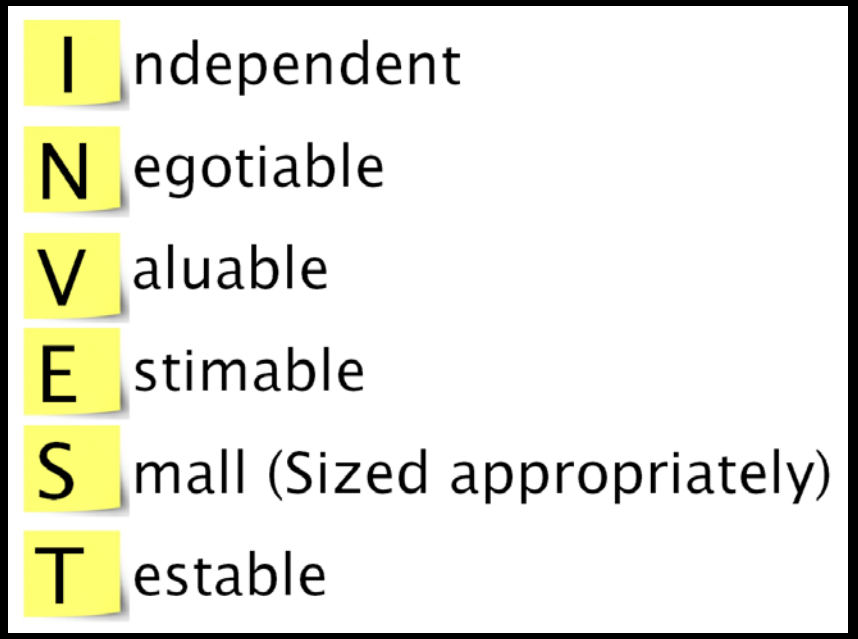


ONE MINUTE, PLEASE!
BACK TO BASICS

How we crunch epic in user stories?



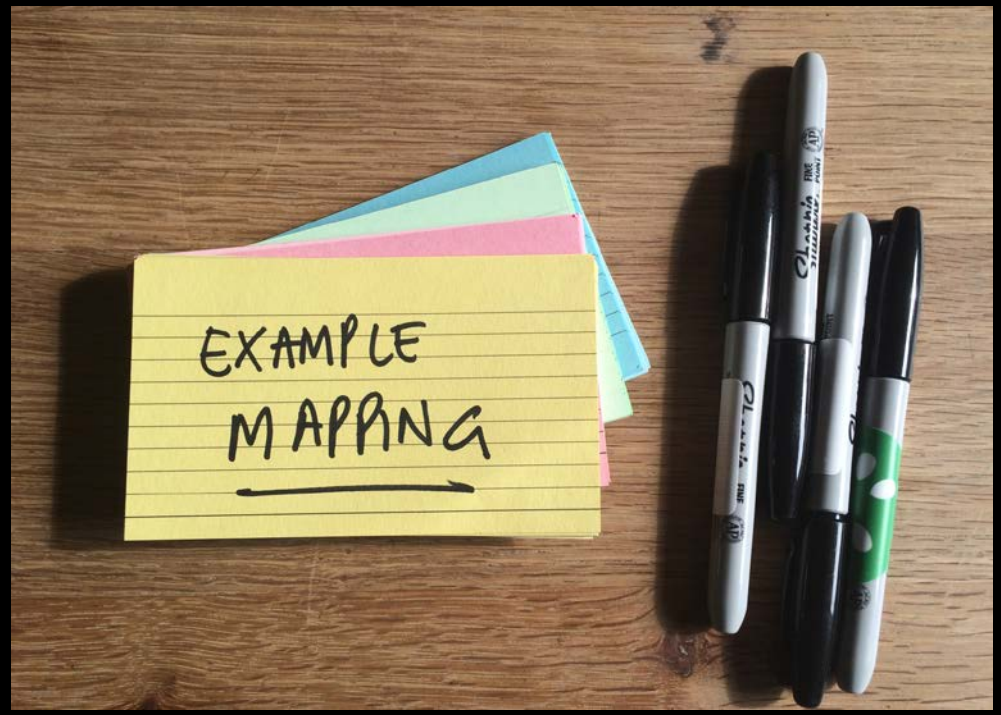
ARE YOU INVEST?



http://agileforall.com/wp-content/uploads/2012/01/Story-Splitting-Flowchart.pdf

HOW DO WE CRUNCH A USER STORY?

WE USE EXAMPLE MAPPING AS DISCOVERY WORKSHOP

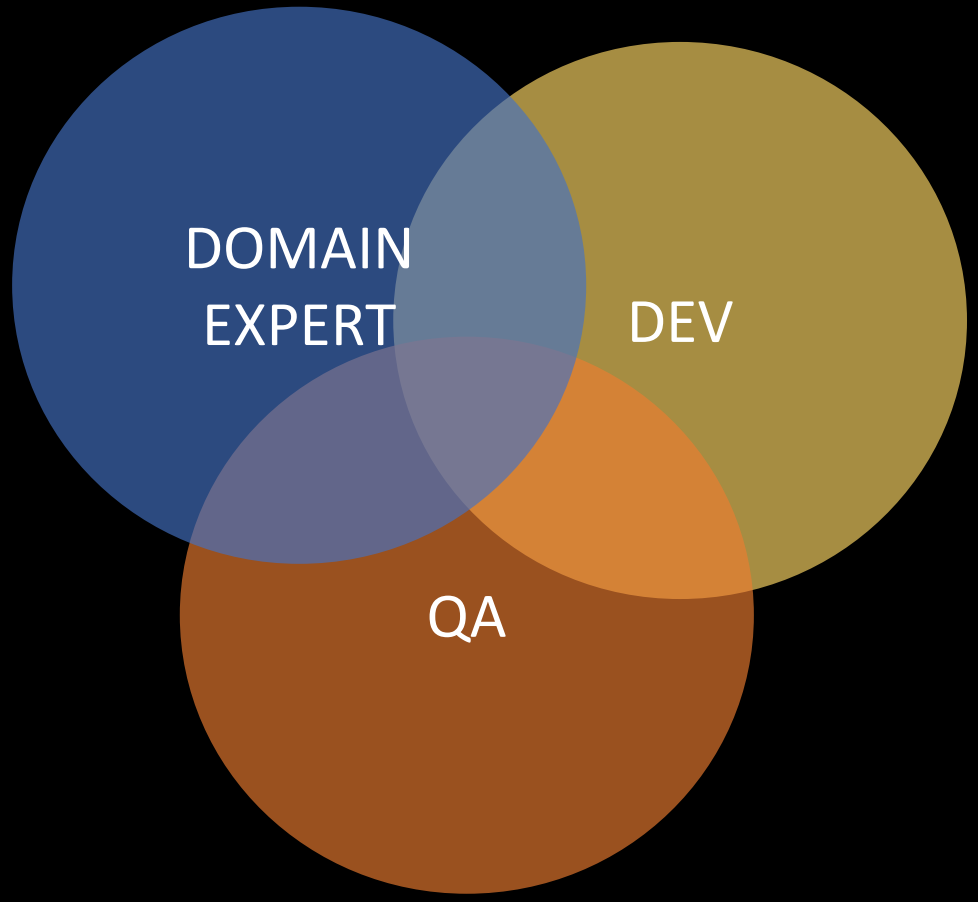


LOW-TECH METHOD - MATT WYNNE

https://cucumber.io/blog/2015/12/08/example-mapping-introduction

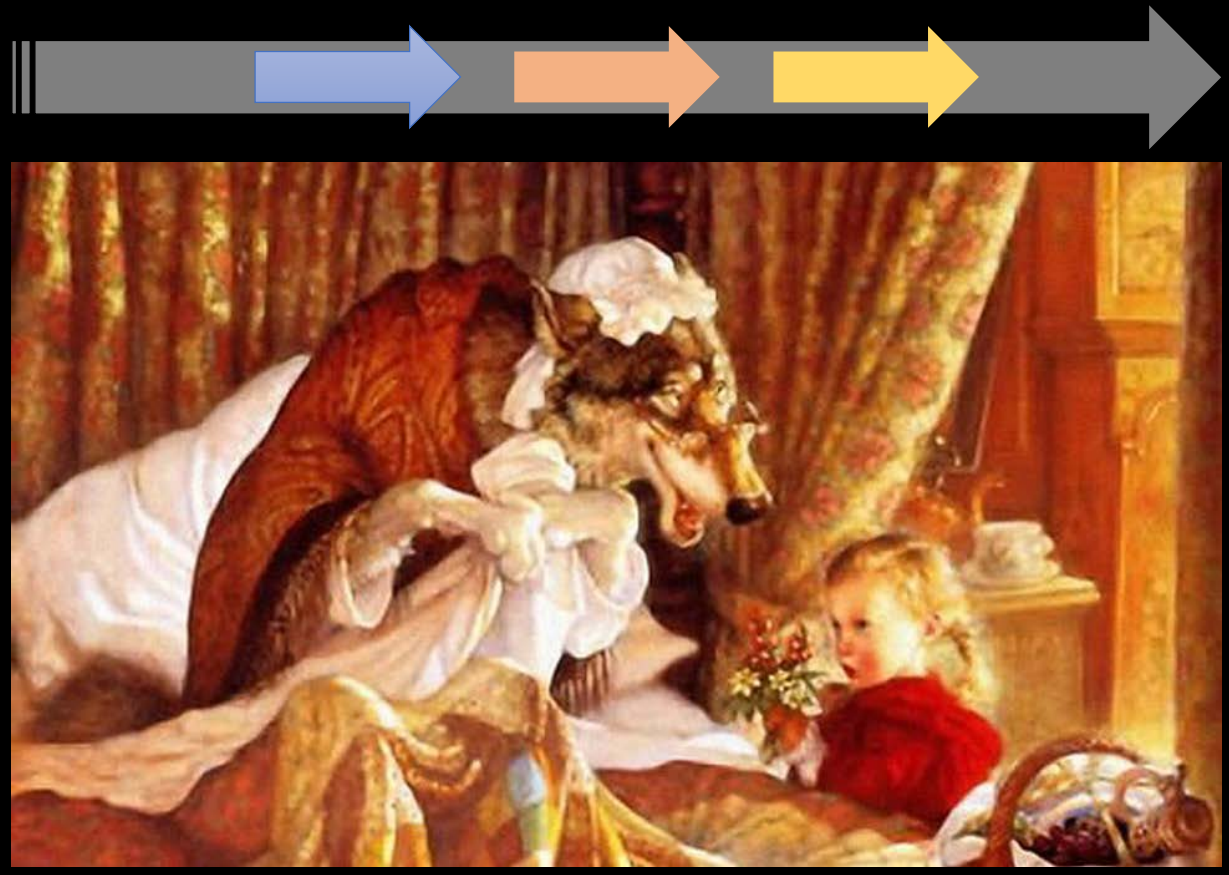
LOW-TECH BUT STRUCTURED

ALIGN MENTAL MODELS



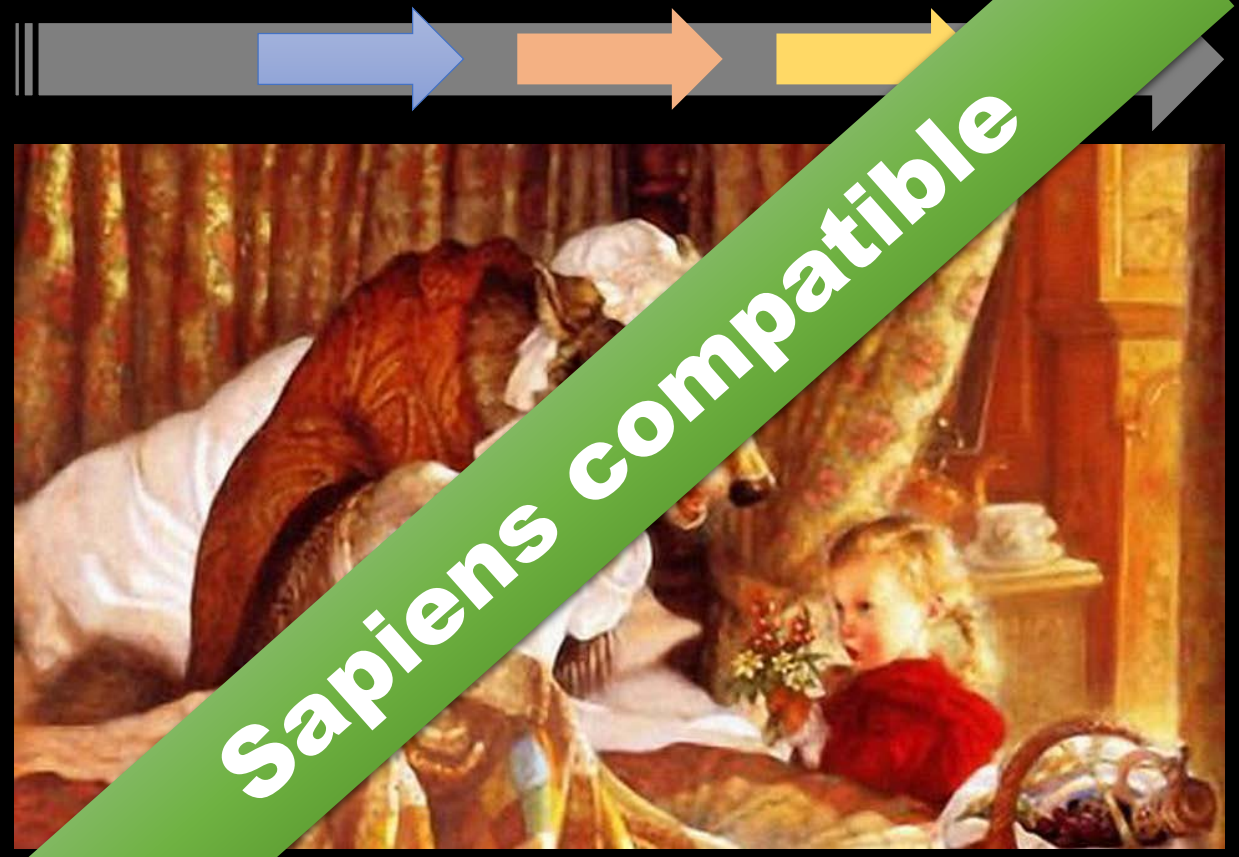
ONCE UPON A TIME A STORY

DOMAIN EXPERT



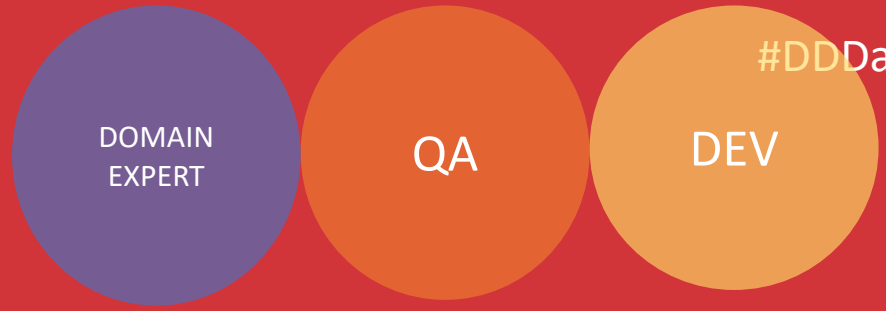
ONCE UPON A TIME A STORY

DOMAIN EXPERT

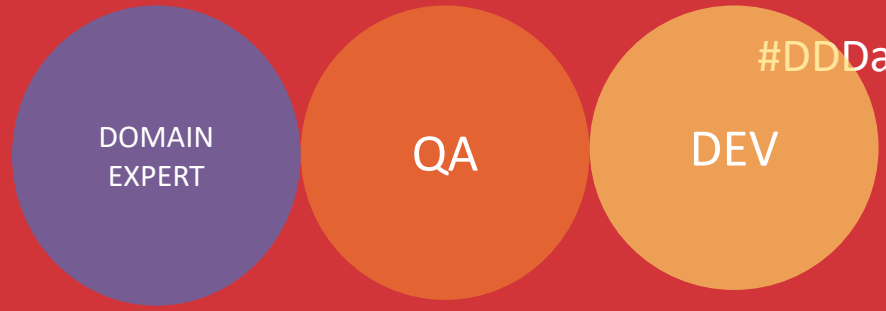


COLLABORATIVE WORKSHOP

STRUCTURED CONVERSATIONS



25 MINUTES PER USER STORY



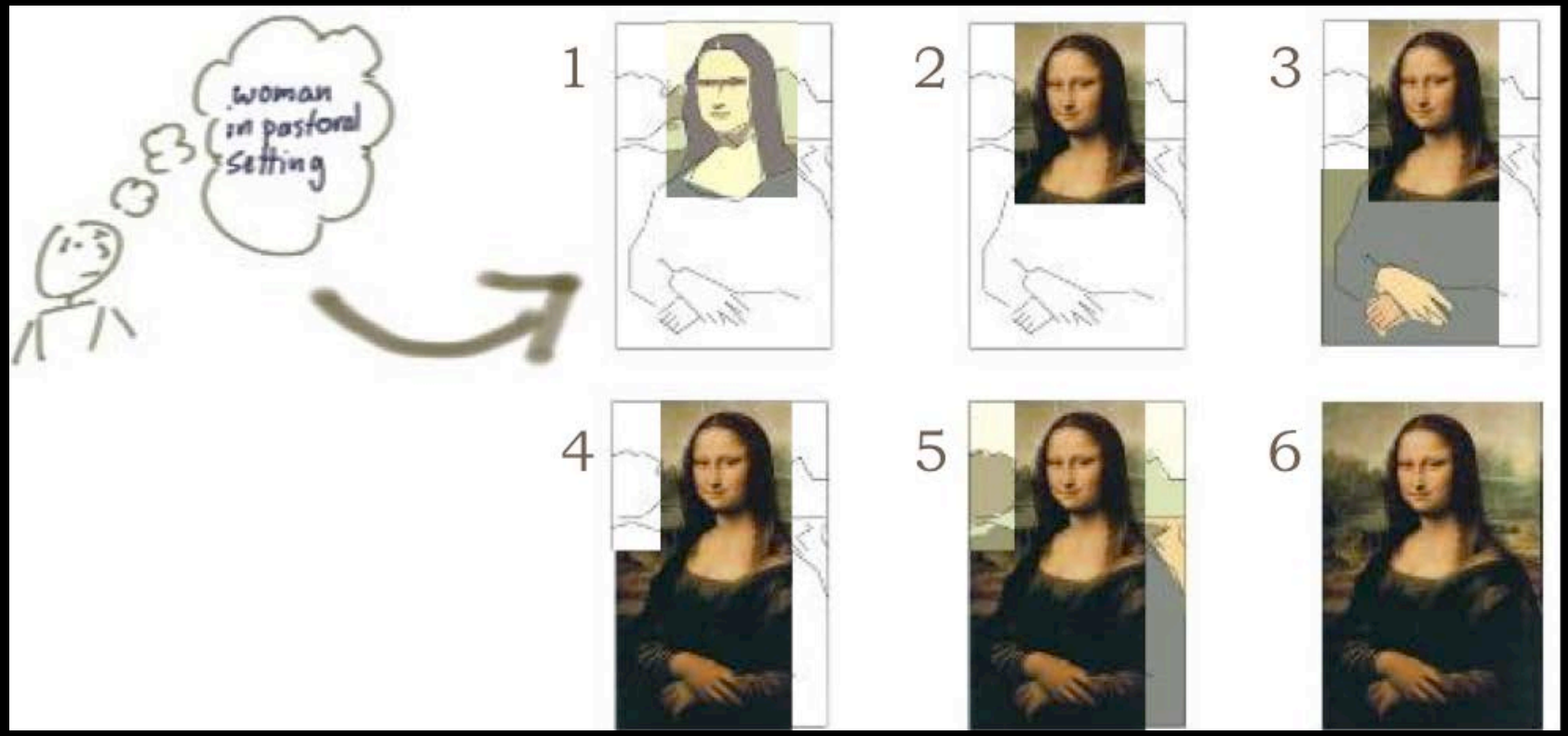
PROGRESSIVE FOCUS

DOMAIN EXPERT

QA

DEV

#DDDaxa



THE WORKSHOP SHOULD ENDING WITH CONSENSUS

DOMAIN EXPERT

QA

DEV

THE WORKSHOP SHOULD ENDING WITH CONSENSUS

DOMAIN EXPERT

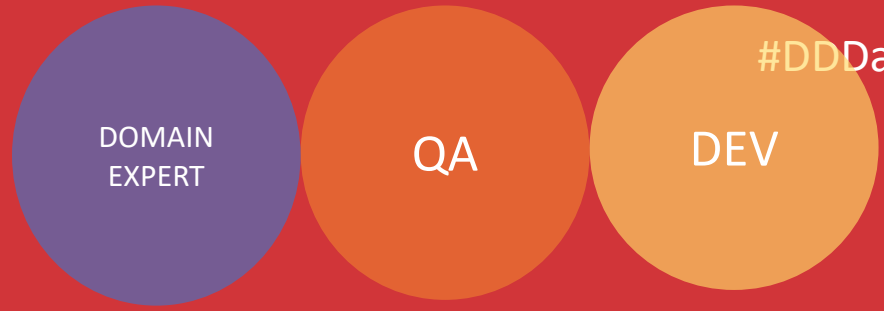
QA

DEV

WELL ...

I WANT AN EXAMPLE PLEASE!

SHOUTY PRODUCT

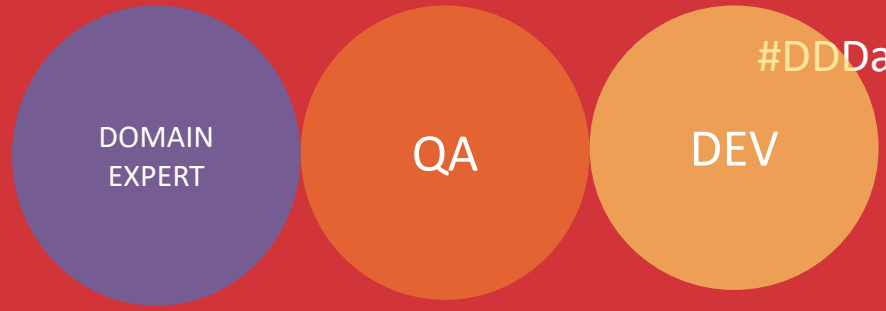


A NEW TWITTER-LIKE SOCIAL MEDIA APP – CALLED **SHOUTY**.

USERS OF THE APP WILL BE ABLE TO 'SHOUT' – AND WILL BE HEARD BY OTHER USERS WHO ARE WITHIN **1000M** OF THE SHOUTER.

THE TARGET PLATFORM IS GPS-ENABLED SMARTPHONES

EXAMPLE MAPPING

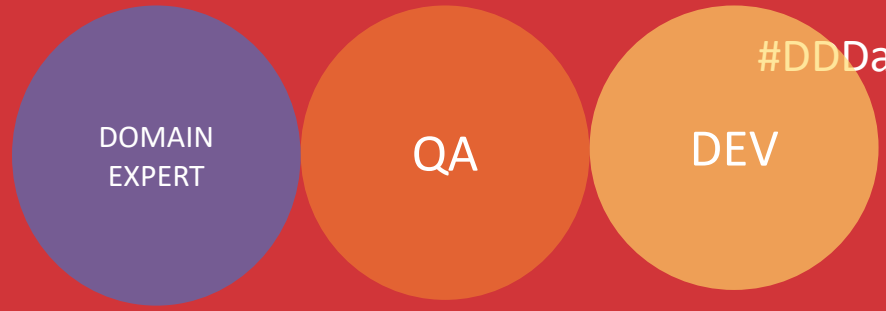


Hear Shout

In range shout is heard

Give us a concrete example please!

EXAMPLE MAPPING



#DDDaxa

Hear Shout

In range shout is heard

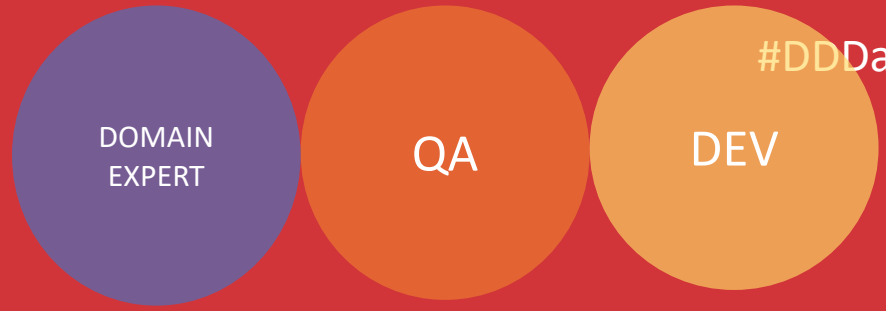
Not hear own shout

*** Lucy is at [0, 0]**
*** Sean is at [0, 900]**
*** Sean shouts**

=> Lucy hears Sean

Give us a concrete example please!

EXAMPLE MAPPING

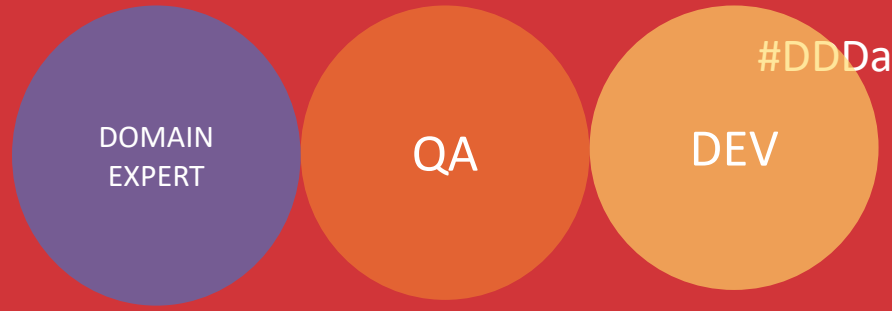


#DDDaxa

Hear Shout

In range shout is heard	Not hear own shout
* Lucy is at [0, 0] * Sean is at [0, 900] * Sean shouts => Lucy hears Sean	* Lucy is at [0, 0] * Sean is at [800, 800] * Sean shouts => Sean hears nothing

EXAMPLE MAPPING

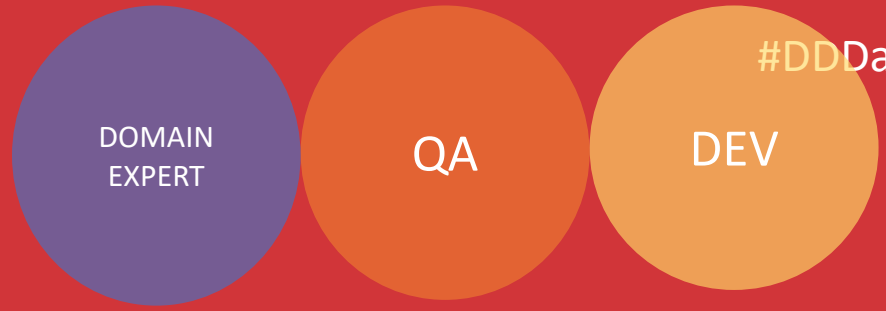


#DDDaxa

Hear Shout

In range shout is heard	Not hear own shout	Out of range shout is not heard
* Lucy is at [0, 0] * Sean is at [0, 900] * Sean shouts => Lucy hears Sean	* Lucy is at [0, 0] * Sean is at [800, 800] * Sean shouts => Sean hears nothing	Give us a concrete example please!

EXAMPLE MAPPING



#DDDaxa

Hear Shout

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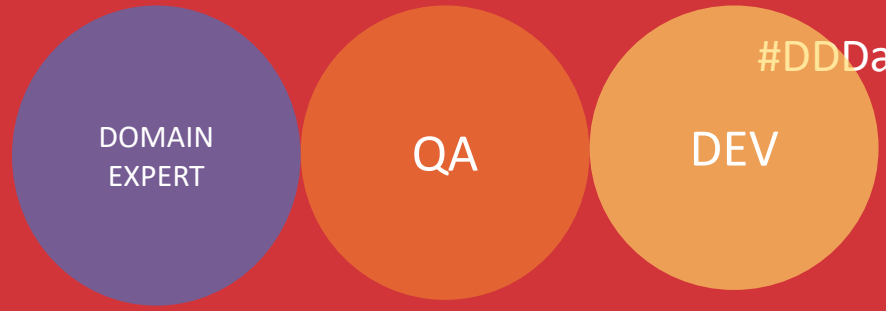
EXAMPLE MAPPING



#DDDaxa

Hear Shout

Shout a message > 2000 characters

In range shout is heard

* Lucy is at [0, 0]
* Sean is at [0, 900]
* Sean shouts

=> Lucy hears Sean

Not hear own shout

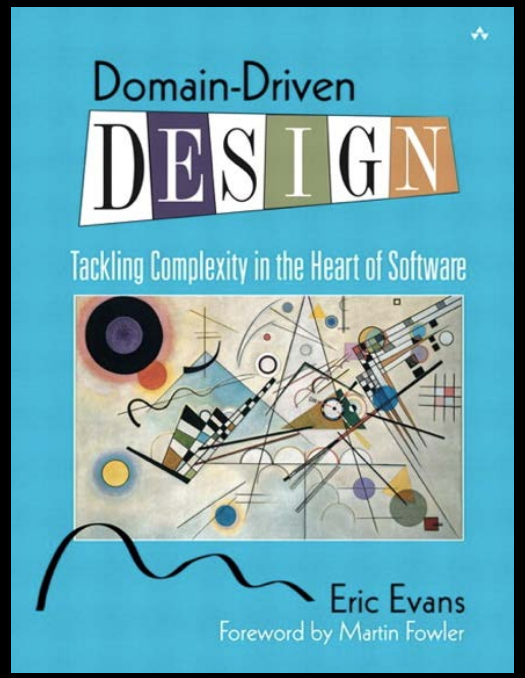
* Lucy is at [0, 0]
* Sean is at [800, 800]
* Sean shouts

=> Sean hears nothing

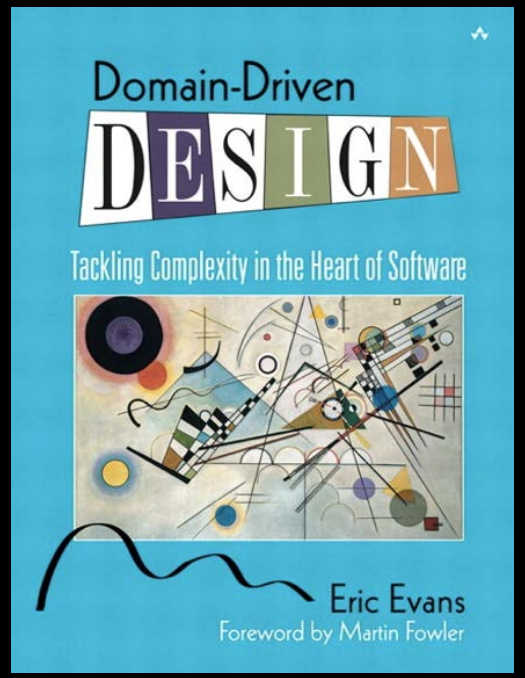
Out of range shout is not heard

* Lucy is at [0, 0]
* Sean is at [0, 1000]
* Sean shouts

=> Lucy hears nothing

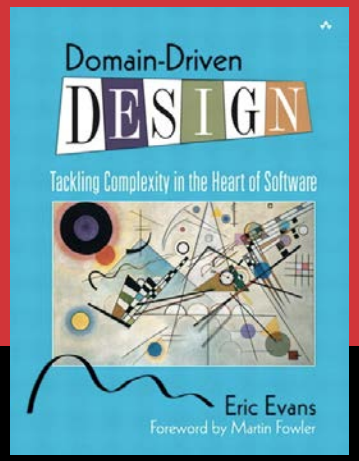

Domain-Driven
DESIGN
Tackling Complexity in the Heart of Software
Eric Evans
Foreword by Martin Fowler

?



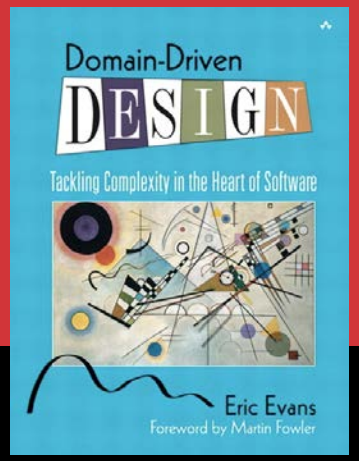
AN APPROACH

A TOOLBOX



AN APPROACH

FOCUS ON BUSINESS VALUE
LANGUAGE AND CONTEXTS ARE KEY
MAKE THE IMPLICIT, EXPLICIT



A TOOLBOX

TACTICAL PATTERNS

STRATEGICAL PATTERNS

#DDDaxa

OUR DOMAIN FOR TODAY

THE CONTEXT

US:

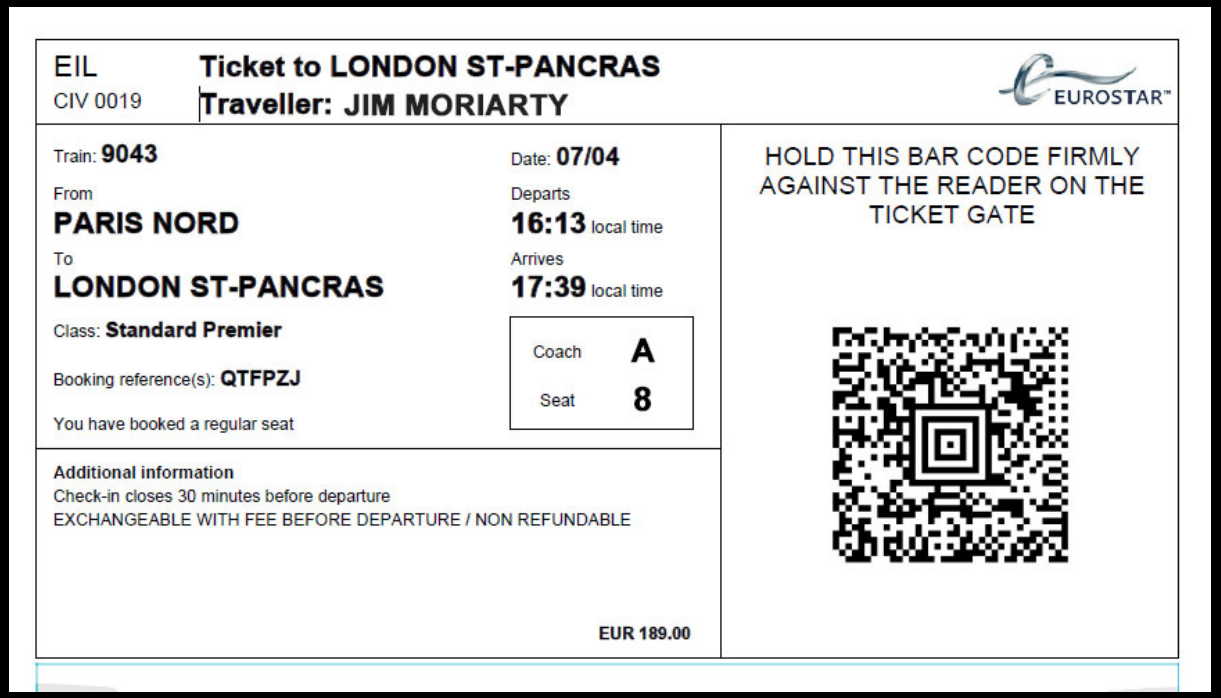
TRAIN-TRAIN, THE STARTUP

IN FRONT OF:

HASSAN-CEHEF, THE TRAIN OPERATOR

TRAIN-TRAIN

OUR DOMAIN FOR TODAY



EIL
CIV 0019

Ticket to LONDON ST-PANCRAS
Traveller: JIM MORIARTY

EUROSTAR™

Train: **9043**

Date: **07/04**

From
PARIS NORD

Departs
16:13 local time

To
LONDON ST-PANCRAS

Arrives
17:39 local time

Class: **Standard Premier**

Coach **A**
Seat **8**

Booking reference(s): **QTFPZJ**

You have booked a regular seat

Additional information
Check-in closes 30 minutes before departure
EXCHANGEABLE WITH FEE BEFORE DEPARTURE / NON REFUNDABLE

EUR 189.00

HOLD THIS BAR CODE FIRMLY AGAINST THE READER ON THE TICKET GATE

TRAIN-TRAIN

OUR DOMAIN FOR TODAY

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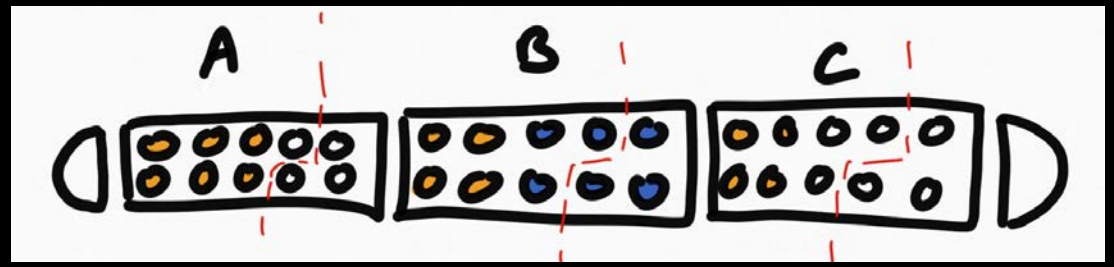


TRAIN-TRAIN

THE CREW

THE DOMAIN GUY

THE TECHIES

CHALLENGES

- TRAIN FILLING OPTIMIZATIONS
- INTEGRATION WITH 2 HASSAN CEHEF BACKENDS

TRAIN-TRAIN

BIZ RULES(*)

- FOR A TRAIN OVERALL, NO MORE THAN 70 PERCENT SEATS MAY BE RESERVED IN ADVANCE
- YOU MUST PUT ALL THE SEATS FOR ONE RESERVATION IN THE SAME COACH

(*) FROM EMILY BACHE'S TRAIN RESERVATION KATA

TRAIN-TRAIN

SITUATION TODAY

- A V1 HAS BEEN RELEASED FEW MONTH AGO
- NEW RULE TO BE IMPLEMENTED
- EVOLUTION COST HAS RISEN
- RECURRENT PENALTIES FROM THE OPERATOR

EXAMPLE MAPPING THIS!

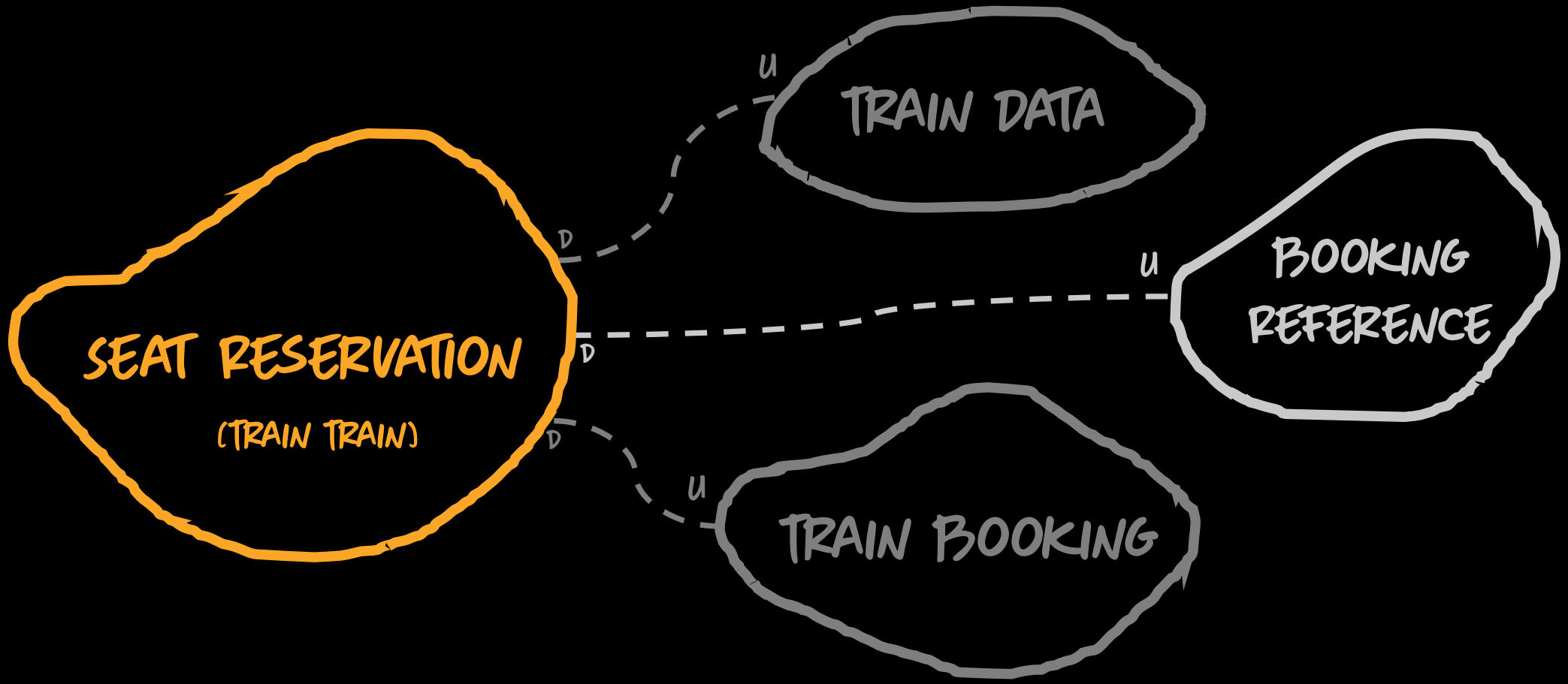
I WANT TO RESERVE 2 SEATS

#DDDaxa

SOME WORDS FROM OUR DOMAIN EXPERT

- TRAIN
- TRAIN ID
- SEATS
- COACHES
- RESERVATION ATTEMPT
- FULFILLED
- TO BOOK
- BOOKING REFERENCE
- RESERVATION
- RESERVATION FAILURE
- ...

MANY BOUNDED CONTEXTS...



#DDDaxa

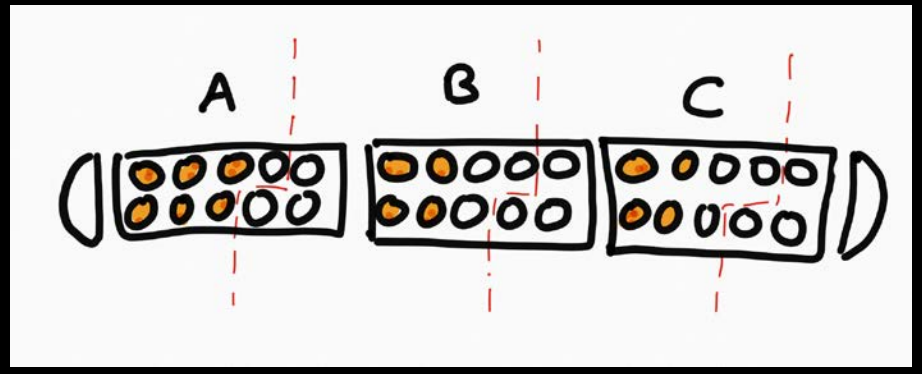
TRAIN-TRAIN

DEMO!

OUR MISSION

NEW RULE!

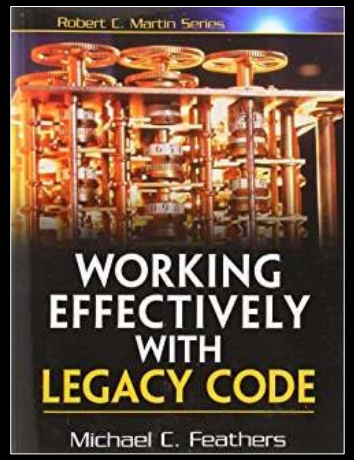
"IDEALLY, NO INDIVIDUAL COACH SHOULD HAVE NO MORE THAN 70 PERCENT RESERVED SEATS EITHER"



TRAIN-TRAIN

EPISODE1:

WE NEED A TEST HARNESS!



TRAIN-TRAIN

LET'S DIVE INTO THE CODE

TRAIN-TRAIN

OUR SYSTEM IS REQUESTED LIKE...

I WANT 3 SEATS FOR TRAIN 9...

```
{"train_id": "9043-2017-04-07", "number_of_seats": 3}
```

TRAIN-TRAIN

OUR SYSTEM ANSWERS LIKE...

WHEN RESERVATION SUCCEED

{"train_id": "1434-2017-06-07", "booking_reference": "75bcd15", "seats": ["1A", "1B"]}

WHEN RESERVATION FAIL

{"train_id": "1434-2017-06-07", "booking_reference": "", "seats": []}

TRAIN-TRAIN

TIME TO ADD OUR FIRST ACCEPTANCE TESTS

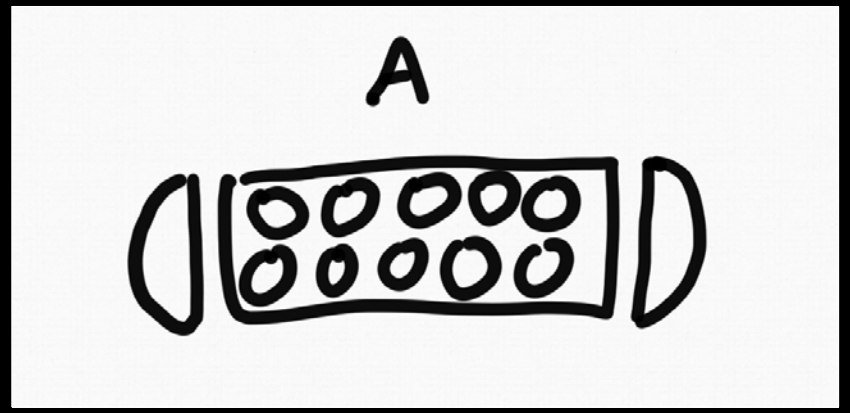
TRAIN-TRAIN

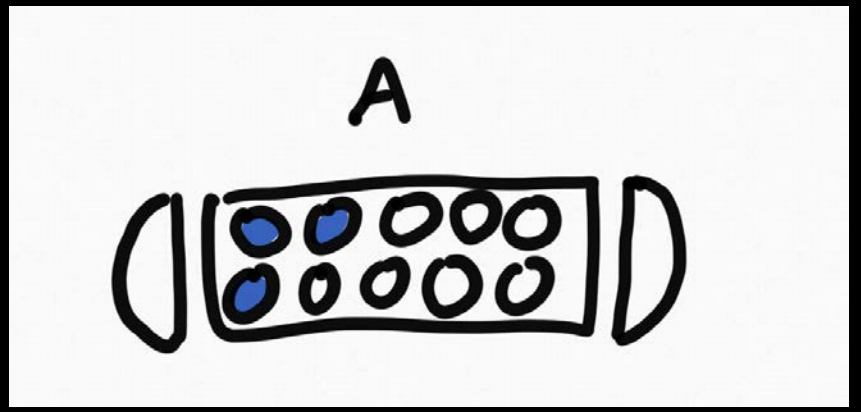
TEST #1

SIMPLE RESERVATION

TRAIN-TRAIN

TEST #1 - SIMPLE RESERVATION





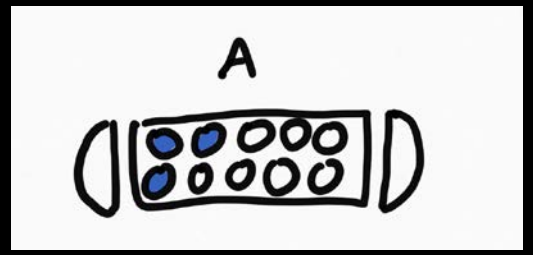
I WANT 3 SEATS

TRAIN-TRAIN

TEST #1 - SIMPLE RESERVATION

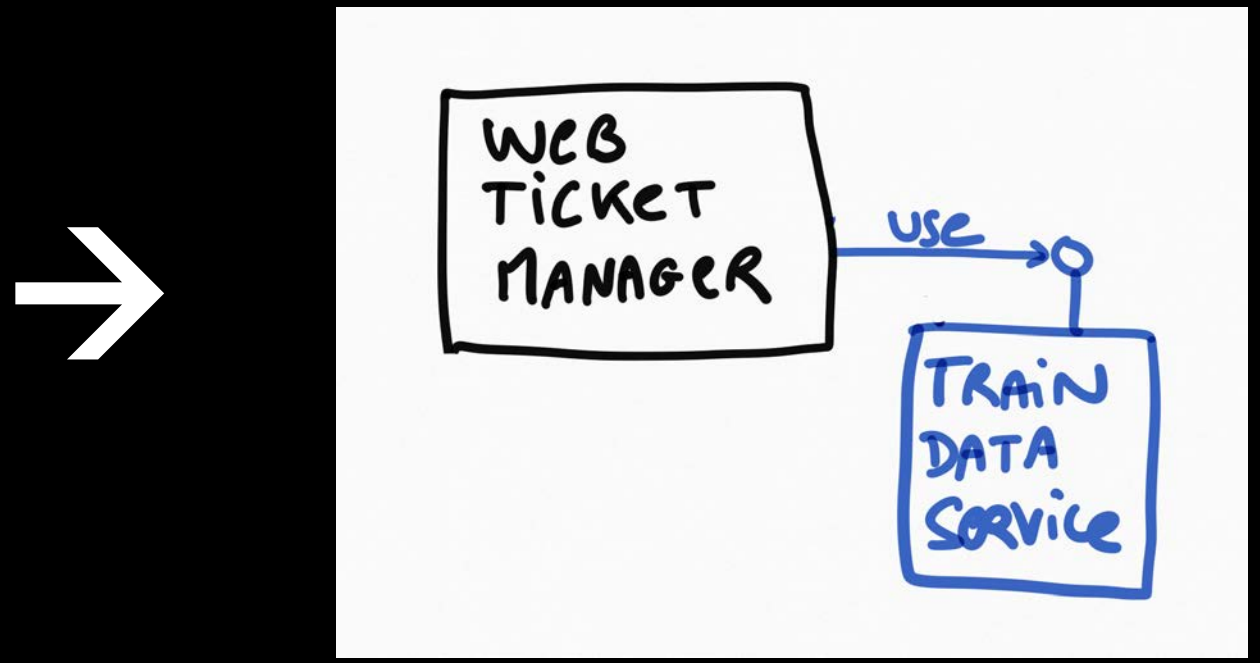
EXPECTED RESULT

```
{"train_id": "9043-2017-06-07", "booking_reference": "75bcd15", "seats": ["1A", "2A", "3A"]}
```



TRAIN-TRAIN

WE NEED SOMETHING TO BE STUBBED!



HOW HASSAN-CEHEF PROVIDES TRAIN TOPOLOGIES

{"seats": {"1A": {"booking_reference": "", "seat_number": "1", "coach": "A"}, "2A": {"booking_reference": "", "seat_number": "2", "coach": "A"}}}

TRAIN-TRAIN

HOW HASSAN-CEHEF PROVIDES BOOKING REFERENCES

You can use this service to get a unique booking reference. Make a GET request to:

```
http://localhost:8082/booking_reference
```

This will return a string that looks a bit like this:

```
75bcd15
```

TRAIN-TRAIN

NEXT!

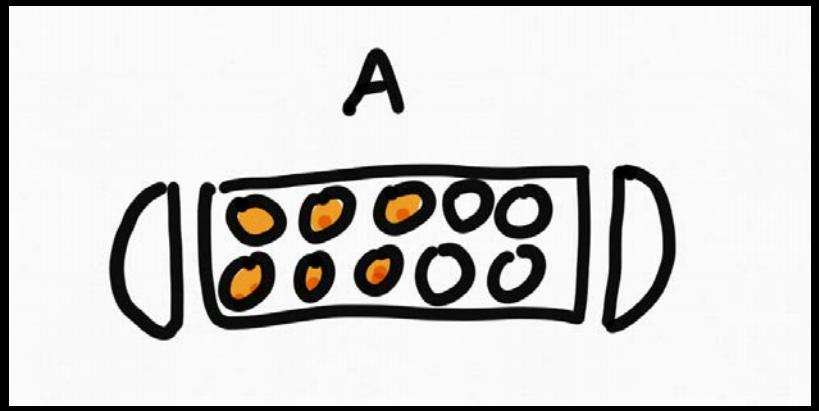
TRAIN-TRAIN

TEST #2

THIS TRAIN IS FULL...

TRAIN-TRAIN

TEST #2 – THIS TRAIN IS FULL



→

CAN'T EXCEED
70 PERCENT OF TRAIN
CAPACITY!

I WANT 2 SEATS

TRAIN-TRAIN

TEST #2 – THIS TRAIN IS FULL

CAN'T EXCEED
70 PERCENT OF TRAIN
CAPACITY!

{"train_id": "1434-2017-06-07", "booking_reference": "", "seats": []}

TRAIN-TRAIN

NEXT!

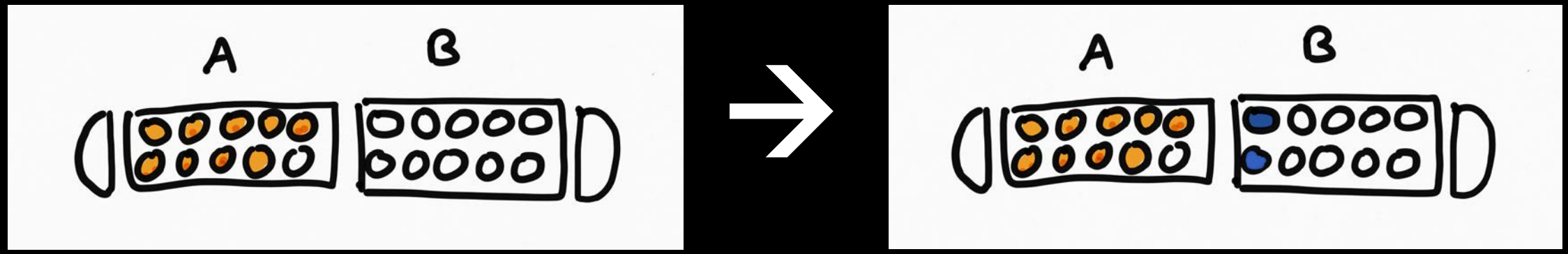
TRAIN-TRAIN

TEST #3

ALL SEATS IN THE SAME COACH PLEASE!

TRAIN-TRAIN

TEST #3 – SAME COACH PLEASE!



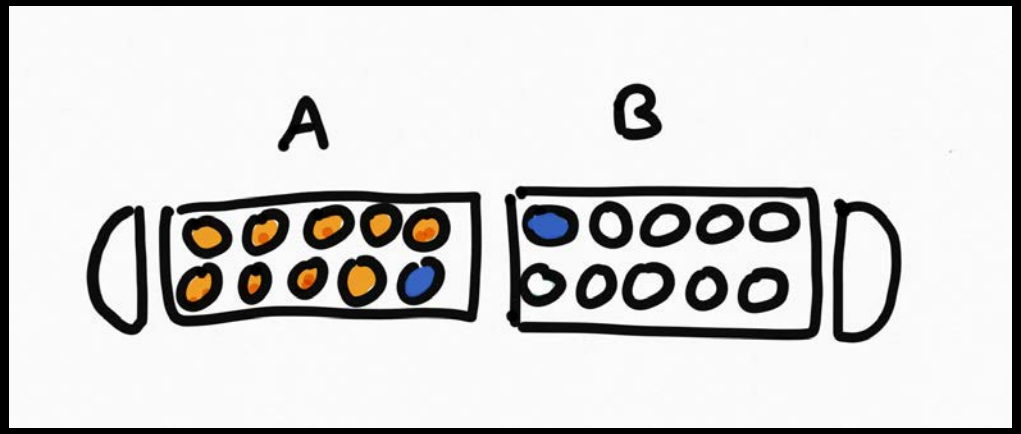
I WANT 2 SEATS

TRAIN-TRAIN

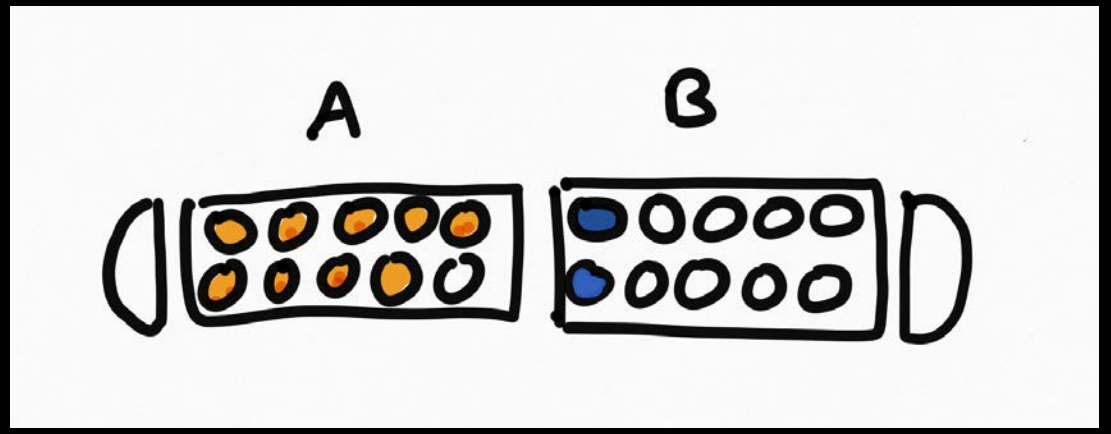
HOUSTON?

TRAIN-TRAIN

TEST #3 – SAME COACH PLEASE!



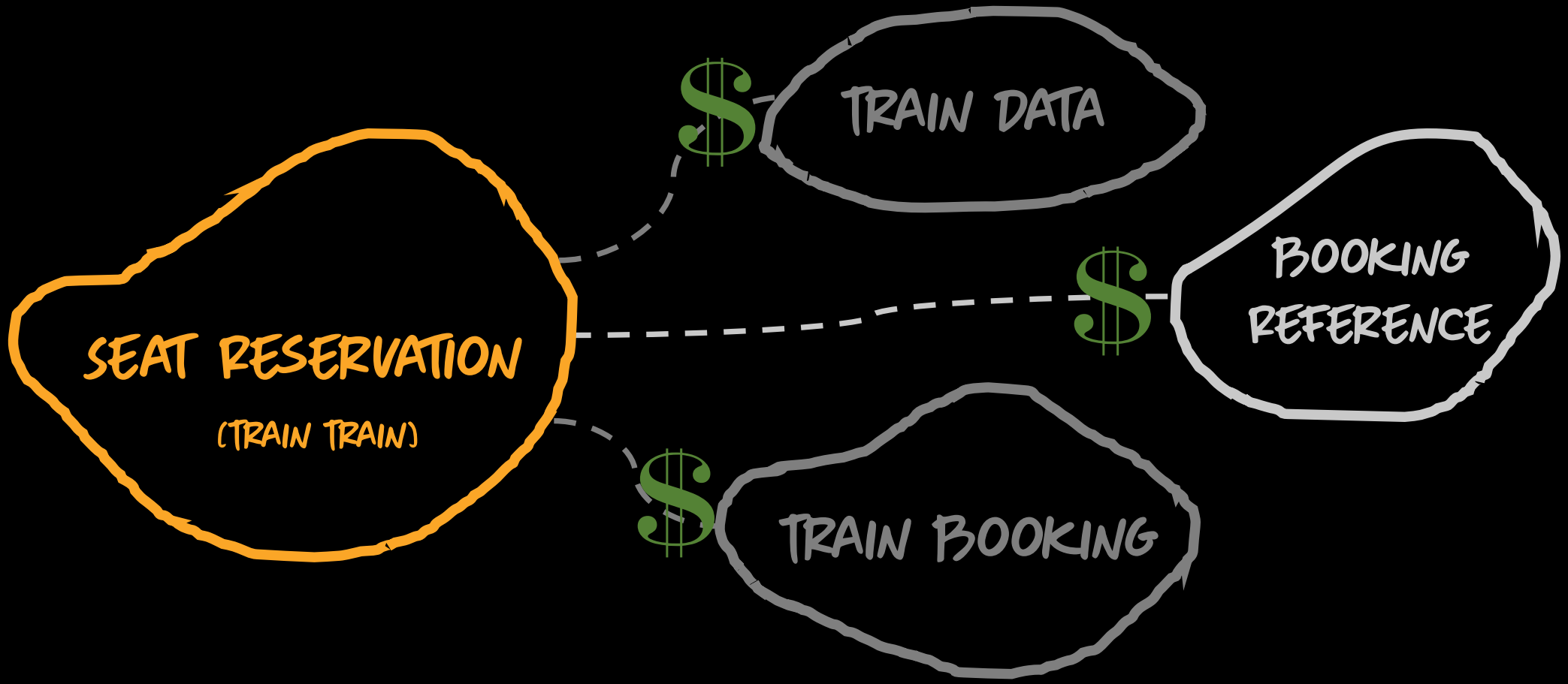
WHAT WE HAVE...



WHAT WE SHOULD HAVE

EXTRA FEES? THAT MAKES SENSE...

EXTRA FEES? THAT MAKES SENSE...



TRAIN-TRAIN

FIX THAT BUG?

OR

ADD THE FEATURE?

TRAIN-TRAIN

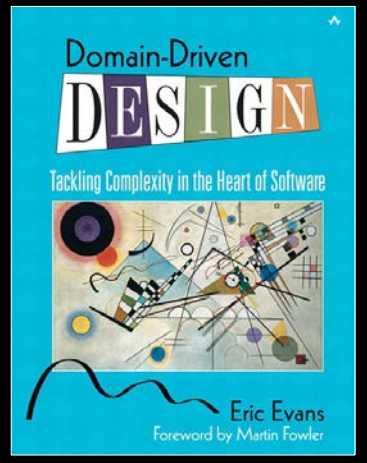
15 MINUTES PAUSE

NEXT: DDD

TRAIN-TRAIN

EPISODE2:

WHERE IS THE DOMAIN?!?



TRAIN-TRAIN

REMEMBER THE BUG?

TRAIN-TRAIN

EXTRACT AND MOVE

CLASS A

....
.....
.....
.....
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.....

.....
.....
..
.....
.....

CLASS B

..
.....
.....
.....

EXTRACT AND MOVE

CLASS A

....
.....
.....
.....
.....
.....

EXTRACT CODE

.....
.....
..
.....
.....

CLASS B

..
.....
.....
.....

EXTRACT AND MOVE

CLASS A

....
.....

.....
.....
..
.....
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.....
.....
.....

METHOD EXTRACTED

CLASS B

..
.....
.....
.....

EXTRACT AND MOVE

CLASS A

....
.....

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.....
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.....
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CLASS B

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.....

MOVE METHOD

EXTRACT AND MOVE

CLASS A

....
.....

.....
.....
..
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CLASS B

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.....

METHOD MOVED

EXTRACT AND MOVE

CLASS A

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CLASS B

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.....

TRAIN-TRAIN

SOME DDD PATTERNS

LET'S ZOOM 1 SECOND

SOME DDD PATTERNS

ENTITY
OR
VALUE TYPE?

SOME DDD PATTERNS

ENTITY

-

HAVE IDENTITY AND LIFECYCLE

MUTABLE

IDENTIFIER EQUALITY

SOME DDD PATTERNS

VALUE TYPE

-

NO IDENTITY

IMMUTABLE

EQUALITY BY PROPERTIES

SOME DDD PATTERNS

ENTITY

-

HAVE IDENTITY AND LIFECYCLE

MUTABLE

IDENTIFIER EQUALITY

VALUE TYPE

-

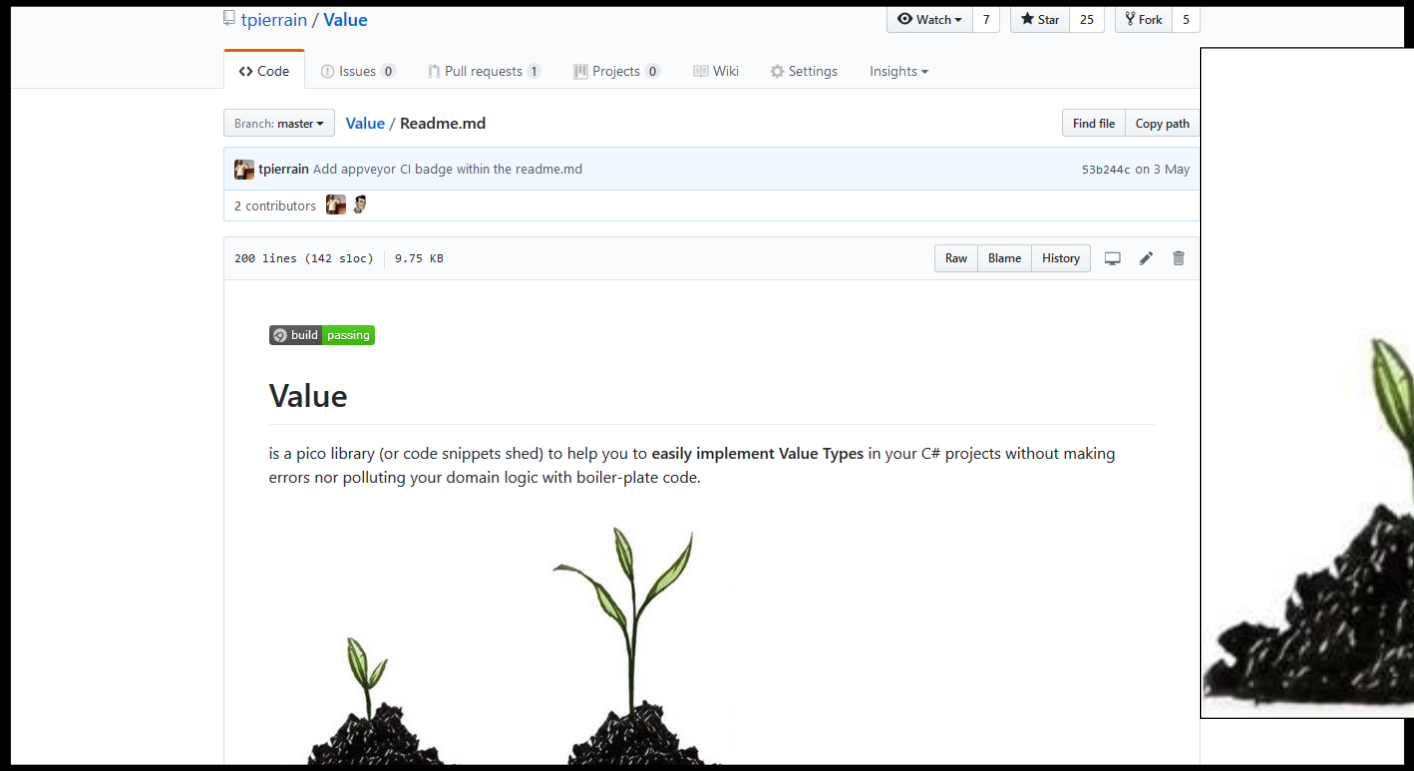
NO IDENTITY

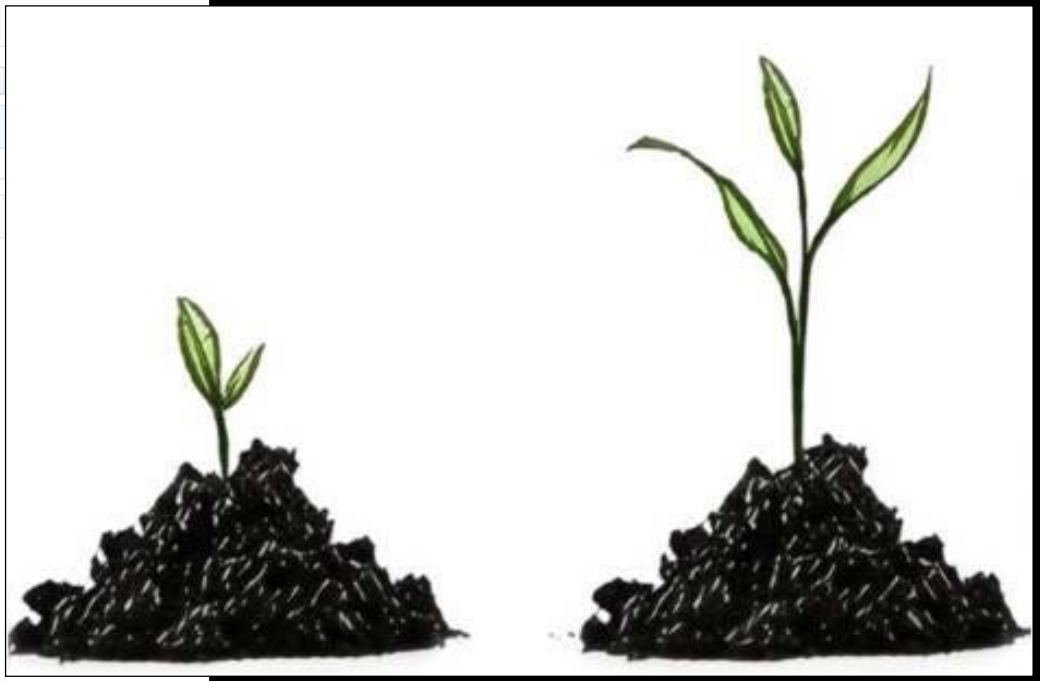
IMMUTABLE

EQUALITY BY PROPERTIES

SOME DDD PATTERNS

VALUE TYPES POWERED BY "VALUE"





SOME DDD PATTERNS

CLOSURE OF OPERATION

-

AN OPERATION WHOSE RETURN TYPE IS THE SAME AS THE TYPE OF ITS IMPLEMENTER

E.g.: Coach otherCoach = coach.AddSeat(seat);

SOME DDD PATTERNS

CLOSURE OF OPERATION

-

DO YOU SEE THE BENEFITS?

SOME DDD PATTERNS

CLOSURE OF OPERATION

-

FOSTER IMMUTABILITY

REDUCE COUPLING

(EASIER TO "MOVE" CODE)

Here, the Coach type stands by itself

SOME DDD PATTERNS

AGGREGATE

-

COLLECTION OF ENTITIES AND VALUE TYPES
TREATED AS A CONCEPTUAL WHOLE

SOME DDD PATTERNS

AGGREGATES IN HERE?

SOME DDD PATTERNS

IS COACH AN AGGREGATE?

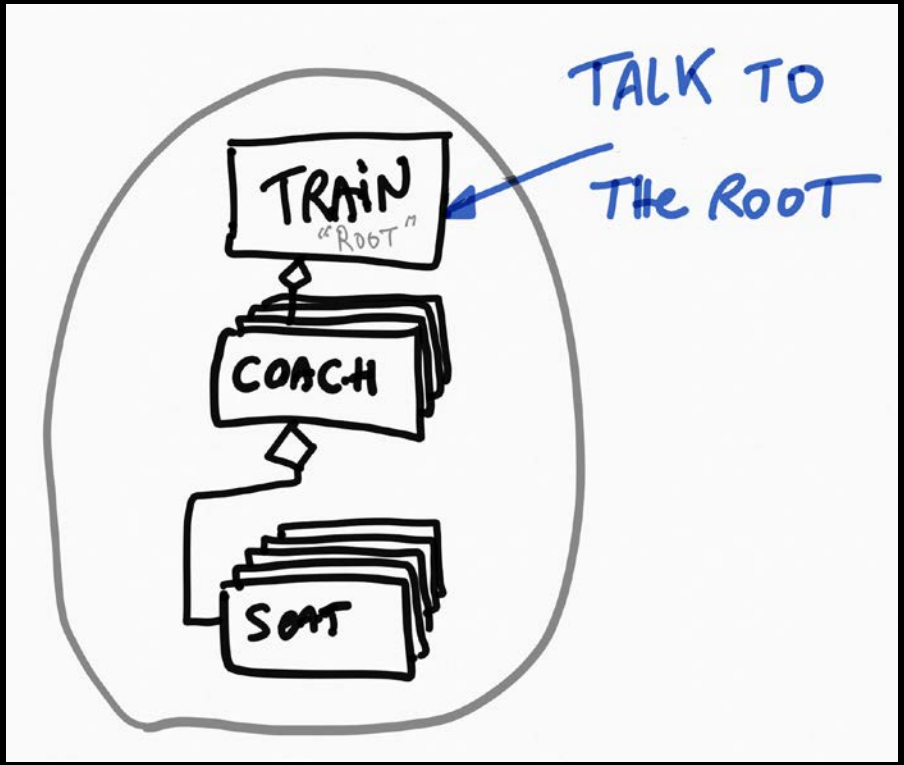
SOME DDD PATTERNS

NO.

NOT YET!

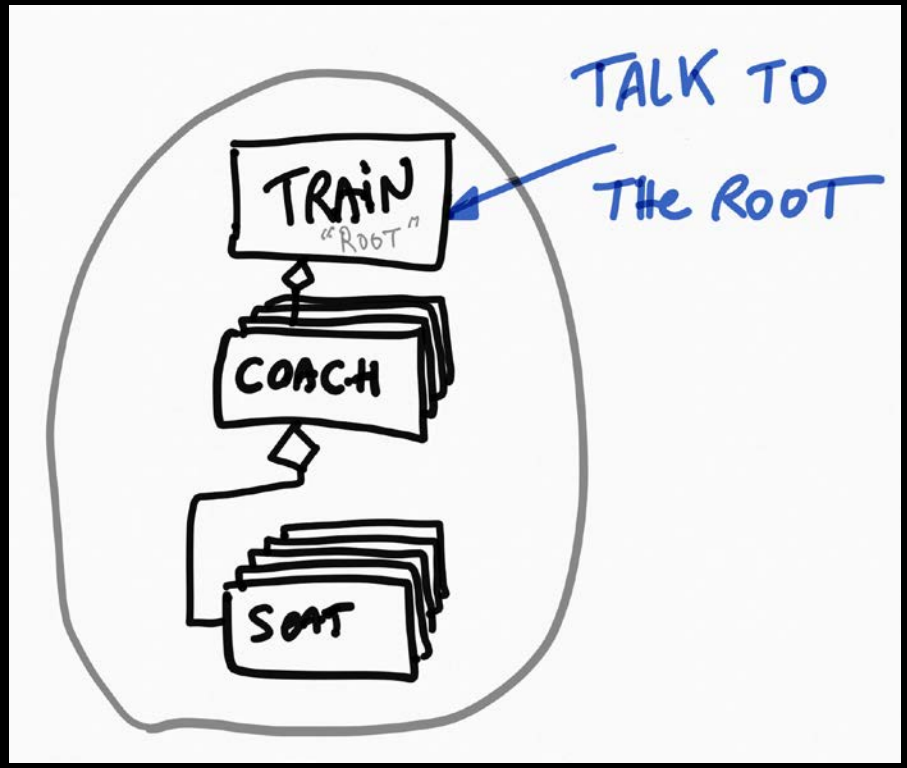
SOME DDD PATTERNS

AGGREGATES NEEDS INVARIANTS



SOME DDD PATTERNS

THINK ABOUT IT:
TRAIN, COACH AND SEAT MAY ALL BE VALUE TYPES HERE (IMMUTABLE)

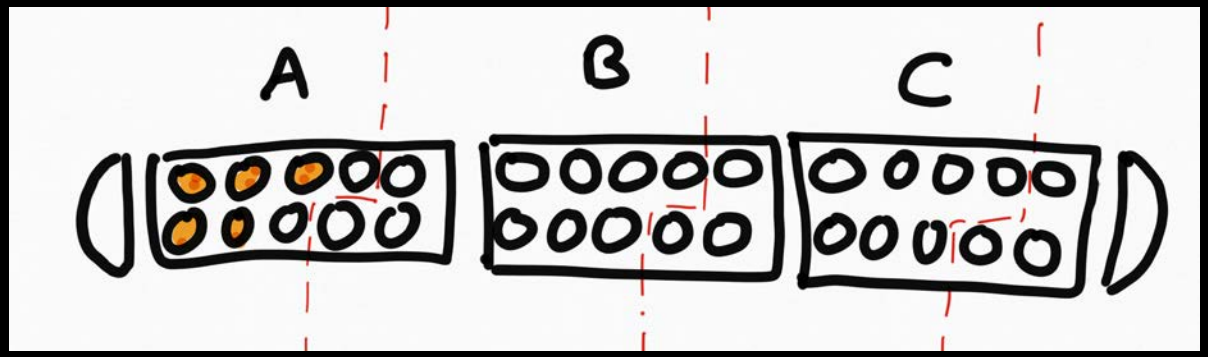


TRAIN-TRAIN

NEXT!

TRAIN-TRAIN

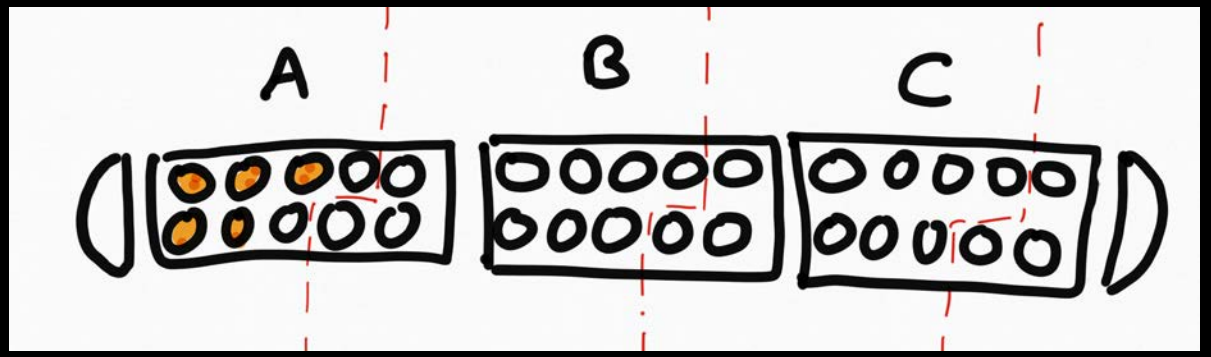
TEST #4 – IDEALLY, NO MORE THAN 70% OF COACH



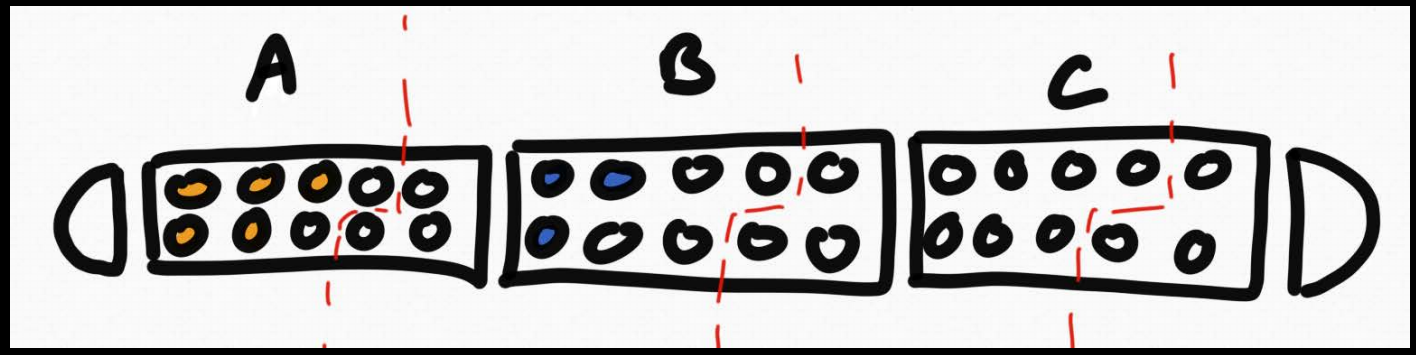
I WANT 3 SEATS

TRAIN-TRAIN

TEST #4 – IDEALLY, NO MORE THAN 70% OF COACH



I WANT 3 SEATS

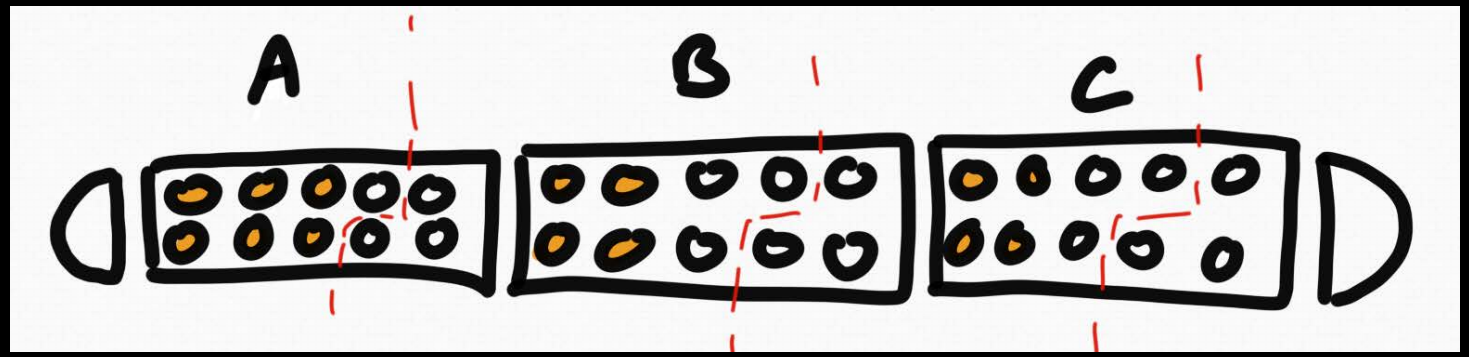


TRAIN-TRAIN

NEXT!

TRAIN-TRAIN

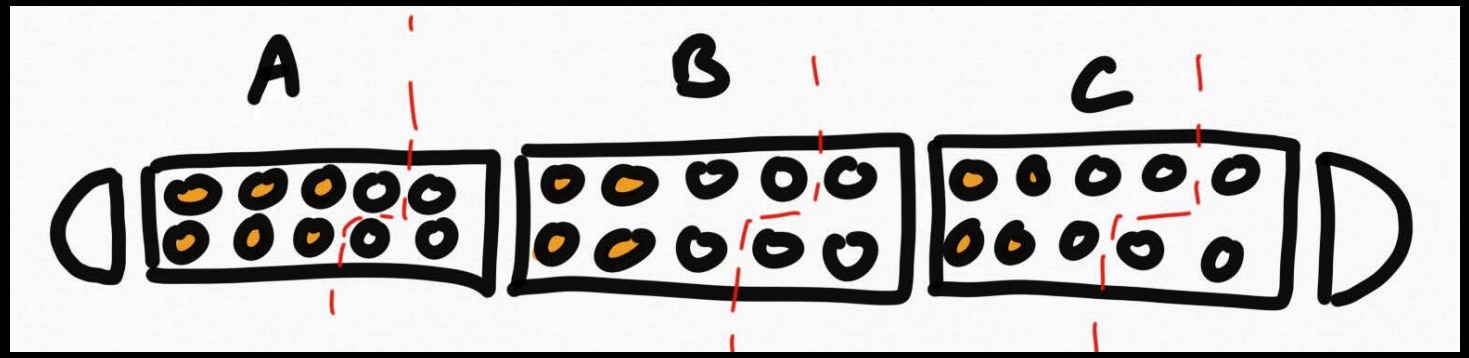
TEST #5 – NON IDEAL CASE



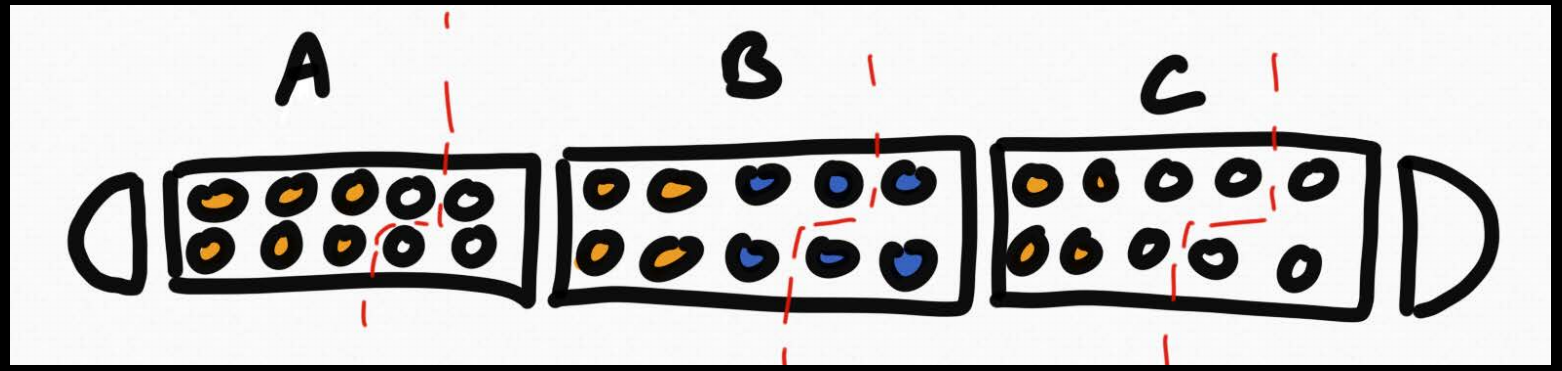
I WANT 6 SEATS

TRAIN-TRAIN

TEST #5 – NON IDEAL CASE



I WANT 6 SEATS



TRAIN-TRAIN

MISSION ACCOMPLISHED ;-)

TRAIN-TRAIN

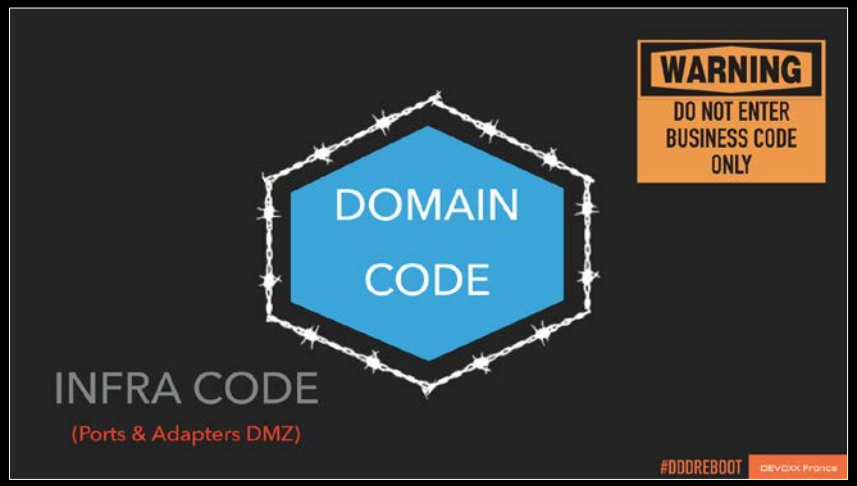
15 MINUTES PAUSE

NEXT: HEXAGONAL ARCHITECTURE

TRAIN-TRAIN

EPISODE3:

HEXAGONAL ARCHITECTURE FTW!



HEXAGONAL ARCHITECTURE?

HEXAGONAL ARCHITECTURE

ALISTAIR COCKBURN

MANY BENEFITS

HEXAGONAL ARCHITECTURE

EMBRACE CHANGE
PROTECT YOUR DOMAIN CODE
ENFORCE TESTABILITY

MANY BENEFITS

HEXAGONAL ARCHITECTURE

EMBRACE CHANGE

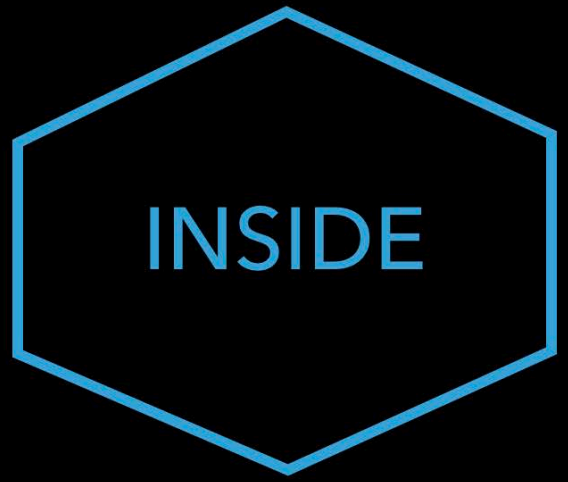
TODAY >> PROTECT YOUR DOMAIN CODE << TODAY

ENFORCE TESTABILITY

HEXAGONAL ARCHITECTURE

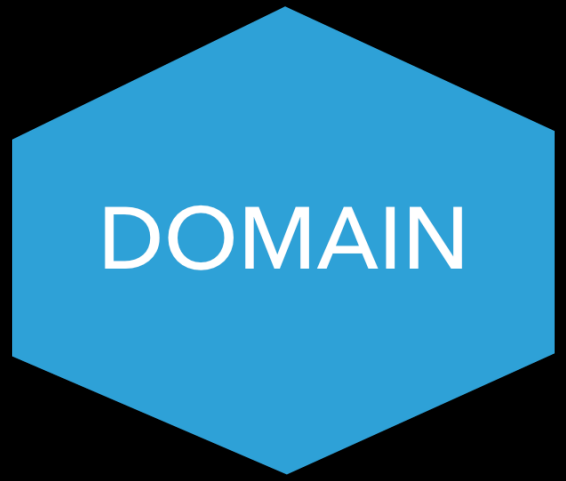
HOW?

HEXAGONAL ARCHITECTURE



OUTSIDE

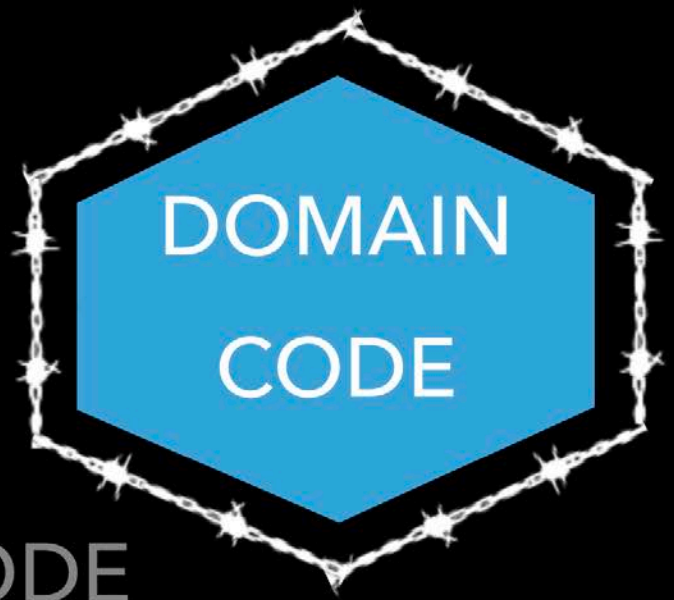
HEXAGONAL ARCHITECTURE



INFRA

(HTTP, Db, MoM,...)

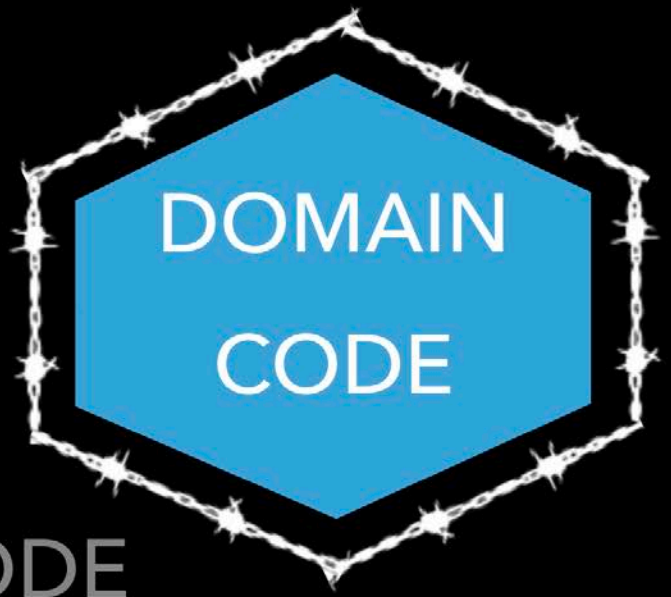
HEXAGONAL ARCHITECTURE



INFRA CODE

(Adapters DMZ)

HEXAGONAL ARCHITECTURE

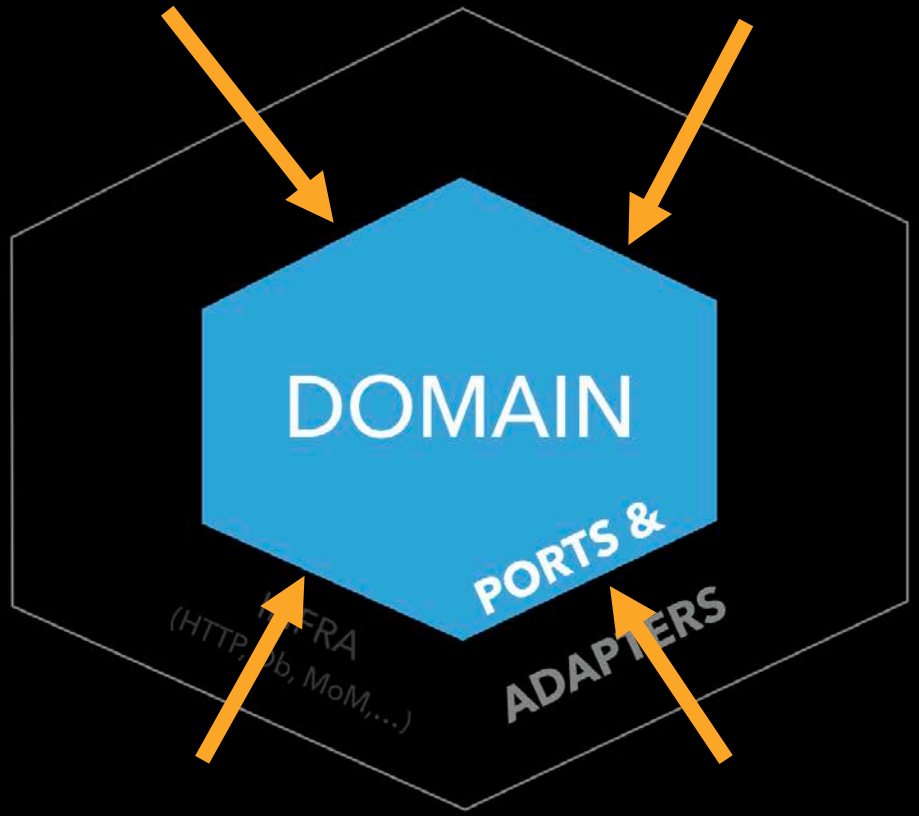


INFRA CODE

>> playground <<

HEXAGONAL ARCHITECTURE

DEPENDENCIES
ALWAYS
TOWARD
THE INSIDE

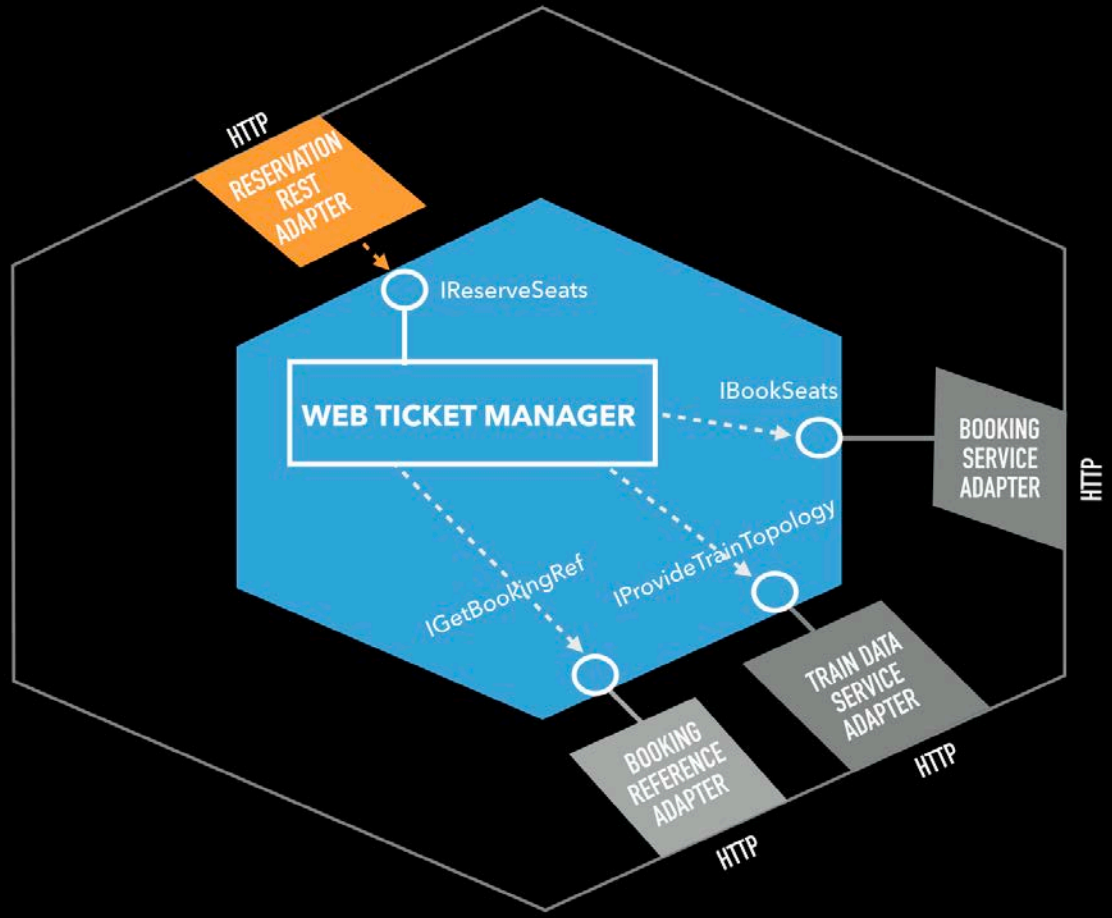


~~DIP PRINCIPLE~~

"CONFIGURABLE
DEPENDENCIES"

HEXAGONAL ARCHITECTURE

PORTS IN THE DOMAIN



ADAPTERS IN THE INFRA

HEXAGONAL ARCHITECTURE

PORTS AND ADAPTERS

TO GO IN

TO GO OUT

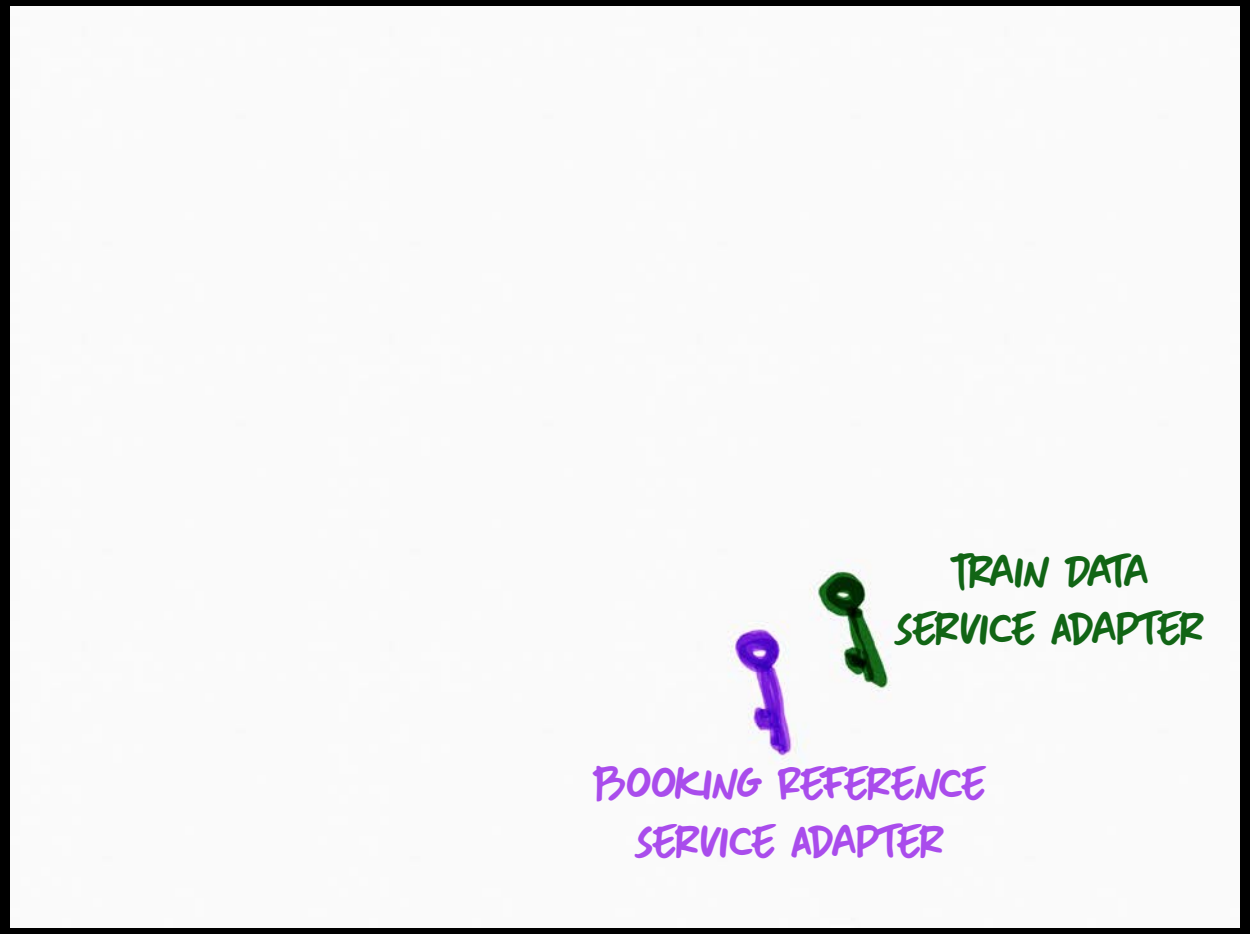
HEXAGONAL ARCHITECTURE

A 3 STEPS INITIALIZATION

THE "KEY RING" METAPHOR

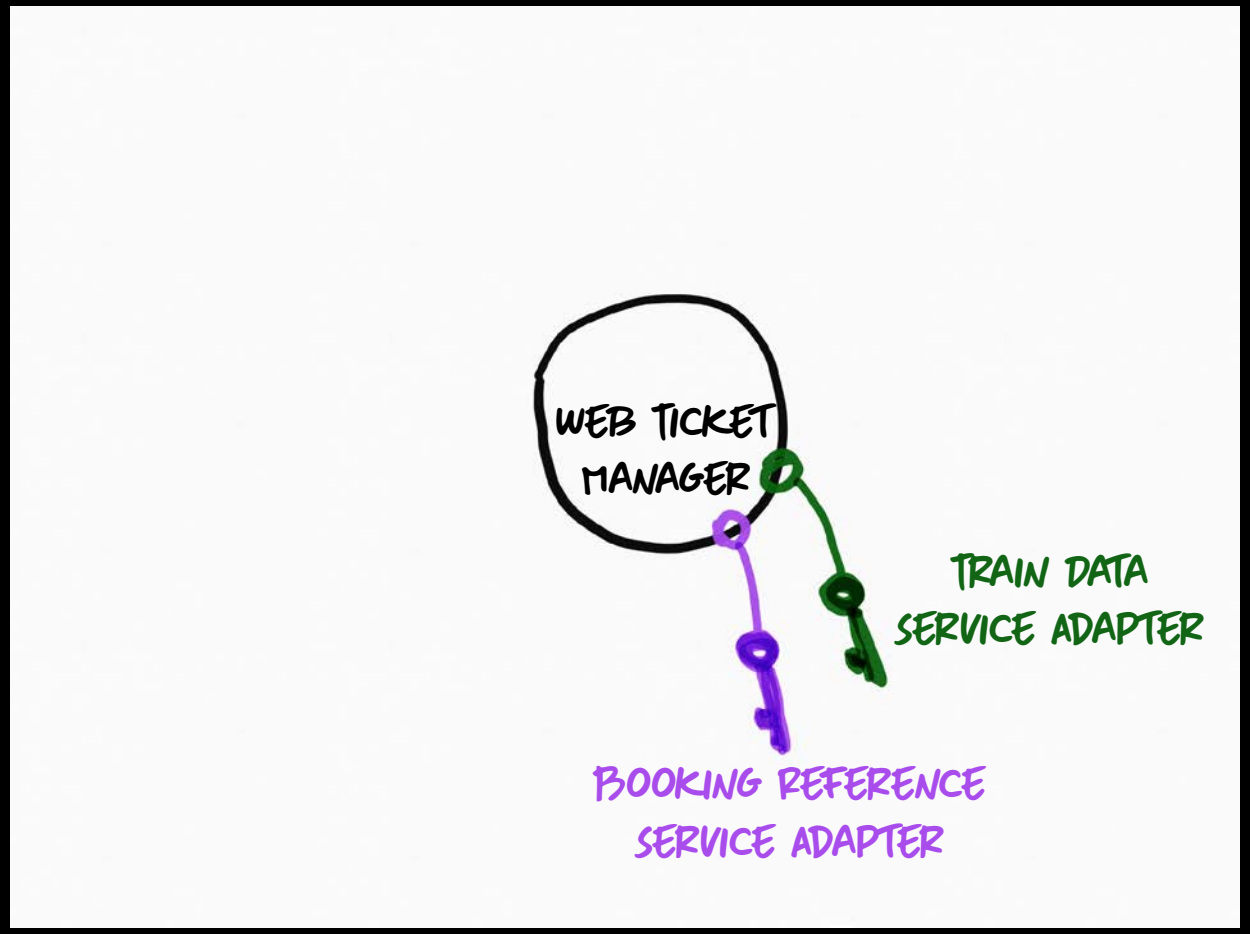
HEXAGONAL ARCHITECTURE

1. INSTANTIATE THE "I NEED TO GO OUT" ADAPTERS



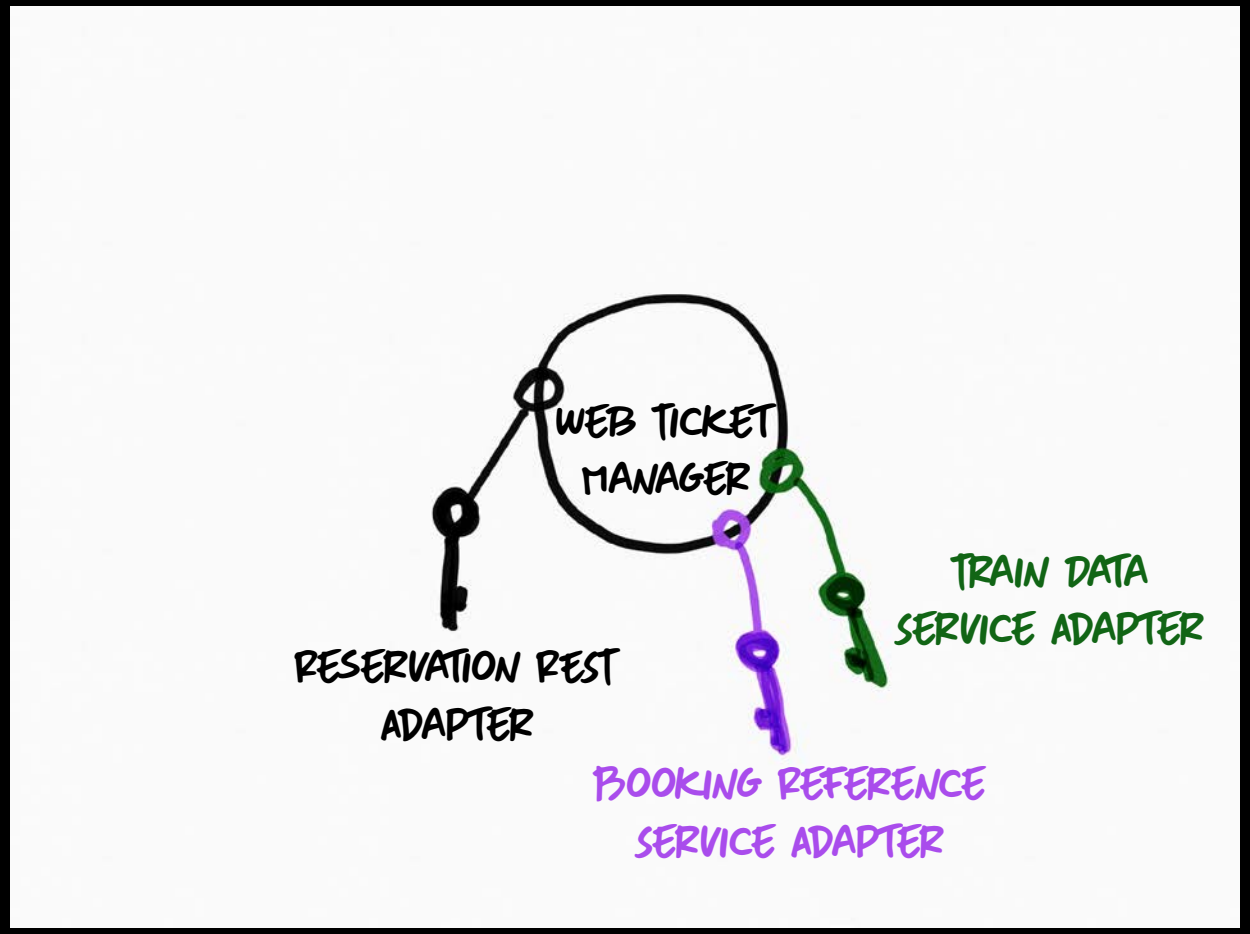
HEXAGONAL ARCHITECTURE

2. INSTANTIATE THE HEXAGON



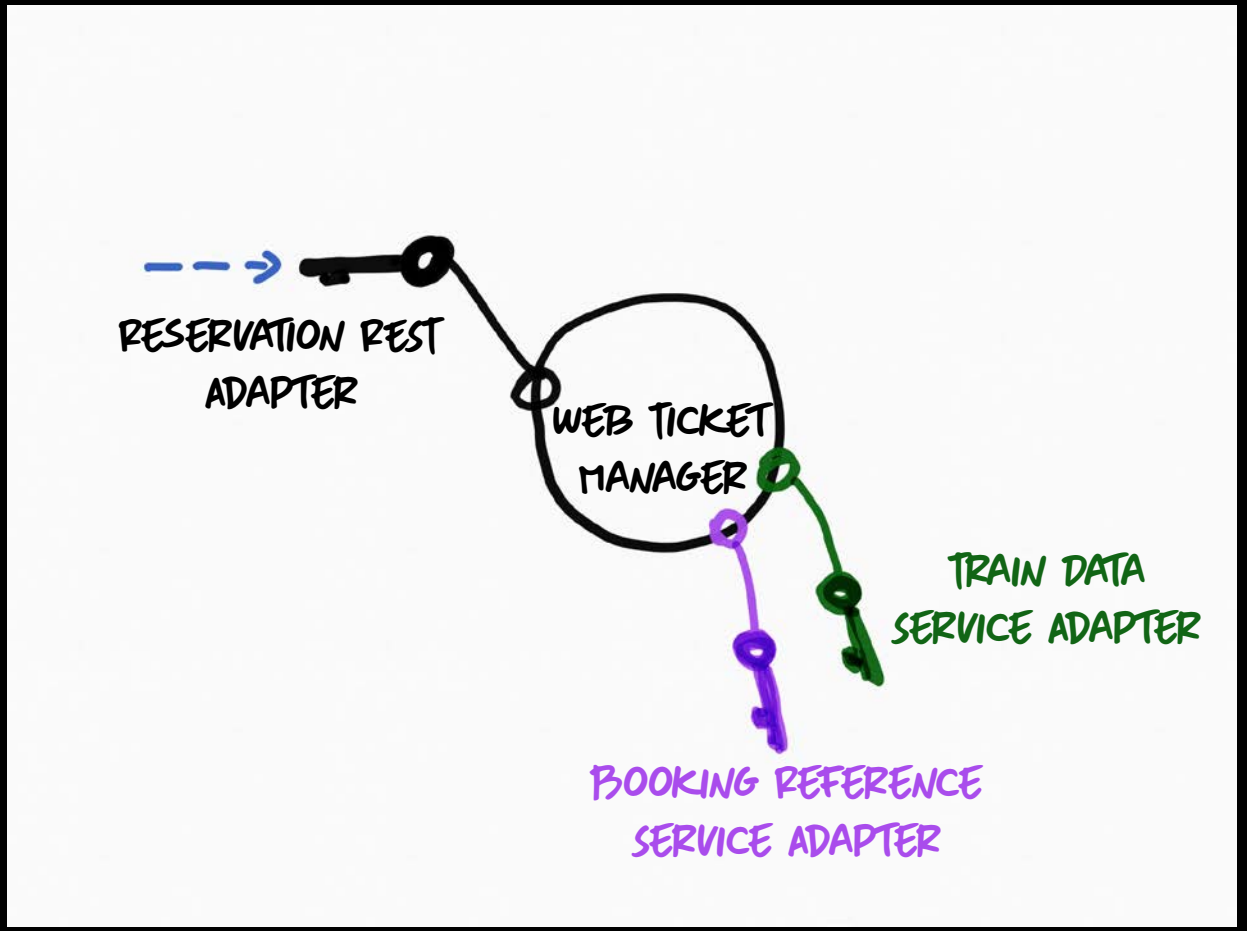
HEXAGONAL ARCHITECTURE

3. INSTANTIATE THE "I NEED TO ENTER" ADAPTERS



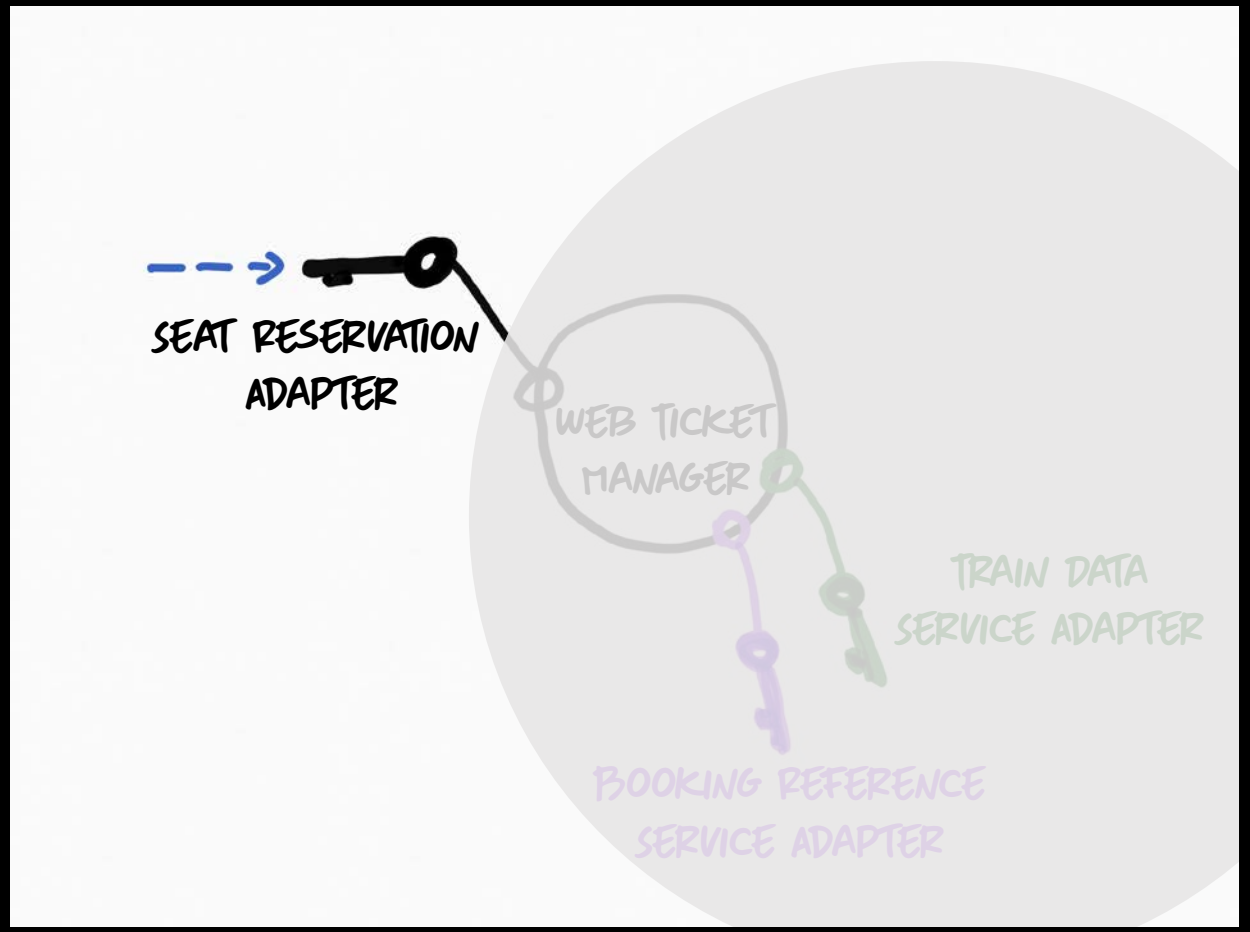
HEXAGONAL ARCHITECTURE

ALL YOU KEEP IN "YOUR HAND"



HEXAGONAL ARCHITECTURE

ALL YOU KEEP IN "YOUR HAND"



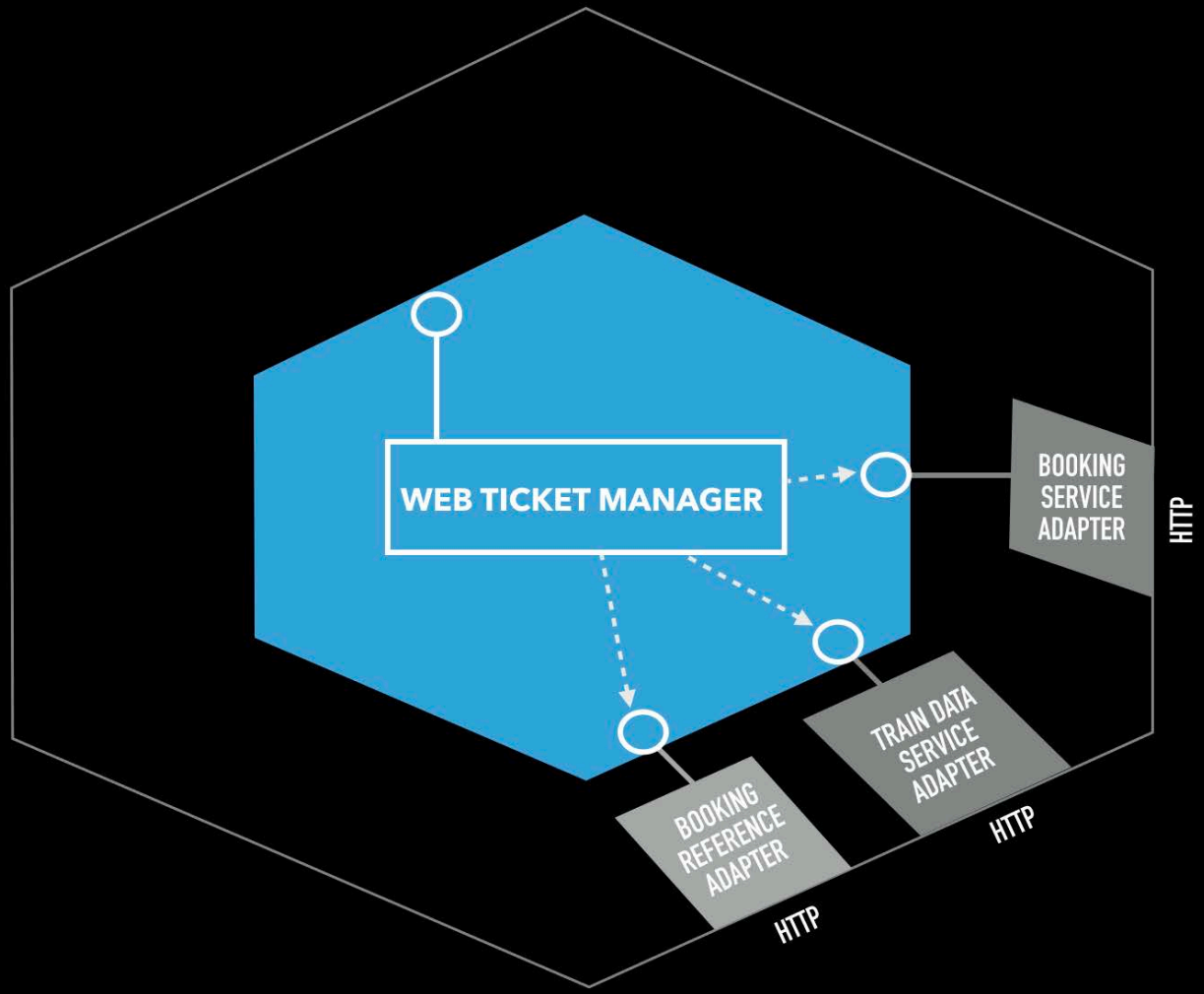
TO PUT IT DIFFERENTLY...

A 3 STEPS INITIALIZATION

1. INSTANTIATE THE "I NEED TO GO OUT" ADAPTERS

HEXAGONAL ARCHITECTURE

2. INSTANTIATE THE HEXAGON



HEXAGONAL ARCHITECTURE

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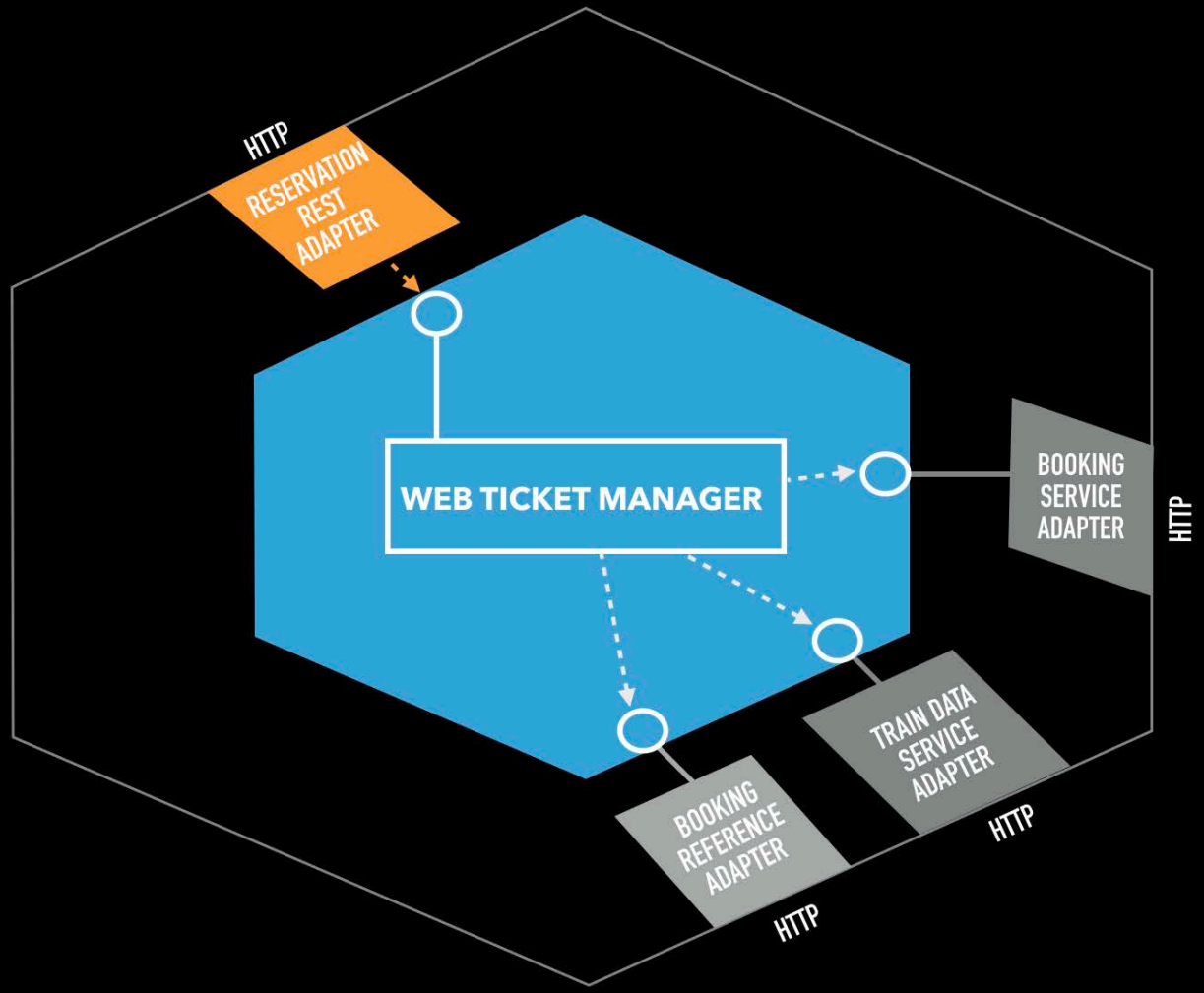
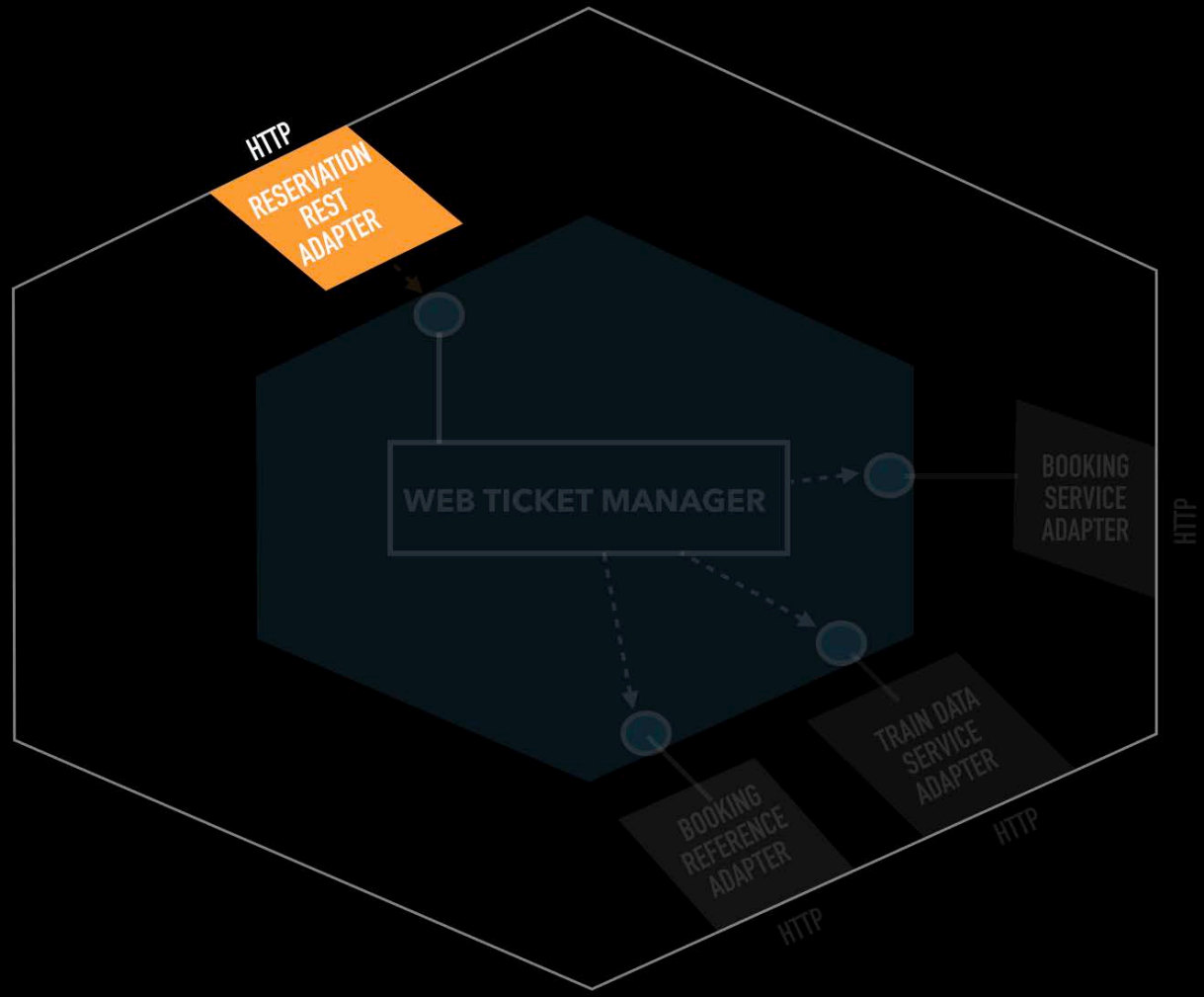


HEXAGONAL ARCHITECTURE

ALL YOU KEEP IN "YOUR HAND"



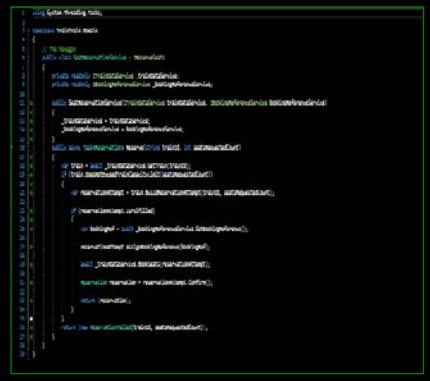
LET'S DO IT!

#DDDaxa

WRAP-UP

FROM WEB TICKET MANAGER TO SEAT RESERVATION SERVICE

BEFORE



AFTER

FROM WEB TICKET MANAGER TO SEAT RESERVATION SERVICE

```
public async Task<Reservation> Reserve(string trainId, int seatsRequestedCount)
{
    Train train = await _trainDataService.GetTrain(trainId);

    if (train.DoesNotExceedTrainCapacityLimit(seatsRequestedCount))
    {
        ReservationAttempt reservationAttempt = train.BuildReservationAttempt(trainId, seatsRequestedCount);

        if (reservationAttempt.IsFulfilled)
        {
            var bookingRef = await _bookingReferenceService.GetBookingReference();

            reservationAttempt.AssignBookingReference(bookingRef);

            await _trainDataService.BookSeats(reservationAttempt);

            Reservation reservation = reservationAttempt.Confirm();

            return reservation;
        }
    }
    return new ReservationFailed(trainId, seatsRequestedCount);
}
```

AFTER

UBIQUITOUS LANGUAGE IN DA HOUSE

```
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UBIQUITOUS LANGUAGE IN DA HOUSE

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            await _trainDataService.BookSeats(reservationAttempt);

            Reservation reservation = reservationAttempt.Confirm();

            return reservation;
        }
    }
    return new ReservationFailed(trainId, seatsRequestedCount);
}
```

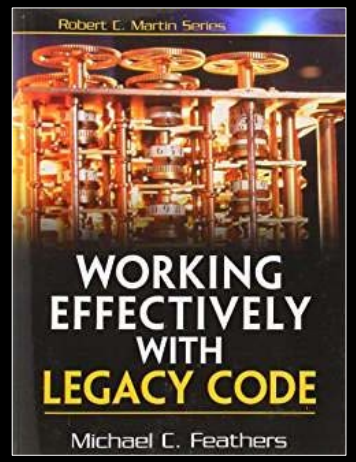
SOON!

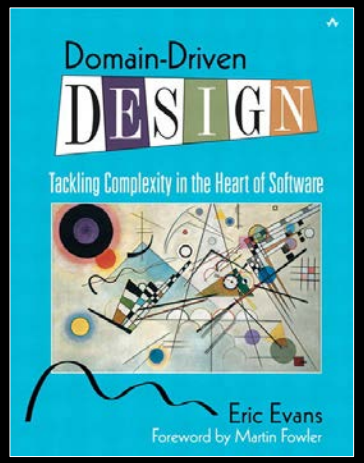
FINAL WRAP-UP

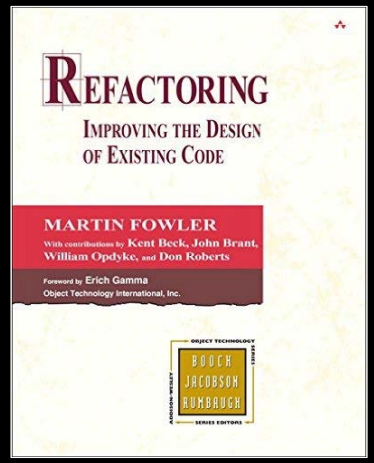
WRAP-UP

FOCUS ON, HIGHLIGHT AND PROTECT THE BUSINESS VALUE IN YOUR CODE!

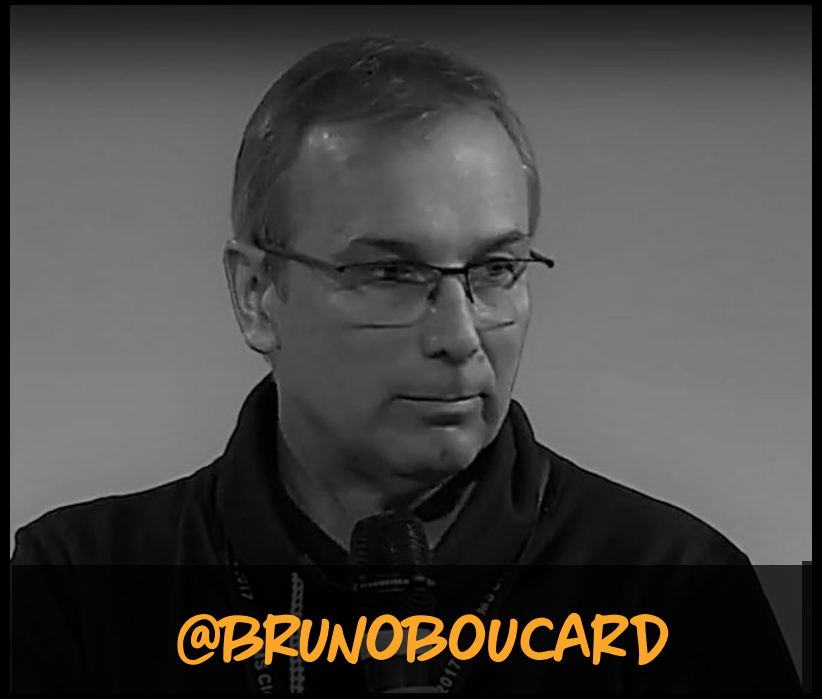
AND THE WINNERS ARE ...



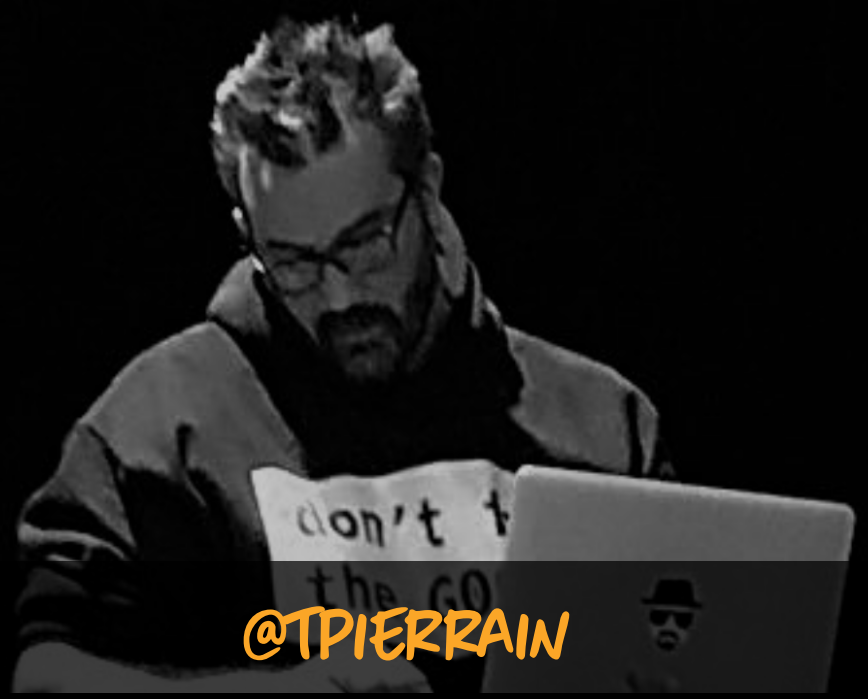




42skillz



@BRUNOBOUCARD



@TPIERRAIN

LET'S CONTINUE TO CHAT ON TWITTER

That's all folks,

Thanks!