

Lessons Learned from Adopting Clojure

Jay Fields



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DRW Trading

#GOTONight

why

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I hate all programming
languages
- Matt Foemmel

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5 years ago

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5 years ago

ThoughtWorks®

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5 years ago

ThoughtWorks®



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5 years ago

ThoughtWorks®

3-4 years



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5 years ago



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5 years ago



Java™

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you, today?

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you, today?



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you, today?



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closed classes

`File.exists("/tmp/file.txt")` not an option

no closures

```
int sum(int[] a) {  
    int result = 0;  
    for (int i : a)  
        result += i;  
    return result;  
}
```

```
HashMap<String, Double> hm =  
    new HashMap<String, Double>();  
hm.put("A", new Double(3434.34));  
hm.put("B", new Double(123.22));  
hm.put("C", new Double(1378.00));  
hm.put("D", new Double(99.22));  
hm.put("E", new Double(-19.08));
```

```
package some.klass.some.where;  
public class ItsJustSomeData extends SomeOtherData  
{ private final String name;  
  private final String age;  
  private final String birthPlace;  
  public ItsJustSomeData(String name, String age, String  
birthPlace) { this.name = name; this.age = age; this.birthPlace  
= birthPlace; } public String getName() { return name; }  
public String getAge() { return age; } public String  
getBirthPlace() { return birthPlace; } public void  
setName(String name) { this.name = name; } public void  
setAge (String age) { this.age = age; } public void  
setBirthPlace(String birthPlace) { this.birthPlace =  
birthPlace; } }
```

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“klocs kill”

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closed classes

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data / behavior separation

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data / behavior separation (reduce + 0 coll)

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data / behavior separation
(reduce + 0 coll)
{“A” 12 “B” 345 “C” 899}

closed classes

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int sum(int[] a)

int result = 0;

for (int i : a)

result += i;

return result;

Map<String, Dou

new HashMap<Strin

hm.put("A", new Dou

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hm.put("D", new Dou

hm.put("E", new Dou

data / behavior separation
(reduce + 0 coll)
{“A” 12 “B” 345 “C” 899}
(defrecord Person
 [name age birth-place])

REPL withdrawl



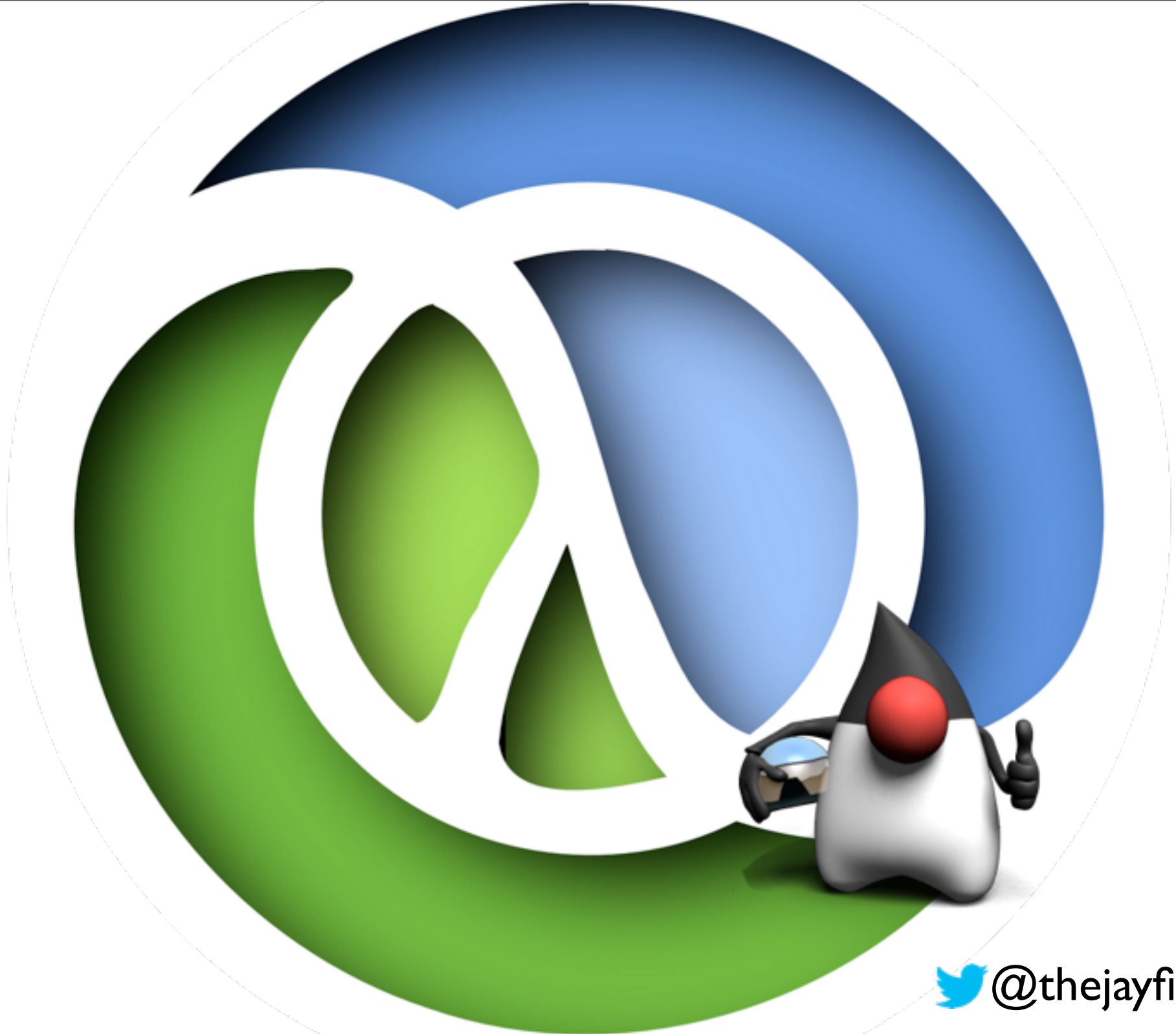
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A language that doesn't
affect the way you think
about programming is
not worth knowing.
— Alan Perlis

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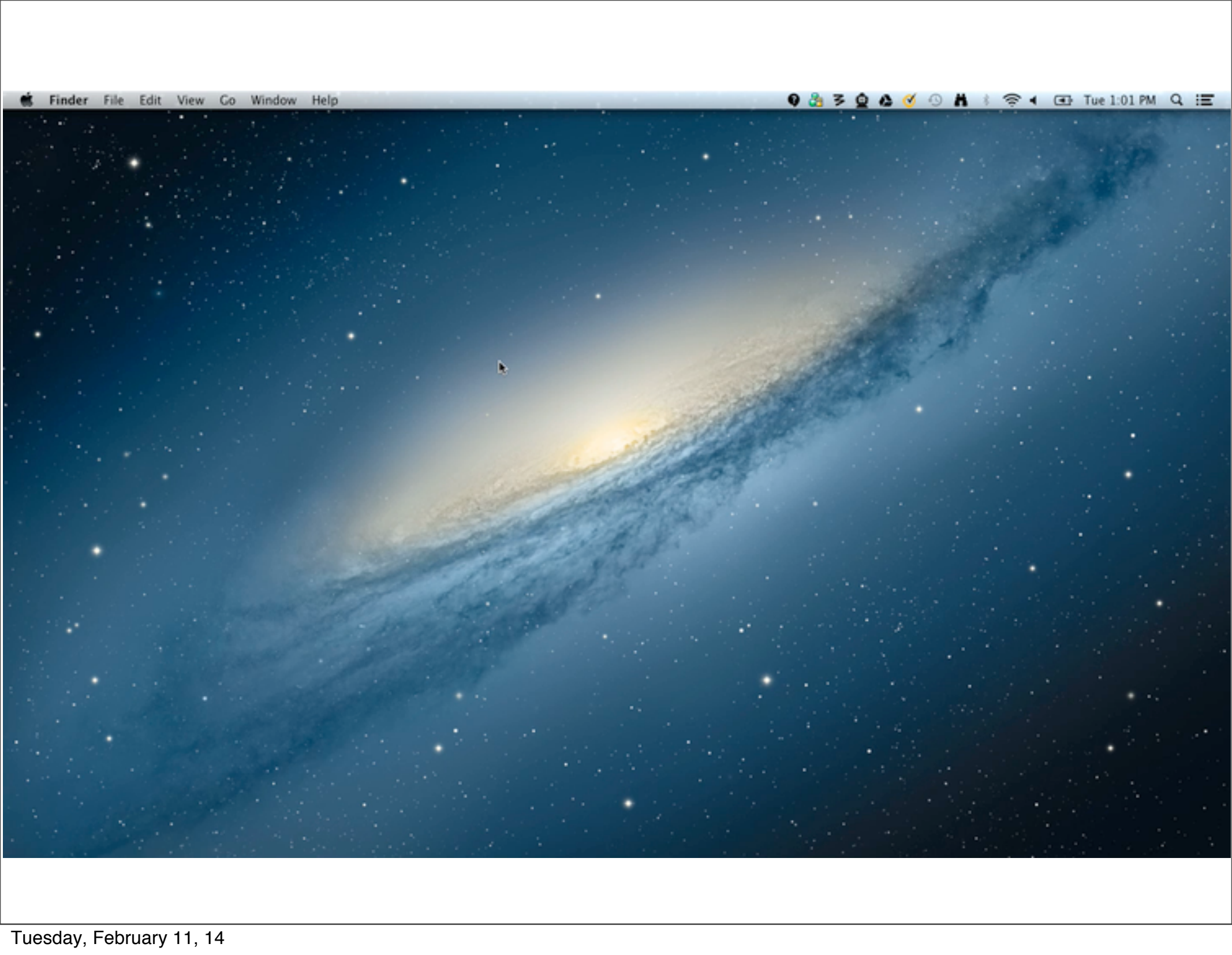


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speed...

RDD, REPL Driven Development





how

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- language

-

-

-

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- language
- runtime
-
-

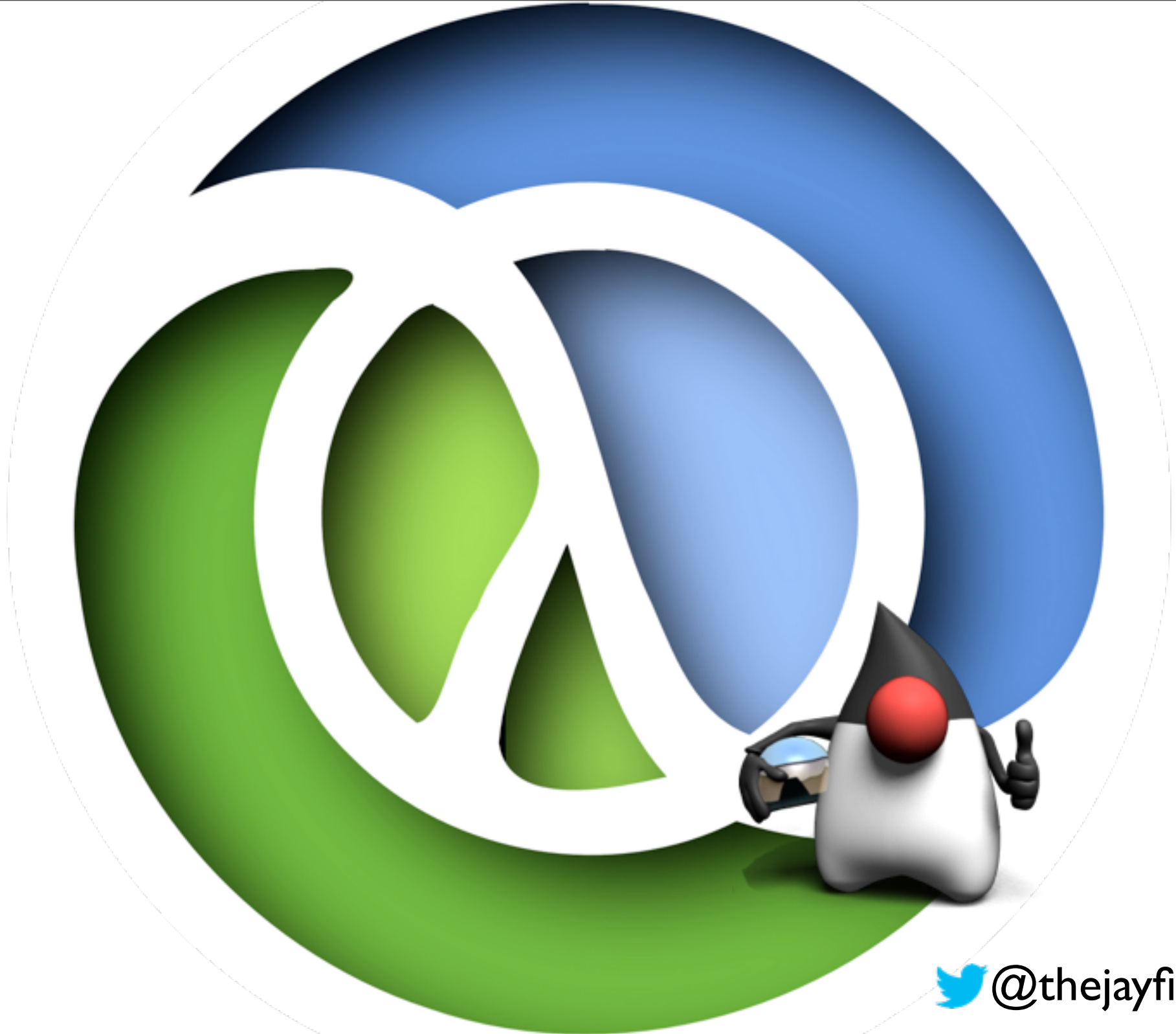
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- language
- runtime
- deployment
-

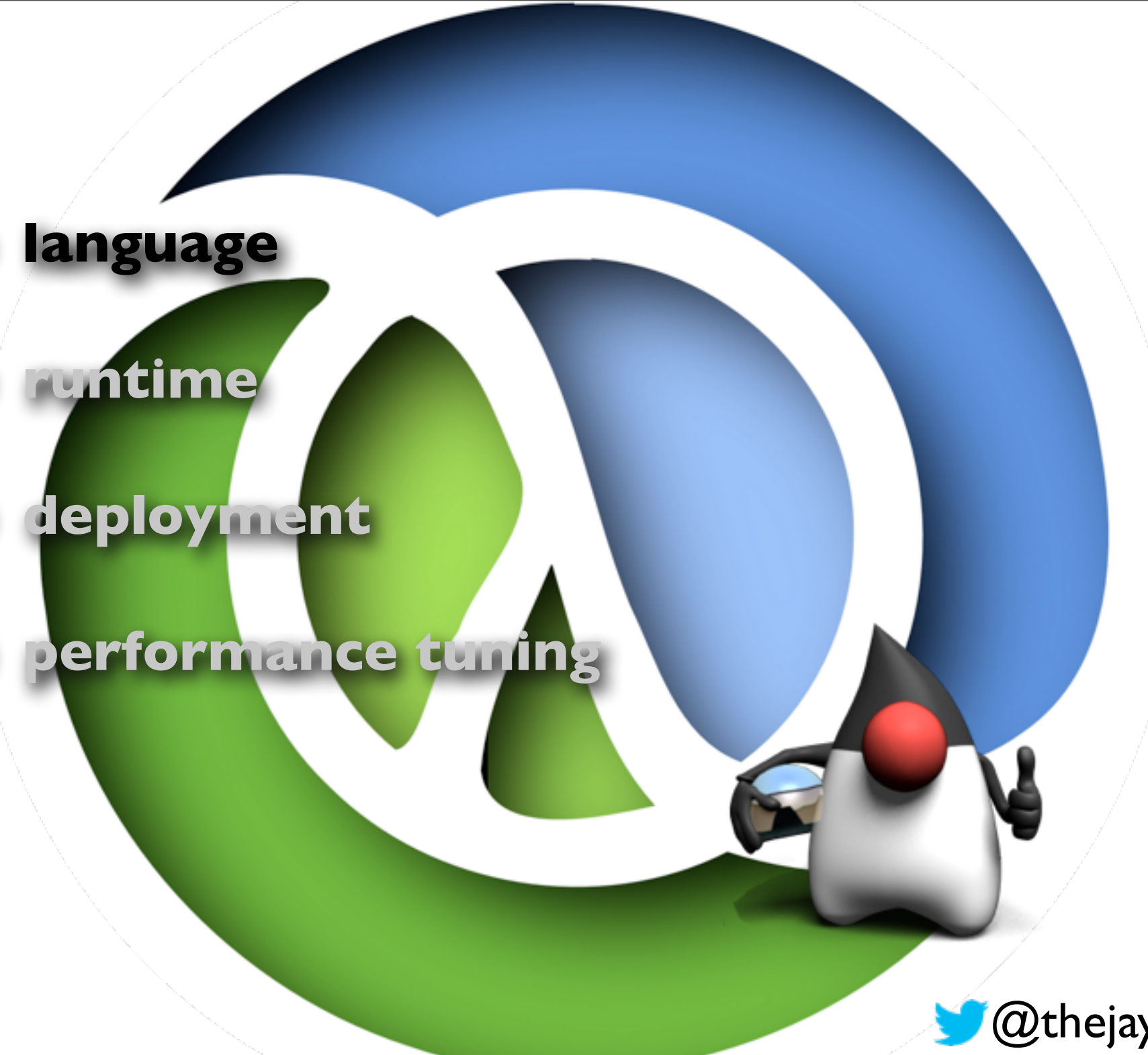
- language
- runtime
- deployment
- performance tuning



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- 
- **language**
 - runtime
 - deployment
 - performance tuning



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find a language that

- doesn't force your teammates to learn a new IDE or editor

find a language that

- doesn't force your teammates to learn a new IDE or editor
- uses the same support frameworks, e.g. Ant, Make, Maven, JUnit.

find a language that

- doesn't force your teammates to learn a new IDE or editor
- uses the same support frameworks, e.g. Ant, Make, Maven, JUnit.
- uses the same tools (beyond code), e.g. YourKit, strace.

hello world

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choose code that

- non-production code

choose code that

- non-production code
- showcases the features you find most valuable in the new language.

choose code that

- non-production code
- showcases the features you find most valuable in the new language.
- you're willing to write in the old and the new language.

choose code that

- non-production code
- showcases the features you find most valuable in the new language.
- you're willing to write in the old and the new language.
- **you're willing to keep in the old language**



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your commitment

- pair with, code review, collaborate

your commitment

- pair with, code review, collaborate
- you'll fix whatever they want to ignore

your commitment

- pair with, code review, collaborate
- you'll fix whatever they want to ignore
- you'll rewrite everything in the old language, if the team determines that the experiment failed.

find allies, don't make enemies

allies

- if you're alone, you've already failed

allies

- if you're alone, you've already failed
- practice together

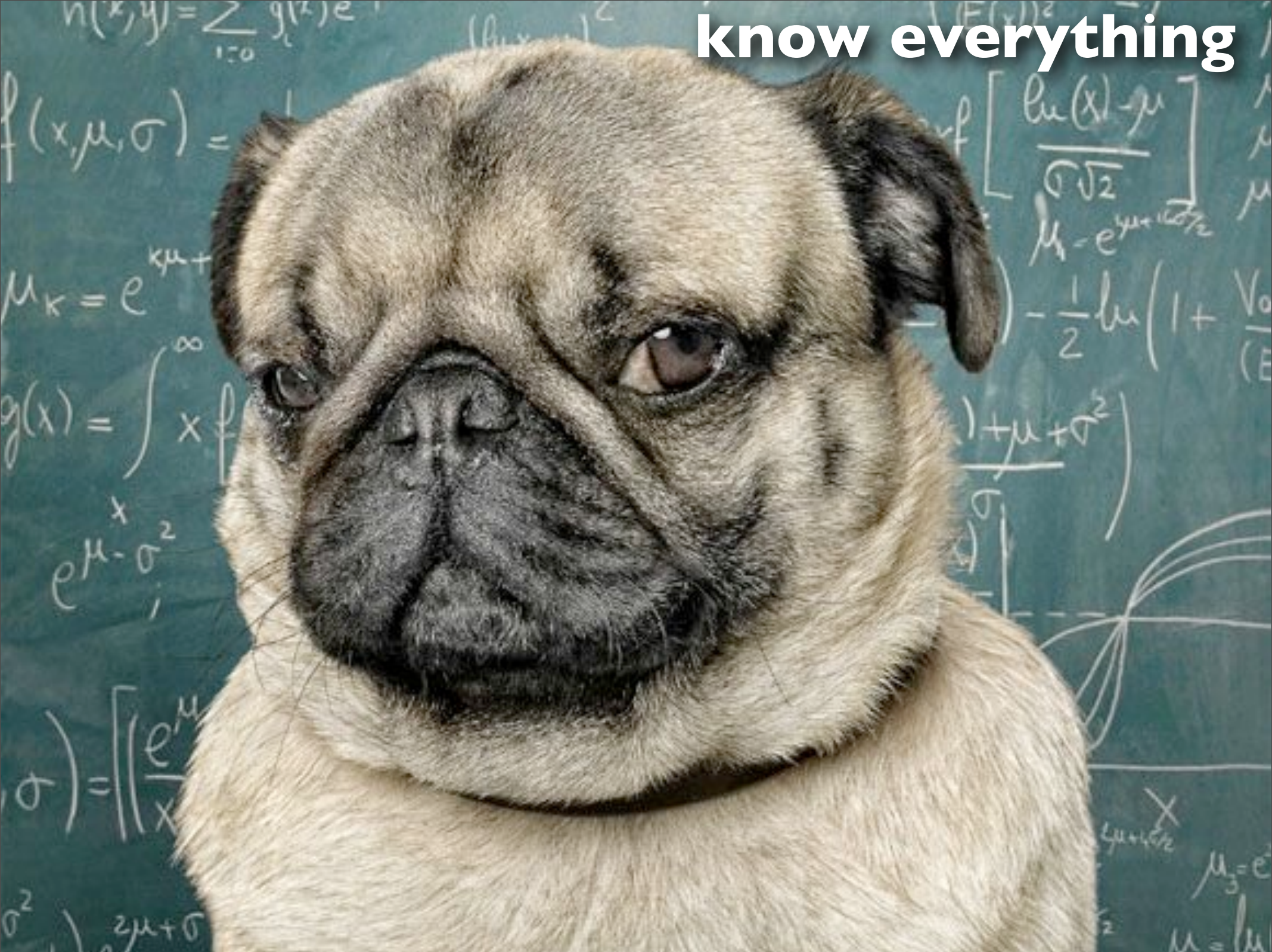
allies

- if you're alone, you've already failed
- practice together
- collaborate on easing non-code friction.
e.g. tool support, workflow support

allies

- if you're alone, you've already failed
- practice together
- collaborate on easing non-code friction.
e.g. tool support, workflow support
- hold the line when you're gone

know everything



know everything

- read books (plural)

know everything

- read books (that's plural!)
- where do the experts live? mailing list, irc?

know everything

- read books (that's plural!)
- where do the experts live? mailing list, irc?
- know more than code: memory allocation, performance, deployment, tool integration, library support, upgrade schedules



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get a budget for training
and support

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**added
responsibility,
you have**

experience report

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technical impact

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It is better to have 100
functions operate on one
data structure than 10
functions on 10 data
structures
- Perlis (again)

requirement: When a user sets a default execution type, remove all existing saved execution types

code is data / data is code

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code is data / data is code

```
(expect (interaction (foo 1 4))  
  (foo (four) (four)))
```

code is data / data is code

```
(expect (interaction (foo 1 4))  
  (foo (four) (four)))
```

```
expected: (foo 1 4) once  
got: (foo (four) (four))  
=> (foo 4 4)
```

technical evolution

- TDD in IntelliJ

technical evolution

- TDD in IntelliJ
- refresh&reload in IntelliJ

technical evolution

- TDD in IntelliJ
- refresh&reload in IntelliJ
- **RDD in emacs**



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staffing impact

- more aligned with community, less aligned with the rest of DRW

staffing impact

- more aligned with community, less aligned with the rest of DRW
- increased barrier to entry

staffing impact

- more aligned with community, less aligned with the rest of DRW
- increased barrier to entry
- a lightweight editor allows you to work from a laptop

staffing impact

- more aligned with community, less aligned with the rest of DRW
- increased barrier to entry
- a lightweight editor allows you to work from a laptop
- more productive than ever before

cultural impact

- expert only team

cultural impact

- expert only team
- work remotely (clojure, emacs)

cultural impact

- expert only team
- work remotely (clojure, emacs)
- **functional programming trolling**



politics, meh



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political impact

- you will be someone's scapegoat

political impact

- you will be someone's scapegoat
 - another programmer
 - unix team

political impact

- you will be someone's scapegoat
 - another programmer
 - unix team
- you might lose a good project



winter is coming

wrapping up

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why on earth would you
undertake this task?

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You've managed to
overachieve at a level
that I couldn't have
imagined when your
project began. I couldn't
be more satisfied and
impressed.



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questions?

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