Lessons Learned from Adopting Clojure

Jay Fields
@thejayfields
DRW Trading
#GOTONight
why
I hate all programming languages
- Matt Foemmel
5 years ago
ThoughtWorks®
5 years ago
5 years ago

3-4 years

ThoughtWorks®
5 years ago
5 years ago
you, today?
you, today?
you, today?
closed classes

File.exists("/tmp/file.txt") not an option
no closures

```java
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; }
}
“klocs kill”
closed classes

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

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

no closures

```java
int sum(int[] a) {
    int result = 0;
    for (int i : a)
        result += i;
    return result;
}
```
data / behavior separation
(reduce + 0 coll)
closed classes

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

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));
data / behavior separation (reduce + 0 coll)
{"A" 12 "B" 345 "C" 899}
no closures

```java
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));
```

```java
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;
    }
}
```
data / behavior separation
(reduce + 0 coll)
{"A" 12 "B" 345 "C" 899}
(defrecord Person
  [name age birth-place])
A language that doesn’t affect the way you think about programming is not worth knowing.
— Alan Perlis
A language that doesn’t affect the way you think about programming is not worth knowing.
— Alan Perlis
RDD, REPL Driven Development
how
• language
- language
- runtime
• language
• runtime
• deployment
• language
• runtime
• deployment
• performance tuning
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
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
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

- 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
get a budget for training and support
added responsibility, you have
experience report
technical impact
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
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
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
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

winter is coming

winter is coming

Tuesday, February 11, 14
wrapping up
why on earth would you undertake this task?
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.
questions?