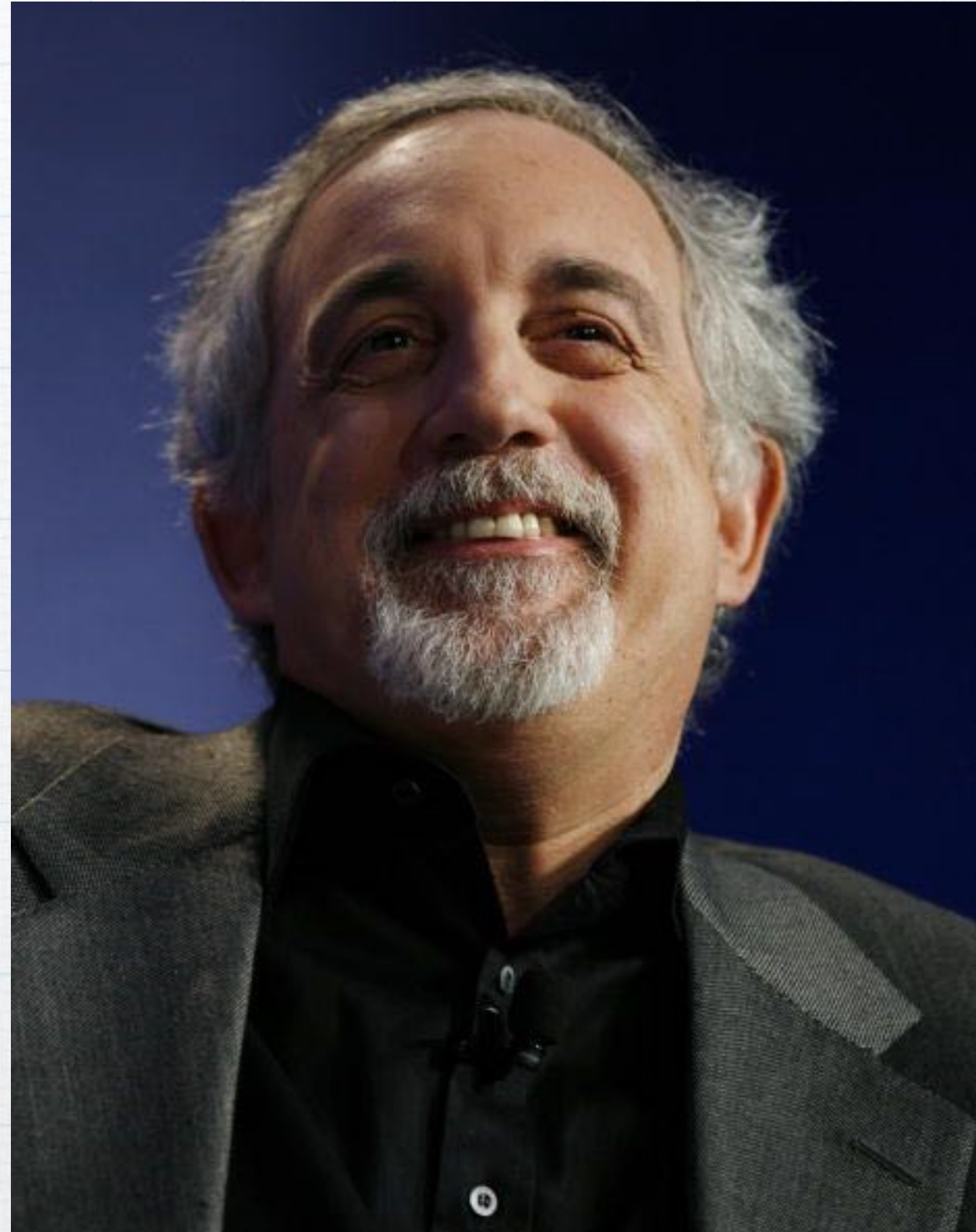


Software Design

Ion Ostafi – Software engineer

**Less technical
talk**

Mitchell Kapor



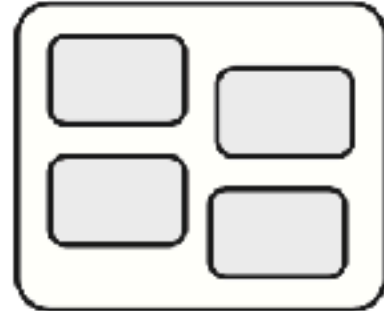
Design is not only

**Making architecture of the
system**

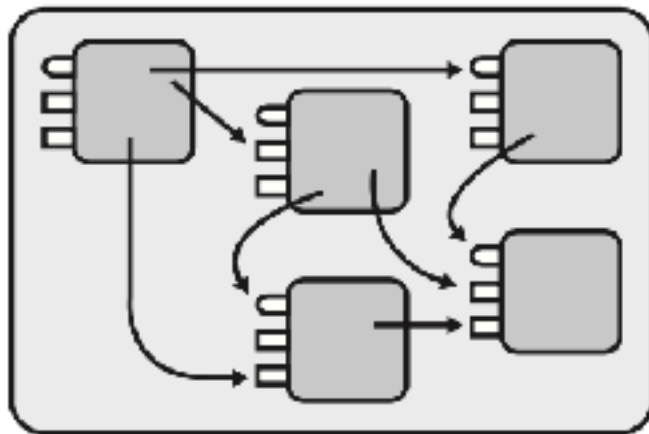
Using some design patterns



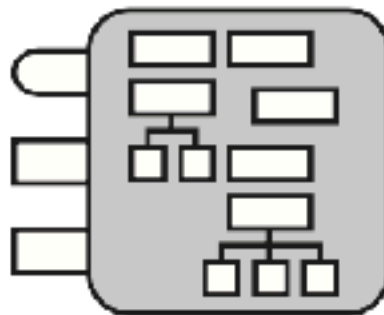
① Software system



② Division into subsystems/packages



③ Division into classes within packages



④ Division into data and routines within classes



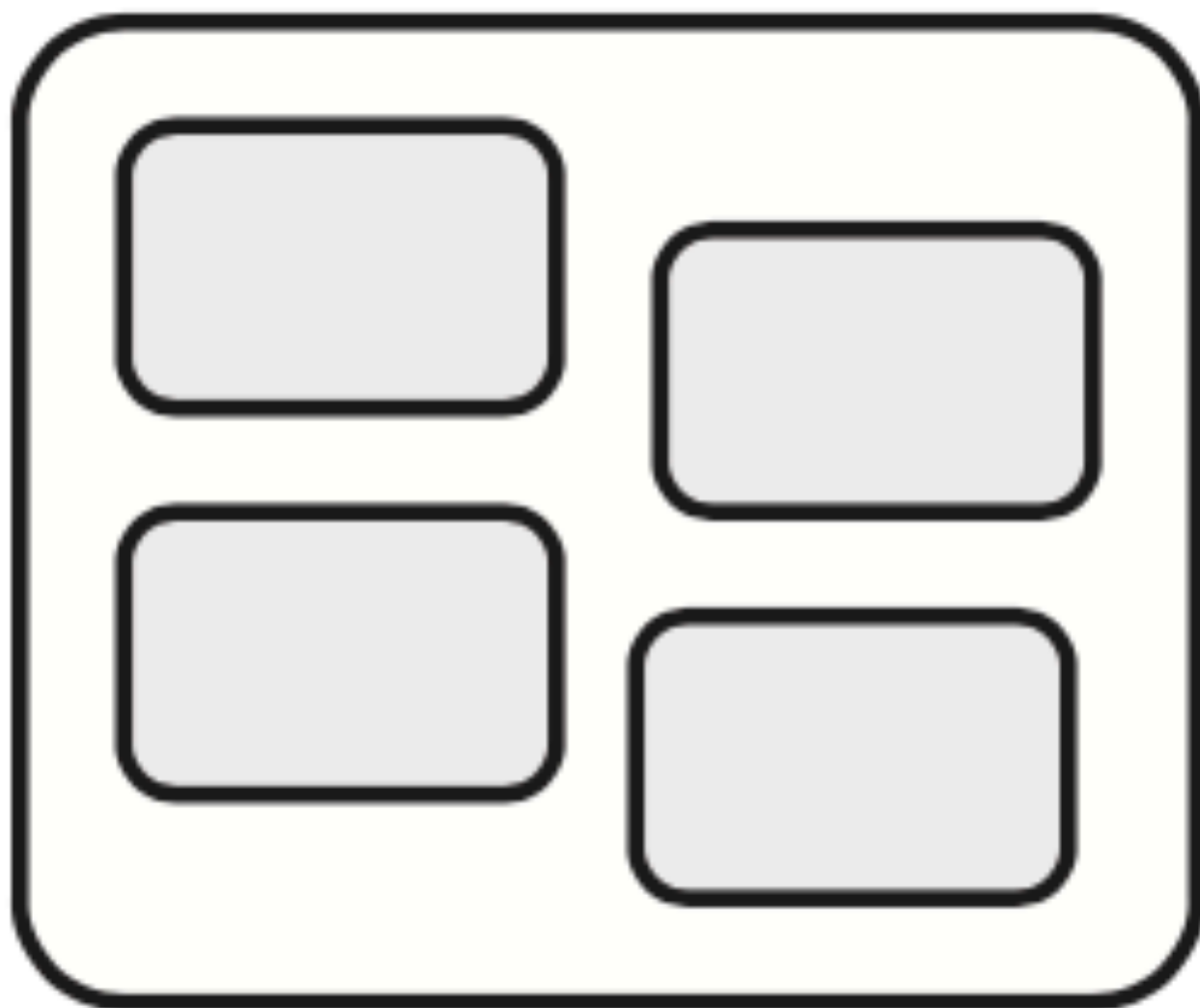
⑤ Internal routine design

1



2

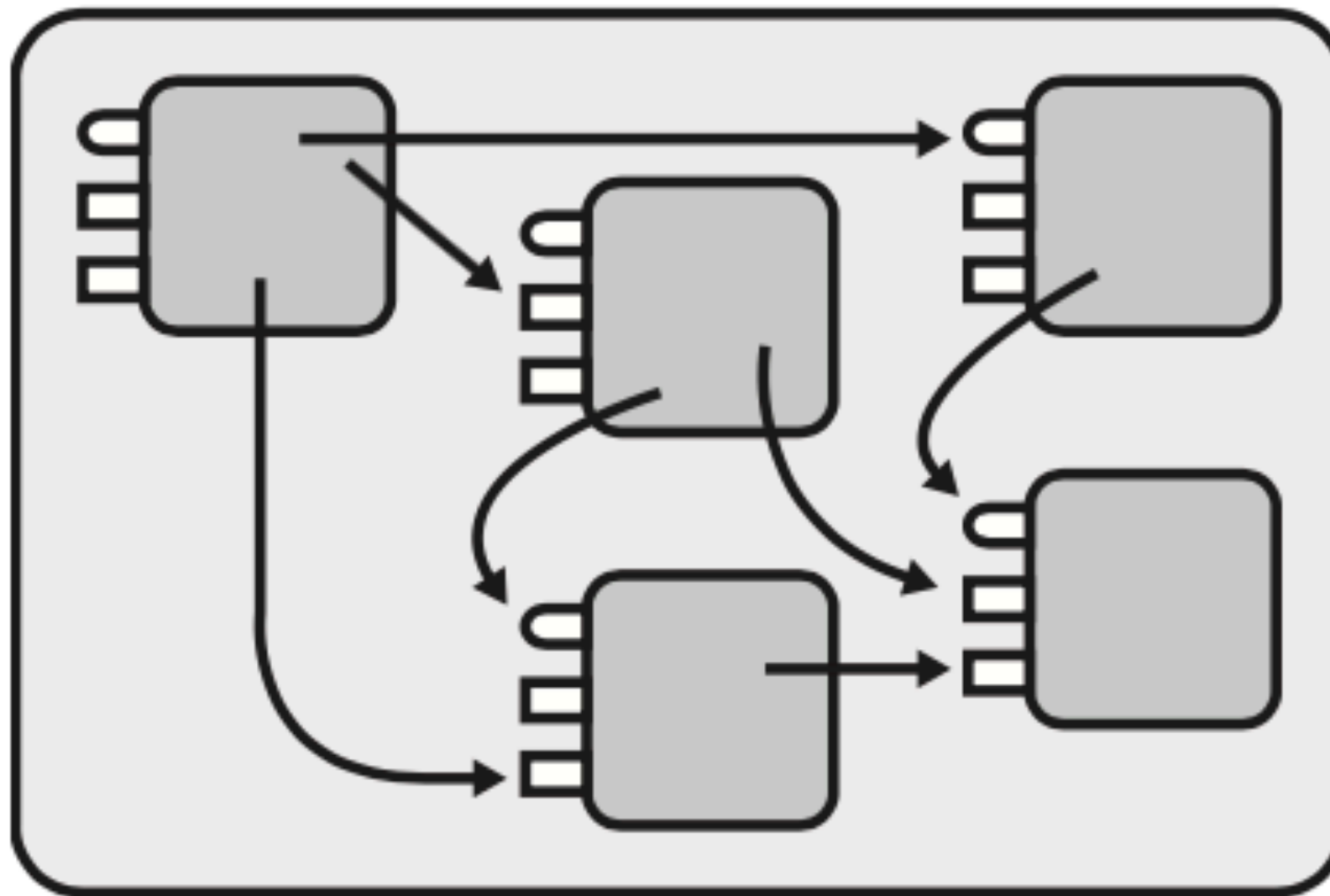




②

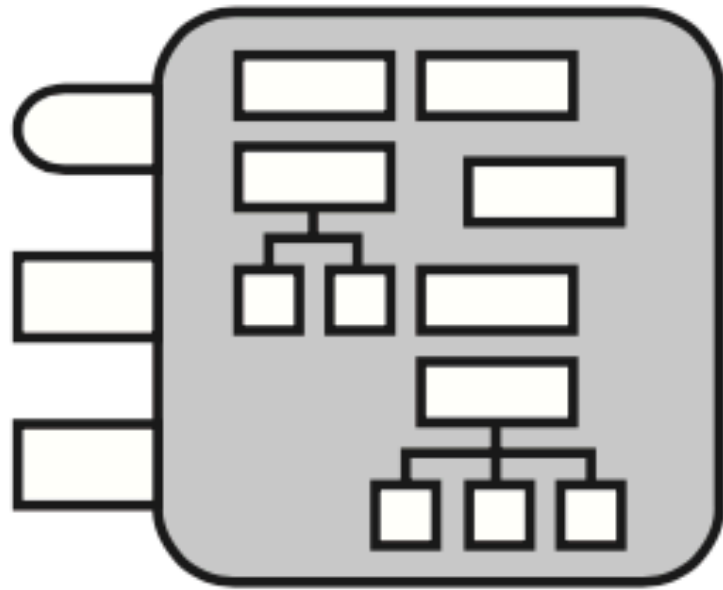


③



③ Division

④ Division



④ Division into data and routines within classes



⑤ Internal routine design

The importance of software design

The importance of software design

**Code changes in later
development**

The importance of software design

```
8 private let endPlaybackGap = 10
9 private let upNextPlayheadGap = 10
10
11 class PlayerLogic: NSObject,
    PlayerLogicType {
12     weak var delegate:
        PlayerLogicDelegate?
13     weak var userActivityConsumer:
        UserActivityConsumer?
14     var media: MediaTypeProtocol
15     var networkCoordinator:
        NetworkCoordinatorProtocol?
16     fileprivate(set) var streamParser:
        StreamDataParserType?
17     var playerObserver:
        PlayerEventsObserverType?
18     fileprivate(set) var playerBuilder:
        PlayerBuilderType?
19     weak fileprivate(set) var player:
        AVPlayer?
20     fileprivate var timer: Timer? = nil {
21         willSet {
22             timer?.invalidate()
23         }
24     }
25     fileprivate var elapsedSeconds: Int =
```

```
4 import AVKit
5
6 class PlayerLogic: NSObject,
    PlayerLogicType,
    PlayerEventsObserverDelegate,
    PlayerTimerDelegate {
7     weak var delegate:
        PlayerLogicDelegate?
8     var media: Media
9     var networkCoordinator:
        NetworkCoordinatorProtocol?
10     private var streamParser:
        StreamDataParserType?
11     private var playerObserver:
        PlayerEventsObserverType?
12     private var playerBuilder:
        PlayerBuilderType?
13     weak private var player: AVPlayer?
14     lazy private var timer: NSTimer = {
        [unowned self] in
15         let playerTimer = PlayerTimer()
16         playerTimer.delegate = self
17         return NSTimer.
            scheduledTimerWithTimeInterval
            (1, target: playerTimer,
```


The importance of software design

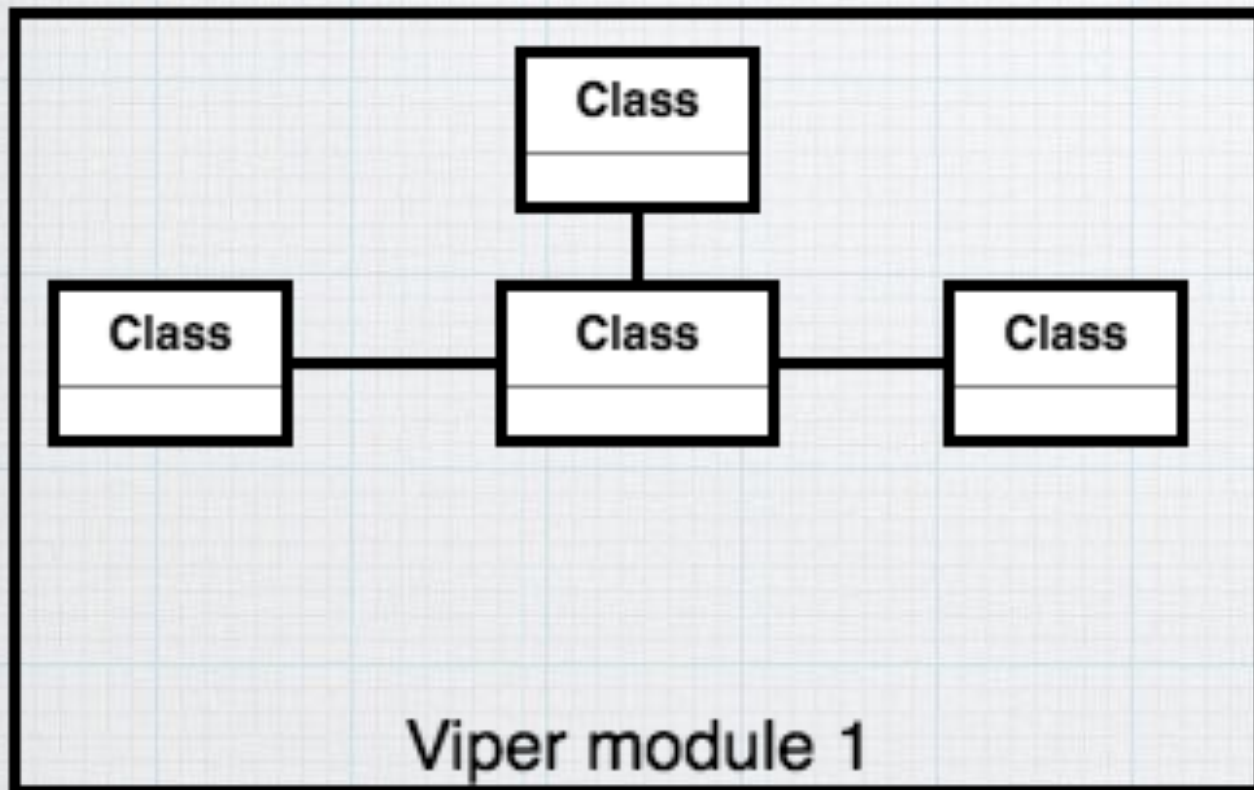
Cooperative work

The importance of software design

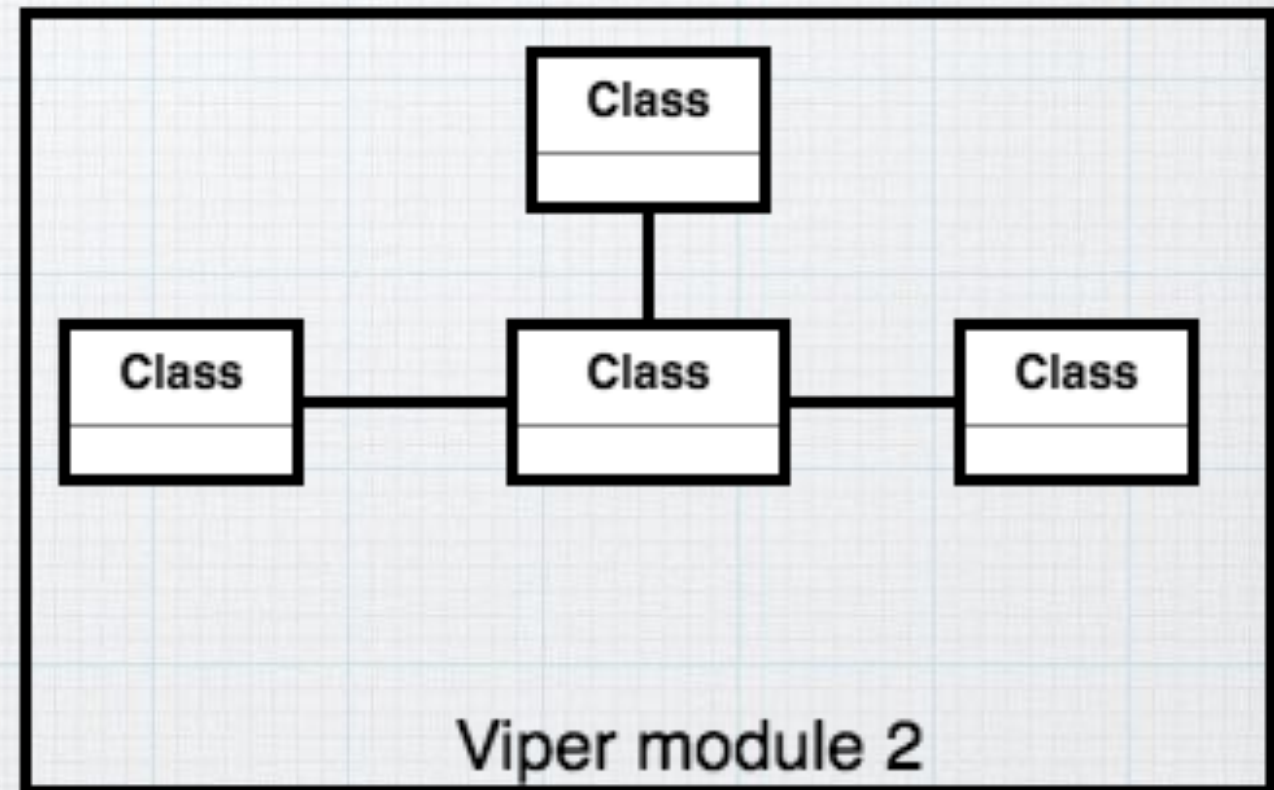


The importance of software design

Greg



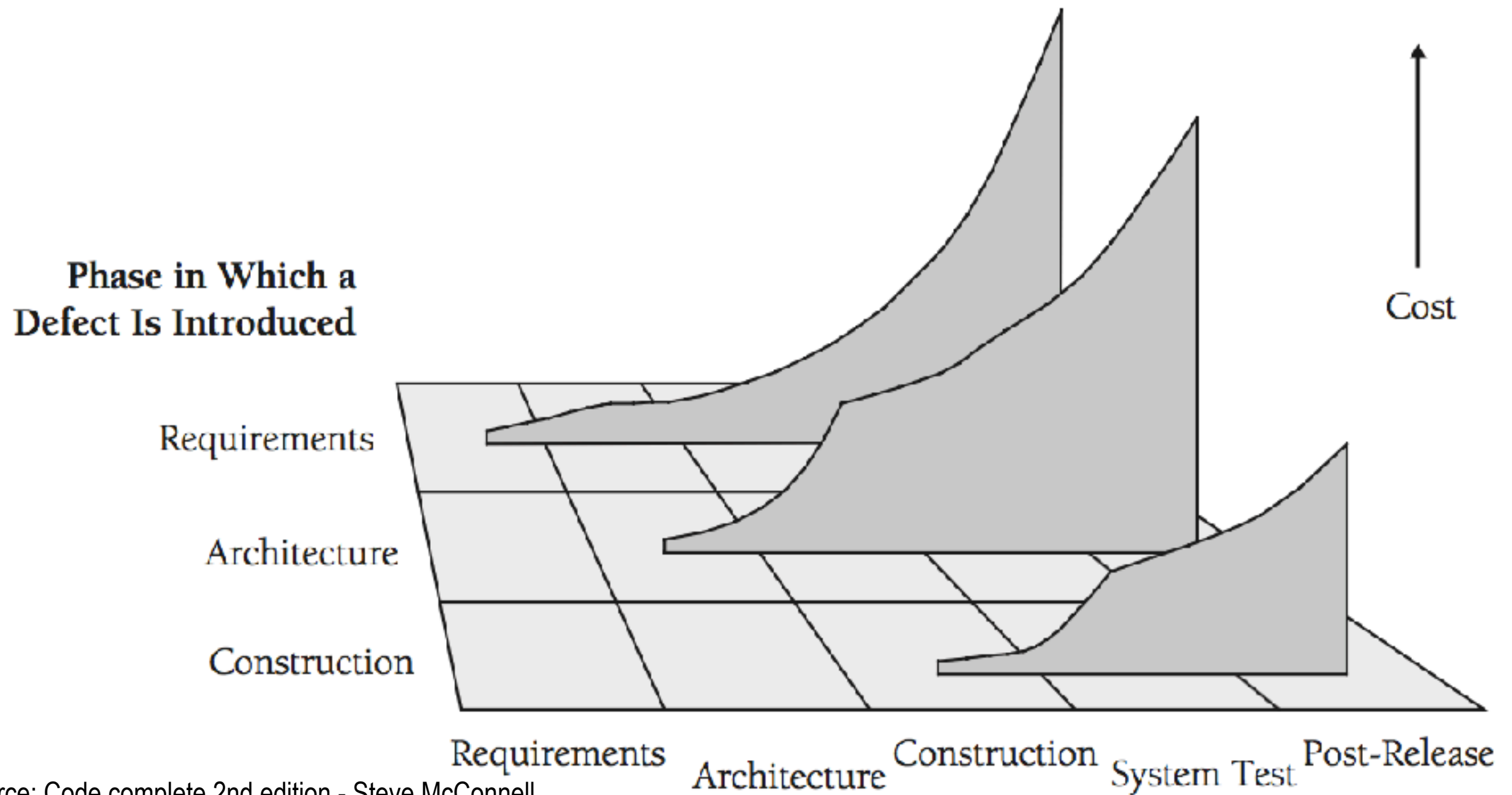
Tom



The importance of software design

Risk reduction

The importance of software design



source: Code complete 2nd edition - Steve McConnell

**Making good design
is not simple**

Design Challenges

Design Challenges

Wicked problem

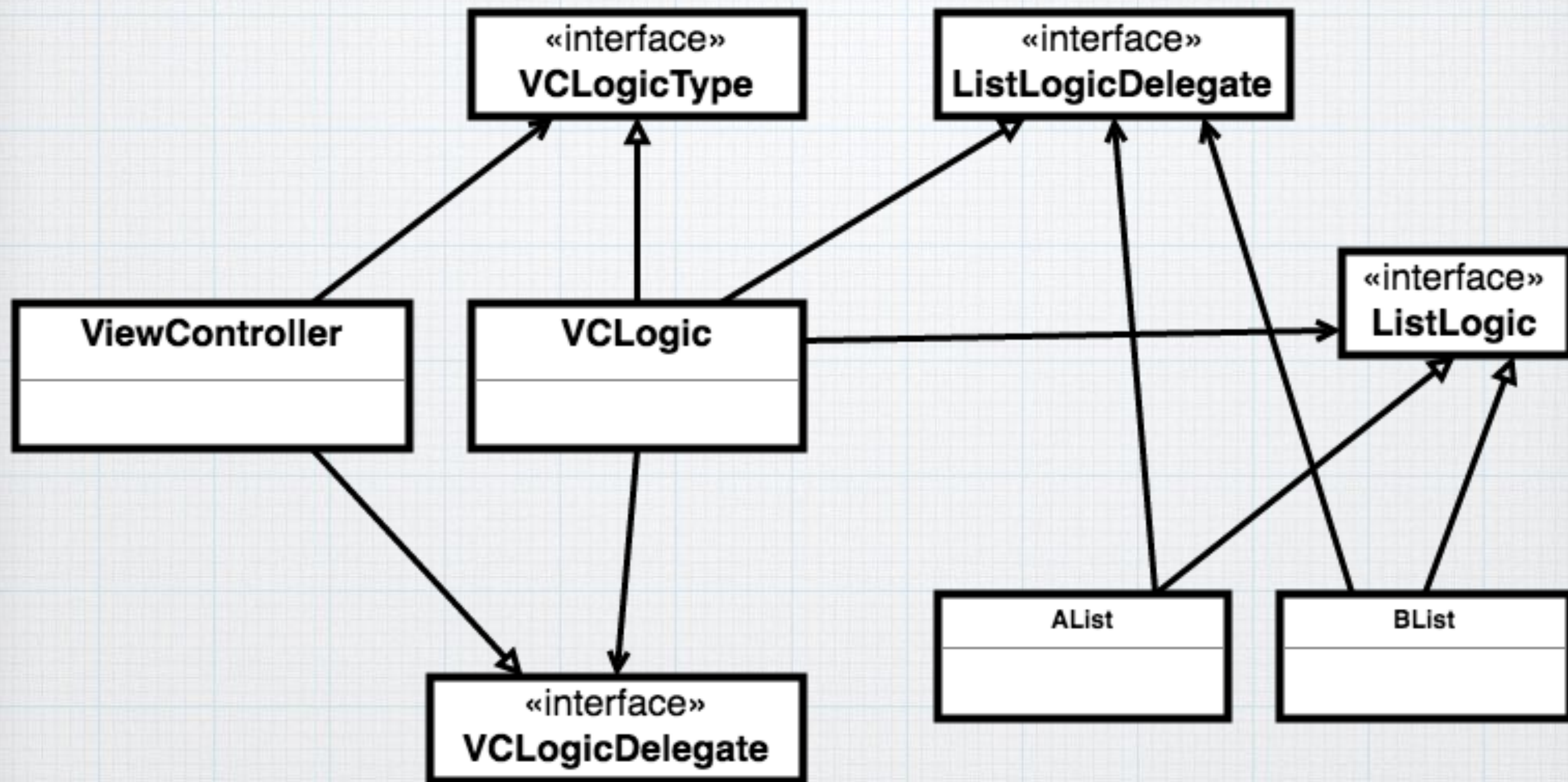
Design Challenges



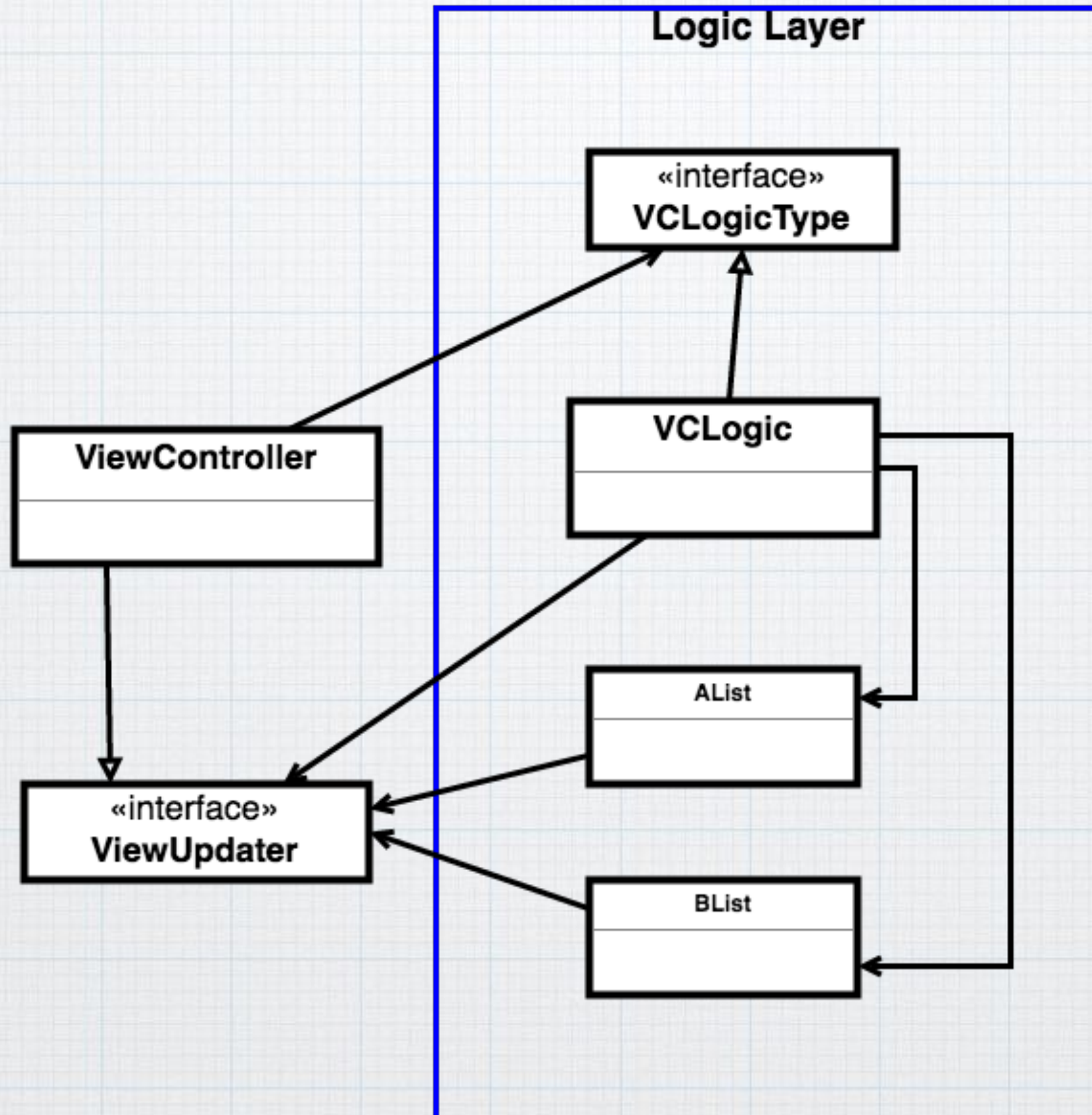
Design Challenges

Sloppy process

Design Challenges



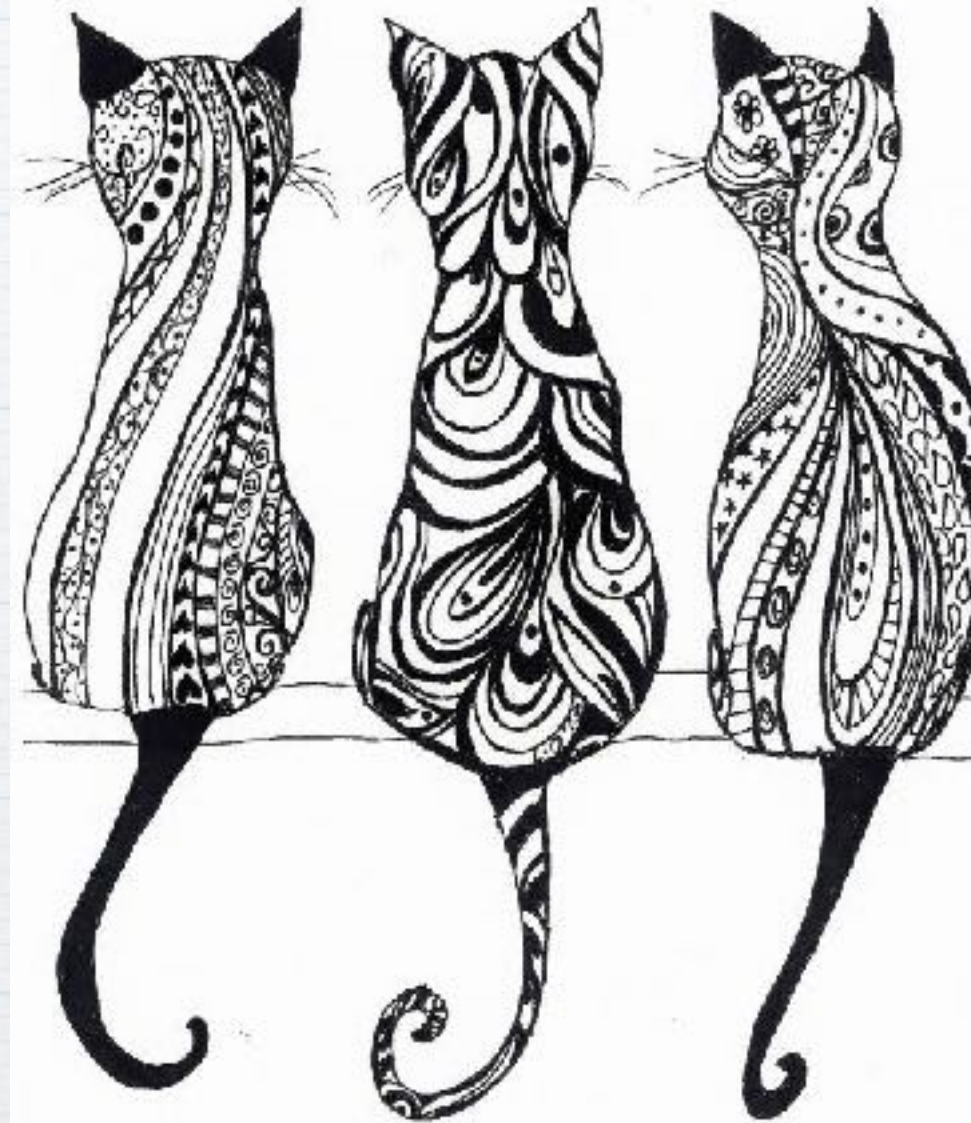
Design Challenges



Design Challenges

Nondeterministic

Design Challenges



Design Challenges

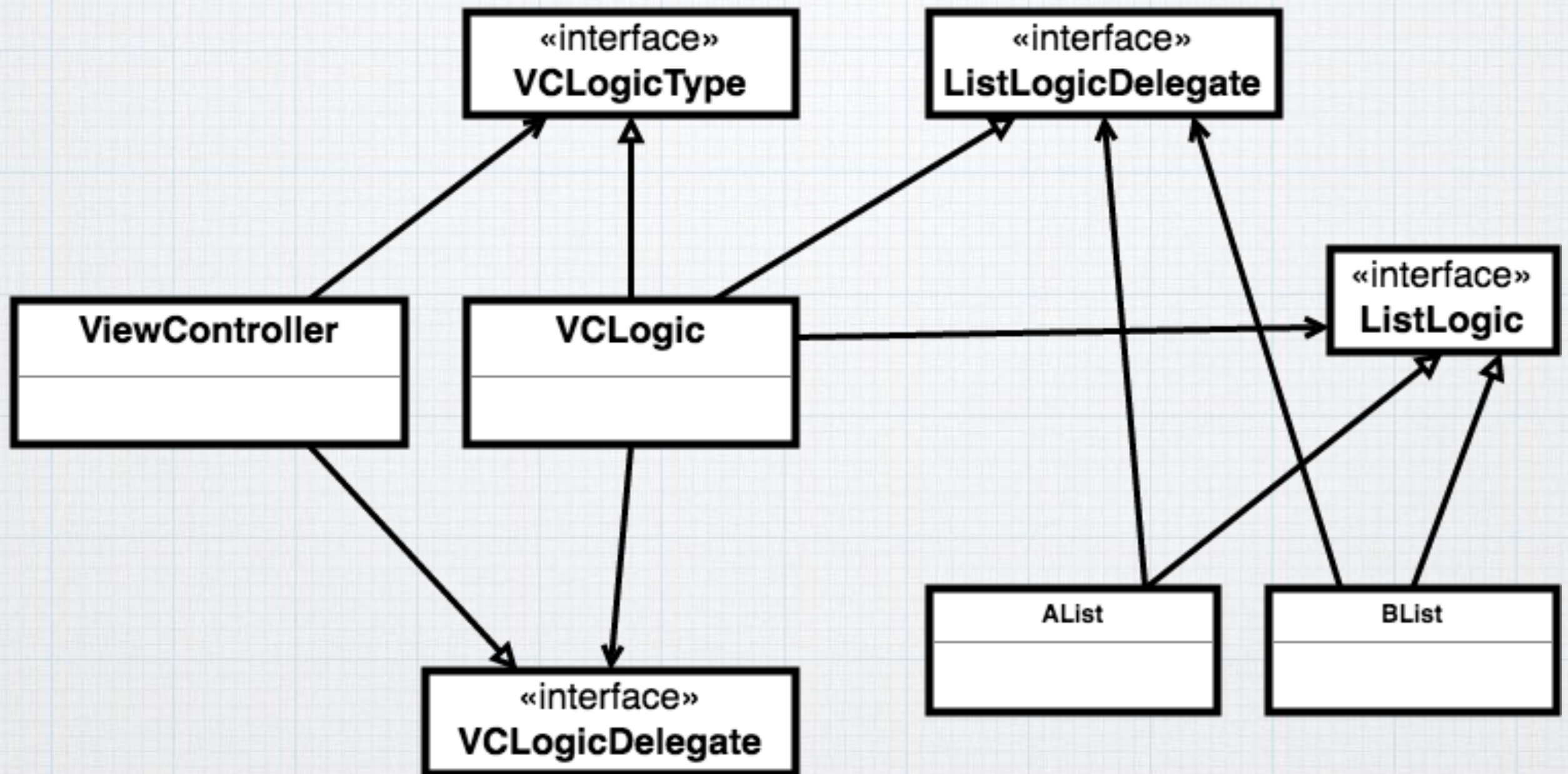
Heuristic process

**Desirable characteristic
of a good design**

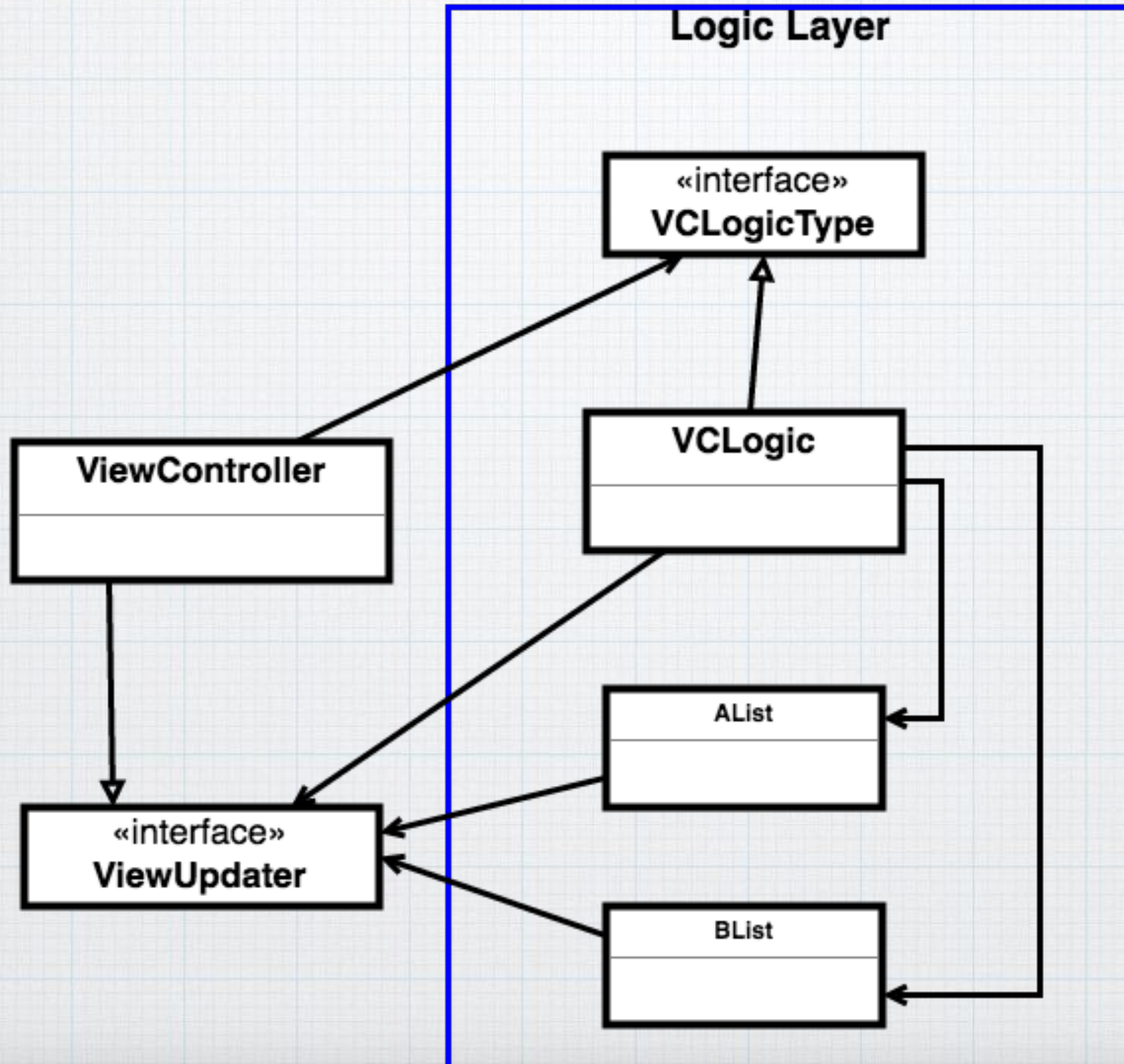
Desirable characteristic of a good design

Minimal complexity

Desirable characteristic of a good



Desirable characteristic of a good

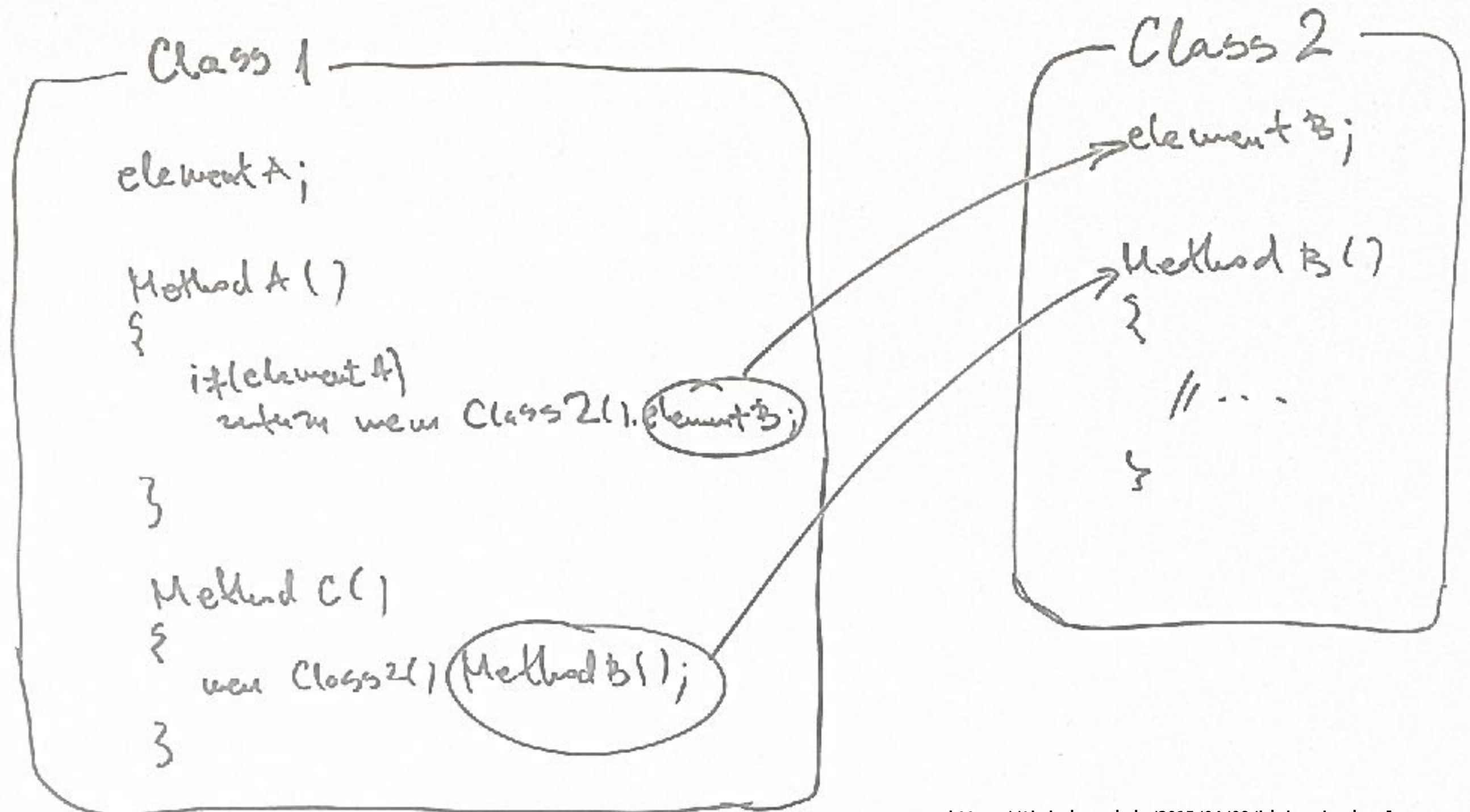


Desirable characteristic of a good

Loose coupling

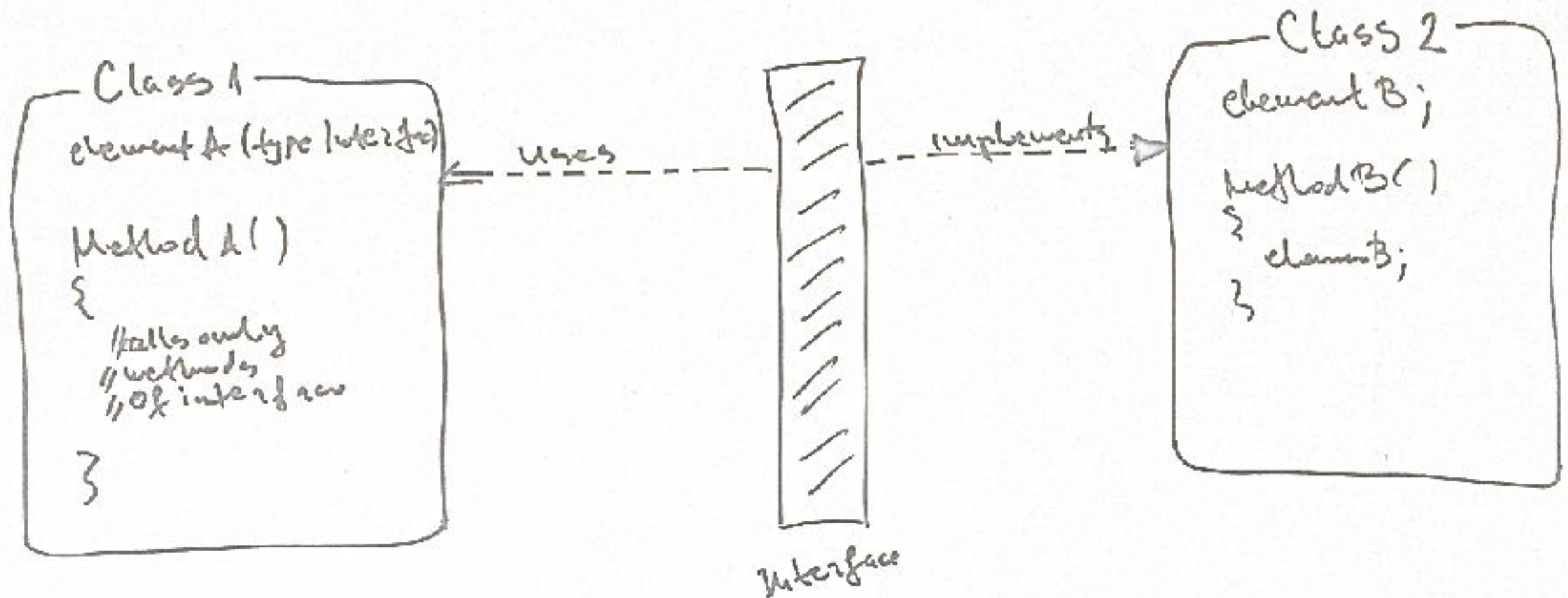
Desirable characteristic of a good

TIGHT COUPLING



Desirable characteristic of a good

Loose Coupling



- Somewhere Else -
Bind <Interface> To <Class2>

Desirable characteristic of a good

High fan-in

Desirable characteristic of a good

```
3 final class Logger: NSObject {  
4     static func logError(_ logFile: String = #file, logLine: Int = #line, logMessage: String)  
        {...}  
8  
9     static func logWarning(_ logFile: String = #file, logLine: Int = #line, logMessage: String)  
        {...}  
13  
14     static func log(_ logFile: String = #file, logLine: Int = #line, message: String) {...}  
18  
19     fileprivate static func formatFileAndLine(_ file: String, line: Int) -> String {...}  
23 }
```


Desirable characteristic of a good

Low to medium fan-out

Desirable characteristic of a good

Standard techniques

Steve McConnell

Code complete 2nd edition

Thank You

email: ostafi_ion@yahoo.com