



Design 101

Diego Pacheco

About me...



- ☐ *Cat's Father*
- ☐ *Head of Software Architecture*
- ☐ *Agile Coach*
- ☐ *SOA/Microservices Expert*
- ☐ *DevOps Practitioner*
- ☐ *Speaker*
- ☐ *Author*



diegopacheco



@diego_pacheco

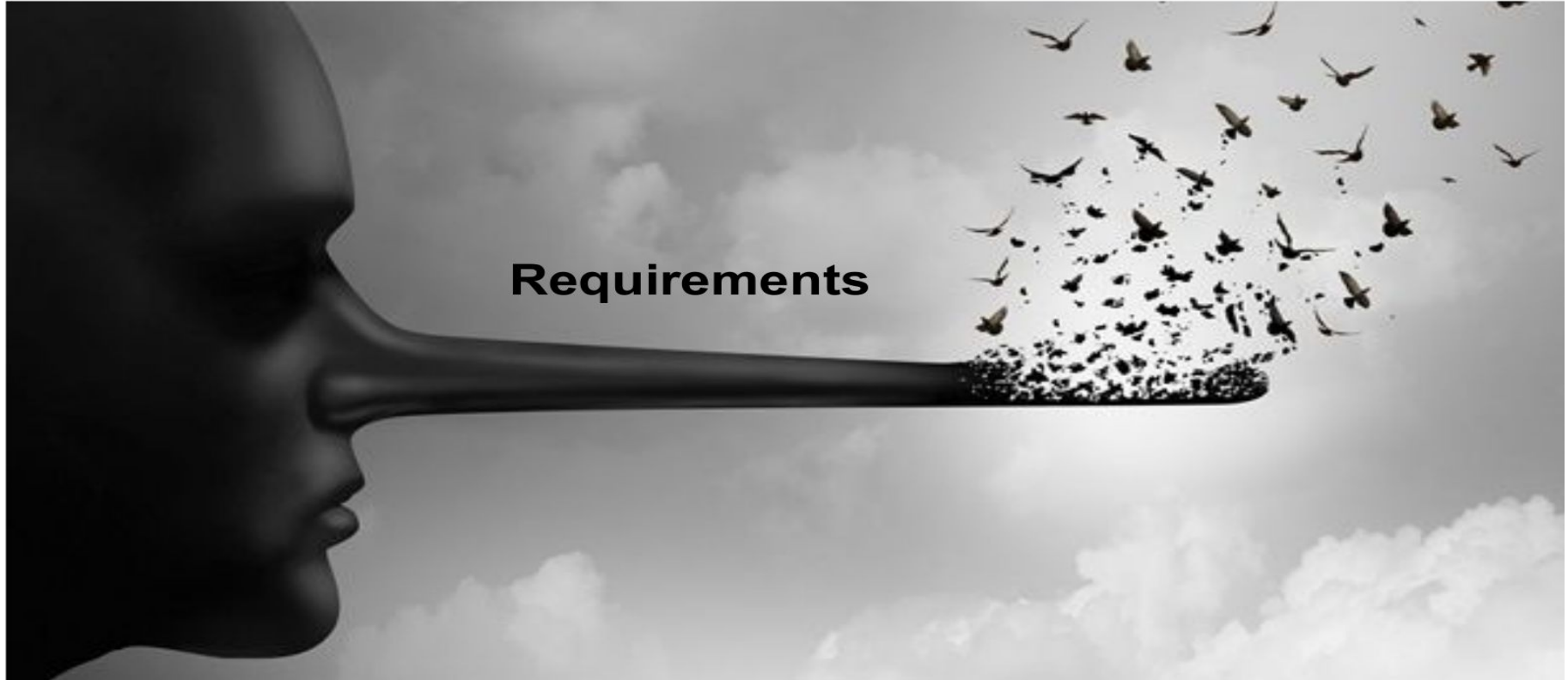


<http://diego-pacheco.blogspot.com.br/>



<https://diegopacheco.github.io/>

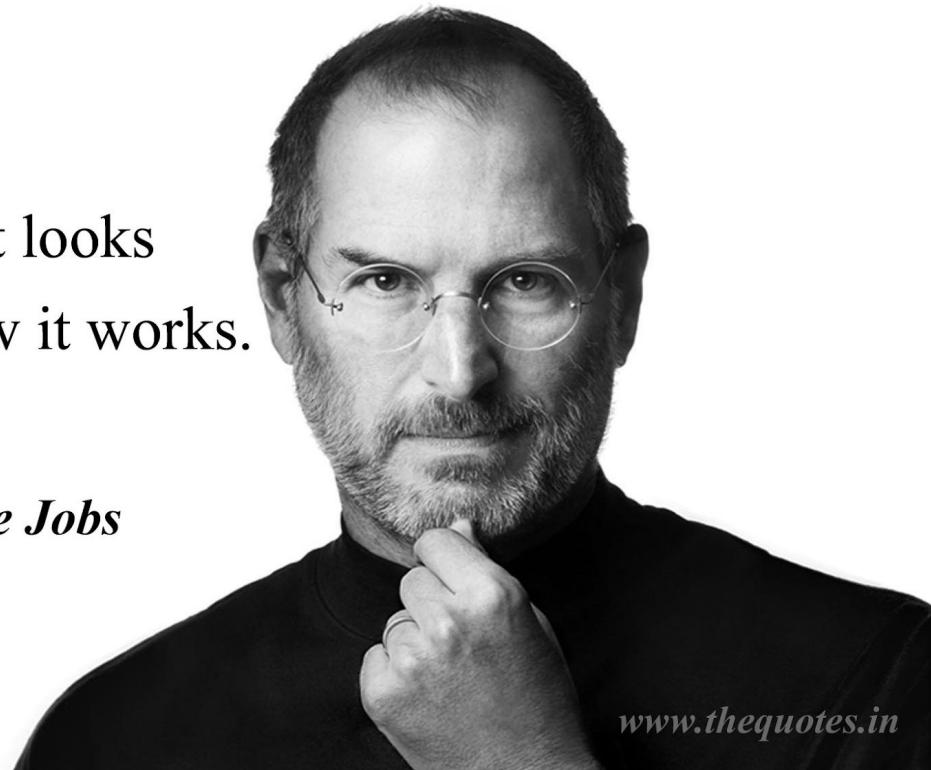
Designer / Architect or Server?



What Design is?

Design is not just what it looks
and feels like. Design is how it works.

Steve Jobs



What Design is?



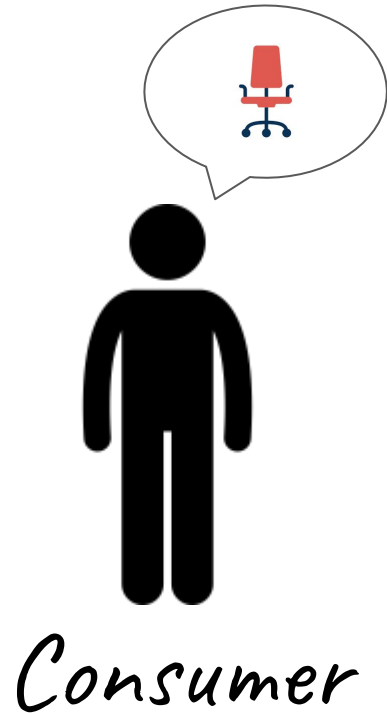
What Design is?



Structure

Responsability

What Design is: Use Cases & Constraints



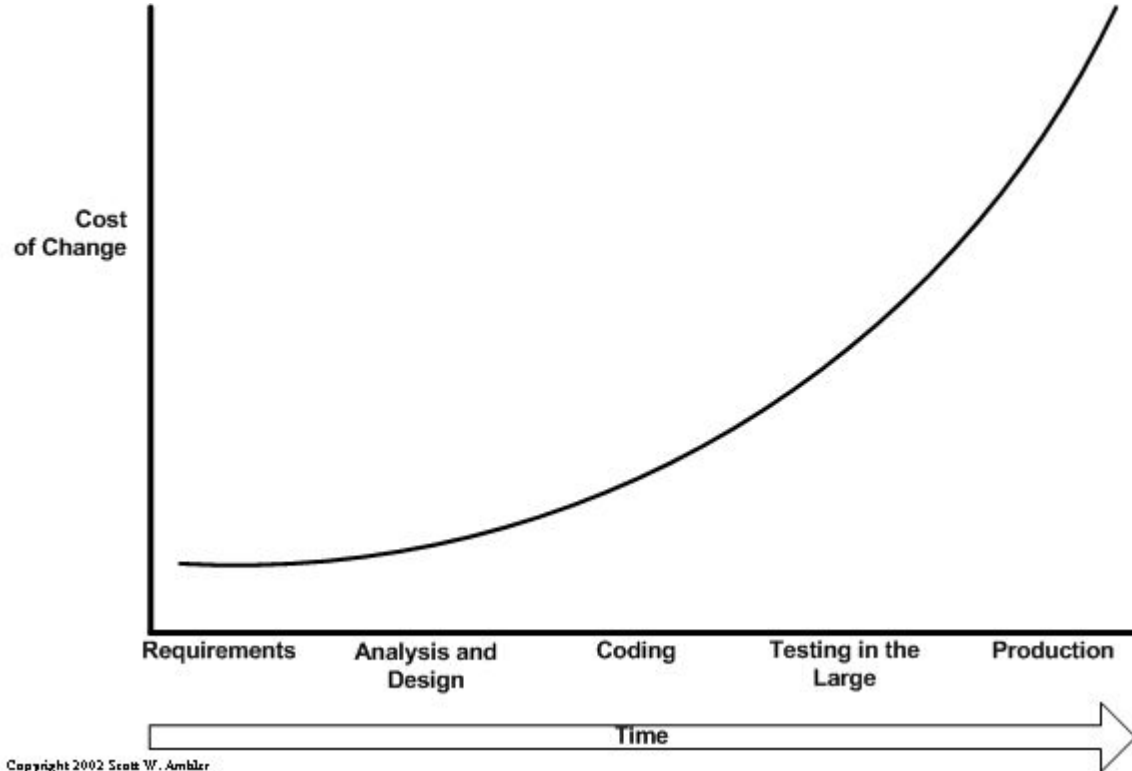
Use Case

Constraints

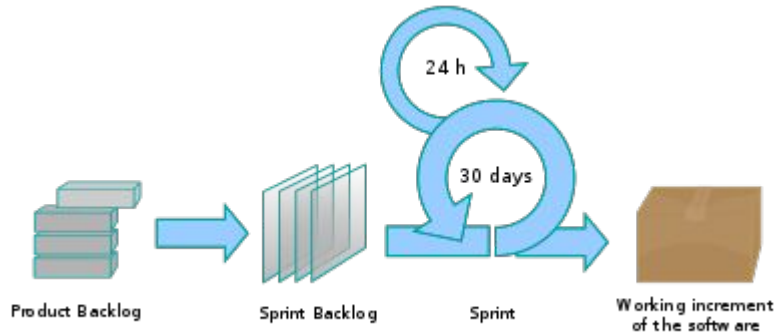
What Design is: It's all about Trade-offs



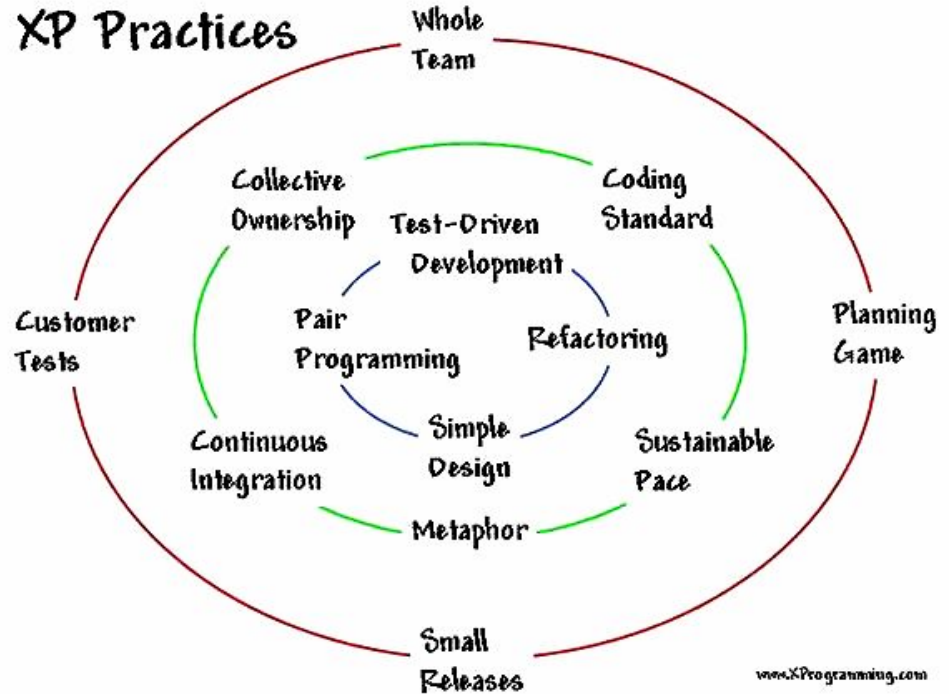
Why Design Matters?



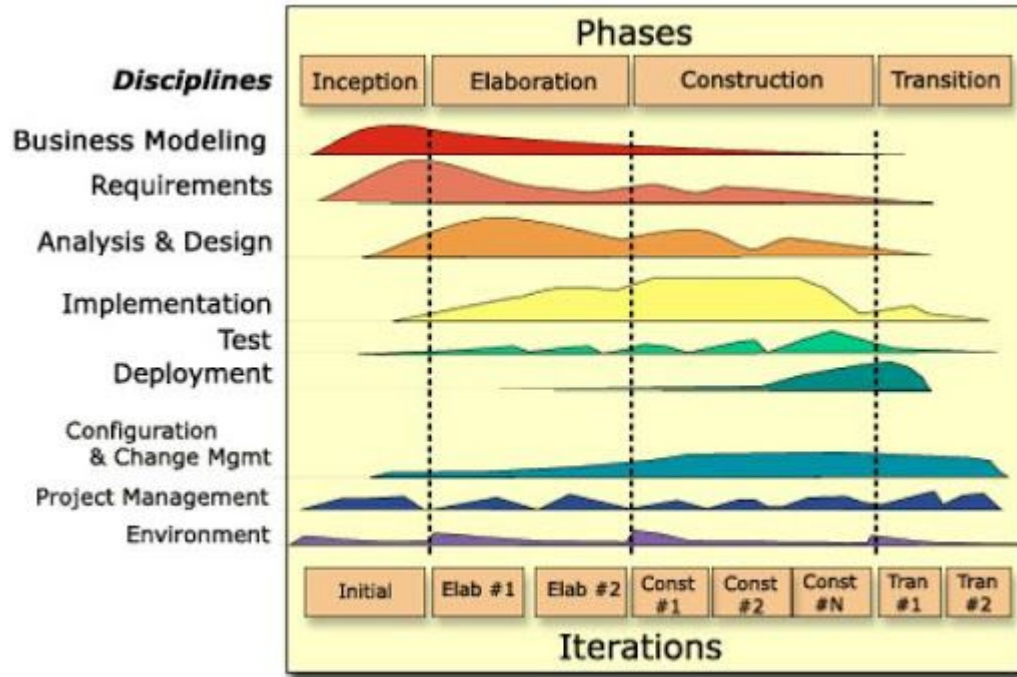
Agile and Design Issues



XP Practices



Agile and Design Issues: Back to RUP



What is a Bad Design?

Obscurity

- ❑ A Great Source of Complexity
- ❑ Obscure code is:
 - ❑ Hard to Understand
 - ❑ Creates more Bugs
- ❑ Generic/Event-Drive makes code Obscure
- ❑ Solution to Obscurity
 - ❑ Always write obvious code
- ❑ Obvious Code Means:
 - ❑ Read Quickly without much thought
 - ❑ Easy to guess what code does
 - ❑ Guess Should be Write
 - ❑ Precise and meaningful



Code Review is the n#1
tool to fight Obscurity

Design Principles



- ☐ Feasibility
- ☐ Testability
- ☐ Maintainability
- ☐ Debuggability
- ☐ Observability
- ☐ Flexibility
- ☐ Extensibility

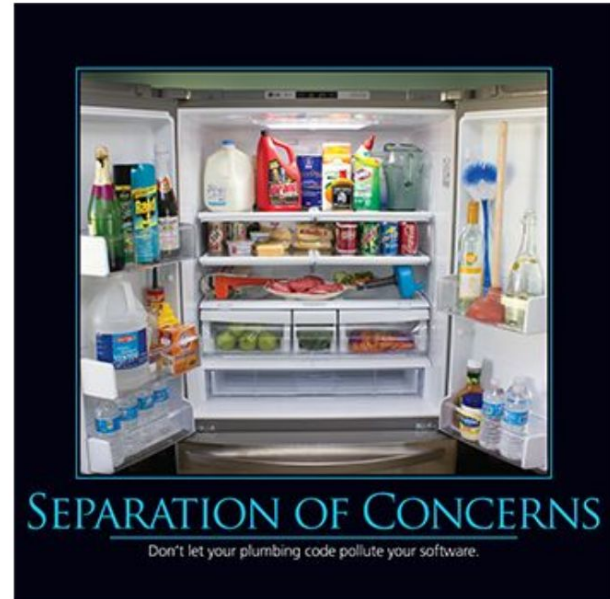
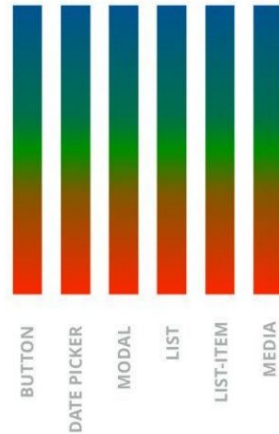
Design Principles: SOC

Separation of Concerns



Separation of Concerns

(only, from a different point of view)

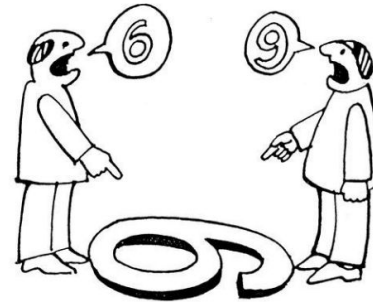
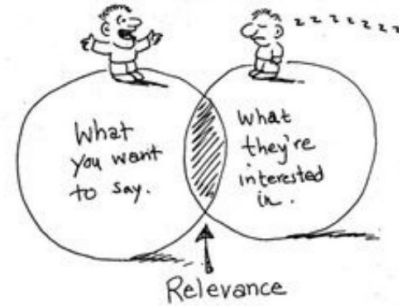


Design Principles: Good Abstractions

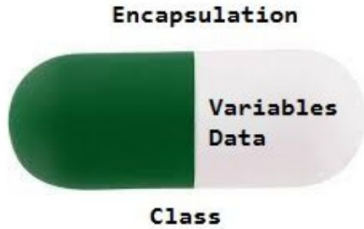
What is abstraction?

"Abstraction is the **elimination** of the irrelevant and the **amplification** of the essential."

- Bob Martin



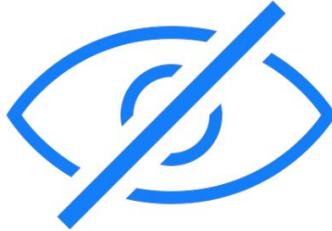
Design Principles: Isolation



*Encapsulation is like ISOLATION
but in a SMALL CLASS level.
Abstract State and Impl details.*



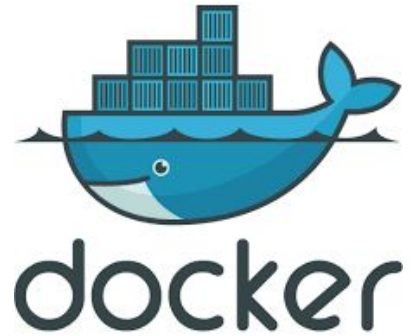
Control



Hidden

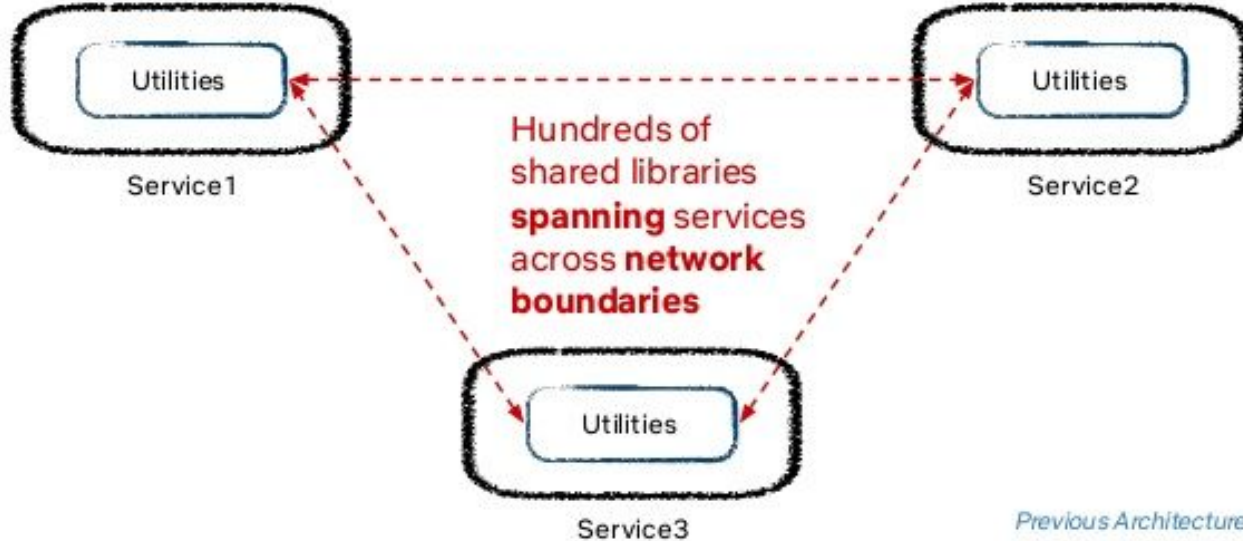


Safety



Design Principles: Binary Coupling

Binary coupling => Distributed Monolith



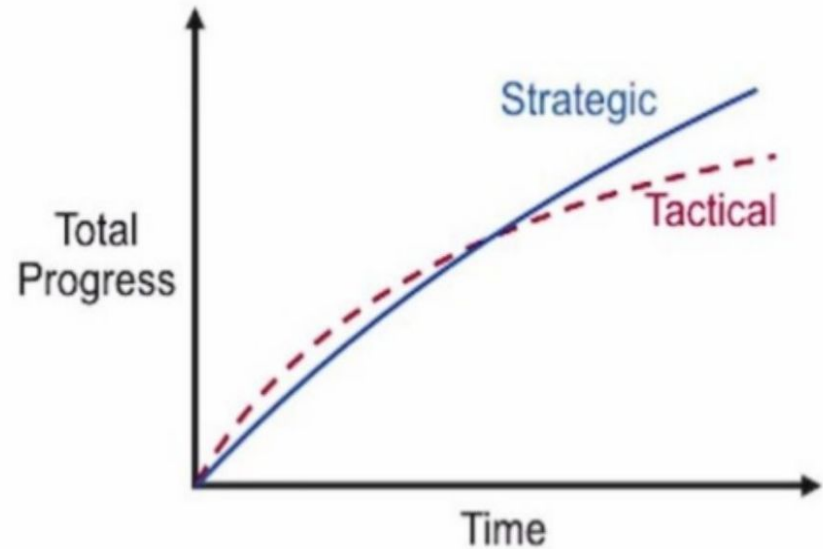
Design Principles: Strategy vs Tactical

- **Strategic programming**

- Goal: produce a great design
- Simplify future development
- Minimize complexity
- Must sweat the small stuff

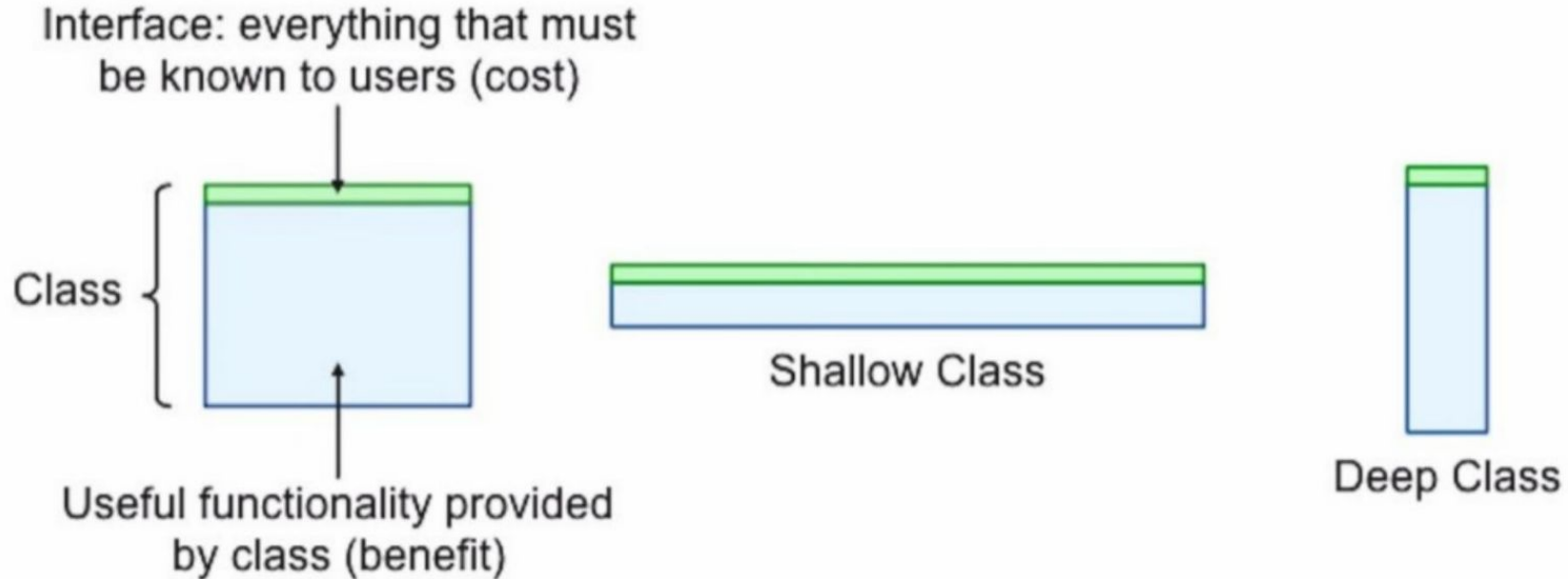
- **Investment mindset**

- Take extra time today
- Pays back in the long run



Design Principles: Shallow vs Deep

Deep Modules and Simple Interfaces



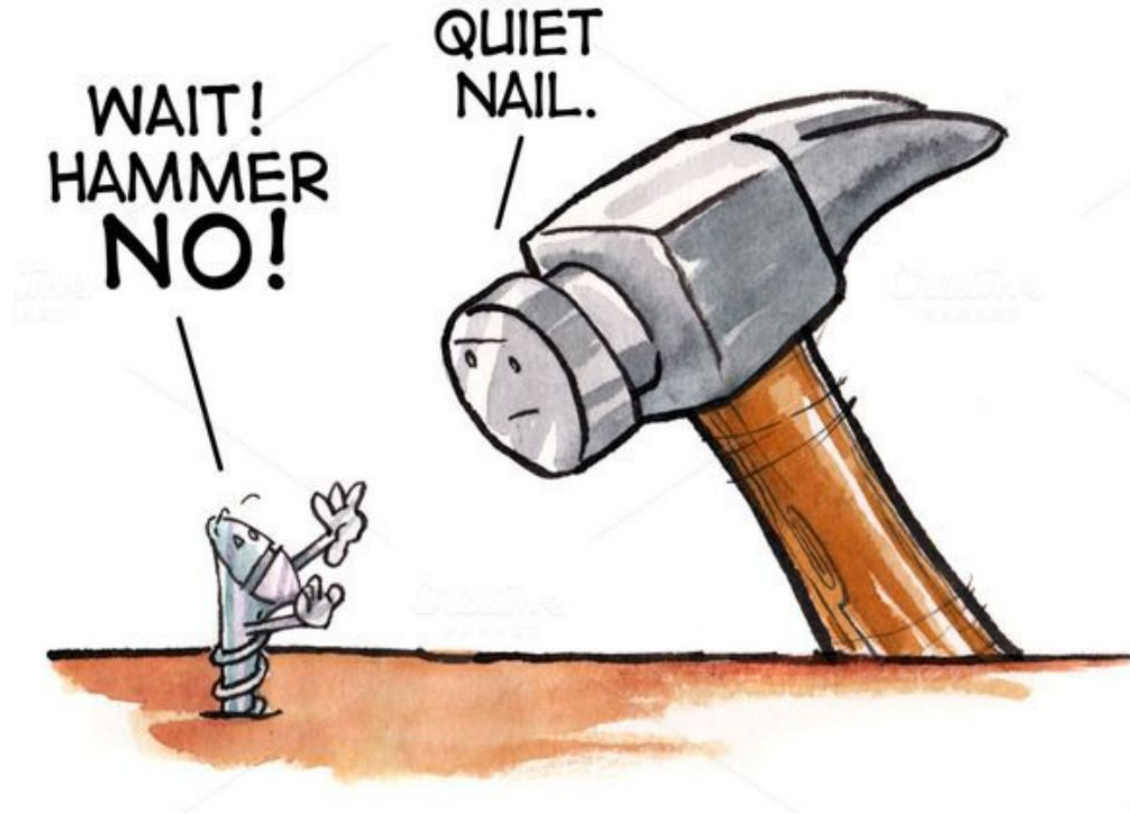
Design Principles: Shallow vs Deep

Pull Complexity Downwards

“It's more important to a module to have a simple interface than a simple implementation”.



The right tool for the job

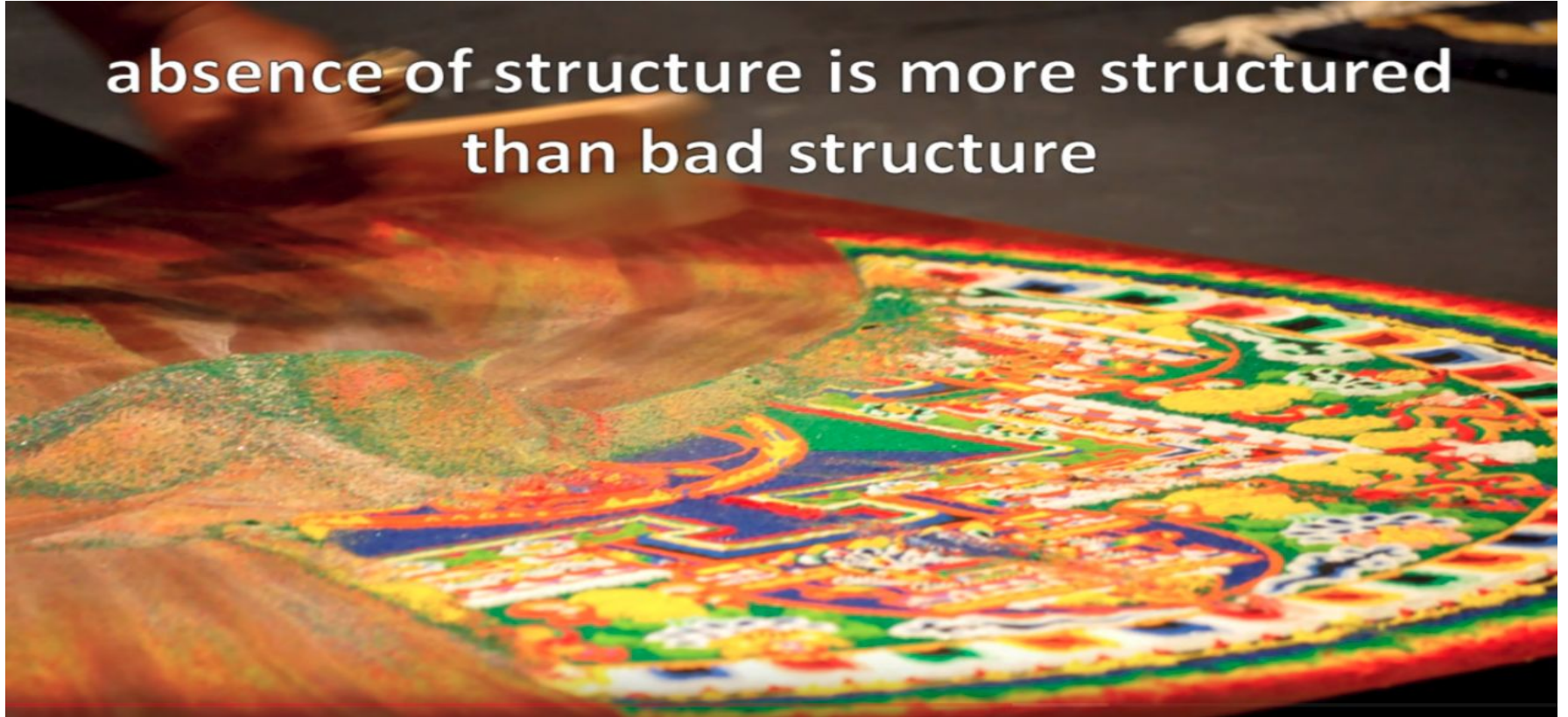


Design is not a one time thing



Design it's tricky

absence of structure is more structured
than bad structure

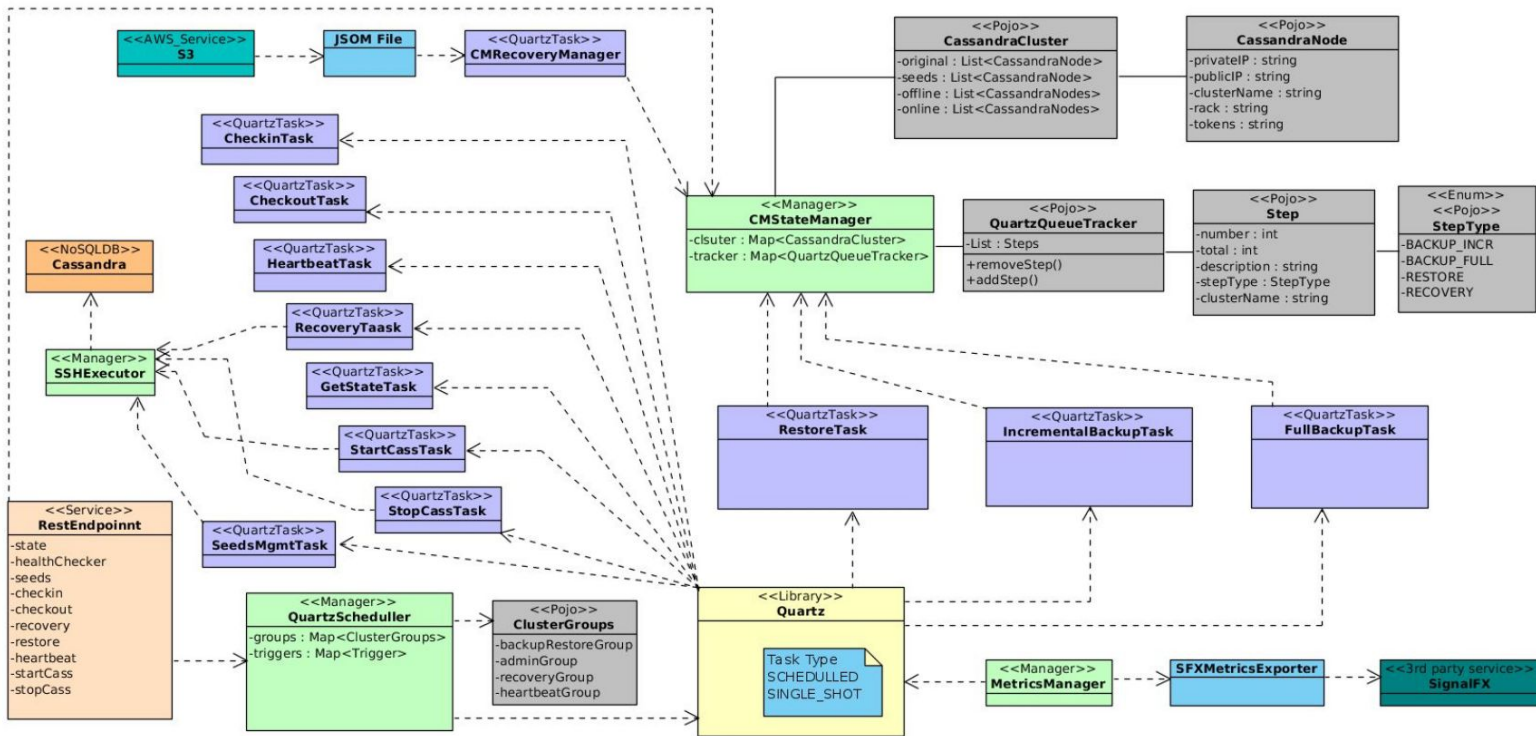


Design by Waves: More than 1 design

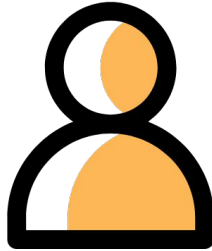
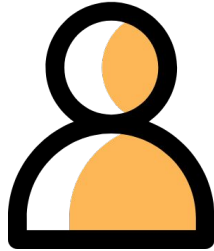
Waves not Steps...



Tools / UML



Design Review Process



Why?



Find Gaps / Holes



Fix before becomes a problem



Benefits



Team Ownership Exercise



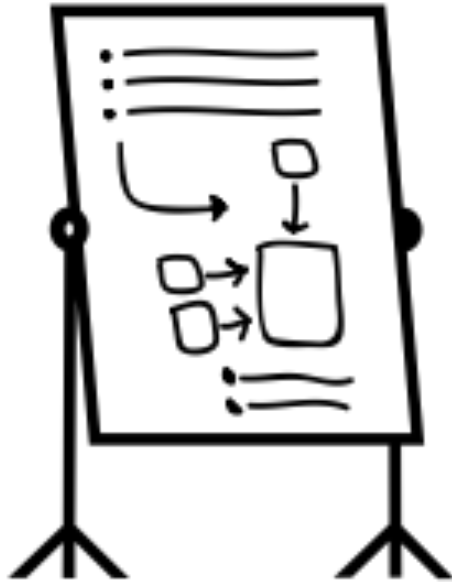
COST Saving (Time and Money)

Design Doc

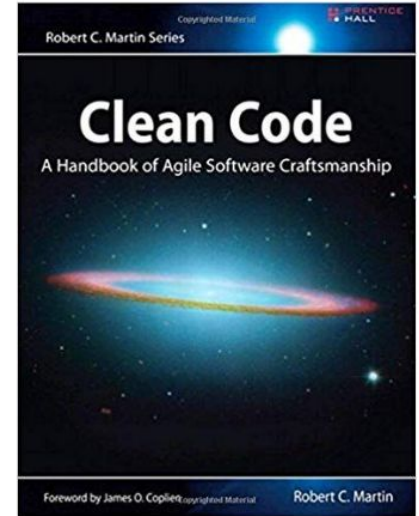
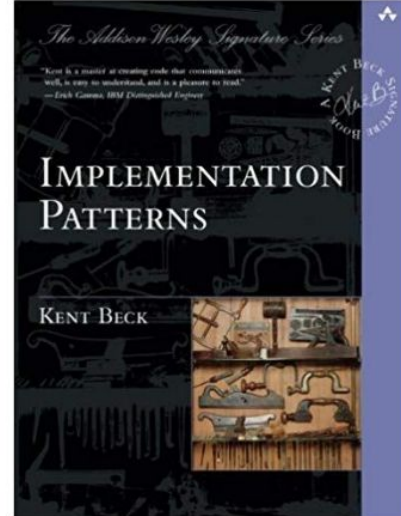
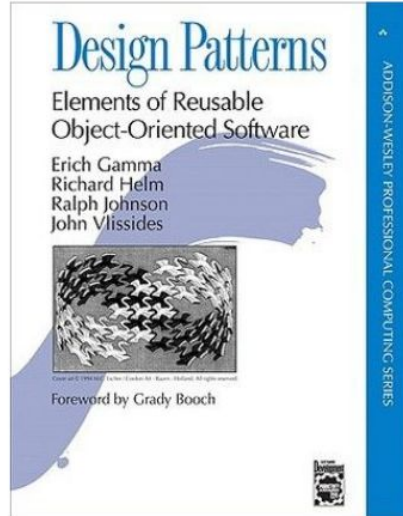
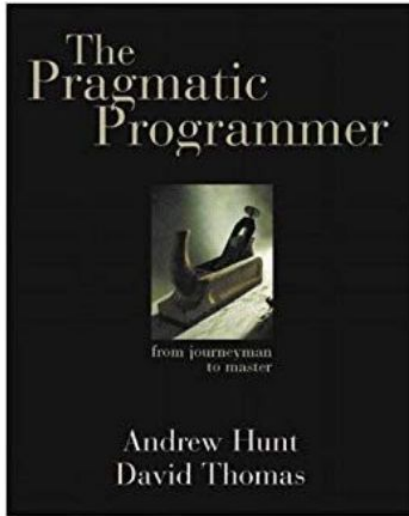


- ❑ *Business Context*
- ❑ *Goals & Non-Goals*
- ❑ *Principles*
- ❑ *Design*
 - ❑ *Trade Offs*
 - ❑ *Diagrams*
 - ❑ *Other solutions considered*
 - ❑ *Observability Specs*
- ❑ *References*

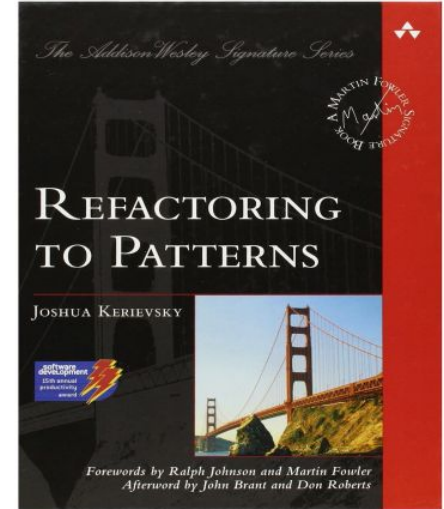
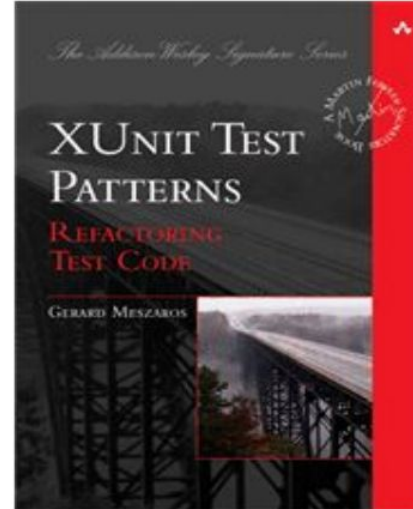
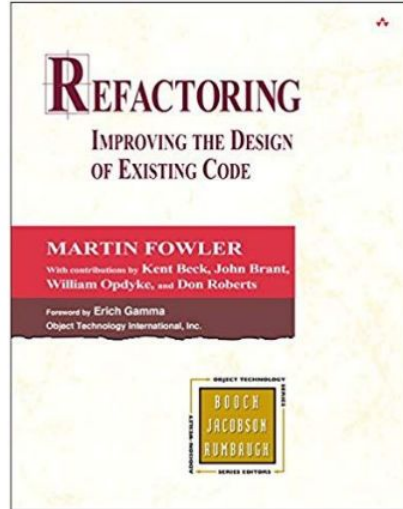
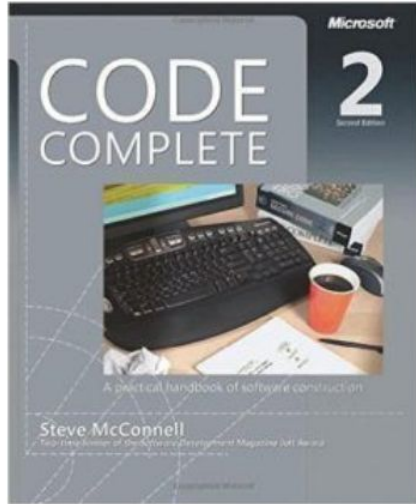
Design Review



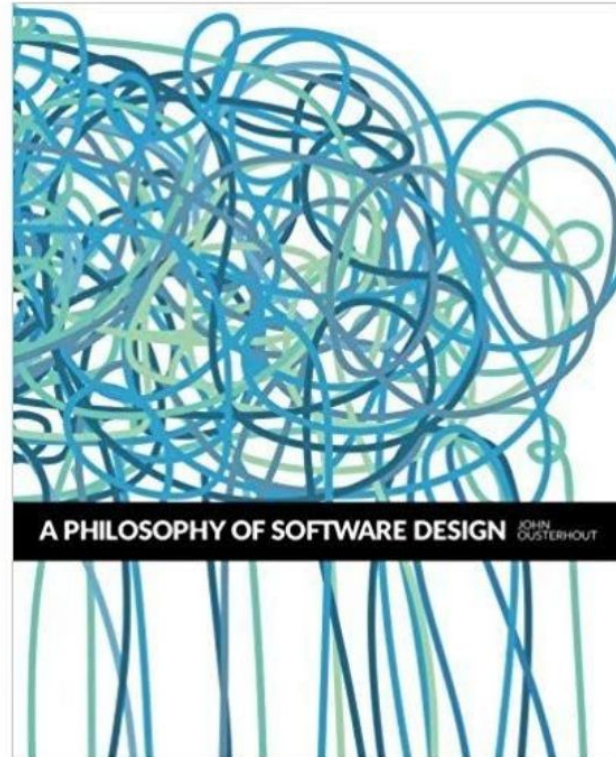
Recommended Books



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