

# XP and Design

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Nov. 2008

**Paulo Caroli & Sudhindra Rao**

ThoughtWorks

# XP and Design

- Where did the Design phase go?



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# About us

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# About us

14 + 6

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About us

Certified Architect

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About us

Agile Coach / Developer

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# Agenda

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# Agenda

- XP
- Traditional Methods and XP
- XP and Design
  - Simple Design
  - Testing
  - Refactoring
  - Continuous Integration
- Conclusion
- Q&A

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# eXtreme Programming

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# XP

- Lightweight methodology
- Kent Beck, late 90s
- 4 Values and 12 Practices (1st edition)
- Focused on the developers

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# XP Values

- Courage
- Simplicity
- Communication
- Feedback

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# XP Practices

- The Planning Game
- Whole Team
- Testing
- Short Releases
- Continuous Integration
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- Coding Standard
- Metaphor
- Sustainable Pace
- Pair Programming
- Refactoring
- Simple Design

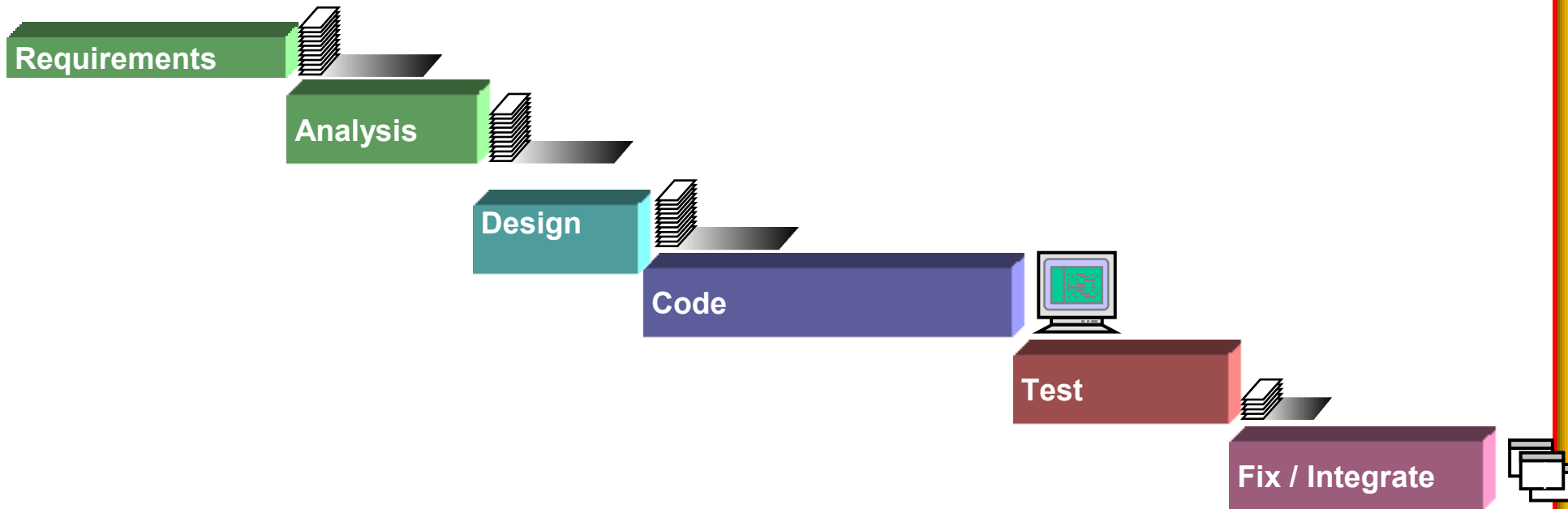
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# Traditional Methods

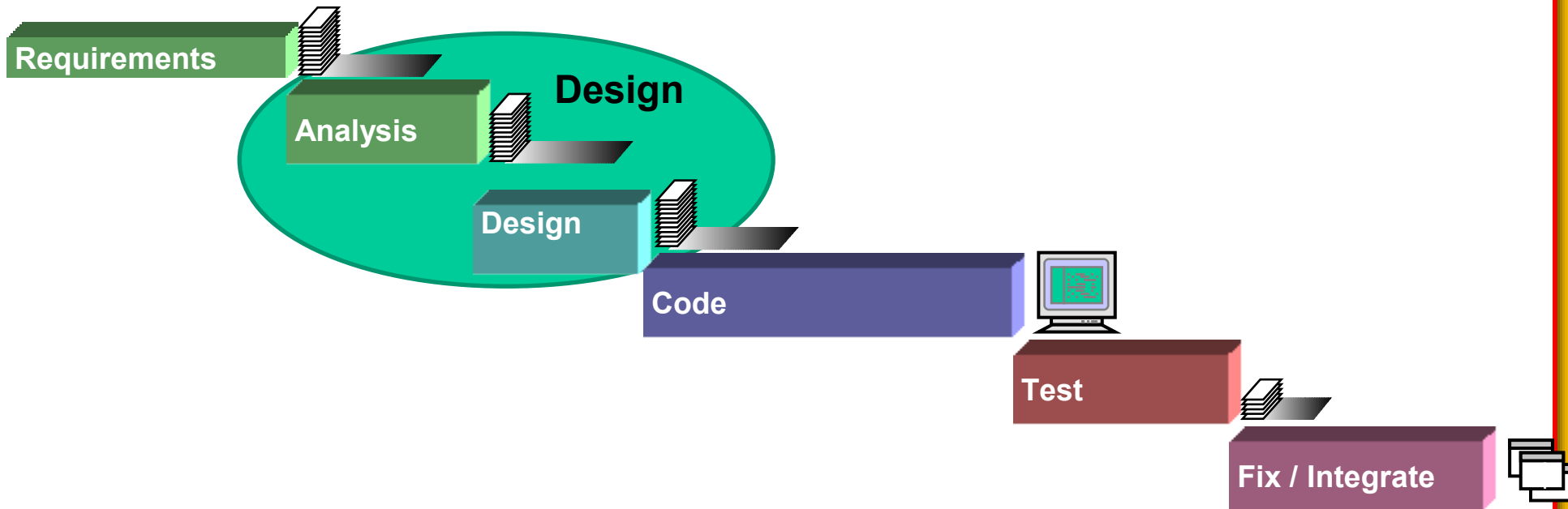
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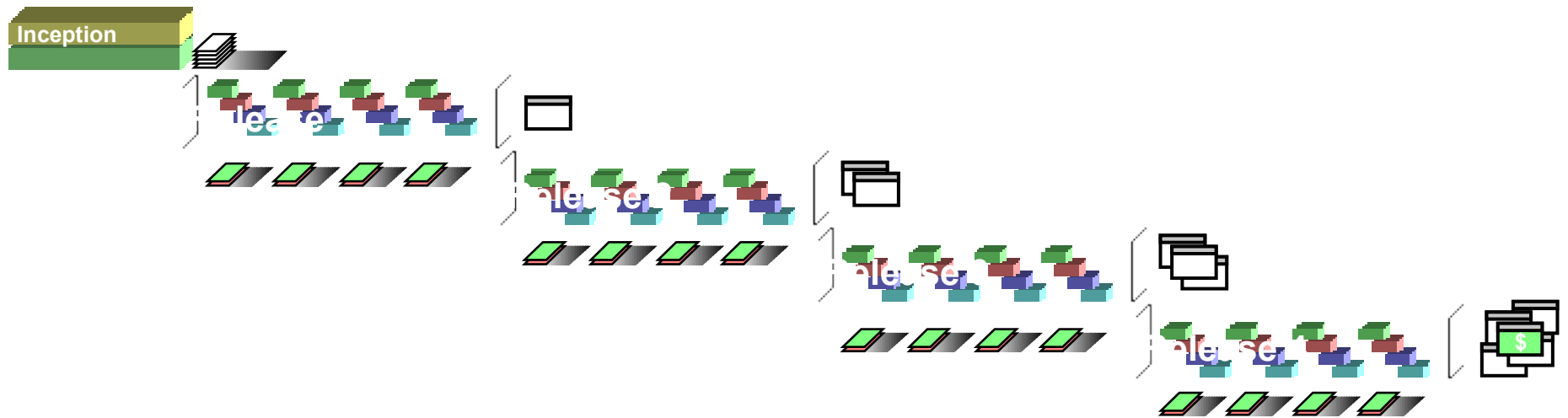
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# Typical XP Project

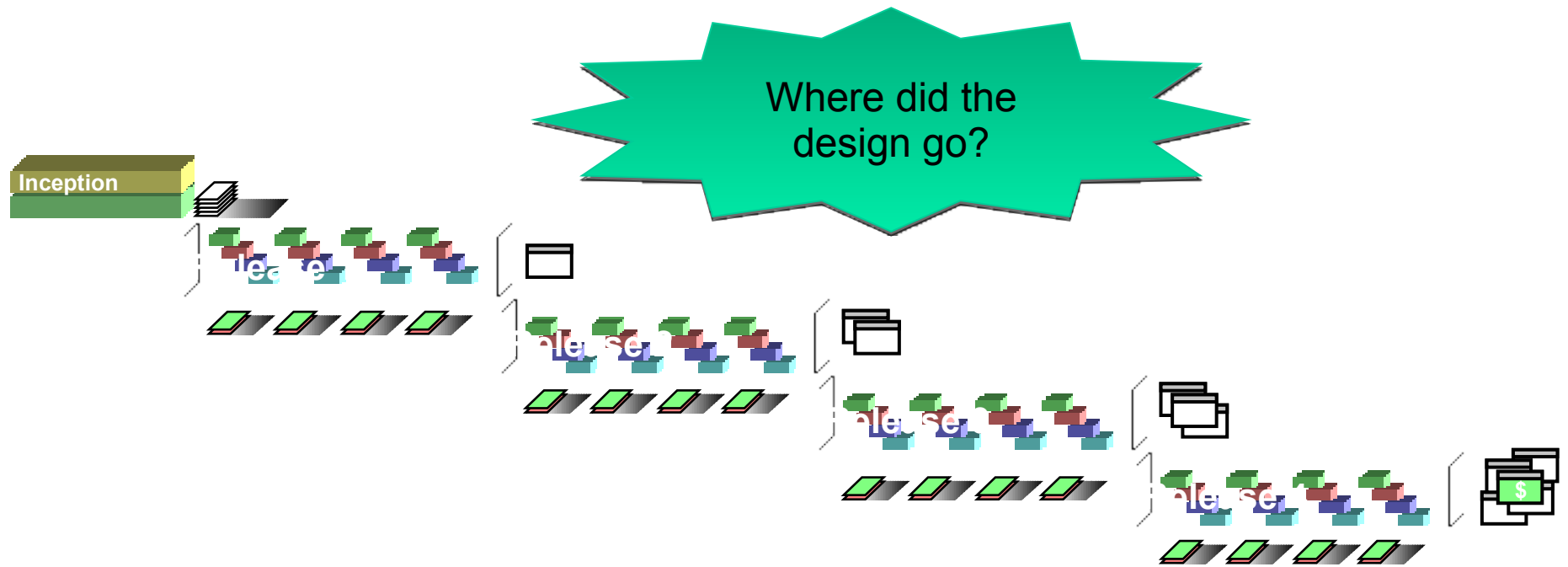
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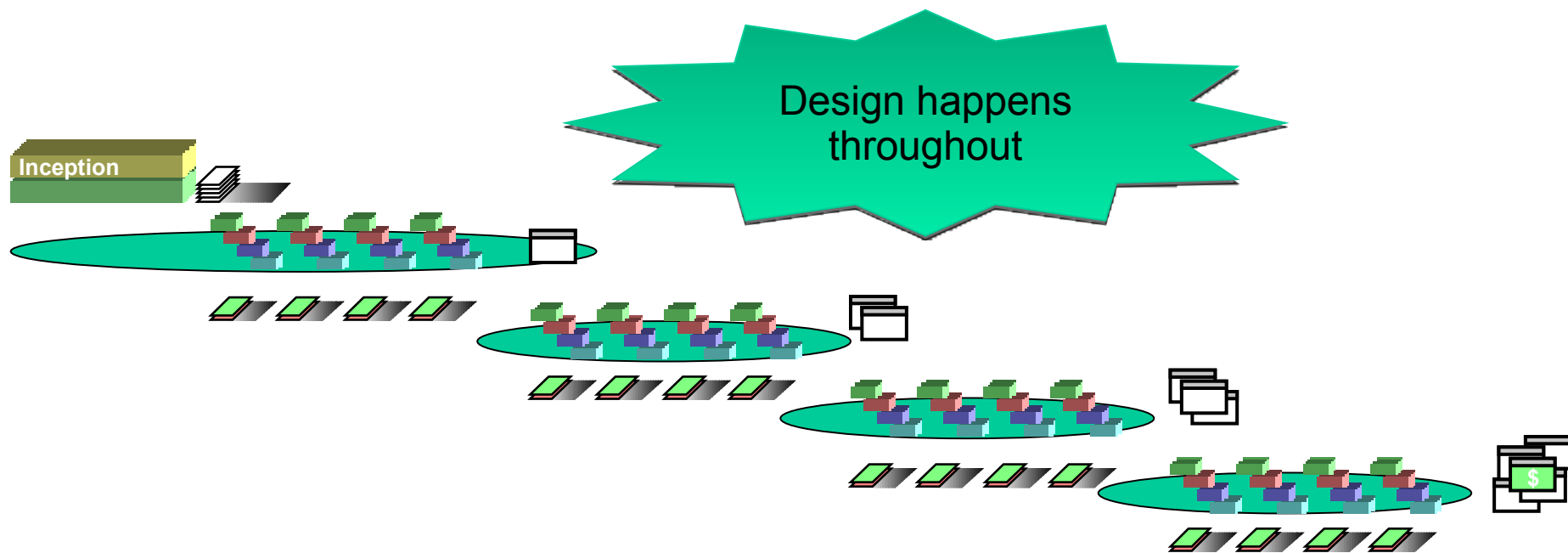
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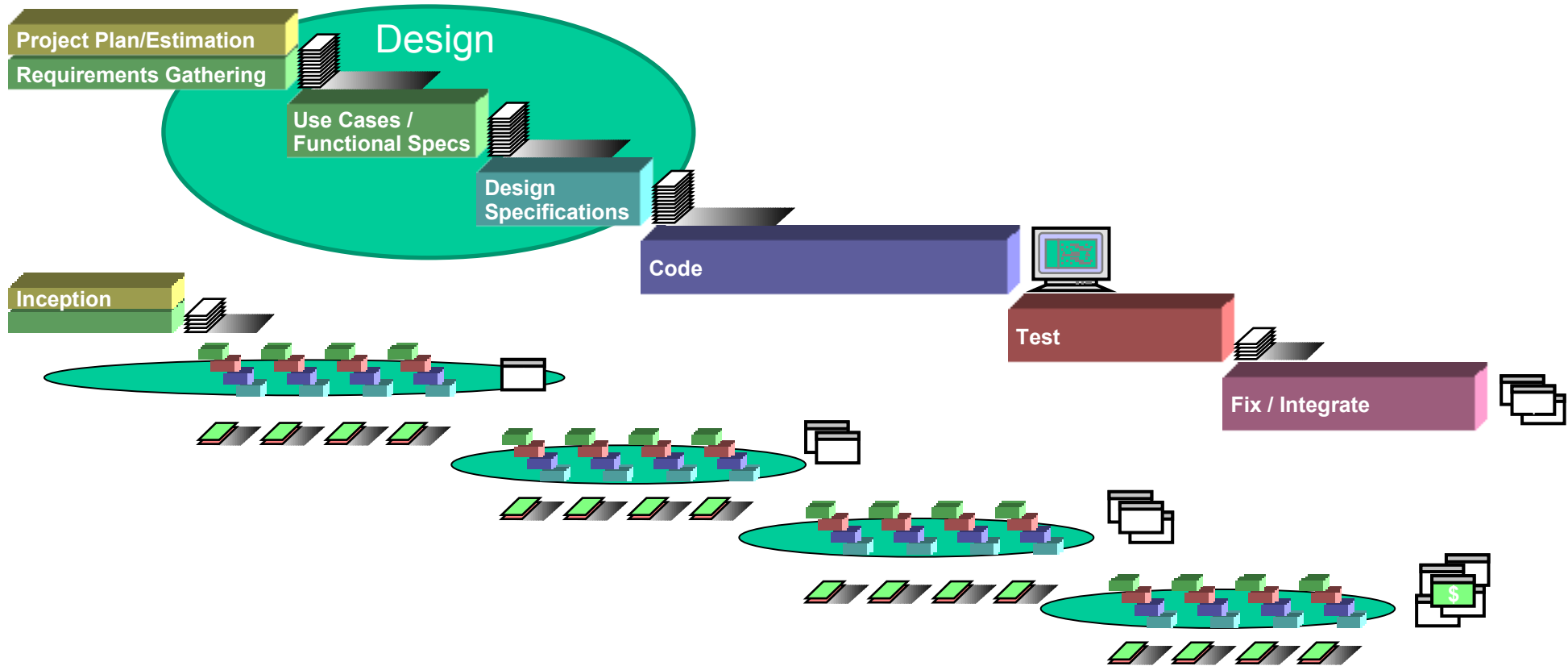
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# Traditional Methods and XP

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# XP and Design

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# XP Practices

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# XP and Design

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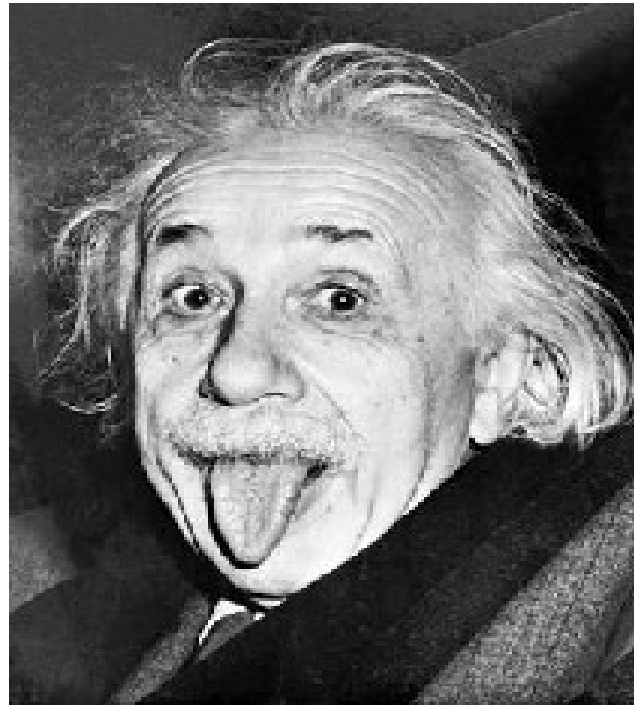
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*"Things should be made as simple as possible,  
but not any simpler."*



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# XP and Design

- Don't try to solve **big problems** in one go
- Break them down into **little problems** and solve them one at a time
  - Produce **simple artifacts** that could be **used flexibly** instead of complex artifacts that aim to embody all possibilities

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# XP and Design

- Never add functionality **before** it is needed
  - Think about tomorrow, but design, test and code for **today's need**
  - Don't design for **future complexity** that may not happen
  - Do the **simplest thing** that meets the **current requirement**

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# XP and Design

- Do the **simplest** thing that could **possibly work**
  - A simple design **takes less time** to finish
  - A simple design means that **changing it later** doesn't have a huge impact

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# XP and Design

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# XP Testing

- Automated Tests
- Acceptance Tests
- Test Driven Development

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# Automated Tests

- The automated test suite provides **feedback** from the system.
- Testing not only serves finding defects.
  - Its primary goal is **avoiding defects**.

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# Acceptance Tests

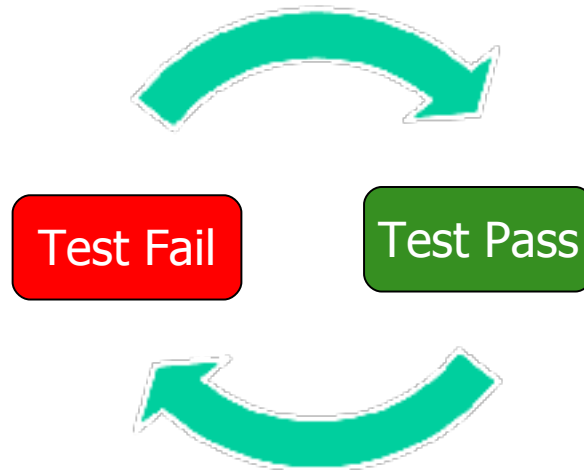
- Acceptance tests are based on the **requirements** given by the customer
  - Some recommend having acceptance tests instead of requirements.
- You can be uncertain whether what your system does is what your customer expects out of it.
  - Acceptance tests **eliminate** this **uncertainty**.
- Developer Test and Customer Test

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# Test-Driven Development

Test-Driven Development (TDD)  
is a design approach!



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# Test-Driven Development

elegantly meet the  
requirements

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# Test-Driven Development

current needs

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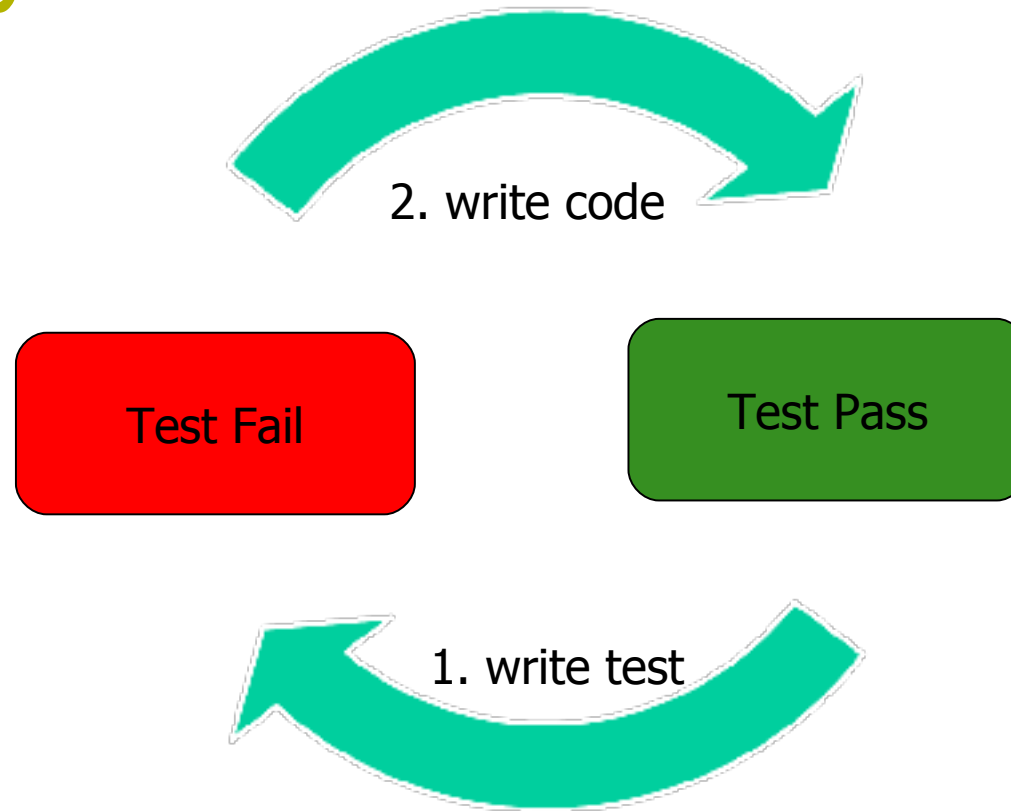
# Test-Driven Development

design evolves

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# TDD Cycle



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# TDD Step 1 - Test Code

- Testable code only!
- Precise specification
- Helps to think about **design**
- Guarantees tangible functional code

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# TDD Step 2 - Functional Code

- Meet the requirement (test code)
- Simplest solution that works
- Leave improvements for a later step
- Avoid writing any further (untested) code

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# XP and Design

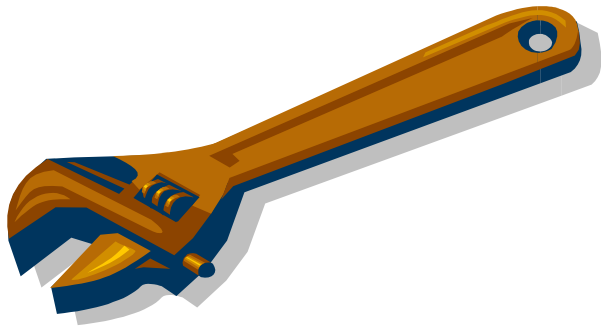
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# Refactoring

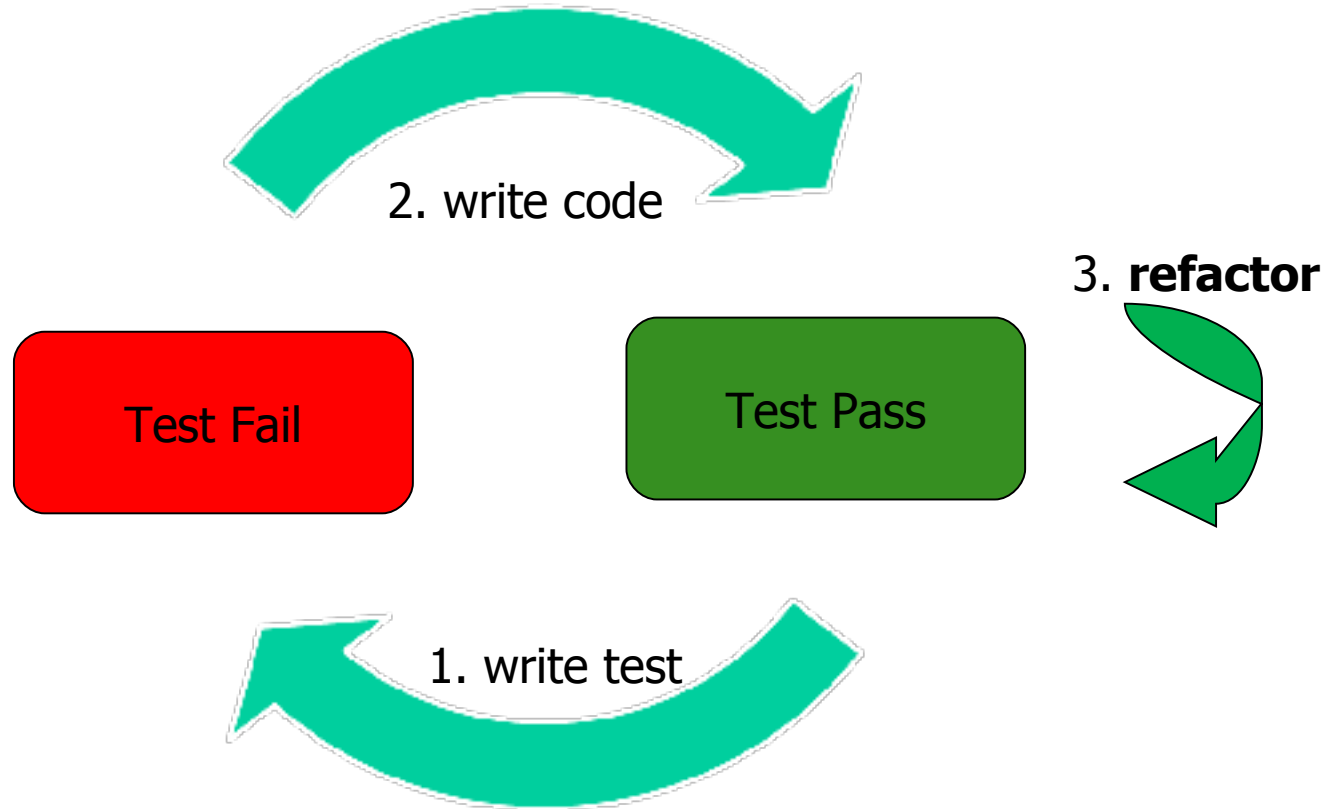
Refactoring is a development practice for **restructuring** an existing code, altering its internal structure to make it more simple, without changing its external behavior



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# A Critical Step



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# TDD Step 3 - Refactoring

- Clean up the code (test and functional)
- Make sure that the code expresses intent
- Re-think the **design**
- Look for Code Smell (improve the design)
- Avoid Broken Windows!

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# XP and Design

- When things get complicated
  - Invest the time to **refactor** it so that it is **simple** again
  - If the design is necessarily complicated, now is a good time to document it thoroughly.

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# XP and Design

- No feature is complete until the suite of **acceptance tests** that define it are passing.
- **Automated tests** ensure that your implementation matches your design
  - Everybody can then know what will be affected when the **design** changes
  - The tests form much of your detailed design documentation

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# Conclusion

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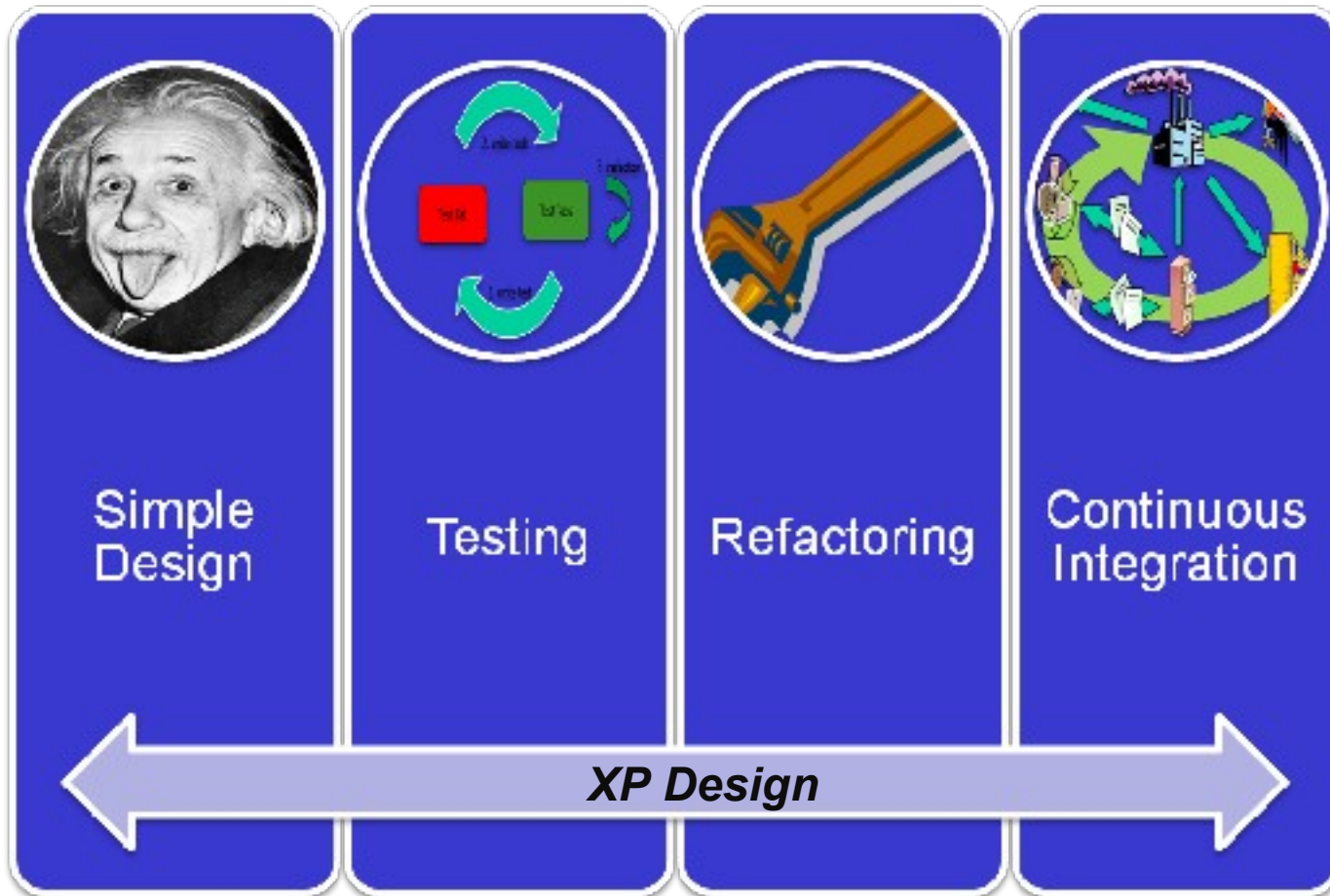
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# XP and Design

- Where did the Design phase go?



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# XP and Design

- Design is so important that we do it everyday!



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# XP and Design

Thanks for attending!  
Questions?

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