Waterfall Development and Its Problems

Stephen Haunts

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History of the Waterfall Model

- First introduced by Winston Royce

http://www.cs.umd.edu/class/spring2003/cmsc838p/Process/waterfall.pdf

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- First introduced by Winston Royce
- Was not referred to as Waterfall until later

History of the Waterfall Model

- Requirements specification

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- Construction
- Integration
- Testing and debugging

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- Maintenance

How Does Waterfall Work?

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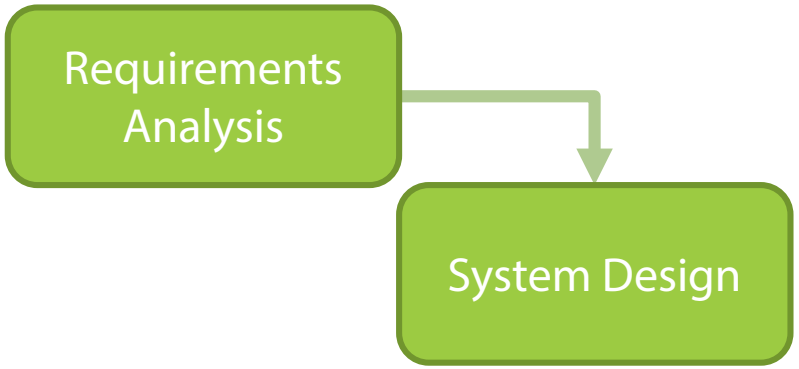

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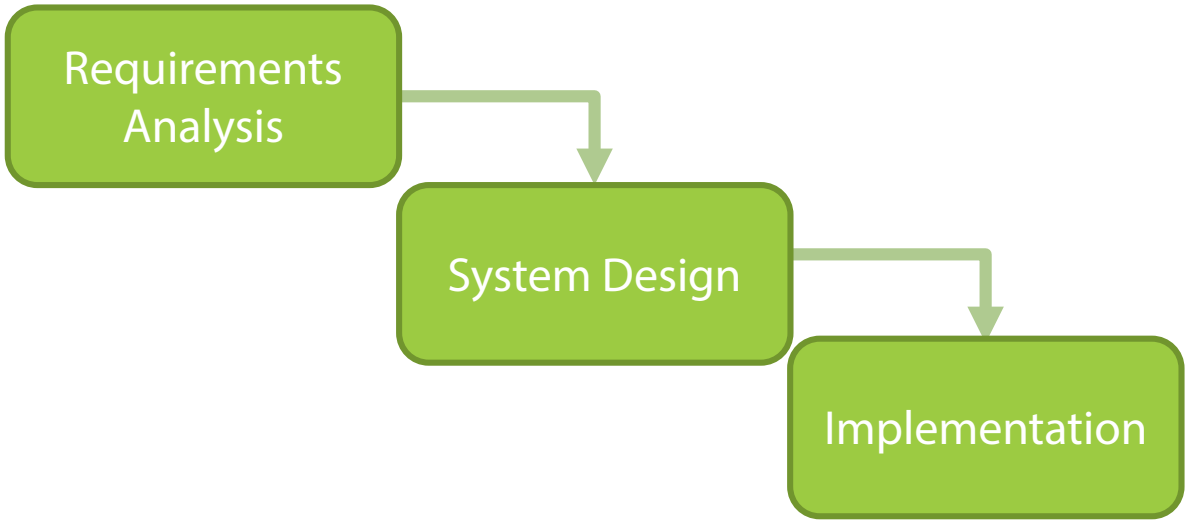

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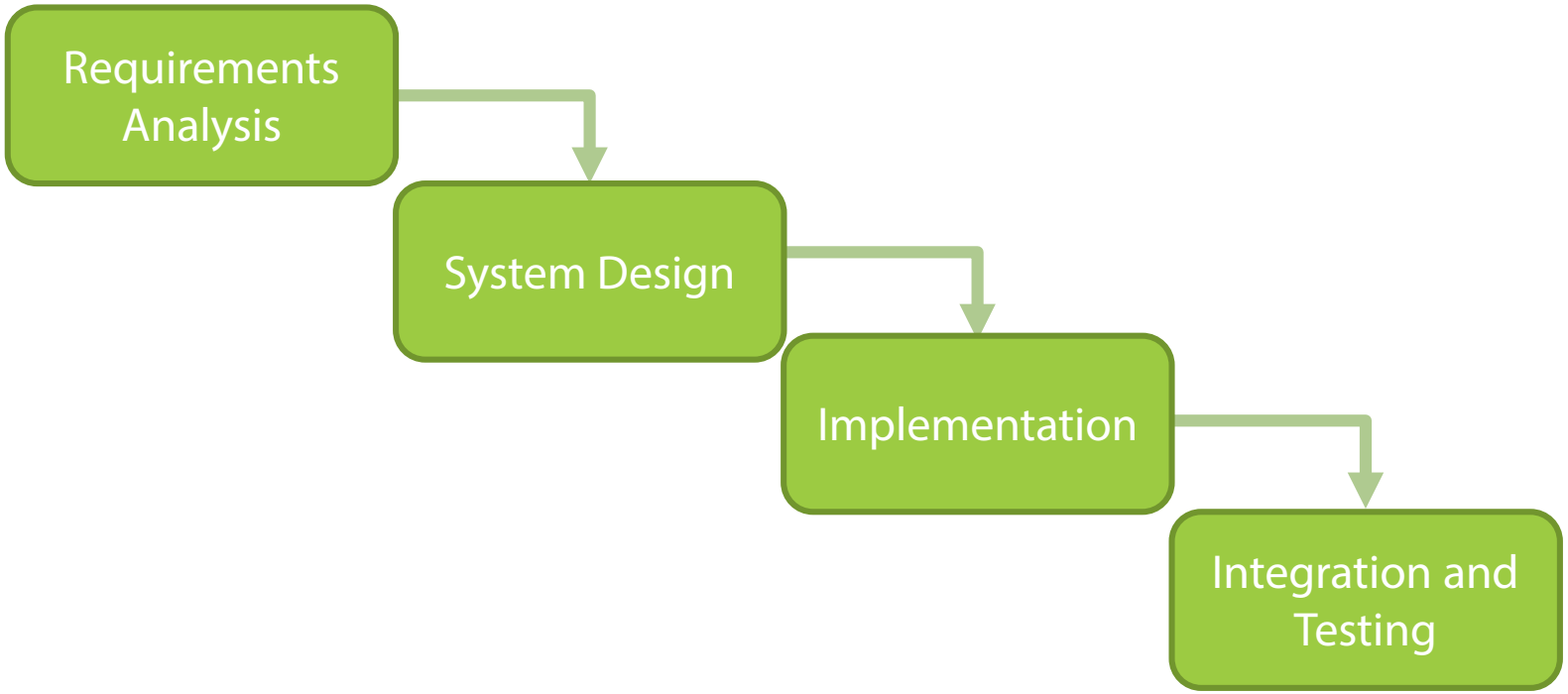

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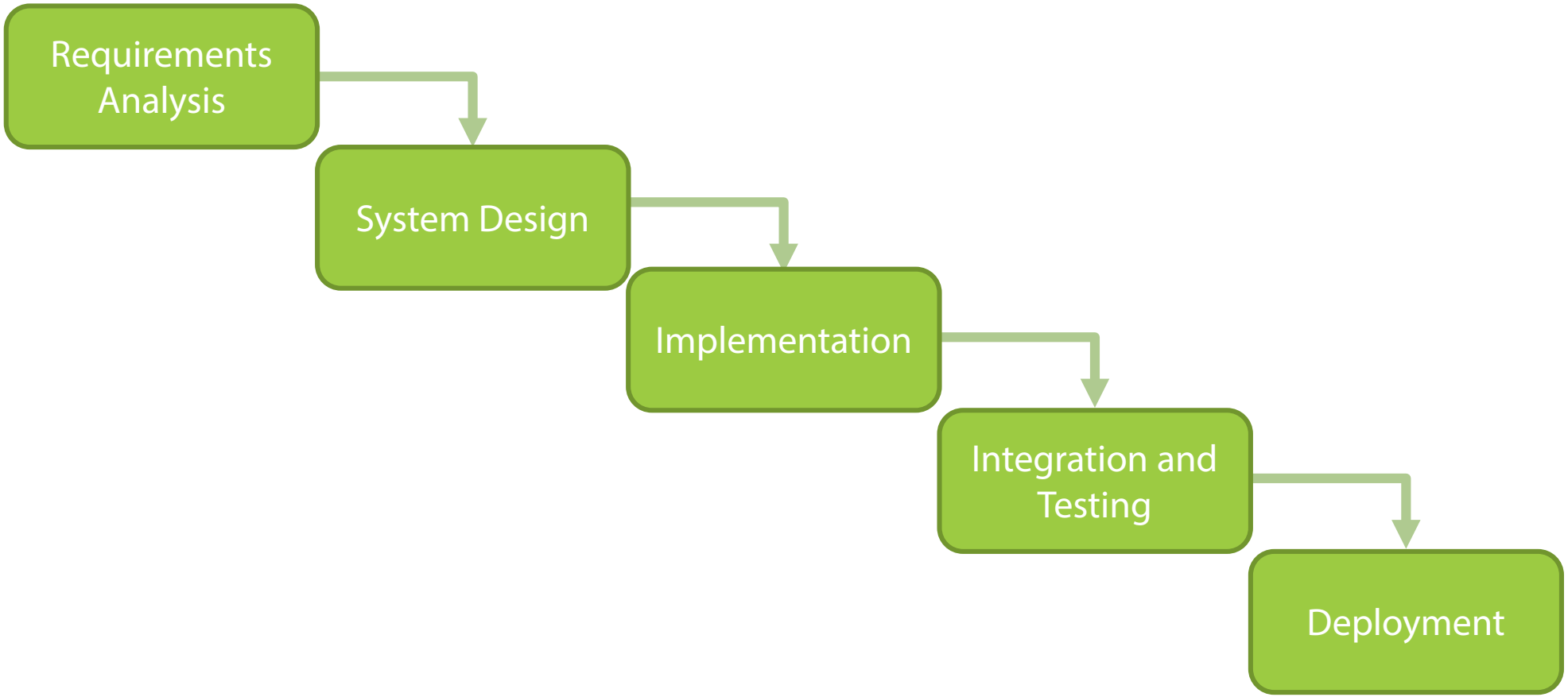

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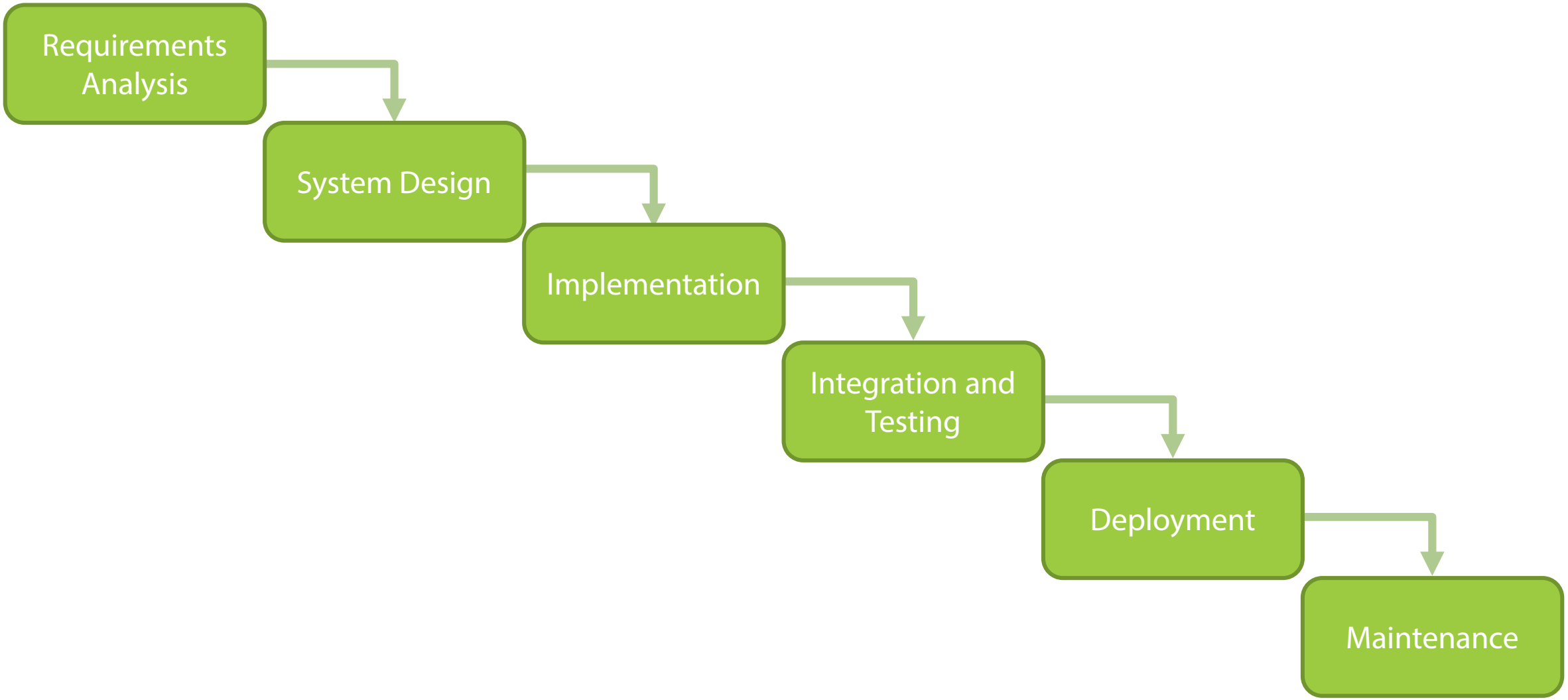

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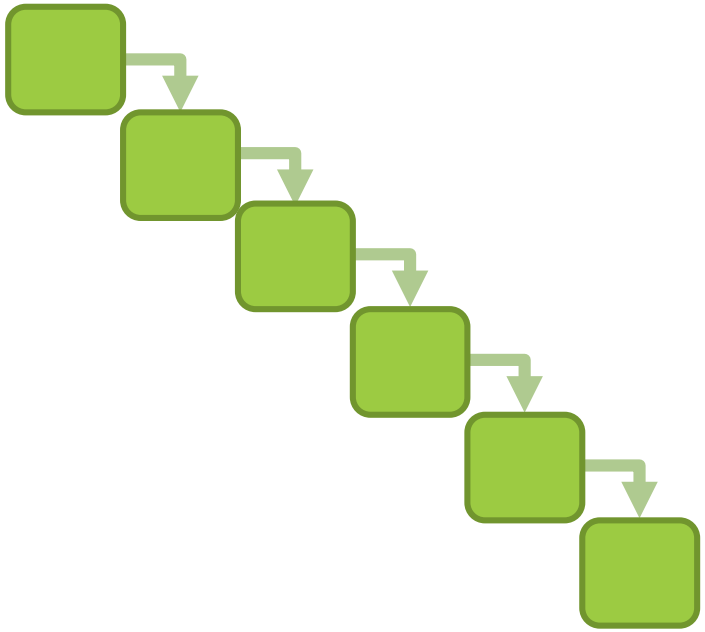

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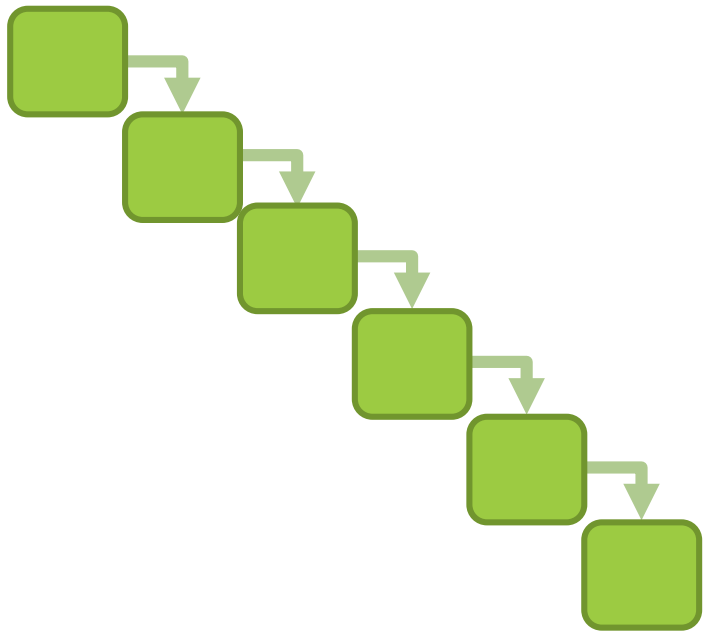

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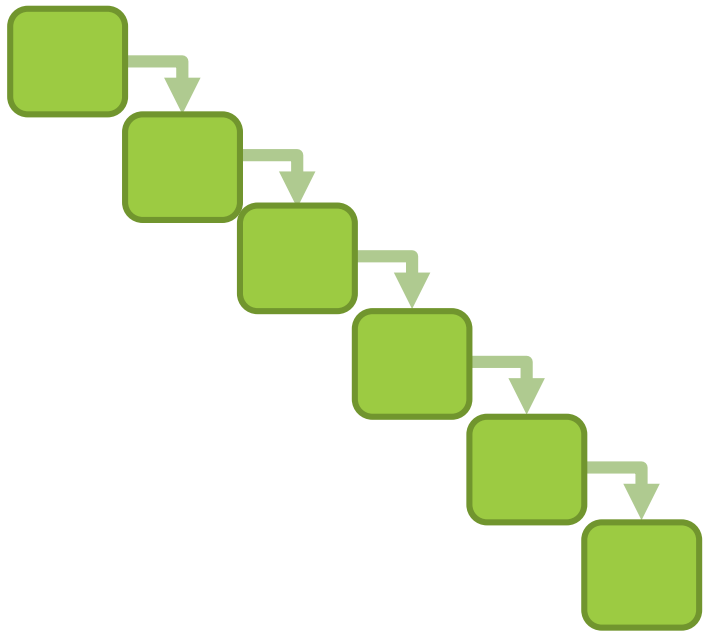

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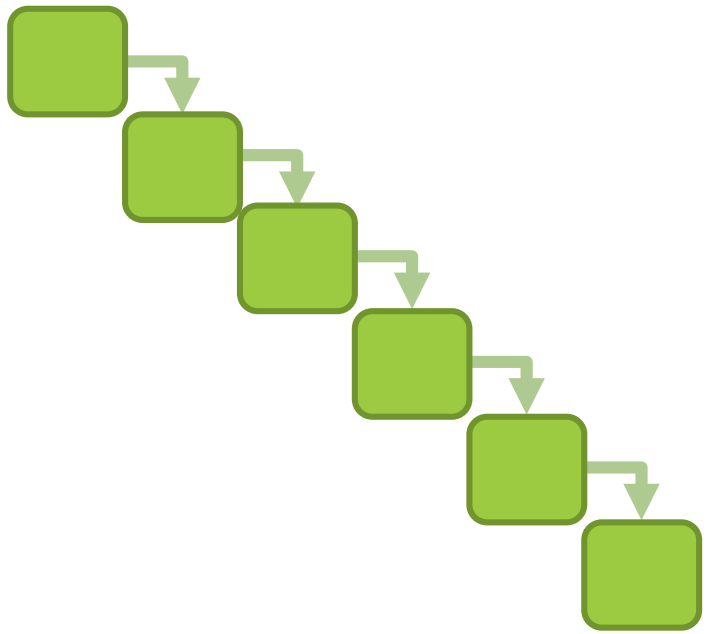

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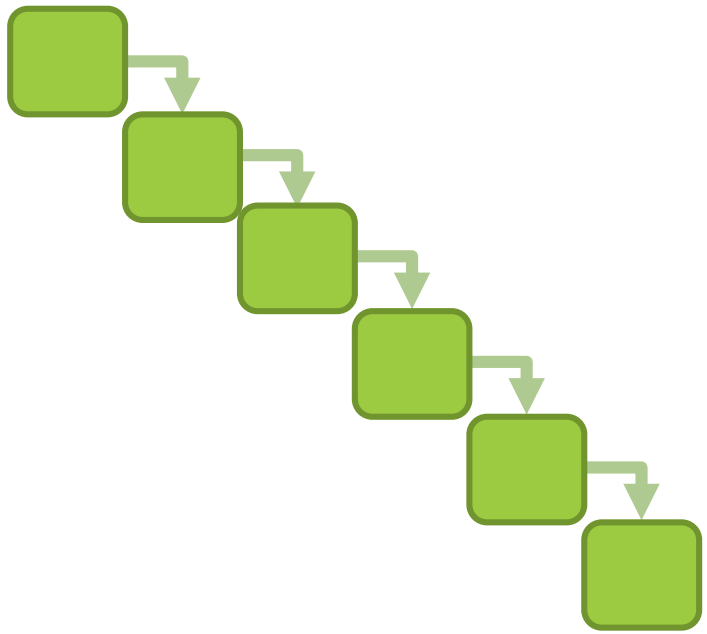

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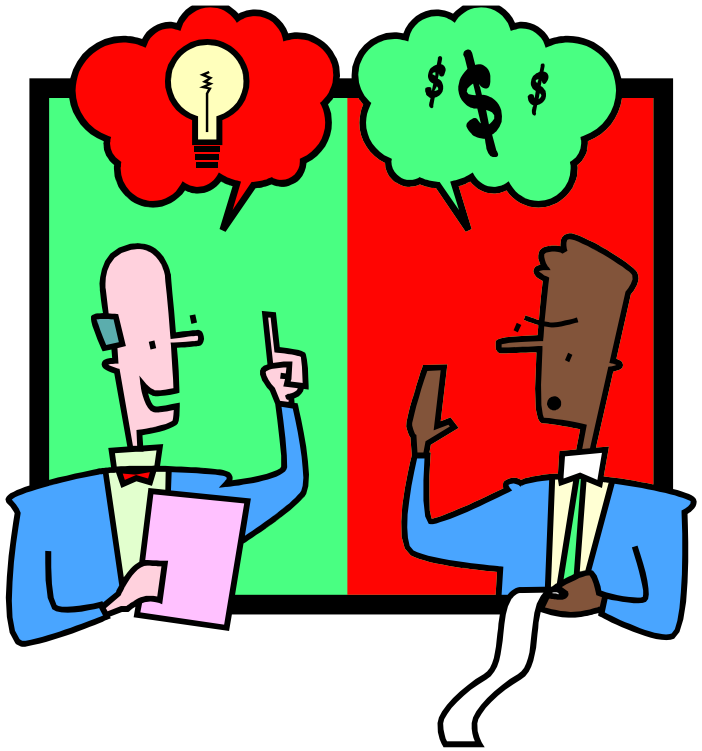
- Suitable resources available

Advantages and Disadvantages



- Advantages

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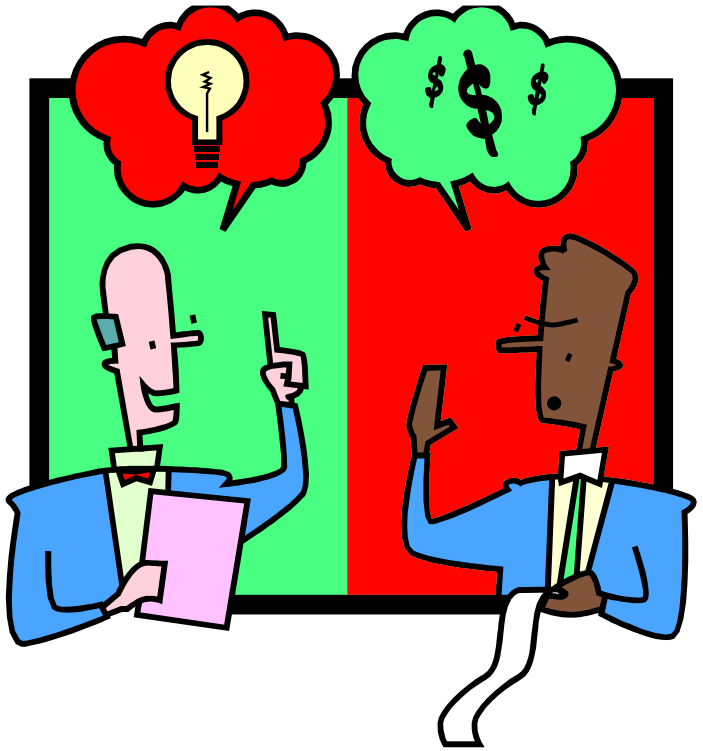
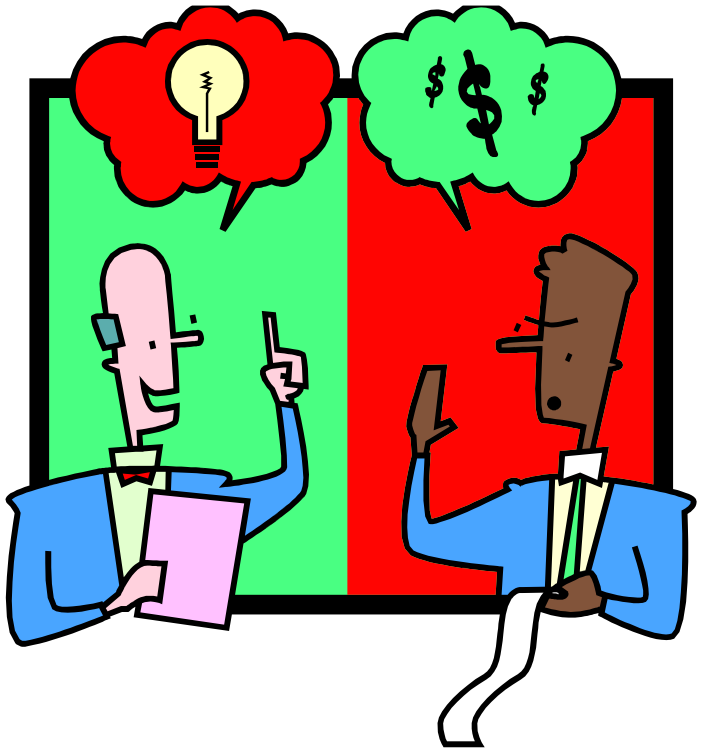


- Advantages
  - Easier scheduling and control

Advantages and Disadvantages



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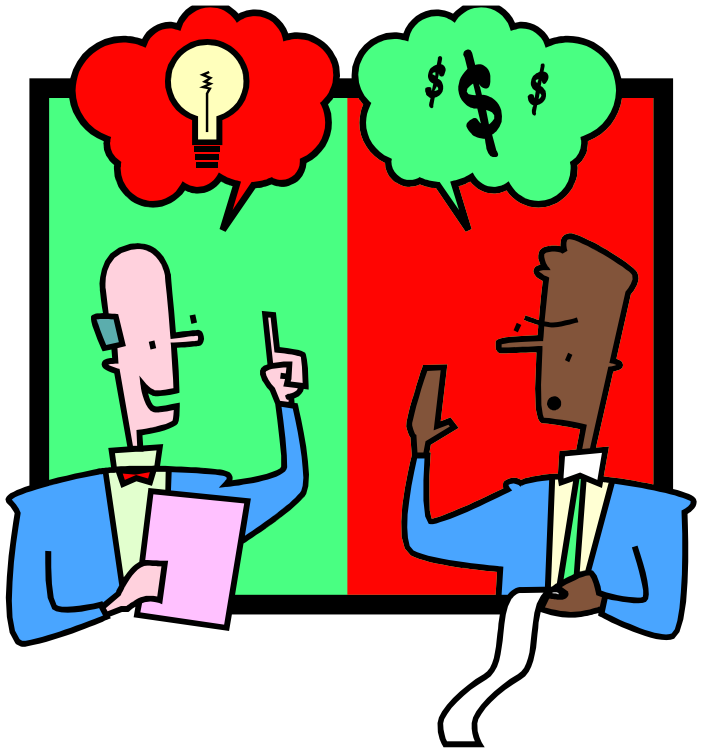

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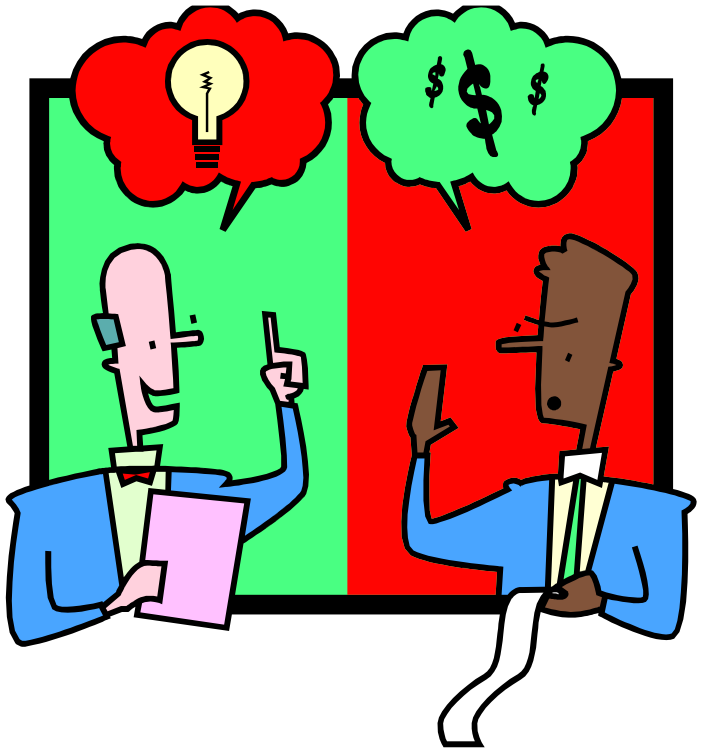

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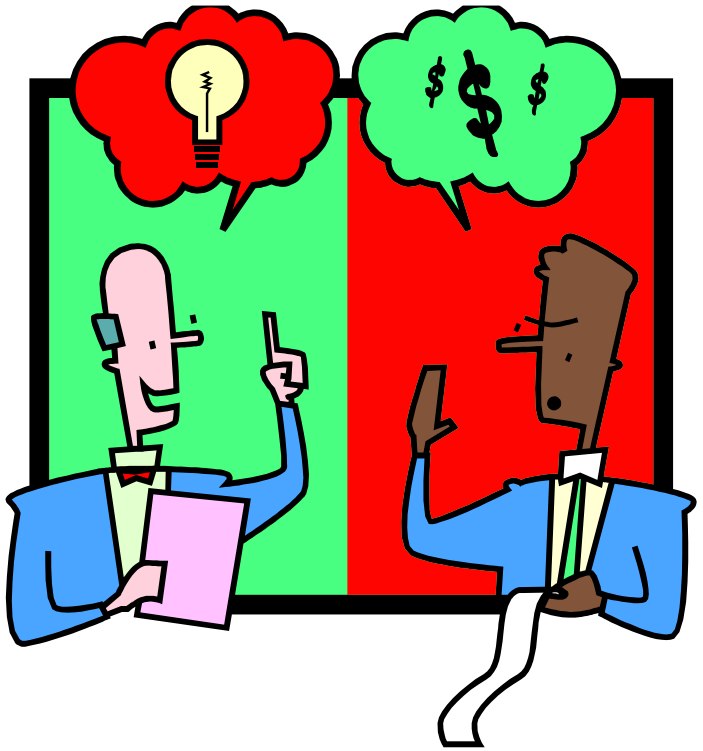

- Disadvantages
  - Does not allow for reflection or revision
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- Well understood milestones

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- Process and results are well documented

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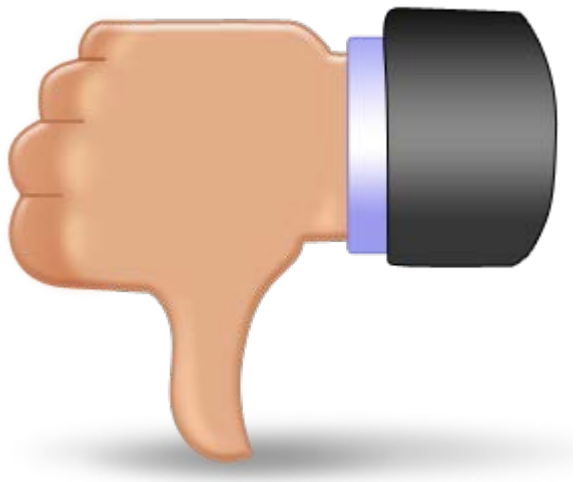
- Tasks are easy to arrange for a project manager

Cons



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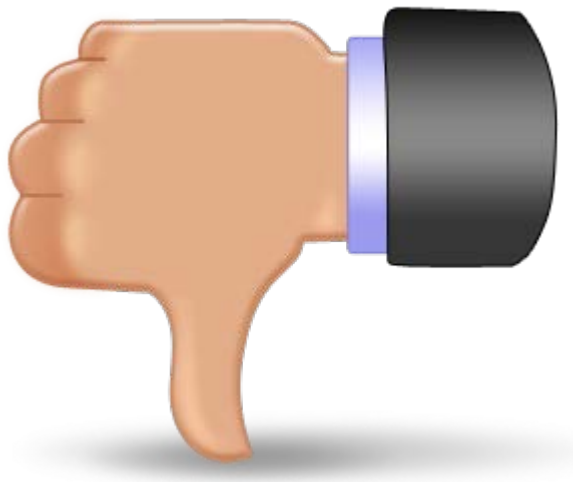

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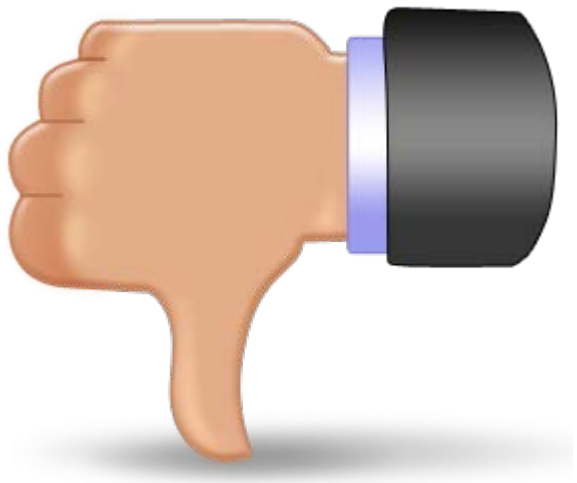

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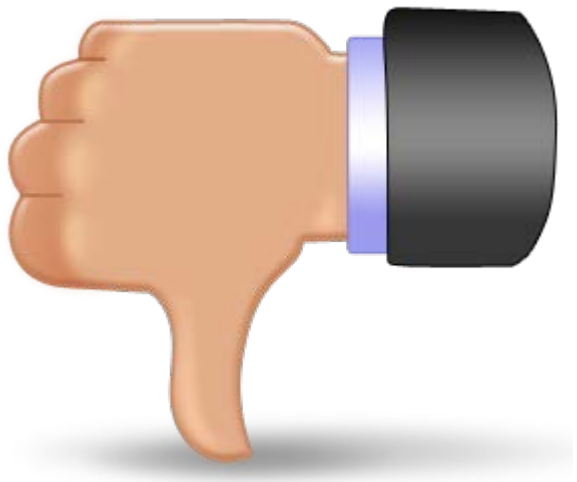

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- Not good where change is expected

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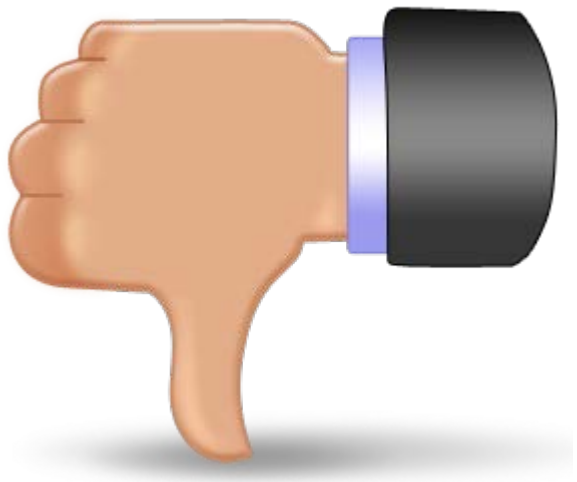

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- Integration and delivery is done as a "Big Bang"

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- Designed to be non-linear
- Described by Paul E. Brook in 1986
- Testing phase for each corresponding development stage

How Does the V-Model Work?

- Verification phases on one side and Validation phases on the other side

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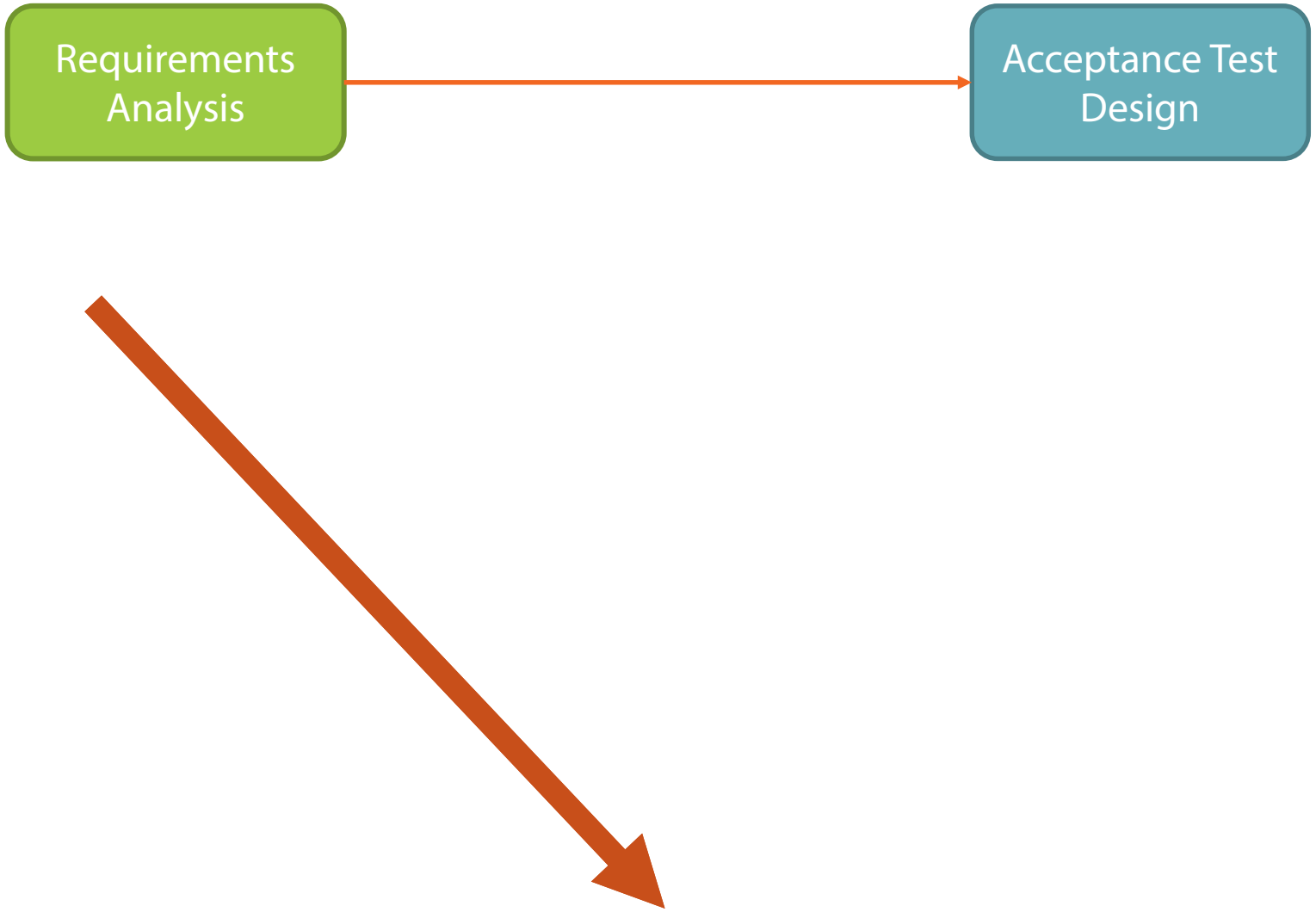

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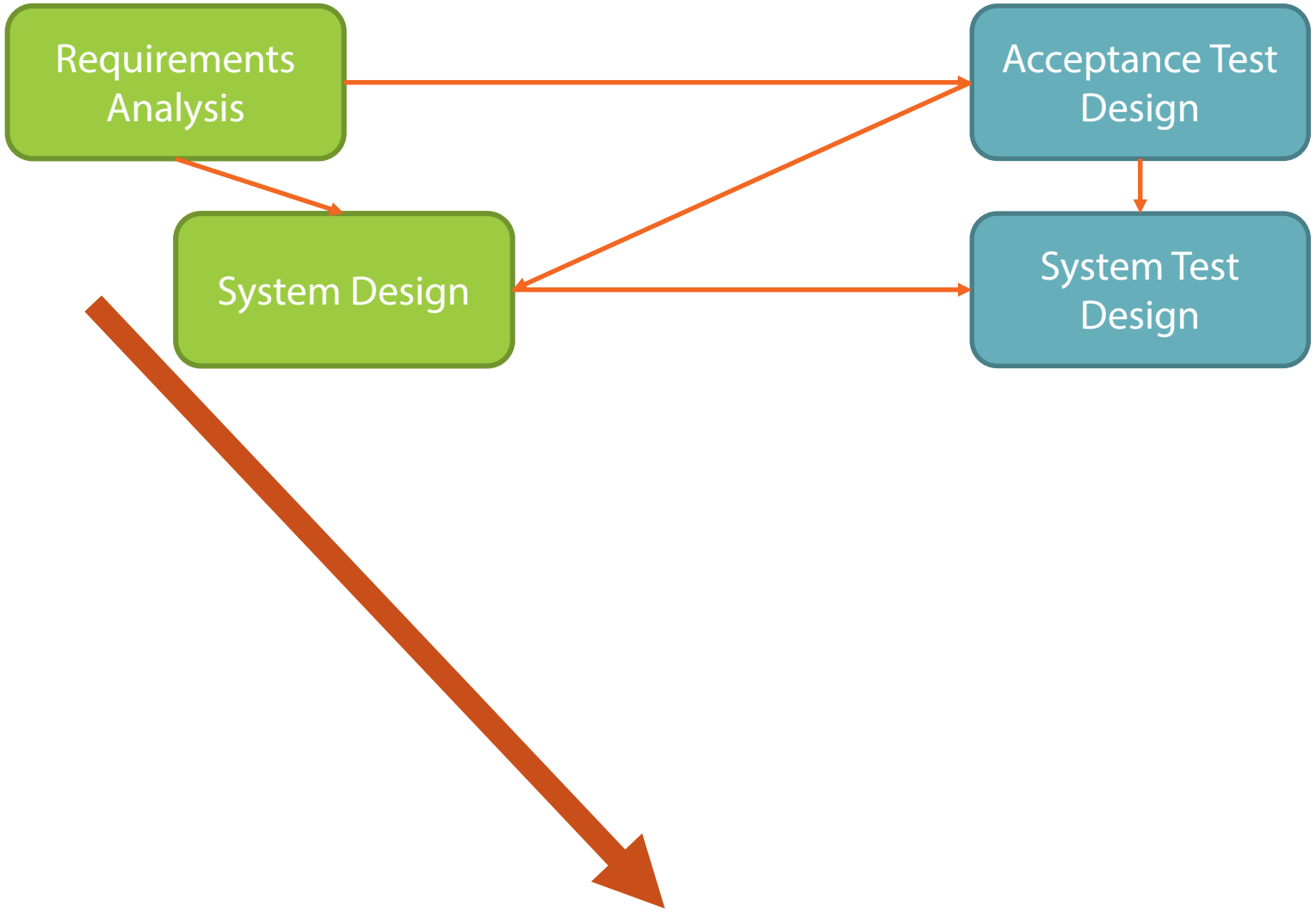

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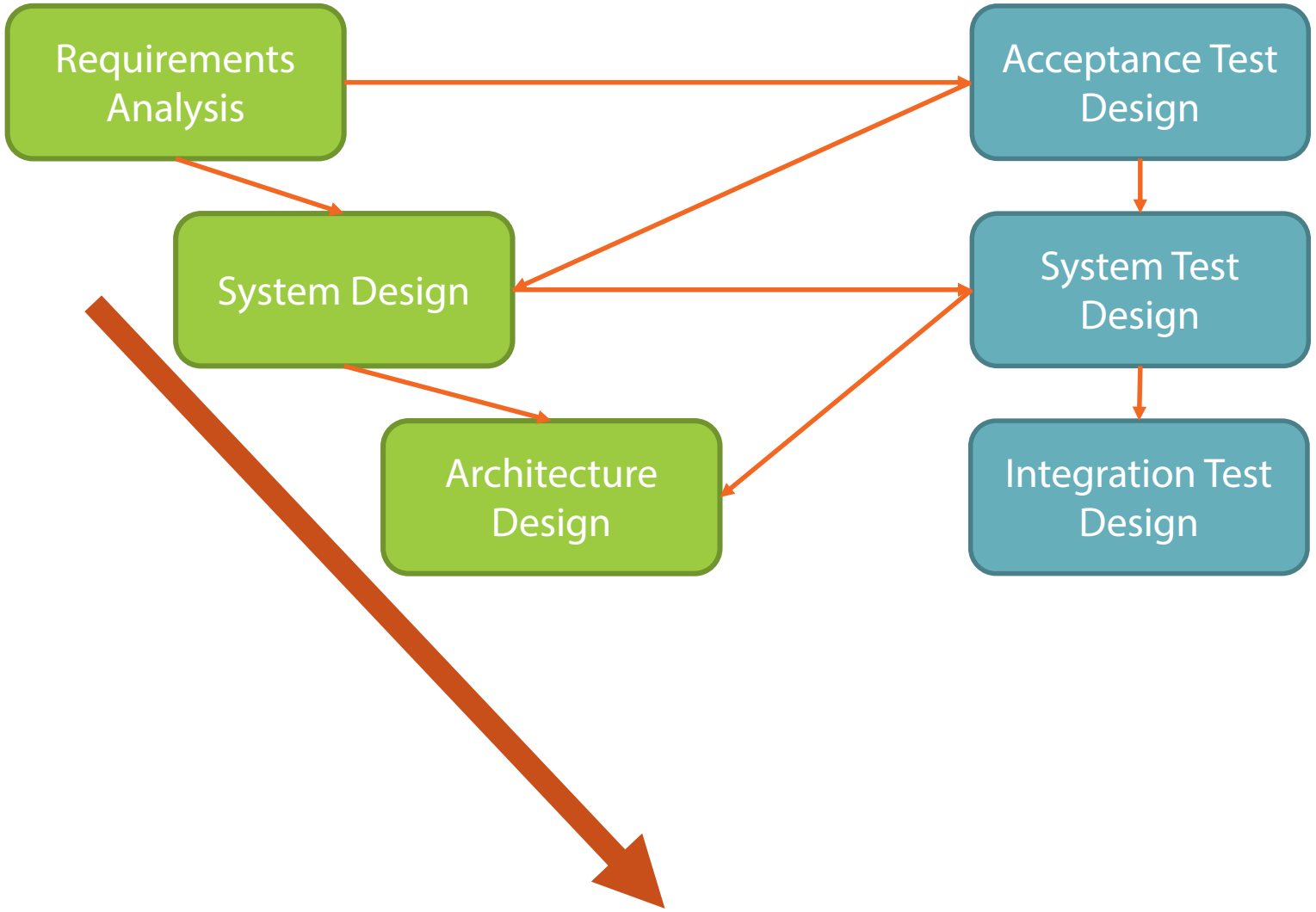

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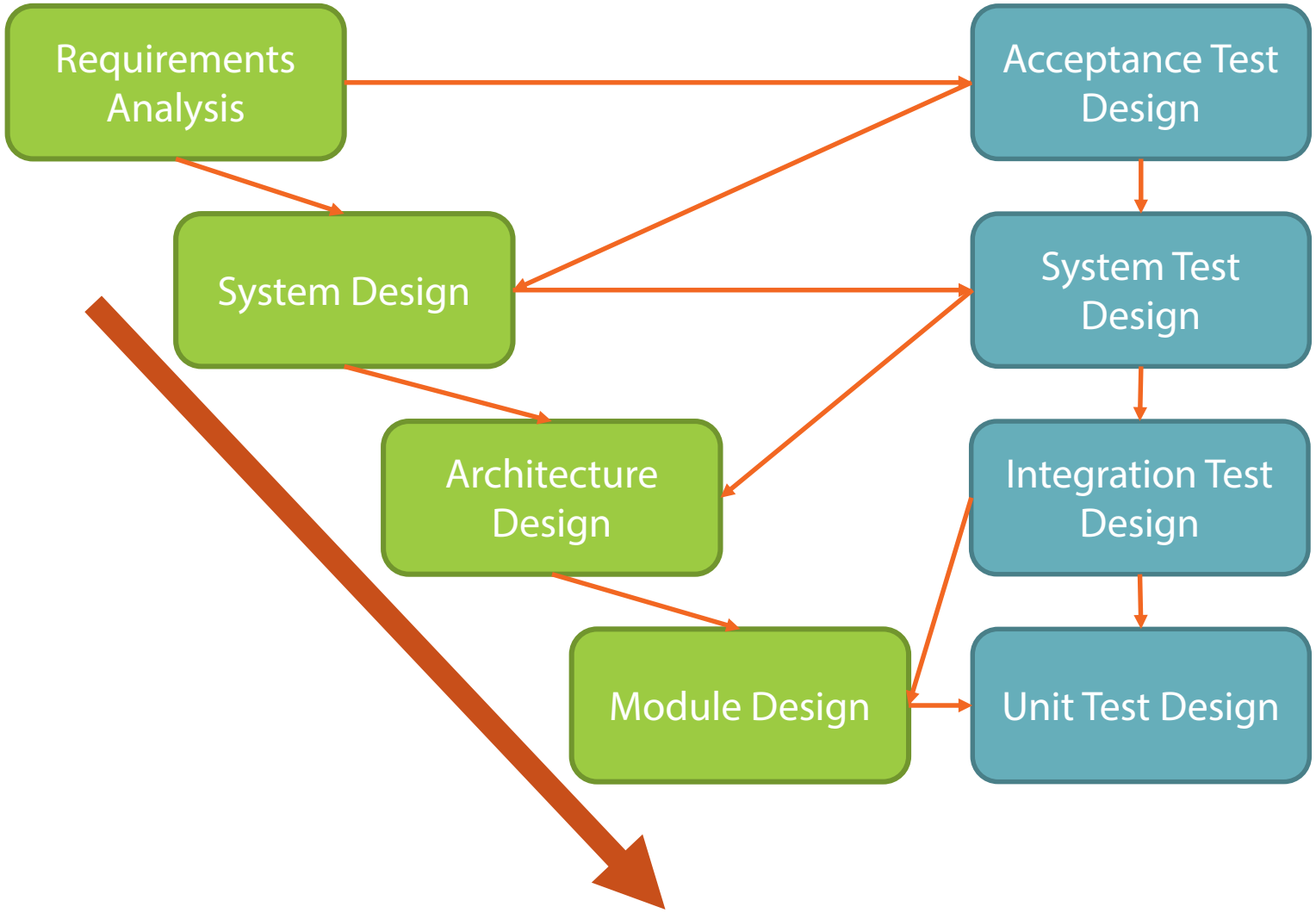

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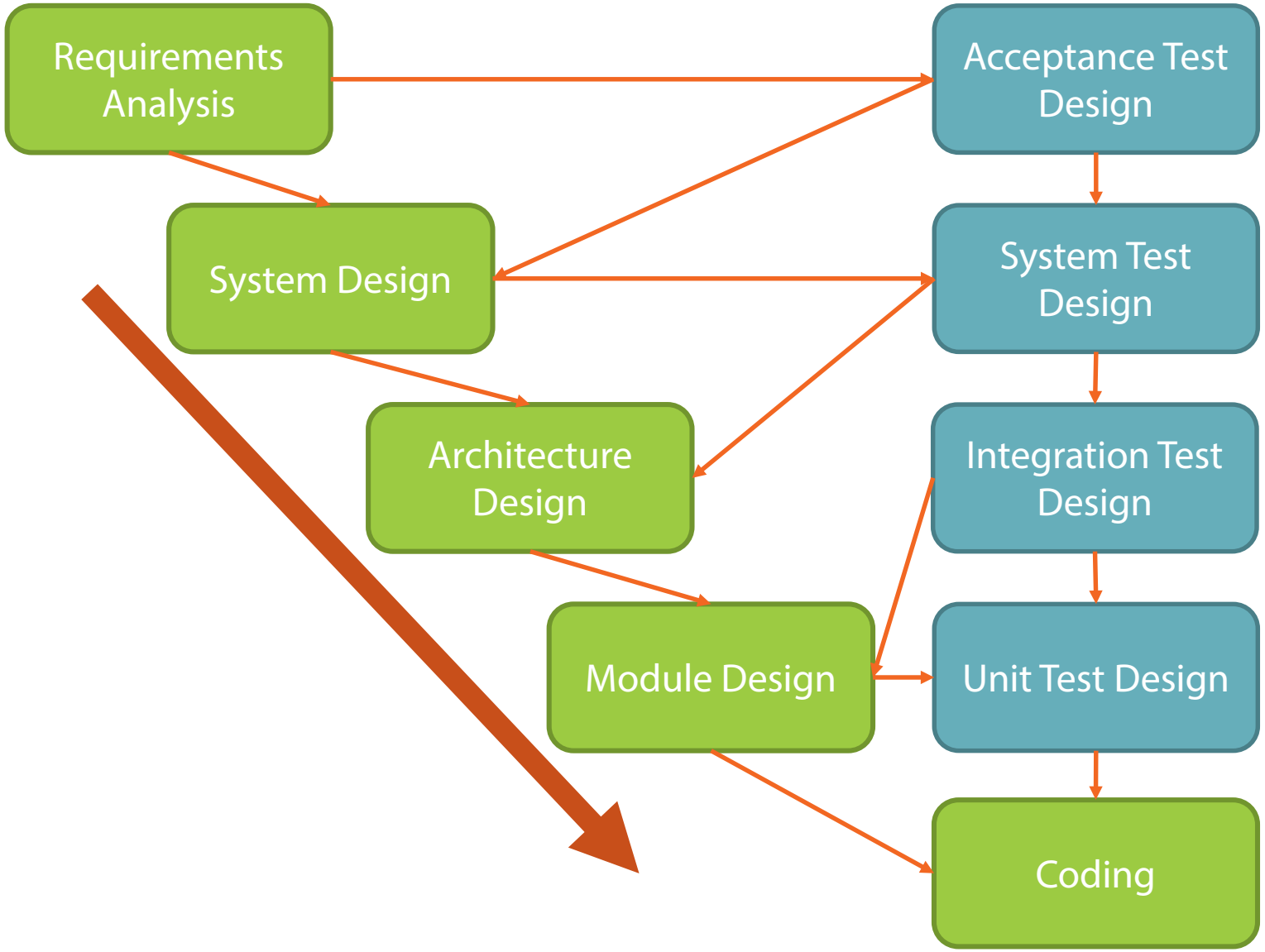

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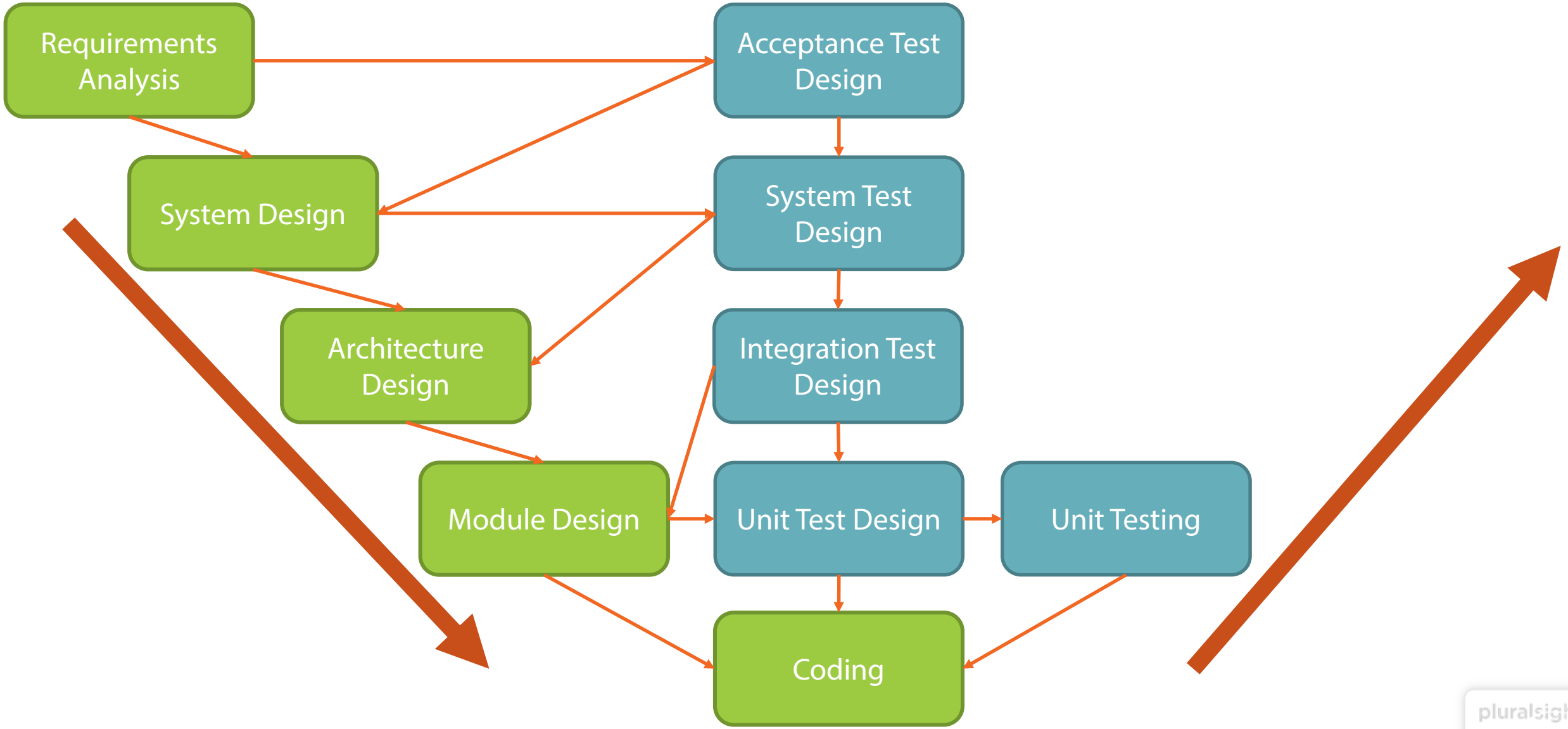

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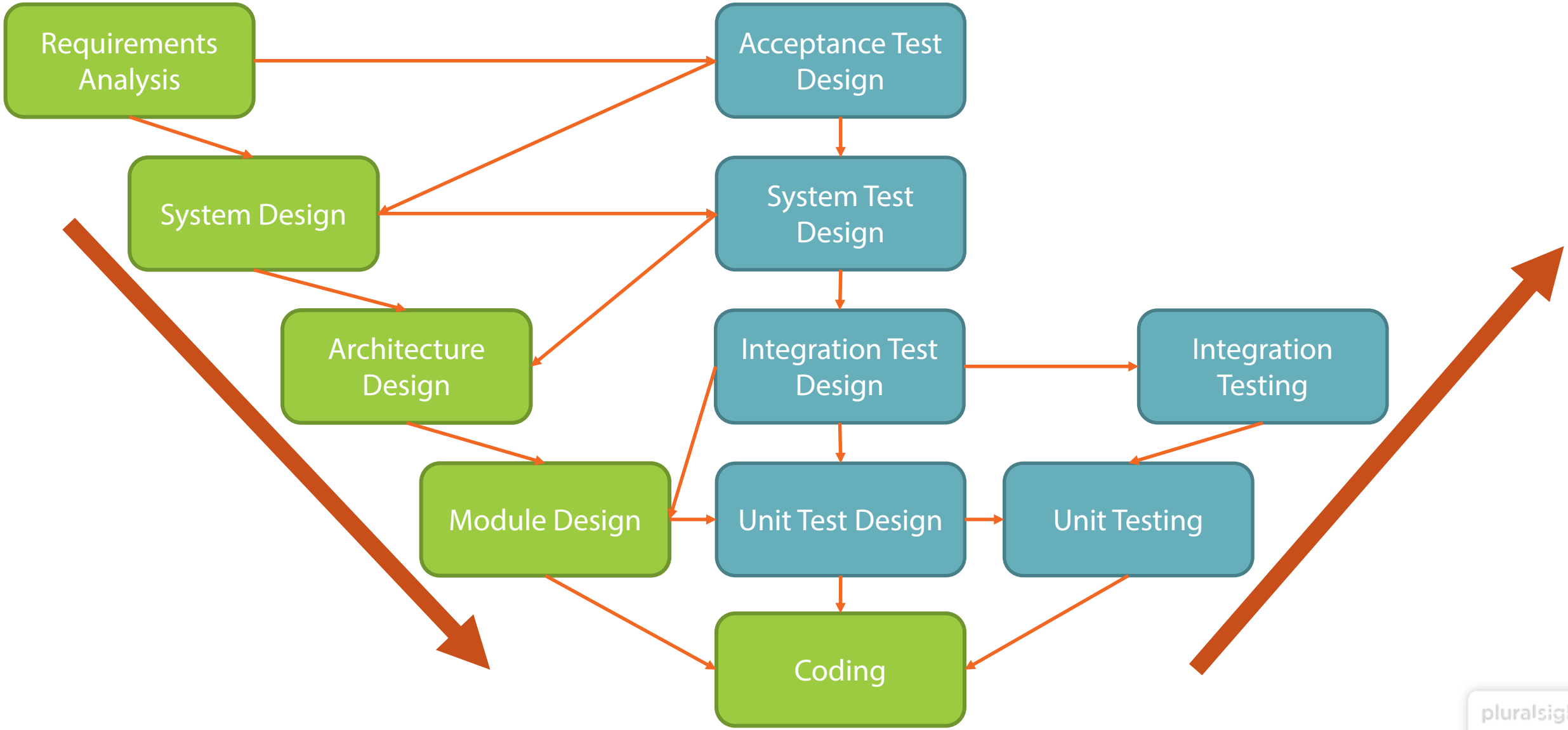

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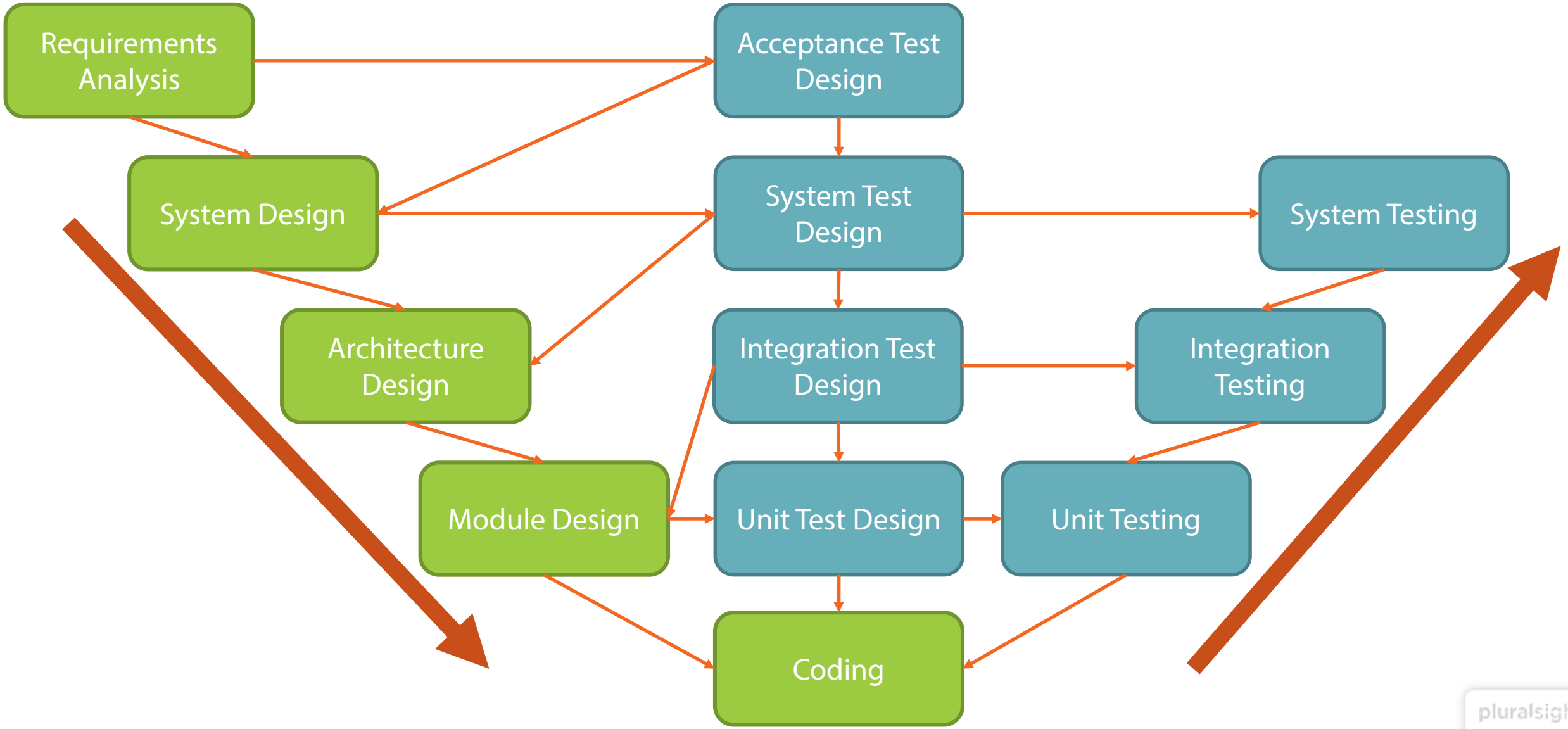

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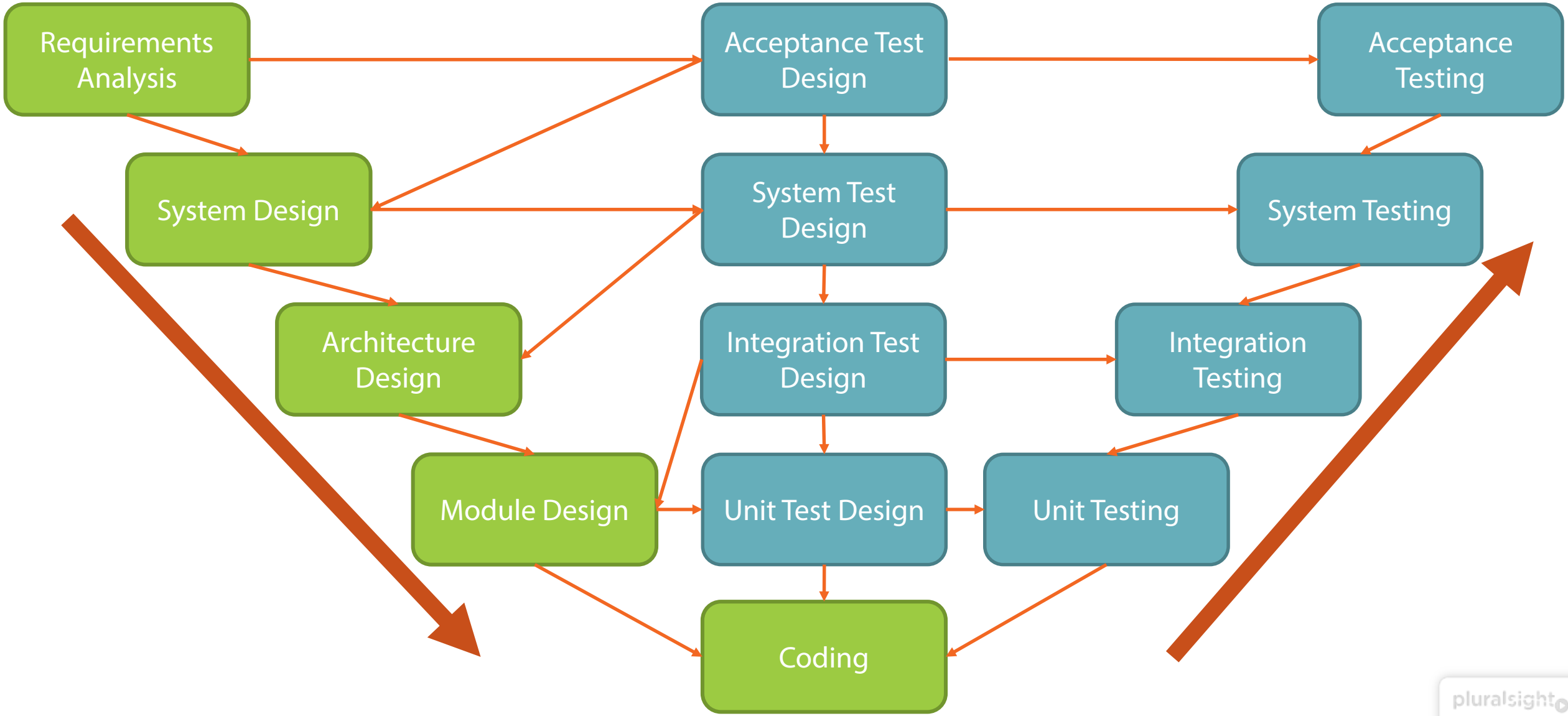

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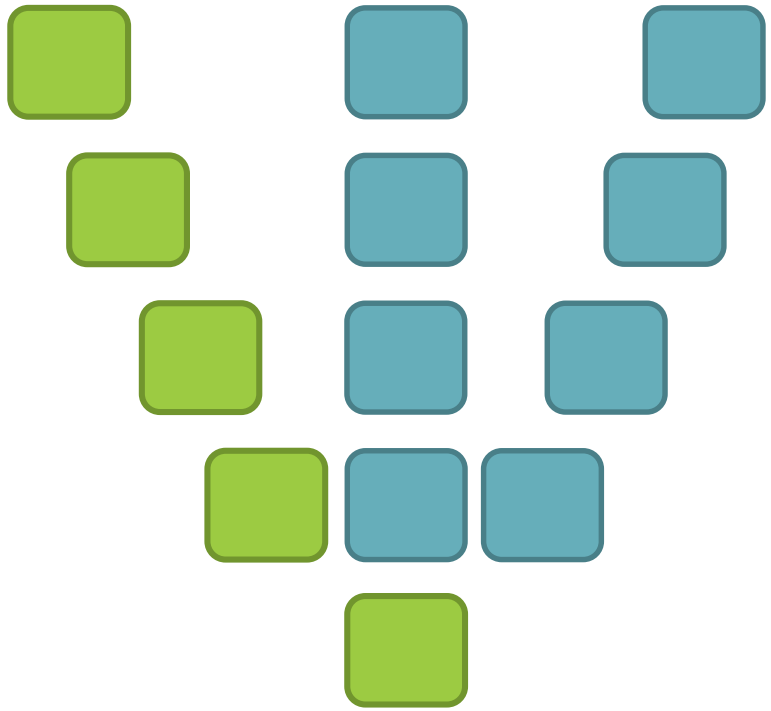

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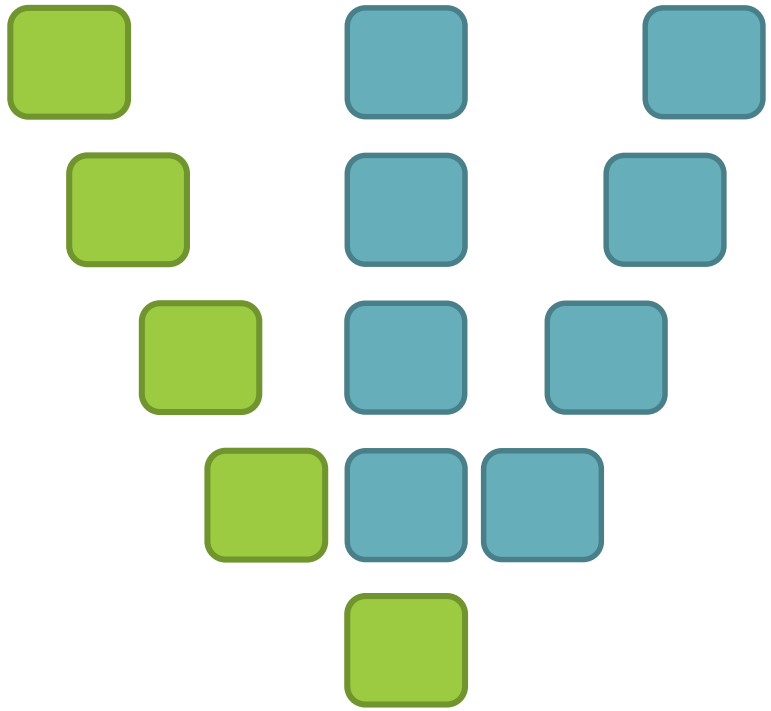

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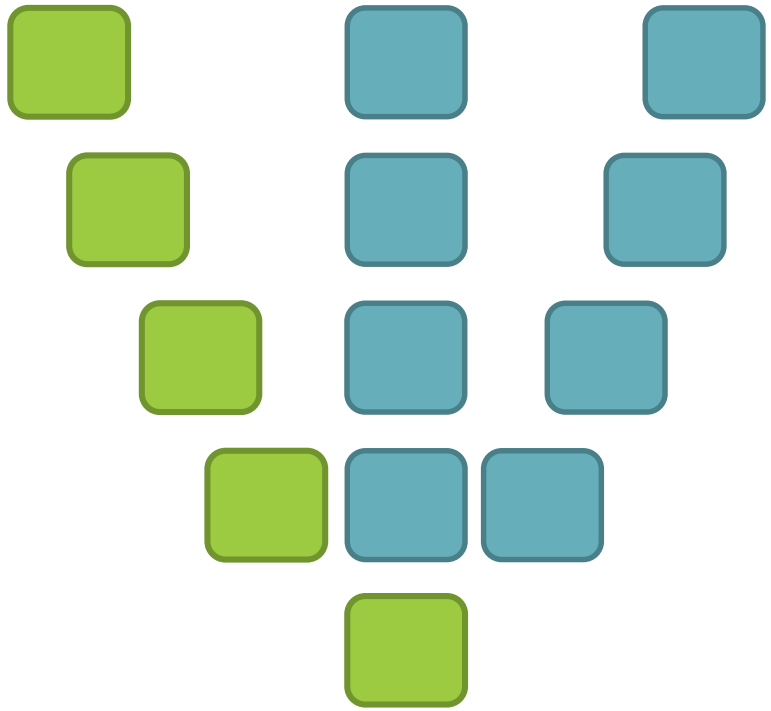

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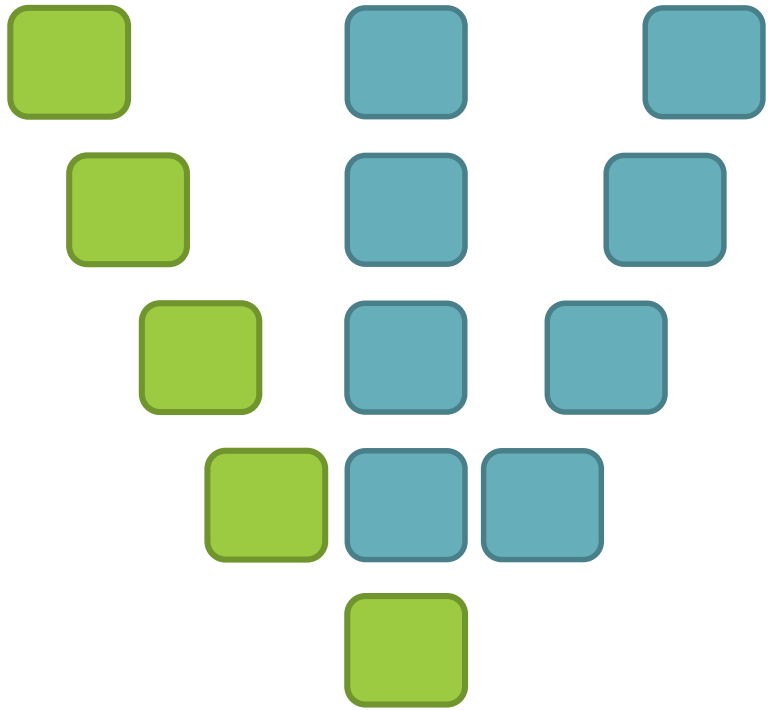

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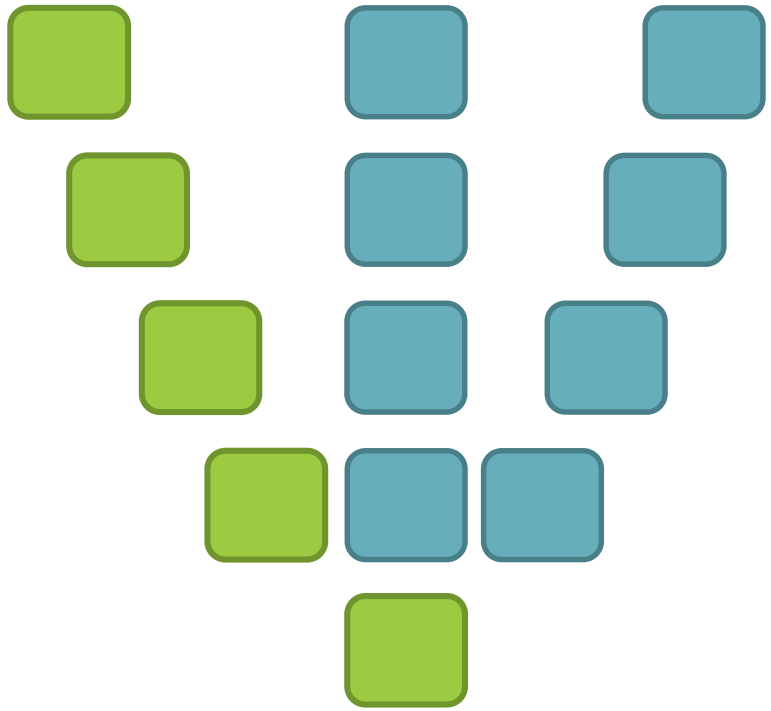

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  - Requirements changes are disruptive and expensive

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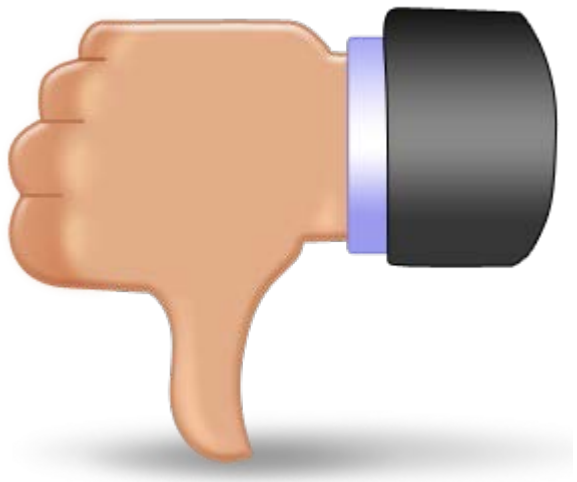

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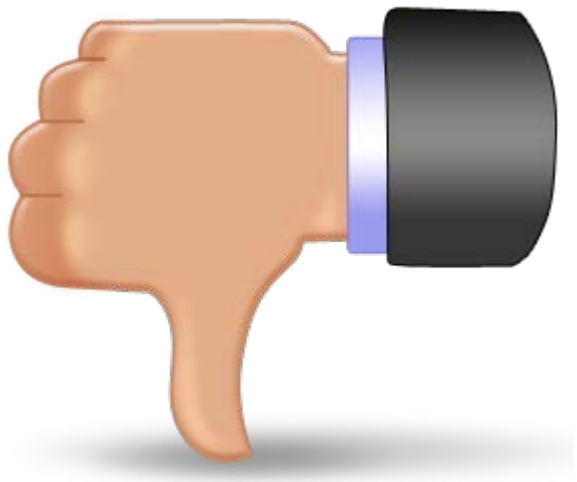

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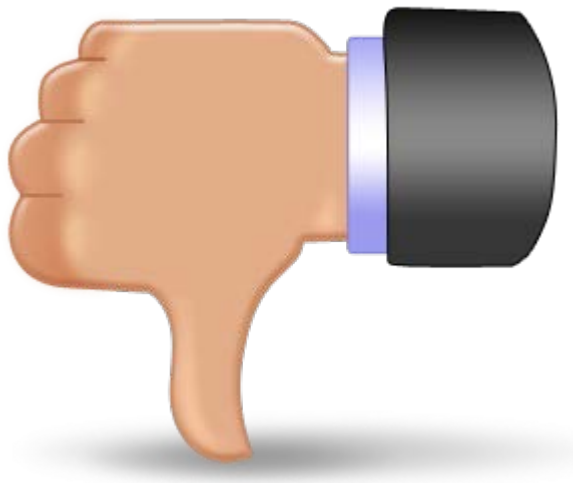

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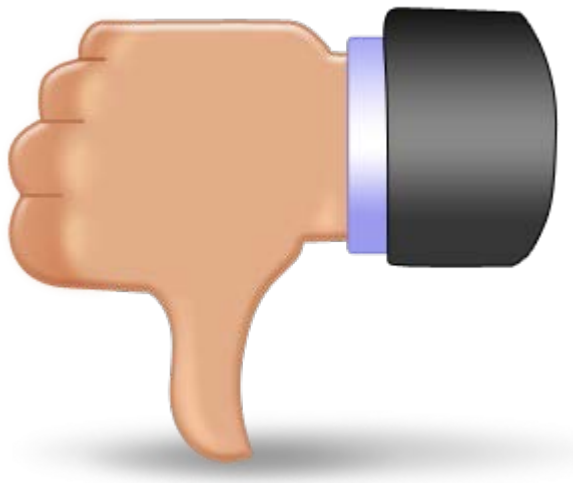

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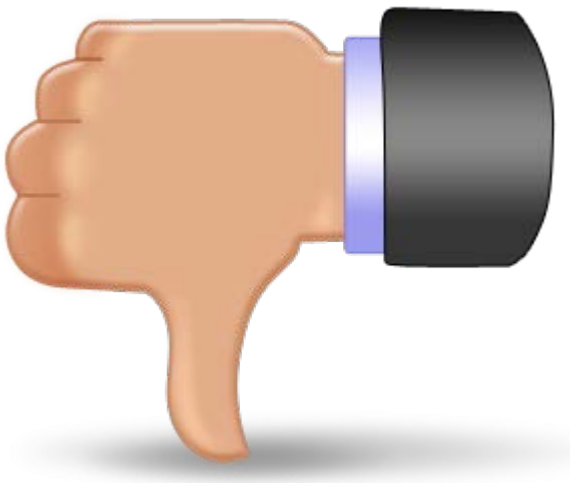

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- Once in testing, difficult to go back

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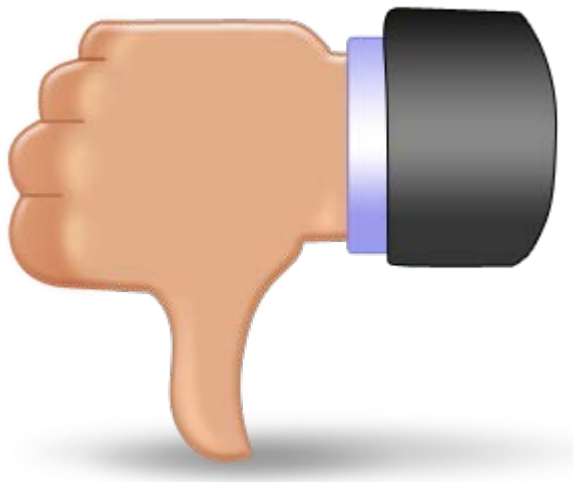

- No working software is produced until late in the day

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- Changes in requirements are disruptive
- Software delivered late in the process

Is There a Better Way?