Agile Formal Methods

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Agile Methods

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- Feature Driven Development (1999)
- And, inevitably: Agile Unified Process (2001)

Agile Methods: Principles

Partial List of Agile Method Principles

- Rapid, continuous delivery of useful and working software
- Working software is the principal measure of progress
- Even late changes in requirements are welcome
- Regular adaptation to changing circumstances
- Close, daily, cooperation between business people and developers
- Continuous attention to technical excellence and good design
- Simplicity

Formal vs. Agile Methods

Most people associate Formal Methods with heavy design methods!

Formal Methods with Agile Character

Recent Formal Methods are more agile than older ones

- Design-by-Contract (Eiffel, JML, Spec#)
- Extended Static Checking based on Contracts (ESC/Java, Boogie)
- Automatic Test Generation (see Christoph's talk)

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  Precise specification — Verification

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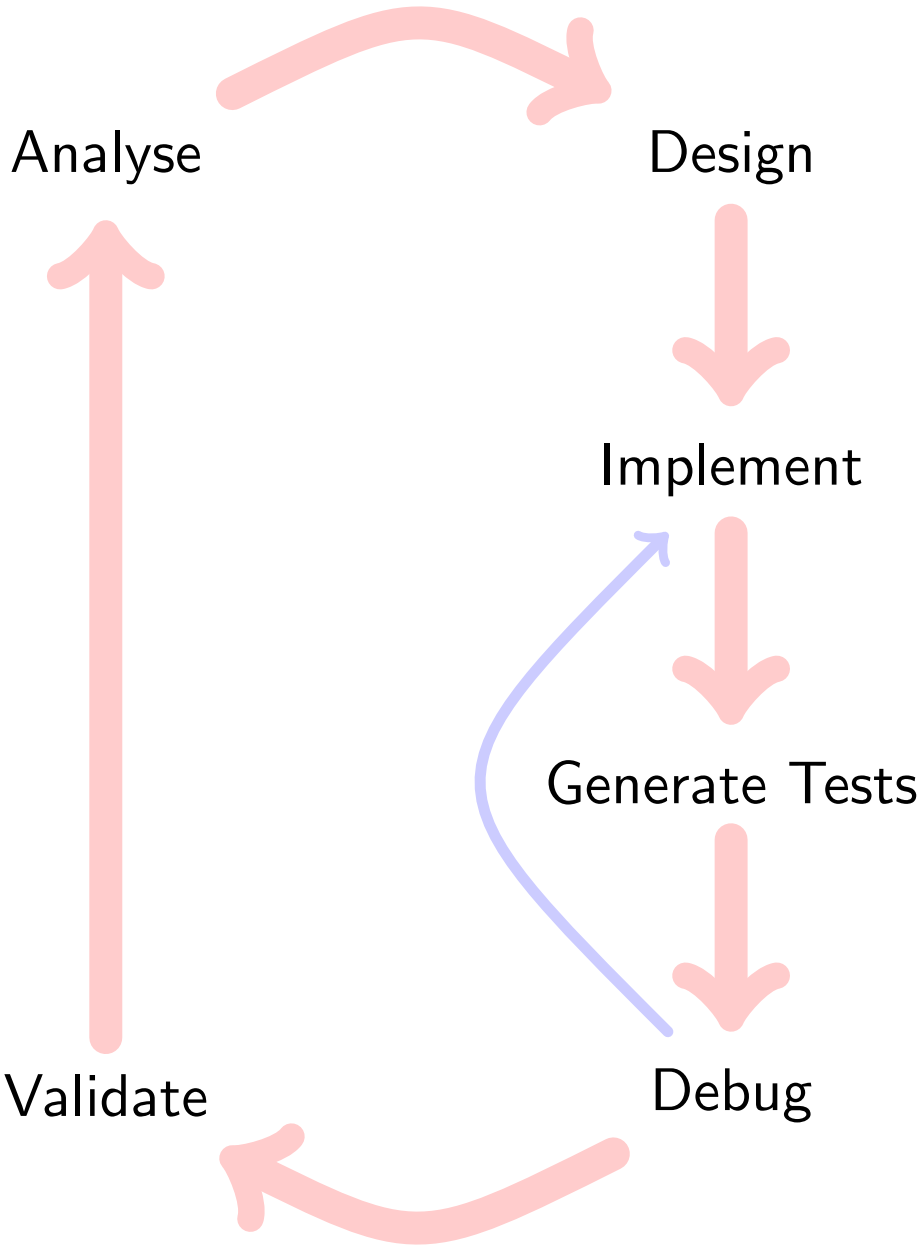
  Precise specification — Verification
- Simplicity
  Is a prerequisite for feasibility of verification!

Towards an Agile Formal Method



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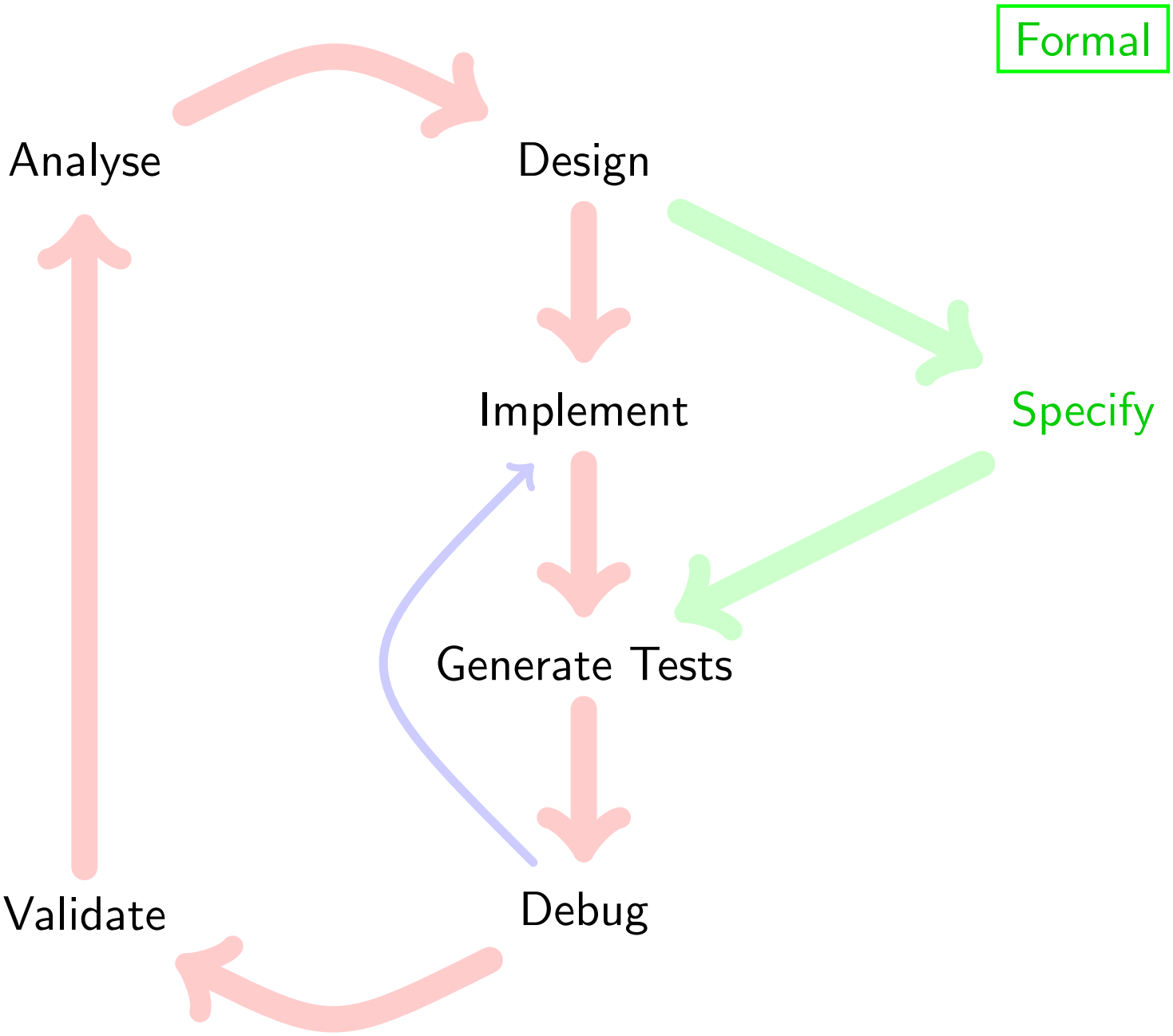

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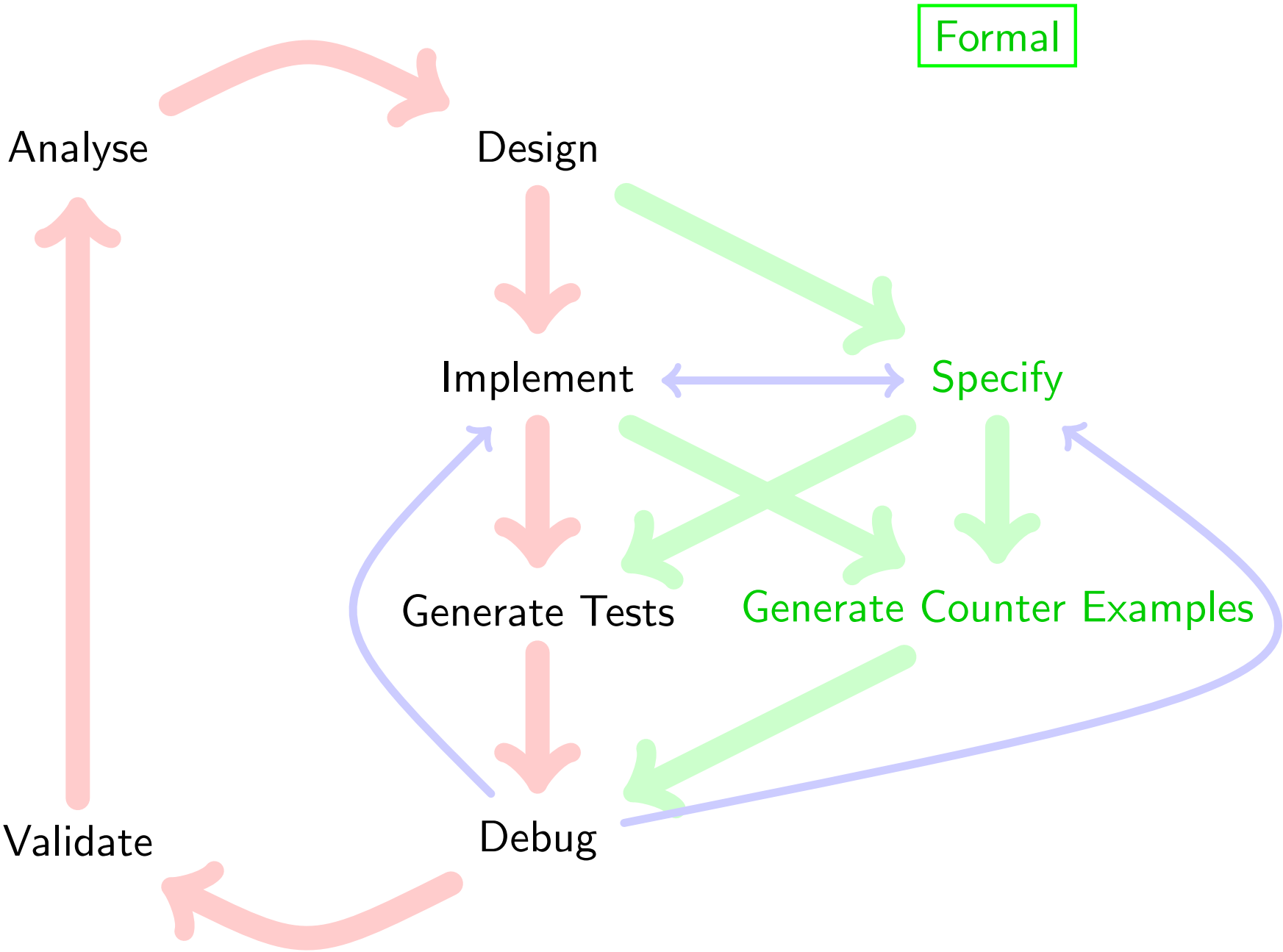

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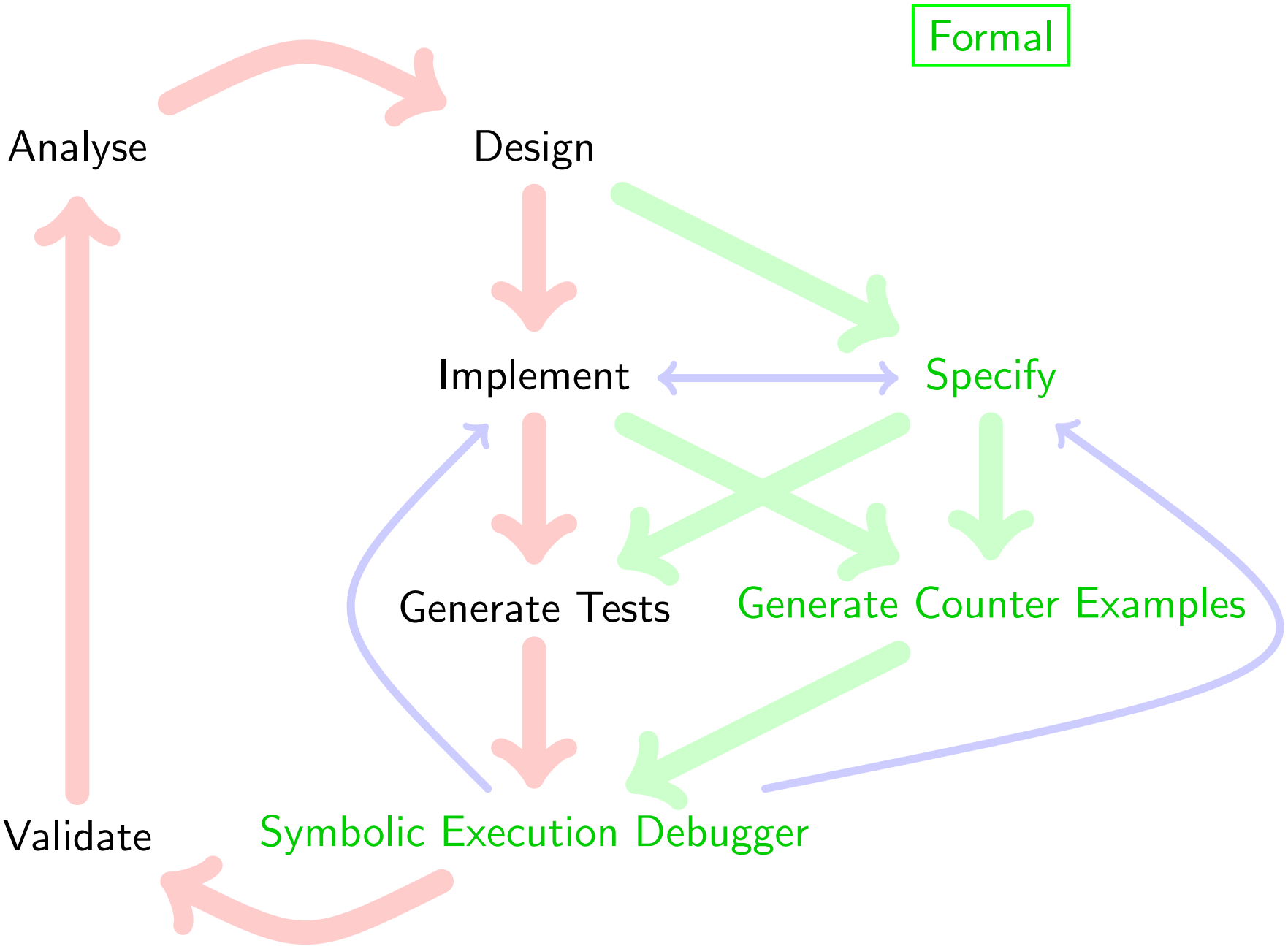

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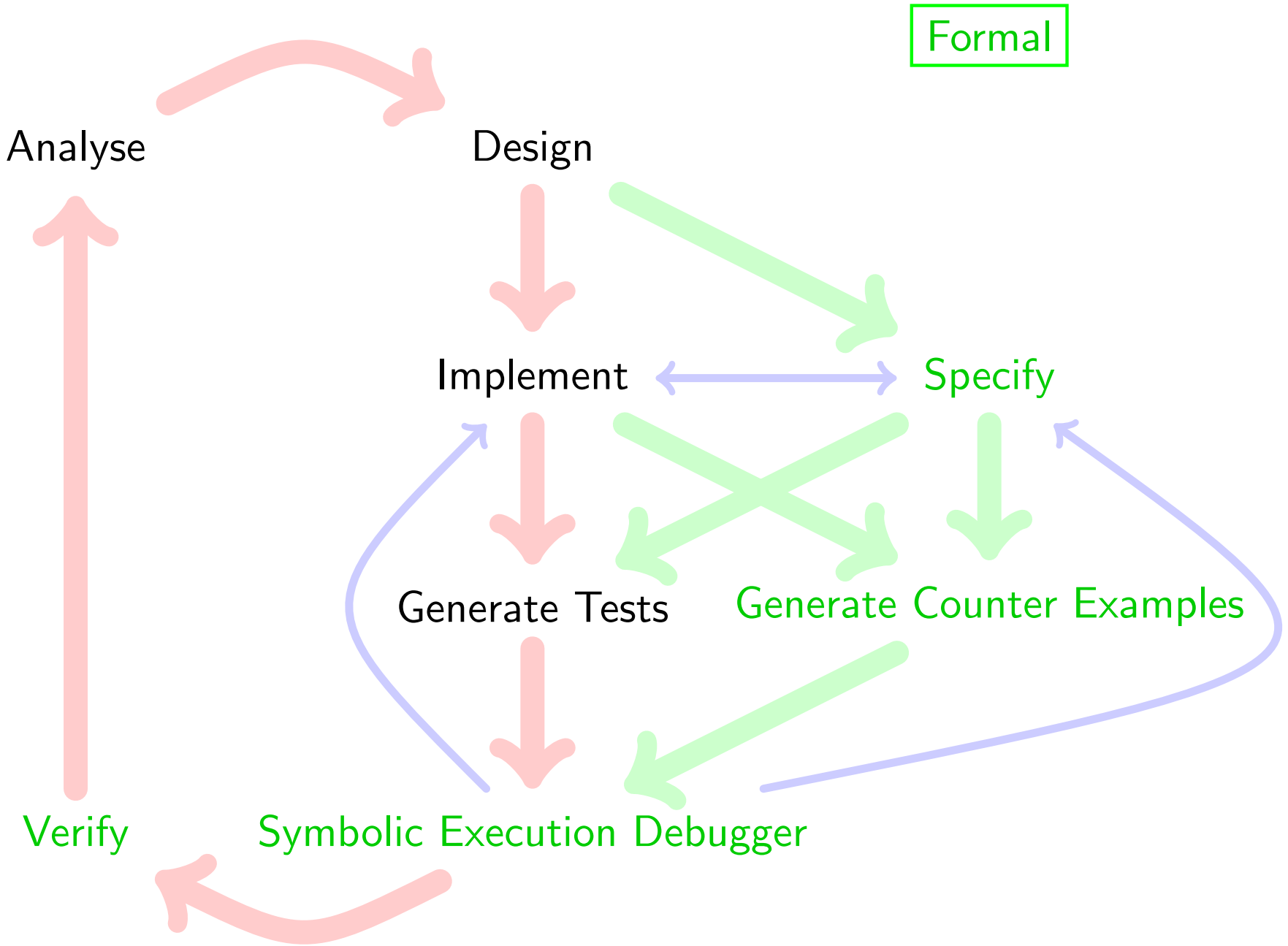

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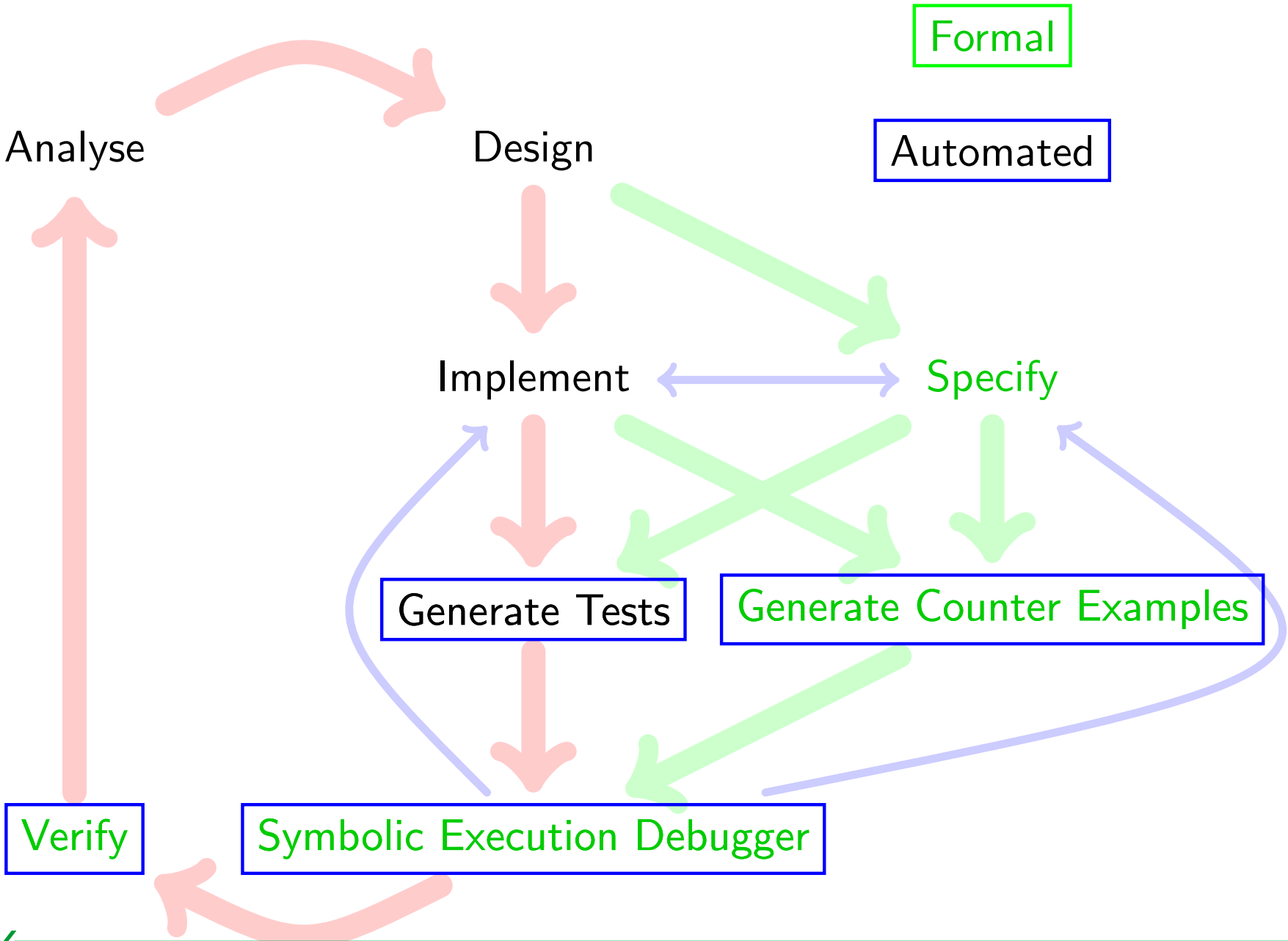

Agile Formal Methods: Prerequisites

- Tight integration into **one** tool, preferably Eclipse
  - source code/specification editor
  - test generation
  - counter example generation
  - symbolic execution debugging
  - verification
- High degree of automation
  Full automation for everything but verification
- Full coverage of target language

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KeY seems very suitable to achieve this!