Software Development Models

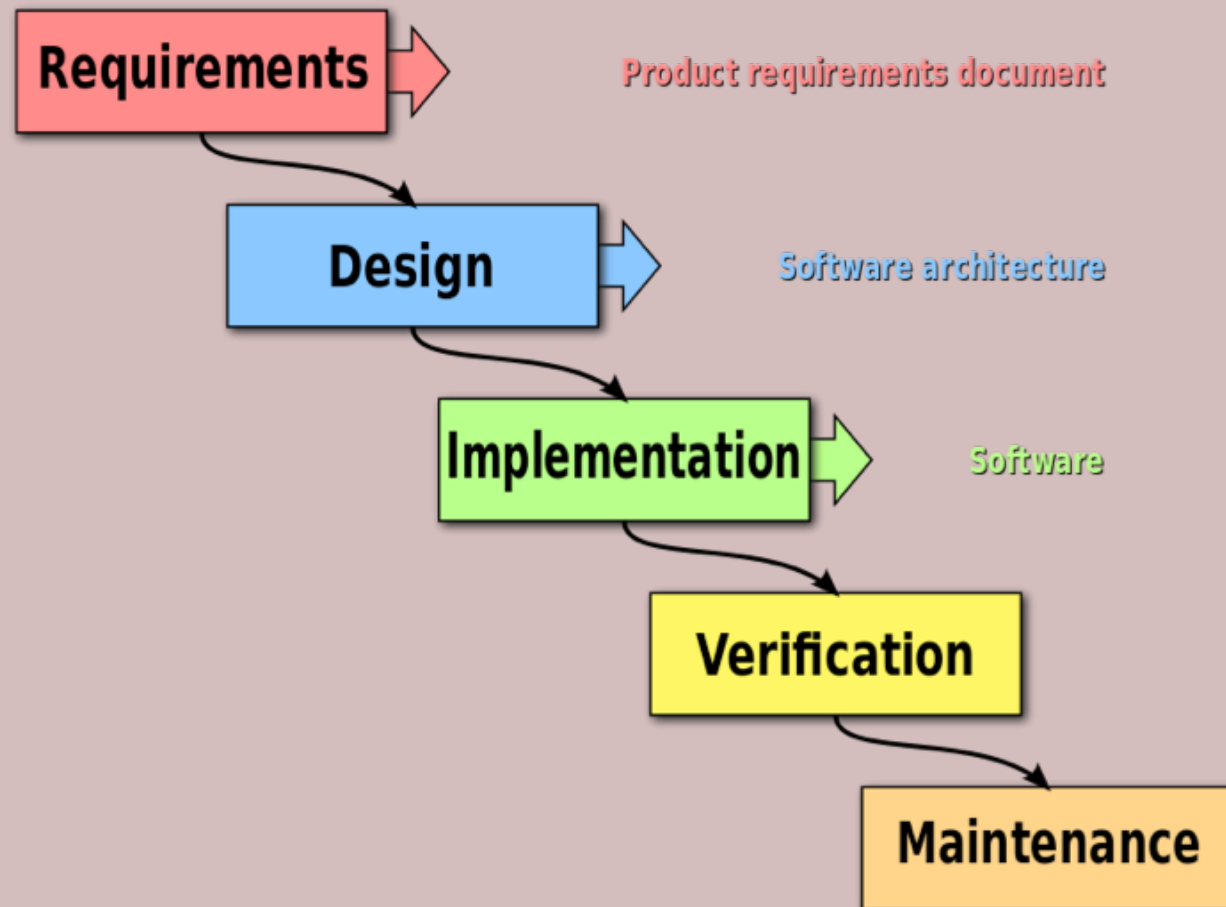## Security Architecture & Tool Sets

Software Development Models

- Many models of software development exist

- Models provide a common framework to use

- Can use detailed practices, procedures, and documentation
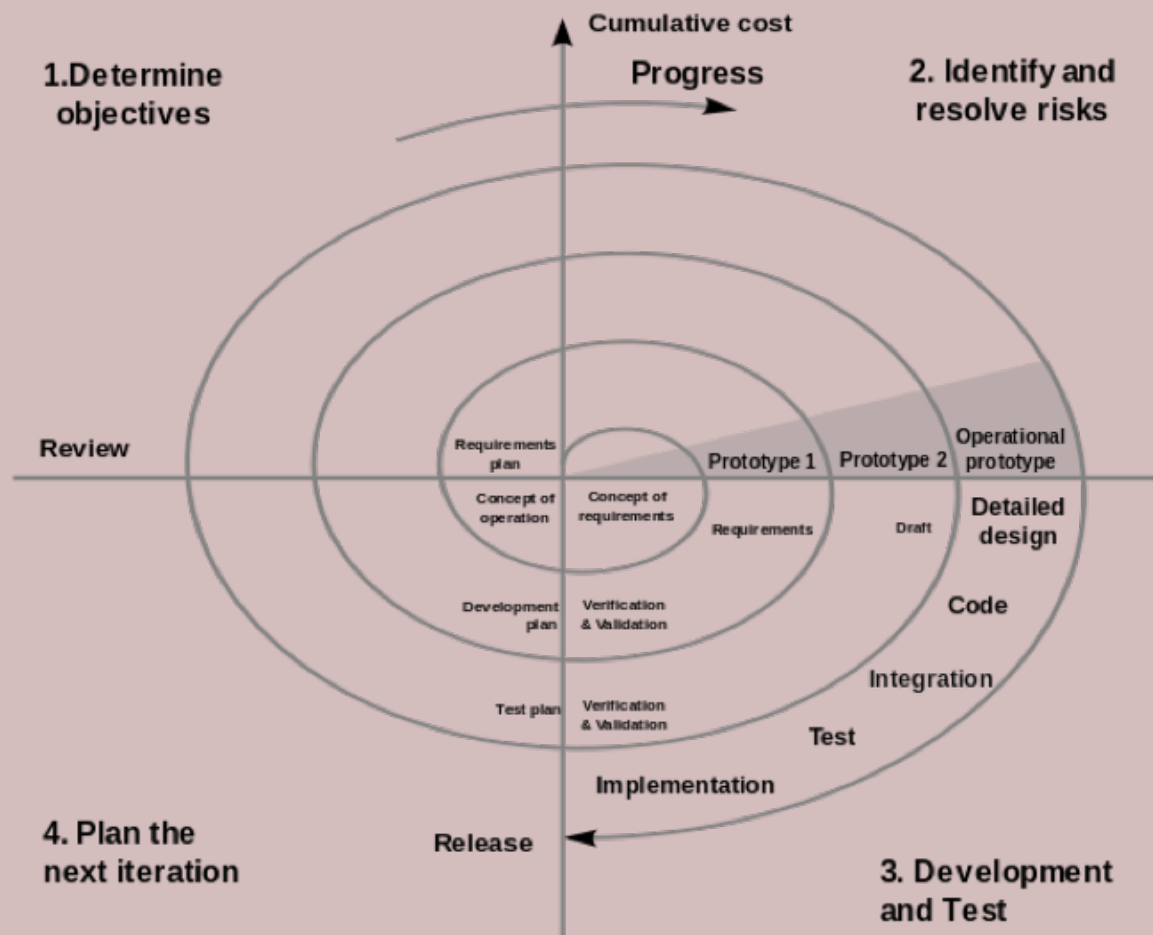
- Can also be less formal and haphazard

Waterfall Model

- Linear model with each phase following the previous phase
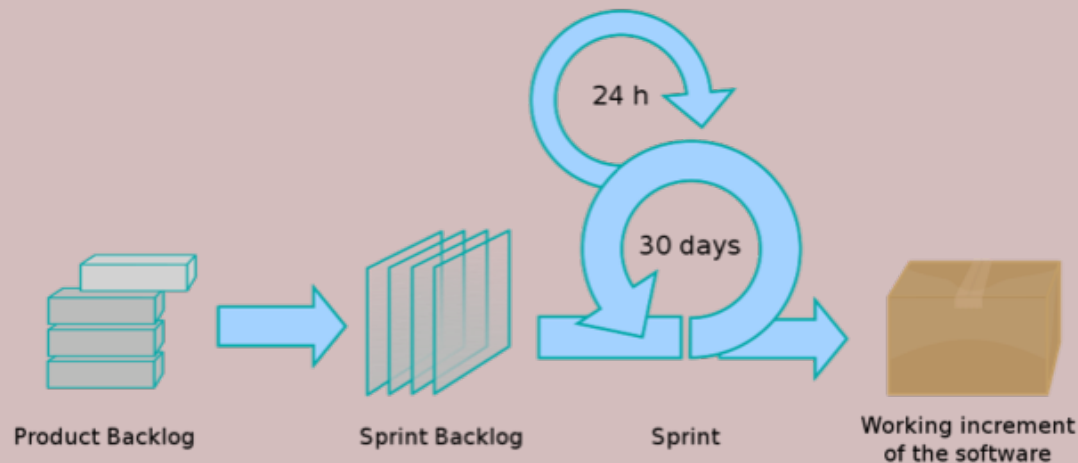
Spiral Model

- Modification of Waterfall, it adds iterative process to revisit phases over and over

Agile

- Iterative and incremental process

- Foundations of Agile:
  - Individuals and interactions are most important
  - Working software is better than the documentation
  - Customer collaboration over contract negotiation
  - Responding to changes fast is better than a plan

Product Backlog → Sprint Backlog → Sprint (24 h, 30 days) → Working increment of the software
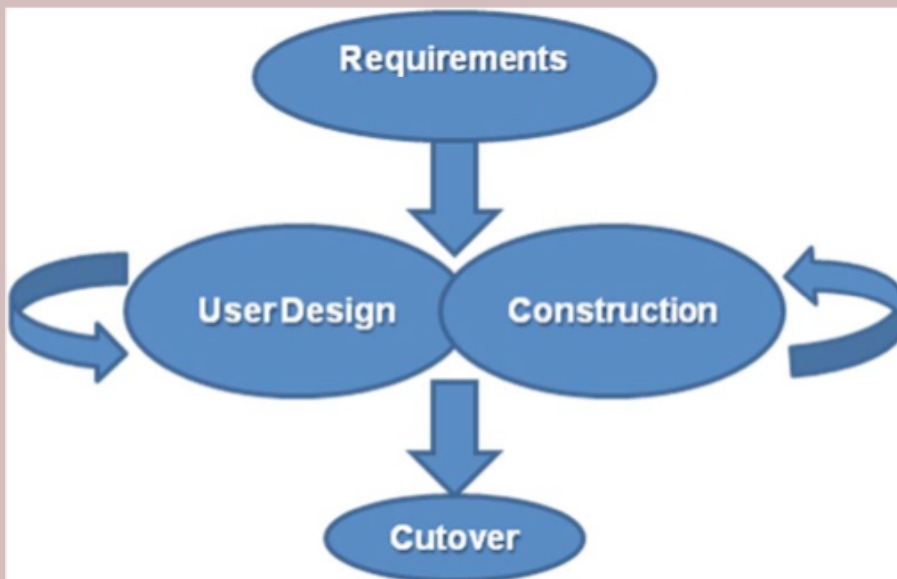
Terms Used in Agile

- Backlogs
  - List of features or tasks to complete

- Planning Poker
  - Estimation tool for planning in Agile

- Timeboxing
  - Agreed upon time to work on specific goal

- User stories
  - Describe high-level user requirements

- Velocity tracking
  - Adds up estimates for current sprint efforts and compares to what was actually complete

RAD
(Rapid Application Development)

- Iterative process relying on building prototypes

- Provides a highly responsive development environment for modularized work

- No planning phase… they just start coding

Terms Used in RAD

- Business Modeling
  - Focuses on understanding business processes
- Data Modeling
  - Gather and analyze datasets and the relationships
- Process Modeling
  - Define the processes and data flows
- Application Generation
  - Code & convert data and processes into prototype
- Testing and Turnover
  - Focus on interfaces between components and verifying functionality

Big Bang SDLC Model

- All coding is based on requirements and making resources available

- Doesn't scale well, works best for single coder

- No planning or process

V Model

- Extension of the waterfall which pairs testing and development phases together