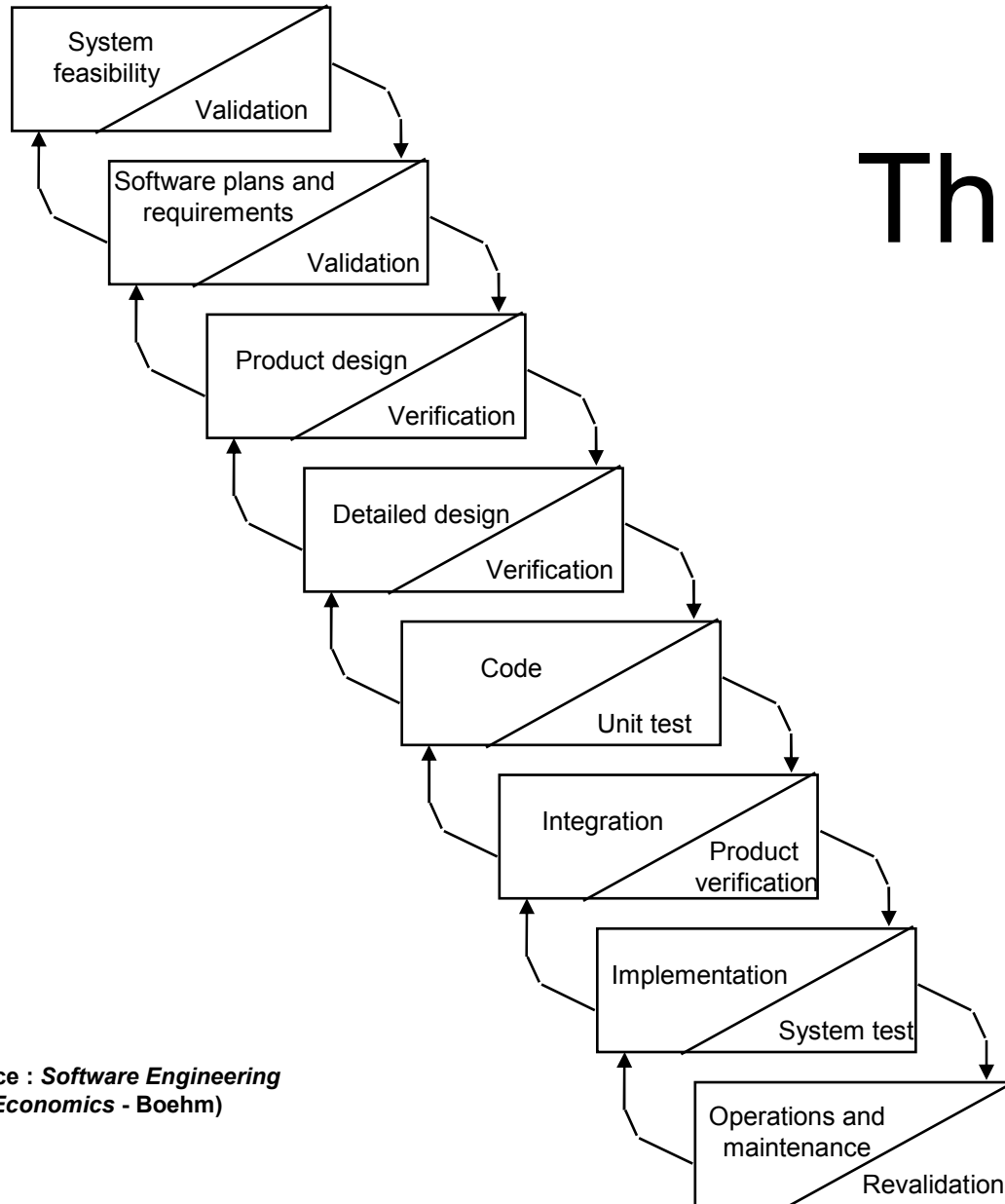


# The Waterfall Process



(Source : *Software Engineering Economics* - Boehm)

# The Waterfall Process

- Entrance/advancement criteria for each phase
- Document driven  $\Rightarrow$  heavyweight
- **Non-overlapping phases**
- Product visibility only at end of process  $\Rightarrow$  lack of user feedback
- Brittle in the face of requirements change

# Waterfall Activity Definitions - 1

- **Requirements Analysis:** determination, specification, review and update of software functional, performance, interface, and verification requirements
- **Product Design:** determination, specification, review and update of hardware-software architecture, program design, and data base design
- **Programming:** detailed design, code, unit test, and integration of individual computer program components. Includes programming personnel planning, tool acquisition, data base development, component level documentation, and intermediate level programming management

# Waterfall Activity Definitions - 2

- **Test Planning:** Specification, review, and update of product test and acceptance test plans. Acquisition of associated test drivers, test tools, and test data
- **Verification and Validation:** Performance of independent requirements validation, design V & V, product test, and acceptance test. Acquisition of requirements and design V & V tools
- **Project Office Functions:** Project level management functions. Includes project level planning and control, contract and subcontract management, and customer interface

# Waterfall Activity Definitions - 3

- **Configuration Management:** configuration management includes product identification, change control, status accounting, operation of program support library, development and monitoring of end item acceptance plan
- **Quality Assurance:** Quality assurance includes development and monitoring of project standards, and technical audits of software products and processes
- **Manuals:** Development and update of users' manuals, operators manuals, and maintenance manuals

# Time Spent in Various Phases of the Waterfall Process

Requirements analysis & design	30 - 40%
Implementation & unit test	15 - 20%
System (integration) test	30 - 50%
Operation & maintenance	yet another 100 - 300%