

# Software Engineering II

## Lecture 1

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# Software Engineering - IEEE

1. The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.

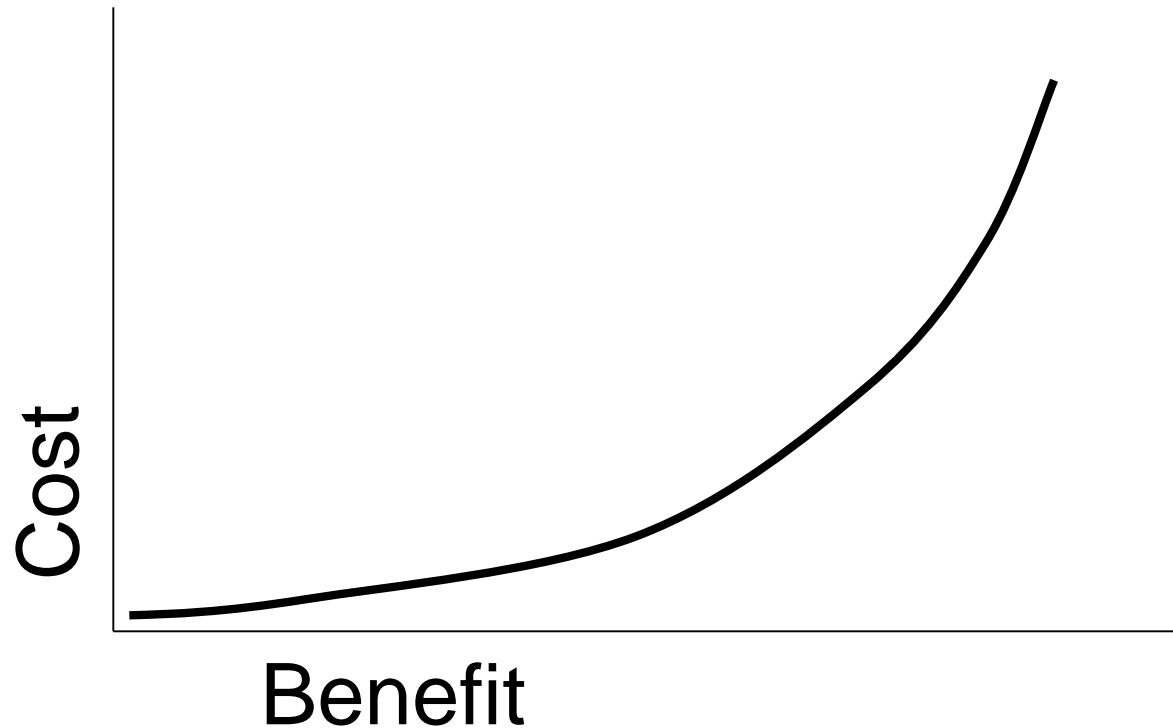
# Software Engineering

all aspects of software production' - Software engineering is not just concerned with the technical processes of software development but also with activities such as software project management and with the development of tools, methods and theories to support software production.

-Sommerville

A software engineer is challenged to produce high-quality software with finite amount

# Law of diminishing returns



Making the engineering decision!

# Software Engineering

Software Engineering is not just about producing software,  
but about producing software in a **COST-EFFECTIVE**

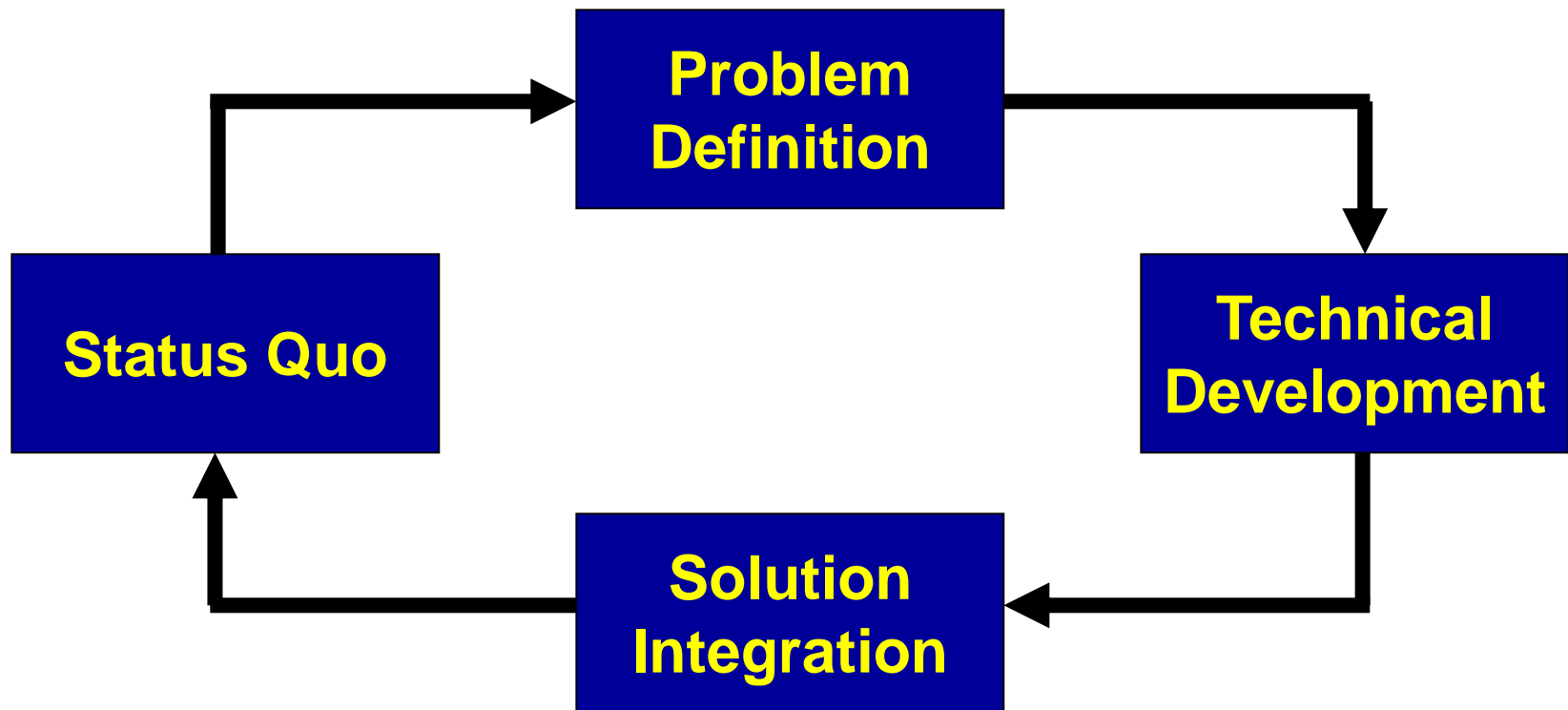
# The Balancing Act!

Potentially conflicting requirements

- Cost vs. Efficiency
- Cost vs. Reliability

**Challenge is to balance these requirements.**

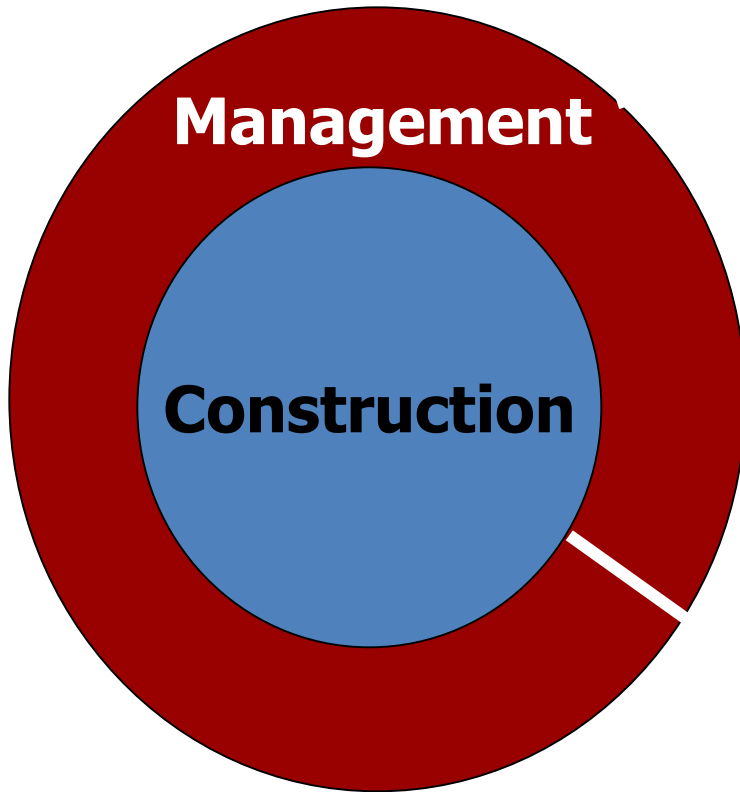
# Software Development Loop





# Well-Engineered Software

- Provides the required functionality



**project planning and  
management  
configuration management  
quality assurance  
installation and training  
etc.**

**Requirements  
Design  
Coding  
Testing  
Maintenance  
etc.**

# The Process

- A software process is a road map that helps you create a timely, high quality result.
- It is the way we produce software
- Provides stability and control
- Work Product
  - Programs, documents, and data produced as a consequence of the software engineering activities

# CMM Maturity Levels

**OPTIMIZED – Process Improvement**

**MANAGED – Process Measurement**

**DEFINED – Process Definition**

**REPEATABLE – Project Management**

**INITIAL – Ad hoc Process**

# Software Engineering Phases

1. Vision – focus on *why*
2. Definition – focus on *what*
2. Development – focus on *how*
3. Maintenance – focus on *change*

