Software Engineering

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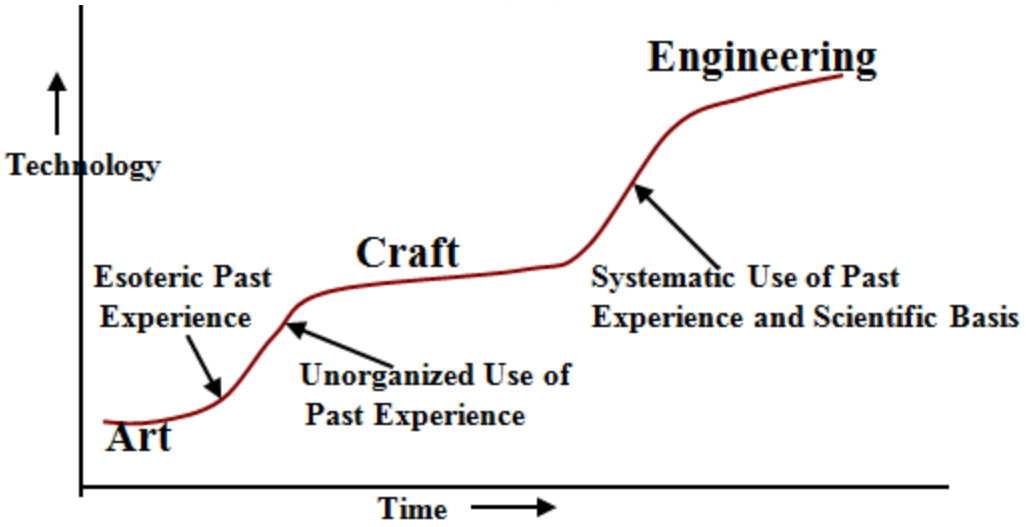
What is Software Engineering

- Software engineering is an engineering discipline that is concerned **with all aspects of software production**.
- **Engineering approach to develop software.**
  -A **disciplined and systematic approach** whose aim is the develop a **quality** software, software that is delivered on **time**, within **budget**, and that **satisfies its requirements.**
- **Systematic collection of past experience**:
  - techniques,
  - methodologies,
  - guidelines.

Software Engineering Definition

- **The seminal definition:**
  - *[Software engineering is] the establishment and use of sound **engineering principles** in order to obtain economically software that is **reliable and works efficiently** on real machines.*
- **The IEEE definition:**
  - *Software Engineering: (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. (2) The study of approaches as in (1).*

Technology Development Pattern



What is the difference between software engineering and computer science?

- **Computer science** focuses on theory and fundamentals;
- **Software Engineering** is concerned with the practicalities of developing and delivering useful software.

Why Study Software Engineering?

- **To acquire skills to develop large programs.**

  -Exponential growth in complexity and difficulty level with size.

  -The ad hoc approach breaks down when size of software increases.

- **Ability to solve complex programming problems:**

  -How to break large projects into smaller and manageable parts?

What is Software?

- **The product that software professionals build and then support over the long term.**
- Software encompasses:

  (1) **instructions** (computer programs) that when executed provide desired features, function, and performance;

  (2) **data structures** that enable the programs to adequately store and manipulate information and

  (3) **documentation** that describes the operation and use of the programs.
- Thus, **Software is a collection of computer programs, data structures and associated documentation.**
- Software products may be developed for a particular customer or may be developed for a general market.

Programs versus Software Products

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Thank You!