Chapter 1: The Product

BOOK REFERRED: ROGER PRESSMAN 5TH EDITION CHAPTER 1

Topics Covered

What is software?

Hardware vs. Software

Failure curve of hardware vs. software

Software characteristics

Software Myths

Some Questions?

What is a software?

Who does it?

Why is it important?

What are the steps?

What is the work product?

How do I ensure that I’ve done it right?

Some questions?

What challenges are faced while making software?

Reasons of failure?

When software is called successful?

What is the solution?

- “Engineering” is the solution.
  - To design, develop (build, fabricate) an artifact that meets specifications efficiently, cost effectively and ensuring quality using scientific principles.

What is Software ?

Software can define as:

- Instruction, data structure and documents

Software products may be developed for a particular customer or may be developed for a general market.

- Software products may be
  - **Generic** - developed to be sold to a range of different customers e.g. PC software such as Excel or Word.
  - **Bespoke** (**custom**) - developed for a single customer according to their specification.

Hardware vs. Software

Hardware (Physical)

- Manufactured
- Wear out
- Built using components
- Relatively simple

Software (Logical)

- Developed/engineered
- Deteriorate
- Custom built
- Complex

Manufacturing vs. Development

Once a hardware product has been manufactured, it is difficult or impossible to modify. In contrast, software products are routinely modified and upgraded.

In hardware, hiring more people allows you to accomplish more work, but the same does not necessarily hold true in software engineering.

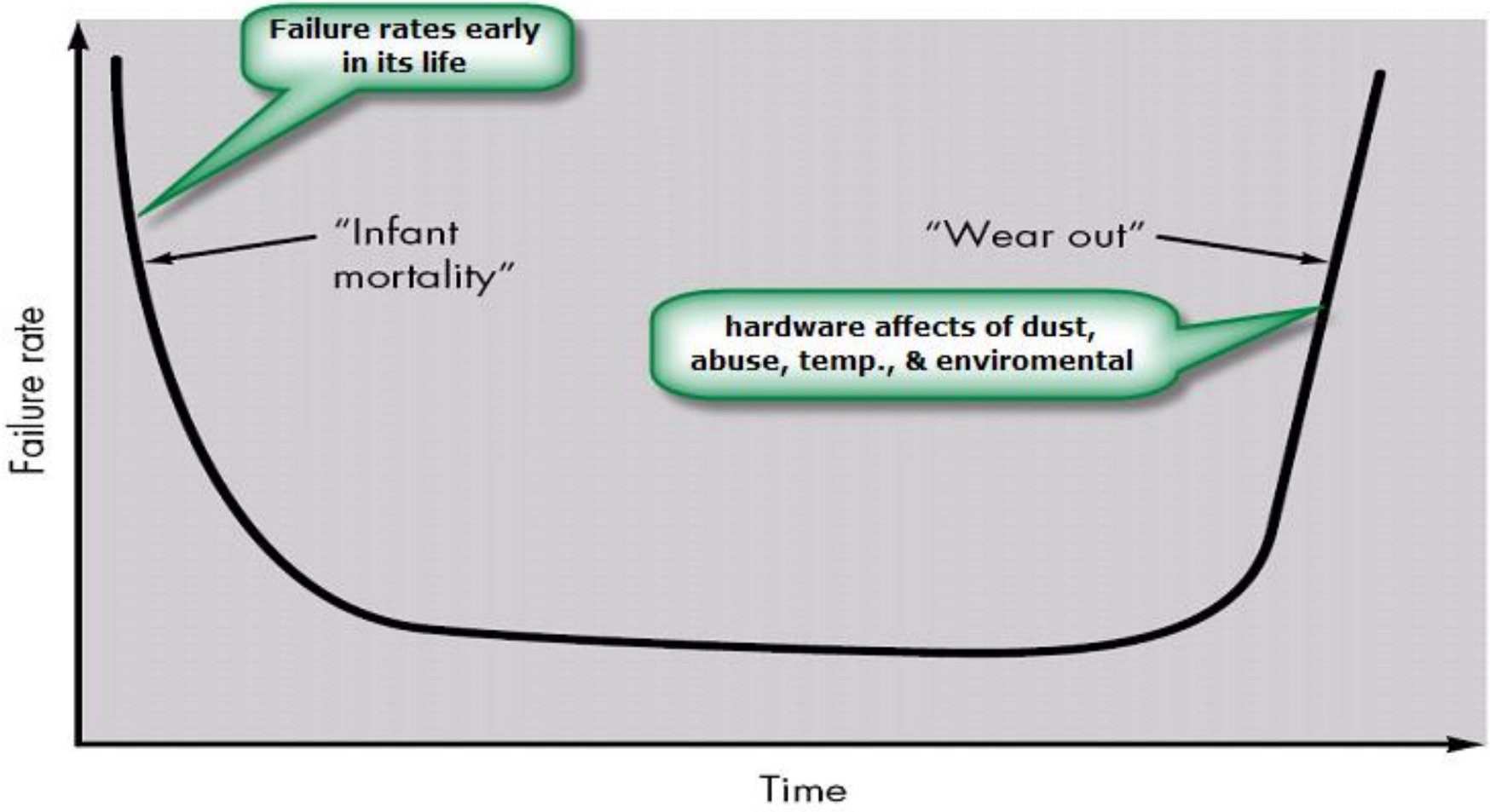
Unlike hardware, software costs are concentrated in design rather than production.

Component Based vs. Custom Built

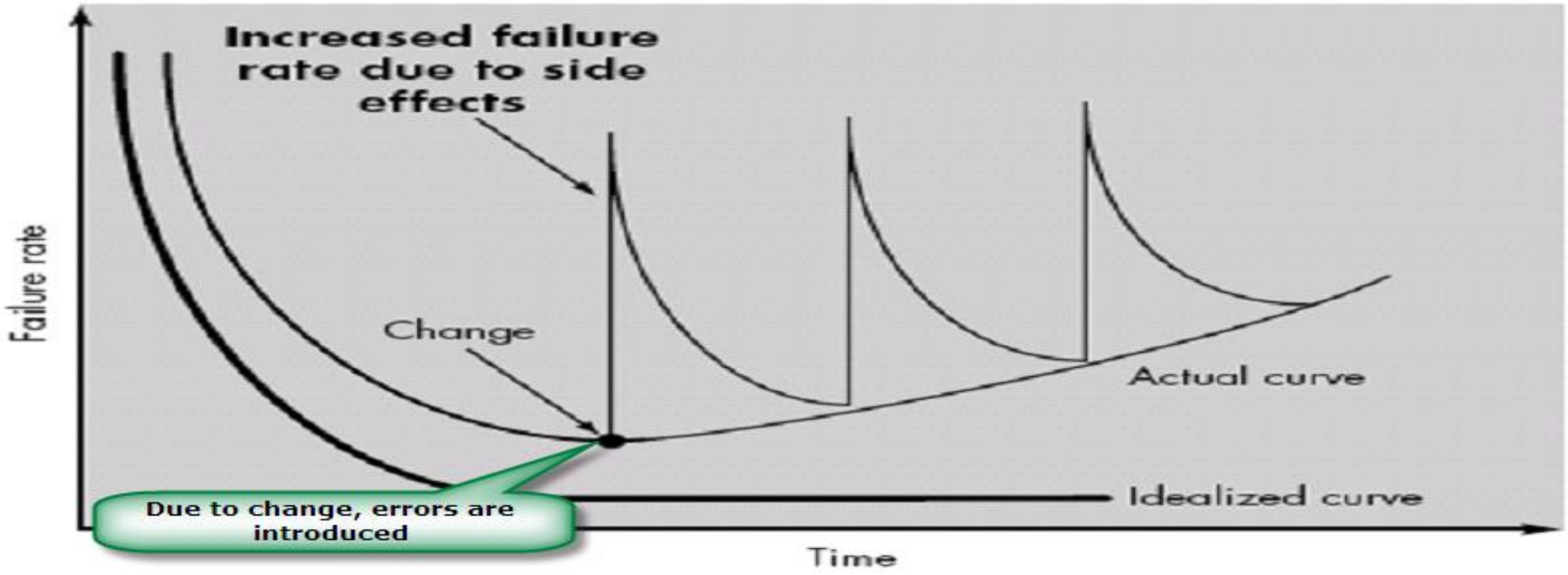
Hardware products typically employ many standardized design components.

Most software continues to be custom built and requires reusability.

Failure curve for Hardware



Failure curve for Software



When a hardware component wears out, it is replaced by a spare part. There are no software spare parts. Every software failure indicates an error in design or in the process through which design was translated into machine executable code. Therefore, software maintenance involves considerably more complexity.

Software characteristics

Software is developed or engineered; it is not manufactured.

Software does not “wear out”, but it does deteriorate.

Software continues to be custom built, as industry is moving toward component based construction.

Software Applications

System software

Application/Real Time software

Engineering/Scientific software

Embedded software

Personal computer/Product Line software

Web based software

Artificial intelligence software

Software Myths

Management myths

Managers in most disciplines, are often under pressure to maintain budgets, keep schedules on time, and improve quality.

Myth1: We already have a book that's full of standards and procedures for building software, won't that provide my people with everything they need to know?

Myth2*:* If we get behind schedule, we can add more programmers and catch up?

Myth3*:* If I decide to outsource the software project to a third party, I can just relax and let that firm build it.

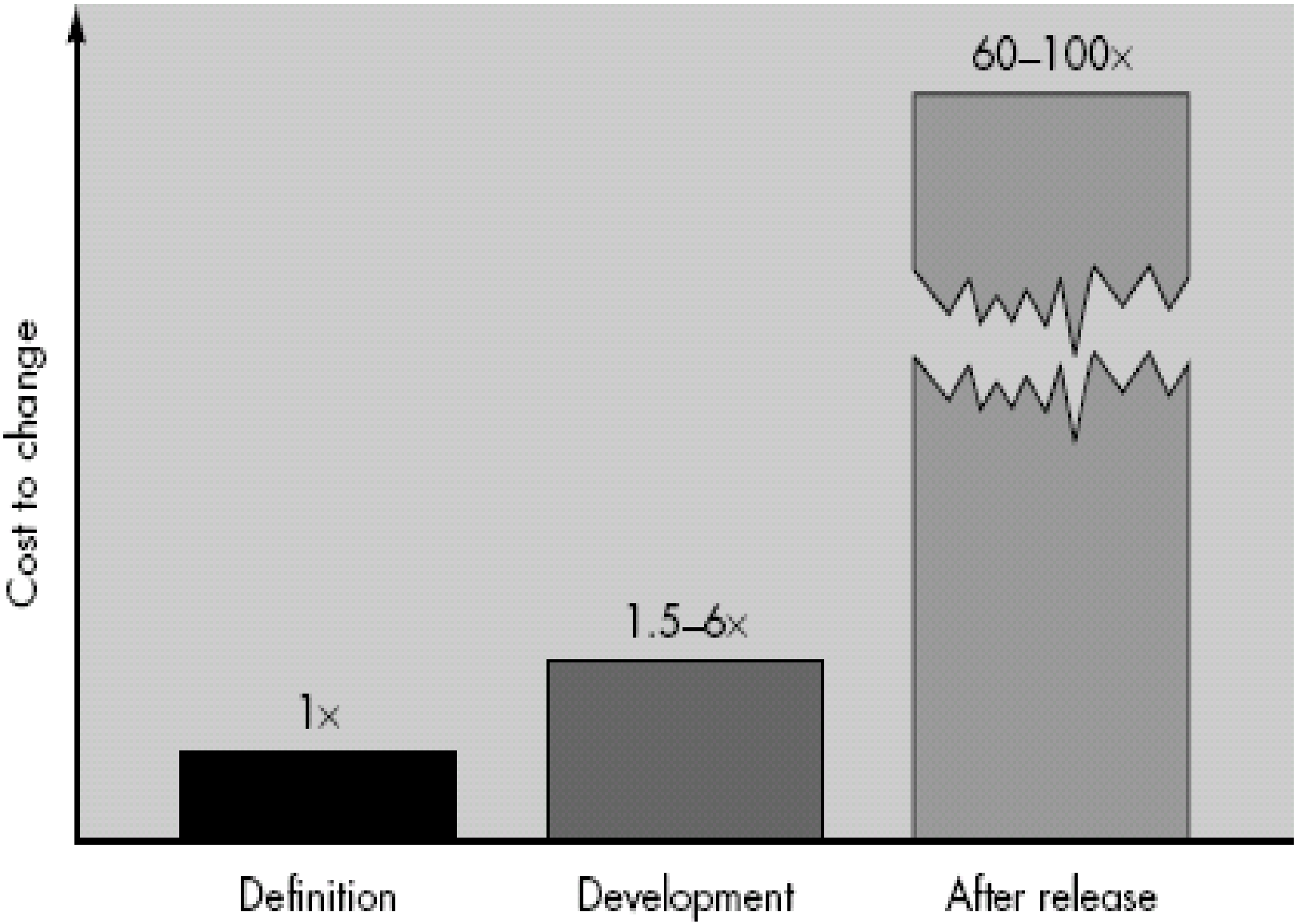
Software Myths

Customer myths

Customer may be a person from inside or outside the company that has requested software under contract.

Myth1: A general statement of objectives is sufficient to begin writing programs— we can fill in the details later.

Myth2*:* Project requirements continually change, but change can be easily accommodated because software is flexible.


Cost to change
60–100×
1.5–6×
1×
Definition
Development
After release

Software Myths

Practitioner's myths

Practitioners are the team of software engineers who are responsible for creating the software product.

Myth1: Once we write the program and get it to work, our job is done.

Myth2*:* Until I get the program "running", I have no way of assessing its quality.

Myth3*:* The only deliverable work product for a successful project is the working program.

Myth4*:* Software engineering will make us create voluminous and unnecessary documentation and will invariably slow us down.

THANK YOU!!!

ANY QUESTIONS??