

Chapter 1

The Product

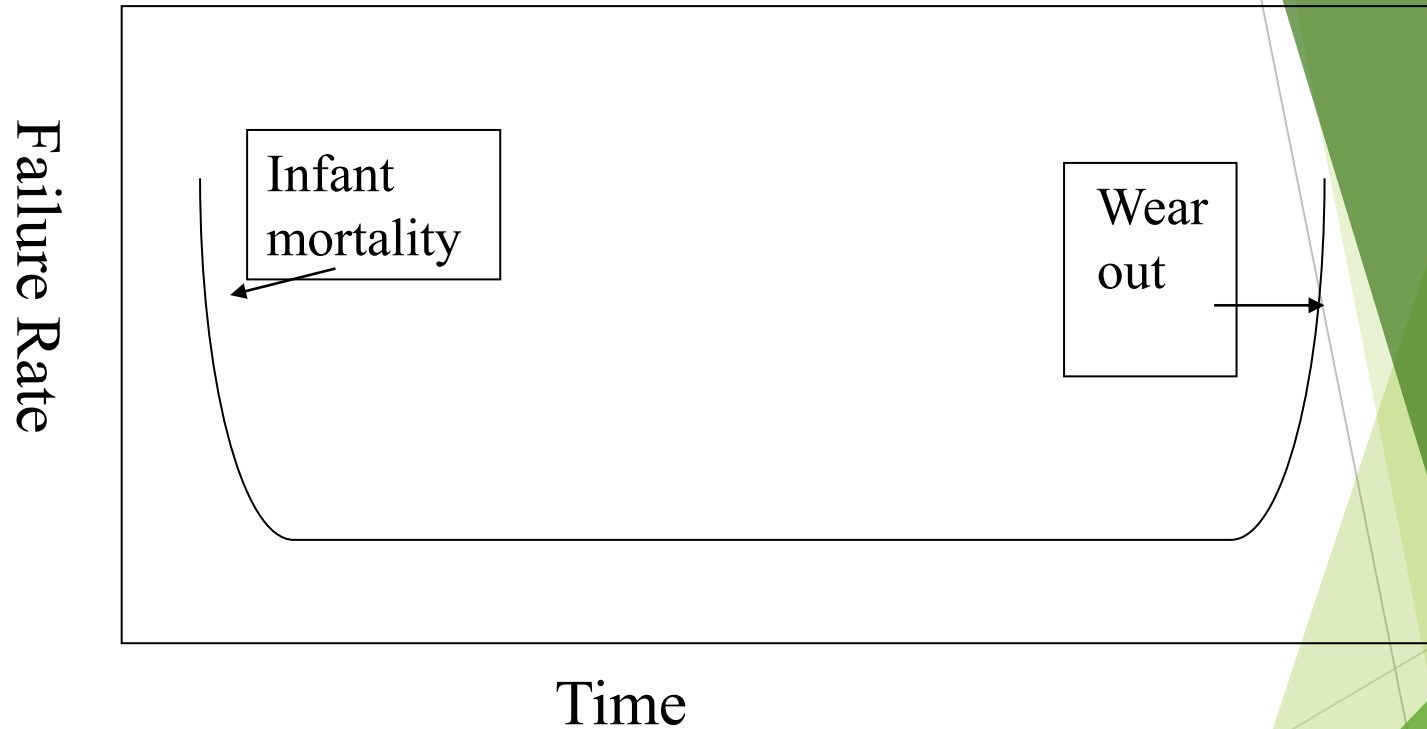
What is Software?

- ▶ 1) instructions (programs) that when executed provide desired function and performance
- ▶ 2) data structures that enable the programs to adequately manipulate information
- ▶ 3) documents that describe the operation and use of the programs
- ▶ A logical rather than physical system element

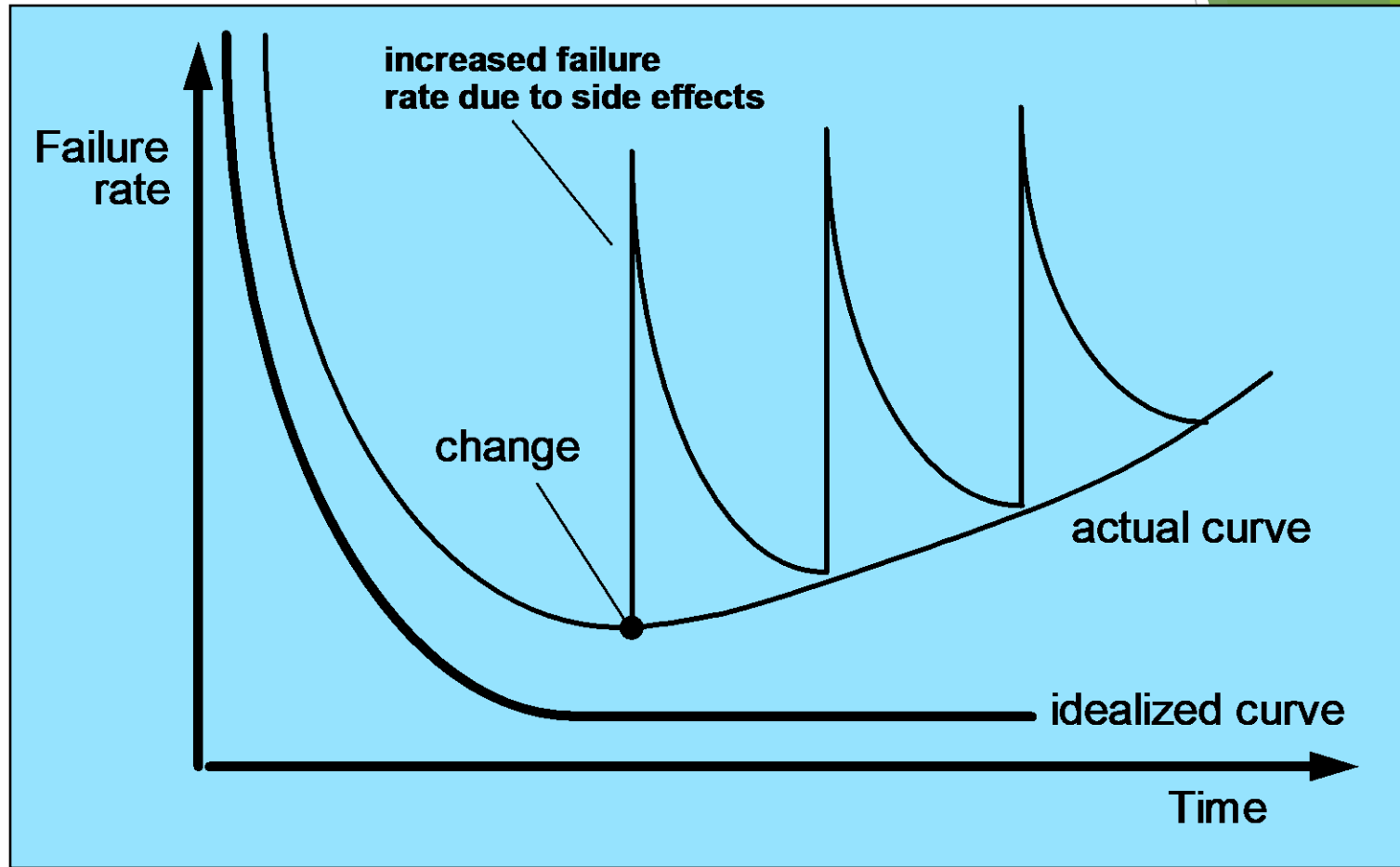
What is Software?

- ▶ software is engineered
- ▶ software doesn't wear out
- ▶ software is custom built
- ▶ software is complex

Failure (“Bathtub”) Curve for Hardware



Wear vs. Deterioration



Software Applications

- ▶ system software
- ▶ real-time software
- ▶ business software
- ▶ engineering/scientific software
- ▶ embedded software
- ▶ PC software
- ▶ WebApps (Web applications)
- ▶ AI software

Software Myths

▶ Management

- ▶ We have standards
- ▶ We have new computers
- ▶ We'll add more people to catch up
- ▶ I outsourced it, I'm done

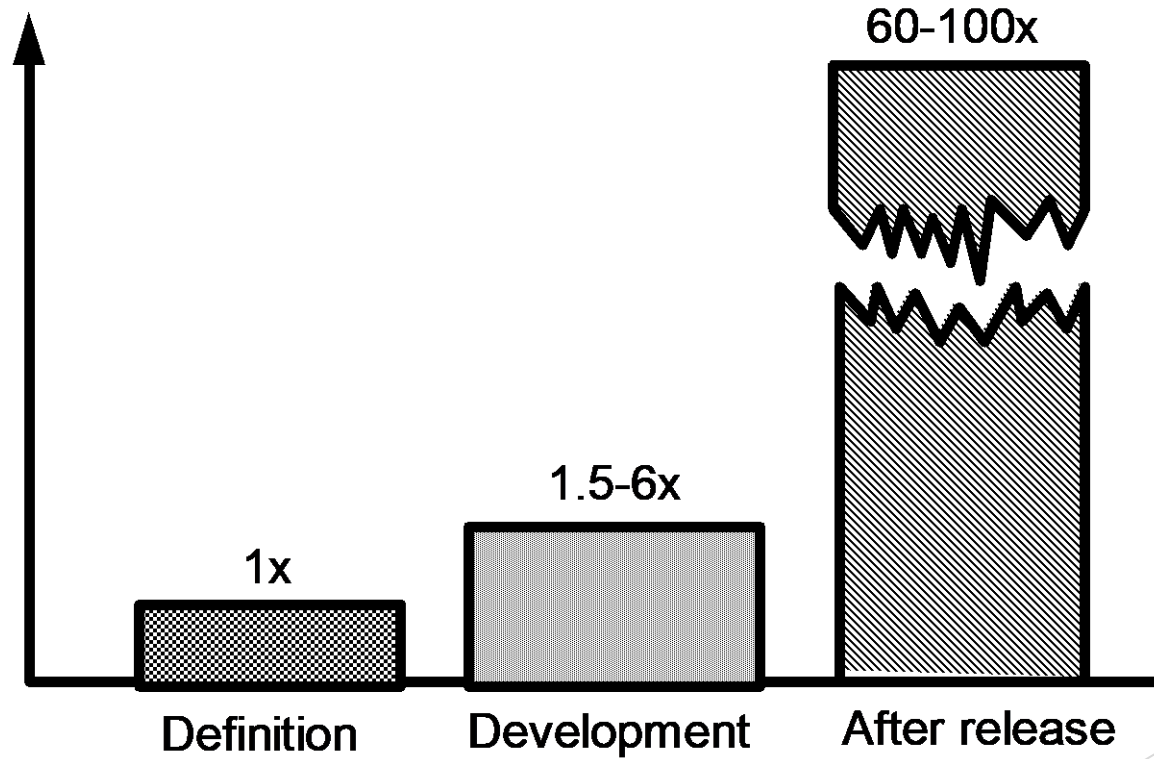
▶ Customer

- ▶ We have general objectives, let's start
- ▶ Change is easily accommodated

▶ Practitioner

- ▶ We'll write it and be done
- ▶ I can't assess quality until it is running
- ▶ I only need deliver code
- ▶ Software engineering is about meaningless documents

The Cost of Change



Software Poses Challenges

- How do we ensure the quality of the software that we produce?
- How do we meet growing demand and still maintain budget control?
- How do we upgrade an aging "software plant?"
- How do we avoid disastrous time delays?
- How do we successfully institute new software technologies?