

TOPICS

**The Nature and History of Software
Development**

Problems with Software Development

**Software Engineering Paradigms and
Technology**

PROBLEMS WITH SOFTWARE DEVELOPMENT

- **Problems**
- **Causes**

Problems

- 1. We have little data on the software development process.**
- 2. Customers are often dissatisfied with the software they get.**
- 3. Software quality is hard to define and measure.**
- 4. Existing software is often very difficult to maintain.**

Can these problems be overcome?

Causes

- **No spare parts to replace, so an error in the original software is also in every copy.**
- **Software quality is a human problem.**
- **Project managers often have no software development experience.**
- **Software developers often have little or no formal training in engineering the development of the software product.**
- **Resistance to change from programming as an art to programming as an engineering task can be significant.**

SOFTWARE MYTHS

- **Customer Myths**
- **Developer Myths**
- **Management Myths**

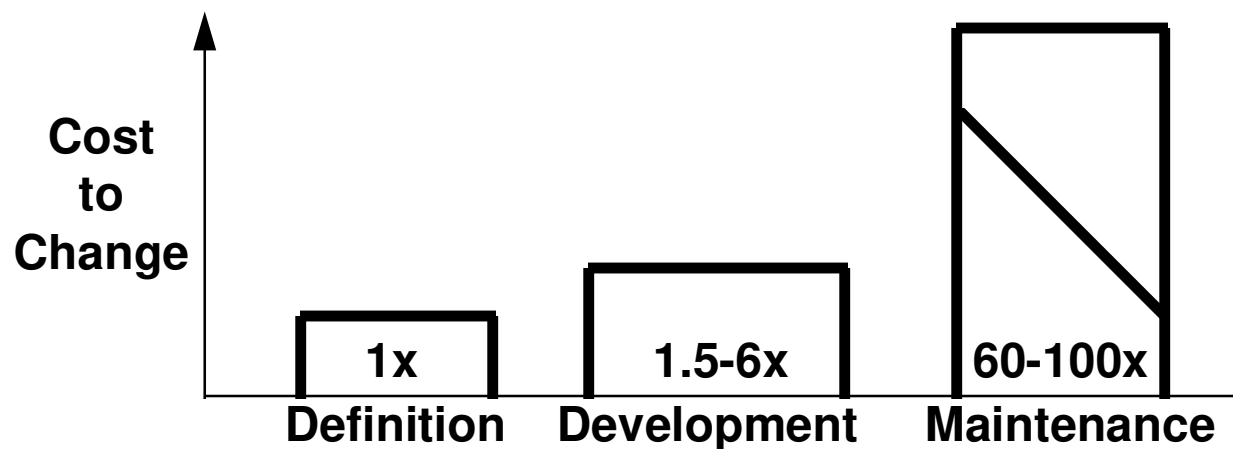
Customer Myths

Myth

- A general statement of objectives is enough to get going. Fill in the details later.
- Project requirements continually change, but change can be easily accommodated because software is flexible.

Reality

- Poor up-front definition of the requirements is *THE* major cause of poor and late software.
- Cost of the change to software in order to fix an error increases dramatically in later phases of the life of the software.



Developer Myths

Myth

- Once a program is written and works, the developer's job is done.
- Until a program is running, there is no way to assess its quality.
- The only deliverable for a successful project is a working program.

Reality

- 50%-70% of the effort expended on a program occurs after it is delivered to the customer.
- Software reviews can be more effective in finding errors than testing for certain classes of errors.
- A software configuration includes documentation, regeneration files, test input data, and test results data.

Management Myths

Myth

- Books of standards exist in-house so software will be developed satisfactorily.
- Computers and software tools that are available in-house are sufficient.
- We can always add more programmers if the project gets behind.

Reality

- Books may exist, but they are usually not up to date and not used.
- CASE tools are needed but are not usually obtained or used.
- "Adding people to a late software project makes it later." -- *Brooks*