

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

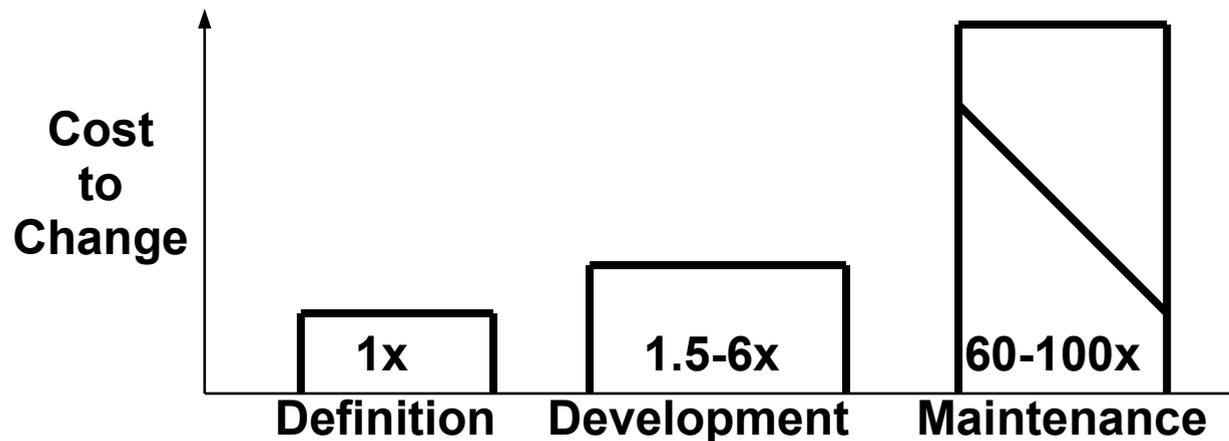
A general statement of objectives is enough to get going. Fill in the details later.

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*