Software Engineering

- Software engineering is concerned with the production of large scale software artifacts by teams of individuals

- *Software engineering is the application of science and mathematics by which the capabilities of computer equipment are made useful to man via computer programs, procedures, and associated documentation   -- B. Boehm*

- *Software engineering ... is the part of computer science that is too difficult for the computer scientists   -- F. L. Bauer*

What is a Process?

What is a Process?

- A series of activities
  with a means for determining progress
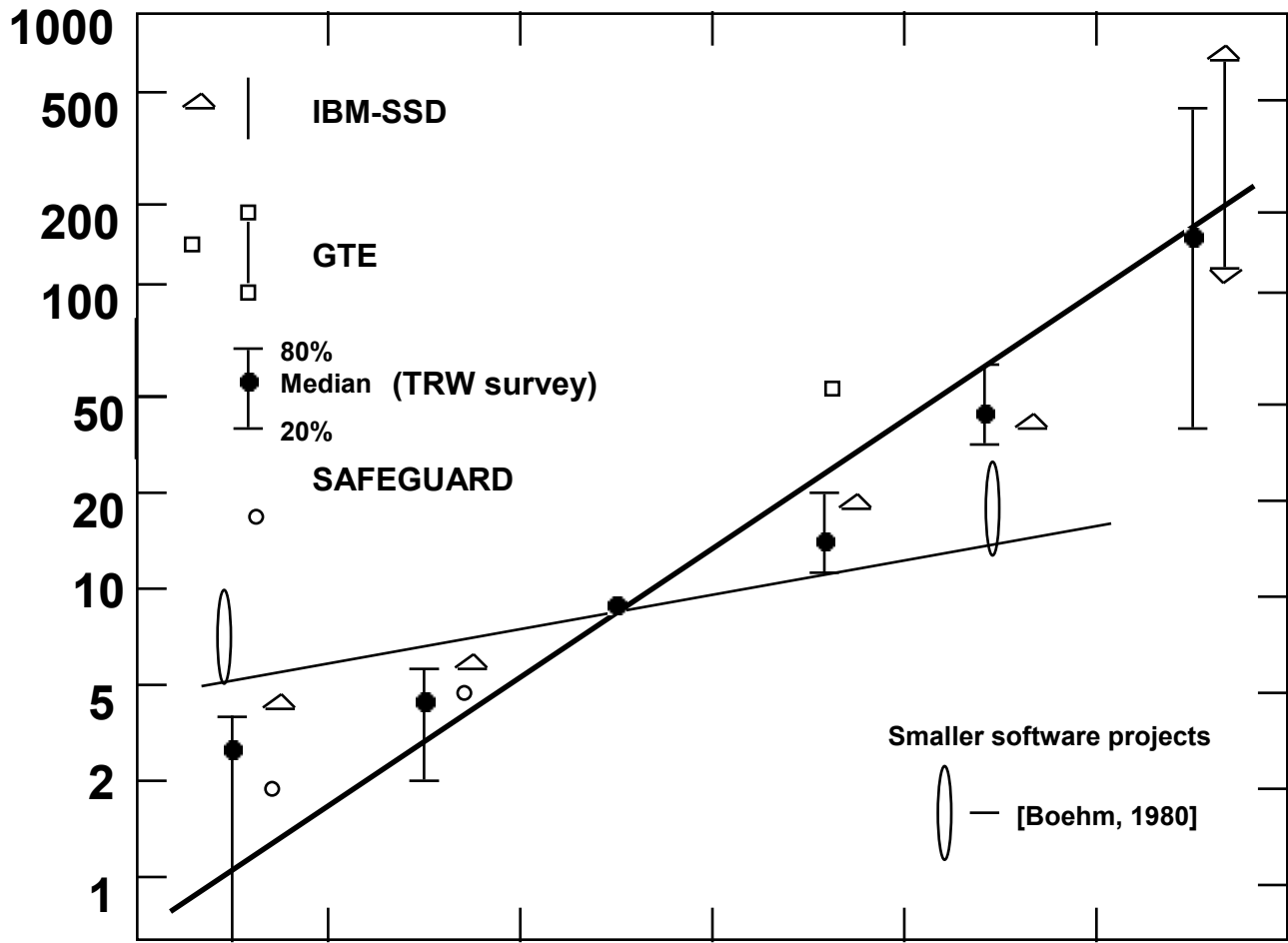
© 2007, Spencer Rugaber

Software Process

- *The related set of activities and processes that are involved in developing and evolving a software system* -- Summerville
- Process assessment
  - ISO 9000
  - Capability Maturity Model (CMM)
- Software process improvement
  - Software Process Improvement Networks (SPIN)
  - Software Engineering Process Groups (SEPGs)

Why Use a Process?

© 2007, Spencer Rugaber

Why Use a Process?

- Management control
- Reuse of tools, education and artifacts
- Repeatable quality and productivity

Increase in Cost-to-Fix or Change Software throughout the Life Cycle

(Source : Software Engineering Economics - Boehm)

© 2007, Spencer Rugaber

Real World Software Process

1. Order the T-shirts for the development team
2. Announce product availability
3. Write the code
4. Write the manual
5. Hire a product manager
6. Spec the software (writing the specs after the code helps to ensure that the software meets the specifications)
7. Ship
8. Test (the customers are a big help here)
9. Identify bugs as potential enhancements
10. Announce the upgrade program

Popular Processes

1. Waterfall
2. Personal Software Process (PSP) / Team Software Process (TSP)
3. Unified Software Process (USP) / Rational Unified Process (RUP)
4. Cleanroom Software Engineering
5. Extreme Programming (XP) / Agile Methods