

# Introduction to Inspection

## Motivation

- Inspection results at BNR [Russell, IEEE Software, 1991]
  - 2.5 million lines of code inspected
  - On average, one fault found per person-hour invested
  - 2-4 times as effective as testing
  - On average 4.5 person-days to fix a failure reported from the field
- Standard practice at many other companies: IBM, AT&T, Tandem.
- A career skill: at your next interview, mention that you have code inspection skills.

## The inspection roles

### *Moderator*

Controls the meetings and ensures conduct is focused and professional.

### *Reader*

Paraphrases the code or documentation.

### *Recorder*

Records any faults found.

### *Others*

Designer, implementor, tester.

## The inspection procedure

### Overview meeting

Overview of code to be inspected

### Individual preparation

Each team member studies the code alone

### Inspection meeting

- Reader paraphrases the code
- Other inspectors listen and speak up only if they see a fault
- As soon as a fault is identified and recorded, move on to the next block of code.

### Rework

Remove any faults found

### Follow-up

Moderator ensures that the rework has been done.

If more than 10% of the code is faulty, run the entire inspection procedure again.

## **Inspection focus**

- Just paraphrasing: what most readers do
  - Frequently there are no detailed, written specifications.
  - So reader paraphrases line-by-line, starting with line 1 and continuing to the end.
  - Other inspectors speak up when they hear something that seems wrong.
- Specialized roles for inspectors
  - To focus on commonly occurring problems, such as: coding conventions, common failures, standard techniques, and portability.
  - In one AT&T inspection team, there was an inspector focused solely on C macros.

## **CSCI 265 focus**

- We do have specifications and so can inspect for "correctness with respect to the specification".
- Correctness of exported functions with respect to the module interface specifications.
- Correctness of local functions with respect to header comments.