

# Return on Investment From SPI

Data shown is from CMU/SEI-94-TR-13. This is consistent with recent data in "Elements of Software Process Assessment and Improvement," IEEE CS Press, 1999.

# ROI

- **Measure what you care about**
  - Achieving business goals, fixing problems
  - Reducing costs
  - Reducing cycle time
  - Improving quality (#defects)
- **All investment is aimed at addressing long-, and short-term goals and problems**

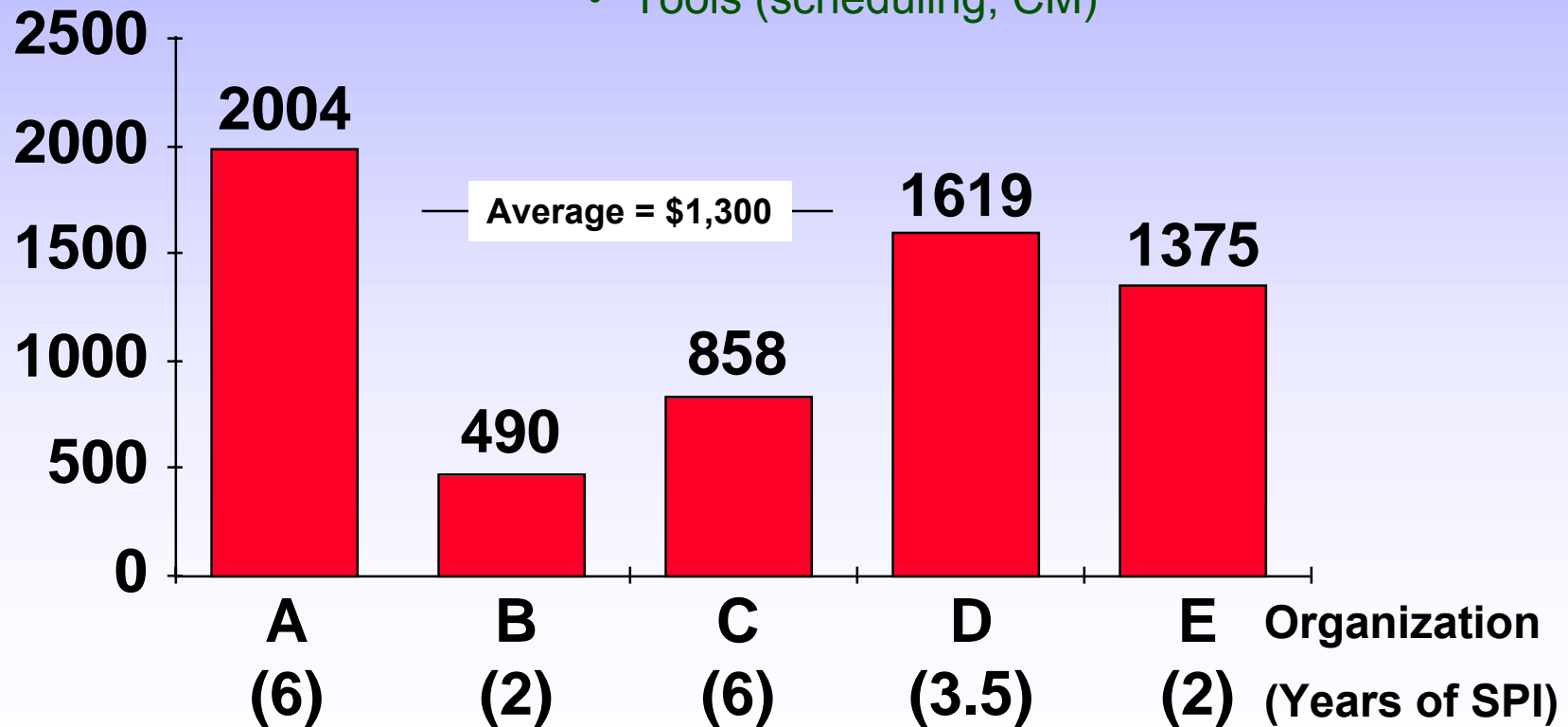
$$\text{ROI} = \text{Benefit of achieving goal (fixing problem)} - \text{Investment of time and \$ in achieving goal (fixing problem)}$$

# Typical Yearly Expenditure on SPI

## Process Group Experiences for Level 2:

- SPI time (4 hrs/week/engineer for 2-3 years)
- Process people (1-3% of engineers supported)
- Skills training (3-5 days/engineer/year)
- Tools (scheduling, CM)

Dollars per  
software engineer



# Typical Yearly Expenditure on SPI

**Choose your speed!**

**Average investment is 2-3 years (Level N  $\Rightarrow$  N+1)**

**1.5-year Level N goal: double your annual investment**

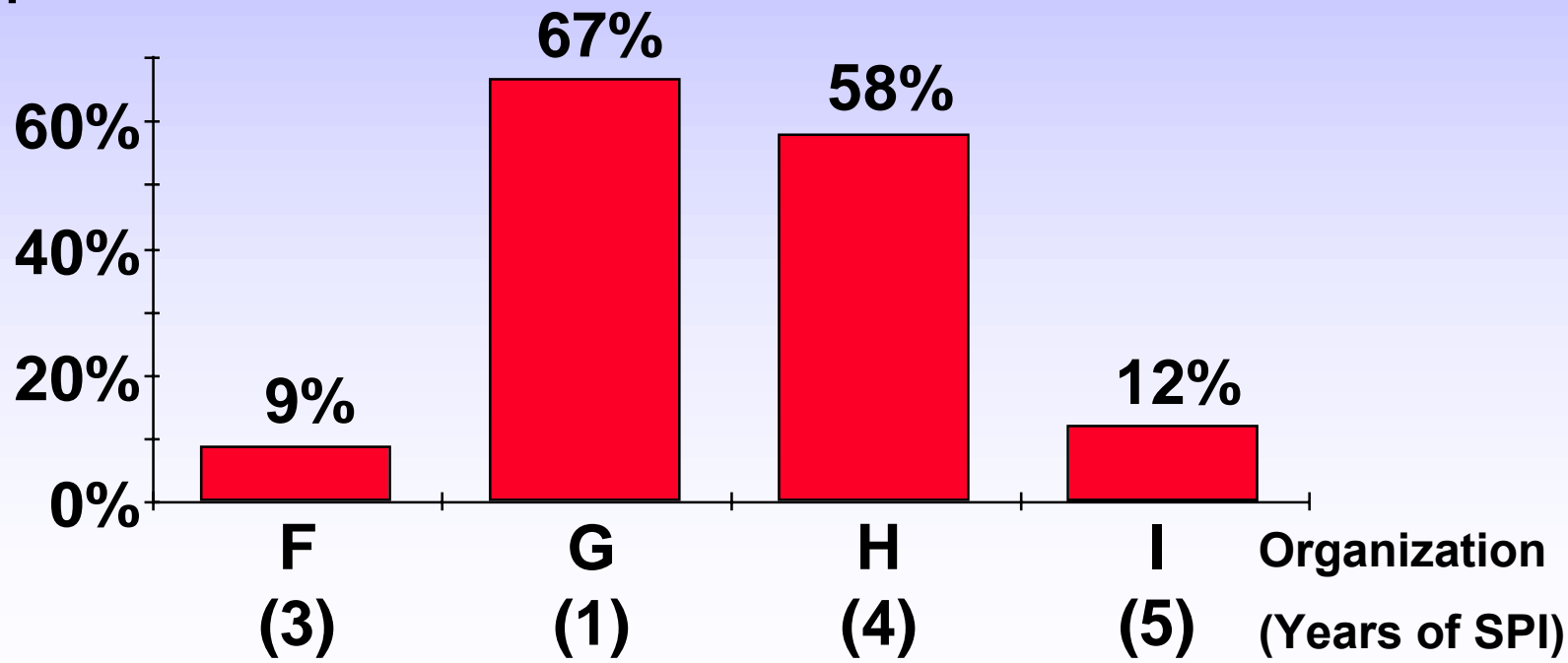
**5-year Level N goal: halve your annual investment**

# Returns - Productivity

## Process Group Experiences for Level 2

- Better planning
- Less rework
- Version controls
- Better testing/assurance

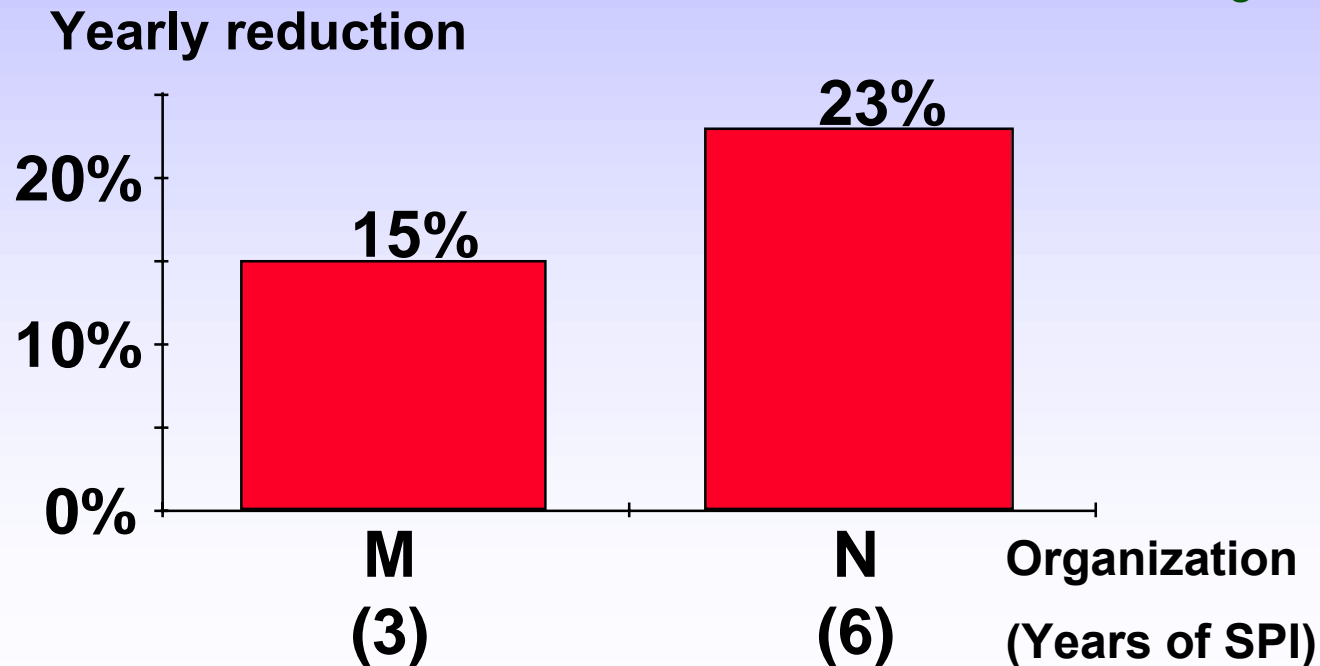
Gain per year in lines of code  
per unit of time



# Returns - Time to Market

## Process Group Experiences for Level 2

- Planning, risk management
- Requirements management / customer involvement
- Version controls
- Better testing / assurance

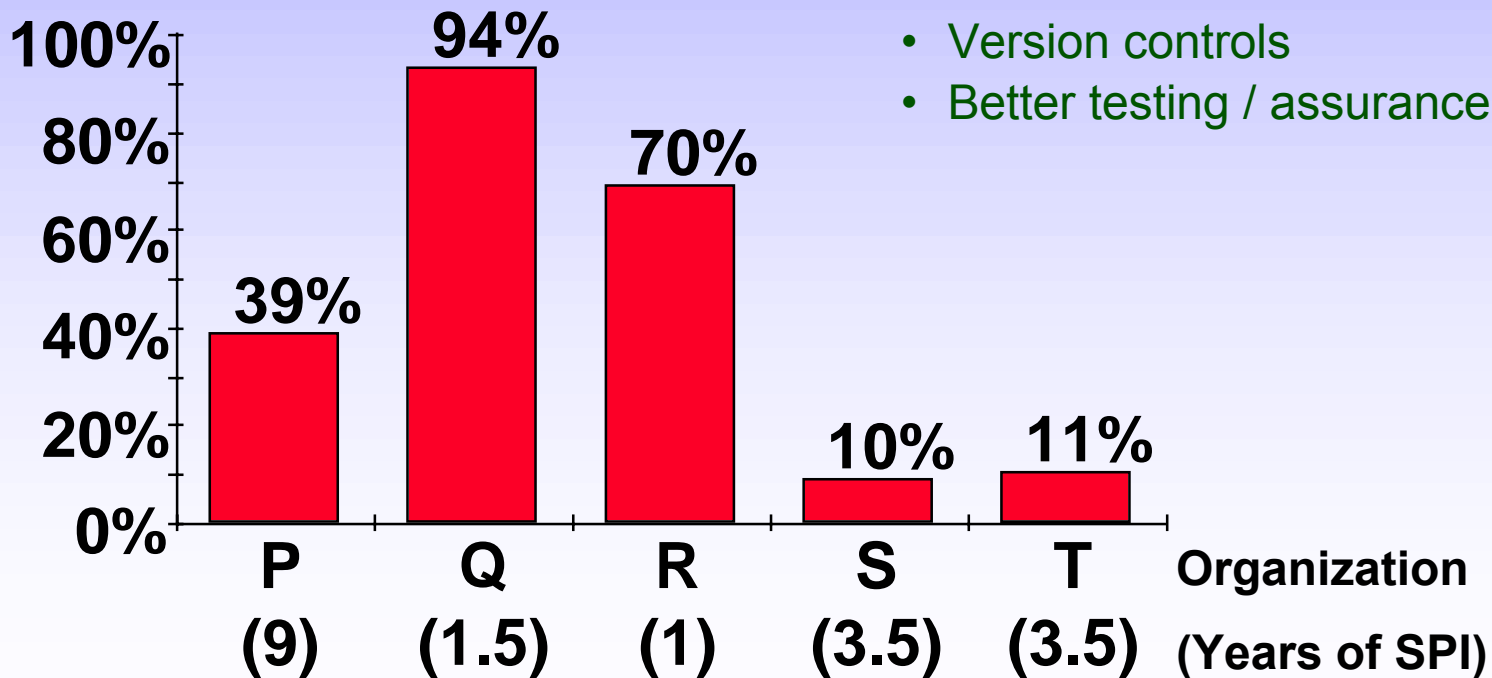


# Returns - Quality

## Process Group Experiences for Level 2

- Test planning
- Risk management
- Requirements management / customer involvement
- Version controls
- Better testing / assurance

Reduction in field error reports per year

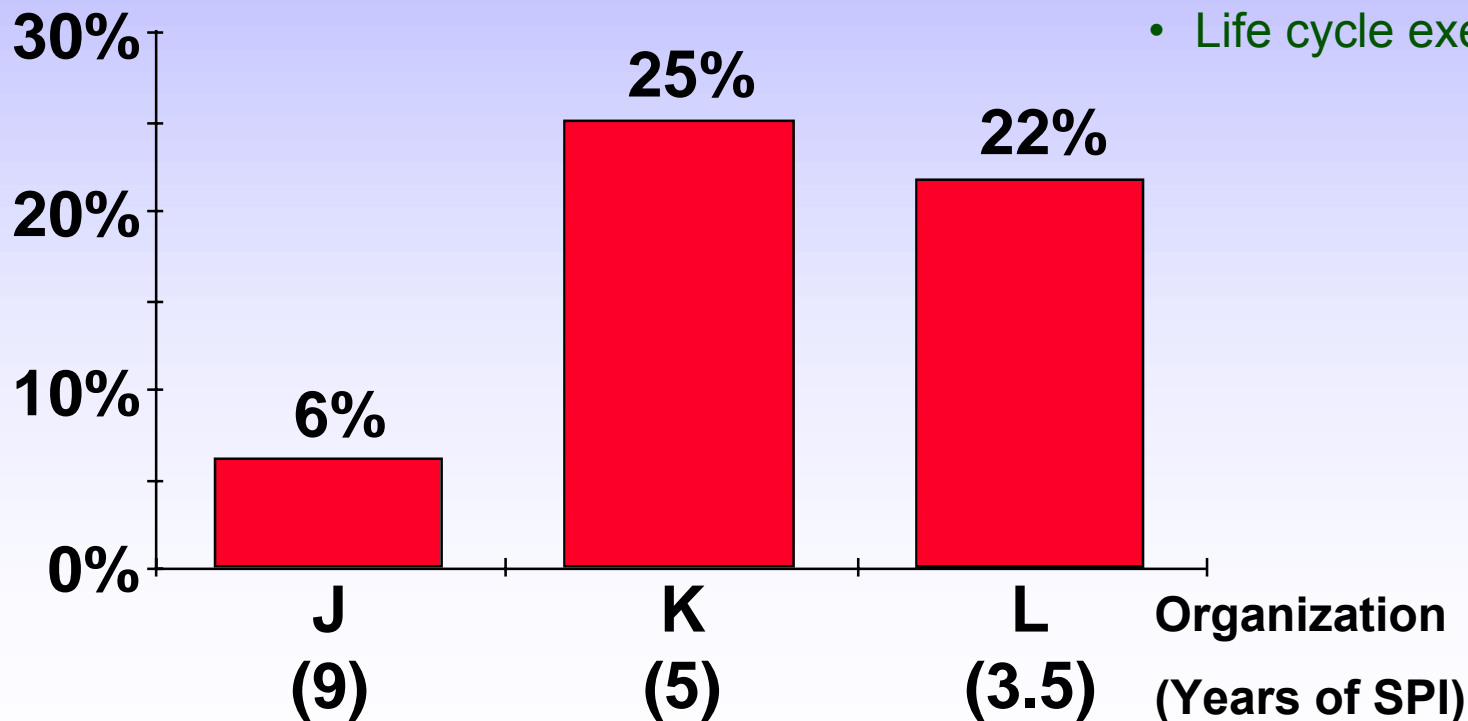


# Returns - Early Defect Detection

## Process Group Experiences for Level 2

- Life cycle used
- Risk management
- Version controls
- Life cycle execution assured

Increase per year in  
proportion of defects found pre-test

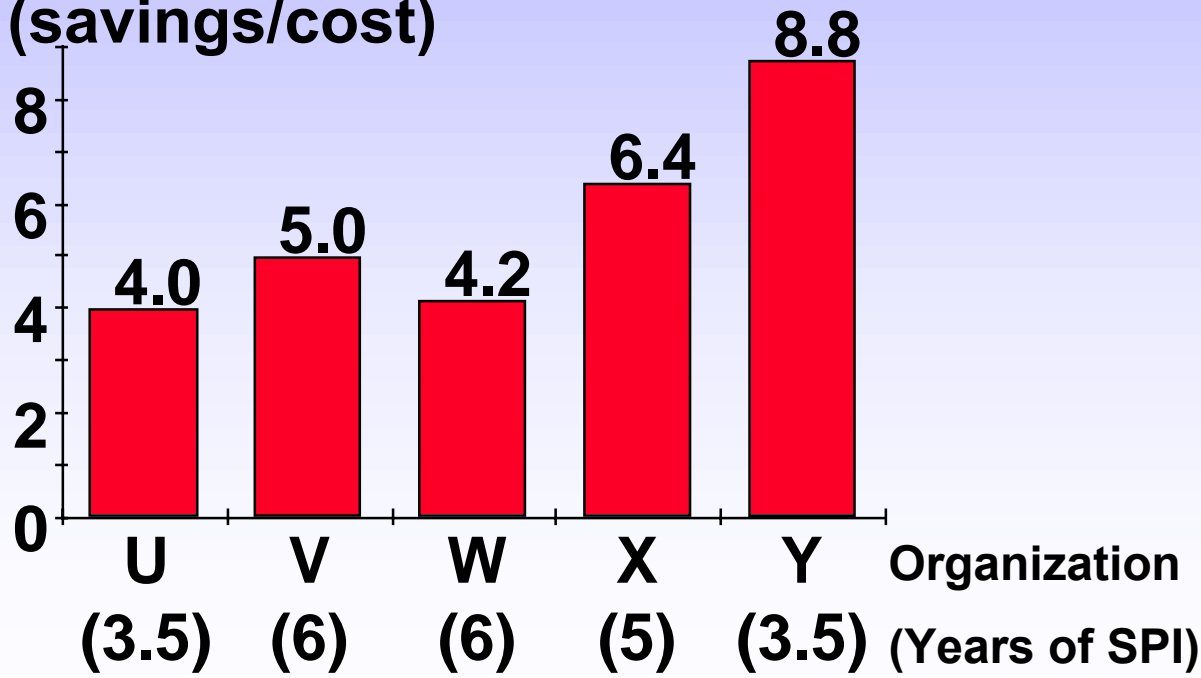


# Returns - Business Value

## Process Group Experiences for Level 2

- Better use of engineering time from the adoption of CMM practices
- Less rework

**Business value  
(savings/cost)**



# Keep ROI Simple

## Example

### Configuration Management

- **time** to build software system **before** CM improvement
- **time** to build software system **after** CM improvement

or

- **time lost** due to version problems **before** CM improvement
- **time lost after** CM improvement

### Planning

- **% slip** from initial schedule estimate **before** planning improvement
- **% slip** from initial schedule estimate **after** improvement

# CMU/SEI-94-TR-13

## ROI Participating Organizations

- Bull HN
- GTE Government Systems
- Hewlett Packard
- Hughes Aircraft Co.
- Loral Federal Systems
- Lockheed Sanders
- Motorola
- Northrop
- Schlumberger
- Siemens Stromberg-Carlson
- Texas Instruments
- U. S. Air Force Tinker AFB  
Air Logistics Center
- U. S. Navy Fleet Combat  
Direction Systems Support  
Activity

Source: CMU/SEI-94-TR-13