



Q/P MANAGEMENT
GROUP, INC.

The Productivity Pendulum

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Agenda

- ➔ • Productivity Trends
- Sources of Productivity Problems
- Productivity Solutions

Productivity

Economic Definition:

Unit of Output / Unit of Labor

Examples:

Business Output / Employee Hours
based on dollars
(GNP)

Output / Hours of All Persons

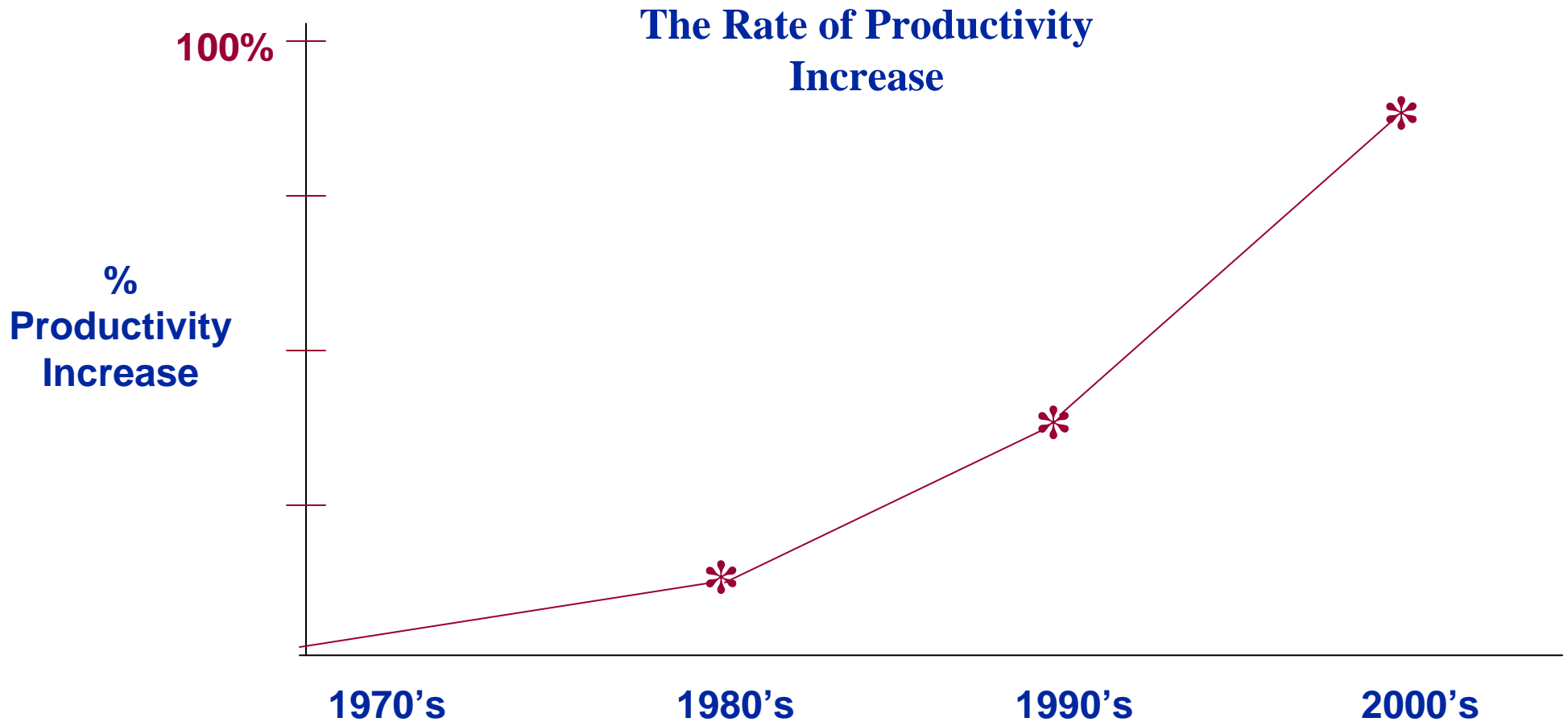
Function Points / Developer Hour

Productivity Solutions

Manufacturing

- Die casting
- Prefabrication
- Assembly line
- Robotics
- QA / Testing tools
- CAD / CAM
- Manufacturing systems
- Just In Time

Productivity Improvement in Manufacturing



Source: Bureau of Labor Statistics

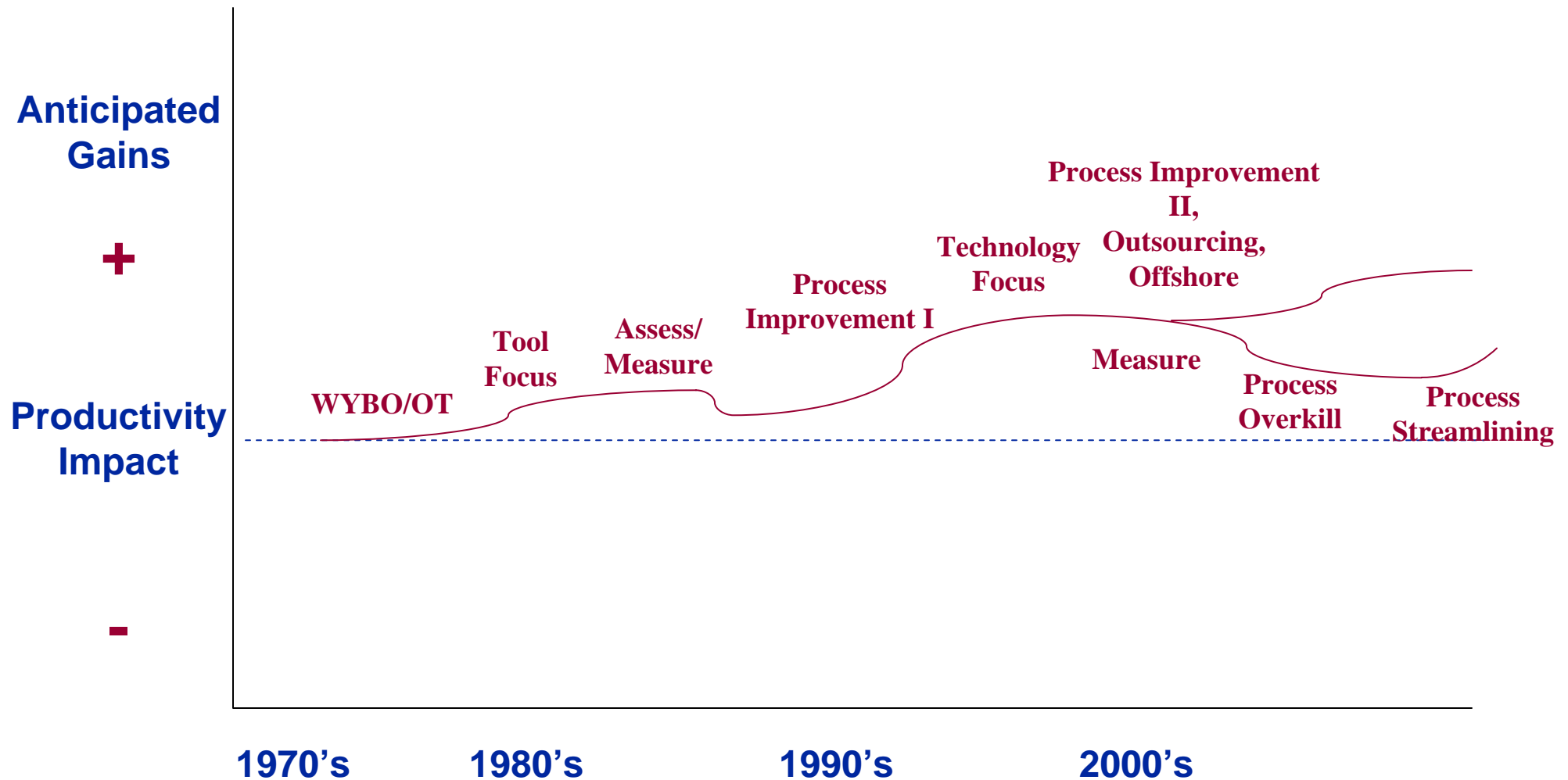
The rate of productivity improvement is doubling every decade

Productivity Solutions

Software

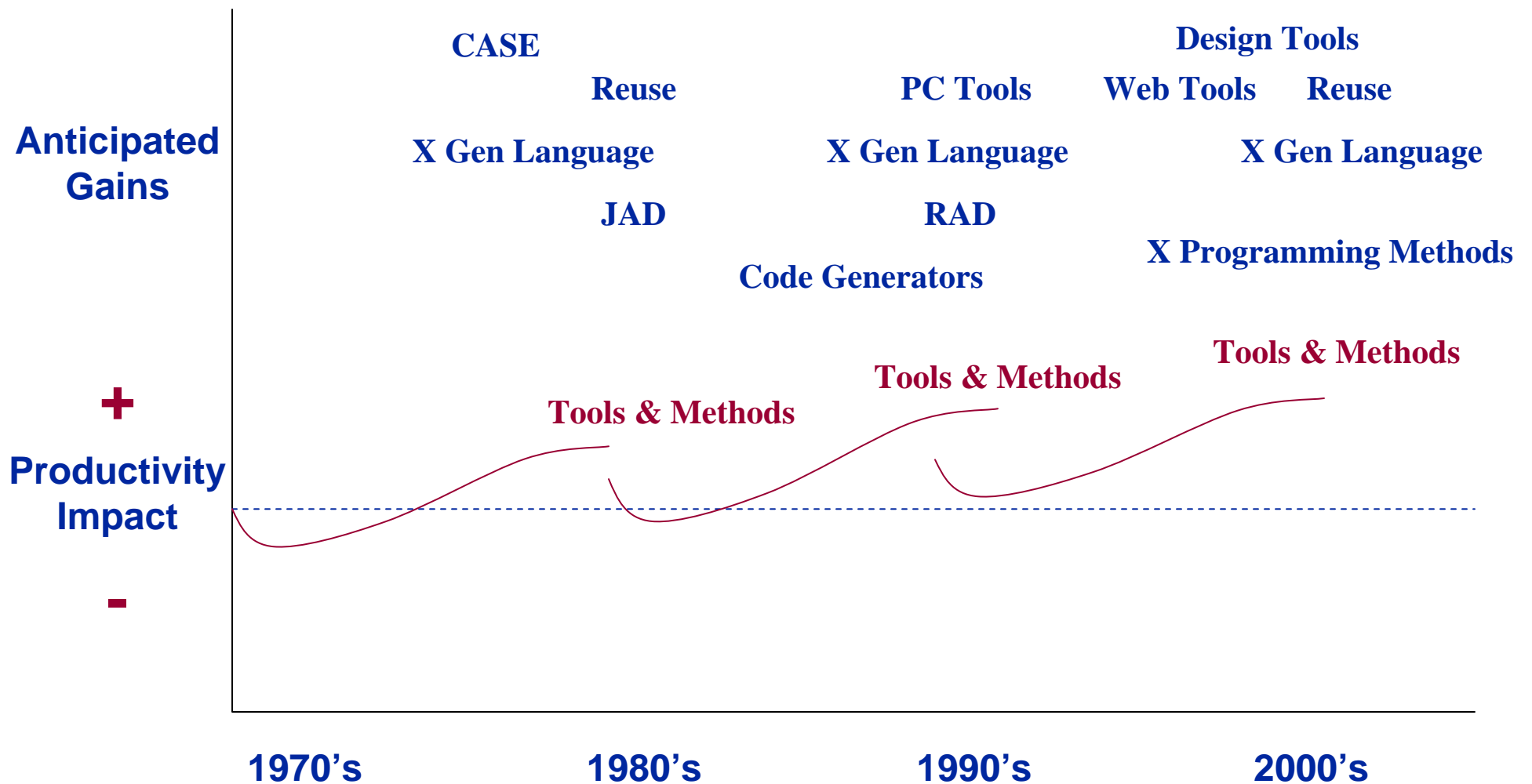
- Design tools
- Higher level languages
- Code tools
- Process improvements
- Test tools
- Technology
- Development / Programming techniques

Over the Decades, Numerous Factors Have Impacted Software Productivity

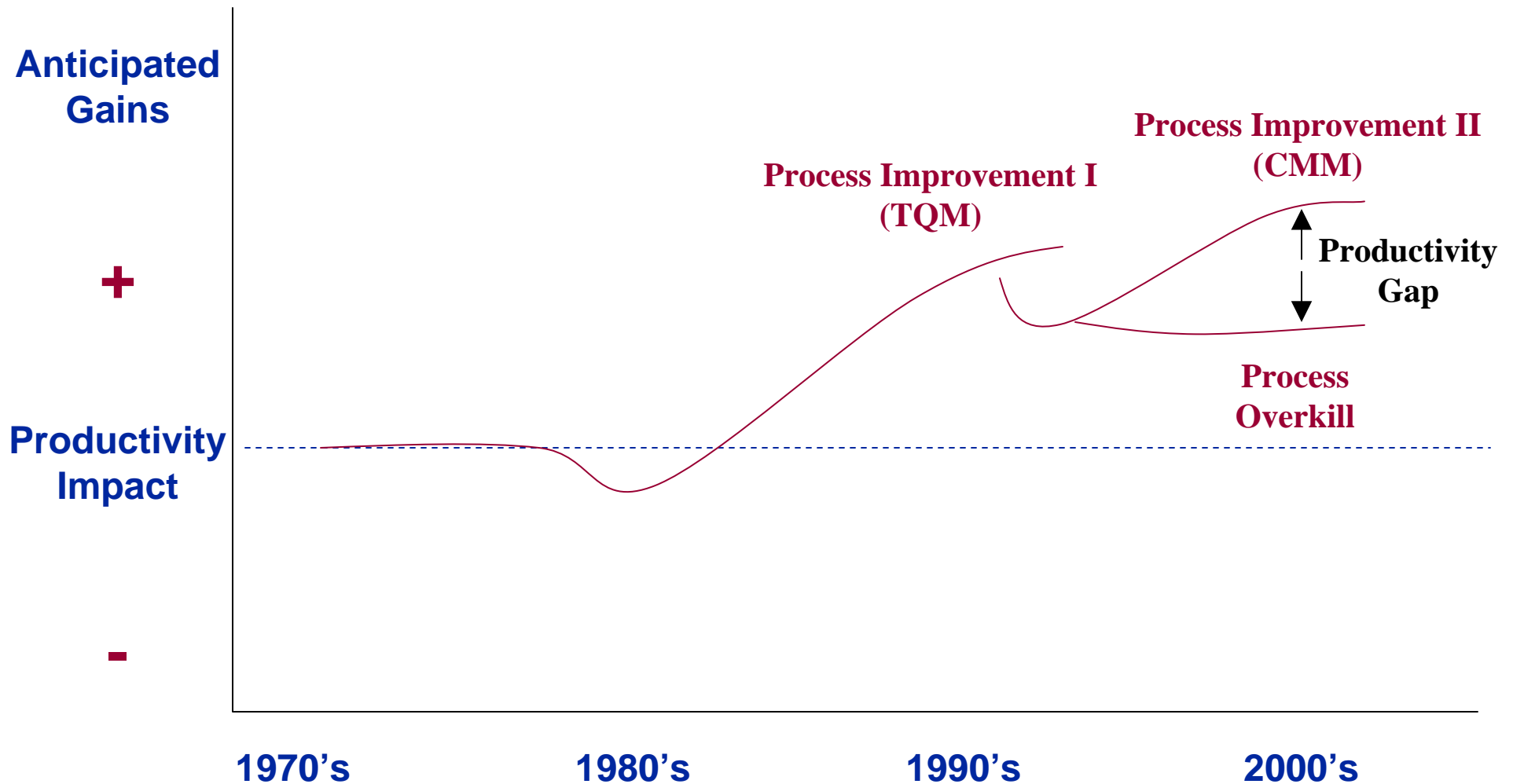


Recently, some companies have experienced productivity decreases

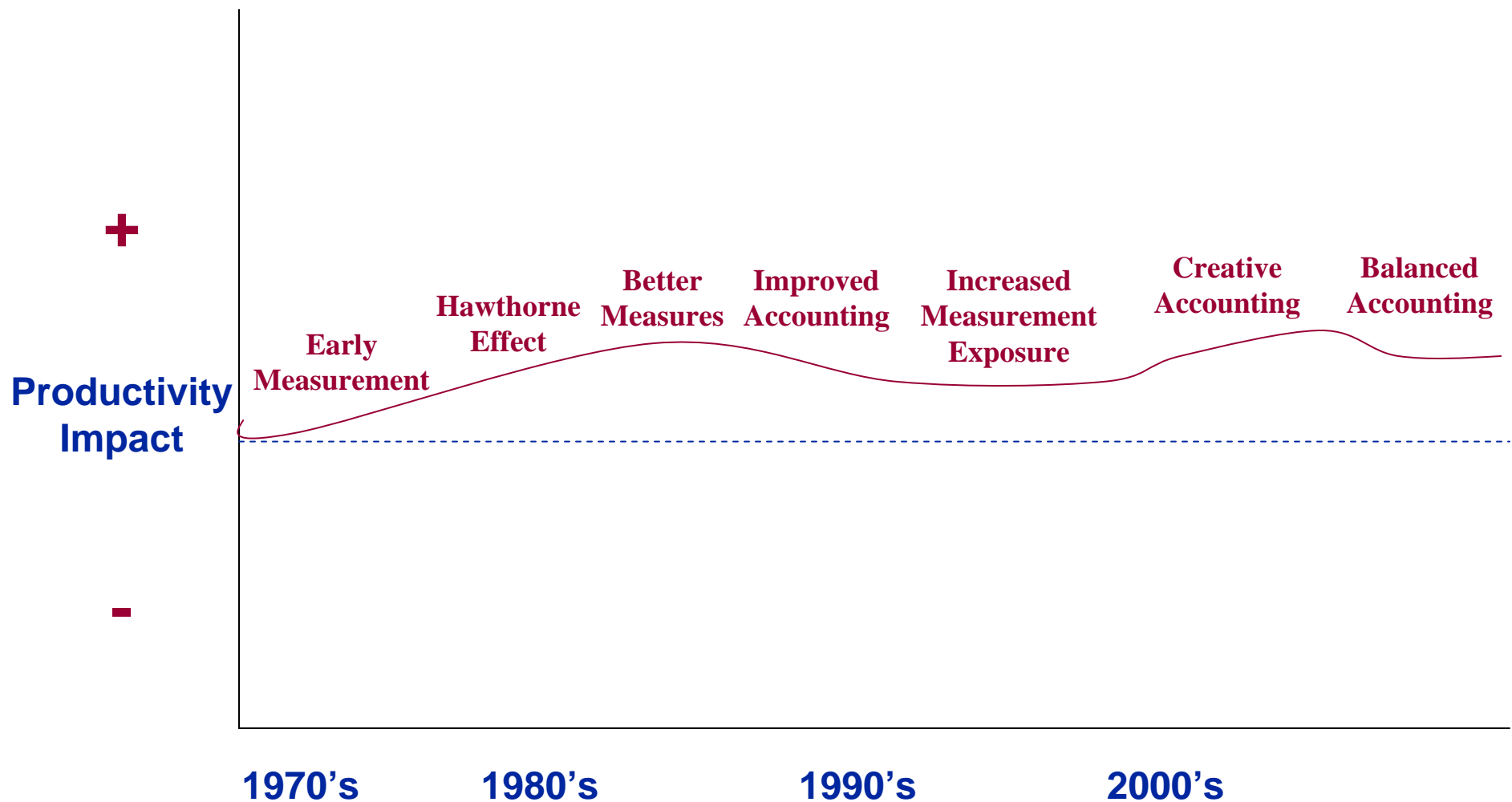
Reliance on Productivity Tools and Programming Methods Have Been Disappointing



Recent Process Improvements Have Had Mixed Results



Even Measurement Has Swung the Pendulum



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Sources of Productivity Problems

The quest for process maturity, high quality and reduced cycle time have had a major impact on productivity

- Process overhead can be very high
- Newly implemented processes are not always effective
- The learning curve can mask effectiveness
- Tradeoffs exist between schedule and productivity
- Quality can hit a point of diminishing return
- Measurement misuse can distort the true picture

Measurement Analysis Can Help Identify the Problems

- Methods and techniques need to be analyzed in terms of flexibility and effectiveness
 - Project management
 - Systems Development Methodologies
 - Quality Assurance and control
 - Contract/vendor management
 - Configuration management
 - Funding and estimating
 - Release management

Measurement Analysis Can Help Identify the Problems

- Project schedules by size category should be compared
- Estimating accuracy should be calculated
- Service level and performance goals should be evaluated
- Measurement and governance activities should be reviewed
- The level of user involvement and the degree of requirements churn should be evaluated

Measurement Analysis Can Help Identify the Problems

- Time accounting should be analyzed in detail
 - Project management time and tasks
 - Quality reviews, inspections and testing activities
 - Design time
 - Documentation time and pages
 - Process overhead on projects
 - Productive versus non-productive time
 - Number of individuals charging time to projects

The Quality Tradeoff Needs to be Evaluated

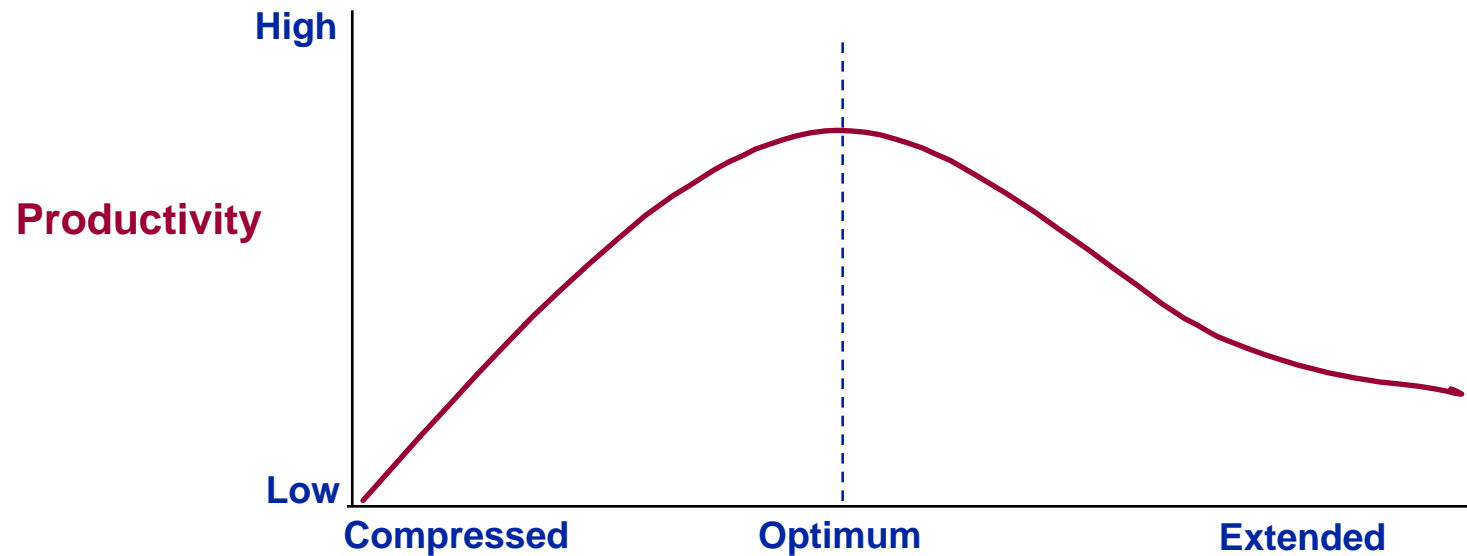
Productivity / Quality Comparison



Better than Best in Class quality and mature processes (with overhead) may result in low productivity

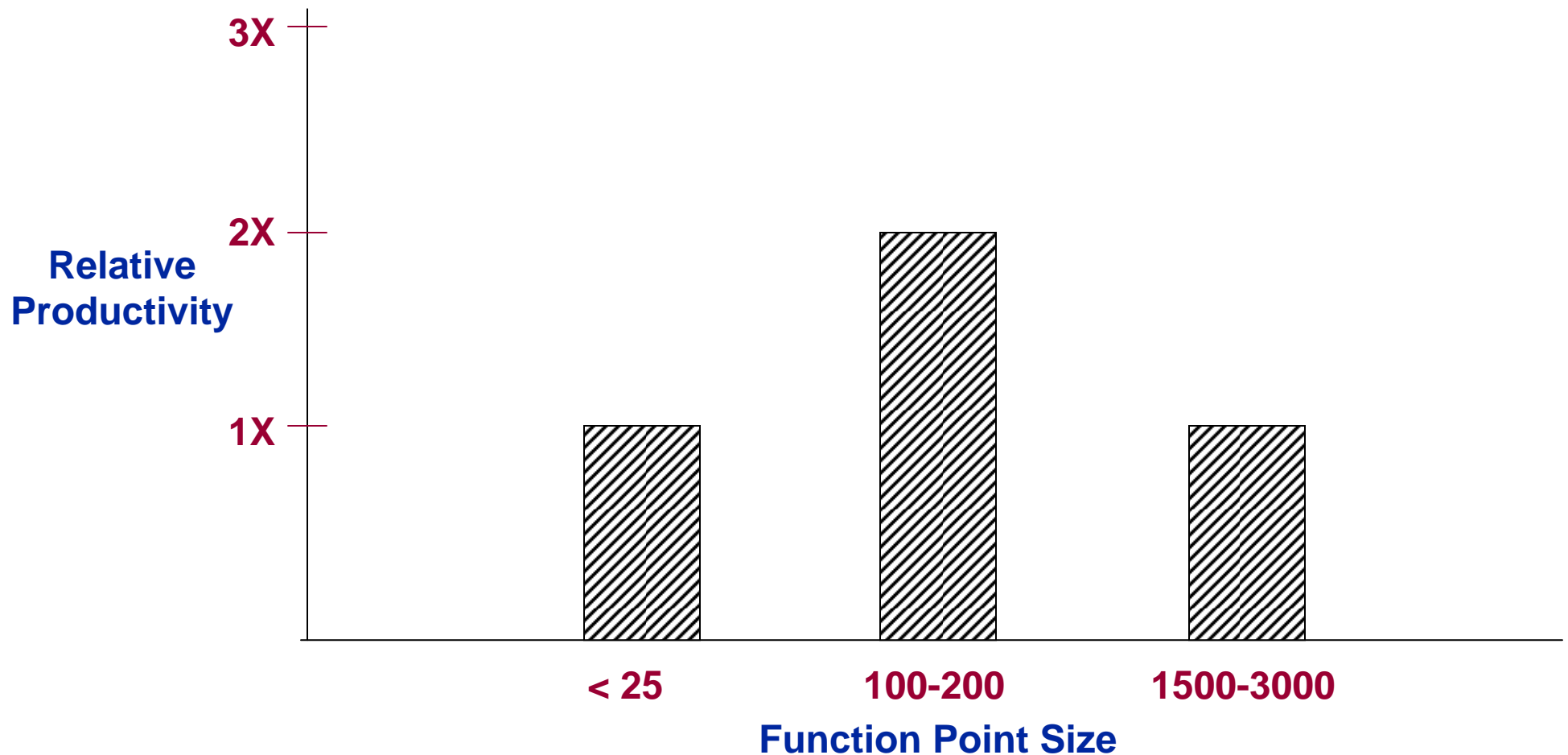
The Schedule Tradeoff Needs to be Evaluated

Productivity versus Schedule



Severely compressed or extended schedules can significantly reduce productivity and increase cost

Small Unproductive Projects Have Increased with Process Improvement and Outsourcing



Process improvement and outsourcing demands tighter management control and funding

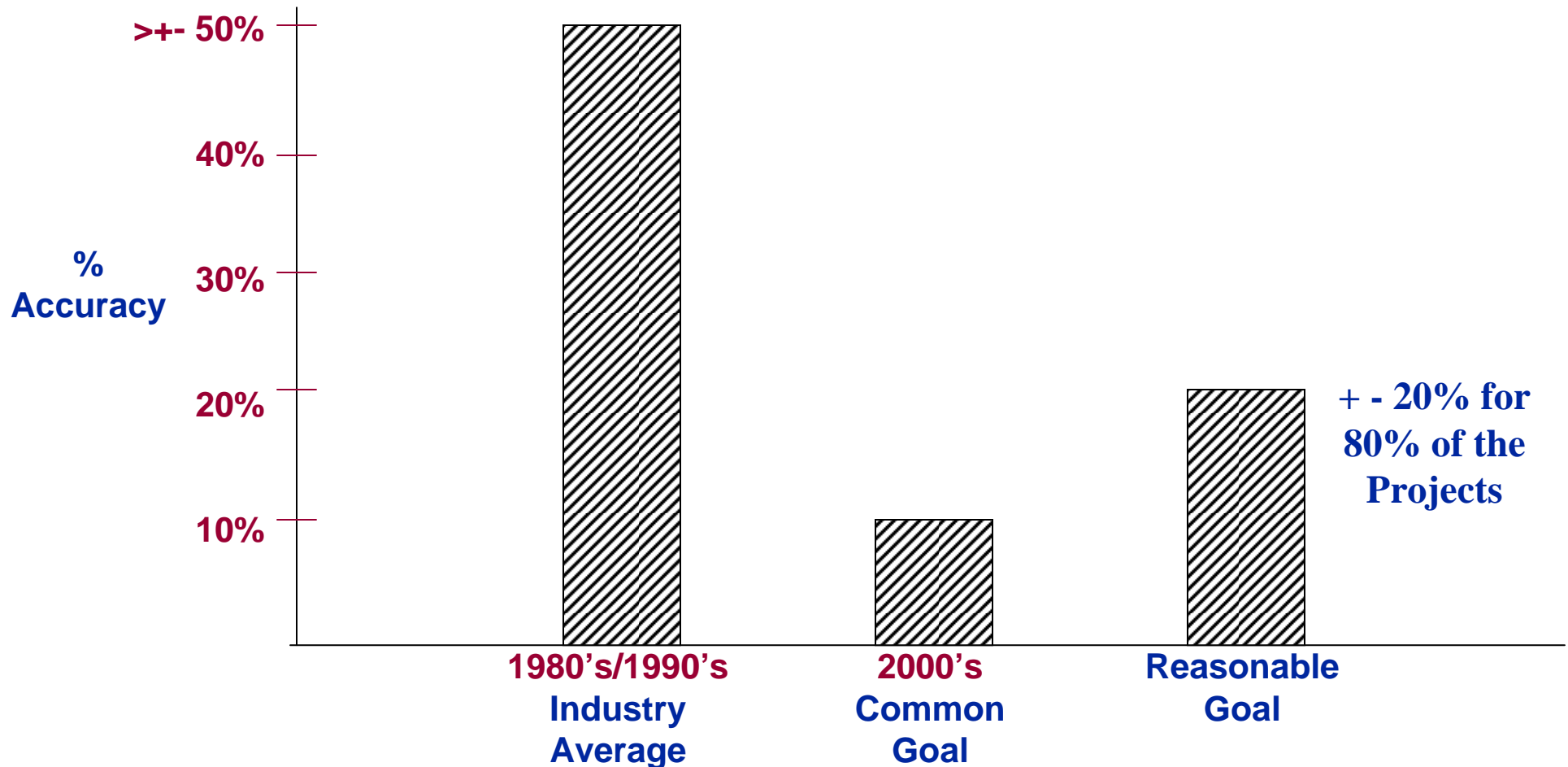
Process Improvement Can Create Overhead

Symptoms of Process Overhead

Activity	% Effort
Project Management	> 15 %
Requirements/Design	> 40 %
Testing	> 30 %
Installation	> 10 %
Reviews/Inspections	> 15 %


Project effort should be analyzed at the phase level to raise red flags and at the task level to determine root cause

Process Improvement in Estimating Accuracy



- The quest for accurate estimates has had a negative impact on productivity
- Reasonable goals and service levels need to be developed

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If Not Too Late, Avoid the Productivity Gap

- Don't rush to maturity
- Essential and incremental process improvement
- Streamline first, implement second
- Put an appropriate price on quality
- Trade schedule for productivity based on business case
- Define balanced service levels
- Establish reasonable goals for estimating accuracy

If Too Late, Eliminate the Productivity Gap

- Streamline, Streamline, Streamline (see details)
- Focus streamlining on processes consuming significant resources (based on measurement analysis)
- Eliminate non-essential or ineffective processes
- Relax service level agreements where appropriate in order to better balance service performance with cost considerations
- Revisit measurement and governance activities and eliminate those without meaning or benefit
- Reduce test cycles where possible by analyzing defect removal statistics versus the cost of quality
- Use measurement to estimate based on good productivity
- Determine project sizes and schedules to optimize productivity

Focus on Process Streamlining

- Streamline project management and systems development methodologies
 - Reduce “required” tasks, deliverables and management checkpoints
 - Establish different paths for different project sizes and types
 - Reduce the guidelines and criteria for selecting quick path approaches
 - Make it easy to waive unneeded activities and deliverables
- Reduce the time associated with quality assurance activities
 - Establish inspection guidelines to eliminate unproductive staff and activities
 - Reduce/eliminate Quality Standards Reviews based on project type and size

Use, Not Abuse Measurement

- Ensure measurement data is accurate, consistent and complete
 - Time accounting details should be at the phase and task level
 - Account for *all* time
 - Separate non-productive from productive time
 - Charge overtime and undertime accurately
 - Account for reuse and middleware separately
 - Validate Function Point counts
 - Analyze by size, type and platform (age for applications)
- Consistency rules should address:
 - Definition of Development, Enhancement and Maintenance
 - What tasks are chargeable to projects, support, and administration
 - What personnel are chargeable (PMs, administrators, management)
 - How an FTP, month and day are calculated
 - How defects are defined (type, severity, time period)
 - The different accounting needs for COTS, vendor and in-house

Summary

Closing the Gap and Beyond

