Focus on Quality

Q:PIT

Reducing the Cost of Quality through Process Improvement, Information Management and Teamwork

http://www.q-pit.co.uk

Cost of Quality

- Only metric worth collecting
- Never done
- Need to be defined

Why Is It Never Done?

Confusion

- Cost of quality
- Cost of quality control activities

No understanding

- What is quality?

What Is Quality?

Generic definitions

- Quality is everybody's business
- We have quality people
- Bigger, better, faster, cheaper
- Etc.

Quality Needs to Be Defined

If you cannot define, you cannot achieve it

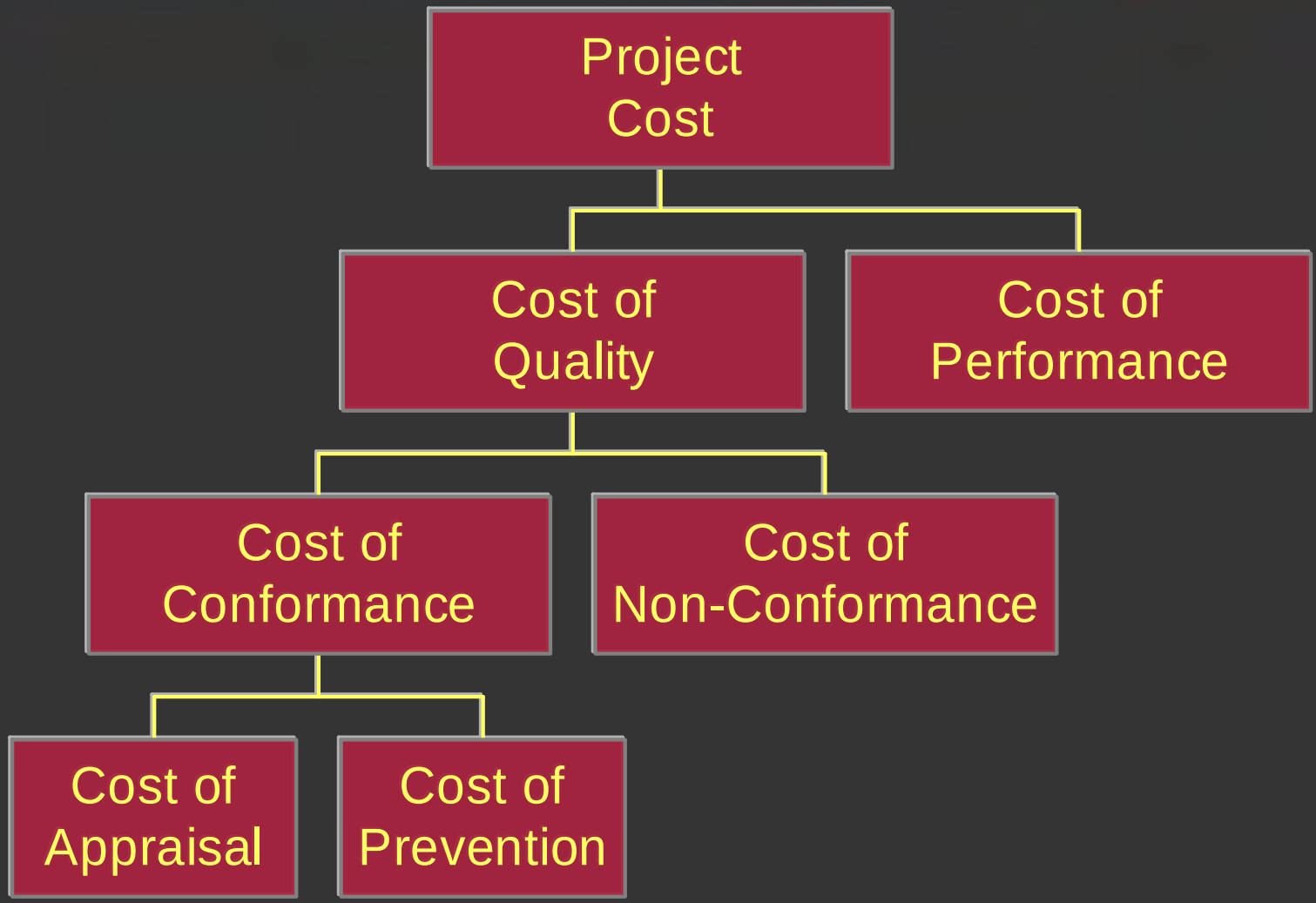
If you cannot measure it

- You do not know when you are progressing
- You do not know when you have arrived
- You cannot demonstrate it

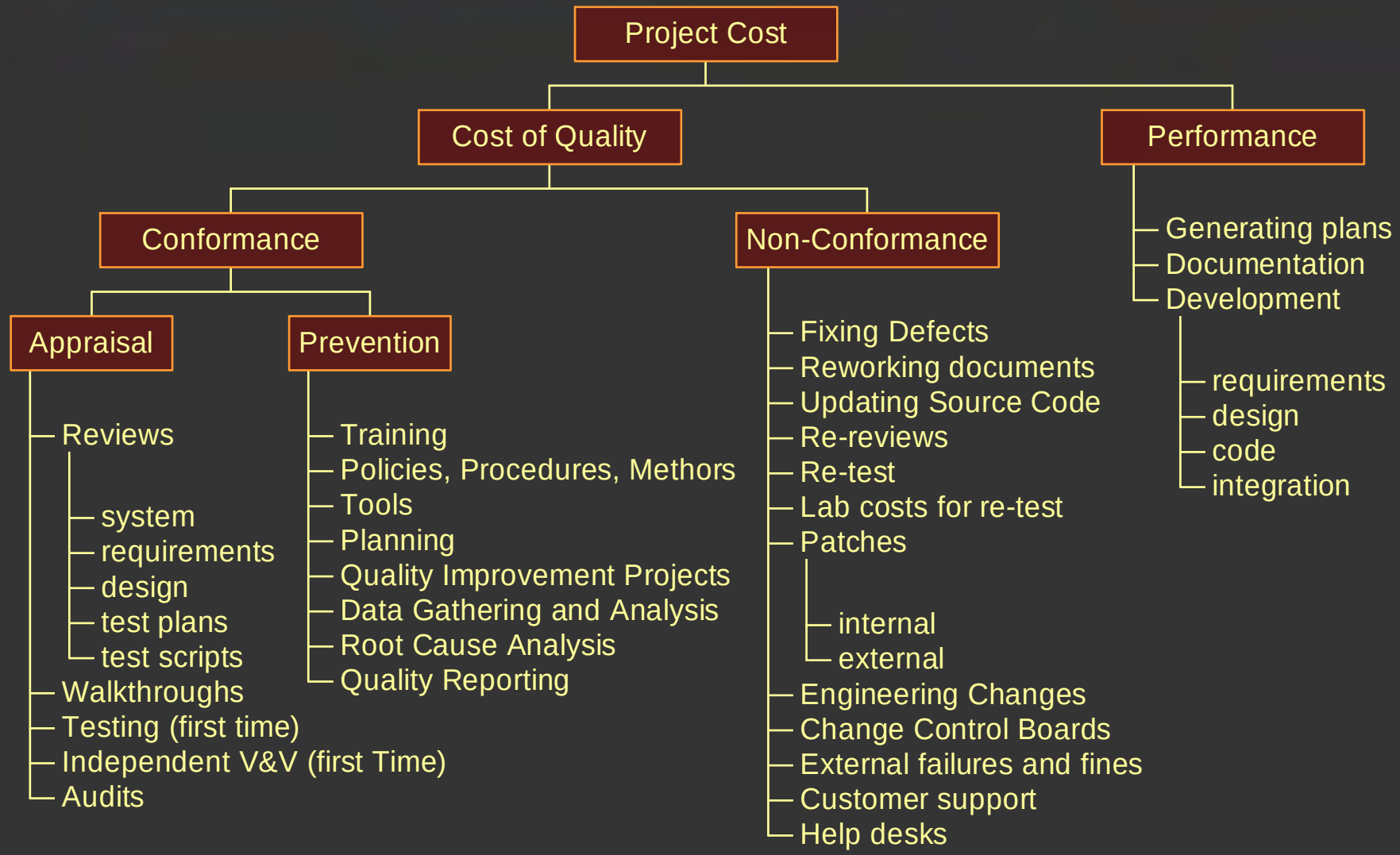
The Quality Issue

Defining Quality

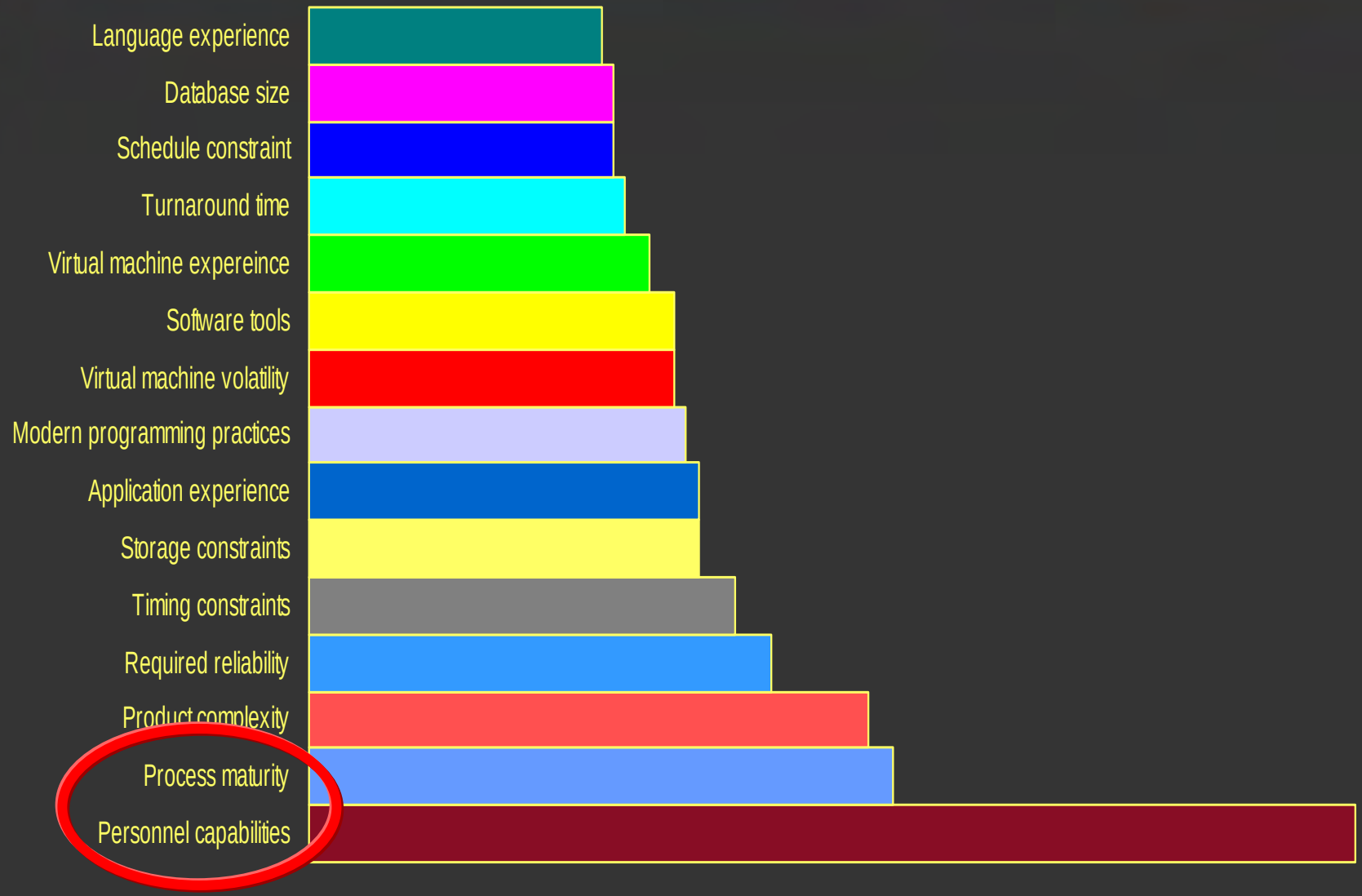
Cost of Quality



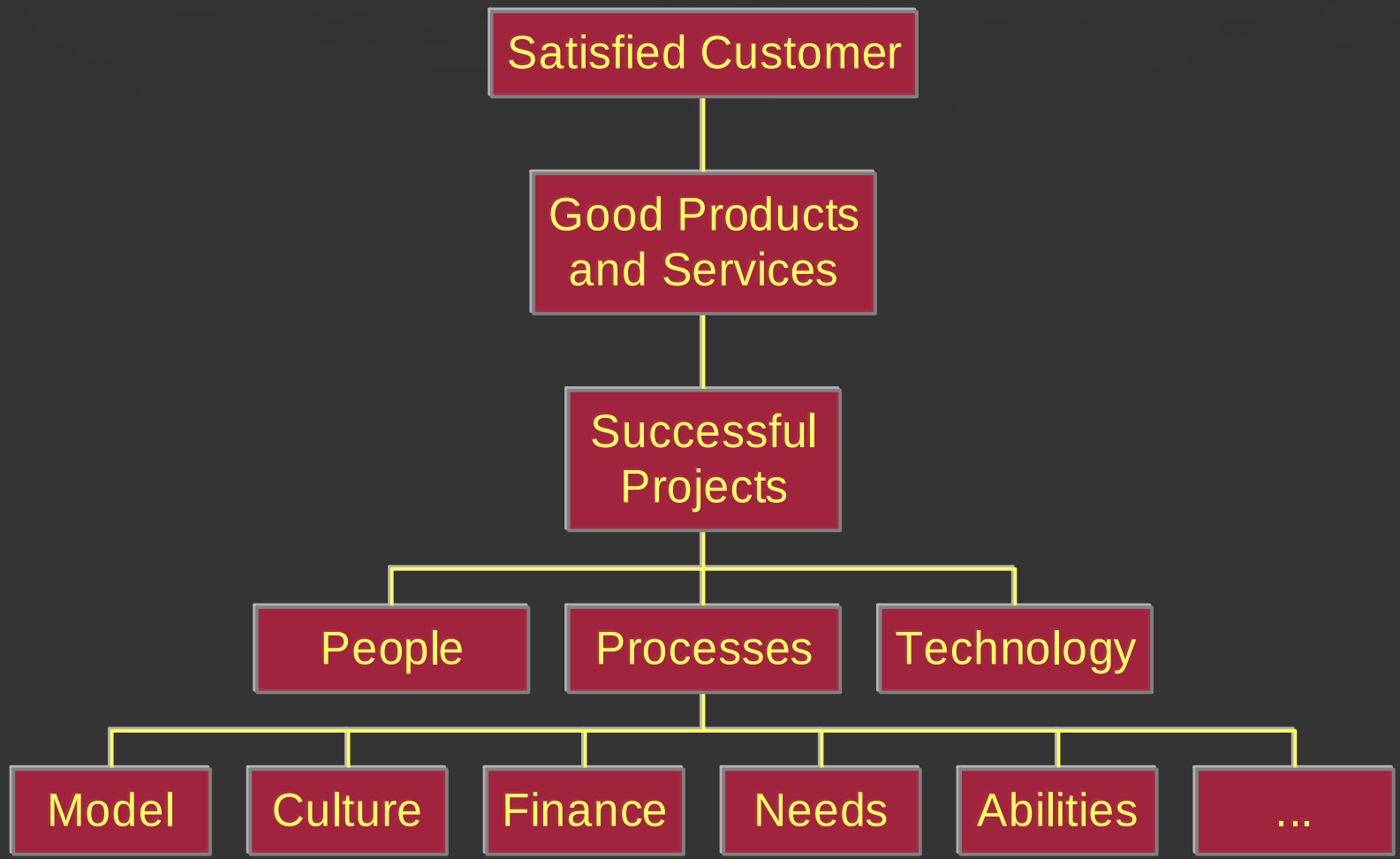
Cost of Quality



Impact of process and people



The Hierarchy of Quality



A Definition of Quality

$$Q = P/X$$

Defining Quality

Quality needs to be defined at the beginning of a project or task according to the main stakeholders:

- Organisation
- Product
- Project
- Process
- People

Basic Software Product Quality Characteristics

Six fundamental characteristics

- Functionality
- Reliability
- Usability
- Efficiency
- Maintainability
- Portability

Project Quality

The quality of the project is related to

- The quality of the product delivered
- According to requirements
- On time
- Within budget

Process Quality

An emphasis has to be placed as well on the quality of the process used:

- Repeatable
- Lessons learnt

Quality

- The productivity of a procedure
- The traceability of a design
- The amount of rework needed
- The number of defects found throughout the process

People Quality

The quality of the project with regard to the people concerned needs to take into account the various stakeholders:

- User’s point of view
- Customer's point of view
- Management point of view
- Worker's point of view

Quality Conclusion

Quality needs to ensure that

- A quality product is delivered
- To the satisfaction of the stakeholders
- Within the guidelines set by the organisation
- In a way that will ensure
  - Growth
  - Sustainability
  - Revenue
  - Customer Satisfaction

Achieving Quality

Once you know what it is you are trying to achieve, you need to know how to achieve it

Determining What Is Realistic

Q=P/X

Don't over-sell

Accept limitations

Make sure you know what is possible before you promise anything

- Understand the requirement
- Estimate and plan the work
- Verify resources and availability

Get Involved

Quality is not someone else's problem!

A Success Story

Boeing's measurements

John Vu
European SEPG Conference

2001

Beyond Level 3?

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Is Level 3 Good Enough ?

Many managers believe that level 3 is good enough.

Limited data at higher levels discourage the community to go further.

Many organizations stopped their process improvement at level 3 and found that they slipped back to lower level.

Few realized that the journey has just begun .....

We only had the appetizer ....

We have not started the main course .... Yet.

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Measured Results from Improvement

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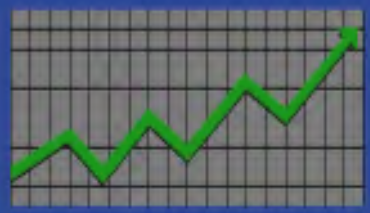
Process Improvement Results

6 organizations in Boeing (28 projects) participated in the study of higher maturity levels (Level 4 & 5).

Measurements baseline established in 1996.

Data collected and analyzed independently by Dr. Kay Nelson of University of Kansas.



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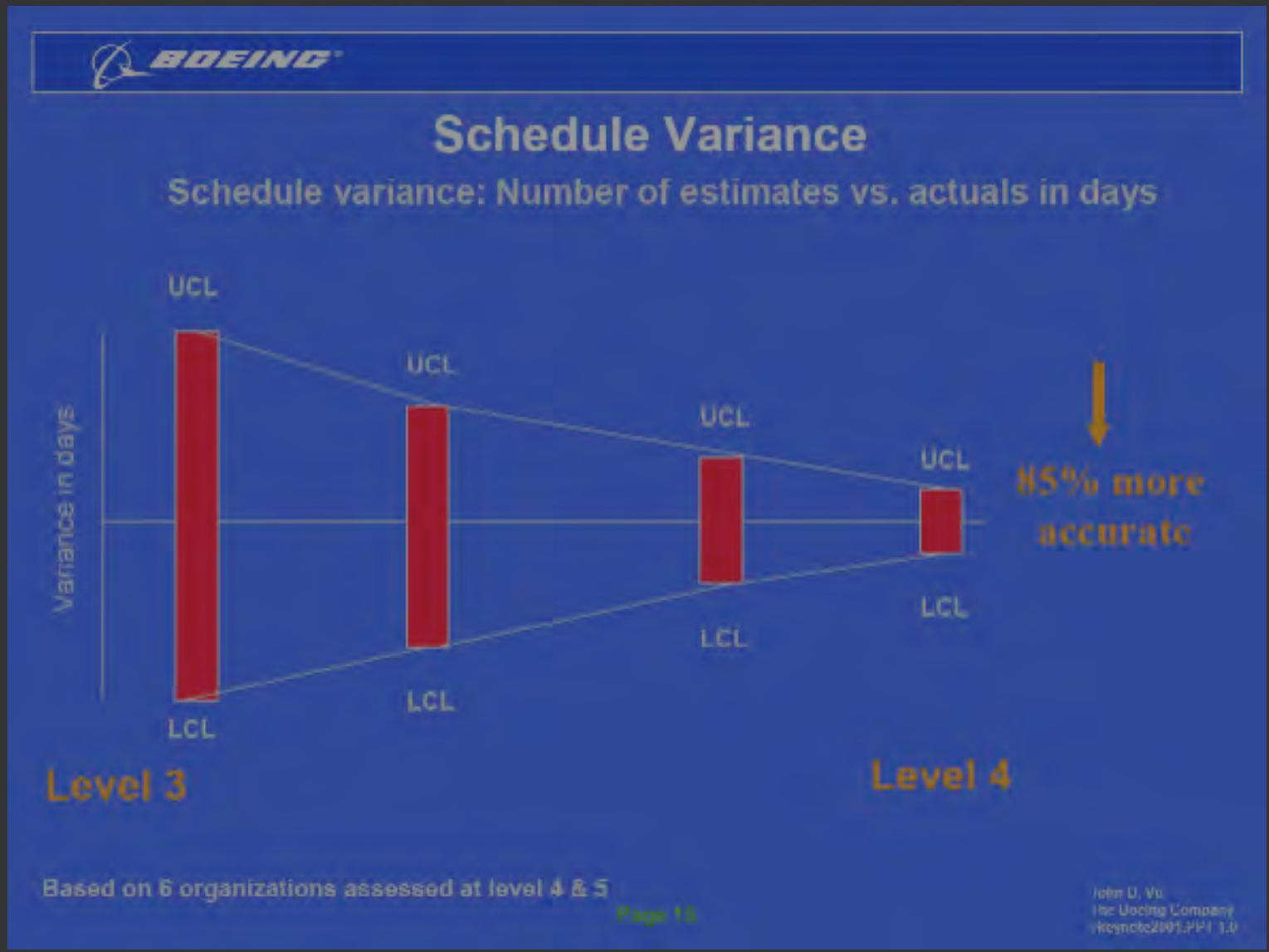
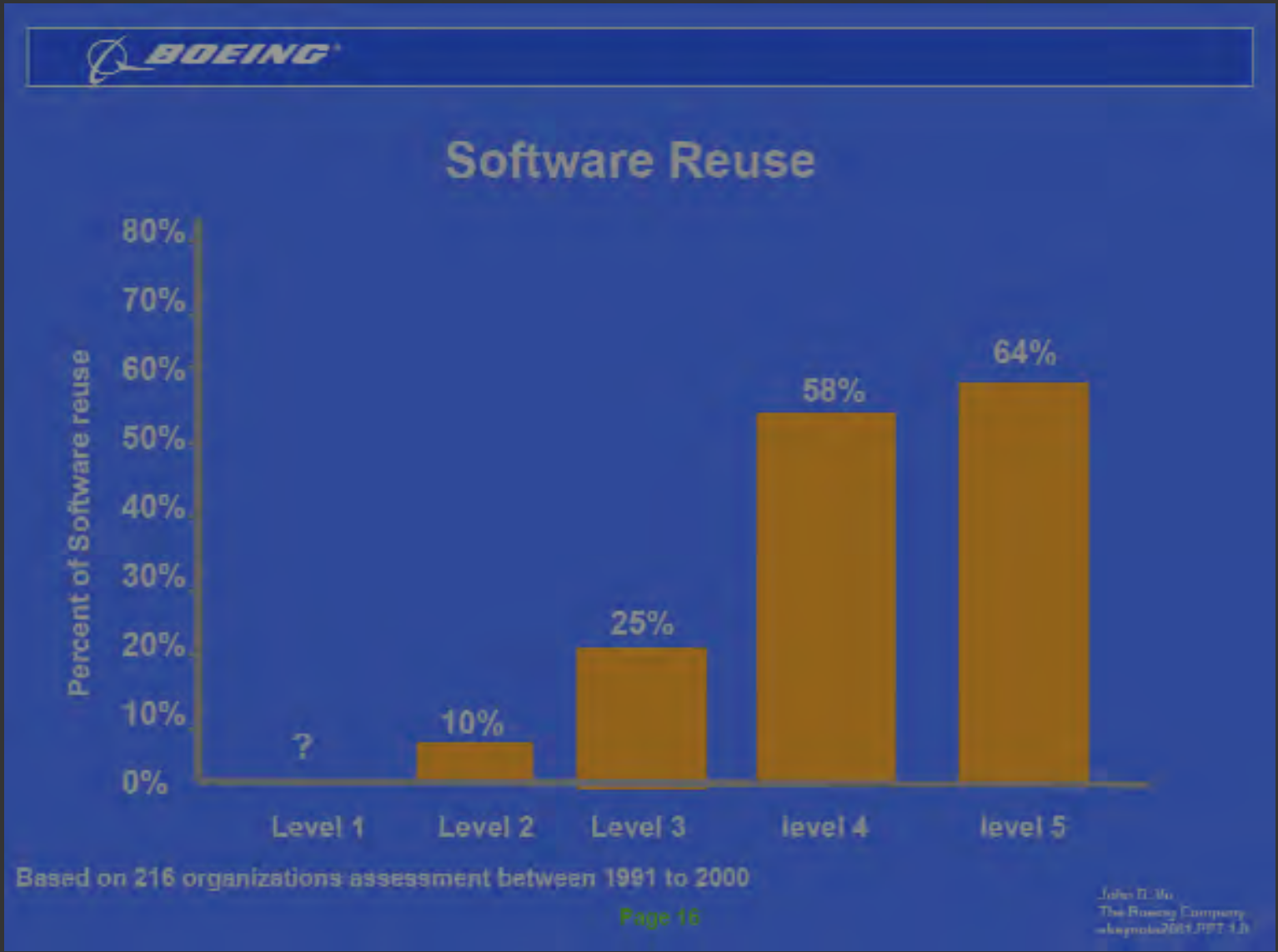
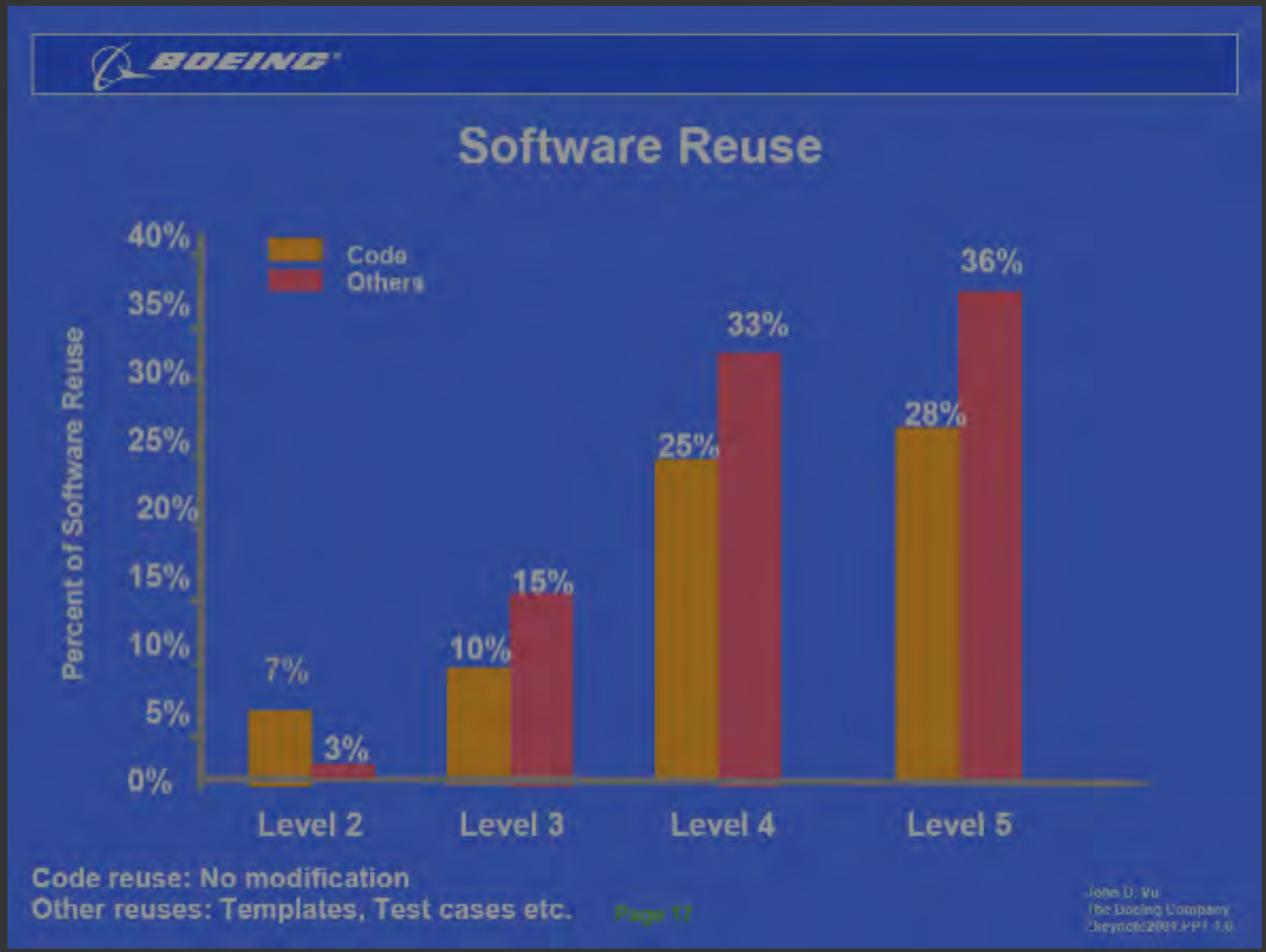
Estimating Improvement



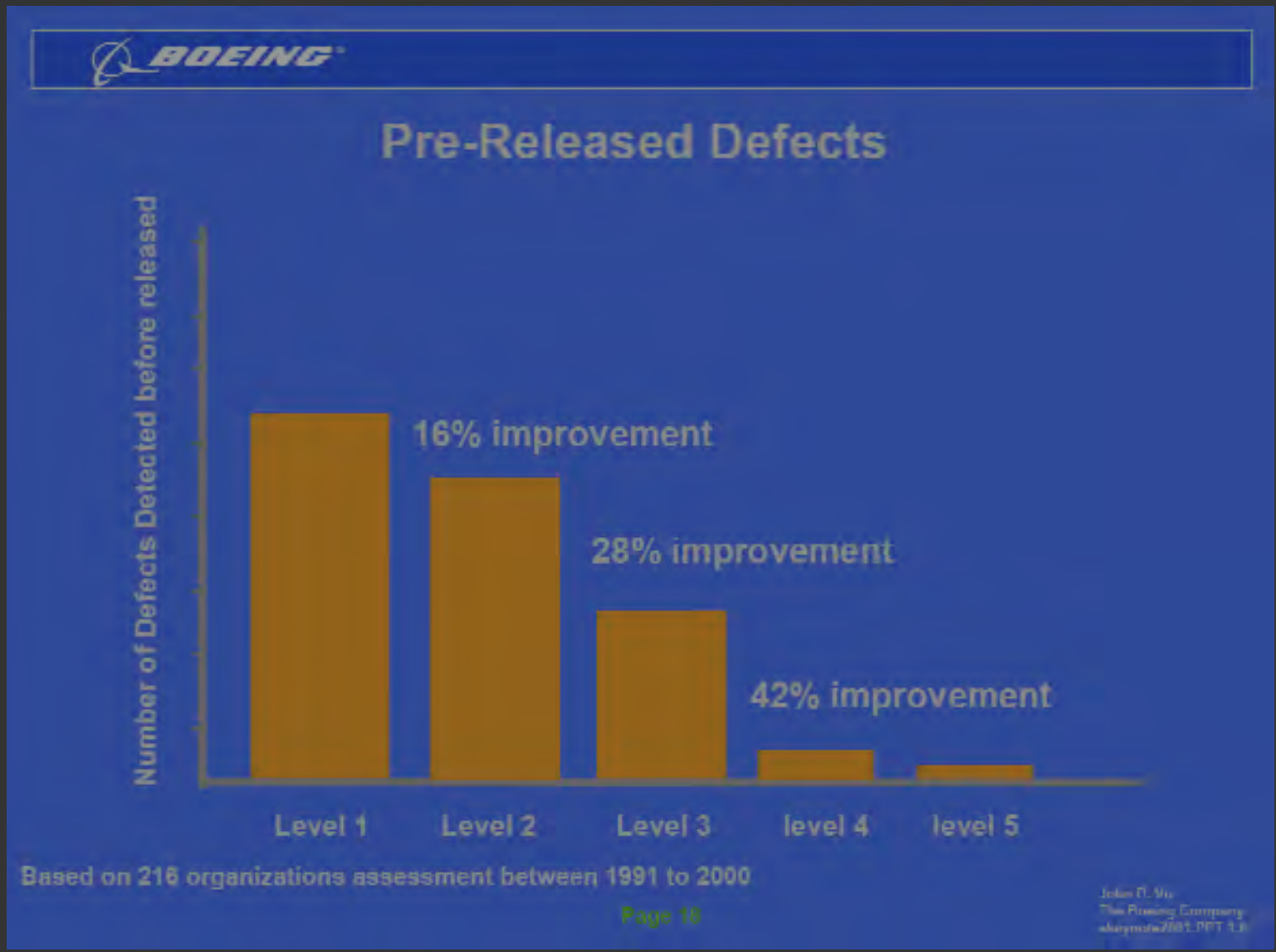
Reusable Development



Reusable Tools



Increased Quality



Reviews and Inspections

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Formal Review & Inspection Benefit Ratio

Formal Review & Inspection increased design effort by 4%
decreased rework effort by 31%

Cost: Benefit ratio is 4% : 31% or 1 : 7.75

Based on 6 organizations assessed at level 4 & 5

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The Boeing Company
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Employee Satisfaction

Using PSP in a CMM Environment

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Technology Improvement

The Boeing Company conducted 3 pilots of the Personal Software Process (PSP) and Team Software Process (TSP) in 1998 in organizations already achieved level 3.

Two organizations achieved level 4 in 2000 - 10 months faster than other level 3 organizations

Data analysis indicated that PSP and TSP did accelerate the rate of improvement by 30% and have better product quality, cost, and cycle time performance

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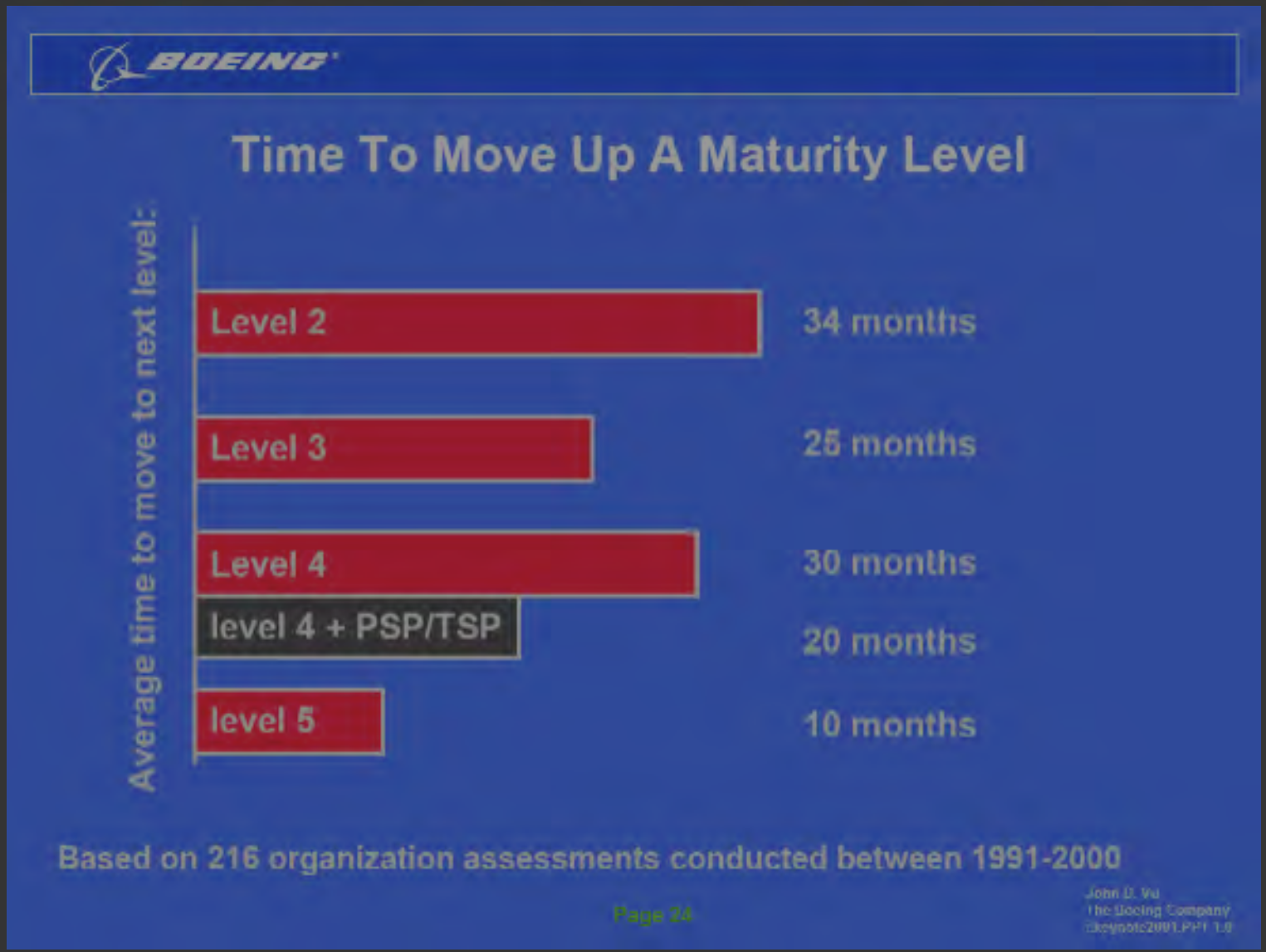
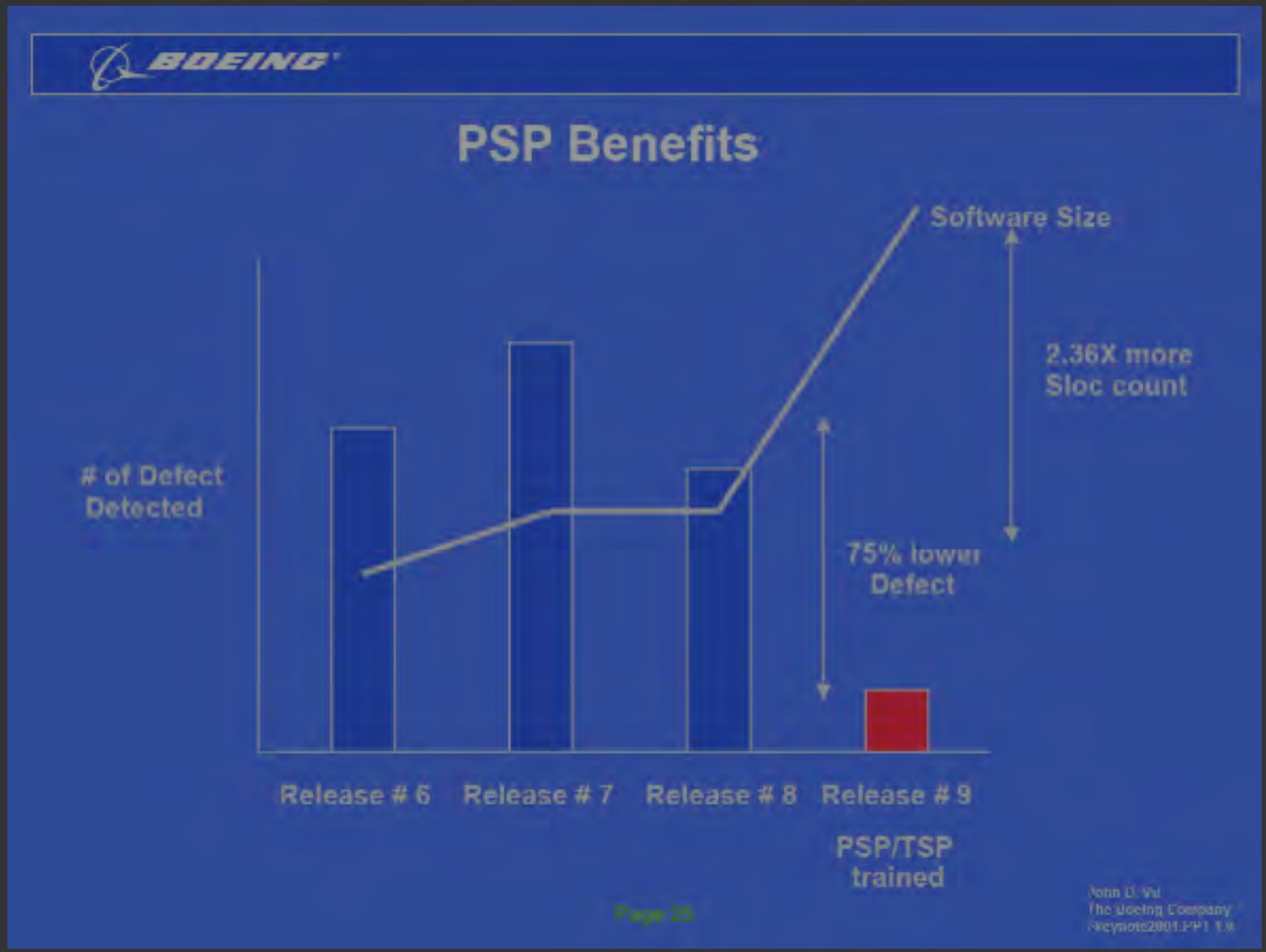
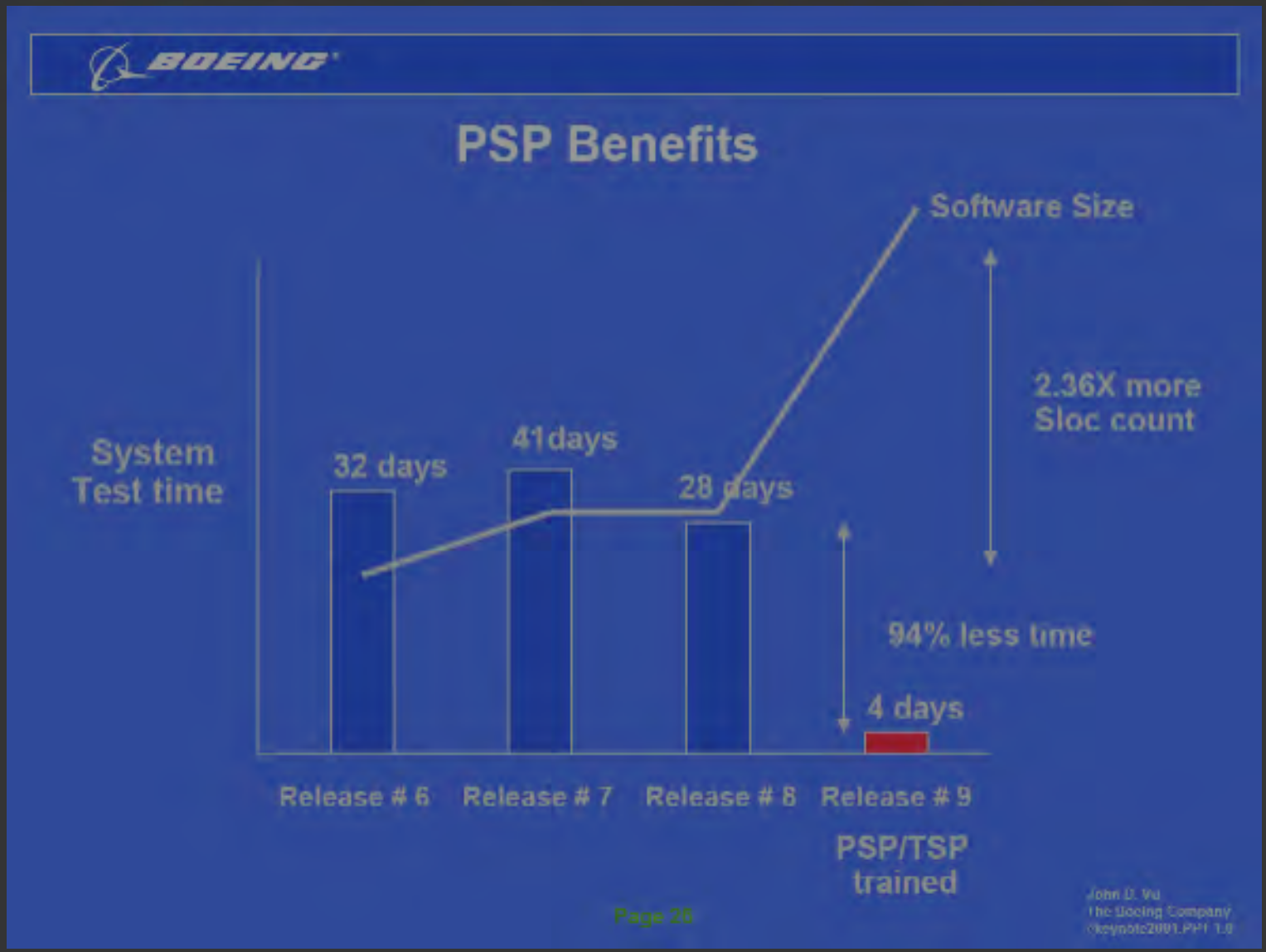
PSP Impact on Level 4



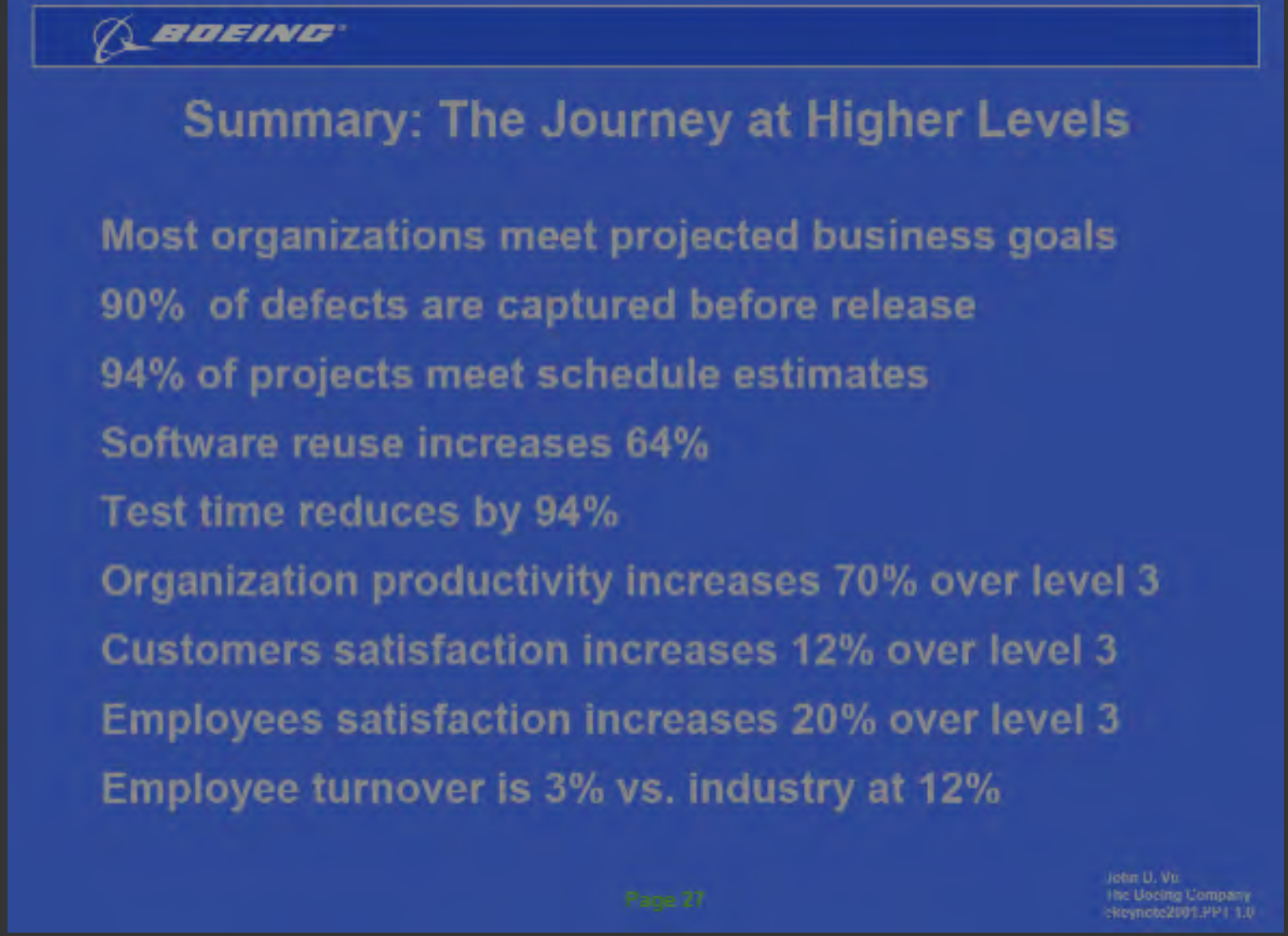
PSP on Software Quality



PSP on Test Time



Moving on from Level 3



Cultural Benefits

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Un-quantifiable Benefits: Organization Culture

Users and developers working together as one team

Greater cooperation between teams (Different projects)

Roles and responsibilities are clear and better defined

Minimum impact when staff changes occur

People understand & appreciate this new way of working together

Increase mentoring among senior & junior people

"We have lots of fun here"

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Boeing Process Improvement Statement

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We Believe

There is a systematic approach to improve the way software is developed and maintained.

There are stages of process maturity in which the organization will improve by following a recommended sequence to decrease risk and increase software performance.

By following an evolutionary path the organization will continuously improve their knowledge to produce better, faster, higher quality products, and achieve customer satisfaction.

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Boeing Recommendations on PSP

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Conclusion

Process Improvement using the Capability Maturity Models such as SW-CMM, P-CMM will help organization improve its software process, attract and retain skilled workers, and achieve its business objectives.

Adopting PSP/TSP in concert with process improvement activities will accelerate organization maturity and determine which organization has the potential to deliver higher quality products at reasonable cost to the customer.

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