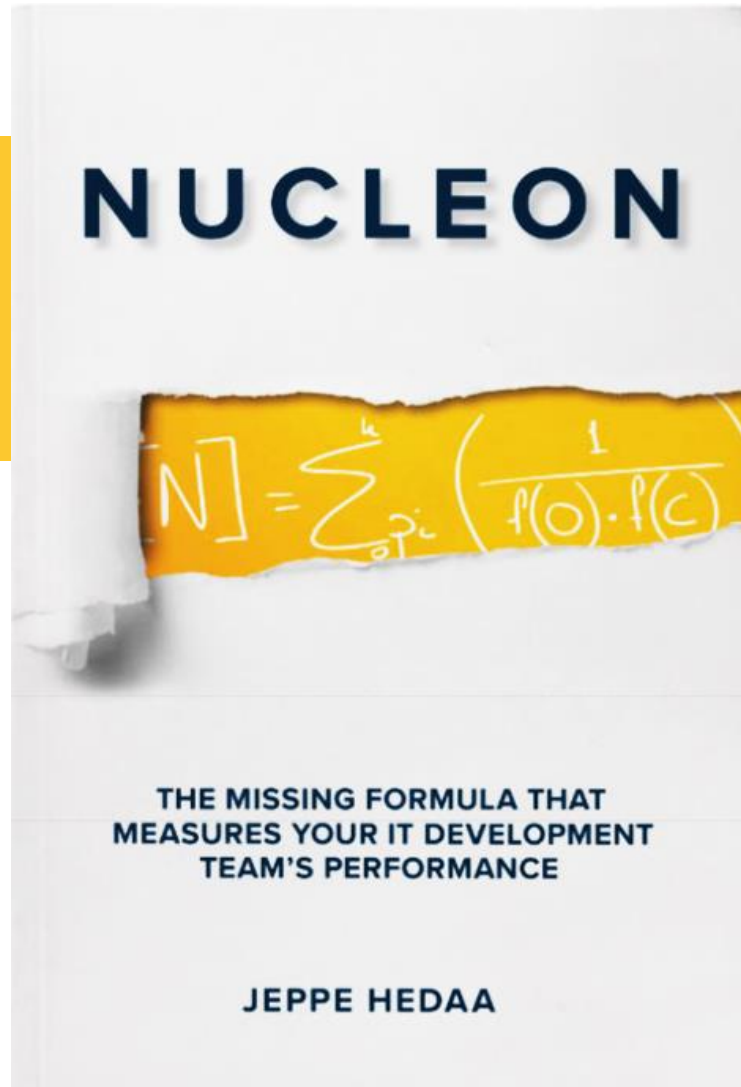


[N]



Determining IT team performance

Estimation and uncertainty drivers

[N]

When making estimations we are primarily looking for two metrics

$$\frac{\text{SIZE}}{\text{CAPACITY}} = \text{TIME/COST}$$

[N]

When making estimations we are primarily looking for two metrics

Mature

Uncertain

The diagram illustrates a relationship between four metrics. On the left, the word **SIZE** is circled in blue, with a line from the word "Mature" above it pointing to the circle. Below **SIZE** is a horizontal line, and below that is the word **CAPACITY**, which is also circled in blue. A line from a question mark "?" below it points to the **CAPACITY** circle. To the right of this fraction is an equals sign, followed by the words **TIME/COST**, which are circled in blue. A line from the word "Uncertain" above it points to the **TIME/COST** circle.

$$\frac{\text{SIZE}}{\text{CAPACITY}} = \text{TIME/COST}$$

[N]

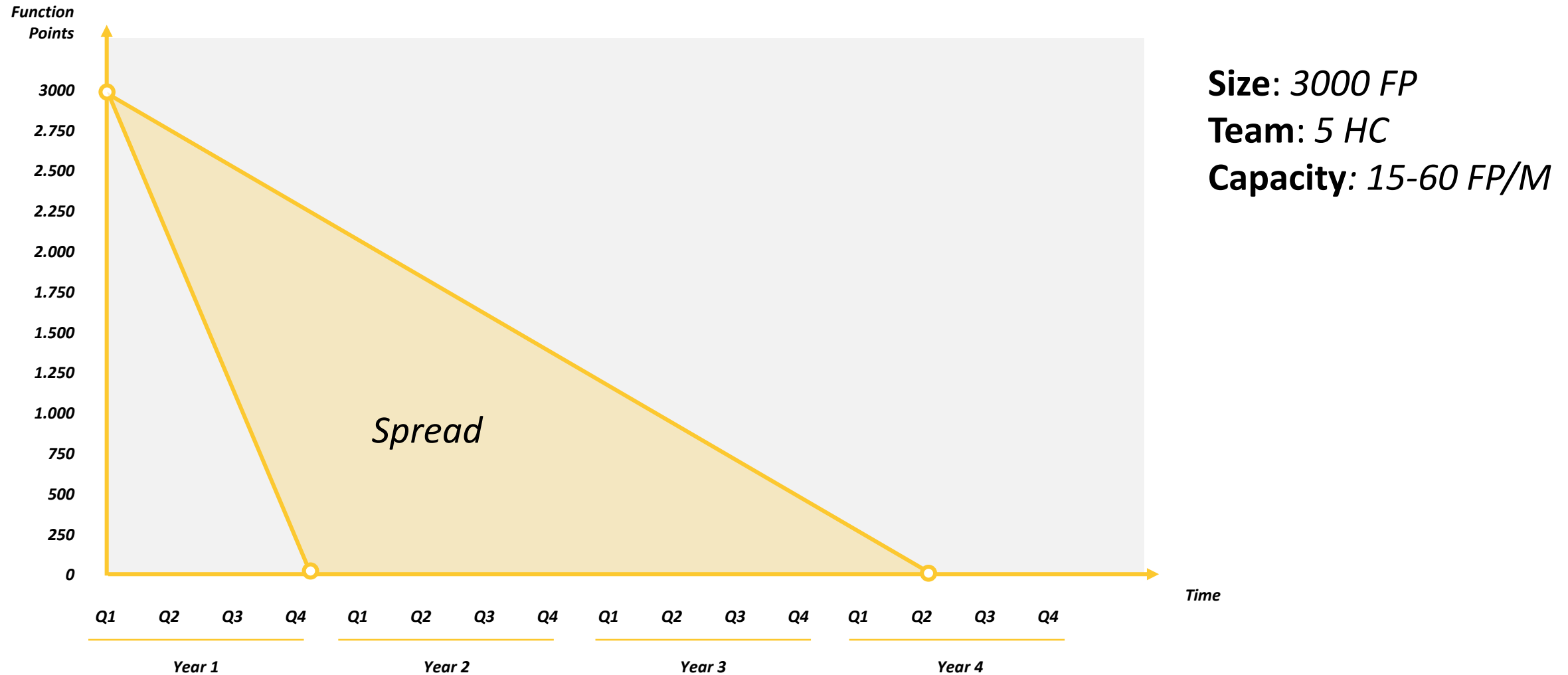
Typically the capacity of a team is based on two techniques

CAPACITY

1. Historical and observed performance data
- or*
2. Subjective evaluation of current performance

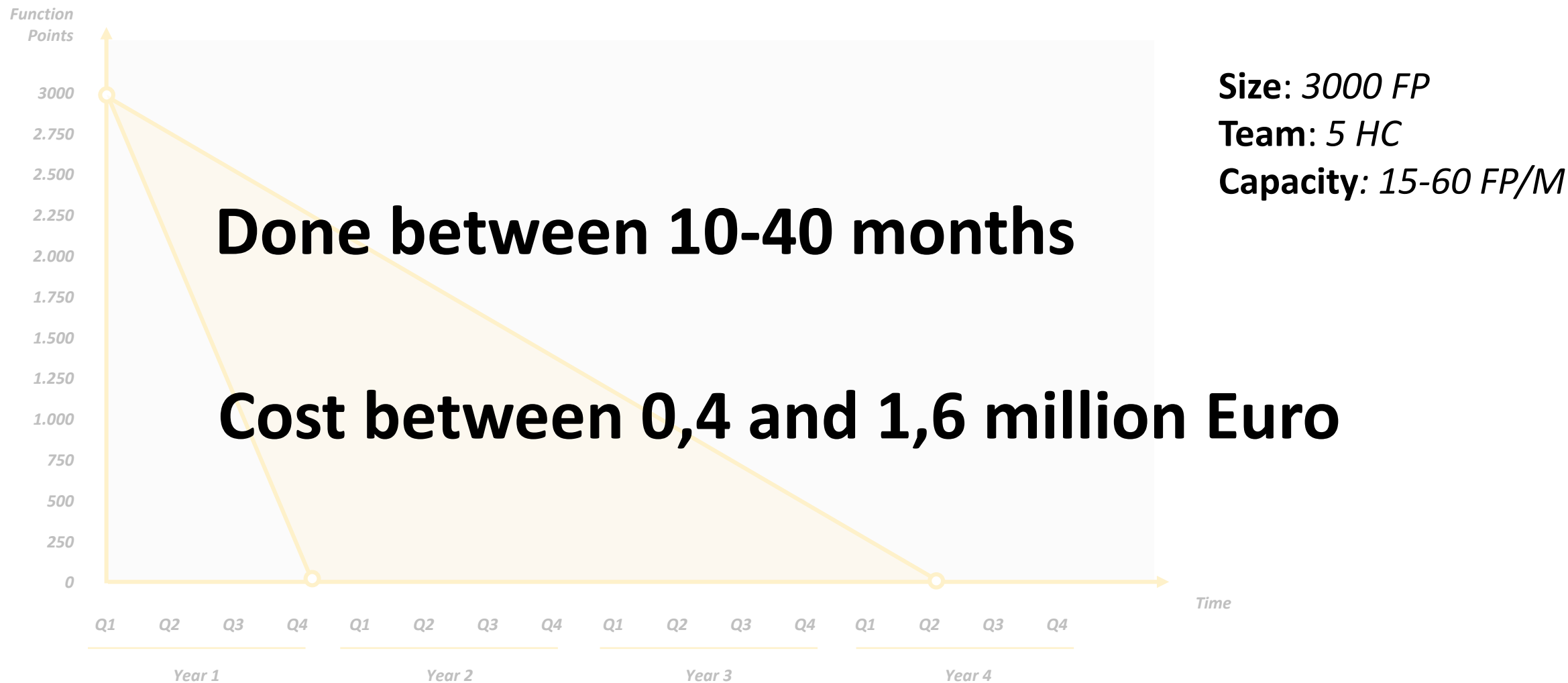
[N]

Let's look at an example with the variance in historical performance



[N]

Let's look at an example with the variance in historical performance



[N]

There can be several reasons for this spread...



Bad PM's

Changing teams

No standards

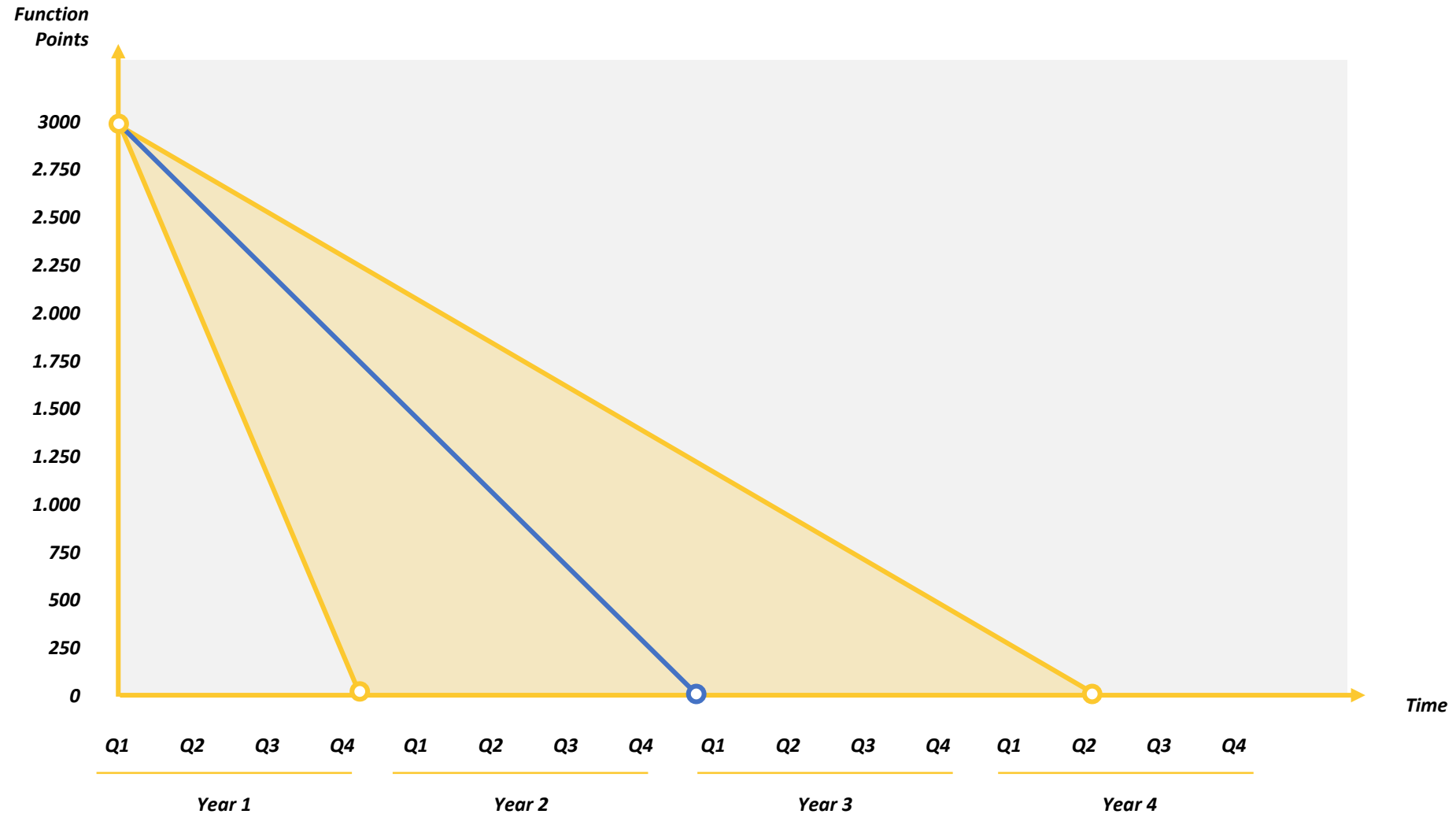
No comparison foundation

No transparency

Changes in context

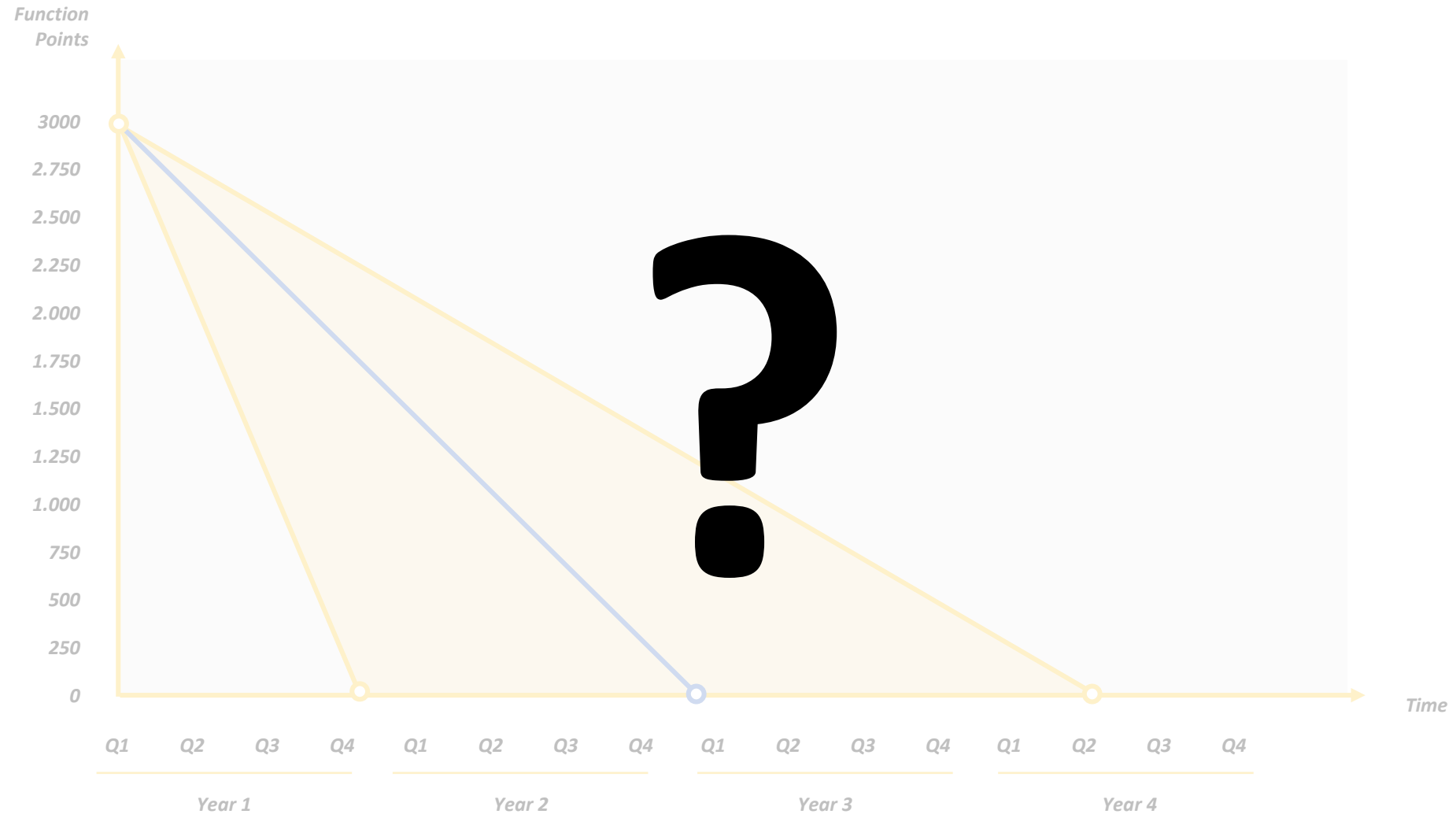
[N]

And therefore our best option... is often our best guess..



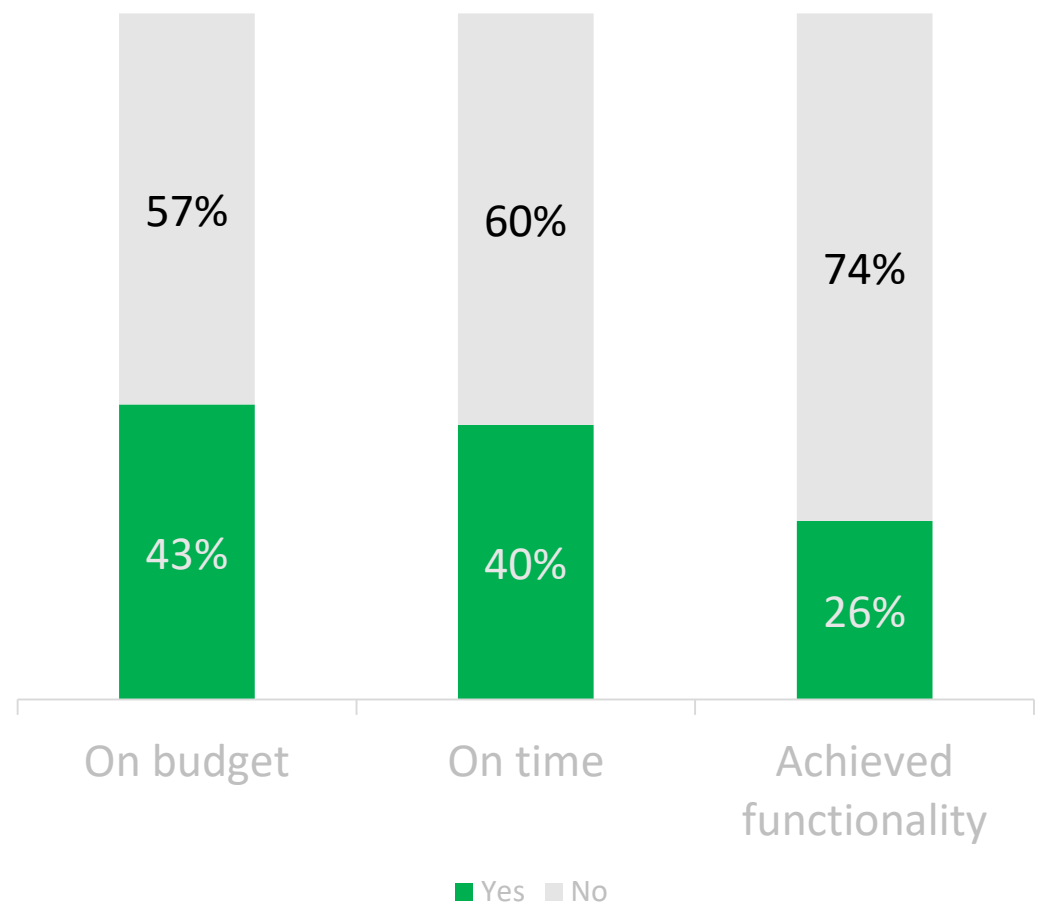
[N]

The question is... with IT being so central to our business
– is this an adequate measure?

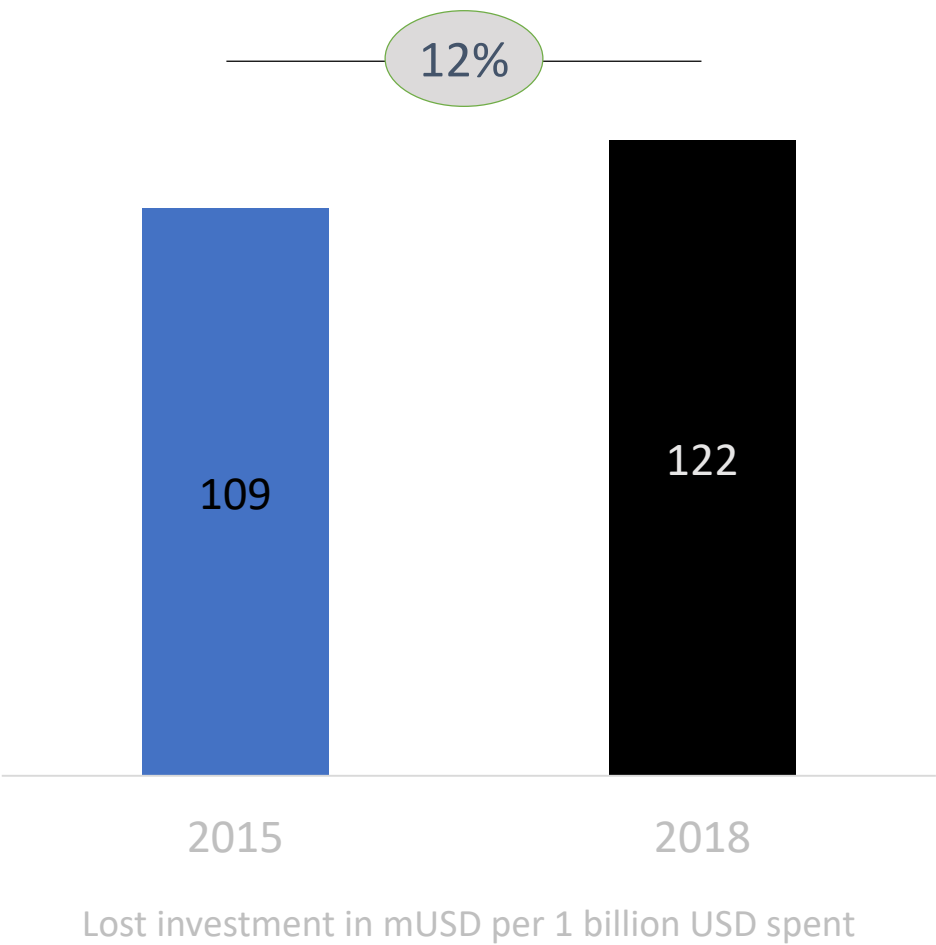


[N]

Most IT projects don't live up to expectations...



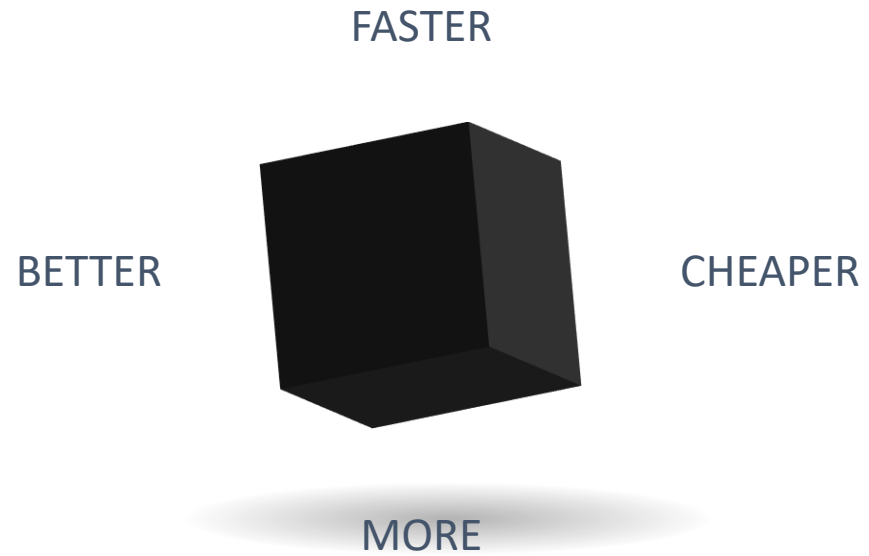
...resulting in increasing investment loss



Source: Standish CHAOS "Decision Latency Theory" report; Project Management Institute "Improve Business Results" infographic

[N]

I saw this a the “black box” problem



[N]

...and the problem was that we were lacking causal thinking

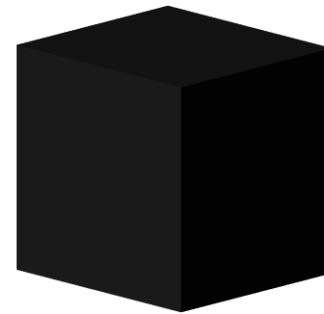
FASTER

BETTER

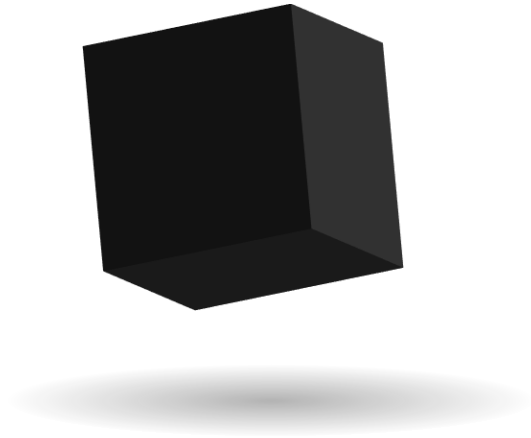
CHEAPER

MORE

=



[N]



[N]



[N]



DB SIZE



END-USER PARTICIPANTS



CONSOLIDATION



USER STORIES



DOMAIN



COMPETENCE



COOPERATION



TEAM STRUCTURE



EQ



COMMUNICATION



CULTURE



PEOPLE



FUNCTION POINTS



PERSONALITY



LEGACY



DECISION MAKER PROXIMITY



TEAM SIZE



TOOLS



EXT. INVOLVEMENT



SECURITY



METHOD MATURITY



BRANDING/MARKETING



MANAGEMENT INVOLVEMENT



BUDGET PRESSURE



BIG DATA



LOCATION



SECURITY



REQUIREMENT NOVELTY



INTERFACES



SOFT SKILLS



PROGRAMMING LANGUAGE



STANDARDIZATION



END USER INVOLVEMENT



PROCESS DESIGN



TESTING



ARCHITECTURE



PROJECT ESTIMATION



INFRASTRUCTURE



EDUCATIONS/TRAINING



REUSE



CAPABILITIES



BACKUP/RESTORE



SOFTWARE COMPLEXITY



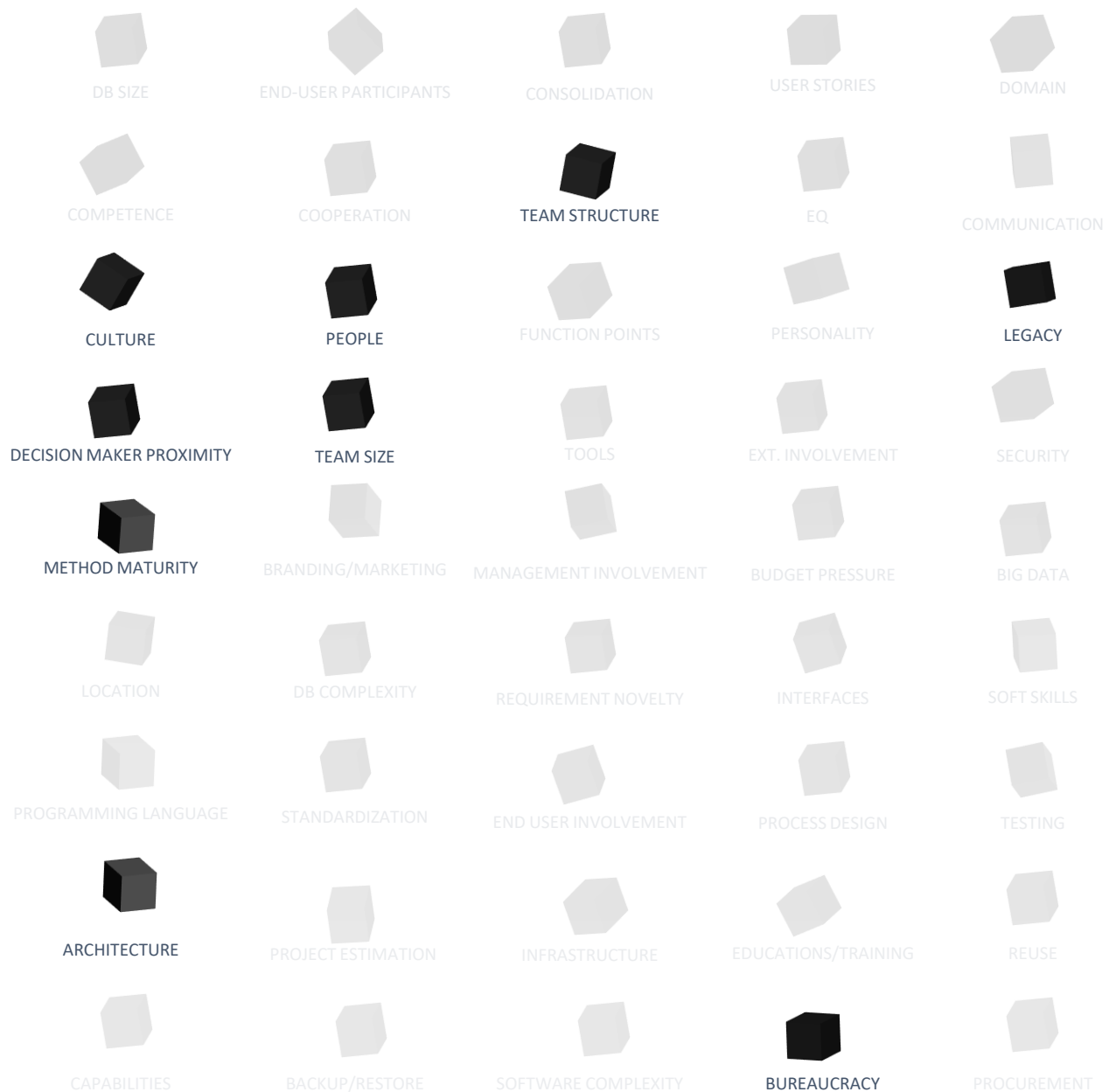
BUREAUCRACY



PROCUREMENT

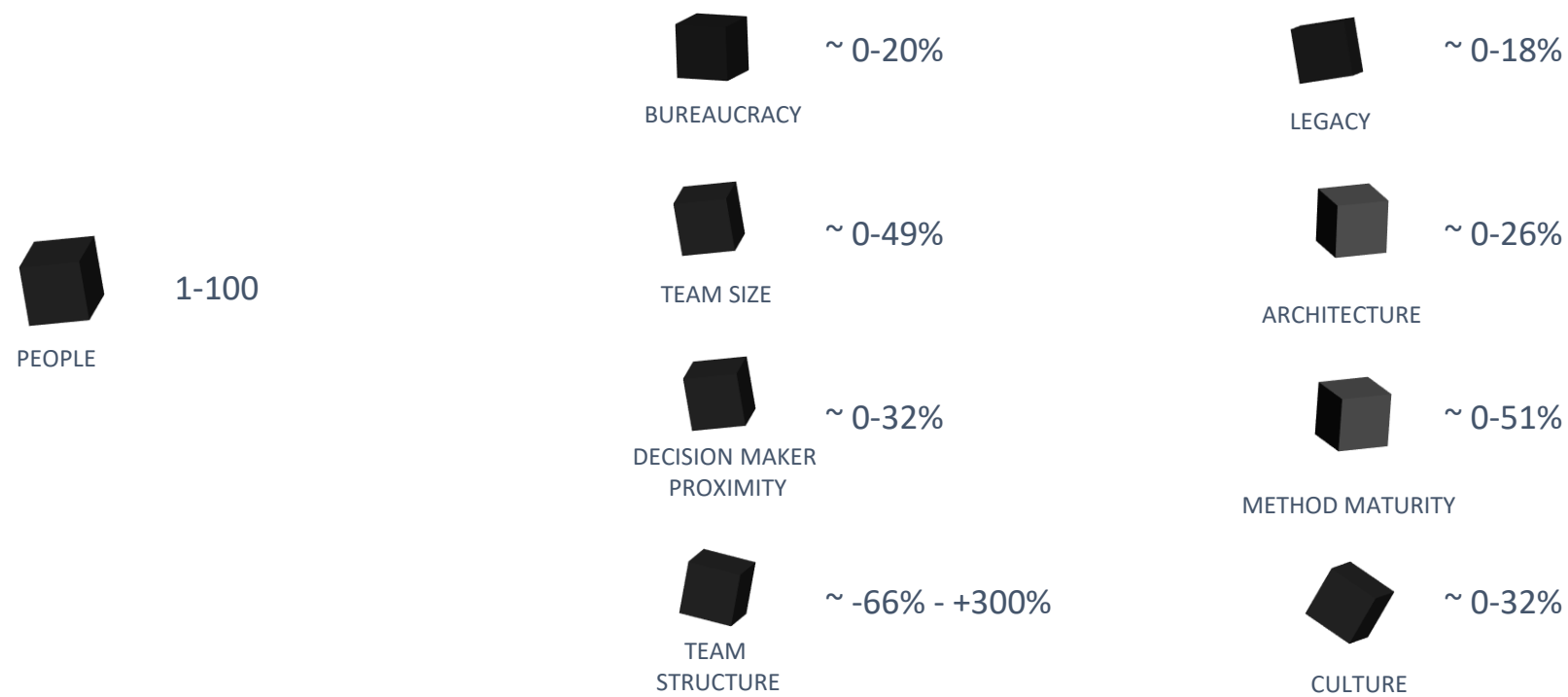


[N]



[N]

We arrived at the factors mostly influencing performance



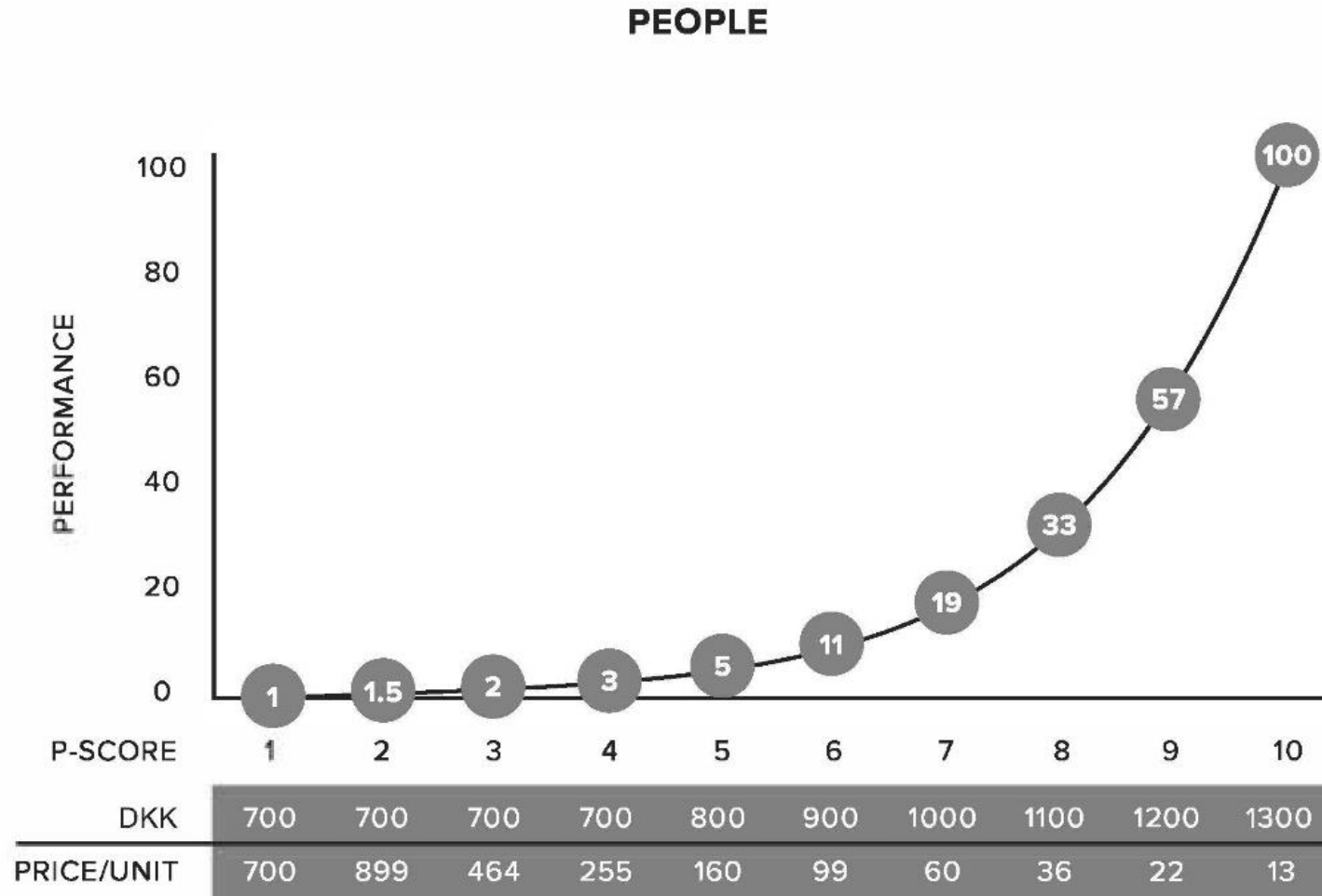
[N]

Which could be expressed in a formula

$$\underbrace{N}_{\text{DEVELOPMENT EFFECTIVITY}} = \sum_{1}^k \underbrace{P_i}_{\text{THE PEOPLE FACTOR}} \left(\frac{1}{\underbrace{f(0)}_{\text{THE ORGANIZATIONAL FACTOR}} + \underbrace{f(C)}_{\text{THE COMPLEXITY FACTOR}}} \right)$$

[N]

People – 1-100x effect



Effect

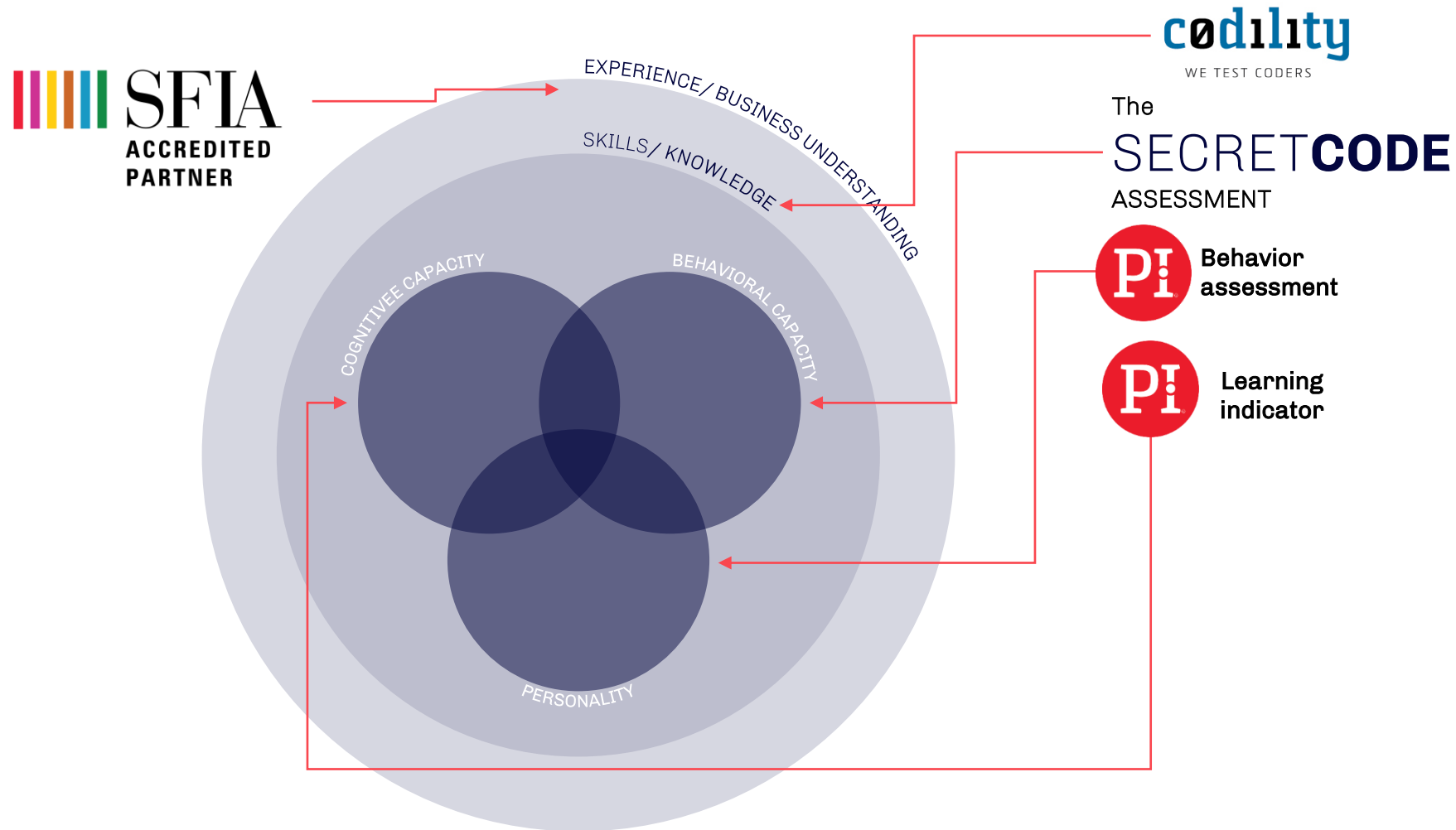
- The quality of your team members

Source

- Harvard Business Review
- Internal studies from Google, Facebook, and Apple

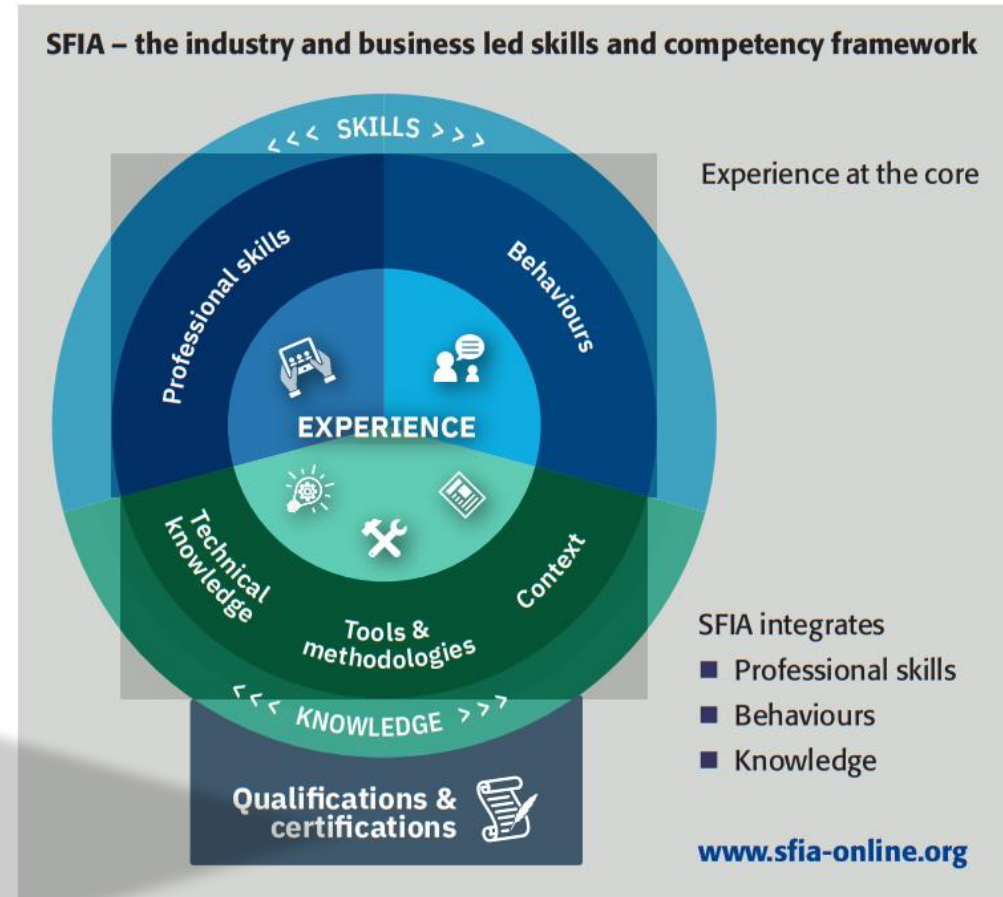
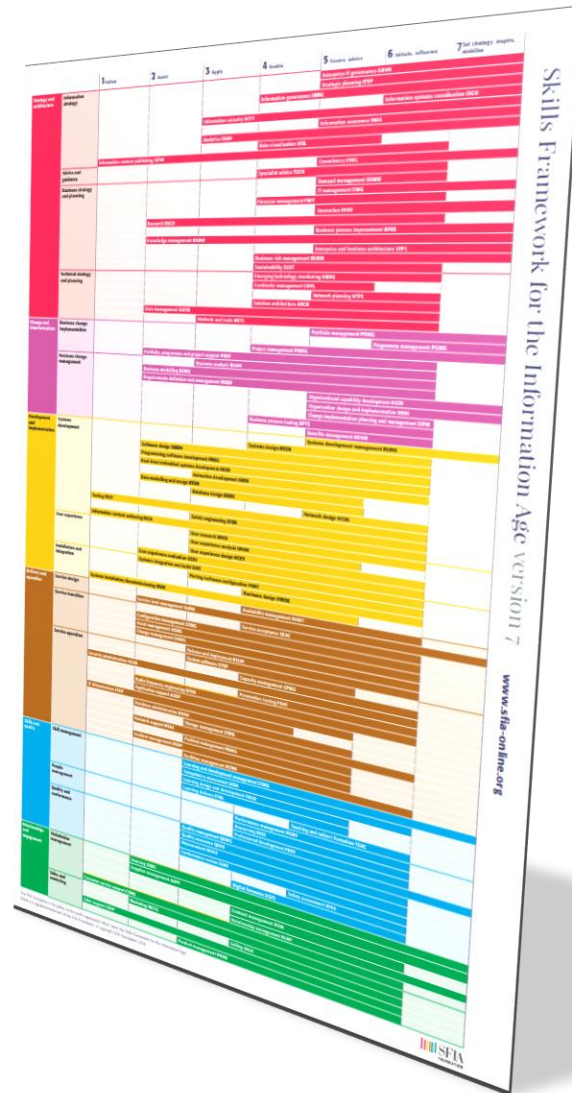
[N]

In 7N we use the 5-layer model described in Nucleon



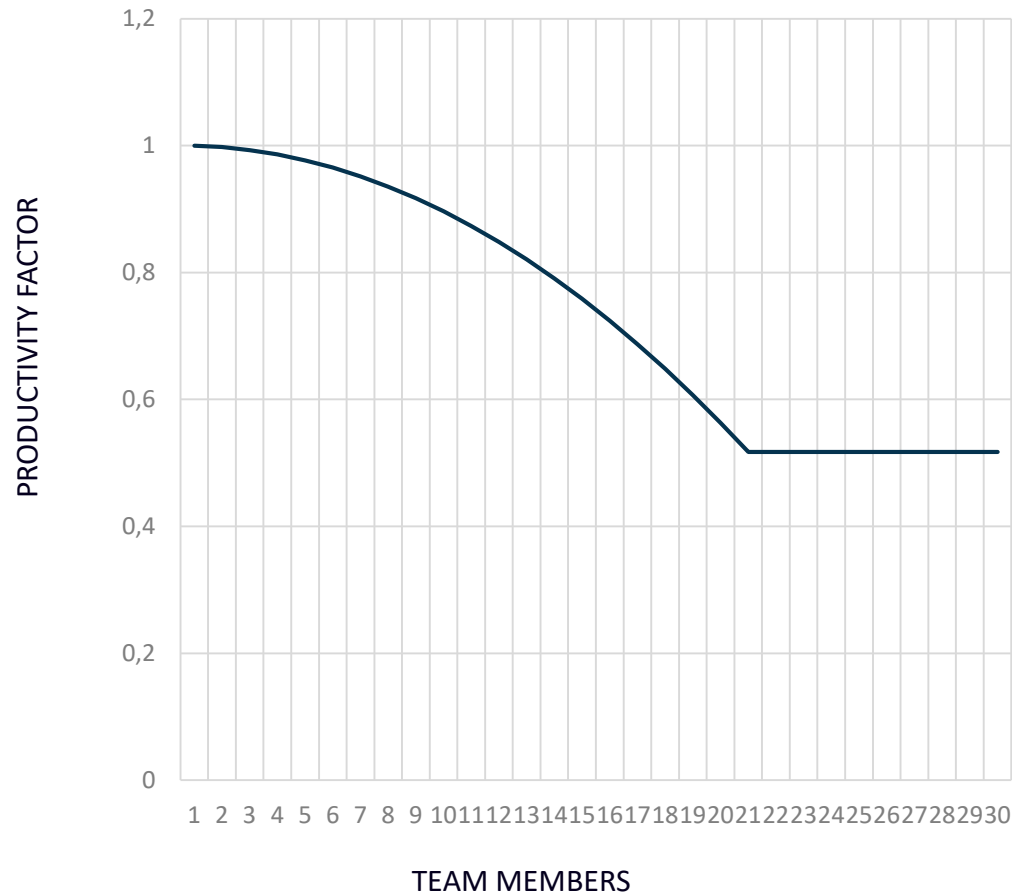
[N]

And use the SFIA framework to map the context



[N]

Team Size (up to -48% effect)



Effect

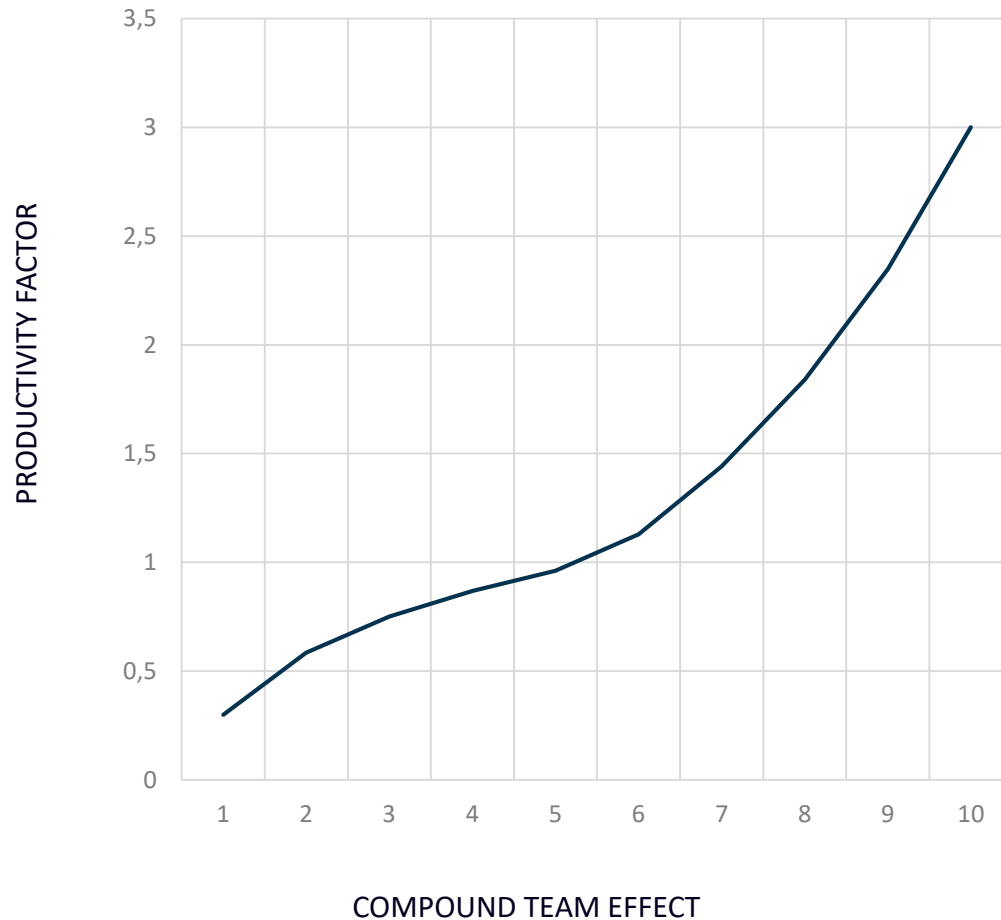
- The number of people on your team
- More members reduce productivity

Source

- Cognitive Load Theory
- *The Mythical Man-Month* – Frederick Brooks

[N]

Team dynamics (-66% to +300% effect)



Effect

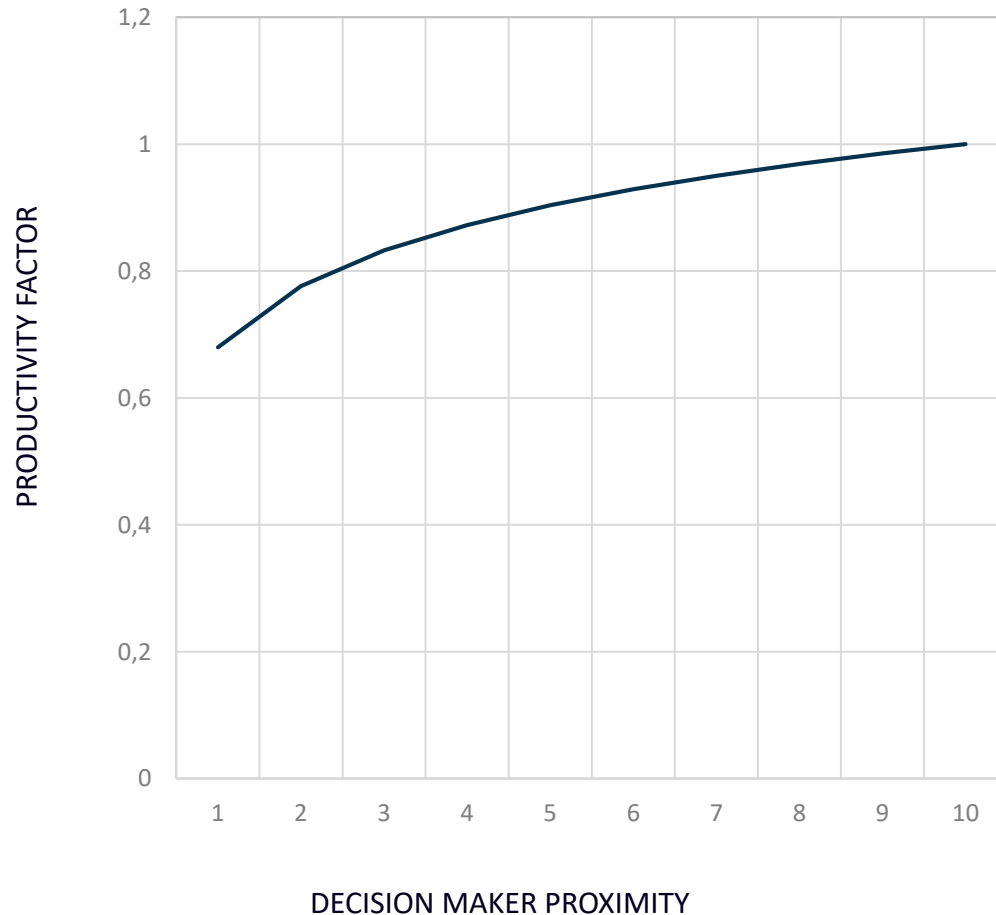
- The amount that high performers lift, and poor performers drag, your team

Source

- “Sitting Near a High Performer can Make you Better at Your Job” – Housman and Minor (2017)

[N]

Decision Maker Proximity (up to -32% effect)



Effect

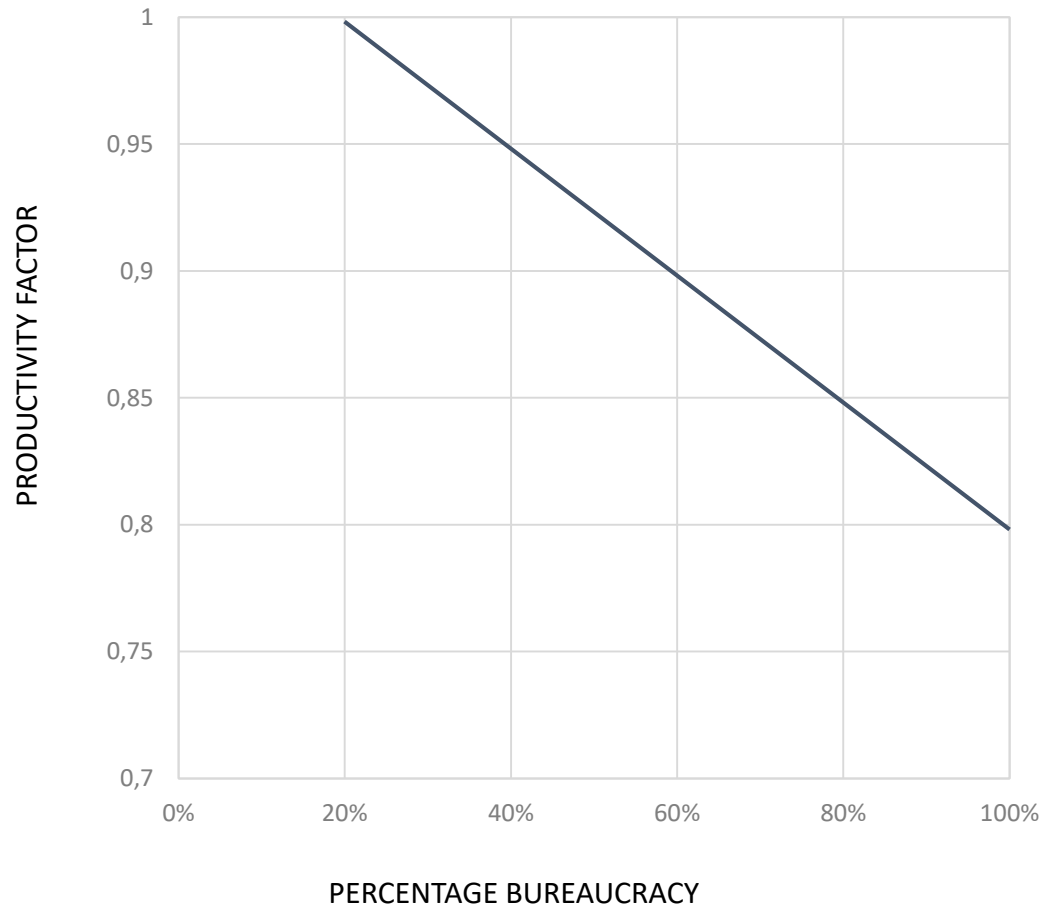
- The ease with which your team can interact with its decision maker and make fast and precise decisions

Source

- Harvard Business Review
- Standish CHAOS “Decision Latency Theory” report

[N]

Bureaucracy (up to -20% effect)



Effect

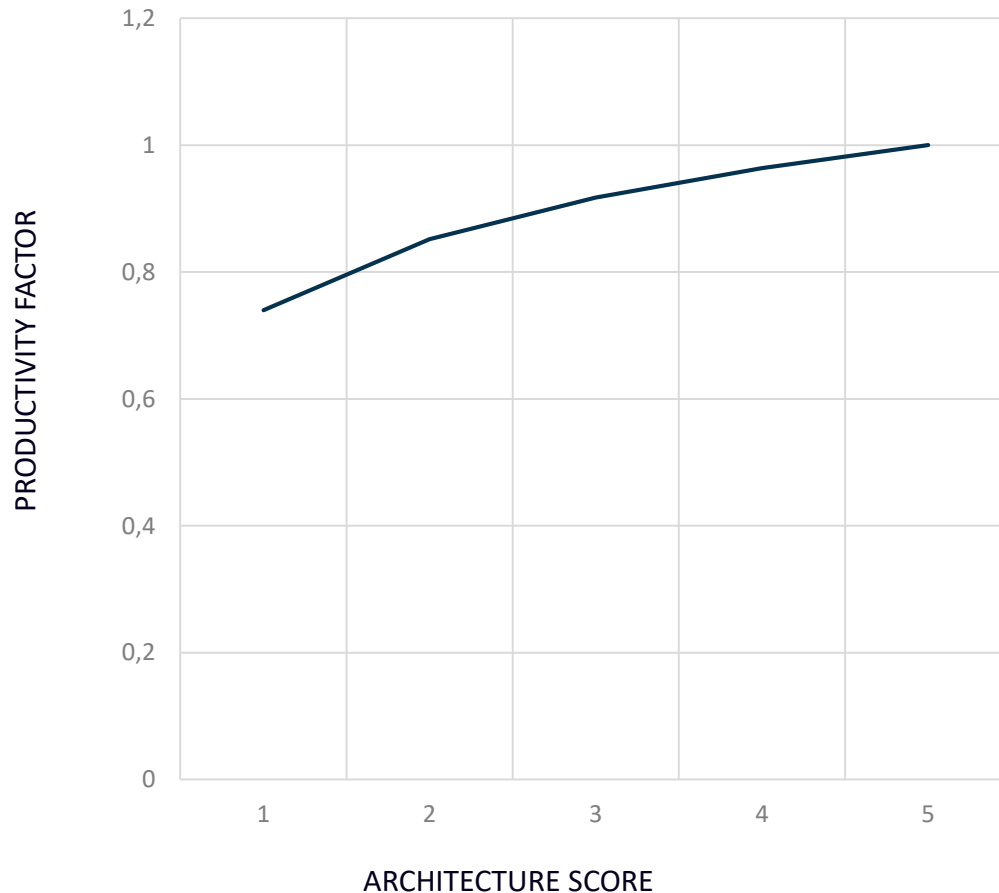
- The amount of time spent not working on production tasks

Source

- “Team mental models and team performance” – Lim and Klein (2006)
- “Relationships among team ability composition, team mental models, and team performance” – Edwards and Day (2006)

[N]

Architecture (up to -26% effect)



Effect

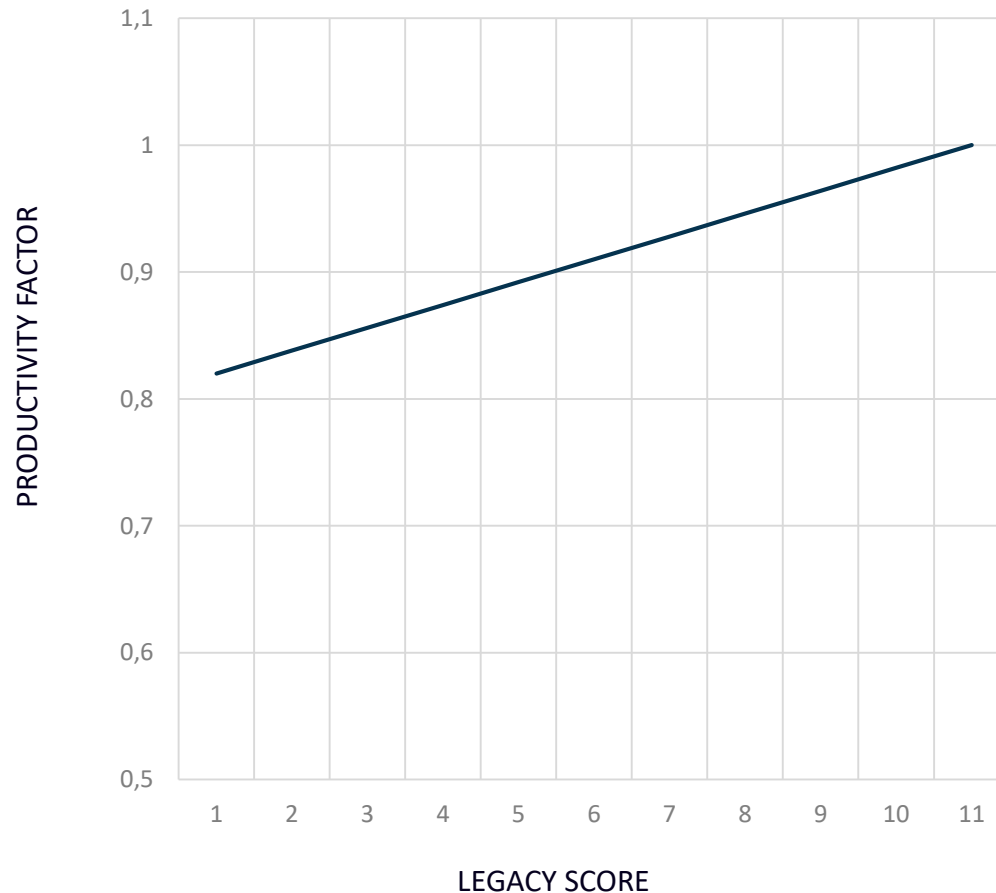
- How well your company's enterprise architecture is documented and understood to support ease of change/implementation and re-use.

Source

- “The Relationship between Enterprise Complexity, Business Complexity and Business Performance” – Roest (2014)
- “Familiar Metric Management” – Putnam and Myers (1995)

[N]

Legacy (up to -18% effect)



Effect

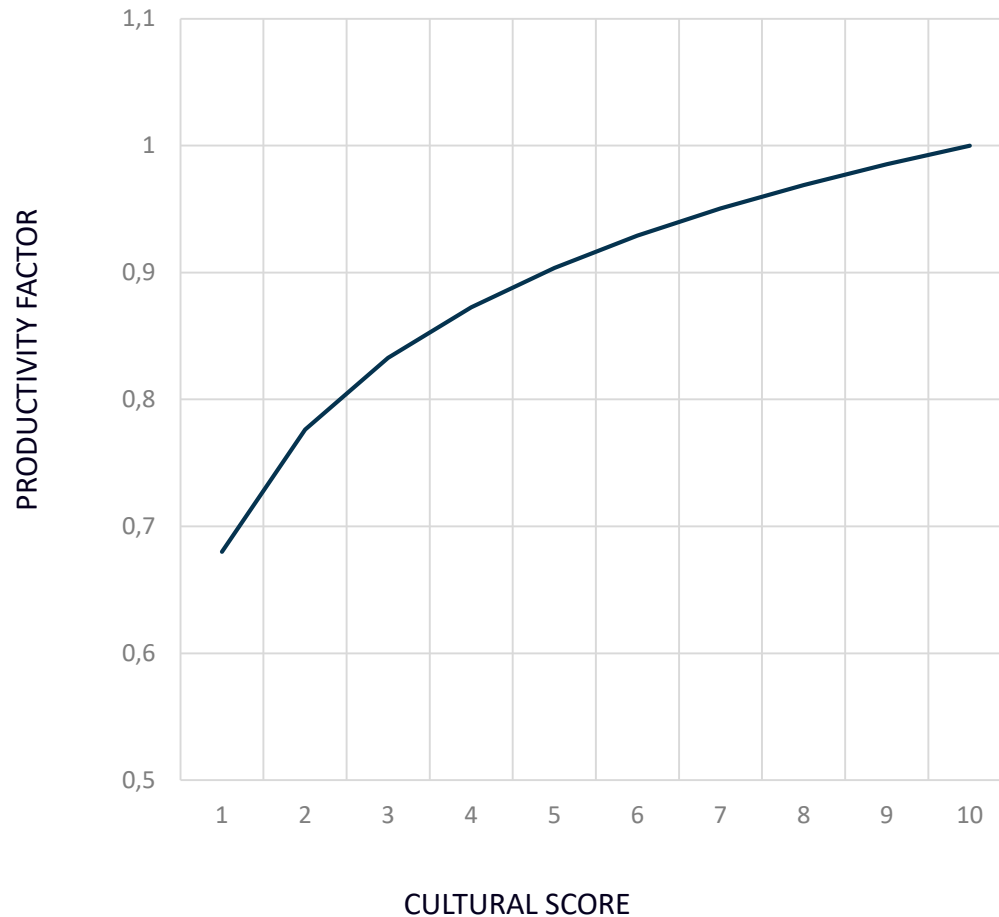
- How many hidden resources you invest in maintenance of obsolete systems

Source

- *Beyond Legacy Code: Nine Practices to Extend the Life (and Value) of Your Software* – David Scott Bernstein
- QSM databases

[N]

Culture (up to -32% effect)



Effect

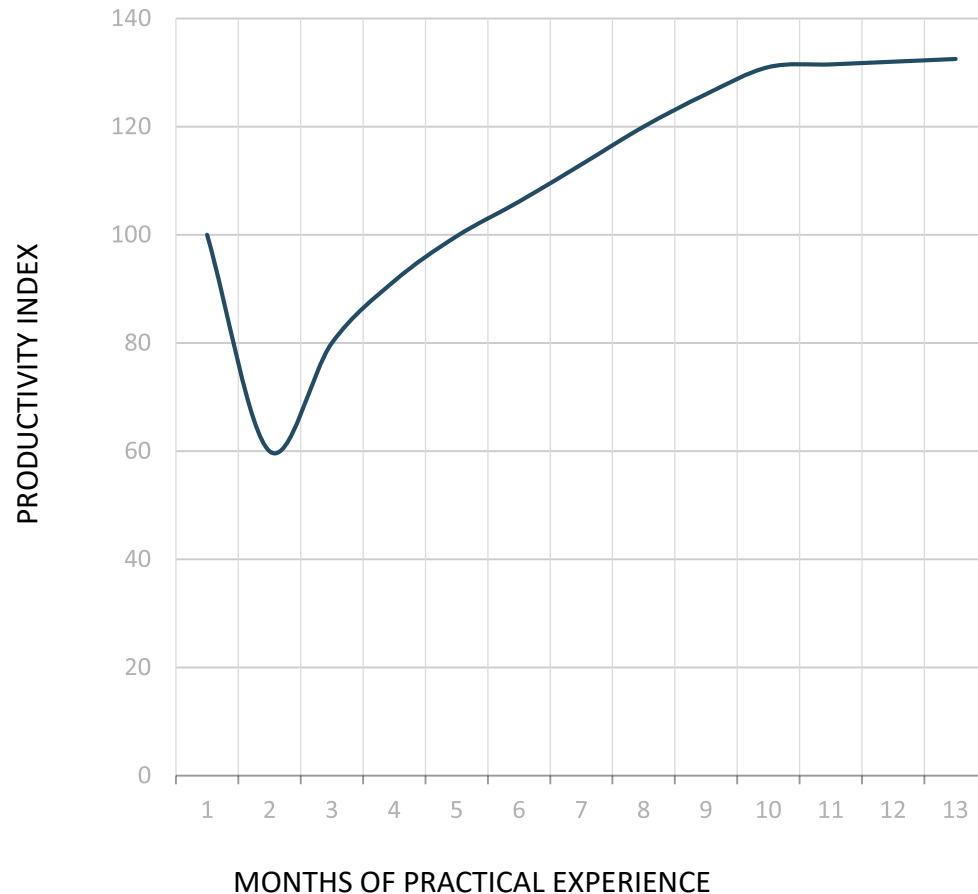
- To which degree your team's culture accelerates or decelerates productivity

Source

- *Primed to Perform: How to Build the Highest Performing Cultures* – Doshi and McGregor (2015)
- "The Relationship between Corporate Culture and Performance" – Dizik (2016)

[N]

Methods Maturity (up to -51% effect)



Effect

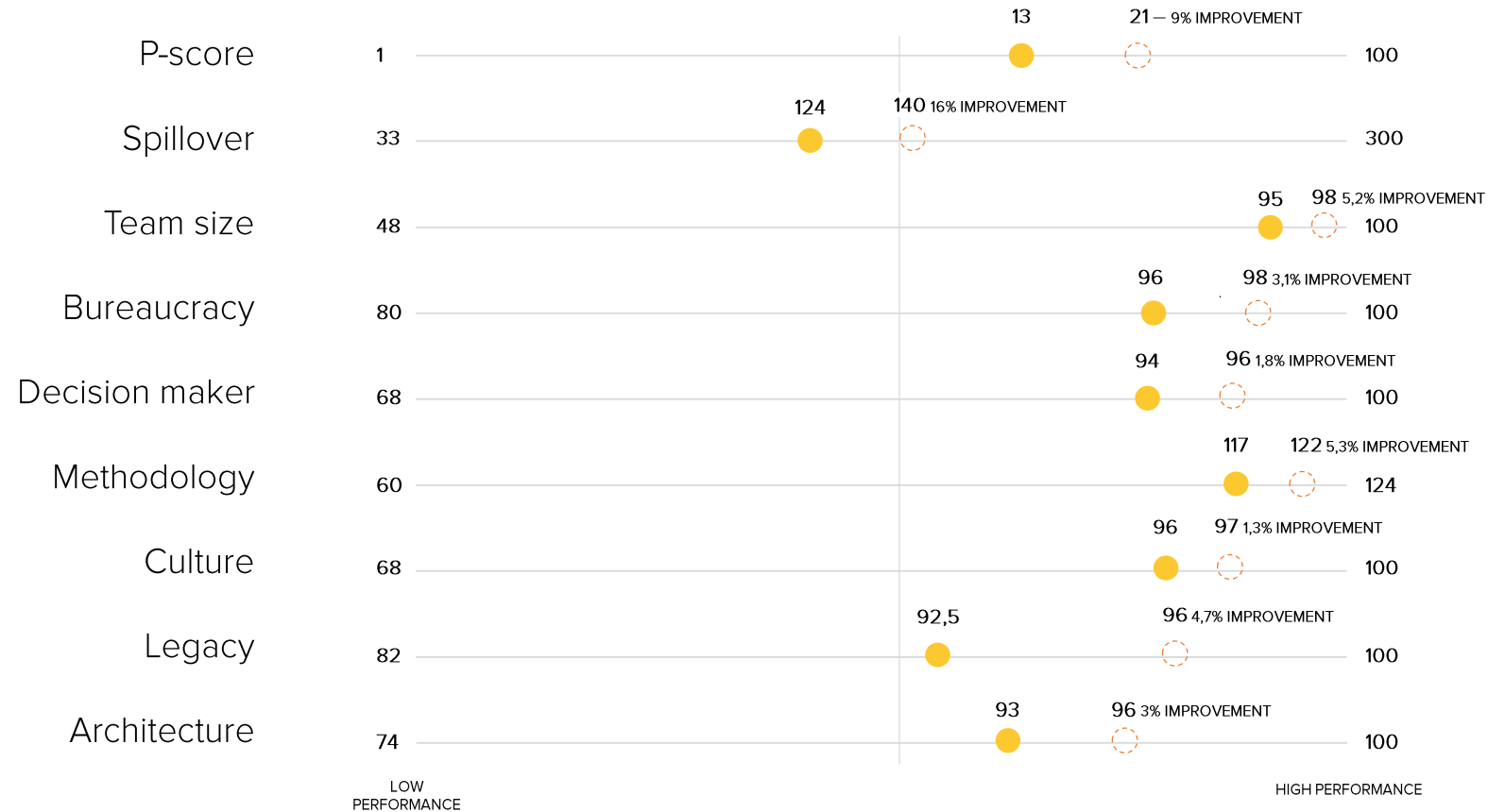
- The length of time your team has been working together

Source

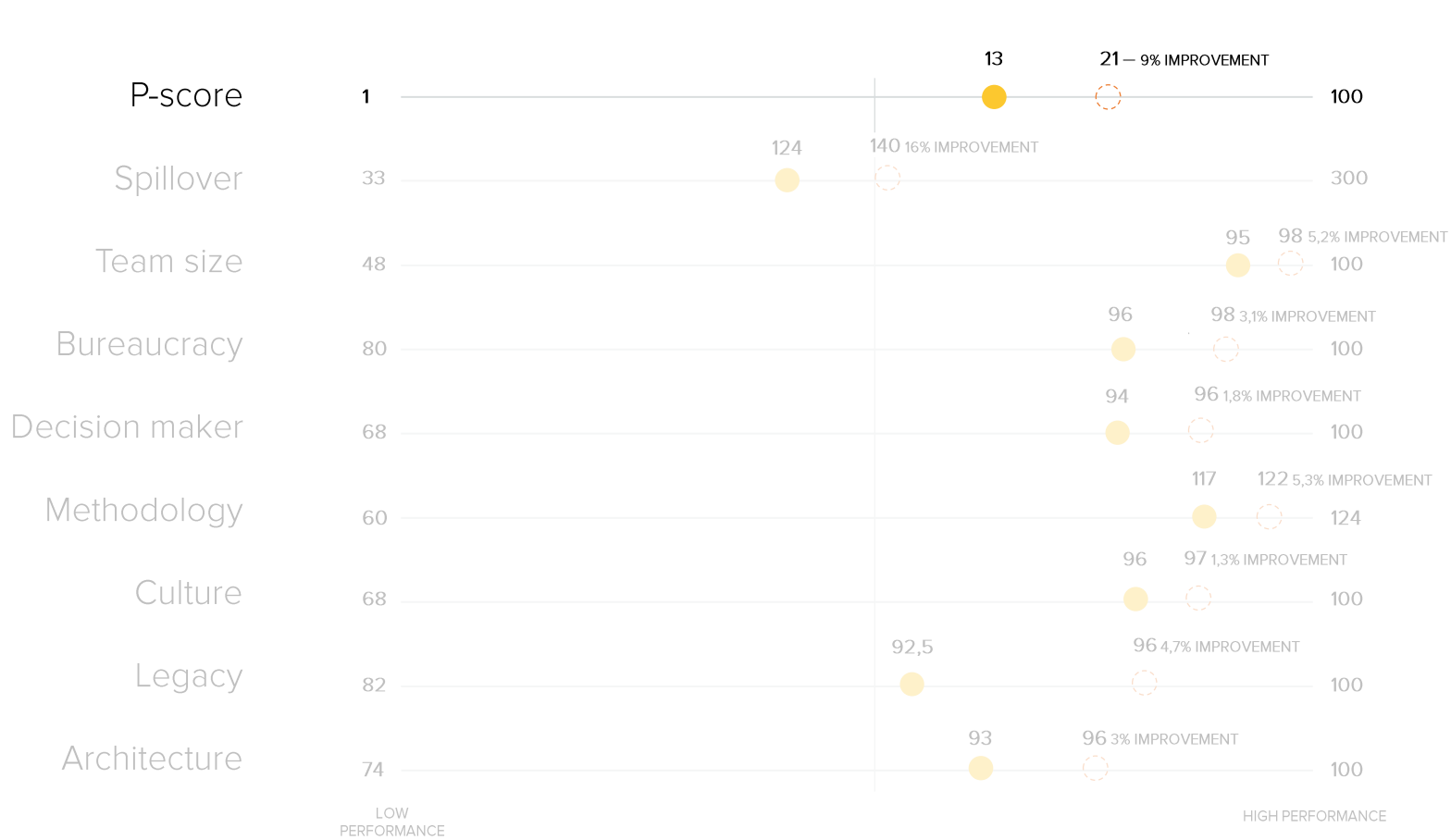
- “Managing the Development of Large Software Systems” – Royce (1970)
- “Agile & Waterfall Methodologies – A Side-By-Side Comparison” – Base36

[N]

So what does this mean in practice?



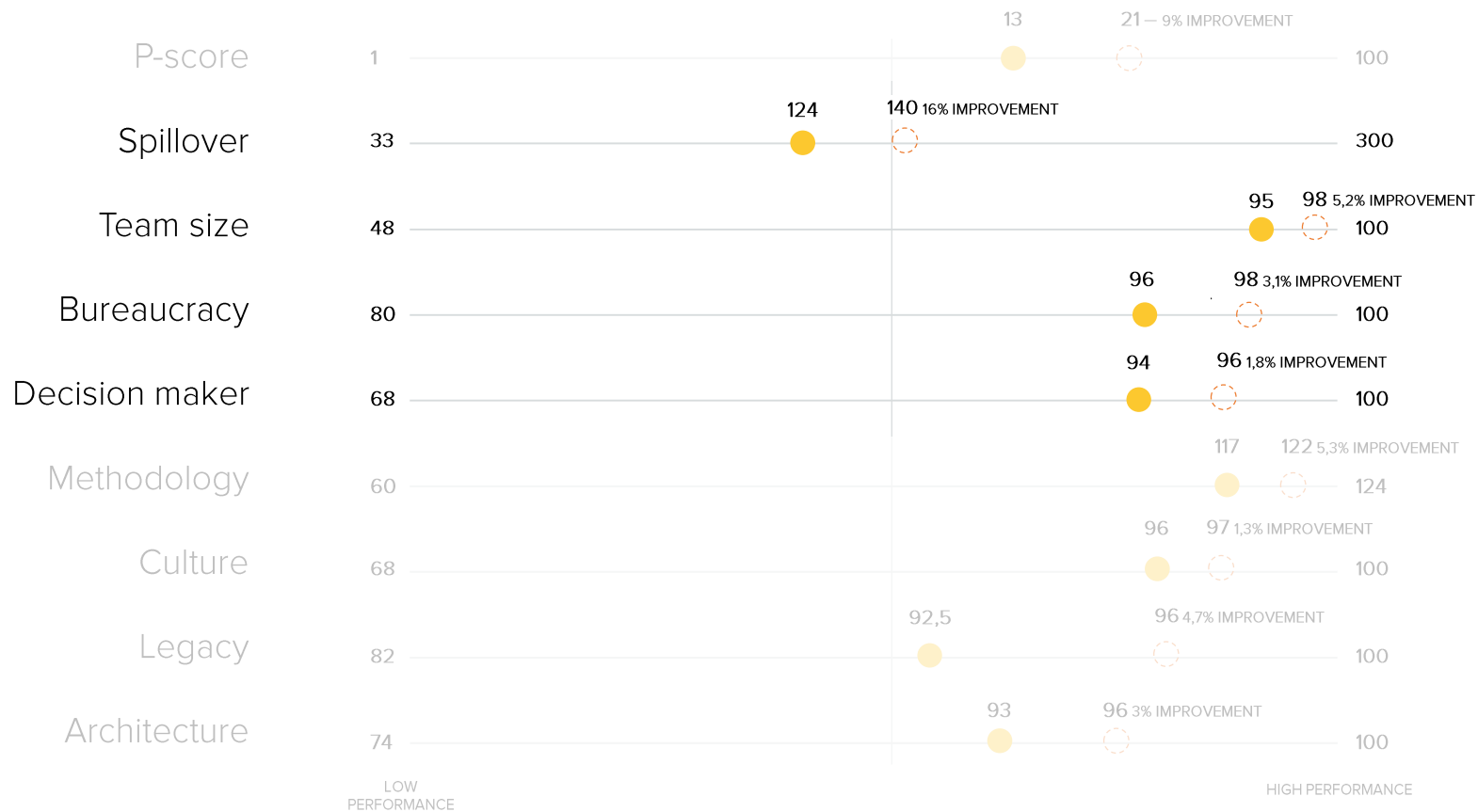
So what does this mean in practice?



Effect

77% increase in effectivity - equivalent to a potential 195 million Euro saving

So what does this mean in practice?

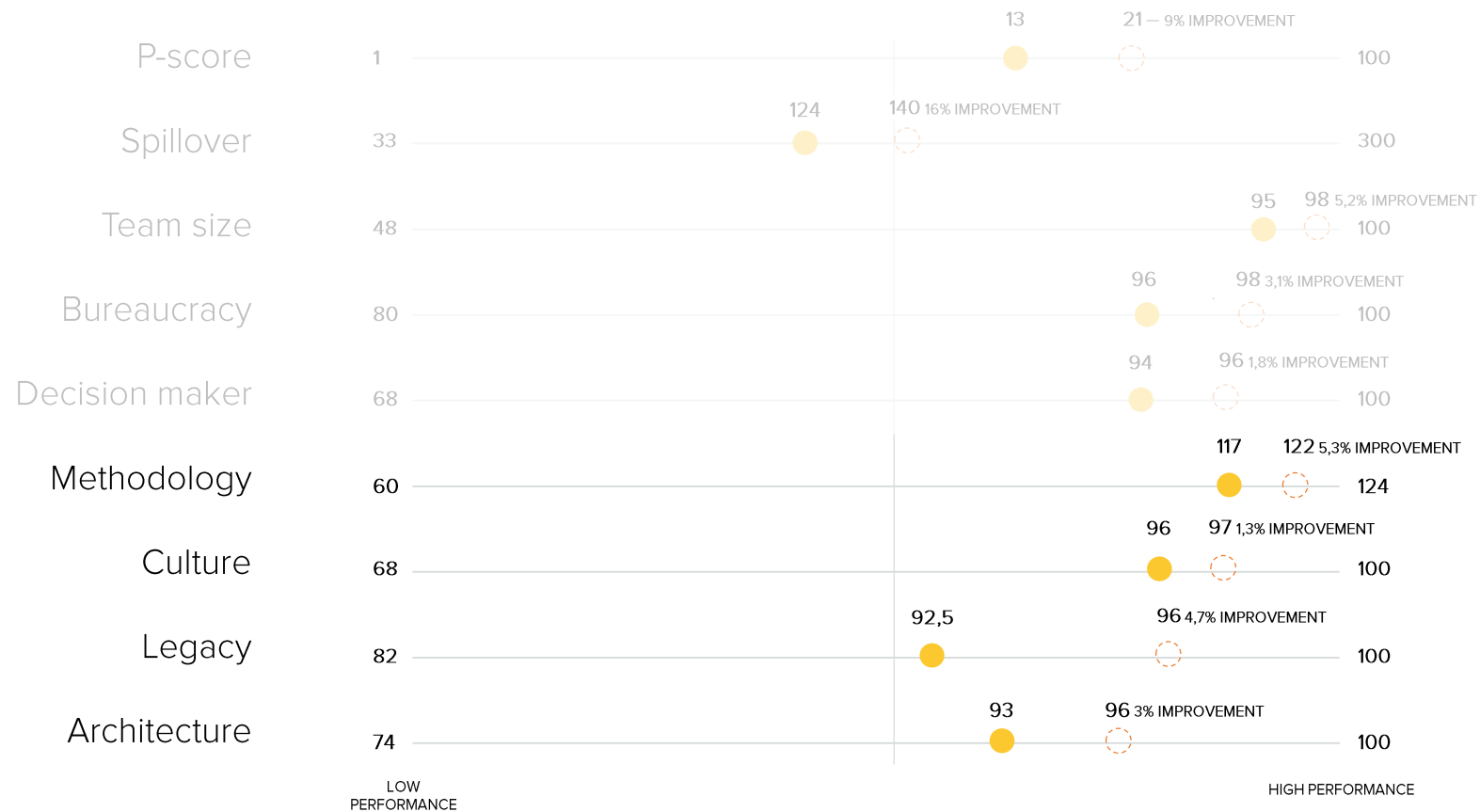


Effect

**25,5% increase in effectivity -
equivalent to a potential 91
million Euro saving**

[N]

So what does this mean in practice?

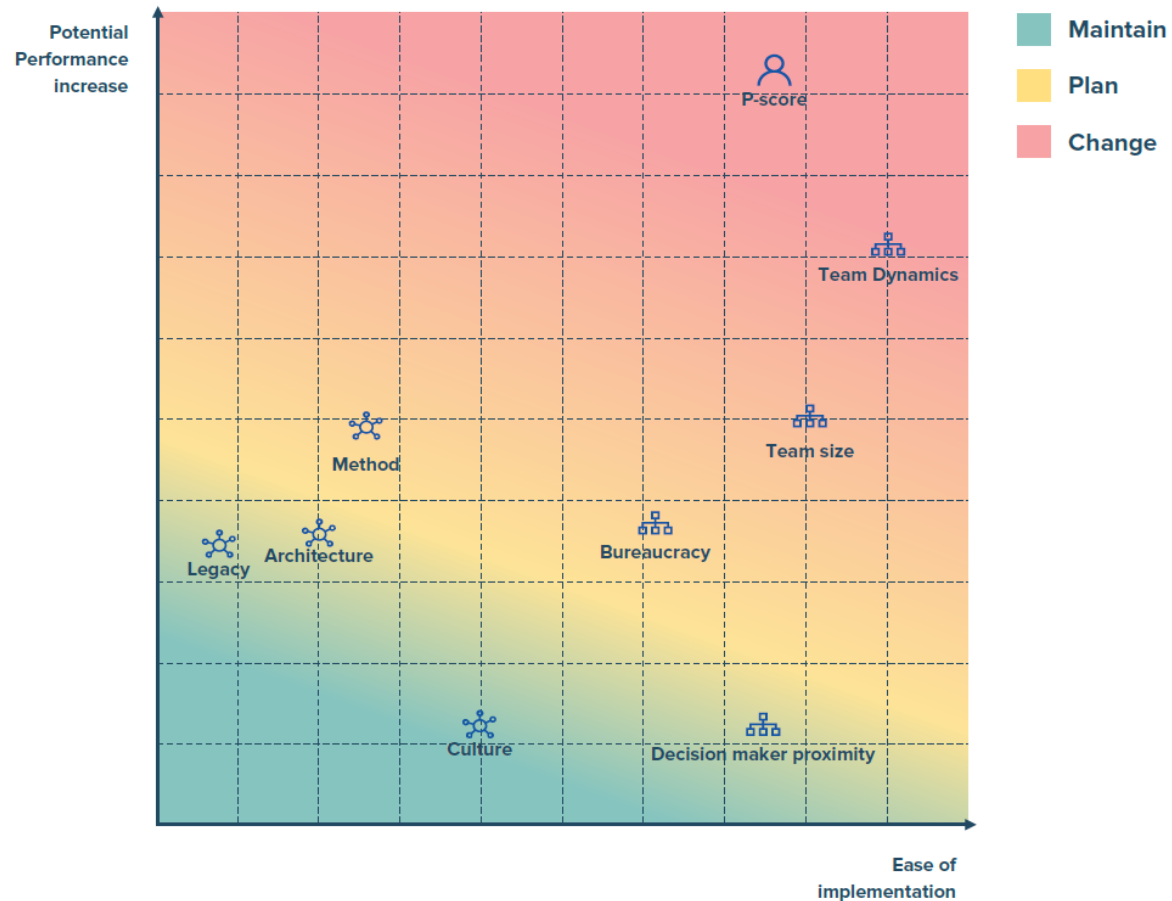


Effect

**14,2% increase in effectivity -
equivalent to a potential 55
million Euro saving**

[N]

So what does this mean in practice?



So based on the Nucleon analysis one of the largest Scandinavian banks could look at a total saving of 341 million Euros

- With a prioritized roadmap suggested for the implementation
- And an ability to get detailed, real-time performance knowledge and better estimation and simulation capabilities

[N]

Thanks for your time

"In fact, it is not just a formula – that is the summary – it is a complex family of measurements and analysis that are compared against best practices in a structured way to reveal all of the major, minor and micro fractures and defects in your IT organizational crystal"

Jim Ditmore, COO Danske Bank

www.nucleonformula.com

Jeppe Hedaa: jh@7n.comn

NUCLEON


$$[N] = \sum_{i=1}^k \left(\frac{1}{f(o) \cdot f(c)} \right)$$

THE MISSING FORMULA THAT
MEASURES YOUR IT DEVELOPMENT
TEAM'S PERFORMANCE

JEPPE HEDAA