Determining IT team performance
Estimation and uncertainty drivers
When making estimations we are primarily looking for two metrics

\[
\frac{\text{SIZE}}{\text{CAPACITY}} = \text{TIME/COST}
\]
When making estimations we are primarily looking for two metrics:

- **Mature**
- **Uncertain**

\[
\frac{\text{SIZE}}{\text{CAPACITY}} = \text{TIME/COST}
\]
Typically the capacity of a team is based on two techniques: CAPACITY
1. Historical and observed performance data
2. Subjective evaluation of current performance
Let’s look at an example with the variance in historical performance.

**Size:** 3000 FP  
**Team:** 5 HC  
**Capacity:** 15-60 FP/M
Let’s look at an example with the variance in historical performance.

Done between 10-40 months

Cost between 0.4 and 1.6 million Euro

Size: 3000 FP
Team: 5 HC
Capacity: 15-60 FP/M
There can be several reasons for this spread...

- Bad PM’s
- Changing teams
- No standards
- No comparison foundation
- No transparency
- Changes in context
And therefore our best option... is often our best guess..
The question is... with IT being so central to our business – is this an adequate measure?
Most IT projects don’t live up to expectations...  

...resulting in increasing investment loss

- 57% on budget
- 60% on time
- 74% achieved functionality

- 43% yes
- 40% no
- 26% no

Lost investment in mUSD per 1 billion USD spent:
- 2015: 109
- 2018: 122

Source: Standish CHAOS “Decision Latency Theory” report; Project Management Institute “Improve Business Results” infographic
I saw this as the “black box” problem.
...and the problem was that we were lacking causal thinking
<table>
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<tr>
<th>N</th>
<th>DB SIZE</th>
<th>END-USER PARTICIPANTS</th>
<th>CONSOLIDATION</th>
<th>USER STORIES</th>
<th>DOMAIN</th>
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<tr>
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<td>COMPETENCE</td>
<td>COOPERATION</td>
<td>TEAM STRUCTURE</td>
<td>EQ</td>
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<td>DECISION MAKER PROXIMITY</td>
<td>TEAM SIZE</td>
<td>TOOLS</td>
<td>EXT. INVOLVEMENT</td>
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<td>CAPABILITIES</td>
<td>BACKUP/RESTORE</td>
<td>SOFTWARE COMPLEXITY</td>
<td>BUREAUCRACY</td>
<td>PROCUREMENT</td>
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</table>
We arrived at the factors mostly influencing performance:

- **People**: 1-100
- **Bureaucracy**: ~0-20%
- **Team Size**: ~0-49%
- **Decision Maker Proximity**: ~0-32%
- **Team Structure**: ~-66% - +300%
- **Legacy**: ~0-18%
- **Architecture**: ~0-26%
- **Method Maturity**: ~0-51%
- **Culture**: ~0-32%
Which could be expressed in a formula

\[ N = \sum_{i=1}^{k} P_i \left( \frac{1}{f(0) + f(C)} \right) \]
People – 1-100x effect

**Effect**
- The quality of your team members

**Source**
- Harvard Business Review
- Internal studies from Google, Facebook, and Apple
In 7N we use the 5-layer model described in Nucleon.
And use the SFIA framework to map the context
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
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)
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
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)
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**

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
Culture (up to -32% effect)

**Effect**
- To which degree your team’s culture accelerates or decelerates productivity

**Source**
- “The Relationship between Corporate Culture and Performance” – Dizik (2016)
Methods Maturity (up to -51% effect)

Effect
- The length of time your team has been working together

Source
- “Agile & Waterfall Methodologies – A Side-By-Side Comparison” – Base36
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
So what does this mean in practice?

Effect
14.2% increase in effectivity - equivalent to a potential 55 million Euro saving
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
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

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