What a Tangled Web Effort Estimation we Weave! How can Knowledge Management disentangle this Web?

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Software Project Management...

Project Management Institute's Project Management Body of Knowledge (PMBOK)

** Includes both internal (informal) commitments and external (formal) contracts

RMW, CQ, EJ & Others 1990
Let’s look at a typical software effort estimation process...

How "big" is the problem to be solved?

- Requirements for a new application
- Estimated size
- Deriving an effort estimate
- Effort estimate
- Data/Knowledge on past finished projects
- Other factors
- Resource allocation
  - Duration estimate
  - Cost estimate

Mendes et al. (2005) Web Effort estimation, Web Engineering, Mendes and Mosley (Eds.), Springer-Verlag, pp. 29-73.
Data... Data... Data...
I cannot make bricks without clay!

— William Shakespeare
Why so many faulty bricks?... or... Why do projects fail so often?

• Among the most common factors¹:

  Software Effort Estimation error can be of 30%-40% on average, thus leading to serious project management problems

  (Jørgensen and Grimstad, 2009)

  – Poor project management
  – Stakeholder politics
  – Commercial pressures

How has most research tackled this?

\[ \hat{y} = a + bx \]

and what about the [link](http://www.worldwidewebsize.com/)?

"Since the mid 1990s, Web development has been one of the fastest growing industries in the world"
What about Web effort estimation?

It is a tangled (complicated) Web!
Let’s elaborate...

- **State of the Art**
  - First article in 2000 (Mendes & Counsel)
  - By 2012, 72 studies¹ & two books

¹ Azhar, Mendes and Riddle (2012), A SLR of Web Resource Estimation, Proceedings PROMISE’2012
Main Findings...

Azhar, Mendes and Riddle (2012), A SLR of Web Resource Estimation, Proceedings PROMISE’2012
HSV color Model
Hue, Saturation, Value (lightness)

VALUE
“Today, knowledge and the capability to create and utilize knowledge are considered to be the most important source of a firm’s sustainable competitive advantage” (Nonaka & Toyama, 2003)
Knowledge Management...

Explication (Extraction) of Tacit knowledge

Representation of Uncertainty

Tool support for Decision Making


Theory of Knowledge Creation...

A process of sharing experiences and hence creating Tacit knowledge

A process of ‘embodifying’ Explicit knowledge into Tacit knowledge

A process of Articulating Tacit knowledge Into Explicit concepts

A process of Combining concepts into Knowledge System

Evidence: 100% Expert-based Model

What-if Scenario...
### Is it ‘Quick to Market’?

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<th>Characteristics</th>
<th>A (NZ)</th>
<th>B (NZ)</th>
<th>C (NZ)</th>
<th>D (NZ)</th>
<th>E (NZ)</th>
<th>F (BR)</th>
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<td>8</td>
<td>11</td>
<td>22</td>
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Value = Improved:

- Processes
- Estimates
- Customer Relationship
- Knowledge
Thank you