capture consensus with paper and block media
captured consensus becomes a computer model for the enterprise
an engineering design process model from the management perspective

Philipp Skogstadt, PhD 2009
engineering design
a management perspective
re-think... re-build... re-think ... until we get big insights
approver, the good manager facilitates re-thinking
censor, the bad manager blocks re-thinking
re-engineered design process model for management
information theoretic characterization of design thinking in action

Vinod Baya, PhD 1997

now lead technology forecaster at Price-Waterhouse-Cooper

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the attention time constant
Baya PhD’1997

7 second rule

design information fragment duration across six activity categories
(2 each = receptive, expressive, search)
the questioning activity of design thinking teams predicts innovation

Ozgur Eris, PhD 2002
now associate professor, design theory and methodology, Technical University of Delft, NL
question frequency predicts performance

Eris PhD’2002

better

80 -

70 -

60 -

50 -

40 -

30 -

20 -

10 -

0 -

design

team

performance

score

40 questions / hour

abstract / concrete (Brereton’92)
reasoning / conceiving (Eris’02)

45.0

35.0

30.0

25.0

20.0

combined rate of DRQ+GDQ (questions/hour)

DRQ = deep reasoning question
GDQ = generative design question

wow

thank you

two types of questions predominate

after Eris 2002

Design Goal

Divergent Thinking

Convergent Thinking

Design Requirements

Alternative Concepts
$c_1, c_2, c_3, \ldots c_N$

DRQ: Deep Reasoning Question
GDQ: Generative Design Question
affective interaction dynamics
predict design thinking
team performance
Malte Jung, PhD 2011
now assistant professor Cornell Univ.
Can we adapt a set of methods that were developed to predict satisfaction and divorce in marriages to solve the problem of understanding the relationships between affective interaction characteristics and performance in design teams?

(Gottman and Levenson, 1992, 2000; Gottman, 1994)
couples at work
engineers at work
LAB STUDY

5 minute affect dynamics

* $p \leq 0.05$

5 to 8 hours

Team Performance

FIELD STUDY

15 minute affect dynamics

* $p \leq 0.05$

** $p \leq 0.01$

~3 months

Team Performance

~3 months
the power of hedonic balance

Jung PhD 2011

wow team performance

regulated (positive hedonic balance) N = 5

thank you team performance

non-regulated (negative hedonic balance) N = 11