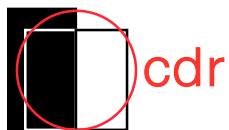


surprise & delight

design thinking in creative
practice and theory

one man's view

NSF Workshop on Synergies Between Creativity and Information Technology,
Science, Engineering, and Design: defining a research agenda
2,3 November 2006 @ Arlington, VA



Larry Leifer

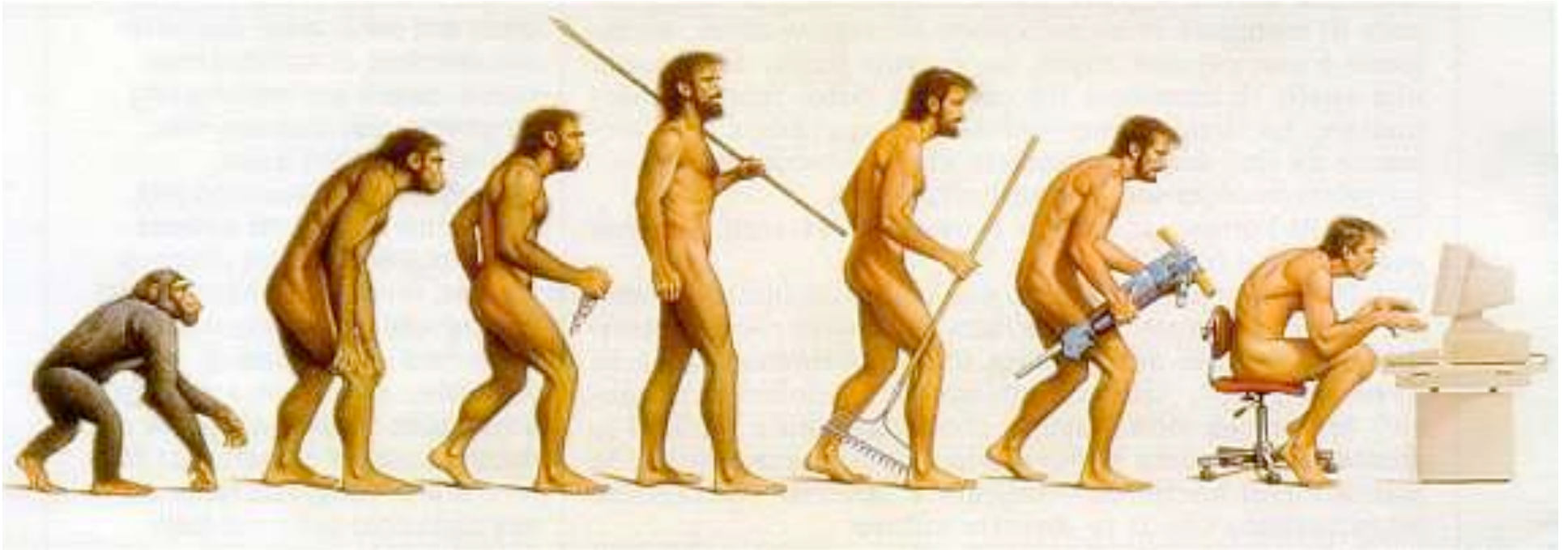
Professor (ME), Founding Director, Stanford Center for Design Research
Founding Member, Hasso Plattner Institute of Design at Stanford



surprise & delight ?



are we making progress ?

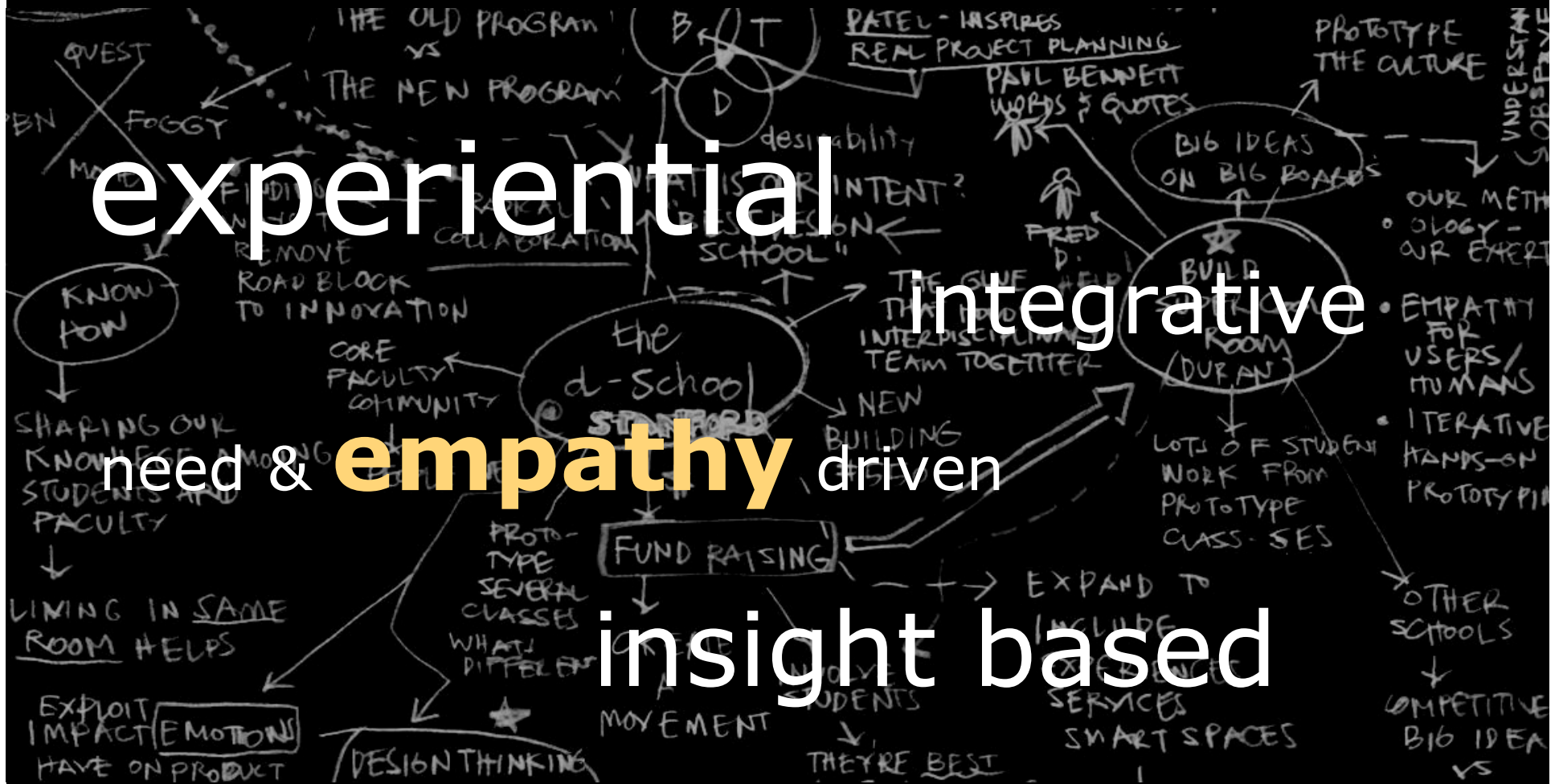


design thinking

experiential integrative

need & **empathy** driven

insight based

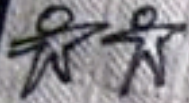


Hasso Plattner Institute of Design at Stanford

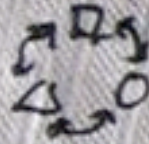


the plan

OUR INTENT: CREATE THE BEST
DESIGN SCHOOL. PERIOD.



prepare FUTURE INNOVATORS to be
breakthrough thinkers & doers



use DESIGN THINKING to
inspire multidisciplinary teams



foster RADICAL COLLABORATION
between students, faculty & industry



tackle BIG PROJECTS and use
prototyping to discover new solutions

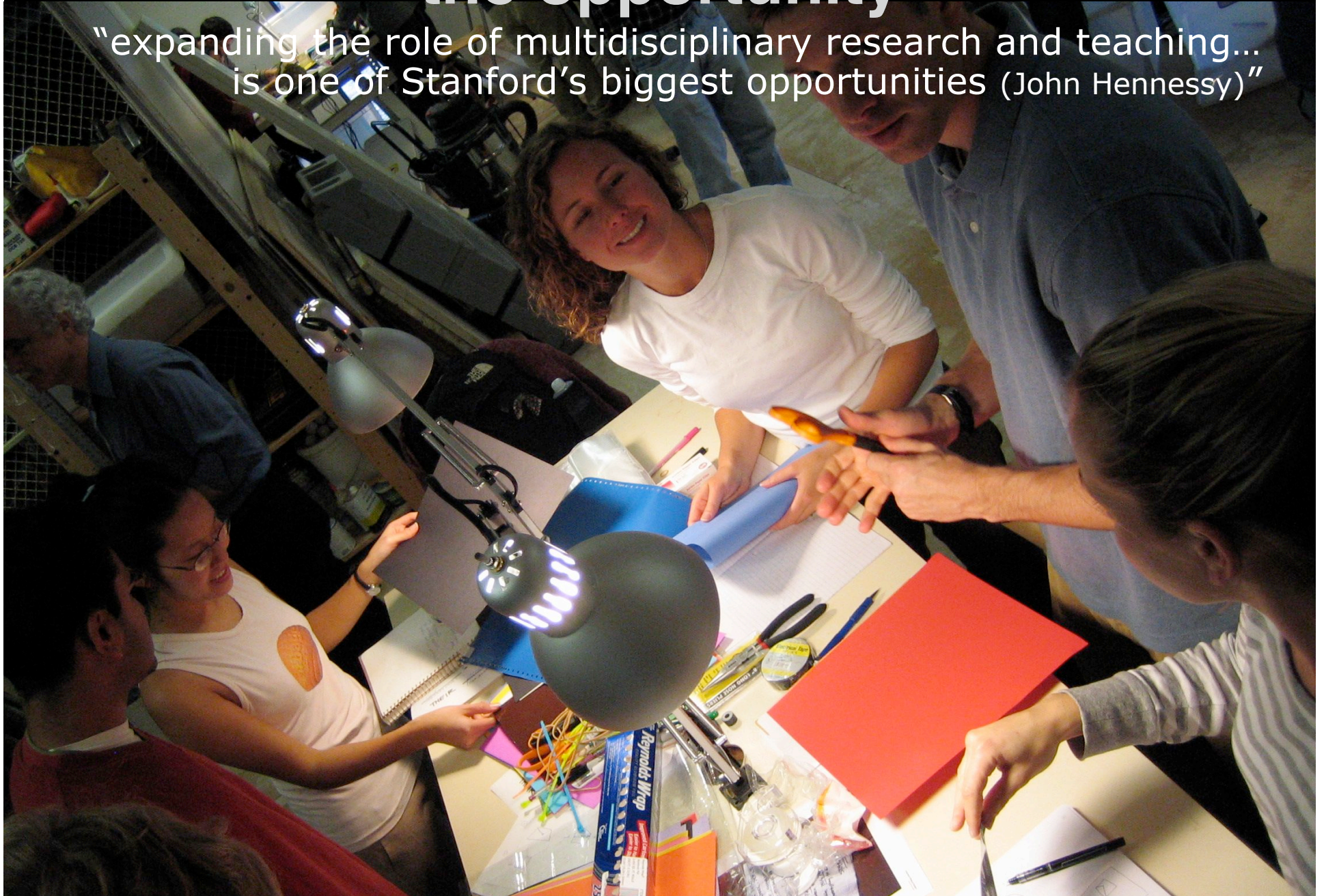
STANFORD d school

the team



the opportunity

"expanding the role of multidisciplinary research and teaching...
is one of Stanford's biggest opportunities (John Hennessy)"



the
break
through

The McGraw-Hill Companies

BusinessWeek

MAY 17, 2004

www.businessweek.com

THE POWER OF DESIGN

A tiny firm called **IDEC** redefined good design by creating experiences, not just products. Now it's changing the way companies innovate.

BY BRUCE NUSSBAUM

thinking

COVER PHOTOGRAPHY
BY TIMOTHY ARCHIBALD

CEO Tim Brown (left)
Founder David Kelley



intense collaboration



extreme product based learning, “design learning”



a culture of prototyping that accelerates discovery



students as experts

reverse mentoring



students engaged and confident
about creating their own innovation process

DESIGN



THINKING

THINKING

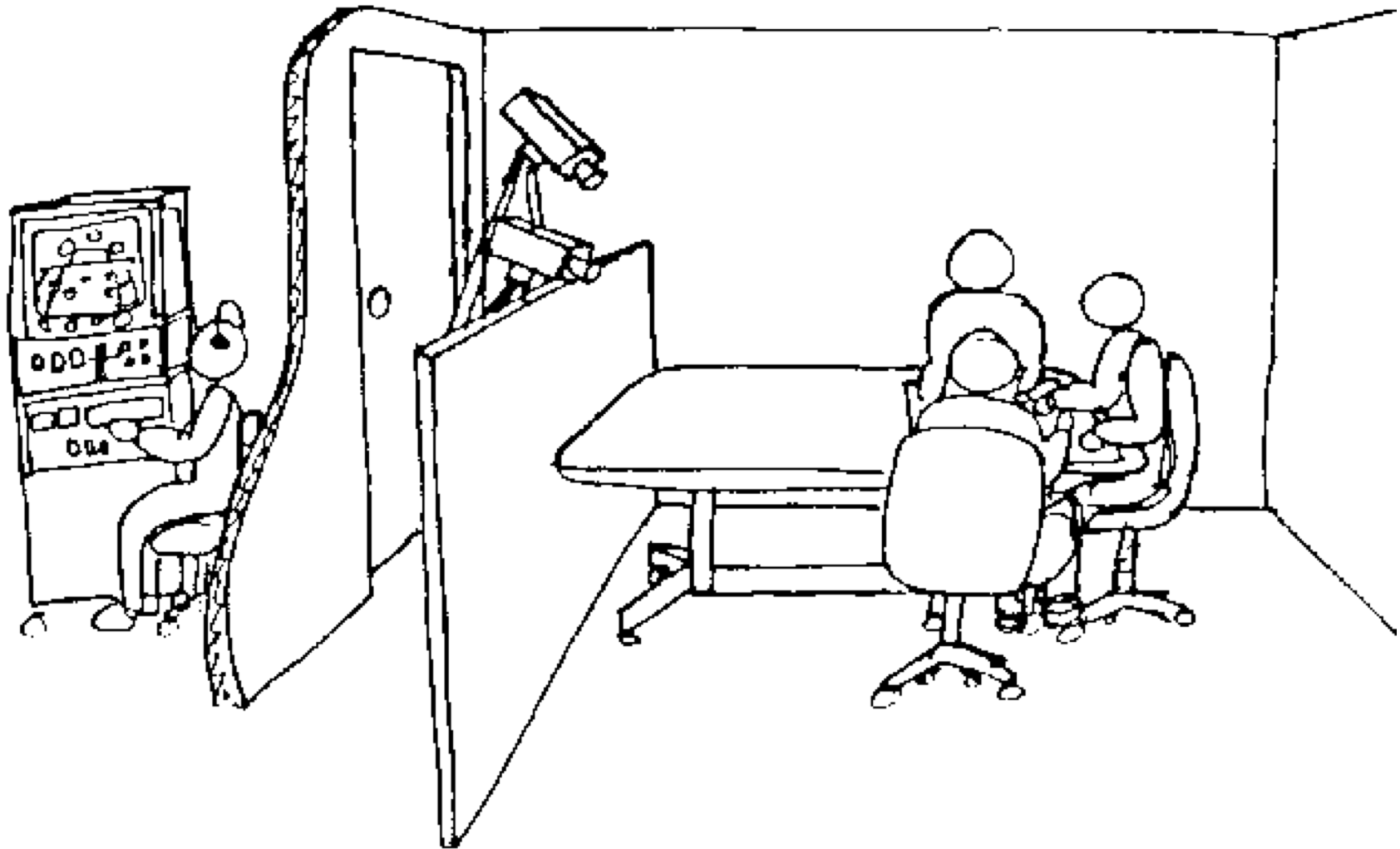
what do we know from
design-thinking-research

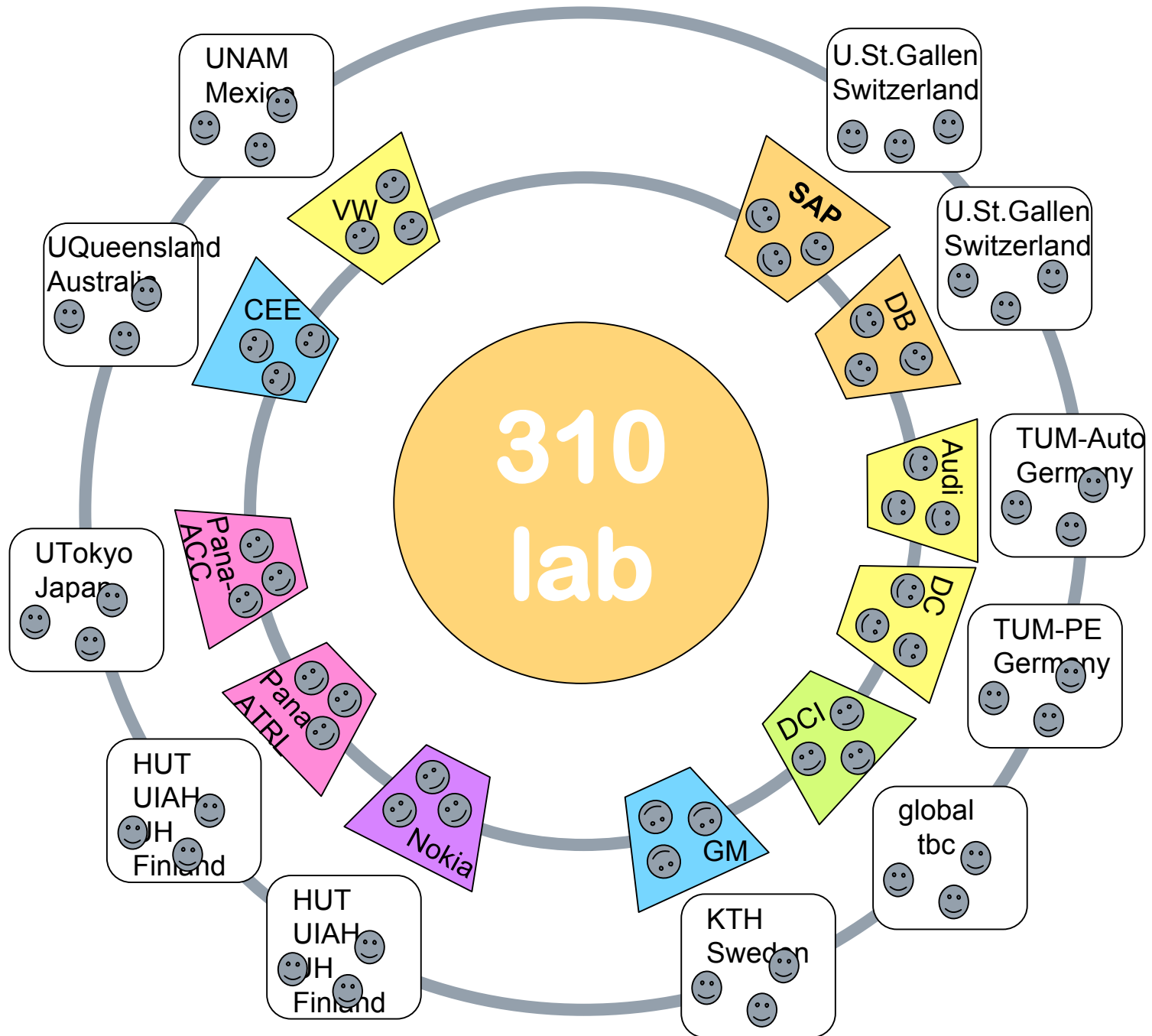


lessons learned from
instrumenting design activity

the power of observation

Tang '89, video interaction analysis





canonical findings

recent IT study

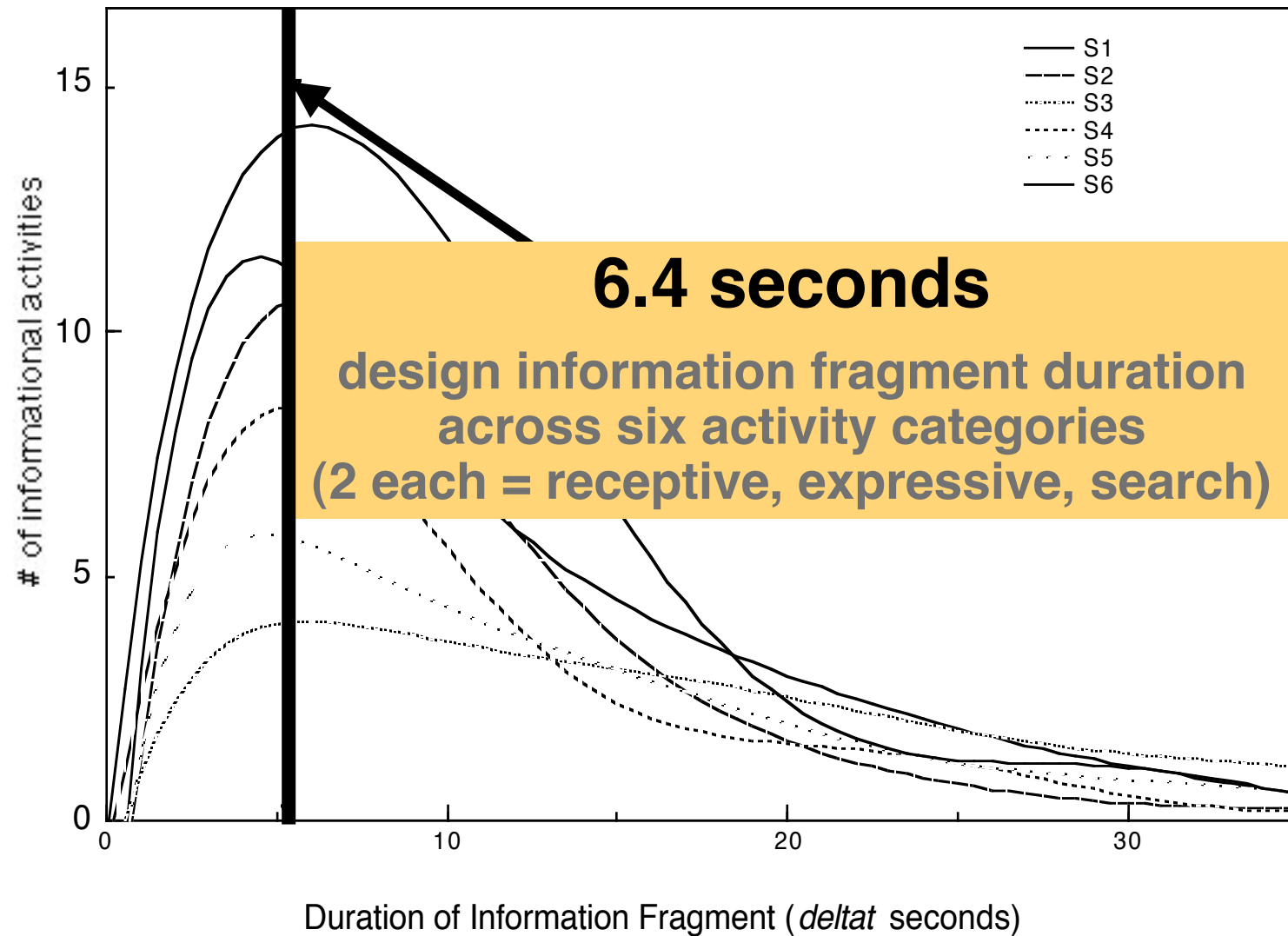
the importance of mediation

(Tang'89)

Function	Text Activity	Draw Activity	Gesture Activity	
Store Knowledge	40	19	1	27%
Express Ideas	2	63	33	43%
Mediate Interaction	0	21	46	30%
	19%	46%	35%	

the attention time constant

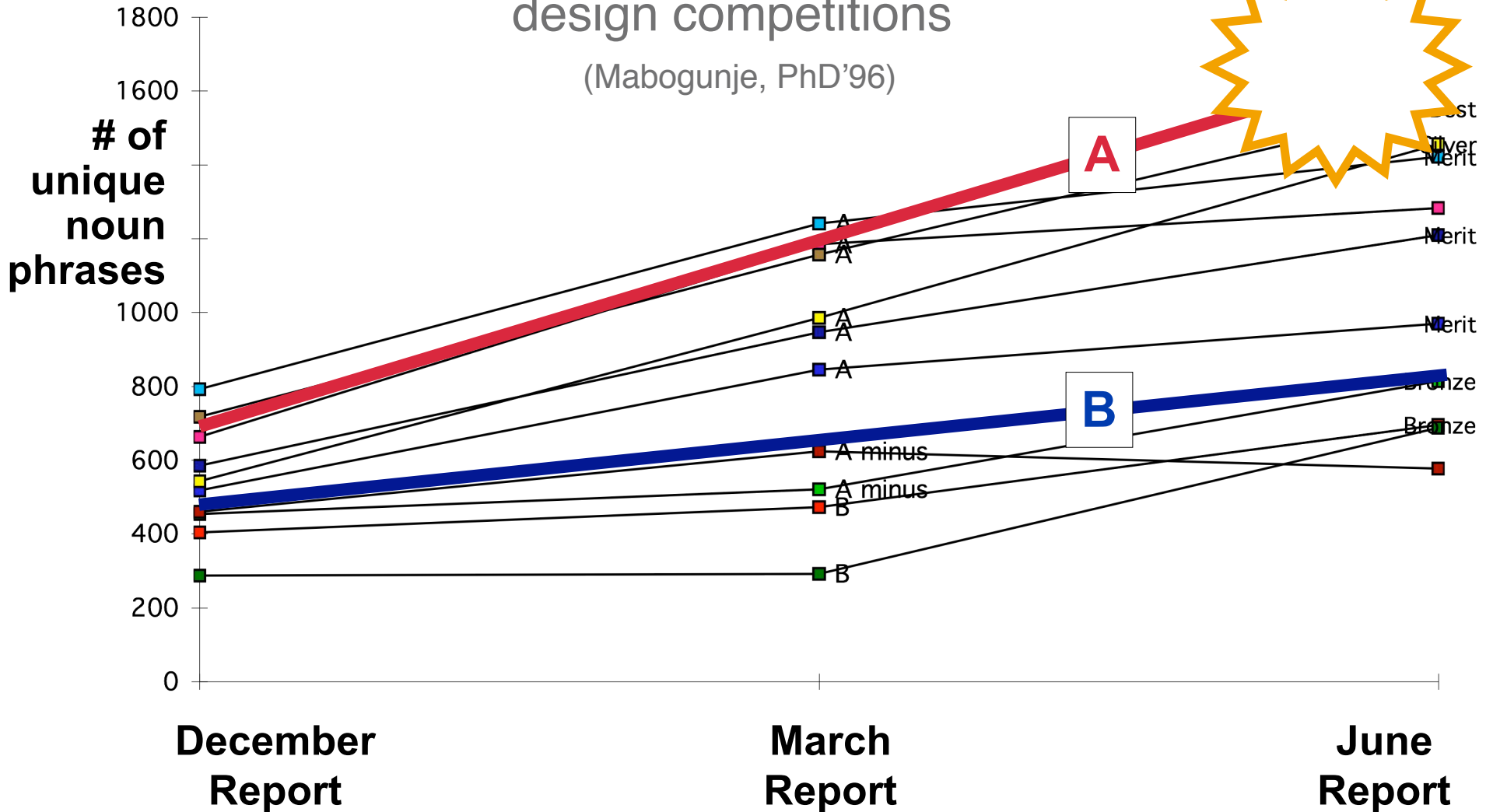
(Baya'97)



creative content matters

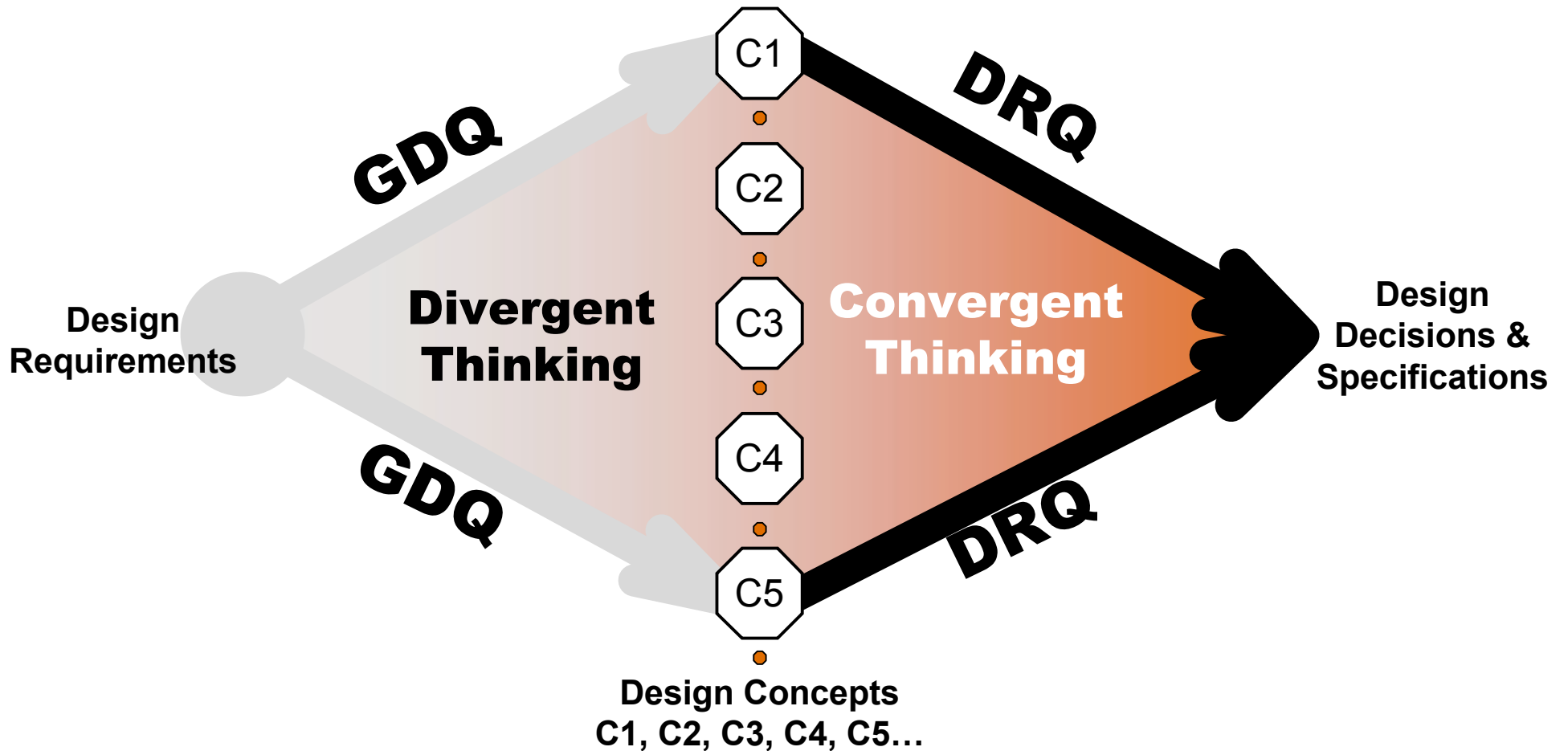
noun-phrases in formal documents
predict awards in peer-reviewed
design competitions

(Mabogunje, PhD'96)



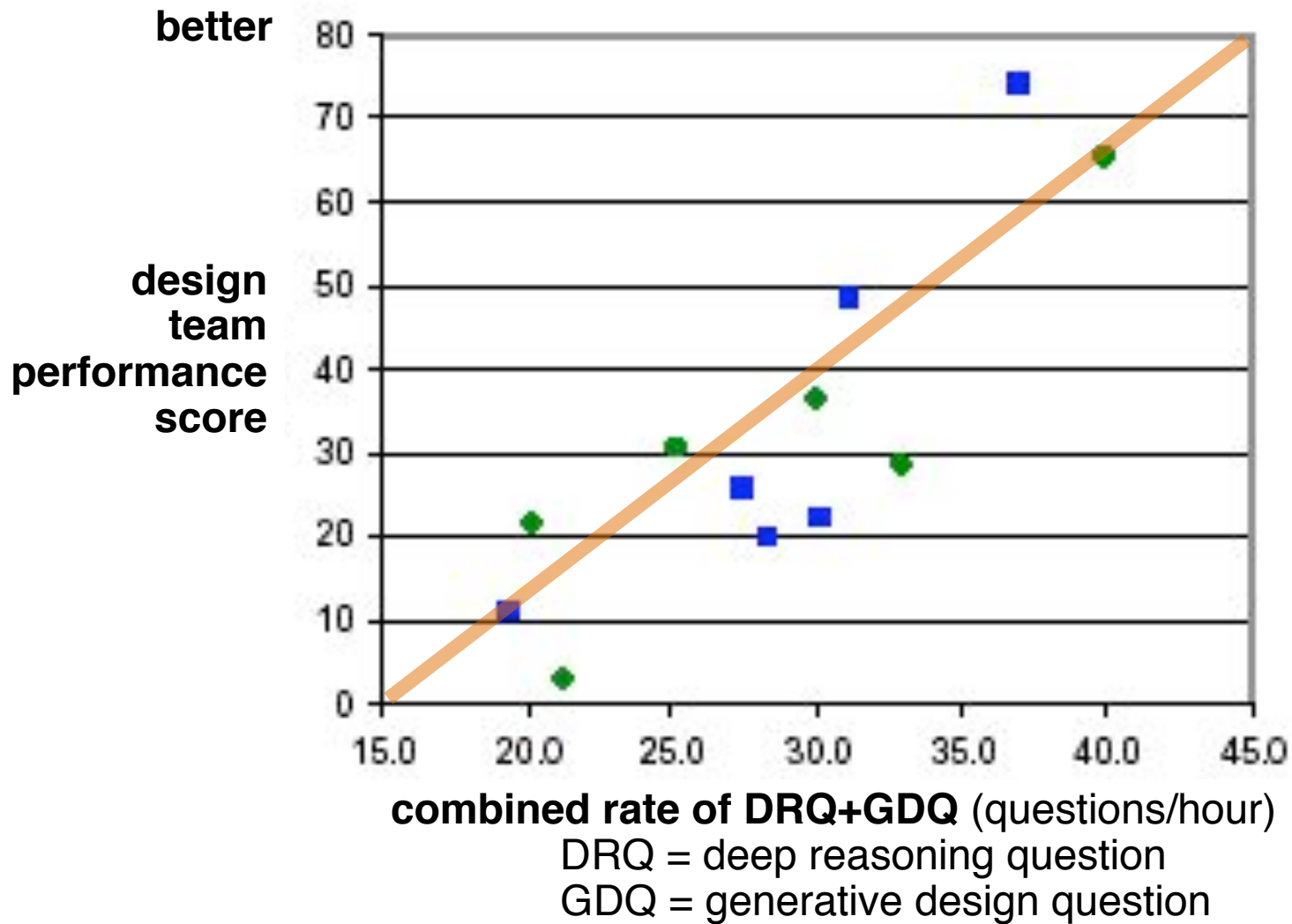
iterative questioning cycles

Eris'02



iteration rate drives performance

Eris'02



field research case

**electronic arts corporation
programming teams in networks**

does game programmer activity
predict product code performance ?

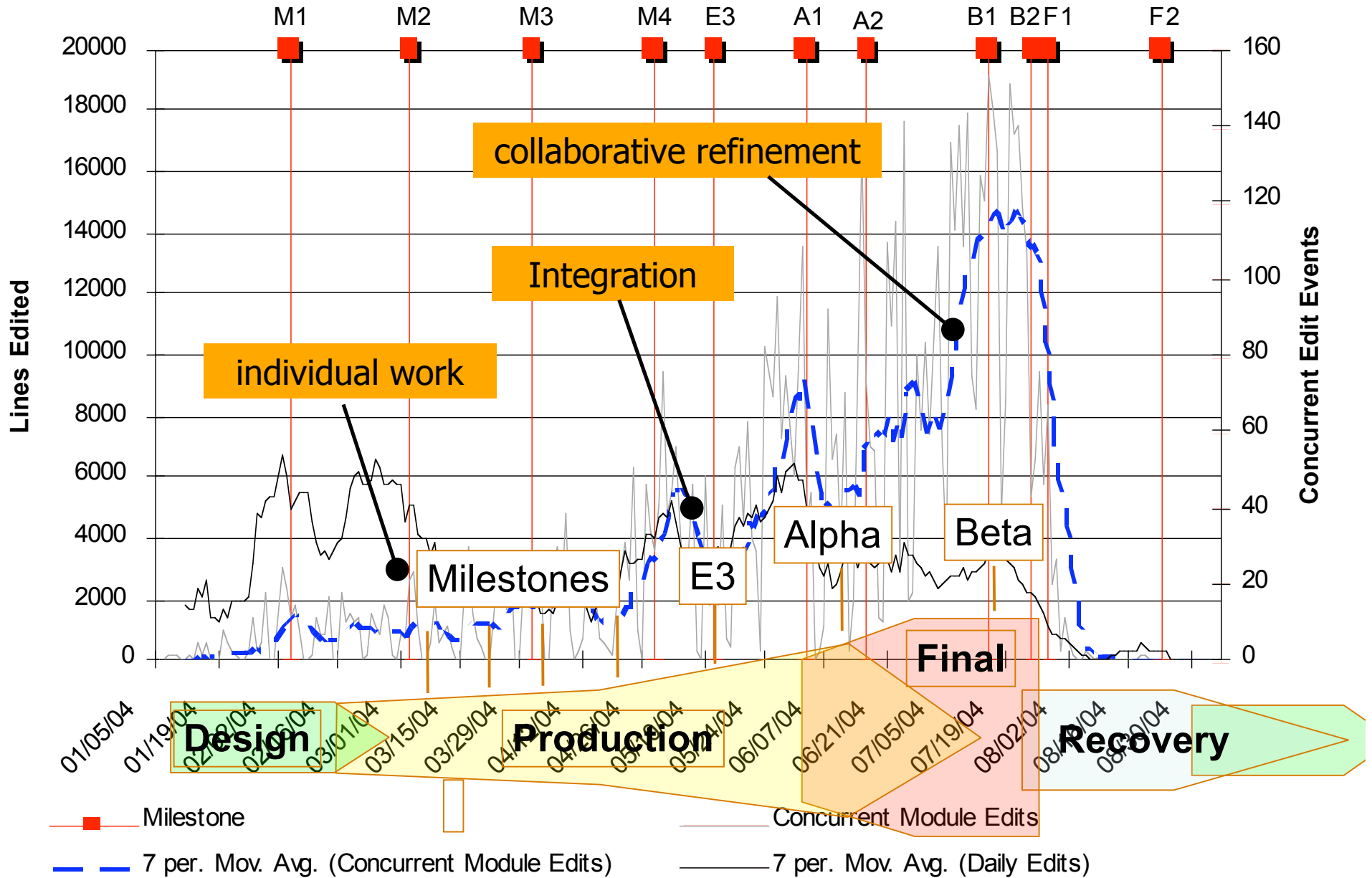
Reiner'05

features of the computer games industry

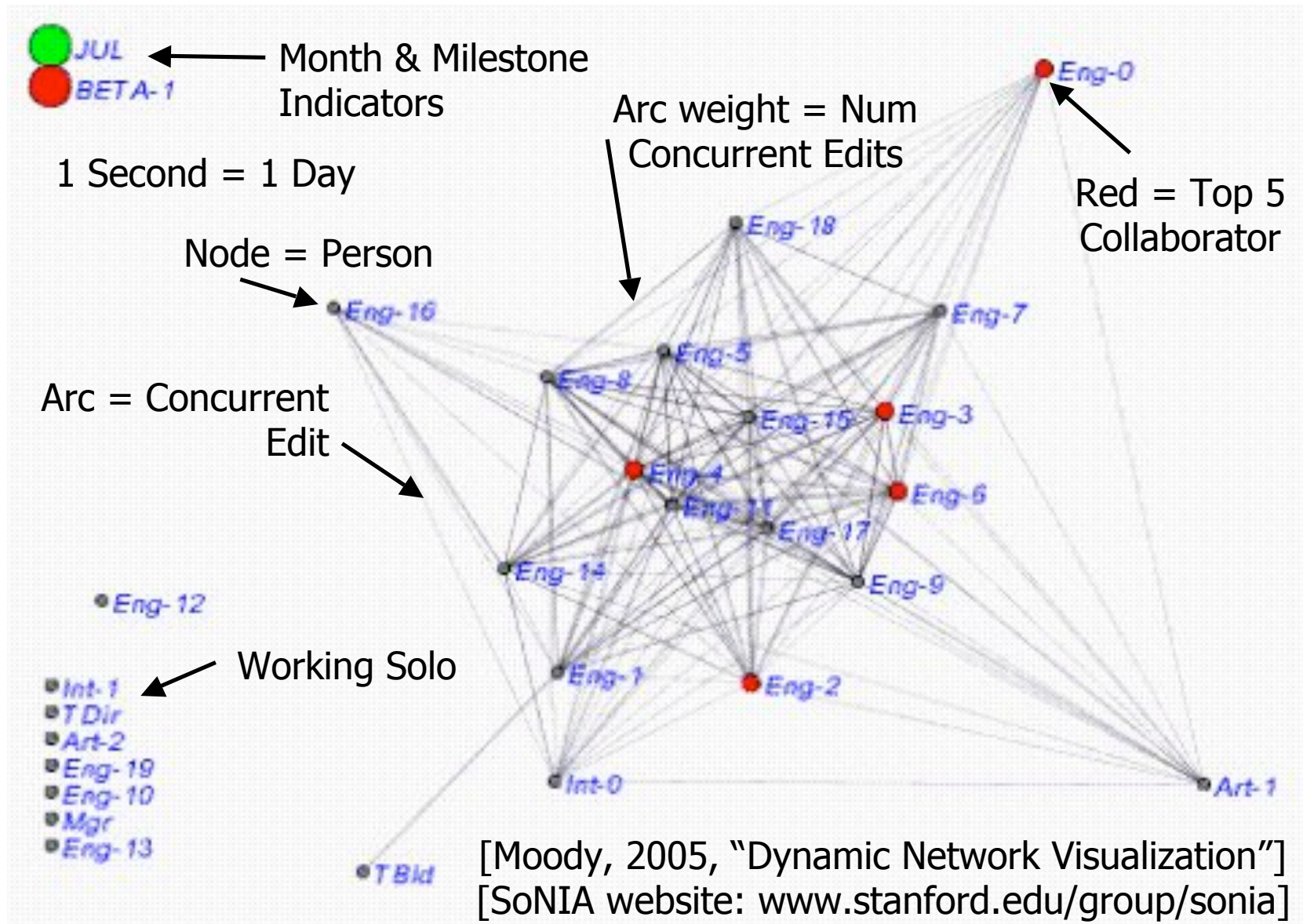
Reiner'05

- ◆ **Multidisciplinary Teams of 75 to 200 people**
- ◆ **Producers, Designers, Artists, Engineers, Testers**
- ◆ **Most assets tracked in a database repository**
- ◆ **Word docs, 3D models, animation data, 2D art, audio, source code**
- ◆ **Yearly, “Fast Track” development cycles**
- ◆ **High performance teams**
- ◆ **Industry-wide recognition, high review scores**
- ◆ **Innovative, patented tech reused by other teams**
- ◆ **Sales quadrupled+ in last three years**

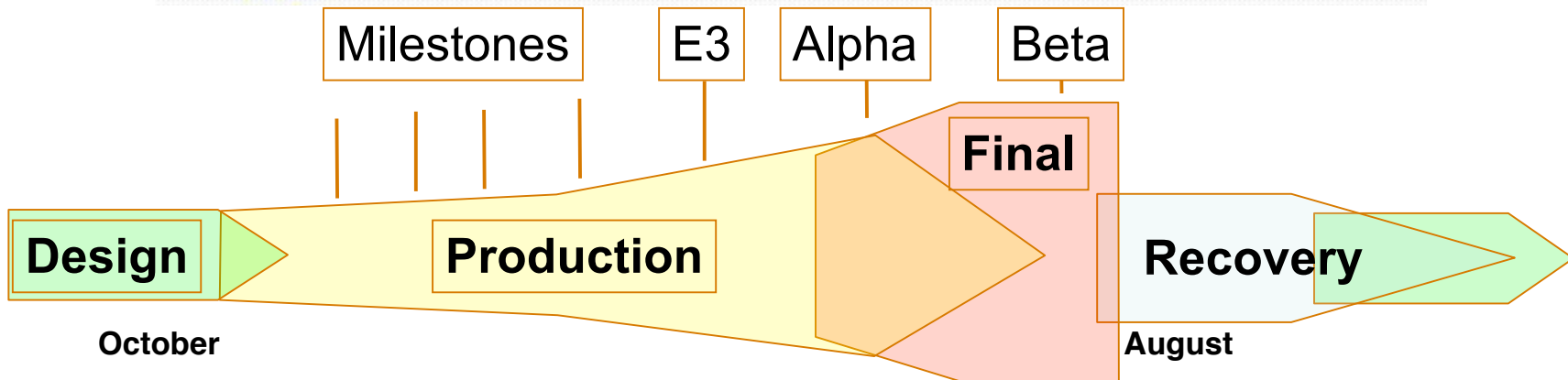
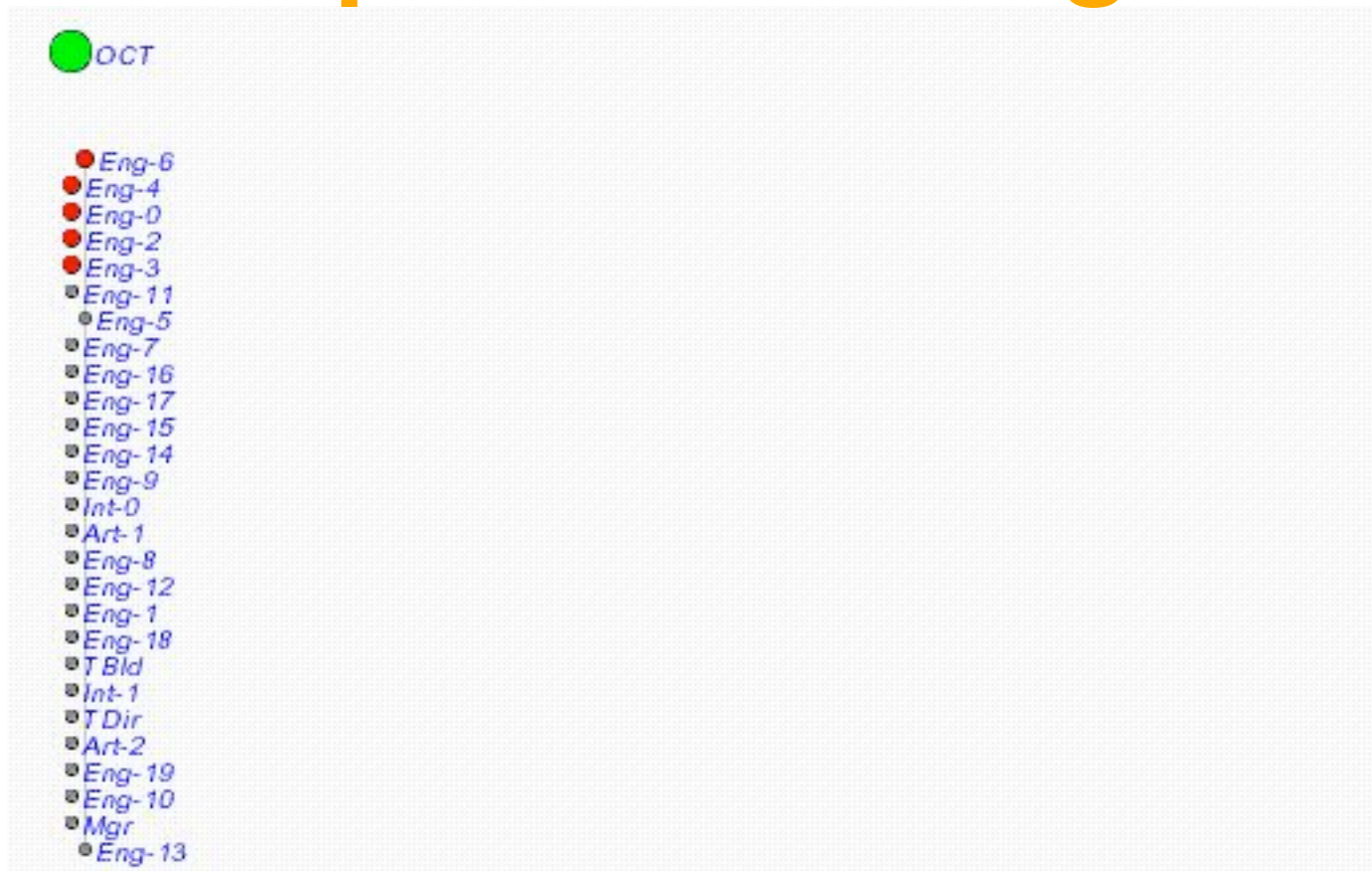
Daily and Concurrent Edits TW 2005 8 Months - January through August



concurrent editing as a social network



surprise not delight



an equation for success

$$i_e = mc^x$$

innovation = **m**inds in **c**ommunication
radical, relevant, & rigorous
working creatively together