

Kolloquium:

Standardised Coordination Task Assessments (working title)

Christoph Oemig, M.Sc.

Human-Computer Interaction Group

University of Bamberg

96045 Bamberg, Germany

[coemig\(at\)acm.org](mailto:coemig(at)acm.org)

Context/Motivation

Nowadays, collaboration is vital in many areas!

Yet, it also introduces the secondary task of **coordination**:

“the act of managing interdependencies between activities performed to achieve a goal” (Malone & Crowstone 1990)



Context/Motivation

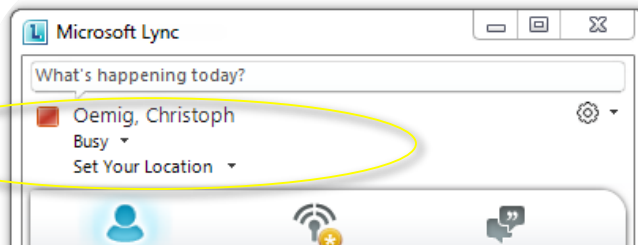
IT support for collaboration is provided using **groupware**:

“computer-based systems that support groups of people in a common task (or goal) and that provide an interface to a shared environment” (Ellis et al. 1991)

These systems especially aim at supporting **coordination**:

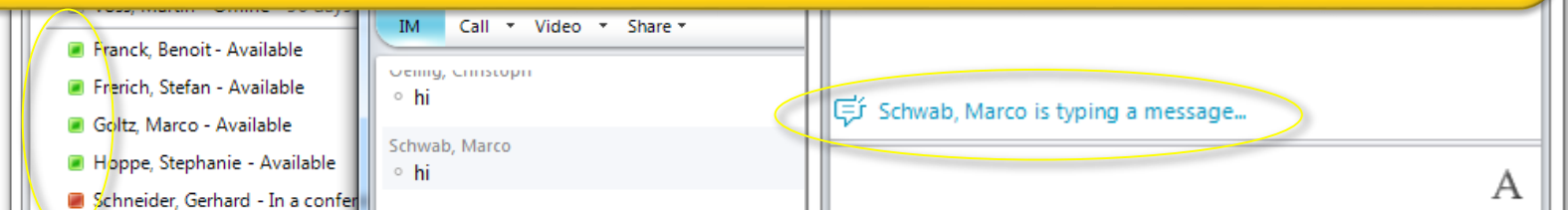
“over the last couple of decades computing technologies are also and increasingly being developed and used for coordinative purposes” (Schmidt 2011)

Context/Motivation



IT support for **coordination** mainly uses the concept of **awareness**:

“the understanding of the activities of others which provides a context for your own activity” (Dourish & Bellotti 1992)



Yet, the goal of **effortless coordination** remains an ongoing issue:

“that is, the question whether and how team work can be coordinated [...] while still keeping the team members’ coordination effort to a minimum.” (Gross 2013)

Problems in Developing Coordination Support

How can I make sure, I create appropriate and effective support for the secondary task of coordination when developing groupware?

Use existing heuristics and guidelines?

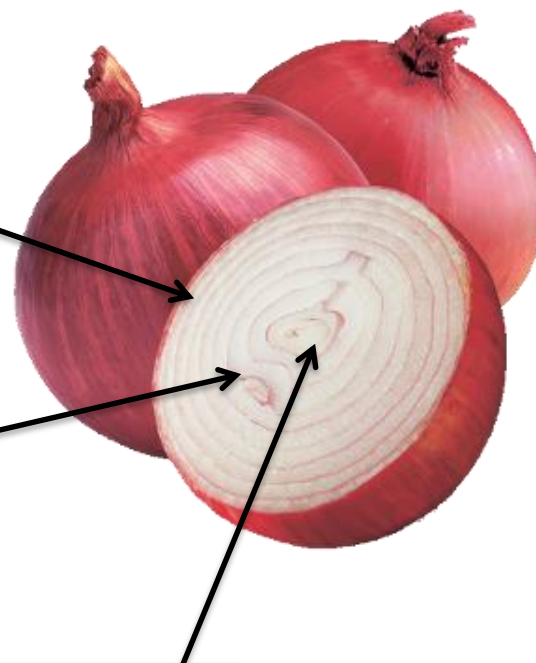
Measure and compare results?

Problem: Measurements in CSCW

“A factor contributing to the failure to learn from experience is the extreme difficulty of evaluating these application” (Grudin 1988)

The measurement dispute: field studies versus usability inspection techniques. The expensive and time consuming versus the unsituated. (Steves et al. 2001)

The inappropriate measurement of secondary task knowledge: the ephemeral and the subconscious (Oemig & Gross 2011)



Related Work/Idea

The **Coordination Theory:**

“The body of principles about how the activities of separate actors can be coordinated” (Malone 1988)

The **Mechanics of Collaboration:**

“Some usability problems in groupware systems are not inherently tied to the social context in which the system is used, but rather are a result of poor support for the basic activities of collaborative work” (Gutwin & Greenberg 2000)

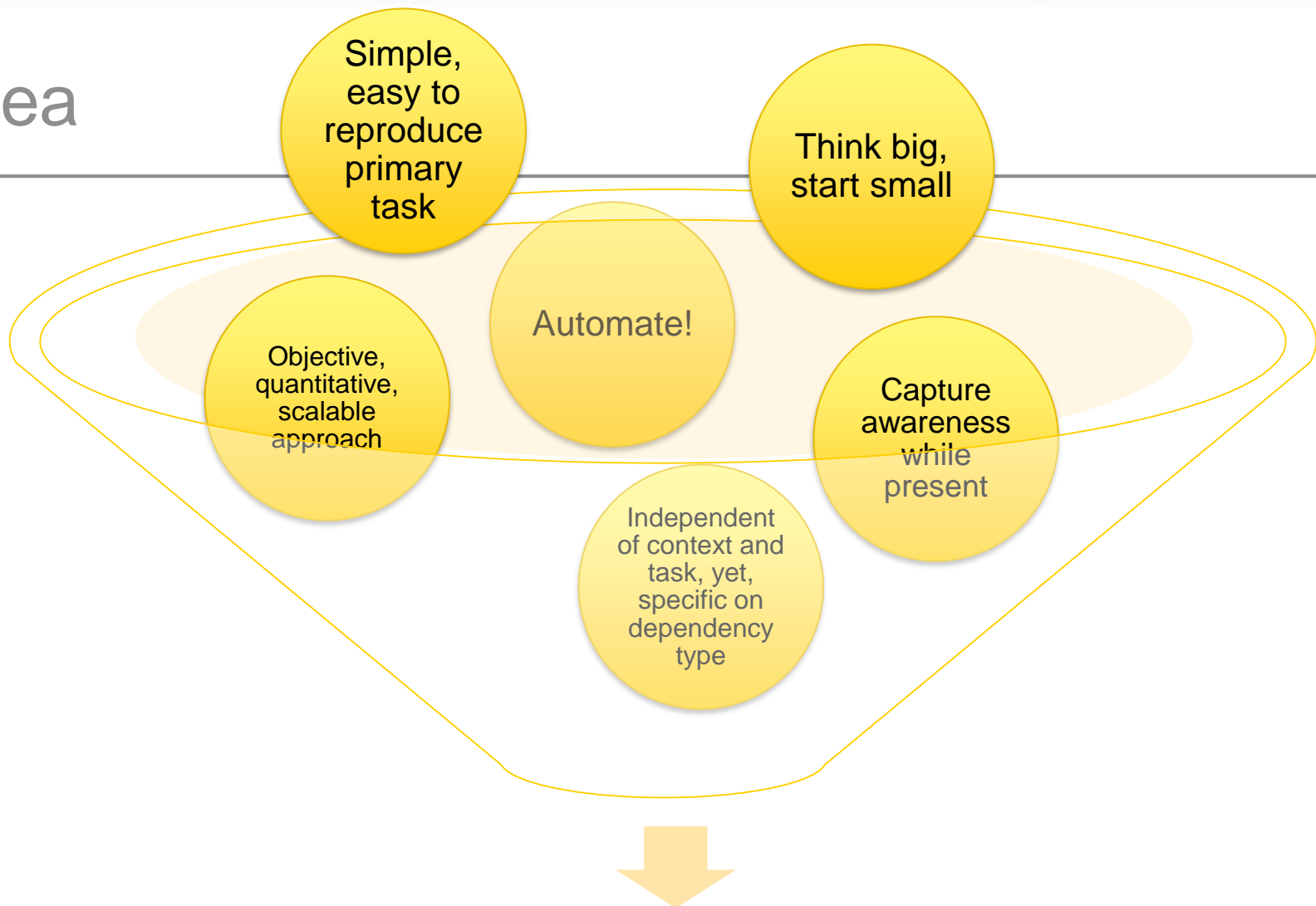


The experiments on **Subliminal Advertising:**

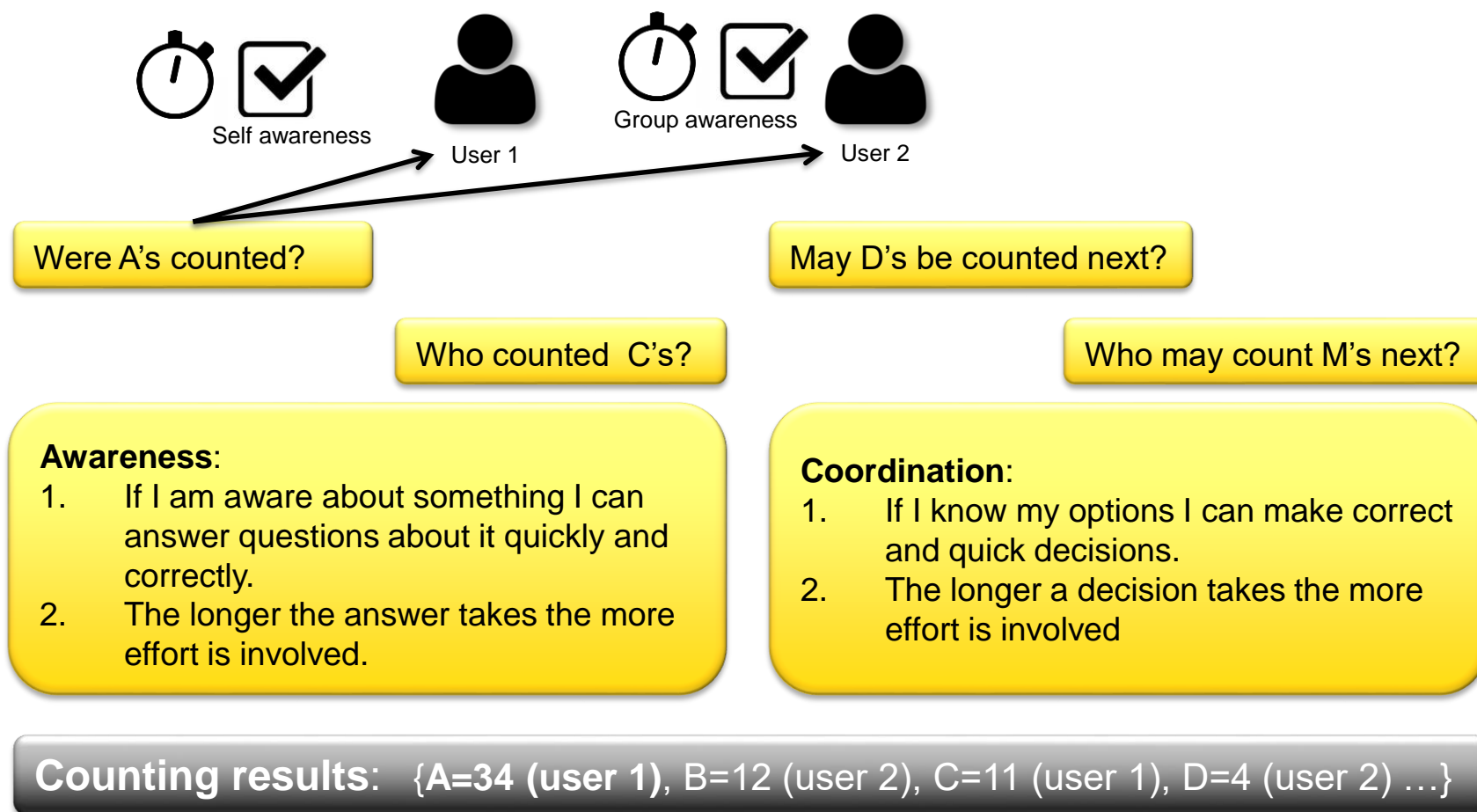
Assessing the subconscious using a primary task (counting of B's)
(Karremans et al 2006)

**The Situation Awareness
Global Assessment Technique:**
The qualitative assessment of SA
using freeze probes (Endsley 1998)

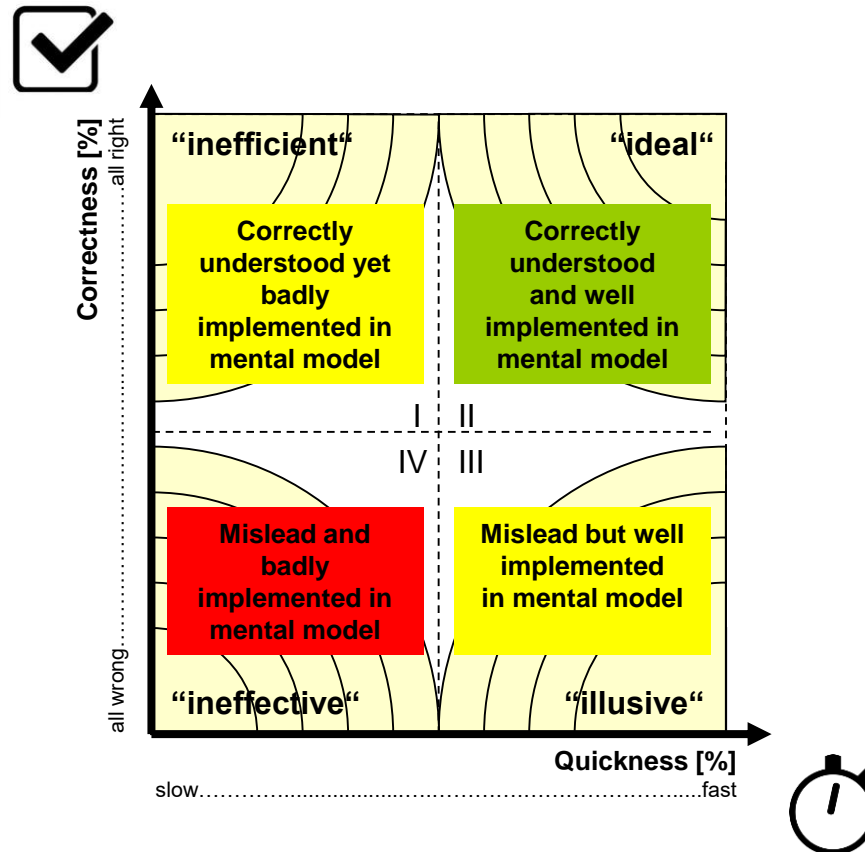
Idea



Contribution – Automated Assessment



Contribution – Visualisation & Evaluation



Contribution - Procedure



Chris: B-->22(13.1
Chris: B-->Start co
Mirko: A-->22(13.
Mirko: A-->Start c



Freeze Probe

Question3:
Who could count the letter Z next?

Answer 1: Mirko

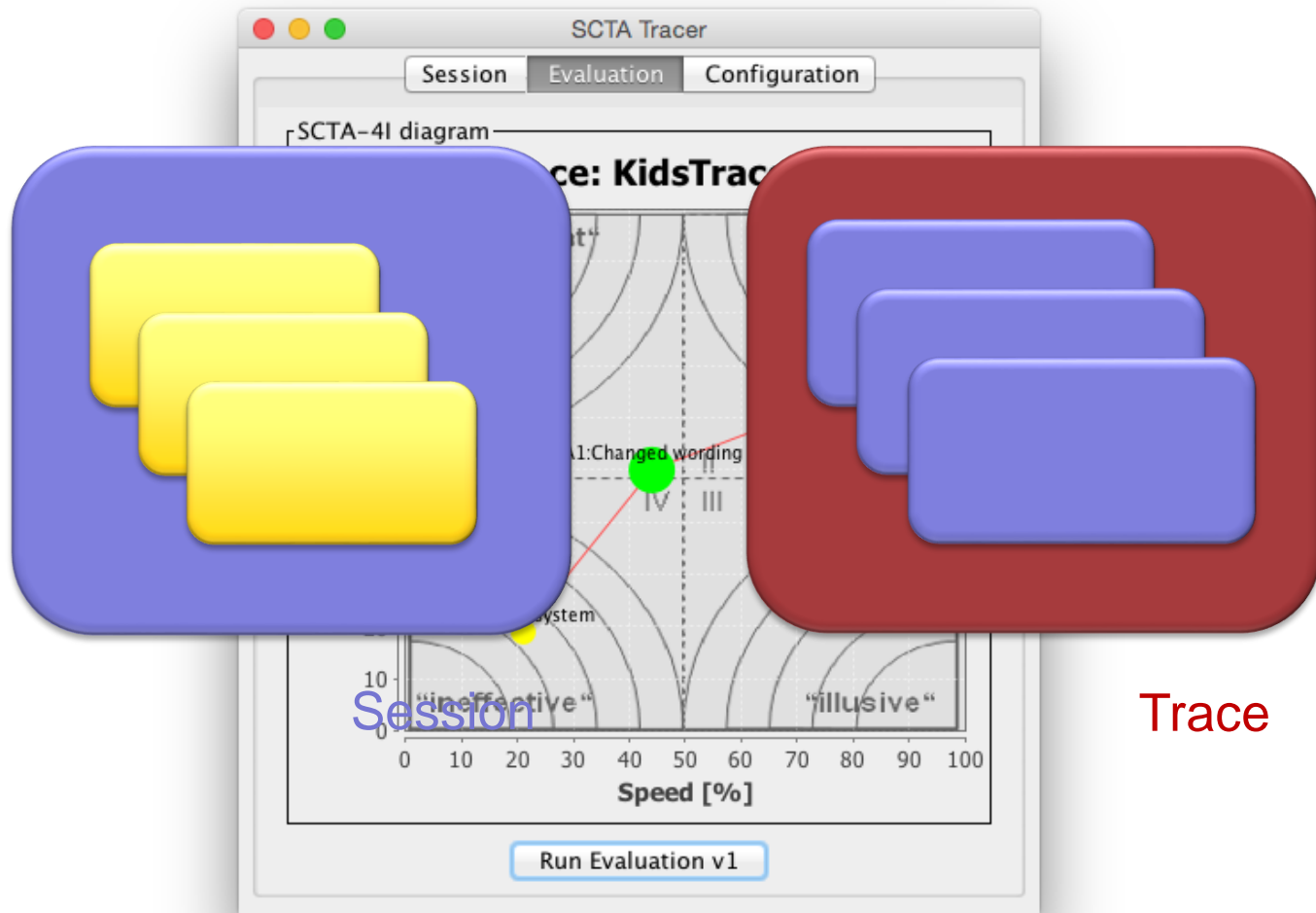
Answer 2: Somebody (not counted yet)

Answer 3: Chris

Go!

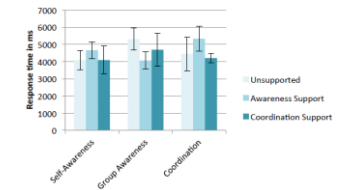
QZLKG mmqIP NaDir
ssnEd axkrh BptPp
CPPJv MLYyr eNVWz
hIAJv ntnJv cYumf
gzWQ1 QBISb GOLWT
beLEw Tdgfg wObJr
ETySt uKcfv LvtaZ
zRwIk PCngg hwroy
DXJIM lxmqs Qjfgt
CKoEB xelMj BNLeC
RNzqB ogahK jnmnN
YgnMK ziBNC ePYqu
SSyVT CBIBT MCXYB
yuNvQ evBGc hkuOD
HFhdB StDIK VCGSK
jxLVU OPdNX GfluI
nZTdg OZcBz ptnKI
zAKMZ Jllvy iqhJE
izVmc SUFR0 VFypd
KHcor uCGBR jmlEL
sipDo zlvrt szZtg
HdjWj Eduot Iynxn
GBmis fQvtq HtsyZ
odfiI XYsTU NWCXL
nwmLd oVOxg MaCwV
AOMdj GCKqL PoiJx
fqkxQ XtOLK HGfFq
POgUE HQMAB NRjrT
EKDqY vjsrB zrfQC
tWUPF kLjhc ZNpyj
zoglf ZmpFd SkazM
wunIS trEyu TuUQo
mhVMZ GLMXK gFEGT
EFhst vZaIB THfQZ

Contribution – Procedure (cont'd)



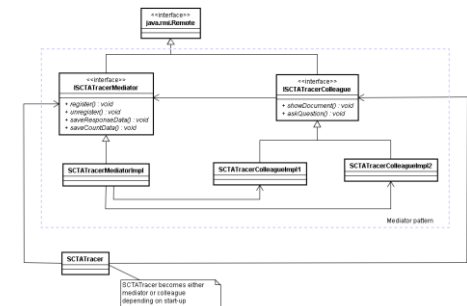
Contribution - Done

Initial experiments (Oemig & Gross 2014): comparison of support prototypes, terminology cleanup, “awareness-/coordination-support system paradox”

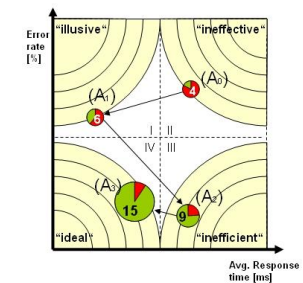


	Success Rate (%)		Performance (Avg.)	Coordination Errors (Avg.)
	Self-Aw.	Group Aw.		
Unsupported	95%	38%	23%	6
Awareness Support	88%	75%	70%	0
Coordination Support	75%	63%	95%	0

Advanced concept & software prototype (Oemig & Gross 2012): Java RMI based prototype, self-and group awareness, changes in visualisation



Initial concept (Oemig & Gross 2011): Measurement and visualisation of traces.



Contribution - Next

Application & Validation:

1. Forgetting curves in secondary task support
2. *Support system experiments*
 - a. *Recues*
 - b. *Large groups*
 - c. *Task switches*
 - d. *Twister*
 - e. *Image vs text*
 - f. *...*

Extension & Validation:

1. Integrate satisfaction measurement and visualisation
2. *Coordination theory interdependency type shared resource*

Technical improvements:

1. RESTful webapplication (device, os, prog. language independent integration)



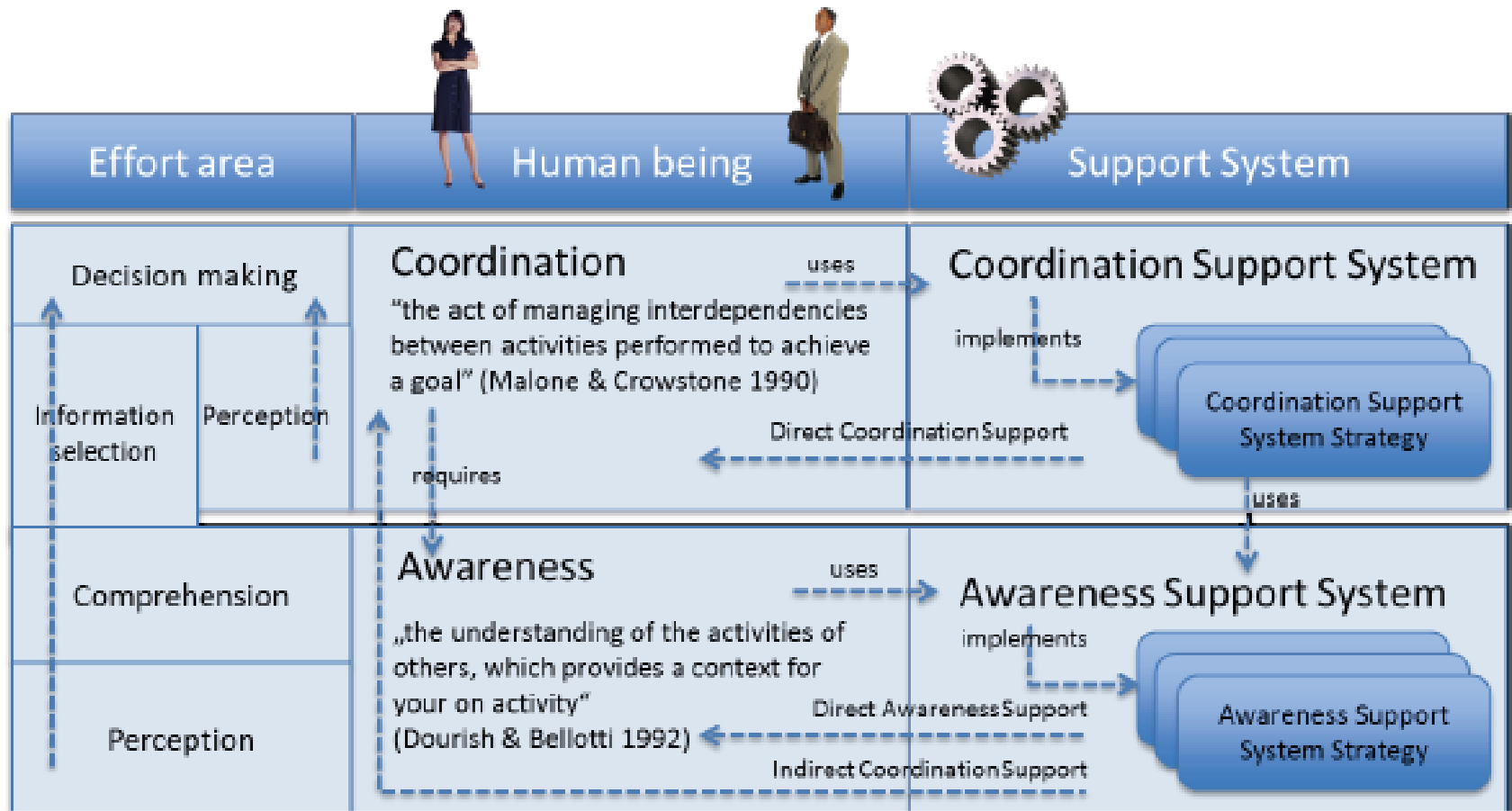
Thank you!



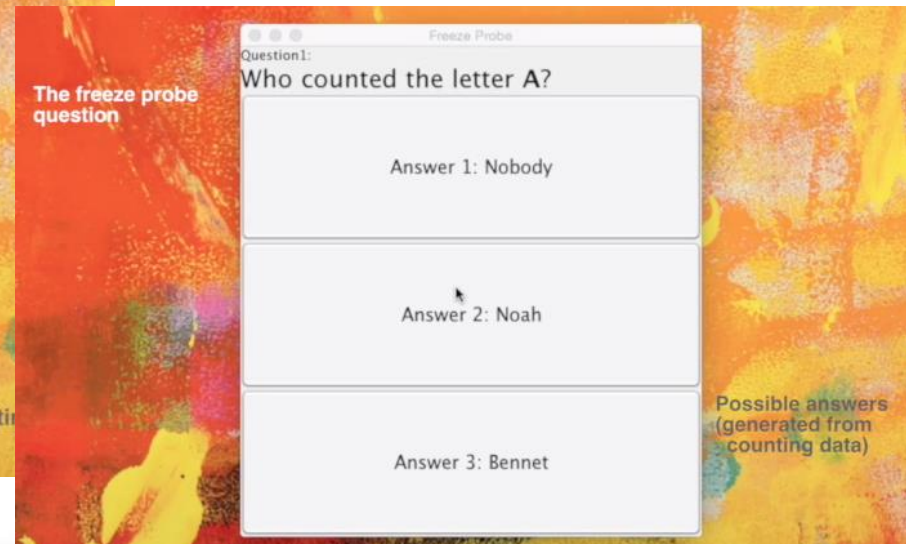
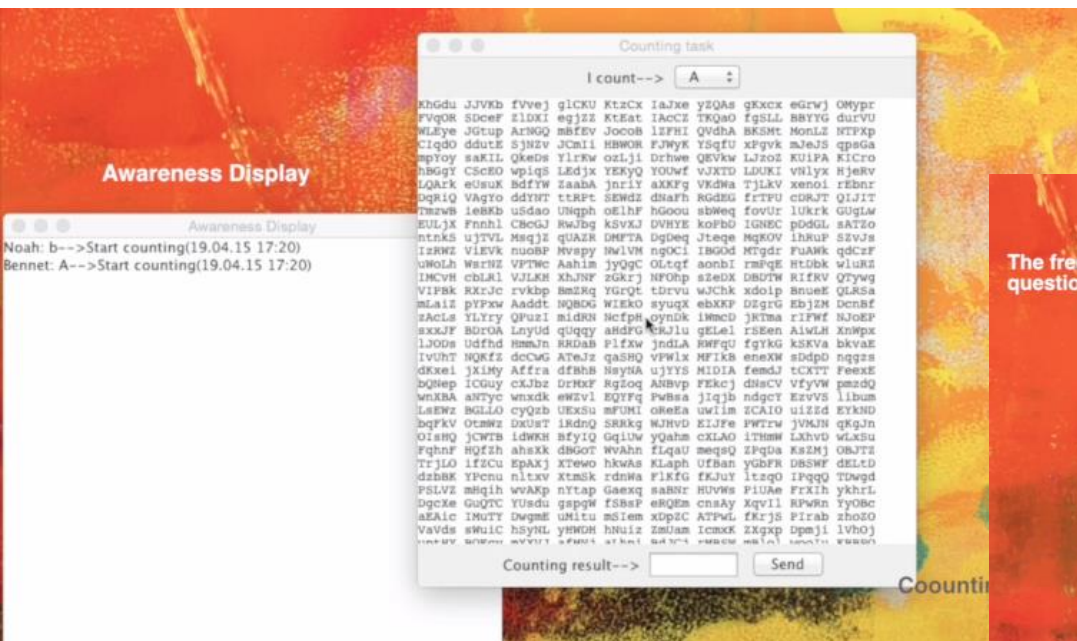
References

- Dourish, P. & Bellotti, V., 1992. Awareness and coordination in shared workspaces. In Proceedings of the 1992 ACM conference on Computer-supported cooperative work - CSCW '92. New York, New York, USA: ACM Press, pp. 107–114.
- Ellis, C.A., Gibbs, S.J. & Rein, G., 1991. Groupware: some issues and experiences. Communications of the ACM, 34(1), pp.39–58.
- Endsley, M.R., 1998. A comparative analysis of SAGAT and SART for evaluations of situation awareness. Annual Meeting of the Human Factors & Ergonomics Society, 42.
- Gross, T., 2013. Supporting Effortless Coordination: 25 Years of Awareness Research. Computer Supported Cooperative Work (CSCW), 22(4-6), pp.425–474..
- Grudin, J., 1988. Why CSCW applications fail: problems in the design and evaluation of organizational interfaces. In Proceedings of the 1988 ACM conference on Computer-supported cooperative work - CSCW '88. New York, New York, USA: ACM Press, pp. 85–93.
- Gutwin, C. & Greenberg, S., 2000. The mechanics of collaboration: developing low cost usability evaluation methods for shared workspaces. In Proceedings IEEE 9th International Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises (WET ICE 2000). IEEE Comput. Soc, pp. 98–103.
- Karremans, J.C., Stroebe, W. & Claus, J., 2006. Beyond Vicary's fantasies: The impact of subliminal priming and brand choice. Journal of Experimental Social Psychology, 42(6), pp.792–798.
- Malone, T.W., 1988. What is coordination theory?
- Malone, T.W. & Crowston, K., 1990. What is coordination theory and how can it help design cooperative work systems? In Proceedings of the 1990 ACM conference on Computer-supported cooperative work - CSCW '90. New York, New York, USA: ACM Press, pp. 357–370..
- Oemig, C. & Gross, T., 2011. Illusive, Ineffective, Inefficient, Ideal: Standardized Coordination Task Assessments of Awareness Support. In M. Eibl, ed. Mensch & Computer 2011: überMEDIENÜBERmorgen - 11. fachübergreifende Konferenz für interaktive und kooperative Medien, Chemnitz, Germany, September 11-14, 2011. Oldenbourg Verlag, pp. 353–356.
- Oemig, C. & Gross, T., 2012. SCTA Tracer: A Distributed Environment for Standardized Awareness Support Assessments. In R. Stotzka, M. Schiffers, & Y. Cotronis, eds. Proceedings of the 20th Euromicro International Conference on Parallel, Distributed and Network-Based Processing, PDP 2012, Munich, Germany, February 15-17, 2012. IEEE, pp. 52–56.
- Oemig, C. & Gross, T., 2014. The Awareness-/Coordination-Support-System Paradox. In A. Butz, M. Koch, & J. H. Schlichter, eds. Mensch & Computer 2014 - Tagungsband, 14. Fachübergreifende Konferenz für Interaktive und Kooperative Medien - Interaktiv unterwegs - Freiräume gestalten, 31. August - 3. September 2014, München, Germany. De Gruyter Oldenbourg, pp. 125–134..
- Schmidt, K., 2011. Cooperative Work and Coordinative Practices, London: Springer London.
- Steves, M.P. & Morse, E., 2001. A Comparison of Usage Evaluation and Inspection Methods for Assessing Groupware Usability. In Proceedings of the 2001 ACM Group. pp. 125–134.

Contribution - Terminology



Contribution – Procedure – Video



Multitrace & Component View

