

Awareness Research in CSCW

(Computer Supported Cooperative Work)

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Überblick

- Was ist CSCW
- Awareness als Konzept in der CSCW-Forschung
 - Forschungsansätze
 - ‚Tool-builders‘ - Tool Support for Awareness
 - Beispiele

CSCW (Computer Supported Cooperative Work)

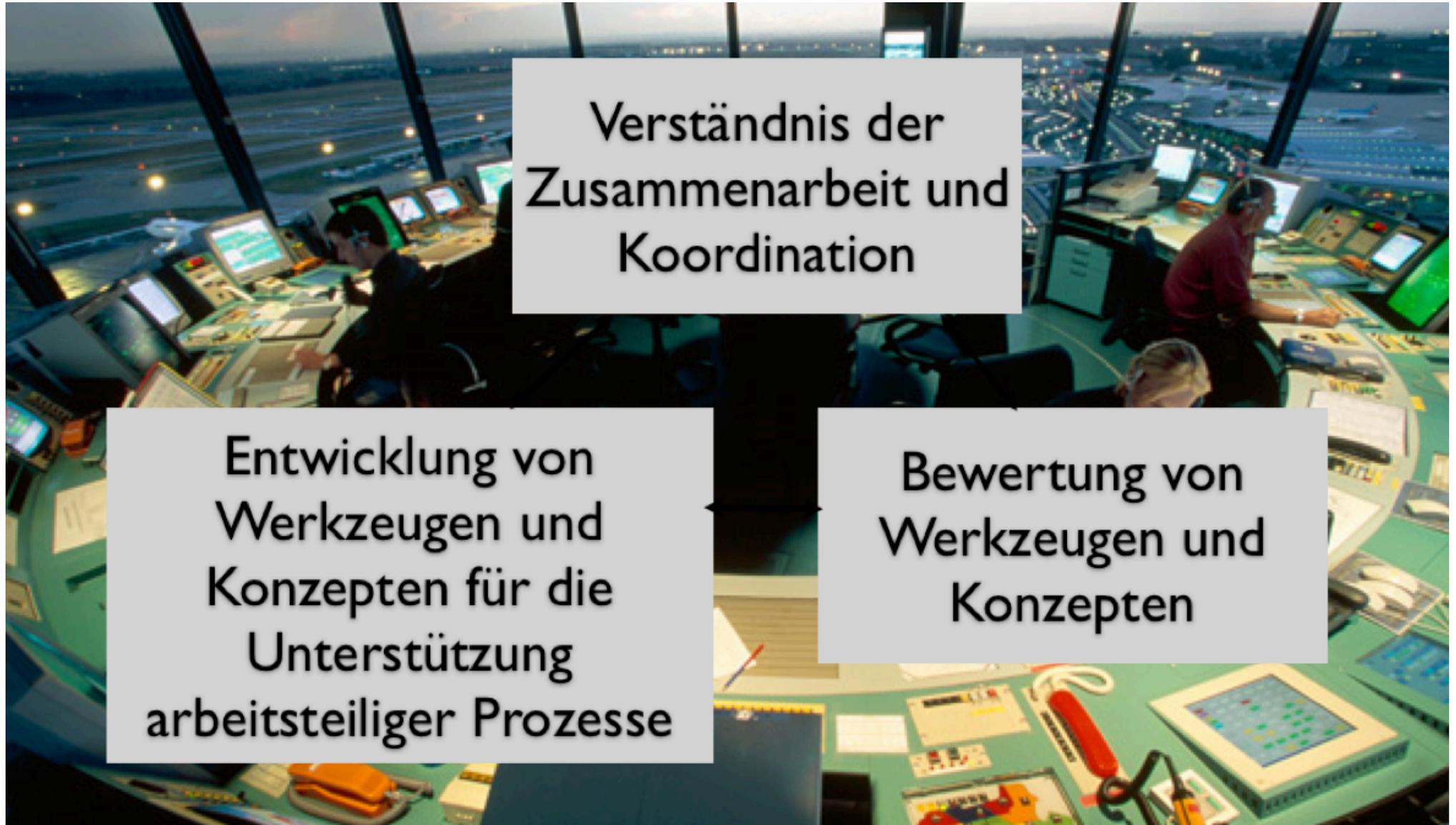
“CSCW aims to achieve a deep understanding of work and other types of social interaction and to develop adequate technical concepts and tools for social interaction in groups and communities.”

(Gross 2013)

CSCW is ‘computer-assisted coordinated activity such as communication and problem solving carried out by a group of collaborating individuals’.

(Greif 1988)

CSCW - Computer Supported Cooperative Work



Verständnis der
Zusammenarbeit und
Koordination

Entwicklung von
Werkzeugen und
Konzepten für die
Unterstützung
arbeitsteiliger Prozesse

Bewertung von
Werkzeugen und
Konzepten

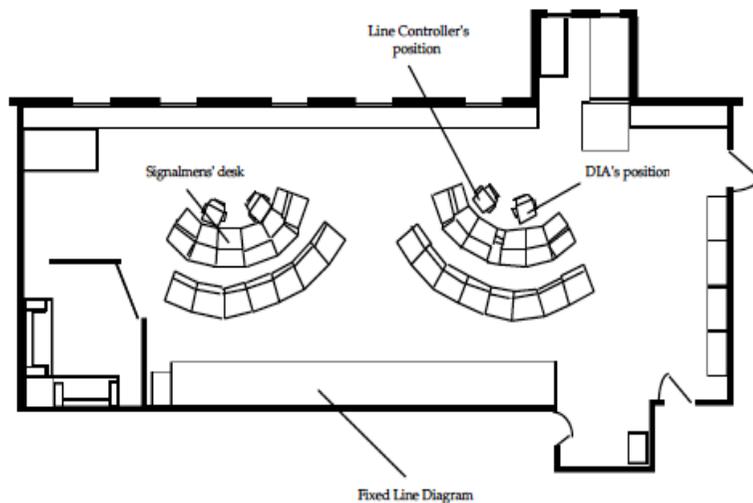
awareness in CSCW

- frühe Explorationen technischer Unterstützung von awareness information – z.B. media space Technologien
- frühe ethnographische Untersuchungen (Workplace Studies WPS) wechselseitiger awareness von Akteuren;
 - Harper et al. (1989) London Air Traffic Control Centre
 - Heath & Luff (1992) London Underground Control Rooms

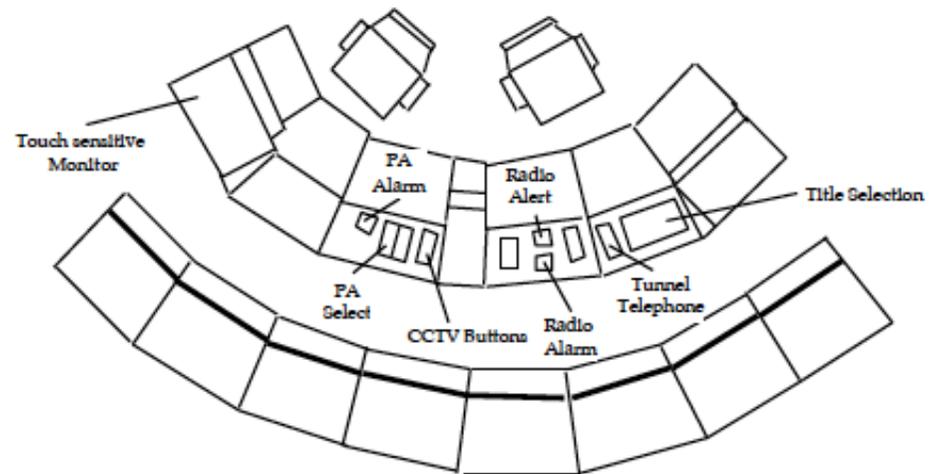
WPS & CSCW

Frühe ethnographische Untersuchungen

Heath & Luff (1992) London Underground Control Rooms
untersuchen publicly available, kollaborative Praktiken und
Artefakte der Arbeits-Koordination



The Bakerloo Line Control Room



Line Controllers and DIAs Desk

Divisional Information Assistant (DIA) ... providing information to passengers through a public address (PA) system and communicating with station managers.

Fragment Transcript (Abbreviated and simplified)

...Controller (C) calls Driver (D)...

C: Control to the train at Charing Cross South Bound, do you receive?

...C. Switches monitor to the platform...

C: Control to the train at Charing Cross South Bound, do you receive?

D: Two Four O Charing Cross South Bound

C: Yeah, Two Four O. We've got a little bit of an interval behind you.

Could you take a couple of minutes in the platform for me please?

D: (()) Over

C: Thank you very much Two Four O.

(5.2)

DIA: Hello and good afternoon Ladies an Gentlemen. Bakerloo Line
Information

DIA: We have a slight gap in our Southbound Bakerloo Line service towards the Elephant an Castle. Your next south bound train, should depart from this station in about another three minutes.

DIA: The next south bound train, should depart from this station in about another three minutes.

...a related announcement follows a couple of minutes later...

monitoring & displaying

Actors somehow **monitor** the activities of their colleagues in the setting - by observing or listening - so as to ascertain the state, progress, direction, etc. of these activities, to ascertain whether they are being done and progressing as expected, to determine how one's own activities need to be adjusted;

On the other hand, actors make their own activities appropriately 'publicly visible' or **display** those aspects of their activities that may be of relevance to their colleagues.

'recipient design'

Learned in practice – by apprenticeship

WPS & (CSCW) Systems Design

Kritik: WPS habe kaum zu design guidelines u. Prototypen geführt

↳ Annahme: systematische Verkopplung von WPS u.
Technik-design

↳ zu einfache Auffassung von Technikentwicklung

Transfer / Umsetzung / Übersetzung von WPS-Ergebnissen findet in disziplinübergreifenden Teams statt;

Untersuchung von Technikentwicklung: nachzeichnen wie Konzepte und Ideen von (Forscher) communities aufgenommen werden.

(vgl. Schmidt, 2011, Cooperative Work and Coordinative Practices)

≈ STS (Science Technology Studies)

WPS & technical research in CSCW

„The function of **workplace studies** is not to produce ‘implications for design’ or anything of the sort but to **challenge taken-for-granted assumptions** about cooperative work and coordinative practices and thus kindle an otherwise sluggish technical imagination.

Thus, bringing findings from ethnographic studies of cooperative work to bear on technological development ... essentially consists in conceptual work.

... there are two aspects to this: a critical one and a constructive one.“ (Schmidt, 2011, p. 354)

awareness

einen Sinn des sozialen und materialen/physischen Kontext aufrechterhalten und anpassen

- 'what is going on'

zumeist ohne besondere Anstrengung und ohne uns bewusst zu werden, dass wir das tun;

Wenn Akteure in kooperativen Prozesse gewahr werden können, was andere (wie) tun od. getan haben, dann können sie diese Resource nutzen um ihre Arbeit selbst zu koordinieren.

"Awareness, then, is an important issue in CSCW because it ties into some of the fundamental **ethical** questions of technology design that emerge from a focus on technology use." (Robertson, 2002, The Public Availability of Actions and Artefacts)

awareness

“awareness involves

knowing who is 'around',

what activities are occurring,

who is talking with whom ...

awareness provides a view of one another in the daily work environments'. (Dourish & Bly, 1992, p. 541)

awareness \approx 'an understanding of the activities of others, which provides a context for your own activity'.

(Dourish & Bellotti, 1992, Awareness and Coordination in Shared Workspaces)

awareness

supporting effortless coordination

“cooperating actors mutually heed what each other is doing and do so effortlessly and without interrupting ongoing work because they (normally) know the work...”

(Schmidt 2011, p. 25)

“However, if the users are in different locations they rely on technical mediation of awareness information and on the proper interpretation of this mediated information”.

(Gross, 2013, p.427)

“... it is important for technology to mediate information appropriately and to avoid ‘additional effort on the users’ side for capturing and presenting the information’

(Gross & Prinz 2004, p. 285).

Awareness systems

„defined as systems intended to help people construct and maintain an awareness of each others' activities, context or status, even when these individuals are not co-located.“

(Markopoulos, 2009, Awareness Systems)

awareness - Unterstützung

Wenn sich kooperierende Akteure an verschiedenen Orten befinden, benötigen sie technische Unterstützung, welche (awareness-) Informationen bereitstellt.

Herausforderungen für die Entwicklung entsprechender Konzepte und Systeme:

- erfassen,
- verarbeiten,
- präsentieren der entsprechenden Informationen;
- Schutz der Privatsphäre,
- Vermeidung von Unterbrechungen bei den Betroffenen.

(Gross & Koch: CSCW. 2007, p.59)

awareness in CSCW

is a dynamic construct— a process rather than a point in time;

“competent practitioners are able to align and integrate their activities because

they know the setting,

they are not acting in abstract space but in an material environment which is infinitely rich in cues ...

they understand the processes and the issues,

they know how activities intersect,

they know what probably will happen and what might happen,

they expect things to happen and other things not to happen,

they anticipate what will happen next, they are in the rhythm,

they monitor for indicators of what is expected to happen, and so on”.

(Schmidt 2002, p. 292)

Tool-builder approach

Real world collaborative affordances

VS.

the blank slate of groupware

in face to face collaboration people can see and hear each other;

remote collaborators can only stay aware of each other through the tools provide by the system

(Greenberg & Gutwin 2016)

(face-to-face) cooperative (design-)work



We-Awareness

Implications to the Design of Distributed Groupware Tools

While we-awareness is easy afforded in face to face collocated collaboration, it is much more difficult to design distributed groupware tools to provide equivalent capabilities:

there can be no awareness unless it is programmed in via system features.

(Greenberg & Gutwin 2016)

awareness support – tool-builder

„remote collaborators can only stay aware of each other through the tools provided by the system“

How can we develop tools to support we-awareness?

‘tool-builder‘ → driven by design concerns;

versuchen awareness zu definieren
und operationalisieren

(Greenberg & Gutwin, 2016, Implications of We-Awareness to the Design of Distributed Groupware Tools)

supporting awareness

Questions that must be considered:

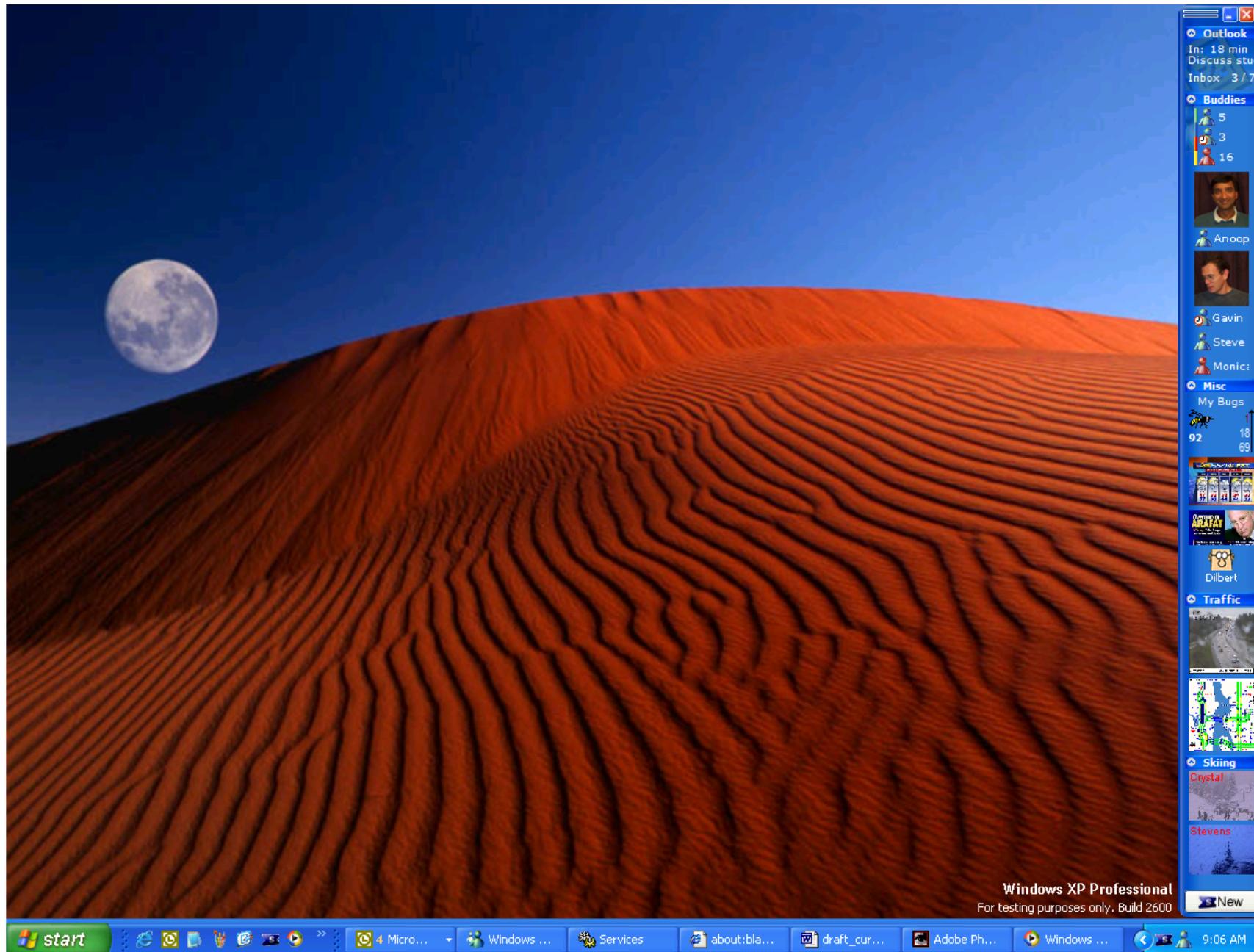
- **What types of awareness information** is crucial and should thus be added to the 'blank slate' of a screen sharing system?
- **How can that awareness information be captured** through technology, and what information will be lost during this capture process?
- **How should that information be translated**, transformed and encoded into a digital form, and—as part of that—what information will be altered as part of that translation process?
- **How will that information be transmitted**, and what are the network effects in terms of that information being received in a timely manner?
- **How will that information be represented** to other participants in order to enable the rich and subtle interactions that occur in the face-to-face setting?

(Greenberg & Gutwin 2016)

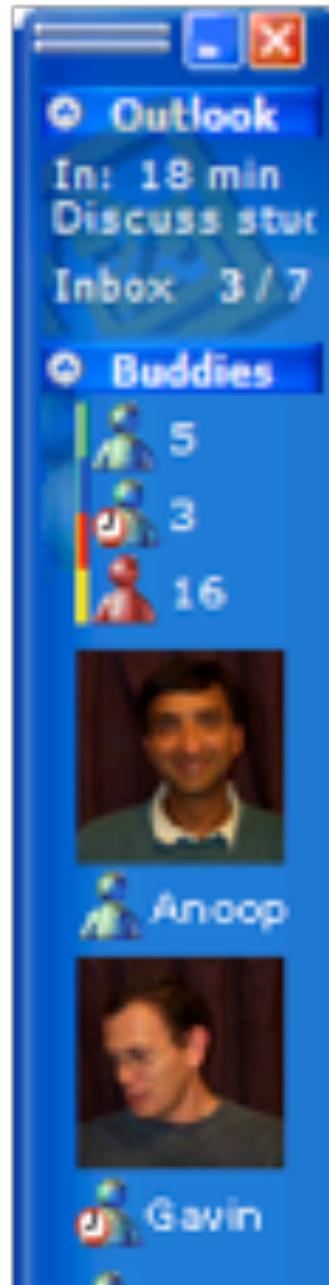
„... we-awareness support is difficult to do, along with particular issues associated with **translating awareness theory to the practice of tool design**“. (m.H.)

(Greenberg & Gutwin, 2016)

Beispiel: The Sideshow sidebar



The Sideshow sidebar



*I have a meeting in 18 minutes

*There are 3 unread and 7 total messages in my inbox.

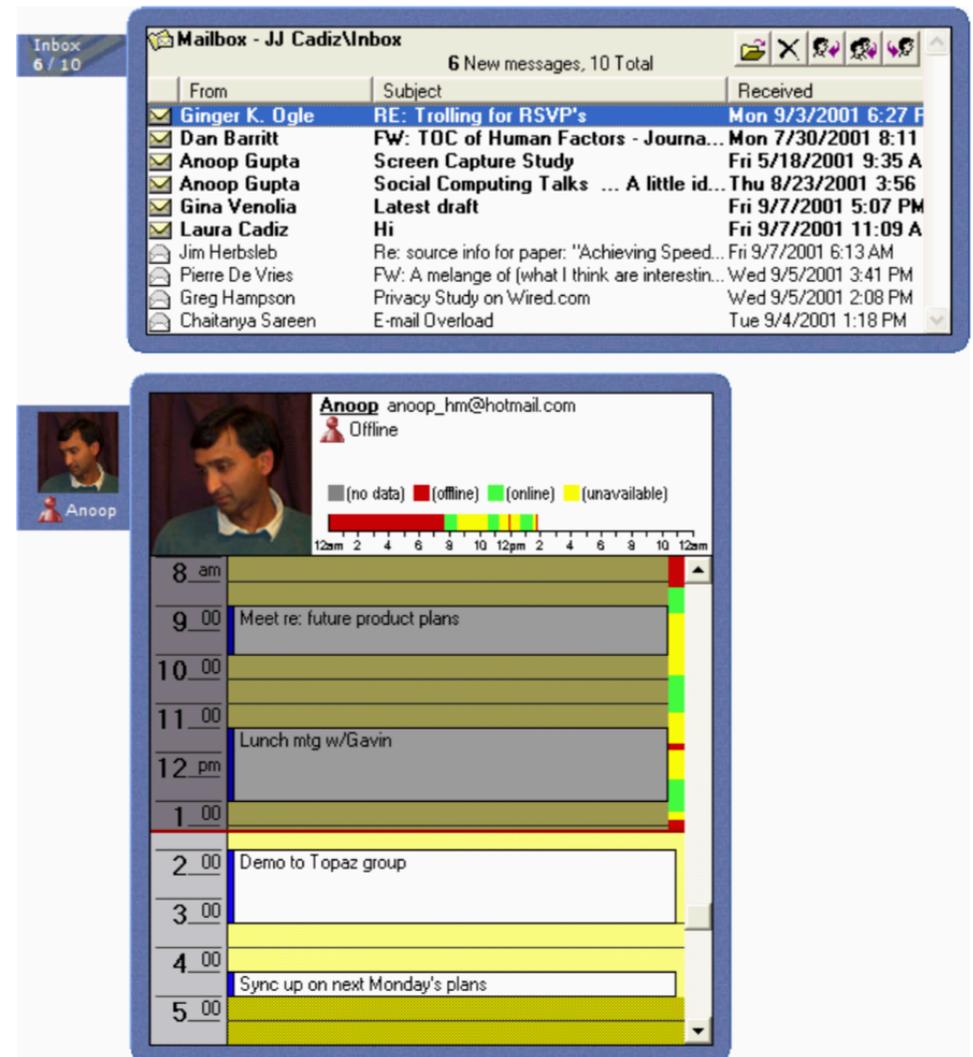
* 5 of my buddies are online, 3 are unavailable, and 16 are offline.

* 5 tickets representing individual buddies, some with pictures, some without.

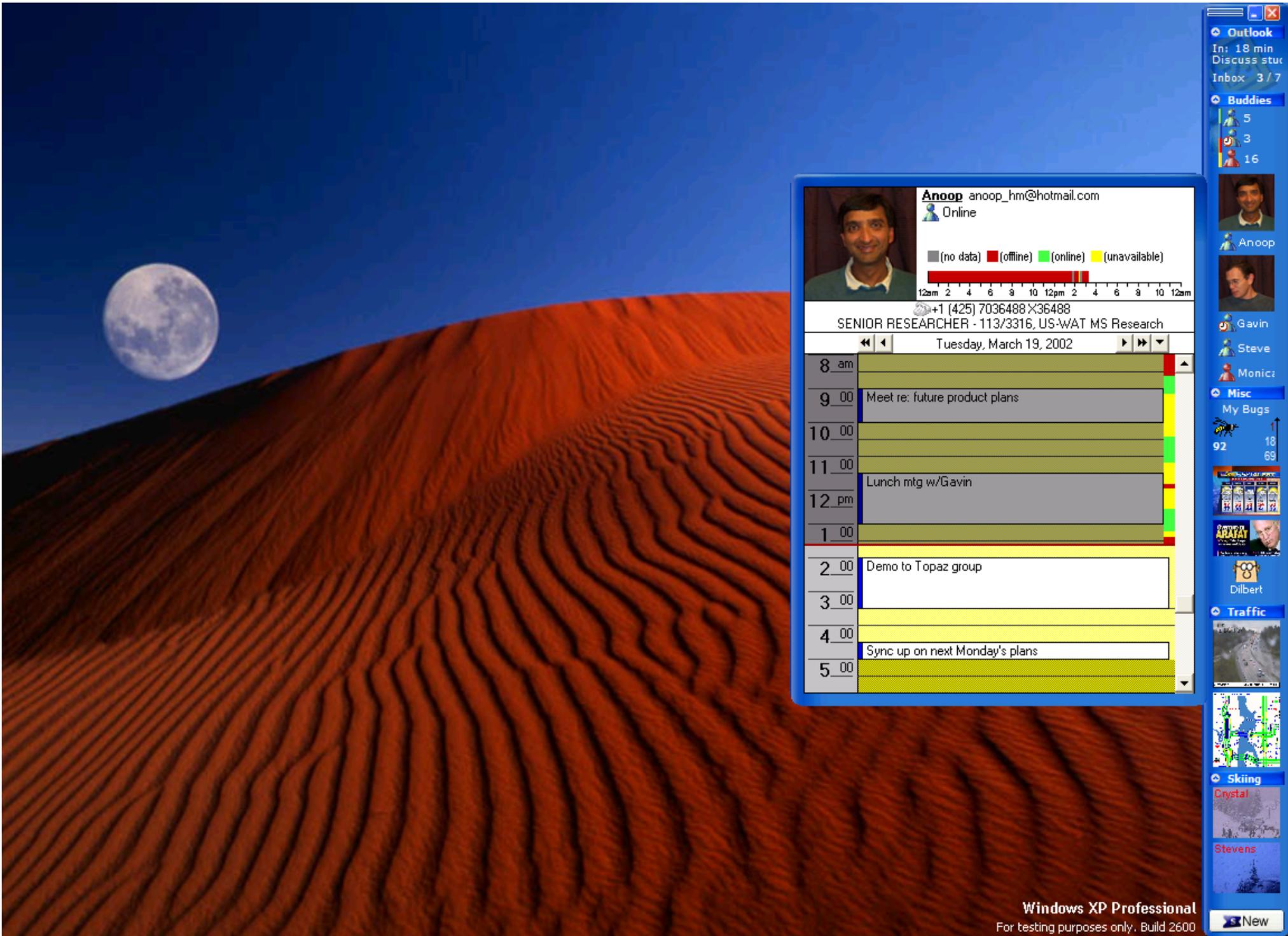
The Sideshow sidebar

mouse over the inbox ticket-tooltip grande shows the contents of the inbox (top). Users can click messages to open

mouse over a person on the sidebar, users can see the person's calendar (if made available) and the history of when the person has been available and unavailable today



Two examples of tooltip grande windows.



Outlook
In: 18 min
Discuss stux
Inbox 3 / 7

Buddies
5
3
16

Anoop
Gavin
Steve
Monic:

Misc
My Bugs
18
92
69

Traffic

Skiing
Crystal
Stevens

New

Anoop anoop_hm@hotmail.com
Online

(no data) (offline) (online) (unavailable)

+1 (425) 7036488 X36488
SENIOR RESEARCHER - 113/3316, US-WAT MS Research

Tuesday, March 19, 2002

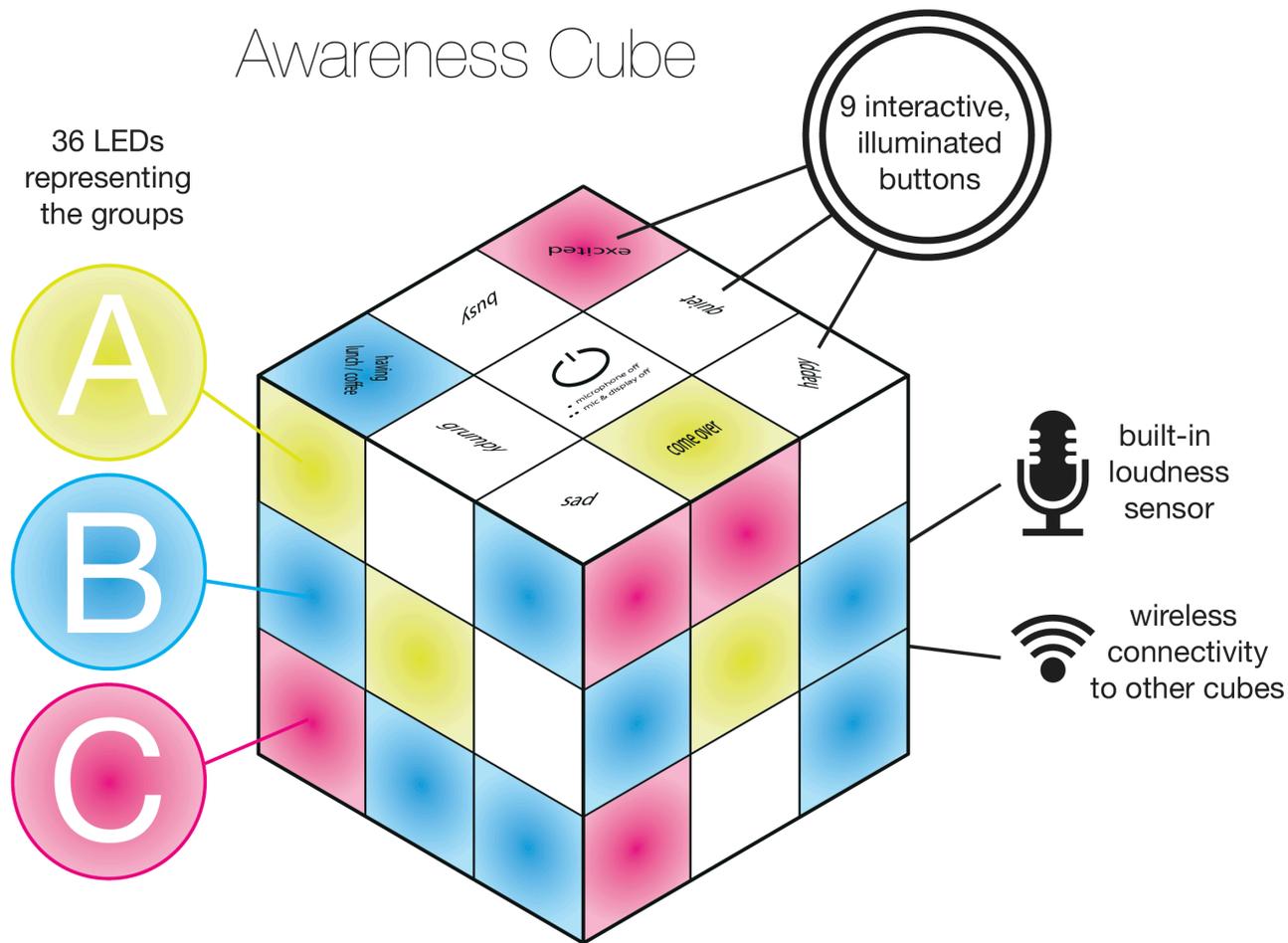
8 am	
9 00	Meet re: future product plans
10 00	
11 00	
12 pm	Lunch mtg w/Gavin
1 00	
2 00	Demo to Topaz group
3 00	
4 00	
5 00	Sync up on next Monday's plans

start | e | Micro... | Windows ... | Services | about:bla... | draft_cur... | Adobe Ph... | Windows ... | 9:06 AM

Windows XP Professional
For testing purposes only. Build 2600

social awareness

Beispiel



Awareness Cubes

