

# NOMAD: Awareness support for student groups

Cristian Bogdan

KTH, NADA, CID/IPLab. HMI graduate

Awareness –understanding the activity of others as a context for one’s own activity– has been a topic of wide interest in CSCW and a variety of models and systems have been devised (Schmidt, Heath and Rodden 2002). However, there is still a need for more validation of the models in practice and for more application of awareness-support systems in settings other than the research laboratory.

In a 3-month project financed by the HMI school I had the opportunity to reflect on how awareness support can improve the work inside the school, by taking an older model (Bogdan and Sundblad 1998, described later on) and putting it in practice. Preliminary discussions and considerations revealed that groups of students from multiple HMI centres taking HMI courses constitute an interesting case for experimenting with awareness support because their work can be characterized as *nomadic*, a case of cooperative work taking place in conditions that vary to a large extent from one session to the other.

My using of the term *nomadic work* was inspired by the studies of amateurs that I conducted as part of my PhD thesis work (Bogdan 2003). The work of both amateur radio operators and amateur student programmers exhibit nomadic aspects, due to the flexibility required by non-amateur obligations of members (family, job, studies etc). *Amateur radio operators* use their portable transmitter-receivers to negotiate short meetings in the city area, as opportunities occur. Also, although local radio club meetings are regular (non-nomadic in time and space), they are frequently characterized by a continuous flow of members entering and leaving them, as their time allows. *Amateur student programmers* in a European student organisation work in short bursts or in longer sessions in various places, as time allows and as computers and Internet connections become available in universities, internet cafés, airports or railway stations. Some have access to laptops, others do not. Non-nomadic assumptions made in the design of programming tools for the corporate world make them unusable in the amateur setting. For that reason, specific tools for nomadic programmers had to be designed.

To attempt a provisional definition, “nomadic” traditionally suggests “having no fixed place”. However, the term as used here suggests some extensions, as follows:

- The case of interest is *cooperative work*, i.e. cooperation between nomadic workers
- Besides not having a fixed *place*, many other aspects of the work can vary considerably, for example:
  - *attendance* to the cooperative work can vary from the whole group to single-member work
  - *duration* of the work sessions can vary from short encounters to long sessions
  - kinds and levels of *technological support* can vary from place to place and from member to member (technological heterogeneity).

A factor contributing to many nomadic aspects is the other activities and obligations that exist in parallel with the work. Information and communication technologies tend to help amplify nomadic aspects of work, by allowing work to be done at home and on the move.

All such observations can be made in the case of *student group work*, for projects and course assignments. It has no fixed place (home, various places at school), varying attendances,

flexible duration, takes place in parallel with other course work, it employs support from wireless and broadband communication technologies, etc. The benefits of awareness support are emphasized especially in the case of such highly fluid working conditions.

The project has involved a group of four students taking part in an HMI course. Their task was to write a literature review using a system that employed sensors and other, work-related cues to provide awareness information (both presence awareness and awareness about work aspects). The users participated in two design sessions and contributed with design ideas during use.

During the design sessions with the users, it became evident that many theoretical assumptions of the awareness model used do not stand. The cue-based model promotes the idea of achieving consistent awareness information by algorithmically combining data gathered from a number of sources (called cues): last system login, last time mail was read, sensor information, etc. The user-designer group realised that the cue information cannot be integrated by algorithmic means, and it is better that the integration is done by the users themselves. As such, the social awareness part of the designed system (called NOMAD) was devised as a coloured matrix, having one line per user and one column per cue. The cues from each user have the same colour, to support at-a-glance views on whether the user is present or not. To support the human integration of cue information, users were able to attach comments to each of their cues, describing for example how they installed their sensors and what are the associated meanings.

The system was built with a WWW interface, so it was readily accessible from a variety of locations. Four sensor boxes ('awareness probes') were built based on the results of the design sessions and given to each student for installation at their primary working places. While sensors were only functional when the students worked at those places, other cues were made available whenever the student was using the system, so the location-nomadic aspect was still supported. Three students had their 'working base' at home, one worked for the literature review mainly while at the job.

Awareness of others' activity on the particular literature review task is supported in the system by means of highlighting new and modified content. Other 'awareness outlets' (using e-mail, SMS, and ICQ) were thought of and may be added in future versions. The system also has more 'ambient', non-functional features, such as using the cue colour matrix at the moment of a document creation as a 'random logo' for the respective document.

The user experience with the system is currently being evaluated by open-ended interviews. Results of the evaluation and other reflections on awareness and nomadic work will be presented at the HMI workshop.

### **References:**

- Bogdan, C., Sundblad, O., (1998): A cue-based, Integrated System for Supporting Social Awareness, technical report, TRITA-NA-D9904, CID, NADA, KTH
- Bogdan, C. (2003): *IT Support for Amateur Communities*, doctoral thesis, KTH
- Schmidt, K., Heath, C., Rodden, T., (eds) (2002): *Computer Supported Cooperative Work 11* (3-4), special issue on Awareness in Cooperative Systems