

## *Using game-like methods to elicit and rate requirements and suggestions for a knowledge community Web site*

This one-hour workshop took place during the BarCamp5 spillover event hosted by the British Computer Society on 27th October 2008. About ten people joined the session, which was introduced and conducted by Conrad Taylor of the KIDMM discussion community.

Conrad opened the discussion by saying that he is interested generally in strategies for eliciting user requirements for products, particularly information products; this is one of the concerns of the Information Design community, and is also pertinent to software development.

Conrad's other and more immediate motivation for broaching this subject has to do with KIDMM (Knowledge, Information, Data and Metadata Management)<sup>1</sup>, which is a discussion community that got started in 2005 within the British Computer Society and has now spread out to involve about 75 people in a busy email discussion list, though there are occasional face to face gatherings.

During 2007, following the KIDMM gathering called 'MetaKnowledge Mash-up',<sup>2</sup> Conrad became aware that the format of an email listserver doesn't cater well for everyone's situation. For some, the list deluges them with too much email within their increasingly unmanageable daily email load; and not everyone has the skills (or uses extended email software features) that make email discussions manageable. Might an online forum site with threaded discussions hosted in a Web 2.0 environment suit the needs of a discussion community better than email?

Conrad had come to the conclusion that Drupal might provide the best toolkit for creating a site of this sort, and registered the domain *kidmm.org* intending to locate such a site there. But without a background or skills in programming, he found himself unable to achieve these goals.

KIDMM has now entered into a 'deal' with a mature student of software engineering, Susan Payne, who for her final year software project will create a custom CMS based on the Zend Framework, expressly designed to support 'knowledge communities' like KIDMM: the software project has been dubbed Know\*Ware, the initial implementation will be for KIDMM.org, and the KIDMM community will be engaged as co-designers by contributing requirements.

An initial face-to-face opportunity to brainstorm user requirements for Know\*Ware will occur on the afternoon of 9 October 2008, in the latter part of an event being jointly organised by KIDMM and ISKO-UK,<sup>3</sup> called *MetaKnowledge*

*Mash-up 2.0 – Making and Organising Knowledge in Communities*. Participants will be seated 'cabaret-style' around tables, with six to eight people around each table. Conrad will lead an exercise which will probably have two principal components:

- ◆ Sifting the comparative 'affordances' of different ways of doing community, both traditional (face-to-face meetings, journals) and modern (email, online forums, social software).
- ◆ Brainstorming possible features and facilities to integrate into an online community toolkit; evaluating these to see which would be desired the most.

### Applying the 'theory of affordances'

To illustrate what 'affordance theory' means, Conrad said that the characteristics of rope 'affords' being able to tie people up with it, but it isn't much good for hammering nails into wood.

Applying affordance theory to community tools can be illustrated by the experience of the Fabula project, in which a few universities and individual home-based researchers were meant to collaborate in developing a multimedia authoring tool for children's bilingual interactive storybooks. Group email was the main way of co-ordinating the project, but several of the academics complained that email interrupted their working day and was hard for them to manage: could not the project use an online Web-based forum tool instead? The home-based researchers objected to having to use dial-up access several times a day to check a Web site only to find that no-one had added anything to it. This case illustrates that email and forums have different affordances – and that these may differently suit people in different situations.

### Cardsorts and GEMs

Among the methods which Conrad is considering adopting for the 9 October workshop exercises are cardsorting and a 'Game-like Elicitation Method' (GEM) called divide-the-dollar. In this, his inspiration is the methods that Rashmi Sinha of Uzanto Consulting uses for requirements elicitation and information architecture research.<sup>4</sup> Although Conrad didn't quote Rashmi's explanations about cardsorting in the

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1. KIDMM Web site is at <http://www.kidmm.org>

2. *MetaKnowledge Mashup 2007 – Putting the word Information back into IT* took place on 17 September 2007. A full report, slides and some audio recordings are available at <http://www.kidmm.org/home/mashup2007/outputs.html>

3. UK Chapter of the International Society for Knowledge Organization – see [www.iskouk.org](http://www.iskouk.org)

4. In this context, it is best to look at the MindCanvas service of Uzanto: <http://www.themindcanvas.com>

BarCamp workshop, it is worth adding them here. The following is taken from an interview that Rashmi did for the Information Design Journal:<sup>5</sup>

In the grand but tired tradition of survey research, understanding people means asking them to check boxes and choose from drop-downs. The most common question format is the much abused Likert Scale. Data analysis is often simplistic. At the other extreme is qualitative research – you can get rich data this way, but it's time consuming and expensive. And its open-endedness can make it difficult and time consuming to find patterns across users.

In terms of structure, card-sorting is at a good in-between point. It's not completely open-ended, but it is also not so structured that people can only express themselves by using checkboxes and dropdowns. Sorting is also a good way to understand how someone thinks and feels about a domain. Let's think of an example – if you want to understand how people use mobile technology, as them to sort all the uses for mobile devices into groups. If you want to understand how someone thinks about music, ask them to sort all their albums into groups. Ask them questions about the groupings they make.

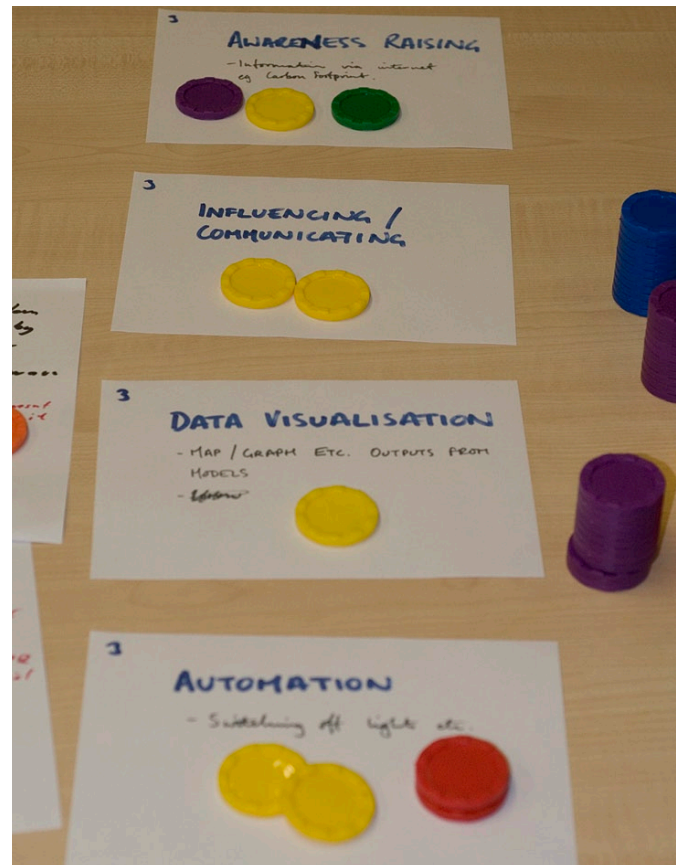
You will find that sometimes the categories reflect their concepts about that domain. Sometimes, they reflect how they feel about something. One person's sorting data reflects their idiosyncratic point of view. Average over enough people, and you start understanding cultural consensus around a topic. Another advantage is that sorting does not take that much time. It can be a fun task – people get into the task and enjoy themselves. All this makes card-sorting pretty much my favorite technique for answering many different questions about how people think and feel.

## Varieties of cardsort

To bring cardsorting to life for the BarCamp workshop participants, Conrad used a prepared set of Post-It notes on which he had written different facilities that might be provided on a CMS-based online community tool such as Know\*Ware is intended to be.

As an example of cardsort practice, one might ask participants in a cardsort to take the provided topic cards and sort them into a triage of three categories: 'must-have', 'desirable' and 'not so important'. This is an example of a **closed cardsort**. Or, one can have a closed set of item cards, but allow people to group them into categories that they themselves define: this can be a way of finding out user perceptions about taxonomy. If one allows participants to add their own topics on blank cards, this is called an **open cardsort**.

Cardsorting can be done with individuals, and the results later aggregated by the researcher, or one can ask a group to perform a cardsort together. In either case the researcher can ask participants to explain their choices, but in a group situation the process of decision-making involves discussion while the sort is in progress, and one could record this



Divide-the-dollar in progress, using coloured plastic poker chips to 'rate' cards produced in an open cardsort brainstorm.

interaction and argument either with an audio recorder, or, for richer capture of the process (showing gestures and movements and re-arrangements of the cards), with video.

Open cardsorting during a discussion prevents it from becoming too linear, 'burying' in later conversation the points that had been made earlier on – the cards lie on the table, constantly reminding participants of the entire landscape of possibilities that have been discussed.

## Dividing the dollar

As for 'divide the dollar', this is a Game-like Elicitation Method (GEM) that Rashmi Sinha and colleagues have implemented on the MindCanvas online elicitation system, which offers several such games. It can be seen as a variation on a closed cardsort. A participant, a 'player' of the divide-the-dollar game, is given a stack of poker chips – say, 10 of them, or 20 – and asked to distribute them over the cards to indicate how much he or she 'values' that item or considers it important. One could, for example, place five chips on something considered really important, two on something less important, or of course none at all on things not valued. All of the chips should be distributed. The process allows participants to modify their distribution choices in a few iterations until they are satisfied that it matches their valuations.

'Divide-the-dollar' is a neat technique because it gives more subtle valuations than a simple triage cardsort can do.

5. *Mental modelling in the creation of user profiles: An interview with Rashmi Sinha* by Lawrie Hunter. Information Design Journal, Vol. 14 No. 1, 2006, published by John Benjamins, ISSN 0142-5471.

It can be done silently (and in an online GEM, this is about all that is practical to do) or with the researcher encouraging a 'think-aloud' protocol on the part of the participant or challenging the participant to explain their decisions, recording the results to collect qualitative data.

Again, 'divide-the-dollar' can be done by teams, provoking argument that flushes qualitative data into the open, and the basic system is capable of being developed in various ways – for example, individuals make an initial distribution, and then in small groups they discuss and adjust the initial distribution. Both the initial and final distribution positions can be recorded.

Conrad demonstrated this using a set of cheap coloured gaming chips bought from a games and toys shop (see photo on previous page). He also said that while wondering what kinds of substantial, stackable markers could be obtained for a price of, say, 2p each, he realised that two pence pieces might do the job well – and could be introduced with the comment that this is people's chance to offer 'their two penn'orth'.

The key feature of all the techniques described above is that, compared to a purely verbal focus group discussion, the group shares a visual and easily manipulated representation which 'snapshots' the current state of the groups' ideas.

## Discussion

John liked the idea of getting people to do an activity that would result in some clear quantifiable measure of opinion, plus the opportunity of garnering qualitative input. He would be interested in the idea of a split test comparing the closed cardsort method with 'divide the dollar', and wondered if something of this sort could be applied to government consultations. He also voiced a word of caution: there could be a group of respondents for whom one of the options is vitally important – not unlikely in a political setting – and this fact shouldn't get swamped in the averages. (Of course, if qualitative input is harvested, it could show up in that.)

Considering government consultations, Harry thought that one could devise some kind of 'game' where different policy positions or solutions could be compared, sifted and rated. He has seen some kind of online tool based on chart construction, where you draw connector lines between boxes representing problems, solutions and effects. As many people do the exercise, some lines become strengthened as many people choose those connections. For political matters, it is particularly important to note the side-effects of a policy decision. Might there be an analogous process to this online tool that works in a more physical setting?

## Reflect–Action methods

Conrad then described another methodology, known as *Reflect* or sometimes as *Reflect-Action*. This had its origins in the ideas of the Brazilian educator Paulo Freire, author of *Pedagogy of the Oppressed*, but fused with a set of methods used by development organisations, called Participatory Rural Appraisal. The Reflect 'toolkit' has now been used in over 350 organisations in around 65 countries, and is

explained at the Web site <http://www.reflect-action.org>, and featured in a video documentary called 'Lines In The Dust'.

The video title refers to the way in which rural gatherings, brought together out of doors to discuss important issues of economic development or social justice, are encouraged to use sticks to draw various kinds of diagram in the dust, adding symbolic markers such as stones, shells or small sticks to indicate elements within the diagram. Conrad thought that the important point to note here was the way that the simple diagramming tools 'afford' anyone stepping forward and making an adjustment to the diagram at any time – something that is hard to do when the diagramming tool is on a computer with one hand on the mouse, or even a flip chart where the marks can't be easily erased.

John remarked that he'd once suggested to a colleague that their annual business planning meeting could be held on a beach – with wet sand as a working surface. 'The suggestion went down like a lead balloon.' But another thought – could one use some of these game-like methods in selecting candidates for a job?

Conrad picked up from this suggestion that if one were 'scoring' candidates in a divide-the-dollar way, the panel members could be given two stacks of chips, with different colours. You could say, 'the yellow chips score for qualifications and the blue ones for personality', for example.

## Cardsorting for MetaKnowledge Mash-up 2.0

John asked how the various elicitation techniques that we had been discussing would play into the event 'Making and Organising Knowledge in Communities'. Conrad explained that the earlier part of the day would be given over to a number of presentations, effectively case studies of the application of methods for sharing knowledge in communities of practice – for example within Airbus Industries, in a 'community of inquiry' around the RSA, within the Chartered Institute of Librarians and Information Professionals, within the teaching profession, and across local government nationwide through the online 'knowledge communities' managed by the LGA's Improvement and Development Agency. (John remarked that bits of central government also use the IDEA platform because it is so good.)

Following the case study presentations, there would be a workshop session. We will consider how the emerging electronic methods for participation compare to our traditional face-to-face methods, also looking at the tools which help with 'reification' of ideas – comparing for example meeting reports/transcripts with electronic mail discussion lists and bulletin boards, in which the act of participation could be said to be at the same time an act of reification, leaving its own written trace. As for organising collected knowledge, we can examine how tagging and rating of content can achieve this. And discussion of these possibilities also relates to KIDMM's desire to build an online tool.

John wondered if what would emerge would be some consensus, or perhaps two worldviews? Conrad thought that when you use an affordance-based analysis, you can find that some tools or methods can suit people in one situation, but not those in another – the Fabula story is a case in point.



## Technologies for sharing workshop outputs

What's also going to be interesting for the workshop is how we can share deliberations in a short time-frame. Compare this with a requirements elicitation exercise – where there is often a small research team which elicits ideas from a larger community, perhaps in a series of focus groups, then analyses results and presents them to the decision-makers so that the artefact or system being designed can be produced. But in a workshop environment, how can we have efficient small discussions and efficiently share them across the groups, in the hour or so available?

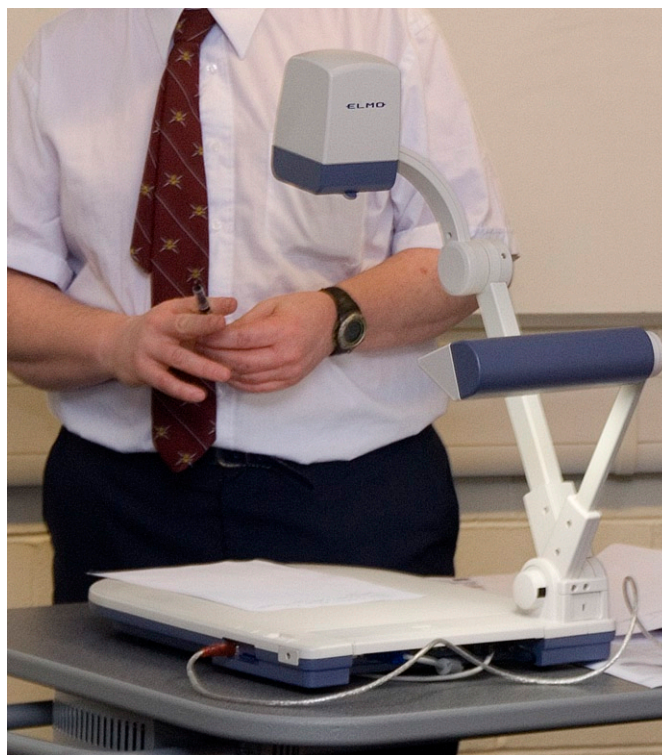
Conrad had hoped it might be possible to hire an Elmo P30, an X VGA document/presentation camera which can be plugged into a data projection system, so that if groups have been working on a paper summary of a cardsort or divide-dollar analysis, a brainstorm or anything else that results in some form of display on sheets of paper up to A3 in size, these sheets can then be projected live onto the walls, commented on and annotated. Also, if an SD card is inserted into the base of the Elmo P30, digital snapshots can be taken of the worksheets and used for compiling reports or posting to Web sites afterwards. If capturing 'gestures' and build-ups over time are important, live video output can also be captured from the P30's composite and S-Video ports.

## From private to shared views

Someone commented that one problem that often occurs in focus groups or other group discussions is that some people just appear to 'float' with the discussion, which is then dominated by those who express their opinions forcefully. So it would be worth having a procedure in which people first record views or choices privately, then share them and discuss them with the group. So you get the collective view, but you also preserve the minority or even individual views.

John described a leadership development course that he'd been on: one of the exercises did do something like that. They were organised into groups of three, and each person had to compile a ranked list of ten techniques for influencing other people. In the ensuing discussion, they were asked to arrive at a *shared* ranking – the hidden agenda being to see who could be most successful in influencing the others around to adopting their ranking of the elements.

Conrad said his knowledge of repertoires of techniques for organising discussions has been contributed to hugely by working alongside Riaz Rhemtulla, a specialist in teacher training who works with the Institute of Ismaili Studies on their secondary school teacher education programme, STEP. Riaz often uses a 'Think-Pair-Share' method<sup>6</sup> in which members of the group are urged to spend a minute thinking and making private notes, then sharing ideas with one other person, before opening up into a group discussion. It's a method for ensuring that individual viewpoints are well articulated in advance of collective assessment of ideas.



An Elmo P30 document visualiser camera in use at City University.

## The danger of category mistakes

Conrad also pointed out a problem that can occur in card-sorting exercises, particularly if they are open cardsorts and participants generate a lot of cards, is that you may treat ideas as being in the same category of being and comparable in parallel, when they might belong to quite different facets. To take cards as an example a set of cards exploring desirable elements of a social networking Web service, 'email notification of new posts' and 'wiki pages' and 'ability to upload photos' doesn't sort well beside such topics as 'fun to use' and 'respecting privacy'. But if you prepare a closed card sort and you are careful, you can organise the card-items so that they are taxonomically parallel.

## Building elicitation into Know\*Ware

In eliciting ideas about what features to develop first for the Know\*Ware tool, Susan Payne and Conrad are already in agreement that an early candidate must be the provision of the discussion mechanisms which can be used in debating further development of the tool; and if some form of the elicitation mechanisms we'd discussed here could be added into Know\*Ware, even just in part, that would be great.

Note that a ranking system is not only of use in polling opinions about how the Know\*Ware tool should develop; for the actual operation of a knowledge-collecting and knowledge-organising site, ranking is one sort of valuable sifting process. Take, for example, building a bibliography: if members of the community rate its contents on the basis of how much they value each book, article or Web resource, the collective opinion can influence the order in which the

6. Think-Pair-Share is a technique for collaborative learning originally devised in 1981 by Professor Frank Lyman at the University of Maryland: see [http://www.eazhull.org.uk/nlc/think,\\_pair,\\_share.htm](http://www.eazhull.org.uk/nlc/think,_pair,_share.htm)

bibliography gets displayed. This is similar to the way in which the Digg service works.

## People sort by different criteria

Cher Devey considered that in building any knowledge community with a measure of diversity, there is going to be an element of anarchy, which is a challenge but also the most exciting part. She knows this from past experiences of online community-building. If there is a core grouping with a shared understanding, as appears to be the case in KIDMM and perhaps in the BarCamp, it can be easy to get discussion going on a meaningful basis. But what if you are dealing with a group of people who don't share the concepts?

Harry spoke of having seen card-sorting work for deciding on the information architecture and navigation structures of a Web site: the cards represented topics, and the exercise was to sort them into logical groups. Most people had little difficulty in doing this, but what was most noteworthy was that different people used quite different categories to sort the cards. It does give insight into how people would navigate intuitively, but it also makes clear how tricky it can be to sort things to suit everyone's perspective.

John recalled Ted Nelson's comment in *Computer Lib* in 1974, saying that as much as you try to categorise and organise and structure things, ultimately you can't because:

Everything is deeply intertwined. In an important sense there are no 'subjects' at all; there is only all knowledge, since the cross-connections among the myriad topics of this world simply cannot be divided up neatly.

This makes it possible for each of us to organise things in a way that suits us, and which is perfectly logical and makes sense in our heads, but that is far from unique – there are other ways of doing it.

Exercises like card-sorting, as has been remarked above, do not necessarily lead to consensus, but they can offer an efficient and engaging way of detecting patterns in user preferences and world-views.