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# Using a Creativity Workshop to Generate Requirements for an Event Database Application

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**Abstract.** This paper describes one experience of using a creativity workshop to generate requirements for an event database application for a network of German Chambers of Commerce (CCI's). The workshop described was the first to be run by the host organization. Techniques used during the workshop included discussion of system boundaries and use of creativity triggers. We discuss the results from the workshop in terms of the number and importance to stakeholders of the requirements generated. We end with a presentation of lessons learnt for improved creative practices in requirements engineering.

**Key words:** requirements acquisition, creativity workshop

## 1 Introduction

The role of creative thinking in requirements engineering has been recognized as important [1], [2], but creativity techniques have yet to be employed widely in requirements projects. In this paper we report the application of published requirements creativity techniques during a workshop in a project developing an event database application for German Chambers of Commerce. Both the project and the organization co-ordinating it were smaller than in other reported applications of similar techniques (see, for example, [1], [2] and [6]). Results reveal the positive impact of the workshop on participants in the requirements process, and the relative effectiveness of some of the creativity techniques.

The remainder of the paper is in 4 sections. Section 2 describes the organizational context within which the work took place. Section 3 describes the project in which the workshop was applied, and section 4 describes the workshop itself. Section 5 reports results from the workshop and post-workshop analyses of generated requirements. The paper ends with a discussion of lessons learned for the organization and for creative requirements engineering activities in general.

## 2 Requirements Engineering at ComNetMedia

ComNetMedia (CNM) is an IT solution provider, which was founded in 2000 as a spin-off of the CCI Gesellschaft für Informationsverarbeitung mbH. It is responsible for about 200 different applications used by German Chambers of Commerce (CCIs), including databases, enterprise content management systems, archive solutions and email. In most cases the applications have an interface to the database of the majority of the German CCI organisation (integrated systems), and need to conform to e-government standards, which has a significant impact on IT architectures and business processes.

CNM has two main branches – development and consulting. The consulting branch consists of 10 project managers / consultants and is responsible for the RE process as interface between customers and developers. The senior consultants and team leaders have nearly 10 years experience in requirements engineering. CNM often carries out requirements work on behalf of the chamber organization, with development being carried out by CNM or another company. RE is therefore one of CNM’s core business areas.

Depending on the project type and size, the RE process is adapted as described in the internal CNM project handbook. For projects of all sizes, the handbook contains models and examples of requirements descriptions, and a description of the internal CNM process for requirements management. For medium and large size projects, CNM uses Quickplace, a LotusNotes based Groupware tool to give transparency and management of RE functions such as change requests, description of work as use cases, and incorporation of RE into project plans. Other tools are available for RE description and management, including style guides relating to GUI design, tools for ER diagrams, use case and process modelling tools.

A new project, to build a new application, starts in most cases with some fuzzy ideas and requirements from the customer or CNM. Analysts at CNM then start to identify additional requirements. After meetings with customer representatives, or further partners, and CNM developers, CNM starts to write the technical concept (use cases, uml etc.) and discuss the results with customers, CNM developers and management. These steps are performed iteratively. However, representatives are often high-level people from the customer organisations, and access to the real target group, which will use the application in their workplace, can be difficult. This problem is reflected in the meetings with customers, when the selected group of representatives is not involved in the daily business process and has no detailed experience with the real issues for users. It means that many requirements are often detected relatively late in the project, when a prototype is in place and more users have access to it. In most cases the new requirements are not “cost neutral”. In these cases, change requests are collected and evaluated by CNM in terms of feasibility, budget, and delivery (release). Then the customer can decide whether the importance/use of the new “functionality” is at least equal to the additional budget/effort.

One horizontal task within CNM RE work is to improve methods to deliver a higher quality RE process and ultimately a better quality of finally product or project. In this paper, we describe the experiences of one of the authors, who is a senior consultant within CNM, of using a creativity workshop as part of the CNM requirements

process. This author had first encountered creativity workshops in the context of the APOSDLE project [3], first by participating as a stakeholder in one such workshop, and then learning more about them from the APOSDLE work-based learning prototype [4]. The idea of running creativity workshops as part of the requirements process was initially developed in the context of the RESCUE requirements process [5]. RESCUE creativity workshops have much in common with other participatory design workshops, but are designed specifically to stimulate creativity, using established models of creativity from artificial intelligence and social and cognitive psychology, as described in, for example [6]. Creativity workshops sit between the four streams of the RESCUE process, drawing input from early models of actors and use cases for the future system, and providing output which is used in particular to help specify use cases and identify requirements for the future system. Outputs from such workshops include requirements, creative design ideas, and storyboards embodying the creative ideas inspired by the workshop. These are used by those who write use cases and requirements as part of the future system specification. Workshops are designed based on models of creativity from cognitive and social psychology, as described in [6] and normally run for two days, incorporating a number of different activities designed to stimulate creativity. The RESCUE team has so far facilitated 14 creativity workshops in the air traffic management, policing and self-directed learning domains (see, for example, [1], [2]). However, RESCUE-style creativity workshops have not previously been run by facilitators from outside of the RESCUE team. This paper describes the first occasion on which this has been attempted.

### **3 The Event Database Application (EDA) Project**

The project in which CNM decided to trial the use of a creativity was to develop an event database application for German CCIs. The first version of the application was built using a content management system. Further development was then transferred into an internal knowledge management project of the DCCI: the association of the German CCIs. As part of this project, “event publication and management” was defined as a sub-system and realised as a database application. Several requirements, such as interfaces to other systems, XML-import/export functions, event management etc. were realised. This version of the application is currently used by German CCIs for offering and “booking” events and training sessions. There are several types of events, such as free-of-charge information events; expensive long term training courses, including examinations, that can lead to degree level qualifications; one day basic training courses about, for example, “how to use MS Word”; or workshops on how to set up a new company.

Three years ago there was a platform change resulting from the fact that the old versions were no longer supported by the software and hardware. The application was updated several times so that the technical platform was “state-of-the-art” but the application (business logic) itself was not. The “old-fashioned” event database application needed an update. At this stage a decision had to be made: whether to simply change the platform again and keep the old concepts, or to take the chance to start from scratch and develop a new concept and IT architecture. CNM management,

together with developers and the EDA project leader decided to start from scratch and build a new application, which would be appealing to users, with additional features and modules in a new architecture. It was decided that input from users and customers should be an important source of information for the new concept. Since, as described above, staff at CNM had access to information about the RESCUE user-centred requirements process, due to their participation in the APOSDLE project [3], it was decided to use one of the techniques described within the RESCUE process – a creativity workshop -- to obtain inputs from the CCI user group.

Several target groups were identified, including external customers interested in CCI training courses, and CCI staff involved in training and event management, marketing, administration, and overall management and control. Holding the creativity workshop as a “live event”, rather than simply consulting experts or writing down concepts, seemed to be a good start to get a wide range of the different target groups from different CCIs together. The aim was to collect ideas from the different target groups in a “democratic” way and not only to ask some experts or write the concept without asking users. The techniques chosen were intended to support the creative invention of requirements from heterogeneous, non-technical user groups, and the structuring of those requirements around key use cases.

#### **4 The EDA Project Creativity Workshop**

18 CCI representatives responded to the invitation to the workshop, including project leaders responsible for CCI web sites and training and course management. Participants came from 12 different CCI's within the CCI24 group, which consists of nearly 30 chambers of commerce [7]. All of these chambers have the old system in place. In addition, to add some more technical expertise on systems and tools running in different CCI's, 2 senior consultants, the CCI24 project leader and a trainee from within CNM were also invited.

The representatives from CCI's were well prepared. As part of the invitation to attend the workshop, they were asked to be prepared with detailed knowledge of CCI internal processes (e.g. how to proceed with the application process for a training course, editing of events in the application, types of events etc.) and experience with the existing application. In most cases CCI representatives collected some feedback from their colleagues and brought lists of ideas (problems) to the workshop. The facilitator spent one day preparing for the workshop, and 4 hours, with the help of some technical support, preparing the space in which the workshop was to be held.

The workshop lasted for 8 hours, with 45 minutes break for lunch. It was held in a large meeting room in Dortmund, and was facilitated by the first author. A first draft of the system context model and use case precis (unstructured paragraphs describing the behaviour of actors in a potential use case) provided the structure for the workshop room itself. The credo was “no ideas off limits” – think of anything, which might be a good idea or should be prevented. Participants were told that all requirements they would identify might be realised in the new application, but that the evaluation of this would be done by CNM, since they were the solution owners, and had an overview of existing and currently planned IT architectures and applications,

allowing them to exploit possible synergies with other applications. The workshop was facilitated to encourage a fun atmosphere so that the stakeholders were relaxed to generate and voice ideas without fear of criticism. During creativity periods, standard RAD/JAD facilitation techniques and rules [1] such as avoiding criticism of other people's ideas and time-boxing each topic under discussion were applied. Stakeholders were supplied with Volere requirement shells [9], print-outs from the current application, A3/4 paper, color pens, pencils etc. with which to record the results from each period.



**Fig. 1.** Scene from the creativity workshop

#### **4.1 Pros and Cons of the Current Situation**

The morning period activities began with two 'round-robin' sessions in which each stakeholder was asked to come up with features or ideas for the new system based on their experience with the existing application. Participants were given approximately 5 minutes, working alone, to identify the disadvantages of the current system, and half an hour was then allowed for each participant to tell the result to the group. The same procedure was performed for the advantages of the system. The aim of this session was to allow participants to concentrate on the current limitations and identify weaknesses and strengths of the current version. But it was also to get their own favorite ideas or important features out into the workshop up-front, so that they would not use time in subsequent sessions trying to get those ideas heard. Participants were allowed to contribute more than one idea each.

## 4.2 Definition of System Boundaries

The morning period activities continued with system-wide brainstorming and the identification of system boundaries, considering other systems used within different CCIs where different direct connections for import and export of data are in place. This led to constraint and boundary identification and cleared up the focus and scope of the future development, and of course of the expectations of the workshop day.

The session began with a prepared flip chart showing the first draft system context model, where the system was in the centre and two “rings” around it defined the different layers: the user front-end and GUI; any co-operative adjacent systems [9]; and autonomous adjacent systems. To get the discussion and idea flow started, participants reviewed the “general story” of the application from the point of view of different target groups including the customer, the CCI, the system itself, and external systems. To drive the session forward, the facilitator then asked open questions e.g. “who or what is part of the application process”. Questions focussed on connections to other systems or actors, connections to different departments in the CCIs (different actors / roles within the CCI organisation), connections between the customer and the system, relation(s) between actors, and relations between use cases or functions and external actors (systems, humans, regulations etc.).

For each activity, actor or system mentioned, assistants added different coloured and shaped post-it notes onto the chart. In addition the group started to create connections between them. The session finished by considering the main use case précis. The aim of this session was to generate a common understanding of what was in and out of scope. This was essential as a lot of the participants’ initial concerns had been to do with external systems.

## 4.3 Using Creativity Triggers to Generate New Requirements

Two sessions during the workshop were dedicated to generating new requirements using exploratory creativity stimulated by the use of creativity triggers. In each of these sessions, participants were divided into four groups with four or five representatives from CCIs and one from CNM. The moderator created the groups in a way that people from different CCIs and departments, and with different experience (as marketing experts, technical experts or event managers) worked in groups together. The aim was to have groups which brought individuals with different expertise and focus together to prevent “specialisation”. Groups worked in parallel, using different creativity triggers.

The creativity triggers used were those defined in [10], and were explained by the facilitator using the context-relevant examples shown in Table 1. Groups were able to choose which trigger they wanted to work with during each session. Each group worked on using its chosen trigger to identify requirements for approximately 30 minutes, documenting new requirements using the Volere requirement shell [9] translated into German. During this time, the facilitator was available to answer questions if needed, but did not otherwise intervene. After each round each group presented their ideas to the workshop as a whole. This often led to the identification of further

requirements. After each round, the participants were re-grouped and chose a new trigger for the next round.

**Table 1.** Creativity triggers and EDA-specific examples used for explanation in the workshop

Creativity triggers	Context-specific explanations and examples used in the EDA workshop
Service	Target group: customer Target group: CCI event/course management Target group: CCI training Target group: CCI public relation and others
Information	Which kind of information is interesting for customers? Which kind of information could a CCI offer? Which kind of information is useful for the customer? Which kind of information is useful for the CCI?
Participation	How can customers actively participate? How can CCI training course representatives actively participate? How can CCI event management people actively participate? How can CCI PR people actively participate?
Connections	Media for customers Connection to ECMS Connection/ Interfaces to other CCI systems Connection of further media (information) channels/systems
Trust	Customer point of view - System Customer point of view - CCI CCI System
Convenience	Customers CCI course/event management CCI training department CCI PR, communication

After the workshop, all the identified requirements were recorded in an MS Excel spreadsheet. The CNM project manager structured the list of requirements by relating them to a rough cluster of basic use cases and identifying those requirements which could be used within different use cases (e.g. print, e-mail reminder) as system-level requirements. The spreadsheet was then placed on the CCI24 partner server. This allowed responsible CCI stakeholders, who were not able to participate in the workshop, to be informed and provide additional ideas to CNM. Several new requirements were identified in this way. Finally, all CCI24 project leader participants were asked to rank the requirements, using the Volere satisfaction and dissatisfaction rating scales [9], on behalf of their CCI. This feedback was then collected and used for our internal ranking.

## 5 Results and Discussion

During the workshop, a total of 148 requirements were generated. 34 requirements had been identified by participants in preparation for the workshop, and a further 5 were identified by the facilitators on immediate reflection after the workshop. In this

section, we analyse data relating to the 148 requirements generated during the course of the workshop to answer a number of research questions of interest. The main outcomes are shown in Table 2.

**Table 2.** Numbers of requirements generated from the initial round robin session and the use of different creativity triggers during idea generation sessions

Technique/Creativity trigger	No. reqts
Round robin pros & cons	41
Service	33
Information	25
Participation	0
Connections	4
Trust	9
Convenience	36
<b>Total</b>	<b>148</b>

### 5.1 What Triggers Did Groups Choose to Work With?

During the idea generation sessions, groups were free to choose which creativity triggers to work with. Table 3 shows how many times a group chose to work with each of the available triggers.

It is interesting to note the differences in the numbers of groups opting to work with the different creativity triggers. Triggers are shown in the table in the order in which they were explained during the workshop. Therefore, the differences may be due to a combination of recency and primacy effects, whereby participants remembered better the earlier and later triggers from the list. However, the impression of the facilitator was that some triggers did not seem as relevant as others, and were not so easy to understand for the participants in this workshop. For example, the ‘Connections’ trigger was explained as quite a technical concept, relating to interfaces with other CCI systems, and may therefore not have seemed very relevant to the stakeholders’ perceptions of the system in terms of its user interface. Further investigation of this issue is needed.

**Table 3.** Numbers of groups who chose to work with different creativity triggers

Creativity trigger	No. of groups
Service	4
Information	3
Participation	0
Connections	1
Trust	2
Convenience	4

## 5.2 How Productive Were the Different Techniques Used during the Workshop?

In Table 4, we present a measure of the relative productivity of the different techniques and triggers used during the idea generation sessions. The data shown was generated according to the formula:

$$\text{number of requirements generated during the session} / (\text{total number of minutes in the session} \times \text{number of repetitions of session} \times \text{total number of people involved in the session}) \quad (1)$$

This measure is intended to give an approximate representation of the number of requirements generated per person-minute. Note that this is only an approximate measure, since sessions lengths are approximate (correct to within + or – 5 minutes), and group sizes for the idea generation sessions were sometimes 5 and sometimes 6 (an average of 5.5 was used for the calculations).

**Table 4.** Productivity of different techniques and triggers

Technique/Creativity trigger	No. of requirements per person-minute
Round robin pros & cons	0.027
Service	0.050
Information	0.051
Participation	N/A
Connections	0.024
Trust	0.027
Convenience	0.055

It is interesting that the round robin session, involving all participants, appears less productive than the work with some of the creativity triggers, which was done by smaller groups working in parallel, although it should be remembered that this session served other important purposes in terms of allowing participants to share ideas and build a common sense of purpose.

Looking at Tables 3 and 4, it is also interesting to note an apparent correlation between the popularity of the creativity triggers (i.e. how often they were chosen by groups) and their productivity, with Service, Information and Convenience being the three most popular triggers (chosen by 3 or 4 groups) and apparently also the most productive (with a productivity measure of 0.05 or more). Both choice of trigger and productivity in working with a trigger are likely to be indicators of how meaningful different triggers are to stakeholders with particular experience in a particular domain. These results therefore lend support to the hypothesis that certain triggers may be more meaningful to participants working in particular domains than others. Again, further research is needed to investigate this.

### 5.3 Does the Use of Creativity Techniques Lead to Good Quality Requirements?

Following the workshop, all CCI's which had sent representatives to the workshop were asked to rate the requirements generated using the Volere measures of customer satisfaction and dissatisfaction [9]. In other words, CCIs were asked to rate, on a scale of 1 – 5, how satisfied they would be if a requirement was met in the final system (where 5 is most satisfied), and also on a scale of 1 – 5, how dissatisfied they would be if the requirement were not met (where 5 is most dissatisfied).

**Table 5.** Total numbers of CCI ratings of a requirement from the creativity technique or trigger shown at the level of satisfaction or dissatisfaction shown

Technique/ Creativity trigger	Customer satisfaction						Customer Dissatisfaction					
	1	2	3	4	5	Avg.	1	2	3	4	5	Avg.
Round robin pros & cons	18	14	67	50	133	3.94	12	15	54	49	94	3.88
Service	27	28	52	64	130	3.80	14	29	56	51	84	3.69
Information	30	27	54	35	49	3.23	31	22	59	30	22	2.93
Participation												
Connections	3	2	6	2	16	3.89	1	2	5	5	9	3.86
Trust	11	5	22	14	27	3.51	9	9	16	10	18	3.30
Convenience	55	32	68	32	88	3.24	46	28	61	27	62	3.13
<b>Total</b>	<b>144</b>	<b>108</b>	<b>269</b>	<b>197</b>	<b>443</b>	<b>3.60</b>	<b>113</b>	<b>105</b>	<b>251</b>	<b>172</b>	<b>289</b>	<b>3.47</b>

Data from this exercise is collated in Table 5. The table shows the numbers of times an CCI rated a requirement generated from the creativity technique or trigger shown at levels 1 – 5 for satisfaction and dissatisfaction. Since each CCI was asked to give two different ratings to each of around 200 requirements, it is perhaps not surprising that some of the requirements were not rated by some participants. In our table, we simply count and average the ratings given.

The overall averages for both satisfaction and dissatisfaction are greater than 3, suggesting that requirements generated during the creativity workshop are seen by the participants to be important in relation to the future system.

It is interesting to note that for both satisfaction and dissatisfaction, the highest average rating is for requirements generated during the round robin pros and cons session held at the beginning of the workshop. This is perhaps not surprising, as people came prepared to share their 'big ideas' about the future system, and did so during that session. So, although this session could be seen as less productive than some according to the measure shown in Table 4, it delivered, on average, the most highly rated requirements.

Considering the different creativity triggers used in idea generation sessions, it is also interesting to note that the triggers which were apparently most productive did not necessarily produce the most important requirements. For example, the 'Information' trigger was the second most productive (see Table 4), but requirements gener-

ated using that trigger had the lowest average satisfaction and dissatisfaction ratings of those from any trigger. 'Connections', on the other hand, appeared to be the least productive trigger according to Table 4, but to stimulate the requirements with the highest satisfaction and dissatisfaction ratings of any trigger. Once again these findings may be quite specific to this group of participants working in this domain. It is the impression of the facilitator that the 'Connections' and 'Trust' triggers were interpreted in quite a technical way (as relating to networking and security, for example), and were in this sense outside of the expertise of most of the stakeholders present. This may have accounted both for the apparently low productivity (i.e. the low number of requirements generated) and the high importance attached to the requirements generated. Further research is needed before we can generalize about the effectiveness of different creativity triggers and techniques.

#### **5.4 Is there any Association between the Creativity Technique or Trigger Used and the Part of the System for which Requirements Are Derived?**

There is a wide variation in the numbers of requirements identified for the different use cases, from 0 to 30, as shown in Table 6. The main foci for attention were the editing of forms on the provider side ('Edit forms'), and making applications to attend training courses on the customer side ('Make application'). 19 requirements were also identified in relation to customer 'Comfort functions' – features of the system which would make it easier and more pleasant for customers to use – and 24 requirements were identified in relation to interfaces, import/export functionalities and xml formats for linking with external systems ('Import/export').

Requirements from the round robin pros and cons session are particularly focused on the 'Edit forms' use case (which accounted for 15 out of the 41 requirements generated during this session) and 'Import/export' connections with external systems (11 out of 41). This reflects the areas of concern which the participants brought to the workshop. However, it is noticeable that requirements related to other areas of functionality were identified later in the workshop, during idea generation sessions using the creativity triggers. For example, while no requirements for the 'Display results' use case were identified during the pros and cons session, a total of 12 had been identified by the end of the idea generation sessions using creativity triggers. No requirements were identified in relation to 'Offers' in the pros and cons session, but creativity triggers lead to 10 new requirements in this area, and finally only 1 requirement relating to 'Marketing' was raised during the pros and cons session, but 10 new requirements were added during idea generation. This suggests that the work with creativity triggers in general gave participants the opportunity to consider broader issues and other parts of the system than those on which they might initially have focused.

Considering the impact of work with particular triggers, the spread of requirements identified using the Service and Convenience triggers appears to reflect the trends from the workshop as a whole, with most requirements from these triggers relating to 'Make applications', 'Edit forms' and 'Import/export'. Requirements generated using other triggers do not always follow the same pattern. For example, perhaps not surprisingly, the biggest group of requirements from the 'Information' trigger relate to the use case about displaying results of searches for course information. Too few

requirements were identified using the Connections, Trust and Participation triggers to be able to identify any trends of this kind.

**Table 6.** Association of requirements from different sources with use cases or system-level aspects of functionality

Technique/ Creativity trigger	Customer use cases							Provider use cases					System-level requirements			
	Login	Search	Display results	Make application	Payment	Offers	Comfort functions	Edit forms	Edit app. forms	Admin/monitoring	Marketing	Statistics	Performance	Usability	Import/export	Security
Round robin pros & cons		2		4			5	15	1		1		2	11		
Service		2	1	7	1	2	3	7			2	1		7		
Information			9	3		5	4		1		2	1				
Participation																
Connections										1			1	2		
Trust			1	1			2						1		4	
Convenience		4	1	6		3	5	8			5			4		
<b>Total</b>	0	8	12	21	1	10	1	3	2	0	11	2	0	4	24	4

## 6 Lessons Learnt

This was the first use of a creativity workshop within CNM, and the first time that such a workshop had been facilitated by someone outside of the RESCUE team that originally developed the concept. The workshop proved to be an extremely useful technique in this context. Many important requirements were generated in a short space of time. In CNM's experience of similar projects, it could take around a year of monthly visits, meetings and discussions to collect a number of requirements similar to that collected through the use of the one day creativity workshop in the EDA project. While some of the efficiency gains may have come simply from collecting a number of different stakeholders together in a single workshop rather than carrying out separate meetings with the different stakeholder organisations, it is the impression of the facilitator that other benefits were due to the use of creativity techniques within the workshop. These techniques surfaced a wider range of ideas, from more different stakeholders, and generated different kinds of ideas from those which would typically be identified through the use of 'standard' requirements techniques. The feedback from participants about both their experience of using creativity techniques during the

workshop and the quality of the resulting use cases and requirements was also very positive.

Based on this experience, CNM will use creativity workshops again to collect requirements for projects similar to the EDA project, where there is a need for a user-oriented requirements process to define requirements for a sizeable product or application, where requirements are initially unclear and there are heterogeneous user groups with different requirements and backgrounds (technical, organisational, content).

One important lesson concerned the management of stakeholder expectations about the requirements activities in and around a workshop. People were surprised and even resentful in the beginning as their expectations differed completely from what actually happened. They expected a meeting where they could place some ideas or just follow a presentation and then start a discussion – the way they usually define applications. Some participants initially criticised the definition of system boundaries as “useless” or a “waste of time”. This was the most important, and most difficult part of the workshop. As the event progressed, the participants’ understanding of why boundaries and the identification of actors are important developed. The most important lesson is to ensure that a good explanation is given as to why this kind of work is important. In future use of creativity workshops, especially with non-technical target groups who have little or no experience of the requirements process, there is a need for some easy to understand arguments and explanations of, for example, why system boundaries are important, and how actors or functionality groups will have influence.

Another lesson, based on our experience, is the need to incorporate some modifications of the creativity process in the case of projects with a clearly fixed budget limit, in order to reduce or prevent dissatisfaction. A workshop can generate many ideas, but there may not be the budget to realise them. In such cases creativity should, if possible, be channelled to focus on areas of functionality within the range of the project budget. One possibility would be to identify extra costs in parallel with requirements so that the customer can decide whether s/he wants the relevant features or not. In the case of product development, the normal practice of CNM is to work first with a pilot customer, before developing a product for general release. In this case, the pilot customer would have the opportunity to be creative, but CNM would ultimately decide whether a particular feature should be “in” or “out of scope”.

In more general terms, the results from this workshop suggest that the effectiveness of different creativity triggers may depend on the project context, and especially on the interests and experience of the stakeholders and the nature of the system to be developed. In the workshop reported in this paper, some triggers were apparently more productive than others, in terms of the numbers of requirements generated by people working with them. Some triggers seem also to have led to the generation of more important requirements than others. However, it is important to note that the triggers which stimulated the generation of the highest numbers of requirements were not the same as those which led to the requirements which were most valued by stakeholders. Finally, there is some evidence that the use of creativity triggers during a workshop can stimulate stakeholders to identify requirements for parts of a new system on which they had not previously focused, and that some triggers (such as ‘Information’) may focus attention on particular aspects of the system. We look forward to building on these findings in future workshops.

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