

# Using Focus Groups in Studies of ISD Team Behaviour

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**Abstract:** This paper discusses an innovative focus group approach used to study an Information Systems Development (ISD) environment. The research had to cope with the application of a broad framework, untested in practice, seeking to elicit potentially highly sensitive opinions and judgments in a highly pressurised, time-restricted environment. The researchers' design of the focus groups is discussed along with an evaluation of the final approach used. The paper concludes with a set of issues for future researchers to consider when designing focus groups for their own studies, along with a set of lessons learned and recommendations arising from the research team's experience in this study.

**Keywords:** focus group, information systems development, evaluation criteria

## 1. Introduction

The research team in this study was tasked with assessing the agility of a proprietary method in a globally distributed systems development organisation. Rather than trying to assess agility by establishing the compliance of implementation with the defined method, we examined each implementation using a conceptually well-established agile assessment framework (see Conboy 2009). The assessment objectives were (i) to establish the agility afforded by the proprietary method as implemented in the organisation ('method-in-action'), and (ii) to identify major issues with the adoption and generate recommendations to address these.

This assessment was highly complex. Significant time restrictions were in place. A previously untested, broad, multi-faceted framework, consisting of highly complex and multidimensional constructs was to be used. There were no accompanying set of prescriptive questions, and the researchers had to address the potential for poor judgement, unsupported anecdotal statements, and statements arising from ulterior motives. The study also involved potentially sensitive and controversial data, and data was difficult to collect in some cases where ISD team members were geographically dispersed.

All of these issues required careful consideration when designing the focus groups approach for this research. Thus, the objectives of this paper are to reflect on the approach used and evaluate its efficiency and effectiveness. In the following sections, the objective of this evaluation is discussed and focus group theory is outlined, including a discussion of its use in various fields. The modifications to the approach used in the IS research study are then discussed, followed by justification of the need to evaluate this modified technique and reflect on possible improvements. We then describe the focus group fieldwork conducted and an evaluation with respect to well established criteria in the literature. Finally, findings and conclusions are discussed.

## 2. Research Objectives

There are many reasons for specifically relaying experiences of focus group research in Information Systems (IS) and for evaluating their effectiveness in our discipline. As discussed below, focus groups have not been used extensively in IS research, despite apparent suitability. They are advocated for descriptive, explanatory and exploratory studies, leverage common concrete situations and groups which are common in work teams in general, and can provide deep and specific insights into complex sociological situations such as teams. They also allow investigation of ambiguous or multi-dimensional topics and a large quantity of data to be collected even where time or researcher access is limited.

As well as all the advantages of the approach, the literature also recognises potential drawbacks. These include difficulties in directing topics for discussion while not imposing the researchers interpretation on the group, effects of group dynamics on the data collected and the lack of prescription in how the technique should be applied. While the literature contains some general 'rules

of thumb', (Morgan 1997), such direction remains quite ambiguous and ill defined compared to other techniques such as surveys (Kidd and Parshall 2000). For example, Morgan (1997) suggests that when conducting focus groups, the researcher "should use a relatively structured format with high moderator input". This in itself is quite a loose prescription, but the true ambiguity is revealed when Morgan suggests that "this guideline will vary depending on how exploratory, descriptive or explanatory the research objective".

In the current study, several significant modifications were made to the focus group technique described in the literature. These were designed to increase the efficiency of the method given the broad set of specific topics to be covered and the severe time restrictions. Modifications included describing each sub-topic to be addressed on an A1 poster stuck to the walls of the room, and collecting data primarily through notes written by members and stuck to these posters. This allowed the capture of inputs from multiple participants simultaneously and in a nominally anonymous manner. These modifications are discussed in more detail later in the paper.

Given the limited use of focus groups in IS research, the vagueness of details on its implementation in a specific context, the significant potential weaknesses in the method and the modifications to reported usage in this study, the researchers felt an evaluation of the technique was warranted. This paper describes this evaluation, where the method as here implemented is reviewed with respect to criteria defined in the focus group literature. We conclude by describing some weaknesses with the method adopted and recommendations for improvement.

### **3. Focus Group Research**

Focus group research emerged from work performed by Paul Lazarsfeld, Robert Merton and colleagues at Columbia University in the early 1940s. It is defined as a "research technique that collects data through group interaction on a topic determined by the researcher" (Morgan 1997) and involves a group of participants and one or more moderators. The core theoretical elements of focus groups include topical focus, group interactions, in-depth data and a 'humanistic' character (Stewart, Shamdasani et al. 2007).

The focus element derives from participants of the group having a 'particular concrete situation' in common (Merton and Kendall 1946) but is also affected by the moderators direction of the groups discussions. In the present study, all participants shared common membership of an ISD project team. In terms of group interaction, small group dynamics can greatly affect the data collected and can lead to increased depth and reflection over individual interviews. In this case, since the topic being investigated related to the team as well as individuals, the group aspect of the technique is considered important in increasing the depth of data collected, as discussions stimulated reflection and helped surface opinions and other inputs that might otherwise not have been forthcoming. Finally, the technique supports an emphatic and open interaction with participants, where discovery of meaning is valued over measurement.

There are many advantages and disadvantages of the technique highlighted in the literature. Focus groups allow the researcher to obtain substantially more data from a group in a short amount of time than one-to-one interviews (Morgan 1997). Insights and less accessible data can emerge which may not otherwise come to the surface (Morgan, 1997). This is especially true where participants may not know much about the research topic and require a group discussion to stimulate them to make a contribution, or what is referred to as "introspective retrospection" (Merton and Kendall 1946). In addition, Bloor, Frankland et al (2001) suggest that focus groups allow participants to "articulate those normally unarticulated normative assumptions". Other researchers (Kitzinger 1994; Kidd and Parshall 2000) draw attention to the importance of this differentiator of focus groups from other forms of collective or focused interviews.

Ideally, group interaction will lead to "collaborative construction" but it can lead to effects such as conformity of views as dominant characters or roles in a group cause others to 'tow the line' (Morgan 1997). Small group dynamics come into play, which can stymie minority or controversial opinions. Conversely, the group setting can lead to polarisation into one or more sub-groups or 'factions' (Sim 1998; Barbour 2007). Opinions expressed may reflect those of a particular group context rather than an aggregation of the opinions of the individuals (Stewart, Shamdasani et al. 2007). Additionally, more 'subtle' input that might emerge in a less 'public' context can be missed. While the moderator has less control over a group and less access to individual opinions, the setting of the topic of focus by the

researcher can also influence the range and depth of input gathered and may not reflect topics considered important or interesting to participants (Merton and Kendall 1946). Focus groups do not allow observation of groups in more 'natural' contexts and are primarily restricted to discussions rather than other forms of interaction (Morgan 1997). Data collected is confined to participants' opinions and reportage of experiences and therefore is highly subjective (Wilkinson 1998).

Focus groups are suitable for exploratory, descriptive and explanatory research but, as implied by the definition above, is particularly suited where the researcher wants to focus on specific topics while leveraging group interaction. The method has also been advocated for "formative evaluation, for programme improvement" (Patton 1990) which matches the use in this study (Hines 2000). Focus groups could be considered to lie between dyadic interviews and direct observation: while allowing the researcher to direct attention to specific topics as allowed by interviews, they also facilitate group discussion as per observation. A significant benefit of focus groups is the ability to get a lot of data from a group in a short amount of time (Morgan 1997; Stewart, Shamdasani et al. 2007).

There is extensive literature on the design and moderation of focus group research (Merton, Fiske et al. 1990; Kitzinger 1994; Morgan 1997; Barbour 2007; Stewart, Shamdasani et al. 2007; Krueger and Casey 2009). However, there are few criteria defined for evaluating such research designs. Nor can these researchers find examples of the evaluation of focus groups as a data collection technique. Discussed below is a set of four criteria proposed by Merton, Fiske et al. (1990) which were used to evaluate the current study. The criteria are range, specificity, depth and personal context, and each is described here before being discussed in further sections with respect to the current study.

*Range* – It is recommended that a broad range of topics be discussed, possibly including some not foreseen by the researchers. This approach is supported through "nondirective" moderation of the group (Merton and Kendall 1946) and ensures participant input reflects what is important or interesting to the participant rather than to the researcher. Directed research questions and prompts invariably reflect the "framework" of the researcher and may imply certain interpretations and suggestions. Therefore, unstructured or semi-structured questions are advised, which do not direct consideration of any particular aspect of the concrete situation (in this case the agile practice-in-action) or invite any particular response.

*Specificity* – Capturing input in terms of experiences and perspectives rather than just opinions is advocated by Merton and Kendall (1946). This helps prevent discussion drifting to generalities and reflects Yin's (1994) call to focus on "low-inference descriptors". This helps to reduce the inevitable inconsistencies and contradictions which arise in focus groups, particularly where participants have not thought deeply about the topic and are forming their opinions during discussions (Barbour 2007). However, this advice has been contested in the literature with the argument that the participants may be best placed to interpret events or experiences and that this approach may actually reduce researcher bias (Hines 2000). An improved technique is to elicit both specific input but also the participants interpretation or opinion.

*Depth* – This relates to the extent of self-revelatory input gained from participants, rather than merely descriptive input. It is important that a 'feeling context' is established to elicit input which provides more insight than statements describing what happened or was experienced. This can be easier where participants are intimately involved in the topic as in this study.

*Personal Context* – The personal and social context of participants is an important factor in interpreting input. Such context can be associated with the role played by the individual, such as project manager or developer, their skill and experience and their affinity with the team. Additional individual circumstance may also play a part, such as previous experiences with agile practices and with other project stakeholders (Morgan 1997). Although there are contrary views (Krueger and Casey 2009), most literature (Merton, Fiske et al. 1990; Kitzinger 1994; Sim 1998) calls for homogenous groups selected randomly from a population. Although different roles and experiences will bring different insights to a group discussion, one of the strengths of a homogenous group is that the differences and convergences can be more easily identified and can lead to deep insights (Sim 1998).

Despite being a valid data collection approach, and extensively used in other disciplines such as marketing and health service research, an examination of the IS literature shows that focus groups as a method of research are under-utilised in the field, with very few IS studies adopting the approach to

date (Sobreperez 2008), and none specifically within the domain of ISD as far as we are aware. Where focus groups have been used in IS studies, they are usually in contexts where focus group studies are more widely used such as health (Eysenbach 2000; Koppel, Metlay et al. 2005) and marketing (Pitt, Watson et al. 1995). Some other research in IS has used focus groups but only as a minor supplementary data collection technique (Reich and Benbasat 2000). More indirectly related to IS, related fields such as Library and Information Science have reportedly used Focus Groups extensively (Kerslake and Goulding 1996).

#### **4. Conducting Focus Groups in Pennysoft**

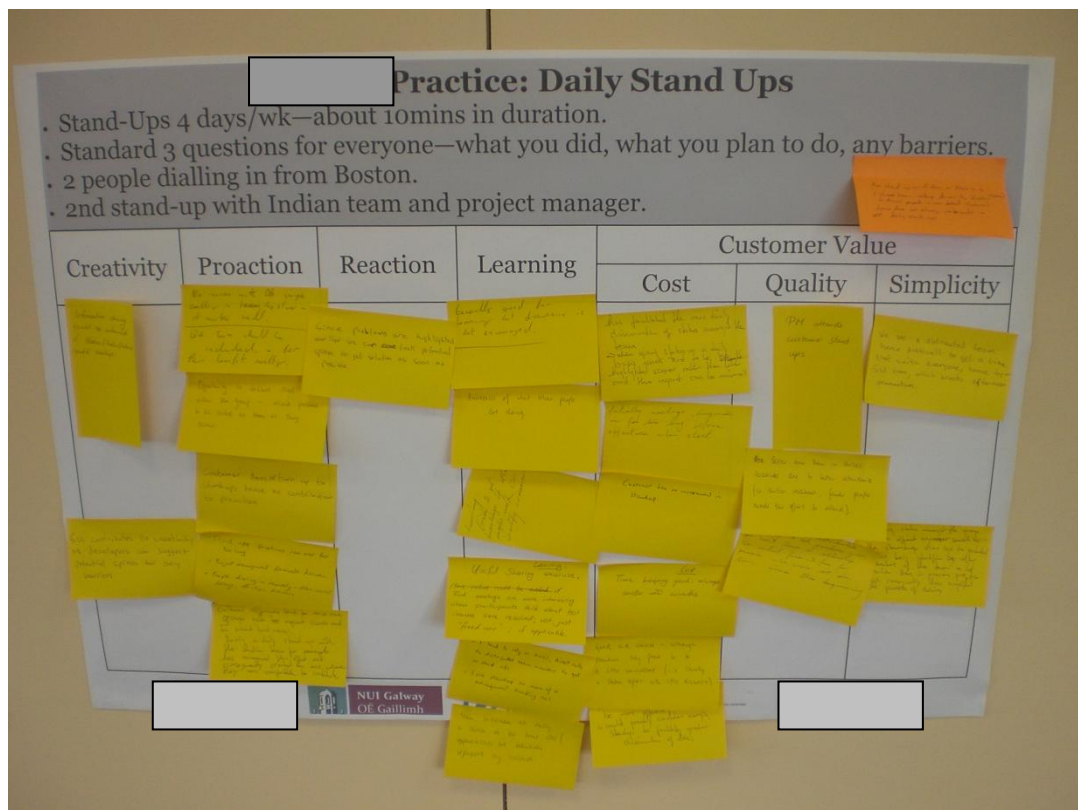
Here we describe the context of the data collection followed by the technique used across three ISD teams. This includes modifications to the focus group approach such as the use of ISD method practices on posters to act as an interview guide, the use of written input by participants as the primary data input method, and the 'self-coding' of such input by attaching the notes to the appropriate poster under a particular agile concept.

Pennysoft (referring to the case study organization which is not identified for confidentiality reasons) is a global financial services firm with approximately 45,000 employees worldwide. Up to 10,000 of these are IT personnel developing systems to support the business, distributed across multiple sites in the US, Europe and India. A formal 'waterfall' development method has been used extensively across the company for several years. A newly developed proprietary method incorporating many principles and practices from agile methods such as Scrum is currently being piloted in several sites. Three such trial projects located in an Irish office were studied as part of this research between July and September 2009. All were part of distributed teams, but with the majority of analysis, development and test based in Ireland. One was a 'green field' project with some US members and a small, inexperienced team of five. The other two were larger (10-20) with US and India based members and were part of larger enterprise wide programs.

The researchers first analysed the method documentation and training material to establish the defined method, which was common across the projects. This understanding was used to develop an interview guide for semi-structured dyadic interviews with project managers from each team. These interviews were transcribed and analysed, and together with observation of key team practices such as daily stand-up meetings, provided an understanding of the method as it was implemented in each project, the *method-in-action* (Fitzgerald, Russo et al. 2002). Significant differences were found across the projects, with different sets of practices implemented in different ways.

A single, 3 hour focus group was then held for each project, with a representative sample of half or more of the team selected by project management. In one case, two participants based in India used a videoconference link and contributed written input using instant messaging. From 3 to 6 researchers filled the roles of moderators, note takers, discussion facilitators and logistical support, and several audio recorders were placed about the room. Each session began with an overview of the research project objectives and the format of the group session. This was followed by an introduction to the agile conceptual framework, including description and examples of how a practice might impinge on creativity, quality and other aspects that affect agility. Then 5-10 minutes was spent on considering each practice in turn (a total of about 2 hours). This was followed by 30 minutes for further discussion of emerging topics, ambiguities and so on. At the end of each session, informants were invited to submit any further, possibly confidential, input directly to the researchers outside the focus group setting.

Before the group session, each development practice as used in the project was described briefly as a set of bullet points on an A1 poster, all of which were hung on the walls of the meeting room. The posters also included a column for each agile concept (see Figure 1) where participants could stick post-it notes with their input on how that concept was affected by the practice concerned. Additionally, two A1 posters were displayed describing the agility constructs. Pens and post-it notes were made available around the room. During the session, the moderator moved from practice to practice, describing each briefly to refresh informants memories and inviting updates or corrections about the practice in verbal or written form. The moderator then encouraged discussion between informants and invited written input. Researchers also captured verbal input from discussions and added these to the posters using a different coloured post-it.



**Figure 1:** Poster sample with post-it note contributions

Periodically, the importance of specific, concrete examples was emphasised in preference to abstract opinions and feelings. As informants stuck post-its to the posters the researchers selected particularly vague or particularly interesting examples and read them out to the group. Immediately following each focus group the post-it notes were coded to record the practice and concept to which they applied and the content was typed up into data tables for use in the analysis. Group discussions, which took place during the session, were later transcribed from the audio recordings. The initial analysis was allocated to four researchers with each working on a set of practices, sometimes jointly. Due to time and resource constraints, formal coding and other data analysis techniques were not used. Following the analysis each section was reviewed by at least two academic reviewers and one industrial reviewer (all of whom had also been involved in the focus groups) with extensive discussions and revisions leading to a comprehensive report for the company.

## 5. Evaluating Focus Group Research

Focus groups were selected as a data collection technique for the current study due to their efficiency in gathering a lot of data from a group of informants and their ability to improve the range and depth of input. However, to address some of the shortcomings mentioned above, several novel extensions were made to the method. The primary data collected was in the form of written notes from participants rather than recording and analysis of group discussions (though these were transcribed and included in the analysis where possible). Therefore, the discussions allowed group (and sub-group) exploration of the topics before participants gave written input, but also facilitated individual input without discussion. The discussion was also highly focused, covering each practice in turn. Therefore, the less defined, 'non-directive' moderator strategy often advocated for focus groups was not followed. Additionally, participants were not randomly selected from a homogenous population as normal; for practical reasons they included several roles (which could be considered to have opposing interests, priorities and motivations) and were selected by the participants rather than randomly.

*Range* – It is recommended that a broad range of topics be discussed, possibly including some not foreseen by the researchers. In the current study, one of the moderators had worked in the organisation previously, had conducted the dyadic interviews and was very familiar with the various projects, methods and participants. The previous senior position of this researcher in the organisation

may have led to a certain directed effect in participants, and comments or questions may have inadvertently carried more weight than appropriate.

Planning for focus groups normally include preparation of an interview guide, which contains typical questions, areas for inquiry and hypothesis (Merton and Kendall 1946). However, given the importance of free flowing discussion in a focus group, such guides must be used carefully – the researcher should be familiar with the domain of inquiry and be attentive to both the explicit and implied content of the discussion. This allows them avoid re-covering topics already discussed or inadvertently cutting short a member by switching topic at an inappropriate time. In this case the guide was expressed as a set of ISD practices as used by the particular group in their project, along with the conceptual agile framework. Each practice was addressed in turn with strong delineation as the discussion moved from one to the next. However, the agile concepts were addressed all together for each practice and allowed free flowing discussion. Due to the written input method used, participants were also free to write down input to practices not currently the focus of the moderators and rest of the group. The researchers feel that this structure allowed sufficient flexibility for individuals and sub-groups to address topics as they saw fit, while ensuring all practices used by the team were given minimum attention and input.

A common criticism of focus group research is that conversations between participants are largely ignored both in reportage and analysis (Wilkinson 1998). Although several extended discussions were transcribed and included in the analysis, undoubtedly the main data collection mechanism considered was the written input. Therefore, more careful attention to group discussions could significantly improve the range of data collected, and its depth.

*Specificity* – Capturing input in terms of experiences and perspectives rather than just opinions is advocated by Merton and Kendall (1946). In this study, the moderators actively encouraged the use of specific examples by participants in illustrating their opinions, and even articulated examples from other projects to encourage description of specific instances. This approach supports “retrospective introspection” (Merton and Kendall 1946) which increases the specificity of input. However, the use of post-its with limited writing space and constraints on time most likely restricted the contribution of specific input and may, indeed, have biased written responses towards the more abstract and subjective.

*Depth* – Achieving depth of input requires an emotionally and politically ‘safe’ environment for participants. Sensitive issues may not emerge in a group that is not sympathetic. Such ‘safety’ was achieved in some part by using written notes as the primary method of accepting input from participants – such notes were nominally anonymous. However, since each participant posted their notes, in their own handwriting, on the wall posters it could not be considered entirely secure in this respect. The emphasis put on specificity and detailed examples from the stimulus situation also helped in achieving depth.

*Personal Context* – The personal and social context of participants is an important factor in interpreting input. In the current study, a representative sample of members from across the ISD teams were selected – these differed in roles, skills, and experience among other factors. However, all had intimate knowledge and experience of the project and the practices used and were homogenous in that respect. Since the study was evaluating the agility of the team as a whole rather than a certain role within the team, it was felt this was the most appropriate way to constitute the groups. However, participants were selected by the project manager of each team and a certain bias may have been introduced in terms of representation.

In considering the effect of personal context on the research method, it is clear that this is particularly important in the data analysis stage. To facilitate this, quotations and other input should be attributed accurately to individual group members (Sim 1998). This facilitates effective coding and pattern detection during data analysis (Kidd and Parshall 2000). In this study, a significant opportunity for improvement is to devise a mechanism to allow attribution of both written and verbal input. However, this must be integrated with an approach that also provides broader context to the input – which places each written contribution in terms of the questions or discussion which prompted it. Although the placing of post-its at certain places on each poster provides some such context, this cannot be considered entirely reliable.

## 6. Conclusion

Given the severe time and resource restrictions, and the extensive scope and lack of prescription of the research task, the focus group approach was highly successful in gathering large amounts of data from each ISD team. The use of written, semi-anonymous input and a highly structured format created specifically for each team, together with multiple researchers with deep knowledge of the projects were critical. However, closer attention to group discussions which led to written input may have led to further insights. Capturing the context of each written and verbal input, such as informant name and the discussion prompting the input would have greatly aided data analysis. Also, including the entire ISD team in the group, or at a minimum, selecting participants carefully to ensure valid representation, may have led to improved data. More thorough explanation of the agile concepts at the beginning of the session would also have reduced ambiguity, particularly in the case of less well known distinctions in the conceptual framework. Also the need to write down on a small post-it with limited time may have encouraged more abstract and generalised input rather than specific examples and experiences. Since each development practice was addressed in turn, there was no explicit effort to capture how practices may be linked and dependant on one another.

It is recommended that when using the written input mechanism to capture data, the group discussions contributing to that are also carefully recorded and transcribed. These can contribute valuable data in their own right and provide important context to the written input. In addition, providing post-it notes with explicit sections calling for specific examples would help 'ground' the input in facts and experiences. Further preparing the post-its with the participants identity, perhaps on the back to preserve anonymity, would provide further context. Additionally, recording the time of posting of each note would help relate it to transcribed discussions, though this may be difficult in practice.

Providing large posters around the room with each describing a particular sub-topic for discussion and capturing written input was successful in two ways. It aided rapidly covering many sub-topics while avoiding ambiguity as to what was being discussed at any time, and facilitated 'self-coding' of data by respondents. However, it is important to allow further topics be suggested by the group and provide additional 'blank' posters and extra time in the session to discuss these. Therefore, a minimum of 30 minutes un-allocated time is advised, as well as an invitation to submit further input 'off-line' and confidentially after the session has ended.

Although the method used allowed very efficient capture of data from the sessions, it is clear that several improvements could be made according to the evaluation criteria as discussed above. Future work will further evaluate the technique with respect to validity and reliability criteria commonly used in qualitative research (Miles and Huberman 1994; Yin 1994) and will help address the shortcomings already identified. It is expected that this work will lead to a useful data collection technique for IS researchers.

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