# Comparing Collaboration and Individual Personas for the Design and Evaluation of Collaboration Software

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## ABSTRACT
*Collaboration personas* are a tool to help design for groups. Prior work posits that collaboration personas can improve tool adoption by helping designers create collaboration tools that are better targeted to the goals, needs, and interactions between members of collaborative groups. We present a comparative study of design and user experience practitioners who used both collaboration personas and individual personas. Participants conducted a cognitive walkthrough and provided redesign suggestions for a collaboration tool. Our results show that the *focus* of the cognitive walkthrough and redesign task differed, with collaboration personas showing more group focus. Collaboration personas led to a more complete discussion, as indicated by a greater amount of time spent on the task compared to individual personas. Despite prior experience and training with individual personas, collaboration personas were *preferred* and *better supported* the task, since they focused on groups of people and their interactions.

## Author Keywords
Collaboration personas, personas, design tools, evaluation, methods, user study.

## ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## General Terms: Design

## INTRODUCTION
The success of social computing has generated a host of workplace collaboration tools, including social networking tools; tools for sharing files, bookmarks, and tags; wikis; community tools; team-space tools; and so on. However, adoption of these tools by entire groups remains a major problem noted in prior work [3,5] and demonstrated by the continued use of email to share files, discuss projects, and coordinate tasks, instead of dedicated collaboration tools [8].

A possible reason for the adoption problem is a lack of methods for considering collaborative groups in technology

design. Even when designing *collaboration* tools, designers often employ methods that focus on *individuals*. For example, *individual personas* (IPs) are a commonly used design tool [1,2,7] that help development teams engage with a typical user. However IPs sketch the qualities and goals of an individual rather than a team. This may lead to tools that are not well targeted at the groups who will use them. Though techniques exist for understanding collaboration, such as ethnography, these are time consuming and unlikely to be performed for every product development effort. Furthermore, we lack methods for translating the understanding gained through such studies into reusable design tools for collaboration.

*Collaboration personas* (CPs) [4] are a tool intended to help design for groups. They are empirically derived descriptions of hypothetical groups of people with specific qualities, goals, and needs realized through collaborations with each other. In contrast to IPs, CPs consider different interactions, types of collaborations and group roles.

But how do product designers and UX professionals who are already using IPs react to CPs? Do CPs help them evaluate and design better collaboration software than IPs? To date, there are no empirical studies evaluating CPs or comparing them to IPs. We present a study of design and user experience (UX) practitioners who used both CPs and IPs to conduct a cognitive walkthrough and provide redesign suggestions for a collaboration tool. We then interviewed them about their reactions to both types of personas.

Overall, CPs were *preferred* and *better supported* the task of evaluating and redesigning a collaboration tool, since they focused on groups of people and their interactions. Despite these positive results, practitioners suggested two major changes to CPs: (1) more emphasis on group dynamics; and (2) more focus on collaborative problems such as tensions, conflict, and pain points. We leverage existing theories [6] to modify CPs to address these critiques.

## WHAT IS IN A COLLABORATION PERSONA?
A collaboration persona is a structured narrative detailing various critical attributes of a group type [4]. The *goals* explain *why* the group does what it does, including *group goals* and *member goals*. *Members and roles* tell us *who* shares collective goals. It is important to specify if members are *stable* (staying in the group), or *dynamic* (joining and leaving the group). *Tasks* are one instantiation of the goals, helping us understand *what* the group does. *Work style* and

*tools* show *how* they accomplish the goal, detailing specific ways that specific members interact, how they are managed, and what tools they currently use. Collectively, these narratives illustrate certain *collaboration needs*, which are made explicit in the CP. For an example of a full CP—a dynamic project team—see [4].

## METHOD

We compared the usefulness of a CP vs. an IP for evaluating and designing collaboration software.

### Participants and Organizational Context

We recruited 15 user-centered design practitioners from a global enterprise offering technology products and services. They had different roles (11 designers and 4 UX professionals), different design/UX experience (novice to expert), and differing experience using personas (occasional to frequent use). Four participants had experience creating personas. Participants had a median of 11 years of experience in design or UX positions, ranging from 2 to 22.

Participants were distributed across three product divisions (A, B, and C). Division A created individual-focused software in a domain where collaboration is common, employing intensive persona training and deploying IPs extensively. Division B and C both specialized in collaboration software. Division B developed and widely used a cast of 11 IPs. Division C deployed user roles rather than personas to design and evaluate their products.

### The Personas

The CP focused on a dynamic team, which prior work shows is a highly prevalent collaboration in modern organizations [5]. It was created by the research team in [4]. This 3-page persona is based on user interviews about typical team communication, goals, roles, collaboration style and tools. The central scenario involves recruiting a team to secure a contract from an external customer, Rainbow Bank. None of the study participants were familiar with or had previously used a CP.

The IP was professionally created by the UX team from division B, where it had been used and refined over 2 years. The 5-page persona described a project manager 'Gerard': his goals, personality, job responsibilities, skills, experience, interests, work environment, communication preferences, tools used, personal life, and a 'day in the life' scenario. We selected Gerard after reviewing all of division B's primary personas. It was the highest quality persona as it was rich in detail and contained content considered important by [1,2,7]. Several other personas lacked key information and/or sufficient detail. Gerard was also used for the design of the tool evaluated in the study task and his job was highly collaborative. Only participants from product division B had seen or used Gerard (8 out of 15 participants).

The CP and IP were similar in that both included goals, responsibilities, work style descriptions, and tools used. However, even these "overlapping" topics were very different in their focus and specifics, since the IP and CP were created with different objectives and guidelines. They did not overlap in their text and images (see the personas at taramatthews.org/ip.pdf and taramatthews.org/cp.pdf).

### Procedure

We conducted pre- and post-interviews before and after a study task. Overall sessions lasted 90 minutes. They were conducted by telephone and supplemented with screen-sharing software. The study task involved two cognitive walkthroughs (one for each persona) of a collaboration tool and a discussion of redesigns suggestions. Persona ordering was counterbalanced to avoid order effects. Before the session, participants were sent the example IP and CP, and asked to read them. Sessions were audio recorded and handwritten notes were taken to aid analysis. Loose transcripts from sessions were analyzed using open coding.

### Pre and Post Task Interviews

Pre-task interviews examined participants' work experience, role, design process, use and opinion of personas. Post-task interviews addressed their experience using each persona. For each persona, we asked what they liked or disliked about it. We asked them to: compare their experience using the CP vs. the IP; which persona they preferred for the study task; describe information that was missing from the CP; and suggest other changes to the CP. Most participants provided lively commentary during the walkthroughs anticipating post-task interview questions.

### Cognitive Walkthrough & Redesign Task

The cognitive walkthroughs required participants to identify problems the persona might encounter with and provide redesign suggestions for Lotus Connections, focusing on Communities and Profiles (ibm.com/software/lotus/ products/connections). A "Community" is a shared space allowing users to configure social media applications— wikis, blogs, forums, bookmarks, and files—to meet the needs of different collaborations. A Community includes a member list that links to Profiles, a Facebook-style corporate directory, with micro-blogging, summaries of employees' activities on internal social media, and professional network ties. Most participants were Connections users and familiar with its operation. Participants were instructed (for the IP example):

*We would like you to think about how Gerard might use Communities and Profiles for his tasks and responsibilities. We would like you to walk through Communities and Profiles systematically and tell us where Gerard's needs are and are not being met. As you are describing problems that Gerard might experience, we will prompt you for possible design solutions.*

We chose a cognitive walkthrough since it is a standard technique for user-centered system evaluation. A user focus was critical to our goal of comparing personas. Other evaluation methods such as heuristic evaluation or scenario-based evaluation do not explicitly focus on specific users.

## RESULTS

The walkthroughs gave participants experience applying a CP and an IP to a collaboration tool. We measured time

spent on each walkthrough, since it indicates task completeness. But given variation in how people completed the task, we consider the interviews our main data source.

## Preferred the Collaboration Persona for the Task

Seven of the 8 participants who expressed a clear preference for one persona preferred the CP. One participant (a designer trained at CooperU) preferred the IP, because he could empathize with it. The remaining 7 participants did not express a strong preference for either persona type arguing that both had complementary properties. None of the 4 participants who regularly created personas preferred the CP.

When asked to explain this preference, overall participants felt the CP focused on the group and their goals, giving a fuller picture of how a collaboration tool might be used:

*I quite liked [the collaboration persona]…. It's a team that needs to get work done together... When you sent me the link to Communities and then I started reading this [collaboration persona], I thought, 'Well, yeah! (laughs) They're gonna kinda need Connections!' This is good, it's obvious. And then when I started reading Gerard, how he works across all these different projects, and he need to bring all these tools together. He's just so organized in a way. He could do it without Connections, honestly. This team really needs Connections. –LP, Designer*

*Quite frankly I enjoyed using the team persona, particularly because, when you think about it, the whole reason you have one of these Community things is to foster team collaboration. –NR, Designer*

## Focus: Group vs. Individual

With both personas, participants discussed and solved *problems* the persona characters might experience in their jobs or using the Communities tool. However, *whose* problems they discussed and solved differed, e.g. with the CP, BS talked about a group-focused problem and solution:

*[Reads description of the CP team's slide use in meetings.] That's a really concrete problem. People are not going to change their behavior as much as we'd like them to. They're not going to create the slides a week in advance. They're not going to put them in a repository and have everyone download them. But can we create a tool that let's people post slides minutes before a meeting and also edit them...*

The CP enabled designer NR, to reason about the potential interactions of *multiple* members in the group:

*I'm trying think from the Rainbow Bank person perspective. We've got Sophie the CIO and Marie... There might be some things in here they don't want Sophie and Marie to see, like their quarrels or something... maybe they've set up a whole separate Community for that and this is the one where it's slightly more public facing because Sophie has access and Marie has access. And Marie comes in here and she goes to the overview... she's mainly looking for, 'so what's their plan so far?' Because she's a real [Global Corp.] advocate and she wants the [Global Corp.] solution to get picked, so she kind of wants to help, so she's looking for overview information.*

In contrast with the IP, designs were focused solely on Gerard, not his collaborations. Designer NM commented:

*This [Community] probably doesn't conform to any mental model that Gerard will probably have coming into it. For example, I think that he would rapidly want to have a section for status reports for example, rather than having discussion forums, feeds, and bookmarks, files wikis blogs. These are all very technology specific things. I think he'd love to be able to have a section where could say, here are the latest status reports and then a section where he could have the current plan and the status of the plan, be a central part of this.*

## More Complete Usage Descriptions with the CP

Participants spent most of the task time describing how the personas would use the tool and problems they would face. Overall, descriptions were longer and more complete with the CP. This seemed to be because the CP enabled participants to better reason about what the group might need from the Communities tool. For example, BS's *entire discussion* involving the IP was incredibly brief because he felt he lacked critical information:

*I'm sort of making this up, but there is the general idea that Gerard… manages lots of projects. [Highlights a line in the persona.] He manages as many as 15, large, multi-person teams that involve remote members… So Communities could be helpful, in that it could help you create groups of people that you are working and provide a central repository related to those projects... But that's probably the best that I could do with this persona...*

In contrast, BS went on to discuss ten different problem areas for the CP when using Communities. One example:

*Does it actually let you do [reading from the persona] 'extensive discussions and negotiations with the client'? So this is a good one… A lot of the tools that we provide at [our company] for... customers are designed to be highly secure and behind the firewall, which is a customer requirement so it's not a bad thing. But if you have something like this [Community], you want to engage people in discussions and negotiations online, but you can't let them behind the firewall because the client is not [one of our co-workers], they don't have access. So how do you negotiate that space?... So that's an actual problem that would come out of this requirement.*

To quantify this, we measured how long participants spent on the task with each persona type. They spent 14:45 (mm:ss) discussing the CP, compared to 11:18 discussing the IP, on average: (t-test, p<.01). To confirm that familiarity with the IP did not cause these differences, we performed an unpaired t-test finding no significant difference between the task times for participants who had (N=8) and had not (N=7) previously used Gerard, for the IP (p=0.20) and CP (p=0.43). We do not believe complexity of the CP caused higher task times either, since the IP at 5 pages was far longer than the CP at 3 pages. Participants told us the CP was clear and easy to use; we received no comments about it being difficult to understand.

## Individual Persona Led to Guesses About Collaboration

Participants perceived that evaluating and suggesting design modifications was easier using the CP:

*It was harder for me to remember what to apply… for Gerard. I felt like I just read so much. But I was like… what was most important you know? I think it was kind of cool how you set up this session with the two different kinds of personas. But I felt more productive with the team one. – BD, Designer*

A goal of personas is to remove guesswork about users in the design process. This is a serious problem regarding the use of IPs for collaboration tool design.

*Well, he [Gerard] had these four projects that were mentioned. But you know I sort of had to imagine the other people that he would be working with. They weren't listed on there in terms of the goals that the other people might have for being in the group. I decided that he was going to make four communities, one for each project. That was fine. But, who the other players were, what their goals were and what were the goals of each project, that I had to make it up. – NR, Designer*

**Modifications to the Collaboration Personas Method**
Despite the usefulness of the CP, practitioners wanted two major improvements: (1) more emphasis on group dynamics that can serve as a group sentiment and behavior predictor; and (2) more focus on collaborative problems designers can solve, such as tensions, conflict, and pain points.

Participants wanted to know more about *group dynamics*: how well they worked together, openness to communication, how leaders interacted with members, and so on. Designers showed particular interest in problematic group dynamics:

*It needs more information about relationships… What are the power struggles? I think any team is going to have some dynamic to it, so what is the social dynamic? I think you kind of get to it in the problems but I think there is more… A problem gives you something to solve. – FW, Designer*

Everyone in the study, especially the designers, were particularly focused on identifying *problems* they could solve for the persona. Participants requested that both personas include more tensions, conflict, and collaborative pain points that would give them problems to solve:

*I don't think there is enough detail about their pain points. I'd like to see a struggle… This is all rosy and everyone gets along, but I would like to see some conflicts… Like where are the communications breaking down? – CS, Designer*

Requests for problems and more group dynamics overlapped. In other words, participants were particularly interested in *problematic* or *dysfunctional* group dynamics.

*I don't think you have to be nice in personas. Every persona I have read is too positive [laughs]. They're like friends and they have kids… I'm like no, it's not true, they are not all nice. – FW, Designer*

**DISCUSSION & CONCLUSION**
Our results show that CPs are a promising tool for certain evaluation and design tasks for collaboration software. They were preferred by the majority of participants over a professionally generated IP, and led to more extended discussions and to design suggestions with a greater focus on the interactions of multiple members of a group.

However, our participants argued CPs can be improved by including more about group dynamics and problems. As a concrete example, we might modify the dynamic project team CP [4], drawing upon small group theory [6]. That theory describes how differences between personal and team goals create problems and conflicts. The theory can also help persona creators make predictions about group behavior. Below, we provide an example of a modified CP that includes conflicts motivated by the theory:

*Jeff and Quan are team leads and the only permanent members. New members need to be convinced to join, since no one in Sales has spare time for a new bid unless they believe it has a good chance of winning. While Jeff cares about any software sales to Rainbow Bank, most of the members he needs to convince are focused on selling their own brands.*

One limitation of the work is that we provided only short-term exposure to the CP, thus our results need to be verified with a longitudinal study in the future. Also, design teams commonly use multiple IPs, so the study setup with a single IP was not totally realistic. However, we do not expect our main result (that CPs better focus designers on collaboration) to be different if our study had included multiple IPs. Multiple IPs typically do not explicitly form a team (this is discouraged in personas literature), so interaction between individual IPs and their group roles would remain unstated, encouraging any collaborative aspects to be "made up."

Overall our results are strikingly positive. Despite extensive prior experience with IPs and the fact that we were using a professionally generated IP, experienced practitioners could immediately see the value of CPs. In future work, we will explore how our improved CPs will impact design and communication activities in other design contexts.

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