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Abstract

Comparing *Collaboration Personas* and *Individual Personas* for the design and evaluation of collaboration software, Judge, Matthews, and Whittaker (2012) found that practitioners preferred collaboration personas, but required that the method put more emphasis on problematic or dysfunctional group dynamics. Because Judge et al. only outlined a possible approach to meet this requirement, we decided to contribute to the specification of the approach. We here report the first steps of this specification work.

Author Keywords

Collaboration personas; user modeling; Group dynamics; Collaboration software; design and evaluation methods; user-centered design

ACM Classification Keywords

H5.3. Group and Organization Interfaces

General Terms

Design, Human Factors.

Motivation and Goal

Comparing *Collaboration Personas* (①③④) and *Individual Personas* ([3][4][10][17][18]) for the design and evaluation of collaboration software, Judge, Matthews, and Whittaker [11] found that design and user experience practitioners, if they preferred collaboration personas (since they focused on groups of people and their interactions), required however that these personas be improved in two ways: (1) by giving more emphasis on *group dynamics* that can serve as a group sentiment and behavior predictor, and (2) by giving more focus on *collaborative problems* designers can solve, such as tensions, conflict and pain points. Judge et al. noticed moreover that, because requests for problems and more group dynamics overlapped, practitioners were in fact particularly interested in *problematic* or *dysfunctional* group dynamics. In one word, practitioners wanted identifying problems they could solve for the collaboration persona.

To help meet this requirement, Judge et al. suggested leveraging theories such as McGrath's (1991) theory of groups. Because describing the approach was not the goal of Judge et al.'s paper (it is in fact the conclusion of this paper), the authors did not develop this suggestion very deeply; they just outlined it very succinctly. So doing, however, Judge et al. prompted the interested reader to try to specify the approach allowing meeting the dysfunctional-group-dynamics requirement. Concerned ourselves with the design of group modeling methods for the design and evaluation of collaborative technologies (②), we decided to contribute to this specification. We here report the first steps of this specification work.

The rest of the paper is structured as follows: (1) We present the Judge et al.'s approach and its limits, leading to the need for specification. (2) We describe the questions orienting our specification work. (3) We report some specifications determined by the orienting questions. (4) We conclude with stating the next steps of our specification work.

Judge et al.'s outline of an approach: Drawing upon theories

Practitioners' reasons for requiring more emphasis on Dysfunctional Group Dynamics
To explain Judge et al.'s approach, we need first to detail the reasons why practitioners required more emphasis on Dysfunctional Group Dynamics in Collaboration Personas. As reported by the authors [11], practitioners wanted to know more about *group dynamics*: They wanted to know how well group members worked together, how open they were to communication, how leaders interacted with members, and so on. Shortly speaking, practitioners wanted to get more information about group members' relationships. They wanted especially information about *problematic relationships* (tensions, conflict and pain points), because including such problems in Collaboration Personas allows getting more realistic personas (as they refer to actual situations where conflicts exist and have to be solved).

Approach to meet the requirement: drawing upon theory (esp., McGrawth's small group theory)
To address the dysfunctional-group-dynamics requirement, i.e., to adapt Collaboration Personas to this requirement, Judge et al.'s approach is to leverage existing theories. They outlined this approach by

③ **COLLABORATION PERSONA'S ATTRIBUTES** [12][13][14]

▷ (Group|Shared) Goals
▷ (Group) Tasks
▷ Members & Roles
▷ (Group) Work style
▷ Current Tools and Problems
▷ Geographical distribution of members
▷ Organizational relationships
▷ Name
▷ Photo

④ **DYNAMIC PROJECT TEAM** [12]

A Collaboration Persona

Definition: "A dynamic, continuously changing group of people working together toward a common, significant goal that is moderate- to long-lived (i.e., months to years). "

Example: "A diverse group of sales and technical people going after a large sales opportunity" e.g., The "Dynamic RFP Sales Team"

showing how they might modify the "Dynamic project team" collaboration persona (④,[11]), drawing upon McGrath's theory of groups [15]. For Judge et al.'s, McGrath's theory provides persona creators with explanations on how differences between personal and team goals create problems and conflicts. The theory can also help persona creators make predictions about group behavior. Judge et al. provided an example of a modified Collaboration Persona (⑤) that includes conflicts motivated by the theory (esp., a conflict between the team leader's collective goal and the team members' individualistic goals).

Limits of the approach
As said before, the approach is very succinctly outlined. The group dynamics aspects considered in the outline are limited to goal conflicts. The improvements to the collaboration persona relate only to the persona's scenario; there is no indication (if implicit) on the modifications to be made to the persona itself. The approach obviously needed to be specified. So we decided to contribute to this specification.

Specifying the approach to emphasizing dysfunctional group dynamics: (1) Orienting questions
Three kinds of questions oriented our specification work:

Questions about the persona improvement goals
Judge et al.'s goal is to improve personas so that they integrate dysfunctional elements in group dynamics. One of the questions we asked was, "Should we integrate only *problems* in personas? Should we not also integrate *solutions* or possible solutions to these problems?"

Questions about the persona improvement sources
Judge et al. propose a *theory*–McGrath's theory [15]–as a source for improving collaboration personas. Some of the questions we asked were, "What to take in the McGrath's theory? What other theories could serve as a source for improvement? And, more generally, what other types of sources (e.g., *methods*) could be used with profit?"

Questions about the nature of persona improvements
The improvement reported by Judge et al. focuses on the scenario associated with the collaboration persona: conflicting elements were introduced in this persona (⑤). Some of the questions we asked were, "How to include problems (possibly solutions) in personas? What elements of the persona (template, scenario…) should be amended or supplemented? What should be changed in the *process* of building personas (as opposed to the persona's template)?"

Specifying the approach: (2) Goals of Collaboration Personas' Improvement
We consider the improvement of personas not only as integrating dysfunctional or problematic elements in group dynamics, but also as incorporating elements of the solution to these problems (in the spirit of the "interaction design patterns", see e.g. [1]). The purpose of the improvement being to highlight the problems that designers can solve, indeed we believe that we can go further and provide designers with solutions or possible solutions to these problems. These solutions or possible solutions can come from theories or experience feedback (users' experiences or designers' experiences).

Specifying the approach: (3) Sources of Collaboration Personas' Improvement

McGrath's theory
Judge et al. focused on causal aspects of conflicts as described in McGrath's theory. Since McGrath's theory also considers the resolution of conflicts, solution elements could also be elicited from the theory. For example, McGrath's theory states that groups solve conflicts with respect to each of three team functions: *production, well-being,* and *member support*. Production activities refer to getting on with the project: in this case, conflicts can be solved by managing political issues (policy choice). Group well-being refers to empathy and trust building among team members: in this case, conflicts can be solved by payoff distribution (e.g., promotions). Member support refers to the interpersonal, social side of group life: in this case, conflicts can be solved by payoff relationships.

Other conceptualizations as complementary sources of improvement
Several other theories–or, generally speaking, conceptualizations–seem relevant to complement McGrath's theory. We here mention three of these conceptualizations (some others are reported in [8]):

▪ *A model describing community lifecycle or evolution* and the problems that may occur all along the lifecyle [9]. This model also mentions possible social and technical solutions to the problems. The model has been proposed for helping the design of organizational memory systems.

▪ *A framework for understanding how group members adapt to cope with coordination breakdown and conflict* by using "coordination mechanisms" which restore and preserve shared understanding among the group [6]. This framework has been developed for requirements analysis for and user evaluation of CSCW systems.

▪ *A vocabulary for describing relationships between people in some community* [5]. Developed for the design of social semantic web applications (esp., social network platforms), this vocabulary describes both positive, negative and mixed relationships among network members (e.g., *Friend Of*, *Close Friend Of*, *Enemy Of*, *Antagonist Of*, *Ambivalent Of*).

Methods as complementary sources of improvement
Several methods of user modeling and scenario modeling could also serve as sources for improving collaboration personas. We here mention three types of such methods:

▪ *Other existing methods for building individual personas or collective personas* (for a review of the latter, see [8]). Some of them will be mentioned in Section "Elements to be improved in Collaboration Personas".

▪ *Group modeling techniques*, i.e., techniques for elaborating "models of groups, collaboration and communities [which] collect and structure the rich information describing interactions between users" [7].

▪ *Collective scenarios techniques,* such as Carroll's [2] extension to the individual-oriented "cognitive" approach to scenario-based analysis and design. What can be exploited more particularly is the list of "stages of action questions" that Carroll proposed to analyze the organizational-level causal dynamics, or the organizational claims, implicit in a scenario of use. This list indexes organizational activity according to a

⑥ **INTRODUCING DYSFUNCTIONING ATTRIBUTES IN THE CP TEMPLATE (2/2)**

…/…

▷ **Members & Roles**
 D *Conflicting Members & Roles*; e.g., Jeff (stable member) vs. Diane and Brian (dynamic members)
 S *Identify the conflicting members and the nature of their conflict*; e.g., loss of confidence

▷ **Relationships**
 D *Conflicting Relationships*; e.g., between the team leader and the client
 S *Restore a relation of mutual trust*

▷ **Group/Process lifecyle**
 D *Conflicts in a given lifecycle phase*
 S *Apply some known conflict resolution strategy corresponding to this phase*

▷ **(Group) Work style**
 D *Coordination breakdowns*
 S *Adjust or Develop Coordination mechanisms*

▷ **Current Tools**
 D *Incompatible tools*; e.g., tools not working across organizational boundaries
 S *Make the tools compatible,* or *Find or Develop compatible tools*

variant of Norman's [16] theory of action, including the following stages: organizations frame goals, plan courses of action in support of these goals, take actions, interpret the consequence s of actions, and evaluate actions with respect to goals. An example of a question relevant to our specification work is, "How does the artifact support the coordination and conflict resolution among group members?"

Specifying the approach: (5) Elements to be improved in Collaboration Personas

Modification of the scenario involving the collaboration persona

Judge et al. modified the persona's scenario by including conflicting aspects in it, precisely conflicting goals. As suggested before, the development of possible conflict-solving strategies could be included also in the scenario.

Modification of the collaboration persona itself
The collaboration persona itself needs to be modified. This can be done *(a)* by extending existing attributes both in collaboration personas (③, [12][13][14]) and individual personas, or *(b)* by adding new attributes to the personas, leading to an extended collaboration persona template such as the partial example given in ⑥. ■ EXTENDING EXISTING ATTRIBUTES.– Behind Judge et al.'s modification of the collaboration persona's scenario is a modification of the collaboration persona's attribute *Members' goals*. We can consider that Judge et al.'s in fact introduced the notion of *conflicting goals* as an extension to the attribute. An attribute that is important to extend is the so-called *Interactions* attribute of individual personas (also known as: (a) *Communicating* attribute in Pruitt and colleagues'

method [10][17[18], an attribute which refers to how the persona keeps in touch with people; (b) *Relationships* attribute in Cooper's method ([3][4]), an attribute which refers to the view of personas in social/organizational groups for which it makes sense to have business or social relationships (because they are part of the same family or corporation). ■ ADDING NEW ATTRIBUTES.– An attribute that can be added to the personas is the *Conflict-management strategies* attribute. Drawing upon the notion of "coordination mechanisms" for example, these strategies can be defined at the group and individual levels. This attribute has to be defined in relation to the existing attribute *Group work style* (which refers to the ways in which group members interwork).

Modification of the procedure of persona building
Behind Judge et al.'s modification of the collaboration persona's scenario is also a modification of the procedure for elaborating the persona and its related scenario. The main modification is to think persona elaboration in terms of dysfunctional behavior too. To continue with this line of thinking, we could agree to introduce *Anti-collaboration-personas*, or *Competition personas*, a kind of persona representing users the system is intended to never really satisfy. We could also imagine *Coopetition personas*, personas who alternatively practice cooperation and competition.

Conclusion: Next steps of the specification
We will continue the specification work we have initiated. Especially we will more deeply specify what can be improved in the personas, scenarios and procedure: this is what practitioners need first to get. We will then assess the approach with practitioners trying to apply it.

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