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Enhancing Coordination through Mobile Applications - The Case of Mobile Recruiting

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Abstract. Due to an increased competition for the most qualified employees, organizations strive to shorten their hiring cycles as studies found that delays in recruitment have negative effects on the employers' attractiveness for applicants. Thus, an efficient recruiting process within organizations is gaining importance to prevent applicants from hiring at a competing organization. Thereby, mobile applications can increase the performance of business processes, e. g. by eliminating media breaks or making information available. However, only certain aspects of the recruiting process are covered by previous work (e. g. employer branding) and the underlying recruiting process within organizations is completely omitted. To address this lack of research, we design and implement a mobile recruiting application "MobiRecruit" that supports the recruiting process. Thereby, we apply design science research to deduce meta-requirements and design principles that are later incorporated by MobiRecruit.

Keywords: Mobile Applications, Mobile Recruiting, Mobile HR, Design Principles, Design Science Research

1 Introduction

The human resource (HR) departments of organizations currently face two main challenges: First, demographic changes lead to a declining population [1, 2] which results in a declining quantitative labor supply [2]. Second, increasing competition and advancing importance of knowledge require more qualified employees [3]. Thus, recruiting qualified employees is gaining importance but becomes more difficult. Accordingly, there is an increased competition for the best applicants between organizations ("war-for-talents") [4]. Hence, an efficient and effective recruiting process within organizations is necessary to shorten hiring cycles [5], as delays in recruitment are reported to have negative effects on the employers' attractiveness for applicants [6]. These delays can occur due to the high collaboration between the hiring department and HR managers, especially when conjoint decisions have to be made and responsible persons are not available (e. g. when being spatially mobile).

Mobile applications can solve these problems through distributing relevant information and allowing location independent decision making [7], which leads to a more efficient and effective recruiting process. However, even though prior studies identified the organizational recruiting process as a valuable usage scenario for mobile

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applications [8], the existing literature is limited to the use of mobile applications for applicant attraction in terms of employer branding [see e. g. 9, 10] or mobile job-postings [11]. Thus, the aim of this paper is to analyze, how mobile applications should be designed to support the recruiting process within organizations. For this purpose, we use a design science approach [12] to deduce design principles for mobile recruiting applications, which can be used to inform the development of actual implementations. Thus, we ask the following research question:

RQ1: *How should a mobile application be designed that supports the recruiting process within organizations?*

Afterwards, we display how the deduced design principles can be transferred into a concrete instance by developing "MobiRecruit", a mobile application that supports the internal recruiting process. According to this we also ask:

RQ2: *How can a mobile application be implemented that embodies these deduced design principles?*

The remainder of this paper is as follows: In section 2, we display theoretical basics of organizational recruiting as well as mobile recruiting applications. Afterwards, we employ a qualitative interview study to outline the problem relevance from a practitioners view (section 3) and display our research design (section 4) before we deduce design principles for mobile recruiting applications (section 5). These build the foundation of our instance, which is described and descriptively evaluated in section 6. Finally, this paper ends with a conclusion in section 7.

2 Theoretical Basics

2.1 Organizational Recruiting

In general, organizational recruiting is part of the human resource management (HRM), which is defined as all operative, tactical, and strategic activities that serve the deployment and leadership of qualified and motivated employees [13]. Thereby, the goal of organizational recruiting is the acquisition of qualified employees in order to re-staff existing vacancies or prevent their occurrence [14]. In a broader sense, the recruiting function comprises the internal recruiting process as well as the development and retention of an organizational image [15]. This is also discussed under the terms of employer branding [16] or personnel marketing [17] and comprises activities that are conducted independently from a concrete recruiting process instance [18]. The overall recruiting process is depicted in Fig. 1 and explained in the following.

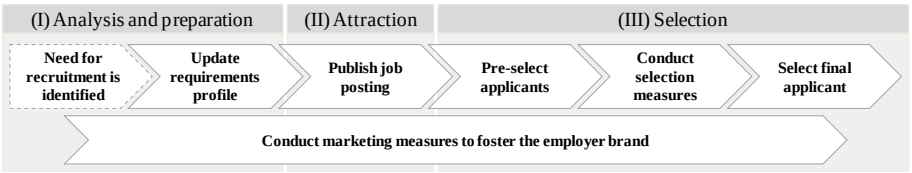

Fig. 1. Recruiting process (based on [5, 15])

The recruiting process starts with the ***analysis and preparation phase (I)*** and is triggered, when a vacancy is conceivable and cannot be re-staffed with existing employees [19] or compensated (e. g. by overtime) [20] and thus, a need for recruitment is identified. If necessary, the requirements (e. g. required professional or methodological skills) of the position are updated (or created in case of a new position) [15]. In the ***attraction phase (II)***, these requirements are transferred into an internal (e. g. within the organizational job market) and/or external (e. g. on external job boards or social media) job posting which is being published [21]. After enough applications are received [5], the ***selection phase (III)*** begins. At first, a pre-selection is conducted wherein applicants are selected for further consideration based on their application documents [5, 22]. Afterwards, the remaining applicants are invited to further selection measures [21], in order to assess their personal suitability (e. g. through interviews and/or assessment centers) [15]. Based on the results of these measures, a final applicant is selected, hired, and integrated into the organization [21]. Within the process, most decisions are made jointly between managers from the hiring department and HR professionals, especially during the select phase (III) [23]. Since managers tend to be spatially mobile [7], delays in decision making occur when they are temporarily unavailable. However, as the activities within the recruiting process strictly depend on each other (e. g. selection measures cannot be conducted before the preselection), delays in decision making directly lead to a lower process performance.

2.2 Mobile Recruiting Applications

Mobile devices (e. g. smart phones or tablet PCs) are defined as devices that can be used location (anywhere) and time (anytime) independent [24–26] and offer an instant internet connectivity (always-on) [24, 25]. Thereby, ***mobile applications*** (app) are applications that are executed on mobile devices and thus can be used location independently [27]. However, since mobile applications are executed on mobile devices, they are constrained by their hardware characteristics (e. g. small display size) [27].

The use of ***mobile applications within the recruiting process*** (see section 2.1) has only partially been analyzed. In terms of personnel marketing, it was analyzed which factors influence the acceptance of mobile job board applications [10], and what the key success factors of these applications are [28]. Furthermore, the behavior and expectations of mobile job board users in terms of job search and application were analyzed [29]. Within the sub-process of attraction (II), the usability of existing mobile job advertisements was analyzed [11], without covering the internal activities during the publishing-process. In order to assess the current market structure of ***existing mobile recruiting applications***, we analyzed 264 vendors of traditional IS for HRM (that offer their products in Germany) which were identified using software catalogues and scientific publications [e. g. 30]. Thereby, 22 vendors already offered mobile applications to support the recruiting process (see online appendix A[1]). However, these applications are either focused on personnel marketing (see above) or are limited to certain specific process aspects (e. g. viewing applications) and neither offer a com-

[1] Online appendix is available at: http://www2.as.wiwi.uni-goettingen.de/getfile?DateiID=728

plete workflow support for the recruiting function nor enable distributed decision making.

Thus, there is no existing knowledge on how the activities of the recruiting process within the organization can be supported through mobile applications. Furthermore, there is no prescriptive knowledge in terms of design principles or theories that could be used to inform the implementation of such applications. We will close this research gap by providing design principles that can inform the design of actual artifacts.

3 Problem Relevance: Need for Reduced Time-to-Hire

From a theoretical perspective, we already examined the underlying problem of our research in the introduction and highlighted that efficient and effective hiring cycles are needed to cope with the growing competition for the best applicants. However, the eligibility of mobile applications to support the recruiting process was yet only analyzed on a theoretical level [8]. To complement this theoretical assessment, we conducted semi-structured, exploratory interviews to identify HRM processes in general, that could benefit from the use of mobile applications. Thereby, we interviewed 24 HR professionals (e. g. HR department heads) from 21 German companies (from different industries, ranging from 1,000 to more than 100,000 employees). The interviews took place in August and September 2013 via phone and lasted between 20 and 30 minutes. They were recorded on tape, transcribed, and translated into English using constant contextual comparison [31]. We used theoretical sampling and decided not to conduct additional interviews as theoretical saturation was reached [32].

During the interviews, the experts (Exp1-24) highlighted the general need for an efficient and effective internal recruiting process. Accordingly, all organizations were already using an IS to support this process (mostly "SAP E-Recruiting" or "milch&zucker BeeSite"). However, even though recruiting was widespread supported by existing IS, the experts stated that the use of general stationary workflow systems is not sufficient, even if they can be accessed from different company sites. The deficiencies of stationary systems in the recruiting process arise, as many binary decisions (e. g. selecting recruiting channels or approving position requirements) must be made by multiple process actors while a sequential order of these decisions must be preserved (see section 2.1). Thus, delays occur when actors cannot access stationary systems while being spatially mobile:

"It's quite common that people say: I'm on a business trip, couldn't finish it before and don't have access to the system. […] If people cannot access systems easily on the go, deadlines cannot be met." (Exp10)

Thus, the experts stated that mobile applications within the recruiting process could be able to prevent this and help to speed up the whole process:

"If an applicant is sending in an application, he is serious. But three month later, he maybe already has a job because someone else was faster. Mobile applications can speed up the process and increase its reliability." (Exp23, manufacturing)

Nonetheless, only few organizations were already using mobile applications for this purpose, which were all limited to mobile job boards [28] and didn't offer any direct process support. Three organizations were planning to enable this in the future,

but were just at starting respective projects. Thereby, they motivated their efforts by the fact that the recruiting process is characterized by a high coordination and collaboration effort between the HR department and business units which can lead to delays, when certain actors are temporarily unavailable (e. g. while being mobile). The experts stated that mobile applications can enhance the coordination between mobile process actors in a twofold manner: First, the location-independent access to relevant information reduces response times during the selection phase (III):

"[…] as well as for the recruiter and HR manager, who are constantly on the move and can work on [recruiting] processes while being mobile." (Exp19, chemical and pharmaceutical)

"If you are looking at the recruiting process, you have a lot of documents that are transferred from one place to another and you always have to wait for a response. Thus, it is possible that there is a huge delay in the intersection between the HR department and the hiring business division" (Exp23, manufacturing)

Second, providing functionalities to make process decisions independently from local or temporal constraints (e. g. choosing applicants in the selection phase within a mobile application) can furthermore enhance the coordination between process actors:

"It would be nice for a recruiter to access the recruiting system in order to preselect applicants or to communicate with the respective department."(Exp17, financial services)

"[…] communicate with hiring managers using tablets so that they can be involved in the applicant management. That they can say: invite, reject, etc." (Exp23, manufacturing)

Even though the above shown quotes can be used as a starting point for the design of an actual implementation, they are not sufficient for a practical-driven deduction of design principles in means of a DSR project. In the following, we complement the practical insights by deducing meta-requirements using coordination theory [33], which are utilized to develop design principles in a second step.

4 Research Design: Design Science Research

As the goal of our paper is the development of a concrete artifact as well as the analysis of its underlying design, we employ a design science research (DSR) approach [12]. Thereby, the outcomes of a DSR project can range from concrete artifacts (level one) over prescriptive statements in form of design principles (level two) to well-developed design theories (level three) [34]. To ensure both, relevant and rigorous research, we draw on the work of Tornack et al. [19] and employ the research methodology that is depicted in Figure 2 and explained in the following.

The first step of the DSR methodology comprises the identification of the underlying problem and it's explanation using well-known theories (e. g. kernel theories) [36]. In a second step, these kernel theories are used to deduce design principles [37, 38], that describe "the properties, functions, features, or attributes" (p. 325) [39] an actual implementation should possess. Thereby, we already revealed the problem relevance based on exploratory interviews. In the following, we deduce meta-requirements [37] from coordination theory [33] and develop a mobile recruiting application based on these suggestions [36], which embodies the design principles (step 3). Afterwards, we descriptively evaluate (step 4) [12] our artifact and highlight how it implements the design proposition. Finally, we summarize the contribution for the

knowledge base and practitioners (step 5). According to Gregor and Hevner [34], we contribute to the knowledge base in the area of mobile recruiting applications on level one (instantiation) and level two (design principles).

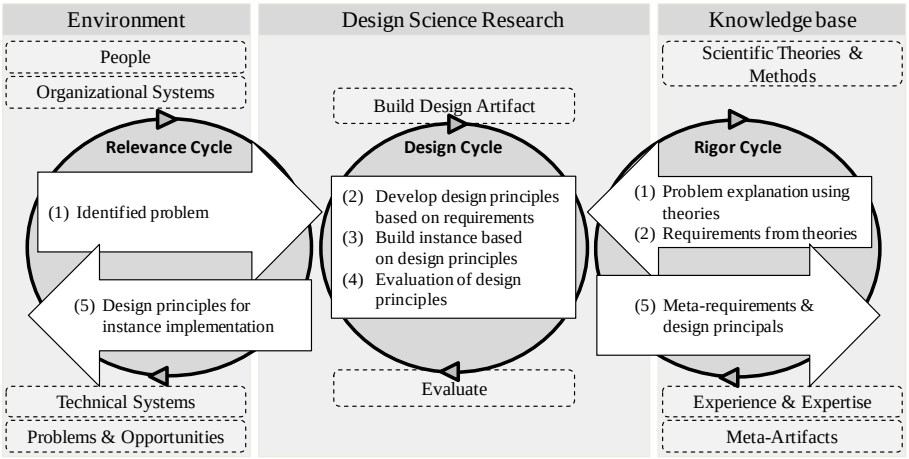

Fig. 2. Design science research cycles (based on [35, 36], adapted from [19])

5 Design Principles for Mobile Recruiting Applications

5.1 Deduction of Meta Requirements

The above mentioned coordination problems that occur when certain process actors are temporarily unavailable can be explained using the coordination theory by Malone and Crowston [33]. They define coordination as the act of managing interdependencies between activities [33, 40], whereby interdependencies are separated into shared resources, prerequisites, and simultaneity [33]. Interdependencies in terms of shared resources occur, when resources are used by different activities [41]. Prerequisites exist, when activities must be performed in a certain order, so that one activity must be completed before another can be started (e. g. when the output of activity A is the input of activity B) [42]. In contrast to this, the term simultaneity describes that different activities are performed at the same time or that different actors are required to perform the same activity (at the same time) [40]. Overall, the general purpose of coordination theory is the identification of activity interdependencies within processes and their classification according to the described scheme [33]. Afterwards, mechanisms can be developed in order to manage these coordination problems [40].

In the following, we use the coordination theory to display activity interdependencies in the recruiting process (see section 2.1) and deduce meta-requirements that address these interdependencies. Figure 3 gives an overview on the activity interdependencies within the recruiting process, which are explained in the following.

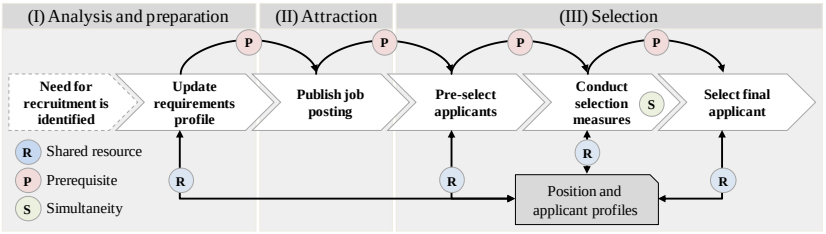

Fig. 3. Activity interdependencies in the recruiting process

Within the recruiting process, *shared resources* exist in terms of position and applicant profiles, which are updated in the preparation phase (I) and used throughout the selection phase (III) to assess the eligibility of applicants. As most decisions in the process are made cooperatively by HR professionals and the hiring manager (cf. section 2.1) these profiles must be accessed by all process actors. However, as applications are usually received and administrated by the HR department [22], delays in decision making may occur when application documents are transferred from one place to another or when documents are not available (e. g. when actors are geographically mobile). Thus, we argue that a mobile application must provide access to relevant information (e. g. applicant profiles) for all process actors **(MR1)**.

As the recruiting process is a sequential process with activities that highly depend on each other, interdependencies occur in terms of *prerequisites* in all process phases: The requirements profile must be updated before the job posting can be published, a pre-selection must be conducted before selection measures can be conducted, etc. When some process participants are unavailable (e. g. when they are spatially mobile), these prerequisites lead to process delays, as decisions within these activities (e. g. selecting recruiting channels or applicants for selection measures) are made by HR professionals and hiring managers. Thus, we argue that a mobile application must support the conjoint selection of position requirements, recruiting channels, and applicants (**MR2**). Furthermore, as these activities can only be started when the previous activities are finished, a mobile application should distribute information about outstanding decisions to process actors when previous activities are completed **(MR3)**.

Simultaneities exist in the case of selection measures, as they are conducted by more than one process actor at the same time. For example, application interviews are usually attended by HR professionals and managers. Here, process delays can occur during scheduling, as multiple timeslots for individual selection measures (e. g. interviews) or larger timeslots for group-based selection measures (e. g. assessment centers) must be found. Thus, we argue that a mobile application should support the scheduling of selection measures between all process actors **(MR4)**. Table 1 summarizes identified activity interdependencies and resulting meta-requirements.

Table 1. Meta-requirements for mobile recruiting applications

Process phase	***Interdependence***	***Meta-requirement***
Preparation (I) *Selection (III)*	HR professionals and hiring managers must review candidates based on position requirements and applicant profiles to perform selections. ***(shared resource)***	***MR1:*** Distribution of process relevant information to HR professionals and hiring managers.

Preparation (I) *Attraction (II)* *Selection (III)*	All activities in the recruiting process are performed sequentially and depend on decisions of previous activities (e. g. only applicants that were not rejected during pre-selection are invited for selection measures). ***(prerequisite)***	***MR2:*** Conjoint selection of position requirements, recruiting channels and applicants (pre- and final selection).
		MR3: Distribution of information regarding outstanding decisions to process actors.
Selection (III)	Selection measures (e. g. interviews or assessment centers) must be conducted by HR professionals and hiring managers simultaneously. ***(simultaneity)***	***MR4:*** Scheduling of selection measures between all process actors.

5.2 Deduction of Design Principles

In the following we use the identified meta-requirements to deduce more concrete design principles for mobile recruiting applications. Thereby, design principles constitute prescriptive statements about concrete design decisions that can be implemented within an artifact [43]. Furthermore, we develop testable design hypotheses that are "used to test whether the meta-design satisfies the meta-requirements" [37] (p. 43). Table 2 summarizes the deduced design principles and testable design hypotheses. In the following, we explain how these design principles manage the previously described activity interdependencies and thus enhance the efficiency and effectiveness of the underlying recruiting process.

Table 2. Design principles and testable design hypotheses for mobile recruiting applications

Design principles and testable design hypotheses
DP1: Provide functionalities to distribute information about position requirements and applicant profiles (covering letter, curriculum vitae and supplementary documents) to HR professionals and hiring managers whilst restricting the access to process actors who are responsible for the respective position. **(*MR1)***
H1: Distributing position and applicant profiles decreases the likelihood of wrong decisions caused by incomplete information and thus increases the effectiveness of the recruiting process.
DP2: Provide functionalities to select position requirements, recruiting channels, applicants (pre- and final selection), and timeslots for selection measures for each individual process actor and to make final decisions informed by these individual selections using a divide-and-conquer strategy. ***(MR2, MR4)***
H2: Selecting position requirements, recruiting channels, timeslots for selection measures, and applicants time and location independently decreases delays in decision making caused by spatially mobile process actors and thus increases the efficiency of the recruiting process.
DP3: Provide system controlled triggers for the immediate distribution of information regarding outstanding decisions to HR professionals and hiring managers and automatically start following activities when previous decisions are completed. ***(MR3)***
H3: Informing process actors about outstanding decisions reduces delays caused by the unawareness of need for action and thus increases the efficiency of the recruiting process.
DP4: Provide functionalities to automatically suggest timeslots for selection measures (using divide-and-conquer) and to suggest applicant assignments for the final schedule of those measures. ***(MR4)***
H4: Automatically suggesting timeslots for selection measures and applicant assignments reduces manual planning effort and thus increases the efficiency of the recruiting process.

As mentioned in the previous section, position requirements and application profiles constitute *shared resources* that are used by all process actors in order to assess the eligibility of applicants for a distinct position (see MR1). The unavailability of this information can lead to wrong decisions (e. g. when unsuitable applicants are

selected), so that we argue that a mobile recruiting application must entail functionalities to distribute this information to HR professionals and hiring managers **(DP1)**. Thus, the chance of wrong decisions caused by incomplete information is reduced and the effectiveness of the recruiting process can be enhanced (H1). However, as information about applicants is person-related, its access must be restricted to take privacy restrictions into account [44, 45]. Hence, process actors should only have access to applicant profiles that are associated to a position that is in their area of responsibility (e. g. subordinated positions in case of managers).

Prerequisites exist in the whole recruiting process and can lead to delays when actors are spatially mobile and aren't available for conjoint decision making (see MR2). Furthermore, the physical absence of actors also leads to delays during the scheduling of selection measures, as a common timetable for their conduction must be found (see MR4). Thus, we argue that a mobile recruiting application must provide functionalities to allow conjoint decision making using a divide-and-conquer [46] strategy **(DP2)**. Divide-and-conquer depicts a strategy for problem solving where problems are broken up into smaller sub-problems and later combined to an overall result [47]. In our case, divide-and-conquer can be used to split up group-decisions into individual decisions which are later combined to a final solution. For example, every actor independently pre-selects applicants and an overall pre-selection is suggested based on these decisions. Then, an actor who is responsible for the pre-selection activity approves (or adjusts) this suggestion and a final decision is made. Thus, delays caused by unavailable actors can be resolved (as individual decisions can be made independently) and the efficiency of the recruiting process can be enhanced (H2).

Even though individual decisions can be made using a mobile recruiting application, spatially mobile actors must initially know that a decision must be made. Thus, delays can occur when responsible managers or HR professionals don't know that an actual recruiting process instance has a need-for-action. Hence, we argue that a mobile recruiting application should contain system-controlled triggers that inform actors about outstanding decisions and that automatically start the next process activity as soon as the previous decision was made **(DP3)**. Thereby, delays can be further reduced and the efficiency of the recruiting process can be enhanced (H3).

As selection measures must be conducted *simultaneously* by most actors, a common schedule for the selection measures must be found (see MR4). However, finding timeslots where all different actors are available can be difficult when certain participants are spatially mobile (and gets exponentially difficult the more applicants and actors are involved). Thus, we argue that a mobile recruiting application must contain functionalities to automatically suggest timeslots for selection measures that are potentially viable for all process actors **(DP4)**. Again, the divide-and-conquer strategy can be used by breaking up the length of potential timeslots: At first, the system seeks for a timeslot that is big enough to conduct all measures. If no suitable timeslot is found, the system is searching for a bunch of smaller timeslots (which are also divided into even smaller ones when not enough slots are found). After all process actors acknowledged the proposed timeslots (using the decision-making procedure as proposed in DP3), the system should automatically assign applicants so that a complete

selection measure schedule is created. Thus, the effort for creating a common schedule is reduced and the overall process performance can be enhanced (H4).

6 Design Instantiation: MobiRecruit

6.1 Instance Development

MobiRecruit is implemented using web technologies to allow access using a simple web browser, which is part of all modern mobile devices [48]. To speed up development and to create a similar user experience on different mobile devices [49], the user interface was created using the Bootstrap Framework and AngularJS. To further ensure a rigorous decoupling of UI and application logic, all data that is displayed in MobiRecruit is stored on a separated PHP / MySQL backend which is accessed via JSON based RESTful interfaces [50]. Thus, no data is stored on the mobile device, which leads to an enhanced security of personal information (e. g. applicant master data). We choose JSON as the encoding format for data transfer, because it is very lightweight and can be easily processed using AngularJS. To support the recruiting process, MobiRecruit implements its own workflow engine and document storage. However, as there is a loose coupling between these components and the user interface using RESTful-APIs, they could be easily replaced by existing solutions.

Figure 4 depicts an overview of all recruiting procedures that the current user is involved in (Figure 4, 1) and an overview of a single process instance (Figure 4, 2).

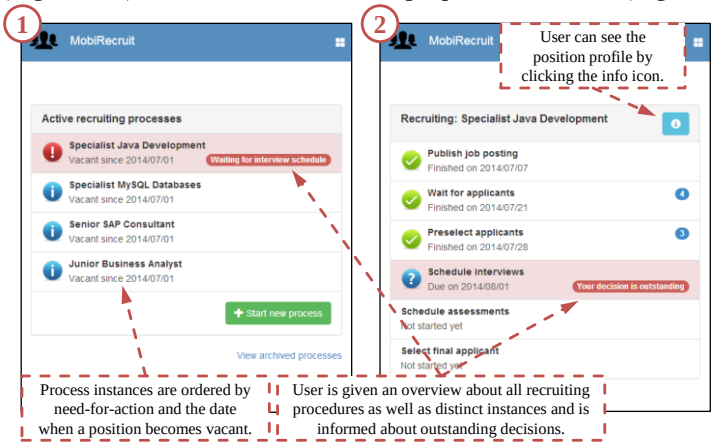

Fig. 4. Overview of all processes and single instances in MobiRecruit

The recruiting procedures (Figure 4, 1) are sorted by the date when the associated position became vacant, whereas those that require action from the current user are placed at the top. Thereby, the user gets directly informed about processes that require some input **(DP3)**. In the process-detail view (Figure 4, 2), the different activities of the recruiting process are displayed (see Figure 1) and marked according to their execution status. Again, the user is notified about activities within this process instance, which require action **(DP3)**. The info button at the top of the list can be used to view

the position profile, including its requirements **(DP1)**. Figure 5 depicts a schematic scheduling process, as implemented in MobiRecruit. At first, individual timeslots where actors are available are extracted (e. g. using interfaces to Microsoft Exchange or CalDav enabled calendars) and a unified list is created. Within this list, MobiRecruit calculates timeslots where each participant is available, using the divide-and-conquer-strategy **(DP4)**. Thereby, a list of viable timeslots is calculated which contains more space than required for all candidates, to give process actors the opportunity to select preferred timeslots (in Figure 5, timeslots for eight hours are calculated although four hours would be sufficient).

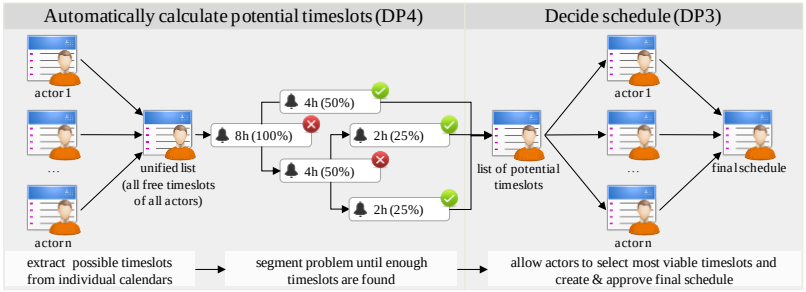

Fig. 5. Schematic scheduling process in MobiRecruit

Figure 6 displays the scheduling of selection measures within MobiRecruit from a user's point of view.

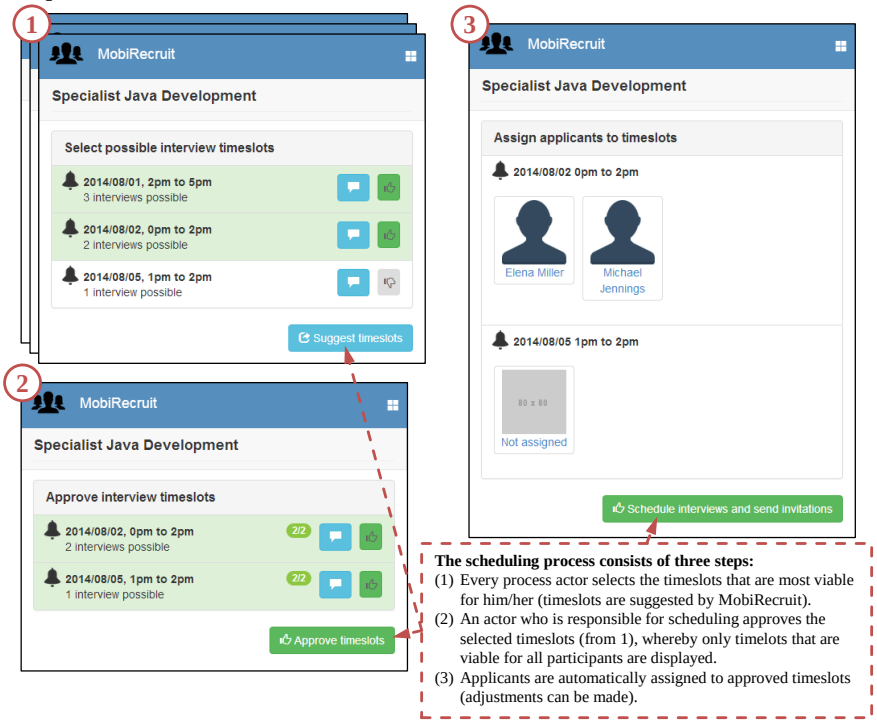

Fig. 6. Scheduling selection measures using MobiRecruit

As soon as enough timeslots are found, the decision-making is structured as described by **DP2**: At first, each process actor can select those timeslots that are most viable for him and can attach comments to explain his decisions (Figure 6, 1). When all participants made their decisions, an actor who is responsible for the scheduling activity (actor was selected as responsible for this when the process was started) approves timeslots that are used as a basis for the conjoint schedule (Figure 6, 2). Third, the applicants are automatically assigned to each approved timeslot (Figure 6, 3), which can be adjusted by the responsible actor. Thereby, the details of each applicant can be viewed by clicking on an applicant **(DP1)**.

6.2 Instance Evaluation

According to our research design (see section 4), the deduced design principles need to be evaluated to prove their utility, quality, and efficacy [12, 36]. In order to do this, we descriptively evaluate [12] MobiRecruit and show how it embodies the design principles and supports our testable design hypotheses.

At first, MobiRecruit allows users to permanently access the profiles of applicants and positions that are associated with a recruiting process instance (see Fig. 4 and Fig. 6). Thus, the user can access this information when decisions about applicants have to be made so that the likelihood of wrong decisions can be reduced (H1). By using a divide-and-conquer strategy, MobiRecruit decouples decisions (e. g. about interview timeslots or selected applicants) and thus allows process actors to make their decisions time and location independent (e. g. during a business trip). Hence, decisions are not deferred until all actors are available and delays in the process can be reduced (H2). Furthermore, MobiRecruit highlights which process instances have a need for action and which decisions must be performed. Thus, the user is permanently informed about the status of his/her recruiting procedures so that he/she can directly react on process events (e. g. the completion of the selection phase) and decisions are made earlier (H3). Finally, MobiRecruit suggests possible timeslots and applicant assignments for selection measures automatically. Hence, the manual effort and the amount of time that is needed during the scheduling of selection measures are reduced, so that selection measures can be conducted earlier (H4).

7 Conclusion

In this paper, we presented the results of a DSR project by displaying four design principles for mobile recruiting applications, which are designed to enhance the efficiency and effectiveness of the internal recruiting process. Thereby, we employed coordination theory [33] to highlight problems within the recruiting process, which were used to derive meta-requirements that address these problems. Afterwards, these meta-requirements were transferred into design principles and implemented within an artifact. We ensured the relevance of our work by explaining the underlying problem from a theoretical, literature-based view and from a practitioners view by displaying

insights from an interview study. Furthermore, we ensured the rigor of our work by using coordination theory [33] as a kernel theory for explaining the problem.

However, there are also limitations that must be considered. As we only descriptively evaluated our design principles and did not conduct an empirical evaluation, future studies should address this aspect. Therefore, we are planning to conduct an empirical evaluation to generate feedback on the general design and usefulness of the developed prototype. Therefore, we already included testable design hypotheses that can be used for the evaluation. Afterwards, this feedback can be used to adjust the design principles and our artifact. Furthermore, we focused on how hiring cycles can be shortened to enhance the recruiting process and prevent that applicants accept job offers from competing organizations. Even though previous studies identified this as a key aspect for successful recruiting processes [6], there are other success factors (e. g. general working conditions) which we did not discuss in our work.

The contribution of our work to the knowledge base is twofold: First, we derived meta-requirements and design principles that can inform the development of mobile recruiting applications (level two, [34]). Second, we developed an artifact that demonstrates how these design principles can be implemented within a mobile application (level one, [34]). From a practitioners view, we displayed how mobile applications can increase the efficiency and effectiveness of the internal recruiting process, which is an important aspect in the competition regarding qualified employees [5, 6].

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