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Master's Thesis

Facilitating team event management - A design science approach

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Abstract

This thesis uses the design science methodology to improve the team event organization process. The process itself is first derived using a qualitative approach by conducting an interview and by using the author's personal experience. Then the modeled process is used to design a tool, which will facilitate the team event organization. To show that the design is applicable, an example implementation of the tool in Odoo is applied. At the end, the tool is evaluated by conducting another interview. The results show that the tool improves the process of team event organization and thus brought it one step further. Practical implication for improving the organization process and directions for future work are also discussed.

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List of Acronyms

API	application programming interface
CP	contextual performance
ERP	enterprise resource planning
FTE	free-time events
FWE	fun at work environment
SME	small and medium-sized enterprise
TB	team building
UI	user interface

1. Problem identification and motivation

Employees are a crucial factor for the company success and hiring the right person for the right working position, which will perform well in the future, could be a hard job (Klang [2012]). But even if the recruiting phase went well and the company manages to hire good employees, a working environment that aids the employee performance and well being should be sustained so to keep good employees in the company. One way to facilitate the aforementioned is by encouraging the social interactions in the organization by organizing “free-time events” like going to a bar or a bowling (Ford et al.). This chapter goes deeper exactly in that topic by discussing the free-time events (FTE) with relation to the terms - “team building”, “fun at work” and “job performance”.

1.1 Team Building

In our days many companies are project-oriented (Miterev et al.). Crucial for those type of organizations is the development of united teams (Thareja). To achieve that goal, team building (TB) interventions may be used. Their purpose is to improve the effectiveness of teams withing the organization and so to facilitate organization development and organization performance (Buller). According to Bartlett et al. TB are the activities performed to acquire the traits necessary to facilitate cooperation of people towards a common goal. The impact of it on organization performance is also recognized by Wolfe et al., who found out that TB has positive effect on team cohesiveness and thus leads to superior performance. Bartlett et al. also came to the same conclusion after making an experiment within a senior-level food service management simulation class. They explored the differences between two sections of student teams one of which made a TB and the other one did not. What they found out is that the first one had superior performance than the second one.

All the research done in the field of TB supports the claim that united teams are very important for the effectiveness of the company and activities outside the working environment may facilitate that. This is not a new topic and thus not a secret, so a

lot of companies try to organize FTE for their employees.

Here by FTE or team events are meant all the activities organized to facilitate the social interactions and acquaintance of the company employees like having a meal together, play bowling or go for a drink in a bar. One can argue that FTE are TB events, because they are not especially designed to acquire the traits necessary to facilitate cooperation of people towards a common goal. Therefore, we will explore the FTE with regard also to the concept of "fun at work".

1.2 Fun at work environment

Even though the roots of the term "fun at work" can be traced back to year 1982 (Tews et al.), Ford et al. claim that until their work there was no serious empirical or theoretical proof for the components, nature and the positive and negative consequences of having fun at the working place. In his work Ford et al. defined the term in the following way: "A fun work environment intentionally encourages, initiates, and supports a variety of enjoyable and pleasurable activities that positively impact the attitude and productivity of individuals and groups.". Afterwards Fluegge refined that term as follows: "Fun at work involves any social, interpersonal, or task activities at work of a playful or humorous nature which provide an individual with amusement, enjoyment, or pleasure.". According to Ford et al. the term is compiled of several components among which "Recognition of personal milestones (e.g., birthdays, hiring anniversaries)", "Social events (e.g., picnics, parties, social gatherings)" and "Games(e.g., darts, bingo, company-sponsored athletic teams)". The aforementioned comply with our definition of FTE, so we can consider team events part of the fun at work environment (FWE). The same study made clear that the fun level in the organizations, they have explored, is low, even though it has many advantages for the organization and for the individuals who work in it. That means both, organizations and individuals, are beneficial from facilitating the FWE. Among the benefits for the organization are things like facilitation of the attraction of new employees, the communication among the employees and the commitment to the organization. For the employees some of the top rated benefits are increase employee enthusiasm, the group cohesiveness and employee creativity. The study also explores the disadvantages of the fun environment, but the conclusion was that those are not significant. In the aforementioned study they claim that the positive impact is much bigger than the negative, but they also state that for optimal results one should consider organization differences like the age of the employees for example. Even though the topic is relatively new in the academic field, research shows that fun is positively related to job satisfaction, job performance, also buffers the impact of emotional exhaustion and reduces employee turnover (Tews et al.). The fact that FTE can be considered part of the FWE makes them partial facilitators of the previously mentioned benefits.

The importance of FTE organized in the company could be explored also from one more perspective, which as the one above is not specifically related to project oriented settings. This is the job performance perspective.

1.3 Task and contextual job performance

Each individual's job performance is important for the enterprise well being. According to [Motowidlo](#), job performance can be defined as the "total expected value to the organization of the discrete behavioral episodes that an individual carries out over a standard period of time.". He claims that people behavior can be described as a constant flow, which is divided in episodes. There are some episodes that influence job performance and others that don't. Of course, researchers on the job performance topic are interested only in those episodes that influence job performance. According to [Borman and Motowidlo](#) overall job performance is a function of task and [contextual performance \(CP\)](#). They define task performance as the employee effectiveness on performing a task that contributes to the company technical core. The [CP](#) is defined as the effectiveness on performing activities that can improve the social and psychological environment which in turn can facilitate task activities. If we consider the definition of [CP](#), some [FTE](#) may be organized to encourage social interactions in the company and thus improve the social environment and [CP](#). The connection between [FTE](#) and the three considered topics ([TB](#), fun at work and [CP](#)) comes to show that even though not vastly discussed in the literature, [FTE](#) exists, their positive influence is visible and should not be left behind. From information technology perspective this could be interpreted as supporting the team event organization process by improving the tools that facilitates it. The aforementioned could be achieved by exploring the users needs and create new tools or adjust existing ones to those needs. Therefore, this thesis goes deeper in that topic and more specifically in the way [FTE](#) are organized by means of information technology support.

2. Research design and research question

Here the goal and the research question for the addressed problem are formulated. The outline of the plan and the chosen method structure for the problem solution are also discussed.

2.1 Research question foundation

During the work in a [small and medium-sized enterprise \(SME\)](#) the author got to know the process of organization of free-time team events. For her this normally includes the following steps:

1. Consider the vacations calendar for dates where (if possible) all employees are at work
2. Make a Doodle¹ poll
3. Invite all colleagues to participate. This involves writing a short email with the description of the event, end date to confirm or reject their participation and a link to the Doodle poll.
4. Write reminder email to participate in the poll, one day before the end date which was set for participation deadline.
5. Choose the best suiting date and write an email again to inform the participant for the decision.
6. Typically, after the event, the organizer collects oral feedback from some of the participants. This is normally not documented anywhere.

¹As [Praison](#) described it, Doodle is an online tool which one can use for event scheduling, which can involve many participants

As one can easily see this can be very time consuming and includes a lot of manual work. Moreover, no data is collected and systematized in order to improve better planning in the future. Information about the personal preferences of the team members, like what kind of activities they enjoy the most and events that they want to repeat, can be useful for filtering the events of interest. This identification of the authors own problems arose the question if other people who deal with team events organization also have that issue. To find out a short questionnaire was invented and short interviews in various companies were conducted. Four different companies participated and five people were interviewed.

From the summary of the information one sees that no defined process of team event organization seems to exist yet (Table A.1). Another interesting observation is that employees with different positions in the company organize team events, even though this is not necessarily part of their job. The organization of those type of events is often connected with a lot of manual work and 4 out of 5 participants agreed that some automation would be useful and would speed-up the process. Those observations define the problem as the lack of definition and automation of the team event organization process, lack of information about the team preferences and also lack of tools that are designed especially for that purpose. That observations led to the definition of the research question:

**Can we improve the process of team event organization by extracting
a generic process definition and use it to design and
implement a tool for team event management?**

Based on the posed research question, the ultimate goal of the thesis can be formulated as:

**Goal: Design and construct an example implementation of a team event
management tool which complies with the described team
event organization process.**

The goal is further detailed in Chapter 3 by associated artifact design objectives. The general idea is that the research result should be an appropriate tool for team event organization. That led to the decision to apply the design science methodology (Hevner et al., Peffers et al.) in order to alleviate this research gap.

2.2 Research structure

The structure of this work is as proposed by Peffers et al. and one can find short outline about the content of each chapter below.

Firstly, Chapter 1 deals with identifying the problem and the motivation aspect with regard to the TB events, the FWE and the CP.

In Chapter 2 the research question is identified and formulated based on the authors' own experience and the conducted interviews. The chapter also presents and motivates the decision to use the "Design science" approach for this research.

In Chapter 3 are explored the existing tools used for free time event organization, mentioned in the interviews and observed by the author. Afterwards, that knowledge

is used together with the general problem identification to infer the objectives of the solution.

In the next chapter is shown the development of the artifact. This includes the design process and the implementation process, which should be in compliance with the objective described in the previous chapter.

The "Design" section ([Section 4.1](#)) starts with a process flow definition. This is done by summarizing the authors experience and the information from the interviews. The reasoning behind that is that first we need to identify a common process in order to be able to recognize the places where automation is needed, possible and also feasible. Afterwards, a general solution of the problem is formulated by showing the basic design of the solution which is independent of a concrete implementation. The "Implementation" section ([Section 4.2](#)) shows that the described objectives are achievable and the design is applicable by proposing an example implementation of this functionality in Odoo².

In [Chapter 5](#), called "Demonstrations", is shown an experimental use of the developed Odoo module in testing environment. This includes testing the team event organization process defined in [Chapter 4](#), including all identified use cases.

The next chapter ([Chapter 6](#)) first outlines the preparation of the Odoo tool presentation and demonstration. Then it describes the experiment of inviting a group of people, presenting and demonstrating the tool to them, and left them to test it themselves. At the end the results from a second evaluation interview are shown. The process and the results are described in the chapter.

The last chapter ([Chapter 7](#)) describes the way the results will be communicated and gives guidance for future improvements.

In agreement with the author's supervisor, she have chosen to handle writing this master thesis by the means of project management and tools as briefly described in [Section A.3](#).

²Odoo is an open source software, based on Python programming language, that covers all business needs [Odoo S.A. \[a\]](#).

3. Define the objectives for a solution

Since the author had no previous experience in this scientific area and was not aware in which journals she should search for literature related to events organization, she used the following strategy. First, a search using the "Association for Information Systems Electronic Library" ([Bepress](#)) with the following key phrases was performed: "team events", "event management", "meeting management", "meeting organizer", "team building" and "events organization", but no relevant papers were found. A second search with "Google Scholar" ([Google Inc. \[d\]](#)) with the same key phrases, except that "team building" was replaced with "team building management", also led to no meaningful results. The key phrase was changed because the search with it in "Google Scholar" lead to unrelated results which had to be reduced because of time constraint, so the phrase was adjusted to a more specific one. The idea of the author was to find and extract the information from relevant conferences and journals. Even though no relevant papers were found, the author performed a third search in journals that deal with the topic. The used key phrase was "team events" in order to reduce the quantity of irrelevant papers. The considered journals are "Project Management Journal (via EBSCO Host)" ([EBSCO Industries Inc. \[a\]](#)), "International Journal of Event and Festival Management" ([Emerald Publishing Limited](#)), "Journal of Human Resources Management Research" ([IBIMA Publishing](#)) and "Human Resource Planning : HR. (via EBSCO Host) " ([EBSCO Industries Inc. \[b\]](#)). The key phrase reduction was done, because of the amount of irrelevant papers reviewed from the previous searches with those key phrases. The third search also did not lead to meaningful results.

From the searches performed above, information related to event management was found. It was oriented towards public events or marketing events, which are considered relatively new research fields, but with a growing interest for the issues related to them ([Park and Park, Crowther](#)). If we consider the aforementioned and that the interest towards the "fun at work" environment research field and the [TB](#) research field is also rather new, it is no surprise that not much was found about team events organization and management.

From the papers related to event management field in general here the interest was toward the tools for organizing events. However, according to [Park and Park](#), who categorized the event management domain, the research on the event management "technology" category was the one that received the least attention. But since the term "technology" was not explicitly defined in the [Park and Park](#) paper and also the related "technology" papers were not listed, the author did not perform extra search to find those papers and no technology related papers were found from the previous searches.

As mentioned in [Chapter 2](#), the goal of the thesis is the design and the example implementation of a team event management tool which complies with the team event organization process. The problem is that during the performed research, no information about the team event organization process was found. So the first step towards the thesis goal, will be the team event process definition. To facilitate this, the authors personal insights and the conducted interviews were used.

3.1 Team event process definition

The team events organization description of the author and the descriptions from the interviews were used to extract the following three different detailed scenarios. The author doesn't claim that the scenarios cover all cases that can occur, but those are the cases described in the used sources:

Scenario 1 The organizer has particular event and date. What he needs is to:

- organize the event information
- create a simple yes/no/maybe inquiry
- communicate the inquiry
- send a reminder for the participation of the inquiry
- collect and document the information, communicate the end result
- send an event reminder
- collect feedback

Scenario 2 The organizer has an event, but there are different possibilities to choose the date of the event. Here he needs to:

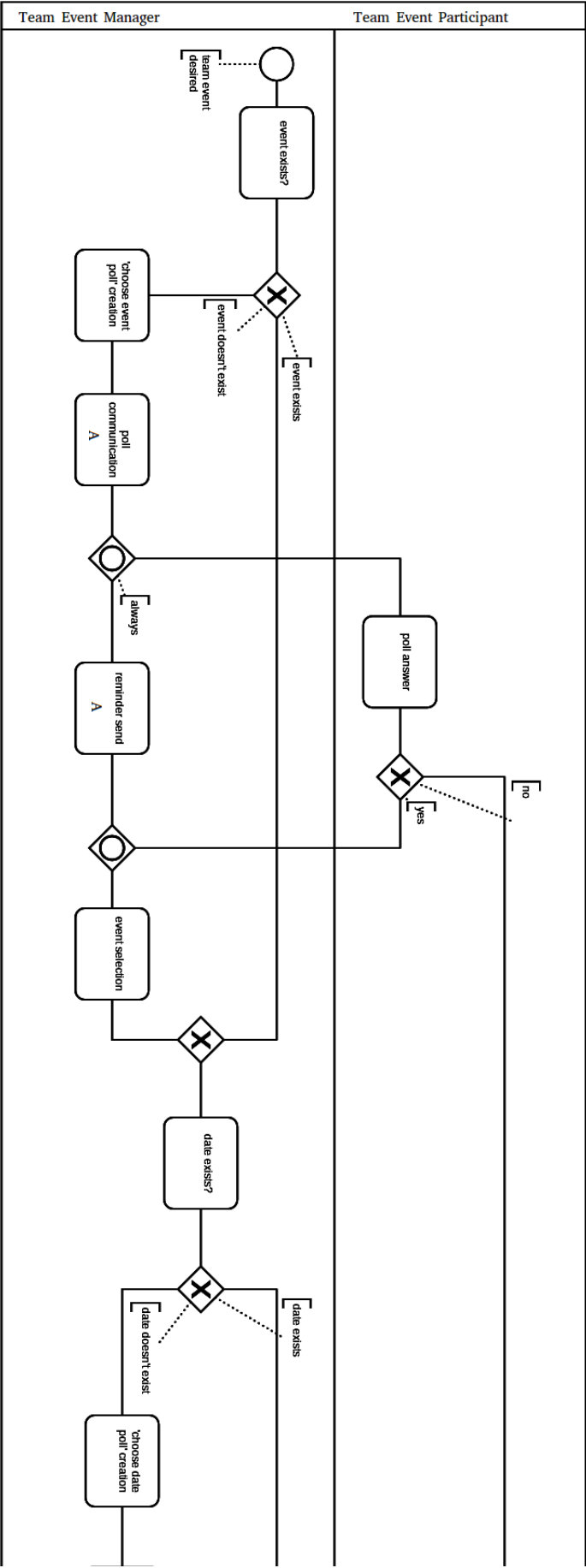
- organize the event information
- create an inquiry with the possible dates
- communicate the inquiry
- send reminder for participation in the inquiry
- collect and document information, communicate the end result
- send event reminder
- collect feedback

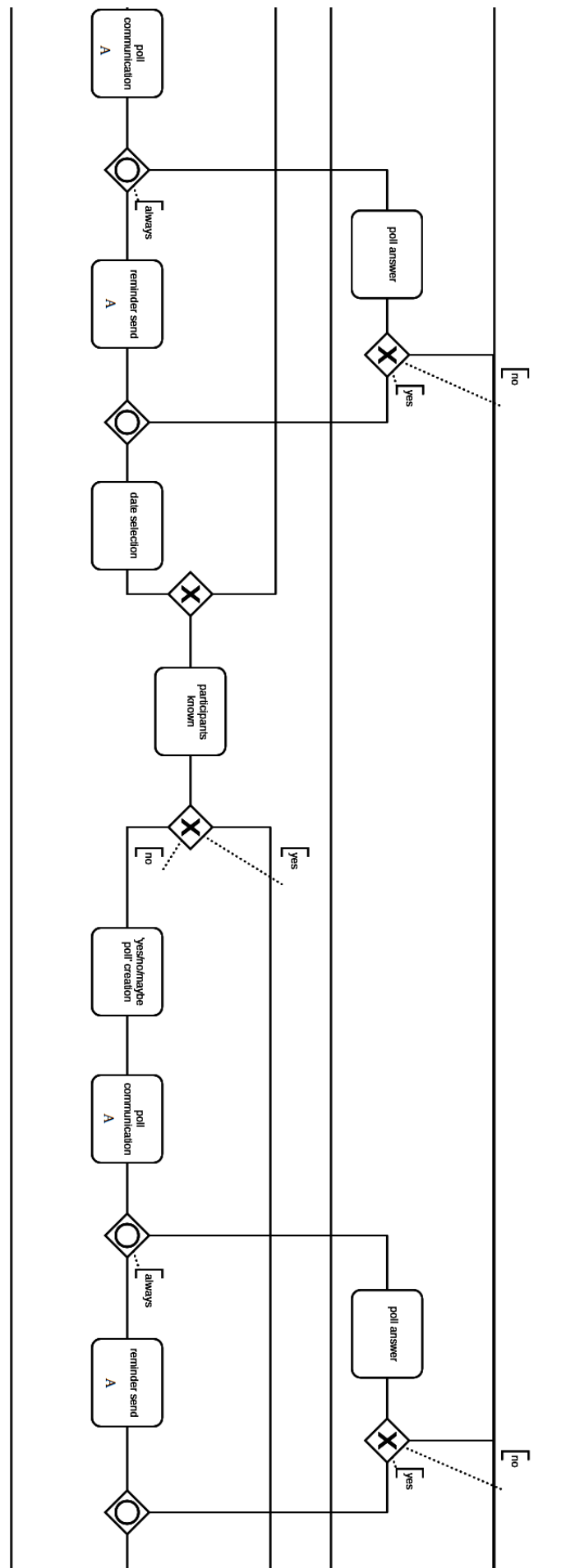
Scenario 3 The organizer has no particular date or event.

- create inquiry to find out if there is an interest in a team event
- communicate the inquiry
- send reminder for the participation in the inquiry
- create inquiry to collect information about the employee preferences for team event
- communicate the inquiry
- send reminder for participation in the inquiry
- create choose date inquiry
- communicate the inquiry
- send reminder for participation in the inquiry
- document the event information
- communicate the event information
- send event reminder
- collect feedback

Those free scenarios are described and summarized as a Business Process Model and Notation (BPMN ¹) diagram in [Figure 3.1](#). Here an excuse is needed for the size of the diagram, but this was required for its readability.

¹BPMN is a diagram type, which intends to standardize the business process model and notation [Specification](#).





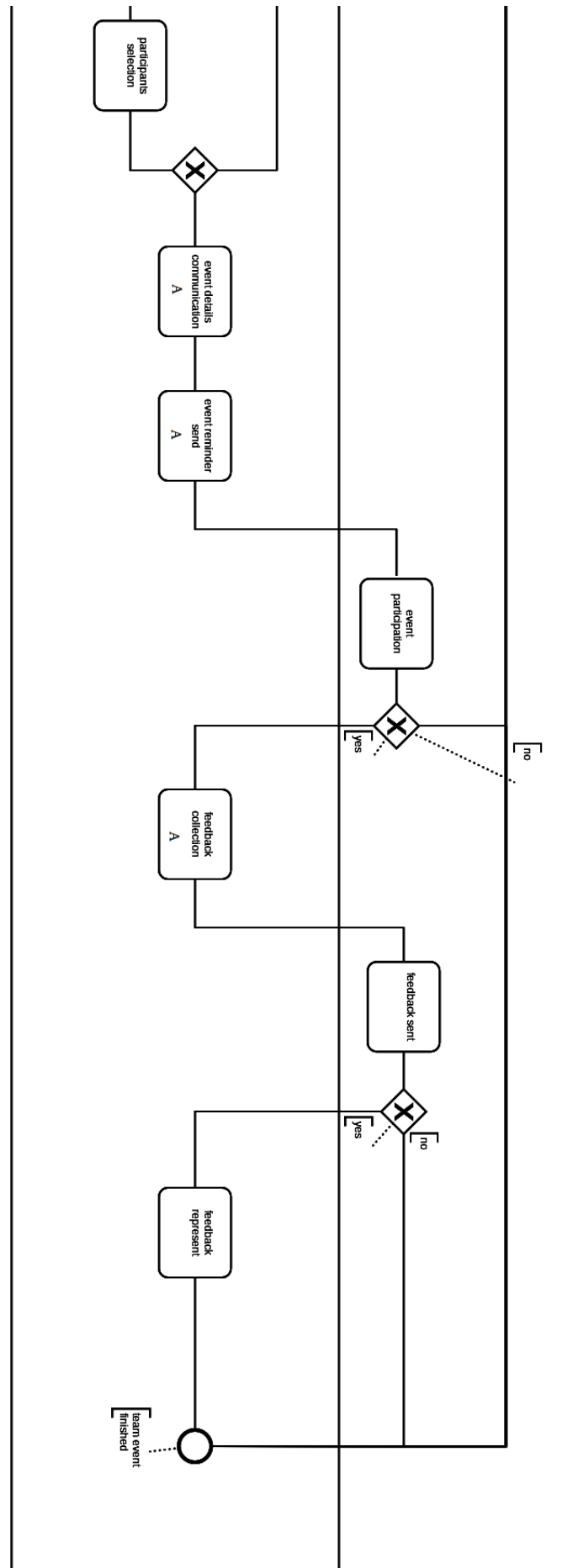


Figure 3.1: A BPMN diagram, describing the team event process

The author doubts that the process is significantly different for other people, but she hasn't reviewed this to proactively discuss the general idiosyncrasy, so she just uses her own conduct. However the process, as it is described above, enables the exploration of the tools that could be used to facilitate it. An interesting observation was that in the interviews no one mentioned that she/he used a tool designed for public or marketing events management. That's why a decision was made to start with exploring what the tools for public or marketing events management offer.

3.2 Public events management tools

Since technology sometimes develops faster than the research field, the author decided that it will be meaningful to conduct a small market analysis. She used a free software search service ([Capterra Inc. \[b\]](#)) and in the category "Software Category" menu searched for "event management software". The website offered four sorting options - "Sponsored", "Highest Rate", "Most Reviews" and "Hot Products". The author explored the top three options of each sort type and found out that the "Sponsored" option results in the most relevant tools for event management. The other options returned results more related to project management organization, personal schedule organization and the like. This could be due to the fact that the term "event" has a broad meaning and could be used in various situations, which could lead to ambiguity. Considering this, the author decided to take the top three tools returned by the search for "event management software" sorted by "Sponsored" as most relevant for the context, which at that time were Azavista ([Azavista \[a\]](#)), XING Events ([XING Events GmbH \[a\]](#)) and etouches ([etouches Inc. \[a\]](#)). A short description of the functionality of the three tools at the time of writing of the thesis is presented.

Azavista - this software have the following features - event request workflow (send event requests and receive approval), task and project management (dashboard where one can see all task and his colleagues activities), registration and participant management (possibility to build event website and registration forms), possibility to check in from the website and print your badge, customize event app, program and session management, products and payments (ability to pay session fees), hotel and travel management ([Azavista \[b\]](#)).

XING Events - the tool offers flexibility by expenses planning, easy ticket shop creation, easy integration in processes via [application programming interface \(API\)](#), automated delivery of tickets, confirmations and invoices to attendees ([XING Events GmbH \[b\]](#)).

etouches - with this tool one can select a venue from a huge venue database, seamlessly manage seating plans, room set-up and inventories, create an event website, design and manage registration forms, send invitations, track responses and send targeted reminders, get feedback by customizable surveys ([etouches Inc. \[b\]](#)).

What one can easily see from that market analysis is that those provide a lot of functionality that can fit well the management of public and marketing events. The

problem is that these tools provide a lot of functionality and one should perform too many steps unnecessary for organizing a team event and also spend some more time on learning how those tools work. Moreover, they lack the functionality needed for the preliminary research i.e. best fitting event date, employee preferences for team activity etc. One more argument is that using public/marketing event tools may violate the employees "data privacy" rights, by using public methods for handling internal events. The first objective could be set, considering the above mentioned observations and the insights from the conducted interview that team events have possibly low frequencies and that their organization is not necessarily part of the job, of the person who organizes it:

OBJ1: Designing a tool which should be as simple as possible and incorporates the needed functionality for team event organization.

As a next step an observation on the tools used for team event organization will be performed and described in the following section.

3.3 Team events management tools

There are different tools used to facilitate that process among which Doodle is pretty popular, but there are also alternatives like Framadate, Duddle, Nuages, Open-Sondage(STUDS), Rally and RDVZ (Johansson and Olausson). Spreadsheet applications, enterprise resource planning (ERP) internal chats, outlook, browser reminder plugin, Skype and tickets system were also among the tools used by the participants in the interviews to facilitate the team event organization. Here a short description will be made of the tools mentioned in the interviews, the ones used by the author and some discovered in the research process. The author took time not only to read the user guides for the systems, but also to test their functionality, so to collect some better understanding about how they all work and what are their functions and to be able to judge better on individual capabilities and functional gaps. The following is a review of the tools in the author's own words.

Doodle As Praisson described it, Doodle is an online tool which one can use for event scheduling, which can involve many participants. With Doodle one can create "simple yes/no polls". "Simple yes/no poll" means that a question is defined, for example "Are you interested in having dinner with your colleagues?" and then the participants can choose between yes or no. There is also an option where the participants can choose between yes, no and maybe. Doodle is also used for choosing a date or date and time for the event. This can be illustrated also using the example from above. A question like "Which date/date and time suits you for a dinner with colleagues?" could be defined, and then as many date or datetime options as one wishes could be created. Each of the participants then can select the options which suits him or her. Another type of poll is the "simple text poll". It is structurally close to the "date/datetime poll" with the difference that one can use simple text, not date/datetime formatted text for the options. Example for that can be - "To which restaurant

would you prefer to go?” and then the options – “Sushi Restaurant”, “Chinese Restaurant” and so on. Afterwards one can send the emails directly from Doodle as he/she defines the email addresses of the people that will participate, or use the participation link and create the email alone. Regarding to the event information, Doodle stores location, title and description ([Doodle AG](#)). Additional questions and discussion can be performed via comments functionality. From the description above could be concluded that Doodle could be really useful for event organization and scheduling, but there are also some cons. Namely Doodle does not support reminder functionality, the event information stored is very limited and it does not store feedback information. Another major drawback is that one can not connect different polls that refer to the same event (there is no functionality for connecting or grouping polls).

Framadate Framadate, as described by their own website, “is an online service for planning an appointment or making a decision quickly and easily.” ([Framasoft](#)). The offered functionality is pretty similar to the one of Doodle. One can create “choose date polls”, but the option must always contain a time slot, as opposite to Doodle where one can create “choose date polls” and omit the time slot. In Framadate one can also create “simple text polls” with the opportunity to use picture as option or link with alternative name. One can answer to the above mentioned type of polls with yes/no/maybe. There is no way to reduce the options only to yes or no. As opposite to Doodle one can not create “simple yes/no polls”. Framadate doesn’t provide separate functionality for that and the two above mentioned types of polls required at least two options. For event information that one can store here only title and description fields are provided. No dedicated place for location information exists. The poll can be shared by a public link, but no functionality for sending an invitation for participation in the poll directly from the website is offered ([Framasoft](#)). Additional questions and discussion can be performed via comments functionality.

Dudle With Dudle one can create “choose date polls”, “simple text polls”, also simple “yes/no/maybe poll” because there is no restriction to have two or more options. But the “maybe” option can not be removed from any of the polls. As for event information, one can only give a title to the poll. Participants can be invited directly from the website or by using a participation link. Additional questions and discussion can be performed via comments ([Technische Universität Dresden](#)).

Nuagets Nuagets is another meeting poll system, but its functionality is a bit limited in comparison to the above mentioned. Here one is only able to create “choose date polls” and can not invite people directly from the system. One can write comment attached to each option, but no additional comments functionality, that can be used for discussions, is provided ([Domaine Public](#)).

OpenSondage OpenSondage is also used for scheduling meetings or events. There is functionality for “choose date polls”, but there is no “maybe” option. The same is also true for the simple text polls – one can choose only between “Yes” or “No”. Inviting people is possible only via participation link and event

information can be stored only in the poll title and description fields. Additional questions and discussion can be performed via comments functionality ([Université de Strasbourg](#)).

Rally In this tool there is only the possibility to create "choose date polls", no creation of "simple text" or "datetime polls" is possible. Event information can be stored in the title, description and location fields. Where the location is a simple text field. Inviting participants can be done directly from the website or via participation link. Additional questions and discussion can be performed via comments functionality ([Vella](#)).

RDVz The official website of this application was not active anymore, so this application won't be explored here.

ERP² system internal chats and Skype ³ Using [ERP](#) chats can be useful for discussions and answering questions about an upcoming event. The problem here is that afterwards one must collect and systematize the data manually, which is time consuming especially when there are a lot of people who take part in the discussion. The same argument goes for Skype too.

Reminder Plugin Using Gmail ([Google Inc. \[c\]](#)) email service and Boomerang (Gmail plugin), one can also write an email and schedule it to be sent later. That functionality can be used in the process of event organization, because with it one can write a reminder email and schedule it to be sent for example one day before the event or one day before the poll expiration date ([Google Inc. \[a\]](#)), but this is just a small part of the event organization

Spreadsheet Applications Spreadsheet applications, for example Excel tables, are a good tool for managing and analyzing data ([Microsoft Corporation \[a\]](#)). But here there is also a lot of manual work that has to be performed in order to enter all the data collected from the polls. This is also true for different text files, where information can also be stored and summarized, but all this has to be done manually. The same problem applies also for using a ticket system, for example MantisBT. Since the purpose of the ticket system is different than to manage team events, here the event planning can be documented, but this must be done manually.

Google+ Google+ is a platform that focuses on bringing all Google functionality together ([Google Inc. \[e\]](#)). This includes also event functionality where one can create an event and invite people to participate ([Google Inc. \[b\]](#)). But this obligates the employees to create an account in Google+, which could violate their personal rights. For the same reasons Facebook⁴ was not discussed in this paper.

Outlook Outlook schedule meeting functionality can be useful when one wants to organize a team event. It offers functionality for adding meetings where one can fill some event information, add participants and then send meeting requests.

⁴Facebook is a social network, whose mission is according to their own statement to "Give people the power to build community and bring the world closer together." ([Facebook](#))

Each participant can then answer with yes/no/maybe and that information is stored in the meeting calendar. But this covers only the case where one has particular date and event. One can not create inquiries in order to choose date, place or event. That means it doesn't have poll functionality except the invitation message. There is also no space left for discussions. A meeting can also be send to predefined groups so no need to invite participants separately each time is required. Here it is possible to store information about the event in the subject, location and message box fields ([Microsoft Corporation \[b\]](#)).

Odoo Odoo also have implemented event organization functionality, but since it's more marketing oriented it does not support all the functionality needed for team event organization. With Odoo one can create event and publish it on the Odoo website. The event modules provide a lot of fields where one can store different information about the event that was not provided from the above mentioned tools like organizer, responsible person, tickets information and the like. Moreover the Odoo event modules provide the functionality needed to set email reminders and option to collect different information in the form of questions on subscription. Additionally there is a chat functionality on the event web page, but this is not suitable for group discussions. Odoo also have survey functionality, and even though with some creativity one can create polls, events and surveys are not connected and since the survey functionality is not intended to create polls it is a bit tedious and the results representation is not very convenient for poll results preview.

The summary of the tools functionality connected to team event organization are represented in [Table 3.1](#).

Based on the comparison in [Table 3.1](#), Doodle support the creation of "yes/no polls", "choose date polls" and "simple text polls". Doodle also enables storing event information like location and description, supports sending emails directly from the Doodle website and enables discussions through the comments section. Missing here are the reminder functionality, the feedback collection, the support of mailing lists and the connection between several polls and event. According to our table Doodle provides the same functionality as Doodle. With Framadate one can create "choose date polls", "simple text polls", store event information and lead a discussion, but the functionality to create "yes/no polls", to collect feedback, to send reminders, to send emails, to create mailing lists and to connect several polls with event, is not supported. OpenSondage enables the creation of "yes/no polls". It also enables the "choose date polls", the "simple text polls", the storing of the event information and the opportunity to lead a discussion. Nuagets gives one the opportunity only to create "choose date polls" and to store event information. Rallly enables the creation of "choose date polls" and the storage of event information, as well as sending emails directly from the Rallly website and the leading of a discussion via comments. [ERP](#) chats can be used for discussions, but does not provide any of the other listed functionality. The same applies also for Skype. Gmail supports sending emails functionality, reminder functionality and also the creation and usage of mailing lists. Excel could be used for storing event information. Ticket systems, in our case we explored MantisBT, provides the needed functionality to collect feedback, store event information, send emails and lead a discussion. With Google+ one can

send emails and email reminders, use mailing lists, lead discussion and store event information. Outlook can be used for storing event information, sending emails and creating mailing lists. With the Odoo Events one can send emails, send reminders, store event information and lead discussion.

From a features perspective three out of fifteen tools support "simple yes/no polls", reminder functionality and creating mailing lists. All, but four tools are able to store event information and in all, but five, one is able to lead a discussion. None from the listed tools provides connection between polls and events and just one facilitates feedback collection. Four tools supports the creation of "simple text polls", six the creation of "choose date polls" and eight support functionality for email sending. Those observations lead to the conclusion that none of those tools embed all the functionality needed to manage a team event (see [Table 3.1](#) header), as described in the three scenarios from [Section 3.1](#). This outlines the second objective:

**OBJ2: Enable the described in [Section 3.1](#) scenarios
to be performed using only one tool.**

From the table one can also easily see that none of the explored tools support feedback collection, but the interviews revealed that this could be useful and needed functionality that will enable ex-post analysis, so the third objective will be:

**OBJ3: Enable the collection of written
feedback on team events.**

And at the end the fourth objective will be:

**OBJ4: Automatize the places where automation
is feasible or make sense.**

That could be useful because from the scenarios definition and from the conducted interviews one can see that the process is tedious and some automation is needed to render it more efficient.

Now when the objectives are defined, the research will continue with the design and implementation, described in the following chapter.

Table 3.1: Summary of the "Team Event" tools futures

Tool/Feature	Yes/No Poll	Send Emails	Reminder	Choose Date Poll	Simple Text Poll	Event Information	Collect Feedback	Pool-Event connection	Discussion	Mailing Lists
Doodle	Y	Y	N	Y	Y	Y	N	N	Y	N
Framadate	N	N	N	Y	Y	Y	N	N	Y	N
Dudle	Y	Y	N	Y	Y	Y	N	N	Y	N
Nuegets	N	N	N	Y	N	Y	N	N	N	N
OpenSondage	Y	N	N	Y	Y	Y	N	N	Y	N
Rally	N	Y	N	Y	N	Y	N	N	Y	N
ERP chats	N	N	N	N	N	N	N	N	Y	N
Skype	N	N	N	N	N	N	N	N	Y	N
Gmail	N	Y	Y	N	N	N	N	N	N	Y
Excel	N	N	N	N	N	Y	N	N	N	N
Ticket System	N	Y	N	N	N	Y	Y	N	Y	N
Google+	N	Y	Y	N	N	Y	N	N	Y	Y
Outlook	N	Y	N	N	N	Y	N	N	N	Y
Odoo Events	N	Y	Y	N	N	Y	N	N	Y	N

4. Design and implementation

This chapter is divided in two sections. The first one will show the design of a tool and the second one will describe its application in an actual tool implementation.

4.1 Design

The design process started with the creation of a basic class diagram for the module (see [Figure 4.1](#)). To facilitate that, the paper from [Dubinin and Vyatkin](#) was used. In their labor [Dubinin and Vyatkin](#) introduced the class and object diagrams, as well as the object constraint language, state machines and dynamic logic. To build the above mentioned diagram, the components description provided in the class diagram section of the [Dubinin and Vyatkin](#) paper were used.

The diagram represents simple poll structure consisting of base "Poll" class, which will be the container for the polls. There is also a "PollOption" class, which will store the different options from which the poll participants can choose. Then comes the "Answer" class, which stores the answers of the poll participants and the "User" class, which stores participants information. The "Event" class will be used for encapsulating the event functionality and attributes. There is also a "Rating" class, which will store the feedback for the different events and last is the "Reminder" class, which enables the reminder functionality on events and polls. As a whole on the diagram one sees basic event, poll, reminder and feedback structures all in one place, connected to each other and as simple as possible, which corresponds to the first and second objective of this thesis.

A simple rating functionality is used to collect feedback and be able to process it, which is in line with the thesis third objective. Here, by simple rating functionality, is meant that each participant should be able to rate the events, which he/she attended. One important component is that a team event category was added to each team event. The idea behind it is that at the end one should be able to group the rating results by team event category, which could facilitate the insights about the team preferences.

The design phase continued with exploring the automation potential. First a short literature review in the "Association for Information Systems Electronic Library"

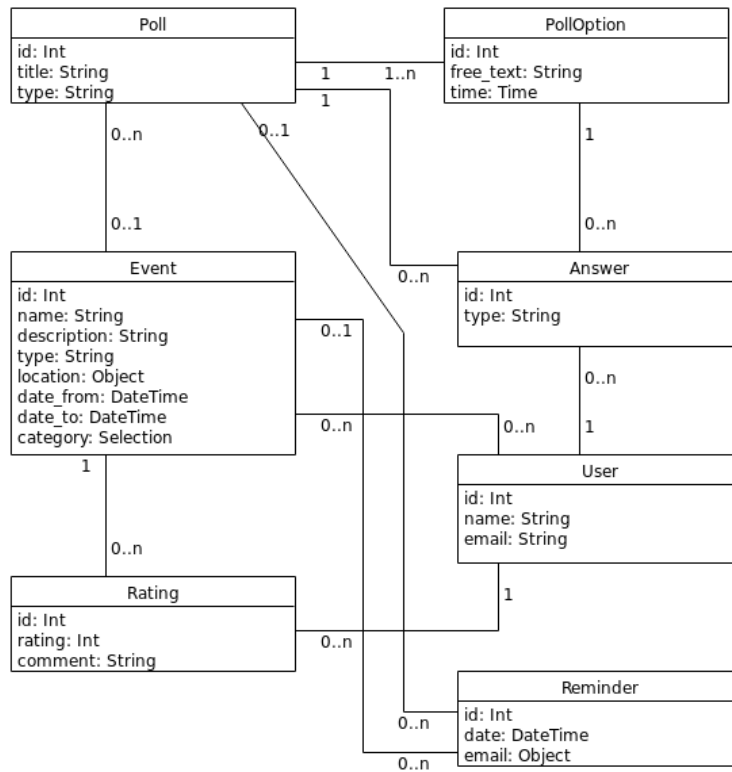


Figure 4.1: A class diagram, describing the free-time event module structure in design stage

with the "software automation potential" and "business process automation" key phrases was conducted. The papers found were related to automation from a bigger scope like a service process automation ([Weinreich and Schön](#)) or public sector automation ([Smith et al.](#)) and the decisions what to be automatized relied on factors like efficiency, accountability, user preferences and costs. An automation potential analysis could be very time consuming and includes customers interviews and assessment and because of time constraints here a decision was made to choose automation places based on the following criteria:

- the action occur regularly in the process of team event organization.
- no specific user input is needed. The action can be performed using already defined information or the information could be unified for all objects.
- the automation could be implemented in a relatively short time (time estimation, based on experience - no more than one week)

Using the above mentioned criteria and by exploring the team event process definition from [Chapter 3](#) the following automation potential was recognized:

- first all reminders could be send automatically
What is meant by this is that when the organizer creates an event or a poll, a reminder could also be created automatically and the date it should be

send could be calculated based on existing poll/event information e.g one day before the event start date or one day before the end date for participation in a poll. This place is in line with the above defined automation criteria since reminders are integral part of the team event organization process, the information needed for their creation could be unified across different objects or extracted from existing information defined on the poll/event and because there is an example of how reminders could be implemented in Odoo, the implementation time should not exceed a week.

- predefined groups

By "predefined groups" is meant a list of user emails referenced as group, so to be able to send email to a group of people, without having to add those one by one each time. The idea behind this is that most of the time an event is organized for all the employees in the company or for the employees for one or couple of the departments of it, this is in line with the first criterion. Being able to write just the group name when one wants to invite a particular group of employees to participate in a poll will save some time and make the process faster. If the group information is predefined, no specific user input will be needed, so this is in line with the second automation criterion. The implementation should not take a lot of programming time so it fits the last criterion.

- predefined emails

By "predefined emails" are meant email templates for the different use cases. Such templates can be created for event reminder, poll reminder, event invitation, feedback collection email and poll participation requests. This will save the time to write emails with almost one and the same content by giving the functionality to directly send a predefined email or change just the part of it that does not suit the current needs. From the automation criterion point of view here the organizer repeatedly writes one and the same email content (criterion one) with just changing the event/poll details, which could be extracted from already filled information (criterion two), which also should not be much time consuming from programming point of view.

- Collecting feedback can also be automatized by sending email automatically after the event

Here the logic is the same as for the reminders. One doesn't need a lot of user input here too, so a feedback reminder could be automatically created when an event is created. The sending date could be one day after the event or similar.

The places where automation should be performed are marked with "A" in the BPMN diagram in [Figure 3.1](#). This part of the design covers the fourth and last objective, which is to automatize the places where automation is feasible.

After the analysis how to cover all the defined objectives in [Chapter 3](#), the use cases, which the resulting artifact should be able to fulfill, can be defined.

1. Use Case

Define all people that will receive an email for the new event

2. Use Case
Use predefined email groups for inviting poll participants
3. Use Case
Create a simple event. That includes name, description, date and location.
4. Use Case
Add a poll to the event
5. Use Case
Create a "free text poll"
6. Use Case
Create a "choose date poll"
7. Use Case
Create a "choose date and time poll"
8. Use Case
Create a "yes/no/may poll"
9. Use Case
Add a reminder for the event
10. Use Case
Add a feedback request for the event
11. Use Case
Enable rating on the event
12. Use Case
Show rating summary by category

At the end in [Figure 4.1](#), one sees the base structure needed, the description of the automation potential shows where automation is reasonable and the use cases described above show what should be the base functionality. Those three components form the base design of the team event organization tool.

4.2 Implementation

The design described above is a basic one and should be platform independent. However, here is considered an example implementation of the described functionality in Odoo using Agile approach¹. This is done to show that the described objectives are achievable and the design is applicable. Odoo is chosen, because it is an Open Source Software platform, it is used from more than 2 Million users ([Odoo S.A. \[a\]](#)) and because its architecture allows rather easy extension of the core functionality by using modules. Another point is that Odoo already has an implementation of event management ([Odoo S.A. \[b\]](#)), but it is marketing and public events oriented

¹Here by "Agile" approach is meant that the implementation was separated on small tasks, which were implemented, tested and accepted one after another ([Kettunen and Laanti](#)).

and does not cover team events planning as described in [Section 3.1](#).

In [Chapter 3](#) the event functionality provided by Odoo was already explored, but for the implementation is needed also an exploration of the internal code structure of the event module. This will facilitate the decision making during the implementation process, but it won't be enough, so a decision was made to also check which other modules could be helpful and explore their structure too. While exploring the structure of the modules, one should take into consideration that Odoo gives the chance to create entirely new modules or extend existing ones, so the pros and cons of the both variants are summarized in [Table 4.1](#). This summary is used as a base line during the decision making if an existing module should be extend or just the know-how from it should be used. The Odoo code search ² tool was used

Table 4.1: A comparison table of the pros and cons of extending existing functionality versus implementing new functionality in Odoo

	Create New Module	Extend Existing Module
Pros	<ul style="list-style-type: none"> • reduce the dependencies to external modules • simple and clean (the module will contain only the needed functionality and fields; no scramble with existing code and usage) 	<ul style="list-style-type: none"> • take advantage of all existing functionality • no code redundancy due to implementing again already existing functionality
Cons	<ul style="list-style-type: none"> • code redundancy due to implementing already existing functionality 	<ul style="list-style-type: none"> • possible complications to separate and extend the functionality like break existing functionality, inheritance issues and the like

to search the Odoo modules for relevant information. The search used the following key phrases "doodle", which led to no results, "event" which showed 312 results and at the end "survey" which had 81 results. Then the author went through the modules and filtered the following modules of interest: event, website_event, website_event_questions, website_event_track and survey, which are explored one by one in the next step.

First the event module is explored. To get a broad picture of the module, its classes and the connection between them, it's structure is represented as a simplified class diagram that can be seen in [Figure 4.2](#). From this diagram is visible that there is a lot of information that can be stored in the event class, but for the team event tool implementation is important that it covers the fields defined in the simple class diagram [Figure 4.1](#). Moreover there are couple of interesting connections to another structures. First the connection to the event.registration class, which can be aligned with the link to the "User" class from the simple class diagram and second the connection to the event.mail class, which represents the connection to the "Reminder" class. From the first analysis it is visible that this module provides a lot of useful functionality, which can be reused in the implementation.

²Odoo code search is a tool that index almost all Odoo repositories and enable search on three levels - full text search, module meta data search and module code and data search ([initOS GmbH](#)).

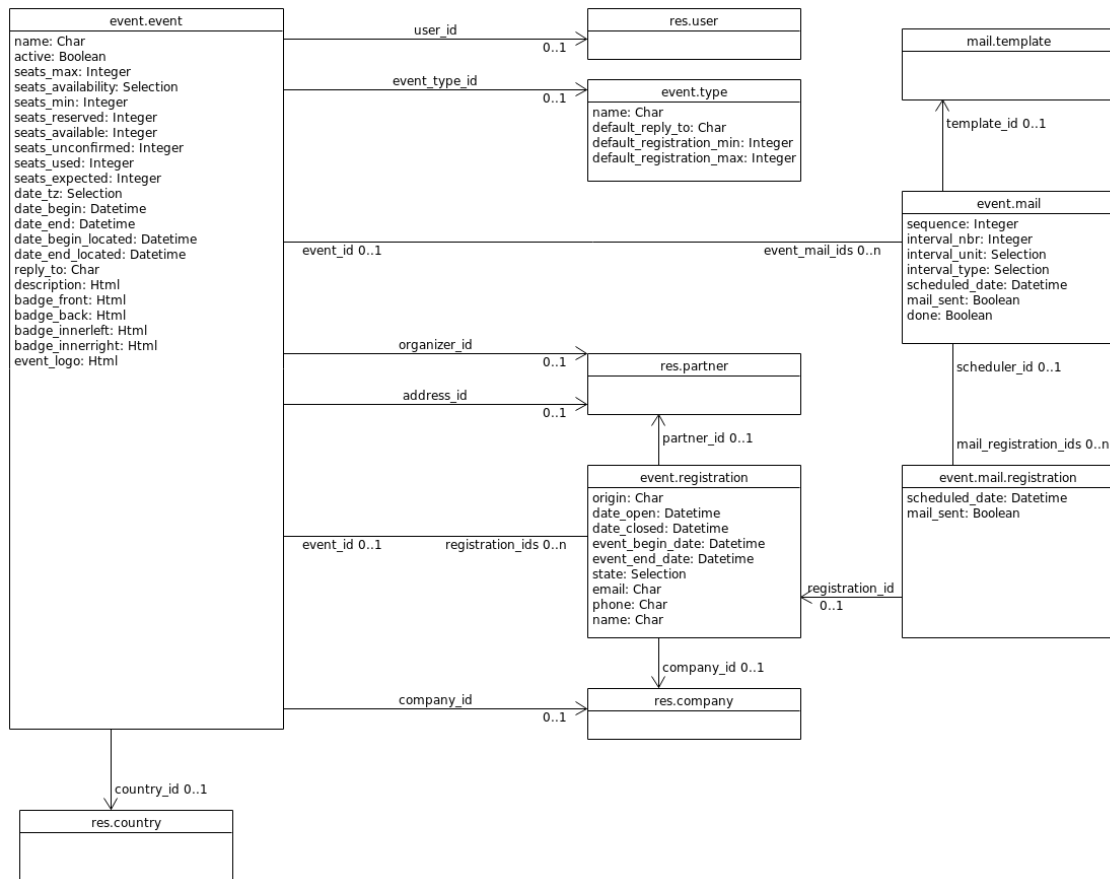


Figure 4.2: A class diagram of the "Event" module of Odoo

Next the `website_event` module is explored. This module extends the event module in a way that can be seen in [Figure 4.3](#). However in this case the class diagram shows only a couple of newly added fields, but this is not enough to show the purpose of the module, because it's power is more in the controller part. Actually this module enables adding an event on the Odoo website making it public, enable on-line registration, selling tickets and promoting. It actually adds all kind of useful functionality for public events, but since here the interest is towards team events, which are not public, this module is not relevant for the current research. The third module is `website_event_question` module. The class structure is represented in [Figure 4.4](#). From the diagram it is visible that the structure pretty much represents the one that was described for the "Poll" class, but by exploring the module further, it was discovered that the usage is different. Actually the functionality, that this module provides, is to add a questions which one can attach to a website event (published event) and those questions will be asked when a person register for the event. But in the case of polls the wanted functionality is to be able to send poll requests independent of the registration, so the only thing that could be reused is the question classes structure. The chapter continues with the `website_event_track` module. A simplified class structure can be seen in [Figure 4.5](#). The main part here is that a new "event.track" class is added and one event can have many tracks. So if one has an event where there are several sessions in different rooms, those could be handled with the module. The other major future is that sponsor functionality is

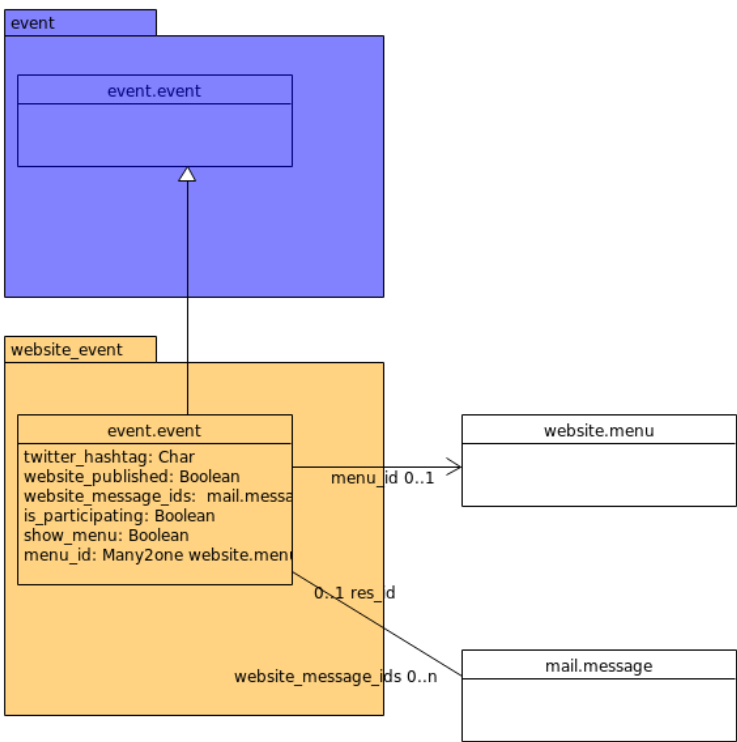


Figure 4.3: A class diagram of the "Website Event" module of Odoo

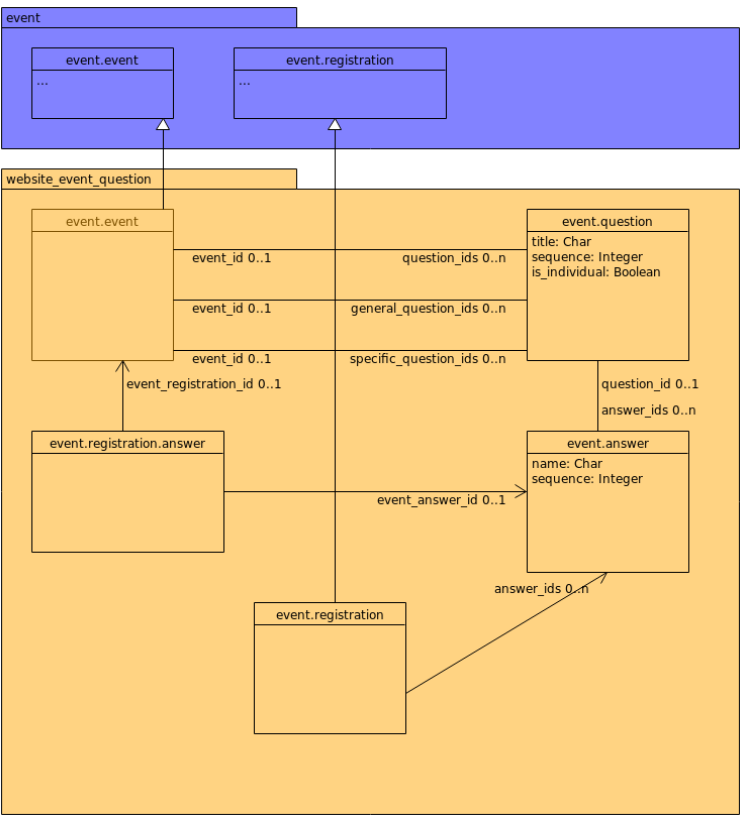


Figure 4.4: A class diagram of the "Website Event Question" module of Odoo

enabled. But as the `website_event` module, this one is also something that is not in line with the idea of simplified team event management handling. The last module

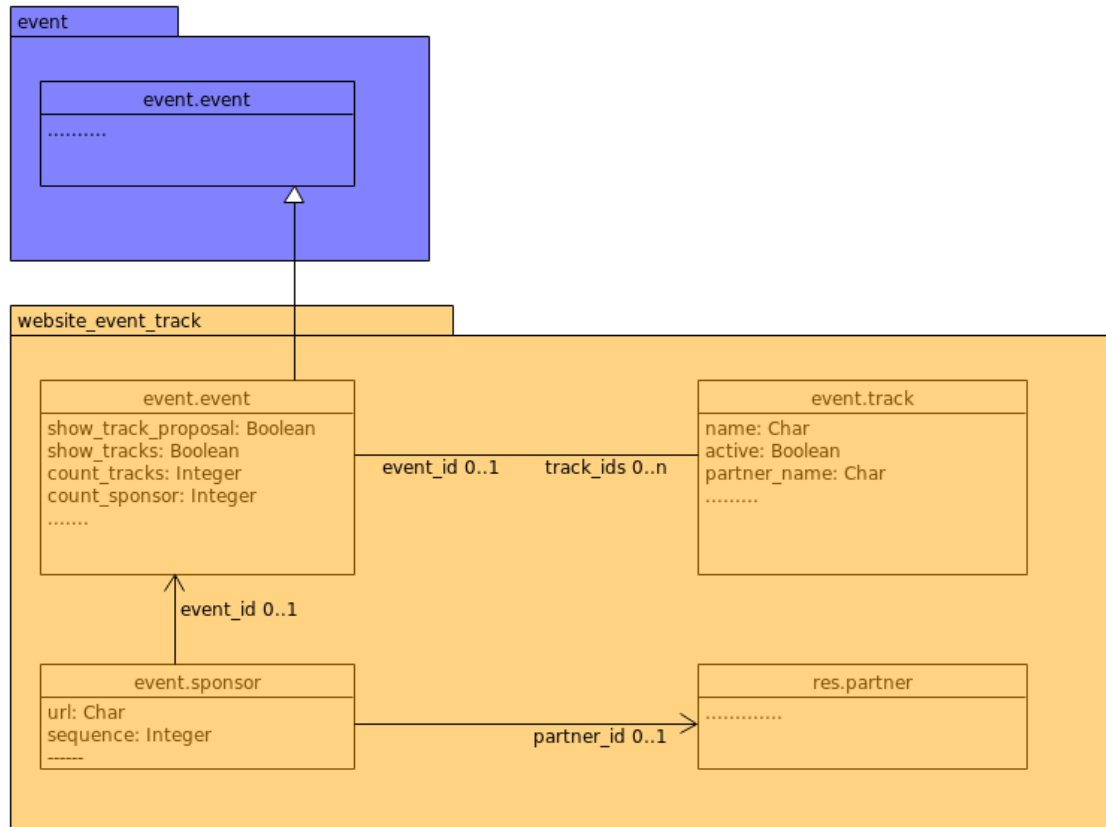


Figure 4.5: A class diagram of the "Website Event Track" module of Odoo

that is explored is the survey module. This module is relatively much larger in comparison to the other ones. It offers a complete functionality to create, distribute and visualize surveys (see fig. Figure 4.6). Unfortunately, with this structure there are a lot of steps that must be performed in order to create a simple one question inquire. This is not in line with the first objective for simplified team event management tool, but the know-how from this module could be useful.

After exploring of the existing modules with similar functionality and comparing their structures with the design structure from this research, while also taking in consideration the pros and cons of extending existing functionality versus implementing new functionality, a decision was made to extend the Odoo Event module for the implementation of the team event functionality. This is because its structure is almost the same as the one designed for team events (Section 4.1) and also some of the functionality is the same or similar. For the poll functionality the first idea was to use the API of Doodle, since Doodle was the one used by the participants in the preliminary interview. Unfortunately, the API was shut down and now one can only use pre-filled html³ wizard through a customized link (GitHub Inc.). This means that one can create a poll, but can not perform any other operations like retrieving the results from it, so this option provides no back compatibility. That's

³HTML is abbreviation of Hyper Text Markup Language and is used to describes the structure of Web pages (Refsnes Data AS).

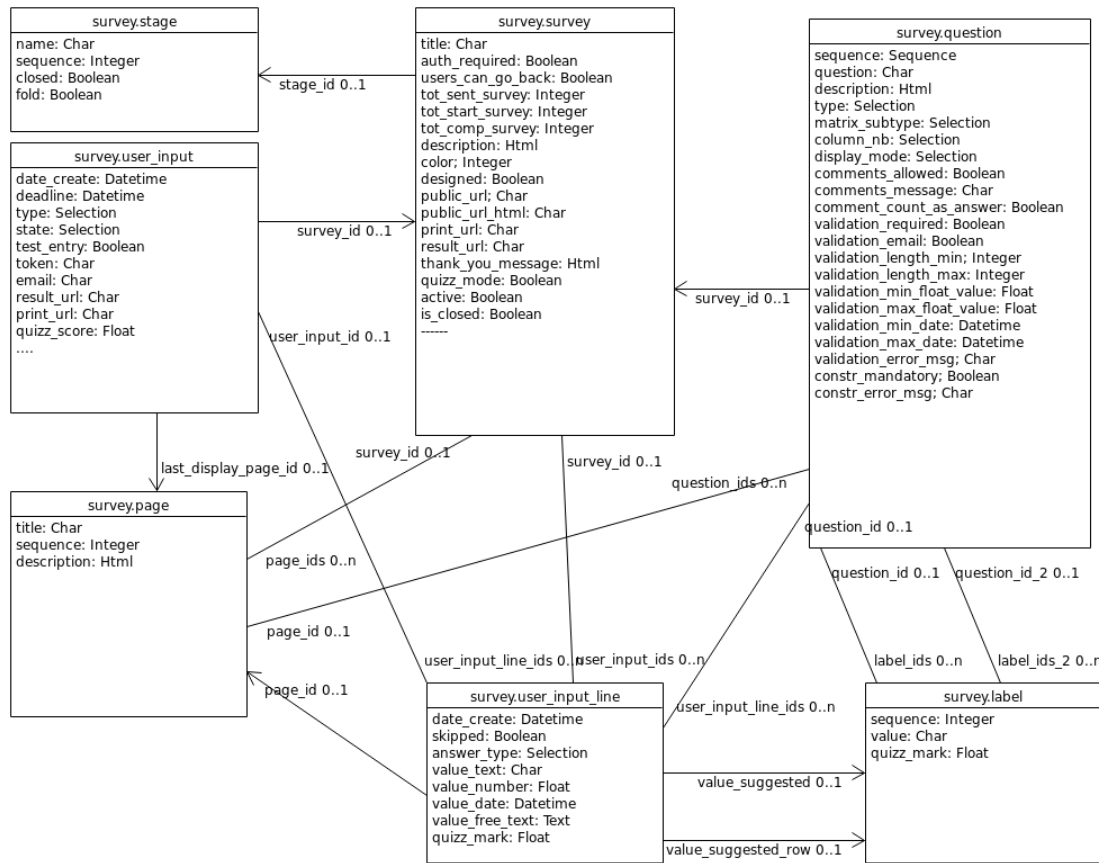


Figure 4.6: A class diagram of the "Survey" module of Odoo

why the Doodle equivalents were extracted from the comparison table (Table 3.1), which have the functionality to create choose date and simple text polls. Those are - Framadate, Duddle and OpenSondag. The author decided to shrink the search scope only to the official websites, but no API was found there. This led to another decision, namely to implement the poll functionality in Odoo and for that to inherit and extend the classes used in the website_event_questions module. The idea seemed reasonable, because the question structure represents the poll structure design described in the Section 4.1. Unfortunately, shortly after the beginning of the implementation process, this turned out to be a bad decision. To separate the website question functionality and its use for creating polls, also the representation of question in the normal events view and in team events view, turns out to be too complicated and not a necessary task, since only the question structure was needed and none of the functionality provided from the website_event_questions module. What is meant by that is that a considerable amount of functions and views had to be inherited and altered in order to distinguish between places where the base question functionality/structure are required and the places where the new poll functionality/structure are required. To avoid the problematic separation of the logic, a decision was made to extract the poll functionality in a new module and use the question structure as a base line. This early detection of the issue and the immediate action for fixing it was possible, because of the used agile approach for software development (Kettunen and Laanti).

The implementation was separated in two iterations. The first iteration was focused on implementing the use cases and automation described in [Section 4.1](#). The second iteration was used for bug fixing and functionality improvements, the idea of which occurred in the development process. At the end two modules were implemented `team_events`, that extends the Odoo event module and `simple_poll`, which implements new simple poll functionality using the know-how and different components of the Odoo survey and website_event_questions modules. Both modules are created in line with the Odoo official developers documentation ([Odoo S.A. \[c\]](#)) and their structure can be seen in [Figure 4.7](#).

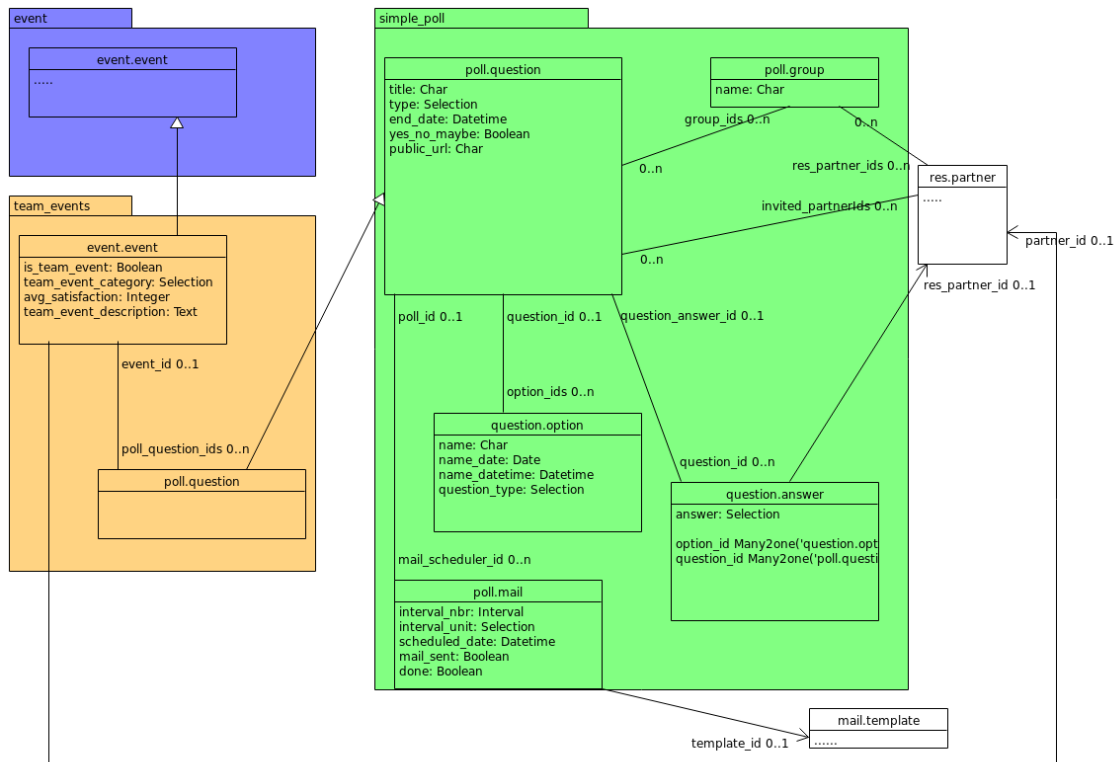


Figure 4.7: Class diagrams of the "Team Events" and "Simple Poll" modules

The implementation has started with the poll functionality module. As mentioned before the initial idea was to extend the `website_event_questions` module, but after this did not work out, a new module - `simple_poll` was created. Here the resulting artifact structure is explained shortly. It is done by exploring the module folders. First is the "models" folder. This folder contains all models definitions. In this case it contains two files - `poll.py` and `poll_mail.py`, which declare the classes - `poll.question`, `question.option` and `question.answer`, `poll.mail` and `poll.group`.

`poll.question`

This class represents the poll container which stores the simple poll information - `title`, `type`, `yes_no_maybe`, `public_url`, `end_date` and also connections to the other classes.

- `title` - this is main question of the poll, for example "Do you want to go out for a dinner?".

- `type` - this field stores information for the poll type. One can choose between three different poll types - "Choose Date Question", "Choose Date Time Question" and "Simple Text Question".
- `yes_no_maybe` - normally the participants can mark a question option or not (it is like choosing between yes or no), but for all three type of questions mentioned above one can check the "yes_no_maybe" option, which enables the participants to choose between yes, no and maybe for each option.
- `public_url` - in order to enable sharing the poll with the participants, a public url is needed. This field is used to store that information.
- `end_date` - this field shows the end date till which the participants can answer to the poll. This is important for the reminder functionality which will be explained afterwards.
- `option_ids` - connects the question with the `question.option` class. As expected one question can have several options.
- `invited_partner_ids` - stores the information for the poll participants, which are objects from the `res.partner`⁴ class. One poll can have many participants.
- `group_ids` - this field is used to enable adding more than one participant to a poll by using a group. It represents the connection to the `poll.group` class. And as for the field before, one poll can have connection to many groups.
- `mail_scheduler_ids` - stores the connection between the poll and the reminders attached to it (`poll.mail` class).
- `question_answer_ids` - the last field stores the connection between the question and the participants answers (`question.answer` class).

`question.option`

This class is used to store the options available for each question. Since one can choose between different question types, different fields are needed to store the options for the different question types:

- `name` - field from type "Char", used to store options for "Simple Text Question" question type.
- `name_date` - field from type "Date", used to store options for "Choose Date Question" question type.
- `name_datetime` - field from type "Datetime", used to store options for "Choose Date Time Question" question type.

This class contains also the "question_id" field, which stores the connection to the "poll.question" and "question_type" field, which is a related field to the "poll.question" "type" field. This means that the "question.option" "question_type" field will have the same value as the "type" field of the related "poll.question" object.

⁴The `res.partner` class is a central object relational mapping class in Odoo. This class is used as base for a lot of Odoo business objects like Users, Customers and Suppliers.

question.answer

This class is used to store the answers of the participants in the poll. Here the following information is stored:

- option_id - this field shows for which option is this answer. Stores the relation to the "question.option" object.
- question_id - this field shows for which question is this answer. Stores the relation to the "poll.question" object.
- res_partner_id - this field shows whose answer is this. Stores the relation to the "res.partner" object.
- answer - this is a selection field and stores the possible answers, which are "yes", "no" and "maybe".

poll.group

This class is used to unite participants under one group name. It contains only two fields:

- name - for the name of the group
- res_partner_ids - this field stores the participants in the group or technically said - the connection to the "res.partner" objects.

poll.mail

This class stores the information for the poll reminders.

- poll_id - this shows to which poll this reminder belongs to. Stores the relation to the poll.question class.
- interval_nbr - this field stores the information for the interval after which the reminder will be send. It is used in combination with the "interval_unit" field and the "poll.question" "end_date" field.
- interval_unit - this is a selection field with the following selection options - "Hour(s)", "Day(s)", "Week(s)" and "Month(s)".
- template_id - this field stores a connection to a template, which represents the reminder email content (mail.template class).
- scheduled_date - this is a function field and stores the scheduled date for the reminder. It is calculated using the "interval_nbr", "interval_unit" and "end_date" fields. For example if one puts value equal to two for the "interval_nbr", "Day(s)" for "interval_unit" and 12th of October 2017, 15h for "end_date", the reminder will be scheduled for 10th of October 2017, or two days before the poll end date.
- mail_sent and done fields stored information if the reminder was already send.

Next is the "controllers" folder. This folder contains the poll_question.py file, which stores the PollQuestion class. This class contains two functions - "render_questions_page" and "submit", which respectively enables the rendering of the right content for each "public_url" and the storing of the answers submitted by the participants.

In the "views" folder xml⁵ files with [user interface \(UI\)](#) definitions are stored. The backend views and menus are defined in the poll_view.xml file and the webpage that the participants will see in the poll_webpage.xml file.

The module structure contains also a "data" folder, used for demo and data files. In this particular module, however, no demo data is added, but to enable the poll reminder functionality a scheduled action is defined, which will check each hour for reminders that are not sent and send them. This is defined in the mail_data.xml file in the "data" folder. Under the same folder one can also find the mail_template_data.xml file, where the template for the default reminder email is defined.

This was the short description of the simple_poll module, the chapter continues with the team event part implementation. As discussed, the already existing "event" module is extended by the new tool. With Odoo one can do so without polluting the existing code. Even though an existing functionality is extended, that is done in a separate module - team_events. Here the models folder contains the event.py file where three classes are defined - event.event, poll.question and event.mail.

event.event

This class inherits the existing event.event class and adds the following fields:

- is_team_event - this field is important for the logic that separates team events from the Odoo public/marketing events. It is used mostly to adjust the [UI](#) of the different event types and to filter the events in the different menus.
- team_event_category - this is a selection field and one can choose between "Sport", "Party", "Social Gathering", "Game". This field was added even though the event module already have category field, because for the two type of events different categories are needed and it is better to keep them separate.
- team_event_description - here the team event description is stored. The event module has a description field, but it is an html field, used to create website content, so like for the previous field, this field was added in order not to mix with the existing functionality.
- avg_satisfaction - this field stores the information for the average rating for a team event, computed based on the review results.
- partner_id - this field stores connection to a "res.partner" and it is used just to enable the proper functioning of the rating functionality.
- poll_question_ids- this field stores the connection to the poll.question class. This enables the attachment of different polls to team events.

poll.question

This class extends the poll.question class from the simple_poll module. Just one new field was added - event_id, which enables the connection to the team event. One poll can have only one event attached to it.

⁵XML - eXtensible Markup Language, used to store and transport data [AS](#).

event.mail

This module extends the existing event.mail class, because an adjustment of the function for sending the rating reminder was needed.

More adjustments were needed for the [UI](#) part here, because different views and menus for team events and Odoo events were required. The implementation of those can be found in the team_event.xml file in the "views" folder.

The last components of this module are the templates for the different team event reminders - "Team Event:Details", "Team Event:Reminder" and "Event: Rating Request" - which are defined in the event_template_data.xml file in the "data" folder. With this ends the implementation description. So far, the technical part of the new tool has been emphasized, but its features and practical use follows in the next chapter.

5. Demonstrations

In this chapter is shown an experimental use of the developed Odoo module in testing environment. This includes testing the three scenarios defined in [Chapter 4](#) and all identified use cases. Those tests are executed by the author.

5.1 Test scenario one.

First is the scenario, where the organizer has a particular event and date. Here first the event information is documented, for which a new event has to be created. To do so, the organizer should go to the Events/Team Events menu and press the "Create" button ([Figure 5.1](#)).

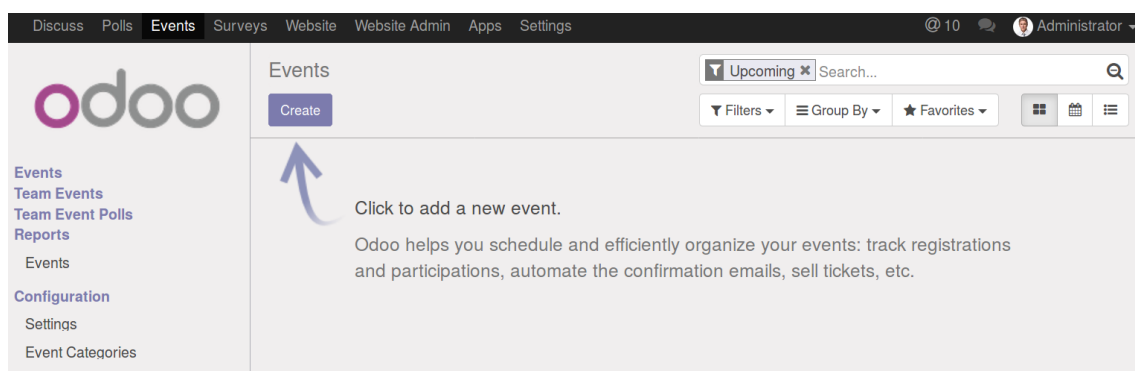


Figure 5.1: An empty "Team Event" list view with "Create" button

This will open a form view, where the information about the team event can be filled. For this scenario, the "Event Name", "Location", "Team Event Description", "Team Event Type", "Start Date" and "End Date" fields are filled as shown in [Figure 5.2](#).

Team Events / Dinner in "Happy Chicken" (2017-10-09)

Buttons: Edit, Create, Action ▾

Progress: 2 / 12 < >

Buttons: Finish Event, Cancel Event, Send Event Details, Send Rating Request, Unconfirmed, Confirmed, Done

Dinner in "Happy Chicken"

Active | 4 Attendees | 8.33 Avg Rating

Location	"Happy Chicken" Happy Chicken street 5 39104 Magdeburg Germany	Responsible	Administrator
Team Event Description	Let us have dinner in "Happy Chicken" and spend some nice time together.	Team Event Type	Social Gathering
Organizer	YourCompany	Start Date	10/09/2017 19:00:40
		End Date	10/09/2017 23:30:46
		Timezone	Europe/Brussels

Registrations | Email Schedule | Polls | Ratings

Reply-To Email

Email to Send	Interval	Unit	When to Run	Sent
Team Event:Reminder	2	Day(s)	Before the event	<input checked="" type="checkbox"/>
Event: Rating Request	2	Day(s)	After the event	<input checked="" type="checkbox"/>

Figure 5.2: The "Team Event" form view of the event for Scenario 1

The next step from the scenario is to create a simple yes/no/maybe inquiry. With the new tool this could be done in two ways:

- Create a new poll from the "Polls" menu
To do so, the organizer should go to menu "Polls" and press the "Create" button (Figure 5.3). In this case it is possible that this poll should be attached to the newly created team event, which could be done by selecting it from the "Event" dropdown list (Figure 5.4).

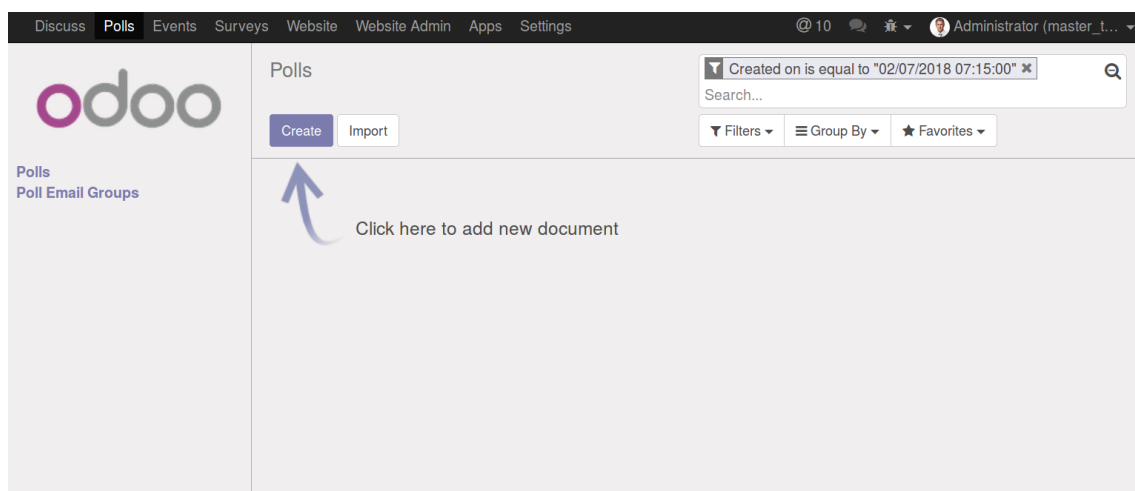


Figure 5.3: An empty "Poll" list view with "Create" and "Import" buttons

Figure 5.4: A "Poll" form view with emphasized "Event" field

- Create new Poll directly from the team event
To do so, the organizer should press the "Edit" button on the Event, go to "Polls" tab and press the "Add an item" button (Figure 5.5). If this option is chosen, the event will be automatically attached to the poll and vice versa.

Figure 5.5: A "Team Event" form view with open "Polls" tab

In both cases, the "create poll view form" opens, which can be used to fill the inquiry information. For this scenario, the poll "Title" and the inquiry participation "End Date" will be filled. For the "Type of Question" field the "Choose Date Time Question" option should be chosen and at the end one option with the date and time for the event have to be added in the "Answer Options" tab (Figure 5.6).

Figure 5.6: A "Poll" pop up form, that allows filling "Poll" information from a "Team Event"

If the participants should be able to answer choosing between "yes", "no" and "maybe" and not only by checking a checkbox (which is handled like choosing between "yes" and "no"), the "Yes/No/Maybe Poll" checkbox under the "Configuration" tab of the "create poll view form" should be checked (Figure 5.7). The last thing that have to

Figure 5.7: A "Poll" form view with open "Configuration" tab

be filled in this form is the "Invite Participants" tab. Here one can use predefined groups or add participants one by one. The predefined groups will be explained later, so for now couple of participants will be added manually (Figure 5.8). Since in that test case the poll was created directly from the event, the new poll won't

The screenshot shows a web form titled "Do you want to have a dinner in". The form has several fields: "Type of Question" (set to "Choose Date Time Question"), "End Date" (set to "09/30/2017 19:00:00"), "Public link" (set to "http://localhost:8069/questions/34"), and "Event" (set to "Dinner in 'Happy Chicken' (2017-1)"). There is a "Send by Email" button in the top right corner. Below the form fields are four tabs: "Answer Options", "Invite Participants" (which is active), "Mail Schedulers", and "Configuration". Under the "Invite Participants" tab, there is a table with two columns: "Name" and "Email". The table contains three entries: "Agrolait" with email "agrolait@yourcompany.example.com", "Edward Foster" with email "efoster@seagate.com", and "Laith Jubair" with email "laith.jubair@axelor.example.com". Below the table is an "Add an Item" button, which is highlighted by a red arrow.

Figure 5.8: A "Poll" form view with open "Invite Participants" tab

be saved till the event is not saved. So the Poll should be saved from the pop up window and then also the event "Save" button should be pressed. The save function will automatically fill the Poll "Event" field with the event the poll was created from and will also create a participation link.

When the phase of poll creation is finished, it can be communicated to the participants. To do so, the organizer has to go to the newly created poll from the "Poll" menu or directly from the event. On the upper right corner of the "poll form", the "Send by Email" button is placed (Figure 5.9). When this button is pressed an email

The screenshot shows the same web form as in Figure 5.8, but with the "Send by Email" button in the top right corner highlighted by a red arrow. The form fields are the same. The "Invite Participants" tab is still active, but the table below it now shows a different set of data: "Text Answer" (set to "10/09/2017 19:15:00"), "Date Time Answer" (set to "10/09/2017 19:15:00"), and "Date Answer" (set to "10/09/2017 19:15:00"). The "Add an Item" button is still present at the bottom of the table.

Figure 5.9: A "Poll" form view with emphasized "Send By Email" button

pop up shows, which is prefilled with invitation email template and the emails of

the participants defined in the "Invite Participants" tab (Figure 5.10). This email can be send by pressing the "Send" button.

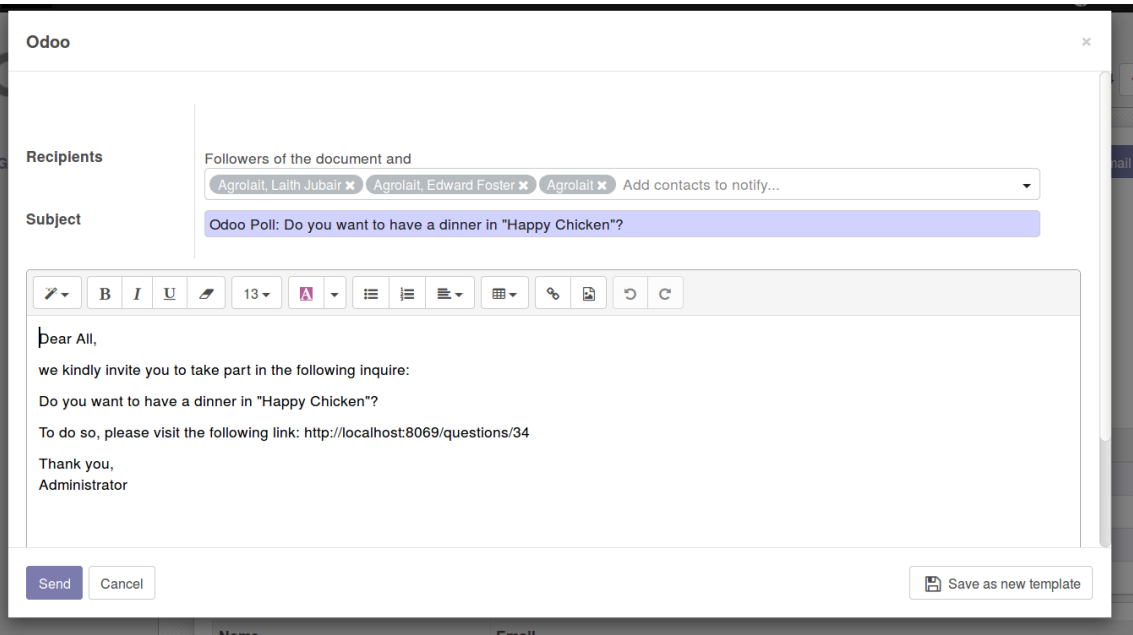


Figure 5.10: A "Send Email" pop up form, opened by clicking on the "Send By Email" button

The Poll view and functionality will be explored further later, so for the time being the section continues with the scenario and its next step - send reminder for participation in the inquiry. The module adds a default reminder to the Poll. This means that each time one creates a new Poll, a reminder for the Poll is created automatically (Figure 5.11).

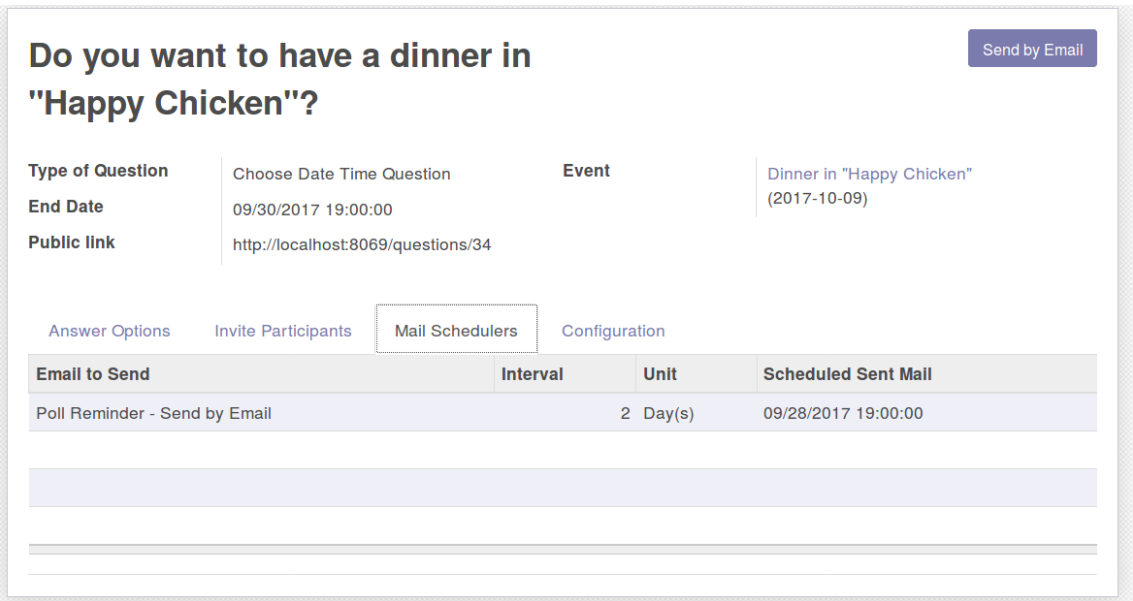


Figure 5.11: A "Poll" form view with open "Mail Schedulers" tab

This reminder will automatically send an email to the participants two days before the end date of the poll with the predefined email content (Figure 5.12).

Dear All,

we kindly invite you to take part in the following inquire:

Do you want to have a dinner in "Happy Chicken"?

To do so, please visit the following link: <http://localhost:8069/questions/34>

Thank you,
Administrator

Figure 5.12: The content of the "Poll" default reminder email

After some feedback is received from the participants of the Poll, the summary from it can be easily seen by clicking on the link stored in the "Url" field. For the current test settings, in Figure 5.13 can be seen that all participants are interested in the event.

Do you want to have a dinner in "Happy Chicken"?

10/09/2017 19:00:00	
Agrolait	Yes
Edward Foster	Yes
Laith Jubair	Yes
(3)Yes	

Figure 5.13: A web view of a "Poll" results summary

In order to add those to the event "attendees" the organizer can open the poll "Answer Options" tab and click the "Fill Event Participants" button next to the chosen option (Figure 5.14). This will add all participants in the poll, who have answered with "yes" or "maybe" to that option, to the event attendees. This is an additional automation step, which was not designed, but recognized during the development process.

The screenshot shows a web form for creating a poll. At the top, there's a title field with the text "Do you want to have a dinner in" and a "Send by Email" button. Below the title, there are fields for "Type of Question" (set to "Choose Date Time Question"), "End Date" (set to "09/30/2017 19:00:00"), and "Public link" (showing a URL). To the right, there's an "Event" field with the text "Dinner in 'Happy Chicken' (2017)". Below these fields, there are tabs for "Answer Options", "Invite Participants", "Mail Schedulers", and "Configuration". Under the "Answer Options" tab, there's a table with columns "Text Answer", "Date Time Answer", and "Date Answer". The first row has "10/09/2017 19:00:00" in the "Date Time Answer" column and "Fill Event Participants" in the "Date Answer" column. A red arrow points to the "Fill Event Participants" button. Below the table, there's an "Add an item" button.

Figure 5.14: A "Poll" form view with emphasized "Fill Event Participants" button

When the event definition is ready the organizer can click on the "Send Event Details" button (Figure 5.15) of the event and send an email, using a predefined email template, with the information for the event to all attendees.

The screenshot shows a web form for creating a team event. At the top, there are buttons for "Finish Event", "Cancel Event", "Send Event Details", and "Send Rating Request". To the right, there are status buttons: "Unconfirmed", "Confirmed", and "Done". Below these buttons, there's a section for "Dinner in 'Happy Chicken'". This section includes a status bar with "Active", "4 Attendees", and "8.33 Avg Rating". Below the status bar, there's a table with fields for "Location", "Team Event Description", "Organizer", "Responsible", "Team Event Type", "Start Date", "End Date", and "Timezone". The "Location" field contains "Happy Chicken", "Happy Chicken street 5", "39104 Magdeburg", and "Germany". The "Team Event Description" field contains "Let us have dinner in 'Happy Chicken' and spend some nice time together." The "Organizer" field contains "YourCompany". The "Responsible" field contains "Administrator". The "Team Event Type" field contains "Social Gathering". The "Start Date" field contains "10/09/2017 19:00:40". The "End Date" field contains "10/09/2017 23:30:46". The "Timezone" field contains "Europe/Brussels". Below the table, there are tabs for "Registrations", "Email Schedule", "Polls", and "Ratings". At the bottom, there are fields for "Minimum Attendees" (set to "0") and "Maximum Attendees" (set to "Unlimited"). A red arrow points to the "Send Event Details" button.

Figure 5.15: A "Team Event" form view with emphasized "Send Event Details" button

Then each of them will receive an email with the content shown in Figure 5.16

Hi,

Here are the details for **Dinner in "Happy Chicken"** event.

Event Description: Let us have dinner in "Happy Chicken" and spend some nice time together.

From: 2017-10-09 17:00:40 **To:** 2017-10-09 21:30:46

Location:

Happy Chicken street,
5,
Magdeburg, 39104,
Germany

Thank you,
Administrator

Figure 5.16: The content of the "Team Event" details email

When the event is created, two email reminders are created automatically - "Team Event:Reminder", which will remind the participants about the event two days before it's start date (Figure 5.17)

Hi Edward Foster,


Please keep in mind that the event **Dinner in 'Happy Chicken'** takes place **This month** at

Happy Street ,
5,
Varna, 9000,
Bulgaria

Thank you,
Administrator

Figure 5.17: The content of the "Team Event" reminder email

and "Event: Rating Request", which will send an email, with content asking the participants to rate the event, two days after it (Figure 5.18).

 Event Satisfaction




Hello,

Please take a moment to rate our team event "**Dinner in 'Happy Chicken'**".

We appreciate your feedback. It helps us to improve continuously.

Tell us how you feel about our team event:

(click on one of these smileys)

—
Administrator

Email automatically sent.

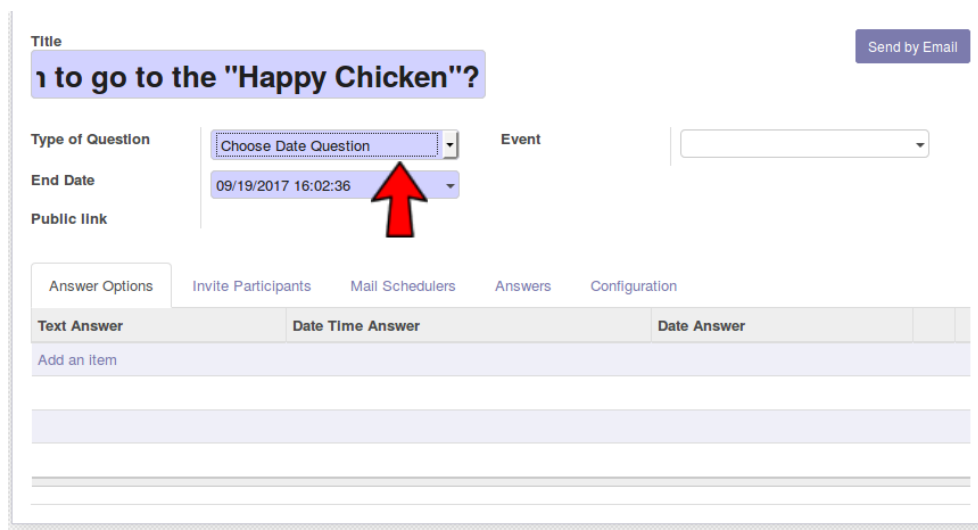
Figure 5.18: The content of the "Team Event" rating reminder email

The email contains three emoticons and each emoticon is connected with a number - ten for the green one, five for the yellow one and one for the red one. Based on which emoticon is clicked, a number is sent, which is saved as the participant rating. Even though one can argue that this conversion is not legitimate, it's an Odoo standard

and it was used as it is. Beside the aforementioned remark, this step enables the feedback collection, which is the last step of the first scenario.

5.2 Test scenario two.

In the previous section it was shown how the first scenario could be performed with the new module. The same could be done also for the second one. Here there is a team event, but the date for it is not fixed, so one that fits best could be chosen. The scenario starts with event information documentation. To see how exactly this could be done, please refer to [Section 5.1](#). What one should pay attention to is that "Start Date" and "End Date" are required fields and since for that scenario this information is not known in the beginning, dummy data have to be used for those. Next the "Choose date poll" will be created. This could be done from the event, that was just created, or from the "Poll" menu. The difference here is that for this scenario, "Choose Date Question" option have to be chosen for the Poll "Type of Question" field ([Figure 5.19](#)).



The screenshot shows a web form for creating a poll. The title is "1 to go to the 'Happy Chicken'?". The "Type of Question" dropdown is set to "Choose Date Question", which is highlighted by a red arrow. The "End Date" is set to "09/19/2017 16:02:36". There is a "Send by Email" button in the top right. Below the form are tabs for "Answer Options", "Invite Participants", "Mail Schedulers", "Answers", and "Configuration". The "Answer Options" tab is active, showing a table with columns for "Text Answer", "Date Time Answer", and "Date Answer". There is an "Add an item" button below the table.

Figure 5.19: A form view of a "Poll" of "Choose Date Question" type

Afterwards the options of the poll can be filled by choosing dates from the calendar, which pops up when the "Date Answer" field is clicked in the "Answer Options" tab ([Figure 5.20](#)).

Figure 5.20: A form view of a "Poll", emphasizing on answer of "Choose Date Question" type

For this test, three options are added - 21.09.2017, 22.09.2017 and 23.09.2017. Then some participants are added, the poll is saved and sent.

The poll looks like it is shown in [Figure 5.21](#).

Figure 5.21: A web view of a "Poll" of the "Choose Date Question" type

One can see that here the user can only click a checkbox, not like in the previous case - choose between "yes", "no" and "maybe". That's because the yes/no/maybe configuration option was not checked in the Poll form view.

Like in the previous case a reminder will be send 2 days before the end date of the poll and when the information collection is ready, its summary could be seen by opening the poll url ([Figure 5.22](#)). Here one sees that both participants are available on 21.09.2017, so this is the best choice for the event date.

When do you want to go to the "Happy Chicken"?

	09/21/2017	09/22/2017	09/23/2017
Michel Fletcher	Yes	No	Yes
Edward Foster	Yes	Yes	No
	(2)Yes	(1)Yes	(1)Yes

Figure 5.22: A web view of a "Poll" participants' choices summary

To add the two people answered with yes to the Poll option, the organizer should simply click on the "Fill Event Participants" next to the option "21.09.2017" similar to the action shown in Figure 5.14. The next two steps are the same as in the previous scenario with the difference that the dummy data on the event have to be changed once more when the information is acquired.

5.3 Test scenario three.

Here details will be discussed only on the steps that were not performed in the previous two sections, so that the redundancy is avoided.

In this scenario no particular date or event is in question and first some information from the employees should be collected. The first step is to create a "simple text poll" with one option and ask if the employees are interested in having a team event (Figure 5.23).

Are you interested in having a team event this month? [Send by Email](#)

Type of Question Simple Text Question **Event**

End Date 09/23/2017 08:47:52

Public Link <http://localhost:8069/questions/18>

Answer Options Invite Participants Mail Schedulers Answers Configuration

Text Answer	Date Time Answer	Date Answer
Team event this month		

[Fill Event Participants](#)

Figure 5.23: The form view of the "Are you interested in having a team event this month?" poll

After that is done and the employees are interested in a team event, a second poll has to be created, again a simple text poll, proposing some events. In the test scenario,

the participants will be able to choose between bowling, sushi, escape room and lasertag (Figure 5.24).

What do you prefer to do? Send by Email

Type of Question: Simple Text Question Event:
 End Date: 09/23/2017 09:07:57
 Public Link: http://localhost:8069/questions/19

Answer Options Invite Participants Mail Schedulers Answers Configuration

Text Answer	Date Time Answer	Date Answer
Bowling		Fill Event Participants
Dinner in Sushi Restaurant		Fill Event Participants
Lasertag		Fill Event Participants
Escape Room		Fill Event Participants

Figure 5.24: A form view of a "Poll" of "Simple Text Question" type

In this test most of the participants liked the idea of bowling and a suitable date and time for the event have to be found. To do that, a "choose date and time" event poll has to be create. The difference with the polls from the previous sections is that here the "Choose Date Time Question" option from the poll "Type of Question" dropdown list has to be chosen. This enables the functionality to add not only date, but also time to the answer options(Figure 5.25).

When do we want to go bowling Send by Email

Title:
 Type of Question: Choose Date Time Question Event:
 End Date: 09/22/2017 09:24:21
 Public Link:

Answer Options Invite Participants Mail Schedulers Answers Configuration

Text Answer	Date Time Answer	Date Answer
	09/18/2017 09:26:03	Fill Event Participants

Add an Item

September 2017

#	Su	Mo	Tu	We	Th	Fr	Sa
35	27	28	29	30	31	1	2
36	3	4	5	6	7	8	9
37	10	11	12	13	14	15	16
38	17	18	19	20	21	22	23
39	24	25	26	27	28	29	30
40	1	2	3	4	5	6	7

Figure 5.25: A form view of a "Poll" of type "Choose Date Time Question"

When the information needed is retrieved, the bowling event can be created. To attach already existing polls to the "Bowling" event, the organizer should open the poll view and fill the "Event" field. The rest was already described in the previous sections.

With this the third scenario test is complete and also the whole testing by scenario. As a next step testing by use cases is performed.

5.4 Use cases testing

Here the defined in the [Section 4.1](#) use cases are explored one by one and tested if the code is suitable for all of them.

- Define all people that will receive email for the new event
In the previous sections was shown how to fill participants of the event from attached poll, but there is a possibility to define those directly on the event. To do so, one should click on the "Attendees" button on the event([Figure 5.26](#)), which will open the attendees view. In this view one can create new attendees or take a look at the ones that already exist.

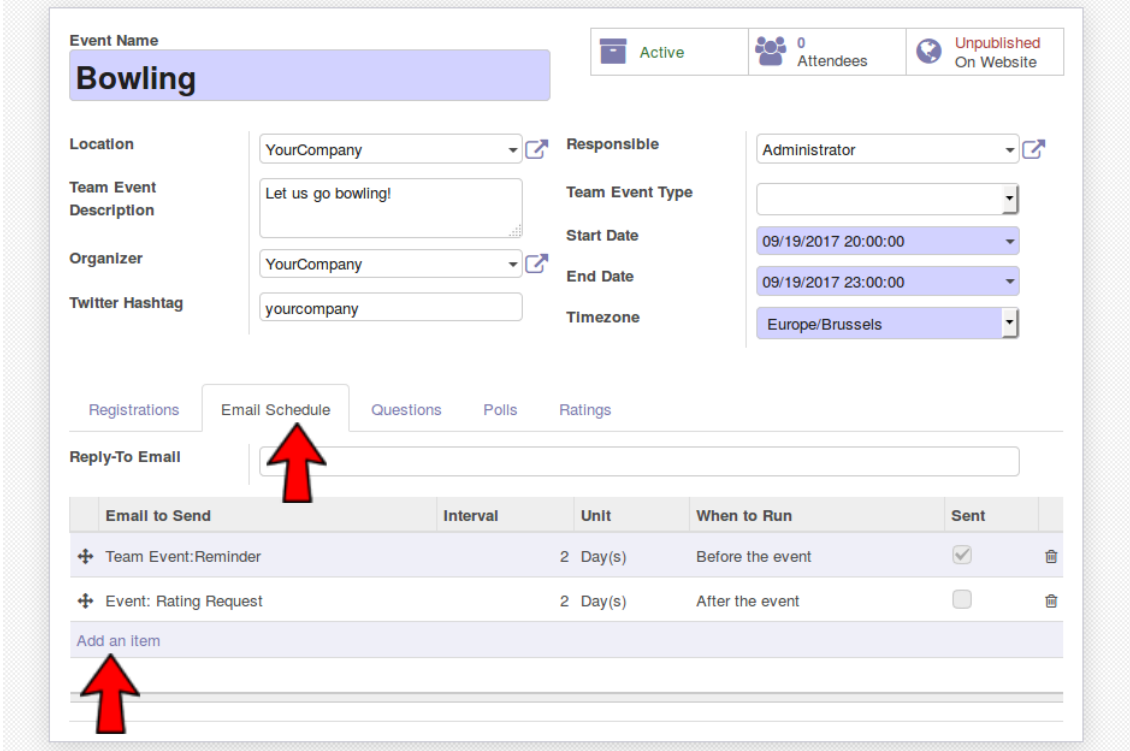
Figure 5.26: A "Team Event" form view with emphasized "Attendees" button

- Enable filtering the default participants by adding a group
Under Poll parent view there is a submenu "Poll Email Groups", when one click on it a "poll email group view" opens and one can define the group name and add all participants for the group ([Figure 5.27](#)).

Figure 5.27: A "Poll Groups" form view

That group can be then used to define participants in a poll from the poll "Invite Participants" tab.

- Create simple event. That include name, description, date and location. As shown in the testing of the three scenarios, one can define a simple event and fill "Event Name", "Location", "Team Event Description", "Team Event Type", "Start Date" and "End Date" ([Figure 5.2](#)).
- Add poll to the event
To add a poll to event, one should go to the Poll view, click on "Edit" button, then click on the dropdown of the "Event" field and choose the event on which one wants to attach his/her poll.
- Create "free text", "choose date", "choose date and time" and "yes/no/-may" polls
Creating the above mentioned polls were covered in the scenarios testing, so one should reference to those parts of the chapter for more details ([Section 5.1](#), [Section 5.2](#), [Section 5.3](#)).
- Add a reminder for the event
Till now only the default email reminders were explored, but one can also add custom ones. To do so one should go to the event, click on the event "Edit" button, then go to the event "Email Schedule" tab and click on the "Add an Item" button ([Figure 5.28](#)). By doing so an empty reminder appears and one can customize it. From the "Email to Send" field, one can choose the template that will be used for the email reminder. From the dropdown list and from the "Interval", "Unit" and "When to Run", one defines when the reminder will be send.
- Add a feedback request for the event
As shown also in the testing scenario sections one can use the event "Send Rating Request" button or the default "Event: Rating Request" reminder to send rating request emails to the participants of the event.
- Enable rating on the event
One can take a look if someone rate the event and how from the event "Ratings" tab (If the value is zero, the person did not rate the event). There is also an average event rating that can be seen at the event form right corner ([Figure 5.29](#)).



Event Name
Bowling

Location: YourCompany

Team Event Description: Let us go bowling!

Organizer: YourCompany

Twitter Hashtag: yourcompany

Responsible: Administrator

Team Event Type: [Empty]

Start Date: 09/19/2017 20:00:00

End Date: 09/19/2017 23:00:00

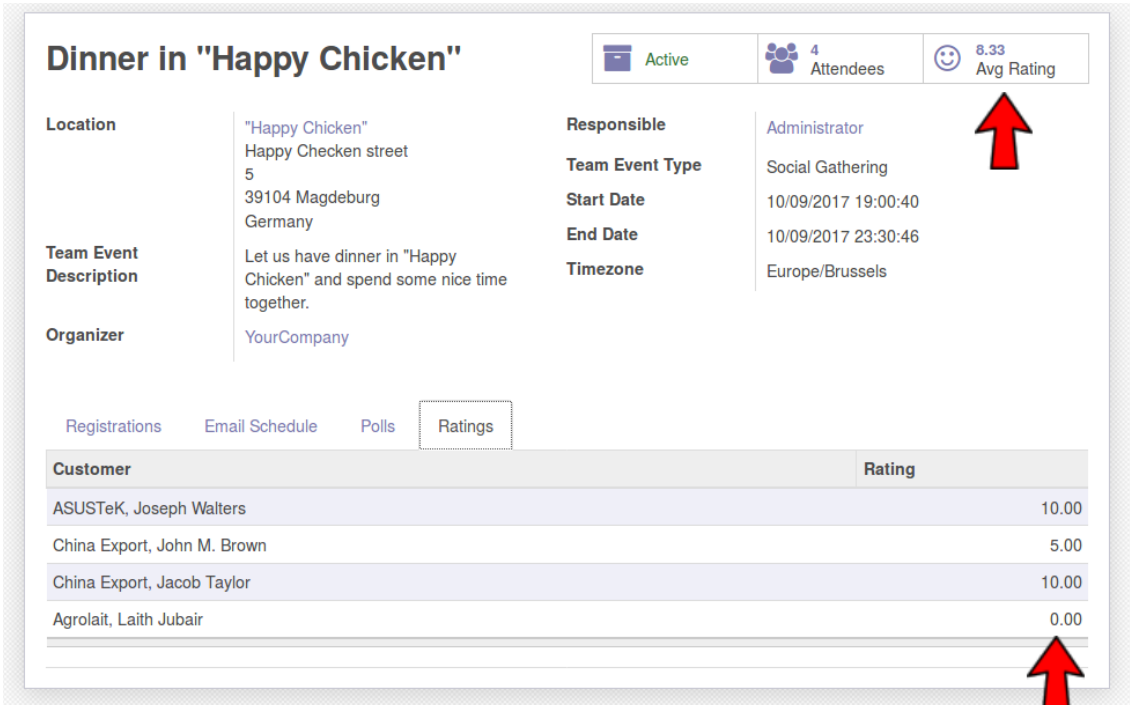
Timezone: Europe/Brussels

Registrations | **Email Schedule** | **Questions** | **Polls** | **Ratings**

Reply-To Email: [Empty]

Email to Send	Interval	Unit	When to Run	Sent
+ Team Event:Reminder	2	Day(s)	Before the event	<input checked="" type="checkbox"/>
+ Event: Rating Request	2	Day(s)	After the event	<input type="checkbox"/>
Add an item				

Figure 5.28: A "Team Event" form view with open "Email Schedule" tab and emphasized "Add an item" button



Dinner in "Happy Chicken"

Location: "Happy Chicken"
Happy Chicken street
5
39104 Magdeburg
Germany

Team Event Description: Let us have dinner in "Happy Chicken" and spend some nice time together.

Organizer: YourCompany

Responsible: Administrator

Team Event Type: Social Gathering

Start Date: 10/09/2017 19:00:40

End Date: 10/09/2017 23:30:46

Timezone: Europe/Brussels

Active | **4 Attendees** | **8.33 Avg Rating**

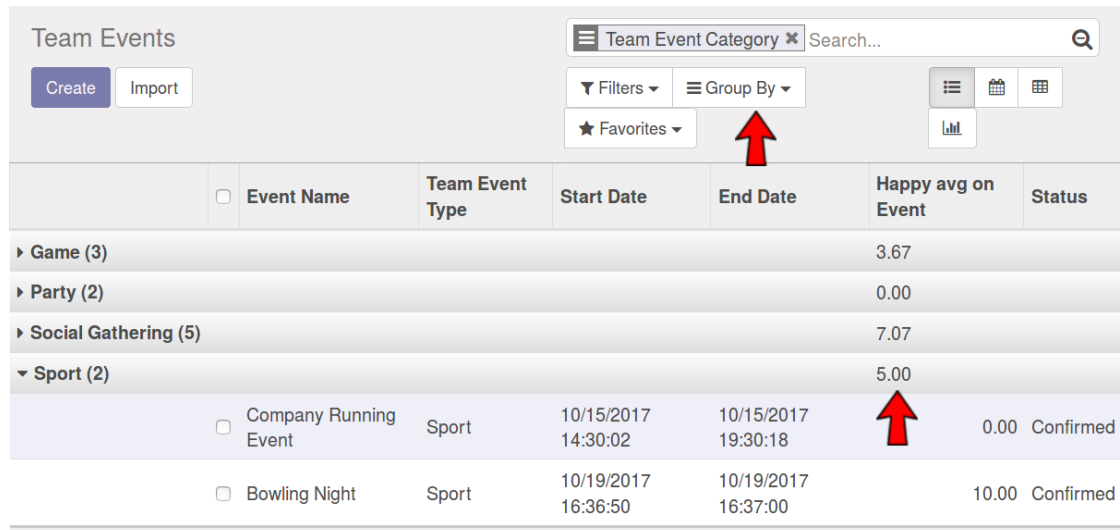
Registrations | **Email Schedule** | **Polls** | **Ratings**

Customer	Rating
ASUSTeK, Joseph Walters	10.00
China Export, John M. Brown	5.00
China Export, Jacob Taylor	10.00
Agrolait, Laith Jubair	0.00

Figure 5.29: A "Team Event" form view with open "Ratings" tab

- Show rating summary by category
To see rating summary by category, one should open the "Team Event"

tree view, go to the "Group By" dropdown list and select "Team Event Category" from it. Then all events are grouped by this field and the average rating can be seen at the top row (Figure 5.30).



The screenshot shows the 'Team Events' interface. At the top, there is a search bar with 'Team Event Category' and a search icon. Below the search bar are buttons for 'Create' and 'Import', and a 'Filters' dropdown. To the right of the filters is a 'Group By' dropdown, which is highlighted with a red arrow. Below the 'Group By' dropdown is a 'Favorites' dropdown. The main table displays a tree view of events grouped by category. The categories are 'Game (3)', 'Party (2)', 'Social Gathering (5)', and 'Sport (2)'. The 'Sport (2)' category is expanded, showing two events: 'Company Running Event' and 'Bowling Night'. The 'Happy avg on Event' column for the 'Sport' category is highlighted with a red arrow.

	<input type="checkbox"/>	Event Name	Team Event Type	Start Date	End Date	Happy avg on Event	Status
▶ Game (3)						3.67	
▶ Party (2)						0.00	
▶ Social Gathering (5)						7.07	
▼ Sport (2)						5.00	
	<input type="checkbox"/>	Company Running Event	Sport	10/15/2017 14:30:02	10/15/2017 19:30:18	0.00	Confirmed
	<input type="checkbox"/>	Bowling Night	Sport	10/19/2017 16:36:50	10/19/2017 16:37:00	10.00	Confirmed

Figure 5.30: A "Team Event" tree view with events grouped by category

This last test from the use case testing concludes the tool demonstration. In this chapter was shown that the newly created modules cover all predefined scenarios and use cases by testing performed by the author. The internal test was successful, so as a next step the tool functionality will be further explored and a feedback from different users in test settings will be collected. This is described in the next chapter.

6. Evaluation and discussion

In this chapter two sections are presented - evaluation and discussion. The evaluation section represents how the evaluation was done and also the retrieved results. The discussion section is used to describe the implications made from the results summarized in the evaluation section.

6.1 Evaluation

In order to evaluate the artifact a qualitative approach was chosen. This approach was considered better than the quantitative one, because of the nature of the research and the research question for which one should consider the natural environment and multiple realities of the participants. The second decision was to conduct an evaluation interview, which is also considered an appropriate source for qualitative data ([Suter](#)). The process of preparation included three steps:

- creation of small educational presentation and demonstration to facilitate the participants understanding of the matter
- create an evaluation questionnaire to collect the participants feedback
- organize an evaluation event

The idea of the presentation was to make a small introduction and to familiarize the participants with the overall idea of the artifact and its functionality. It includes:

- Introduction part
Outlines the scope of the thesis with short explanation how the information was collected, how team events are understood in this context, why they are important and what difficulties are met by organizing those. The information for this presentation part was taken from [Chapter 1](#).
- Objectives part
Here the objectives of the thesis and the end goal were introduced ([Chapter 3](#)).

- Odoo
Also a small introduction to the system used for the implementation was made to explain basic concepts of its use.
- Event and Poll modules features
The last part of the presentation introduced the new artifact and its features.

For the demonstration of the artifact, a test environment was prepared and filled with a small amount of demo data. This was done by using the three scenarios described in [Chapter 3](#). Those three were performed and this resulted in three events and five polls. The feedback collection was manually simulated using the Odoo backend, so to have some demonstration data for that too. For the demonstration itself the second scenario was chosen where there is an event, but the date is not fixed. The idea was to perform that scenario in front of the participants step by step.

To structure the feedback collection, an "Odoo Team Event Organization Tool Evaluation Questionnaire" was created. It includes eight open questions ([Section A.2](#)). The format was considered appropriate, because the opened structure allows greater freedom to answer the questions and also opens space for discussion and collection of more detailed feedback, which is important for the rigour of the qualitative research ([Alshenqeeti](#)). Because of the limited time, a decision was made to conduct only a single session interview and also to conduct the interview in a form of a focus group interview, which could also facilitate the collective generation of ideas ([Alshenqeeti](#)). The next step was to organize the evaluation event. A group of five people, different than the one from the first interview, was invited to test the artifact functionality. As mentioned before the first idea was to perform the evaluation with all participants at once, but because of the schedule of the invited people, this was not possible. So the author decided to perform the interview in four rounds. Three rounds with just one participant and one with two participants. This means that two types of interviews were performed - one-on-one interviews and a focus group interview ([Alshenqeeti](#)). This brought some additional observations of the behaviour of the participants in the different evaluation settings - evaluation in a group or alone - which is discussed in the [Section 6.2](#) of this chapter.

The evaluation event proceeded as follows:

- Introduction to the matter using the prepared presentation
Each evaluation event started with the presentation, so to give the participants some background, explain the brought scope of the work and also what is expected from them and what is actually the goal of the evaluation they are taking part in.
- Demonstration
After the presentation, the author performed live the second scenario from [Chapter 3](#) step by step. So the participants could get some insights how the artifact could be used.
- Invite the participants to test the tool themselves
The next step was to leave the participants to test the tool themselves. They

were asked to think of an event they want to organize and do it by using the test system.

- Collect feedback

At the end each participant was interviewed using the feedback questionnaire (Section A.2) and the answers were documented and then summarized.

The summary of the evaluation interviews can be seen in Table 6.1. The matrix format was chosen, because it is known as a good way to collect, arrange and ease analysis of the data. Moreover it is thought that this format could ease the use of the data in subsequent researches (Miles et al.). What could be seen from the table is that all participants have organized a team event and agreed that the demonstrated tool have automation on a sufficient level. Three of five participants were not satisfied with the tools they use for organizing team events and also thought that the newly created tool provides all the functionality they need for that. Also three of five participants found the UI is intuitive and easy to work with and two of the participants thought some improvement is needed. Four of the participants were satisfied with the functionality of the newly created tool and one participants thought it is on a mediocre level. Also four of five agreed that the feedback is enough to draw some conclusions for the team preferences and one suggested that for, a full feedback a question if the participants want to repeat the event is needed. At the end some suggestions for improvement were proposed, but those will be discussed in Chapter 7. The discussion of the retrieved results can be seen in the following section.

Table 6.1: Summary of the answers from the "Odoo team event organization tool evaluation questionnaire" (Section A.2)

Question/Participant	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
1. Have you ever organize a team event?	Yes.	Yes.	Yes, a couple of.	Yes.	Yes.
2. Are you satisfied with the tools you have used till now?	Not really.	Yes.	So far no.	Yes.	If I consider the one that I just saw – no. If don't consider it – so-so
3. Are you satisfied with the functionality provided from this tool?	Yes.	If it is a scale from 1 to 10, I would go for something btw. 4 and 6. But I can be convinced if my requirements are satisfied, especially the UI. From functionality you have more than the tools I have used, but for the UI the others are more intuitive to use.	Yes, I think it is easy to handle, quick and seems to have the potential to be very helpful.	In general yes.	Yes, it is perfect! Have all the functionality I need in one place. I particularly like the default email reminders, the email templates, the idea for collecting feedback.
4. Do you think that we have all the functionality we need in one place?	Yes.	No, I think it is important to be able to create a list where each participant can fill what he/she will bring for the event. It is not important for all events, but it is quite common.	Yes, I didn't miss any functionality.	No. I think that one should be able to mark if participant have paid something. I also think that one should be able to keep track of who actually come to the event and who didn't.	Yes, everything I can think of is there.

5. Do you find the UI easy and intuitive to work with?	Yes.	I could not done it without your help. In my opinion some of the buttons don't have nice labels. The workflow is not clear, I was not sure in what sequence I should perform the actions (I didn't know which button to press first, second and so on in order to create the whole thing) The summary of the polls is not easy to read. Yes/No in text form is hard to perceive. It will be better if you use some colours and/or check /cross/question mark signs.	Yes.	I did not pay attention. I did not notice anything myself, but after a discussion I agreed with the remarks of another participant in the inquiry that there are some places where improvements could be done.	Yes.
6. Do you think that the automation is in a sufficient level?	Yes.	Yes.	Yes, it is sufficient.	Yes.	Yes.
7. Do you think that the information gathered is enough to make some conclusions about the employee preferences?	Yes, but may be the rating should be anonymous.	I think it is not full. I think that you should add another feedback category to ask if the people would like do it again.	Definitely.	If we talk about individuals preferences not really, but if we talk about the team in general then yes.	Yes.
8. Do you have some suggestions for improvement?	- improve the connection btw. colours and functionality. May be use more bright colors for the main functionality as save and so on. - may be the feedback should be anonymous.	Send the event also as a calendar file attachment so everyone can add it to its own calendar.	Option to cancel participation.	See question 4.	- connect the location with google maps will ease the use - add some place where pictures can be added

6.2 Discussion

Here the results from the evaluation described in the previous section are discussed. First some meta data is given for the group of participants who took part in the evaluation, then the results are discussed with regard if the evaluation was done in a group or alone and also with relation to the background of the participants. At the end an evaluation of the tool used for the implementation is done.

The participants group consisted of five people - two men and three women in age between twenty-five and thirty-three years. Two of the participants had strong applied Informatics background connected with work experience, one had more theoretical Informatics background from the University and short internship and two had no Informatics background. Three of the participants made the evaluation alone and two of them made it in a group.

As a start an interesting observation is that the answers were influenced based on the participant background and also on that if the evaluation event was conducted in a group or alone. That's why here the author explores the answers in two groups. The first one is from three of the participants, who had a background more related to project organization and back office work and performed the evaluation alone, and the second one consists of the other two participants, who have more strong applied Informatics background and made the evaluation together (those were Participant 2 and 4 from the [Table 6.1](#)). Another interesting observation is that the first group consists only of women and the second of men.

From the answers one can see that, conducting the interview in a group of two led to bigger discussion and biased answers which is consistent with the finding of [Alshenqeeti](#). The place where it stands out most that the answers were biased is question five - "Do you find the UI easy and intuitive to work with?", where Participant 4 admitted that he did not saw anything unusual or unintuitive in the UI, before he heard the answer of Participant 2. Also during the group discussion of the questions, potential improvements were discovered and also suggestions for improvements were proposed, which is in line with the idea that group interviews could be useful when it comes to creativity and group generation of ideas ([Alshenqeeti](#)). Those observations led the author to the thought that in the future she must consider what is more important for the evaluation - the unbiased results, or the constructive discussion - and choose the settings based on that decision.

The chapter continues with a results summary considering the two groups mentioned before. From the results table it is visible that all participants from both groups have organized team events. The first group of participants were not satisfied with the tools they used for organizing team events and were very satisfied by the functionality of the new artifact, it's UI, functionality and possibilities for feedback collection and analysis. The second group was satisfied with the tools they used till that moment in time (As a main tool used, both participants mentioned Doodle), and were relatively satisfied with the new artifact. They also have some suggestions for functionality improvements, UI improvements and feedback collection improvements. At the end all five participants agreed that the artifact has a good automation level.

Overall the received feedback is positive, even though with a constructive critic, and it can be concluded that according to the participants the artifact have the potential to be very useful, which gave a positive answer to the research question: "Can we improve the process of team event organization by extracting a generic process definition and use it to design and implement a tool for team event management?".

The goal of the thesis was also achieved, which was "to make an example implementation of team event management tool which complies with the team event organization process" (Chapter 4). This was done by defining the aforementioned process (Chapter 3) and designing and implementing a tool (Chapter 4) which covers the four defined objectives, which are:

- Designing a tool which will be as simple as possible and incorporates just the needed functionality for team event organization.
- Enable the scenarios described in Chapter 3 to be performed using only one tool.
- Enable the collection of written feedback on team event.
- Automatize the places where automation is feasible and make sense.

Even though the tool covered the objectives, there is still some space left for improvements. The guidelines for future improvements collected from the interview and from the author during her work on the artifact, is discussed in the next chapter.

Next an exploration of some of the participant's behaviour based on their background is presented.

Participant number two for example has a experience related to construction and evaluation of UI and it is likely that his evaluation and perspective was influenced by that. As one can see from his answers, he pays the biggest attention to the UI and also according to him UI is the thing which actually make a difference if a tool will be widely accepted or it will stay unused despite of the good functionality it provides.

Participant 5 has no experience in Informatics, but her work is the one that includes a lot of team events organization and in her working settings this is very important. She was very satisfied with the new tool and thought that it can help her extremely in the daily work. She also shared that she had some experience with other scientific work related to Informatics, but according to her this one developed something useful for the end user and was exposed in a way understandable for someone with no Informatics background.

Participant 4 has a strong background in programming, so his focus was more on the functional part of the tool and he also gave some remarks how the tool could be made more rigorous and secure.

From the discussion above it is visible that the focus of the different participants is different based on their background, even though all of them dealt with team events

organization. This leads to the observation that evaluating a team event tool could be a difficult task, since team event organization is common for people with different professions and different background and this should be considered when conducting subsequent research. This also strengthen the decision to use qualitative approach for evaluation by showing that considering the multiple realities of the participants is important.

A side observation, not directly related to the results, is that the format of the interview could be improved in the future. From the beginning the author thought that using open answer questions will lead to a bigger discussion, important for collecting some detailed information which is considered valuable for qualitative studies (Suter) and this was also the case for most of the questions. But it seems that for some of the question an answer in a form of Likert scale (Boone and Boone) would be also useful and will ease the participants as well as the analysis of the results. Such question for example is the first one - "Are you satisfied with the tools you have used till now?" (Section A.2), where some of the participants had difficulties and asked for a scale like from 1 to 10 or from 1 to 5. So as a suggestion in the future those kind of questions could be represented using Likert scale, but also with some place left for open discussion. However one should consider whether the sample will be large enough to derive statistically meaningful result from it (Damia and Picón Aguilar).

After the evaluation of the artifact itself, also a small evaluation for the system used was done. This was achieved by performing a simple analysis of the modules in the sense of size. The analysis was facilitated by a tool called "cloc"¹. With this tool it was possible to separate the meaningful lines of code in the modules of interest from the blank lines and comments. This led to the results shown in Table 6.2. What

Table 6.2: Summary of the Odoo modules lines of code analysis

Module Name	team_events	simple_poll	event	rating	mail	website
Lines of Code	509	590	2152	593	14337	11441

is visible from the table is that the two modules(team_events and simple_poll) have in sum 1099 meaningful lines of code. But they reuse functionality from four other modules - event, rating, mail and website, which have in sum 28523 meaningful lines of code. Even though the author did not claim that all the code from the inherited modules was used, one can make the conclusion that using system with good inheritance mechanism saved the time for the design and development of those already existing functionality and gives the chance to focus only on the missing parts. Moreover the fact that Odoo is an Open Source system enables the exploit of the "Free Software's Four Freedoms" - use, study, share and improve. This means one can use the existing code, study what is there and how it is written, share the product with others and also change it (Free Software Foundation Europe).

Using Open Source framework can also have some disadvantages. For example one can and in most of the cases uses the existing UI, because it saves time to reuse it

¹cloc is a tool used to count blank lines, comment lines, and physical lines of source code in different programming languages (AIDanial).

instead of to implement it entirely new. The problem occurs from the fact that the UI won't be especially designed to serve the needs of the new tool, so it is possible that it won't be the optimal one. However one can argue that in the case of Odoo and other ERP systems, the issues is more related to the global scope of the system where the UI should be consistent and still suitable for all the various functionality provided. Another thing that could be considered as disadvantage is that one should be careful with the Open Source certificates of the reused code. What is meant here is that in some cases it is possible that the certificate of the reused code is not in compliance with the one with which the new tool will be distributing. This will make the distribution of the new tool under the chosen certificate illegal, so a special attention should be paid. Taking into account the advantages and disadvantages of the Open Source software, one can judge if it is appropriate to be used considering the project settings, requirements and peculiarities. For the current research using Open Source brought more advantages than disadvantages. Due to time constraints of the work, reusing the know-how from the Odoo code and also reusing the existing UI and modules was beneficial to fit in the time frame. Also the tool was not supposed to be distributed as a commercial product, so this softened the license compliance criteria. The discussion above justified the decision to use Open Source, because certainly more effort would have been necessary if no Open Source software would have been taken. Only from the fact that Odoo has public/marketing event management implementation, one can derive that it is likely that Odoo was a good choice even among Open Source Systems. But another smaller research is planned to be conducted to verify that decision.

Since team events are conducted in a working environment it is important to relate them with another business data like human resources. This was the reason why the author did not search for standalone tools for event management, but for systems that have implemented also event management along with other business related functionality. A search in the "Capterra" website ([Capterra Inc. \[b\]](#)) was conducted. There the author went to "Blogs", "Event Management Software" and then "8 Free and Open Source Event Registration Software" ([Capterra Inc. \[a\]](#)). The first three tools were stand alone tools, but the third one was a plugin for WordPress², so a decision was made to explore if WordPress would have been a better choice for the implementation. WordPress also has "Events Manager" plugin, and a it can also be connected with some business related data like Human Resources through the "Human resource management" plugin. Till that point WordPress also looks just as legitimate choice for the implementation of the team event management tool as Odoo. The author then went further and checked what is the extension mechanism for WordPress plugins. What she learned is that for this system one can extend directly in the plugin or using hooks³, but one should rely on that there are hooks added from the developers who wrote the initial plugin in the needed places and even if this is the case their flexibility is limited. This led to the conclusion that extending the WordPress system is well defined and could be easily performed via

²"WordPress started as just a blogging system, but has evolved to be used as full content management system and so much more through the thousands of plugins and widgets and themes.." ([Automattic Inc. \[a\]](#))

³"Hooks are a way for one piece of code to interact/modify another piece of code.." ([Automattic Inc. \[b\]](#))

new plugin, but extending existing plugin without directly writing in the plugin code could be problematic. This exploration led to the conclusion that for the current research Odoo was the better choice for the tool implementation. With the latest observations the decision to use Open Source tool and also the decision to use Odoo among the Open Source Systems for the artifact implementation could be justified. What was not discussed till this moment is the rigour of the research itself in its whole. Here the author explores the thesis work with regard to the four quality categories considered fundamental for each research, namely "Conduct of the research", "Conceptual significance of the research", "Practical significance of the research" and "Presentation of the research" (McKay and Marshall). The suitability of the research method falls in the first category. As mentioned in the introduction part (Chapter 1), for this paper design science was applied. The research method was chosen, because it was considered appropriate for the goal of the thesis, which is to build a suitable tool for team event organization. This is in line with the result expected from a design science research, which is to create and evaluate an artifact for identified organization problem, where as artifact is meant one of the following – constructs, models, methods and instantiations (Hevner et al.). Also after the conduction of the research, the applied methodology fits well with the whole research concept and idea, so even if the author had the chance to conduct the research again she was going to choose the same methodology. Even though the approach seems appropriate, various issues were encountered also recognized in the literature as typical design science issue like insufficient existing theory, problems with evaluation because of the rich context of the issue and also the risk taken by conducting a design science research, because of its rigorous and recognition issues in the scientific field (Hevner et al.). The authors attempt to handled the first two issues and also covered the scope of the second and the third quality categories, are documented in Chapter 1 and Chapter 6. To overcome the last issue and cover the last quality category the author decided to use the framework for applying a design science research, described by Peffers et al.. How well the author covered those issues and categories is then matter for the reader to determine.

7. Conclusion and future work

This work went one step further towards better team event organization by defining the team event organization process and by the creation of a simple design and example implementation of a team event management tool. Positive feedback from the evaluation was received, which gave a positive answer to the research question: "Can we improve the process of team event organization by extracting a generic process definition and use it to design and implement a tool for team event management?". The goal of the thesis was also achieved, which was "to make an example implementation of team event management tool which complies with the team event organization process". The research, the design, the implementation, the demonstration and the evaluation were documented as a master thesis and will be presented as such. Also as a next communication step the resulting artifact could be provided for public free use by making a pull request in Odoo Community Association (OCA) GitHub repositories.

However what should be considered is that the resulting artifact is a prototype and requires improvements before it could be used in a live environment, so as next some guidelines are given on what one should focus in the future, using the information from the evaluation interviews and the author observations. The author point of view, which is also supported by the evaluation, is that the biggest flaw of the resulting artifact is the relatively poor [UI](#). This conclusion is based on the idea that the most important thing from an user perspective here is to have a tool which is easy to handle. The reason behind this is that team events are not something that is organized frequently and it is not bound to a specific role in the organization. To improve the [UI](#) and experience the following suggestions could be given:

- Define a workflow, to guide the user through the different organization steps.
- Rework the labels of the fields and buttons in order to make them more comprehensive. Also use suitable colors when feasible.
- Add more tooltips to the fields, i.e for the "End Date" field of the "Poll" ([Figure 5.7](#)) a tooltip could be - "The participants will be able to take part in the poll till that date."

- Improve poll summary representation by using colours and signs instead of text i.e cross and red coloring for "no", question mark and yellow for "maybe", green color and tick for "yes".

Here it also should be mentioned that the UI of the Odoo system is considered relatively poor in general and this was recognized by the Odoo company and they are already working toward its improvement (Odoo S.A. [d]).

The other suggestions for improvements could be considered more like details, but of course they are also important for the result. Those are summarized by the following ideas:

- Add functionality to create a poll where the participants can answer by typing free text and not choosing between predefined options. This could be useful for the cases where one wants to create a list with the things that each of the participants will bring for the event, like food, beverages and the like.
- Send also a calendar file attachment of the event with the predefined event invitation email, so everyone can add the event in his/her own calendar.
- Use google maps to add a location for the event instead of text fields for street, city and the like.
- Add functionality to attach pictures to the event or link to the place where pictures are stored.
- Enable changing poll answers by the user.
- Enable the user to cancel participation to an event by him/herself.
- Enable keeping track of payments made by the attendees.
- Enable keeping track of the people who actually attended the event.
- Add another feedback option where one can rate if he/she would like to repeat the event.
- For the rating calculation based on event type, it will be better if we make sure that enough people took part in the evaluation of a particular event and take it into account for the group calculation only if a significant part of the participants did. The idea behind this is that a possible scenario is to have an event with the highest rating, where only one participant took part of the evaluation.

The last recommendation is to separate more time for the cycle of extended testing and bugfixing, since for this tool the tests were done only by the author and also only two improvement iterations were done.

The recommendations for future work were the last component from the recommendation and communication part, which is also the end of the whole research. As final words and general conclusion could be said that there is much more research and development that could be done in this research field, but with the results and the suggestions for improvements from this master thesis the team event organization process was brought one step further.

A. Appendix

A.1 Summary of the interview with regard to team events problem identification

Table A.1: Summary of the interview with regard to team events problem identification

Question/Participant	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
1. What is your position in the company?	Content and Digital Marketing Specialist also responsible for event management and other marketing-related tasks and activities. (*software company serving international clients)	Team leader.	Team leader.	Team assistant	Team leader.
2. Does your work involve team event organization?	Yes. See 1.	No.	No, but this is a way to motivate your team.	Yes.	No.
3. Do you organize your team events also without that to be part of your work?	Yes. See 1.	Yes.	Yes.	Till now – no.	Yes.
4. Can you describe your steps when you organize team event?	Usually, the company CEO tells me we shall organize a team event next month and picks the dates (Friday to Sunday covered). There are also cases when we pick two options so that our colleagues can select the period that fits them better. I search for suitable TB locations and check whether the dates are available. Then create a discussion in our internal ERP system where everyone can see all related details and post comments. We also use Skype. Our team members usually write +1 or -1 for “Attending” and “Not attending” respectively. Normally, we consent to the dates suggested, sometimes with the exception of 1-3 colleagues who have to take care of their children.	<ul style="list-style-type: none"> - Write an inquiry - are you interested in team event - Collect information about cost and details - Create a doodle poll with couple of suggestions for event. (jump house, bar...) - Create a doodle poll to choose a date - Write an email about the details after an event and date is chosen - Use reminder plugin where we write the msg we want to send, after how much time it should be send and to whom - Feedback – no feedback is collected, it is inferred after some time when you see if the colleagues keep participating or no (if they come they like it). The idea is that if you ask colleagues if they like it or no as a team leader, they may be feel uncomfortable to share if they don't like it. 	<ul style="list-style-type: none"> - write an email for example “Are you interested in dinner together” - if there is an interest create an excel list with the proposal dates. - summarize the information. That includes a lot of emails who will come, who won't , who will come when a specific condition is met like “If Misho is there, I will come too” - reminder to participate in the date voting - check the most suitable date for most of the participants - Write an email to ask the people if they want to propose a nice place - collect the proposal and make the team vote for a place - When the date and the place are chosen send an email with the relevant information - send a reminder but in a more soft way like “I am really happy to see you tomorrow, just one day left” 	<ul style="list-style-type: none"> - write email to all team members with inf. for the event - inquiry for participation - document the information in a ticket system - write email to remind for the participation inquiry - write another email when we collect the inf. - write email with inf. for the event - email with all detail short before the event 	<ul style="list-style-type: none"> - talk with the closest colleague who will be invited - outlook is used. Each person in the company have it's own calendar there with all his work appointments (and some times FTE).Then check the participants free time and choose date accordingly (no inquiry for suitable date) - create new event in outlook - there is a functionality that sends an email with yes/no/- may be inquiry - the answers also can be seen in outlook - no reminder is send neither for participation nor before the event - no feedback is collected

5. Does that happen often?	Our TBs and company parties happen every 3-4 months. We also have small birthday parties at the office, a Christmas party, and other special occasion events (e.g. company anniversary).	Around 3 times a year	3-4 times a year.	Around 3 times a year.	Once in a month.
6. Do you think automation can be done here?	Yes. It would alleviate the entire organization and coordination	Yes.	Yes.	Yes. It will be better and much easier.	No.
7. If yes, what?	In our case, our developers' team could add a designated "Events" module into our existing ERP system allowing organizers to propose dates, send RSVP to all team members, request suggestions, feedback, receive comments, updates, etc.	- the reminder functionality can be integrated together with the poll functionality - collect some information about future events in the city - generate poll for all dates in a specific range (all dates starting after two weeks and till the 5th week for example) - collect suggestions from groupon.com for example - the events filtering can be automatized event from groupon and future events in the city	Questionnaires for date, location and so on, because the company allow usage only on secure tools that are approved from the security team.	I don't know.	-
8. Do you think that can speed up the process?	Yes.	Yes, it will be better if the tools are integrated together	Yes.	For sure.	-
9. Do you collect feedback from your colleagues after the event and how?	Usually, feedback is exchanged verbally during and after the event. We don't need a written feedback since our company is not a big corporate structure.	No.	No. No inquiry, if they want they will share alone.	No.	No
10. Do you use that data or do you think it can be useful?	We take note of our colleagues' comments and feedback, try to sense the moods and desires and strive to respond to their expectations. This happens rather intuitively.	No.	Yes, for the next time (For example if couple of restaurants were proposed and we went to the first one, next time we can go to the other)	Yes.	Yes.

A.2 Odoo team event organization tool evaluation questionnaire

The "Odoo team event organization tool evaluation questionnaire" contains the following questions:

1. Have you ever organize a team event?
2. Are you satisfied with the tools you have used till now?
3. Are you satisfied with the functionality provided from this tool?
4. Do you think that we have all the functionality we need in one place?
5. Do you find the user interface easy and intuitive to work with?
6. Do you think that the automation is in a sufficient level?
7. Do you think that the information gathered is enough to make some conclusions about the employee preferences?
8. Do you have some suggestions for improvement?

A.3 Master thesis project process organization and documentation

The whole process of the thesis writing, tool design and development was handled as project and organized using MantisBT ¹ and includes the following steps:

1. First a new MantisBT project - "Master Thesis Nikolina" was created.
2. Two different project categories - "Documentation" and "Implementation" were added. All tickets related to the Odoo tool implementation were put under the "Implementation" category and all tickets related to the master thesis documentation were put under the "Documentation" category.
3. A project management ticket - "PM ticket" was created. Here the project management information was collected.
4. The master thesis was separated to steps and a plan schedule was created with rough estimation for the time needed for each step of the master thesis. Milestones were set and the information was added to the "PM ticket".
5. Under the "Documentation" category a main ticket "MT Content" was created.
6. Under the "Documentation" category a ticket for each master thesis chapter was created and a relation was added to the main "MT Content" ticket. Each time when a new requirement or idea for the documentation part occur a new ticket was created and related to the corresponding chapter ticket.

¹ MantisBT is an open source bug/issue tracking system ([MantisBT Team](#)).

7. Under the "Implementation" category a main ticket "Initial Simple implementation" was created. For each defined use case in [Section 4.1](#) a new ticket was created and a reference to the main ticket was added.
8. Under the "Implementation" category an "Implementation Refinements" and "Implementation Refinements 2" were created. Each time when during the development and testing of the tool a bug was found, a new feature was proposed or idea occurred, a new ticket was created and assigned to the "Implementation Refinements" if that had to be ready for the master thesis and to the "Implementation Refinements 2" if that was a proposal for future improvements.
9. An appointment for short weekly supervisor meeting was set. After each meeting a short report was created and a tickets for the new task/issues were created and ordered as described above.

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Statutory Declaration

I assure that this thesis is a result of my personal work and that no other than the indicated aids have been used for its completion. Furthermore I assure that all quotations and statements that have been inferred literally or in a general manner from published or unpublished writings are marked as such. Beyond this I assure that the work has not been used, neither completely nor in parts, to pass any previous examination.

Magdeburg, 14. February 2018