

Implementation of Task-Tracking Software for Clinical IT Management

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Abstract. Often in clinical IT departments, many different methods and IT systems are used for task-tracking and project organization. Based on managers' personal preferences and knowledge about project management methods, tools differ from team to team and even from employee to employee. This causes communication problems, especially when tasks need to be done in cooperation with different teams. Monitoring tasks and resources becomes impossible: there are no defined deliverables, which prevents reliable deadlines. Because of these problems, we implemented task-tracking software which is now in use across all seven teams at the University Hospital Erlangen. Over a period of seven months, a working group defined types of tasks (project, routine task, etc.), workflows, and views to monitor the tasks of the 7 divisions, 20 teams and 340 different IT services. The software has been in use since December 2016.

Keywords. Health information management, information management, Project management

1. Introduction

1.1 Introduction

The IT Department of the University Hospital Erlangen, Germany, has 130 employees in seven divisions. The work is organized in functional teams (systems technology, hospital information systems, and desktop services, among others) as well as in cross-functional and interdisciplinary project teams. Several tools are in use for project and task planning and controlling - from paper-based Post-it notes, to Excel lists, MS outlook tasks, Microsoft (MS) SharePoint lists, MS Project plans, and so forth. Double documentation is unavoidable in keeping the to-do lists of individual employees and project plans (if they exist) updated. The status of routine tasks and projects is often only available to one team - unclear dependencies between projects and routine activities follow. Another issue is controlling tasks, which are often discussed and assigned in meetings and require the employee to transfer them to their own to-do lists. Our goal was therefore to implement task-tracking software to manage all IT projects and tasks across teams. A key goal is a comprehensive project list that shows all activities of the IT department at first glance.

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1.2 Requirements

- R1: The tool should be used for managing projects of different sizes as well as for managing routine operations (termed “functional tasks” in this paper). Tracking and controlling tasks from different sources (functional tasks, project tasks, task assigned in meetings, personal to-dos) in one database is required.
- R2: It should be possible to create different views of the task database for managers, individual users, project/functional teams, and for the whole IT department.
- R3: The tool should allow the user to communicate about tasks, to set a due date and workflow statuses, assign these to a team or a coworker, and document structured information like clients and stakeholders involved.
- R4: The documentation of project plans with different hierarchy levels (work breakdown structure) is required. The tool should allow building a schedule.
- R5: The user should be able to filter, search, and sort tasks by due date, assignee, IT service and status, and see all projects across departments and institutions.
- R6: Connection between tasks and documentation (project documentation, meeting notes, technical documentation, release notes, etc.) is required.

The documentation of tasks associated with changes to incidents and service requests (SR) was not planned (definition: see IT Infrastructure Library (ITIL) [1]). A help-desk system for first-level support is already in use, so we decided to set up the task-tracking systems for project tasks and as a next step include the documentation of incidents / SR in the new tool.

2. State of the art

There is a consensus among experts that problems in healthcare IT projects are more managerial than technical [2]. Most of health IT projects do not deliver what they should, are over budget or are late [3, 4]. Literature has proven that missing project management (PM) methods are one significant reason why IT implementations fail [5, 6, 7]. But the reality of many IT departments in healthcare is: too many simultaneous and dependent projects, insufficient PM skills of software engineers and a lack of professional PM tools [8, p. 32]. 45% of the IT-projects in German Hospitals are not reaching their set goals [8, p. 32]. And IT health care departments are most of the time organized as a combination of two or more types of organizational structures, such as the project-organization-structure and the functional organization structure [9]. So functions are moved from functional departments like “In-patient Clinical Applications” etc. to project teams. Allocation of resources is only possible if tasks on both sides are documented with the same quality. The implementation of a task-tracking software should solve these problems: one tool for all teams, which includes all health IT projects at the university hospital and specified standards for the documentation of tasks.

3. Concept

A working group of 15 key users and managers for selection and customization of a software tool for task-tracking and project management was founded in May 2016. Meetings were twice a month or weekly. The following specifications were created.

3.1 Task contexts

We identified four task contexts: projects, work in functional teams, committees and personal tasks. Because the organization has a matrix structure, we want to have both types of tasks in the system: functional objectives (reported to functional managers) and project tasks (reported to project managers). For the third source of tasks, “committees” were identified; for example, a management board, where members were assigned to tasks in every topic. Normally, the assignee needs to transfer the task by hand from a protocol to its own to-do list. The challenge for the new tool was to skip this step and create the task directly in the protocol and assign it to a personal to-do list. We only want to use one tool for organizing tasks, so the option to document sensitive tasks and personal reminders was required. The different tasks needed varying kinds of authorization, which are shown in Table 1.

Table 1. Task categories and the authorized employees.

Categories of tasks	Description	Authorized Employees
Project	Task from a project role (project member)	Project team
Routine	Tasks from a functional role, standard changes	Functional team
Personal	Personal tasks	The specific user only
Committees	Task assigned in specific meetings (not project meetings)	Member of the board meetings

The transfer of tasks from one space to another should be possible, as well as views and queries on multiple projects.

3.2 Types of issues and hierarchy

To plan and track projects, a hierarchy of tasks is needed. The working group agreed that three levels are necessary. The new system needs to link tasks and the related packages to accumulate the progress of a task package based on its subtasks. In the committee space it should be possible to document important decisions right next to tasks.

3.3 Views on the task pool

The main question was: what do different stakeholders want to know? Which views do we need in a tracking system? Here are some examples:

- A single **user** wants to see all of his or her project tasks and the tasks of the IT services he or she supports, as well as the tasks of colleagues in functional teams or project teams.
- The **project manager** wants to see all tasks in the project in a timeline and in a hierarchical structure, and to monitor progress and assign tasks.
- The **functional manager** wants an overview of all of his or her team’s

projects, as well as all tasks belonging to the IT service this team is in charge of.

- The **CIO, portfolio manager and advisory boards** want to see an overview of all planned, ongoing and closed projects.
- The **customer** wants to see the progress of the project they are paying for.

To create views about tasks related to specific IT services, every routine task needs to refer to one of the 340 IT services that the IT department hosts. The system should be flexible enough that there may be views defined on the task pool, (for example, for a single team) as well as the ability to easily build queries on the task pool.

4. Implementation

We chose the commercial software product JIRA (Version 7.2.7, Atlassian, AUS, <https://de.atlassian.com/>) as the issue tracking tool to fulfill the requirements. We bought JIRA (for agile software development) and JIRA core (for project management). We chose JIRA because it satisfied our main requirements, and could also connect with our enterprise wiki Confluence (Version 5.9), since they are made by the same vendor, Atlassian. The benefit was the simplicity in linking together project documentation in Confluence and task tracking in JIRA.

4.1 Projects in JIRA

JIRA offers projects as containers for different kinds of tasks - every container has its own concept of authorization. To support cross-functional work and transfer tasks from team to team, a container named "Routine" was created. This container encompasses all functional tasks and standard changes of all seven teams. This container is only accessible for members of the IT department. Every long-term project with its own project team and documentation has its own container in JIRA. All project members as well as physicians and nurses are granted access. Committees have their own container with a separate permission scheme and issue security.

4.2 Issue types and workflows in JIRA

In JIRA, every kind of issue can be implemented: bugs, feature requests, risks etc. We implemented four issue types: epics as a large piece of work which encompasses many issues, tasks, subtasks, and decisions. Epics, tasks and subtasks have similar field screens: they have the same four-step workflow (New Tasks, Approved Tasks, in Progress, Done) and due dates are required to create chronological project plans. Defining and using compatible fields and workflows for tasks from different sources makes it possible to transfer them from one project to another. We developed an add-on together with Seibert Media to assign JIRA issues in Confluence without opening JIRA (ConJira, V1.1, Seibert Media).

4.3 Views and filters in JIRA

We implemented the aforementioned views. The IT service related to each task also contains the information of the department and the team, which is responsible for the

service. Based on this information it is possible to create views for teams without explicit documentation of the team. We built a dashboard showing the individual tasks for each employee. The tasks of operational teams and project teams were organized in Kanban Boards. An add-on called “Structure” was implemented to maintain a big picture of all projects and to organize the hierarchy of issues in project plans.

5. Lessons learned

The usage of IT depends on ease of use, usefulness and attitude. First, the documentation of the task needs to be fast: for example, through using autocomplete to search for a specific service. Second, the utility for an employee needs to be clear: for example better information and communication with coworkers and customers. A system driven solely by management and accounting will fail. To improve users’ morale, every team should be involved in the customization process and the tool should be used routinely, both in and out of meetings. Pain points in this project were the missing integration with the help-desk system and missing Gantt chart functionalities. For both problems, we are considering purchasing suitable Atlassian Ad-ons.

6. Conclusion

The tool has been in use since December 2016. We now have around 200 small projects and six long-term projects in JIRA, with over 3000 documented tasks. Last month, we started configuring JIRA for non-technical teams. The tool is in use in team meetings and by management to monitor and prioritize tasks and projects.

7. Conflict of Interest

The authors state that they have no conflicts of interest.

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