

# DAIKnow: A Gamified Enterprise Bookmarking System

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**Abstract.** One of the core ideas of gamification in an enterprise setting is to engage employees, i.e., to motivate them to fulfil boring, but necessary tasks. In this demo paper, we present a gamified enterprise bookmarking system which incorporates points, badges and a leaderboard. Preliminary studies indicate that these gamification methods result in an increased user engagement.

**Keywords:** enterprise gamification; social bookmarking system

## 1 Introduction

A few years ago, one could observe a run on social bookmarking systems such as Delicious<sup>1</sup>, i.e., online platforms that allow users to contribute, annotate and share bookmarks. Social bookmarking systems played an important role in studying techniques that are associated with the Web 2.0 such as tagging, the development of shared vocabularies (i.e., folksonomies) [1] and social networking [2]. An important domain where such systems are applied are in an enterprise scenario, i.e., they are used to provide means for employees to discover and share knowledge within the company [3] or to support innovative ideas [4]. Looking at the usage statistics of those bookmarking systems after having been deployed for a few years, one can observe a dramatic decrease of active users. Stewart et al. [5] argue that the rise and fall of such systems heavily depends on the internal corporate culture. Although the usage of such system might initially be high, its popularity can quickly erode, especially if its usage is based on a voluntary basis only and not promoted further by the management. A promising approach to increase user participation is the application of gamification methods. Deterding et al. [6] define gamification as “*the use of game design elements in non-game contexts*”, i.e., game mechanics and concepts such as leaderboards, points and badges are applied on non-gaming environments to reach specific goals. Example studies where such principles have been applied include [7–10].

In this demo paper, we introduce DAIKknow<sup>2</sup>, an enterprise bookmarking system which got enriched with gamification elements. DAIKknow is deployed as

<sup>1</sup> <http://delicious.com/>

<sup>2</sup> <http://daiknow.dai-labor.de/>

social bookmarking system of a large research institute and used to study the use of gamification principles at the workspace. In this paper, we provide an introduction into the main features of the system and provide an overview of the gamification elements that have been included.

## 2 Enterprise Bookmarking System

Providing similar functionalities as the Delicious system, DAIKnow allows to create bookmarks of websites, as well as bookmarks for files on internal file server. Given the importance of different access rights within companies, the system incorporates existing rights management. Further, it provides facilities to share bookmarks with individual users and users who used certain tags.

The system has two main views: A personal view and a general view. On the personal site, the user can see all bookmarks. Bookmarks can be either public, i.e., they are visible for everyone, or private, i.e., they only appear on the user's site. On the general site, all public items are displayed. The general view is split into a bookmark and a user view. Both bookmarks and users can be tagged and retrieved using the search box on the top right side of the screen.

Bookmarks can either be created by using a JavaScript based bookmarklet which allows users to bookmark pages those pages that are open in their web browser or by using a Windows tool.

When creating a bookmark, the system automatically suggests tags that can be used to describe the item. These suggestions are extracted from the describing text and the most commonly used tags of the user.

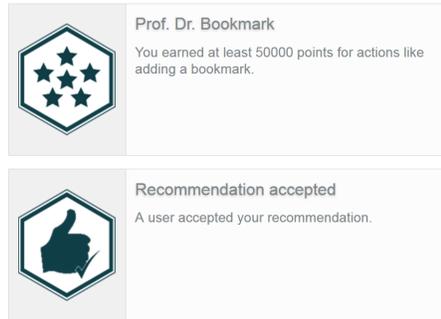
Besides, the system displays a "most popular" section where the most frequently used tags of the week (and of all time) are shown to enable users to understand what topic is currently important in their company.

## 3 Gamification Elements

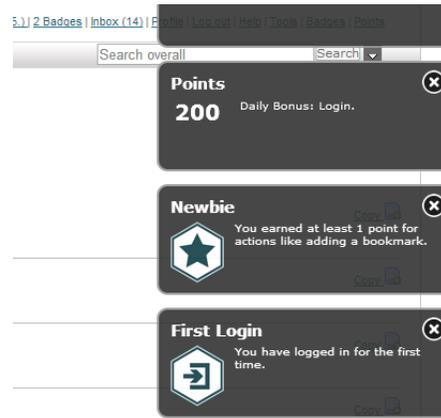
In order to increase usage of the DAIKnow system, we introduced four gamification elements, namely points, badges, a leaderboard, and feedback messages. These elements cover different aspects that motivate users. While points and badges are rewards that can be achieved when fulfilling different tasks, leaderboards introduce a competitive factor. Points can be gained by directly interacting with the system, e.g., by creating a new bookmark. Badges, on the other hand, are awarded for achieving certain goals such as continuously creating new bookmarks over a longer period of time.

In the remainder of this section, we introduce the applied gamification elements in more detail.

**Points** The system provides multiple means to gain points, including daily login, adding a public/private bookmark, providing a bookmark recommendation for another user, and many others. Users also receive some extra points if they add more than three tags per bookmark.



**Fig. 1.** Two example badges.



**Fig. 2.** Messages appearing on the user's first log in.

**Achievement Badges** Users are awarded with badges for performing certain activities. For example, they can receive a badge for earning a specific number of points, creating a certain number of bookmarks, regular usage, or for providing feedback on bookmark recommendations. In Figure 1, two example badges are depicted.

**Leaderboard** The leaderboard provides an overview of who gained the most points and badges in decreasing order. The main goal of this element is to raise some competition between users of the system. It is split into two parts: A monthly list, and an all time list. This split allows new users to reach the top position of the monthly list, while long term commitment is still visible, hence satisfying older players.

**Feedback** Making sure that the user is constantly reminded of the gamification methods, the system incorporates a message system (Figure 2). These messages are displayed for ten seconds each time a user receives a reward (points or badges) and when the user increases their position on the leaderboard. In addition, the user is notified when another user copied one of their bookmarks or accepted their bookmark recommendation.

## 4 Summary and Outlook

In this demo, we showcase a gamified enterprise bookmarking system of a research institute with over 140 employees. User interactions are constantly logged to further study gamification methods in an enterprise environment. Preliminary

studies [11] indicate the advantages of gamification principles in this scenario. The system will be used to further study these advantages and rising challenges. In the future, we intend to apply the same methods to an enterprise and desktop search scenario, e.g., to study constraints [12] that can influence search behavior.

## 5 Acknowledgments

We thank Eugen Rein and Christian Sauer for programming and graphic design support.

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