

Collaborative Tagging Applications and Capabilities in Military Information Systems

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ABSTRACT

With this paper we will be exploring the use of Collaborative Tagging in administrative Military Information Systems. The Estonian Defence Forces (EDF) is currently using Information Systems (IS) mainly for administrative purposes.

The potentials of using Collaborative Tagging in Inter- and Intra-organizational settings for knowledge management and sharing are not well understood at present. Moreover, military applications of Collaborative Tagging have not been reported. The paper will therefore explore some initial use cases of the use of Collaborative Tagging and from these identify potentials and threats.

1.0 KEYWORDS

Knowledge Organization Systems, Knowledge Maturing, Digital Ecosystems Collaborative Tagging (CT), Estonian Defence Forces (EDF), Knowledge Maturing, Semantic Scuttle (SSC).

2.0 INTRODUCTION

Different Social Technologies has been used by humankind without any theoretical-scientific fundamental knowledge. Social Technologies are getting more popular each day and nobody can name himself as an expert in this field. Social Technologies need more analysis of theoretical approach. Different kind of capabilities in Social Technologies have been grown and developed independently without structured approach.

One of the ways to explore different kind of Social Technologies from theoretical perspective would be to research the collaborative tagging (CT) capability in the administrative Information Systems of Estonian Defence Forces (EDF).

CT describes the process by which many users add freely chosen keywords (tags) to shared content (such as webpages, photos, ...) and in the last years, collaborative tagging systems emerged as a popular tool supporting knowledge workers such as researchers or students in managing their own resources and finding relevant material based on keywords assigned to them [1].

3.0 BACKGROUNDS

In order to proceed with further analyses the conceptual terms should be clarified. This terminology was created by integrating different knowledge from different authors. It shows the individual concept of knowledge of me as the author of current research article:

- **Tags** are metadata about the resource.
- **Collaborative tagging systems** allow users to share resources in the web and to annotate them with freely chosen keywords, so called tags. The resources together with tags are stored on a central server and can be accessed from any computer connected to the web. The term social bookmarking system often is used interchangeably for such systems [2].
- **Taxonomy** is the practice and science of classification (parent-child relationship).
- **Folksonomy** is the result of personal free tagging of information and objects for one's own retrieval. The tagging is done in a social environment (usually shared and open to others).
- **Controlled vocabulary** schemes mandate the use of predefined, authorised terms that have been preselected by the designer of the vocabulary, in contrast to natural language vocabularies, where there is no restriction on the vocabulary.
- **Ontology** is a formal, explicit specification of a shared conceptualization.
- **Knowledge Organisation Systems** are used to organise documents, document representations and concepts.

All these previous terms are common terminology getting from individual knowledge sharing into group knowledge sharing in the current research.

The concept of administrative information systems of EDF is based on strong Taxonomy. There are for every information systems platform different kind of use cases, which describe different problems. Described Information Systems are:

- EDF information system Postipoiss (provides the possibility of managing incoming and outgoing documents during these lifecycles. Finding the specific document is time consuming. The system uses expired structure and it needs modern solutions and capabilities, which would satisfy user's needs;
- EDF mil intranet (It supports transportation orders, job time schedule administration, training databases and a lot of other necessary possibilities);
- EDF mil internet web page (for public gives answers to the questions: What EDF is? What the EDF tasks are?)
- ILIAS E-Learning portal (different kind of learning manuals, course papers etc.)

4.0 THE RESEARCH PROBLEM

From practical perspective at the moment Information Systems of EDF are having information overlapping – you can find the same information in different systems.

Information is not managed effectively – finding exact information in different information systems can be very time consuming and problematic.

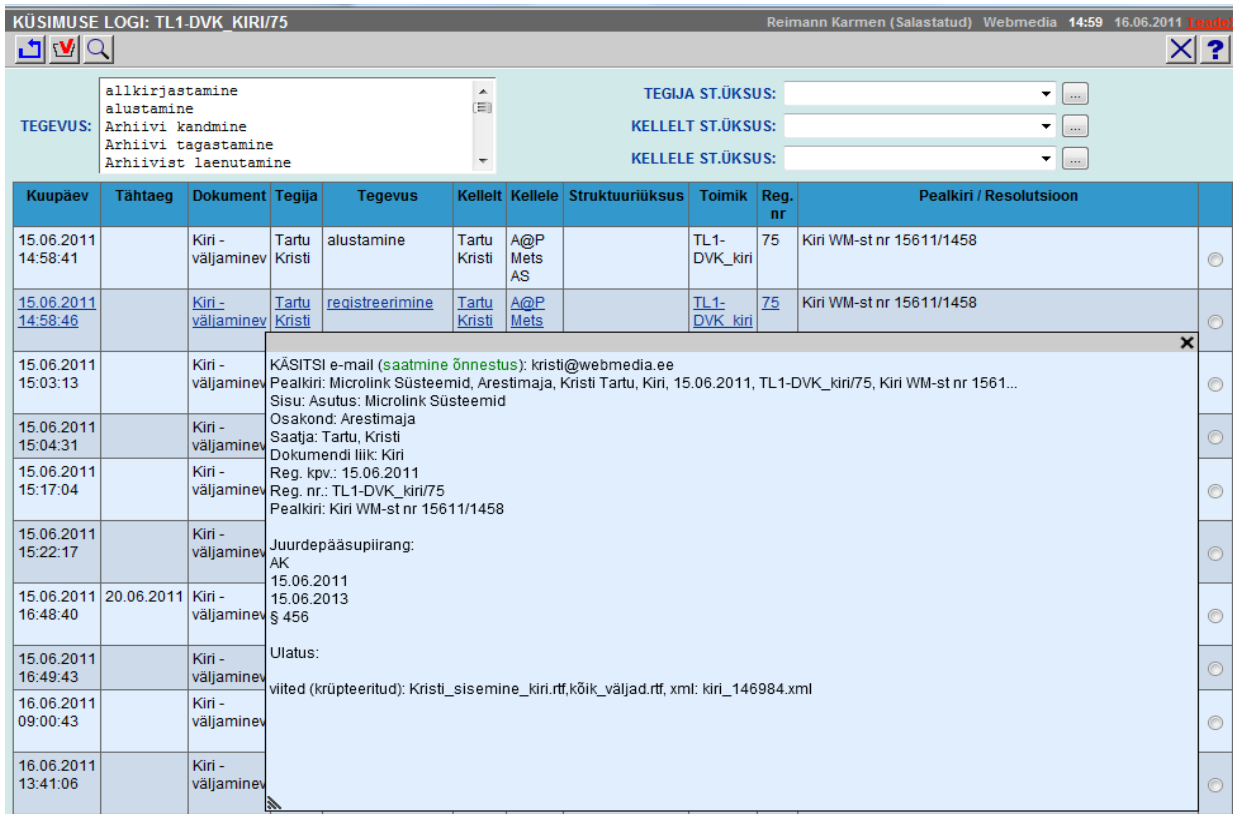
Generally I would define the research problem: EDF is having disparate information sources, that people cannot make sense out of it.

For illustration purposes, the following use cases can be mentioned:

4.1 Use Case No 1

In EDF is in use web based documentation administration software Postipoiss. It was programmed by one of the Estonian programming companies. The current IS provides the possibility of managing incoming and

outgoing documents during these lifecycles. There is possibility to create new tasks for employers digitally, possibility to have an overview about contacts in the EDF and find the necessary documentation which includes needed information.



Kuupäev	Tähtaeg	Dokument	Tegija	Tegevus	Kellelt	Kellele	Struktuuriüksus	Toimik	Reg. nr	Pealkiri / Resolutsioon
15.06.2011 14:58:41		Kiri - väljaminev	Tartu Kristi	alustamine	Tartu Kristi	A@P Mets AS		TL1-DVK_kiri	75	Kiri WM-st nr 15611/1458
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15.06.2011 15:03:13		Kiri - väljaminev	KÄSITSI e-mail (saamine õnnestus): kristi@webmedia.ee Pealkiri: Microlink Süsteemid, Arestimaja, Kristi Tartu, Kiri, 15.06.2011, TL1-DVK_kiri/75, Kiri WM-st nr 15611/1458 Sisu: Asutus: Microlink Süsteemid Osakond: Arestimaja Saatja: Tartu, Kristi Dokumendi liik: Kiri Reg. kpv.: 15.06.2011 Reg. nr.: TL1-DVK_kiri/75 Pealkiri: Kiri WM-st nr 15611/1458							
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15.06.2011 16:49:43		Kiri - väljaminev								
16.06.2011 09:00:43		Kiri - väljaminev								
16.06.2011 13:41:06		Kiri - väljaminev								

Figure 1: Taxonomy in IS Postipoiss.
(Different documents from top to bottom)

Finding searched documentation is often too complicated. Postipoiss is Taxonomy based - it means information is not structured effectively for the changing needs of some users and doesn't take into account dynamic information environment. Collaborative Tagging could increase effectiveness and fasten finding the necessary documents.

At the moment IS Postipoiss has simple categorization, but it takes time to find exact information (Figure 1). More efficient and simple is for user tagging. Information is found faster and easily and CT could give the possibility to build up more complex database, which takes into account also the dynamical environment (it means that updated information is shown in real-time on Tags).

For example we want to find out what kind of personnel is sent to specific NATO conference. Searching gives us approx. 10 different recently made documents about NATO conferences. So we have to go through all these 10 to find the searched documentation.

By using Collaborative Tagging the classification for NATO conferences could be more specific – all NATO conferences in the IS could be classified as different tags. For example there could be added specific tag “NATO HFM panel Conference 2012”, which could be updated in the future.

4.2 Use Case No 2

The intranet based EDF IS was programmed by Staff and Signals Battalion programmers some years ago. It supports transportation orders, job time schedule administration of Staff and Signals Battalion workers, training materials databases and a lot of other necessary possibilities.

For example we want to find an order for giving ranks to employers. When simple employer wants to know if the received document is an order of Ministry of Defence or an order of EDF Supreme Commander or it is not even an order, but simple information letter.

By using current IS the information tree is following: Documents/Laws, Orders, Training materials etc. – the correct information finding is too complicated and needs time (Figure 2).

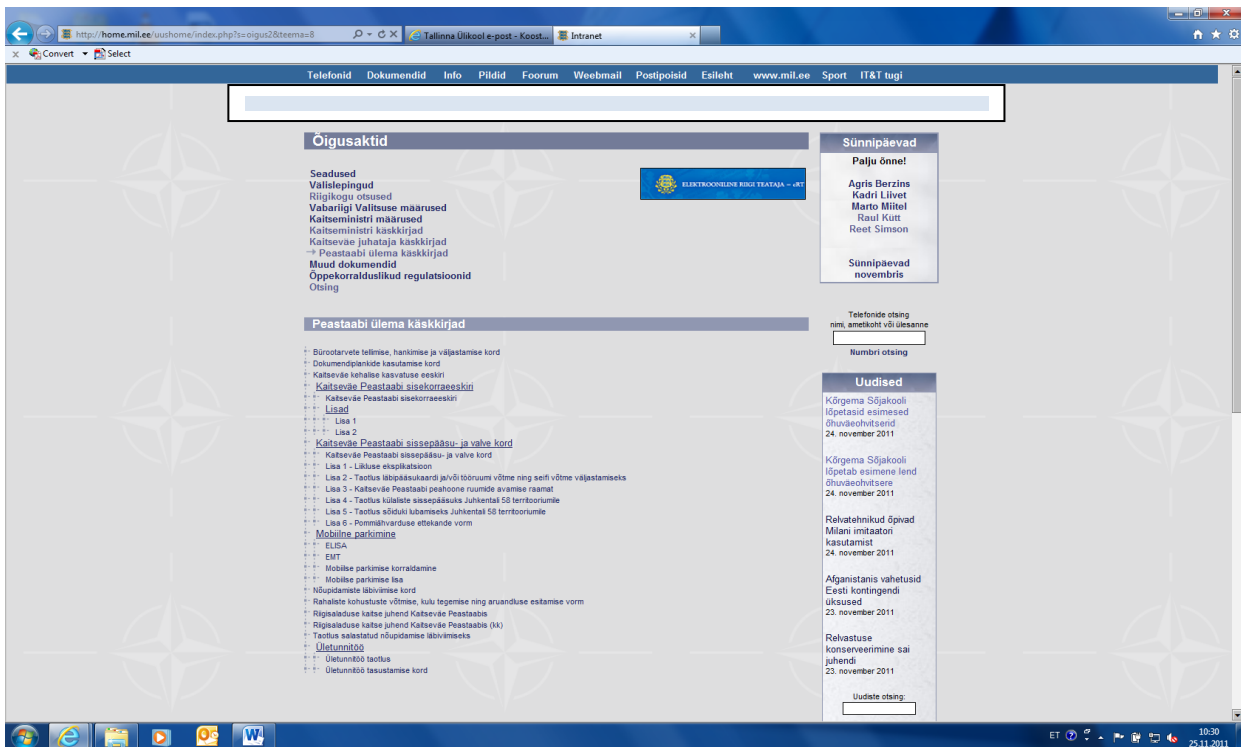


Figure 2: Taxonomy in IS Postipoiss.
(Different documents from top to bottom)

By using CT could be finding exact information much more efficient and faster. By using Tags should have very specific names to find how to give ranks to employers for example?

There could be Tag called Ranks of Employers.

5.0 THE GOAL OF THE RESEARCH

In the present research it is necessary to find out what kind of services are most adaptable and how is it possible to apply these services in the best possible way to the Estonian Defence Forces personnel.

It is necessary to evaluate how services can provide high-level qualities and reliability. Third party individuals must be included to service design and development analysis as main ones. Here I see myself as one of third party individual as researcher of current topic.

This research is necessary because if we understand better the relations between internal knowledge structures (knowledge maturing model) and tag choices (Collaborative tagging in

Knowledge Maturing context – in other words SSC model (Figure 3)), it gives advantage - people who are interested in specific topics will be able to follow these experts more easily towards exact interface guidance.

6.0 KNOWLEDGE MATURING

The kind of activity and commitment which is facilitating tagging in organizational environment has to carry broader mission and goal for EDF. Knowledge maturing (KM) is a concept which defines goal-oriented learning on a collective level. While developing collaborative tagging capabilities it thus becomes essential to evaluate the alternative solutions from knowledge maturing perspective.

Table 1: Collective Tagging in KM environment

Expressing ideas	<ul style="list-style-type: none"> • Posting tags. • Exploring others tags. • Connect to other users with the same interest.
Distributing in Communities	<ul style="list-style-type: none"> • Establish patterns. • Produce metadata
Formalization	<ul style="list-style-type: none"> • Identifying and applying facets. • Applying controlled vocabulary as common terminology. • Organizing resources according to the corporate taxonomy.
Ad-hoc learning	<ul style="list-style-type: none"> • Taxonomy becomes an artificial memory device and boundary object between different communities.
Standardization	<ul style="list-style-type: none"> • Ontology can be developed as an industry wide shared conceptualization. • Axiomatization by domain experts.

During the knowledge maturing process knowledge becomes less contextualized, more explicitly linked and easier to communicate. It takes place in five sequential phases defined as: expressing ideas, distributing in communities, formalization, ad-hoc learning and standardization [3]. As collective tagging reflects the process of knowledge creation from individual perspective and collective perspective then the activities within collective tagging can be connected to the knowledge maturing phases. Table 1 depicts the distribution of collective tagging activities in knowledge maturing process.

In order develop and maintain the credible capacity of EDF and ensure constant learning at organizational level those knowledge maturing phases have to identifiable inside the collective tagging. This framework model gives the essential support in deriving the value of tagging system.

7.0 THE RESEARCH PROJECT AND METHODOLOGY

In this chapter the Research Vision of the Knowledge Maturing in the Collaborative Tagging will be presented. The principal author of the current research paper has started from the beginning of the year 2012 the small research project by using the Semantic Scuttle (SSC) software.

SSC has been implemented based on three level layers as depicted in figure 3:

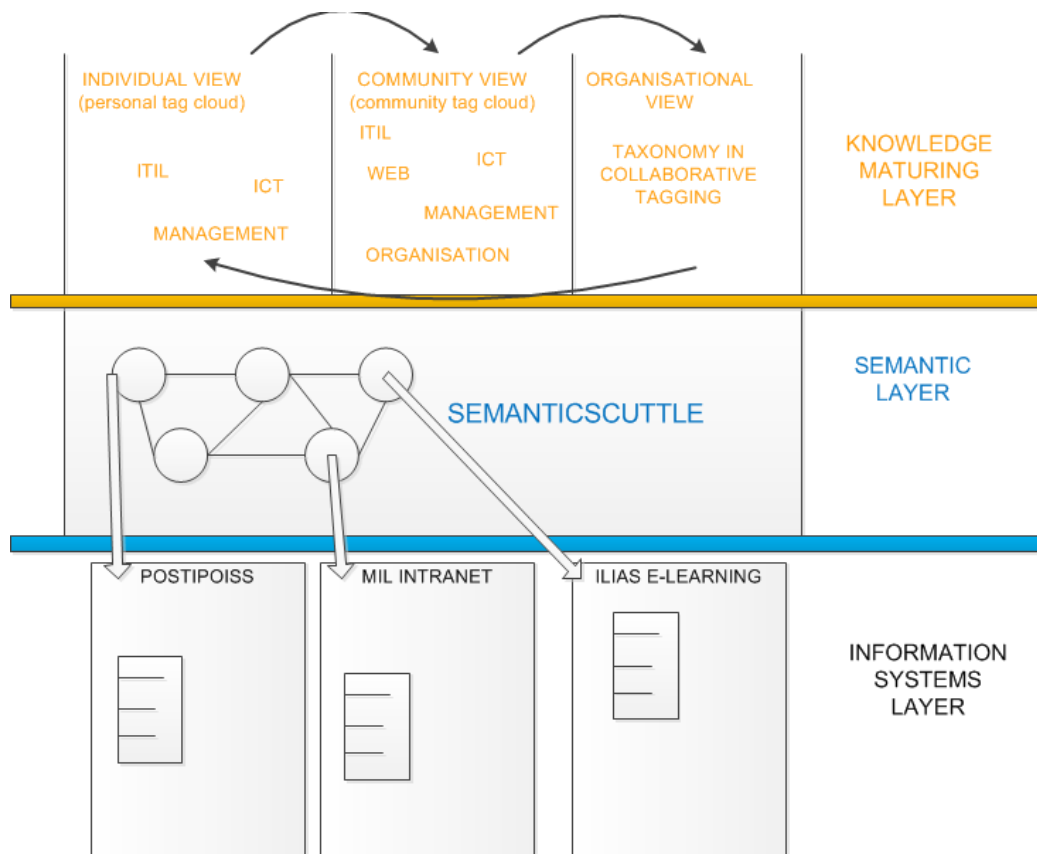


Figure 3: Three Layers of Semantics

1. Information Systems Layer consists of different kind of used administrative Information Systems (IS) in EDF.
2. Semantic Layer consists of used Information System called SSC. It's goal and possibility is to combine all the coming information from IS into semantic context – every SSC user can find necessary information more efficiently and information is combined into one environment.
3. Knowledge Maturing Layer – taken into account the Knowledge Maturing theory we can improve organizational knowledge collaboration. We can use technology efficiently and organizational knowledge will be improved.

Collaborative Tagging improves Knowledge Management, because by using Tags we can prioritize most used information and knowledge. Personal Tag Clouds will be shared and it gives in community setting capability of Community Tag Cloud sharing. Finally we will have Taxonomy in Collaborative Tagging – based on common rules how to share information and knowledge will be tagging used as effective tool.

The principal author of the current paper would define research project as Action Design Research, because the Action Research part of the project tries to solve different kind of practical problems, understand deeply social practice and to improve it and Design Research tries to solve improvement problems. Design research is not much interested in what is, but more in what can be. Design Research consists of two basic activities: build and evaluate. These are steps, which will be conducted in the Action Design Research, which has not been started yet. Action Design Research was successfully used through a case of competence management at Volvo IT [4].

The principal author would define his research steps:

- Identify target area of interest (Collaborative Tagging capability in EDF Information Systems);
- Reading the literature (reading about Collaborative Tagging generally)
- Develop research question (will be developed according that Knowledge not managed effectively in EDF Information Systems)
- Design a study (Interviews, observations, questionnaire produced regarding how could help EDF Information Systems users Collaborative Tagging tool Semantic Scuttle by sharing knowledge more effectively)
- Collect and analyse data (Qualitative data that need to be interpreted)
- Write up results
- Publish the research project

Further research improvements will be taken into account during PhD studies of the paper author.

8.0 CONCLUSIONS

Google ideology gives capability to find something rapidly. At the workplace you need the same capability – find very specific information rapidly. But everything starts from ideology how we share information. We have still old ideology, how we share information –we are still in EDF sharing information that is in catalogues and sub catalogues. But nowadays finding exact information from database is not difficult, at least it shouldn't be, because we have technological capabilities.

CT would be useful for example, when we have new user, because he even doesn't know what kind of information to search. Tagging gives already visualized overview what kind of information would be useful. CT in the Information Systems of EDF should be automatic (CT suggesting automatic – which Tag for which kind of information to use), but human control should stay. Based on controlled vocabulary human finally decides which tag will be used for Automatic Tag Recommendation System finally.

In the current research overview were some initial use cases of the use of Collaborative Tagging and from these identify potentials and threats.

Further the idea presented in the current paper gives fundamentals to continue with research of Knowledge Maturing model in Collaborative Tagging context.

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