Some Aspects of using Web 2.0/Enterprise 2.0 Technologies in Accounting

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1. Introduction

Traditional communication and collaboration tools, previously mentioned as Groupware technologies, can create and manage local informational flows, but they can hardly bring any surplus value in time. Nowadays, these technologies tend more and more to be replaced by new communication and collaboration technologies, all grouped under the name Web 2.0.

All studies and also everyday reality show the development of Internet and Web 2.0 and their adoption in broad areas of all social and economic environments:

- Facebook has 1.28 billion monthly active users and claims to have 802 million active daily users, meaning that 63% of users log on every day (Facebook, 2014).
- Twitter has 883 million user accounts and 232 million monthly active users (Moth, 2013).
- Wikipedia has more than 30 million articles in 287 languages (Wikipedia, 2014a) and 133,025 active registered users (Wikipedia 2014b).
- More than 1 billion unique users visit YouTube each month and 100 hours of video are uploaded to YouTube every minute (YouTube, 2014).
- LinkedIn operates the world’s largest professional network on the Internet with more than 300 million members in over 200 countries and territories. Professionals are signing up to join LinkedIn at a rate of more than two new members per second (LinkedIn, 2014).

Due to their deep social roots, these technologies are nowadays more and more employed by companies. A global study performed by the McKinsey company in 2013 (McKinsey, 2013) shows that many of the companies are beginning to use these technologies internally: 73% of the companies included in the study declared they are using at least one of the Web 2.0 technologies, 74% stated they are using at least one of the technologies to interact with their clients and 48% declared they are using at least one technology to interact with business partners. Accordingly to the same McKinsey study, in figure 1 there is a presentation of the evolution of Web 2.0 technologies usage in companies in the 2009-2012 interval, at a global scale.

The academic world is already talking about Web 3.0 and Web 4.0 technologies and, similarly, about Enterprise 3.0/Enterprise 4.0 technologies, based on a semantic web, the philosophy of which is free, unrestricted communication. However, until now, there haven’t been developed any generally accepted frameworks and there are lots of controversies regarding terms.

In this article we shall describe the Enterprise 2.0 technologies and, by consequence the Web 2.0 technologies, we shall analyse their main characteristics, the benefits and risks of their broad use in companies and we shall emphasize a few aspects regarding their use by accounting departments and accounting professionals. We considered it would be a challenge to approach the employment of these technologies in accounting, as it is a known fact that accounting has a reputation for being rigid and reluctant to change, especially when it comes to adopting new information technologies.

2. Enterprise 2.0 definition

Enterprise 2.0 is one of the newest concepts in the field of enterprise collaborative IT technologies. This concept was first used in 2006 by the professor A. McAfee from Harvard, in the article titled Enterprise 2.0: The Dawn of Emergent Collaboration (McAfee, 2006). The term is not supposed to be a synonym to the term Web 2.0 proposed and used for the first time by T. O’Reilly in 2004, but instead it is intended to be used alongside with it.

Although Enterprise 2.0 became a known term both in practice and among the authors who write specialized literature, there are few who have a clear and complete definition for it. Most often Enterprise 2.0 is considered to be:

- A concept that extends technologies at the business and/or corporate level from Web 2.0 concepts on a personal level (Kim et al., 2012);
- The use of emergent social software platforms within companies, or between companies and their partners or customers (McAfee, 2006);
- User centred approach of Enterprise Content Management (ECM) systems (Hinchcliffe, 2009);
- Applying Web 2.0 in enterprises in four areas: communication, cooperation, collaboration and connection (Cook, 2008);
- Applying Web 2.0 in enterprises in four areas: connection, communication, collaboration and content (Joe, 2009).

However, none of these explanations is a complete definition for what Enterprise 2.0 stands for. In a more comprehensive definition provided by the authors Frappaolo și Keldsen (2008) from AIM Research, Enterprise 2.0 is considered to be: a system of Web-based technologies that provide rapid and agile collaboration, information sharing, emergence, and integration capabilities in the extended enterprise. First, this definition emphasizes the fact that Enterprise 2.0 does not consist of a single technology, but of a collection of technologies which extend the Web technologies palette, composing an entire system. Second, the definition emphasizes the value and purpose of these technologies. Fast and agile shows the dynamic
nature of the Enterprise 2.0 technologies. The extended enterprise means both the company and the company's relationship with its clients and business partners.

The term Web 2.0 is associated with a multitude of technologies: blog, wiki, mash-up, podcast, social network, RSS etc. Many of these are based on a user-focused approach. Companies have seen the impact these technologies can have on improving collaboration and communication and, consequently, on improving productivity.

3. Enterprise 2.0 specific technologies

Like we demonstrated earlier, Enterprise 2.0 consists of a series of Web technologies which provide platform-type development tools for creating and supporting communities (together with sharing content and processes) each providing different functions. Combining the results of the studies performed in 2008 by the well-known company Forrester Research and by the AIIM professional association (Association for Information and Image Management) on the actual stage of the Enterprise 2.0 technology employment (Forrester, 2008; AIIM, 2008) and correlating these results with those of the global study performed by the McKinsey company in 2013 (figure 1), we observed that blogs, wikis, Social networks, RSS (Really Simple Syndication) and podcasts are the most known and implemented, while others, like: social voting, social bookmarking, mash-ups and widgets are less employed.

**Blogs.** The term Blog is the short for Weblog. Blogs are Web journals which allow users to rapidly communicate with a mass audience. Typically, blogs have only one author, but content can be added by the reader community, in the form of comments. Blogs provide content, organized in the form of individual entries, displayed in inverse chronological order. They also provide the possibility to add additional features, like: search, taxonomy creation, tagging, RSS subscriptions etc. In enterprises, blogs can be used for internal communication purposes and for project management activities. Also, they can be used for external communication with customers, business partners, shareholders etc.

**Wikis** are collaborative Web sites whose main role is to create and develop content. Each wiki has a predefined domain and anyone can add information and can modify / or comment on the contributions of others. Thus, in a wiki site, content develops organically and the collective wisdom shows gradually, with the comments, opinions and expertise added by all users. The most well-known example of a wiki site is Wikipedia. In companies, wikis can be used in a very broad area of activities, like collaborative workflow for certain documents, reports, studies etc. and for team work when managing projects.

**Mash-ups** are composite applications built around generally-accepted standards, like XML, HTML, Web services, Java Script. They provide a fast and easy integration, low costs, content from several sources and agile and customizable user interfaces. RSS is one of the ways that content can be added to a mash-up. Mash-ups can be used in companies in order to integrate applications and stand-alone data sources and present them in an aggregated manner. Using programming, one can create executive dashboards or unique user views for some applications and multiple data sources.

**Podcast.** Similar to a blog, a podcast has only one author and provides a mass communication channel. The major difference is that a podcast provides a fast and simple way to share knowledge in a multimedia format. For this reason, it is often referred to as a multimedia blog. Similarly to blogs, a podcast provides users with the possibility to subscribe to the podcast channel by RSS feeds. In companies, podcasts can be used to distribute learning or internal communication materials in a format that allows employees to access them from anywhere at all times. For example, a meeting can be recorded and then distributed to other employees who could not attend it. Thus it can be viewed or re-examined and listened or re-listened to anytime, in order to clear certain aspects.

**RSS (Really Simple Syndication)** represents a whole family of Web feed formats, it is based on standards, it is using the XML format and it can be employed to link the content of a web site to other web sites. An RSS feed provides both a summary of the web content it refers to and the whole web content. RSS, dynamically and automatically keeps subscribers posted on the changes appeared in the content of the respective site. Users subscribe to an RSS feed by introducing the link to the respective content into a reader or by using the RSS button in the browser. Reader programs regularly check the links to which a user subscribed in order to identify new content and download any new content they discover. RSS feeds can become the main tool to modify the informational flow which travels inside companies by email. They can be used to keep posted all interested people, both inside and outside of the company, on news regarding the company or the activities performed by working teams.

**Social bookmarking** is a tagging tool, used freely by individuals and shared publicly or collectively. It provides users with the possibility to tag documents as favourites in a public or semi-public space. Users save the links to the content (web pages) which they wish to remember and/or share. Most of the social bookmarking systems allow users to tag saved links, thus allowing content to be organized depending on similar tags. This way, users can navigate throughout the content by selecting different tags. Considering the number of users who bookmarked the same content in a similar way, a form of social voting emerges. In an organization, if broadly adopted, social bookmarking helps staff find relevant information and reduce duplicate research.
Social voting provides a tool to capture collective opinion. It’s a tagging form which allows users to assess the quality and utility of a particular piece of content. The more users participate, the more relevant the popularity rate obtained. Social vote tools use particular algorithms in order to build general tops or to calculate content value, based on the user feedback. In certain situations, these algorithms aren’t based on explicit user votes, but assess popularity based on user interaction with the content. Inside a corporate environment, social voting can help discover really important documents or choosing the best solutions.

4. SLATES and FLATNESSES – Enterprise 2.0 frameworks

The main characteristics of the Enterprise 2.0 technologies were synthetized and grouped by professor McAfee (2006) under the acronym SLATES (Search, Links, Authorship, Tags, Extensions, Signals) (figure 2). McAfee’s SLATES Framework was further extended by D. Hinchcliffe (2007). He added another four features to the ones described by A. McAfee: Freedom, Network-oriented, Social and Emergence, brought together by the acronym FLATNESSES (figure 2).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>F</th>
<th>Freedom</th>
<th>no barriers to authorship, free from a learning curve or restrictions</th>
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<tr>
<td></td>
<td></td>
<td>L</td>
<td>Links</td>
<td>ability to create interconnections between users and between content</td>
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<tr>
<td>allow users to search for other users or content</td>
<td></td>
<td></td>
<td>Search</td>
<td>ability to create interconnections between users and between content</td>
</tr>
<tr>
<td>ability to create interconnections between users and between contents</td>
<td></td>
<td></td>
<td>A</td>
<td>Authorship</td>
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<tr>
<td>creating content easily and low-barrier in accessing and using platforms</td>
<td></td>
<td></td>
<td>T</td>
<td>Tags</td>
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<tr>
<td>allow users to tag content and create taxonomies which can be combined to create a Folksonomy</td>
<td></td>
<td></td>
<td>N</td>
<td>Network-oriented</td>
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<tr>
<td>recommendations of users or content based on profile, preferences, and/or behaviour</td>
<td></td>
<td></td>
<td>T</td>
<td>Extensions</td>
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<tr>
<td>allow people to subscribe to users or content keeping them up to date</td>
<td></td>
<td></td>
<td>S</td>
<td>Search</td>
</tr>
<tr>
<td>transparency of access, diversity of content and community members and openness of structure must provide approaches that detect and leverage the collective wisdom of the community</td>
<td></td>
<td></td>
<td>S</td>
<td>Social</td>
</tr>
<tr>
<td>allow people to subscribe to users or content keeping them up to date</td>
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<td></td>
<td>E</td>
<td>Emergence</td>
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<td></td>
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<td>S</td>
<td>Signals</td>
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From this point of view, the Enterprise 2.0 technologies can seem redundant with certain already existing concepts in the theory of business and IT, like: collaboration, collective wisdom, open access, knowledge management etc. Collaboration is one of the 3C (Communication, Collaboration, Coordination) which belongs to the nowadays already old Groupware technologies. Similarly, the terms „free access” and „collective intelligence” aren’t new either; they were basic concepts in knowledge management. The capacity to build online platforms in order to manage collective wisdom and team work also precedes the appearance of the Enterprise 2.0 technologies. Collaboration, searchable content, developing content in a collaborative manner were all possible before the Enterprise 2.0 emerged. The main difference is that Enterprise 2.0 technologies can do all that in a much faster, more agile manner, with less barriers. The ultimate goal is to eliminate all barriers.
The collaborative environments and projects from the past took very much knowledge and technical effort both in order to be created and to be used. Nowadays, with the help of the Enterprise 2.0, all this can be accomplished very quickly, in a matter of hours. So, nowadays the main challenges aren’t technical anymore, like it was the case in the past, but are rather tied up to the enterprise culture. The companies and the economic environment in its whole must be more opened to developing collaborative content and thinking and they must also consider the free and agile sharing of this content, which, in the end leads to knowledge. In other words, the major challenges of these new technologies are the change of the enterprise culture and also a dramatic change of the way people think and act. Without major changes in the company management, in the employee education and mentality and, finally, without any adequate changes in the organizational culture, these technologies can bring more disadvantages than advantages.

5. Benefits and risks of using Enterprise 2.0 in companies

As we previously mentioned, the implementing of the Enterprise 2.0 into the corporate environment means, first of all, change. Any change means both benefits and risks. Before implementing these technologies, companies should assess the benefits and the potential risks, understand them and take action against any threats. Also, it must be taken into consideration that the potential risks and benefits of adopting the Enterprise 2.0 in the corporate environment tend to vary a lot from one company to another, according to the company's size, employee dispersal extent, employee average age, the company's field of activity, the degree of regulation of the domain and of the activity itself, organizational culture, the development of the IT system of the company and also of the implemented technologies.

We shall further present a synthesis of the benefits and risks of implementing the Enterprise 2.0 technologies in a company environment, made after Dowson (2009, p.33-36).

- **Improving productivity** – the employees and the teams work more efficiently thanks to an easier collaboration process and to the direct access to information and resources.
- **Faster innovation and development** – all stages, from the conceiving of a new product/concept to its release, are much more efficient, due to the easier interaction between all employees.
- **Improved efficiency for project management** – the Enterprise 2.0 tools are extremely important for optimizing project management in all domains.
- **Improving team work performance** – accelerating interactions between all members of a team and faster confidence building.
- **Better internal communication** – better communication and information exchange between employees.
- **Greater personnel involvement** – improving communication with team mates and taking part in debates lead to a greater employee involvement.
- **Improving collaborative involvement** – the existence of both tools and initiatives which help collaboration lead to behaviour changes.
- **More efficient learning and development processes** – the Enterprise 2.0 tools provide easy access to content and also a better connectivity for shared learning.
- **Easier access to organizational expertise** – it simplifies the process of discovering and connecting to knowledge sources, both the ones “hidden” in documents and processes and the human one.
- **Improved searching** – it improves searching for relevant information and resources, thus helping employees in their tasks.
- **Employer attractiveness** – when it comes to employers, young personnel takes into consideration how open minded and innovative they are. Adopting Web technologies is often seen as a proof of a progressive culture in a company.
- **Better market visibility and better company reputation** – Web 2.0 technologies are extremely efficient when it comes to promoting and building leadership and public awareness towards a company.

Many of these benefits are also confirmed by the study globally performed and published in 2010 by the McKinsey company (2010). This study states that a very large number of respondents in the corporate environment, who are using at least one Web 2.0 technology, consider they have obtained measurable benefits (9 out of 10 named at least one benefit). These benefits vary from a more efficient marketing to a much faster access to knowledge (figure 3).
Besides benefits, adopting Enterprise 2.0 technologies in companies can also bring along some risks, which can become uncontrollable:

- **Information leaks** – confidential information can leak much more easily outside the company.
- **Network security** – open systems are more vulnerable to attacks.
- **Loss of control over informational feeds** – executives cannot control anymore the information feeds in the company.
- **Encouraging negative internal comments** – employees are more “daring” in doing negative or inadequate comments on discussion forums, blogs or other open communication forms.
- **Encouraging negative external comments** – employees can make negative comments aimed at the company or even at its clients on public sites which use Web 2.0 technologies.
- **Inadequate personnel behaviour** - online instruments can raise the visibility of inadequate comments;
- **Uncertain or misused information** – personnel can post inaccurate or uncertain information or misleading instructions.
- **Personnel productivity drops** – employees spend too much time using the internal or external social networks of the company for other purposes than the ones strictly tied to their work.
- **The need for more bandwidth** – the excessive use of multimedia content (video, audio) during informal discussions, meetings, video conferences etc. leads to high prices generated by the need for more and more bandwidth.

For many of these risks, the study globally performed and published in 2013 by the McKinsey market research company (McKinsey, 2013) provides accurate data, obtained by interviewing a number of 2.955 company leaders. By far, the biggest risk they named (55%) was the leakage of confidential information outside companies. Only 6% of the respondents declared that they do not see any risk in using these technologies in a company (figure 4).
Even if, as it was previously shown, the risks associated with using Enterprise 2.0 technologies can be quite numerous and important, the risks of ignoring these technologies can be even bigger. The biggest risk is that of unauthorized use of these technologies on the web, outside well-defined frameworks and without clear and coherent policies. This practice could lead to huge security risks, as internal and even confidential information is stored at all times on the web and activities that the company cannot know of or control in any way, are also taking place on the web.

In our opinion, no matter the risks these technologies bring with them, companies will eventually have to adopt them, in order to keep up with and adapt to the more and more dynamic, flexible, open and agile social and economic environment.

In this given context, Accounting will have much to catch up with, as it hasn’t yet adopted to a significant extent collaborative technologies which are already traditional, like the Groupware technologies. We have already written and published a study and an extended analysis on the employment of Groupware technologies in Accounting departments in our book “Integrative and Collaborative Information Technologies in Accounting” (Rizescu, 2010).

With the adoption of the Enterprise 2.0 technologies in companies, in our opinion, accounting departments will be forced to adapt to the imposed changes, among which the most important are the flexibility and agility of the new environments. However, faster than that, professional accountants can already use such technologies, which they can find on the Internet, in order to gain unlimited access to information, communication and collaboration.

6. Employing Enterprise 2.0 technologies in Accounting

Accounting can benefit from the Enterprise 2.0 technologies, both inside the company, as a component function and also independently, by independent professional accountants and accounting companies.

Independent accounting professionals can use Web 2.0 technologies for:
- Faster and easier communication with their customers, with almost zero costs;
- Transmitting and/or receiving necessary data and information to/from the clients;
- Transmitting accounting information using innovative formats: audio, video, on mobile devices, written on blogs or wikis;
- Sharing information and knowledge with other members of their trade;
- Keeping up to date with changes in the law and especially with the procedures required for applying these changes, as this profession is one of the most affected by legislation changes;

From our research, it seems that, although shyly, professional accountants have begun using these technologies outside companies, on the Web. There are a series of blogs for accountants, like http://www.cabinetexpert.ro/, which was uploaded online in April 2004, is managed by contacafe.ro and already has over 5000 articles posted and almost 15,000 likes on facebook.com (other blogs on the web on accountancy are mentioned in table 1).
Table 1. The most well-known Romanian accounting blogs

<table>
<thead>
<tr>
<th>Accounting blogs</th>
<th>Details</th>
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<tbody>
<tr>
<td><a href="http://www.cabinetexpert.ro/">http://www.cabinetexpert.ro/</a></td>
<td>This is one of the most well developed blogs which treats accounting subjects. It is affiliated to the contacafe.ro portal, it has over 5000 articles posted and almost 15.000 likes on facebook.com</td>
</tr>
<tr>
<td><a href="http://www.curierulfiscal.ro/">http://www.curierulfiscal.ro/</a></td>
<td>It is affiliated to the “Curierul Fiscal” magazine, it has, begging with November 2007, approximately 8000 accounting, tax systems and tax legislation related articles and has almost 1800 likes on facebook.com.</td>
</tr>
<tr>
<td><a href="http://www.blogulspecialistului.ro">http://www.blogulspecialistului.ro</a></td>
<td>Owned by Rentrop &amp; Straton and affiliated to the manager.ro network, it contains numerous articles in the fields of accountancy, tax systems, work legislation, law resources, management, business and import-export. They are grouped in categories (important, attention, special, useful information, news). It has over 2300 articles treating accountancy and tax systems.</td>
</tr>
<tr>
<td><a href="http://www.blogcontabil.ro/">http://www.blogcontabil.ro/</a></td>
<td>Owned by a private person, it claims to be an anti-stress blog for accountants, who publish both accounting and entertainment articles. It has 1908 articles and 994 comments.</td>
</tr>
<tr>
<td><a href="http://blog.contaradulescu.ro/">http://blog.contaradulescu.ro/</a></td>
<td>Owned by an accounting company, it has about 200 articles, the first one being published in September 2013. The blog’s sections are: Accounting advising, Tax Advising, NGO, Self-Employed, Ltd, Accountancy, Expert Accountant, Accountant Expertise, Legislation, HR.</td>
</tr>
<tr>
<td><a href="http://www.blogportalfinante.com/">http://www.blogportalfinante.com/</a></td>
<td>Launched in 2011, it is affiliated to the finance and accounting portal <a href="http://www.portalfinante.com/">http://www.portalfinante.com/</a>, which was one of the pioneer projects approved in the “Small business creation and development by young people program”. It has over 200 de articles.</td>
</tr>
<tr>
<td><a href="http://www.econtabil.info">http://www.econtabil.info</a></td>
<td>Launched in 2007 and owned by a private person, it has approximately 700 articles published and numerous useful links.</td>
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</tbody>
</table>

***data collected in July, 2014

We also found some forums dedicated to accountancy, like the one managed by conta.ro, which already has over 112.000 members, over 25.000 subjects and over 240.000 messages (other relevant forums on accountancy subjects are presented in table 2).

Table 2. The most well-known Romanian accounting forums

<table>
<thead>
<tr>
<th>Accounting forums</th>
<th>Details</th>
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<tbody>
<tr>
<td><a href="http://www.conta.ro/forum/">http://www.conta.ro/forum/</a></td>
<td>Affiliated to the conta.ro portal, it has 112.151 members, 25.450 subjects and 246.750 messages.</td>
</tr>
<tr>
<td><a href="http://www.contacafe.ro/">http://www.contacafe.ro/</a></td>
<td>Affiliated to contacafe.ro, it has 19078 members, 1954 subjects and 3108 messages.</td>
</tr>
<tr>
<td><a href="http://www.contabile.ro/forum/">http://www.contabile.ro/forum/</a></td>
<td>Affiliated to the contabile.ro accounting company, it has 7836 de members, 575 subjects and 1587 de messages.</td>
</tr>
<tr>
<td><a href="http://www.sagasoft.ro/forum/">http://www.sagasoft.ro/forum/</a></td>
<td>Affiliated to the Sagasoftware company, the producer of the SAGA software application, it has a number of 62.440 members. It also has a section dedicated to accounting problems, with the same name, where there are 12.860 subjects and 77.283 messages posted.</td>
</tr>
<tr>
<td><a href="http://contabilitate.myforum.ro/">http://contabilitate.myforum.ro/</a></td>
<td>The forum of the accountants from Gorj has 1407 members, 126 subjects and 528 messages. The last posted message is from January 2013.</td>
</tr>
<tr>
<td><a href="http://www.avocatnet.ro/content/forum%7CdisplayForumPage/forumID_9/Contabilitate-in-general.html">http://www.avocatnet.ro/content/forum%7CdisplayForumPage/forumID_9/Contabilitate-in-general.html</a></td>
<td>The portal has a forum with a very large number of members and subjects, among which there is a section named “Accounting in general”, where there are around 1800 debate subjects.</td>
</tr>
<tr>
<td><a href="http://www.apec-romania.ro/forum-apec.html">http://www.apec-romania.ro/forum-apec.html</a></td>
<td>The Romanian Professional Economists and Accountants Forum has 926 users, 322 subjects and 500 messages.</td>
</tr>
<tr>
<td><a href="http://www.contabun.ro/forum">http://www.contabun.ro/forum</a></td>
<td>It has 201 members, 189 subjects and 234 messages.</td>
</tr>
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</table>

***data collected in July, 2014
Also, there is a series of Romanian Accounting portals which keep accounting professionals updated with more and more diverse subjects: accounting and tax legislation, accounting monographs, taxes and dues, tax calendars, forms for accounting and financial documents, accounting software applications, folders containing accounting companies or accounting professionals, magazines, articles, news related to the domain etc.

The most developed such portals, known by professional accountants and identified by repeated research on google.com using relevant terms are presented in table 3.

Table 3. The most developed Romanian accounting portals

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<th>Portal Name 1</th>
<th>Portal Name 2</th>
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***Data collected in July, 2014

Considering the limited amount of space for this article, one might think that there are numerous such blogs, forums or portals that weren't mentioned in tables 1, 2, or 3 and so, the information we presented is not meaningful enough. We mention that, beside the blogs and forums we found, there aren't many others with a similar amount of traffic or which at least appear in the first 10 result pages displayed by Google after several searches using relevant terms. Another observation is that, for all the analysed blogs, the number of comments for the published articles is very low. The number of answers to posted subjects on different forums is also low, as it is not much greater than the number of subjects themselves. There are very little exceptions to that. This leads to the conclusion that professional accountants who access these resources on the Internet are rather passive users and are not yet real contributors to this kind of resources.

Part of portals presented in table 3 provide access to a part or to all of the information they contain based on a monthly subscription, which will lead to more accounting professionals migrating to real free information sources provided by the Web 2.0.

From the wiki presence point of view, the most interesting approach was that of the professor C.M Dragan, who started writing a book about accountancy, named ABACO – A starter’s guide to Accountancy, using the http://ro.wikibooks.org wiki. Unfortunately, this approach has been abandoned, the last update on the site being from 2009. The Romanian version of the Wikipedia.org website contains a section titled Accountancy, in which there are a number of 21 published articles: Asset, Trial Balance, Balance of Accounts, Account, the Principle of Double Record, Result of Accounting Period etc.

Gathering professional accountants on forums, in groups on social networks or around blogs leads to a better continuous information process and can also lead to forming “a single powerful voice”, which can put pressure on professional organizations (CECCAR, CAFR) or other regulatory institutions in order to make them change things and thus make this profession progress.

As far as the usage of these technologies by the accounting departments in the Romanian companies, even without a study of our own or any study at all, we can afford to take the risk of stating that they are barely used. When stating that, beside our own empirical observations, we also take into consideration the results of a study performed by H. El-Sayed and C. Westrup (2011) at the Manchester University. This study was sponsored by the CIMA (Chartered Institute of Management Accountants) and one of its conclusions is that “there are very limited examples of accountants, even in early adopter companies, who use Enterprise Web 2.0 techniques in a systematic and deliberate way”.

In our opinion, companies could have numerous advantages, if they used Enterprise 2.0 technologies in their accounting departments:

- Accounting and professional accountants will perform their tasks much more rapidly and more professionally, by properly supporting the executive tier in the company.
- Enterprise 2.0 offers to professional accountants the possibility to improve their productivity, by sharing knowledge and allowing them to obtain the information they need rapidly, efficiently and in innovative ways.
- Implementing this kind of applications is not very expensive and the main advantage here is that they are easy to use.
- Improving communication between accountants and other employees in the company.
- Changing mentalities amongst accountants and make them more enthusiastic towards new.

Beside these benefits, there are also a series of risks, like loosing control over informational feeds both inside and outside the company. Accountants may become less efficient if attracted in informal communication channels, where there are conversations, which are not related to their tasks at work. Also, sensitive data and information that they work with on a current basis may leak outside the company, thus causing important problems.
Many of these risks can be avoided by properly training professionals and by implementing proper security and data confidentiality measures.

The major advantages of using some of the Enterprise 2.0 technologies in accountancy are:

- **Blogs** can be used by accounting professionals in order to share knowledge on legislation changes which affect accounting procedures, using and laying down financial and accounting documents and forms, ways to calculate taxes and exercise taxes etc.

- **Wikis** simplify the collaboration between professional accountants and also the collecting and sharing of knowledge. Tracking documents and files on paper support from one accountant office to another will not be necessary anymore. With a single click, the knowledge provided by some professional accountants can be easily and efficiently improved by others, by modifying existing wikis or by adding new content. This way, with the help of wikis, internal regulations and procedures of the Accounting Department can be improved, accounting monographs can be developed, accounting professionals can collaborate with other employees in order to create reports which require data from several departments or fields of activity etc.

- **Podcasts.** The utility of podcasts for the company and, consequently, for the accounting function can be illustrated with the help of IBM’s example, which uses this type of application in order to share information with its employees. Instead of managing the time in which the employees take part in classic or online meetings, they chose to record the meetings and make them available to the employees with the help of podcasts. Beside cutting down costs related to planning and organizing meetings and also travel costs, the main advantage is that employees can choose themselves the most appropriate moment to listen/watch or listen/watch again or analyse again these meetings.

All this being said, we consider that adopting these technologies in companies, while taking the necessary measures to change organizational culture, can help save important amounts of money. In this context, it is compulsory that professional accountants accept these applications, try to understand and identify the ways in which they can help them accomplish their daily work-related tasks.

### 7. A solution for using some Enterprise 2.0 technologies in accounting

In this section, we shall try to demonstrate how easy it is to implement and use blogs and wikis in an enterprise portal which allows these technologies. We shall explain the general security measures required by this approach, in order to eliminate the security risks above mentioned. The portal has been built using Microsoft Office SharePoint Server 2007 technologies and was designed as a general solution of integration and collaboration in a company. The complete description of the portal and its features and functions can be found in Rizescu (2010).

#### 7.1 Using accounting blogs in a company

When it comes to changes, Accounting is one of the most affected domains. An accountant must be permanently up to date with all changes both in general legislation and in internal rules and regulations. A Blog is an ideal tool, which can also be used inside a company, in order to inform accountants and keep them up to date with the novelties.

Blogs are an efficient tool for providing content on a regular basis to an interested audience. Inside a portal, accountants can create blogs, where they can publish and also consult information related to:

- Legislation changes that affect accounting procedures.
- Tax statements, changes and updates of the software applications used in order to fill in these statements.
- Taxes and excises and the way they are calculated, according to the latest in legislation.
- New regulations, both legislative and internal, concerning the creation and use of financial and accounting documents and forms.
- Changes in the chart of accounts and in the formulas required to register accounting operations.
- Updating on the deadlines for bringing in tax statements, financial and accounting documents and reports etc.
- Solutions for resolving atypical accounting problems etc.

Creating and using a blog inside the portal is simple and it doesn’t require technical knowledge from accounting professionals. Creating a blog requires creating a new site to host that blog. That is why, in order to be able to create a blog, an accountant must be granted the right to create new sites inside the portal. The Blog has a main page, where the content added by the accountant is added in reverse chronological order. Accountants can also group the posted subjects in several categories, so that they can be found as easy as possible by other interested employees (figure 5).
In order to add a topic on the blog, an accountant must first connect to the site which hosts the blog, with a username and a password. Thus, authenticity for the posted topics can be provided. Topics can be written using a simple HTML editor. Thanks to the integration of SharePoint Server with Microsoft Office 2007, the topics can be written and published in the portal directly from Microsoft Word.

Considering that a blog can contain different categories of information, it takes different levels of security to access this information. Most instruments which deal with creating and maintaining blogs do not provide such security levels, so that is why sensitive information or information which can violate intellectual property is not published on blogs. In a portal, blogs have a security level implemented in order to provide access to the information to authenticated employees only and deny it to anybody without proper rights.

Also, an accountant has the possibility to control comments added to the topics. This way, he/she can avoid spam, unwanted or off-topic comments.

Because the blog’s content is stored and managed from the SharePoint server, it is possible to use RSS feeds. By subscribing to the RSS feed attached to the blog, accountants and other interested employees are permanently kept up to date with the news on the blog. The RSS notifications are sent to the Microsoft Outlook e-mail accounts.

### 7.2 Using accounting wikis in a company

Often, because of the frequent changes, situations occur when accountants must consult with other colleagues in order to solve accounting problems. These discussions can take a lot of time, as it is well-known that any discussion can diverge to other topics, which are not related to the problem. Besides, very often these discussions require accountants to go to other places inside or even outside the company. In order to avoid such situations and frequent displacements, wiki sites are a good solution. With their help, accountants inside a company can collaborate efficiently.

Wiki is, in fact, an online Word document. Accountants can use wikis in any situation that requires working on a single shared document. This way, the situation existing in traditional systems, where documents are sent from one employee to another via e-mail and multiple versions coexist can be avoided.

Inside a portal, a Wiki site can be used by accountants for almost any document which requires working together with several employees:

- Planning calendars for tasks and projects which require accountants to collaborate with several other employees from different departments.
- Developing standards for the accounting department.
- Creating and developing internal rules and regulations.
- Developing accounting monographs.
- Creating job descriptions for the accounting department and also other departments.
Creating reports which require manual input data, which does not exist in any company application and which need to be provided by several employees.

Because each created Wiki is hosted on a separate site inside the portal, they will all benefit from the same security model as the SharePoint sites. Only accountants and employees granted with the proper rights can modify Wiki pages. Once an accountant visits a Wiki page, if granted with the proper permissions, he or she can modify content with a simple click of a mouse. Accountants can create Wiki pages without knowing anything about web pages and HTML. While modifying the page, the accountant can prevent other employees from modifying the same page by checking the “check-out” option. Afterwards, they can use the “check-in” option in order to add explanatory comments for the changes brought to the document and the reasons they made them.

Accountants, if granted full rights on the Wiki site, can control the access rights for the other employees. They can allow only a certain group to modify Wiki pages, while granting all the other employees only reading permissions. When a Wiki page is modified, accountants and other interested people can be notified with email messages sent to their Microsoft Outlook accounts.

Figure 6 Wiki for accounting monographs

The most powerful feature of a wiki is the ease with which it can be created and modified, allowing any employee without technical skills to collaborate with other members of the same company. Changes made to the wiki pages (adding, modifying, erasing content) are controlled by the means of saving different versions. Each version contains the changes made to the document and information in the person that made the changes (figure 7). Accountants can return to a prior version of the page if they consider the changes to be wrong or inadequate, by simply pressing the “version restore” button. When restoring, a new version of the page is created, with the same content as the restored version.
Accountants can define alert messages as to be able to identify more easily the modified pages. They can choose modifications they want to be informed of, how often they should be informed, or the subject of the alert message. Defining alerts can be done with the “Alerts” option from the “History” menu. This alert sends an email on the performed changes and also a link to the relevant pages. Accountants can use the “Alerts” option from the Wiki libraries, and this will send them alerts related only to the respective page, not all pages of the Wiki site. Another way for a user to follow changes made to the materials on the wiki site is to subscribe to an RSS feed defined for that site.

8. Conclusions

Companies have always fought to obtain more with less, to improve their competitiveness, productivity and effectiveness. Accountancy has also aimed for these goals. We consider that today’s collaborative technologies can turn accounting departments into very efficient tools, which can significantly improve company profits. Also, the today’s collaborative technologies have the potential to change the classic modern image (modern because it is somehow superior to the image of the accountant wearing glasses and white sleeves and writing digits in big, dusty books) of an accountant surrounded by tons of documents waiting to be introduced in accounting software applications or by tons of reports coming out a dot-matrix printer. The accounting professionals of today can connect to PCs, laptops, PDAs (Personal Digital Assistant), mobile phones, smartphones (iPhone) and can solve tasks or can access, from anywhere, the applications they are working with on a current basis and the information they need.

In our opinion, the Enterprise 2.0 technologies and the other collaborative technologies as well will soon be able to provide online accounting/accounting as a service (SaaS)/accounting 2.0, which is virtually independent from time and space and which will revolutionize the way in which professional accountants think and act. In this context, professional accountants will be less interested in routine operations and will become more preoccupied to satisfy the information needs of all those who are interested in financial and accounting information, and also to find new solutions for developing businesses or for building more profitable solutions for their clients. This way, the role of accounting professionals will gradually change towards management, analysts or consultants, thus becoming able to offer superior, creative services and profit.

The Enterprise 2.0 technologies have low maintenance costs and they are easy to implement and operate. In our opinion, they are the most appropriate platform which can provide communication and collaboration features, both inside a company and outside it. With the help of these technologies, each part of the accounting process can be assigned to the right person or resource, no matter where in the world that person or resource is, which leads to better efficiency and deep changes in the way that professional accountants work.

We also consider that the Web 2.0 technologies and the Internet will eventually lead to e-accountant communities, where professional accountants will have unlimited access to information, will communicate freely, ask for advice, exchange ideas and information and will contribute to the development of the trade as a community. In our opinion, the emergence of these communities will result in a higher request to integrate these technologies in the companies, in the systems that the members of these communities use on an everyday basis. Thus, accounting IT systems will evolve to more comprehensive systems, to business
management systems, which will bring together all the important information regarding the activity of a company and which will be available for access with a minimum effort.

All these things can happen only if companies are willing to change their organizational culture and the way they are doing business and if professional accountants are willing to adopt the technologies, understand their utility and use them in their everyday activity. In this case scenario, the ability of professional accountants to use the technologies and their will to learn how to use them plays the major part.

References
21. Rizescu, G. (2010), Integrative and Collaborative Informational Technologies in Accounting, Didactical and Pedagogical Publishing House, Bucharest