Crowdsourcing in telework as a new scalable business model

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I. INTRODUCTION

In the modern world, information becomes more and more valuable and circulates quickly. Traditional business models cannot provide for procurement of such beneficial properties of information as objectivity, reliability, completeness, accuracy, urgency and usefulness. The extreme importance of these properties led to the development of new business approaches. The synergetic correlation between social and business environment is in strong demand. The business task found a solution by virtue of social power, resolving many social problems; however, it also led to the emergence of new ones.

II. SEMANTIC WEB AS WEB 3.0 FEATURE

The idea behind the creation of Web 3.0 is as follows: a new platform is to be developed on the basis of Web 2.0. It is to become not exactly technological, but rather social and cultural so that professionals can use it to generate attractive and useful content for users.

In the opinion of Nova Spivack, Web 3.0 "is best defined as the third-decade of the Web (2010 – 2020), during which time several key technologies will become widely used. Chief among them will be RDF and the technologies of the emerging Semantic Web. While Web 3.0 is not synonymous with the Semantic Web (there will be several other important technology shifts in that period), it will be largely characterized by semantics in general.

Web 3.0 is an era in which we will upgrade the back-end of the Web, after a decade of focus on the front-end (Web 2.0 has mainly been about AJAX, tagging, and other front-end user-experience innovations." [1]

The author of the term "Web2.0", Tim O'Reilly defined Web 3.0 as the interrelation between the Internet and the real world. [2]

Web 3.0 is defined as the creation of high-quality content and services produced by gifted individuals using Web 2.0 technology as an enabling platform. Web 3.0 throttles the "wisdom of the crowds" from turning into the "madness of the mobs" we've seen all too often, by balancing it with a respect of experts. Web 3.0 leaves behind the cowardly anonymous contributors and the selfish black hat SEOs that have polluted and diminished so many communities. [3]

Therefore, the increasing integration of innovative Web 2.0 services into a profitable business models became a premise for the creation of Web 3.0. It is aimed to provide the most valuable properties of information, and, thus, can be used as a basis for modern business frameworks.

Web 3.0 is considered to be an intelligent system for a reason. In terms of information supplying, Web 3.0 is a more efficient, intuitive and customized user environment. This becomes possible thanks to an important feature of Web 3.0 – Semantic Web. Given the fact that Web 3.0 is based on natural language access to information, this technology can be identified as reflective intelligent system. [4] Thus, Web 3.0 is not merely a system for generation of high-quality content, but also for the creation of successful business models.

The core of Semantic Web is based on the introduction of meta language used to describe website content and automatically exchange data between servers. Descriptive mechanisms for Semantic Web have already been developed; they include Resource Description Framework, Web Ontology Language, and Extensible Markup Language.

The concept of Semantic Web was developed in 1960's by Allan M. Collins, cognitive scientist, M. Ross Quillian, language expert, and Elizabeth Loftus F., psychologist. It was designed to be a framework for supplying semantically structured information. Meta data and interrelations inside it help users to better understand website content, and upgrade to Web 3.0, allows generation of high-quality content that adapts to users' interests. The Semantic Web can be considered as an integrator across different information applications, content and systems. It can be used in many different areas such as publishing, blogging, knowledge base, decision support systems and many others. Often the terms "semantics", "metadata", "ontologies" and "Semantic Web" are used inconsistently. In particular, these terms are used as everyday terminology by researchers and practitioners, spanning a vast landscape of different fields, technologies, concepts and application areas. Furthermore, there is confusion with regard to the current status of the enabling technologies envisioned to

realize the Semantic Web. [7] The most well-known versions of the layered architecture that exist within literature have been proposed by Berners-Lee. [5]

Web 3.0 is also useful for marketing managers, opening new opportunities for client attraction. These days more and more marketing managers use Web 3.0 services to develop and promote new products and services in cooperation with consumers. Web 3.0 penetrates deeper into business processes and helps generate high-quality content at the level of clients profile management.

For example, Web 3.0 deeply penetrated into Enterprise Telework Ecosystem (ETE). It allowed to accumulate semantic information about client profiles in enterprise database by virtue of interaction between different subjects of the ecosystem (data searchers, data actualizers, marketing managers, call centre operators, and sales managers). Each member, assigned with their task, forms semantically structured information required for successful interaction with company's potential clients.

III. CROWDSOURCING SEMANTIC WEB

Semantic Web technologies are an efficient way for presenting information over the internet. Semantic technologies provide a new layer that we can name an ecosystem, above existing information technology infrastructure. This layer allows exchange and interrelation of information, data, content and processes. Semantic technologies can be considered as another level of depth that provides far more relevant, intelligent, capable and responsive interaction than it is available at information technology level by itself.

This structure can be symbolically identified as a database, which is globally linked to all files and documents available online. This link is made in a form that can be understood by computers.

Semantic Web is a development tool for Web 3.0 allowing users to easily find, mix, match and combine the information they need. [6] As for Enterprise Telework Ecosystem, Semantic Web is an integration tool and base concept for commercial use of two systems: telemarketing process and enterprise database.

Interaction of these two systems with their base elements such as data searchers, data actualizers, marketing managers, call centre operators and sales managers via Semantic Web can significantly improve efficiency of sales business process and increase overall operating margin. Therefore, it represents a hybrid model of human intellect and machine capabilities to understand and respond to complex search requests, based on their meaning. This goal can be achieved by using metadata and ontologies and by splitting search requests into separate keywords. In Enterprise Telework Ecosystem, Semantic web approach should be used for segmentation of enterprise database. This is performed through the selection of keywords for each segment. To take advantage of this approach, marketing managers need to organize the work of data searchers and actualizers using crowdsourcing technology and Semantic Web.

Semantic Web is of interest to many these days. Cory Doctrow studies Semantic Web from the standpoint of behavioural concept and decision-making psychology of users. For instance, some users might enable metadata on fake pages, misleading the system itself. Data searchers cannot guarantee the relevance of company contacts and profiles they input into the system, in fact, in many cases they simply try to fill in the fields with no matter what information. That is why in Enterprise Telework Ecosystem the process of data accumulation should be performed in two stages. During the second stage, data actualizers check the accuracy and relevance of data. Because gathered data contains valuable potential client profile, we are interested in efficiency and high accuracy of information. Data searchers and data actualizers are the ones responsible for implementation of Semantic Web in Enterprise Telework Ecosystem, not general public.

Upon request from marketing managers, data search can be upgraded to a higher level, what we can name Web Mining. Web Mining should be understood as a search for useful and original data, in-depth analysis and smart search. Web Mining integrates the techniques of two popular research fields - Data Mining and the Internet. By analysing the potential rules hidden in web blogs, WUM helps personalize the delivery of web content and improve web design, customer satisfaction and user navigation through pre-fetching and caching. [8] The process of data input into enterprise database is corresponding with Web Mining. A client communication process from start to finish has a life cycle that begins with the work done by data searchers and ends with the work done by call centre operators. Gathered information from this cycle is analysed and reviewed by marketing managers because they are the ones who brings intelligence feedback back into the system, so a new improved cycle can be launched. When Web mining is done through the crowdsourcing model, it expands business scalability potential.

Jigsaw (online business directory) company is a proof to this statement. Its community is mainly sales, marketing and human resources professionals. They want to find people more easily, and generally, sell them something. "Our goal is to make sales and marketing far more efficient," Mr. Fowler said. [9] As a crowd-sourced directory of 17 million B2B contacts, Jigsaw was built on the contributions of over a million individual members. [15] The same approach is also actively used by a Russian company "Marketing Telesystems LLC". [10] It is a part of Telemarketing business offered as DaaS (Data as a service) model, which is now available on the Russian market.

Web Mining and Data Mining can be effectively used for customer segmentation and other marketing purposes. Among the valuable and useful purposes of them in Enterprise Telework Ecosystem, the following should be highlighted: detailed content analysis of all recorded calls done by telemarketing system, for further individual product and proposal formation.

The main goal, based on automatization, is structured, and detailed business relation with clients supported by Web

Mining; improving the work efficiency and optimize use of marketing resources.

Back in 2008, the following terms were introduced based on Semantic Web in 2008: Microwork and Microtasking. Microwork refers to a series of micro tasks. Microtasking, in its turn, refers to the process of splitting the work into several singular elements. Microwork is a series of small tasks which together comprise a large unified project, and are completed by many people over the Internet. Microwork is considered the smallest unit of work in a virtual assembly line. It is most often used to describe tasks for which no efficient algorithm has been devised, and require human intelligence to complete reliably. [11] In Enterprise Telework Ecosystem, Microwork is performed by data searchers, actualizers, auditors and telephone operator. Sometimes, several Human Resource Management processes are fulfilled through Microwork. Those are micro tasks for data searchers (to search for client profile over the internet), for data actualizers (to perform a task that verifies the accuracy of profile information), for telephone operators (to make a call to a client in the profile) and for auditors (they monitor that each micro worker does their task according to instructions).

Creation of Microwork-services led to rapid development of remote jobs all over the world. Many companies started to offer their services that require Microtasking approach in their business model.

Sometimes users are offered to complete a very basic tasks, for example, to leave a comment to a picture or an article. Tasks can be different, and mainly they come from large or developing companies that use Microwork-services as a part of their outsourcing strategy. An example of a task in Entreprise Telework Ecosystem can be: "Please search for the "Telephone number" in google and update it in a company profile".

Microtasking is becoming more and more demanded by call centres, contact centres and content centers. Thanks to crowdsourcing, companies get a chance to hire teleworkers in a new way. Their successful work depends on flexible Information Technology infrastructure, and that is why we believe that SaaS and DaaS business models are of crucial importance.

Teleworkers make cold calls, process inbound calls and perform other services for call centres. They do not need to be present in the office and/or have specific equipment. Each of the teleworkers has a global goal that they try to achieve individually.

Crowdsourcing grants significant advantages to both, employees and employers. Employees can work from home anywhere in the world and receive their salary through online payment services; it saves their time and gives a chance to work for disabled people, pregnant women or stay-at-home mothers to make their living; it allows people from third world countries earn more money, than they can on local labor market. Employers, in their turn, save money on rent, internal resources and other expenses.

This given, Crowdsourcing in Semantic Web can be considered as a concept for future business development.

Compared to traditional organization model, this new business architecture provides an advantage of flexible business scaling possibilities coupled with optimization of time and resources. Such business architecture can also be used to resolve important social issues.

A bright example is LiveOps. This company offers a contact centre platform and services that allow calls to be routed to single or dispersed locations. Since 2000, the company has operated an on-demand call centre service made up of thousands of home-based independent agents who contract with LiveOps to handle calls for financial, health, retail, insurance and non-profit organizations. During the Hurricane Katrina relief effort, LiveOps was the only call centre able to respond and ramp up in hours (versus other call centres' timeframe of days) to assist the Red Cross with calls from family members looking for missing or displaced loved ones. Since then, the company has been on hand to help many other relief organizations with emergency and fundraising efforts. [12]

Constant quality control is crucial for maintaining the system and its information properties. Business scaling possibilities may decrease, should the company fail to build a stable and reliable quality control system. Microtasking and crowdsourcing can be of help here, to.

Let us take a deeper look at the internal audit of the Enterprise Telework Ecosystem. The task is as follows: listen to the recorded call and evaluate it against quality criteria. Crowdsourcing model can be used for objective evaluation. Independent army of Microworkers is hired to audit the internal processes against a quality criteria check-list. Each Microworker evaluates the task of call centre operator according to their competence. The more Microworkers are hired – the more tasks will be evaluated, and the better will the company's communication practices be.
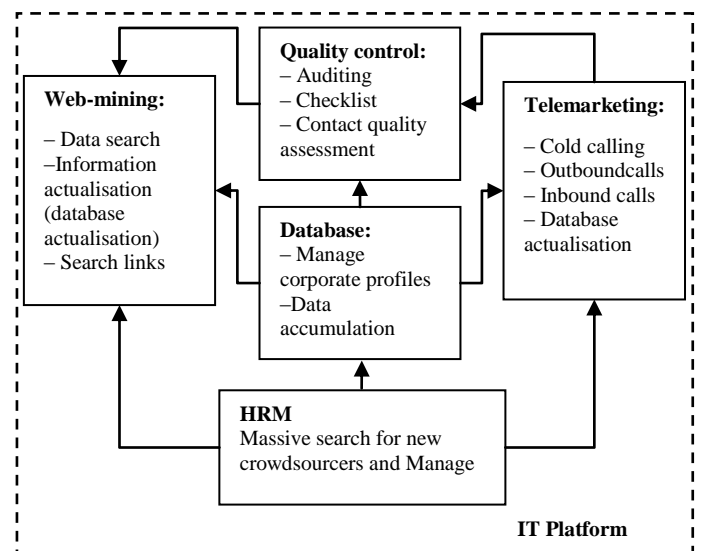

Fig.1. Enterprise Telework Ecosystem

Reliable Information Technology platform combined with Enterprise Telework Ecosystem is a way to create a new innovated scalable business model.

IV. CROWDSOURCING SCALABILITY AND FUTURE OF HUMAN RELATIONSHIP MANAGEMENT IN CROWDSOURCING

We have looked at crowdsourcing and telework – new developments that are now used in innovative companies. Information technologies have become flexible and open to business and social needs.

Web Mining, telemarketing and quality control based on a flexible IT system can be scalable. The number of workers involved in each of these processes depends on the needs of a company.

Crowdsourcing philosophy is reflected in cooperation between people who work on the same project and have the same goal. The task can only be accomplished with the help of IT instruments that open wide opportunity for mutual work.

The question is: "How can scalability be achieved?" On one hand, new approaches to business processes allow companies to scale tasks volumes up and down while the quality of work remains high regardless of business needs. On the other hand, information technologies form a platform for successful operation of the ecosystem.

Human resource management (HRM) is worth special attention. HRM is the management system of an organization's workforce. [13] It includes competent employee selection, task quality control and human resources optimization. Human resource management is a fundamental part of organization's management systems. Management of teleworkers has its own distinctive features, which is why it is necessary to assign tasks and motivate workers correctly.

Business scalability raises certain management questions, from selection and evaluation of employees to evaluation of results.

Despite the fact that crowdsourcing is becoming more and more popular, we have to say that resources of online communities are limited because of low levels of professionalism and high levels of irresponsibility. This makes it impossible to utilise them as beneficial economic tools.

The society is now in the process of resocialisation, when modern communication technologies allow the formation of new social configurations with expert (intelligent) online communities. Possibly, these communities can be considered as mechanisms for Knowledge as a Service (KaaS), which, in their turn, manage our implicit and explicit knowledge. At the same time, technologies, systems and data accumulation and access structures (internet, intranet, portals and networking software) procure instrumental support for knowledge management.

In the near future, crowdsourcing might transform into noossourcing (from Greek "noos," mind), which implies management of expert online societies. [14]

Power of masses, organised in the web, can help achieve many economic goals; organised knowledge, in its turn, is more powerful than the power of masses.

Is it possible that these processes become self-organizing in the future, turning into intelligent system? We believe that the answer is "Yes".

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