Chapter 19
Towards Crowd-Driven Business Processes

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ABSTRACT

Web 2.0 is shifting work to online, virtual environments. At the same time social networking technologies are accelerating the discovery of experts, increasing the effectiveness of online knowledge acquisition and collaborative efforts. Nowadays it is possible to harness potentially unknown (large) groups of networked specialists for their abilities to amass large-scale collections of data and to solve complex business and technical problems, in the process known as crowdsourcing. Large global enterprises and entrepreneurs are increasingly adopting crowdsourcing because of its promise to give simple, low cost, access to a scalable workforce online. Enterprise crowdsourcing examples abound, taking many different shapes and forms, from mass data collection to enabling end-user driven customer support. This chapter identifies requirements for common protocols and reusable service components, extracting from existing crowdsourcing applications, in order to enable standardized interfaces supporting crowdsourcing capabilities.

1. INTRODUCTION

As information technology (IT) became commonplace in work environments, research on computer supported cooperative work (CSCW) emerged with focus on facilitating collaboration between members of a group while carrying out tasks with a shared objective. CSCW has evolved into a domain concentrating on the role of the computer in group work, beyond mere “note taking” activities (Greif, 1988). Rodden (1991) describes in his survey CSCW groups of systems, which provide co-authoring, messaging, conferencing, meeting rooms, and real time conferencing capabilities.
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The systems are classified based on temporal dimension; differentiating situations where workers are collaborating in synchronous and asynchronous way. Location dimension distinguishes between systems that engage collocated and distributed team members. In mid-nineties researchers investigated coordination of cooperative activities at work, in order to conceptualize CSCW (Schmidt et al., 1996).

Since early days of CSCW, in the last two decades, computing systems became an instrumental part of business processes, aiding humans to perform a variety of computational asks in an automated fashion. On the other hand, the human computation is a computer science term for processes that switch the role of the computer and a person interacting with it, thereby enabling computing systems to rely on a person or a group of people to solve a specific problem, such as training the classification algorithms.

More recently, social networking technologies enable people to build online social relationships, based on common interests and background, resulting in a powerful way of discovering experts and building virtual teams. As a new generation of knowledge workers enters the enterprise (millennia), the way in which they are used to produce and consume information and cooperate with others in their ecosystem is having a visible impact on enterprise processes.

New paradigms need to be developed (or existing ones need to be adapted) to understand how work gets now done in enterprises. Game mechanics (gamification) are ever more employed to harness human abilities for business objectives, by introducing elements of entertainment into the problem space. Game with a purpose (GWAP) is a term used for such systems, first explored in the context of CAPTCHA (von Ahn et al., 2003). By design, they encourage crowds to either compete or collaborate to complete the tasks.

With smaller and faster, universally connected computing devices, which are becoming intimately embedded in physical and social contexts, interconnected and widespread, the nature of how people do work is undergoing transformation. Web 2.0 is elevating the work to online environments. Unknown groups of networked experts are increasingly being employed for their abilities to amass large-scale collections of data and to solve complex problems with large numbers of variables, in the process known as crowdsourcing (Howe, 2006). In parallel, social networking technologies are accelerating the discovery of experts, increasing the effectiveness of online knowledge acquisition and collaborative efforts (McAfee, 2009).

Global enterprises are embedding crowdsourcing into their business processes to leverage scalable workforce online, and thereby accelerate time-to-value. Examples of enterprise crowdsourcing can be found across the product and service lifecycle, from early design stages, where crowds are engaged to submit ideas on new features (e.g. Dell’s IdeaStorm1) or products, to development (e.g. TopCoder2), provide product support (e.g. FixYa3), to solving business and research challenges (e.g. InnoCentive4). As a result, numerous enterprise crowdsourcing models emerged, based on the type of the requested task, type of crowd engaged (e.g. internal, external, or hybrid), and type of the incentive, to name a few (Vukovic et al., 2010a). Crowd members are motivated to participate in crowdsourcing, either by intrinsic incentives, such as ability to build their own digital reputation (Bryant et al., 2005), or by explicit and tangible incentives, such as payment (Kittur et al., 2008a).

Two key technical challenges for enterprise crowdsourcing are integration of human computation in existing business processes, and standardization of human computation (crowdsourcing) protocols. This necessarily poses the question on how to revisit existing processes and protocols to accommodate for these novel ways of carrying out work. Moreover, quality, value and cost metrics are necessary to assess how crowdsourced processes measure up to traditional processes in terms of quality of results, overall value of results to the...
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