

# The Management of Crowdsourcing in Business Processes

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## 1. Introduction

Organizations increasingly place value on the devolution of decision-making authority both within and beyond traditional organizational hierarchies and boundaries. The sacrifice of centralized management control is exchanged for increased engagement from staff, customer and partners and the more agile decision making and improved commitment to implementing decisions this implies. However, most existing IT service management and workflow management systems assume a centralised management model and offer very limited management support for devolved decision making. In this paper, we examine an approach to devolved decision-making in industrial workflow through the trend to crowdsource elements of the localization workflow for digital content, by leveraging the linguistic talents of online user communities which use the content or associated products. .

In general, both IT service management and workflow management solutions target the enterprise market and are therefore marketed toward individual companies. Management support for inter-organization workflows adopt a value-chain world view that aims to optimize the position of the organization operating the system and treats people and companies outside of the organization as either downstream suppliers or upstream consumers. Underlying the use of crowdsourcing in workflows is a Value Network world view [allee], where the value to the end user is prioritized by all participants in the network, and benefits are sought beyond direct financial exchange such that customer good-will and loyalty, community cohesion and free knowledge exchange are explicitly valued. However, the management of crowdsourcing in an enterprises workflow poses challenges for the centralizing assumption embedded in workflow standards such as BPEL [bpel] and IT management procedures.

## 2. Challenges in Managing Crowdsourcing in the Localization Process

Localization workflows address the translation of digital content, such as software UI text or product manual, into different target market languages. Usually parallel translation is required to multiple languages simultaneously, within a fixed deadline. The most common model is for much of this task to be mediated by language service providers, who manage a cohort of translators who often work remotely, e.g. from home. Increasingly previous translation of similar material is retained and reused in the form of a Translation Memory (TM) available to all workers, so that no phrase need be translated more than once. In addition, techniques such as statistical machine translation are starting to be used to assist the translator. Managing the quality of translation against the cost and time (measured per word) across this value-chain remain a major challenge for industry. It relies on human quality control by specialist post-editors, and is sensitive to factors such as the source and destination languages, the content domain, the repetitiveness of the content, complexity of sentences, availability of TM, and is therefore regarded as relatively subjective.

One potential advantage of crowdsourcing is to address the shortcoming of subjective quality assessment by supporting “wisdom of the crowd” style rating of translation. This may be especially advantageous if those involved in rating are representative consumers of the translations, since their satisfaction is the ultimate gauge of quality.

Successful examples of crowdsourcing have required significant investment of time and energy in platforms that enable the organization to effectively leverage the input of the crowd. In order for users to take the trouble to contribute, they need to be provided with some motivation to do so. A user must feel a sense of community and that their contributions are valuable. A system that aims to build a community must support communication between the participants. The platform should provide tools such as forums, blogs, wikis etc. to support community building and enable collaboration. These tools should be managed to ensure that they are used for the intended purposes.

The crowd normally consists of many overlapping groups with various different shared attributes each with a different relationship to the organization. Sometimes their contributions should be treated differently. For example, some translatable content may contain confidential information and should have restricted access – while some translatable content may involve the translator to have highly specialized knowledge. In order to allow organizations to leverage user-generated content in such a way that the management cost of the system does not grow more quickly than the value of the crowd-sourced content, we have developed the Community Management Framework (CMF) which is based upon the integration of our Community Based Policy Management System (CBPMS) [feeney] with the popular open-source Drupal content management system [drupal].

Drupal provides tools which support community-building and online collaboration, eg blogs, forums. The CBPMS is a policy based management system which allows administrators to sub-divide their communities into fine-grained groups, each with their own set of policies, giving them different rights in the system.

### 3. Conclusions and Further work

The Centre for Next Generation localization [cngl] is developing a number of systems in order to investigate the issues that arise in integrating centralized workflows with community-based value creation in the form of crowd-sourced localization. Consistent with current workflow and system integration practice these developed studies adopt a service oriented architecture, using web service and web service orchestration standards [bpel], integrated with data interchange standards from the localization industry, e.g. XLIFF. Idiom Worldserver, a leading commercial localization workflow management system was used to implement the segmentation, TM reuse, and reassembly portions of the workflow. A BPEL Glassfish web service orchestration engine was used to support several configurations of academic, open source and commercial Text Analytics and Machine Translation. Translation crowdsourcing was implemented through a plugin in the Drupal CMS. This integration provides us with an experimental platform for further investigating the integration of industrial workflows in this knowledge-based industry with the potential for crowdsourcing certain activities while being able to manage the end-to-end quality of the overall workflow.

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### References

- [allee] Allee, V. “The Future of Knowledge: Increasing Prosperity through Value Networks”, Butterworth-Heinemann
- [cngl] Center For Next Generation localization <http://www.cngl.ie> 6<sup>th</sup> Feb 2009
- [drupal] Drupal Content Management System <http://www.drupal.org> 6<sup>th</sup> Feb 2009
- [bpel] Web Services Business Process Execution Language Version 2.0, OASIS Standard, 11 April 2007, Downloaded from <http://docs.oasis-open.org/wsbpel/2.0/OS/wsbpel-v2.0-0S.html> 6<sup>th</sup> Feb 2009
- [feeney] Feeney, K., Lewis, D., Wade, V., Policy Based Management for Internet Communities, in Proc. of IEEE 5th Int’l Workshop on Policies for Distributed Systems and Networks, IBM Thomas J Watson Research Center, New York, USA, pp 23-34, June 2004

