

Technology Change and Online Community Development

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INTRODUCTION

Online communities are increasingly seen to display the same features accepted as characteristic of communities based on face-to-face interaction. Among the characteristics of “real,” “normal” communities is the ability to grow and thrive by evolving and adapting to, for example, changes in technology and infrastructure. Our experience in online gaming communities also demonstrates this same ability to evolve and adapt to technological and infrastructural changes.

One online community that began in 1991 and continues to “live long and prosper” began in conception as a role-playing game called Starfleet and is now described as a shared fiction or collaborative writing group. Set in a fictional universe based on that of the television program “Star Trek: The Next Generation,” this group moved from the Prodigy online service onto Usenet in 1994 (it is still known by its newsgroup name, “alt.starfleet.rpg”), and by 2000 had established a Web-based Yahoo! Group (<http://groups.yahoo.com/group/starfleet-rpg/>), which continues to be its means of functional interaction. Each of these hosting venues brought with it changes in the means (posts, direct e-mails, Web pages) by which game or collaborative writing activities were conducted. Parallel to these were changes in the rules, policies, and practices of the community. Even the nature and content of the social interactions of the members of the community changed in fundamental ways as its technological manifestation did so.

In this article, we will demonstrate the relationship between changes in the technology by which the “Alt-Starfleet-RPG” (or “ASR”) community conducted its activities and changes in the organizational and social interactions of its members. While we consider this relationship between changes in technology and social interactions with a perspective of knowledge technologies, we will draw on personal archives of the “posts”

or installments of collaborative stories that comprise the focus of the community, conduct online interviews with participants in the various periods of its development, and draw on our own experience in the membership and administration of the organization and the social life of the community from 1995 to 1999.

Our hypothesis is that the technological venue of an online community strongly impacts the values it comes to express, and these in turn strongly impact the choices of technology made by and for that community. For testing this hypothesis, we will use case study research methodology for our inquiries into the Alt-Starfleet-RPG community, as a single embedded case (Yin, 1994). The rest of this article provides background information for knowledge technologies for a verifiable and evolvable trustworthy e-society; then, the case analysis of the Alt-Starfleet-RPG community as the main focus of the article; and discussion of future trends in research, before the conclusion.

BACKGROUND: KNOWLEDGE TECHNOLOGIES FOR A VERIFIABLE AND EVOLVABLE TRUSTWORTHY E-SOCIETY

The e-society system refers to a part of a society that is implemented as an information system. Such a system, in addition to providing a clear definition of the relationship between an individual and the organization, as well as other aspects relating to the structure and functions of society systems, must also ensure that its functions and behavior conform to institutional and regulatory requirements. It must also be capable of keeping pace with social changes and other developments. Additionally, all the services and functions of an e-society must be available to all members equally, and be provided on a stable basis¹.



In this coming e-society where essential aspects of social life as such politics, economics, law, administration, medicine, and education will be computerized as information systems, a new discipline for using the latest developments in information science to implement a trustworthy e-society will be necessary, since (1) along with the beneficial developments, the deficiencies and imperfections of an e-society system will be potential sources of danger to our lives and property, and (2) "the difficulties inherent in changing systems could result in an inability to adapt to, and evolve with, changing social conditions," causing the society itself to become rigid and inflexible (ibid).

The latest advances in mathematical, software, artificial intelligence, and other information science technologies will contribute to creating a fundamental technology enabling the establishment of such a trustworthy e-society to deal with these deficiencies and difficulties. Developing a methodology for modeling the e-society system, logic verification technology could be used to "ensure that such a system meets the requirements of trustworthiness with regard to its correctness, accountability, security, and fault-tolerance," among others. Furthermore, a scientific methodology must be developed for ensuring that the e-society system can evolve and progress in accordance with social changes. The resulting research and education outcome could be considered as an emerging discipline that is concerned primarily with the realization of the e-society from the point of view of verifiability and evolvability, while contributing into the infrastructure of a trustworthy society so that we can safely entrust our lives in the coming e-society.

Up to now, information science has been effectively used to developed complex and large-scale software and systems, while in its support, a large number of

concepts and methods in areas relating to specification description, verification and testing, programming, user interface, network, and architecture, among others, have also been developed, which could be used in order to define, verify, and develop an e-society system that will enable the design and implementation of a trustworthy e-society. In addition, in general the type of system tools such as the communication and information technologies would be an important determinant for the development and maintenance of the e-society, as a virtual and networked institution in the new "emerging" knowledge economies and societies. Thus, a perspective of "knowledge technologies (KT)," rather than "information and communication technologies (ICT)" will be more helpful to explain this impact of technology on the development of knowledge societies, and virtual communities.

Emerging as a concept distinct from knowledge management, knowledge technology is one that adds a layer of intelligence to information technology, which supports the acquisition, management and organization, representation and modeling, use and exchange of knowledge, and information and data. The term refers to a fuzzy set of tools including data mining, machine learning, decision support software, language technologies, knowledge management, and other information technologies making it possible to filter appropriate information and deliver it when it is needed. Among these are ontologies, topic maps, blogs, groupware, document management, expertise locators, social networking engines, and wikis². In short, KT can be defined as an intelligent information technology. When we extend this definition, approaching from a learning and knowledge science point of view, KT also involves communication and collaboration technology. In fact, if integrated with

Table 1. Basic technologies for trustworthy e-society (Adapted from ibid)

Verifiable and Evolvable E-Society	Trustworthy E-Society Technologies
A logical system and a formal description system capable of defining an e-society	Mathematical infrastructure
Methodologies for the definition and verification of e-society trustworthiness requirements	Advanced human interface infrastructure
Methodologies for e-society verification through theorem proving, model inspection, simulation, etc.	High-reliability network infrastructure
E-society modeling and evolution using the latest object technologies	High-reliability hardware infrastructure
E-society structure and functions	

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