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Online communities

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Abstract

The combination of low-cost access to increasingly powerful computing and networking capabilities combined with a deregulated internet has facilitated the rapid development of a new social phenomena, that of the online community. The potential for near universal internet access and the ability to communicate at costs lower than ever before in human existence has facilitated the development of online communities which work to fulfill two basic human desires, first, to reach out and connect to other human beings and secondly to obtain knowledge.

This paper examines the concept and practice of online communities: first, by establishing an understanding of their historical and technological roots; and then by developing a three-dimensional taxonomy through which the properties of the communities can be examined. Case study examples are utilized to illustrate the community types within the taxonomy.

Keywords: Internet; Online community; Networks; Cyberspace; World Wide Web

1. Introduction

The development of network technologies has, since its earliest days, changed the nature of business, the role of the individual in the workplace and at a higher level, how society functions as a whole. The speed of this change continues to increase as the first and second generations of networking technologies are being replaced by the third generation internet-based broadband and wireless technologies. The proliferation of low cost access to the Internet and the World Wide Web has facilitated new mechanisms for both inter-organizational and inter-personal connectivity, allowing users of the Internet to reach out to other users in a manner unimaginable only a decade ago.

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The deregulation of the Internet in 1995 has significantly changed the way that society interacts at all levels. For retail corporations the potential of the online channel has required a paradigm shift in their business thinking, affecting both their internal and external relationships. Internally, the increased networking and computational capability provides the company with its ability to change, modify and reconfigure workflows, its processes, as well as the patterns of workforce behavior. Externally, corporations can now more freely interact with suppliers and partners to create and develop new business models. For example, a corporation may allow its vendor community, via the internet, access to functions within its enterprise resource planning system, thus allowing them to view its internal stock levels and facilitate re-supply as necessary. Other industries have been similarly affected, for example, entertainment and news corporations have been forced to redefine their relationship with their customers, many of whom are no longer willing to be a passive audience but more frequently wish to be active participants in the process; be this through interactive online gaming over a network with other members of the global game playing community, or through peer-to-peer network communities such as Napster.com where members swap and share music. Absorbing and adapting to a connected world is not always easy, however it cannot be avoided, society's drive towards a networked and hyper-connected world will continue to move forward as it is itself driven by the community ethos.

The convergence of the Internet and the World Wide Web is a unique phenomenon, both from a technical and a social perspective, technically it allows reliable open access across any distance, regardless of the information point of origin or destination; it allows real time, high bandwidth data to be transmitted at relatively low cost anywhere, be that point terrestrial or even non terrestrial. The technology is standards-based and thus universally accessible and open to development by anyone, but unlike previous social phenomena such as radio or television the medium allows bi- and multi-directional communication and allows data to be stored for 'use' upon demand e.g., emails are stored in a server until opened, where upon they are again stored for subsequent use unless deleted by the owner.

The ubiquity of the Internet and the human desire for connection, knowledge and information, has also created a new social phenomena, that of the online community. Online communities operate to fulfill goals in multiple online spaces. For example, at the commercial level, many organizations that are involved in business-to-business commerce create a community space in which to interact at the personal, functional or entity level; in a similar manner many governmental functions facilitate community interaction where citizens can directly access and interact with their official entities. Other online communities exist in the areas of not-for-profit organizations, professional communities of practice, the military, as well as at the non-commercial level where individual citizens create their own community of interest.

This article examines the concept and practice of online communities. It commences with an examination of the origins of online communities, followed by a discussion of the evolution of online communities, and their characteristics. The paper then develops taxonomy for online communities. Finally, conclusions are developed based upon the issues raised in the paper's discussion.

2. Online communities: an overview

2.1. The derivation of the term 'community'

The term 'community' has a long history and the roots of it's common English usage are derived from two Latin derivations, the trisyllabic *comunete*, used in the context of 'common fellowship, society [1] ' and the 4-syllabic *co(m)munité*, meaning 'fellowship, community of relations or feelings'. Its use was extended in Medieval Latin to be used in the same sense as *universitas,* to reflect 'a body of fellows or fellow-townsmen [1]. Since then the term has commonly evolved and has been utilized in several ways, including being considered as a state: i.e., 'the quality of appertaining to or being held by all in common; joint or common ownership, tenure, liability, etc.; as in *community of goods* [1], it is also used in relation to a state of common focus, i.e., *'community of interest*' [1]. A wider and more general use of the term develops the concept of the general public interest: i.e., '*the community*: the people of a country (or district) as a whole; the general body to which all alike belong, the public' [1].

The term has also developed an extensive set of technical uses in the academic literature [2,3], central to which is the use of community within the context of *social interaction, geographic area, and common bonding* [4]. The term also has specific usage within the business management literature in which the term community relates to the concept of the business environment being composed of '*communities of practice*' [5–8].

2.2. The origins and development of online communities

The online community concept has its roots in several areas. One of which can be found in the development of electronic data interchange (EDI) and inter-organizational systems. The EDI concept was originally captured by Kauffman in his 1966 HBR article [9], which urged organizations to 'think beyond [their] organizational boundaries - extra corporate systems,' while Cash [10] went on to define an Inter Organizational System as 'an automated information system shared by two or more companies,' both of which led to the concept of data and information exchange within a 'business community.'

A second branch of the online community evolved from the work at the University of Essex in England where in 1981 Roy Trubshaw, Richard Bartle, and Stephen Murrell adopted a single user game 'Advent' that ran upon a DEC-10 computer to allow multiple users to interact in a shared memory space. The game, a version of 'Dungeons and Dragons', was termed a Multi-User Dungeon or MUD and has subsequently evolved to form the basis of Multi-Player Online Role Playing Games. (MPORPG's).

A major catalyst that expanded the scope and nature of inter-organizational interaction has been the development of standardized networking protocols such as TCP/IP [11] and XML (http://www.w3c.org) which have for example, enabled organizations to explore new inter-organizational messaging models and leverage

them for competitive advantage and other network users such as game players to expand the scope of their potential membership and game choices. These messaging models are wide ranging but are based on the premise that a set of users are interacting over a network towards a common objective or goal, in essence an online community.

The deregulation of the Internet in 1995 enabled the concept of technology-based connectivity to be brought down to the atomic level, where individuals can interact over a global network, creating a new channel of social interaction, the first new major public communication channel since the invention of the television by Philo T. Farnsworth in 1927. In light of this development we can informally define an online community as *a collective group of entities, individuals or organizations that come together either temporarily or permanently through an electronic medium to interact in a common problem or interest space.*

2.3. Identifying online communities

With an estimated 304 Million users of the Internet in 2002, and a mean growth rate of 23%[1], the Internet is more than just a technology phenomenon, but ranks as one of the greatest technology phenomena of all time, one that changed the very fabric of society. The growth of web users is only matched by the growth in the number of web pages accessible on servers around the world, estimated by Google to be in excess of the 3 billion web pages (as of March 2003). Thus a key issue is, with so many web pages what does a community look like from a computational perspective and can they be automatically identified in a web search?

Researchers at IBM have worked to create a computational definition of online communities which represents the World Wide Web as a large and expanding bi-partite graph and that within that graph there exists dense directed bi-partite sub graphs, which are the 'signatures' of web communities [12,13]. The researchers then utilize this definition and model as a formal specification for their CLEVER algorithm (htttp://www.almaden.ibm.com/cs/k53/clever.html), which enables communities to be locating through their graph specific properties. The research of Flake et al. [14–16] has utilized this as the basis of their work on the efficient identification of Web communities [17]. This has led to an estimate that there are over 400,000 communities resident upon the World Wide Web [18], and over 300,000 [19] online topic-based discussion boards.

The ability to identify both established and emerging communities will be important for many parties; especially those who may wish to join, build, or influence them. From a commercial perspective the area is fertile ground for building a profitable online business model. In a study by the consultants McKinsey & Company, it was found that while transaction sites convert only 2% of their unique visitors into repeat visitors [20], online community sites have a 60% success rate at converting unique visitors into members [20]. This finding is reinforced by research which

[1] http://www.morganstanley.com/institutional/techresearch/tech0308.html?page=research

identified that 84% of Internet users in the United States contacted some sort of online group (2001 Data) [21], 85% of which are operated by commercial organizations (i.e., they do not have .edu, .gov, or .org as their final suffix in their URL) [22].

This data has important ramifications for all participants and facilitators in cyberspace and inevitably leads web developers, be they transactional or content driven, to query the role that communities play in their organizations and their online presence.

From a commercial perspective, data from the research group Participate.com has shown that 60% of net marketplace users are buyers, of which 63% visit net marketplaces on a weekly or more frequent basis, and that 54% of net marketplace users participate in online community programs (http://www.participate.com).

From a non-commercial perspective a potential participant may wish to locate a community of interest or community of practice in which to participate. For example a participant may wish to locate a health or aid agency related community in a language that is not predominant on the World Wide Web, for example http://www.epoor.org is a community site that is concerned with building the capacity of Pakistani society to engage in the themes of globalization.

Thus the ability to identify communities, community users, partners, facilitators and other related entities are of increasing importance. In order to understand the possible role that communities will play in the future it is important to determine what types of communities are being created and to develop a taxonomy through which to consider them.

3. Taxonomy models for online communities

The literature on the classification of online communities has produced several models. The earliest of which is that of Cash and Konsynski [10] who considered the relationships that exist within connected business systems. They define an organization to be either a 'facilitator' of network interaction e.g., an Internet Service Provider or a 'participant'. Hagel and Armstrong, considered online communities and broadly partitioned the online space into four areas: *Communities of interest,* of which the popular finance web site Motley Fool is an example (http://www.motleyfool.com), *Communities of relationship,* e.g., the forum for cancer related issues (http://www.cancerpage.com), *Communities of fantasy*, e.g., communities interested in Dungeons and Dragons or Multi-User Dungeons (MUDS) (http://www.well.com/user/hlr/vcbook/) and *Communities of transaction*, e.g., online business to consumer (B2C) and business to business (B2B) communities such as eFoods.com (http://www.efoods.com) [23]. Lazar and Preece [24] classified online communities based upon: their attributes, their support software, their relationship to physical communities and their boundlessness.

Stanoevska-Slabeva [25,26] has defined a two-part topology model for online communities. The first part defines the types of community: Discussion or conversation communities, task and goal-oriented communities, virtual worlds and hybrid communities. The second part defines the 'Typology of Functionalities for Community Support' in which Stanoevska-Slabeva defines 'the static and dynamic aspects of the

organizational structure as well as the basic services for communication and coordination [25] ‘ as they relate to Schmidt’s Media Reference Model [27].

Building upon the previous research this paper aims to create taxonomy of the online space defined through a communities’ social and operational attributes, based upon the definition of an online community presented earlier.

4. Research methodology

In developing the taxonomy for electronic communities a grounded theoretic approach [28] was taken. This approach was considered beneficial as the research literature in this area is sparse and an exhaustive quantitative approach to classification for example by IBM’s CLEVER algorithm is infeasible due to the scope of the World Wide Web.

The use of the case study grounded approach to research has been shown by Eisenhardt [29] and others [30–32] to be applicable and appropriate to research areas that are in the early stages of formalization in which the foundations are being created. The research method used in this study is based on that of Rothaermel and Sugiyama and aims to compliment their work on defining characteristics of commercial communities [33].

5. Research results: categorizing electronic communities

The grounded theory approach resulted in the identification of a three-dimensional model for the online community space (see Fig. 1), these being: the degree of community regulation, the degree of community openness to membership and the

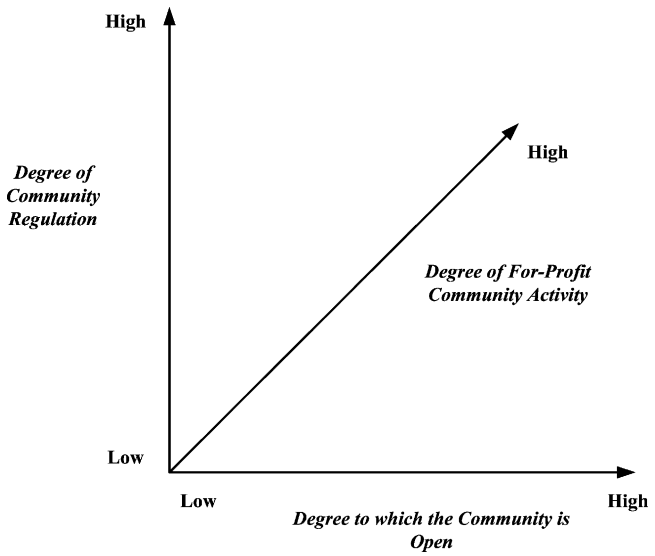

Fig. 1. A three-dimensional taxonomy of the online community space.

degree to which a community is involved in for-profit activities. The dimensions of this taxonomy will now be considered with small case study examples.

5.1. Unregulated communities

Unregulated communities commence their existence when a set of participants initiates interaction through a common site or location. The sites' commonality of intent generates community participation but these are unregulated by a facilitator or rules of conduct. They often start out as not-for-profit groups with common interests such as those identified by Pew [34] who identified nine different types of group around which communities can evolve.

5.2. Regulated communities

As communities evolve and increase in size they either fracture into yet smaller niche unregulated communities or consciously decide, as a community, to move into a more regulated environment. This path has several options: the community either gives over responsibility for facilitation of services to a professional external body such as IBM, AOL or Yahoo! or alternatively, they may establish their own facilitator functions. The move to a hosted community environment does not however mean that the content of the community necessarily has to change to be of a commercial nature, a community may wish to remain not-for-profit if this is its value proposition to community members. For example a vendor-neutral health-related site that is free of bias from government agencies, HMOs or drug companies may well be the core value that drives members to that community.

The regulated community space can be partitioned further, first from the perspective of access, for example, is the community open to all who wish to access it and at the same time adhere to the rules of involvement as prescribed by the facilitator, or is the community private, open only to those invited to participate. Secondly regulated communities can be considered from the perspective of their primary role, for example is the community a for-profit or not-for-profit community. We will now consider these four classes of communities.

5.3. For-profit, open and regulated communities

A for-profit, open and regulated community is open to any individual or group that obeys the rules of the regulator of that community. The regulating body being the provider of the environment, and thus can control its partitions, prevent data/information encroachment and the unauthorized access of data by external parties. Regulatory agents range from specialist network management companies such as ANXeBusiness Corp http://www.anx.com who manage the global, secure, multi-provider ANX Network and whom facilitate communities such as the JNX/ANXeBusiness electronic trading network, to more consumer oriented Internet Service Providers (ISP) such as America Online http://www.aol.com and UOL of Brazil http://www.uol.com.br. The Internet service provider, which regulates the

community may charge a fee for their facilities, from both the users and the suppliers of information content depending upon its business model, in return facilitating community interaction through chat rooms, instant messaging, poster boards and the construction of sub-communities. Providers also enforce all the security, and hardware defenses that regulate the system and that differentiate it from the public domain unregulated communities.

For-profit, open and regulated communities are typified by eBay whose auction community http://www.ebay.com consists of 34 Million people [35] each of which connect through a variety of ISP's and who operate through a shared code of trust. For eBay members their reputation is everything and whose online activity must embody the 'spirit of eBay' in order for them to operate as an effective member of the community. An online community space that has seen rapid evolution has been that of multi-player online role playing games (MPORG's). Evolving from MUDs these communities offer users the ability to interact online in virtual 3D worlds, through various role-playing and scenario-based contexts. Backed by large software companies e.g., Microsoft, and global entertainment organizations such as Sony Corporation, game developers have created fantasy, combat and community centered games, among others, that run upon hardware local to the user, in combination with facilitating remote servers which connect the players together for a fee and who regulate the space. The gaming community has a very dynamic, and innovative user base where 'entrepreneurial' members have built businesses outside of the game by creating game artifacts such as the 'tools,' 'swords,' 'weapons,' and even complete 'virtual characters' within the game environment and then selling that artifact or character through the eBay community.

5.4. *For-profit, private and regulated community*

A second type of for-profit community consists of organizations that utilize the network and its abilities to undertake private, member only, business-to-business transactions. For example, Land Rover Vehicles utilizes the REDX (Rover Engineering Data Exchange) network to communicate with the 146 suppliers involved in the production of their Freelander product [36]. Land Rover not only performs the usual business support functions through the network but also uses the network to foster a community spirit that results in higher levels of responsiveness, flexibility and collaboration among all members.

The automotive industry has been one of the first to harness the potential of the Internet and develop added value through the concept of collaborative user communities. The Ford Motor Company has been a company at the forefront of this initiative, having been an early adopter of TCP/IP-based technologies [37] and having connected its 150 worldwide facilities through a virtual private network (VPN) by 1997. They aim to leverage their networks both internally and externally to derive 'maximum business value' [37] from their Intranet-based community. To this end the company created an Enterprise Knowledge Base, which integrates web usage with business processes through '*Knowledge Domain Teams*.' These internal Ford communities helped focus process activities and corporate competitive intelli-

gence, answering questions, directing queries, and facilitating the growth of internal relationships.

The web initiative at Ford and the need for the internal communities to interact with external entities was a catalyst in establishing a common infrastructure to facilitate the user interaction. First, through the Automotive Industry Action Group (AIAG) that included Ford, GM, DaimlerChrysler and 1600 other companies within the automotive industry (http://mows.aiag.org/ScriptContent/memberinfo/MemberCOlist2.cfm), then through the creation of the Automotive Network Exchange (ANX) and later through the business-to-business Covisint platform (http://www.covisint.com). Covisint, founded in 2000 amalgamated together the systems of GM, Daimler Chrysler and Ford. Each company brought together their individual e-business initiatives to form a single global business-to-business supplier community/exchange. The exchange had by January 2003 over 77,000 members spread over more than 2600 companies. The aim of Ford is to utilize their involvement in Covisint to 'handle nearly all collaborative efforts between Ford and its largest suppliers, including online meetings, exchange of engineering information, exchange of real-time demand and inventory information, and collaboration on other issues critical to procurement of highly-engineered parts and raw materials [38]. Covisint is an example of a collaborative-community that is closed and regulated, in that only invited suppliers and manufacturers become members. It is not possible for an organization to simply become a member and compete for tendering opportunities, as would be the case if Covisint were an open regulated community space.

5.5. *Not-for-profit, open and regulated community*

A natural early adopter of the online community open-regulated space was education and in 1989, prior to the deregulation of the Internet, a group of researchers from TERC, a not-for-profit education research and development organization in Cambridge, MA with funding from the NSF created the LabNet project [39]. LabNet was conceived to aid high school science teachers 'teach science in a more experimental, collaborative, and in-depth, project-enhanced approach, using technological tools where appropriate. The project is designed as a community of practice, connected mainly by a telecommunication network' (http://www.terc.edu/papers/labnet/Guide/02-About_LabNet.html). The research group in 1995 described its community base as follows: 'The LabNetwork, carried on America On Line. (AOL), currently provides a meeting place for over 700 teachers to support each other in experimenting with new teaching strategies, reflect on their teaching experiences, problem-solve, share resources, and build collegial connections with their peers. AOL provides the necessary (and very user-friendly) software free of charge for the most commonly used school computers, and offers extensive user support, competitively priced rates, experience in serving over 1,000,000 users, and a commitment to building easy-to-use interfaces to new features such as Internet services. The LabNetwork provides *message boards* (where members can initiate and carry on extended, public dialogues), *file libraries*

(with science materials and project database), online *chat areas* (for real-time conferencing), and a private *e-mail* system (which supports an Internet gateway and easy computer to computer transfer of all kind of files). The network was designed by teachers primarily for the use of the teaching community, and its evolution is linked to teacher contributions. Teacher-moderators help to initiate, contribute, moderate, and sustain dialogues, and help to link reflection on the network with action in the classroom' (http://www.terc.edu/papers/labnet/Guide/02-About_LabNet.html). The LabNet experiment continued until February 1998 whenand technology developed from this and other early sites e.g., the ARPA backed Computer Aided Education and Training Initiative (CATI) have been adopted by other educator communities such as the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) (http://www.melot.com).

An area that has also spawned open-regulated not for profit online community activity is that of online support groups' in health care. One such group is the Transverse Myelitis (TM) Association, founded in 1994 as a not-for profit organization that supports those affected by TM, a rare inflammatory disease involving both sides of the spinal cord. The association 'facilitates support and networking opportunities among TM families; provides educational information; functions as a clearinghouse for articles and research literature about the TM diagnosis; and investigates, advocates for and supports research and innovative treatment efforts' (http://www.myelitis.org/). This aim is achieved through both on and off line community activities.

Organizations in this community type include the health communities Brain Talk (http://www.braintalk.org) and CancerCare (http://www.cancerpage.com). Brain Talk is a forum owned and maintained by the Department of Neurology at Massachusetts General Hospital, that supports communities in the area of mental health and neurology. The forum founded in August 2000 has 44653 members with 234 forums, the site having received over 10,347,000 visits since August 2000. CancerCare a non-profit support group that sponsors regular free teleconferences touching on the many issues affecting cancer patients and their loved ones.

The public service and Government sectors are also represented in the not-for profit open and regulated space. C-Span (http://www.c-span.org) for example, is a private, non-profit company, created in 1979 by the cable television industry as a public service, whose mission is to provide public access to the United States political process. The organization is fully funded by the television affiliates thus maintaining C-Span's independence from both governmental and commercial interests. It receives no government funding and accepts no advertising. They aim to provide an online community forum that enables their viewers to 'share opinions and discuss policy with public officials, journalists, opinion leaders, authors, historians, and other community members' (http://www.c-span.org/community/).

5.6. *Not-for profit, private and regulated communities*

There exists a domain of communities that are not for profit and which are both private and regulated, focusing primarily upon the provision of proprietary data

and information either collectively funded or collectively derived from the membership of the community. The National Science Foundation (http://www.nsf.gov) for example, maintains communities whose participants are involved in consortia projects, collaborative ventures between universities and Federal organizations. These communities include areas where the data may be classified and/or have a commercial or research sensitivity.

Communities in this space also include those within highly regulated, private environments such as NASA (http://www.nasa.gov), the Central Intelligence Agency (http://www.cia.gov), the United States Government's National Security Agency (http://www.nsa.gov) and the British Governments Security Service (http://www.mi5.gov.uk).

5.7. Communities that overlap the for-profit and the not-for-profit regulated spaces

In both the commercial, for-profit and the non-commercial spaces there are instances in which organizations overlap between the private-regulated and open-regulated spaces. For example EFS Network, Inc, (http://www.efsnetwork.com/) a for-profit entity co-owned by many of the leading companies within the foodservice industry has two community dimensions, one for 'Members only' and another for 'public' access.

Similarly within the not-for-profit sector, communities exist across the two regulated spaces. An example of this at the national level is the United Kingdom's Governmental site that promotes an open discussion forum (http://www.ukonline.gov.uk/Discussions). The forum allows citizens to vent their opinions, air their feelings and 'gain a voice' in the Governmental process. However the internal Government community space of the British Government is strictly regulated and restricted. At the organizational level, the Illinois Certified Public Accountants (CPA) Society also has two separate community spaces, one for 'Public Access' and the other permitting 'Member Access Only' (http://www.icpas.org).

6. Enabling technologies

Online communities by definition connect through a telecommunications medium, with the Internet and its associated technologies being the primary enabler. The open standards that lie behind the Internet, e.g., TCP/IP, and the World Wide Web, e.g., HTML, facilitate the ability of all users of these technologies to potentially become members of any community that uses the technology. The standardized basis of these technologies has allowed for the growth and development of associated protocols, applications and systems that enable differing aspects of the network to be exploited to promote community based activities, for example, security in the form of firewalls only allows registered community members assess to certain defined aspects of a network or site. Security may be further enhanced when a firewall is combined with a network that is leased from a telecommunications provider for the organization's or communities sole use, forming

a virtual private network (VPN) ensuring security, responsiveness and accountability.

The ability and scope of a community to interact online is dependent upon the applications and systems that support them. One such technology is groupware, which can take many forms, ranging from instant messaging, short text messaging over telephones, and email systems, to Group Decision Support Systems (GDSS) and Enterprise Resource Planning (ERP) systems. Groupware has a wide range of applications and platforms but can be considered as any application that facilitates multi-user activity upon an issue of common focus. We can see therefore that the groupware definition is very close but at a lower level of abstraction, closer to the hardware architecture, than that for an online community. Examples of groupware range from the music swapping applications of Napster and Morpheus to corporate project collaboration software systems such as LOTUS Notes from IBM. Collaborative software and (GDSS) [40] also facilitate communities, frequently in commercial and scientific domains, to help users come together and analyze semi-structured problems and perform scenario analysis over data sets. Taken to its logical extreme we can think of ERP systems as an information system 'collective' that represents a functioning process model of an organization. In essence an ERP is a system that every member of the organization interacts with, and through which run the processes that form the organization. Sub ERP corporate communities have also evolved around specialized functions and the enabling technologies that support them including executive information systems and supply chain management systems.

7. Social implications and conclusions

The development and the deregulation of the Internet is, as we stated earlier, one of the greatest society transforming events in human history. For the first time it is possible to be connected in real time to potentially hundreds of millions of people simultaneously. The growth of the internet as a medium of communication is continuing to grow and this is likely to continue for the foreseeable future due to the advent of low cost computing, creative applications such as digital voice and data messaging techniques, as well as the utilization of universal, standardized access mechanisms.

The connectivity of the medium has, as we have described in this paper, significant implications for the way society interacts as individuals and as a collective, with the advent of satellite telephones and 'internet cafes,' it is difficult to think of the earth as a 'lonely planet' any more.

The growth of online communities was a natural extension of the medium and human nature, however online communities are dynamic by nature and thus it is important that researchers and organizations have the ability to identify and classify them. This is a valuable asset as it allows an organization, facilitator, or even an individual to consider the role a certain community type plays in society and the artifacts necessary to accompany that community type in order for it to be effective. For example it is important to know the access, security, and technology

requirements of a given community type as it evolves from perhaps being an open regulated community to one that is private and regulated. Communities also need to understand the competitive, regulatory and strategic implications of positioning themselves in a certain category as then they can develop an understanding of the forces that influence and operate in that environment.

This paper is intended to provide an initial step in the definition of these categories and allow other workers to develop their research on a delineated community space allowing standardized instruments to be created. Clearly there is much more work to be done in defining the multiple aspects of these categories and their associated communities, this paper is an initial step in facilitating that work.

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