ISSN No. 0976-5697

Volume 5, No. 3, March-April 2014

International Journal of Advanced Research in Computer Science

RESEARCH PAPER

Available Online at www.ijarcs.info

Corpus of Internet Standards-The Standards for Communication

Depavath Harinath
Lecturer in Computer Science,
Department of Computer Science,
Siddhartha Degree College for Women,
Affiliated to Osmania University, Dilsukhnagar,
Hyderabad, A.P., India.

Abstract: Information technology exchange is a very important facet of life to many people in the world today. The biggest contributor to information exchange today is the Internet. Standardizing the Internet become an increasingly central issue as business interoperability demands mount. This paper explains about different standards bodies and the features of Internet standards developed and published under the coordination of different standards organizations.

Keywords: ISOC (Internet Society),IETF(Internet Engineering Task Force),RFC(Request For Comment).

I. INTRODUCTION

Information technology exchange is a very important facet of life in the world today. The biggest contributor to information exchange today is the Internet. The Internet has grown by leaps and bounds during recent years. People around the globe are using the Internet for entertainment, information exchange, and commercial transactions. The importance of the Internet is growing on a daily basis and therefore, some guidelines should be developed with respect to Internet Standards development. Standards provide the commonality across international lines that are required for effective information exchange. The standardization efforts have become an increasingly central issue as business interoperability demands mount.

The internet standards share certain characteristics, described below:

a. ***Freely accessible specifications:*** All relevant specifications required to implement the standards are available without fee or requirement of other contractual agreement (such as a nondisclosure agreement).

b. ***Unencumbered:*** It is possible to implement and deploy technology based on the standard without undue licensing fees or restrictions.

c. ***Open development:*** Inorder to have relevancy in the resulting standard, it is critical that all parties working with impacted technologies are able to participate in and learn from the history of the development of an Internet standard.

d. ***Always evolving:*** As the Internet itself continues to evolve, new needs for interoperability are identified, so the standards that support it must evolve to address identified technical requirements.

Development of computer communication standards dates back to late 1960s, motivated by data portability and digital communication needs. With formation of the Internet Engineering Task Force (IETF) in 1986, it became the steering body for development of Internet related interoperability standards [2]. The IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual. The key internet standards, such as the Internet Protocol (IP), are developed and managed by the Internet Engineering Task Force (IETF).

The IETF's mission includes the following:

a. Identifying, and proposing solutions to, pressing operational and technical problems in the Internet.
b. Specifying the development or usage of protocols and the near-term architecture to solve such technical problems for the Internet.
c. Making recommendations to the Internet Engineering Steering Group (IESG) regarding the standardization of protocols and protocol usage in the Internet.
d. Facilitating technology transfer from the Internet Research Task Force (IRTF) to the wider Internet community.
e. Providing a forum for the exchange of information within the Internet community between vendors, users, researchers, agency contractors, and network managers.

The IETF (Internet Engineering Task Force) is an organization with major influence in development of Internet standards. Formation of IETF standards resembles very much the processes in open source development: influential members first issue RFCs (Request for Comments) reporting current practices and propose solutions to interoperability problems of Internet technologies, later these proposals are converged into standards.Request for Comments documents were invented by Steve Crocker in 1969 to help record unofficial notes on the development of ARPANET. RFCs have since become official documents of Internet specifications, communications protocols, procedures, and events. A Request for Comments (RFC) is a publication of the Internet Engineering Task Force (IETF) and the Internet Society (ISOC), the principal technical development and standards-setting bodies for the Internet. An RFC is authored by engineers and computer scientists in the form of a memorandum describing methods, behaviors, research, or

innovations applicable to the working of the Internet and Internet-connected systems. It is submitted either for peer review or simply to convey new concepts or information. The IETF adopts some of the proposals published as RFCs as Internet standards.

Today the corpus of standards produced by IETF contains over four thousand 'request for comment' documents(RFCs), and it remains as one of the central bodies alongside with Institute of Electrical and Electronics Engineers(IEEE), International Standards Organization (ISO) [11], and others, for development of standards aimed at provision of interoperability in the larger information technology domain. The structure, procedures and objectives of standardization efforts are explicit and well established[1].The general requirements for standardization efforts has been considered in research[6], as well as more general aspects of IT business such as increased influence of collaborative knowledge creation, alliances[8],[5], and consequences of externalities[10]. However, empirical research and case studies specifically targeting standards development and network effects on the development process received attention only recently[3,4,7,9,12].

In the information technology industry, there are two basic categories or definitions of standards. They are "de jure" and the "de facto" standards. De jure standards or formal standards are standards developed within an accredited standards development organization (or through a standards setting organization) using rigid procedures that may periodically be audited. The de jure standards development is based on openness and due process. Openness means that there are no obstacles to prevent an individual with a direct and material interest from expressing a viewpoint regardless of whether it is an affirmation or an objection to the discussion(i.e., the participation in the standards development activity is open to all persons). Due process ensures equity and fair play in the development process. De jure standards are typically produced by organizations working with ISO(International Standards Organization), ANSI(American National Standards Institute), ITU(International Telecommunication Union) and others like them. The other type of standards, de facto standards, are market driven standards that receive wide acceptance from many organizations in the industry.

These standards may be developed following a process that may be as rigorous as the de jure process but may be lead by a few organizations representing the industry rather than a diverse group representing numerous interest groups in the industry. De facto standards become a standard primarily because they are widely adopted and readily available.

Some examples of these standards may be:

a. De facto standards include, Microsoft Windows that is widely accepted as a client operating system and is most often shipped with computers from the factory.
b. PDF(Portable Document Format), ISO 32000-1, is now a de jure standard as it was developed based on the ISO procedures. Prior to ISO 32000-1, PDF was also a de facto standard as it was a specification that was owned and maintained by Adobe Systems.
c. PDF/A, ISO 19005-1, is also a de jure standard that was also developed based on the ISO procedures and adopted as an ANSI standard (ANSI/AIIM/CGATS/ISO 19005-1) using the AIIM's standards development procedures which were approved by ANSI.
d. TIFF (Tagged Image File Format) is an example of a de facto standard. It is a specification that is owned by Adobe Systems. The specification is freely available on the Adobe Systems web site but the specification is controlled by Adobe Systems.

II. PRESENT STANDARDS DEVELOPMENT BODIES IN PRACTICE

Like all other types of industries, the Internet also having its competing bodies that are trying to develop and implement global Internet standards. There are government agencies, non-profit organizations, consortia bodies, and multinational bodies that are contributing to Internet standards development. One of the major players in the Internet standardization world is the Internet Society (ISOC). They are a multinational, non-profit organization that was founded in 1992. Their major goal is to ensure the open development, evolution and use of the Internet for the benefit of people throughout the world. The Internet Society (ISOC) is an independent international non-profit organization with headquarters in Geneva, Switzerland and Reston, Virginia, USA. ISOC acts as a global clearinghouse for technically-sound, unbiased information about the Internet, as a provider of education, and also as a facilitator and coordinator of Internet-related initiatives around the world. It provides the organizational home for the IAB (Internet Architecture Board), IETF (Internet Engineering Task Force), and IRTF(Internet Research Task Force). ISOC was founded in 1992 to provide leadership in Internet related standards, education, and policy. It is supported by an active, global network of members who help promote and pursue the ISOC mission in all parts of the Internet community and all parts of the world. The Society has more than 80 organizational and more than 28,000 individual members in over 80 chapters who contribute to regionalizing the scope of ISOC technical, educational and policy initiatives.

ISOC is the organisational home of the-

a. The Internet Architecture Board (IAB)
b. The Internet Engineering Task Force (IETF)
c. The Internet Research Task Force (IRTF)

Collectively, these bodies support the creation of specifications and research for general Internet operation and evolution. The figure (1) illustrates the Internet Society (ISOC) hierarchy.

A. The Internet Architecture Board (IAB):

The Internet Architecture Board (IAB) is the committee charged with oversight of the technical and engineering development of the Internet by the Internet Society (ISOC). It oversees a number of Task Forces, of which the most important are the Internet Engineering Task Force (IETF) and the Internet Research Task Force (IRTF). The body which eventually became the IAB was created originally by the United States Department of Defense's Defense Advanced Research Projects Agency with the name Internet Configuration Control Board during 1979; it eventually became the Internet Advisory Board during September, 1984, and then the Internet Activities Board during May,

1986 (the name was changed, while keeping the same acronym). It finally became the Internet Architecture Board, under ISOC, during January, 1992, as part of the Internet's transition from a U.S.-government entity to an international, public entity.

The IAB's responsibilities include-

a) ***Architectural Oversight:*** The IAB provides oversight of, and occasional commentary on, aspects of the architecture for the network protocols and procedures used by the Internet.
b) ***Standards Process Oversight and Appeal:*** The IAB provides oversight of the process used to create Internet Standards. The IAB serves as an appeal board for complaints of improper execution of the standards process, through acting as an appeal body in respect of an Internet Engineering Steering Group (IESG) standards decision.
c) ***Request for Comments series:*** The IAB is responsible for editorial management and publication of the Request for Comments (RFC) document series.
d) ***Internet Assigned Numbers Authority:*** In conjunction with the Internet Corporation for Assigned Names and Numbers (ICANN), the IAB is responsible for administration of the assignment of IETF protocol parameter values by the Internet Assigned Numbers Authority (IANA). The Internet Assigned Numbers Authority (IANA) is a department of ICANN responsible for coordinating some of the key elements that keep the Internet running smoothly.
e) ***External Liaison:*** The IAB acts as representative of the interests of the IETF in liaison relationships with other organizations concerned with standards and other technical and organizational issues relevant to the worldwide Internet.
f) ***Advice to the Internet Society:*** The IAB acts as a source of advice and guidance to the Board of Trustees and Officers of ISOC concerning technical, architectural, procedural, and (where appropriate) policy matters pertaining to the Internet and its enabling technologies.
g) ***Internet Engineering Steering Group Confirmation:*** The IAB confirms the IETF Chair and IESG Area Directors, from nominations provided by the IETF Nominating Committee.
h) ***Internet Research Task Force Chair:*** The IAB selects a chair of the IRTF for a renewable two year term.

B. The Internet Engineering Task Force (IETF):

The Internet Engineering Task Force (IETF) is the internet's premier technical standards body. It gathers a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the internet Architecture and the smooth operation of the internet. The IETF seeks broad participation. The work of the IETF place online, largely through email lists, reducing barriers to participation and maximizing contributions from around the world. IETF working groups (WGs) are organized by topic into several areas (e.g., routing, transport, security, etc.).

The IETF is really about the individuals its participants. There is no membership in the IETF- the IETF is made up of volunteers. Anyone may register for and attend any meeting. The closest thing to being an IETF member is being on the IETF or Working Group mailing lists. The IETF Working Groups are grouped into areas, and managed by Area Directors, or ADs. The ADs are members of the Internet Engineering Steering Group (IESG). Providing architectural oversight is the Internet Architecture Board (IAB). The IAB also adjudicates appeals when someone complains that the IESG has failed. The IAB and IESG are Chartered by the Internet Society ISOC) for these purposes. The General Area Director also serves as the chair of the IESG and of the IETF, and is an ex-officio member of the IAB. While the actual technical work of working groups is accomplished largely through email lists, IETF meetings are held three times a year with the primary goal of supporting IETF Working Groups in getting their tasks done. A secondary goal is to promote a fair amount of mixing between the WGs and the areas. However, the results of Working Group sessions at face-to-face meeting must gain consensus on the WG mailing list for a decision to be made. The IETF organize briefing panels at nearly all IETF meetings, and publish the IETF Journal three times a year in advance of each IETF meeting.

The mission of the IETF is to make the Internet work better by producing high quality, relevant technical documents that influencing the way people design, use, and manage the Internet. The IETF pursues this mission in adherence to the following principles:

a) ***Open Process:*** Any interested person can participate in the work, know what is being decided, and make his or her voice heard on an issue. The main objective of this principle is to make documents, Working Group mailing lists, attendance lists, and meeting minutes publicly available on the internet.
b) ***Technical Competence:*** The issues on which the IETF produces its documents are issues where the IETF has the competence needed to speak to them. The IETF is willing to listen to technically competent input from any source. The main objective of this principle is to follow the network engineering principles- that is also often referred to as "engineering quality".
c) ***Volunteer Core:*** IETF participants and leadership are people who come to the IETF because they want to do work that furthers the IETF's mission of "making the Internet work better".
d) ***Rough Consensus and Running Code:*** The IETF makes standards based on the combined engineering judgement of participants and real-world experience in implementing and deploying IETF specifications.
e) ***Protocol Ownership:*** When the IETF takes ownership of a protocol or function, it accepts the responsibility for all aspects of the protocol, even though some aspects may rarely or never be seen on the Internet.

C. Internet Research Task Force (IRTF):

The Internet Research Task Force (IRTF) focuses on longer term research issues related to the Internet while the parallel organization, the Internet Engineering Task Force (IETF), focuses on the shorter term issues of engineering and standards making. The IRTF is a composed of a number of focused and long-term Research Groups. These groups work on topics related to Internet protocols, applications, architecture and technology. Research Groups have the stable long term membership needed to promote the

development of research collaboration and teamwork in exploring research issues. Participation is by individual contributors, rather than by representatives of organizations. The IRTF is managed by the IRTF Chair in consultation with the Internet Research Steering Group (IRSG). The IRSG membership includes the IRTF Chair, the chairs of the various Research Groups and other individuals ("members at large") from the research community selected by the IRTF Chair. The mission of the IRTF includes - The Internet Research Task Force (IRTF) promotes research of importance to the evolution of the Internet by creating focused, long-term Research Groups working on topics related to Internet protocols, applications, architecture and technology.

Therefore The IETF and IRTF are open organisations, relying on transparent, bottom-up processes to build consensus. Thousands of people from around the world participate in the process and the standards they develop are free and accessible to everyone. Participants, who primarily come from the private sector, governments and academia, are technical experts who work together collaboratively as volunteers.

Another organization that is involved with Internet standards is the World Wide Web Consortium (W3C). Tim Berners-Lee, the inventor of the World Wide Web, created W3C in 1994 to help standardize his invention. W3C's mission is: To lead the World Wide Web to its full potential by developing protocols and guidelines that ensure long-term growth for the Web." W3C accomplishes its mission through the creation of various web standards and guidelines. Their guidelines are known as W3C recommendations. Various companies from around the globe participate in the W3C standards development process.

One of the major standards bodies that deals with Internet standards in Europe is the European Telecommunications Standards Institute (ETSI). The ETSI is a not-for-profit organization that consists of members from approximately 700 organizations throughout 60 countries. The ETSI focuses on fixed, mobile, radio, converged, broadcast and Internet technologies. Another major European standards body is the European Association for Standardizing Information and Communication Systems (EMCA). The EMCA was created in 1961 and the standards that are created by EMCA are accepted by many members of the European and the international communities.

The EMCA works closely with other standards bodies such as ISO and IEEE. The EMCA is a "fast track" standardization organization whose motto is "Standards@Internet Speed." A major international standards body is the International Telecommunication Union (ITU). The ITU began in 1865 as the International Telegraph Union and they focused on methods of communication to connect the globe. One of the major mission areas of the ITU is to build an information and communication infrastructure. In order to make the mission area a reality, they need to be actively involved in the standards development of the Internet, which is the newest means of global communication. Two of the ways that the ITU plays an active role is through their standardization section, the Telecommunication Standardization Sector (ITU-T), and through their involvement with the World Summit on the Information Society (WSIS). A body known as the Internet Governance Forum (IGF) was created by actions of the WSIS to deal with various Internet issues. The IGF will act as an important body with respect to Internet standards development.

The International Organization for Standards (ISO), the American National Standards Institute (ANSI), and the Institute of Electrical and Electronics Engineers (IEEE) are all major standards bodies that deal with a whole spectrum of standards issues. They all contribute to the development and implementation of Internet standards, but it is a small part of what each of those organizations perform.

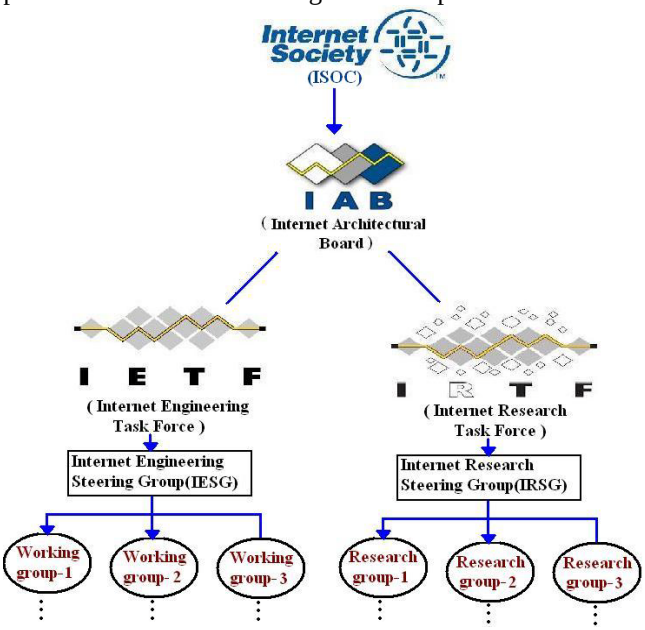

Figure (1) illustrates the Internet Society (ISOC) hierarchy

III.THE INTERNET STANDARDS PROCESS

The Internet Standards Process set forth by the IETF in theory is straightforward, but in practice it can be difficult and complicated. The complications arise due to creating standards of high technical quality, ensuring all interested parties come to a consensus, and ensuring that the proposed standard has utility for the Internet community as a whole. These complications must be overcome to ensure that a useful standard is created. The goals of the Internet Standards Process are:

a. Technical excellence
b. Prior implementation and testing
c. Clear, concise, and easily understood documentation
d. Openness and fairness
e. Timeliness

The Internet Standards Process is intended to balance these conflicting goals. The process is believed to be as short and simple as possible without sacrificing technical excellence, thorough testing before adoption of a standard, or openness and fairness. The development of an Internet standard using the IETF method begins when an individual or a working group writes an Internet Draft. This draft is an informal document that is placed in an Internet-Draft directory. This Internet Draft directory allows the draft to be reviewed by a wide audience of Internet users. Once in the Internet-Draft directory, it can published as a part of the non-standards track Request For Comments (RFC) series, it

can be chosen to be placed in the RFC standards track, or it can be removed from the Internet-Drafts series if its status remains unchanged for more than six months.

An RFC may be published either as a "Standards track" document, or an "Informational" or "Experimental" document. Standards track RFCs document the workings of the Internet, and the various protocols which make it up. Experimental and Informational RFCs do not describe standards, but rather contain information that may be of interest or use to the Internet community. These non-standards RFCs often indicate the best current practices in relation to a specific area of the Internet. These Best Current Practices (BCP) form a separate document series. All standards track RFCs are subject to a strict process of review before they are adopted as Internet standards. Every standards track RFC has a status associated with it which indicates its maturity and place within the standards track. A standards track RFC (i.e., here Internet Draft) starts out as a "Proposed Standard", after which it becomes a "Draft Standard" before being confirmed as an "Internet Standard". Internet Standards are specifications for which a significant amount of review, implementation, and operational experience has been gained. They have a significant amount of technical maturity and are generally of interest to the Internet community as a whole. All RFCs are identified by a unique number, starting at one and incrementing sequentially as documents are published. This number is assigned to a specific version of the specification and after an RFC has been assigned a number it may not be edited. Subsequent revisions start out as Internet drafts, and are assigned a separate RFC number when they are ratified. A repository of RFCs is maintained by the RFC editor and this collection is mirrored on servers world-wide.

If an Internet Draft contains enough useful information to be put into the RFC standards track, then it begins to transitions through a series of maturity levels. The first level is the Proposed Standard. Specific action by the IESG is required to move a draft to the Proposed Standard level. Proposed standards are treated as immature specifications, and it is required to implement them in order to validate, test and clarify the specifications. Proposed Standards can be changed at this stage of the process. The next stage of the Internet Standards process is the Draft Standard stage. This is a very mature stage where at least two independent and interoperable implementations of all options and features of the specification must occur. If any features or options are not tested, they must be removed before the specification can enter the Draft Standard stage. Once in this stage, changes are only made to solve specific problems. A specification that has been sufficiently tested and implemented is then becomes an Internet Standard. The Internet Standard is one that has a high technical maturity and the specified protocol or service developed provides a benefit to the Internet community. The figure (2) illustrates the Internet Standard Process.

Generally Internet Standards cover interoperability of systems on the Internet through defining protocols, message formats, schemas, and languages. The most fundamental of the Internet Standards are the ones defining the Internet Protocol. An Internet Standard ensures that hardware and software produced by different vendors can work together. Having a standard makes it much easier to develop software and hardware that link different networks because software and hardware can be developed one layer at a time. Normally, the standards used in data communication are called protocols. All Internet Standards are given a number in the Internet Standard series. Each RFC is static; if the document is changed, it is submitted again and assigned a new RFC number. If an RFC becomes an Internet Standard (STD), it is assigned an STD number but retains its RFC number. When an Internet Standard is updated, its number stays the same and it simply refers to a different RFC or set of RFCs. A given Internet Standard, STD *n*, may be RFCs *x* and *y* at a given time, but later the same standard may be updated to be RFC *z* instead. Note that not all RFCs are standards-track documents, but all Internet Standards and other standards-track documents are RFCs.

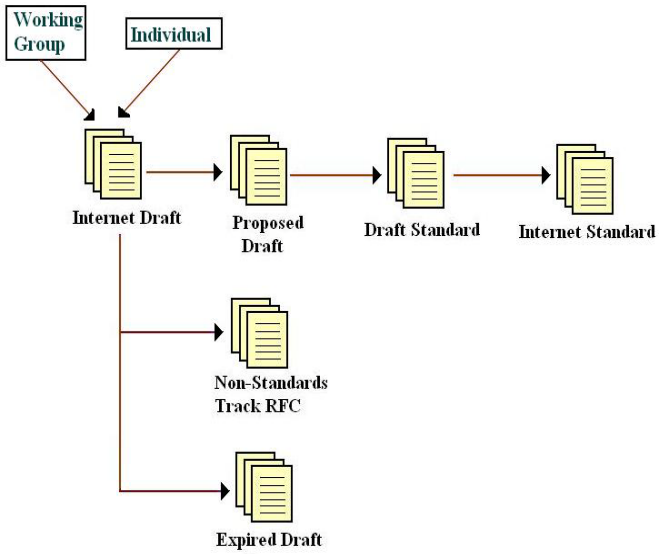

Figure (2) illustrates the Internet Standard Process

IV. BENEFITS OF STANDARDIZING THE INTERNET

There are many different reasons to standardize the Internet. Some standardization bodies have financial reasons to standardize the Internet. Other standardization bodies have “good will” reasons to standardize the Internet. Each reason leads to a different type of benefit of standardization. As the use of the Internet grows globally, the number of web browsers increases at a high rate. Currently there are over 100 different web browsers in use. This is in part due to users around the world and an increasing numbers of electronic devices that can access the Internet. One of the ways to ensure that the maximum number of users can view and use our webpage is through the use of standards. Standardization will help accessibility and compatibility issues. If software developers around the globe use certain standards when developing websites and other Internet tools, then it is more likely that users of the Internet around the world will be able to use the websites that have been built regardless of the Internet browser that they use.

Security is an important area of the Internet in which standardization is vital. As the Internet grows, the number of hackers grows in similar proportions. Since security is a major concern for computer users, many major companies are actively involved in efforts focused on creating standards to increase security on the Internet. If the major software companies in the world work with the major

standards organizations, then the Internet has a better chance of becoming more secure.

Another reason and benefit to standardization is to minimize stability issues. As technology improves, the software that uses the technology improves as well. Software programmers need to ensure that as they write code for web pages, it needs to be both forwards and backwards compliant. When major companies develop web pages, one programming team may develop the web page and another team may update the webpage. Standards for the Internet "offer a set of rules that every Web developer can follow, understand, and become familiar with: When one developer designs a site to the standards, another will be able to pick up where the former left off." Therefore, standardization of the Internet will save all webpage designers both time and money due to the acceptance of their product by a multitude of web browsers. Standardization is a benefit to both the producers and the consumers.

V. CONCLUSION

Standards development requires a fine balance between demands of timely delivery, wider collaboration, and excellent technical consistency. Standardization of the Internet will save all webpage designers both time and money due to the acceptance of their product by a multitude of web browsers. Standardization is a benefit to both the producers and the consumers. The issue of Internet standards is one that is very important to global market. There are many different organizations that are currently dealing with the various standards issues. The best type of standards system for this arena is an open standards system. This coupled with demand-driven standards created by the fast moving standards bodies, such as EMCA and W3C, will lead to a technologically sound Internet realm. Some form of global Internet governance is needed, but the representation at the global level should be based on the number of Internet users a country has, not just the pure size of the country. This will help the Internet become a major means of commerce throughout the world.

VI. ACKNOWLEDGMENT

My heartful gratitude to almighty God and my parents - father D.Chatur Naik and mother D.Ghammi Bai without whose unsustained support, I could not have completed this paper.

VII. REFERENCES

[1]. S.Bradner. The Internet Standards Process (RFC2026), 1996.

[2]. Mehmet Gencer "Structure and Collaborative Aspects of Internet Standards" an IEEE paper, Page(s):733 – 739, 2007.

[3]. M. Gencer, B. Ozel, V. S. Tunalioglu, and B. Oba. Open Source Systems, chapter Organization of Internet standards. Springer, Boston, 2006.

[4]. B. Choi, T. S. Raghu, and A. Vinze. An empirical study of standards development for e-businesses. In Proceedings of the 39th Hawaii International Conference on System Sciences, volume 6, page 139a, Los Alamitos, CA, USA, 2006.IEEE Computer Society.

[5]. P. A. David and L. C. Keely. The endogenous formation of sciencetific research coallitions. Economics of Innovation and New Technologies, 12:93–116, 2003.

[6]. D. L. Garcia. Standard setting in the United States. Journal of the American Society for Information Science, 43:531–537, 1992.

[7]. R. Garud, S. Jain, and A. Kumaraswamy. Institutional entrepreneurship in the sponsorship of common Technological standards. Academy of Management Journal, 45:196–214, 2002.

[8]. R. Gulati, N. Nohria, and A. Zaheer. Strategic networks.Strategic Management Journal, 21:203–215, 2000.

[9]. J. V. Nickerson and M. zur Muehlen. Defending the spirit of the web: Conflicts in the internet standards process. In J. L. King and K. Lyytinen, editors, Proceedings of the Workshop on Standard Making, pages:56–69, 2003.

[10]. B. Demil and X. Lecocq. Neither market nor hierarchy nor network: The emergence of bazaar governance. Organization Science, 27:1447–1466, 2006

[11]. Depavath Harinath, "OSI Reference Model – A Seven Layered Architecture of OSI Model " International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE) ,Vol.3,Issue18, August 2013.

[12]. M. Xia, K. Zhao, and M. J. Shaw. Open e-business standard development and adoption. In J. L. King and K. Lyytinen, editors, Proceedings of the Workshop on Standard Making, pages 56–69, 2003.

[13]. "Standards and the Internet" by Scott R.Delwiche for strategic standardization, August, 2008.

Short Bio Data for the Author

Depavath Harinath, received the Bachelor of Science degree in computer science from New Noble Degree college, Affiliated to Osmania University, Hyderabad, A.P, India in 2008 and received Master of Computer Applications degree in 2012 from Sreenidhi Institute of Science and Technology, an autonomous institution approved by UGC, accredited by NAAC with 'A' grade and accredited by NBA, AICTE, New Delhi - Permanently affiliated to JNTU, Hyderabad, A.P., India. Now working as Lecturer in Computer Science in Siddhartha Degree College for Women, Affiliated to Osmania University, Dilsukhnagar, Hyderabad, AndhraPradesh, India. Having two years of experience in teaching and already published three manuscripts in different international journals. My research Interests are Computer Networks and Network Security.