

Vint Cerf Closing Keynote
Global INET, April 24, 2012
Geneva, Switzerland

Key highlight: Cerf says, “That a multistakeholder dialogue is essential should be obvious. That governments have a role to play is equally obvious, but they are not and cannot be the sole arbiters of the path toward trust and safety. We ALL have a responsibility in the digital commons... This then is the challenge that faces the Internet Society as it begins its third decade of existence. Upon it falls the responsibility to articulate and facilitate the discussion leading to a safer and more-trustworthy Internet that embodies the freedoms sought by all members of our global society.”

Video posted by ISOC on Livestream:

http://www.livestream.com/inet1/video?clipId=pla_f2794989-fd45-44e6-8a67-39318ed0fef9

Cerf Keynote:

I’d like to talk about three themes this afternoon: Freedom, Opportunity and Responsibility.

It’s hard to believe that 20 years have passed since the formation of the Internet Society. The initial impetus for its formation came with the need to find non-governmental funding for the operation of the Internet Engineering Task Force Secretariat. This function had been hosted by CNRI and funded by the U.S. National Science Foundation, but by 1991 it was very clear that a significant level of IETF activity and general Internet activity was driven by the private sector interests and efforts and that research funds ought to be more focused on research than on the rapidly growing public Internet.

By June of 1991, with the concurrence of Bob Kahn – who was then and now is the CEO of CNRI – and colleagues on the Internet Activities Board – as it was then known – we were ready to announce the Internet Society would be operational in January of 1992. The announcement was made at INET 1991 – it took place in Copenhagen, Denmark, during a particularly rainy week, and I remember someone from Denmark explaining to me that “statistically” it was a nice day, despite all the rain. Larry Landweber, who was the founder of the INET conferences, was very pleased that this conference would become the flagship event for the nascent Internet Society.

The founding organizations of the Internet Society included CNRI, with Bob Kahn at the head; EDUCOM, run by Ken King; and RARE, run by Kees Neggers, although at that time his position was preceded by Juergen Harms, as we’ve heard earlier a couple of times this week. Through their formal actions the initial board of trustees was formed.

I was named the founding president, and we took up office space generously provided by CNRI. During one of the preparatory meetings, we opened up the opportunity to take up individual membership, and I recall that Steve Wolff, who had funded the IETF

Secretariat, from the NSF, and Jon Postel had a race to see who could write the first \$70 check. Jon won. His membership number was then 1314159, as memory serves. The mathematicians among you will recognize this as the number one followed by six digits of Pi. While the numbering of memberships has changed with time, I always thought this was a rather nice, if quirky, choice. It also avoided the problem of who got member No. 1.

We had many aspirations for this organization; not only support for the further technical development and standardization of the Internet through IETF, but also a social mission driven by the belief that a new kind of society would arise from the spread and use of the Internet.

We hoped that ISOC would be a vehicle through which an appreciation of the technical, social, economic and governmental impact of the Internet might be more widely disseminated, modeled in some ways after the Association for Computing Machinery. We imagined that there would be individual members, chapters and perhaps even special-interest groups situated wherever an interest in the Internet might be found. We even anticipated a kind of newsletter or magazine publication and even a professional journal. Tony Rutkowski undertook the task of creating a magazine among other things. The professional journal never quite made it.

We tried forming an Internet Societal Task Force in parallel with the IETF and the Internet Research Task Force. Several people were particularly interested in this, including Christine Maxwell and David Nordfors, among others. **We hoped that we might highlight societal issues occasioned by the spread and use of the Internet. While the ISTF did not work out in this early effort, in some ways the Internet Governance Forum has proven to be a more successful manifestation of that idea, and perhaps it is time for ISOC to revisit the ISTF notion within its own framework.**

There were other early battles, not the least of which was a fight over the use of the term "Internet" as a trademark registered in the U.S. Patent and Trademark Office. Not long after the Internet Society was founded a company calling itself Internet Inc. had trademarked the term "Internet." It was in fact a company providing an automated teller machine network. Now remember this was a time period when the Internet technology was beginning to make use of something called asynchronous transfer mode communication. And I called up the company and I said, "Hi, I hear you call yourself Internet Inc., what do you do?" and they said, "Well, we run an ATM network." Being an engineer I thought they were running an asynchronous transfer mode high-speed network for the Internet. The conversation went on for almost five minutes before I realized they were doing banking with an automated teller machine system.

Patrice Lyons, with the support of CNRI and ISOC, drove a 10-year contest in order to make the term "Internet" specific to the system based on the TCP/IP protocols and subsequent protocol evolutions, and her success preserved the term and its use, not

only for the Internet Society but for all who use it to refer to this remarkable global and transforming networked technology

Another notable battle, beginning in 1978 – well before the formation of the Internet Society – lasted some 15 years. To determine whether the open systems interconnection protocols or Internet's TCP/IP would be more favored. As the new president of the Internet Society I wrote to the U.S. National Institutes of Standards and Technology in 1992, requesting that an evaluation be performed to determine whether TCP/IP protocols could be an acceptable alternative to the OSI protocols that were, at that time, formally preferred by the U.S. government and other governments around the world. A blue ribbon panel was formed, and a year later it was concluded that the TCP/IP protocols were an acceptable alternative.

Many people have served in leadership positions over the course of the Internet Society's 20-year existence – members of the board of trustees, presidents, vice presidents, chapter presidents and many other officers – too many to name in this short commentary. I would like, however, to acknowledge the extraordinary success of the longest-serving president and CEO, Lynn St. Amour. She received, as many of you saw, a lifetime achievement award yesterday. Her bold decision to bid on the operation of the .ORG top-level domain when the Internet Corporation for Assigned Names and Numbers opened up an opportunity for new management set ISOC on a new course, sustained by the financial resources of the Public Interest Registry created by ISOC for the purpose of bidding on this opportunity.

The Internet Society has grown in scope and staffing and impact thanks to this visionary initiative, and much of the credit for this lies with Lynn.

The success of the Internet Society has brought new challenges and new opportunities, and I'd like to spend my remaining time reflecting on some of them.

The Internet was created out of a stunningly successful foray into packet-switching technology thanks to early work by Paul Baran, by Donald Davies, Len Kleinrock, Larry Roberts, Steve Crocker, Bob Kahn, Louis Pouzin, Peter Kirstein, and many others – some of them in this room. The ARPANET idea broke free of the conventional telecommunications technology of the day – circuit-switching – giving free rein to the ARPA-sponsored Network Working Group, led by Steve Crocker, to devise new protocols and applications for a new network of heterogeneous computers interacting over a homogeneous network.

These ideas spawned new explorations in packet-switching, from shared satellite links to mobile radio, like the packet radio net and the Aloha Net and the Ethernet, which derived out of the Aloha Net. The success of these efforts led to the need for a new technology to allow flexible interconnection of these many kinds of packet networks into a common infrastructure. Beginning with Bob Kahn's open networking ideas that were formulated in 1972, the notion of TCP and eventually TCP/IP took shape. The

International Network Working Group, modeled after Crocker's Network Working Group, took pains to adopt an open membership and development process.

FREEDOM was the key. Freedom to build networks. Freedom to interconnect them. Freedom to design and try out new protocols and applications without having to get permission. Freedom to ingest new communications technologies over which the Internet Protocol packets could be transported. Freedom to speak and share ideas. Freedom to access all the technical specifications without having to join an organization or pay a fee. The Internet is really all about freedom. Freedom to speak, freedom to hear, freedom to innovate.

It still amazes me that while Bob Kahn and I were working either at or for ARPA we were allowed to release all of the information about the Internet to anyone who was interested. As I recall we neglected to ask for permission. We had the idea that people should be able to build pieces of the Internet and connect them together with anyone else who was willing to cooperate.

It was an organic vision of growth. And of course we also hoped that the lack of barriers to use would facilitate their eventual adoption as international standards.

By any reasonable metric, the Internet and its technology and the institutions it has spawned have benefited from this "open" philosophy.

With the advent of the World Wide Web at just about the time the Internet Society was being founded, we saw a burst of application development and use that might be compared to the Cambrian explosion of evolution.

[Speaking of OPPORTUNITY]

Now, in the second decade of the 21st century, nearly 3 billion people appear to be online. Mobiles have joined the Internet to create yet another opportunity for innovation and creative expression. How often do we hear "there's an app for that" in reference to the smartphones that number in the billions?

To keep the Internet growing it's imperative that the newer IP Version 6 protocols be widely implemented and used. The Internet Society has organized first an initiative in 2011 World IPv6 Day and in 2012 World IPv6 Launch. On June 6 of this year IPv6 will be "turned on" by as many of the users and application providers and Internet Service Providers as possible and will stay on. I'm sure Robert Hinden, who's instrumental in the design of IPv6, is pleased to see this happen, at last.

This will give us the freedom to expand the Internet well beyond the confines of its original 32-bit address space. The 128-bit address space of IPv6 allows for over 340 trillion trillion trillion terminations – enough to allow an Internet of Things to evolve in the new, digital Cambrian explosion.

With all this freedom comes RESPONSIBILITY. It is in this space that I believe the Internet Society may make its most important contributions. The Internet, and, in particular, its users, reflect the whole spectrum of human behaviors and motivations. It spans national and domestic jurisdictions. It crosses through and mixes culture, language, attitudes, social norms and conventions. It is both an instrument for limitless benefit and a means for producing harm. If we're going to talk about freedoms enjoyed by Internauts around the world, we must also talk about freeing them from harm. Freedom from harm must be added to the list of important freedoms we value and express, for example, in the UN Declaration of Human Rights.

It is clear that we cannot absolutely assure that the Internet cannot be used to harm others. Fraud, spam, social abuse, theft – among other harms – can be perpetrated using the Internet. These are not new. They are pursued in using other infrastructures, such as the telephone and the postal service. We can, however, recognize that the values the Internet brings are eroded by abuse and that we Internauts should feel a strong motivation to reduce risk and increase safety consonant with the rights and freedoms so important to our modern and increasingly global society.

The Internet Society has a natural voice and constituency for exploring and articulating steps towards increasing the safety of the Internet and the trust that is essential to its true potential.

These are complex problems. They draw into debate technology, domestic and international legal frameworks, social norms, voluntary behaviors and a host of other ingredients.

That a multistakeholder dialogue is essential should be obvious. That governments have a role to play is equally obvious, but they are not and cannot be the sole arbiters of the path toward trust and safety. We ALL have a responsibility in the digital commons.

This then is the challenge that faces the Internet Society as it begins its third decade of existence. Upon it falls the responsibility to articulate and facilitate the discussion leading to a safer and more-trustworthy Internet that embodies the freedoms sought by all members of our global society. It is here that the Internet Society may be able to make its most significant contribution and it is here that we must take a stand.

I take this moment to congratulate the Internet Society and its members and constituents on 20 years of success and to wish it similar and greater success in the future as the world becomes more connected than ever in human history.