

Name(s) \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

## Activity Guide - Primary Source: "The Internet is for Everyone"



### Introduction

So far in this class, you have solved a few problems by creating and using small protocols for transmitting data over a wire, but the Internet is obviously much bigger than a single wire connecting two people. It connects billions of people and even more billions of machines. For it to work, there must be open standards and protocols that anyone can follow, so that any machine can communicate with any other. Without protocols, it would be as if machines were speaking different languages.

### Background - The Internet Engineering Task Force (IETF)

So who develops these protocols? Who makes the final decisions? Who is in charge? The amazing thing is that no single person, government, or corporation is in charge. Rather, citizens and volunteers who are interested in defining the standards that make up the Internet join a membership organization (sort of like a club) called the *Internet Engineering Task Force* or **IETF**.

From the [IETF Website](#): *The IETF's mission is "to make the Internet work better," but it is the Internet **Engineering Task Force**, so this means: make the Internet work better from an engineering point of view. We try to avoid policy and business questions, as much as possible. Most participants in the IETF are engineers with knowledge of networking protocols and software.*

### Background - Request for Comments documents (RFCs)

The IETF develops protocols somewhat informally, with a few meetings of interested people and an email list. From these exchanges, documents emerge that contain proposals for new protocols whose authors post it on the IETF website and ask the public to comment on it (hence: Request for Comments). Over time, this format has taken on a life of its own and they are known simply as "RFCs."

### RFC 3271 - The Internet is for Everyone

#### Vint Cerf

In 2002 Vinton "Vint" Cerf, regarded widely as one of the fathers of the Internet, wrote [RFC 3271](#) and submitted it to the IETF. It is entitled "The Internet is for Everyone." It's a funny place to post an RFC that is not describing a protocol, but Cerf wanted to make sure that the people who define and engineer the Internet standards and protocols would see it. Cerf was speaking on behalf of the "Internet Society," a group started by IETF members who had been involved from the very early days when the Internet was a US military project.

"The Internet is for Everyone" is about making sure that the way the Internet is engineered maintains the philosophy that the Internet should be available and useable by everyone in the world, regardless of race, gender, creed, location, or wealth. Clearly, Vint Cerf thought that the prospect might be threatened in early 2002<sup>1</sup>. In the article, he lays out the state of the Internet and its usage in 2002, predicts the future, and then presents a series of nine challenges or threats to the idea that the Internet is for everyone.

The last several paragraphs begin with the phrase: "Internet is for everyone - but it won't be if..."

<sup>1</sup> It is worth noting, and probably not a coincidence, that this was written and published in the early aftermath of the terrorist attacks of Sept. 11, 2001.

## Student Task

1. **With a partner, skim the RFC** and look at the nine challenges laid out at the end.

**While you're looking at the document, what do the challenges make you think of?**

With your partner, discuss the challenges and try to think of *related examples you know about* from your experience, the news, or history.

2. **With your partner pick two (2) of the challenges** and for each be prepared to:
  - State the challenge briefly in your own words. You can start your statement with the “Internet is for everyone - but it won't be if....” and then explain *in your own words* what it means.
  - Give an example you know of that applies to that challenge.

The RFC is reproduced below in its entirety. ([Here's the original RFC 3271](#) if you want to see it.) Commentary is provided on the side to help explain some of the technical details and contextualize some of the statements.

Primary Source Document	Commentary
<p>Network Working Group Request for Comments: 3271 Category: Informational</p> <p style="text-align: right;">V. Cerf Internet Society April 2002</p>	
<p style="text-align: center;">The Internet is for Everyone</p>	
<p>Status of this Memo</p> <p>This memo provides information for the Internet community. It does not specify an Internet standard of any kind. Distribution of this memo is unlimited.</p>	<p>Standard introductory fare for an RFC document. It's okay to skip to the good parts.</p>
<p>Copyright Notice</p> <p>Copyright (C) The Internet Society (2002). All Rights Reserved.</p>	
<p>Abstract</p> <p>This document expresses the Internet Society's ideology that the Internet really is for everyone. However, it will only be such if we make it so.</p>	
<p>1. The Internet is for everyone</p> <p>How easy to say - how hard to achieve!</p> <p>How have we progressed towards this noble goal?</p>	<p>Here is Vint's challenge: it's easy to say that the Internet should be for everyone, but what will it take to actually make it be so?</p>
<p>The Internet is in its 14th year of annual doubling since 1988. There are over 150 million hosts on the Internet and an estimated 513 million users, worldwide.</p>	<p>This is the state of the Internet in 2002.</p>
<p>By 2006, the global Internet is likely to exceed the size of the global telephone network, if it has not already become the telephone network by virtue of IP telephony. Moreover, as many as 1.5 billion Internet-enabled appliances will have joined traditional servers, desktops and laptops as part of the Internet family. Pagers, cell</p>	<p>This is Vint's prediction in 2002 for what would be true in 2006.</p> <p>Keep in mind that this was written 5 years <i>before</i> the first</p>

phones and personal digital assistants may well have merged to become the new telecommunications tools of the next decade. But even at the scale of the telephone system, it is sobering to realize that only half of the Earth's population has ever made a telephone call.

It is estimated that commerce on the network will reach somewhere between \$1.8T and \$3.2T by 2003. That is only two years from now (but a long career in Internet years).

The number of Internet users will likely reach over 1000 million by the end of the year 2005, but that is only about 16% of the world's population. By 2047 the world's population may reach about 11 billion. If only 25% of the then world's population is on the Internet, that will be nearly 3 billion users.

As high bandwidth access becomes the norm through digital subscriber loops, cable modems and digital terrestrial and satellite radio links, the convergence of media available on the Internet will become obvious. Television, radio, telephony and the traditional print media will find counterparts on the Internet - and will be changed in profound ways by the presence of software that transforms the one-way media into interactive resources, shareable by many.

The Internet is proving to be one of the most powerful amplifiers of speech ever invented. It offers a global megaphone for voices that might otherwise be heard only feebly, if at all. It invites and facilitates multiple points of view and dialog in ways unimplementable by the traditional, one-way, mass media.

The Internet can facilitate democratic practices in unexpected ways. Did you know that proxy voting for stock shareholders is now commonly supported on the Internet? Perhaps we can find additional ways in which to simplify and expand the voting franchise in other domains, including the political, as access to Internet increases.

The Internet is becoming the repository of all we have accomplished as a society. It has become a kind of disorganized "Boswell" of the human spirit. Be thoughtful in what you commit to email, news groups, and other Internet communication channels - it may well turn up in a web search some day. Thanks to online access to common repositories, shared databases on the Internet are acting to accelerate the pace of research progress.

The Internet is moving off the planet! Already, interplanetary Internet is part of the NASA Mars mission program now underway at the Jet Propulsion Laboratory. By 2008 we should have a well-functioning Earth-Mars network that serves as a nascent backbone of an interplanetary system of Internets - InterPlaNet is a network of Internets! Ultimately, we will have interplanetary Internet relays in polar solar orbit so that they can see most of the planets and their associated interplanetary gateways for most, if not all of the time.

The Internet Society is launching a new campaign to facilitate access to and use of Internet everywhere. The campaign slogan is "Internet is for everyone," but there is much work needed to accomplish this objective.

iPhone existed. Many people still did not have cell phones.

"Personal digital assistants" were replacements for people's address books and calendars, but they could not be used as phones and did not connect to the Internet. Oh yeah, WiFi was kind of new.

It turns out Vint was exactly right about 2005, but things got better faster than he predicted. By the end of 2014 it was estimated that over 40% of the world's population was on the Internet. Still...less than half the world.

Things that did not exist when Vint wrote this paragraph: YouTube, streaming video, streaming music, HD television, smart phones, or really even phones that took pictures.

One of the greatest amplifiers, Twitter, was still 4 years away, and it was really 6 years before anyone had heard of it.

Voting for public office is still done in person.

"Boswell" means a constant companion, someone who is always there. In 2015, it's estimated that 90% of the world's Internet data was created within the previous 2 years.

This project was cancelled by NASA in 2005. But we get the point: the Internet is big, always growing, and there's nothing stopping it from being even bigger.

Here come the challenges or threats to the idea that the Internet is for everyone....

**Internet is for everyone - but it won't be if** it isn't affordable by all that wish to partake of its services, so we must dedicate ourselves to making the Internet as affordable as other infrastructures so critical to our well-being. While we follow Moore's Law<sup>2</sup> to reduce the cost of Internet-enabling equipment, let us also seek to stimulate regulatory policies that take advantage of the power of competition to reduce costs.

Challenge 1

**Internet is for everyone - but it won't be if** Governments restrict access to it, so we must dedicate ourselves to keeping the network unrestricted, unfettered and unregulated. We must have the freedom to speak and the freedom to hear.

Challenge 2

**Internet is for everyone - but it won't be if** it cannot keep up with the explosive demand for its services, so we must dedicate ourselves to continuing its technological evolution and development of the technical standards the lie at the heart of the Internet revolution. Let us dedicate ourselves to the support of the Internet Architecture Board, the Internet Engineering Steering Group, the Internet Research Task Force, the Internet Engineering Task Force and other organizations dedicated to developing Internet technology as they drive us forward into an unbounded future. Let us also commit ourselves to support the work of the Internet Corporation for Assigned Names and Numbers - a key function for the Internet's operation.

Challenge 3

**Internet is for everyone - but it won't be** until in every home, in every business, in every school, in every library, in every hospital in every town and in every country on the Globe, the Internet can be accessed without limitation, at any time and in every language.

Challenge 4

**Internet is for everyone - but it won't be if** it is too complex to be used easily by everyone. Let us dedicate ourselves to the task of simplifying the Internet's interfaces and to educating all that are interested in its use.

Challenge 5

**Internet is for everyone - but it won't be if** legislation around the world creates a thicket of incompatible laws that hinder the growth of electronic commerce, stymie the protection of intellectual property, and stifle freedom of expression and the development of market economies. Let us dedicate ourselves to the creation of a global legal framework in which laws work across national boundaries to reinforce the upward spiral of value that the Internet is capable of creating.

Challenge 6

**Internet is for everyone - but it won't be if** its users cannot protect their privacy and the confidentiality of transactions conducted on the network. Let us dedicate ourselves to the proposition that cryptographic technology sufficient to protect privacy from unauthorized disclosure should be freely available, applicable and exportable. Moreover, as authenticity lies at the heart of trust in networked environments, let us dedicate ourselves to work towards the development of authentication methods and systems capable of supporting electronic commerce through the Internet.

Challenge 7

<sup>2</sup> "[Moore's Law](#)" is not a law of nature. It's just an observation that so far has been true since the early 1970s. Moore's law states that every 18 months or so, computers and digital technology will double in speed and capacity while the costs get cut in half. So, for example: If something costs \$200 now, in about a year you can have the same thing for \$100, or something twice as good for \$200.

**Internet is for everyone - but it won't be if** parents and teachers cannot voluntarily create protected spaces for our young people for whom the full range of Internet content still may be inappropriate. Let us dedicate ourselves to the development of technologies and practices that offer this protective flexibility to those who accept responsibility for providing it.

**Internet is for everyone - but it won't be if** we are not responsible in its use and mindful of the rights of others who share its wealth. Let us dedicate ourselves to the responsible use of this new medium and to the proposition that with the freedoms the Internet enables comes a commensurate responsibility to use these powerful enablers with care and consideration. For those who choose to abuse these privileges, let us dedicate ourselves to developing the necessary tools to combat the abuse and punish the abuser.

Internet is for everyone - even Martians!

I hope Internauts everywhere will join with the Internet Society and like-minded organizations to achieve this, easily stated but hard to attain goal. As we pass the milestone of the beginning of the third millennium, what better theme could we possibly ask for than making the Internet the medium of this new millennium?

Internet IS for everyone - but it won't be unless WE make it so.

### Challenge 8

### Challenge 9

Vint repeating what he said at the beginning...it's easy to say "the Internet should be for everyone," but actually achieving that is pretty hard.

The "WE" Vint is referring to here is not just the IETF, but citizens in general, like you.