



**National Information Solutions Cooperative<sup>®</sup>**



# Futures Retreat



**Vern Dosch**  
**CEO and President**

# Agenda

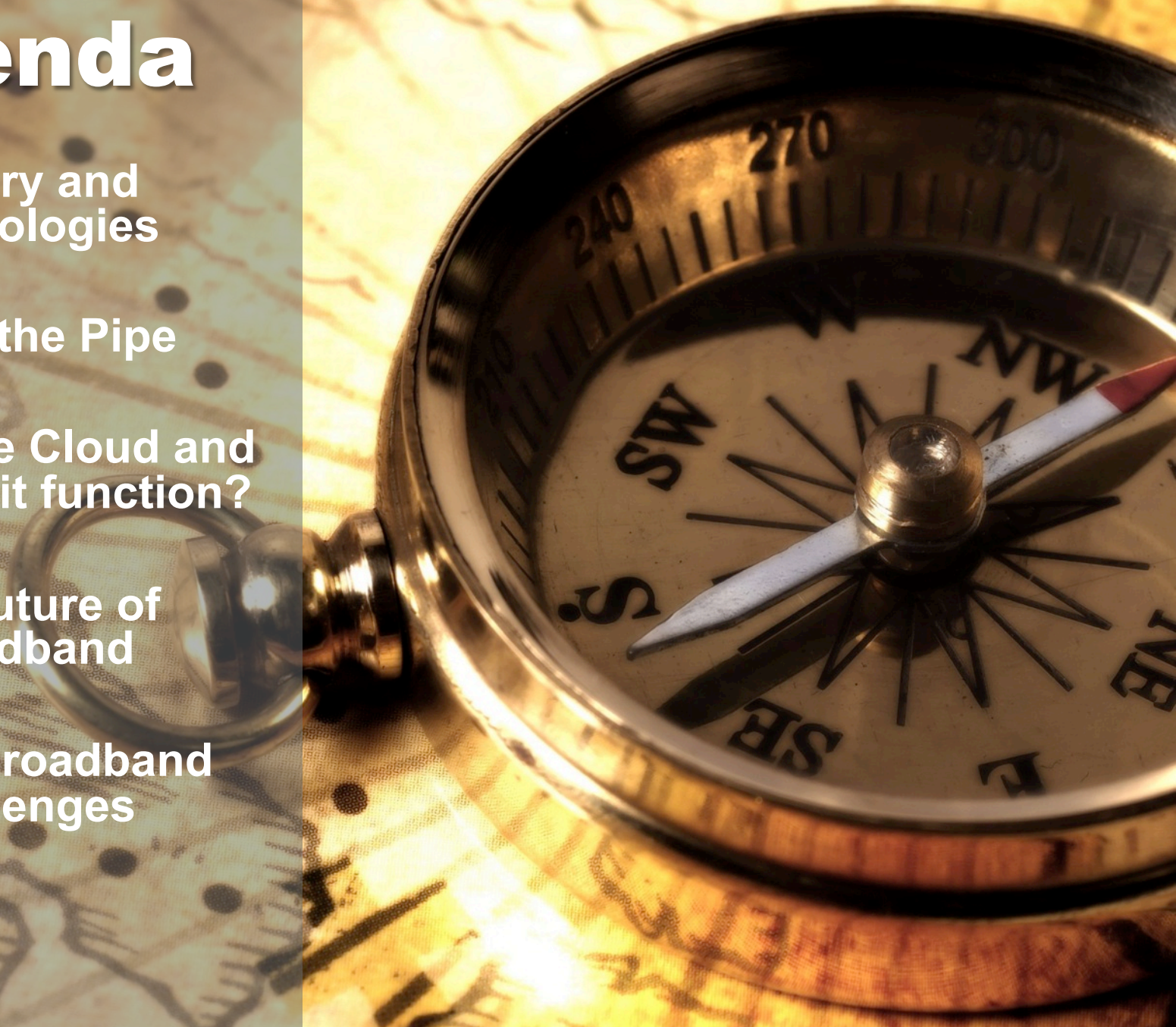
History and  
Technologies

Filling the Pipe

What is the Cloud and  
how does it function?

The Future of  
Broadband

Future Broadband  
Challenges





**Independent Telecom Demise**

NTCA 

NATIONAL TELECOMMUNICATIONS COOPERATIVE ASSOCIATION

NTCA  THE RURAL  
BROADBAND  
ASSOCIATION

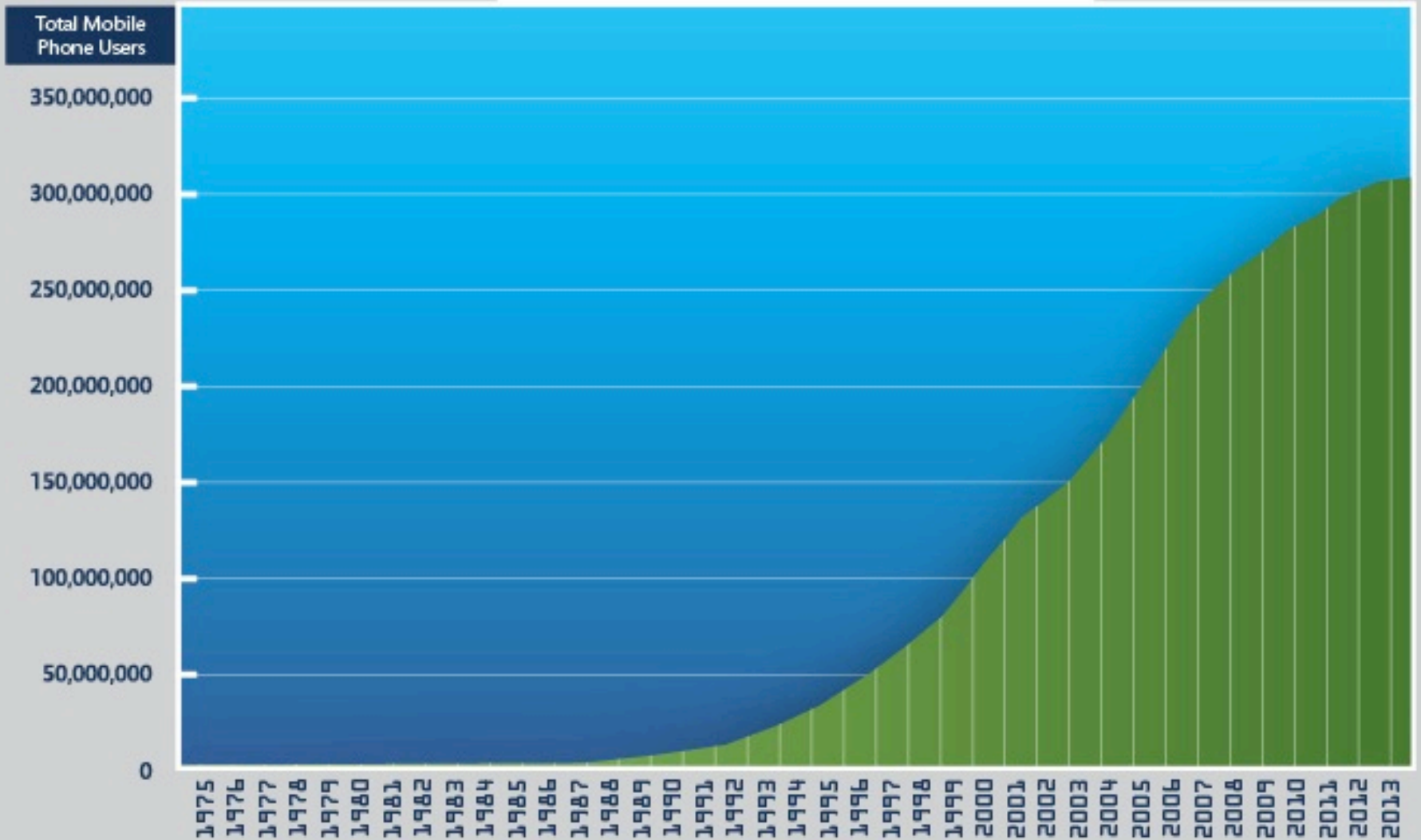


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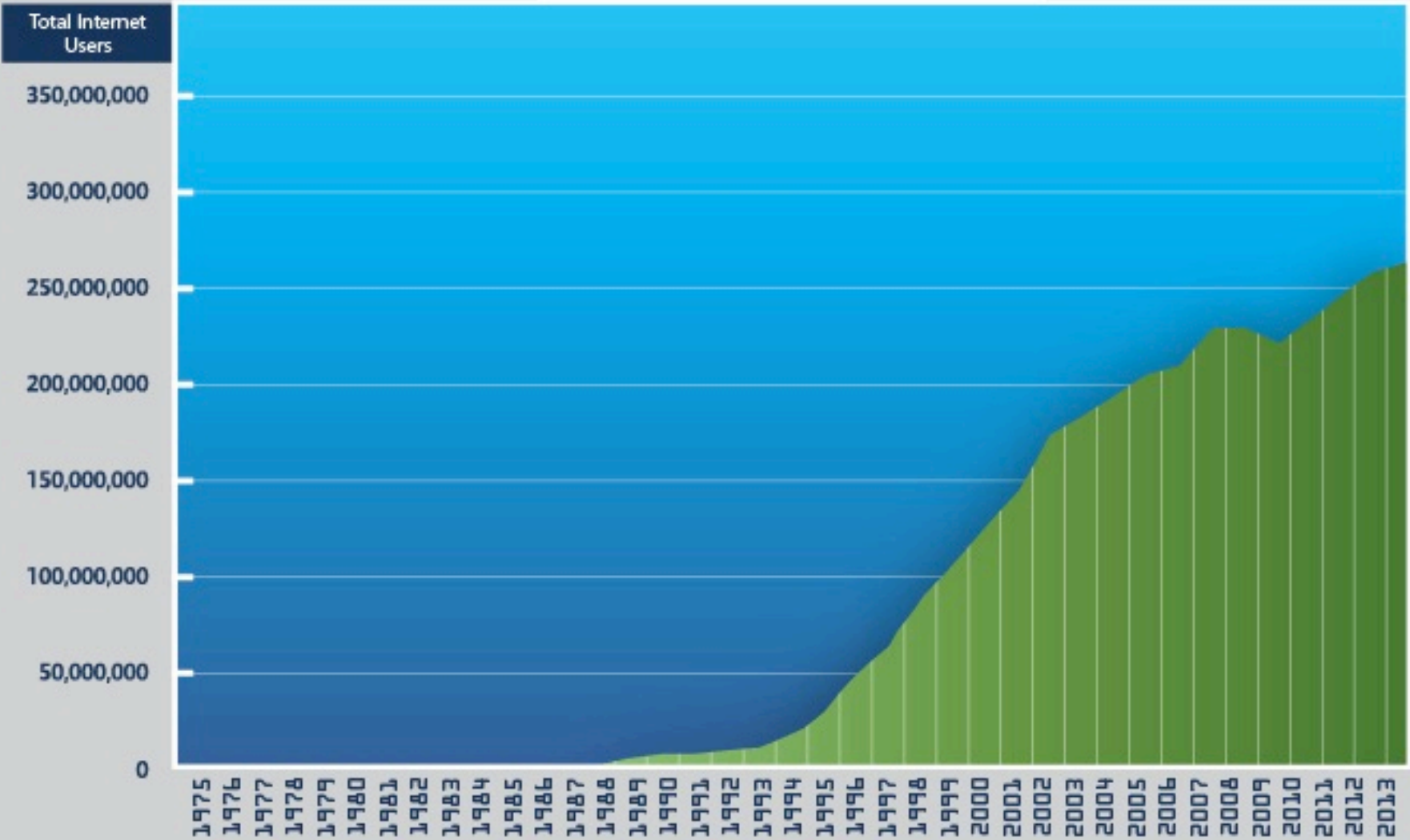
# SUSTAINABLE BUSINESS

~

## Total U.S. Mobile Phone Users



# Total U.S. Internet Users







**Dial-up to Gig**





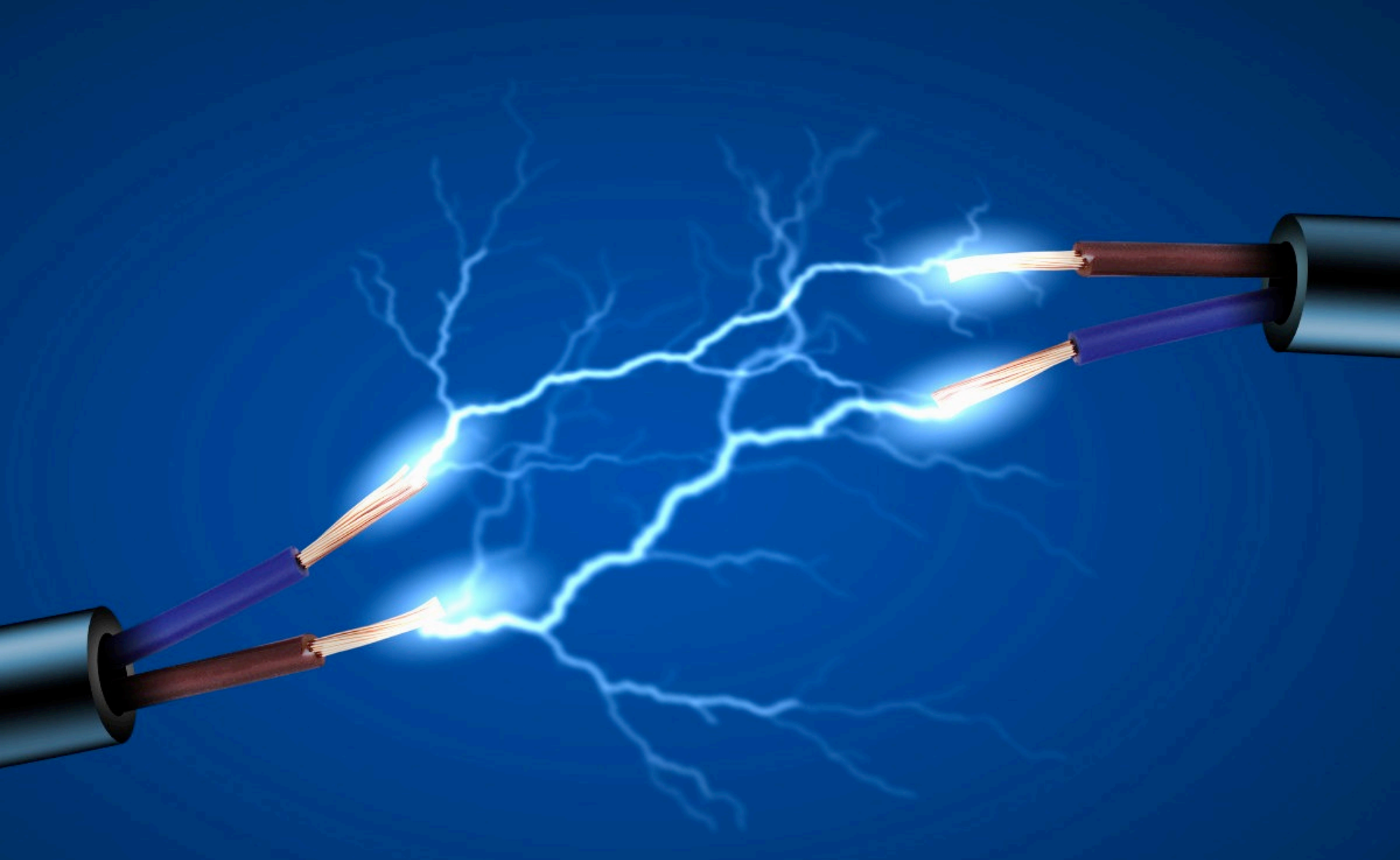
1960



1980



2010



**Internet like Electricity**

# Filling the Pipe



# Off-Site Storage and Cloud Services





**Education Revolution**

**Offers thousands of educational resources, including a personalized learning dashboard, over 100,000 practice problems, and over 6,000 micro lectures, to anyone, anywhere for free.**



**KHAN**  
ACADEMY



# Home Automation

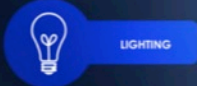


# REMOTE HOME CONTROL

ONLINE HOME AUTOMATION



CLIMATE



LIGHTING



SECURITY



ENTERTAINMENT



ECO MODE

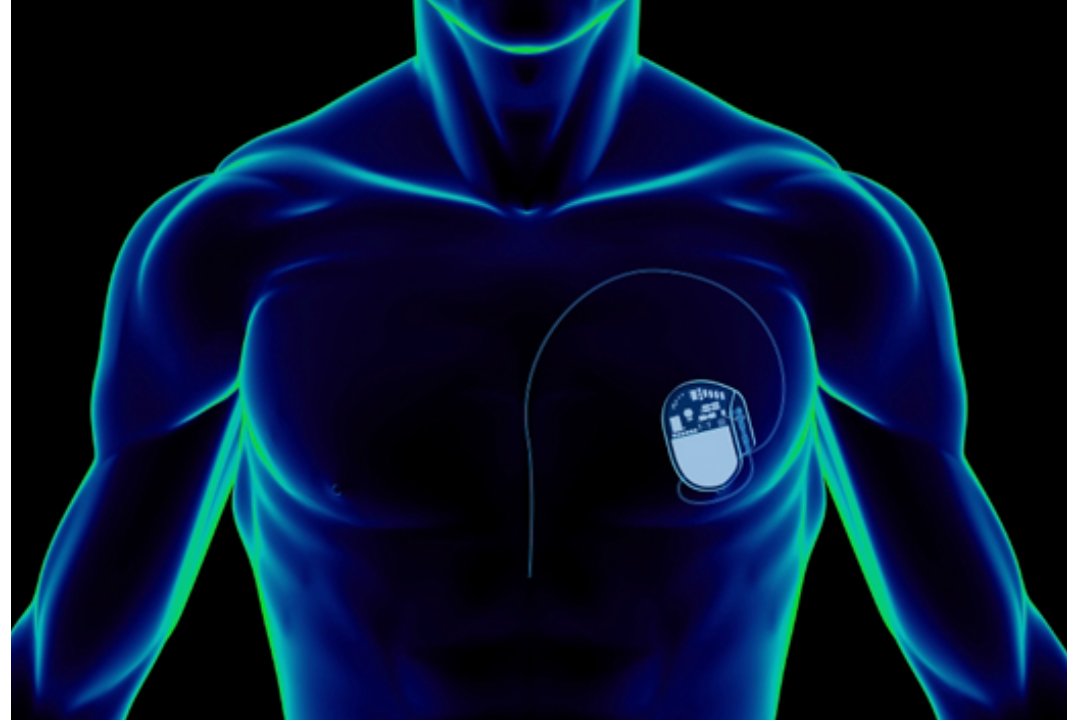
NORMAL

OFF

# Home Automation



**Face Time from Rome**



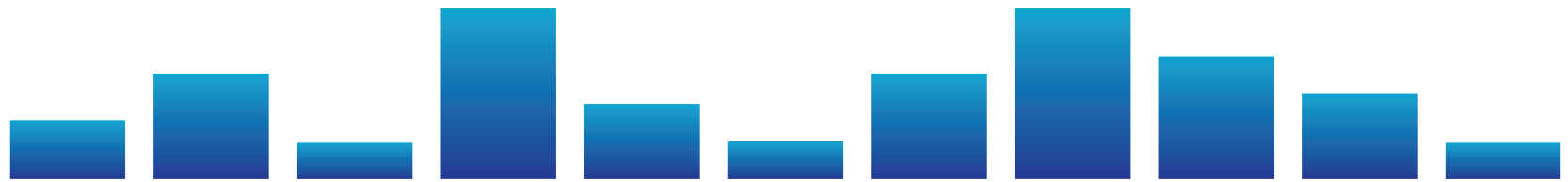
# Wearables

Technology integrated into life



# Impact

Opportunities for our industry



# Broadband Measured Service

TM



**We used to be  
data poor,  
now the  
problem is  
data obesity.**

Hal Varian





**Easing the Transition**



**Fighting  
the Caps**



facetime

You **Tube**

**skype™**

**NETFLIX**

**19%** of  
Households are  
using  
**Video**

**talk**



**SOFTWARE**  
DEFINED NETWORK



## OVERHAUL

Changes how entire  
Internet will be  
organized  
and operated.

**SOFTWARE**  
DEFINED NETWORK



## OVERHAUL

Changes how entire Internet will be organized and operated.



## DYNAMIC

Moving away from fastest and cheapest hardware to dynamic control of content delivery.

**SOFTWARE**  
DEFINED NETWORK



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# SOFTWARE DEFINED NETWORK



## URGENCY

Capabilities are becoming a dire need for many demographics.



## OVERHAUL

Changes how entire Internet will be organized and operated.



## DYNAMIC

Moving away from fastest and cheapest hardware to dynamic control of content delivery.

# SOFTWARE DEFINED NETWORK



## PROFITS

Software that can automatically monitor, control, adapt and rapidly changes in customer usage.



## URGENCY

Capabilities are becoming a dire need for many demographics.



at&t

**\$30 Discount, with a Catch**



 current Google Fiber cities

 potential Google Fiber cities

Google fiber



TRUE  
FALSE

**Google's Intentions**

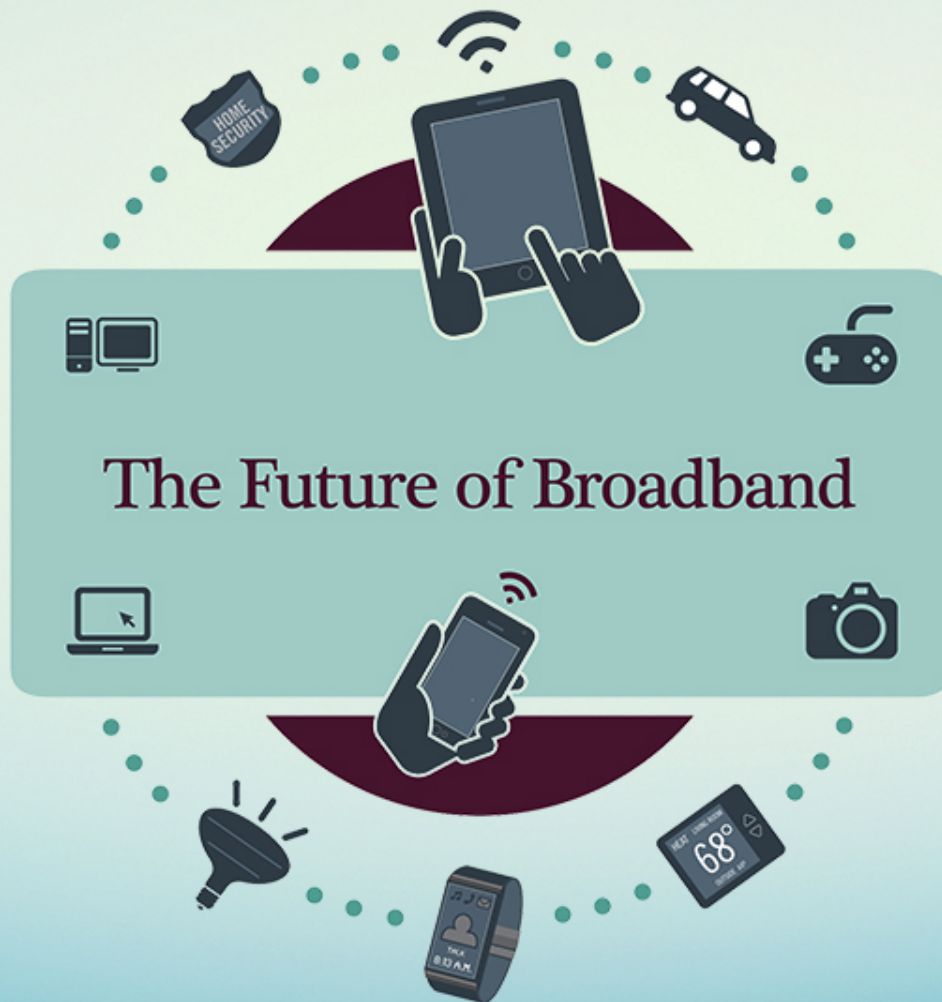
A close-up photograph of a computer keyboard. The central focus is a bright green key with the word "Access" printed in white, lowercase letters. To the right of the text is a white icon of a key. The surrounding keys are dark grey or black, with some showing faint white markings. The lighting is dramatic, highlighting the green key against the darker background.

Access



**Always Connected**

# Intelligent Digital Devices (not just PCs)



- Workstations
- Phones
- Tablets
- Gaming Consoles
- TV Sets
- Cameras
- Cars
- Appliances
- and MORE...

# OF THE INTERNET THINGS



# TABLETS

Used everywhere by everyone





# Migration to the Cloud



**Every Day Life**  
Are You Using the Cloud?



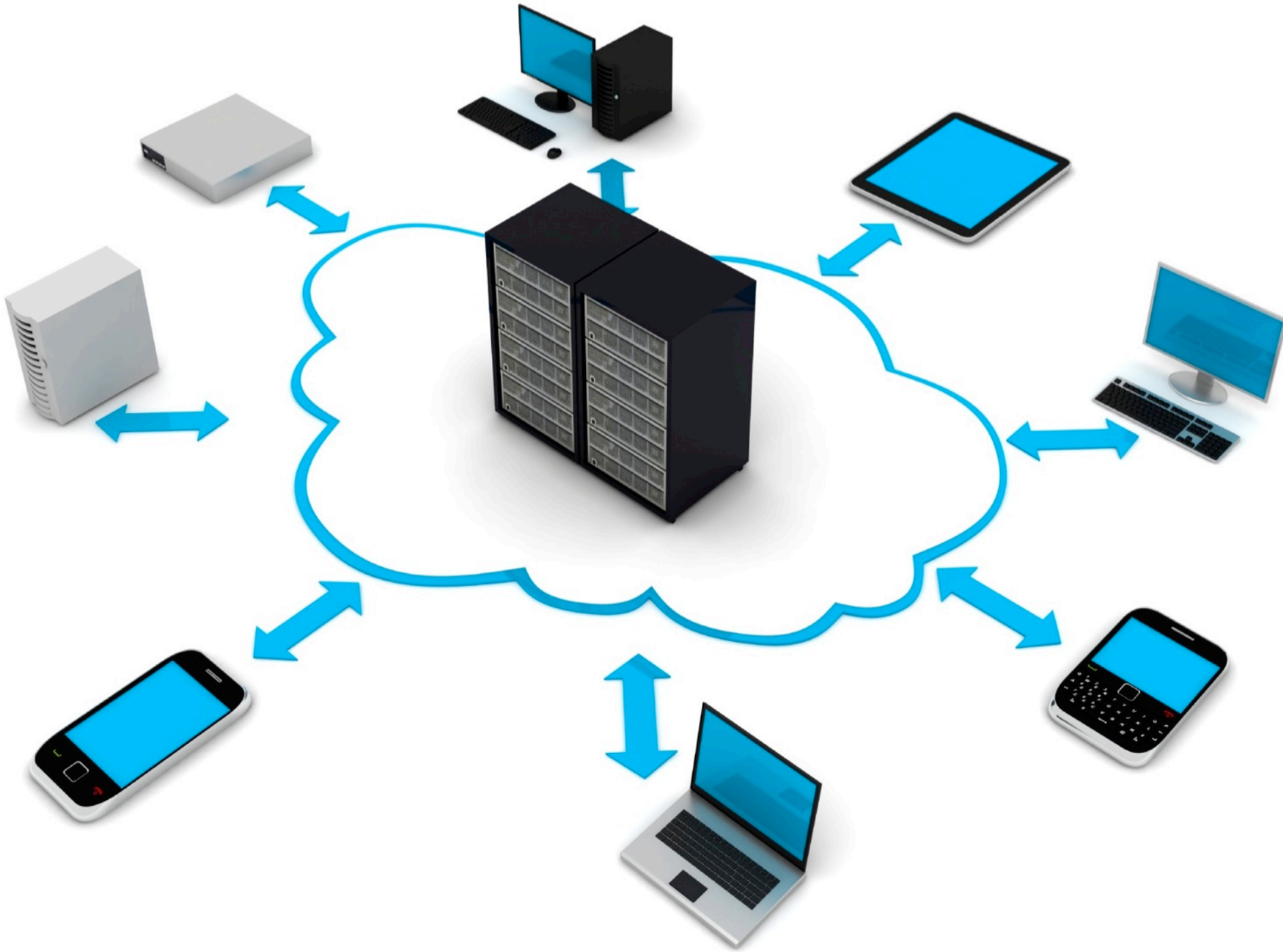
B

Y

O

D





# Cloud Platforms

## Public

Provides services to anyone.

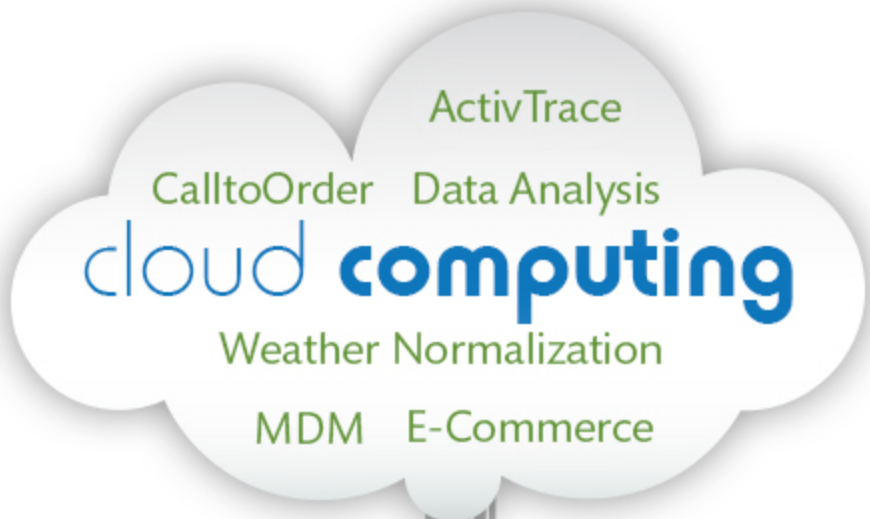
## Private

Proprietary datacenter providing services to a limited number of people. Control over performance and sensitive data.

## Hybrid

Leverages public resources while providing security.

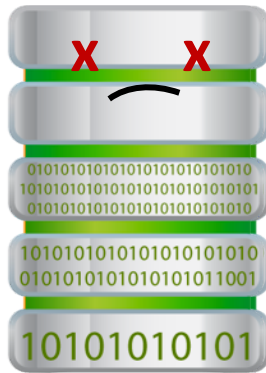
**accessible**  
**easy scalable**  
**computing resources**  
**& services**



server **room**  
Billing Accounting Engineering













1:54 pm

Doppler radar reports strong rotation near Data Center One

F3 Tornado hits Data Center One, where your data is stored.





Data Center One

Data Center Two





**The Connection Value**



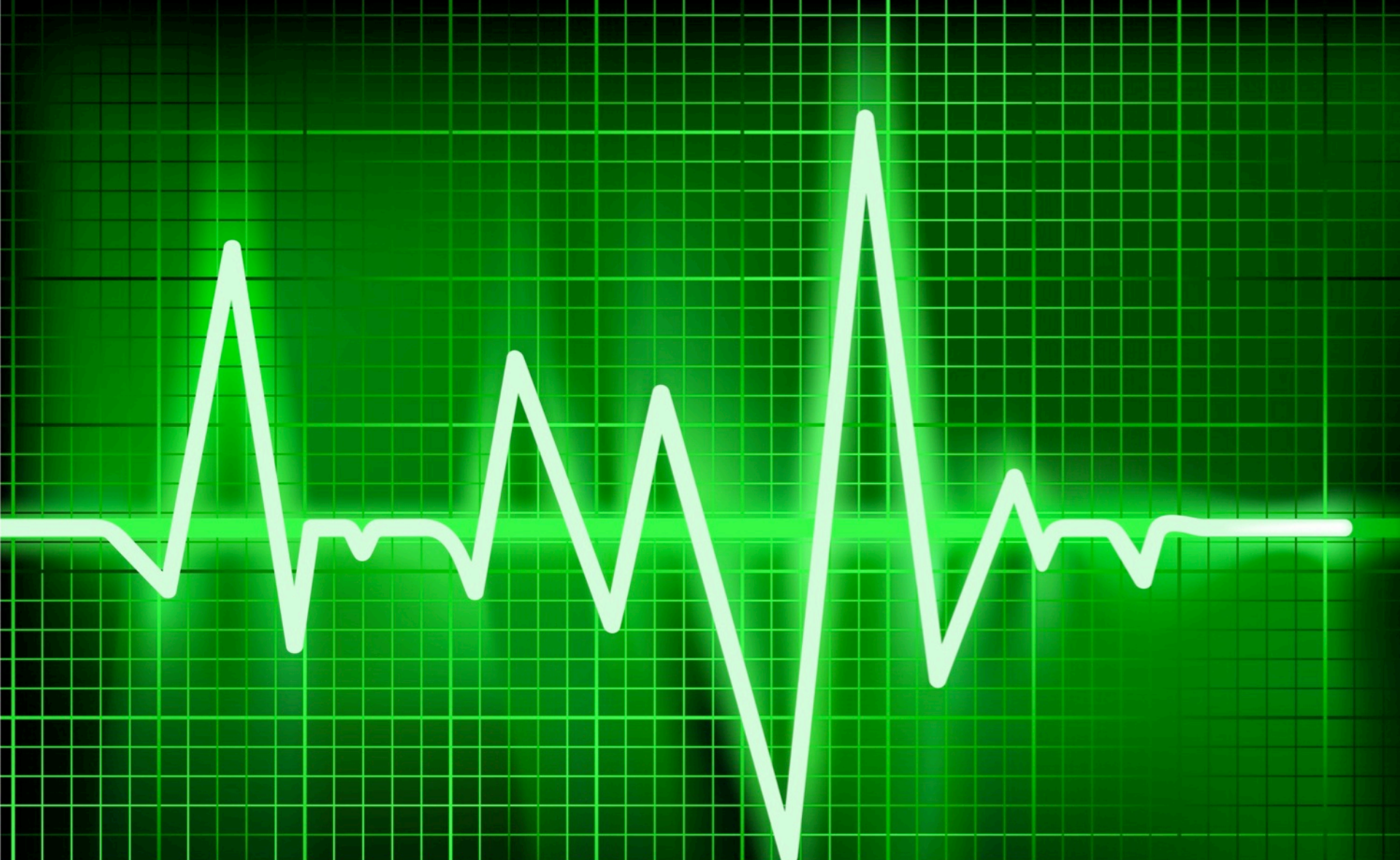
The Future

NEXT EXIT

**What Lies Ahead**



**Evolving from a Place**



# **The Digital Revolution Lifeline**



**Holds Ecosystem Together**

**By 2015, 6 million users will be members of the "Terabyte Club"**





**60% of mobile users  
consume a gigabyte**





**90% of US Households will be  
Connected to 100 MBPS- 1GBPS**



# **The Hyper-Connected Home**

# the **Internet** of **Everything**

**6 iPads**  
**4 TVs**    **1 Apple TV**  
2 Network Security Cameras  
1 House Sound System    **1 Nest Protect**  
**13 Cell Phones**  
**2 Routers**    **1 FitBit**  
**2 iPods**    **2 Nest Thermostats**  
2 Wireless Wi-Fi Controllers    **5 PCs/Notebooks**  
**1 Garage Door Opener**  
1 Vehicle Monitoring System  
**1 Automated Metering Device**  
1 Demand Response Controller





**TVs and Computers Merge**

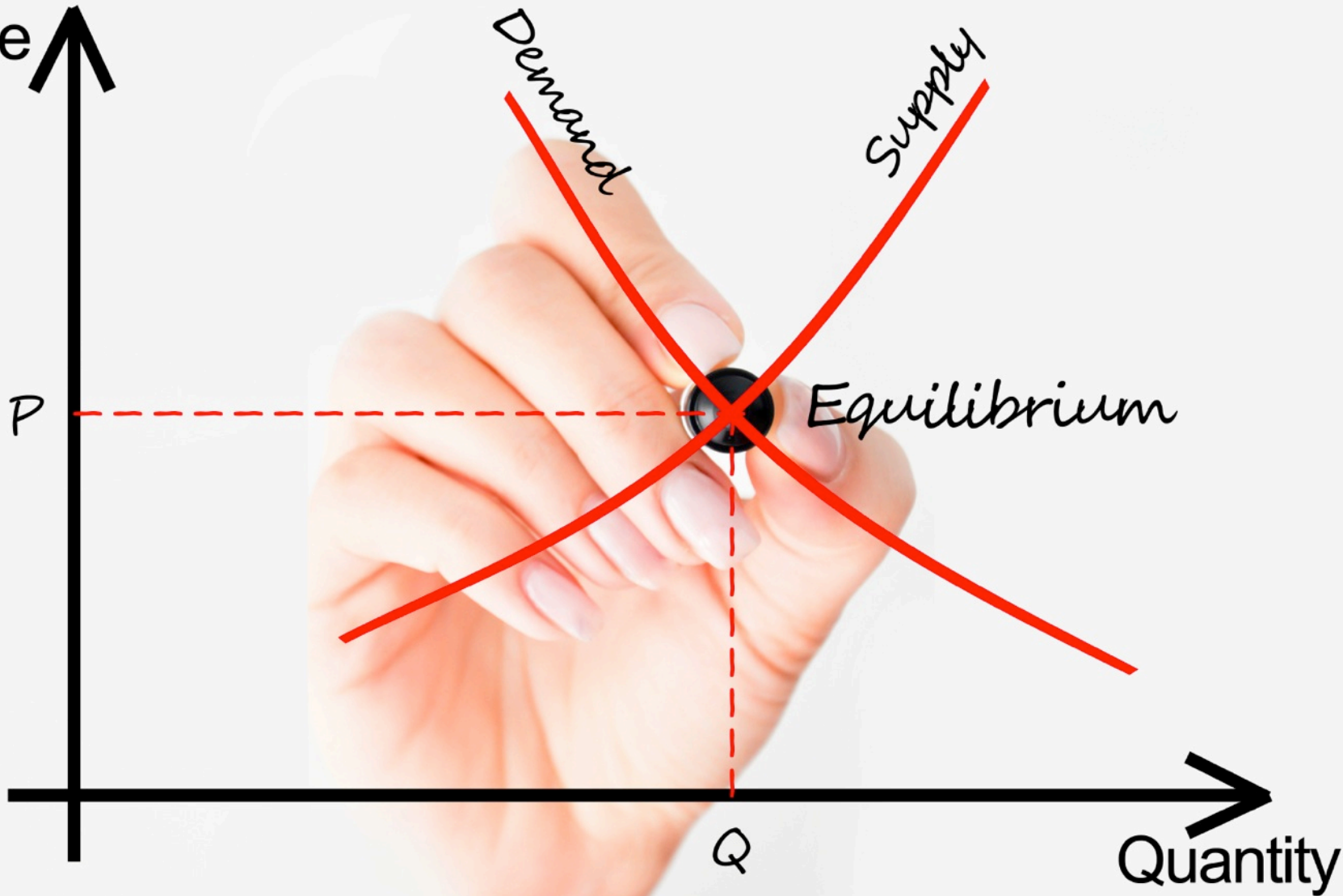


# Broadband Challenges



# Creating a Trusted Environment

Price



P

*Demand*

*Supply*

*Equilibrium*


Q

Quantity



# **What's Needed for Broadband**



A young boy with dark hair is looking down at an open book. The book is glowing with a warm, golden light, and the background is a dark, starry space. The boy is wearing a blue shirt. The overall scene is magical and evocative of knowledge and discovery.

**The Openness of the Internet**



**Gigabit in a Flash**



# Canoeing the Mountains

**Thank You**