THE GOOD & EVIL OF THE INTERNET AND WHY YOU SHOULD KNOW ABOUT THEM

OSHER LIFELONG LEARNING INSTITUTE

- OLLI WINTER 2020 COURSES
- Mondays, January 27—March 2
- 9:30—11:30 a.m.
- @Cooperage

- Dr. Farid Farahmand

A course
focusing on understanding the Internet technologies & its contradictions:

Connecting us   ← →   Isolating us

Giving freedom ← →   Destroying privacy

What we cover in this course

- What is the Internet?
- What are internet algorithms?
- What is Internet surveillance?
- What is Cybercrime?
- Future of the Internet – where is it going?

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First Lecture…..

- What is the Internet?

- What do we use it for?

- How does the Internet work?

- What runs the Internet?

- Who owns the Internet?

- Who controls the Internet?

Before we go on…..

- Course web page is available: http://web.sonoma.edu/users/f/farahman/ (click on OLLI)
- First part (50 min) + 10 min break!
- In the second part we can watch a few movies / demos.
- All updates to the webpage will be available after class.
- **Please complete the short survey at the end of each each class!**
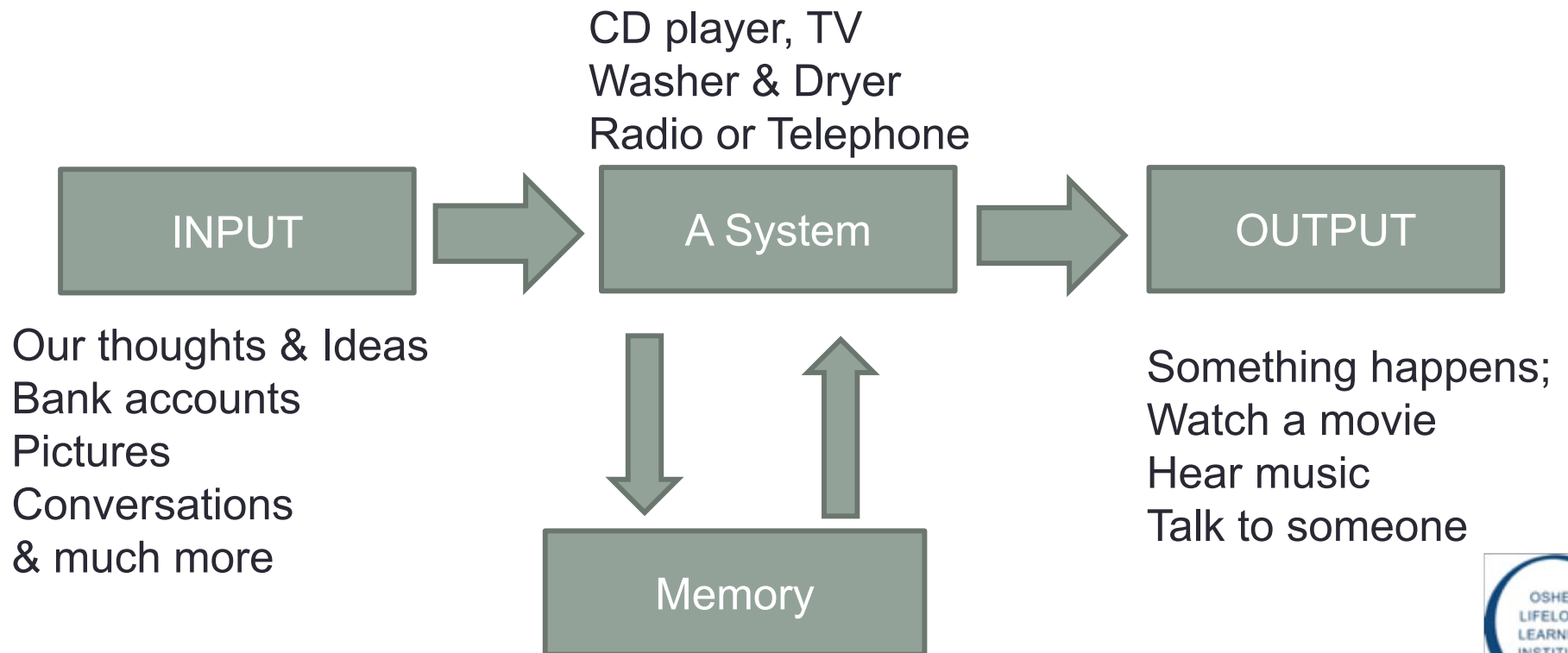
Feel free to ask questions at any time!

A Quick Survey…..

1. How many people carry a smart phone?
2. How many hours/day do you use the Internet?
3. Do you use the Internet mostly on the smart phone or on your computer?
4. What are the two most common things you use the Internet for?

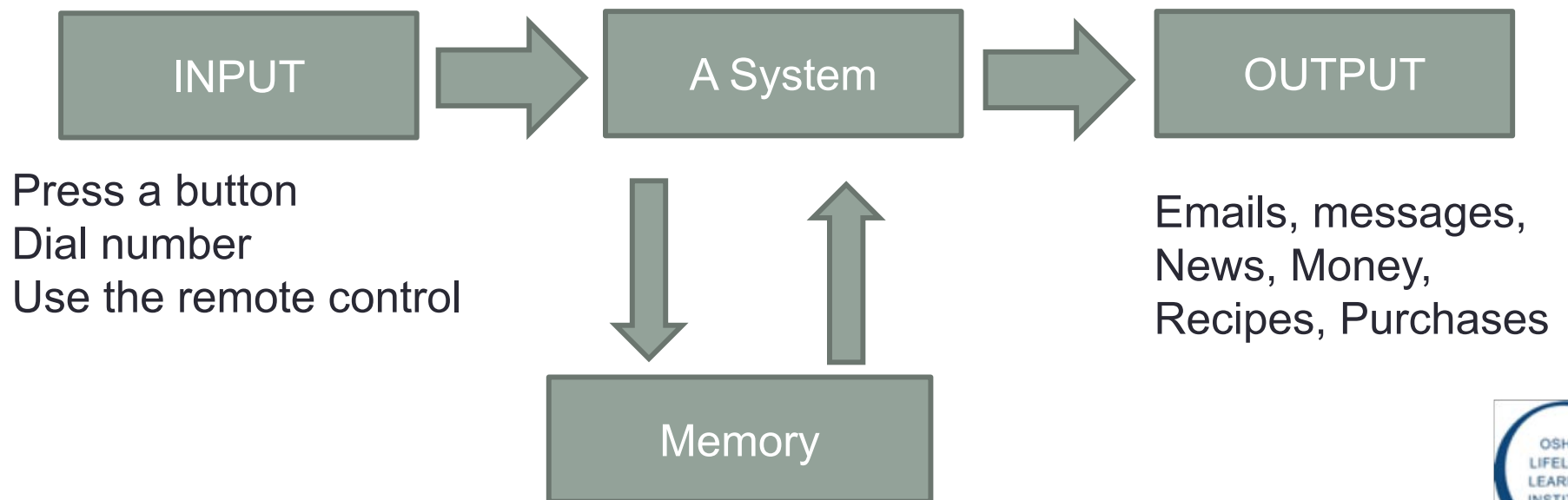# Why do we need to know about how the Internet work?

a little

- What is the difference between your Internet and your car or dishwasher or TV?
  - How much do you know about them?

CD player, TV
Washer & Dryer
Radio or Telephone

INPUT	→	A System	→	OUTPUT

Our thoughts & Ideas
Bank accounts
Pictures
Conversations
& much more

Memory

Something happens;
Watch a movie
Hear music
Talk to someone

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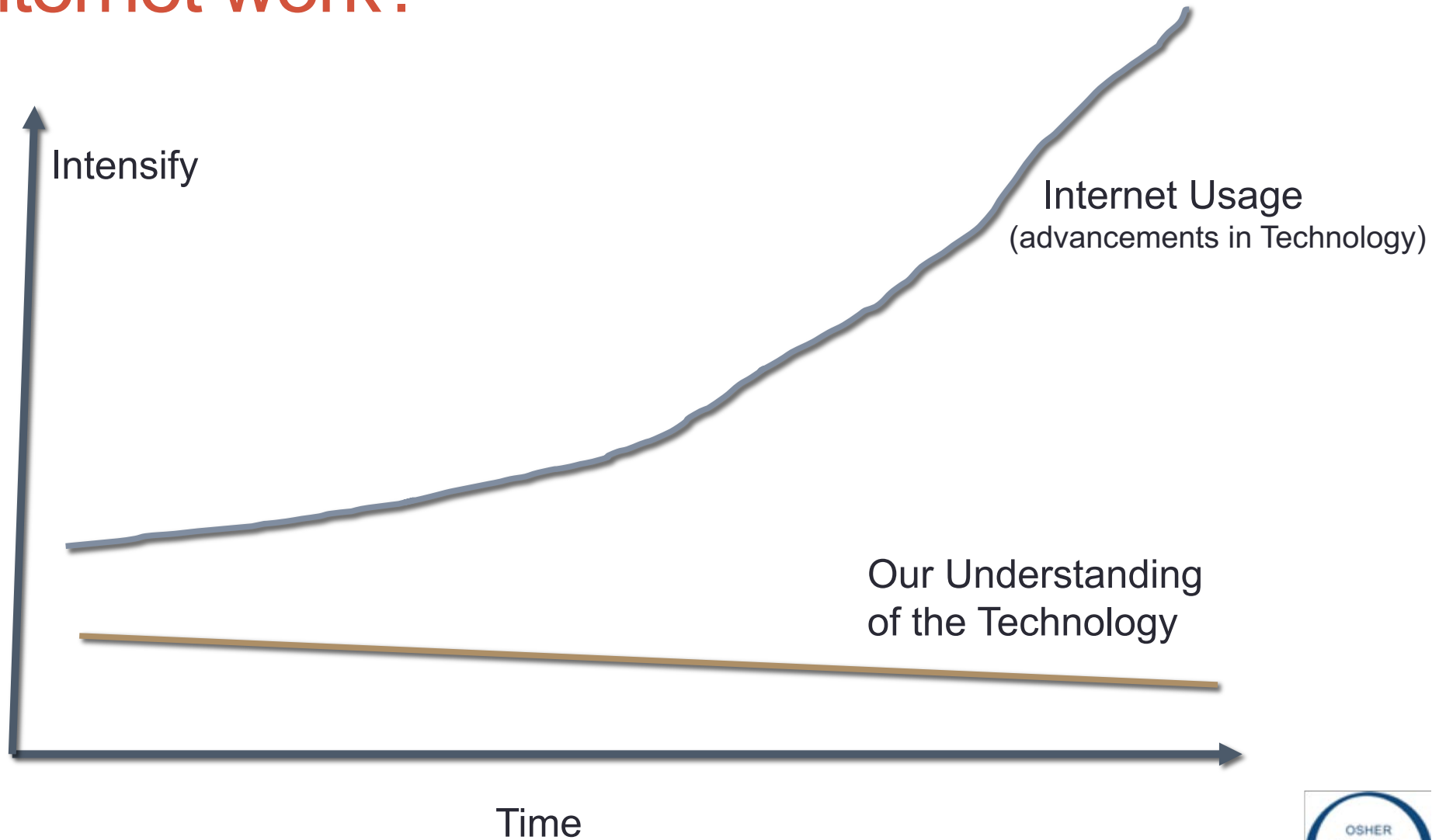INSTITUTE

Why do we need to know about how the Internet work?

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- What is the difference between your Internet and your car or dishwasher or TV?
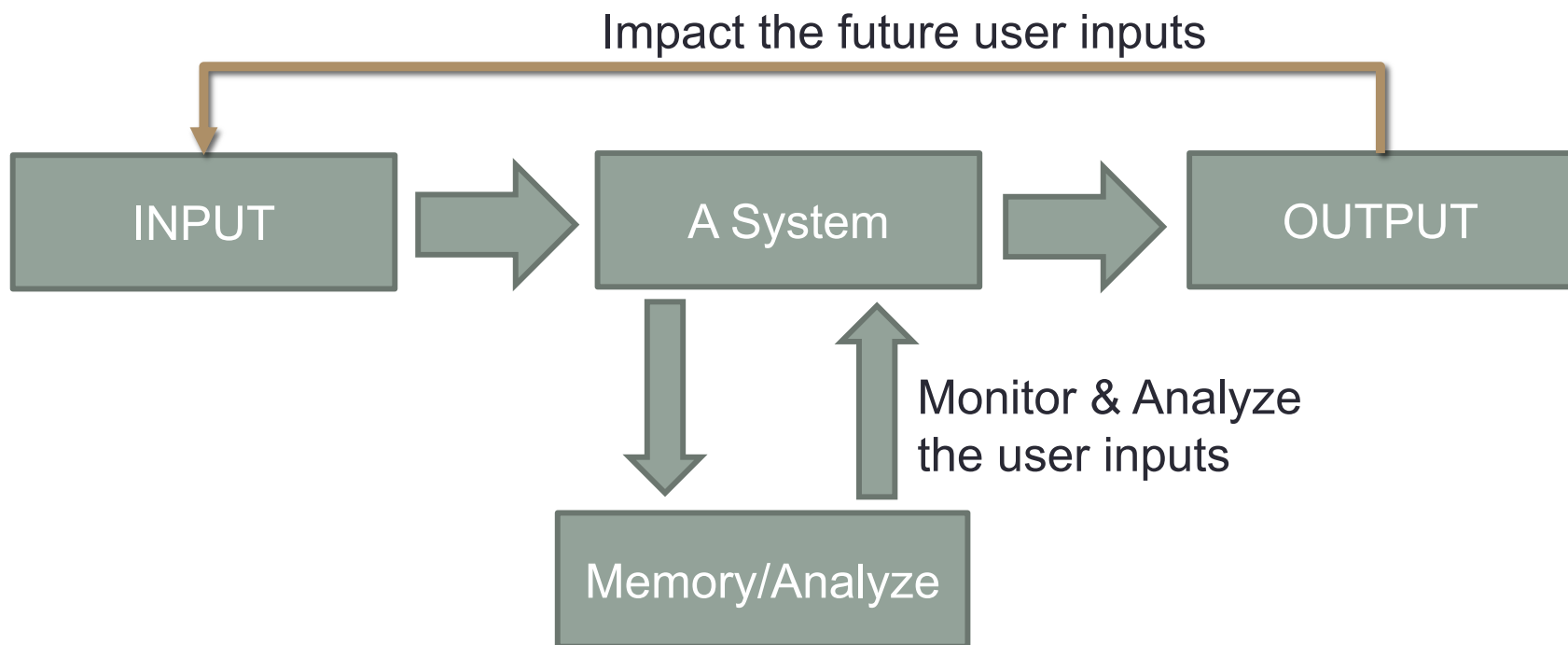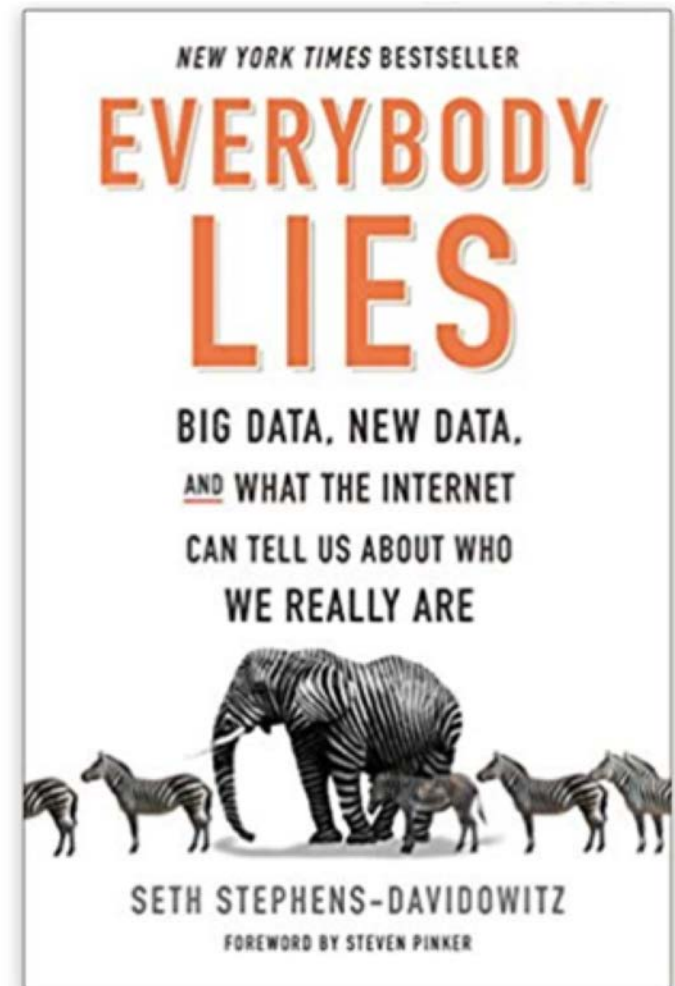- Internet is a digital **interactive media**

INPUT	→	A System	→	OUTPUT

Press a button
Dial number
Use the remote control

↓ ↑

Memory

Emails, messages, News, Money, Recipes, Purchases

Why do we need to know about how the Internet work?

a little

Intensify

Internet Usage
(advancements in Technology)

Our Understanding
of the Technology

Time

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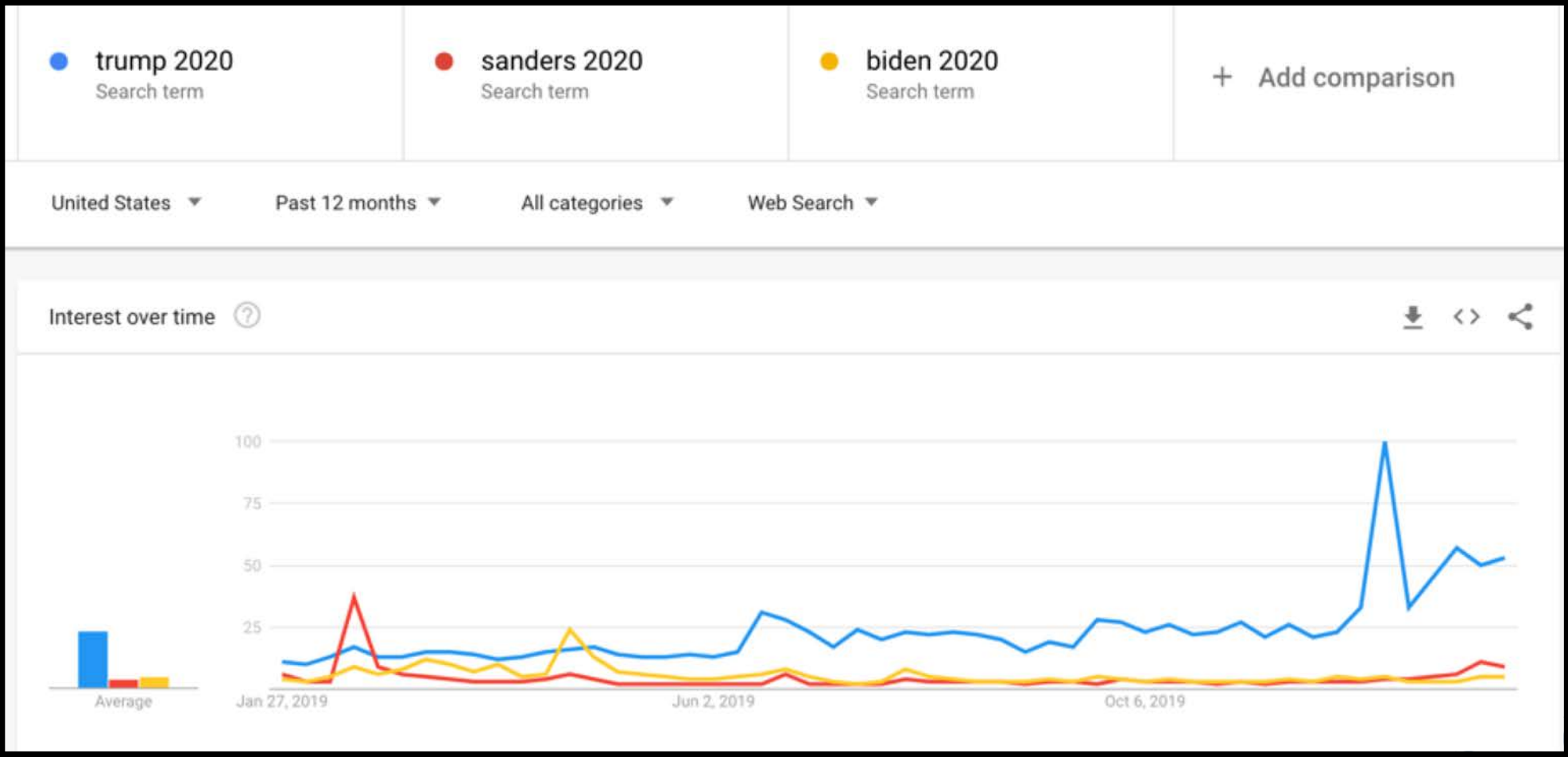LIFELONG
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Why do we need to know about how the Internet work?

a little

- What is the difference between your Internet and your car or dishwasher or TV?
- Internet is a digital **interactive media**

Impact the future user inputs

INPUT	→	A System	→	OUTPUT

Memory/Analyze

Monitor & Analyze the user inputs

Why do we need to know about how the Internet work?

a little

- What is the difference between your Internet and your car or dishwasher or TV?
- Internet is a digital **interactive media**
  - So powerful and reliable that can **analyze & even predict** our actions
  - It can even **influence** our thoughts and actions
- Example:
  - Book: Everybody Lies,

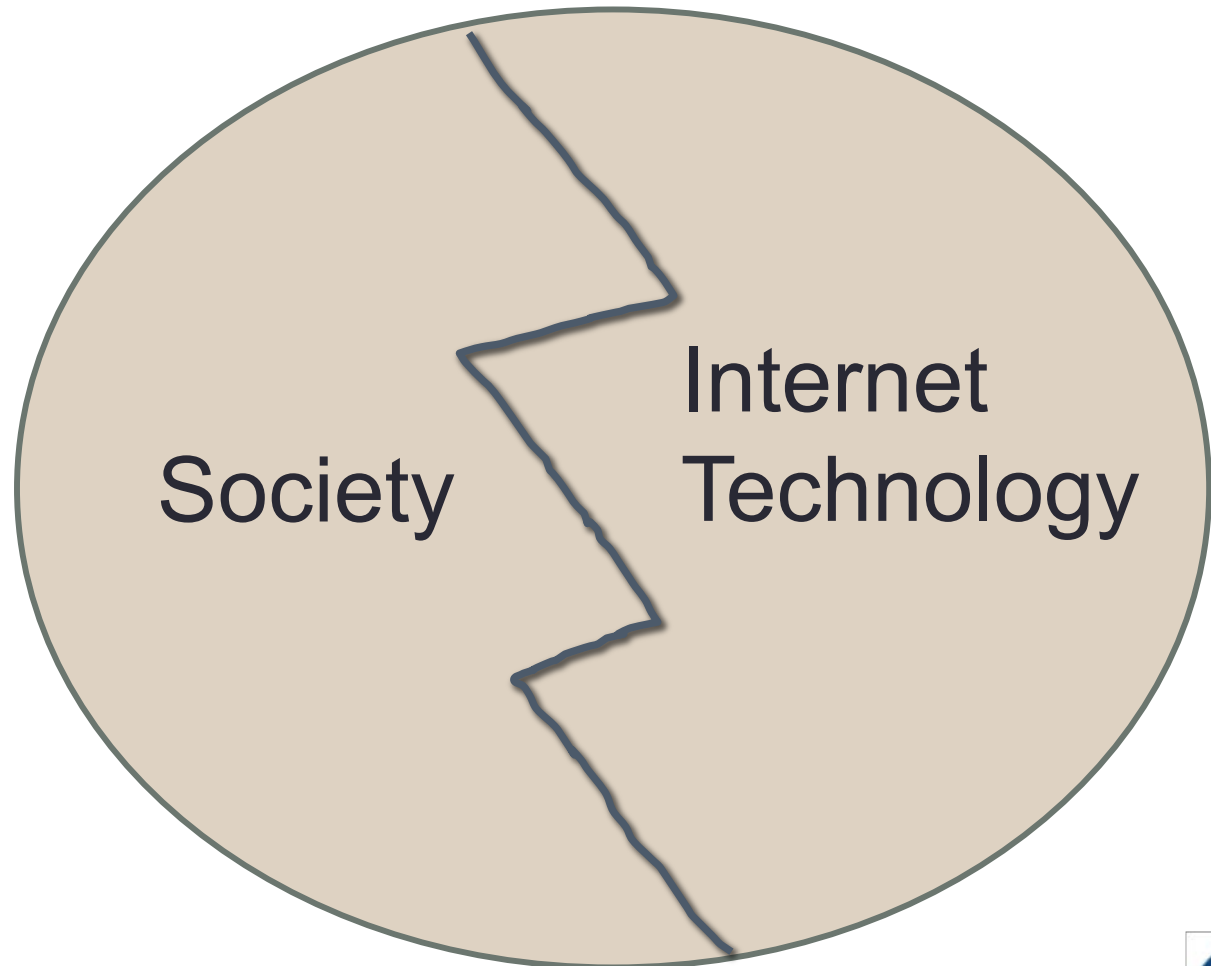NEW YORK TIMES BESTSELLER

EVERYBODY LIES

BIG DATA, NEW DATA, AND WHAT THE INTERNET CAN TELL US ABOUT WHO WE REALLY ARE

SETH STEPHENS-DAVIDOWITZ

FOREWORD BY STEVEN PINKER

Google Trend

Why do we need to know about how the Internet work?

a little

- Lack of transparency
- Lack of privacy
- Lack of oversight
→
- Exploiting & controlling
- the society

Society

Internet Technology

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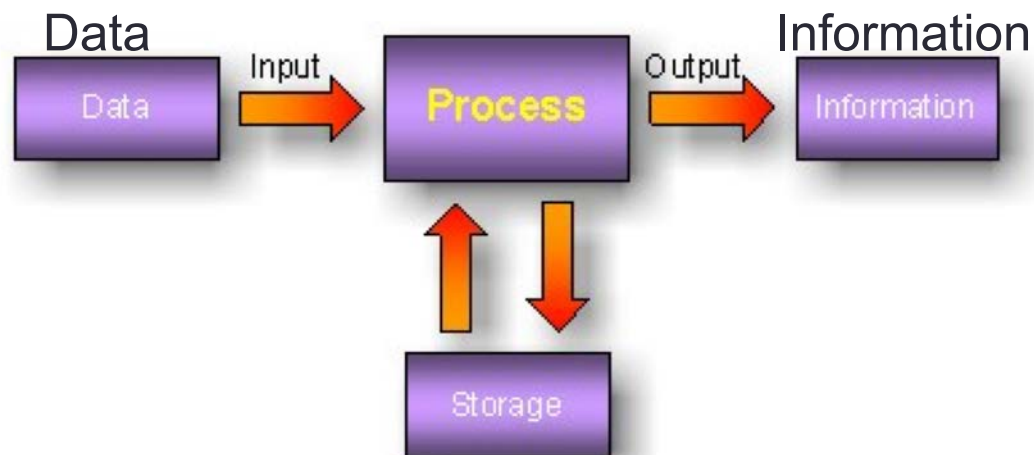LIFELONG
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Let's talk about technology in general…

Different Technologies….

Nano-Technology

Food processing and Agriculture

Manufacturing

Information Technology

Automotive & Robotics

Semi-conductor

Battery/Wind/Solar Energy
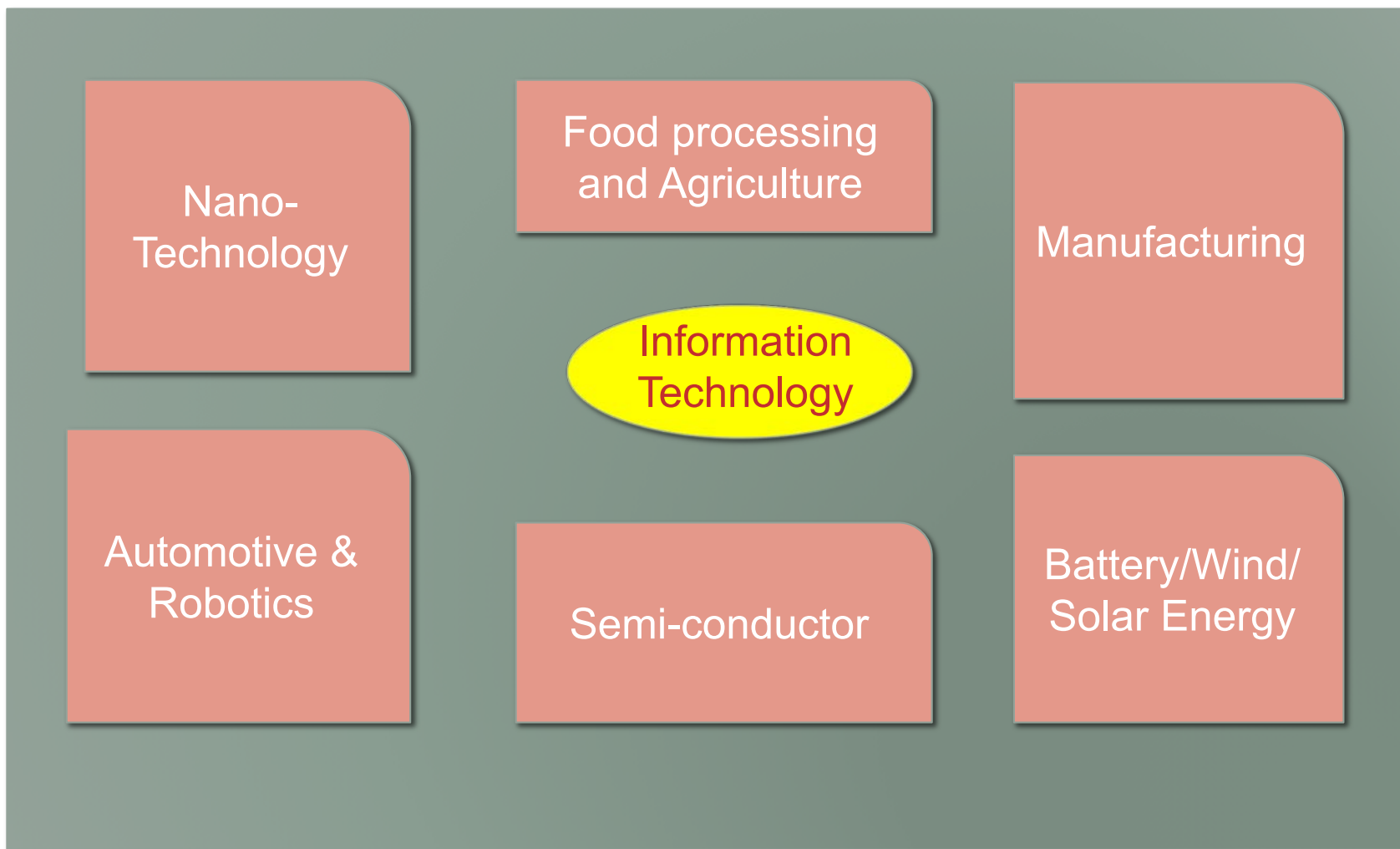
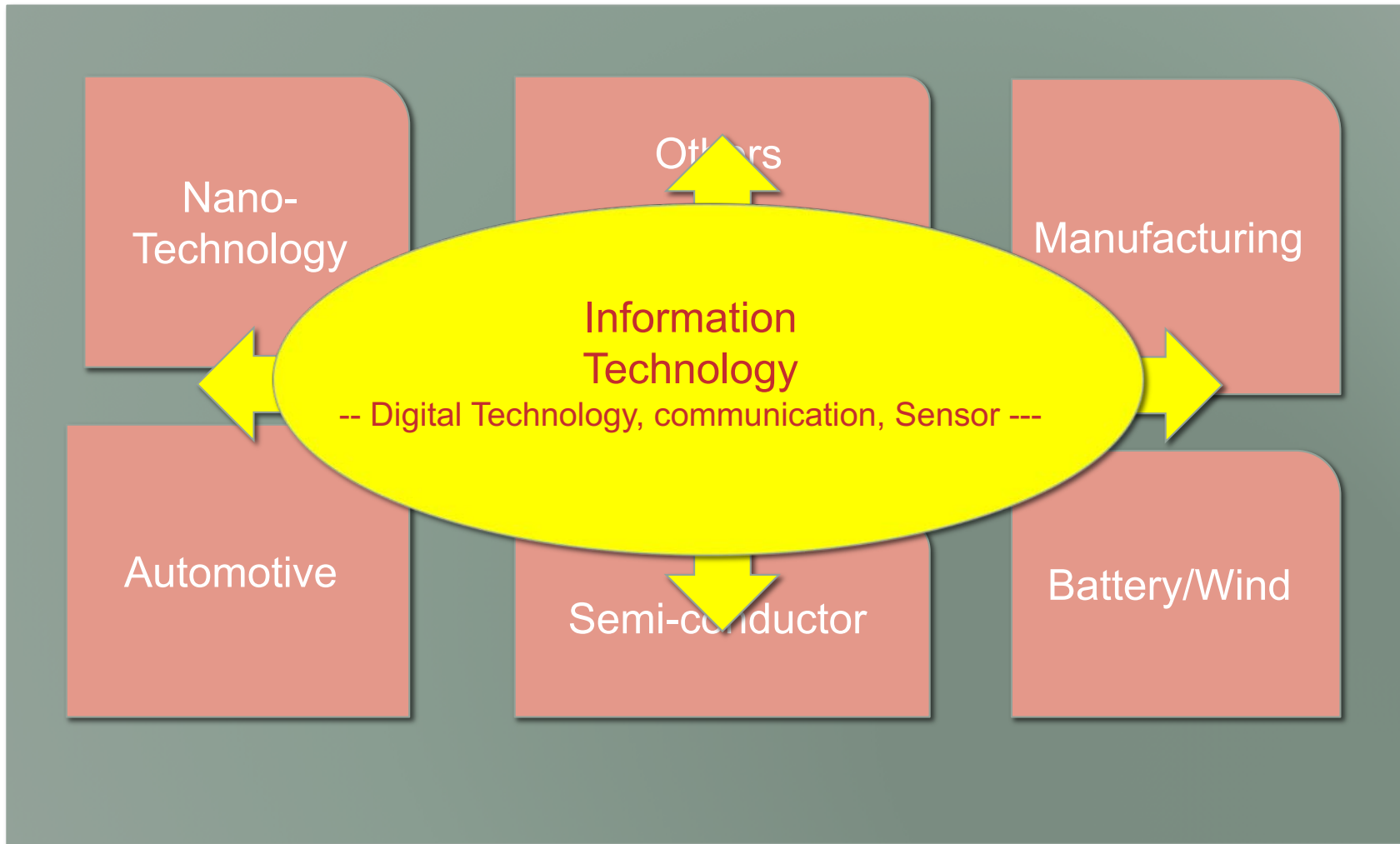# What is Information Technology?

- IT is the **acquisition, management, processing, storage, and dissemination of information**
- The data/information can have many different forms (e.g., vocal, pictorial, textual and numerical)


Information Processing Cycle

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IT Impacting All Other Technologies

Nano-Technology

Others

Manufacturing

Information Technology
-- Digital Technology, communication, Sensor ---
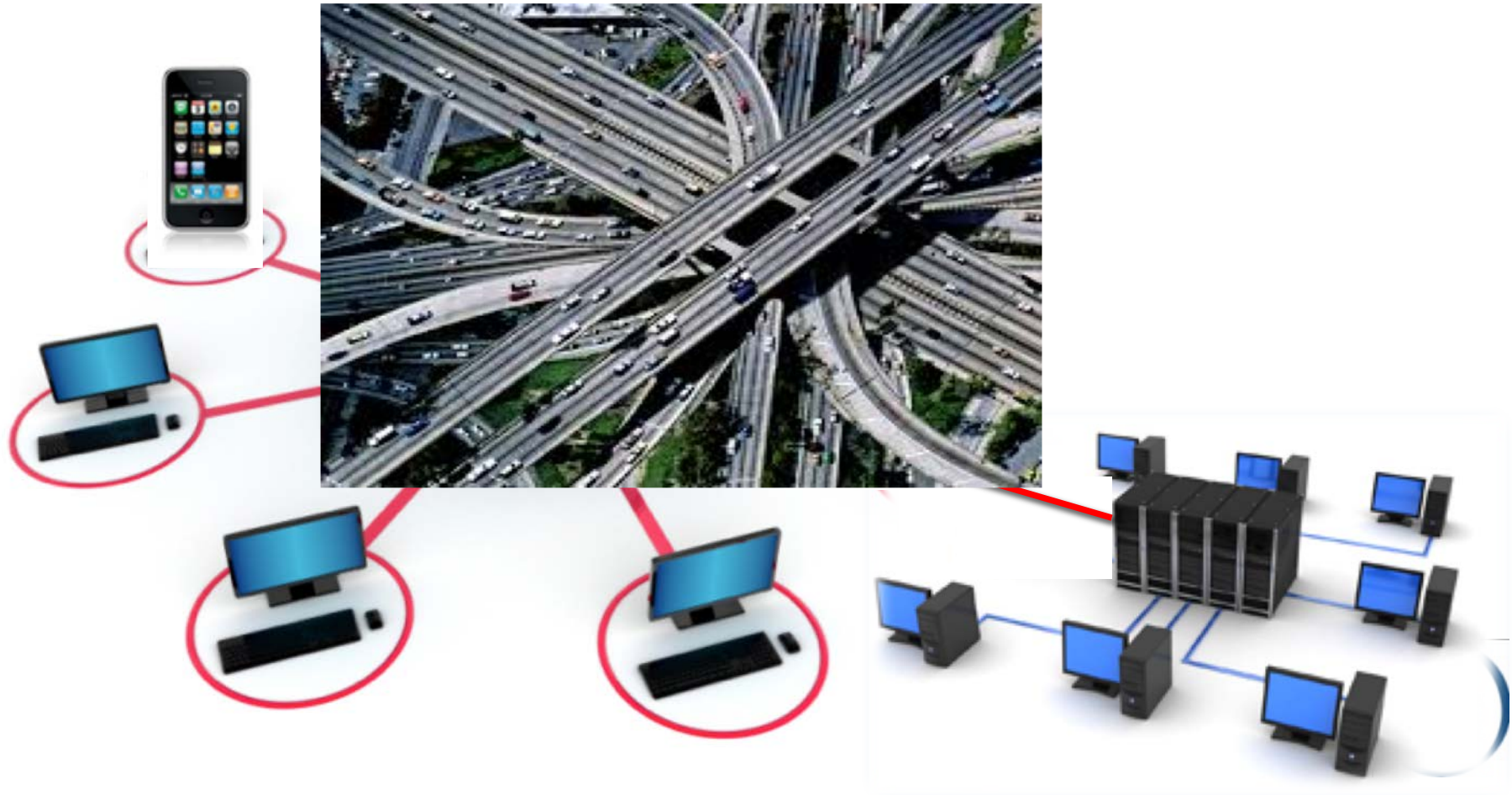
Automotive

Semi-conductor

Battery/Wind

The Internet & Information Technology

- The Internet is the enabling technology to create an IT infrastructure
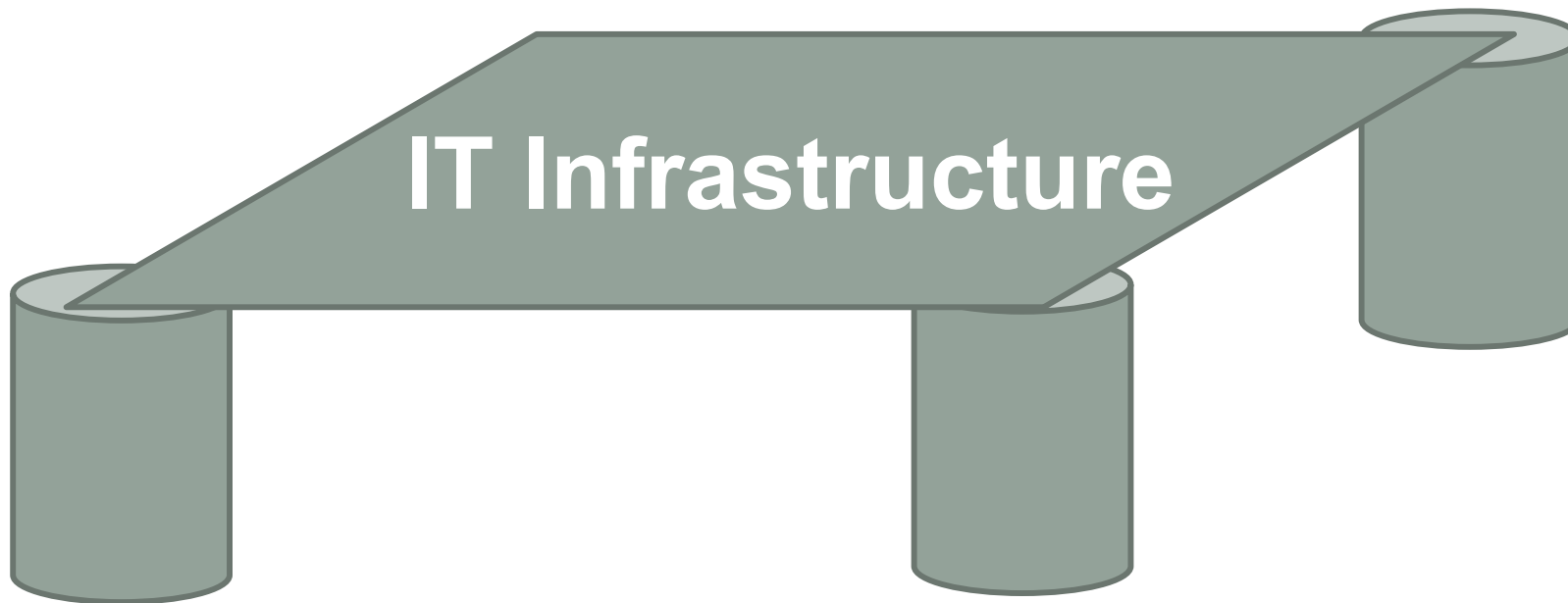
What is the Internet?

- The **Internet** is the **global system of interconnection** between devices – e.g., computers, cell phone, tablets
- The Network of Networks!
- Connecting everyone together – road system!

Internet & WWW

- The **World Wide Web** is a technology that exploits the Internet to enhance delivering **many services**

Examples of Such Services

- Finding Directions
- Shopping
- Chatting
- Music
- News
- File Sharing

Web Browsers

- The software allowing us to use available services
- Different in terms of
  - Speed,
  - Resource utilization,
  - Portability,
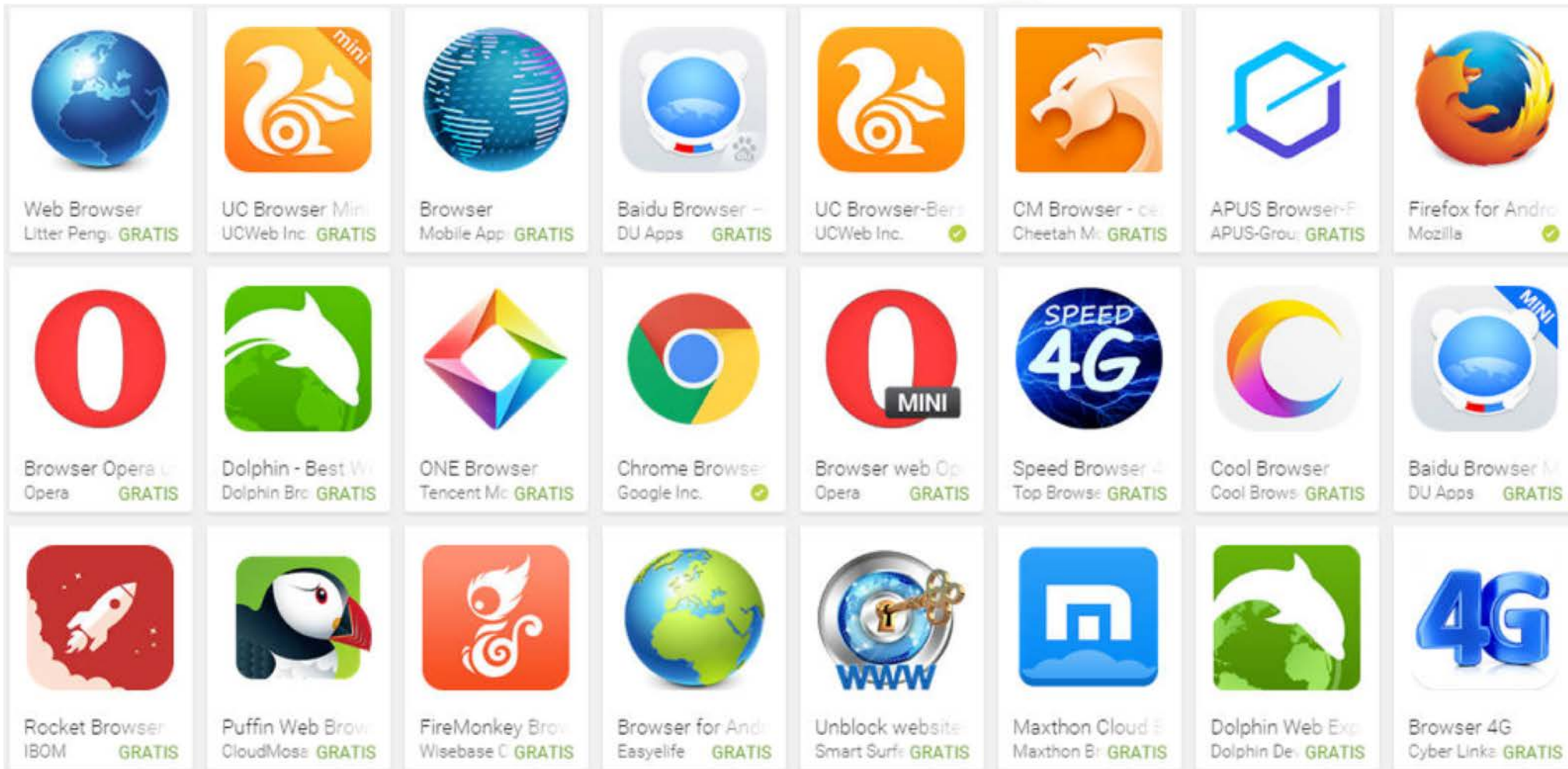 - Etc.

Common
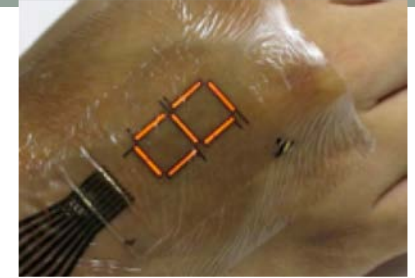Browsers:

Web Browsers

- The software allowing us to use available services
- Different in terms of

Access to the Internet Services

- Today about **half** of Internet users in

Body-integrated electronic devices (**Electronic Tattoo & Embeddable Implant Elec.**)

Watch-size Computers (**wearables**)

Smart Phones: Anytime, anywhere! (smaller & more powerful)

Laptops: Offering mobility

Mainframes: Large machines, Limited access

ENIAC (Electronic Numerical Integrator And Computer) was one of the earliest GP commuters It weighted about 30 tons & consumed 150 k

PCs: Promising Individual Freedom

ENIAC (Electronic Numerical Integrator And Computer) was one of the earliest GP commuters It weighted about 30 tons & consumed 150 k

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Devices …

- **As the devices become smaller and more powerful**
  - **→ Easier to use!**
  - **→ We use them for everything….**
  - **→ Integrated part of our lives!**

- Finding Directions
- Shopping
- Chatting
- Music
- News
- Contacts
- File Sharing
- email

1.75 Billion Cellphones in 2014
748 million Androids in 2013
125 million iPhones in 2012
53 million iPads in 2012

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What People Do on Their Smartphones

% of adults who use their smartphone to do the following activities on a typical day

Activity	%
Check weather reports and forecasts	52%
Use a social networking site	50%
Play a game	37%
Get news	36%
Listen to an online radio or music service	22%
Check your bank balance or do online banking	21%
Get turn-by-turn directions	15%
Upload photos online	15%
Use Twitter	10%
Visit a local, state or federal government website	6%
Get coupons to use at local businesses	5%
Watch movies or TV through a paid subscription service	4%

Source: Pew Research Center's Internet & American Life Project

EVERY MINUTE OF THE DAY

PINTEREST USERS PIN **3,472** images.

YOUTUBE USERS UPLOAD **72 HRS.** OF NEW VIDEO.

EMAIL USERS SEND **204,000,000** MESSAGES.

Google RECEIVES OVER **4,000,000** SEARCH QUERIES.

VINE USERS SHARE 8,333 VIDEOS.

FACEBOOK USERS SHARE **2,460,000** PIECES OF CONTENT.

SKYPE USERS CONNECT FOR **23,300** HOURS.

TINDER USERS SWIPE **416,667** TIMES.

YELP USERS POST **26,380** REVIEWS.

WHATSAPP — USERS SHARE — **347,222** PHOTOS.

APPLE USERS DOWNLOAD 48,000 apps.

PANDORA USERS LISTEN TO **61,141** HOURS OF music.

AMAZON MAKES **$83,000** IN ONLINE SALES.

INSTAGRAM USERS » POST **216,000** NEW PHOTOS.
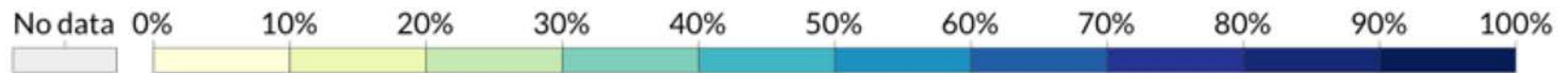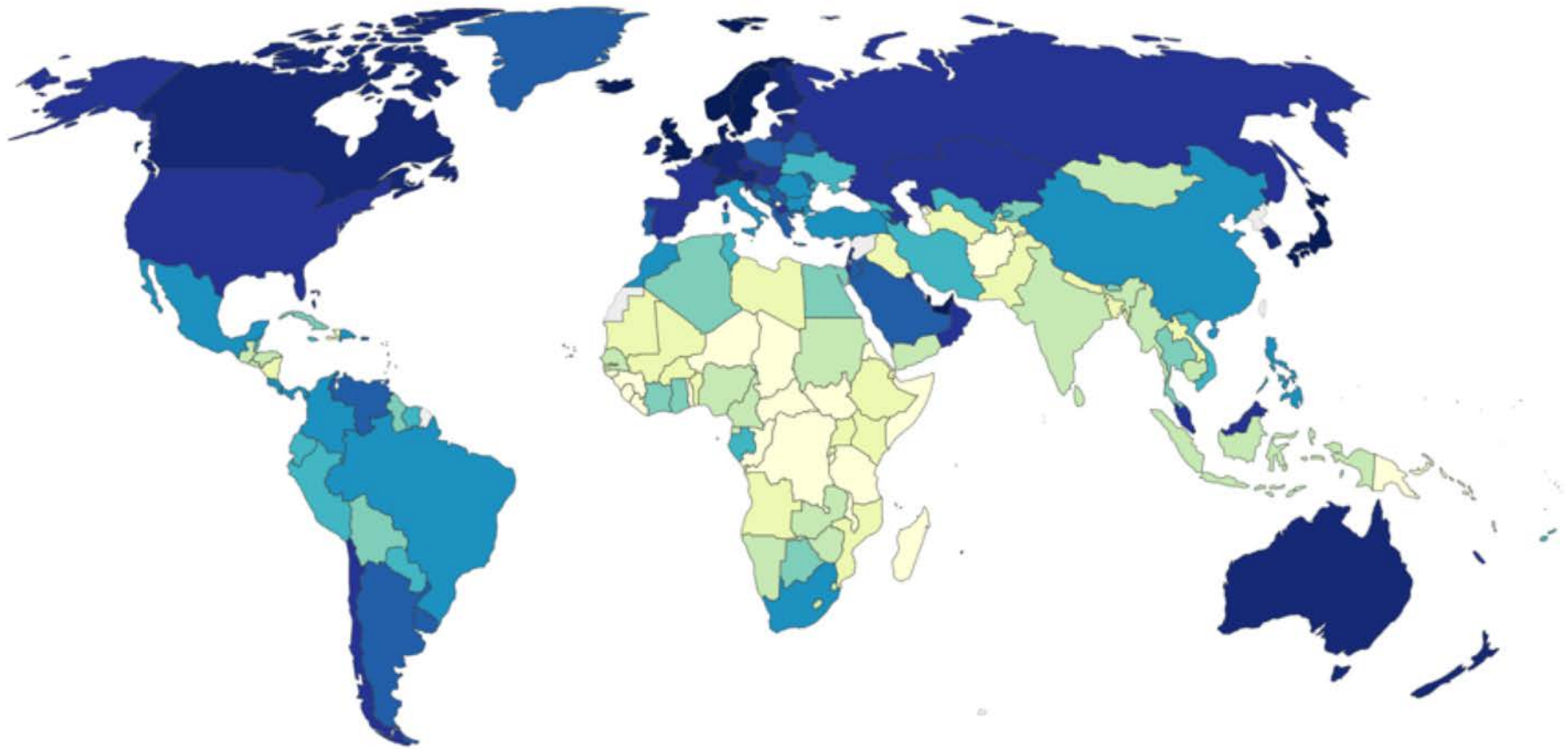
TWITTER USERS TWEET 277,000 TIMES.

Number of internet users by country, 2017

Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.

No data	0	1 million	10 million	50 million	100 million	250 million	>500 million
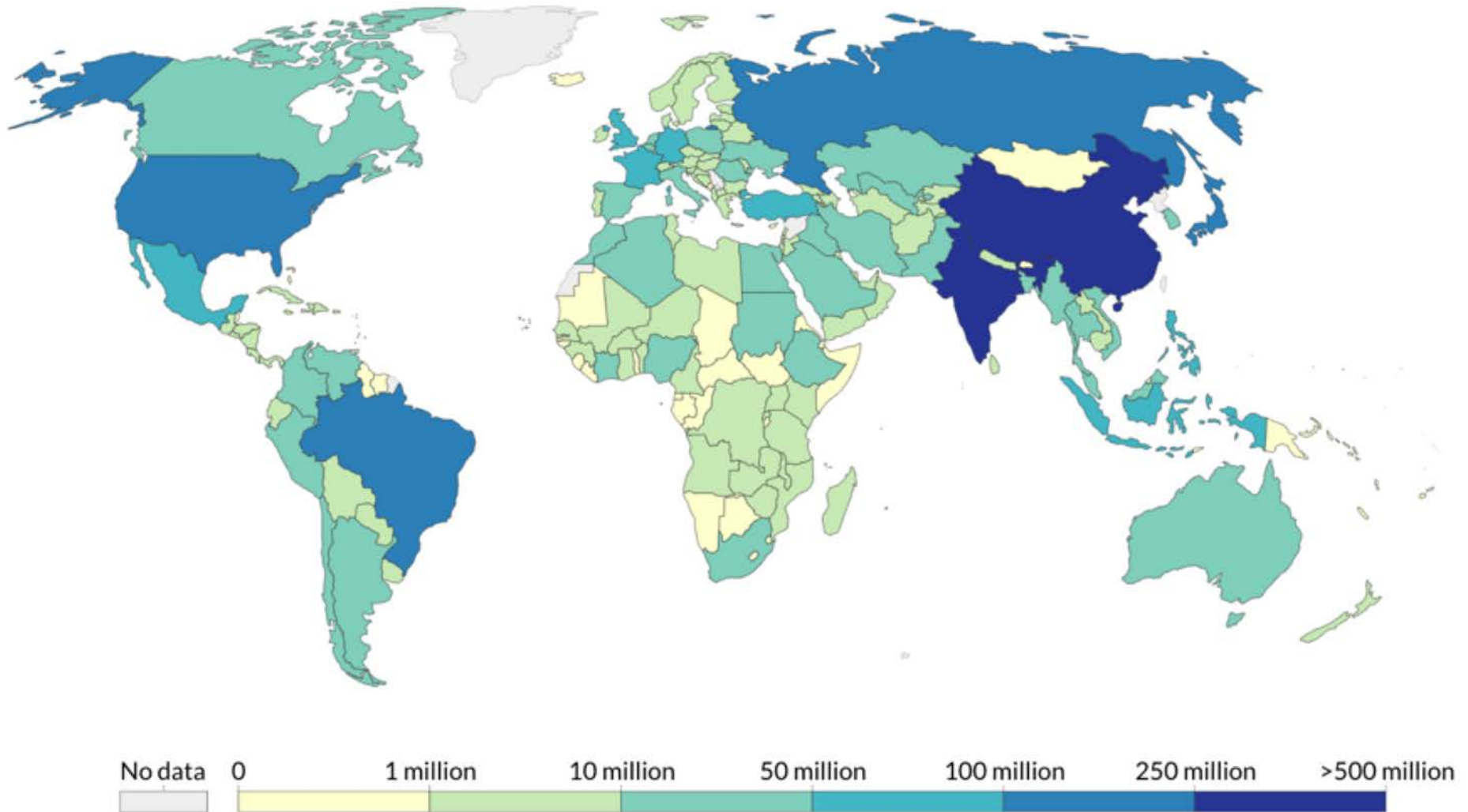
Share of the population using the Internet, 2015

All individuals who have used the Internet in the last 3 months are counted as Internet users. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.

Our World in Data

No data   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

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Smartphones:
Use Them Anywhere, Anytime!

63% keep their phone with them for ALL but an hour of a working day!

3.37 Billion worldwide email accounts

15% of Americans answer phone calls **During Sex** Hello? Hello?
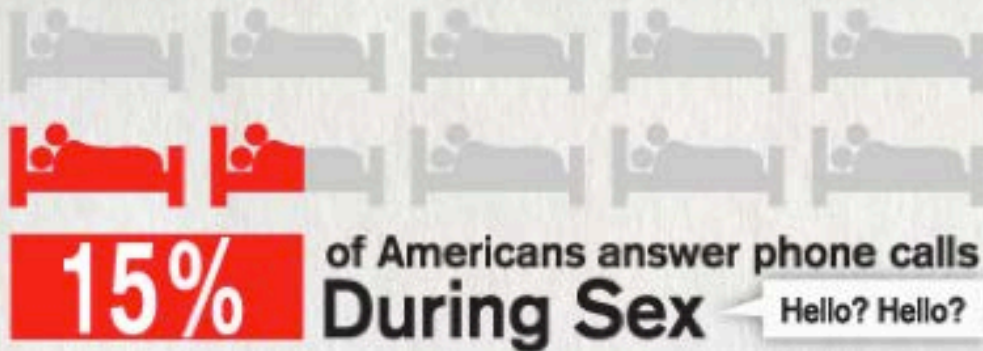
Teens send an average of **60 texts** a day,

40 percent of people with iPhones said they'd rather give up brushing their teeth for a week than go without their phone! (Chicago Tribune, 2011)
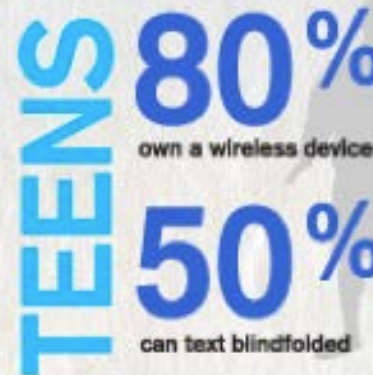
Percent who said they could only go a few hours without their mobile phone: 34%

6.1 BILLION

tick tick tick!
Americans use approximately
Minutes Per Day
(That's about 21 minutes per person)

TEENS 80% own a wireless device

Have access to cell phones

50% can text blindfolded

Text Blindfolded!

Cell phones around the WORLD
Highest average number of cell phones per person

1. United Arab Emirates **1.95**
2. Estonia **1.94**
3. Hong Kong **1.61**
4. Italy **1.52**
5. Bulgaria **1.47**
6. Lithuania **1.41**
7. Portugal **1.39**
8. Singapore **1.36**
9. Czech Republic **1.34**
10. Russia **1.33**

What do We Use the Internet for?

- Global Communications
- Healthcare
- Gambling
- Education
- Distance Learning
- E-commerce
- Criminology
- Radio

- Finding Directions
- Dating
- Shopping
- Chatting
- Music
- News
- Monitoring
- Forms and Applications

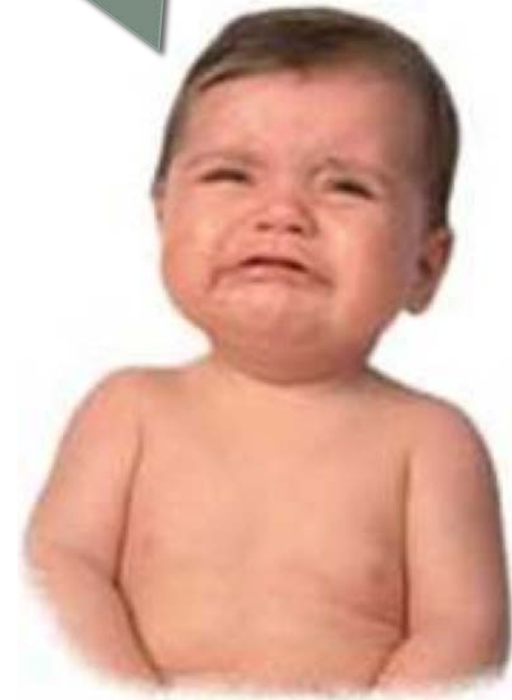25% of "hook ups" are now starting on Facebook!

Gross revenues of online games (gambling) estimated to grow to USD 5.5 billion by 2015

Babies & the Internet

So, What Do ALL These Tell Us about Us?

Our Dependency on IT

- Physical & Social dependency
- The Internet is becoming the default forum for many commercial and personal relationships
  - Self-expression
  - Communicate with others
  - Storage and exchange of information
- For many of us "the virtual world is becoming as real as the physical"

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Early Expectations of the Internet!

The Internet Project

- The Internet project started in 1967 (ARPANET)
  - A group of scientist began planning a Data Communication Network to exchange messages
  - The computer network funded by the DoD
- Two main trusts of the Internet
  - A network to share resources
  - New protocols allowing exchange of information
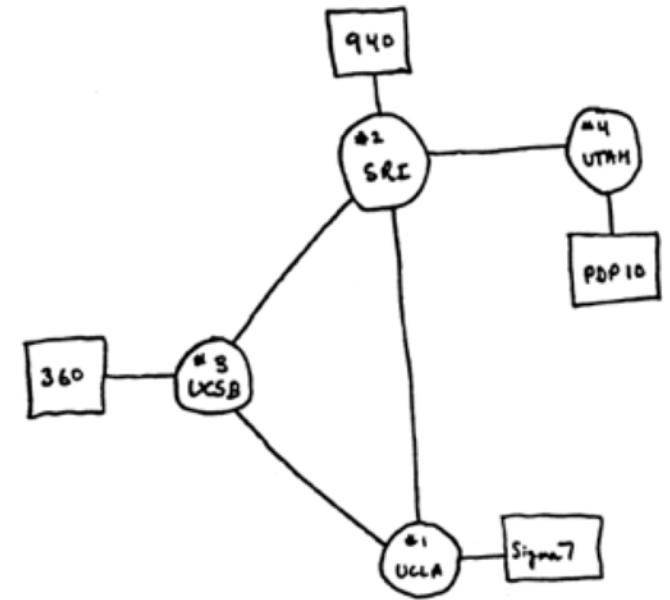
1. UCLA,
2. The Stanford Research Institute's Augmentation Research Center,
3. UC Santa Barbara,
4. The University of Utah

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Early Expectations –
Early 70's

- Internet became the technology of liberation
  - Techno-utopian dreamers were promising a cybernetic meadow
  - Fred Turner coined the term Virtual Reality
    - Believed linked computers will link people creating a technological paradise - unconstrained by existing physical, social & political boundaries
- The WWW brought the notion of Heavenly City - emerging from computer network
  - Promising liberation from rules and routines

The Reality of the Internet –
Fast forward 40 years

- The Internet turned out to be a powerful and a mysterious new technology
- It empowered us in many ways (revolutionized our lives)!
  - Education, Commerce, Healthcare, etc.
- It has also become an instrument of bureaucratic control
  - Creating a conduit of corporate profits
  - Replacing human work by smart technology
  - Polarizing communities
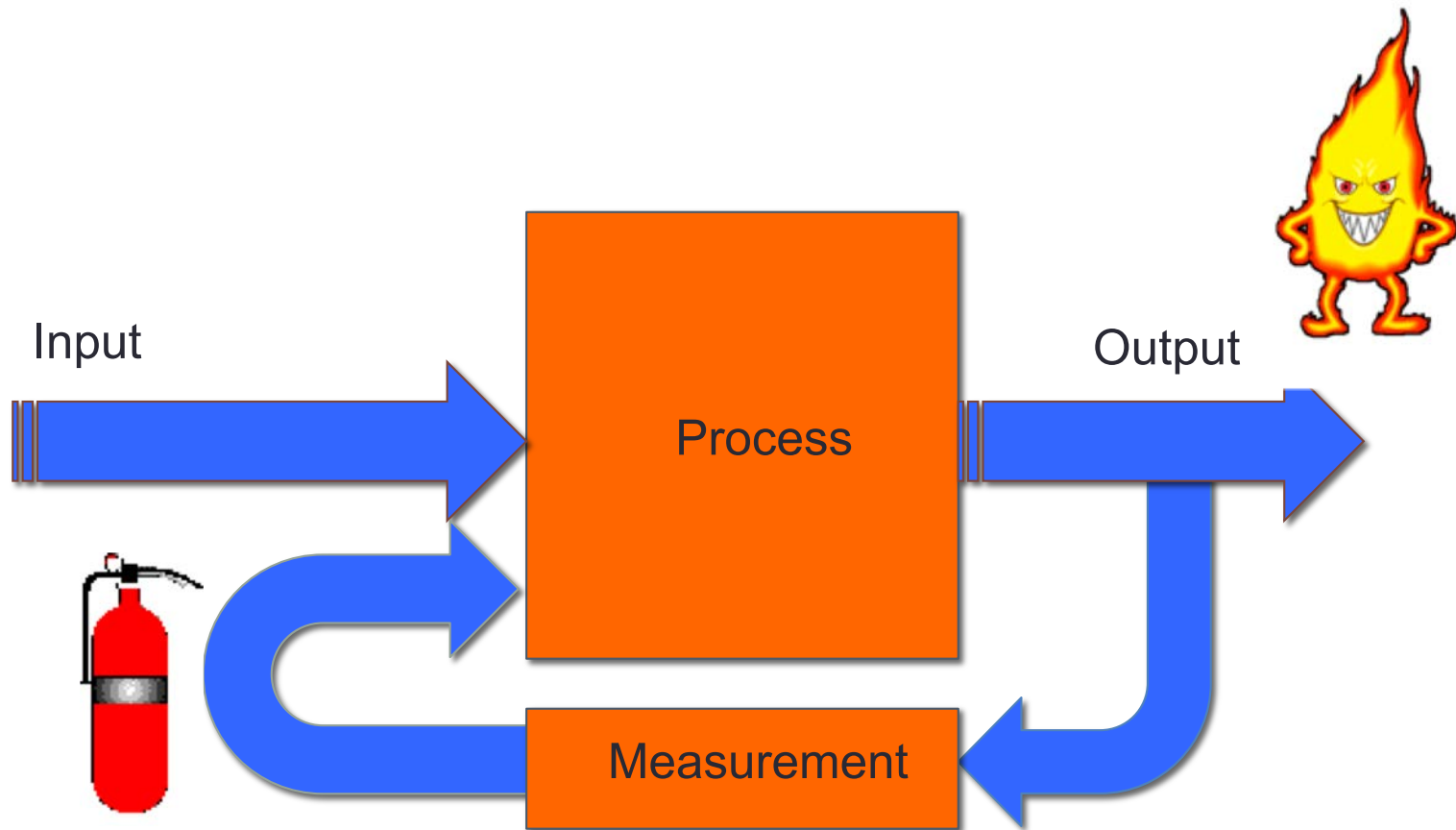 - Becoming a "Home of Business" rather than Mind
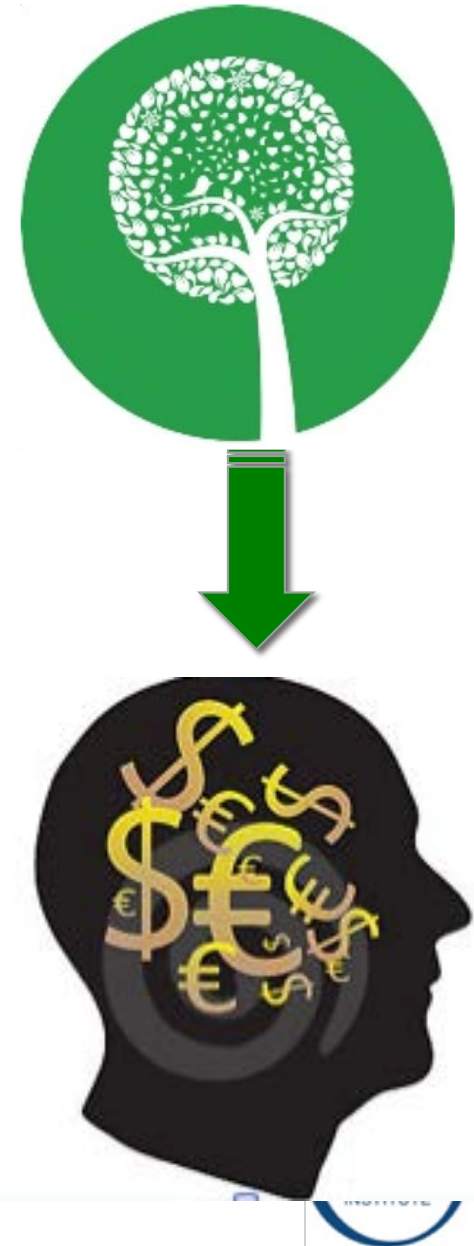
The Reality of the Internet
Fast forward 40 years

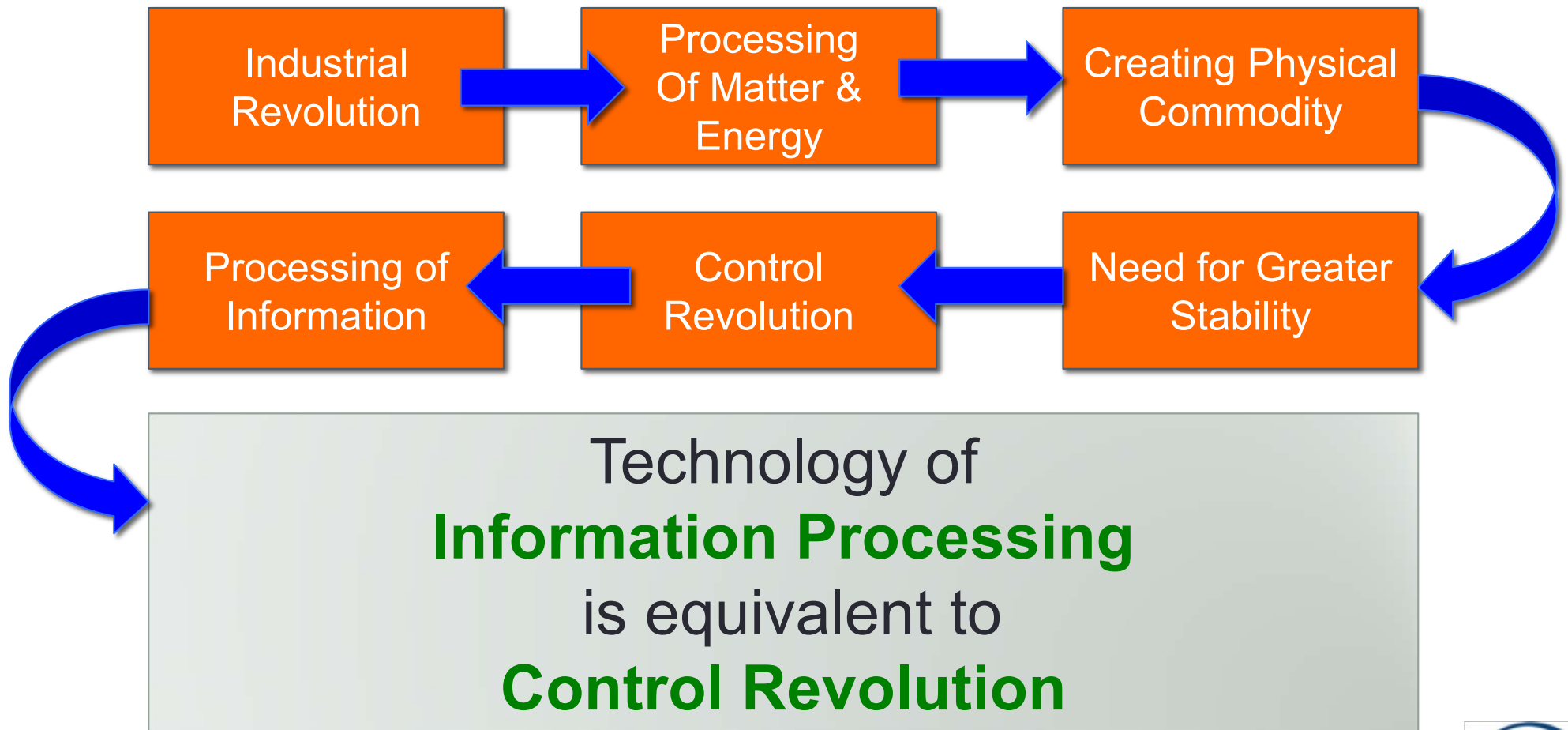We focus on
"CONTROLLING"
power of the Internet
technology

Technology Is All About Processing & Measurement to Control the Output

Technology Is All About Processing & Measurement to Control the Output

Input

Output

Process

Measurement

- Energy
- Matter
- Information

Control Revolution & Information Technology

Industrial Revolution	→ Processing Of Matter & Energy	→ Creating Physical Commodity
Processing of Information	← Control Revolution	← Need for Greater Stability

Technology of
Information Processing
is equivalent to
Control Revolution
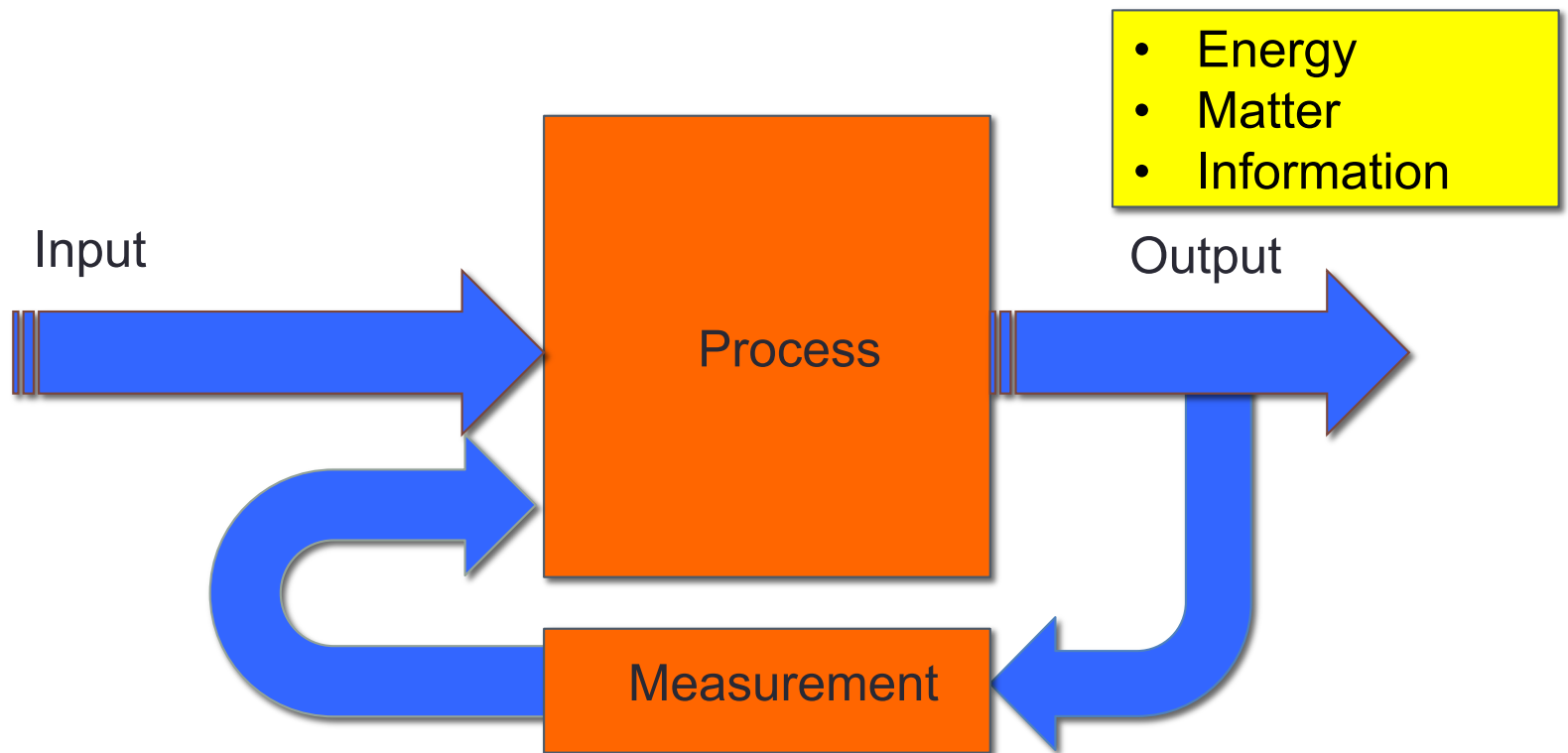
Information is Commodity!

- Our economic system is based on Market-Economy
  - The means of production are privately owned and operated for profit
  - The market rules
- Information technology (e.g., Internet) is yet another way to control the market for more profit!

the people and labor

Corporation

How THE INTERNET Works

In Five Minutes

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Getting Connected….

- Internet Device (e.g., computer or cell phone)
  - Each device has a unique hardware address (called MAC address)
  - My phone Wi-Fi MAC: **18:87:00:bf:99:0f**
  - My MacBook: **f0:f4:79:50:df:b6**
- Internet Service Provider (ISP)
  - Examples: AT&T, Vertizon, Netzero, etc.
  - They provide IP (Internet Protocol) address (e.g., **168.34.23.101**)
  - Also offer services such as email, web page, etc.
- Physical Connection (e.g., cable or phone)
  - Provided by the phone company or the ISP

The Internet In Action
What you need to have…

Internet Service Provider (ISP)

Physical Connection

Internet-enabled Devices

The Internet

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The Internet In Action
How Does it Work?

Internet Service Provider (ISP)

Physical Connection

Internet-enabled Devices

The Internet

The Internet In Action
Identifications….

Internet Service Provider (ISP)

Email

IP: 168.34.23.101
f0:f4:79:50:df:b6

Physical Connection

All your messages pass through the ISP

Internet-enabled Devices

- Serial Number Identifies your machine
- The IP address identifies who you are!

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The Internet In Action
Tracking your web activities….

Internet Service Provider (ISP)

Physical Connection

Internet-enabled Devices

The Internet

The Internet In Action

Internet Service Provider (ISP)

Email

IP: 168.34.23.101
f0:f4:79:50:df:b6

Physical Connection

Internet-enabled Devices

The Internet

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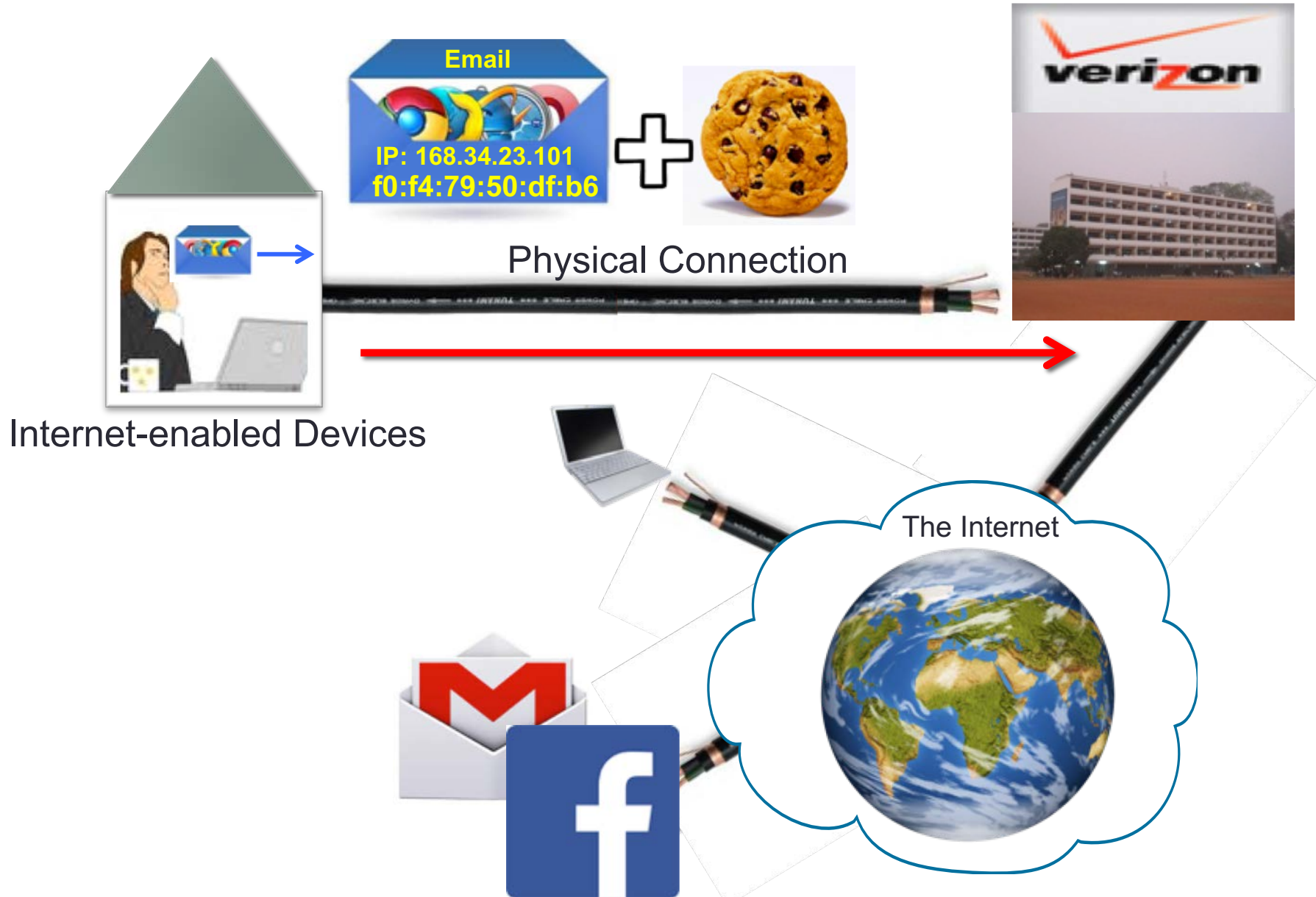
Facts:
In U.S. 23 ISPs control 75% of the Market

Tracing A Simple Email From YAHOO!

HEADER------------
IP: 168.34.23.101
MAC: f0:f4:79:50:df:b6
ISP & Location

Email Header Analysis

IP Address: 130.157.158.211
Hostname: village-158-211.sonoma.edu
IP Address Country: United States 🇺🇸
IP Continent: North America
IP Address City Location: Rohnert Park
IP Address Region: California
IP Address Latitude: 38.3433,
IP Address Longtitude: -122.7041
Organization: Sonoma State University
ISP: Sonoma State University

Email Lookup Map (show/hide)