Module CS5052NI Professional Issues, Ethics and Computer Law

2022

A Gift of Fire

Fifth edition

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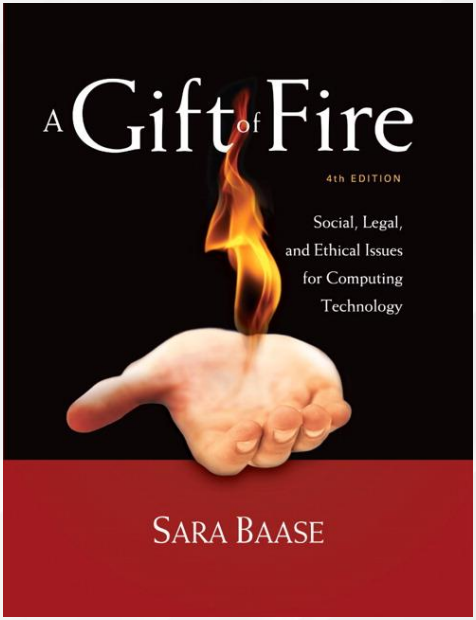


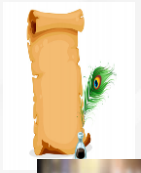
Chapter 1:

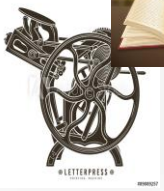
Unwrapping the Gift

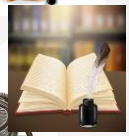
Agenda

- The Pace of Change
- Change and Unexpected Developments
- Themes
- Embracing change in technology
- Safety measures

Technology timeline







Stone Age

Iron Age

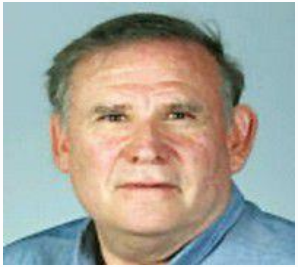
Middle Age

Industrial Age

Electronic Age

The Pace of Change

"*In a way not seen since **Gutenberg's printing press** that ended the Dark Ages and ignited the Renaissance, the **microchip** is an **epochal technology** with unimaginably far-reaching economic, social, and political consequences*."



– Michael Rothschild

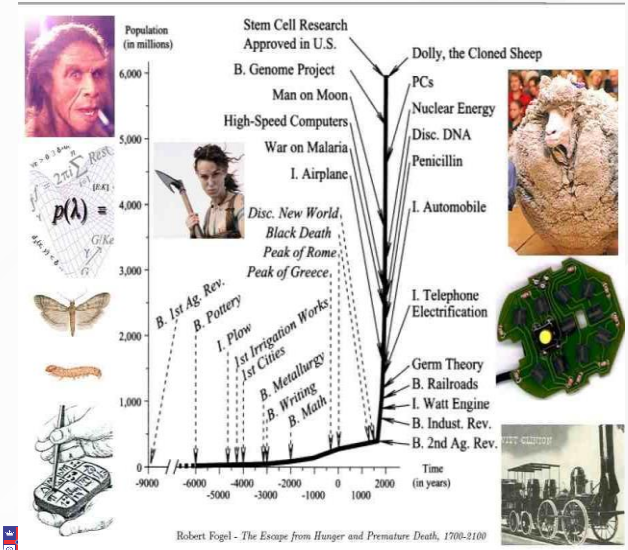
American economist;

Visiting professor at Department of Economics

University of California (UCLA)

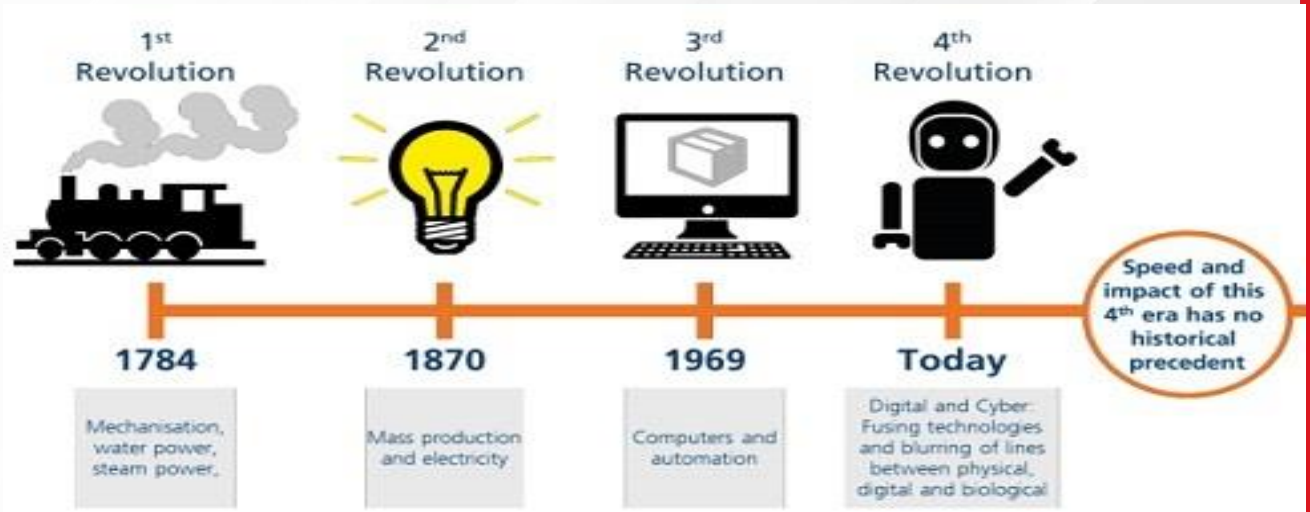
former dean at Princeton.

The Pace of Change



- **Prehistoric Age** < 500,000 to 50,000 B.C. 450,000 years
- **Stone Age**: 50,000 to 5,000 B.C. 45,000 years
- **Copper Age** 5,000 to 2,000 B.C. 3,000 years
- **Bronze Age** 2,000 B.C. to 0 A.D. 2,000 years
- **Dark Age** 0 A.D. to 900 A.D. 900 years
- **Middle Age** 900 A.D. to 1,300 A.D. 500 years
- **Renaissance Age** 1,300 A.D. to 1,550 A.D. 250 years
- **Imperial Age** 1,550 A.D. to 1,750 A.D. 200 years
- **Industrial Age** 1,750 A.D. to 1,930 A.D. 170 years
- **Nuclear Age** 1930 A.D. to 1980 A.D. 50 years
- **Information Age** 1980 A.D. to 2005 A.D. 25 years
- **Nano Age** 2005 A.D. to 2012 ... < 10 years

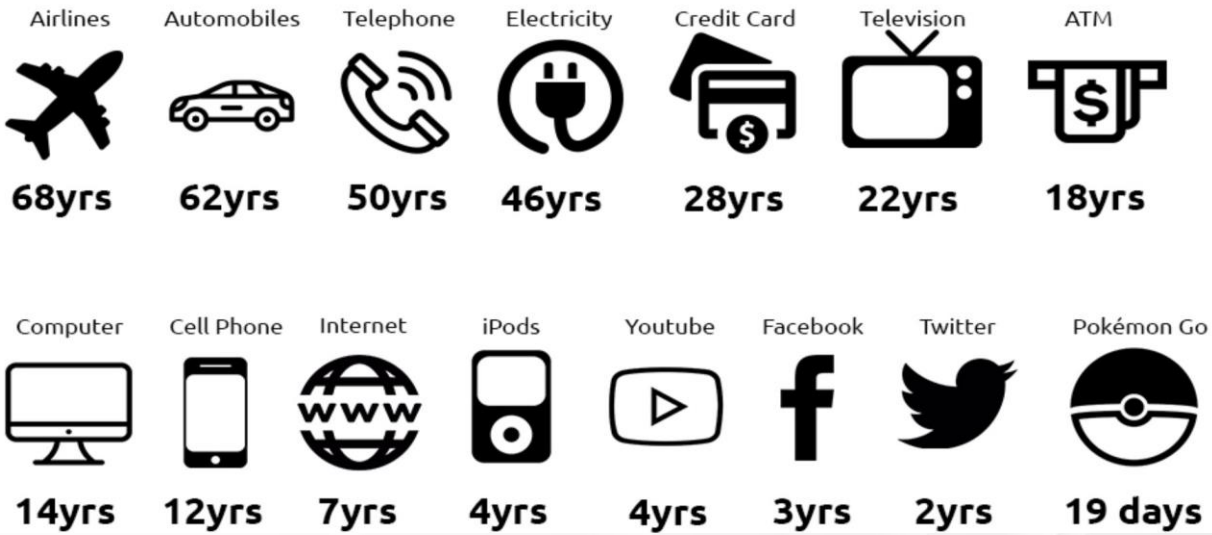
The Pace of Technological Change



The Pace of Change

- 1940s: First Computer was built.
- 1956: First Hard Drive Disk weighed ton and stored 5 MB (Mega Bytes)
- 1991: Space shuttle had 1 MHz (Mega Hertz) Computer.
- Ten years later, some automobiles had 100 MHz (Mega Hertz) Computers.
- Speeds of several gigahertz are now common.

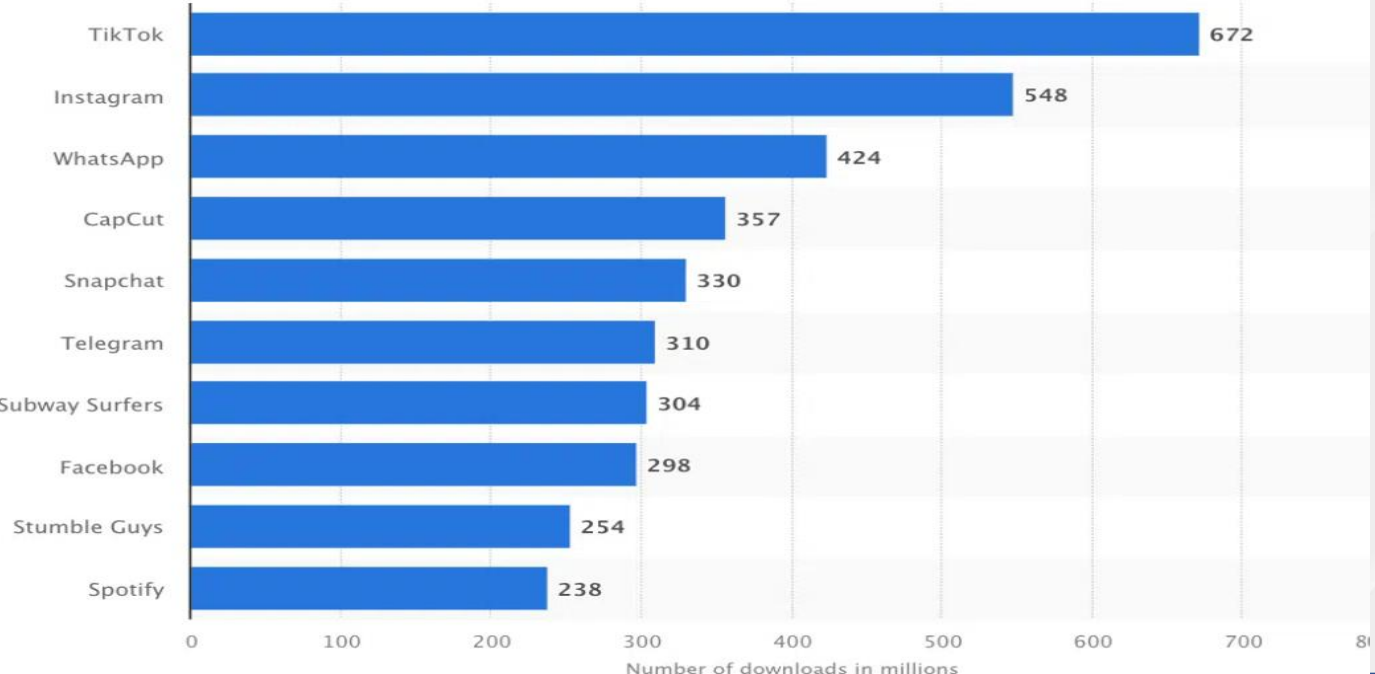
NUMBER OF YEARS IT TOOK FOR EACH PRODUCT TO GAIN 50 MILLION USERS:



General social media statistics: Source: Hootsuite's Digital Trends Report 2022

- Over 4.74 billion people across the world use social media. People spend an average of 2 hours and 28 minutes per day.
- Nigeria, Brazil, and South Africa spend the most amount of time on social media Japan, South Korea, and Austria spend the least amount of time on social media
- The main reasons people use social media is to stay in touch with friends and family, fill spare time, and read the news daily time spent using social media in hours
- In 2022, marketers spent $65.31 billion on social media advertising. Social video advertising is expected to reach $79.28 billion in 2024

TikTok: 18.6% of total internet users worldwide



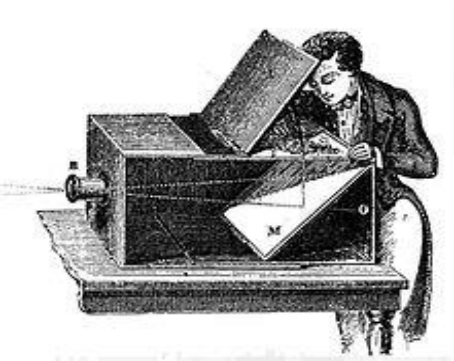
Discussion Question

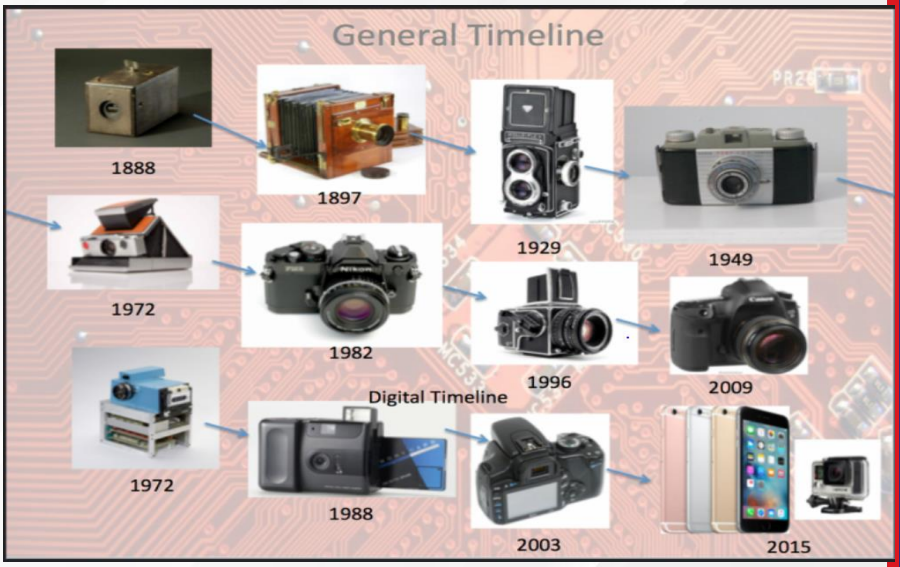
What Devices are now Computerized that were not originally?

Think back 10, 20, 50 years ago.

TVs

Cameras




General Timeline
1888
1897
1929
1949
1972
1982
1996
2009
Digital Timeline
1972
1988
2003
2015

Phones

Evolution of phones

Change and Unexpected Developments

- *"It is precisely this unique human capacity to transcend the present, to live one's life by purposes stretching into the future*
- *- to live not at the mercy of the world, but as a builder and designer of that world*
- *- that is the distinction between human and animal behavior, or between the human being and the machine*."

- Betty Friedan(American feminist writer)

Change and Unexpected Developments

- **Technology:** Putting scientific knowledge to use for practical purpose.
- Technology can seem amazing or terrible, depending on your point of view.
- Aren't always easy to predict.

The Internet of Things (IoT)

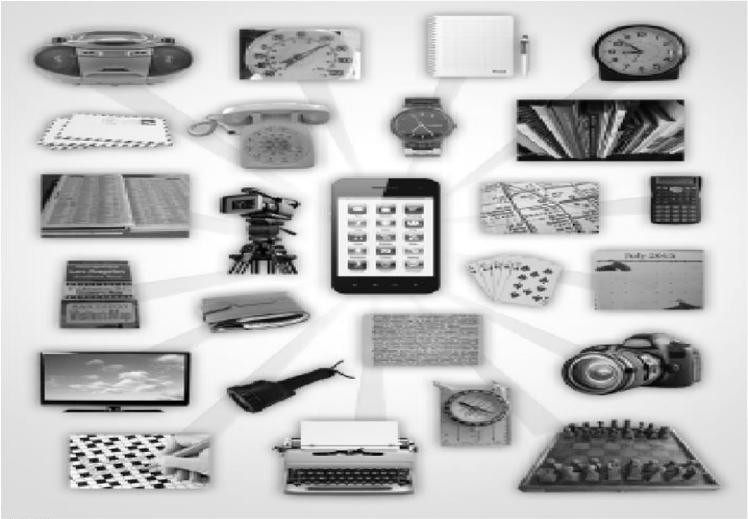
- Tech companies and analysts estimate 15 billion IOT devices in 2015 and will be 50–70 billion by 2020.
- Advantage: Efficient resource utilization, Minimize human effort, Save time.
- Disadvantage: Security, Privacy, Complexity

Example: Smart Phones

- Smartphone apps for many tasks: monitoring diabetes, finding places, locating water in remote areas,
- Location tracking raises privacy concerns. Cameras in cell phones affect privacy in public and non-public places. Talking on cell phones while driving is dangerous.

Example: Smartphones

- Some of the items replaced by Smart Phones



Without my cell phone, I wouldn't:

1. know what time it is
2. be able to solve a math question
3. know a single phone number
4. know the date
5. be able to text my friend when I'm at their house
6. take a snap shot at a picture perfect time
7. be able to wake up from an alarm in the morning
8. find my way in the dark

Artificial Intelligence

- Branch of computer science that makes computers perform tasks normally requiring human intelligence.
- Researchers realized that narrow, specialized skills were easier for computers than what a five-year-old does: recognize people, carry on a conversation, respond intelligently to environment.
- Many AI applications involve pattern recognition
- Speech recognition is now common tool

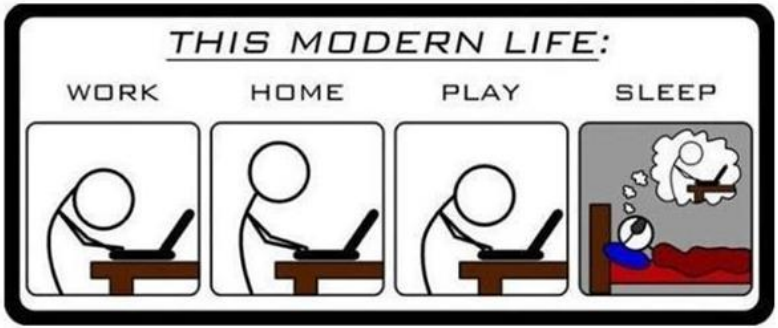
Artificial Intelligence

Turing Test:

- If computer convinces human subject that computer is human, computer is said to “pass”.
- Philosopher John Searle argues that computers cannot be intelligent. They do not think; they manipulate symbols and do so at very high speed, and they can store, access, and manipulate a huge quantity of data, but they do not understand, rather simulate understanding.

Communication and the Web

- In the 1980s, email messages were short and contained only text.
- People worldwide still use email, but texting, tweeting, and other social media are now preferred.



Telemedicine

- Remote performance of medical exams and procedures, including surgery.
- Also known as long-distance medicine
- It can be used in prisons to reduce chance of escape, on long airplane flights to treat sick passengers or in rural areas to consult with medical specialists.

Distance learning

- Allows students to complete high school, continuing education and college courses without physically being on campus.
- Classes may be taken online, through audio or video cassette instruction or by mail.
- Students learn remotely and do not have face-to-face learning with instructors or other students and involved online education.

Free stuff

- Email programs and email accounts, browsers, filters, firewalls, encryption software, word processors, spreadsheets, software for viewing documents, software to manipulate photos and video, and much more
- Phone services using VOIP such as Skype, Viber, Messenger etc.
- Craigslist classified ad site
- University lectures

Change and Unexpected Developments

"While all this razzle-dazzle connects us electronically, it disconnects us from each other, having us "interfacing" more with computers and TV screens than looking in the face of our fellow human beings. Is this progress?"

– Jim Hightower, Radio Commentator, 1995

Drawback of technology

- Do not know **when and how to limit** its usage
- **Spending more** than they can afford
- **Addiction** to online gaming and social media

Example:

Cell Phones Pros

- Smartphone apps for many tasks
  - monitoring diabetes
  - locating water in remote areas
  - Location tracking raises privacy concerns.
  - Cameras in cell phones affect privacy in public and non-public places.

Cell Phones Cons

- Smartphone apps for many tasks
  - Cell phones can interfere with solitude, quiet and concentration.
  - Talking on cell phones while driving is dangerous.
  - Other unanticipated negative applications: teenagers sexting, terrorists detonating bombs, rioters organizing looting parties.

Example: Self Driving Vehicles (pros)

- Will serve multitude of purposes
- Less distraction for drivers
- Follow traffic rules and Better traffic management
- Better safety and Better road journey
- Enhanced convenience
- Insurance benefits
- Fuel to cost advantage
- Environmental benefits

Example: Self Driving Vehicles (cons)

- Higher Cost of Acquisition
- Loss of Jobs
- Too much dependency on Technology
- Commuting Issues
- Legal and Ethical Issues
- Privacy Issues
- Maintenance Issues
- Various restrictions

Social Networking

- First online social networking site :www.classmates.com 1995.
- Find colleagues from kindergarten, primary school, high school, college, workplaces, and the U.S. military.
- Myspace 2003, popular from 2005-2008, First social network to reach a global audience.
- Facebook started at Harvard as online student directories in 2004
- LinkedIn 2003, employment-oriented online service.
- Allows members (both workers and employers) to create profiles and connections.

Social Networking

Pros:

- Businesses connect with customers.
- Organizations seek donations.
- Groups organize volunteers.
- Protesters organize demonstrations and revolutions.
- Individuals pool resources through “crowd funding”.

Cons:

- Lacks Emotional Connection
- Gives People a License to be Hurtful
- Lacks Face-to-Face Communication Skills
- Stalkers and bullies stalk and bully
- Facilitates Laziness
- Creates a Skewed Self-Image
- Causes Distractions

Communication and the Web

- Blogs (“Web log”) began as outlets for amateurs wanting to express ideas, but they have become significant source of news and entertainment.
- Inexpensive video cameras and video-manipulation tools have resulted in a burst of amateur videos.
- Videos on Web can infringe copyrights owned by entertainment companies.

Free stuff

- Advertising pays for many free sites and services, but not all.
- Wikipedia funded through donations.
- Businesses provide some services for good public relations and as a marketing tool.
- Generosity and public service flourish on the Web. Many people share their expertise just because they want to.
- For companies to earn ad revenue to fund multimillion-dollar services, many free sites collect information about online activities and sell it to advertisers.

Themes: Old problems in new context

- Cyberspace has many of problem, annoyances and controversies of non-cyber life
  - Crime, pornography, violent fiction and games, advertising, copyright infringement, gambling and products that do not work right
- Adapting to new technology: thinking in new way
  - Changes in Technology require adaptive changes in laws, social institutions, business polices, personal skills, attitudes and behavior
- Varied sources of solutions to problems
  - Solution for problems that result from new technology, the market, education, management polices and public awareness, volunteer efforts and law

Themes: Global Reach

Global Reach : translates to a business venture that removes barriers through use of the Internet.

- Ease of communication with distant countries has profound social, economic and political effects
- Increase in potential market share by increasing the customer base
  - **Some beneficial, some not**
    - Unable to personally examine the products
    - Privacy and security in online purchases
    - Fraud with credit cards

Themes: Trade-offs and Controversy:

- Increasing security means reducing convenience.
- Perfection is direction, not option.
- There is difference between personal choices, business policies, and law.

Discussion Questions

- How will we react when we can go into hospital for surgery performed entirely by machine?
- Will it be scarier than riding in first automatic elevators or airplanes or vehicle?
- How will we react when we can have conversation and not know if we are conversing with human or machine?
- How will we react when chips implanted in our brains enhance our memory with gigabytes of data and search engine? Will we still be human?

Embracing change in technology

- Often not able to predict how products will eventually be used
- Important to experiment and discuss the consequences of advancements
- Adapting is our only option

Kill switches

- Allow remote entity to disable applications and delete files.
- Are in operating systems for tablets, smartphones and some computers.
- Used mainly for security but raise concerns about user autonomy.

Kill switches: Examples

- Amazon had deleted some books from its store and from the kindle of people who had bought them due to copyright issues in 2009.
- Apple remotely deleted several of its apps from app store as well as from individual users' phones that deemed to have privacy and security at risk in 2019.
- In 2011, a software developer discovered a malicious code in app for Android phones. Google removed the app from its store and from more than 250,000 phones.

Safety measures: Machines

- Understand its **risks, rewards and best uses**
- **Thoughtful safety policies** that will protect people
- Provide proper **safety training** so that people are aware
- The government needs to review policies, laws and procedures regularly to adjust to the changes in technology
- Getting the latest antivirus software's as it would be updated with protection to the latest viruses
- Set lock systems or use strong and different passwords to each of your devices and accounts

Safety measures: Information

- Read the **terms and conditions** carefully
- When you accept Terms & Conditions you are legally-binded in a contract
- Contract may include your acceptance to share your information photos or even paying extra fees without your consent.

Any questions?