

# Social Context of Computing

# Digital Divide

## WHAT is it?

**Definition:** The gap between demographics and areas that have access to modern information & communications technology from those who don't.



## WHO does it effect?



**OLD  
VS. YOUNG**



**ABLE-BODIED  
VS. DISABLED**



**WEALTHY  
VS. POOR**



- 62% of households making >30k use the internet.
- 77% of older people require a walkthrough to set up a device.
- 27% of disabled adults have never used the internet.
- In the U.S., 75% of urban residents use the internet, compared to 69% of rural residents.



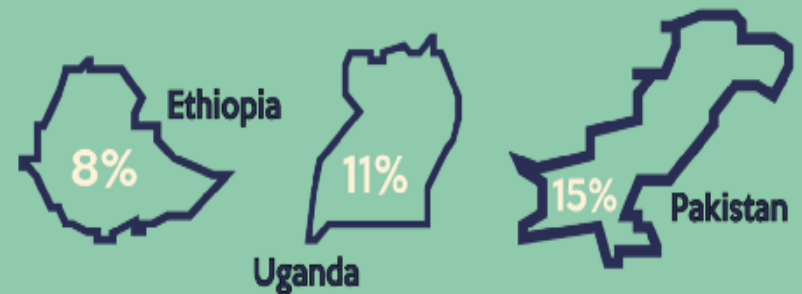
**RURAL  
VS. URBAN**



# WHERE is it located?

- 31% of the world does not have 3G coverage,
- 15% of the world has no electricity.
- South Koreans pay as much as half of what Americans pay for internet that is 200 times faster in speed.

Lowest  
Amount  
of Access

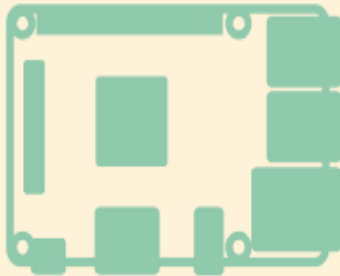


## Internet

Highest  
Amount  
of Access



# HOW can we fix it?



The Raspberry Pi Foundation is dedicated to creating affordable solutions in computer technology.



that



the



:



Google labs has researched and tested Project Loon, a state-of-the-art balloon technology that brings internet to the masses.

Learn more more about other solutions, such as new political policies, for the digital divide here:



# What Is the Digital Divide?

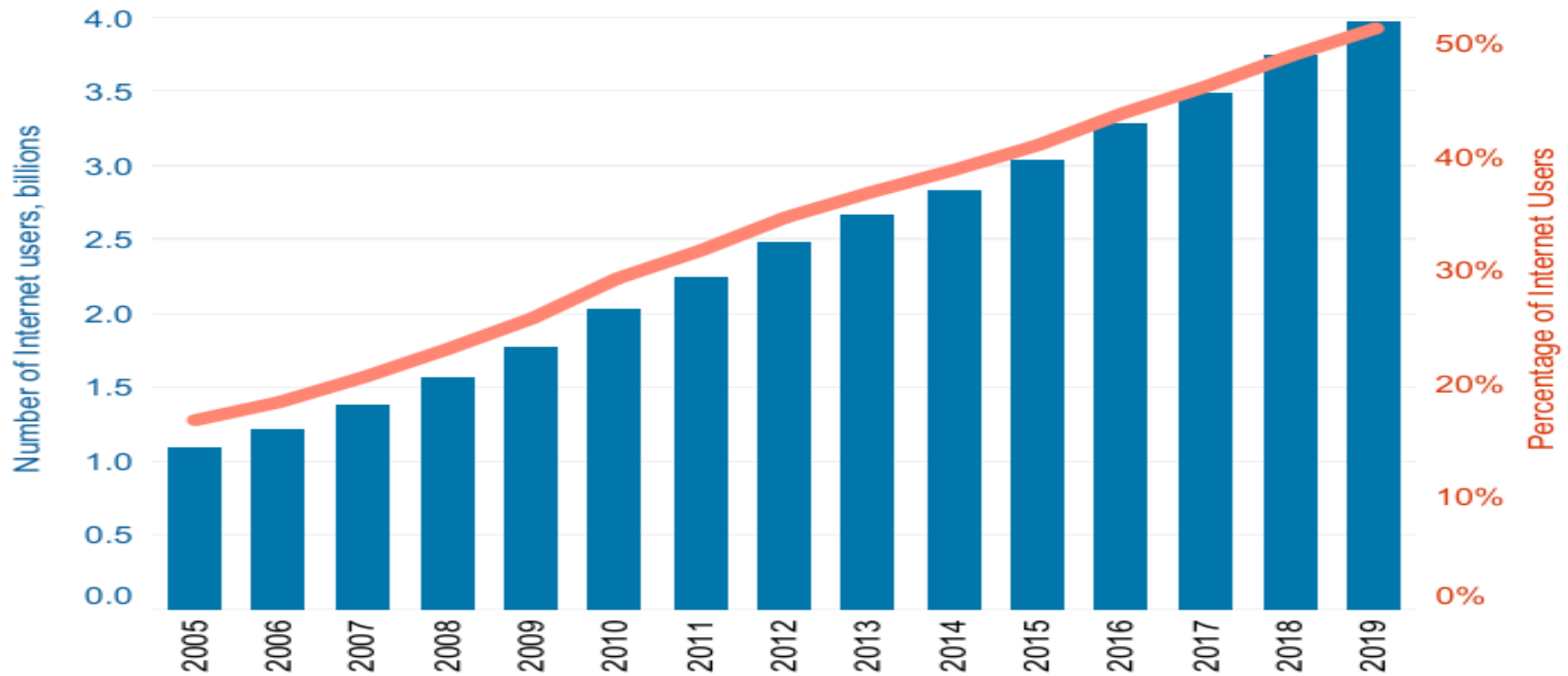
- the digital divide is the gap between those with Internet access and those without it. But the digital divide is multifaceted and includes many factors such as access, affordability, quality, and relevance. As [Michael Kende wrote](#), “the digital divide is not a binary.” Here are some of the things that lead to disparities in Internet access:
- **Availability:** Is there available access to the Internet in your area?
- **Affordability:** Is that access affordable?
- **Quality of service:** Are the upload and download speeds sufficient
- **Relevance:** Does the connected community have the necessary skills and technologies?
- **Additional divides:** Other areas that can create digital inequality include [security](#), interconnectivity, digital literacy, and access to equipment.

# What is the digital divide today?

- According to studies and reports, the digital divide is still very much a reality today. According to a 2019 [report](#), approximately 5 million rural American households and 15.3 million urban or metro areas still don't access broadband internet.
- Meanwhile, a study by the [Pew Research Center](#) noted that 24% of adults with household incomes below \$30,000 a year don't own a [smartphone](#) and 40% of those with lower incomes don't have home broadband services or a computer.
- Globally, the digital divide in developing countries includes a lack of access to digital technology and internet service. It can also include a lack of accessibility to modern, high-quality new technologies such as mobile phones and [Wi-Fi](#) access.

# The Latest Data on Digital Divide

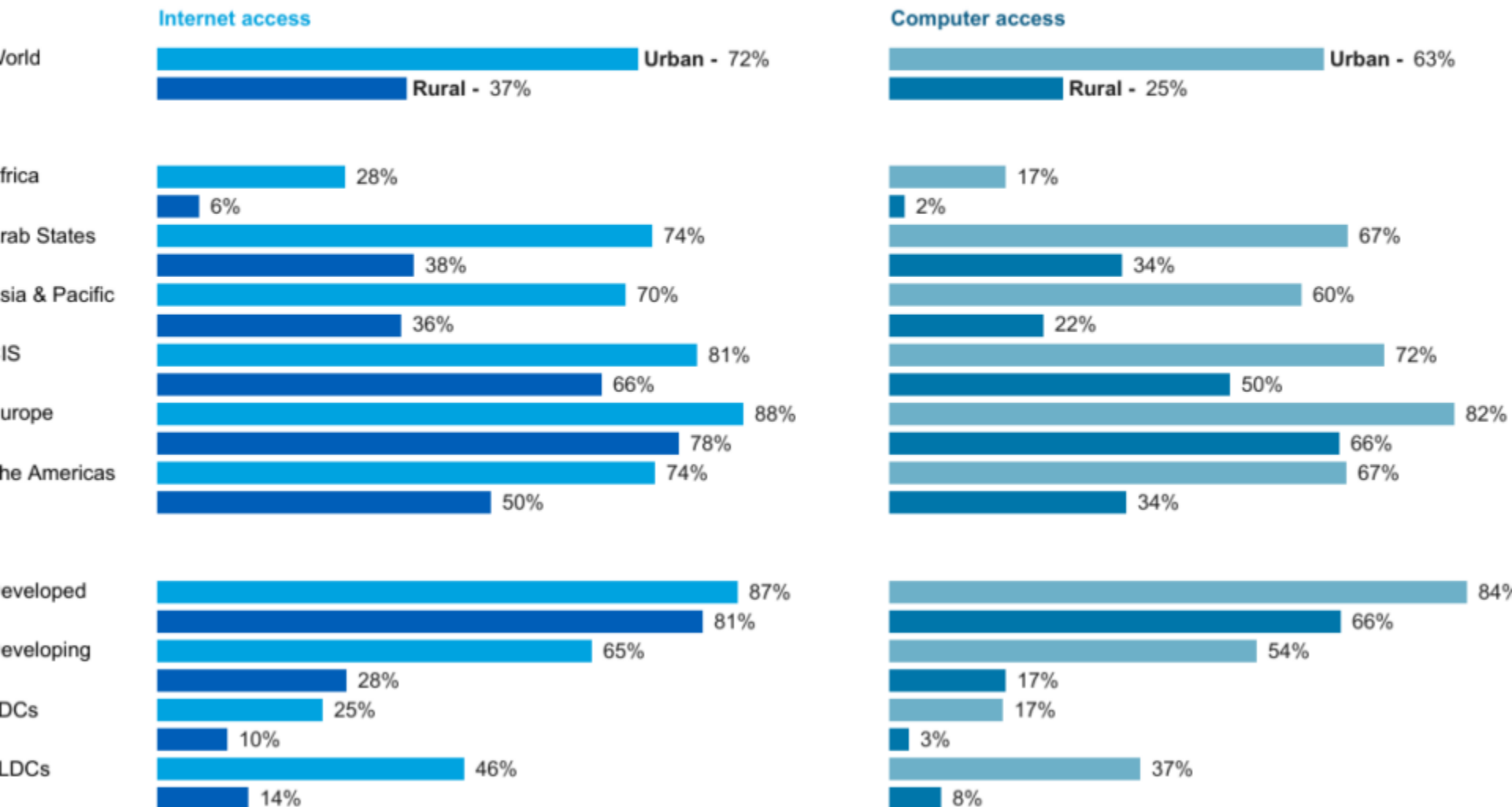
- The [UN's Broadband Commission for Sustainable Development](#) estimates that nearly 3.6 billion people remain totally unconnected to the Internet by any measure. This means there are around 4.1 billion people online, about 53.6% of the global population.



Source: ITU

# Internet access at home in urban areas twice as high as in rural areas

Percentage of households with computer and/or Internet access at home, 2019\*



\* ITU estimate.

Note: Insufficient data available to produce estimates for SIDS.

Source: ITU

# What's the difference between Wi-Fi and broadband?

Wi-Fi connects devices to home and business networks, while broadband connects those networks to the internet.

## Wi-Fi



Home or business network



Wi-Fi access point



Person with a device

## Broadband



ISP



Wireless or wired connection,  
such as fiber, DSL or 5G



Home or business network



# The Digital Divide Exacerbates Other Divides

Digital exclusion has many adverse impacts. Here are a few:

- **Access to healthcare and its outcomes:** Internet access is an important public health issue. Lack of access means exclusion from vital health information and resources.
- **Economic opportunities:** For both [workers](#) and business owners, lack of quality broadband means decreased economic opportunities and competitiveness in the digital economy.
- **Educational opportunities:** Lack of Internet access for school-aged children means that they are denied the educational benefits of the Internet.

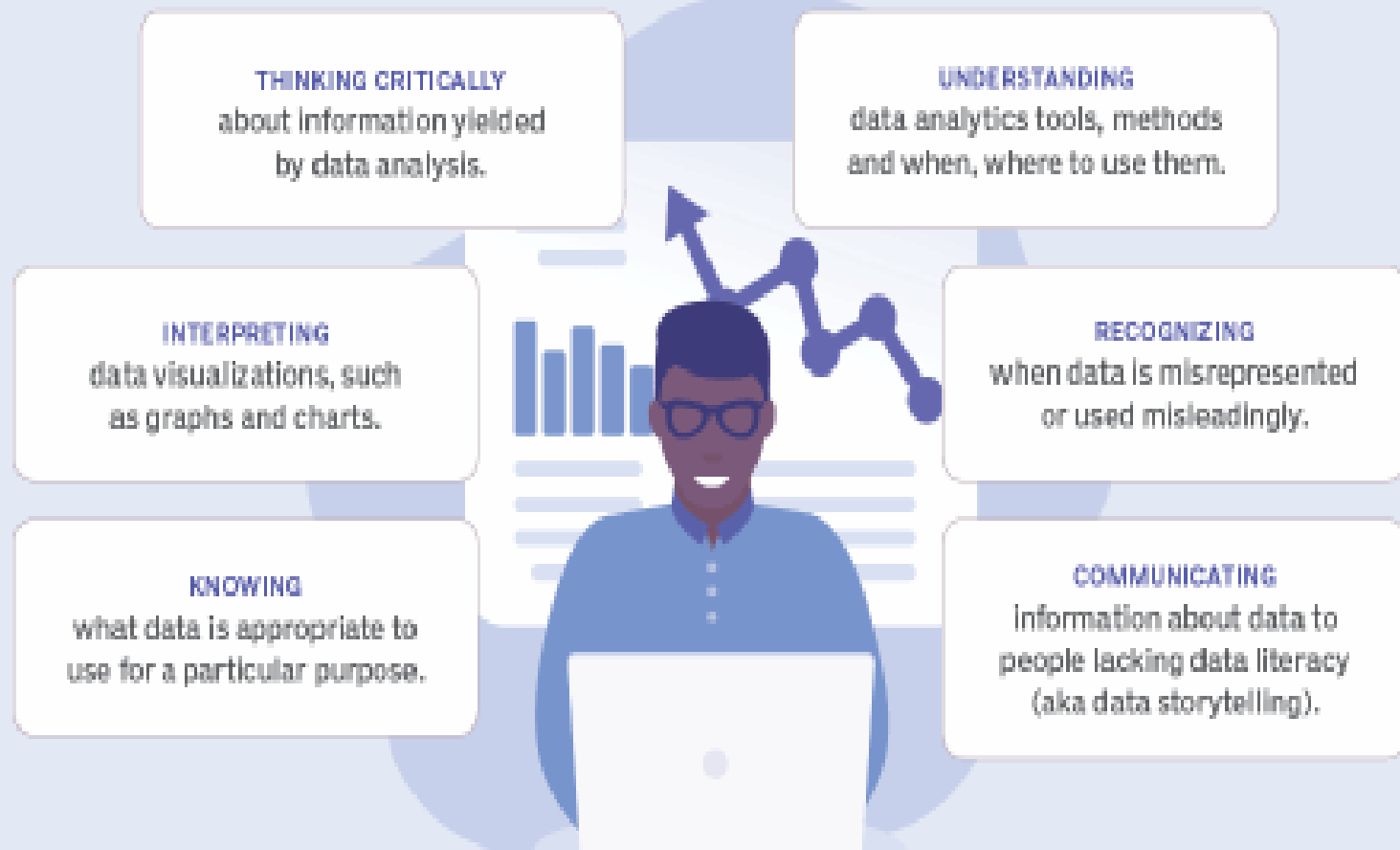
# Community Networks Are One Complementary Solution for Bridging the Digital Divide

- [Community networks](#) can meet the challenges of the many digital divides, bringing affordable Internet access to those who need it the most. Beyond making the Internet available and affordable, community networks help address some of the other divides mentioned above.
- For instance, bringing Internet access to a community improves health disparities by making affordable telehealth options available to rural areas—this was the outcome of the Internet Society’s Nepal’s initiative [Effective Broadband for Health](#). Other communities have seen changes in different areas at once through connectivity, such as education, healthcare, and agriculture in the case of the [Murambinda community network in Zimbabwe](#).
- The community network deployment process also shows that community members who are involved in building their networks also strengthen their shared digital literacy skills.

# Bridging the digital divide

- Proponents for bridging the digital divide include those who argue it would improve [digital literacy](#), digital skills democracy, social mobility, economic equality and economic growth.
- The United Nations, for example, has helped to raise awareness regarding the global digital divide through the yearly celebration of World [Information Society](#) Day. It has also created the Information and Communication Technologies Task Force in an effort to bridge the global digital divide.
- However, overcoming the digital divide has not gotten easier, particularly in the aftermath of the [COVID-19 pandemic](#).
- A [2020 McKinsey report](#) stated that learning loss will only increase as educators and students have taken to remote learning and internet usage from home is required by low-income families who may not have access to the right technology.

# Data literacy skills



# Components of ICT

The term information and communications technology (ICT) is generally accepted to mean all technologies that, combined, allow people and organizations to interact in the digital world.



# What Is an Electronic Office?

- An **electronic office** is an office or work environment that is utilizing electronic methods of storing and using documents over using paper.
- Also known as an e-office, an electronic office is a term that refers to any office environment that makes significant use of computer technology to operate.
- Today, an electronic office is more commonly equated with the virtual office, which involves the use of wireless technology to allow people to work from virtually anywhere with the right type of laptop or notebook and a reliable wireless connection.

# ICT in the workplace

- Computers and internet access have transformed the way many people work:
- businesses rarely produce written letters or reports or use **typewriters** any more
- documents are more likely to be sent by **email** than by post or fax
- employees with laptops or smartphones can work from home or while they travel
- There are positives to an employee having a computer, especially one with internet access:
- use of email, **instant messaging** online collaboration tools and video conferencing to interact with colleagues and clients
- access a host of information online to help with research-related tasks
- easily share and collaborate on documents

# Relevance of Information Communication Technology at Work

- Ease of Communication and Collaboration
- Ensures Employee Productivity and Industry Efficiency
- Maintains Organization and Accuracy
- Data Security and Safety
- Higher employee productivity and satisfaction.
- The ability to better serve customers.
- Increased Collaboration
- Improved Cost Management



# Disadvantages

- The internet is full of distractions and employees may prefer to play games, browse and update **social networking sites** or reply to personal emails and instant messages than to get on with their work.
- Employers are aware of this and often block access to certain websites. These restrictions may be relaxed during lunchtime or outside of working hours.

# What is Virtual Workplace

- A **virtual workplace** is a **workplace** that is not located in any one physical space; rather, several **workplaces** are technologically connected (via the Internet) without regard to geographic boundaries. Employees are thus able to interact and work with one another in a collaborated environment regardless of where they are in the world.
- A **virtual workplace** decreases unnecessary costs by integrating technology processes, people processes, and online processes

# Benefits of Virtual Workplace

- **Eases the transition to remote work.**
- **No physical office space means lower costs.**
- **More market opportunities and higher profits.**
- **Environment-friendly.** Since employees don't need to commute anymore, lower emissions result.

# The impact of ICT on society

## Working from home

- Many employers give their workforce the option to be based at home. A **secure internet connection** provides access to the company's network, shared files, email and printers.
- Employees can use the company's email system to keep in touch with the office. There are also a number of other ways of communicating. They can:
- divert their office phone to their mobile phone or **smartphone**
- browse the intranet to keep up to date with company developments
- take part in meetings using **video conferencing**

# Advantages

- **for the employee**
- No travel costs or time wasted travelling to and from work
- Working in the comfort of their own home
- Option to work for a company hundreds or even thousands of miles away
- Able to spend more time with their family
- **for the employer**
- No need to provide employee with a desk or computer if they choose to use their own
- Overhead cost savings with remote work
- Employee may be happier working from home and do more work as a result

# Disadvantages

- **for the employee**
- It can be lonely working from home and they may not feel part of a team
- There are arguably more distractions at home than in the office
- It may prove difficult to separate work from home life
- **for the employer**
- Harder to check what employee is up to
- Employee may not feel part of a team and might end up doing less work

# What is monitoring in the workplace?

- “Employee monitoring” refers to the methods employers use to surveil their workplaces and their staff members’ whereabouts and activities. These methods include employee monitoring software, time clocks, video surveillance, GPS systems and biometric technology. Video surveillance, for example, can strengthen your business’s security and productivity. Catching a thief on camera certainly reduces shrinkage costs.
- Employee tracking and monitoring systems serve other important purposes. Their main goals are to prevent internal theft, examine employee productivity, ensure company resources are being used appropriately, and provide evidence for any potential litigation.

# Advantages for Employees

- "Electronic **monitoring** offers a distinct advantage to the **employee**: it is objective". This is a benefit because it provides an unbiased method of performance evaluation and prevents the interference of managers' feelings in an **employee** review.
- Electronically-generated information offers uniform and accurate feedback on past performance. Thus, the evaluation will be solely based on the quantity and quality of an **employee's** work, rather than on managers' opinions.



# Disadvantages for Employees

- Although the advantages are important and helpful to employees, the disadvantages that go along with **employee monitoring** may outweigh the benefits. While employers argue that **monitoring** is an inexpensive way to increase productivity and customer service, others argue it is really the modern method of exerting control and power over labor.
- **Monitoring** has been used to determine pay and promotion decisions as well as to reinforce disciplinary actions.
- Objections to computer **monitoring** include the issue of privacy. **Monitoring** is intrusive and the potential for abuse exists. For example, computer data banks, telephone and video **monitoring**, active badges, and other **monitoring** techniques make the private lives of workers easier to delve into without detection. Data concerning employees' security clearance, computer applications preferred, right/left handedness, and "even how the user takes his coffee" can be maintained -- which go beyond how an **employee** is performing on the job

# Ergonomics

- Ergonomics is defined as the applied science of equipment design, as for the workplace, intended to maximize productivity by reducing operator fatigue and discomfort. In simple language this means fitting the job to the people who have to do it, through the design of equipment and procedures. Ergonomics may also be referred to as biotechnology, human engineering, and human factors engineering.

- The word ergonomics comes from the Greek word “ergon” which means work and “nomos” which means laws. It’s essentially the “laws of work” or “science of work”. Good ergonomic design removes incompatibilities between the work and the worker and creates the optimal work environment.
- Ergonomics draws on many disciplines to optimize the interaction between the work environment and the worker.

# Why computer ergonomics?

- Many people spend hours a day in front of a computer without thinking about the impact on their bodies. They physically stress their bodies daily without realizing it by extending their wrists, slouching, sitting without foot support and straining to look at poorly placed monitors.
- These practices can lead to cumulative trauma disorders or repetitive stress injuries, which create a life-long impact on health. Symptoms may include pain, muscle fatigue, loss of sensation, tingling and reduced performance.
- Ergonomics is a field of study that attempts to reduce strain, fatigue, and injuries by improving product design and workspace arrangement. The goal is a comfortable, relaxed posture.

# Types of Ergonomics

- There are [three types of ergonomics](#): physical, cognitive, and organizational.
- **Physical Ergonomics**
- Physical ergonomics is the most commonly known form of ergonomics, and for good reason. It deals with the physical load on the human body when performing activities. Understanding physical ergonomics and how to integrate it heavily influences on-site safety.
- **Cognitive Ergonomics**
- Cognitive ergonomics is the method of designing and arranging information and data to create a light cognitive load.
- Perception, memory, reasoning, and motor response all affect how someone interacts with and performs their work. A [higher cognitive workload](#) causes more stress on the worker.
- **Organizational Ergonomics**
- Organizational ergonomics combines the knowledge gained from other areas of the factory, like physical and cognitive ergonomics, to optimize safety and efficiency across the entire organization.

# **3 Ways Poor Office Ergonomics Can Hurt Your Health**

- **Vision Problems**
- **Back and Neck Pain**
- **Wrist, Hand and Shoulder Pain**