

# Cloud Technology

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# Objectives



At the end of the lesson students should be able to

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- Describe what is meant by cloud Technology
- State benefits of cloud technologies
- Describe the different types of cloud computing that exist
- Outline the different types of cloud services that are available
- Outline what is the purpose of E-Gov
- Describe different type of services available on the E-Gov website
- Describe the benefits of automating government resources

# Cloud Technologies

Cloud computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, and intelligence by way of the Internet (“the cloud”)

It is designed to offer **faster innovation**, **flexible resources**, and **economies of scale**.

Economies of scale means that you pay only for the cloud services you use which will help to lower your operating costs, run your infrastructure more efficiently, and scale as your business needs changes.



# Benefits of Cloud Computing

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**Cost** is lower because Cloud Computing reduces the expense of buying hardware and software and even the setting up and maintaining the databases and data centers

**Security:** Cloud providers offer different types of technologies that focuses on maximum security with the aim of protecting your data, apps, and infrastructure from potential threats.

**Accessibility:** Cloud services are provided on demand, and these can be access easily and within a click of a mouse.



# Benefits of Cloud Computing

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**Productivity:** Cloud computing removes the need to have on-site hardware setup, software patching, and other time-consuming IT management chores. These are eliminated so the IT teams can spend time on tasks

**Reliability:** Cloud computing makes data backup, disaster recovery, easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.



# Types of cloud computing

Several different models, types, and services have evolved to help offer the right solution for your needs.

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## **Public cloud**

Public clouds are owned and operated by a third-party cloud service providers, which deliver their computing resources, like servers and storage, over the Internet. (Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP))

With a public cloud, all hardware, software, and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser.



# Types of Cloud Computing

## Private cloud

A private cloud refers to cloud computing **resources used exclusively** by a single business or organization. A private cloud can be physically located on the company's on-site datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

## Hybrid cloud

Hybrid clouds combine public and private cloud together. The technology allows data and applications to be shared between the two clouds. This gives business greater flexibility, increasing the existing infrastructure and security. Companies can use a public cloud for less-sensitive data and a private cloud for mission-critical applications.



# Types of cloud services

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Most cloud computing services fall into the following categories:

- Infrastructure as a service (IaaS),
- Platform as a service (PaaS),
- Software as a service (SaaS).



# Infrastructure as a service (IaaS)

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The most basic category of cloud computing services.

With IaaS, you rent IT infrastructure—**servers and virtual machines (VMs), storage, networks, operating systems**—from a cloud provider on a pay-as-you-go basis.

## Examples:

**Amazon EC2 (Elastic Compute Cloud):** Provides virtual servers that users can customize with their chosen operating system and applications.

**Microsoft Azure Virtual Machines:** Offers a range of virtual machine sizes and configurations to meet diverse computing needs.

**Google Compute Engine:** Enables users to create and run virtual machines on Google's infrastructure.



# Platform as a service (PaaS)

Platform as a service refers to cloud computing services that supply an **on-demand environment for developing, testing, delivering, and managing software applications.**

PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network, and databases needed for development.

**Heroku:** Simplifies application deployment and management with a focus on web applications.

**Google App Engine:** Provides a platform for building and hosting scalable web applications and APIs.

**AWS Elastic Beanstalk:** Makes it easier to deploy and manage applications on AWS by handling infrastructure provisioning and scaling.



# Software as a service (SaaS)

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Software as a service is a method for delivering software applications over the Internet, on demand and typically on a **subscription basis**.

With SaaS, cloud providers host and manage the software application and underlying infrastructure, and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet, or PC.

**Salesforce:** A customer relationship management (CRM) platform that helps businesses manage sales, customer service, and marketing.

**Microsoft 365:** A suite of productivity tools, including Word, Excel, PowerPoint, and Outlook, delivered as a cloud-based subscription service.

**Google Workspace:** A collection of cloud-based productivity and collaboration tools, including Gmail, Google Docs, and Google Drive.





# TYPES OF CLOUD COMPUTING

# Uses of Cloud Computing

- ✓ **Create cloud-native applications**

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Quickly build, deploy, and scale applications—web, mobile, and API.

- ✓ **Test and build applications**

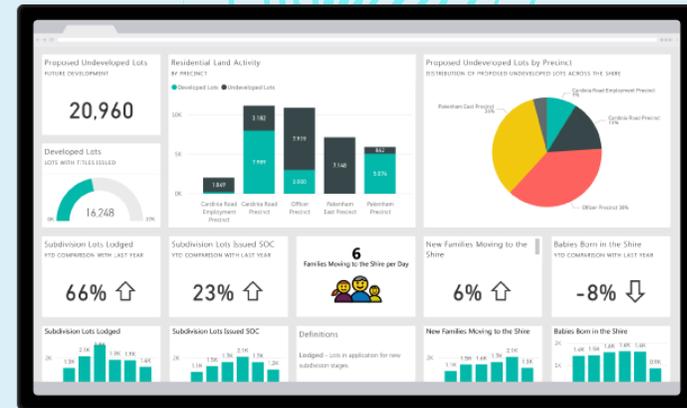
Reduce application development cost and time by using cloud infrastructures that can easily be scaled up or down.

- ✓ **Store, back up, and recover data**

Protect your data more cost-efficiently—and at massive scale—by transferring your data over the Internet to an offsite cloud storage system that's accessible from any location and any device.



# Uses of Cloud Computing



## ✓ **Analyze data**

Sync your data across teams, divisions, and locations in the cloud. Then use cloud services, such as machine learning and artificial intelligence, to uncover insights for more informed decisions.(Power BI)

## ✓ **Stream audio and video**

Connect with your audience anywhere, anytime, on any device with high-definition video and audio with global distribution. (zoom, teams,..)





# E-Gov Resources

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Electronic Government Resources

# Objectives

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At the end of the lesson students should be able to

- ❑ Outline what is the purpose of E-Gov
- ❑ Describe different type of services available on the E-Gov website
- ❑ Describe the benefits of automating government resources





# What are E-Gov Resources?

Website <http://egov.kz>

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Discussion: In pairs discuss

- What is E-gov?
- What are the functions of E-Gov
- Services provided by the user account
- List of services provided in electronic format



**Definition:** E-Gov refers to the use of electronic communication technologies, such as the internet, to enhance and deliver government services, information, and communication with citizens, businesses, and other government entities.

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### **Functions of E-Gov:**

- a. **Service Delivery:** Facilitating the delivery of government services to citizens and businesses through online platforms.
- b. **Information Dissemination:** Providing information about government policies, programs, and initiatives in a transparent and accessible manner.
- c. **Citizen Engagement:** Engaging citizens in government activities, decision-making processes, and policy discussions.
- d. **Efficiency Improvement:** Streamlining internal government processes to improve efficiency and reduce bureaucratic barriers.
- e. **Transparency and Accountability:** Enhancing transparency in government operations and fostering accountability through the availability of information.



# Services Provided by User Account on E-Gov Platforms:

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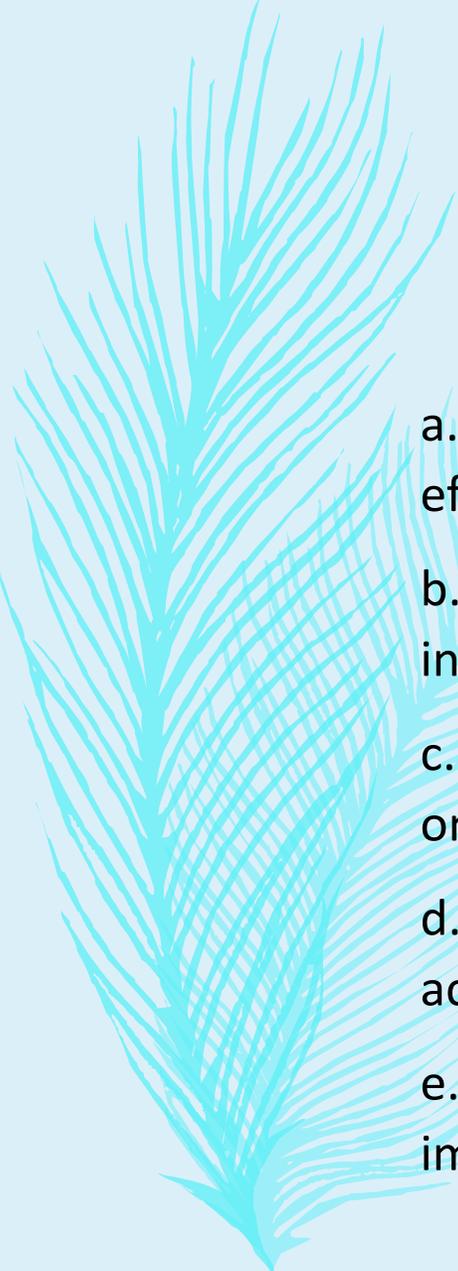
- a. **User Authentication:** Enabling secure and unique identification of users accessing the platform.
- b. **Personalized Services:** Tailoring services and information based on the user's profile and preferences.
- c. **Transaction History:** Providing users with access to their transaction history and interactions with government services.
- d. **Notifications and Alerts:** Sending timely notifications, updates, and alerts to users about relevant government activities or changes.
- e. **Feedback and Surveys:** Allowing users to provide feedback on government services and participate in surveys or polls.



# List of Services Provided in Electronic Format:

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- a. **Online Application Submissions:** - Permit applications - License applications - Benefit claims
- b. **Payment Services:** - Paying taxes online - Online fee payments for government services
- c. **Information Services:** - Access to government policies and regulations - Government reports and publications
- d. **Communication Services:** - Online messaging with government officials - Notifications and alerts via email or SMS
- e. **E-Government Portals:** - Comprehensive platforms offering a range of government services and information in one place.
- f. **Citizen Participation Services:** - Online forums and discussion boards - Surveys and polls for public opinion



# Purpose of E-Gov:

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- a. **Efficiency:** Streamlining government processes and services to make them more efficient and accessible.
- b. **Transparency:** Enhancing transparency by providing citizens with easy access to information and government activities.
- c. **Accessibility:** Making government services more accessible to the public through online platforms.
- d. **Citizen Engagement:** Facilitating citizen participation and engagement in government activities and decision-making.
- e. **Cost Savings:** Reducing costs associated with traditional paper-based processes and improving resource utilization.