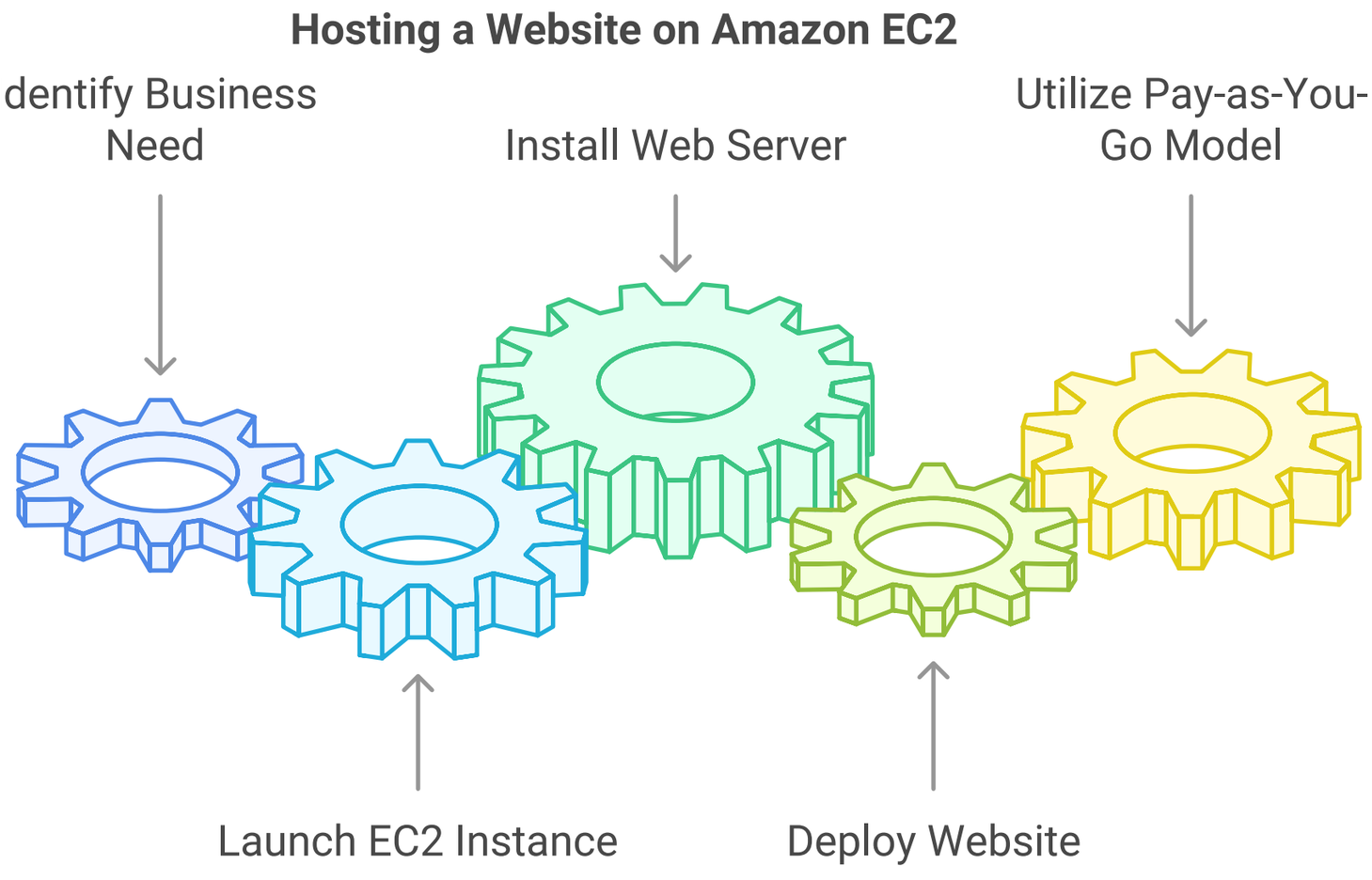
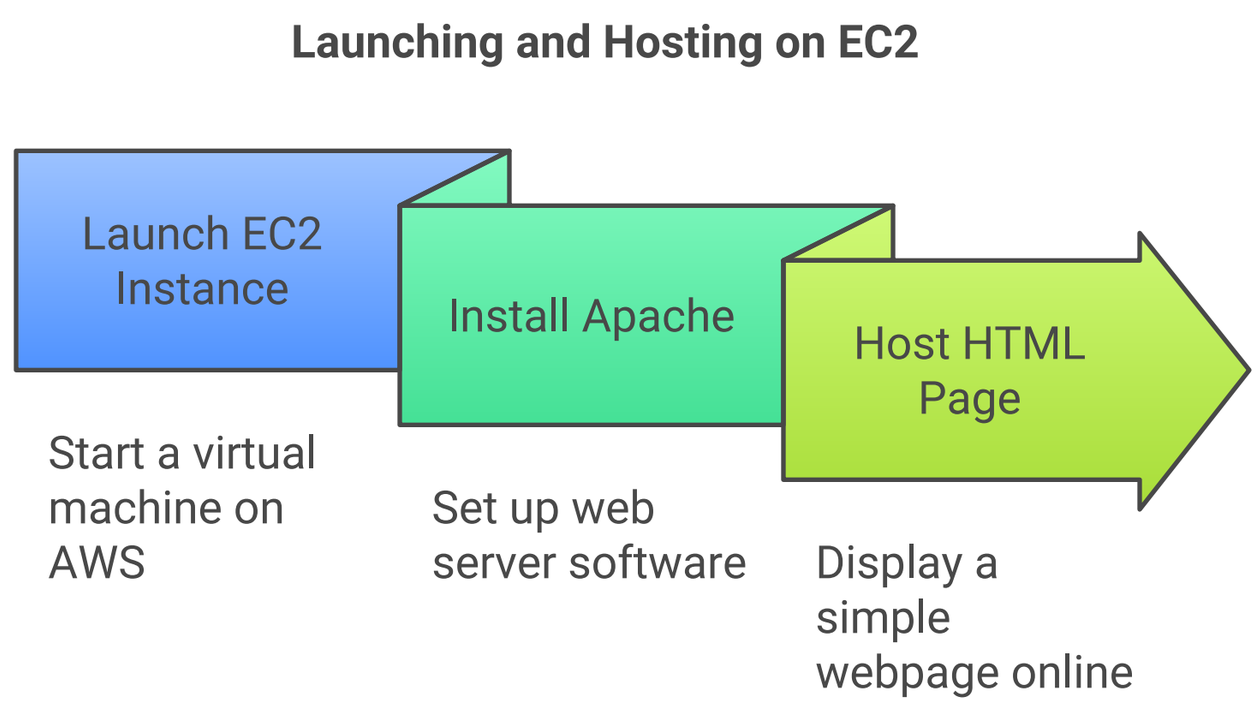
1. Compute – Amazon EC2 (Virtual Machines)

Example: Hosting a Website

- Imagine you have a small business and want to host a website.
- You can launch an **EC2 instance (a virtual server)**, install a web server (Apache/Nginx), and deploy your website.
- Instead of buying physical servers, AWS lets you **pay-as-you-go** for computing power.

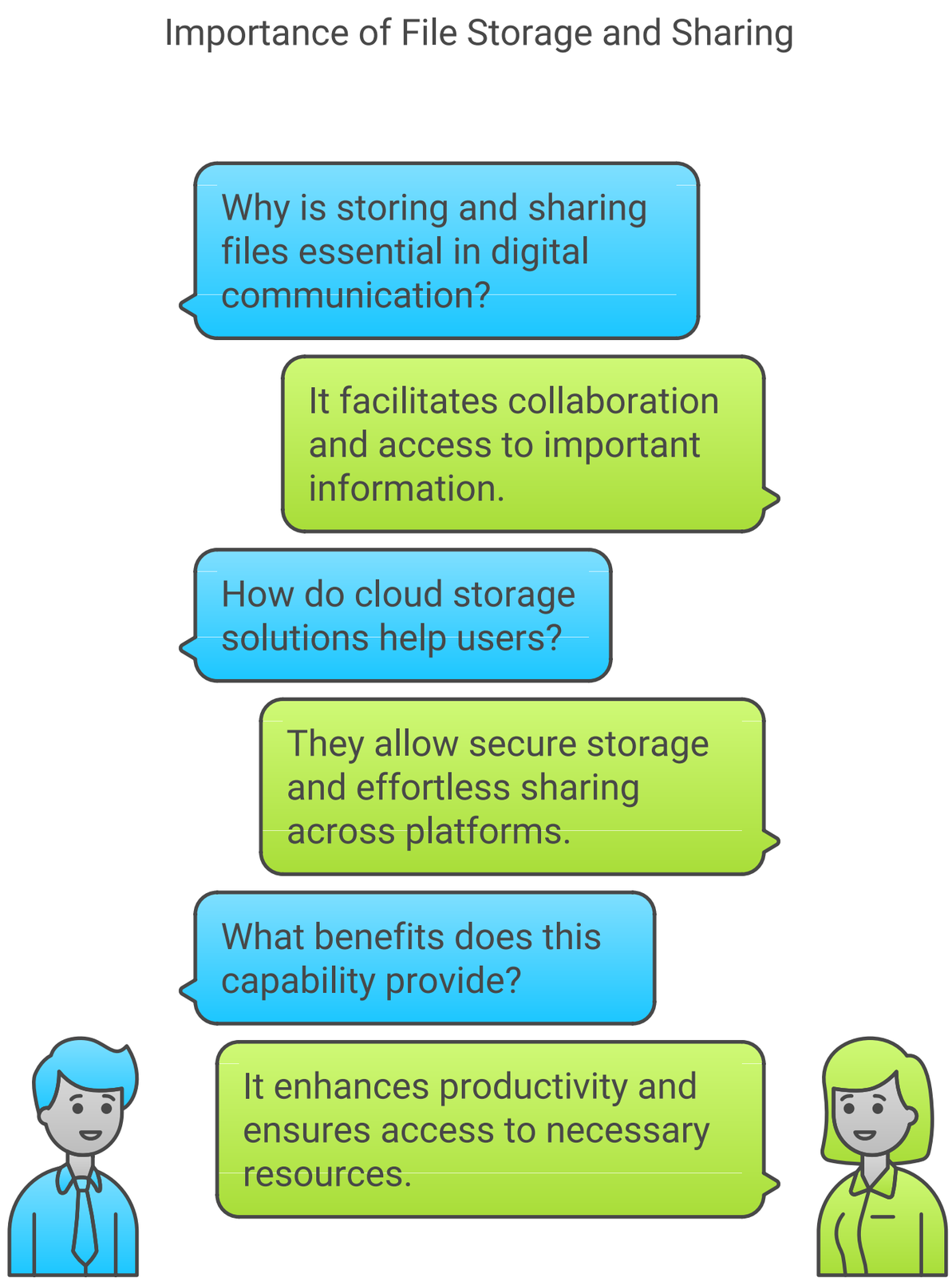


📌 **Hands-on Idea:** Launch an EC2 instance, install Apache, and host a simple HTML page.

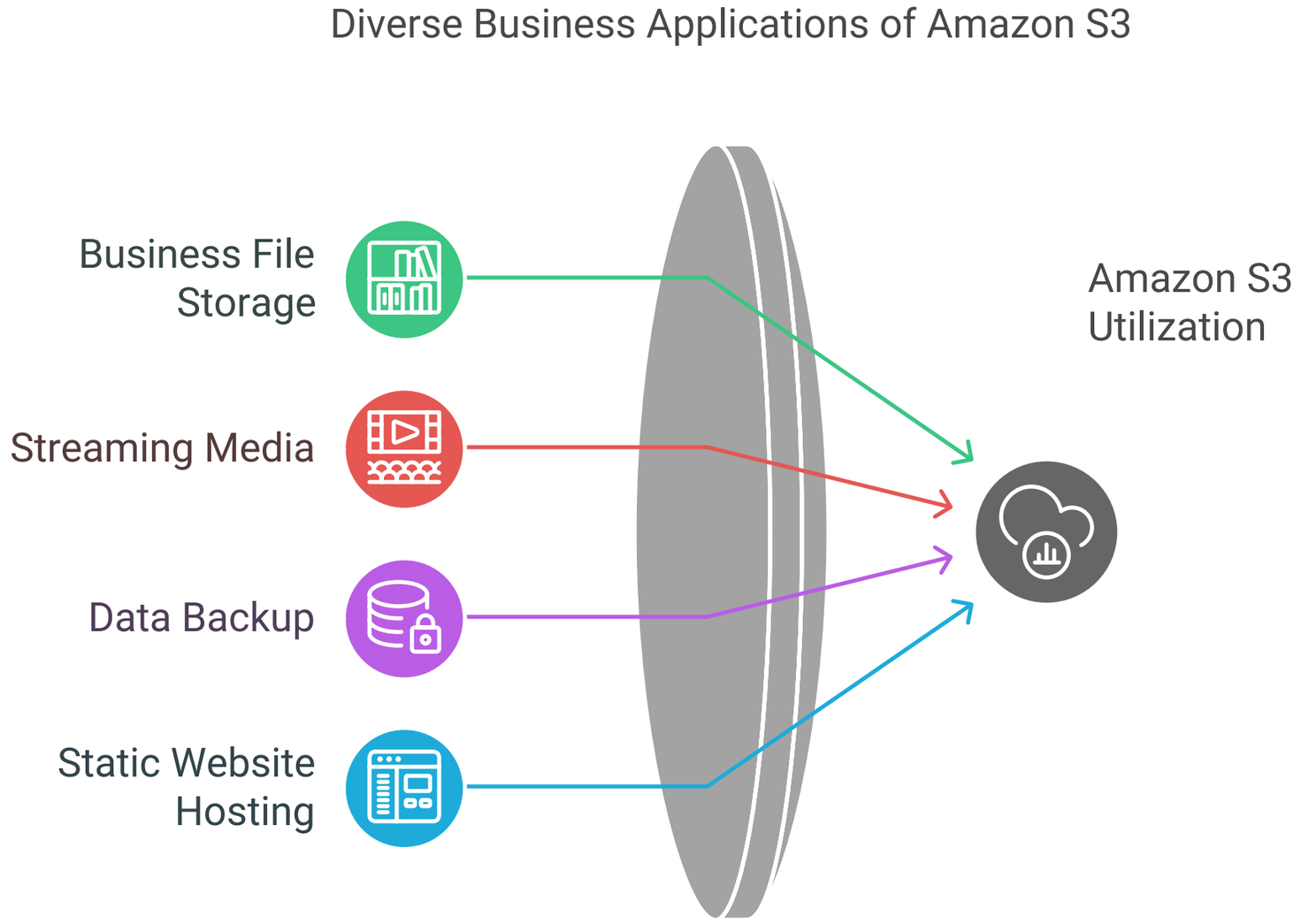


2. Storage – Amazon S3 (Cloud Storage)

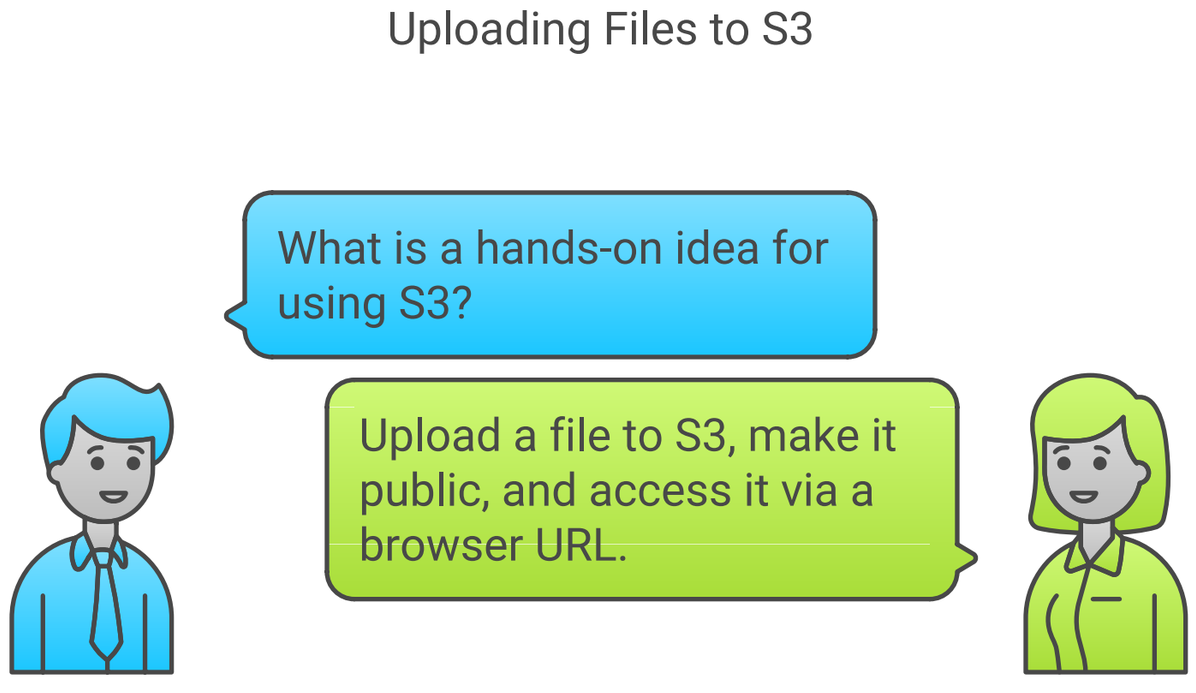
Example: Storing & Sharing Files



- Think of S3 like Google Drive, but for businesses.
- A company like Netflix stores **movies and thumbnails** in S3 so that when you stream, it loads from the closest data center.
- Businesses use S3 for backup, storing logs, and hosting static websites.



📌 **Hands-on Idea:** Upload a file to S3, make it public, and access it via a browser URL.

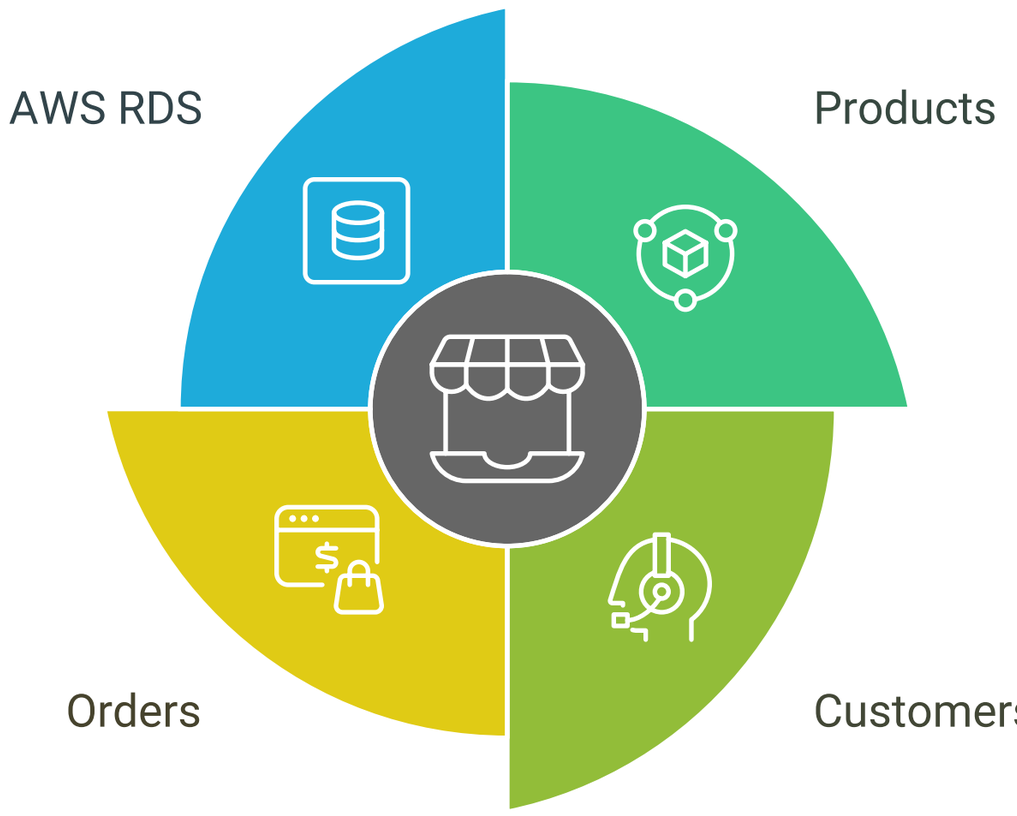


3. Database – Amazon RDS (Managed Databases)

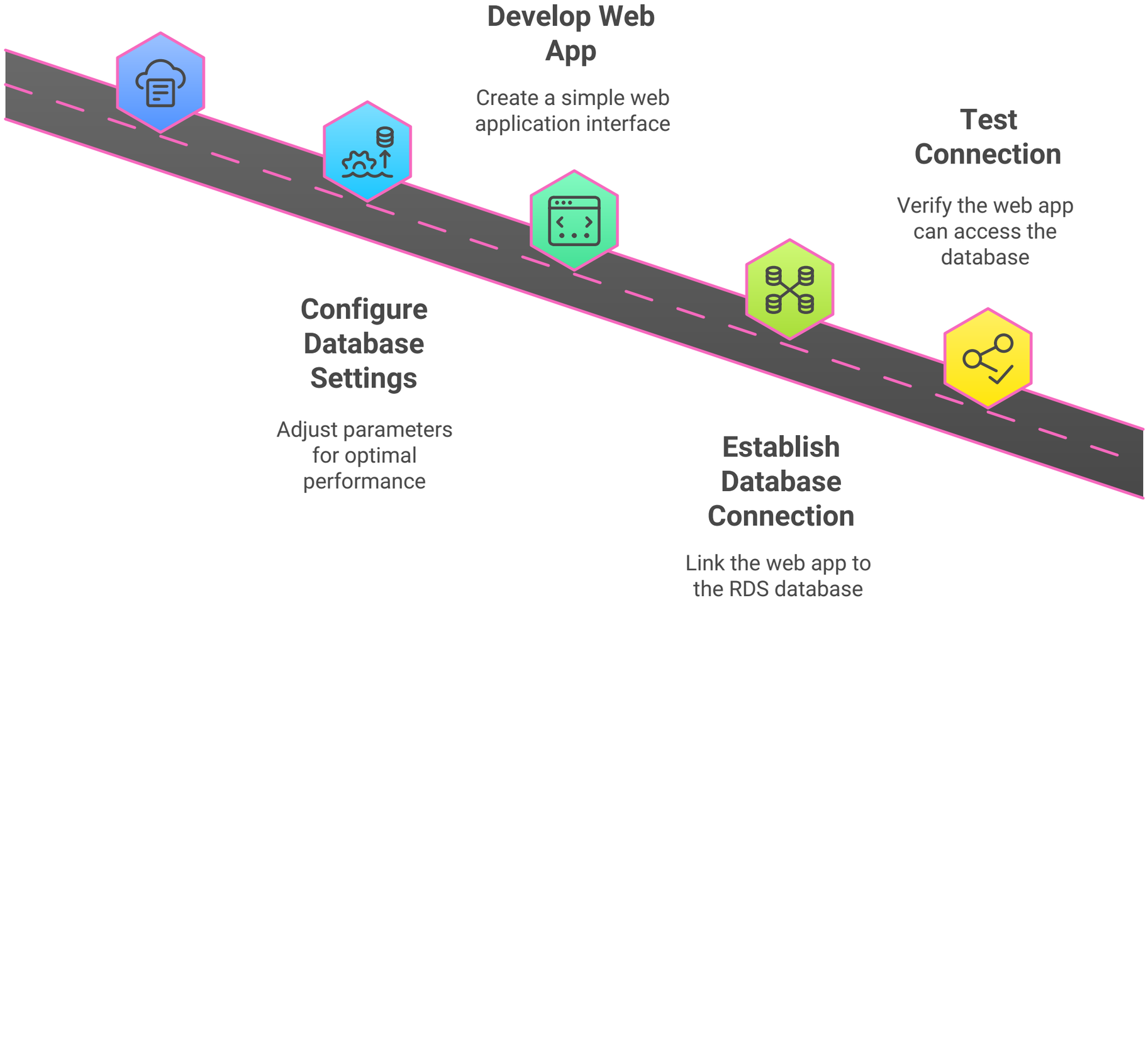
Example: Online Shopping App

- Suppose you're building an **e-commerce store** like Amazon.
- You need a database to store **products, customers, and orders**.
- Instead of managing a MySQL/PostgreSQL database yourself, you use **RDS**, which is fully managed by AWS.

AWS RDS in E-commerce Architecture



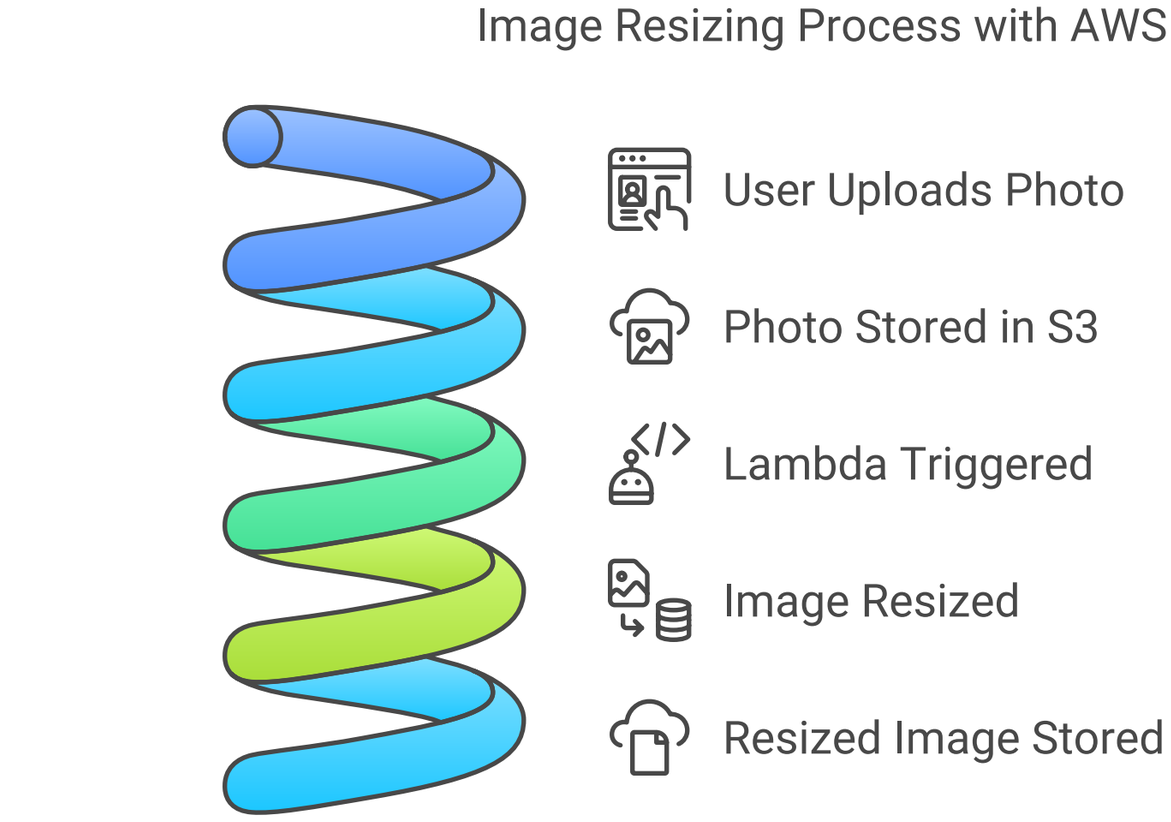
Connecting RDS with a Web App



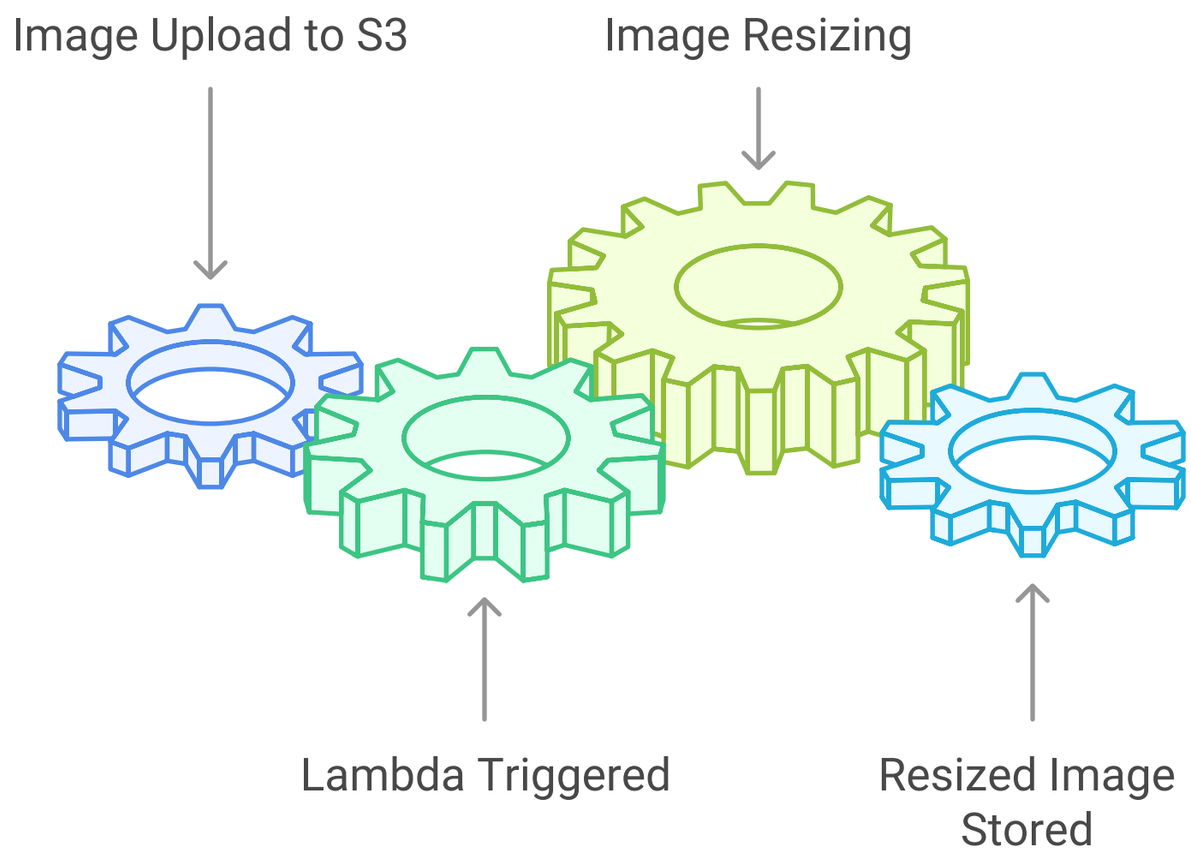
4. Serverless – AWS Lambda (Auto-scaling Functions)

Example: Auto-Resizing Images

- A travel website lets users upload photos.
- You want to **automatically resize images** before storing them.
- AWS Lambda can **trigger when a new image is uploaded** to S3 and resize it without needing a server.

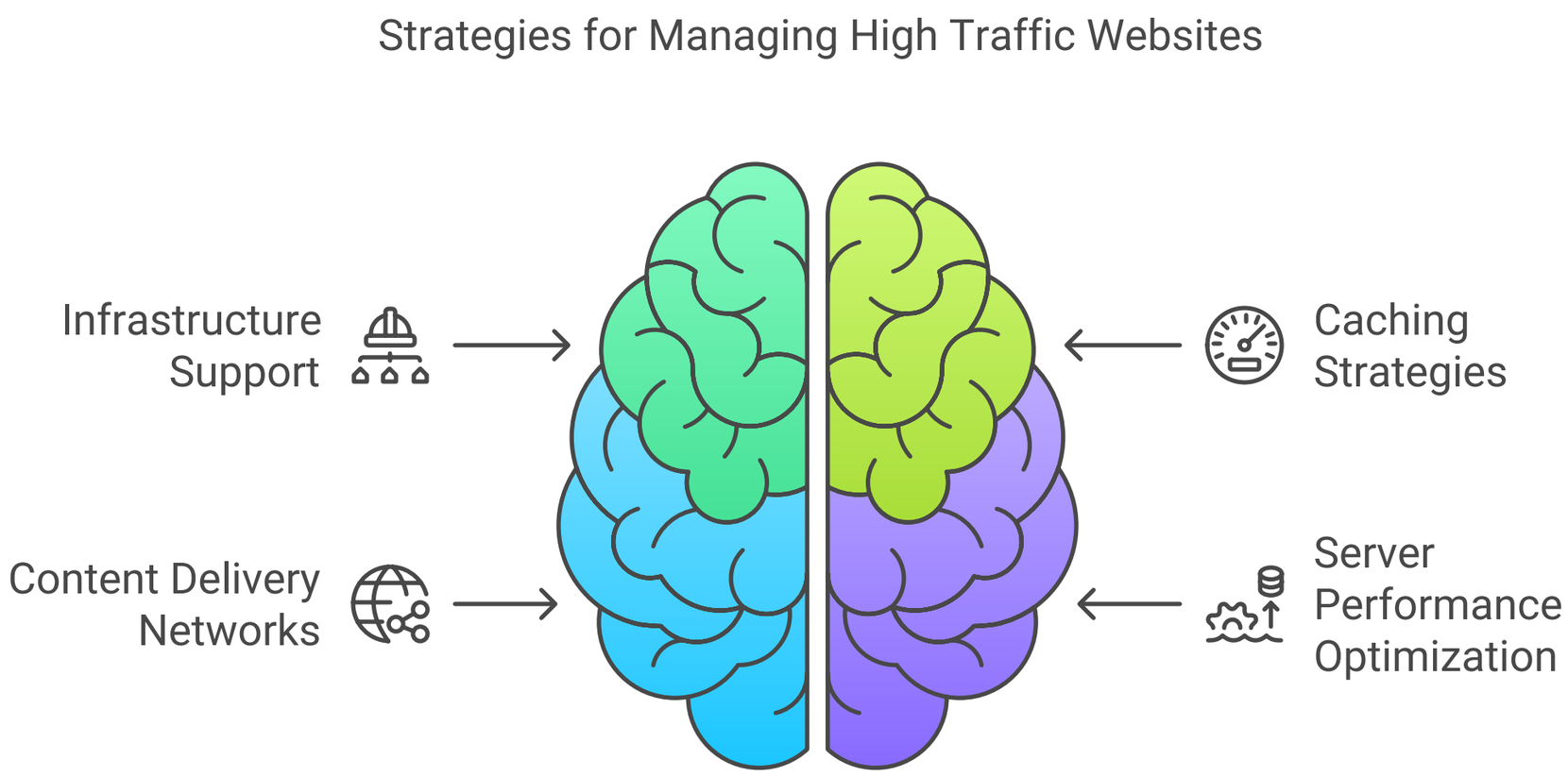


📌 **Hands-on Idea:** Write a Lambda function that resizes images when uploaded to an S3 bucket.



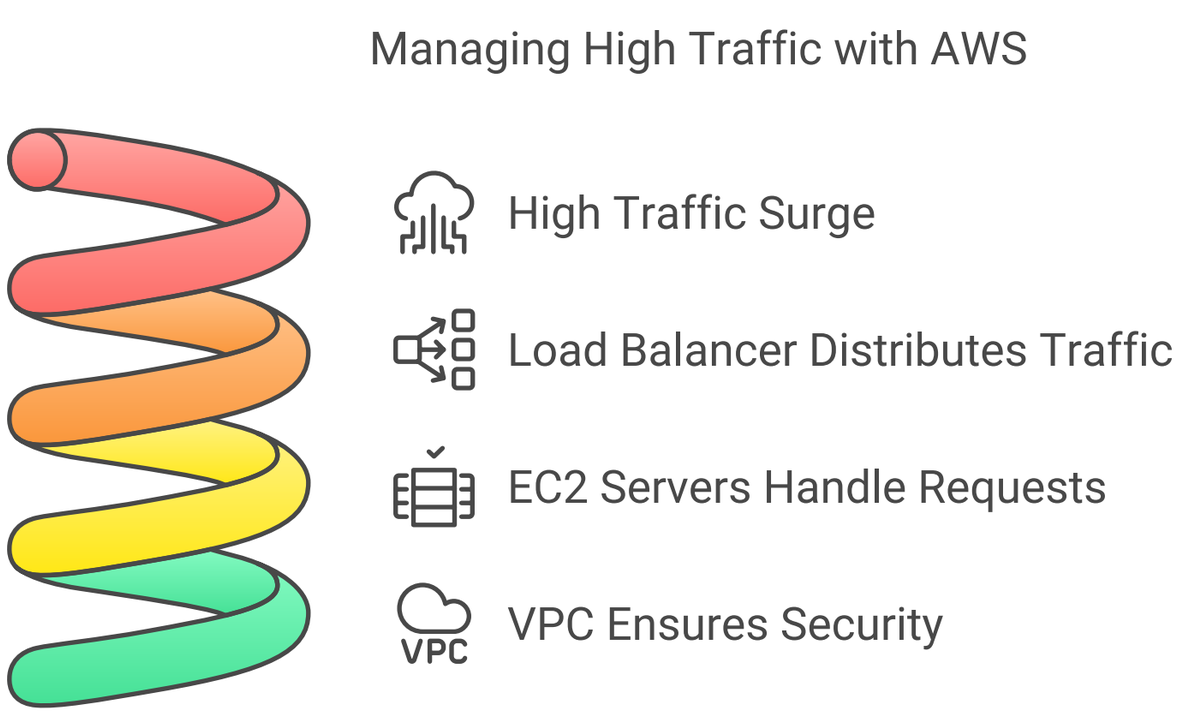
5. Networking – AWS VPC + Load Balancer

Example: Handling High Traffic Websites

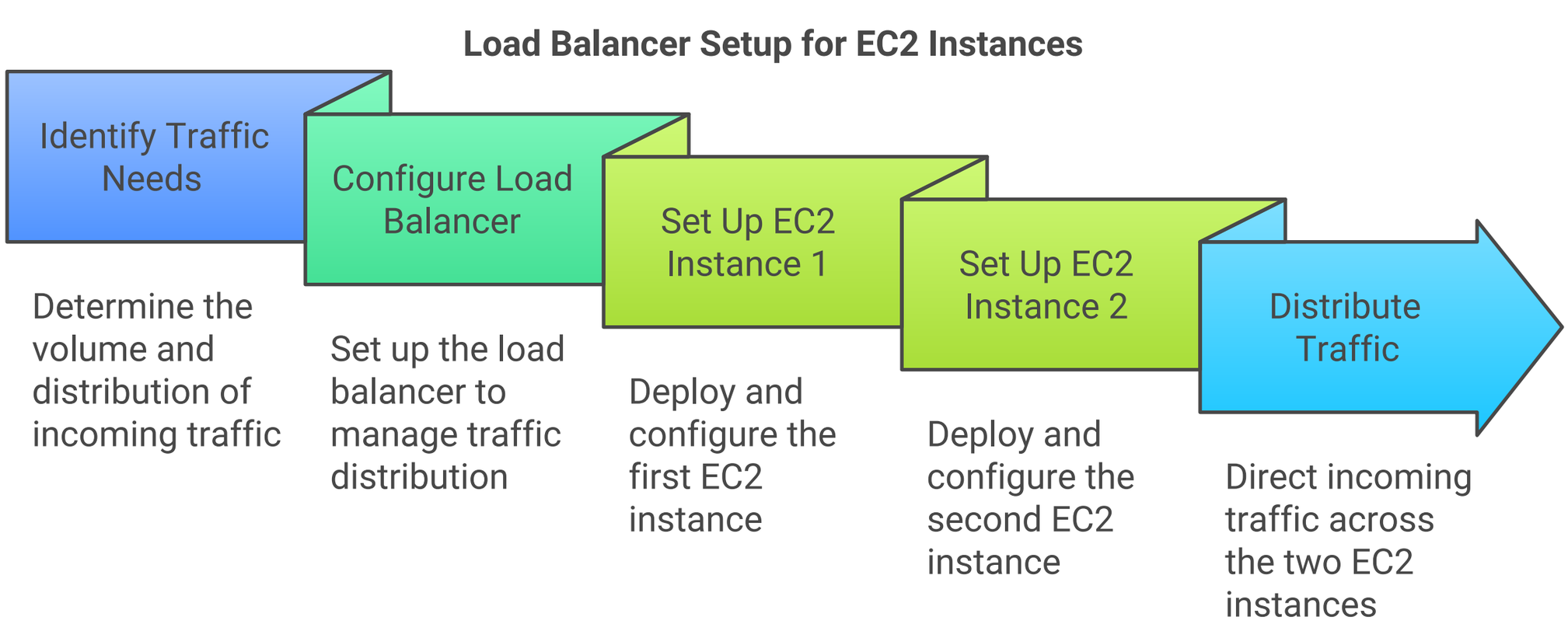


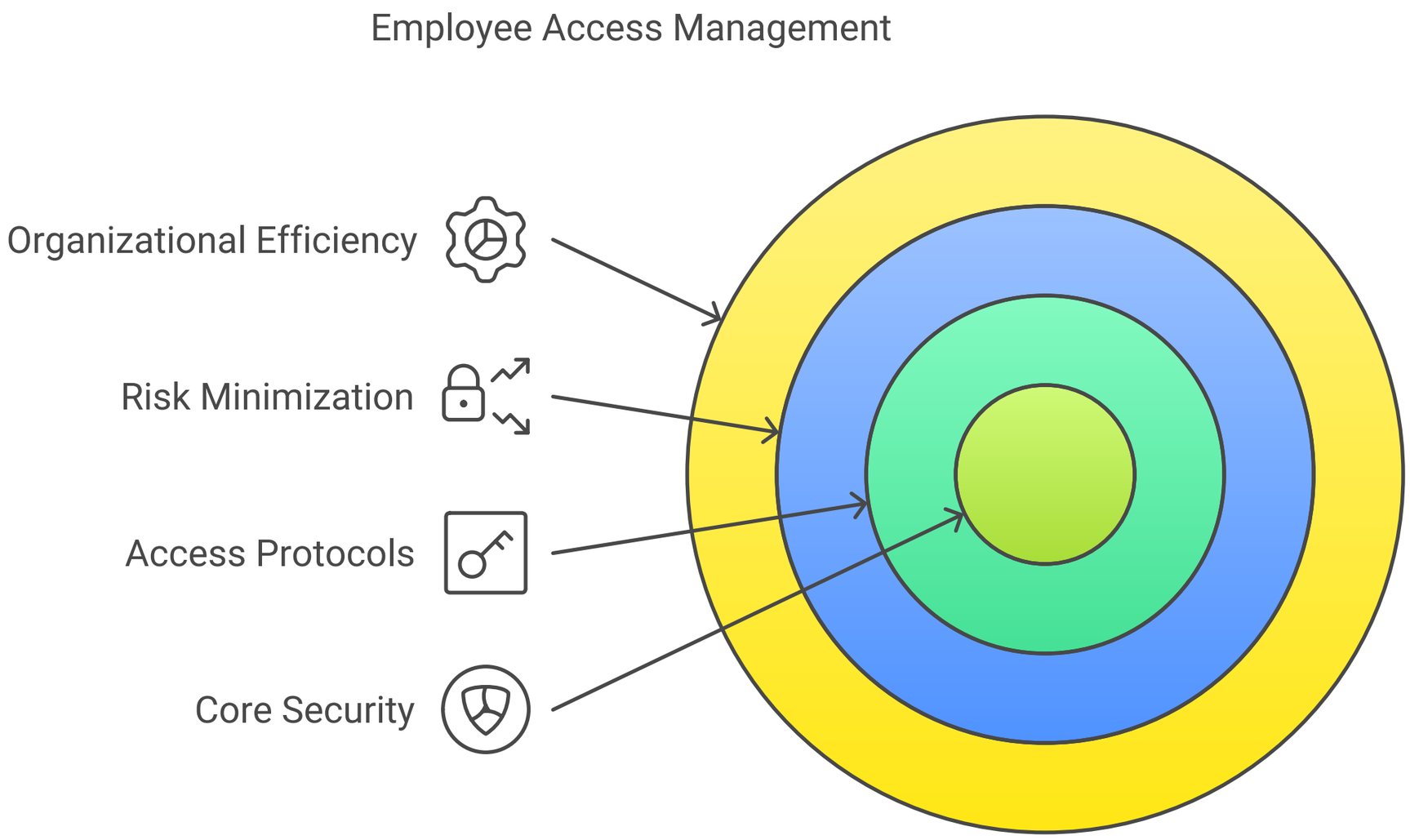
- Imagine you run an online ticket booking system.
- On **Black Friday**, millions of users visit at once.

- AWS **Load Balancer** distributes traffic between multiple EC2 servers, preventing crashes.
- AWS **VPC (Virtual Private Cloud)** ensures security by isolating your database from the internet.



📌 **Hands-on Idea:** Set up a Load Balancer to distribute traffic across two EC2 instances.





- A bank uses AWS for cloud hosting.
- The **IT team** should manage servers, but the **Finance team** should only access billing reports.
- AWS IAM (Identity and Access Management) lets you create users and assign permissions.

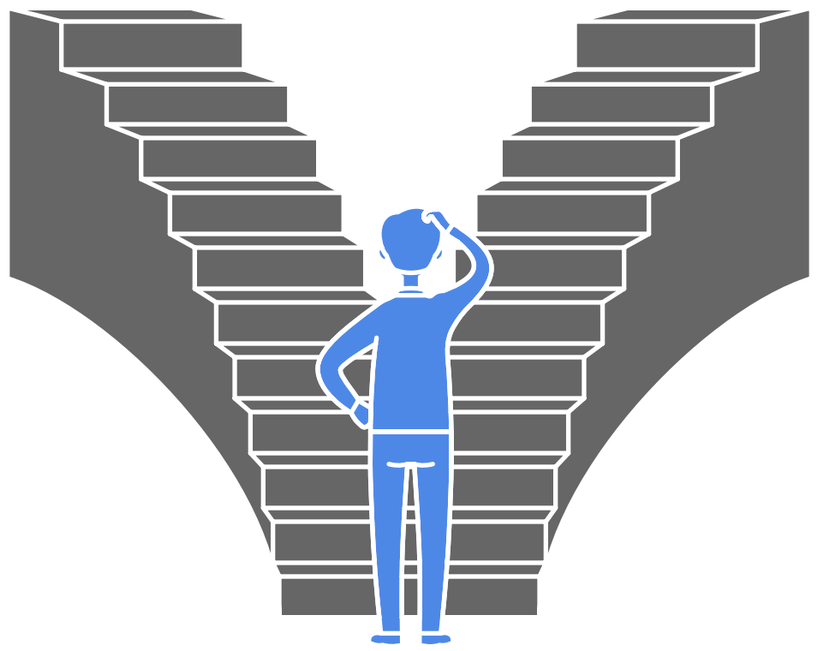
How should AWS IAM permissions be assigned?

Server Management

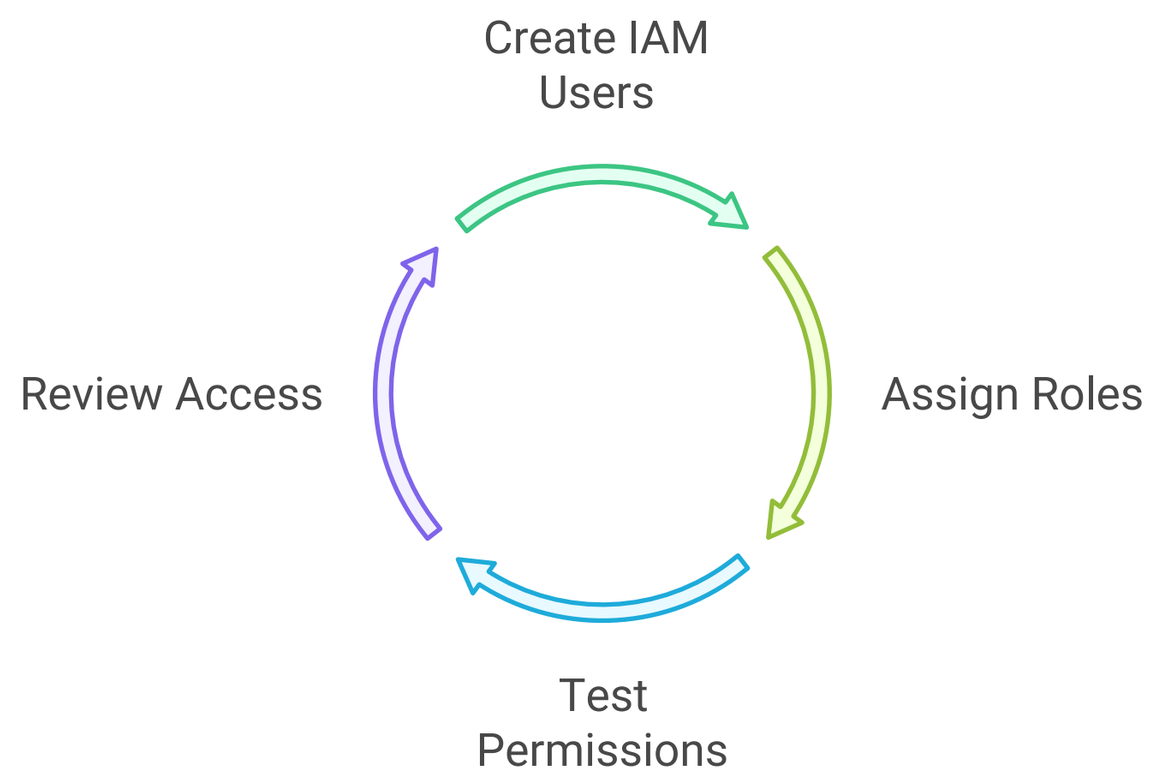
Allows the IT team to manage servers and maintain system integrity.

Billing Report Access

Restricts the Finance team to view only billing reports, ensuring financial data security.



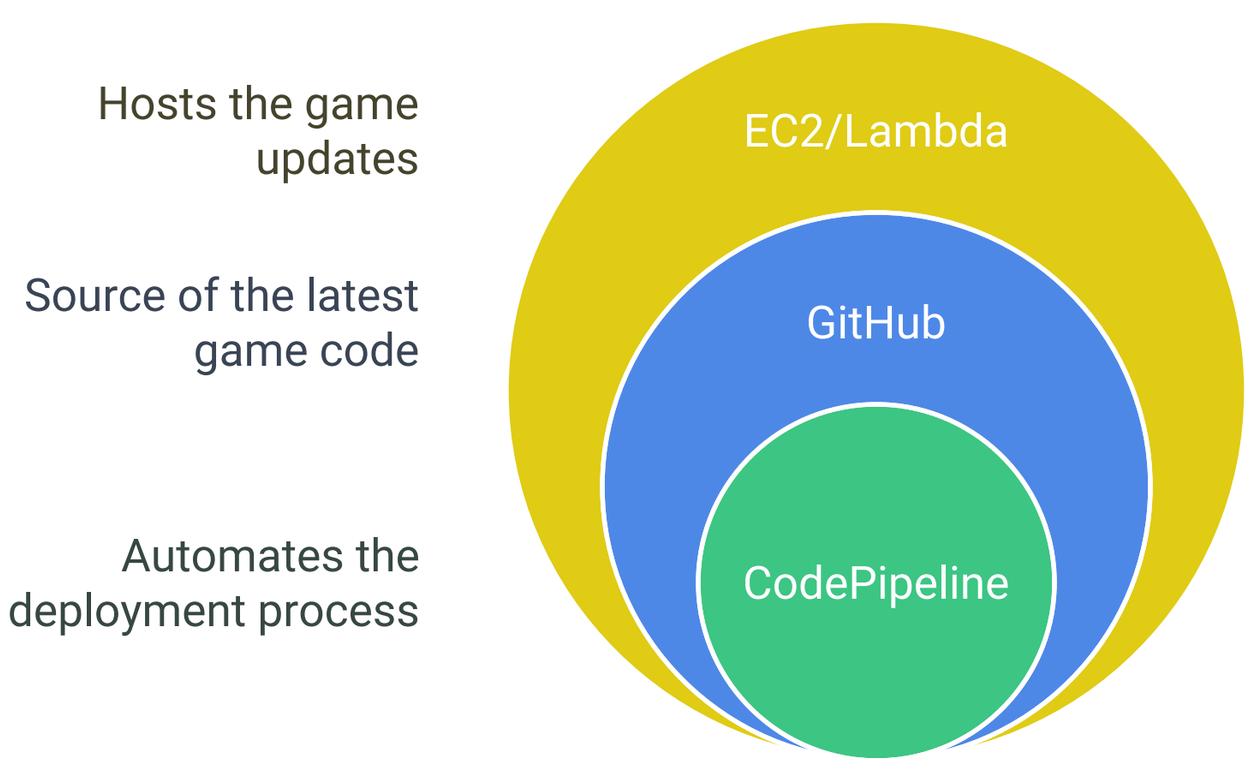
📌 **Hands-on Idea:** Create IAM users with different roles and test access permissions.



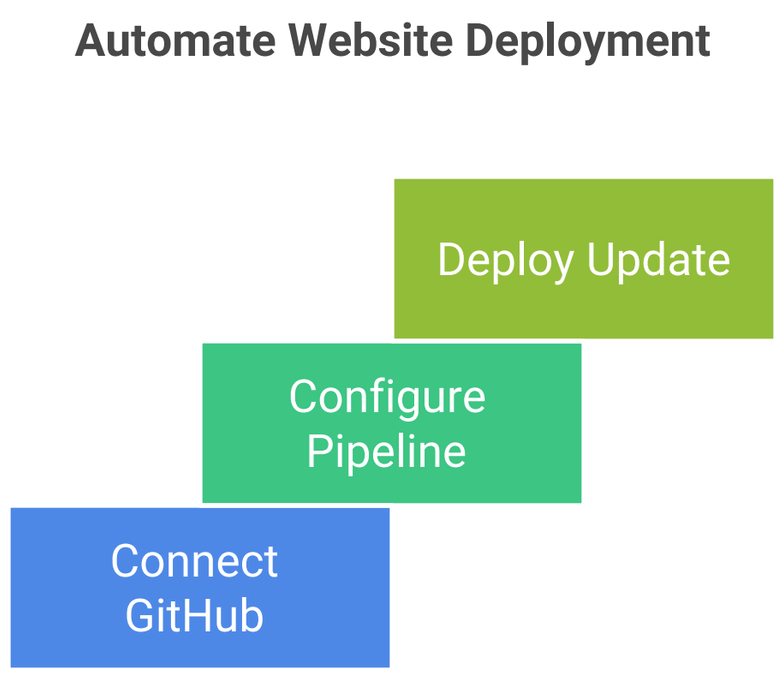
7. DevOps – AWS CodePipeline (CI/CD Automation)

Example: Automating App Deployment

- A gaming company releases updates every week.
- Instead of manually deploying updates, AWS **CodePipeline** can automatically **fetch the latest code from GitHub** and deploy it to EC2 or Lambda.

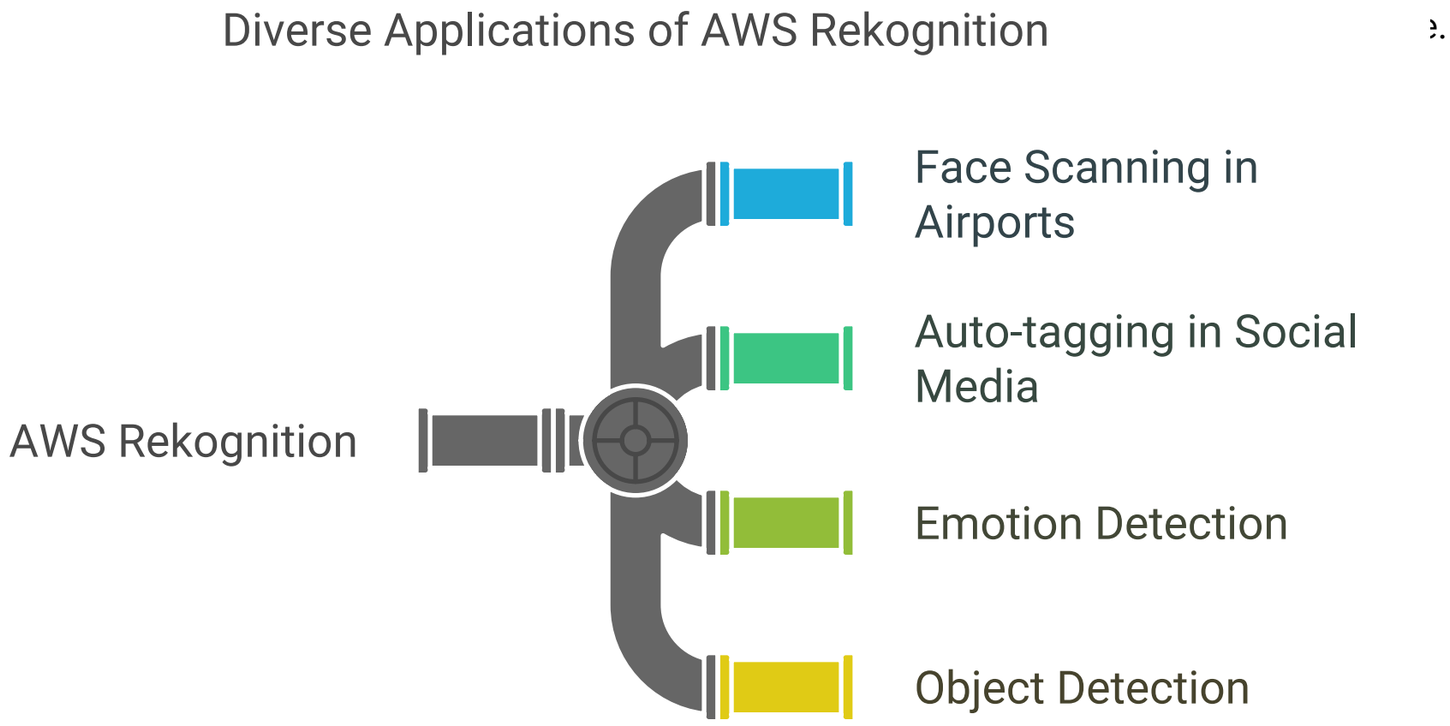


📌 **Hands-on Idea:** Set up AWS CodePipeline to deploy a website update from GitHub automatically.

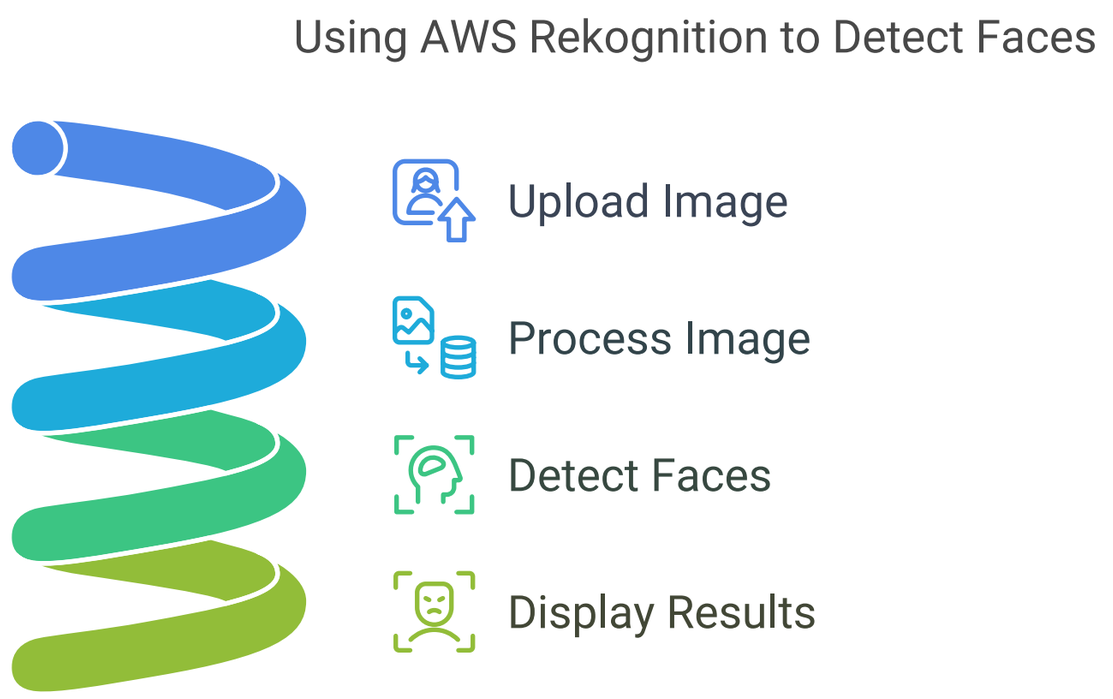


8. AI & Machine Learning – AWS Rekognition

Example: Face Recognition in Airports

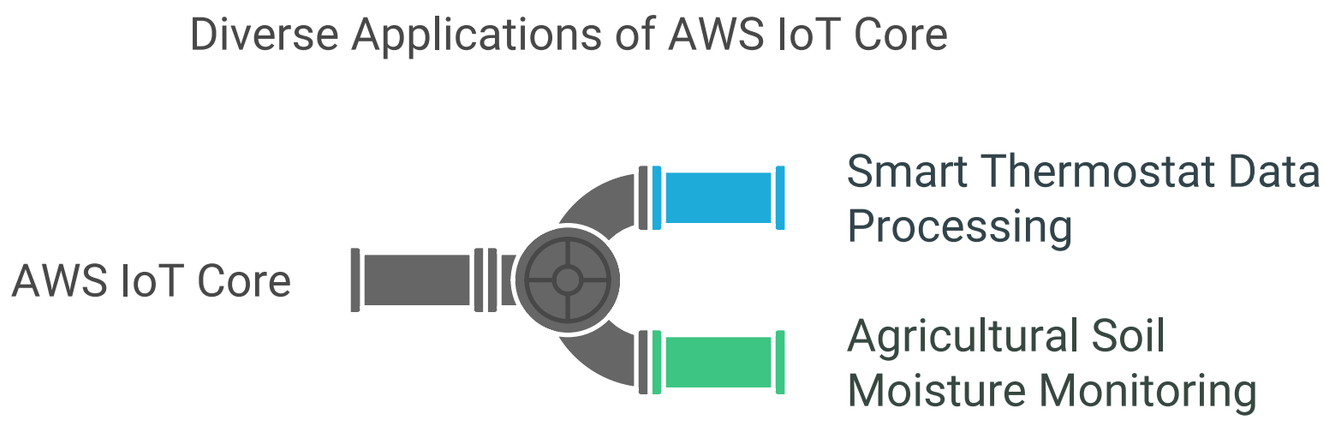


📌 **Hands-on Idea:** Upload an image to AWS Rekognition and see if it detects faces.



9. IoT – AWS IoT Core

Example: Smart Home Devices



📌 **Hands-on Idea:** Simulate IoT data using AWS IoT Core and process it with Lambda.