How Amazon Web Services is supporting the UK Health Security Agency

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Amazon Web Services (AWS)

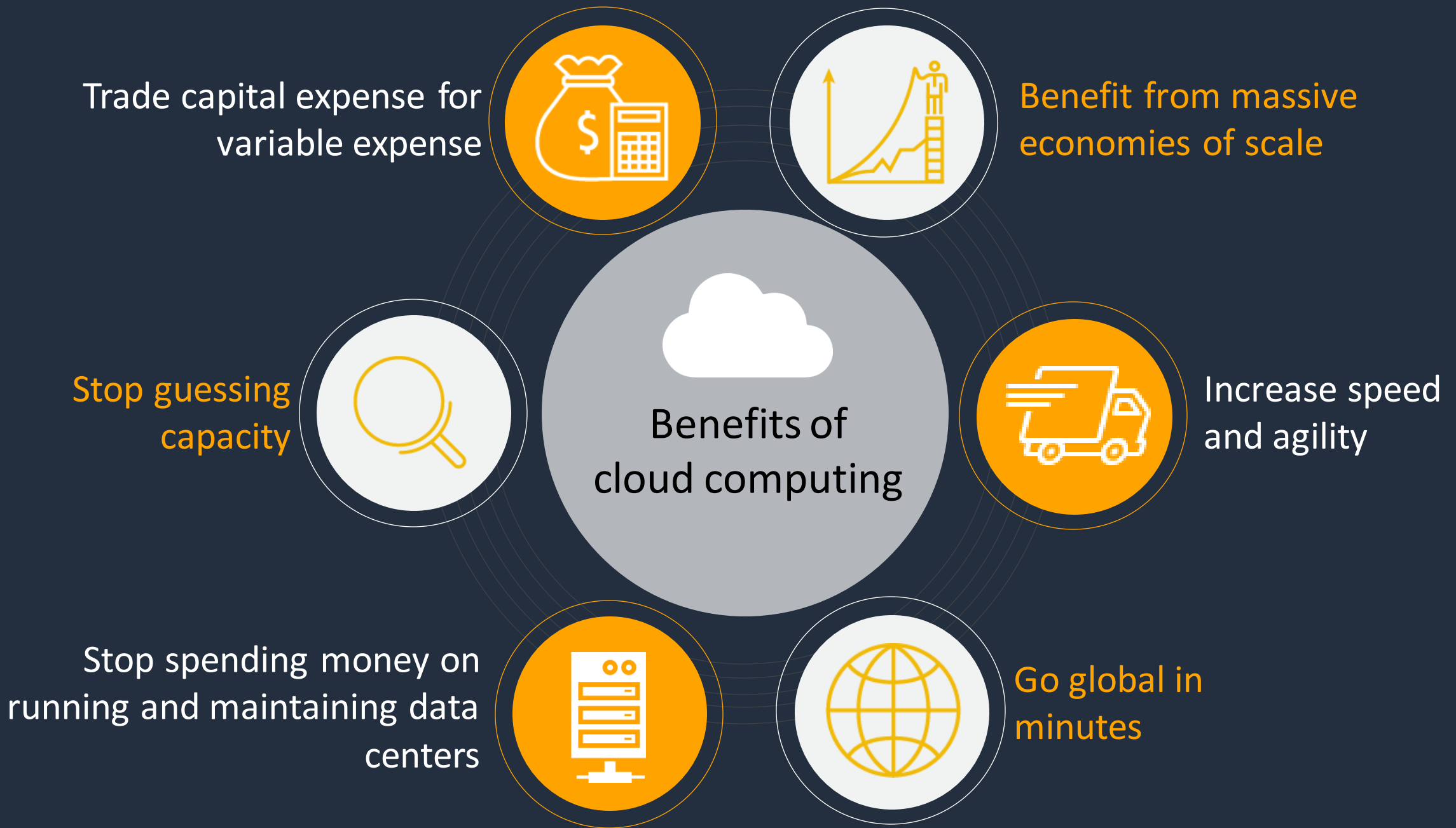# Introduction – What is Amazon Web Services (AWS)?

What is cloud computing?

- The on-demand delivery of IT resources & applications over the internet with no up-front costs and pay-as-you-go pricing.

Benefits of cloud computing

- Trade capital expense for variable expense
- Benefit from massive economies of scale
- Stop guessing capacity
- Increase speed and agility
- Stop spending money on running and maintaining data centers
- Go global in minutes

AWS Ecosystem

TECHNICAL & BUSINESS SUPPORT

| Support | Professional Services | Optimization Guidance | Partner Ecosystem | Training & Certification | Solutions Management | Account Management | Security & Billing Reports | Personalized Dashboard |

MARKETPLACE

| Business Apps | Business Intelligence | DevOps Tools | Security | Networking | Databases | Storage |

ANALYTICS

- Data Warehousing
- Business Intelligence
- Hadoop/Spark
- Streaming Data Analysis
- Streaming Data Collection
- Elasticsearch
- Data Pipelines
- Interactive SQL Queries
- ETL

APP SERVICES

- Queuing & Notifications
- Workflow
- Search
- Email
- Transcoding

DEV OPS

- One-click App Deployment
- Resource Templates
- Build & Test
- Application Lifecycle Management
- DevOps Resource Management
- Triggers
- Containers
- Analyze & Debug
- Patching

MOBILE SERVICES

- API Gateway
- Single Integrated Console
- Identity
- Sync
- Mobile Analytics
- Mobile App Testing
- Targeted Push Notifications

IoT

- Rules Engine
- Device Shadows
- Device SDKs
- Device Gateway
- Registry
- Local Compute

MACHINE LEARNING

- Custom Model Training & Hosting
- Image & Scene Recognition
- Facial Recognition & Analysis
- Facial Search
- Text to Speech
- Conversational Chatbots
- Deep Learning (Apache MXNet, TensorFlow, & others)

ENTERPRISE APPS

- Virtual Desktops
- Sharing & Collaboration
- Corporate Email
- App Streaming
- Communications
- Contact Center

HYBRID ARCHITECTURE

- Data Integration
- Integrated Networking
- Integrated Identity & Access
- Integrated Resource & Deployment Management
- Integrated Devices & Edge Systems

MIGRATION

- Schema Conversion
- Exabyte-Scale Data Migration
- Application Migration
- Database Migration
- Server Migration

INFRASTRUCTURE

- Regions
- Availability Zones
- Points of Presence

CORE SERVICES

- Compute
  VMs, Auto-scaling, Load Balancing, Containers, Virtual Private Servers, Batch Computing, Cloud Functions, Elastic GPUs, Edge Computing
- Storage
  Object, Blocks, File, Archivals, Import/Export, Exabyte-scale data transfer
- Databases
  Relational, NoSQL, Caching, Migration, PostgreSQL compatible
- Networking
  VPC, DX, DNS
- CDN

SECURITY & COMPLIANCE

- Identity Management
- Configuration Compliance
- Access Control
- Key Management & Storage
- Monitoring & Logs
- Account Grouping
- Assessment & Reporting
- Resource & Usage Auditing
- Web Application Firewall
- DDOS Protection

MANAGEMENT TOOLS

- Manage Resources
- Monitoring
- Service Catalogue
- Server Management
- Configuration Tracking
- Resource Templates

Where is AWS used?

AWS value proposition for population scale healthcare

Accelerate time to insights

Largest portfolio of sciences partners & genomic solutions

Agility & scalability

Extensive global infrastructure to support data sovereignty

Cost effective

Up to 90% reduction in compute and data storage costs

Most secure

AWS supports 98 security standards and compliance certifications

Frictionless collaboration

Access to 70+ life sciences datasets and a secure infrastructure for global collaboration

UK Health Security Agency   NHS England   Genomics england   biobank uk   EMIS connecting healthcare

Industry leaders are building on AWS

NETFLIX | **F1 Insights | powered by aws** | **deliveroo**

- Netflix is the world's leading internet television network, with more than 200 million members in more than 190 countries enjoying 125 million hours of TV shows and movies each day.

- Netflix uses AWS for nearly all its computing and storage needs, including databases, analytics, recommendation engines, video transcoding, and more—hundreds of functions that in total use more than 100,000 server instances on AWS.

- Formula 1 uses AWS services such as Storage, Compute & Machine Learning to provide F1 insights to over 500 million fans worldwide.

- 1.1m telemetry data points per second combined with 70 years of historical data to provide fans and teams about track-side decision making.

- F1 data scientists worked closely with AWS engineers to develop F1 insights.

- F1 is also working with AWS to design next gen race cars using AW HPC.

- Founded in 2013, Deliveroo works with more than 140,000 restaurants, 10,000 grocery partners and 150,000 riders, delivering meals in over 800 cities across Europe and Asia.

- Using AWS has allowed Deliveroo to improve service quality, reducing food delivery times by 20 percent while also cutting costs. AWS's scalable infrastructure now helps Deliveroo meet the fluctuating demands of delivering food in 12 markets worldwide, while machine learning (ML) and data analytics services provide the intelligence to manage delivery logistics and offer customers personalized restaurant recommendations.

How have AWS supported UKHSA?

NHS Covid-19 App

- Medically approved app delivered in just 12 weeks.

- Downloaded by more than 22 million people.

- Prevents 1 million infections, 44,000 hospitalisations, and 9,600 deaths.

- Scalability: the reliability and scalability of AWS infrastructure was essential for supporting the app's 22+ million users.

UKHSA Enterprise Data Analytics Platform (EDAP)

- What is it?

  - Brings Key UKHSA data together in **one safe & secure place** so that staff who need to access it can **analyse this data at scale and at pace**.

EDAP Benefits

Today's Challenges

Data is held in **multiple independent platforms**

Data sharing is clunky and time consuming

Significant time is spent obtaining, managing and transforming data

Limited assurance regarding information governance and use of data

Benefits enabled Tomorrow

Multiple data sources held in **a secure single platform**

Improved collaboration and auditing

Improved and **standardised analytics tooling**

Increased confidence in the provenance of data

A clear **curated data catalogue**

Making **Data an enhanced enterprise asset**

Better data, improved analytics, enhanced health security

aws

Thank you!

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