



## DETAILED LECTURE NOTES

Characteristics of cloud computing-

- ① On-demand self-services
- ② Broad network access
- ③ Rapid ~~elasticity~~ elasticity
- ④ Resource pooling
- ⑤ Measured service

Issues in cloud computing

- ① Cloud computing is internet based computing where shared resources, software and information are provided to computers and other devices on demand.

These are major <sup>Ethical</sup> issues in cloud computing-

- i) Privacy
- ii) Compliance
- iii) Security
- iv) Sustainability
- v) Abuse
- vi) Higher cost
- vii) Recovery of lost data contingency
- viii) Upkeeping (management) of cloud
- ix) Lack of resources/skilled expertise
- x) Pay per use service charges.



Cloud computing definition- Cloud computing is an on-demand service model for IT provision, often based on virtualization and distributed computing technologies. Cloud computing architectures have:-

- highly abstracted ~~resource~~ resources.
- near instant scalability and flexibility
- near instantaneous provisioning
- shared resources (hardware, database, memory etc)
- service on demand usually with a pay as you go billing system.
- Programmatic management ~~req~~.

~~Issues in cloud computing.~~

Important components of cloud Architecture -

- ① Client Infrastructure
- ② Application
- ③ Service
- ④ Runtime cloud
- ⑤ Storage
- ⑥ Infrastructure
- ⑦ Management
- ⑧ Security
- ⑨ Internet





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Benefits of Cloud Computing Architecture -

- Significantly reduces IT operating costs.
- Offers good user accessibility
- It has a better disaster recovery.
- Provides high security
- Helps to enhance your data processing.

Cloud Migration:- A cloud migration is when a company moves some or all of its data center capabilities into the cloud, usually to run on the cloud based infrastructure provided by a cloud service provider such as AWS, Google cloud or Azure.

Benefits of cloud migration of cloud -

- Scalability
- Cost
- Performance
- Digital Experience

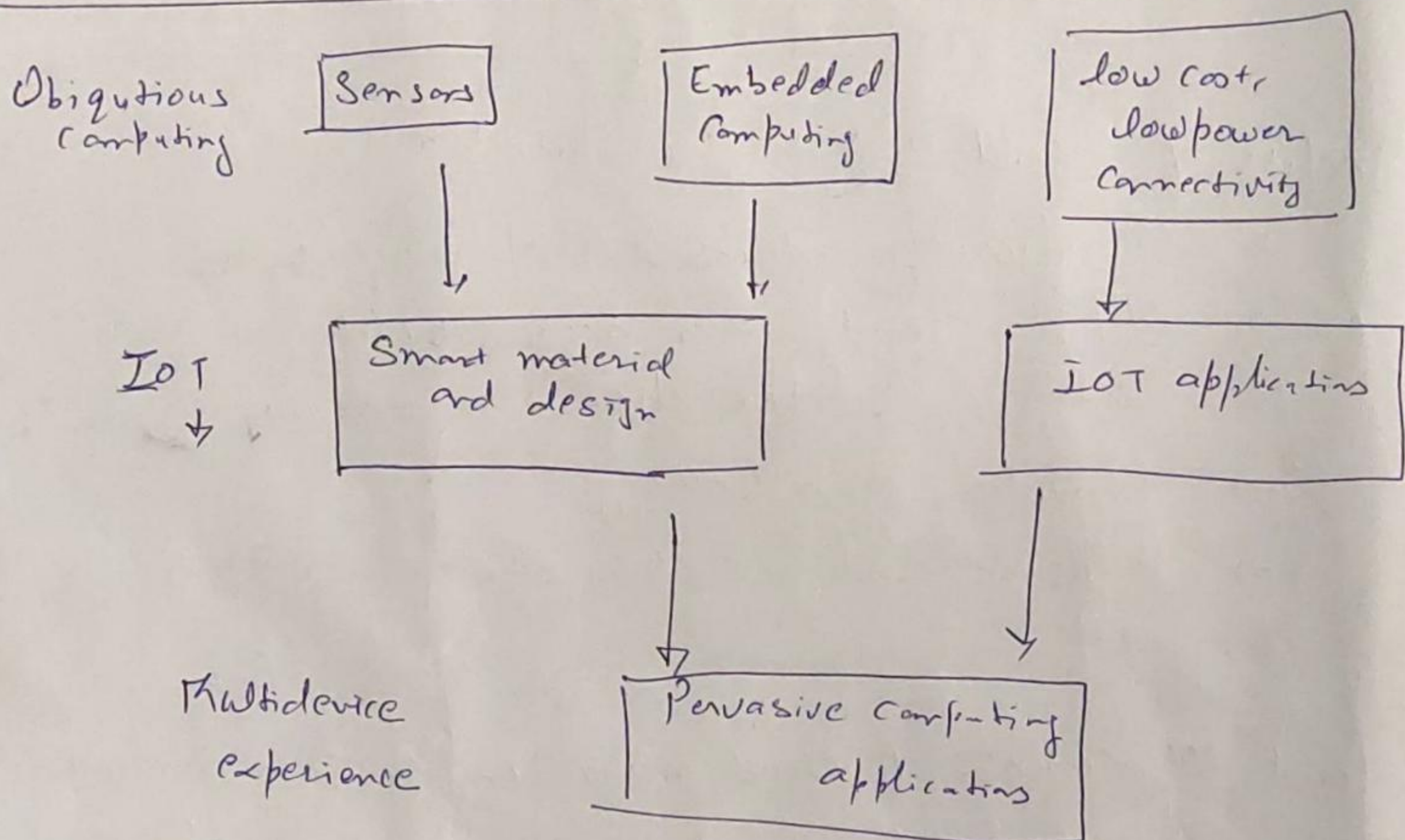
Common cloud Migration Challenges:-

- i) Lack of strategy
- ii) Cost Management
- iii) Vendor lock-in
- iv) Data Security and Compliance.



## Cloud Service Providers -

- i) AWS    ii) Microsoft Azure    iii) Google Cloud
- iv) Alibaba cloud    v) Oracle cloud    vi) IBM cloud
- vii) Tencent cloud



Cloud Migration Process - Common elements of cloud migration strategy include the following -

- Evaluation of performance and security requirements.
- Selection of cloud provider.
- Calculation of costs
- any reorganization deemed necessary.

At the same time, be prepared to address several common challenges during a cloud migration:-

- interoperability
- data and application portability
- data integrity and security
- business continuity





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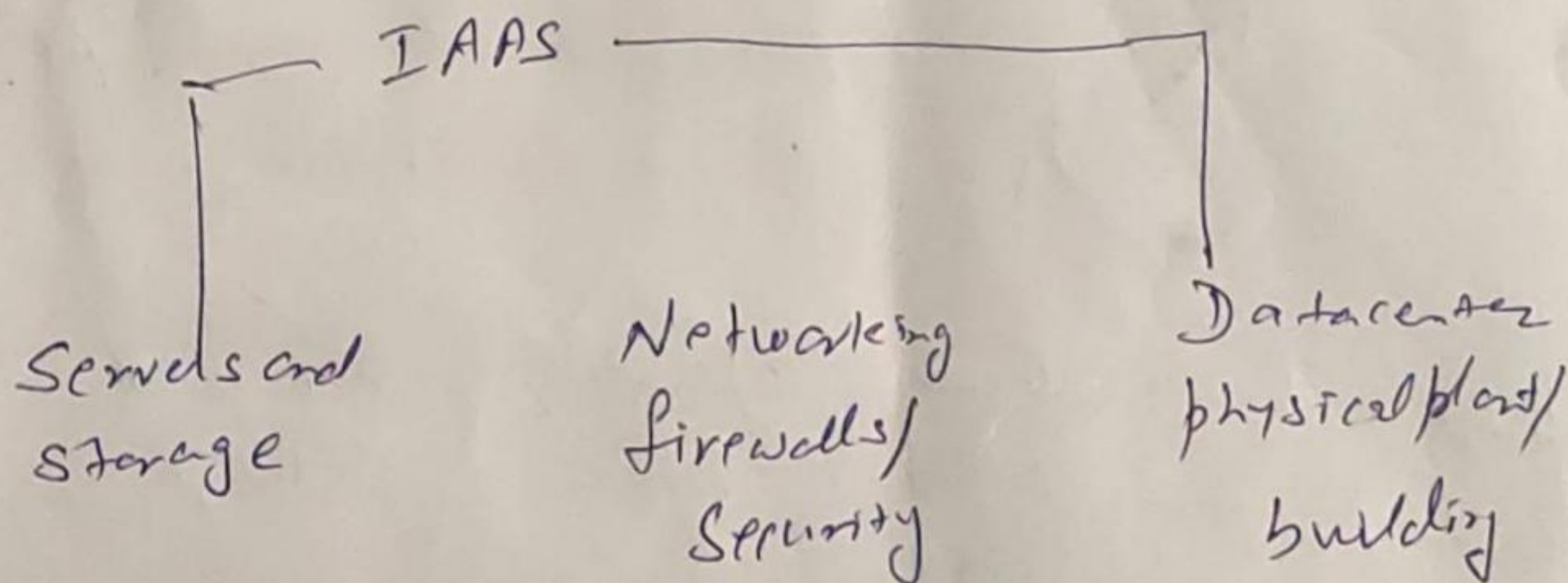
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Cloud Computing - The important characteristics of cloud computing is ability to deliver a variety of services which can be diverse from each other.

Types of Cloud Computing Reference Model - Cloud Service Models  
Infrastructure as a Service (IAAS)

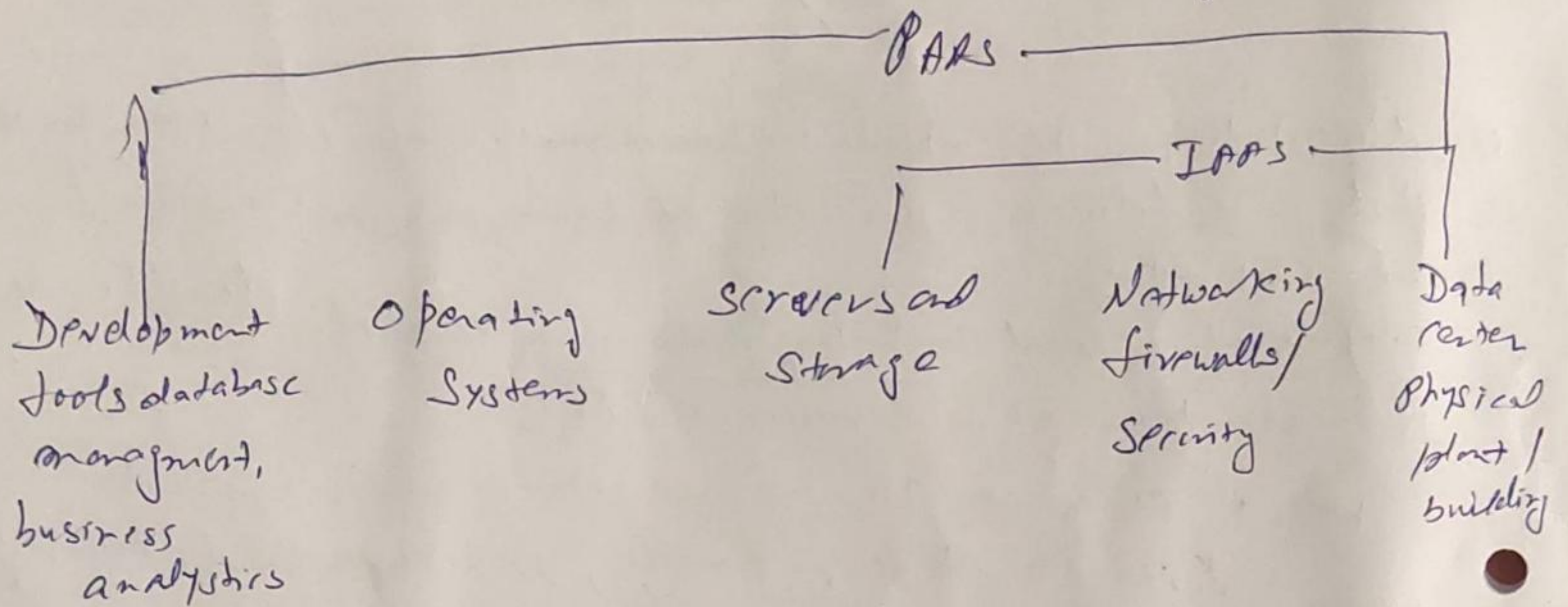
\*) We can rent IT infrastructure servers and virtual machines, storage, networks and operating system from cloud provider on a pay-as-you-go basis. Its an instant computing infrastructure provisioned and managed over the internet. Virtual hardware is provided on demand in the form of virtual machine instances.



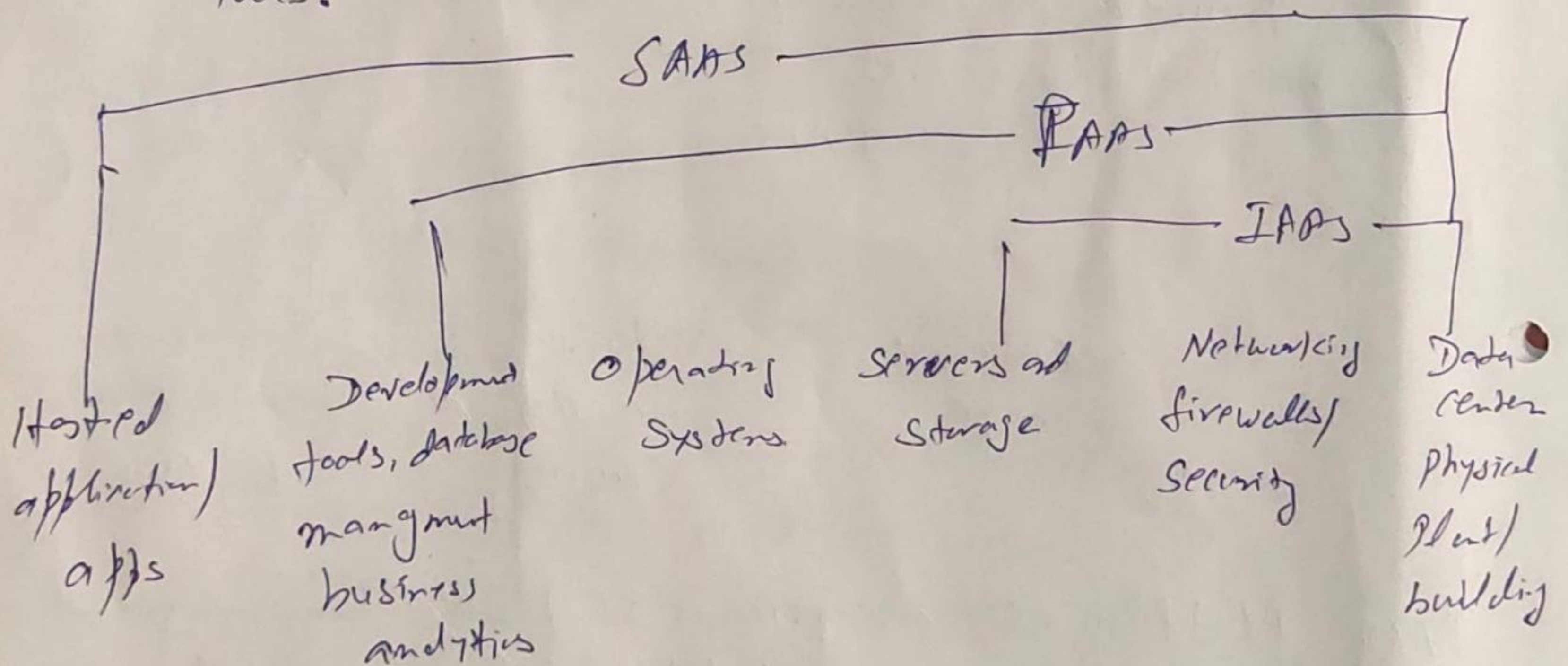
PAAS Platform as a service - It provides an environment for building, testing, and deploying software applications. The goal of PAAS is to help create an application as quickly as possible without having a focus on managing the underlying infrastructure.



PaaS models deliver scalable and elastic run time environments on demand and host execution of applications. These services are backed by a core middleware platform that is responsible for creating an abstract environment where applications are deployed/executed.



SAAS - This is centrally hosted and managed for the end customer. Common examples email, calendars, and office tools.





## Cloud Migration Strategies -

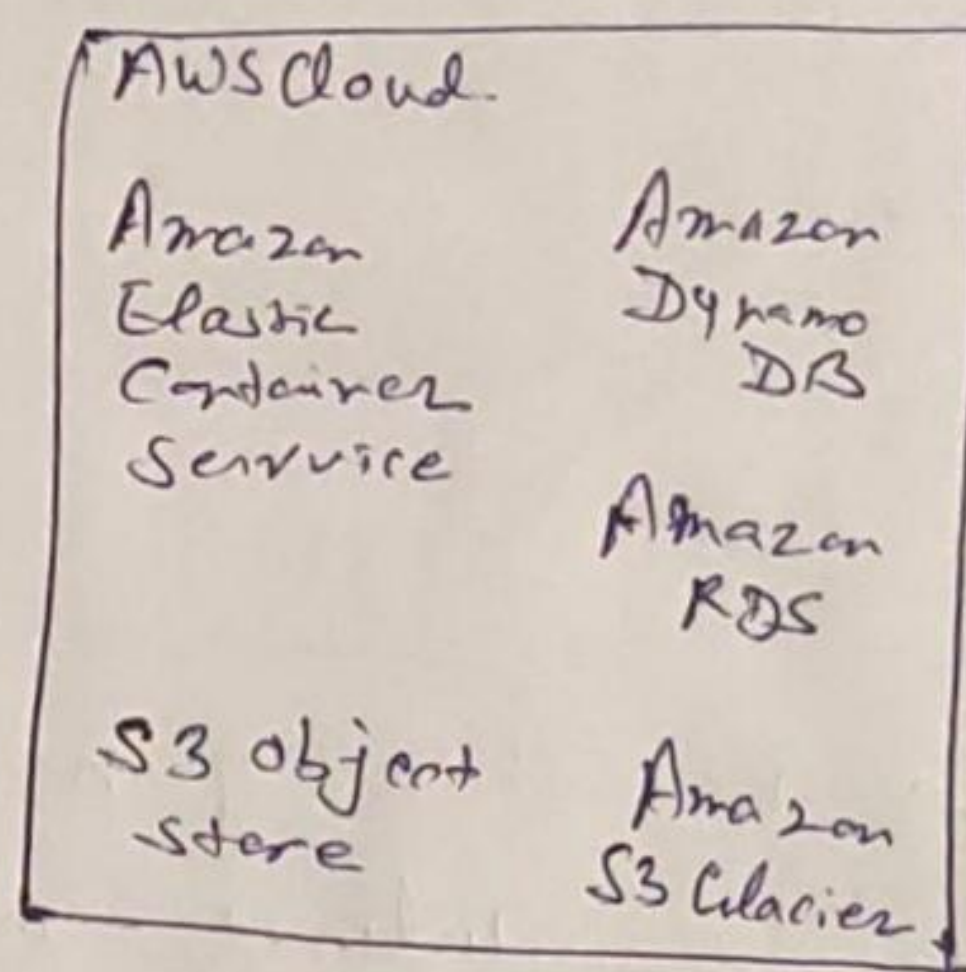
- ① Refactor - or Re architect  
Re architect with cloud native features.

Traditional  
Server

Database

Storage

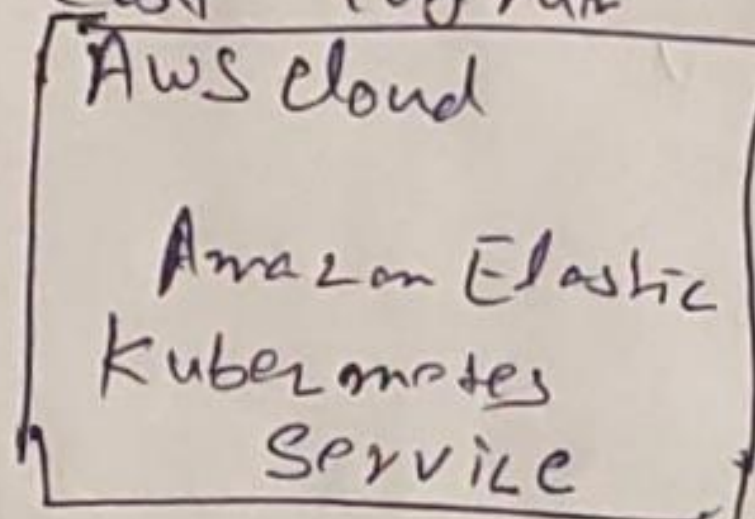
Cost Log-run



- ② Replatform. Lift, reshape / tweak & shift.

Traditional  
Server

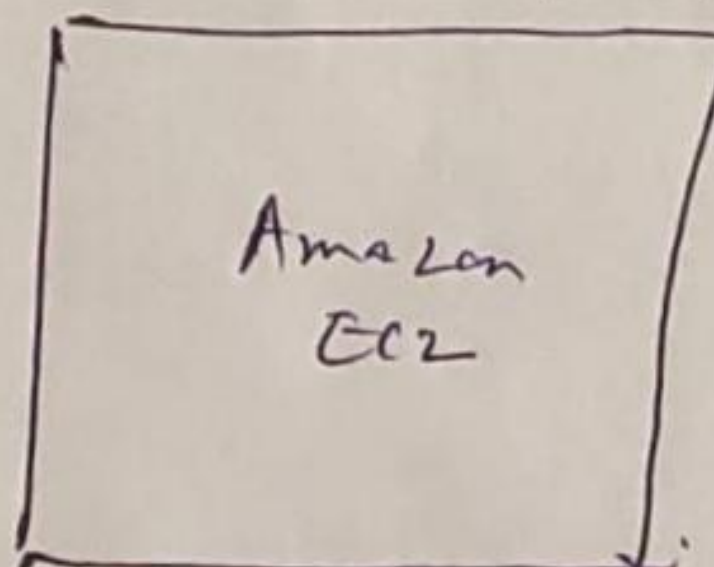
Cost Log-run



- ③ Rehost - Lifting & Shift.

Traditional  
Server

Maintain Log-run



- ④ Repurchase - BI Tools, Reporting Tools.

- ⑤ Retain - Revisit

- ⑥ Retire - Decommission the application.





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- For showing max. memory size for the current user.  
ulimit -m
- For showing max memory size limit  
ulimit -v





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Campus: ..... Course: .....

Class/Section: .....

Date: .....

Name of Faculty: .....

Name of Subject: .....

Code: .....

### Cloud Migration Strategies -

- **Rehost** - Or "lift and shift" involves using infrastructure as a Service. You simply redeploy your existing data and applications on the cloud server. It is also a good option for cases where it is difficult to modify the code, and you want to migrate your applications intact.
- **Refactor** - or lift, tinker and shift. is when you tweak and optimize your applications for the cloud. In this case PaaS model is ~~not~~ employed. The core architecture of the applications remain unchanged, but the adjustments are made to enable the better use of cloud based tools.
- **Revise** - Revising builds upon the previous strategies, requiring more significant changes to the architecture and code of the systems being moved to cloud. This is done to enable applications to take full advantage of the services available in the cloud which may require introducing major code changes. This strategy requires foreplanning and advanced knowledge.



• Rebuild - Rebuild ~~takes~~ the discarding the existing code base and replacing it with a new one. This process takes a lot of time and is only considered when companies decide that their existing solutions don't meet current business needs.

• Replace:- The company doesn't redevelop its own ~~at~~ native application from scratch. This involves migrating to a third party, prebuilt application is the data while every thing else about the system is new.