

Information System Project (BCO3447)

Assignment 3 (Project Status Report)

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Executive Summary

In this report various type of UML diagram are used to represent implementation of Indian Grocery System. First section is Solution Overview which consists of various diagrams like Discovery map, Process Model, Context Level Data flow diagram and Use Case. These diagrams are created to clearly understand the system that needs to be built. Second Section is Service and Service Oriented Architecture it represents the services being implemented by the system and also how they are integrated together. In some cases where a different service uses different platforms ESB is used to integrate them. The third and the last Section describes about cloud computing delivery model.

Solution Overview

Solution Overview as the name suggest defines the solution to overcome the problem. Indian Grocery Store designed online system to overcome manual system based problem such as no online purchasing, unable to get customer feedback etc. So Various diagrams are used to define the Indian Grocery Store system. It consists of Discovery map, Process Diagram, Context Data flow Diagram and Use case diagram to describe the functionality of the system.

Discovery Map

Discovery Map is developed using great tools provided by IBM on BlueWorksLive. It is used to create the basic structure of the system and to brainstorm the requirement (Bagui & Earp, 2011).It consists of milestone and related activities. Refer the below figure for discovery map.

Commented [1]: This should be a business process model. How were these functionalities/requirements identified ? This model is only including system functionalities and not a business process. This applies to the BPM model provided below.

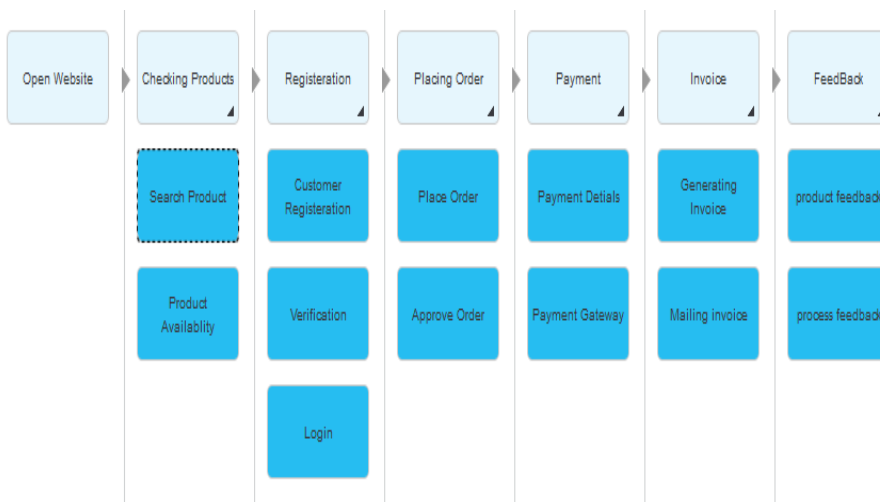


Diagram: Discovery Map

Business Process Model

Business Process Model is also created using BlueWorksLive. Business process model helps us to define the primary flow of event that are going to occur in a process .The model Demonstrates several Participant like Customer, Service Provider and Bank(Captain, 2011). It also show different milestone like Registration, Product Selection ,Order, Payment ,Invoice Generation and feedback and also the activities with condition associated with them.

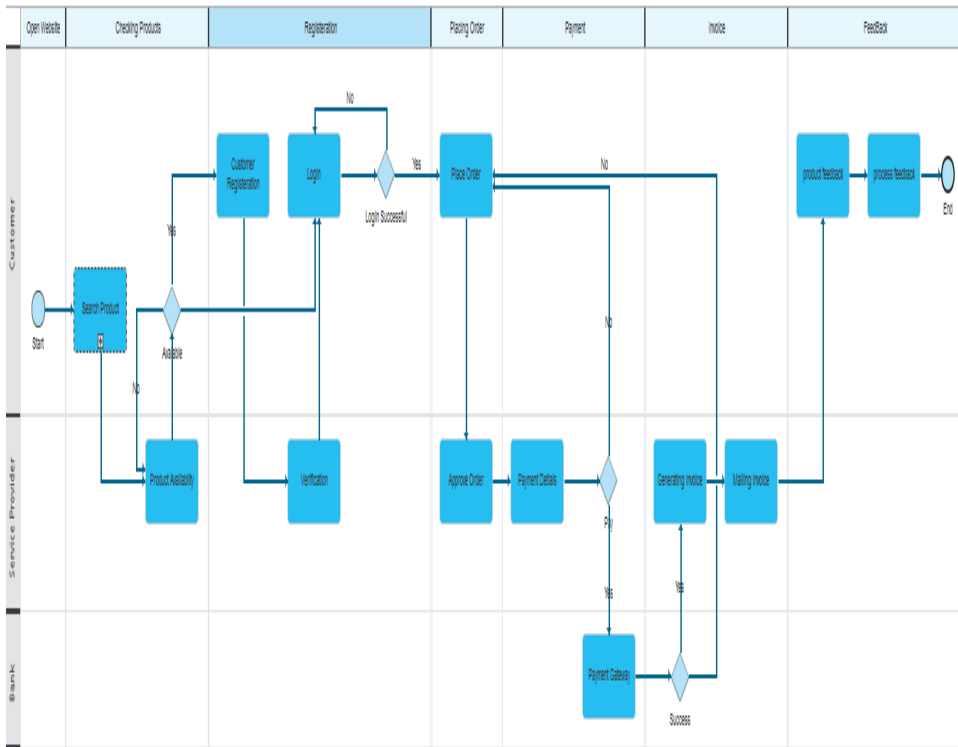
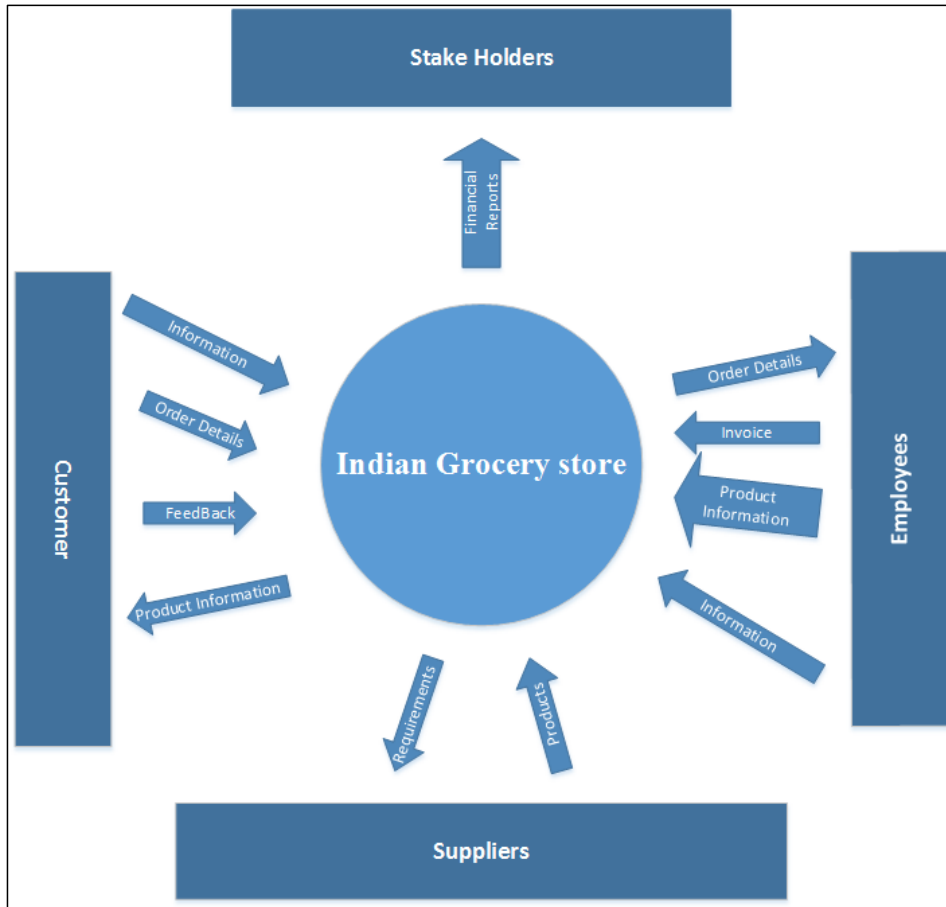


Diagram: Business Process Model

Context Data Flow Diagram

Context Data flow diagram is used to represent the external entities to the system and flow of data between them (Harnandez, 2003). Refer to the below figure it show the context diagram of Indian Grocery Store Website having entities Stake Holder, customer, employees and customers which interact with the system for various purposes.



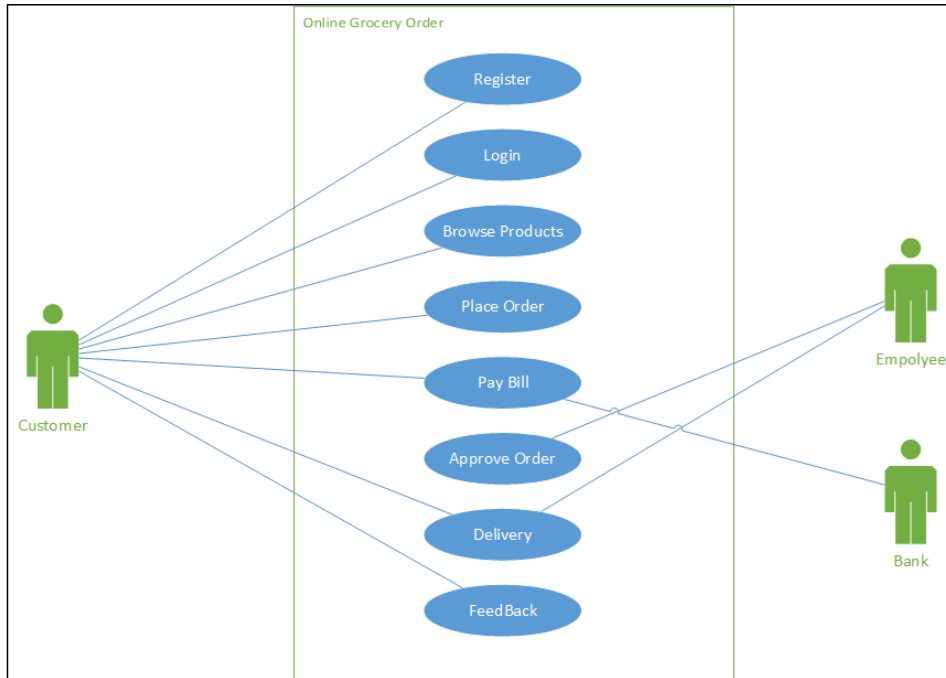
Commented [2]: What about payments ?
Is invoice generated by the system or employee ?

Diagram: Context DFD

Use Case

A use case diagram is used to specify the behavior of the system or part of the system to get clear understanding of the system. Use case is used to define a system or part of the system (Jha, 2007). It consists of various activities and actors in it. Use case simple represent the interaction of various actors with the system and also specifies system boundaries. Refer to the

below diagram for use of the system which consist of various actors like customers, employees, bank etc.



Commented [3]: This is a good model however it does not match the context diagram provided above.

Diagram: Use Case

Service Oriented Architecture (SOA)

The third party services being used by use may not be compatible or decipherable with each or with our application, to overcome this limitation we will utilize SOAP which stands for Simple Object Access Protocol which is a messaging protocol that lets programs that run of disparate operating system to communicate with each other, It use XML for this (Jha, 2007).

SOA is a style of software design where services are provided by application components to the other components using a particular protocol. Each service of Indian Grocery Store application is integrated and created in similar stage, which makes the SOA. Refer to the below image for SOA architecture of the system.

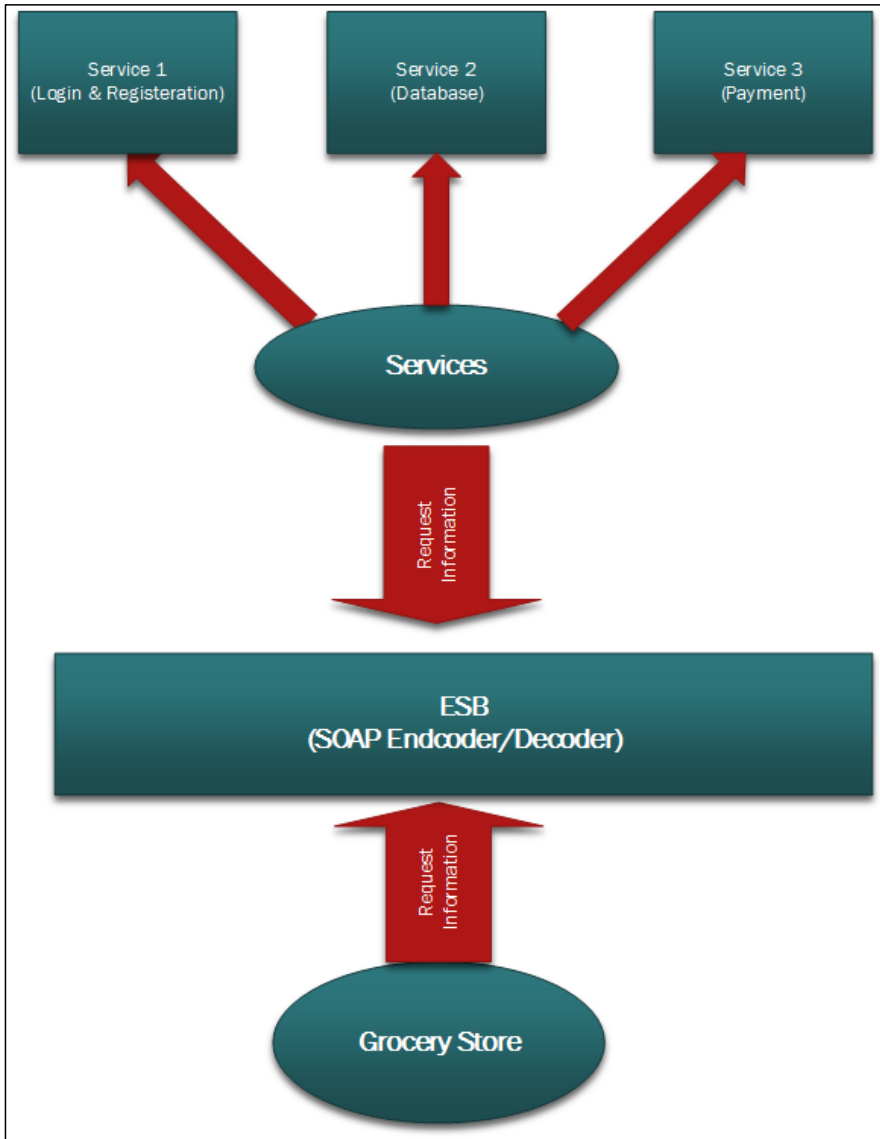


Diagram: Service Oriented Architecture (SOA)

Commented [4]: Why are arrows in this model only in one direction ??

Service

To make the application user friendly some third party services are being used. The services being used are recognizable and approachable by the client.

Service	Motive
Yahoo Mail/Gmail	To login or register the user on to website and also for password retrieval
MySQL Database	To save data of the whole website like products, sales, customer, employees, finances etc.
PayPal	PayPal Payment gateway to provide customer facility to make payment online

Commented [5]: Is this Yahoo or Gmail ? Which service is included in this system ? or may be both ??

Commented [6]: This is not a service, it is a database for storing data. Storing/extracting specific data could be a service.

Commented [7]: Are these the only services used in this system (two services) ?? What about all the other functionalities included in your use case and context diagrams ??

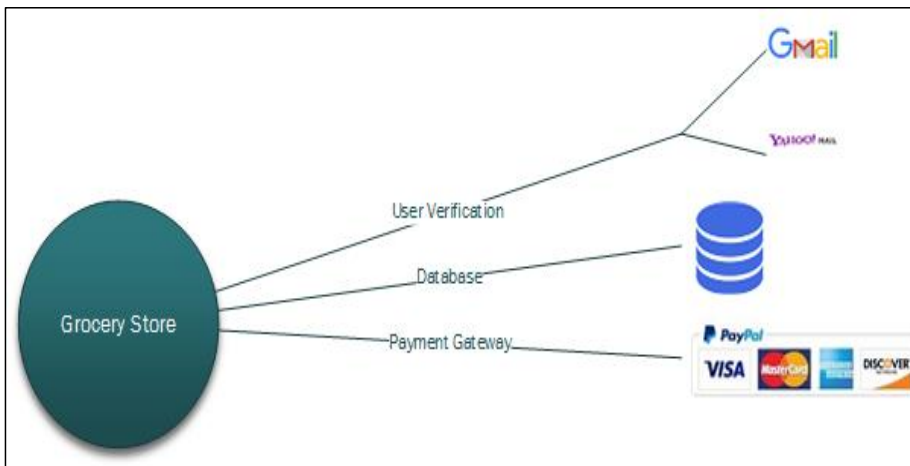


Diagram: Services

Cloud Computing Delivery Model and Platform

Cloud Computing

Cloud Computing as the name suggest is the delivery of computing services over the internet. Cloud computing paradigm provides access to information and computing services to anywhere a network connection is available. It provides a pool of resources which include but not limited

to hard drives, network connections, computing devices, and software applications (Rob, 2012). Some examples of cloud service are online data storage facility, social media, email etc. Two main providers of cloud services are Amazon and Google.

Characteristics:

- **On-Demand:** User can request and manage cloud service based on their needs.
- **Device Independence:** Cloud service is device independent and can be accessed using any web browser.
- **Broad network Access:** It requires network connection to function and operate.
- **Maintenance:** Cloud vendor maintains the system so customer don't need to worry about it
- **Performance:** As cloud services are provided by many IT giant performance is away improving and crossing the expectation.

Type of Cloud Computing:

Cloud computing is divided into four types of clouds as follows:

1. **Private Cloud:** Private cloud is used to meet internal needs of the enterprise. It is most secure of all types of cloud as it is implemented within the internal firewalls of the organisation. It is controlled and accessible only to the internals of the enterprise.
2. **Public Cloud:** This is the most popular type of cloud. The whole cloud computing facilities are controlled and provided by third party vendors like Amazon, Google etc. It is less secure and more vulnerable to outside attacks.
3. **Hybrid Cloud:** It is the combination of private and public cloud. This type of cloud is generally implemented to avail services of both public and private cloud. In this type the enterprise implements cloud services of third party vendors along with its own private cloud. Security of this type lies between that of private and public i.e. it is more secure than public cloud but less secure than private cloud.

Cloud Computing Service Models Representation

Service Model: There are three ways in which Cloud computing offers its services as follows:

Software as a Service (SaaS): SaaS is defined as software, which is provided as a system to the customer. This can be as a subscription basis with monthly, quarterly or yearly charges for the software service being provided. Sometimes it even free if other mode of revenues can be used like advertisement, referrals etc.

Characteristics of SaaS:

- 1) Commercial software online.
- 2) One to many delivery model.

- 3) Application Programming Interfaces (API) to connect with other applications or services.
- 4) Central Management

Justification for using choosing Saas: Saas Software as a Service is central hosted software that is provided to a customer in the form of pay as you go service, In this way the grocery store can easily scale up to more feature else also scale down. Thus the cost is reduced drastically as instead of buying the software it is being rented .The grocery store will be benefited from this as it will go alive quickly and start selling its products without much of investment. Some reasons of using Saas are: -

- 1) Lower setup cost
- 2) Least implementation time
- 3) Rapid Scaling as per your needs
- 4) Every application related function will be handled and managed by the vendor.
- 5) Limited Training is required to use the system

Platform as a Service (PaaS): PaaS is defined as an online platform provided to developers for creating their applications with advance tools and quickly as possible. PaaS is similar to Saas in a way that in Saas Software is delivered online and in PaaS Platform to develop the delivered over the web.

Characteristics of PaaS:

- 1) Service to building, testing, deploying, maintaining in an integrated environment.
- 2) Online user interface to code, design, implement etc.
- 3) Multiple concurrent user architecture.
- 4) Billing and subscription management.

Justification for using (PaaS): The PaaS model guarantees to free your operations from the commonplace administration and upkeep while arranging for your group or representatives from the support work with the goal that they can concentrate on creative programming advancement and upgrades, which are likely, the core of your business.

Infrastructure as a Service (IaaS): Infrastructure as a service is way of delivering infrastructure over web as a service. It consists of servers, storage, networking devices. IaaS is best option for many organisations as instead of buying these resources they can easily get then on demand. IaaS is generally implemented as private or public infrastructure and sometime combination of both i.e. hybrid.

Characteristics of IaaS:

- 1) Resources are provided as service.

Commented [8]: This is not the meaning or usage of SaaS. Please ensure you have researched and studied the concept of SaaS before considering its use in your system.

- 2) Allow to scale the resources based on the requirements
- 3) Consist of multiple users on single powerful piece of hardware.

Justification for using (IaaS): The IAAS model additionally underpins fast and also permits even small companies to manage their frameworks from anyplace, expanding or diminishing computing power and infrastructure, as they required. Moving a business turn out to be considerably much easier when IAAS in place other than the traditional one.

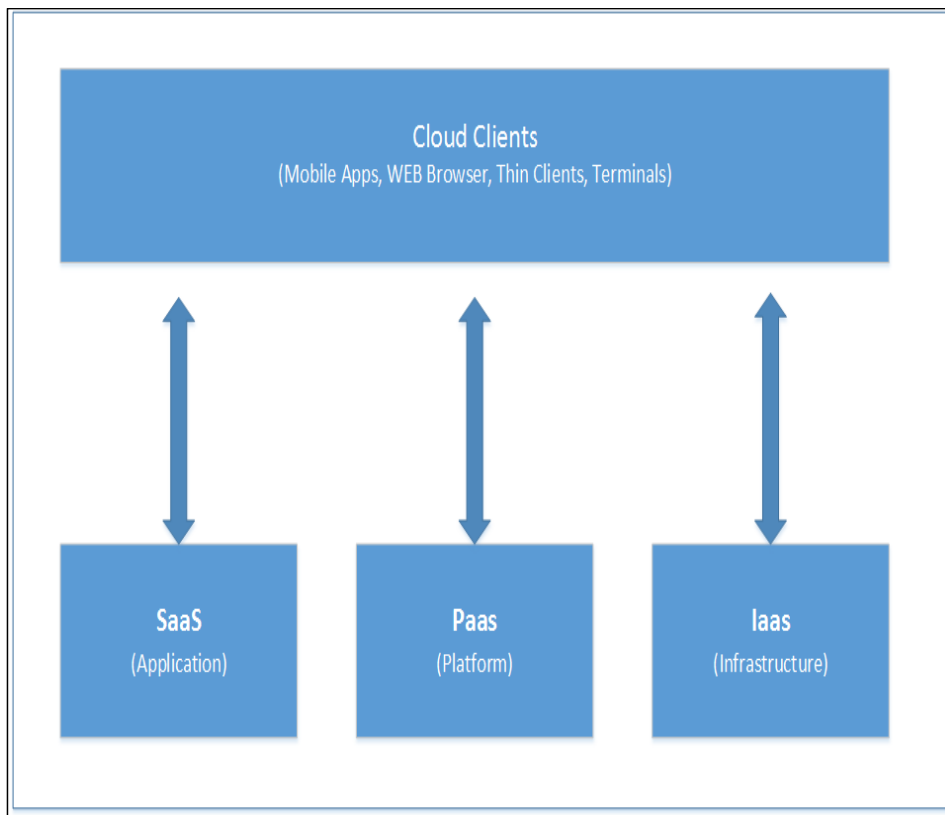


Diagram: Cloud Computing Service Model

Google Cloud Computing Delivery Model

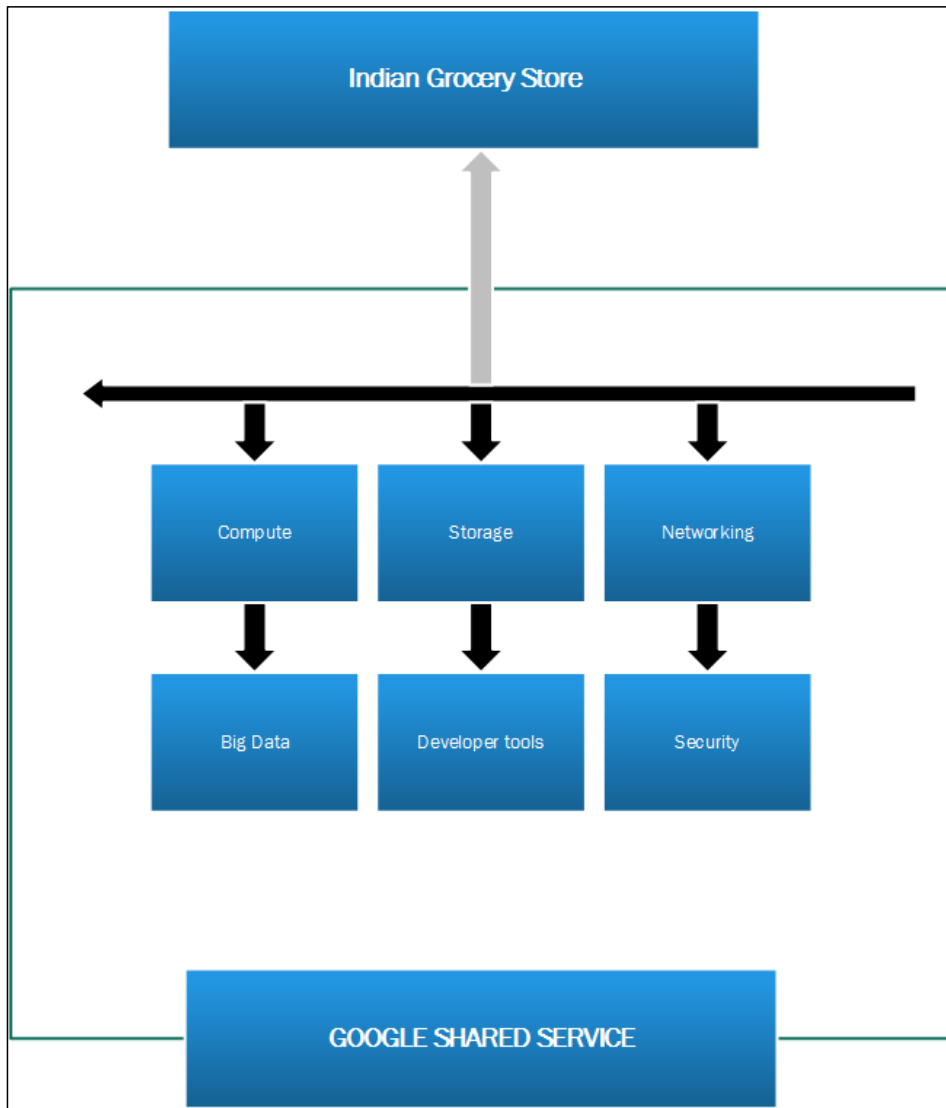
Google cloud platform is a package of cloud computing services offered by Google. Google Cloud Platform (GCP) runs on the same infrastructure that Google uses internally for its products like YouTube, Gmail, G-maps, search etc.

Google cloud provides us with many tools and quality features to help build a secure infrastructure as a service (IaaS) for public and private use of cloud services.

Some top-notch features of Google Cloud are:

- 1) Compute: A fully managed app development Platform (Compute Engine, App Engine, Container Engine, Container Registry, Cloud Functions)
- 2) Storage: Scalable, consistent, reliable, high performance object storage and databases for your applications
- 3) Networking
- 4) Big data management: Data mining, data warehousing (Big query, Dataflow, Data lab)
- 5) Machine Learning
- 6) Developer Tools Like Cloud for Android studio, IntelliJ, Eclipse etc.
- 7) Identity and Security
- 8) Management Tools: Monitoring, logging, diagnostic etc.
- 9) Intelligent (IoT) platform that unlocks business insights from your global device network (Cloud IoT).

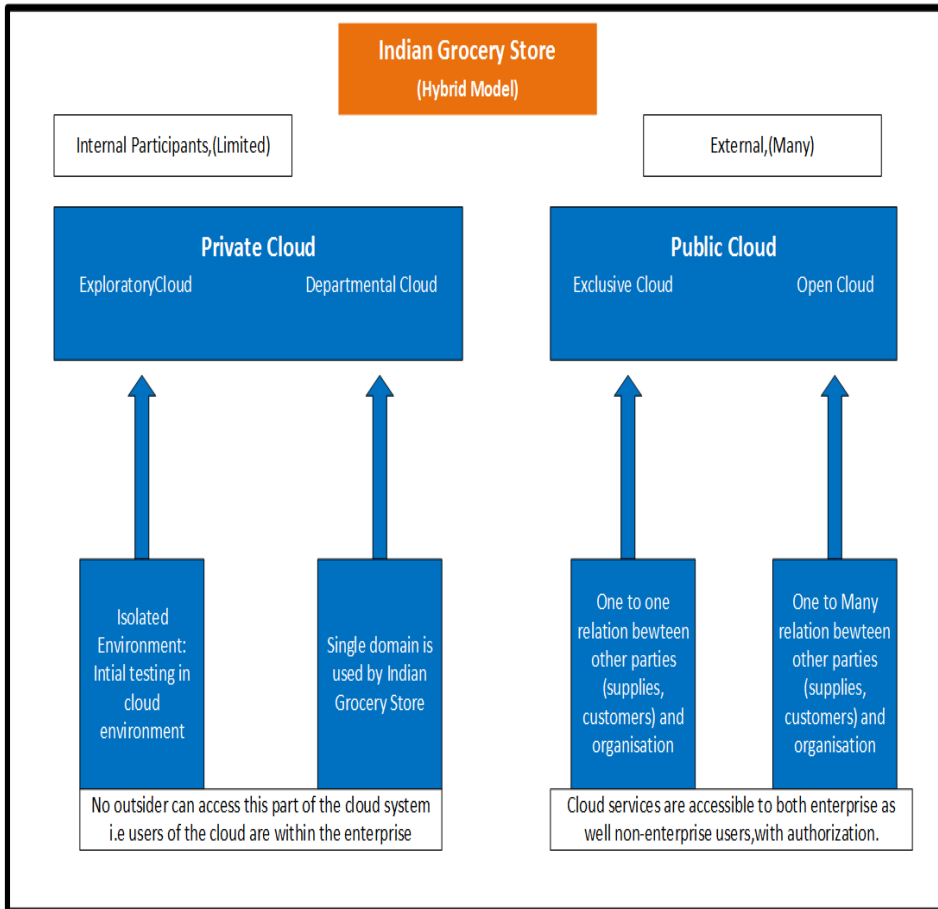
Some of the top companies that use Google Cloud platform services are Coca Cola, Philips, and Snap Chat etc.



Commented [9]: Model not clear. How is big data applicable to your system? What are the development tools required as part of PaaS for your system? Specifications for storage, computing power(servers), networking for your system?? Who is going to provide them? How much will it cost?

Diagram: Google Cloud Computing Delivery Model

Delivery Model of Indian Grocery Store Website



Commented [10]: Model not clear ? Taking a model from somewhere and adding a box will not make it meaningful.

Diagram: Delivery Model of Indian Grocery Store

Some benefits of cloud systems are:

1. **Flexibility:** It can be scaled up and down according to requirements of the system
2. **Automatic Software Updates:** The server are not the responsibility of the customers the supplier are responsible for it and keep on updating the technology to keep up with the competitive market

3. **Security:** As the data is stored online at some off shore secure location data is never lost. All the current cloud service provider take security of the platform very seriously, thus makes it more secure.
4. **Easy access:** Cloud services can be access from anywhere across the globe using internet connection.
5. **Increased Collaboration:** As anyone with an internet access can access the cloud so collaborative development can be carried out.
6. **Backup and recovery:** Most cloud service providers has policy to back data every 3 days and support recovery in case of failure or if any problem occurs.

Commented [11]: The cloud delivery section in this document includes mostly definitions and generic models. Models relevant to your system are missing. This will need to be fixed for the final assignment. Also, this document lacks proper referencing.

References

- Bagui, S. & Earp, R., 2011. *Database Design Using Entity-Relationship Diagrams*. 2nd ed. USA: CRC Press.
- Captain, F., 2011. *Six-Step Relational Database Design: A Step by Step Approach*. 2nd ed. London: Wilbert.
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