



**Field of Computer Science  
School of Computing, Faculty of Engineering  
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# **TECHNOLOGY AND INFORMATION SYSTEM**

## **PROJECT - Low Fidelity Prototype PART 1 REPORT**

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## 1. Introduction

In this project, we selected a furniture retailer that uses augmented reality (AR) technology in its business as our client. They face many problems when managing applications, such as security, server capacity, efficiency, maintenance fee and business expansion. Our team decided to introduce cloud computing to them to solve these problems.

Simply put, cloud computing is the delivery of computing services through the Internet (or we call "cloud")-including servers, storage, databases, networks, software, analysis and intelligence, to provide faster innovation, flexible resources and economies of scale. So cloud computing can well solve the problems faced by our clients.

## **2. Content of report**

As mentioned in introduction, our potential client is a furniture retailer that is using AR in their business. The retailer is not using cloud computing to manage his AR application. Our idea is to help the furniture retailer to change his AR business model into cloud computing, in which the retailer can get more benefits by using cloud computing to manage his business.

Before we discuss the solution, let's introduce our client's application briefly. Basically, after their application scans a plane or space through the camera of a mobile phone, consumers can project their products (furniture) onto the plane or space to achieve a preview effect.

This application brings a lot of benefits and conveniences to the consumers. For example, try before you buy. AR augments physical objects with digital content, so customers can view the appearance of new furniture in their home in real time without worrying about paying for inappropriate things, especially for large items. In this way, customers can try the furniture virtually without worrying about making the wrong decision.

In addition, it also benefits themselves, especially during this epidemic. The function provided by this app allows consumers to simply simulate and purchase at home instead of actually shopping for furniture at the exhibition hall to reduce the risk of infection. So despite the epidemic, their business has not been greatly affected.

### **3. Architecture planning and design**

Augmented Reality (AR) technology is mainly composed of feature extraction, feature points matching and 3D object drawing to impose virtual information onto the real camera. However, feature extraction and feature points matching both require high computational cost. That's the first problem.

In addition, due to the need to store data information, our client needs to spend a lot of money on the operation and maintenance of the data center.

Next, they expressed the need to optimize the supply speed of IT resources. The current situation is that the time that IT resources are provided to developers usually takes several weeks.

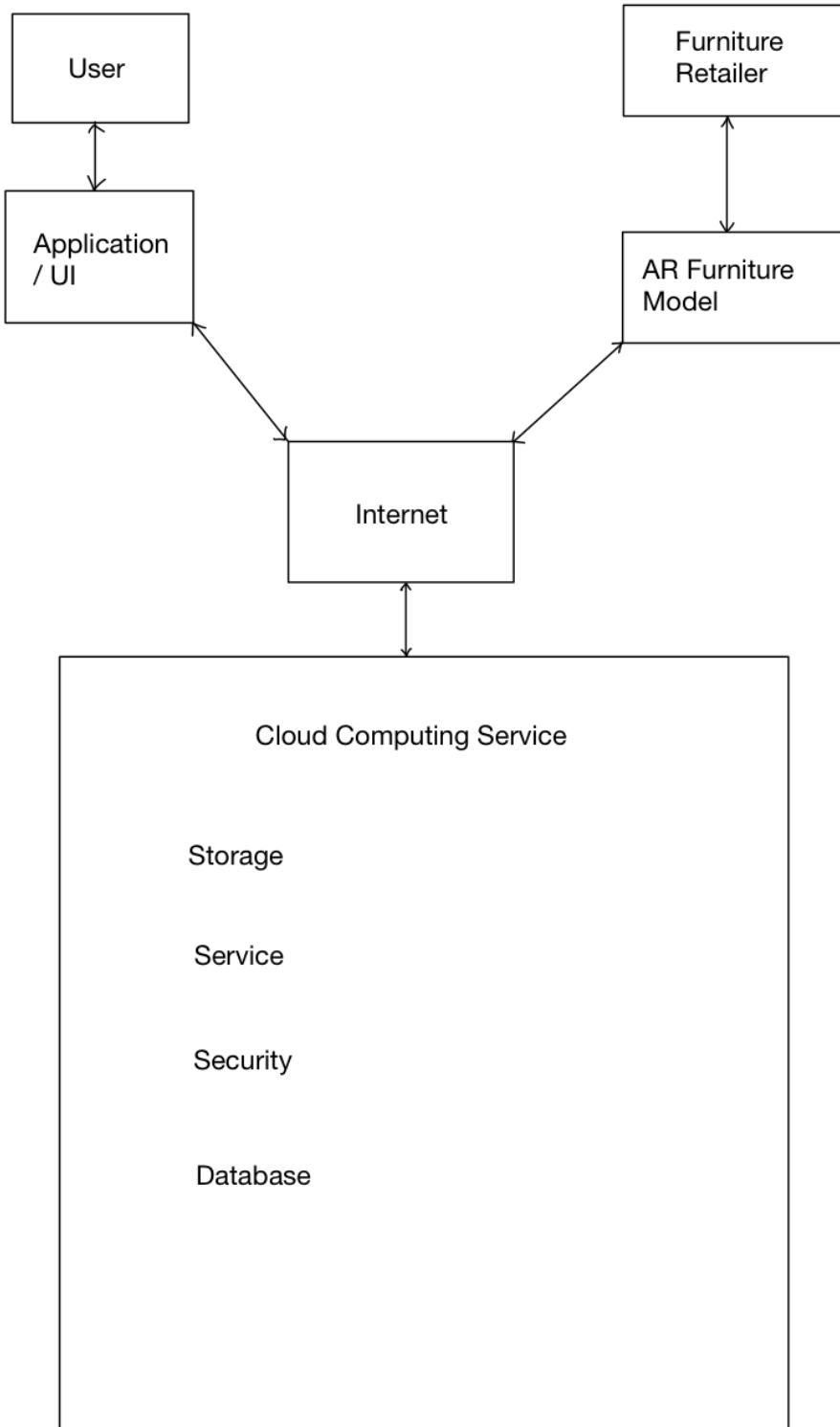
Those problems can be solved by cloud computing perfectly. First, one of the benefits of cloud computing is that it can save costs for companies that adopt cloud computing in the long run. If the company no longer needs to hire a technical support team to solve server problems, it will actually save money.

The company's adoption of cloud computing means fewer physical servers. This allows the company to reduce the size of the data center or completely abandon it. Cloud computing allows companies to focus on their customers instead of heavy racks, stacks, and power-supply servers.

In the cloud computing environment, new IT resources can be obtained with one click, which means that the time for these resources to be supplied to developers will be reduced from a few weeks to a few minutes.

Not only that, the cloud can be responsible for heavy tasks that require sufficient computing power, while the device side is only responsible for sensing, detecting, and displaying. This greatly reduces the requirements for data storage, memory, and computing capabilities on the device side.

## Architecture Planning and Design



## 4. Conclusion

### 4.1 Limitation

Since this is the first time this furniture retailer uses cloud computing to manage his AR application, the retailer lacks knowledge and experience about it.

Next is data confidentiality risk. There is always the risk that other people can access user data, such as hackers. Therefore, the cloud provider's data protection and cloud protection must be done well, otherwise it will threaten data confidentiality.

In addition, cloud computing depends on internet connection. When there is no Internet connection where the consumer is located, or there is a problem with the Internet of the cloud provider, the company's cloud server will automatically disconnect.

### 4.2 Contribution

Cloud computing will help the customers to increase the security of their data. Cloud services will provide security service to their customer with pay-as-you-go pricing. So, the data will be secure as their security services are often better than the customer's own security service.

Besides that, the server capacity problem will also be solved. Customers do not need to keep guessing the capacity of the server. Instead, they can scale based on the demand. Therefore, the fees that the customer spent on the server capacity can be reduced a lot.

Other than that, efficiency is one of the very important key factors in a business. Since the customers are using cloud computing to manage their

business, speed and agility can be increased. There are just minutes between wanting resources and having the resources with just a few clicks. Everyone in the company that uses cloud computing can also work from anywhere.

By using cloud computing services, customers can stop spending money on running and maintaining data centers, thus they can use the money on other things that may help to grow their business.

Usually, cloud computing services will have multiple availability zones around the world. It can provide service to all the users around the world. Therefore, customers who use cloud computing should be able to expand their business to the global.