

## Introduction

Data sharing in the Cloud is one of the fastest growing trends in the world today.

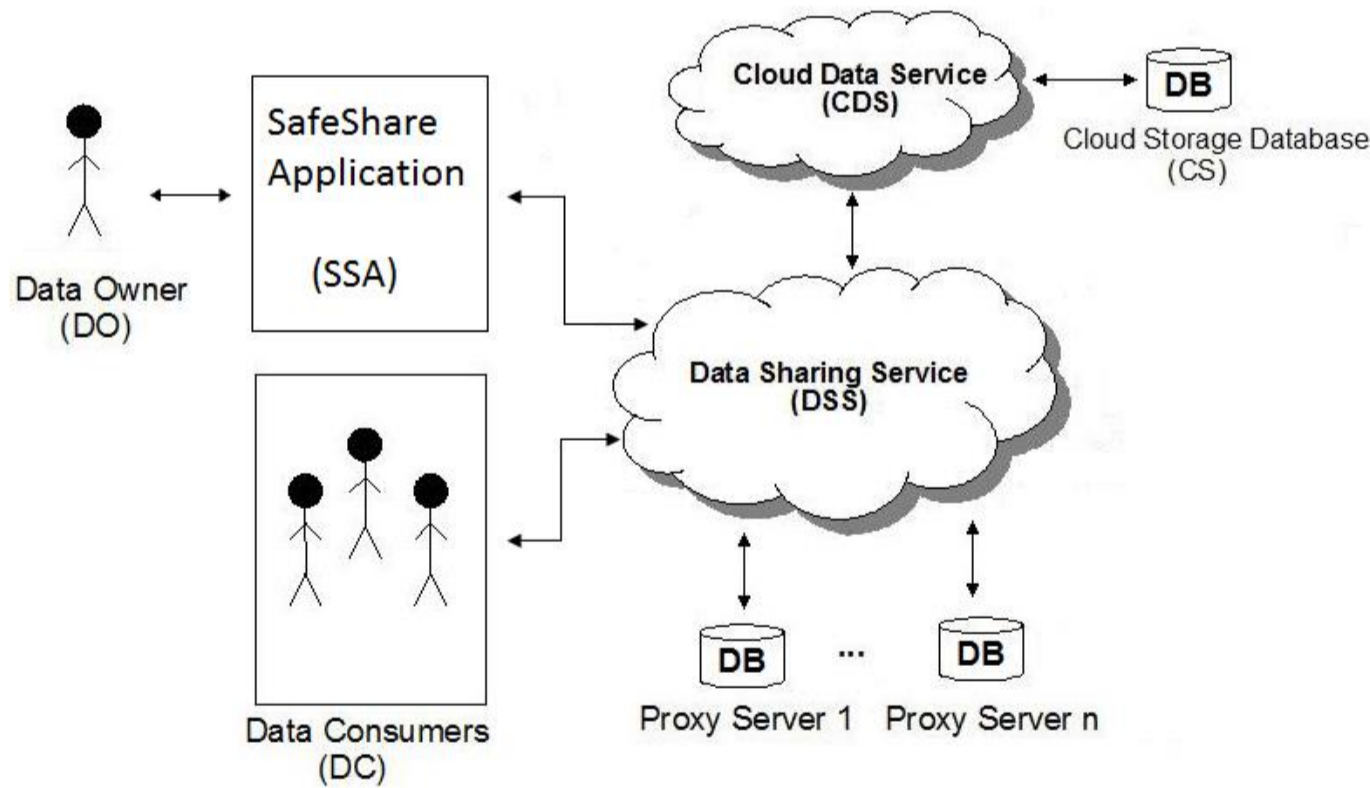
- According to a survey by InformationWeek, nearly all organisations shared their data somehow with 74% sharing their data with customers and 64% sharing with suppliers.
- Healthcare providers are willing to store and share electronic medical records via the Cloud and hence remove the geographical dependence between healthcare provider and patient.

However, privacy and security issues still continue to be a barrier in the widescale adoption of the Cloud for data sharing purposes:

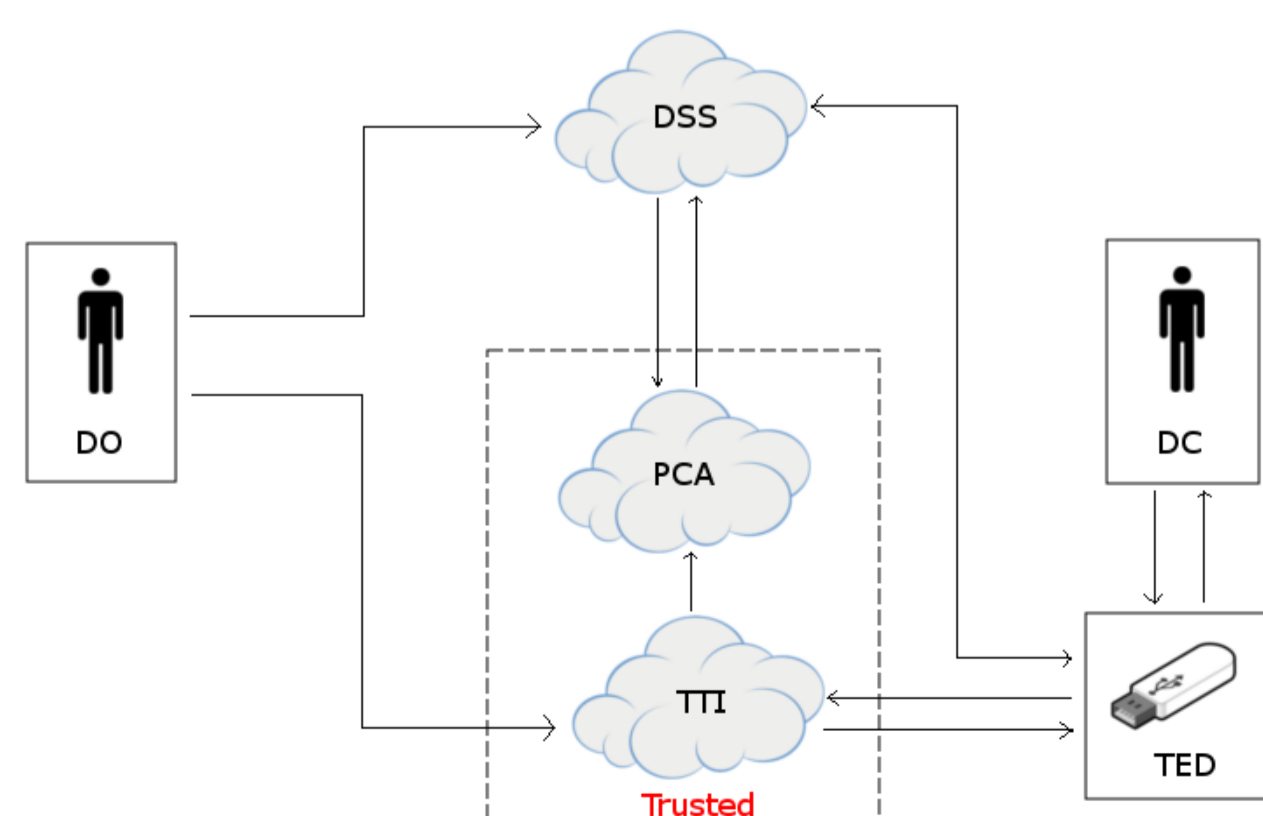
- According to a survey carried out by IDC Enterprise Panel, Cloud users regarded security as the top challenge with 75% of surveyed users worried about their critical business and IT systems being vulnerable to attack
- Insider attacks remain one of the biggest threats in the Cloud today.
- Data owners are increasingly demanding greater control over their data as they no longer know how and where their data are being used.

We present a secure data sharing model in the Cloud:

## Secure Data Sharing Model

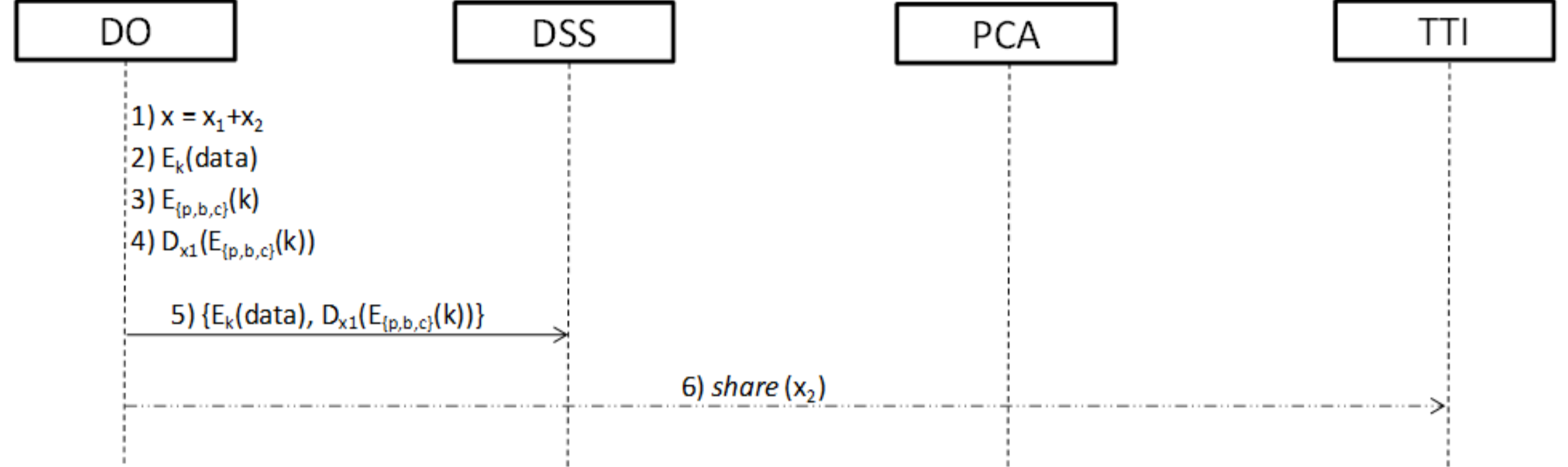


## Improved Secure Data Sharing Model

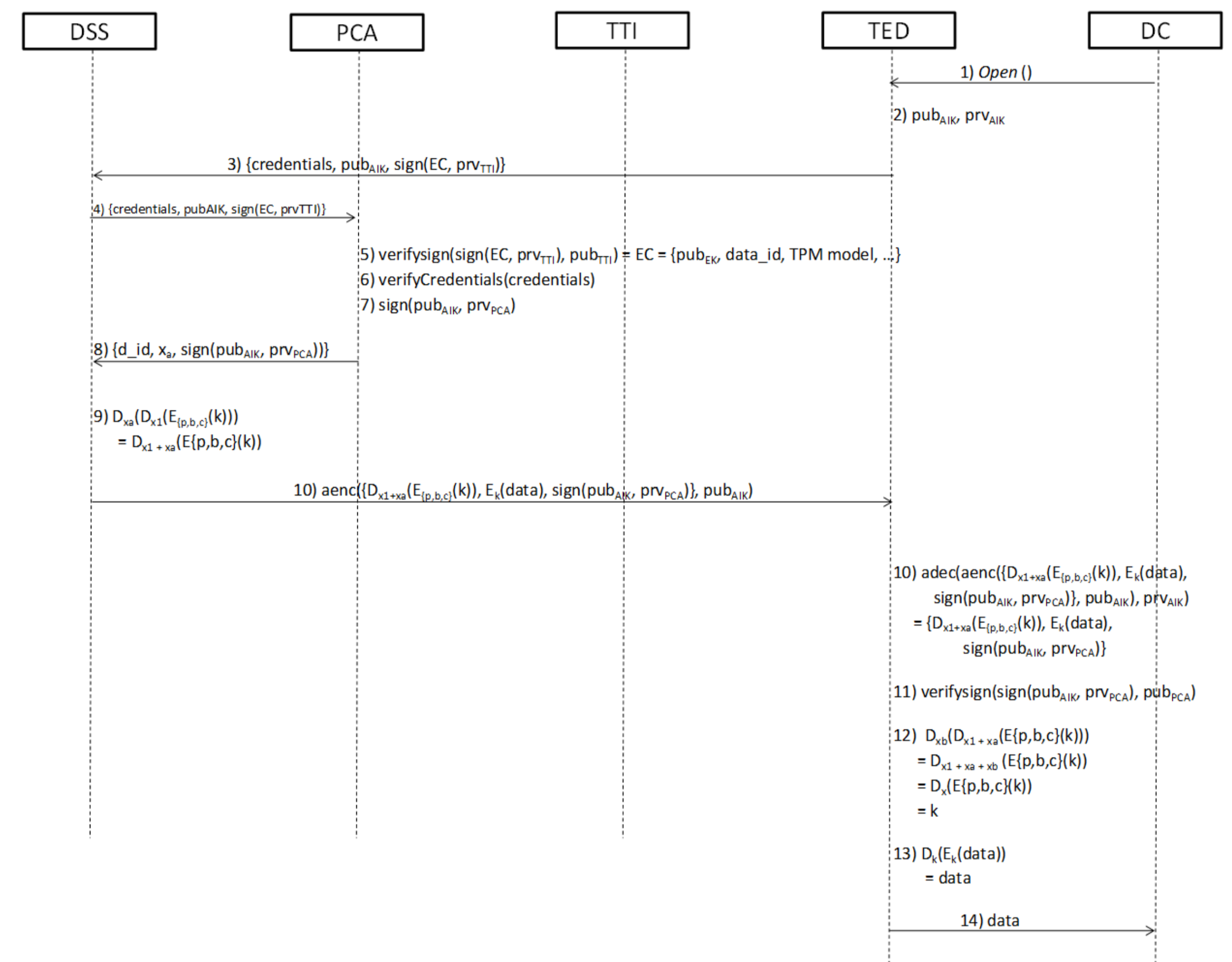


## Secure Data Sharing Protocol

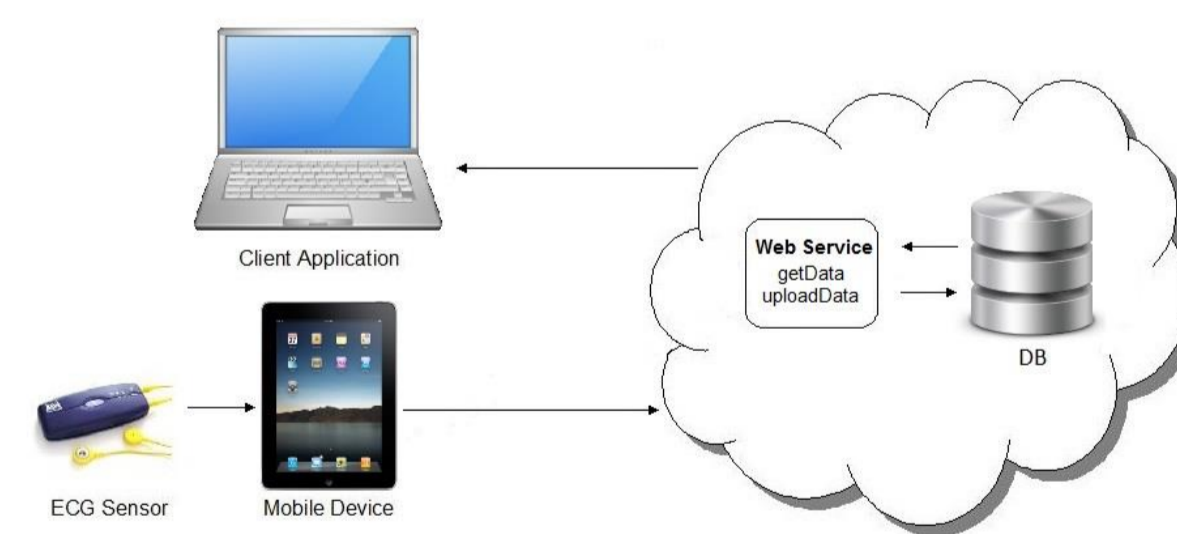
### Secure Data Storage Protocol



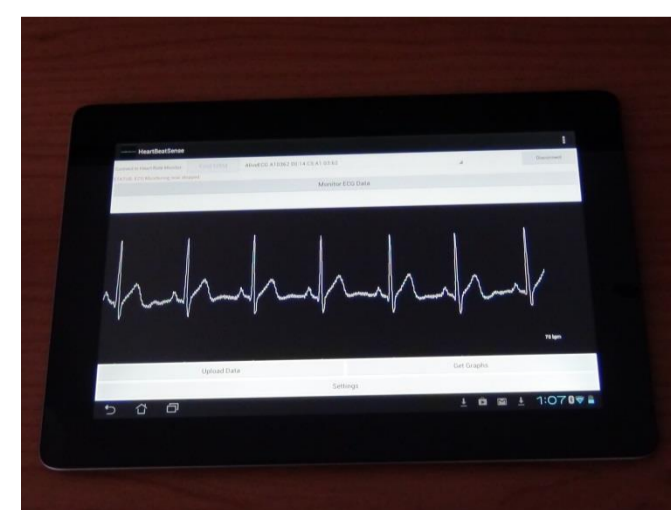
### Secure Data Access Protocol



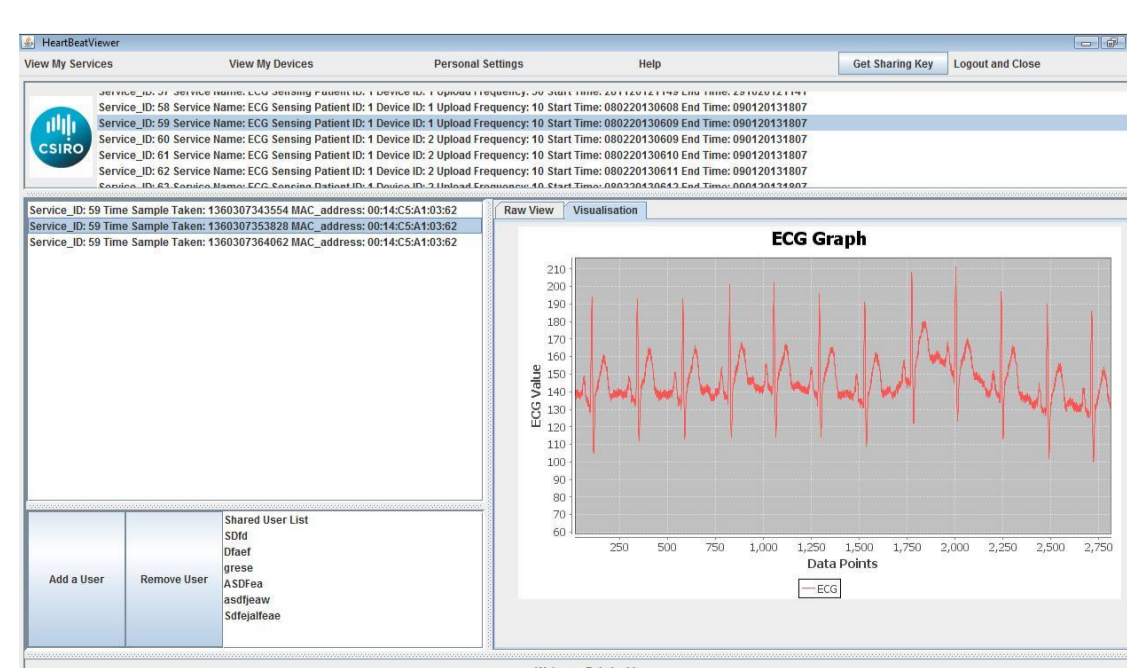
## Secure Data Sharing in Telecare Environment Architecture



### Mobile App prototype (Client View)



### Remote Client application (Doctor View)



## Contributions

- Combining mobile, Cloud and body sensor technologies for enabling remote telecare between doctors and patients.
- A model and protocol giving the data owner greater control when sharing data via the Cloud.
- An algorithm incorporating TPM devices that prevent illegal redistribution of data when sharing data with dishonest users in the distributed computing environment.

## Publications

- Danan Thilakanathan, Shiping Chen, Surya Nepal, Rafael A. Calvo, Leila Alem: A Platform for Secure Monitoring and Sharing of Generic Health Data in the Cloud. Special Issue on Integration of Cloud Computing and Body Sensor Networks, Future Generation Computer Systems (2012)
- Danan Thilakanathan, Shiping Chen, Surya Nepal, Rafael A. Calvo: Secure data sharing in the Cloud, Book Chapter on Security, Privacy, and Trust in Cloud Systems, by Springer (2013)
- Danan Thilakanathan, Shiping Chen, Surya Nepal, Rafael A. Calvo: Secure and Controlled Sharing of Data in Distributed Computing. 2nd IEEE International Conference on Big Data Science and Engineering (2013)