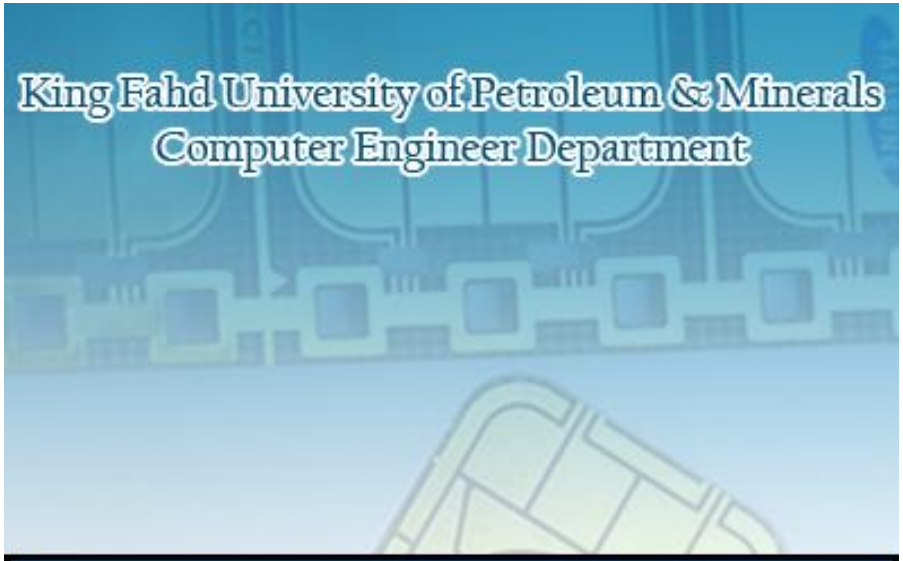
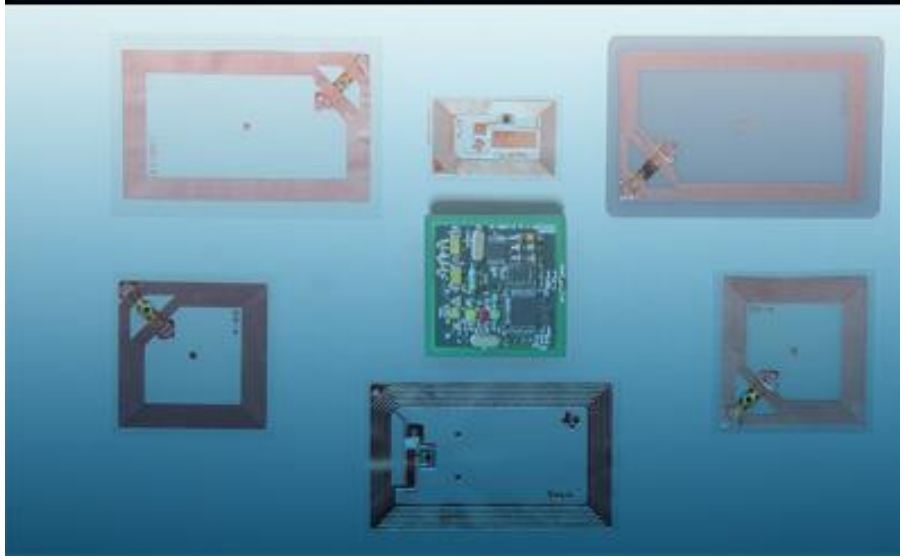
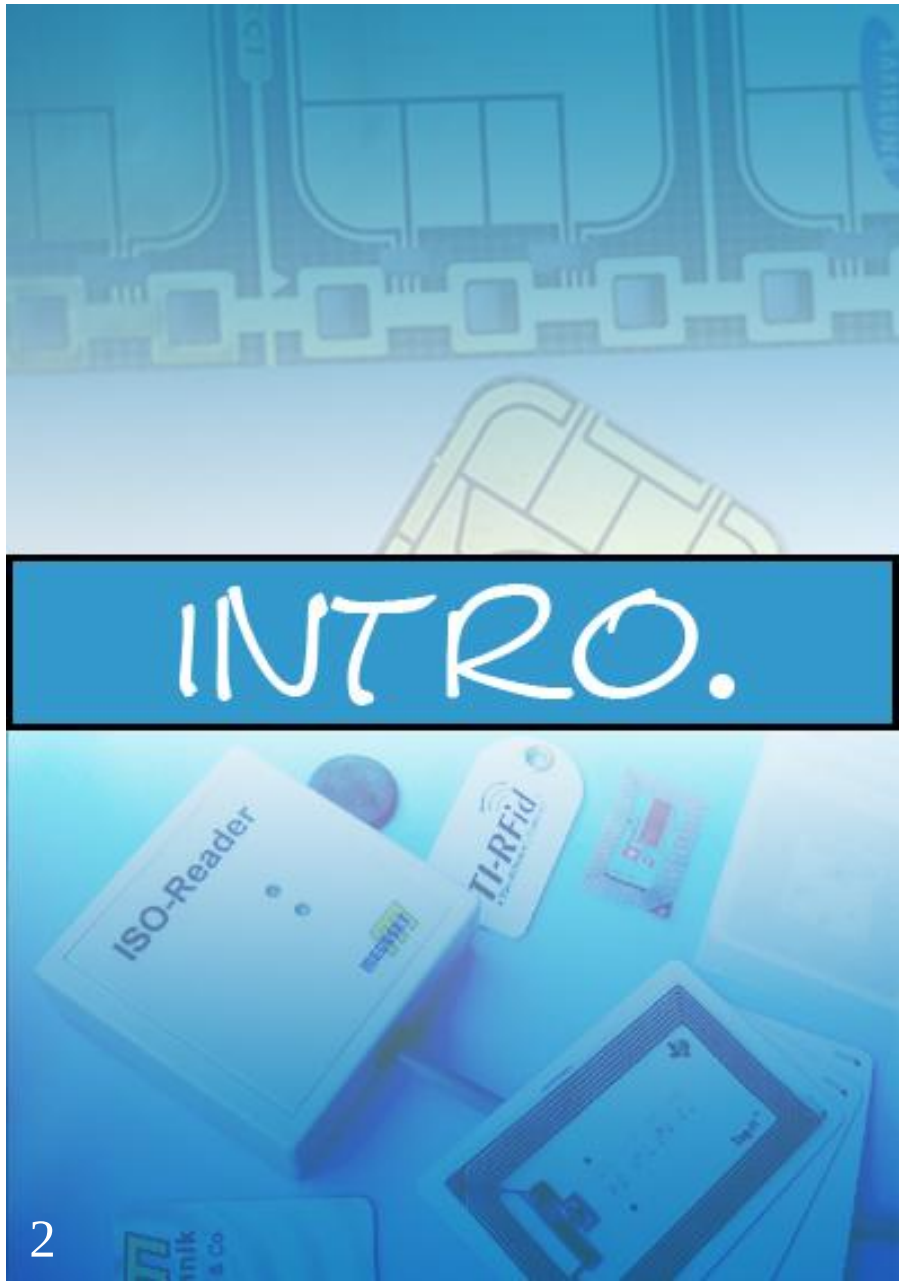


Smart Cards & RFID lab for innovative solutions
Location: Research Institute-15/5213

Under Supervision of
Dr Muhammad Wasim Raad
raad@kfupm.edu.sa





The World nowadays tends toward automating and computerizing *the activities of daily life*. Amongst the recent advanced technologies *is smart card* and RFID technology. Smart *cards have* been introduced to replace the traditional magnetic card. The smart card brings a variety of benefits to users. It provides security like encryption and electronic signatures, stores up to 100 or more times the information than *a* typical magnetic strip *card*, and reduces tampering and counterfeiting through high security mechanisms. Today, about 3 billion cards have been issued worldwide. The use of *a* microprocessor chip enhances the level of automation and security, making *a* credit or debit *card* a smart card.

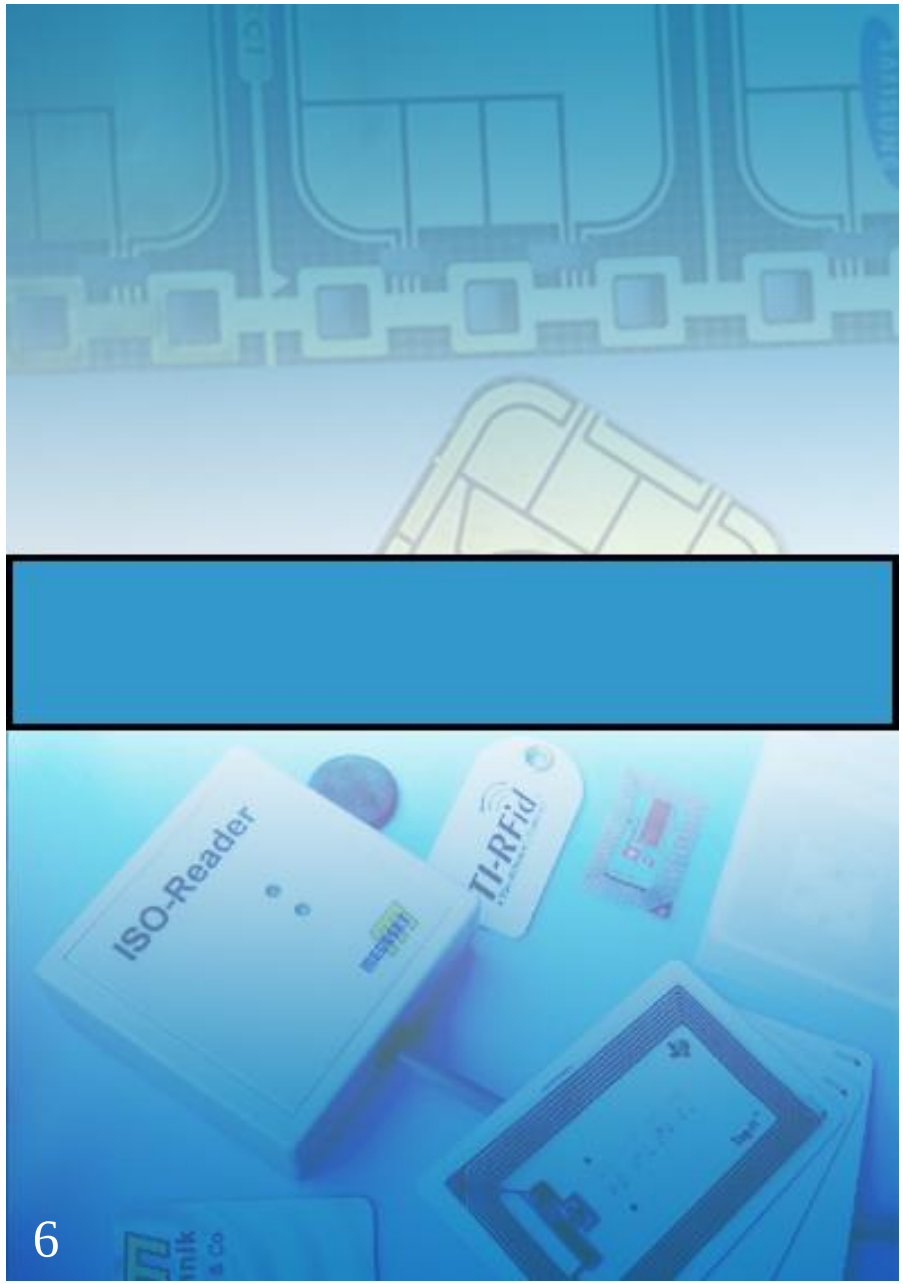
Among all smart cards, the MULTOS open platform smart card is considered one of the most secure smart cards, enabling anybody to program and download *multiple applications* securely on the same card even after issuing the card. Saudi Arabia has begun issuing a national ID card based on MULTOS, with additional health and digital certificate data on the card. The objective of establishing the new *joint* KFUPM-Step Nexus smart card & RFID lab is mainly to support innovative student projects in this area, and collaborate with the industry in providing technical support and certified training.

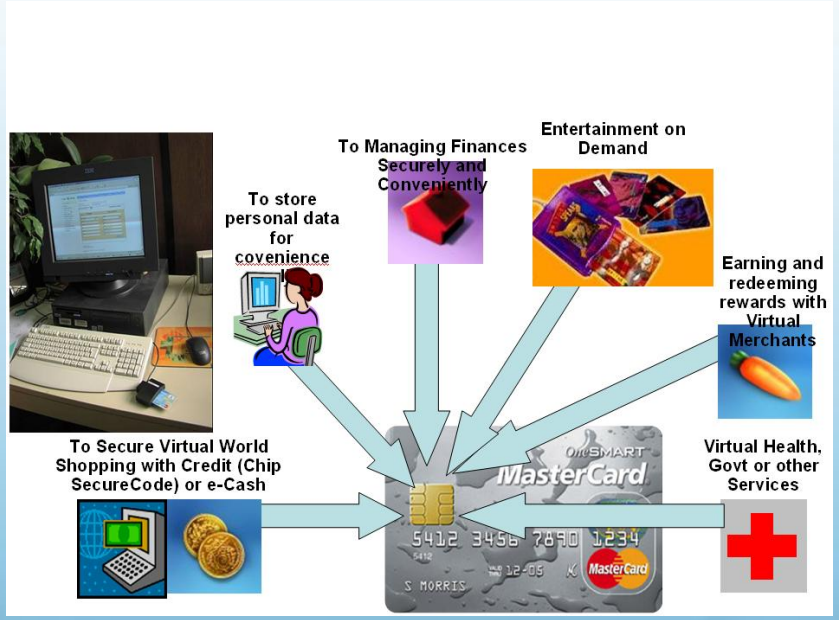
Equipped with state-of-the art smart card & RFID tools, the new lab will provide an excellent facility to conduct projects as well as research in smart card & RFID.

Radio frequency identification (RFID) is revolutionizing the way organizations around the world track the location and movement of goods and assets. RFID technology utilizes inexpensive wireless RFID chips or tags that report their location to nearby scanners. Items with RFID tags can be tracked from a supplier's factory floor to the retailer's store shelves.

The technology is already helping major retailers better control their inventory. Soon other organizations are expected to find innovative uses for RFID.

Hospitals will be able to instantaneously pinpoint the exact location of expensive equipment through RFID systems. Not only will the technology help hospitals maximize the use of equipment, but it will help them provide better care. In the pharmaceutical industry, companies may soon use *RFIDs* to help monitor the distribution of drugs around the world. This will help them reduce product counterfeiting while helping them better control inventory and monitor product quality. The MULTOS new Smart card will also help patients registered on health insurance to get their medication.


ISO-Reader
TI-RFid


To store personal data for covenience
To Managing Finances Securely and Conveniently
Entertainment on Demand
Earning and redeeming rewards with Virtual Merchants
To Secure Virtual World Shopping with Credit (Chip SecureCode) or e-Cash
Virtual Health, Govt or other Services
MasterCard
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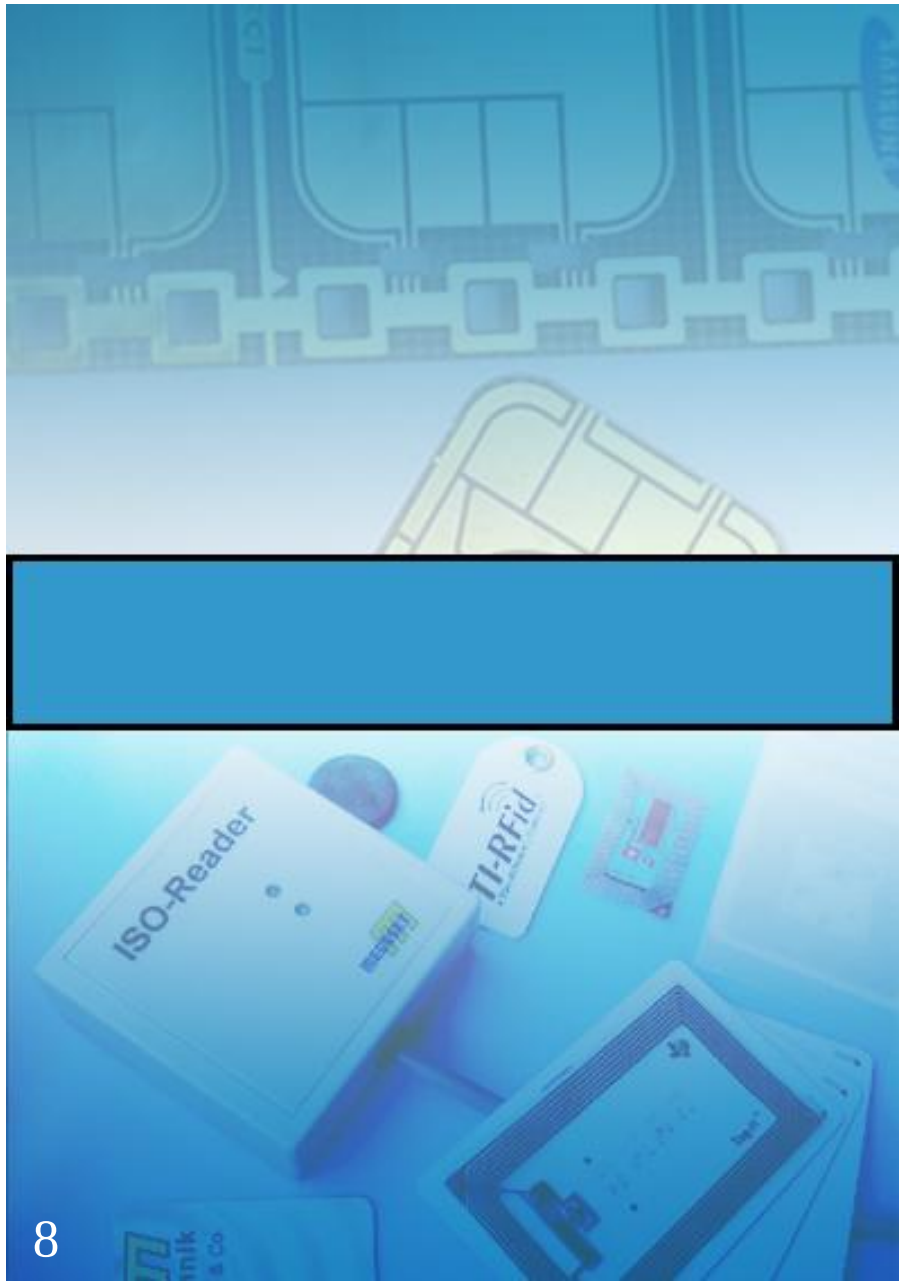
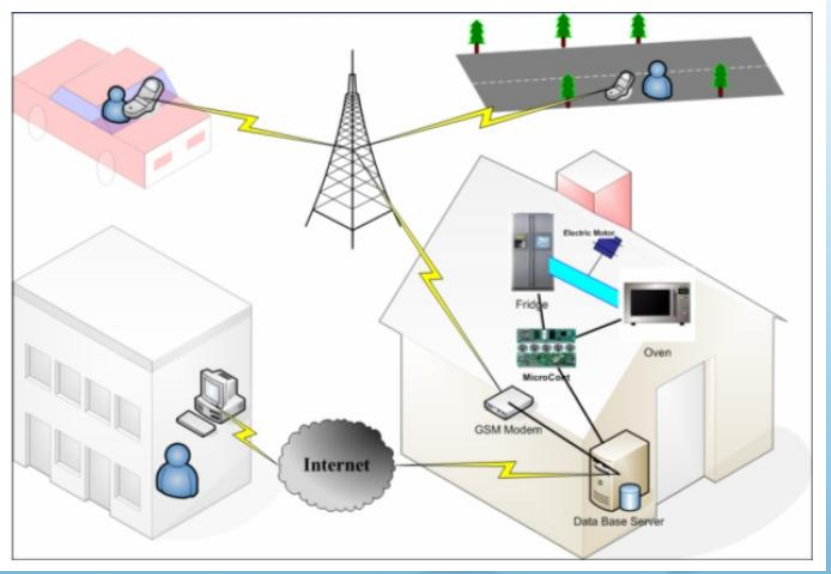


Smart Appliances Project

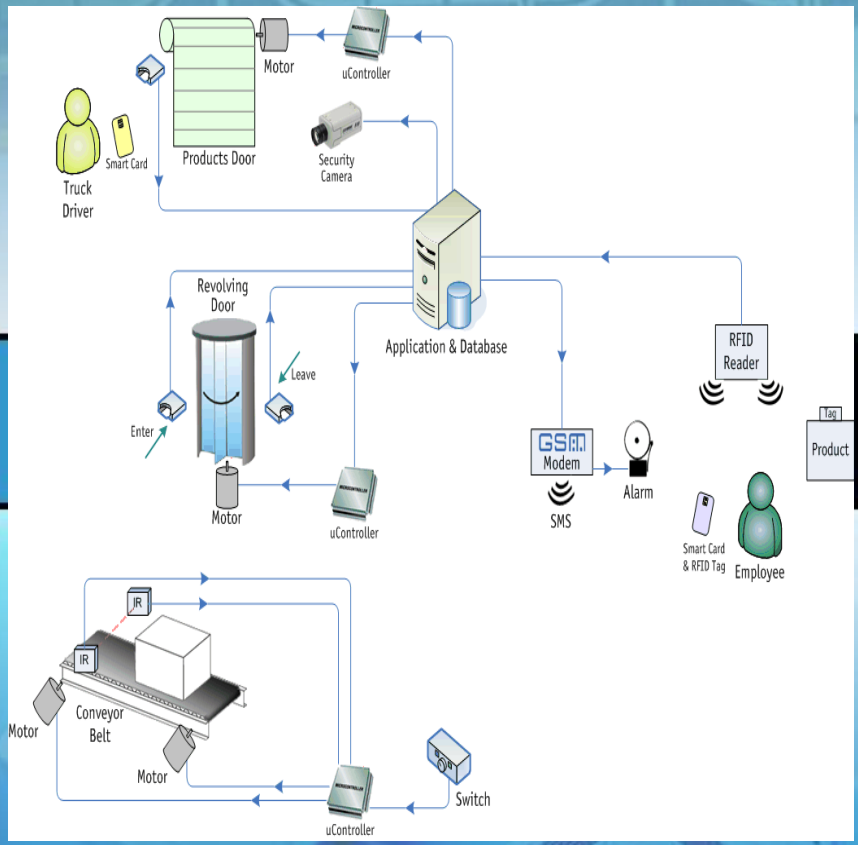
We have started putting the first block in building a complete smart home, by adding brains to some kitchen appliances.



The idea was to invent a new appliance that can operate as a microwave and as a fridge as one device. Thus, employees, students or even grandmothers can access this smart device from the internet using a secure smart card, select his/her desired food from the fridge, and order it to be ready at a specific time.

Smart Warehouse Project

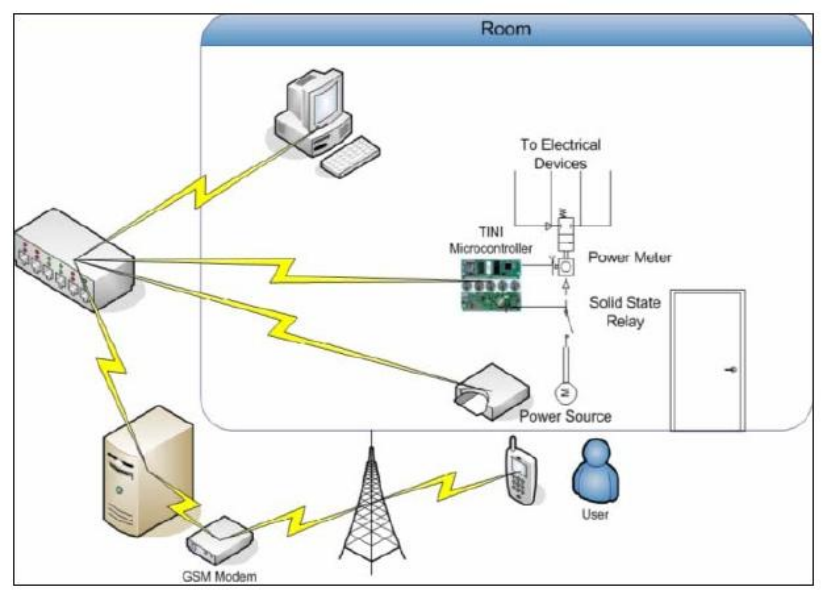
The project is based on *a* MULTOS smart card solution for access control *of* a smart warehouse in a supply chain.



RFID technology is used to track products in a supply chain in a supermarket and trigger *a* security alarm with a warning SMS message using *a* GSM network if a product is stolen..

Prepaid Electricity Project

We are providing prepaid electricity cards, so people can buy *a* specific amount of energy to use it only when *needed.*



People can register for this service and charge their accounts through the Internet or through their mobile phones. Our engineers suggest the use of smart cards for user's personal identification and to allow people to buy more electricity and access their personal profiles.