DUE CONFERENCE 2015

FUTURE INTERNET CONCEPTS FOR DEMAND MANAGEMENT

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AGENDA

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Background
Future Internet Concepts for Demand Management

- The paper presents an international research and experimentation initiative linked to the Future Internet (called TRESCIMO) which facilitates the validity of using these technologies as base for energy demand management.

- What is the **Future** of the **Internet**?
  In 30 years, the internet has progressed from connecting a small number of computers to each other, to interconnecting billions of devices to each other. Future Internet Research and Experimentation (FIRE) focusses on excelling this process and finding innovative ways to utilize the internet for the good of society. To do so, a lot of effort is being given to the Internet-of-Things and Machine-to-Machine (M2M) communications.

What is the “Internet of Things”?

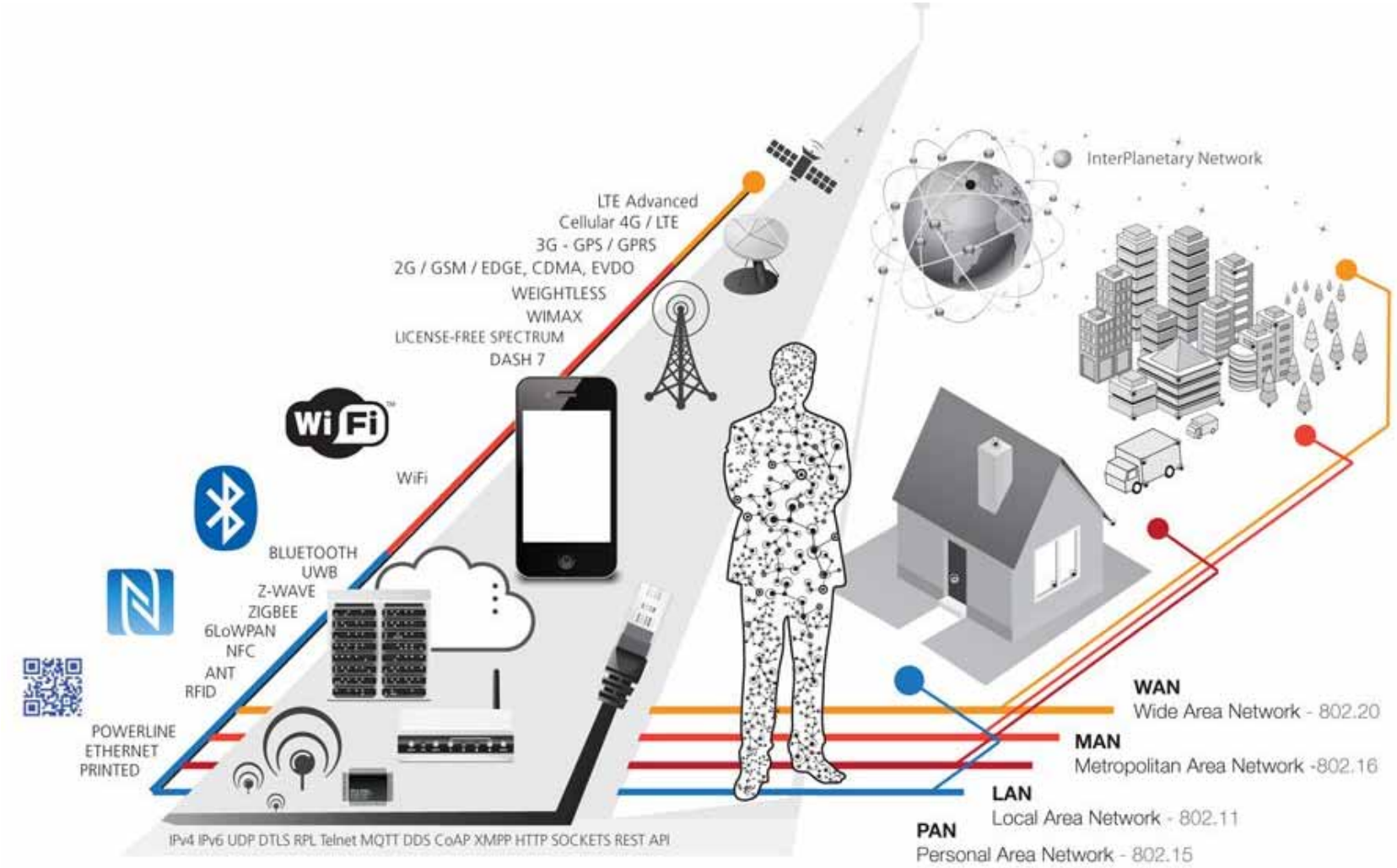
Internet of Things:

- Internet of Things (IoT) is the network of physical objects or "things" embedded with electronics, software, sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected devices. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure.

- Typically, IoT is expected to offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is expected to usher in automation in nearly all fields, while also enabling advanced applications like a Smart Grid.

- CISCO predicts: By 2020, there will be 50 billion “things” connected to the internet.

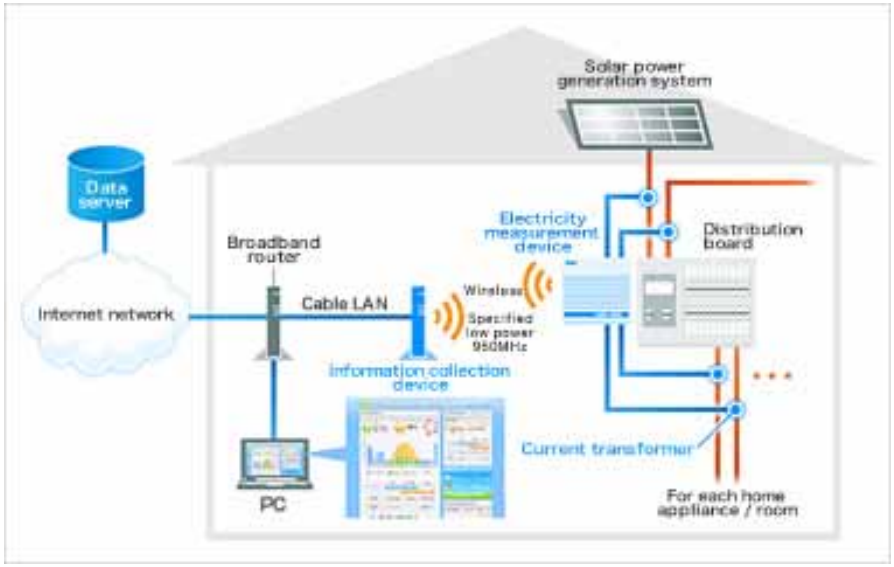
Machine to Machine (M2M) Communications



Smart Energy - Home Energy Management

- By making use of IoT and M2M technologies, it's possible to find new and innovative ways to alter the way people use energy. This could influence a reduction in their energy requirements, reduce their individual impact on the environment and reduce the amount of energy that is wasted.

- This would all be done with the intent to improve the quality of life of a particular individual, not to have technology stop them from going about their daily lives.



Benefits from the use of the Future Internet

- What is the value of making use of Future Internet technologies to perform Demand Management?
  - Change Customer Behaviour
  - Optimize Energy Usage
  - Increase customer education about energy use
  - Continually monitor and measure the impact on the customer
  - Increase the customer utilization of the Internet
  - Create an open way for the customer and the utility to communicate

- The benefits are equally felt by the customer and by the utility.

ESKOM TRIAL

Testbed for Reliable Smart City Machine to Machine Communications (TRESCIMO)

PROJECT OVERVIEW

- Project being undertaken is a collaboration effort between the European Union and South African partners to be executed over a planned duration of two year (2014 - 2016).
- South Africa's consortium partners - Eskom Research, CSIR and UCT.
- TRESCIMO – Aims to test the effectiveness of implementing interconnected sensors [machine to machine (M2M) communication] using Internet based technologies [Internet of Things (IoT)] to create a Smart City environment for citizens.

Eskom Project Objectives

Eskom Objectives:

1.Investigate and monitor the impact of Internet of Things (IoT) and Machine to Machine Communications on Demand Management;

2.To monitor Customer Behaviour patterns during Peak Demand;

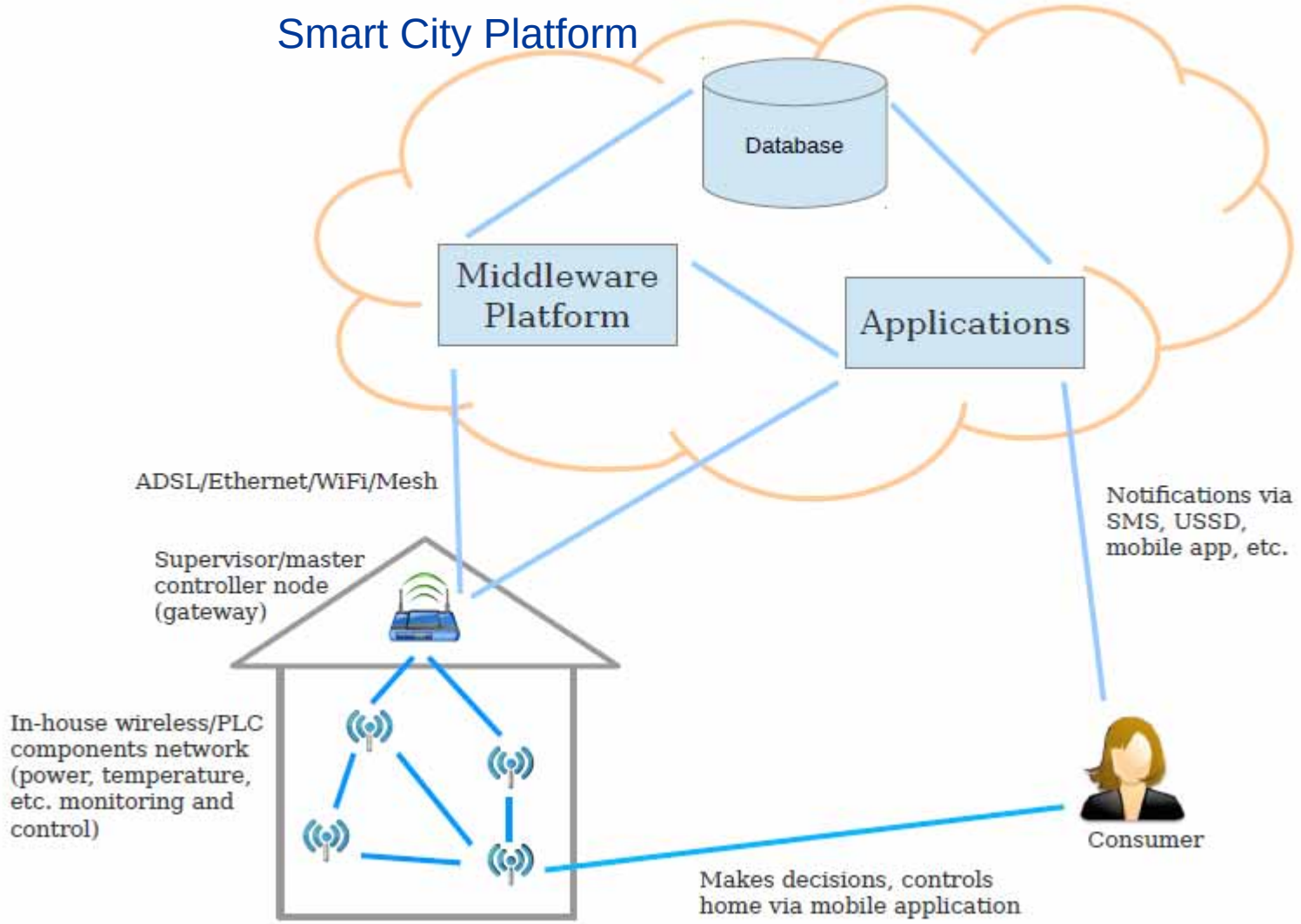
3.Trial testbed of 10-30 experimental sites to test behavioural interventions using;

- CSIR/Eskom developed Smart Devices (Active Plug) to be installed at trial participants home;
- Mobile Application installed on customer smart phones to aid customers in remotely controlling nominated appliances in home.

4.To determine the effectiveness of using a mobile and web based application on changing usage behaviour;

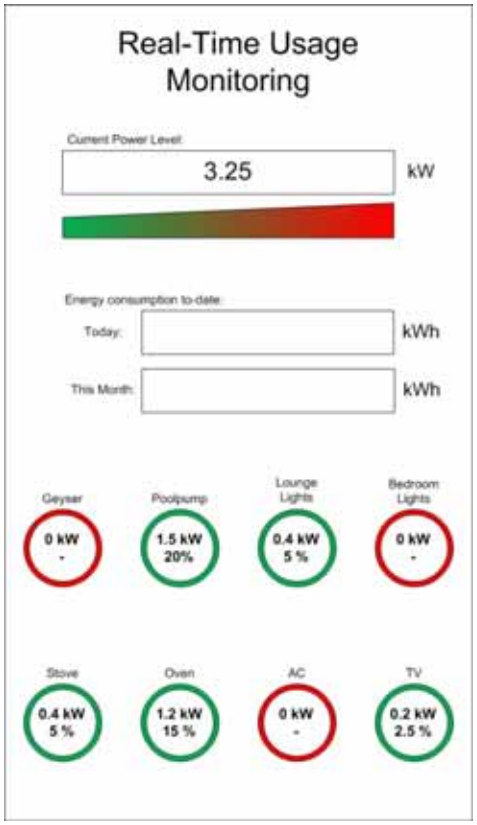
5.To analyse the practical application of the IoT as an enabler of demand management.

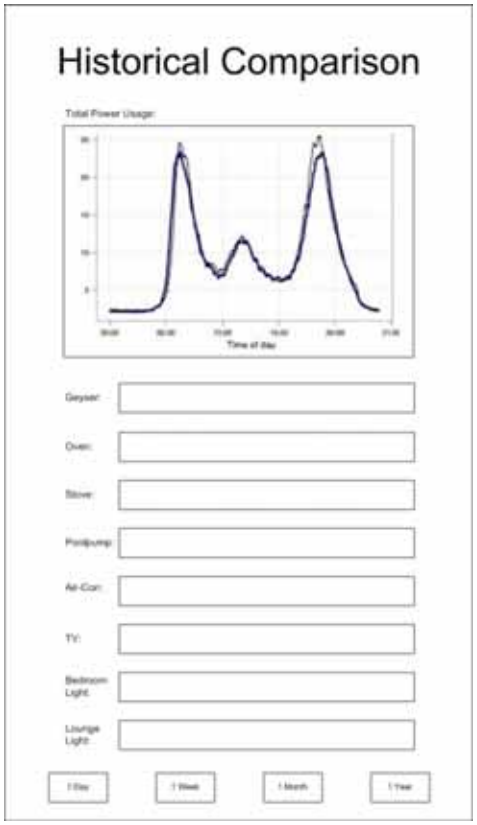
ESKOM TRIAL ARCHITECTURE

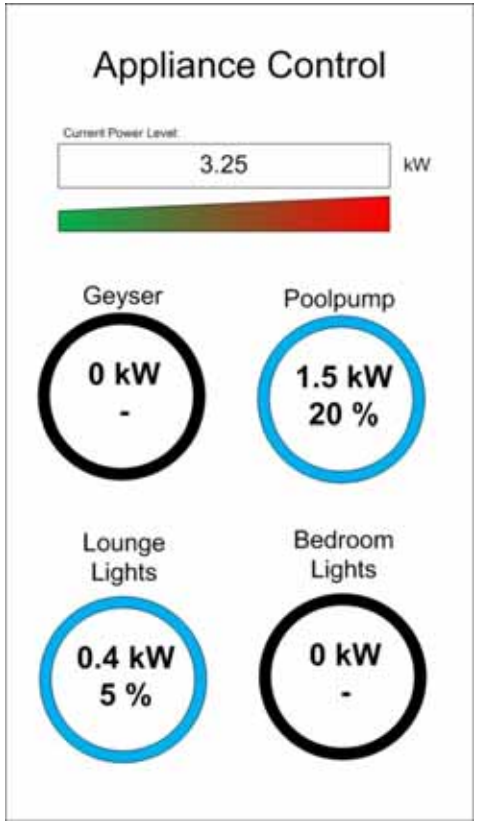


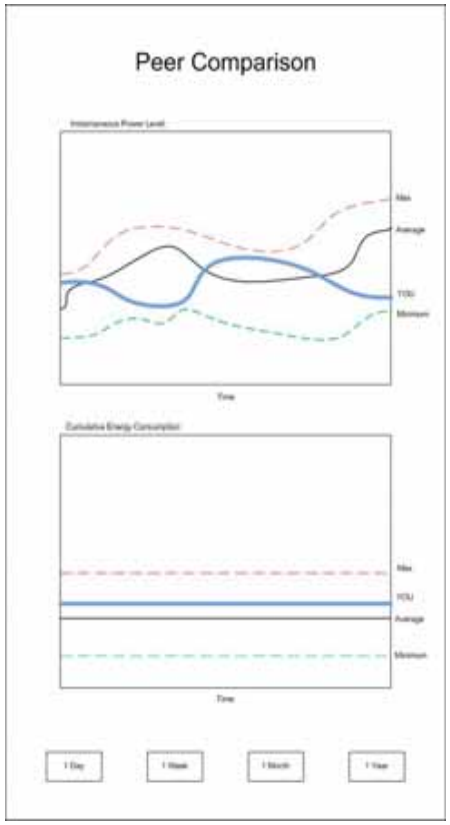
SMART DEVICES (HOME ENERGY MANAGEMENT)

MOBILE APPLICATION - LAYOUT



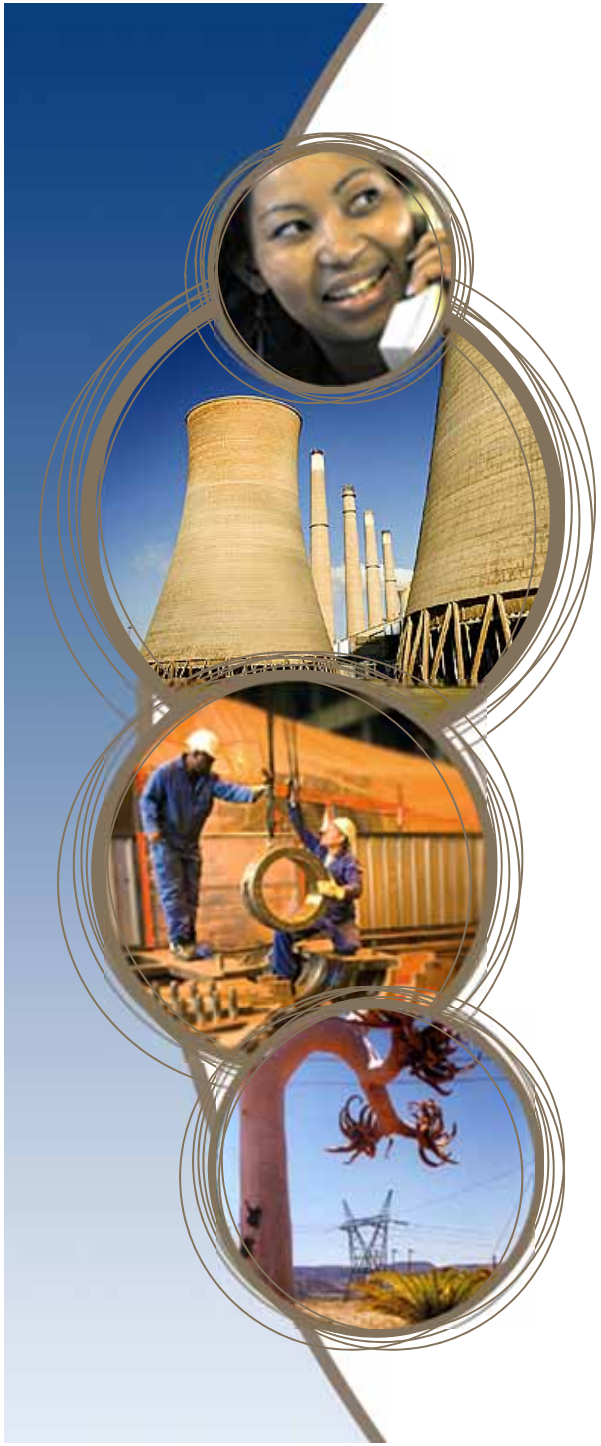






CONCLUSIONS and WAY FOWARD

- Develop participation criteria for trial customers
- Identify potential trial customers
- Sign-up customers to participate in the trail (10 - 30 customers).
- Communication, Marketing (Customer Information Pack) & Training material to be developed with partners for enrolling the 10-30 homes as part of the experimentation
- Execute the trial as per the trial objectives
- Test customer behavioural aspects



Thank you

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