

# Personal data as an amplification of human capability on the HAT

Being 'socially-smart' in an Internet-of-Things world - findings from the HAT project (<http://hubofallthings.com>)

Professor Irene Ng  
Professor of Marketing & Service Systems  
Director, International Institute for a Product & Service Innovation, WMG, University of Warwick

THE UNIVERSITY OF  
WARWICK

 **WMG**  
Innovative Solutions





# Smart phone? no.

Smart "me"

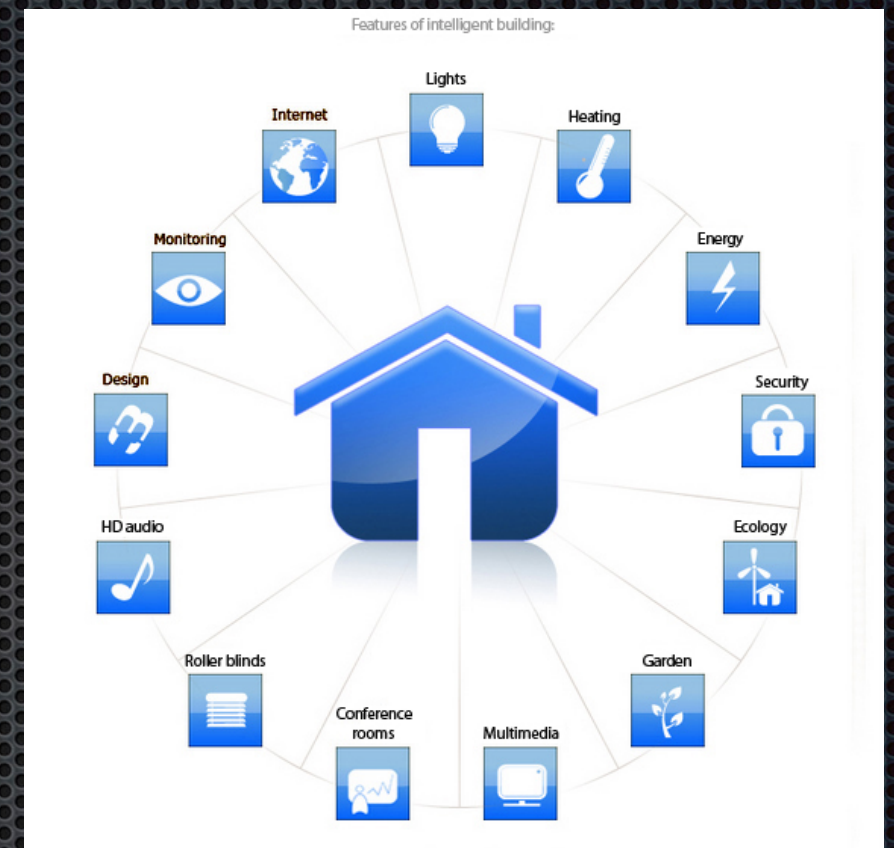
What made the smart  
phone successful is  
because it amplified our  
abilities, not because it  
itself was smart.





Smart appliances?  
Smart home?  
Smart things?

Current mindset of  
"smart" sets up objects  
to compete with  
humans





You're not helping, Watson.....





# But here's the problem

Smart things that compete with us don't sell. Smart things that **amplify** us, do.

We need things to be **socially smart.**





Since the dawn of commerce,  
markets are created from  
offerings that amplify humans  
in the way we think is  
meaningful to ourselves

We buy a cup only because  
our hands can't hold water  
We buy shoes because we  
think we look good in it

So even with the best intentions, we may  
end up making 'smart' things that creep us  
out, leave humans feeling useless,  
inadequate, uneducated.... Things that may  
be too smart, but actually not smart at all....







Things/service should be Socially Smart



First rule (axiom) of being  
"socially smart"

(Proofs in forthcoming economics paper)





"Socially smart" is **co-created**

A thing cannot be socially smart if it is not amplifying one (or more) human persons, **as perceived by the same human person(s)**



# Many people think that if a thing can think for us, it must be smart

- So a lot of data science effort is spent on prediction
- To predict and learn what you might want to do so that the thing can do it for you





But this logic is incomplete. Prediction assumes some form of consistency.

Because human lives is lived in variety as well as consistency

Guests for dinner, change of plans....

Have you ever had an identical day?

When have you needed service/help (amplification) most? When things go the routine way, or when things change?



Prediction is useful to make something smarter, but not enough to make it socially smart



# Amplification is needed most in the mundane crisis of life

It's how we discovered we need a wheel, a pen, paper, phones, coffee.

Smart things try to make human beings predictable, forcing us to live rigid lives..

Socially smart things understand life as a series of predictable and unpredictable events





So when an  
object is 'smart',  
we react in  
different ways

Approach-avoid conflict





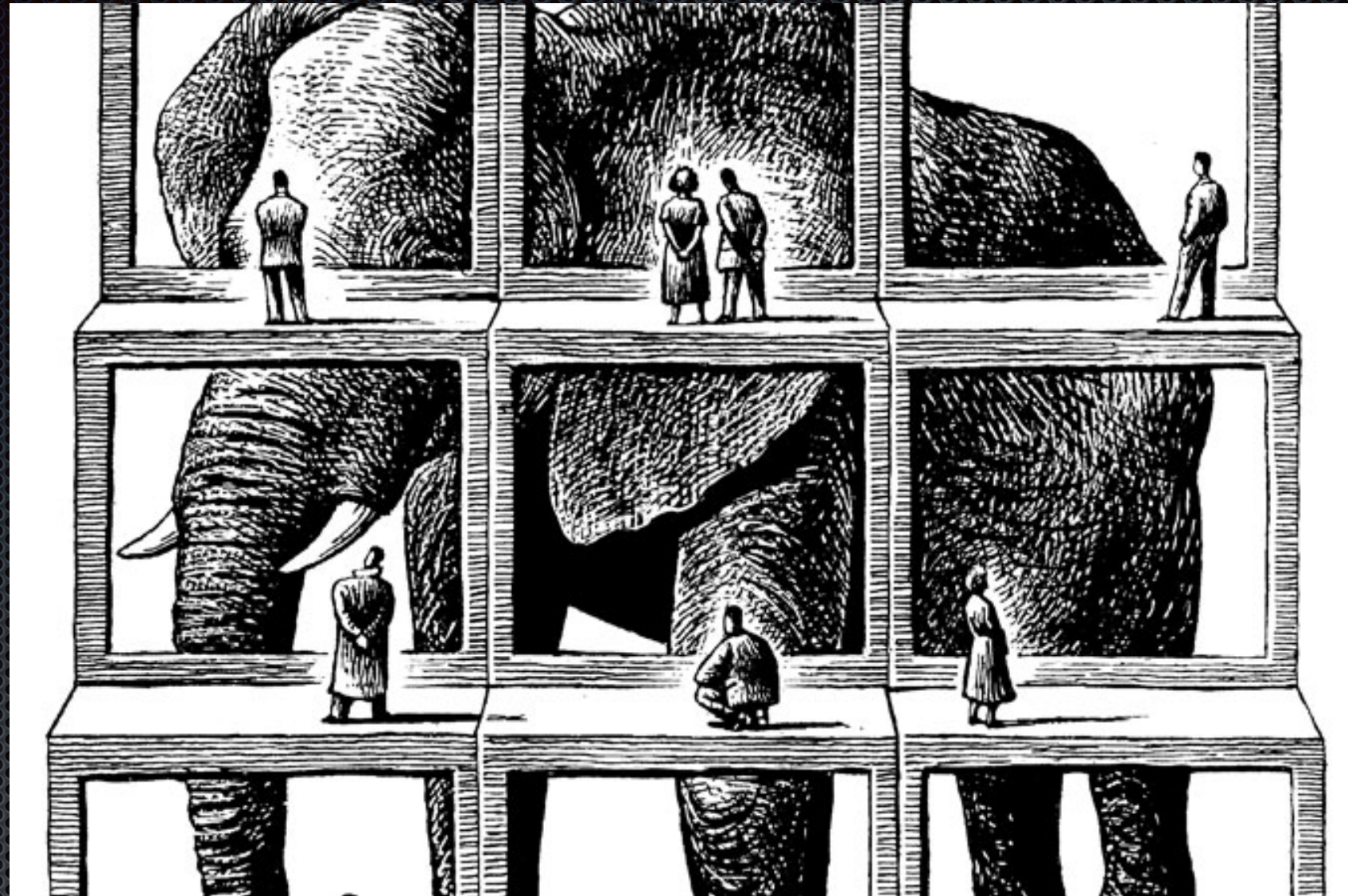
# Mindlessness and Mindfulness

- Sometimes we are happy with some objects/service to take over cognitive effort e.g. Windscreen wiper goes faster with more rain. [Mindlessness]
- Sometimes we are not happy with some objects/service taking over cognitive effort e.g. Supermarket sending coupons for pregnant mum before she knew she was pregnant [Mindfulness]
- Finding: In consistency, we value mindlessness; in variety, we value mindfulness. We want control.



Second rule of "socially  
smart"





"Socially smart" is **contextual** to when an object/service is part of consistency or variety in lived lives

A thing is socially smart only if it is contextually smart in amplifying human capabilities



For those who know service  
dominant logic (Vargo & Lusch 2008)

A smart object is a **service in context** (ie it  
is contextually competent)



# Internet-of-things objects are slowly becoming contextually competent

- Being more visible (can be discovered e.g. Car keys)
- Being able to be actuated anywhere (can be controlled e.g. Philips Light bulb)
- Being part of a system (can be coordinated e.g. Fibaro smart home)
- Is dynamically reconfigurable (can be contextually aware e.g. Motion sensed lights)
- integrates personal data (can be personalisable e.g. IFTTT)



Third rule of "smart"





"Socially Smart" (and smart) things have no moral judgement

Amplification can cause as much harm as good in so far as humans are just as able to harm one another as they are able to serve one another

The ability of socially smart things to serve human lives depend on who has power over it. A socially smart (and smart) thing is completely corruptible



So based on the three rules of "socially smart" (co-created, contextual and corruptible), how do we design socially smart Internet-of-things?

Sure, we need the new technologies, algorithms, materials, software etc. but to co-create and to be contextually smart and to mitigate corruptibility, smart things need the HUMAN PERSON..... Or.....

Personal Data

Because socially smart things need to know how, when and where it should be smart. It needs to FIT human lives both in its consistency and variety.



# The HAT



- A Personal Data Container (mitigating corruptibility)
- An ontology and database schema that flattens and liberate vertical data (enabling amplification and contextualisation)
- A data bundling tool (contextualisation of data by yourself)
- A platform for exchange and use of personal data (amplification through innovative offerings)



# The HAT use case

The hot water system in a home: illustrating consistency, variety, contextualisation, amplification and corruptibility



# HAT demonstrator

- Live demo of HAT demonstrator house
  - Fibaro ([www.fibaro.com](http://www.fibaro.com)) home system
  - Fitbit ([fitbit.com](http://fitbit.com))
  - Netatmo ([netatmo.com](http://netatmo.com))
  - Beauty box (HAT team Cambridge)
  - Toilet roll holder (HAT team Edinburgh)
  - Facebook ([www.facebook.com](http://www.facebook.com))
  - Google calendar
  - iPhone location
- Live demo of HAT Hyperdata browser





# Let me introduce you to 250L and 300L

250L heated by heat pump  
300L heated by immersion heating and solar  
thermal

Variety: when we have guests in winter, when  
there is no sun in summer, when we take our  
showers (morning or night)

Consistency: when we take our showers (within  
4 hours of morning or night)

Data transformation: where do I get the data?

Amplification: how can I know how hot the tank  
is? What energy source should I use - heat  
pump, immersion or solar mixing? Do I want  
comfort or Eco? Can I be Eco sometimes and  
comfortable at other times?

Contextualisation: what data should be in a  
bundle to inform the management of this?

Calendar for knowing when guests are coming?





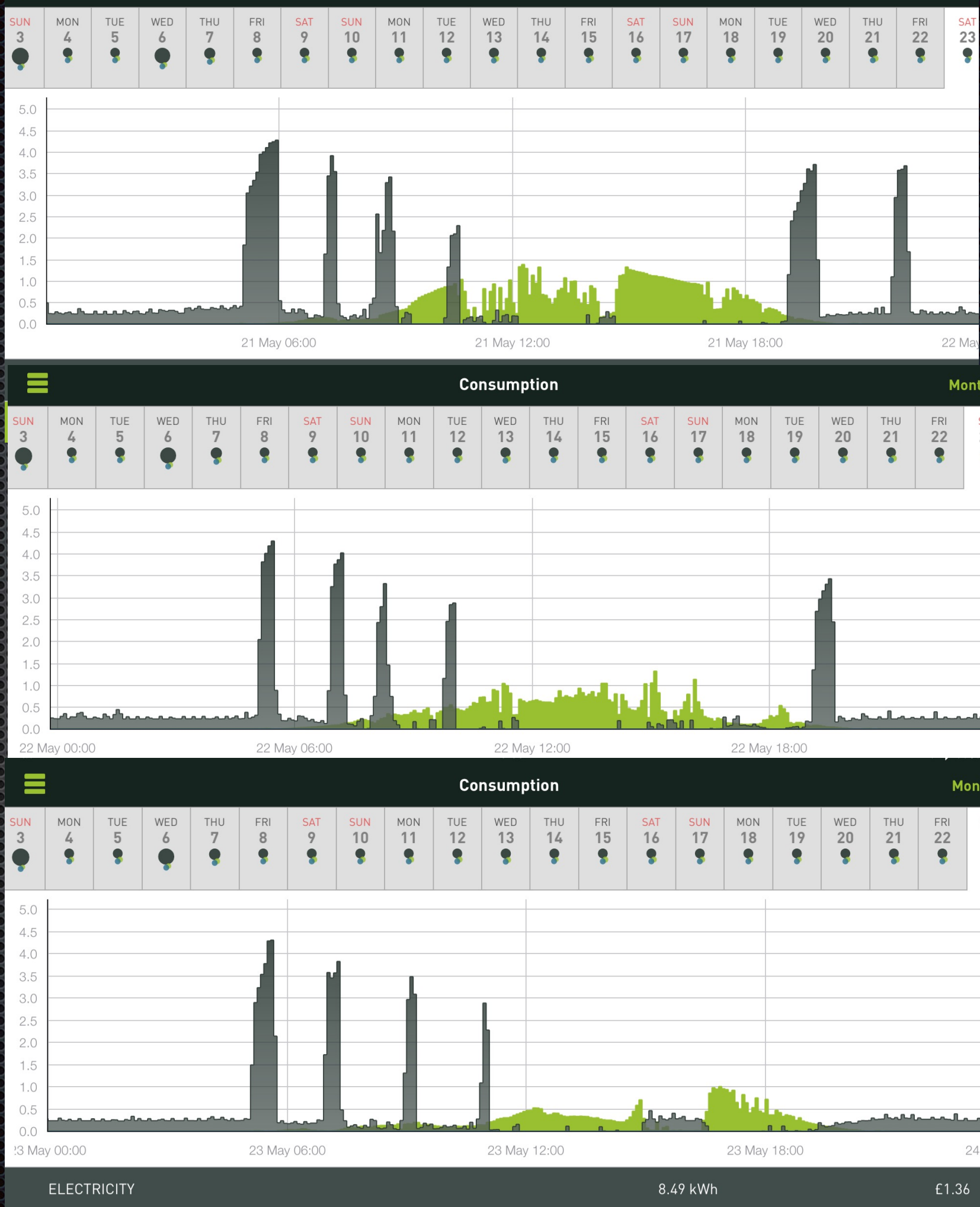
3 days

What is consistent

What is variety

What is the issue

What is the solution





# Current instrumentation: What is a socially smart home water system?

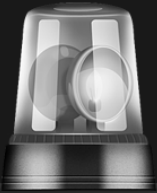

iPad 22:41 16%

Home 5 21.0°C 68 **Plant room** 0 Arm

2015/05/18 22:41:20 DCS-5222L

Battery level Camera

Battery level

ALARM	MOTION	WHAT'S UP
 DISARMED	4h 7m  Golf store door Plant room	250L tank temp: 50.68°C to 50.62°C 22:40:17 250L tank temp: 50.50°C to 50.68°C 22:36:47 House meter: 6.66W to 8.12W 22:34:05 250L tank temp: 50.25°C to 50.50°C 22:33:38 300L tank temp: 21.32°C to 21.13°C 22:32:57

250L tank temp Plant room 50.6°C

300L tank temp Plant room 21.1°C

Plant room temp Plant room 13.5°C

Sunlight Plant room 14 LUX

Pump for tanks Plant room OFF

Immersn heat tank 2 Plant room OFF

Irrigation master Plant room OFF

Battery level Plant room

Lightbulb Thermometer House meter Camera



Thank you.