



MAKING THE MARKET BEHIND THE METER

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OVERVIEW: EMERGING MARKET BEHIND THE METER



WHAT

- Integration of distributed energy resources with/without grids
- Contestable services behind head billing meters
- Intelligent applications and automated actions (such as alerts, diagnostics, switching, mode changes)

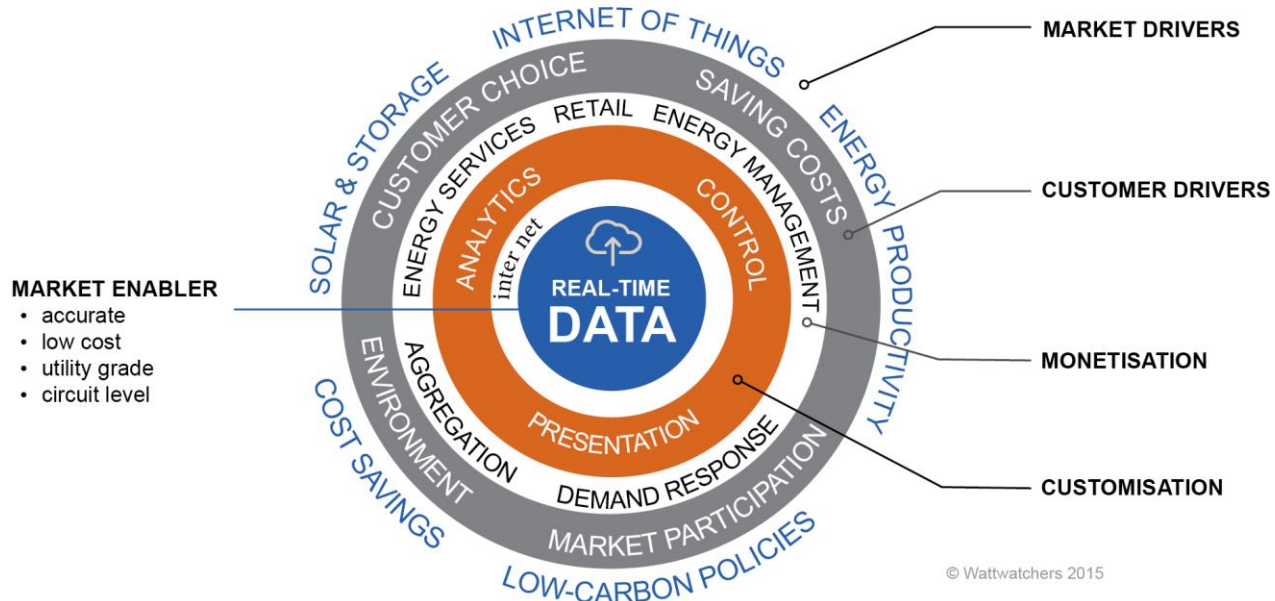
HOW

- Real-time data is key 'market enabler'
- Sensors on the ground, brains in the Cloud
- 'Internet of Things' Information Value Loop

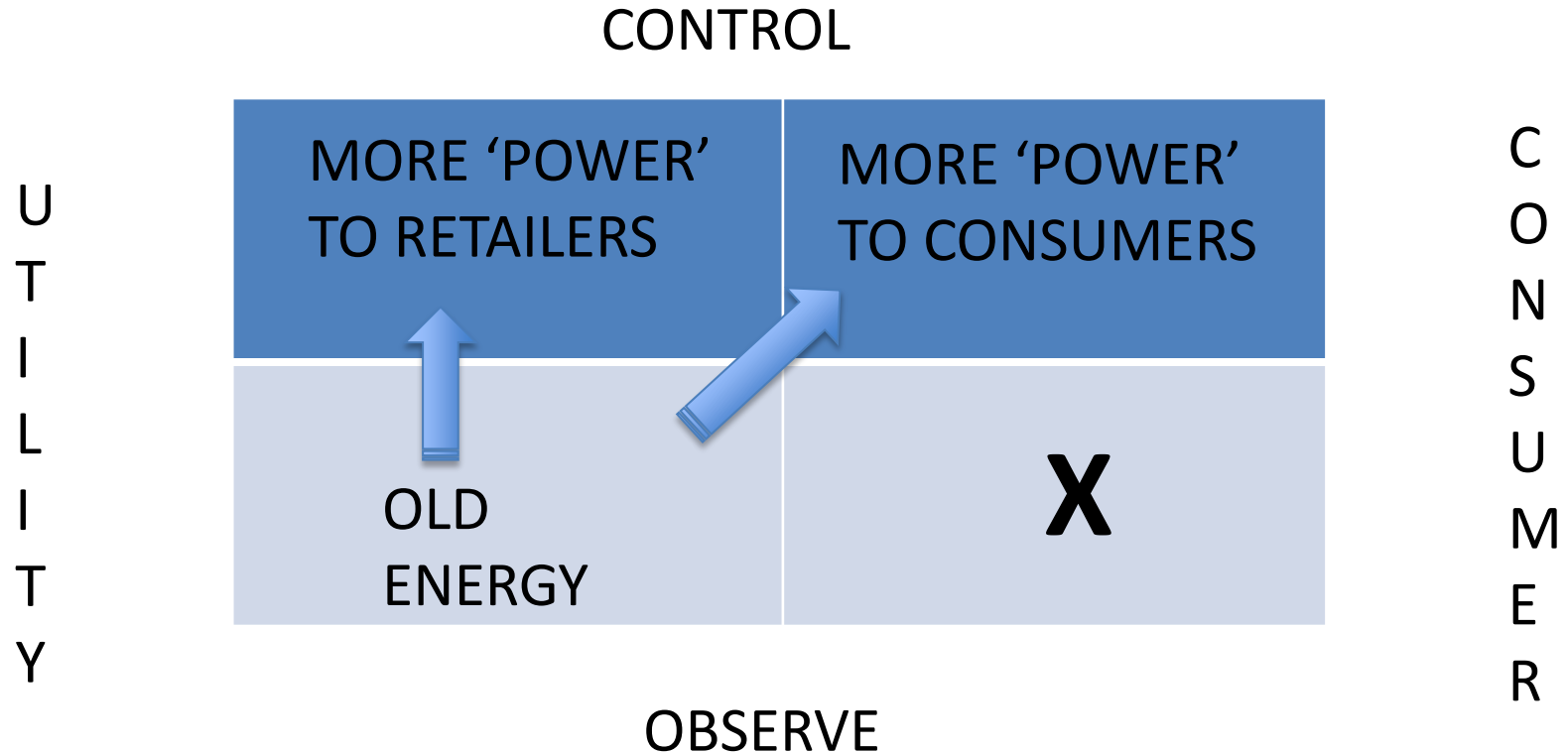
KEY QUESTION:

WHERE DO YOU GET THE DATA FOR THAT?

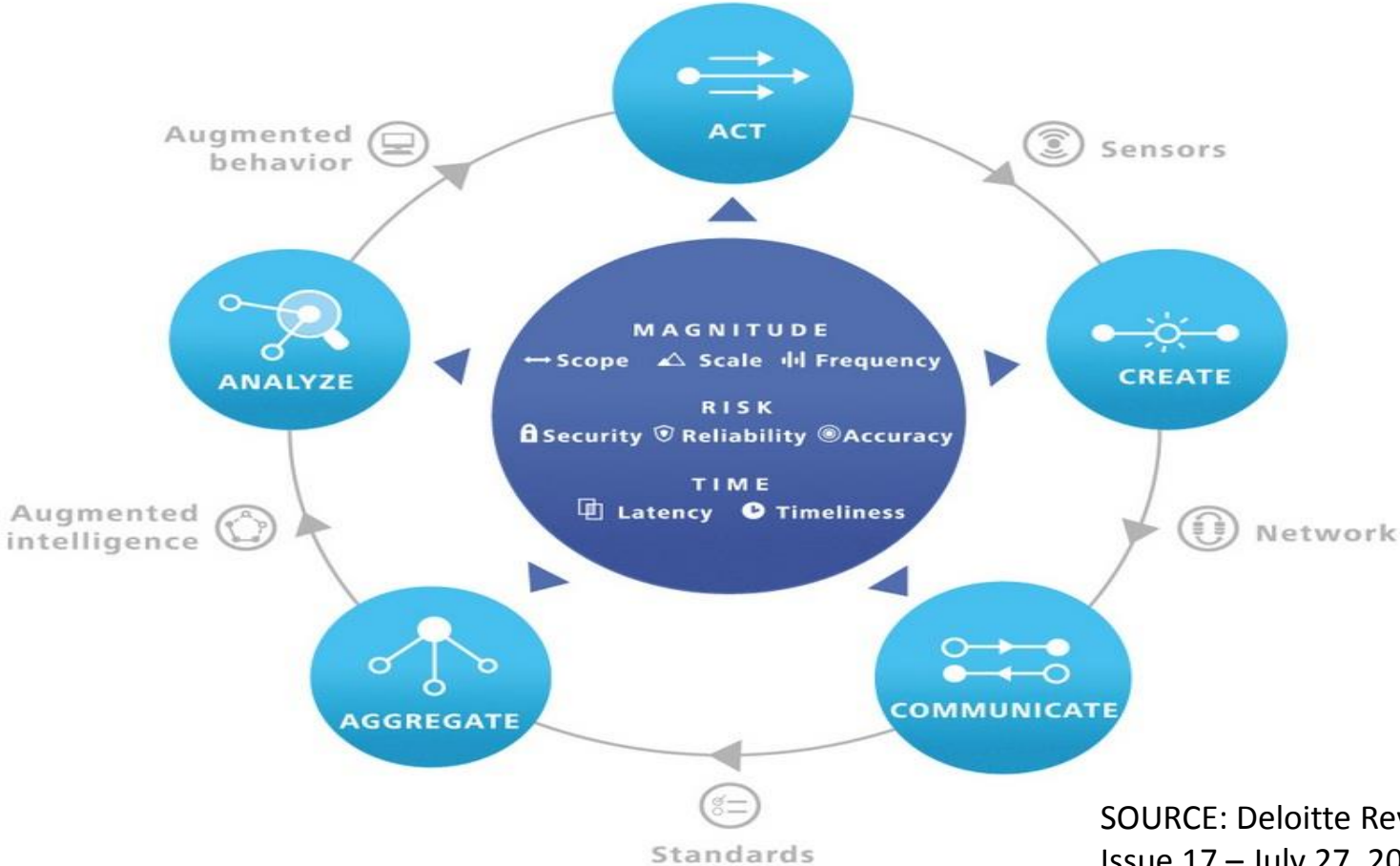
DATA POWERS THE NEW ENERGY ECONOMY



WHICH PATH FOR NEW ENERGY?



THE INFORMATION VALUE LOOP - INTERNET OF THINGS



SOURCE: Deloitte Review
Issue 17 – July 27, 2015

EXAMPLE: WATTWATCHERS + SOLAR ANALYTICS

Total energy, solar (and soon battery) performance, alerts & predictions

Brains in the Cloud

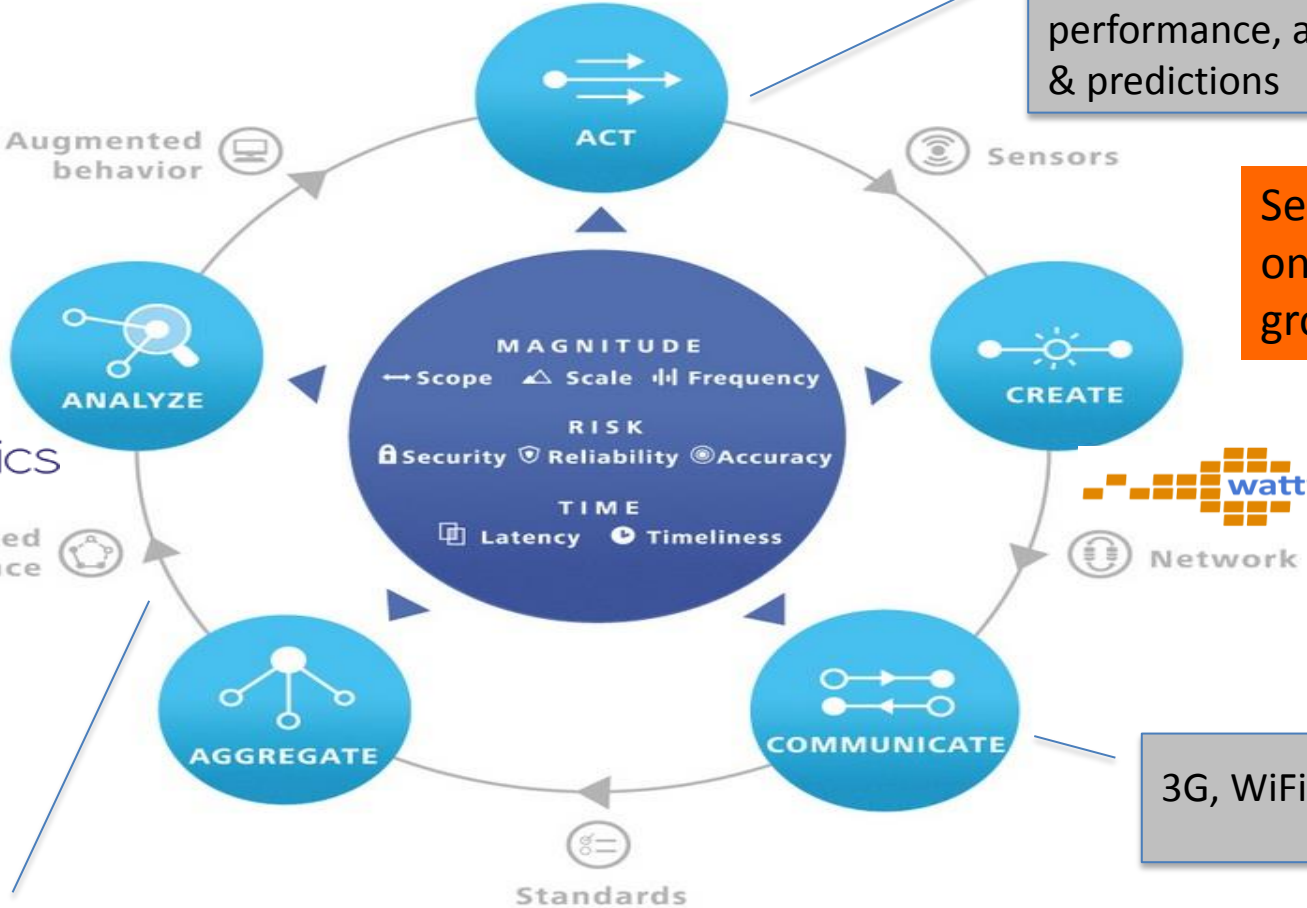
Sensors on the ground

solar analytics

wattwatchers digital energy

Energy data + Weather data + Algorithms

3G, WiFi, LoRa



WHERE DO YOU GET THE DATA FOR THAT NOW?



Main sources of data

- Utility billing meters – some ‘smart’ many not
- Inverters – solar and increasingly for storage batteries too
- Commercial sub-metering systems
- Other meters and sensors – from IHDs to more sophisticated offerings (some embedded in solar/storage/grid ‘integration systems’ and energy management)

Problems/challenges

- Restricted or contested access to data
- Inadequate communications
- Poor and/or variable quality and timeliness of data
- Interoperability issues

WHO NEEDS DATA FOR 'THAT'?



- Consumers
- Electricians/solar installers
- Energy/data service providers
- Retailers
- Distributors
- Grid operators
- Investors
- Equipment manufacturers
- Regulators
- Consumer advocates

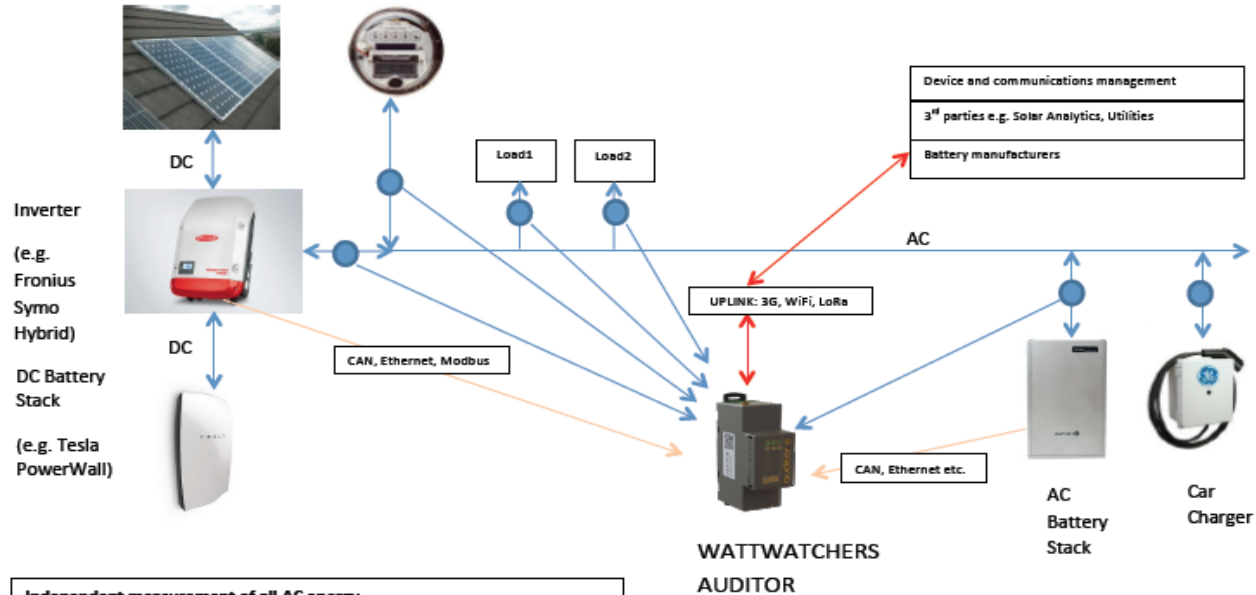
ARCHITECTURE FOR NEW ENERGY DATA SOLUTION



- Physical access to all relevant energy flows
- Enterprise class metering
- Comprehensive online management, code update, multiple applications (especially for processing high frequency energy data)
- Connectivity of all relevant equipment to the internet, ideally through one 'uplink', preferably 3G
- Data accessible to all relevant parties: customer, manufacturer, vendor/installer, utility (and grid operators by arrangement)
- Commercial arrangements that don't exclude any participant
- Measurements and connectivity that are independent of all the various parties, simplifying provision of service level agreements (SLAs)

GETTING DATA TO BRAINS IN THE CLOUD – ‘VIZIGRID’

VIZIGRID – RELATIONSHIPS & CONNECTIONS



- Independent measurement of all AC energy
- Suitable for all 'new energy' configurations
- Independent uplink for battery/inverter data
- Integrated access of all data and control paths to all parties
- Communication Service Level Agreements (SLAs) through one provider

SOLUTIONS START WITH SENSORS ON THE GROUND



Utility
deployment

Consumer
app

Energy
services



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Smart Meters/Data Collectors/Loggers

Three Class 1 meters with
on-board communications
(3-phase OR 3 circuits)



Low-power, low
data overheads

One-sixth size, one-third
the cost of Smart Meter

No batteries, no 'HUB'
needed

One product DIN install,
configure off smartphone

No data loss from
network outages

Wi-Fi,3G,ethernet,
LoRaWan

Utility-independent
data in real-time

Private key
authentication & encryption

**Power metrics
data**
(5 sec. or NEM timeframes)

- Real energy
- Reactive energy
- Voltage
- Current
- Frequency
- Power factor
- Real power
- Reactive power

AUDITOR3®
(also in 6-meter units)

supports multi-server,
multi-client models