

May 2018
Cape Town, South Africa



The Digital Utility & The Transition To Edge Intelligence In Smart Water Networks

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Utility Challenges (Some...)

Climate Change (Water Scarcity)

Changing Population / Demographics

Energy Losses (NTL) / Leakage (NRW)

Need To Maintain Service

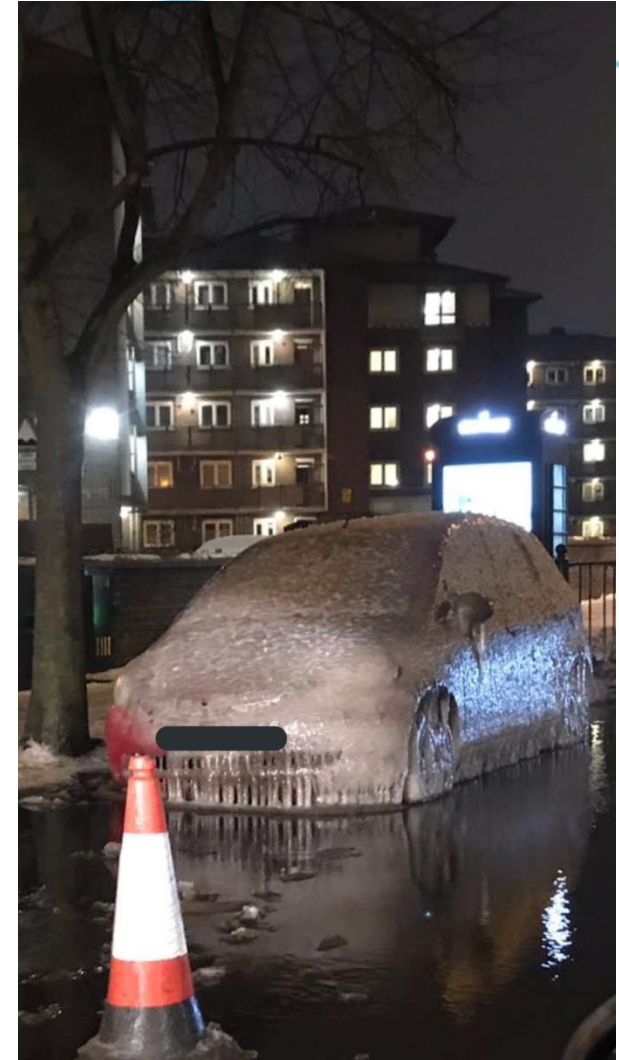
Climate Change... London March 2018



Thames Water confirmed about 20,000 homes were affected as it scrambled to set up water bottle stations... The water company said it is working to fix a number of burst pipes after customers reported problems in north, north west, south west and west London. It comes after the firm issued a warning over frozen pipes amid the bitterly cold conditions that swept across the UK caused by the so-called Beast from the East this week.

Eight Weeks Later...

Met Office confirm today is officially the HOTTEST early May bank holiday Monday on record with temperatures soaring to 24.2C



The Utility Solution?

Move To AMI / Smart Water Network?

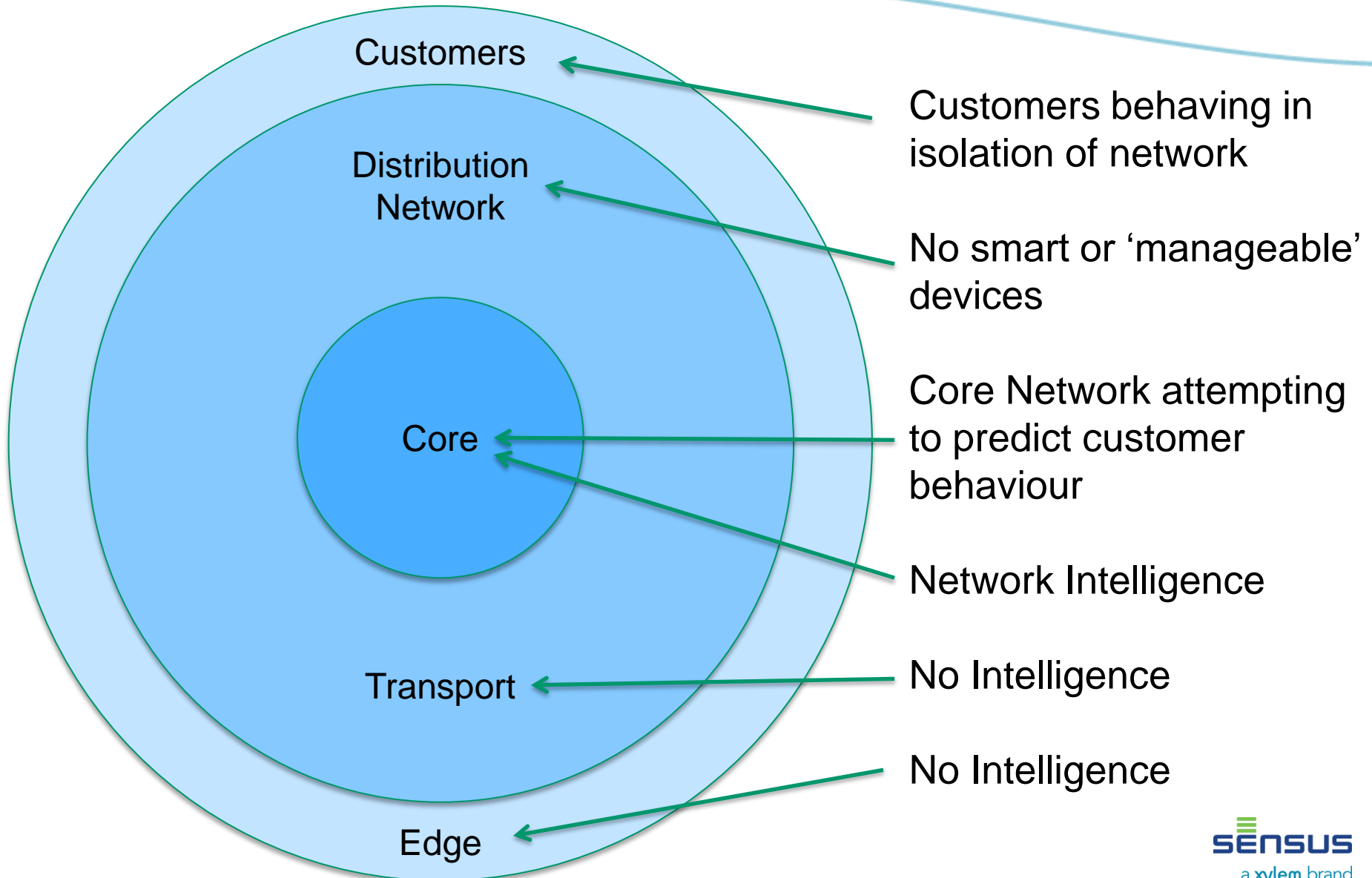
Deploy Lots Of Smart Meters?

Adopt IOT? Whatever That Is...

All This Means Edge Intelligence...

... The Telco's Did This 30 Years Ago

Telephone Network Of 30 Years Ago



Telephone Network Of 30 Years Ago

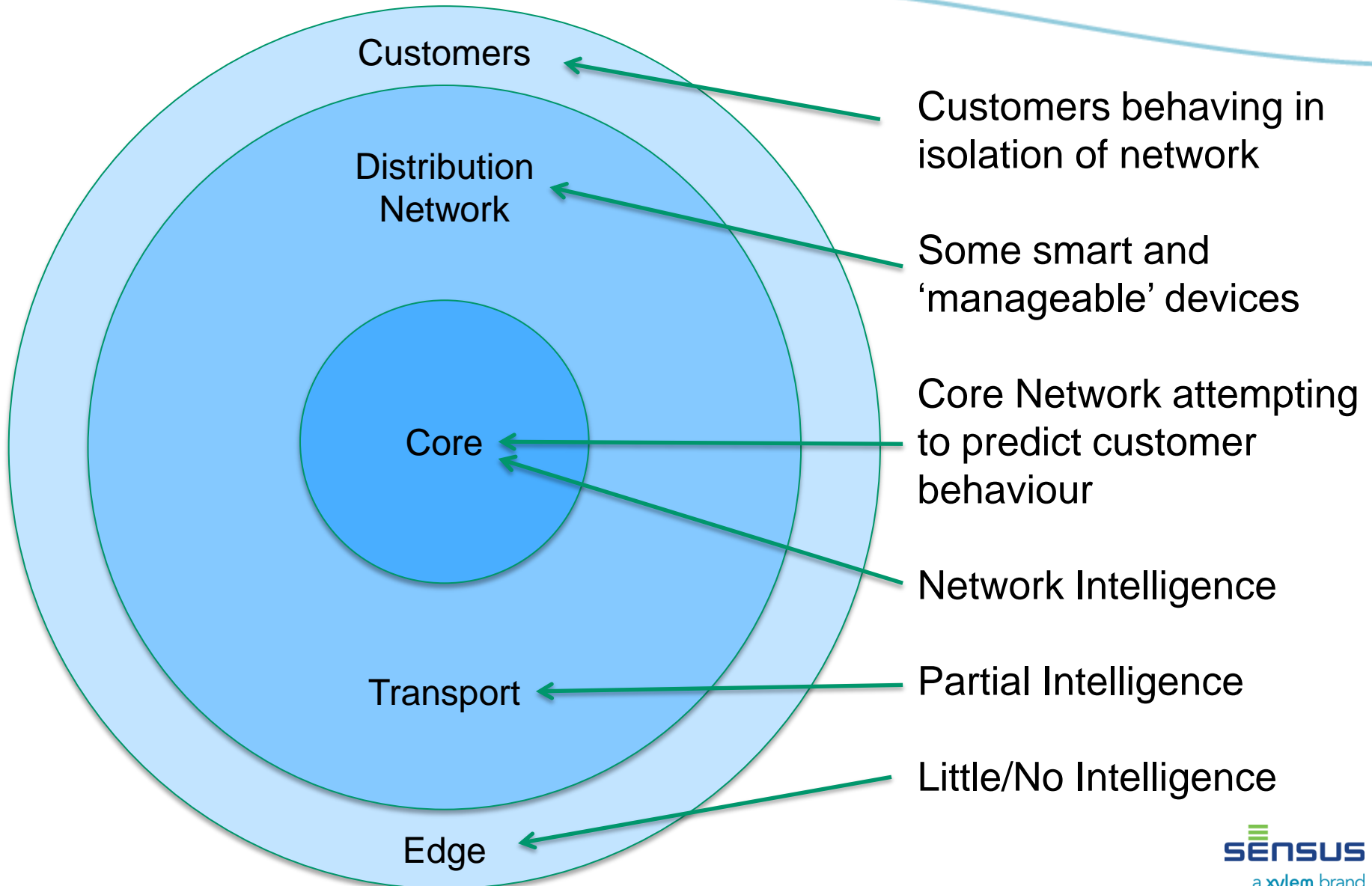
Dial Tone: Core To Edge Intelligence

Busy Hour: Planning For Peak Demand

Capacity: Oversold In Same Way As Airline Seats Or Gym Membership

Network Designed To Shed Load

Most Energy/Water Networks Today



Most Energy/Water Networks Today

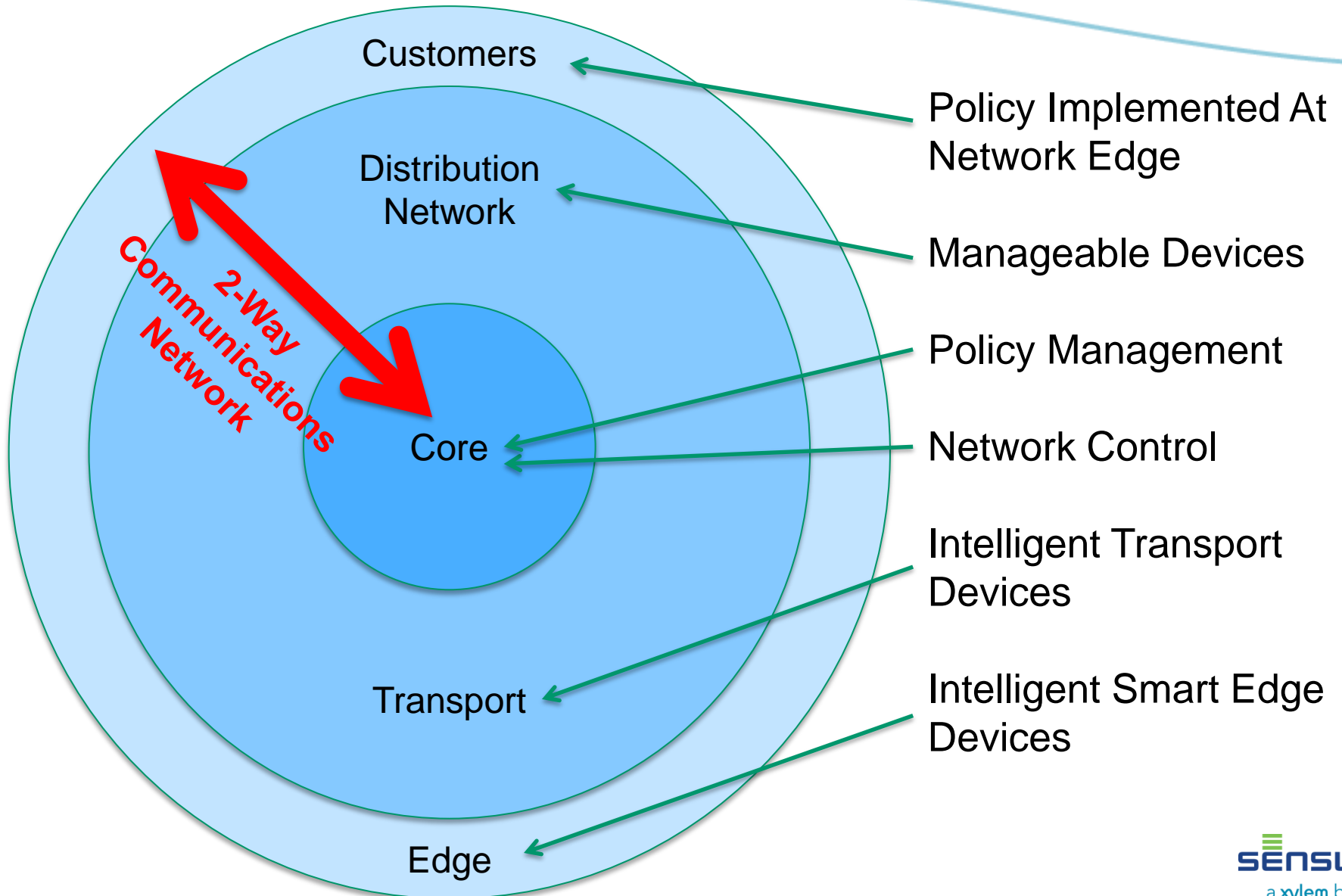
Core Network Attempts To Guess Customer Behaviour

Very Little Network Intelligence At Network Edge... Only The Customer

Customer Demand Is Difficult To Predict As They Try The Service When They Want To

Exception In SA STS Electricity Prepayment (Mostly Offline)

What Happened In The Telecoms World



What Happened In The Telecoms World

Adoption Of Core To Edge Dedicated Communications Channels

Low Speed; Data Bottleneck... Data Rates 2.4kbs or 9.6kbs

Often MESH Style Networks... High Latency

Not Possible To Make & Implement Decisions Rapidly

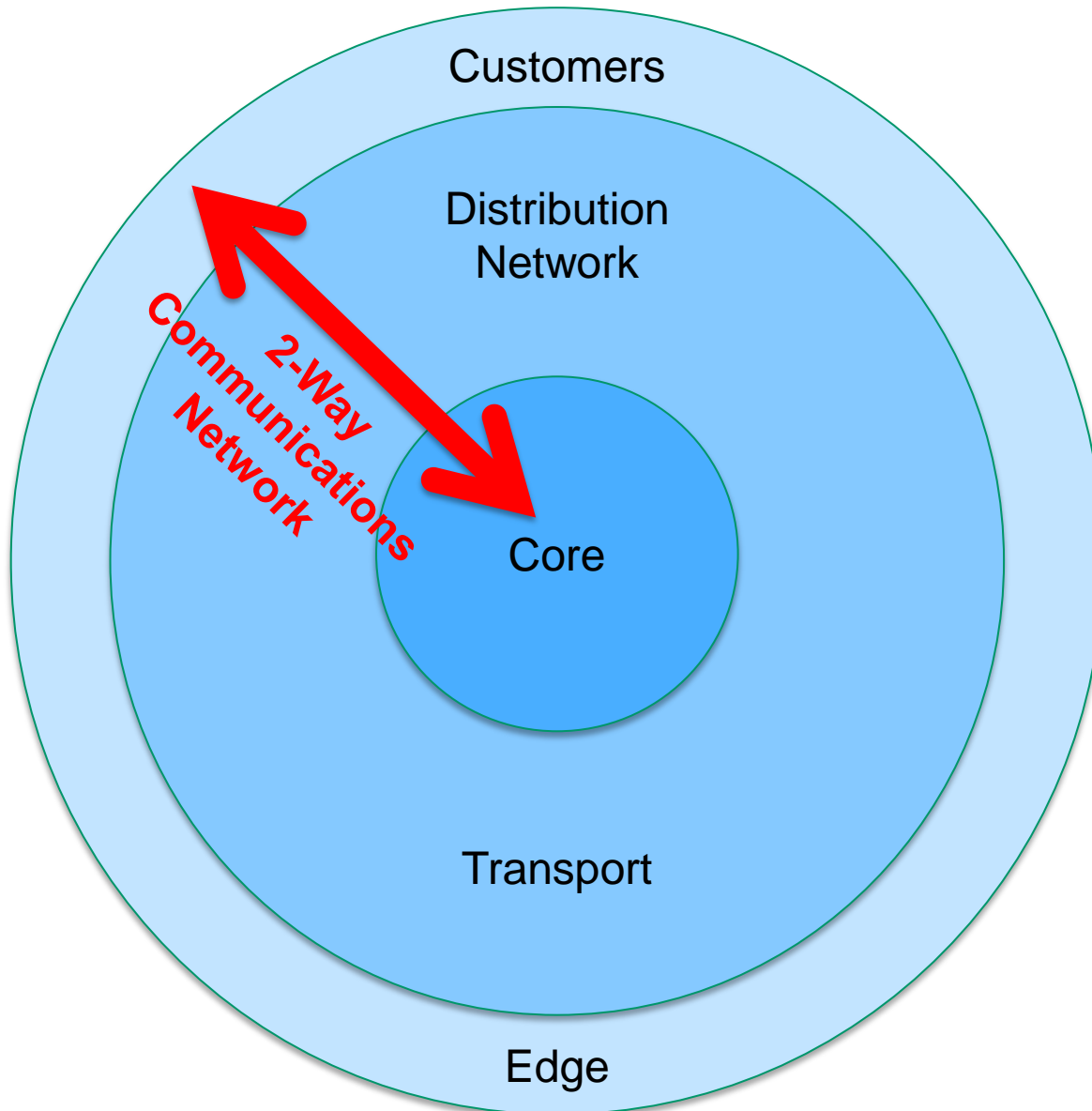
Move To Edge Intelligence

Policy Set In Network Core

Policy Implemented At Network Edge

Centre Weighted Network Management

The Telecoms Path...



Edge Devices Became Independently Intelligent

Communications Network Critically Important (2Way)

High Latency Comms Was Serious Challenge

Defined Core To Edge Policy Management

So For Utilities The Solution Is...

Adopt Communications Network

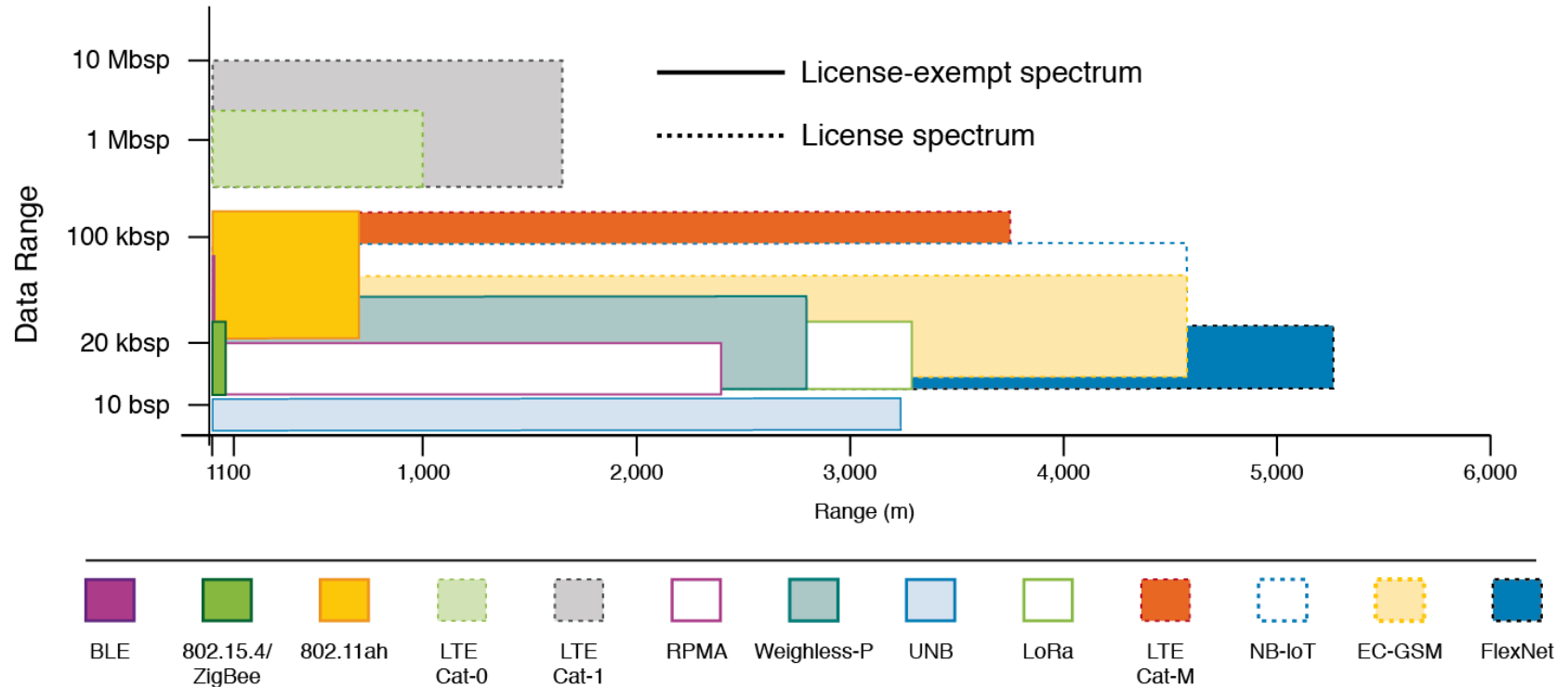
Deploy Smarter & Communicating Meters

Introduce Demand Side Management

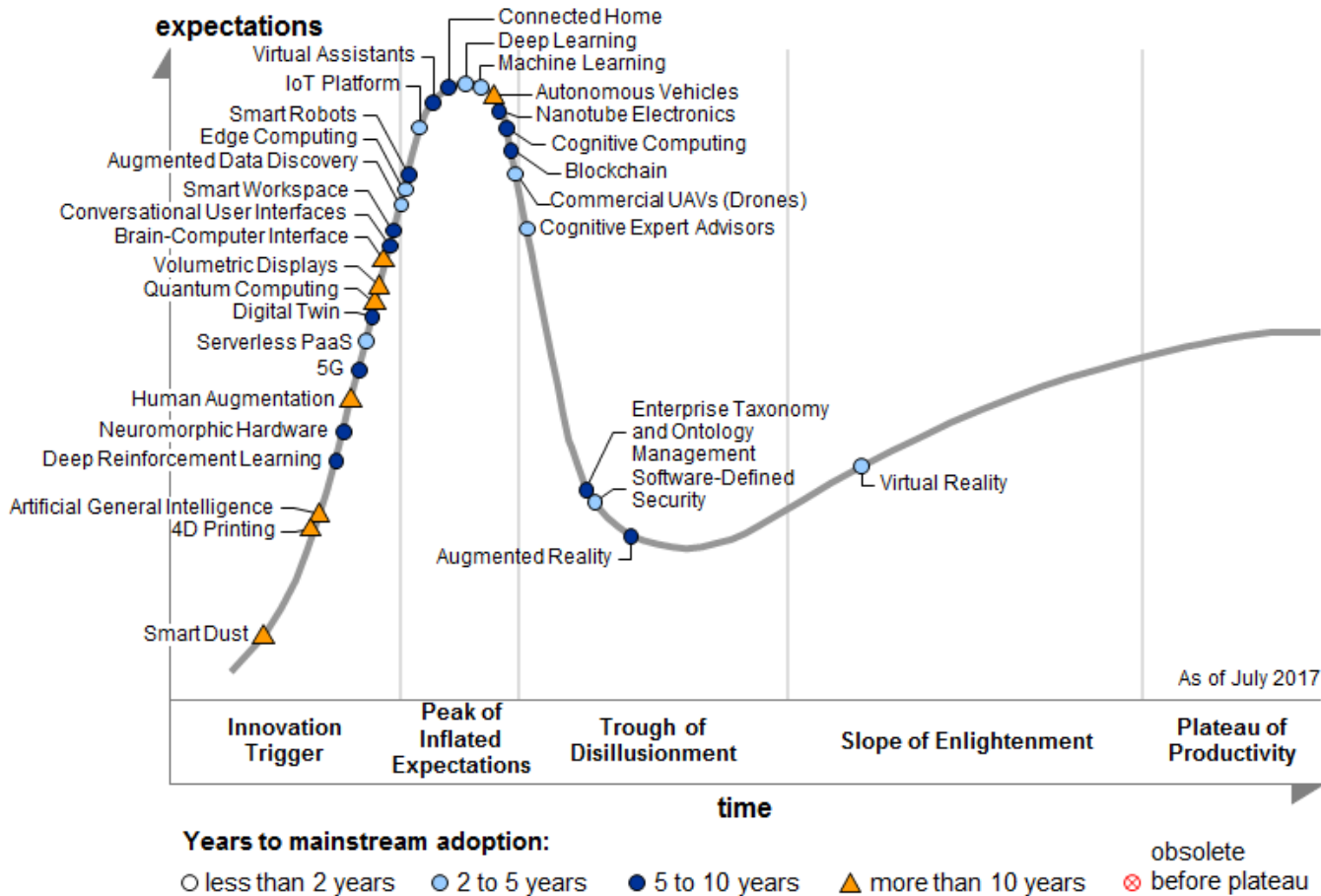
Move Intelligence To Network Edge

What are the Communications Options Available?

Communications Options



Internet of Things



The internet of dogs, cats, dustbins, bicycles OR Smart Meters...?

Defining Your Requirements

Field Performance >99%

Dedicated, Utility-Grade, Single
Technology Platform

Low Infrastructure For Lower OPEX

Point To Multi-Point & Multicast
Messaging Network – No Repeaters –
No MESH

Optimised For Both Battery & Powered
End-Points – 20 Year Battery Life For
15 Minute Reads

Important Stuff Re The Comms Decision...

>99.5% Connectivity Avoiding Multiple Networks

Dedicated So Traffic Doesn't Compete

Secure So You Get To Sleep At Night

Proven So You're Not The GuineaPig In The Cold

Economical Both In Terms Of CAPEX & OPEX

Resilient So It Works When Times Are Bad

Future-Proof So No ForkLift Upgrades Required

Communications Is Critical... Tough Decision

1

- Understand & Address New Challenges

2

- Identify Need For Smart Communications Network

3

- Evaluate Multiple Technologies Available

4

- Find One Technology Solution Suitable For All Environments

5

- CAPEX vs OPEX Decision

6

- It's a 20 Year Decision...

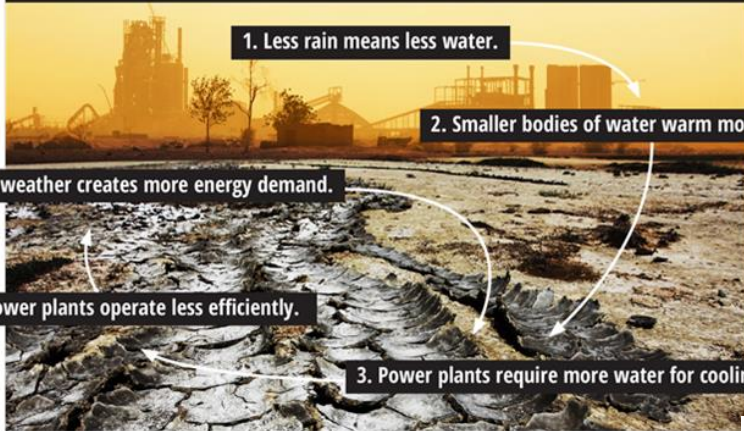
Thank you

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The Energy-Water Nexus...

The best way to save **water** is to save **energy**.

Drought conditions impact water production.



1. Less rain means less water.

2. Smaller bodies of water warm more easily.

5. Hotter weather creates more energy demand.

4. Power plants operate less efficiently.

3. Power plants require more water for cooling.

The best way to save **energy** is to save **water**.

Water processing consumes energy throughout the production cycle.

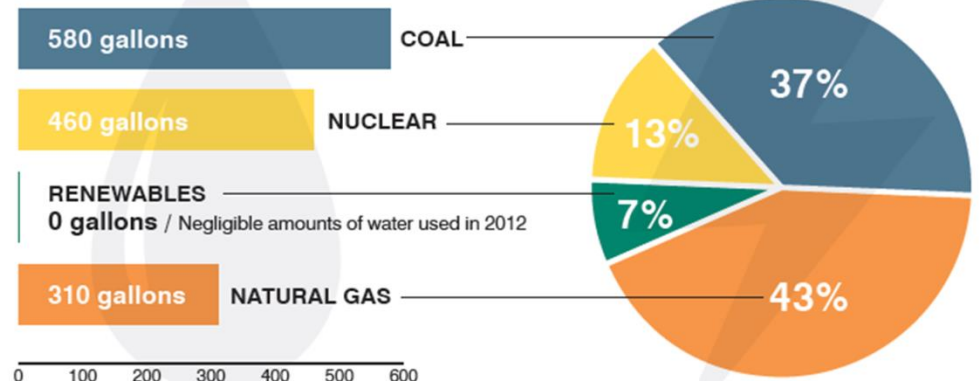


How much water does it take to power Texas?

Every fuel source requires a certain amount of water, but some are far more thirsty than others.

Gallons of water used per MWh on average

Percent of ERCOT Energy (2006-2013 avg.)



Borrowed from Kate Zerrenner (Manager US Climate and Energy Program at Environmental Defense Fund)