Disruption and the utilities' new role in the energy sector

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“History has taught us that nothing is constant but change, and 2018 will be no different.”
Benoit Laclu - EY Partner, Global Power & Utilities Leader
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Forbes

The Energy Revolution Of 2018: Electricity Storage

EL ESPECTADOR

La promesa de descentralizar el manejo de la energía

Economía 9 Feb 2018 - 9:00 PM
Por: Natalia Tamayo Gaviria

Cycle, un proyecto ideado en Colombia, es un dispositivo que distribuye autónomamente la energía eléctrica de una comunidad, racionalizando su uso. Quedó entre los tres finalistas que se premiarán en el World Government Summit y aspira a recibir financiación de hasta US$200.000

European Parliament Pushes for More Ambitious Renewable Energy Targets

But the parliament's 2030 proposal still has to win out over a weaker EU Council plan.

Zuli and Logitech Team Up to Make Smartphones Into Home Automation Sensors

CNN

The home battery that stores renewable energy

World™ Utility Summit

Utilities are facing a revolution

Contents

- Drivers for transformation of the Power & Utilities sector
- There is a new type of consumer
- New habits and customs of the P&U consumer
- Impacts in P&U sector
- How do power and utilities respond to consumer changes?
- New disruptive technologies
- Understanding the emerging technology is crucial to remain relevant as a utility

Drivers for transformation of the Power & Utilities sector

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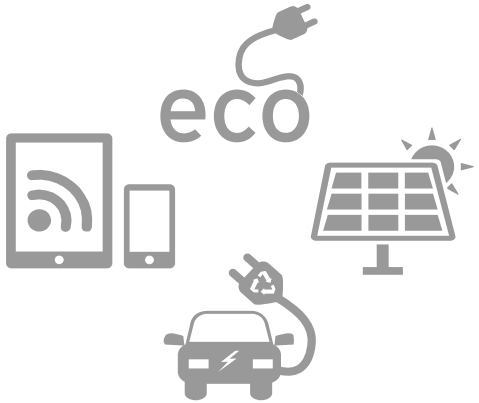
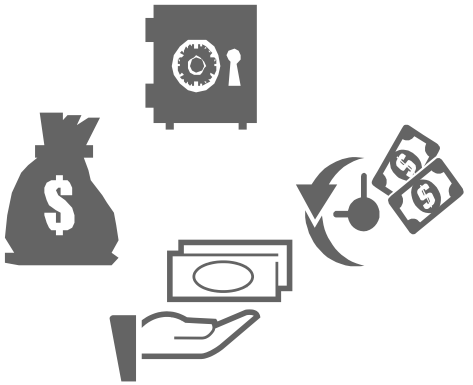
Drivers for transformation of the P&U sector



Improvements and emergence of new technologies

Climate change and environmental awareness



Transfer of economic power

Population increase

Accelerated urbanization

Regulatory changes

There is a new type of consumer

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New habits and new customs

Social, digital and connected consumers

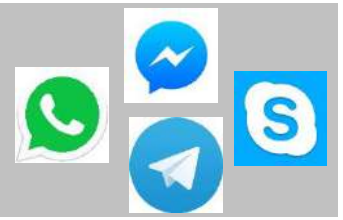
Instant access to information at any time

Online purchases through smartphones and tablets

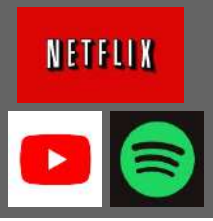
Prosumers: involved in the creation of content massified by social networks

Crowdfunding

Social consumers: Proliferation of instant messaging



Use of alternative devices to television to see the same content



Bidirectional interaction between the consumer and the product

New habits and customs of the P&U consumer

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New P&U consumer (Disruptors)

Digital Experience

- Customers expect advice on their consumption and how to save on their bills
- Expect to know when consumption is higher and how it can be more efficient
- Want to know which of their electric devices consume the most and the way to optimize it use
- Hope to control their devices through mobile apps
- Want to have their house connected

Interconnected consumers

Users connect with each other to purchase energy generated by themselves

Communication channels

- Want to have more than one communication channel (Preferably apps)
- Consumers expect to be able to communicate with the lending company whenever they want

Emerging technologies

- **Electric vehicles**
- **Distributed energy & microgrids**
- **Energy harvesting**
- **Blockchain**

Real-time monitoring

When a problem arises, they hope to be able to monitor the solution of it through mobile applications

Prosumers

- **Consumers are evolving to the prosumer, who can also produce power and challenges one-way physical flow from generator to themselves.**
- **Consumers demand more control, new products**

Customer Loyalty

- Customers demand closer companies, that understand their needs to create loyalty
- Expect to cover their energy needs in a sustainable way with security in supply

✓ New business model

New customer experience

Impacts in P&U sector

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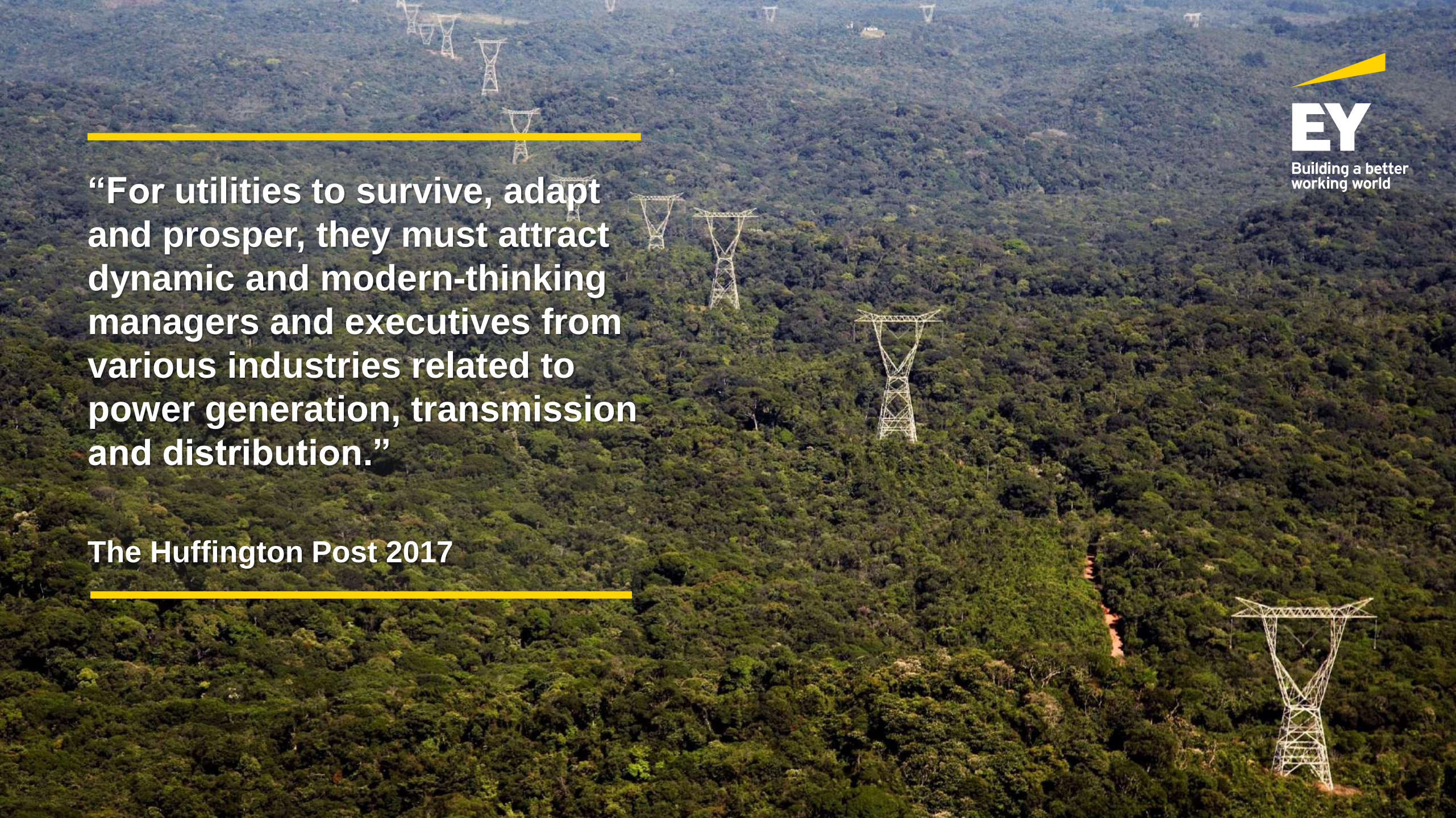

“For utilities to survive, adapt and prosper, they must attract dynamic and modern-thinking managers and executives from various industries related to power generation, transmission and distribution.”

The Huffington Post 2017

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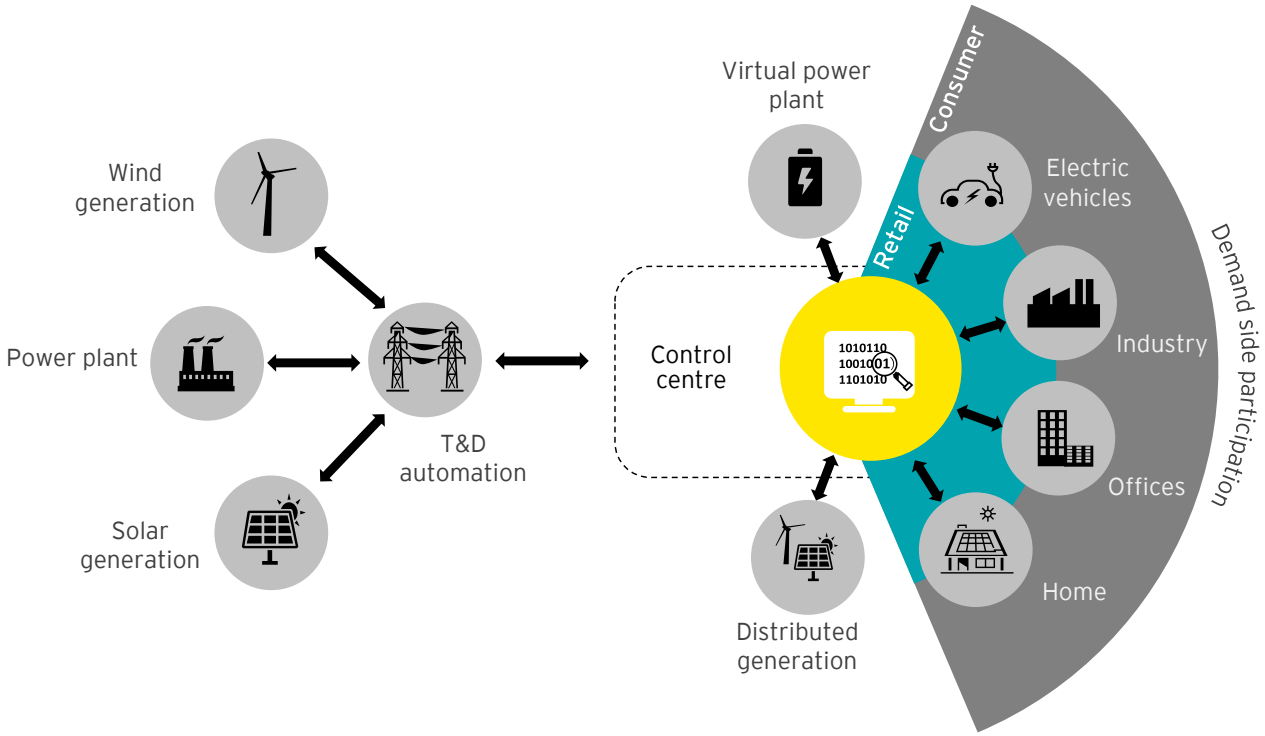
Impacts the P&U sector

Disruption is driving P&U players to rethink their purpose and capabilities

Sector in Transformation

Business Model Reinvention…
…moving towards a new value chain, augmented and interconnected by digital technologies, where both power and information will flow in both directions

- **Empowered Customers & New Competition**
- **New Networks and Technology**
- **Renewables, DER and New Services**
- **Growing Stakeholders and Expectation**
- **Aging Operations and Talent**



How do power and utilities respond to consumer changes?

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How do power and utilities respond to consumer changes?

Customer experience

Utilities need to:

- Optimize customer and Billing costs
- Understand their customers
- Digital channels have become an integral element of outage communications between customers and field force staff, with mobile and social media being used to provide realtime updates on outage status both to and from customers
- Use deep customer knowledge to innovate. Based on our experience, it pays back significantly
- Use analytics to provide a deeper, more intuitive experience

Digital and smart capabilities

- Digitize business processes of the companies
- Create digital experience for the consumer
- The digital capabilities should be focused on allowing great agility and quality in the front end with clients.
- Digital capabilities Require the management of broad and multidisciplinary work teams
- In the digital transformation it is crucial to make fast decisions based on data

Operational Efficiency

- Integrate operational technologies with IT systems to provide seamless processes
- Accelerate the automation and simplification of business processes to drive increase productivity of the workforce
- Digital connectivity holds significant opportunity for field workers delivering home connections and emerging response services. It will provide vital insight into which services are needed for which customers at any given time.

How do power and utilities respond to consumer changes?

Connected home services

- Homes will interface with technology in different ways where domestic processes will be joined together in an interactive, data-rich smart whole smart house.
- 'Smart home' is becoming a focal point for many industries.
- Use IoT technologies to answer the smart homes demands

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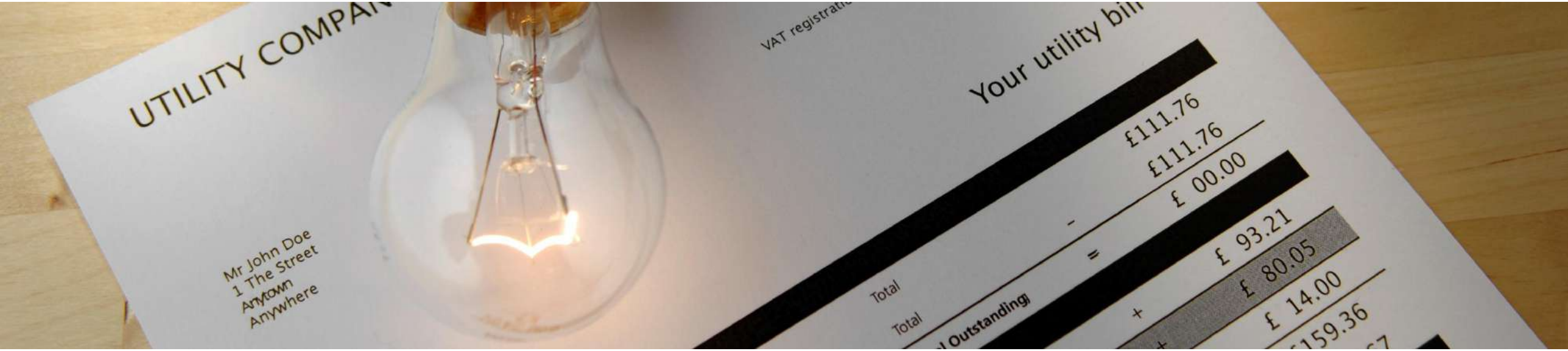
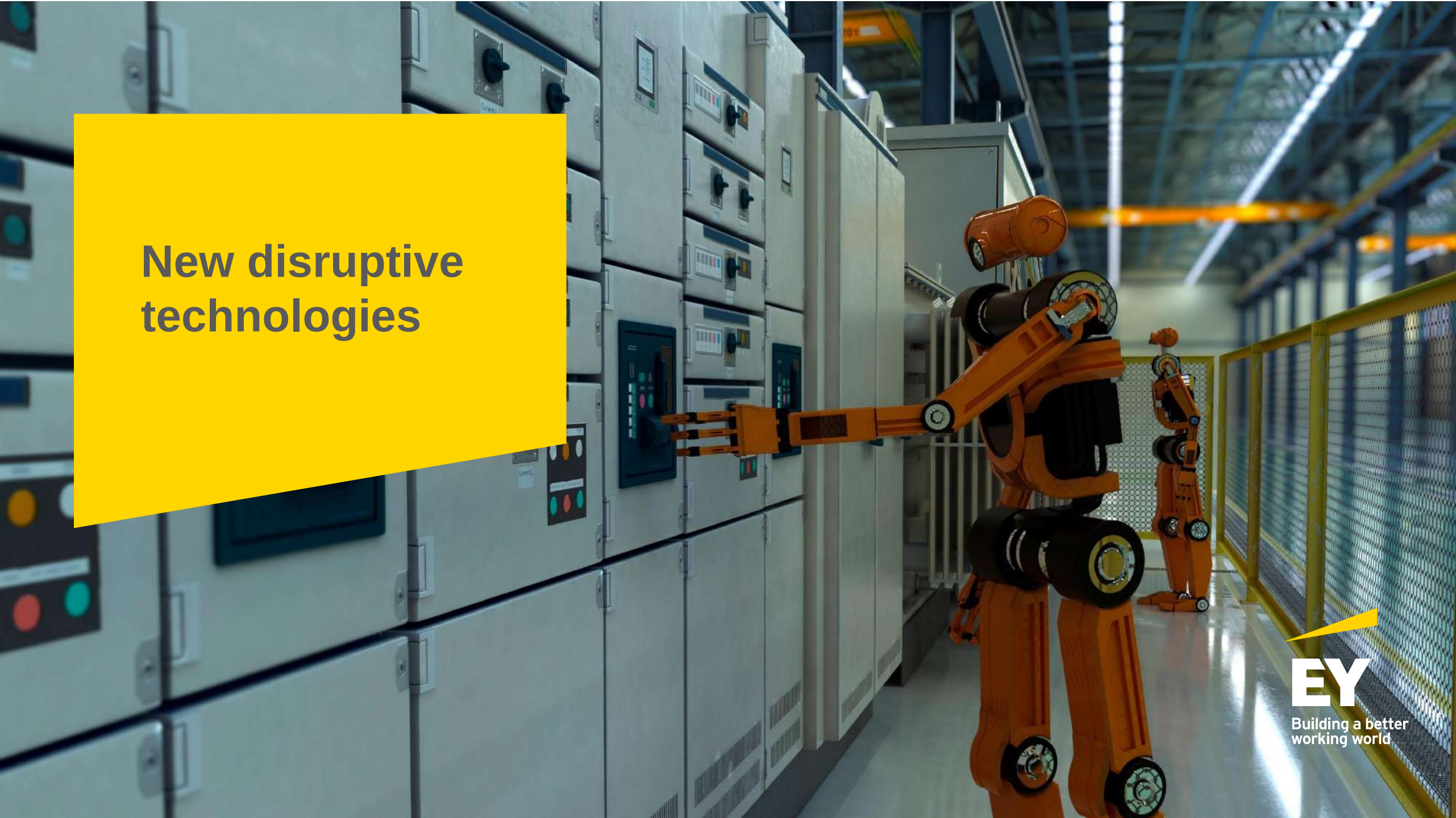
Customer and Billing Transformation

- Reform to the structure of prices and charges in the bill
- Exceed customers' service expectations, helping to reduce the consumption of public services and promoting greater use of renewable energy
- Regulatory changes in bill collection will allow a more efficient activation of resources and send the appropriate economic signals



New disruptive technologies



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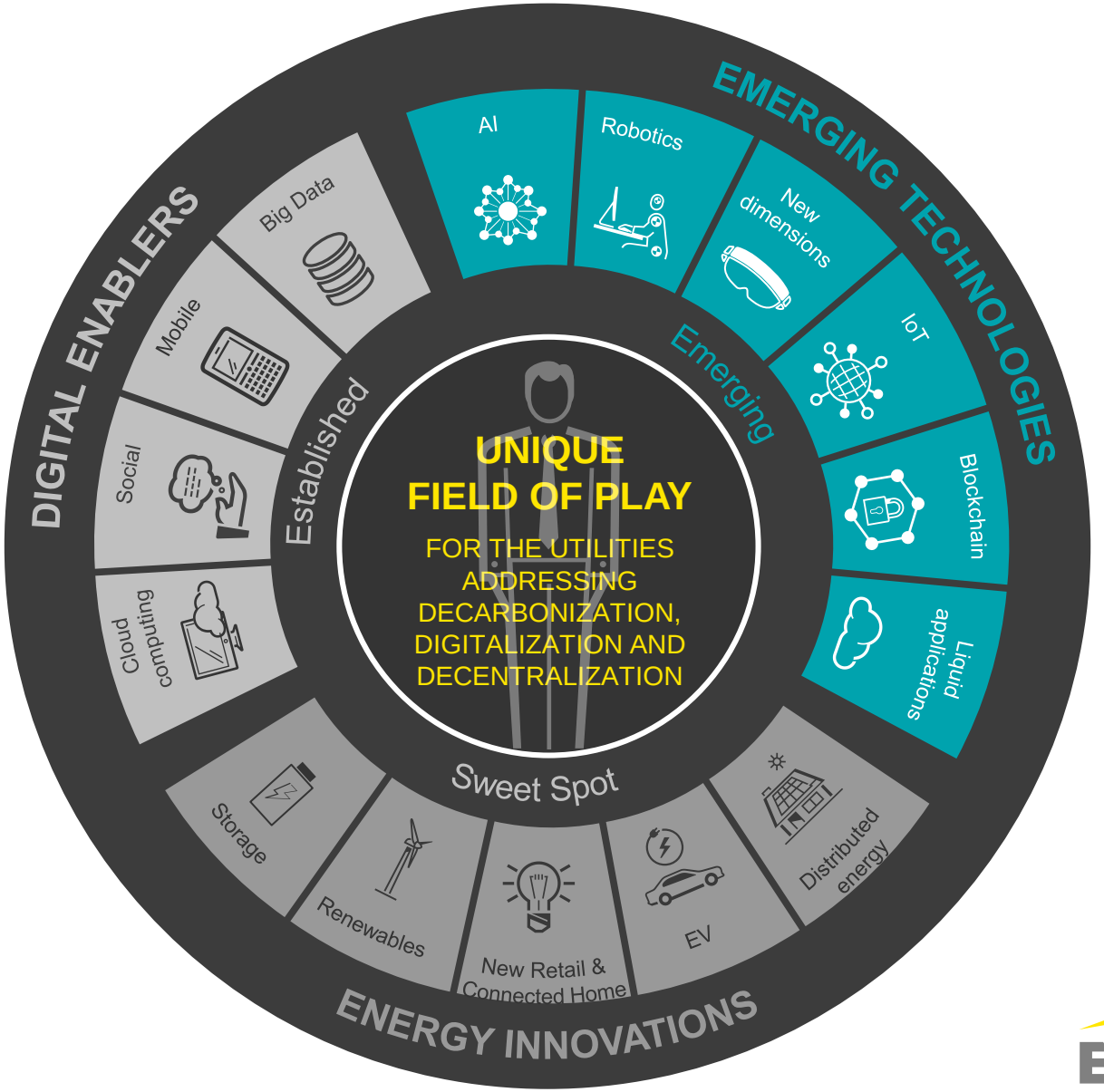
New disruptive technologies

As technology evolves ever faster, there is indeed a unique opportunity for utilities to combine digital, emtech & energy innovations - bringing value to their customers and society

Big data, analytics and digital connectivity promise to be transformative beyond the grid, offering the power to make sense of data from smart meters and household appliances to inform new strategies, products and service offerings.But this will mean realigning investment priorities and rethinking business models.



The game changer … is the collision of technologies

Digital enablers

Mobile

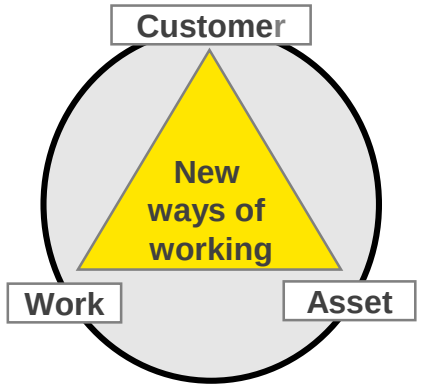
Cloud Computing

Social

Big Data

Internet of Things

Future Utility



More automated
More intelligent
More integrated

Emerging technologies

- Augmented Reality (AR)
- Smart Glasses
- AI & Machine Learning
- RPA - Process Automation
- Driverless vehicles
- Drones
- BlockChain
- High speed video relay
- Unstructured data analytics
- Geo-spatial / Geo-fencing

Energy innovations

Storage

Renewables

New Retail & Connected Home

Google Telecoms

EV

Distributed Energy

Virtual Power Plant

Microgrids

Understanding the emerging technology is crucial to remain relevant as a utility

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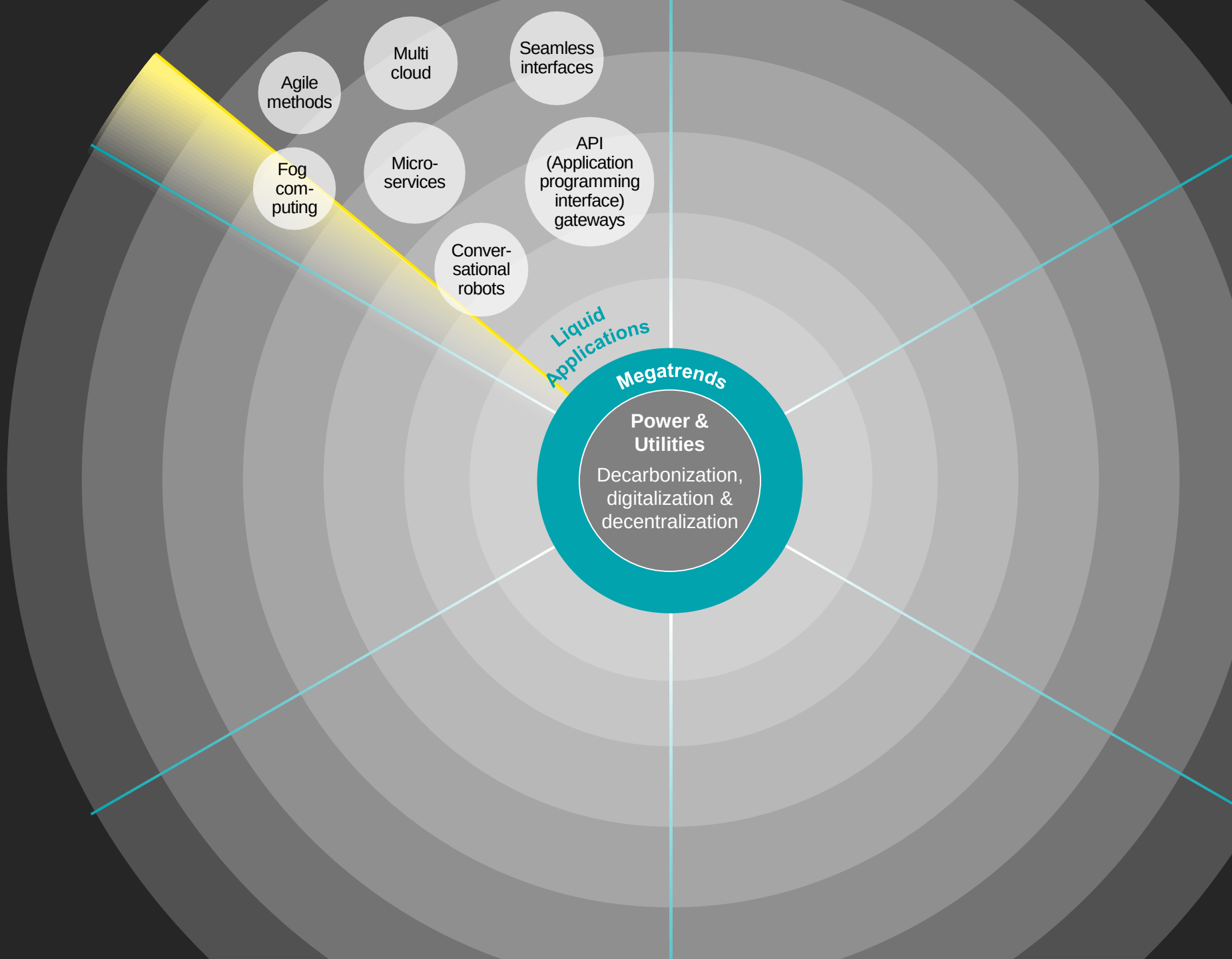
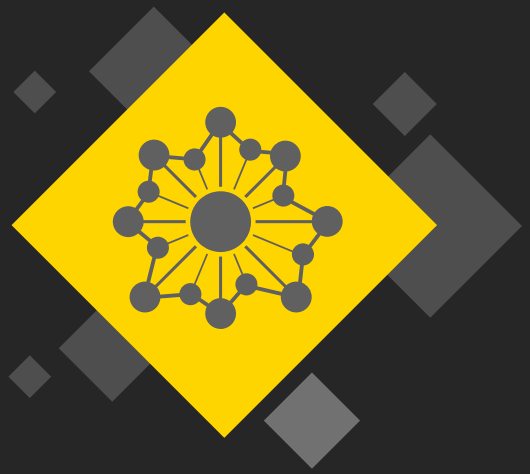
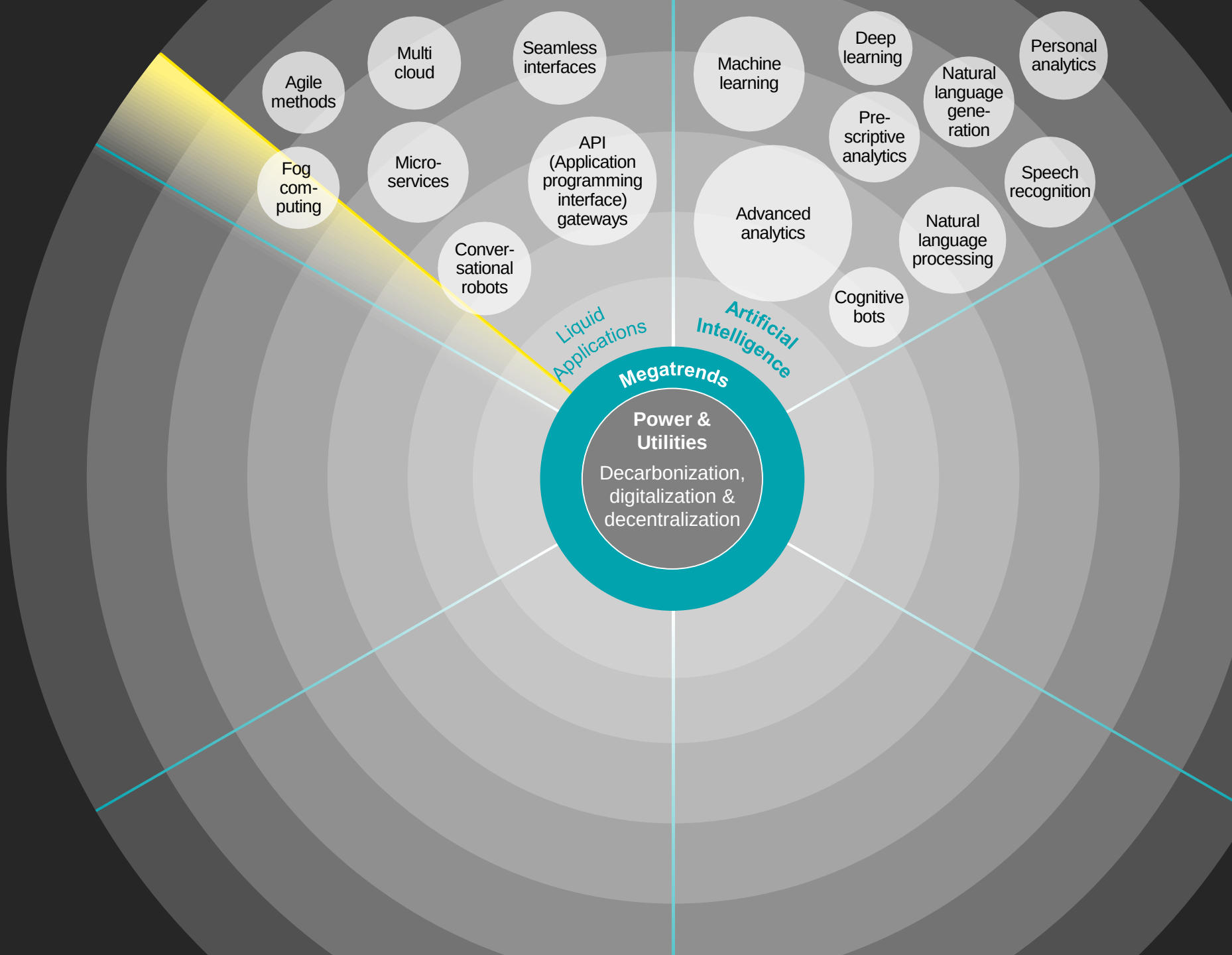
The possibility of integrating the best in class meter data services with leading consumer interfaces in weeks making services highly agile

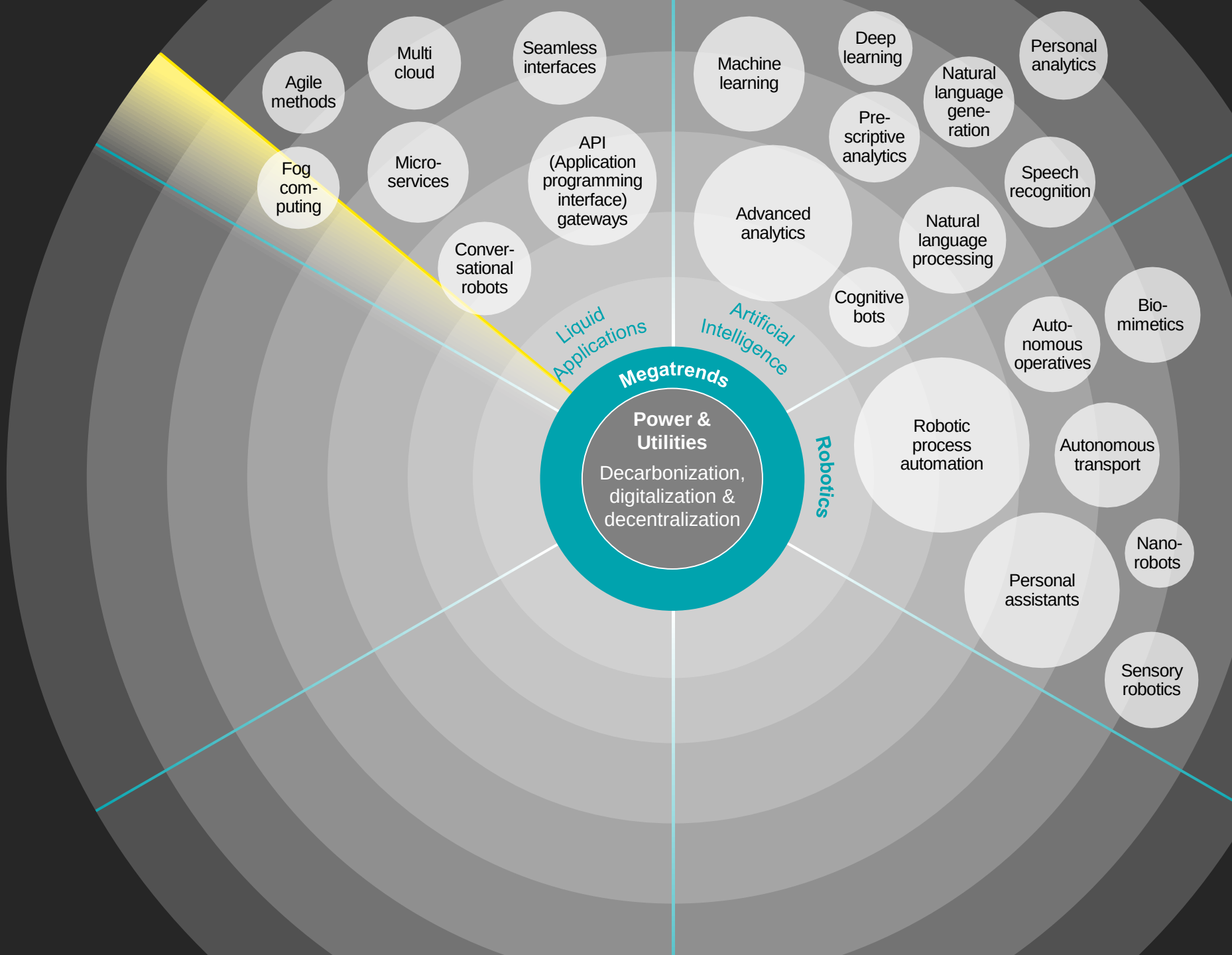




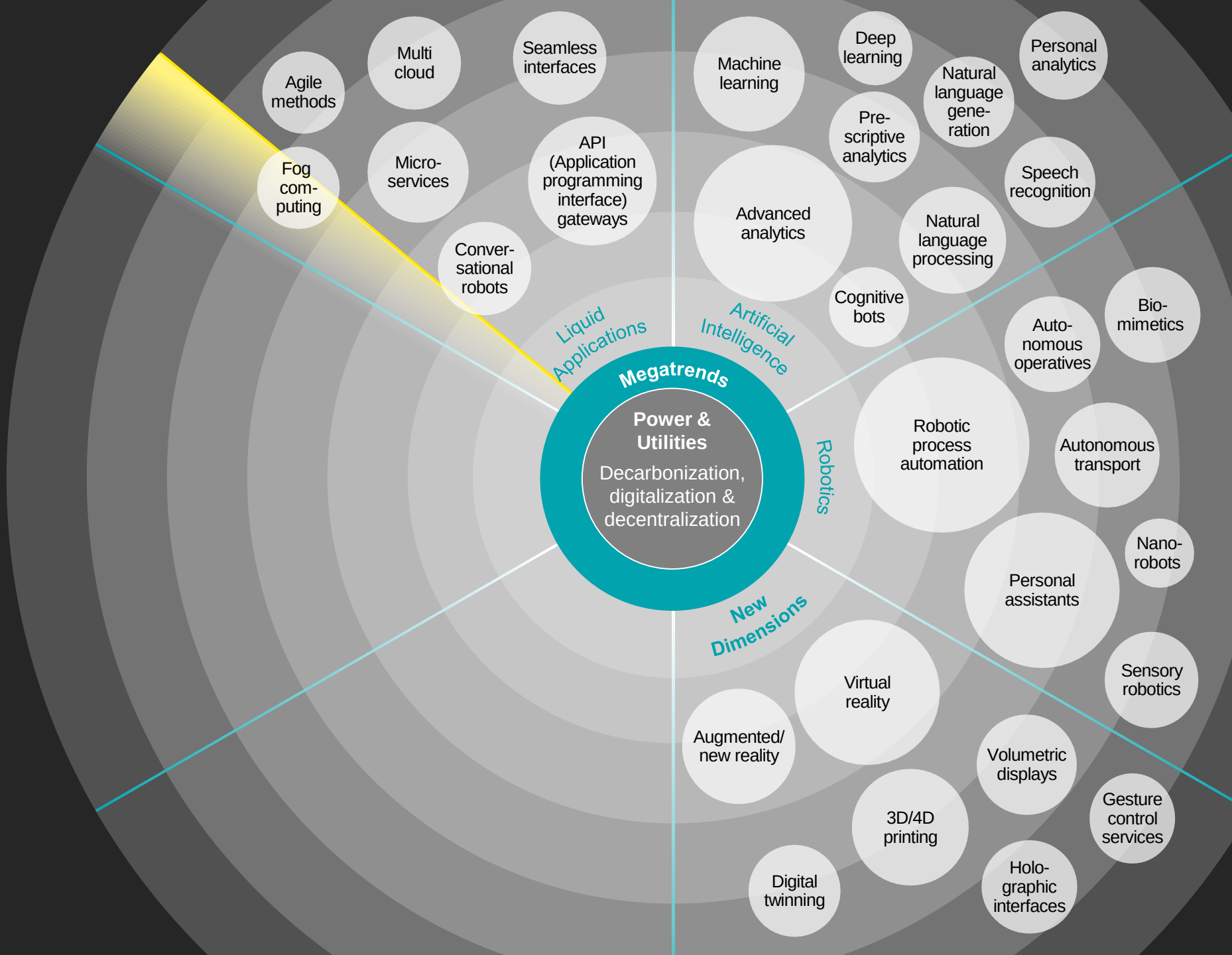
Perceiving, reasoning and acting on customer and network data patterns, predicting and adapting demand and supply



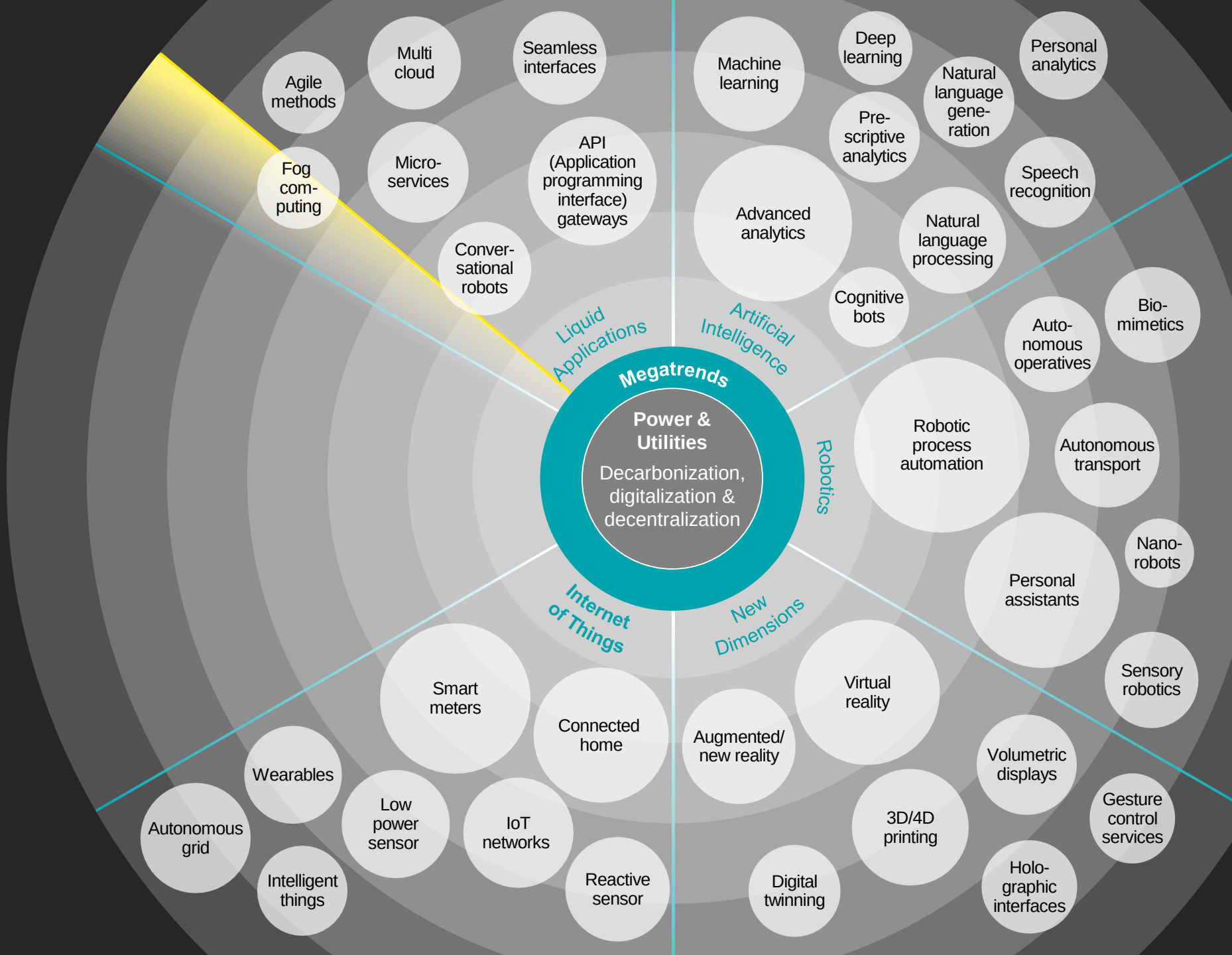
Taking the spectrum of utilities front and back office processes introducing intelligent automation to increase efficiency



Just-in-time performance information, insights and physical resources bringing the assets base into the head office and the spare parts to the issues



Connecting the assets across the utility creating a digital gateway to the network and consumers increasing the speed and breadth of capabilities available



A new architecture increasing the opportunities for peer to peer transactions, green certification, and asset tracking with no middle man

Could a Utility look different tomorrow?

1

Major incident:

Truck hits an electricity tower

3

Network Drone:

Hub deploys a drone to survey the incident, providing real-time visuals to assess support required

4

Incident profiling:

IH collates real-time data from multiple sources

9

Incident Resolved:

Incident report data fed back into core systems i.e. Asset Management and Work Schedules

2

Network Intelligence:

Sensors alert the IH and diagnoses a disruption to the asset

Intelligent Hub (IH)

"Business Control Room"

7

Customer, Emergency Services & other Service Provider updates:

Effected parties are immediately notified of the incident and expected outages via connected media i.e: apps on mobile devices

Emergency Services are dispatched to site with intelligent briefing

8

Virtual Warehouse Logistics:

Critical Network Inventory created with a 3D printer, assembled and deployed to site

Rapid Incident profile created

5

6

Automatic Dispatch of Response Team:

Best available engineers (right skills + right place) in driverless vehicles re-routed to incident

Schedules automatically updated

Incident profile accessed via mobile devices & reviewed on-route

10

Automatic Insurance Claim:

GPS location of the vehicle together with driver digital ID locate insurance records and images from the incident generate an automatic claim for insurance

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