IBM – Hvad sker der, når forsyningen for alvor rammes af teknologi

Kim Escherich, IBM

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Kim Escherich, IBM

What happens?

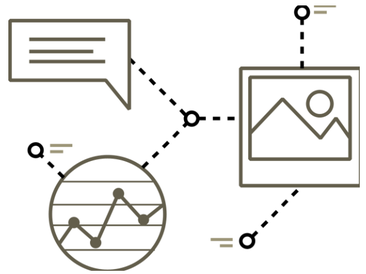
Utilities are facing the legacy challenges with a new face

Source: 2016 STATE OF THE
ELECTRIC UTILITY SURVEY

> Utilities have always had to worry about their workforce, infrastructure and regulatory models -- but in the 21st century, new technologies, market entrants and regulations have given these legacy challenges a new face.

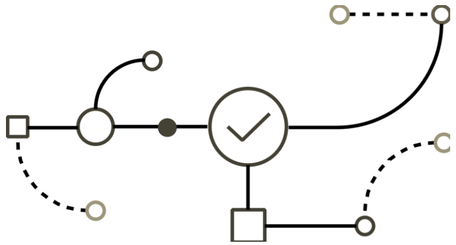
What are the three most pressing challenges for your utility? Choose three.

43%	Aging workforce
41%	Existing Regulatory model
38%	Aging infrastructure
37%	Renewables integration
35%	Stagnant load growth
26%	Physical and/or cyber grid security



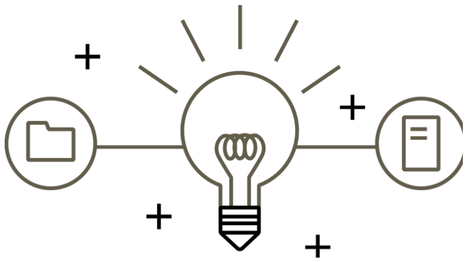
Understand

Like humans do



Reason

to extract ideas



Learn

From past results

Interact

In a natural way

This rapid increase of data volume and velocity is transforming industries and professions, making new infrastructure demands

Data flows from every device, replacing guessing and approximations with precise information. Yet 80% of human generated data is unstructured; therefore, invisible to computers and of limited use to business.

By 2020,

1.7 MB

of new information will be created **every second** for **every human being** on the planet.

HEALTHCARE DATA

99% growth by 2020

88% unstructured

Healthcare data comes from sources such as:

Patient Sensors | Electronic Medical Records | Test Results

GOVERNMENT & EDUCATION DATA

94% growth by 2020

84% unstructured

Government & education data comes from sources such as:

Vehicle Fleet Sensors | Traffic Sensors | Student Evaluations

UTILITIES DATA

93% growth by 2020

84% unstructured

Utilities data comes from sources such as:

Utility Sensors | Employee Sensors | Location Data

MEDIA DATA

97% growth by 2020

82% unstructured

Media data comes from sources such as:

Video and Film | Images | Audio

The world is being reinvented in code deployed on cloud platforms as a means to improve agility and flexibility

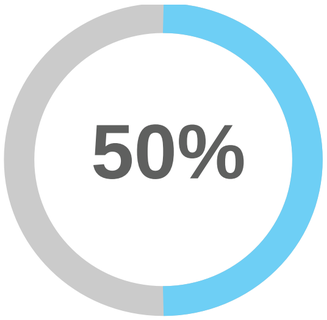
The world is being rewritten in software code, and cloud is the platform on which the new digital builders—from developers to business professionals—are reimagining everything from banking to retail to utilities.

100,000,000
lines of code in a new car

5,000,000
lines of code in smart appliances

1,200,000
lines of code in a smartphone

80,000
lines of code in a pacemaker



of **B2B collaboration** will take place through **web APIs** next year.

Smart TVs represented 27% of all TV sales in 2012; by 2018, they will represent 82%.

Sensors for **industrial asset monitoring and management** will grow from just over 15M units in 2014 to over 40M units in 2018

Smart LED lighting will grow from 6M units in 2015 to 570M units in 2020, used for safety communication, health, pollution and personalized services.

By 2020, there will be 925M **smart meters** installed worldwide, more than double the 400M in 2014.

Code Tools
Analytics Data APIs

Revenues for **smart grid sensors** will grow ten-fold from 2014 to 2021.

By 2017, there will be 1B connected things in **smart homes**, including appliances, smoke detectors and cameras.

Smart traffic sensors and other devices installed in smart cities will grow from 237M units in 2015 to 371M in 2017.

Cognitive IoT = AI + Analytics + Human interface + IoT

Cognitive Business

An organization that **creates insights** & **knowledge** from **all forms of data**, to **enhance** the expertise of everyone in their organization, and continually **learns** and **adopts** overtime, to help their clients, **outthink**, or meet or beat, their market's expectation

> "*The key to growth is the introduction of higher dimension of consciousness into our awareness*"
>
> **– Lao Tzu**

IBM Design Thinking

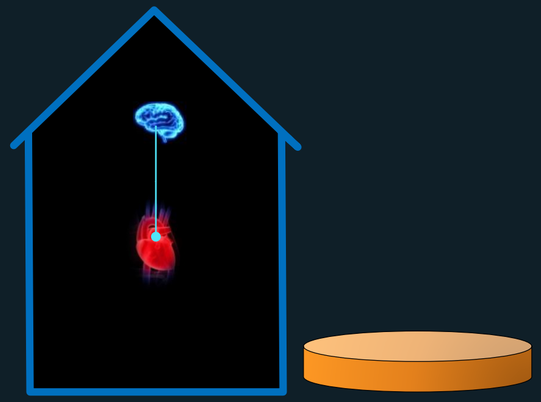
We use IBM Design Thinking as a human-centred framework for moving from design to operations. A proven approach with core practices specific to IBM.

NEW WAYS OF WORKING

Example: The composable building

Building Management Evolution

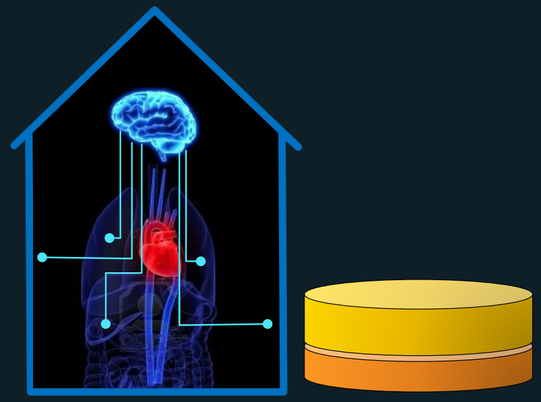
Automated Buildings (1980 – 2000)



Visualize KPI

- \+ Good for ratings
- \+ Allows identifying general issues
- – Bad for identifying energy waste

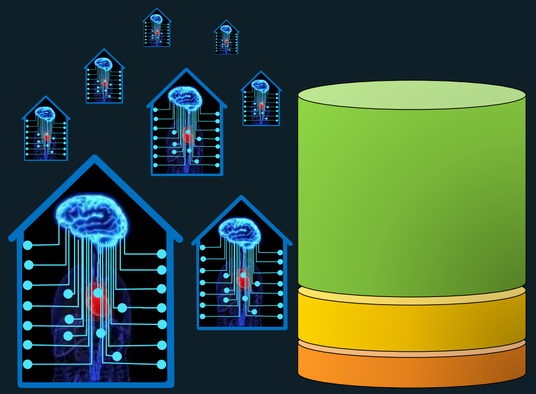
Smart Buildings (2000 – 2015)



Analyze Energy Consumers

- \+ Understand consumption of rooms and central assets
- – Only primary datapoints are analyzed

Cognitive Buildings (> 2015)

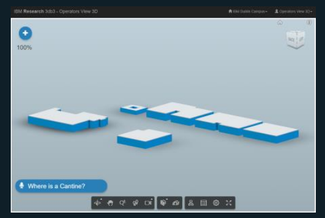


Learn Behaviour

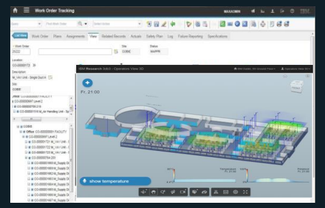
- \+ Predictive control down to desk level
- \+ Understand energy flow and building occupancy
- \+ Consider comfort preferences of users
- \+ Collect context such as weather and meetings
- – Too data points even for advanced analytics

Scalable IoT Platform

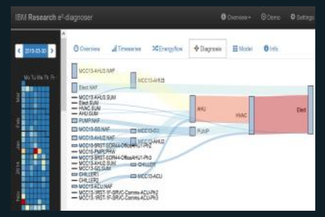
Cognitive analytics for deep insights to unlock new cost savings.



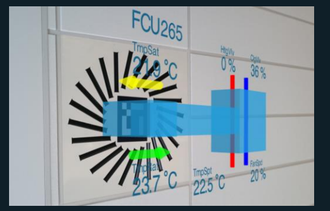
Navigate a campus via Watson speech



Manage and find your assets in 3D



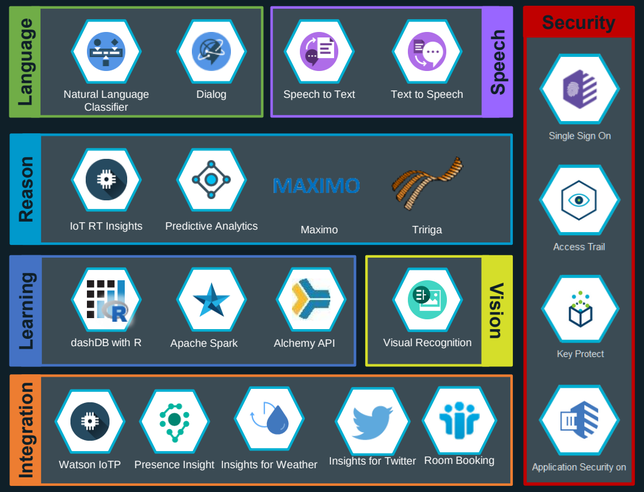
Understand energy flow and diagnose anomalies with cognitive analytics



Easily monitor and maintain assets before they fail

Understand temperature, comfort and occupancy in buildings and data centers

Customizable IoT platform that provides simple integration and high scalability



Plug-and-play instrumentation with IoT devices

Vibration Data with IoT Sensors

Electricity with IoT Meter

Occupancy with PIR

Proximity with BLE

Desk Comfort Sensors

Rapid modelling with laser scanner

30-06-2016

ISS Turns to IBM Watson IoT to put the 'Human Touch' into buildings

Global leader in facility services taps insight from sensors and devices to create better, happier buildings.

ISS, a leading global provider of facility services, has signed a commercial agreement with IBM to use the power of Watson IoT to transform the management of over 25,000 buildings around the world.

Headquarted in Copenhagen, ISS is one of the world's largest private employers with over half a million staff managing everything from concierge to cleaning, catering to technical maintenance for thousands of high profile clients including Rolls-Royce, Nordea, Novartis, and Royal Air Force in the UK.

Through the new agreement, ISS will tap IBM's Watson IoT platform, consulting and advanced facilities management technologies to transform the services it provides to building owners and users around the world with the goal of making buildings more personalized, intuitive and user-friendly.

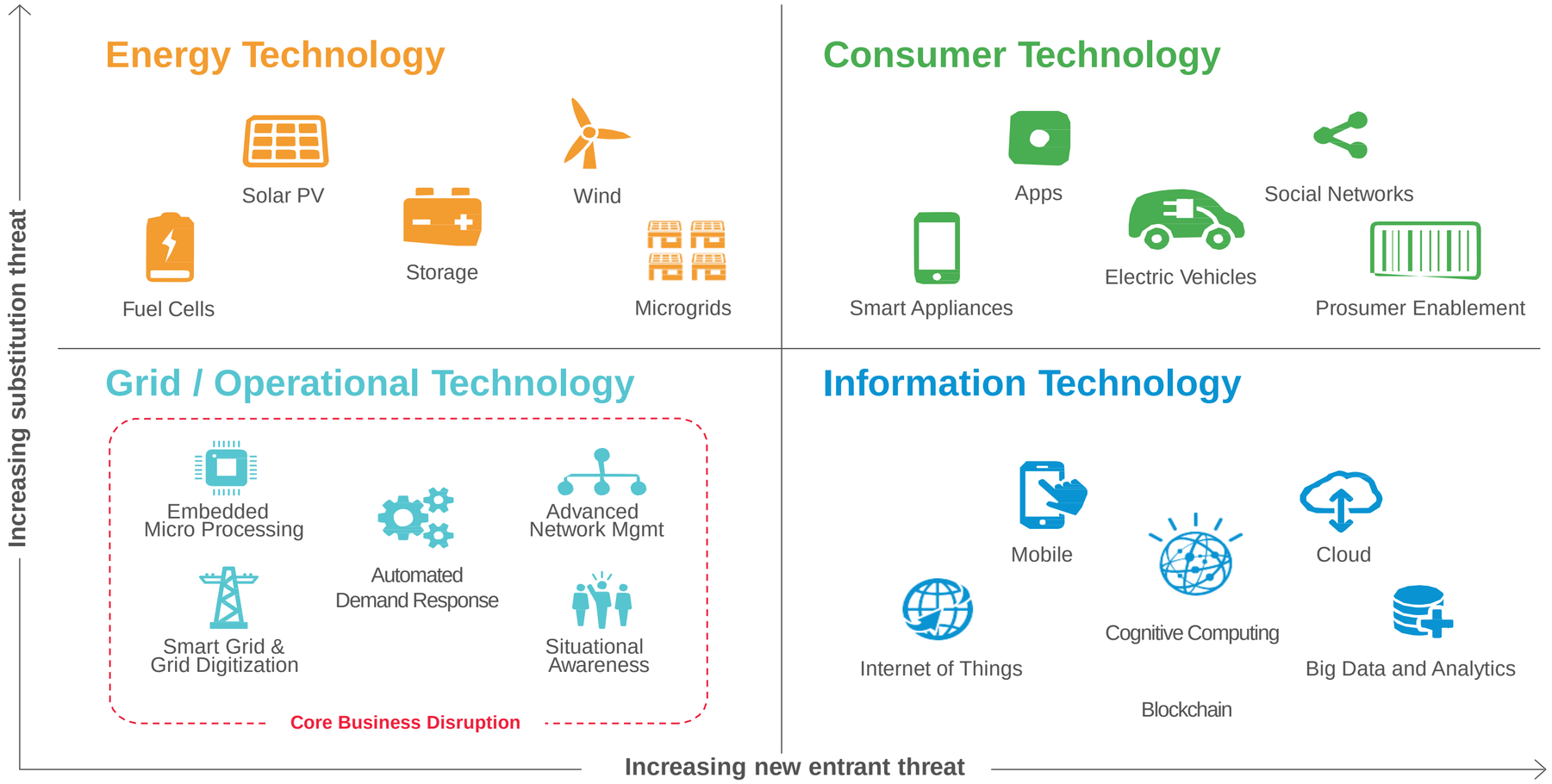
Working with IBM, ISS will integrate and analyse data from millions of devices and sensors embedded into buildings including doors, windows, chairs, meeting rooms, dispensers and air conditioning systems. Data will be uploaded onto IBM's Watson IoT cloud platform and cognitive computing technologies will learn from this data helping ISS optimise its services as well as furthering its understanding of how people use buildings, thereby creating new opportunities for innovation.

KONE ELEVATORS

Predict, understand, optimize, build new business

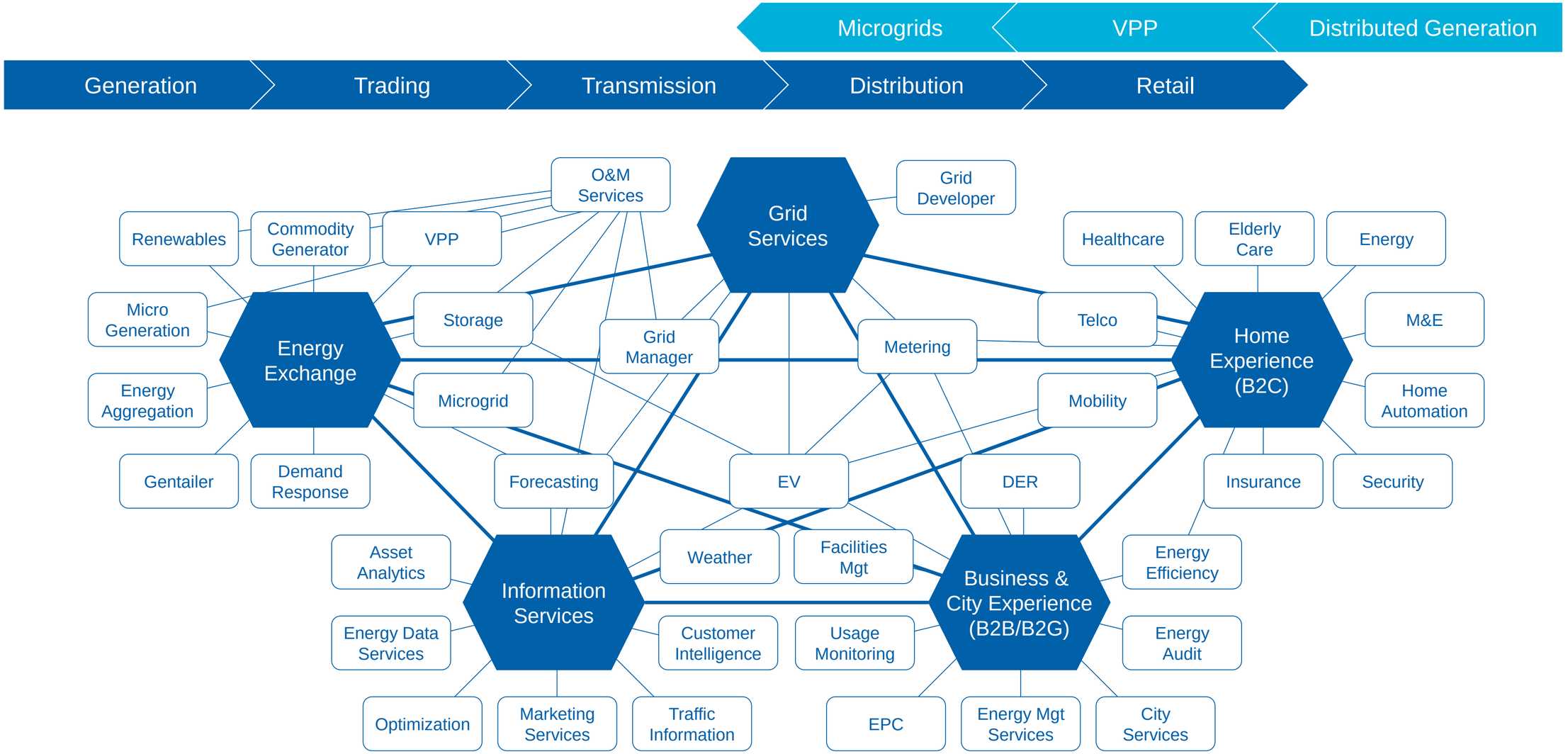
Energy & Utilities + IoT

Four types of technology are disrupting energy and utilities companies' core business and operations



Future Energy & Utilities Industry Models

Energy will be integrated on the back of more flexible and digitally enabled ecosystems/business platforms



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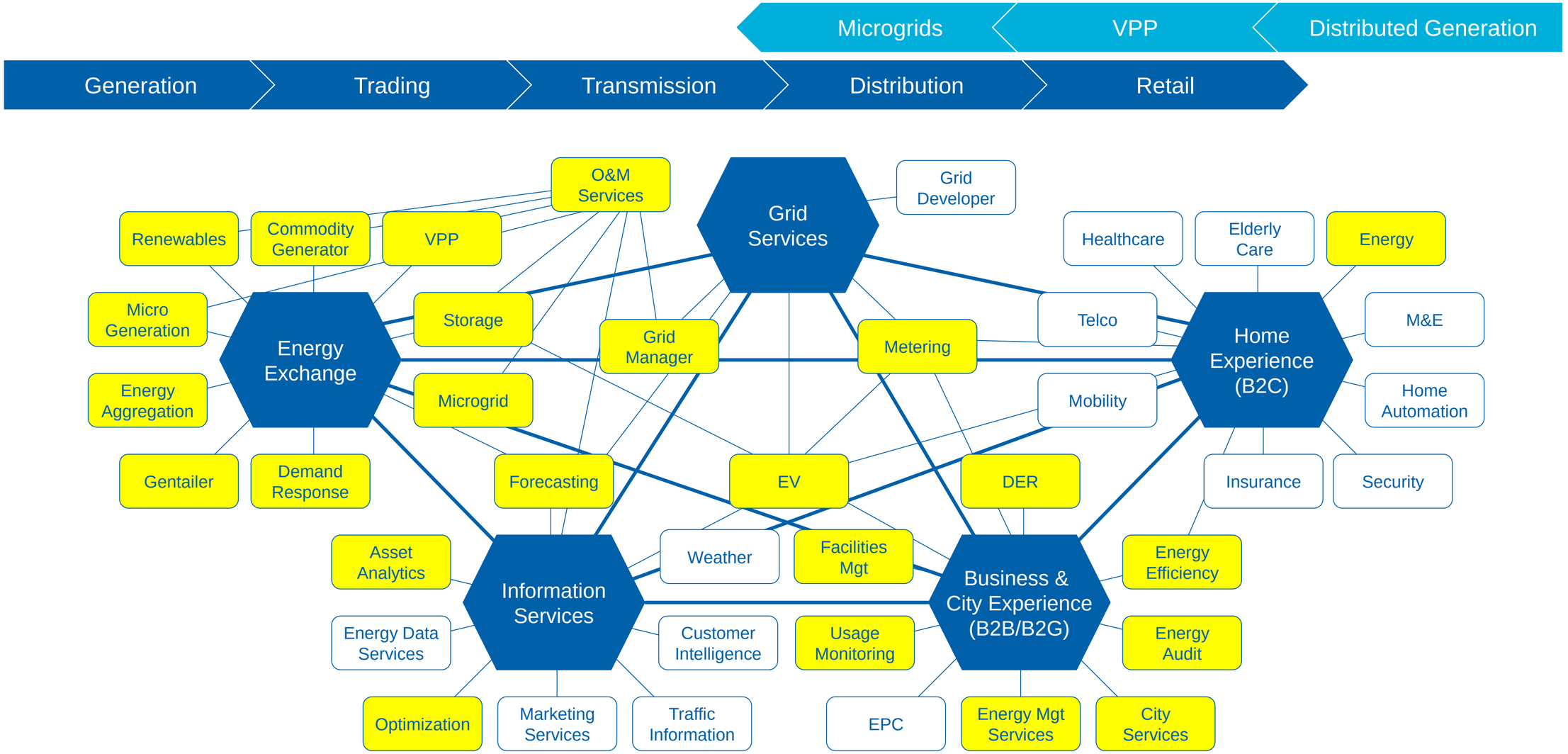


Opportunities for IOT

Energy Efficiency / Energy Management

IoT captures energy consumption in HVAC, Thermostat, Lighting and Water Heater in facilities, delivering individualized energy insight based on occupancy, weather and holidays, to help reduce energy consumption & better detect equipment false settings

Microgrid Operations DER Asset Management

Better DER asset management capturing IOT data on Solar PVs, CHP, Inverters & Storage in real-time – “smart microgrid”. Optimize SCADA controls for maximized energy production, quality, reliability and grid integration, the fusion of assets and assets in real-time control

Smart Grid Sensors

Integration with smart grid sensor providers (voltage/current, phase & power quality measurement) to collect and curate IOT data for grid operations, performance management & planning, visualization & analytics

EV Integration

Things are EVs and charge stations. Delivers load forecast to charge operators. Enables smart charging capability via the control of charge timing, speed, and the extent of vehicle charge, augmenting the spinning reserves and the smoothing of renewable energy variability. Charge station health monitoring and asset management

Substation Security / Surveillance

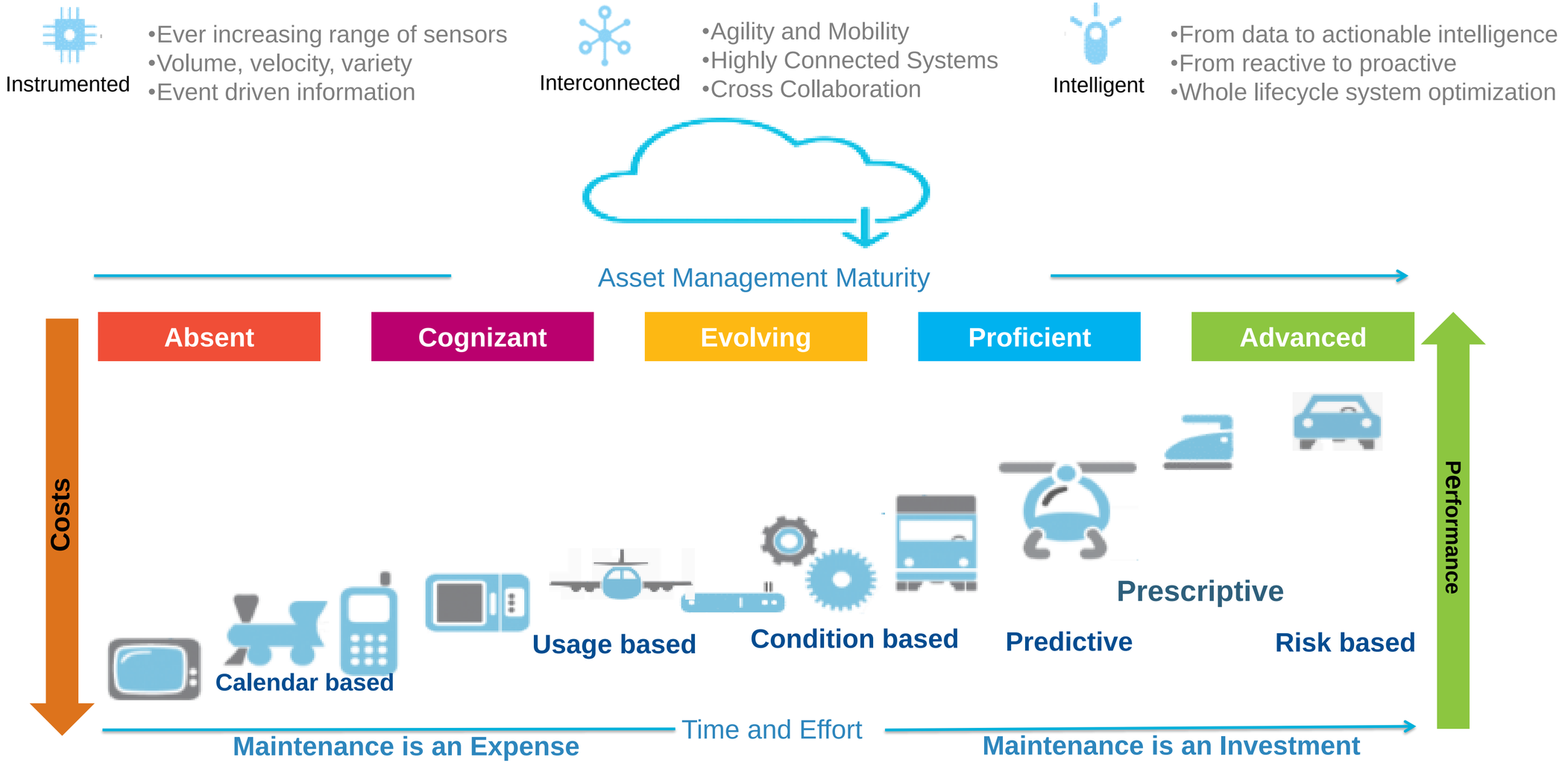
Substation transformers have proven to be vulnerable to vandalism and cyber-security attacks, security cameras and alarms are being instrumented to protect the physical security of the grid. IOT is an enabler to allow remote security management and surveillance

Grid Operations

Smart Grid is utility’s 1st IOT implementation. IoT is hugely effective in capturing grid equipment data, applying analytics to understand the data in equation, and using these new found insights to optimize grid operations and planning

Enterprise Asset Management

.... will move customers to advanced stages of asset management maturity



Watson supports technical support and service

Self-Service

Basic Triage VRU/ Agent Assist
Troubleshooting/Q&A: Self Assist
Service Request: Self Assist

Agent Assist

Remote Visual Agent Assist
Watson In the Middle (Agent Assist)
Traditional Agent Assist

Field Technician

Field Tech Assist
Field Tech Dispatch Optimization
Home Repair Services

Engineering

Construction & Engineering
Lessons Learned
Health and Safety

How to do stuff
the composable way?

The IBM portfolio for cognitive IoT

IoT for [X] industry
Predictive maintenance
Asset management
Facilities & real estate
IoT Product engineering
IoT Platform

Connecting the data that matters

Applications
Optimizing operations for business impact

Solutions
Enabling new business models with integrated solutions for industry

Powered by IBM Watson

Business Transformation

Enabled by IBM Cloud

Local Deployment

Platform
Everything you need to innovate with IoT

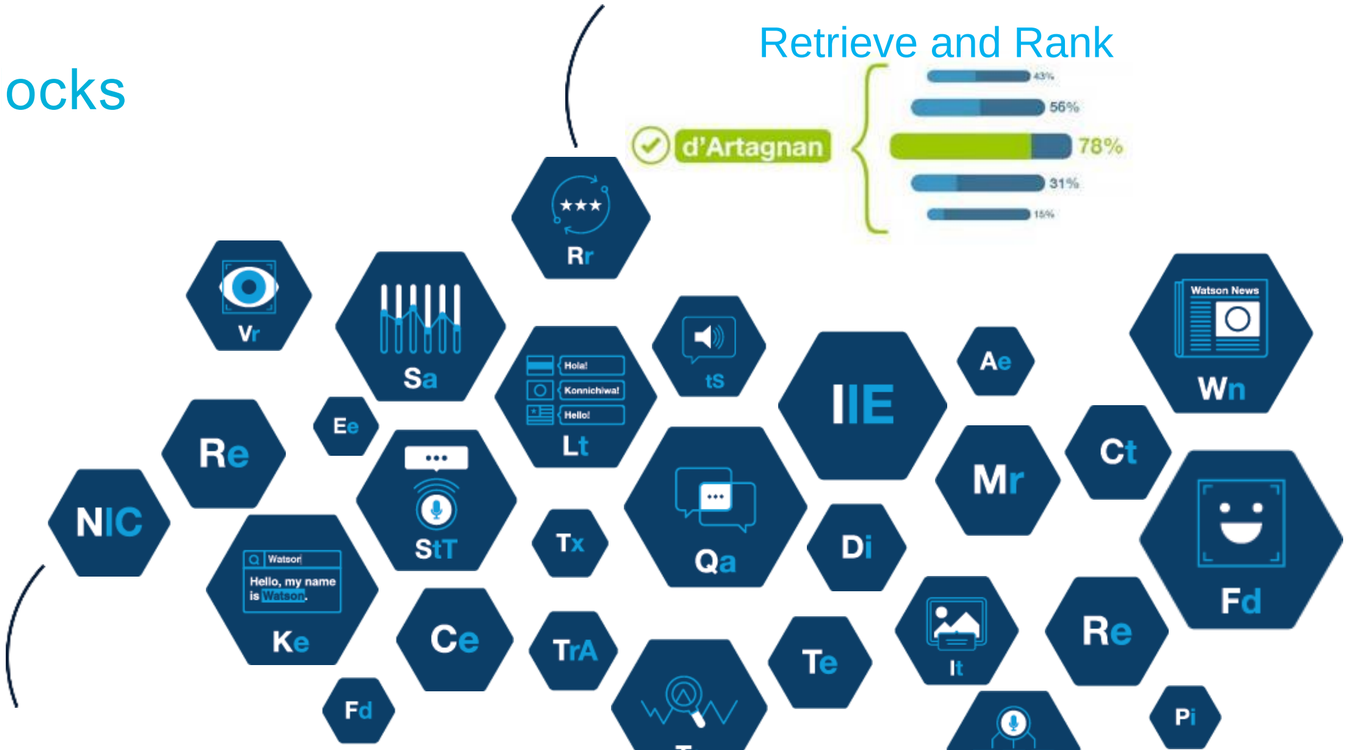
Blockchain
Edge
Weather
Non-traditional partners

Watson cognitive API’s

Watson’s APIs are cognitive building blocks

Message Resonance
Concept Expansion
Face Detection
Natural Language Classifier
Speech to Text
Text to Speech
Language Translation
Language Detection
Sentiment Analysis
Dialog
Retrieve and Rank
Image Link Extraction
Tradeoff Analytics
Entity Extraction
Tone Analyzer
Personality Insights
Taxonomy

Author Extraction
Concept Tagging
Relationship Extraction
Concept Insights
Relationship Extraction
Question & Answer
Feed Detection
Keyword Extraction
Visual Recognition
Image Tagging
Text Extraction



dashDB for Transactions SQL Database

A flexible and powerful relational database for enterprise-level online transaction processing.

IBM

Data Connect

Data Connect: Self-service data preparation and integration for analytics projects.

IBM

Decision Optimization

Develop optimization applications, such as planning or scheduling, using our APIs to connect to the CPLEX

IBM Beta

Geospatial Analytics

Expand the boundaries of your application. Leverage real-time geospatial analytics to track when devices

IBM

IBM DB2 on Cloud

DB2 on Cloud: Offers customers the rich features of an on-premise DB2 deployment without the cost,

IBM

IBM Graph

A fully-managed graph database service based on the TinkerPop stack.

IBM

IBM Master Data Management on Cloud

IBM® Master Data Management (MDM) on Cloud helps businesses gain a trusted view of data in a hybrid

IBM

IBM Watson Machine Learning

IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.

IBM

Information Server on Cloud

IBM® Information Server on Cloud allows you to rapidly expand data integration and governance capabilities

IBM

Informix on Cloud

IBM Informix on Cloud helps businesses gain a trusted view of data in a hybrid computing environment.

IBM

Insights for Twitter

Use IBM Insights for Twitter to incorporate Twitter search results into your Bluemix applications.

IBM

Lift

Lift is a fully managed data migration service.

IBM

Streaming Analytics

Ingest, analyze, monitor, and correlate data as it arrives from real-time data sources. View information and e

IBM

Weather Company Data

Use the Weather Company Data for IBM Bluemix service to incorporate weather data into your Bluemix

IBM

ClearDB MySQL Database

Highly available MySQL for Apps.

Third Party

Cupenya Insights

Business Activity Insights for Bluemix© apps

Third Party

ElephantSQL

PostgreSQL as a Service

Third Party

Namara.io Catalog

Open Data. Clean and simple.

Third Party

Redis Cloud

Enterprise-Class Redis for Developers

Third Party

TinyQueries

Create complex queries easily

Third Party

Kim Escherich
escherich@dk.ibm.com
+45 2880 4733
internetofthings.dk

@kescherich | @danmark50

/in/escherich