



Forest Grove
Data-Driven Decision Making

Optimising technology to
unlock insights that drive
better business decisions

Forest Grove Customer Conference 2023

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Forest Grove

Data-Driven Decision Making

Optimising technology to
unlock insights that drive
better business decisions

[D2S2] Driving innovation through data and IOT: converging digital and physical worlds to unlock operational efficiencies

Presented by:

Adam Schindhelm - CEO, LX Group

About the session:

Having led the development of 500+ products and projects with a focus on IoT and embedded systems, Adam will share insights into the current technology trends and opportunities for instrumentation, sensors, tracking, computer vision, AI and blockchain. From a product design perspective, Adam will share the shift he is seeing amongst clients from 'building a product to sell' to 'building a product to solve a problem'. This session will offer you with innovative approaches to solving problems and unlocking operational efficiencies by converging digital and physical worlds.

*Driving innovation through data and IOT:
Converging digital and physical worlds to unlock operational efficiencies*



*Adam Schindhelm
CEO
LX Group*

**We create next
generation
products for a
better world,
at scale.**



**We deliver the
future daily^x**

**Custom product design for
16 years**

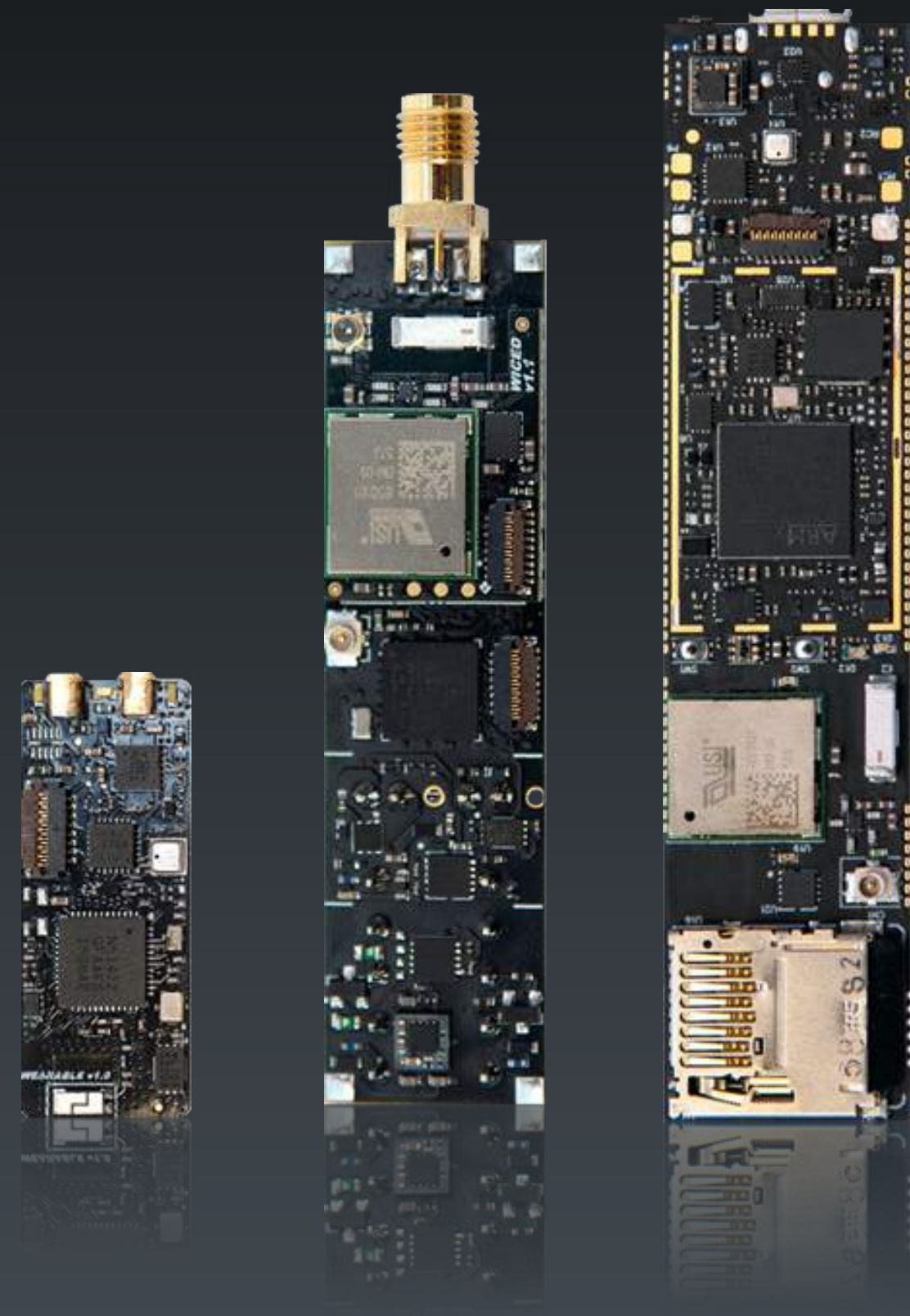
**Over 500 products and
projects delivered**

A full-stack team & platform

40+ industry verticals

LX

Full-stack IoT.



We've developed for a diverse range of industry verticals



**Consumer
Electronics**



**Oil, gas +
mining**



**Industrial +
factories**



**Military +
mission control**



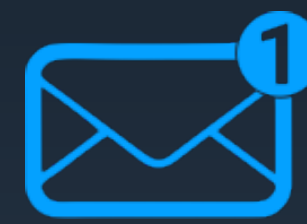
**Medical +
healthcare**



**Transport +
logistics**



**Agriculture +
environment**



**Marketing +
engagement**



Smart Utilities



**Smart
Infrastructure**



**Smart
Buildings**



Smart Cities



Smart Homes



**Smart
Insurance**



**Smart Vehicles
+ parking**



Accelerate your success, with next generation product design^x

See Different.

Full stack in-house multi-award winning product design team (hardware, firmware, cloud and apps development). We think outside the box.

Ideas Realised.

Experience from 100's of innovative products and projects for both tech start ups through to large multinationals - from strategy to scale.

Scale Faster.

Devices deployed around the globe, with LX's proprietary IOT Cores currently powering smart bins, to mines, boats, animals and even teddy bears.

da
ONS

Recent work

// Nurochek

Portable Brain assessment device

NuroChek is a headset that measures aspects of the brain's electrical activity using EEG.

Both affordable and portable, the custom headset broadcasts EEG signals to a smartphone for analysis and to the cloud for secure storage. Subsequent tests can be carried out and similarities or differences from test to test may be examined by a doctor.

LX has worked closely with HeadsafeIP in the development of the Nurochek, developing the electronics hardware and firmware.



// Nurochek



// Landis + Gyr

Real time smart load control for power distribution.

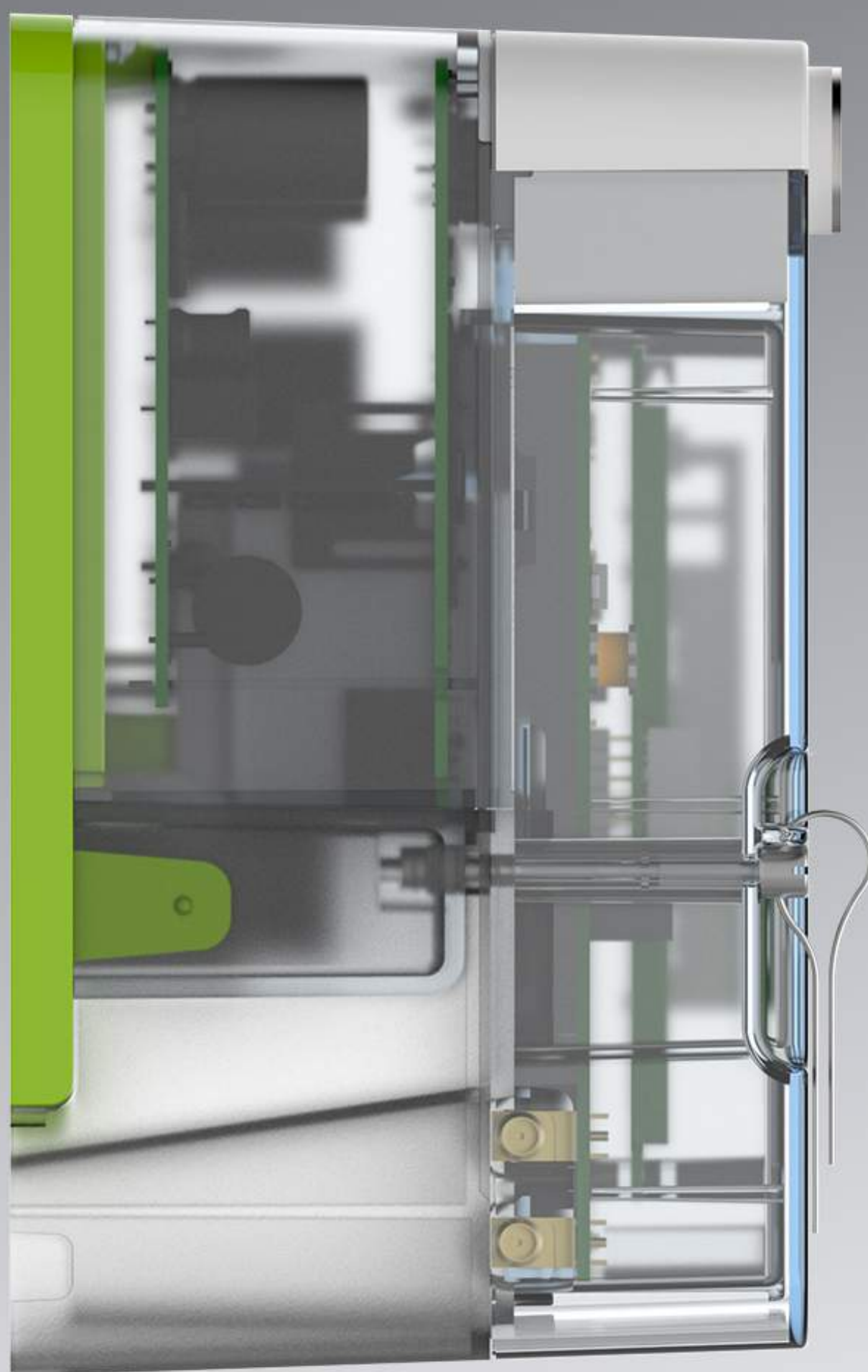


Smart ripple control receiver listens for electrical grid signalling to balance the load on the grid in real time.

Unlike traditional ripple control receivers, this product supports cellular and ZigBee control of the electricity load.

This enables the electricity distributor to manage the peak demand of the power grid, reducing the need for additional expensive grid infrastructure. LX developed the electronics hardware and embedded firmware for the first generation of the product.

// Landis + Gyr



// QUE Touch



Smart Home Controller



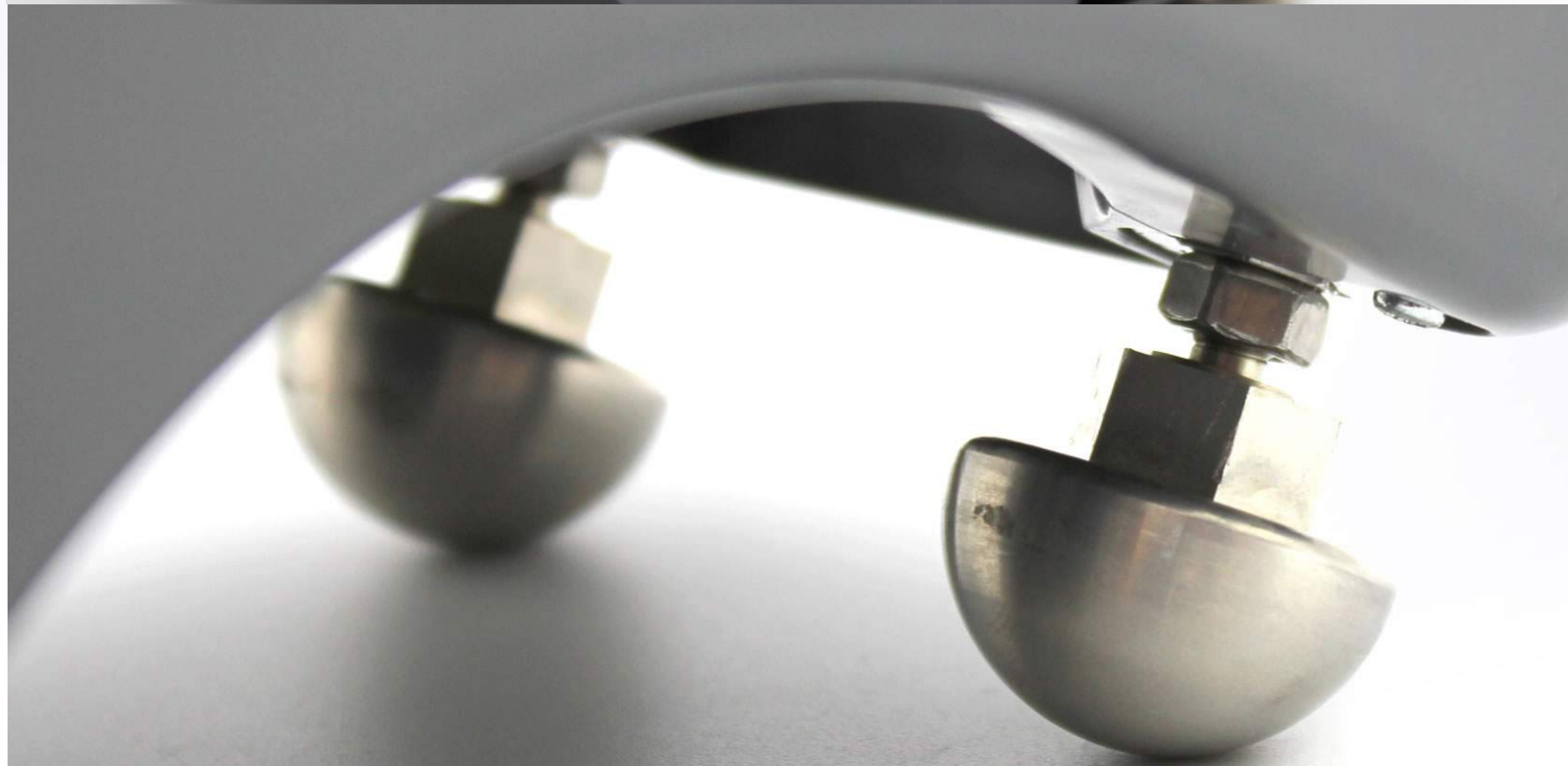
Que features modern design, the latest technology including A9 dual core processor with 1GB RAM, logging of historical energy usage, scheduling interface, master timer and zoning. Que Connect facilitates remote control and monitoring of the system via an internet connected mobile device. LX undertook the complete design of all aspects of electronics hardware, firmware, software and cloud backend for this product. Recipient of the Australian Good Design Award.













7.5% INCREASE
IN SALES
OF DOLMIO

3.5 MILLION VIEWS ON
YOUTUBE

12 MILLION EARNED MEDIA
IMPRESSIONS

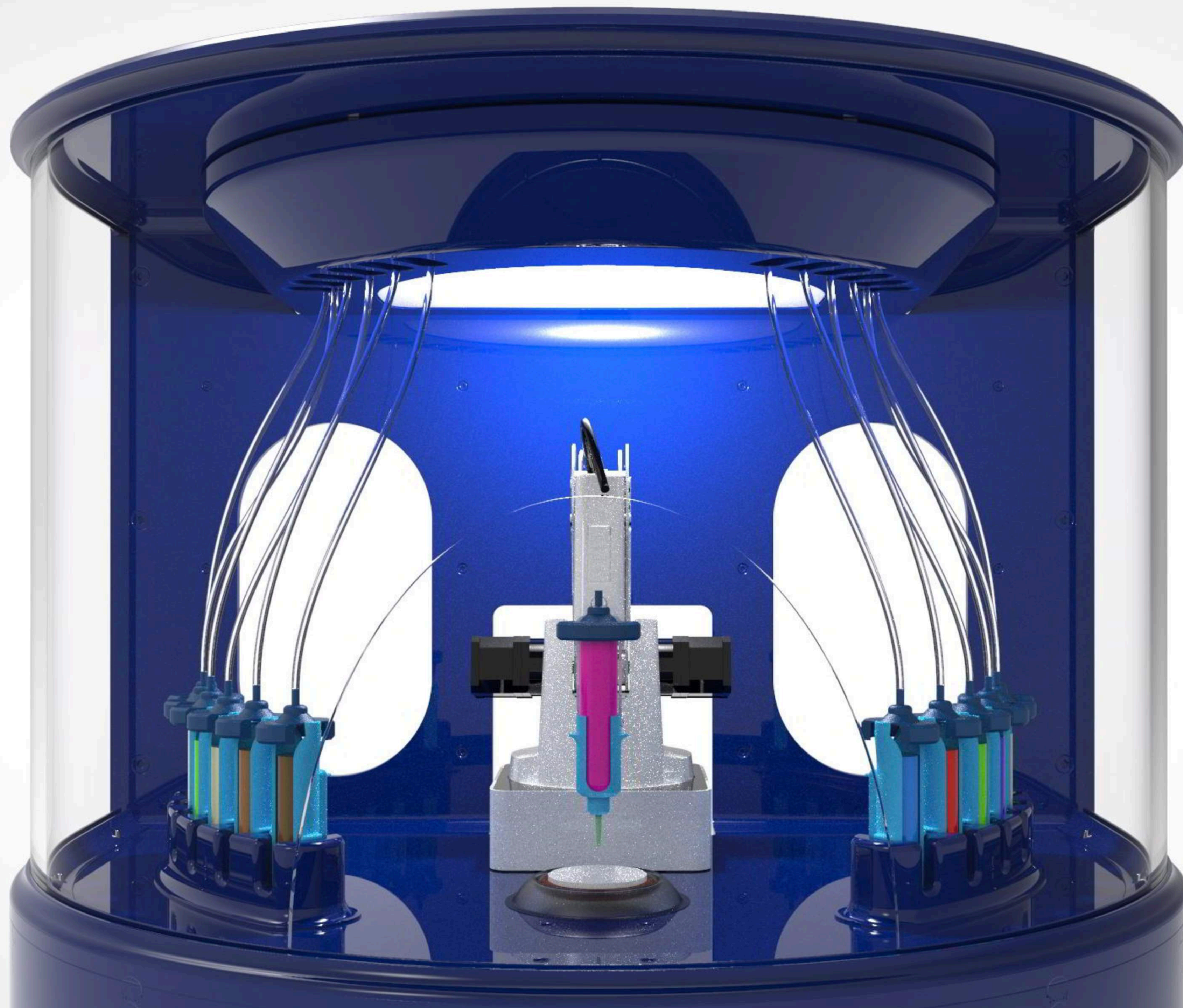
Herald Sun Daily **Mail** Australia **PEDESTRIAN.TV** psfk
Co.CREATE **The Daily Telegraph** **YAHOO!** **7** **Slate**



PEPPER HACKER™

THE PEPPER CRACKER THAT TURNS TECH OFF AND FAMILY DINNER TIMES ON









/Clients

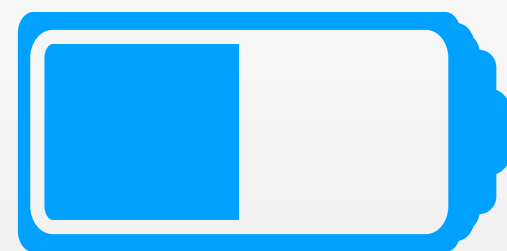
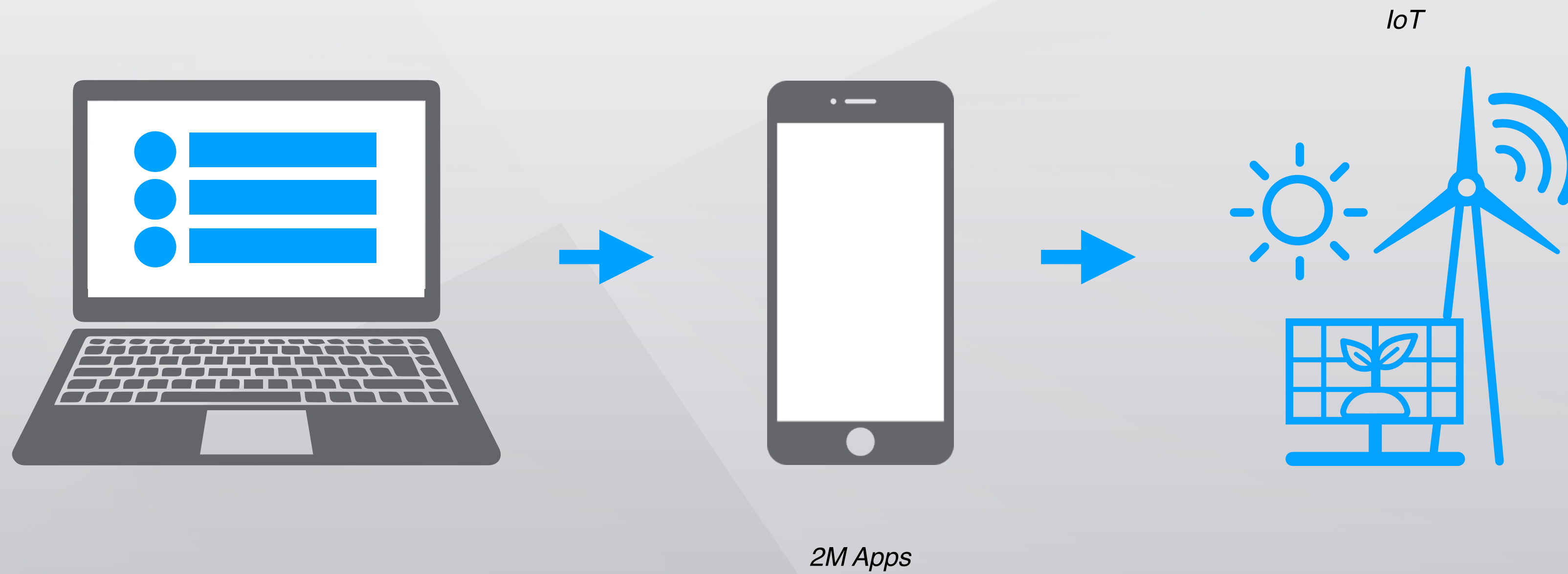
We're proud to shape the future with these ambitious forward thinkers.





.....IoT

Third Generation of Computing – Key Drivers



‘The Internet of Things will be the **largest device market** in the world.’

‘. . . it will be more than **double the size** of the smartphone, PC, tablet, connected car, and the wearable markets combined.’

‘I don’t think we’ve seen this type of market size before.’

- INTERNATIONAL DATA CORPORATION

By 2026, the IoT device market is anticipated to reach
USD \$1.1 trillion
(a 24.7% CAGR from 2018)
Fortune Business Insights

There will be an estimated
25 billion
IoT devices by 2025
Gartner

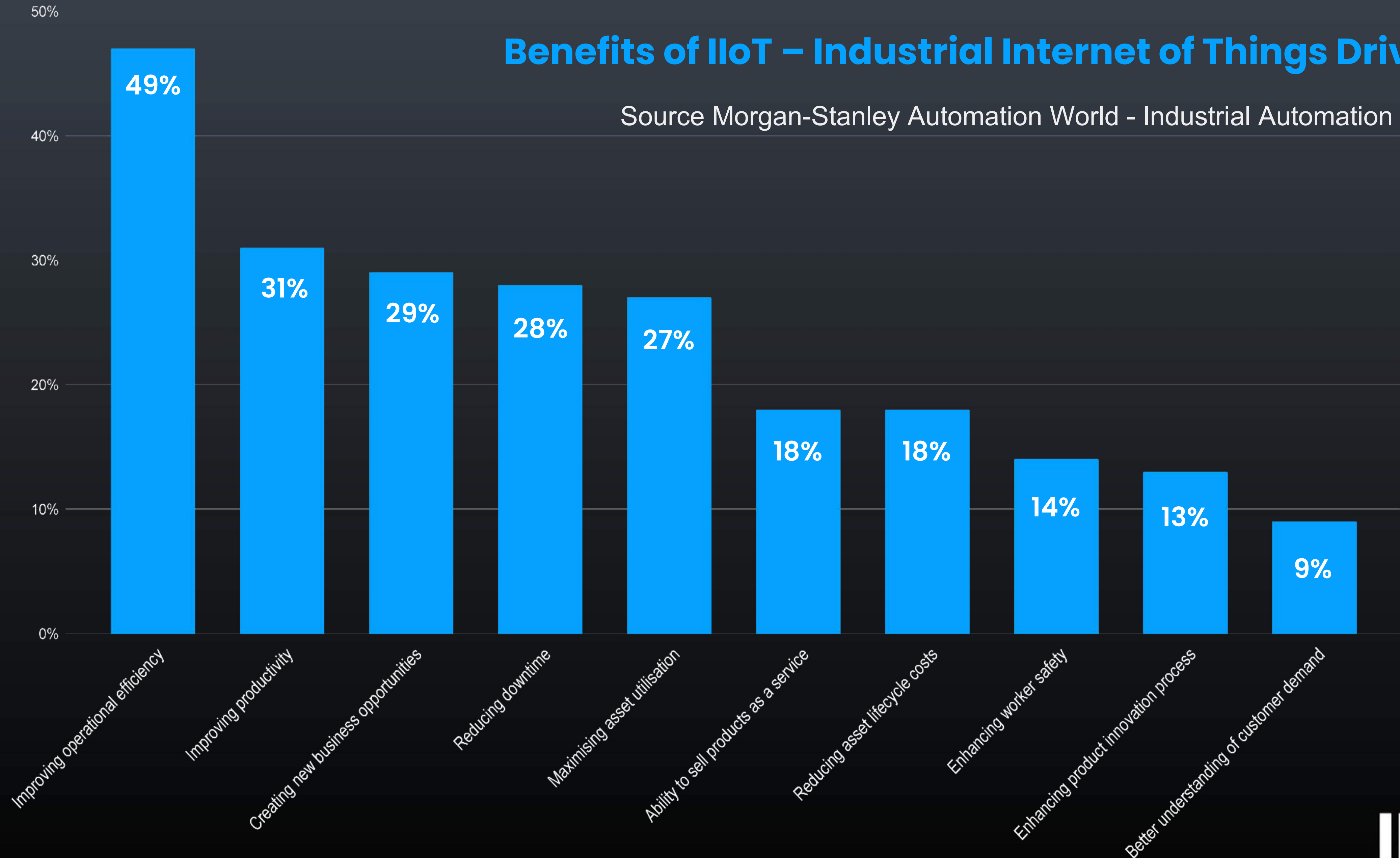
80%
of organisations that
have adopted IoT
report positive results

85%
of companies say
they have IoT project
budgets

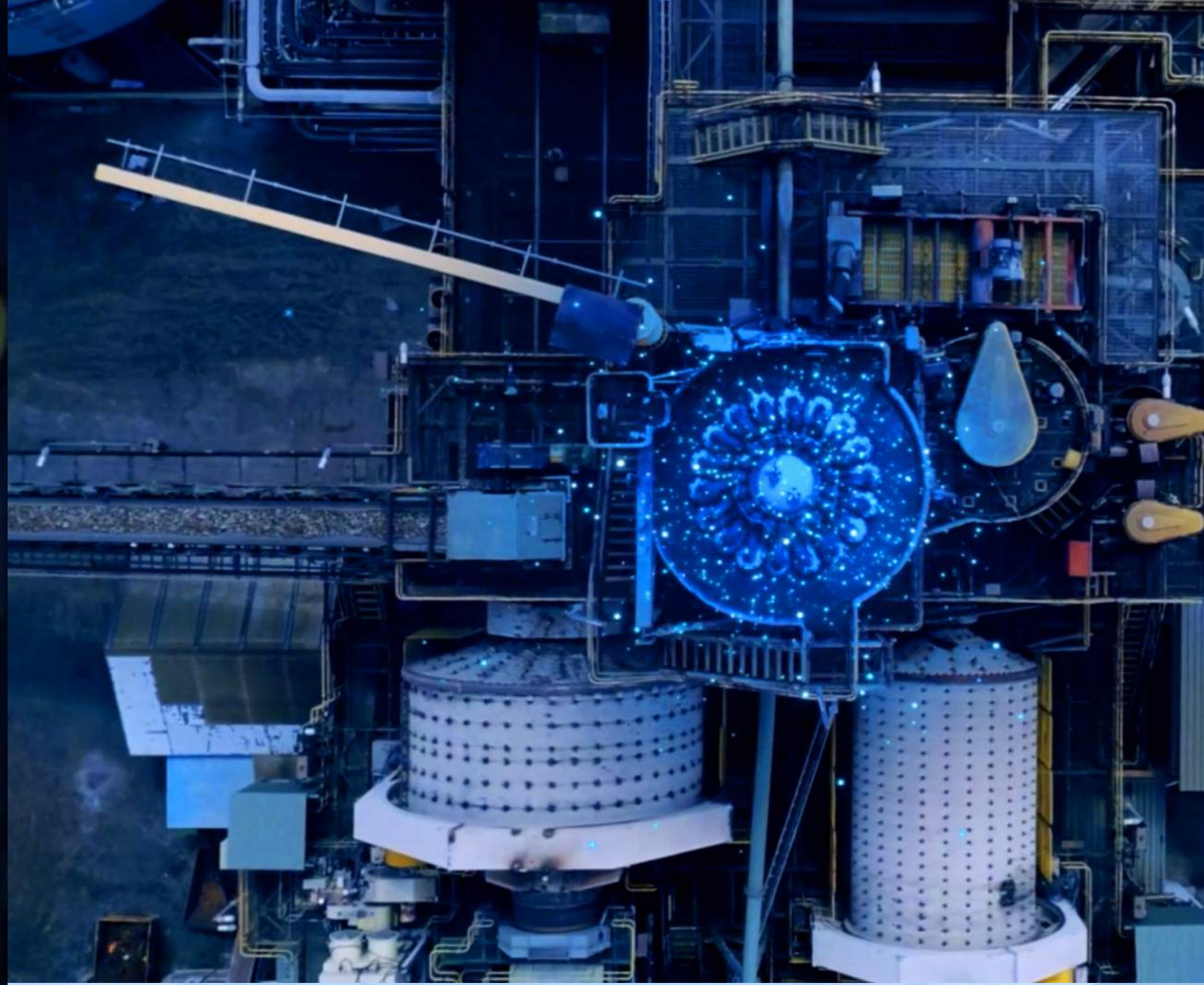
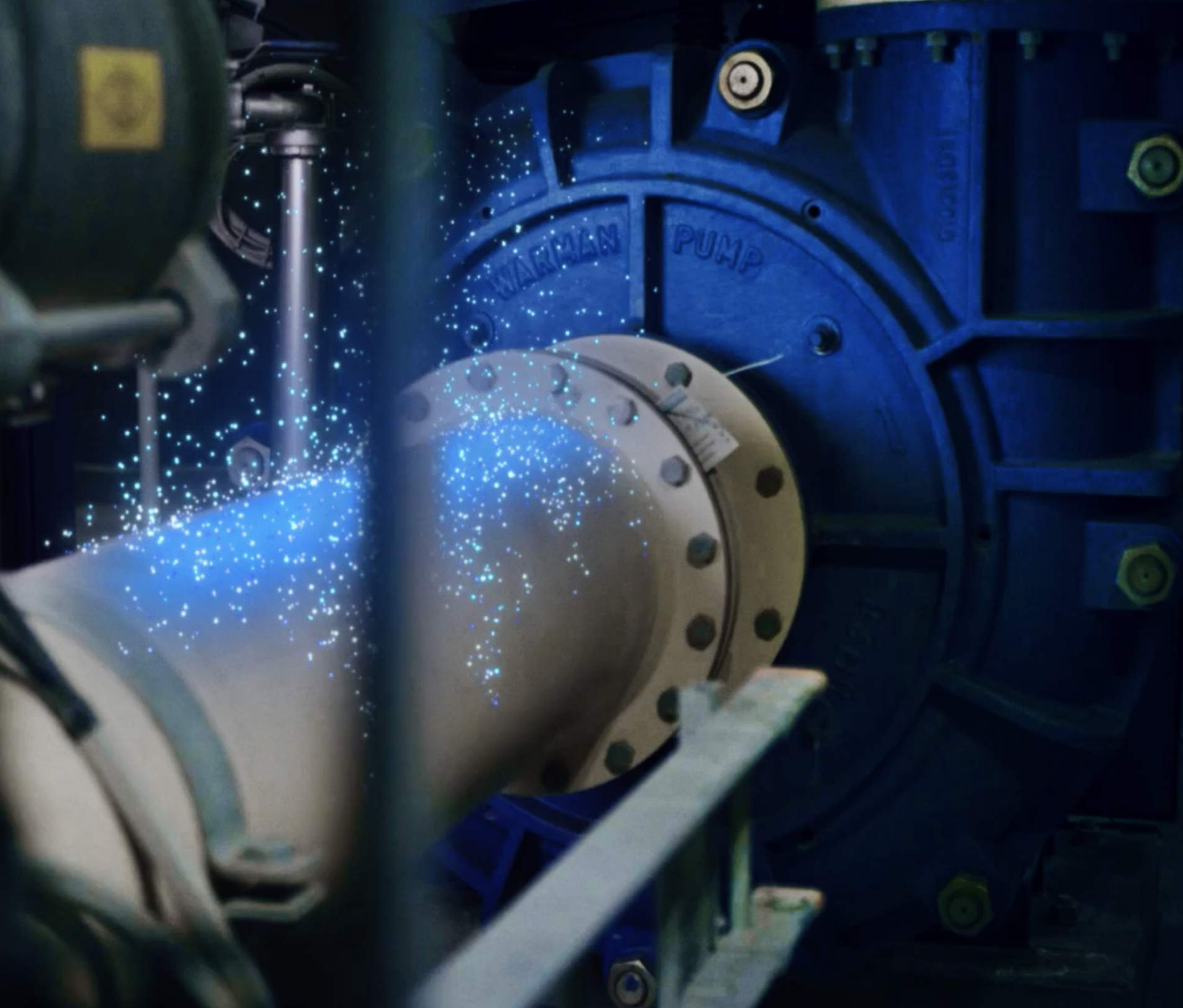
94%
executives have digital
transformation as a
top strategic objective

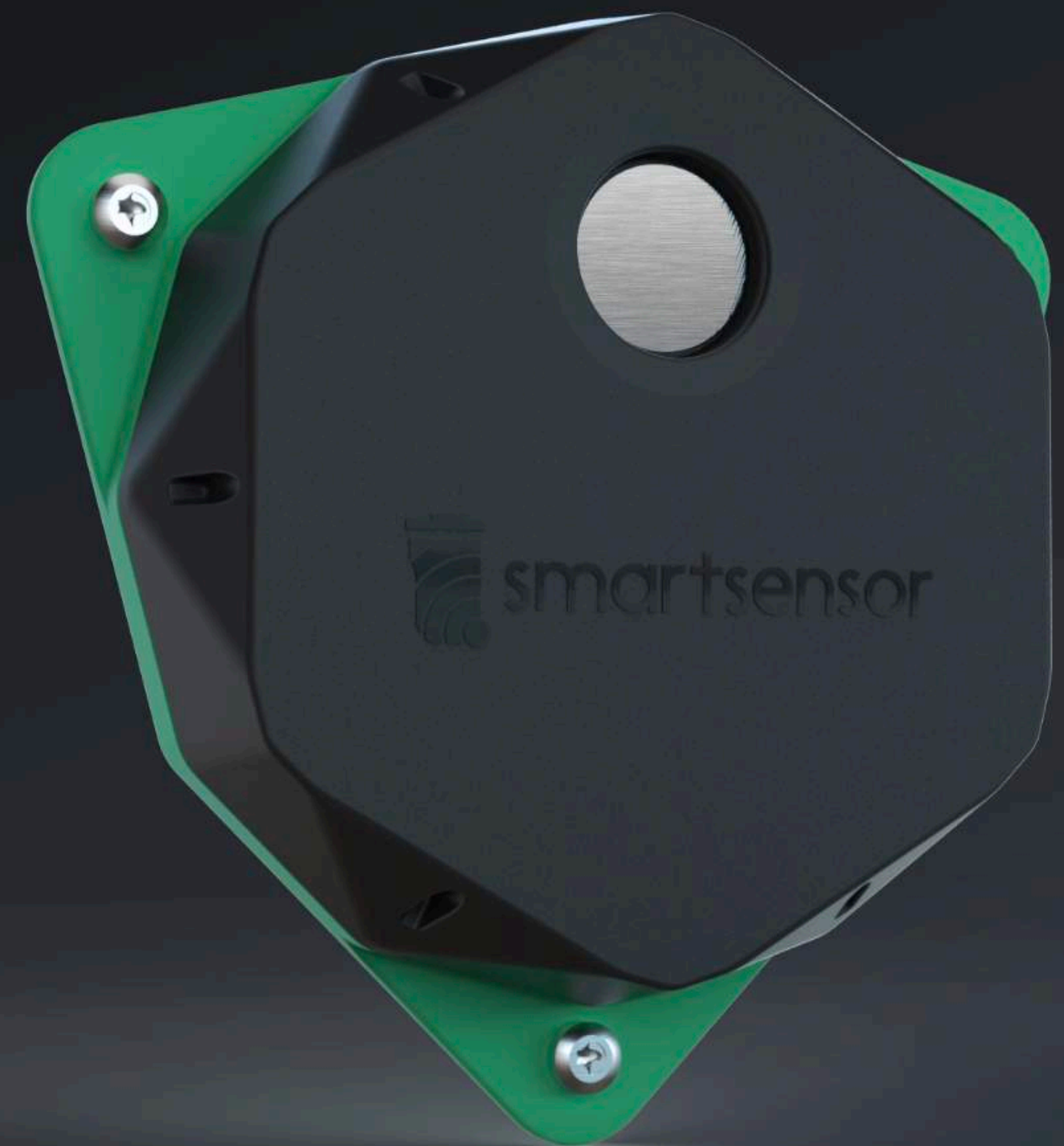
Benefits of IIoT – Industrial Internet of Things Drivers

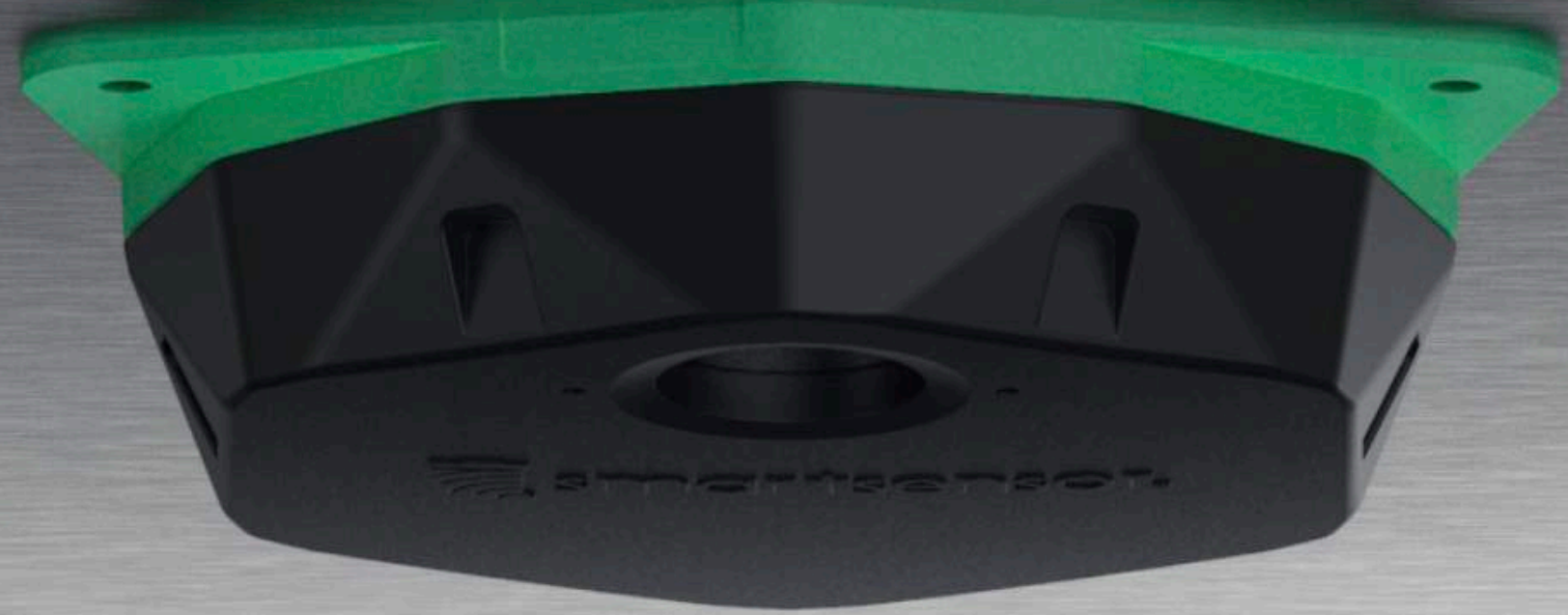
Source Morgan-Stanley Automation World - Industrial Automation survey

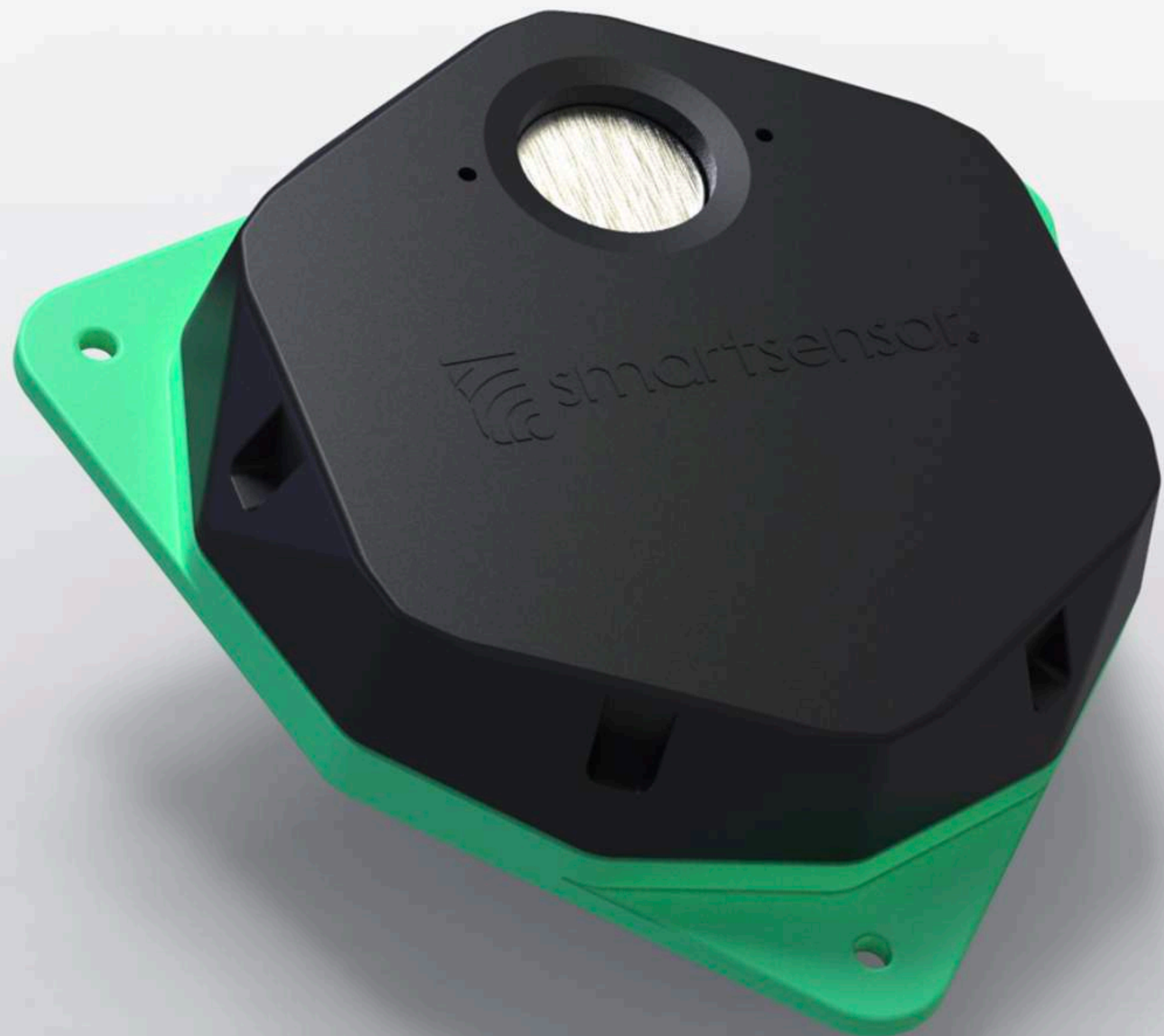


Recent work: IoT Specific











David Muller
Red Rock Cl

Inventory Management

Search
Search Bins by tag or Zone

Recycling Notre Dame

Fill Level	Fill
Contents	Recy
Capacity	150
Location	Pris
Temperature	23
Battery Level	80%
Signal Level	90
Update Count	10
Coordinates	5.12

Fill Level	Fill
Contents	Recy
Capacity	150
Location	Pris
Temperature	23

400 GEORGE ST
READY FOR COLLECTION

Case Study: 'The Blockchain Experiment'

**Temperature, humidity and location of 17
Tonnes of almonds was tracked using IoT and
blockchain technology.**

The experiment tracked the produce from Mildura (Australia), through the rail network to the Port of Melbourne, along the shipping route to Hamburg (Germany) on an Ethereum based blockchain in partnership with the Commonwealth Bank of Australia Innovation Lab. The project lowered costs and improved efficiency, inclusiveness and transparency in the supply chain.

The solution was build upon LX based tracking and sensing devices and cloud APIs.



// Case Study



// Case Study

Sales Order #31615

Welcome, OLAM

DETAILS STATUS DOCUMENTS FINANCE

Order Info

Shipper Name	OLAM Australia	Shipper Address	55 Wyandra St, Newstead QLD 4006
Consignee Name	THE BUYER	Consignee Address	123 Gruber Strabe, Hamburg, Germany

Commodity Info

Commodity	Almonds	Form	Kernel
Batch	F003847005	Size	25/27
SKU	8773	HS Code	0802.12.00

Shipping Info

Quantity	(20 x 850kg bags) 20ft	Vessel ETD from POL	2018-05-30
ETA	2018-05-30	Vessel	OOCL OAKLAND
Direction	Northbound		

Pricing Info

Gross weight	17063.7	UDM	KG	FOB	100000	Currency	AUD
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explorer.commbanklabs.com.au/blocks/141615

Eth-Explorer

Latest Block: **141615**

Block Details

141615

```
< Block Hash: 0x69496dc0a0f0904fa97915169e4e0140bd77ebab0c12e50386b933fdda1f1784
Gas Used : 0
Transactions Count : 0
Created Time : Fri Jul 27 2018 14:03:32 GMT+1000 (AEST) >
```

trade.commbanklabs.com.au/sales-order/jaa97731-0153-4118-04de-ab106259d55c/status

Add New Sales Order

#31615
Customs cleared - Shipment date 2018-05-30

Recent Orders
All Orders
Notifications
Logout

- 25-05-2018 08:14 AM
- Goods received by Packer 25-05-2018 07:35 PM
- Container stuffed 25-05-2018 07:38 PM
- Pre-Receive Advice 25-05-2018 08:10 PM
- Shipping Container Received at origin intermodal railyard site 26-05-2018 02:06 PM
- Shipping Container departed origin intermodal railyard site 26-05-2018 04:23 PM
- Merbein 2018-05-27
Current Location Estimated Arrival
- Shipping Container arrived at destination intermodal railyard site 27-05-2018 09:57 AM

Location

Map Satellite 3D Park

Blue Mountains National Park
Central Coast
Goldford
Sydney
Wollongong

Sensor Data

25.2 degrees
Temperature

31%
Relative humidity

LAST UPDATED 26-07-2018 04:25 PM

[VIEW TRANSACTION](#)









BORAL

BORAL



AWAMOÅ
PORTALOOS
PH. 437 3428
DANARU
108

AWAMOÅ
PORTALOOS
PH. 437 3428
DANARU
108



IoT Challenges

IoT Challenges

- Pace of innovation, speed of adoption
- CAPEX / Hardware Deployment / Reliability
- Driving organisational change with Data

The background consists of several overlapping geometric shapes in shades of dark gray and black. A large, light gray shape is on the left, and a dark gray shape is on the right. A black shape is positioned in the upper right, and another black shape is in the lower right. The word "Speed" is centered in the middle of the image.

Speed

Over 300 Sensors

3+ Terabytes of data per race

“If you are not instrumented you can’t win”



Amara's Law

We tend to overestimate the effect of a technology in the short run and underestimate its effect in the long run

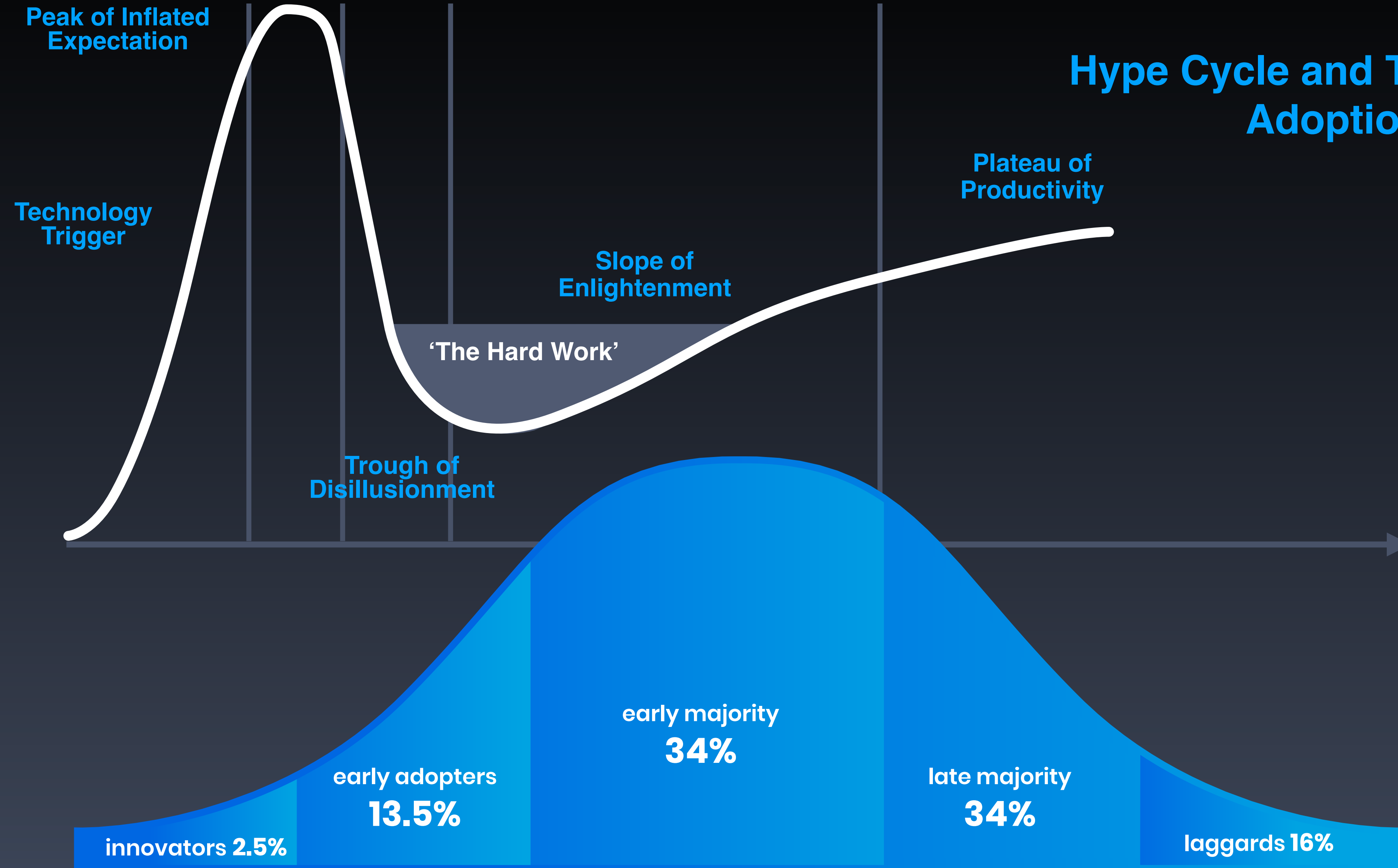
how technology changes
(**exponential**)

the way we think (**linear**)

perception gap



Hype Cycle and Technology Adoption Lifecycle





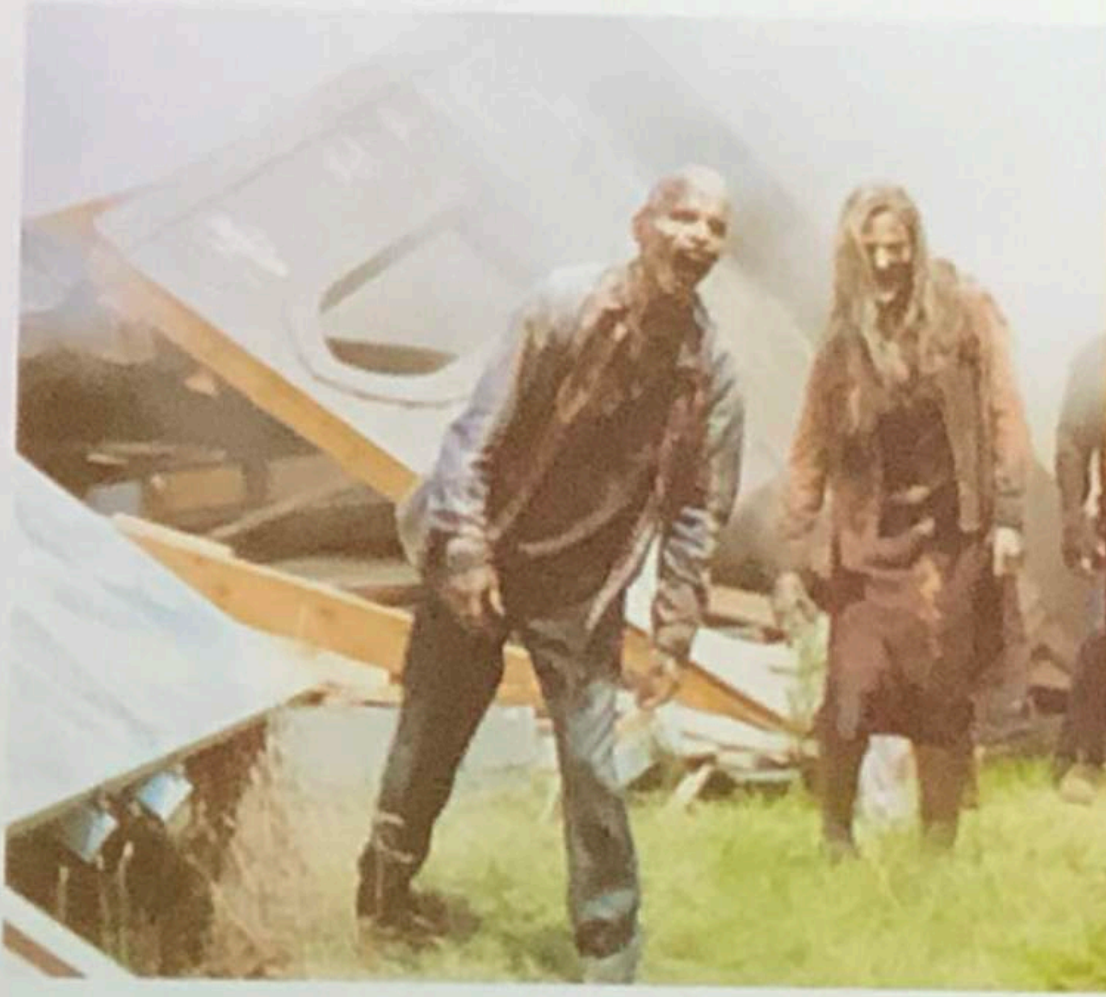
“Big will not beat small anymore, it will be the fast beating the slow”

Challenge 2: CAPEX / Hardware / In Field Reliability

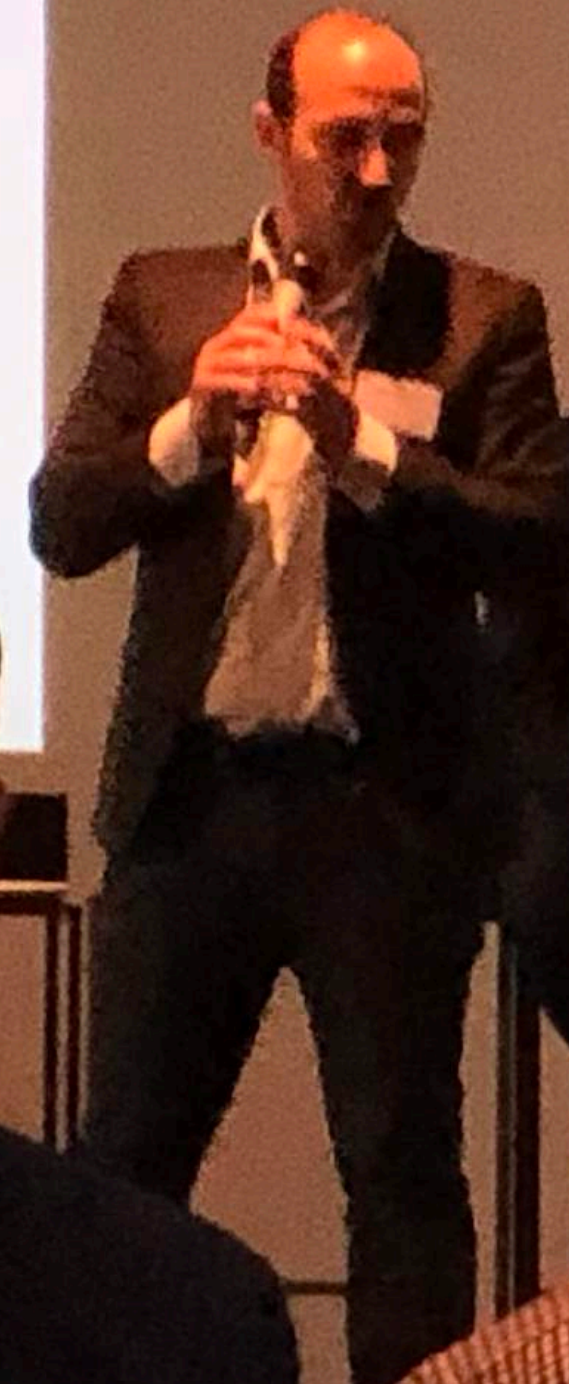
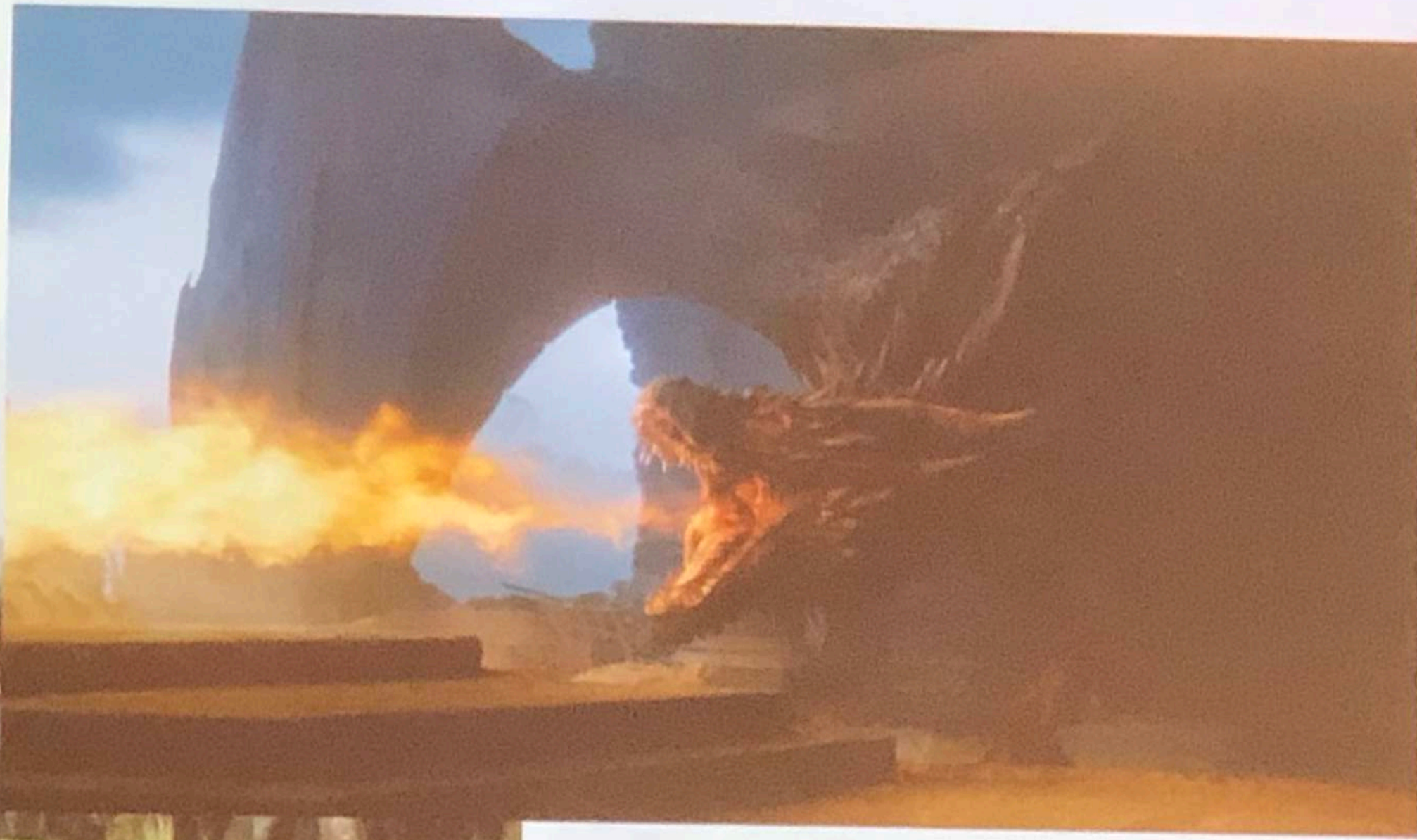
CAPEX / Hardware / Reliability

- Enormous opportunities exist for traditional industries & service oriented companies with no experience with hardware deployment / CAPEX hurdles.
- High stakes game. Mistakes can be extremely costly.
- Typical IoT deployments require large scale deployments to drive operational efficiencies.

Internet Of Zombies ?



ANGRY CUSTOMERS

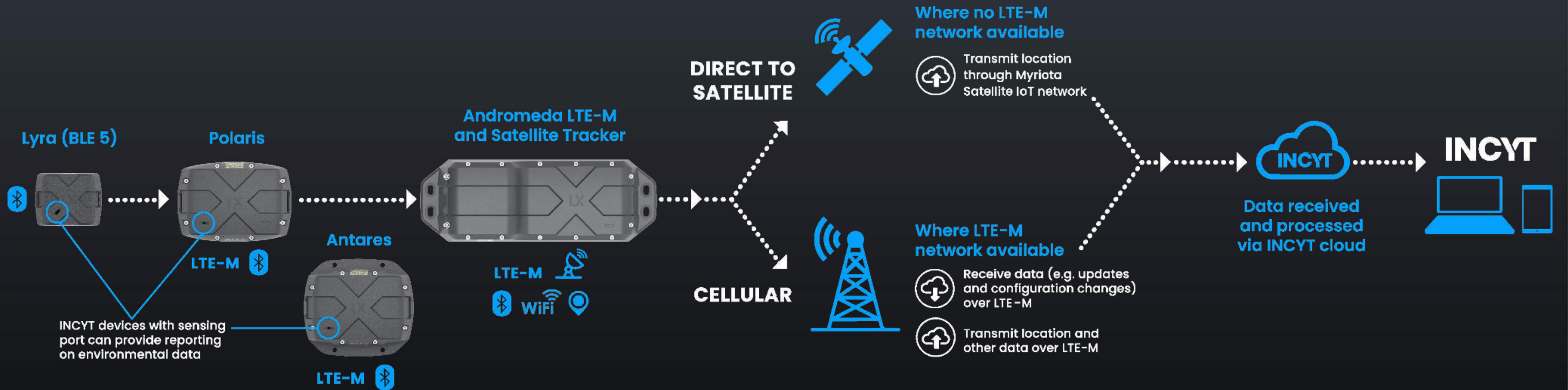


Challenge 3: Driving Organisational Change

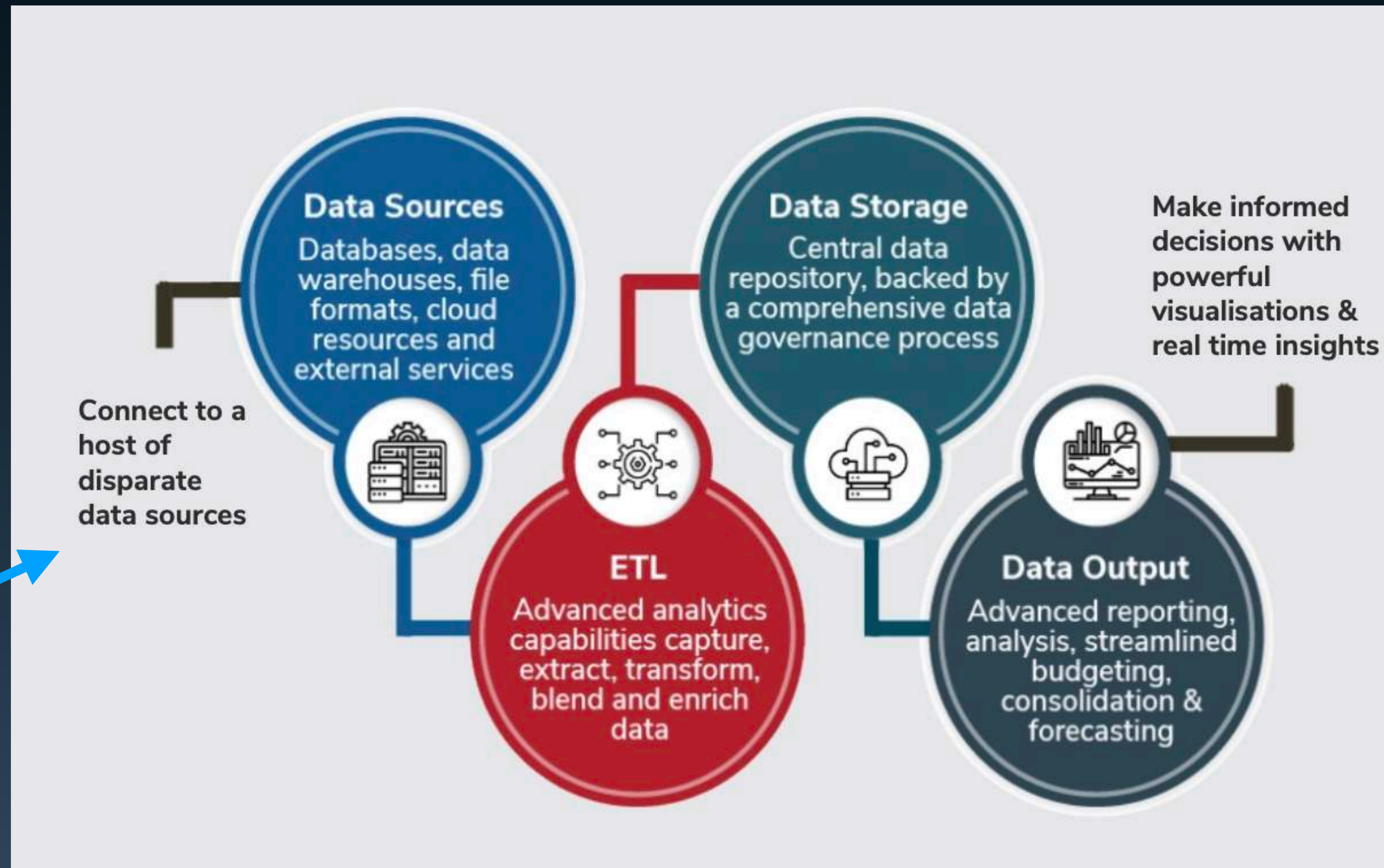
Organisational Change

- Driving change is hard!
- Accessing the data from the physical world is only the first step.
- Adapting, changing and unlocking business efficiencies from the data is where the value to organisations lie.

Example IoT System



Organisational Change



IoT Data

Organisational Change



DATA & FINANCE TRANSFORMATION JOURNEY

1. Extract, Transform & Load (ETL)

2. Intelligent Data Analysis

2. Financial Planning & Analysis

3. Machine Learning / Predictive Analytics / AI

4. Visualisation

- Connect to a wide variety of source systems, traditional databases, and new data sources (e.g. social media)
- Work with structured, semi-structured and unstructured data
- Leverage data transformation products with out of the box data connectors
- Simple, fast, and scalable cloud data storage solutions

- Provide code-free and guided solutions that create the opportunity for all staff to analyse data
- Interactive visual exploration
- Data interrogation

- Short term budgeting, forecasting, and performance management
- Long-term valuation financial modelling including scenario management
- Automate and schedule processes

- Leverage existing datasets and perform targeted or self-service advanced analytics
- Simple linear, multilinear, decision tree, random forest, gradient booster, etc.

- Empower users with dynamic dashboards and self service analytics
- Provide the power to see and understand their data without reliance on IT

Data connectivity	Data analysis	Consolidation	Model Creation	Reports
Data Validation	Trending	Budgeting & forecasting	Model Validation	
Data Cleaning / Transformation	Data normalisation	Reporting & dashboarding	Model Training and Optimisation	Dashboards
Integration and Consolidation	Statistical Analysis	Asset management	Enterprise solution deployment	Data Exploration
Load	Other data analysis	Workflow & Automation		
Storage				

**We create next generation products for
a better world, at scale.**

Let's get started now.

Australia

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69002 Lyon
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Manila, Philippines

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