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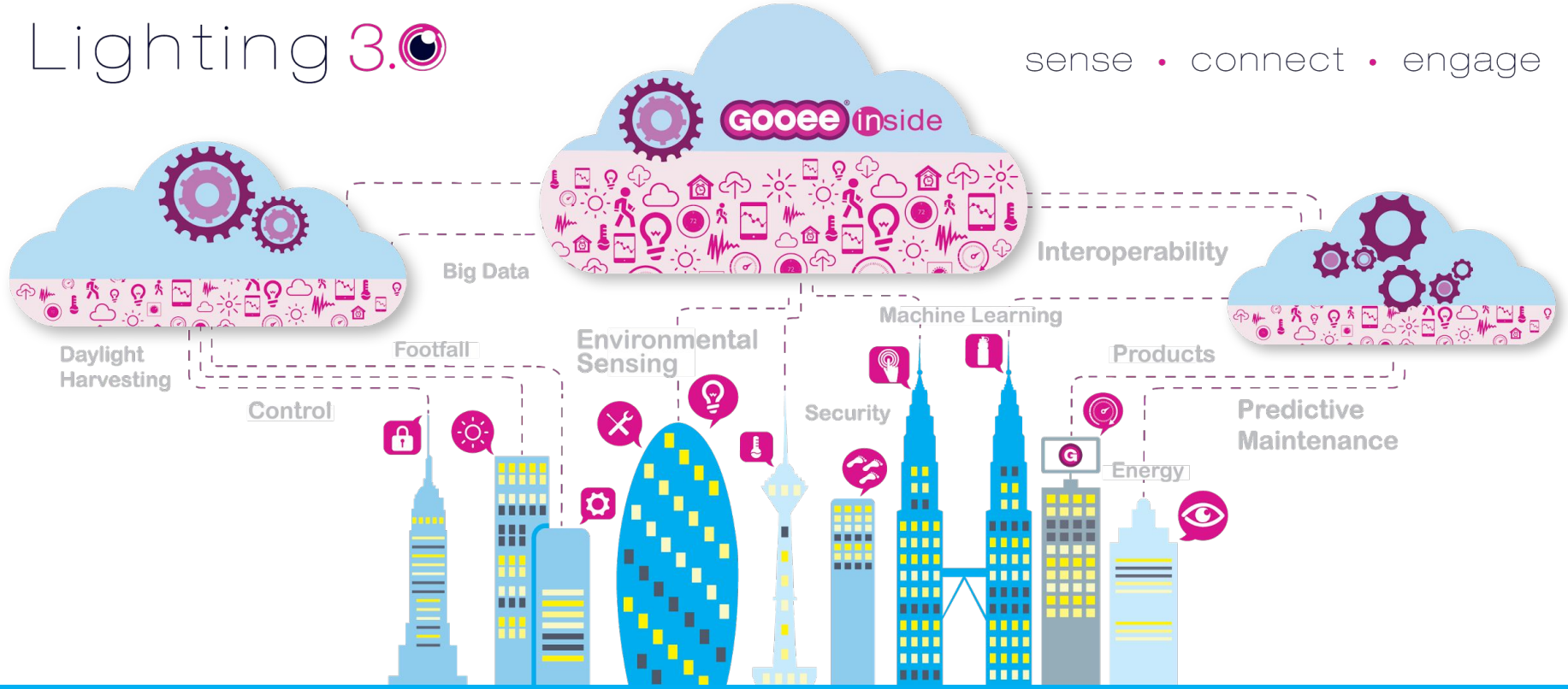
Lighting 3.0 - Smart, connected Lighting for the IoT

Alex Klein, Business Development Manager Europe, Aurora Group



AURORA®
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WORLD CLASS
Manufacturing and Sourcing Capabilities

founded 1999

$ 170m global turnover

12,000 products launched

900+ employees

13 International Facilities

customers in over 70 countries

450,000 sq.ft
IN-HOUSE
UK & Asia

- R&D
- Industrial Design
- Electronic & Mechanical Engineering
- NEMKO Test Facilities
- Manufacturing

Lighting 3.0

Srt	Pwr	Lht	Thm	Opt
Smart	Power	Light	Thermal	Optics


Ji'an City, China


Dongguan, China


Swindon, UK

Evolution of Lighting

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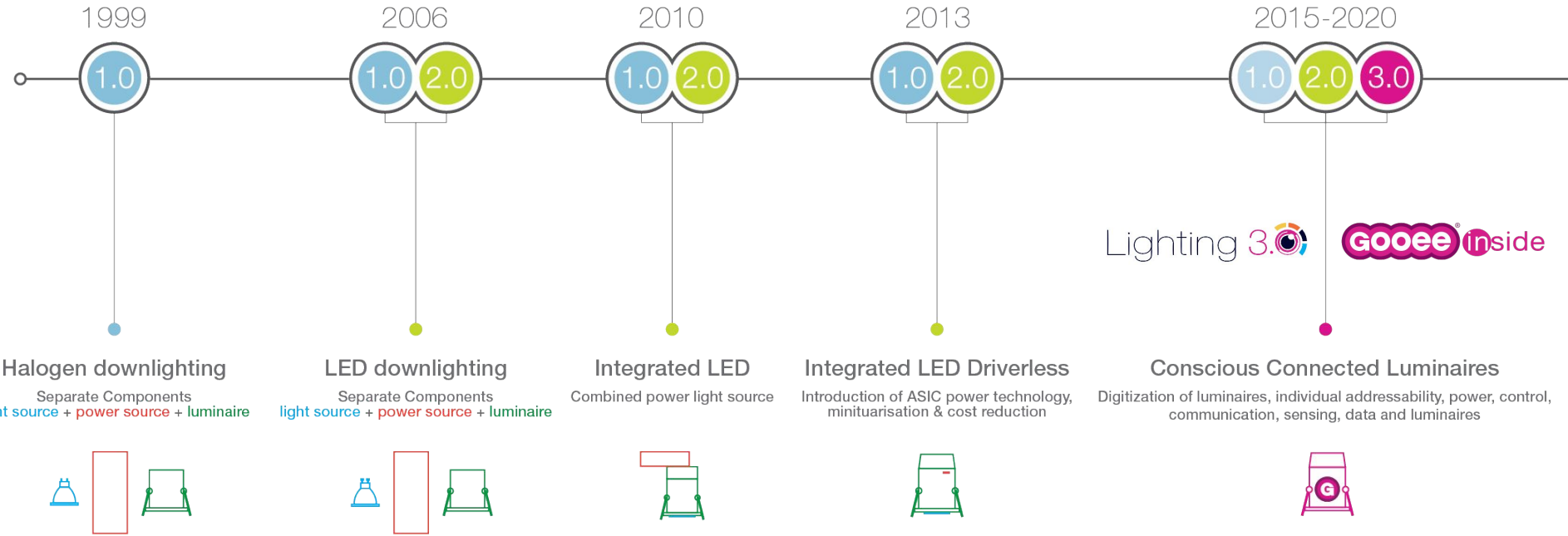
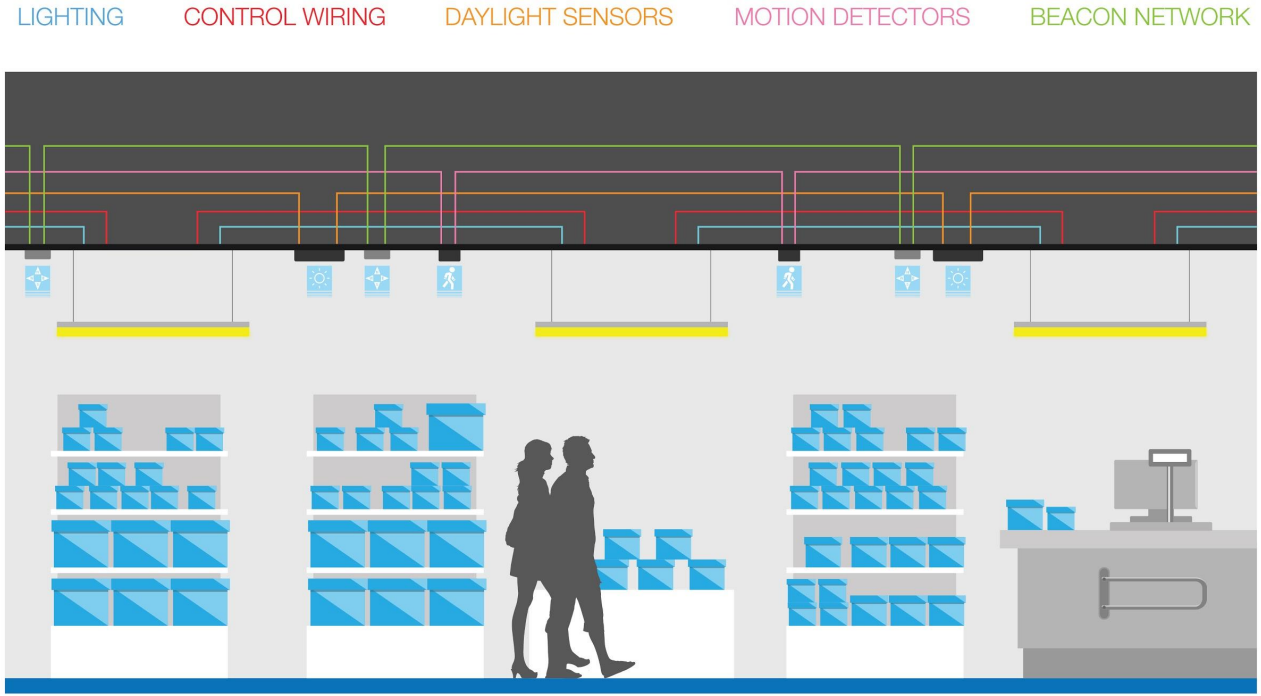
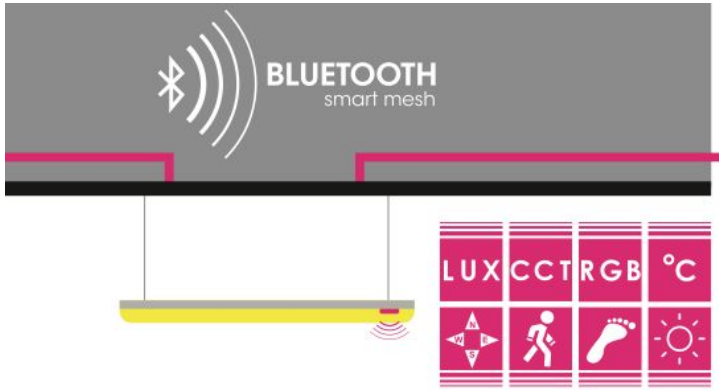


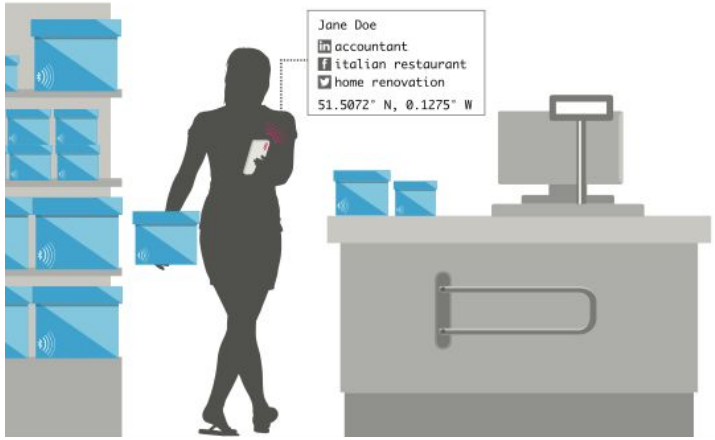
Multiple Independent ‘Networks’

Issues

- Management of multi-trades
- Increased hardware & labor costs
- Increased install costs & time
- Increased cost of cables
- Multiple interfaces
- Long term, costly service contracts
- Licensing costs
- Hard to upgrade
- Difficult to retrofit







FUTURE STATE

Lighting 3.0

The Single Essential Network

LIGHTING • CONTROL WIRING • DAYLIGHT SENSOR
MOTION DETECTORS • BEACON NETWORK

- Unified solution
- Everything as a Service
- Low install cost
- No additional hardware
- Easy retrofit

- wireless control
- predictive maintenance
- energy management
- light performance
- occupancy detection

- location
- identity
- security
- automation

Lighting 3.0
sense • connect • engage

Gooee inside

- 360° life cycle
- Asset management & tracking
- Brand > consumer
- Information > occupants

ENVIRONMENTAL INTELLIGENCE

Control & Scene Setting
Individual or Group light control via app, wall device, sensors, schedule or autonomously

LED Maintenance
Know when to replace the lights before they fail and optimise energy consumption

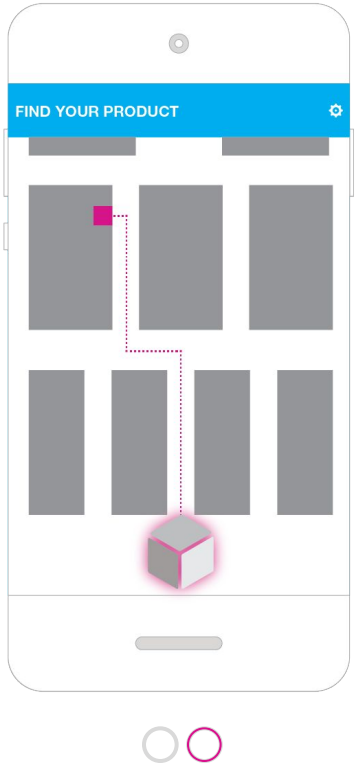
Energy Management
Real-Time reporting and energy optimization based on machine learning and rules engines

Daylight Harvesting
Light sensors monitor ambient light to optimise energy usage

Occupancy
In-built sensors detect presence and direction for security or energy management

Outcomes

- **Enabling up to 80% energy reduction in lighting**
- **Creating greater communication between building management systems**
- **Producing personalisation and customisation options for employees**



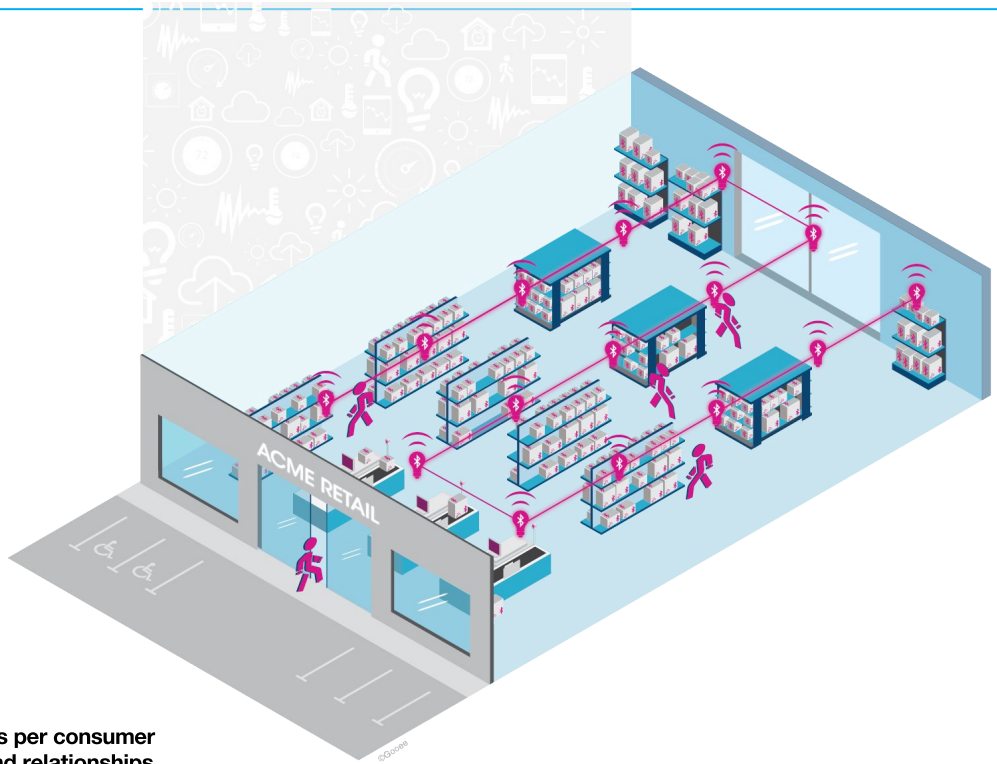
HUMAN
ENGAGEMENT

Location Based Engagement
Real-Time, location based offers to consumers in retail stores

Security Tracking
Smart cards track employees throughout the built environment. Mobiles track them externally via GPS

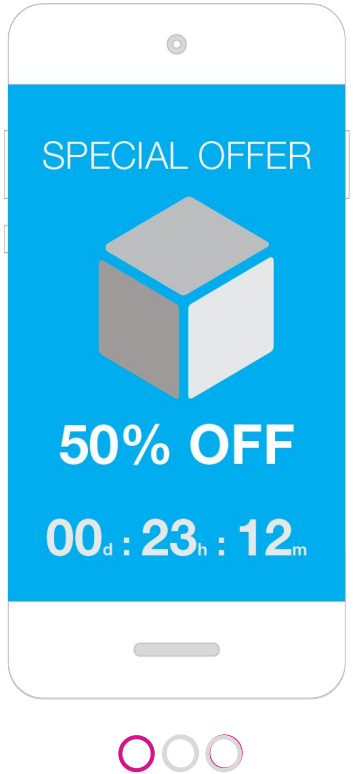
Automated Checkout
Beacons automatically charges customer as they walk out of the store

Layout Optimization
Based on comprehensive analysis on in-store customer behavior



Outcomes

- **Ensuring additional interactions per consumer**
- **Creating closer consumer-brand relationships**
- **Generating increased consumer spend per customer**

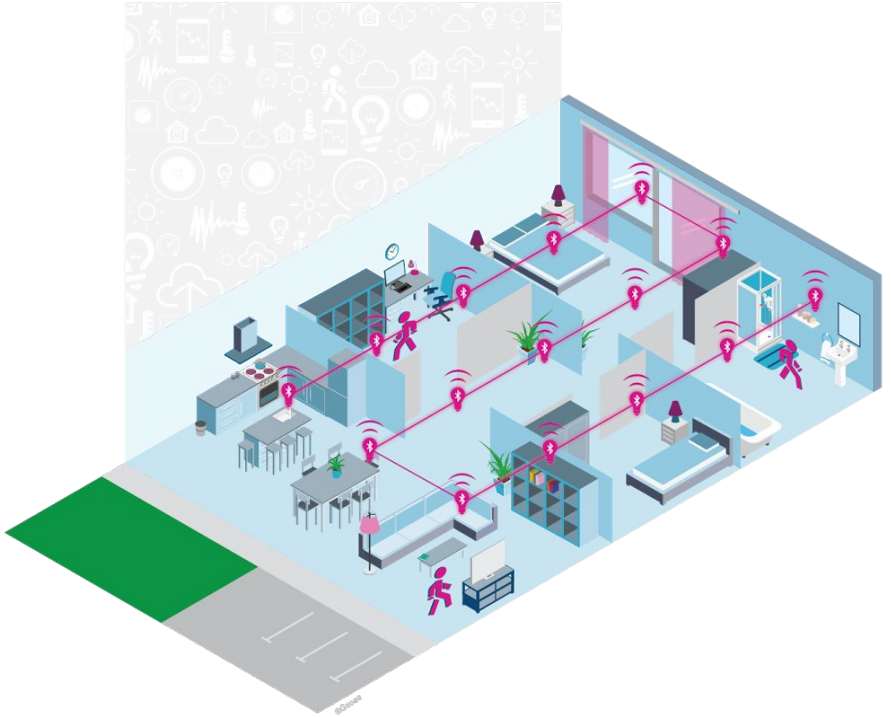


ASSET
TRACKING

Consistent Viewing of Items
RFID and other location based technology tracked via the lighting network

360 degree Product Lifecycle
Brands can understand and connect to consumers before and after purchase and better understand their behaviour.

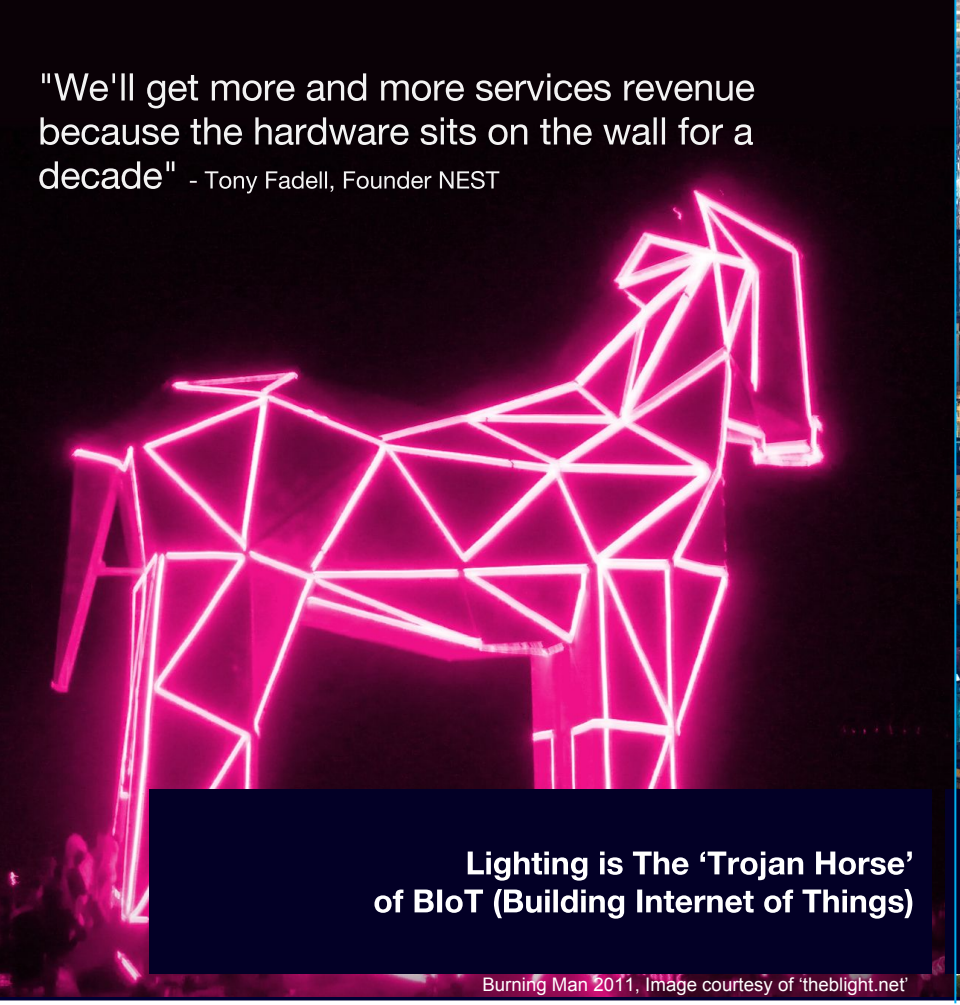
Democratizing Data
Putting control of data sharing back in hands of the consumer in exchange for incentives and offers. Your data your way!



Outcomes

- **Increased employee productivity**
- **Substantial improvements in product visibility**
- **Ensuring greater communication between front and back office**

"We'll get more and more services revenue because the hardware sits on the wall for a decade" - Tony Fadell, Founder NEST



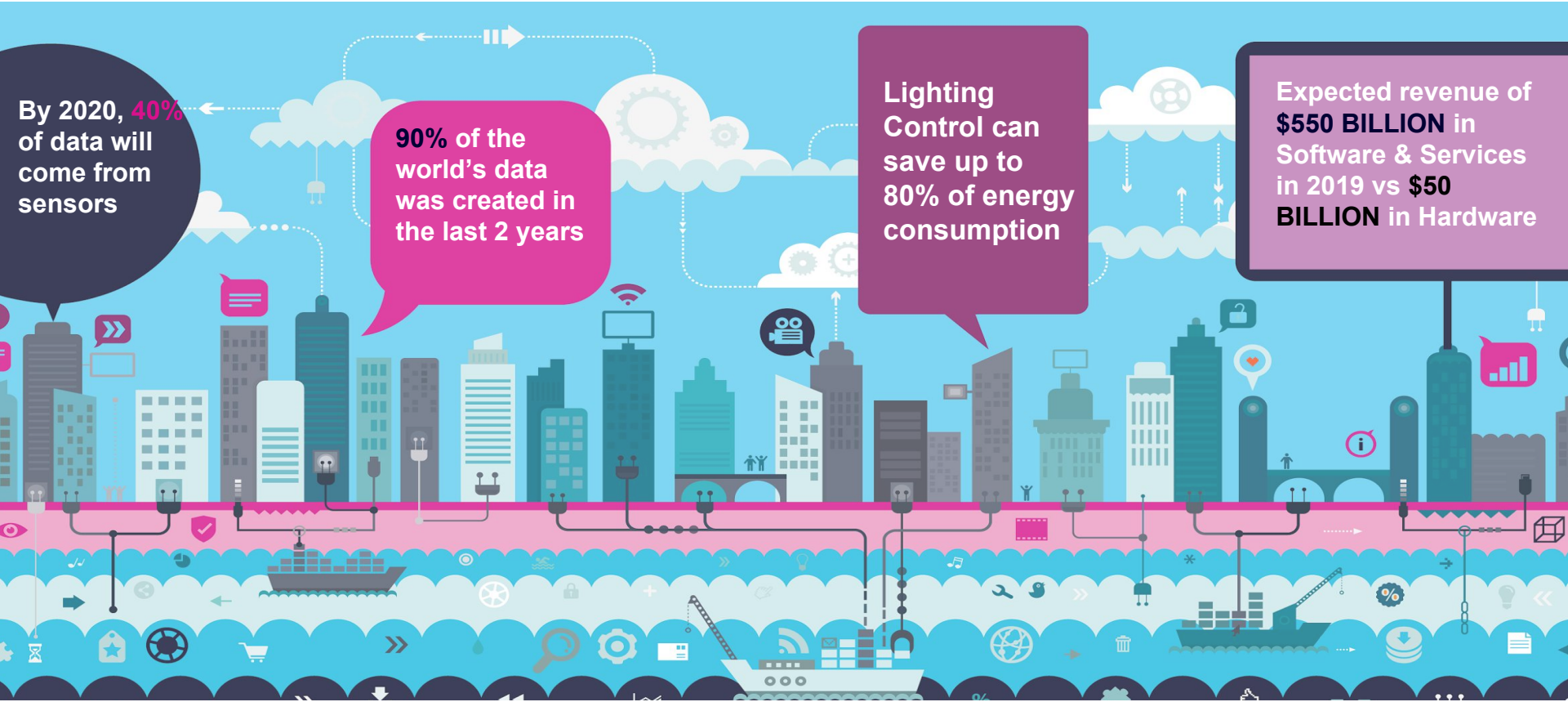
Lighting is The 'Trojan Horse' of BIoT (Building Internet of Things)

Burning Man 2011, Image courtesy of 'theblight.net'

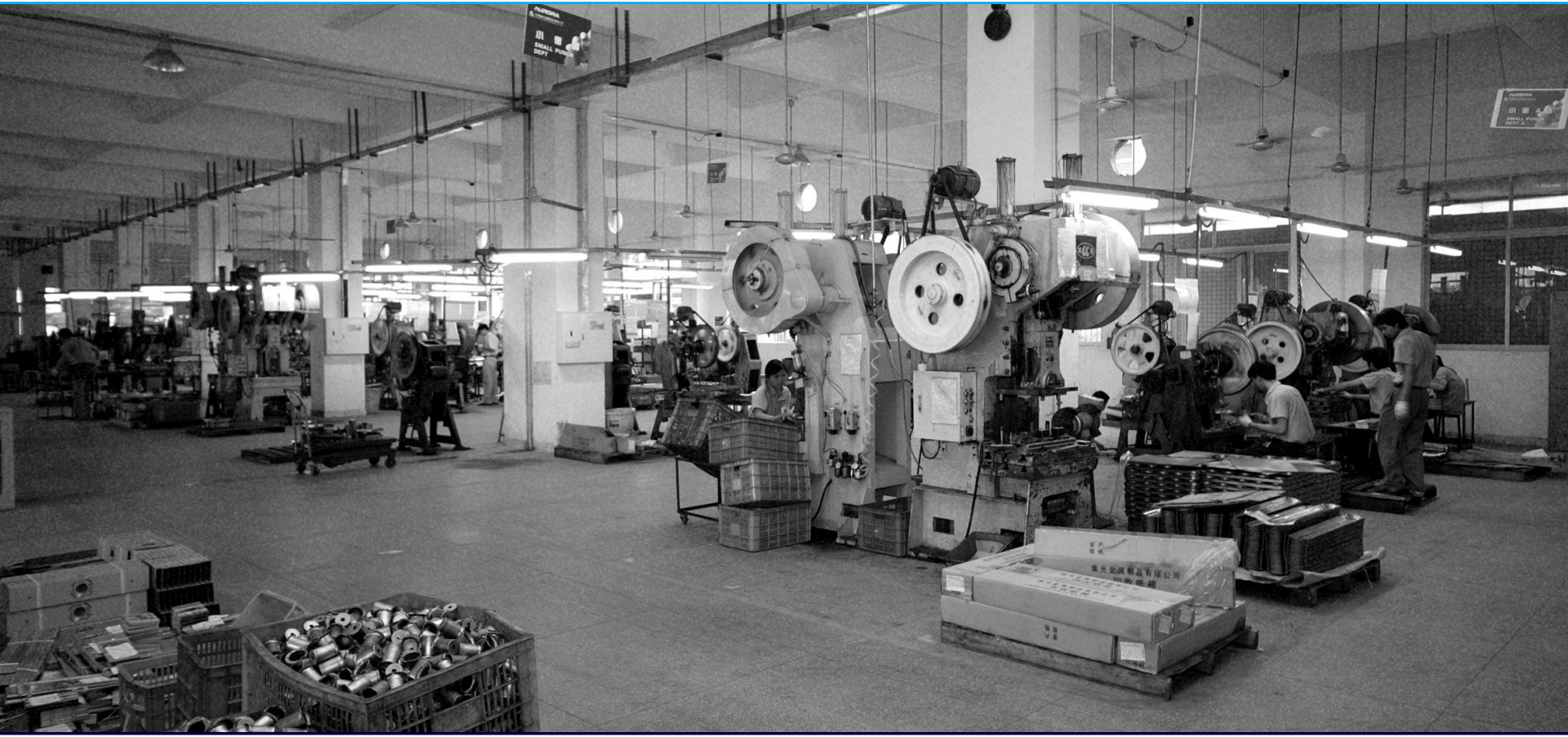
Lighting is the most Pervasive & Ubiquitous element in the built environment

Smart Connected Lighting - Lighting 3.0

What is the Internet of Things?



This doesn’t come naturally to lighting manufacturers



What do you need to create Lighting 3.0?

- PROGRAMMERS
- OPERATING SYSTEM
- COMMUNICATION
- ENTERPRISE MESH
- SENSORS
- SERVER HORSEPOWER
- SCALABLE CLOUD

AURORA®
VALUE BEYOND ILLUMINATION

COST EFFECTIVE
SMART CONSCIOUS CONNECTED LUMINAIRES

Aurora Key Launch Partner

making smart simple™

"The world's first full stack operating platform, designed and optimised to connect lighting manufacturers to the IoT"

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Conclusions

ADOPTION =
INTEROPERABILITY
OPENLY ACCESSIBLE
VALUE ADDED BENEFITS
EASE OF USE
GREAT USER EXPERIENCE

Lighting will emerge as the dominant IoT endpoint in built environments

It's about reducing Total Cost of Ownership

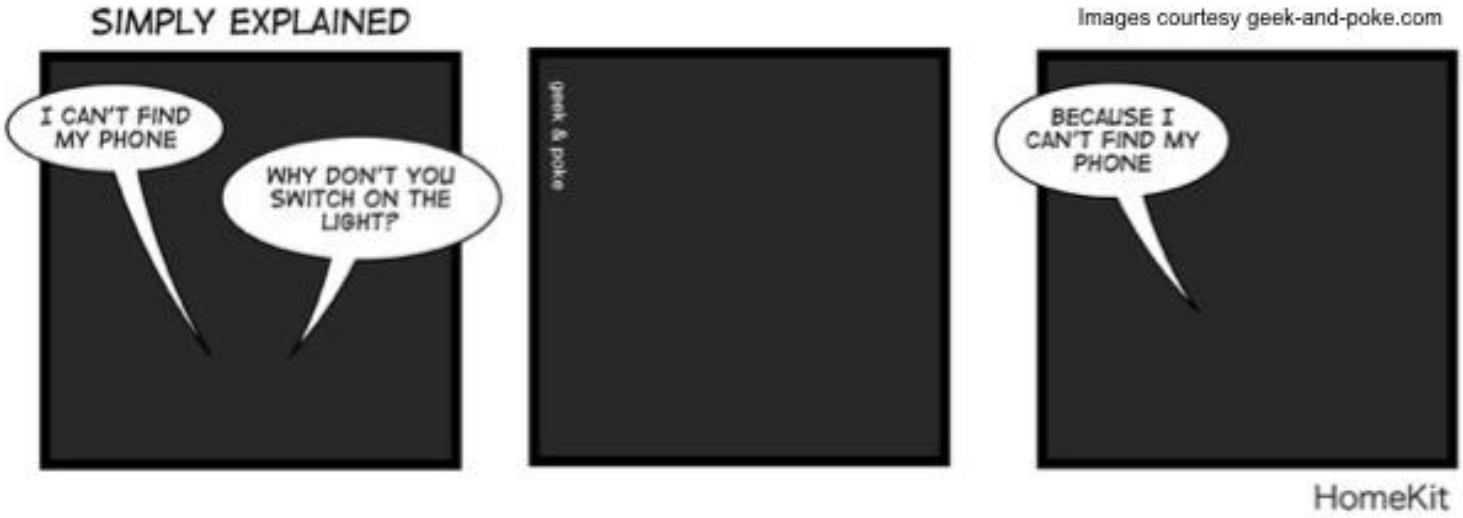
Democratizing control & data and putting it into the hands of the user

Software & services beats hardware by x10

It's all about value-driven insights and user benefits

Lighting 3.0 is the transformative business model for lighting industry

Thank You!



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#lighting3pointzero