

 RIOT Summit  
September 13 - 14, 2018

# FROM R&D TO PRODUCT VIA OPEN SOURCE/STANDARDS

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# OUTLINE



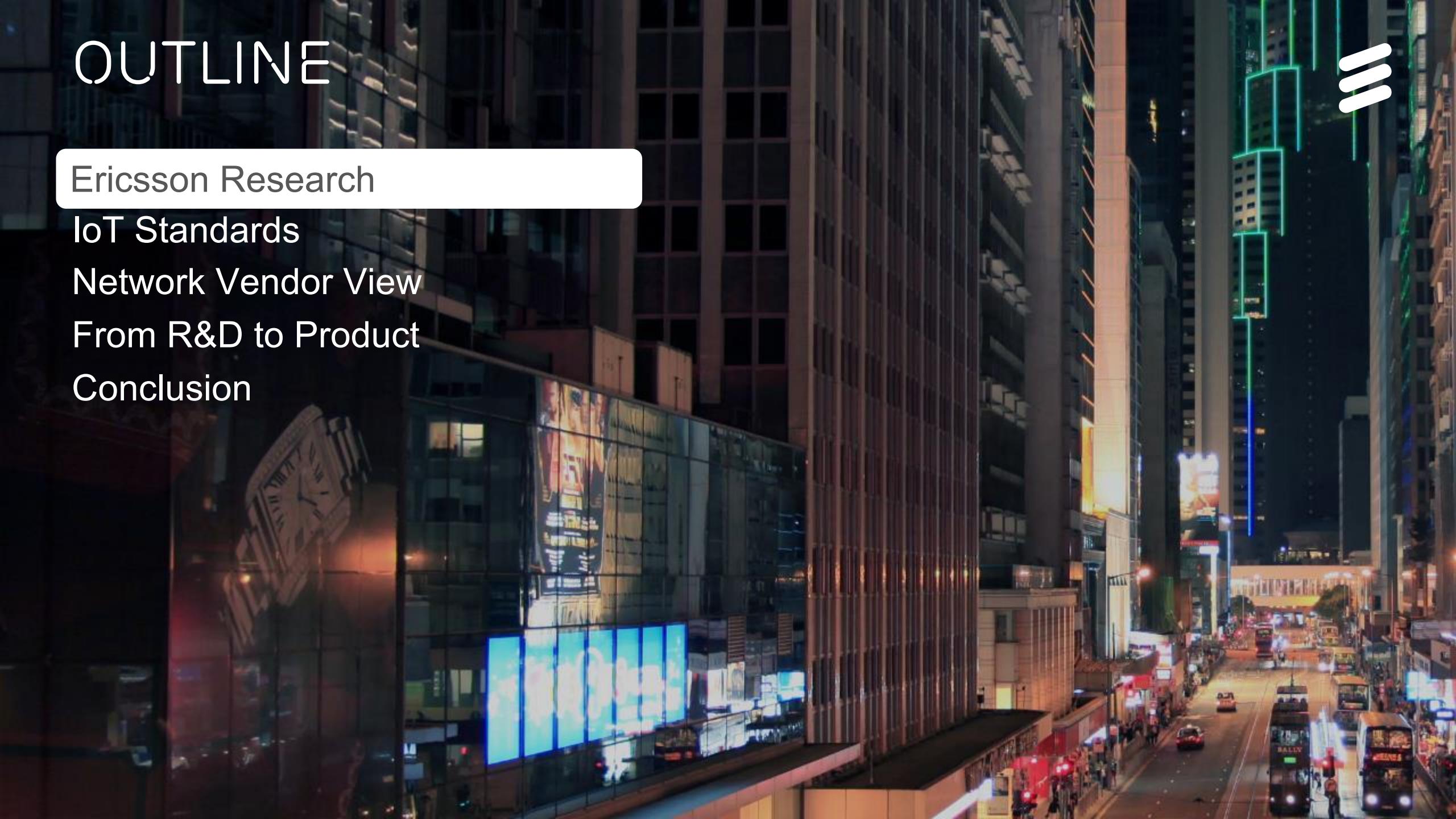
Ericsson Research

IoT Standards

Network Vendor View

From R&D to Product

Conclusion





# WORKING ON RESEARCH: EXPECTATION



# WORKING ON RESEARCH: REALITY



# OUTLINE



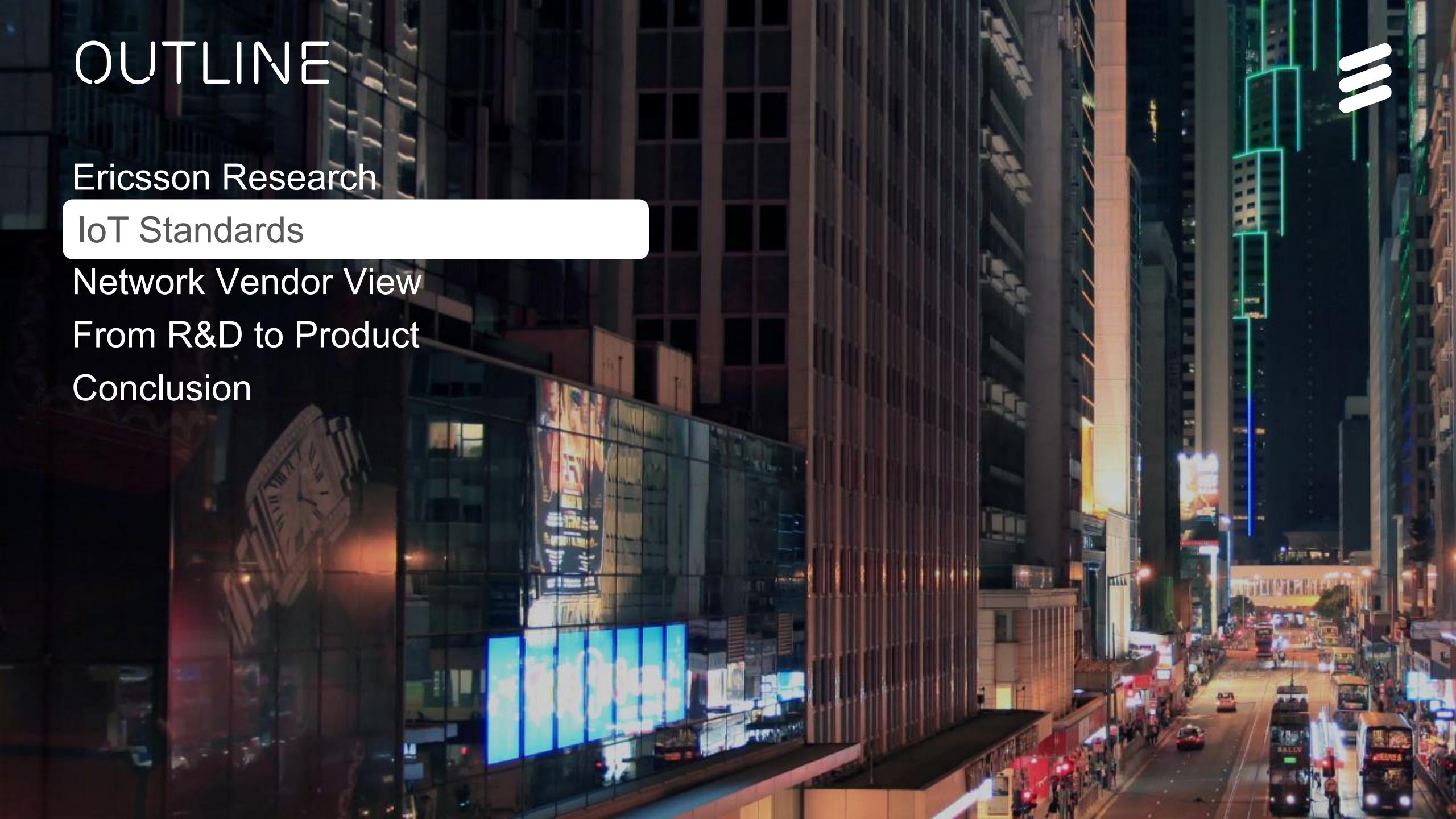
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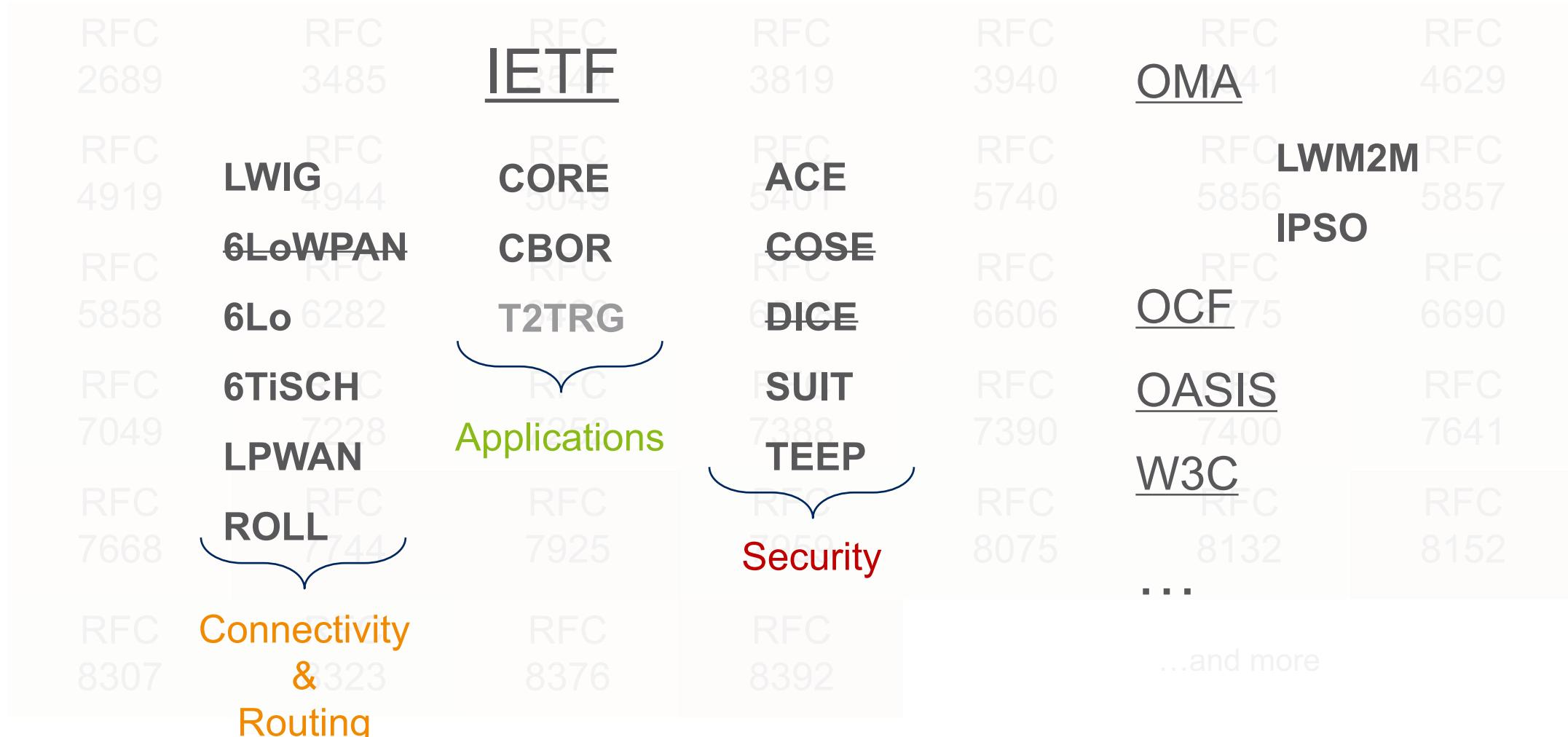


# IETF : CIRCA 18 YEARS OF IOT STANDARDS



RFC 2689	RFC 3485	RFC 3544	RFC 3819	RFC 3940	RFC 3941	RFC 4629
RFC 4919	RFC 4944	RFC 5049	RFC 5401	RFC 5740	RFC 5856	RFC 5857
RFC 5858	RFC 6282	RFC 6469	RFC 6568	RFC 6606	RFC 6775	RFC 6690
RFC 7049	RFC 7228	RFC 7252	RFC 7388	RFC 7390	RFC 7400	RFC 7641
RFC 7668	RFC 7744	RFC 7925	RFC 7959	RFC 8075	RFC 8132	RFC 8152
RFC 8307	RFC 8323	RFC 8376	RFC 8392	...and more		

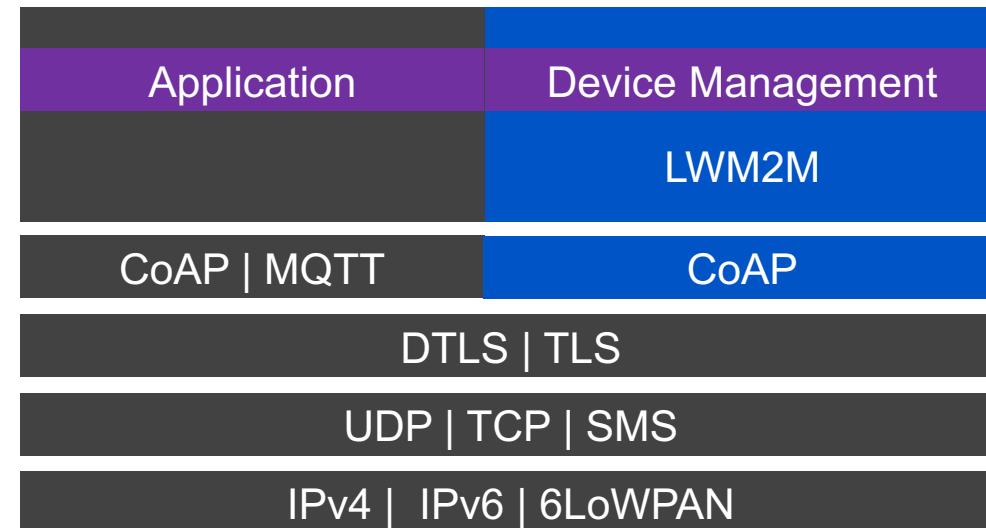
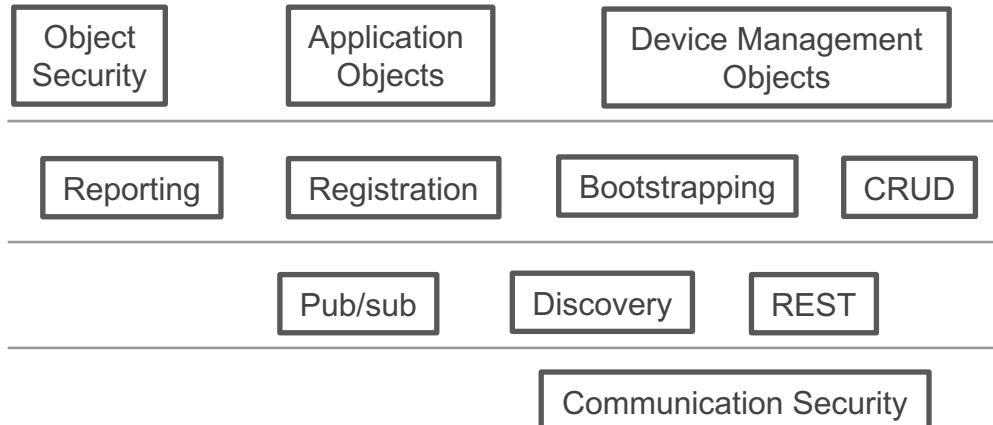
# IETF : CIRCA 18 YEARS OF IOT STANDARDS



# WEB FOR IOT AND CONSTRAINED DEVICES



- › Stack-wide interoperability
- › Full functional support
  - Security, dev mgmt, apps
  - S/w upgrades, bootstrap
- › Common extensible semantic model
  - Applications
  - Management
- › Well-proven technologies
- › Openly standardized
- › Driven and adopted by major industry leaders



# OUTLINE



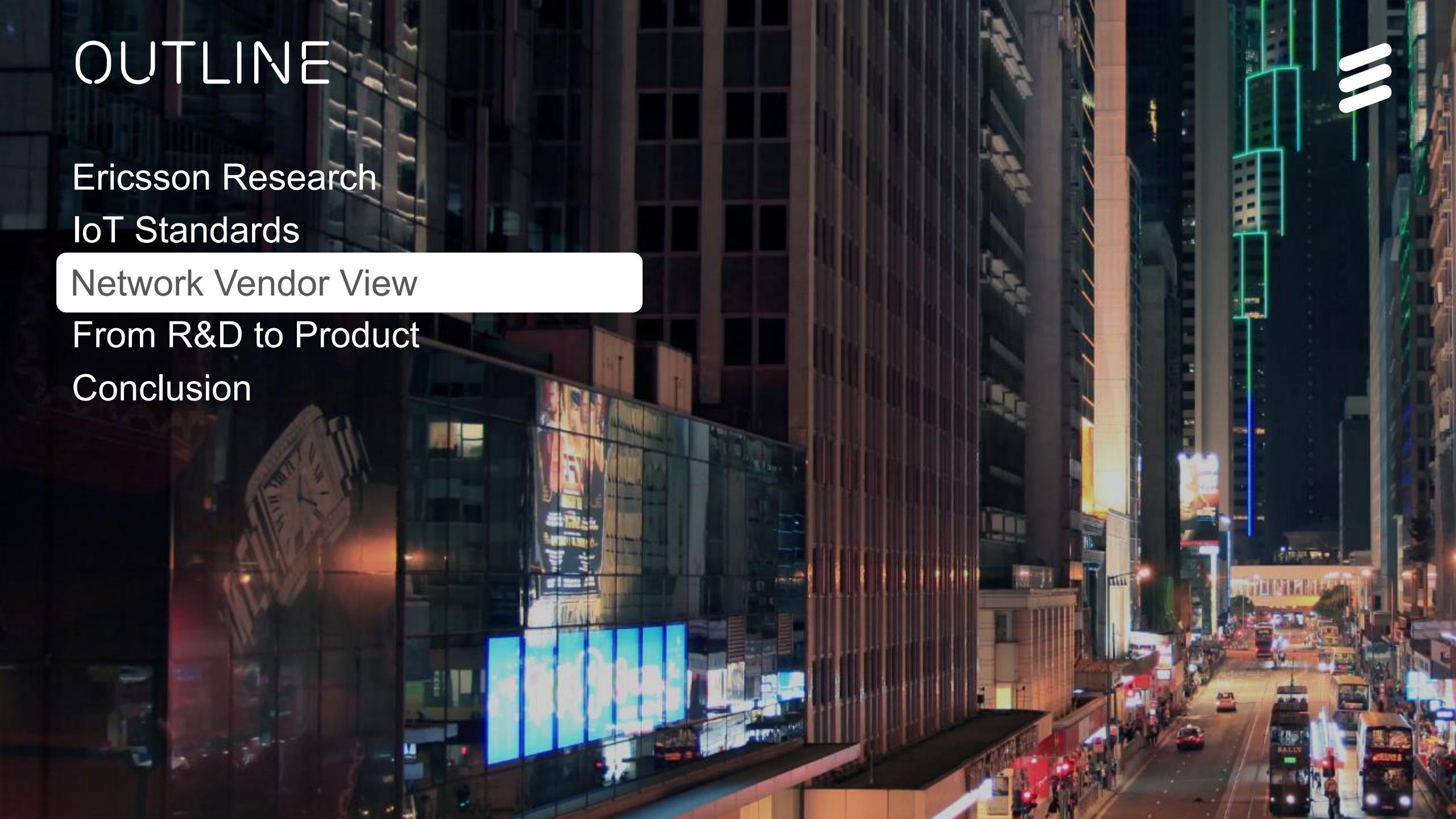
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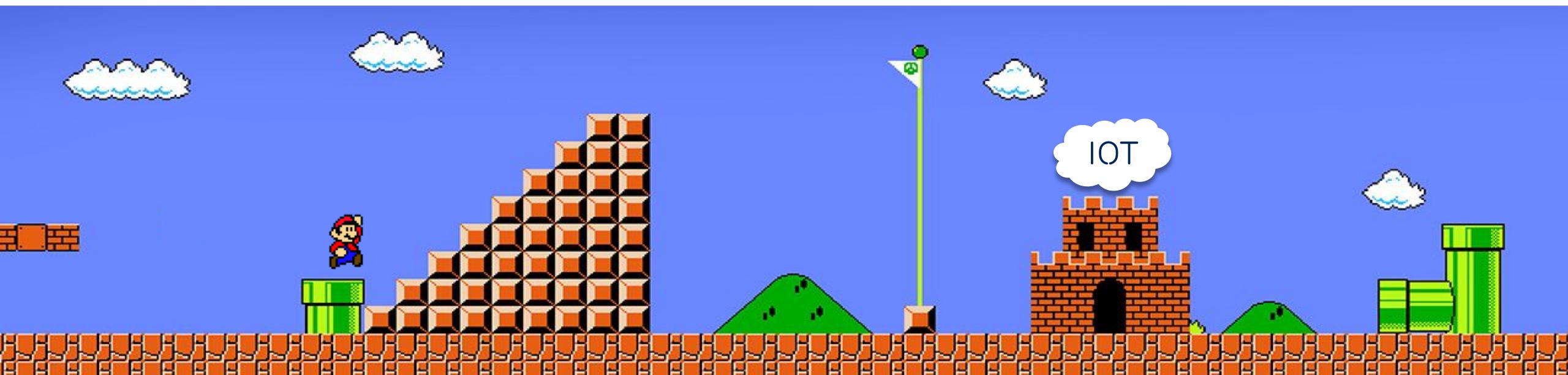
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# WORK IN PROGRESS OVERVIEW



- › Devices ----- Networks ----- Cloud
- › Out of being a datapipe into software and services. Same for IoT



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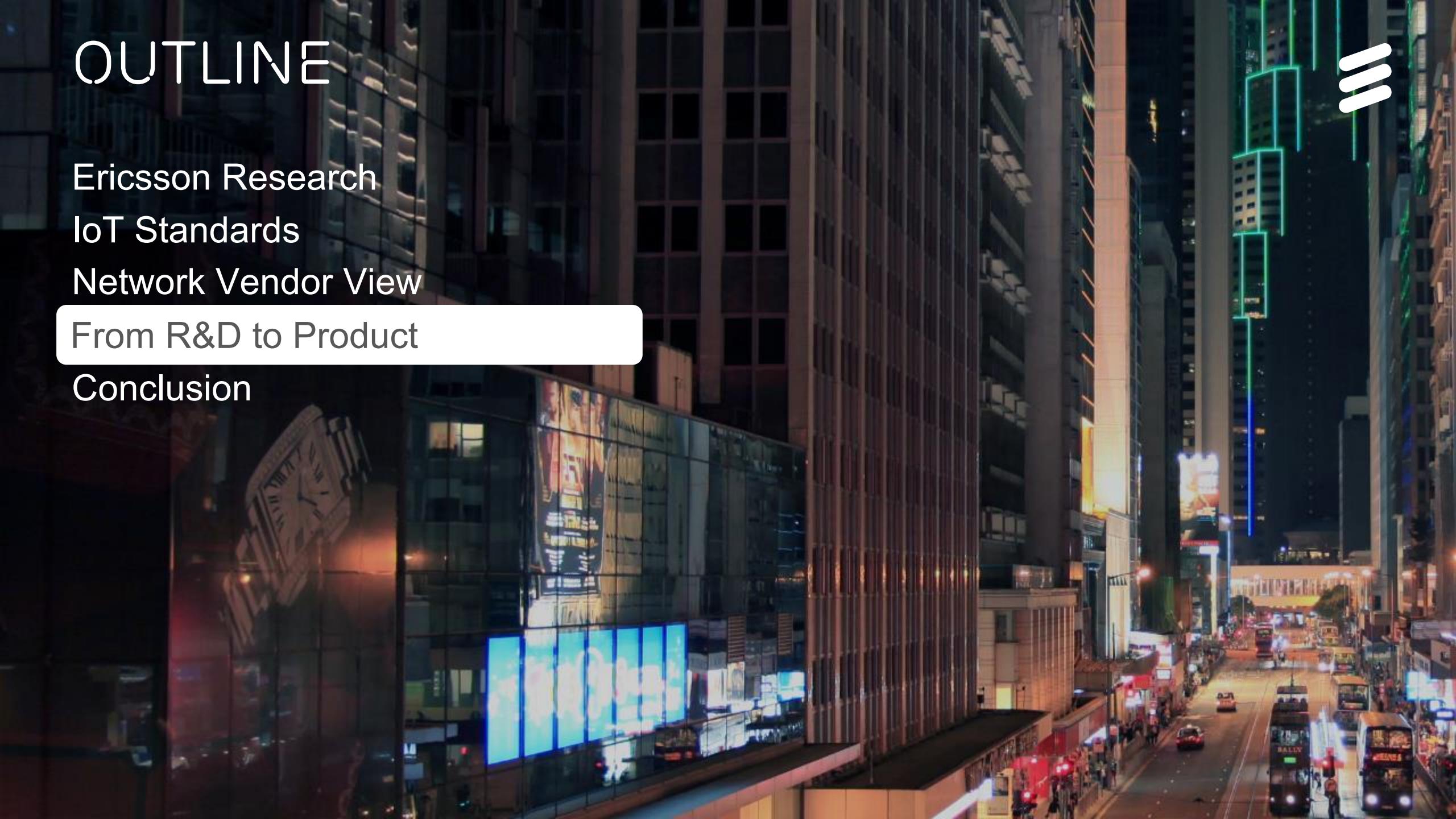
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# 2014 – YANZI NETWORKS



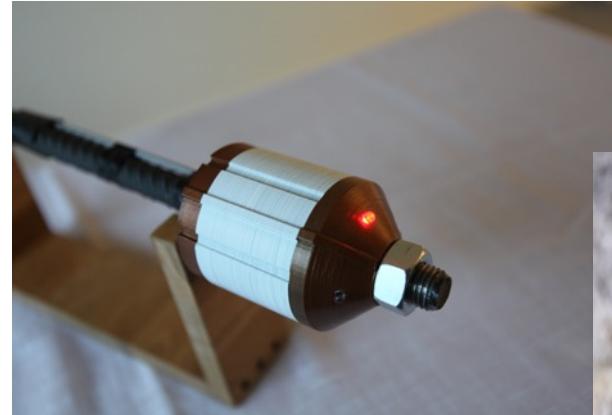
- › Since 2009 using common standards and protocols, IPv6 networking, CoAP and IPSO.
- › Very connected to research with the RISE - Research Institutes of Sweden and the Contiki developers.





# 2015 – SMARTROCKBOLT

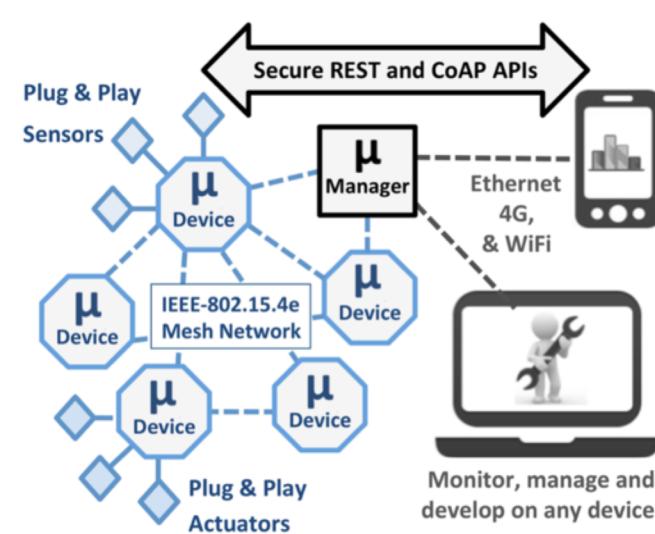
- › Won competition for Smart IoT application using common standards.
- › Thingwave. Spin-off company from Luleå University of Technology (8 people team).





# 2015 – VERSASENSE(MICROPNP)

- › Participated in IoT competition with focus on plug and play with uPNP and Zero-configuration.
- › Avoiding vendor lock-in through open standards and protocols (IEEE, IETF, etc).
- › Spinoff from postdoc team at KU Leuven in Belgium.





# 2016 – HUSQVARNA GARDENA

- › R&D collaboration project around LWM2M at the time.
- › New IoT product market segment validated last month via stock crash (19%) of other unit.
  - “**exit from low price point product segments** and brands, particularly in petrol powered walk-behind lawnmowers and garden tractors.”
  - “**To focus on future premium product** and service offerings under the core brands of Husqvarna and **Gardena**.”



**Swedish Chainsaw Massacre Hits Husqvarna**

By Niklas Magnusson  
July 17, 2018, 11:08 AM GMT+3  
Updated on July 17, 2018, 11:31 AM GMT+3

► Shares fall the most since Husqvarna was listed in June 2006

► Company to restructure Consumer Brands Division, exit segments



# 2016 – ACKLIO



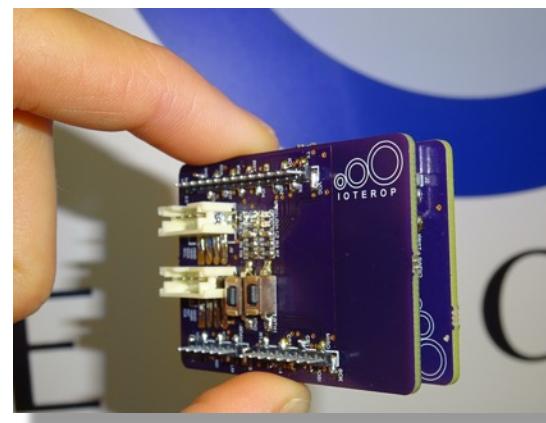
- › Focus on LPWAN networking, compression, and network management.
- › Started while at Télécom Bretagne engineering school R&D.
- › Strong IETF focus (LPWAN, CORE, 6LoWPAN, T2TRG, YANG...)





# 2016 – IOTEROP

- › Ex-intel developer working on LWM2M.
- › LwM2M client implementation (IOWA). Actively contributing to OMA.
- › Focus on design and software mainly. Catering to the telco side of IoT.





# 2017 - IKEA TRÅDFRI

- › Consulting company implemented lighting product Trådfri using CoAP, LWM2M and IPSO objects for light control. Offering DTLS.
- › Under the radar by the community at large.



IKEA Products Rooms Ideas This is IKEA

home > Products > Lighting > Smart lighting > TRÅDFRI

Gateway kit  
**TRÅDFRI**  
White spectrum/white

**£69** A<sup>+</sup>

Energy Rating

Article no: 203.389.63  
View more product information

Easy to get started with a TRÅDFRI smart kit which contains gateway, remote control and 2 E27 LED light bulbs (large base) with white spectrum.

No store selected Available online

Quantity: 1

A screenshot of the IKEA website product page for the TRÅDFRI gateway kit. The page features the IKEA logo and navigation links for Products, Rooms, Ideas, and This is IKEA. The main heading is 'Gateway kit TRÅDFRI White spectrum/white'. The price is listed as £69 with an energy rating of A+. Below the price, there's a link to 'View more product information'. A brief description states: 'Easy to get started with a TRÅDFRI smart kit which contains gateway, remote control and 2 E27 LED light bulbs (large base) with white spectrum.' At the bottom, there are buttons for 'No store selected' and 'Available online', and a 'Quantity' selector set to 1.



# 2017 – “PRECISION ENVIRONMENTAL MONITORING COMPANY”

- › Segment leader but see the need to move from proprietary in-house to standard solutions to simplify IoT operations.
- › Selected a set of open standards for PoC product development.





# 2018 – “TWO UTILITY COMPANIES”

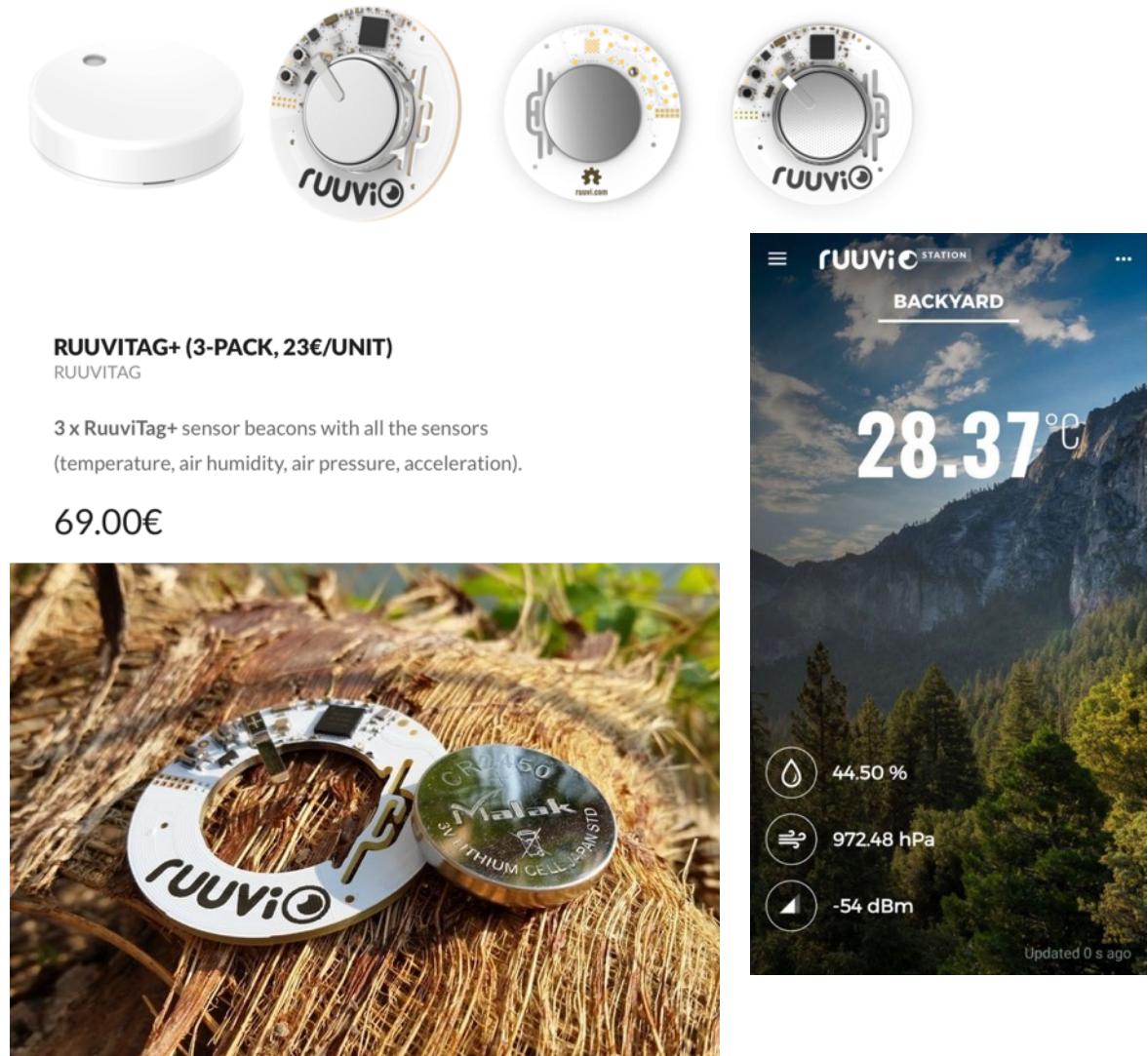
- › R&D work on modernizing metering software.
- › Currently use DLMS/COSEM, a standard defined by/for smart metering companies. Looking into IETF and OMA standards.
- › Need to move away from PLC and try new radio technologies.
- › Strong focus on security.





# 2018 – RUUVI TAG

- › Open Source generic sensor node that bridges mass-production and prototyping.
- › Eddystone beacon protocol to advertise sensor measurements on SSID.
- › Becomes an generic IoT Platform for telemetry. Used in Kaltio, NCC...



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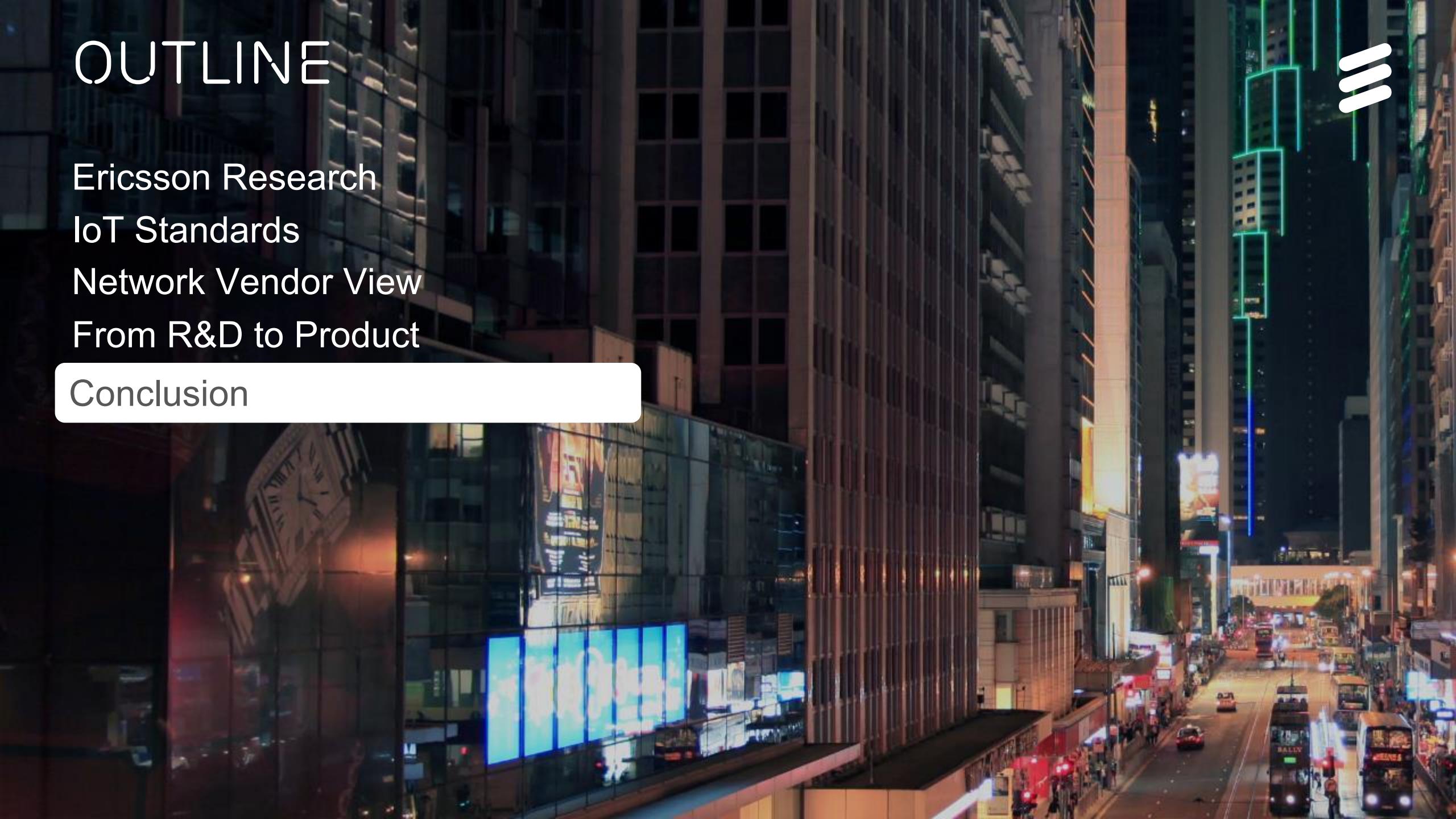
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# PERFECTION VS VERSATILITY

