

# Trends on Network Connectivity

AgroConnect

Jacob Groote

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# Data traffic is growing exponentially for both fixed and mobile

KPN interactive television and OTT services are the main drivers



## Customer behavior changing

Non-linear video traffic growing rapidly driven by unique KPN and OTT services

KPN interactive services



KPN Play



TV Everywhere



Start-over TV



Live TV Pausing

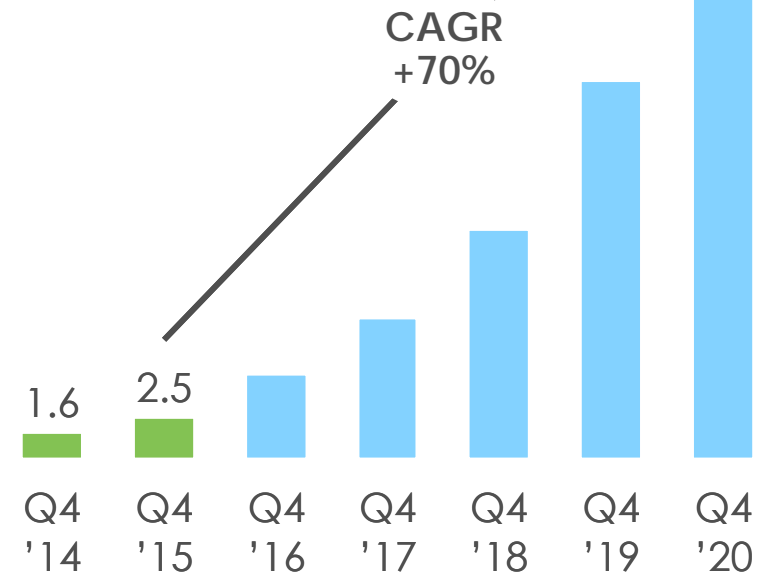
OTT services



## Data usage accelerating

Total data traffic forecast (KPN fixed & mobile network)

In Tbps

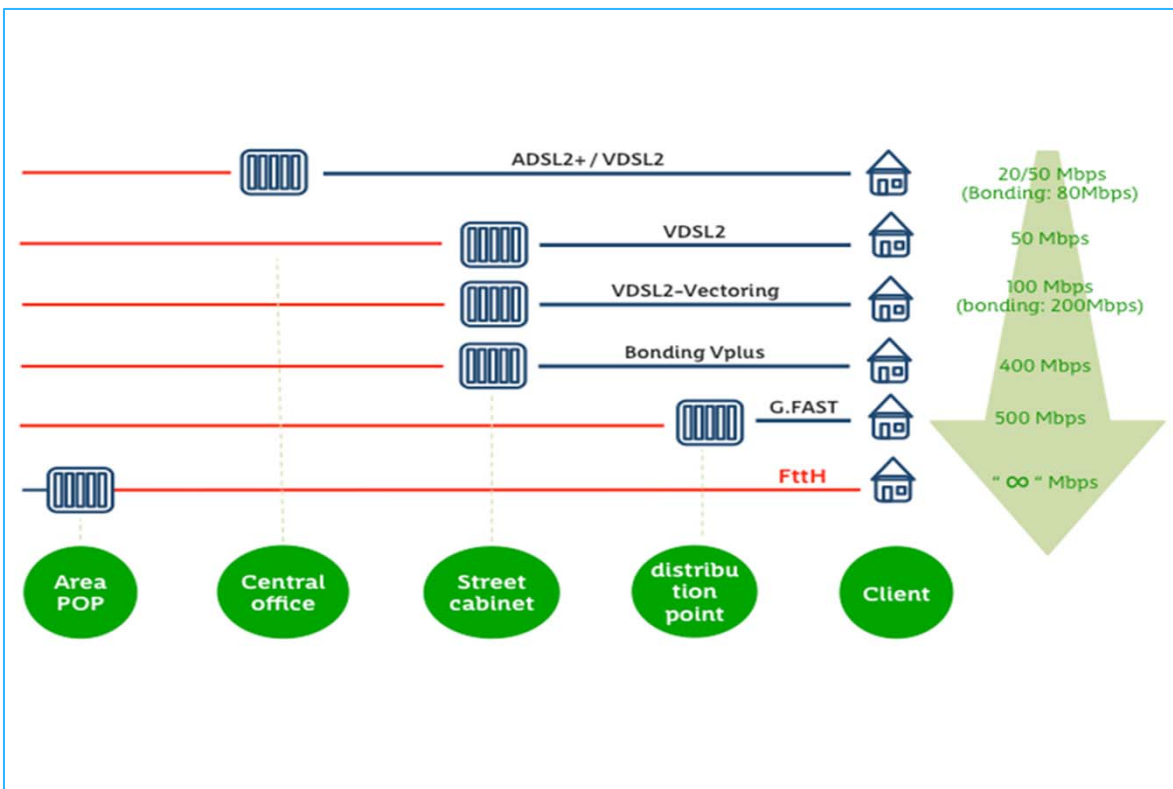


# 85% of all households on 100 Mbps by the end of 2016

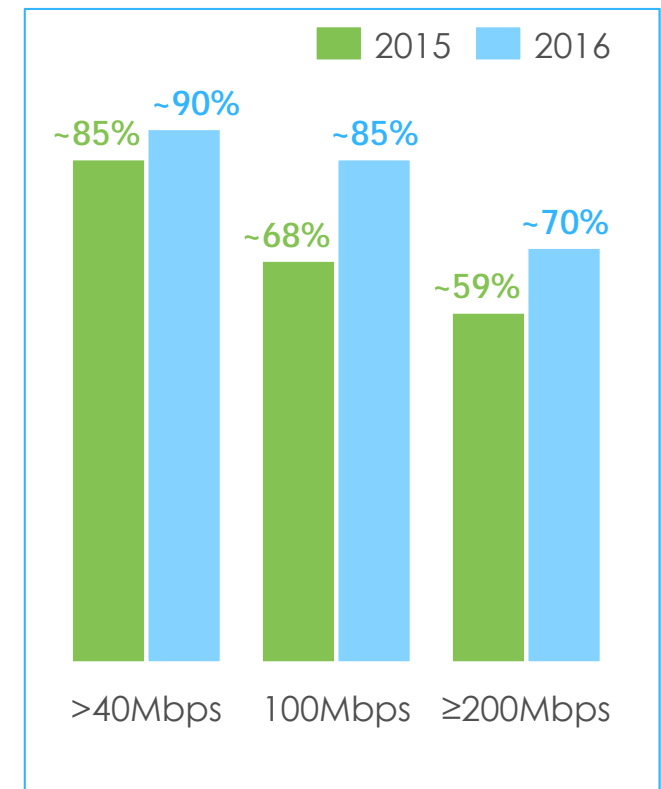
Cost effective combination of FTTH and copper upgrades



Recent technology developments make copper an attractive alternative to FttH

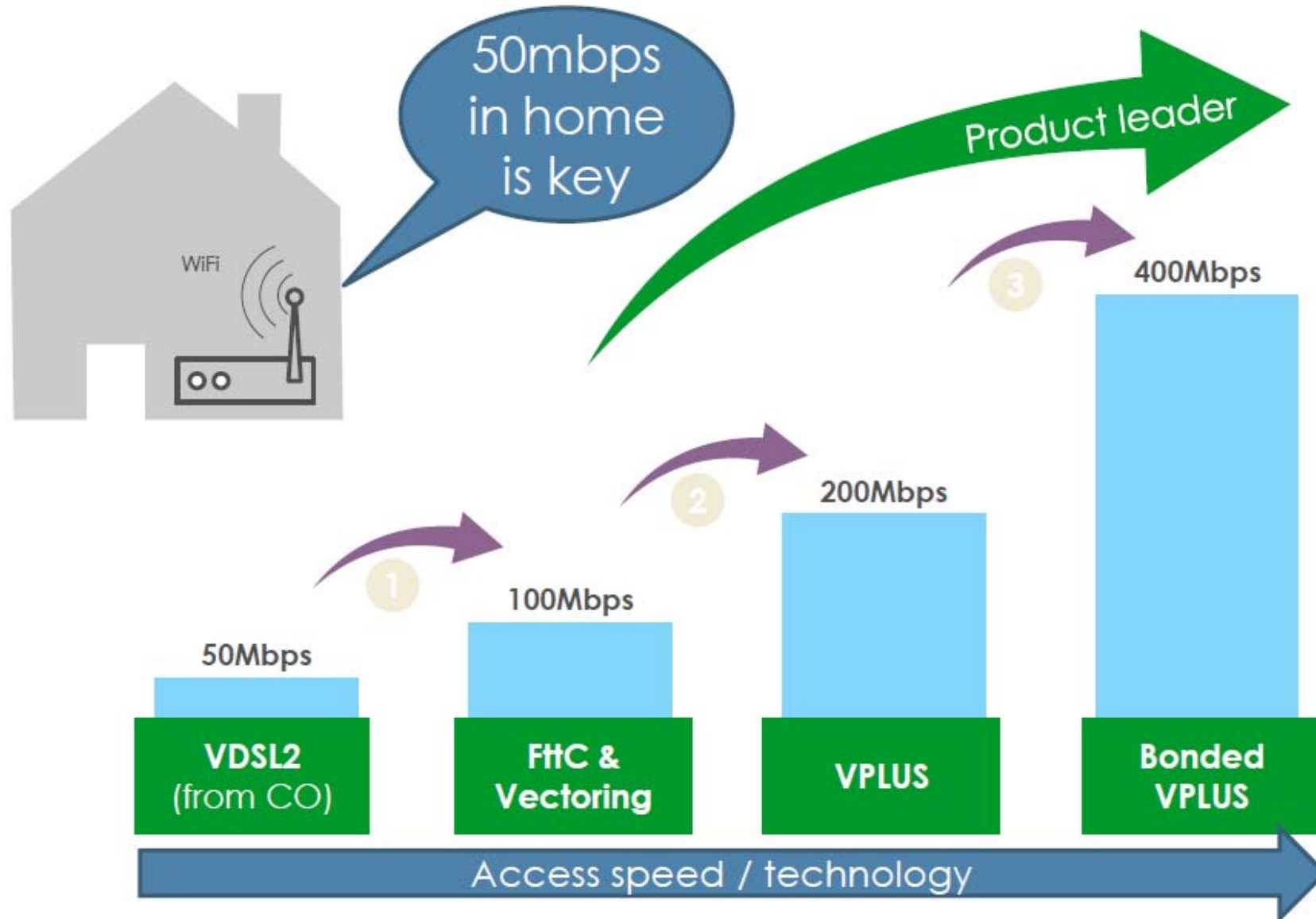


Household coverage progression



# Only high access speeds is not enough

in-home connectivity will really determine the customer experience



# 4G network coverage almost 100%

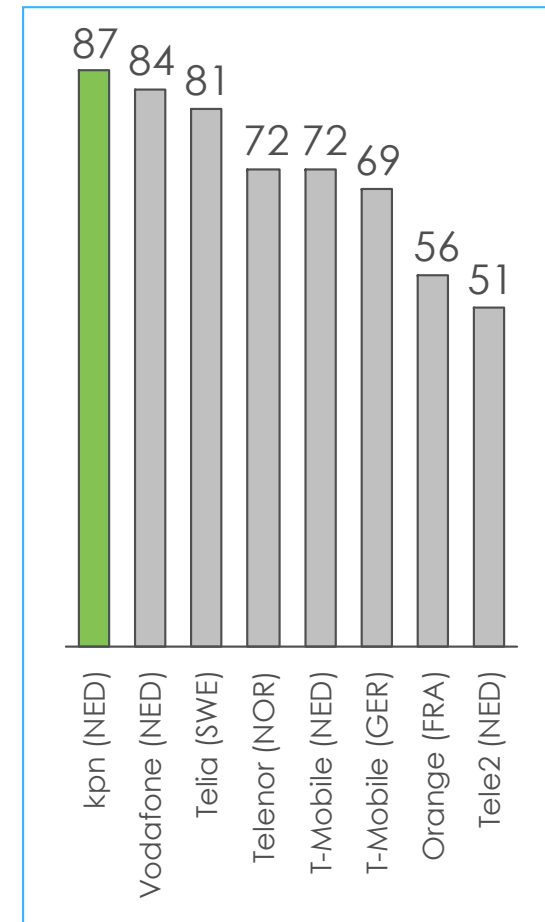
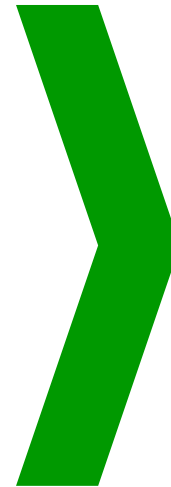
Customers perceive highest time spend on LTE of all operators in Europe



99,3% population coverage



Highest time spend on LTE in Europe



1 OpenSignal; The state of LTE (September 2015)



# Internet Buitengebied

Fast internet at home with 4G of KPN

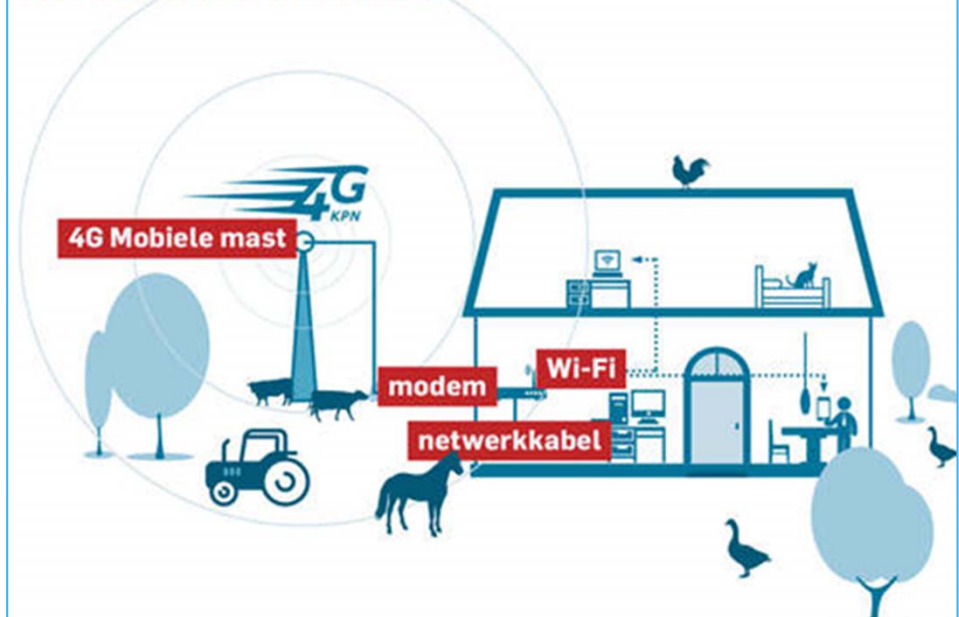


Available for customers that comply to the following criteria:

- Rural areas within the Netherlands with low bandwidth (<6 Mbps)
- Sufficient 4G capacity (not in cities or village centers)
- No bandwidth adjustments scheduled within the next six months



## Snel internet via 4G



# Internet of Things can be distinguished on three levels



# LoRa: a network for low power, long range IoT

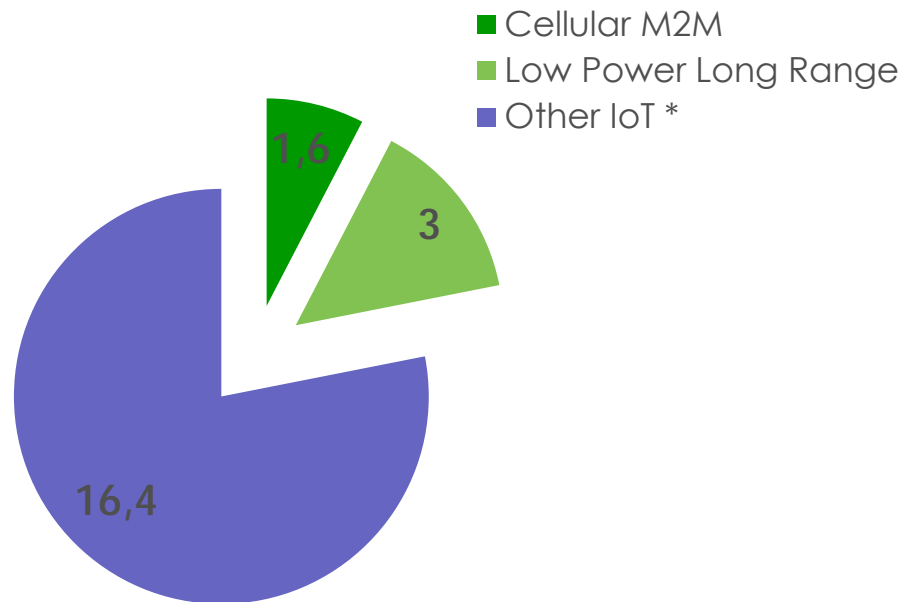
Launch in November 2015, nationwide coverage in Q2 2016



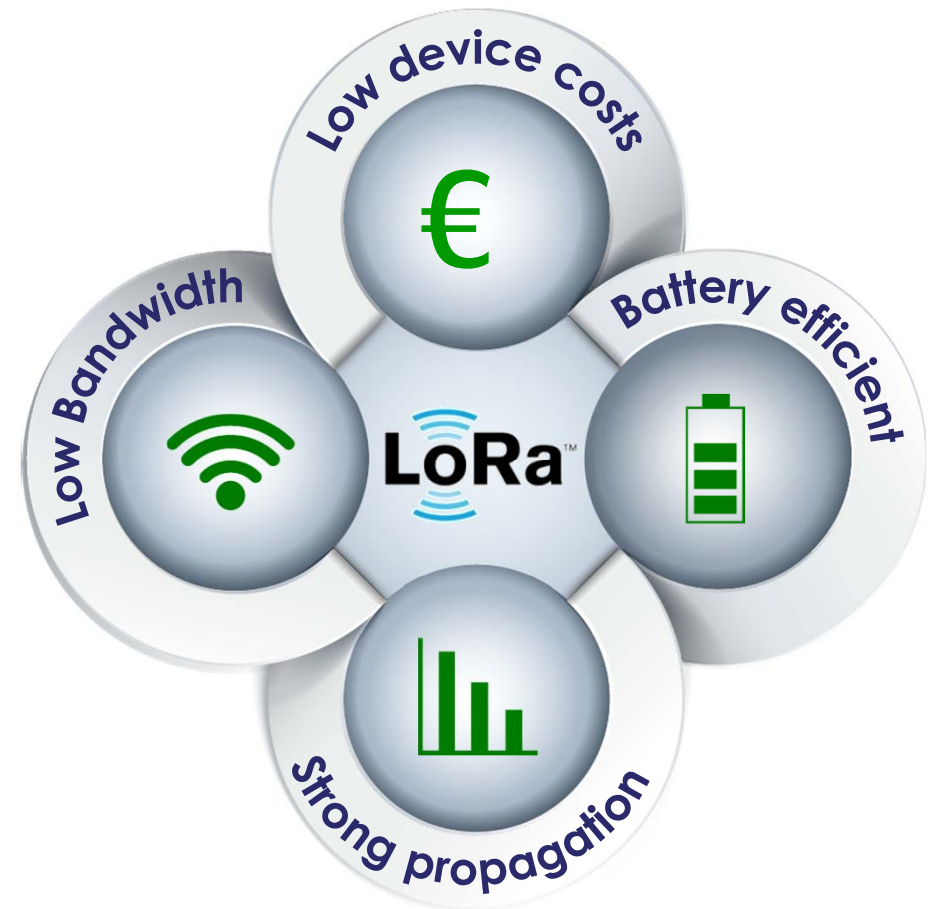
Significant part of IoT market will be low power long range connections <sup>1</sup>

Low power, long range IoT is characterized by four key aspects

21 billion connected devices in 2020



\* Other IoT includes all short and mid-range technologies (e.g. Bluetooth, Zigbee, Wifi)



<sup>1</sup> Source: Gartner, Analysys Mason



# A real life LoRa example



Windturbine zendt gegevens door over windkracht en -snelheid.



Sensoren bewaken de dijk over de gehele lengte. Alleen bij signaal in de centrale hoeft de controleur nog op pad.

Dijkbewaking d.m.v. sensoren



# The standardization of 5G

Enhance Mobile Broadband and empower the Internet of Things

