



Ericsson Research

A look into the future

Jan Färjh

Vice President

Head of Ericsson REsearch

Outline

> Vision

> Mobile Broadband

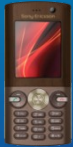
> Challenges

Internet of the future

Today

Mobile

Fixed



>4B subscribers
Connecting Individuals

>400M subscribers
Connecting Household

Tomorrow



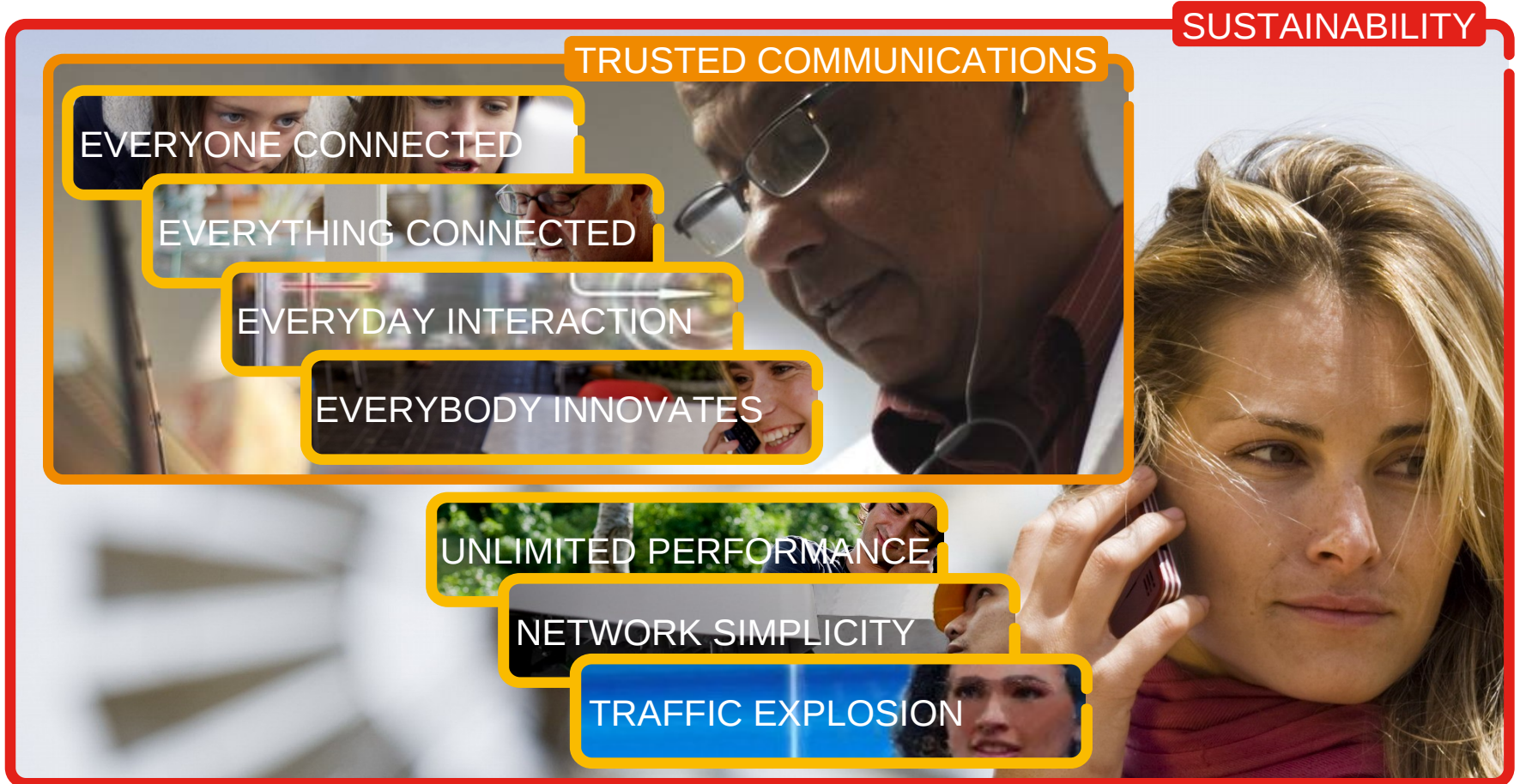
50B devices
Everything connected

Mobile Broadband – Internet of Things

From households to individuals and devices



Vision - KEY Areas



EVERYONE CONNECTED



- › Social communication, sharing our lives and experiences
- › Virtual presence with high quality communication



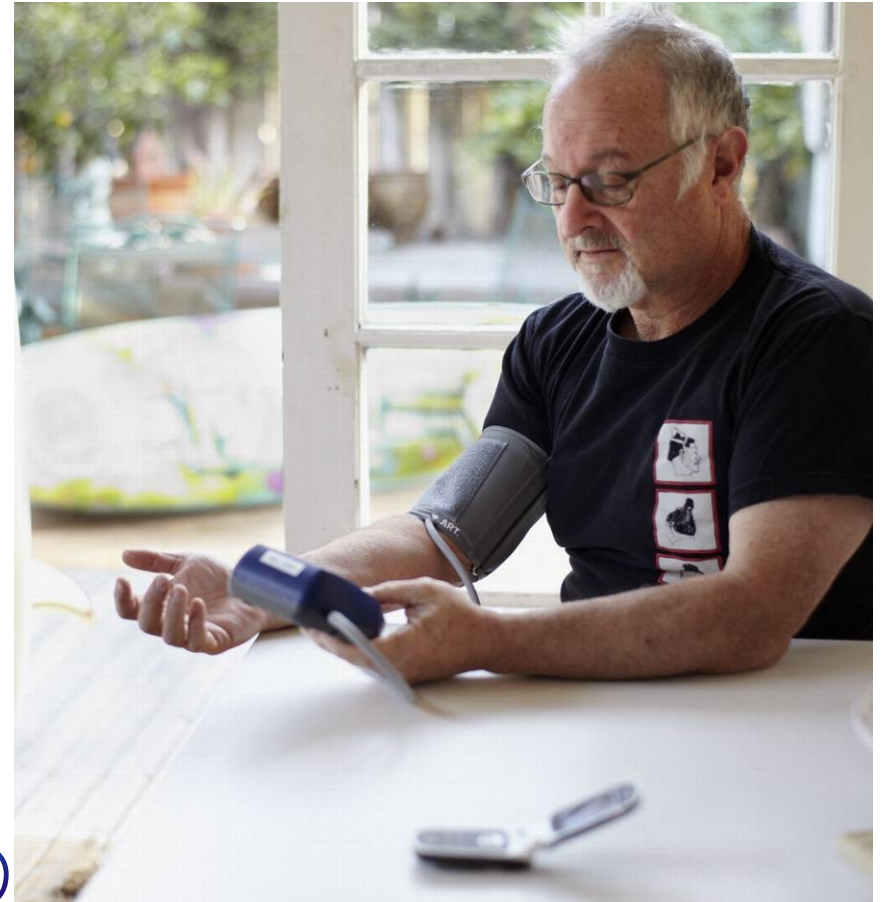
EVERYONE CONNECTED

EVERYONE IS SHARING



EVERYTHING CONNECTED

- › Billions of devices and sensors connect
- › All items become social objects, part of our own sphere



EVERYTHING CONNECTED
EVERYTHING IS SOCIAL



EVERYDAY INTERACTION

- › Interaction with everyday smart devices – web-of-things
- › New ways of interacting with data and devices



EVERYDAY INTERACTION
EVERYDAY LIFE IS AUGMENTED

EVERYDAY INTERACTION

8.00 am



Open the car and make it start

8.30 am



Pay traffic fares

9.00 am



Access office

10.30 am



Control the NFC wallet

6.30 pm



Pay at retail stores

8.00 pm



Choose and pay in restaurant



Get bus timetable



Access to bus



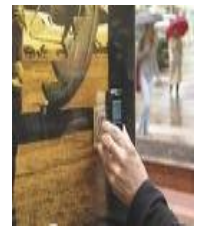
Access to campus



Borrow a book from library



Get advertising and promotions



Access to concert



EVERYDAY INTERACTION
EVERYDAY LIFE IS AUGMENTED



EVERYBODY INNOVATES



- › Open devices and networks support innovation
- › Content and services are easy to create, easy to use

 EVERYBODY INNOVATES
EVERYBODY IS CONTRIBUTING 

TRUSTED COMMUNICATIONS



- › Secure networks interconnecting everything
- › Secure user-friendly services
- › Robust and reliable platforms

 TRUSTED COMMUNICATIONS
PRIVACY PROTECTION 

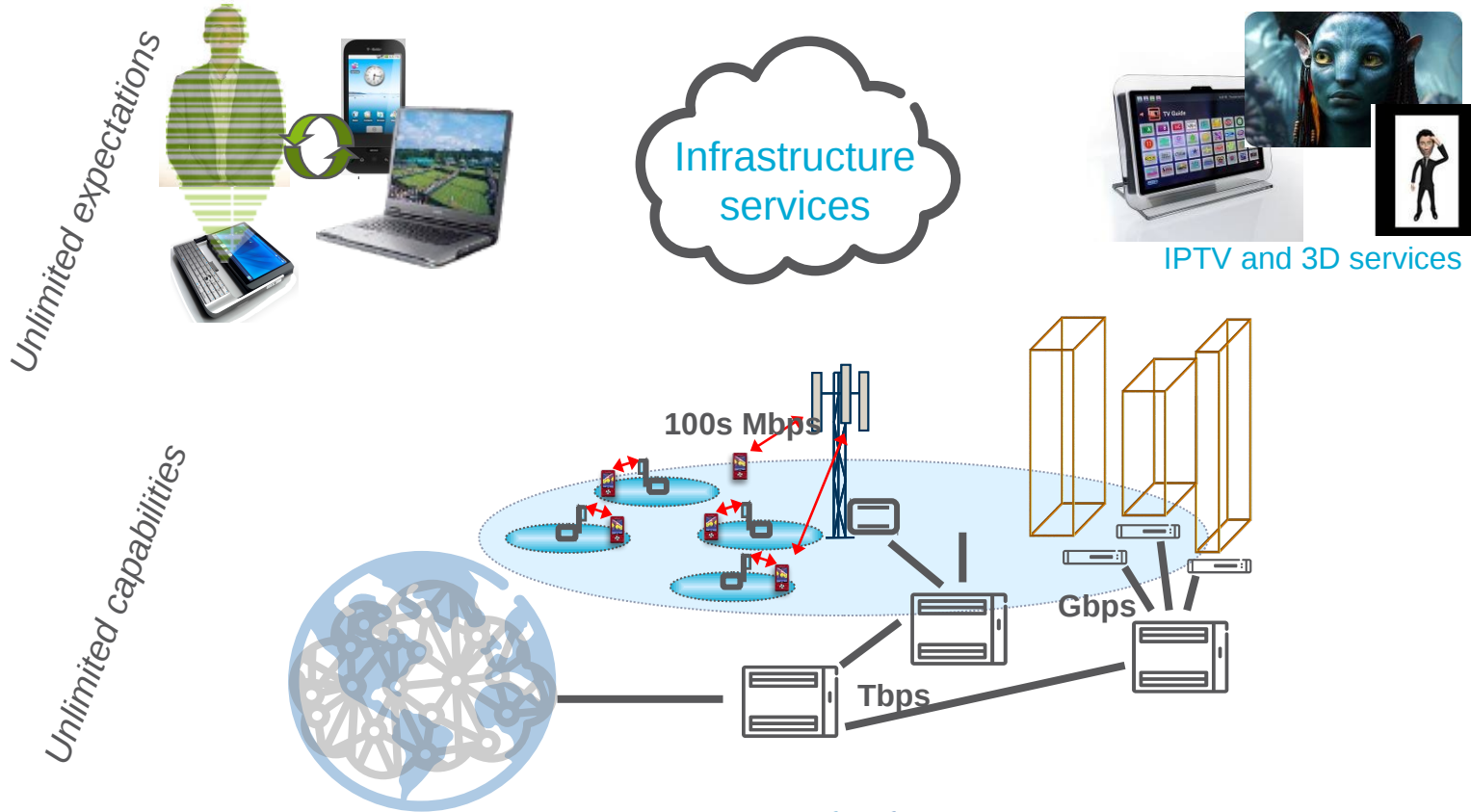
Unlimited performance

- › Faster and richer services, larger screens, IPTV and 3D
- › Networks perceived as without limitations



SERVICES ARE PRESENT
ALWAYS AND EVERYWHERE

Unlimited performance



**SERVICES ARE PRESENT
ALWAYS AND EVERYWHERE**

Network Simplicity

- › Plug & play for all network nodes
- › Self-managed networks with automatic optimization and corrective actions



MAKING HIGH PERFORMANCE NETWORKS AFFORDABLE

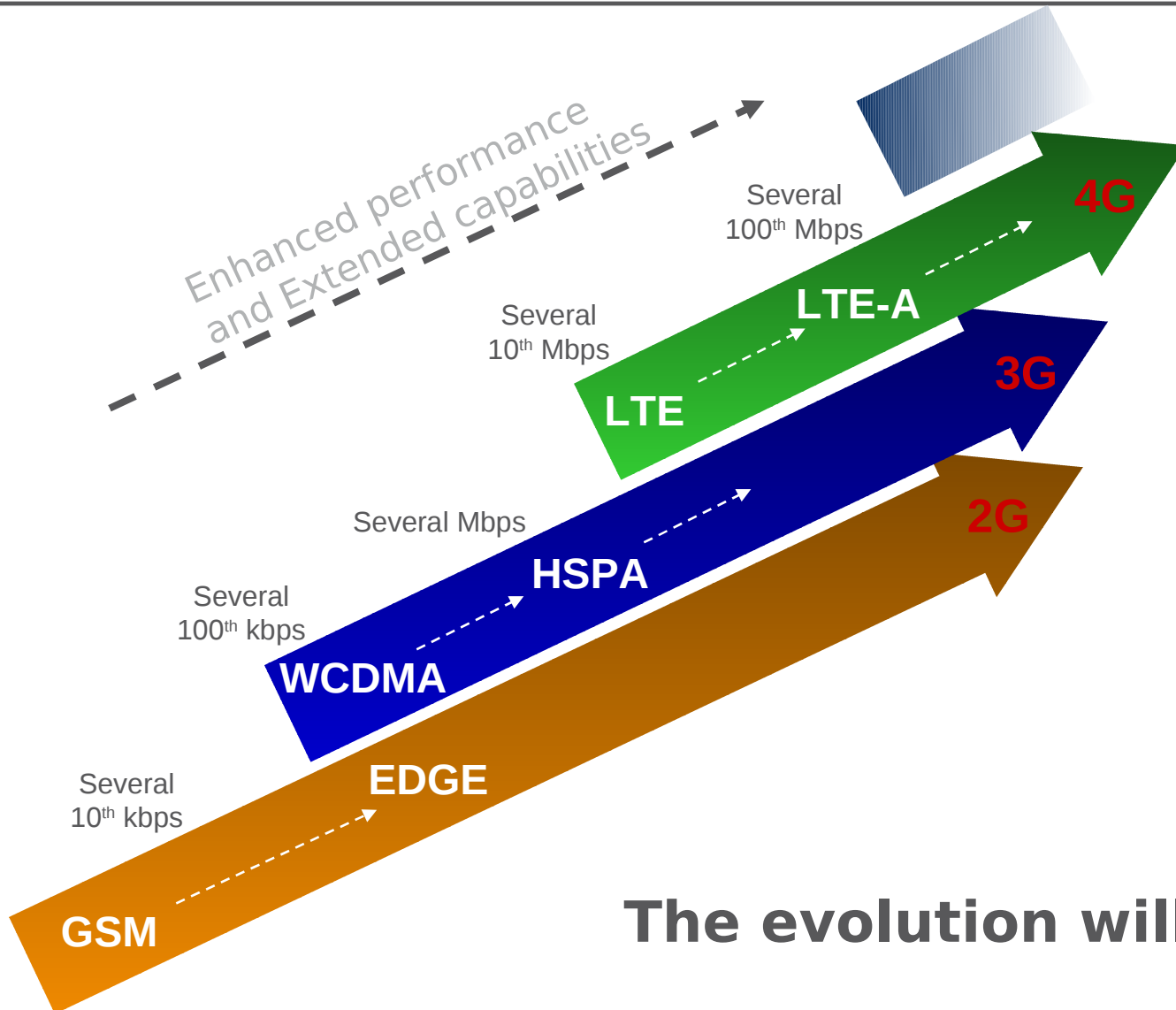
Traffic and Device explosion

- › Fixed internet traffic doubling every second year, mobile broadband traffic every year
- › Smart phones replace all plain phones; connected devices outnumber humans tenfold



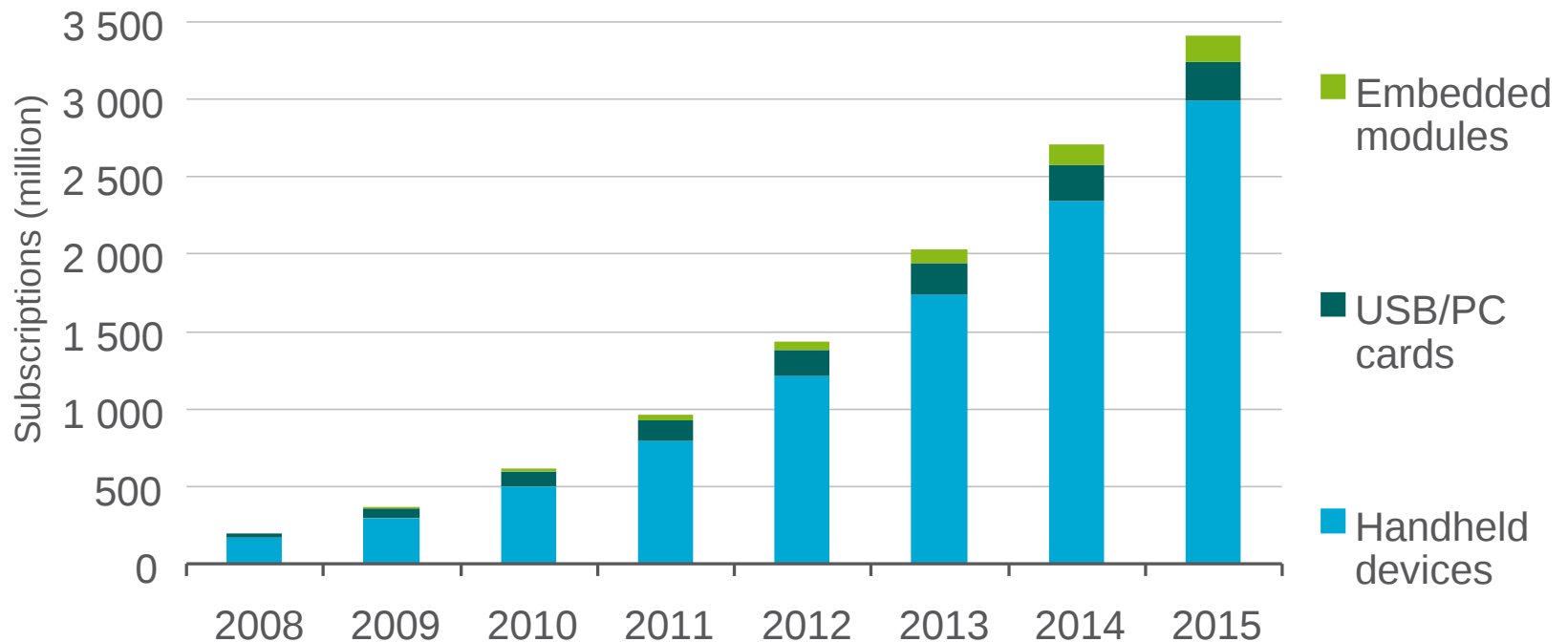
CONTINUED EXPONENTIAL TRAFFIC GROWTH
THE MOBILE SHARE GROWING

Radio-access evolution



Mobile broadband subscriptions

M2M connections
to be added on top



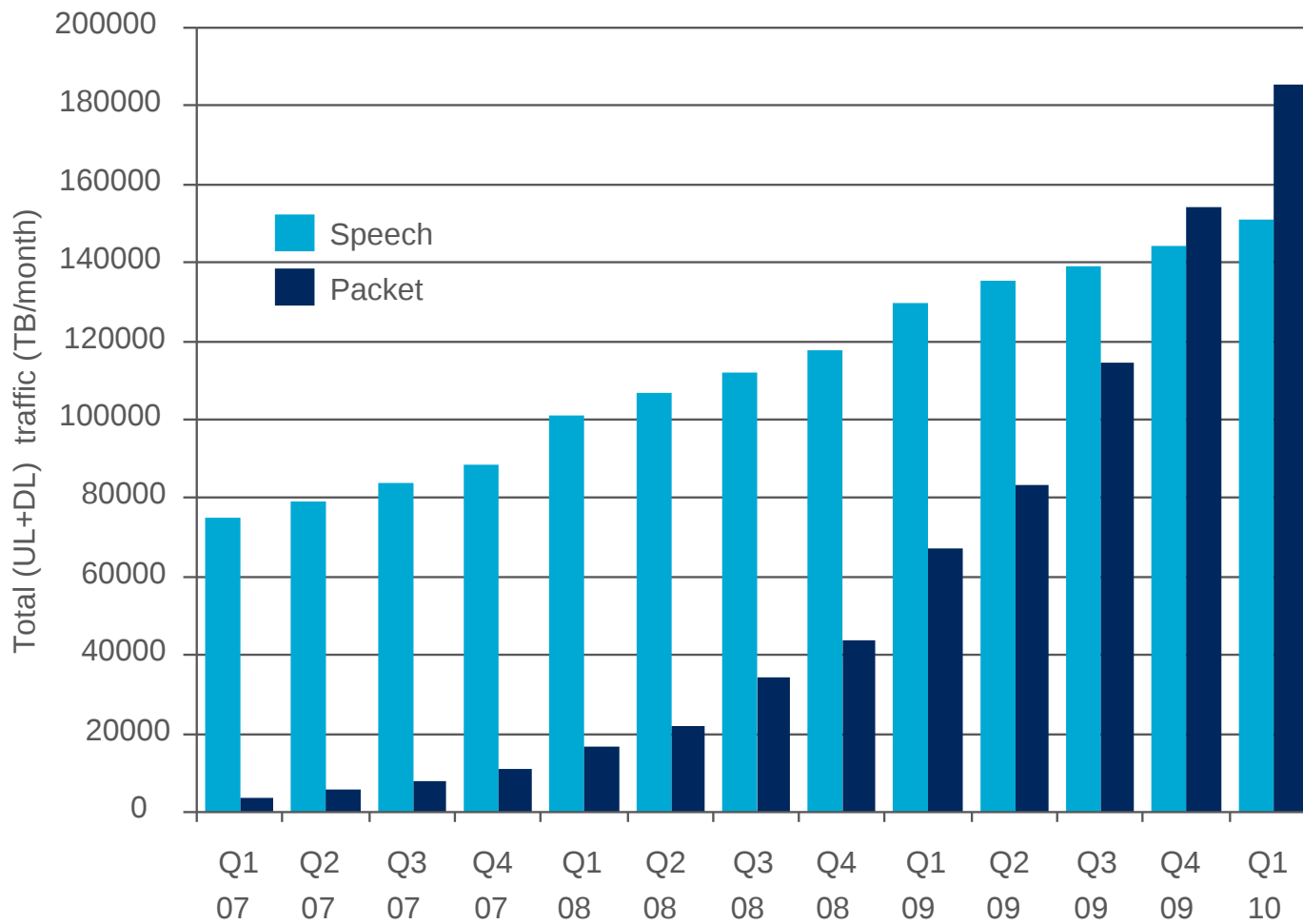
Source: Internal Ericsson
Mobile Broadband includes: CDMA2000 EV-DO, HSPA, LTE, Mobile WiMAX & TDSCDMA.
It includes handsets, USB dongles, embedded modules etc. The vast majority is handsets.
Please note that mobile broadband access could be used for fixed applications

This slide contains forward looking statements

Measured voice and data traffic

Killer APP: Connected Mobility 24/7

Measured Data
Updated Q1 2010



This slide contains forward looking statements

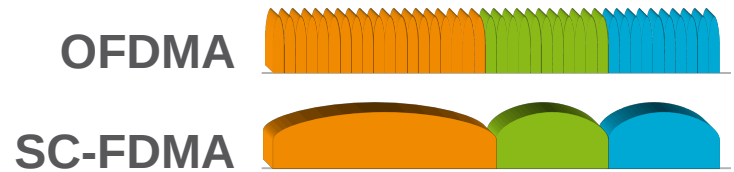
(DVB-H, Mobile WiMax, M2M and WiFi traffic not included)

Key LTE radio access features

LTE radio access

Downlink: OFDM

Uplink: SC-FDMA



Advanced antenna solutions

Diversity

Beam-forming

Multi-layer transmission (MIMO)

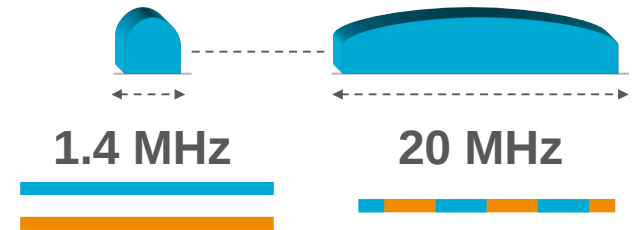


Spectrum flexibility

Flexible bandwidth

New and existing bands

Duplex flexibility: FDD and TDD



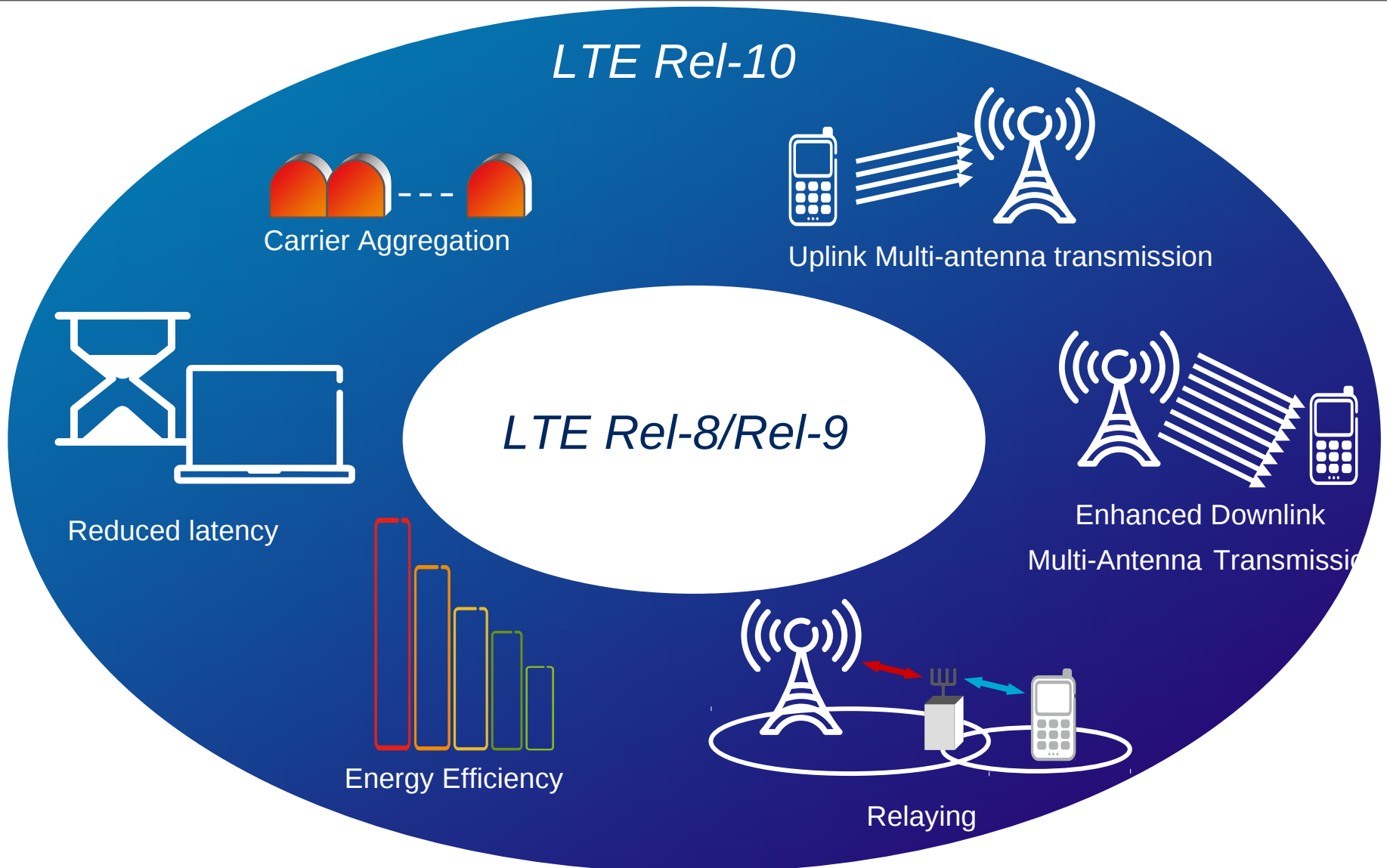
Worlds largest COMMERCIAL LTE network



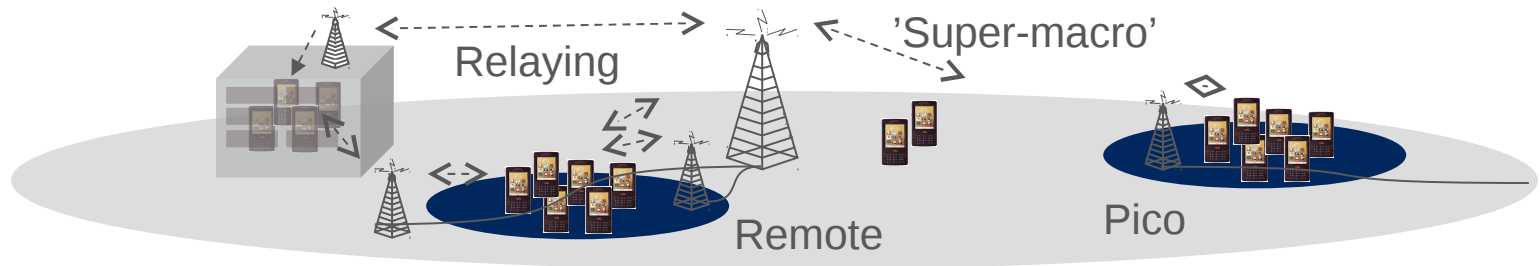
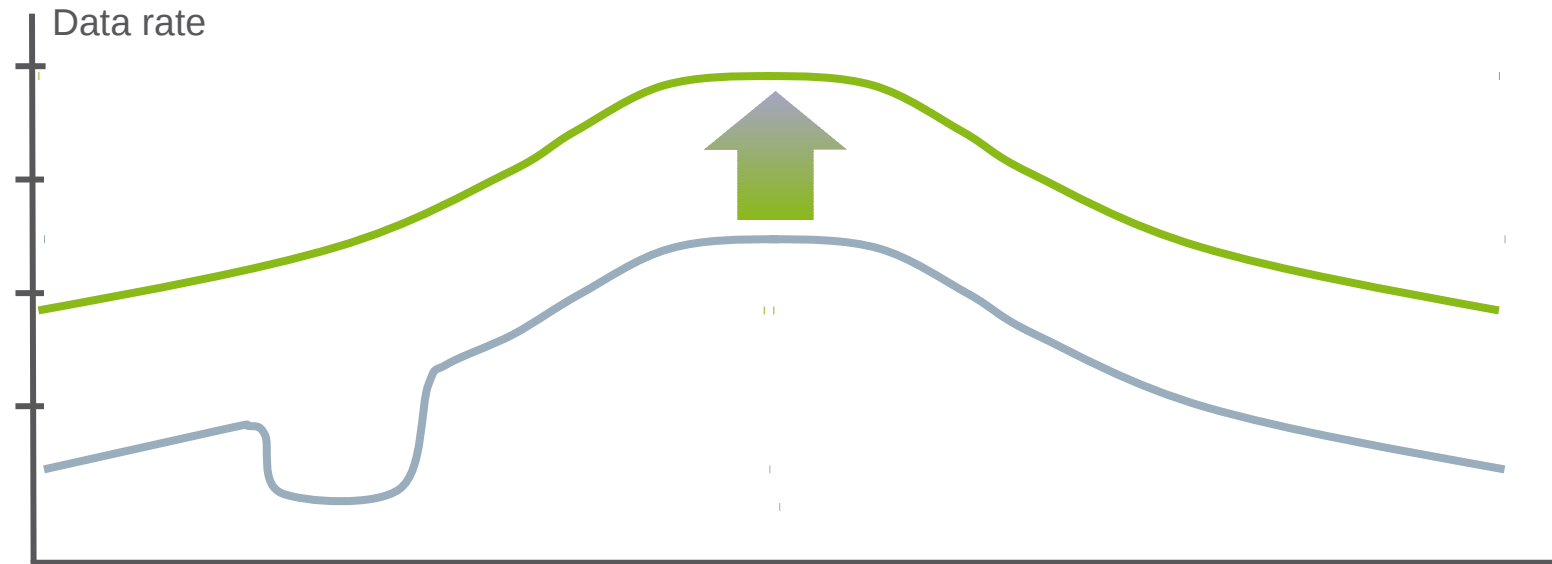
Down Link Throughput in Drive test (10 MHz)



Evolution of LTE

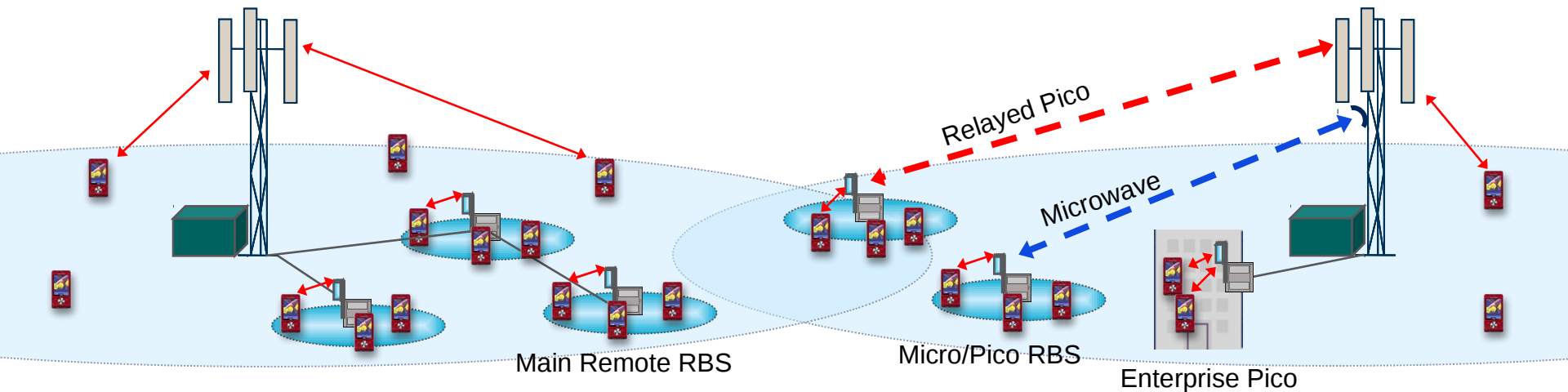


Meeting the traffic and bitrate demand



Meet Demand with 'Super-Macro' and 'New Deployments'

Heterogeneous deployments



- › Interference co-ordination between cell-layers
 - Maximizing capacity in each layer
- › Ease of Deployment
 - Self organizing networks (SON)
- › Multiple Backhaul Options
 - Relays, Microwave, Fiber, VDSL

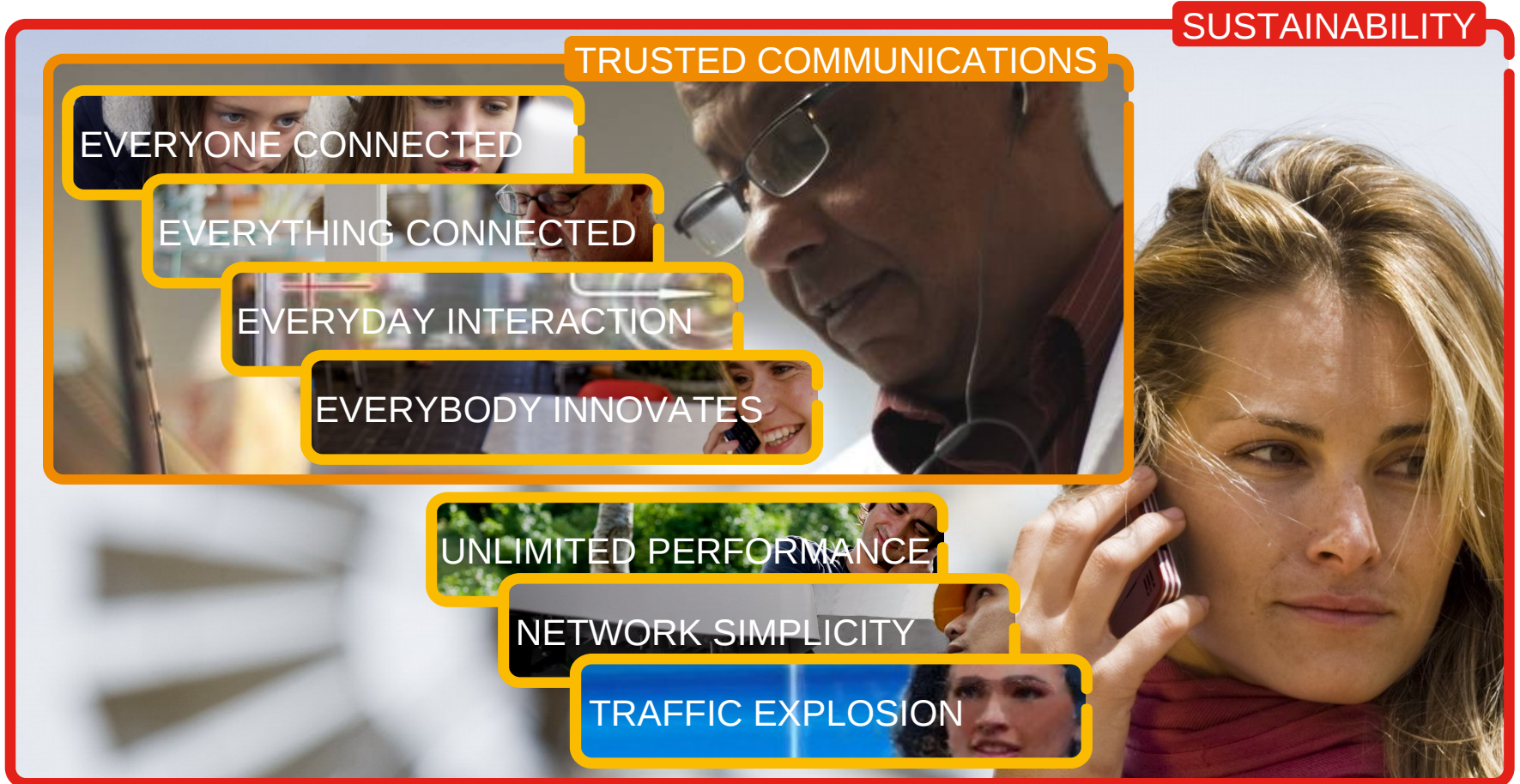
SUSTAINABILITY



- › High energy efficiency
- › ICT-services reduce CO₂ emissions
- › Socio-economic development

 TRAVEL THE AIRWAVES
WORLD PROSPERITY 

Vision - KEY Areas



Summary

- › Mobile broadband is a success
- › Exponential traffic growth
- › Opportunity for innovations
 - Co-ordinated Heterogenous Networks



ERICSSON