



5G, IOT & ERICSSON-LG

Henry Kang

IT&Cloud consultant, Ericsson-LG



1980



1990



2000



2009



1980



1990



2000



2009



TRANSPORT



MUSIC /
FILM



MOBILE
TRANSACTIONS



ONLINE
SHOPPING



CROWD
FUNDING



ERICSSON AT A GLANCE





NETWORKS



IT



MEDIA

ERICSSON

LG



INDUSTRIES

ERICSSON AT A GLANCE

42,000
PATENTS

24,100
R&D EMPLOYEES

31,6 BILLION
SWEDISH CROWNS IN R&D



ERICSSON AT A GLANCE

1 BILLION

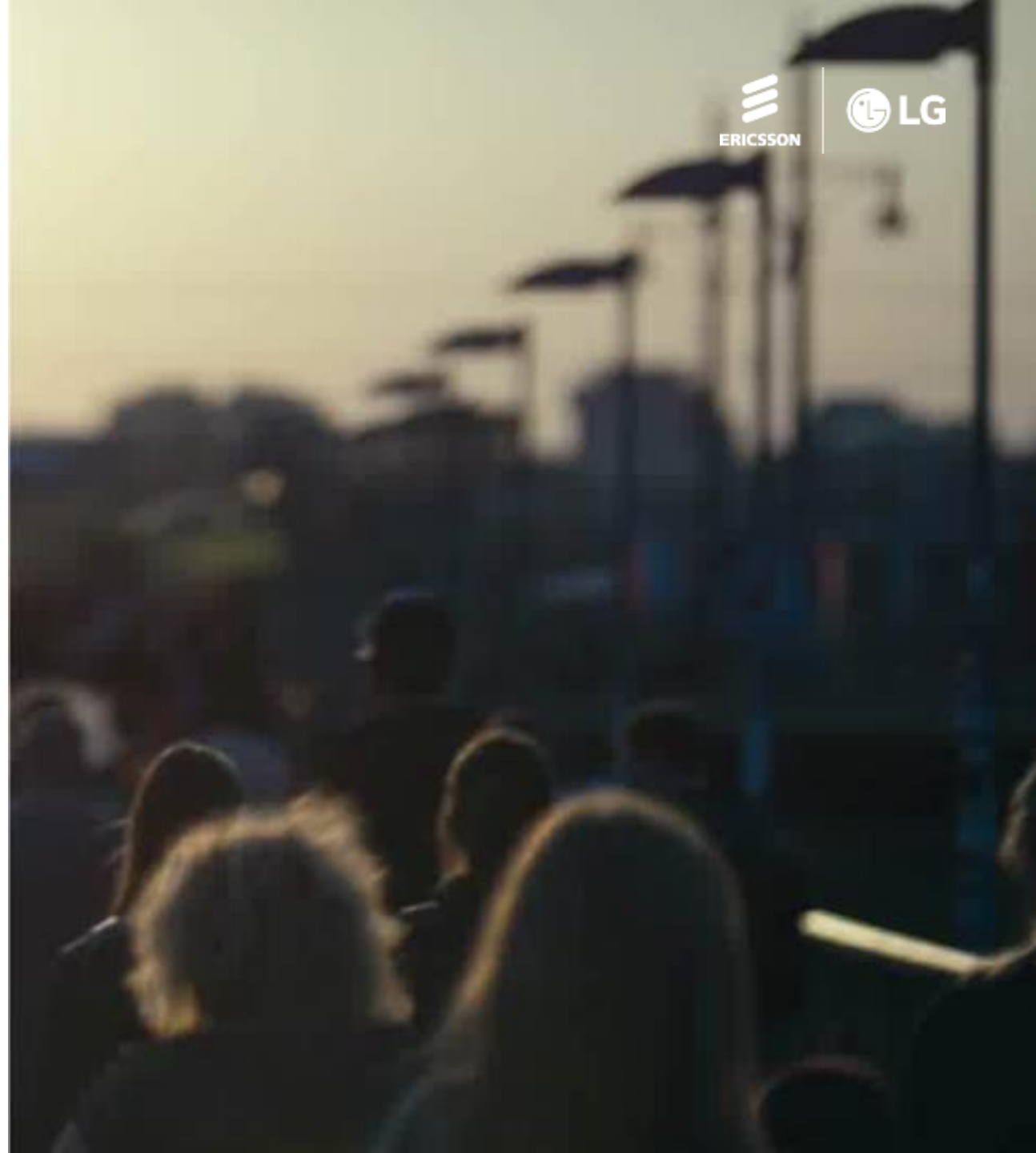
SUBSCRIBERS MANAGED BY US

2.5 BILLION

SUBSCRIBERS SUPPORTED BY US

62,400

SERVICE PROFESSIONALS



ERICSSON AT A GLANCE

223 BILLION

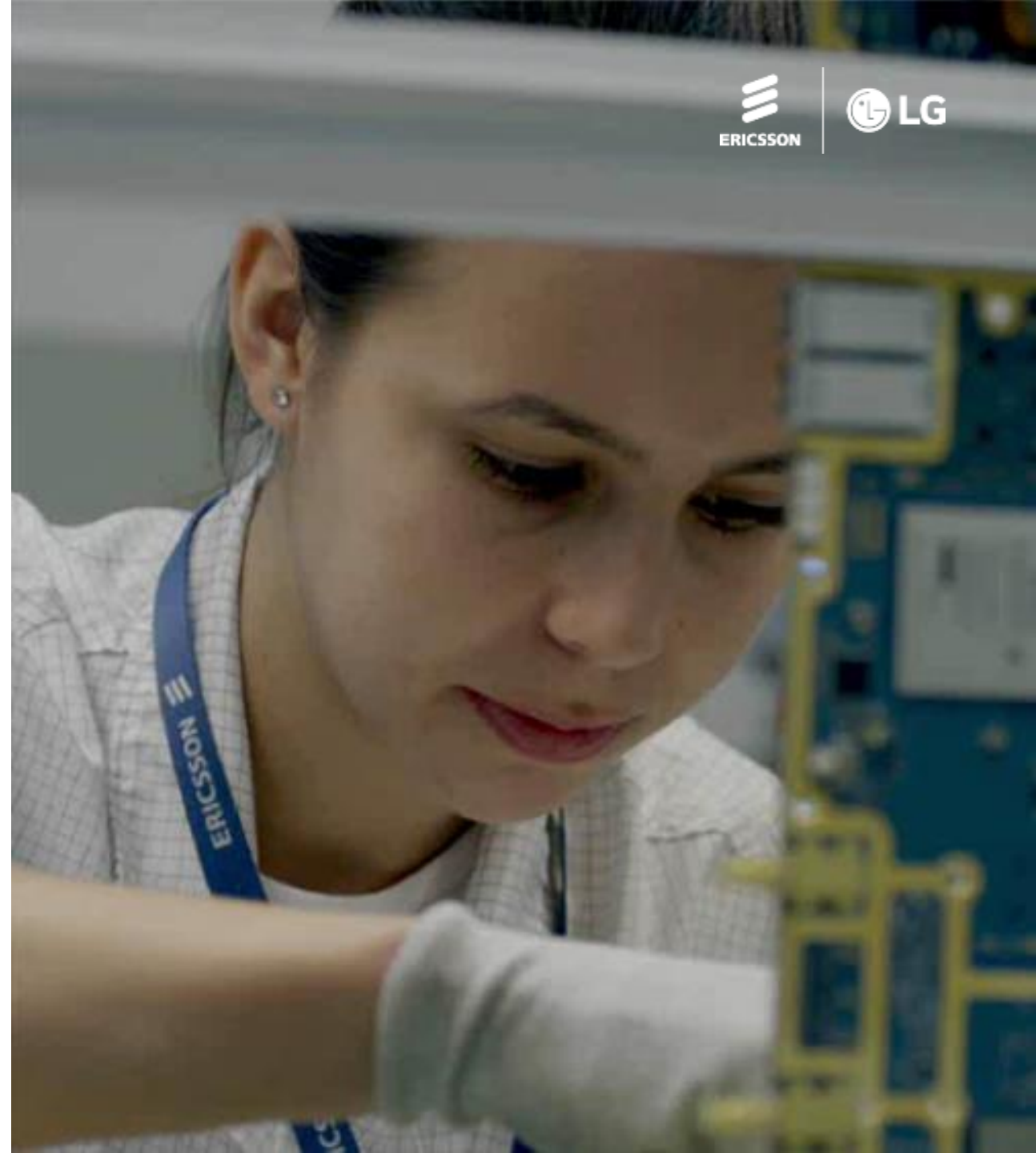
SWEDISH CROWN IN NET SALES

180

COUNTRIES WITH CUSTOMERS

111,000

EMPLOYEES



OUR VISION

A NETWORKED SOCIETY WHERE EVERY
PERSON AND EVERY INDUSTRY IS EMPOWERED
TO REACH THEIR FULL POTENTIAL

VISION

MISSION

VALUES

OUR MISSION

WE LEAD TRANSFORMATION
THROUGH MOBILITY

VISION

MISSION

VALUES

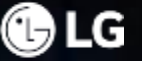
OUR VALUES

TRUST PERFORMANCE INNOVATION

VISION

MISSION

VALUES



OUR VISION

THE NETWORKED SOCIETY

PEOPLE

THINGS


INTERACTIVITY

BIG IDEAS



5G IOT CLOUD INSTALLATION TRANSFORMATION

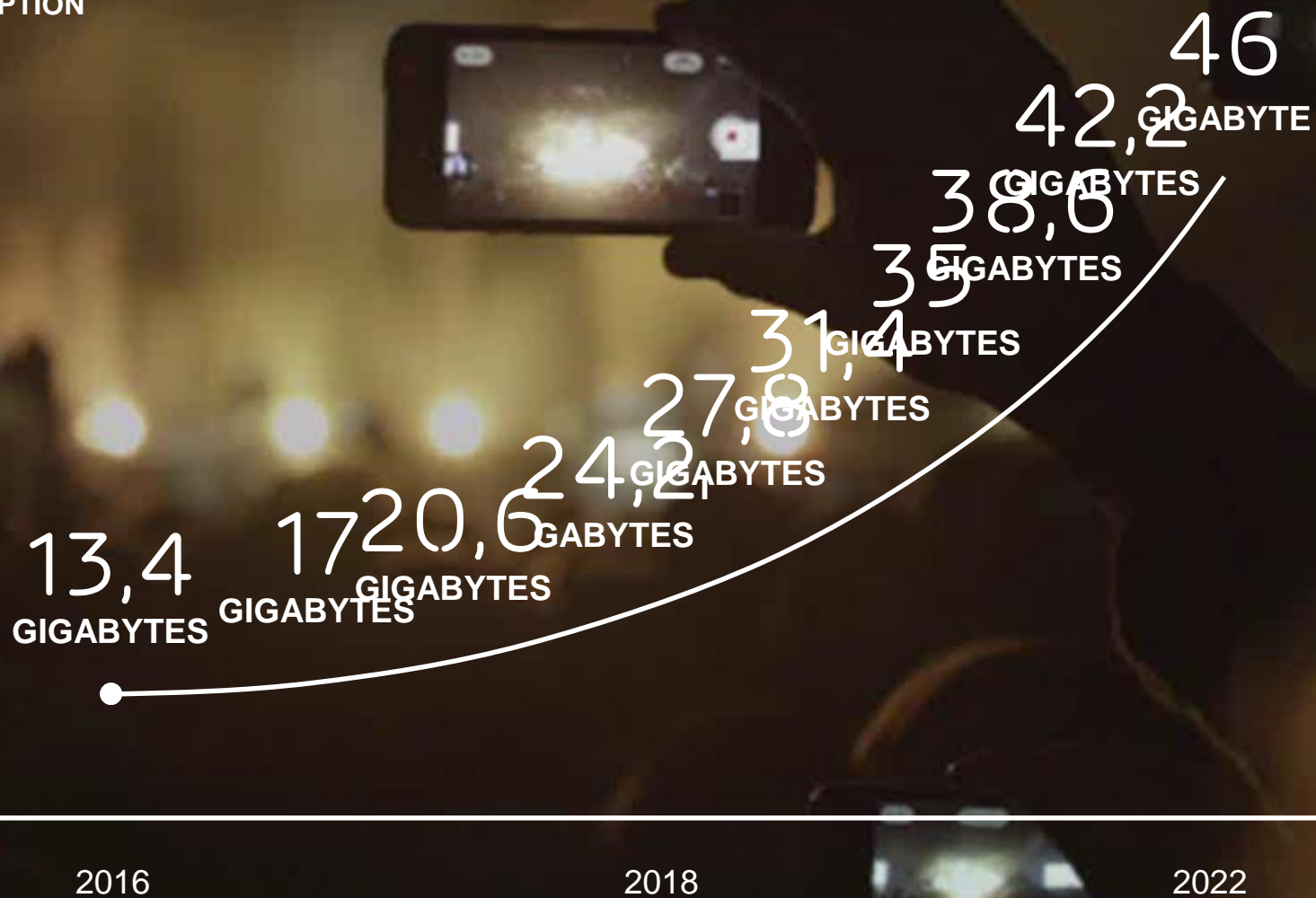
AT AN INFLECTION POINT



THE 5TH TECHNOLOGICAL REVOLUTION



DATA TRAFFIC
GREW 70% BETWEEN
Q1 2016 – Q1 2017

MONTHLY
DATA CONSUMPTION



X8

MOBILE DATA
TRAFFIC



X9

SMARTPHONE
TRAFFIC



1,6 MILLION

NEW SMARTPHONE SUBSCRIPTIONS PER DAY

2.7 BILLION
LIKES ON FACEBOOK

\$13 MILLION
CROWDFUNDING

\$2.7 MILLION
E-COMMERCE



24H

13 MILLION
HOURS YOUTUBE VIDEO WATCHED

500,000
AIRBNB STAYS PER NIGHT

3 TIMES
UBER REVENUE OVER SIZE OF
TAXI MARKET, IN SAN FRANCISCO

NEW LOGIC

PHYSICAL GOODS
DELIVERY INDUSTRY



DIGITALLY
CONNECTED INDUSTRY

HEALTH

EDUCATION

MEDIA

TRANSPORT



WELLNESS

LEARNING

CULTURE

MOBILITY

BANKING

UTILITY

RETAIL



TRANSACT

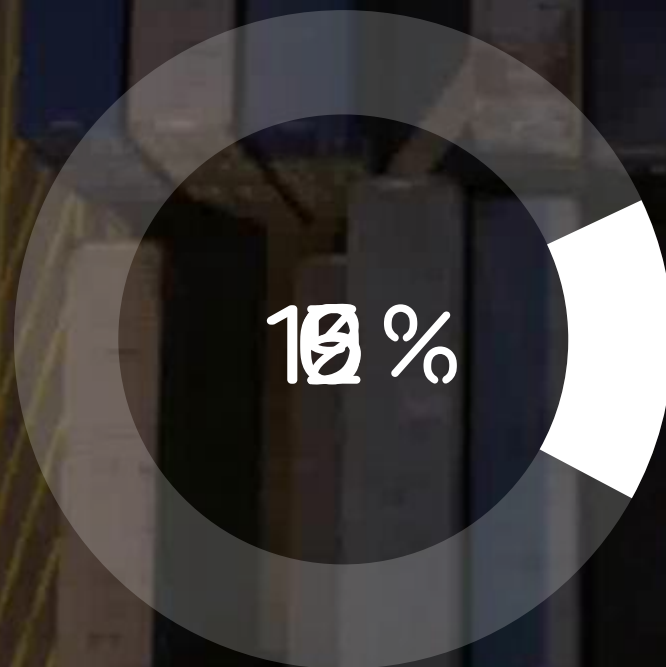
FUNCTION

EXCHANGE



FOR EVERY 1000 BROADBAND CONNECTIONS

80 NEW JOBS
ARE CREATED



- › Smart transport
- › Smart buildings
- › Smart travel
- › Smart work
- › Smart agriculture and land use
- › Smart services / smart industry
- › Smart grid (incl. smart homes)

REDUCTION IN GLOBAL GHG
EMISSIONS FROM ICT BY 2030

CAPTURING THE NETWORKED SOCIETY



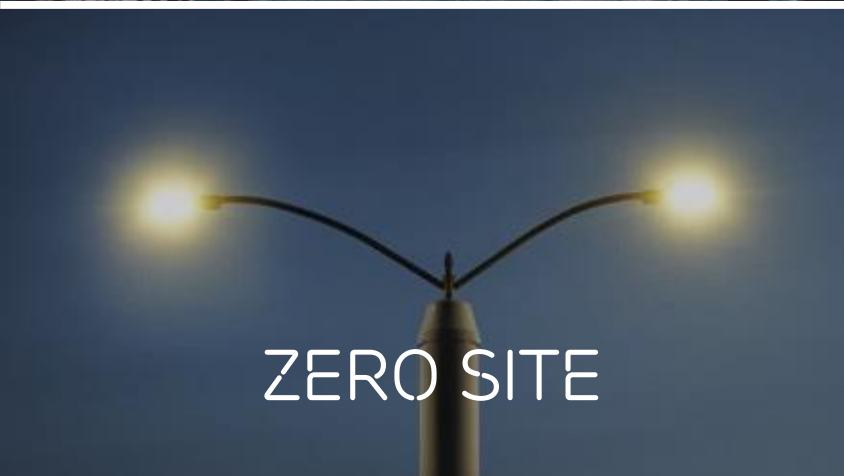
TELE GREENLAND



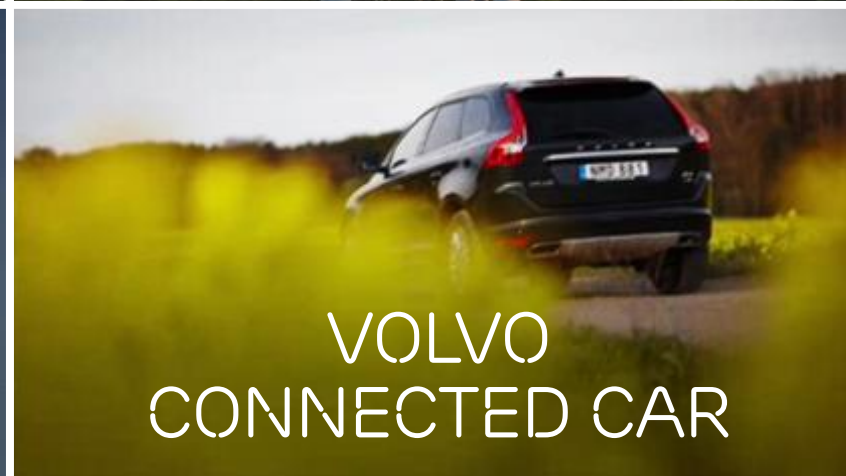
ANTENNA
INTEGRATED RADIO



MAERSK LINE



ZERO SITE



VOLVO
CONNECTED CAR



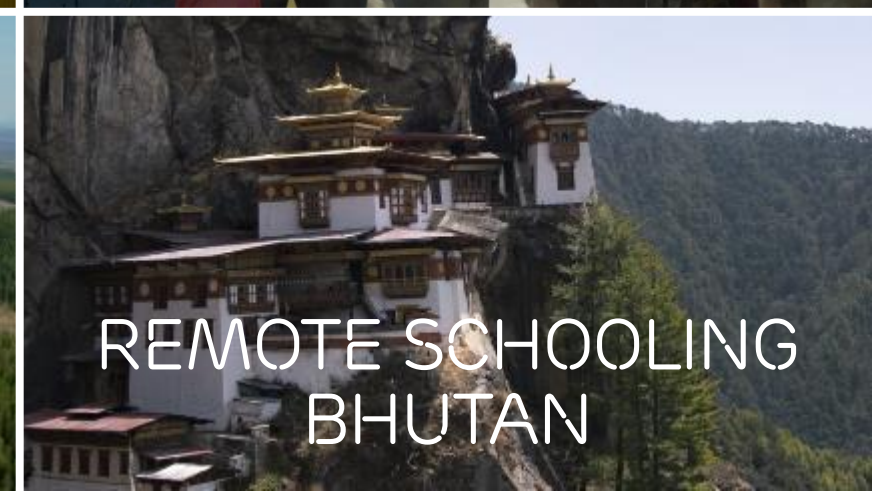
FACEBOOK +
INTERNET.ORG



M-COMMERCE IN
UGANDA



E.ON SMART METER



REMOTE SCHOOLING
BHUTAN

5G TUSCANY

Achieving the UN Sustainable Development Goals

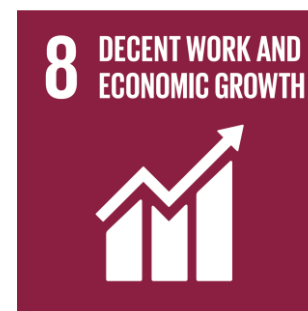
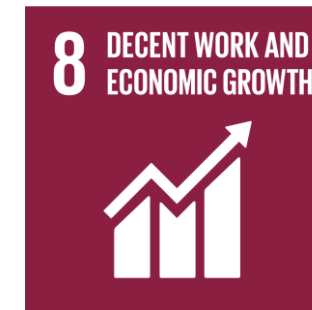


AgriRobot

- › Improved agricultural production
- › Efficient & clean energy use
- › Enable economic growth

Connected Port

- › Improved efficiency in port operations
 - Logistics: real-time tracking and visualization of containers
 - Safety for ships' movements





OUR MISSION

WE LEAD TRANSFORMATION
THROUGH MOBILITY

COMMERCIAL PRESENTATION CONNECTED VEHICLE CLOUD

ERICSSON IN AUTOMOTIVE



- Client Headquarter
- Cloud Global Delivery Center
- Live Deployment
- Ericsson Global R&D

AUTOMOTIVE HIGHLIGHTS

- › 1,500,000 Connected cars (Mar -16)
- › Adding 40,000 connected cars every month
- › 15 Awards for “Connected Vehicle Cloud”
- › Live in 150+ Countries

ERICSSON VALUE

- › Trusted Automotive & Transport ecosystem provider
- › Speed to Market, One stop shop for connected services
- › Scale & Efficiency
- › Innovation and R&D focused on connected services

ABOUT CONNECTING CARS



Consumer perspective

A REASON TO BUY

High demand on connected services

Society & Sustainability

LICENSE TO SELL

Laws, regulations & environment

Increased efficiency, quality and lower cost

SAVE COST

Direct Customer interface

CUSTOMER
SATISFACTION

Evolve service centric offering

NEW REVENUE
STREAMS

Internal Efficiency

Customer Relationship

Business innovation

OEM Value

AUTOMOTIVE SUB-SEGMENTS



VEHICLE MAKERS

- › Passenger Cars
- › Commercial Vehicles
- › Construction Equipment (Agriculture, Forklift, etc.)

AFTERMARKET ACTORS

- › Dealers, OEM-led and Independent
- › Rental & Leasing
- › Logistics, Long-haul and Last mile
- › Others (Operators etc.)

PRIORITY SUB-SEGMENTS

- › **Passenger Cars**
- › **Commercial Vehicles**
- › **Construction Equipment**

- › Dealers, OEM-led
- › Rental & Leasing
- › Logistics, Long-haul and Last mile

THE OEM CHALLENGE



Energy / utilities companies
Insurance companies
Infrastructure/smart cities

Drivers/operators
Vehicle manufacturers
Authorities

APIs, APPS & END USER

TELEMATICS &
FLEET SERVICES

Dealer
Repair shops
Support Center

DEALER
SYSTEMS



CONNECTED
VEHICLE CLOUD

GCAAS

MVNOAAS

Aftermarket
Logistics
Warranty
Production
Product development
Vehicle repository
CRM

OEM BACKEND
SYSTEMS

Central Data Storage
Reporting & Analytics
Accounting
Billing

AUTOMOTIVE OFFERINGS

ERICSSON AUTOMOTIVE PLATFORM

A COMMON PLATFORM FOR ALL CVC SOLUTIONS



Customer Experience

GEO-FENCING

REMOTE
VEHICLE
CONTROL

FLEET
MANAGEMENT
PORTAL

VEHICLE
DIAGNOSTICS

ECO-DRIVING

CALL CENTER
SUPPORT

Many more...

CVC APPLICATIONS

ECO-SYSTEM SUPPORT

IOT APPLICATION
ENABLEMENT

ANALYTICS & INSIGHTS

BUSINESS
MANAGEMENT

CLOUD PLATFORM

SECURITY

IOT ACCELERATOR (FOR AUTOMOTIVE)

CONNECTIVITY

CONNECTED VEHICLE CLOUD SUITE



INFOTAINMENT

2013

TELEMATICS

2015

FLEET
MANAGEMENT

2016

*ADVANCED
DRIVER
ASSISTANCE
SYSTEMS*

2017

*SOFTWARE
DEFINED
VEHICLES*

2018

CVC SOLUTION SUITE

AUTOMOTIVE PLATFORM

IOT ACCELERATOR FOR AUTOMOTIVE

FUNCTIONAL ARCHITECTURE – OVERVIEW



Solutions

Applications

Enabling Services

Cloud Platform

Infrastructure

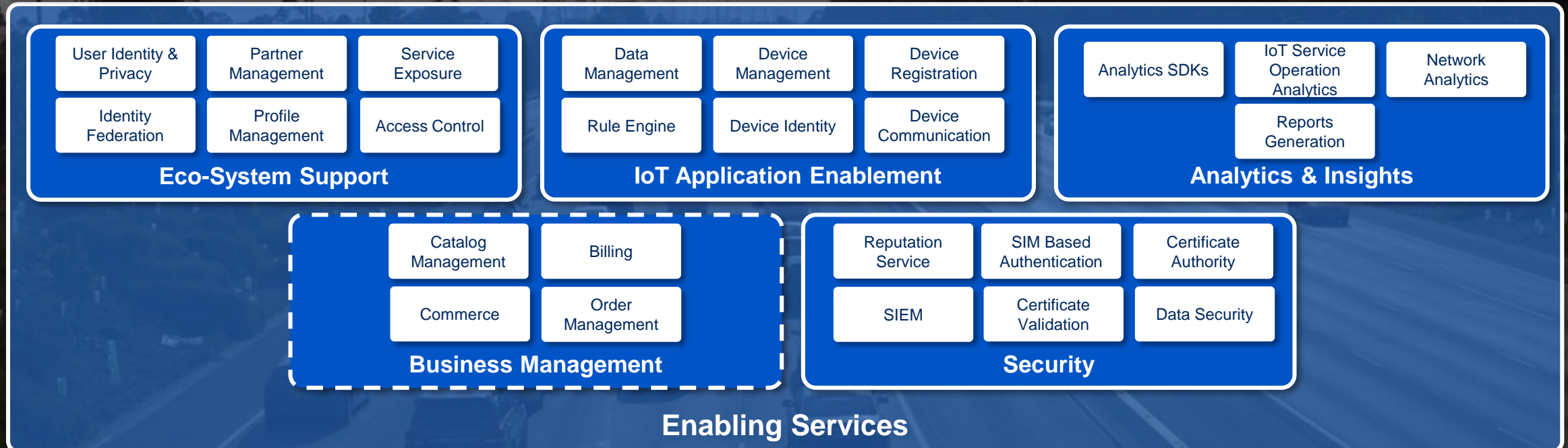
Connectivity

IOT ACCELERATOR FOR AUTOMOTIVE FUNCTIONAL ARCHITECTURE – ENABLING SERVICES



Solutions

Applications



Cloud Platform

Infrastructure

IOT ACCELERATOR FOR AUTOMOTIVE

FUNCTIONAL ARCHITECTURE – CLOUD PLATFORM



Solutions

Applications

Enabling Services

Alarm Handling

Application
Service Registry

In Service
Performance

Logging and
tracing

Application
Hosting

Application Life
Cycle
Management

Application Hosting & Management

Relational Data
Storage

Structured Data
Storage

Distributed
Cache

Networked
Filesystem

Media Asset
Catalog

Data Storage

Cloud Platform

Infrastructure

Connectivity

AUTOMOTIVE OFFERING



SERVICES (AREAS)

Telematics & Fleet
Management

Infotainment &
Driver services

SW Distribution &
Delivery management

Others

CONNECTED VEHICLE CLOUD

ECO SYSTEM
MANAGEMENT
USER & SERVICE
MANAGEMENT

VEHICLE AND DATA
MANAGEMENT

CONNECTIVITY & CONSULTING

EDAV, Data Privacy, Network &
Technology Consulting

Connectivity-aaS, Subscription
management, Managed Operations

BUSINESS
SUPPORT

MONETIZATION,
CHARGING, BILLING

STREAM DATA
PROCESSING &
ANALYTICS

DRIVER SERVICES & INFOTAINMENT



- › Head Unit App Store
- › Data Plan Self Care (WiFi Landing page)
- › Road Service Information
- › Geo Messages (traffic information)
- › Service Booking
- › Package Delivery
- › Predictive Mobility
- › Internet Radio (iheart radio, stitcher, Spotify, BBC, Pandora)
- › Navigation (TCS)
- › POI (TCS)
- › Parking (Streetline)
- › Weather (Accuweather)
- › Others (GlympsE, Wikipedia)

TELEMATICS SERVICES



Remote Car Control

- › Climate Control
- › Engine Start
- › Honk & Light
- › Trunk lock/unlock
- › Seat Heat
- › Climate Control non engine
- › Door Lock/unlock
- › Close/open window/sunroof

Remote Car Control Enhanced

- › Phone As a Key
- › Digital Key
- › Remote Diagnostics

Security Services

- › Stolen Vehicle Tracking (SVT)
- › Remote Vehicle Immobilization
- › Tampering Notification
- › Unauthorized Driver Detection
- › Automatic Vehicle Immobilization
- › Theft Notification
- › Manage Theft Notification

Safety and Emergency Services

- › eCall
- › Roadside Assistance (bcall)

Concierge

- › iCall

Remote Car Status

- › Health Check
- › Dashboard

Trip Data

- › Journey Log
- › Trip route

Software And Device Management

- › FOTA/SOTA

FLEET MANAGEMENT



Baseline

- › OEM & Fleet Operator Portals
- › Driver Mobile App
- › Positioning, Track & Trace, Trip Logging
- › Telematics & Vehicle Data
- › Driver Behavior (Driver score)
- › Eco-score
- › Geo-fencing
- › Alerts Maintenance & Incidents
- › Analytics & Data Visualization

Roadmap

- › Routing and Scheduling
- › Logistics, Goods Tracking
- › Critical Road Information, Road Hazard Warning/broadcast,
- › Weather Conditions
- › Platooning, Vehicle to Vehicle Connectivity

COMMERCIAL PACKAGING CONNECTED VEHICLE CLOUD



PaaS

SaaS

CVC Design and execution environments

CVC Platform services

Basic/Mandatory

Optional

CVC Device Com

CVC Data Storage

CVC Device Management

CVC Commerce

CVC Analytics enablement

CVC Service Exposure

Ericsson applications

CVC Fleet Management

CVC Remote Car Status

CVC Roadside Assistance

CVC Concierge/Information call

CVC Safety and Emergency Services

CVC Security Services

CVC Remote Car Control

CVC Digital Key

CVC Market Place

CVC Basic services

REFERENCE CASES





LINK & CO

VOLVO CARS

DRIVER SERVICES AND INFOTAINMENT



CUSTOMER CHALLENGES

- › Sell more cars and capture after market sales
- › Build new customer relationship and increase quality control
- › Add new revenue streams through digital channel

ERICSSON SOLUTION

- › World first Global Cloud based Service for Automotive (EMEA, Americas and China) launched 2013w46
- › 7 years MSA covering SI and Operation
- › Agile development – more than 160+ Change request (add on sales)

Volvo BENEFITS

- › Continuous evolvement of new functionality throughout the life of the car and reducing recalls
- › Through global cloud possibility to roll out content to mass markets and vehicles
- › New ways to sell services and add new revenue from third parties

11:27 PM



Your car requires maintenance service. Would you like to be contacted by the dealer?

Yes

No



TP

DIGITAL




 LVCC Gold Lot

 Parkmobile 1



02:01


Confirm payment of 6.25 USD to
Parkmobile.
Refund is not possible.

OK to pay
Exit to cancel

OK to start parking



GEELY

TELEMATICS AND INFOTAINMENT



CUSTOMER CHALLENGES

- › **Off the shelf** Infotainment and telematics services for an immature market
- › **Grow service range** across multiple car models
- › **One stop shop** for telematics and connectivity services
- › **Market launch Q4 2016**

ERICSSON SOLUTION

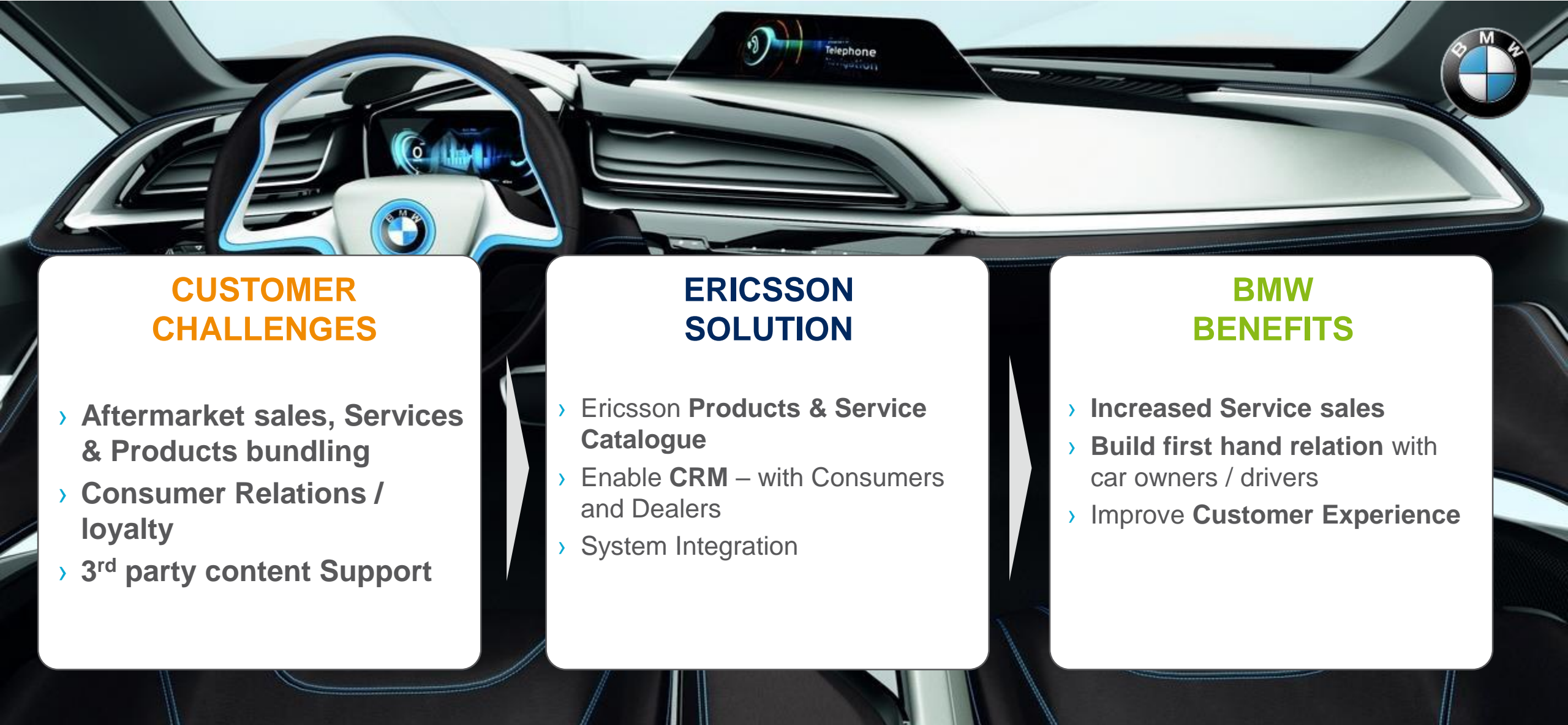
- › **Connected Vehicle Cloud** Platform and services - SaaS
- › **System Integration** – Front end and back end.
- › **Connectivity & Telematics Call Center** provided by China Unicom
- › **Head-unit/ TCU integration**

GEELY BENEFITS

- › **Fast time to market** in record time deployment plan
- › **One cloud** for both Telematics & Infotainment
- › **Future proof** Leverage innovation from shared platform

BMW

PRODUCT & SERVICE AND CATALOGUE



CUSTOMER CHALLENGES

- › Aftermarket sales, Services & Products bundling
- › Consumer Relations / loyalty
- › 3rd party content Support

ERICSSON SOLUTION

- › Ericsson Products & Service Catalogue
- › Enable **CRM** – with Consumers and Dealers
- › System Integration

BMW BENEFITS

- › Increased Service sales
- › Build first hand relation with car owners / drivers
- › Improve **Customer Experience**

ERICSSON AUTOMOTIVE RESEARCH

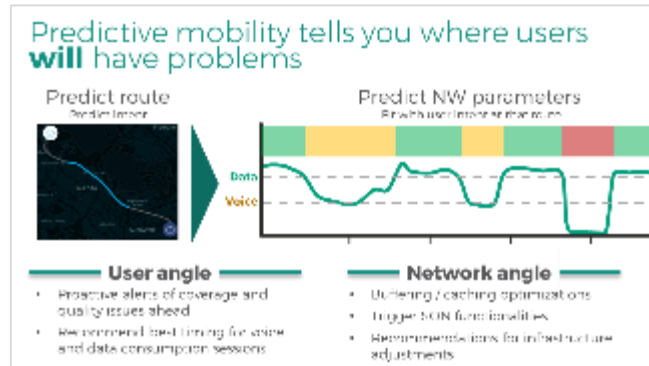
SELECTED SUBSET



Platooning with 5G



Predictive Mobility for Streaming to Autonomous Cars



Digital Key



Autonomous Bus



5G Remote Control

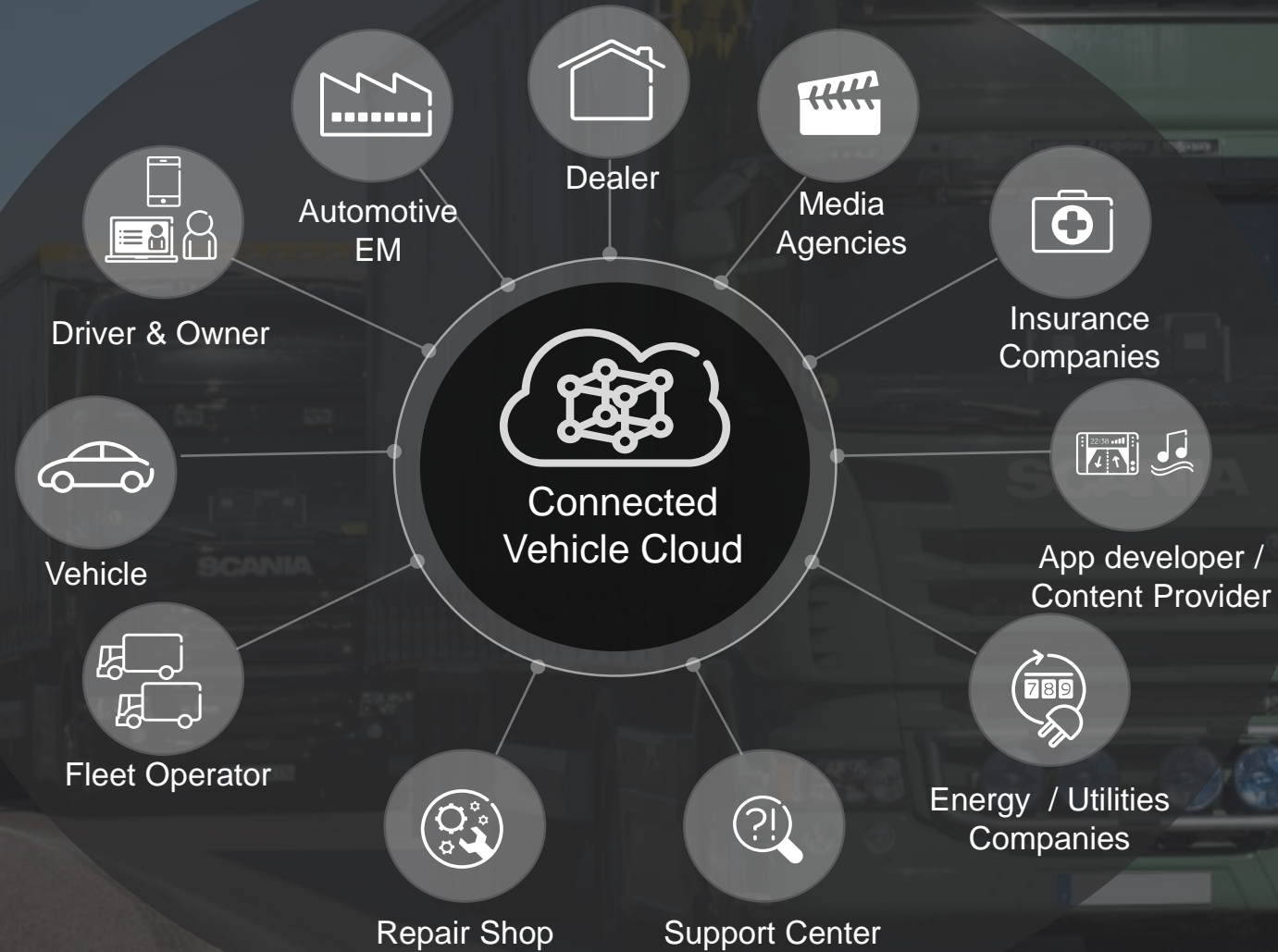




CONNECTED VEHICLE MARKETPLACE



EVOLVE SERVICE CENTRIC OFFERING THE CONNECTED SERVICES ECO SYSTEM



THE CONNECTED AUTOMOTIVE MARKETPLACE

UNLOCKING THE BUSINESS VALUE OF THE CONNECTED CAR



```
{
  "topic": "interchange.vehicle.aled375-8129-4908-ac61-9504020a0eee.stream",
  "args": {
    "speed": 17,
    "location": {
      "lat": 57.70954167,
      "lng": 11.93773833
    }
  },
  "obd_data": {
    "engine_load": 18,
    "engine_coolant_temperature": 80,
    "engine_rpm": 940,
    "speed": 16,
    "timing_advance": 0,
    "air_intake_temperature": 8,
    "air_flow_rate": 3,
    "throttle_position": 12,
    "runtime_since_engine_start": 214,
    "distance_since_mil": 0,
    "ecu_voltage": 13,
    "fuel_consumption": 6
  }
}
```



WHAT IS AN ECO SYSTEM?



SUCCESS FACTORS



BUSINESS MODEL & TERMS
CONDITIONS



PARTNER MANAGEMENT
PROCESS



WELL DOCUMENTED API



Enable service providers to independently build applications

THE CONNECTED MARKET PLACE



ERICSSON CONTRIBUTION



PARTNERS - STOCKHOLM

STOKAB
Fiber



MSB
Ericsson Response



URBAN ICT ARENA

5G connected automated vehicles
Automated busses
Personal travel assistant
Clever demand & dispatch handling
Mixed fleet with high availability



ROYAL SEAPORT
Smart Grid



DIGITAL DEMO STOCKHOLM

iWater
Techgården
Smart traffic lights



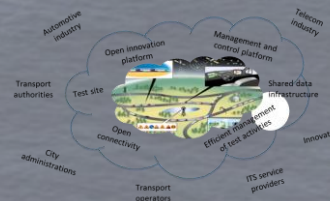
INITIATIVES - SWEDEN

5G FOR SWEDEN
Industry & research Initiative
Industrial Mobile Communication
in Mining
5GEM
PIMM



INDUSTRI-FORSKNINGSFORUM
Digitalization of Swedish Industry

ITRL
Test site for connected
& automated mobility 2020



DRIVE SWEDEN
Demand prediction
Management of fleet
Traffic information



WALLENBERG PROGRAM

WARA-AD
Autonomous Driving
Focus: Systems of Aut. Vehicles and Infrastructure.
Example: Street Crossing
Communication, Cloud, C2, Safety, Localization



WARA-PS
Public Safety
Example: Rescue Scenario
Autonomous boats, UAVs
Surveillance, sensing,
Communication,
Cloud, Command&Control



WARA-SC
Smart City
Traffic / transport, energy,
communication.
Monitoring, Command&
Control, Anomaly detection



START BUSINESS WITH

✓ Data Centric Security

✓ IoT Accelerator

