

V O L V O



Floating car data for safety and traffic systems

Jonas Rönkvist Security Class: Public
2023-06-13

V O L V O

For life. To give people freedom to move in a personal, sustainable and safe way.

PURPOSE-LED COMPANY

**PERSONAL
FOR LIFE**

Life is precious. So is living. That is why Volvo helps people come to life and live life freely. We celebrate individuality and the freedom to be you. We want to make life easier and to help you save time and stress. To enable joy and peace of mind. Volvo comes from Sweden after all, a place that believes quality of life is as important as being alive itself.

**SUSTAINABLE
FOR LIFE**

We do not only protect people in and around our cars. We also work hard to protect the planet we live on. We commit to the highest standard of sustainability in mobility in order to protect the world we all share. We want to keep the world around our cars as safe as the people in them.

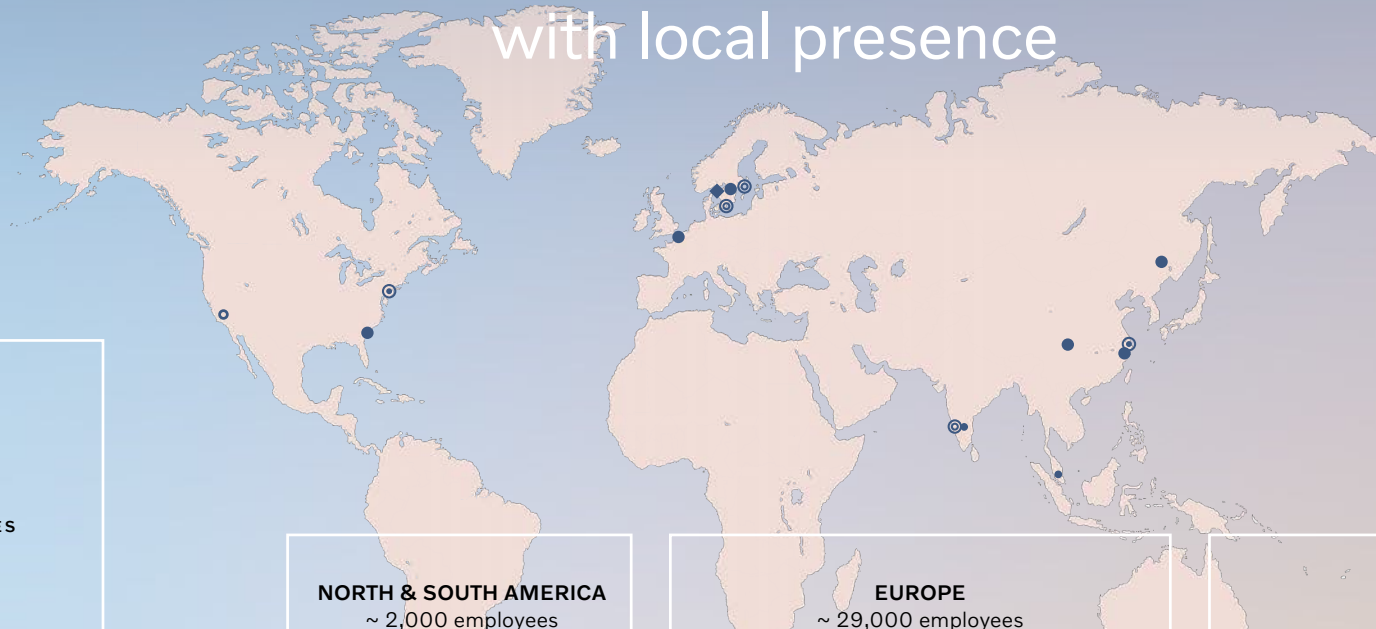
**SAFE
FOR LIFE**

In 1927 one of our founders, Gustaf Larsson, stated: "Cars are driven by people. The guiding principle behind everything we make at Volvo, therefore, is and must remain, safety." This principle made our brand synonymous with safety and is today as relevant as ever before. We will continue to pioneer the safest, most intelligent technology solutions in mobility and everyday life to protect what is important to people. Their lives, and the lives they are living.



VOLVO

Combining a global perspective with local presence



- ◆ HQ/R&D/Design/Production
- ⊙ Regional HQ/R&D/Design
- Design
- Production
- ⊙ Tech Hub

↓

615,000
RETAIL DELIVERIES

3
REGIONS

+100
SALES IN COUNTRIES

~2,500
RETAIL PARTNERS

~43,000
EMPLOYEES

NORTH & SOUTH AMERICA
~ 2,000 employees

USA
Mahwah, NJ
– Americas Headquarters
Charleston, SC
– Car production
Camarillo, CA
– Design centre

OTHER COUNTRIES
~ 100 employees

EUROPE
~ 29,000 employees

Sweden
Gothenburg
– Global Headquarters
– R&D
– Design Centre
– Car Production
Stockholm
– Tech Hub
Lund
– Tech Hub

Olofström
– Body components
Skövde
– E-motors
Floby
– Components

Belgium
Ghent
– Car Production

ASIA
~ 12,000 employees

China
Shanghai
– APAC Headquarters
– Regional R&D and Design Centre
Chengdu
– Car Production
Daqing
– Car Production
Taizhou
– Car Production

Singapore
APEC Offices
India
Bangalore
– Tech Hub

Owned assembly factory in Kuala Lumpur, Malaysia and contract assembly in Bangalore India.

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Our current portfolio - a focused line-up

- All models available as PHEVs/ BEVs
- Since 2020 all new models have been fully electric
- Newest addition of the EX90, revealed in November 2022

S U V / X C



EX90



XC90



XC60



XC40



W A G O N / V



V90



V60



S E D A N / S



S90



S60



C R O S S O V E R / C



C40



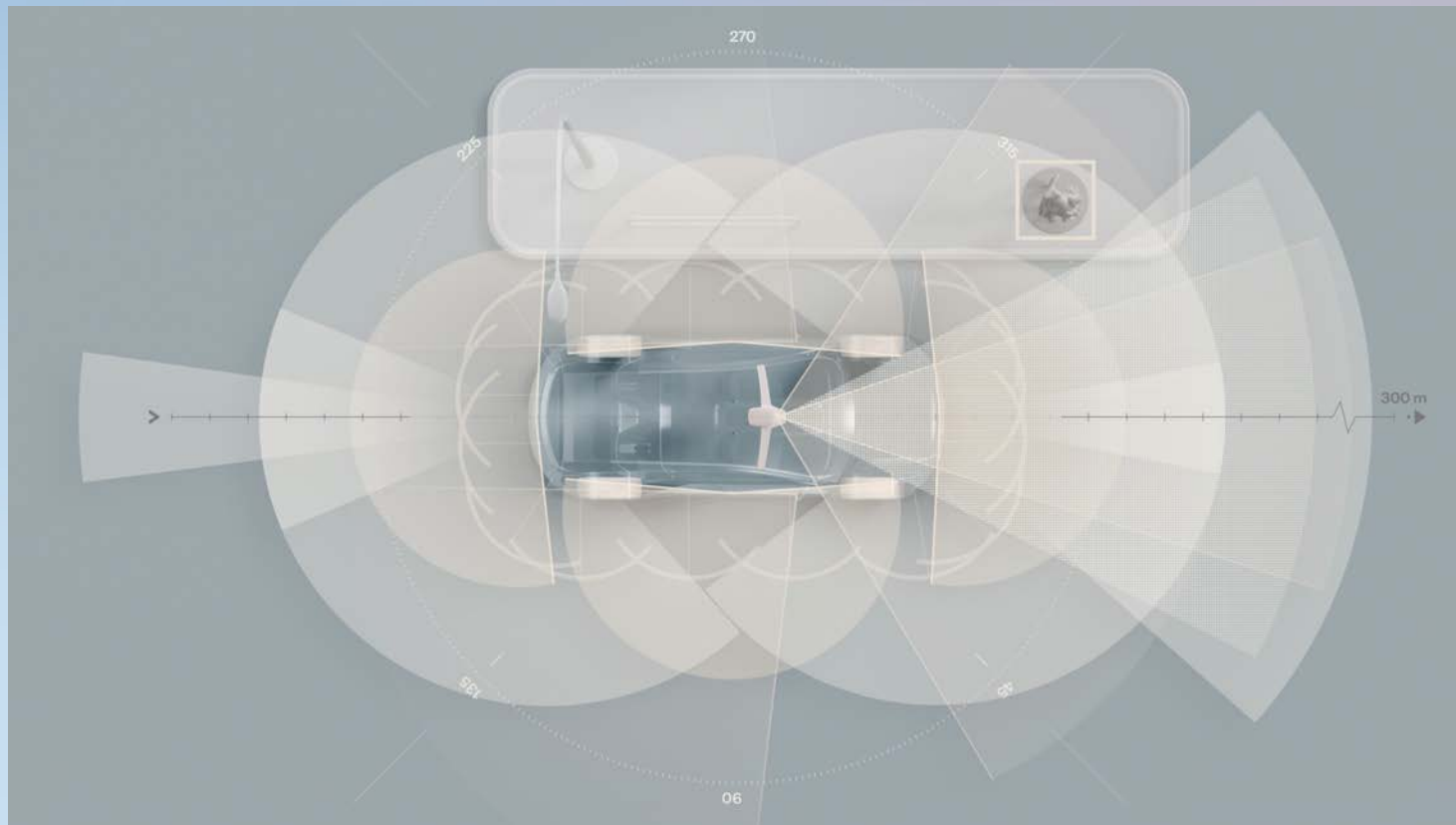
FULLY ELECTRIC

PLUG-IN HYBRID

INTERNAL COMBUSTION ENGINE

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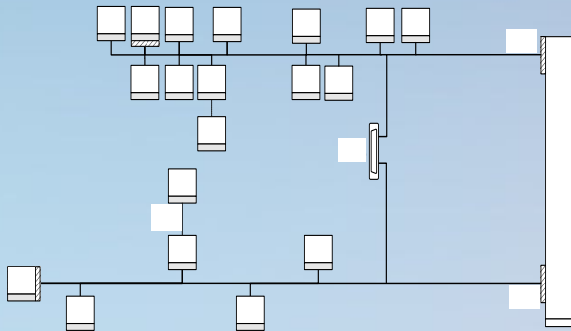
Lets start how to generate data



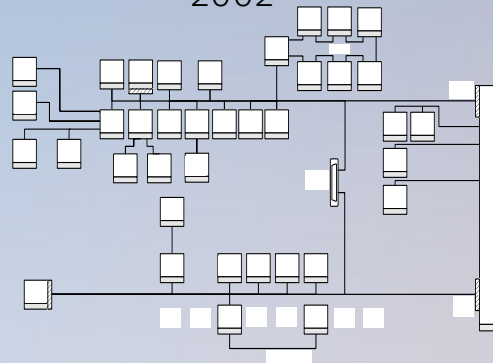
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Evolution of car electronics

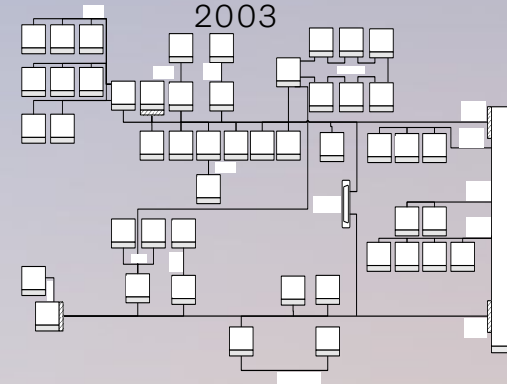
1998



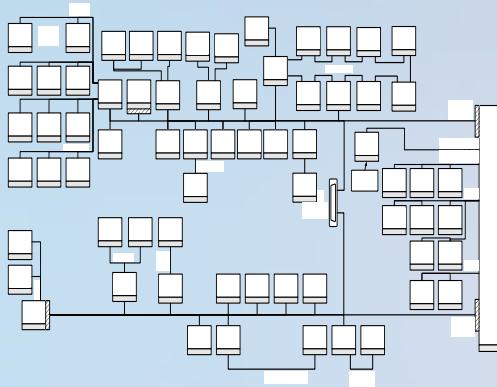
2002



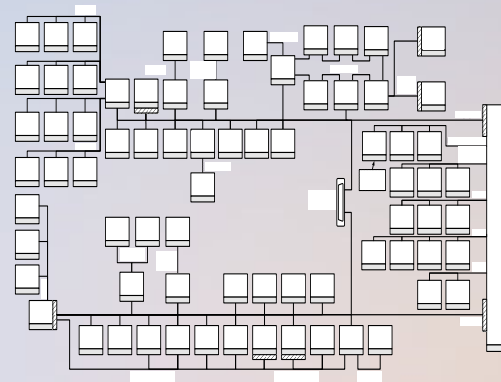
2003



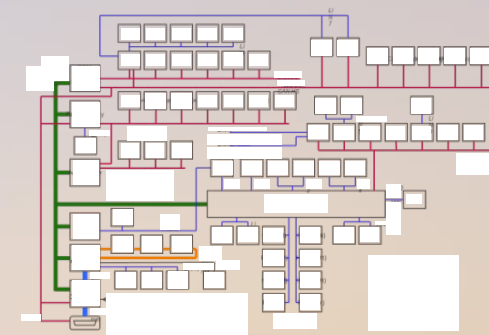
2006



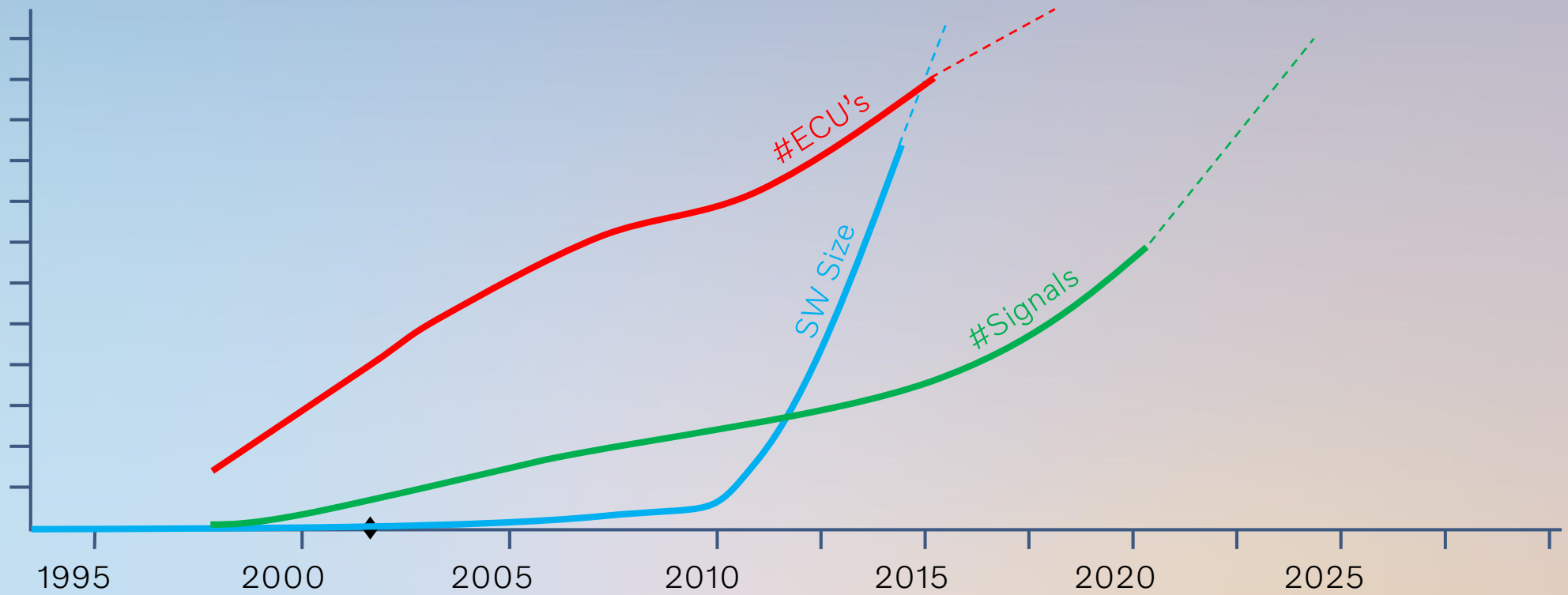
2012



2013

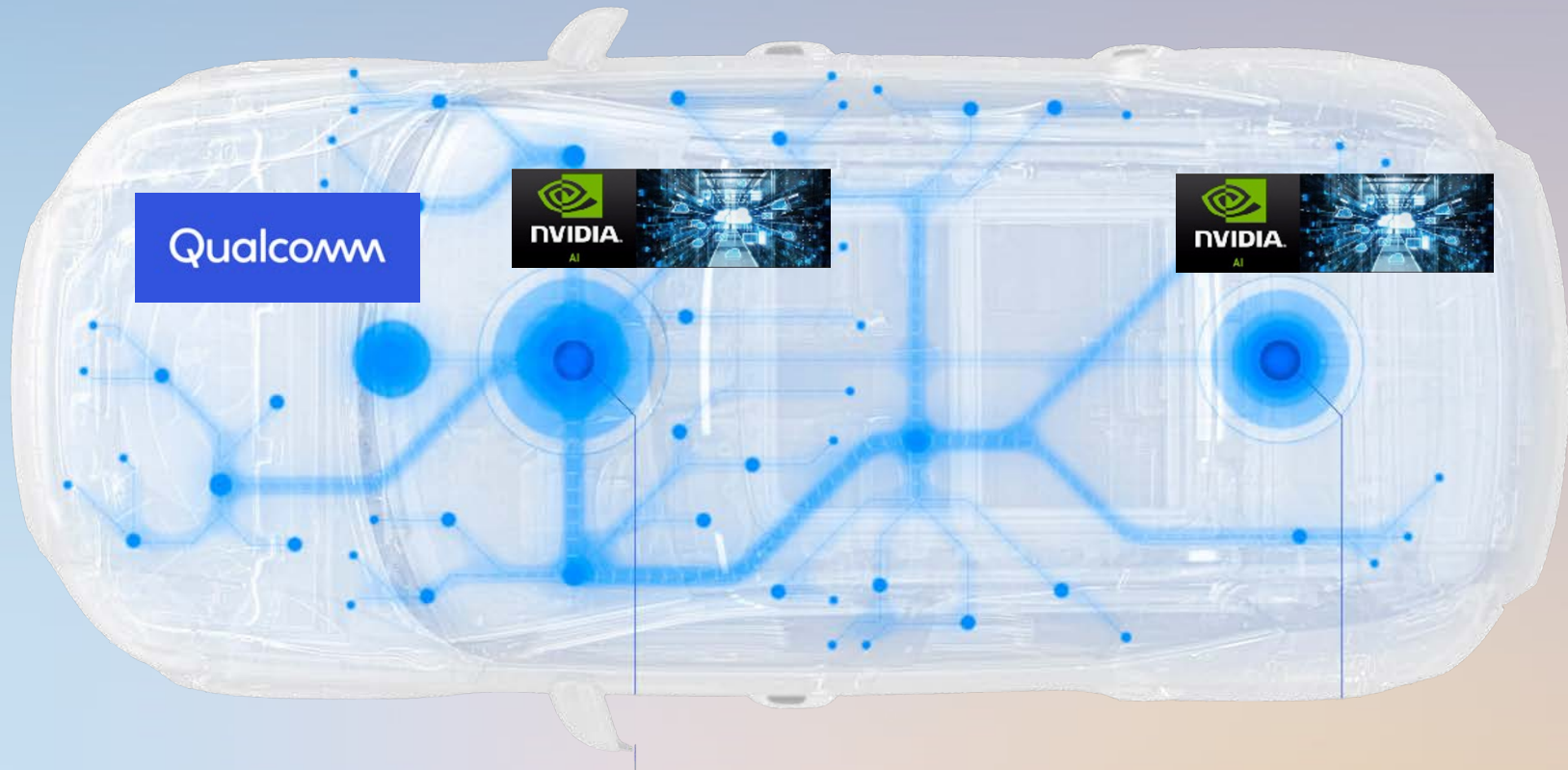


Data and software evolution



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Next generation car, able to manage data and SW growth



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Communication in a car?

Broadcasting

AM

FM

DAB

SDARS

TV/DVB

WLAN

802.11a/b/g/ac

WPAN

Bluetooth

BLE

WWAN

2G (GSM, GPRS, ...)

3G (UMTS, HSPA. ...)

4G (LTE)

5G

A premium car has around 40 antennas in total

Other

125 kHz (Keyless entry)

NFC (13.56 MHz)

433 MHz (TPMS)

GNSS

GPS

Glonass

BeiDuo

Galileo

V2X

ITS-G5 (802.11p)

WAVE (802.11p)

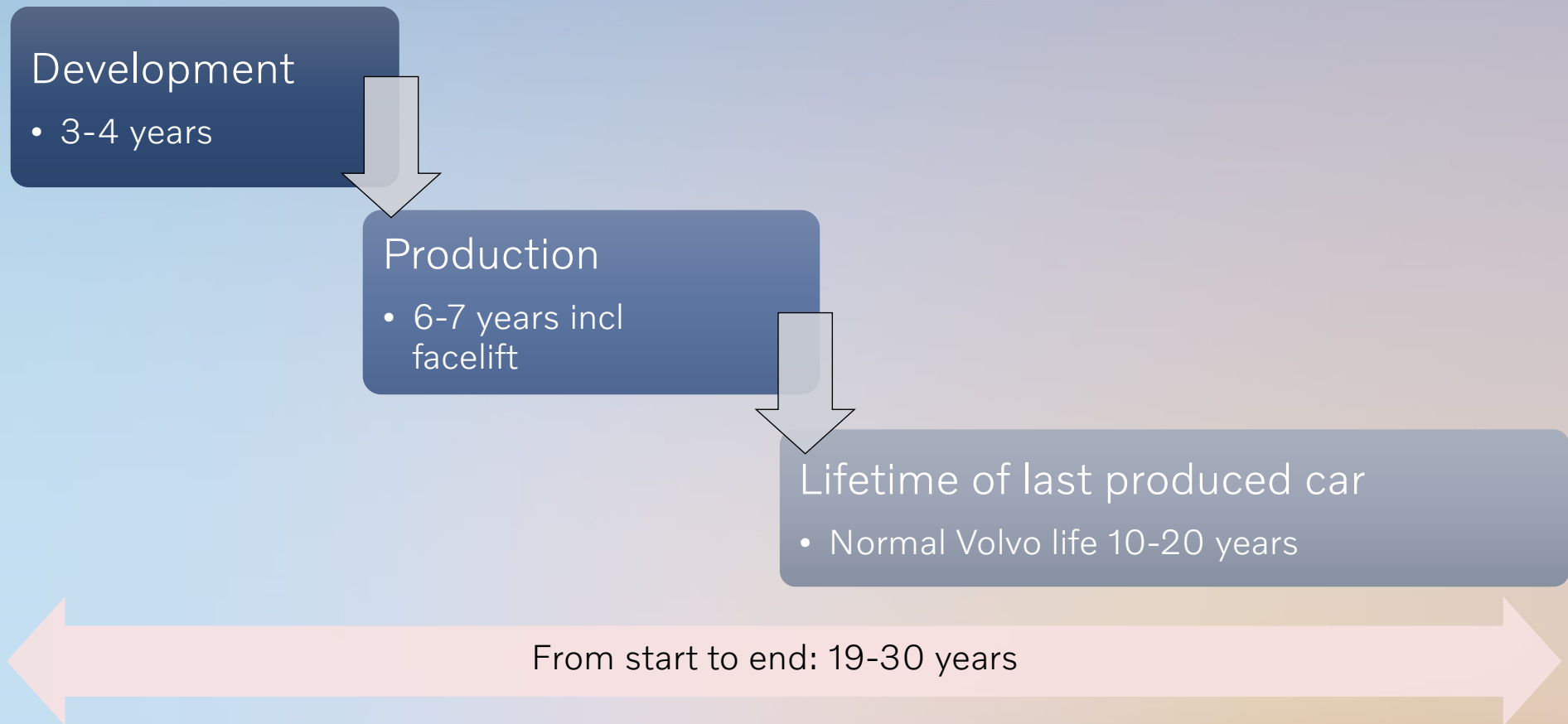
C-V2X (LTE-V2X)

C-V2X (5G NR-V2X)



Take generations to make a total system change

Time overview for one model



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So how do we use the car for safety and traffic systems



Volvo On Call 2001

Connected Safety 2016

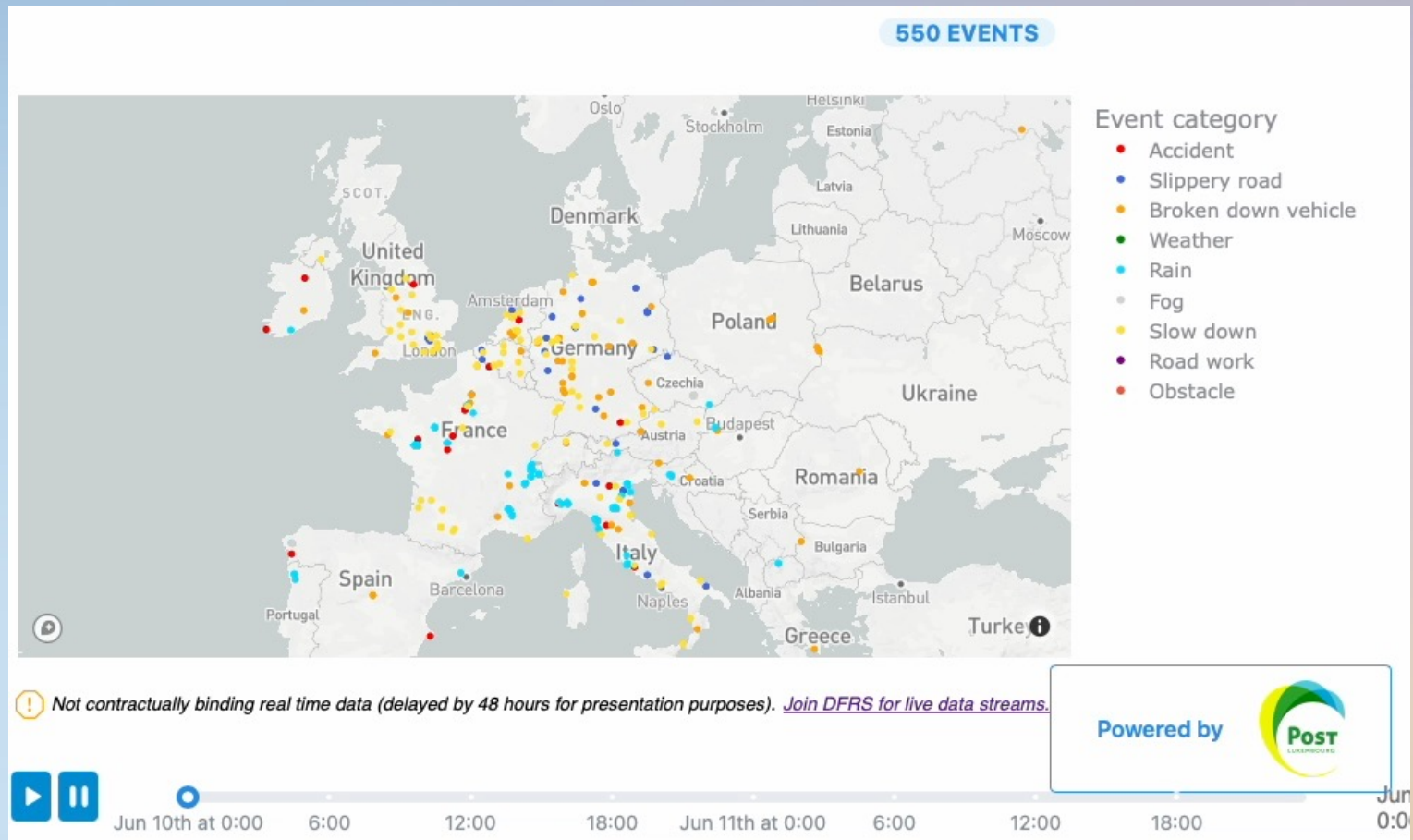
- Friction warning
- Hazard light

Nordic Way 2015-2023

Data for Road Safety

CCAM

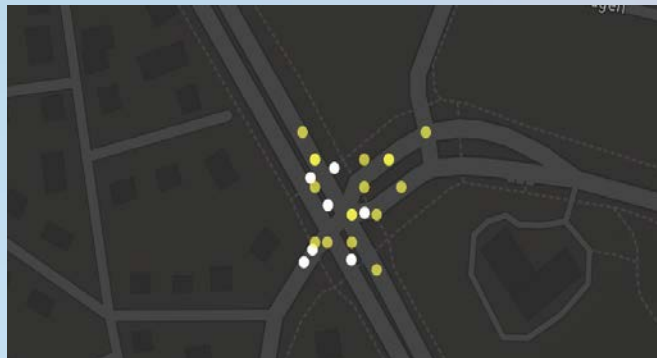
Live example from Data for road safety



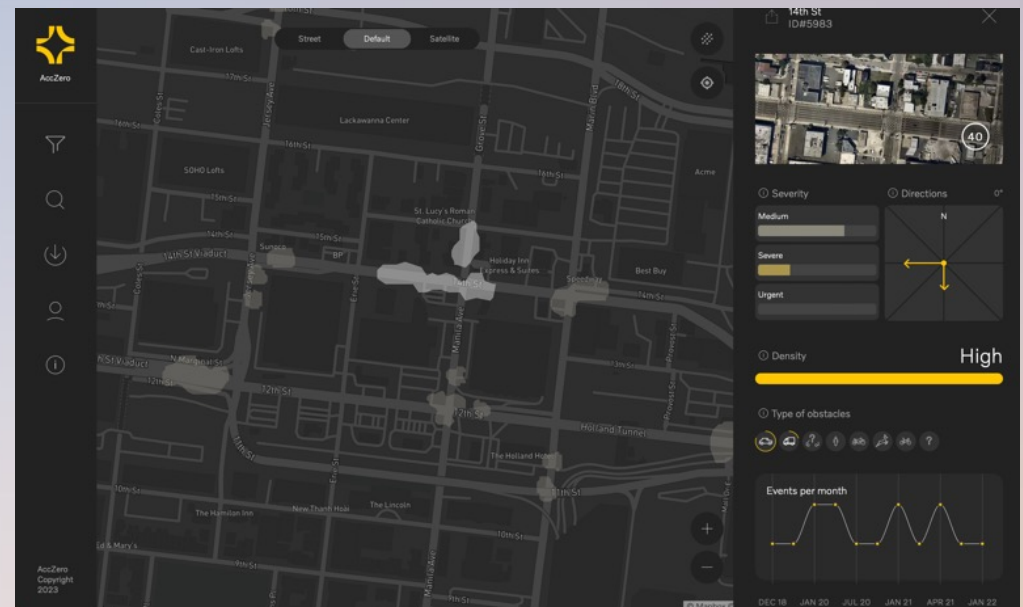
Using vehicle data to make road network safer

A safety service for all kinds of road operators. Based on anonymous data from vehicles.

Overlaying data from avoided accidents and real accidents, a deeper analysis can take place to plan for rebuilding situations to avoid future accidents.



- ADAS events
- Accidents



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VOLVO

ANDROID ROCKZ!

Google



APIS

Overview



Bring your products to life with data and functionality from our APIs.

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