



nextium

Recerca i Innovació en el sector d'Automoció de Catalunya



17 de maig del 2022

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IDNEO IS AN **EXPERIENCED**
DESIGN, ENGINEERING and
MANUFACTURING FIRM.



- ▶ **+500 engineers**
- ▶ **Full Service Value Proposition**
- ▶ **Technology & Innovation Partner**
- ▶ **Global Services EU, US, Asia**
- ▶ **ISO-9001
IATF 16949
SPICE Level 3**

California, US
Engineering Services

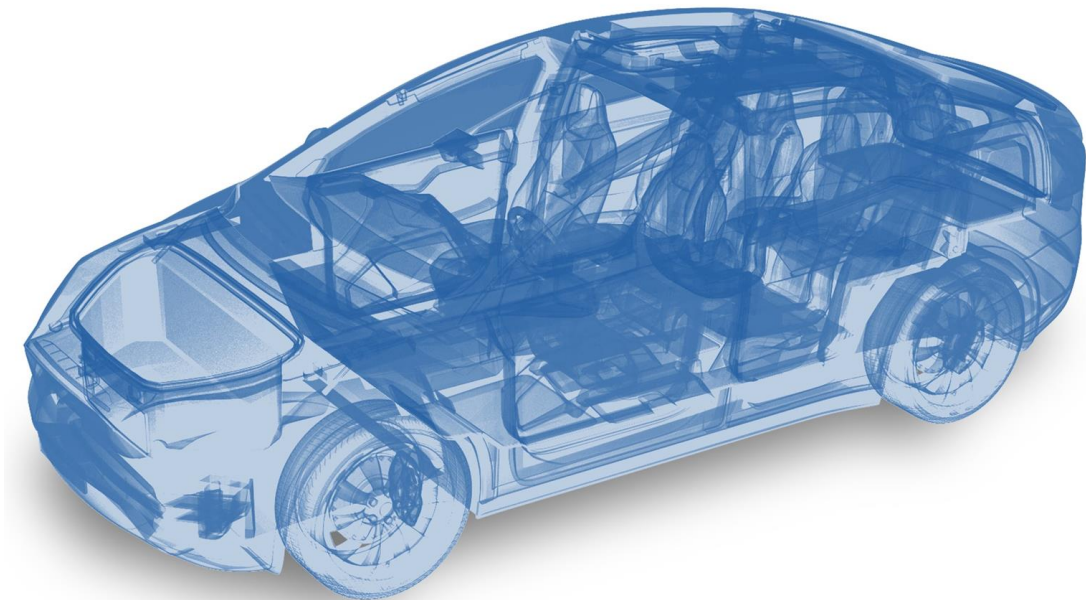
Detroit, US
Engineering Services

Málaga, ES
Software Development

Barcelona, ES
R&D Headquarters

Germany
Engineering services

Hyderabad, IN
Off-shore Software services



1. POWERTRAIN

BLDC controllers and power drivers
High Voltage inverters / Heaters
SCR Dosing Control Modules
BMS / Charger / DC-DC

2. BODY / COMFORT

Door / Roof / Seat control modules with LIN / CAN
Body Control Module

3. CHASSIS / SAFETY

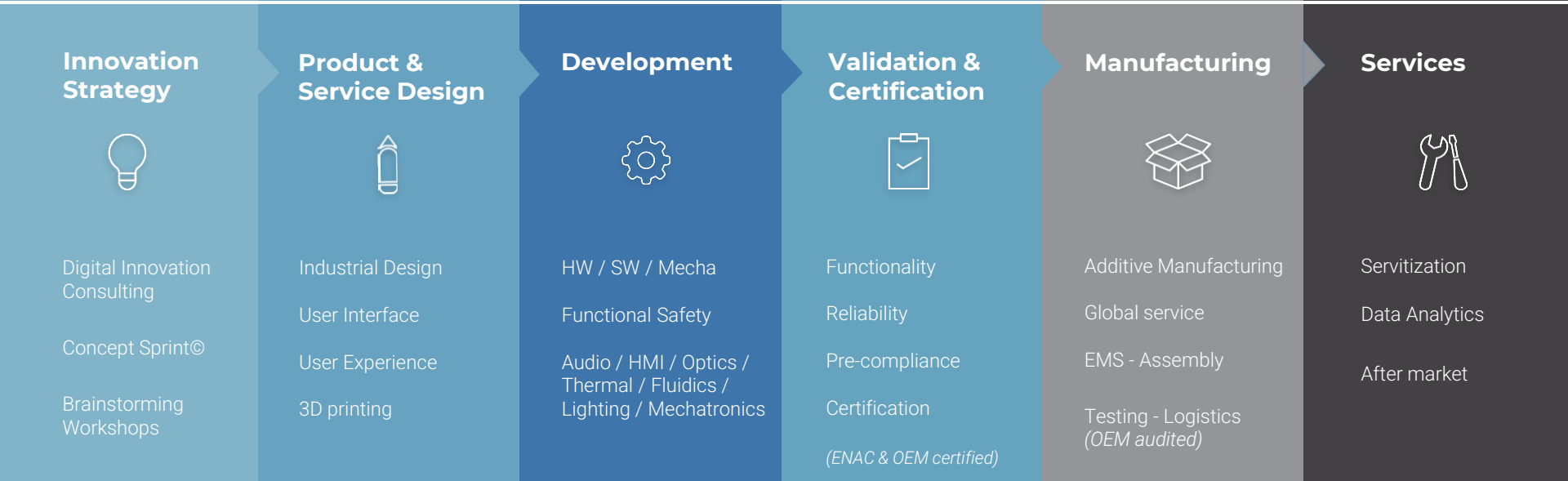
Brake by Wire controllers
Electronic Parking Brake

4. ADAS & INFOTAINMENT

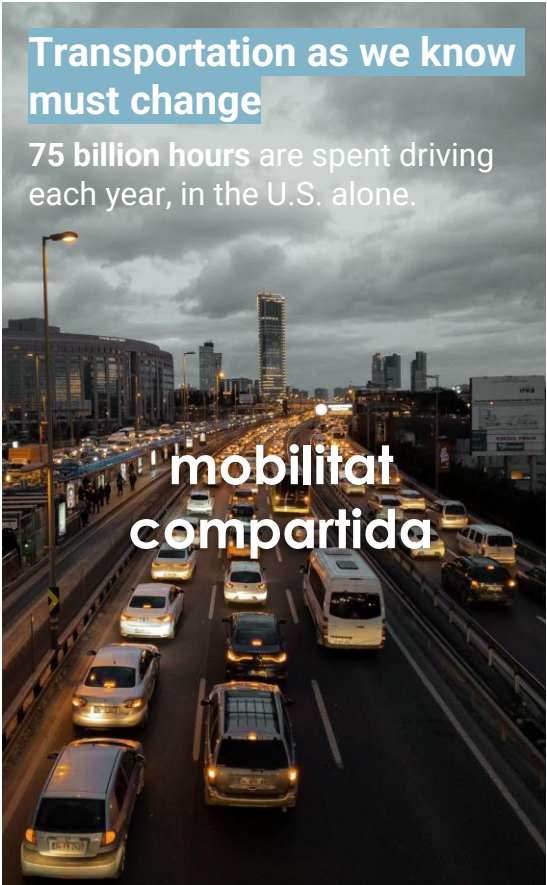
Cameras for Autonomous Driving / ADAS
Driver & Occupant monitoring
Infotainment Controllers
Connectivity modules / V2X



ONE-STOP PARTNER



IDNEO PROVIDES **FLEXIBILITY AT EACH STAGE** OF TECHNOLOGY DEVELOPMENT,
FROM CONCEPT TO MANUFACTURING



Transportation as we know
must change

75 billion hours are spent driving
each year, in the U.S. alone.

mobilitat
compartida



electrificació
&
micro-mobilitat

ENVIRONMENT

75% of carbon monoxide
pollution in the U.S. is caused by
motor vehicles



digitalització
&
cotxe autònom

A different **MOBILITY**
EXPERIENCE for a new
generation

Connectivity

Telematics
V2X
Positioning



IVI

In-Vehicle
Infotainment



PKE

Passive Keyless Entry
Phone as a Key



A.D.

Vision & Biometrics
Image Processing ECU



MICRO-MOBILITY

BMS

60V Battery Management



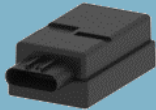
Battery Swap

Fast recharge of
batteries for eScooters

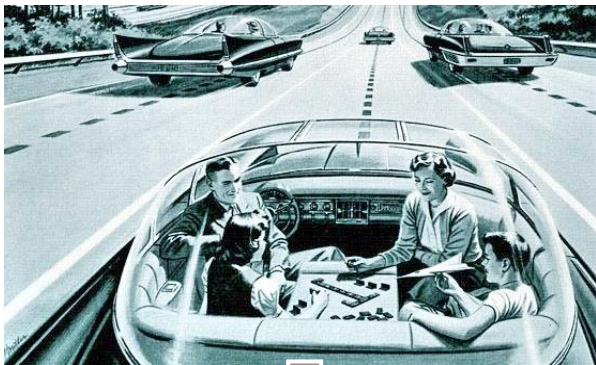


Telematics

TCU



EL COTXE AUTÒNOM COM L'IMAGINEM ... I COM REALMENT SERÀ



Nous models de negoci

- Transport públic sota demanda
- Zones poc poblades
- Robo-taxis

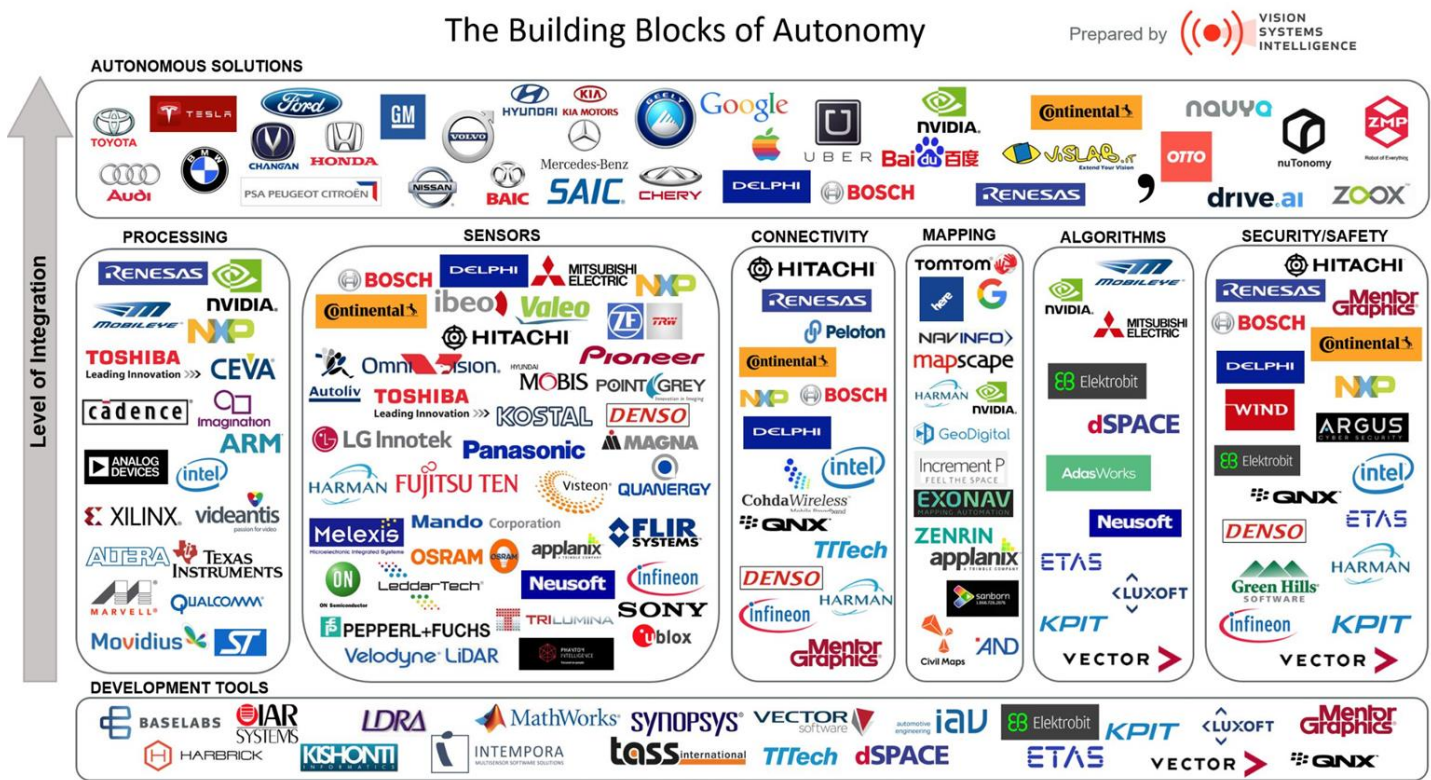


Transport de mercaderies

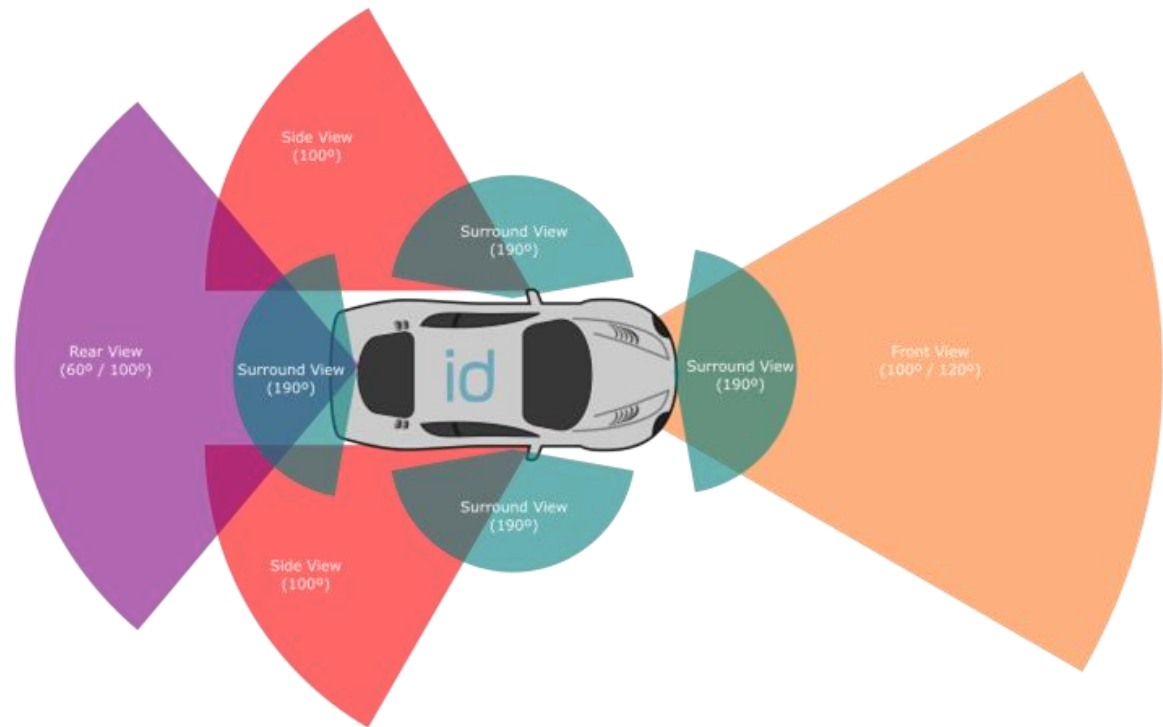
- "Última milla" / Lliurament a domicili
- Llarga distància

AUTONOMOUS DRIVING ECOSYSTEM

Alta complexitat → Cooperació → Aliances estratègiques



Surround View / Surround Sense



Exterior
Cameras



Resolution: 2.6 Mpx
30-45 fps



Resolution: 8 Mpx
30-45 fps

In-cabin Cameras

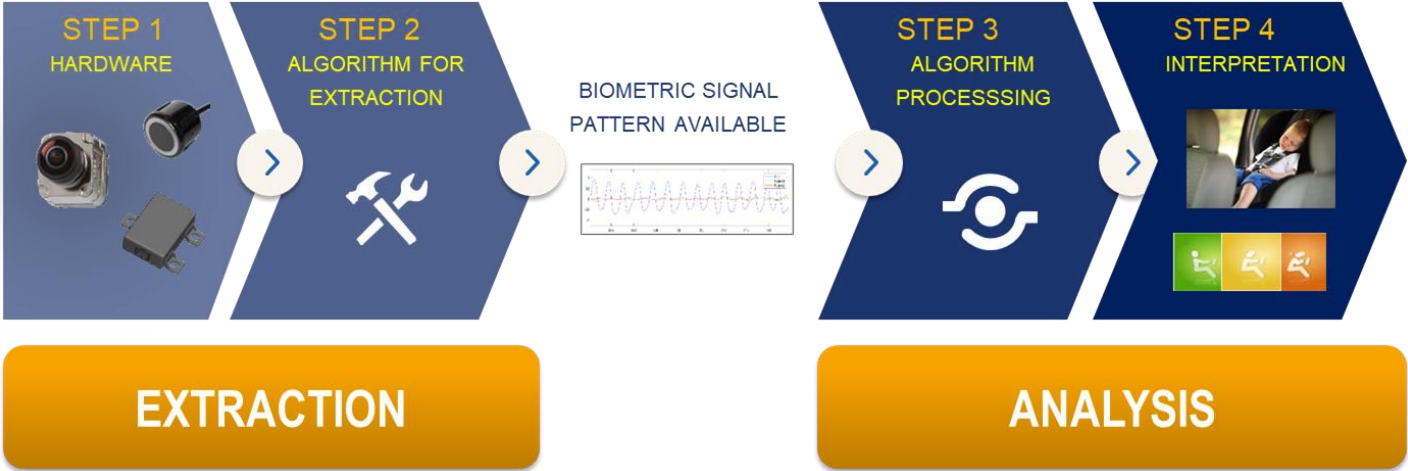


Resolution: 1.5 Mpix
IR
60 fps

Image Processing Units



Up to 6 cameras
Gbps Ethernet
Video output



Automotive

- Child Presence detection
- Intrusion detection
- Driver drowsiness prediction
- Driver monitoring system
- Occupant Monitoring
- Seat Belt Reminder
- Occupant Classification
- Occupant Vital Signs

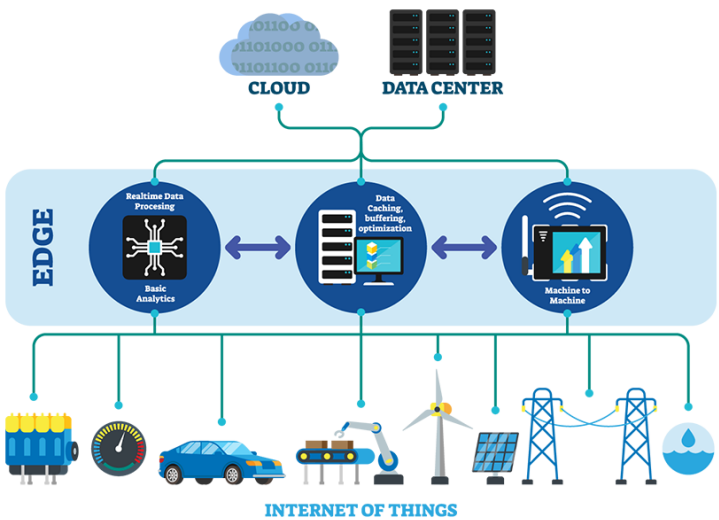
CAR AUTOMATION SENSORS

Sensor type	Quantity	Data generated per sensor
Radar	4–6	0.1–15 Mbit/s
LIDAR	1–5	20–100 Mbit/s
Camera	6–12	500–3500 Mbit/s
Ultrasonic	8–16	<0.01 Mbit/s
Vehicle motion, GNSS, IMU	-	<0.1 Mbit/s

Processar totes les dades en temps real per tal de realitzar

- Diagnòstics en temps real
- Manteniment predictiu
- Anàlisis del conductor i ocupants
- Conducció autònoma

Edge Computing



E.g. For L3 AD
Cloud: 500 PB data storage (2025)
Edge: 30 TOPS

SYSTEM OVERVIEW / FEATURES

Key Management

Remote activation/Registration/Deregistration
Key sharing
Key revocation

Profile Management

Operator identification
Different privileges for each key/operator

BLE connection

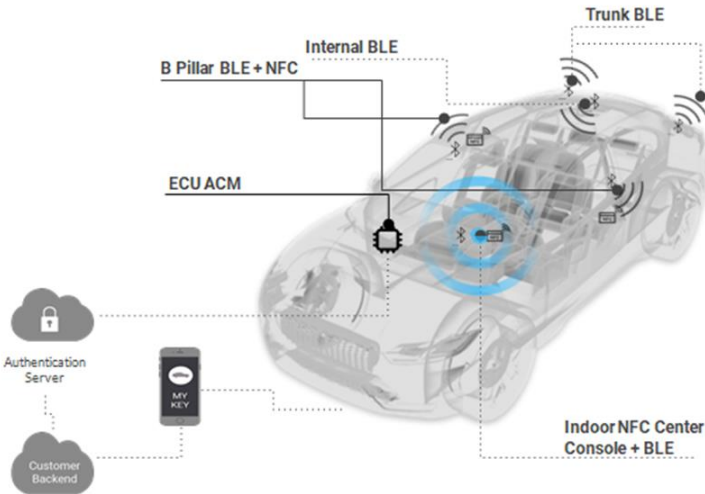
Up to 30 - 50 meters
Control over lock doors status
Lights, Horn, windows, Air-conditioning Control
Get vehicle status

BLE positioning

Welcome feature: Lights, horn
Passive Entry to Lock/Unlock doors
Door handle button Lock/Unlock
Inside-Outside detection for Passive Start/Drive Authorization

NFC- Secondary Entry

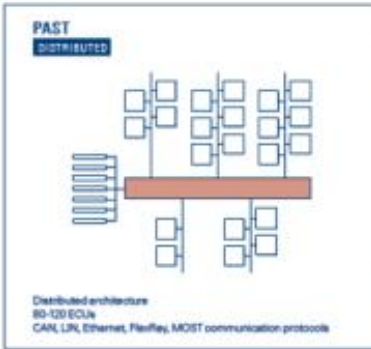
Back up for Passive Entry and Passive Start functionalities



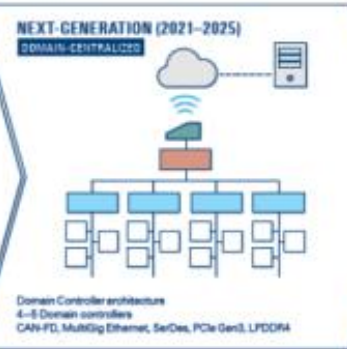
EVOLUTION OF IN-VEHICLE NETWORKS

Developments in Advanced Driver-Assistance Systems (ADAS) are creating a new approach to in-vehicle network (vtn) architecture design. With today's vehicles containing at least a hundred ECUs, the current distributed network architecture has reached the limit of its capabilities. The automotive industry is now focusing on a domain or zonal controller architecture to simplify network design, reduce weight and cost and maximize performance. A domain controller can replace the functions of many ECUs for enabling high-speed communications, sensor fusion and decision-making, as well as supporting high speed interfaces for cameras, radar and LiDAR sensors.

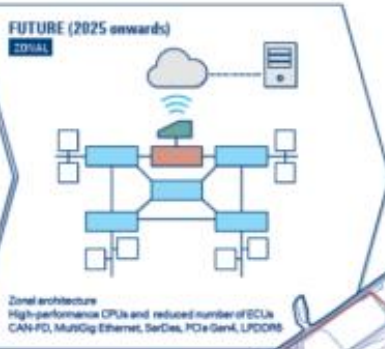
Passat:
Controladors per funció



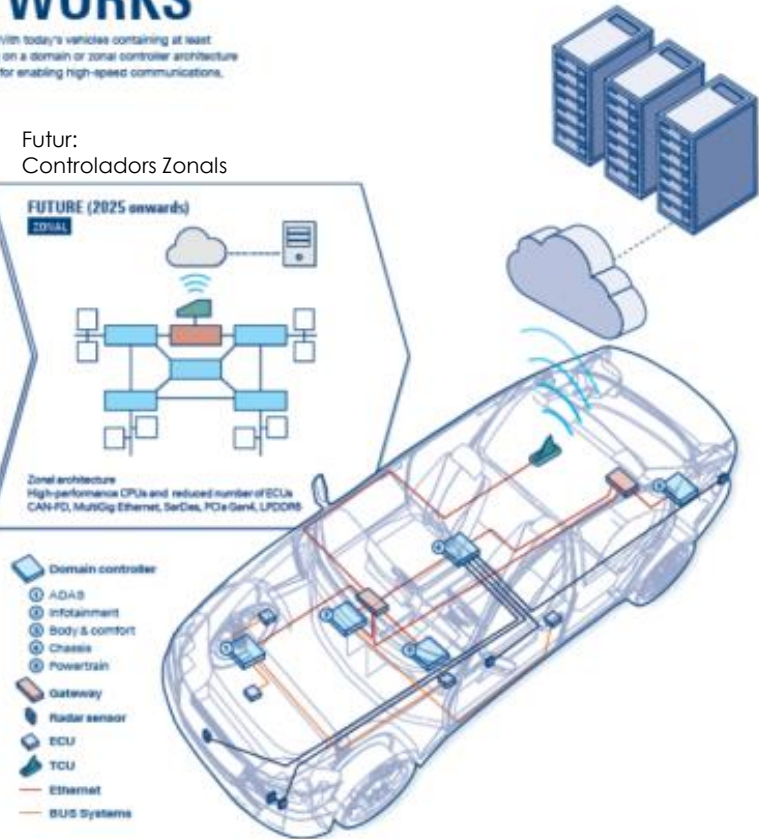
Present:
Controladors de Domini



Futur:
Controladors Zonals



- ❖ 50-120 ECUs/vehicle
- ❖ Body&Comfort
- ❖ Powertrain
- ❖ Chassis
- ❖ Infotainment
- ❖ ADAS/AD



IDNEO CONNECTED DIGITAL ENABLER PLATFORM

Sistema modular i adaptable que integra **funcions i serveis connectats** enfocats a la **mobilitat compartida, autònoma i elèctrica**.

Permet gestionar la **interfície d'usuari**, l'**accés al vehicle** amb el mòbil, així com la **connectivitat** wifi/bt + 4G/5G.

Oferim una **plataforma de computació** que permet executar serveis avançats en temps real, tot donant una **experiència d'usuari** rica, i habilitant **nous models de negoci** en l'àmbit de la **nova mobilitat**.



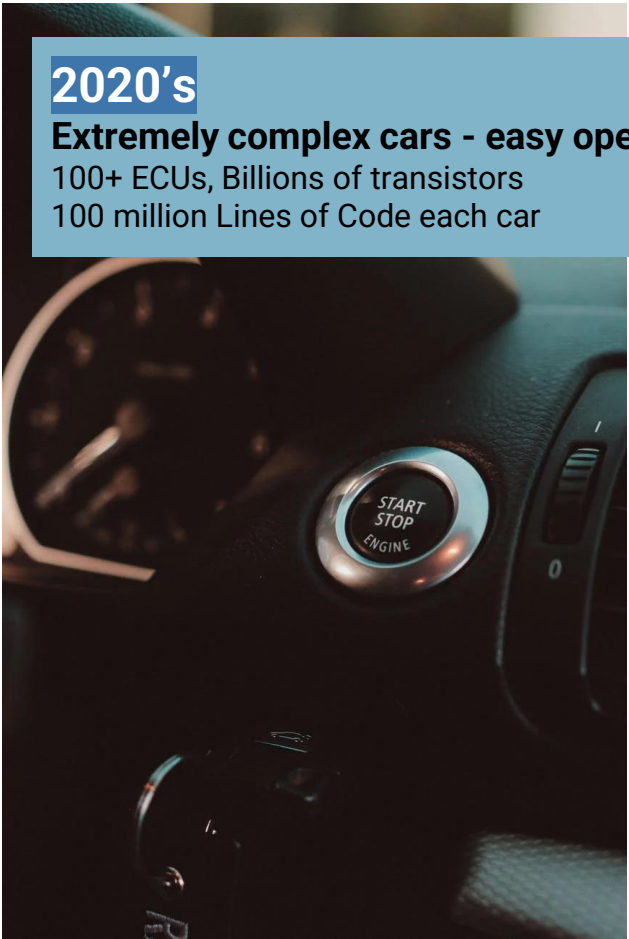


1920's

Simple cars - complex operation

0 Lines of code

0 ECUs, 0 transistors



2020's

Extremely complex cars - easy operation

100+ ECUs, Billions of transistors

100 million Lines of Code each car

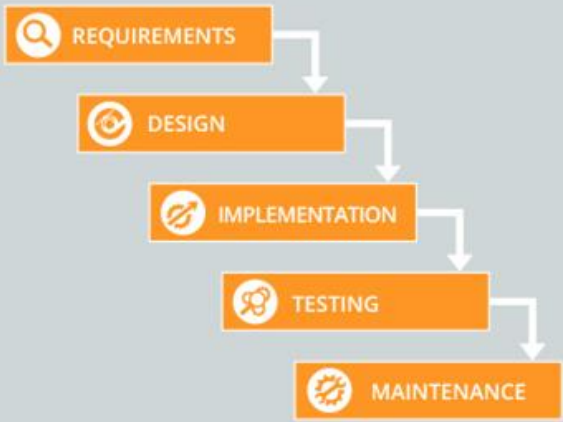
SOFTWARE-DEFINED CAR COMPLEXITIES

Topic	Challenges
Long product life	Useful product life from 10 to 15 years. Maintenance, fixes, recalls...
Car model updates	Partial hardware & software update cycles (3-4 year cycles)
Functional Safety	Regulation requirements: ISO26262
Domain ECU transformation	Software-defined software architectures High speed buses: CAN (1 mbps) → Ethernet (1000 Mbps)
AI software	High amounts of computing power, data storage AI software is trained, not developed Autonomous Vehicles regulation in development
Software legislation	Cybersecurity (ISO SAE 21434) & OTA
Content usage	Changed by mobile devices Integrate / replace dilemma

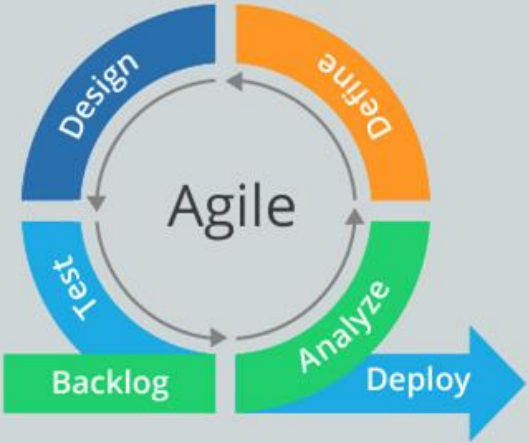
```
355 for (; p < l.length; p++) void 0
356 r(o, "", l1);
357 if ($("#mode_single").hasClass("
358 else {
359 var k = $("#fin").val();
360 $("#fin").val(k + "\n\n" + o);
361 var b = $("#fin");
362 b.length && b.scrollTop(b[0].scro
363 }
364 $("#fin").parent().parent().addCl
365 $("#fin").parent().parent().remove
366 }, 450), $("#loader").toggleClass(
367 )), $("#unique").click(function()
368 var e = c($("#fin").val()),
369 t = $("#limit_val").val(),
370 l = _(c($("#collected_ta").val()))
371 if (2 * t - 1 > 1) return $("#go")
372 for (var s = 0; s < e.length; s++)
373 for (var o = $("#collected_ta").va
374 for (var i = "", s = 0; s < n.leng
375 $("#collected_ta").val(i), $("#go"
376 )), $("#no_single").click(function
377 var e = c($("#collected_ta").val()
378 t = $("#no_single_prog").val(),
379 l = d(e, t),
380 l = f(l);
381 $("#collected_ta").val(l)
382 )), $("#reglament_go").click(func
383 p($("#topcommon").val(), $("#sets"
384 )), $("#resetall").click(function()
```

It's not only about being the first, it's about getting the **new** mobility experience **right**.

WATERFALL



AGILE



Apply the **Lean Startup** principles:

- ▶ Iterative product releases
- ▶ Validated learning
- ▶ Emphasize customer feedback over intuition
- ▶ Flexibility over planning

CULTURAL CHANGE ON TRADITIONAL AUTOMOTIVE COMPANIES

A wide-angle photograph of a clean, modern manufacturing plant. In the foreground, a worker in a white lab coat is seated at a workstation, focused on a task. To the right, two other workers in white lab coats are standing and engaged in a discussion, with one pointing towards a computer monitor. The background shows a well-lit space with various pieces of industrial equipment, shelving units, and blue storage bins. The floor is marked with blue lines, and the ceiling features large, square light fixtures and circular ventilation fans.

Pla d'industrialització planta Mollet del Vallès

worldwide EMS partners

MANUFACTURING

A futuristic city street at night, featuring a blue overlay on the left side with white text. The scene includes a curved road with light trails, a pedestrian bridge with people, and modern skyscrapers in the background.

**TECHNOLOGY
IS CHANGING
THE WORLD.**

**COMPANIES NEED
FORESIGHT,
INNOVATION &
VELOCITY IN
ORDER TO DEAL
WITH MARKET
DISRUPTION.**

Gràcies