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Engineering
Solutions

From prototype to production:

Scaling your startup with automotive-grade electronics

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AUMOVIO Engineering Solutions Start-Up scale-up solutions

Agenda

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AUMOVIO
Engineering Solutions

AUMOVIO Engineering Solutions

We are...

- An engineering and technology provider.
- A one stop shop – from the idea to the product.
- A gateway to high volume automotive products.
- More than 1,600 experienced engineers & specialists.
- Developers of technology for future mobility.

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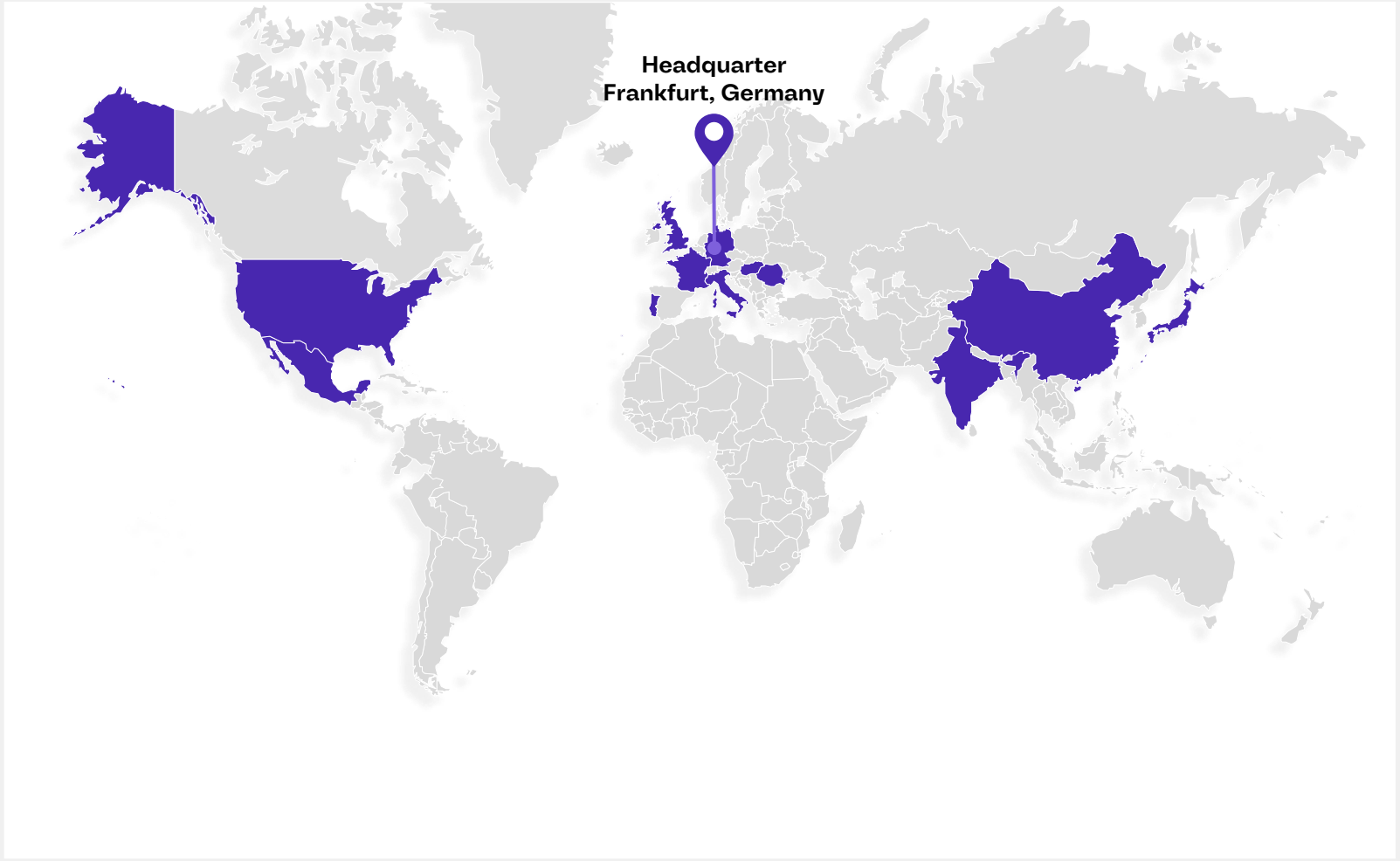
Our global footprint



1600+ Employees

17 Locations

European Union

- **Frankfurt (DEU)**
- Ingolstadt (DEU)
- Karben (DEU)
- Markdorf (DEU)
- Regensburg (DEU)
- Turin (ITA)
- Veszprém (HUN)
- Timisoara (ROU)
- Toulouse (FRA)
- Porto (PRT)

United Kingdom

- Lichfield (GBR)

North America

- Auburn Hills (USA)
- Guadalajara (MEX)

Asia

- Bengaluru (IND)
- Shanghai (CHN)
- Yokohama (JPN)
- Seongnam-si (KR)

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We are development and production partner for challenges in the automotive and industrial market

Development

Component supply

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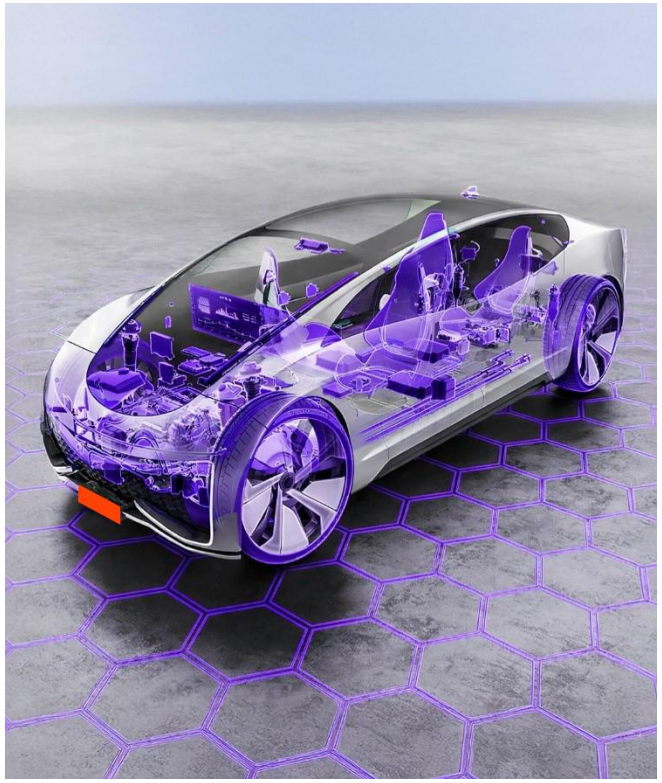
Portfolio overview
Domains and areas of expertise

Customized automotive technology

We apply high-volume technologies to specific small series projects and use-cases in different markets



Chassis

Vehicle body & comfort

Assistance & automation

Drivetrain

Cockpit & infotainment

Network & connectivity

General engineering solutions

We support the development of components & systems for mobility and ensure product functionality & conformance.

IT & data management

We support transformation to a data driven organization and optimize IT systems.

Prototype & manufacturing services

We manufacture according to your design and provide solutions for sustainability.

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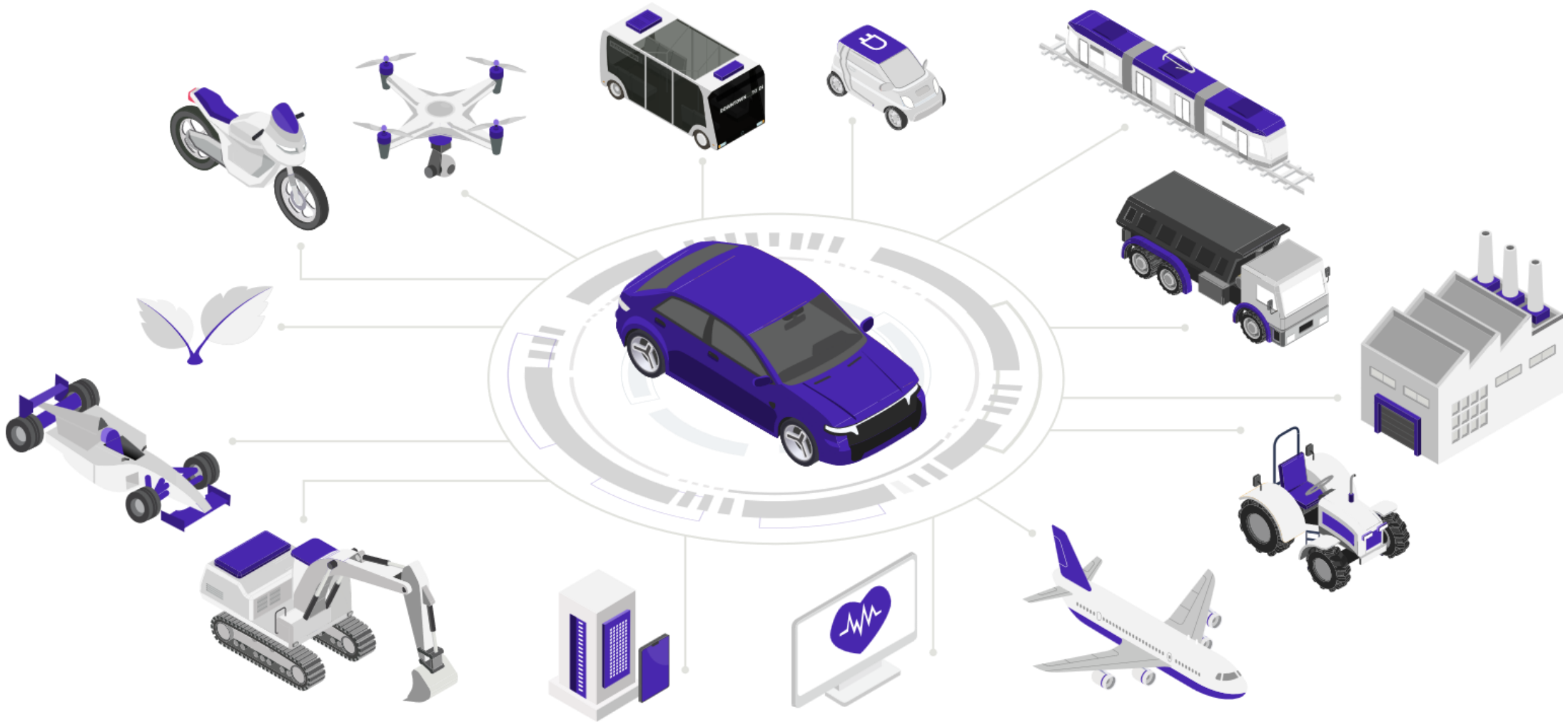
Internal

Transferring technology from automotive to other industries



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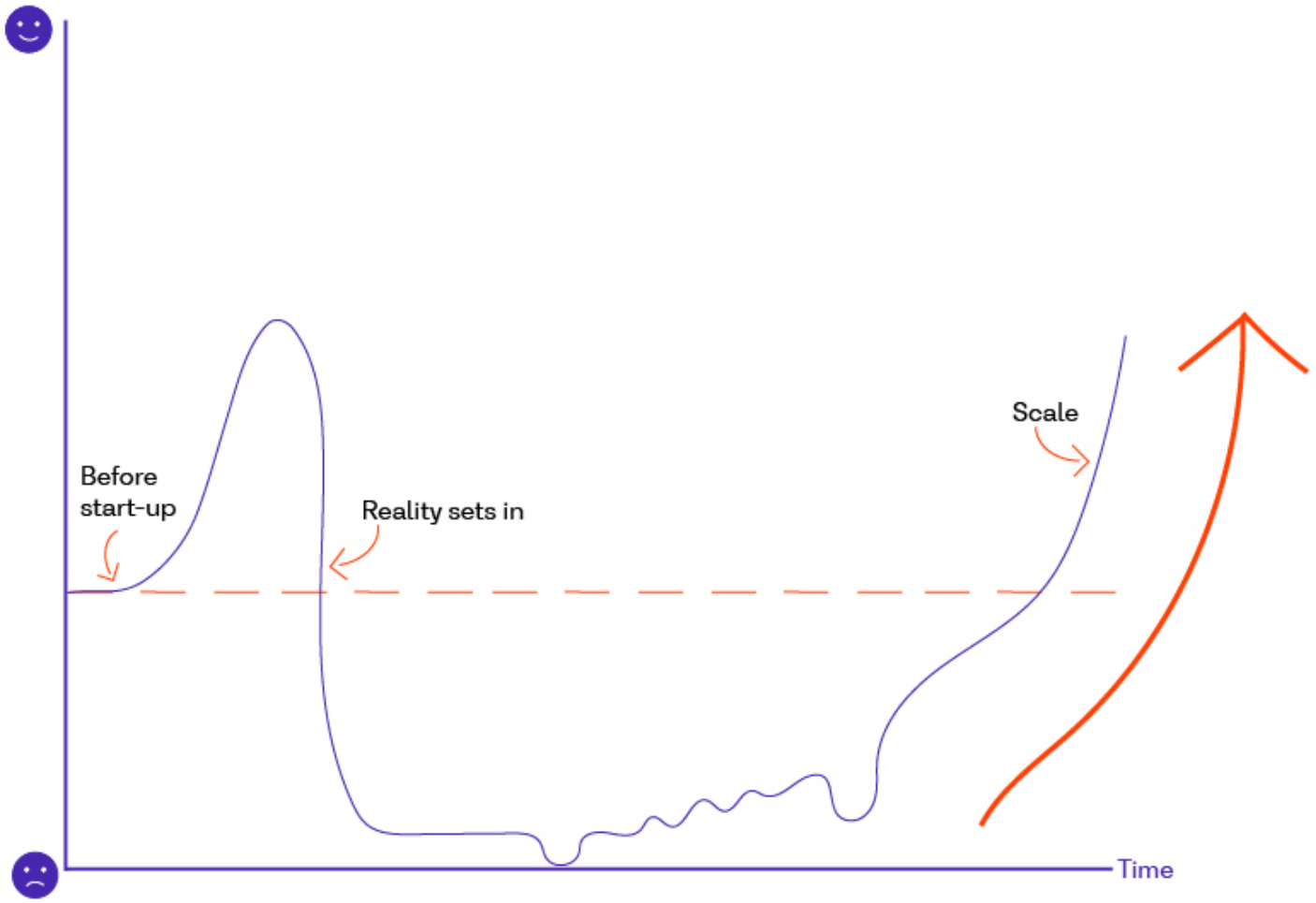
Internal

The startup curve

The startup curve



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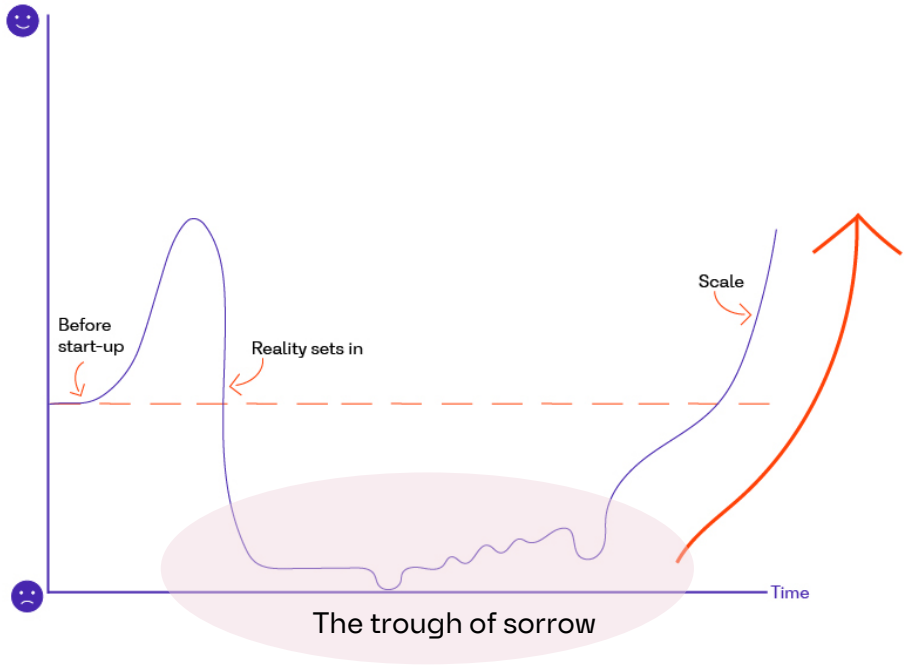
Internal

The trough of sorrow



- There is a huge gap between *proving an idea works* and *building something you can sell in thousands*.
- Why do many great startups stall at the "prototype bottleneck?"
- The myth: *"If the prototype works, we're close to production."*
- The truth: *"A prototype proves the concept – not the scalability."*

Concept vs. A-Sample

PoC vs. A-Sample vs. Scalable Product

Proof of Concept

A-Sample

Scaled Product

The architecture changes as you move from ‘it works’ to ‘it scales’

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Is your A-Sample really an A-Sample, or just a prettier concept?

A PoC is:

- A functioning prototype
- It attracts attention of investors
- Is something early adopters want

An A-sample is

- A functioning prototype with a future plan
- Where regulatory standards and IP has been considered
- A prototype that satisfies necessary functional, manufacturing, quality and overall system feasibility for full product life cycle

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The automotive world is a benchmark for quality, reliability, lifetime support, and functional safety – even for non-automotive sectors.

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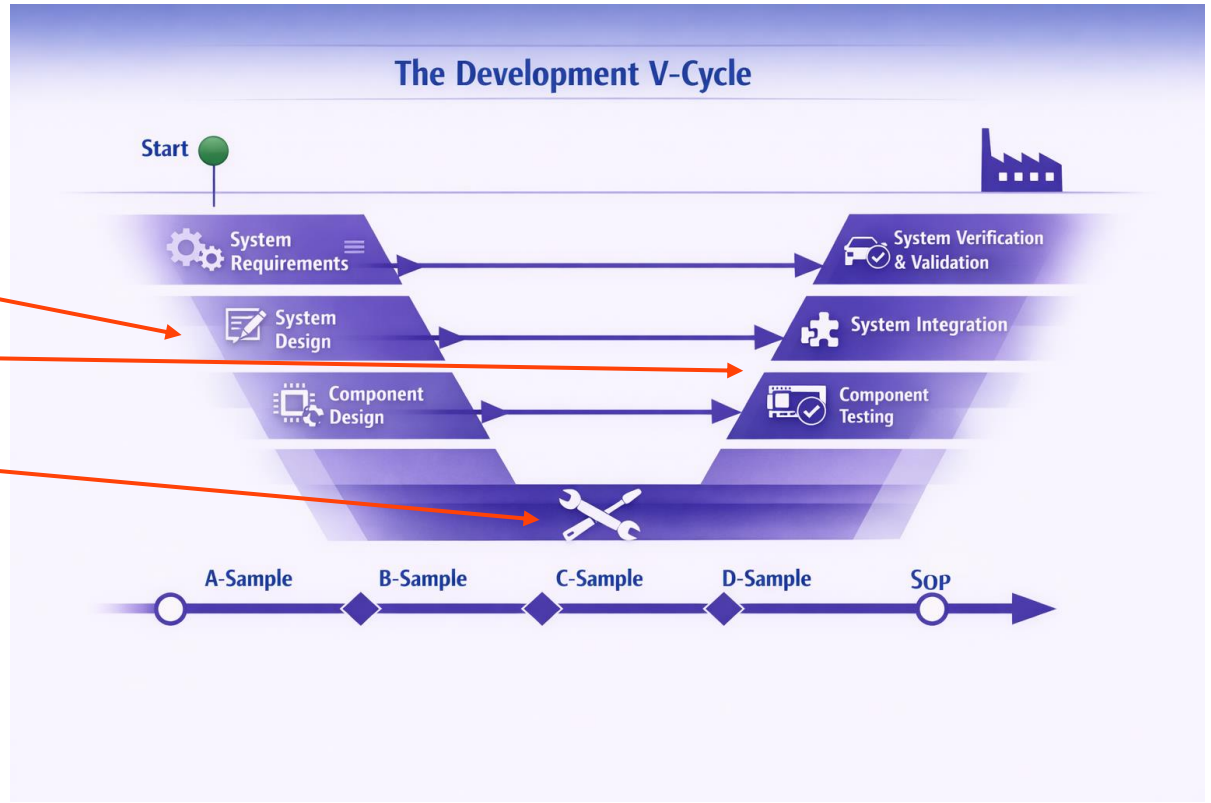
Development process

V-Cycle process

The left side = thinking and architecture

The right side = testing and proving

The bottom = Prototyping, the valley of pain



If you don't make good decisions on the left side, you pay for them on the right side – in delays cost, redesigns and missed launch windows.

Why automotive grade from day 1

What “automotive-grade" actually means (not the generic marketing fluff)

- Component longevity: 10–15+ year availability
- Temperature, vibration, EMC robustness
- Built-in diagnostics, CAN/UART/LIN structures
- Functional Safety (ISO 26262) conceptual alignment
- Cybersecurity readiness (ISO/SAE 21434)
- Documentation and traceability that enables certification and customer acceptance

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Why automotive grade from day 1

Why this matters even if you’re NOT building an automobile. Because:

–It reduces field failures

–It enables global certification

–It ensures you’re not dependent on hobby boards or consumer-grade electronics that go obsolete in 12–18 months

–It attracts serious investors and OEM partners

–It shortens the overall industrialization path

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Don’t worry – this is where AUMOVIO Engineering Solutions can become your partner.

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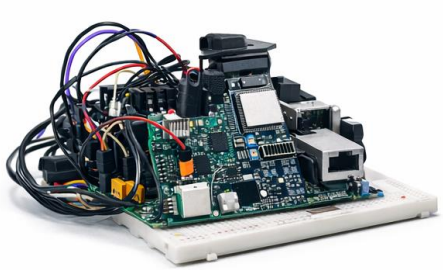
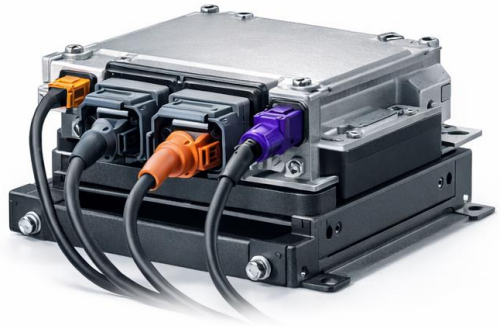
Filling capability gaps

Capability gaps
The architecture moment – where startups often fail

- Most startups hire great mechanical or firmware talent, but architecture (safety, cybersecurity, diagnostics, upgradeability, scalability) is a specialization they rarely have in-house.
- If architecture is wrong at the start, every sample (A/B/C/D) inherits the mistake.
- AUMOVIO Engineering Solutions will help startups successfully design for manufacture



A DIY PoC architecture



A scalable automotive-grade architecture

Capability gaps
Pre-compliance samples and testing

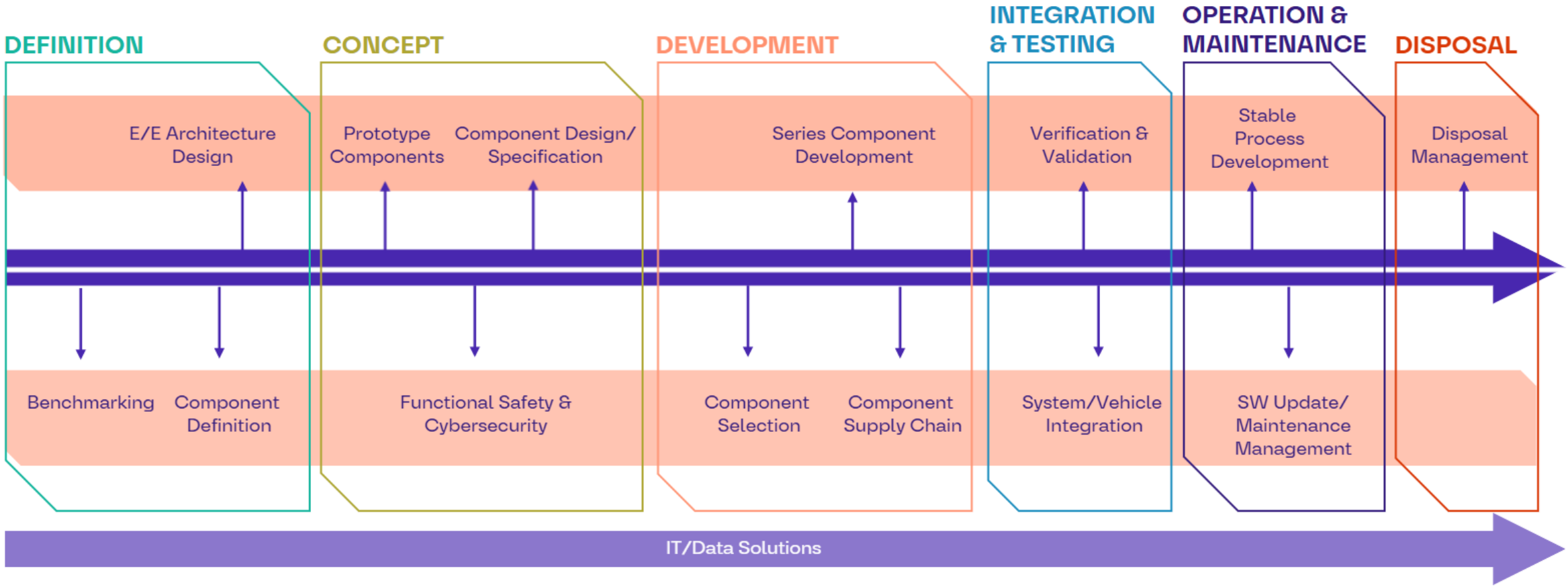
Don’t Skip the B-Sample Phase
Startups often **jump from A-sample to C-sample**, creating risk later.
AUMOVIO provides **B-sample builds in our *Sample Shops*** – at **higher volume** than A-sample.

De-Risk Design Validation (DV)
AUMOVIO performs **testing before DV**, identifying failures early.
Prevents costly issues at certified labs and becomes a **major cost/time saver**.

Meaningful B-Sample Design
Proper B-sample design ensures **useful, analyzable test results**.
Without it, DV failures may be **impossible to analyze** due to design flaws introduced between A → B.

Access to AUMOVIO Expertise
Working with AUMOVIO gives startups access to **extensive lessons learned** from past programs.
Reduces avoidable mistakes and strengthens the path toward successful validation.

Capability gaps
Examples of how AUMOVIO Engineering Solutions fills the gaps



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Reference work package
Vehicle system architecture – passenger car

E/E-architecture design and cable harness layout

Customer	New EV start-up/USA
Vehicle type	Passenger car/3-wheeler
Scope	– Create E/E-architecture for vehicle for US market – Create power management and communication matrix for the entire vehicle – Create Harness Description List file for wire harness manufacturer
Output	– Communication matrix & electrical circuit layout – Wire harness definition & Harness Description List file
Time & tools	– 1 year – PREEVision

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Reference work package
Vehicle integration and test automation

Vehicle level feature list and operational scenarios review and consultancy

Customer	Start-up
Vehicle type	Self-driving electrical bus PT1/ PT2
Scope	– Integration and flash support AES and non-AES ECUs – Root cause analysis for feature testing, clamp management – Test automation for cyber security, fault injection and diagnostic
Output	– Time & cost efficiency for commissioning the vehicles – Quickly identify issues and escalate them to the right team for resolution – Collaborated closely with the team to deliver major parts of the final project
Time & tools	– 15 months – PREEVision/ CANoe/ CAPL, Monaco, XMIT and several other tools

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Reference work package
Functional safety base training for start-up OEM

Functional safety introduction by training to start-up OEM

Customer	Start-up OEM/EU
Vehicle type	High-end sports vehicle
Scope	– Provide an overview on the topic functional safety in automotive – Create awareness of the necessary tasks for functional safety in responsibility of an OEM
Output	– Functional safety training session onsite
Time & tools	– 1 day – No tools, presentation only

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Reference work package
Product safety for ADAS domain SAE L2+

Functional safety for start-up OEM on vehicle level for ADAS domain SAE L2+

Customer	Start-up OEM/EU
Vehicle type	Passenger car
Scope	– Develop functional safety concept for advanced driver assistant systems (ADAS) on vehicle level – ISO 26262 part 1-4 for 29 ADAS features
Output	– Item definition & HARA – Safety plan – Functional safety concepts – Functional safety requirements
Time & tools	– 12 months – MS office, IBM DOORS

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Reference work package
Product safety fully automated charging robot

Product safety engineering for residential lifestyle robots

Customer	AES/EU
Vehicle type	Residential lifestyle robot
Scope	– Product safety of an automated charging robot for electric vehicles – Focus on ISO 26262, ISO 21448, ISO 12100 and ISO 13849, ISO 13482
Output	– Functional safety concept based on several risk analyses – Safety-oriented analyses (FMEA, FTA, STPA) – Safety requirements
Time & tools	– Continuous support during development – MS office, APIS IQ-RM, isograph reliability workbench, IBM DOORS

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Reference work package
Product safety consulting for start-up OEM

Product system safety services for commercial vehicles

Customer	Start-Up OEM/EU
Vehicle type	Light commercial vehicle
Scope	– System design consultation with focus on powertrain domain – Functional safety concept on vehicle level according to ISO 26262
Output	– Documentation of conformity to ISO 26262 for the OEM scope – Functional safety specification for component suppliers
Time & tools	– 9 months – MS office

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Reference work package
Product safety analysis for agricultural machine

Safety management in off-highway product development

Customer	AES/EU
Vehicle type	Tractor attachment system
Scope	– Risk analysis according ISO 12100 – Agricultural performance level (AgPL) analyses according ISO 25119 – Safety management for development stage
Output	– Documentation of conformity to EU regulations 2006/42 (machine directive) and 2023/1230 (machine regulation)
Time & tools	– Continuous support during development – MS Office, APIS IQ-RM

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Summary of types of engineering support available

1. Architecture + System Engineering
Requirements capture, Safety concept definition (ASIL alignment), Cybersecurity threat analysis, Diagnostic and communication strategy, Component selection & lifecycle management

2. Hardware Enablement
PCB redesign for automotive grade, Power stages, thermal design, reliability engineering, EMC risk mitigation & pre-compliance

3. Software / Firmware
Bootloaders, OTA preparation, Safety-oriented software patterns

4. Prototype Build Support
A-Sample build, B-Sample iteration, C-Sample verification, D-Sample production validation

5. Supply Chain & Manufacturing

Even if you start with AUMOVIO's aftermarket-grade components, using AUMOVIO ensures proper traceability, alternates, lifecycle monitoring, and long-term sourcing.

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We are
Your gateway to the AUMOVIO components universe

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- Specialist for tailored offerings and lower volume customers.
- An engineering and technology provider.
- A one stop shop – from the idea to the product.
- Developers of the technology for future mobility.

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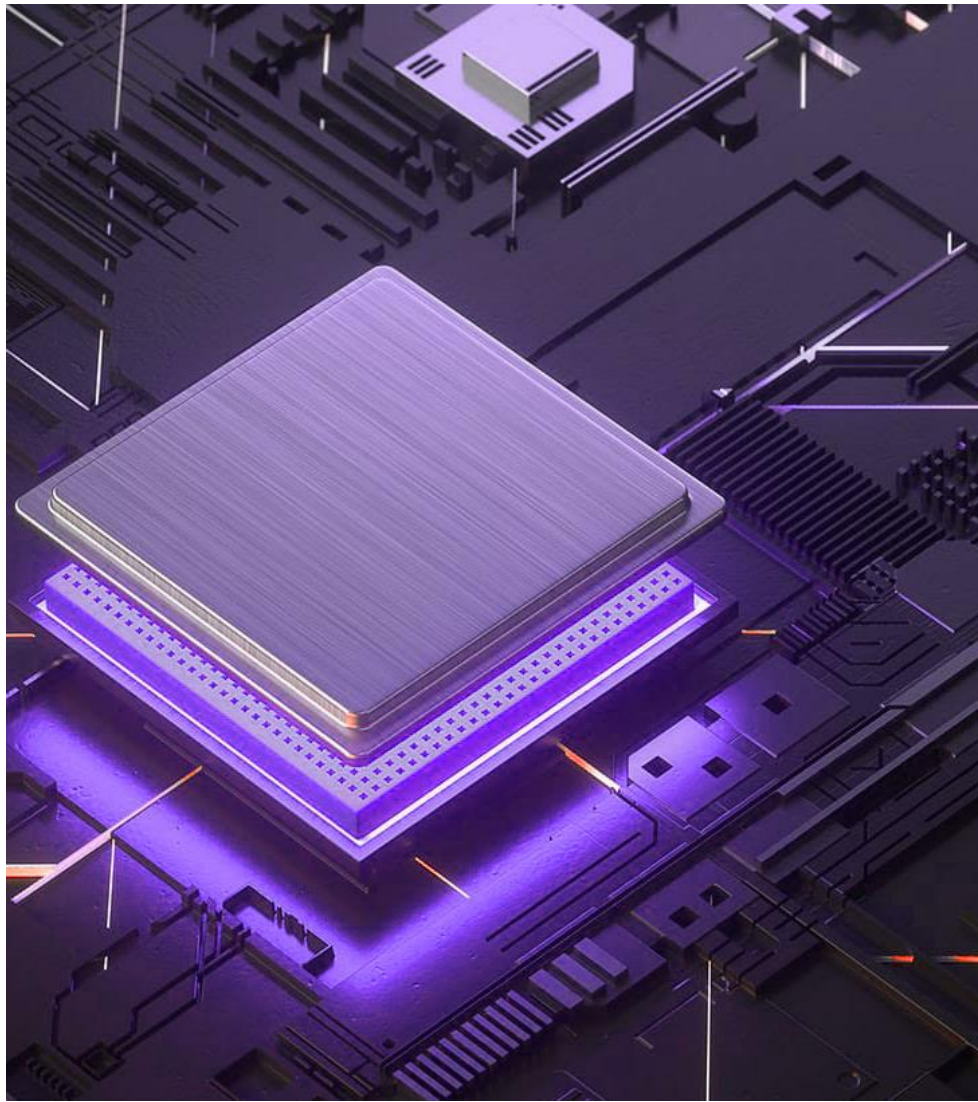
Business Areas

- Leading supplier to the automotive industry.
- Century-long experience and relationships.
- Aftermarket and off-the-shelf components available
- Focus on high volume customers.



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Accelerating time to market

Scaling confidently & accelerating time to market

Zoom out of what you are doing and look at where you are trying to get to

You don’t speed up by going faster.

You speed up by **avoiding backtracking**

Get the architecture right earlier on in the design process = fewer redesign cycles

Utilization of automotive grade components = stable supply chain

Professional documentation = investors and customers say ‘yes’ faster

Proper sample progression = predictable validation timeline

Do it right early -> Finish faster.

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Conclusion

Conclusion

The choices you make in your prototype determine whether you scale – or stall

Great ideas fail in the gap between prototype and production – not because the idea was bad, but because the product wasn't built to scale.

Automotive-grade thinking isn't about cars – it's about reliability, safety, longevity, and trust.

Startups who design for scalability from day one launch sooner, spend less, and grow faster.

AUMOVIO fills the gaps so founders can focus on innovation – while we ensure the product can be industrialized.

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If you’re ready to scale confidently from prototype to production, let’s build the path together.

Q&A

Thank you

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