Investor Presentation

TTTech Auto AG

12/2022

TTTech Auto at a glance

Safety innovation leader – from groundbreaking academic research to series production

ASIA
Shanghai (CN)
Nagoya (JP)
Seoul (KR)

AMERICA
Bay Area (US-CA)

EUROPE
HQ Vienna (AT)
Munich (DE)
Ingolstadt (DE)

Madrid (ES)
Barcelona (ES)
Novi Sad (RS)

Belgrade (RS)
Osijek (HR)
Banja Luka (BA)
Izmir (TR)

International footprint with 14 locations and
a selection of global customers

2m+ Vehicles on street equipped with MotionWise

1,100+ Highly-skilled software engineers

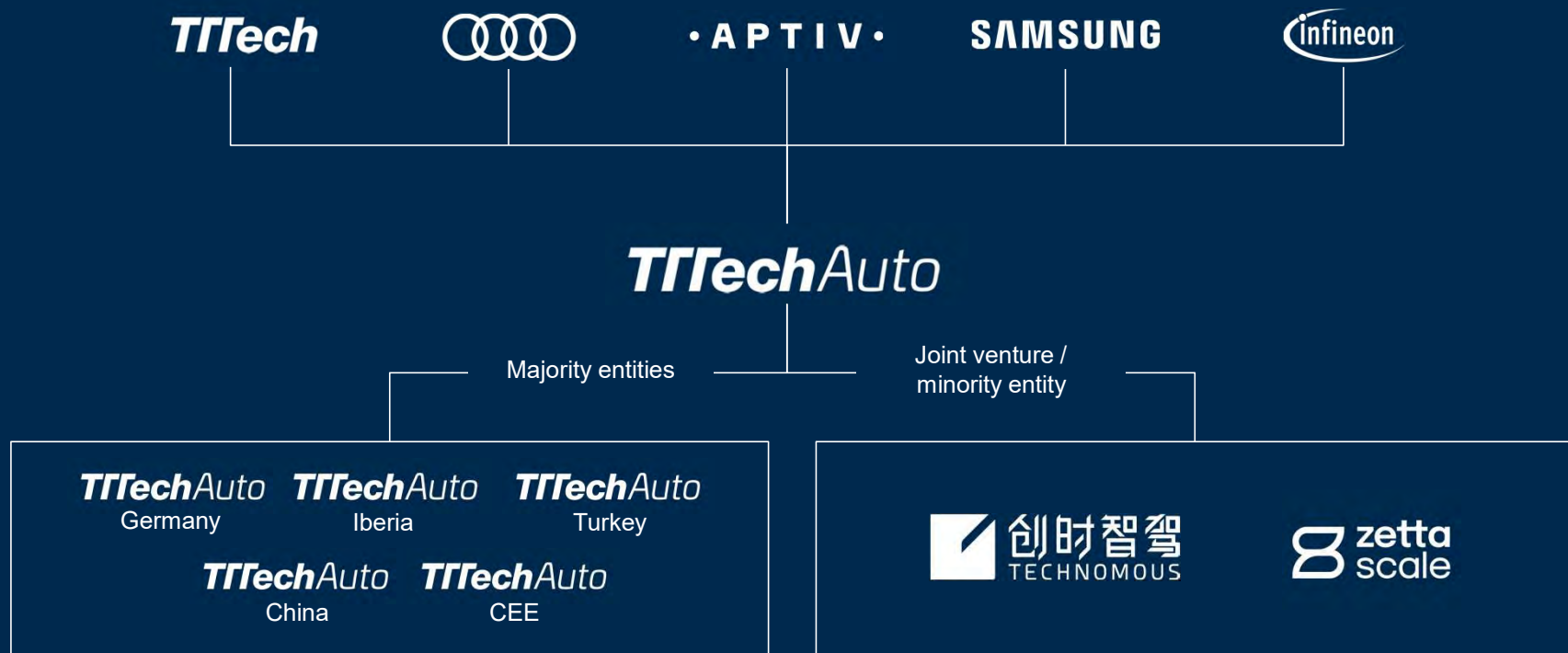**60+** Network of OEMs, Tier 1s and technology partners

20+ Years of experience in dev. of safety-critical systems

2

TTTech Auto shareholder structure

Privately held joint Austrian stock company with solid equity from blue-chip shareholders

TTTech Auto Executive Board

CEO

Dr. Dirk Linzmeier

Dr. Dirk Linzmeier has more than 20 years of experience in various management positions and in development in the automotive industry.
Before joining TTTech Auto, Dirk Linzmeier was CEO of OSRAM Continental, a joint venture between OSRAM GmbH and Continental AG with 1,500 employees, which he successfully established in the market.

He began his career as a development engineer in research at Daimler-Chrysler, where he earned his doctorate in the field of radar- and infrared-based assistance systems.

CTO

Dr. Stefan Poledna

As Chief Technology Officer, Dr. Stefan Poledna is responsible for the company's technology roadmap, all scientific topics and quality management. He has over 30 years of international industry experience in innovative embedded systems development and has authored and co-authored several patents.

He received his M.Sc. and Ph.D. degree in computer science with distinction from Vienna University of Technology, where he also lectures on Dependable Computer Systems.

CFO

Harald Triplat

Harald Triplat is the Chief Financial Officer and responsible for the finance, legal, global operations, human resources and strategic alliances. He started his professional career in auditing and has over 20 years of experience in the international banking industry in various management roles, including 6 years on the executive board of a payment service provider.

He holds a master's degree from the Vienna University of Economics and Business.

CGO

Friedhelm Pickhard

As Chief Growth & Performance Officer (CGO), Friedhelm Pickhard is responsible for engineering performance, quality, growth strategy and execution. He has over 30 years of experience in automotive and defense industry in various engineering and management roles. He has several years of experience in business and R&D management in Asia.

He received his degree (Dipl.-Ing.) in Electrical Engineering from the Ruhr University Bochum and in Communication Engineering from the University of Paderborn.

TTTech Auto's DNA: Safe system design

Development and deployment of safety-critical avionics networks, e.g. Boeing 787, Airbus A220 (fly by wire), NASA Orion spacecraft, ESA Ariane 6

>1 billion flight hours

23 different aircraft types

700 million passengers

First series-proven ASIL D safety software platform for ADAS Domain ECUs in the market
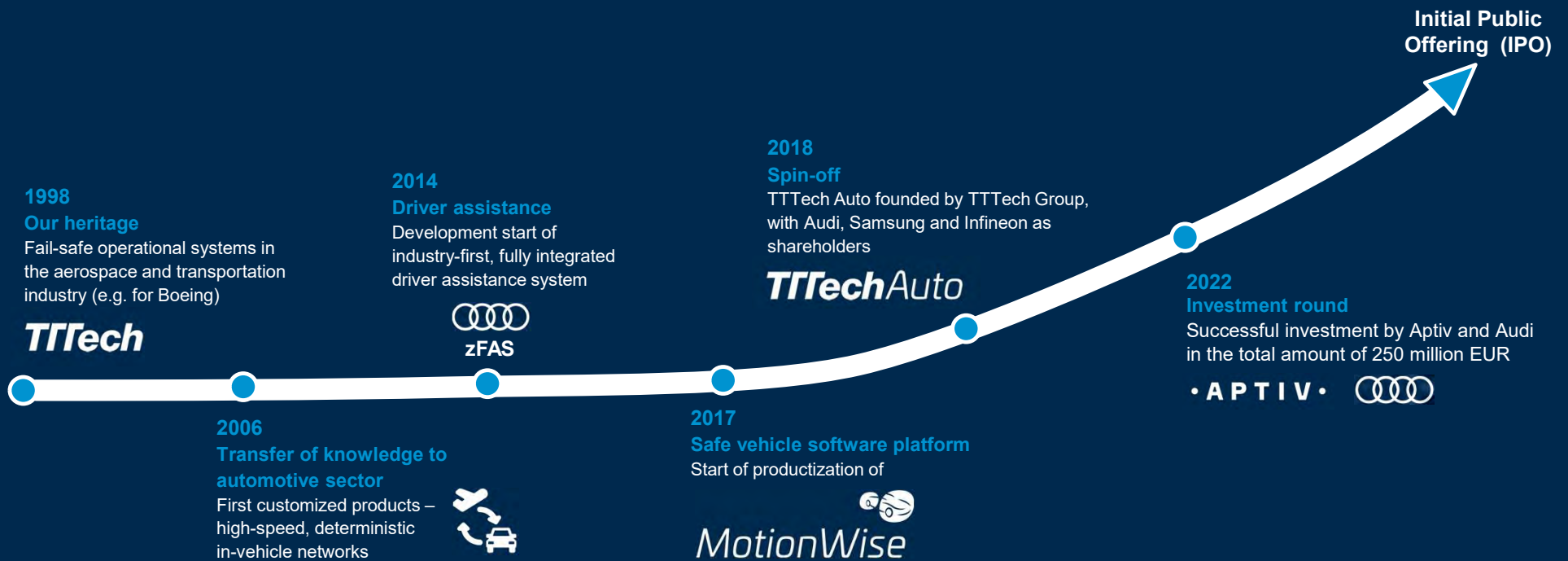
MotionWise

>2 million vehicles

Transforming leading research into market-shaping, safety-critical aviation products and advanced driver assistance system (ADAS) platforms.
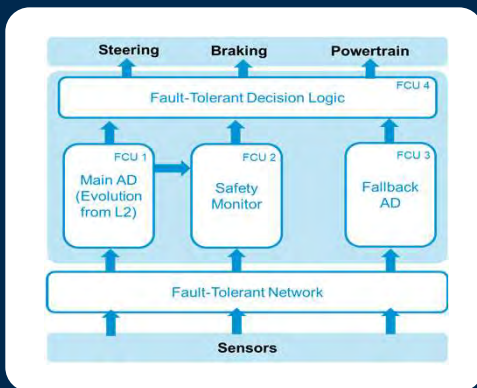
TTTech Auto MotionWise – the safe vehicle software platform for automated driving, based on experience in the development and deployment of safe and reliable critical avionics systems/networks.

20+ years in cross-industry experience provides the foundation for automotive safety challenges

TTTechAuto

Initial Public Offering (IPO)

2018
Spin-off
TTTech Auto founded by TTTech Group, with Audi, Samsung and Infineon as shareholders

TTTechAuto

2014
Driver assistance
Development start of industry-first, fully integrated driver assistance system

zFAS

1998
Our heritage
Fail-safe operational systems in the aerospace and transportation industry (e.g. for Boeing)

TTTech

2022
Investment round
Successful investment by Aptiv and Audi in the total amount of 250 million EUR

·APTIV·

2006
Transfer of knowledge to automotive sector
First customized products – high-speed, deterministic in-vehicle networks

2017
Safe vehicle software platform
Start of productization of

MotionWise

Safety is the grand challenge to introduce SAE Level 4 autonomous driving

TTTech Auto hereby is recognized as a leading global expert in and provider of fail-operational safety software architecture solutions (24 safety technology patents, safety-critical supplier for Audi's zFAS)

Conceptual architecture

- Defining a robust safety architecture that ensures the necessary level of redundancy and prevents common cause failures

- "Innovation friendly" architecture allowing to introduce feature upgrades quickly, while ensuring rigorous safety claims

L4 reliability challenge in number
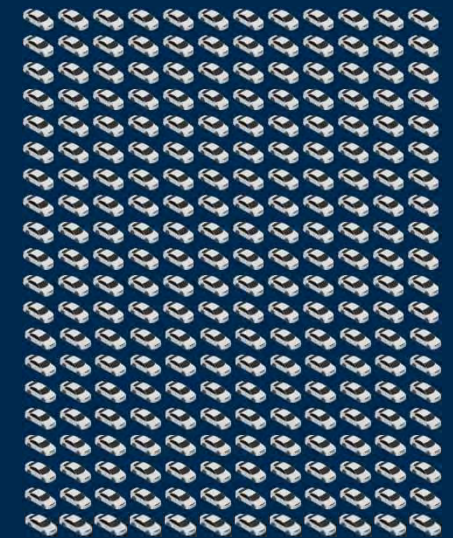

Approx.
0.00000001
system failures per hour in critical mode
≈ once every
10,000 years*

*Monitoring subsystem tracks and approves the output for the actuators. A Fallback must be in place if the primary or the monitor fails.

OEMs are facing an exponential growth in complexity with the increase in SW functionalities

X **ENGINE TYPE** X **TARGET AREA** X **OPTIONAL SYSTEM** =

Gasoline1
Gasoline2
Diesel
Hybrid
EV

North America
South America
EU
China
India
Japan
Etc.

Traffic Sign Recognition
Blind Spot Detection
Front light control
Lane change
Etc.

The OEM provided rough order of magnitude estimates for encountered complexity, leads to the need of 200* different versions every month.

*Based on management assumption, only 10% out of those 200 releases are subject to a full release cycle and thus applicable when measuring the time/cost advantage of MotionWise
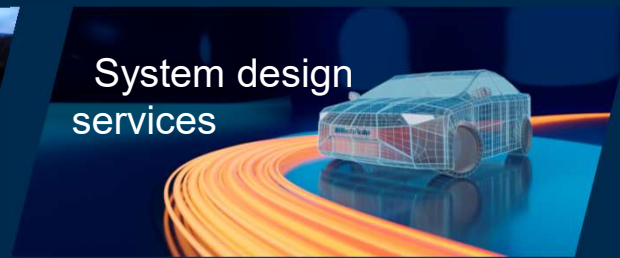
TTTech Auto product & service portfolio

MotionWise

Safe vehicle software platform

- Service Oriented Architecture (SOA)
- Open standards
- Compliant with safety and security standards
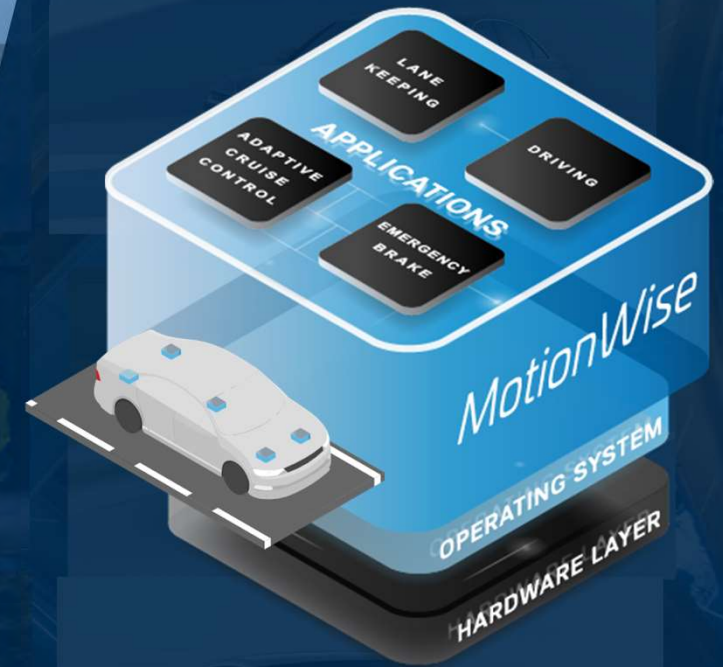- Part of a growing ecosystem

System design services

- Electronic Controls Design House: from "A" sample to industrialized ECUs
- General safety consulting services
- Security consulting services
- Autonomous driving SAE Level 4 system and safety consulting services

Automotive services and solutions

- ECUs, GWs and displays
- "Power to log" – testing tools
- Time-Sensitive Networking (TSN)
- Pre-series development platforms

The first series proven
safe vehicle software platform for DCUs
deployed already on more than **2,000,000** cars

MotionWise, the safe vehicle software platform (VSP) is a modular solution for software-defined vehicles

TTTechAuto

MotionWise consists of …

A **safety middleware** in the vehicle

Safe workload (applications) orchestration at the system level

MotionWise ensures the **safe** and **efficient** distribution, **execution** and **communication** of mixed-criticality applications within and across SoCs.
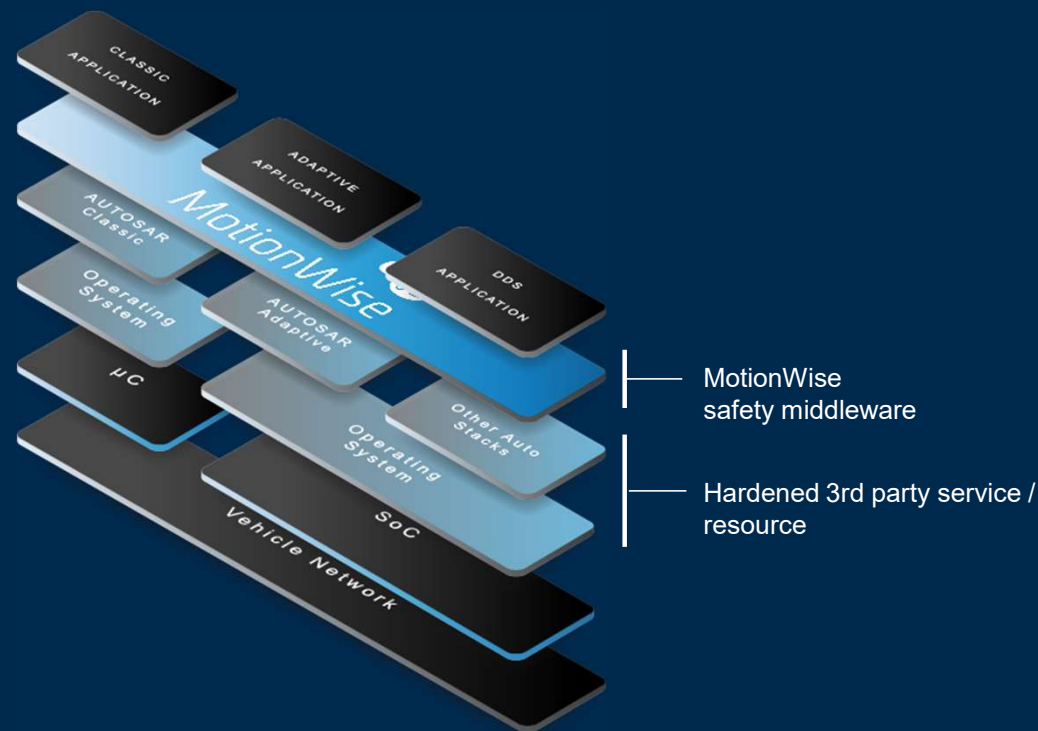
A **development framework** during development

Accelerated software integration with predictable outcomes

MotionWise enables **rapid**, **secure** and **repeatable** software development with **a predictable integration** result.

MotionWise VSP features are unmatched in the market and provide essential benefits

MotionWise safety middleware

Hardened 3rd party service / resource

Key benefits

SAFE ASIL D system certification for highest safety requirements including fail-operational designs

FAST Reduces time to market by reducing integration cycles down to a single day

INDEPENDENT Interoperable with a diverse selection of HW, OS and middleware SW
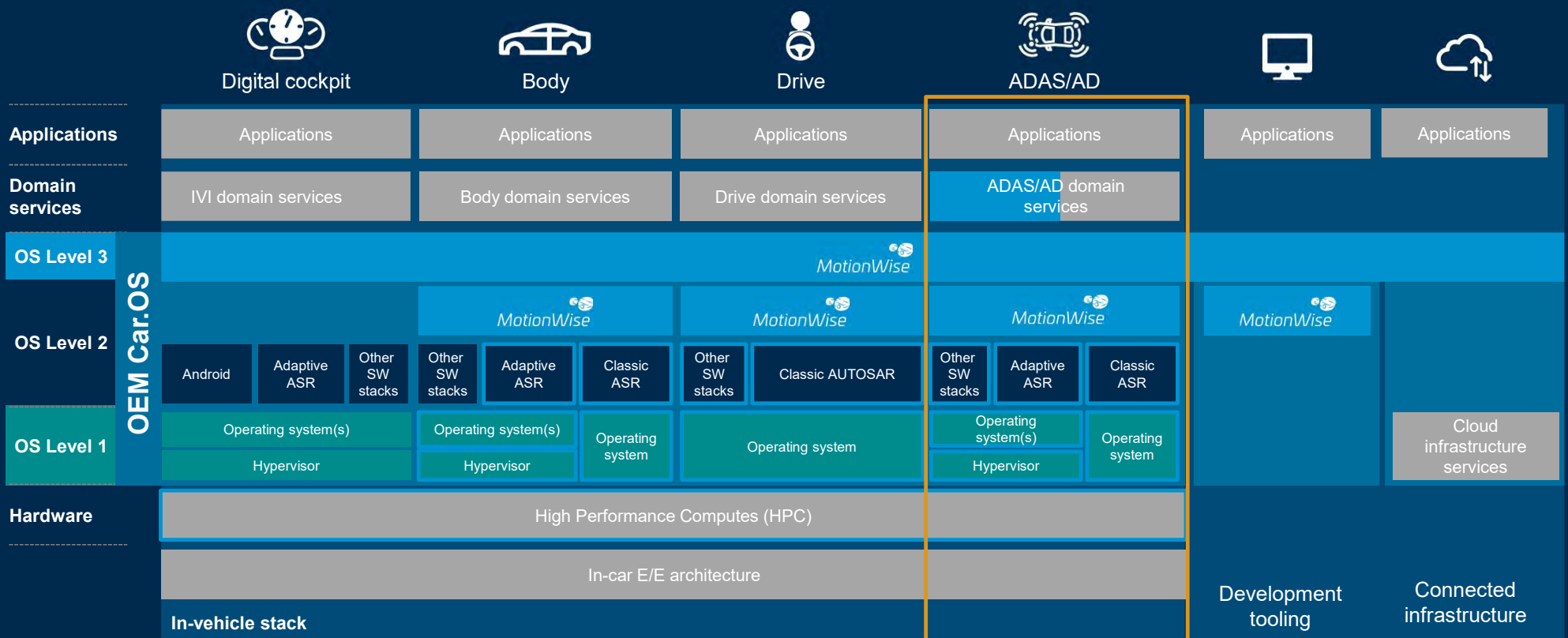
EFFICIENT Reduces dev. cost by maximizing the utilization of HW resources across the car & shortening integration efforts

SEAMLESS Integrates modularly into OEM toolchains, providing a fun user experience to end users

And more …

MotionWise VSP footprint
Example of usage within an OEM Car.OS

TTTechAuto

	Digital cockpit	Body	Drive	ADAS/AD		
Applications	Applications	Applications	Applications	Applications	Applications	Applications
Domain services	IVI domain services	Body domain services	Drive domain services	ADAS/AD domain services		
OS Level 3	MotionWise					
OS Level 2		MotionWise	MotionWise	MotionWise	MotionWise	
	Android / Adaptive ASR / Other SW stacks	Other SW stacks / Adaptive ASR / Classic ASR	Other SW stacks / Classic AUTOSAR	Other SW stacks / Adaptive ASR / Classic ASR		
OS Level 1	Operating system(s) / Hypervisor	Operating system(s) / Hypervisor / Operating system	Operating system	Operating system(s) / Hypervisor / Operating system		Cloud infrastructure services
Hardware	High Performance Computes (HPC)					
	In-car E/E architecture				Development tooling	Connected infrastructure
In-vehicle stack						

OEM Car.OS

MW service   Hardened 3rd party service / resource   Current car series focus

13

TTTech Auto

HQ, Vienna, Austria

office@tttech-auto.com | www.tttech-auto.com | +43 1 585 65 38-5000