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The AI opportunity in Automotive

February 2025

A few key points

This presentation has been developed in collaboration between the Strategy& team, PwC's global strategy house, alongside our PwC industry and function experts. Together, we transform organizations by developing actionable strategies that deliver sustainable outcomes.

AI allows auto players to strengthen top- and bottom line in turbulent times – if taken seriously

Our hypotheses on AI in Automotive

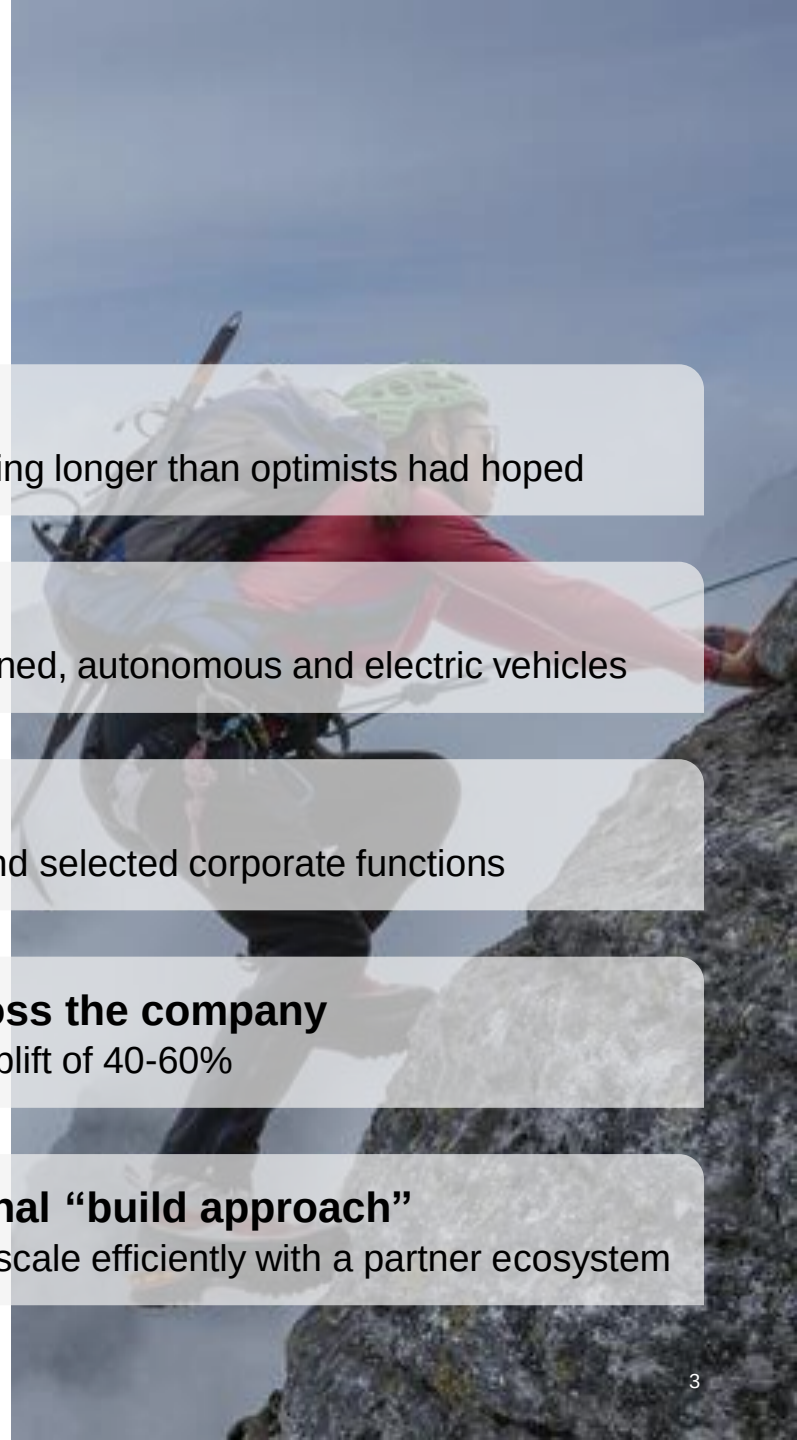
1 **AI is coming in waves and its impact is not as anticipated**
AI capabilities are evolving from generative to agentic AI, yet realizing bottom-line impact is taking longer than optimists had hoped

2 **AI will boost key transformation areas of the automotive and mobility sector**
Value will be particularly created in technology-driven fields of innovation such as software-defined, autonomous and electric vehicles

3 **AI use cases emerge across the value chain, but with different time horizons**
Highest short-term impact is seen in customer assistance/experience, software development and selected corporate functions

4 **AI brings significant bottom-line opportunities, if effectively coordinated across the company**
Our analysis suggests that a holistic AI transformation strategy can realize a potential margin uplift of 40-60%

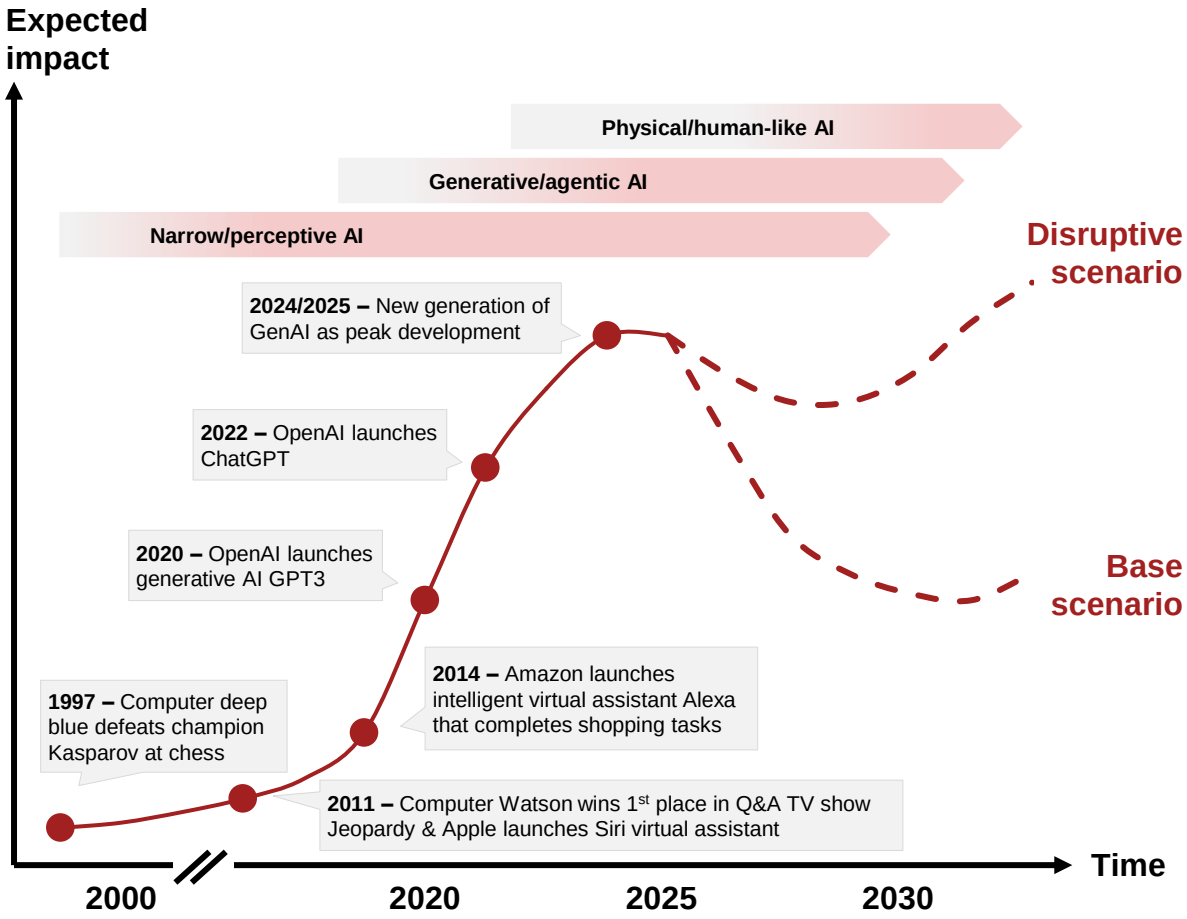
5 **AI unleashes its potential at scale in partnerships that go beyond the traditional "build approach"**
Winners start with foundational AI work, focus promptly on major cost/revenue categories, and scale efficiently with a partner ecosystem



Abbreviation: AI = Artificial Intelligence
Source: Strategy& analysis

AI is moving from hype to reality, though the urgency to act remains high

Evolution of expected AI impact



Realistic AI evolution scenarios requiring immediate action by CEOs

- **Fast development** toward agentic and physical AI
- **Wide AI adoption** for products, business models and processes
- **Reshaping entire industries** in combination with other technologies

AI strategy required for risk hedging and business continuity – with rapid acceleration of AI efforts to exploit window of opportunity

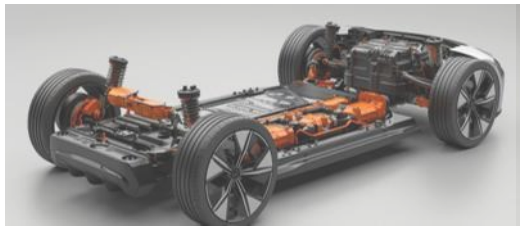
- **Regulation or cost hinder** further AI advancements
- **Use cases scaling** up in **selected** high-value **areas**
- Overall **impact lags behind** overhyped **expectations**

AI strategy as accelerator for efficiency gains – with upside potential to secure differentiation and new value pools

Note: Narrow/perceptive AI is specialized for limited tasks with sensory capabilities, such as voice or image processing, without general reasoning skills. Generative/ agentic AI creates new content based on learned patterns – in a more developed stage, it acts autonomously and makes decisions based on programmed objectives and environmental inputs. Physical/human-like AI mimics human actions or behaviours, often embodied in robots, for interacting with the physical world.
Source: Strategy& analysis

In Automotive, AI will boost all technology-driven innovation areas

AI impact and company examples in automotive transformation areas

	Software-defined and autonomous vehicles		Alternative drivetrains and sustainability		New services and business models		Digital operations and supply chain	
Principal challenges								
AI solutions for different player types	Upgrade SW development, digital CX and cybersecurity		Manage demand uncertainty, infrastructure and regulation		Build customer-centric org. and maximize customer lifetime value		Increase efficiency without compromising quality and safety	
	Impact	Example	Impact	Example	Impact	Example	Impact	Example
Suppliers		E2E development platform **NVIDIA**		Optimized battery management **Bosch**		Road assessment service **Michelin**		Customer behavior analytics **Cox Automotive**
OEMs		Personalized digital in-car experience **Tesla**		Automatic EV charging robot **Hyundai**		Automated used car evaluation **Auto1**		Video-based quality control **BMW**
Mobility providers		Sensor data processing for AD **Waymo**		Enhanced EV charging schedule **Free2Move**		Dynamic route pricing **Uber**		High-demand area prediction **Grab**

 Degree of expected AI impact specific to transformation area and player group. The more the bar is filled, the higher the impact

Note: Exemplary company-specific AI solutions. Abbreviations: SW = Software, E2E = End-to-end, AD = Autonomous driving, EV = Electric vehicle, Org.= organization

Source: Strategy& analysis, company websites (retrieved 01/2025) and press releases (published 03/2023-12/2024)

AI use cases have value potential across the automotive value chain

AI use case examples for the automotive industry

Value chain	Research and development	Production and supply chain	Sales, marketing and aftersales	Mobility and financial services	Connected and automated services
Data assets	Product 360°	Plant/supply chain 360°	Customer 360°	Ecosystem 360°	Vehicle 360°
Use cases	Automated vehicle software generation and testing	Automated visual factory control and asset positioning	Automated marketing content generation and campaigning	Battery state of health and residual value estimation	Electric vehicle energy/ charging optimization
	Generative vehicle/ parts design	Co-bot/robot applications	Virtual customer service centers/assistants	Visual inspection and residual value calculation of used cars	Automated driving optimization
	Generative battery engineering	Predictive maintenance of assets	Predictive diagnostics and warranty optimization	Adaptive mobility-as-a-service fleet management	In-vehicle personal assistant and experience optimization
	Automated product life-cycle management	End-to-end supply chain/ material disposition RPA	Personalized vehicle configuration and pricing	Multi-modal ticketing and payment optimization	Intelligent driver care
	R&D project prioritization and performance improvement	Supply chain logistics optimization and risk mitigation	Fleet sales co-pilot	Last-mile transportation optimization	Smart navigation and parking services
	…	…	…	…	…

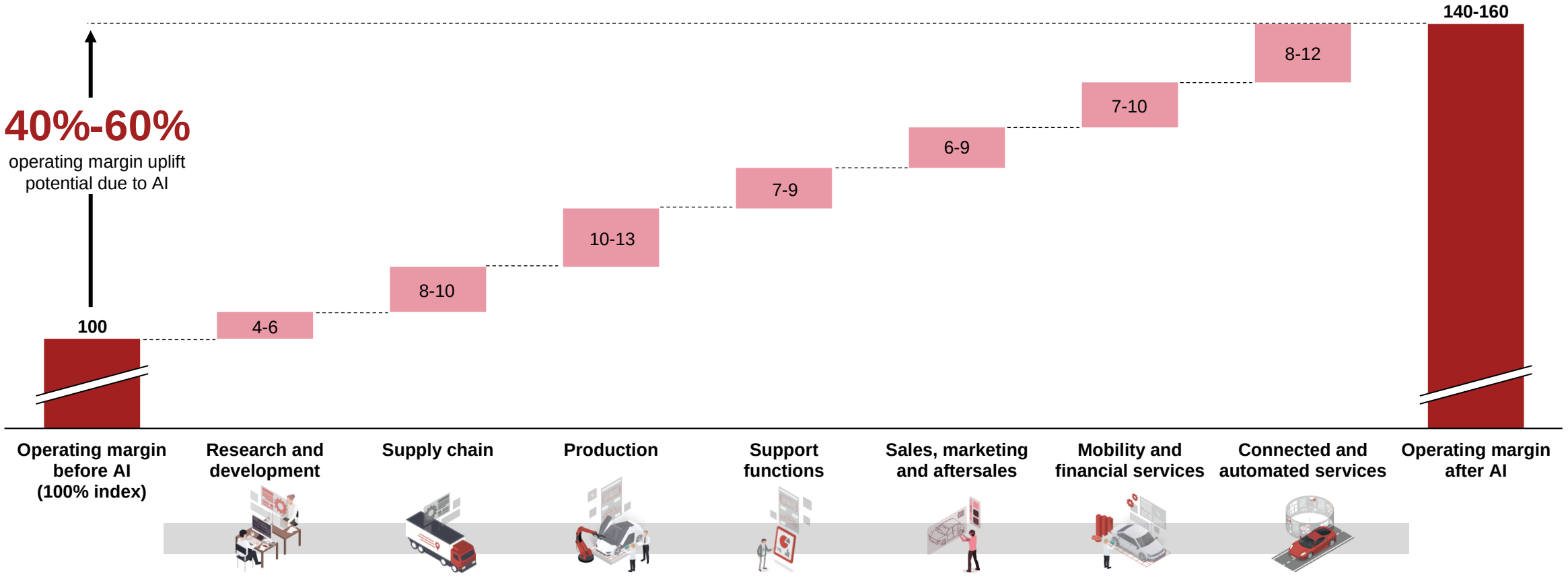
Corporate functions	Overall and support functions (e.g. strategy, planning, M&A, IT, finance, HR)				
Use cases	Target company valuation for non-binding offer	Automated regulatory compliance monitoring	Emission monitoring	Automation of accounts payable	Cybersecurity risk detection and mitigation …

Main use case value lever: Efficiency Growth

Source: Strategy& analysis. Abbreviations: R&D = Research and development, RPA = Robotic Process Automation

Our analysis suggests potential 40-60% margin uplift due to AI

Estimation of AI impact across the automotive value chain (indexed operating margin in %)

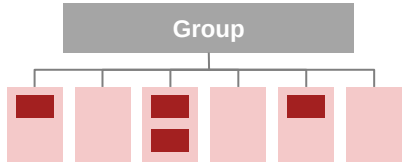


Note: 1) The potential AI impact on the operating margin is estimated mainly from an manufacturer/supplier perspective. 2) Total impact is lower than the sum of individual value blocks due to overlaps. 3) Value per block is driven by AI impact per function (in %) and a function's revenue/cost share on total operating margin. Basis for the calculations of the impact per function are AI use cases relevant for the automotive industry after considering cost efficiencies and revenue uplifts.
4) Support functions include IT, HR, finance, legal and M&A
Source: Strategy& analysis

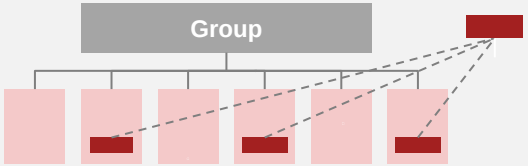
Tailored AI governance is key to effective scale-up across the company

Data and AI governance options with zoom-in on the “Hub and spoke” model

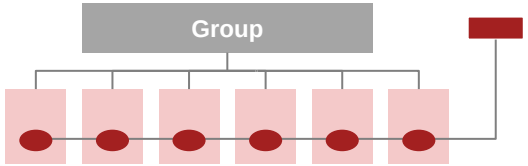
Decentralized model



“Hub and spoke” model



Centralized model



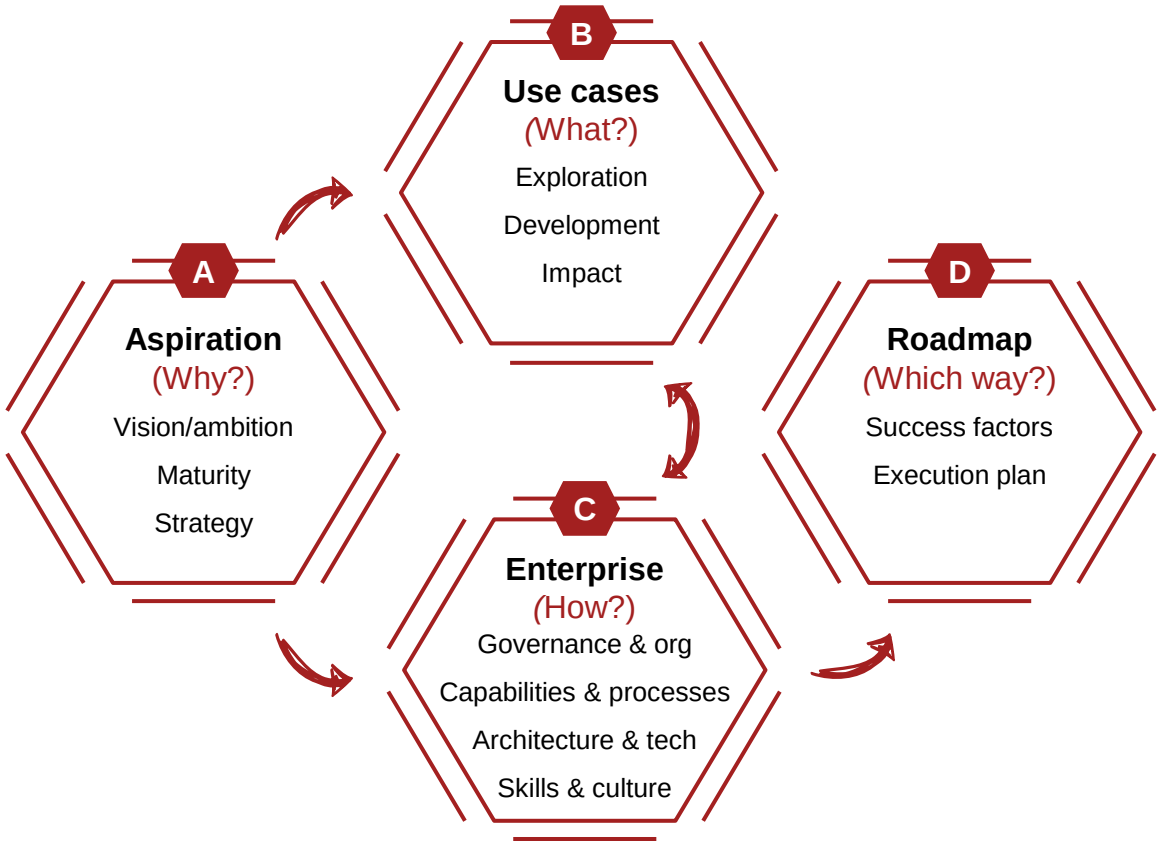
Coordination areas		Hub ⟷ Spokes	Implications on responsibilities of hub vs. spoke teams (selection)
Strategy and processes	Vision and targets		**Hub:** Target setting, organizational changes, process blueprints **Spoke:** Data/AI strategy operationalization, business unit/functional targets
	Operating model		
	…		
Use cases	Portfolio management		**Hub:** Target portfolio structure, budget and monitoring, lighthouse use cases **Spoke:** Domain-specific use case prioritization, development and deployment
	Development and implementation		
	…		
Data management	Data processing and usage		**Hub:** Data/AI compliance and guidelines, data standards/catalogue **Spoke:** Data quality assurance, data stewards, data access management
	Regulation and policies		
	…		
Capabilities and culture	Awareness and communication		**Hub:** Foundational training, best practice sharing, community building **Spoke:** Capability development and training specific to business unit/function
	Training		
	…		
Technology	Tools		**Hub:** Infrastructure and platform/tool provision, technology partnering **Spoke:** Specific technical requirement definition, specific tool operations
	Platform and infrastructure		
	…		

Data/AI capabilities Business (functions/countries) Power balance Note: The "hub and spoke” model for data/AI governance involves a lean central team providing core services (“hub”) and decentral/dedicated business teams operationalizing solutions (“spokes” with dotted reporting to the hub). The right degree of centralization of coordination areas depends on the specific company situation
Source: Strategy& analysis

To succeed from start to scale, a holistic view on AI and data is crucial

Strategy& proven data and AI framework

Approach



Selected success factors

Recalibrate existing data and AI activities to stay ahead
Refine data strategy considering (Gen)AI, adjust use case target portfolio, and identify implications for overall digital/IT transformation program

Trusted AI is key to addressing ethical and regulatory challenges
Establish and monitor comprehensive trust framework along AI use case planning, data, model, validation and deployment

AI activities require collaboration with external partners
Data/AI experts are in short supply and algorithms are complex – work with partners for speed and efficiency, yet without creating dependencies

Every use case may require a different AI setup
AI is not one software suite, but a range of tools/vendors possess different strengths – the entire AI player landscape should be utilized

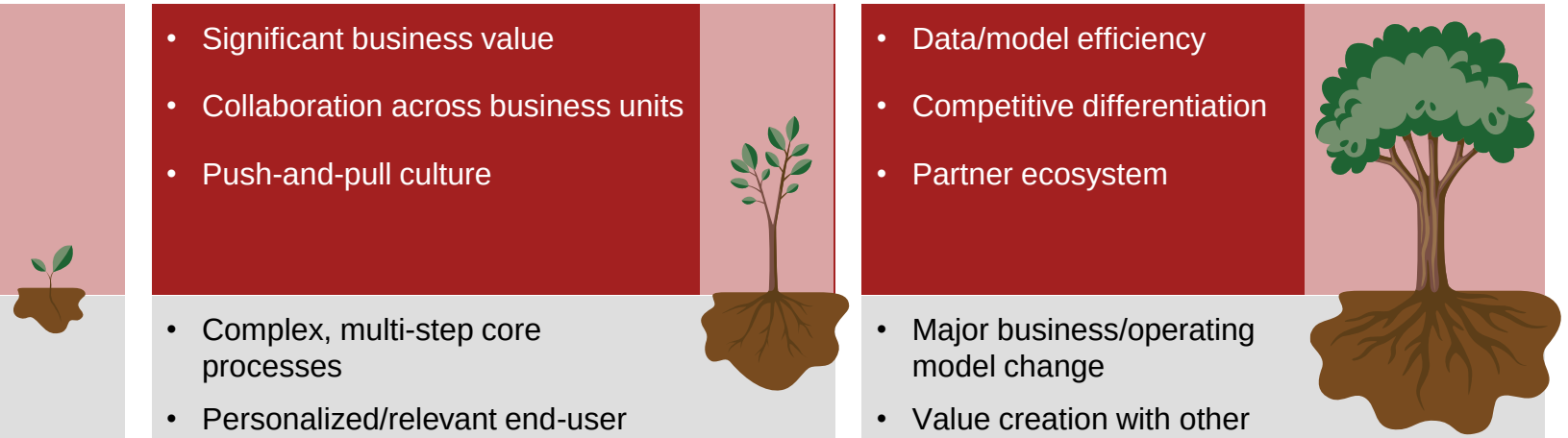
Culture is crucial in implementing AI successfully
AI is usually described in technical terms – but creating a culture that encourages employees to learn and experiment with AI tools is vital

Source: Strategy& analysis

Front-runners move quickly from AI foundation to the big-ticket items

Data and AI development stages from start to scale

	“START with basics” Short term (1-2 years)	**“GROW with big tickets”** Medium term (3-5 years)	**“SCALE with major change”** Long term (5+ years)
Main goals	• Known, measurable and fast results • Pilots and lighthouses • Resources freed-up for next level	• Significant business value • Collaboration across business units • Push-and-pull culture	• Data/model efficiency • Competitive differentiation • Partner ecosystem
Main use case attributes (with examples)	• Internal tasks with high automation potential • End-user services with “wow-effect” • Internal structured data basis	• Complex, multi-step core processes • Personalized/relevant end-user experience • Internal unstructured data basis	• Major business/operating model change • Value creation with other industry sectors • Multi-domain and multi-owner data basis
	Virtual customer service centers/assistants Automated vehicle software generation and testing	In-vehicle personal assistant Generative vehicle/ parts design	Co-bot manufacturing applications Scaled automated driving



Increase in (TIME TO) IMPACT

Source: Strategy& analysis

Accelerate your AI journey now – contact our AI experts in Automotive

Your AI quick wins

1 **Assess your AI maturity with initial recommendations** in a free online test

Start online now

2 **Get inspired by our industry-specific AI use case library**[1)] in an initial conversation

Talk to our experts

3 **Get an indication of your AI value potential** in a joint workshop

Get to know our team

Our AI and data experts in Automotive

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Note: 1) Our library contains a list of >100 AI use cases along the automotive value chain at different maturity stages (from ideas to real-world examples)

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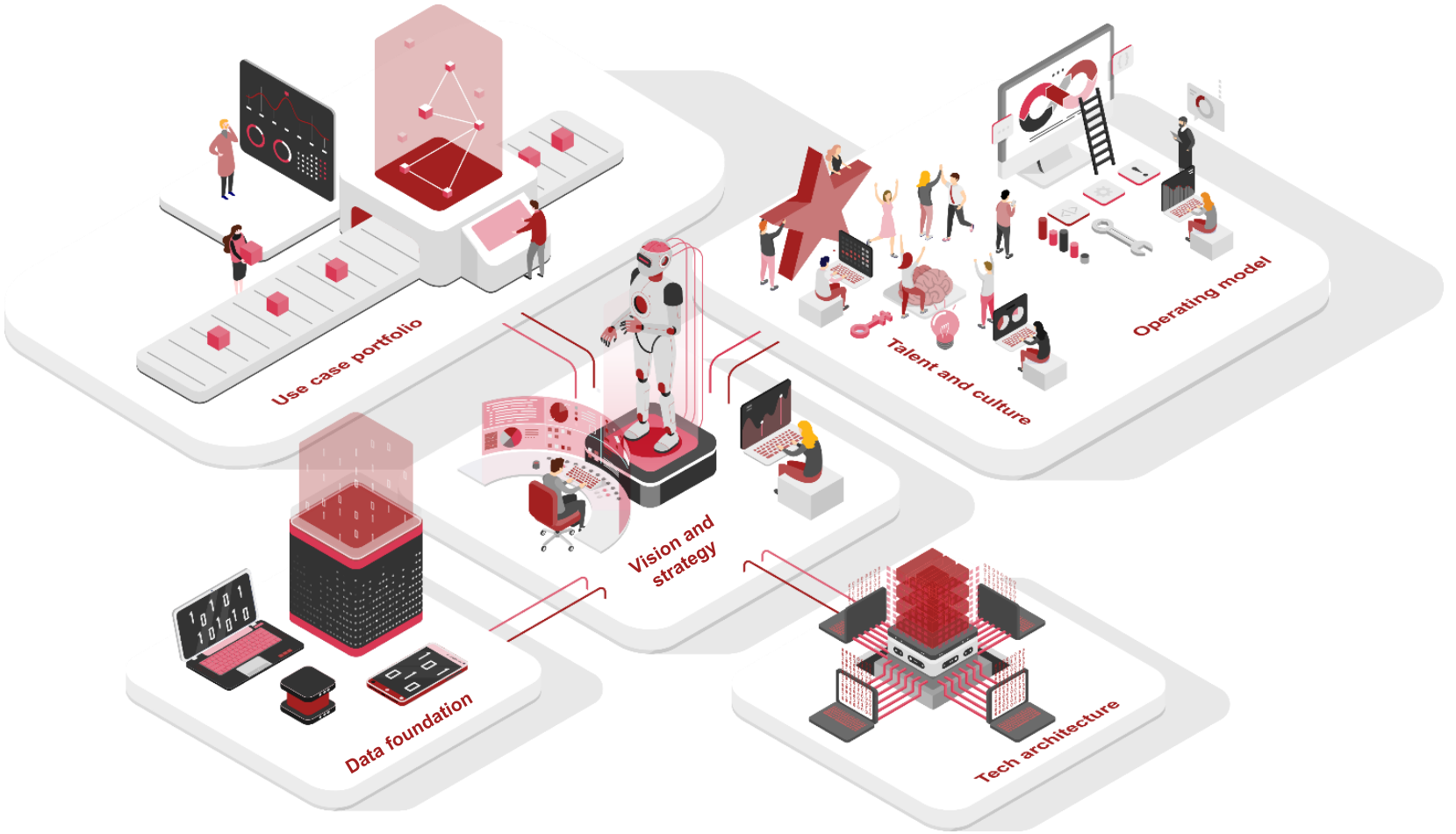

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