Deloitte.

**The Future of the
Automotive Value Chain**
Driving the Future of Procurement

Preface:
An industry in turmoil.
CPOs in paralysis?

Disruption is the new normal in the automotive industry – Dieselgate, Brexit, the US-China trade war, US-EU tariff threats, Fridays for Future, to mention but a few of the recent events causing trouble on automotive OEMs' executive floors. For almost a decade now, the entire industry seems to be engaged in a constant struggle to transform itself while facing headwinds on several fronts: major technology shifts with unprecedented investment needs, massive regulatory and political pressure, radically changing customer expectations, and aggressive attacks from new mobility competitors.

The procurement function plays a very crucial role in this transformation. Many OEMs have consistently pushed the dis-integration of their value creation in recent decades. Put simply: Many OEMs buy almost everything except for engines and car bodies from their suppliers. Maintaining the stability, quality, and commercial performance of these hyper-complex n-tier supply chain networks is the job of the chief procurement officers (CPOs). In today's business environment, automotive CPOs have a lot on their plate:

- How to stay on top of technological developments in new 'digital' commodities?

- How to empower and equip teams with the new skills required in a rapidly changing technology and supplier landscape?

- How to create future-proof procurement organizations that incorporate new agile work models as well as streamlined, automated operational processes?

- How to make the most of new cloud-based procurement systems?

- How to establish an effective and fast innovation sourcing process in order to remain on top of the game going forward?
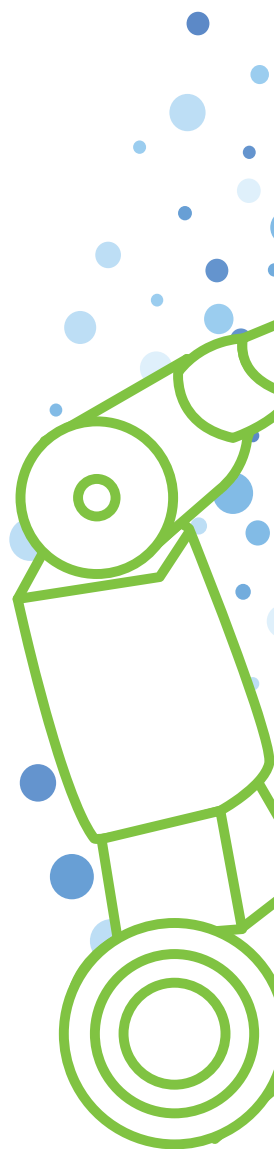
The list goes on.

Are automotive CPOs up to these challenges? With this study we aim to provide guidance to automotive procurement leaders in times of great uncertainty. Paralysis is not an option, but transformation is!

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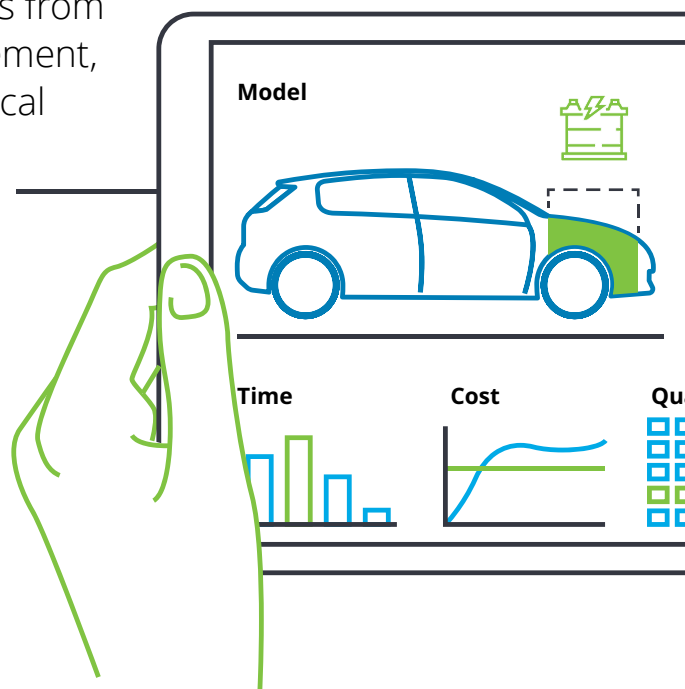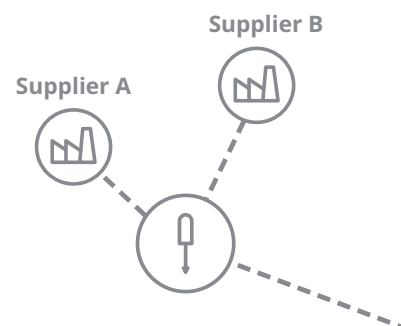Lead Global Automotive Consulting

Chapter I: Approach

All considerations in this publication are based on one simple assumption: Future industry developments are hardly ever one-dimensional. Rather, they are influenced by a multitude of drivers, which almost never develop in a straightforward way. When uncertainty is high, thinking in scenarios can help. Consequently, we have developed four scenarios for the future automotive value chain that highlight development outlooks for OEMs and Tier 1 suppliers.[1]

We combined our own procurement transformation experience with the input and explorations of several top automotive managers, mobility entrepreneurs, researchers, and lobbyists, as well as IT and battery developers.

This included the analysis of more than 60 drivers from the areas of social change, technological advancement, economic shifts, environmental trends, and political development (see figure 1).

Model

Time   Cost   Qu

[1] See Deloitte's "The Future of the Automotive Value Chain: 2025 and beyond," "Supplier industry outlook 2025," and "Supplier Financial Transformation".

Supplier A
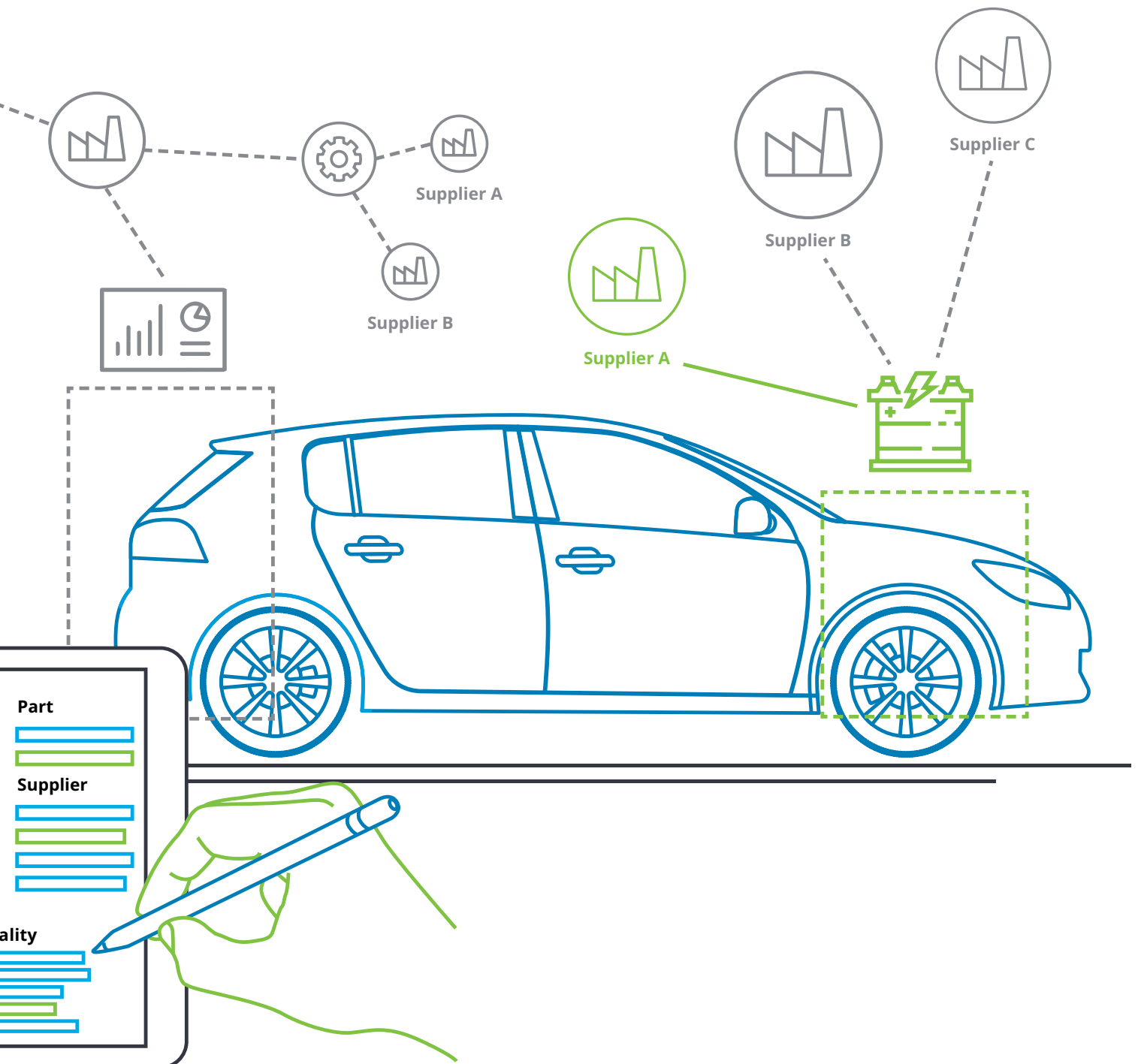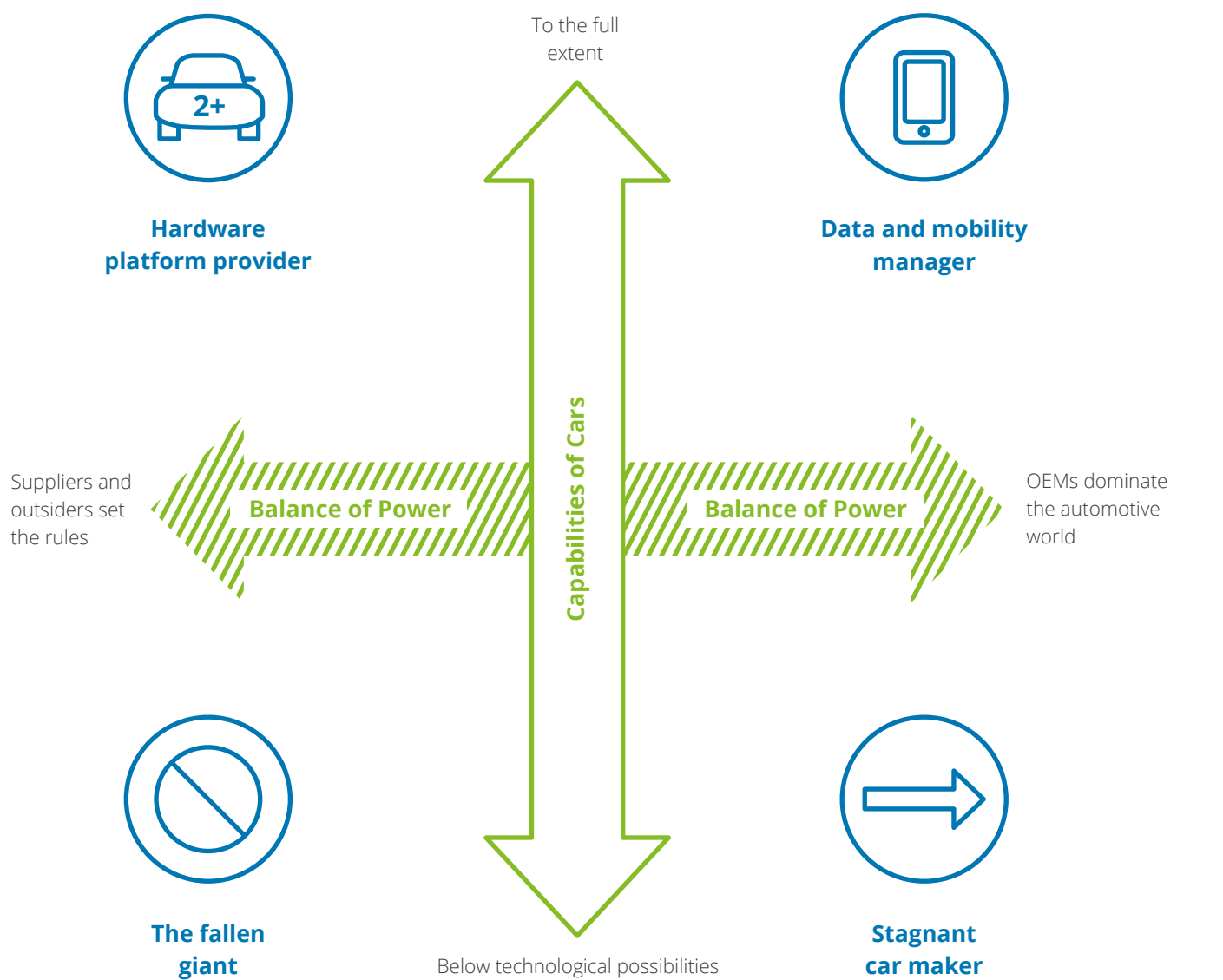
Supplier B

Supplier A

Supplier B

Supplier C

Part

Supplier

ality

Fig. 1 – 60+ drivers that will shape the future automotive value chain, clustered by impact on the upstream value chain and uncertainty

Zone of interest

Degree of Impact (vertical axis): Low / Medium / High

Degree of Uncertainty (horizontal axis): Low / Medium / High

Drivers shown in the chart:

- Predominant Powertrain Tech
- Connectedness of Cars
- Alternative Powertrains
- Power Charging
- Lightweight Technology
- Artificial Intelligence
- Market Control by New Players
- Source of Auto-mot. Innovation
- Autonomous Driving
- Updatable Car
- Re-manufacturing Processes
- Environmental Regulations
- Competition for Talent
- Degree of Customization
- Man-machine Dialogue
- Consumer Power
- Role of Suppliers
- Place of Production
- 3D Printing
- Growth in Asian Markets
- Power of Suppliers
- Capability of Cars
- Availability of Batteries
- Future Standing of Driving
- E-mobility Business Models
- Safety Awareness
- Autonomous Production Networks
- Environmental Concern
- White-Label Cars
- Trust in OEMs
- Freedom of Trade
- Sales Channels
- Protection of Personal Info
- Urbanization
- Strength of IP Laws
- Lifecycle
- Artificial/Organic Components
- Pollutant-free Production
- Form of Ownership
- Energy Storage Location
- Data Monetization
- End-to-End Mobility Services
- Infrastructure Spending
- Telecommuni-cation Grid
- Adaptive Cars
- Polluter Pays Principle
- Cost Pressure on Suppliers
- Corporate Valuations
- Ride Sharing
- Pay-per-use Models
- Energy Storage
- Oil Price
- Shareholder Interest
- Public Transport Infrastructure
- Vehicle Structure
- Cost of Capital
- Stringency of Cyber Security Standards
- Data Storage
- Buying vs. Leasing
- Financing Options
- Importance of Material Wealth

Distinct and meaningful scenarios unfold from drivers where high impact and high uncertainty coincide.

We examined these drivers to assess their degree of uncertainty and their impact on the future automotive value chain. Finally, applying the Deloitte Center for the Long View's proven methods helped formulate four quintessential scenarios (see figure 2).

Fig. 2 – Four scenarios for the automotive value chain

Hardware platform provider

Data and mobility manager

To the full extent

Capabilities of Cars

Suppliers and outsiders set the rules

Balance of Power

Balance of Power

OEMs dominate the automotive world

The fallen giant

Stagnant car maker

Below technological possibilities

Scenario 4 –
Hardware platform provider

IT players have disrupted the automotive value chain. OEMs are now primarily suppliers of white-label cars to the internet giants. In this world, OEMs can only play a relevant role if they provide a superior platform for 'infotainment' and mobility services and/or retain a strong brand image. Since OEMs are not able to fully cash in on the revenue potential, the margin per vehicle decreases.
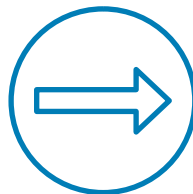
Scenario 1 –
Data and mobility manager

In this world, connectivity has become a differentiator. E-mobility (including battery-operated and plug-in hybrid electric vehicles, range extenders and fuel cell technology), autonomous driving, and integrated mobility are a common reality for the general public. OEMs are able to set the standards and are the dominant players in the automotive industry, offering a rich portfolio of products and services. Innovative automotive outsiders have to play according to the rules set by OEMs. In particular, premium brands and status play a decisive role in consumers' buying behavior. OEMs provide an attractive workplace for talented people.

Scenario 3 –
The fallen giant

The car is solely a means of transportation and brand attractiveness has diminished. The technology hype has cooled down, which has put an end to the rise of the high-tech car. As mobility has become a commodity, profit margins have decreased and OEMs are focusing on improving processes and cost efficiency. Industry outsiders such as Uber have entered the market and are forging exclusive alliances with suppliers to provide affordable mass mobility. Since private car ownership has decreased, fleet management has become of significant importance for OEMs. New talent is hard to come by due to the reduced attractiveness of OEMs.
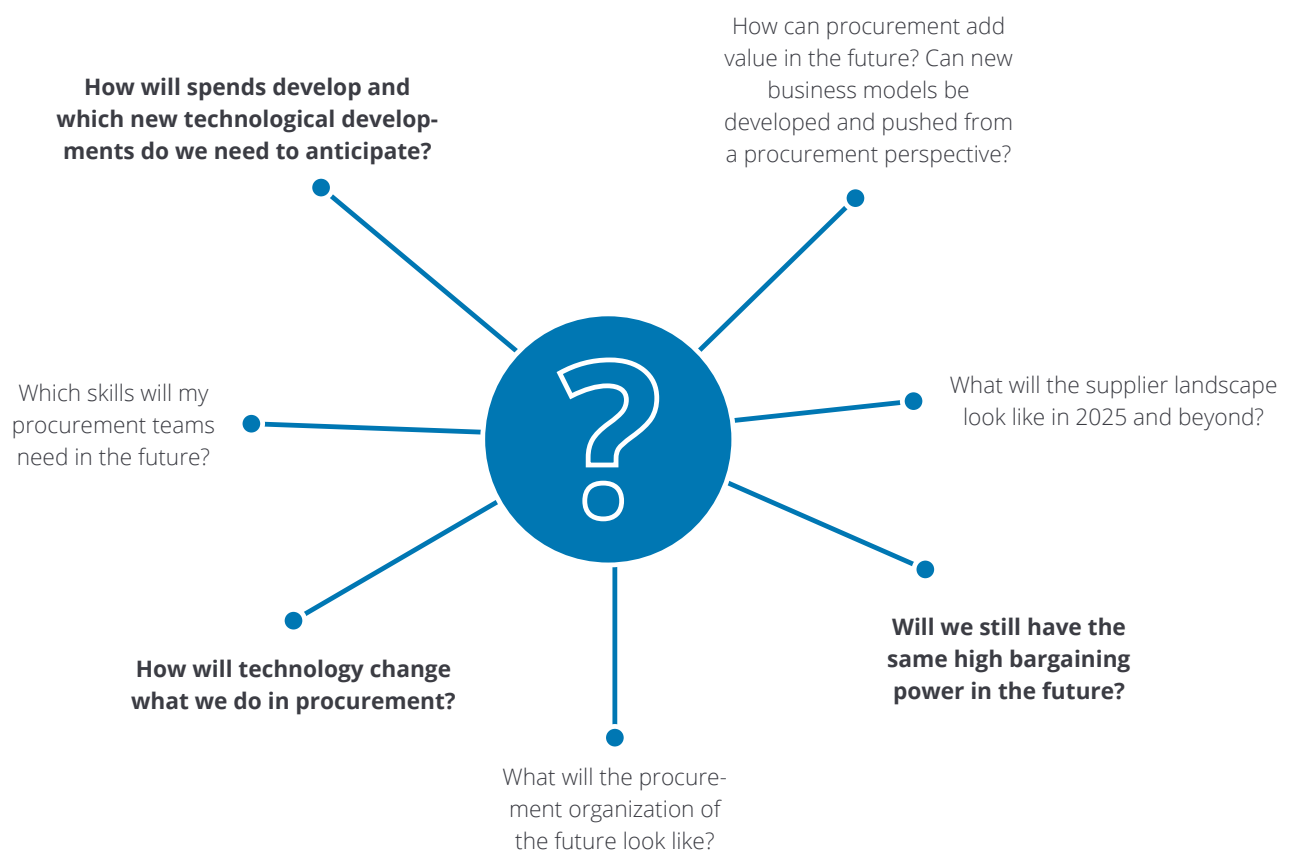
Scenario 2 –
Stagnant car maker

Massive lobbying by OEMs has prevented potential new high-tech players from entering the market. However, this defensive strategy has also slowed down technical development, with the result that many potential innovations have not been rolled out in the market, with regulations, for example, limiting the deployment of technology. Dramatic accidents with immature autonomous cars have also resulted in a loss of consumer acceptance.

Based on many conversations and recent projects with automotive procurement decision-makers (figure 3), we have now reviewed these scenario narratives from a dedicated and in-depth procurement perspective.

Fig. 3 – Questions from selected interviews with automotive procurement experts

How can procurement add value in the future? Can new business models be developed and pushed from a procurement perspective?

How will spends develop and which new technological developments do we need to anticipate?

Which skills will my procurement teams need in the future?

What will the supplier landscape look like in 2025 and beyond?

How will technology change what we do in procurement?

Will we still have the same high bargaining power in the future?

What will the procurement organization of the future look like?

Source: Deloitte – Selected Expert Interviews.

The methodological basis for this procurement-specific analysis is the breakdown of procurement dimensions along Deloitte's Procurement Operating Model (see figure 4).

This framework covers all relevant operating model dimensions and has been validated in many procurement transformations. It will now guide us through the analysis of procurement challenges in four likely scenarios of the future automotive value chain.

Fig. 4 – Deloitte's Procurement Operating Model

Procurement Operating Model (POM) levels
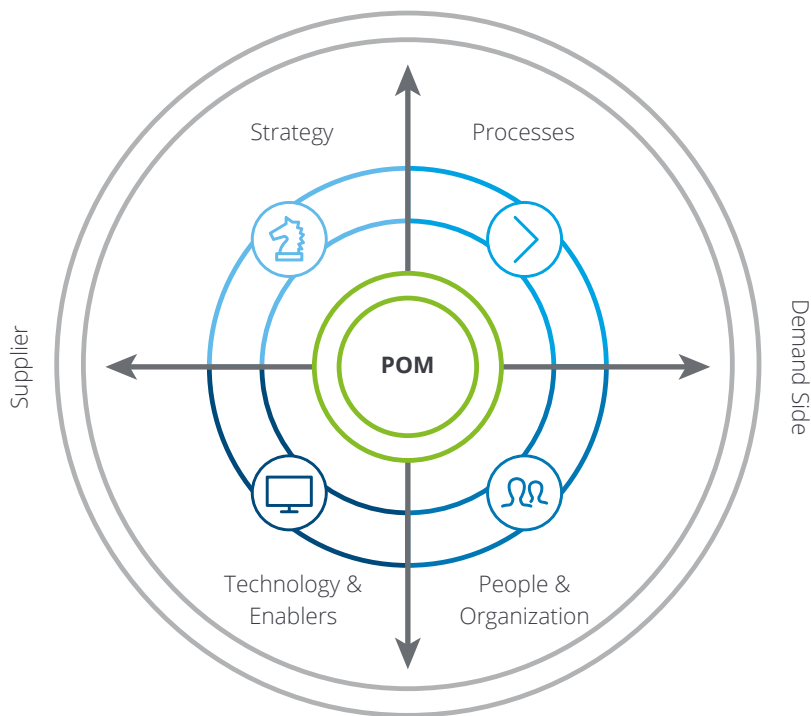
POM dimensions

Strategy
· Impact & business engagement
· Governance model
· Performance management

Processes
· Requisition to Pay Process
· Category Management
· Contract Management
· Supplier Relationship Mgmt.

People & Organization
· Role charters & job descriptions
· Knowledge & skills
· Staffing
· Location

Technology & Enablers
· Performance Management
· Technology/Digitalization
· Information Management

Chapter II: Scenarios automotive CPOs might face in 2030 and beyond

Let us put ourselves in the shoes of an automotive CPO in the year 2030 and beyond. This procurement leader is facing challenges that might still seem a bit far-fetched from where we stand today. However, for the CPO in the following four scenarios, these challenges are imminent and decisions must be made fast.

To make the situation more tangible, we assume the perspective of the CPO of a fictitious automotive OEM, which we shall name the FUTURE CAR COMPANY. The company's position today: headquartered in Europe, respected brands, serves volume and premium segments alike, active in vehicle manufacturing and financial services, total sales of €60 billion with a solid 12.5 percent EBITDA margin. The setup of the FUTURE CAR COMPANY a decade from now depends on the scenarios introduced in the previous chapter. What will the CPO's situation look like for each of the scenarios?

Scenario 1
Procurement as the innovation leader

**What business environment
is the CPO facing?**

The FUTURE CAR COMPANY has established itself in business models beyond traditional car manufacturing: It managed to break out as a successful "data and mobility manager." Procurement in this scenario must master new technologies, help develop new service offerings, coordinate new partnerships, and be the driver of digitalization and automation of procurement processes and tools. Soaring demand for "digital" components for advanced driver assistance systems, mobility services, and analytics applications, among others, has affected commodity strategies, capability needs, and team setups. Speed of innovation is key. Procurement must be able to work with both small, specialized companies and Silicon Valley tech giants. On top of

that, procurement adds value to new, data-driven business models by analyzing, evaluating, and processing data streams to and from its suppliers. Managing the purchasing-related complications of the multiple strategic cooperation agreements the company has concluded with suppliers and competitors alike has become the daily business of the procurement organization. Furthermore, digitalization efforts in all procurement processes are a key driver for operational efficiency. In general, bargaining power vis-à-vis traditional suppliers continues to be strong, as the FUTURE CAR COMPANY still controls the overall vehicle development/value creation process as well as customer access.

What does the spend cube look like?

Direct spend volumes increased significantly compared to a decade ago, mostly driven by solid vehicle sales, a breakthrough in new, digital business models, broadly implemented driver assistance systems, and the successful electrification of the powertrain portfolio.

**Fig. 5 – Direct spend development "Data & Mobility Manager"**
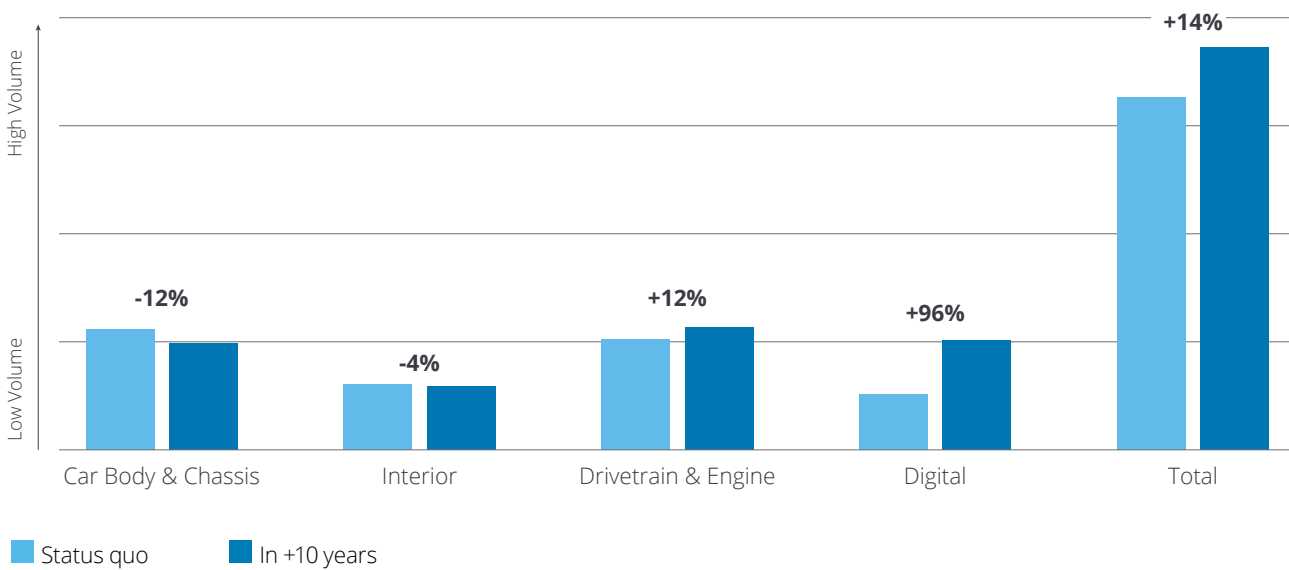
Status quo   In +10 years

Source: Deloitte "Supplier industry outlook 2025" clustered into four spend categories and adjusted time horizon:
Car Body & Chassis: Frame, Body, Axles, Steering, Suspension, Wheels & Tires, Brakes
Interior: Seats, Climate Control, Other Interior
Drivetrain & Engine: ICE, Fuel System, Transmission, Exhaust System, Electric Drivetrain, HV Battery/Fuel Cell
Digital: Electronics, ADAS & Sensors, Infotainment & Communication

What are the top priorities on the CPO agenda?

Strategy

▶ Further emphasize innovation in the procurement organization. Incorporate innovation KPIs into the procurement leadership's target agreements (e.g., number of new qualified innovation partners).

▶ Push cooperation partners in new business models (especially in digital & mobility services) for commercial benefits. These partnerships were very good for accelerating R&D, but now they must finally show some commercial benefits.
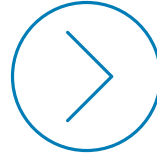
Processes

▶ "Automate for speed": keep driving process standardization along our cloud-based system infrastructure by adapting as many industry best practices as possible.

▶ Finalize outsourcing of operational procurement processes to highly automated shared service centers (focus: Source-to-Contract and Purchase-to-Pay processes) in order to leverage full automation potential.

▶ Keep pushing supplier relationship management with small, innovative suppliers: take our 'joint incubation' and 'hackathon' initiatives to the next level (after their great success in recent years).

▶ potential deal breaker   ▶ key initiative   ▶ differentiator

People & Organization

➤ Improve integration of our new commodity experts from highly diverse backgrounds (e.g., software quality and security, cell chemistry, vehicle IT architecture), which we desperately need to work on a level playing field with our R&D colleagues.

➤ Update the service catalog of our 'Digital Procurement Academy' (current course program includes 'Innovation Scouting Methods,' 'eAuctioning,' 'Advanced Cost Analytics for Software and Digital Services,' 'Negotiating with Start-ups,' 'Effective Relationship Management with Large Technology Cooperation Partners,' …).

➤ Further improve our innovation speed and willingness to learn as an organization: ensure funding for our 'Future Procurement Accelerator' again this year and further promote participation in this innovation program among our teams.

➤ Add further capacity to our CoE for cost analysis & value engineering capabilities in maturing battery/fuel cell technologies and software as well as our CoE for AI-based procurement tools, analytics, tool-based award optimization, and advanced negotiation techniques.

Technology & Enablers

➤ Keep our procurement system transformation program on track toward a highly automated, analytics- and AI-enhanced cloud platform.

➤ Launch next generation of AI-based robots for contract creation in all direct and indirect commodities.
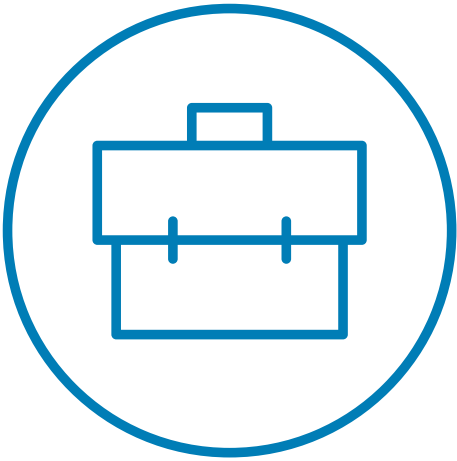
Scenario 2
Business as usual with incremental improvements

What business environment is the CPO facing?

The company as it stands can best be described as a 'stagnant carmaker.' The business environment changed only incrementally in the last decade. Innovation in the field of autonomous driving and new mobility failed to gain widespread market success – also due to successful lobbying by the incumbent OEMs aimed at protecting their strong market position. In effect, the FUTURE CAR COMPANY still has strong bargaining power vis-à-vis its suppliers.

Overall, the scope and challenges of the procurement function are not much different from today – with one crucial exception: The current generation of alternative drivetrains concepts is significantly more mature than today, but still at a higher cost than ICE technologies. Protecting this highly stable and commercially optimized supply chain is key for the CPO. And another important priority for the entire procurement organization is to digitalize and automate procurement processes and tools as far as technologically possible.

What does the spend cube look like?

Direct spend volumes grew moderately, mostly driven by the (still costly) electrification of the powertrain portfolio.

Fig. 6 – Direct spend development "Stagnant Carmaker"
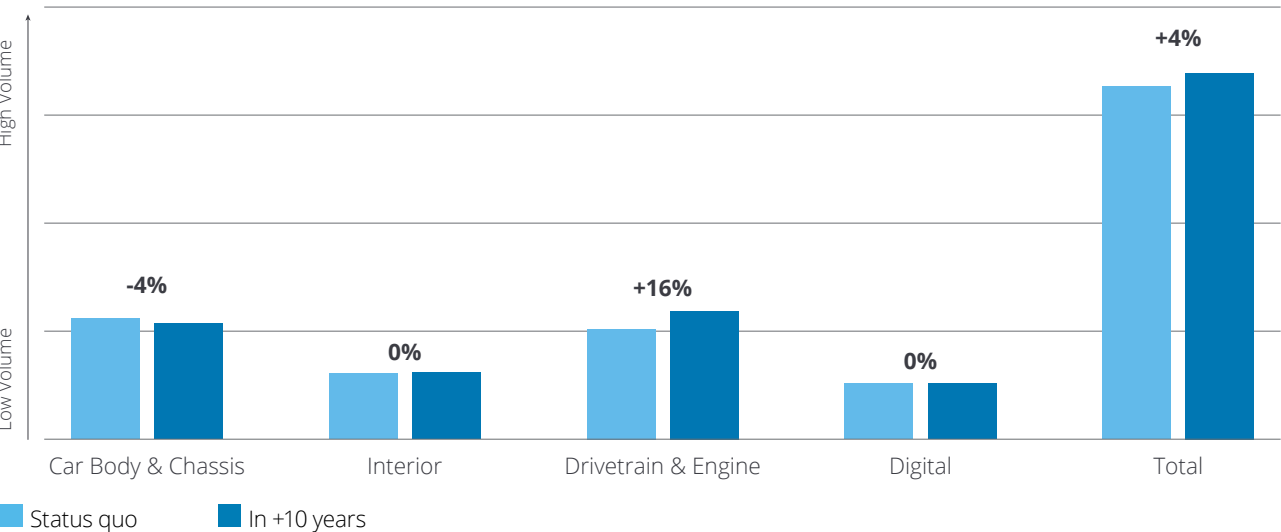
Legend: Status quo | In +10 years

Car Body & Chassis: -4%
Interior: 0%
Drivetrain & Engine: +16%
Digital: 0%
Total: +4%

Source: Deloitte "Supplier industry outlook 2025" clustered into four spend categories and adjusted time horizon:
Car Body & Chassis: Frame, Body, Axles, Steering, Suspension, Wheels & Tires, Brakes
Interior: Seats, Climate Control, Other Interior
Drivetrain & Engine: ICE, Fuel System, Transmission, Exhaust System, Electric Drivetrain, HV Battery/Fuel Cell
Digital: Electronics, ADAS & Sensors, Infotainment & Communication

What are the top priorities on the CPO agenda?

Strategy

▶ Now that innovation cycles have slowed down significantly, focus squarely on commercial excellence by increasing cost pressure on our stable supplier base and improving internal process efficiency as well as compliance.

▶ Monitor n-tier chain and actively stabilize where necessary (keep supplier base stable and alive).
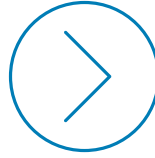
Processes

▶ Improve procurement process compliance by enforcing utilization of 'guided buying' applications as part of our integrated procurement IT platforms ('first line of defense').

▶ Evaluate further possibilities for outsourcing operational procurement processes to external shared service center providers.

People & Organization

▶ Enhance cost analysis & value engineering capabilities for maturing battery/fuel cell technologies as well as software.

▶ Extend our CoE for advanced negotiation methods with special focus on new savings levers in highly mature supplier markets.

Technology & Enablers

▶ Keep driving process cost reduction through systematic standardization of transactional procurement tasks together with our technology partners.

▶ Manage rollout and >75% utilization rate of new big data analytics-driven supplier risk management tool.

▶ potential deal breaker   ▶ key initiative   ▶ differentiator
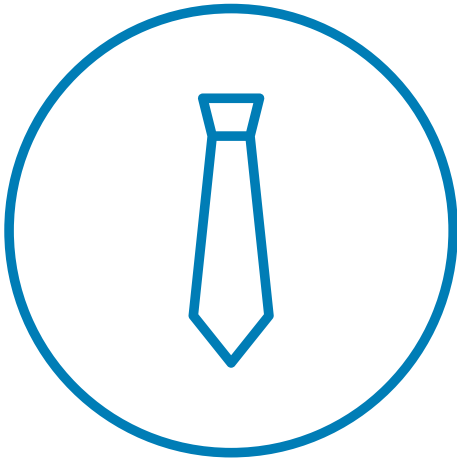
Scenario 3
Cost leader in a declining industry

What business environment is the CPO facing?

The decline in private car ownership and the focus on affordable mass mobility requires the FUTURE CAR COMPANY to rethink its setup – and not just in procurement. This 'cost down' scenario leads to strong insourcing from suppliers, as all OEMs are struggling to utilize their own development and manufacturing capacities. The FUTURE CAR COMPANY managed to limit its revenue decline by building a s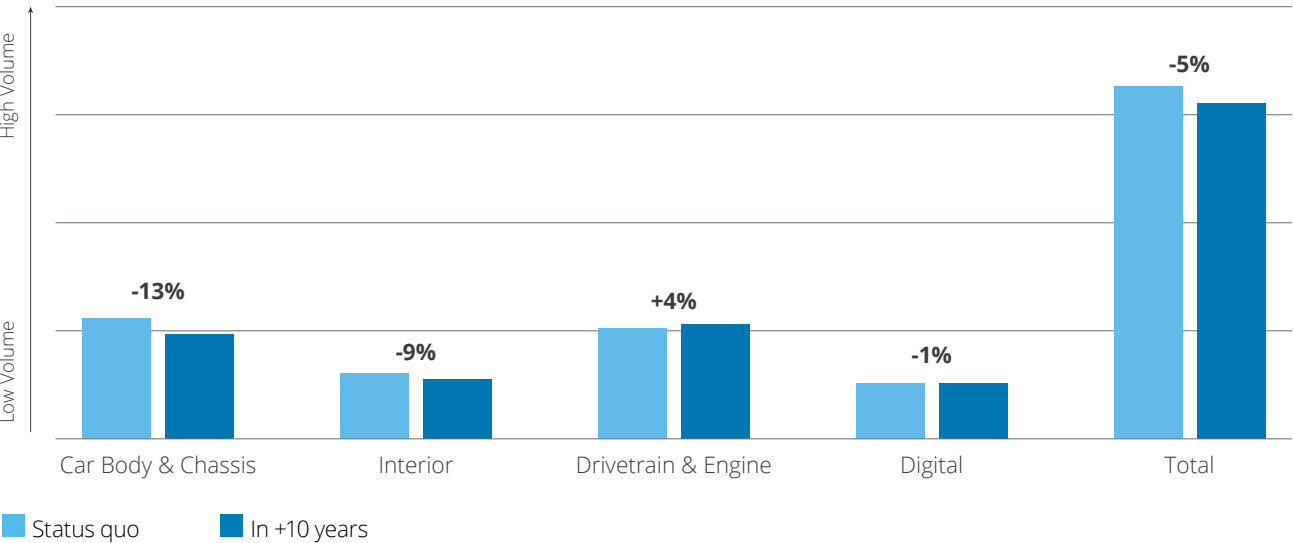trong white label manufacturing business line, i.e., contract manufacturing for other carmakers. The product portfolio is focused almost exclusively on simple, durable vehicles for fleet use. Vehicle sales have become more project- and tender-based: Key customers are now large fleet providers or municipalities. In this scenario, procurement has two major goals: to drive continuous vehicle cost reduction together with the development departments and to minimize internal operational running costs – by all means possible. If not, the FUTURE CAR COMPANY might not be able to survive another decade.

What does the spend cube look like?

Declining direct spend volumes reflect the overall market downturn. As the FUTURE CAR COMPANY managed to increase its white label manufacturing business, spend volumes did not drop too sharply. Powertrain, the only growing spend category, has gained importance due to the successful electrification of the powertrain portfolio.

Fig. 7 – Direct spend development "The Fallen Giant"

Legend: Status quo / In +10 years

Values: Car Body & Chassis -13%, Interior -9%, Drivetrain & Engine +4%, Digital -1%, Total -5%

Source: Deloitte "Supplier industry outlook 2025" clustered into four spend categories and adjusted time horizon:
Car Body & Chassis: Frame, Body, Axles, Steering, Suspension, Wheels & Tires, Brakes
Interior: Seats, Climate Control, Other Interior
Drivetrain & Engine: ICE, Fuel System, Transmission, Exhaust System, Electric Drivetrain, HV Battery/Fuel Cell
Digital: Electronics, ADAS & Sensors, Infotainment & Communication

What are the top priorities on the CPO agenda?

Strategy

▶ Given our simplified product portfolio, strongly consolidate our supplier pool and bundle volumes to selected key partners that are able to survive.

▶ Pursue partnerships with our key suppliers, which incentivizes long-term collaboration. In the end, we have partly turned into a Tier 1 supplier (in our white label business), potentially competing with our suppliers for large manufacturing deals. A high level of mutual trust is crucial here.
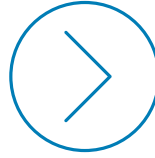
Processes

▶ Incorporate our commodity experts and cost engineers into the sales and product development process even earlier than before. We must learn from commercial vehicles: maximum cost efficiency and reusability of vehicle concepts for efficient adaptability to the specific demands of large, professional, highly cost-sensitive fleet providers.

▶ Promote our concept (and platform) for alliance sourcing to key Tier 1 partners to further incentivize commitment to long-term partnerships.

People & Organization

▶ Prepare for more discussions with our works councils: We are fighting for all our employees but need to take action in response to the downturn.

▶ Shift qualifications: keep streamlining and outsourcing highly transactional tasks on the one hand. Train our staff to use advanced sourcing tools (e.g., for eAuctions or contracting) or target costing methods for large B2B projects. Most importantly, motivate our people to work in a fundamentally different, far less prestigious automotive industry than a decade ago.

Technology & Enablers

▶ We must reduce our operating costs by driving process standardization along an integrated procurement system: roll out the system solution with the highest return on investment, use of mature industry best practices, and minimal implementation time.

▶ Roll out a new AI-based supplier risk analytics tool to help identify distressed suppliers before it is too late.

▶ Implement AI-based liquidity and working capital management tools as part of our new integrated direct and indirect procurement IT platform.

▶ potential deal breaker   ▶ key initiative   ▶ differentiator

Scenario 4
The preferred supplier for the new mobility giants

### What business environment is the CPO facing?

Innovations in the automotive industry have been radical. However, the FUTURE CAR COMPANY keeps on losing direct customer access and slips into a Tier 1 supplier role. The new global mobility giants from Silicon Valley set the pace for innovation and specify the type of product to be developed. They define what the 'mobility user' will experience. They also define the interfaces between user-interacting vehicle features and the hardware platform for the car. The actual development and manufacturing duties remain with the FUTURE CAR COMPANY. The CPO's key challenges in this scenario are similar to those in scenario 1 ('procurement as innovation leader'): soaring demand for 'digital' commodities, the need to stay on top of all new technological developments, and the expectation to transform this knowledge into an agile, yet robust supplier network. The difference in this scenario: Customers dictate a lot of the vehicle platform, especially in the fields of IT architecture, software standards, and digital services/applications. Many procurement decisions must now also be aligned with these customers. On top of that, the FUTURE CAR COMPANY experiences a situation so far known only to its own suppliers: Its highly professional, demanding B2B customers expect not just innovation but also constant process and cost optimization to remain commercially competitive. As many of the FUTURE CAR COMPANY's large suppliers are trying to establish themselves as technology and manufacturing partners directly to the new global mobility giants, new supplier-competitor constellations arise and negotiation power dwindles.

What does the spend cube look like?

Direct spend volumes increased significantly, very similar to scenario 1. The main difference is not directly visible: A large part of the spend is directed by the customer.

Fig. 8 – Direct spend development "Hardware Platform Provider"
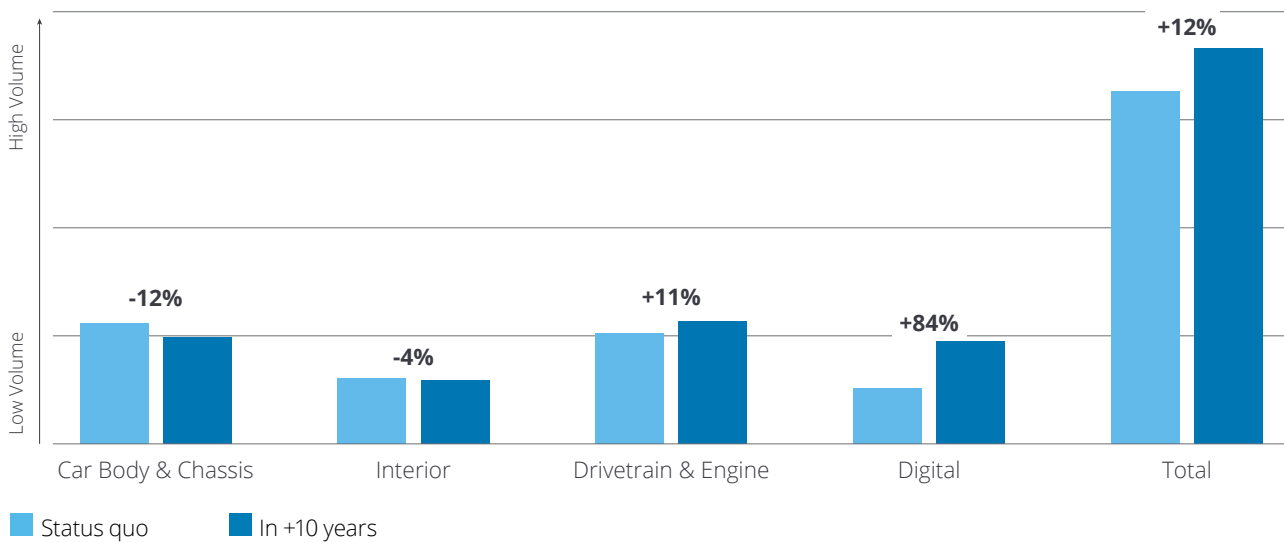
Source: Deloitte "Supplier industry outlook 2025" clustered into four spend categories and adjusted time horizon:
Car Body & Chassis: Frame, Body, Axles, Steering, Suspension, Wheels & Tires, Brakes
Interior: Seats, Climate Control, Other Interior
Drivetrain & Engine: ICE, Fuel System, Transmission, Exhaust System, Electric Drivetrain, HV Battery/Fuel Cell
Digital: Electronics, ADAS & Sensors, Infotainment & Communication

What are the top priorities on the CPO agenda?

Strategy

▶ Form long-term alliances with our B2B customers and key suppliers (for hardware components, software, and data) to remain the leading integrated vehicle platform provider. Otherwise, these will challenge our positioning in the value chain.

▶ Solidify our standing as the leading innovation partner, always on a level playing field with our customers: Further drive speed of innovation in the procurement organization by implementing innovation KPIs into leadership's target agreements (e.g., number of new qualified innovation partners).
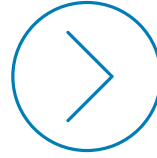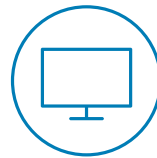
Processes

▶ Establish closer procedural ties to our B2B sales department: In our new Tier 1 situation, we must incorporate our commodity experts and cost engineers into the sales and product development process even earlier than before.

▶ Accelerate the ramp-up of our highly automated shared service center for transactional Source-to-Contract and Purchase-to-Pay processes (e.g., approval flows or purchase order creation).

People & Organization

▶ Establish exchange and joint learning programs with our B2B customers to get a better understanding of their user-interacting vehicle features (e.g., infotainment, interior design) and incorporate our knowledge from supply markets to discuss ways of making our vehicle platform even better.

▶ Add the following training courses to our 'Digital Procurement Academy': 'Relationship management for new supplier types (especially incumbent Tier 1 suppliers as potential competitors, suppliers preselected by our customer, small innovation partners)'; 'Relationship management with long-term cooperation partners,' and 'Innovation Scouting Methods'.

Technology & Enablers

▶ We must show our customers that we are leading innovators. Nevertheless, we also take process standardization, automation, and the resulting cost reduction seriously: announce our new integrated procurement system at least six months ahead of the previously communicated plan.

▶ At the same time, we must make the case to our employees: We apply state-of-the-art technology so you can focus on activities that really add value vs. dull transactional tasks.

▶ potential deal breaker   ▶ key initiative   ▶ differentiator

Scenario-based thinking helps procurement leaders to overcome insecurity regarding future developments and think through options and their impacts.

Chapter III:
No-regret moves toward the automotive procurement function of the future

Scenarios are a useful tool for contingency planning. Therefore, the aim of chapter II was to accentuate potential differences on an automotive CPO's agenda in the future. However, despite all ambiguity in the future development of the automotive value chain, we believe that there is a set of strategic imperatives to pursue in any case. From our perspective as well as our forward-looking analysis, these "no-regret moves" for every automotive procurement division are:

Fig. 9 – Five no-regret moves for the automotive procurement transformation

1 Accelerate supplier portfolio development – without compromising supply chain robustness

2 Drive commercial optimization of new 'digital' spend with new business models

3 Build the technology-enabled procurement function and maximize potential from process digitalization

4 Organizationally split transactional and knowledge-intensive procurement tasks

5 Bring your employees in on the journey: train new capabilities, adjust team structures, and align performance management accordingly

From our perspective, these moves must be made right now, not in ten years' time! So let us have a closer look at each of them.

1

Accelerate supplier portfolio development – without compromising supply chain robustness

Procurement must be able to communicate on a level playing field with R&D and translate this knowledge into supplier network development. Of course, this is already the case today. However, no matter which future value chain scenario we assume, the overall speed of innovation will increase. Not only in 'digital' commodities (see 'no-regret move 2'), but also for alternative powertrains, battery, fuel cell, or BEV/PHEV-specific vehicle frame architecture, and others. We mentioned concepts to drive innovation from a procurement perspective: innovation incubators or hackathons with start-ups, development cooperation with tech companies, internal incentives (e.g., innovation KPIs) and processes (e.g., procurement accelerators that also integrate suppliers) to push the cause.

More external pressure on supply chains

All of this tends to make supplier networks built on JIT/JIS requirements and often highly volatile demands more complex and, as a consequence, more fragile. External events put pressure on supply networks. Some current examples: Dieselgate, Brexit, US-China trade war, or US-EU tariff threats. To give an order of magnitude of the risk: Our research shows that, e.g., a hard Brexit would cause major supply chain disruption resulting in a cost increase for vehicles sold in the United Kingdom of €3,700 – €5,600 per vehicle.[2] There is no reason to believe that this or other types of trade policy pressure will decrease in the next decade. Supply chains and the procurement function must be prepared for this and draw up contingency plans, e.g., flexibly

shifting production to other locations without quality issues or even investing in new plants. This usually works much better with reliable and trusted long-term partners.

No compromise when it comes to supplier quality

Robustness is also key in terms of quality and stability of innovation partners: rightfully, automotive standards are extremely high when it comes to process, product, and project management quality of suppliers. Innovation partners with little or no automotive experience often struggle with this. Good practice from our project experience is to help enable new, innovative partners collaborate directly with incumbent suppliers or specialized R&D units (e.g., for vehicle software development). What is more often the case with large tech companies is that their products and assets are highly complex, so they are not prepared to relinquish control and rather keep focusing on protecting their intellectual property than providing transparency for quality assurance. Professional cooperation management and high levels of mutual trust with the partner are crucial here.

An absolute no-regret move when strengthening supply chain robustness is to implement state-of-the-art risk management tools. Be it for the financial stability of suppliers, delivery risks from raw material scarcity, infrastructural and political instability, or image and sustainability risks from environmental scandals, implementing advanced big data analytics tools utilizing real-time data feeds has become an absolute priority for many of our clients. On top of that, a new risk category for cars is gaining more and more relevance: cyber security.

Cars go digital – but what about cyber security?

When talking about the growing importance of vehicle software, one must not neglect the additional cyber security risks that arise. The OEM must ensure information security for both the vehicle and the user of mobility services. With UNECE WP.29 regulators expect OEMs to have certified cyber security management systems (CSMS) and software update management systems (SUMS) in place from 2021. In this context, OEM procurement functions must ensure that suppliers provide

- detailed product descriptions for installed hardware and software (from product development all the way until the end of the vehicle's lifetime)

- software updates and patches to proactively ensure information security

- proof that suppliers have established their own management system for information and cyber security

- proactive information to the OEM about known vulnerabilities to ensure an immediate and adequate response so as to prevent their exploitation

- support to help the OEM fix vulnerabilities (both ad-hoc and preventive)

Ensuring this type of transparency and compliance from suppliers will be a major challenge for OEM procurement. For example, to get a young software company with no automotive background to realistically promise proactive software patches until a vehicle's end of life, which can be many decades in the future. Regulators have not provided detailed requirements for putting demands in practice – discussions are still ongoing. Therefore, for procurement functions to seek advice in these questions concerning cyber security and information vulnerability management is mission-critical.
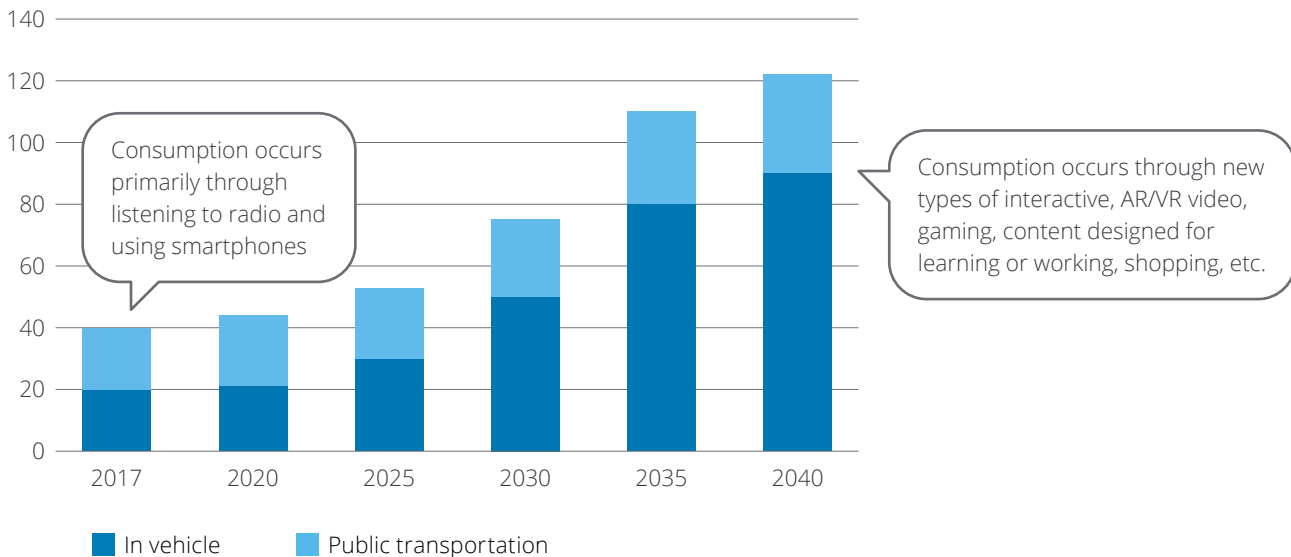

2

Drive commercial optimization of new 'digital' spend with new business models

The conversion of cars into smart electronic driving devices is already underway and will accelerate further in the upcoming years: Software and data are used to process central functions, e.g., drivetrain configuration for reduced energy consumption. Driver assistance systems must communicate with the vehicle's surroundings to ensure reliability and safety. Software-based mobility services connect vehicles with users and third-party businesses. On top of that, vehicles must enable their users to communicate, work, and enjoy data-driven infotainment while driving.

These developments will lead to an explosion in volumes of data and software elements in the car of the future. This shift poses great new challenges for the procurement function – impressively visible in an almost doubled projected spend volume (see Chapter II, Scenario 1).

Fig. 10 – Estimated future mobility-based media consumption in the U.S.

Annual hours spent consuming media (billions)

Consumption occurs primarily through listening to radio and using smartphones

Consumption occurs through new types of interactive, AR/VR video, gaming, content designed for learning or working, shopping, etc.

■ In vehicle ■ Public transportation

Source: Deloitte University Press "Experiencing the future of mobility".

Gain transparency on software and data in components and their supply chains

A substantial amount of in-vehicle software is embedded in hardware and/or mechanical parts. OEMs today source hardware components, which already contain the code provided by the component supplier as a black box. It is crucial for procurement functions of the future to be able to "disintegrate" hardware and software elements: They must be able to understand and evaluate which specific software features they need so they can specifically control their quality and cost – as opposed to having to buy blindly. The same need for transparency applies to data (e.g., traffic or parking data): Who generates the data (usually the vehicle owner)? Who may collect, aggregate, and standardize the data? Are there further analytics and services provided to "refine" the data? Which new regulations regarding data protection must be considered (e.g., GDPR for the connected car)?

Be able to control the software and data supply chain

Once this transparency is provided, development and procurement functions must conduct detailed make-or-buy considerations. On the one hand, this poses questions such as: Which elements are strategically relevant and must be developed in-house or with an exclusive cooperation partner (e.g., autonomous drive algorithms)? Which software elements are commodities and can easily be outsourced (e.g., mobility app development)? On the other hand, questions arise concerning system complexity and data ownership: How can the "remaining" hardware elements of the embedded system be more standardized, modularized, and commercially bundled (e.g., ECUs for Vehicle-2-X communication)? How and by whom should vehicle data be managed, i.e., stored, analyzed and, if possible, monetized?

Establish new collaboration models with suppliers and enable your teams

Software and data providers are less dependent on individual customers (like automotive OEMs), as they are not locked in by capital-intensive, client-specific investments (e.g., plants, machines or tools). Therefore, "hardball" procurement methods must be supplemented by more collaborative, incentivizing approaches. Revenue sharing for data-driven services or co-development and subsequent licensing of software are two common examples.

All these new requirements necessitate thorough enablement of procurement organizations and processes. New tools and processes for source code, data quality assurance, and cybersecurity must be developed. Legal expertise and contractual standards for intellectual property management and licensing models must be established. New supplier scouting processes in fast-paced innovation environments must be set up.

Considering the growing importance of these spend categories in the future, missing out on these measures for commercial optimization is not an option.

3

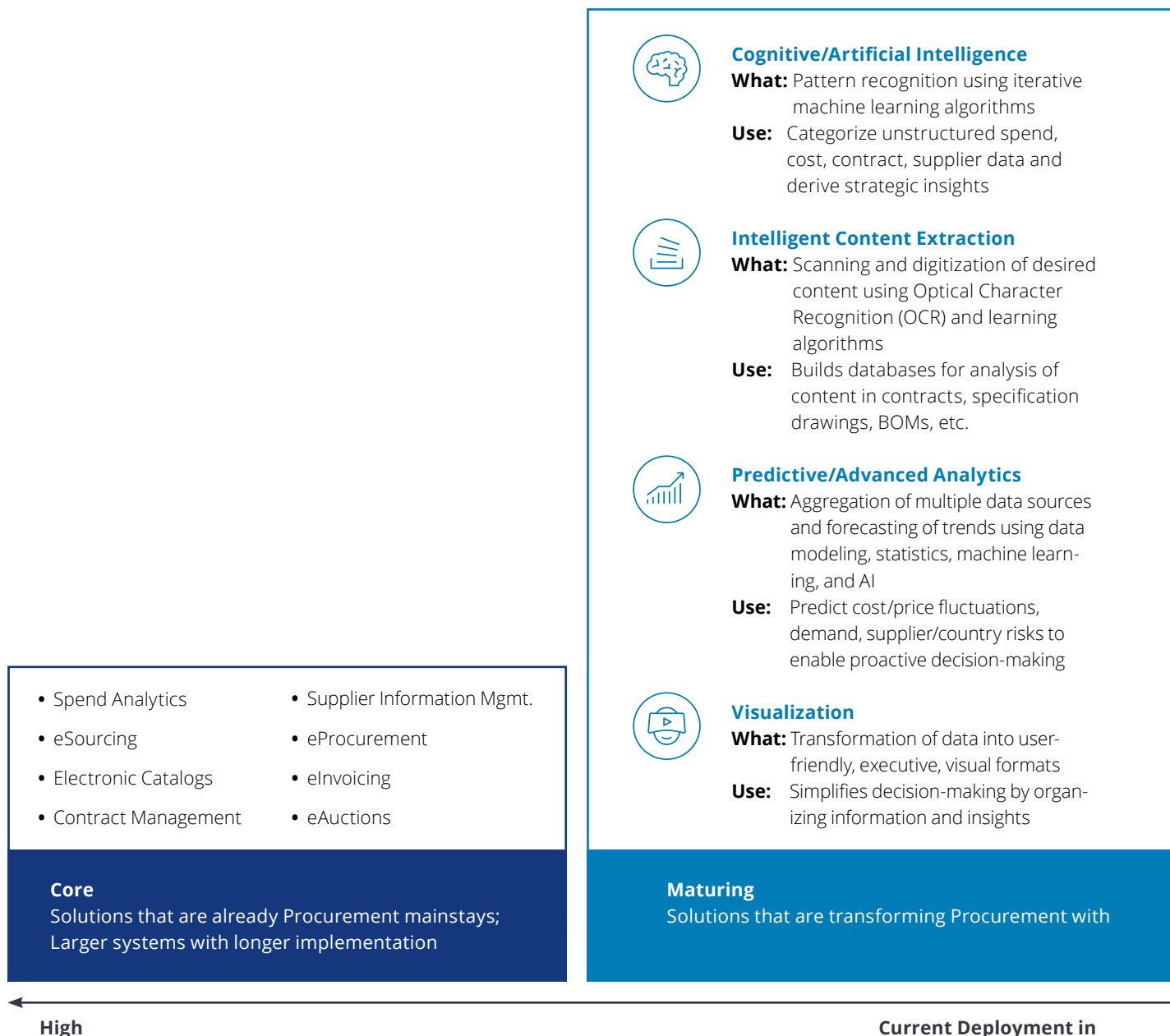### Build the technology-enabled procurement function

State-of-the-art procurement IT systems provide transparency of global supply markets, end-to-end spend information, accelerated internal processes, and a broad portfolio of advanced analytics and sourcing tools to support the teams.

The procurement technology landscape is advancing rapidly, moving through a regular cycle from emerging to maturing, until widely adopted as core (see figure 11).

Low-cost computing and data storage are enabling advancements in mobile technology and cloud services. Constant connectivity is the norm. Sensors bring devices and machines to life in the Internet of Things. More data is available in real time and can be integrated and analyzed. Therefore, building a technology-enabled procurement function is an absolute no-regret move.

Fig. 11 – Overview of digital procurement use cases (not exhaustive)

Cognitive/Artificial Intelligence
What: Pattern recognition using iterative machine learning algorithms
Use: Categorize unstructured spend, cost, contract, supplier data and derive strategic insights

Intelligent Content Extraction
What: Scanning and digitization of desired content using Optical Character Recognition (OCR) and learning algorithms
Use: Builds databases for analysis of content in contracts, specification drawings, BOMs, etc.

Predictive/Advanced Analytics
What: Aggregation of multiple data sources and forecasting of trends using data modeling, statistics, machine learning, and AI
Use: Predict cost/price fluctuations, demand, supplier/country risks to enable proactive decision-making

Visualization
What: Transformation of data into user-friendly, executive, visual formats
Use: Simplifies decision-making by organizing information and insights

- Spend Analytics
- eSourcing
- Electronic Catalogs
- Contract Management
- Supplier Information Mgmt.
- eProcurement
- eInvoicing
- eAuctions

Core
Solutions that are already Procurement mainstays; Larger systems with longer implementation

Maturing
Solutions that are transforming Procurement with

Technology use cases for Procurement have been growing constantly in recent years. However, the deployment of new solutions such as blockchain is still low.

Collaboration Networks
What: Platforms that provide buyers and suppliers with a view of all elements of the value chain

Use: Maintain supplier information in the cloud, measure, analyze, and manage supplier performance, and identify, monitor, and escalate supplier risk

Crowdsourcing
What: Capture of mass input (data, sentiment, etc.) by leveraging mobile technology

Use: Monitoring trends and events impacting supply chains or suppliers

3D Printing
What: Making a physical object from a digital model by laying down layers of a material

Use: Rapid prototyping of goods/parts in support or RFPs

Robotics
What: Software that recognizes and learns patterns and performs rule-based tasks

Use: Automates multiple repetitive manual tasks (e.g., some P2P tasks), driving efficiency and reducing risk

Blockchain
What: Data structure that uses trusted peer-to-peer network to create a digital transaction ledger

Use: Verify and validate transactions in the P2P process; trigger automated payments

Sensors/Wearables
What: Devices that detect, capture, and record physical data

Use: Detect movement of goods, inventory levels for reordering, enable audit tracking during site visits

Cyber Tracking
What: Real-time tracking of online activity

Use: Proactive monitoring of supplier behavior and social media sensing

Virtual Reality/Spatial Analytics
What: Detecting events of changes of status using video, location data, and pattern analysis

Use: Conducting supplier visits or audits

minimal investment

Emerging
Solutions that could impact Procurement in the future

Procurement digitalization pays off: cost, cash and compliance

Many procurement organizations are working with "well-established" IT architectures and highly fragmented application landscapes. Consequently, procurement decision-makers are often hesitant to embark on a major IT transformation journey. Apart from the fact that most solutions are available as cost-efficient cloud-based, 'as-a-service' offerings, procurement digitalization really does pay off:

- More effectiveness and efficiency in procurement, leading to bigger savings. Effective and smart spend analytics tools save time. Efficient processes save time. Chat bots or RPA for supplier communication save time. The list goes on. Procurement teams can devote this time to better preparing category strategies and for negotiations, which usually directly translates into better results and bigger savings.

- Optimized cash flows: Cash flow analytics manage 'days payable outstanding' automatically and reliably. Particularly tail spend, i.e., spend from a large number of smaller suppliers, can be monitored more effectively.

- Improved compliance: Procurement systems can serve as the first line of defense to avoid compliance issues. 'System-guided buying' reduces ordering errors. Availability of real-time data highlights quality issues before it is too late. Automated, AI-based analytics of financial and other KPIs can detect struggling suppliers several levels down the n-tier chain.
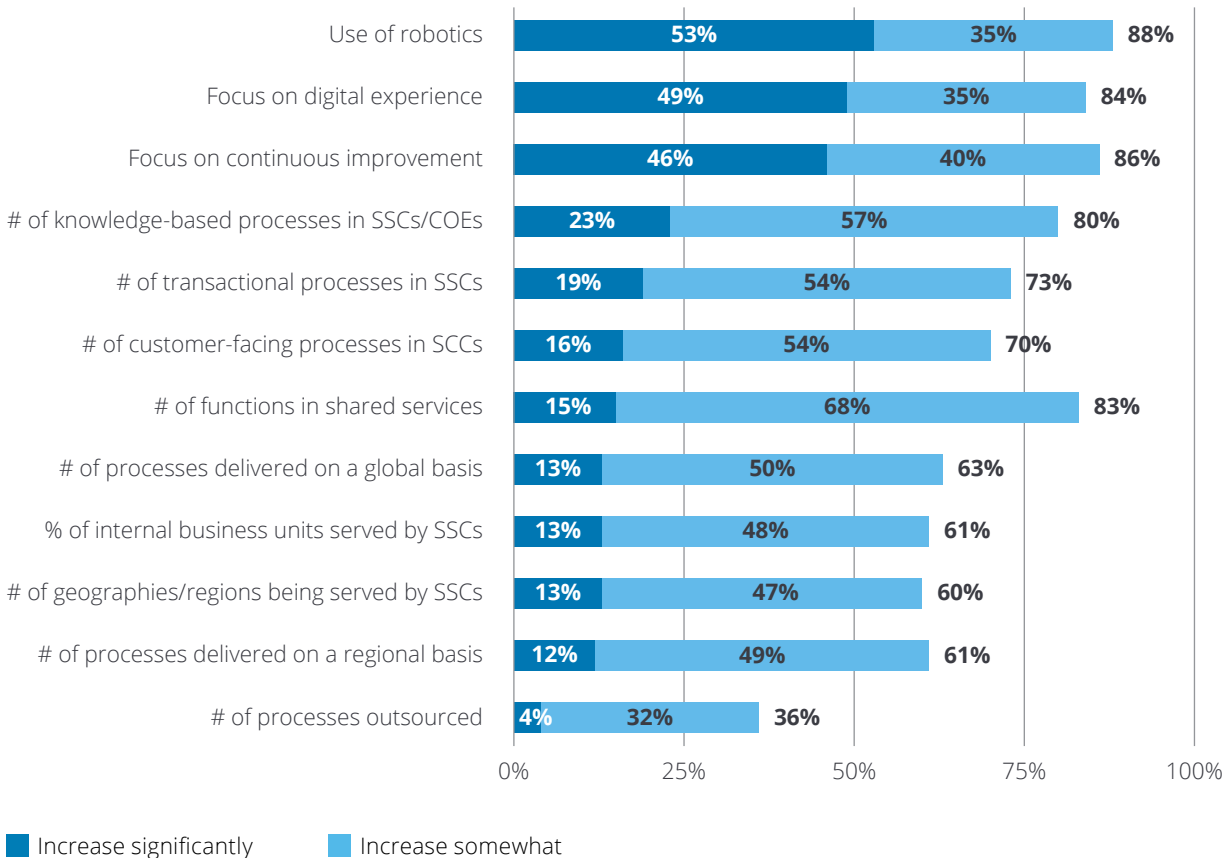
How to slice the elephant

A technological transformation of this magnitude should always be approached holistically, as a joint effort between the procurement organization and IT. New technologies can only deliver on their full potential if operational processes have been streamlined accordingly. Experience from unsuccessful system transformations shows that 'old processes plus new technology equals expensive old processes.'

Furthermore, the future system landscape must be able to adapt to changing business model demands. Referring back to our automotive value chain scenario: Does the system support profit-sharing contracts for digital services? Can new performance metrics, e.g., for the level of innovation per commodity, be integrated? Finally, finding the right mix of core cloud-based systems (e.g., Coupa, SAP Ariba) and bespoke developments for critical processes (e.g., innovation management, advanced SRM) is key. Defining a target IT architecture that supports integrated solutions and limits on-premise applications will be the first step.

Organizationally split transactional and knowledge-intensive procurement tasks

In recent decades, many large automotive companies have outsourced transactional activities to shared service centers (SSCs) – either self-managed organizations or organizations run by process-outsourcing service providers. Activities suited to outsourcing to an SSC are typically generic services, high in volume and low in value-add, which can be bundled regionally or even company-wide. Examples of procurement include tasks such as tender and approval process administration, creation of purchase orders, or updating supplier price information. The main focus of SSCs lies in operational process efficiency. As pointed out above (in no-regret move 3), technology can effectively digitalize and automate many procurement processes, especially highly transactional activities that include analysis of large data volumes. Potential for further efficiency lies in the implementation of RPA and AI-based tools. At Deloitte we work with many clients globally in SSC-related matters and survey their expectations of the future use of SSCs regularly.[3] Not only is the share of procurement processes performed via SSCs increasing (+14% from 2017 to 2019), but a significant increase in the use of robotics, a focus on digital experience, and a focus on continuous improvement within the next 3–5 years is expected by more than 45% of survey respondents (see figure 12).

Fig. 12 – How are organizations expecting to change their use of shared services in the next 3–5 years

Category	Increase significantly	Increase somewhat	Total
Use of robotics	53%	35%	88%
Focus on digital experience	49%	35%	84%
Focus on continuous improvement	46%	40%	86%
# of knowledge-based processes in SSCs/COEs	23%	57%	80%
# of transactional processes in SSCs	19%	54%	73%
# of customer-facing processes in SCCs	16%	54%	70%
# of functions in shared services	15%	68%	83%
# of processes delivered on a global basis	13%	50%	63%
% of internal business units served by SSCs	13%	48%	61%
# of geographies/regions being served by SSCs	13%	47%	60%
# of processes delivered on a regional basis	12%	49%	61%
# of processes outsourced	4%	32%	36%

■ Increase significantly   ■ Increase somewhat

Source: Deloitte 2019 Global Shared Services Survey Report.

To reflect this in the context of the future of procurement: State-of-the-art procurement technology will allow efficiency gains previously realized by the physical outsourcing of activities to SSCs to be achieved – to a large extent, if not completely.

Develop new procurement expertise in centers of excellence

The complementary concept to SSCs is the creation of centers of excellence (CoEs). They provide high value-add and general services in the sense that they are not specific to any location. A CoE works with a centralized pool of experts that leverages specialized knowledge and best practices company-wide. In this field, we see a multitude of use cases in the automotive procurement of the future, such as

- negotiation tools and support services (e.g., game theory-based approaches)

- use of state-of-the-art digital sourcing and analytics tools (e.g., eAuctioning or award optimization)

- cost analysis and value engineering for new 'digital' commodities (e.g., software and digital services)

- new learning concepts and content (e.g., on innovation scouting methods, supplier relationship management with non-traditional automotive suppliers, AI and machine learning concepts)

- 'Future Procurement Accelerators' as a company-wide innovation unit to leverage disruptive technologies to develop and improve procurement functions (see chapter IV)

Organizationally centralizing these activities, either as SSCs or CoEs, has the clear benefit of boosting effectiveness, efficiency, and speed of organizational innovation due to scalability. We will discuss the size of potential efficiency gains in the following chapter.

5

Bring your employees in on the journey

One final "must do" across all scenarios is the result of all of the above: adjust the procurement role and capability model to reflect increasing innovation speed, new spend categories, the transformation of procurement technology, and the restructuring of tasks in SSCs and CoEs – not forgetting to keep motivating the right talent for the procurement jobs of the future.
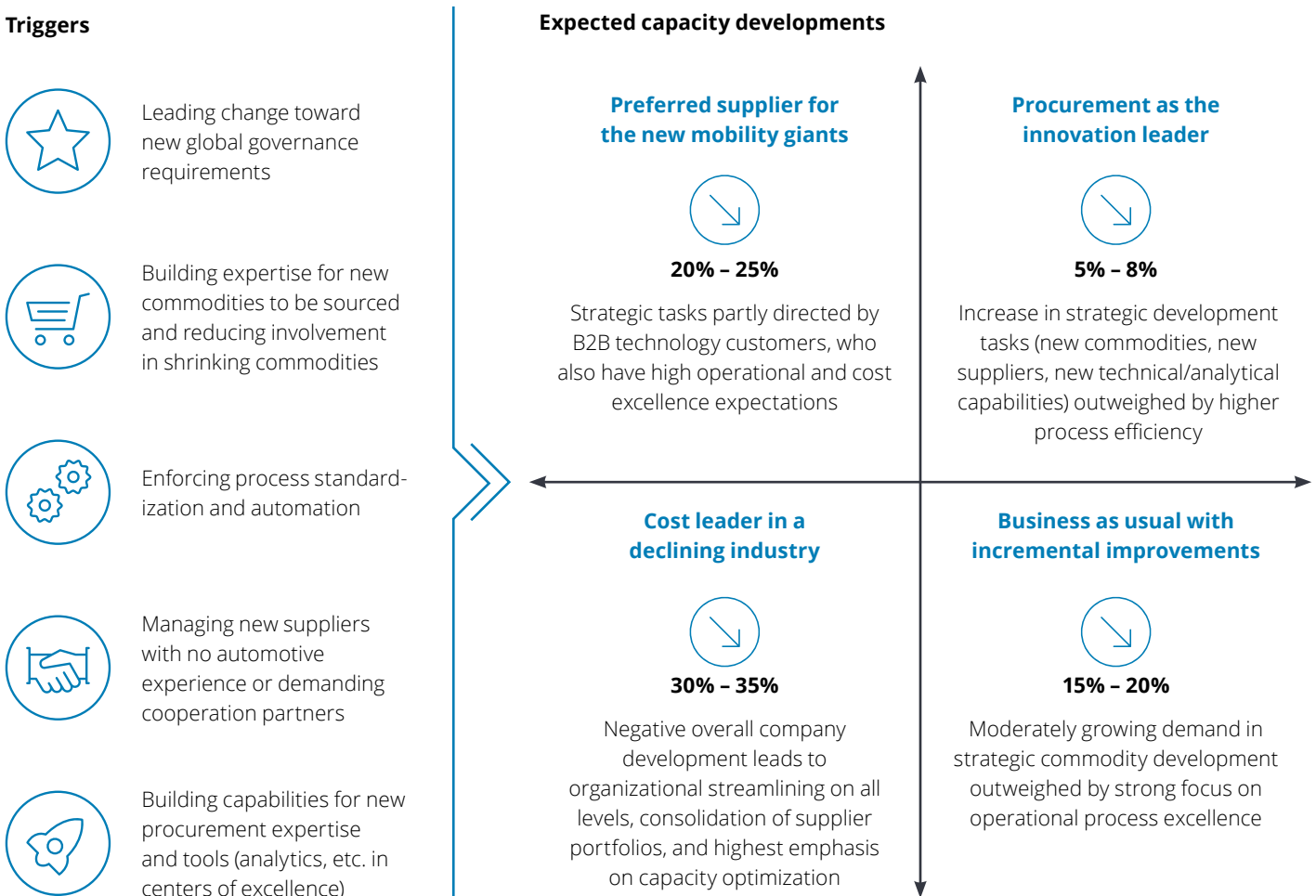
New capabilities needed

An initial key aspect of this organizational adjustment is the enabling and training of procurement teams in order to be able to thrive in the future. Every employee needs to have a solid understanding of new digital technologies – in the car, in mobility services around the car (see 'no-regret move 2'), but also in the context of procurement processes and systems (see 'no-regret move 3'). A best practice example in this context is an interactive self-learning system called 'Digital Fluency Academy.' The program gives an overview of current digitalization trends and provides an understanding of their actual benefits (and limitations) for the company and its employees. The curriculum is updated regularly to keep pace with the rapid innovation in this field. At Deloitte we are so convinced of the value of this program that not only do we recommend it to our clients, but we rolled it out in-house, training all our own employees in how to use it.

Changing capacity demands

Considering the effects of new spend categories, new supplier portfolios, new technologies for automation, etc., we expect drastic changes in procurement roles as well as capacity demand. On the one hand, activity scope and capacity demand for tactical and operational procurement roles will diminish due to speedy progress in process digitization, automation and/or outsourcing. On the other hand, strategic roles that require, for example, new technology (such as digital services) as well as new supplier network expertise will gain in importance. Independently of the applicable scenario, we do expect that efficiency gains will outweigh scope and capacity increase. Considering this overarching rationale as well as our experience with working with OEMs and large Tier 1 suppliers, we regularly use a parametric and scenario-based capacity model, which helps quantify the impacts of future procurement trends on organizations (see figure 13).

Fig. 13 – Triggers for changing procurement capacity demands and expected capacity developments per scenario

Triggers

⬠ Leading change toward new global governance requirements

🛒 Building expertise for new commodities to be sourced and reducing involvement in shrinking commodities

⚙ Enforcing process standardization and automation

🤝 Managing new suppliers with no automotive experience or demanding cooperation partners

🚀 Building capabilities for new procurement expertise and tools (analytics, etc. in centers of excellence)

Expected capacity developments

Preferred supplier for the new mobility giants

↘

20% – 25%

Strategic tasks partly directed by B2B technology customers, who also have high operational and cost excellence expectations

Procurement as the innovation leader

↘

5% – 8%

Increase in strategic development tasks (new commodities, new suppliers, new technical/analytical capabilities) outweighed by higher process efficiency

Cost leader in a declining industry

↘

30% – 35%

Negative overall company development leads to organizational streamlining on all levels, consolidation of supplier portfolios, and highest emphasis on capacity optimization

Business as usual with incremental improvements

↘

15% – 20%

Moderately growing demand in strategic commodity development outweighed by strong focus on operational process excellence

Considering the overall negative capacity outlook across all scenarios, it is important to note: Technology that can be used to reduce transactional tasks should not be considered a threat by procurement teams. In reality, it enables them to focus on more value-adding strategic tasks that require expertise.

Managing performance in the future of procurement
Such a profound change in capabilities, roles, and team structures must also be supported by a corresponding performance management approach. The definition of performance KPIs must cover conventional categories such as 'cost,' 'quality,' and 'compliance.' On top of that, measuring performance in the areas of 'flexibility,' 'sustainability,' and 'innovation' will gain even more importance in the future.

One last aspect that must not be forgotten: Depending on how future automotive value chain scenarios unfold (e.g., considering current attitudes and demands on climate policies among school students), carmakers must be prepared to lose some of their attractiveness as employers. It is therefore crucial to keep the employer brand – especially for procurement jobs – fresh and in line with new business models for the mobility of the future.

Chapter IV: Define your 'accelerated' procurement transformation path

If anything, one thing should be clear by now: Automotive CPOs will have a lot on their plate in the upcoming decade and pressure to act is high. So, how best to approach this type of complex and multi-dimensional transformation automotive procurement functions will have to undergo in the next decade? While much has been written about designing transformation journeys, we believe that essentially it boils down to three building blocks.
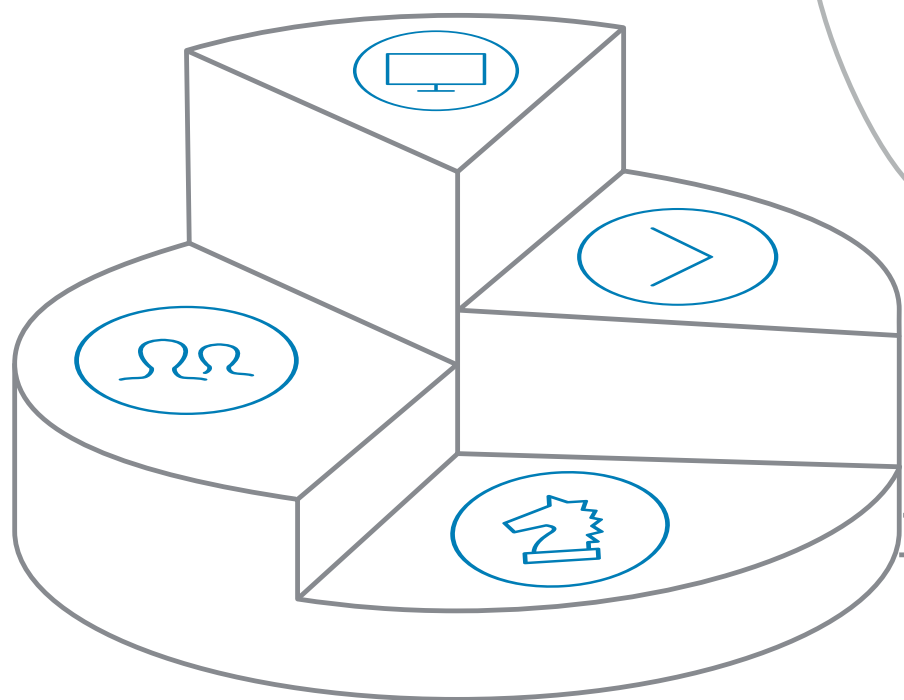
Transformation target design: Know your starting point to define your vision

Aspects to be incorporated into a transformation toward a future automotive procurement function were laid out in the previous two chapters, be they future procurement scenarios, specific items on the CPO agenda, or the set of five no-regret moves. However, the first step in any procurement transformation is to develop a company-specific strategic vision based on these influences. There is no "one-size-fits-all" approach. Instead, the actual status quo as well as specific aspirations and capabilities must always be taken into consideration. Performing a neutral assessment to determine the status quo is therefore a must. Deloitte offers procurement performance assessments (along the dimensions of Deloitte's Procurement Operating Model, see chapter I) but also assessment of an organization's digital maturity: The "Digital Maturity Index" – jointly developed by Deloitte and the University of Duisburg-Essen – quantifies and benchmarks the status quo in terms of digitalization and highlights concrete fields of action.[8]

However, we must ask ourselves one question again: Was it not the core assumption of this study that future developments are hardly ever one-dimensional and straightforward? Structuring a complex procurement transformation along a classic waterfall approach often impedes navigation in disruptive environments. Therefore, a second important building block for a successful procurement transformation in our view is the "Future Procurement Accelerator".

Fig. 14 – Building blocks for the accelerated procurement transformation

Holistic transformation target design

Accelerated execution

Forward-looking strategy review
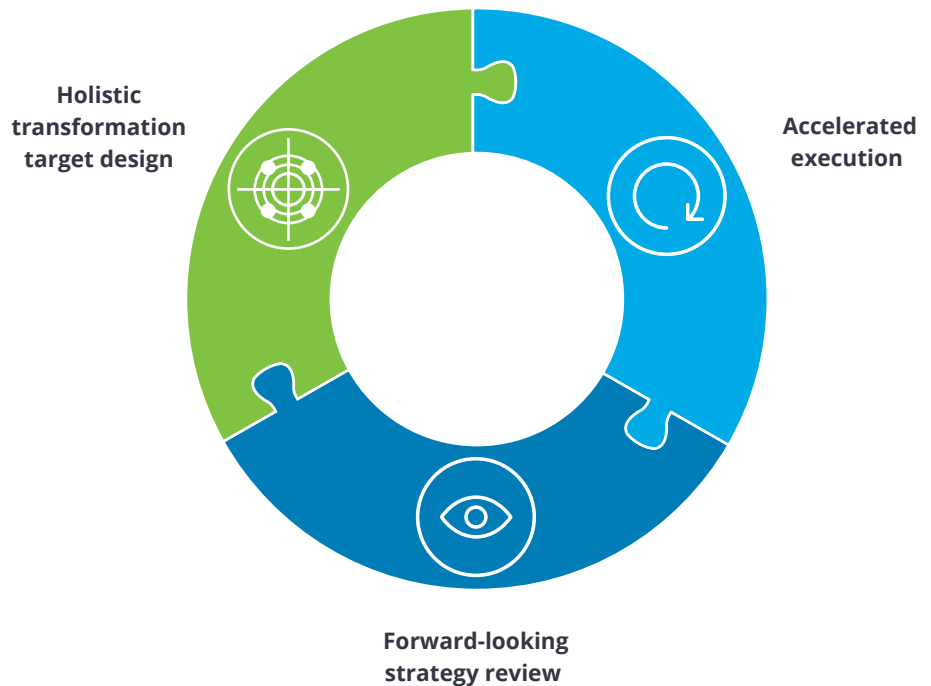
Accelerated execution: Put your 'intrapreneurs' in the driving seat

Deloitte has adapted the structures and processes of digital venture capital funds and developed the 'Future Procurement Accelerator,' a powerful tool that helps enterprises boost innovative ideas and speed up the transformation agenda. The basic idea behind it is that employees become "intrapreneurs" and take responsibility for the success of their ideas. Enhanced by a support infrastructure, a dedicated investment fund (including impact controlling), and agile process structures, valuable ideas can be realized quickly.

Employees become idea owners by simply submitting their ideas in a brief pitch document (see figure 15 for a comparison between traditional and accelerated decision-making paths). They present the concept to an Accelerator Investment Board in a five-minute pitch. Like in a venture capital organization, the board quickly decides to either decline or fund the idea, which enables the idea owner to detail the presented concept further. In an iterative and agile process, the idea owner develops their innovation toward application maturity: Starting with an initial concept, the next stages include the development of a prototype and an implementable minimum viable product (MVP).
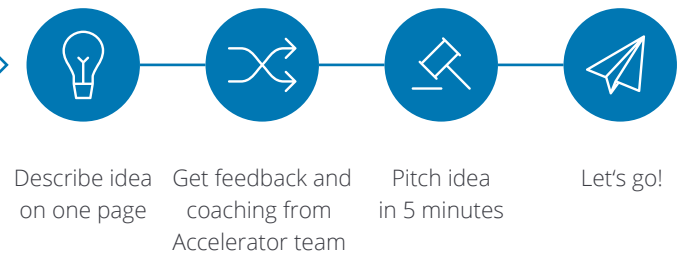
[8] See for more information about the Deloitte Digital Maturity Index (DMI): https://www2.deloitte.com/de/de/pages/operations/articles/digital-maturity-index.html.

Fig. 15 – Accelerating decision-making with the "Future Procurement Accelerator"
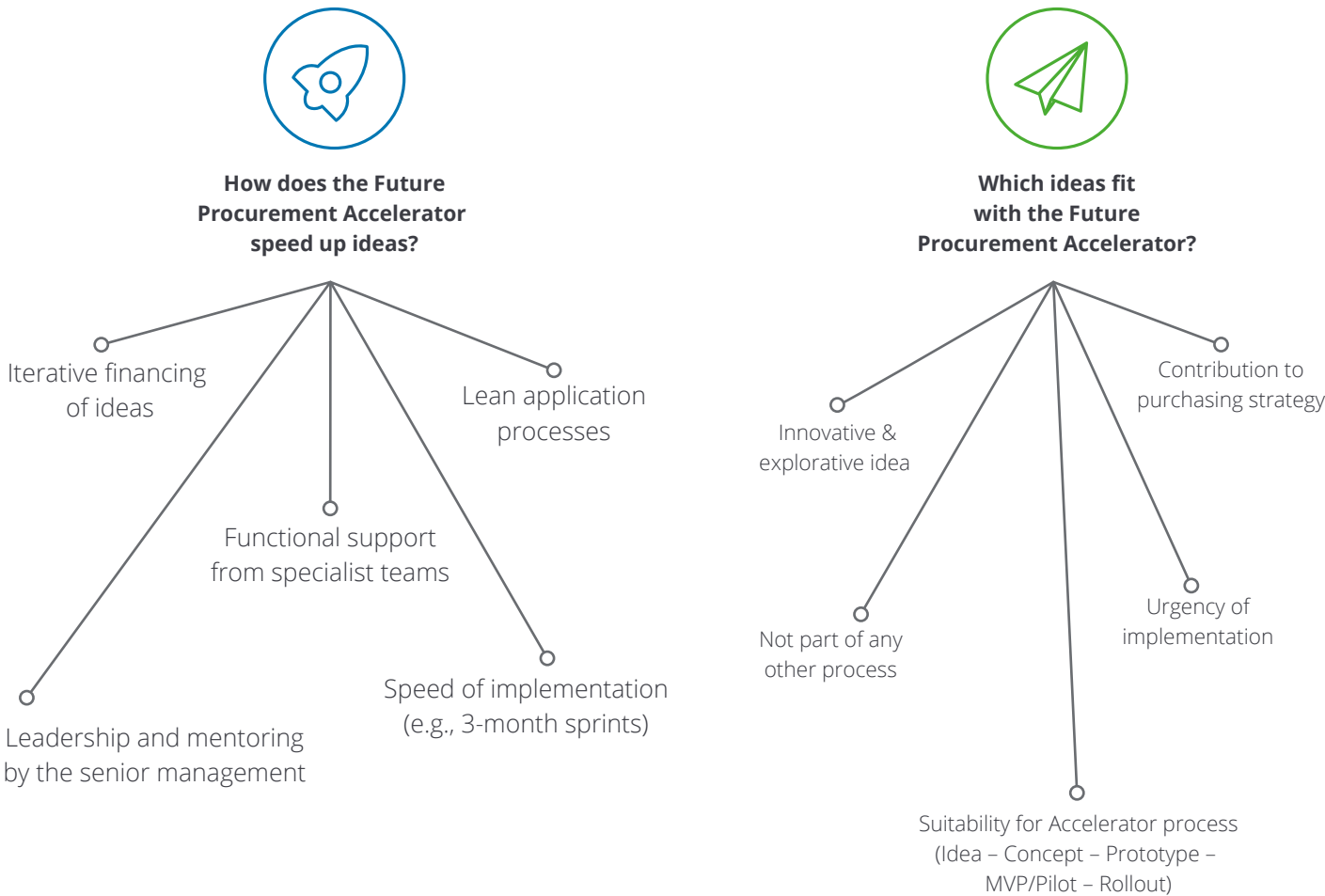
Traditional decision-making path

Decision-making in the "Future Procurement Accelerator"

Fill out initial project charter

Introduce the idea to the team leader

Incorporate feedback and jointly present to the head of department

Prepare and align decision proposal for board

Clarify financing options

Align with affected departments and detail concept

Present idea to board

Wait for feedback

Let's go!

Describe idea on one page

Get feedback and coaching from Accelerator team

Pitch idea in 5 minutes

Let's go!

Traditional structures tend to require lengthy decision-making processes for securing project funding with a long-term budget. In contrast, the mantra of the 'Future Procurement Accelerator' is 'think big, start small, act fast.'

With a "Future Procurement Accelerator" companies can encourage employees to become "intrapreneurs" and accelerate decision-making processes. This increases ownership and speed.

Fig. 16 – Accelerating Innovation with the Future Procurement Accelerator

How does the Future Procurement Accelerator speed up ideas?

- Iterative financing of ideas
- Functional support from specialist teams
- Lean application processes
- Leadership and mentoring by the senior management
- Speed of implementation (e.g., 3-month sprints)

Which ideas fit with the Future Procurement Accelerator?

- Innovative & explorative idea
- Contribution to purchasing strategy
- Not part of any other process
- Urgency of implementation
- Suitability for Accelerator process (Idea – Concept – Prototype – MVP/Pilot – Rollout)

Forward-looking strategy review: Take it to the next step

Let us recall the scenario descriptions in chapter II. With the pace of change in spend categories and procurement processes picking up, fostering digital competencies and speed of innovation are top priorities on the CPO agenda. Innovation is a key differentiator across all four scenarios, either as an innovation driver for service differentiation (as in scenarios one and four) or for driving efficiency and cost optimization ideas (as outlined in scenarios two and three). It goes without saying that this high speed of innovation also impacts the procurement transformation agenda itself. Therefore, regular forward-looking strategy reviews are more than necessary.

The tool of choice for Deloitte's Center for the Long View[9] (see chapter I) for keeping scenario-based strategies up to date is Gnosis.strategy (see figure 17) – a web-based decision support tool which combines AI-powered indicator monitoring with scenario design methodology. Gnosis.strategy uses ultra-reliable, market-leading "Natural Language Processing" (NLP) artificial intelligence, designed to evaluate any relevant qualitative or quantitative data source. It is capable of identifying, structuring, and interpreting 15,000 events for 20 indicators every week. It would take approximately 19 analysts working 40 hours per week to replicate the power of this tool.

The insights from such powerful analysis and interpretation tools can then be used on a regular basis to review the initial transformation vision and roadmap.

Fig. 17 – Gnosis.strategy – AI-powered decision support platform for monitoring and evaluating changes in business environments
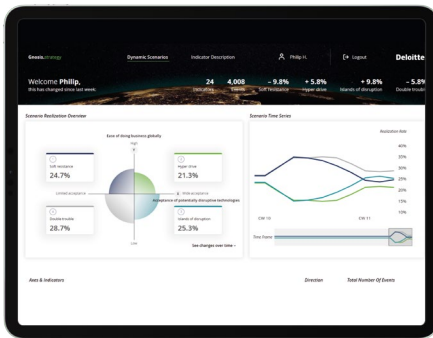
Gnosis.strategy **...**
- is a web-based decision support platform accessible via PC, tablet, or phone
- combines AI-powered indicator monitoring with scenario methodology
- uses AI to make structured and unstructured market data usable
- monitors and assesses indicators that reflect business environment elements

Future Direction
Monitor scenario realization over time based on changes in business environments to identify and evaluate resulting strategic needs for action

Market Intelligence
Explore indicator development data to trace business environment changes back to events, analyze trends, or assess competitors

Indicator Management
Actively manage monitored indicators and ensure their exhaustiveness and validity over time based on artificial intelligence and expert analyses

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[9] See for more information about the Deloitte Center for the Long View:https://www2.deloitte.com/de/de/pages/strategy/topics/clv-en.html.

Conclusion

The automotive industry is in turmoil and the procurement function will be instrumental in helping it weather the storm. The scenario analysis in this study showed that the required core capabilities, the ways of working, and how value is generated in procurement will change significantly. Of course, speed of innovation is key. And while CPO agendas vary depending on which future scenario will materialize - a set of five no-regret moves should be addressed in any case:

1. **Accelerate supplier portfolio development – without compromising supply chain robustness**

2. **Drive commercial optimization of new 'digital' spend with new business models**

3. **Build the technology-enabled procurement function**

4. **Organizationally split transactional and knowledge-intensive procurement tasks**

5. **Bring your employees in on the journey**

When it comes to dealing with ambiguity along the transformation journey, the three key building blocks are:

- **design your transformation agenda based on a clear understanding of the status quo (e.g., based on the Deloitte Digital Maturity Index)**

- **accelerate execution using the "Future Procurement Accelerator"**

- **regularly review your strategy (e.g., supported by gnosis.strategy)**

We hope the considerations in this study will provide guidance to automotive procurement leaders in these times of great uncertainty. Do we think everything has been said and is clear with this study? Realistically speaking: no! We would therefore like to invite all readers to reach out to us and start a conversation about their specific procurement transformation toward the next successful decade in the automotive industry.

Automotive business models will not be future-proof without determined transformation efforts from the procurement function.

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