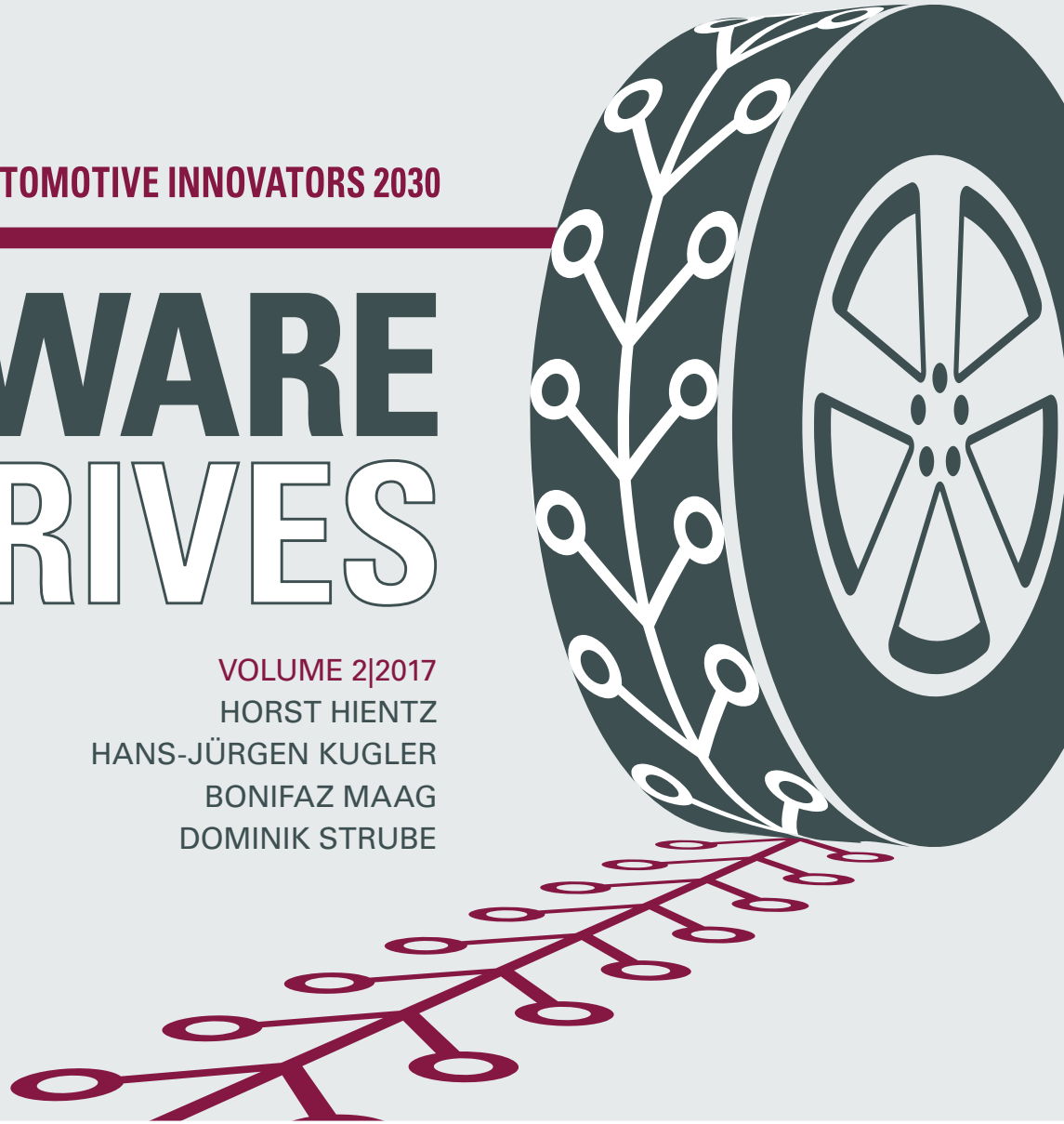
DIGITAL CAPABILITIES FOR AUTOMOTIVE INNOVATORS 2030

SOFTWARE DRIVES



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Kugler Maag Cie
People. Performance. Processes

Integration of digital capabilities:

- Management consulting
- Performance improvement
- Process and project implementation

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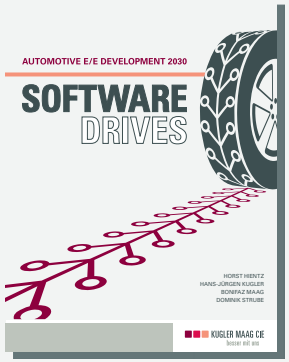
Content

- Survey framework
- Automotive industry challenge
- Business concerns
- Architecture concerns
- Process concerns
- Organization and Culture concerns
- Summary

Survey framework



Successor of the industry survey ›**Software Drives 2030.** Automotive E/E Development‹ (June 2015).

» software-drives.com

Methodology

Worldwide expert interviews of E/E Executives and Managers – inside and outside Automotive

Timeframe

January 2017 until June 2017

In cooperation with

BMW GROUP

BOSCH

Universität St.Gallen

The digital transformation redefines the industry.

Multi-dimensional transformation:

Industry structure	Industry outsiders as market entrants, co-creation of value.
Technology	Service-driven business emerges when electronics meets IT & AI.
Customer	Digital lifestyle dominates, B2B2C, decrease of ownership.
Strategy & Business	Transmission from the interaction of technology and social demands.

The digital transformation affects each dimension.

Digital services rely on specific capabilities across all business dimensions – B/A/P/O concerns.

Structure conducts performance:

Service-driven Business models

require appropriate system Architectures

based on purposeful Processes

within an enabling Organization & Culture.

Game changer: Automotive goes digital services.

Services becomes Automotive‘s new paradigma.

Services shape the value proposition.

Services drive brand differentiation.

Services define the customer interface.

A variety of service-driven business models will increase dramatically the diversity of industry.

The value providers define the brand.

Established vs service-driven value propositions

Manufacturer | Provider | Consumer

Ownership

»DRIVE YOUR OWN CAR.«

Mobility-as-a-Service

»BE MOBILE WHEREVER YOU NEED IT.«

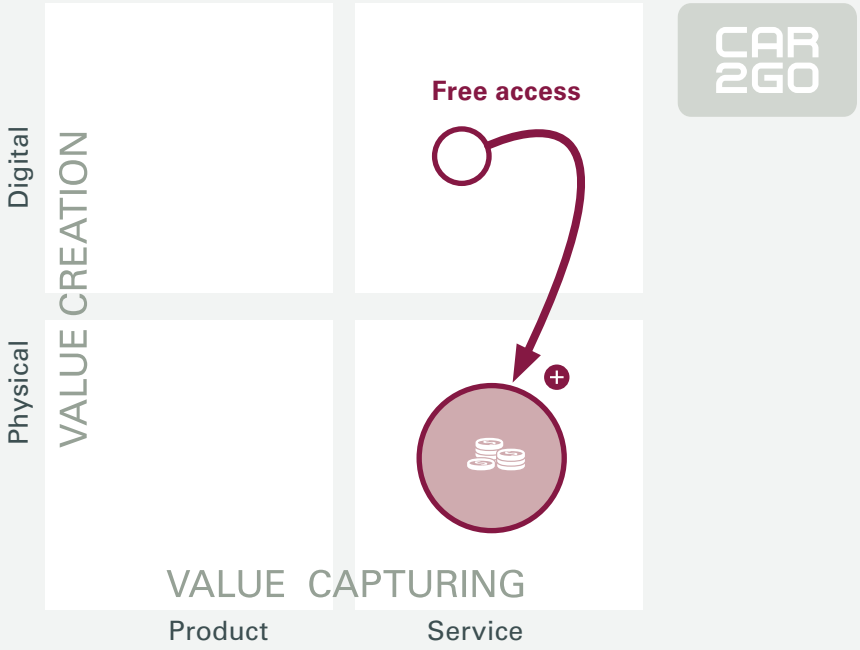
Augmented mobility

»RIDING TIME MEANS VALUE TIME.«

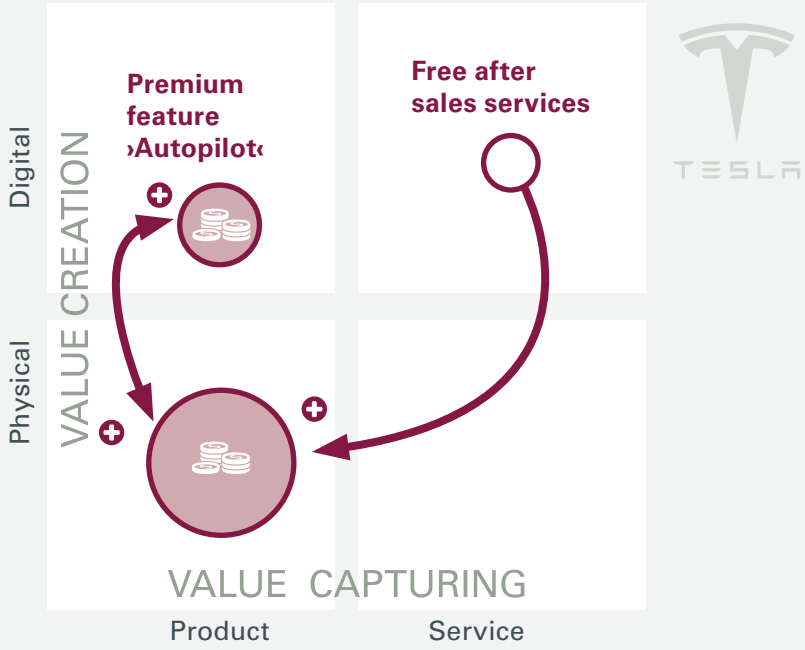
Services become a business's prerequisite – mandatory for value creation, optional for value capturing.

Business model variety through services.

Example: Hardware as a Service



Example: Freemium Services



Source: Prof. Elgar Fleisch et al., St. Gallen University

The shift from product-oriented to service-driven business models requires to rethink value-creation.

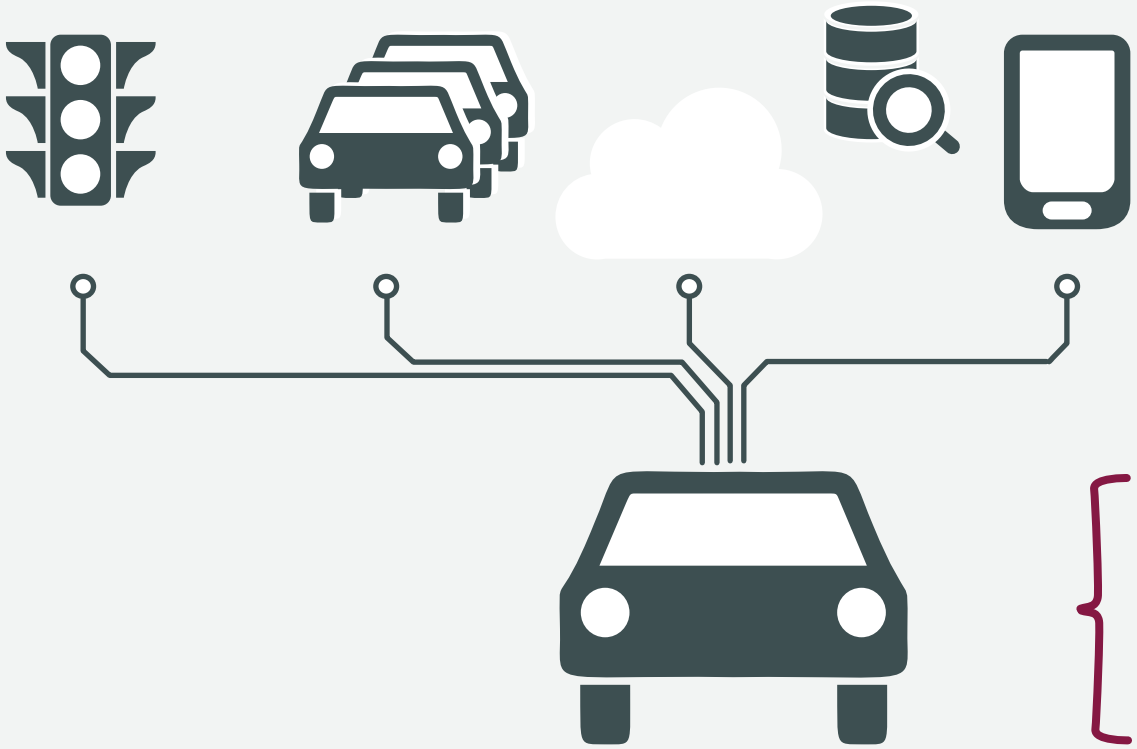
Required capability (exemplified):

Creating service-driven value.

- Customer focus: Thinking outside-in, beyond traditional industry boundaries and agnostic toward the propretiary vehicle.
- Defining the value components: Value creation and/or value capturing.
- Eco systems: Co-operating with cross-industry value creation networks.
- Adjusting the company‘s mind-set and structures – budget shift from CapEx (development) to OpEx (operations).

Digital services operate in a system-of-systems so constraints are to be agreed, implemented & monitored.

Systems encounter coincidentally.



LAYERS

CONNECTED

PHYSICAL

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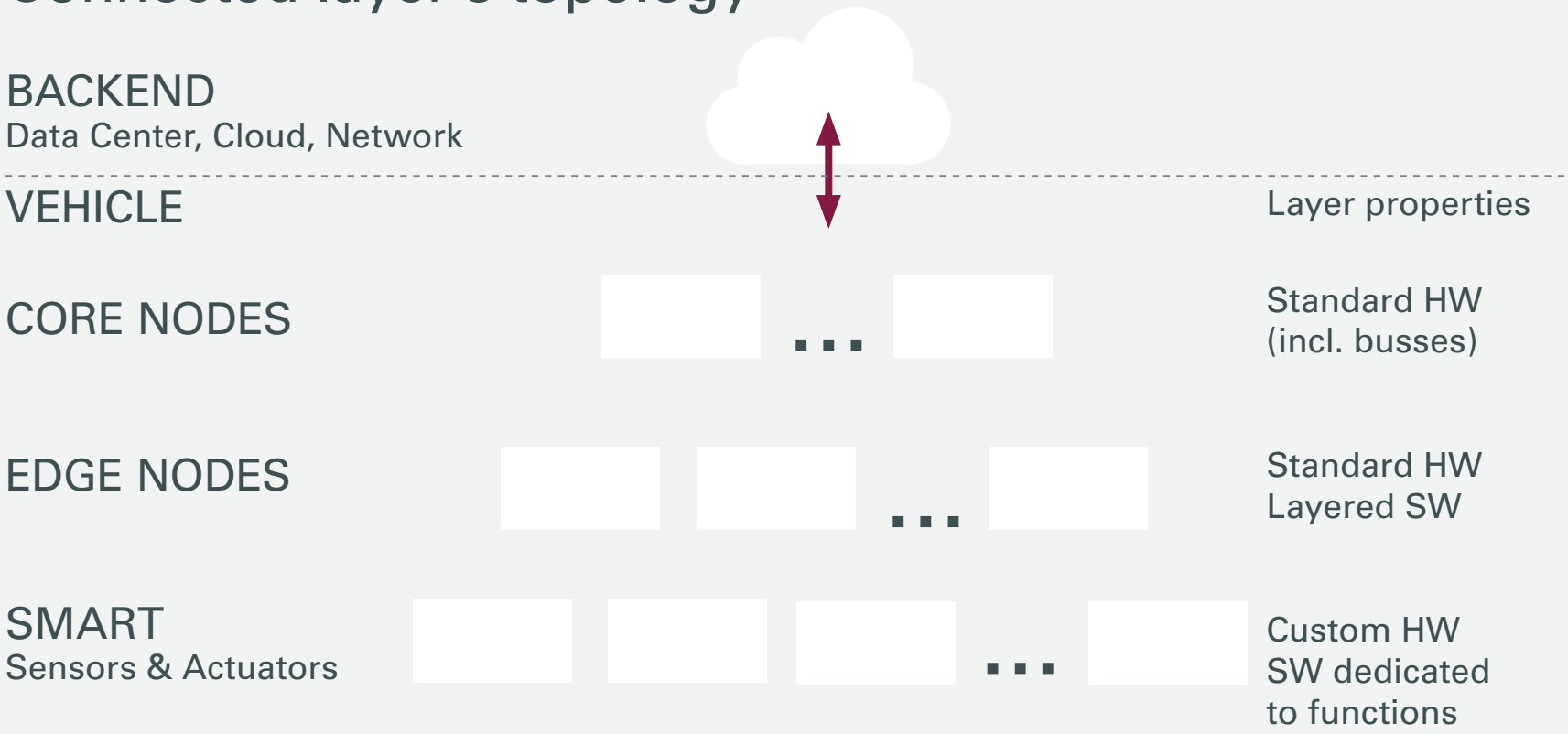
Service-driven business models require a service-oriented system environment and architecture.

Connected layer's topology



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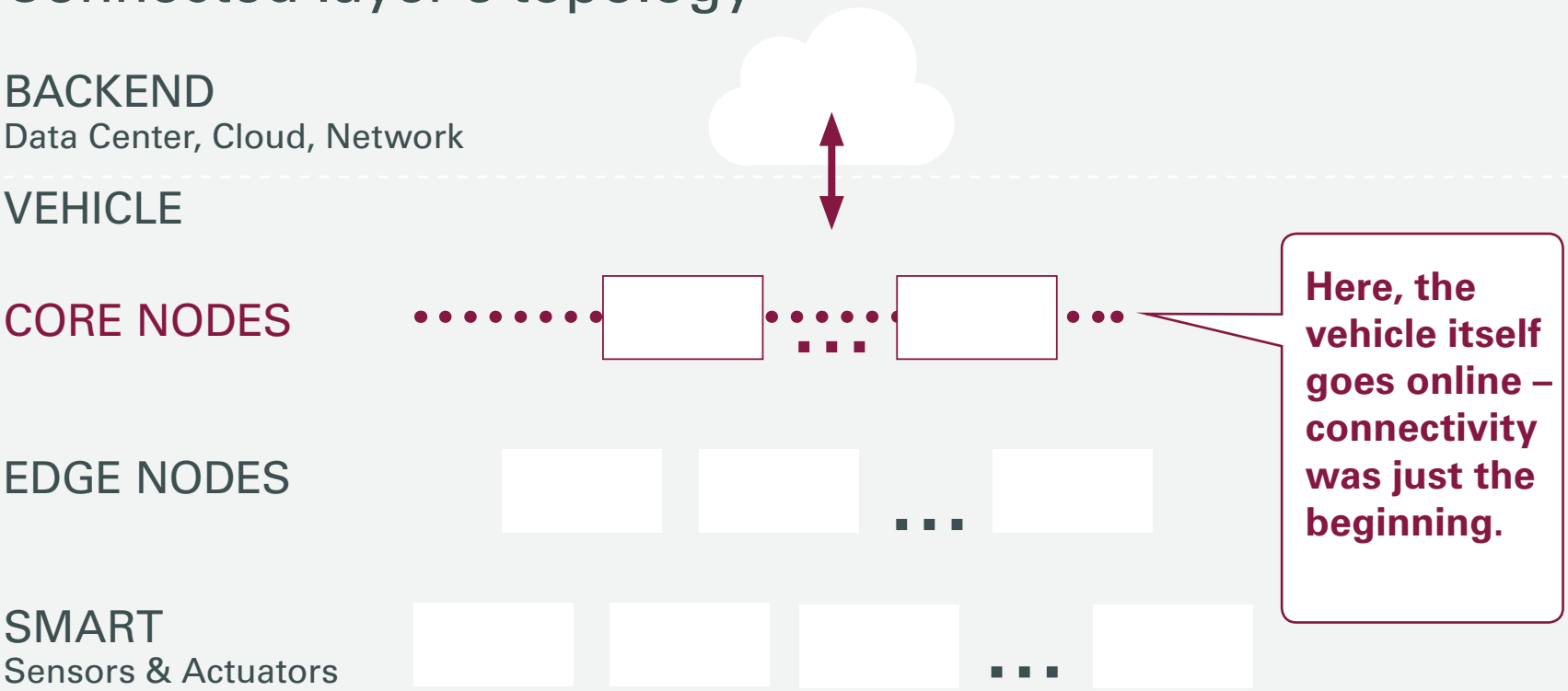
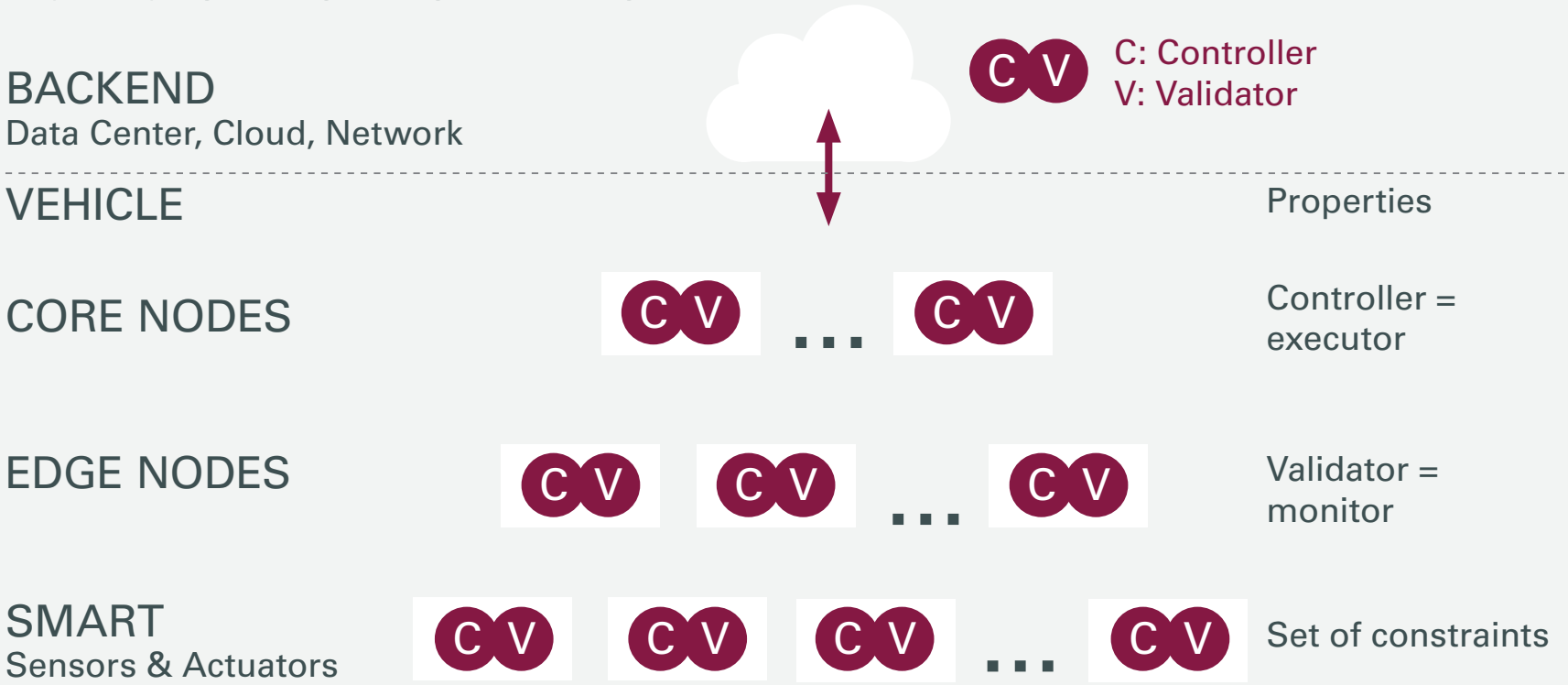


Service-driven business models require a service-oriented system environment and architecture.

Validator–controller model

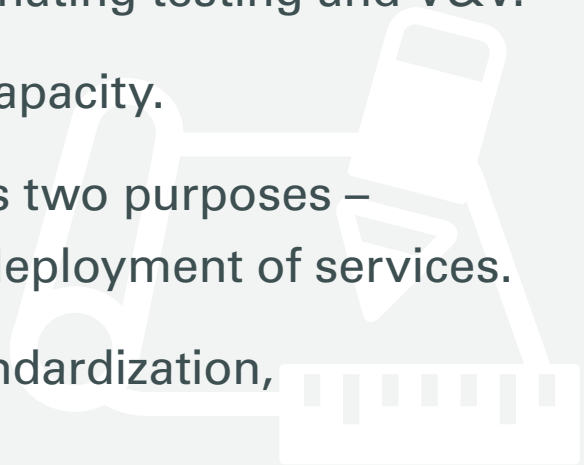


Architectures have to anticipate the potential growth of emergent service-driven businesses.

Required capability (exemplified):

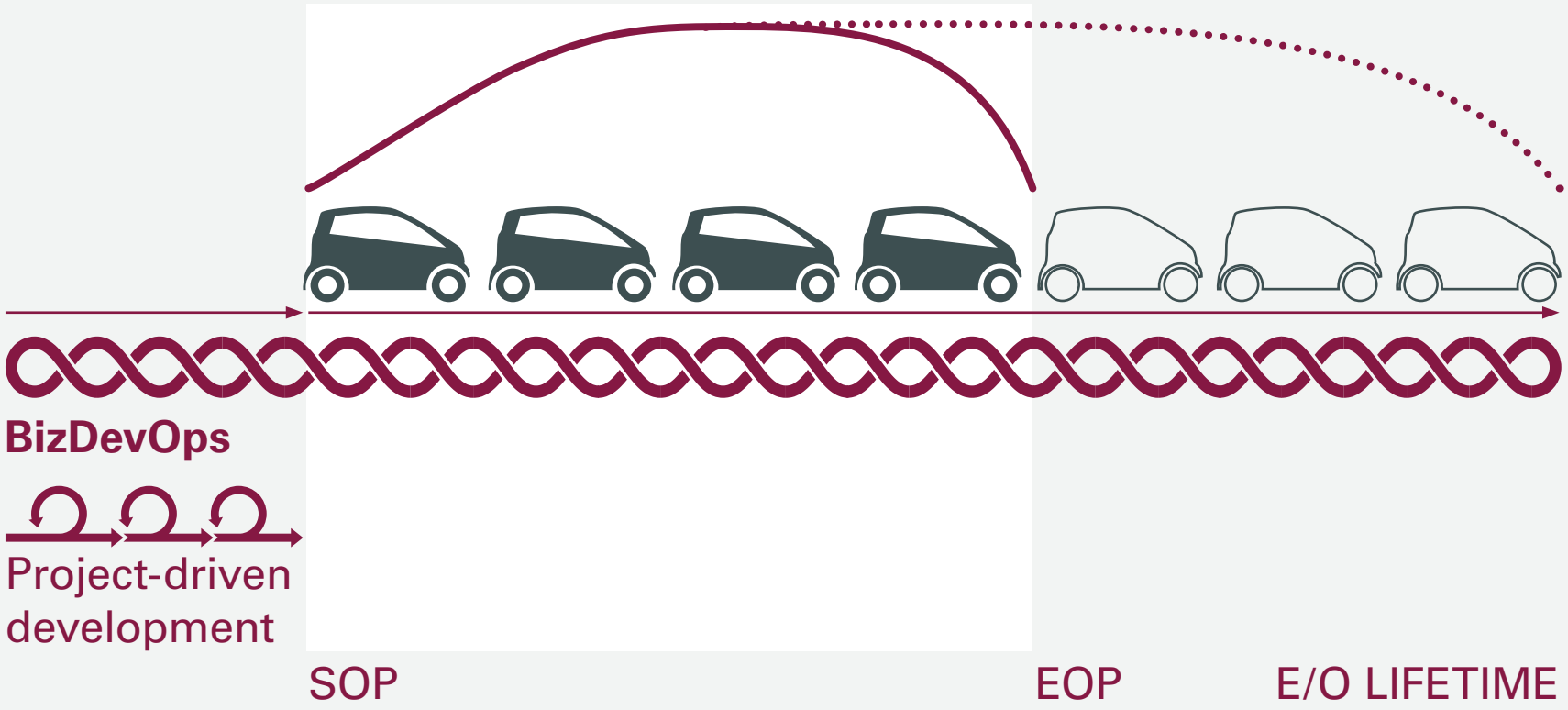
Developing scalable architectures.

- Designing an asynchronous architecture with end-to-end focus.
- Selecting appropriate architectures and automating testing and V&V.
- Priming the system for scaling with surplus capacity.
- Virtualization on Core and Edge Nodes serves two purposes – supports freedom from interference & easy deployment of services.
- Benefiting from blue prints, open source, standardization, commodizitation, etc.



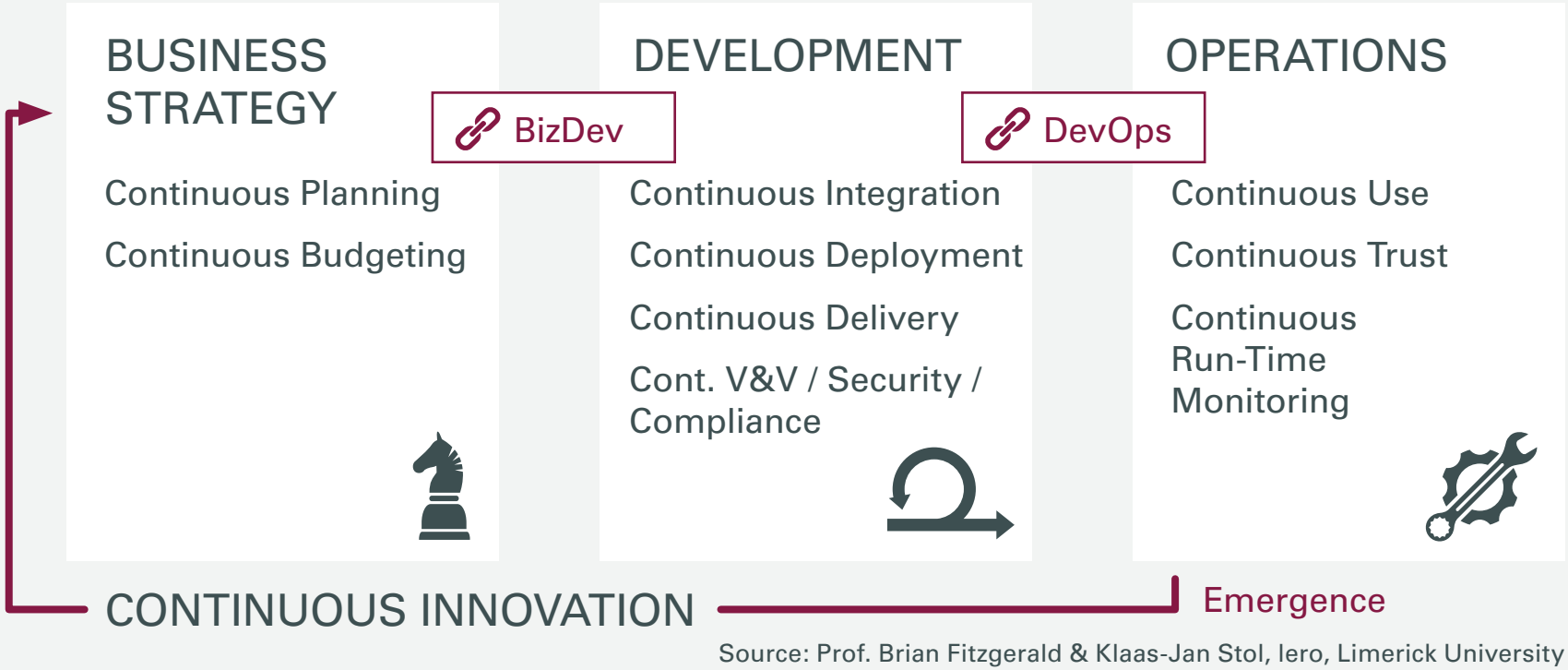
Continuous Engineering represents the shift from CapEx to OpEx across the intended vehicle lifetime.

Development over the intended lifetime:



Continuous Innovation aligns Continuous Engineering with business concerns – continuously.

Continuity by BizDevOps capabilities:

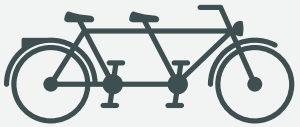


Source: Prof. Brian Fitzgerald & Klaas-Jan Stol, Iero, Limerick University

Velocity, time-to-market and instant adaptability over cost efficiency.

Slack resources enables velocity by

allowing simultaneous experiments and A/B testing for alternative business approaches.



facilitating protective capacity buffers for developers and engineers.

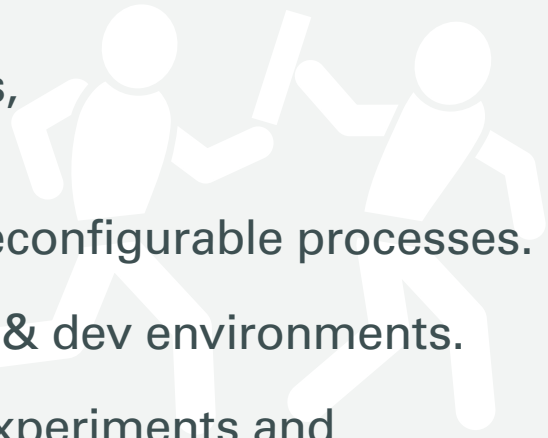
The capability to quickly reconfigure collaboration within and beyond an organisation will become key.

Continuous Innovation per BizDevOps capabilities connects business functions.

Required capability (exemplified):

Engineering value continuously.

- Continuing Engineering across the lifetime to enable continuity between BizDevOps.
- Shifting awareness and resources to operations, the new 24/7 customer interface.
- Accelerating velocity with agile, adaptive and reconfigurable processes.
- Gaining flexibility from 3rd party infrastructures & dev environments.
- Fostering both value and time-to-market with experiments and A/B testing simultaneously.



A digital organization embraces services as the industry's transformation key driver.

Serviceability incorporates

an end-to-end customer focus albeit outdated industry problem definition patterns.

cooperative value creation in a cross-industry and in a cross-functional ecosystem.

the balance of ambiguity and creative tensions

- antagonistic types of innovation (evolutionary vs revolutionary)
- integration of different business logics (Dev vs Ops)

Serviceability and a customer end-to-end focus challenges the organizational structure.

From hierarchy to Continuous Innovation (BizDevOps):

A digital services team is a cross-functional team empowered by decision-making responsibility.

BizDevOps teams benefit from:

- holistic approach
- intrapreneurship
- customer tie
- short decision making process
- accountability
- well-defined scope
- multidisciplinary competences
- instant feedback from experiments & failures

Service teams act as a mini company: They are their services‘ PO & CEO.

Make serviceability the Automotive mobility industry core competence.

Required capability (exemplified):

Balancing ambiguous business requirements.

- Opening the corporation's boundaries for both cross-industry and ad hoc cooperation.
- Balancing the need of both continuous and discountinuous innovation.
- Hedging of both existing product-related and new service-driven business affairs.

Challenge: Designing a connected corporation from strategy to the field and vice versa.

The structure of an industry incumbent constraints the ability to transform the corporation's business logic.

Change dilemma – bias of outdated structures:

Downstream
Business conducts structure


Business models


Architectures


Processes


Organisation & Culture

Upstream
Old structure rules business

SUMMARY

Service business
changes the industry fundamentally – more than automated driving and e-mobility.

Architectures
base upon generic, highly standardized blue-prints driven by non-functional requirements.

Processes
for operations and services over the lifetime rule the SOP-driven development.

Organizations
enable service-oriented business models.

Contact information

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www.softwaredrives.com

Dominik Strube
Project Manager Software Drives 2030

dominik.strube@kuglermaag.com
+49 7154 1796 123

Editor
KUGLER MAAG CIE GmbH
Leibnizstr. 11
70806 Kornwestheim

Phone +49 7154 1796 100
information@kuglermaag.com

www.kuglermaag.com
www.kuglermaag.de

KUGLER MAAG CIE North America Inc.
50 W. Big Beaver Rd., Suite 400
Troy, MI 48084

Phone +1 248 687 1210
usa@kuglermaag.com

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