

The new role(s) of Tier 1s in a software- enabled vehicle

Computer on Wheels #3

Webinar by the Roland Berger **A**dvanced **T**echnology **C**enter

January 8, 2021



Topics of this webinar



**Major EE
developments
and trends**

**Tier 1
business
model
disruption**

**New business
models**



Major EE developments and trends

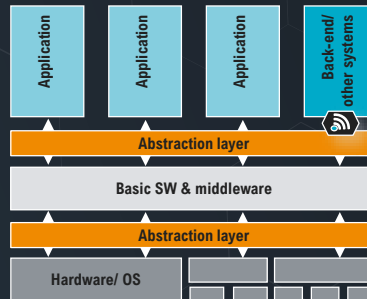
Tier 1s are challenged by the rise of new architectures and software platforms, reshuffling of the value chain and emergence of a new market

Technology trends

Architecture centralization



SW platform standardization and HW abstraction



Value chain dynamics

OEMs increase control of SW stack

SW pure-plays become Tier-1

Tech giants enter automotive

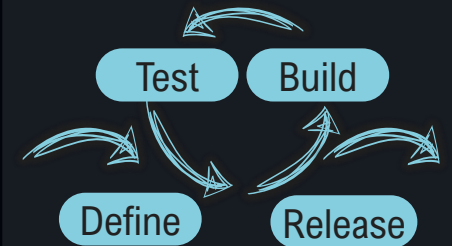
SemCos capture value

EMSs expand

Tier 1s under pressure

New(ish) SW market

New development paradigm, process and organizations



Software as a (monetized) product or service



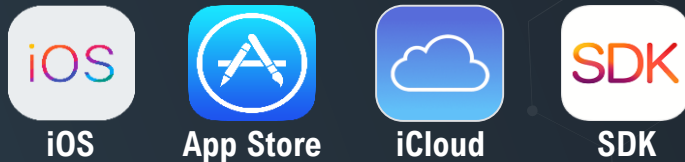
The car of tomorrow is a software-enabled and cloud-connected data device (on wheels)

Smartphone architecture

Apps



Software platform and SDK



Device hardware

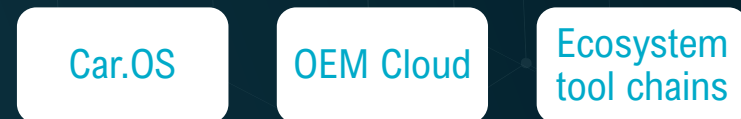


Vehicle architecture

Features & services



Vehicle software and digital platform



E/E architecture



Mechanics



- > **Core functionality provided as application or service** through cross domain SW architecture and hardware access
- > **Monetization** of SaaS, 3rd party applications and user data
- > **Decoupled hardware and software life cycles**
 - **Forward compatibility of hardware** to enable future SW upgrades
 - **Backward compatibility of SW** to utilize HW over (long) lifetime
- > **Standardization of software architectures**

The automotive industry moves towards centralized architectures to enable new features, reduce software and hardware complexity and cost

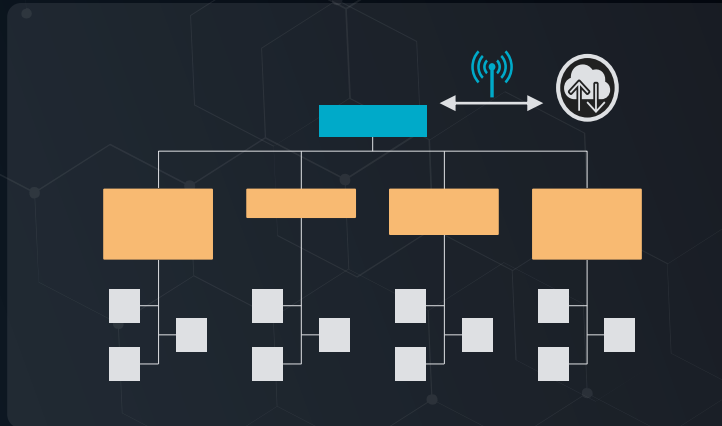
Illustrative

Distributed (Established)



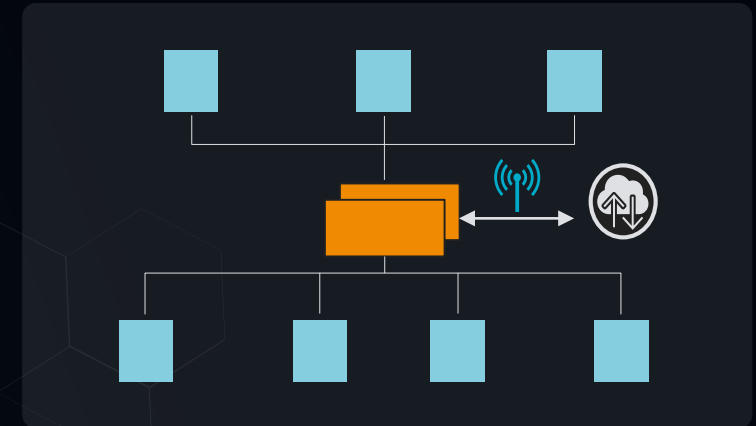
"One box - One function"

Domain centralized (~2025+)



Domain consolidation

Central + zonal (~2030+)



"Bifurcation"

Full abstraction of commoditized hardware

Value dominance of SoC and associated SW stack

The automotive value chain is disrupted by new entrants and active moves of the traditional participants



The automotive market for embedded software solutions could reach USD ~35 bn by 2030

Illustrative

Market value [USD bn]

... **BUT**

MARKET CONSOLIDATION will have a huge impact both on market size and profitability:

Additional upside
Base scenario



Consolidation of platforms and functional domain stacks **could significantly reduce the overall size of the market** and **drive total costs down ...**



... while driving **profitability** of the individual players closer to the **levels seen in other SaaP/SaaS markets**

+6.1%

35

7.7



2030





Tier 1 business model disruption

Traditional sourcing model for ECUs is being disaggregated into multiple elements – what is the role for a Tier 1?

Traditional T1 business model



Tier 1 fully responsible for HW+SW

- > Fully integrated HW+SW sourcing model with T2 sourcing largely at T1 discretion
- > Priced in unit cost + EDD charge + tooling, where SW is frequently a black box for the OEM

New reality

3rd party SW	OEM SW	SW stack engineering & integration services
OEM-directed hardware (e.g., chip sets)	Hardware engineering services	Is there a real role for Tier 1?
EMS services	...	

- > Separation of process and value chain steps into SW design and integration, HW design and integration and HW manufacturing
- > Lot's of directed and directly-sourced elements by the OEM incl. chip sets, basic SW, engineering services, functional applications, ...

This has happened before...

Tier 1
business
model
disruption



Mainframe
60's - 70's

Leading edge custom
HW and custom SW
from the same
manufacturer



Workstation
80's-90's

Professional grade/
high end applications



Personal Computer
80's-00's

Mass adoption: HW and
SW separation,
emergence of HW and
SW platforms



Mobile Device
00's - today

Commoditized
(miniaturized) HW,
ubiquitous dominance
of SW platforms across
devices

The disruption in business model is resulting in Tier 1s losing control over profitability levers that were previously available to them

Traditional T1 business model

>7% EBIT (above supplier industry average)

Limited BOM transparency

Limited transparency on HW, EDD and esp. SW cost (esp. items like SW licenses)

High overall CPV

With fully integrated sourcing model and ability to upcharge Tier 2 components

Limited scale requirements

Ability to compete on system and domain knowledge

Warranty responsibility balanced with degree of control

While holding front-line warranty responsibility, also ability to balance it with control of Tier 2s

New reality

<5% EBIT (more in line with process specialists)

Ever higher degree of transparency

OEMs learning the cost structures, building should-cost models and engaging in direct Tier 2 negotiations

Only part of CPV is addressable

Disaggregated sourcing model leading to Tier 2s losing a large share of addressable CPV

High scale requirements

Standardization leading to reduced relevance of domain expertise

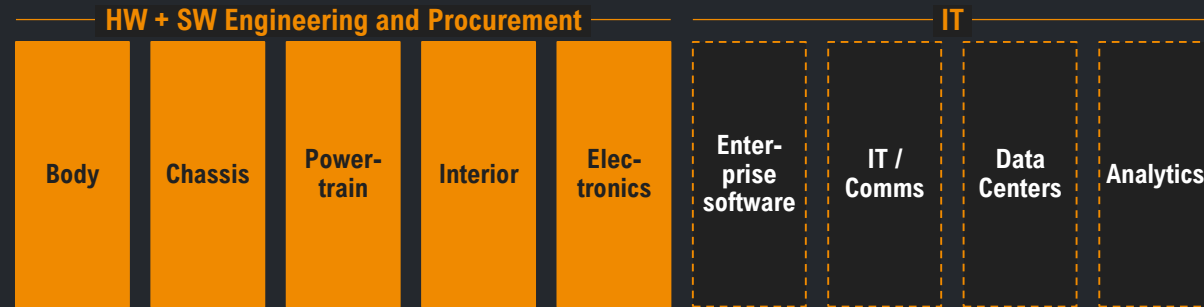
Warranty responsibility coupled with loss of control

Same front-line responsibility while having to integrated numerous directed and directly-sourced SW and HW elements

OEM software organizations are becoming more sophisticated and are moving to centralized, cross-domain engineering & procurement structures

Conventional model:

Organization around hardware silos

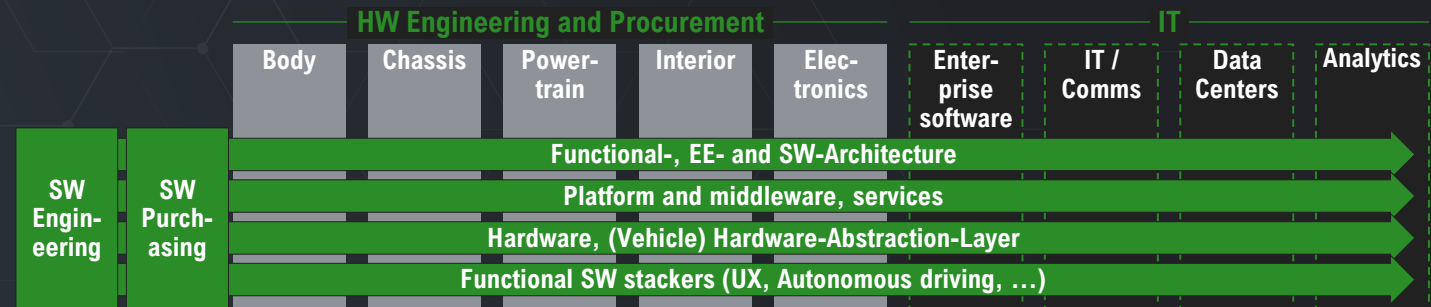


- > Structured by silo'd domains for HW + SW development and sourcing
- > Low functional orientation
- > SW budgets tied to vehicle programs
- > Sourcing of SW by domain

Tier 1
business
model
disruption

New functionally-oriented model:

Transversal organization



- > Central transversal organizational units
- > Structure reflects functional-orientation
- > SW budgets independent from vehicle programs
- > Central strategy-driven SW sourcing

The disruption of the Tier 1 business model will not happen "overnight" and will vary by domain, type of the OEM and region





New business models

With the sunsetting of the traditional Tier 1 business model in automotive electronics, new opportunities are opening up



All new business models come with advantages and disadvantages and unique requirements to win

	ESP	Data-driven/ connected services	Development & validation tools	SaaP/ SaaS
Description	Development services for HW and SW (pure service business model)	Providing data- and connectivity-enabled services directly to consumers, OEMs and other players	Designing tools / tool chains for the entire development and continuous deployment process – "shovels and pickaxes" for the industry	Pure SW business model – selling platform or functional SW
Advantages & disadvantages	<ul style="list-style-type: none"> ⊕ Perfect fit with Tier 1 competencies ⊕ Higher margins ⊖ Small size ⊖ Existing strong competition 	<ul style="list-style-type: none"> ⊕ Enormous potential ⊖ Adoption challenge ⊖ Right to play / access to data for Tier 1s 	<ul style="list-style-type: none"> ⊕ Growing relevance ⊖ Small size ⊖ Only needs a few players ⊖ (Almost) no competencies among Tiers 1s 	<ul style="list-style-type: none"> ⊕ High growth potential ⊕ Partial fit with Tier 1 competencies ⊖ Lower CPV ⊖ High scale requirements
Critical success factors	Ability to achieve meaningful size for the shareholders	Solving the adoption challenge	Buying the right existing player...?	Achieving scale = Dominating specific segments

All new business models come with advantages and disadvantages and unique requirements to win

	Advanced SoC	Advanced analogue HW	Downstream integration	EMS
Description	Developing high-value SoCs with high degree of function SW stack integration	Designing high-value electronic and mechatronic components (e.g., LIDARs)	Entering full systems (all the way to complete vehicles?)	Large-scale built-to-print electronics manufacturing
Advantages & disadvantages	<ul style="list-style-type: none"> ⊕ Dominating share of the component value ⊖ (Almost) no competencies among Tiers 1s 	<ul style="list-style-type: none"> ⊕ Good fit with Tier 1 competencies ⊖ Limited market size ⊖ Still subject to commoditization 	<ul style="list-style-type: none"> ⊕ Large CPV ⊖ Significant new competences ⊖ Competition with customers ⊖ Market demand uncertainty 	<ul style="list-style-type: none"> ⊕ Large market and high growth ⊖ Existing strong competition ⊖ Almost certain need to expand outside of automotive to match scale
Critical success factors	Entering the chip-making world	Continuous product innovation and active portfolio management	Market demand validation and competency expansion	Scale & low cost

Every player needs to evaluate their unique roadmap to manage the shift away from the traditional Tier 1 business model in automotive electronics

- > The world around the electronics Tier 1s is rapidly changing – technological disruption is coupled with value chain reshuffling and emergence of a new SW market
- > While time may vary, the traditional Tier 1 business model in automotive electronics will give way to a plethora of different new models and roles in the value chain
- > There is no "one size fits all" solution for the electronics Tier 1s going forward – every new business model comes with a variety of advantages and disadvantages and some unique requirements to win

What is your unique roadmap to manage the sunset of the traditional Tier 1 business model in automotive electronics?

Your contacts

Thank you for
joining today



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THINK:ACT

