# Problem

**Demanding applications...**     **require multicore platforms ...**     **that are hard to program efficiently**
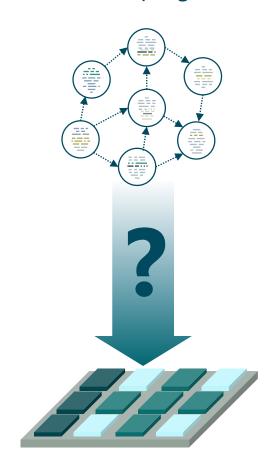
5G connectivity

Embedded Vision

Automotive

Number of required processor cores

6,000

3,000

-

2014   2017   2020   2023   2026

?
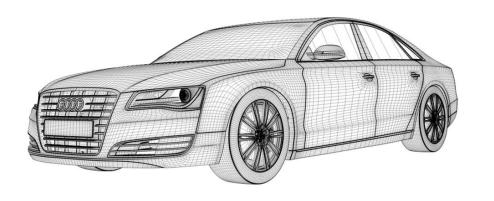
# Multicore Challenges in automotive industry
## 1. "Classical" ECU

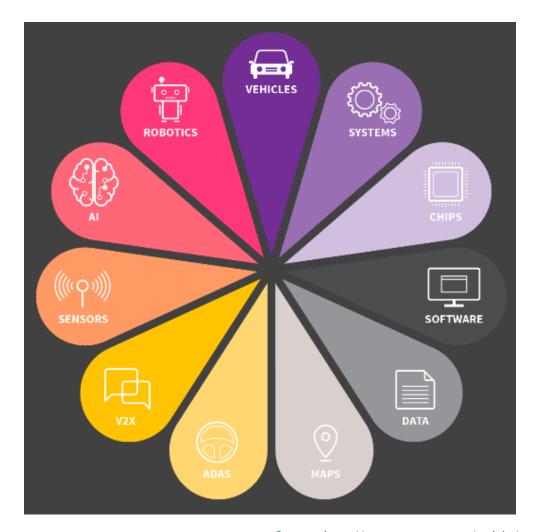**AUTOSAR**
Automotive Open System Architecture

✓ Defines a layered software architecture

✓ Offers multiple levels of abstraction

✓ Defines a methodology

✓ Supports multiple cores with version 4.0

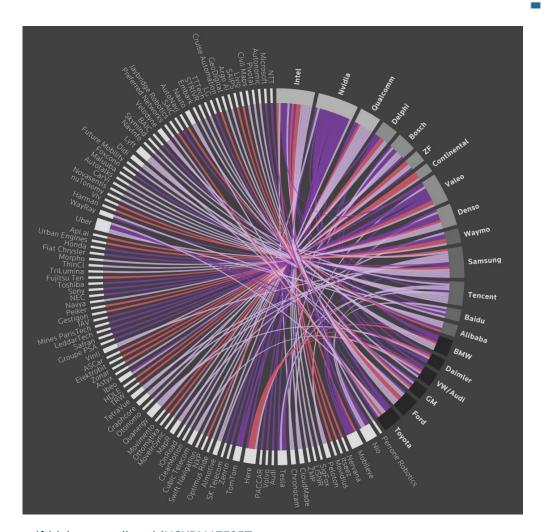The AUTOSAR Classic Platform is
used for automotive control applications

# Multicore Challenges in automotive industry

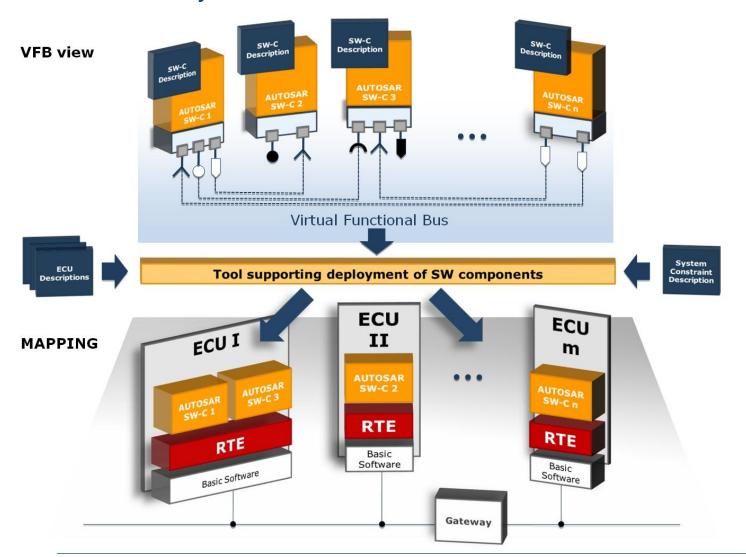## 2. "New guy in town" autonomous driving



Source: http://www.reuters.com/article/us-autos-selfdriving-suppliers-idUSKBN17F0EZ

SLX TOOL SUITE - AUTOMOTIVE

# INTRODUCTION
## AUTOSAR System Overview

**VFB view**

**MAPPING**



VFB Virtual Functional Bus
- Can be considered as a virtual communication interface
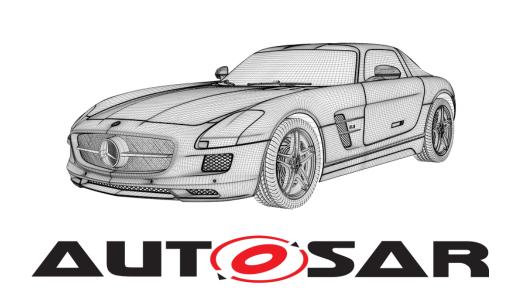
RTE Runtime Environment
- Can be considered as the implementation of the VFB for a specific ECU
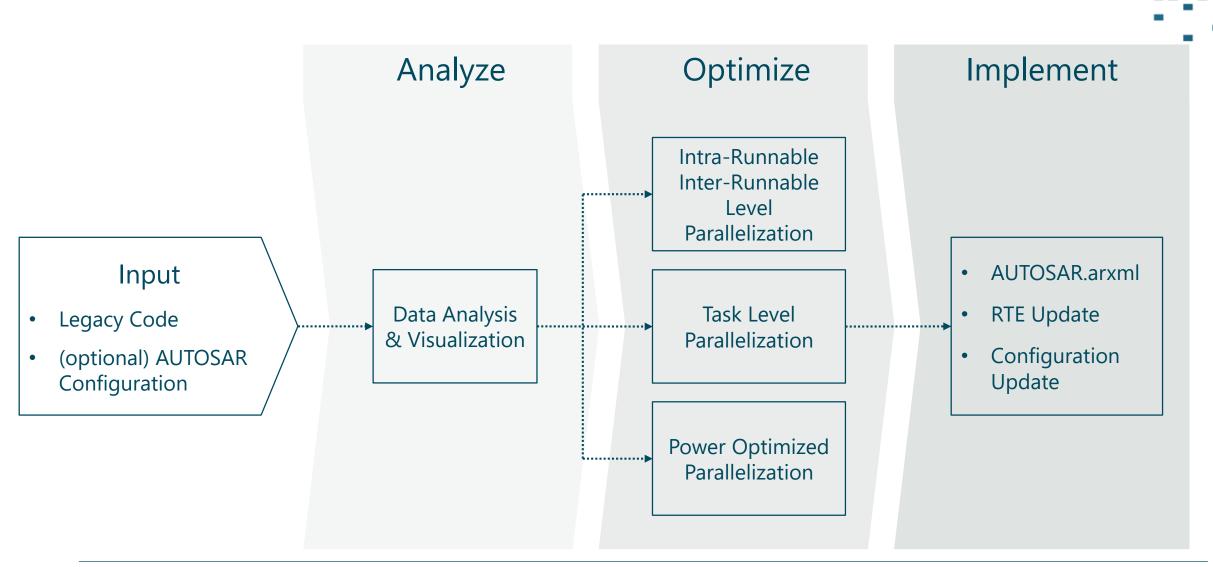
# INTRODUCTION
## AUTOSAR Classic Platform

### AUTOSAR Facts

- Runnables are executable entities

- Runnables are mapped to tasks

- Tasks are the scheduled items

- Tasks are bound to a single core

- OS Applications define the task to

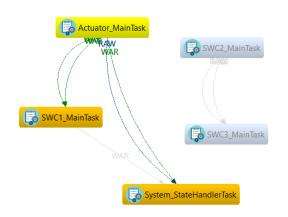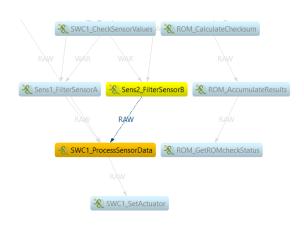  core mapping

# SLX Tool Suite - Automotive

| Analyze | Optimize | Implement |
|---------|----------|-----------|

**Input**
- Legacy Code
- (optional) AUTOSAR Configuration

Data Analysis & Visualization

Intra-Runnable Inter-Runnable Level Parallelization

Task Level Parallelization

Power Optimized Parallelization

- AUTOSAR.arxml
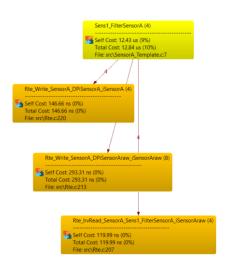- RTE Update
- Configuration Update
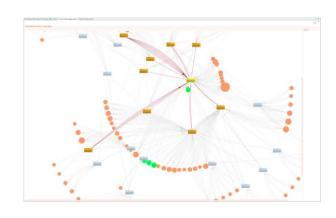
# ANALYZE
## Automotive Flow

## Different level of abstraction with focus on:

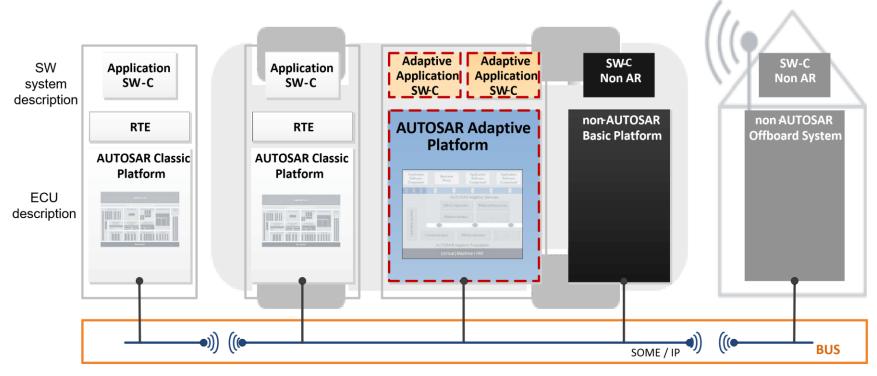- Task level data analysis
- Runnable level data analysis



Inter-Task Data
Dependencies

Inter-Runnable
Dependencies

Intra-Runnable
Call Graph

Code Analysis
Graph

## A new AUTOSAR standard: The AUTOSAR Adaptive Platform

The new platform will close the gap. It will support adaptive deployment, complex micro-controllers and interaction with non AUTOSAR systems.



Common Bus Interface Specification

THE END