YD LIM

Country Manager /
Regional Sales VP
at
NXP Korea
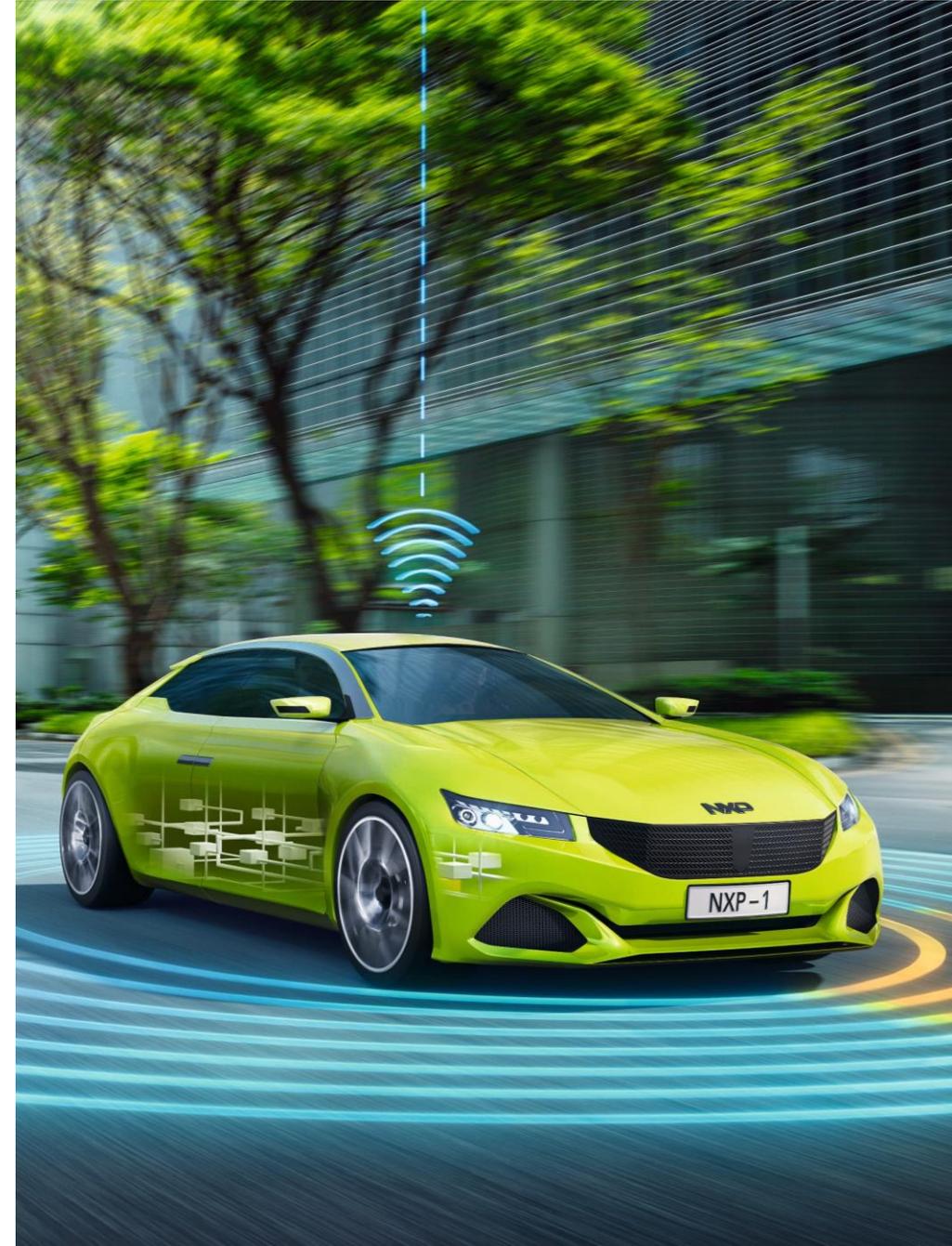
AUTOMOTIVE MARKET POSITIONS

Technology Leadership

+

Applications Leadership

#1 Auto Processors

#1 Auto Application Processors

#1 Auto RF

#1 Auto DSPs

#1 Vehicle Network Processors

#2 Auto Analog

#2 Auto Microcontrollers
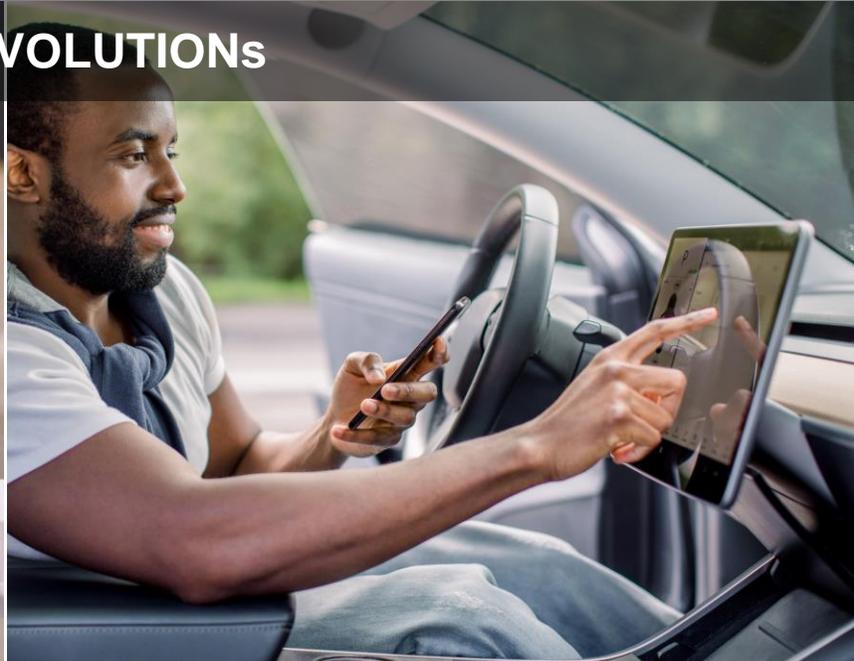
#1 Car Infotainment

#1 Digital Radio

#1 Secure Car Access*

#1 In-Vehicle Networking*

#1 Radar*

#2 Powertrain

*Excluding portions of the market not serviced by NXP products
Source: Strategy Analytics, IHS Markit, NXP. Based on 2021 Auto TAM

NXP IS A LEADING SUPPLIER TO THE GLOBAL AUTOMOTIVE INDUSTRY

Car radio and infotainment system
Display and instrument cluster
Secure car access (door control)
Stability sensors
Airbag sensors
Battery management
Particle sensor
NOx sensor
Urea sensor
Parking camera
Tire pressure sensor
Airmass sensor
Air quality sensor
Tailgate closing
Power steering
Steering wheel & column control

Convertible or sliding roof
Seat, headrest control
Mirror adjustment
Passenger occupancy detection
Seatbelt system
Vision
Window lifter
Lighting (interior/headlamps)
Starter / alternator
Water pump engine cooling
Engine cooling fan
Powertrain engine control
Radar
HVAC water pump
ADAS
Vehicle Gateway
ABS & parking brake
V2X
Oil pump
Cloud services

NXP LEADERSHIP

#1 Automotive Processors

#1 Infotainment

#1 ADAS Radar

#1 Vehicle Networking

#1 Secure Car Access

#1 Auto RF / Digital Radio

#1 Auto Application Processors

#1 Auto DSPs

Average vehicle today has ~1,000 semiconductors with a value of $640
By 2030 expect >1,200 semiconductors valued at $1,000, with U.S. Cars >$1,200

CARS OF THE FUTURE

ONE CAR, different missions & TECHNOLOGY EVOLUTIONs

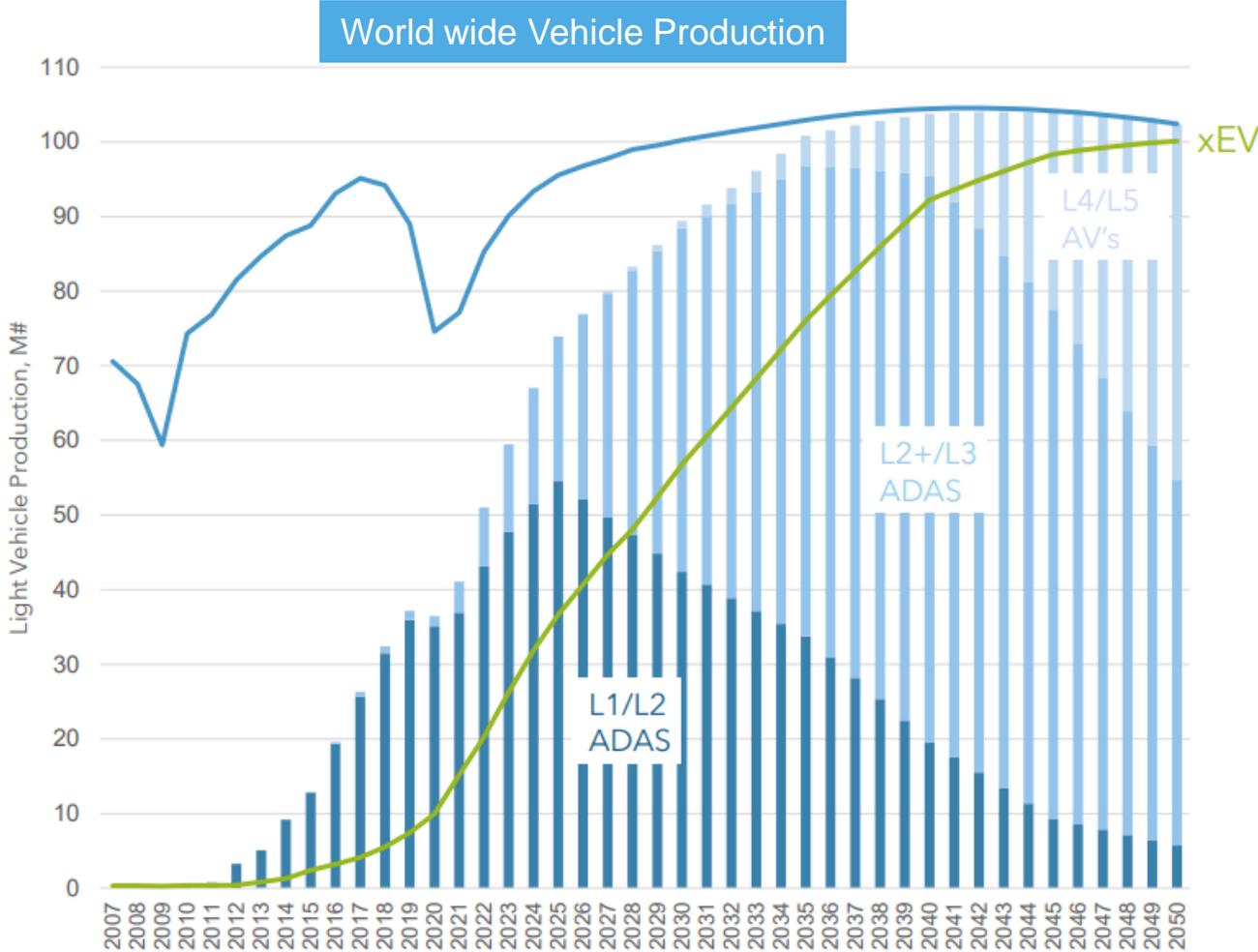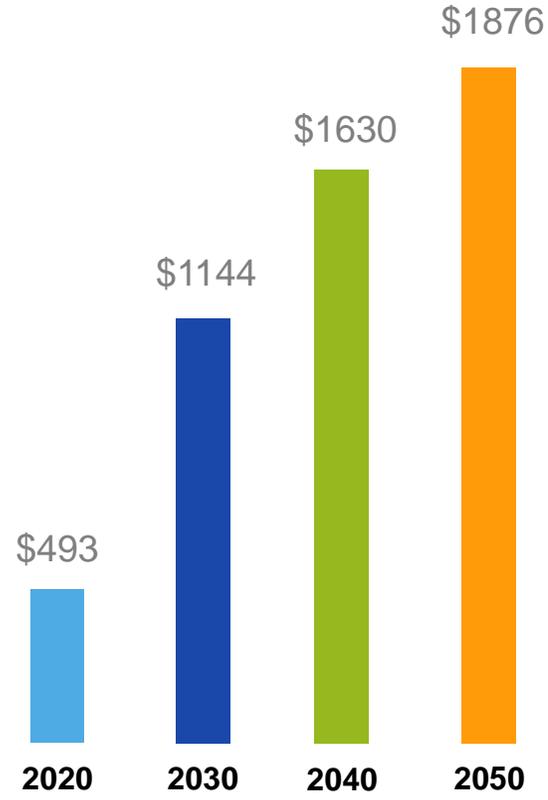| Be conscious, decide, learn	Transport at top efficiency	Update, customize, reconfigure
AUTONOMY	**ELECTRIFICATION**	**SERVICE ORIENTED**
Zero Road Accidents	Zero Emissions	Zero Time Wasted
94% of accidents from human error	Increasing global regulations	Intelligent transport systems, new opportunities for infotainment

SEMI CONTENT GORWS ON XEV/ADAS

FUTURE CAR MISSIONS

CLOUD

↕ Over-the-Air(OTA) Service

One clear path towards SOFTWARE-DEFINED VEHICLE

SAFE, SELF-DRIVING	ELECTRIC	SECURELY CONNECTED, SERVICE ORIENTED
AUTONOMY	**ELECTRIFICATION**	**SERVICE ORIENTED**
New sensing, thinking	New energy mgmt	New E/E architecture

MOVING INTO THE
FUTURE FASTER

Solutions for advanced systems

NXP

MOVING INTO THE FUTURE FASTER
Solutions for advanced systems

SOFTWARE-DEFINED VEHICLE PLATFORM
S32 compute, networking, propulsion, battery and power management systems

NXP

MOVING INTO THE FUTURE FASTER
Solutions for advanced systems

SOFTWARE-DEFINED VEHICLE PLATFORM
S32 compute, networking, propulsion, battery and power management systems

SAFE AUTOMATION
Radar, driver monitoring, safety co-processors

NXP

MOVING INTO THE FUTURE FASTER
Solutions for advanced systems

SOFTWARE-DEFINED VEHICLE PLATFORM
S32 compute, networking, propulsion, battery and power management systems

SAFE AUTOMATION
Radar, driver monitoring, safety co-processors

USER INTERACTION
Telematics, car access, eCockpit, radio, touch systems

NXP

MOVING INTO THE FUTURE FASTER
Solutions for advanced systems

SOFTWARE-DEFINED VEHICLE PLATFORM
S32 compute, networking, propulsion, battery and power management systems

SAFE AUTOMATION
Radar, driver monitoring, safety co-processors

USER INTERACTION
Telematics, car access, eCockpit, radio, touch systems

SOFTWARE & DIGITAL TWIN

NXP

WHAT IS A SOFTWARE-DEFINED VEHICLE?

Software

Defines the customer experience
Becomes the differentiator
Is the focus point for innovation
Brings OEMs new revenue streams

Hardware

Is a stable, scalable future-proof platform
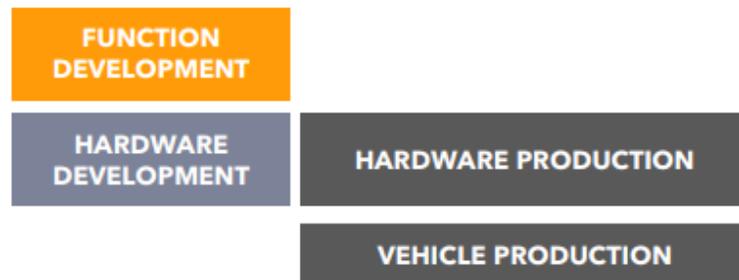
New features
includes

Car & cloud integration
Over-the-air(OTA) update
Flexibility to continuously evolve
Service-oriented architectures
Virtualization and containerization

New processes
are

DevOps : continuously integrate, test and
deployment of software
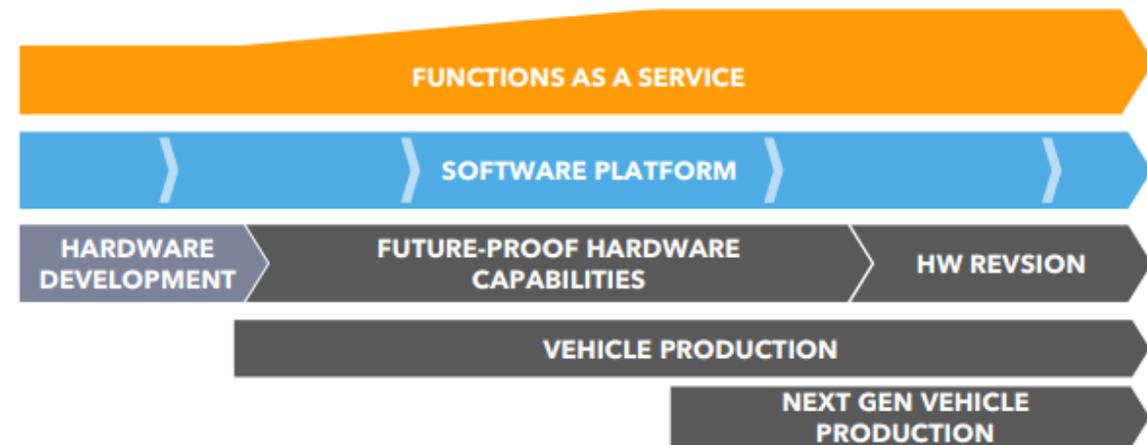Agile and lean methods
Digital twin virtual modeling

WHAT DOES A SOFTWARE-DEFINED VEHICLE OFFER?

SOFTWARE FOR **SDV**

- Software platform abstracting complex vehicle network

- Managing updates across vehicle

- **DECOUPLING** hardware and software development process and lifecycle

- Enabling **ECOSYSTEM**

Applications

Platform services

Middleware

Core (low-level) software

Hardware
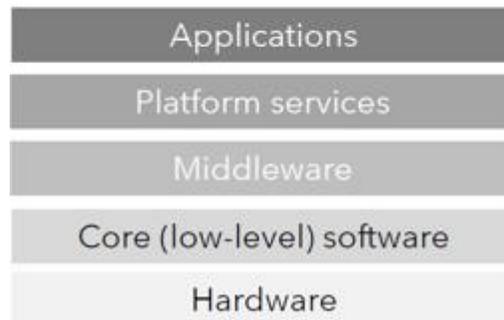
SOFTWARE FACTORY

- Automates development, testing, integration & testing
- Core software & applications

CLOUD SERVICES

- Configuration
- Lifecycle management
- Digital twin

BROAD PARTNET NETWORK
with strong automotive expertise

The Automotive Processing Partner Program comprises a global network of independent companies that offer the vital tools, software, technology, engineering services and training to accelerate customer designs based on NXP components.

Engineering ecosystem:

software and hardware engineering services, consultancy and training on products, safety and security and more.

Application ecosystem:

application software and networking stacks.

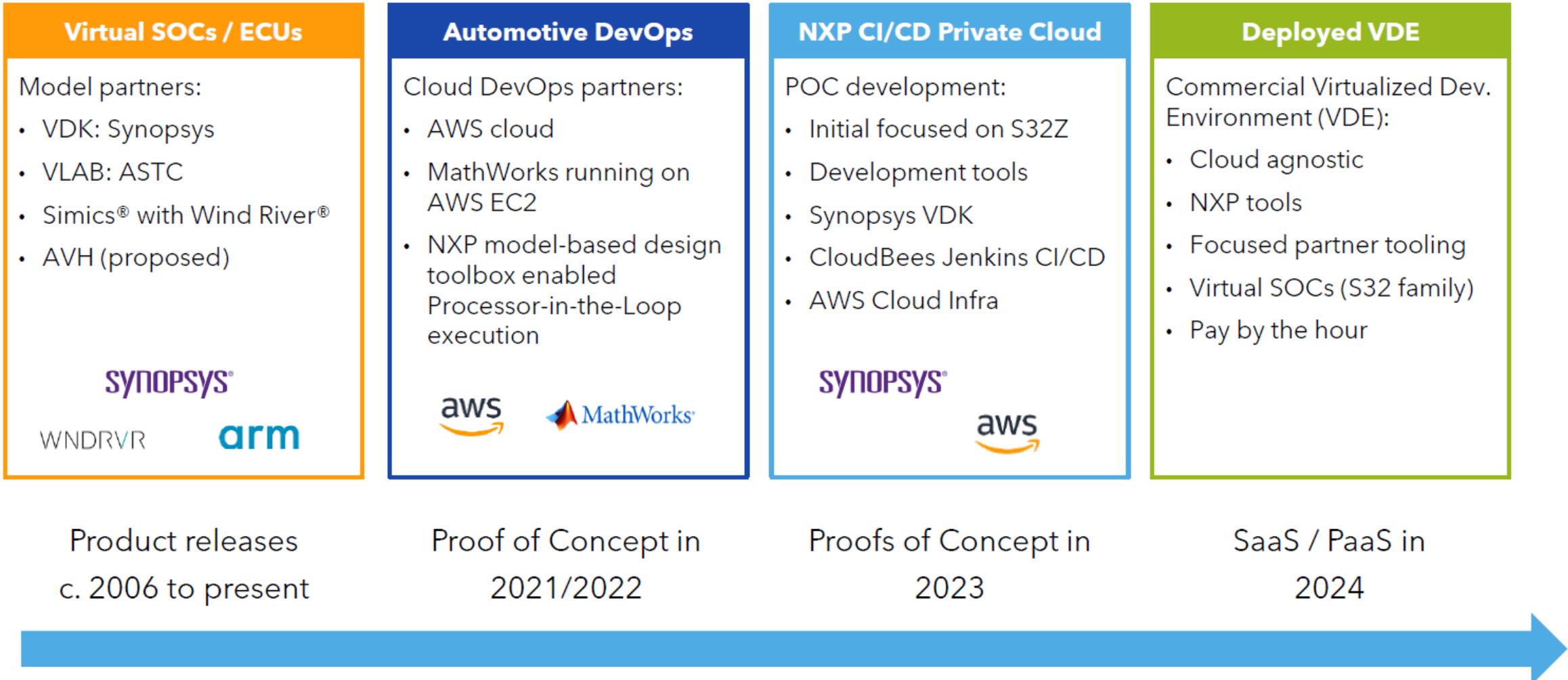**Enablement ecosystem:**

OS & hypervisors, development tools, virtualization and modelling tools.

NXP VIRTUALIZATION ROADMAP

Virtual SOCs / ECUs	**Automotive DevOps**	**NXP CI/CD Private Cloud**	**Deployed VDE**
Model partners: • VDK: Synopsys • VLAB: ASTC • Simics® with Wind River® • AVH (proposed) **SYNOPSYS** WNDRVR **arm**	Cloud DevOps partners: • AWS cloud • MathWorks running on AWS EC2 • NXP model-based design toolbox enabled Processor-in-the-Loop execution **aws** **MathWorks**	POC development: • Initial focused on S32Z • Development tools • Synopsys VDK • CloudBees Jenkins CI/CD • AWS Cloud Infra **SYNOPSYS** **aws**	Commercial Virtualized Dev. Environment (VDE): • Cloud agnostic • NXP tools • Focused partner tooling • Virtual SOCs (S32 family) • Pay by the hour
Product releases c. 2006 to present	Proof of Concept in 2021/2022	Proofs of Concept in 2023	SaaS / PaaS in 2024

MathWorks
AUTOMOTIVE
CONFERENCE 2023
Korea

Thank you

MathWorks®