



Visual Intelligence Pioneer

STRADVISION

AI Assisted Driving for Everyone

April 2021

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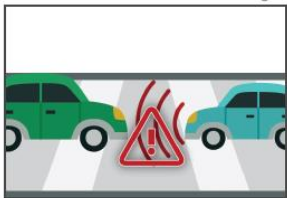
Company Introduction

StradVision - AI Assisted Driving for Everyone

Company Overview

In 7 years since foundation in 2014, already at the mass production stage

Forward Collision Warning



Lane Departure Warning



Traffic Sign Recognition



Video Link

Foundation: In 2014, Headquartered in South Korea

AI Software Product: Develops deep-learning based perception software using camera sensors for advanced driver-assistance systems (ADAS)

- 183 US patents in Deep Neural Network (156 issued, 27 in progress)

Production-ready: being deployed on 50+ vehicle models in partnership with 9 OEMs

- First vehicle model with mass-production came to the market in 2019

Team: 140+ employees, including total 100+ engineers in data, algorithm and others

- Offices in Germany, Japan, US, China and Korea

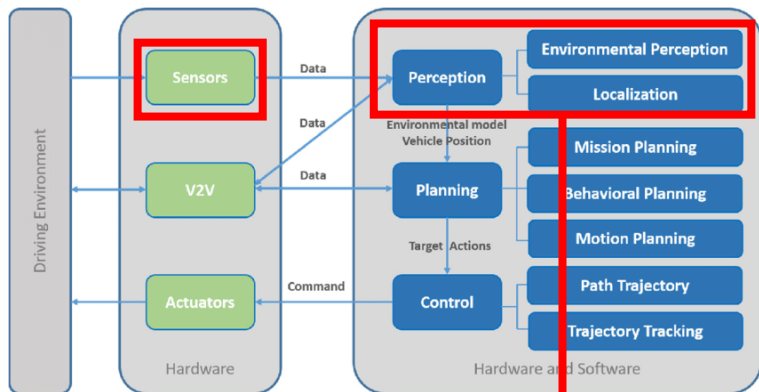
Investment: Total funding of US\$ 41 Mil (incl. Series B of 27Mil in Dec. 2019)

- Investors include Hyundai Motor Company, LG Electronics and IDG Capital

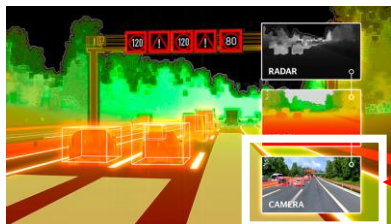
Camera Perception SW

Provides deep learning-based camera perception, platform independent software

Typical ADAS System



Environmental Models



Main applications include Lv2-3 ADAS, Lv4 Autonomous Vehicles and IVI¹⁾

- **Multi-cameras support** – combining and running up to 9 camera sensors, more accurate perception to be realized
- **More features on one chip** – Lean and compact SVNet enables to run multiple applications on one chip
- **Functional safety** – ASPICE CL2²⁾, ASIL-B³⁾ to be certified
- **Low material costs** – replacing other sensors with cameras, more affordable custom ADAS can be built

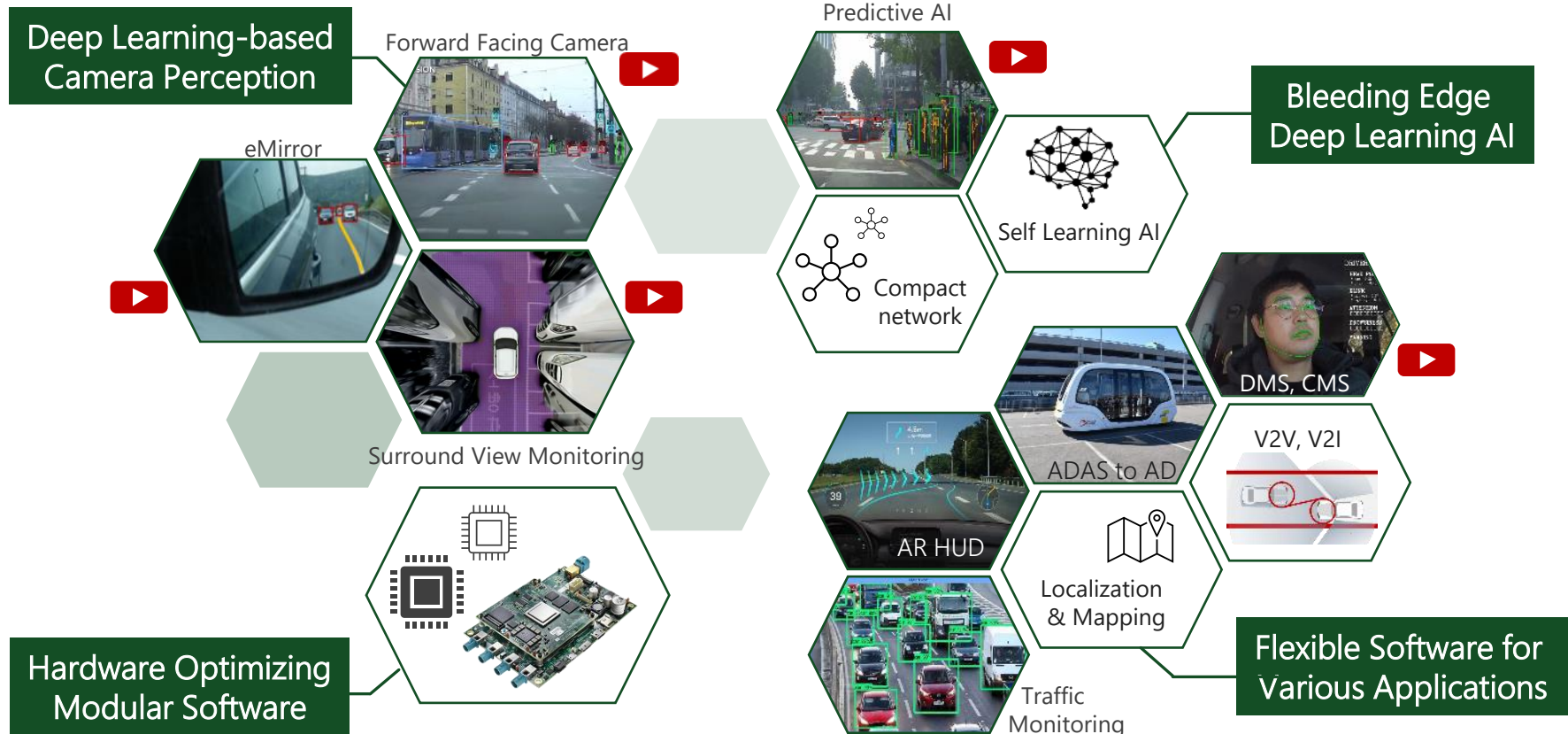
1) IVI : In-vehicle infotainment, e.g. driver monitoring systems

2) ASPICE CL2 : Automotive Software Performance Improvement and Capability dEtermination Capability Level 2

3) ASIL-B : Automotive Safety Integrity Level - B

Core Assets

Combining expertise in deep learning, computer vision and embedded systems for automotive





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Product - SVNet

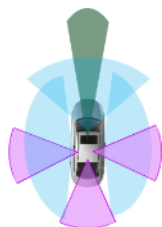
AI-based vision processing technology for ADAS

Product Portfolio

A Mass Production Proven Software

Industry proven SVNet powers 13 million ADAS & Autonomous Vehicles

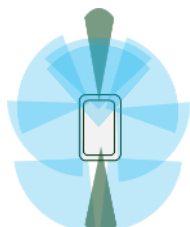
L1 - L2+ Standard



L1~2 : Front & 360 SVM¹⁾
Cameras

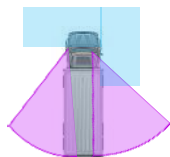
L2+ : Multi Camera front &
360 SVM Cameras

L4 AD Shuttle



6 cameras

Commercial Vehicle Solution



- Blind spot detection
- Mirror replacement cameras

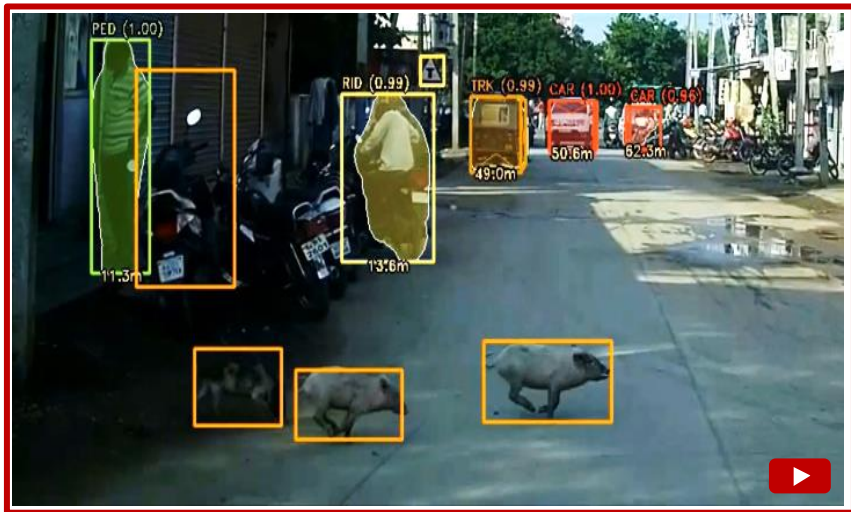
- ✓ **L2 Front camera project:** SOP²⁾ in 2019 & 2020
- ✓ **L2 360° SVM project:** SOP in 2019
- ✓ **L2+ Front camera POC³⁾ Projects:** Long range detection and others
- ✓ **L2+ 360 SVM POC Projects:** Perception for parking
- ✓ **L4 AD Shuttle project:** Project is on-going
- ✓ **Mirror Replacement:** POC projects

1) SVM: Surround View Monitoring
2) SOP: Start Of Production

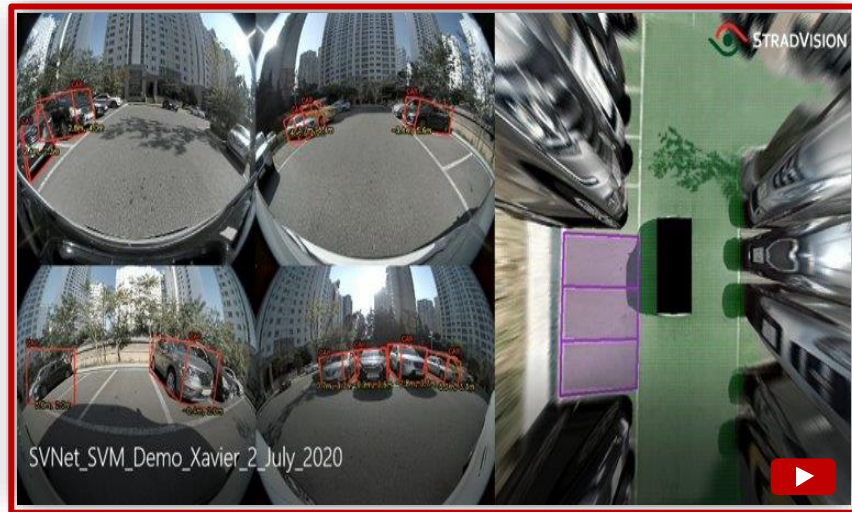
3) POC: Proof Of Concept
L1, L2, and L4: ["Levels of Driving Automation" released by SAE International](#)

Product – SVNet

Deep neural network enabling vehicles to perceive environments using camera sensors



Running On Front-facing Or Side Cameras



Running On Around View Monitor

- SVNet is deep learning-based : guarantees higher accuracy and works well even with abnormal image data
- SVNet is very lean and compact : running on Automotive grade SoCs for multiple cameras and multiple ADAS features

Supporting platforms:



Products Maturity – 50+ Models

Total 13 million vehicles are planned to be on the road with SVNet software

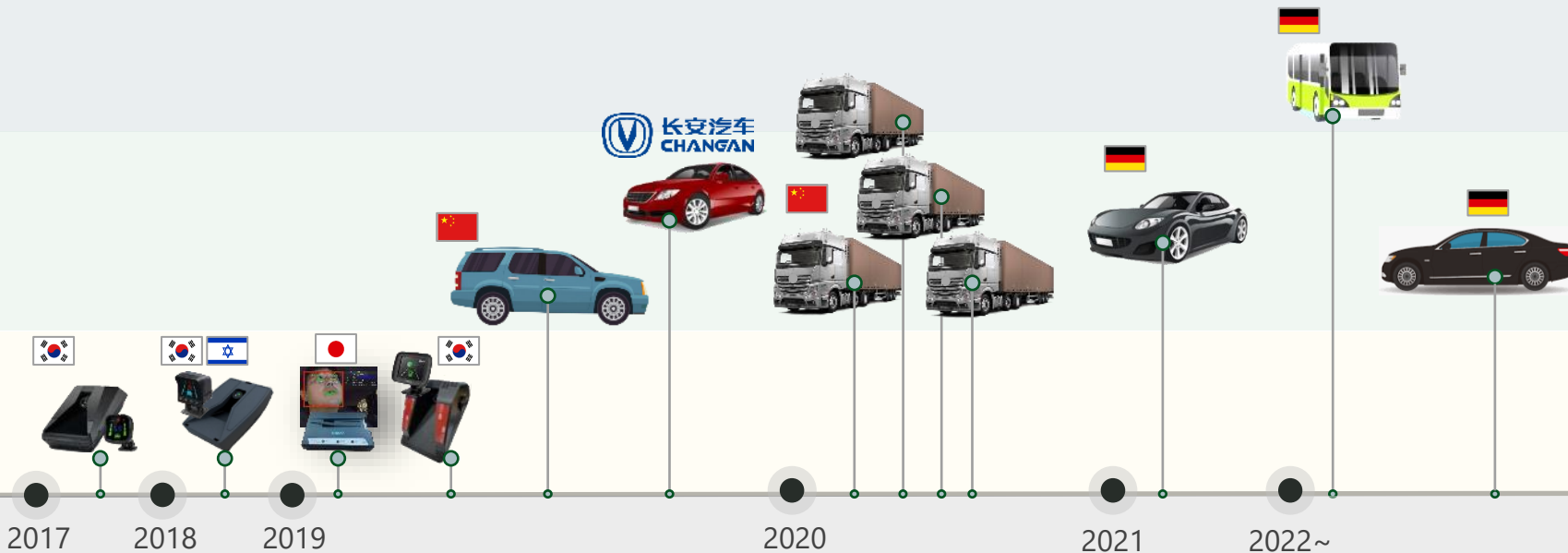
Unit: EA over lifetime

AV¹⁾
(Level4)

ADAS²⁾
(Level2)

After
Market

SOP Year



- 1) AV: Autonomous vehicles
- 2) ADAS: Advanced Drivers' Assistance Systems
- 3) SVNet: StradVision Deep Learning Network

Technology Leadership

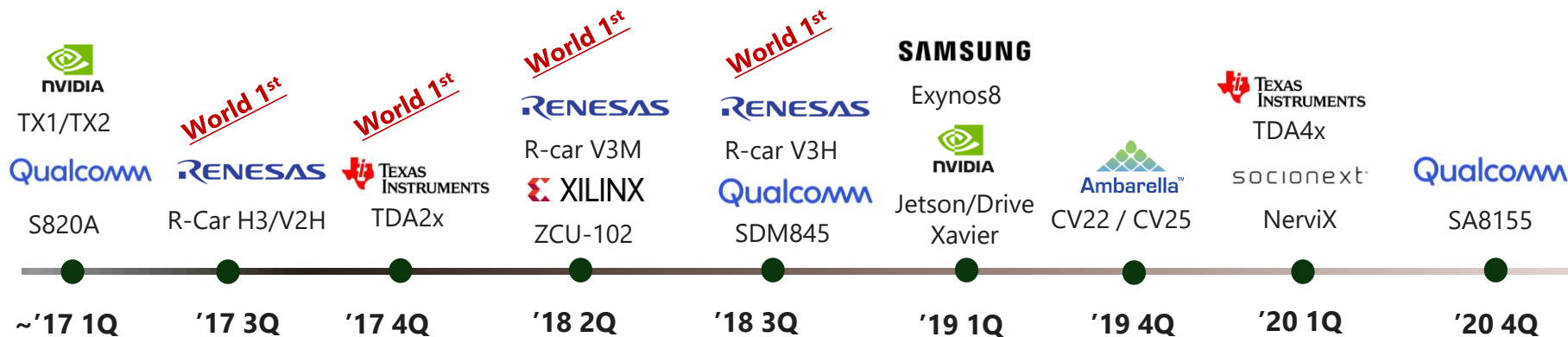
StradVision is at the forefront of identifying, utilizing, and adapting cutting edge platforms

Pragmatic innovator – 156 US patents issued, 27 in progress

- Patents about application of deep neural networks (DNN): efficient implement, training, faster inference, data engineering, and optimization
- Demonstrated the key idea of the IP via intensive experiments and optimization results

SVNet implementation within 6 month of launch of new SoC

- Constantly implementing DNN based object detection on embedded platforms within short periods (3~6 months)

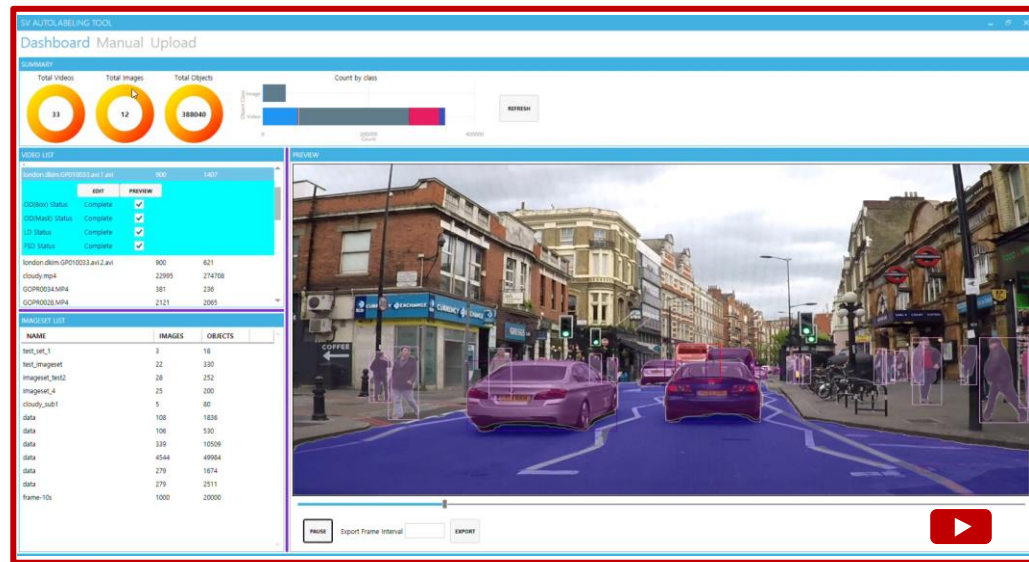


Development Excellence

Auto Labeling Tool with 97% accuracy rate, reducing human labor works significantly

8x Faster data annotation brings more affordable AI technology swiftly

- Labor-intensive hence time-consuming annotation job can be done faster
- **Always up-to-date AI algorithm** – collect data and upgrade performance by training algorithm rapidly
- **Increase productivity and quality simultaneously** – data annotators handle more data within same time yet annotation accuracy also increases, simply learning how to use Auto Labeling Tool
- **SVNet tailored** – comes only with SVNet to guarantee best performances



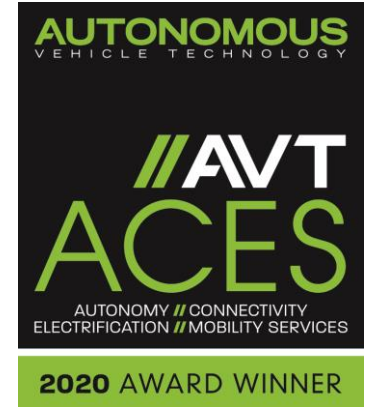
Click the image to play video

Awards

Strong partnership with SoC partners as well as global recognition as top AI provider



2020



2019, 2020



2020 AutoSens Awards
Product of the Year Finalist



Certification

1st deep learning-based perception software with ASPICE CL2¹⁾ certified

Aims for fully compatible with ASIL B¹⁾ for Functional Safety.

Certificate : **ASPICE CL2**²⁾
(2019, 2021)



Certificate: **Guo Biao**³⁾
(2019, 2020)



Certificate: **ISO 27001**
(2020)



Certificate: **ISO 9001**
(2020)



Certificate: **ISO 20000-1**
(2021)



- 1) ASIL B: Automotive Safety Integrity Level B
- 2) ASPICE CL2: Automotive Software Performance Improvement and Capability Determination Capability Level 2
- 3) GB: JT-T1242-2019

Global Operation

Offices in Germany, US, China, Japan with HQ in South Korea





Thank you

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