

CAMERA FIRMWARE
SOFTWARE DEVELOPMENT
RHONDA CAMERA SDK

IMAGE SENSOR DRIVERS

OPTICAL SYSTEM SELECTION

IMAGE QUALITY

3A ALGORITHMS

CONTINUOUS INTEGRATION

IQ QA

QUALITY ASSURANCE

EE QA



INFERENCE ON THE EDGE

COMPUTER VISION

CVFLOW PORTING

DNN OPTIMIZATION

TEST AUTOMATION

BOM OPTIMIZATION

HARDWARE DESIGN

PCB SCHEMATICS & LAYOUT

RHONDA

PER-UNIT IQ CALIBRATION

FACTORY SUPPORT

IQC & OQC

RHONDA SOFTWARE

CAMERA DESIGN HOUSE

Rhonda Software

CAMERA DESIGN HOUSE

CLOSE AMBARELLA DESIGN PARTNER

We help our customers develop their camera products by providing **turnkey solutions**, from the initial idea to factory mass production.

Extensive expertise in **Imaging** processing, **Connected** devices, **Computer Vision**, **Cloud based** services, **Mobile Applications**, etc.

A wide variety of **System on a Module** platforms as a solid basis for proofs of concept, prototypes, and production projects to shorten time to market.



year **1995**

Established



year **2007**

In Camera
Imaging



>200

Camera
products



100+

Engineers



Automotive
imaging systems



Edge AI



Video Cloud



Multi-sensor
systems

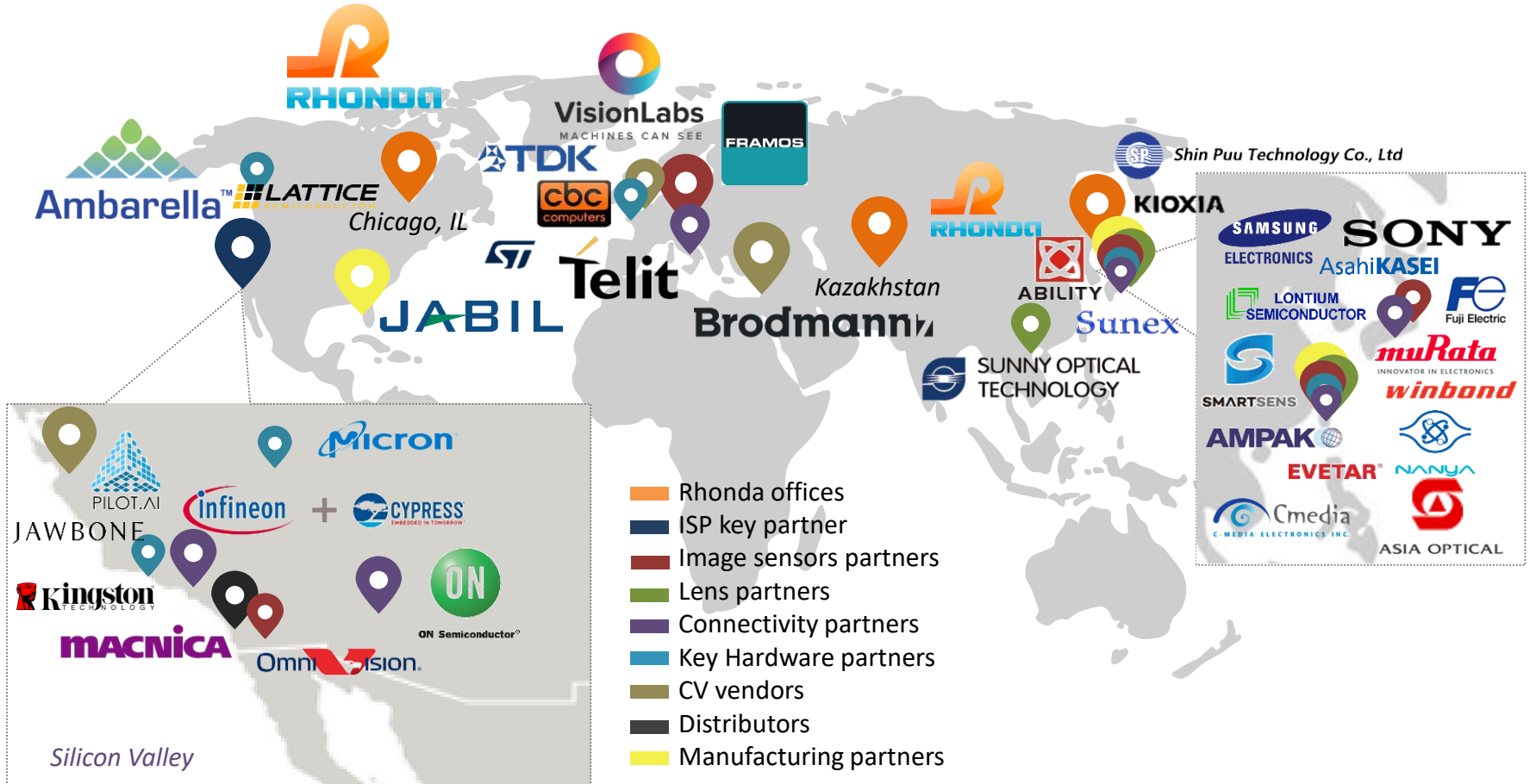


Robotic
cameras



Intelligent
automation

Rhonda Software Ecosystem



Rhonda Software Company Structure

FRONTEND

Chicago, United States

- Headquarters
- Business development
- Strategic clients & partners support
- Team of US-based experts

Almaty, Kazakhstan

- Fully-featured development site
- Ambarella-based projects
- Engineering team: SW, HW, IQ
- Sales office

BACKEND

Vladivostok, Russia

- Rhonda IP development
- Non-Imaging projects
- Rhonda products & platforms
- Internal tools & process improvements

Our Services

Electrical Engineering

*Schematics and PCB layout
BOM cost optimization
Hardware review, bring up
and validation*

SW Development

*Camera FW: application and BSP
Image/video capture and
encoding
Rhonda Camera SDK*

Image Quality

*IQ tuning in fully equipped IQ lab
Lens & image sensor selection
and benchmarking
3A algorithms (AWB, AE, AF)*

System Engineering

*Requirements elicitation
System architecture and
component selection
Feasibility study*

Radio Frequency Design

*Antenna design and simulation
EMI/EMC
Certification support*

Mechanical Engineering Design

*Camera housing
Thermal design and simulations
DFM/DFX*

Quality Assurance

*Manual QA
Test automation
Interdisciplinary QA (Image
Quality, EE, etc.)*

Manufacturing Support

*Incoming & outgoing quality control
through automated tools
Per-unit image quality calibration
Tender and factory selection*

Embedded Debugging

*Debug tools: cross-platform logging
firmware, profilers, etc.
Remote debugging
Interdisciplinary troubleshooting*

Computer Vision

*DNN porting into Ambarella CVflow
Third-party CV library integration
CNN optimization by pruning & quantization
CV backbone selection*

Mobile Applications

*Android & iOS
Reference applications*

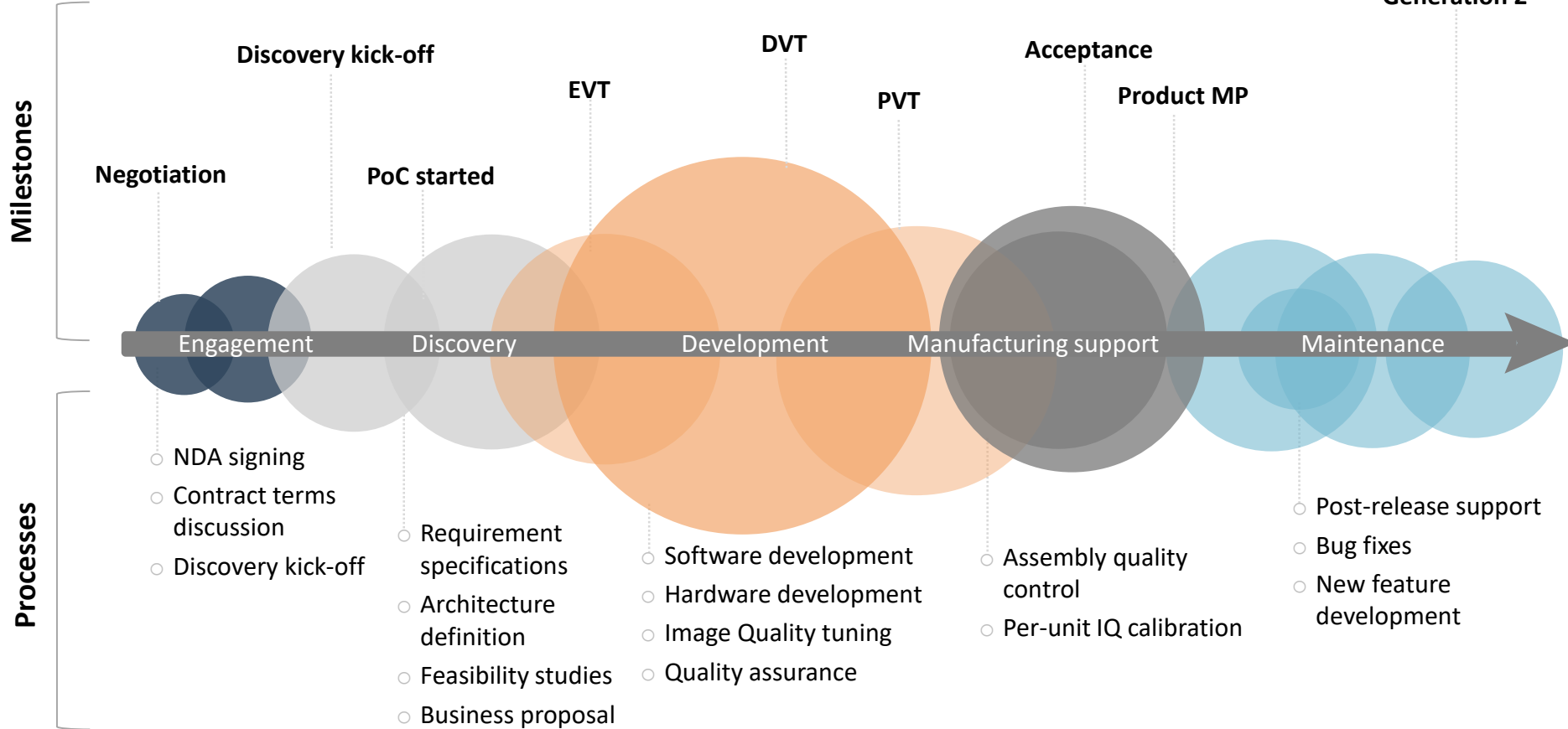
Cloud Services

*In-house video cloud platform
Integration with customers'
platforms
Vendor agnostic architecture*

Generation 1

Product development cycle

Generation 2



Rhonda Systems on a Module

READY TO GO HW PLATFORMS FOR FAST PROTOTYPING & PRODUCTION



H22 SOM
Wearable 4K



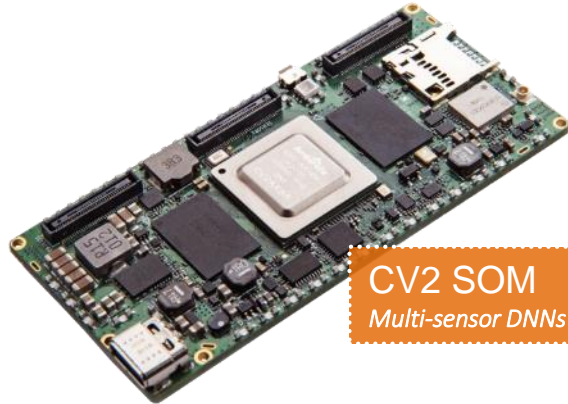
H2 SOM
Multi-sensor 4K



CV25 SOM
Low-power CV



CV22 SOM
AI on the Edge



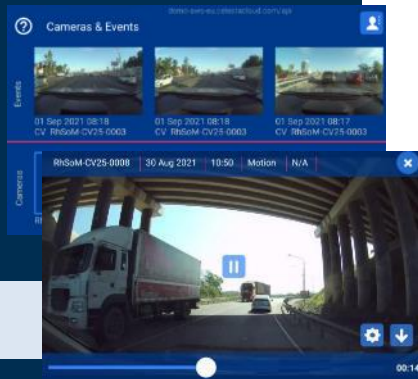
CV2 SOM
Multi-sensor DNNs



Optics Modules
& Carrier boards

ADAS Cloud Cam Proto

*Smart automotive
camera prototype
for fleet monitoring*



SoM-based Prototype

- Based on Rhonda CV22 or CV25 Ambarella SoC
- Integrated AI for front-view ADAS from Brodmann17
- Vehicle and pedestrian detection
- Real-time audio warnings to driver
- External GPS/GLONASS module
- Connectivity through mobile Wi-Fi hotspot or USB LTE modem
- Full HD road event video recording with auto uploads to Video Cloud
- Local Wi-Fi video streaming enables viewfinder during camera installation
- Mobile App for Video Cloud access
- Camera housing with 1/4" screw for installation with off-the-shelf in-car mounts



DEMO VIDEO <https://youtu.be/bxiFnRjuyoE>

Automotive & Transportation as a Strategic Market

1

Segments

- Micro-mobility safety
- Pedestrian protection
- Transportation support services
- Advanced Driver Assistance Systems (ADAS)
- Driver Monitoring Systems (DMS)
- Autonomous driving
- Car-sharing automation
- Parking assistance system

2

Use cases

- CAR-DVR / Event recording
- Fleet management
- Blind spot monitor
- E-mirrors / Backup cameras
- Self-driving applications
- Driver monitoring
- Passengers monitoring
- Cabin monitoring
- Automotive parking / Parking lot automation
- 360° surround-view

3

Technologies

- CV algorithms (object detection, surface classification, etc.)
- Sensor-side HDR + 4K + Low light
- Multi-sensor solutions with different FOV
- Electronic Image Stabilization
- GMSL2 and FPD-link support
- LED flicker mitigation
- IQ calibration for automotive conditions
- Cloud-connected solutions with geo tracking

Robotics and Intelligent Automation as a Strategic Market

1

Segments

- Retail & E-commerce automation
- Robotics in Warehouse, Logistics
- Unmanned Delivery
- Tele-medicine, Tele-care & Lifestyle
- Intelligent Security systems
- Manufacturing automation
- Hospitality management automation

2

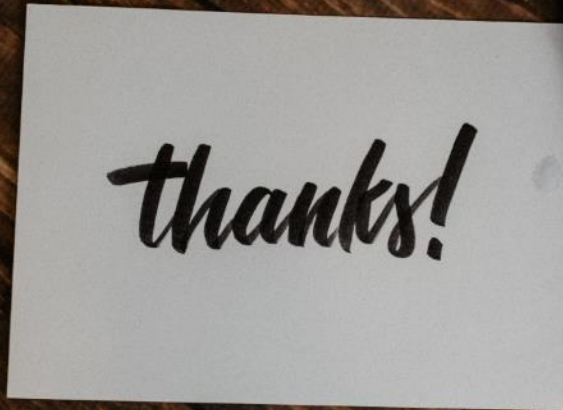
Use cases

- Shelf-monitoring systems
- Products sorting and merchandising
- Robotic vision cameras
- Unguided barcode recognition
- Telepresence
- Online medical consultations
- Production line monitoring
- Smart cities & Video surveillance for government facilities
- IP cameras with people counter

3

Technologies

- CV algorithms (object detection, face recognition, etc.)
- Stereovision & Depth-mapping
- Cloud-connected streaming services
- PTZ & ROI analysis
- Sensor side HDR + 4K
- Electronic image stabilization
- High performance in low-light conditions
- GMSL2 and FPD-link support



RHONDA SOFTWARE

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