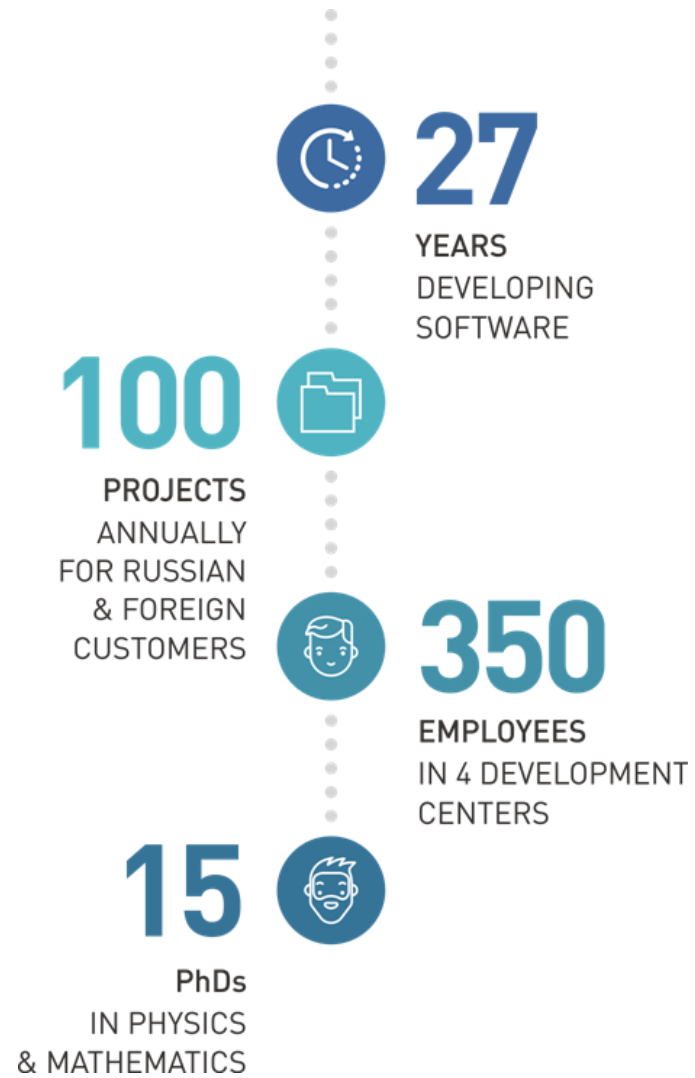




AstroSoft

Service Provider to
Algorithms Design and
Software Development



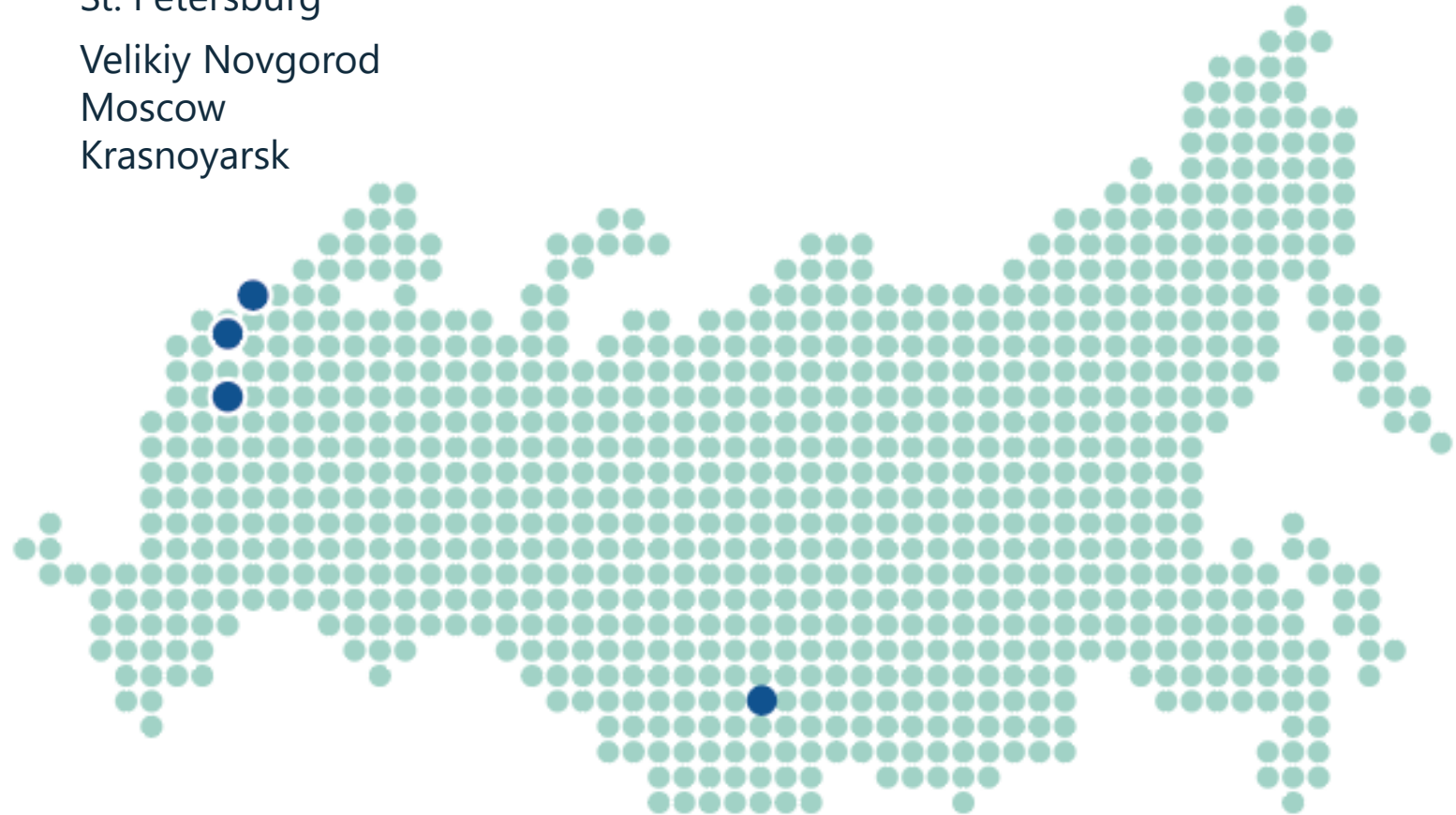
RESEARCH and DEVELOPMENT CENTERS:

St. Petersburg

Velikiy Novgorod

Moscow

Krasnoyarsk



RUSSIAN TOP UNIVERSITIES



Saint Petersburg State University



POLYTECH

Peter the Great Saint Petersburg Polytechnic University



ITMO UNIVERSITY

Saint Petersburg National Research University of Information Technologies, Mechanics and Optics



Saint Petersburg Electrotechnical University "LETI"

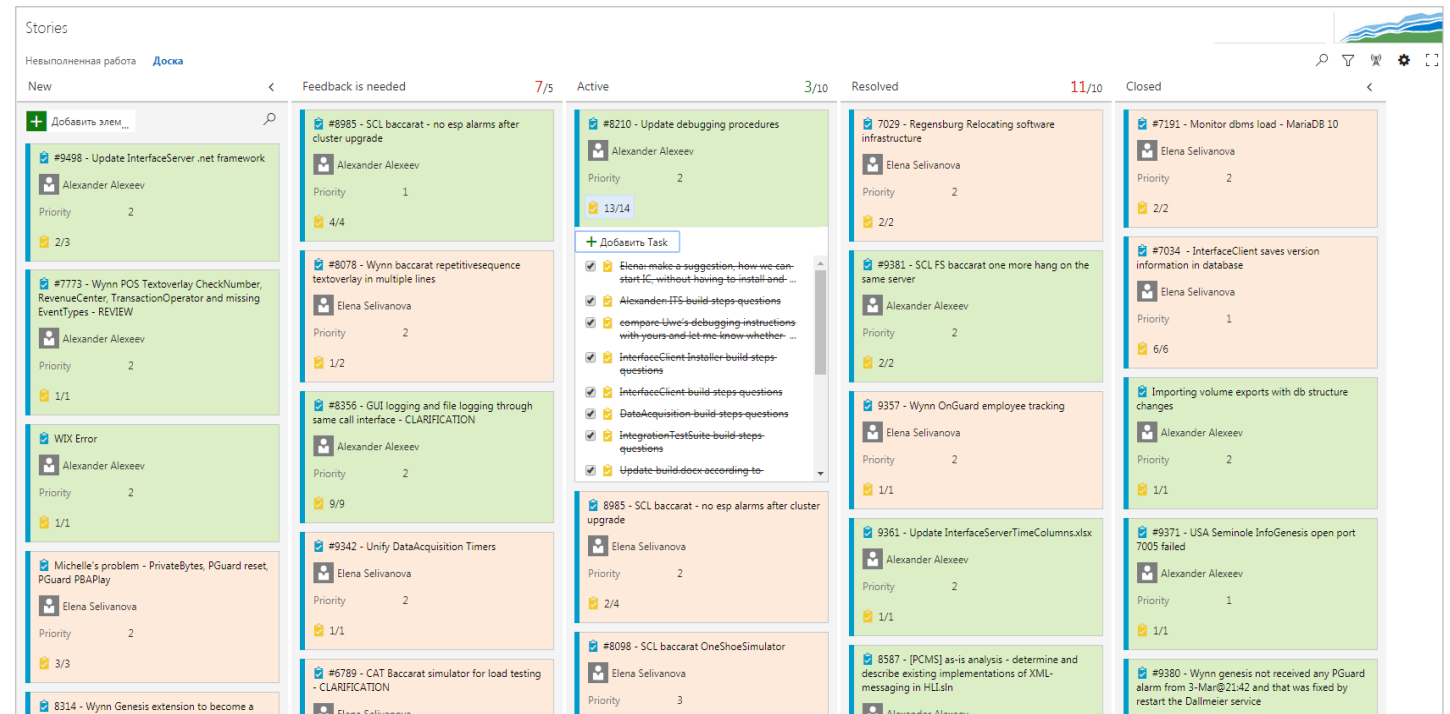


Petrozavodsk State University

We use agile project management approaches based on iterations and kanban.

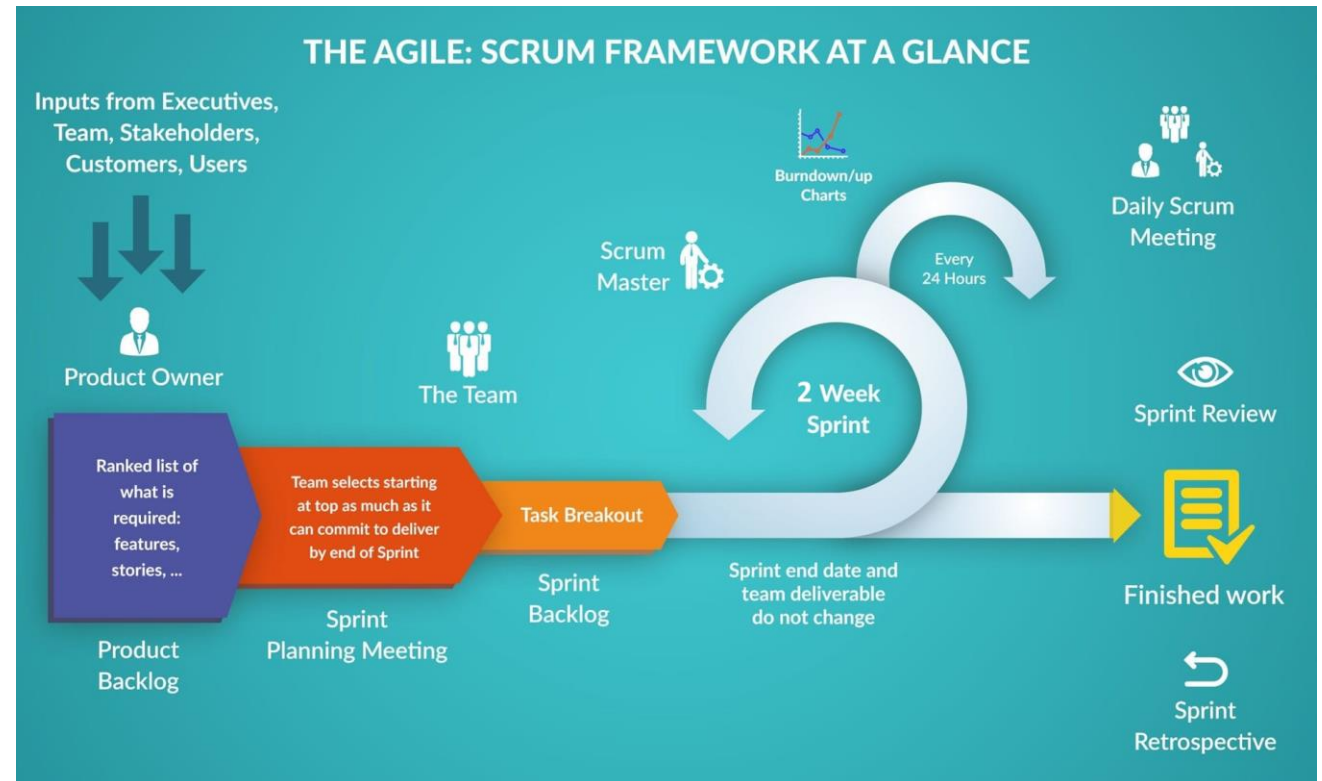
SCRUM is our default project management method allowing:

- decompose complex tasks
- interact constantly with customer
- meet changing requirements



Our default project scenario:

- Sprints duration: 2 weeks.
- Report to the Customer: 1 in 2 weeks on Friday.
- Meeting with Customer: 1 in 2 weeks on Monday.
- Progress and plans are reported and discussed at the end of each sprint.
- Subsequent steps can be corrected or changed based on the previous results.



Project Planning



Project Tracking



Requirements
and Version control



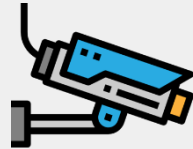
Development tools



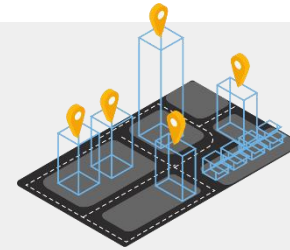
KEY COMPETENCES



Embedded Software



Video Processing



Deep Learning

We develop custom software
for Display systems



Synchronization with Infotainment system

Video and navigation data
streaming (H264)

Audio and phone data
transfer and distribution

Graphics displaying

Subsystems and sensors events and alerts (engine, power,
fuel, temperature, pressure, voltage, etc.)

CAN data signal processing

SOME/IP Middleware (MOST, CAN, Ethernet, ICOM)

Boot manager



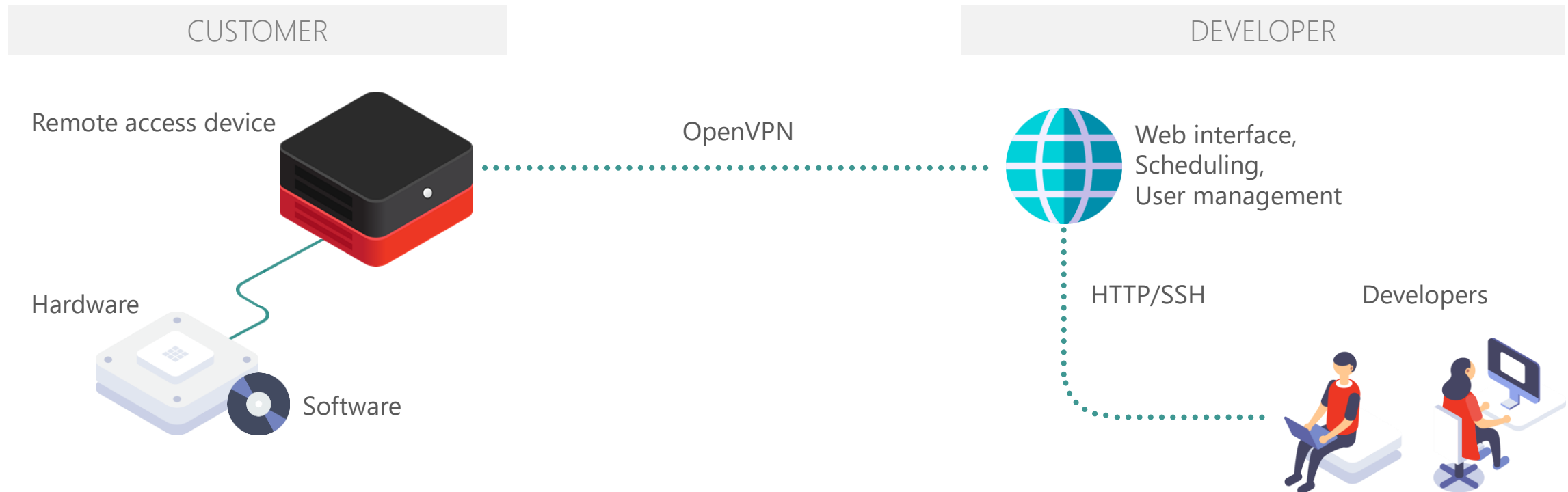
- Recording of the entire bus communication
- Snapshot functions enable quick saving and restoring of workspace configuration
- Monitoring of messages and signals via alarm plug-in and trigger
- Creation of processes and test sequences via scheduler tables
- Integrated virtual ECU (ExCar) and extensive examples for easy entry
- Remote control via COM-API



We provide our customers services of secure remote software development in cases:

- hardware and software must stay in-house for security reasons,
- hardware is often updated prototype,
- hardware delivery takes too much time or money.

How it works



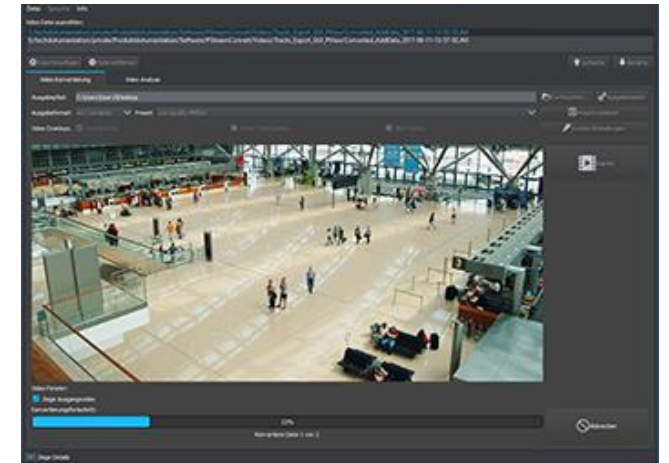
Firmware and drivers for video surveillance cameras, recorders and systems for leading CCTV manufacturer from Germany.



Firmware and
calibration tools

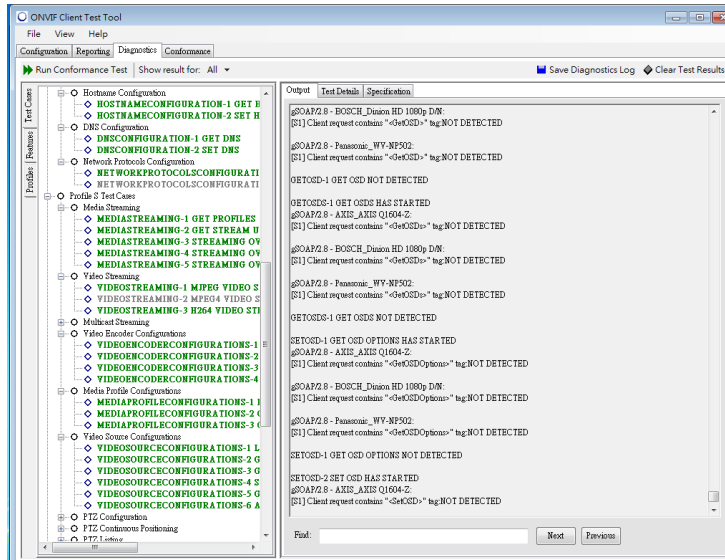


Recording and
backup software

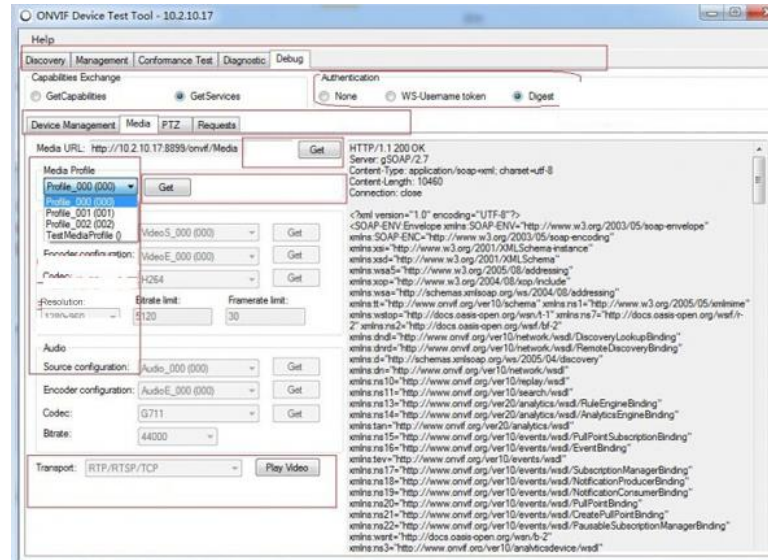


Management and
conversion software

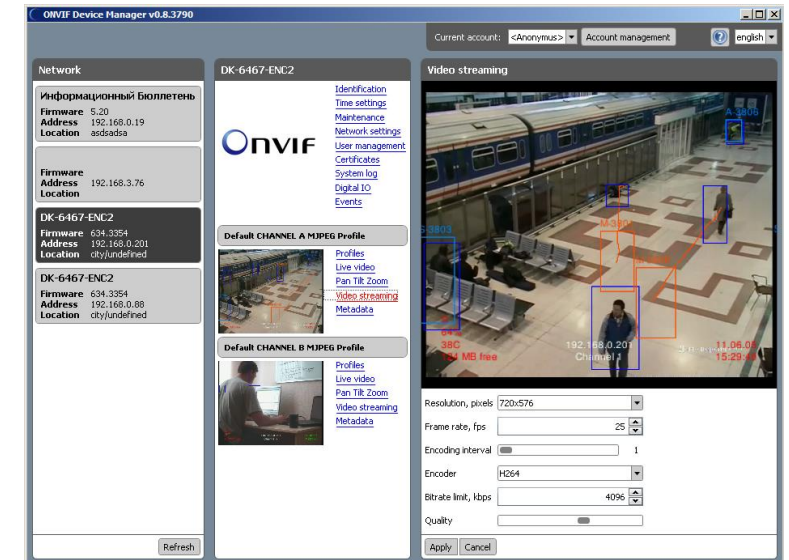
Testing and standard conformance tools for international association of CCTV manufactures ONVIF that provides standardized interfaces for interoperability of IP-based physical security products (cameras, recorders, smart locks).



Client test tool

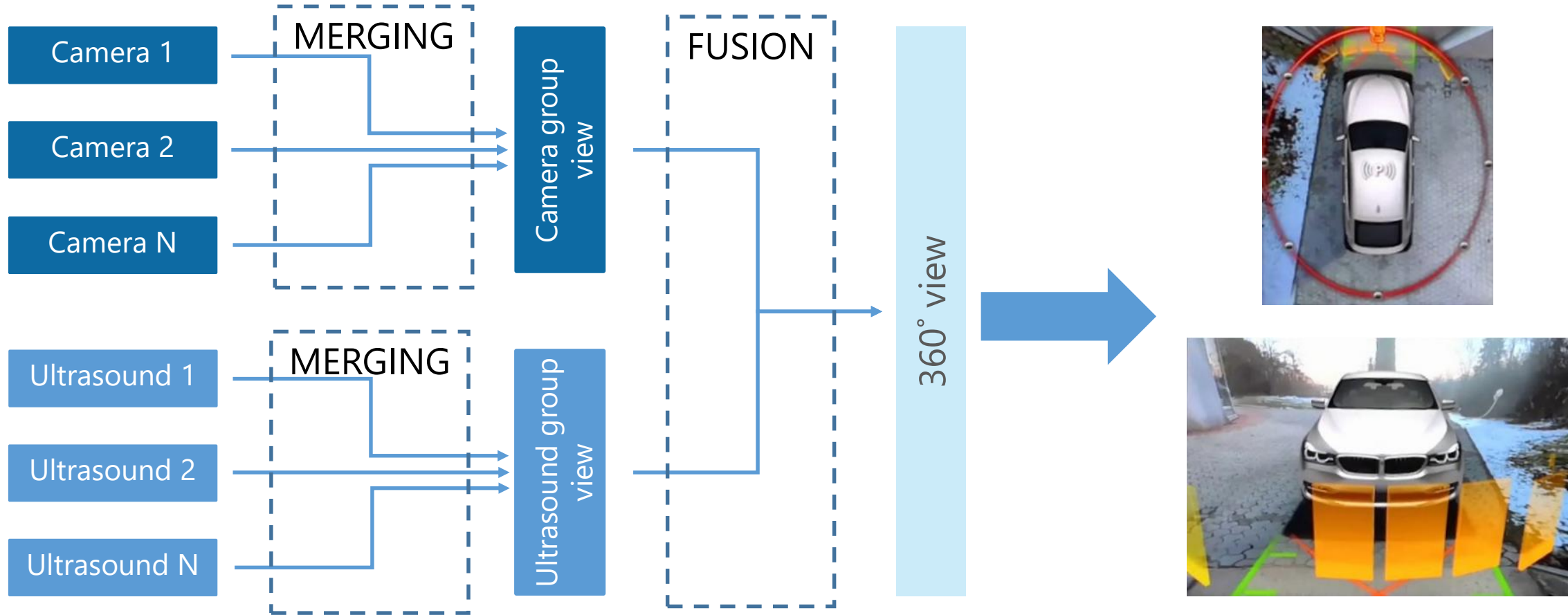


Device test tool

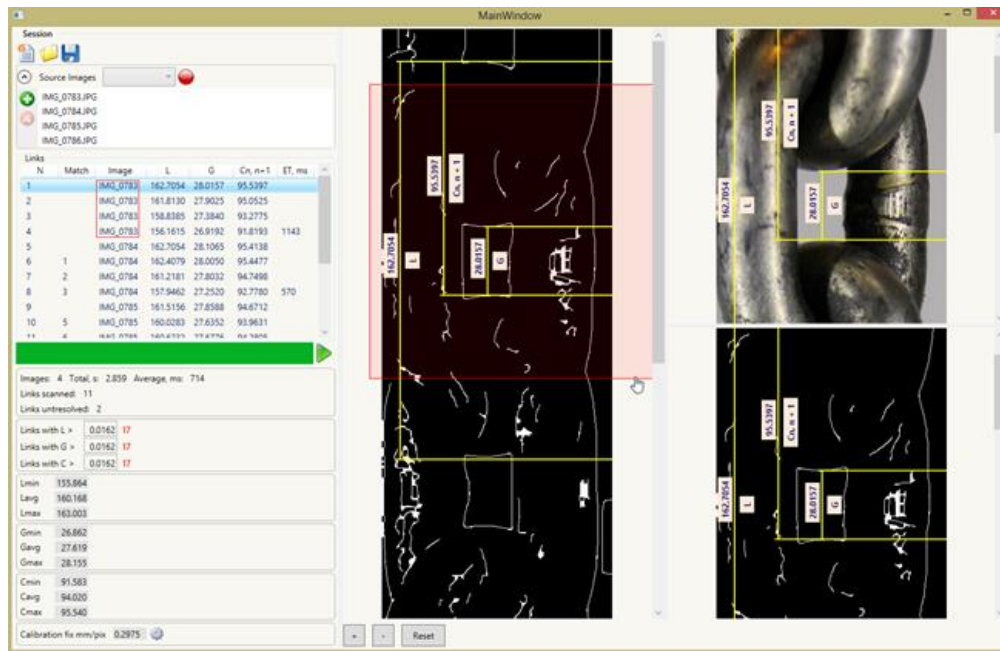


Device manager

Sensors merging and fusion solutions to build complex 360° view.



Video analytics solutions for prediction maintenance and production calibration based on video processing for timber plants in Finland.

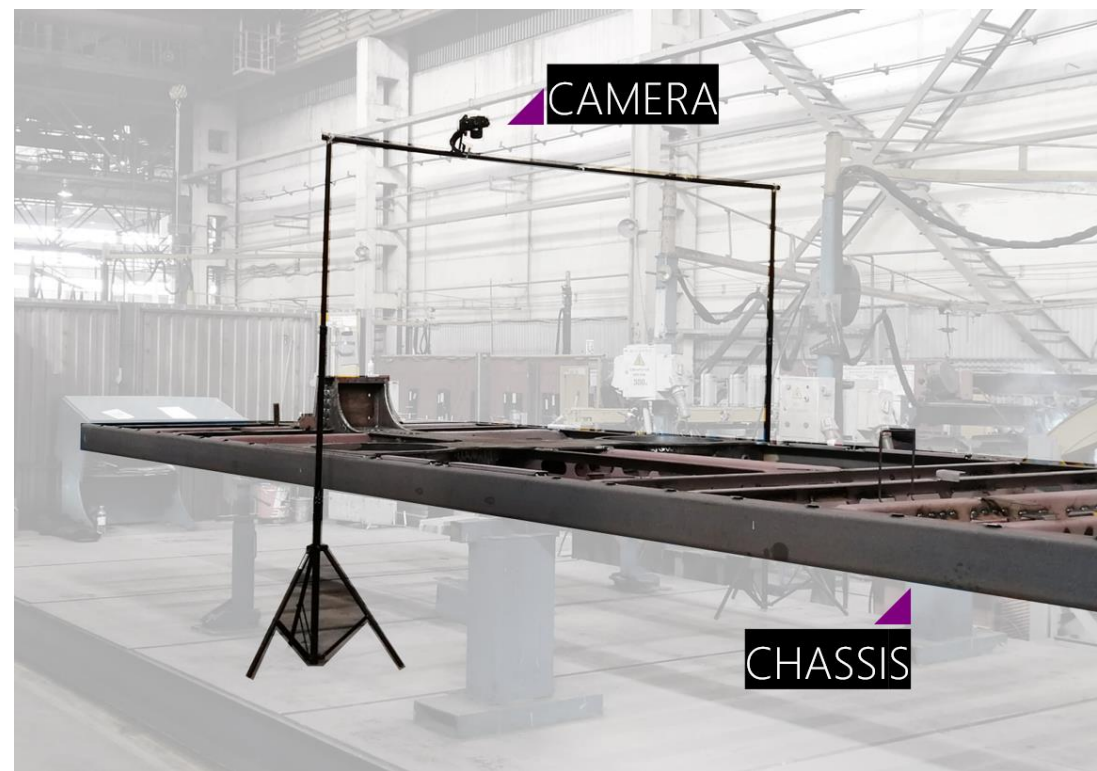


Machinery chains
wear and tear

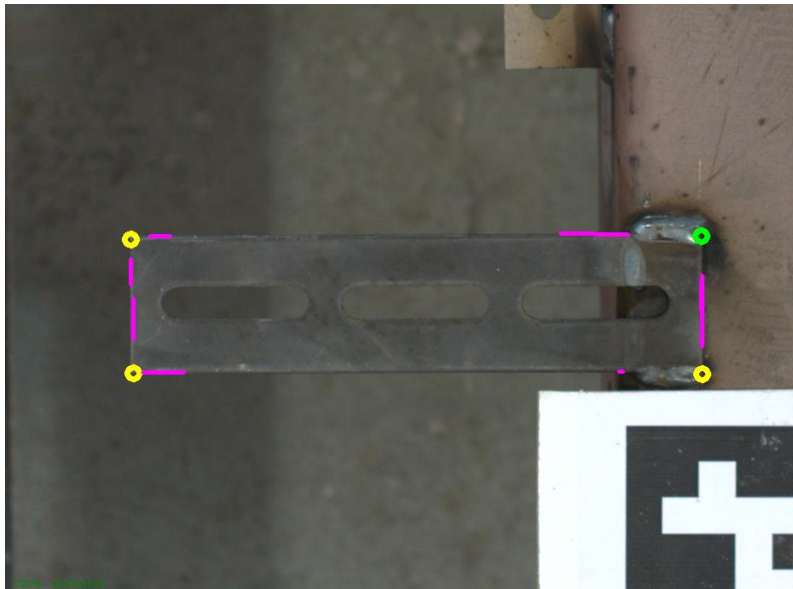


Wood chips recognition
and calibration

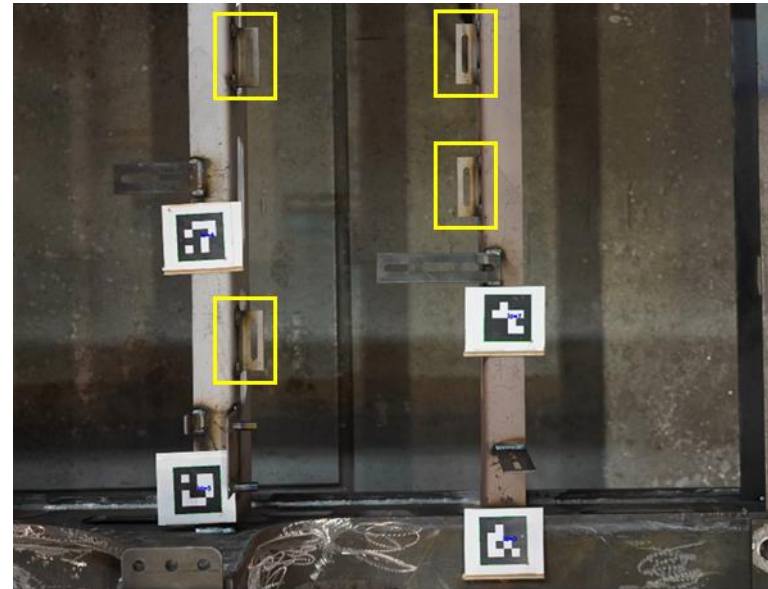
Video analytics solutions for industrial production quality control for railroad cars manufacturer.



Our solutions are based on image recognition using deep learning and neural networks.



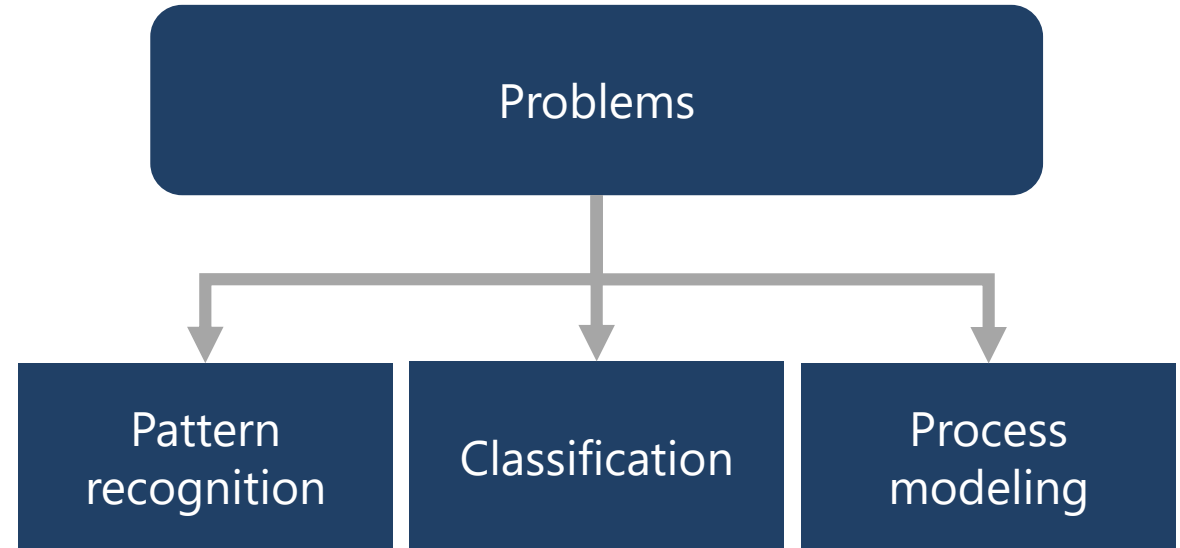
Dimensions
matching



Assembly control

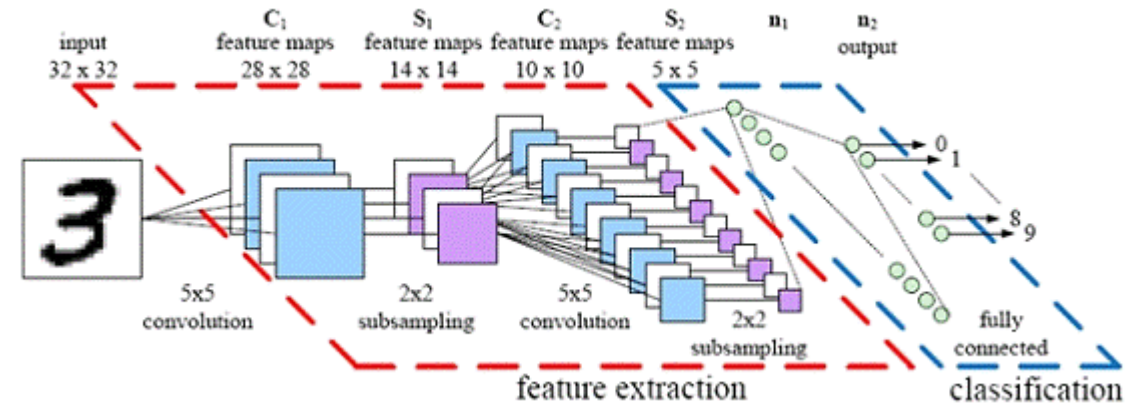
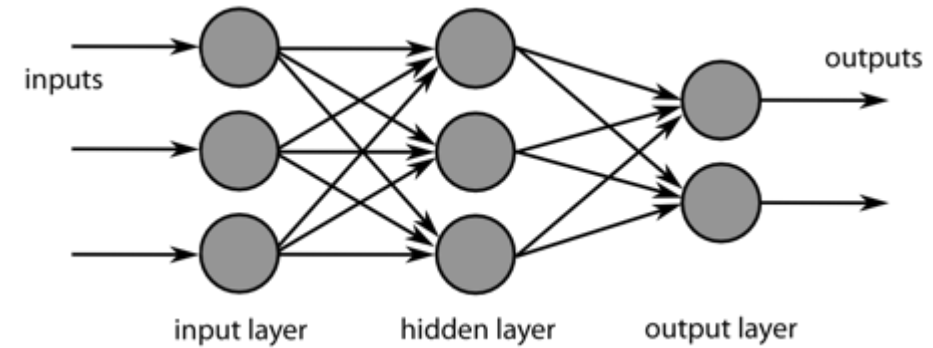
Technologies and problems

- **Feedforward neural networks** (perceptron, convolutional neural network)
- **Adaptive resonance theory (ART) networks**
- Self-organizing competitive networks, Kohonen networks
- Generative adversarial networks (GAN)

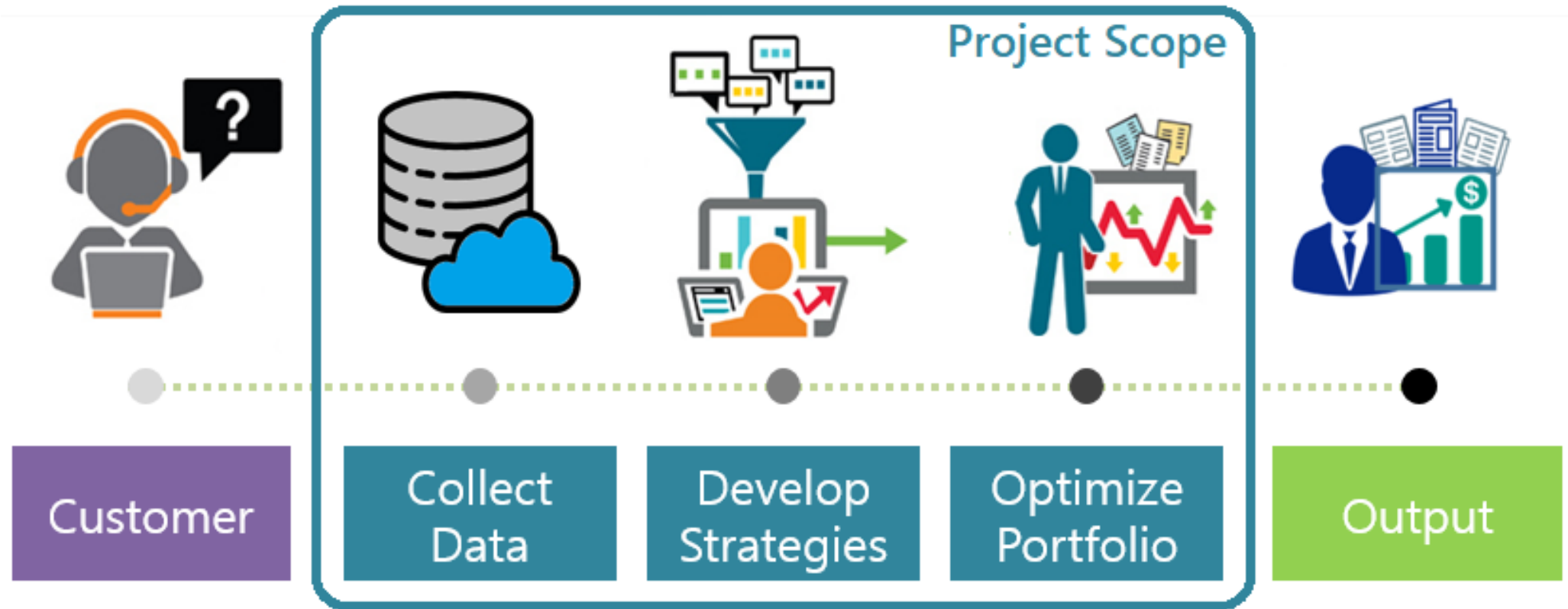


Deep learning

- Dropout
- Batch normalization
- L2-regularization
- Back propagation for CNN
- GPU



Framework for trade strategies and portfolio optimization for Korean financial group



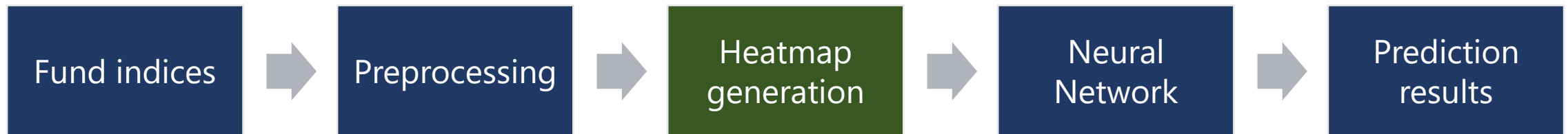
Fund prediction strategies development based on heatmap approach for Korean financial group

Goal

Predict funds behavior using heatmap generation algorithms.

Overview

The prediction result is profit margin with a particular value of probability. Funds prediction is made in 5 stages. After uploading input data (existing fund indices) preprocessing is needed. At this stage invalid data is excluded and train, validation & test datasets are formed. At third stage the heatmaps are generated using new developed algorithms. After that Neural Network is trained with a big amount of these heatmaps and we get funds prediction results as an output.



More intellect for the same money
=
Better product

We find solutions for unsolvable tasks.

ASTRO●SOFT

astrosoft.xyz

Timofey.Ponomarenko@astrosoft.ru