

Who we are ...



Kappa optronics GmbH

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Vision

With our vision systems we stand for security and trust. When driving or flying, Kappa is always the first choice any time people rely on safe decisions.

Mission

We translate the highest requirements for safety-critical vision systems into customer-specific solutions. Our solutions protect lives while flying or driving. Our partners value our employee's excellence and commitment.

Values

Consistent customer orientation • Partnership • Excellence • Creative Freedom • Family-Oriented Corporate Culture

- κ Founded 1978 | CEO: Christian Stickl
- κ Headquarters **Germany**
- κ Certified ISO 9001 (Industry) & EN/AS 9100 (Aviation)
- κ 145 Employees – 35% in R&D | 74 % Export | 26% Germany
- κ Membership: Aerospace Valley, EMVA, FED, IPMA/GPM, Measurement Valley, Spectronet

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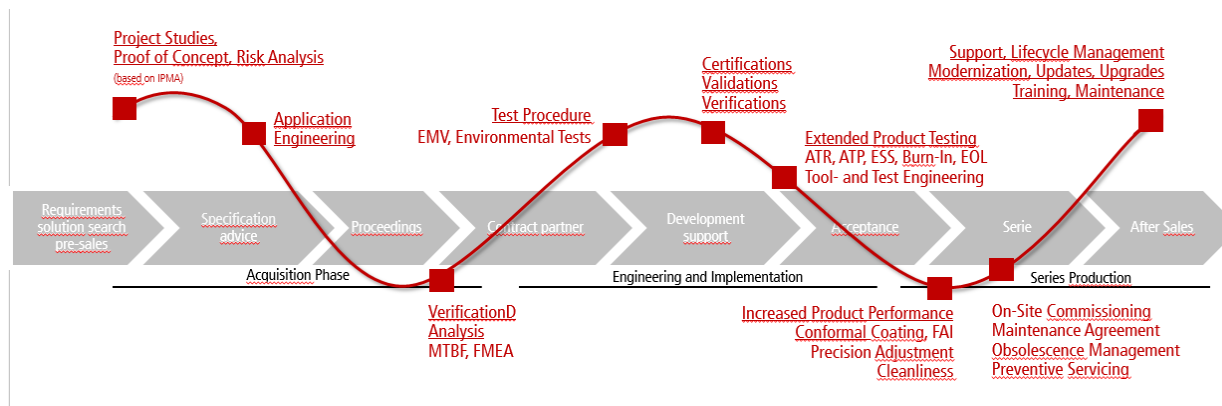
How we do it ...

- Ⓚ More than 40 years experience in camera development
- Ⓚ System competence in safety regulated markets (air to air refueling, electrical rear mirror)
- Ⓚ Qualified and robust design for harshest environment
- Ⓚ Well established structures in R&D for safety critical systems
- Ⓚ 45 Engineers at facilities in Gleichen, Germany

Ⓚ Camera Solutions



Complete System **Ⓚ**



Shunting Yard Video Assist

Background

- Ⓚ More railway freight expected the next years
- Ⓚ Rail freight has taken on a key role in light of climate protection
- Ⓚ Qualified employees are more and more difficult to find



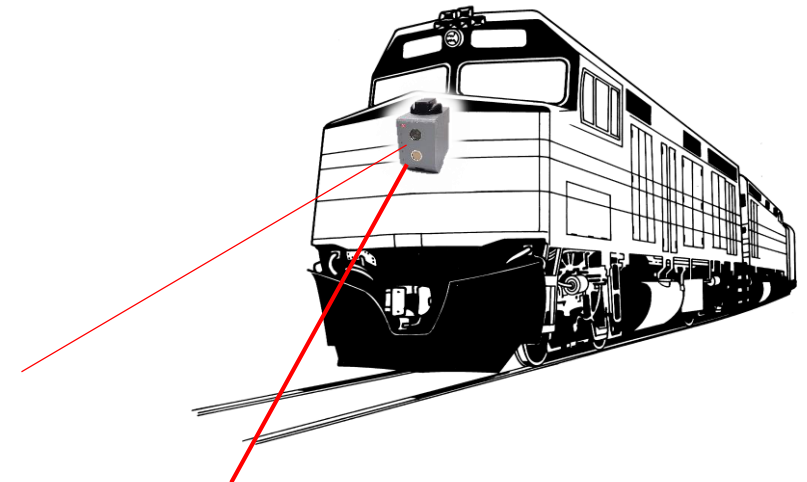
Solution

- Ⓚ Wireless 24/7 **Safe-on-Time Video** (SOTV) in harsh environments
- Ⓚ Obstacle detection and distance estimation **Driver Assistance**
- Ⓚ SIL 2 certification approved by authorities



Challenge

- Ⓚ SOTV and Driver Assistance not standardized yet
- Ⓚ One solution suitable for EU and not limited to one country
- Ⓚ EC type approval from North to South Europe



Ready for realization if...

- Ⓚ **Partners** helping us to develop the **vision algorithms** for obstacle detection (universities, research institutes, ...)
- Ⓚ **Consortium** Shift2Rail JU Members and Associate Members interested in a **universal solution**
- Ⓚ **Other Railway Cargo Companies** and **Supplier of Equipment** with focus on **highly automated shunting** (signals to train, brakes, processing)
- Ⓚ **Support** from **EC authorities** to standardize the requirements throughout Europe to harmonize the system with one certification for all members of the EU
- Ⓚ **Dividing** the development costs and be supported by Shift2Rail



2020 Call for proposals topics...

κ S2R-CFM-IP5-01-2020: Use-centric rail freight innovation for Single European Railway Area

κ Work stream 5: Automated train operation (TD 5.1) (ATO)

κ S2R-CFM-IPX-01-2020: Advanced Functions towards Autonomous Trains Support from **EC authorities**

κ Work-stream 1: Concerning train external environment perception the following activities should be tackled in a coordinated way with TD2.2, TD2.9 and TD5.6

