ASE GMBH

NUMBERCHECK

RAIL & ROAD GATE

OCR-GATES FOR DIGITIZATION
AND PROCESS OPTIMISATION

Eric Steck, CEO

01 | ASE – WHO WE ARE

02 | NUMBERCHECK – VIDEO RAIL GATE

03 | NUMBERCHEK – MODUL DESCRIPTION

04 | NUMBERCHECK – VIDEO ROAD GATE

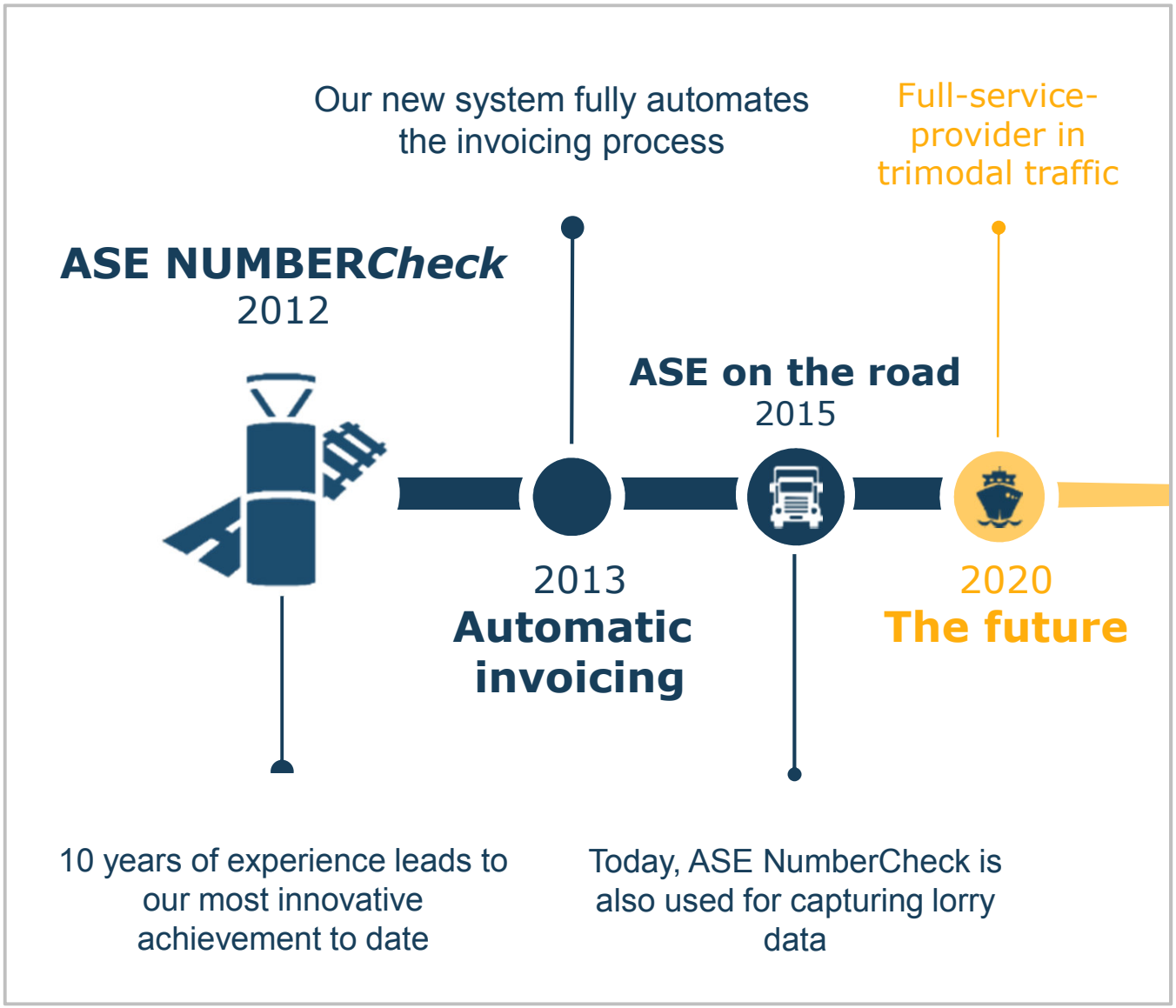
05 | BIOMETRICAL FACIAL RECOGNITION

06 | YOUR BENEFIT / PRAXIS EXAMPLES

07 | REFERENCES / CONTACT

WHO WE ARE / ASE MILESTONES

- Foundation 2002
- Customer specified video surveillance systems
- OCR development since 2009
- Over 100 customers

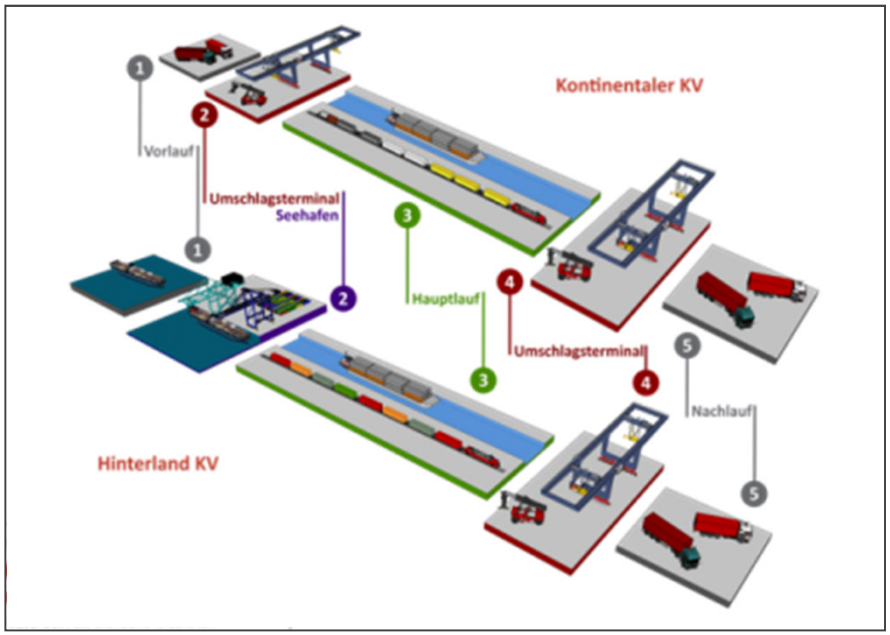


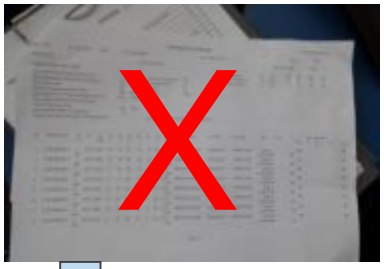
COORDINATION OF STREAMS

Provision and exchange of information for combined transport

Secure, efficient and cost-saving transport

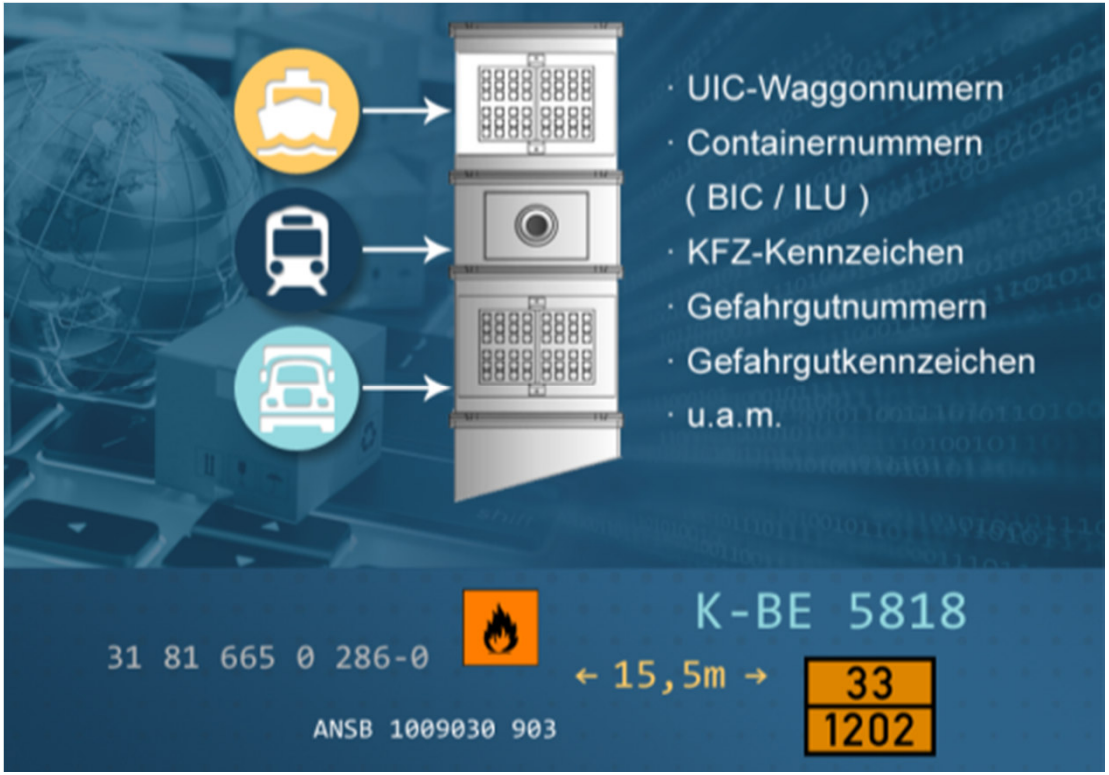
Aim is to standardize the exchange of data with all actors in the transport chain





Our solution

01 OCR GATE „NUMBERCECK“ FROM ASE CAPTURES AND DIGITIZES DATA IN GOODS TRAFFIC



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02 | NUMBERCHECK – VIDEO RAIL GATE

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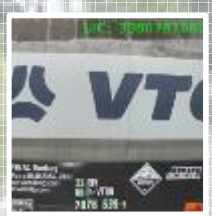
OCR GATE FOR RAILWAY TRAFFIC

Optical detection of UIC numbers in running process

Detection of dangerous good signs and numbers

Train monitoring

Automatic image processing



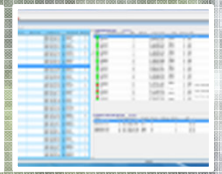
As-is documenation

Recording of goods, tank and passenger cars

Interfaces to superior software systems

Interfaces to freight car scales

Data match



Reading length over buffer (LOB)

Detection break lever postion

Our solution

02

OCR GATE – STRUCTURE VARIANTS

STEEL OR ALUMINIUM PORTAL AND/OR STEEL PILLAR

RWE in Hamm

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7 MODULES FOR CUSTOMER SPECIFIED SOLUTIONS

M1 ASE NUMBER*Check* and axle sensoric

M2 Flat wheel detection

M3 Detection container numbers

M4 Detection ADR-plates

M5 As-is documentation and archiving

M6 Automatic data match with RU (railway undertaking)

M7 Automatic billing

ASE NUMBER*Check* pillar

Schematic layout

MAXIMUM EFFICIENCY

+

SUBSTANTIAL INCREASE IN REVENUE

+

EXTENSIVE COST SAVINGS

+

SMALL INVESTMENT

SHORT PAY BACK TIMES

03 ASE NUMBERCHECK AND AXLE SENSORS

Reliable recognition, image processing and plausibility check of UIC wagon numbers, Russian wagon numbers, locomotive types and much more.

The wheel sensors record the direction of travel, speed and wheel signature and automatically report the corresponding wagon.

ASE NUMBER*Check*

- Full WiFi, LWL, UMTS, LTE, and radio connectivity
- Steel pillar protects against vandalism
- Compact design, individual configuration
- Identifies trains and wagons at up to 80km/h

Wheel sensors

- Transmission wheel signature
- Establishes direction of traffic, speed, number of axles, and number of wagons
- Locates a wagon at factory or rail premises

Flat wheel detection

- Interface to flat wheel detection and other measuring systems for WTMS (wayside train monitoring systems)

M1 **M2** M3 M4 M5 M6 M7

✓ **Modular construction** for flexible adjustment

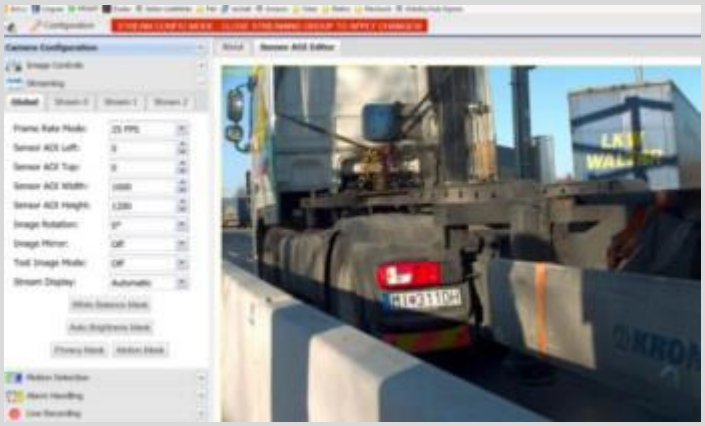
✓ **Easy integration** in existing track bed

ASE Technology – MODUL Description

03 DETECTION OF CONTAINER NUMBERS AND DANGEROUS GOOD SIGNS FOR RAIL & ROAD

Reliable identification, image processing and plausibility check of CNT BIC container numbers (loading units)

Detection of dangerous good signs and numbers (ADR-plates) and license plates



Detection container number

- Detection BIC/ILU code
- Automatic data match
- Interfaces to superior TOS software systems

Detection dangerous goods

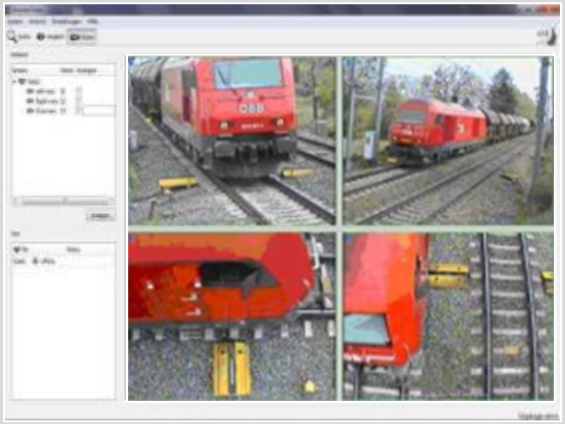
- Detection of ADR plates
- Data match

- ✓ **Increase in throughput speeds**
- ✓ **Registration, steering of lorries and trains**
- ✓ **As-is documentation**
- ✓ **Process optimisation**

M1 | M2 | **M3** | **M4** | M5 | M6 | M7

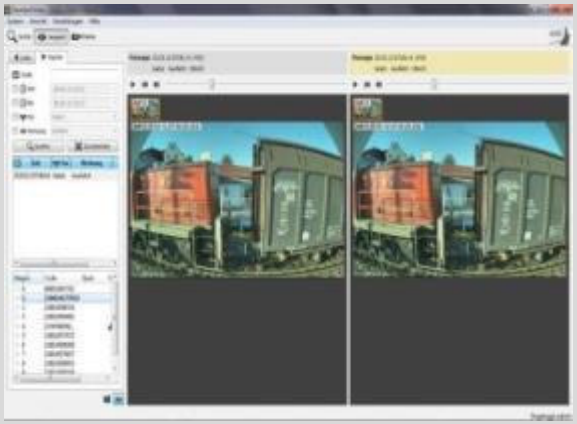
03 AS-IS DOCUMENTAITON AND ARCHIVING

Application for video gate rail & road:
As-is documentation and archiving enables searching for wagons and complete trains by day, time, arrival, departure, and UIC numbers, as well as for vehicle numbers and BIC/ILU code.



Archive of 360°-views of passing trains and waggons

Registration of the train association or wagons from all sides



Comparison of stored pictures at entry and exit

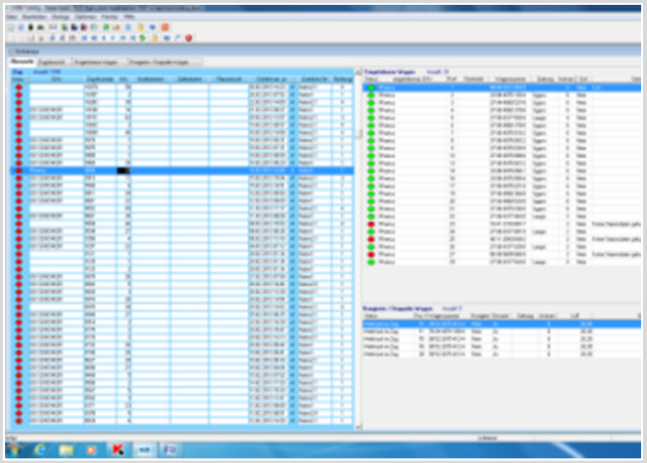
Detection of:
break lever position, faulty step, ADR-plates, missing notes
Graffity

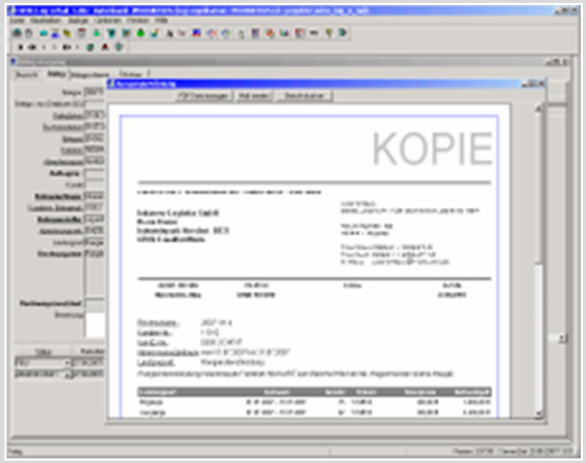
Stitching analyses to watch complete trains (zoom as you like)

- ✓ **Export video and image data**
- ✓ **Proof of damage**

AUTOMATED TOC MATCHING

Automated electronic matching of transits captured by ASE Number*Check* with datas from RU (railway undertakings) and automated invoicing to all infrastructure users





GUI: User interface of Aprixon's TrAbSy invoicing software

- Identifies and captures UIC numbers
- Reading length over buffers
- Matches announced RU-data
- Mobile end devices for longer stays in infrastructure areas

✓ **Efficiency gains**
individual format adjustment

✓ **Fully automated procedure**

✓ **Sales increase**
Effective billing

✓ **Lower costs**
Free capacities

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OCR GATE FOR ROAD / TRUCK TERMINAL

Automatic registration, monitoring and steering of trucks

Capturing vehicle numbers, ILU- and BIC Code, dangerous good signs

Integration of data via interfaces to superior logistic and operations control systems

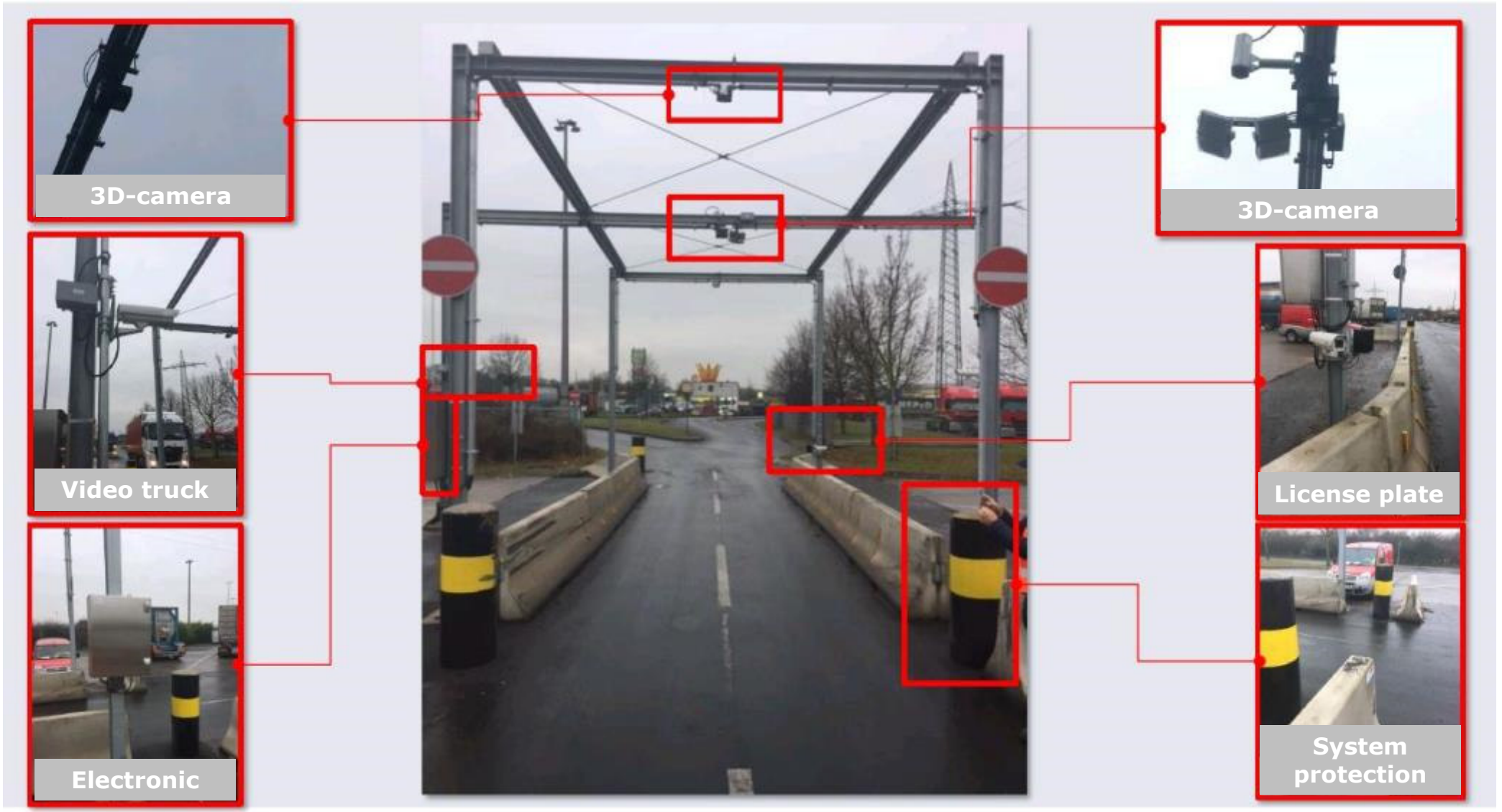
Sensoric at steel portal on left and right sight of the lane

System protection

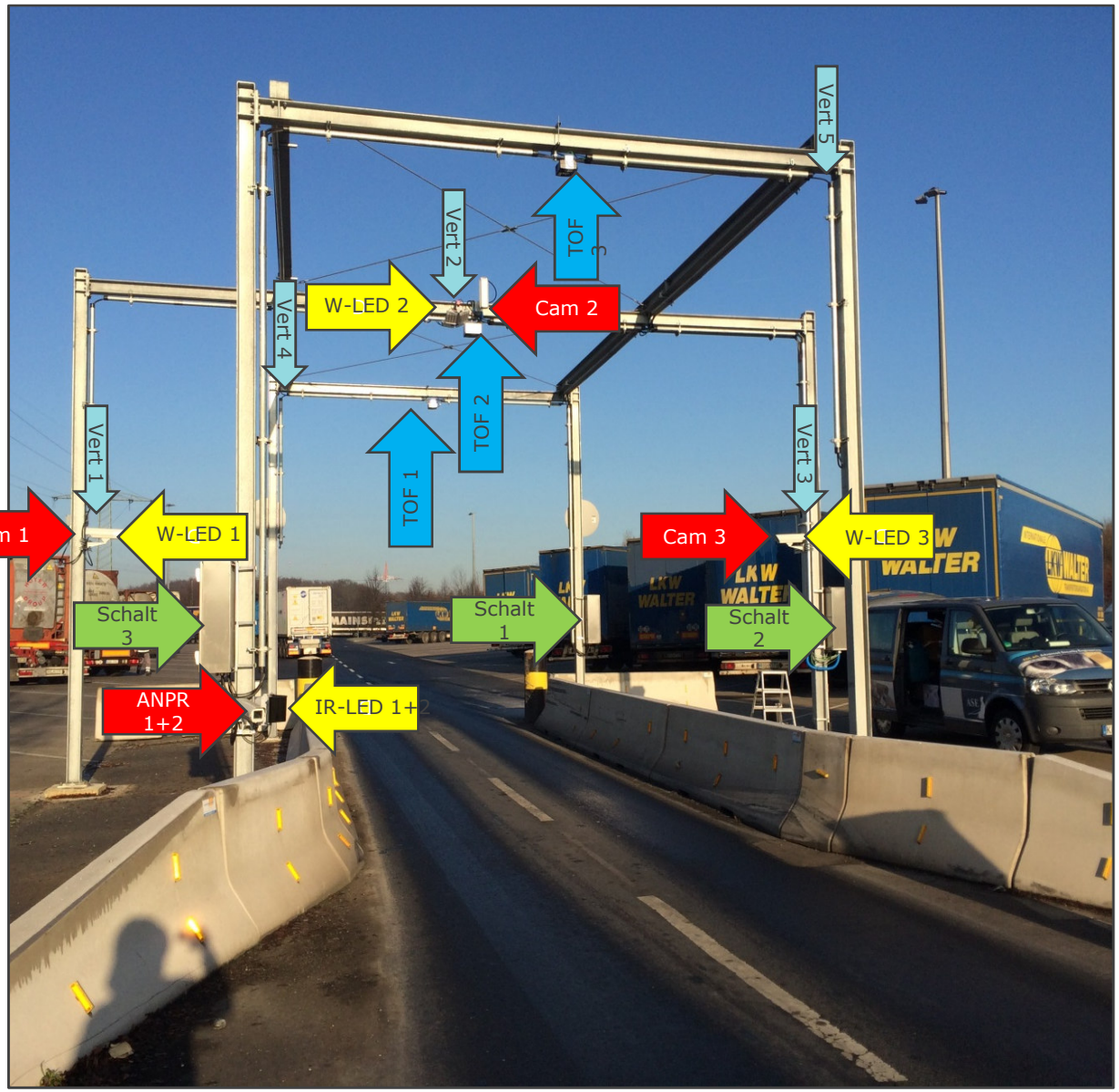
Sensoric includes:

- **Cameras**
- **Ilumination**
- **Laser scanner**
- **Transmission modules**

VIDEO GATE – STRUCTURE AND COMPONENTS



VIDEO GATE – STRUCTURE AND COMPONENTS (DETAILS)



ANPR 1	Camera for vehicle number detection ahead
IR-LED 1	Infrared light for vehicle number detection
ANPR 2	Camera for vehicle number detection behind
IR-LED 2	Infrared light for vehicle number detection
Cam 1	Camera for video recording of left truck or container side
W-LED 1	Wight light LED for video recording
Cam 2	Camera for video recording of upper truck or container side
W-LED 2	Wight light LED for video recording
Cam 3	Camera for video recording of right truck or container side
W-LED 3	Wight light LED for video recording
TOF 1	3-D-camera for singling vehicles or container triggering
TOF 2	3-D-camera for singling vehicles or container triggering
TOF 3	3-D-camera for singling vehicles or container triggering
Vert 1-5	Junction box

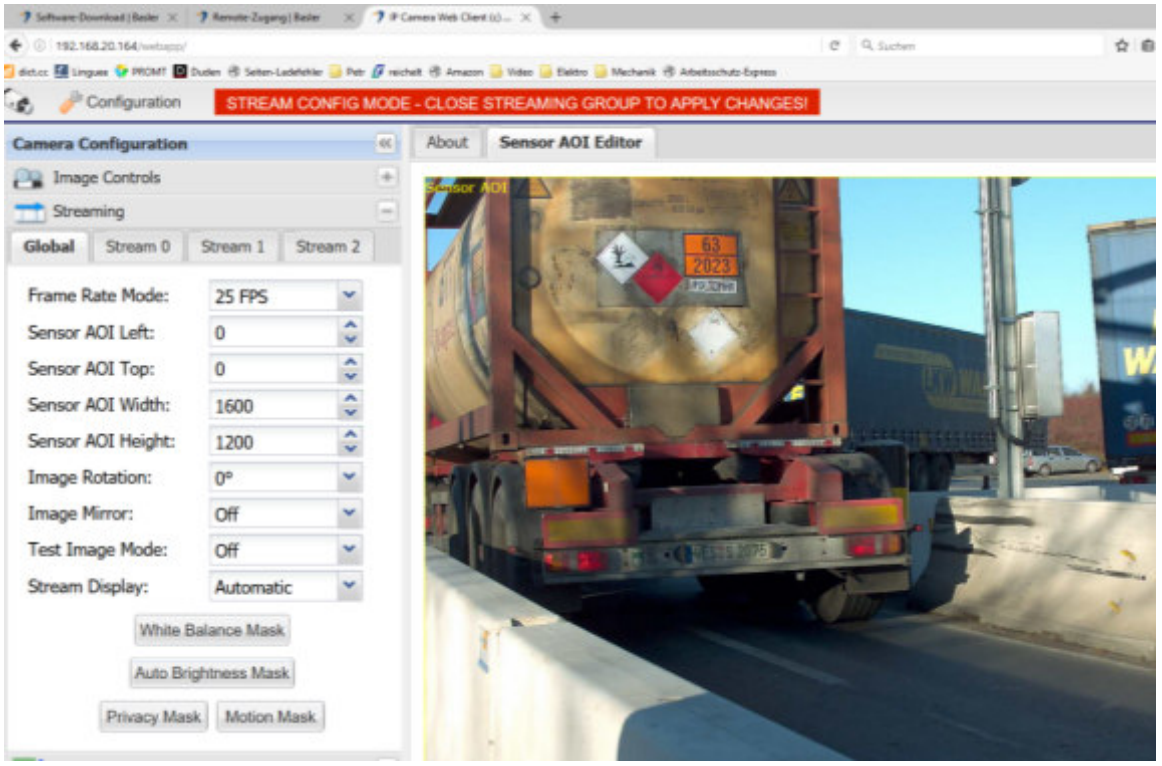
VIDEO GATE – HARD- AND SOFTWARE COMPONENTS

Hardware:

- Steel portal or steel column
- Sensoric: Cameras and lighting
- Transmission moduls and components

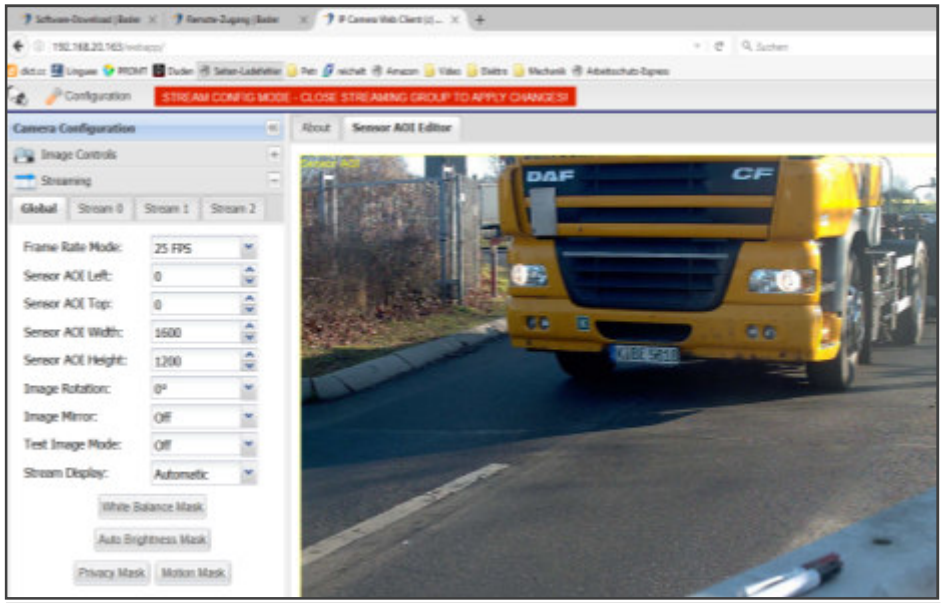
Software:

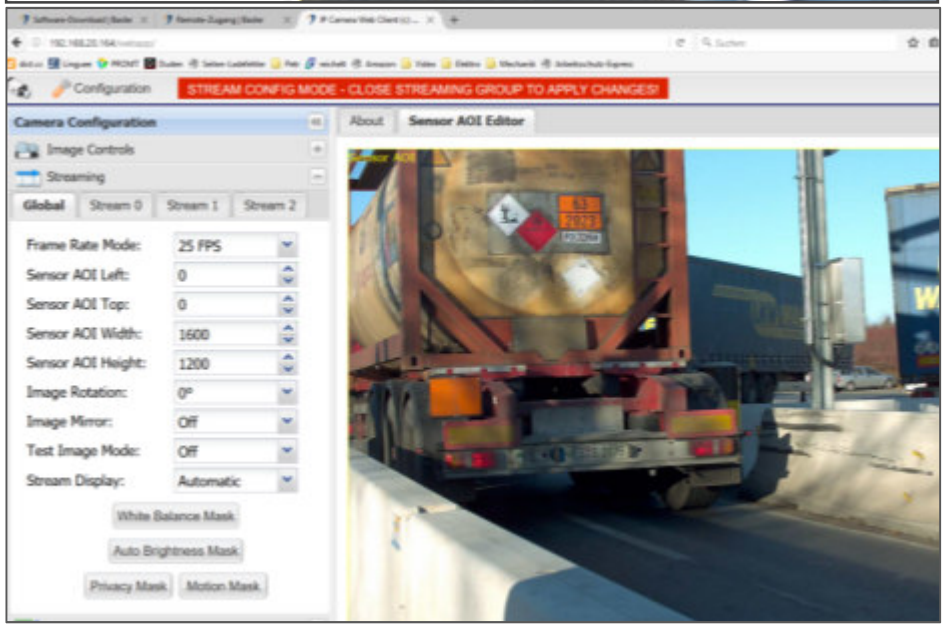
- OCR system: ASE-Numberfinder
- Interfaces to superior software systems (TOS)



Example: Visualisation software „Portos videogate", dbh Logistics IT AG

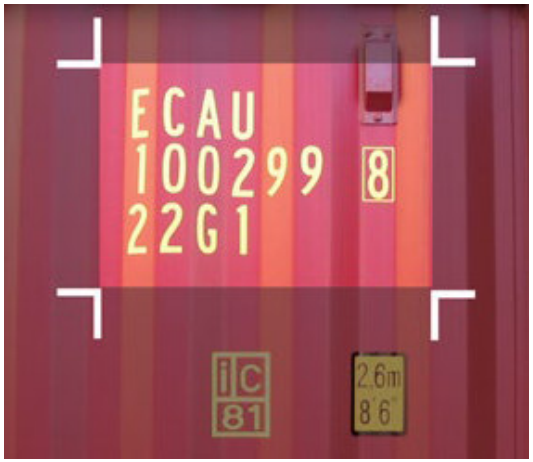
PROJECT COLOGNE-EIFFELTOR





Detection of :

- License plates /vehicle numbers (ANPR)
- Dangerous good numbers and signs (ADR-plates)
- Container numbers (BIC/ILU)
- Bar code/QR code



OCR RESULT:
ECAU 100299 8 22G1

04 VIDEO GATE – SYSTEM PROTECTION

01 | ASE – WHO WE ARE

02 | NUMBERCHECK – VIDEO RAIL GATE

03 | NUMBERCHEK – MODUL DESCRIPTION

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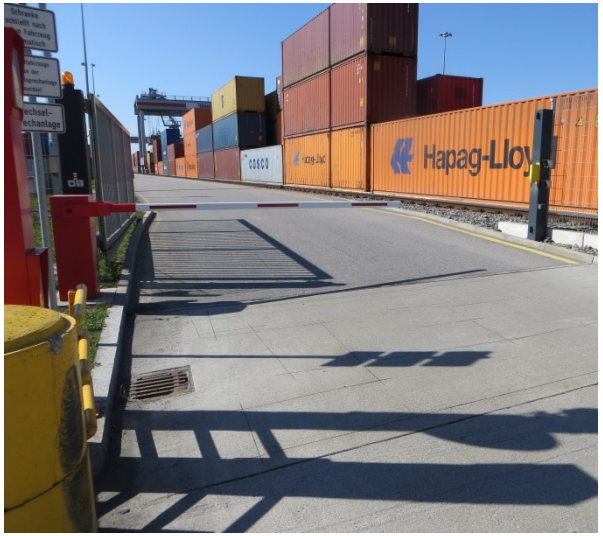
OPTION: BIOMETRICAL FACIAL RECOGNITION

- For safety relevant areas
- Video based facial recognition
- Quick verification of personal identity
- Easy handling of access authorization
- Matching with already existing access profiles
- Integration to existing card-/code systems



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02 | NUMBERCHECK – VIDEO RAIL GATE

03 | NUMBERCHEK – MODUL DESCRIPTION

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YOUR BENEFIT

Significant increase of cycle times

Process optimization automatic data capturing

Effective deployment planning

Increase of sales

Proof of damage Settlement of claims

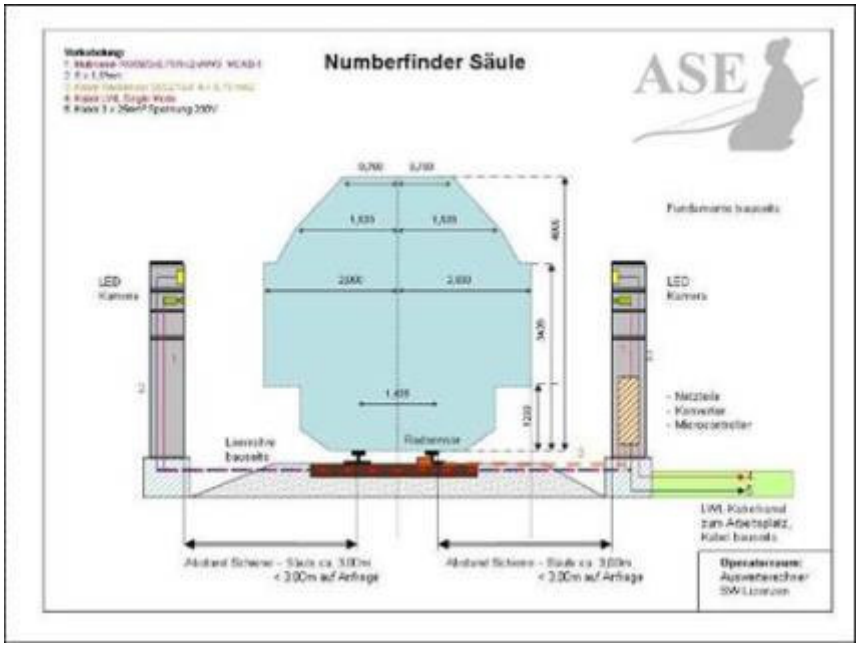
REASONS FOR OCR-GATE SYSTEMS FROM ASE

- **Smart image processing**
  Highly efficient OCR algorithm, matching captured information with database
- **Archiving & remote access**
  Accessing information by wagon number, date, time, etc., using remote interfaces from anywhere
- **Universal interfaces**
  Standardised communication using any logistics or operating system via WiFi, UMTS, GPS, etc.
- **Tailored software**
  Visual inspection of captured arrivals using stitching module
- **Comprehensive process automation**
  Captures downtimes
- **Extensive shunting support**
  Checks shunting order / advance information on shunting; follows wagon movements across the rail network

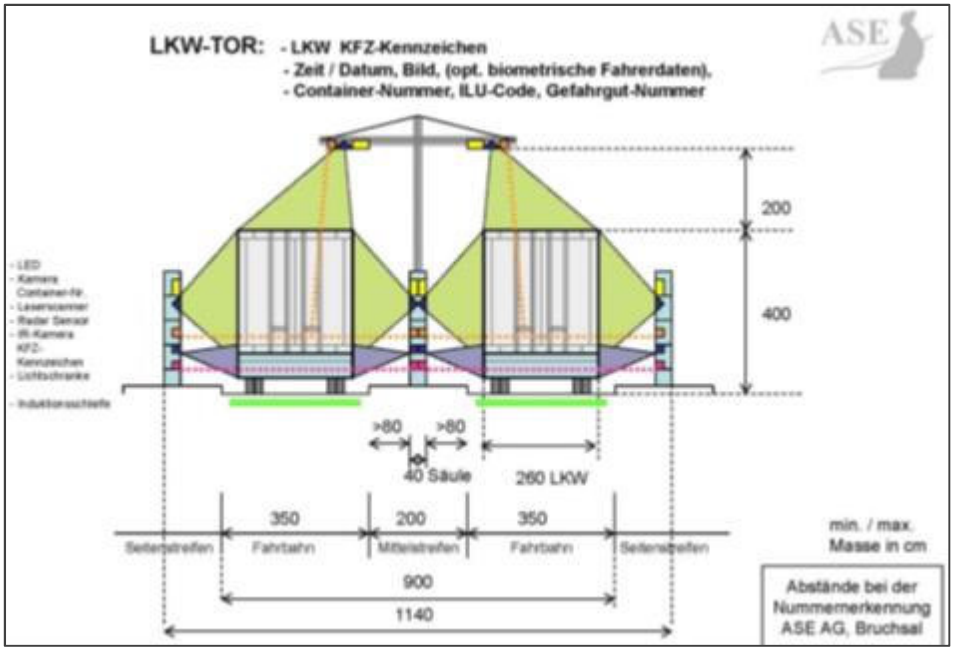
- **Enormous contributions to success with low investment volume**
  Large yield and savings potential
- **Our systems convince by their quickest operational readiness**
  Track closures not required
- **Flexibility of a customer specified design**
  We offer tailor-made solutions for every project and every customer
- **Many years of experience & comprehensive engineering knowledge**
  Our solutions are well thought-out, innovative and highly efficient
- **We have strong partners in industry and research**
  Our network is an essential part of our success
- **Software-Updates**
  Stay up to date with us at all times

SCHEMATIC DIAGRAMM VIDEO GATE

Rail gate
Sensoric in steel pillars

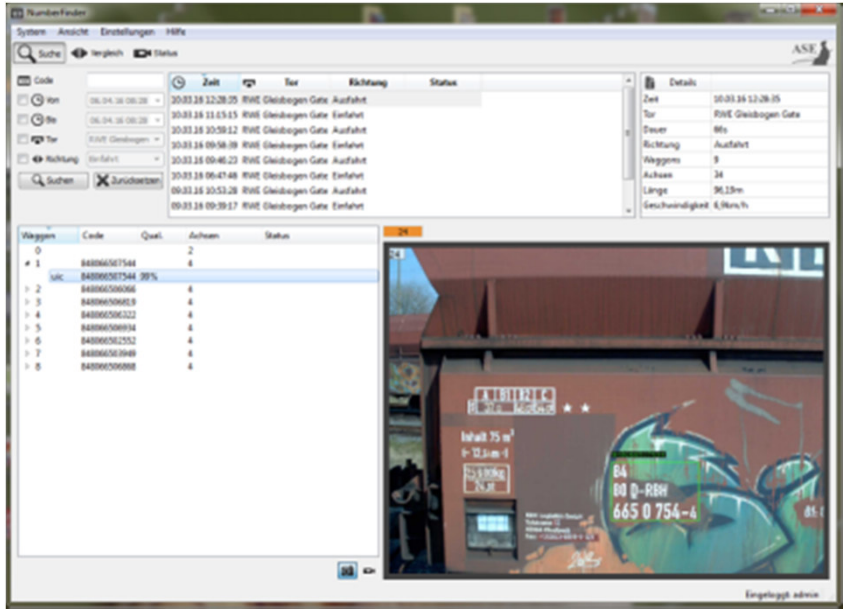


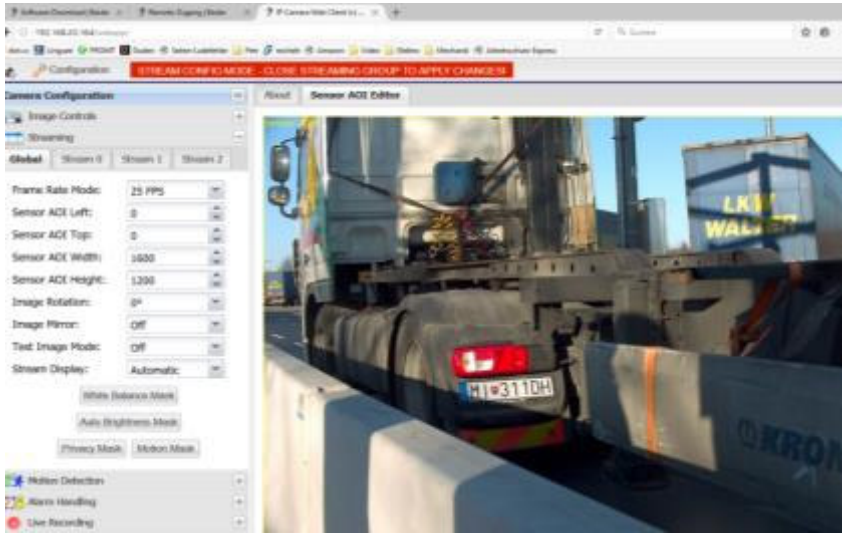
Road gate
Sensoric in steel pillars
(alternatively mounted at a portal)



NUMBER*Check* video gate for rail & road

PRAXIS EXAMPLES





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06 | YOUR BENEFIT / PRAXIS EXAMPLES

07 | REFERENCES / CONTACT

REFERENCES

RWE, Hamm

SBB Cargo

DUSS, Cologne

Railway / NUMBER*Check*- References

ArcelorMittal
basell
BMW GROUP Werk Regensburg
bayernhafen Regensburg
bp
E.I.M.G
duisport Duisburger Hafen AG
DB
DUSS
HE WÄGETECHNIK
HGM
HKM
infraserv höchst
INFRABEL Right On Track
PCK
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