

EVO *TEGRA*

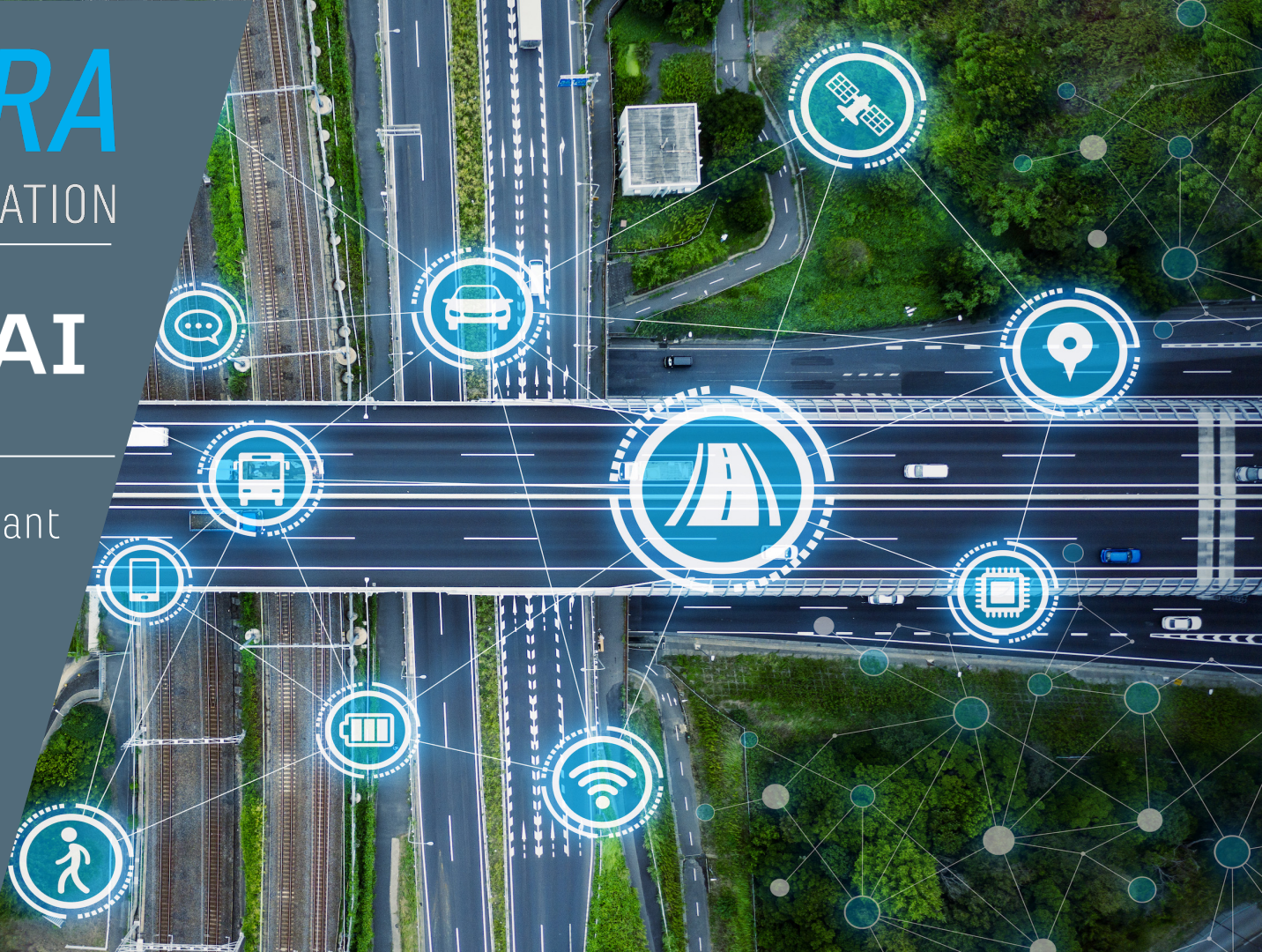
CONCEPTS & INTEGRATION

brighter AI

Data protection compliant
solutions for lossless
image data acquisition

Automotive

www.brighter.ai
www.evotegra.com



Brighter AI

brīghter AI

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Brighter AI offers anonymization solutions for image and video data with a focus on automotive and smart city.

"The natural anonymization of Brighter AI has no negative impact on the performance of machine learning models." (Automotive Tier 1)



Evotegra GmbH

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We offer customer-specific solutions and products for image recognition with artificial intelligence with a focus on automotive and industry.

“Evotegra GmbH has extensive experience, processes and tools for the automated acquisition and labelling of image data”



Fleet-based Corner Cases collection



"There are millions of corner cases [...].
Every time someone takes over from autopilot, [the car] saves the camera data and uploads it to our system." (Elon Musk 2019)

GDPR compliant collection of corner cases with fleet and series vehicles

Phase 1: employee vehicles and car sharing fleets

Phase 2: Rollout on series vehicles (continuous optimization of all corner cases)

Requirements

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Collection of corner-case data

- Necessary for validation and training
 - High number of scenarios necessary
- Transfer to series
 - Cost effective sensors
- Rare events
 - Mass data collection inefficient
 - GDPR relevant data
 - Targeted acquisition necessary
 - Videos
 - Single images
 - Sensor data
- Next generation sensor data needed
 - Acquisition with different sensors
 - Not available in current production vehicles



Traffic Lights

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Germany

- 4 classes

Robust detection

- Night

Traffic Signs

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Germany

- ~150 classes (StVo)
- Regulatory signs
- Danger signs
- Directional signs
- City limits
- Signposts
- Additional signs

Traffic Lights

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Detection at night and distance.
(16001 = Traffic light)

Traffic signs and lights

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China ~400 classes

- Regulatory signs
- Danger signs
- Directional signs
- City limits
- Signposts
- Additional signs

Robust detection

- Into the sun

Traffic Lights

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China
Strong contrast

Solution

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Automotive Grade AI

- Jetson-Xavier platform for data acquisition
 - Transferable to automotive grade (e.g. ZF Pro-AI)
- Automotive grade sensors
 - ISO 26262 ASIL C
 - HDR (Dynamic Range > = 120db)
 - LED flicker suppression
 - Night detection
 - Very high sensitivity to light (0.1 lux)
 - e.g. IMX390, ARS0231
- Close and remote detection
 - 30-200 ° opening angle
- AI object detection
 - Robust detection of traffic lights
 - status recognition



Solution

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Fully automated swarm based data collection

- Data selection with artificial intelligence in the vehicle
 - Data anonymization in the vehicle
 - 4G / 5G transmission
 - No manual processes
- AI platform
 - Real-time execution of AI object detection
 - Integration of individual requirements
- AI data
 - Generation of individual training data
 - Training of AI networks
- Cloud
 - Control server for campaign management
 - Collection of distinct property types / locations
 - Data transfer and storage
 - Strong encryption / authentication



Solution

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Flexible platform for data collection

- Jetson-Xavier platform for data acquisition
 - High performance for real-time AI applications
 - Low power consumption (15-50W)
 - Simple and reversible integration
 - Fully automatic operation
 - Remote maintenance possible via VPN
 - Updatable
- Flexible
 - Supports numerous sensors / cameras
 - Pictures and videos
 - 3D acquisition with stereo camera
 - GPS
 - CAN
 - ...



Composition

Cloud Data storage
Control Server
Anonymization

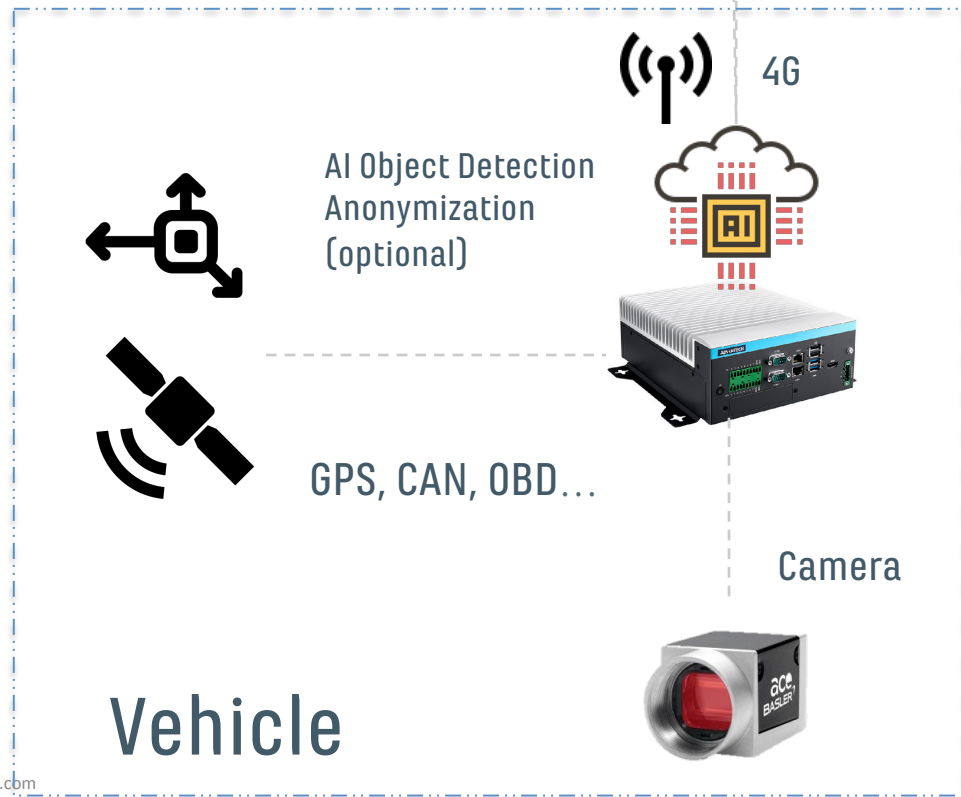


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Remote
administration



Data protection, GDPR

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Principles of data acquisition

Legitimist interest [GDPR Art. 6/1f)

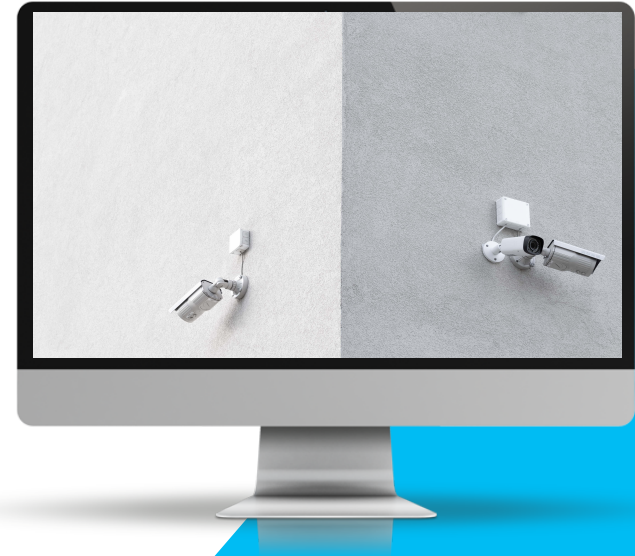
- may be factual, economic or non-material interest [Reimer HK-EuDSchVO Art. 6, margin no. 54.).

Processing and Storage

- Targeted selection through artificial intelligence
 - Data minimisation [GDPR Art. 5 / 1c)
- Lossless anonymization
 - In the vehicle or in the cloud
 - Data protection by design [GDPR, Art. 25]
- Privacy related data only in transient form
 - Anonymized data is no longer subject to the GDPR

Authorization and Authentication

- strong encryption for data transfer and storage



Anonymization

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Both number plates are synthetic!



Lossless removal of privacy related features by replacing license plates and faces with synthetic counterparts.

No negative impact on AI models

Thanks!

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