brighter AI

How AI increases efficiency, productivity, and customer satisfaction - industrial use cases enabled by generative AI

Tobias Stelzer, 15.12.2021

Please go to www.slido.com

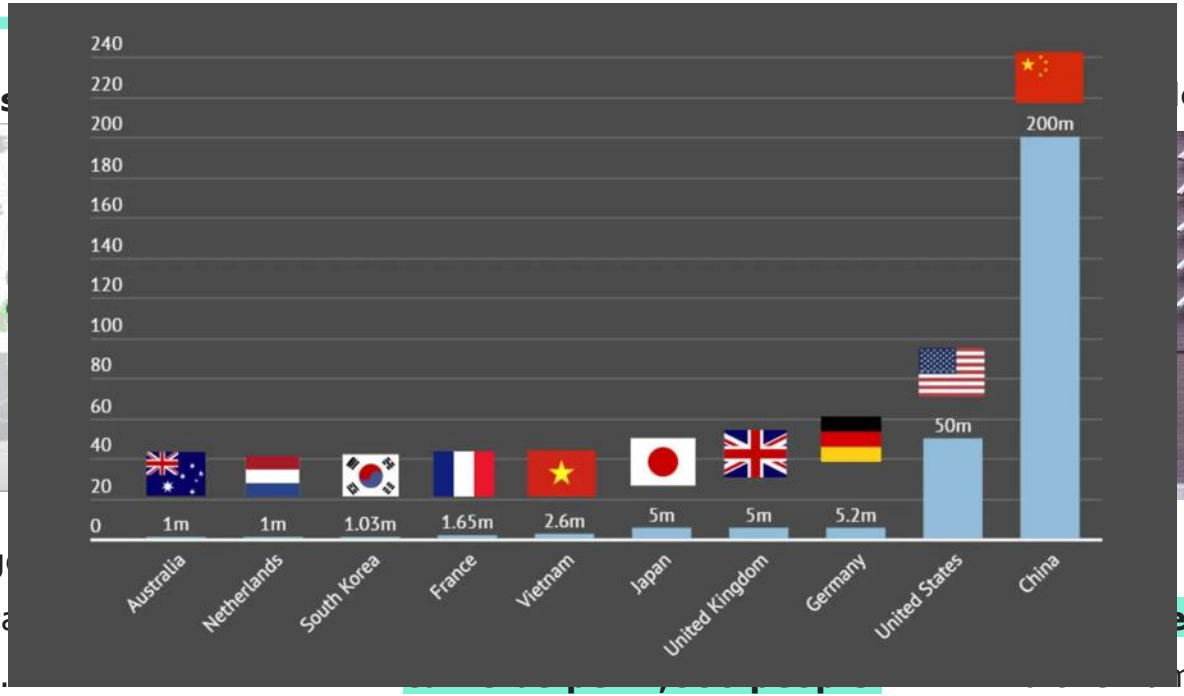
Q: What's your opinion on video surveillance?

Enter the code 273108

OR Scan

The number of surveillance and security cameras constantly increases

Germany has **eo surveillance...**

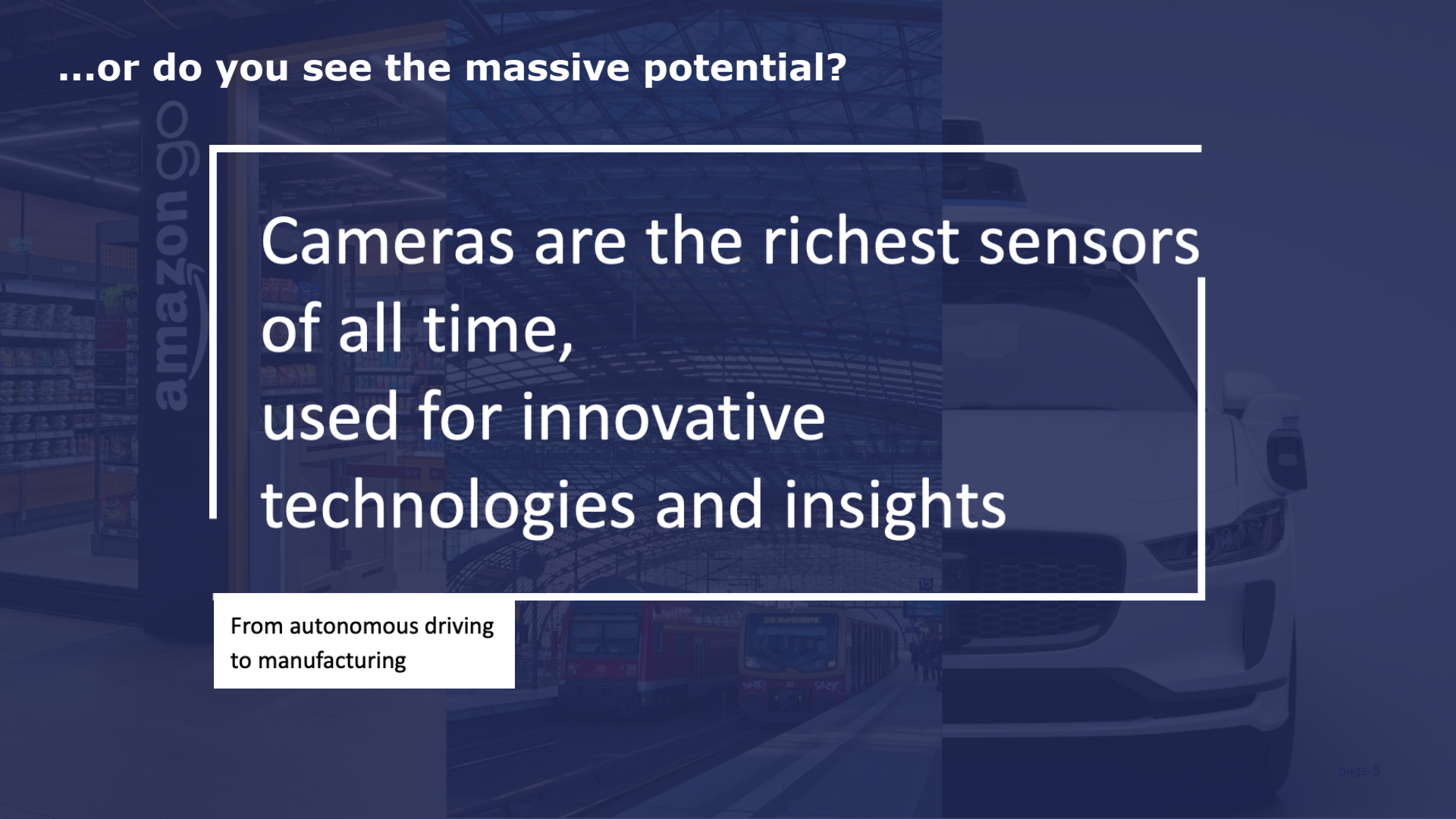


the **third** larg to collect more surveillance ca **etabytes** of data. 2019 globally. nber is increasing.

Sources: Techspot, 2019; Statista, 2019; BizTech, 2021;

Do you feel like...

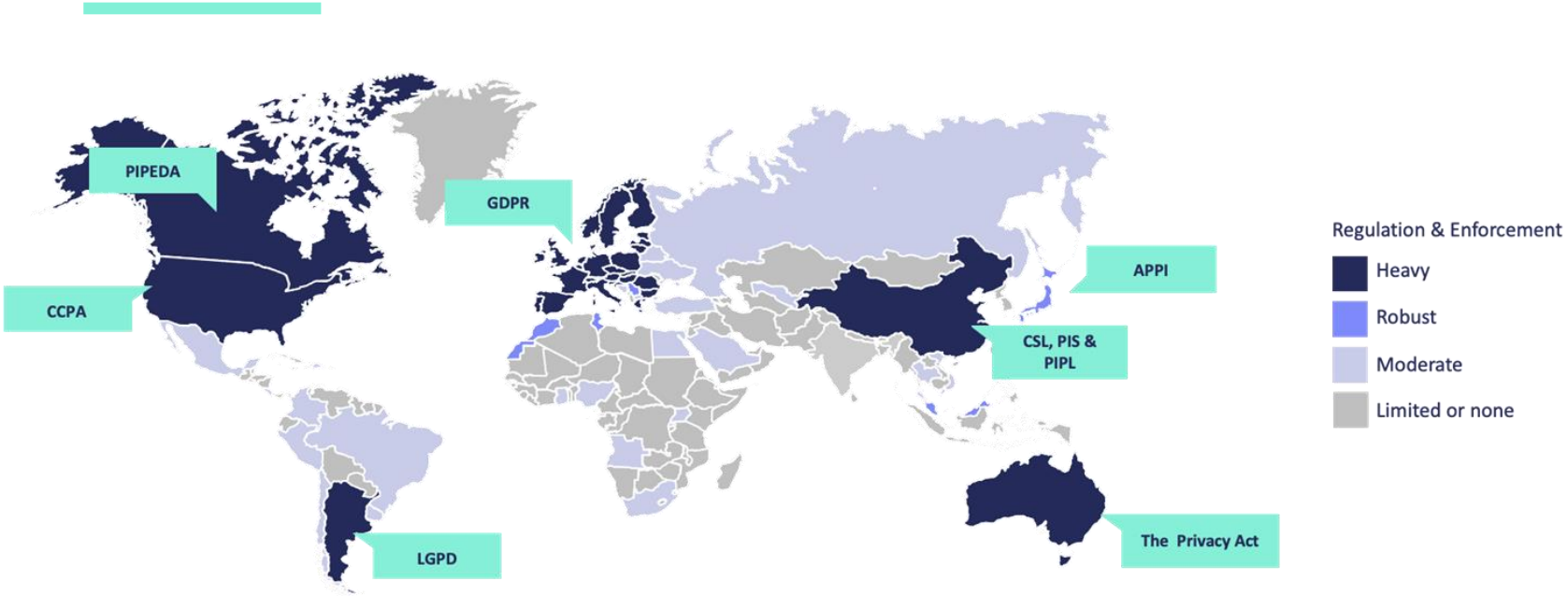
...or do you see the massive potential?



Cameras are the richest sensors of all time,
used for innovative technologies and insights

From autonomous driving to manufacturing

The potential is being “held back” by privacy regulations that are increasing worldwide



https://www.dlapiperdataprotection.com/

GDPR: protecting privacy yet blocking exciting use cases

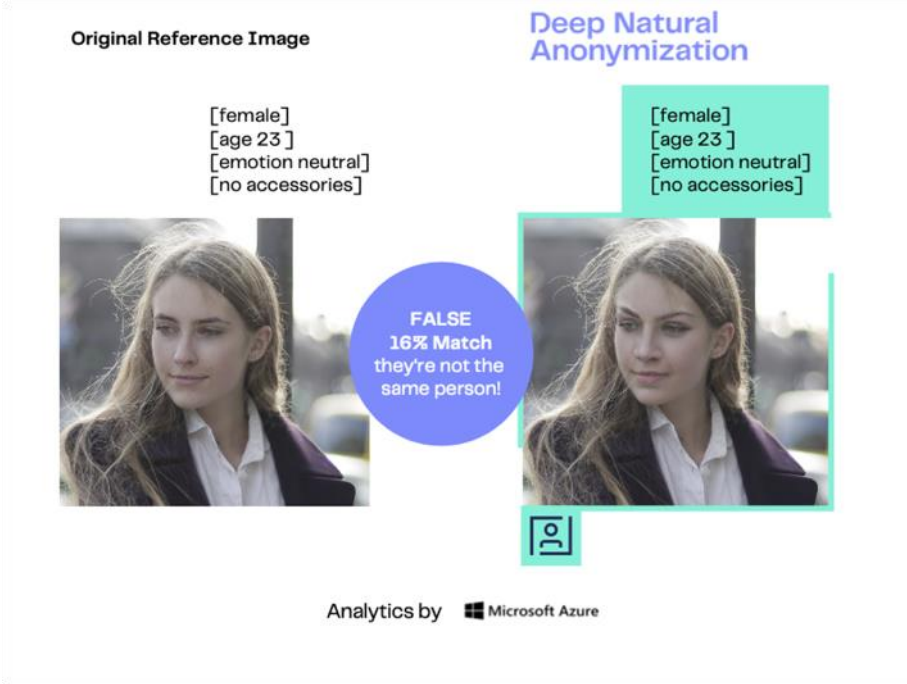
- Enhances individuals' control and rights over their **personal data**
- Simplifies the **regulatory environment** for international business.

- **Critics**: the regulation is too restrictive
- Blocks new, exciting technology use cases, like AI and machine learning algorithms.

The Solution: Data anonymized by generative AI protects identities and is not subject to the GDPR

Recital 26, GDPR:

The principles of data protection should therefore not apply to anonymous information, namely information which does not relate to an identified or identifiable natural person or to personal data rendered anonymous in such a manner that the data subject is not or no longer identifiable.



Video

How does it work?

1. Faces are detected in the original image

2. For each face, an artificial overlay is generated

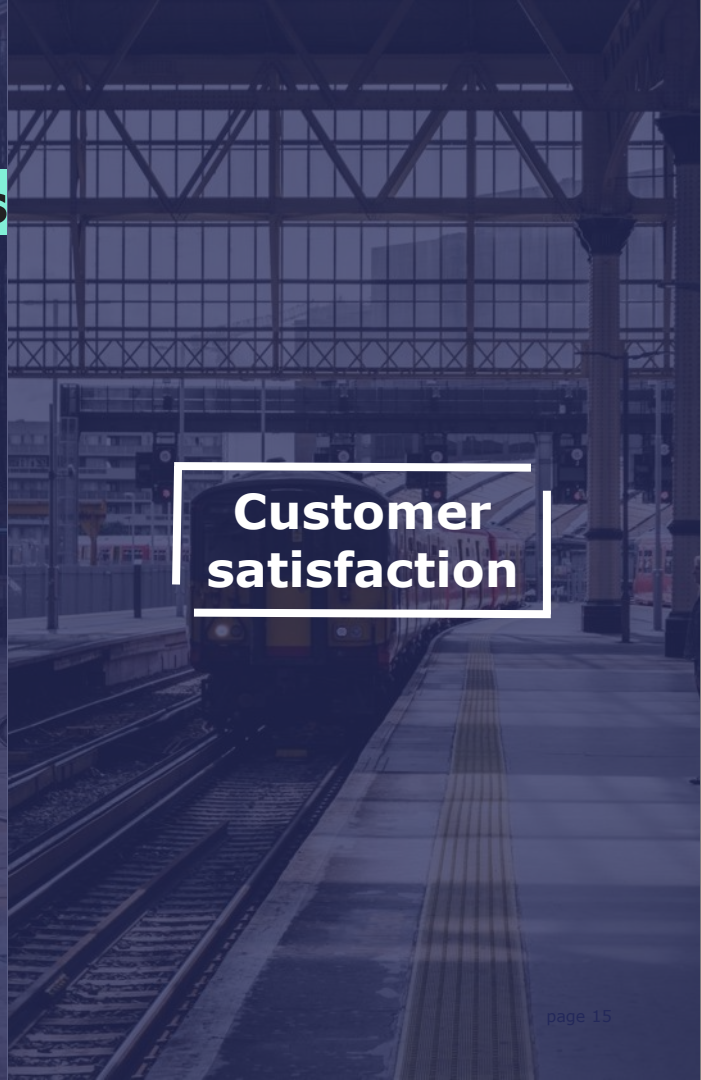
3.These non-reversible overlays replace the original face

Deep Natural Anonymization

Industrial Use Cases

Efficiency

Productivity



Customer satisfaction

Use Case 1: Challenge & Goals - Use live-recorded footage to improve training productivity

BVG Berliner Verkehrsbetriebe

brīghter AI

Practical training	Helps new drivers develop driving skills and familiarize with the routes
Reuse live-recorded footage	Run real-life driving scenarios in simulators to train new drivers in a time span of 50 days (incl. theory)
Increase training productivity	Reduce costs and time to train new drivers, improve training quality

Use footage recorded by existing cameras in public transport vehicles to train new drivers

BVG Berliner Verkehrsbetriebe

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- Live-recordings of the tram routes
- Footage of real-life traffic situation
- Precious material for training new drivers

- Implement the footage in simulators
- Improve training productivity and quality in a short time span, and guarantee new drivers' safety during training

- Protect pedestrians and passing vehicles' privacy

PII Anonymization

New drivers gain practical experience by practicing driving in simulators

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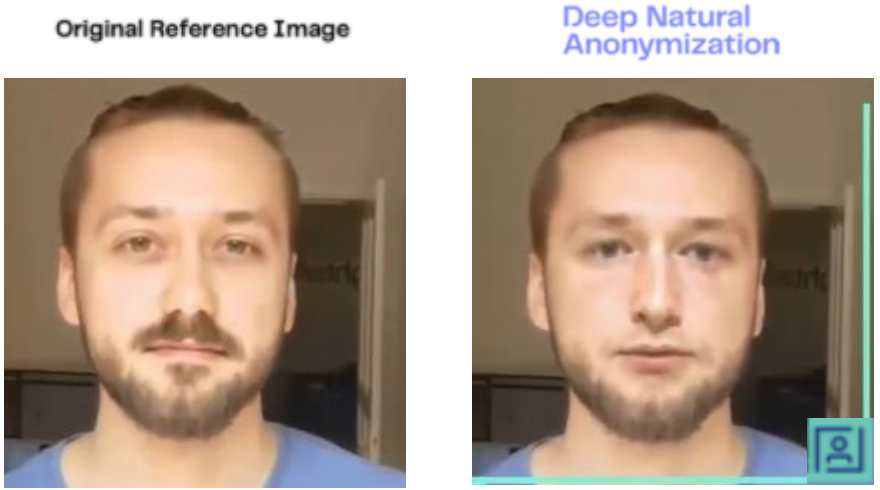
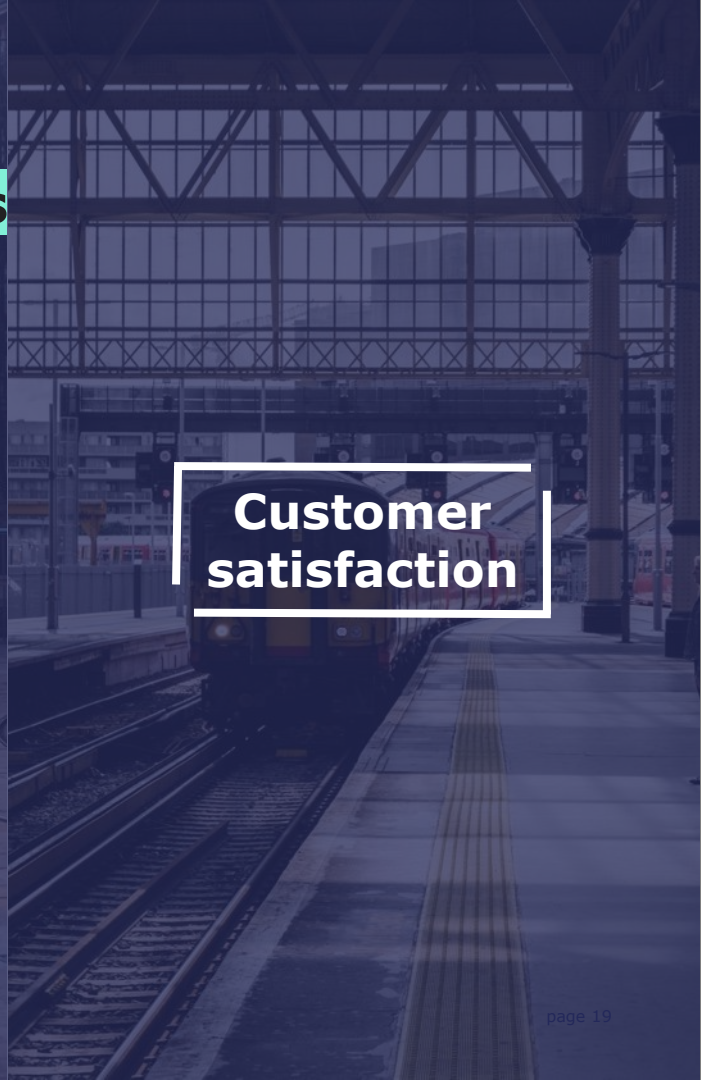
- Edge deployment: camera is attached to vehicle windshield.
- Footage is sent to a server, where PII is directly redacted
- Flexibility: cameras are mobile, can be used in different trams



Industrial Use Cases

Efficiency

Productivity



Customer satisfaction

Use Case 2: Challenge & Goals – Increasing efficiency of workforces in (lean) production environments

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Lean manufacturing	Eliminate manufacturing wastes
Save energy	Reduce energy for power equipment, lighting, and cooling
Add value to business	Reduce costs, enhance competitiveness, achieve environmental performance goals

Sources: Gogula, V., Wan, H. D., & Kuriger, G. (2011).

Security cameras can be used to improve efficiency of the workflow

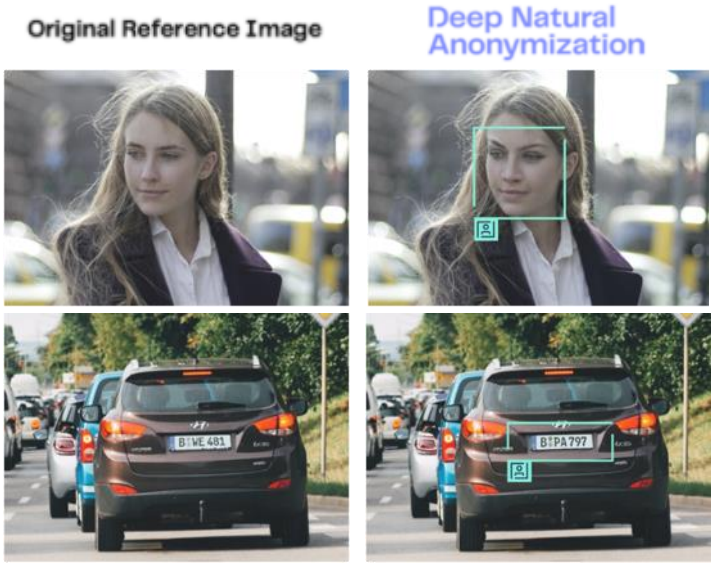
- Monitors production lines
- How long is the distance between stations
- How do workers interact with the stations

- How to improve the efficiency of workflow
- Reduce waste during manufacturing

- Workers' privacy needs to be protected

PII Anonymization

Anonymization enables video analytics that improves manufacturing efficiency, while complying with GDPR



- Face anonymization via user interface of brighter Redact online
- High accuracy face anonymization from production line footage
- Video analytics provides insights on how to improve manufacturing efficiency
- The process is compliant to the data protection regulations

Industrial Use Cases

Efficiency

Productivity

Customer satisfaction

Use Case 3: Challenge & Goals – Overcrowding as the main reason of customer dissatisfaction in public transport

DB BAHN
brighter AI

Overcrowding	Results in inconvenience and low customer satisfaction
Capacity planning	is the key to improving customer satisfaction, and encourages passengers to choose public transport
Reduce emission	Public transport helps reduce CO2 and noise emissions

Source: Börjessona, Rubensson, 2019

Use existing security cameras for capacity planning to improve customer satisfaction

- Utilize existing security cameras in the train to know how many people are in which train and where
- Gain RTCI (real-life crowding information) of where and when have empty seats in the train

- Use machine learning algorithms to measure passenger density
- Disseminate RTCI to inform
- **Alternative**: building infrastructure & railway → pollution & inefficiency

- Use Deep Natural Anonymization to conduct automatic and simultaneous face redaction

PII Anonymization

Sources: Mayor of London (2015); Crossrail.co.uk (2021)

GDPR-compliant RTCI is an influencing factor in attracting more passengers to public transport

DB BAHN
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Original Reference Image

Deep Natural Anonymization

- Railway-grade hardware-software-solution
- Edge-deployment with seamless integration in S-Bahn
- DNAT generate synthetic images that covers detected faces before data analytics

>95% accuracy of passenger density

Industrial Use Cases

Efficiency

Productivity

Customer satisfaction

Use Case 4: Challenge & Goals - Analyze camera footage from intersections to improve productivity of traffic accidents prevention

Road traffic injuries - A major public health problem	Approximately 1.3 million people die each year as a result of road traffic crashes
Crash risk factors: individual & environmental	Dangerous factors: poorly designed and maintained road, low visibility & lack of crash-protective roadside objects
Analyze camera footage from intersections	Conduct measures to improve traffic safety for bicycle drivers and pedestrians
Reduce traffic accidents	Reduce costs and time & improve accuracy in preventing traffic accidents

Sources: Willacy, 2019; WHO, 2021

Use existing security cameras to minimize environmental crash risk factors

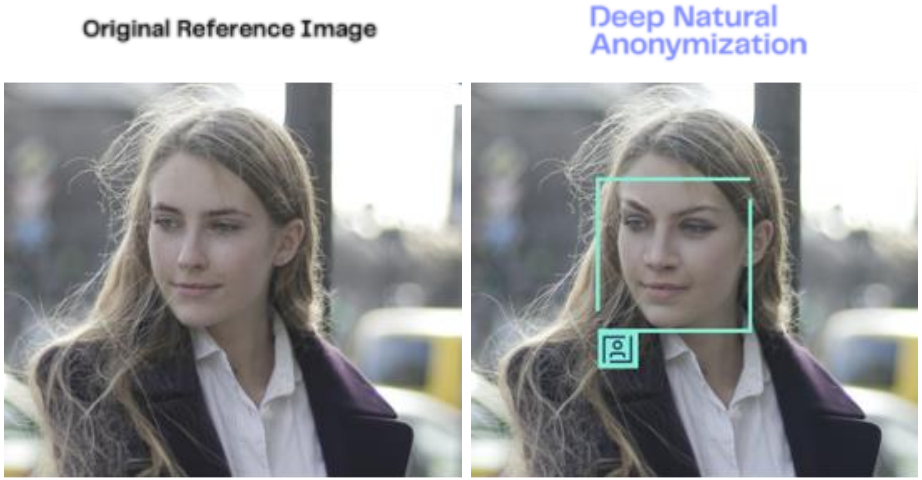
- Utilize existing security cameras at intersections to know where and how traffic accidents happen

- Leverage machine learning algorithms to inspect environmental crash risk factors
- Use the information to accurately better road design and roadside obstacles, etc.
- **Alternative**: focus on public health sector
  → financial & infrastructure investment
  ☹ → too late for the severely injured & dead

- Use Deep Natural Anonymization for redaction, enabling scalable video analytics

PII Anonymization

Lowering the danger of traffic accidents by anonymized video analytics

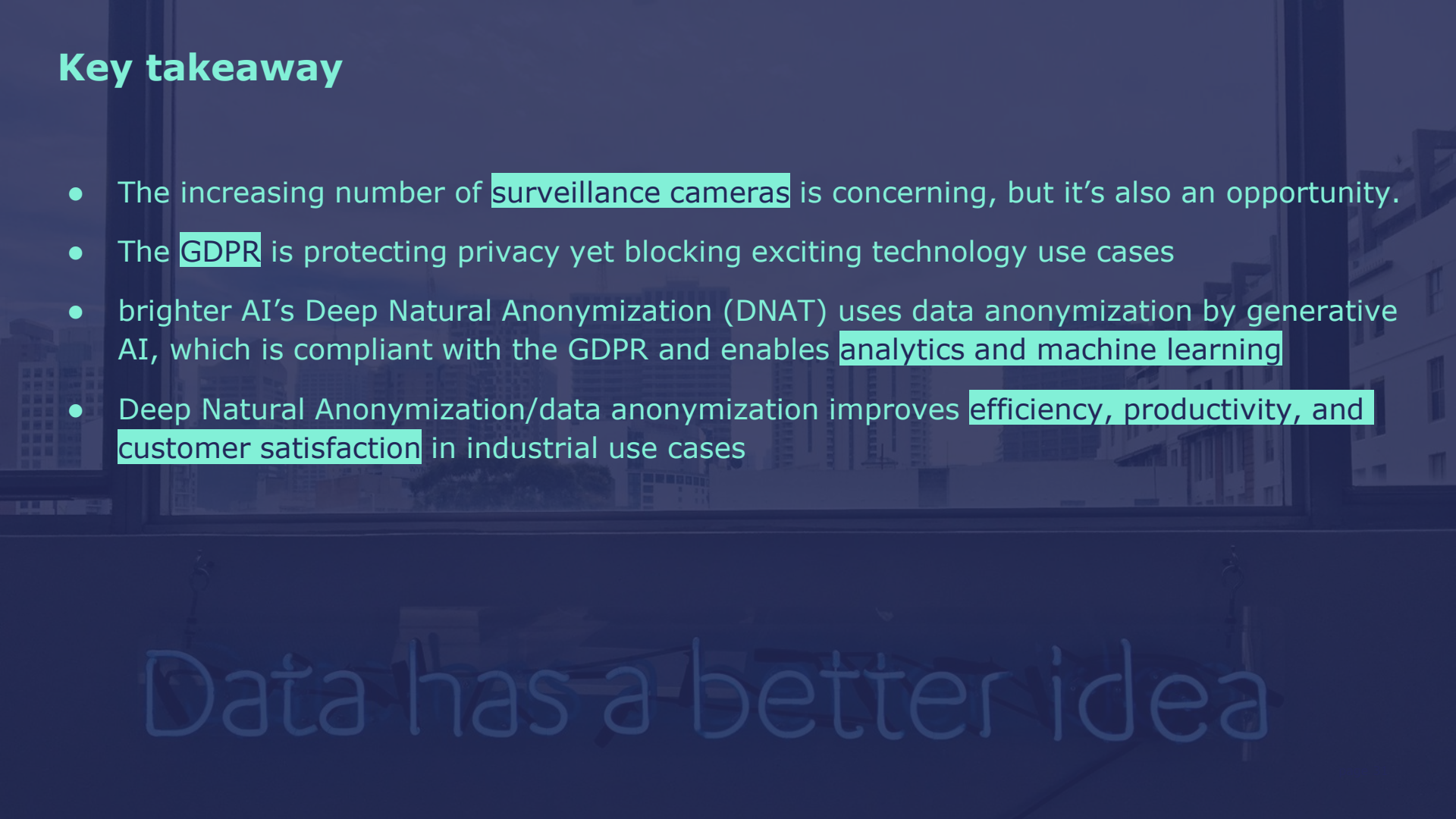


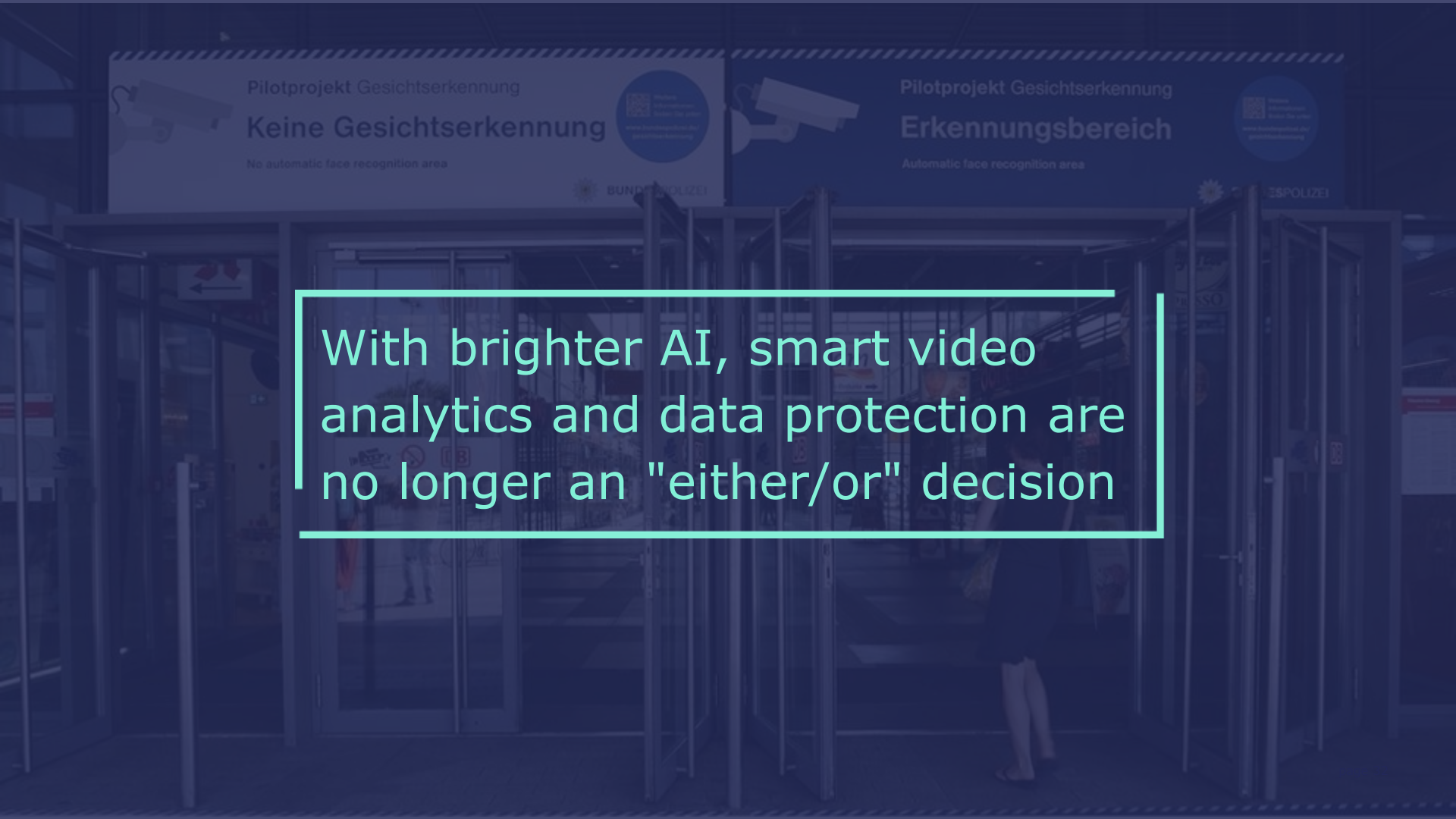
- Facial anonymization through brighter Redact
- Anonymization via on-premise server: transfer data from a secured data server to (a) virtual machine(s)
- Developing the possibility of full-body anonymization
- During the time of 9 months, brighter AI is expected to anonymize around 8 hours of footage per day per camera

Expected anonymization of ≈30,240 hours of footage

Key takeaway

- The increasing number of surveillance cameras is concerning, but it’s also an opportunity.
- The GDPR is protecting privacy yet blocking exciting technology use cases
- brighter AI’s Deep Natural Anonymization (DNAT) uses data anonymization by generative AI, which is compliant with the GDPR and enables analytics and machine learning
- Deep Natural Anonymization/data anonymization improves efficiency, productivity, and customer satisfaction in industrial use cases





With brighter AI, smart video analytics and data protection are no longer an "either/or" decision

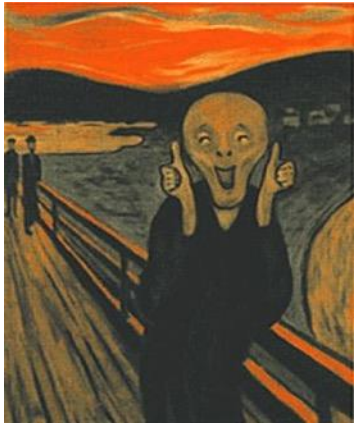
Please go to www.slido.com

Q: What kind of Use Cases do you see for your own business/institution that would create value - given you can unlock the power of visual content through anonymisation?

Enter the code 273108

OR Scan

After anonymization…



Tribute to George Orwell & Edvard Munch (?)

Let’s talk!

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