# From Cloud to Edge

Disruptive innovation in existing environments?!

**5G.NRW - Living on the Edge** Benedikt Franke (Seashell GmbH)



## IoT adoption & its security risks have both grown

paloaltonetworks.com/iot-threat-report-2020





### Fight crime with technology

#### Example: The Glass House / Train Station



### Fight crime with technology

#### **Current status**

- Existing, heterogeneous, fleet of CCTV cameras
- A distributed network of single cameras spread all over the train station

#### **Innovation project**

- A cloud server, which is processing data feed by three connected cameras (not scalable)



### The smart network

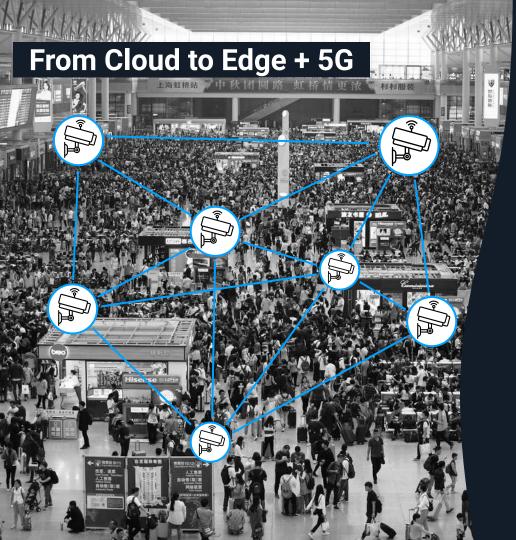
The goal is to have one comprehensive network of connected cameras, exchanging data and automatically sending alerts / critical information to relevant authorities.

#### Requirements

- 1. Real time data (object/face recognition, capacity)
- 2. Real time action taking
- 3. Real time performance & problem visualization
- 4. Data protection & high privacy standards

#### Challenges:

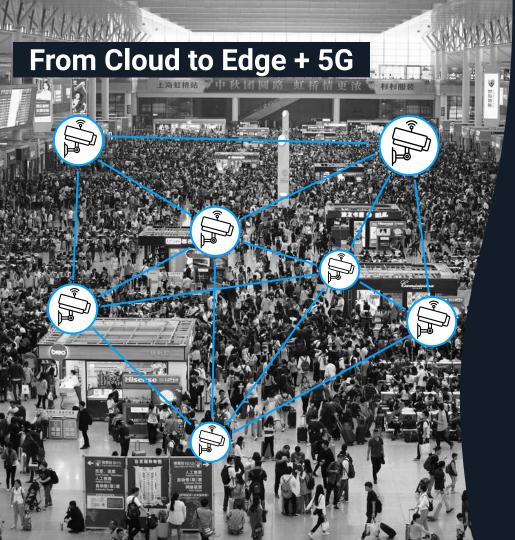
- 1. Heterogeneous device fleets
- 2. Complex software infrastructure to fulfill requirem.
- 3. Lack of transparency (problem-/performance-wise)
- 4. Cloud-Resource-bottleneck



### Technology is the key

#### From Cloud to Edge + 5G a powerful combination

- Process data where it's generated
  - Avoid expensive Cloud resources
  - Increase security
  - Improve performance
- Make it possible with 5G
  - Ultra-low latency
  - Large bandwidth
  - Extra security
  - Scalable for ambitious scenarios
- Area of conflict: Hardware vs. Software



### Technology is the key

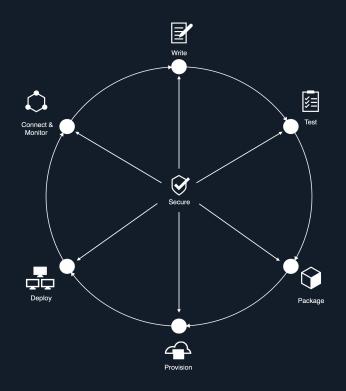
Let's focus on software: Developers are clearly missing a comprehensive workflow to get support in their daily tasks:

- Lack of standards
- Lack of automation
- Huge manual effort
- Missing workflow



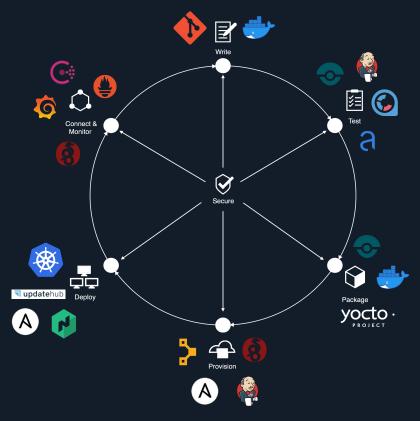
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### The development lifecycle



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### Huge pain for developers





#### True relieve for developers



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#### Innovation has many faces

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There is a lot of technology ready to be used and some other which needs to be developed. Two big levers to drive innovation:

**Specific:** Solve specific technical challenges through new technologies, e.g. the Mobile Edge Platform from the Lehrstuhl für Software Engineering

**Generic:** Integrate single existing solutions into a developer friendly workflow



#### Tons of use cases





















# Thank you very much for your kind attention. Any questions?



bfranke@seashell.sh

www.seashell.sh www.github.com/seashell

