

SCRUBBER WATCH

Pollution Monitoring for Harbours

FORGET DIESELGATE, IMO2020 IS COMING!

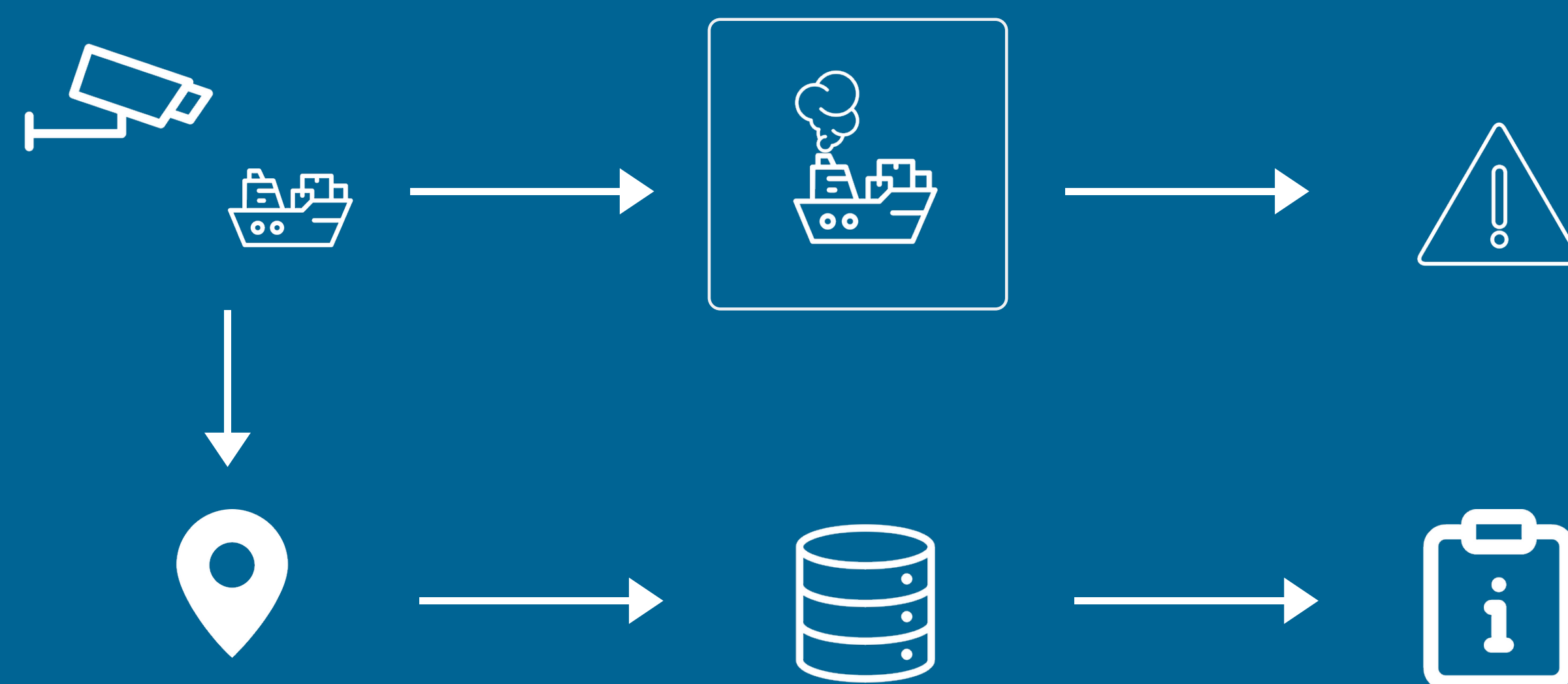
WHY SCRUBBER WATCH

With the IMO2020 resolution taking effect 1. Januar 2020, the importance of emission monitoring for vessels is bigger than ever. Previously, it was a viable solution for operators to switch to Marine Gas Oil or liquified natural gas within these zones and burn the cheaper Heavy Fuel Oil on open seas. Starting 2020, however, every ship using HFO is required to have an Emission Gas Cleaning System (EGCS, so called scrubbers) in place, no matter where on the worlds seas. The pending problem for operators and port authorities is verifying if scrubbers are in use without directly checking each ship on an individual basis.

THE IDEA

The idea of the ScrubberWatch project is that the effect of the scrubber on the emitted gases can be measured through a vision based system. The underlying assumption is that the concentration of sulfur dioxide can be measured directly or indirectly via the temperature, smoke density or smoke color.

As a simple first step toward simple pollution monitoring, we built a recognition model to detect smoke on images of ships. We further built a proof-of-concept user interface to illustrate a potential use-case of the vision-based system.



THE OUTLOOK

The ScrubberWatch project is only meant as a proof of concept towards a new approach to pollution monitoring. Further steps are required to validate our hypothesis outlined in our technical document (<https://bit.ly/35GuxsS>).

Especially, systematic research is required to ascertain the feasibility of vision estimation of sulfur dioxide concentration. For example, infrared cameras could be used to estimate the temperature of gas emissions and thus sulfur dioxide concentration.

Furthermore, a sustainable business model for port authorities has to be developed, e.g. monitoring as a service. Beside this technical and economical aspects, we believe that this project points out an important direction for further development. Our belief has been consolidated by being selected as the winner of EIT Digital DeepHack Hackathon Hamburg 2019.

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