



V-PRISM: An Edge-based Architecture to Virtualize Multimedia Sensors in the Internet of Things

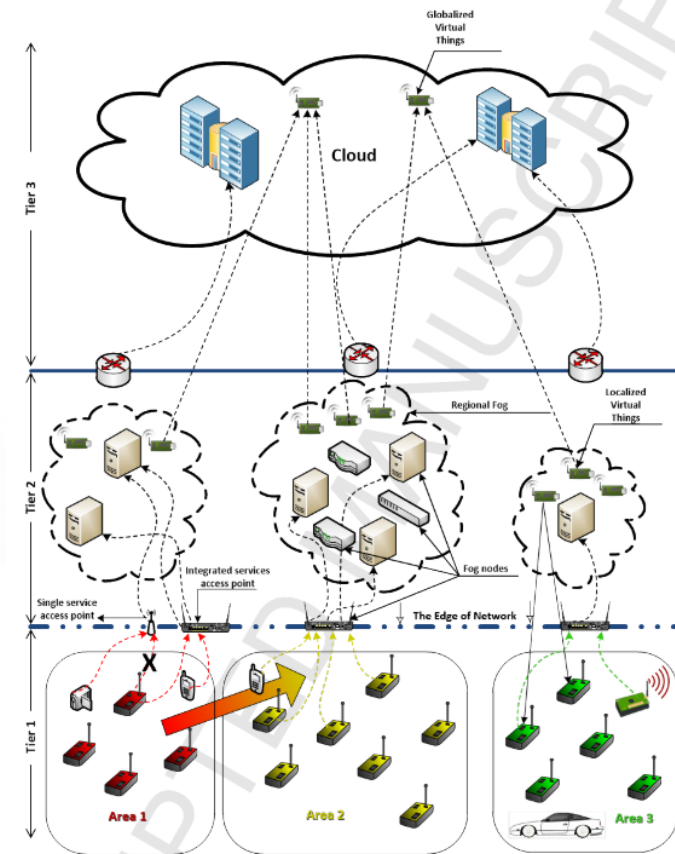
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Context & Motivation

- **Internet of Things (IoT):** things become continuous source of data;
- **Cloud of Things (CoT):** the cloud acts as an intermediate layer between sensors and applications;
- **Virtualization:** can be used to abstract the physical world and solves problems like sensor's heterogeneity.

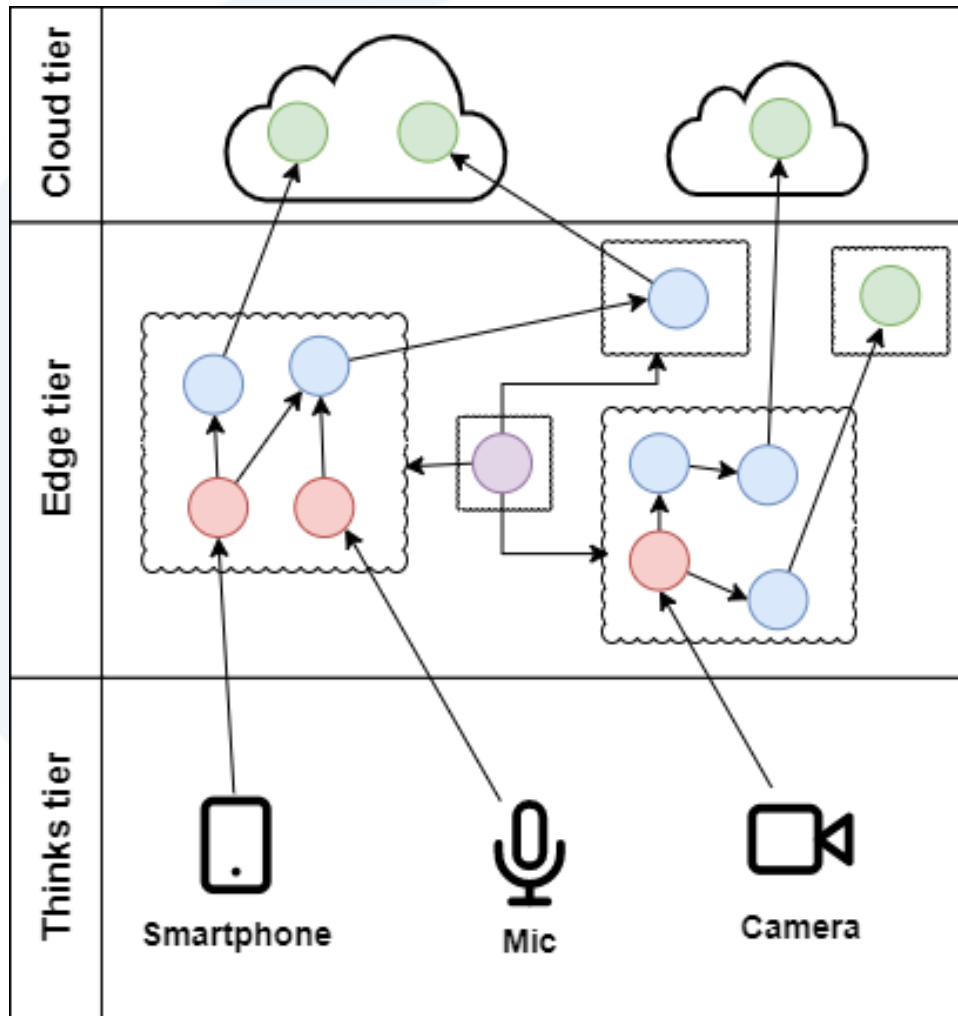


LI, W. et al. System modelling and performance evaluation of a three-tier Cloud of Things. **Future Generation Computer Systems**, v. 70, p. 104–125, 2017.







Context & Motivation

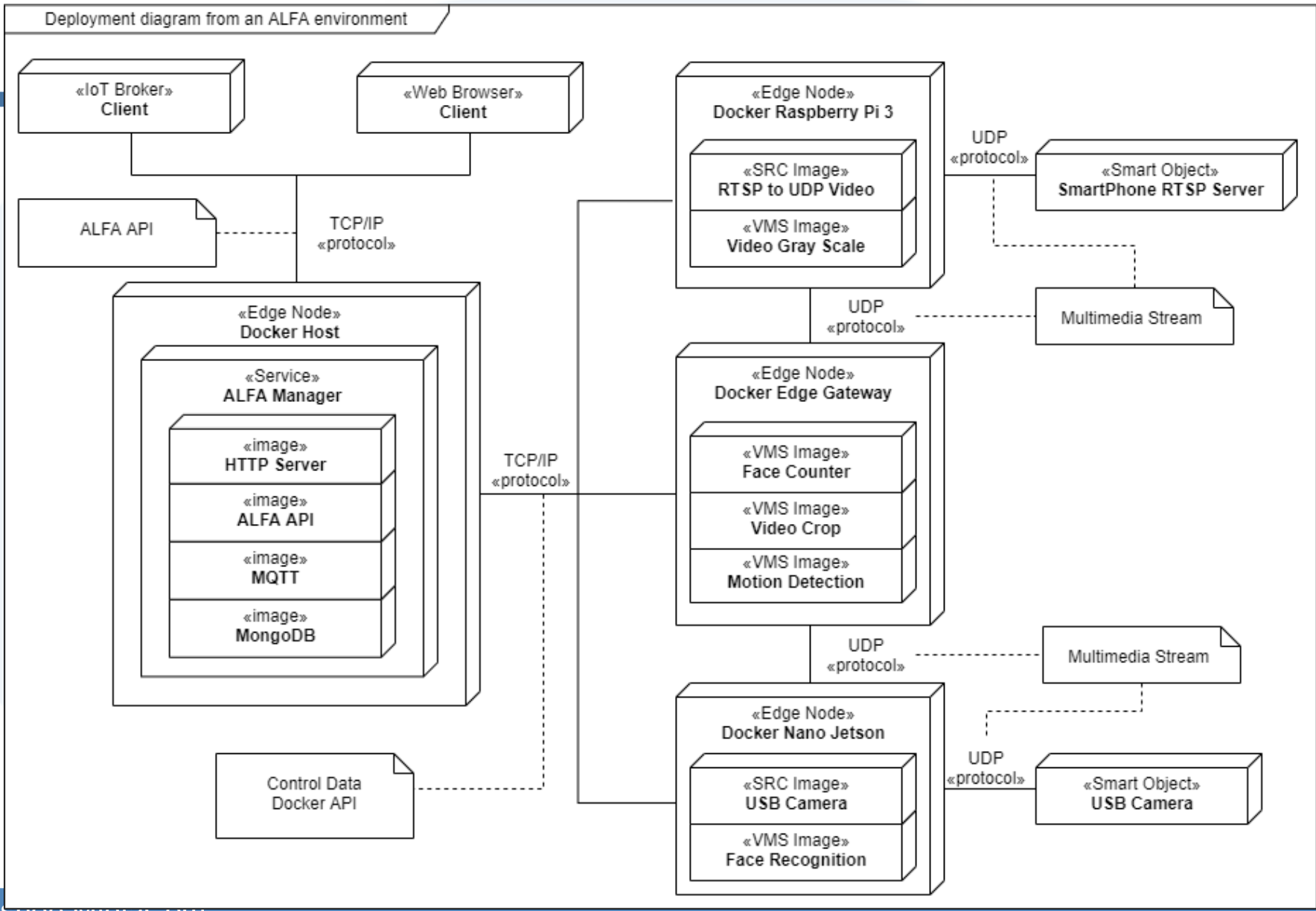
- **Internet of Multimedia Things (IoMT):** a subset of IoT that includes only multimedia devices (camera and mic);
- **Edge Computing:** brings storage and computation as near as possible of the source of data;
- **Multimedia** applications are usually **latency-sensitive**;
- Edge computing are in a prime position to process multimedia applications

Arquitetura

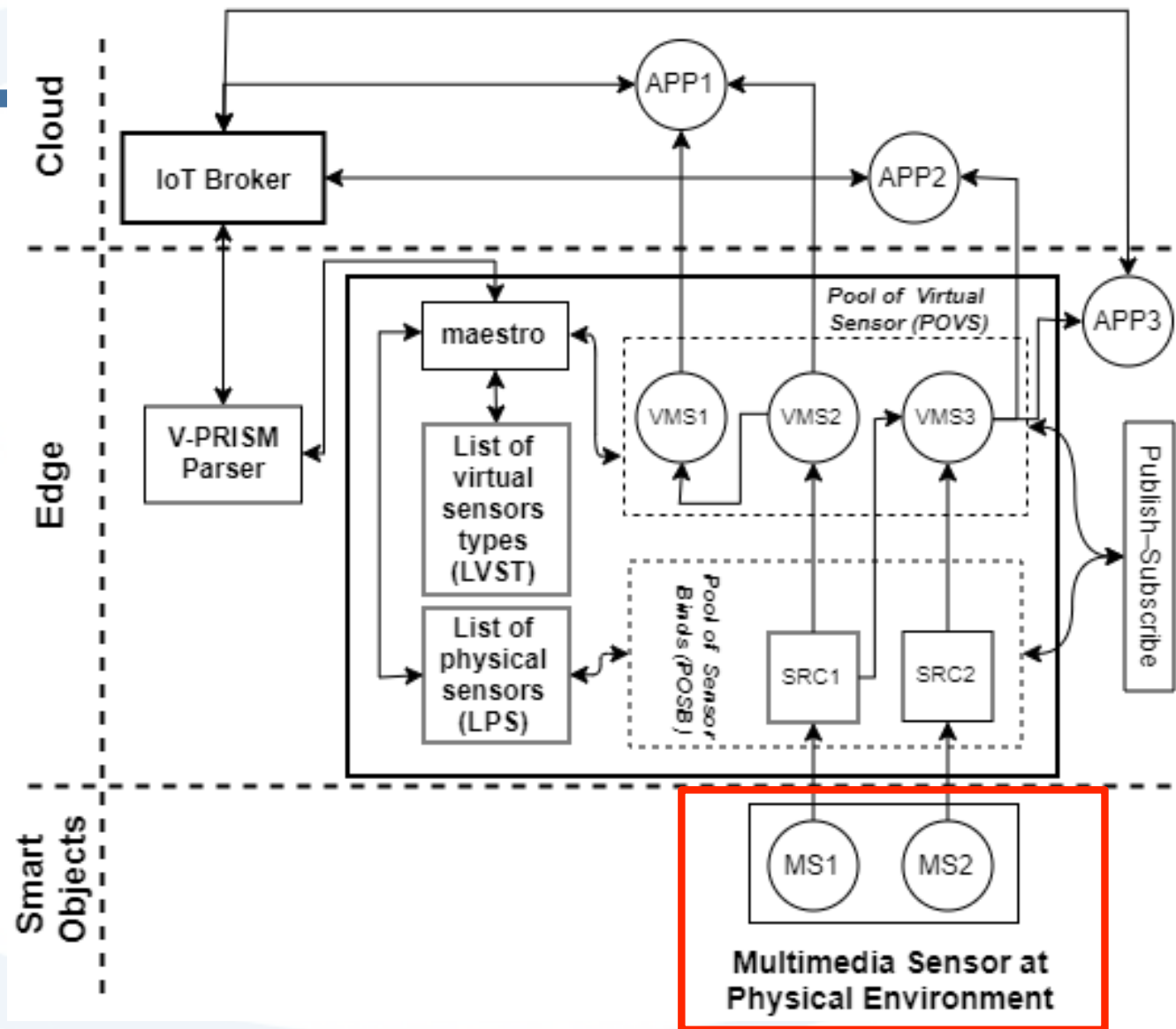


Legend

-  Cloud
-  Edge Node
-  IoMT Application
-  V-PRISM - Virtual Multimedia Sensor
-  V-PRISM - Virtual Device
-  V-PRISM - Manager



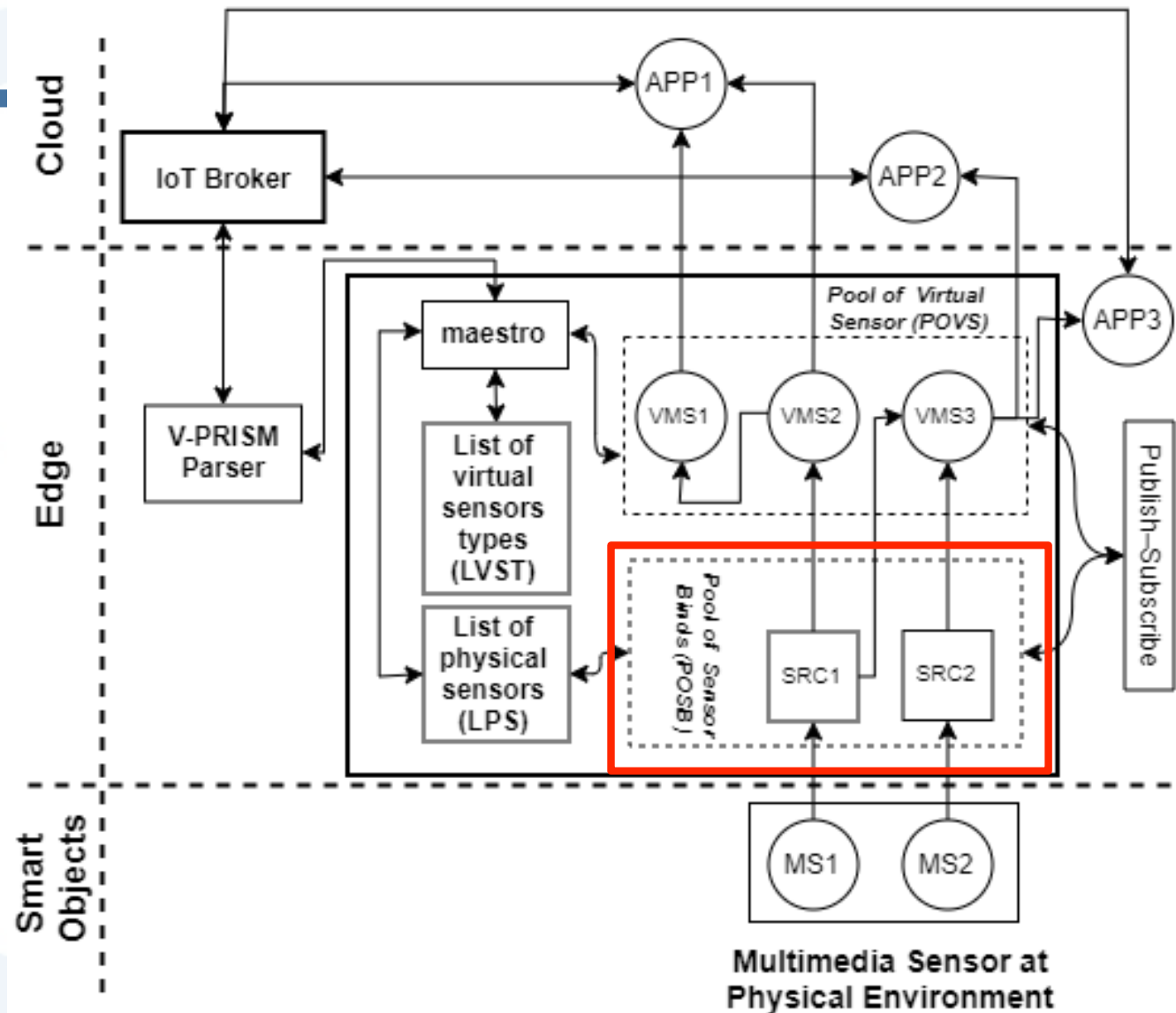
V-PRISM



Caption

SRC = Source
VMS = Virtual Multimedia Sensor
APP = Application

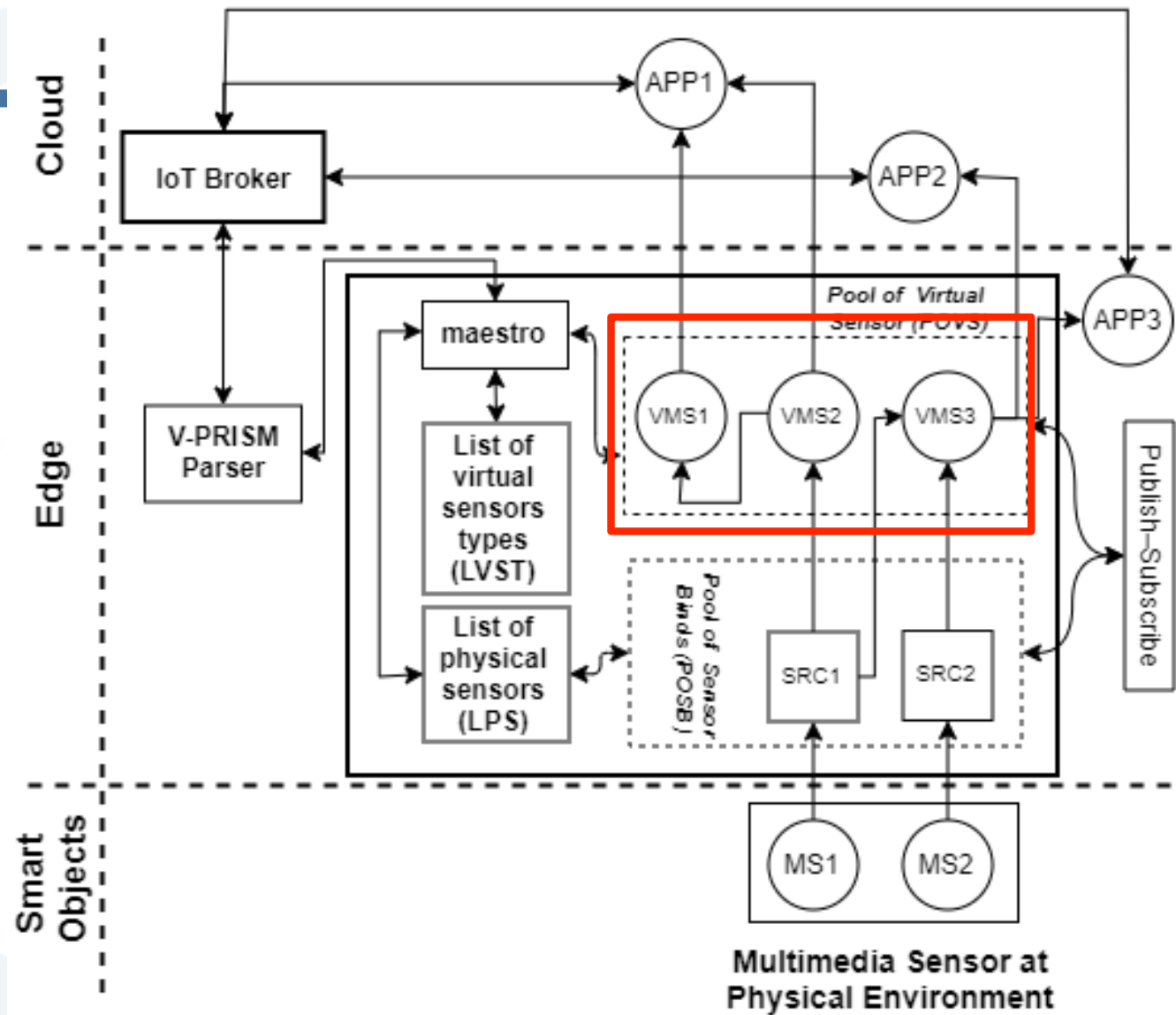
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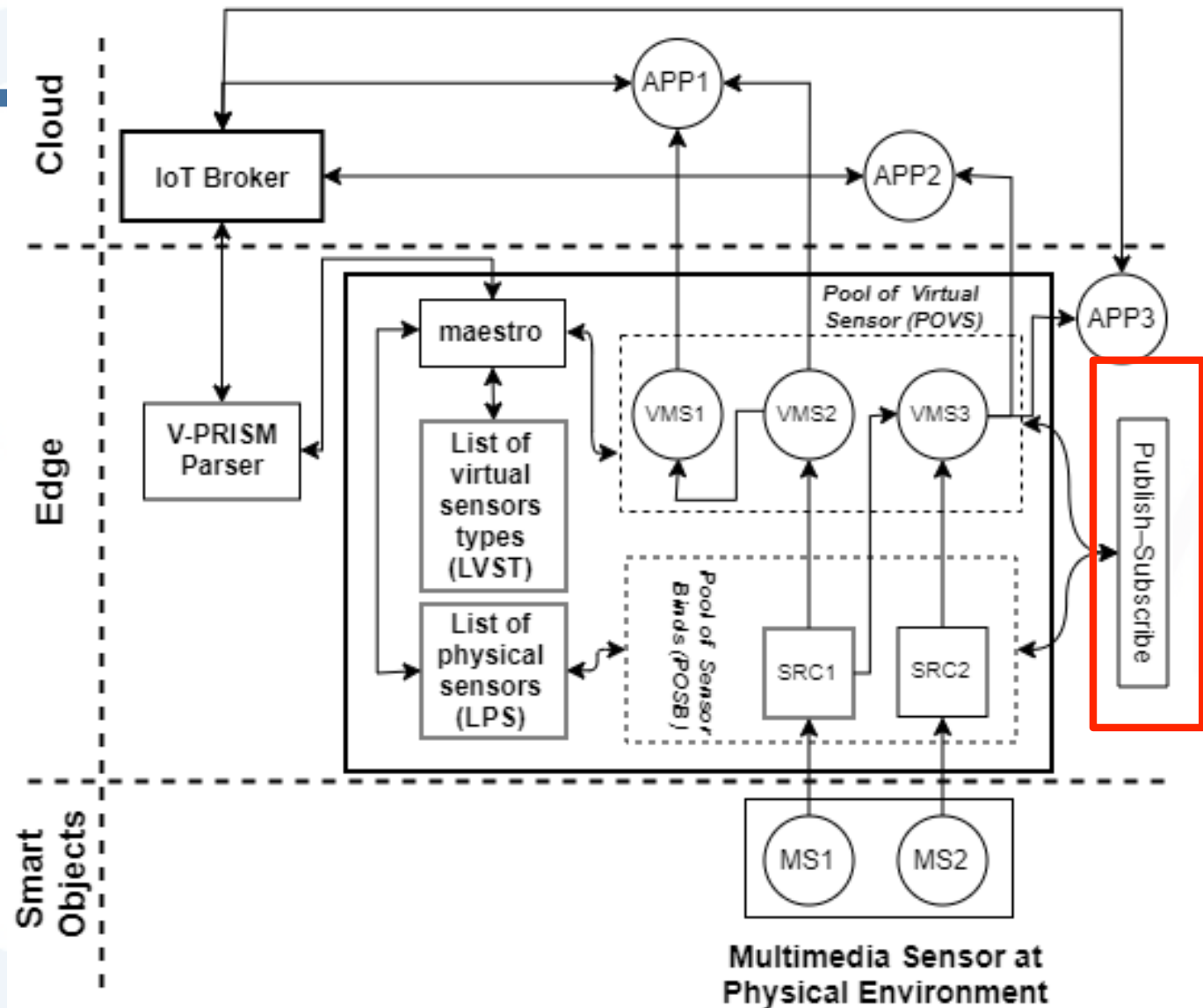
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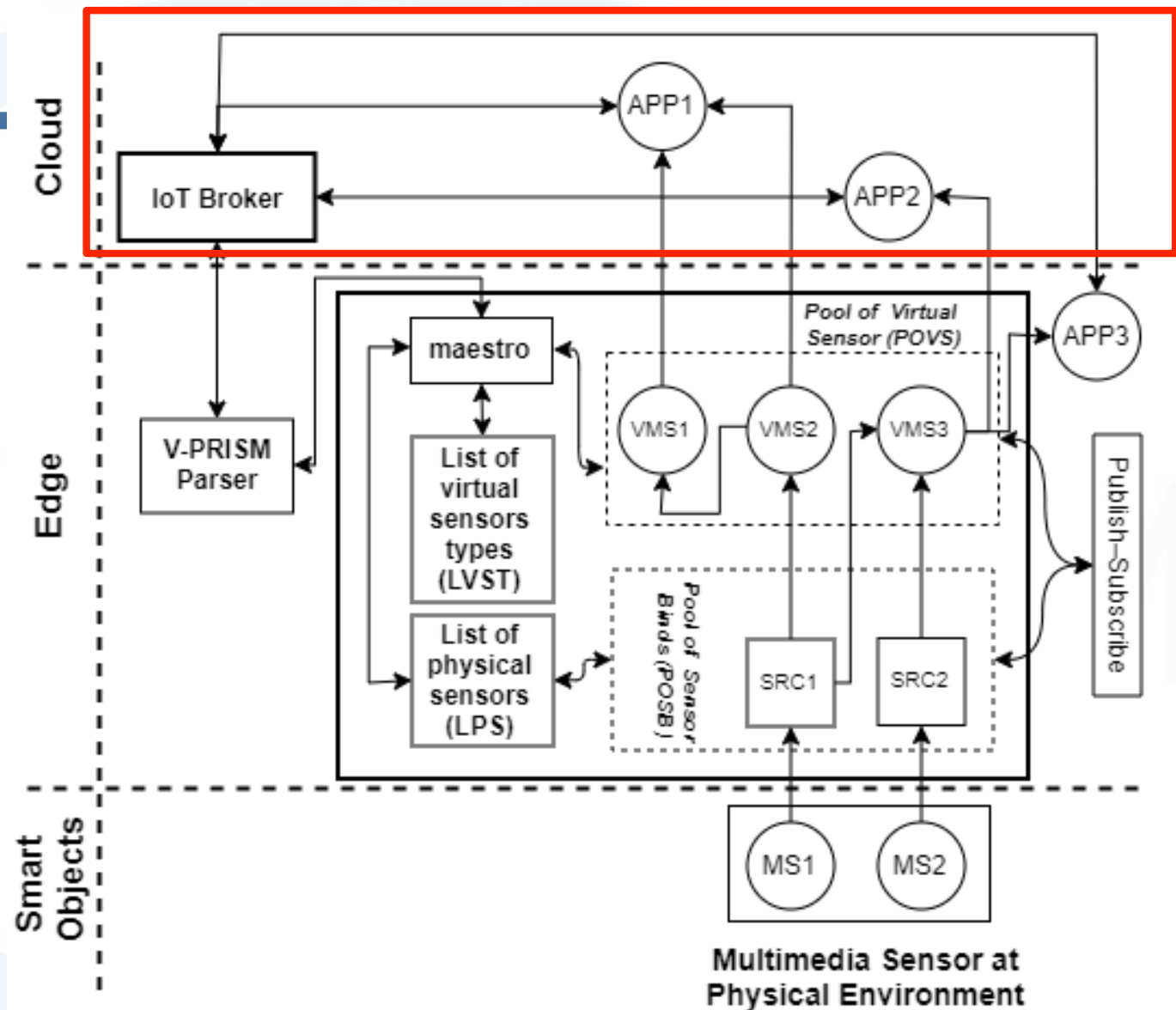
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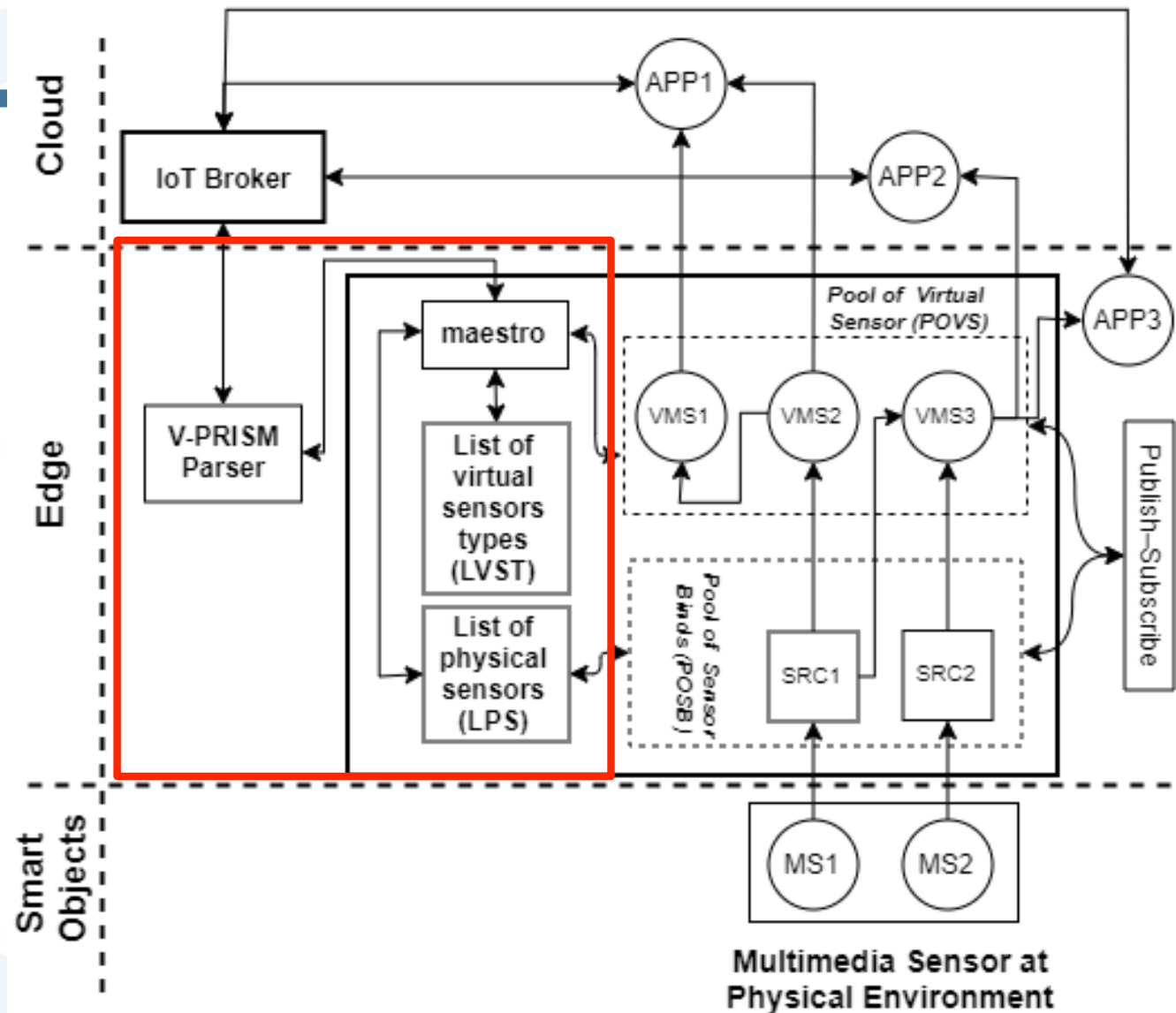
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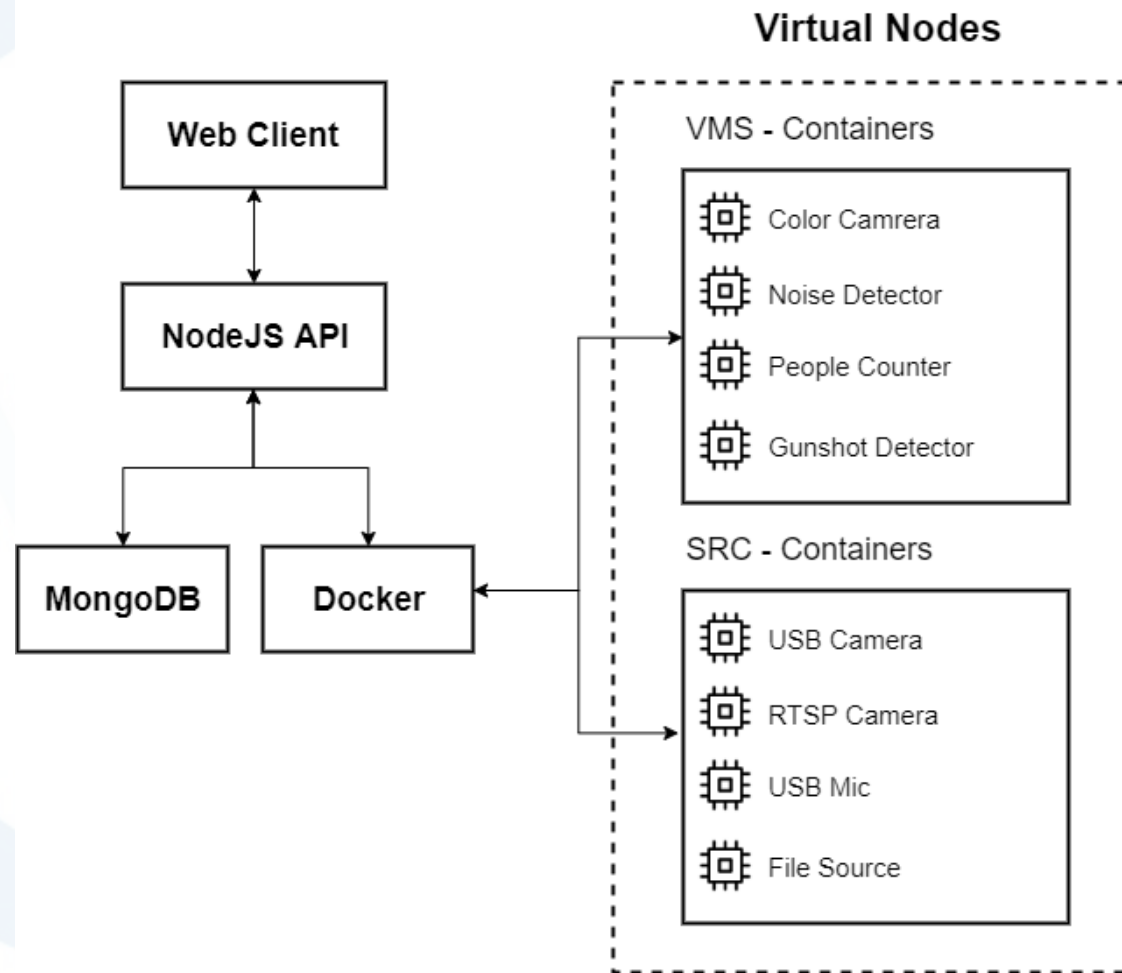
V-PRISM



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Proof-of-concept



Proof-of-concept

V-PRISM Manager

- Home
- VMS
- Devices
- Edge Nodes
- Locations
- Types
 - VMS
 - Devices
- Github

VMS Types

[+ New VMS Type](#)

Name	Docker Image	Actions
VMS = Forward UDP to UDP changing video to greyscale	alfa/plugin/udp_video_black_white	New VMS Edit Remove
VMS = Forward UDP to UDP cropping the video	alfa/plugin/udp_video_crop	New VMS Edit Remove
VMS = UDP to UDP	alfa/plugin/udp_to_udp	New VMS Edit Remove
VMS = Noise Detector	alfa/plugin/noise_detector	New VMS Edit Remove
VMS = Video Merge	alfa/plugin/video_merge	New VMS Edit Remove
VMS = Video Face Counter	alfa/plugin/face_counter	New VMS Edit Remove

Total: 6

Onde encontrar informações



<https://github.com/midiacom/alfa>





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