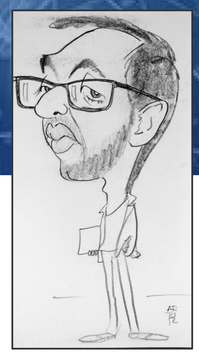
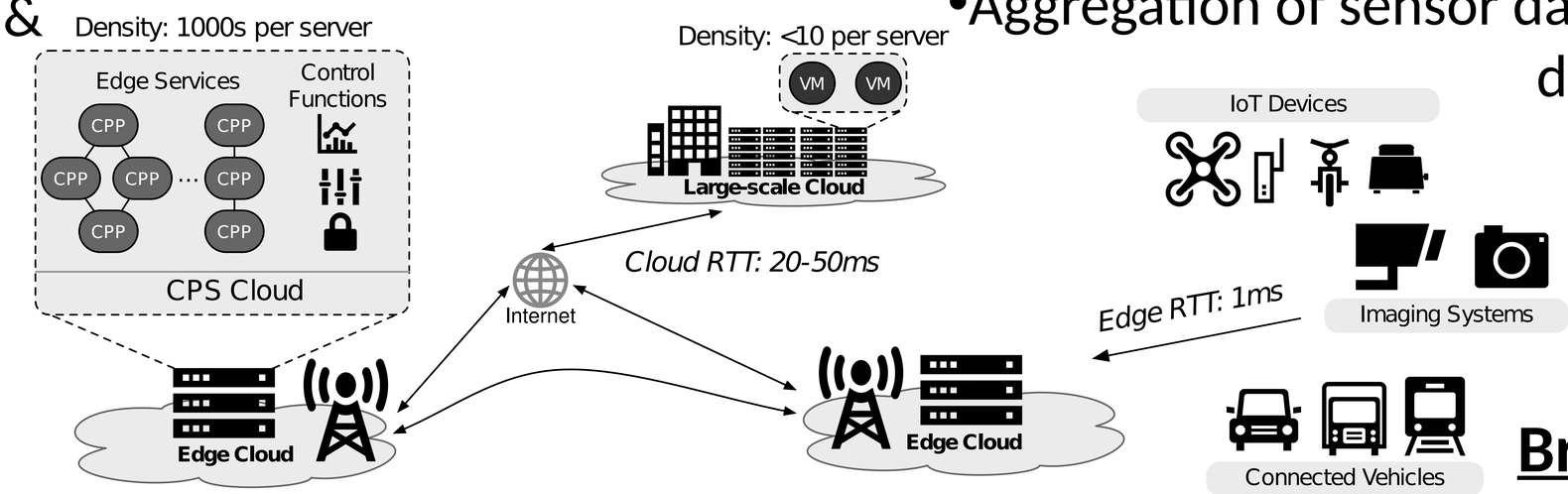


Edge-Cloud Support for Predictable, Global Situational-Awareness and Control for Autonomous Vehicles (1837382, 2019)

Gabriel Parmer, Timothy Wood, Taeyoung Lee
The George Washington University

Challenge:

- How can the Edge-Cloud be integrated into CPSes? Requires: *real-time*, *density/efficiency*, *security*
- Multi-tenancy & controlled latency w/ limited resources



Solution:

- Cyber-Physical Processes (CPPs) – lightweight computation abstraction for per-client isolation
- End-to-end per-packet deadline scheduling
- Efficient data-movement w/ strong isolation

Scientific Impact:

- Abstractions to enable controlled-latency offloading of device computation with limited resources
- Aggregation of sensor data for global decision making

Broader Impact:

- More capable AVs and CPSes → more reliable, smarter devices/consumer products
- CP Infrastructure-as-service – potential for a multi-tenant, latency-sensitive, CP cloud
- Integration into 3 classes, 3 Phd, > 10 ugrad