V2X System for Future Transportation

FLUXITY

Redefine Traffic

Nathan Byun

Nathan Byun

Education

Georgia Institute of Technology

B.S. in Industrial and Systems Engineering

Industry

HYUNDAI | NEW THINKING. NEW POSSIBILITIES.

QC Engineer

Business

FLUXITY
Redefine Traffic

Founder of a startup

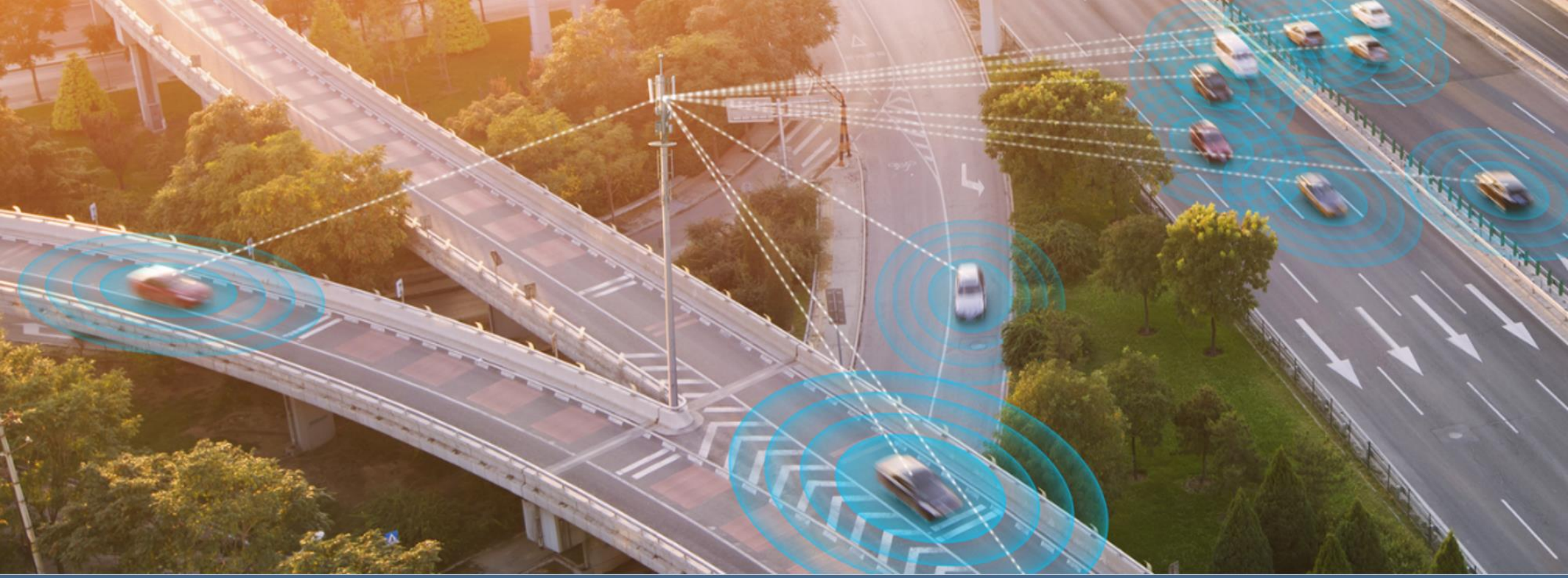
Transportation infrastructure
is the driving force
of economic growth

Current road systems are at their limit

Estimated Annual Cost of Congestion is $150B+

Source: www.fhwa.dot.gov/congestion
mobility.tamu.edu/ums

Traffic Management hasn't changed for 300 years
Geographic History
HISTORY



Solution

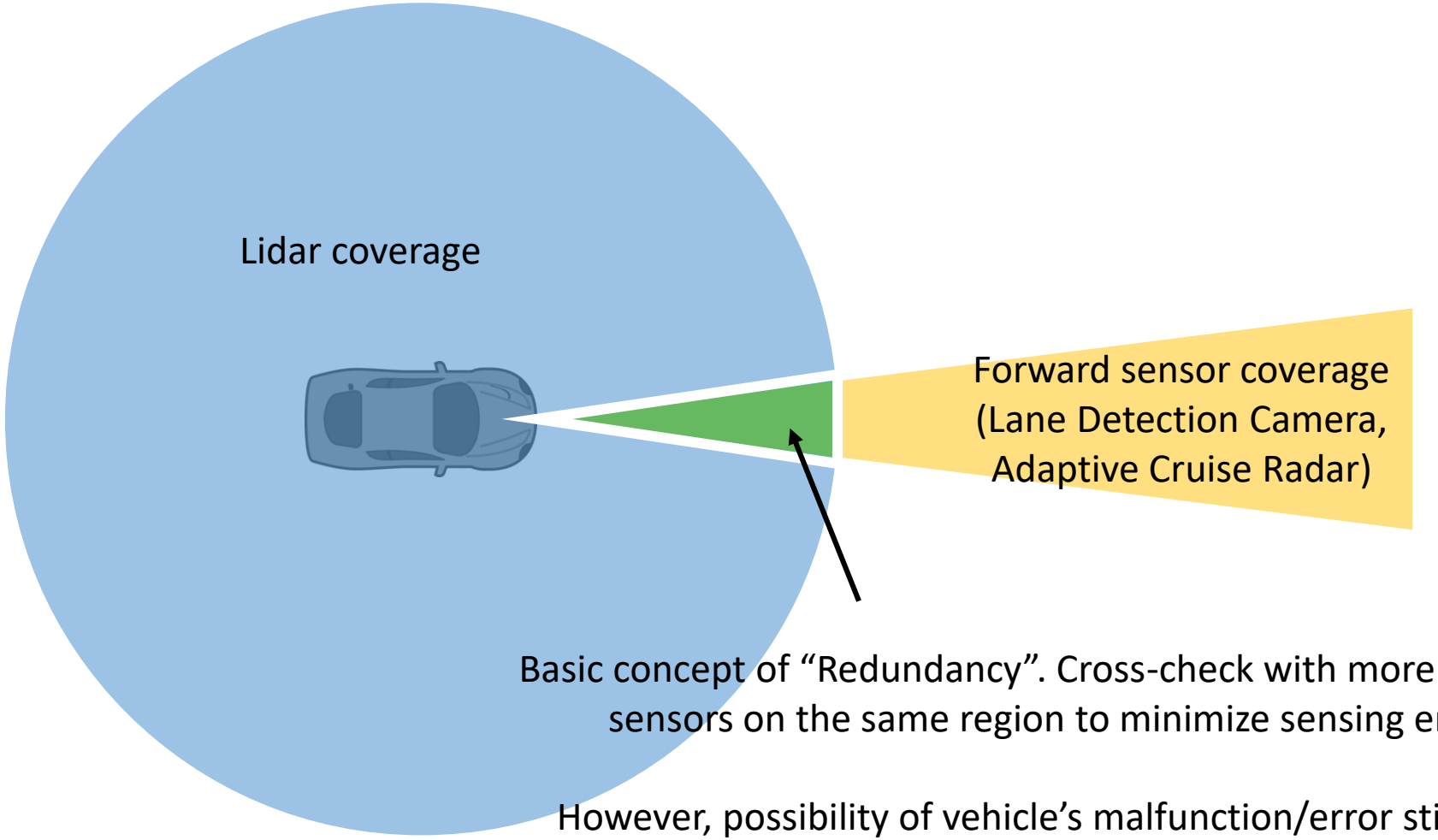
Software

HW Design

Construction

U.S. Patent #14/798,273

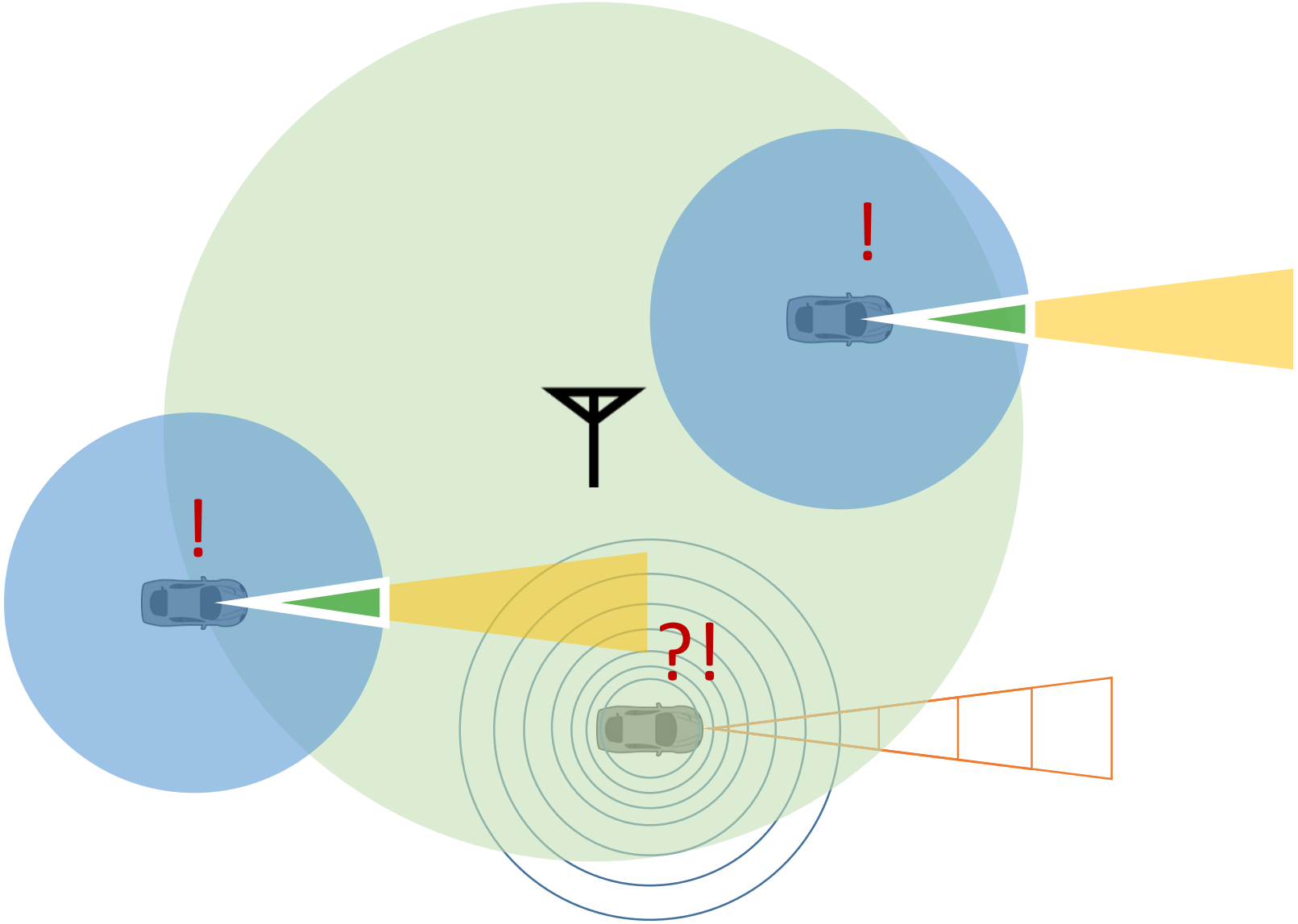
U.S. Patent #15/089,040



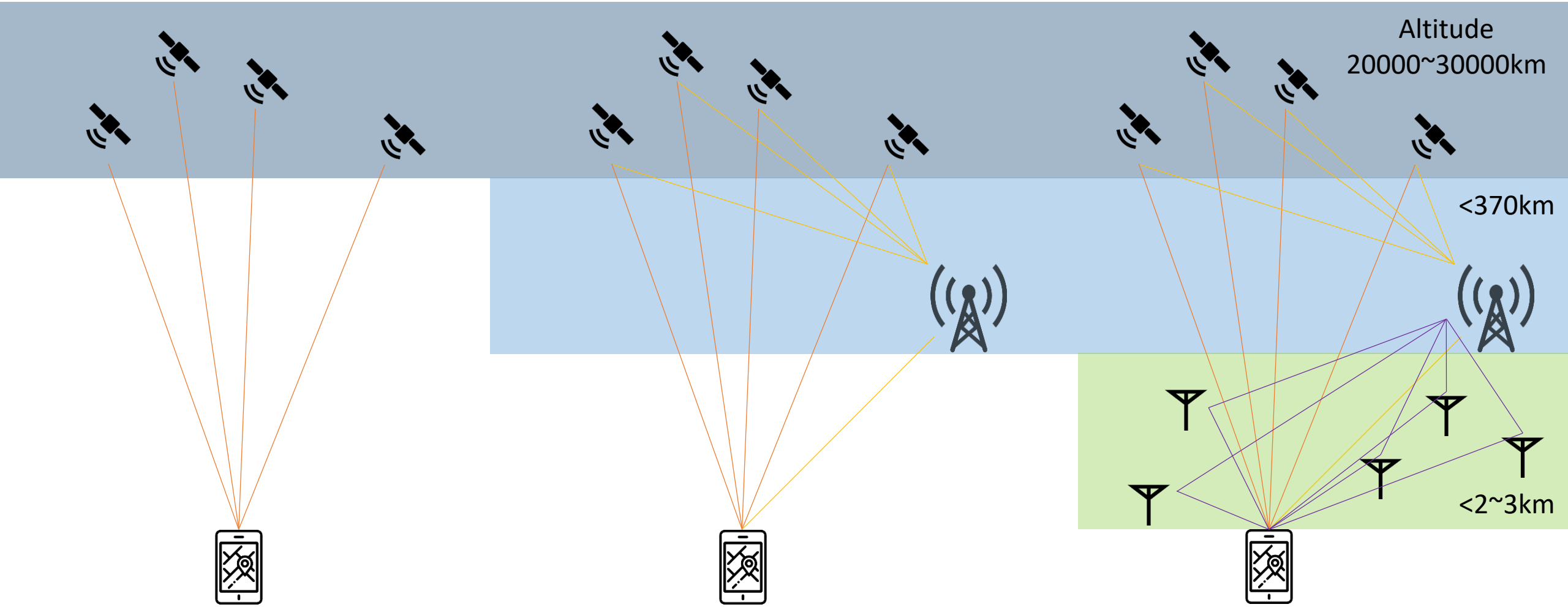
Basic concept of “Redundancy”. Cross-check with more than one sensors on the same region to minimize sensing error.

However, possibility of vehicle’s malfunction/error still exist.

Redundancy through infrastructure



Improve accuracy of real-time location info & latency with infrastructure

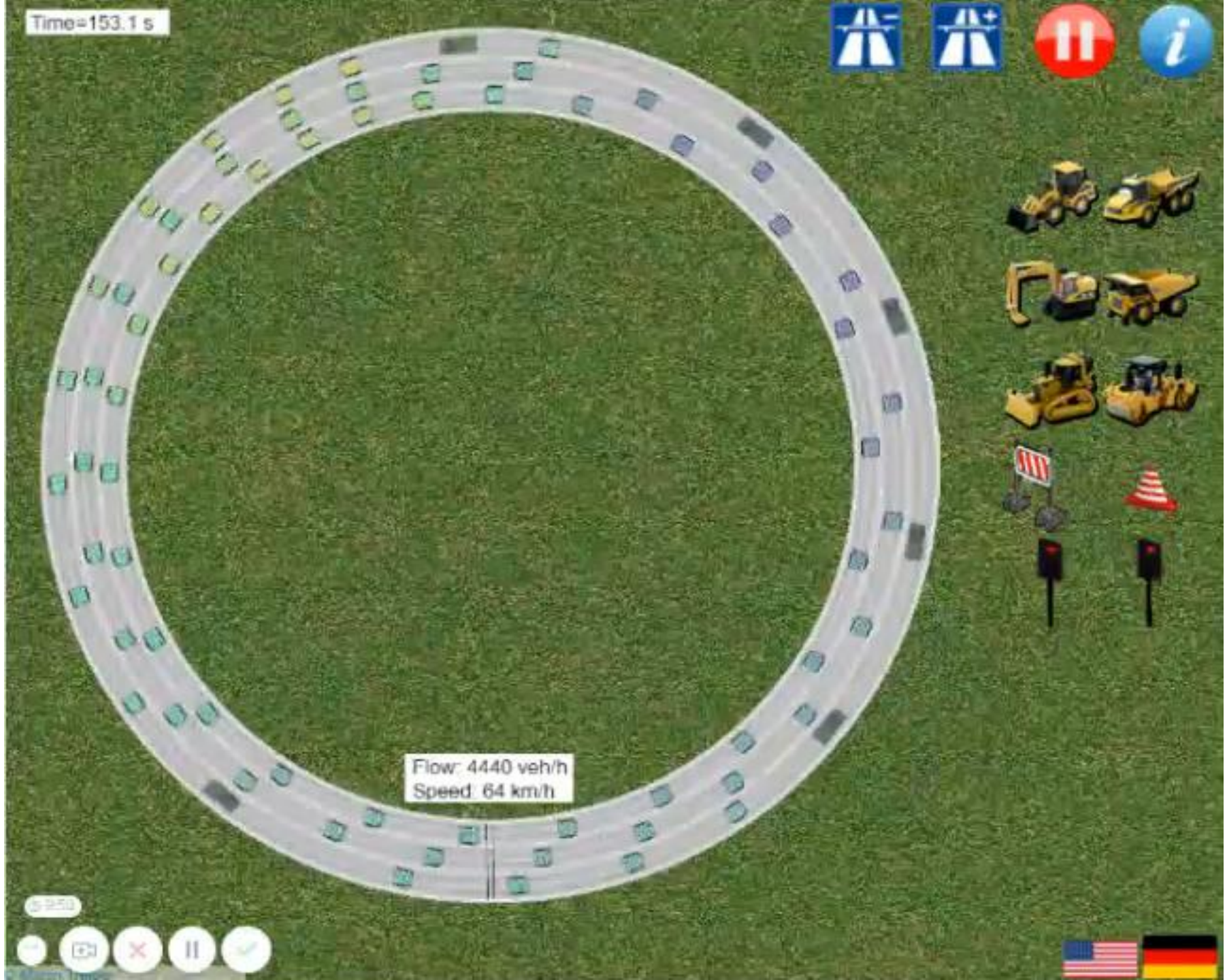


Basic GPS
Error range <15m

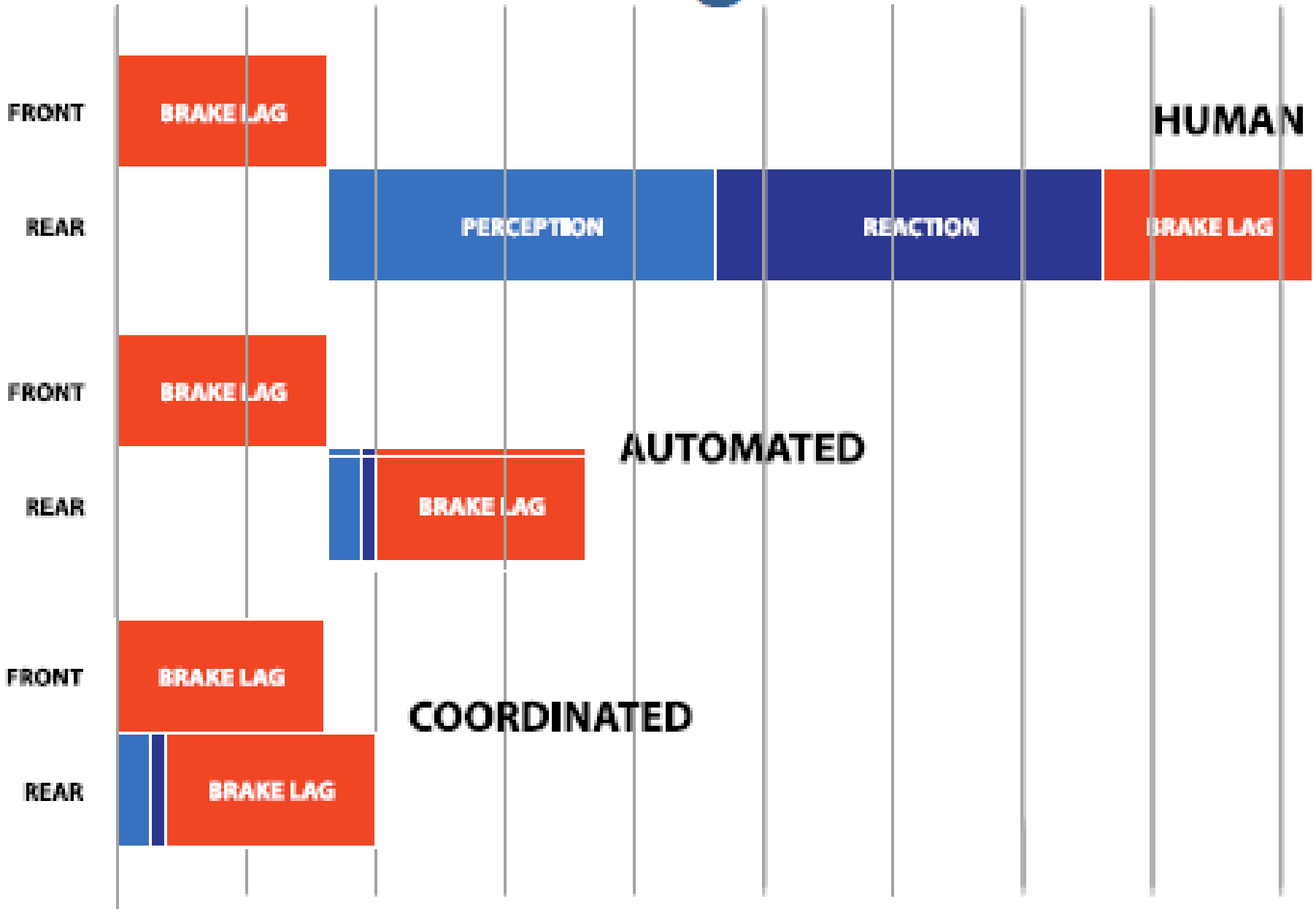
Additional revision using DGPS station
Error range <0.7m

Enhanced revision using higher density infrastructure
Error range <10cm (Target)

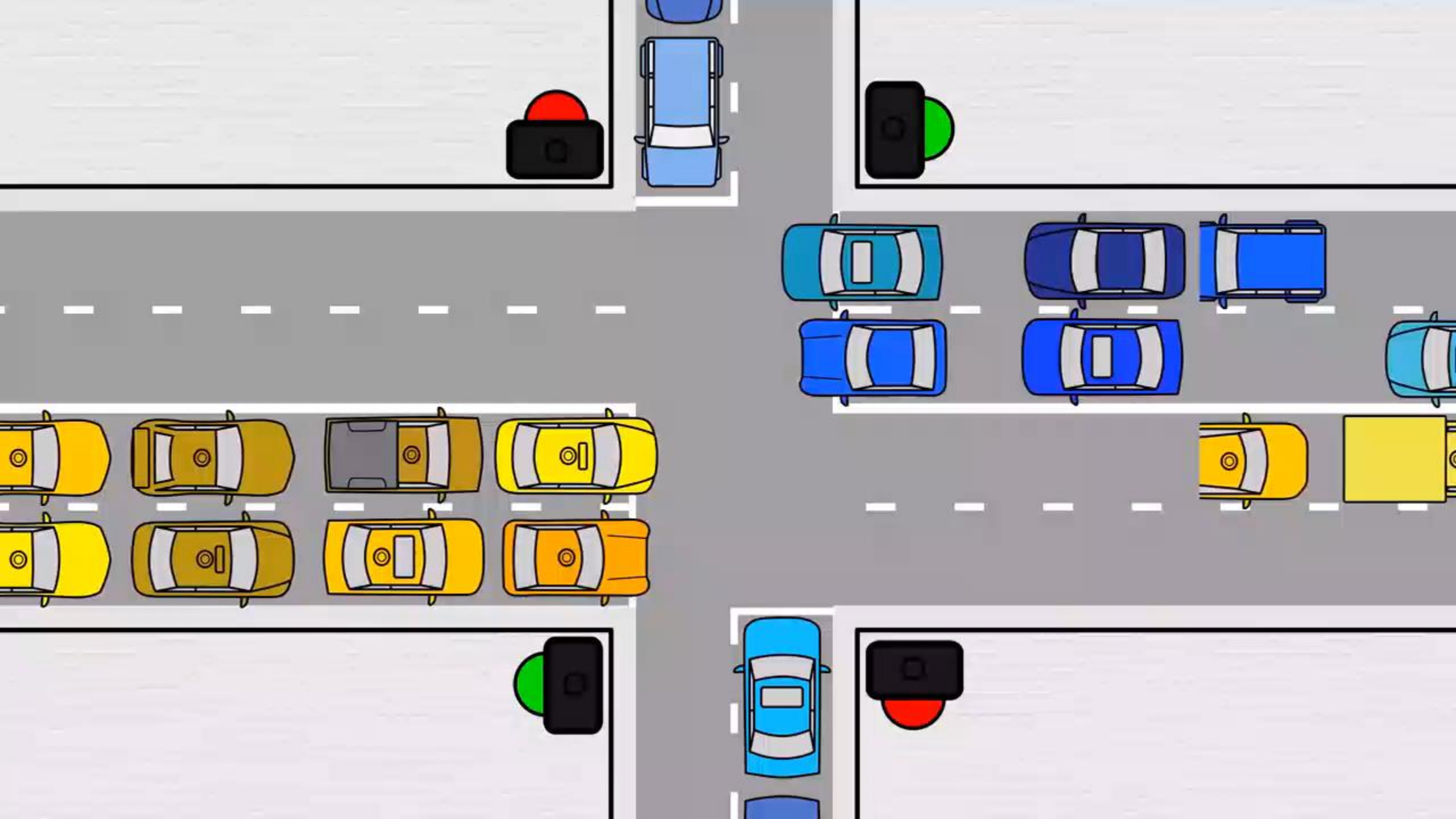
*As of 2017, about 10 Korean government depts' are proposing collaborative satellite accuracy enhancement project from 30m to 1m of error range.


Time=153.1 s
Flow: 4440 veh/h
Speed 64 km/h

Connected Braking

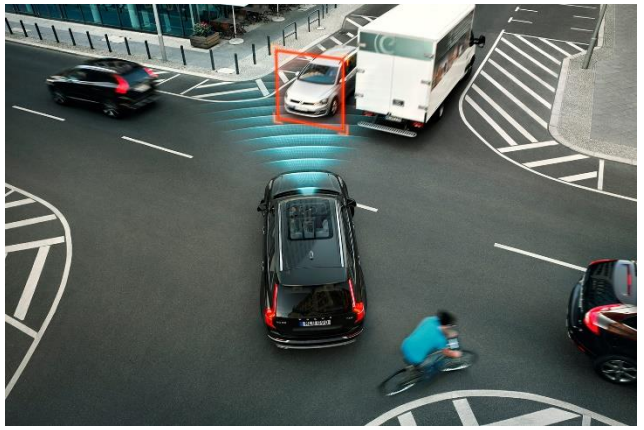


Peloton



“Light Traffic” by
MIT Senseable City Lab,
ETHZ & CNR

Solution to Traffic Congestion (Could potentially replace traffic light)



Safety Assurance to Autonomous Vehicles

Better Connectivity, more accurate GIS without latency– Possible new opportunity

"Does your car have any idea why my car pulled it over?"

nathan.byun@gatech.edu

in/na6an

nathan6