

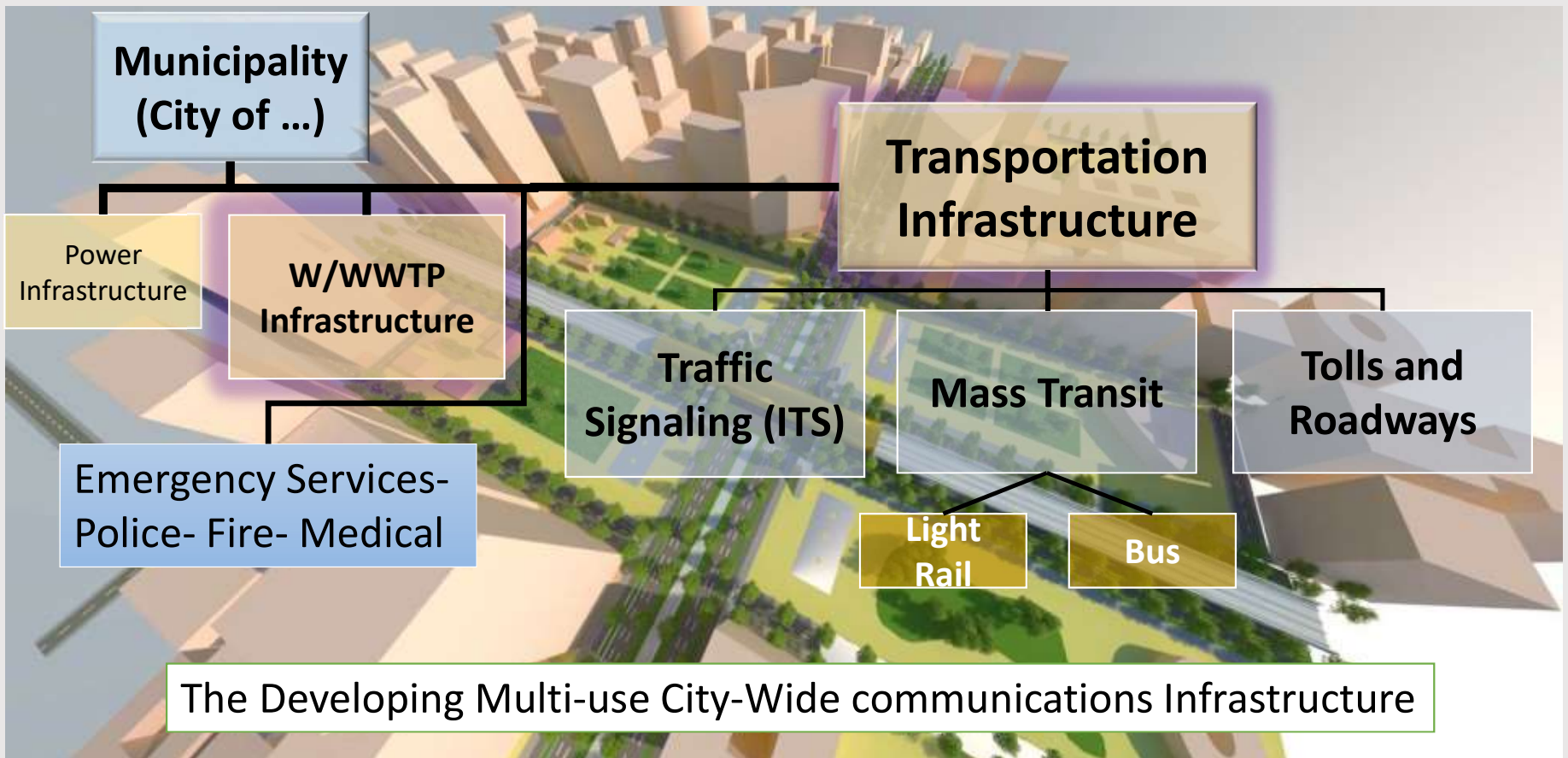


Urban Infrastructure

From Dedicated Low Bandwidth to Shared High Bandwidth
Communications Networks- The Smart City Backbone



What Defines Urban Infrastructure?



A Brief History...



20+ years ago- Dedicated serial systems for Traffic Control

About 20 years ago (1998)- Introduction of Ethernet for IP Cameras and Traffic Controllers and some spread spectrum wireless

Over the intervening time until 2018- Ethernet bandwidth increases from 10Mbps/100Mbps/1Gbps/10Gbps/40Gbps/100Gbps- creating the ability to provide a truly City-Wide communications Infrastructure



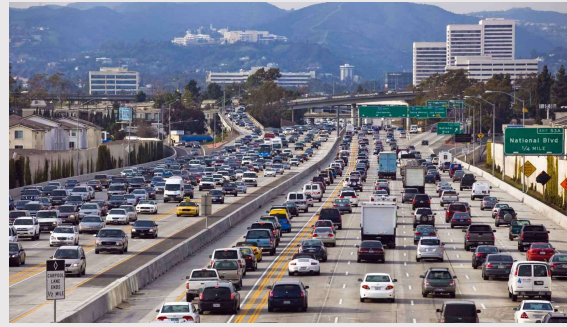
ITS Comprises:



Intersection Control and Monitoring



Highway Monitoring



Toll Collection



Passenger Rail



Busses



Parking Structures



These are Parts of the ITS Whole

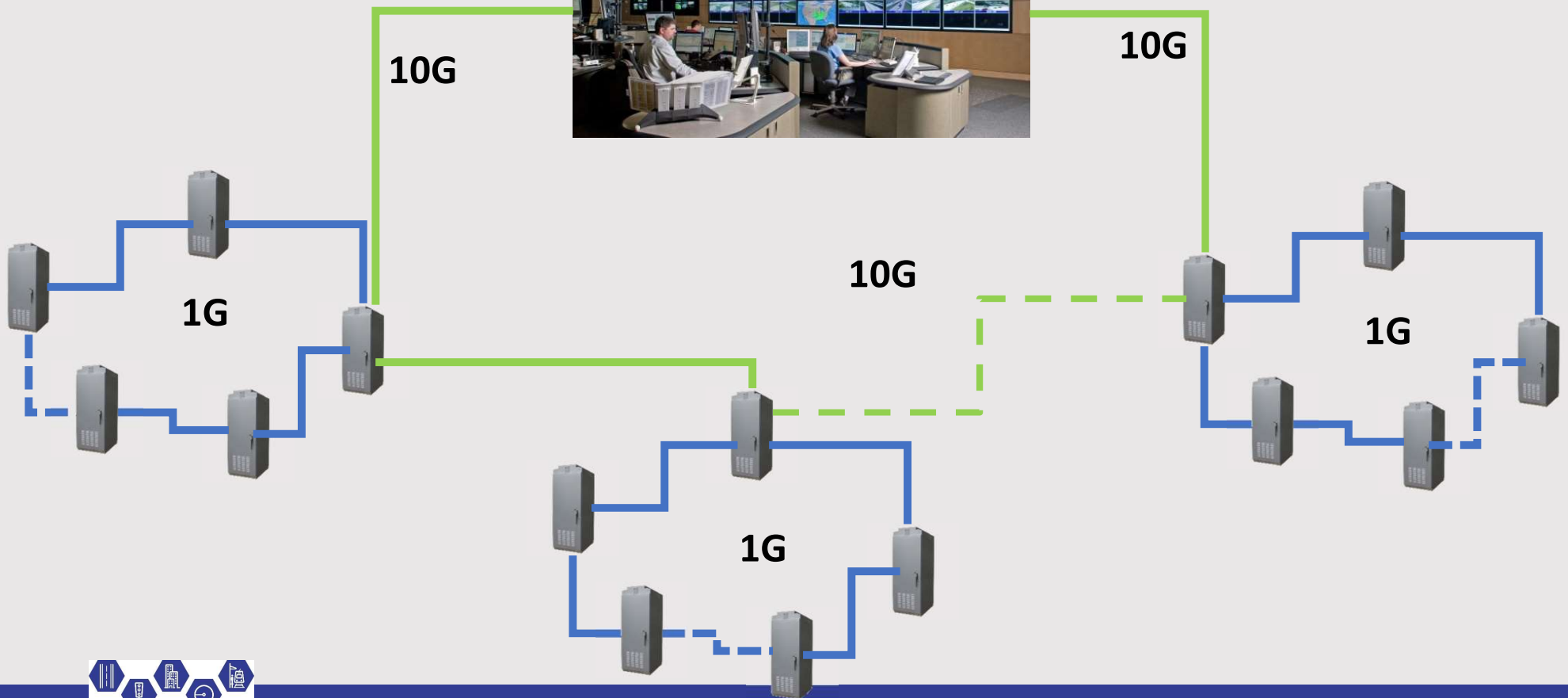
- Weather
- Airports
- Freight Rail
- Inter/Intra Vehicle Comms
- And More.....



A Simple Network



Redundancy =
Reliability



Integration with Older Systems



Small or Old Intersection



DSL

DSL

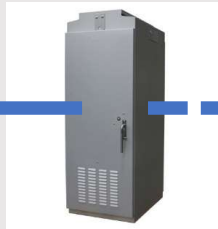
DSL



1st Street



Central Street



5th Avenue



9th Street



12th Street



Connecting to the Disconnected



Detached Intersection



1st Street



Central Street



5th Avenue



9th Street



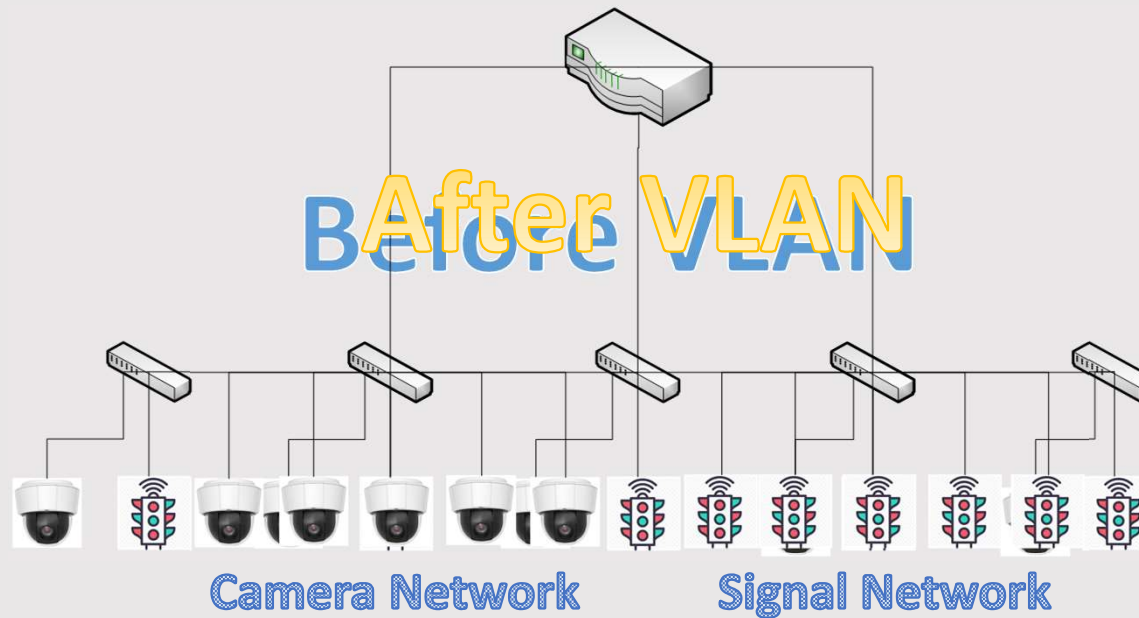
12th Street



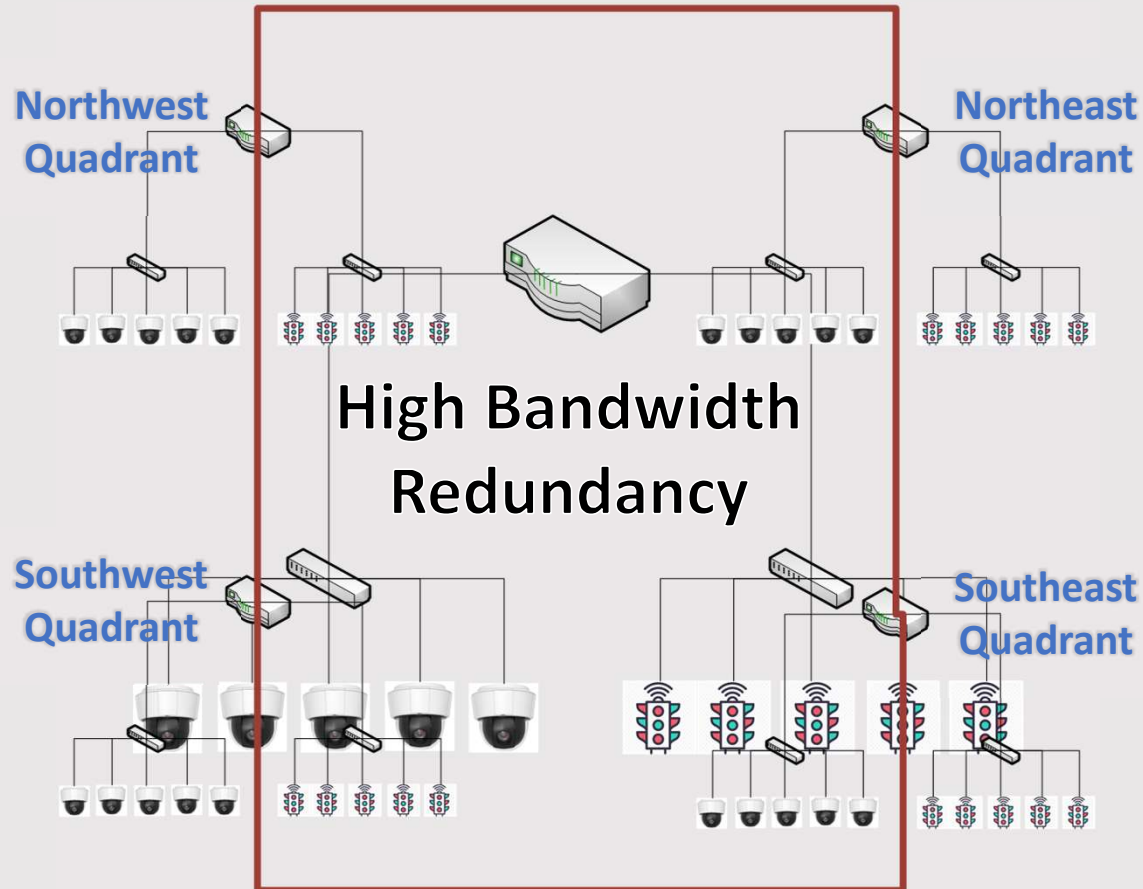
Growth – VLANs (Virtual Local Area Networks)



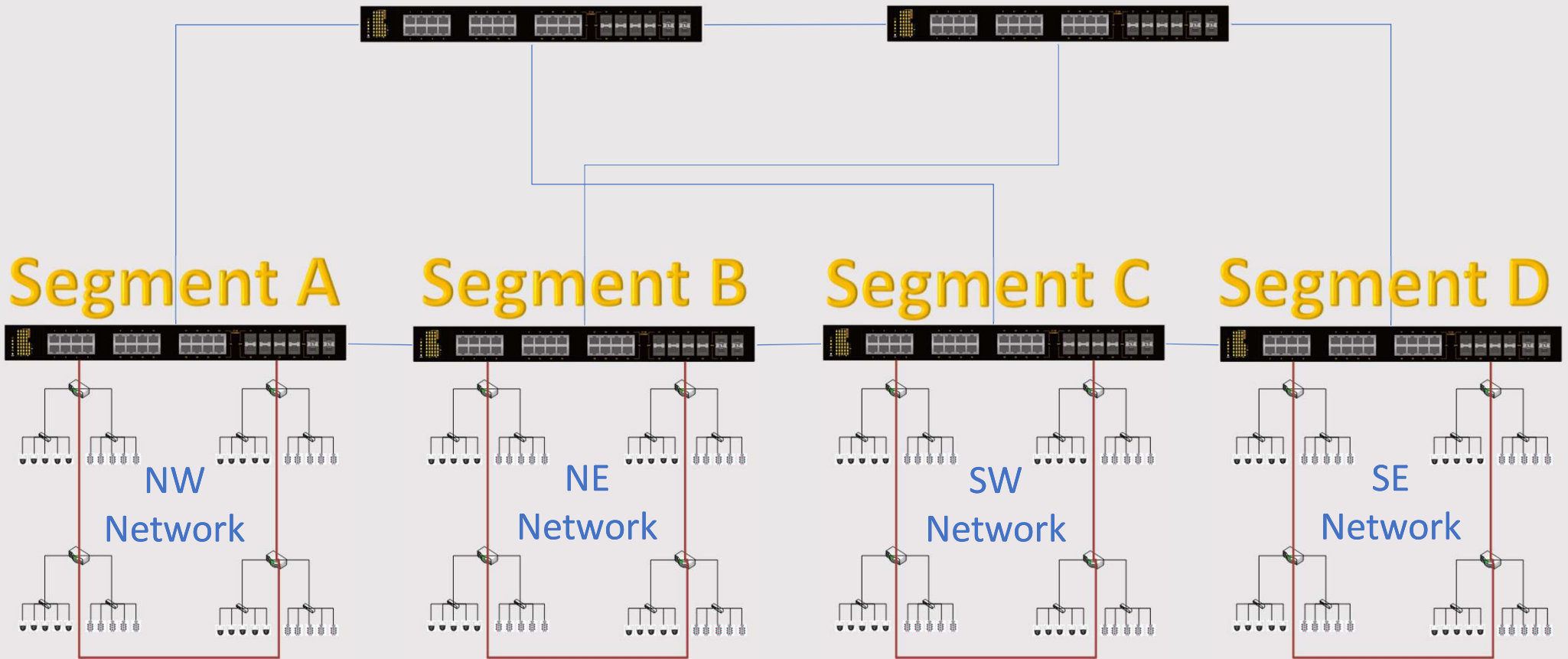
- VLANs - >100 Devices and growing
- Video at intersections



Growth - Quadrants



Growth – Segmentation through IP Scalable Systems





Questions?

