

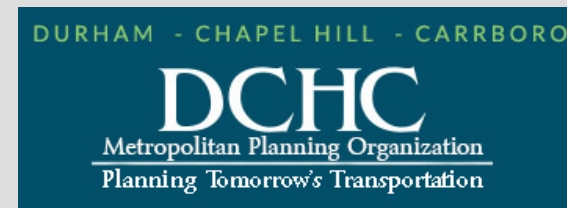
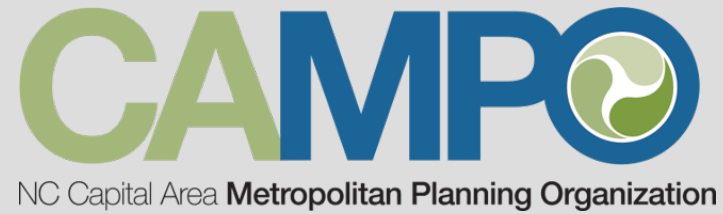


TRIANGLE REGION ITS DEPLOYMENT PLAN UPDATE

Durham-Chapel Hill-Carrboro TCC

September 23, 2020

TEAM



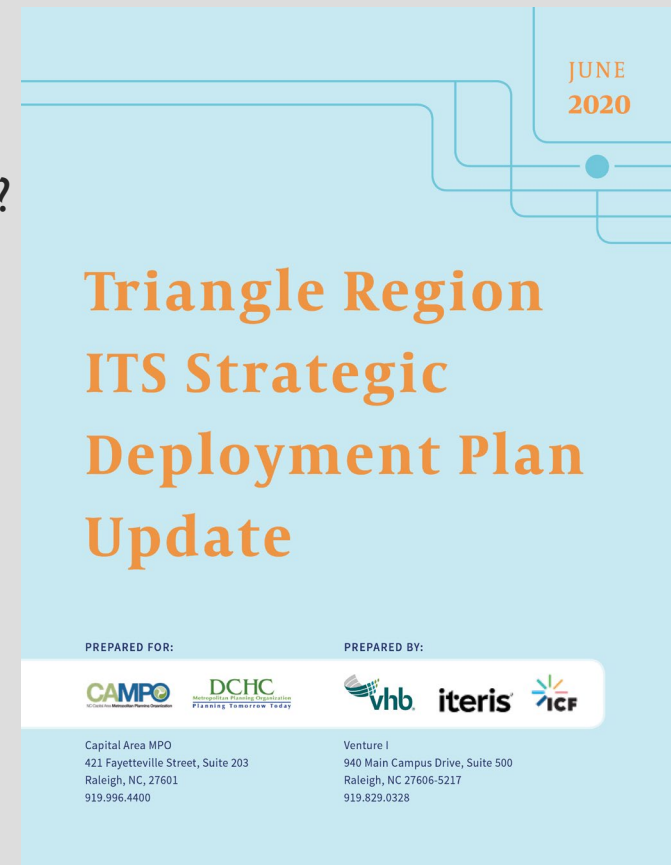
VHB Engineering NC, P.C.

Iteris

ICF

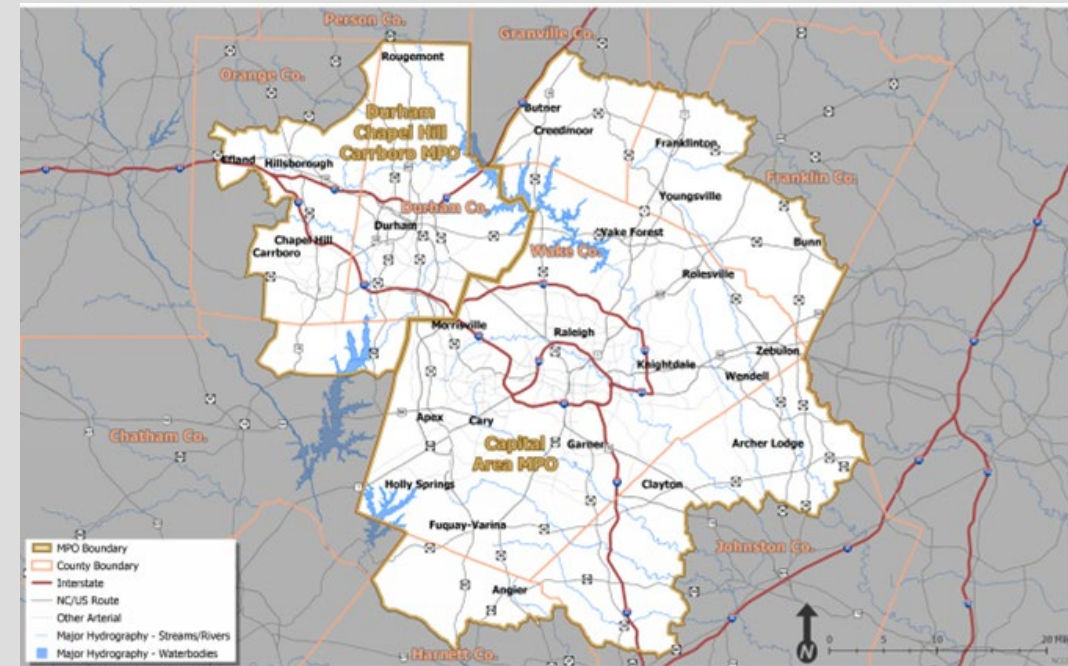
TRIANGLE REGION ITS STRATEGIC DEPLOYMENT PLAN UPDATE

- What is the purpose of the plan?
- What are the major components of the plan?
- How were study objectives achieved?
- What are the major findings?



PLAN PURPOSE

- Provide a framework for the near-term, mid-term, and long-term (up to 10 years from present) deployment of ITS technologies to enhance efficiency and sustainability of the regional transportation system
- Geography includes the combined areas of the Durham-Chapel Hill-Carrboro MPO (DCHC MPO) and the Capital Area MPO (CAMPO)



OBJECTIVES OF THE STUDY



- Support Vision Zero
- Support reliability across an integrated transportation network
- Enhance network mobility
- Improve multimodal connectivity and equitable access
- Improve, monitor, and manage assets
- Support economic vitality

HOW STRATEGIES

Establish and develop partnerships for operations, communication, and information dissemination

Improve incident management and response

Prioritize deployments to improve safety and provide accurate real time information

Expand Integrated Corridor Management (ICM) Program

Improve system communications for interconnectivity and data sharing

Implement an Asset Management Program

Evaluate and execute cost effective solutions

MAJOR STUDY EFFORTS

- Updating the Regional ITS Architecture
- Assessing current ITS deployment and identifying gaps between current conditions and goals
- Assessing current state of the practice and emerging technologies
- Identifying deployment recommendations

ARCHITECTURE UPDATE

- Architecture was updated to the latest version USDOT's Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT)
- Web-based document that can be hosted locally.
- Includes all of the backbone requirements for developing the deployment plan
- Currently hosted by Iteris (<https://local.iteris.com/ncarch/index.htm>)
- Will be hosted by Triangle J Council of Governments (TJCOG)

RAD-IT Triangle Region ITS Architecture

Home
 Scope
 Planning
 Stakeholders
 Inventory
 By Physical Object
 By Stakeholder
 Services
 Roles and Resp Needs
 Functions
 Interfaces
 Standards
 Agreements
 Projects

Welcome

This Regional ITS Architecture is a roadmap for transportation systems integration in the Triangle Region of North Carolina. The architecture was developed through a cooperative effort by the region's transportation agencies, covering all modes and all roads in the region. It represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the region.

The architecture provides an overarching framework that spans all of the region's transportation organizations and individual transportation projects. Using the architecture, each transportation project can be viewed as an element of the overall transportation system, providing visibility into the relationship between individual transportation projects and ways to cost-effectively build an integrated transportation system over time.

The purpose of this regional ITS architecture web site is to encourage use of the regional ITS architecture and gather feedback so that the architecture is used and continues to reflect the intelligent transportation system vision for the region. The menu bar at left provides access to the stakeholders, the transportation systems in the region (the Inventory), the transportation-related functions that are envisioned, and the existing and planned integration opportunities in the region.

Architecture Databases

RAD-IT Database files. To download a free version of the RAD-IT software, go to arc-it.net.

- [2019 Triangle Regional ITS Architecture RAD-IT File](#)

ARCHITECTURE UPDATE



Home

Scope

Planning

Stakeholders

Inventory

By Physical Object

By Stakeholder

- Scope: the geographic scope, timeframe, and services included in the architecture
- Planning: this section links the Objectives for the region from the ITS Plan update to the services in the architecture
- Stakeholders: lists the agencies and private sector organizations that play a role in the implementation, management, or operation of ITS systems and contributing systems in the region
- Inventory: lists the things – the systems and devices that make up ITS in the region as well as non-ITS systems that have data needed by the ITS systems or that take data from ITS

CURRENT DEPLOYMENTS AND GAPS

- Utilized the 2010 ITS Deployment Plan
 - Identified what was planned vs what has been implemented
- Utilized feedback from stakeholders in the region
 - Transit operators
 - Municipal/MPO staff
 - NCDOT staff
- Large stakeholder group meetings and small group stakeholder interviews

STAKEHOLDER ENGAGEMENT

- Three large stakeholder group meetings/workshops
 - All municipalities, transit operators, emergency services, NC Toll Authority, NCDOT, and both DCHC and CAMPO staff were invited attendees
- Ten Small group interviews included
 - Town of Cary, Town of Morrisville, and Town of Apex
 - City Durham
 - City Chapel Hill and Town of Carrboro
 - City Raleigh, Town of Garner, and Town of Wake Forest
 - NCDOT Central Office
 - NCDOT Divisions 4, 5, and 6
 - NC Turnpike Authority
 - GoTriangle

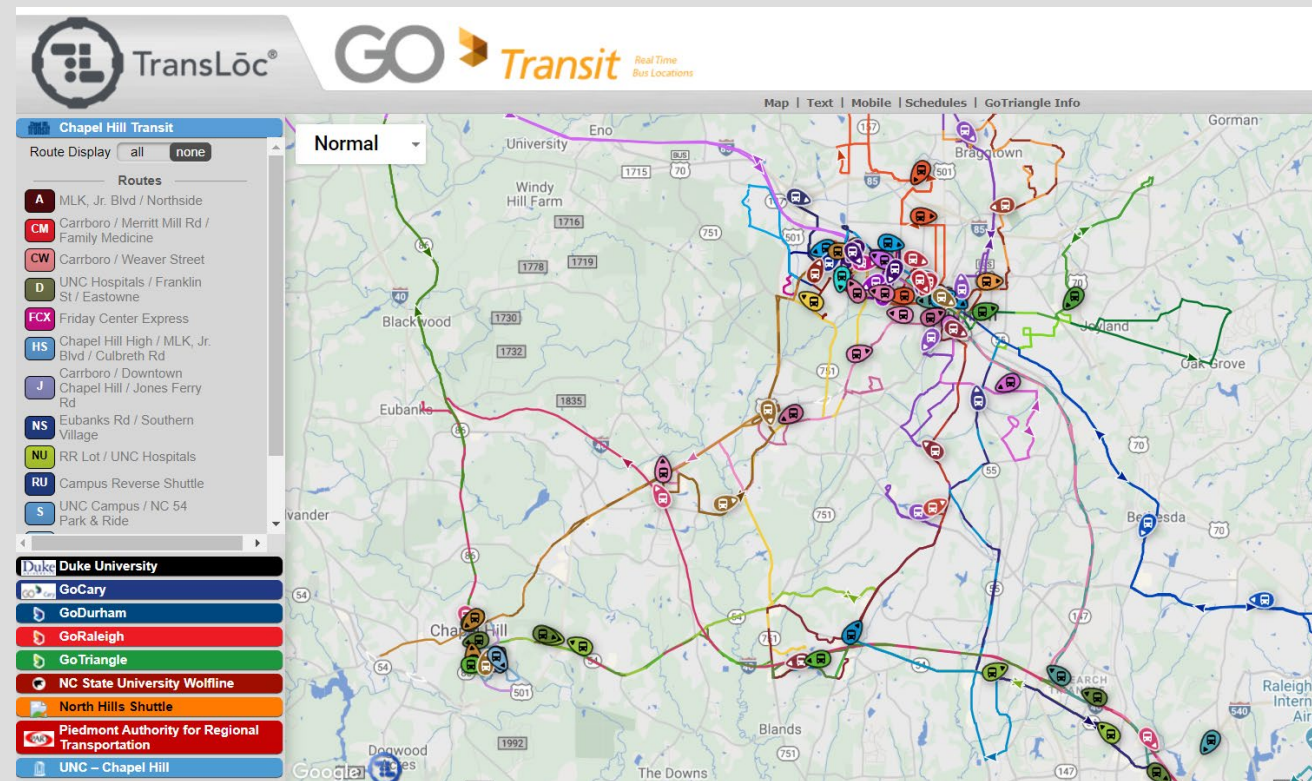
EXAMPLES OF CURRENT DEPLOYMENTS

- <https://drivenc.gov/>

The screenshot displays the DriveNC.gov website interface. At the top, there is a search bar containing "Durham County, North Car..." and navigation icons for "Legend" and "Settings". Below this is a menu bar with "Traffic Map", "Incidents", and "Snow & Ice" (the active tab), along with a "Login" button. The main map area shows Durham County, North Carolina, with a red banner at the top stating "NORTH CAROLINA REMAINS UNDER A SAFER AT HOME ORDER". The map features several orange and red markers labeled "Construction" and "Night-Time Construction". A sidebar on the left contains sections for "Choose Map Pins" (All Types, All Roads, Future Events Hidden), "Ongoing Events" (#Biz40NC, 2020-08-01 Hurricane Isaias), and "View Data Layers" (Cameras, Congestion, Rest Areas, Snow & Ice).

EXAMPLES OF CURRENT DEPLOYMENTS

- <https://triangle.transloc.com/>



EXAMPLES OF CURRENT DEPLOYMENTS

- Traffic management centers
- Dynamic message signs
- Traffic signal systems connected via communication systems
- Wide area fiberoptic cable communication networks with supplemental wireless
- Bicycle detection and lead-pedestrian-interval (LPI) signal phasing
- Emergency vehicle pre-emption
- Wrong-way driving detection on I-540 ramps
- CCTV cameras
- Signal Phase and Timing (SPaT) Challenge deployments for connected vehicles
- Integrated corridor management for large scale roadway construction projects
- Waze and Google Maps navigation platforms

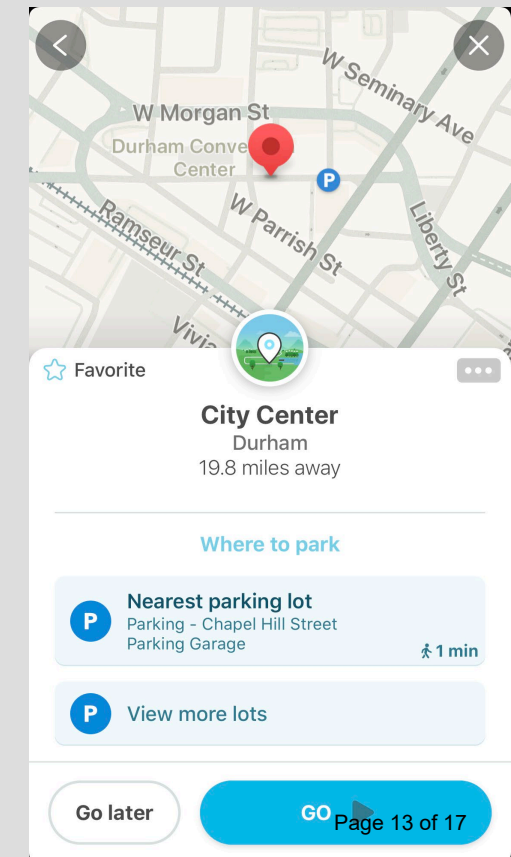
Typical CCTV Camera



Underground Traffic Signal Fiber



Waze Navigation App

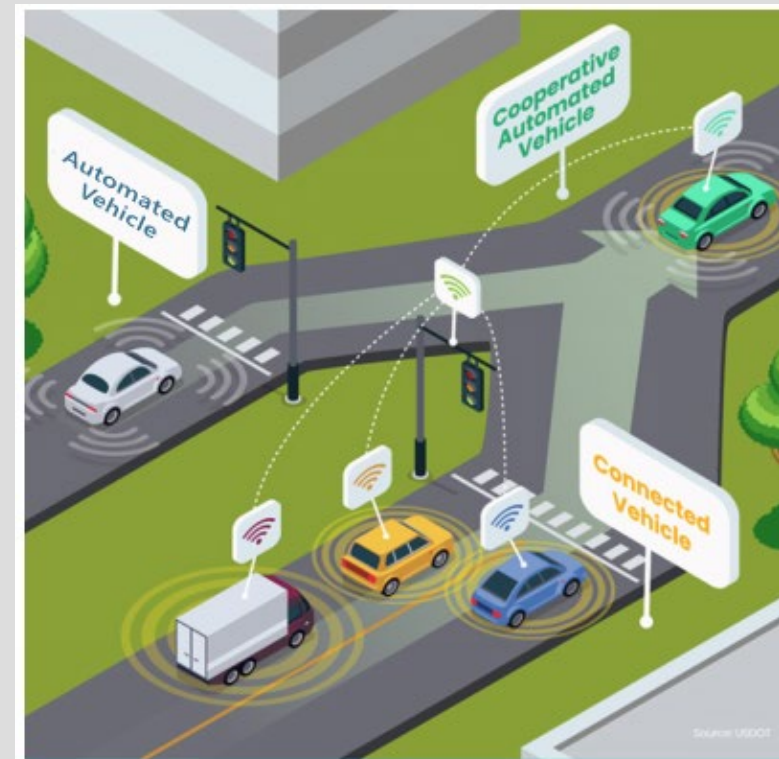


STATE OF THE PRACTICE AND EMERGING TECHNOLOGIES

- Literature research
- Utilized feedback from stakeholders in the region
 - Transit operators
 - Municipal/MPO staff
 - NCDOT staff
- Large stakeholder group meetings and small group stakeholder interviews

EXAMPLES OF THINGS TO COME TO THE REGION

- Autonomous and connected vehicle technologies
 - Competing technologies – Dedicated Short Range Communications (DSRC) radio and 5GLTE wireless technology
- Transit vehicle preemption
 - BRT corridors under development
- Continued operation and deployment of past successes
 - Additional traffic management center
 - DMS
 - Coordinated traffic signal systems with improved compatibility across municipal boundaries
 - More widespread GPS-based EVP
 - More robust and fully connected fiber optic network

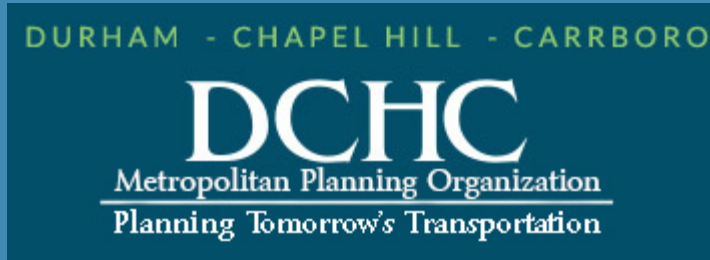


Connected and Automated Vehicles (CAVs) are expected to provide **increased safety** while also **supporting economic vitality**. CAVs are expected to be a significant component of future automotive industry.

MAJOR DEPLOYMENT PLAY RECOMMENDATIONS

42 Action Items were identified

- Build and inventory a regional fiber optic cable network
- Establish a regionally compatible asset management system
- Continue constructing coordinated traffic signal systems
- Establish software and hardware platforms to support connected and automated vehicles seamlessly across the region
- Continue developing municipal agreements to consolidate municipal traffic signal systems
- Continue deployments to support transit – transit signal priority/bus rapid transit, unified farebox systems, and improved AVL systems
- Establish a regional task force/working group intent on ITS deployment



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