# PENNDOT ITS COMMUNICATIONS

OVERVIEW

- History of PennDOT ITS connectivity

- Improvements to PennDOT video systems

- IT connectivity projects for ITS

- Fiber network improvements

- Signal system projects

- Current and Future PennDOT connectivity projects

PENNDOT'S STRUCTURE

- PennDOT broken into 11 districts regions across the state

- 7 of those regions have Traffic Management Centers (TMCs)

- 4 of those 7 regoins are Regional TMCs, open 24/7

- Statewide TMC oversees and helps where TMCs and RTMCs need it

- BIO and BOMO at central office

PENNDOT DISTRICT MAP
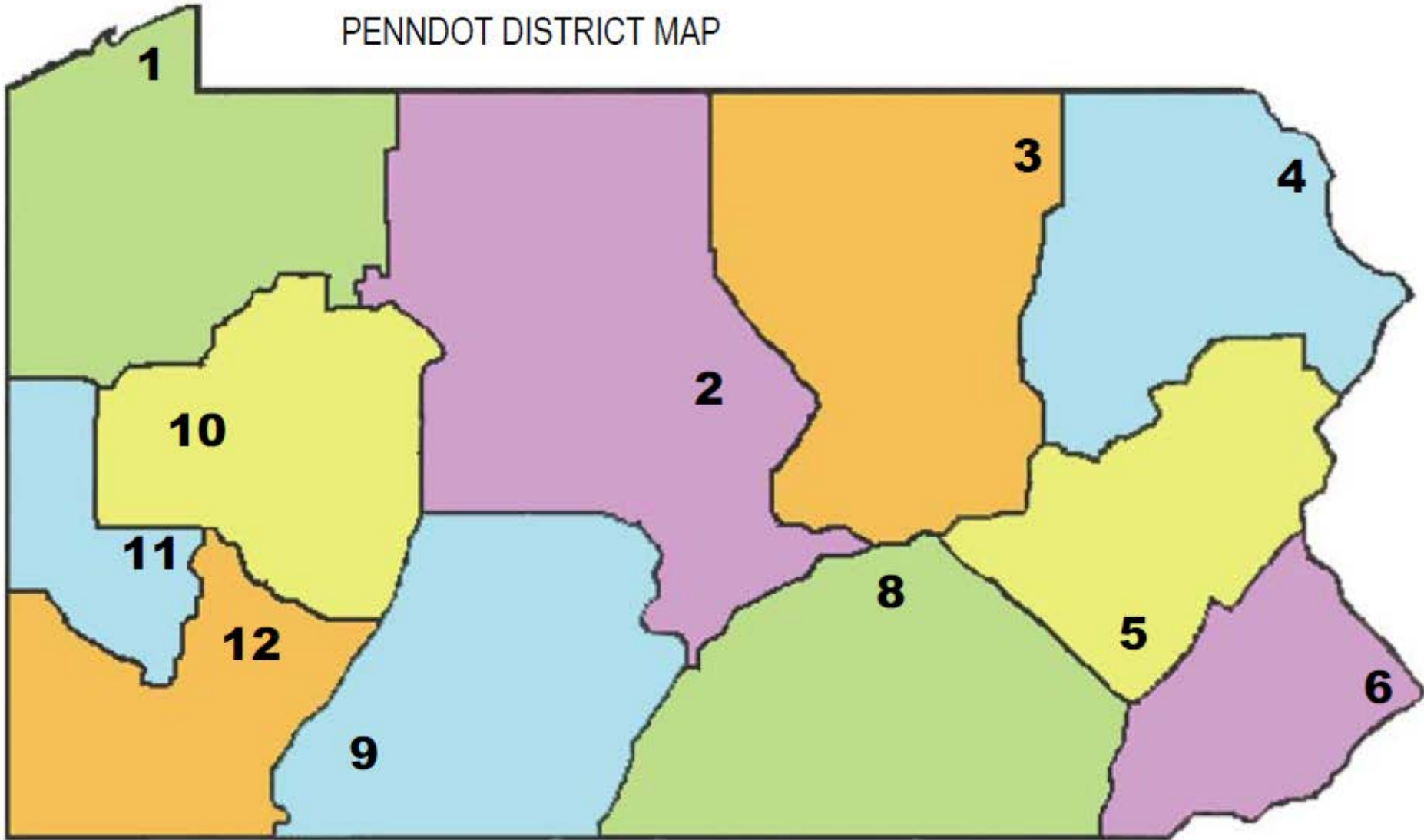
IN THE BEGINNING…

- Separate districts with little to no IT involvement

- PennDOT TMCs worked independently for the most part

- First IT related TMC projects:
  - Network improvements at TMC offices
  - Axis encoders installed to pull video from existing analog infrastructure to share traffic camera video with the public, using static images

VIDEO SHARING SOLUTION

- Goal to provide streaming video of traffic cameras to the public and centralize video infrastructure

- RTMCs already have Cisco VSOM solution for video management

- Deployed Cisco VSOM to smaller TMCs that did not have it yet.

- Built central office VSOM environment to manage and monitor VSS video.

- Made improvements to existing VSOM environments at RTMCs

VSS CONTINUED

- Implemented streaming video servers at each TMC to compress and share video throughout PennDOT

- Built video portal for county maintenance and other non-TMC personnel to use

- Increased bandwidth to handle additional video data load

- Worked with 511PA vendor to add streaming video option for the public

- Still pulling from Axis encoders, making VSOM not as useful
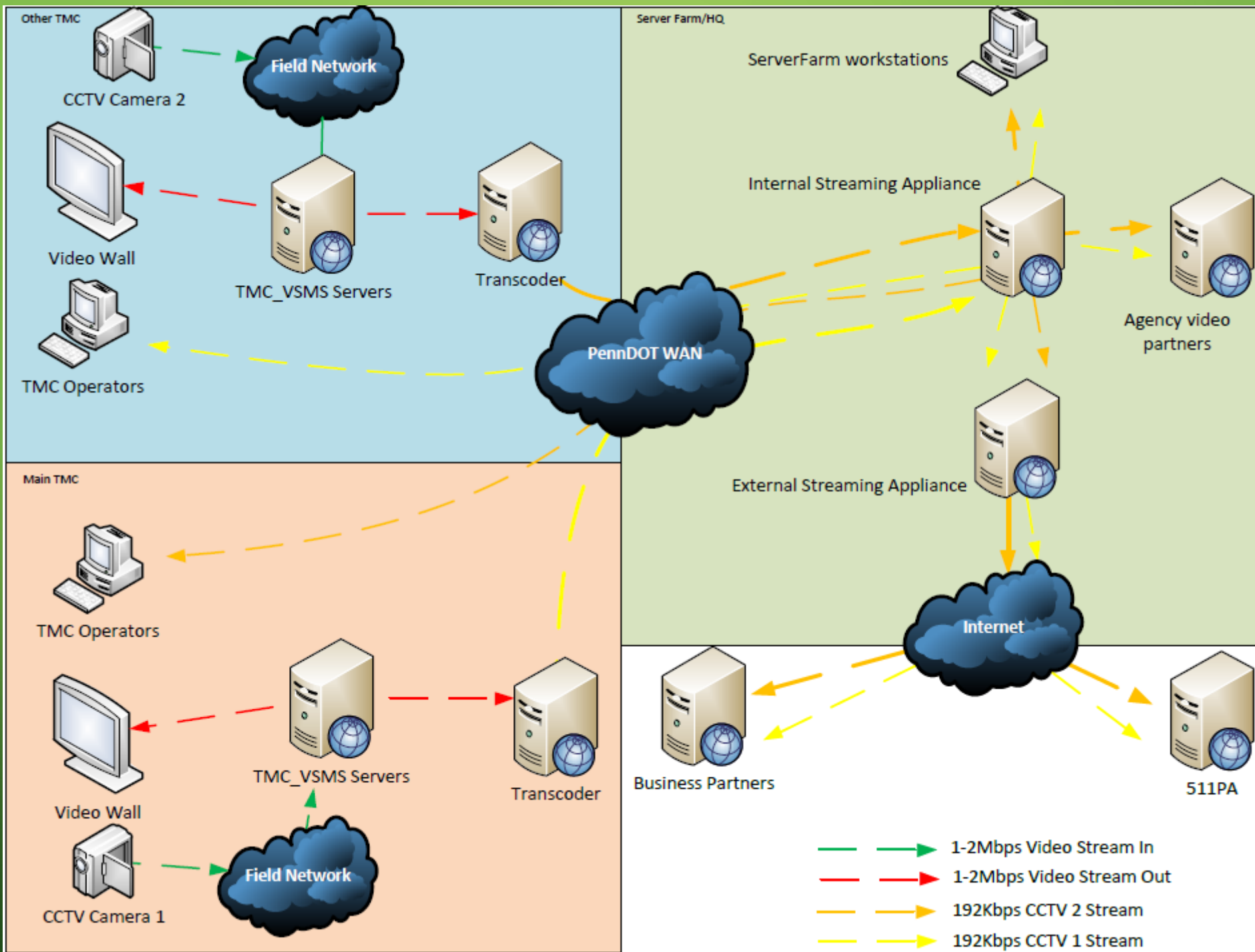
IT BECOMES MORE INVOLVED IN ITS

- Sine growing pains from BIO to learn what BOMO and the TMCs do and how to help them

- Coordination between BOMO and BIO increased

- BIO and BOMO work together on state wide policies, helping bring TMCs together

- Policies include IT to be involved in all technical aspects of ITS projects

- BIO manages video systems that have already been implemented

IT INVOLVED IN ITS NETWORKS: T1 AND CELLULAR

- Most cameras circuits were Point to point T1 circuits

- Made it impossible for BIO to communicate and manage field devices

- BIO worked with TMCs to transition to MPLS circuits

- With MPLS in place BIO is now able to communicate with and manage cameras/encoders in the field.

- Transitioning cellular connected devices to private cellular network

- Using 4G LTE to connect rural, constriction, and temporary cameras to PennDOT

IT INVOLVED IN ITS NETWORKS: FIBER NETWORKS

- Started with little to no central office knowledge fiber layout

- First step: Gain access to fiber infrastructure currently in place

- Started mapping out connected devices on fiber networks

- Got involved in fiber network designs

- Gave advice on improvements of existing network

- Started monitoring fiber network infrastructure

GREEN LIGHT GO

- Goal to connect remote signal networks not on PennDOT networks back to PennDOT datacenter

- Worked with townships to put routers in place to connect back to PennDOT

- Routers build secure tunnel back to PennDOT data center making it possible for PennDOT signal groups can get access to them

- Giving townships VPN access to PennDOT to retain access to their signals

- Work on fiber networks to connect signal networks

- BIO than involved in all future signal projects for design and advice.

CURRENT AND FUTURE PROJECTS

- Genetec replacement for Cisco VSOM

- Improvements to video wall systems

- Further advancements in fiber communications

- Continuing conversion of point to point T1s to MPLS

- Integration with other states and EOCs

- Connecting more signal corridors back to PennDOT

QUESTIONS?