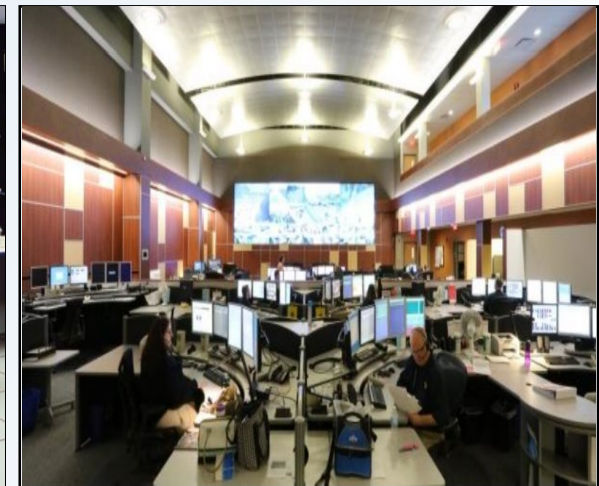
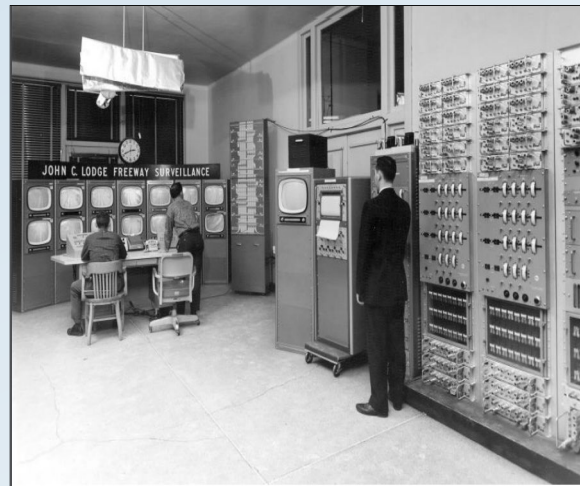


Being “Future Ready”

Michigan DOT Device Modernization Plan

12/11/19



MDOT ITS History

MDOT has been deploying Intelligent Transportation Systems (ITS) since the 1960's with the first closed circuit television (CCTV) cameras being deployed on the John Lodge Freeway. The Surveillance, Control and Driver Information (SCANDI) program began in 1976 in Detroit. The statewide ITS Program has continued to evolve, reaching significant milestones throughout the years from the opening of the Transportation Operations Centers (TOC) in the 1980's to the first Active Traffic Management System deployed in 2017.

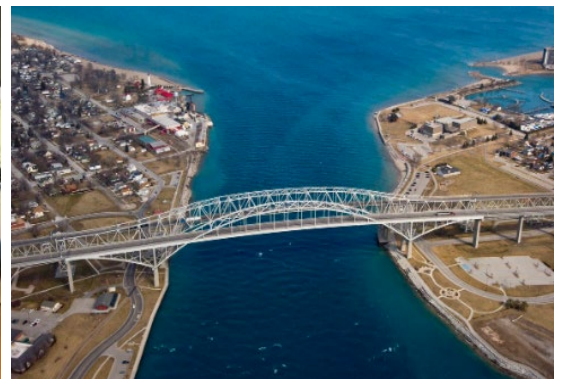
https://www.michigan.gov/documents/mdot/History_of ITS in Detroit 478054 7.pdf



MDOT TOC's

MDOT's three TOCs are focused advancing the mission on improving safety, mobility, and economy for residents and business, by ensuring safe, smooth, and efficient roads.

- Statewide Transportation Operations Center (**STOC**)
- Southeast Michigan Transportation Operations Center (**SEMTOC**)
- West Michigan Transportation Operations Center (**WMTOC**) along with the Blue Water Bridge Operations Center (**BWBOC**)

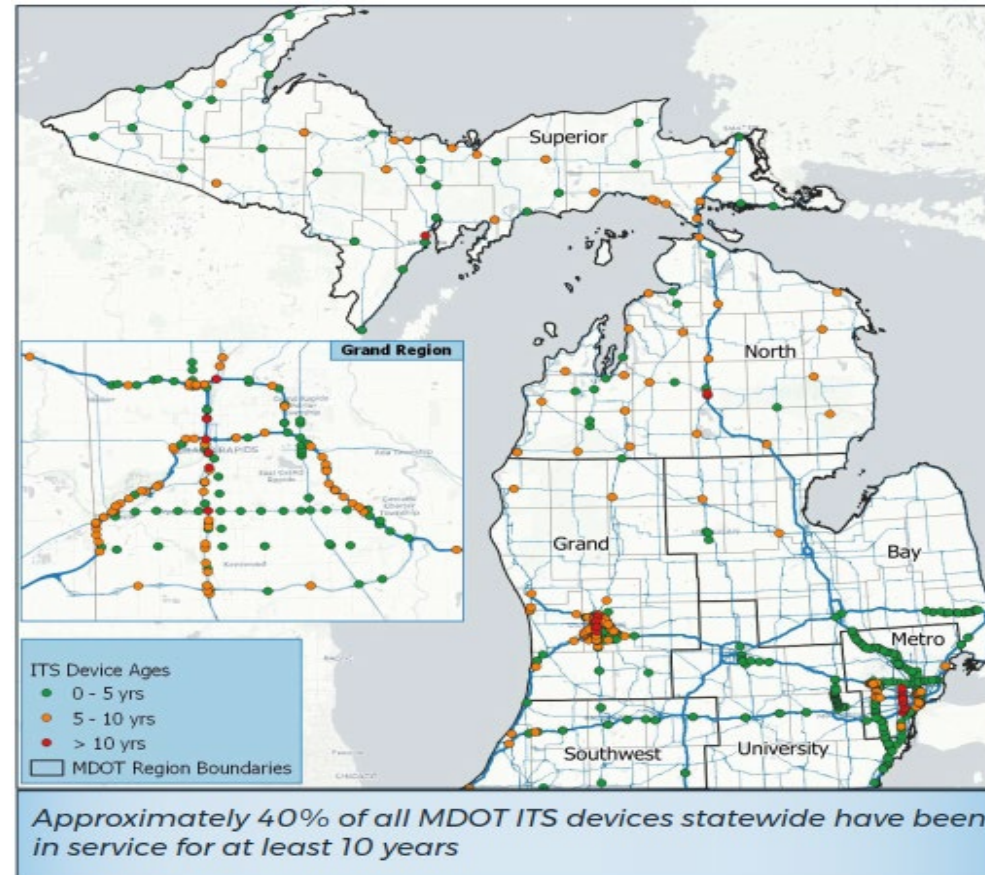


MDOT ITS Device Infrastructure

Over **6,000** ITS devices statewide including:

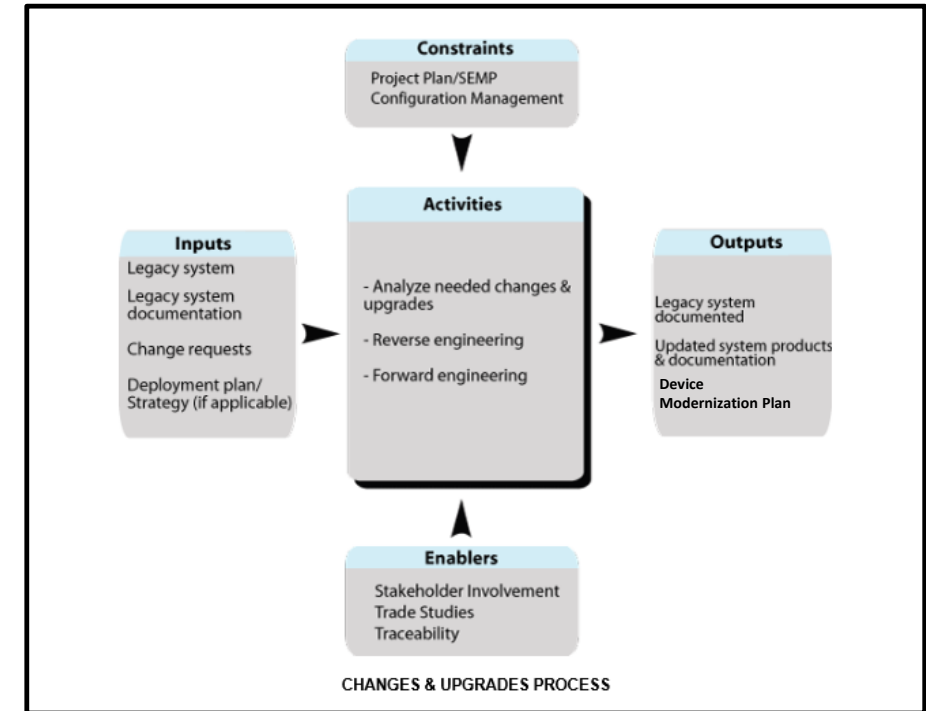
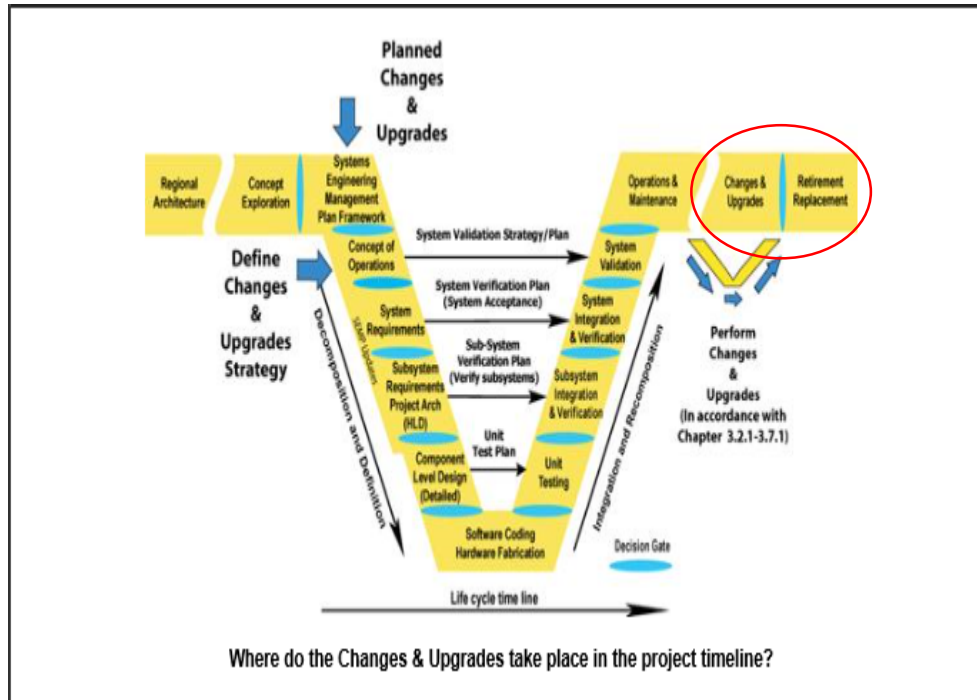
- 730 CCTV cameras
- 700 Microwave Vehicle Detectors Systems (MVDS)
- 230 Dynamic Message Signs (DMS)
- 90 Environmental Station Sensor (ESS) sites
- 200 Road Side Units (RSU)
- Highway advisory Radio (HAR)
- Dedicated Short Range Communication Radios (DSRC)
- Ramp Metering
- Vehicle detectors
- Truck Parking Information Systems
- Many more components e.g. network systems, fiber OSP, wireless access points

Know your existing Systems/Infrastructure through a Device Modernization Plan (DMP)



** DMP follow's the MDOT 2018 Strategic Plan for ITS*

FHWA 940 “Change/Upgrades-Retirement/Replacement” Section



Why Analyze for Change/Upgrades or Retirement/Replace ITS infrastructure?

- Infrastructure become obsolete
- Changed in design
- Aged of equipment
- End of support life

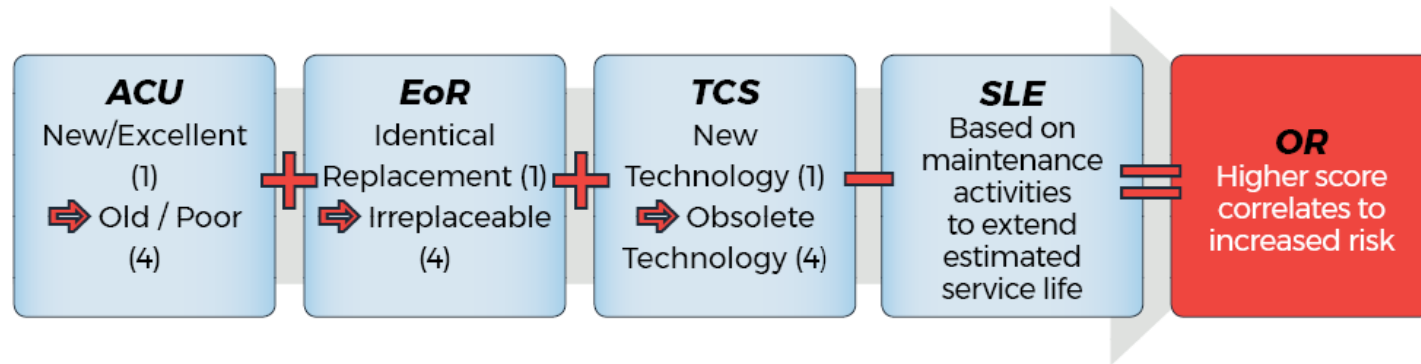
- Technology changes/evolution
- Manufactures support
- Availability of Alternate Vendors
- Efficient design and equipment ROI

Modular Open Systems Approach (MOSA)

- **Improve competition** – open architecture with severable modules, allowing components to be openly competed.
- **Keep technology fresh** – delivery of new capabilities or replacement technology without changing all components in the entire system.
- **Incorporate innovation** – operational flexibility to configure and reconfigure available assets to meet rapidly changing operational requirements.
- **Enable cost savings & cost avoidance** – reuse of technology, modules, and/or components from any supplier across the acquisition life cycle.
- **Improve interoperability** – severable software and hardware modules to be changed independently.

DMP DEVELOPMENT PROCESS

- **Review Historical Data:** device in-service date, warranty start/end dates, Asset Management Database (AMD)-maintenance work order trends, MTBF issues, On-site field infrastructure assessment
- **Stakeholder Engagement:** essential for success. Develop steering committee of identified regional representative that will provided feedback and discuss priorities for modernization. Review state of practice related to device maintenance and modernization for newer technologies.
- **Criticality Ratings Process:** Risk assessment scoring from multiple defined factors and cost analysis.



- **Delivering the** recommendations to optimize delivery, scale, cost, and efficiency for MDOT (build) and make
- **Annual Maintenance and Updates:** Foundation for a proactive evaluation and update process for the DMP; to be completed annually when the subsequent year's construction is developed. Conduct efficient state of practice research, implement best practices and innovations

DMP long term

- Plan for end of system's life cycle
- Document existing systems to capture necessary data into electronic format (Interactive GIS Asset Database)
- Technology evaluation processes
- Prioritize modernization of data mining
- Consider aspects of cost/timeline for deliverables
- Living document

Thank You!!!