Kansas Statewide Transportation Operations & Management Center (TOMC) Early Deployment Study

National Rural ITS Conference
Big Sky, Montana
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KITS
kansas intelligent transportation systems

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OLSSON ASSOCIATES





Study Background

- Why KDOT Studied This Issue?
- What is the Best Operational TOMC Concept for Kansas?
- Who will KDOT's Partners be in the Center?
- Where would a TOMC be Located?
- What Functionality will the TOMC Have?
- How will the TOMC Interface with Other Agencies and Systems?
- How will it be Staffed?
- What is the Potential Cost to Kansas?
- What are the Benefits?

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Study Overview

- 15 month Study, Starting Summer 2004
- Identify Project Steering Committee/Champion
- Develop Trial TOMC Concepts (Concept of Operations)
- Stakeholder Meetings Statewide
- Refine TOMC Concepts (High Level Requirements)
- Stakeholder Review
- TOMC Implementation Plan and Strategies (Detailed Requirements)

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Study Organization Chart

ITS Steering Committee

Project Champion
Project Steering Committee
Stakeholders

Project Study Team
KDOT – ITS Unit
Telvent Farradyne / Olsson Associates

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Project Steering Committee

- KDOT – ITS, Operations, Traffic, Public Information, Construction & Maintenance, Management, Planning (Multi-Modal), Metro Engineer, District Engineer, Computer Services/IT, Communications
- KHP
- KTA
- KS Adjutant General's Office
- FHWA
- KMCA

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Operational Concept

- Who
  - KDOT Offices
  - KHP
  - KTA
  - Scout TOC
  - Wichita TOC
  - Other Local TOC
  - Other 911/EOC
  - KMCA
  - Local Emergency Services
  - Media
  - Others

- Roles/Responsibilities
  - Services & Systems
  - Staffing / Operations
    - Policies & Procedures
    - Performance Expectations
  - Maintenance
    - IT Support
    - Center & facilities
    - Communication infrastructure
  - Funding
    - Implementation
    - Operations
    - Maintenance





Statewide TOMC Options

- **Centralized Statewide TOMC**
- **Distributed Approach in Each District**
- **Virtual TOMC Approach**
- **Hybrid Approach**

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Centralized Statewide TOC

- Interconnects with and backup to 2 Regional TOCs (KC and Wichita)
- Monitor statewide ITS
- Network with other agencies for disasters
- Traveler info
- Motor carrier enforcement
- Vehicle dispatching
  - Operations 24x7x365

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Distributed TOMC Services
(at each of KDOT's 6 districts)

Emergency management

Incident management

Maintenance dispatching

Wireless 911

CAD - Patrol

Call monitoring

Traffic monitoring

Weather monitoring

Vehicle tracking

Information entry

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Virtual TOMC

- Access
  - Intranet
  - Internet
  - Desktop
  - Home
- Low space needs
  - Uses Windows to reduce monitors
- No dedicated facility

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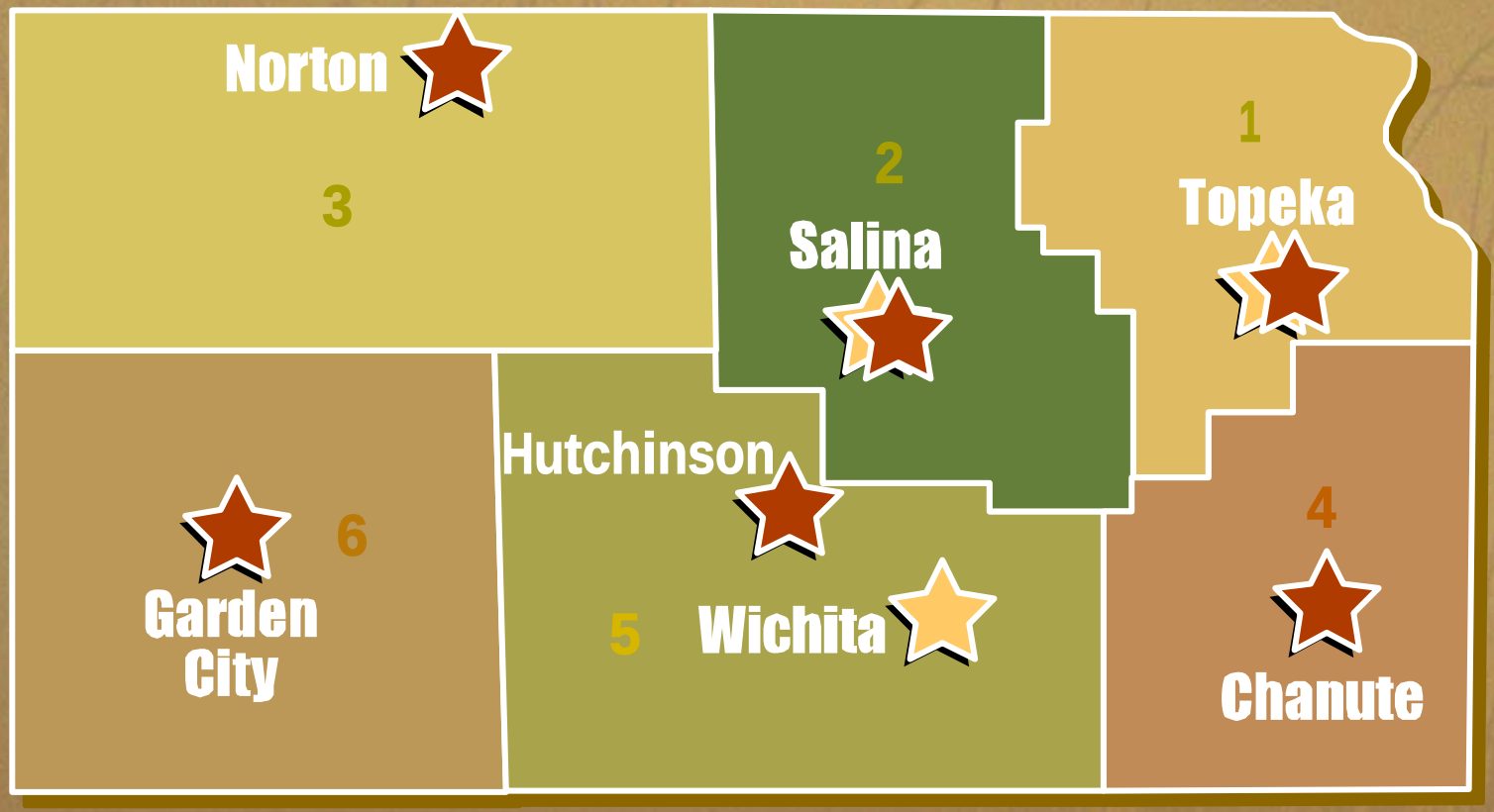
Potential TOMC Locations



Potential Central Location

Potential Distributed Location

Anywhere - Virtual TOMC Location

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Stakeholder Involvement Review

- **Input from Regional Stakeholder Meetings**
  - **Topeka, Salina, Norton, Chanute, Hutchinson, Garden City**
- **Input from Supplemental Interviews**
  - **KTA, AAA, Adjutant General, Emergency Management, KHP, FHWA, FMCSA, City of Wichita, Wichita MPO, KAB, KMCA, KSU-Salina**
  - **KDOT: BCS, Const. & Maint., Ops Division, ATIS**
- **150+ Stakeholders**

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TOMC Goals and Objectives

- **Need 1:**
  - **Improve Incoming Communication With KDOT**
- **Need 2:**
  - **Improve Traveler Information Collection**
- **Need 3:**
  - **Improve Traveler Information Distribution**
- **Need 4:**
  - **Improve the Effectiveness of KDOT Operations & Emergency Operations in KS**

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Preferred Concept of Operations

- **Hybrid/Virtual TOMC**
  - **PROS:**
  - **Software Based, Lower Cost Solution, No New Facilities Required**
  - **Available at Every Terminal with a Software Interface, Secure**
  - **Provides for Sharing of Data**
  - **Provides for Sharing of Control**
  - **Can be Used in a "War Room" as Needed in Existing TOCs, EM Offices, District Offices, Etc.**
  - **Provides Local and Statewide Control**

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Preferred Concept of Operations

- **Hybrid/Virtual TOMC**
  - **<u>CONS:</u>**
  - **No Fixed Centralized Gathering Point or Co-Location Opportunity**
  - **Still a Need for One Point of Contact with KDOT**
  - **Security Access Risk**
  - **Who is Going to Enter Data and Monitor? (Staffing)**
  - **Need a Communications Backbone Capable of Handling Video**

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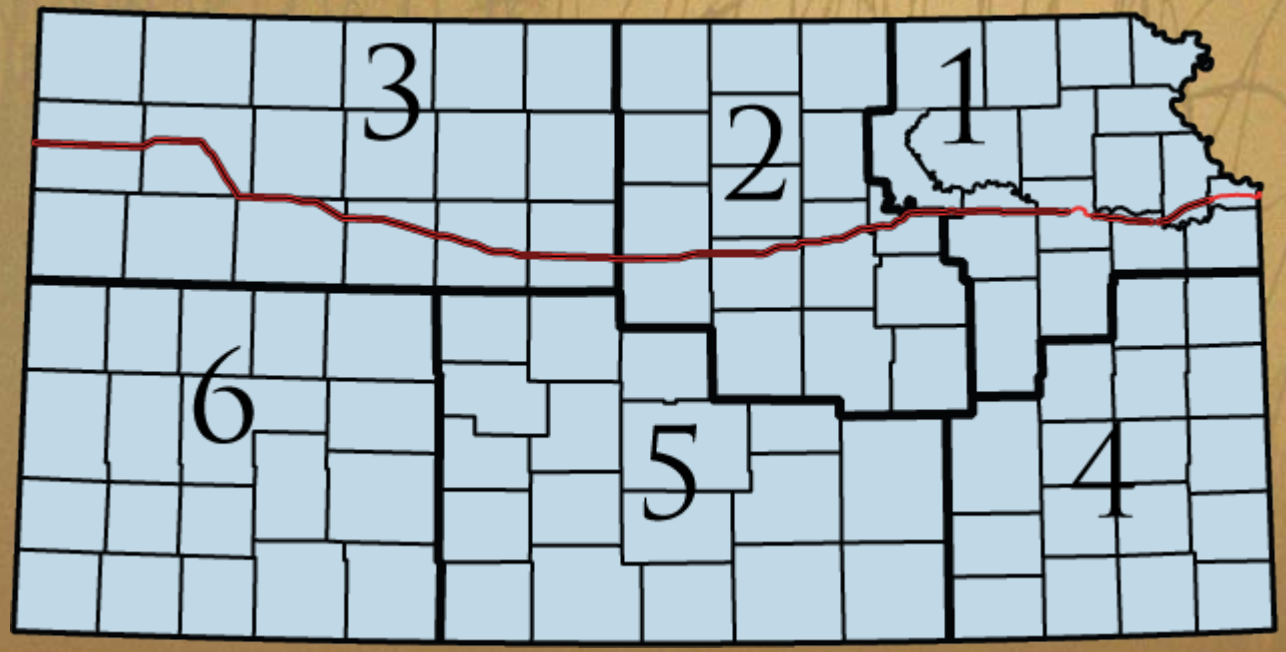
Pilot Project

Districts 2 & 3
Along I-70



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TOMC User Activities - Pilot

- Daily:
  - Maintain ITS Network
  - ITS Field Device Monitoring & Control
  - Check for KDOT Alerts
- Weekly/Monthly
  - Diagnostics & Testing
  - Conduct Training and Exercises
- Events Incidents
  - ITS Field Device Monitoring & Control
  - Status Updates
  - Agency Coordination and Information Sharing

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TOMC Staffing Impact

Activities	BCS	HDQ	Districts	Partners
• Daily				
• Weekly/Monthly				
• As Needed for Incident or Event				
• Annual FTE	0.4	0.2	0.4	0.2

Less than 2 hours/mo

Less than 4 hours/mo

≥ 4 hours/mo

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Software and Costs

Options

- COTS: License fees plus configuration
- “Freeware”: Configuration, Adaptation
- Modify Other KDOT Software – KanRoad: Custom Design of New Modules
- Custom: Complete Custom Design

- Estimated SW Cost, Pilot
- Additional SW Cost, Statewide
- Annual HW/SW Maintenance

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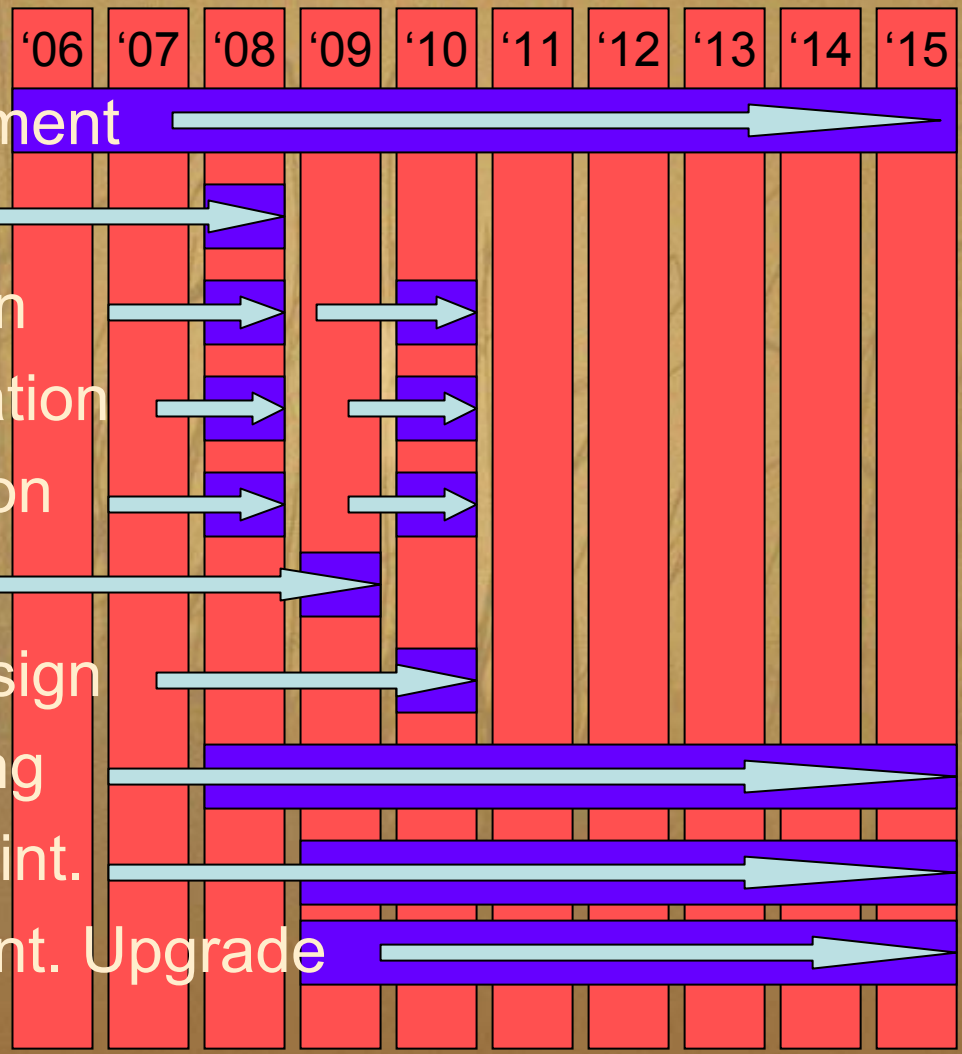
Implementation Timeline

- ITS Device Deployment
- Pilot Test Design
- Software Acquisition
- Comm. Implementation
- Hardware Acquisition
- Pilot Test Eval.
- Statewide Impl. Design
- Annual O&M Staffing
- Annual SW/HW Maint.
- Annual Comm. Maint. Upgrade



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Implementation Costs ($1,000s)

- FY ’08: $ 945
- FY ’09: $ 435
- FY ’10: $1,188
- FY ’11: $ 408
- FY ’12: $ 408
- FY ’13 $ 408
- FY ’14: $ 583
- FY ’15: $ 408

Pilot, Software

Statewide

Annual Support

Software Upgrade

Annual Support

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Additional Recommendations

- Implementation Recommendations
  - On-going Collaboration with Stakeholders
  - TOMC Steering Committee Organization
  - TMC Working Groups (Process Improvements)
  - ITS Deployment Plan Update
  - ITS Field Device Deployment Continuation
- Process Improvements
  - Contacting KDOT (Incidents and OS/OW)
  - Sharing TOMC Control between Districts
  - Sharing TOMC Control with Public Partners
  - Sharing TOMC Data/Views with Information Providers





Conclusions

- Key Recommendations
  - ITS Field Devices – Staged Deployment
  - Communication Infrastructure
  - TOMC Software
  - TOMC Hardware
  - Maintaining Momentum
- Acknowledgments
  - Project Steering Committee
  - ITS Unit – Mike Floberg, Karen Gilbertson, Shari Hilliard
  - Stakeholders
  - PBF/ Telvent – Matt Volz
    Olsson Assoc. – Steve Bahler

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