City of Chicago
ITS Initiatives

David Zavattero

City of Chicago OEMC

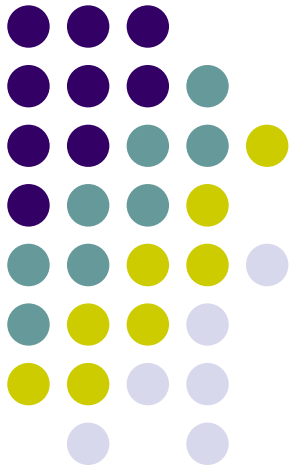
Traffic Management EXPO 2007

November 7-8, 2007

Developing and Deploying the Chicago Traffic Management Center

David Zavattero

City of Chicago OEMC



56th Annual Illinois Traffic Engineering & Safety Conference

October 18-19, 2007

CITY OF CHICAGO OEMC EMERGENCY MANAGEMENT & COMMUNICATIONS

TRAFFIC MANAGEMENT AUTHORITY

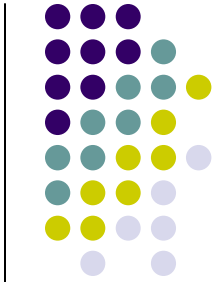
Chicago Traffic Management Center Phase 2

Kick-Off Meeting

Wednesday, November 14, 2007

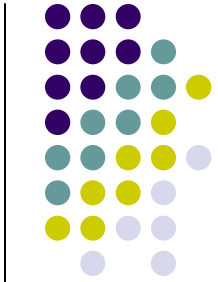
/daz1d-oemc/present/build-chicago-tmc-v3.ppt

Some questions



- Why a TMC?
- What will a TMC do?
- What's done so far?
  - Existing systems
  - Related projects
- What's next?

An Overview



- Signal systems
- Traveler information
- Transit and traffic management
- Database development & integration

- Traffic Management Center

Providing Traveler Information

Creating Public/Private Partnerships

Making Transit More Effective

Reducing Traffic Congestion

Managing Incidents

Supporting Homeland Security

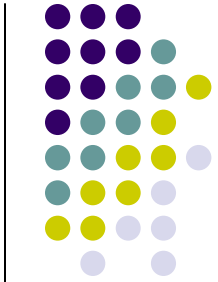
Promoting Interagency Cooperation

Resolving Truck Transport Issues

Interagency Communications

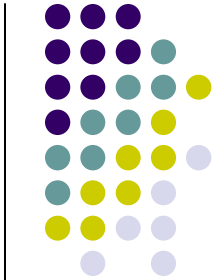
Integrating Traffic Management Centers

10 Recommendations



1) Adopt/adapt existing technologies
2) Pursue multi-disciplinary approaches
3) Create operational roadmap with stakeholders
4) Use diversified acquisition strategy, open standards
5) Work closely with technology providers
6) Emphasize capabilities for routine operations
7) Employ metrics for cost/benefit decisions
8) Perform independent assessments
9) Develop cadre of people with expertise
10) Sustain an integrated network of centers

Interesting source of these recommendations:

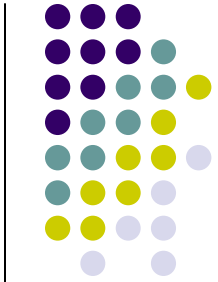


Improving Disaster Management: The Role of IT in Mitigation, Preparedness, Response and Recovery

Adapted from:

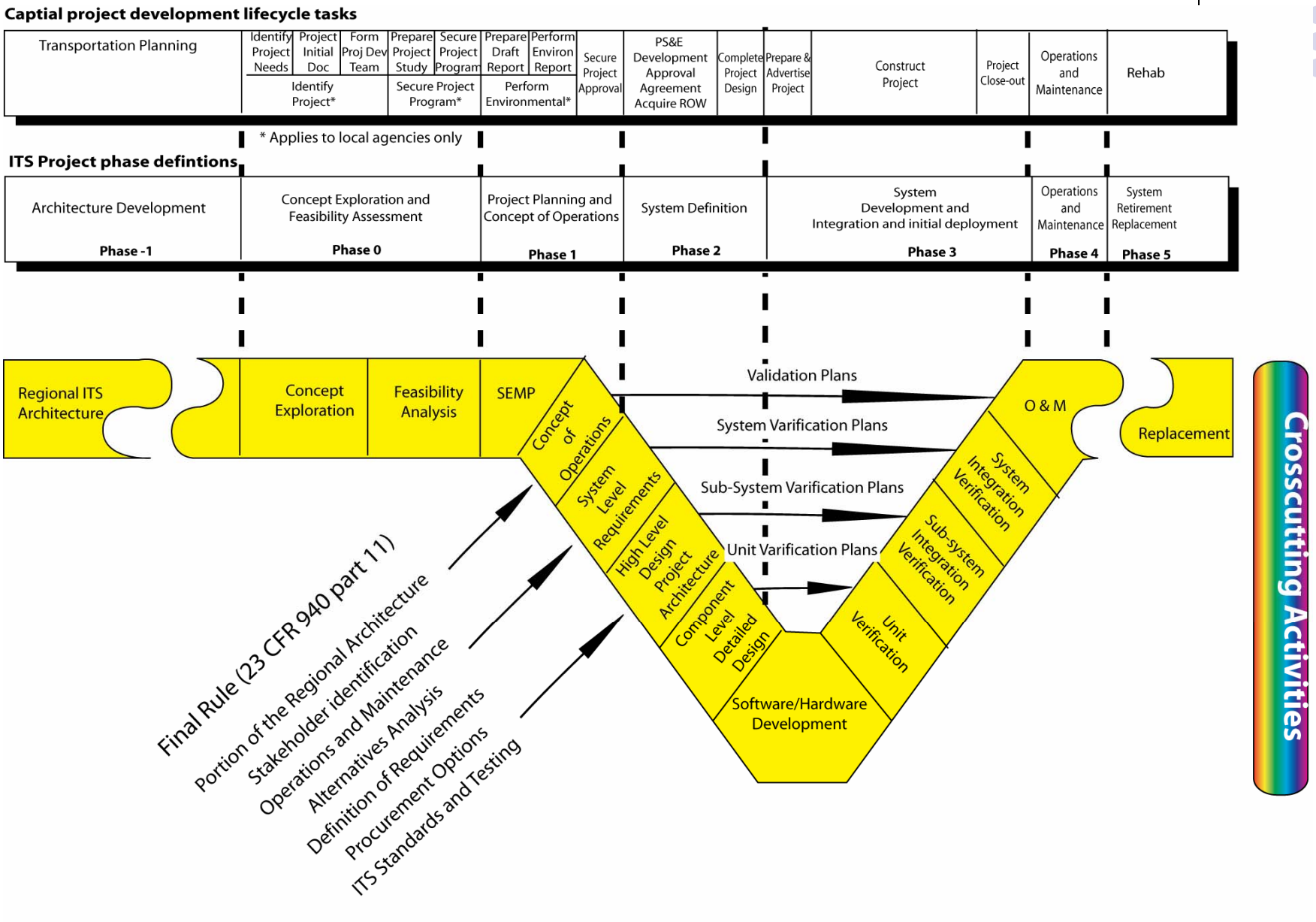
Draft report prepared by NSF for OMB and FEMA in response to Sec. 214 of the "E-Government Act of 2002"

TMC Development Themes

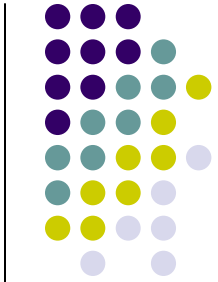


- **Information Management and Communications**
  - **Wired and wireless communications**
  - **Data sharing and mining**
  - **Dealing with uncertain information**
- **Software Tools and Services**
  - **Open architecture, standards-based**
  - **Computer vision, sensor fusion, prediction, modeling, real-time negotiation**
- **Human Factors**
  - **Interfaces, privacy, institutional issues**

Use System Engineering Process



Completed TMC Concept of Operations, Architecture, and Project Development Report

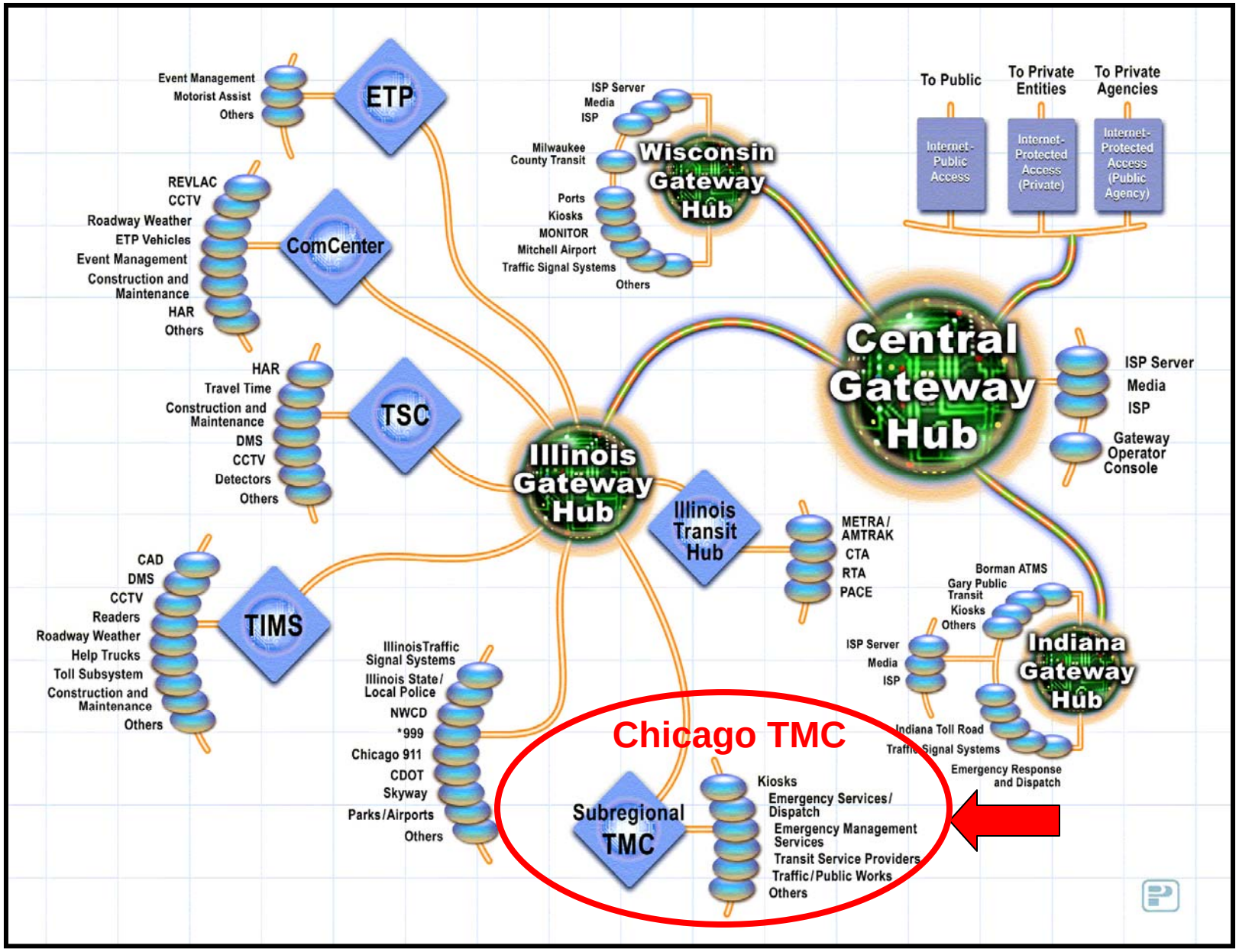


- Defined roles and responsibilities
  - WHAT will be done
  - WHO will do it
  - But not HOW it will be done
- Established the core requirements
- Provides framework project architecture

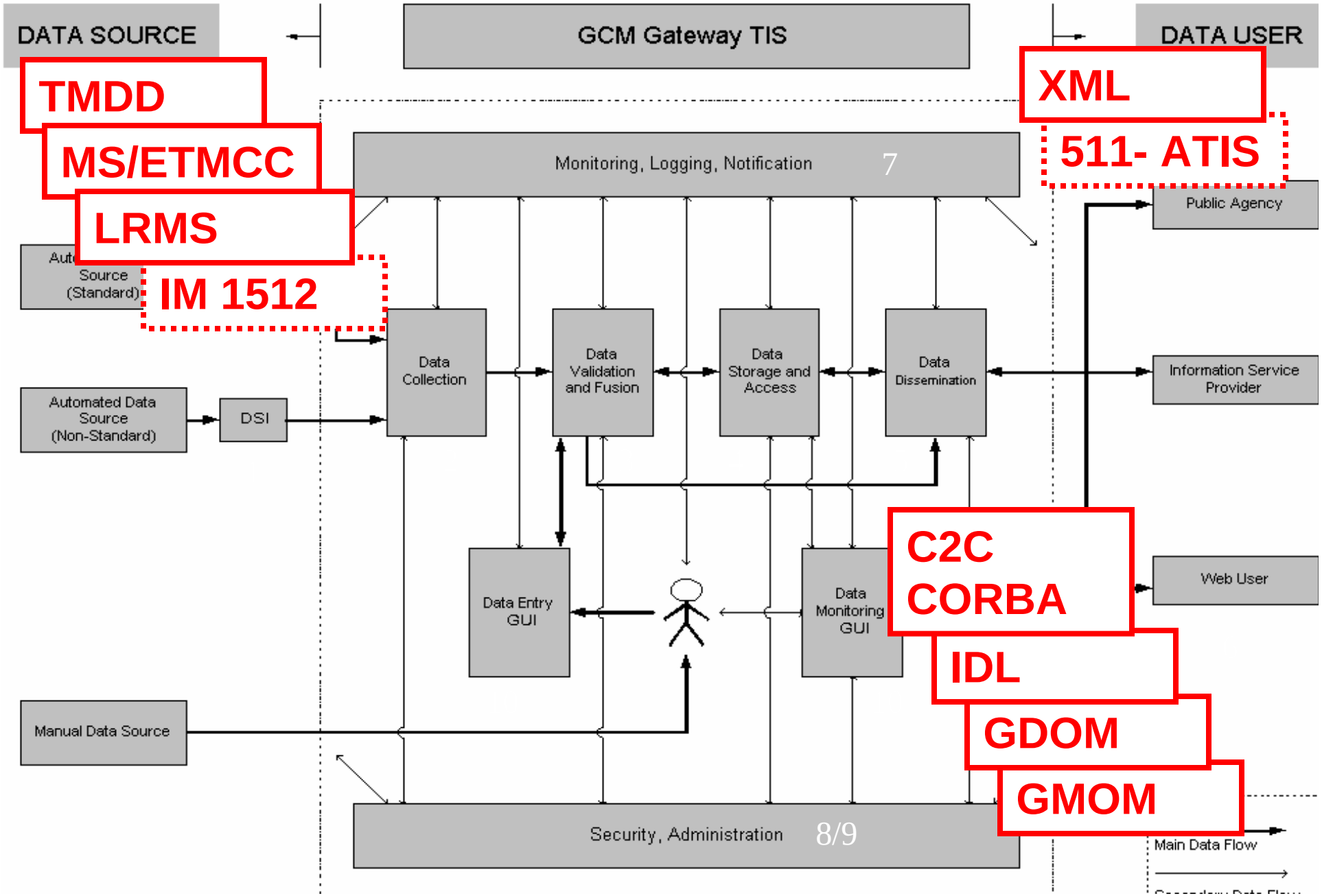
… build on existing regional integration


Traveler Information
Approximately 30 minutes
CTA Orange Line
5

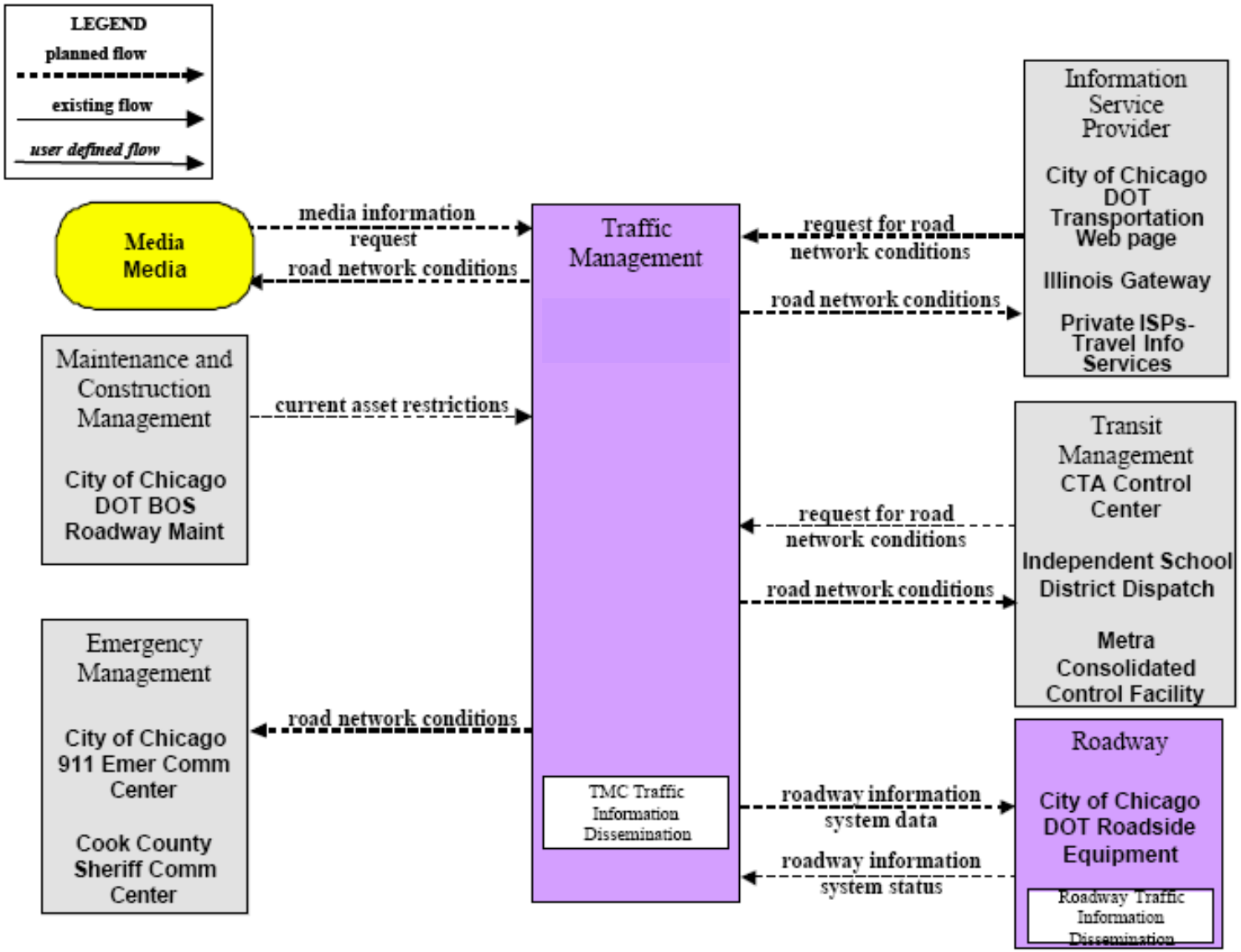
… use the NE Illinois Regional Architecture



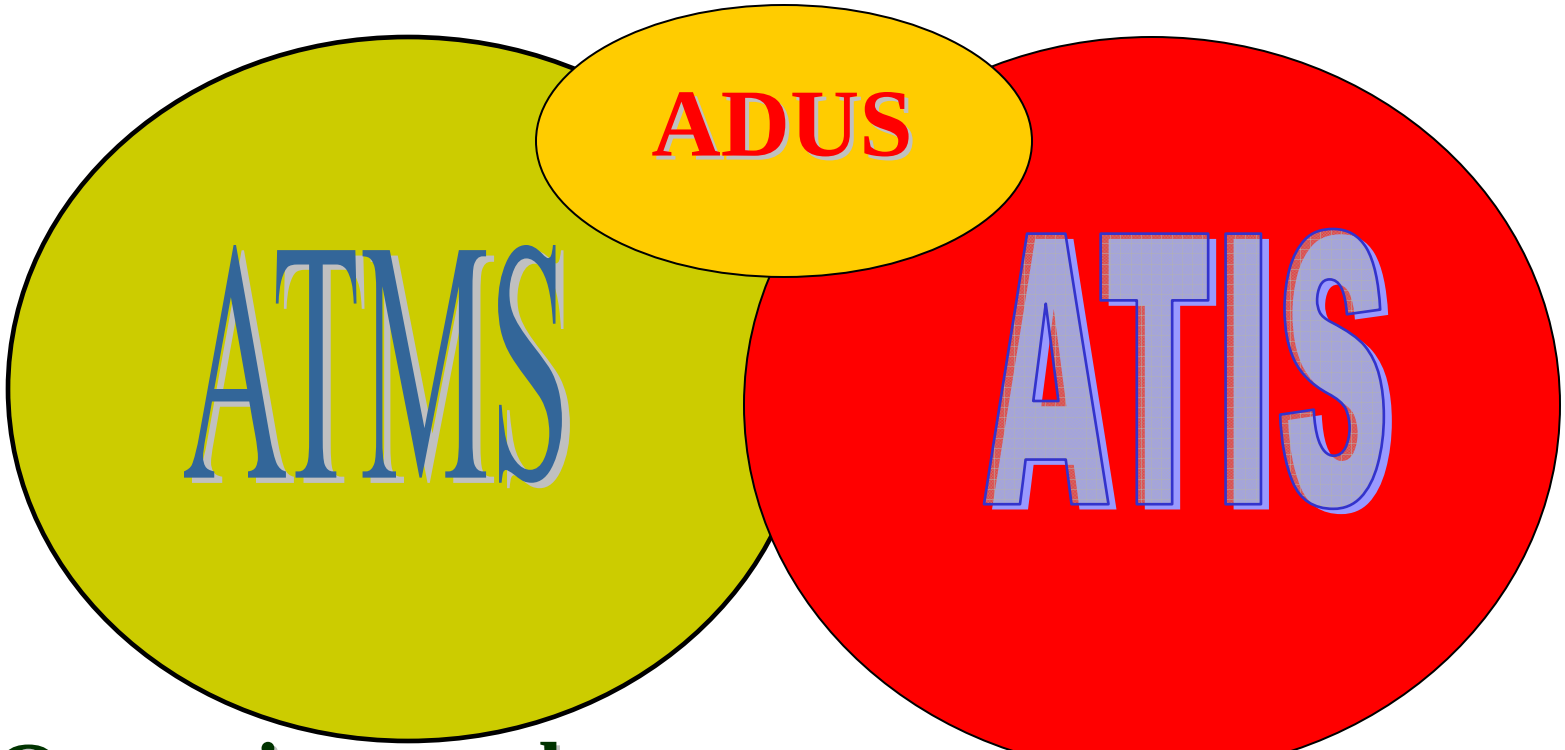
… apply available standards



Chicago TMC Info Flows



… share data

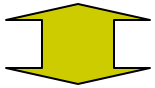

Planning and Research
ADUS
ATMS
ATIS
Operations and Management
Traveler Information

Many ITS Tools in Chicago

- Traffic responsive, adaptive signal systems
- Video detection, surveillance systems
- Signal pre-emption, priority systems
- Computer Aided Dispatch (CAD) systems
- Traveler information systems
- Vehicle navigation, tracking systems
- Enforcement systems - cameras
- Safety systems – traffic calming devices
- Permit, Towing, Snow Command systems and services

Signal System Tools

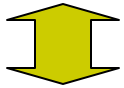
- Time-based Coordination
- Closed Loop Interconnects (CLMATS)
- Centralized Signal Control (MIST)
- Responsive Signal Control
- Adaptive Signal Control (RT Tracs pilot)



  - City-wide signal optimization program
  - Smart corridors
  - Response plans
  - Central control

Video System Tools

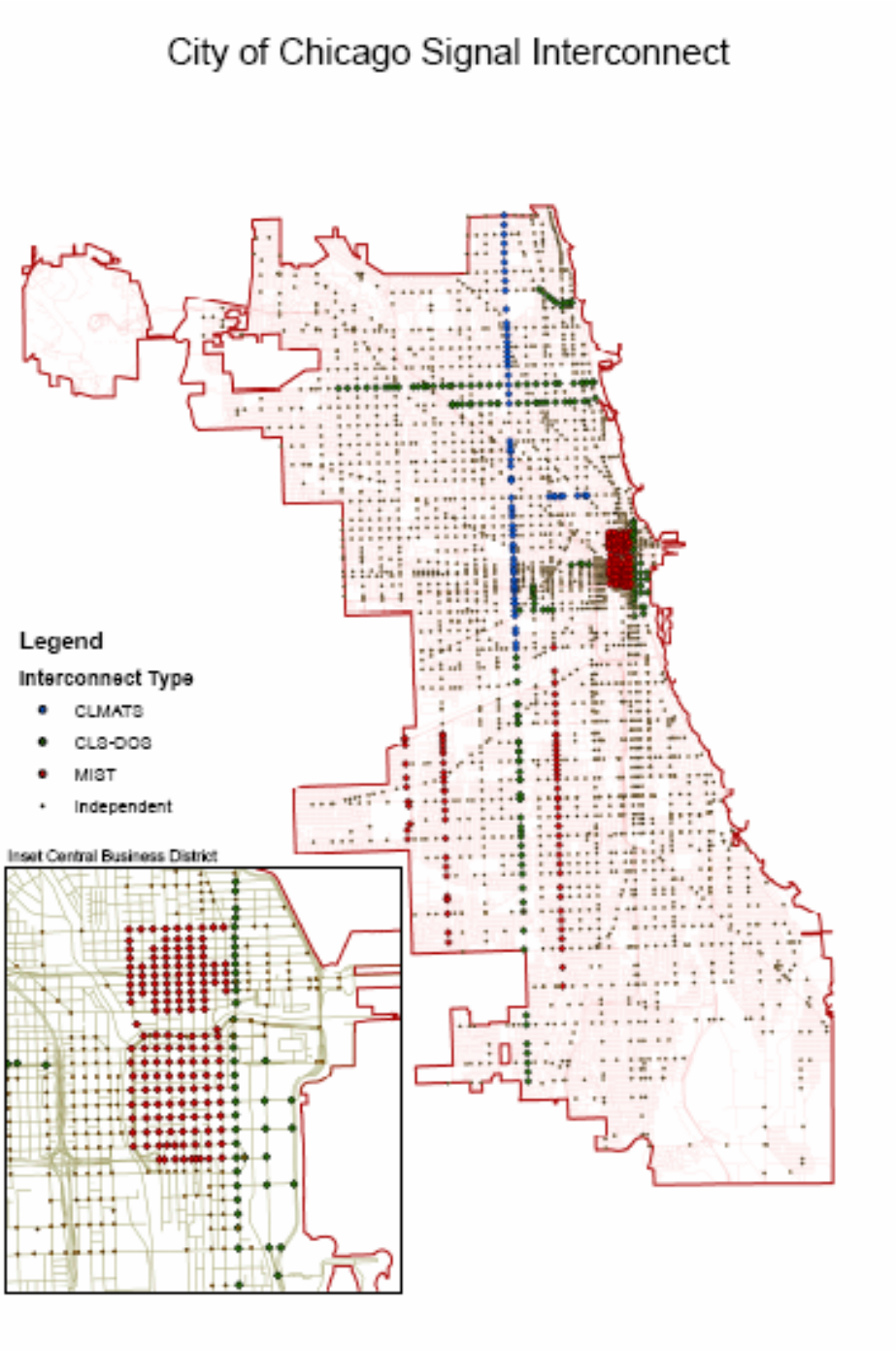
- Video Detection
- Video Surveillance



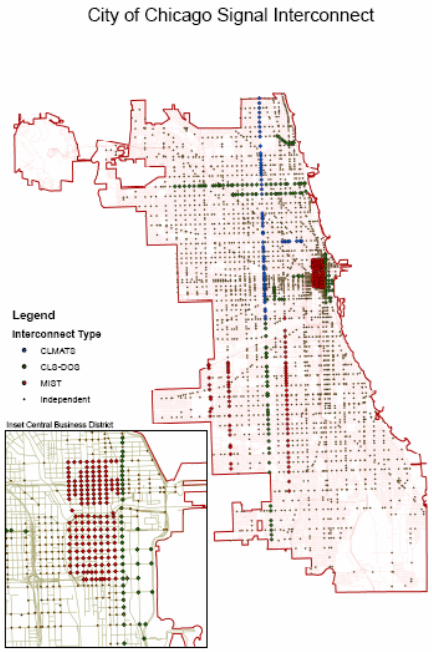
  - Multiple video systems
  - High-bandwidth communications backbone
  - Shared use of cameras

Chicago Signal Systems in place:

- **Over 26,000 intersections**
- **Over 2,900 Signals**
- **476 intersections interconnected in 25 systems**
  - **MIST (6)**
  - **CLMATS (19)**



Video Detection & Surveillance



- 13.8 miles
- 39 intersections
- Operated under MIST from Chicago TMC
- 26,000-44,000 ADT

Project:

Ashland Avenue Alternate for Dan Ryan Reconstruction

Project Lead:

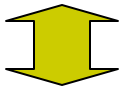
Chicago Office of Emergency Management and Communications (OEMC)

Project Team:

Chicago Department of Transportation
Chicago Skyway
Illinois Department of Transportation

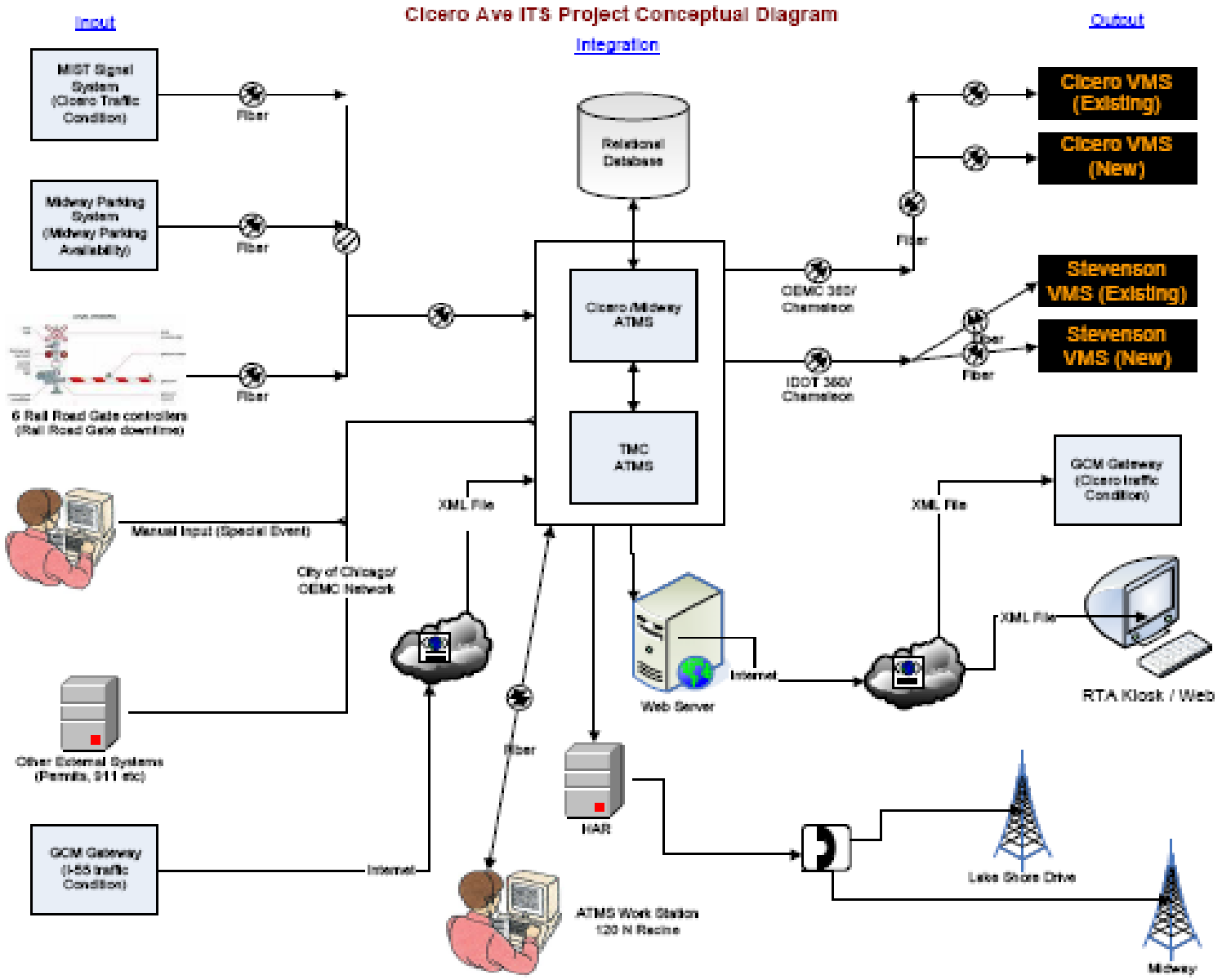
Pre-emption, Priority Tools

- Emergency Vehicle Pre-emption
- Highway Rail Interconnects
- Transit Signal Priority

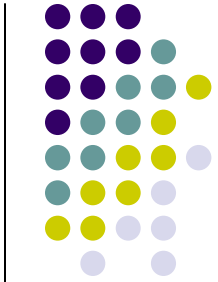


  - Western Ave. Transit Signal Priority System Pilot
  - Cicero Ave. Smart Corridor RR Gate Information

Cicero Ave. Smart Corridor / Midway HAR



Traveler Information Tools



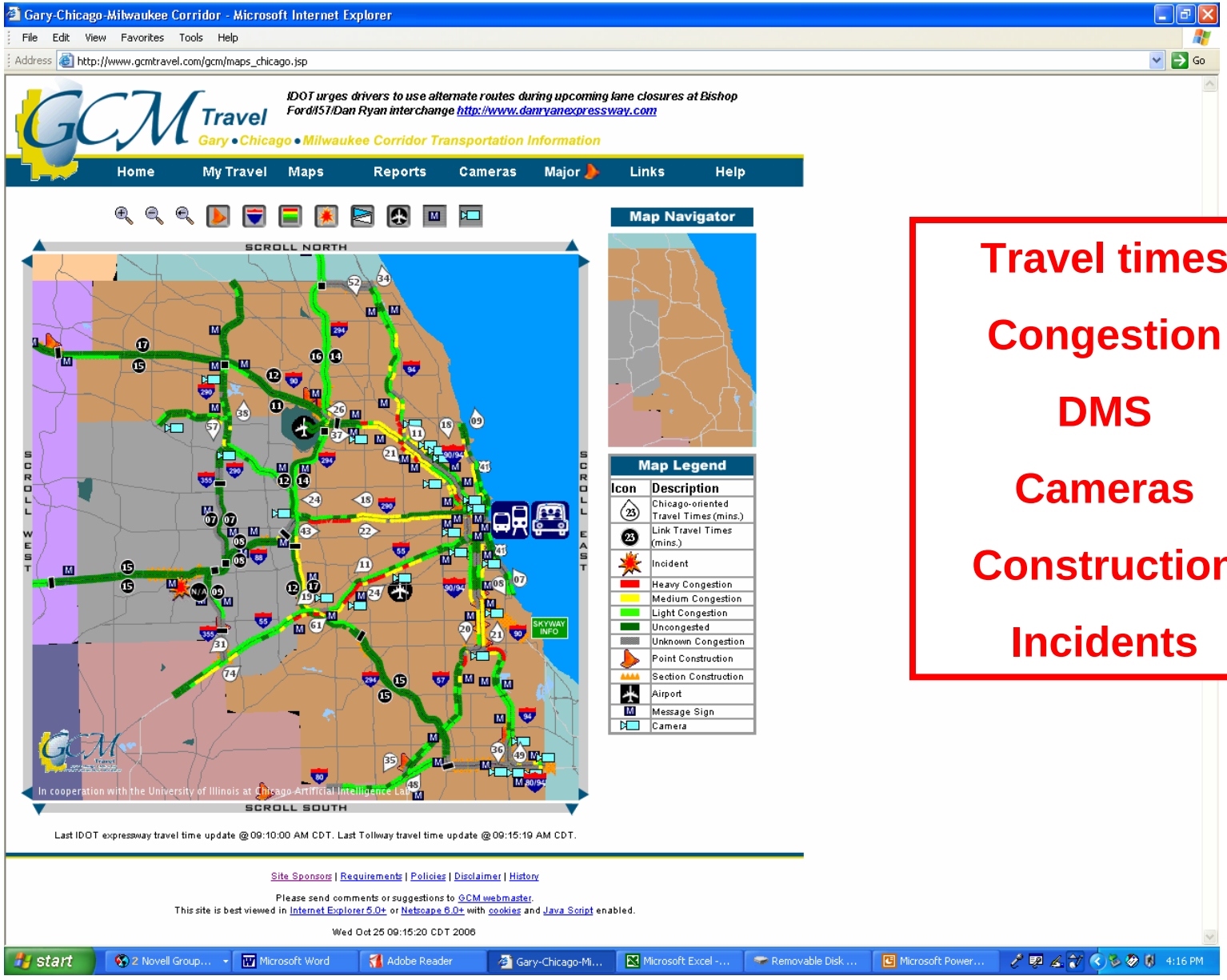
- **Broadcast Media**
- **Dynamic Message Signs**
- **Highway Advisory Radio**
- **Subscription Services, e-Mail Alerts**
- **Mobile, Wireless Services**
- **Internet**

  http://www.egov.cityofchicago.org/city/webportal/home.do

  Go to: "Traffic & Transportation" and "Travel & Transportation" for Traffic Advisories, Street Closures, etc.

Arterial DMS

www.gcmtravel.com



Travel times

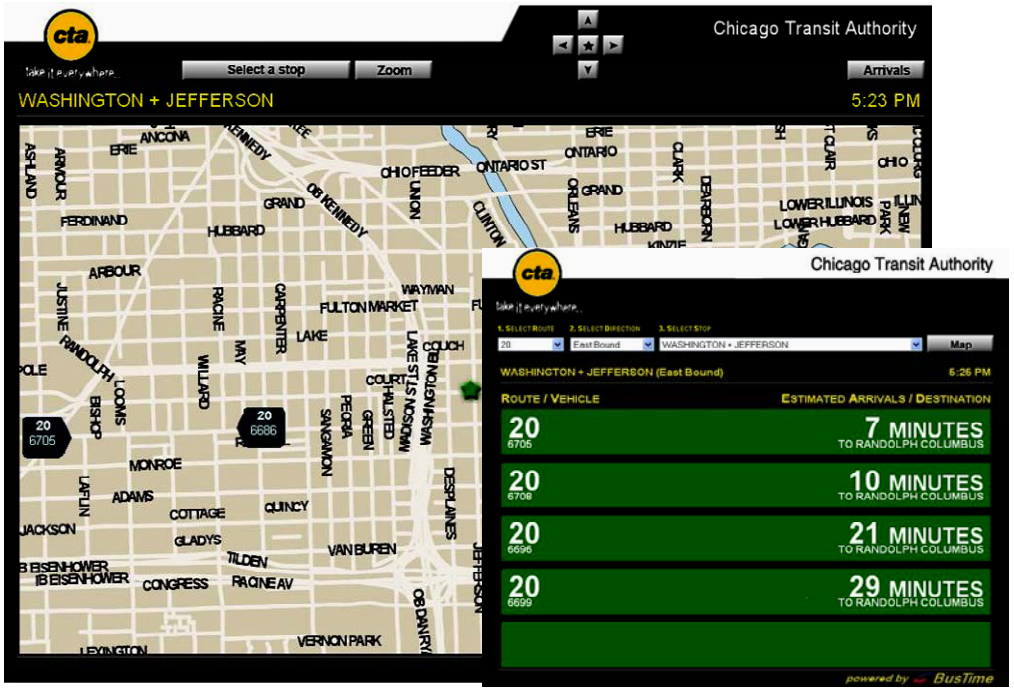
Congestion

DMS

Cameras

Construction

Incidents



Project:
CTA Bus Tracker

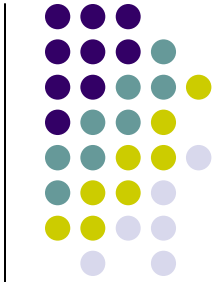
www.ctabustracker.com

Project Lead:
Chicago Transit Authority

Project Team:

CTA Technology Management
CTA Transit Operations
Clever Devices

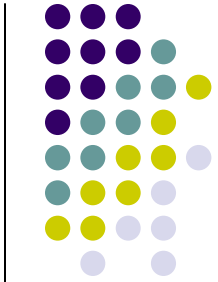
Enforcement Tools



- **Red-light cameras**
- **TMA Traffic Control Aides**

Red Light Running

Safety Tools

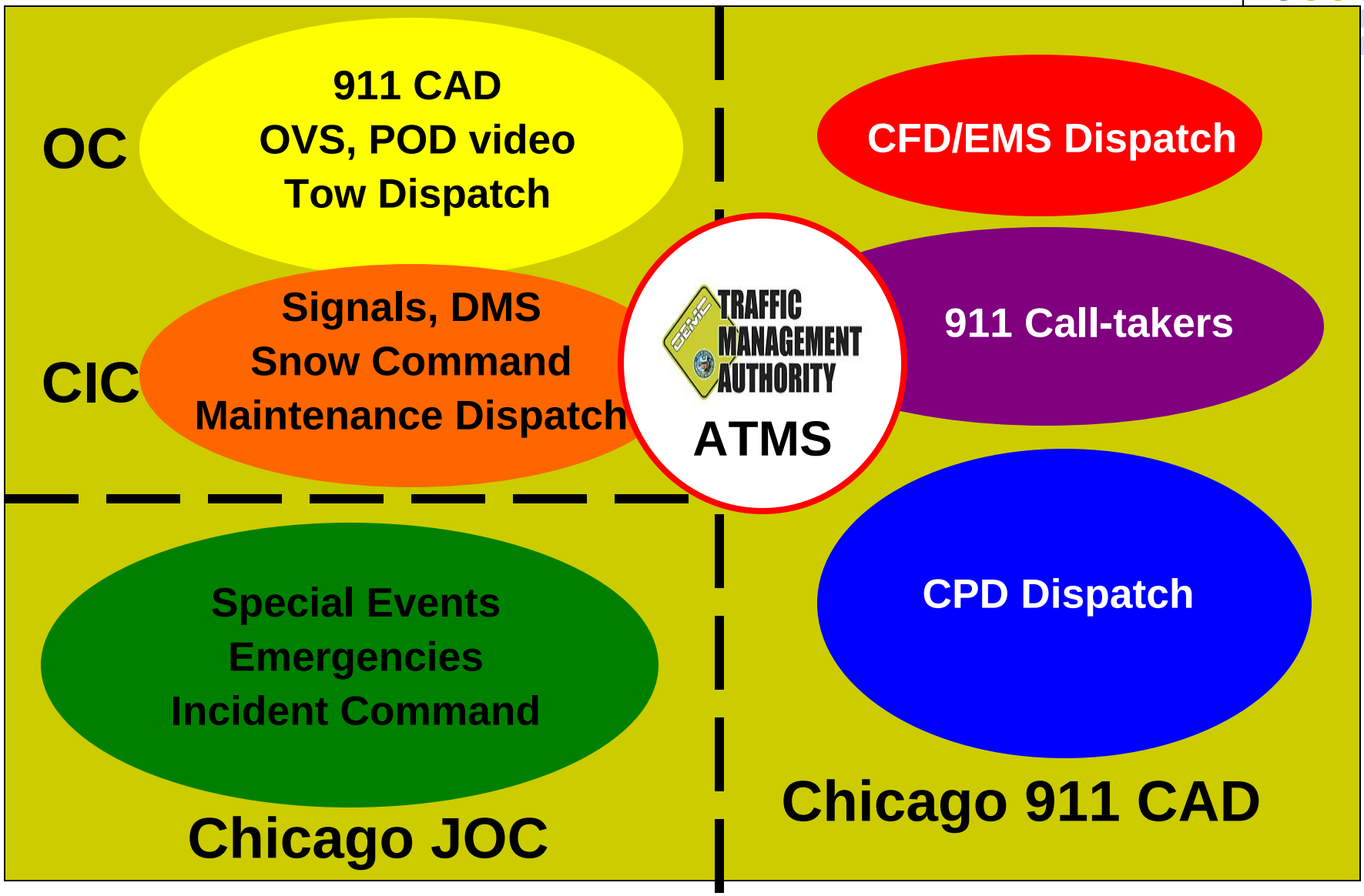


- Pedestrian Countdown Signals
- Pedestrian Activation/Presence Detection
- Audio/Visual Notification
- Traffic Calming

Ped Countdown Signal

Chicago OEMC: Co-Location of Public Safety, Emergency, and Transportation Operations

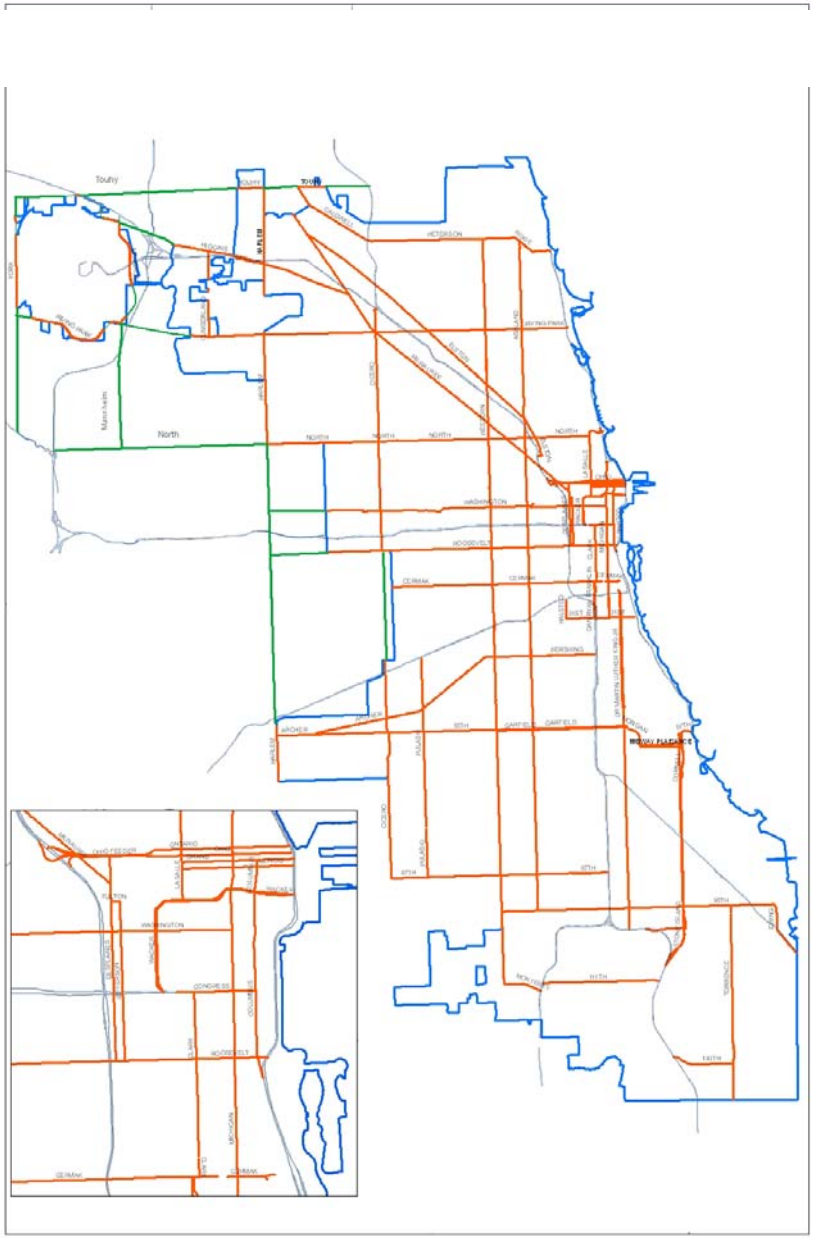
Chicago TMC Integration



911 Operations Floor

911 – Police, Fire, Emergency Computer Aided Dispatch

Arterial Performance Monitoring System

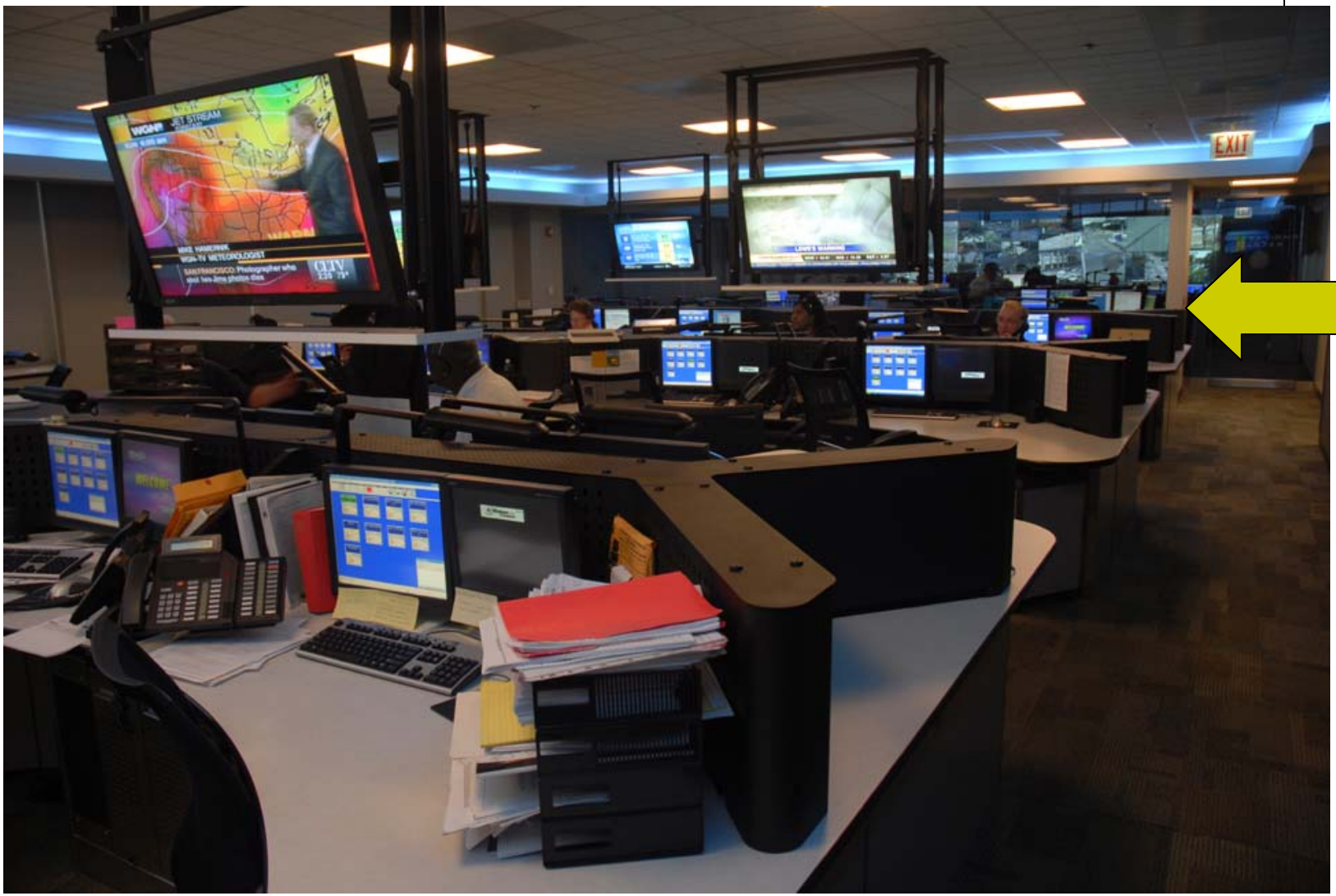


- About 300 miles of major arterials
- Includes Strategic Regional Arterials
- A connected network of routes to supplement expressways
- Can support responsive traffic control strategies

Operations Center

Chicago Incident Center

Signal (MIST), DMS, CCTV Workstations



Project:

Chicago Unified Command Vehicle

Project Lead:

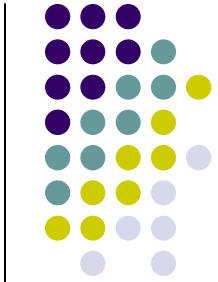
City of Chicago Office of Emergency Management and Communications

Project Team:

MorganFranklin Corp.

E-One Corp.

Next steps



- System manager contractor (in place)
- Develop final requirements (winter 2007/2008)
- RFP for system development and implementation (spring 2008)
- Build out TMC systems (2008/2009)
  - Hardware
  - Software
  - Network
  - Staffing
  - Training
- Test and operate (2009+)

Thanks,

David Zavattero

Deputy Director

Chicago Office of Emergency Management and Communications (OEMC)

Traffic Management Authority

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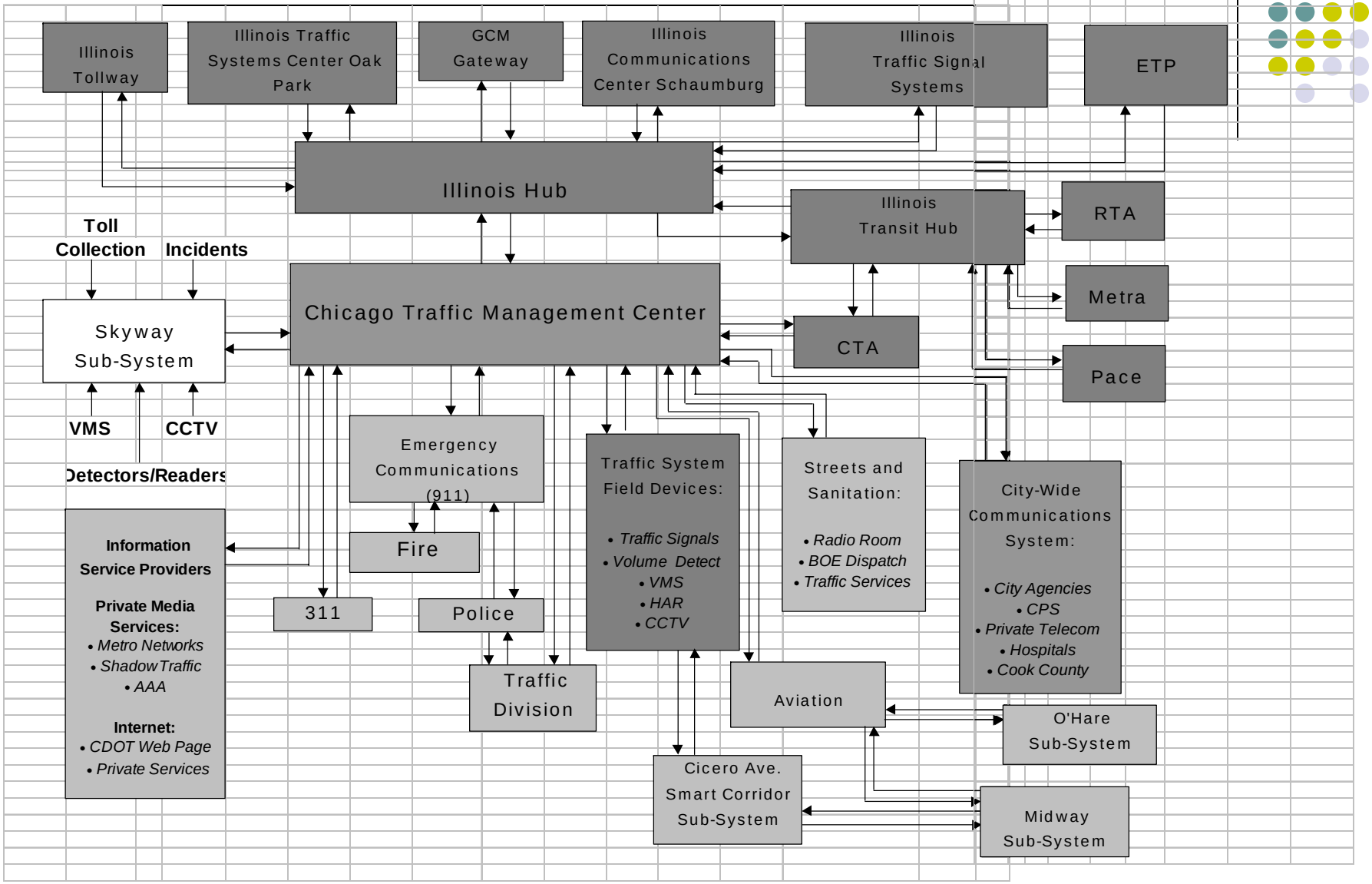
Chicago TMC Architecture



Chicago TMC Conceptual Diagram