Transportation and GIS: Speeding Us Up or Slowing Us Down?

Gary Vlieg, M.Sc., P.Eng.

Traffic Operations Manager

City of Surrey

Transportation – What is it?

- Multi-modal
- Planning
- Design & Construction
- Operations

Transportation Planning

- Modelling
- Land Development
- Land Use planning
- Develop future road network
- Network expansion/contraction

Design & Construction

- Design improvements
- Develop budget
- Tender for construction
- Construction
- As-built drawings

Traffic Operations

- Operate the transportation system
- Signals
- Streetlights
- Signage
- Pavement markings
- Public inquiries

GIS Opportunities

- Streetlights
- Signals
- Signage
- Development applications
- Restrictive Covenants
- Rights-of-Way
- Drawing Management

SURREY
CITY OF PARKS

Streetlights

- Two major functions:
  - Relamping
  - Pole Painting
- 5000 lamps and poles per year
- HPS lamp life ~ 5 years ~ 20,000 hrs
- $35 per installed lamp
- $35 per painted pole

SURREY
CITY OF PARKS

Streetlights cont'd

- Outages repaired on demand
- Cost ~ $90 per occurrence
- Why relamp a repaired streetlight?
- Current paper based system
- GIS allows queries on recent repairs
- At 5% repair rate = 350 lamps = $12,000 saved per year

SURREY
CITY OF PARKS

Streetlights cont'd

- GIS allows for asset management
- Track outages
- Recurrent outages indicate other problems
- Address problem rather than symptom

Traffic Signals

- Signals control flow of traffic in time
- Public safety
- Municipal liability
- 262 signals (2004)
- Add 10 signals per year
- $130,000 per signal
- $20,000 per cabinet

SURREY
CITY OF PARKS

Typical Signal

Typical Signal Cabinet

Traffic Signals cont'd

- Minimum after hours callout $500
- Signal controller $1500
- Use GIS to track callouts
- Too many callouts replace components
- One location spent $10K in one year!

Traffic Signal Asset Management

- Each signal has many components
- Components are modular
- Critical to track age and performance
- GIS will allow for better asset management
- Query based on age, manufacturer, performance

SURREY
CITY OF PARKS

Signage

- Regulatory and advisory
- Regulatory is enforceable and Liable
- Advisory provides information
- Currently 45,000 signs
- Don't have a spatial database

Signage cont'd

- Need to view signs relative to other street furniture or plants/trees

- Residents voice concerns

- Currently requires field visit

- GIS and aerial photos (10 cm/pixel) eliminates need for field visit

Signage cont'd

- GIS realise significant productivity gains
- Current aerial photos saves Traffic Operations $25,000 per year in productivity
- With signs in GIS would double or triple
- Would allow better asset management

SURREY
CITY OF PARKS

Challenges

- Data intensive
- Time to populate database
- Start after the beginning
- Post-implementation monitoring

SURREY
CITY OF PARKS

Summary

- Definitely will speed us up
- May slow you down during implementation

- Bottom Line – do it!

SURREY
CITY OF PARKS

QUESTIONS?

SURREY
CITY OF PARKS