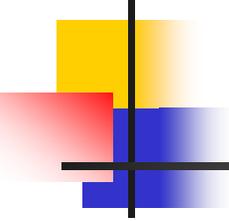# Managing Transit Information Technology

John Attanucci

2006

Outline

- IT Objectives
- Current Status & Trends
- Major Components
  - Office Automation/Communication
  - Admin & Finance Systems
  - Operations/Planning Systems
  - Maintenance Management Systems
  - Advanced Technologies
- Major Challenges and Potential Solutions

Transit IT Objectives

- Support overall transportation mission
- Enhance work environment of agency employees
- Enhance customer service and improve reliability of service
- Provide increased flexibility to respond to market demands
- Increase cost-efficiency
- Standardize training throughout agency

Status of Transit IT

- Generally behind comparable private sector industries
- Transit IT – 1-1.5% of budget or less than half of private sector budgets
- Systems are complex and unique
- Market very small for IT vendors
- Procurement issues in tech marketplace
- Top managers have little familiarity
- Full benefits yet to be realized

Office Automation/Communications

- Management offices generally fully automated in recent years
- Skills development is finally catching up
- Internet access may be limited
- WANs last link to automate remote garages
- Little need for custom tools/training paramount
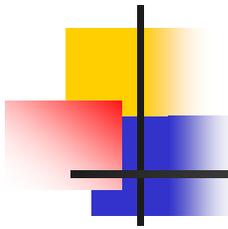
Admin & Finance Systems

- First transit IT apps—accounting, payroll, budget, purchasing, etc.
- IT manager often reports to admin AGM
- Large agencies—large initial investment in mainframe apps
- Small agencies—often tied to city's admin systems
- Disproportionate resources to these finance systems
- "COTS" accounting/finance packages often need significant customization for transit
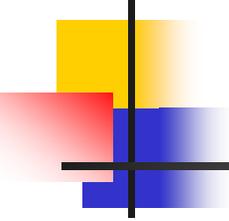
Operations/Planning Systems

- Major applications include:
    - GIS planning and data analysis
    - Vehicle and operator scheduling
    - Operator bid, dispatch, & timekeeping
    - Paratransit management
    - Customer information/trip planning
- 2-3 major vendors in US with a few in-house custom systems
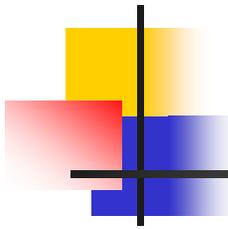
Operations/Planning Systems (cont.)

- COTS systems are customized for rules, reports, & interfaces
- Provides core schedule database to users throughout the agency
- Enforces standardization of procedures
- Real cost savings achievable (1-3% for each of these applications)
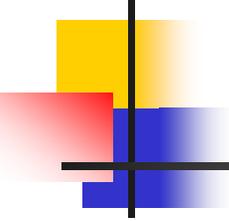
Maintenance Management Systems

- Significant increase in automated maintenance records in 1990's
- Applications include:
  - Vehicle repair & work order histories
  - Shop standard-based scheduling/timekeeping
  - Parts inventory control/purchasing
  - Automated fueling
  - Warranty/component/tire tracking
 - Automated on-line service manuals
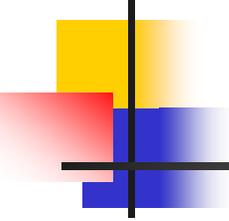
Maintenance Management Systems (cont.)

- Many COTS vendors to choose from as trucking industry has spawned a lucrative & competitive marketplace

- Use of data critical to success— maintenance managers support key

- Enhances comparisons of garage performance
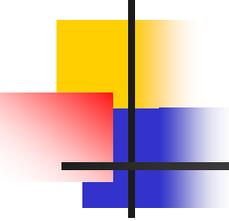
Advanced Technology

- Adds real-time dimension to traditional transit MIS apps
- Applications include:
  - Automated vehicle location (AVL)
  - Automated passenger counters (APC)
  - Automated fare collection (AFC)
  - Customer information displays (CID)
  - Operator mobile data terminals (MDT)
  - Interactive web sites
- Examples: MBTA CAD/AVL and Station Management
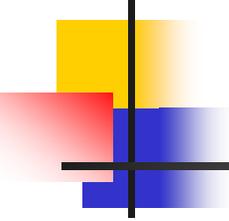
Advanced Technology (cont.)

- New technology is often challenged in the transit environment

- Vendors entering and leaving market very quickly

- Benefits (e.g.., productivity, service reliability) are substantial if problems can be overcome
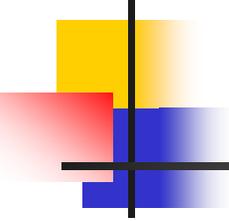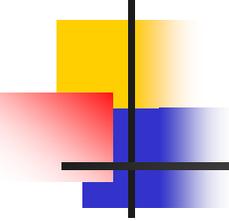
The Future

- Challenge:
  - IT funding levels too low
- Potential Solutions:
  - Tie IT upgrades to each capital project
  - Institute charge-backs to operating departments and dedicate staff to each
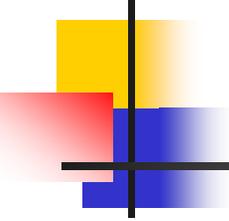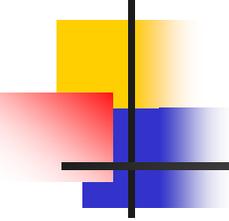
The Future

- ## Challenge:
  - ### Attracting qualified staff very difficult
- ## Potential Solutions:
  - ### Consider outsourcing for increased staff needs/upgrade project management skills of in-house staff
 - ### Enhance visibility and authority of IT chief

The Future

- **Challenge:**
  - Integration of disparate systems extremely difficult
- **Potential Solutions:**
  - More carefully specify required output databases from all vendors
  - Hire a high-level integration contractor
  - Consider an "enterprise" approach with one primary vendor for all related apps
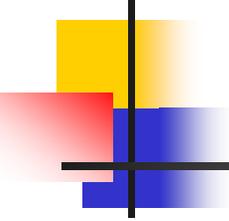
The Future

- **Challenge:**
  - Advanced technology is too unreliable
- **Potential Solutions:**
  - Procure new systems "creatively" by setting explicit performance specs with incentives for levels of compliance
  - Use a general contractor approach to ensure system integration
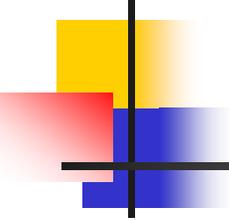
The Future

- Challenge:
    - Small transit agencies have bigger relative IT implementation problems
- Potential Solutions:
    - Consult extensively with other small agencies/imitate successful programs
    - Consider modified operating procedures as a beneficial by-product of COTS IT deployment

The Future

- Challenge:
  - IT leadership Void
- Potential Solutions:
  - Recruit aggressively and evaluate thoroughly
  - Consider cross-training your best manager