



# Utilizing Geospatial Tools to Collect and Analyse Asset Data in the City of Manchester, New Hampshire

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- Introducing the City of Manchester
- City Challenges
- Pavement and Asset Approach
- Results
- Lessons Learned



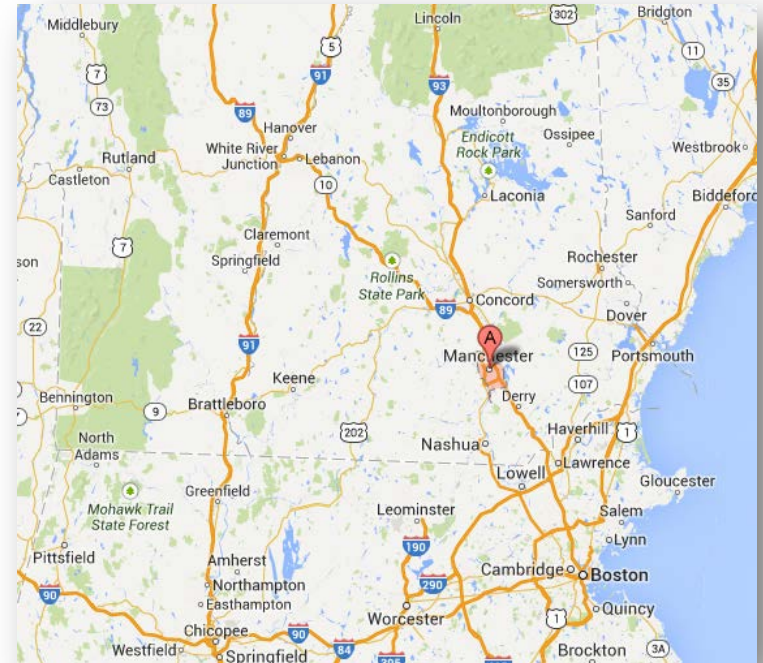
## City of Manchester, NH

Manchester is the largest city in New Hampshire, and the largest City in New England north of Boston.

Area: 34.9 sq. miles (90.4 km<sup>2</sup>)

Population: 110,209 (2012)

Unemployment rate: 5.2% (Aug 2013)





## **Public Works Department Mission Statement**

The Public Works Department strives to provide superior, yet competitively priced general services basic to the quality of life and safety of the residents of the City of Manchester, New Hampshire.



## Highway Division

### Maintain

- 420 miles of roadways.
- 354 miles of sewer, some dating back to 1846 (*over 100 miles of sewer over 100 years old*)
- 189 miles of drainage

### Manage

- Street lighting system of 8,870 fixtures
- 151 Signalized intersections and 20,000 signs.
- All improvements within the City's right of way
  - 4,800 ramps
  - 1,500 crosswalks
  - 5 million LF of striping, sidewalks and curbs



### Construct

- Annually construct and re-surface over 11 miles of roadways, curbing and sidewalks
- Several miles of utilities including sewer and drainage



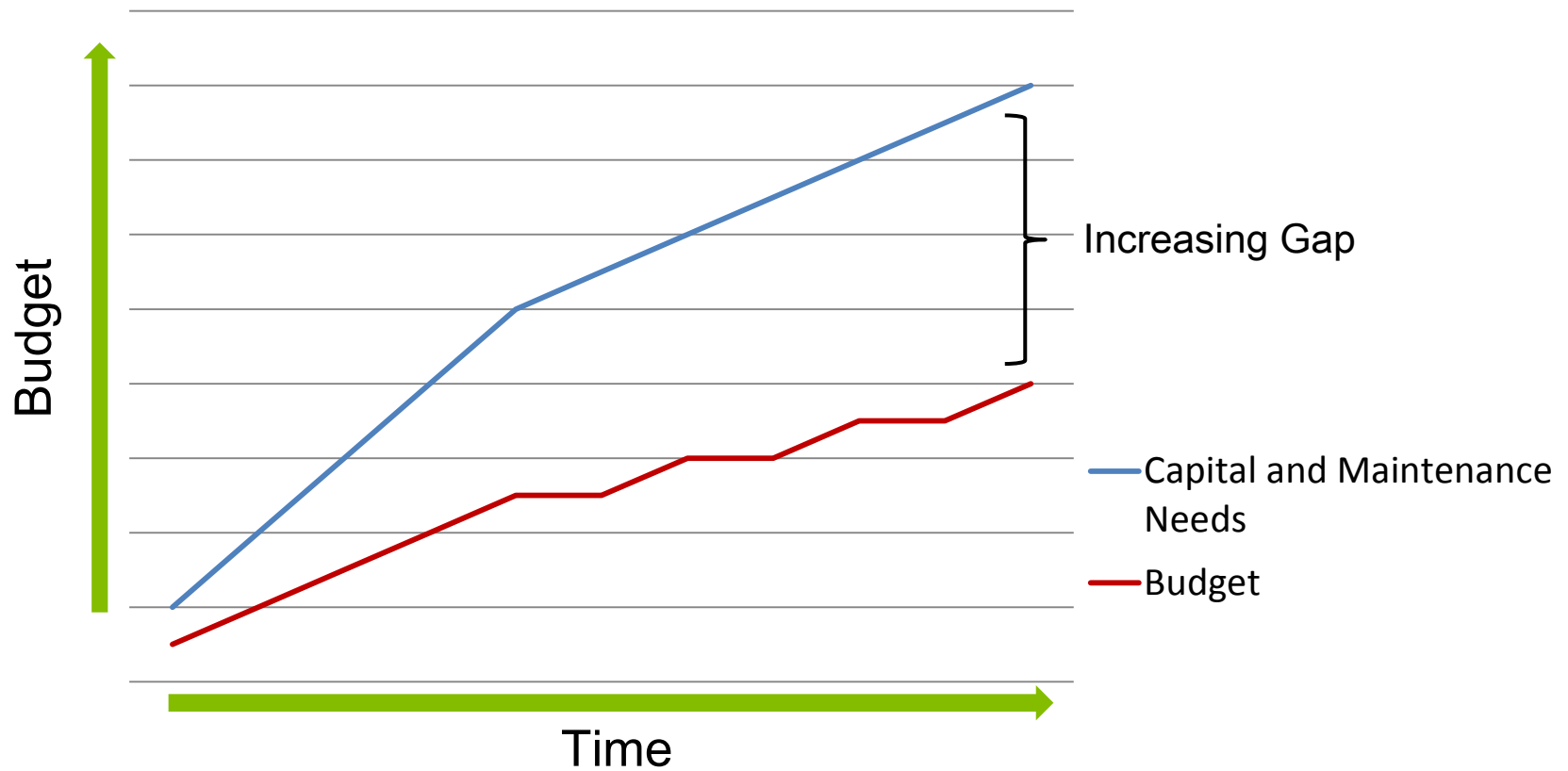
- Typical Pavement Condition:
  - Rehabilitation based on worst-first and complaints



- Assets:
  - Little information about what existed, where, and condition
  - Extensive work being done, but shotgun scatter approach
  - No reliable means of tracking spending on labor or materials related to asset classes



## Doing More with Less



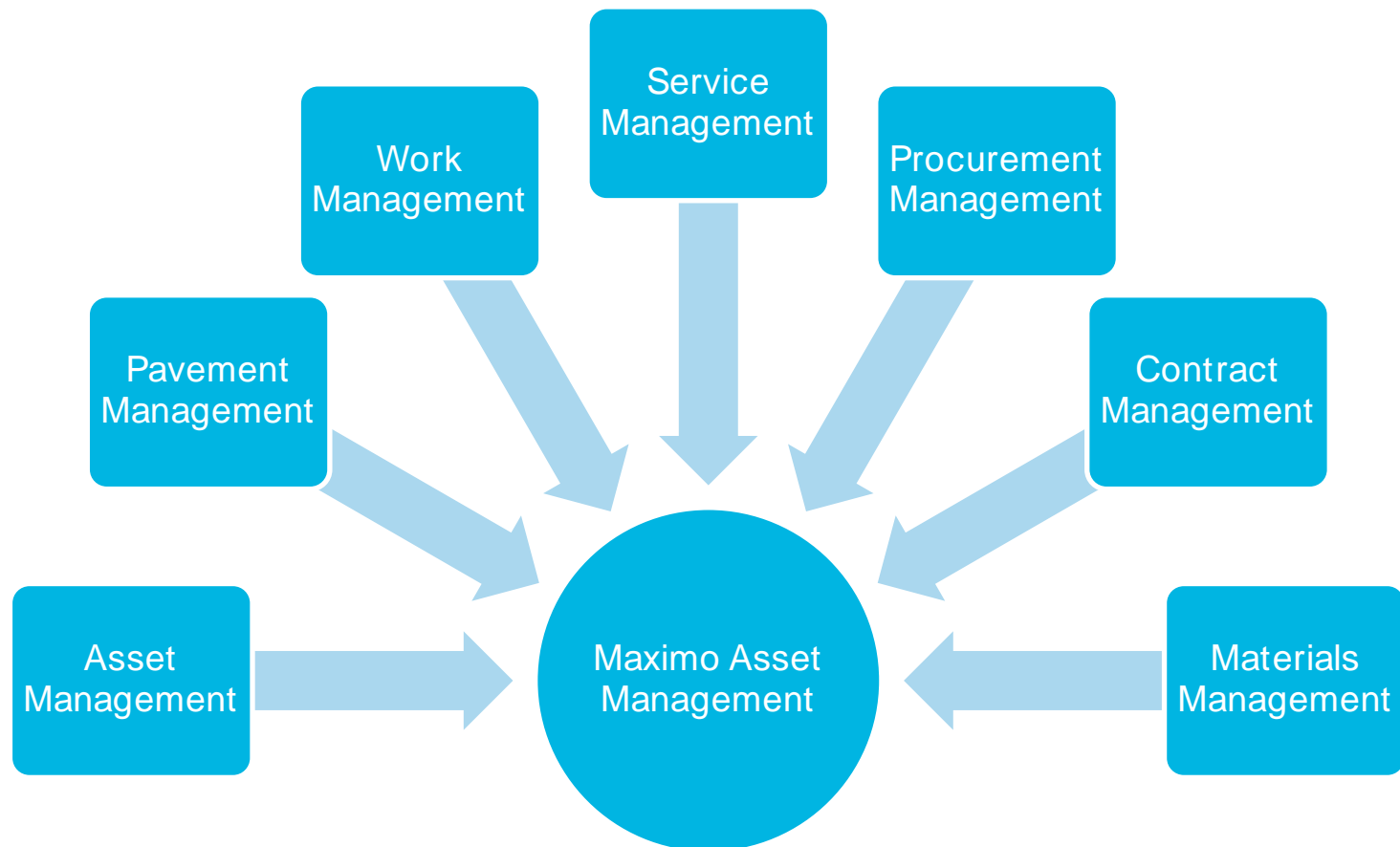


## The need for an Enterprise Asset Management System

- Needed a tool to help do more with less
- You can't improve what you can't measure
- You can't manage what you don't know
- Consolidate Multiple Legacy Systems
- Add pavement management
- Work and Maintenance Management
- Budget Control, workflow management & Automation
- GIS Mapping



- Selected IBM's Maximo Spatial
  - Objective to 'grow into it'

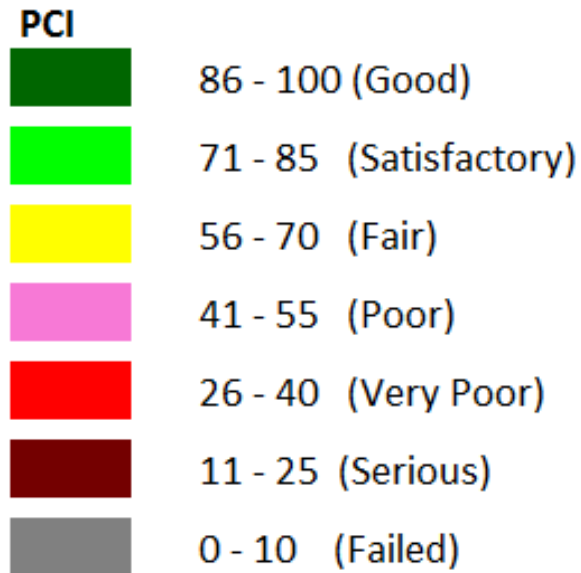


- State-of-the-Art Imaging and LiDAR
- Collected data on all City owned and maintained streets

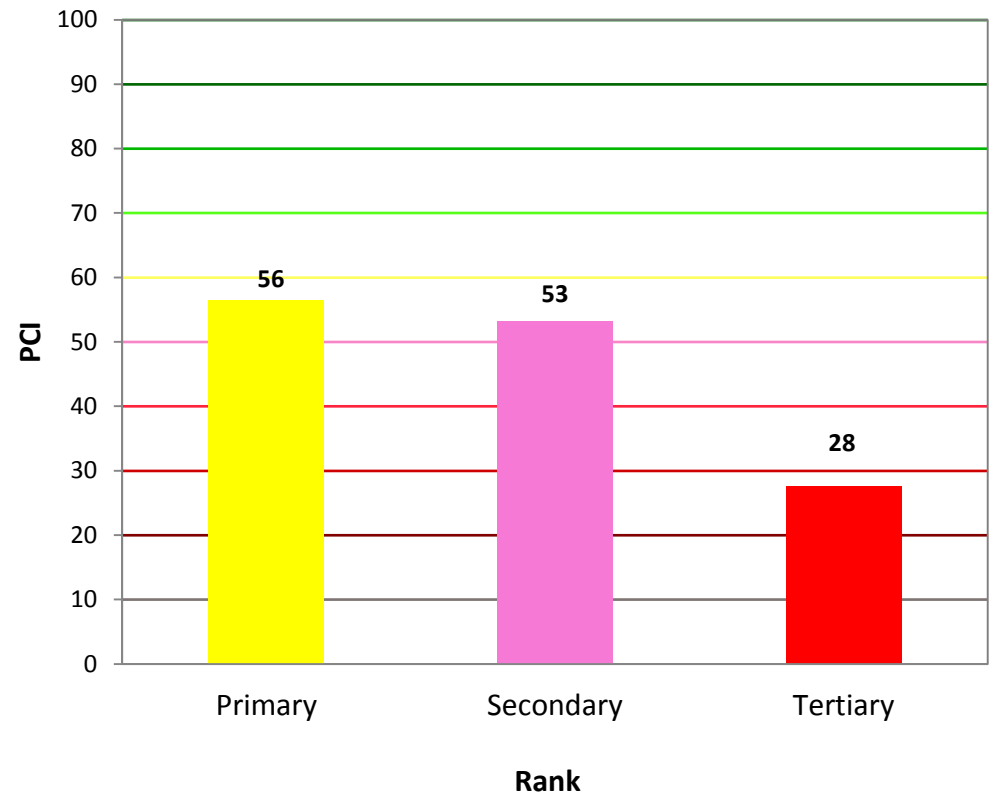




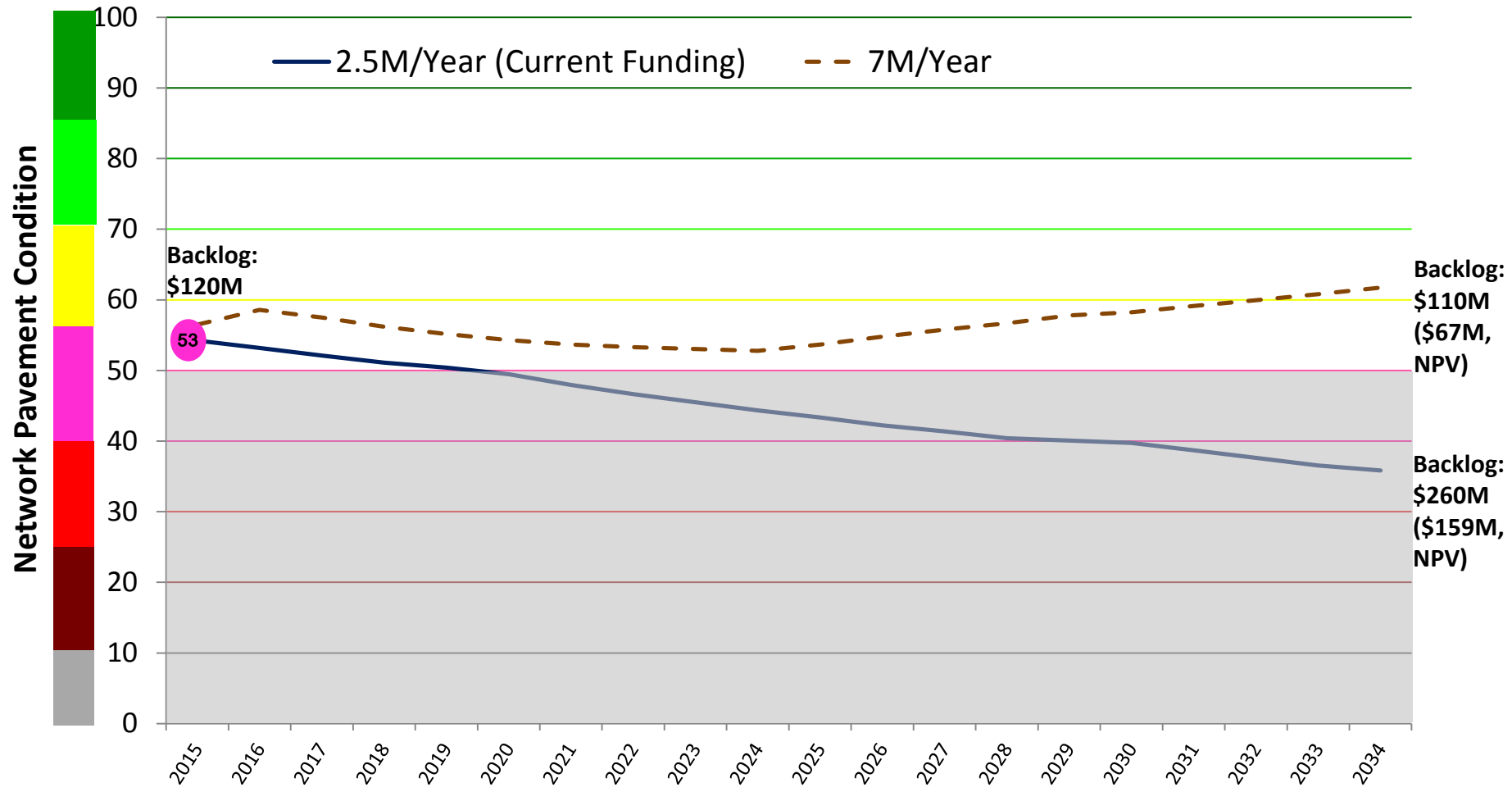
- Numeric Condition Scale:  
Pavement Condition Index (PCI)



## Manchester Road Network



**Replacement Value of all Roads: \$280 Million**  
**Current Backlog: \$120 Million**

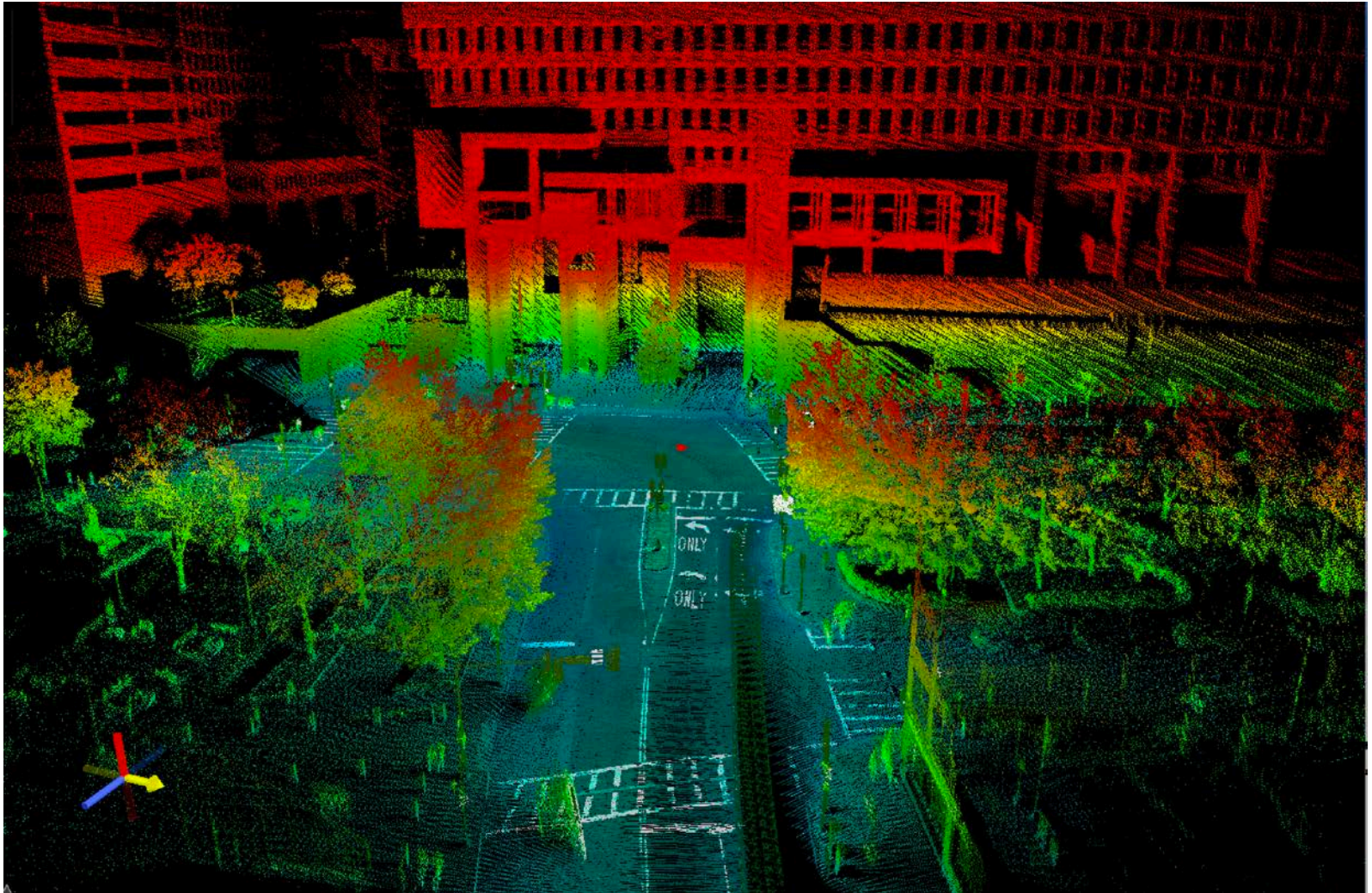


- Pavement management benefits realized immediately
- Board of selectman approved annual budget increase from \$2 M to \$6 M
- Paving more roads
- Improved preventive maintenance program
  - Detailed crack seal program
  - Surface seals



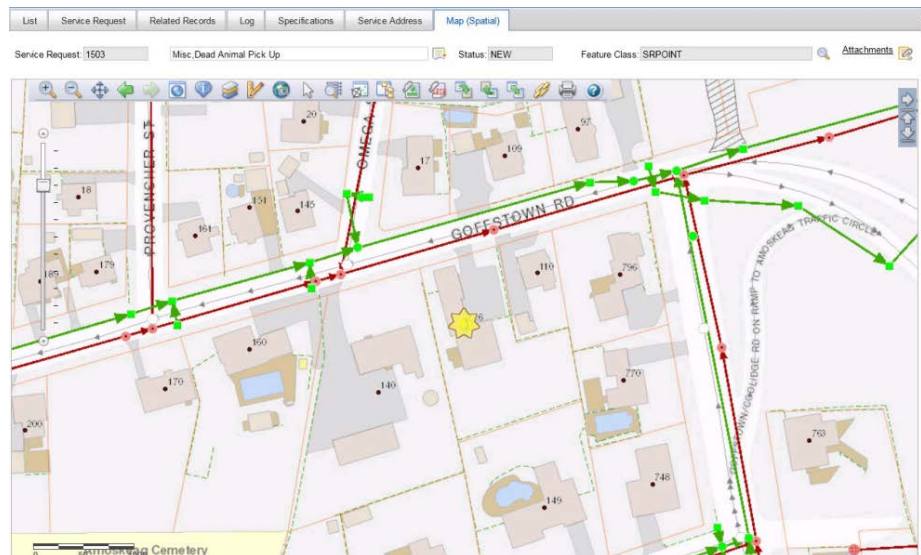
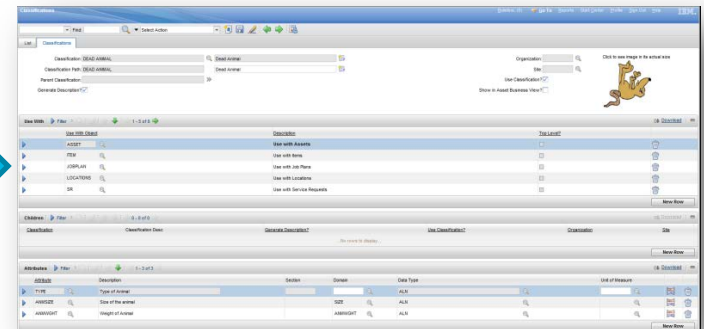
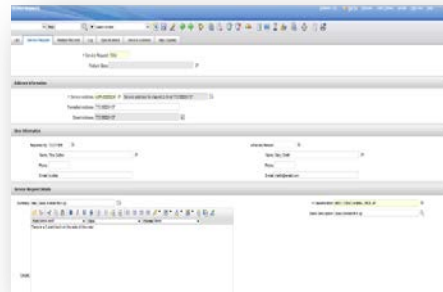
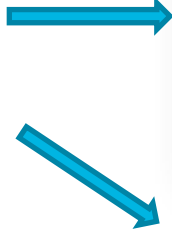


- LiDAR





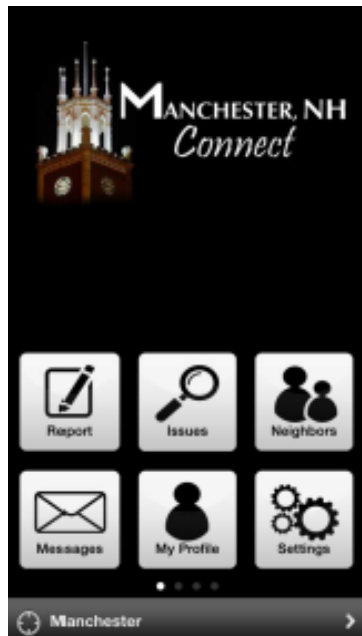
## The value of asset mapping and visualization



- Mapping and Visualization Opportunities
  - Service Calls
  - Road Closures
  - Highway Construction
  - Power Lines Down
  - Public Services
  - GPS Fleet Locations
  - Work History
  - Emergency Response
  - Criticality Based Decision Making



- Work Order System
  - 4059 Service Requests to date – 419 active, 3640 closed
  - 5731 Work orders to date – 3557 active, 2174 closed
  - 20,750 Work orders and Activities
  - 135 Preventive Maintenance Schedules – 122 active
  - 1/3 of SR's are for potholes – 41 active, 1401 closed

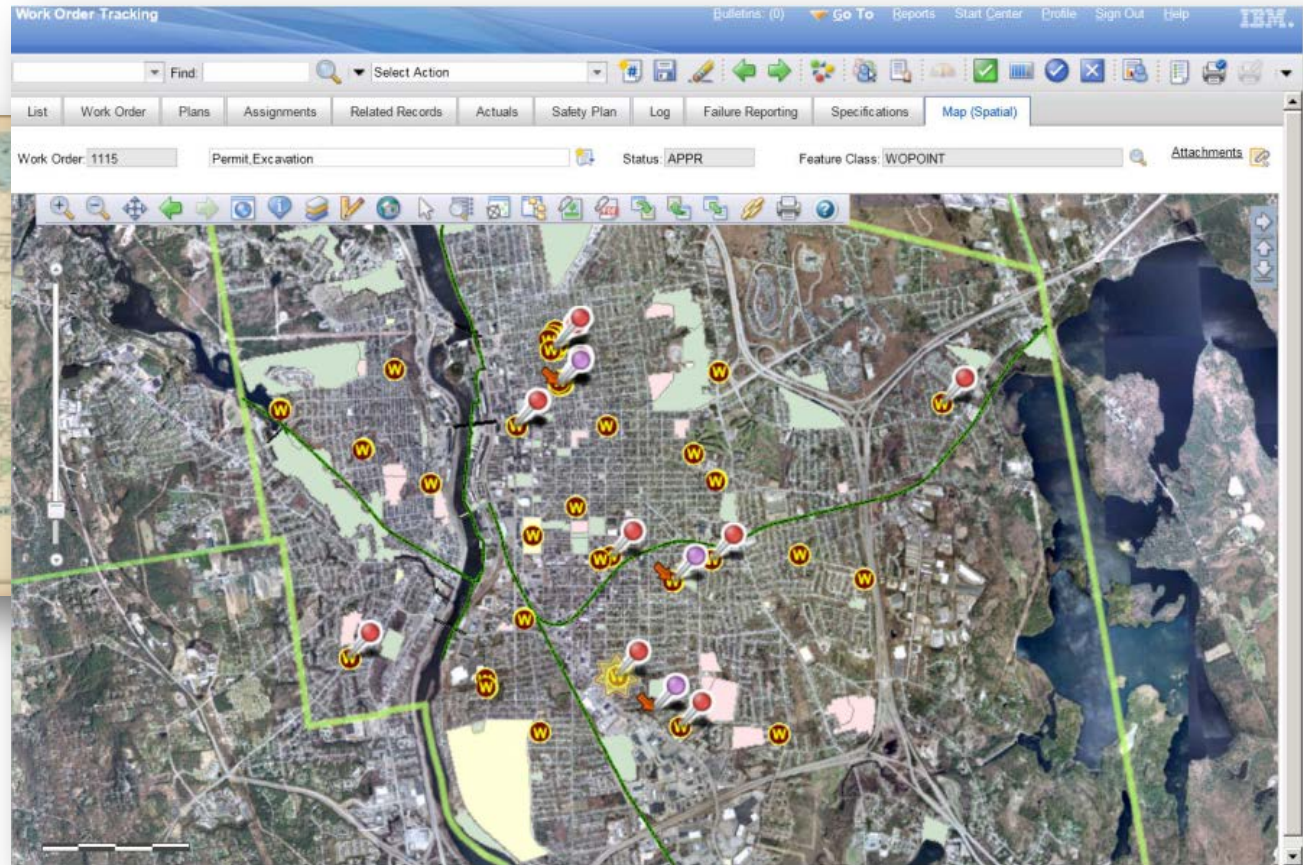


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- Results
  - Data collection savings - integrated approach (assets and pavement)
  - Pavement budget increase and making better decisions
  - Improving business decisions
  - Shifted staff responsibilities in a positive way (less time wasted on time-keeping and payroll)
  - Community connection (see-click-fix)

- Payoff: Bringing a historical city into the modern world





- Lessons Learned
  - Top Leadership must back the project
  - Don't underestimate the time and resources it takes
    - IT requirement is extensive
    - Thoughtful set up so that queries can be effective
  - Everyone will need to be involved (get buy-in through involvement)
  - Results take time, but are worthwhile



# Thank You

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**Timothy J. Clougherty, City of Manchester, NH**

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**AECOM**