Asset Management Systems: Build it and they will come… Or will they?

Southeast Minnesota GIS User's Group
Winter 2019 Meeting at Rochester Public Utilities

Kevin Morrissey, Kelsey Budahn, Christy Shostal
City of Rochester, MN
Department of Public Works

Overview

- History of Asset Management at RPW
- Selection Process for Work and Asset Management
- ElementsXS by Novotx, Inc.
- Multiple Components Working Together

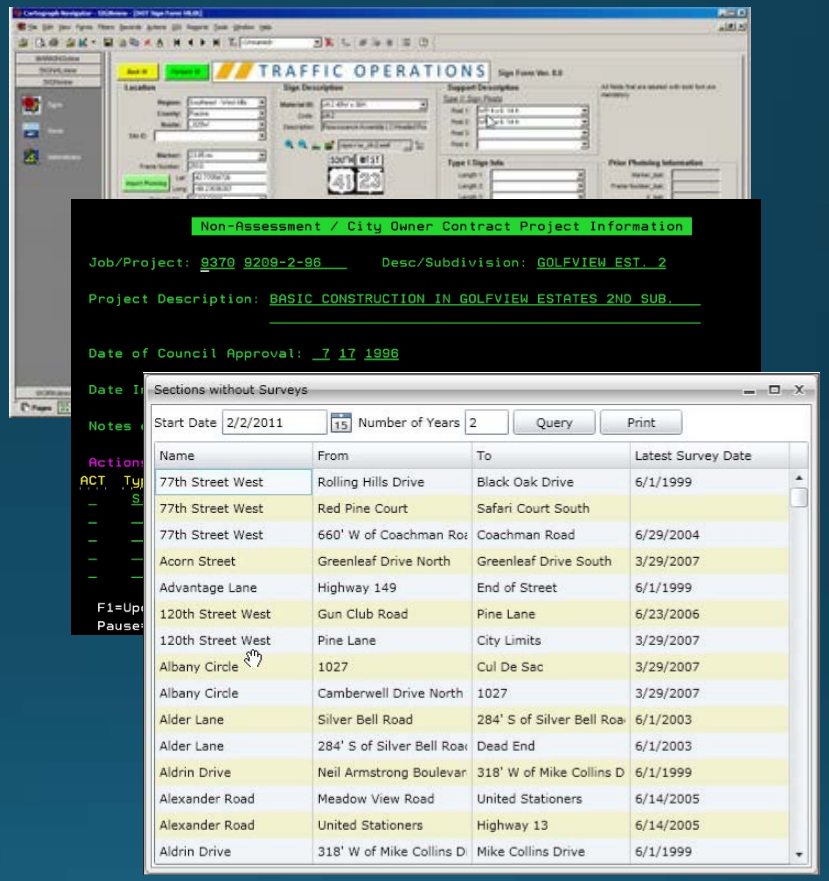
- Demonstration
- Departmental/Field usage

- Challenges and Successes
- Next Steps

- Questions

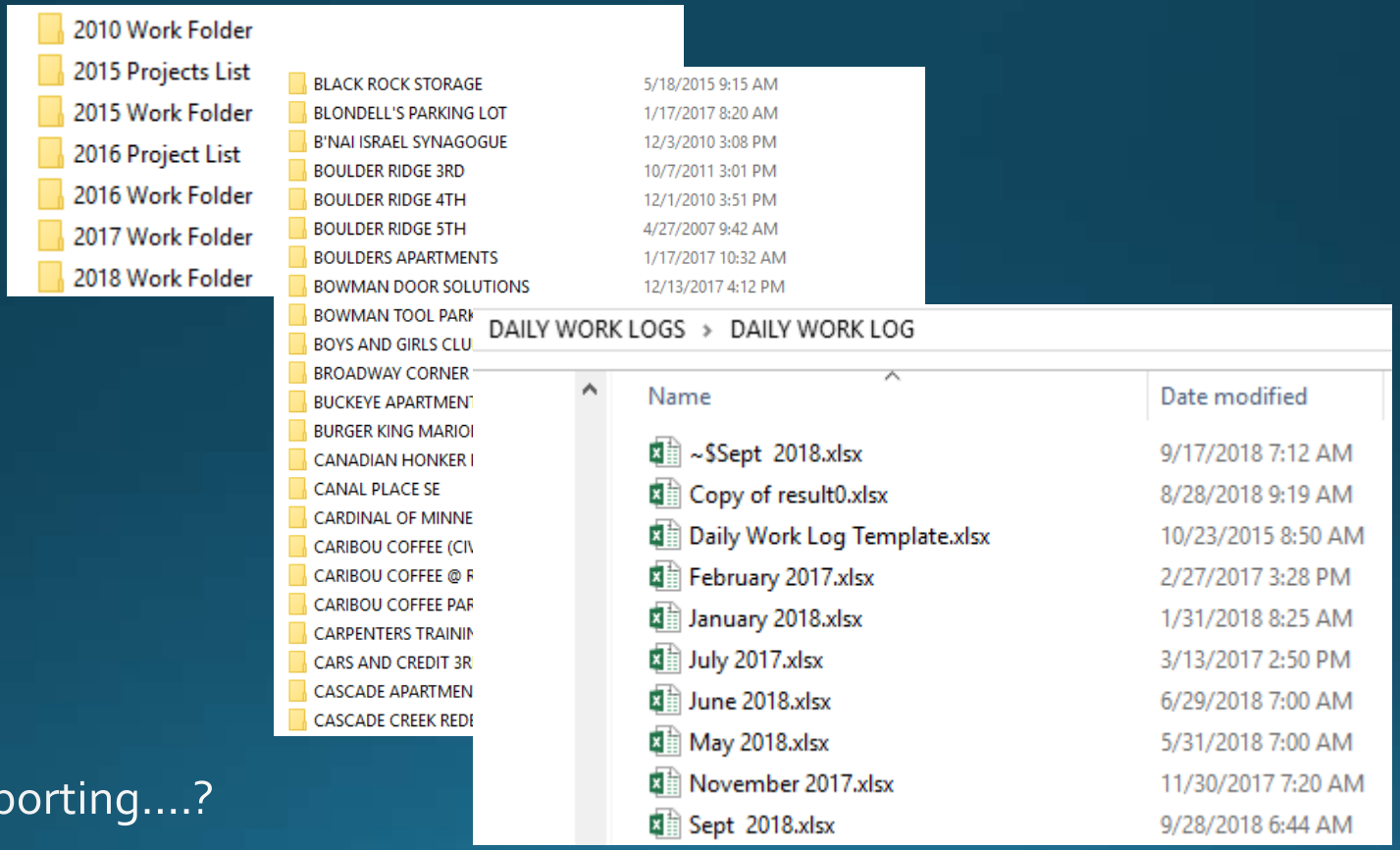
History of Asset Management at RPW

- Paper Lists, Paper Forms
- Cartegraph – Sign Maintenance
  - Pre 2000
  - Tabular only
  - 60% signs mapped by 2014
- AS/400
  - Sewer Maintenance
  - Crash Records
- ICON Pavement Mgmt
  - Street Maintenance
- Cues – Granite XP – Sewer CCTV
  - Not tied to GIS initially
  - VHS Tapes, paper books
- Map Books
  - Highlighters and markups



History of Asset Management at RPW

- Scanned Paper Forms, More Excel,
- Word Documents (word-bases)
- And Folders…



- Reporting….?

History – Choosing the appropriate AMS

- Criteria:
  - Web Applications
    - No Client Installs
  - Any Device, Any OS
    - Users Determine Best Device
  - GIS-Centric (Map First)
    - Common Operating Picture
  - Single GIS Repository
    - no duplication of data
  - Consolidate Silos
    - Retire Access DBs ASAP
    - Enterprise DB (SQL)
  - Customizable Workflows
    - Best Practice (or not!!)
    - Standardized processes are built in
  - Office And Field Editing
    - Where appropriate
  - Unlimited Asset Types
    - Ability to grow as needs change
  - Application Program Interface (API)
    - Development for integration
    - Future Proof?

History – Choosing the appropriate AMS

- Research and Considerations:
  - Regional Survey of AMS
    - 50+ respondents
  - Survey of our own systems
    - Existing Systems First
  - Best Value Procurement
    - What we Think We Want
  - Resource Limited
    - Financial
    - Staffing
  - Administration and Council support 2013

History – Choosing the appropriate AMS

elements XS

UNMATCHED FLEXIBILITY.

Elements allows you to create your own workflow processes and tailor the user experience to the unique needs of your organization without custom code.

This means you're not restricted to how we believe you should do business; Elements XS3 is flexible enough to adapt to your unique business requirements via:

- Unlimited custom fields
- Unlimited custom record layouts
- Unlimited custom workflow processes
- Automated user-defined follow up events and triggers
- Data analysis and calculations on user-defined custom data schemas

Each of the above is accomplished using Windows Workflow Foundation technology and our Dynamic Data management system, found only in Elements.

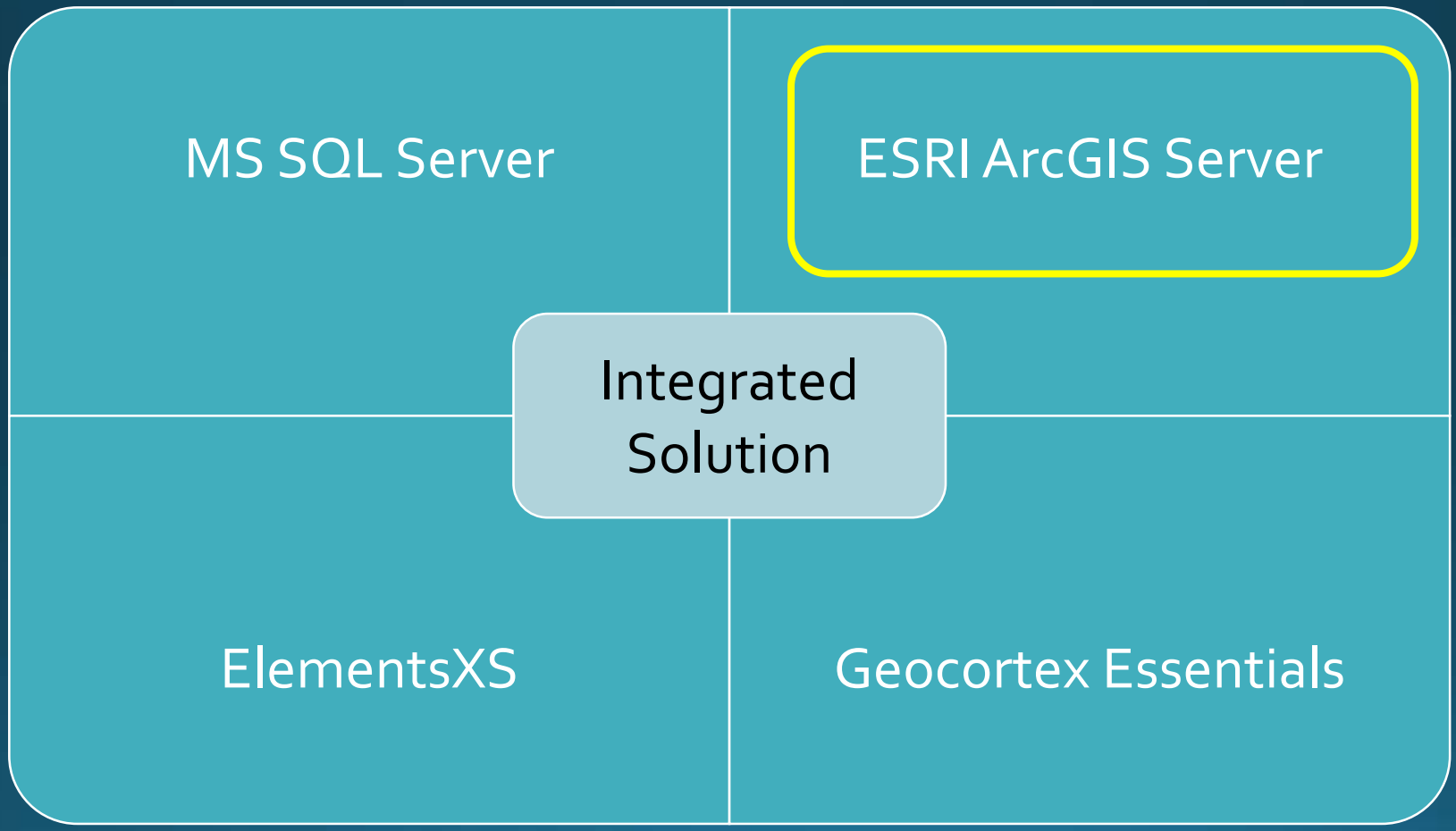
Don't worry, all custom data is stored nicely in SQL and can be easily queried for reports and spatial analysis.

History – Choosing the appropriate AMS

Design → Install → Configure → Train → Go Live

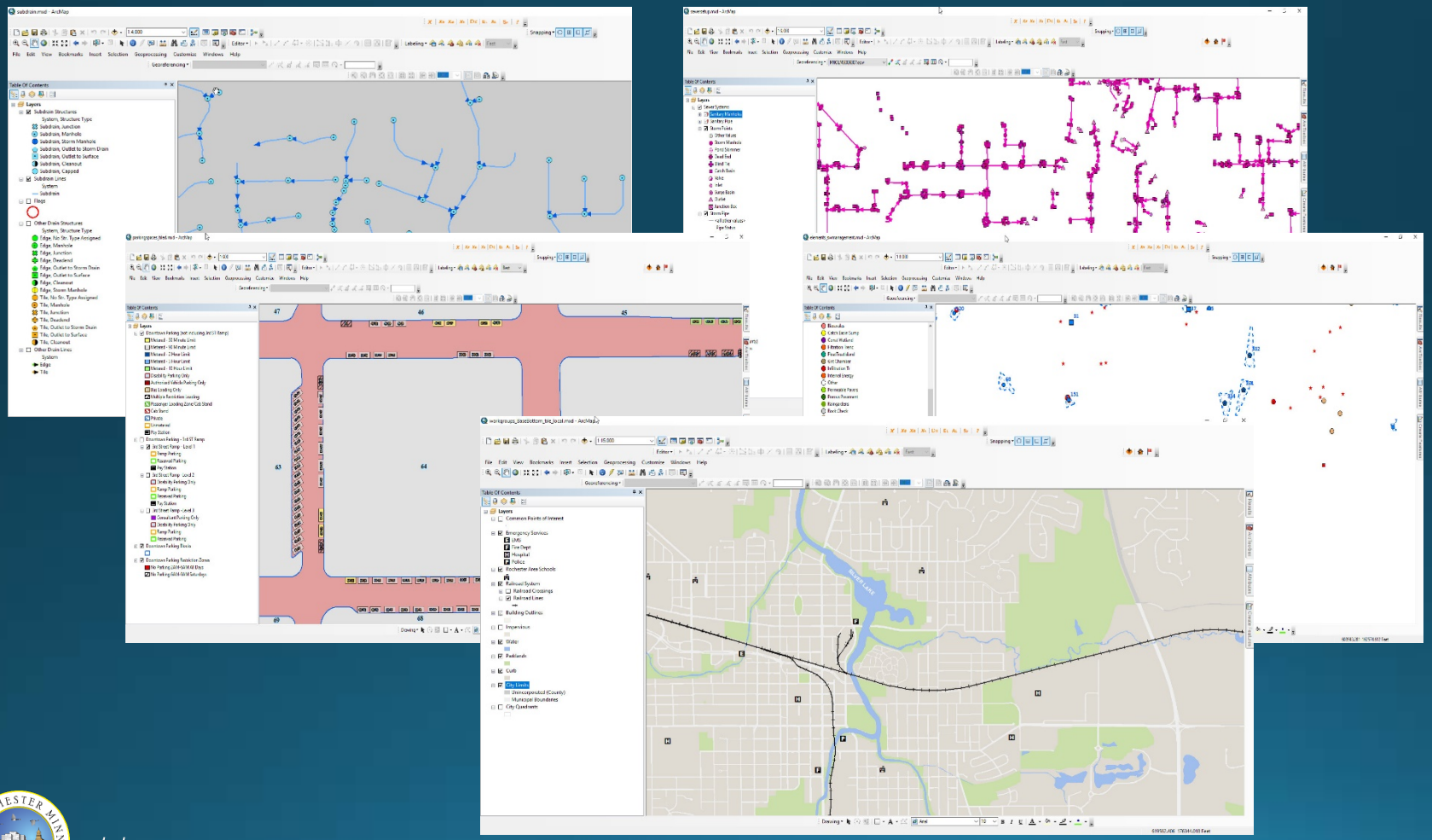
January 2014 → June 2015

Multiple Components Working Together



Multiple Components Working Together

- Enterprise Geodatabase
  - Preparing The Data to Publish Web Services



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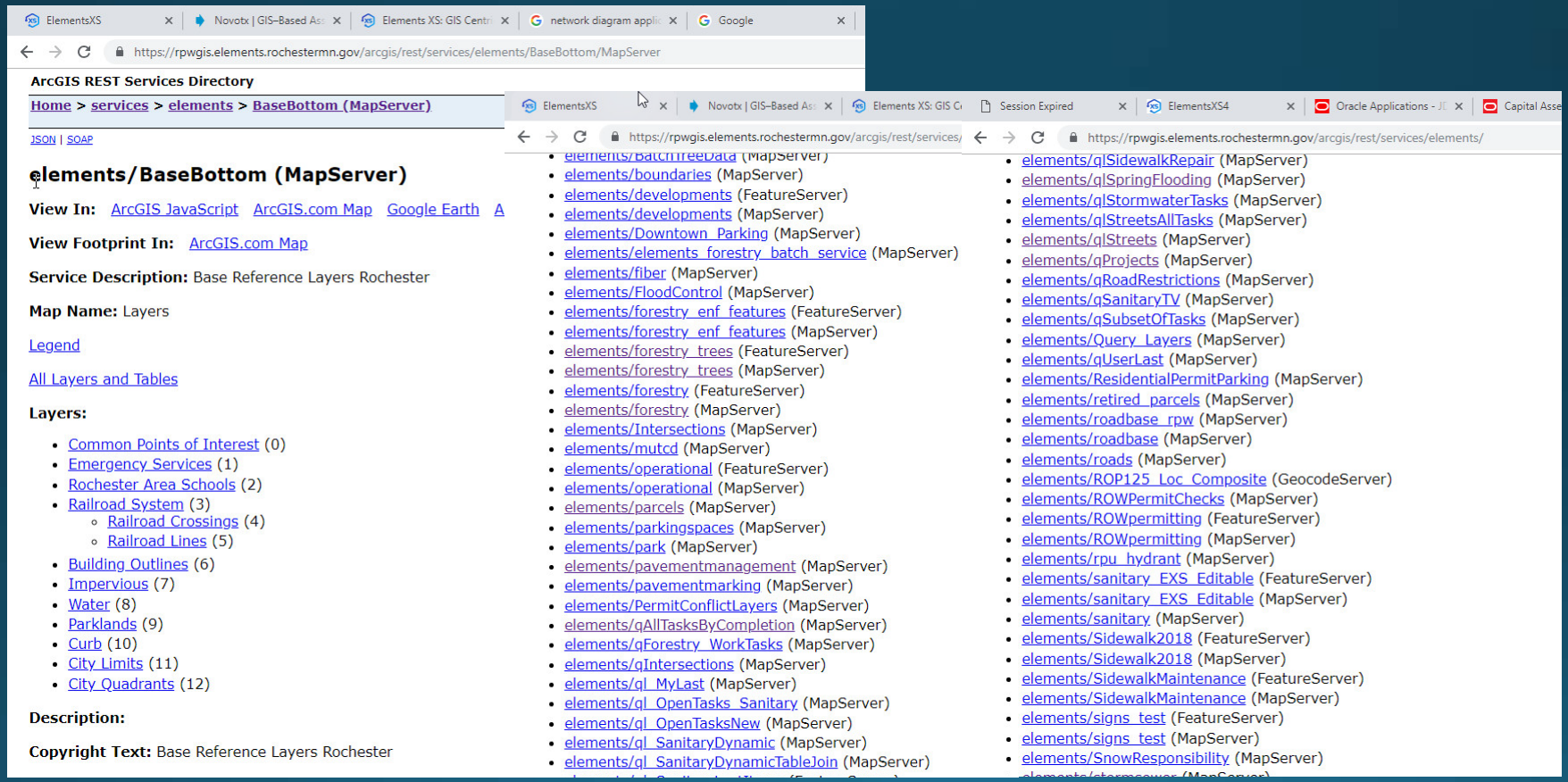

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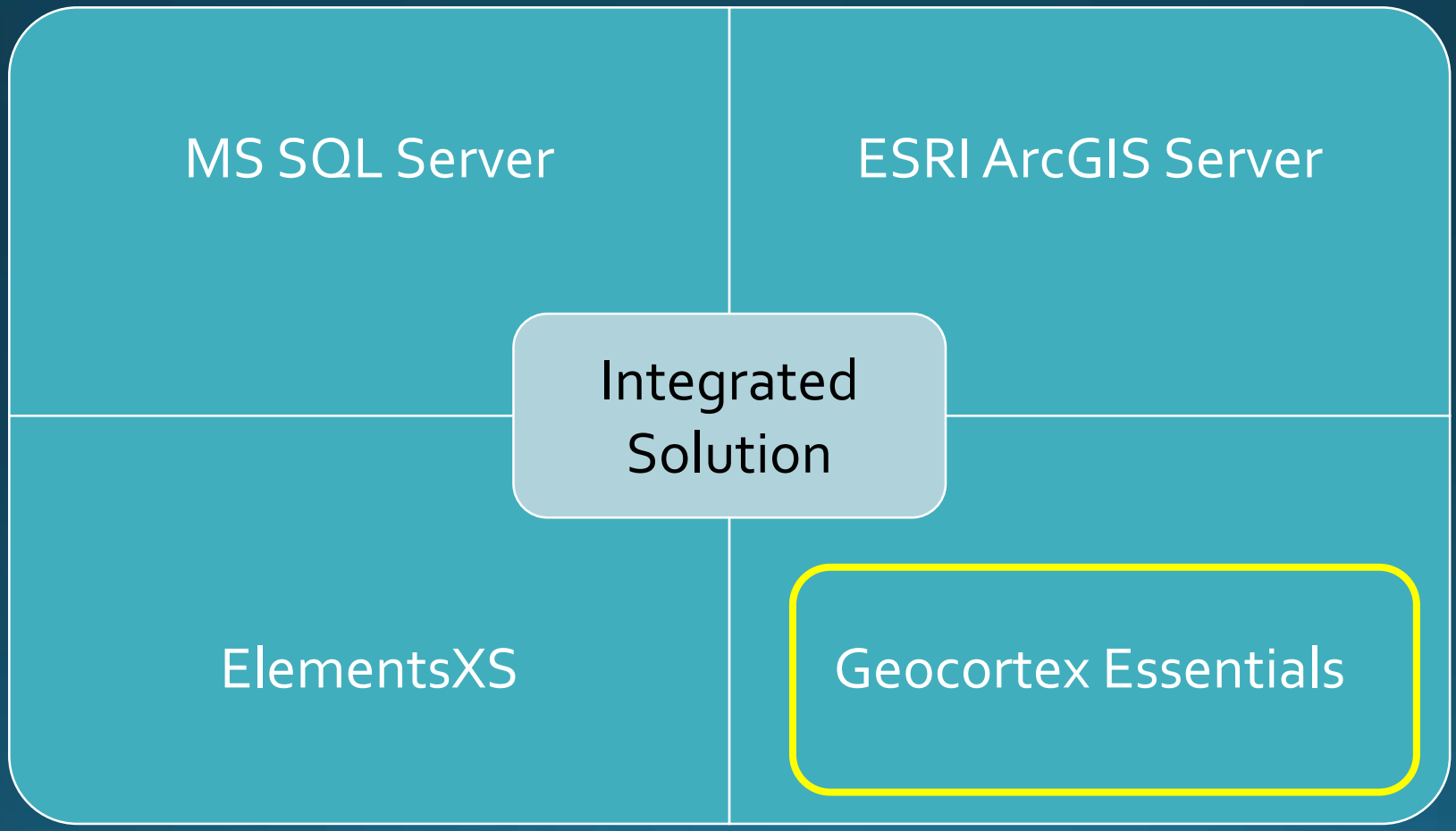
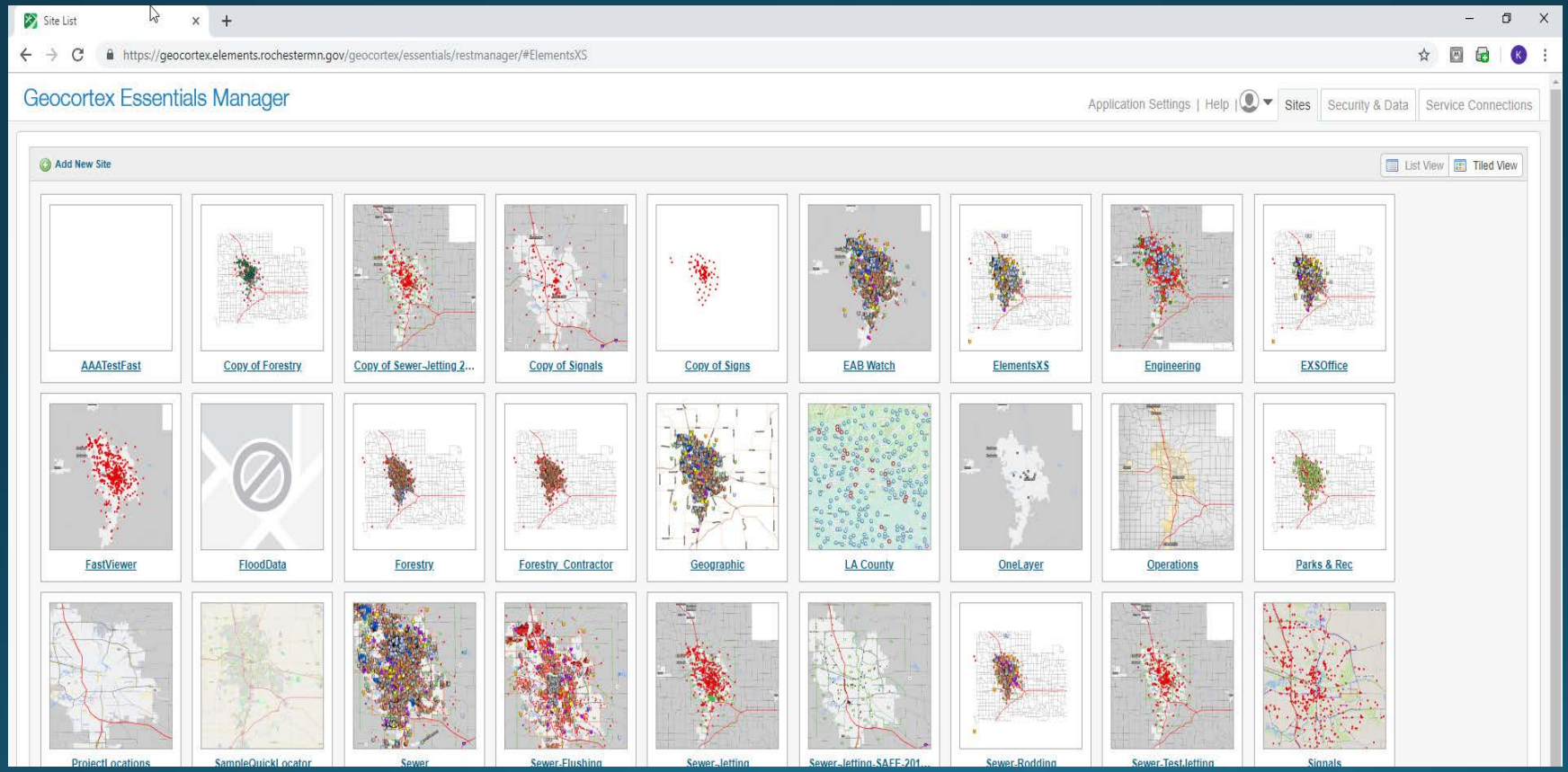


Multiple Components Working Together

- Geocortex Essentials
  - Building "Sites" and "Viewers"
    - Similar to AGOL "Maps" and "Apps"



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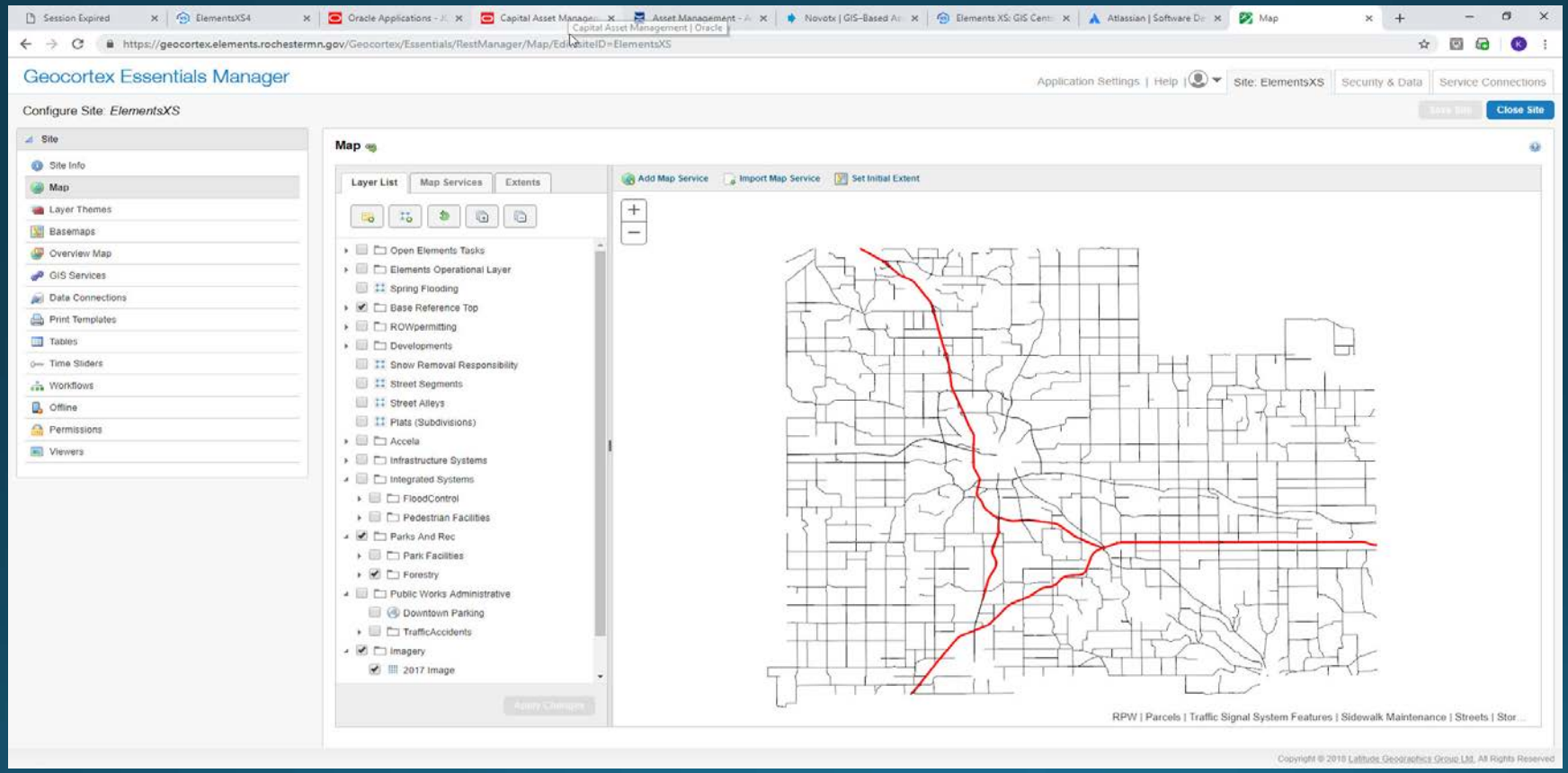

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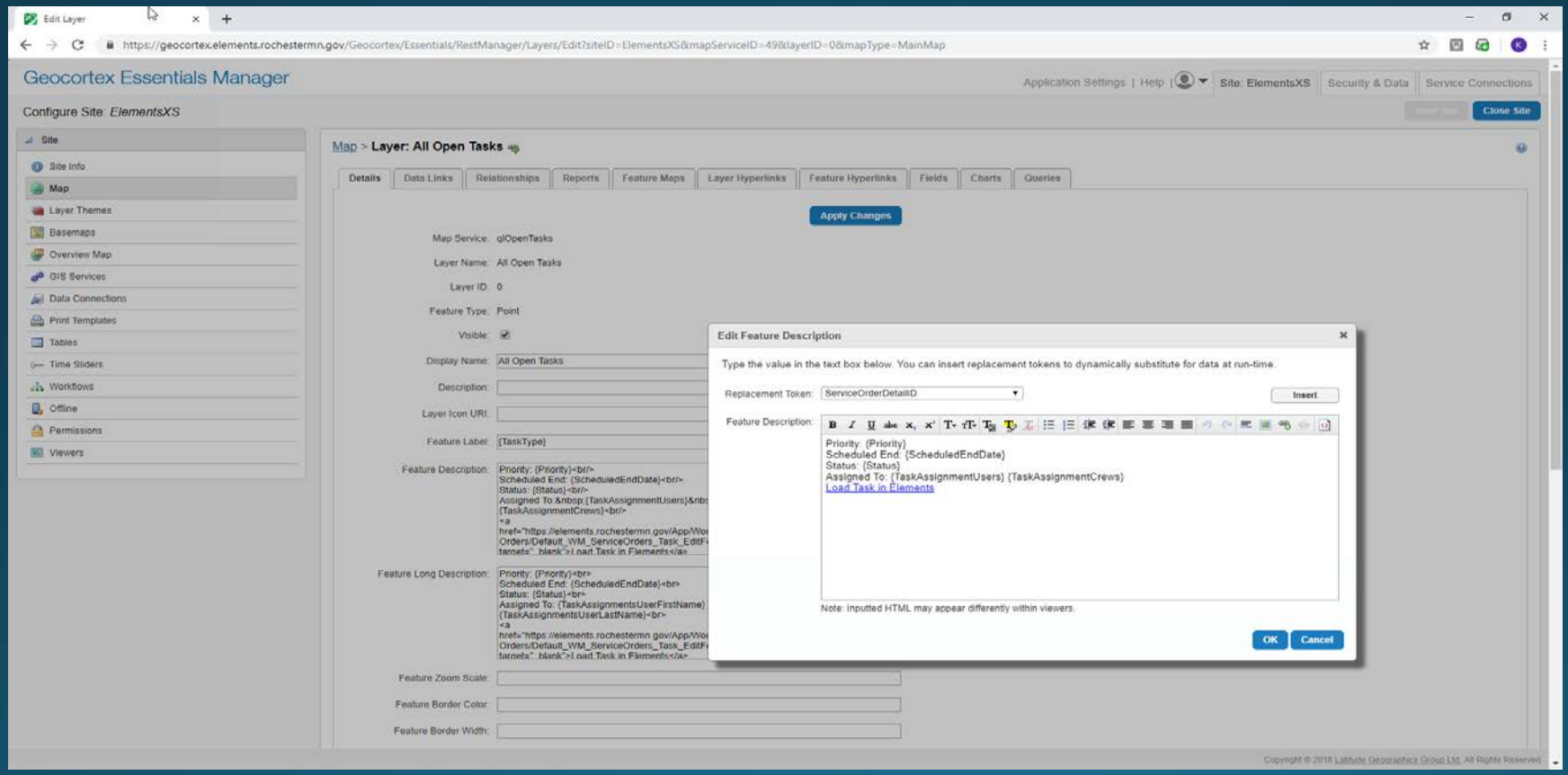

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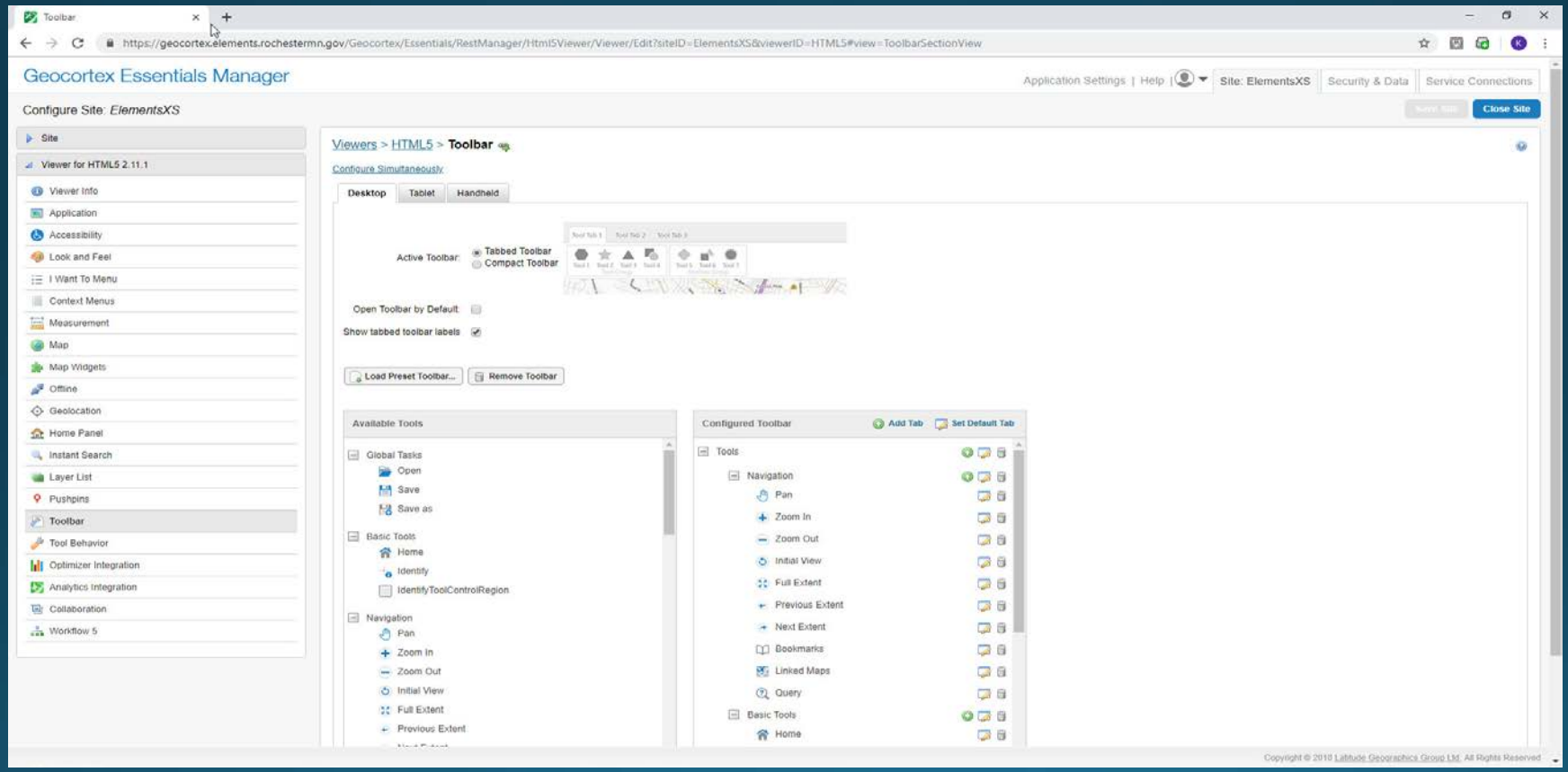
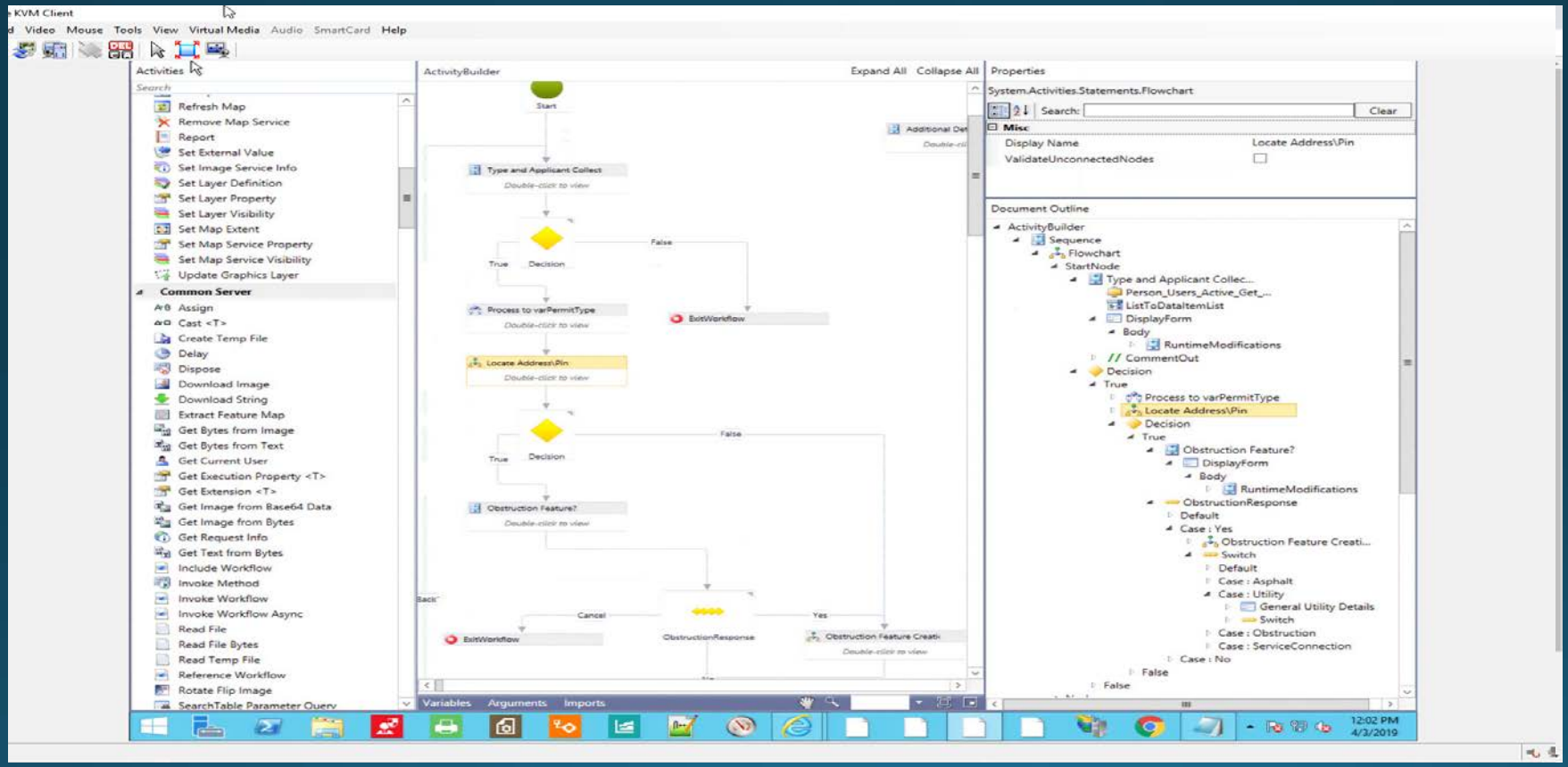


Multiple Components Working Together

- Geocortex Essentials
  - Workflow Designer



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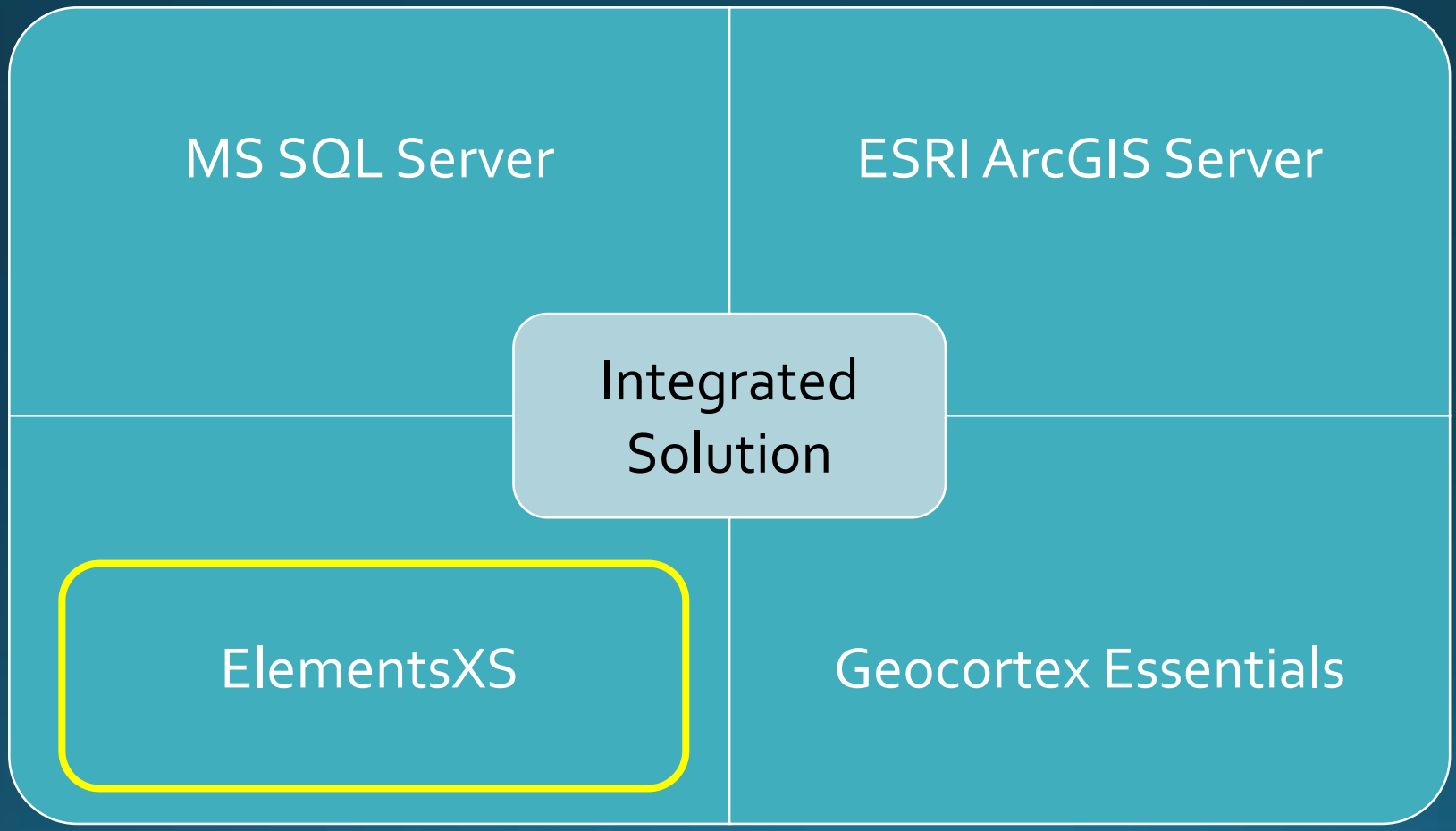
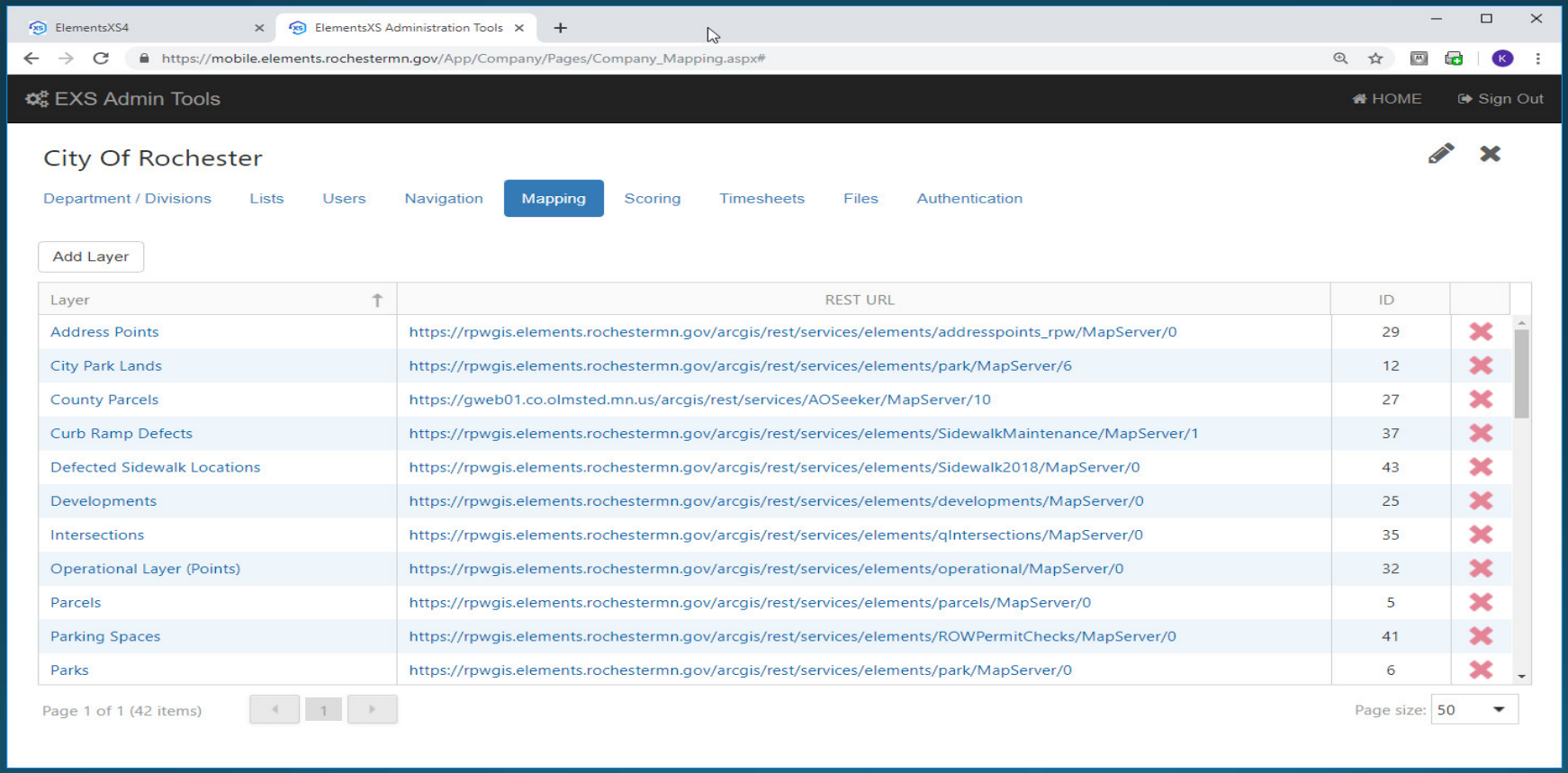


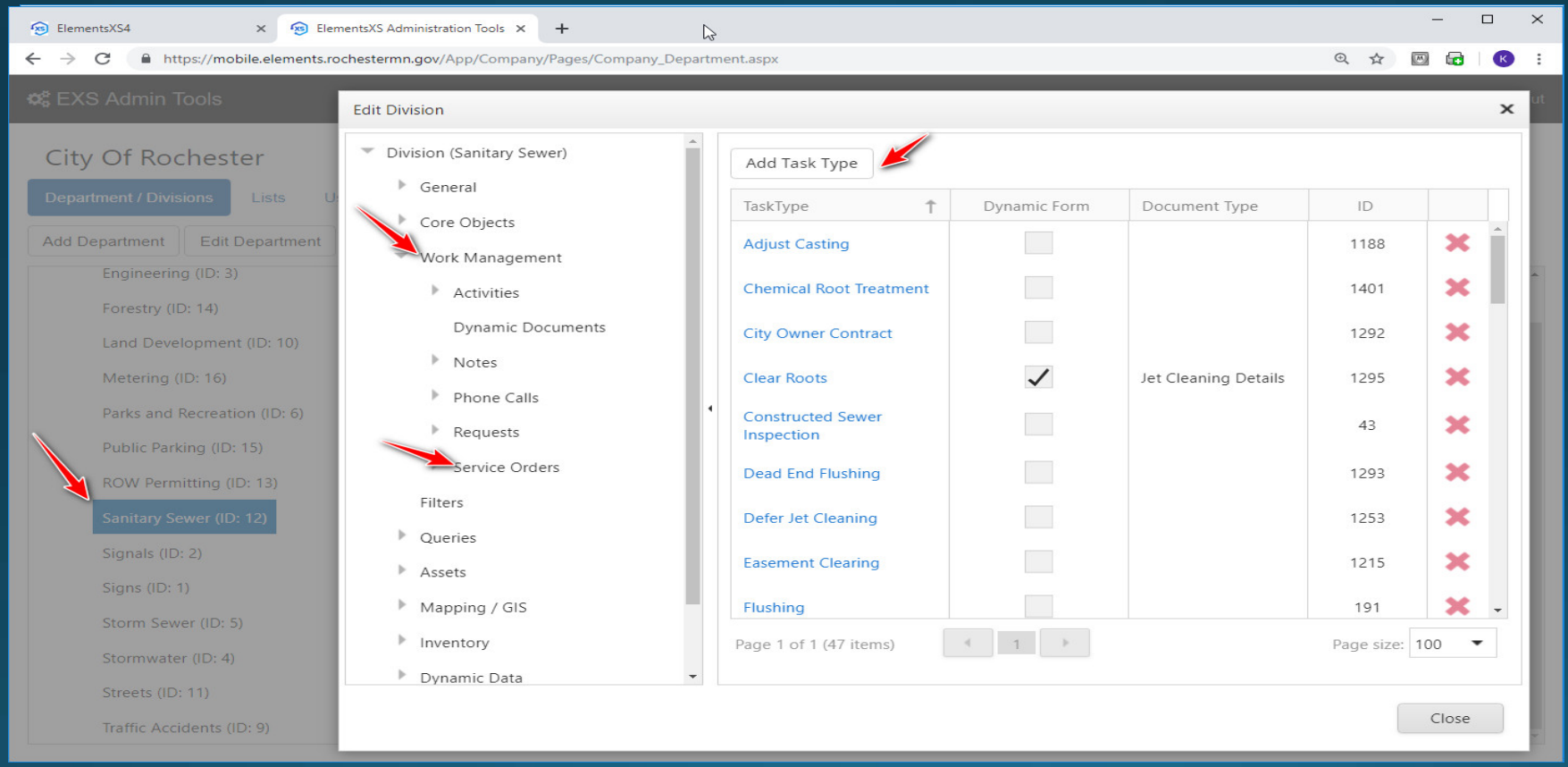
Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools



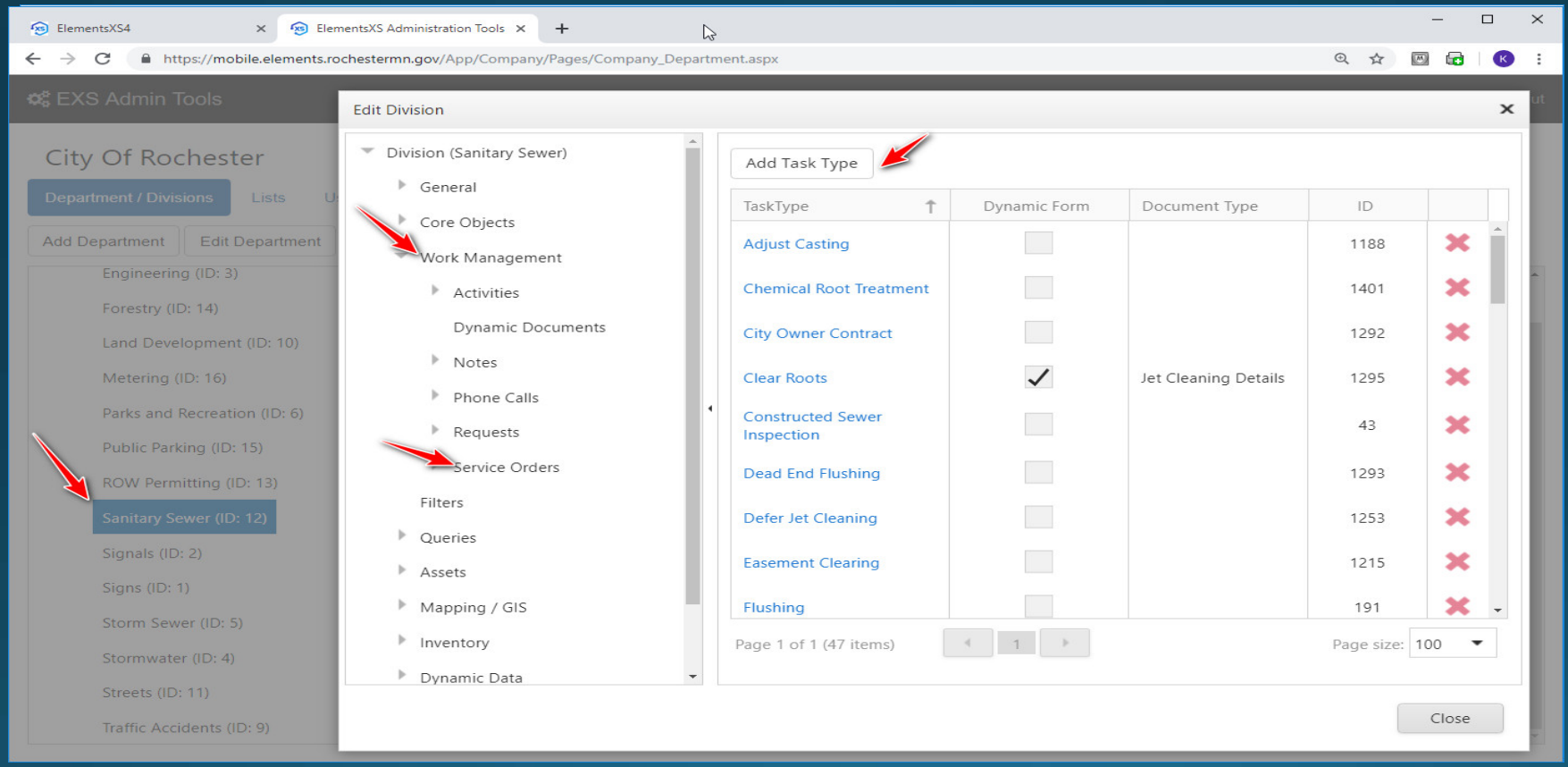
Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools – Map Layers



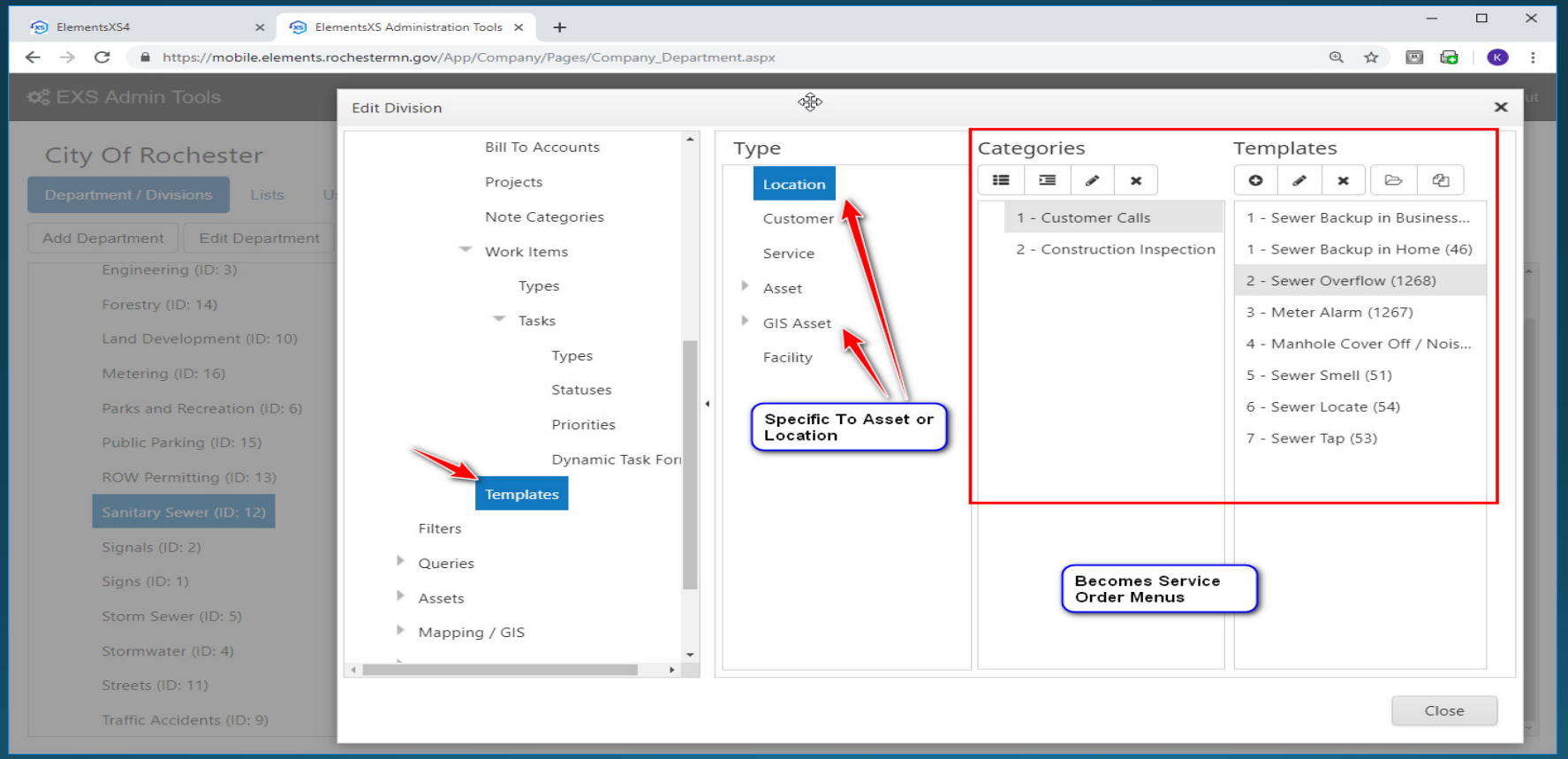
Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools – Service Order Task Types



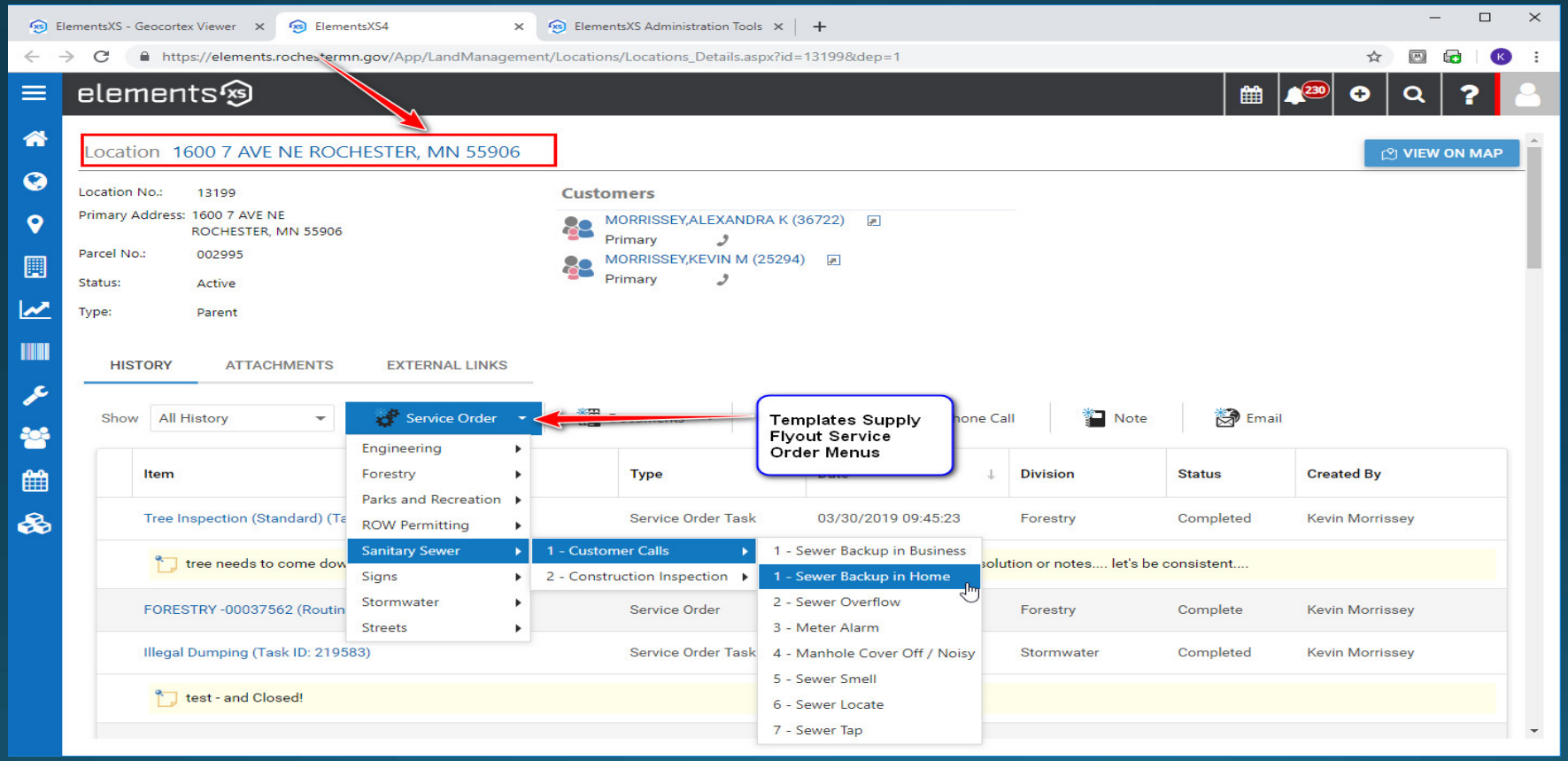
Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools – Templates (Setup)



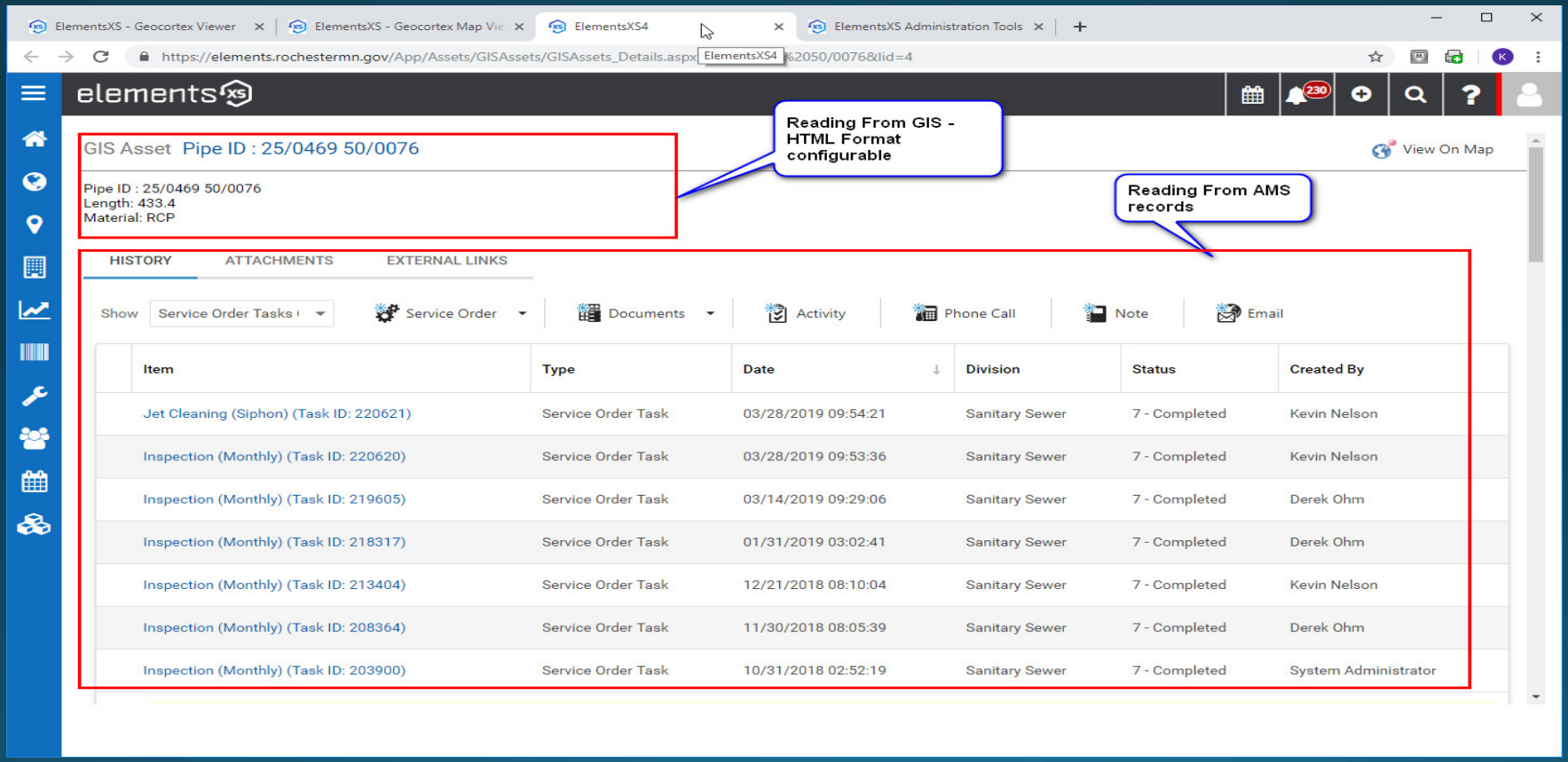
Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools – Templates (User Interface)



Multiple Components Working Together

- ElementsXS Configuration
  - Admin Tools – GIS Asset (User Interface)



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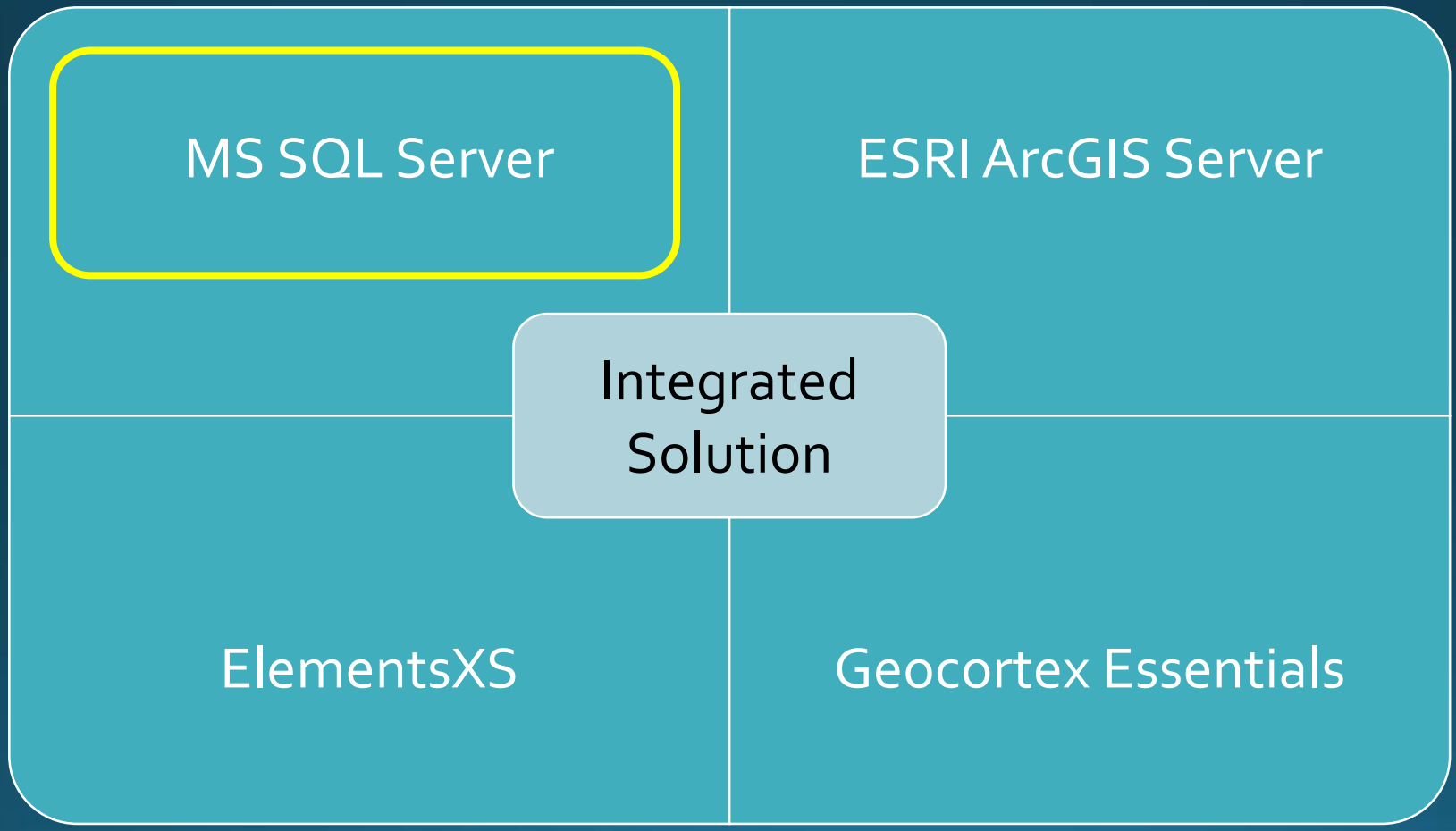
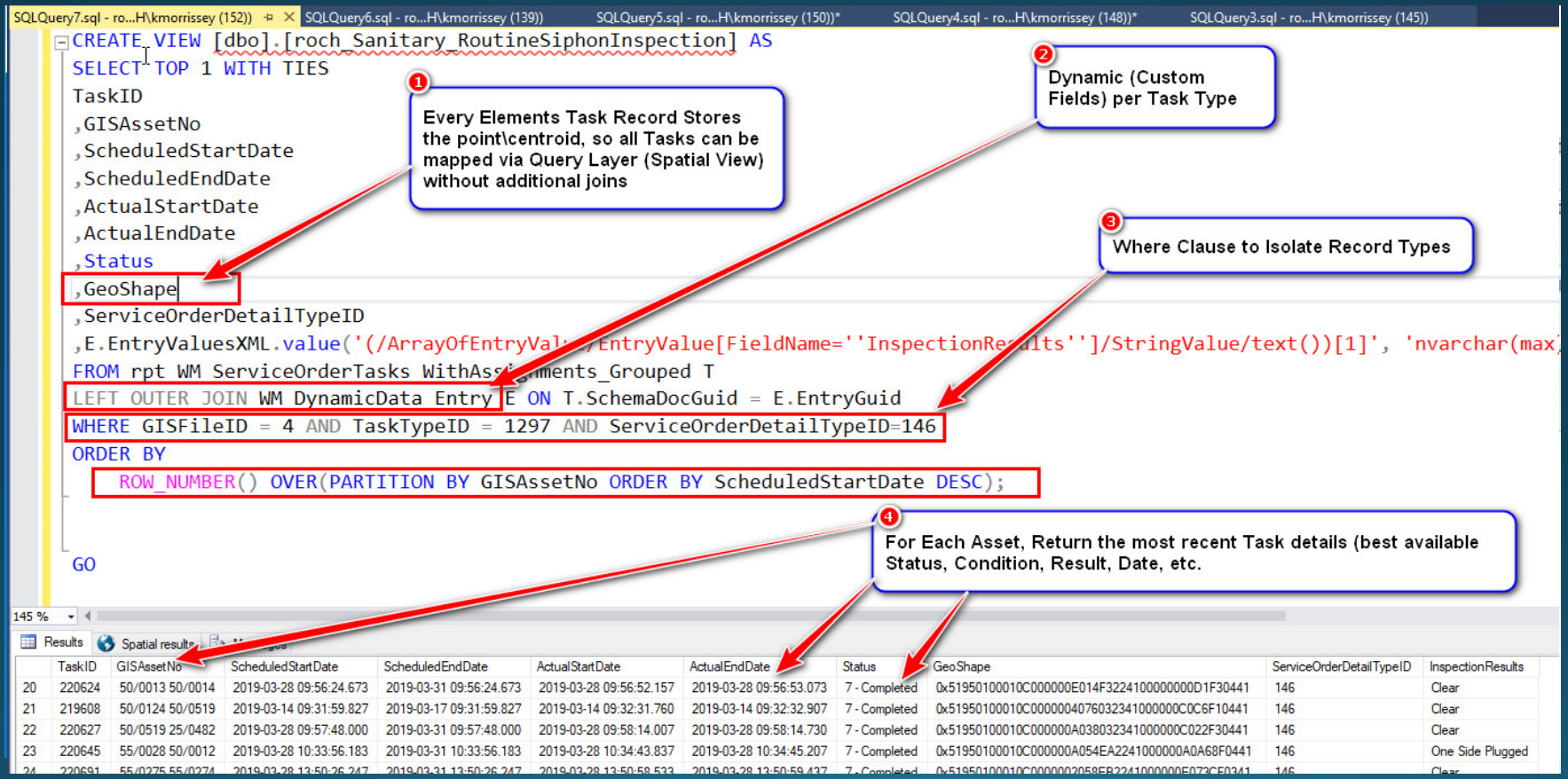


Multiple Components Working Together

- Publishing AMS Specific Map Services
  - Query Layers – "Open Tasks"



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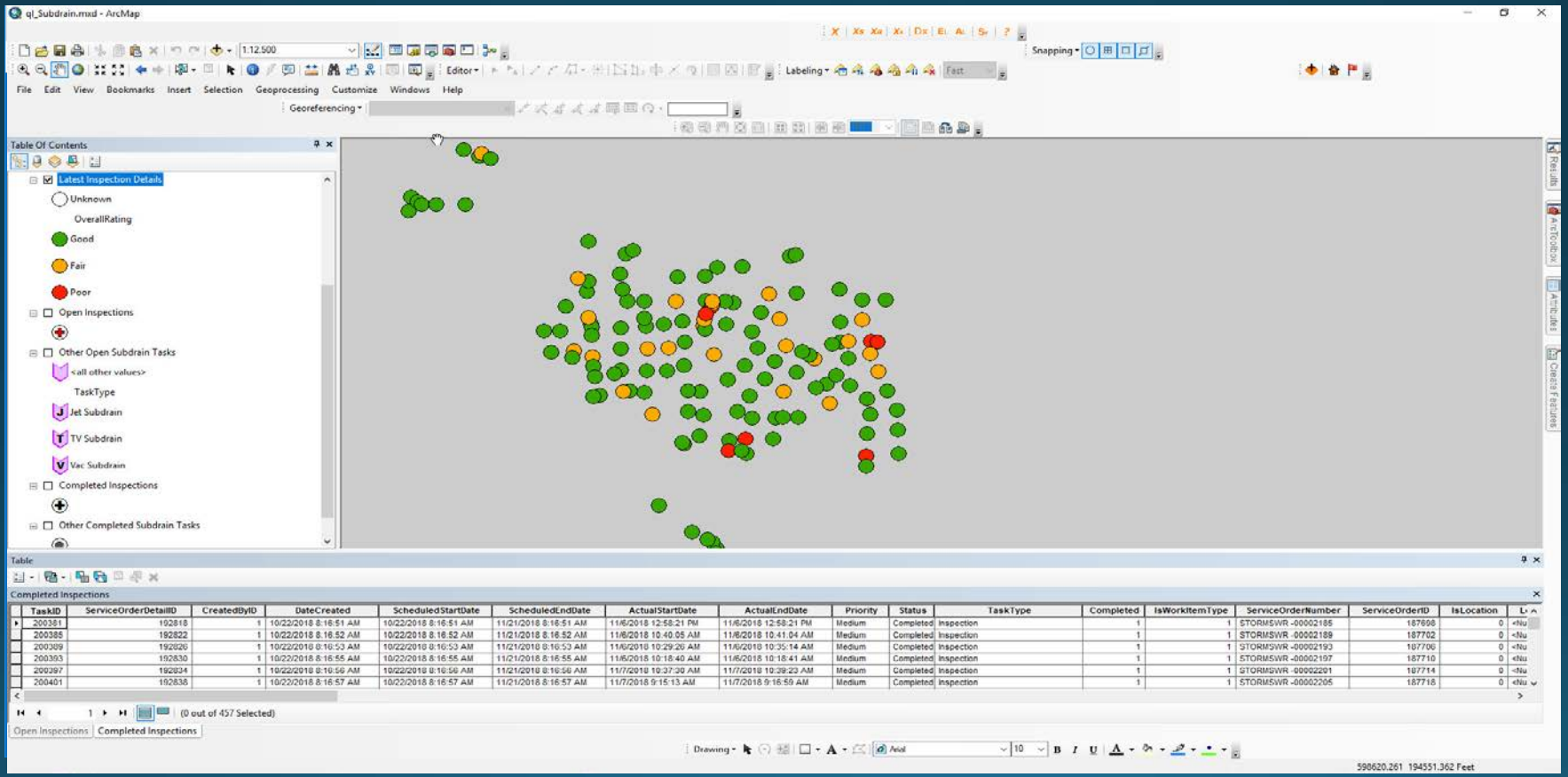
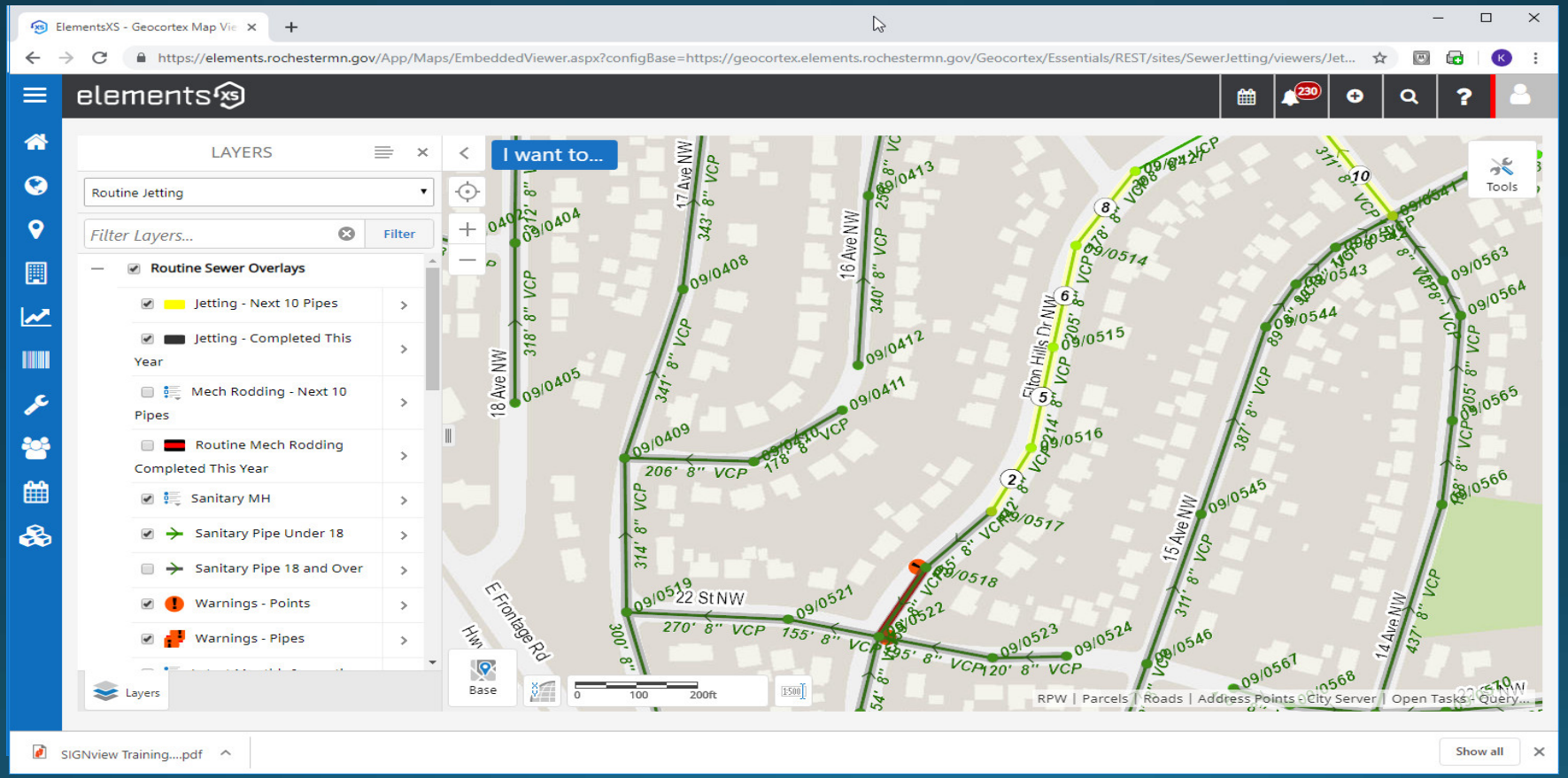


Multiple Components Working Together

- Publishing AMS Specific Map Services
  - End User Map View



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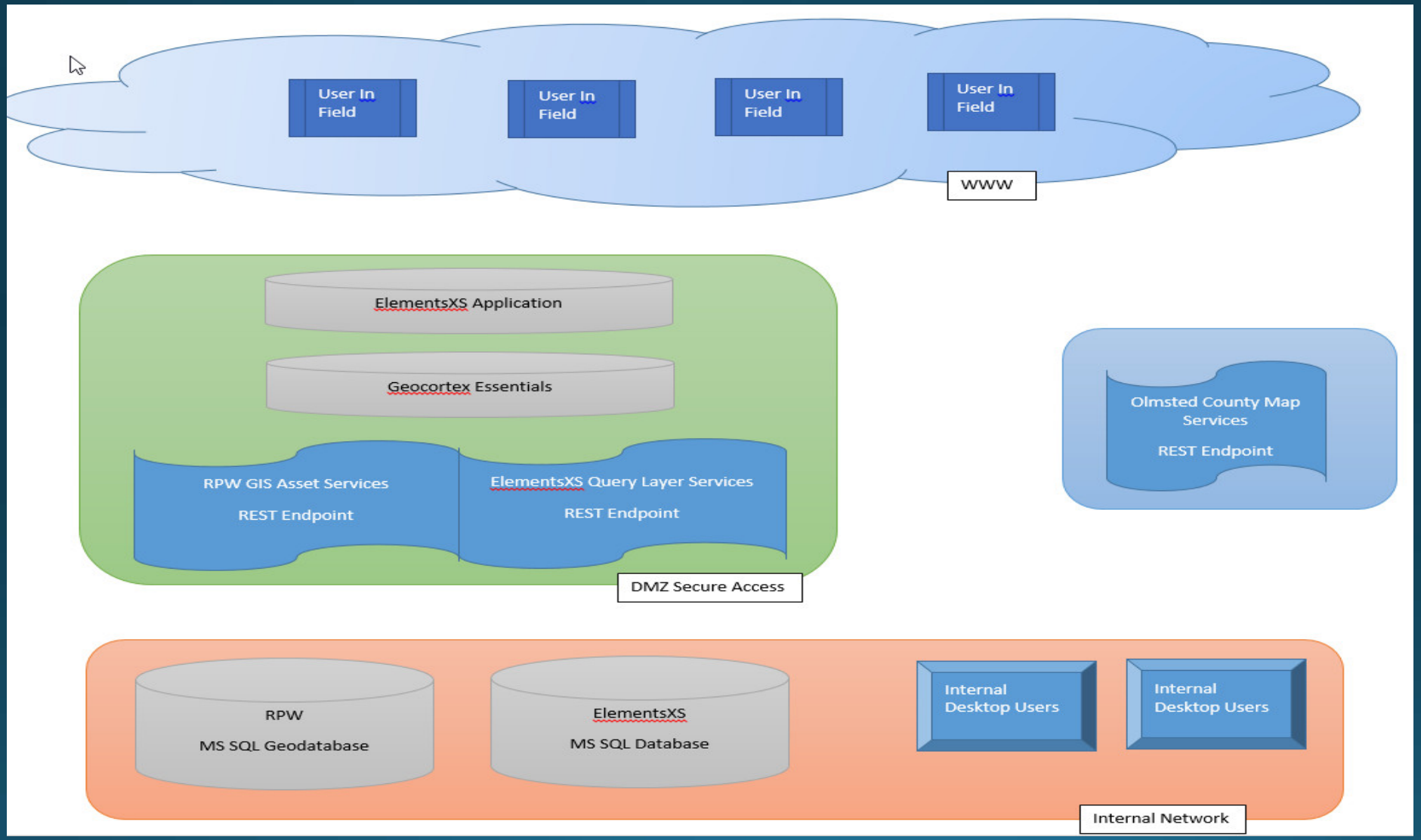

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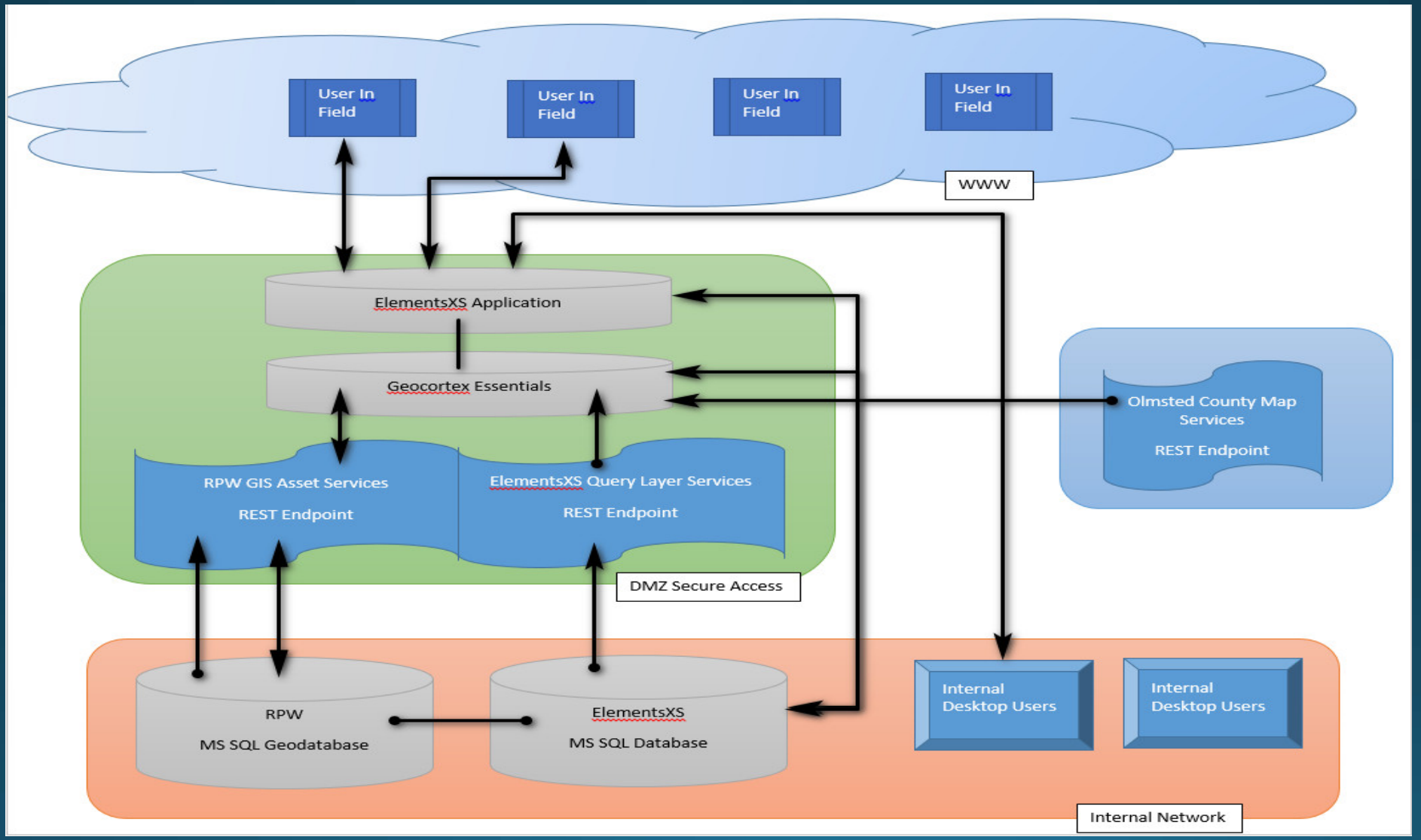
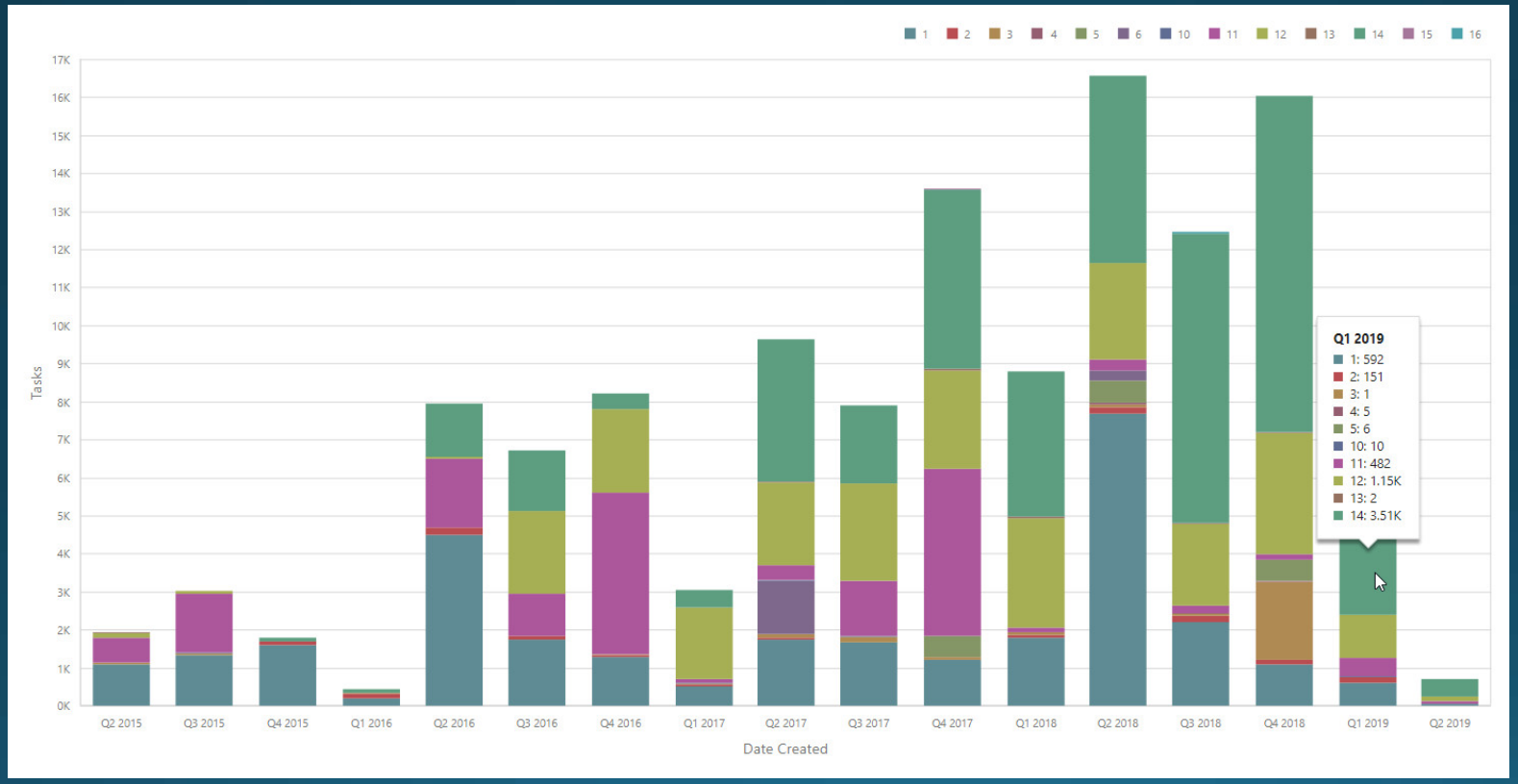


Departments and Usage

- Departments
  - Public Works
  - Parks and Forestry
- Full Adoption
  - Forestry - Call Logging, Inspection, Maintenance, EAB, Enforcement
  - Sanitary Sewer – Routine Maintenance, Inspections
  - Traffic Signals – Maintenance Calls
  - Crash Records - Historical Analysis
  - Signs – All Inventory and Maintenance
  - Street Maintenance – All Calls, Work Dispatch
- Dipping their toes
  - Storm Water – Complaint Tracking
  - Infrastructure – Sidewalk Inspections
  - Engineering - Project Tracking and Acceptance Inspections
  - Parks – Complaint Tracking
- Testing \ Development
  - Pavement Management – Annual Maintenance Planning
  - Right of Way Permitting
  - Gopher Locates
  - Public Service Announcements

Departments and Usage

- Over time, more processes are transitioned into Elements



2015 2016 2017 2018 2019

Overview

- History of Asset Management at RPW
- Selection Process for Work and Asset Management
- ElementsXS by Novotx, Inc.
- Multiple Components Working Together

- Demonstration
- Departmental/Field usage

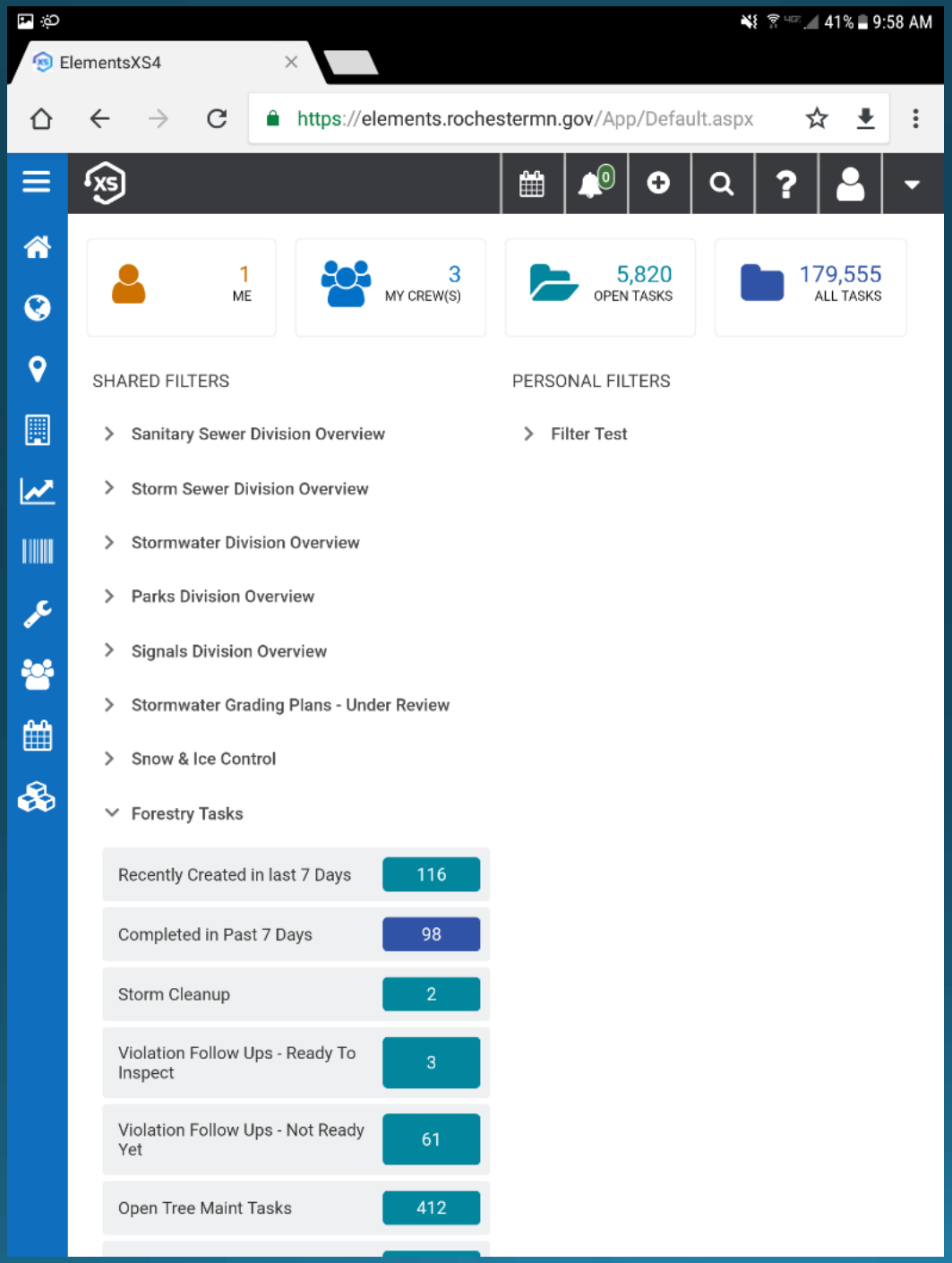
- Challenges and Successes
- Next Steps

- Questions

Demo

Home screen:

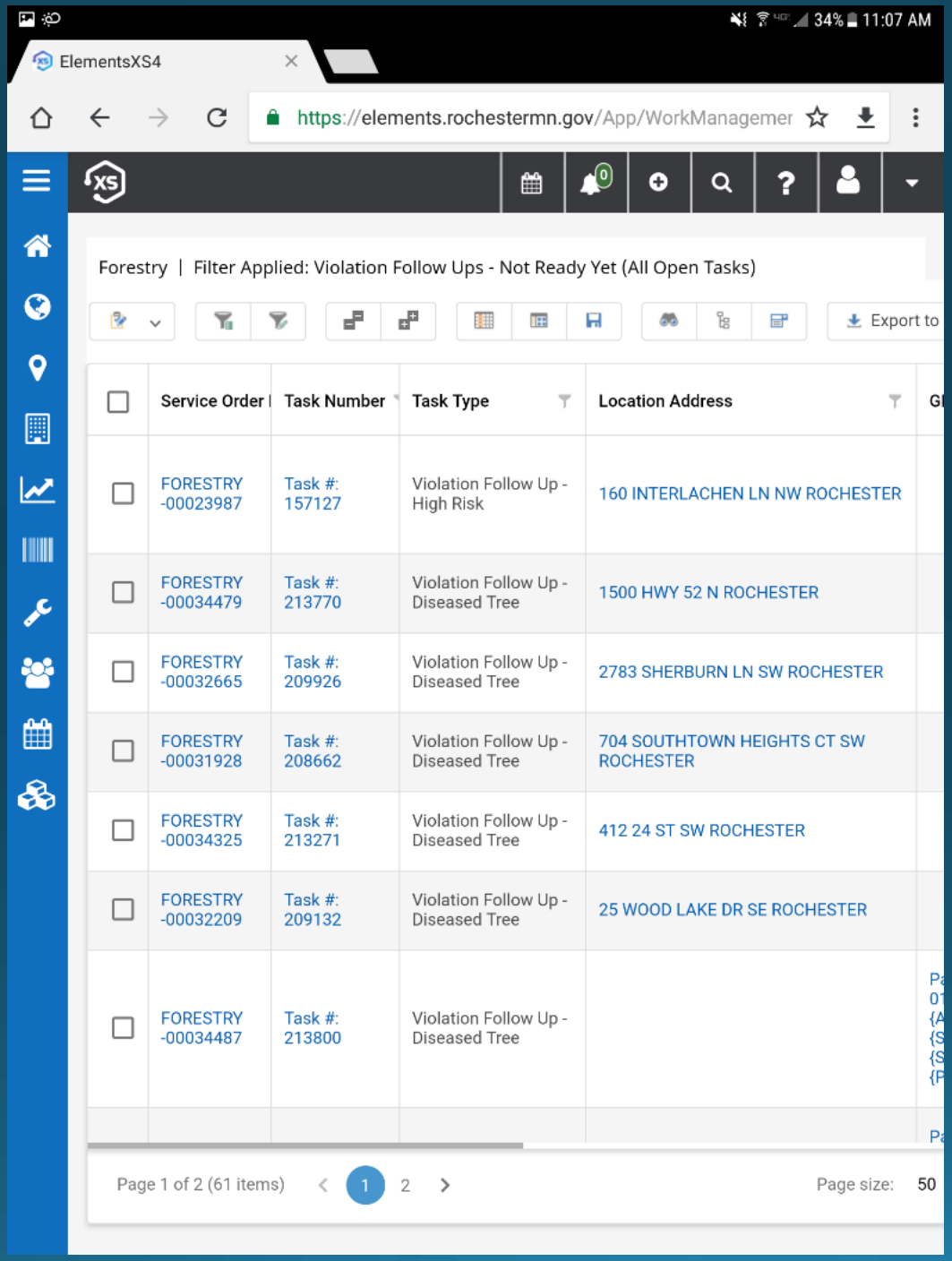
- Task assignments
- Set filters



Demo

All Open Tasks:

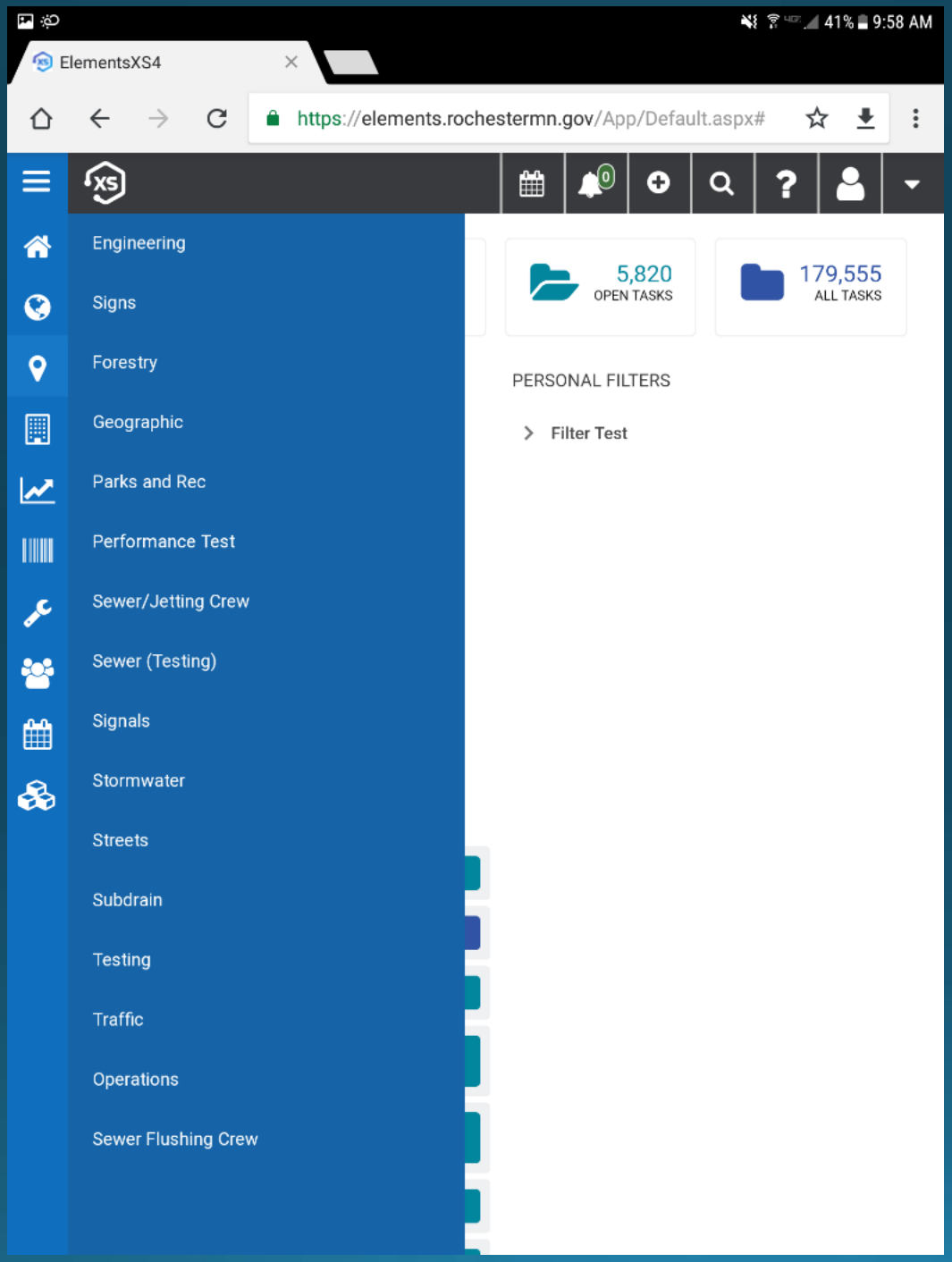
- Filter by list
- Query and sort



Demo

Map Viewers:

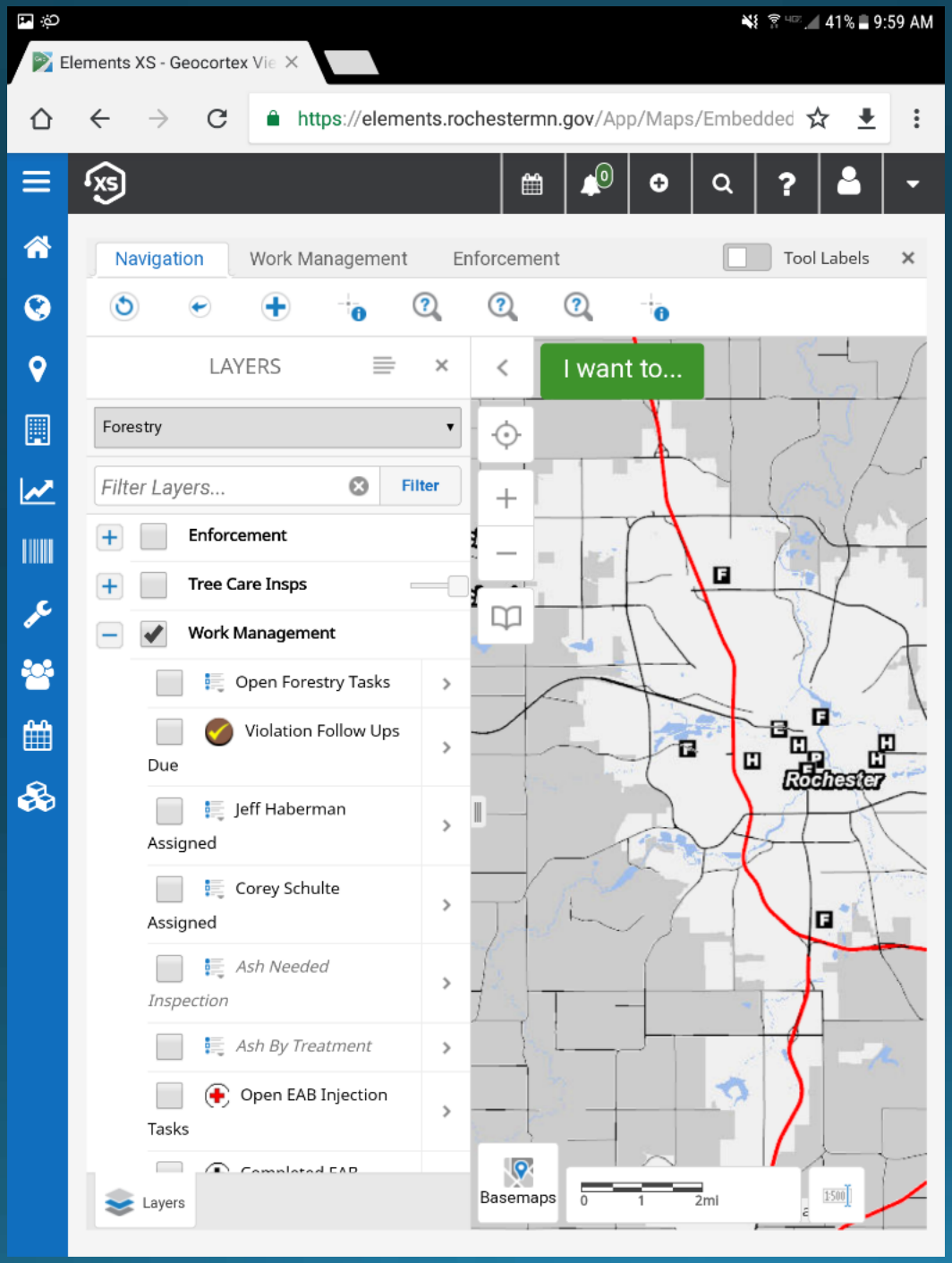
- Department, division, or task specific



Demo

Map Viewer:

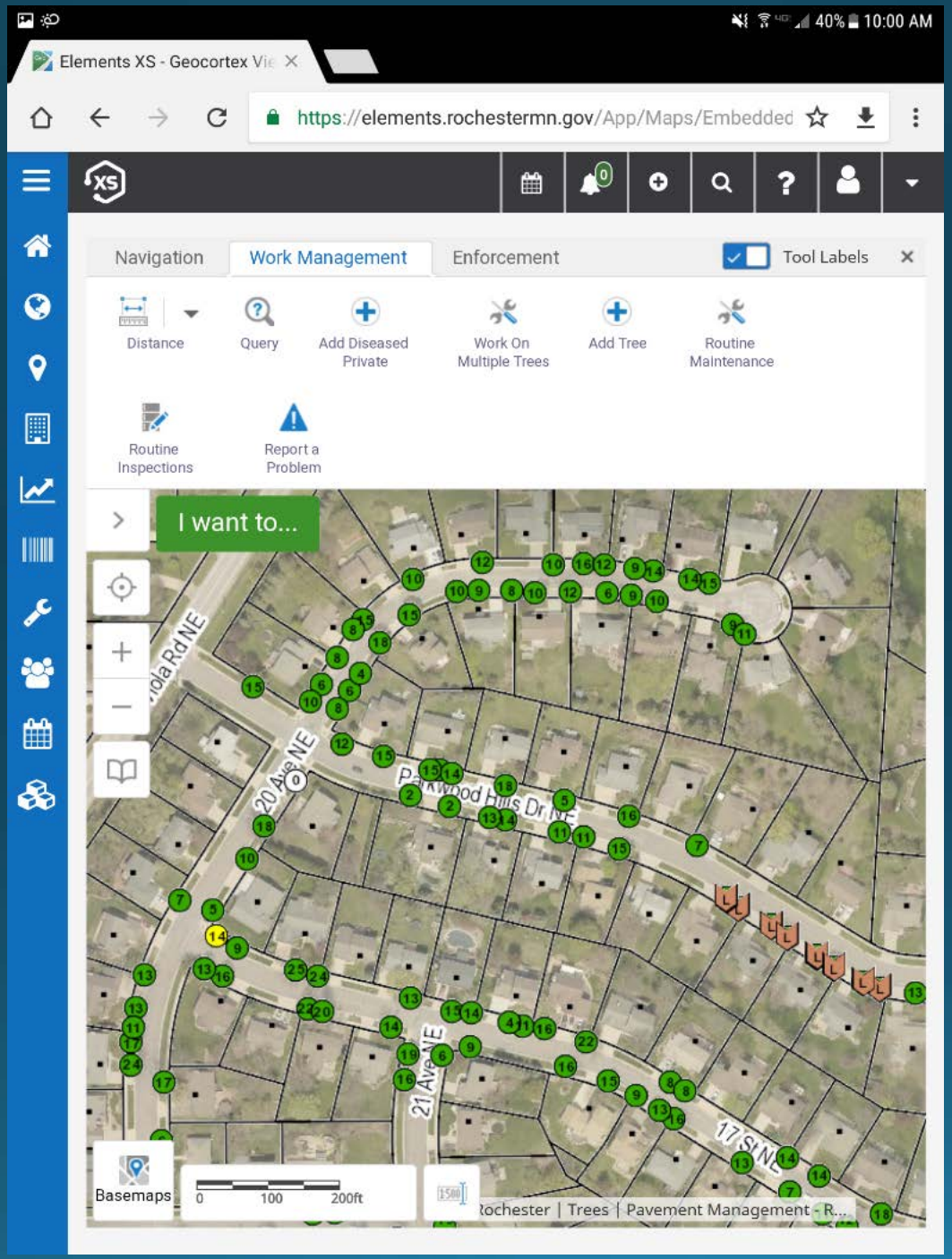
- Layers Panel
- Toolbars
- Map View



Demo

Map Viewer:

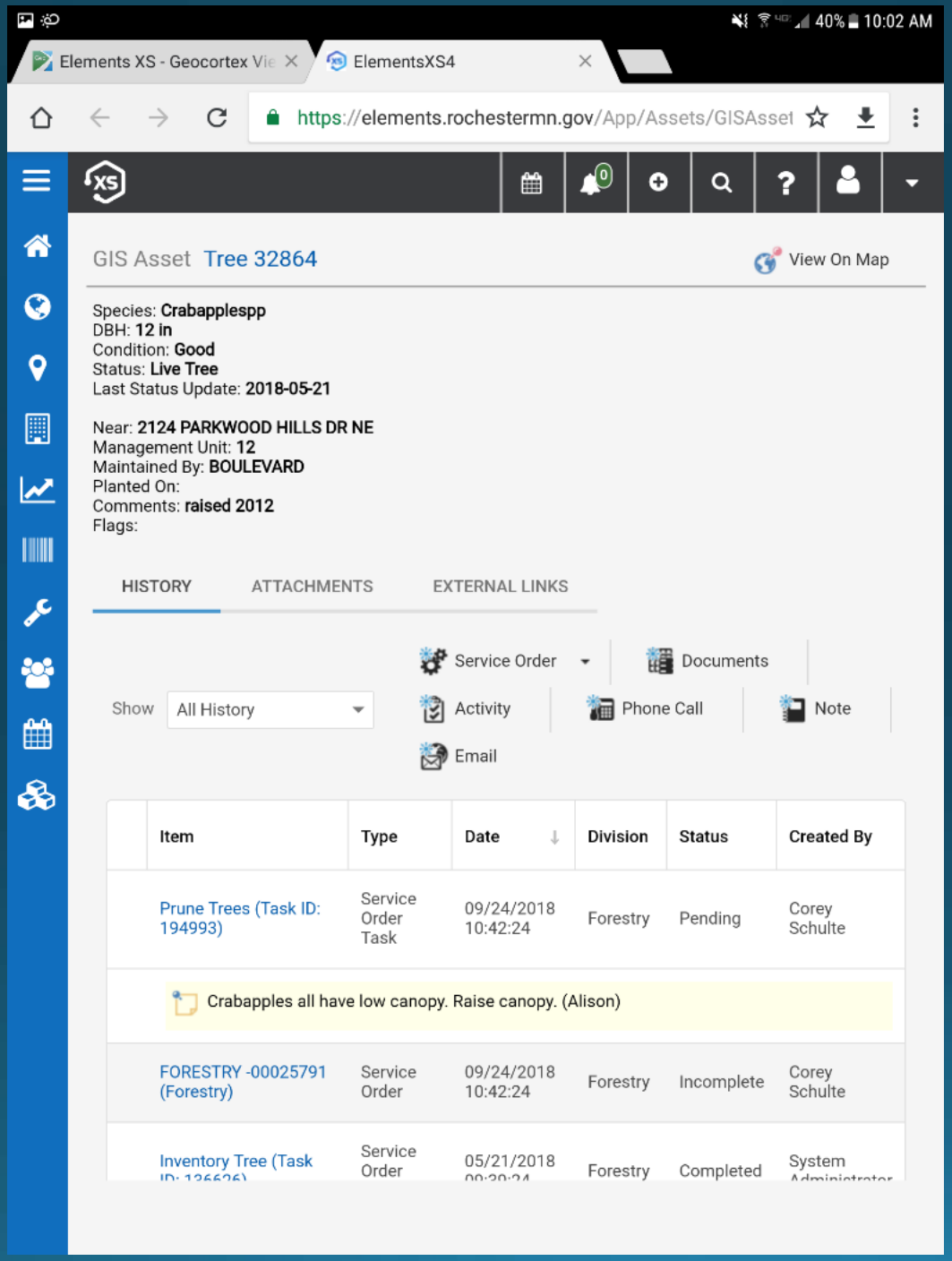
- Work Mgmt tools



Demo

GIS Asset:

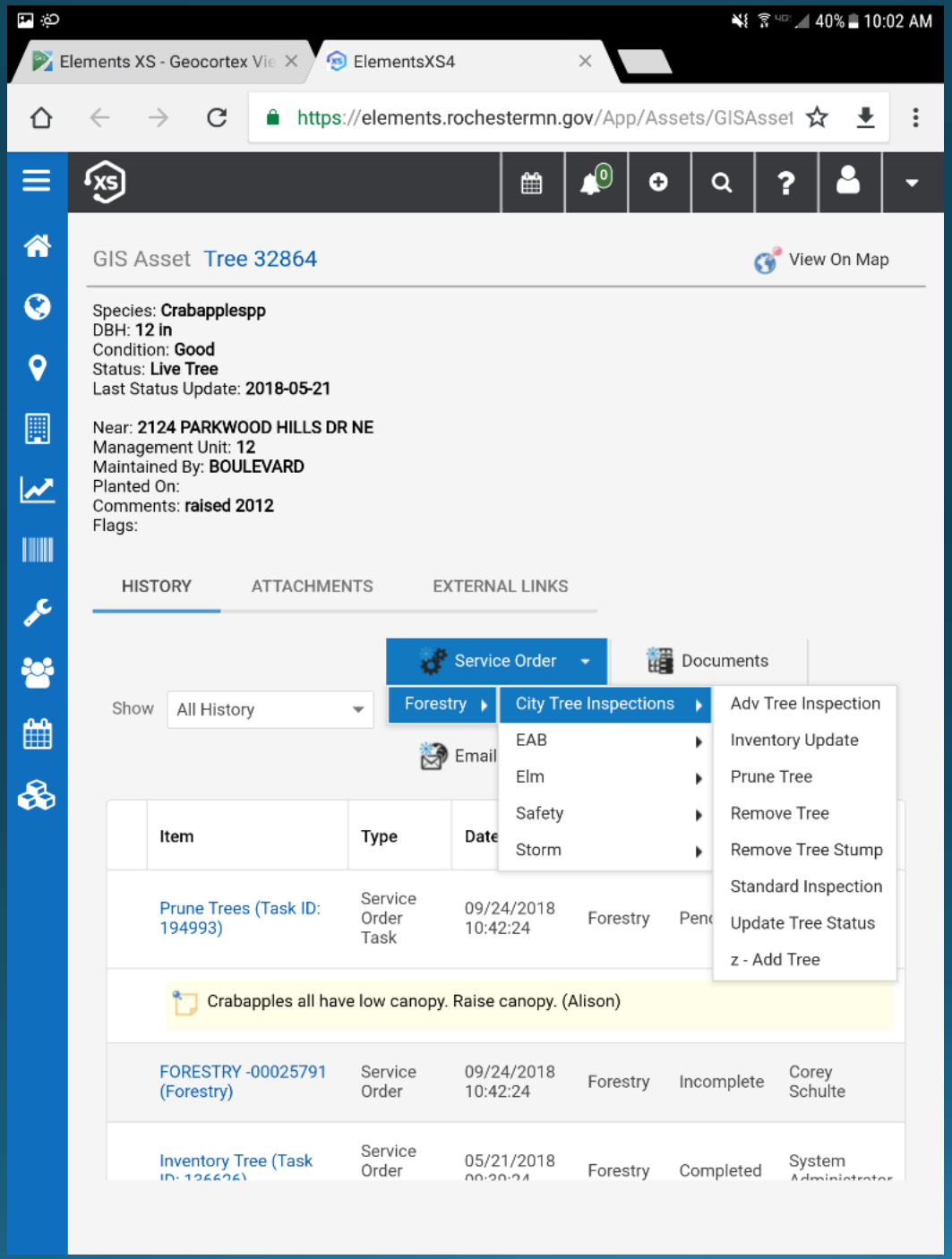
- Key attributes
- Service order history
- Create new service orders



Demo

Service Order:

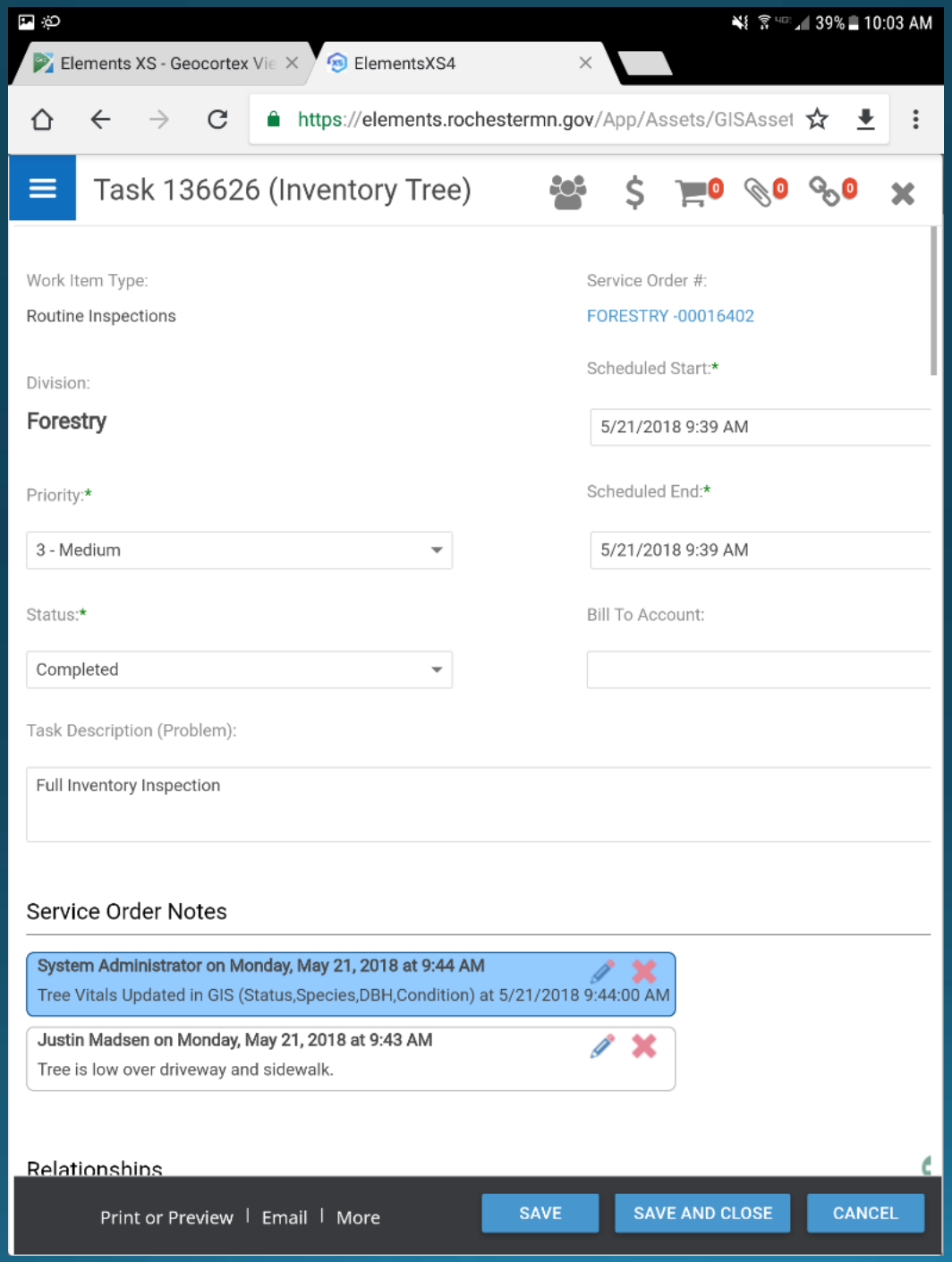
- Choose from a custom pick list



Demo

Service Order:

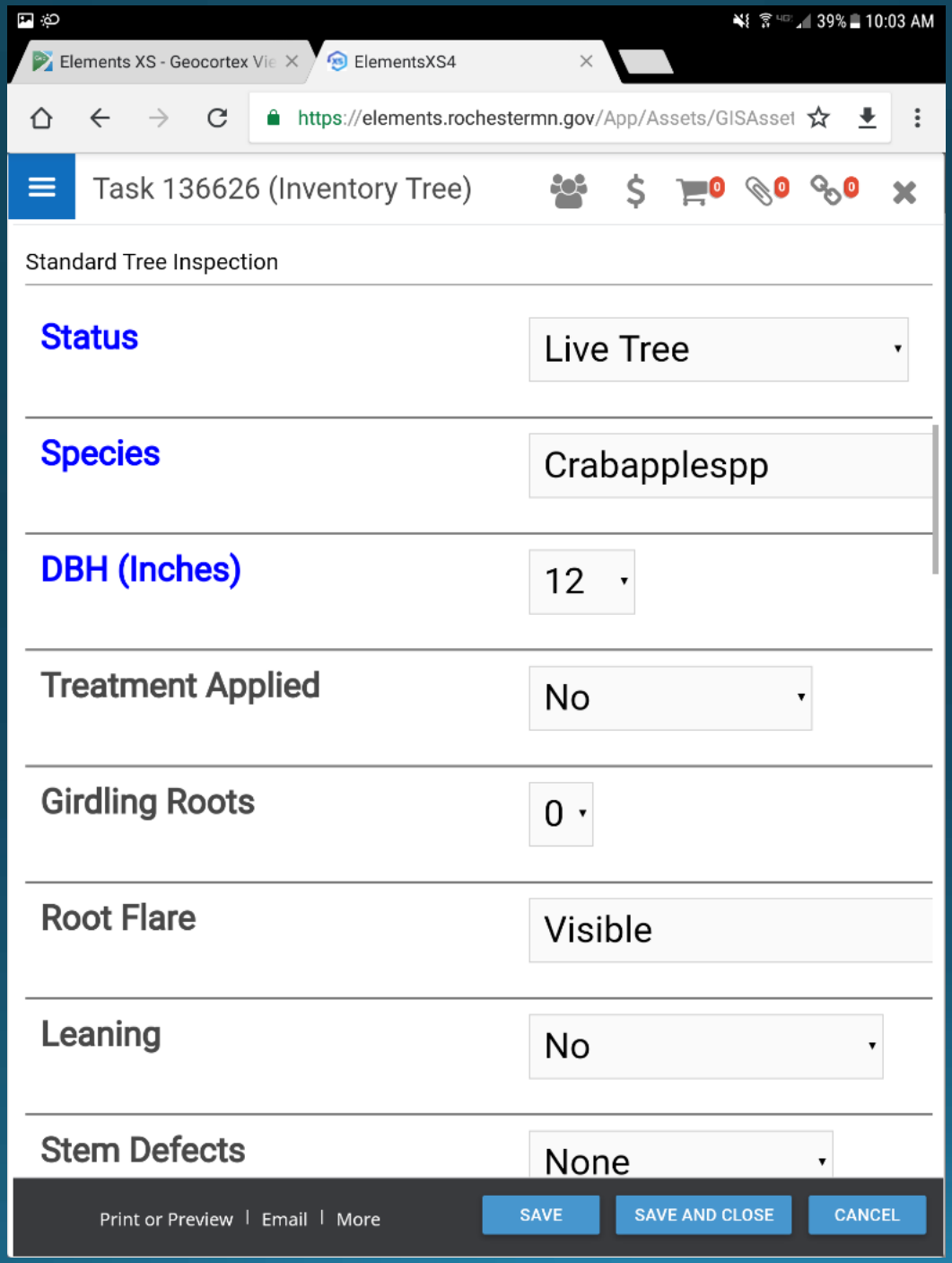
- Service order #
- Task #
- Task Type



Demo

Service Order:

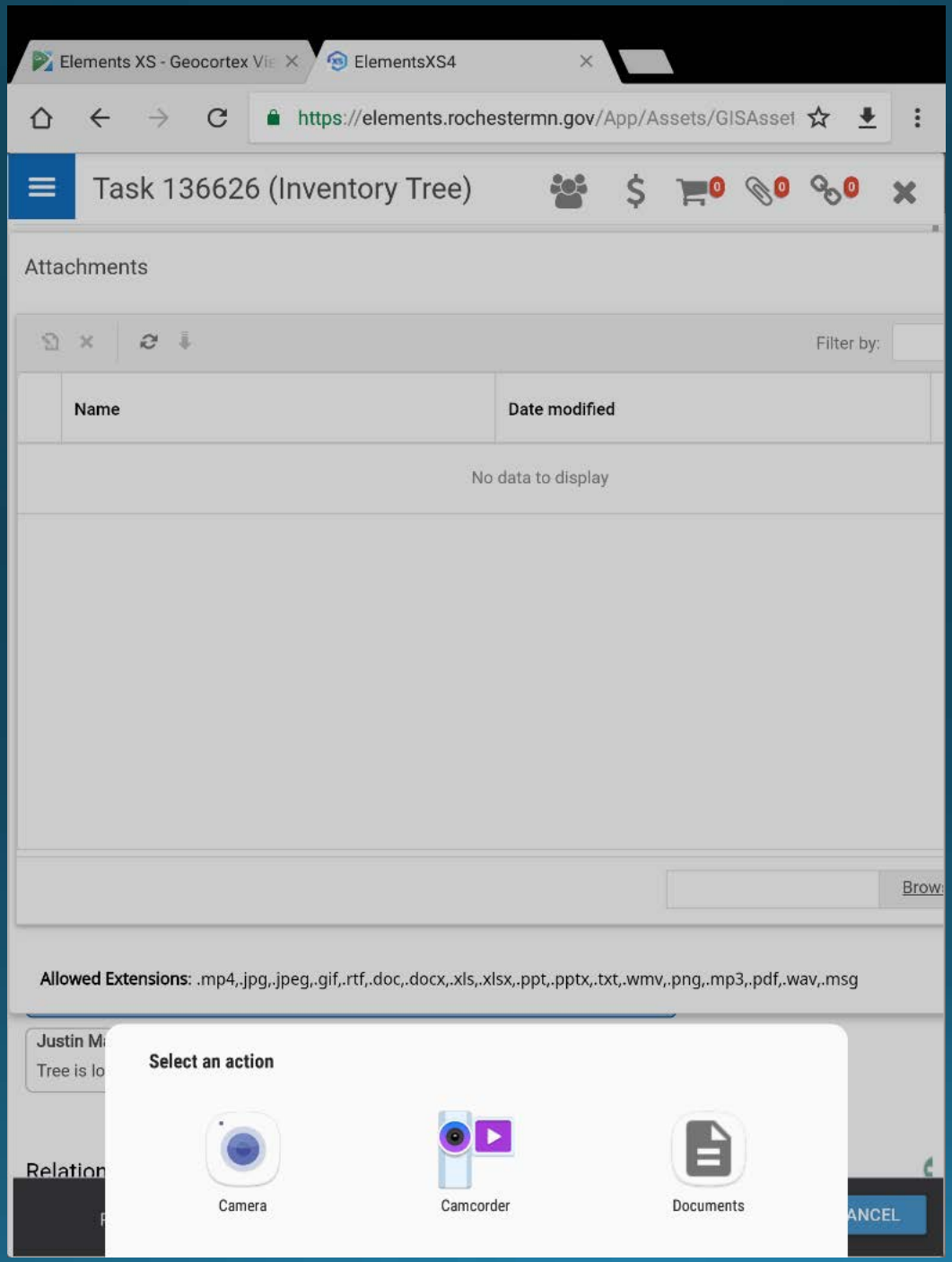
- Task #
- Task Type
- Enter main attributes + more



Demo

Service Order:

- Attach items to task



Elements Reports

Service Order Tasks Created Year To Date By Signal

Division: Signals — Completed: 32 — Total: 33

Signal: Signal 0200 at CSAH 22 (37th St NE/E Cir Dr NE) And TH 63 (N Broadway) — Completed: 0 — Total: 1

Date Created	Signal ID	Task #	Task Type	Status	Problem	Resolution
01/23/2019	0200	218023	Luminaire Not Working	Pending	Cover fell off of luminaire in NE corner.	

Signal: Signal 0210 at Rocky Creek Dr NE And TH 63 (N Broadway) — Completed: 1 — Total: 1

Date Created	Signal ID	Task #	Task Type	Status	Problem	Resolution
01/03/2019	0210	214252	Pedestrian Countdown	Completed	Turn ped signal heads so they are pointed directly at the opposite landing. When pushing the buttons, the heads are turned so half the countdown numbers are blocked by the visor.	Moved pedestrian countdown in the NW corner for crossing N. Broadway, NE corner for N. Broadway and Rocky Creek, SE corner for Rocky Creek.Moved 5 section head in SE corner for SB traffic.

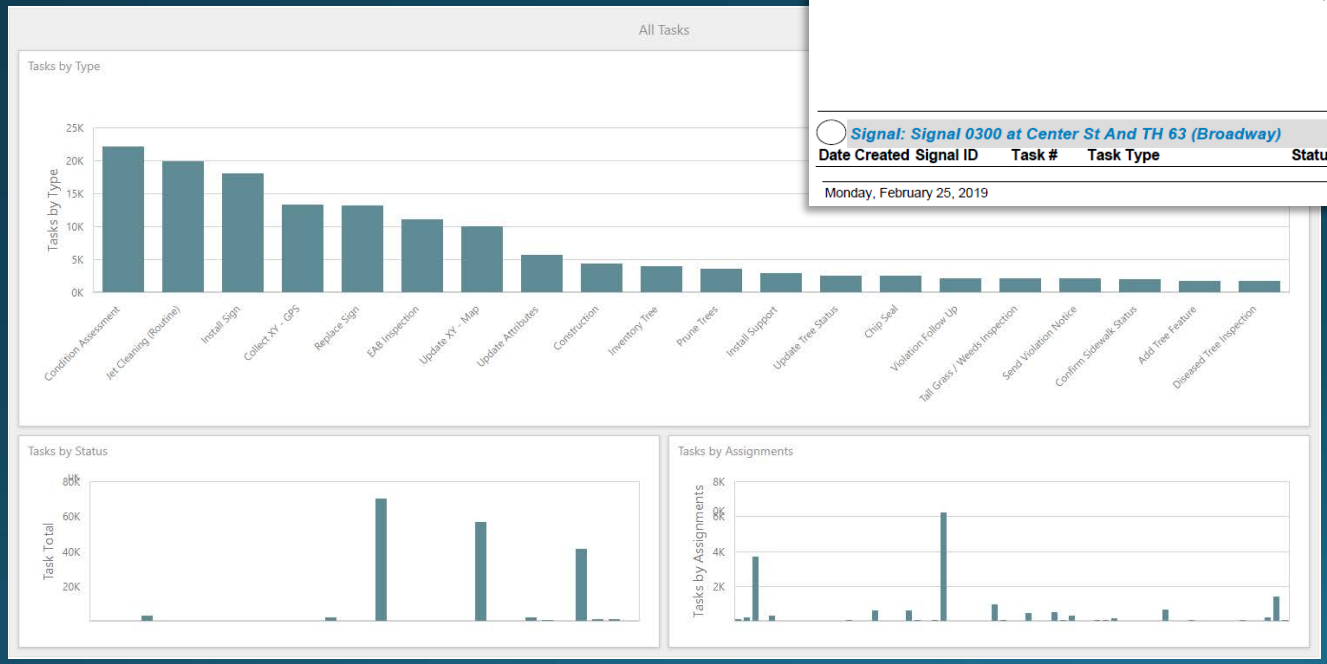
Signal: Signal 0220 at Northern Heights Dr NE And TH 63 (N Broadway) — Completed: 1 — Total: 1

Date Created	Signal ID	Task #	Task Type	Status	Problem	Resolution
01/02/2019	0220	213928	Vehicle Detection	Completed	Had a complaint that the intersection was not running correctly.Found phases 2 and 6 where in fault. Detection wire must have been cut during construction.	

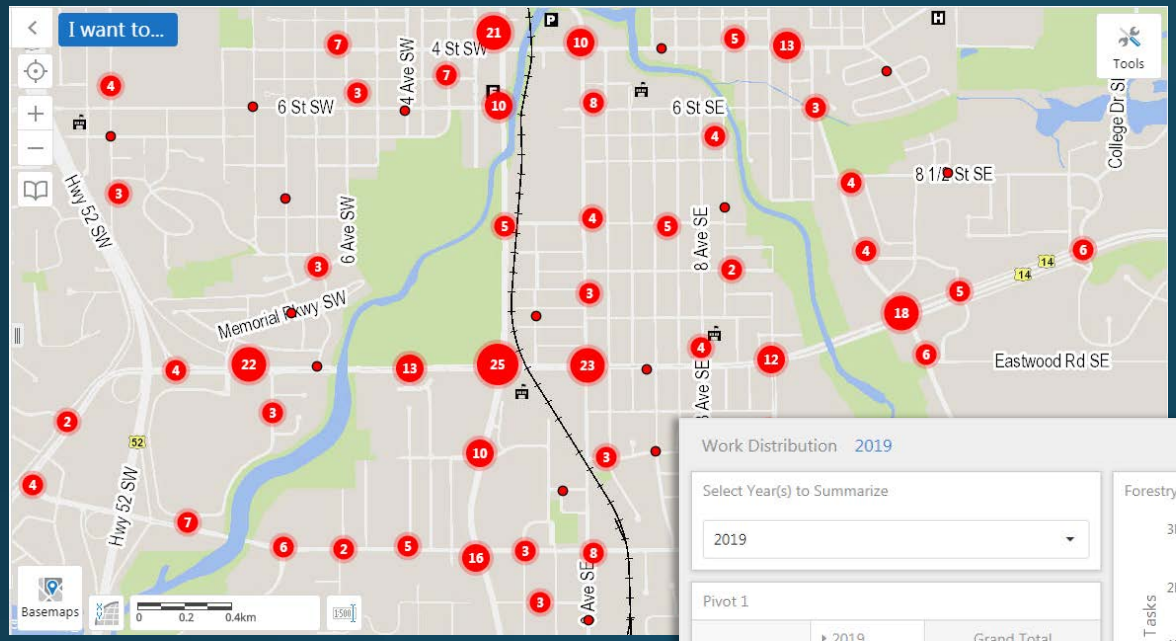
Signal: Signal 0300 at Center St And TH 63 (Broadway) — Completed: 4 — Total: 4

Date Created	Signal ID	Task #	Task Type	Status	Problem	Resolution

Monday, February 25, 2019 — Page 1 of 8



Elements Reports



Work Distribution 2019

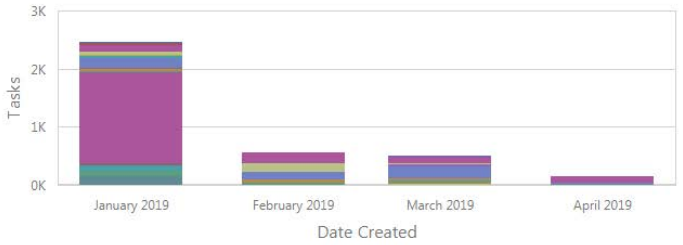
Select Year(s) to Summarize

2019

Pivot 1

	2019	Grand Total
City Tree Inspection Requests	6	6
City Tree Maintenance Tasks	16	16
City Wide Check	1	1
EAB Efforts	1.57K	1.57K
Encroachment	31	31
Private Property Inspection Requests	473	473
Routine Inspections	778	778

Forestry Work Tasks Breakdown



	City Tree Inspection Requests	City Tree Maintenance Tasks	City Wide Check	EAB Efforts	Encroachment	Private Property Inspection Requests	Routine Inspections
January	3	8		1.57K	14	344	287
February				1	1	77	200
March	3	6	1	1	15	46	168
Grand Total	6	14	1	1.57K	30	467	655

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- Challenges and Successes
- Next Steps

- Questions

Challenges (Technical)

- No mobile device management policies in place (technical needs ahead of our policies).
  - Managing each device – naming convention, inventory control, OS updates.
- Initial restrictions by IT: had to use Microsoft devices, no Android or iOS
  - A lot of time and $ spent trying to get Elements to work smoothly on Dell Venue and Microsoft Surface devices.
  - Eliminated users from being able to use phones.
  - Moving to DMZ finally allowed for the use of any device type.
- Connectivity in the field varies.
- Battery depletion by end of full day.
  - Charge during breaks with car chargers.
- Winter – devices difficult to use when cold.
  - Use a stylus to keep fingers functional.

Challenges

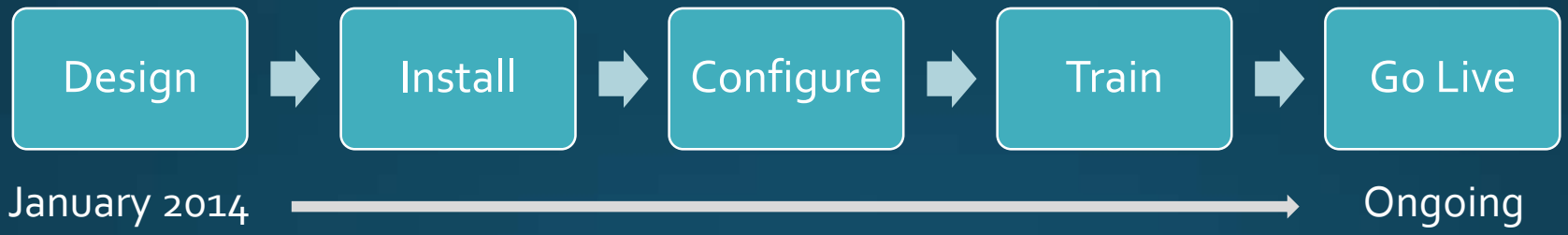
- Misconception that Elements would do everything (including microwave your cup of coffee).
  - Hard for some to understand what the system should and should not be used for.
  - Not a "one size fits all" and some work flows are best suited for other systems.
  - Why recreate the wheel is systems already exist that are transparent, efficient, and cost-effective?
    - Disaster Management, Stormwater/MS4 Activity Tracking.
- Challenges with culture/behavior
  - Not going to give up my clip board
  - The drop down says "pink" but I prefer "rose"
  - Disconnect between some groups in the field and those in the office using the data and realizing the gains.
  - Preference for older/existing systems due to comfort.
  - Reluctance by many to provide critical/essential feedback.

Challenges

- Funded and approved as a project and not a program.
- Project team turnover without replacing roles.
  - No acknowledgment that the scope, cost and/or timeline needed to adjust.

Challenges

- Adjust timeline and scope to match resources.

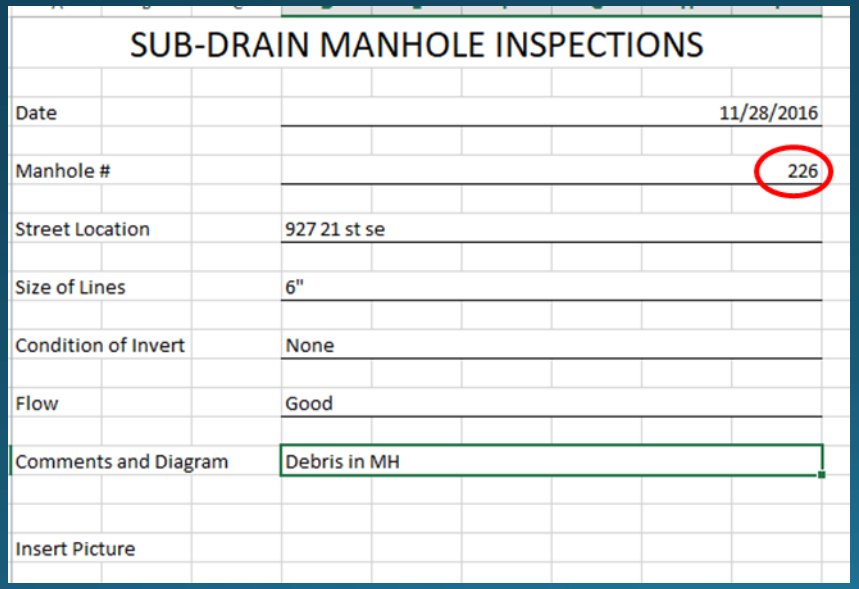


Challenges

- Lack of a strong champion within the Department.
- Turnover in the Organization resulted in initial champion leaving.
- Major organizational changes have resulted in many diverging areas of focus.
  - Need focus.
  - Need support and resources.
  - Vision/capabilities need to be understood.
  - Need buy-in.
  - Need help buffering requests.

Successes

- Biggest success with groups with no existing systems in place (i.e. Forestry)
  - Able to start from scratch, no comparisons to past systems/tools, open-minded and enthusiastic partners.
- Consistent, replicable, reportable information
  - Can perform analysis (i.e. subdrain inspection data, crashes, etc.).
  - Can pass data onto consultants (or other entities).
  - Contractors able to access (i.e. Rochester Plumbing & Heating).

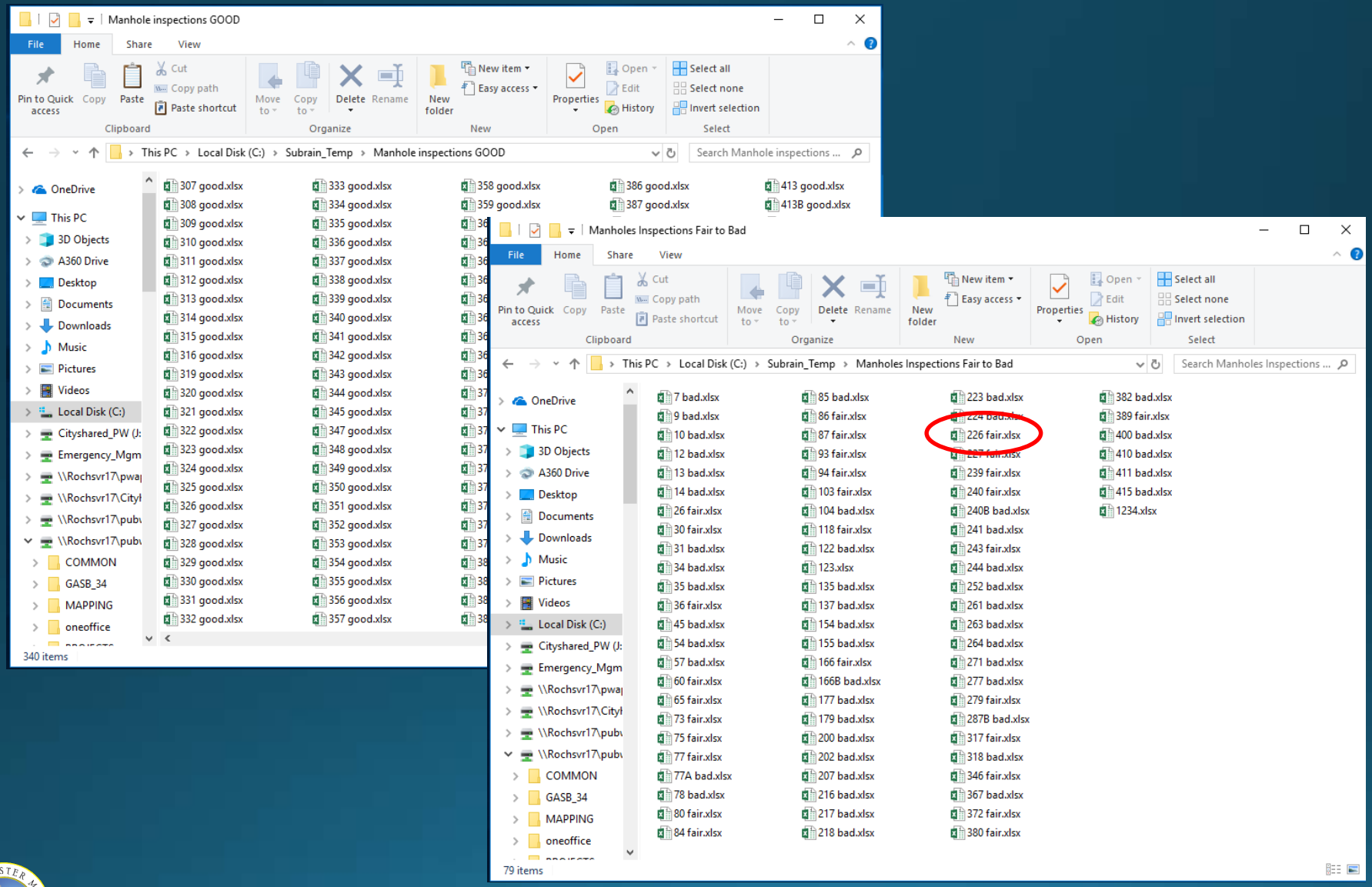


SUB-DRAIN MANHOLE INSPECTIONS

Date	11/28/2016
Manhole #	226
Street Location	927 21 st se
Size of Lines	6"
Condition of Invert	None
Flow	Good
Comments and Diagram	Debris in MH
Insert Picture	

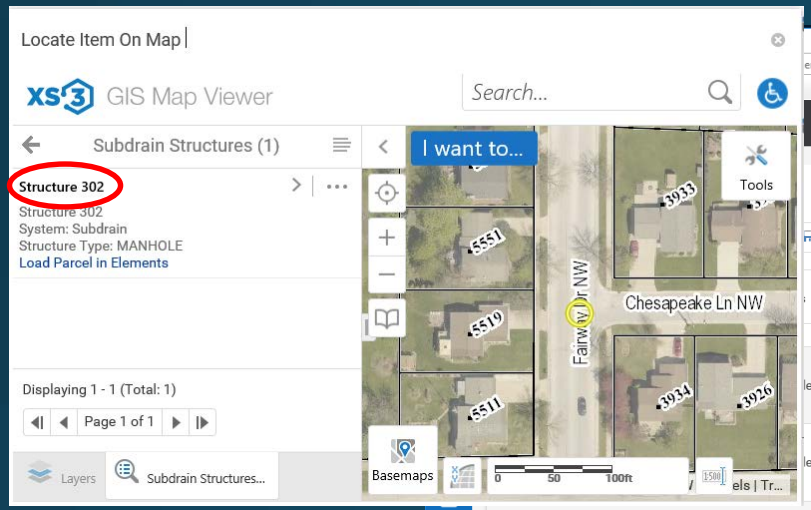
Sample "pre-Elements subdrain inspection report

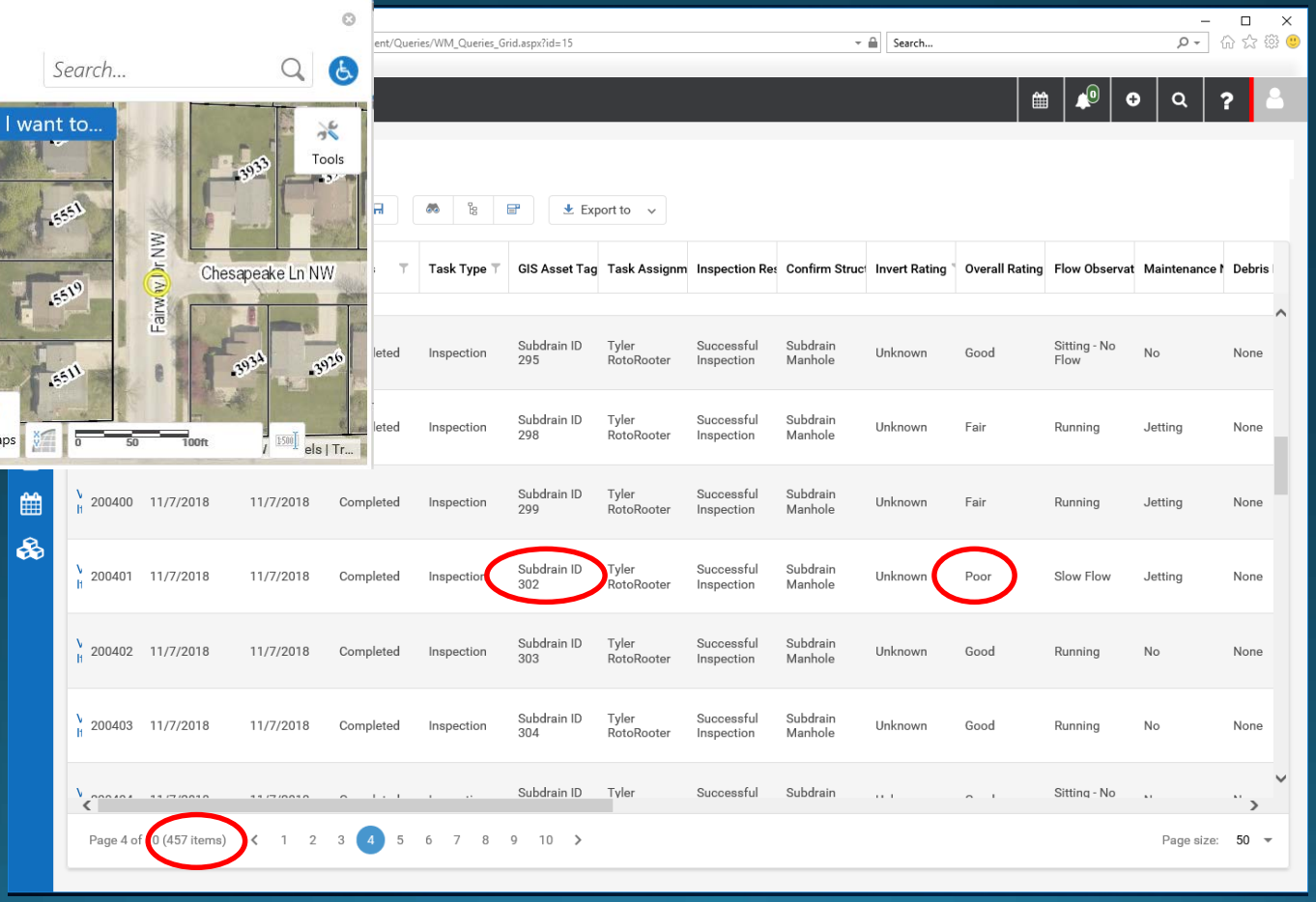
400+ separate Excel inspection documents each inspection season…

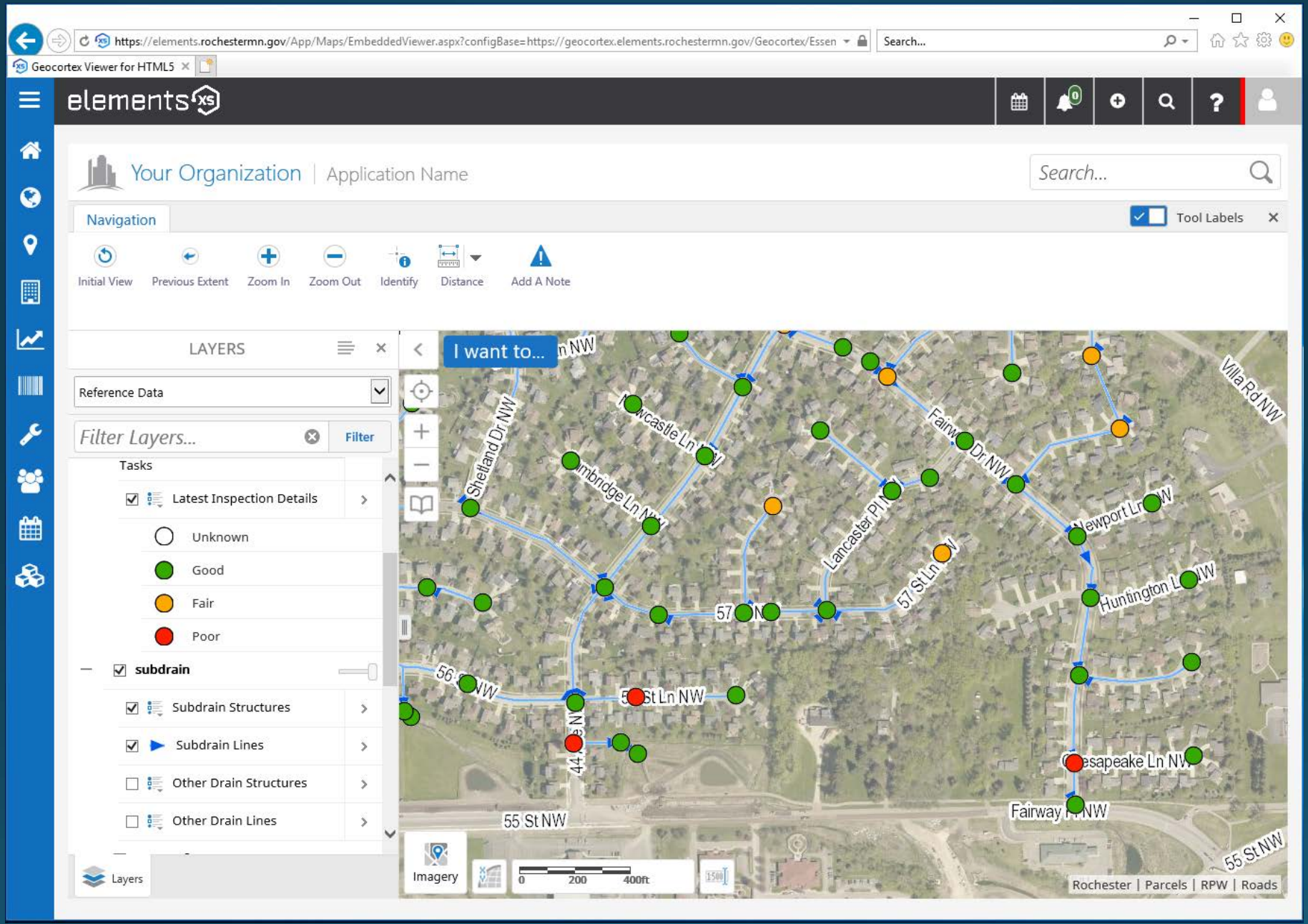


Successes

- 450+ inspections performed several times/year that can now be tracked spatially, analyzed, reported on, etc.
  - Track real-time progress as inspections are taking place.



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Your Organization
Application Name
Search...
Navigation
Tool Labels
Initial View
Previous Extent
Zoom In
Zoom Out
Identify
Distance
Add A Note
LAYERS
Reference Data
Filter Layers...
Filter
Tasks
Latest Inspection Details
Unknown
Good
Fair
Poor
subdrain
Subdrain Structures
Subdrain Lines
Other Drain Structures
Other Drain Lines
Layers
I want to...
Shetland Dr NW
Lancaster Pl NW
57 St Ln NW
Villa Rd NW
Huntington Ln NW
Chesapeake Ln NW
55 St NW
Imagery
0
200
400ft
Rochester | Parcels | RPW | Roads

Successes

- Systems and workflows guiding new teammates
  - Processes no longer "unwritten" or only in our heads.
- Growth and more reports
  - Users asking for more is a sure sign of success.
  - Some "power users" are building their own reports and customizing filters.
  - Users are participating and contributing, coming up with new ideas.
  - The workflows and reports are flexible.
- Unforeseen benefits
  - Essential information shared amongst departments regarding intersecting workflows and prioritization. Example: sidewalks and forestry.
- Added capacity to the internal COR team.
  - Creation/addition of a new GIS team member has provided a terrific boost.
- Skills learned/developed within the Organization are invaluable.
  - Due to the "lean" team the PM had to learn/grow skills in programming, customization, report building, trouble-shooting, etc.

Next Steps

- Continuing updates and improvements
- Continuing to build out reporting
- Incorporate Labor, Equipment, Materials
- Contractor Interface
- Citizen Interface \ Integration
- Two Tiered Environment (Dev / Production)

Questions?