

Maximo Scheduler and Spatial

...a powerful combination

September 1, 2016



Unlocking potential.
Achieving results.

Agenda

- **Introductions**
- **What is Maximo Spatial Asset Management?**
- **What is Maximo Asset Management Scheduler?**
- **Use case 1:** How these integrated solutions add value?
- **Use case 2:** How these integrated solutions add value?

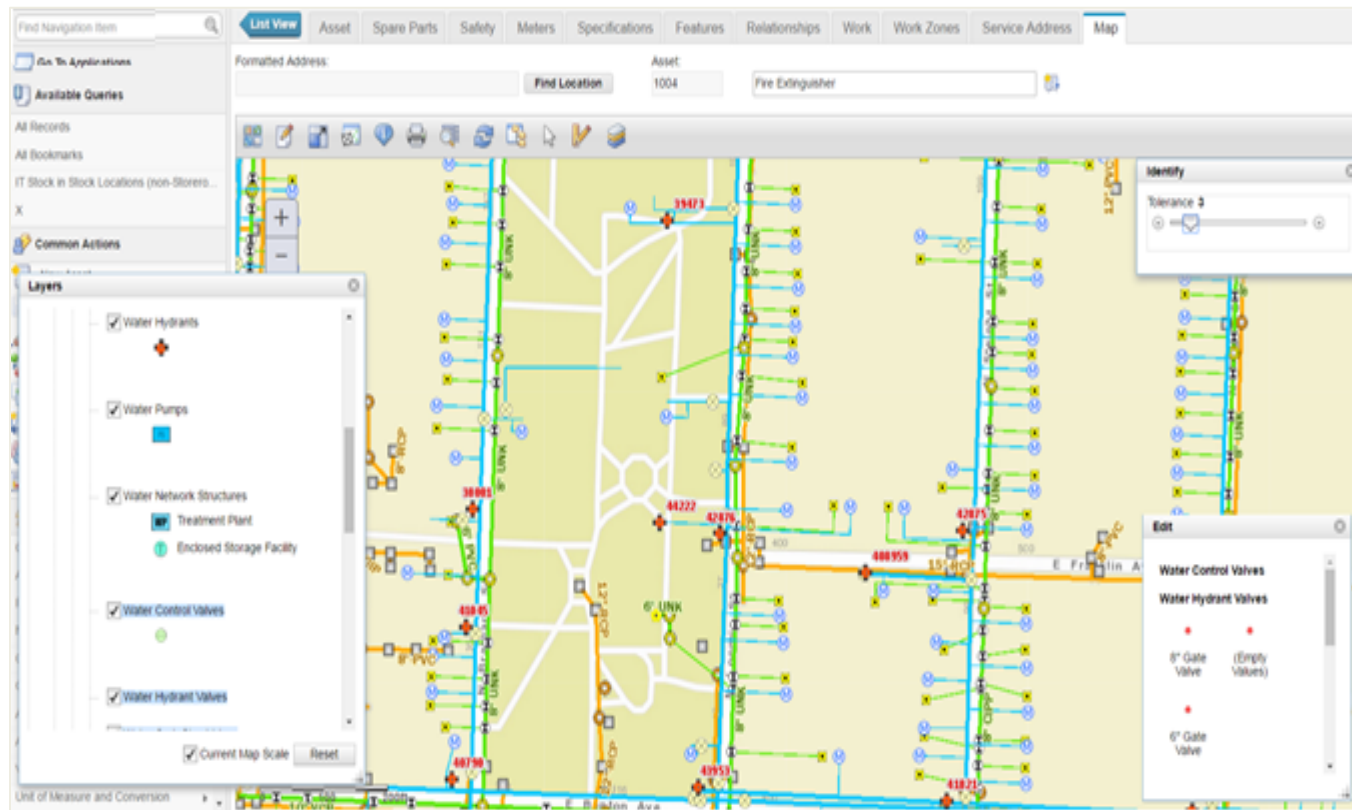
Introduction

- **Lacey Radabaugh**
 - Sales Engineer – Energy and Utilities
- **Mike Beasley**
 - Vice President – Utilities



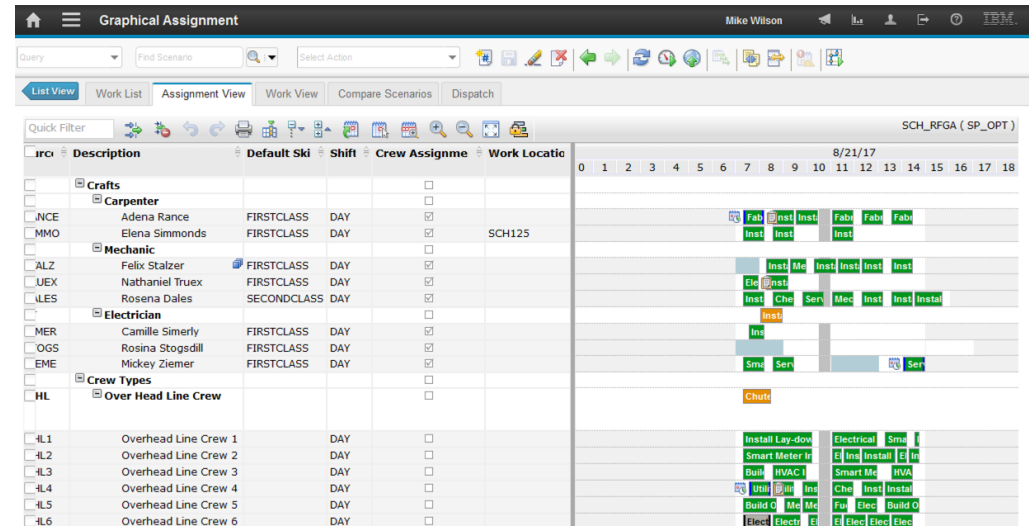
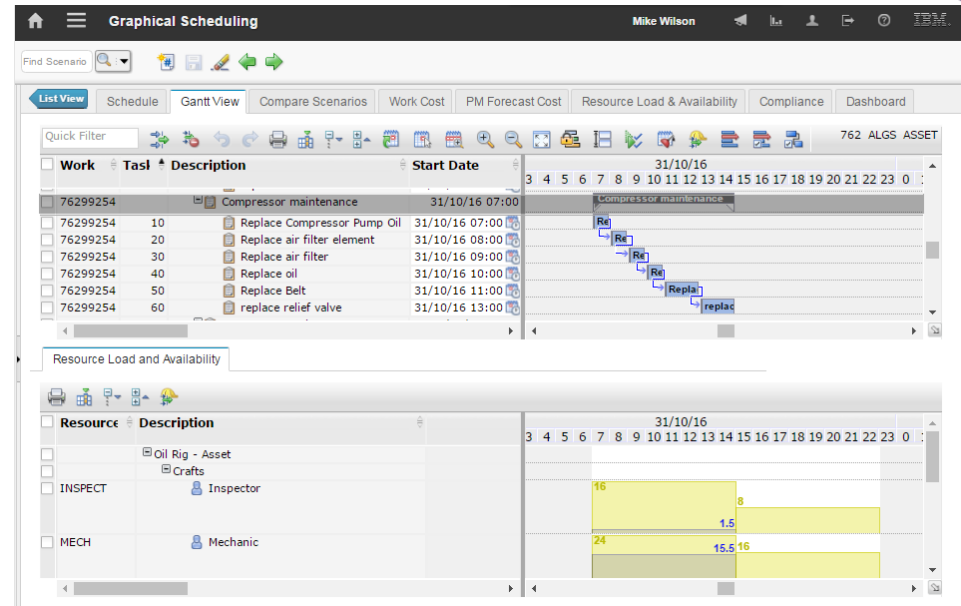
What is Maximo Spatial Asset Management

- Provides a GIS solution that allows users to 'visualize, question, analyze, and interpret data to understand relationships, patterns, and trends.'
- Allows users to look at data in a way that is quickly understood and easily shared on a map.
- Creates a level of awareness and insight that tabular systems without graphics cannot provide.



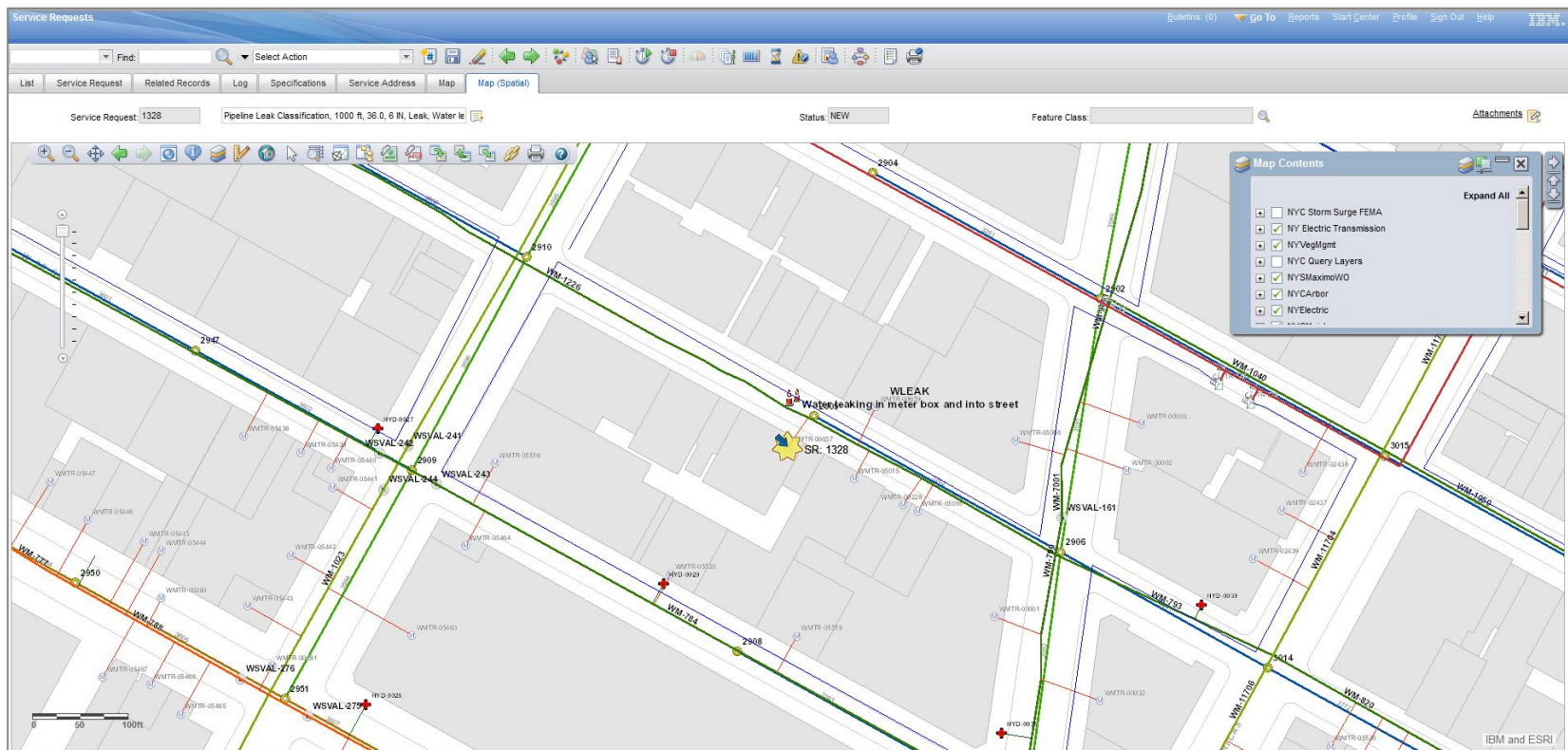
What is Maximo Asset Management Scheduler

- Maximo Asset Management Scheduler is an end-to-end work management tool that accommodates many roles in the work management lifecycle
 - Planners and schedulers can view work orders and PMs graphically on a Gantt chart, compare the required resources against those available, and adjust accordingly
 - Supervisors can manage work order assignments graphically and drag and drop to assign to labor and crews
 - Dispatchers can use maps to graphically monitor field technicians, work in progress, and status
 - Field technicians can receive work and provide real time status updates to the dispatcher
- Optimization models help gain significant efficiencies by automating work management tasks



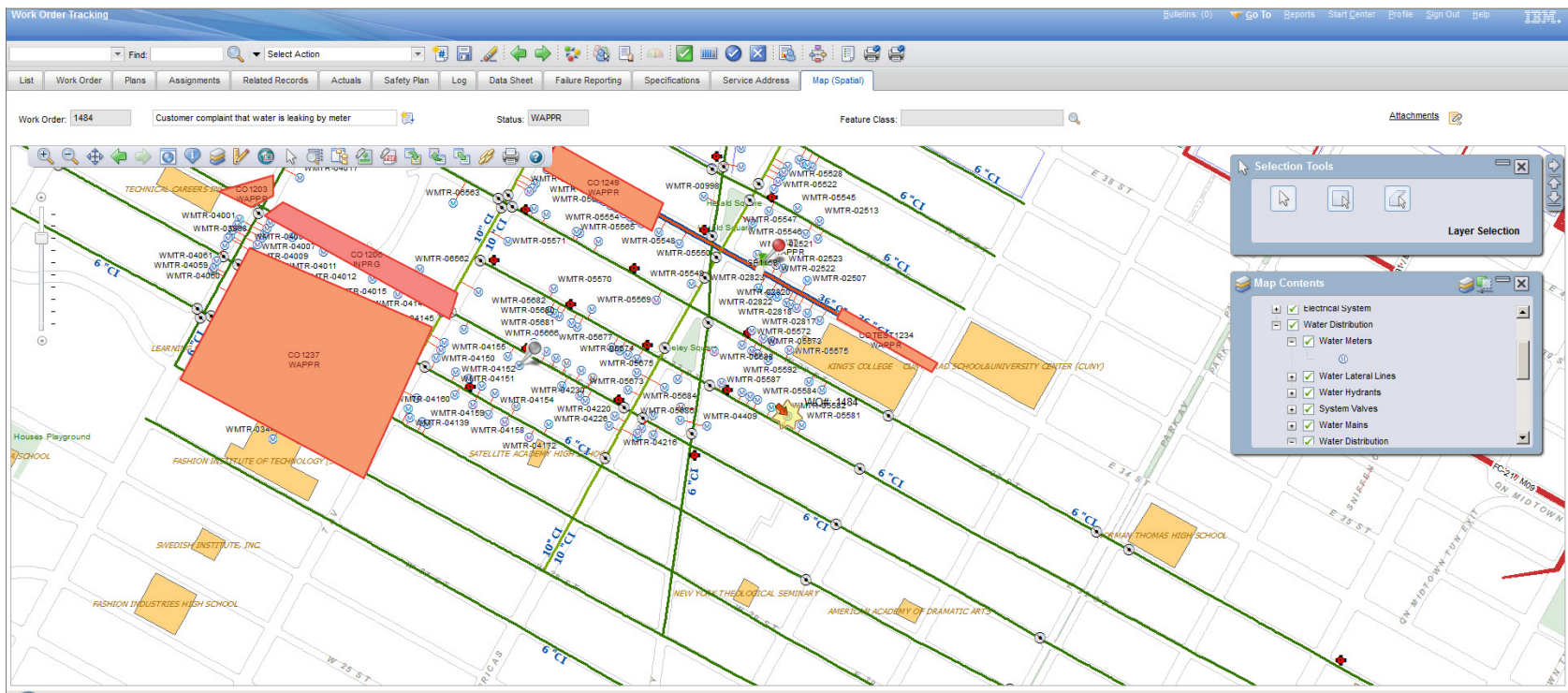
Use case 1: service request initiated based on customer complaint

- A service request is initiated based on a customer calling and indicating there is water leaking around their meter
- Map position of service request can be determined from the customer premise location or meter asset
- Map feature for service request can automatically be created
- Location of work can be visualized in a map and nearby features including other services requests, work orders, assets and locations can be visualized



Work order created from service request

- A work order is created from the service request
- Map position of the work order can be determined from related information
- Map feature for work order can automatically be created



Work order is assigned

- The supervisor is notified of the work order by the dispatcher
- The supervisor utilizes the Graphical Assignment application to view availability of technicians and assign the work through a graphical drag and drop view
- Once assigned, the supervisor locks the work and enters notes

The screenshot displays the 'Graphical Assignment' application interface. The top navigation bar includes a home icon, a menu icon, the title 'Graphical Assignment', and the user name 'Mike Wilson'. Below the navigation bar is a toolbar with various icons for actions like search, save, and undo. The main interface is divided into several sections:

- Left Panel:** A list of resources with checkboxes, descriptions, default skills, and status. Resources include Crafts (Mechanic), Electrician, and Carpenter, with specific technicians like Felix Stalzer, Nathaniel Truex, and Adena Rance listed.
- Center Panel:** A grid showing the availability and assignment of technicians for the month of August 2017. The grid is organized by date (21, 22, 23) and shift (W34, 23). Various icons and colored blocks represent different work assignments and shifts.
- Right Panel:** A context menu is open, listing actions such as 'Split Work According to Shifts', 'Split Work', 'Split Work into Three Records', 'Create Assignment', 'Delete Assignment', 'Lock', 'Add/View Notes' (highlighted by the mouse), 'Available Labor', 'Unassign', 'Move to Next Hour', 'Move to Today', 'Move to Next Day', 'Move to Day', 'Set Work to Day', 'Go To Quick Reporting', 'Go To Work Order Tracking', and 'Go To Maximo Anywhere'.

Work order is executed

- Tailored Everyplace applications allow technicians to see a summarized view of their required materials and tools
- Visualize their daily route of work orders, get turn by turn directions, see other labor and crews nearby and unassigned work nearby
- Start and stop a work order through a single tap, create labor and tool transactions, capture log notes, meter readings, failure codes and more

The screenshot displays a mobile application interface for managing work orders. The main window is titled "My Work" and "Details". It features a "Work Orders" section with a table listing various tasks. Below this is a "Map View" showing a route on a map. A "Query Unassigned Work Orders" dialog box is open, allowing users to filter work orders by date and status. A directions overlay is also visible, providing turn-by-turn instructions for a specific route.

Work Order	Description
6011	HVAC Quarterly Inspections & Certification
1650	PLUMBING, Plugged Toilet
1660	PLUMBING, Plugged Toilet
1668	Forklift #1 Quarterly Inspection and Certification
1004	Generator Overhaul
1002	Rebuild Feedwater Pump
2128	Pump overhaul
2165	STATION INSPECTION, Y, N, Y
2544	Crane Quarterly Inspection and Certification
2545	Monthly Rope, Chain, and Hook Inspection

Query Unassigned Work Orders

Scheduled Start

From: 8/23/16

To: 8/27/16

Target Start

From:

To:

Status:

Work Type:

Priority:

Find Cancel

Map View

1. Head north on Sitka Spruce Street toward Bristlecone Dr 0.2 mi

2. Continue onto Anna's Ln 0.2 mi

3. Turn right onto W Milham Ave 1.4 mi

4. Turn left onto Oakland Dr 0.5 mi

Close

Required Materials

1 - 6 of 10

Progress of work is monitored

- The dispatcher can view work order progress
- View location of labor and crews
- View unassigned work and assign it to the nearest

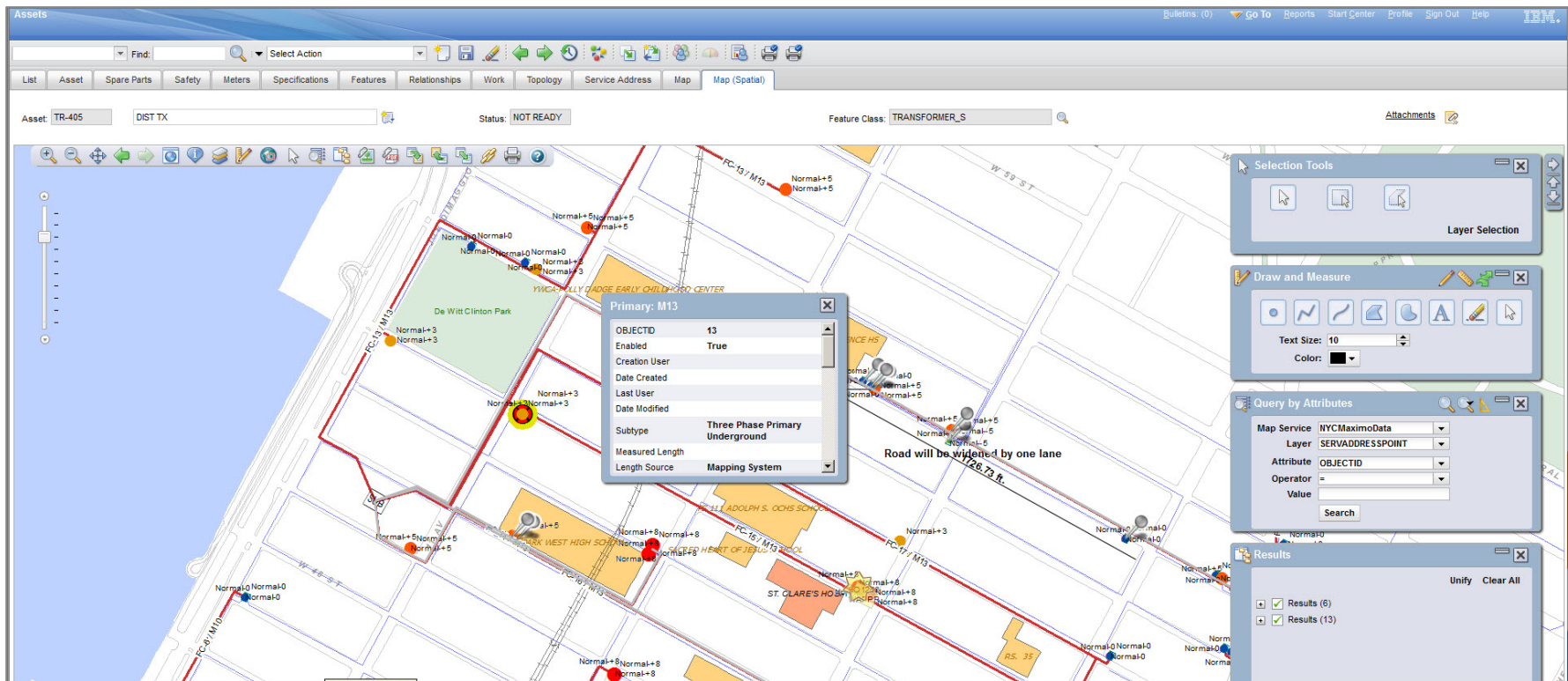
The screenshot displays the 'Graphical Assignment' software interface. The top navigation bar includes a home icon, a menu icon, and the title 'Graphical Assignment'. Below this is a search bar with 'Query' and 'Find Scenario' fields, and a 'Select Action' dropdown. The main interface is divided into several sections:

- Dispatch View:** A central map showing the geographic distribution of work orders and labor. The map includes labels for streets like 'Fanhawe Park Rd W', 'Commissioners Rd W', and 'Whitcliffe Rd S'. Work orders are represented by colored pins (green for 'Approved', orange for 'Canceled', blue for 'Close Work Order', etc.) and labor is represented by icons of people. A legend on the right side of the map explains these symbols.
- Labor and Description Table:** A table on the left side of the interface listing labor resources and their assignments. It includes columns for 'Labor and Description', 'Status', and 'Date'. The table is organized into sections for 'Crafts' (Carpenter, Electrician, Mechanic), 'Crew Types' (Over Head Line Crew, Snow Plow Crew, Water Maintenance Crew), and 'Crews' (Over Head Line Crew 1, Over Head Line Crew 2, etc.).
- Work Orders Status Legend:** A panel on the right side of the map showing the status of work orders. It includes a list of status options with corresponding icons:
 - ☒ Approved (Green pin with checkmark)
 - ☒ Canceled (Orange pin with X)
 - ☒ Close Work Order (Blue pin with X)
 - ☒ Completed (Blue pin with checkmark)
 - ☒ In Progress (Green pin with bar chart)
 - ☒ Waiting on Approval (Blue pin with envelope)
 - ☒ (Others) (Blue pin)

The bottom of the interface shows a Google Map data copyright notice and a scale bar indicating 2 km.

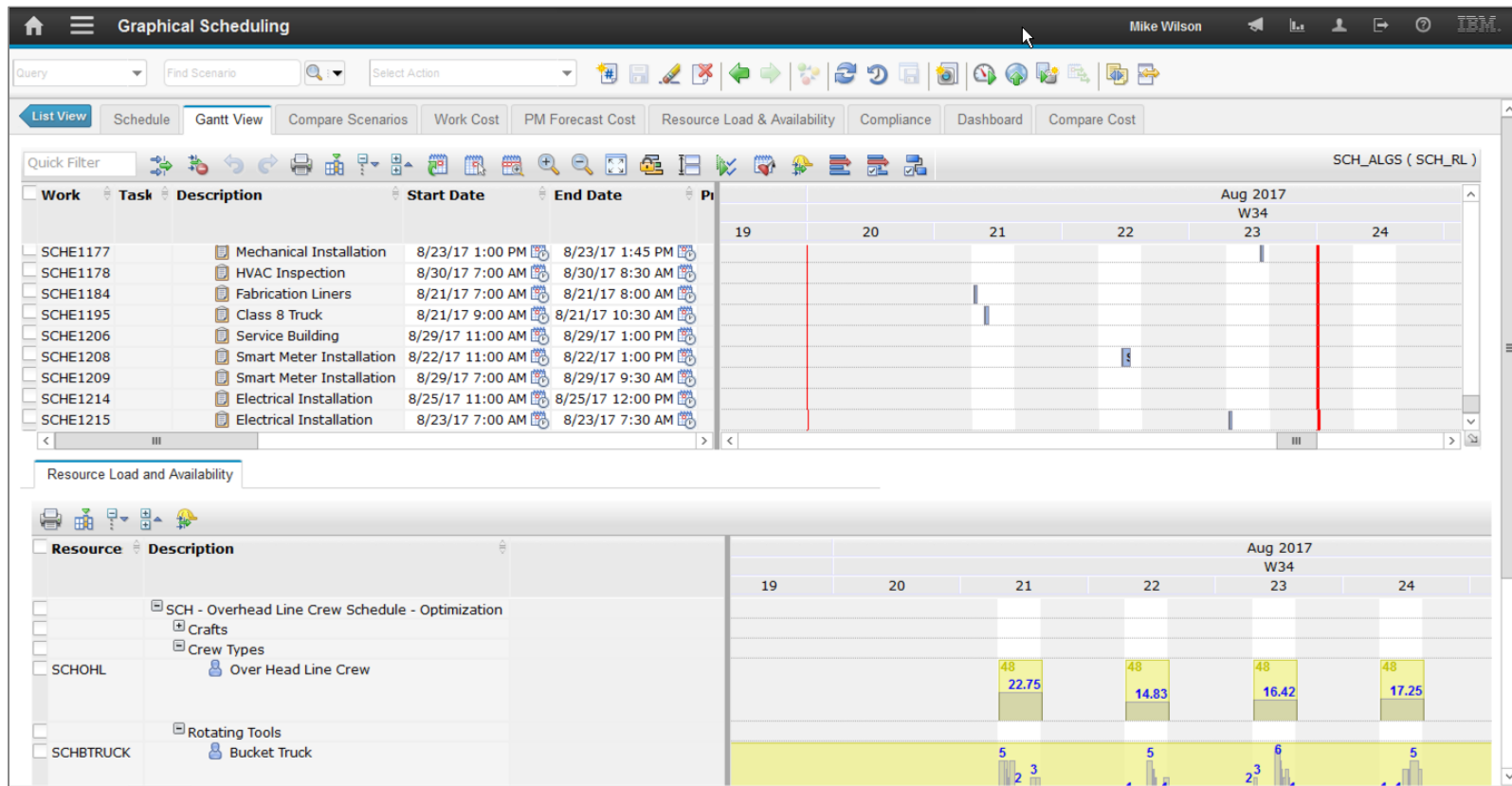
Use case 2: work is initiated to relocate overhead lines

- Due to a road widening initiative, overhead lines must be moved on 50 feet to the right
- From within the map view in the Assets application, all assets along the corridor of road are identified and a work package is created from a single Select Action



Work is scheduled

- After the work is designed, work is scheduled in the Graphical Scheduling application
- Resource load and availability and other resource availability including assets, locations, items and tools can be taken into consideration when scheduling work
- Date constraint windows and task dependencies can be adhered to



Work is assigned

- Work can be assigned to crews within the Graphical Assignment application

The screenshot displays the 'Graphical Assignment' application interface. The top navigation bar includes a home icon, a menu icon, the title 'Graphical Assignment', the user name 'Mike Wilson', and several utility icons. Below the navigation bar is a toolbar with a 'Query' dropdown, a 'Find Scenario' search bar, a 'Select Action' dropdown, and various icons for editing and navigation. The main interface is divided into two panes. The left pane contains a table with columns: Resource, Description, Default Ski, Shift, Crew Assignme, and Work. The right pane shows a Gantt chart for the date 8/21/17, with a detailed view of a task named 'SCHB1172 - Electrical Installation(SCHOHL)'. A pop-up window provides details for this task, including Start Date, End Date, Duration, Status, Asset, and Location.

Resource	Description	Default Ski	Shift	Crew Assignme	Work
SCHSMER	Camille Simerly	FIRSTCLASS	DAY	<input checked="" type="checkbox"/>	
SCHSTOGS	Rosina Stogsdill	FIRSTCLASS	DAY	<input checked="" type="checkbox"/>	
SCHZIEME	Mickey Ziemer	FIRSTCLASS	DAY	<input checked="" type="checkbox"/>	
CARP	Carpenter			<input type="checkbox"/>	
	Crew Types				
BOSNOW	Snow Plow Crew			<input type="checkbox"/>	
BOSNOW1	Snow Plow Crew 1		DAY	<input type="checkbox"/>	
BOSOHL	Over Head Line Crew			<input type="checkbox"/>	
BOSOHL1	Over Head Line Crew 1		DAY	<input type="checkbox"/>	
BOSOHL2	Over Head Line Crew 2		DAY	<input type="checkbox"/>	
BOSOHL3	Over Head Line Crew 3		DAY	<input type="checkbox"/>	
BOSOHL4	Over Head Line Crew 4		DAY	<input type="checkbox"/>	
BOSOHL5	Over Head Line Crew 5		DAY	<input type="checkbox"/>	
SCHOHL	Over Head Line Crew			<input type="checkbox"/>	
SCHOHL1	Overhead Line Crew 1		DAY	<input type="checkbox"/>	
SCHOHL2	Overhead Line Crew 2		DAY	<input type="checkbox"/>	
SCHOHL3	Overhead Line Crew 3		DAY	<input type="checkbox"/>	
SCHOHL4	Overhead Line Crew 4		DAY	<input type="checkbox"/>	
SCHOHL5	Overhead Line Crew 5		DAY	<input type="checkbox"/>	
SCHOHL6	Overhead Line Crew 6		DAY	<input type="checkbox"/>	
BOSWATER	Water Maintenance Crew			<input type="checkbox"/>	
BOSWAT1	Water Maintenance Crew 1		DAY	<input type="checkbox"/>	
BOSWAT2	Water Maintenance Crew 2		DAY	<input type="checkbox"/>	

SCHB1172 - Electrical Installation(SCHOHL)

Start Date: 8/21/17 12:00 PM
End Date: 8/21/17 1:00 PM
Duration: 1:00
Status: WAITASGN
Asset: SCH109
Location: SCH109

Assignment of work may be optimized

- The assignment of work can be optimized by a spatial scheduling optimization model

Spatial Scheduling Optimization

Scenario:
SP_OPT SCH - Overhead Line Crew GA and Dispatch - Optimization

Schedule

☒ Immediate Run in Background Mode? ☐

☐ At this Time Refresh Project Data? ☐

☐ Recurring

E-Mail Address Notification:

* Name:
1008

Objectives Constraints Variables

Minimize Task Interruptions? ☐ Maximize the Sum-product of Prioritized Work Orders? ☒ Minimize Travel Time? ☒

Maximize the Number of Assigned Work Orders? ☐ Minimize Task Completion Time? ☐ Complete High Priority Work First? ☒

Last Run

Save Submit Close

Spatial Scheduling Optimization

Scenario:
SP_OPT SCH - Overhead Line Crew GA and Dispatch - Optimization

Schedule

☒ Immediate Run in Background Mode? ☐

☐ At this Time Refresh Project Data? ☐

☐ Recurring

E-Mail Address Notification:

* Name:
1008

Objectives Constraints Variables

Match Skills? ☒ Include Travel Time in Total Time? ☒

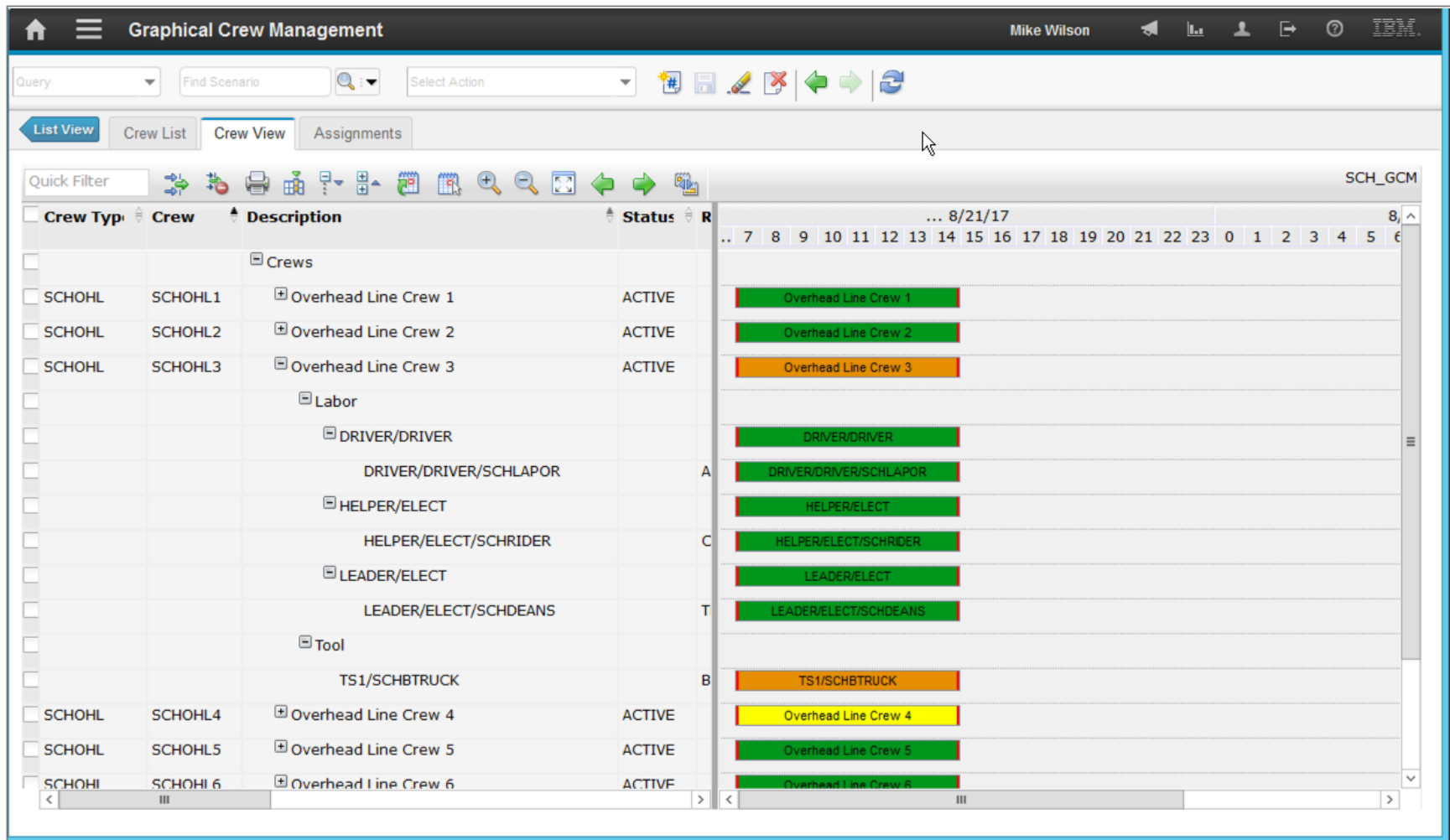
Schedule Window? ☐ * Travel Time Buffer %:

Last Run

Save Submit Close

Daily shuffle of crews is managed

- Supervisor builds and manages crews graphically – day by day or a weekly look ahead



Introducing – Scheduler Plus!

Advanced work management solution, built on top of Maximo Scheduler



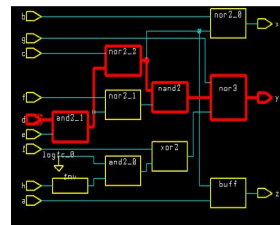
Weather integration

- Incorporate weather data into planning/scheduling and dispatching
- Weather alerts / notifications



Appointment scheduling

- Make customer appointments within a schedule window
- Customer notifications – cancel / reschedule



Managing large projects

- Dependencies across work orders and tasks
- Highlight critical path, backward pass, % complete



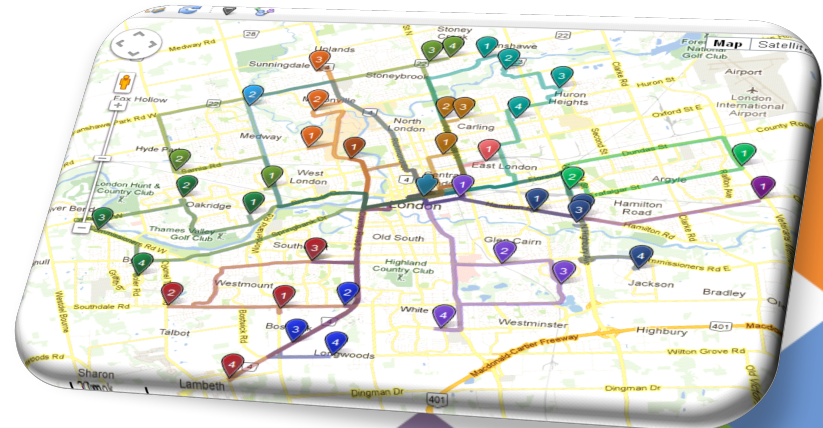
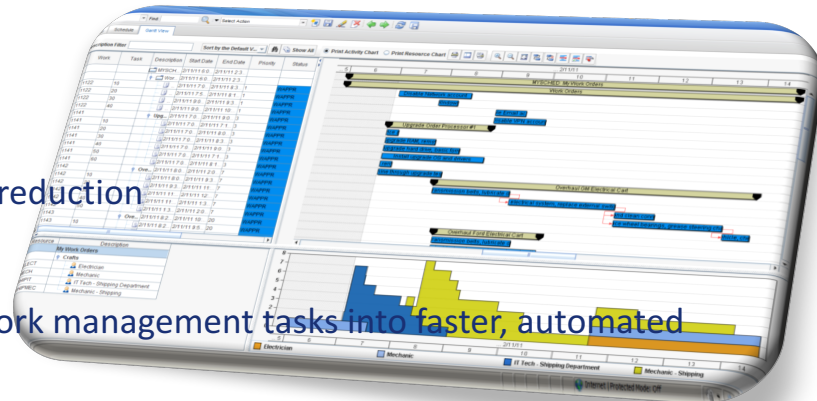
Dynamic dispatching

- Auto refresh, re-optimization based on real-time progress
- Incorporate real-time traffic conditions

Back-up

Why do clients chose Maximo Scheduler?

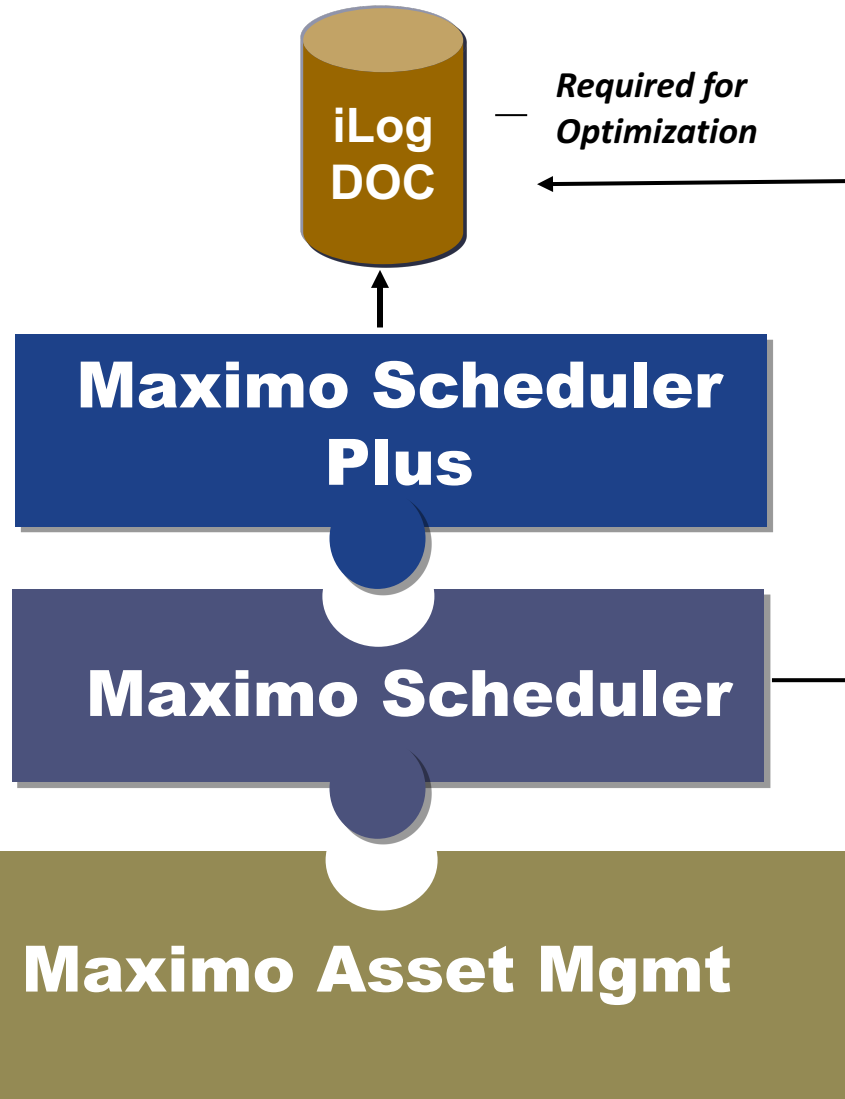
- Embedded in Maximo
 - No third-party product integrations required
 - Save time and capital
 - Work without leaving Maximo
 - Right-click actions provide further efficiencies
 - Company mandate (or personal preference) on tool reduction
- Optimization
 - Transform laborious, manual and time consuming work management tasks into faster, automated processes with meaningful results
 - Included with the Scheduler license
 - Option to build custom models
- Other important factors
 - Asset / Location availability
 - SQL query builder
 - Low cost = quick ROI



About Cohesive Solutions

- Cohesive Solutions operates out of Kennesaw, Georgia (*metro Atlanta*). Cohesive provides business process transformation and consulting services which enables organizations to achieve higher ROI from their assets and the information technology that manages and maintains those assets. Cohesive's professionals have been serving clients since 1990.
- For more information visit www.cohesivesolutions.com or contact Mike Beasley at mbeasley@cohesivesolutions.com or (678) 601-5478.

Scheduler Plus – also embedded in Maximo



- Advanced scheduling solution
- Add-on product to Maximo Scheduler, code embedded in core Maximo therefore still a single install
- On-prem and via SaaS
- Requires a separate license purchase
- Includes the optimization models

Maximo Scheduler and Scheduler Plus – Roadmap

Weather

- Configurable weather views
- Weather alerts / notifications

Appointment Scheduling

- Make customer appointments within a schedule window, see tech availability, incorporate weather
- Customer notifications - cancel, reschedule

Network dependencies (Phase 1)

- Link across WOs and tasks
- Pert chart

Weather impact on Assets

- Weather overlay on maintenance/operational windows

Weather impact on Job Plans

- Adding weather requirements to conditional job plans
- Variable length condition (ex: weather impacted)
- Go or No Go criteria
- Applying conditional job plan tasks to existing WOs

Network dependencies (Phase 2)

- Backward pass
- Highlight critical path
- Introduce % complete

Dynamic Dispatching

- Auto refresh for improved tracking of progress
- Re-optimization based on real-time progress, including emergent work
- Real-time road conditions and traffic
- Continuous weather updates and weather event notifications
- Everyplace template updates - weather

Weather based assignments

- Manual clearing of decks
- Optimization – reschedule planned and emergency

Enhanced resource availability

- WO outside schedule, shifts/breaks

Performance

- Support high volume operations

Qualifications at WO & Task Level

- Manual and Optimization

Weekly and Monthly planning buckets

Performance

PM display

- Constraint window
- Compare PM scenarios
- Emergency template (ex. Weather event activity)

Performance

Release 1

H2 2016

Release 2

H1 2017

Release 3

H1 2017

4 Role Based Applications

- 1) Graphical Scheduling
- 2) Graphical Assignment
- 3) Graphical Assignment – Repair Facilities
- 4) Graphical Crew Management

Also includes the Everyplace mobile templates to support the Field Technicians and the Supervisor

Roles We Accommodate in Managing Work

