Maximo Scheduler

A Revised Approach to Work Management

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Topics To Be Covered

- Introductions
- Scheduler - Our revised view of Work Management
- Deep Dive

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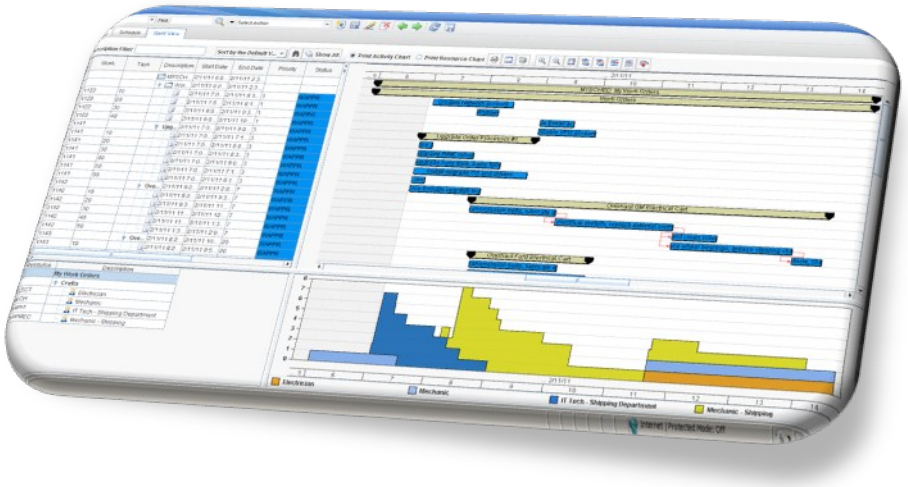
Scheduler – Revised Approach to Work Management

Scheduler is now not just a planning & scheduling tool !

- It is a means for simple labor assignments to be made
- It is a Dispatching application where the location of Crews and Labor, and the progress of work can all be monitored
- It is Maximo Everyplace templates designed to make the job of the field technician all that much easier



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Roles That We Now Accommodate in Managing the Schedule

Scheduler/Planner

- Defines and adjusts labor/crew availability along with resource leveling
- Capacity Planning
- Assigns work orders to resources
- Continuously optimizes the schedule as the operational environment changes
- Sequence and route work assignments based on geography

Dispatcher

- Monitor field resources and work order progress and status
- Monitor the location of field resources compared to open orders
- Enter status and complete work orders on behalf of technicians who don't have mobile devices
- Sequence and route ongoing work assignments based on geography and optimization

Field Technician

- Supervisor approves and assigns work on mobile devices
- Receive work orders in the field and provide real time status updates to dispatch
- Complete, edit and approve work orders on mobile devices along with viewing work on a map with optimal driving directions
- Notify dispatch of potentially dangerous situations, incomplete work

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Maximo Scheduler Target Markets

Our strength has always been in organizations seeking a single product to maintain their assets across all asset classes!

- Utilities
- Manufacturing
- Facilities
- Federal, State, & Municipal gov'ts
- Oil & Gas
- Service Providers

These same organizations desire a <u>single</u> product to create:

- an optimal schedule that is meaningful and achievable
- Quick, easy to perform, and reliable labor assignments
- Be aware of Crew and Labor location, sequenced dispatched work, and be able to effectively deal with new incoming work
- Provide field technicians with a dynamic route of daily work, directions to work locations, a view of nearby work and co-workers, and a means to manage their work, all on a mobile device

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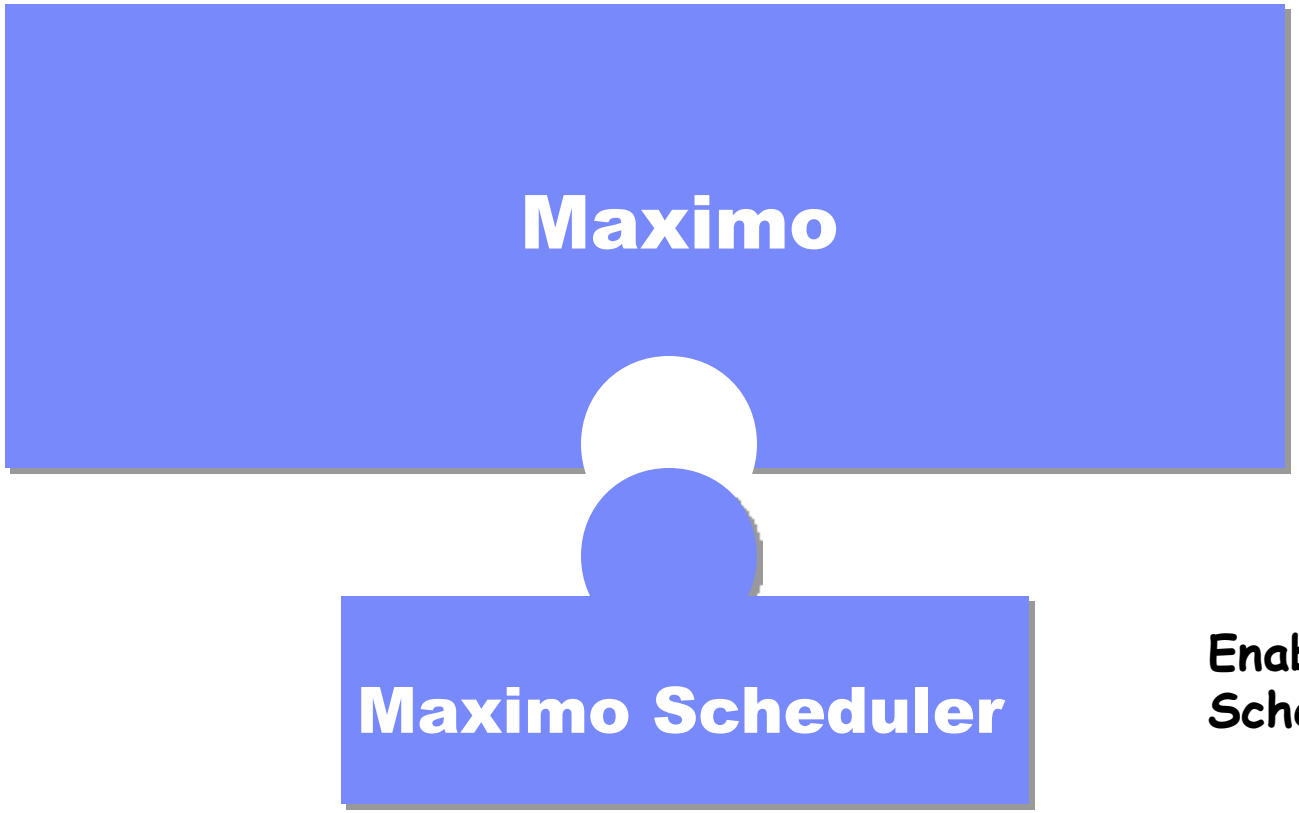
What is Maximo Scheduler?



Scheduler is an add-on product to Maximo

Is installed when Maximo 7.5 is installed

Enabled by the Scheduler license key

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Maximo Scheduler's Pedigree

Scheduler 7.1

Gantt View to visualize work orders and tasks

- Drag & drop work orders & tasks
- Manage dependencies
- Perform CPM
- View resource load and availability

Work Orders

- Date constraints
- Task dependencies

Scheduler 7.1.1

Gantt View to visualize PM forecasts

- View and manage future PMs and Work Orders
- View resource load and availability for both future PMs and Work Orders

Work Orders

- Bulk Reschedule
- Assignment Manager tab in Work Order application

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What Makes Up Scheduler 7.5.1

Investing in the natural evolution of our current products in a direction desired by our customers

Enhancements to Scheduler

- Graphical Assignment/Dispatching
- Provision of standard Work Order actions
- Additional Resources
  - Assets/Locations
  - Labor
  - Tools
  - Materials
- Schedule Compliance

Enhancements to Maximo

- Service Addresses
- Public Map UI Control
- Crews

Maximo Everyplace role based templates

All included as Maximo Scheduler 7.5.1

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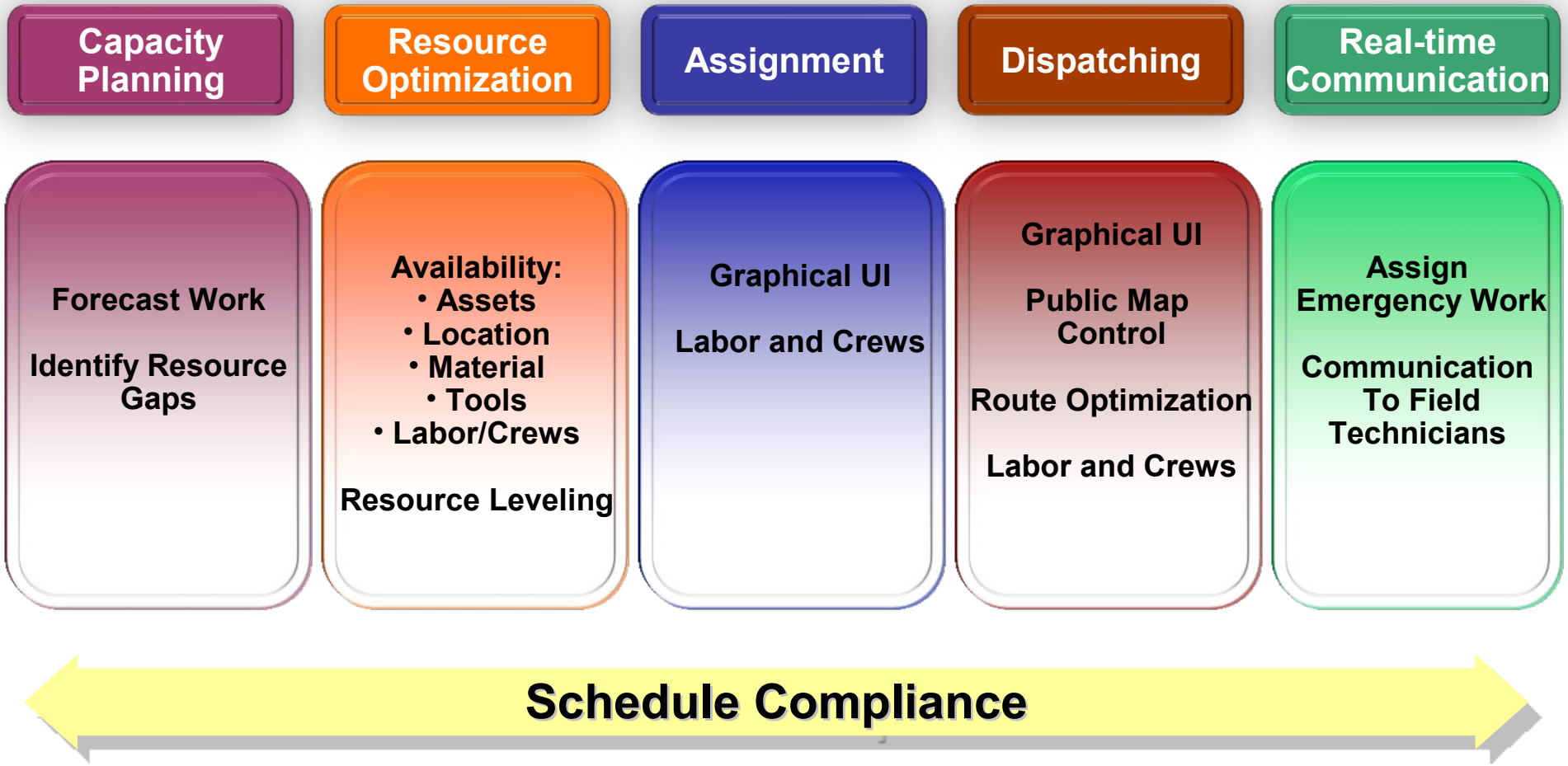
Our Work Management Focus Areas



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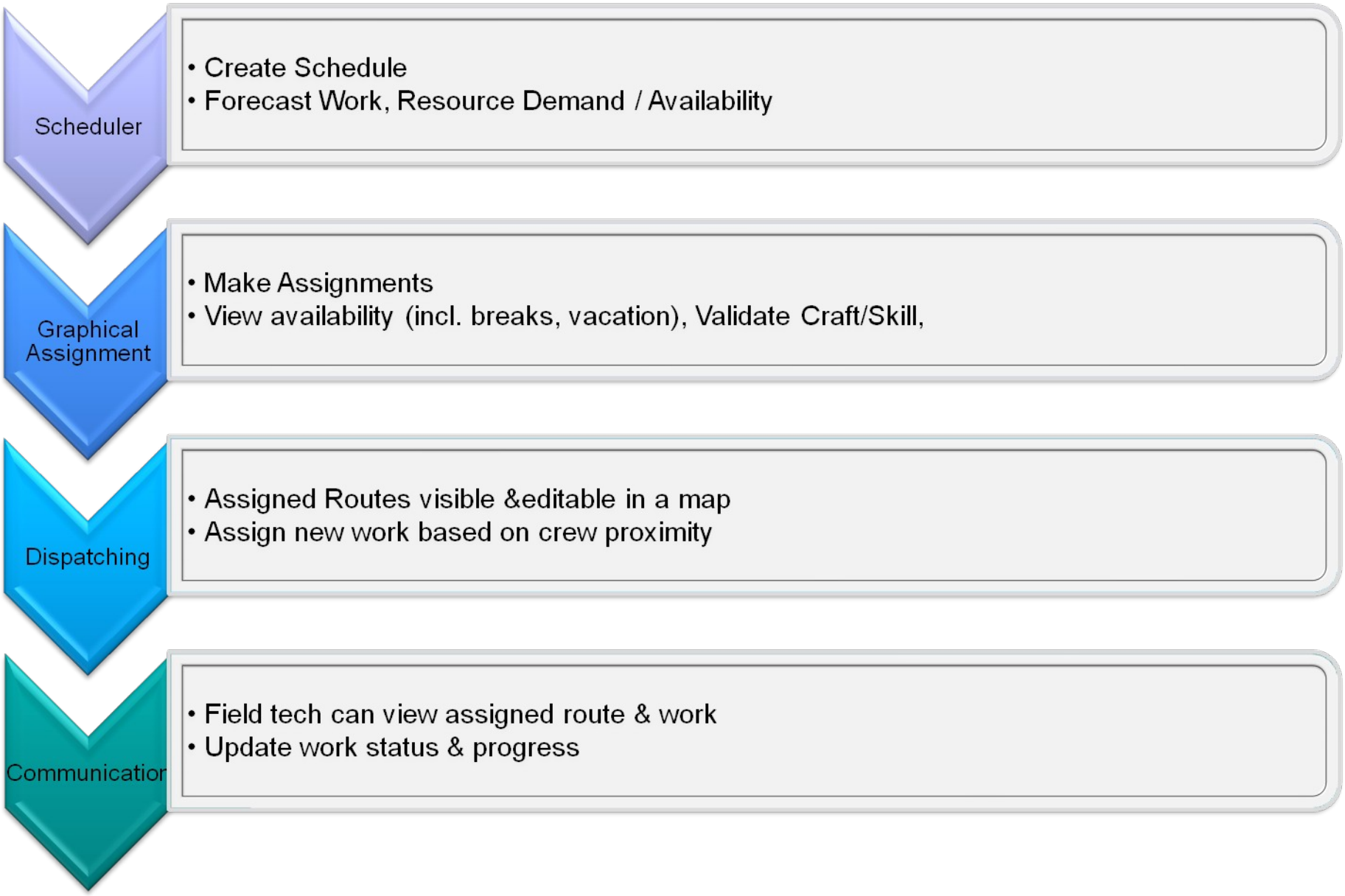
Logical Work Management Hand Off



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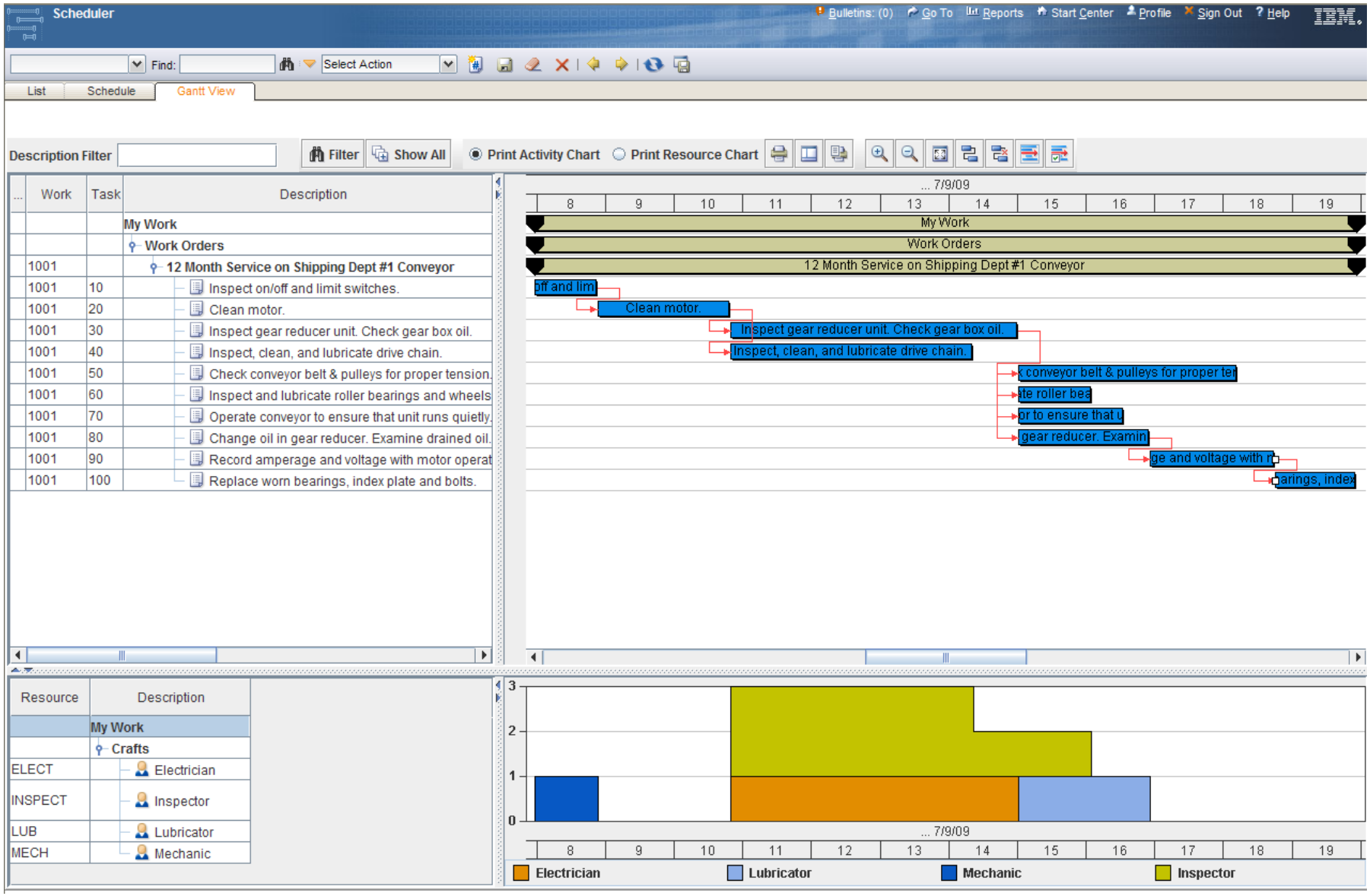
Work Orders & Labor Requirements



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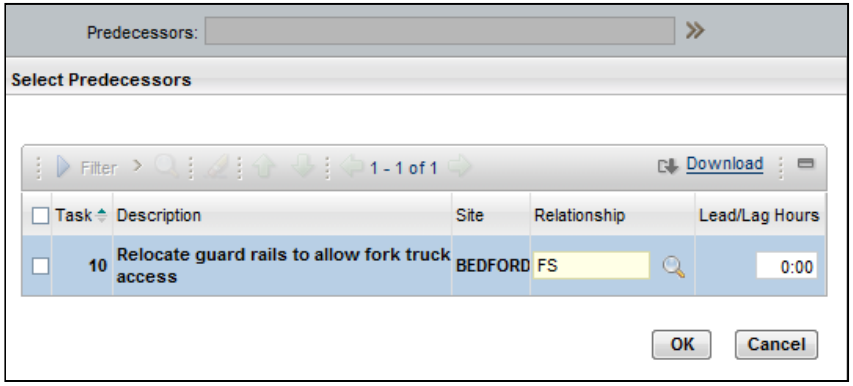
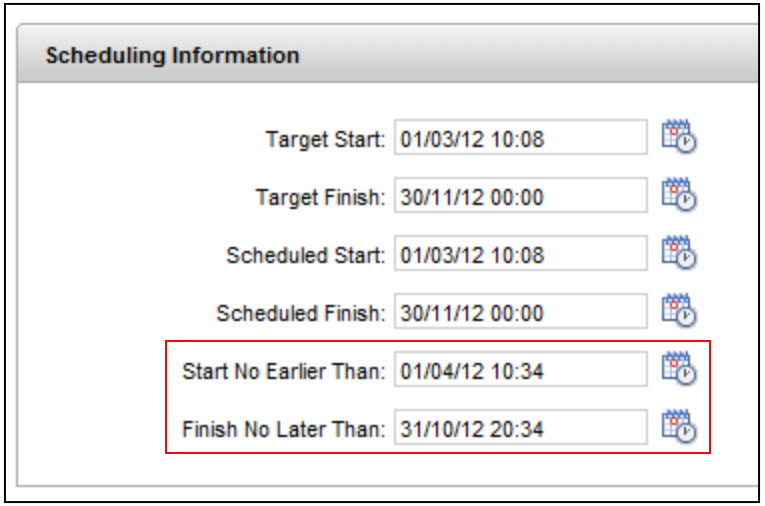
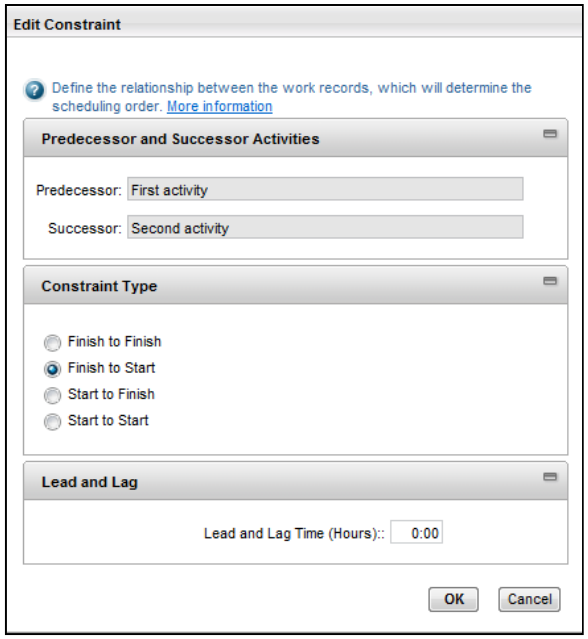
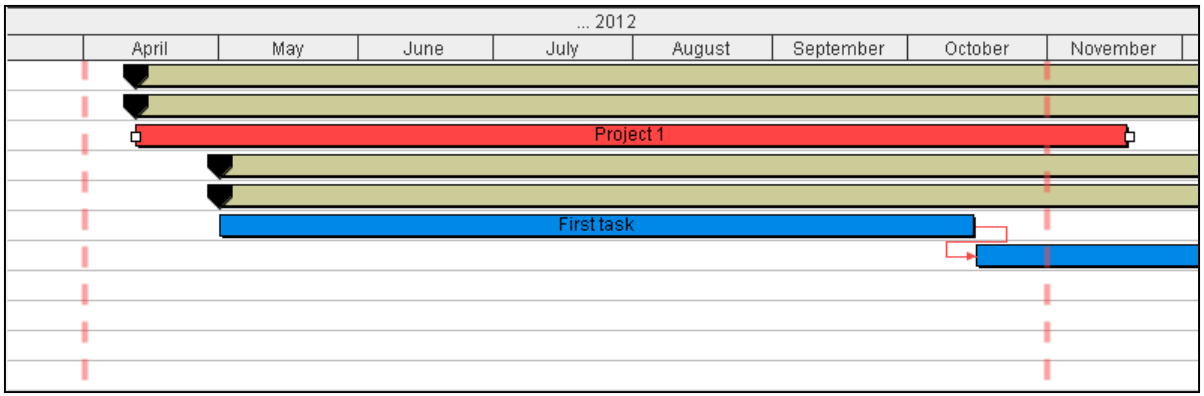
Precedence Logic and Activity Constraints

- *Precedence logic added between work orders/tasks that have the same parent*
- *SNE/FNL date constraints calculated automatically from JP/PM offsets*









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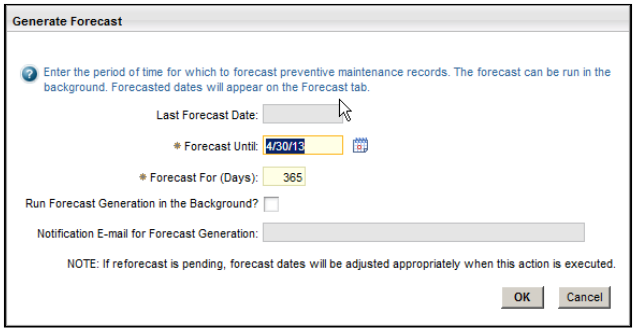
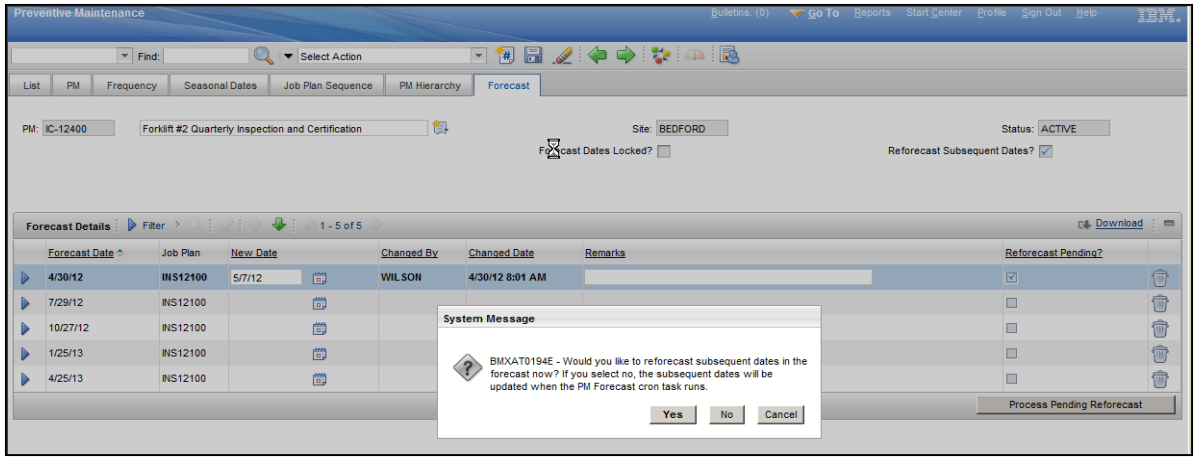
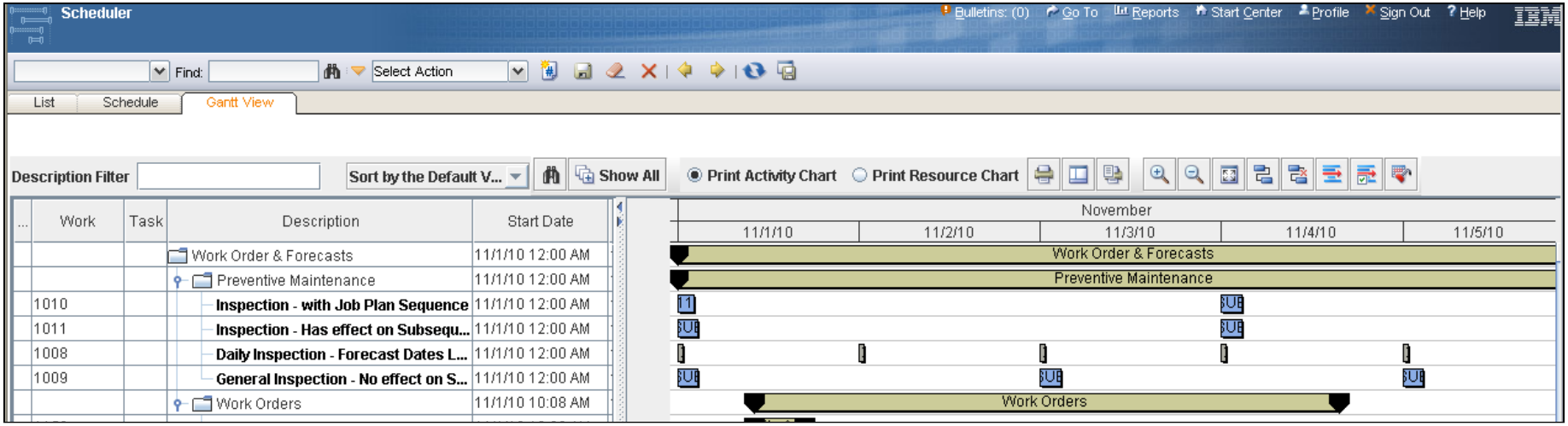
PM Forecasting

- *Generate a forecast based on the PM details. Allow a means to modify forecasted dates and have Maximo use the dates when generating PM based work orders.*
- *PM Forecast dates are graphically displayed in the Maximo Scheduler Gantt chart.*







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Functionality, Use Cases, and Value by Role

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The Planner & Scheduler

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Schedule Compliance

Use Case

- Mid-way through a one month project, operations has asked the maintenance manager to assess performance against plan. Maintenance uses the Scheduler to open the monthly schedule and show actual work dates vs. planned dates for the 2 weeks done, and their impact on the remaining work.

- The maintenance director requires a weekly schedule compliance report from every maintenance manager in order to measure the effectiveness of the work scheduling process. They recognize that this metric is an indicator of planning effectiveness, reactive work and craft worker effectiveness.

Problem

- The Scheduler product shows only work orders Scheduled Date in the Gantt chart. Users need to see the Schedule Date as well as the Actual Dates. This will enable them to compare planned work vs actual work being performed and make necessary changes to following work in order for the overall schedule time demands to be met. There is no ootb means to calculate and store these weekly/monthly metrics to measure planning effectiveness.

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Schedule Compliance

Solution

- The new Scheduler application has the capability to graphically show work orders Target Start/End, Scheduled Start/End and Actual Start/End dates in the Gantt view. By default, the Scheduler will show Scheduled Start/End dates offering the user the option of showing all other dates with the click of a button.

- Users have the option to to calculate and store the Schedule Compliance metric. A configuration page is available, providing users the ability to set the frequency for this metric (i.e. weekly, monthly and quarterly)

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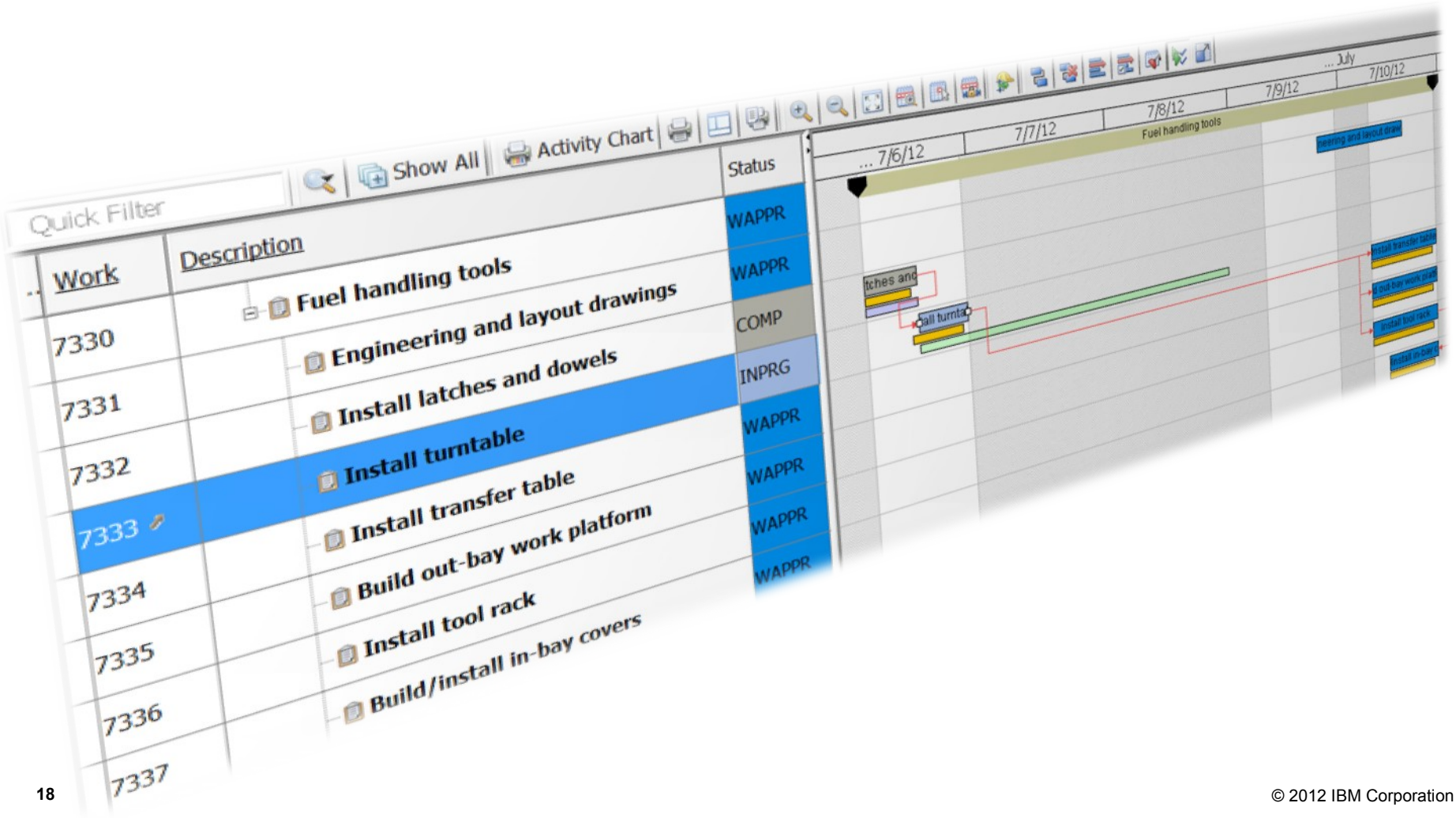
Schedule Compliance

The ability to show Target, Scheduled and Actual Dates on the Gantt chart

- Allows Planners & Schedulers to get a view of how work is progressing, and the affect of the progress on related work



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Visibility of Other Resources

Use case

- Several major PMs are due at the same time due to a busy production schedule. As such, Assets are only available for maintenance at very specific dates/times. The maintenance planner needs to schedule this work during the available time slots

- The floor manager just found out that a turbine will be available for maintenance the next day. He would like to gather all pending work orders on that turbine and its sub assemblies and schedule them during that window of opportunity.

- 5 trucks are due for annual maintenance next week. The operations planner would needs to know the availability of the repair bay in various locations so that he can coordinate truck routes such that they will be in the vicinity of the assigned bay in time for maintenance.

- The maintenance manager needs to review next week's scheduled work orders to make sure the parts are in stock. If parts are not available for the work, he will need to reschedule such work orders and replace them with other pending work orders.

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Visibility of Other Resources

Problem

- The Maximo Scheduler 7.5 product does not provide the planner with visibility to production schedules, Asset and/or Location or Tool availability, or the available stock levels on critical inventory items.

Solution

- The new Maximo Scheduler 7.5.1 application now provides a graphical view of Craft, Asset, Location, Materials, and Tools that will allow the planner to schedule work with confidence that other critical considerations can be met.

- Planners will be able to view when equipment will not be running, and when it will be available for maintenance to be performed.

- Planners will be able to avoid reworking schedules due to schedule dates that can not be met due to Asset and/or Location utilization.

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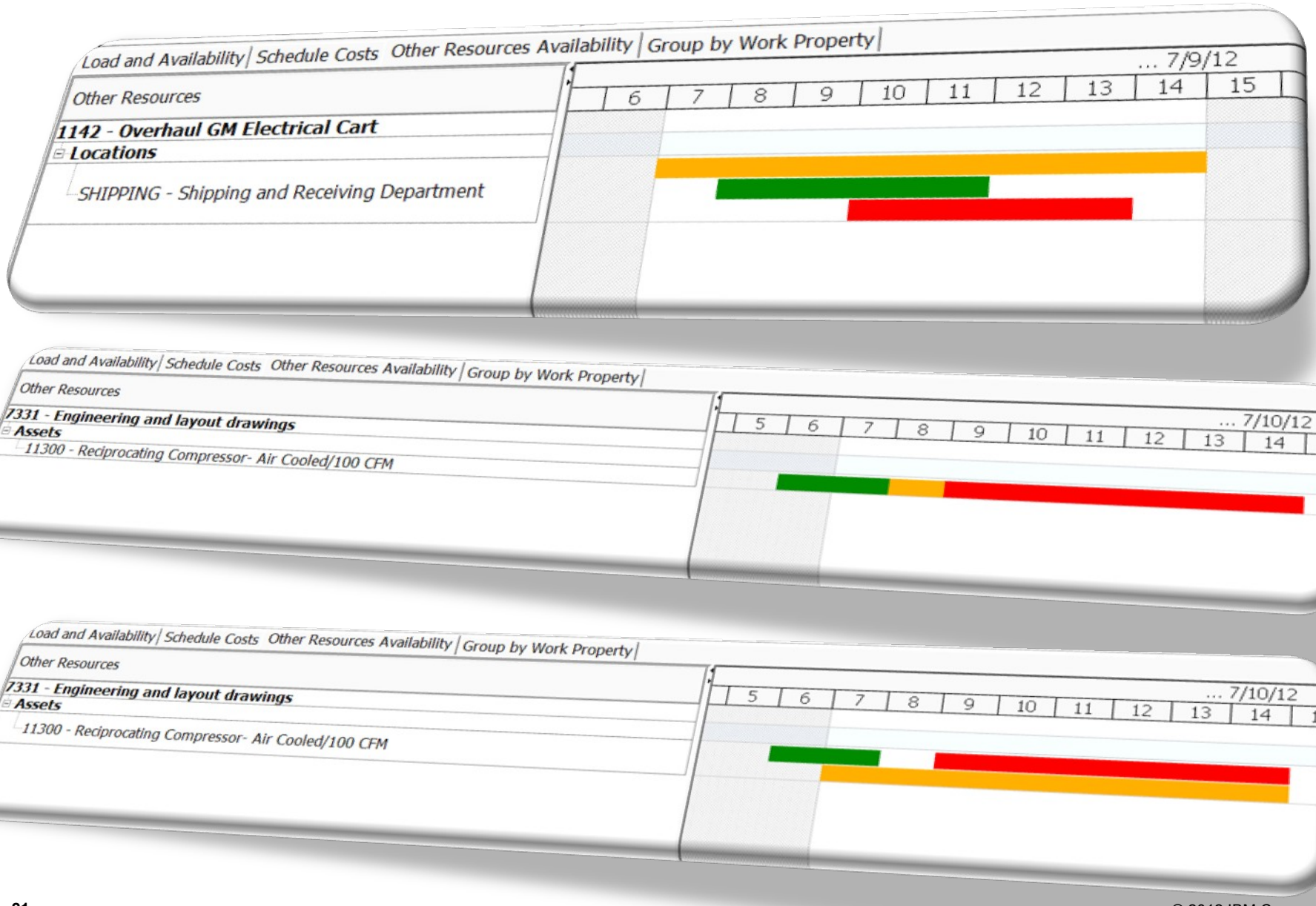
Asset & Location Availability



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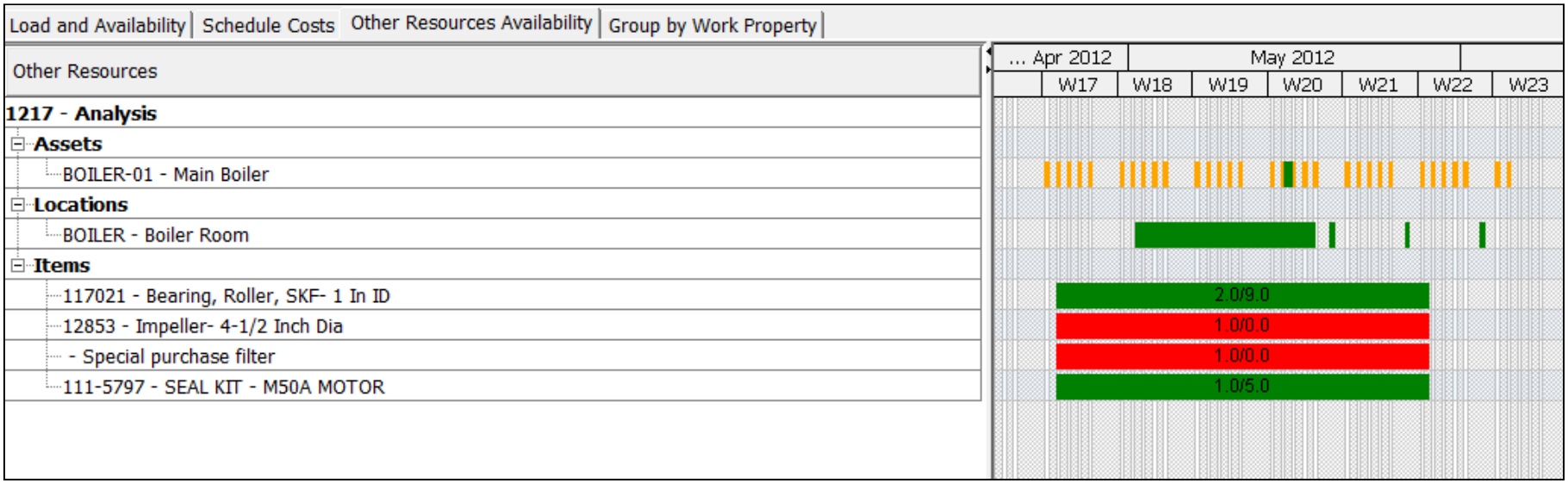
Material Availability

Other Resource Availability tab shows:

- Maintenance/Operational/Calendar availability of Asset and Location
- Material Availability for planned materials
  - Shows required quantity vs available quantity
  - Green bar shows materials are available, red bar shows materials are unavailable
- Planners & Schedulers know when not to schedule work based on material availability



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Work Order Actions

Use Case

- A maintenance planner schedules work orders based on Craft availability. Once he sets the schedule start dates for his work, he would like to change their status from “Open” to “Scheduled”

- A maintenance supervisor, after changing the status of “in progress” work orders to “completed” in the scheduler application, wants to create follow up work orders on few them.

Problem

- To perform any work order related actions (i.e. change status, create follow up work etc.) from within the Maximo Scheduler 7.5 application, the user has to hyperlink to the Work Order application.

Solution

- The following work order actions are now available within the new Maximo Scheduler 7.5.1 application.
  - Change Status, Create Job Plan from Work Plan, Initiate Work Flow, Change Parent and Create Follow-up work orders.
- The user can select one or many work orders to perform these actions

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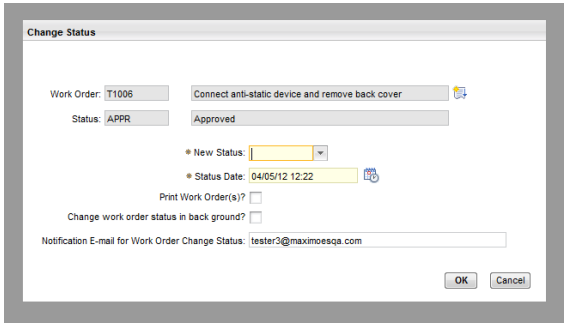
Additional Actions

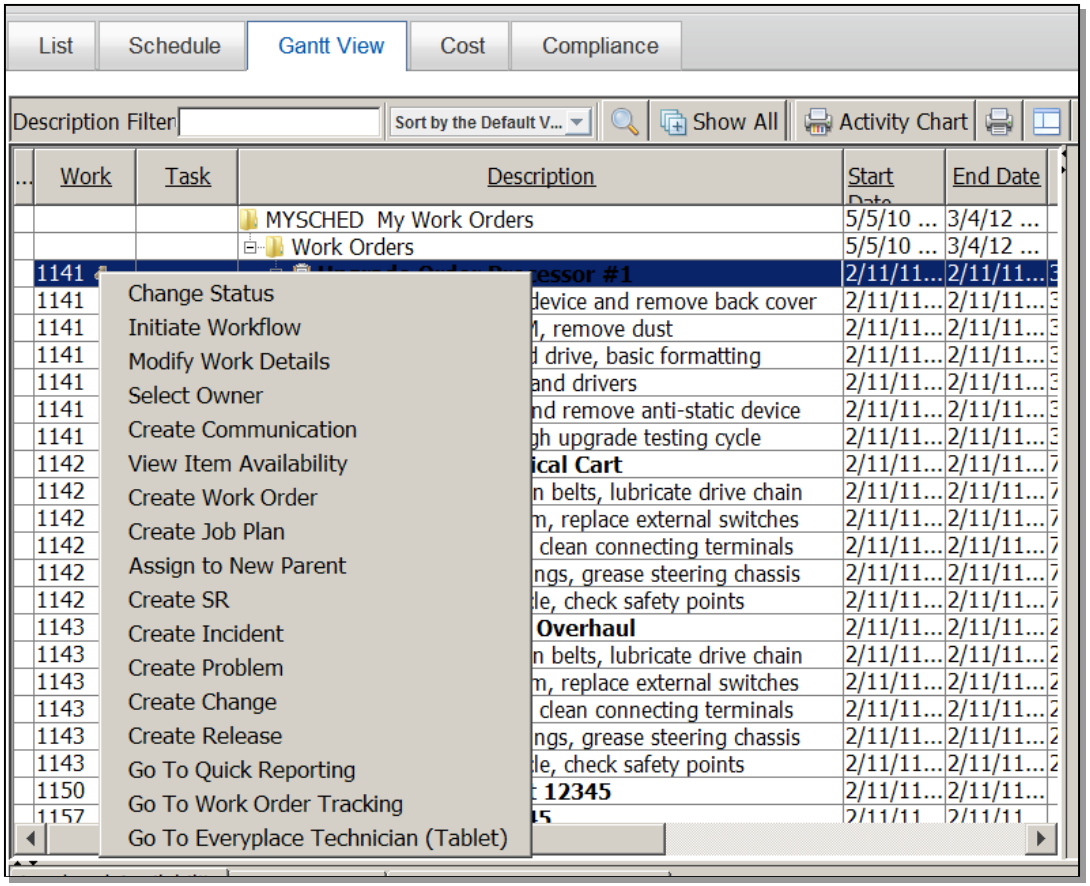
Work Order Actions

– Allow status changes on multiple work orders/tasks



Additional Toolbar Buttons

– Zoom to Week
– Go To Day
– Constrain horizontal scrolling to the date range containing work
– Filter resources based on selected work orders
– Show/Hide Compliance
– Full Screen



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Schedule Cost Projection & Tracking

Use Case

- A Planner knows that he only has a given budgeted amount to devote to the project which is currently being scheduled. His management will need to know if that the project can be planned to be done within budget.

- A capital project is partially complete, and the project planner has been asked by executive management for a cost rundown of the scheduled project, progress, etc.

.

Problem

- The Maximo Scheduler 7.5 product does not provide instant access to projected or current costs run against a schedule or project. A report must be devised through alternative tools to meet this often urgent need.

Solution

- The new Maximo Scheduler 7.5.1 product provides an instant means for a Planner to assess how closely they are keeping to budget with a schedule being defined. For schedules that are underway, it provides a complete breakdown of proposed, committed, and actual costs. This eliminates the need for custom reports to be defined and run, and can assist a Planner in keeping within budget long before the start of a planned project.

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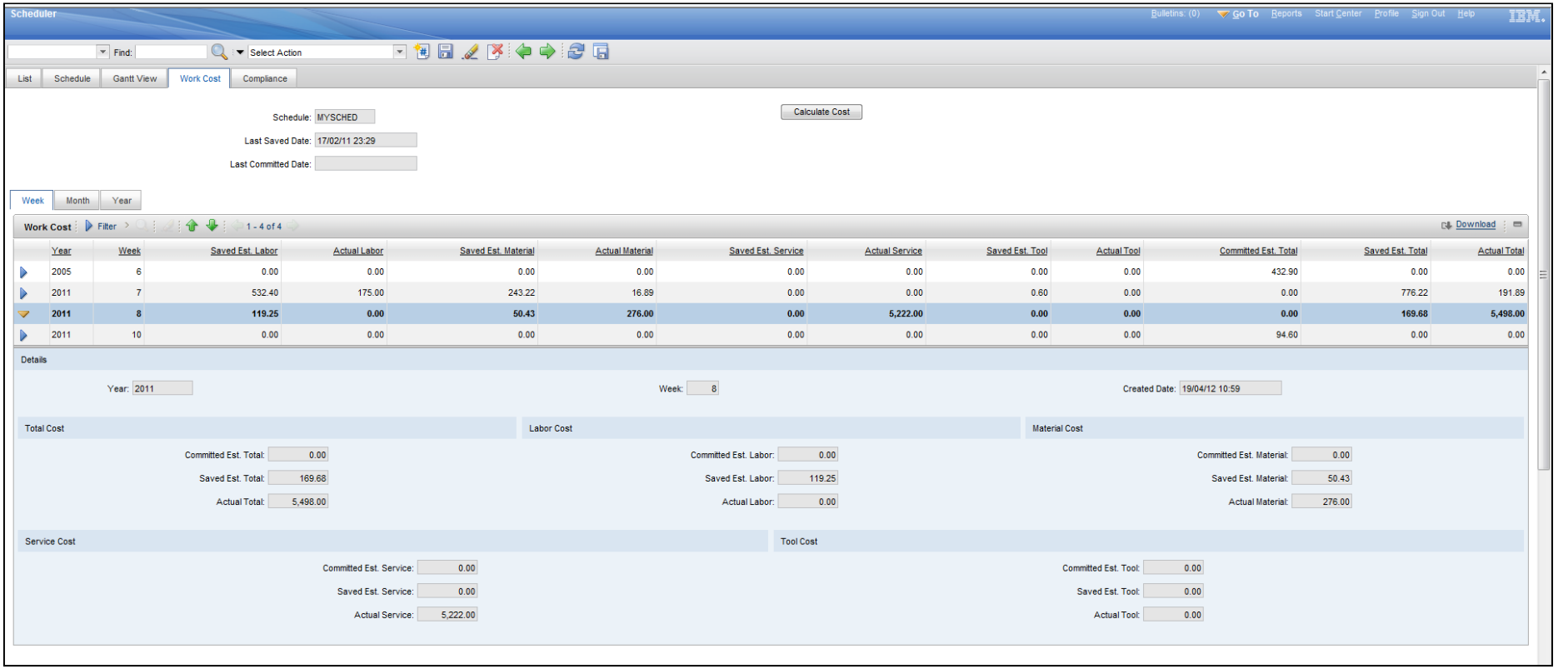
Schedule Cost Tab

Calculate costs within schedule by week, month and year

- Illustrate Committed and Saved Estimated Labor, Materials, Services and Tools, as well as Actual Labor, Materials, Service and Tools
- Allows budget adherence



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Making Labor Assignments With Graphical Assignment

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Graphical Employee Assignment

Use Case

- Part of a maintenance supervisors role is to assign work to maintenance technicians or crews based on their skill and availability. To do this quickly and accurately, they need to view their current assignments, break time, shift and vacation time.

Problem

- Prior versions of Maximo do not provide a graphical representation of daily availability of technicians and crews. The current Assignment Manager is form based, without the ability to “drag and drop” assignments, hence this is a laborious process

Solution

- A new Graphical Assignment application is now available within the Maximo Scheduler 7.5.1 product that provides drag and drop capability, along with the visibility of all other critical factors (current assignments, vacation and break time, for proper assignments to be made.
- Illustrates unassigned work and facilitates efficient assignment of appropriate technicians or crews based on craft or crew type.
- Provides effortless reassignment of work from one technician/crew to another, as well as the ability to split work among technicians/crews.

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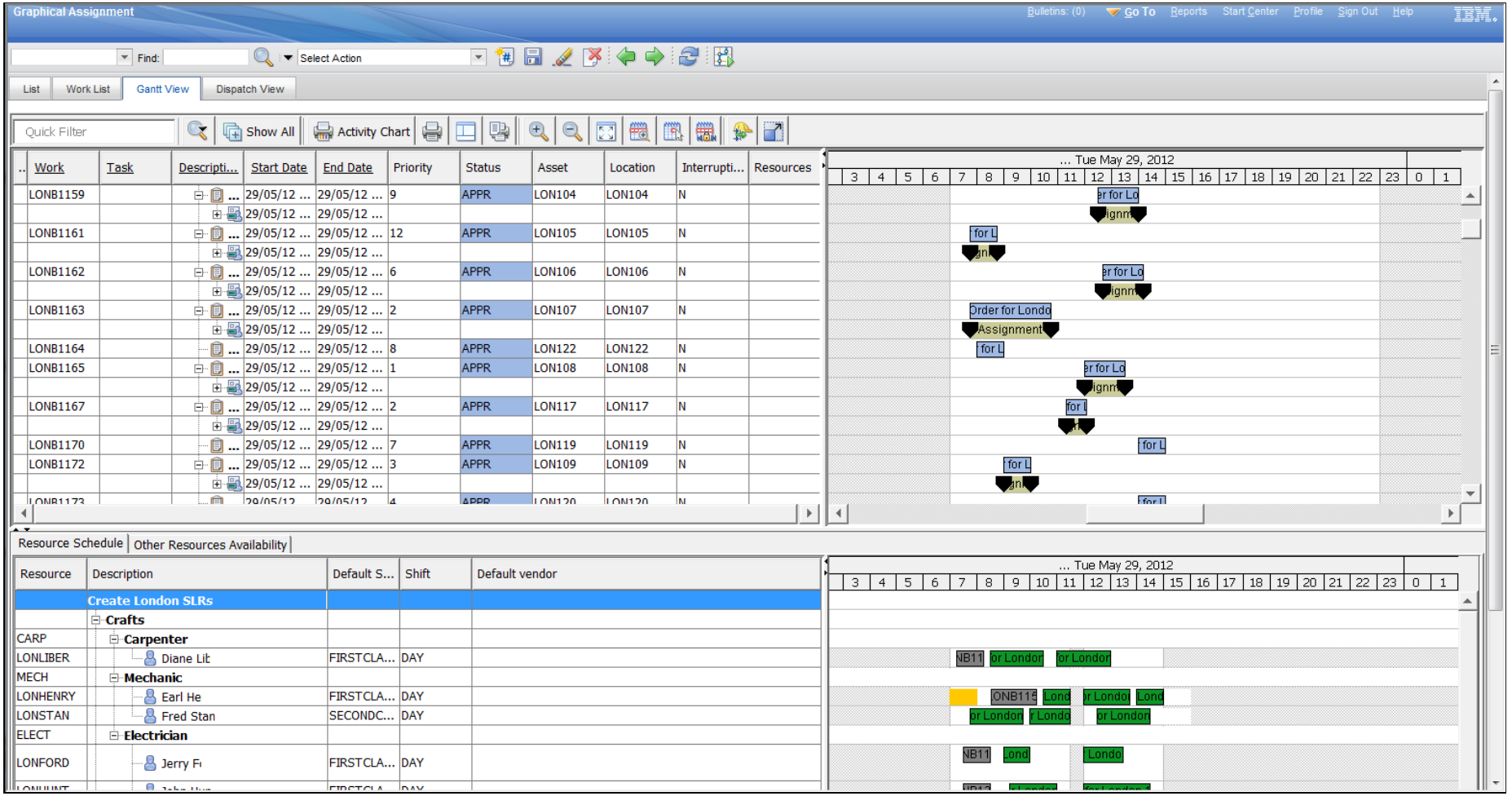
Graphical Assignment

New application aimed at the process of assigning work to people

- Similar UI to Scheduler Gantt view for consistency
- Helps the Planner & Scheduler see non work time for a resource, as well as assignments made by other Foremen beyond the bounds of their schedule… eliminates duplicate labor assignments



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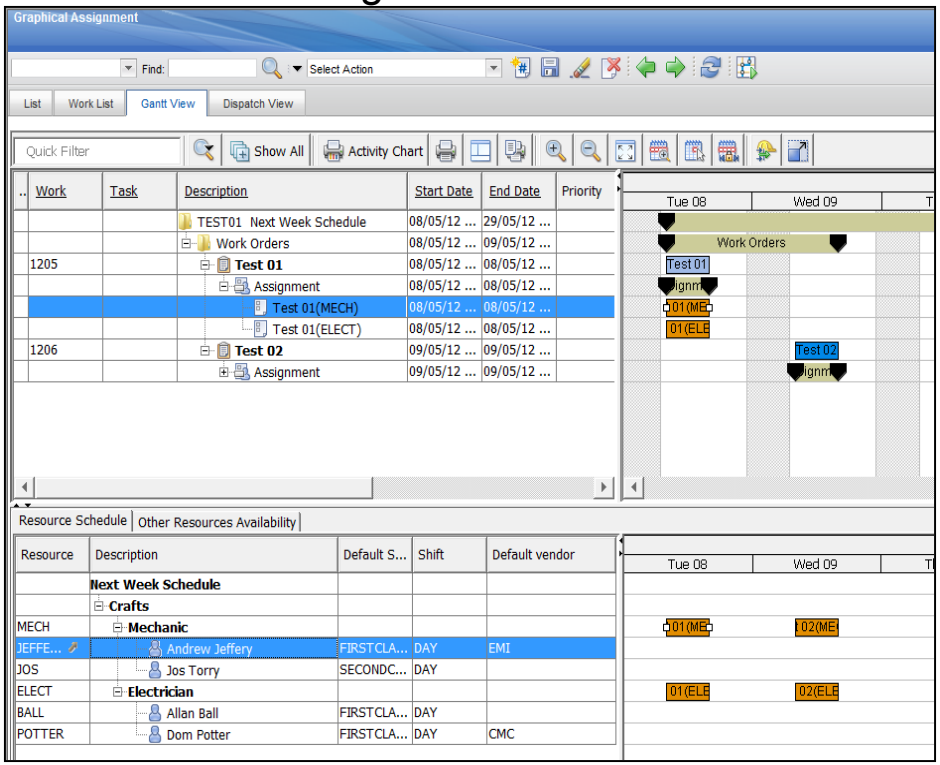
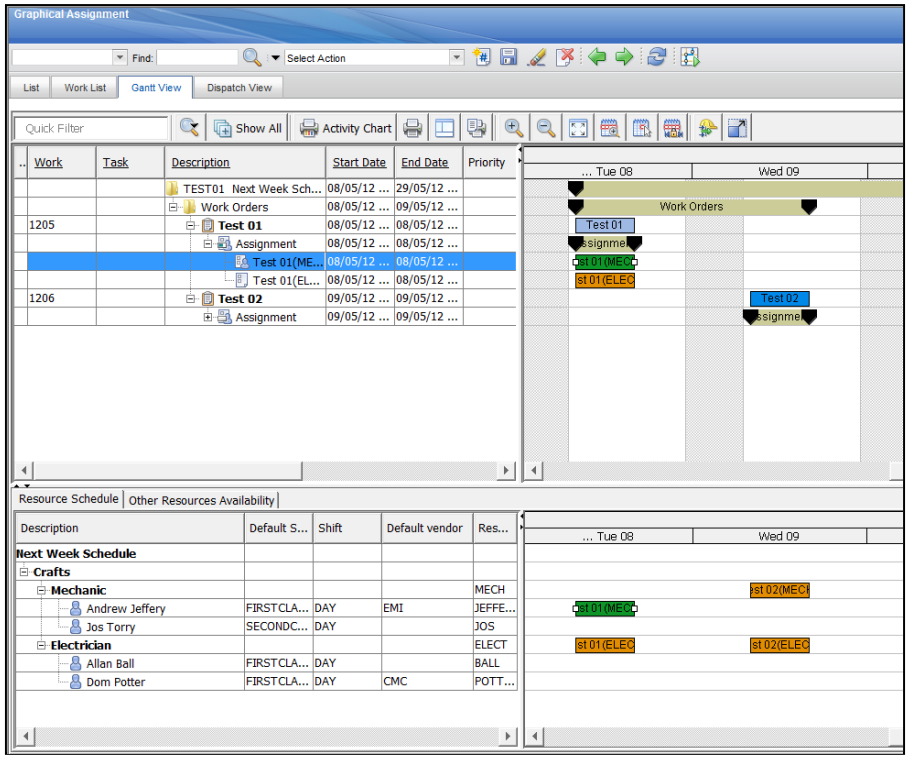
Making an Assignment

Allows the Foreman to:

- Split Work According to Shifts, might be used if extending duration of the assignment across an end of shift
- Split Work, once split can drag second assignment to add a time gap
- Split Work into Three Records, creates two additional assignments
- Create Assignment
- Delete Assignment





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The Dispatcher

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Dispatching

Use Case

- The dispatcher is notified at the start of the shift that Crew1 will not be available today, so all of their priority 1 work needs to be rerouted and reassigned to other crews in order for that work to be completed today.
- The Dispatcher has received an emergency work order for the northeast part of the city that needs to be worked on within the next 2 hours.

Problem

- There is no easy way for the Dispatcher to view all of the current routes and where the work or resources are located throughout the city in an efficient manner .
- The Dispatcher needs to have a single view showing all of the today's routes on a map along with their work locations. They also need to have the ability to quickly assign new work to a crew and re-optimize their work route.

Solution

- The new Dispatching application within the Maximo Scheduler 7.5.1 product allows the Dispatcher to:
  - Utilize maps to show street-level routes (SLRs) on a map, location of labor or crew resources.
  - Quickly drag and drop new work to a crew at the "beginning of the shift scramble" when time is limited to rearrange schedules for the day.

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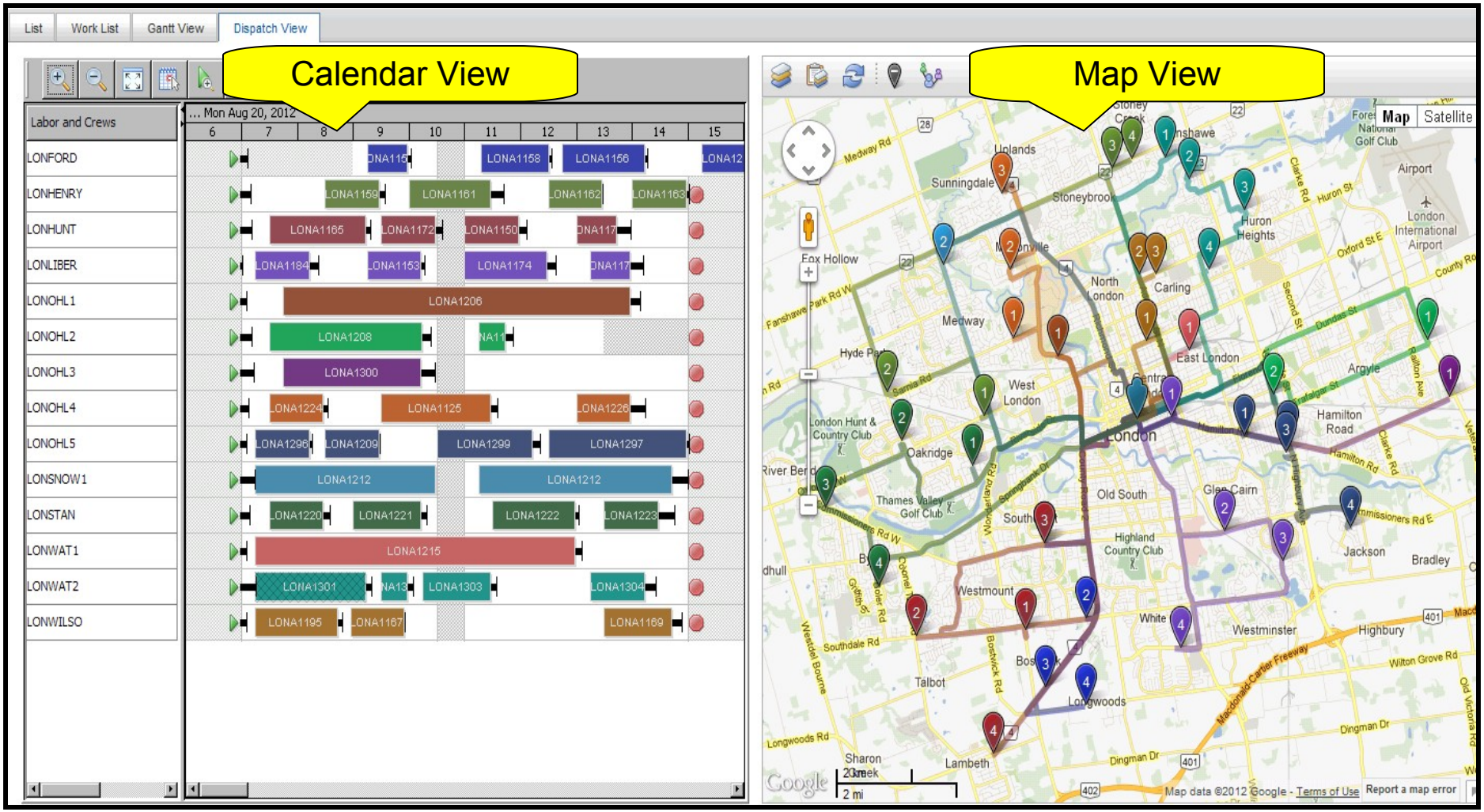
Dispatch View

- Dispatcher views the map with applicable Crew or Resource routes as defined by assignments.
- View each Crew or Resource calendar



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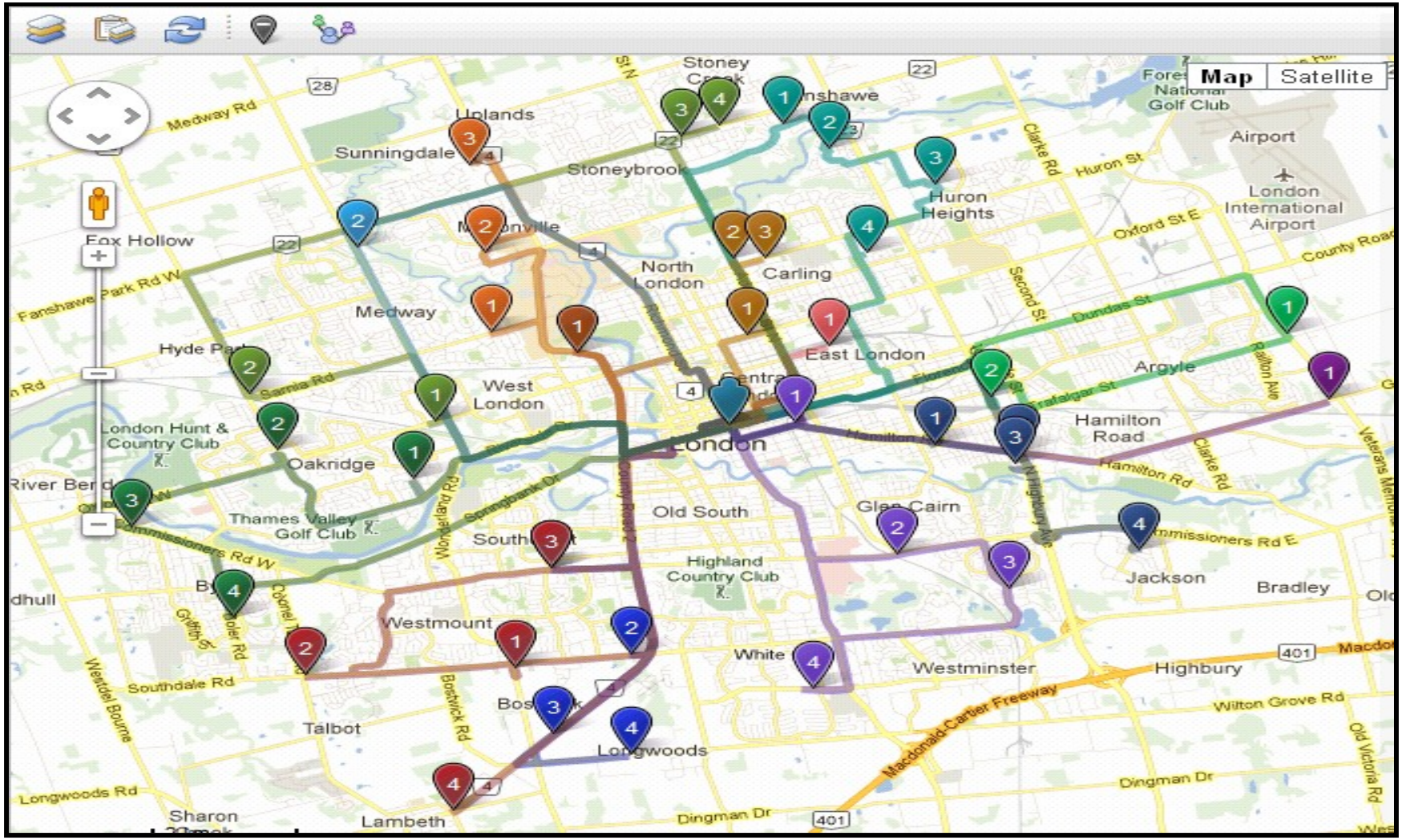
Dispatch – Map View

- Show each sequence of assignments and relative location for ach Labor or Crew
- View nearby Crews and Resources, unassigned work, prioritized work,



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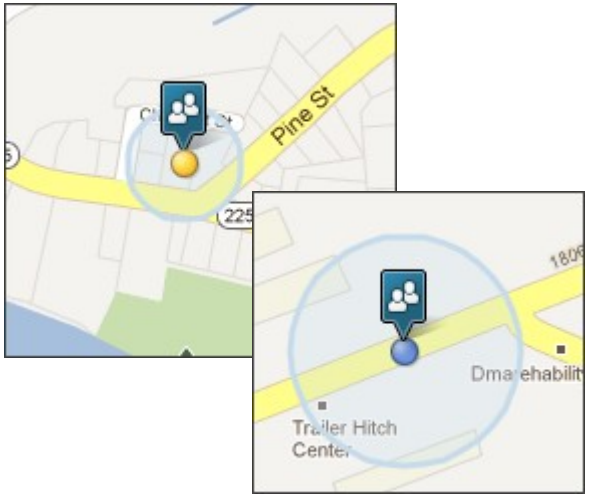
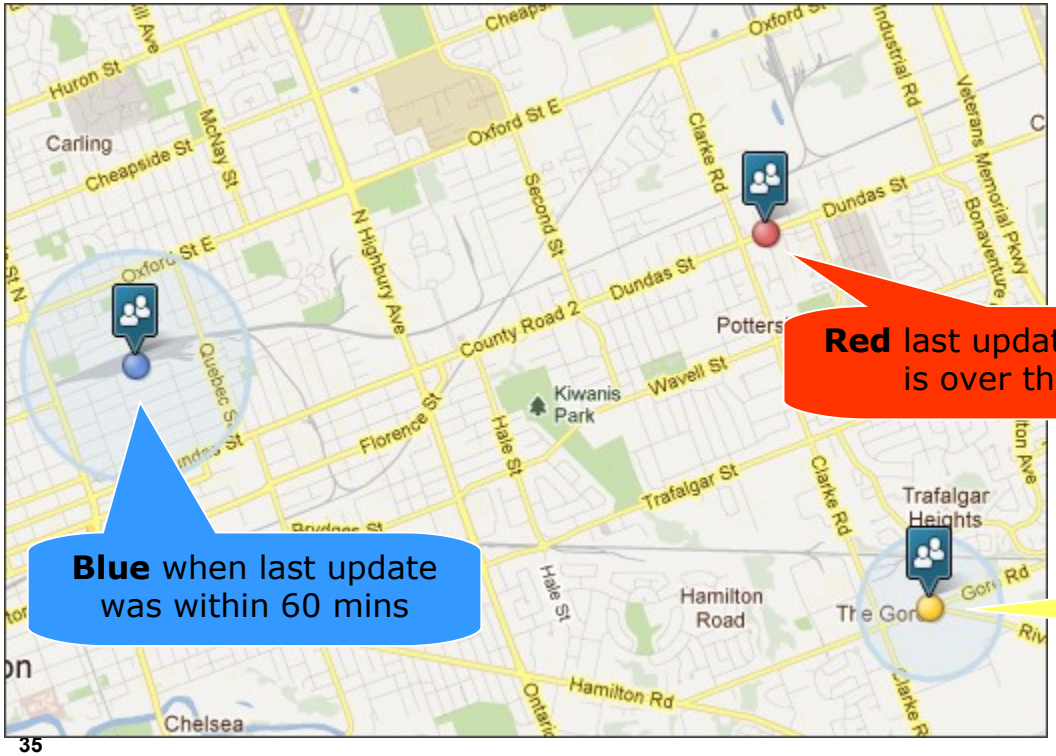
Labor & Crew Geolocation Tracking

Browser geolocation API tracks the user

- Allows Dispatcher to know the location of all resources and/or Crews – allows for making better dispatching decisions





Red last update accuracy is over the limit

Blue when last update was within 60 mins

Yellow last update outside 60 mins

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The Mobile Field Technician

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Field Technician

Use Case

- The field technician is assigned work from the Dispatcher, and needs a way of acknowledging receipt, taking ownership, and knowing where the work needs to be performed.
- The field technician has finished his assigned work order early and has time available for other work, but does not know where any nearby work may be.
- An apprentice field technician is working on a job, but encounters a problem that they know can be resolved by a Journeyman Mechanic. They are fairly certain that a nearby resource exists, but unsure where and how best to reach them.
- The Foreman is made aware of a new work order assigned to his team, and needs to see where his resources are located and the work which they are engaged in so that he may appropriately assign the work.

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Field Technician

Problem

- The field technician has no way to determine where work is located, where nearby unassigned work may be located, or where neighboring resources may be.
- The Foreman can not see how, spatially, his work team is dispersed, or the status of their work, to determine who the best resource would be to assign new work to.

Solution

- The existing Maximo Everyplace mobile offering has 4 new templates provided as part of the Maximo Scheduler 7.5.1 product.
  - **Everyplace Technician (Tablet)** Large Screen Heavy Technician Functionality
  - **Everyplace Technician (Phone)** Small Screen Heavy Technician Functionality
  - **Everyplace Technician (Lite)** Small Screen Light Technician Functionality (Inspector, Break/Fix, Rapid Dispatch)
  - **Everyplace Supervisor** Small Screen Supervisor Functionality

- Enable Field Technicians and Foremen to view maps displaying current and assigned work, location of nearby resources, unassigned work, turn by turn directions to next assignment, feedback on assigned work

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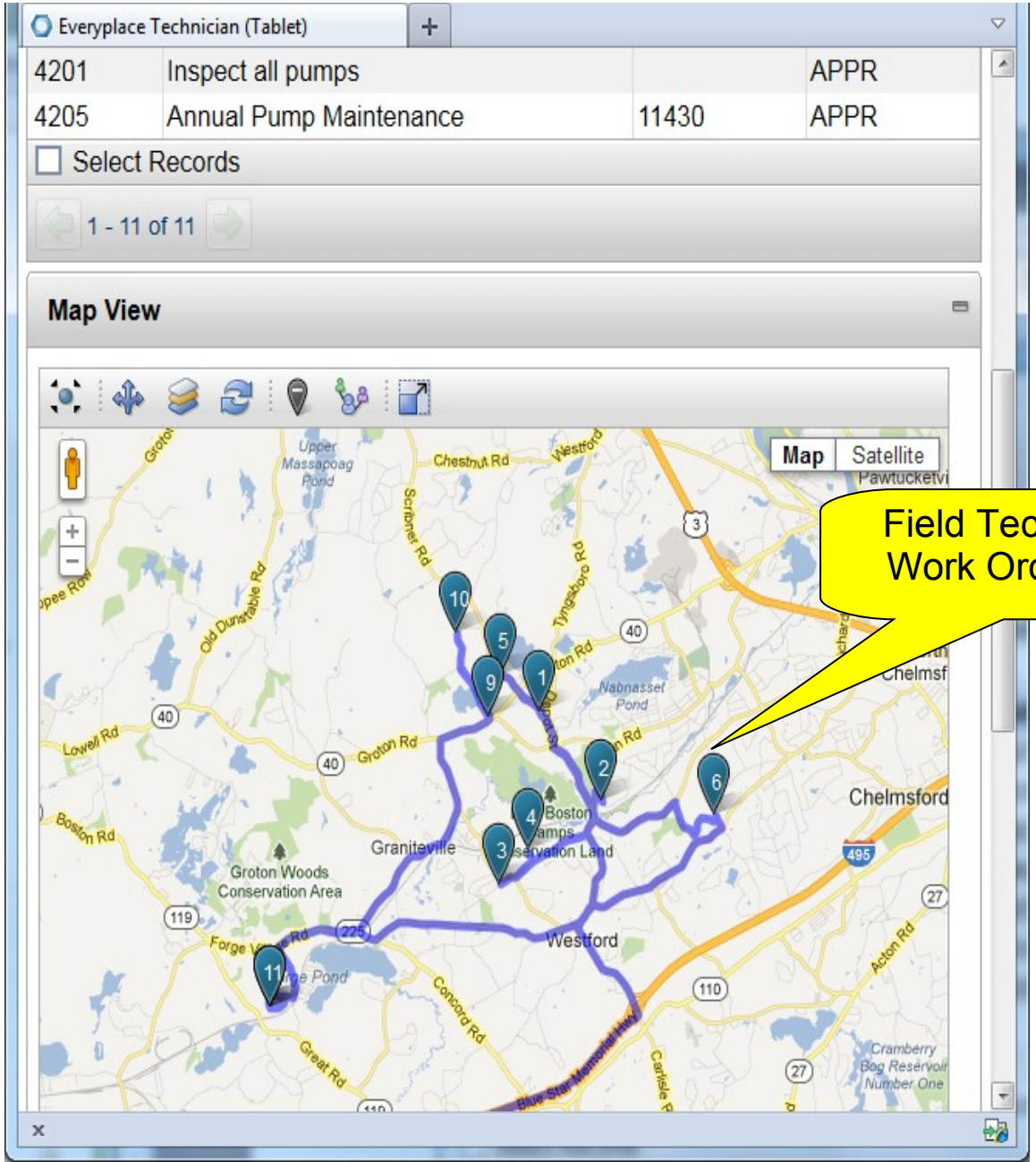
Field Technician Application



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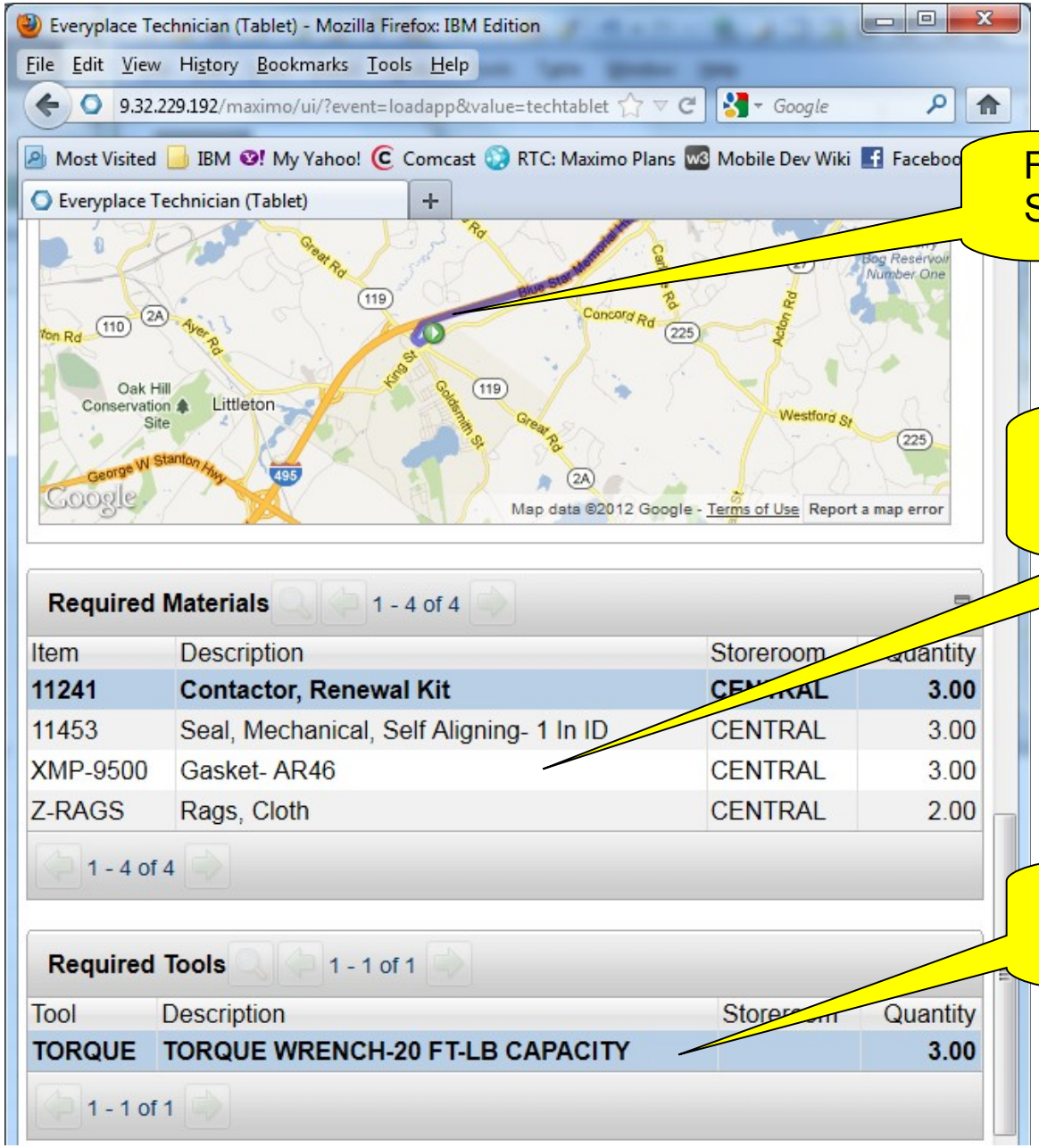
Field Technician Application – My Work



Field Technician's Street Level Route

Field Technician's Material Requirements

Field Technician's Tool Requirements

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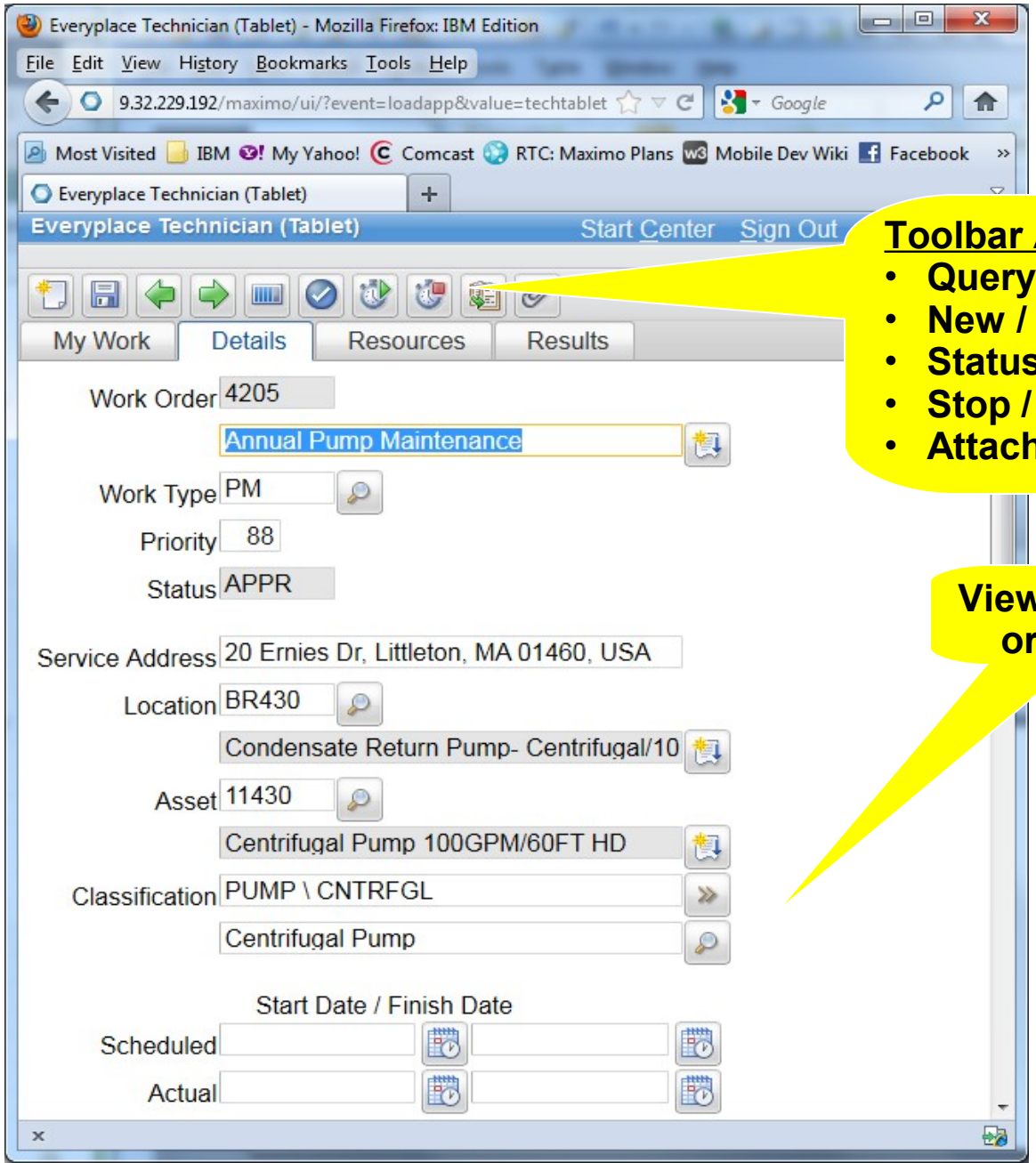
Field Technician Application – Details



Toolbar Actions:

- Query Tools
- New / Follow-up Work Order
- Status Change
- Stop / Start Timers
- Attach Documents

View work order details

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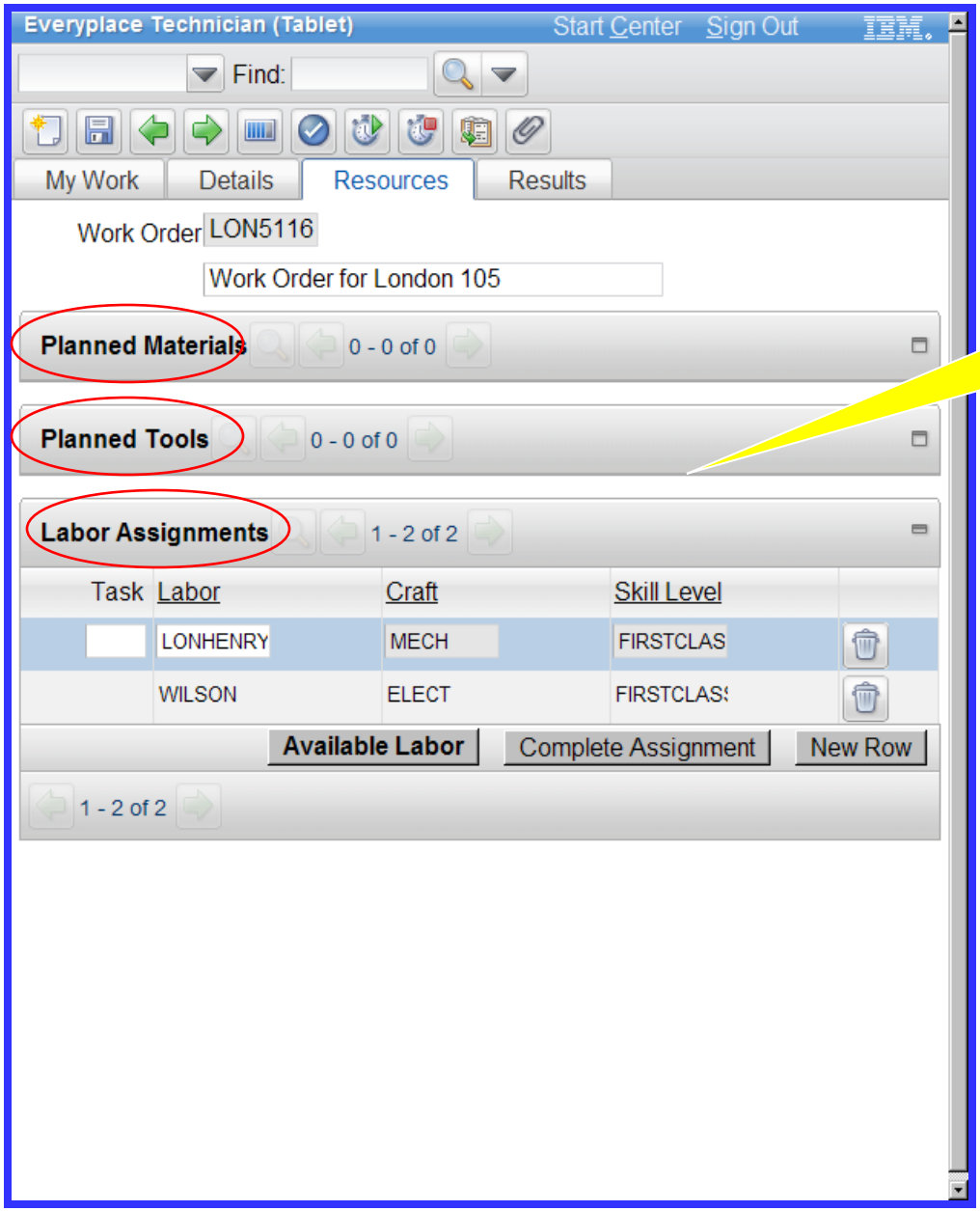
Field Technician Application – Resources



Planned Materials, Tools and Labor/Crews

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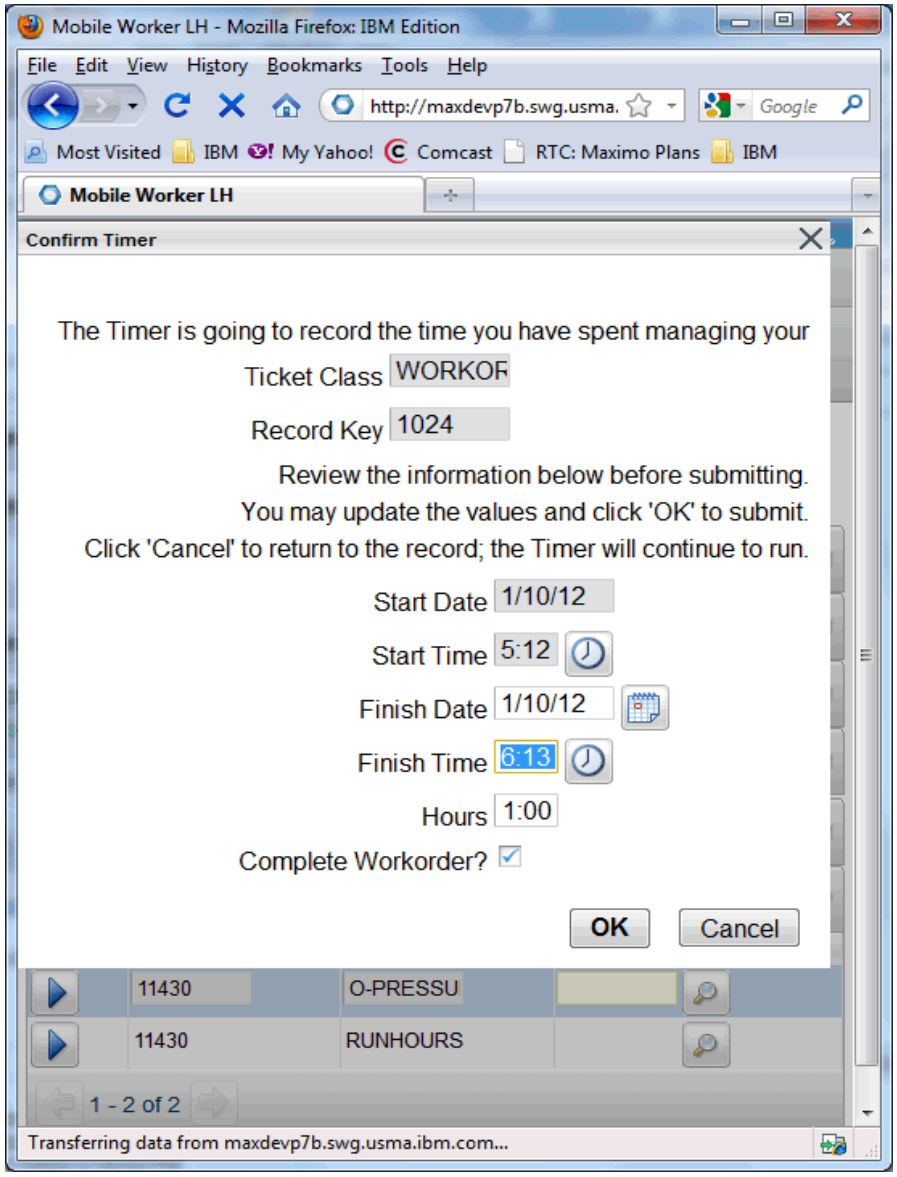
Field Technician Application – Time Reporting



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The Summarized Work Management Vision

- **Use Maximo Scheduler to:**
  - Find the optimal time to schedule upcoming work by balancing:
    - Work order and Task relationships and constraints
    - Labor, Asset, Location, Craft, and Material availability
  - Drag and drop labor assignments

- **Increase the visibility of resources and crews by:**
  - Leverage map UI control for dispatching of incoming work
  - Monitor progress of existing work
  - Manipulate crew and resource routes

- **Improve efficiency of field technicians**
  - Leveraging map UI control for viewing of route stops
  - Dynamic work list based on dispatched work and automated optimization
  - Communication with neighboring resources
  - Intuitive feedback from mobile applications

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