Workplace Planner Walkthrough
Laboratory Example

Acknowledgement

This tutorial was developed for Purdue University Calumet under the direction of Professor Susan Scachitti, Professor of Industrial Engineering Technology (IET). The project was conducted by Matthew Wirtz, an undergraduate IET student, and focused on process planning and using Proplanner software to analyze lean improvements in a healthcare laboratory.

Traditionally associated with manufacturing environments, the usefulness of Lean technology is today being recognized for its benefits in a variety of organizations that extend beyond manufacturing such as healthcare, retail, and government. Professor Scachitti and other Purdue University Calumet faculty have been utilizing various advanced technology such as the Proplanner software to apply Lean, Six Sigma, and other traditional Industrial Engineering concepts to improve organizations profitability, productivity and quality. We would like to thank David Sly and the Proplanner staff for the opportunity to validate the usefulness of this software in a non-traditional lean environment.

Creating Your Own Workplace Planner

Step 1: Using AutoCAD, create a layout of the workplace that will be used. The drawing must be created to actual size, because Proplanner Workplace Planner (WPP) calculates its measurements based off of the drawing. WPP defaults Engineering units (Foot – Inch), but can be changed to Decimal units (Metric). When using the default method, one AutoCAD base unit is equal to one inch. In order for WPP to function properly, the drawing does not have to be highly detailed. Layers can be used to make the drawing more user friendly, but are not needed. After using Workplace Planner, new layers will automatically be included for the locations and walk paths of the operators. In essence, the drawing only needs as much detail as needed by the user to determine the locations when routing the elements. (See Figure 1)

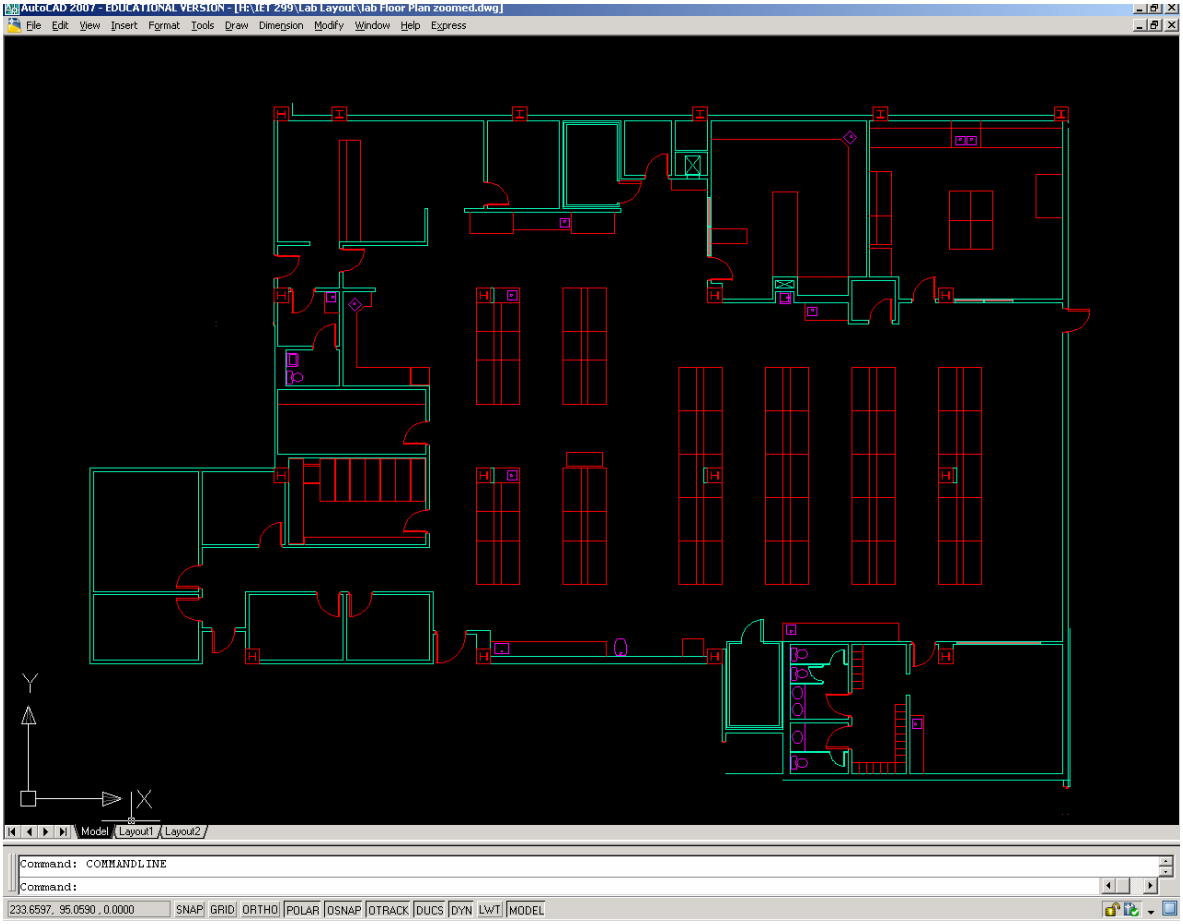

Figure 1

Step 2: Leaving the completed layout open, click on the "W" button on the toolbar. (See Figure 2)

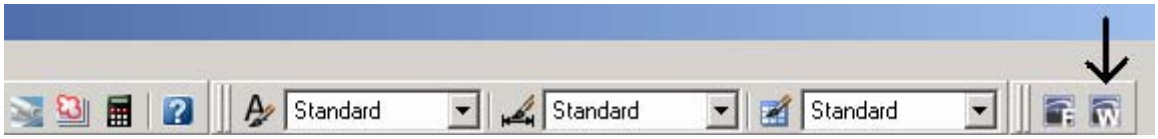

Figure 2

Click on the Proplanner logo to open WPP. When WPP opens, the routings tab is on top. This is where all the input data is entered and edited. (See Figure 3)

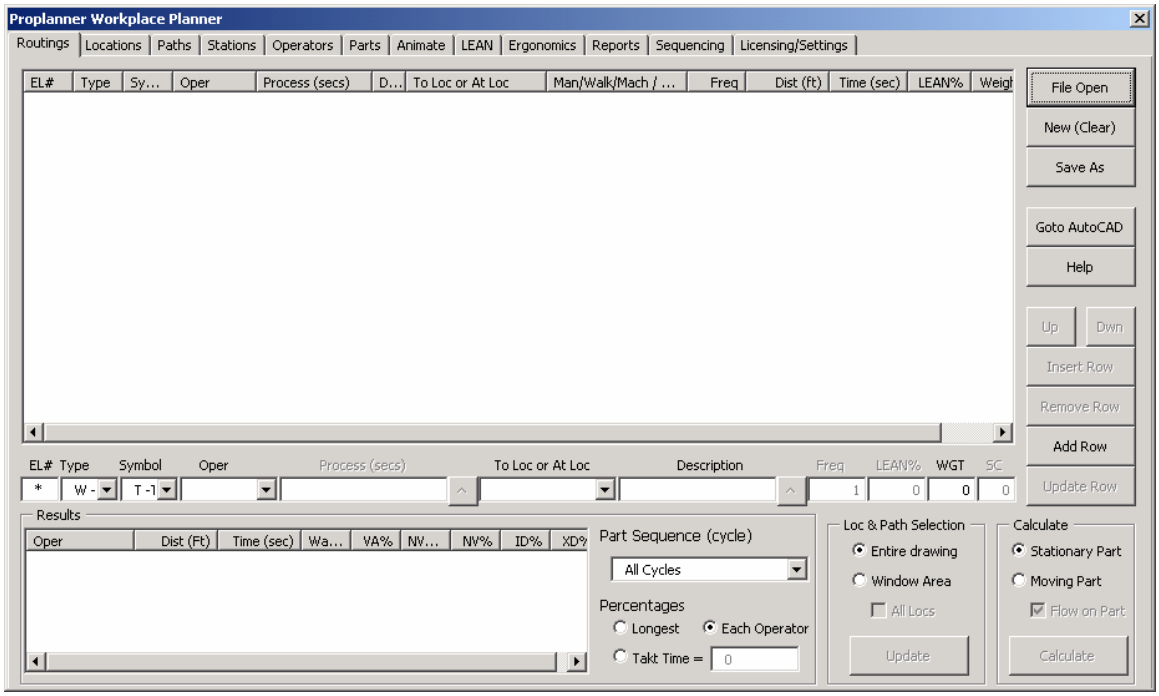

Figure 3

Step 3: See Workplace Planner Routing Help

Note: Synchronizing the operators becomes important when one operator must complete a step before another operator begins. In order to do this, the type should be on "S – Synchronize Operators." Symbol will automatically default to D. The synchronizing option allows the synchronization of four operators. The operator that must wait is entered first, in the regular element for operator, and the operators that must complete the task first are then entered in the fields that usually contain the elements: Process, To Loc or At Loc, and Description. If the Description element is not needed for a fourth operator, it could be filled out as usual. (See Figure 4)

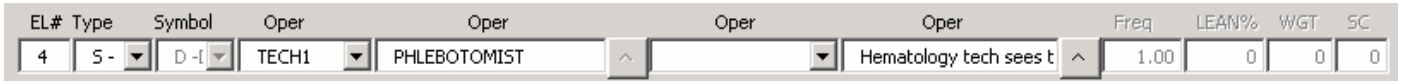

Figure 4

Step 4: After filling out the entire routing for each step, click Update Row. Next, click Insert Row. (See Figure 5) Notice that a new line is added and is directly beneath the current line. Click the new line below the line that is currently highlighted.

Note: If the process changes or the order of the process is entered incorrectly, the Up and Dwn button can be used to move the elements around. (See Figure 5)

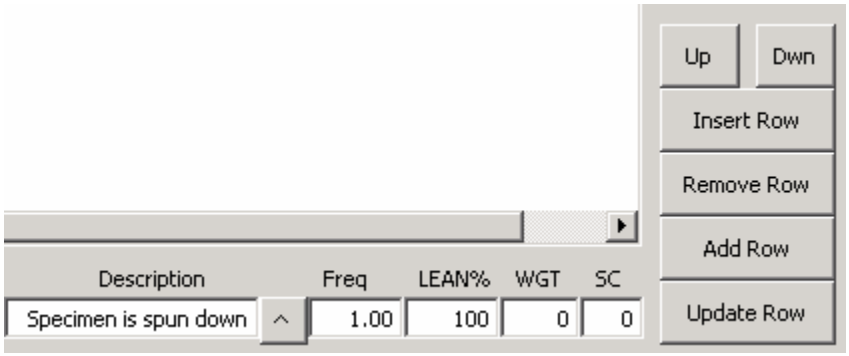

Figure 5

Step 5: Repeat steps 3 and 4 until the entire process is added.

Step 6: Now the process is ready to be calculated. Click Calculate. The user will be prompted with a message saying "Some Locations are missing Select OK to add them." Click OK. AutoCAD's cursor will now prompt the user to select locations on the drawing. Place the location on the drawing where the operator will actually be working at, not just the general area. After establishing the last location, AutoCAD will automatically draw the paths. Notice how the paths created are cutting through walls and other inaccessible areas. This happens because WPP bases its calculation on the fact that the shortest distance between two points is a straight line. (See Figure 6)

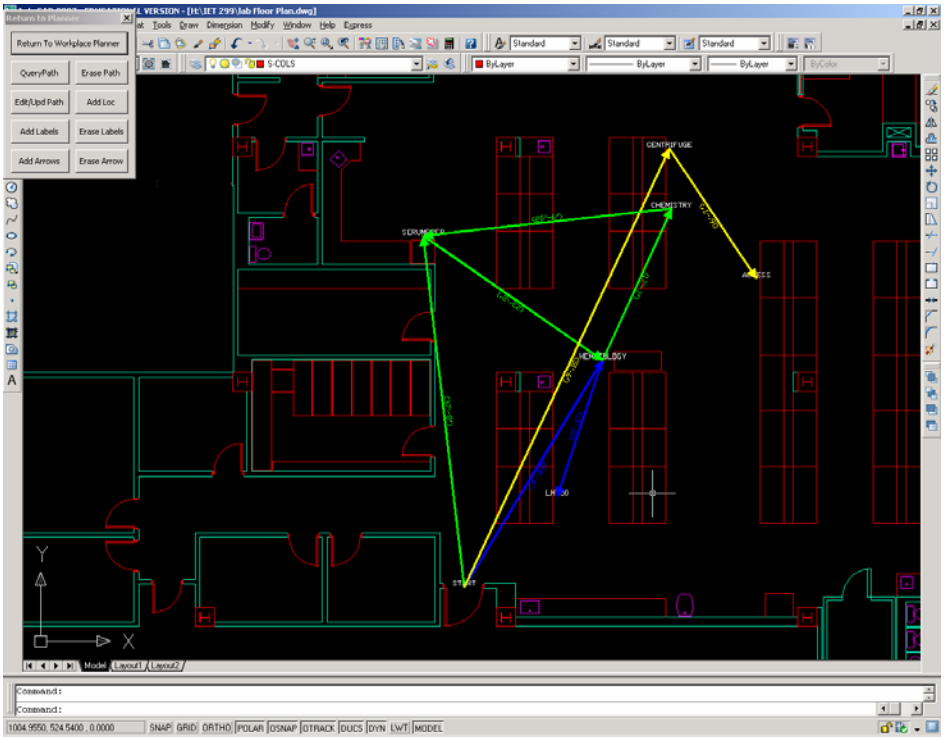

Figure 6

Step 7: In order to gather correct data about the process, the paths will have to be confined to acceptable walking areas. To do so, click the "Edit/Upd Path" button on the WPP toolbar. The cursor in AutoCAD will now say "Select Path Object." Click on a

path that needs to be edited. The path will disappear and ask the user to click on a location defined in step 6. Follow the walking paths from the start and click every time the direction of the path changes. After arriving to the final destination of the step, hit the Esc button. Hit the OK button when it pops up. The path created will be a thinner line from the original, but will go back to normal after editing all paths and recalculating. After editing all the paths click the "Return To Workplace Planner" button on the WPP toolbar. Hit the "Calculate" button one more time. Now all the paths are laid out according to the user, and they have their distances calculated next to them. (See Figure 7)

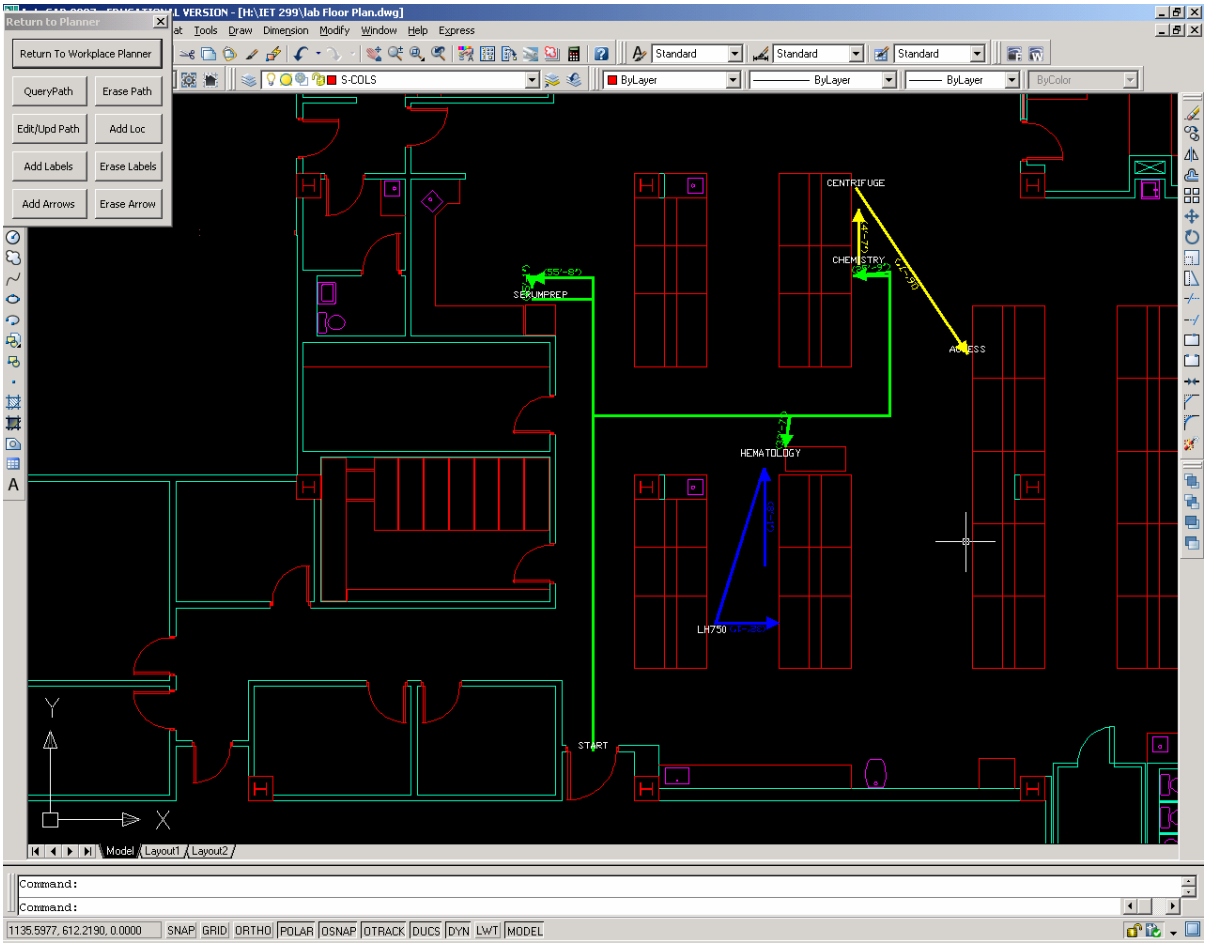

Figure 7

Step 8: Now that the drawing and calculations are all complete, the user can now get efficiency reports and watch an animation of the process created. To see a breakdown of the operators' value added percentages to the process click the LEAN tab. Inside the Lean tab, a chart will appear with a lean assessment chart. Each operator in the process will be represented by a column in the chart. (See Figure 8) WPP breaks each of operator's tasks into five different categories:

- Walking
- Non-Value Process

- Value Process
- Non-Value and Necessary
- Internal Delay

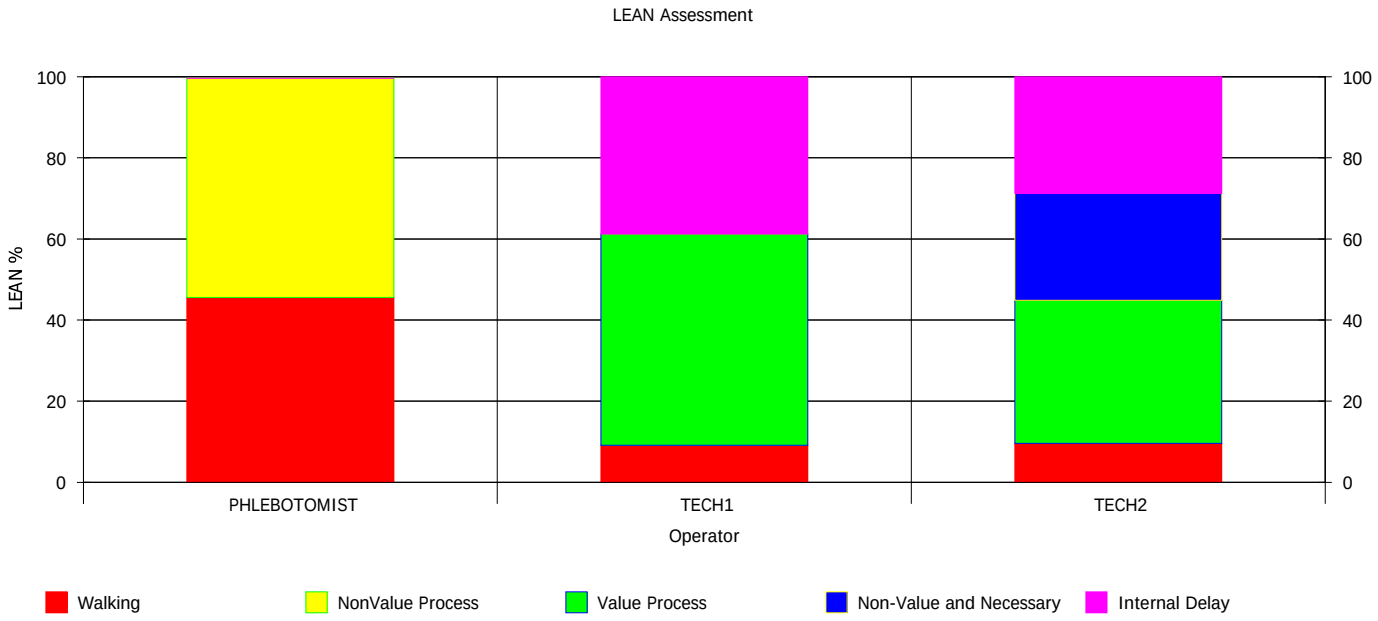

Figure 8

To watch the process animation, click the Animate tab. Change the motion delay to 0.2. Click the Animate button. Clicking Animate will take the user back to the AutoCAD drawing, and the operators will follow the process created. In the top left hand corner, a table will appear and describes step by step what is going on, which operator is doing what, and the time it takes to complete each step. (See Figure 9)

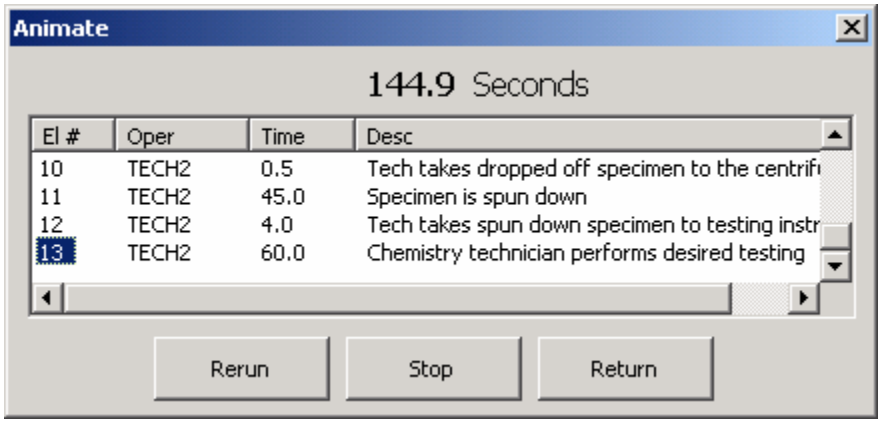

Figure 9