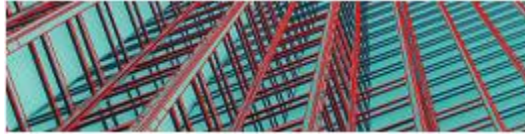


AutoCAD LT 2011 Productivity Study



Comparison of User Productivity Between AutoCAD LT 2008 and AutoCAD LT 2011

Conducted for
Autodesk

Autodesk

By

David Cohn

cohn

June 1, 2010

Comparison of User Productivity Between AutoCAD LT 2008 and AutoCAD LT 2011

By David S. Cohn

Executive Summary

While the overall performance of a software program or hardware platform can be measured using standard benchmarks, actual user productivity is a more difficult metric to gauge, since it often includes perceptions of the overall user experience and must account for differences in the methods employed while using the software.

In order to quantify the potential productivity improvement a typical user is likely to experience when upgrading to the latest version of AutoCAD LT, we devised a series of tests involving timing the repeated re-creation of a selection of drawings using both AutoCAD LT 2008 and AutoCAD LT 2011. The drawings used were judged to be representative of those that would be produced by typical AutoCAD LT users.

The tests were performed by David Cohn, widely recognized as an expert in the use of AutoCAD and AutoCAD LT, utilizing the features and functions he judged to be the most expedient means of producing the end result in each respective version of the software. The software was run on computer hardware and operating systems typical of what was likely to be employed by an actual customer at the time each version of AutoCAD LT was released.

The results of the study were quite dramatic. It took more than 11 hours to complete the seven drawings using AutoCAD LT 2008 compared to 6.25 hours to complete the same seven drawings using AutoCAD LT 2011. This represents an improvement in overall user productivity of 44 percent as a result of upgrading from AutoCAD LT 2008 to AutoCAD LT 2011.

While not considered in the quantitative results of this study, additional functionality available when running Windows 7 could further improve overall productivity.

Although the results reported in this study would likely vary depending on the level of experience of the user and the nature of the drawings being produced, similar improvements in personal productivity are likely due to improvements in the features and functionality available in AutoCAD LT 2011 compared to AutoCAD LT 2008. This level of improvement to personal productivity is so significant that most users will find it easily justifies the cost of upgrading.

Do new features result in increased productivity?

AutoCAD LT was first released in December 1993 as a lower-cost, 2D-only alternative to the company's flagship AutoCAD software. Each release since then has offered numerous new features and functions that have contributed to improve the overall productivity and usefulness of the software beyond each previous release.

One could argue that by upgrading to the latest release, customers would actually save money because the features and functions of the new software would enable them to complete their work faster than would be possible had they used an earlier version of the software. Yet many customers skip releases for economic reasons.

The question becomes one of quantifying the actual productivity improvements a user could reasonably expect to achieve by upgrading from their old version of AutoCAD LT to the latest release.

Developing the Study Criteria

In the spring of 2010, Autodesk approached me to conduct a productivity study comparing AutoCAD LT 2008 to AutoCAD LT 2011. I devised a study in which a number of drawings typical of those produced by actual AutoCAD LT customers would be recreated multiple times using both AutoCAD LT 2008 and AutoCAD LT 2011, utilizing features and functions judged to be the most expedient method for producing the desired end results. The time required to create each drawing would be recorded using a stop watch and rounded to the nearest minute.

After considering nearly 100 different drawings produced by actual AutoCAD and AutoCAD LT users, I selected seven drawings, most of which I concluded would require a typical user anywhere from an hour to half a day to complete.

Each drawing was chosen based on a number of criteria designed to showcase one or more features of the software that did not exist in AutoCAD LT 2008 but were added in subsequent releases. While each drawing could certainly be produced using the features and functions available in AutoCAD LT 2008, the advanced capabilities added in subsequent releases would likely enable a typical user to produce the drawing faster using AutoCAD LT 2011.

Since the premise of the test was to determine how much time could be saved by using a new feature, the test itself was already predisposed to show that using AutoCAD LT 2011 is more productive than using AutoCAD LT 2008. However, since each of the drawings used in the study was originally produced using versions of AutoCAD or AutoCAD LT predating the 2008 release, I concluded that the study would present a realistic analysis of the productivity gains a typical user could achieve.

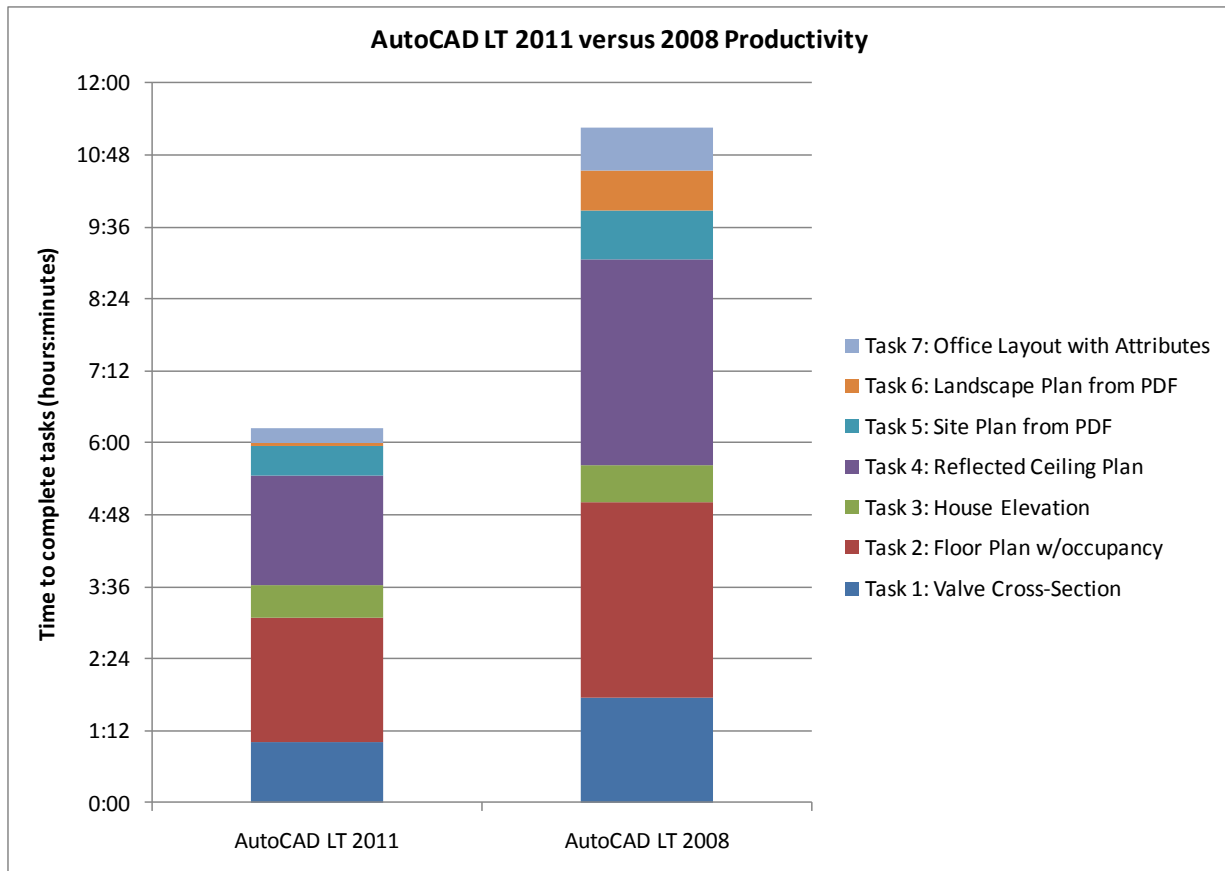
In order to eliminate additional biases in the design of the study, such as improvements in speed simply due to increasing familiarity with the sample drawings, some of the sample drawings were produced first using the 2011 release of the software and then produced using AutoCAD LT 2008, tilting any such improvements in the favor of the older release. Each drawing was also reproduced in each release several times and only the fastest times were ultimately included in the results.

In spite of focusing on new features, I expected to see only modest reductions in the time required to produce the drawings in the newer release. I did not expect to see dramatic improvements in overall user productivity. Most CAD drawings consist of lines, arcs, and circles, and I reasoned that there have been very few changes that would improve the speed at which a typical user would be able to create or modify the objects that represent the majority of a typical drawing. After all, how much faster can you draw a line?

Dramatic Results

The results of the study were more dramatic than I expected. It took 11 hours, 16 minutes to complete all seven drawings using AutoCAD LT 2008, compared to 6 hours, 15 minutes to complete the same tasks using AutoCAD LT 2011. This represents an improvement in overall productivity of 44 percent on a collection of tasks representative of work that is fairly typical of the types of drawings created and edited using AutoCAD LT. On individual tasks that focused on specific aspects of the software, productivity improved anywhere from 16 to 90 percent.

The following chart illustrates the cumulative improvement in overall productivity, represented as the total time required to complete the seven sample drawings in AutoCAD LT 2011 compared to AutoCAD LT 2008.



Time to complete all seven drawing tasks in AutoCAD LT 2011 versus AutoCAD LT 2008.

The study in detail

The AutoCAD LT 2011 productivity study compared the time required to produce a collection of seven different drawings multiple times using both AutoCAD LT 2008 and AutoCAD LT 2011, using the features and functions judged to be the most expedient method for producing the desired end result. The time required to create each drawing was recorded using a stop watch and rounded to the nearest minute.

Each drawing task required many common AutoCAD LT commands. But each was selected because certain aspects of the drawing would expose the potential time savings that could be achieved by using features and functions not available in AutoCAD LT 2008 but added to subsequent releases and therefore available to someone using AutoCAD LT 2011.

Drawing Task #1

The first drawing represents a typical mechanical part that might be produced using AutoCAD LT—a cross-section through a valve assembly. The assembly consists of three separate parts, each of which was initially modeled separately. For each part, the part boundaries, hatch patterns, and background or hidden lines were drawn on their own separate layers. After completing each separate part, the parts were moved and rotated into their proper positions to create the completed cross-section of the valve assembly. A second drawing file was then created consisting of a bordered sheet and title block, using sample templates included with AutoCAD LT. The first drawing showing the cross-section of the valve was then inserted into the second drawing as an external reference so that it displayed inside the bordered sheet and title block, with the viewport set to an appropriate scale so that the drawing would fit onto the bordered sheet and the viewport border would not be visible. Once this step was completed, dimensions were added to the valve assembly drawing. Then, the bordered sheet drawing was updated so that it reflected the changes made to the externally referenced valve assembly drawing. Figure 1 shows the completed task #1 drawing.

Because of the new features available in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated productivity improvements in a number of areas:

- Setting up layers would be faster in AutoCAD LT 2011 because the Layer Properties Manager is a non-modal palette compared to a dialog box in AutoCAD LT 2008.
- Actual drawing and editing tasks would be faster because the ribbon interface is more intuitive and puts commands where they're more easily accessed.
- Polylines used for profile lines are more easily edited in AutoCAD LT 2011 using grips, compared to the Vertex Editing option of the PEDIT command in AutoCAD LT 2008.
- Hatch patterns can be previewed as they're being created in AutoCAD LT 2011 compared to using a dialog box in AutoCAD LT 2008.
- The ALIGN command can be used to move and rotate components into their proper location in AutoCAD LT 2011 compared to using individual MOVE and ROTATE commands in AutoCAD LT 2008.
- Changes to external references can be immediately updated in AutoCAD LT 2011 or edited in place, whereas in AutoCAD LT 2008, the externally referenced drawing must

of the HATCH command, the availability of the ALIGN command, and the ease with which changes to external references can be immediately displayed within a host drawing.

Drawing Task #2

The second drawing task was the recreation of a complex floor plan for a hospital facility. The drawing is a design development stage drawing showing all walls, doors, windows, and plumbing fixtures. Each object type would be created on its own appropriate layer (for example, a walls layer, a doors layer, and so on). Wall intersections needed to be cleaned so that the walls could be filled with a solid-fill hatch pattern. After completing the plan, all the rooms needed to be labeled. Then, area fills were added to indicate the occupancy/usage of each space. Since all plumbing fixtures, door swings, and labels needed to remain visible in the final drawing, the area fills needed to be faded so that they did not overpower the appearance of the drawing. The final drawing needed to be presented on a D-size architectural bordered sheet which would also include a legend identifying the different occupancy/usage types along with the square footage for each occupancy type. Figure 2 shows the completed task #2 drawing.

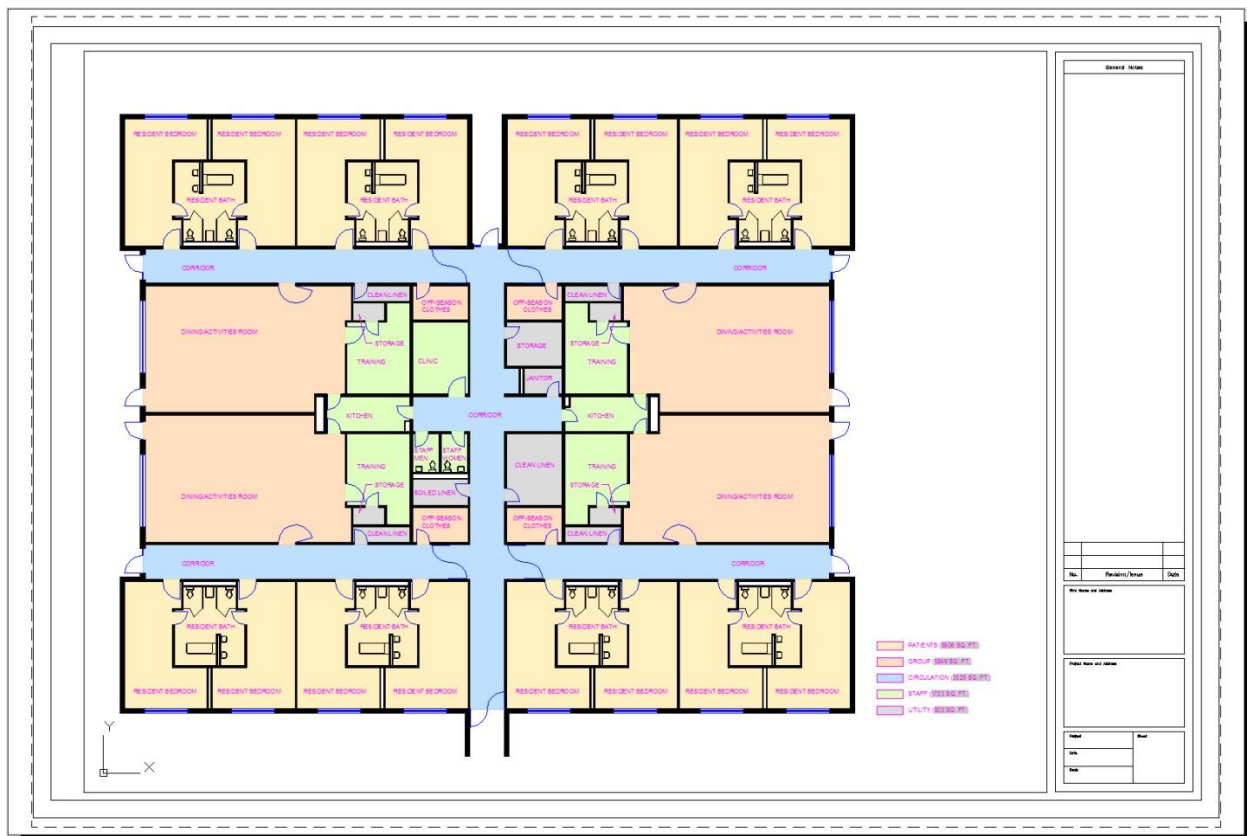
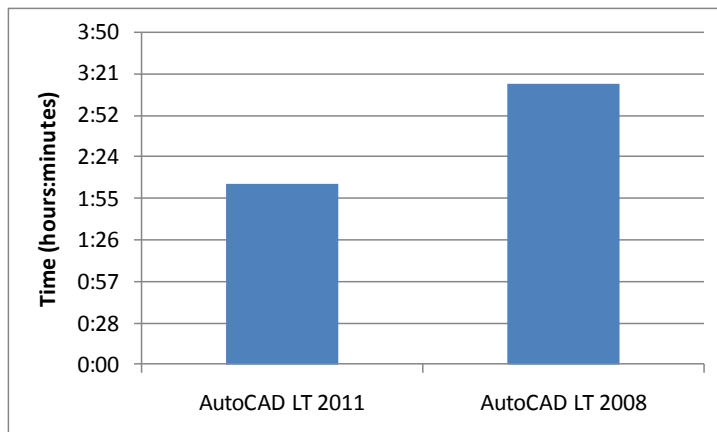


Figure 2: Completed task #2 drawing – a floor plan including occupancy and area calculations.

Because of the new features available in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated productivity improvements in a number of areas:

- Setting up layers would be faster in AutoCAD LT 2011 because the Layer Properties manager is a non-modal palette compared to a dialog box in AutoCAD LT 2008.
- Actual drawing and editing tasks would be faster because the ribbon interface is more intuitive and puts commands where they're more easily accessed.
- Area fills added as hatch patterns would be faster and easier to create in AutoCAD LT 2011 because they could be previewed as they were being added, whereas in AutoCAD LT 2008, they would not become visible until after they were added.
- In AutoCAD LT 2011, the ability to control transparency, to send hatch patterns to the back, and to bring text to the front would make it easier to ensure that the area fill appeared behind other objects, whereas in AutoCAD LT 2008, this can only be accomplished by using DRAWORDER and the transparent appearance of filled areas controlled by creating a color-based plot style table that used screening for the fill colors.
- To create the legend in AutoCAD LT 2011, the areas of the various occupancy/usage types could be inserted as a field that reported the area of each filled area, whereas in AutoCAD LT 2008, the legend would have to be created using text only after first determining the area property of each filled area.

This drawing took 3 hours: 15 minutes to complete using AutoCAD LT 2008. The same drawing took only 2 hours: 5 minutes to complete using AutoCAD LT 2011, an improvement of 36 percent.



Task #2: Floor plan floor plan including occupancy and area calculations

AutoCAD LT 2011 was 36 percent more efficient in the creation of the task #2 drawing, largely thanks to the improved accessibility afforded by the ribbon interface, the ability to preview hatches, the ability to easily create transparent objects, and the ability to include fields.

Drawing Task #3

The third drawing task was the completion of an elevation of a custom house. The outline of the actual elevation was previously created. The task in this case was to use standard AutoCAD LT commands to embellish the drawing to create a client presentation by adding hatches and fills to represent brick, stucco, roofing materials, and so on. This also included adding thicker

profile lines to clearly show which portions of the house were closer to the front of the view. Because brick was the major building material and the craftsmanship of the masonry was an important consideration for the client, care needed to be taken to ensure that the brick coursed out properly. The brick also needed to be shown with a filled background to make it stand out from the rest of the materials. Figure 3 shows the completed task #3 drawing.

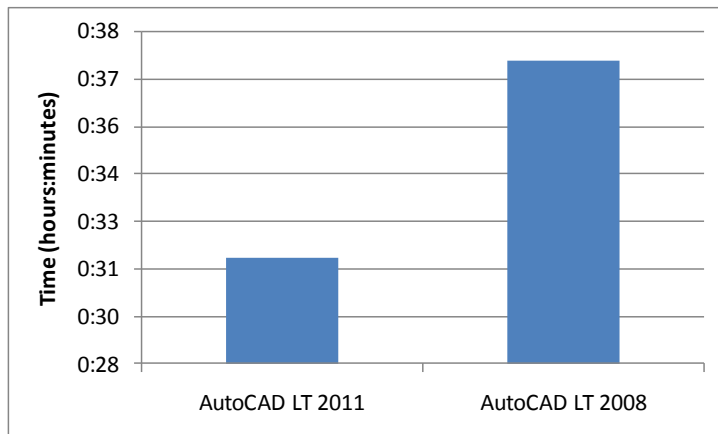


Figure 3: Completed task #3 drawing – a presentation elevation of a high-end custom home.

Because of the new features available in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated productivity improvements in a number of areas:

- Improved productivity resulting from the Layer Properties manager palette.
- Improved command accessibility thanks to the ribbon interface.
- Dramatic improvements in the ability to fill the appropriate areas with hatch patterns representing the various materials, particularly the brick, with the added advantage in AutoCAD LT 2011 of being able to visually adjust the hatch origin to ensure that the brick coursing was correct. In addition, the ability to include a background color along with hatch patterns in AutoCAD LT 2011 would eliminate the need to apply two hatch patterns in AutoCAD LT 2008, one for the brick pattern and the other to create the shaded background.

This drawing took 38 minutes to complete using AutoCAD LT 2008. The same drawing took 32 minutes to complete using AutoCAD LT 2011, an improvement of 16 percent.



Task #3: Presentation elevation of a custom house

AutoCAD LT 2011 was only 16 percent more efficient in the creation of the task #3 drawing. While the improved interface did provide some benefits, the anticipated improvement from being able to visually adjust the hatch origin to ensure the proper brick coursing was not recognized because it was just as easy to establish the hatch origin using tools already available in AutoCAD LT 2008. The major portion of the 6 minute difference was the elimination of the need to hatch brick areas twice, since in AutoCAD LT 2011, a background color could be created as part of the brick hatch pattern.

Drawing Task #4

The fourth drawing task was the completion of a reflected ceiling plan for a rather complex office building. The floor plan of the office build was previously created. The task in this case was only to create the reflected ceiling plan. Portions of the floor plan were at odd angles, however, and one wing of the building curves. The ceiling tile pattern could be created as a user-defined hatch pattern but would need to be centered appropriately in each individual room as well as along a curving corridor. Blocks representing 24x48 light fixtures and round down lights as well as HVAC supply and return air diffusers and sprinklers would need to be added to the ceiling plan. Figure 4 shows the completed task #4 drawing.

Because of the new features available in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated a number of productivity improvements. The most significant impact on the time required to complete this drawing would be in the addition of hatch patterns to represent the ceiling tiles in each room. In particular, I anticipated that being able to see and manipulate the angle of the hatch pattern and the origin of the pattern within each room would provide a significant reduction in the time required to complete this drawing in AutoCAD LT 2011 compared to AutoCAD LT 2008.

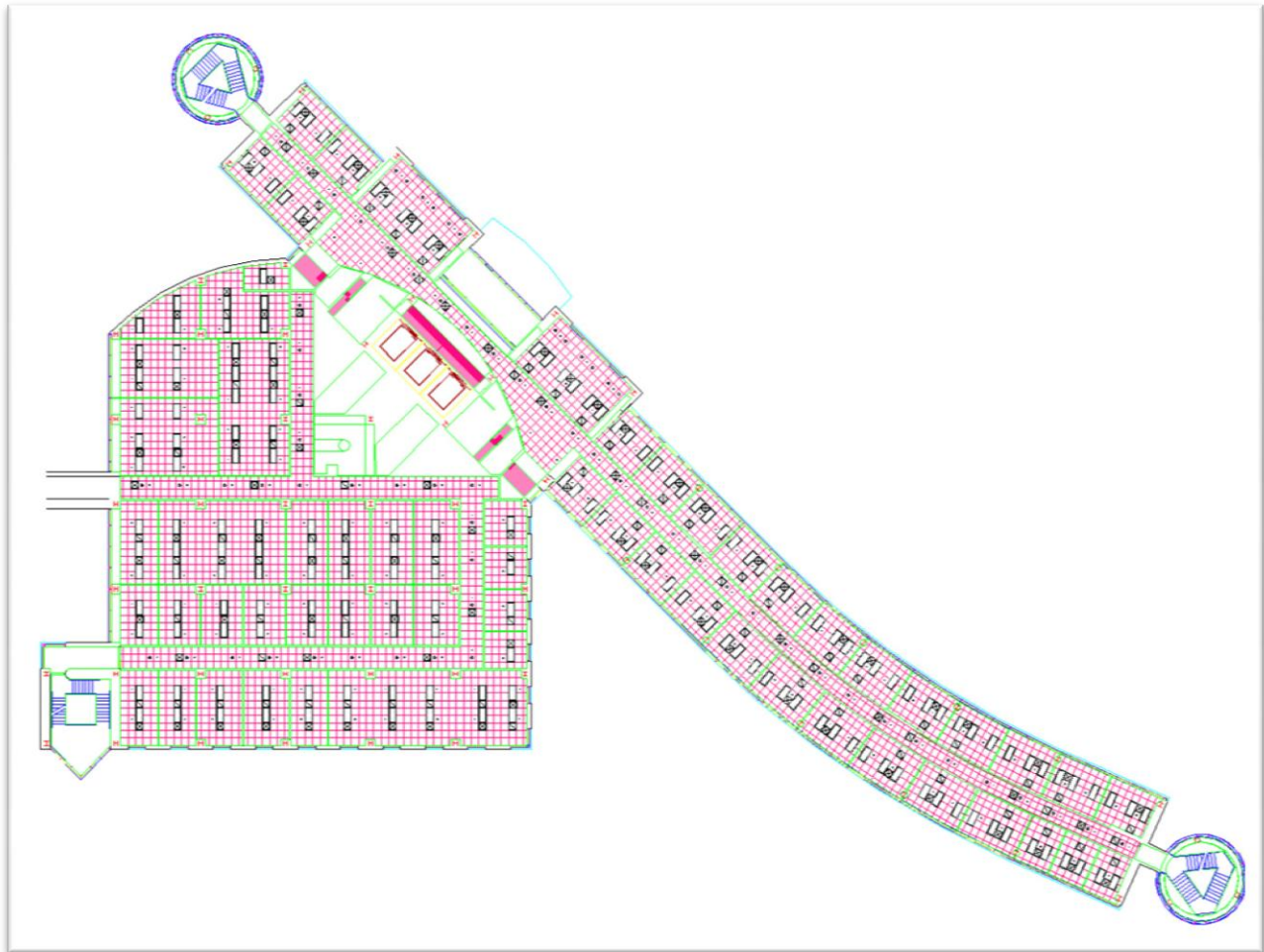
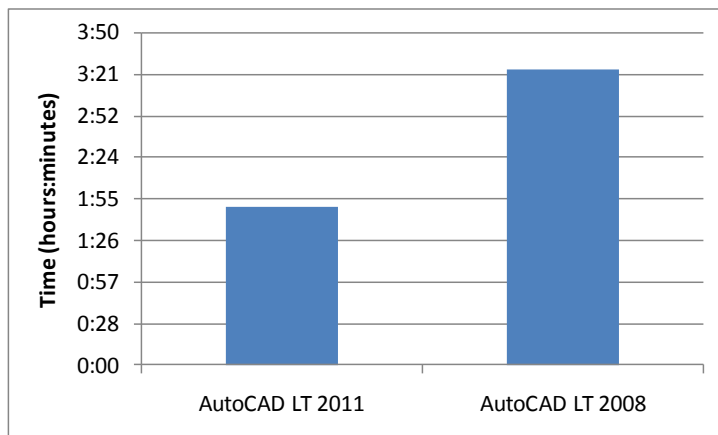


Figure 4: Completed task #4 drawing – a reflected ceiling plan of a complex office building.

This drawing took 3 hours: 25 minutes to complete using AutoCAD LT 2008. The same drawing took only 1 hour: 50 minutes to complete using AutoCAD LT 2011, an improvement of 46 percent.



Task #4: Reflected ceiling plan of a complex office building

AutoCAD LT 2011 was 46 percent more efficient in the creation of the task #4 drawing. The most significant improvement was indeed both the ability to preview hatch patterns in AutoCAD LT 2011 and also the ability to use grip editing to quickly and easily modify the angle and origin of hatch patterns after then were added to the drawing. In AutoCAD LT 2008, it was much more difficult to get the ceiling tiles to align properly in each room, particularly those rooms along the curved portion of the building.

Drawing Task #5

The fifth drawing task was the creation of a site plan on which a new building is to be constructed. The existing site plan, including the contour lines, had been provided as a PDF file. This task involved duplicating the existing line work in AutoCAD LT and adding the utility lines, curbs, building footprint, and so on. Figure 5 shows the completed task #5 drawing.

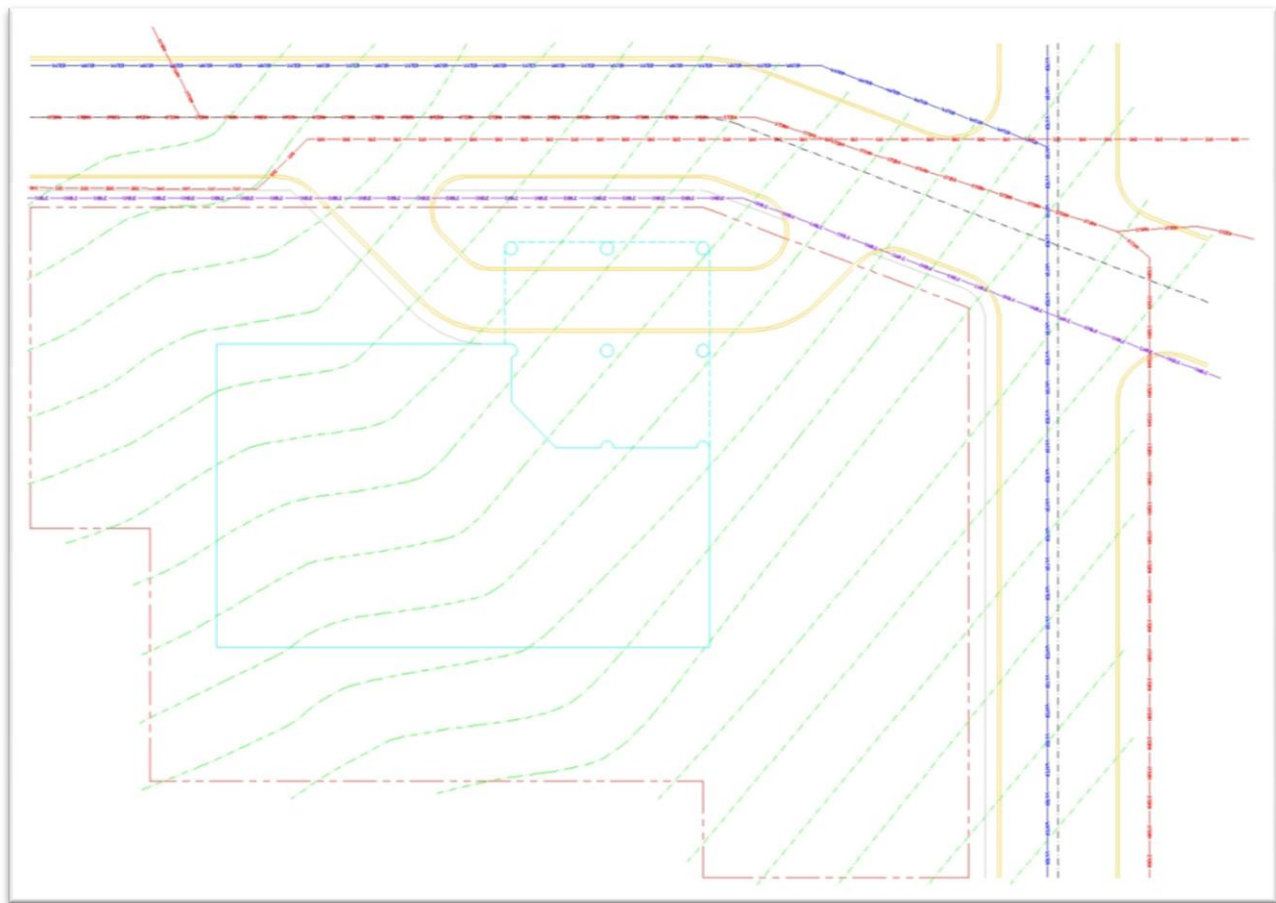


Figure 5: Completed task #5 drawing – a site plan based on a provided PDF file.

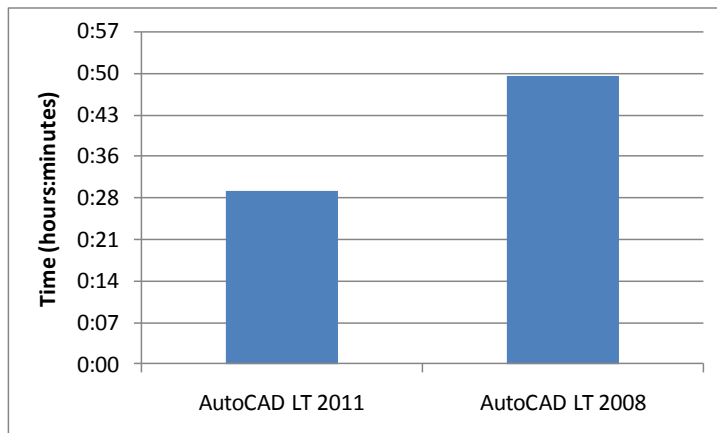
Thanks to improved functionality in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated significant improvements in a number of areas thanks to the ability to use completely different workflows:

- In AutoCAD LT 2008, in order to utilize the PDF file, the user would have to first open the PDF file in the free Adobe Acrobat Reader software, perform a screen capture to grab

the line work in the PDF file, and then copy and paste that line work into AutoCAD LT as an OLE object. Once visible in AutoCAD LT, the image of that line work could be scaled so that the image was at approximately the correct size. The user would then trace over the line work in the image file using standard AutoCAD LT commands. Since the scaling of the image would only approximate the actual size of the objects in the site plan, care would need to be taken to ensure that the resulting AutoCAD LT drawing was accurate.

- In AutoCAD LT 2011, the PDF file could be attached directly to the drawing as an underlay. Since in this case the PDF file was originally output from an existing AutoCAD drawing, the PDF file could be scaled precisely and then standard AutoCAD LT commands used to snap new drawing objects to the underlying PDF geometry to recreate the line work in the existing drawing.
- The utility lines were created using complex linetypes that incorporated symbols and text. If care was not taken to always draw these lines from left to right, the resulting text would appear upside-down. In AutoCAD LT 2008, this would require the lines to be erased and redrawn. In AutoCAD LT 2011, any upside-down lines could simply be reversed, or if the complex linetype was defined with the new “upright” orientation option, complex linetypes would always be right-reading regardless of the direction in which they were originally created.
- In AutoCAD LT 2011, the new grip editing capabilities of polylines and splines would improve the creation of the contour lines compared to the editing options available in AutoCAD LT 2008.

This drawing took 50 minutes to complete using AutoCAD LT 2008. The same drawing took only 30 minutes to complete using AutoCAD LT 2011, an improvement of 40 percent.



Task #5: Site plan based on a provided PDF file

AutoCAD LT 2011 was 40 percent more efficient in the creation of the task #5 drawing. The most significant improvement was the improved workflow of being able to attach the provided PDF file as an underlay in AutoCAD LT 2011 as opposed to having to bring it in as an OLE object in AutoCAD LT 2008. Had the original PDF file not been created from an AutoCAD drawing, however, the user would likely not have been able to snap to the geometry in the attached PDF file, in which case the time savings would not have been as dramatic.

Drawing Task #6

The sixth drawing task was to add the floor plan of an existing house to a landscaping plan. In this scenario, the user was assumed to have been working on the landscaping plan and was subsequently provided with the floor plan of the existing house as a PDF file. The only thing that needed to be accomplished in this task was the addition of the floor plan to the landscaping plan. Figure 6 shows the completed task #6 drawing.

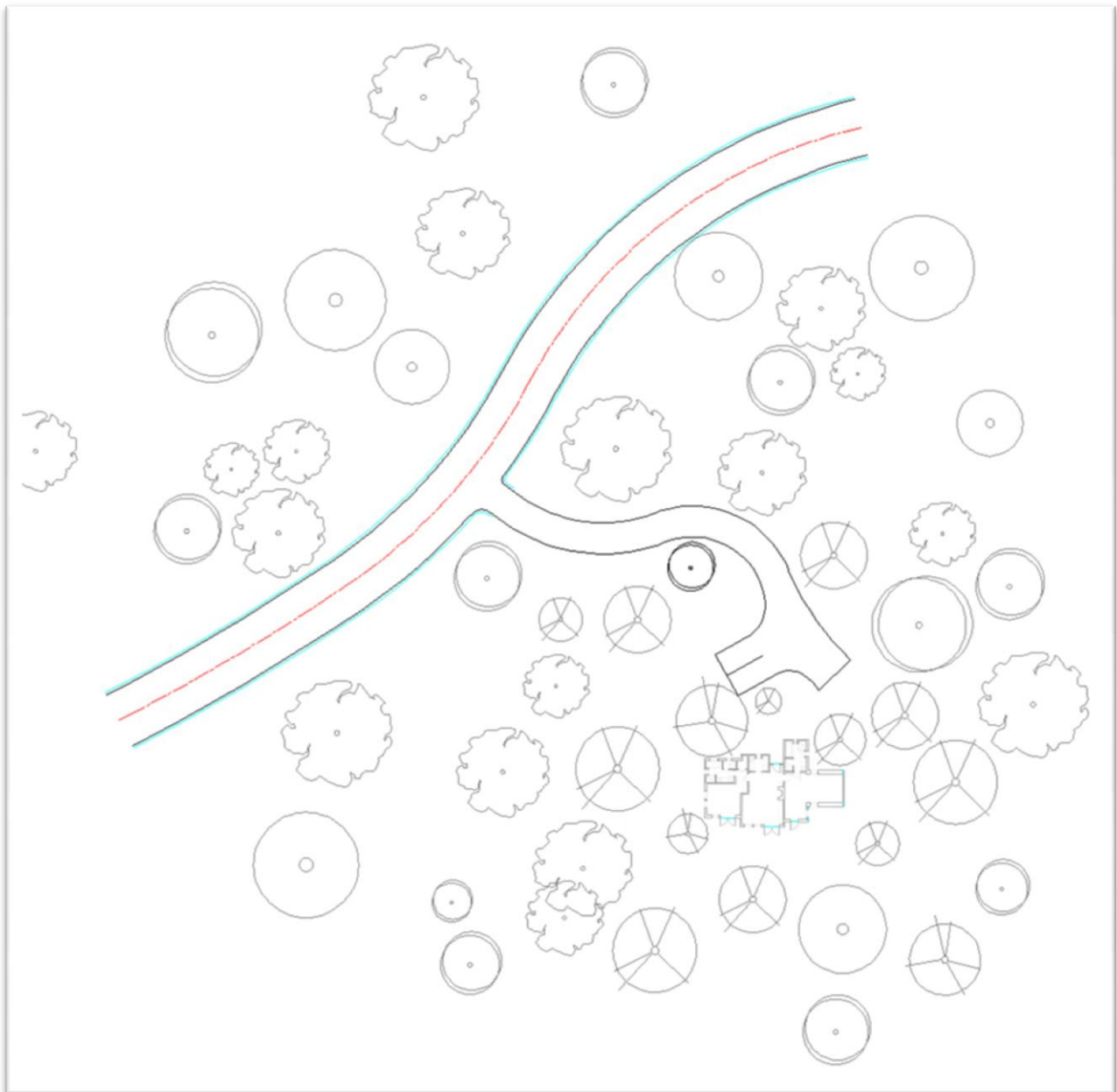
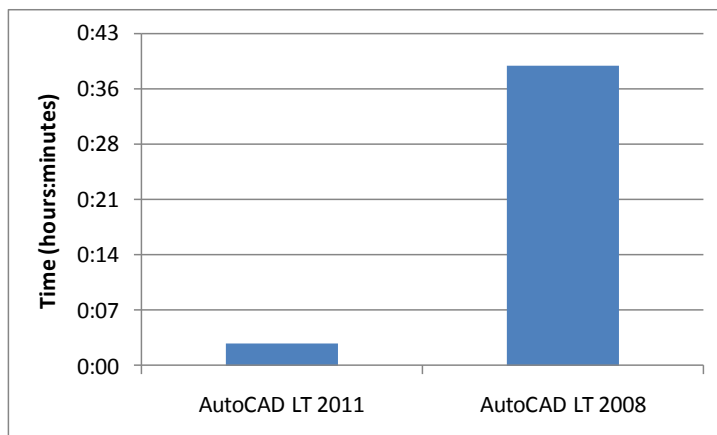


Figure 6: Completed task #6 drawing – a floor plan added to a landscaping plan.

Again, thanks to improved functionality in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated a significant improvement in the time required to complete this task thanks to the ability to use completely different workflows:

- In AutoCAD LT 2008, in order to utilize the PDF file, the user would have to first open the PDF file in the free Adobe Acrobat Reader software, perform a screen capture to grab the line work in the PDF file, and then copy and paste that line work into AutoCAD LT as an OLE object. Once visible in AutoCAD LT, the image of that line work could be scaled so that the image was at approximately the correct size. The user would then have to trace over the line work in the image file using standard AutoCAD LT commands.
- In AutoCAD LT 2011, the PDF file could be attached directly to the drawing as an underlay. The PDF file could then be scaled to the correct size. A clip boundary could then be applied to remove extraneous information in the PDF file and the PDF frame hidden so that it was not visible in the drawing.

This task took 39 minutes to complete using AutoCAD LT 2008 compared to just 3 minutes using AutoCAD LT 2011, an improvement of 92 percent.



Task #6: Landscape plan incorporating a floor plan from a PDF file

AutoCAD LT 2011 was 92 percent more efficient in the creation of the task #6 drawing, the most dramatic productivity improvement in the study. The capabilities demonstrated by this particular task have wide-ranging applications. It is quite common to obtain PDF files of existing conditions. The ability to incorporate a PDF file as an underlay in an AutoCAD LT drawing and to then crop out unwanted portions of that PDF file can significantly reduce unnecessary drafting, particularly when working on revisions or additions to existing work.

Drawing Task #7

In the seventh and final drawing task, an existing floor plan of an office layout was provided in which furniture had already been placed, for a total of 148 instances of 12 different blocks. Each furniture block already had an attribute associated with it identifying the name of the furniture object. In this scenario, the user needed to change the names of the furniture to those requested by the designer. In addition, attributes needed to be added to the existing furniture

blocks so that each piece of furniture would also include the price of each item. Figure 7 shows the completed task #7 drawing.

The ability to include attribute data along with the visible objects comprising blocks has long been recognized as an extremely useful feature in AutoCAD and AutoCAD LT. Once the drawing is completed, this data can be exported for use in downstream applications.

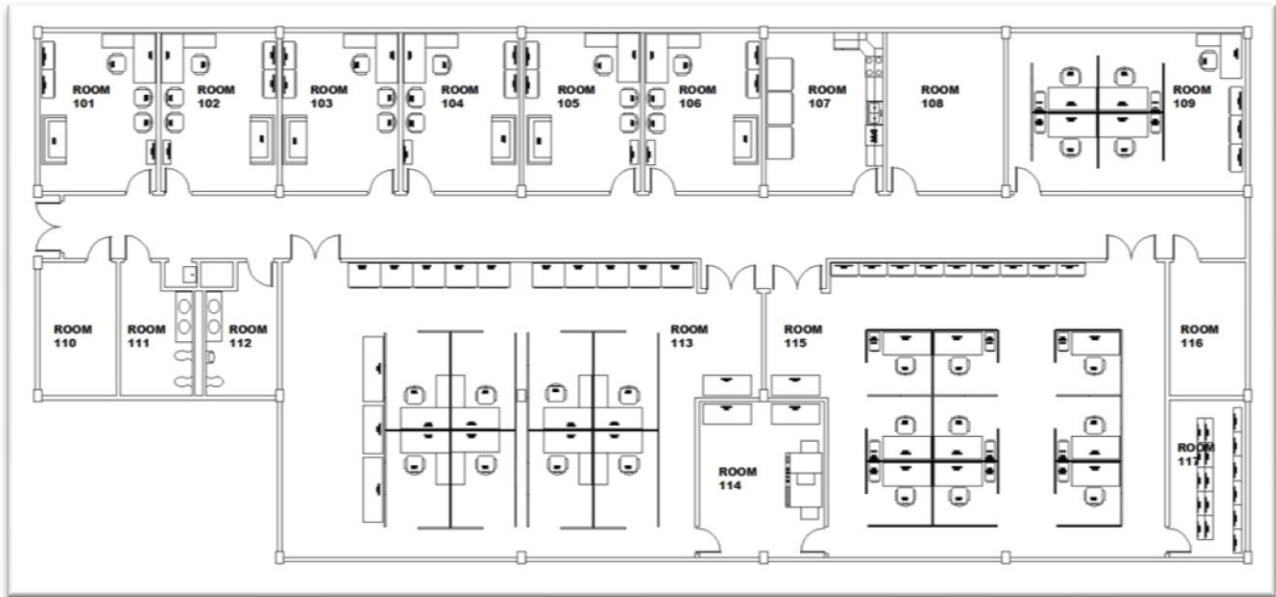
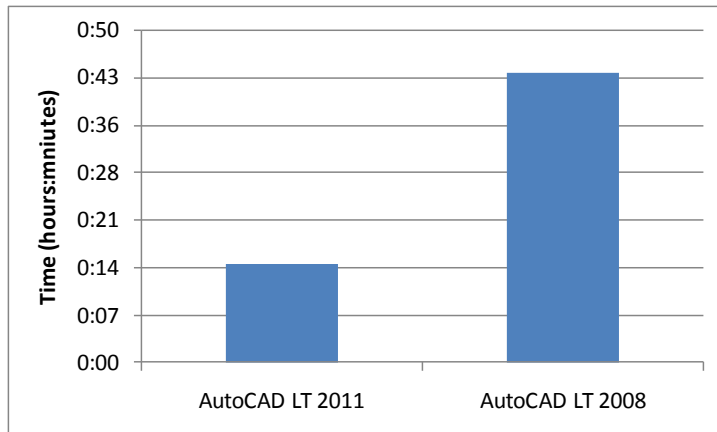


Figure 7: Completed task #7 drawing – an office layout including furniture blocks with attributes.

Again, thanks to the improved functionality in AutoCAD LT 2011 compared to AutoCAD LT 2008, I anticipated a significant improvement in the time required to complete this task thanks to the ability to use completely different workflows:

- In AutoCAD LT 2008, it is possible to change the attribute representing the name of the furniture by doing a global replacement of the existing attribute. But to add attributes to the block, the user must edit the block definition to add the new attributes and then replace each instance of the block with the new information. Since each block must be opened in the Block Editor anyway, it would actually be faster to make both changes inside the Block Editor.
- In AutoCAD LT 2011, it is possible to change the value of the attribute representing the name of the furniture by using the Search and Replace tool. But to add attributes to the block, the user must edit the block definition to add the new attributes. Since each block must be opened in the Block Editor anyway, it would actually be faster to make both changes inside the Block Editor. But there is no need to replace each instance of each block. In AutoCAD LT 2011, after adding attributes and modifying the default values of existing attributes, all of the information for all instances of each block can be synchronized in a single step.

This task took 44 minutes to complete using AutoCAD LT 2008 compared to 15 minutes using AutoCAD LT 2011, an improvement of 66 percent.



Task #7: Update attributes in blocks in a office furniture layout

AutoCAD LT 2011 was 66 percent more efficient in the completion of this task. Users often find that they need to add additional attributes and values to existing blocks. The ability to do this and then easily synchronize the data rather than having to edit each instance of each block has far-ranging implications for all users.

About the Systems Used for Testing

The seven task drawing scenarios were completed on two different computer platforms:

- The AutoCAD LT 2008 tests were performed on an HP xw4600 workstation equipped with an Intel® Core™ 2 Duo 3.16GHz CPU, 4GB of RAM, a 7200rpm SATA hard drive, and an NVIDIA® Quadro® FX570 graphics accelerator, running Windows® XP 32-bit. This workstation did not become available until 2008; nearly a year after AutoCAD LT 2008 was released.
- The AutoCAD LT 2011 tests were performed on an HP Z200 workstation equipped with an Intel® Core™ i5 3.47GHz CPU, 4GB of RAM, a 7200rpm SATA hard drive, and an NVIDIA® Quadro® FX 1800 graphic accelerator, running Windows® 7 32-bit. This is a relatively new workstation released shortly before AutoCAD LT 2011 began shipping and targeted at the entry-level to mid-range CAD market.

Although the tests did not take into consideration the differences between the two systems, I did note several issues that may be considered when comparing the hardware platforms and operating systems as they relate to overall user productivity.

The time required for the systems to boot up was virtually identical. The HP xw4600 workstation running Windows XP was ready to start programs approximately 50 seconds after pressing the power button. The HP Z200 workstation running Windows 7 was ready to start programs approximately 52 seconds after power-up.

AutoCAD LT 2008 actually loaded faster, however, taking approximately 4 seconds to load on the HP xw4600 workstation running Windows XP compared to approximately 8 seconds to load AutoCAD LT 2011 on the HP Z200 workstation running Windows 7. The longer load time is largely due to the ribbon interface in AutoCAD LT 2011.

Once AutoCAD LT was up and running on the respective systems, AutoCAD LT 2011 seemed more responsive on the Z200 workstation running Windows 7 than AutoCAD LT 2008 on the xw4600 under Windows XP, owing to Windows 7's use of Direct3D®. Accessing commands was also significantly easier in AutoCAD LT 2011 thanks to the ribbon interface (compared to the pull-down menus, toolbars, and dashboard interface used in AutoCAD LT 2008). Some of the increased productivity measured when using AutoCAD LT 2011 was certainly due to the program's improved interface.

AutoCAD LT 2011 also leverages the Live Taskbar Preview functionality in Windows 7. With the Windows 7 Live Taskbar Preview, when you move the cursor over the AutoCAD LT icon on the Windows taskbar, you see a preview image of each drawing currently open in AutoCAD LT 2011 (as shown in Figure 8). You can click on a preview image to quickly work on that drawing or even close the drawing using the preview image. If AutoCAD LT 2011 appears in the list of recent programs in the Start menu, it also stores a "jump list" of most recently opened files. You can then load one of those files (or start AutoCAD LT 2011 and load the file) by simply

clicking on it in the list. You can also pin files so that they remain in this list. The jump list also appears when you right-click on the taskbar icon. These jump lists are shown in Figure 9.

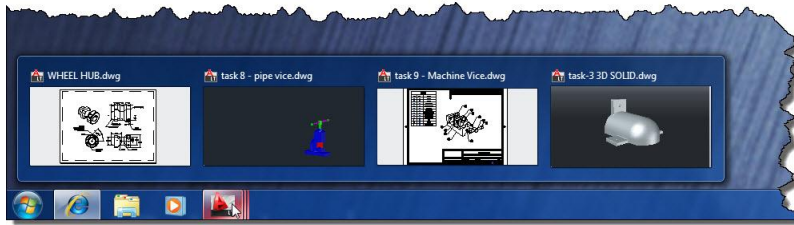


Figure 8: The Windows 7 Live Taskbar Preview lets you preview and switch to an open drawing.

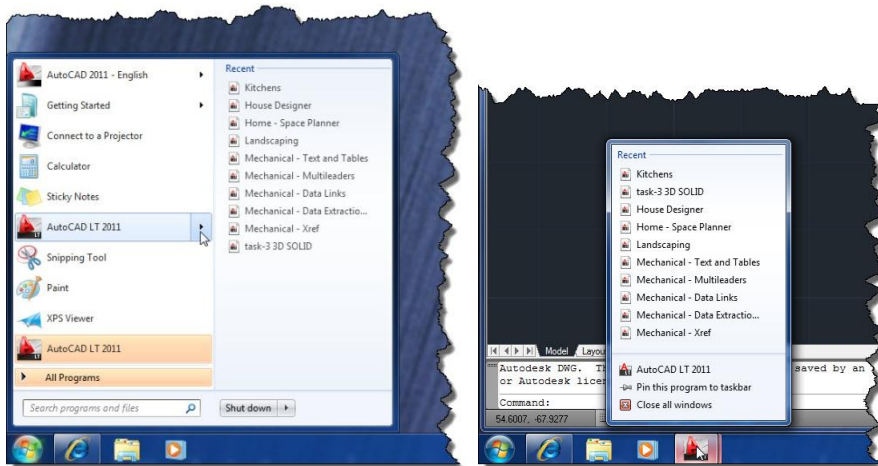


Figure 9: Windows 7 “jump lists” enable you to quickly load recently accessed drawings.

While not considered in this study, this additional functionality available when running Windows 7 could further improve overall productivity.

Conclusions

The results of this productivity study were both dramatic and conclusive—AutoCAD LT 2011 is significantly more productive than AutoCAD LT 2008.

When creating typical drawings, the ease of access afforded by the ribbon interface as well as the use of new features and functionality introduced in AutoCAD LT 2009, 2010, and 2011, results in improvements in individual user productivity ranging from 16 to 90 percent, with an average improvement in productivity of 44 percent.

While different individuals will likely experience varying degrees of improvement, depending on the nature and complexity of the drawing and their skill levels, similar levels of improvement are highly likely. Enhancements to the user interface in both AutoCAD LT and Windows 7 also yield a more satisfying user experience.

Most users will be able to get more work done faster as a result of moving from AutoCAD LT 2008 to AutoCAD LT 2011. The amount of improvement likely to be recognized is so significant that most users will conclude that it easily justifies the cost of upgrading.



About the Author

David Cohn has more than 25 years of hands-on experience with AutoCAD® as a user, developer, author and consultant. He has been benchmarking computer hardware and software since 1985 and has published hundreds of articles and reviews as a contributing editor to *Desktop Engineering* magazine, the former publisher and editor-in-chief of *CADCAMNet* and *Engineering Automation Report*, and the former senior editor of *CADalyst* magazine. He is also the author of more than a dozen books about AutoCAD. A licensed architect, David was also one of the earliest AutoCAD third-party software developers, creating numerous AutoCAD add-on programs. He has also taught college-level AutoCAD courses and is always a popular presenter at both Autodesk University and AUGI® CAD Camps.



This productivity study was performed at the request of Autodesk Inc., which funded this work.

The Autodesk logo, consisting of the word "Autodesk" in a white, bold, sans-serif font. The letters are set against a black rectangular background.

Autodesk, Inc.
111 McInnis Parkway
San Rafael, CA 94903



David S. Cohn Consulting
711 Chuckanut Drive North
Bellingham, WA 98229-6921

Phone: 360-733-0711
Web: www.dscohn.com

The analysis and opinions in this report reflect my best judgment as of writing but are subject to change without notice. David S. Cohn shall not be liable for any loss or injury resulting from the use of this information. All trademarks and copyrights to products mentioned or images used are the property of their respective owners.