AutoCAD Productivity Analysis

A report by Jon Peddie Research

JPR Jon Peddie Research

AUTODESK® **AUTOCAD®**

Table of Contents

Executive Summary 2
Study Goals and Objective 3
A survey of CAD end users 3
Survey results 4
General characteristics of the respondents 4
Working with DWG files 7
The value of DWG files 9
Exchanging DWG files 11
The respondents and their organizations 16
Conclusion 18

Table of Figures

Figure 1: Geographic location of respondents 5
Figure 2: The experience of the CAD users 6
Figure 3: Almost 2/3rd of the respondents work in 3D 7
Figure 4: DWG files are clearly the most popular format 8
Figure 5: AutoCAD was used for just under half of the DWG files created 8
Figure 6: Over 31% of the respondents spend more than 40% of their time creating DWG files 9
Figure 7: The average time AutoCAD is used in a project by the respondents is 5.8 months 10
Figure 8: Forty-percent of the respondents think a completed DWG file is worth on average $28,400 10
Figure 9: Not all the DWG files the respondents get from outsiders have been created in AutoCAD 11
Figure 10: CAD users exchange DWG drawings with other companies 3/4s of the time 12
Figure 11: AutoCAD users share their drawings over half the time with other companies 12
Figure 12: DWG files from outsiders are corrupted about 30% of the time 13
Figure 13: AutoCAD files are corrupted less than 16% of the time from internal sources 13
Figure 14: The CAD user repairs corrupted files about 40% of the time 14
Figure 15: The respondents spend a little over an hour repairing a corrupted CAD drawing 15
Figure 16: DWG files are the overwhelming majority used by the respondents 16
Figure 17: Most of the respondents are in design and engineering 17
Figure 18: Size of organization 17
Figure 19: Respondent's company's industry segment 18

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Executive Summary

Jon Peddie Research conducted a very focused survey with CAD users to gauge the value they place on their drawings and the challenges they encounter in an increasingly multi-CAD world where CAD users may often encounter CAD drawings from a variety of CAD vendors.

According to the JPR survey:

- Professionals in the field place the value of a DWG file at $28,400,
- Surveyed CAD professionals report that AutoCAD is required 43% of the time, and
- They spend an average of 5.4 months on a project.

In the context of this survey, sixty-eight percent of the people who use other programs work with DWG files as well. It is interesting to note that today, people tend to work with more than one CAD software tool. According to this survey, they are using an average of 2.3 programs.

The respondents spend almost one third of their time working with DWG files.

AutoCAD users get damaged files from outside sources 31.4% of the time and spend at least an hour repairing them.

Respondents have an average of 9.7 years' experience, which suggests they are experienced in handling DWG files and have developed efficient strategies for repairing damaged files.

Many of the respondents worked for very large firms. The average size of the companies represented in the survey was 2,386 employees. Most respondents said they are working in manufacturing related fields, and the second most selected field was engineering.

Using our own research of the CAD industry, Jon Peddie Research has found that the DWG format is the most common format for 2D CAD drawings in the industry. One out of 4 people using CAD tools are working with AutoCAD or AutoCAD LT. In all, 2 out of 5 people working in CAD are touching DWG files. We believe these estimates are conservative, but they confirm the importance of DWG in the CAD industry.

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Study Goals and Objective

Autodesk engaged Jon Peddie Research (JPR) to generate a custom report with data to understand and quantify advantages and issues associated with DWG files in multi-CAD environments. Companies involved in large projects with multiple partners and subcontractors may encounter CAD drawing files from a variety of sources. Likewise, the trend towards collaboration between users and companies has fostered multi-CAD environments. Several companies offer CAD tools, which promise DWG compatibility. This study asked users about their experiences in these environments.

The study asked how often people encountered problems with DWG files created in products outside the Autodesk product family. And, the survey asked how much time they worked on those files in an effort to preserve data integrity.

We also asked about the value associated with that intellectual property in time or data loss.

All of us working on this survey were curious to discover if even slightly incompatible software puts the user at risk, endangering, or even causing the loss of their intellectual property by using a non- trusted data source.

As part of that investigation we sought to find out how many of the participant's projects require AutoCAD as well as the number of professionals who use AutoCAD.

This report therefor is quantitative and comparative. Whenever possible, the data is in concrete terms such as nine out of ten AEC professionals use AutoCAD, or 20% of professionals use DWG as an exchange format.

Overall, we believe the survey demonstrates the importance of DWG as a repository for design documentation. In addition, the survey notes that users spend a significant amount of time repairing files and are able to place a dollar figure to those files.

A survey of CAD end users

JPR conducted an on-line web-based survey of CAD users. We used various end user lists and the good offices of several friendly web sites to solicit CAD users to take the survey. The survey targeted people who frequently visit web sites devoted to CAD, or who have asked for information related to CAD products. We offered the participants raffle gifts as an incentive to take the survey.

Our goal was to reach 30,000 people who are involved in the CAD industry; we reached 607,990 individuals. Our hope was to get a 2-3% rate of response (on 30,000 invitations), we received 2,446 a 0.4% response.

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List supplier	Names	Return	% Return
JPR	9,500	148	1.56%
Autodesk	123,490	682	0.55%
Every Media	50,000	146	0.29%
Desktop Eng	40,000	997	2.49%
Connect Press	385,000	473	0.12%
TOTAL	607,990	2,446	0.4%

Of the respondents, we disqualified 72 who worked for a CAD software companies; we only wanted users and their managers. That left us with 2,374 qualified returns.

We designed the survey in conjunction with Autodesk, and Autodesk gave final approval of it before we launched it.

The survey established the demographic profiles of participants including experience and programs used. Because this is a survey built around software use, Autodesk was not interested in the platforms the participants use.

Survey results

Although we had the survey translated into three languages, English, French, and Japanese, and the invitations were also translated and sent to prospective email addresses, the responses from collected in French and Japanese were disappointing. We received just 1.36% French responses and only 0.29% in Japanese.

Of the 34 French respondents, 24 of them were disqualified for working for a CAD software company, which left us with just 7 qualified French respondents, or 0.3%, not significant.

Seven Japanese people responded and four of them were disqualified leaving us with just 0.1%, also not significant.

In looking through the data we found a few dozen email addresses with country specific address (e.g., .fr) and those all chose the take the survey in English.

General characteristics of the respondents

The geographical distribution of the respondents was overwhelmingly from North America, 86%, the second highest count was Western Europe with 6%.

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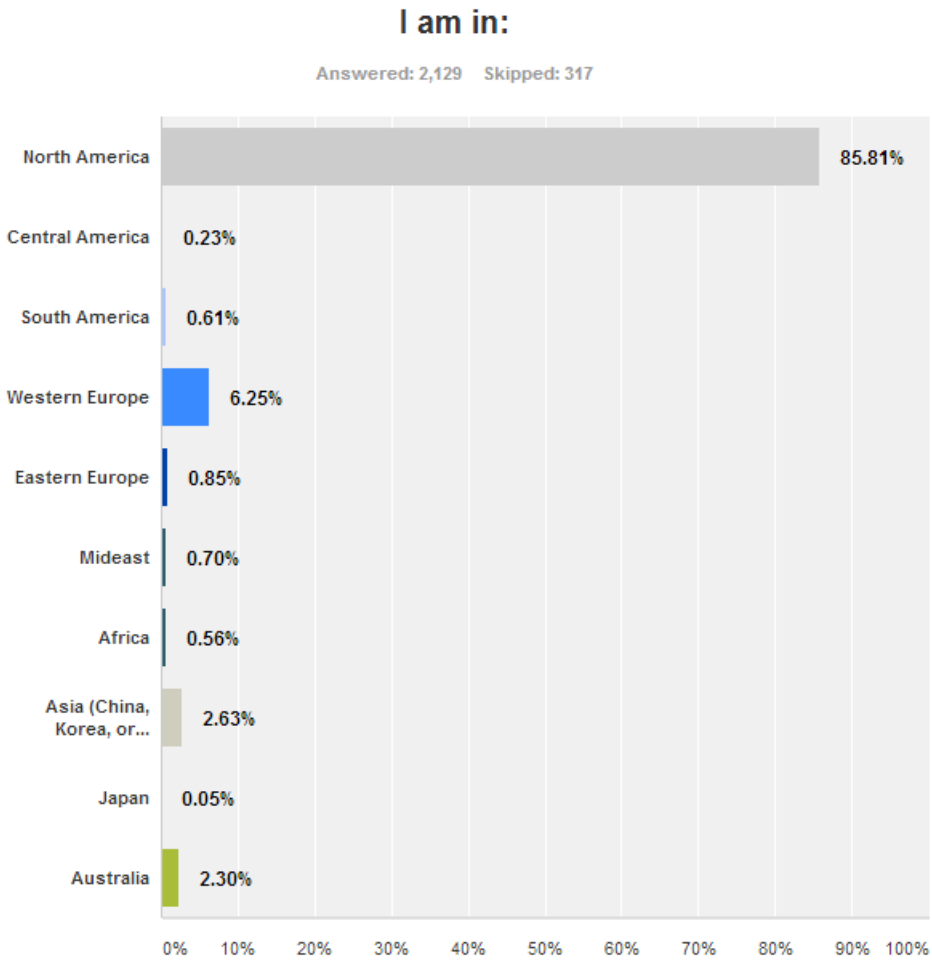

Figure 1: Geographic location of respondents

We were quite successful in reaching actual CAD users, and over 92% of respondents said they use CAD software.

To make the results meaningful we also wanted to find out how long the respondents had worked at their current job, and found almost 56% of them had been working in their current job for over 10 years.

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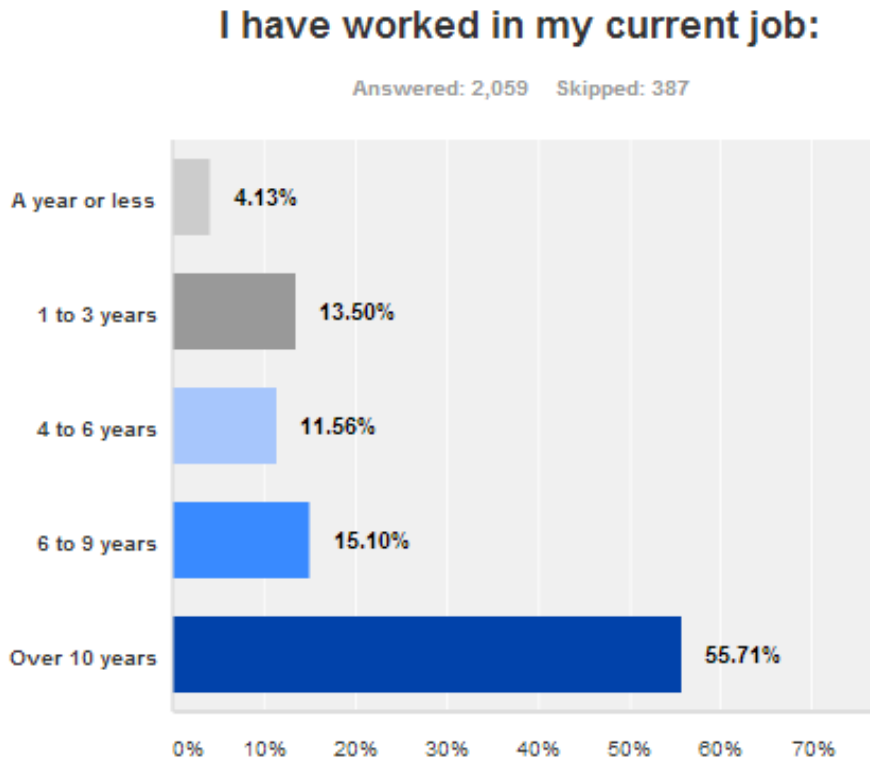

Figure 2: The experience of the CAD users

We found this question to be important because it gives considerable weight to the value and experience to the answers of the subsequent questions; these are people who have hard-earned experience and their views are quite valuable.

To double check the validity of the users, we asked the question even more specifically – how long have you been using CAD, and over 77% of them answered over 10 years—this was a very pleasing result because it meant we could have a very high degree of confidence in the conclusions we drew from their subsequent answers. Over 62% of the respondents work in 3D, which was a larger percentage than we expected, and gave us confidence that we would get valuable insight about the importance of quality in DWG files.

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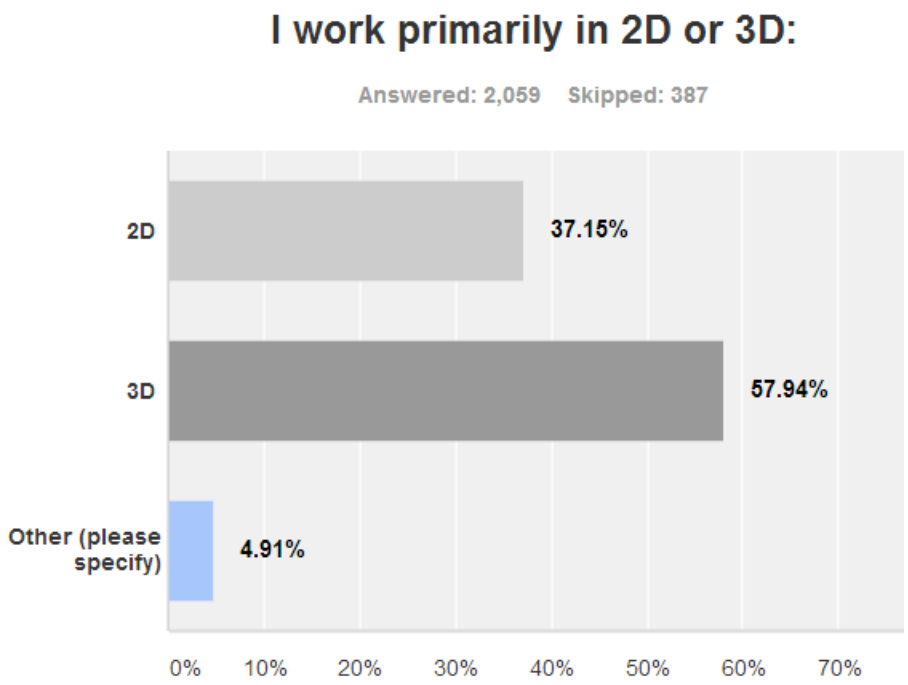

Figure 3: Almost 2/3rd of the respondents work in 3D

We were fascinated to find that respondents are now working predominantly in 3D. This is a shift that has been a long time in coming and marks a significant milestone in CAD practices. The "Other" category was mostly people who worked in both 3D and 2D.

As expected, the respondents don't use just one CAD program, but they overwhelmingly worked with AutoCAD. The respondents who answered the question worked with an average of 2.3 programs.

Working with DWG files

We wanted to find out how widely used DWG files were. We got an interesting spread. In all, over 45% of the respondents work with DWG as their primary format and only 5.6% never have occasion to work with the DWG format.

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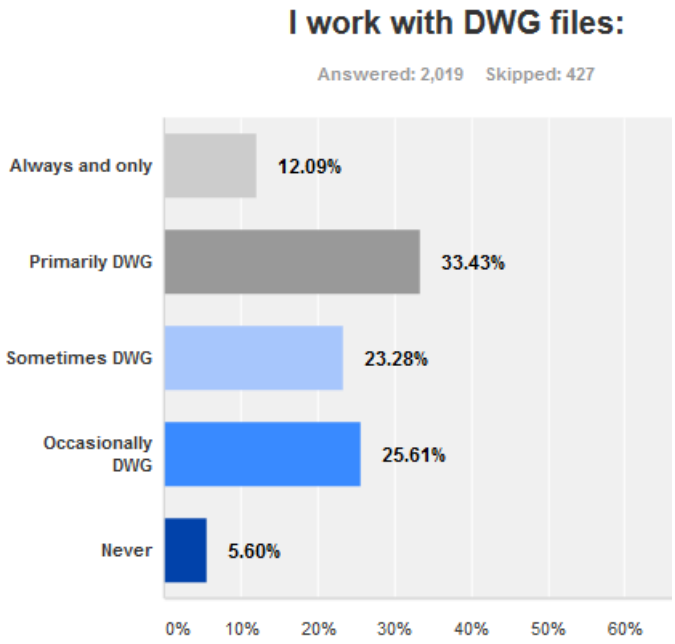

Figure 4: DWG files are clearly the most popular format

Conversely, although most of the respondents said they worked with DWG files most of the time, there is a significant use of other formats in the respondents' companies. This is in line with our findings that people are working with more than one CAD program.

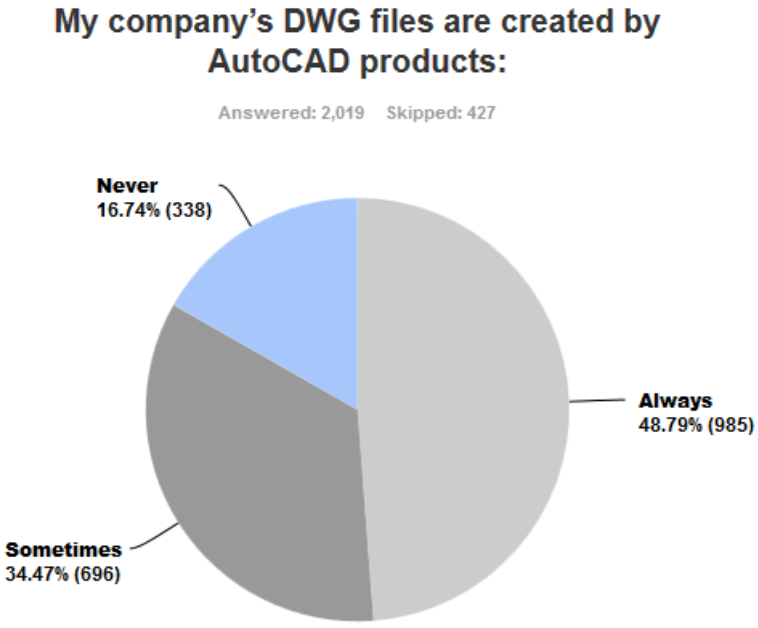

Figure 5: AutoCAD was used for just under half of the DWG files created

We have established that the DWG format is a popular format in the industry.

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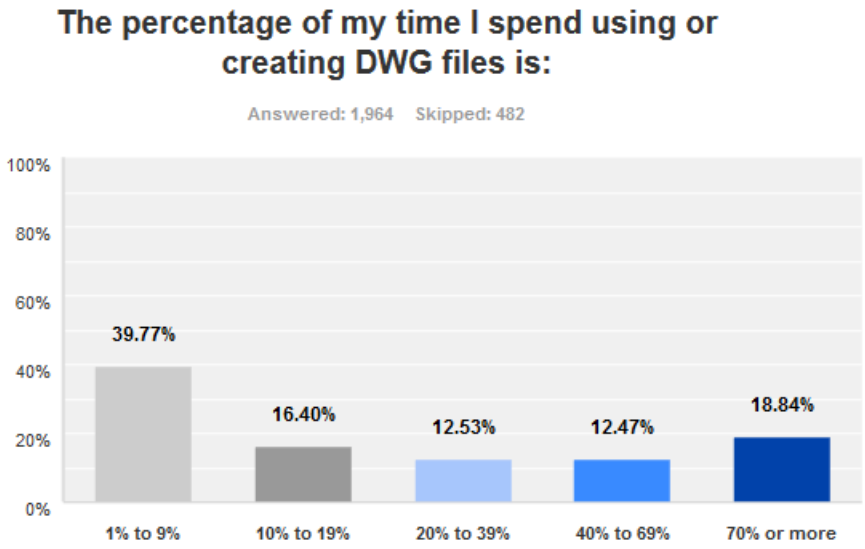

Figure 6: Over 31% of the respondents spend more than 40% of their time creating DWG files

The value of DWG files

To determine the value of DWG files we asked how much time people spend on drawings and how long their projects typically last.

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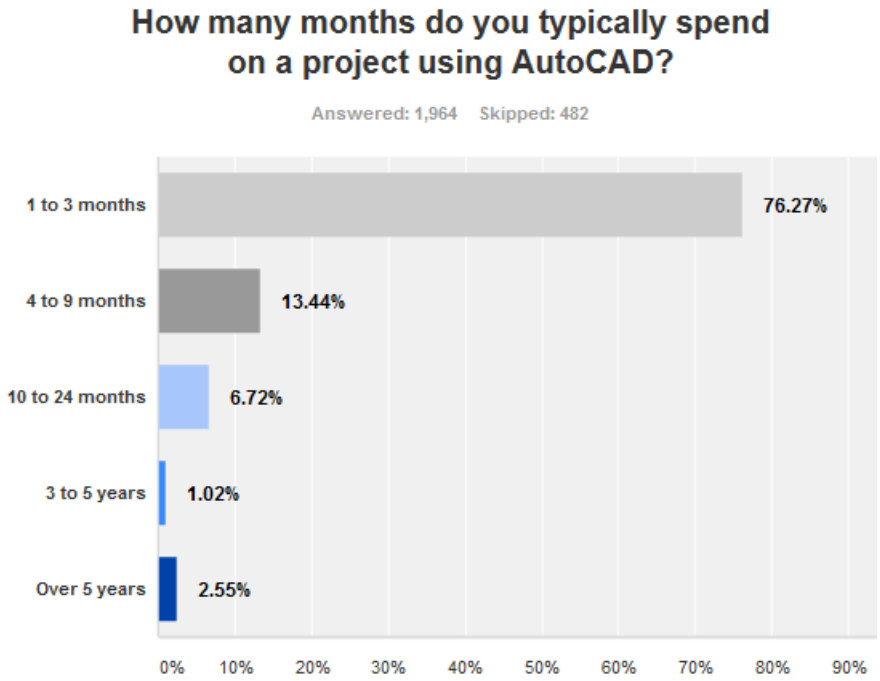

Figure 7: The average time AutoCAD is used in a project by the respondents is 5.8 months

We asked the respondents to estimate what they thought was the value of a completed DWG file to see if it was possible to put a value on it. Understandably, most users are not sure how to value a completed CAD file. It may often depend on the type of work a person does and the size of the project. However, close to 50% of the respondents were willing to put a price on their work.

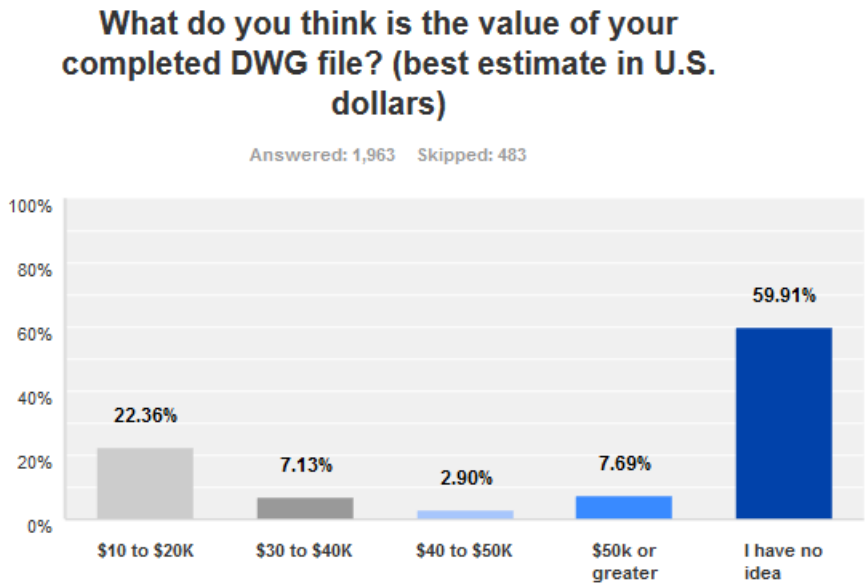

Figure 8: Forty-percent of the respondents think a completed DWG file is worth on average $28,400

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Exchanging DWG files

Autodesk's TrustedDWG technology helps identify DWG files that were not last saved by AutoCAD and informs customers that Autodesk cannot guarantee the compatibility of such DWG files with AutoCAD software. We asked the respondents about their experiences dealing with DWG files from other sources.

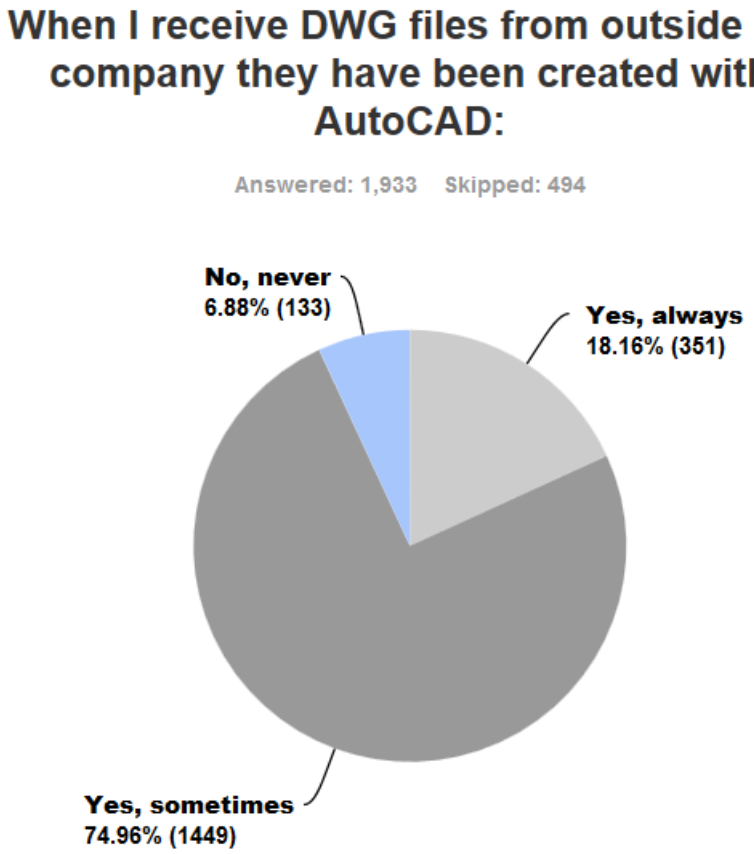

Figure 9: Not all the DWG files the respondents get from outsiders have been created in AutoCAD

Exchanging DWG files with other companies is a very common experience according to the respondents, who say they do it almost three fourths of the time.

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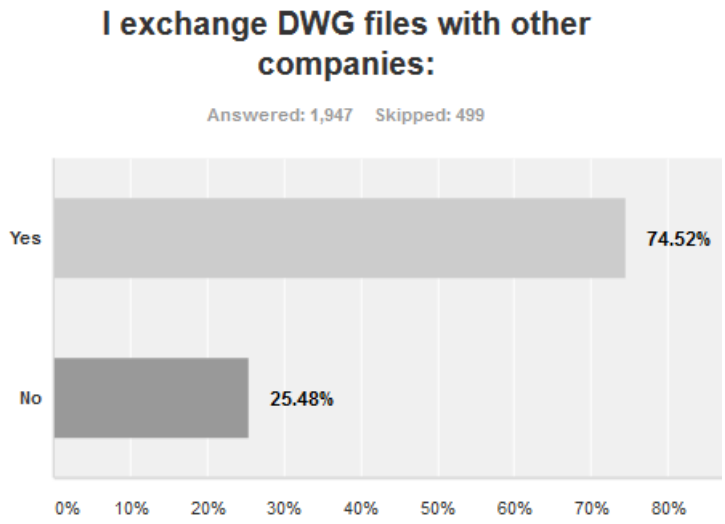

Figure 10: CAD users exchange DWG drawings with other companies 3/4s of the time

AutoCAD users share their DWG files with other companies about 75% of the time.

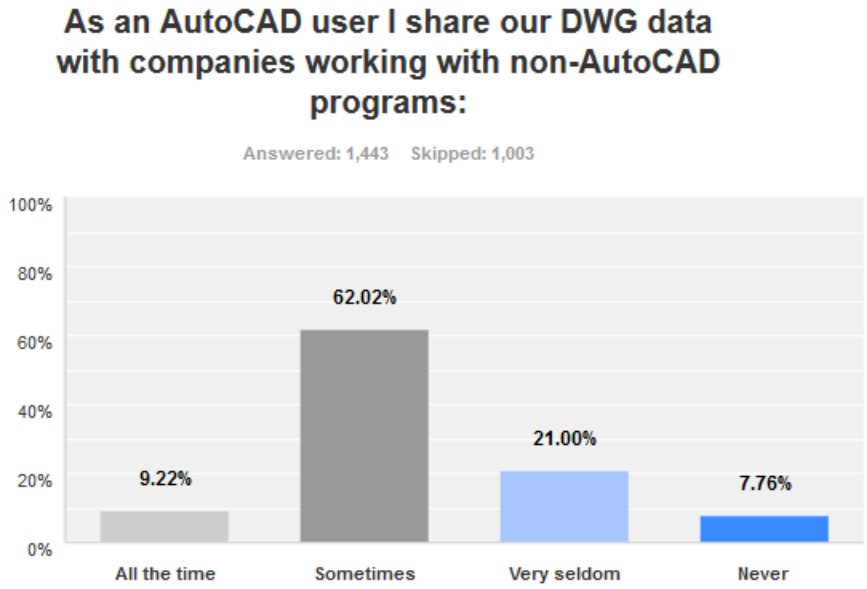

Figure 11: AutoCAD users share their drawings over half the time with other companies

When AutoCAD users get DWG files from outsiders, they are frequently corrupted in some way.

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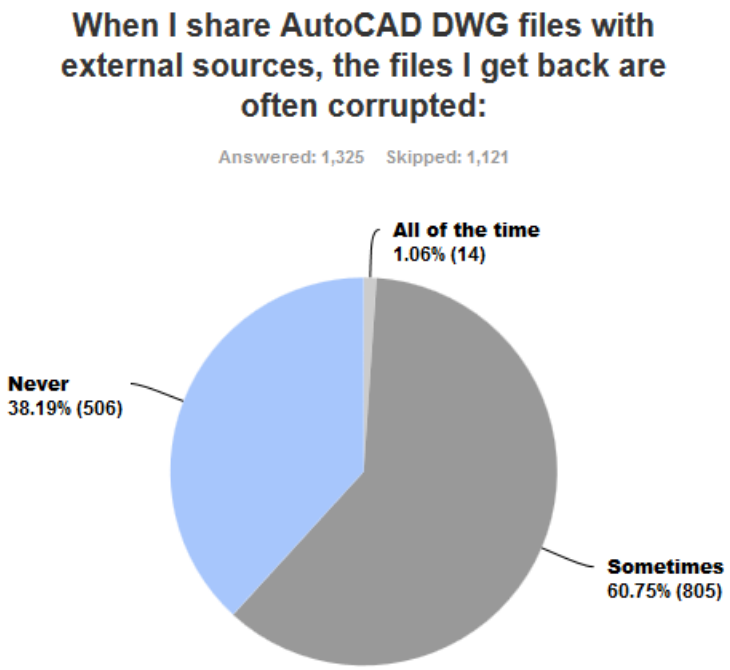

Figure 12: DWG files from outsiders are corrupted about 30% of the time

However, in a more controlled environment, the exchange of DWG files results in less corruption.

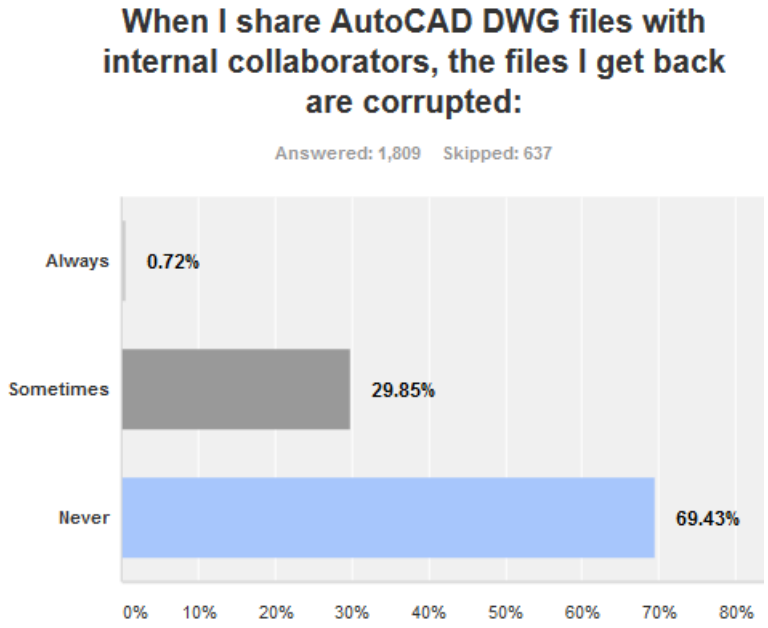

Figure 13: AutoCAD files are corrupted less than 16% of the time from internal sources

Internal control of DWG file quality is better if mixed programs are being used.

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The CAD users typically have to repair corrupted files a lot, but not all of the time. An average of forty-three-percent of the total respondents said they repair DWG files created by non-AutoCAD products (from internal and external sources).

An average of forty-nine percent of the people who answered the question said they had to repair those files. The people making the repairs were senior people in the firms who are needed for more important work.

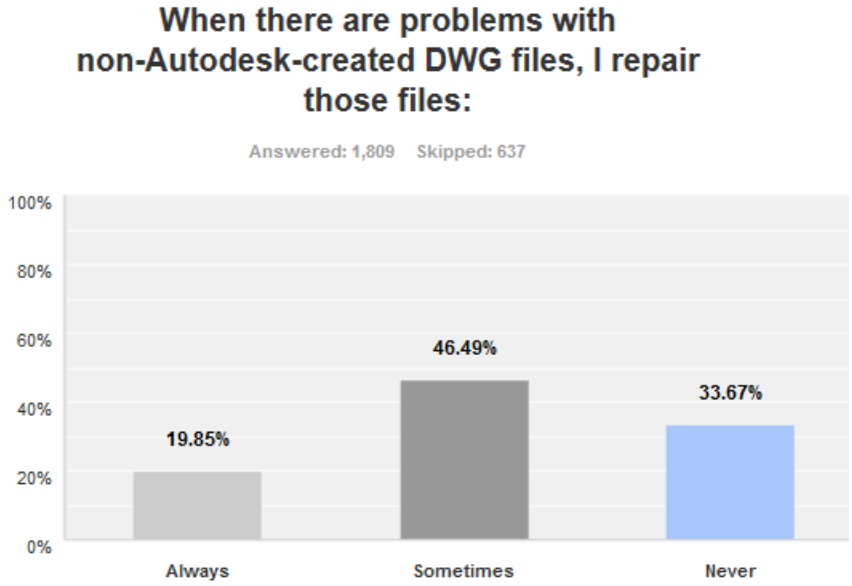

Figure 14: The CAD user repairs corrupted files about 40% of the time

Repairing a damaged CAD file is time consuming, annoying, and productivity inhibiting.

Almost forty-four percent of the total respondents (and 88% of the people answering the question) said that when they repair corrupted files, they spend an hour or less repairing files. The average time spent came to about an hour per drawing.

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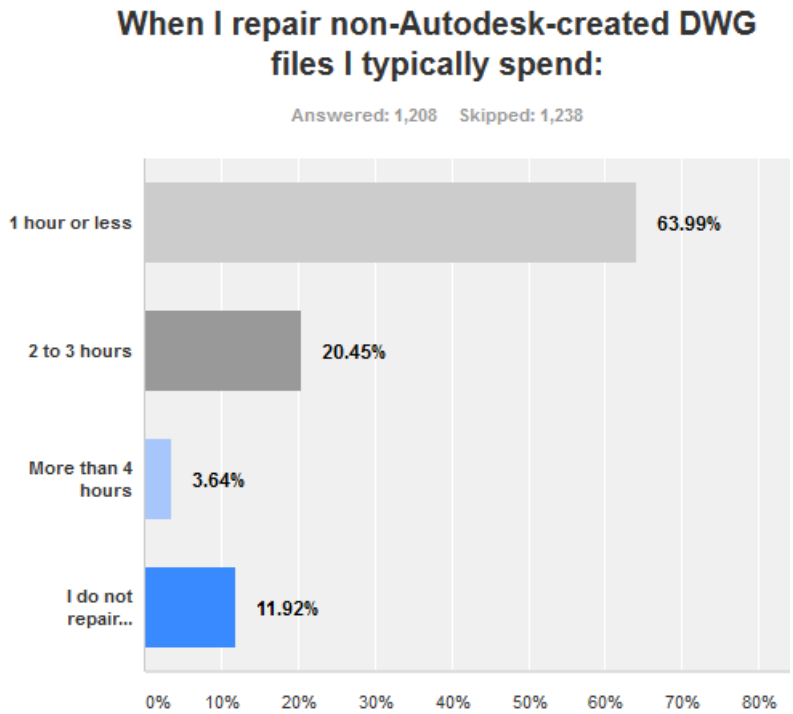

Figure 15: The respondents spend a little over an hour repairing a corrupted CAD drawing

If the respondents spent an average of an hour a day, repairing damaged DWG files, we estimate that represents a 16% productivity hit.

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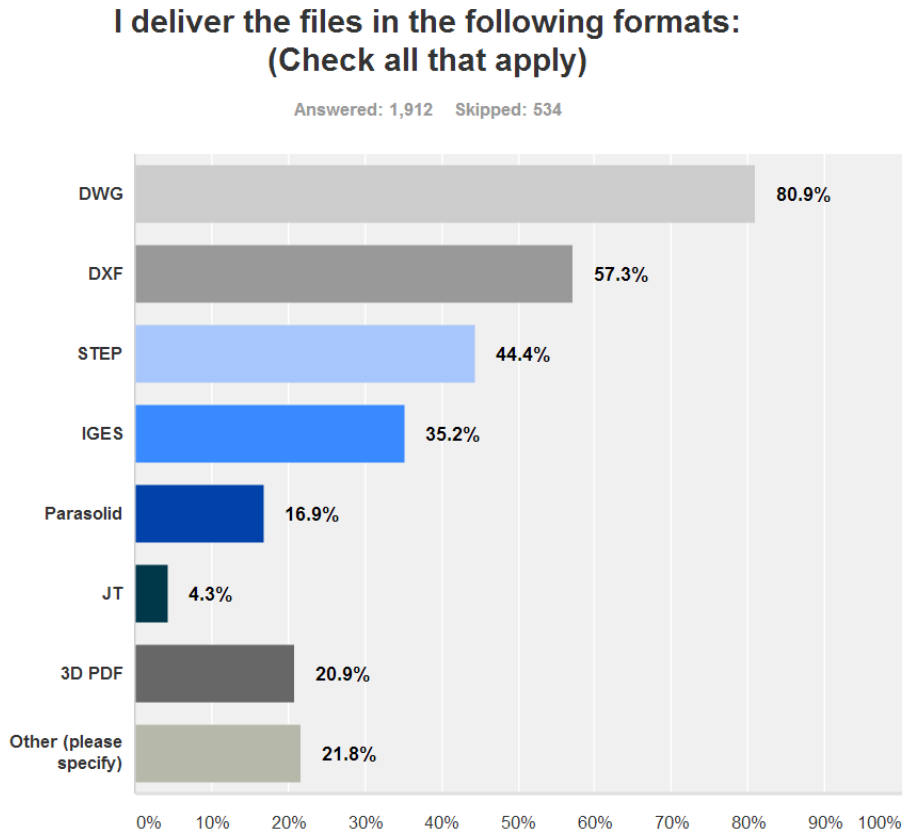

Figure 16: DWG files are the overwhelming majority used by the respondents

The respondents and their organizations

Almost two-thirds of the respondents worked in design and engineering.

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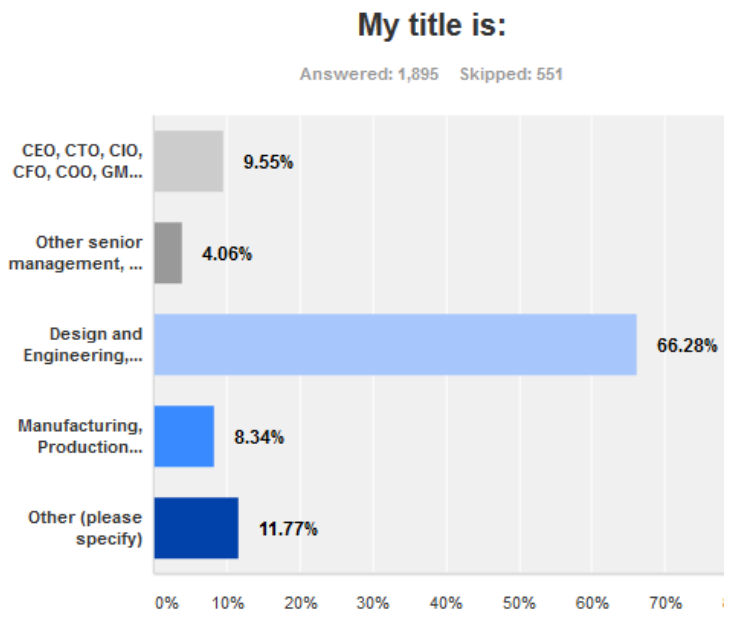

Figure 17: Most of the respondents are in design and engineering

When asked about the average number of employees at their company, respondents answering the question (77.5%) put their company's size at around 2,386 people. We found this to be a surprisingly high average, and perhaps a little misleading; 45% of the respondents work in companies of 100 or less employees and the majority of respondents, over 75% of the total, work in companies that fall under the SMB category (under 1000 employees according to Gartner and IBC).

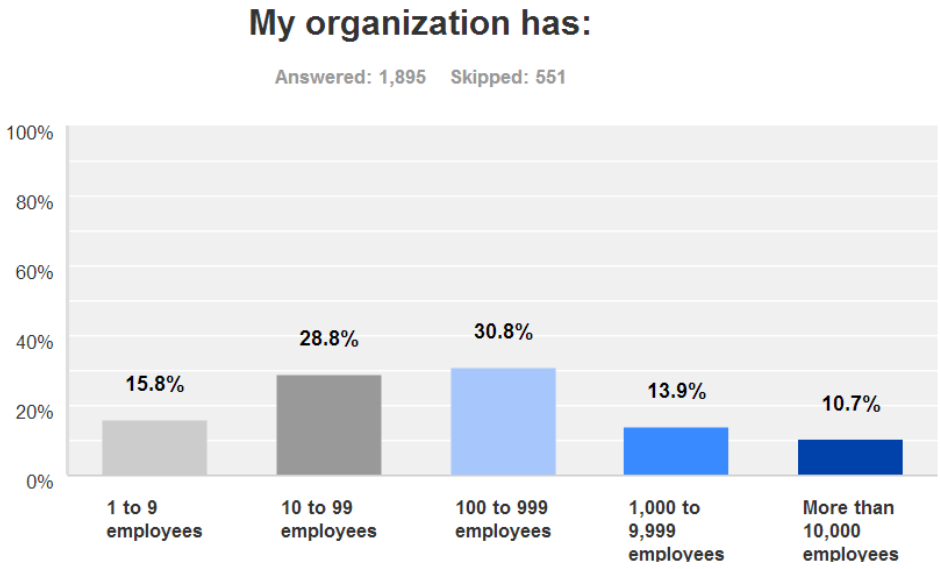

Figure 18: Size of organization

The primary industry was manufacturing, and engineering came in second.

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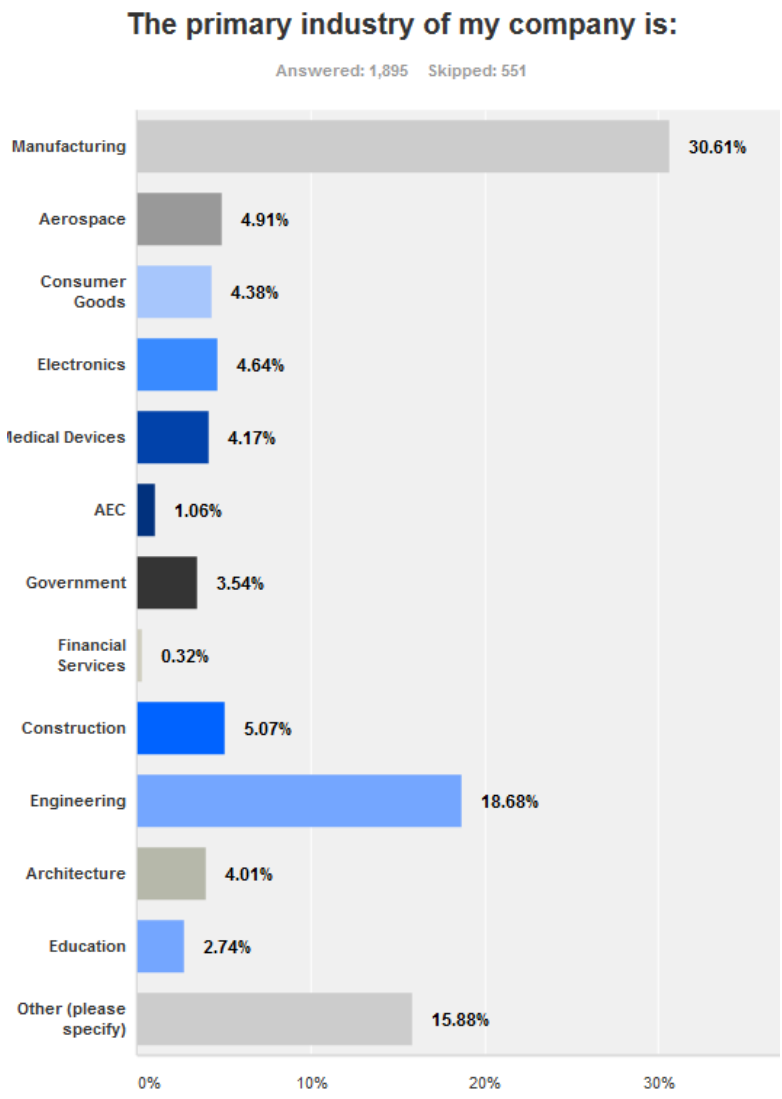

Figure 19: Respondent's company's industry segment

Conclusion

This survey comes at a good time. AutoCAD was introduced in 1982. Competitors have fielded very credible products and the compatibility between DWG files produced by different products has improved over the years. However, the majority tends to repair files.

Companies are increasingly working in a multi-CAD environment. As a result, many companies rely on DWG as the lingua franca in this diverse environment.

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