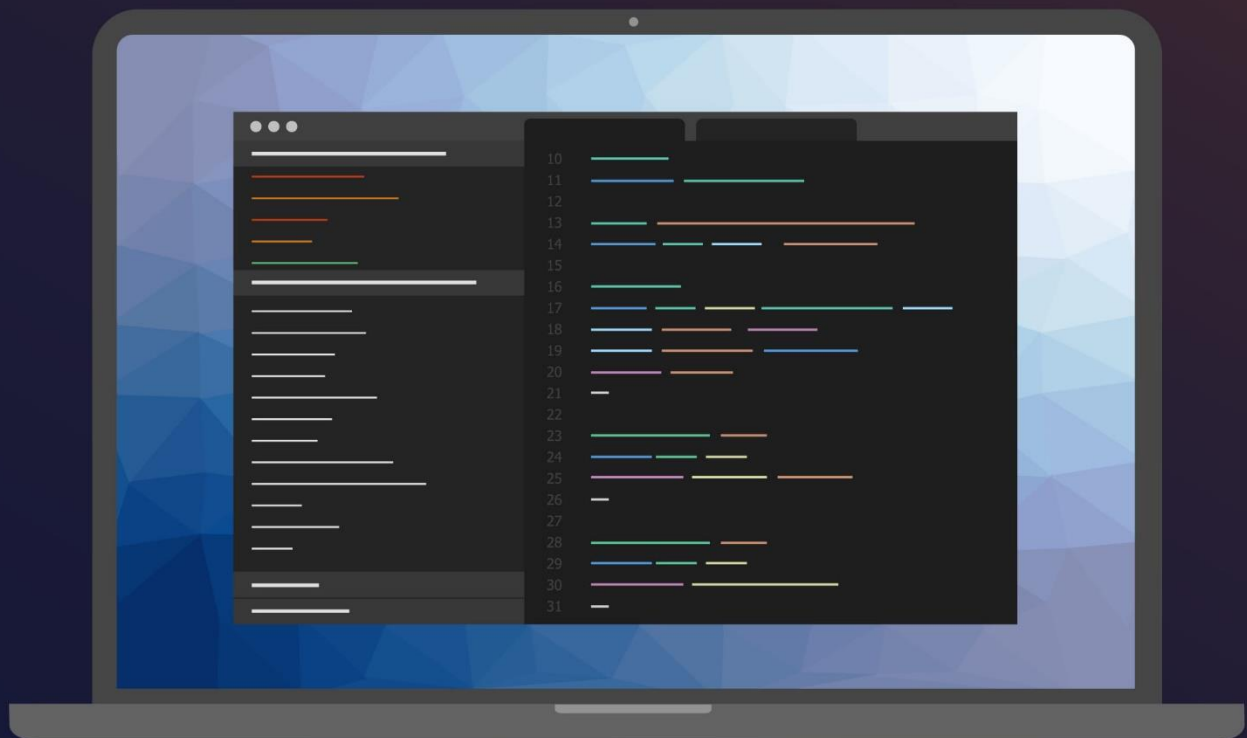**MacroSoft™**
An **ISO 9001:2015** Company

STATE OF VISUAL FOX PRO APPLICATIONS AND
INDUSTRY CURRENT PRACTICES IN US

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Table of Contents

Prologue

The above Table of Contents contains the list of major questions posed in the survey for which we provide results in the following set of charts. These are all hyperlinked so a reader can easily skip to the question of most interest and then back to the Table of Contents.

Survey results are presented in aggregate form, so no single individual is identifiable. In addition to the direct tabulations and graphs of survey results we also provide our analysis of results and their implications and impact.

Introduction

Macrosoft is a leader in providing professional technical services for both ongoing support of VFP applications and migration of VFP applications to modern technology platforms.

As a result of this expertise, Macrosoft conducted an industry best practices survey during the first two weeks of March 2021. The survey was conducted online using SurveyMonkey. There was a total of 21 questions comprised of multiple-choice, rank order, free text comments, and perception weighting. The survey does not introduce a systemic bias between those who will continue using VFP and those looking to migrate to a new platform.

Requests to complete the survey were distributed to our client contact list of 5237 FoxPro professionals. Additionally, survey requests were published in three select FoxPro LinkedIn user groups.

LinkedIn - Visual FoxPro Developers (1,812 members)

LinkedIn - FoxPro Developers (2,515 members)

LinkedIn - Visual FoxPro (1,223 members)

366 individuals participated in the survey. We were unable to determine the number of unique companies represented, but it is believed the vast majority have a single response from each company. Therefore, it is believed that well over 300 companies are represented in the survey response. Based on the broad participation it is believed that the results are highly accurate and represent a significant portion of the industry.

We plan to perform an annual survey of the FoxPro industry; we expect the questions will evolve over time.

Questions about this survey can be directed to John Kullmann, VP, Technical Solutions Macrosoft, Inc, jkullmann@macrosoftinc.com.

Macrosoft is prepared to provide an industry expert who can present these results as requested to industry user groups.

Back to Index

VFP App Used In-House or for Clients
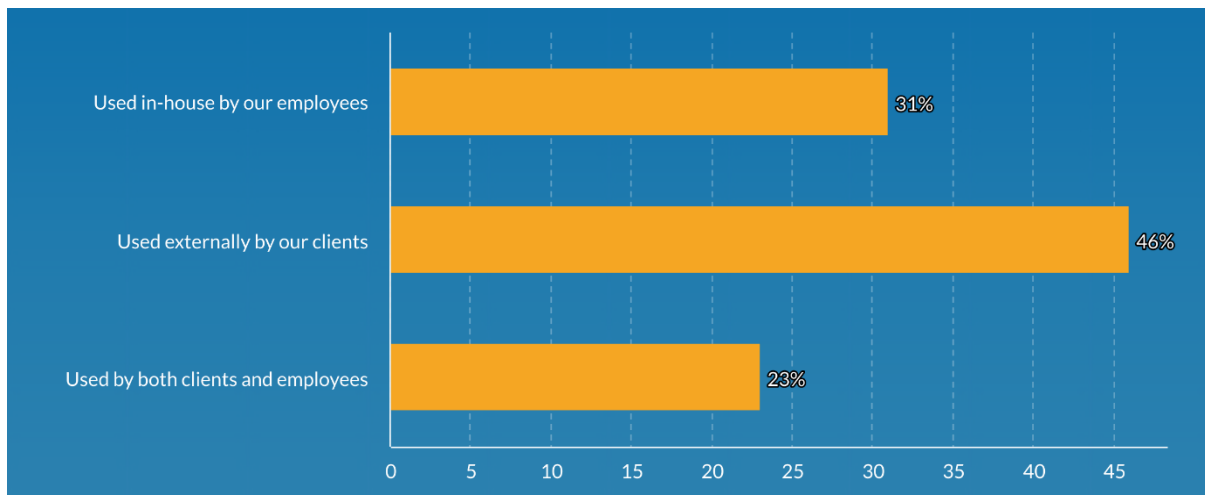
Survey Findings:

A total of 69% of respondents indicate their application is used externally by clients or by both internal and external clients. 31% indicate the application is used entirely in-house.

Analysis:

Surprisingly over two-thirds of FoxPro applications are used externally by clients. Prior to this survey, our view would have been that a majority of FoxPro applications in production today are used only internally by client employees. Rather, survey results show a large percentage of companies continue to utilize FoxPro applications for client-facing applications, despite some of the support issues this entails as it is a desktop deployment requiring a 32-bit operating system.

Back to Index

Developed In-House or Outsourced
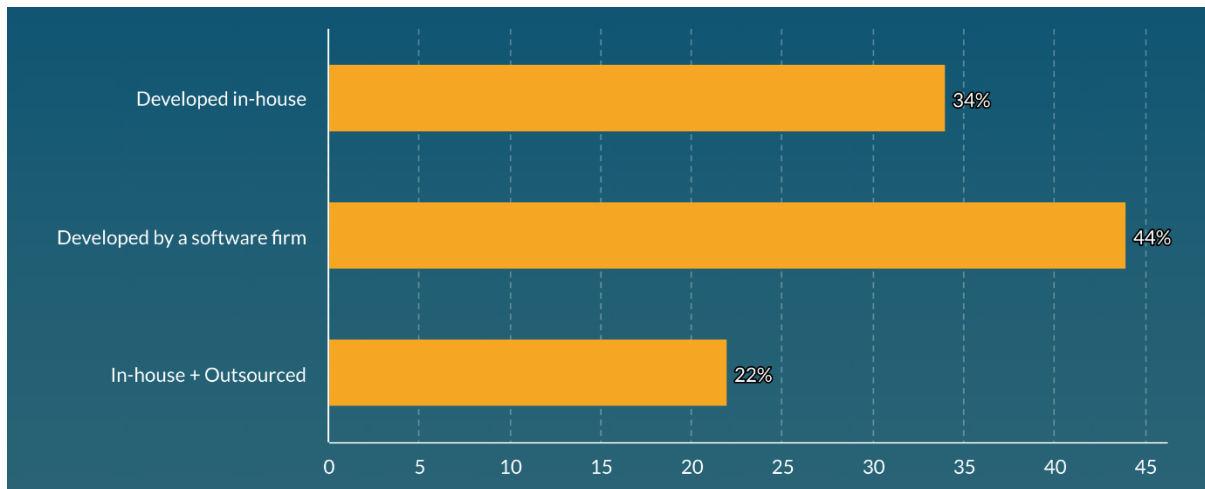
Survey Findings:

34% of respondents indicate their application was developed in-house. 44% indicate it was developed entirely by an outsourced software development firm. Lastly, 22% say it was a blended effort between both in-house and outsourced developer(s).

Analysis:

It is reasonable that two-thirds of respondents outsourced some or all the development effort. It is of course common for organizations to rely on the expertise and additional resources of software development companies to build custom applications. The concern this raises is two-fold:

1. Company's internal developers must ensure they acquire full knowledge of the source code in order to be able to update and maintain the application once initial development is done.
2. Companies must ensure they own the underlying source code allowing them to make changes, updates or do other modernizations to the application.

Back to Index

How Frequently are Changes Made?
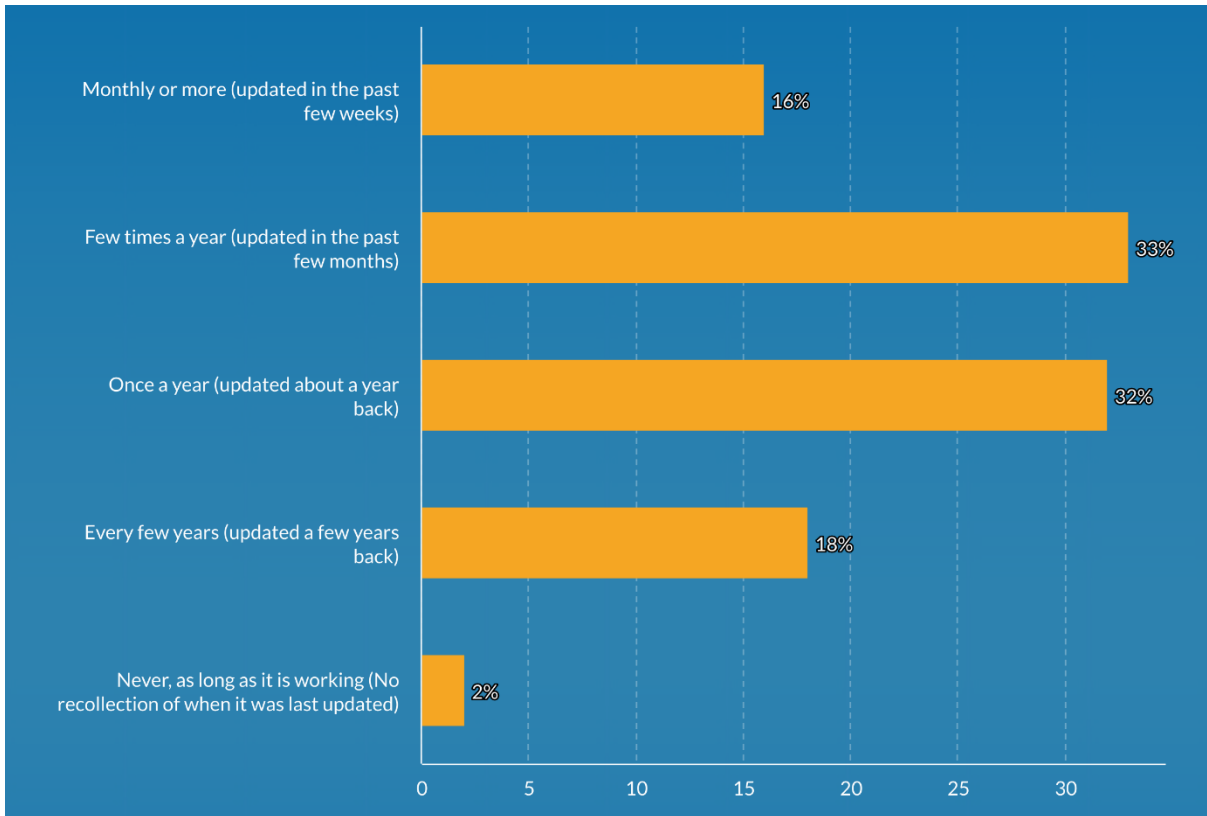
Survey Findings:

20% of respondents indicate that it has been years since the FoxPro application has been changed or updated. 32% indicate changes occur approximately annually. 33% indicate changes are made a few times a year. And 16% indicate changes are made on a regular basis of monthly or more frequently.

Analysis:

Not surprisingly over half of the VFP applications in use today are mostly static, having changes made once a year or less often. These are legacy VFP applications. They perform well and continue to satisfy an organization's functional needs with little to no changes required.

It is the remaining 48% of respondents that indicate their VFP apps undergo changes every few weeks or every few months that need to consider if FoxPro remains the right technology platform to support their organization. If companies have a VFP application that is constantly updated it is likely the organization will be better supported going forward by having a modern technology platform. We say this for two reasons: (1) the modern app provides a much broader range of

functionality (cloud, web, microservices, etc.); and (2) there is a much larger pool of qualified developers to support a modern technology stack.

Back to Index

Rate the Potential Risks for Legacy VFP
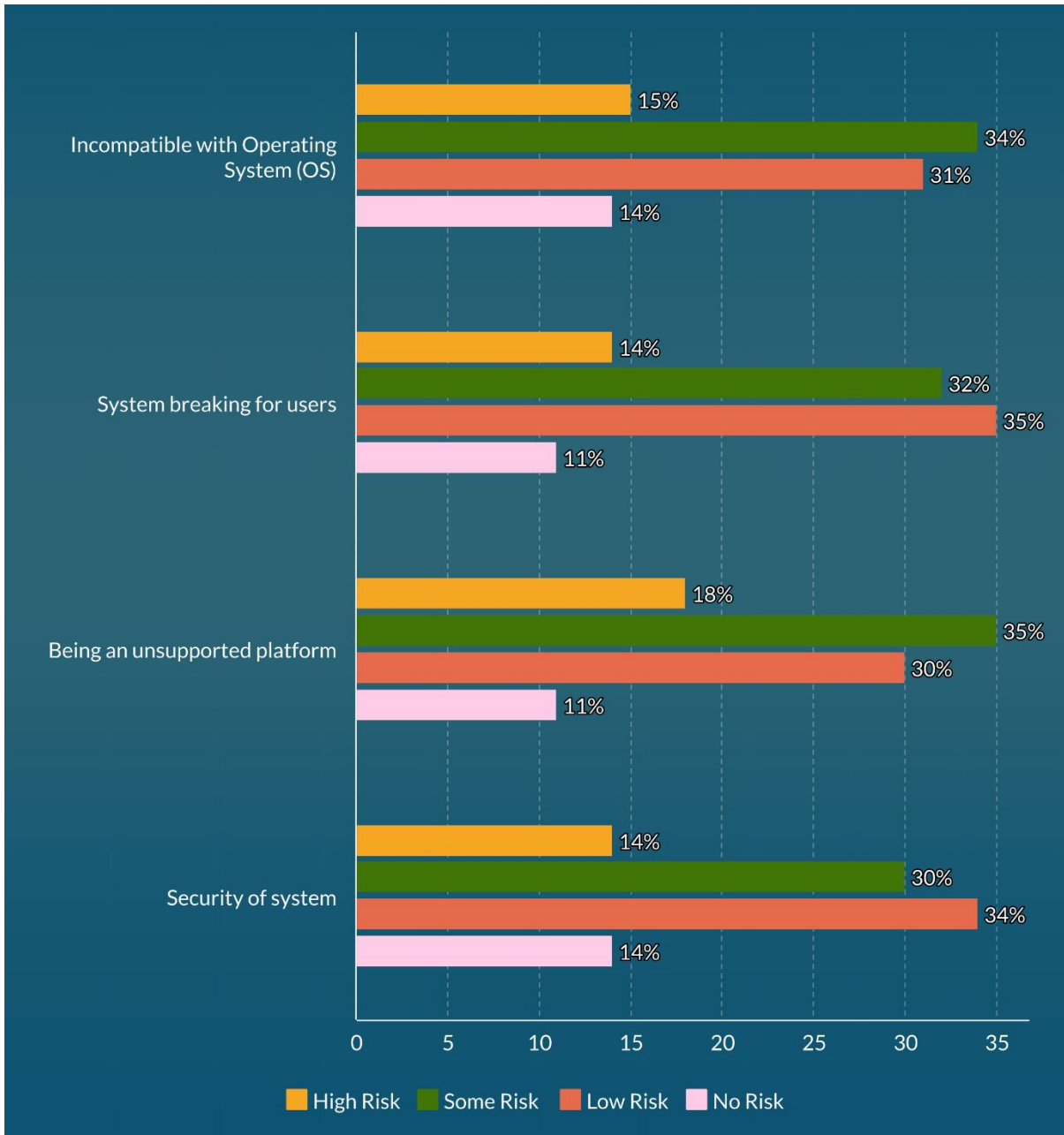
Survey Findings:

As shown in the chart above, the survey lists 4 often-cited risks of VFP applications. 56% of respondents rated it as high or some risk the app being on an *unsupported development platform*.

System security had a somewhat lower risk profile but still 47% of respondents rated it as high or some risk. The two other risk elements - *incompatibility with modern operating systems* were identified by 52% of participants as high or some risk, and *system breaking for users* were identified as high or some risk by 50% of participants.
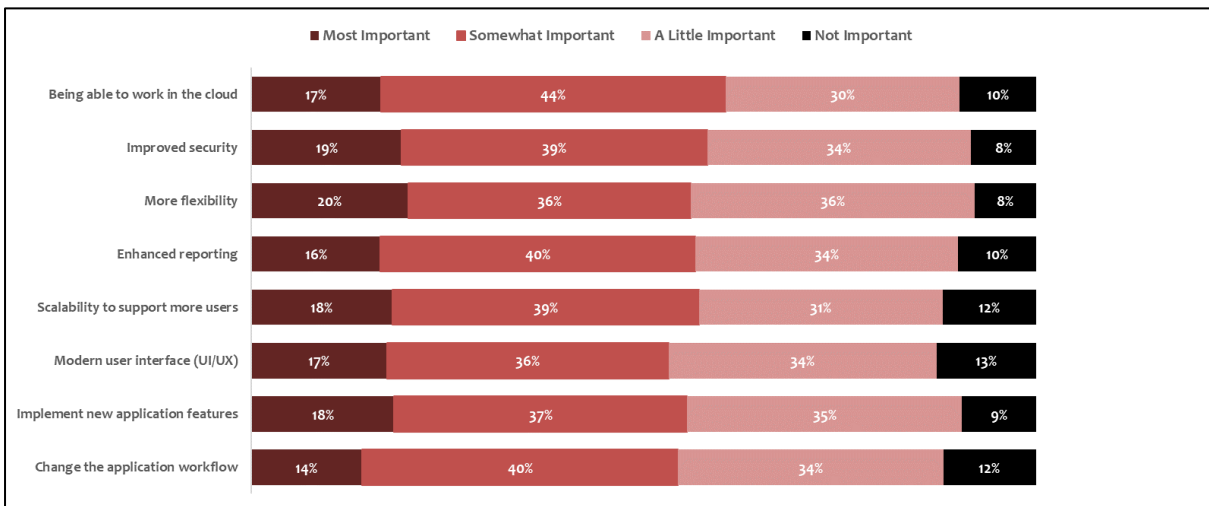
Analysis:

About half of participants identified significant risk for all four of these risk elements: incompatibility with the operating system, system breaking for users, being an unsupported platform, and security of the system. These are real risks and well understood in the industry. We assume companies running mission-critical applications in Visual FoxPro *are* taking steps to minimize or eliminate these 4 risks. This might include implementing enhanced system access security, or it may eventually result in a going-forward plan to entirely replace the legacy software system.

On the other hand, we see that over 40% of respondents rate these 4 risks as low risk or no risk at all. These respondents presumably are either not convinced that their VFP app is held hostage to these risks, or more likely they have found ways to eliminate or lessen these risks. Either way, we will be exploring this topic further in our next survey.

[Back to Index](#)

Important Factors in Modernization

Factor	Most Important	Somewhat Important	A Little Important	Not Important
Being able to work in the cloud	17%	44%	30%	10%
Improved security	19%	39%	34%	8%
More flexibility	20%	36%	36%	8%
Enhanced reporting	16%	40%	34%	10%
Scalability to support more users	18%	39%	31%	12%
Modern user interface (UI/UX)	17%	36%	34%	13%
Implement new application features	18%	37%	35%	9%
Change the application workflow	14%	40%	34%	12%

Survey Findings:

Eight unique factors are listed in the survey as important drivers for modernization (see chart) and participants were asked to rate each according to its importance.

At the high end of importance, *being able to work in the cloud* was rated by 61% of respondents as a most or somewhat important factor; at the low end of importance, having a *modern interface* (web-based) was least important with 47% saying it's little or not important.

Overall, all eight factors are rated by 50+% of participants as most or somewhat important so clearly these are among the factors driving companies to consider modernization alternatives.

Analysis:

We want to make clear, FoxPro remains a robust well-performing application framework that has supported many successful companies for the last several decades and continues to do so. Moving to a new platform should be based on specific business needs and benefits, and we believe the above factors are among the keys that are driving modernization efforts.

As an example, *improved security* can often be a key factor driving modernizations. Security audit requirements generally mandate that enterprise systems be on supported software platforms, and a company's auditors, clients or investors will often require it. In this case, it may end up being required for continuing to do business.

Each of the 8 factors can have significant business impacts, and each business case evaluating modernization will be different.

Back to Index

Number of Application Users
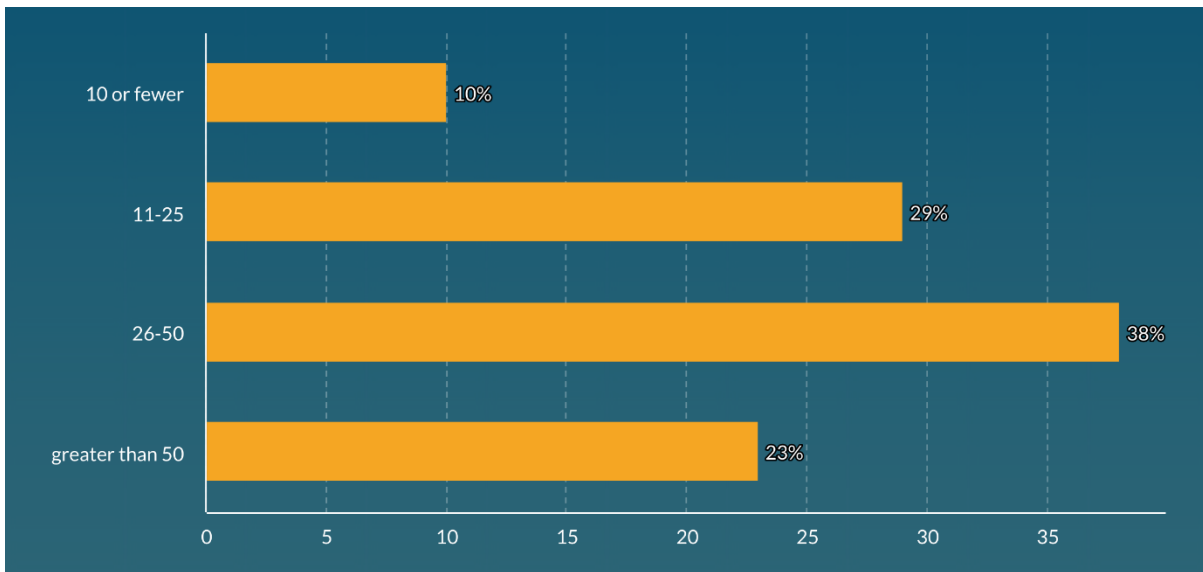
Survey Findings:

A majority (61%) of respondents indicate their VFP application has 26 or more users. Only 10% of respondents indicated they have 10 or fewer system users. So, the VFP apps appear to be at least in the lower-mid-range of users or higher.

Analysis:

These results suggest to us that the VFP apps surveyed are being used by mid-sized companies or by mid-sized departments/organizations within larger companies. This further suggests the VFP apps fulfill a very well-defined set of functions in the company, one that is hard to replicate with off-the-shelf or open-source products.

At the smaller end of user range, 10 or fewer, we find only 10% of respondents. This contradicts the often-cited hearsay that the VFP apps remaining tend to be small and have very few users. Our survey results show that the bulk of VFP apps have reasonable-to-high user counts. So, these are custom-built systems supporting mid to large user bases, which of course makes them much more difficult to replace. These larger systems have remained in place for many years and continue to support organizations well.

Back to Index

Biggest Impediments to Modernization
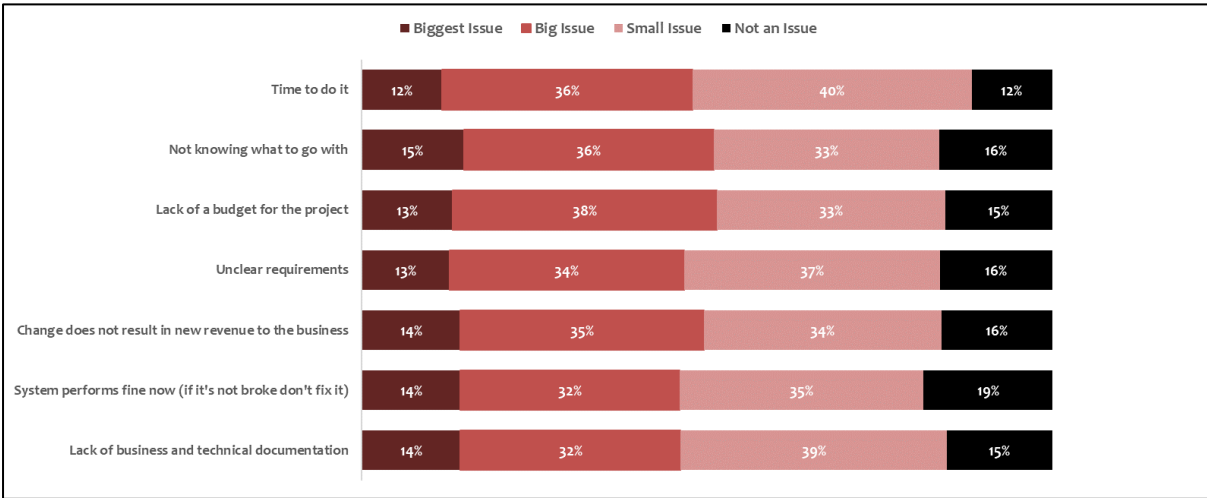
Survey Findings:

The survey posed seven top reasons or impediments preventing companies from modernizing their Visual FoxPro application (see chart). Survey results show the leading reason to be *lack of budget* for the project with 51% of respondents saying that is either a big or the biggest issue preventing them from starting.

Interestingly, a majority of respondents (52%) indicate that the often-extended *time to do it* is not an issue or only a small issue. That is contrary to the conventional wisdom at least with respect to full migrations.

Among the lowest-rated impediments are *unclear requirements,* and *lack of business and technical documentation*. These are two sides of the same coin, namely not having specific system requirements for the current system, and not fully knowing what the new system needs to do. While these impediments are real and will pose challenges to modernization, many companies realize, rightfully so, that they cannot stand in the way.

Analysis:

Based on the 360+ people that responded to the survey it seems the availability of a budget for any modernization effort stands squarely in the way of progress. This is of course not surprising. Yet many of the surveyed companies find themselves at a dilemma point. On the one hand they don't have the budget, but on the other hand they find themselves with an VFP system that is not fully documented, and as current team members leave the organization, or retire there is further loss of technical understanding of the underlying application.

Back to Index

Application Size: Lines of Code
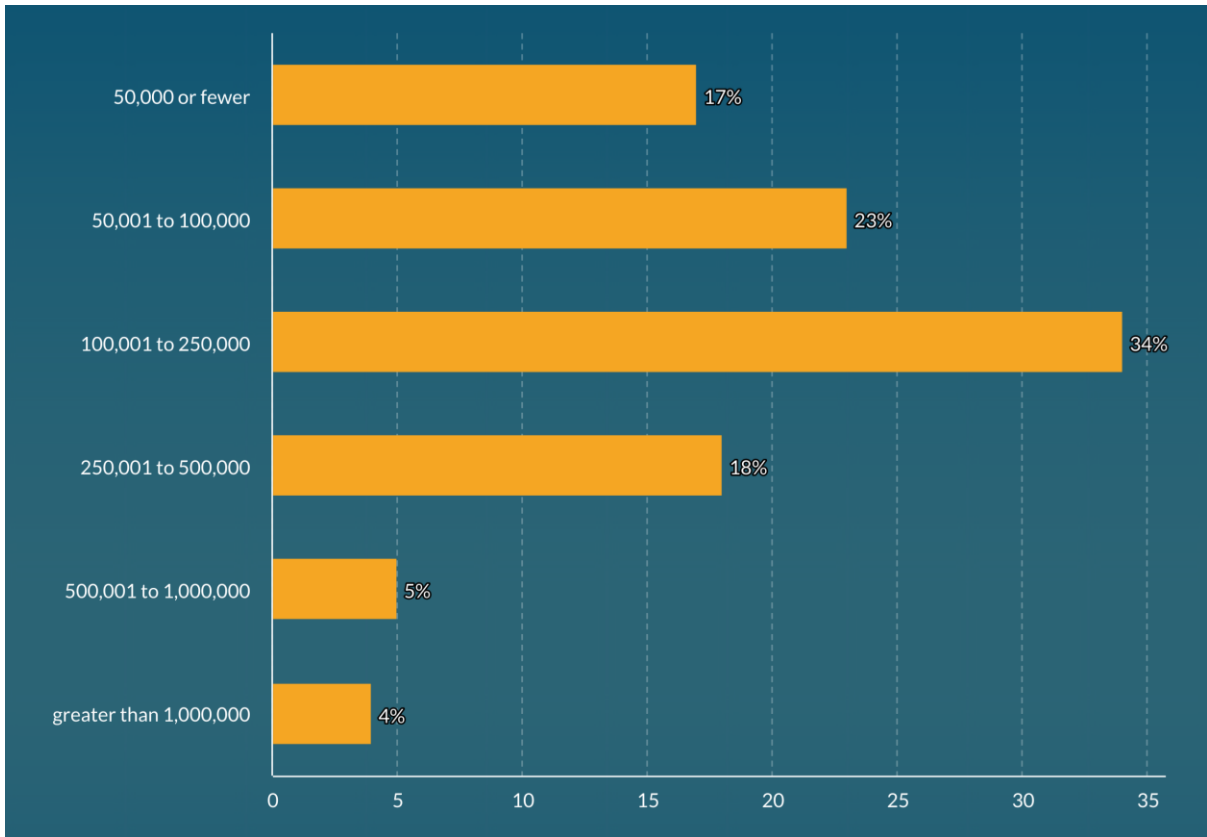
Survey Findings

Survey results show the VFP apps of many of our respondents are definitely not small systems. 9% cited apps with more than half a million lines of code, and 9% with over the 500,000 level.

On the other side of the size range, 17% had fewer than 50,000 lines of code. The bulk of the respondents (75%) cited midsize applications with 50 to 500,000 lines of code.

Analysis

Lines of code are one relevant measure of the overall size of an VFP app, but it is not the only measure. Future surveys will take a deeper dive into other size and complexity issues such as: programs, forms, controls, reports, etc.

For companies wanting a deeper understanding of the size of their current VFP app, we recommend utilizing the free tool, Code Matrix, which will provide them an Excel analysis detailing the size statistic of the application.

Code Matrix is one of Macrosoft automation products for assisting clients in VFP conversions or migrations. See the Macrosoft website for more information and a free download of the Code Matrix Application.

Back to Index

VFP Migration Status
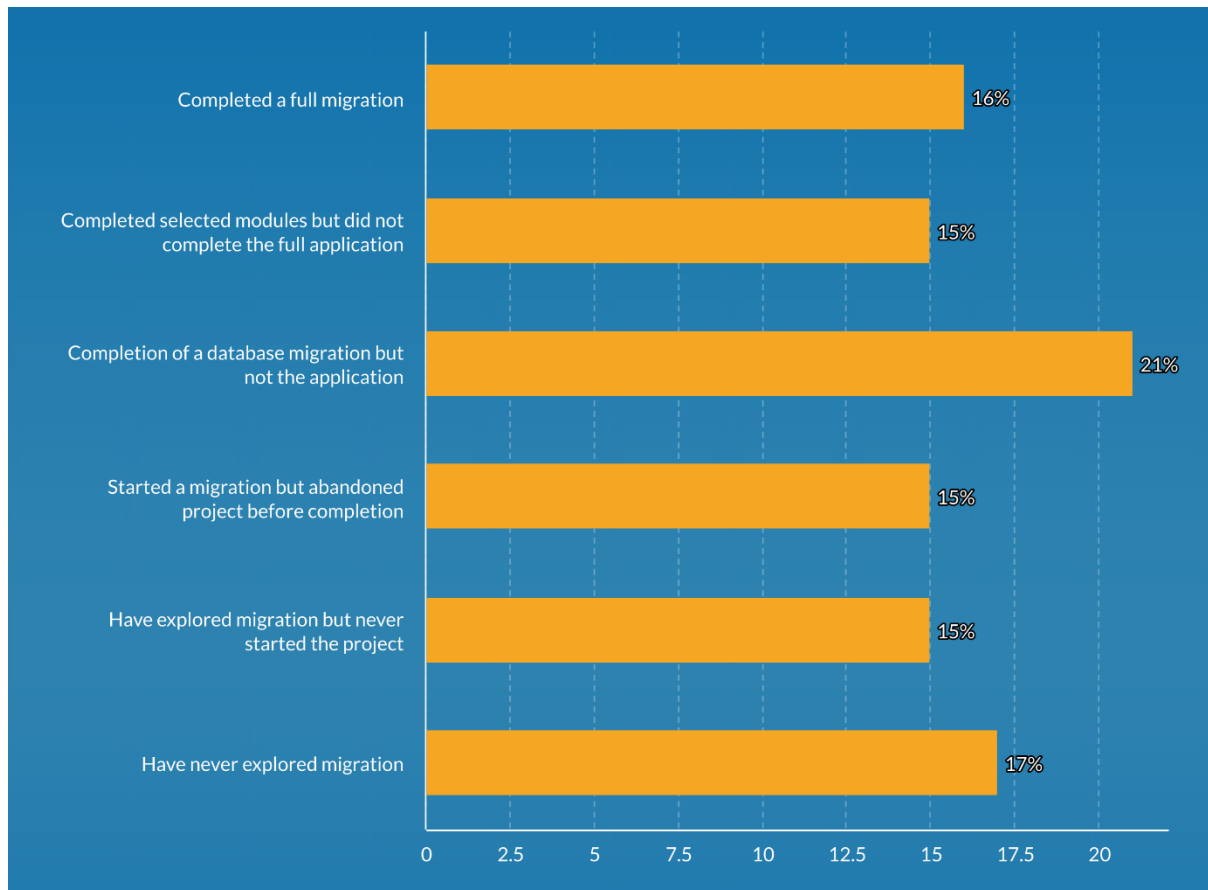
Survey Findings:

Participants were asked if they ever had begun the process of migrating their VFP application and if they had what was the current status.

16% indicated their company had completed the full migration. 15% had completed select modules but not the full application and 21% had migrated the database but kept the application in the VFP framework.

15% abandoned the process before completion.

Analysis:

21% of companies having a VFP app have taken the step of moving the data out of the FoxPro database. This is definitely a good step in the right direction for
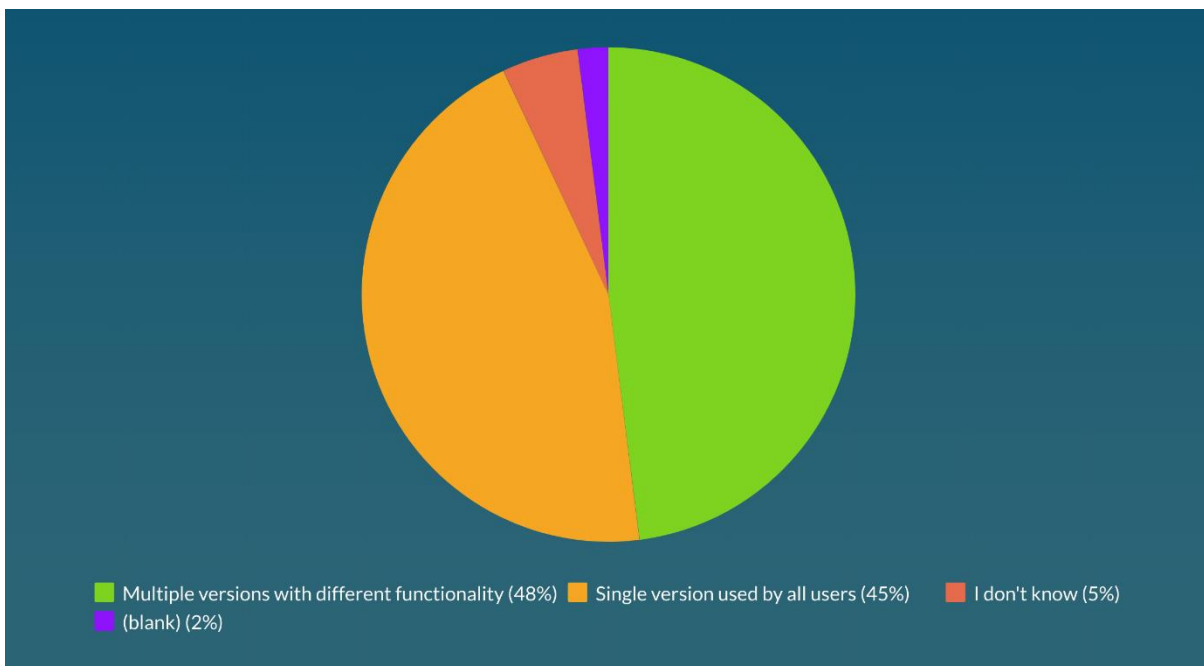
modernization. This shift may have been precipitated by security concerns associated with protecting the VFP system's underlying data.

Unfortunately, 15% of companies that began a migration abandoned the process before completion, but we are not surprised by this finding. It is a major undertaking especially for large VFP apps, one that takes excellent know-how and best practices, and a lot of incremental development resources, both of which are often beyond a company's steady-state capabilities.

Future surveys will dig deeper into the reasons causing companies to abandon their efforts before completion.

Single vs. Multiple Instances

- Multiple versions with different functionality (48%)   ■ Single version used by all users (45%)   ■ I don't know (5%)
- (blank) (2%)

Survey Findings:

Roughly half of the respondents 48% indicate that their current VFP application has different versions with different functionality. On the one hand this is a great customization benefit of visual FoxPro deployed as a desktop solution. On the other hand, versioning becomes extremely complex and time-intensive for supporting multiple external clients having different functions within their version of the application (even if only slightly different).

Analysis:

It is of course not a good thing in general for companies to customize the functionality of an app to support individual clients' needs and requirements or to permit clients to do so themselves. Best practice dictates that new functionality should be built into the core of the system with clients able to *configure* functionality to their specific needs. It is critical to have a complete documentation understanding of every version used by clients.

If undertaking a modernization or migration project, it's generally best to start with the most complex version of the app and then have partitions to allow select functionality to be available for some clients and masked for others. So, the core application provides all functionality, it's simply whether or not parts of the app become enabled for an individual client requirement. Deployment as a single version greatly assists in upgrading and support/maintenance of the application.

Number of In-House Development Resources
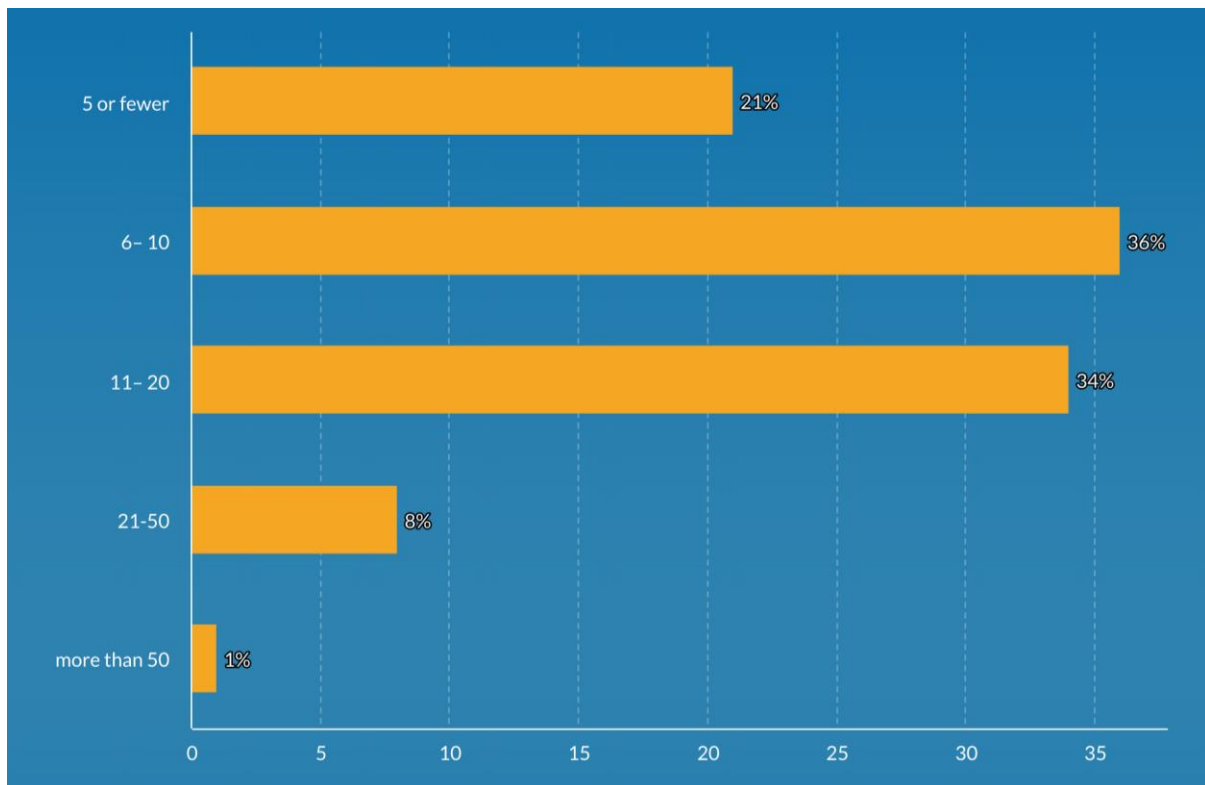
Survey Findings:

We found companies responding to this VFP survey to have a distribution in a number of in-house developers centered around 10. 21% had five or fewer developers 9% had greater than 20 in-house developers. The remaining 70% had between 6 and 20 developers.

Analysis:

Most companies responding to this VFP survey had a small to modest size of in-house development staff. In our view this can create two challenges for these companies:

(1) risks to the company if 1-2 key developers were to leave and take much of the knowledge of the VFP system with them; and

(2) these companies almost certainly do not have enough in-house development staff size to accomplish a full VFP migration project with in-house staff only.

So, while the risk of staff losses is great, the company will most likely have to look for support from an outside vendor to undertake a full migration. The low end of the size distribution (5 or less) is particularly sensitive to these risks.

[Back to Index](#)

Languages besides VFP
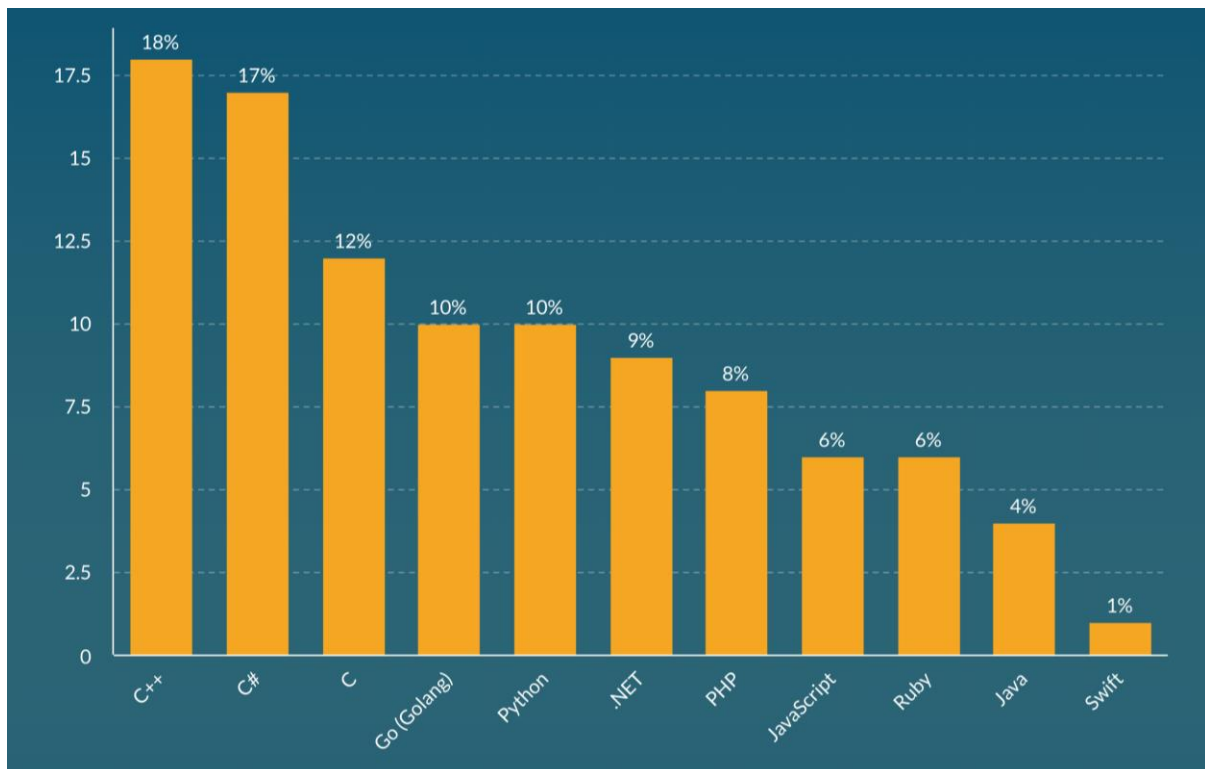
Survey Findings:

We found a wide range of development languages being used by companies that participated in the survey. These are companies that have one or more Visual FoxPro apps to maintain. The most common languages used by 10% or more of

the respondents include the trio of (C++, C# and C) and two of the newer languages, Go and Python. Less frequently but still utilized include .NET, PHP, JavaScript, Ruby, Java, and Swift. This will be an interesting chart to watch year over year to see which languages gain greater acceptance.

Analysis:

It is an interesting juxtaposition within some companies surveyed. They have VFP apps and are at the same time involved with some of the newer languages of Go and Python as well. In our view, this is a somewhat rocky mix of development talents, and may signal that a migration of the VFP app is in the offing for the near future.

One thing is sure, the developers working with the newer languages cannot (and most often will not) work to build up VFP skills to maintain the company's VFP apps. These developers and those that are in the VFP sphere almost live in different worlds.

Our view is that there is a steady and accelerating trend towards open-source development languages both for application development as well as for databases. The industry is seeing the maturity of open-source technologies. We will see if subsequent surveys bear this out.

Back to Index

Online Forums Participation

Forum	Percentage
ProFox	24%
Foxite	22%
Visual Foxpro (Facebook)	17%
Level Extreme (formerly Universal Thread)	11%
Visual FoxPro Developers (LinkedIn)	8%
Virtual Fox Fest (formally South West Fox)	8%
Fox GeekGatherings	6%
FoxPro Developers (LinkedIn)	2%
Others	1%
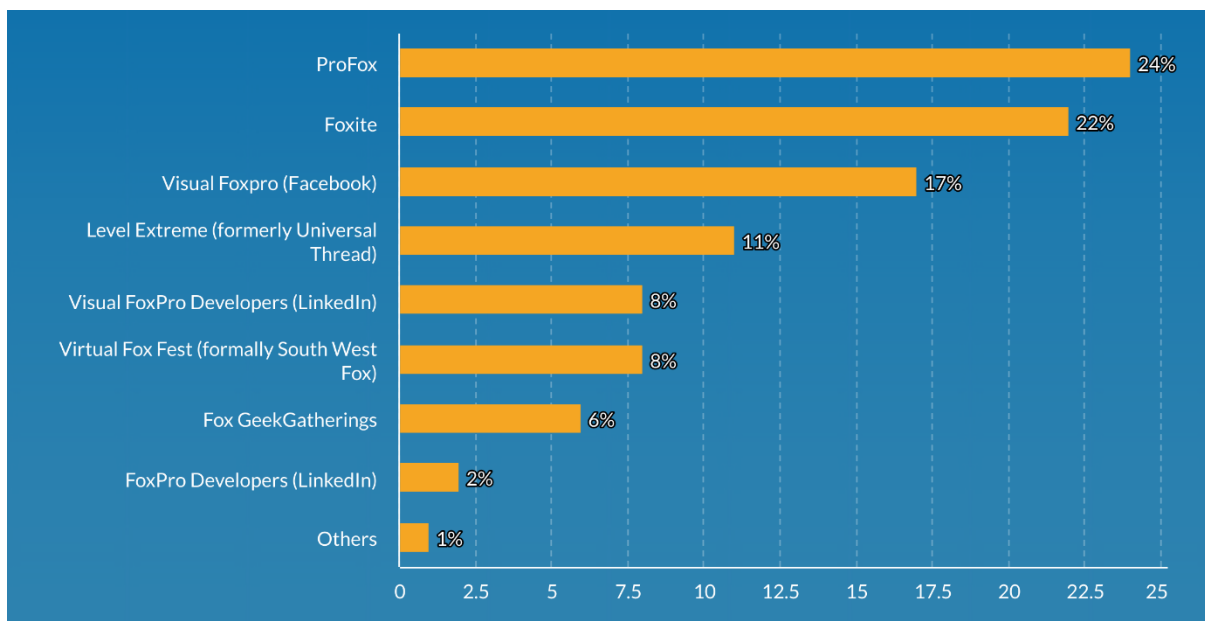
Survey Findings:

The survey found participants utilized a lot of different online VFP community forums. Most popular amongst these included ProFox, Foxite, and the Visual FoxPro group on Facebook.

Less utilized were LinkedIn and other groups including Level Extreme, VFP Developers, Virtual Fox Fest, and Geek Gatherings.

Analysis:

Our perception of the VFP community from these survey results is one of collaboration and sharing best practices. These survey results show an active community of developers interested in sharing new ideas and methods. While critics may say loudly VFP is at end of life, it does not appear to be so from the numbers implicit in these forums and community gatherings. From this perspective, VFP is still a very active and important development language.

Looking at these different groups, posts appear to be coming weekly or more often with users supporting each other on questions, posting for job opportunities, or simply networking to grow business.

(On a personal level, it is great for us to be a part of this community! Also, we give a special shout-out to organizers of Geek Gatherings, now known as Virtual Fox Fest, as they continue to hold their Visual FoxPro best practices conference. It is our hope that this community can meet again face to face soon.)

Years with VFP
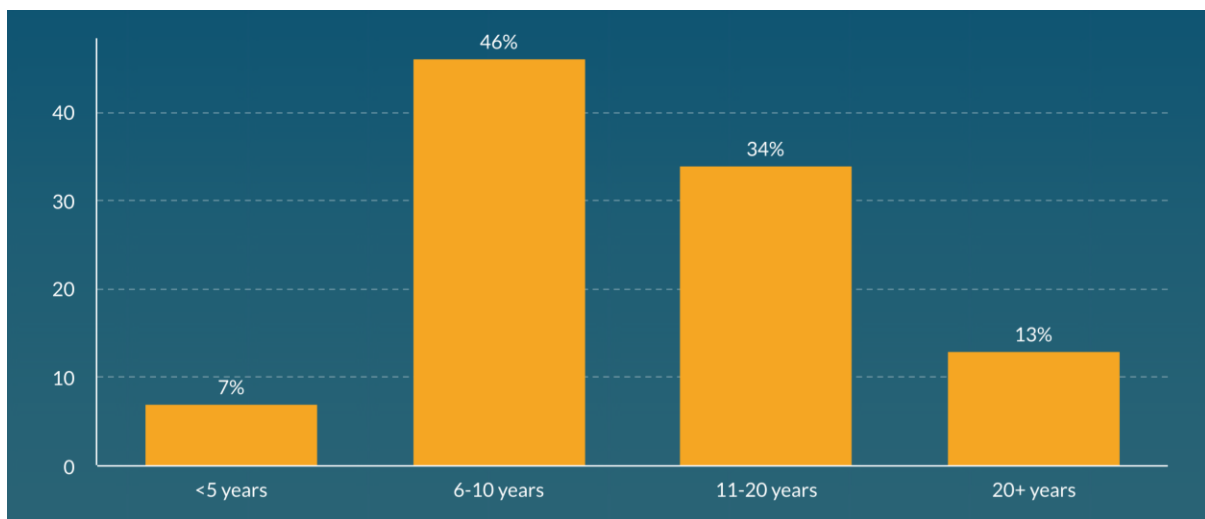
Survey Findings:

As expected, survey results confirm the FoxPro development community is not weighted with new entrants, with only 7% utilizing the language for five or fewer years. We see 13% have been using FoxPro for over 20 years. The vast majority of participants (80%) have used FoxPro for 6 to 20 years.

Analysis:

This chart is somewhat alarming when we consider the long-term viability of applications running on Visual FoxPro. Only a small fraction of respondents is new to this development language. As current members move on to other languages or retire, fewer developers will remain available to support maintain and enhance existing Visual FoxPro applications.

It is our view that very few new visual Fox pro applications are being created but rather existing applications are being supported to continue to deliver business value.

Modernization Drivers
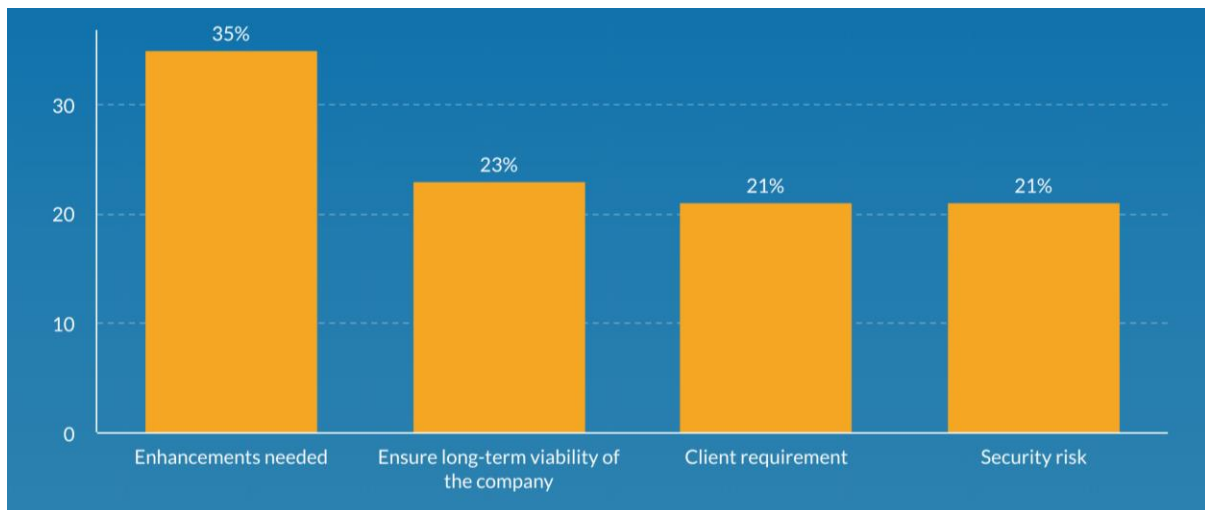
Survey Findings:

Users were asked what would cause the need for their company to begin a modernization or migration of an existing FoxPro application. 33% said the driving factor could be a major required enhancement.

Roughly 20% of respondents indicated each of the following 3 drivers: (1) to ensure the long-term viability of their company, (2) client requirements, or (3) security risk.

Analysis:

It is our view that enhancements <u>should be</u> the number one driver towards modernization or migrations, but often within companies generalized security risks are the trigger that gets movement started. Though FoxPro is solid and not vulnerable to security hacks, it is an unsupported language. Overzealous security compliance or audit departments can often require the modernization of a legacy FoxPro application.

One of the responses above, *to ensure the long-term viability of their company*, is indeed a very dramatic statement. 20% of respondents gave that answer. We presume these respondents are referring to the fact that migrations of their VFP app would open up the many benefits of modern technology and without those benefits their company will likely fall further and further behind competitors. Those companies clearly have to take a close evaluation of whether or not to migrate and enumerate the benefits they will derive from a migration.

Back to Index

Post Migration Data Handling

■ Post Migration Data Handling (23%)   ■ Post Migration Data Handling (77%)
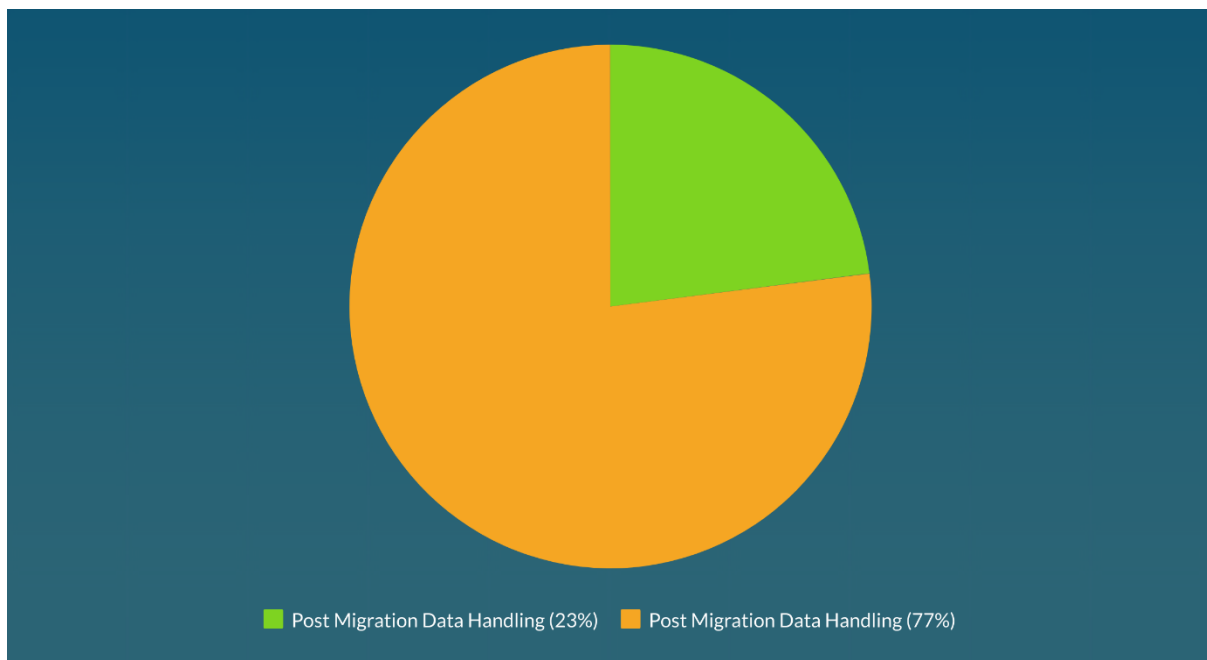
Survey Findings:

The overwhelming majority of respondents (77%) indicate they would migrate their system data to the new application rather than archive it if they went through a migration or modernization process.

Analysis:

It is not surprising that current FoxPro users would want to migrate all their existing data. The FoxPro applications that are in use today are beneficial because they do exactly what an organization needs and have exactly the data the organization requires. Companies would not want to archive this valuable data but continue to use it in any new or modern application.

Yet, the migration of data can be extremely messy or problematic if not properly planned and implemented. Applications built in FoxPro have grown over many years, sometimes as many as 20 years. This means they likely have been updated through multiple versions, with the early code starting as DOS, going into FoxPro and then shifting through the multiple versions of Visual FoxPro up and through version 9. Some of these legacy codes may still be in the currently active application. This greatly complicates the migration process.

Data that is many years old can also be problematic when migrated to a new database. There will almost surely be missing information required by new business rules, or there may be bad or corrupted information, or unique characters that may not port properly. The data migration process starts by field mapping between Visual FoxPro and the data equivalent in the target database. Clean structured data in an optimized database will of course enhance the new system's responsiveness, improving user experience and overall system performance.

[Back to Index](#)

Application Size: # of Screens
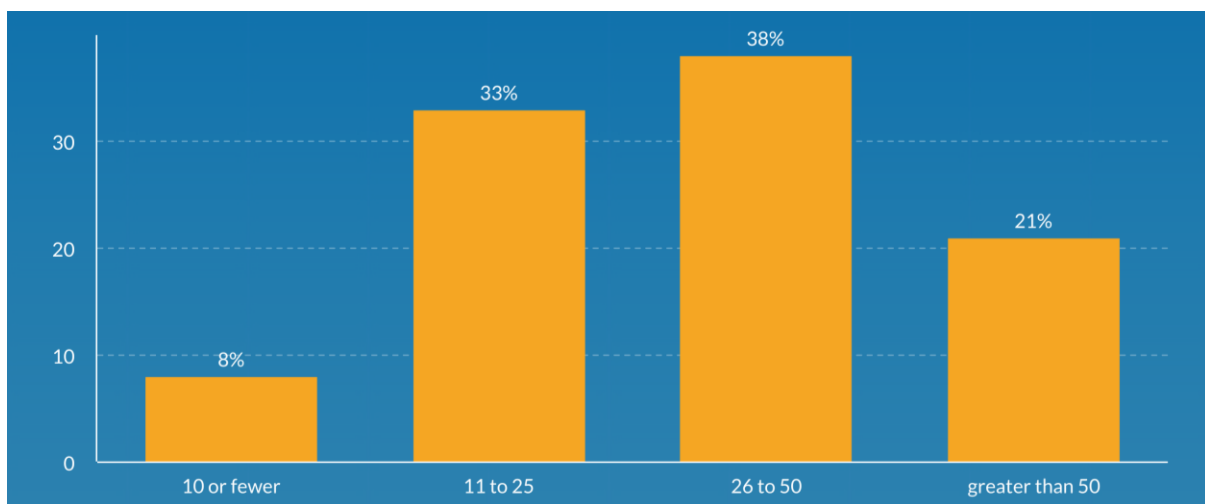
Survey Findings:

Respondents to the survey indicated their Visual FoxPro applications are quite large with 21% having greater than 50 screens in the application. A large majority 71% indicate their VFP system has between 11 and 50 screens. Only 8% of respondents have systems with 10 or fewer screens.

Analysis:

The number of screens is another measure of the complexity of a VFP app, and it compliments an earlier survey question on number of lines of code.

The complexity associated with multiple screens is very critical when considering an application modernization or migration. It is not simply what is happening on a single screen, which is easy to test during a migration. More complex and more important are the workflow or user stories that occur screen to screen.

A new design in a modern technology platform might offer the opportunity for screen consolidation allowing complete tasks or functions to be completed without navigating across multiple screens. Improving workflow and screen design is critical to a successful modernization project. It is important to have application users directly involved in any migration to ensure the best user experience. Consider a migration project not as just a 'migration of functionality', but rather as an opportunity to enhance how users experience the application.

Current VFP Developers
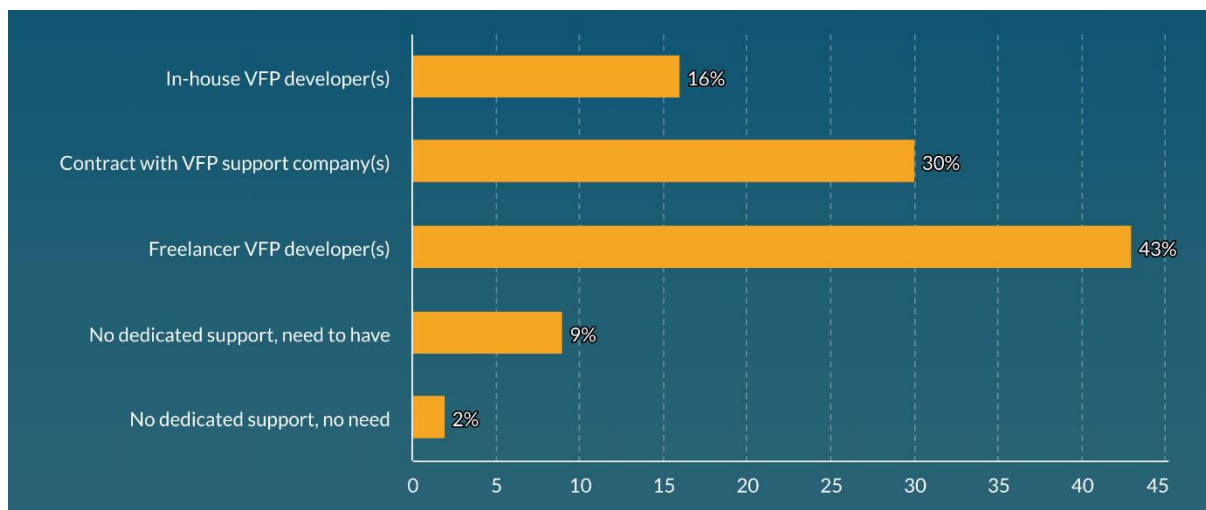
Survey Findings:

Respondents were asked whether their application is being supported by an in-house development team, contract support team, or freelance developer, or lastly

has no support at all. The majority of respondents are using freelance VFP developers (43%) or are contracting with a VFP support company (30%). Only 16% of companies have in-house VFP developers on staff. We are surprised to see that 11% report having no dedicated support.

Analysis:

At one level, it is not surprising that the vast majority (73%) of organizations are using outside support for their Visual FoxPro application. IT organizations within many companies are centered around newer development languages and platforms. But at another level, this can be concerning, since it leaves the well-functioning VFP app as an island within the company with only outside support, in many cases performed from overseas.

It is our view that companies should not 'ignore' their VFP app., which results of this survey question seem to suggest is happening. Rather they should strive to have a mix of some in-house VFP knowhow partnered closely with a well-established VFP support company that has a team of trained VFP people ready to respond to any issues.

The 43% of respondents that are contracting with freelance developers also present a problem in our view. In this case, the company is putting the VFP application in the hands of a single developer. While there may be cost advantages to this approach, there are obviously also significant risks. Lastly, we need to advise the 11% with no support at all that they should at least establish a relationship with an VFP support organization that they can tap into should they have a need.

Back to Index

Ideal Target Platform
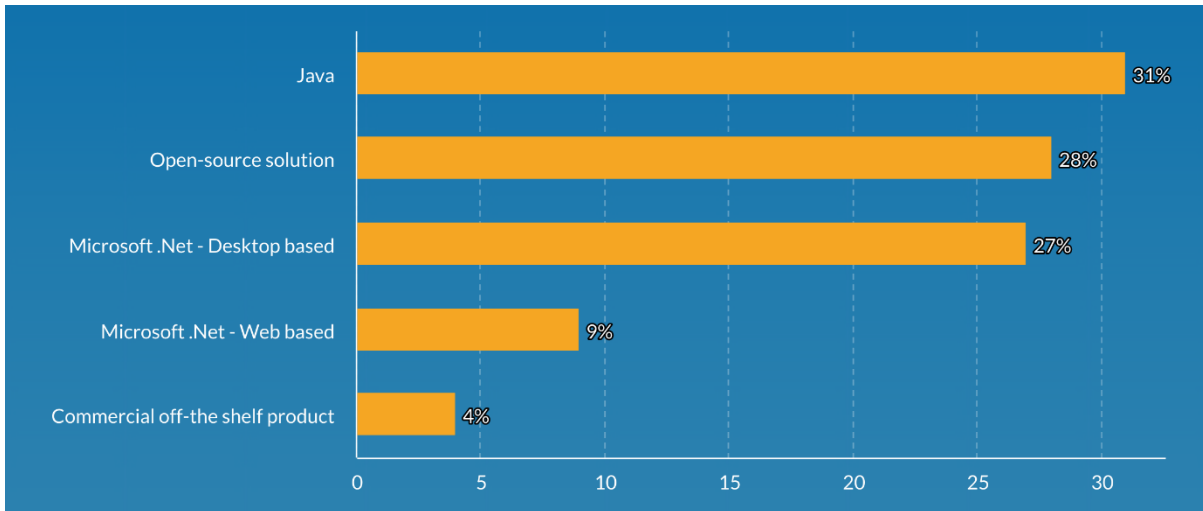
Survey Findings:

Survey participants were asked what their ideal target development platform is for a newly migrated application. Roughly a third of each indicated: Java (31%), open-source solution (28%), or Microsoft .NET desktop (27%).

Surprisingly, only 9% selected a Microsoft web-based solution, and more surprisingly still, only 4% considered their ideal target app to be a commercial off the shelf system.

Analysis:

It is not surprising that organizations are split equally amongst Java, open-source solution or microsoft.net. What is surprising is (1) a lack of interest in commercial off the shelf solutions, and (2) web-based solutions. These results once again show that existing VFP app users and companies are satisfied with the desktop functionality of their current VFP app, and want any new system to look as much the same as possible.

Back to Index

Expected Migration Completion Time
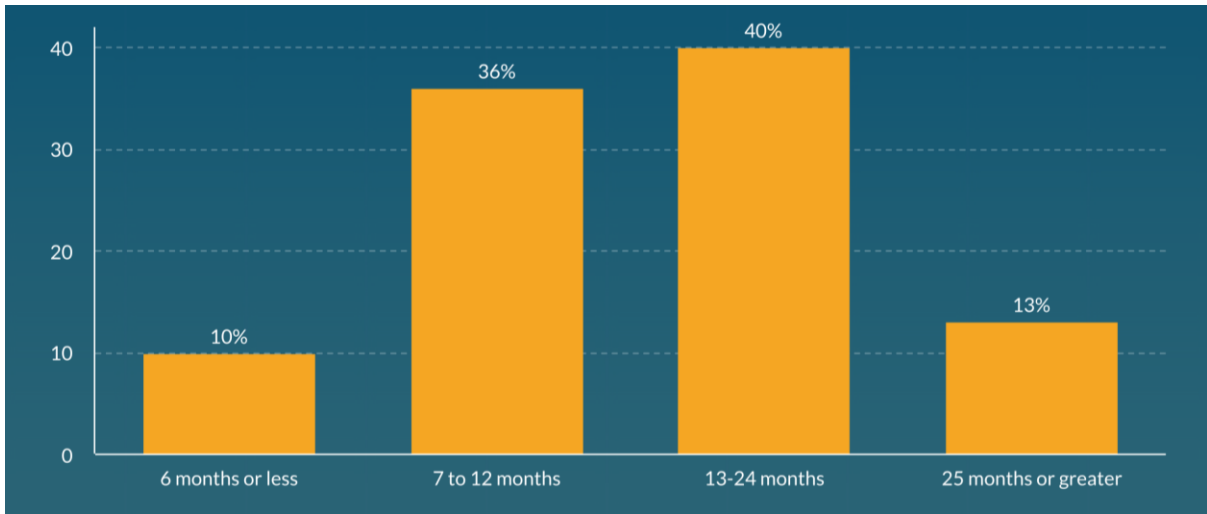
Survey Findings:

Users were asked what they expected the time period would be to complete a migration to a modern technology platform. 46% felt that it can be completed in less than a year, with 10% indicating 6 months or less.

53% indicated it would be greater than a year, with 13% indicating it would be longer than two years.

Analysis:

Knowing how long the migration will take is an important factor in determining if it is right to do for your business and when is the right time. Even if you do not plan to do it in the near term it is worth having an analysis done to determine a plausible migration schedule.

New ever-more powerful automation tools such as Code Morph and Data Morph (offered by Macrosoft) as well as other tools offered by other vendors, can greatly help to speed up migration and significantly reduce project completion timespans. Also, to the extent a company can devote significant resources to the testing phase of a VFP migration project that will greatly help reduce project timespans.

Also, there can be a phased migration approach where certain modules or functional components of the VFP app are released along the way, so a company does not need to wait till full completion to gain some of the benefits of the migration.

An agile development methodology utilizing automated code conversion tools with frequent releases is the best approach to ensuring a successful VFP migration project.

Back to Index

Survey Findings:

Now we are on to the comparative statistics section, where responses are compared across two of the survey questions. We have selected 7 of such comparative statistics to show here. In this first comparison, we compare two questions: Update Frequency vs. Development Status

- **Update Frequency**: How frequently do you make changes / updates to the current VFP application?
- **Development Status**: Was your VFP program developed in-house or by an external software development firm?

There is a dramatic difference shown in the chart when comparing responses to these two individual questions. Companies that develop(ed) their VFP applications in-house are significantly more likely to push regular updates to the app than

other companies where the development of the VFP app was done entirely by an outside software firm or the VFP app was built by the company together with an outsourcing firm.

70% of companies surveyed that did updates to the app every month or even more often built the VFP app entirely in-house. Clearly, for this subgroup, there is in-house support of the VFP app, and it is being updated and maintained regularly.

On the other extreme, 80% of the companies who never pushed updates to the applications had a 3rd party software firm that developed the app. For this sub-group of companies, the VFP app does what it is expected to do, and there is no push to update the app.

Analysis:

We conclude that companies that engage in frequent updates to their VFP app want to maintain control of the app in-house utilizing their own development teams. This is likely because of a combination of domain knowledge and technical expertise.

Those with infrequent updates will use an outside resource on an as needed basis rather than having the cost of an in-house development team that would then be frequently idle.

[Back to Index](#)

Usage Status vs. Update Frequency

Monthly or more
- Used in-house by our employees: 15%
- Used externally by our clients: 14%
- Used by both clients and employees: 23%

Few times a year
- Used in-house by our employees: 39%
- Used externally by our clients: 27%
- Used by both clients and employees: 35%

Once a year
- Used in-house by our employees: 26%
- Used externally by our clients: 37%
- Used by both clients and employees: 31%

Every few years
- Used in-house by our employees: 17%
- Used externally by our clients: 20%
- Used by both clients and employees: 9%

Never, as long as it is working
- Used in-house by our employees: 2%
- Used externally by our clients: 1%
- Used by both clients and employees: 3%

Legend: ▮ Used in-house by our employees   ▮ Used externally by our clients   ▮ Used by both clients and employees

Survey Findings:

In this graph we compared two questions, Usage Status vs. Update Frequency

- **Update Frequency**: How frequently do you make changes / updates to the current VFP application?
- **Usage Status**: Is your VFP application used in-house to support your company, or used by your clients or both?

VFP applications that are used in-house by employees or both by in-house employees and external clients are updated frequently with over 50% of those companies indicating they update the VFP app multiple times a year.

Conversely, VFP apps that are used exclusively by external clients are updated infrequently with 60% having been updated only every few years or never.

Analysis:

There is a major difference in the frequency of updates based on the pattern of usage (either in-house only; in-house and clients; or clients only). This could be due to the fact that, as discussed earlier, most VFP app are desktop apps.

Updating internal client's local machines is likely significantly easier to implement than external client local machines.

This is a major disadvantage for this subset of VFP apps. New features and functionality are not now being provided to clients, which can be critical to ensuring the stickiness and enthusiasm of clients. This in turn would reduce the likelihood of churn to other competitive products as new updates would be arriving regularly.

Back to Index

Potential Risks for Legacy VFP vs. (In-house Usage vs. External Clients)
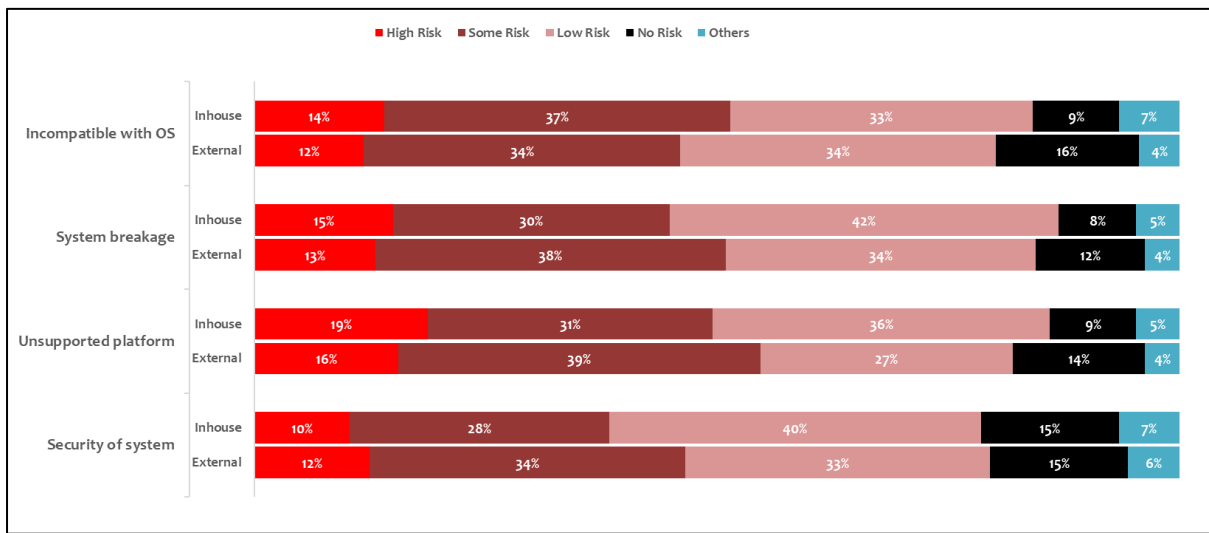
Survey Findings:

In this graph, we compare respondents' answers to two questions, *Potential Risks for legacy VFP vs. Usage Status*

- **Potential Risks**: Rate the potential risks your legacy VFP application may face?
- **Usage Status**: Is your VFP application used in-house to support your company, or used by your clients?

Apart from the risk of *incompatibility of operating systems*, companies that use their VFP apps for external clients indicate greater concern for the other three risk factors: system breakage; unsupported platform and security of the system.

System breakage was identified as high risk or to have some risk by 51% of respondents. Being an unsupported platform was identified as high or some risk

by 55% of respondents. And system security was deemed to have a high risk or some risk by 46% of respondents.

Analysis:

This perceived risk for VFP applications utilized by external clients being higher makes logical sense. With external clients, you confront many more technical factors that are outside of the control of the organization.

With your internal teams, you can control the network settings and technology environment. Having control over the entire environment allows you to avoid the introduction of risk that could impact your application.

Back to Index

Potential Risks for Legacy VFP vs. (In-house vs. External Development)
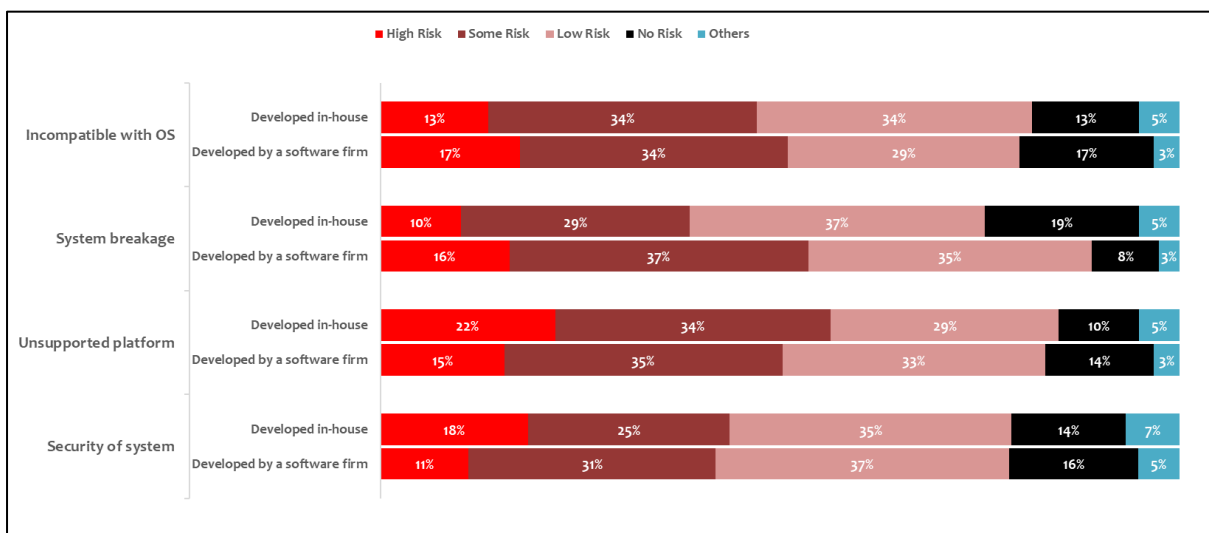
Survey Findings:

In this chart, we compare results for two questions, Potential Risks for legacy VFP vs. Development Status:

- **Potential Risks**: Rate the potential risks your legacy VFP application may face?
- **Development Status**: Was your VFP program developed in-house or by an external software development firm?

In-house development of the VFP app is associated with a significantly reduced perceived risk of system breakage. 19% of those respondents consider system

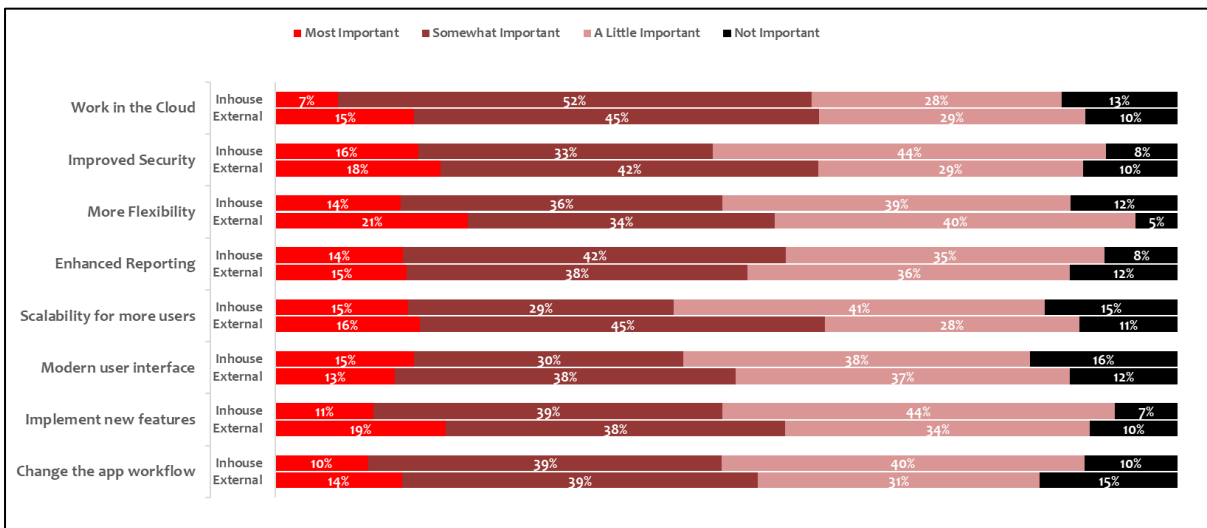breakage a non-issue while only 8% of companies with external development think along those same lines.

Overall, across the 4 risk types, external development does increase the perception of these risks as compared to in-house development.

Analysis:

From these findings, we conclude that organizations that have their own internal FoxPro development teams can minimize risk as they have the knowledge of the business, an understanding of the technology stack and clear requirements from the end user. With more knowledge and control you can minimize risk.

Back to Index

Modernization Drivers vs. (In-house Usage vs. External Clients)

		Most Important	Somewhat Important	A Little Important	Not Important
Work in the Cloud	Inhouse	7%	52%	28%	13%
	External	15%	45%	29%	10%
Improved Security	Inhouse	16%	33%	44%	8%
	External	18%	42%	29%	10%
More Flexibility	Inhouse	14%	36%	39%	12%
	External	21%	34%	40%	5%
Enhanced Reporting	Inhouse	14%	42%	35%	8%
	External	15%	38%	36%	12%
Scalability for more users	Inhouse	15%	29%	41%	15%
	External	16%	45%	28%	11%
Modern user interface	Inhouse	15%	30%	38%	16%
	External	13%	38%	37%	12%
Implement new features	Inhouse	11%	39%	44%	7%
	External	19%	38%	34%	10%
Change the app workflow	Inhouse	10%	39%	40%	10%
	External	14%	39%	31%	15%

Survey Findings:

In this graph, we compare two questions, Modernization Drivers vs. Usage Status

- **Modernization Factors**: What is most important to your business as you modernize your application?
- **Usage Status**: Is your VFP application used in-house to support your company, or used by your clients?

Working in the Cloud' and 'Implement New Features' are more important drivers for modernization when the application is being used by external clients verses when it is being used in-house.

Across all the modernization factors, companies with external clients as application users put more focus on these modernization factors verses companies with solely in-house users.

Analysis:

Overall, it is clear those companies that have VFP applications that support external clients are more closely aligned with and sensitive to the 8 factors associated with modernization included in the survey. This of course makes sense. Companies servicing external clients with their VFP app understand that these clients can switch to other companies that offer more modern and user friendly apps.

<p align="center"><u>Back to Index</u></p>

<p align="center">Biggest Impediments to Modernization vs. (In-house vs. External Development)</p>
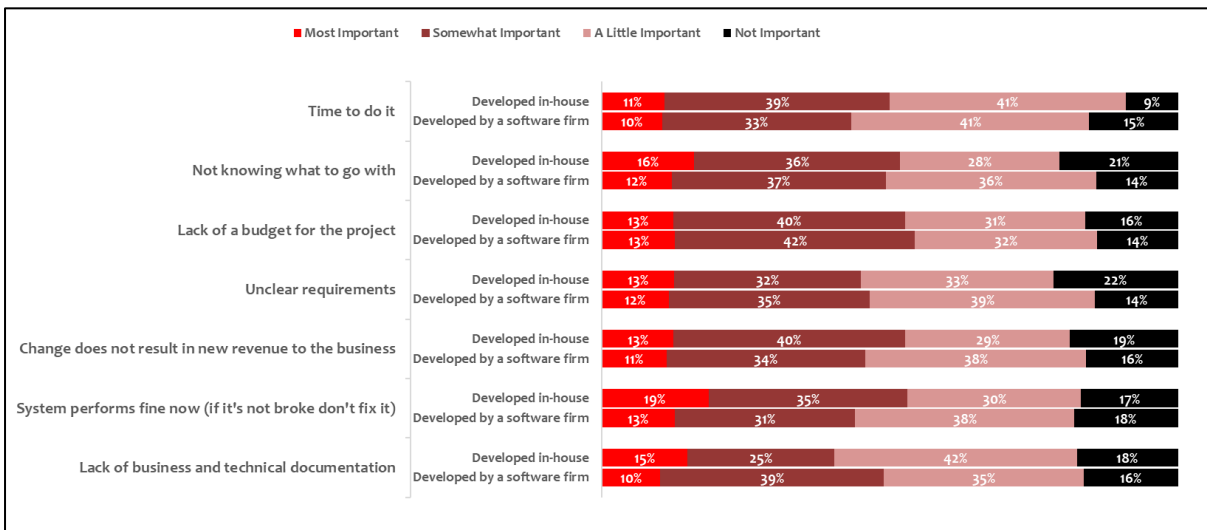
Survey Findings:

In this graph, we compare two questions, Impediments to Modernization versus Development Status

- **Biggest Impediments to Modernization**: What are the biggest barriers to doing a modernization to your VFP app?
- **Development Status**: Was your VFP program developed in-house or by an external software development firm?

There are two surprising findings in these comparative survey results.

First, companies with in-house VFP app development teams perceive 'lack of business and technical documentation' as a more important hurdle for modernization than those with external teams.

Secondly, 'system performs fine now' is another hurdle in modernization that has higher ratings when development is done in-house.

Analysis:

The importance of these 8 factors impacting modernization, when compared for companies that have in-house development versus those that use external development software houses are somewhat counter intuitive at first. But we suspect what is happening in the following. Those companies relying on external development vendors are assuming that these external vendors have tools and capabilities and experience that would allow the external vendors the ability to address these impediments.

Back to Index

Concluding Comments

This concludes our summary of results from the 2021 Survey of VFP Applications Industry Best Practices, conducted during the first two weeks of March.

The bottom line of the survey results, in our opinion, shows an industry in major flux, with sharp differences of views about the role of VFP applications in the present technology world. That is not surprising.

From the very beginning of its life, VFP has always had its strong proponents because of its tremendous power and flexibility as an application programming language. Even now 20 years later, facing significant end-of-life challenges, and with other key technologies moving forward around it, we still see in survey results participants who view VFP as the language/platform of choice.

Best practice advocates and tech support vendors will have a field day in working with companies in all parts of the response curves to this survey, to assist those companies in their current use of VFP apps and possible future migrations or modernization efforts.

All participants to the survey will receive this paper and will be able to compare and contrast their views versus their peers in the industry. All readers will be able to see the wide diversity of responses to fundamental questions affecting and driving the VFP app. industry and where it goes from here.

As noted, we plan to conduct this survey on an annual basis, which will bring a lot of new context to the responses as we see how the survey responses evolve over time. Stay tuned!

Back to Index

Thank you!..