

TABLETS FOR WEALTH MANAGEMENT: THE SMART MONEY IS ON A TABLET POWERED BY INTEL



The smart money is on a tablet powered by Intel®

The Microsoft® Surface™ Pro 3 delivered time-saving performance and a better user experience than the ARM-based devices* we tested:

40% less waiting while using financial planning software

45% less waiting while researching mutual funds

54% faster access to financial data

76% faster start to editing Office documents

Full Office 365™ functionality for secure collaboration

Better Lync® video call quality for remote meetings

* vs Apple® iPad Air™ and Samsung Galaxy Note® 10.1

Time is money. If you are a wealth-management professional meeting with a client, your technology should facilitate building relationships with clients, instead of getting in the way of it. You want to focus on the numbers and issues of concern for your clients and not waste their precious time. The technology you use to illustrate your points and conduct any on-the-fly research should work quickly and seamlessly. The last thing you or your clients want is to wait while you pull up information. By selecting a high-performance tablet that delivers the best experience in face-to-face and remote meetings, you position yourself well to help your clients as much as possible.

In the Principled Technologies labs, we tested three tablets—a Microsoft Surface Pro 3 powered by Intel, an ARM processor-based iPad Air and an ARM processor-based Samsung Galaxy Note 10.1. We looked at how the tablets performed when executing common tasks, such as using financial planning software and researching mutual funds. We also investigated Lync video quality for remote meetings and Office 365 functionality with Word, Excel, and PowerPoint.

The bottom line? The Surface Pro 3 delivered the best return in our tests, as it outperformed the competition by up to 76 percent, and provided a better experience for secure collaboration and remote meetings with clients.



WHAT WE COMPARED

Figure 1 shows the three devices we compared. In addition to the Intel processor-powered Surface Pro 3 with Microsoft® Windows® 8.1 Pro, we looked at two ARM processor-based devices, each being a different operating system—iOS on the iPad Air and Android™ on the Galaxy Note 10.1. We used apps available for each device when possible, and used the browser to access Web sites when apps were not available.


|  Surface Pro 3 |  iPad Air |  Galaxy Note 10.1 |
|--|---|---|
| Intel Core™ i5-4300U processor | Apple A7 processor | Samsung Exynos 5 Octa processor |
| Microsoft Windows 8.1 Pro | iOS 7.1.2 | Android 4.4 |
| MoneyGuidePro® Web site | MoneyGuidePro Web site | MoneyGuidePro Web site |
| Fund Mojo Web site | Fund Mojo Web site | Fund Mojo Web site |
| Bloomberg® Web site | Bloomberg app | Bloomberg+ app |
| MarketWatch® Web site | MarketWatch app | MarketWatch app |
| Morningstar® Web site | Morningstar app | Morningstar Web site |
| Office desktop apps, including Word 2013, Excel® 2013, and PowerPoint® 2013 | Office for iPad apps, including Word for iPad, Excel for iPad, PowerPoint for iPad | Office Online apps, including Word Online, Excel Online, and PowerPoint Online |
| Lync 2013 desktop app | Lync 2013 for iPad | Lync 2013 app |

Figure 1. The three tablets we compared and the apps and Web sites we looked at with the tablets.

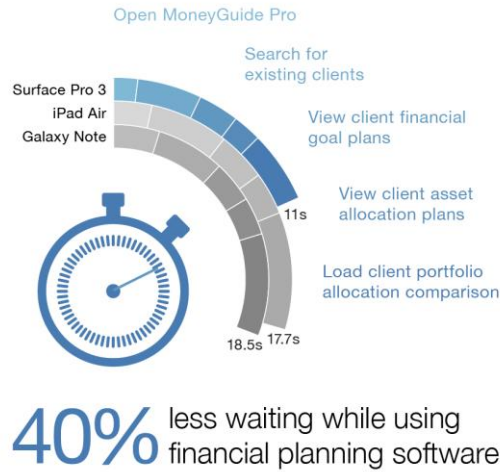
LESS WAITING WHILE USING FINANCIAL PLANNING SOFTWARE

Financial planning software is integral to the job of a wealth-management professional, simplifying the process of looking at a client’s portfolio, answering a client’s questions, and showing how financial decisions can influence both short term and long term financial health. To see how the three tablets performed using financial planning software, we looked at common tasks in MoneyGuidePro (<https://www.moneyguidepro.com/>) on the tablets such as searching for an existing client and viewing a client’s financial goal plan.

As Figure 2 shows, using MoneyGuidePro on the Surface Pro 3 meant waiting up to 40 percent less than the competition for five tasks. The difference between tablets

was even greater for some tasks, with the client portfolio allocation comparison taking almost twice as long to load on the iPad Air and Galaxy Note 10.1 than on the Surface Pro 3.

Figure 2: The amount of time spent waiting with the three tablets while using MoneyGuide Pro financial planning software. Lower numbers are better.

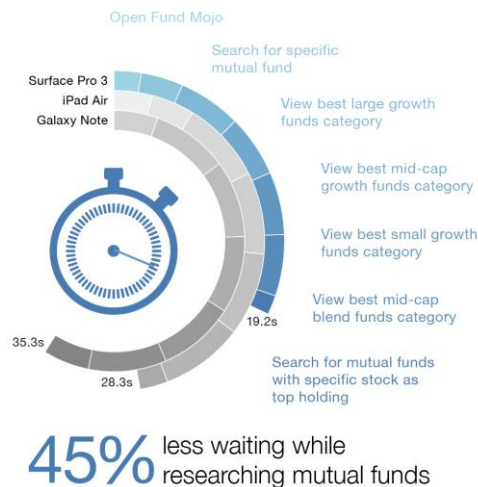


LESS WAITING WHILE RESEARCHING MUTUAL FUNDS

For some wealth management professionals, mutual funds can play an important role in retirement planning, as they can allow investors to increase portfolio diversification. We looked at how the three tablets stacked up when researching mutual funds on Fund Mojo (www.fundmojo.com/), putting the tablets through common tasks such as searching for a specific mutual fund and looking at a mutual fund category.

As Figure 3 shows, using Fund Mojo on the Surface Pro 3 meant waiting up to 45 percent less than the competition for seven tasks. Less time to complete these tasks on the Surface Pro 3 can mean more time to meet with clients and to get work done.

Figure 3: The amount of time spent waiting with the three tablets while research mutual funds. Lower numbers are better.



FASTER ACCESS TO FINANCIAL DATA

The Web contains an enormous amount of financial news and tools. Market volatility means that staying on top of market news and analysis is important when clients raise concerns and questions about how they should respond to changes in the market. We looked at how quickly the three tablets could access popular resources such as Bloomberg, MarketWatch, and Morningstar.

As Figure 4 shows, the Surface Pro 3 could access financial data up to 54 percent faster than the competition. It took over three times as long to access MarketWatch on the Galaxy Note 10.1, and almost three times as long on the iPad Air. Using the Surface Pro 3 instead of the iPad Air and Galaxy Note 10.1 can mean saving valuable time.

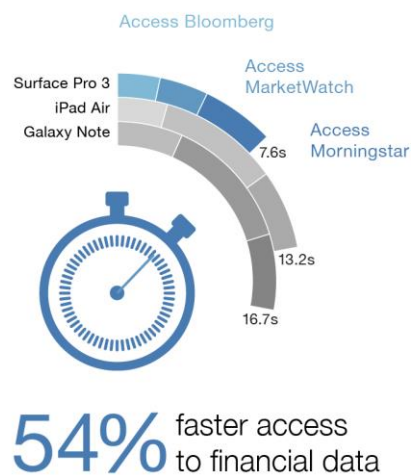


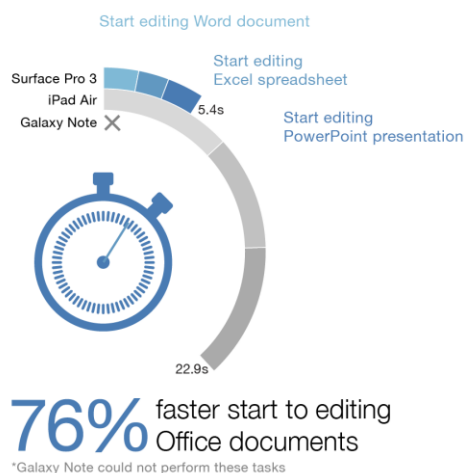
Figure 4: The amount of time it took to access financial data with the three tablets. Lower numbers are better.

FASTER TO START EDITING OFFICE DOCUMENTS

Just as with financial planning and research tools, Office 365 productivity applications are tools that can facilitate building and maintaining relationships with clients. The less time it takes to start working on calculations and models in an Excel spreadsheet or notes in a Word document, the more time there is for other tasks and meeting with clients.

As Figure 5 shows, we found we could start editing Office documents stored in OneDrive™ for Business 76 percent faster with the Surface Pro 3 than we could with the iPad Air. We also found we could not edit Word documents or PowerPoint presentations on the Galaxy Note 10.1, which meant having to find a workaround or use another device for working on Word documents and PowerPoint presentations.

Figure 5: The amount of time it took to start editing Office documents with the three tablets. Lower numbers are better.



FULL OFFICE 365 FUNCTIONALITY FOR SECURE COLLABORATION

We looked at Office 365 feature support with the three tablets. As Figure 6 shows, we again found significant features missing with the Office for iPad apps on the iPad Air and Office Online on the Galaxy Note 10.1. Microsoft’s lack of official support for Android tablets meant that we could not create or edit Word documents and PowerPoint presentations on the Galaxy Note 10.1.¹

We also found limited support for encrypted Office documents with the Office for iPad apps on the iPad Air and no support at all with Office Online on the Galaxy Note 10.1. We could not encrypt Office documents with a password on the iPad Air, and on the Galaxy Note 10.1, we could not even open password-protected Office documents. Both the iPad Air and Galaxy Note 10.1 would require workarounds to collaborate securely with sensitive client financial data.

¹ office.microsoft.com/en-us/office365-suite-help/compare-how-different-mobile-devices-work-with-office-365-HA103991814.aspx




| |  Surface Pro 3 |  iPad Air |  Galaxy Note 10.1 |
|--|--|--|---|
| Created and edited Word documents and PowerPoint presentations | ✓ | ✓ | ✗ |
| Opened password-protected Office documents | ✓ | ✓ | ✗ |
| Encrypted Office documents with a password | ✓ | ✗ | ✗ |
| Had full offline access to Office documents in OneDrive for Business | ✓ | ✗ ² | ✗ |
| Saved Office documents in PDF format | ✓ | ✗ | ✗ |
| Sent Office documents in PDF format | ✓ | ✓ | ✗ |
| Created and ran macros in Excel spreadsheets | ✓ | ✗ | ✗ |
| Used external data connections in Excel spreadsheets | ✓ | ✗ | ✗ |
| Inserted and manipulated pivot tables | ✓ | ✓ | ✗ |
| Saved Excel spreadsheets in CSV format | ✓ | ✗ | ✗ |

Figure 6. Office 365 feature support for wealth management professionals with the three tablets.

BETTER LYNC VIDEO CALL QUALITY FOR REMOTE MEETINGS

Busy work schedules and responsibilities at home make it difficult for some clients to schedule face-to-face meetings during a normal workday. Collaboration technologies such as Microsoft Lync, which is available as a part of Office 365 for Business, make it possible to still meet with clients when meeting in person isn't an option. We also looked at Lync feature support with the three tablets. As Figure 7

² We could open Office documents in OneDrive for Business on the iPad Air when offline only if we had previously opened them when online.

shows, we found much better feature support with the Lync desktop app on the Surface Pro 3 than with the respective apps on the iPad Air and Galaxy Note 10.1. Some missing features on the iPad Air and Galaxy Note 10.1 are showstoppers—we couldn't even drive a Lync meeting on the iPad Air.




| |  Surface Pro 3 |  iPad Air |  Galaxy Note 10.1 |
|--|--|--|---|
| Started a Lync meeting and invited participants | ✓ | ✗ | ✓ |
| Presented a program window during a Lync meeting | ✓ | ✗ | ✗ |
| Presented a PowerPoint presentation | ✓ | ✗ | ✗ |
| Sent and received files | ✓ | ✗ | ✗ |
| Added and removed contacts | ✓ | ✗ | ✗ |
| Added contacts from outside of organization and organized contacts into groups | ✓ | ✗ | ✗ |

Figure 7: Lync feature support for wealth management professionals with the three tablets.

We also looked at Lync video call quality to see how the three tablets would compare in a remote meeting with clients, using a survey approach where participants rated video call quality on a scale of 1 to 5. For more on the survey process, see [Appendix B](#). As Figure 8 shows, we found the Surface Pro 3 rated much better in Lync video call quality than the competition. Better Lync video call quality can mean better meetings with clients and can facilitate building better relationships.

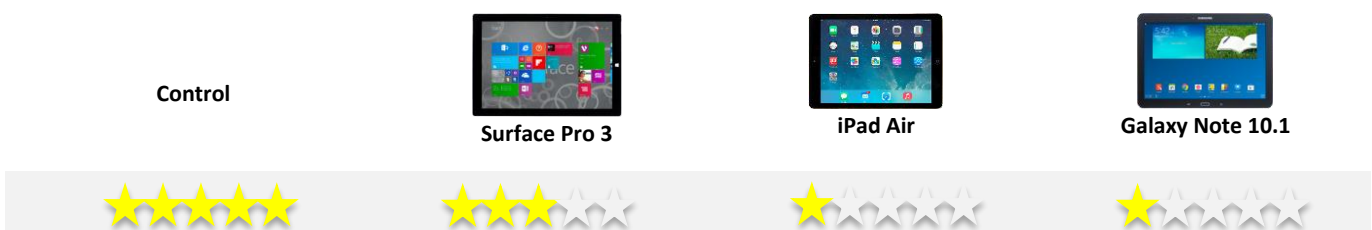


Figure 8: Mean opinion score for Lync video call quality. Higher numbers are better.

LESS WORKAROUNDS WITH THE SURFACE PRO 3

The Surface Pro 3 runs Windows 8.1 Pro, which can mean less workarounds than with the iPad Air and Galaxy Note 10.1. You can use the same applications that you are familiar with using on your desktop or laptop at the office, and access files with sensitive financial data the same way. Your IT staff can manage the Surface Pro 3 the same way they manage your desktop or laptop. Choosing the iPad Air or Galaxy Note 10.1 ultimately can mean workarounds for you and your IT staff. How do you use applications that are not compatible with the iPad Air or Galaxy Note 10.1? How does your IT staff provide secure access to files? One option with the iPad Air and Galaxy Note 10.1 is virtual desktop infrastructure (VDI), which enables IT staff to give you a virtual workspace with access to those applications and files. For the iPad Air and Galaxy Note 10.1, this means more work for IT staff and an additional cost beyond the initial purchase price.³

BOTTOM LINE

Building relationships with clients takes time. You need a tablet that helps you build those relationships, not slow you down. We found the Surface Pro 3 gave us the best return, outperforming the competition by up to 76 percent while also delivering full Office 365 functionality for secure collaboration with clients and better Lync video quality for remote meetings. Based on our hands-on testing, we are bullish on the Surface Pro 3 powered by Intel for wealth management professionals.

³ www.principledtechnologies.com/Intel/HP_ElitePad_1000_G2_TCO_0714.pdf

APPENDIX A: WHAT WE TESTED

Figure 9 provides details configuration information for the devices we tested.

| System | Microsoft Surface Pro 3 | Apple iPad Air | Samsung Galaxy Note 10.1 2014 Edition |
|-----------------------|-------------------------------|-------------------------|--|
| Processor | Intel Core i5-4300U processor | Apple A7 processor | Samsung Exynos 5 Octa processor |
| Processor frequency | 1.9 GHz | 1.4 GHz | 1.3 GHz Quad + 1.9 GHz Quad |
| Processor cores | 2 | 2 | 4 + 4 |
| Memory | 4GB LPDDR3 RAM | 1GB LPDDR3 RAM | 3GB RAM |
| Storage | 128GB | 64GB | 32GB SSD + 32GB SanDisk Ultra microSDHC card |
| Graphics | Intel HD4400 Graphics | PowerVR™ G6430 | ARM Mali™-T628 |
| Battery capacity (Wh) | 42 | 32.9 | 31 |
| Display | 12" 2,160 × 1,440 | 9.7" 2,048 × 1,536 | 10.1" 2,560 × 1,600 |
| Wireless | 802.11ac/802.11 a/b/g/n | 802.11 a/b/g/n | 802.11 ac (802.11 a/b/g/n compatible) |
| Bluetooth® version | 4.0 | 4.0 | 4.0 |
| Weight (lbs.) | 1.76 | 1.0 | 1.2 |
| OS | Windows 8.1 Pro | iOS 7.1.2 | Android 4.4 |
| Browser | Internet Explorer 11 | Safari | Google Chrome™ |
| Word version | Word 2013 | Word for iPad 1.1 | Word Online |
| Excel version | Excel 2013 | Excel for iPad 1.1 | Excel Online |
| PowerPoint version | PowerPoint 2013 | PowerPoint for iPad 1.1 | PowerPoint Online |
| Lync version | Lync 2013 | Lync 2013 for iPad 5.4 | Lync 2013 5.4 |

Figure 9: Detailed configuration information for the devices we tested.

APPENDIX B: HOW WE TESTED

We applied all available software updates on the three tablets. We also created shortcuts to Web sites on the Surface Pro 3 desktop and on the home screen of the iPad Air and Galaxy Note 10.1.

Using financial planning software

Opening MoneyGuidePro

Time to open MoneyGuidePro on the Surface Pro 3

1. Simultaneously start the timer and double tap the shortcut to MoneyGuidePro on the desktop.
2. When MoneyGuidePro is fully displayed, stop the timer, and record the result.
3. Close the browser tab, which also closes the Internet Explorer browser.

Time to open MoneyGuidePro on the iPad Air

1. Simultaneously start the timer and tap the shortcut to MoneyGuidePro on the home screen.
2. When MoneyGuidePro is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Safari browser.

Time to open MoneyGuidePro on the Galaxy Note 10.1

1. Simultaneously start the timer and tap the shortcut to MoneyGuidePro on the home screen.
2. When MoneyGuidePro is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Chrome browser.

Searching for existing client

Time to search for existing client on the Surface Pro 3

1. Double tap the shortcut to MoneyGuidePro on the desktop.
2. Maximize the Internet Explorer browser window.
3. Log in to MoneyGuidePro.
4. Tap Planning.
5. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
6. Type Whitakers.
7. Simultaneously start the timer and press Enter.
8. Tap the link to the existing client.
9. When asked if you would like to update the portfolio information, tap No.
10. When the page listing the plans for the existing client is fully displayed, stop the timer, and record the result.
11. Close the browser tab, which also closes the Internet Explorer browser.

Time to search for existing client on the iPad Air

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type Whitakers.
6. Simultaneously start the timer and tap Go.
7. Tap the link to the existing client.
8. When asked if you would like to update the portfolio information, tap No.
9. When the page listing the plans for the existing client is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Safari browser.

Time to search for existing client on the Galaxy Note 10.1

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type Whitakers.
6. Simultaneously start the timer and tap Go.
7. Tap the link to the existing client.
8. When asked if you would like to update the portfolio information, tap No.
9. When the page listing the plans for the existing client is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Chrome browser.

Viewing client financial goal plan

Time to view client financial goal plan on the Surface Pro 3

1. Double tap the shortcut to MoneyGuidePro on the desktop.
2. Maximize the Internet Explorer browser window.
3. Log in to MoneyGuidePro.
4. Tap Planning.
5. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
6. Type Whitakers and press Enter.
7. Tap the link to the existing client.
8. When asked if you would like to update the portfolio information, tap No.
9. Simultaneously start the timer and tap Financial Goal Plan.
10. When the client financial goal plan is fully displayed, stop the timer, and record the result.
11. Close the browser tab, which also closes the Internet Explorer browser.

Time to view client financial goal plan on the iPad Air

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type Whitakers and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.
8. Simultaneously start the timer and tap Financial Goal Plan.
9. When the client financial goal plan is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Safari browser.

Time to view client financial goal plan on the Galaxy Note 10.1

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type Whitakers and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.

8. Simultaneously start the timer and tap Financial Goal Plan.
9. When the client financial goal plan is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Chrome browser.

Viewing client asset allocation plan

Time to view client asset allocation plan on the Surface Pro 3

1. Double tap the shortcut to MoneyGuidePro on the desktop.
2. Maximize the Internet Explorer browser window.
3. Log in to MoneyGuidePro.
4. Tap Planning.
5. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
6. Type `Whitakers` and press Enter.
7. Tap the link to the existing client.
8. When asked if you would like to update the portfolio information, tap No.
9. Simultaneously start the timer and tap Asset Allocation Plan.
10. When the client asset allocation plan is fully displayed, stop the timer, and record the result.
11. Close the browser tab, which also closes the Internet Explorer browser.

Time to view client asset allocation plan on the iPad Air

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type `Whitakers` and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.
8. Simultaneously start the timer and tap Asset Allocation Plan.
9. When the client asset allocation plan is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Safari browser.

Time to view client asset allocation plan on the Galaxy Note 10.1

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type `Whitakers` and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.
8. Simultaneously start the timer and tap Asset Allocation Plan.
9. When the client asset allocation plan is fully displayed, stop the timer, and record the result.
10. Close the browser tab, and close the Chrome browser.

Loading client portfolio allocation comparison

Time to load client portfolio allocation comparison on the Surface Pro 3

1. Double tap the shortcut to MoneyGuidePro on the desktop.
2. Maximize the Internet Explorer browser window.
3. Log in to MoneyGuidePro.

4. Tap Planning.
5. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
6. Type `Whitakers` and press Enter.
7. Tap the link to the existing client.
8. When asked if you would like to update the portfolio information, tap No.
9. Tap My Snapshot.
10. Simultaneously start the timer and tap Resources.
11. When the client portfolio snapshot allocation comparison is fully displayed, stop the timer, and record the result.
12. Close the browser tab, which also closes the Internet Explorer browser.

Time to load client portfolio allocation comparison on the iPad Air

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type `Whitakers` and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.
8. Tap My Snapshot.
9. Simultaneously start the timer and tap Resources.
10. When the client portfolio snapshot allocation comparison is fully displayed, stop the timer, and record the result.
11. Close the browser tab, and close the Safari browser.

Time to load client portfolio allocation comparison on the Galaxy Note 10.1

1. Tap the shortcut to MoneyGuidePro on the home screen.
2. Log in to MoneyGuidePro.
3. Tap Planning.
4. Under Search for Existing Client, tap to place the cursor in the Clients Last Name field.
5. Type `Whitakers` and tap Go.
6. Tap the link to the existing client.
7. When asked if you would like to update the portfolio information, tap No.
8. Tap My Snapshot.
9. Simultaneously start the timer and tap Resources.
10. When the client portfolio snapshot allocation comparison is fully displayed, stop the timer, and record the result.
11. Close the browser tab, and close the Chrome browser.

Researching mutual funds

Opening Fund Mojo

Time to open Fund Mojo on the Surface Pro 3

1. Simultaneously start the timer and double tap the shortcut to Fund Mojo on the desktop.
2. When Fund Mojo is fully displayed, stop the timer, and record the result.
3. Close the browser tab, which also closes the Internet Explorer browser.

Time to open Fund Mojo on the iPad Air

1. Simultaneously start the timer and tap the shortcut to Fund Mojo on the home screen.
2. When Fund Mojo is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Safari browser.

Time to open Fund Mojo on the Galaxy Note 10.1

1. Simultaneously start the timer and tap the shortcut to Fund Mojo on the home screen.
2. When Fund Mojo is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Chrome browser.

Searching for specific mutual fund

Time to search for specific mutual fund on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Tap to place the cursor in the Name/Symbol field in the top-right corner.
4. Type FBIOX.
5. Simultaneously start the timer and press Enter.
6. Tap the Fidelity Select Biotechnology Fund link.
7. When the webpage is fully displayed, stop the timer, and record the result.
8. Close the browser tab, which also closes the Internet Explorer browser.

Time to search for specific mutual fund on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Tap to place the cursor in the Name/Symbol field in the top-right corner.
3. Type FBIOX.
4. Simultaneously start the timer and tap Search.
5. Tap the Fidelity Select Biotechnology Fund link.
6. When the webpage is fully displayed, stop the timer, and record the result.
7. Close the browser tab, and close the Safari browser.

Time to search for specific mutual fund on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Tap to place the cursor in the Name/Symbol field in the top-right corner.
3. Type FBIOX.
4. Simultaneously start the timer and tap Go.
5. Tap the Fidelity Select Biotechnology Fund link.
6. When the webpage is fully displayed, stop the timer, and record the result.
7. Close the browser tab, and close the Chrome browser.

Viewing best large growth funds category

Time to view best large growth funds category on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Simultaneously start the timer and tap Mutual Fund in the menu.
4. Tap the Best Large Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, which also closes the Internet Explorer browser.

Time to view best large growth funds category on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. After the drop-down menu appears, tap Mutual Fund again.
4. Tap the Best Large Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Safari browser.

Time to view best large growth funds category on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. Tap the Best Large Growth Funds link.
4. When the webpage is fully displayed, stop the timer, and record the result.
5. Close the browser tab, and close the Chrome browser.

Viewing best mid-cap growth funds category

Time to view best mid-cap growth funds category on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Simultaneously start the timer and tap Mutual Fund in the menu.
4. Tap the Best Mid-Cap Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, which also closes the Internet Explorer browser.

Time to view best mid-cap growth funds category on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. After the drop-down menu appears, tap Mutual Fund again.
4. Tap the Best Mid-Cap Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Safari browser.

Time to view best mid-cap growth funds category on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. Tap the Best Mid-Cap Growth Funds link.
4. When the webpage is fully displayed, stop the timer, and record the result.
5. Close the browser tab, and close the Chrome browser.

Viewing best small growth funds category

Time to view best small growth funds category on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Simultaneously start the timer and tap Mutual Fund in the menu.
4. Tap the Best Small Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, which also closes the Internet Explorer browser.

Time to view best small growth funds category on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. After the drop-down menu appears, tap Mutual Fund again.
4. Tap the Best Small Growth Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Safari browser.

Time to view best small growth funds category on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. Tap the Best Small Growth Funds link.
4. When the webpage is fully displayed, stop the timer, and record the result.
5. Close the browser tab, and close the Chrome browser.

Viewing best mid-cap blend funds category

Time to view best mid-cap blend funds category on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Simultaneously start the timer and tap Mutual Fund in the menu.
4. Tap the Best Mid-Cap Blend Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, which also closes the Internet Explorer browser.

Time to view best mid-cap blend funds category on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. After the drop-down menu appears, tap Mutual Fund again.
4. Tap the Best Mid-Cap Blend Funds link.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Safari browser.

Time to view best mid-cap blend funds category on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Simultaneously start the timer and tap Mutual Fund in the menu.
3. Tap the Best Mid-Cap Blend Funds link.
4. When the webpage is fully displayed, stop the timer, and record the result.
5. Close the browser tab, and close the Chrome browser.

Searching for mutual funds with specific stock as top holding

Time to search for mutual funds with specific stock as a top holding on the Surface Pro 3

1. Double tap the shortcut to Fund Mojo on the desktop.
2. Maximize the Internet Explorer browser window.
3. Tap Mutual Fund in the menu.
4. Under Mutual Funds with a Stock as top holding, type `TSLA` in the search field.
5. Simultaneously start the timer and press Enter.
6. When the webpage is fully displayed, stop the timer, and record the result.

7. Close the browser tab, which also closes the Internet Explorer browser.

Time to search for mutual funds with specific stock as top holding on the iPad Air

1. Tap the shortcut to Fund Mojo on the home screen.
2. Tap Mutual Fund in the menu.
3. Under Mutual Funds with a Stock as top holding, type TSLA in the search field.
4. Simultaneously start the timer and tap Go.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Safari browser.

Time to search for mutual funds with specific stock as top holding on the Galaxy Note 10.1

1. Tap the shortcut to Fund Mojo on the home screen.
2. Tap Mutual Fund in the menu.
3. Under Mutual Funds with a Stock as top holding, type TSLA in the search field.
4. Simultaneously start the timer and tap Go.
5. When the webpage is fully displayed, stop the timer, and record the result.
6. Close the browser tab, and close the Chrome browser.

Accessing financial data

Accessing Bloomberg

Time to access Bloomberg on the Surface Pro 3

1. Simultaneously start the timer and double tap the shortcut to Bloomberg on the desktop.
2. When Bloomberg is fully displayed, stop the timer, and record the result.
3. Close the browser tab, which also closes the Internet Explorer browser.

Time to access Bloomberg on the iPad Air

1. Simultaneously start the timer and tap the shortcut to Bloomberg on the home screen.
2. When Bloomberg is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Safari browser.

Time to access Bloomberg on the Galaxy Note 10.1

1. Simultaneously start the timer and tap the shortcut to Bloomberg on the home screen.
2. When Bloomberg is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Chrome browser.

Accessing MarketWatch

Time to access MarketWatch on the Surface Pro 3

1. Simultaneously start the timer and double tap the shortcut to MarketWatch on the desktop.
2. When MarketWatch is fully displayed, stop the timer, and record the result.
3. Close the browser tab, which also closes the Internet Explorer browser.

Time to access MarketWatch on the iPad Air

1. Simultaneously start the timer and tap the shortcut to MarketWatch on the home screen.
2. When MarketWatch is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Safari browser.

Time to access MarketWatch on the Galaxy Note 10.1

1. Simultaneously start the timer and tap the shortcut to MarketWatch on the home screen.
2. When MarketWatch is fully displayed, stop the timer, and record the result.

3. Close the browser tab, and close the Chrome browser.

Accessing Morningstar

Time to access Morningstar on the Surface Pro 3

1. Simultaneously start the timer and double tap the shortcut to Morningstar on the desktop.
2. When MarketWatch is fully displayed, stop the timer, and record the result.
3. Close the browser tab, which also closes the Internet Explorer browser.

Time to access Morningstar on the iPad Air

1. Simultaneously start the timer and tap the shortcut to Morningstar on the home screen.
2. When MarketWatch is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Safari browser.

Time to access Morningstar on the Galaxy Note 10.1

1. Simultaneously start the timer and tap the shortcut to Morningstar on the home screen.
2. When MarketWatch is fully displayed, stop the timer, and record the result.
3. Close the browser tab, and close the Chrome browser.

Start editing Office documents

We prepared the Office 365 environment on the three tablets prior to our hands-on testing. On the Surface Pro 3, we installed the Office desktop apps available through the Office 365 settings menu in the browser. On the iPad Air, we installed the Office for iPad apps available through the App Store. We uploaded all test documents to OneDrive for Business for access on the tablets. We also installed the OneDrive for Business sync app on the Surface Pro 3, which created a folder on the device that automatically synchronized with OneDrive for Business.⁴

Start editing Word document

Time to start editing Word document on the Surface Pro 3

1. Open the Word desktop app from the taskbar in desktop mode.
2. Tap Open Other Documents.
3. Tap OneDrive for Business, and tap the Documents folder.
4. Tap the test Word document.
5. Simultaneously start the timer and tap Open to open the Word document.
6. When the Word document is fully displayed, stop the timer, and record the result.
7. Close the Word document.
8. Close the Word desktop app.

Time to start editing Word document on the iPad Air

1. Open the Word for iPad app from the home screen.
2. Tap OneDrive for Business, and tap the Documents folder.
3. Simultaneously start the timer and tap the file name to open the test Word document.
4. Tap Edit.
5. When the Word document is fully displayed, stop the timer, and record the result.
6. Close the Word document.
7. Close the Word for iPad app.

⁴ <http://office.microsoft.com/en-us/support/sync-onedrive-for-business-or-sharepoint-site-libraries-to-your-computer-HA102832401.aspx>

Start editing Excel spreadsheet

Time to start editing Excel spreadsheet on the Surface Pro 3

1. Open the Excel desktop app from the taskbar in desktop mode.
2. Tap Open Other Spreadsheets.
3. Tap OneDrive for Business, and tap the Spreadsheets folder.
4. Tap the test Excel spreadsheet.
5. Simultaneously start the timer and tap Open to open the Excel spreadsheet.
6. When the Excel spreadsheet is fully displayed, stop the timer, and record the result.
7. Close the Excel spreadsheet.
8. Close the Excel desktop app.

Time to start editing Excel spreadsheet on the iPad Air

1. Open the Excel for iPad app from the home screen.
2. Tap OneDrive for Business, and tap the Spreadsheets folder.
3. Simultaneously start the timer and tap the file name to open the test Excel spreadsheet.
4. Tap Edit.
5. When the Excel spreadsheet is fully displayed, stop the timer, and record the result.
6. Close the Excel spreadsheet.
7. Close the Excel for iPad app.

Time to start editing Excel spreadsheet on the Galaxy Note 10.1

1. Open the Chrome browser from the home screen.
2. Tap the omnibox.
3. Type login.microsoftonline.com, and tap Go.
4. Enter the username and password for the account, and tap Go.
5. Tap OneDrive for Business in the menu.
6. Simultaneously start the timer and tap the file name to open the test Excel spreadsheet.
7. Tap Edit in Browser.
8. When the Excel spreadsheet is fully displayed, stop the timer, and record the result.
9. Close the Excel spreadsheet.
10. Close the Chrome tab.
11. Close the Chrome browser.

Start editing PowerPoint presentation

Time to start editing PowerPoint presentation on the Surface Pro 3

1. Open the PowerPoint desktop app from the taskbar in desktop mode.
2. Tap Open Other Presentations.
3. Tap OneDrive for Business, and tap the Presentations folder.
4. Tap the test PowerPoint presentation.
5. Simultaneously start the timer and tap Open to open the PowerPoint presentation.
6. When the PowerPoint presentation is fully displayed, stop the timer, and record the result.
7. Close the PowerPoint presentation.
8. Close the PowerPoint desktop app.

Time to start editing PowerPoint presentation on the iPad Air

1. Open the PowerPoint for iPad app from the home screen.
2. Tap OneDrive for Business, and tap the Presentations folder.

3. Simultaneously start the timer and tap the file name to open the test PowerPoint presentation.
4. Tap Edit.
5. When the PowerPoint presentation is fully displayed, stop the timer, and record the result.
6. Close the PowerPoint presentation.
7. Close the PowerPoint for iPad app.

Lync video call quality

Recording Lync video calls

To measure Lync video call quality, we set up a survey environment for opinion scoring by 11 Principled Technologies employees. We selected a video clip to serve as our capture sample and control, and positioned the tablets so that their front-facing cameras pointed toward a computer with a high-resolution display. We set up a test laptop and used the built-in Lync Recording Manager to record video calls with the three tablets. We started recording on the laptop and began playing the selected video clip on the computer with the high-resolution display. We saved the samples in the highest quality available through Lync Recording Manager.

Preparing the Lync video survey environment

We used the same room that we used to capture the Lync video calls with the three tablets. We prepared four samples for participants to evaluate, including the original video clip and the recorded Lync video calls with each tablet. We loaded the four samples into a randomized playlist on the same computer with the high-resolution display.

Surveying Lync video call quality

We seated participants in the room and asked them to watch the samples once through, and then to watch the samples however many times they needed to make a judgment on video quality. After the survey proctor left the room, the participants watched the samples and completed the survey. Figure 10 shows the rating scale that we provided to participants, which asked participants to consider the degree of impairment was present in the recording, consistent with the traditional mean opinion scoring method. We tallied the survey scores and took the arithmetic mean from the total scores for each sample, and then rounded to the nearest whole number.

| Level of impairment | | |
|---------------------|------------------|------------------------------|
| 5 | Excellent | Imperceptible |
| 4 | Good | Perceptible but not annoying |
| 3 | Fair | Slightly annoying |
| 2 | Poor | Annoying |
| 1 | Bad | Very annoying |

Figure 10: Lync video call quality rating scale.

APPENDIX C: DETAILED RESULTS

Figure 11 presents detailed results from our hands-on testing for the devices we tested.

| | Microsoft Surface Pro 3 | Apple iPad Air | Samsung Galaxy Note 10.1 2014 Edition |
|---|-------------------------|-----------------|---------------------------------------|
| Using financial planning software | | | |
| Time to open MoneyGuidePro (lower is better) | | | |
| Run 1 | 00:01.12 | 00:02.13 | 00:02.86 |
| Run 2 | 00:01.25 | 00:01.95 | 00:02.87 |
| Run 3 | 00:01.15 | 00:02.07 | 00:02.88 |
| Median | 00:01.15 | 00:02.07 | 00:02.87 |
| Time to search for existing client in MoneyGuidePro (lower is better) | | | |
| Run 1 | 00:03.09 | 00:04.28 | 00:04.25 |
| Run 2 | 00:03.11 | 00:04.15 | 00:04.36 |
| Run 3 | 00:03.09 | 00:04.36 | 00:04.28 |
| Median | 00:03.09 | 00:04.28 | 00:04.28 |
| Time to view client financial-goal plan in MoneyGuidePro (lower is better) | | | |
| Run 1 | 00:01.96 | 00:02.68 | 00:02.59 |
| Run 2 | 00:01.88 | 00:02.78 | 00:02.62 |
| Run 3 | 00:01.96 | 00:02.61 | 00:02.72 |
| Median | 00:01.96 | 00:02.68 | 00:02.62 |
| Time to view client asset-allocation plan in MoneyGuidePro (lower is better) | | | |
| Run 1 | 00:01.38 | 00:02.21 | 00:02.17 |
| Run 2 | 00:01.47 | 00:02.32 | 00:02.36 |
| Run 3 | 00:01.28 | 00:02.31 | 00:02.37 |
| Median | 00:01.38 | 00:02.31 | 00:02.36 |
| Time to load client portfolio-allocation comparison in MoneyGuidePro (lower is better) | | | |
| Run 1 | 00:03.44 | 00:06.38 | 00:06.46 |
| Run 2 | 00:03.68 | 00:06.45 | 00:06.40 |
| Run 3 | 00:03.42 | 00:06.03 | 00:06.24 |
| Median | 00:03.44 | 00:06.38 | 00:06.40 |
| Total time to use financial planning software | 00:11.02 | 00:17.72 | 00:18.53 |
| Researching mutual funds | | | |
| Time to open Fund Mojo (lower is better) | | | |
| Run 1 | 00:01.54 | 00:02.44 | 00:03.27 |
| Run 2 | 00:01.56 | 00:02.46 | 00:03.12 |
| Run 3 | 00:01.48 | 00:02.27 | 00:03.26 |
| Median | 00:01.54 | 00:02.44 | 00:03.26 |
| Time to search for specific mutual fund (lower is better) | | | |
| Run 1 | 00:02.40 | 00:02.85 | 00:05.69 |
| Run 2 | 00:02.37 | 00:02.79 | 00:05.55 |
| Run 3 | 00:02.48 | 00:02.73 | 00:05.80 |
| Median | 00:02.40 | 00:02.79 | 00:05.69 |
| Time to view best large growth funds category (lower is better) | | | |
| Run 1 | 00:03.60 | 00:05.29 | 00:05.70 |
| Run 2 | 00:03.82 | 00:05.42 | 00:05.76 |
| Run 3 | 00:03.56 | 00:05.31 | 00:05.72 |
| Median | 00:03.60 | 00:05.31 | 00:05.72 |

| | Microsoft Surface Pro 3 | Apple iPad Air | Samsung Galaxy Note 10.1 2014 Edition |
|--|-------------------------|-----------------|---------------------------------------|
| Time to view best mid-cap growth funds category (lower is better) | | | |
| Run 1 | 00:03.76 | 00:05.22 | 00:05.66 |
| Run 2 | 00:03.51 | 00:05.28 | 00:05.73 |
| Run 3 | 00:03.44 | 00:05.45 | 00:05.72 |
| Median | 00:03.51 | 00:05.28 | 00:05.72 |
| Time to view best small growth funds category (lower is better) | | | |
| Run 1 | 00:03.68 | 00:05.46 | 00:05.70 |
| Run 2 | 00:03.58 | 00:05.37 | 00:05.71 |
| Run 3 | 00:03.50 | 00:05.31 | 00:05.88 |
| Median | 00:03.58 | 00:05.37 | 00:05.71 |
| Time to view best mid-cap blend funds category (lower is better) | | | |
| Run 1 | 00:03.49 | 00:05.34 | 00:05.81 |
| Run 2 | 00:03.78 | 00:05.41 | 00:05.80 |
| Run 3 | 00:03.49 | 00:05.25 | 00:05.68 |
| Median | 00:03.49 | 00:05.34 | 00:05.80 |
| Time to search for mutual funds with specific stock as a top holding on Fund Mojo (lower is better) | | | |
| Run 1 | 00:01.17 | 00:01.80 | 00:03.46 |
| Run 2 | 00:01.02 | 00:01.81 | 00:03.39 |
| Run 3 | 00:01.11 | 00:01.94 | 00:03.41 |
| Median | 00:01.11 | 00:01.81 | 00:03.41 |
| Total time to research mutual funds | 00:19.23 | 00:28.34 | 00:35.31 |
| Accessing financial data | | | |
| Time to access Bloomberg (lower is better) | | | |
| Run 1 | 00:01.88 | 00:02.68 | 00:04.09 |
| Run 2 | 00:02.06 | 00:02.50 | 00:02.20 |
| Run 3 | 00:01.99 | 00:02.65 | 00:03.99 |
| Median | 00:01.99 | 00:02.68 | 00:03.99 |
| Time to access MarketWatch (lower is better) | | | |
| Run 1 | 00:02.11 | 00:06.21 | 00:08.10 |
| Run 2 | 00:02.28 | 00:06.59 | 00:08.92 |
| Run 3 | 00:02.31 | 00:06.41 | 00:08.15 |
| Median | 00:02.28 | 00:06.41 | 00:08.15 |
| Time to access Morningstar (lower is better) | | | |
| Run 1 | 00:03.41 | 00:04.22 | 00:04.50 |
| Run 2 | 00:03.54 | 00:04.13 | 00:04.71 |
| Run 3 | 00:03.35 | 00:04.17 | 00:04.63 |
| Median | 00:03.41 | 00:04.17 | 00:04.63 |
| Total time to access financial data | 00:07.68 | 00:13.23 | 00:16.77 |
| Start editing Office documents | | | |
| Time to start editing Word document (lower is better) | | | |
| Run 1 | 00:01.70 | 00:07.97 | N/A |
| Run 2 | 00:01.89 | 00:07.90 | N/A |
| Run 3 | 00:01.85 | 00:07.86 | N/A |
| Median | 00:01.85 | 00:07.90 | N/A |

| | Microsoft Surface Pro 3 | Apple iPad Air | Samsung Galaxy Note 10.1 2014 Edition |
|--|-------------------------|-----------------|---------------------------------------|
| Time to start editing Excel spreadsheet (lower is better) | | | |
| Run 1 | 00:01.59 | 00:06.93 | 00:37.49 |
| Run 2 | 00:01.61 | 00:06.74 | 00:37.87 |
| Run 3 | 00:01.64 | 00:06.85 | 00:37.39 |
| Median | 00:01.61 | 00:06.85 | 00:37.49 |
| Time to start editing PowerPoint presentation (lower is better) | | | |
| Run 1 | 00:01.94 | 00:08.11 | N/A |
| Run 2 | 00:01.81 | 00:08.12 | N/A |
| Run 3 | 00:02.03 | 00:08.03 | N/A |
| Median | 00:01.94 | 00:08.11 | N/A |
| Total time to start editing Office documents | 00:05.40 | 00:22.86 | N/A |

Figure 11: Detailed results.

ABOUT PRINCIPLED TECHNOLOGIES



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We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

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