USING SECTRA PATHOLOGY VIEWER WITH THE MICROSOFT SURFACE PRO 3 POWERED BY INTEL

Less waiting and more features with the

Intel® processor-powered Microsoft® Surface™ Pro 3

The Surface Pro 3 delivered superior features and better performance when using Sectra® Pathology Viewer and doing other pathology-related tasks.*

LESS WAITING:

up to **5.8%** while reviewing lab samples

MORE FEATURES:

- Annotate in Sectra Pathology Viewer
- View multiple samples in Sectra Pathology Viewer
- Stylus, USB, & keyboard support

*vs ARM®-based Apple® iPad Air™ 2

The most accurate medical decisions are well-informed ones for which there is as much available data as possible. A touch-enabled device running medical software should enable an efficient workflow and facilitate doing research, communicating with colleagues, and making a diagnosis. Which tablet is on call and ready to get the job done?

In the Principled Technologies labs, we compared the experience using Sectra Pathology Viewer with two devices: an Intel processor-powered Microsoft Surface Pro 3 and an ARM processor-based Apple iPad Air 2. We put both devices through real-world scenarios with representative tasks to see which device offered a better experience with Sectra Pathology Viewer.

In our hands-on testing, we found that the Intel processor-powered Surface Pro 3 offered more features than the iPad Air 2, including the ability to annotate and view multiple samples in Sectra Pathology Viewer and stylus, USB, and keyboard support. The Intel processor-powered Surface Pro 3 also took less time to complete the tasks in the two scenarios. Our experience suggests that medical professionals using Sectra Pathology Viewer would have a better experience and improved workflow by choosing the Intel processor-powered Microsoft Surface Pro 3.

NOVEMBER 2014

A PRINCIPLED TECHNOLOGIES TEST REPORT

Commissioned by Intel Corp.

USING SECTRA PATHOLOGY VIEWER

In a medical research lab, having the right equipment can save time, facilitate collecting data, and help researchers make accurate interpretations. Waiting on a device for any crucial task can hinder productivity and frustrate users, leading to challenging experiences when handling valuable data. We tested two devices with different processors and operating systems by putting them through common tasks using medical data that included the use of Sectra Pathology Viewer. We looked at the feature functionality each device provided during use and the amount of time these devices took to complete tasks in two scenarios.

Researchers, doctors, and others in medical fields commonly use Sectra medical software such as Sectra Pathology Viewer in their daily routine to view and annotate digitized tissue samples. The software can help pathology departments digitize their workflows, which aids in organizing and tracking samples and reducing the amount of time pathologists spend preparing and viewing samples. Sectra Pathology Viewer stores samples in the cloud, a central location capable of housing high-resolution images that, according to Spectra, can reach file sizes of a few hundred megabytes. Sectra Pathology Viewer offers access for additional users to view annotations and stored notes on samples.

We tested the following two devices:

- **Microsoft Surface Pro 3**, powered by an Intel Core™ i5 processor, running Microsoft Windows® 8.1 Professional
- **Apple iPad Air 2,** with an Apple A8X processor, running iOS 8.1

Both tablets have a touch-focused user interface, business-ready applications, and lab-appropriate features. We tested the Surface Pro 3 primarily in its tablet mode. For detailed specifications on the devices we tested, see Appendix A. For more on how we tested, see Appendix B, and for detailed results, see Appendix C.

DEVICE FEATURES

Both of the devices we tested boasted slim, compact form factors, but their hardware and software features differed. For example, the Microsoft Surface Pro 3 had an adjustable kickstand, allowing the user to place the device on a table or desk while maintaining hands-free usability. In addition, the Surface Pro 3 offered vibration feedback when pressing certain buttons, alerting the user if the device registered selections.

Figure 1 shows the hardware features of the devices we compared in our hands-on testing.

	 Microsoft Surface Pro 3	 Apple iPad Air 2
Rear camera (MP)	5.0	8.0
Rear flash	✓	✘
Front camera (MP)	5.0	1.2
Display size (inches)	12	9.7
Resolution	2160 × 1440	2048 × 1536
Pen/stylus input	✓	✘
Hovering cursor	✓	✘
Kickstand	✓	✘
USB port	✓	✘
3.5mm audio	✓	✓
Mini DisplayPort	✓	✘
microSD™	✓	✘
Magnetometer	✓	✘
Gyroscope	✓	✓
Battery capacity (Wh)	42	27.3
Storage (GB)	128	128
RAM (GB)	4	2
Vibrating alert	✓	✘
Snap-on keyboard	✓	✘

Figure 1: The hardware features of the two devices we tested.

WHAT WE FOUND

Reviewing lab samples

Brandon, a clinical pathologist fresh out of med school, loves technology. A network-enabled digital microscope is Brandon's main tool for studying tissue samples. Using the microscope, he can quickly prepare, position, and save high-resolution digital images of the tissue samples. He doesn't have to worry about analyzing them right away—the data is saved to the cloud-based Sectra software.

After capturing images of a day's samples, Brandon returns to his office. He loads Sectra Pathology Viewer software on his device and begins to analyze and annotate the samples. One sample has an intriguing anomaly, so he searches his laboratory's available digital literature and medical journals for help understanding it. When he finds a relevant article, he loads the journal as a PDF and makes some notes using Microsoft Word on that particular sample. He switches to the next sample, and zooms in. He opens the previous sample again and views both samples side-by-side. He notes the sample that first caught his attention appears to be healthy. As he's finishing analyzing the day's samples and noting the results, he receives a flash drive from a colleague containing a PowerPoint® presentation with useful information regarding research they're conducting together.

	Microsoft Surface Pro 3	Apple iPad Air 2
Attachable keyboard and touchpad	✓	✗
Full-size USB 3 port	✓	✗
View multiple samples in Sectra Pathology Viewer	✓	✗

Figure 2: Feature support while reviewing lab samples with the devices.

Brandon would appreciate being able to view multiple samples at the same time with the Intel processor-powered Surface Pro 3.

Figure 2 shows the features that would be helpful to Brandon. A touch-focused user interface may not be ideal in the lab at times, and the Intel processor-powered Surface Pro 3 offered an alternative with its magnetic, attachable keyboard and touchpad. This hardware feature enabled the use of the device similar to a traditional laptop. The full USB 3.0 port on the Surface Pro 3 offered better connectivity—the device can read and write data to a flash drive or connect to local lab equipment. In this scenario, the lack of a pointing device for the iPad Air 2 made it impossible to use Sectra

Pathology Viewer annotation tools without the ability to hover. Perhaps most important, Brandon would be able to more easily compare samples with the ability to view multiple samples at the same time with the Surface Pro 3. Figure 3 shows how Brandon would be able to view multiple samples at the same time with the Intel processor-powered Surface Pro 3.

Surface Pro 3 iPad Air 2

Figure 3: Displaying multiple samples in Sectra Pathology Viewer with the Intel processor-powered Surface Pro 3 vs. only one sample with the iPad Air 2.

Figure 4 shows that the Intel processor-powered Surface Pro 3 required 5.8 percent less waiting than the iPad Air 2. Using Sectra Pathology Viewer on the Apple iPad Air 2 took over 1.5 seconds longer to open a digital sample than the Surface Pro 3. With the Intel processor-powered Surface Pro 3, Brandon gets a better experience with a faster device and features that enable a better workflow.

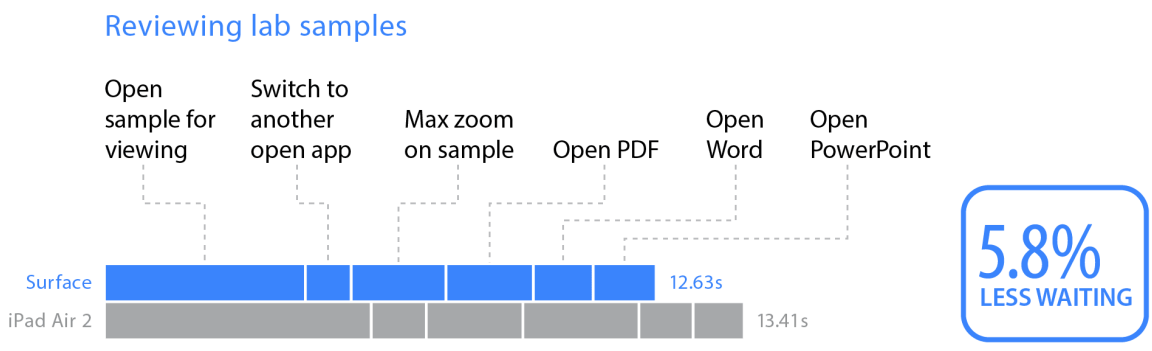

Figure 4: The time spent waiting while reviewing lab samples with the devices.

Conducting pathology research

Gabriella and her clinical pathology team see many samples of tissue, blood, and urine. One day, a dozen tissue samples arrive from biopsies. Her assistant catalogues them in the clinic's database. The device's Wi-Fi® capability allows Gabriella to use any resource on the network, so she quickly pulls a PDF summarizing information on the tissue. After preparing samples for the digital microscope, she scans, digitizes, and uploads them to the clinic's servers. While still viewing the PDF, she navigates to one sample and makes notes using Sectra software. Then, she switches to another sample, zooms in on a specific area, and annotates the sample. She can save those annotations for future study and review.

Gabriella opens Microsoft Word to log some of the day's findings. After finishing her logs, Gabriella opens a Microsoft PowerPoint presentation she's been building and makes a few changes and additions.

	 **Microsoft Surface Pro 3**	 **Apple iPad Air 2**
Distance measurement tool	✓	✘
Arrow tool	✓	✘
Square annotation tool	✓	✘
Simultaneous view of PDF and Sectra Pathology Viewer	✓	✘

Figure 5: Feature support while conducting pathology research with the devices.

Gabriella would be able to annotate samples in Sectra Pathology Viewer with only the Intel processor-powered Surface Pro 3.

Figure 5 shows the Sectra software features that would be helpful to Gabriella. Viewing necessary data in multiple apps simultaneously could save time, especially when working with different types of documents. When attempting to annotate samples in Sectra Pathology Viewer, Gabriella would need a pointing device, such as a stylus, that has the ability to hover. We found that only the Intel processor-powered Surface Pro 3 with its included stylus offered the ability to annotate in Sectra Pathology Viewer. We couldn't annotate samples in Sectra Pathology Viewer on the Apple iPad Air 2.

Figure 6 shows that the Intel processor-powered Surface Pro 3 required slightly less time to complete the tasks in the scenario than did the iPad Air 2. The Surface Pro 3 included additional features, such as the ability to annotate, while also performing the same workload in slightly less time.

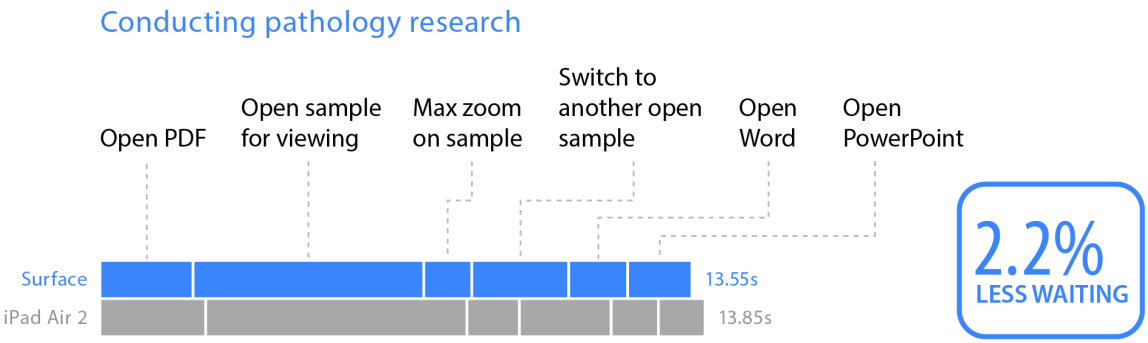

Figure 6: The time spent waiting while conducting pathology research with the devices.

CONCLUSION

Touch-enabled devices have a place in the world of medical data, providing mobility and flexibility. In our pathology research scenarios, we found that the Intel processor-powered Microsoft Surface Pro 3 offered more features than the ARM processor-based iPad Air 2, including the ability to annotate and view multiple samples at the same time in Sectra Pathology Viewer. The Surface Pro also completed tasks in two scenarios in less time than did the iPad Air 2. By offering both more features and better performance, the Intel processor-powered Microsoft Surface Pro 3 can enable a more efficient workflow when working with Sectra Pathology Viewer.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figure 7 presents detailed information for the two devices we tested.

System	Microsoft Surface Pro 3	Apple iPad Air 2
Processor	Intel Core i5-4300U	Apple A8X
Processor (GHz)	1.9	1.5
Processor cores	2	3
Memory (GB)	4	2
Storage (GB)	128	128
Battery capacity	42 Wh	27.3 Wh
Display	12” (2160×1440)	9.7” (2048×1536)
Wireless	802.11 a/b/g/n/ac	802.11 a/b/g/n/ac
Bluetooth®	Bluetooth 4.0 LE	Bluetooth 4.0 LE
USB ports	1 × USB 3.0	None
System weight	1.76 lbs.	0.96 lbs.
Front camera (MP)	5.0	1.2
Rear camera (MP)	5.0	8.0
OS	Microsoft Windows 8.1 Pro	Apple iOS 8.1

Figure 7: Detailed configuration information for the three devices.

APPENDIX B – HOW WE TESTED

Before testing with these procedures, ensure each device has the most recent version of the Web browser Google Chrome™. We used version 38.0.2125.111 on the Microsoft Surface Pro 3 running Microsoft Windows 8.1 and version 38.0.2125.67 on the Apple iPad Air 2 running iOS 8.1.

Reviewing lab samples

1. Navigate to the Sectra Web viewer using Google Chrome:
   `www.dev-demo-pat.sectra.se/demonstrator/#pl1004-13`
2. Enter the credentials.
3. Simultaneously start the timer and sign into the site.
4. When the sample has completed loading, stop the timer, and record the result.
5. At the bottom left of the screen, select the sample Block Mitt, and start the timer.
6. When the sample finishes loading, stop the timer, and record the result.
7. Simultaneously start the timer and use the device's touchscreen to zoom to maximum zoom.
8. When the image fully renders, stop the timer, and record the result.
9. Navigate to the device's home screen or desktop, and launch the default browser.
10. Navigate to the test PDF URL. We used a 2.6MB PDF and loaded it from a link in Outlook 365™ Web mail.
11. Simultaneously start the timer and open the link to the test PDF.
12. When the PDF fully loads, stop the timer, and record the result.
13. Navigate to the device's desktop or home screen.
14. Launch Microsoft Word, and start the timer.
15. When Microsoft Word has completed loading, stop the timer, and record the result.
16. Navigate back to the device's desktop or home screen.
17. Start the timer, and launch Microsoft PowerPoint.
18. When Microsoft PowerPoint is fully loaded, stop the timer, and record the result.
19. Complete steps 1 through 18 two more times.

Conducting pathology research

1. Launch the browser, Google Chrome.
2. Navigate to the test PDF URL. We used a 2.6MB PDF and loaded it from a link in Outlook 365 Web mail.
3. Simultaneously start the timer and open the link to the test PDF.
4. When the PDF fully loads, stop the timer, and record the result.
5. Navigate to the Sectra Web viewer using the device's default Web browser:
   `www.dev-demo-pat.sectra.se/demonstrator/#pl1004-13`
6. Enter the credentials.
7. Simultaneously start the timer and sign into the site.
8. When the sample has completed loading, stop the timer, and record the result.
9. At the bottom left of the screen, select the sample Block Mitt, and start the timer.
10. When the sample finishes loading, stop the timer, and record the result.

11. Simultaneously start the timer and use the device's touchscreen to zoom to maximum zoom.
12. When the image is fully rendered, stop the timer, and record the result.
13. Navigate to the device's desktop or home screen.
14. Launch Microsoft Word, and start the timer.
15. When Microsoft Word has completed loading, stop the timer and record the result.
16. Navigate back to the device's desktop or home screen.
17. Start the timer, and launch Microsoft PowerPoint.
18. When Microsoft PowerPoint is fully loaded, stop the timer, and record the result.
19. Complete steps 1 through 18 two more times.

APPENDIX C – TEST RESULTS

Figure 8 presents the detailed results with the time to complete tasks in the scenarios recorded in seconds. We performed all tasks three times and used the median scores. Note: Testing with Sectra Pathology Viewer was done in the US toward a server in Europe.

	Microsoft Surface Pro 3	Apple iPad Air 2
Reviewing lab samples		
Time to open a sample in Sectra Pathology Viewer		
Run 1	00:04.60	00:06.11
Run 2	00:04.63	00:06.05
Run 3	00:04.54	00:06.34
Median	**00:04.60**	**00:06.11**
Time to switch to another sample in Sectra Pathology Viewer		
Run 1	00:01.02	00:01.21
Run 2	00:01.11	00:01.28
Run 3	00:01.05	00:01.26
Median	**00:01.05**	**00:01.26**
Time to max zoom in on a sample in Sectra Pathology Viewer		
Run 1	00:02.17	00:02.17
Run 2	00:02.28	00:02.23
Run 3	00:02.17	00:02.21
Median	00:02.17	00:02.21
Time to open PDF from Web mail (2.6 MB)		
Run 1	00:02.03	00:02.71
Run 2	00:02.00	00:02.66
Run 3	00:02.00	00:02.57
Median	**00:02.00**	**00:02.66**
Time to open Microsoft Word		
Run 1	00:01.37	00:01.24
Run 2	00:01.38	00:01.17
Run 3	00:01.37	00:01.25
Median	**00:01.37**	**00:01.24**
Time to open Microsoft PowerPoint		
Run 1	00:01.41	00:01.17
Run 2	00:01.47	00:01.17
Run 3	00:01.44	00:01.18
Median	00:01.44	00:01.17
Total time waiting	**00:12.63**	**00:13.41**
Conducting pathology research		
Time to open PDF from Web mail (2.6 MB)		
Run 1	00:02.13	00:02.40
Run 2	00:02.19	00:02.47
Run 3	00:02.12	00:02.42
Median	**00:02.13**	**00:02.42**

	Microsoft Surface Pro 3	Apple iPad Air 2
Time to open a sample in Sectra Pathology Viewer		
Run 1	00:05.44	00:05.84
Run 2	00:05.28	00:05.98
Run 3	00:05.10	00:05.99
Median	**00:05.28**	**00:05.98**
Time to switch to another sample in Sectra Pathology Viewer		
Run 1	00:01.10	00:01.19
Run 2	00:01.09	00:01.20
Run 3	00:01.11	00:01.25
Median	**00:01.10**	**00:01.20**
Time to max zoom in on a sample in Sectra Pathology Viewer		
Run 1	00:02.22	00:02.12
Run 2	00:02.25	00:02.08
Run 3	00:02.12	00:02.10
Median	**00:02.22**	**00:02.10**
Time to open Microsoft Word		
Run 1	00:01.35	00:01.07
Run 2	00:01.41	00:01.08
Run 3	00:01.35	00:01.08
Median	**00:01.35**	**00:01.08**
Time to open Microsoft PowerPoint		
Run 1	00:01.44	00:01.08
Run 2	00:01.47	00:01.02
Run 3	00:01.47	00:01.07
Median	**00:01.47**	**00:01.07**
Total time waiting	**00:13.55**	**00:13.85**

Figure 8: Detailed test results.

ABOUT PRINCIPLED TECHNOLOGIES

Principled Technologies, Inc.
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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.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.