



Intel® NUC and the Building Blocks of Life Science

ProteinSimple and digitalVAR find a “fits just right” solution with the Intel® NUC powered by the Intel® Core™ i5 processor



Challenge

ProteinSimple develops protein analysis tools for the life science industry. Their latest creation, Wes, simplifies Western blot analysis via a fully automated process. ProteinSimple needed an instrument controller (i.e., an attached PC to handle computations and control) that was powerful enough for data crunching, but small enough to minimize the benchtop space used.

Solution

digitalVAR, an Intel® Technology Provider, served up the perfect solution: an Intel® NUC powered by an Intel® Core™ i5 processor. The Intel® NUC was attached to the back of Wes' monitor so that it didn't take up any valuable benchtop space, while the Intel® Core™ i5 processor delivered the performance necessary for complex protein analysis.

Result

Wes has been a huge success, offering ProteinSimple's customers a customized solution that streamlines the Western blot process. With the Intel® NUC and the Intel® Core™ i5 processor, Wes takes up less space and saves time so that analysts and technicians can focus more on research and discovery.

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– Dr. John Proctor,
Director of Marketing,
ProteinSimple

Specialized Markets Call for Specialized Solutions

Life science is no ordinary business segment. Technicians require specific technology solutions to meet their needs. Whereas a regular office might use laptops and desktop PCs to get the job done, organizations specializing in life sciences need refined hardware that integrates with testing, analysis, and diagnostic equipment. That's where ProteinSimple comes in. Since 2000, ProteinSimple has been building and developing tools to meet these highly specialized needs in the field of protein analysis.

To put it in layman's terms, a ProteinSimple instrument measures proteins and helps technicians understand the physical characteristics or purity of proteins in biological samples. These instruments are used by lab technicians, professors, graduate students, and others in pharmaceutical development, protein therapeutics and more.

There's still a huge gap in the general IT industry on how to manage solutions such as these. Major OEMs have only recently, in the past decade, begun to understand the market's needs and are starting to move in that direction.



“The [Intel®] NUC has a lot of flexibility for a lot of life science projects. We have interest from clients who want to put it inside other larger instruments, or on the outside depending on form factor.”

– Vladimir Itskovsky,
Director of Sales and Support,
digitalVAR

However, it's up to companies like ProteinSimple to fill in the gaps. This isn't a bad thing, because specialization enables ProteinSimple to sharpen their focus and fulfill market needs while anticipating future needs as well.

ProteinSimple is 100% focused on protein analysis in the life science tools segment. Dr. John Proctor, Director of Marketing at ProteinSimple said, “Our focus is making protein analysis tools that are as easy to use as possible, delivering the most quantitative data possible.”

The Western Blot Made Simple

In late 2013, ProteinSimple developed a new system called Wes, a “walk-up, walk-away” solution to protein analysis. Wes and the Simple Western family of instruments are a complete replacement for traditional Western blots. Western blots have been around since 1979 and have been used to detect the occurrence of specific proteins in tissue samples. Typically, Western blots are used in molecular biology, biochemistry, immunogenetics, and other molecular biology disciplines to help understand the role of specific proteins in disease.

When performed manually, the Western blot process involves many complex steps, uses a lot of gear, takes up significant bench space, generates a lot of waste, and eats up several hours of a technician's time. As a fully automated Western blot replacement system, Wes completely eliminates these problems. All the technician has to do is insert their samples and walk away.

ProteinSimple's design philosophy with Wes prioritized ease of use and the smallest footprint possible. The company carefully considers how end users will interact with each instrument, and what kind of data users need to obtain. One of the most important considerations is the availability of benchtop space. Benchtop space is much more valuable than office space because users are often switching between different instruments, samples, notebooks, and so on. Making Wes small and compact was critical for success.

The Missing Ingredient

Every instrument that ProteinSimple makes comes with an “instrument controller,” which is industry parlance for describing an attached PC that's used to input commands or generate data. When it came to incorporating Wes' instrument controller, ProteinSimple mandated a few basic rules:

1. The instrument controller had to have the smallest possible footprint. As stated previously, benchtop space is crucial for a scientist or lab technician.
2. The instrument controller had to pair with a white monitor. Color played an important role in Wes' design, which was intended to be both inviting and aesthetically pleasing.
3. The instrument controller had to have the processing power necessary for complex protein analysis and calculations.

digitalVAR and ProteinSimple Team Up

For six years, ProteinSimple has been working with digitalVAR, an Intel® Technology Provider that consistently delivers instrument controllers and CPUs for ProteinSimple's customized protein analysis tools. Whereas major OEMs have only been in the specialized life science market for less than a decade, digitalVAR has been serving the community for 15 years. This experience sets them apart from other resellers in the field and gives them an edge when it comes to knowing, anticipating, and solving problems for companies like ProteinSimple.

digitalVAR was intrigued by the unique rules that Wes posed. Working together, digitalVAR and ProteinSimple tried a number of different technology solutions to meet these requirements. A full desktop PC solution was too heavy handed because the typical PC tower took up too much space. An All-in-One (AIO) desktop PC satisfied almost all of the requirements, but there was no widely available AIO model that came in the preferred color, white, that also met the necessary performance specs.

The Answer: Intel® NUC

When it seemed as though all other options had been exhausted, digitalVAR considered building the instrument controller from scratch. Unlike other resellers in the field, they have the unique capability to build fully customized systems. However, once they learned about what the Intel® NUC had to offer, digitalVAR opted to recommend it instead. This was in part due to the fact that the desktop boards needed to support the custom-built solution were not as elegant as the Intel® NUC.

"Once [the Intel® NUC] was here, it was sort of a no-brainer. It was the best fit with what we were trying to accomplish with Wes," John said. The key selling point of the Intel® NUC was that it could be attached to the back of Wes' monitor, effectively turning the whole unit into an AIO computer. The Intel® NUC didn't take up a single inch of benchtop space, and the color of the chassis no longer mattered because it was no longer in plain sight. digitalVAR also integrated memory, a Solid-State Drive (SSD), and a customized operating system with each Intel® NUC kit. Thanks to this successful integration work, ProteinSimple got the total package: everything they needed in a turnkey format. "The [Intel®] NUC was ready to go right out of the box, and it takes thirty seconds to equip it to the back of the monitor... It was the perfect solution," John said.

As for processing power, the Intel® NUC features an Intel® Core™ i5 processor, which was more than enough to meet Wes' demanding requirements. Comparable solutions in similar form factors are designed for web browsing and lighter applications, but not heavier technical computing. The Intel® Core™ i5 processor is what gives the Intel® NUC the power it needs to support life science applications and more.

Unlocking the Potential of Intel® NUC

The Intel® NUC offers a lot of technological advantages, from its small form factor to its high throughput and processing power, to its expandability and support for multiple peripherals. Yet one key advantage that might be overlooked is that the Intel® NUC, with dimensions as small as 4.6" x 4.4" x 1.36", can go virtually anywhere.

Naming Wes

If you check out ProteinSimple's website (www.proteinsimple.com), you'll notice that all of their solutions have one thing in common: they all have friendly, personalized names. Wes is the focus of this study, but the ProteinSimple family also includes Sally Sue and Peggy Sue, among others.

Intel® Technology Provider

digitalVAR (www.digitalvar.com) has been an Intel® Technology Provider for the last 2 1/2 years and recently moved up to Gold partner status. Membership in the program gave digitalVAR access to training sessions on the Intel® NUC, and Intel roadmaps so digitalVAR could ensure the Intel® NUC would meet its customers' life cycle needs. digitalVAR also benefited from one-on-one, personalized guidance from an Intel account manager, along with benchmarking to help sharpen their business practices and refine their technology portfolio.

The Intel® NUC: A Pint-sized Powerhouse

The Intel® NUC packs a lot of power in a small form factor. With a footprint that's just about 4.6" x 4.4" x 1.36" or greater, this highly customizable solution supports Intel® Celeron®, Intel® Core™ i3 and Intel® Core™ i5 processors for flexible configurations that scale to meet a wide range of deployment needs.

Key features include:

- Support for mSATA Solid-State Drive
- Optional support for 2.5" SSD or HDD
- Up to 16 GB memory
- Up to 4 USB 3.0 ports
- Mini HDMI* and Mini DisplayPort*
- Intel® Gigabit LAN or support for Wi-Fi



Vladimir Itskovsky, Director of Sales and Support for Life Science and Clinical Diagnostics at digitalVAR, acknowledged this potential when he said, "The [Intel®] NUC has a lot of flexibility for a lot of life science projects. We have interest from clients who want to put it inside other larger instruments, or on the outside depending on form factor." The Intel® NUC isn't just a standalone desktop PC, it also works as a building block for other systems and instruments. This is especially important in an industry

where large OEMs do not yet support the kinds of specialized hardware and applications that organizations need right now.

The opportunity is wide open for resellers even if they don't have the capability to custom-build a platform. Intel® NUC kits include a VESA* mounting bracket, which can be used to mount the Intel® NUC to the back of a monitor. It's this versatility that makes the Intel® NUC the perfect addition to any technology portfolio.

A Bright Future

Small form factor, the ability to attach to the back of a monitor, and the power to support intense number crunching is what made the Intel® NUC the ideal complement for ProteinSimple's Wes solution. Both ProteinSimple and digitalVAR will continue to use the Intel® NUC in future offerings, and when asked if he would recommend the Intel® NUC to other companies like his own, John said, "Not if they're going to compete with us."

Learn more about the Intel® NUC at: www.intel.com/nuc

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