

# A mobile data science workstation is no ordinary laptop

Why data scientists require  
high-performance on the go.

Z<sup>hp</sup>

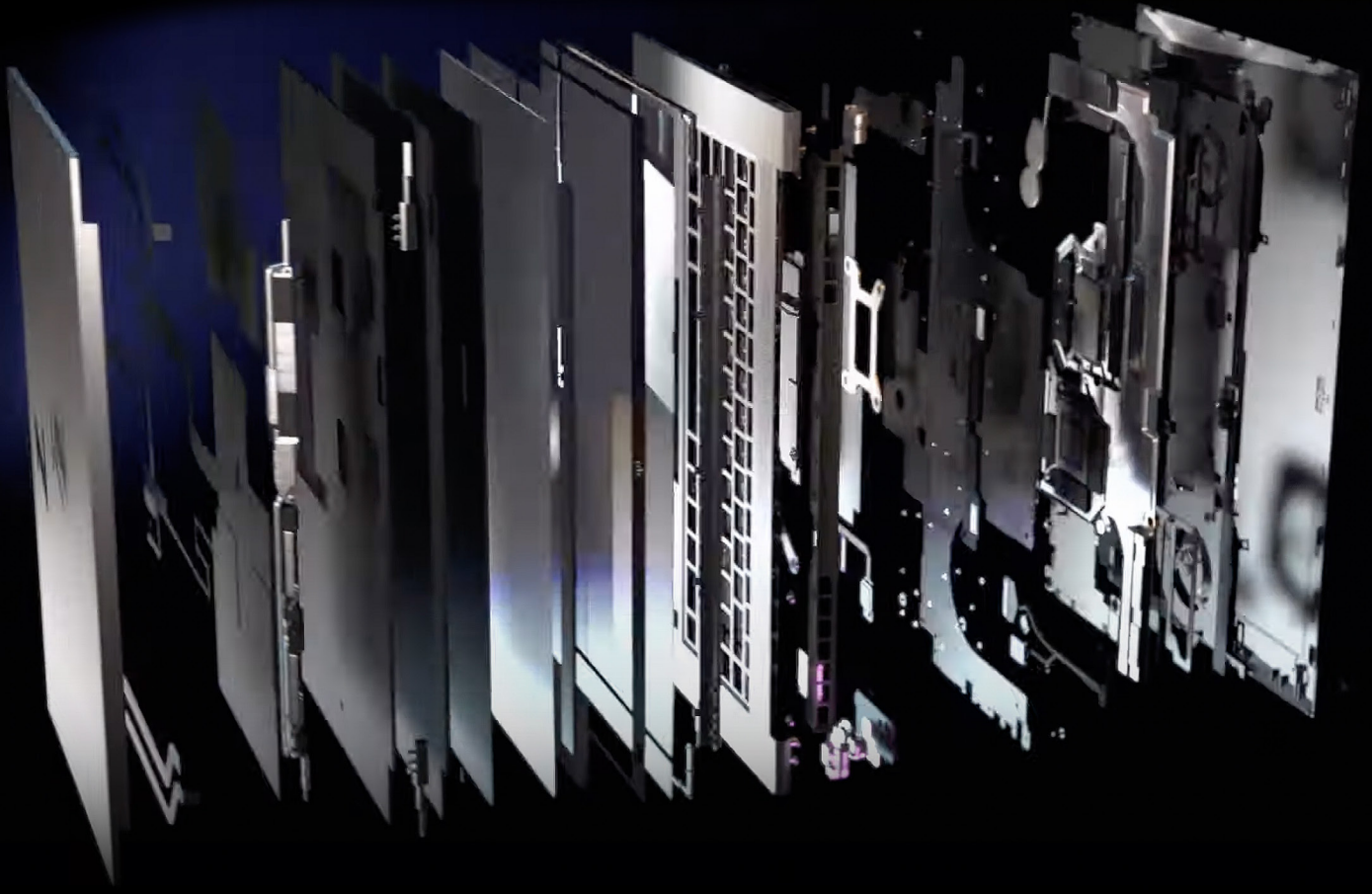


# Why is a high-performance mobile workstation a necessity for data science?



Data scientists rely heavily on the computing resources built into enterprise workstations: server-quality CPUs, dozens of gigabytes of memory, terabytes of storage and a discrete graphics processing unit (GPU) with dedicated memory. But today, data scientists, data engineers and machine learning engineers need to be able to work from anywhere. Mobility is a standard requirement for today's shifting workspaces. And while a traditional laptop solves this for others, for data scientists to work at their peak performance, they need a specialized solution that's been tailor-made for them.

***Data scientists require a specialized solution with distinct capabilities: workstation power and mobile performance that comes data science ready.***



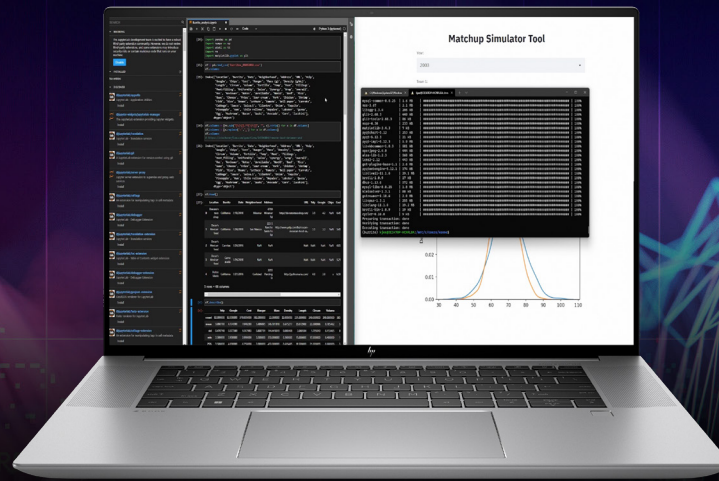
## No mere notebook

The standard-issue laptop is fine for communication and typical spreadsheets, but it can't do everything data scientists need. Three-time Kaggle Grandmaster and Z by HP Data Science Ambassador, Firat Gonen<sup>1</sup> describes what happened when he tried to use a typical laptop for data science before he had a workstation. "I had a regular MacBook Pro, and it worked fine up to some computing stage, but then I noticed the battery was swollen. The whole thing was floating on the desk." Gonen's experience is not uncommon. Data science requires high-level computing power and math processing capacity. And the entire design approach must protect against overheating. For years, you could accomplish this with a large desktop workstation. Now computer engineers and designers have managed to fit those capabilities into mobile workstations.

Describing the difference between a standard computer and a workstation, Gonen, who has since become a Z by HP Ambassador and has a ZBook Studio, says, "It's like comparing a regular car to—oh, I don't know—a fighter jet."

***While a mobile workstation like the ZBook Studio looks like a standard laptop, can fit in a computer bag, and can go anywhere, it packs in a whole lot more.***

Specs in such a mobile workstation can include 16 to 128 GB RAM, 1 to 8 TB storage, powerful processors like the Intel® Core™ i9 vPro® or Xeon® processor and all the GPU processing of an NVIDIA RTX™ A5000 or A5500.



## Mobile data science: local vs. cloud

In data science, the final output of the development pipeline is a well-tuned, rigorously trained model that is then deployed into production, often on servers or edge devices. While early phases of data science—like the architectural work of examining the problem and designing the model—might be possible on a powerful laptop, the later deliverables are different. The late-phase work of building, testing and iterating the model against the data calls for that power, math processing, RAM and storage.

For some, these demands necessitate moving to the cloud. That means taking time to transfer data, exposing it to the security risks of whatever connection the user might be on, including questionably secure home internet connections. And as for building, testing and iterating via the cloud, the costs of the pay-as-you-go cloud model can loom over the process and negatively impact the choices made.

“Essentially, there’s a cost issue,” says Andre Franklin, Senior Product Marketing Manager at NVIDIA, an HP Alliance Partner. “Data science efforts reach a point where you become hesitant to iterate. Either you’re on a regular business

laptop, where each additional iteration or training episode is slow and costs time, or you’re in the cloud, where the meter is always running. Besides, in the cloud, you incur a lot of latency when building certain models around audio, natural language processing or camera feeds. One of the secrets of developing good models is trying different things over and over again—the number of iterations, tests and trials in a given period of time. So, iterating on the NVIDIA RTX™ GPU-enabled mobile workstation at no additional cost means you can use the cloud where it makes sense: mining large datasets.”

***Iterating on the GPU-enabled mobile workstation at no additional cost means you can use the cloud where it makes sense: mining large datasets.***

With a workstation, it’s different. You can execute the complete process on one device without lagging from uploads or security exposure. Since the device

has a fixed cost, you are not dissuaded from doing the necessary testing and iteration. Plus, if it’s a mobile workstation, you can do everything without being tethered to an office.

“Developers are more productive when it’s easy to experiment with different algorithms, parameters and data without regard to cloud setup and costs,” writes Franklin. “Other development tasks can also be more efficient and cost-effective, including reviewing and cleaning data, exploring data features, and evaluating, building and testing models.”



## Select a true data science workstation

When choosing a mobile workstation for data science, it's essential to make sure it's designed specifically for data scientists. Many are intended for other use cases, such as film editing. To maximize the benefits to data scientists, Z by HP goes further with dedicated data science workstations. The [HP ZBook Studio](#) and the [HP ZBook Fury](#) data science mobile workstations are equipped for precisely what data science requires.

Z by HP devices undergo testing actual data science workflows during development. Enterprise-class components are tested and certified with partners like NVIDIA and Intel, and the products represent optimal configurations for data science professionals. And, two more features take the Z by HP high-performance mobile workstations beyond the realm of company-issued laptops and enable you to do more of your data science work anywhere: the combination of the GPU and dedicated memory along with their preloaded software stack.

GPUs and dedicated memory are chosen for data science performance specifically. They are specced to handle the heavy lifting of model training and the demands of rendering visualizations.

Z by HP data science workstations come with the built-in workflow advantage of a preloaded data science software stack.

This stack is a preconfigured, preloaded package of the open-source tools most commonly used in developing and testing models:

- 1 Machine learning—including TensorFlow, Keras, PyTorch, Scikit-learn and XGBoost
- 2 Model and app development—including Git, Visual Studio Code, PyCharm and Docker
- 3 GPU acceleration—including RAPIDS™, NVIDIA GFX Driver, Virtual Container Toolkit and NVIDIA CUDA®

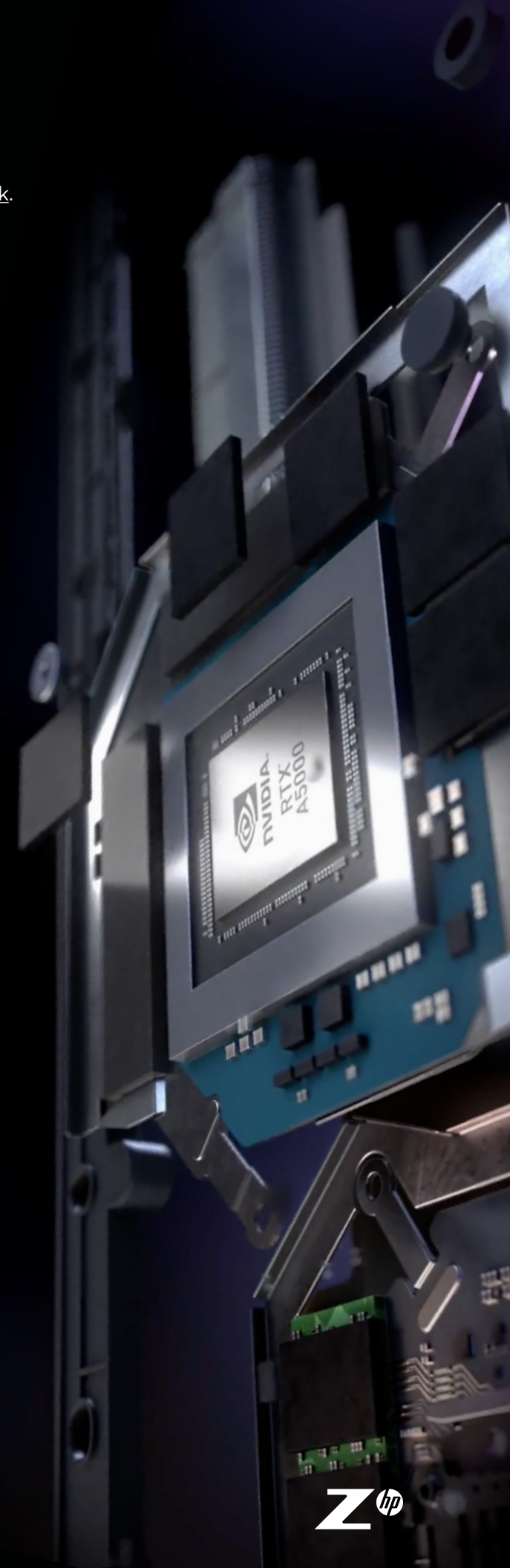
These workstations come preloaded on Ubuntu 20.04, the most trusted Linux distribution, or Windows 10 and 11 Pro with preinstalled Windows Subsystem for Linux 2 (WSL 2).<sup>2</sup> This enables you to use both Windows and Linux operating systems, saving you the need for an extra computer. Z by HP workstations also make it easy and straightforward to connect to the three major public cloud providers: AWS, Google Cloud and Microsoft Azure.

“Having the software stack preloaded so that everything works from day one is a big deal,” says Lenny Isler, Business Development Manager for data science and AI at HP.

**“When you can run data science workloads locally without worrying about moving datasets around the internet, you can dive straight into the work you’re meant to do.”**

**LENNY ISLER**

Business Development Manager  
for data science and AI at HP



# A mobile workstation for your data science workloads

Robust components, a dedicated, NVIDIA RTX™ high-quality GPU and a preloaded selection of trusted data science software differentiate the high-performance mobile workstation from the average laptop computer. The mobile workstation redefines the category and paves the way for data professionals to perform more work wherever they want to be.

Find out how the [HP ZBook Studio](#) and the [HP ZBook Fury](#) can enable your organization's data scientists, data engineers and data analysts to produce more in less time<sup>[9]</sup>. Z by HP data science workstations are designed with configuration options that optimize performance, memory, storage, display, GPU and software to bring iteration with flexibility to data science.

<sup>1</sup> Firat Gonen is part of the Z by HP Data Science Ambassador program and is provided with products. The observations he provided are his own.

<sup>2</sup> WSL 2 requires Windows 10 or higher, Intel Core i5 processor or higher and is available on select Z workstations. You must be running Windows 10 version 21H2 and higher (Build 19044 and higher) or Windows 11.