Headwave3

Next-Generation Software Foundation for Geoscience R&D

IMAGING

INTERPRETATION

CHARACTERIZATION

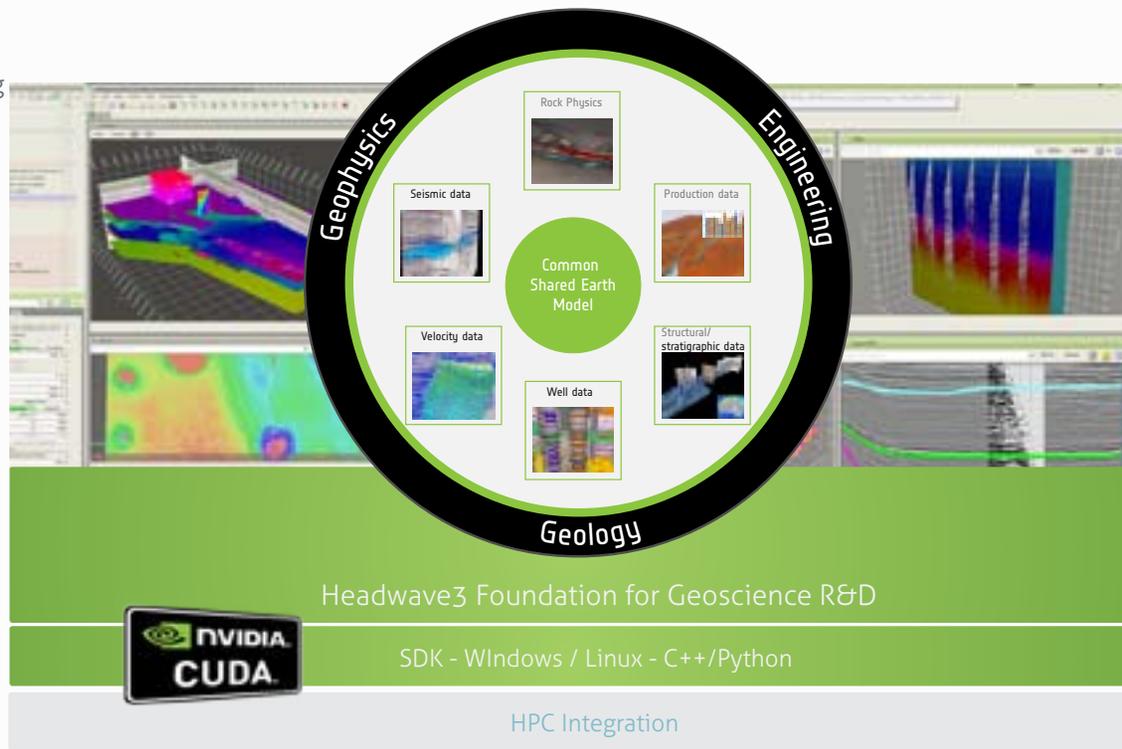OTHER GEOSCIENCE PROPRIETARY USAGE
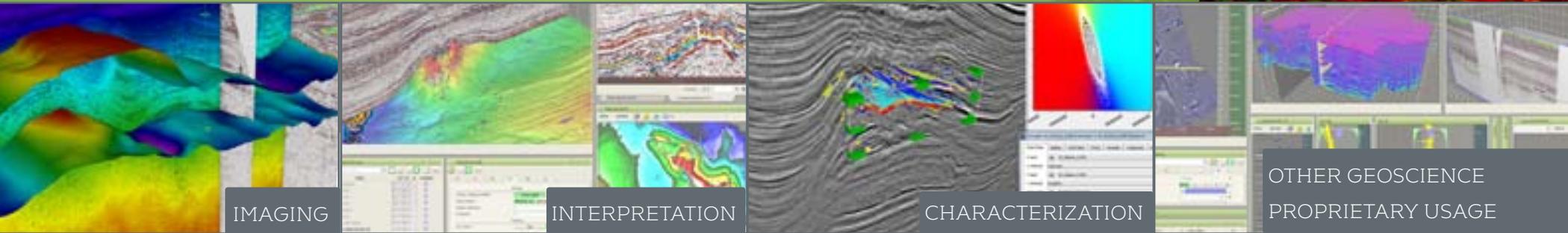
HEADWAVE3 IS ENTIRELY MODULAR FOR RAPID DEVELOPMENT AND EASE OF DEPLOYMENT. THE PLATFORM IS END-TO-END GPU ACCELERATED, PROVIDING EXCELLENT PERFORMANCE AND INTERACTIVITY. IT IS ALSO PREPARED FOR MULTI-USER, REAL-TIME COLLABORATION AND MOBILITY.

For small- and medium sized companies, the platform's greatest benefits are its ease of use, the fact that it allows for early take-up of innovative approaches, and the easy creation of valuable workflows (modules).

For international and national oil companies, the open platform adds a great deal of value by allowing rapid turn-around from idea to a marketable product. It allows for joint R&D collaboration and easy integration, it supports innovation by being highly flexible, and the oil companies can customize however they want ("secret sauce"). Partners and clients can build what Headwave can build.

Modern GPUs (Graphic Processing Units) with extreme processing power now promise to fuel a third wave of game-changing applications and workflows. Many companies have tried to take advantage of this, but all have fallen short due to shallow integration (resulting in paralyzing performance bottle-necks) and narrow scope (resulting in isolated features with poor interoperability).

Up to this point, no company has re-thought the basic premises of their platforms and attempted to play to the real strengths of modern GPUs.

Geophysics

Engineering

Geology

Rock Physics

Seismic data

Production data

Common Shared Earth Model

Velocity data

Structural/ stratigraphic data

Well data

Headwave3 Foundation for Geoscience R&D

NVIDIA CUDA

SDK - WIndows / Linux - C++/Python

HPC Integration

In contrast, Headwave 3 is the first geoscience platform that has been designed from the ground up to fully harness these technologies to empower earth science professionals. We believe that over time, Headwave's products will overturn current conceptions about how geoscientists will carry out their work.

Architecture

Most legacy geoscience applications have been written to serve a particular end-user need, and APIs are generally an afterthought.

In stark contrast to this, Headwave chose to develop the underlying architecture and APIs first, with funding and sponsorship from one of the world's largest IOCs. This architecture is now the foundation for our own products as well as other proprietary modules.

- Unconstrained - completely open & extendable w/C++ & CUDA APIs
- End-to-end GPU accelerated resulting in industry's fastest system
- Cross-platform
- HPC integration

Key Target Areas

Headwave3's data model can be extended to support any E&P need, and the underlying visualization capabilities already supports the majority of geoscience needs including geological models, (un-) structured reservoir models, etc.

That said, where Headwave3 really outshines the competition is where large data, compute and interactivity meet.

- Imaging workflows
- Multi-dimensional interpretation
- Large data analytics
- ... anything else that requires large amounts of E&P data, demanding computations and end-user interaction