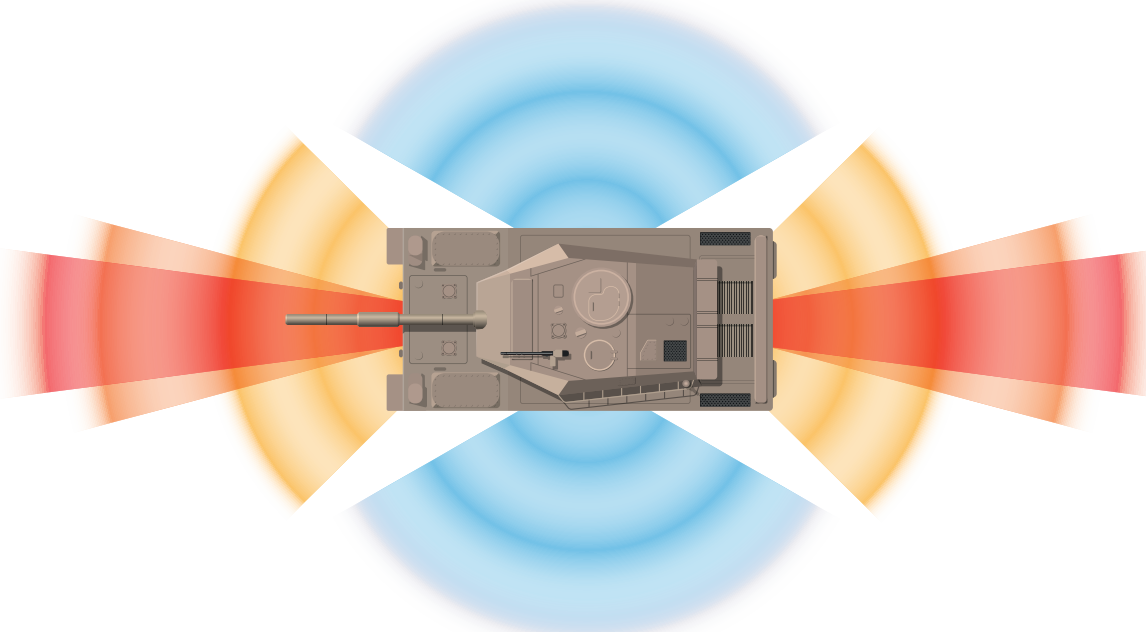# abaco
SYSTEMS

WE INNOVATE. WE DELIVER.
YOU SUCCEED.

About Abaco

For over three decades, Abaco has been providing high performance, rugged embedded computing solutions to a broad range of military programs. On land, in the air and on the ocean, Abaco is present on many of the highest profile platforms. We have a rich legacy of delivering mission-critical systems where failure is not an option.

Abaco and autonomy

Abaco key autonomy enablers

> High Performance Embedded Computing
> CPU, GPU, FPGA hybrid integration capability
> Multi-sensor technology capable – ingest, fusion, perception
> Multi-function, real-time I/O
> FPGA radar processing
> Decision, compute and system control
> AI, deep-learning
> High memory bandwidth
> Secure Gigabit Ethernet
> Safety-certifiable real time processors
> Package optimization
> AXIS ImageFlex image processing and visualization toolkit

Robotics and autonomous systems will change the face of the defense industry across all branches and domains. Recognizing this, Abaco Systems began a focused autonomous initiative three years ago. This initiative anticipates the vast computational power needs for future autonomous systems while drawing on our legacy in supporting severe defense and aerospace applications with ever-increasing thermal demands in ever shrinking SWaP constraints. We embrace the full gamut from board-level CPU, GPU and FPGA computers to mission-ready modular solutions to hybrid architecture computer solutions, employing rapid-prototyping demonstration platforms and processing toolkits that serve to optimize performance and to streamline programs from development through deployment.

From development to deployment

Abaco supports the entire autonomy product development life cycle with a clear path from bench through pilot to deployment and a commitment to minimizing cost and risk. We combine hybrid best-in-class CPU/GPU/FPGA processor capability with appropriate software tools and libraries to integrate autonomous algorithms. This enables rapid development and faster time-to-market, allowing algorithms to flow through, maximizing reuse and minimizing revisions during the course of a program.

abaco.com/autonomy

Abaco products for autonomous applications

Delivering the autonomous platforms of the future will require a broad range of rugged hardware supporting powerful software. From single board computers through advanced AI-capable parallel processors to graphics/imaging/video subsystems and network switches, Abaco is a single source, guaranteeing interoperability. Our middleware solutions – including sophisticated development environments, tools and libraries – are designed to help our customers get to market fast.

Abaco's solutions share distinguishing characteristics that make them ideal for the development of autonomous platforms. These include:


High performance

Autonomous vehicles require the capture, processing and distribution of massive amounts of complex, sensor-acquired data. That's why our processors and ultra-high speed network switches are designed to deliver the ultimate, no compromise performance, leveraging the optimum technologies – Intel processors, GPU, FPGA – for each element of the transition from data ingest to action.


Minimal SWaP

Today's vehicular platforms are increasingly constrained in size, weight and power (SWaP) – a function of maximum mission length and manoeuvrability on the one hand, and the need to accommodate the maximum possible payload on the other. Abaco leads in developing solutions with a minimal footprint – as well as in developing solutions that consume minimal power.
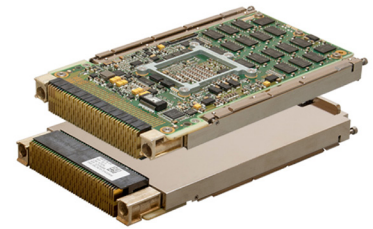

Security

Autonomous applications require the highest levels of security. Secure applications need a secure hardware platform on which to build – and Abaco provides this with our SBC347D, which incorporates a range of security features designed to assist with user defined Anti-Tamper and Information Assurance strategies. These include an inherently secure FPGA solution (and support for Intel's Trusted Execution Technology.
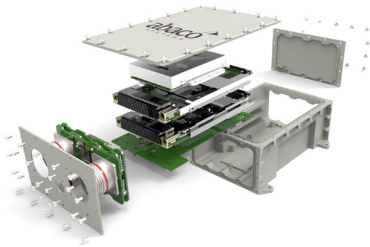
Rugged

All Abaco products are designed to withstand the harshest of environments: shock, vibration, extremes of temperature, contaminant ingress and so on. Rugged reliability is built-in at the design stage – using specially selected components, for example. Our products are deployed in armored vehicles, tanks, fighter aircraft and warships – and even in space. Abaco is relied upon where it matters most.
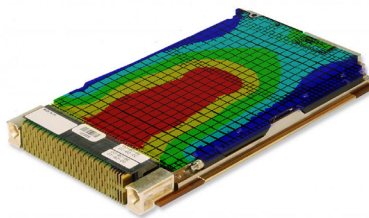
Advanced thermal management

High performance subsystems require the dissipation of significant amounts of heat that can otherwise cause failure and adversely impact mission success. This problem is exacerbated by the confined spaces in which they are typically installed. Abaco is a leader in thermal management technologies. Our SBC347D single board computer, for example, based on an Intel® Xeon® processor, is unique in its ability to maintain maximum performance – even at temperatures as high as 75°C.

No hassle interoperation

Our powerful, flexible Intel®-based hardware platforms are complemented by our AXIS – Advanced Multiprocessor Integrated Software – development environment. A comprehensive suite of software tools and libraries, it is designed to enable the rapid creation of sophisticated autonomy solutions that leverage the potential of multi-core, multi-processor and heterogeneous high performance computing architectures.

Not only does AXIS ease and speed application development – from design [through debugging, optimization and tuning] to deployment – but it also supports autonomy application scalability and portability across platforms, enabling a straightforward transition from lab to field. Inherently intuitive and quick to learn, AXIS gives developers the tools they need to be more productive.

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