

CLIMATE INTELLIGENCE

Delivering actionable climate intelligence to driving decisive climate adaptation and science-driven mitigation

Space-based and terrestrial sensors provide data to federal scientific agencies around the clock. Using modern data platforms that shorten the time it takes to get this information to end users is critical for scientific advancement, improving resiliency against civilian national threats, protection of human life, and improvement of economic activities for the U.S. and our global partners.

To re-energize scientific collaboration, scientific leaders need open-architecture data platforms that expand interconnectivity. Such platforms are critical to interoperability and to helping establish rapid adaptation across the federal scientific computing ecosystem.

Employing new approaches in data architectures—like open systems, edge processing, and artificial intelligence (AI)—is key to delivering data where and when it's needed most. With smart systems and space-based, terrestrial, and nano sensors relying on these platforms to turn their data into intelligence, building a secure and fault-tolerant foundation is imperative.

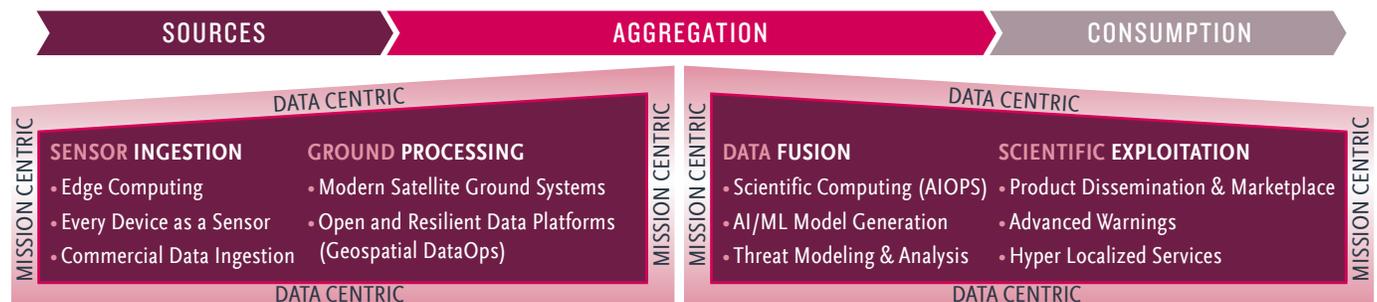
Exponentially growing bodies of data from national and commercial sources contain information and insights that are key to advancing everything from bioinformatics to atmospheric and oceanic science to intelligent transportation. Getting the most out of this universe of data requires effective and innovative analytics supported by cloud-based systems using Agile processes. By bringing velocity and scale to the analytical pipeline, data platforms speed the delivery of new mission capabilities and help unlock the power of AI and process automation. Development, security, and operations (DevSecOps) play a central role in delivering all these benefits.

The figure below highlights how Booz Allen defines climate intelligence, starting with initial observation followed by processing and fusion, and finally, to scientifically exploiting the integrated information to drive assured decision-making.

DEPLOYING SMART EDGE PROCESSING TO ACCELERATE SENSOR INGESTION

Scientific sensor platforms collect data continually. To be helpful in the fulfillment of critical missions, this data needs to get to the mission actors who can use it: meteorologists, physicians, emergency planners, and so on. In the physical environment, the communication channels that deliver information are not always hardened. Extreme conditions can make such channels difficult or impossible to access, slowing data processing, or even altogether preventing data from being processed, fused, and disseminated. New on-board capabilities such as AI-powered analytics could empower these systems to respond to extreme environmental challenges like tsunamis, virus outbreaks, or energy crises in real time—allowing systems to make decisions that deliver data to mission scientists when it is needed most. Moving compute capabilities to the edge makes the data pipeline more robust and ultimately allows for more data to be leveraged in the modeling and fusion process.

FIGURE 1





APPLYING DEVSECOPS FOR MODERN SATELLITE GROUND SYSTEMS

By integrating development, security, and operations, DevSecOps enables rapid development, new capabilities, and built-in resilience. Terrestrial stations play a leading role in modern space architectures, as new technologies give control centers flexibility to expand capabilities in both new and existing systems. When designing a new modern satellite ground-based system, Booz Allen builds in adaptability to respond to unknown challenges. For example, we recommend using digital models and modular architecture so we can test and mitigate threats in the ground layer and entry points for new capabilities. The ground system can be equipped with software and algorithms allowing for things like anomaly assessment, with smart analytics alerting operators to potential failures before they happen.

ENABLING INTEROPERABILITY FOR DIGITAL FUSION ACROSS SCIENTIFIC MISSIONS

Increasingly, data fusion requires open data platforms. Open architectures remove barriers that challenge innovation by making both physical and virtual platforms more modular. To take advantage of this, many civilian scientific agencies are moving toward adopting open approaches across enterprise platforms to improve their decision-making speed. Open data platforms promote modularization, such as containers and microservices, and loose coupling—where components rely on each other as little as possible.

ACCELERATING CLIMATE DECISION-MAKING THROUGH SCIENTIFIC EXPLOITATION

Extreme weather conditions like drought, flooding, wildfires, heatwaves, and other increasingly frequent and intense natural disasters provide dramatic proof of the escalating climate crisis. Environmental information is critical to understanding these devastating events and making decisions about how to respond to and prepare for them. AI-ready data and open data platforms are at the heart of solving this problem. Booz Allen applies strategies and technologies that help scientific clients accelerate transformation of their supporting technology, freeing them up to focus on the science and modeling, as well as other aspects that may add more value to their work. We ensure that our clients can meet scientific goals and improve their ability to stay ahead of climate and health threats—on Earth and beyond.

About Booz Allen

Booz Allen is the established leader in scientific-enabled missions for the federal government. Booz Allen serves as the prime mission systems implementor across multiple federal programs spearheading climate, health, and energy to solve our nation's most complex challenges.

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