

Critical Infrastructure Intelligence Packages from SAP, Powered by Intel

A modern work and asset management solution with
location intelligence



Across industries, enterprise asset management is a balance of three key factors: cost efficiency, reliable infrastructure performance, and risk management. SAP, Esri, and Intel have joined forces to create a portfolio of integrated, modular asset management solutions—powered by Intel® technologies—to help companies maintain that balance as they optimize operations and prevent potential disasters.

How are you managing risks posed by increasing natural disasters and an aging infrastructure?

Natural disasters have caused \$807.3 billion in damage in the past 10 years, with \$95 billion of that occurring in 2020.¹ Half of the U.S. electrical infrastructure is more than 50 years old. Gas and water infrastructure is not far behind. On top of that, massive amounts of data sit in silos across departments, making it nearly impossible for those companies to have up-to-date, trustworthy views of their businesses. Processes need to be consolidated, streamlined, and repeatable. You also need rigorous, standardized compliance reporting to meet regulatory demands.

Data silos

SAP and Esri have spent more than nine years integrating their platforms to enable businesses to break down the silos between their IT and geographic information systems (GIS). They do so by running on a common, integrated data management platform—either SAP HANA or SAP HANA Cloud optimized on Intel architecture. This way, you can seamlessly combine operational data from SAP S/4HANA with spatial data in ArcGIS® Enterprise, a powerful GIS mapping and spatial analytics platform. Even better, access to data can be provided in real time with no replication, saving costs and ensuring a single source of truth. GIS teams are relieved of writing, editing, and maintaining extract, transform, and load (ETL) routines, which allows them to focus on higher value activities and thus dramatically increase their productivity.

No consolidated process to fix problems

A common challenge facing utilities is the lack of unified processes to address the most pressing problems. When different tools or organizations are not talking to one another, the result is inefficiencies. The duration and size of planned outages are often too broad and take too long, costing businesses revenue, productivity, and reputation. What's needed is a solution that enables holistic work and asset management that blends data from asset history, repair cycles, financial cost, network design, available resources, and skill sets. Such a coordinated approach enables predictive asset maintenance, extended asset life, reduced costs, lower risk, and better customer service.

Cross-industry demands

In addition to these challenges, industries across the board are expecting more from their asset management solutions as technology evolves. These expectations include:

- Seamless information sharing across the enterprise
- Ability to turn insights into action with real-time, location-aware information
- Ability to mitigate risk from natural disasters and aging infrastructure
- Timely and effective responsiveness in environmental and emergency situations
- Rigorous and consistent means to meet regulatory compliance demands
- Modern and effective technology that helps attract and retain top talent



Figure1. Solution architecture

Critical infrastructure intelligence packages from SAP, simplified

To help businesses meet their asset management challenges, optimize operations, and minimize risk, SAP collaborated with Intel and Esri on a new configurable and scalable technology solution. Critical infrastructure intelligence packages use artificial intelligence (AI), big data, and process automation to create proactive, predictive, and preventative asset management processes.

Utilities are faced with multiple paths to equipment failure due to wind events, floods, and fire. Staying on top of equipment inspections is both labor-intensive and time-intensive. So then, where do you focus your resources? With disparate processes to address these problems, utilities are forced to be reactive rather than proactive. The package solution removes the complexity from these scenarios by facilitating seamless integration with the SAP S/4HANA platform and ArcGIS Enterprise. You can finally experience a truly actionable, seamless solution that enables you to streamline efficiencies surrounding enterprise asset management, including inventory, risk assessment, and start-to-finish case management for assets.

The packages solution is built on the world-class software technology of SAP and Esri and is fully integrated to support the entire enterprise asset management life cycle, as shown in Figure 1. Combining Intel processing capabilities, Esri GIS data, and the powerful SAP HANA platform makes it easier for companies to harness the value of data and drive better business outcomes. A company already running SAP HANA or SAP S/4HANA and ArcGIS Enterprise can swiftly deploy packages for a rapid and verifiable return on investment (ROI), see Figure 2.

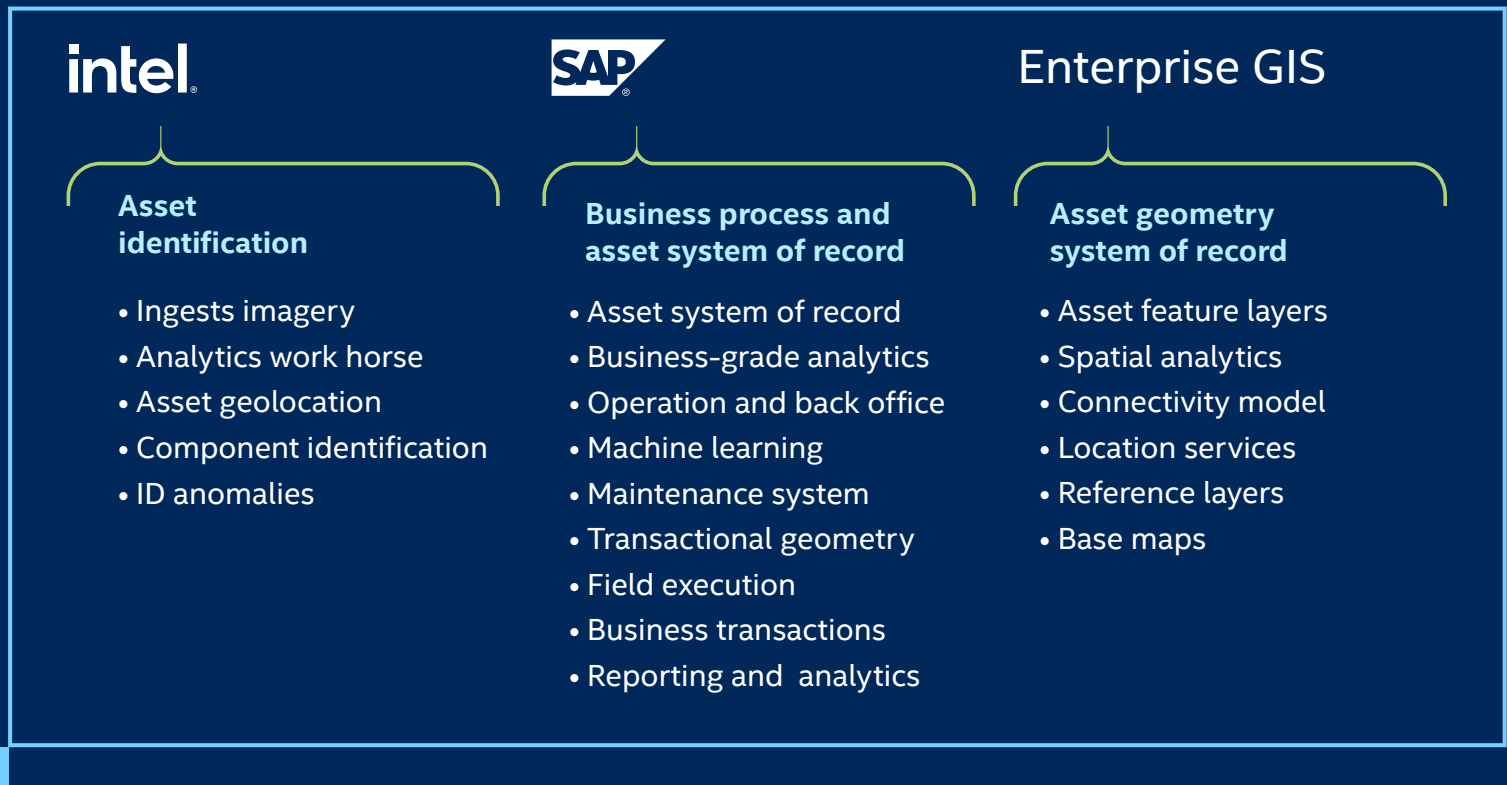


Figure 2. Critical infrastructure intelligence packages from SAP feature world-class software

Additionally, the synergy between SAP HANA and Intel® Xeon® Scalable processors helps businesses achieve a high return on infrastructure investments. This optimized environment delivers:

- Enhanced application responsiveness, latency, and performance to process and scan large amounts of data at blazing speeds, for a single source of truth
- The ability to scale performance, increase memory capacity, and accelerate machine learning (ML) and AI workloads to better protect and future-proof the enterprise

Employ packages to reimagine performance, dramatically improve your total cost of ownership (TCO), and radically change the boundaries of what is possible—on premises, in your data center, and in the cloud.

A flexible asset management solution

The elegance of the package solution is that it has applications across many use cases and industries, as listed below.

Use cases

- Asset inspections, especially in hard-to-reach areas
- Vegetation encroachment for utility lines
- Identification of damaged equipment and nearby hazards
- Aerial mapping and surveying
- Surveillance
- Traffic monitoring and accident reconstruction
- Firefighting and wildfire prevention
- Weather monitoring
- Helping first responders reach people in need and find hospitals with available capacity
- Overcoming social-distancing constraints
- Assessing damage before sending technicians to help ensure safety
- Managing personal safety equipment with enterprise asset management (EAM)

Industries

- Utilities
- Federal, state, and local government agencies
- Railroads
- Oil and gas
- Mining and aggregate
- Agriculture
- Solar and wind farms
- Construction/engineering/infrastructure
- Telecommunications
- Freight shipping and transportation
- Property and agriculture insurance

Oil and gas

Identify aging equipment risk to help avoid disaster

In the oil and gas industry, aging equipment asset failures can result in both humanitarian and financial disaster. As has been seen in multiple cases across the country, a gas pipe explosion can lead to tragic loss of life, serious injuries, billions of dollars in litigation and fines, and unquantifiable brand damage. These aging equipment failures make disasters within the oil and gas industry worth striving to avoid altogether by investing in consistent and rigorous preventative measures. By combining real-time operational data from SAP with the power of location intelligence from Esri, critical infrastructure intelligence packages from SAP can proactively identify aging equipment risk and prioritize potential preventative maintenance, thus significantly reducing the likelihood of a catastrophic event.

According to the Energy Information Administration, there are more than three million miles of natural gas distribution pipelines within the United States.² Oil and gas companies are also highly visible and must maintain a high level of compliance and proactive measures for the sake of their immediate customers, in addition to the good of the environment and the general public. Managing this massive amount of infrastructure requires a solution that is flexible, repeatable, and cost-effective. This is where the packages solution comes in.

Applications within oil and gas

- Inventory and asset management
- Proactive maintenance
- Insurance for asset failures
- Inspections

Utilities

Increasing use of drones and vehicles means more data to manage and analyze

Utility companies are increasingly using unmanned aerial vehicles (UAVs) and roadside information to conduct more comprehensive visual inspections and mapping of electrical assets. As utilities scale their use of imagery, they run into the challenges of managing large datasets and relying on tools and processes that are increasingly unsuitable to efficiently review, analyze, and annotate the thousands of asset photos.

With the packages solution, utility companies can more effectively manage these large volumes of data while streamlining the infrastructure inspection process by using AI. Indeed, packages extract valuable insights from imagery, including the geolocation, the inventory of components, and the identification of encroaching vegetation and damaged or worn equipment. Issues that are identified are organized into prioritized corrective actions for maintenance planning and updates for asset and geospatial records.

Packages enable organizations to better manage, visualize, and analyze this imagery and data by using Intel technologies.

Using packages, utilities can improve infrastructure resiliency, increase operational effectiveness, and lower their TCO as they drive insights to action in a fully verifiable manner. Simplified record-keeping and reporting help utilities adhere to regulatory compliance requirements that are required of them by federal, state, and local government agencies.

Applications within utilities

- Asset inspection
- Records updates
- Maintenance planning
- Regulatory compliance reporting
- Vegetation management





Critical infrastructure intelligence packages from SAP, powered by Intel: modern work and asset management with location intelligence

The SAP and Esri solution, powered by Intel Xeon Scalable processors, comes ready to deploy and addresses a host of business pain points relating to enterprise asset management. Give your company the tools to discover process efficiencies, identify ways of minimizing risk to the organization and employees, and drill down into more robust management analytics.

Contact an SAP, Esri, or Intel sales representative to learn more and to see a demo of the packages solution's pilot offerings.



¹ Climate.gov. "2020 U.S. billion-dollar weather and climate disasters in historical context." January 2021. climate.gov/news-features/blogs/beyond-data/2020-us-billion-dollar-weather-and-climate-disasters-historical.

² U.S. Energy Information Administration (EIA). "Natural gas explained." December 2020. eia.gov/energyexplained/natural-gas/natural-gas-pipelines.php.

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