

Adexa eGPS for Semiconductor Industry

Highly Capital-intensive, long cycle times, new processes, and volatile demand are challenges faced in the industry, for both front-end, back-end and Fables. The industry is under pressure to lower cost, improve efficiency, and increase service levels and ROI.



Optimize capacity with improved forecasting.

Minimize cycle times and inventories in step with demand

Every semiconductor environment poses a unique array of business challenges. Companies who wish to be competitive must synchronize activities across a highly distributed network of plants and facilities to minimize costs while maximizing revenues, customer service and return on assets (ROA).

To do this, you need highly configurable, collaboration-based planning software that can simultaneously consider the constraints of all participants within the extended supply chain. Adexa Enterprise Global Planning System (eGPS) shows you the way.

Increase planning accuracy with reliable demand forecasts

Capacity planning is often undermined by contradictory demand signals that only emerge after production is underway. With the extraordinary problem-solving speed of eGPS, you can turn conflicting signals into intelligent consensus forecasts that present a true picture of exactly what is required from the supply chain.

eGPS, using advanced ML algorithms, quickly rationalizes input from all kinds of sources, from historical data to third-party analyses about the market, providing greater reliability in long-term projections and heightened responsiveness to short-term fluctuations.

Stabilize and optimize inventories at every stage of production

In complex supply chains, small distortions in demand forecasts are magnified to extreme levels as each link compounds the error with its own safety margin. Then, when actual orders arrive, the entire supply chain pays the cost of obsolete or surplus inventories, failed deliveries or missed sales. Ultimately, the result is wasted capacity and lost profit.

With the end-to-end visibility and more responsive forecasting, cycle times can be compressed dramatically in planning, scheduling and manufacturing using prescriptive algorithms, so capacity can be allocated more responsively. Meanwhile, die banks and inventories can be predicted with greater precision to improve cost efficiencies up and down the entire supply chain. The reduced cycle times pay off by moderating short-term demand fluctuations, reducing work-in-progress inventories and minimizing obsolete stocks as new products roll out.

A True Digital Twin of fabs and backend sites is a must for optimized use of equipment

Given that each fab costs billions, some order of magnitude higher, *utilization* of equipment must be at its highest. Realtime planning and control of *WIP* is essential and reduction of *cycle times* is an on-going objective. These 3 objectives may at times be conflicting. Intelligent algorithms are needed to model, plan and operate hand in hand with the real-time information from MES and ERP systems.



Stabilize Demand Planning

Integrate demand data from multiple sources including OEMs, subcontractors and market intel into reliable consensus forecasts in real-time.



Respond Better with Optimized Inventory

Extend visibility up and down the supply chain to optimize the use of die bank inventory to be more flexible in response to short-term demand fluctuations.



Build the Digital Twin of Fabs & AT Sites

Fabless manufacturers can optimize capacity and lead times by generating a digital twin to model and manage global resources as a single integrated supply chain.



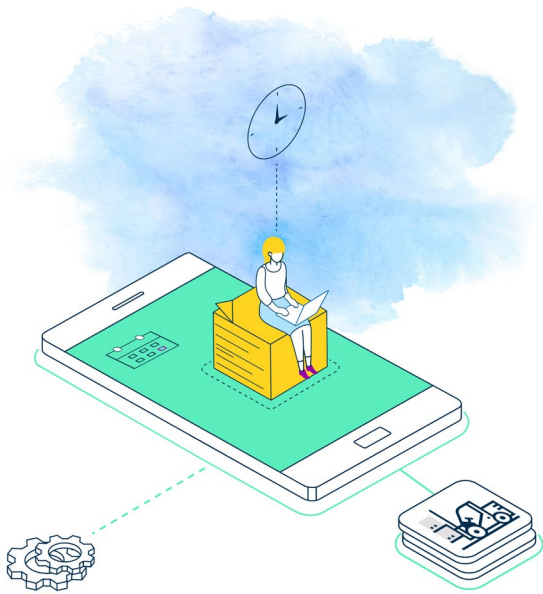
Synchronize Multi-Site Production

Establish a common language for capturing data and feeding decisions back to varied legacy systems and shop floor applications.



Enable Collaboration

Deliver better information faster so trading partners can react quicker to changes in the supply chain, helping to reduce inventories and increase customer responsiveness.



“With the extraordinary problem-solving speed of eGPS, you can turn conflicting signals into intelligent plans to optimize resource utilization, shorten cycle times, and reduce WIP while ensuring customer-requested delivery commitments”

Synchronize capacity planning across distributed facilities with a True Digital Twin of your facilities

Acquiring varied sources of capacity and supply is one thing; getting them to work together is another. eGPS has its roots in collaborative systems, so it's inherently suited to integrate with the varied systems across multiple facilities within the enterprise and throughout the supply chain. All eGPS modules share the same data model, providing maximum speed and scalability.

Each application can be used as a stand-alone solution, and is pre-integrated with other modules for easy implementation as an interactive suite. With its open architecture, eGPS also integrates seamlessly with existing transaction and execution systems.

As you update information and make new decisions, eGPS communicates directly with legacy MRP, ERP, MES, configurator, logistics and accounting systems at any level in the supply chain. Whether you are supporting fabless or integrated operations, you're now in position to leverage the full potential of extended partnerships. Everyone affected by any change is alerted instantly. So everyone's moving in the same direction, at the same speed.

Fab Modeling, Precision ATP/CTP with True Digital Twin

Adexa is uniquely positioned to provide ATP/CTP commitments in real-time for both the supply chain level as well as fab level. In other words, each fab or Assembly/Test site can independently provide real-time delivery to end customers. The precision results from accurate modeling of equipment such as steppers, batching resources, tools and required masks, handlers as well as complexities of in-process testing, wait time restrictions and yield variations. **For example, a tester combined with an octal handler provides 2 times the throughput of a tester combined with a quad handler.** Through attribute planning, Adexa deploys intelligent constraints to support customer qualifications instead of specific part#,s, or ranges thereof.

Moreover, Adexa Genies® are constantly at work to correct the model as the performance of equipment or other operating factors change over time. They also self-improve policies such as safety stock for finished goods or die bank inventories. Lastly, Adexa's architecture allows both S&OP and S&OE in ONE unified model. The more granular data is added the closer it gets to a digital twin. No need for multiple systems for planning and execution or even sequencing and interaction with MES. All in one continuum of planning and execution.

eGPS for Semiconductor: Get there faster!

With Adexa eGPS, you and your supply chain partners can have a clear picture of where you're going and your position right now as you move forward on your business objectives.

eGPS points the way to more accurate planning and execution

eGPS enables a global view of supply and demand requirements, measured against constraints, to support smarter decision-making across the enterprise and throughout the supply chain. eGPS allows you to optimize production and delivery plans for speed and profitability, and communicate the plan to all parties involved in the process, from raw materials to the final customer. When exceptions emerge or new constraints appear, eGPS automatically and continuously updates the plan and alerts stakeholders to the new directions they need to take.

Faster to respond

The proven collaboration digital twin platform and the use of attributes, underlying eGPS enables quick configuration to fit your business systems so you can see your actual data and processes in action before you buy. Adexa offers specific templates for complex semiconductor equipment and processes so that accurate digital models are built.

Faster to implement

All applications in the eGPS suite are pre-integrated and native to the Adexa environment. Both S&OP and S&OE reside in ONE system, truly merging planning and execution. There's no time wasted patching interfaces between critical systems.

Faster to solve

The powerful AI/ML and optimization techniques at the heart of eGPS forms a digital twin and solves highly complex problems and what-if scenarios in seconds where other solutions require hours or days to process. Fast solving also allows more accurate modeling at the lowest possible level of detail. Real-time interaction with MES and ERP allows continuous monitoring and planning of the operations.

Faster innovation

Adexa delivers advanced functionality first because, while other solution providers are working on fixes to bundle disparate modules together from varied developers, our unified data model lets us focus development on adding real enhancements to eGPS solutions. Furthermore, Adexa Genies® enable automation of many of your business processes and constantly improve and optimize your policies such as safety stock levels for finished goods and die banks.

Faster return-on-investment

By implementing your solution with pre-integrated modules and use of attribute based planning technology, you adapt quickly to your business processes. eGPS delivers benefits sooner and earning dividends on your investment faster.

“Using Adexa Genies®, eGPS enables building a digital twin of your supply chain and your factories, and continues to self-correct the model and self-improve the policies such as safety stocks.”

