PEERGROUP

PEER Tool Orchestrator
Tool Automation Software

PEER Tool Orchestrator (PTO™) is a field-proven factory automation software product for semiconductor equipment manufacturers. Used in 25 equipment models and deployed in over 30 fabs worldwide, PTO has become the leading tool automation solution for process, metrology, and inspection equipment.

From startups to large, multi-national companies, PTO gives OEMs the ability to automate a new tool platform in as little as six weeks, accelerate fab acceptance, and improve equipment reliability in production. OEM software engineers can focus on adding competitive process features to a tool, rather than grappling with automation standards.

PTO provides tool OEMs with capabilities and options built on a wealth of experience from a large install base. And when any new fab or processing requirement is encountered, it is quickly integrated into the next tool shipment, then embedded in the product at the next release. You can be confident that PTO can accommodate any automation challenges your tool might encounter.

Product Family

PTO has evolved into a family of product offerings to meet the varying automation needs of different tool types, processing scenarios, and fabs.

- **PTO Standard**
  For tools with an EFEM that need to communicate with a factory host based on the 300mm standards. This can include an E30 adaptor for older fabs that are not 300mm-compliant.
- **PTO CTC**
  For cluster tool controllers, with support and control for vacuum environments (vacuum robots, pumps, valves, gauges), as well as a flexible infrastructure for collaboration with PLCs.
- **PTO Lite**
  For tools where communication to the factory host is based on E30 (200mm, photovoltaic, assembly, and so on).
- **PTO IMM**
  For integrated metrology modules, including support for SEMI E127 or the TEL spec for IMM integration. Supports multiple data clients, with both E30 and E127-style data collection.

Product Highlights

Features	Benefits
Full SECS/GEM, 300mm, and Interface A connectivity	PTO provides robust support for these industry standards: E4, E37, E5, E30, E39, E40, E84, E87, E90, E94, E116, E120, E125, E132, E134.
Drivers for most commercial robots and load ports	Support for new hardware can be developed quickly in PTO's extensible Device Adaptation Layer: ▶ *Integrated EFEM platforms*: Brooks Series 8 & 9; Asyst Spartan ▶ *Load ports*: Brooks Vision, FixLoad6 & 6M; Asyst Isoport, Versaport, Series 3; TDK ▶ *Robots*: Radiance, PRI, Kensington, Kawasaki, Yaskawa ▶ *Tag readers*: Hermos, Advantag, Omron, Keyence ▶ *WID readers*: Cognex Insight ▶ *Vacuum systems*: Brooks MX400, Granville-Phillips Gauges, Pheiffer Pumps
Dynamic wafer scheduling	Accommodates a varying number of wafer stations; parallel or serial wafer flow; collaborative, adjustable routing; deadlock detection; and backwards wafer flows.
Bridge tool and reticle support	Allows the EFEM to seamlessly handle different wafer sizes, including dynamically swapping between FOUPs and FOUPs with inserts at the same load port. Handles the unique requirements for moving reticles in and out of a tool.
Hardware coordination service	PTO provides software-based wafer interlock security when using disparate hardware components, providing safe and efficient wafer movement to maximize throughput and reduce the occurrence of broken wafers.
Simplified tool configuration	Configuration screens let you easily manage hardware variations within or across tool platforms, such as the number or type of load ports, process modules, robot end effectors, and so on. You can also adjust light tower, load port, and tag reader behavior to suit any fab you install in without software changes. At any time, you can update and test the hardware communication settings or run simulated components.
Extensible UI framework	Adjust the look and feel of PTO's screens via Windows theme attributes. Plug your custom screens into PTO's E95 framework for an integrated user interface.
Integrated metrology module support	Use PTO to provide an E127/IMM interface to connect your metrology module to a cluster tool.
RaP/E139 support	PTO includes support for this emerging recipe management standard, including an adaptation infrastructure for OEMs with existing recipe management models.

Architecture

Written entirely in C#, PTO is an object-oriented framework of modular components and services organized into layers. The flexibility of Microsoft's .NET development platform means that PTO is both stable and highly adaptive. OEMs may add their own customizations to any layer of the PTO architecture.

Host Bridge Layer

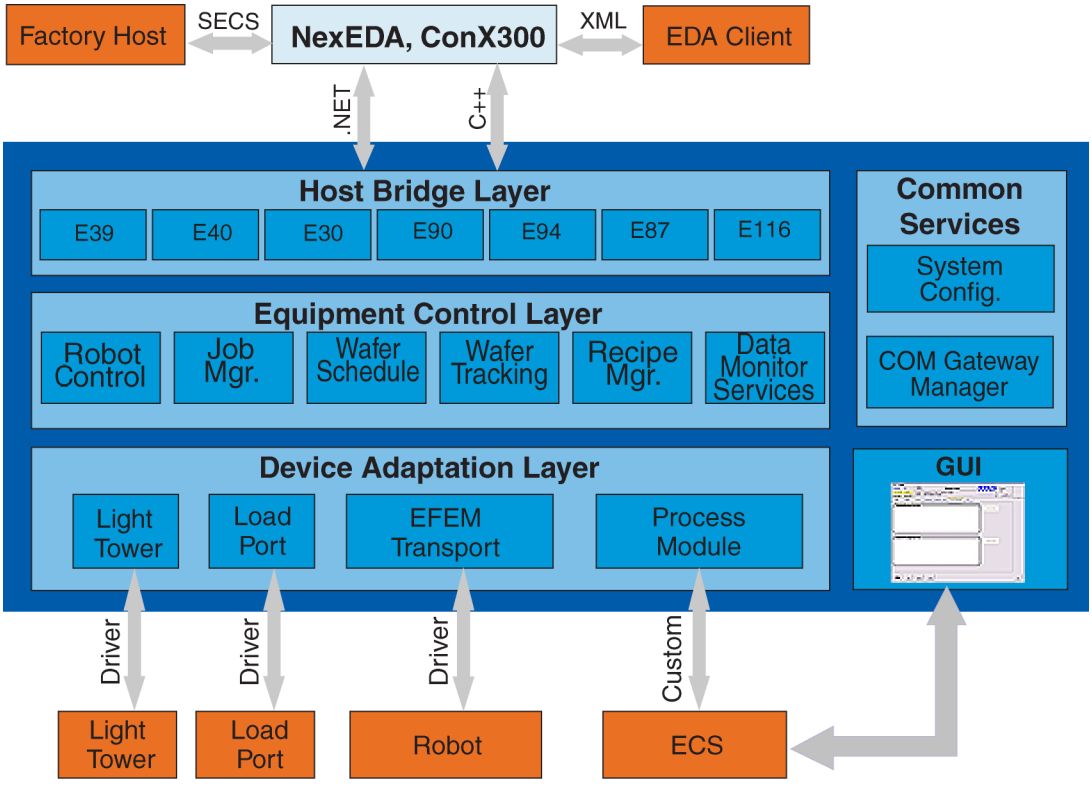
Coordinates access to the 300mm objects managed by NexEDA™ and distributes data and events to and from the factory host via the 300mm standards. It also provides a backwards compatibility mechanism to work with older factory hosts via E30.

Equipment Control Layer

Manages wafer movement within the EFEM or vacuum transfer chamber. It is also responsible for wafer scheduling, automated wafer recovery, job management, and recipe management.

Device Adaptation Layer

Translates high-level processing commands from the scheduler to hardware-specific commands, allowing hardware to be exchanged on a tool easily. This layer also provides hardware coordination for precise control of synchronous and asynchronous hardware actions.



About PEER Group

PEER Group provides leading-edge factory automation software solutions, integration, and consulting services to advanced manufacturers and OEMs in the semiconductor, electronics, life sciences, and automotive industries. Many of the world's best manufacturing companies turn to PEER Group to solve their most challenging equipment automation, data management and custom application development problems. PEER Group partners with leading software and automation companies to ensure the most efficient delivery of highly functional, reliable, and scalable solutions. Learn more about PEER Group at www.peergroup.com.

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