Solution Brief

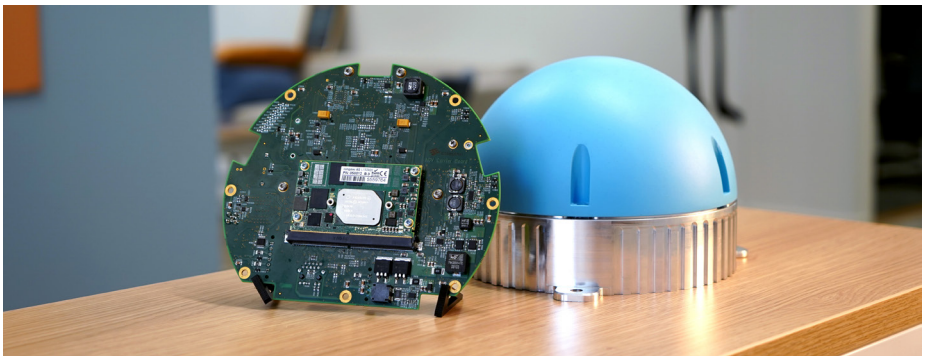
Smart Cities and Intelligent Transportation
Intel Atom® processor

Etteplan Develops Next-Generation, All-in-One Evaluation Platform to Accelerate Customers' Product Development

Etteplan Evaluation Platform leverages congatec Computer-on-Modules (COMs) and Intel Atom® Processors for connectivity, positioning, and integrated edge computing

As cities grow larger and heavy-duty machinery becomes more sophisticated, fleet owners and managers need be able to control their data and improve operations and logistics. Tools that pinpoint vehicle locations, help ensure operator safety, provide navigation, gain analytical insights, and more can increase fleet safety and efficiency. The Etteplan Evaluation Platform is a reference design, built on a congatec computer-on-module powered by an Intel Atom® processor, devised to be customized to meet specific customer use cases and needs. Low-power consuming Intel Atom® processors offer the compact size, industrial temperature range, long-life expectancy, passive cooling, and power efficiency that the Etteplan Evaluation Platform requires.

The new platform is upgradeable, increasing capacity for onboard connectivity, positioning, and edge computing. For instance, it will be easy to switch from the current Intel Atom® processor to the next and/or upcoming generation. Users can now choose among connectivity using 4G, 5G, Wi-Fi, and/or multi-band LTE, depending on conditions and customer needs. High-precision location data is accurate within a margin of just 10 cm. The Linux-powered edge computing offers low latency and includes an internal MCU.



Etteplan, partnering with congatec and Intel, has created the **next generation evaluation platform**

Enabling Research & Development

Whatever your edge computing or connectivity requirements, the Etteplan Evaluation Platform can provide them. Artificial intelligence, machine learning, combined data from different sensors within a vehicle—all these and more are possible.

You can accelerate new heavy equipment technology solutions with the Etteplan all-in-one evaluation platform. Rather than three separate chassis, the platform uses just one chassis for positioning, connectivity, and edge computing—making it less expensive and easier to repair. It's customizable for any vehicle or machine, with a rugged design that supports testing in harsh environments.

When you're no longer able to repair components of your existing system or need to expand critical functionality, the Etteplan Evaluation Platform can replace your legacy gateway. You can easily add new sensors to the platform and sensor monitoring is available within minutes. The multiple connectivity modes mean that the platform can communicate on buses, autonomous guided vehicles, and moving heavy equipment using the locally supported communication variant.

The Etteplan Evaluation Platform frees R&D teams to concentrate on core competencies, rather than spending precious resources on developing your own platform. You can evaluate ideas immediately by adopting the easy-to-use technology. By working with the platform's customized reference design, you can optimize features and reduce the time to market. Working with its Linux-based design, developers can modify the source code quickly and work within a flexible, secure environment.

Designed for the most punishing environments, the platform—with its versatile options—is currently available for customization.

Etteplan Evaluation Platform Details

Etteplan customizes the chassis form factor and dimensions according to customer needs. For example, one model has curved sides to be appropriate for snow and harsh winter conditions in cold climates. Customers can manufacture their own chassis, following their licensed platform model, or Etteplan can have them manufactured on behalf of the customer. In either case, the customer owns the license for the completed product.

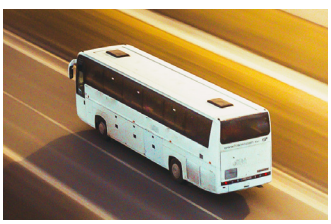
Etteplan Evaluation Platform

Etteplan tailors the reference design to create a platform that supports exactly the capacities the customer needs.

The platform enables:

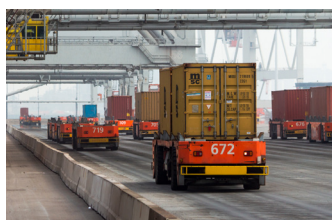
- **360° view** Connect with sensors and cameras that provide a full perspective of the external environment and record external events as needed.
- **Idle monitoring** Ensure efficient energy use and measure engine health when a vehicle is powered on but not moving.
- **Route optimization** Help drivers reach their destinations with mapping and directions, optimizing routes and saving fuel.
- **Position monitoring** Provide location within 10 cm and enable operators to oversee the entire fleet in real time.
- **Driver safety monitoring** Keep drivers safe on the road by monitoring fatigue and detecting distractions through connected sensors and cameras.
- **Predictive maintenance** Detect the performance status of vehicle components, indicating potential maintenance needs and optimizing maintenance schedules. Maximize vehicle uptime and performance.
- **Cargo management** Monitor sensors and cameras that provide information on the status of cargo, including overall security, space utilization, vibration, and temperature monitoring.

Use Cases

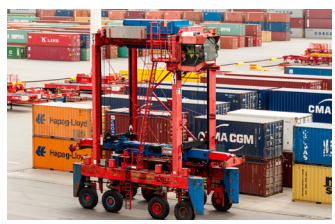


Buses
Fleet management

Heavy machinery/trucks
Fleet management and terminal operations



Outdoor AGV
Terminal operations



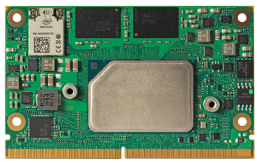
Shuttle and straddle carriers
Terminal operations

COM Basics

Computer-on-module (COM) products play a key role in the design and implementation of embedded systems and solutions for modern transportation, among other applications. COMs are designed as small circuit boards that include the processor. The COM plugs into standard connectors on a carrier board that is embedded in a new module and can be swapped into an existing a larger application-specific system. Most interface circuitry is situated on the module and the interfaces are routed to the appropriate ports on the carrier board. Because the COM conforms to size and connectivity standards, it allows for a smooth upgrade of the CPU, memory, or other components. Unique application-specific circuits are usually incorporated into the carrier board itself.

congatec conga-SA7

- SMARC 2.1 module based on Intel Atom® x6000E
- High performance Intel® UHD Graphics (Gen 11)
- Options for industrial temperature range -40° to 85° C
- Options for time sensitive networking and time coordinated computing for improved real-time capability
- Up to 4.267 MT/s memory support



congatec conga-SA5

- Low Power Intel Atom® processor
- High performance Intel® Gen. 9 graphics
- Options for industrial temperature range -40° to 85° C
- Time coordinated computing
- Enhanced security execution

About Etteplan

With nearly 4,000 professionals working across three continents, Etteplan is a technology service company specializing in software and embedded solutions, engineering solutions, and technical documentation solutions. Etteplan is a forerunner in the engineering industry and differentiates itself by the wide-ranging competence of its experts. Etteplan customers include the world's leading companies in the manufacturing industry. Etteplan helps them create a better world through engineering, innovation, and digitalization.

About congatec

congatec is a rapidly growing technology company focusing on embedded computing products. Driving industry standards since 2005, congatec provides engineering and support for standard and customized products in all major regions. Their COM modules are used in a wide range of applications and devices in industrial automation, medical technology, telecommunications, and other vertical markets. congatec is a global market leader in the COM segment with an extensive customer base made up of organizations of all sizes.

About the Intel Atom® Processor Family

The flexible, compact, and reliable Intel Atom® Processor Family delivers the right balance of performance and cost for your business. These low power processors offer the rich features, durability, and scalability needed for modern network infrastructure, network security acceleration, and storage appliances—all in a small footprint.

Learn more

lp.etteplan.com/rugged-evaluation-platform