



Accelerating Edge AI Innovation How Inventec Empowers Customers with Partner's Hardware Technology

- Collaborative AI ecosystem enhances deployment efficiency and accuracy, optimizing traffic management for reduced emissions.
- AIM-Edge series features fanless design for harsh environments and 24/7 operation
- Taiwan Provincial Highway 74 smart traffic deployment achieved 30% traffic flow improvement
- Manufacturing AI applications improved first-pass yield by over 27%, reducing inspection labor

- Supports multiple connectivity options (5G/4G/Ethernet) and IoT integration applications

The rise of AI-driven edge computing solutions is transforming industries by enabling real-time intelligent analytics and automation close to data sources. Inventec Corporation is a global leader in electronics manufacturing and technology integration, advancing the practical adoption of AI by delivering comprehensive edge AI solutions tailored for real-world industrial, transportation, and smart city applications. Known for its comprehensive hardware manufacturing and AI integration capabilities, Inventec collaborates with a world leader company in AI as a partner to build edge AI systems powered by the Jetson platform. Through this partnership, Inventec delivers compact, fanless, ruggedized AI boxes that meet the stringent requirements of industrial, transportation, and city infrastructure applications.

Core Technology: Partner's hardware platform Embedded AI Platform

At the heart of Inventec's AI solutions lies the partner's hardware platform, which provides GPU-accelerated deep learning inference and computer vision capabilities optimized for edge deployment. Key advantages embraced by Inventec include:

- High AI processing throughput, supporting multiple neural networks simultaneously.
- Low power consumption, suitable for deployment in diverse and challenging environments.
- Rich sensor and camera I/O integration, enabling flexible AI application design.
- Seamless AI software development with the partner's hardware platform SDK suite, allowing deployment of pre-trained and custom models.

Inventec integrates the hardware platform modules into its AIM-Edge series, delivering robust edge AI hardware platforms.

Industrial-Grade Edge AI Hardware Solutions

- Inventec designs its AI boxes for durability and reliability in harsh conditions:
- Fanless, compact enclosures are suited for vibration-prone and outdoor environments
- Multiple connectivity options, such as Gigabit Ethernet, USB 3.0, HDMI, and GPIO, support various sensors and video feeds
- Flexible mounting options, including wall- and pole-mount configurations, facilitate deployment in smart traffic and city monitoring contexts.

The AIM-Edge family, featuring models like the ncox, has been successfully applied in traffic management and manufacturing automation.

Customer Implementations: Smart Traffic Management with AIM-Edge ncox

Inventec's AIM-Edge ncox, integrated with partner's hardware platform, has been deployed extensively in Taiwan for smart traffic applications. These edge AI boxes are installed on traffic poles across critical highways to perform real-time AI analytics such as vehicle and pedestrian detection, object tracking, and dynamic traffic light control. Key outcomes include:

- Up to 30% improvement in traffic flow efficiency demonstrated along Taiwan's Provincial Highway 74.
- Reduced latency through on-device processing without reliance on cloud infrastructure.
- Continuous and energy-efficient operation with battery backup systems ensuring 24/7 reliability.
- Enhanced pedestrian safety and enforcement capabilities enabled by AI video analytics.

This deployment represents a successful real-world example of how Inventec leverages partner's hardware technology to address urban traffic challenges through edge intelligence.



Collaborative Ecosystem and Technical Foundations

Inventec's success stems from strategic partnerships and technology integration:

- Leveraging partner's software package SDK and toolkit for AI software and video analytics development.
- Collaborating with a leading imaging and optical products provider for high-quality imaging solutions that improve AI analysis accuracy.
- Working with engineering partners to implement AI-driven dynamic traffic signaling, achieving significant congestion relief and environmental benefits.

- Incorporating advanced connectivity options such as 4G/5G and supporting private network edge computing for IoT integration.

This ecosystem approach enhances the scalability and effectiveness of customer AI deployments.

Business Impact and Benefits

Traffic management solutions have generated measurable improvements in vehicle flow, fuel savings, and reduced carbon emissions, contributing to operational efficiency and environmental sustainability for municipalities.

Manufacturing AI applications have reduced inspection labor, improved first-pass yield by over 27%, and facilitated workforce reallocation to higher-value tasks.

Edge AI devices' fanless, rugged design ensures reliable long-term operation in challenging industrial and urban environments with minimal maintenance.

Future Outlook

With AI continuing to evolve towards more sophisticated, distributed edge deployments, Inventec plans to extend its partner's hardware-based portfolio to support broader AI applications spanning autonomous vehicles, healthcare diagnostics, and environmental monitoring. Ongoing research and innovation will ensure customers benefit from scalable AI performance aligned with operational needs.

Conclusion

Inventec's AI solutions built around the partner's hardware platform exemplify a powerful synergy of hardware engineering and AI technology. By delivering edge AI systems that enhance traffic management, manufacturing efficiency, and smart city infrastructure, Inventec empowers customers to harness AI for practical, impactful outcomes, driving forward the digital transformation era.