

## Artificial Intelligence at the Edge – Case Study

### mtes Neural Networks (mtesNN)

mtesNN a VC funded IoT-AI start-up, develops low power AI enabled IoT edge devices that incorporate latest advances in semiconductor technology. Over the last year they have developed intelligent Structural Health Monitoring, AI camera for smart city surveillance, and other AI enabled devices. They also developed Apricot™, a firmware SDK that enables integration of technologies and services such as firmware to hardware mapping, cloud connectivity, AI engine and wireless networks increasing reusability and reducing time to market in developing IoT devices.

### Problem

mtesNN were faced with an urgent need to rapidly develop an IoT-AI platform to fulfill their vision of delivering AI enabled IoT devices to market within a span of a year. mtesNN was looking for a software technology that could rapidly accommodate their need for multiple communication capabilities, device management & customized integrations to their hardware ecosystems.



*Cognitive AI camera*

### Solution

Altix identified and recommended the need for a device middleware that could accommodate mtesNN's need for a rapidly integrating their AI technology into different hardware platforms with unique communication and customer requirements.

Altix was confident about solving mtesNN's need for a device and cloud platform using BoxPwr™ an IoT toolkit developed based on expertise and insights in delivering IoT solutions. BoxPwr offers ready to use frameworks that address radio abstraction, communication protocol integration, multi cloud platform connectivity, device management, edge AI/analytics engines, sensor fusion and support for multi-vendor device management protocols. In addition to BoxPwr, mtesNN chose to rely on Altix as their extended engineering team to develop Apricot SDK based on BoxPwr, firmware development, and productize & integrate their AI algorithms.

### Conclusion

mtesNN is a testament to a company that is playing at the very cutting edge of IoT and AI. They have achieved many a feat since their start in late 2018. Altix with its Altix BoxPwr IoT toolkit and an entire team of IoT engineering talent that understands IoT, Cloud and AI intimately helped deliver Apricot, SHM and AI camera to the Japan market with in 6 months.

# BoxPwr – IoT Toolkit



IoT End Points

**BoxPwr Pico, Nano - device software**

- Sensor Integration
- Mesh & Wireless Networks
- Low-Power WANs
- Legacy Connectivity

**Connectivity and Translation**



IoT Edge

- BoxPwr Micro, Standard - device software**
- Edge Analytics Frameworks
  - Multi Cloud connectivity Framework
  - GUI Management
  - Device Management
  - MVIF (Translate comms)
  - Security Customization
  - Network Stack Integration
  - Radio Adaptation Layer
  - Aggregation and Translation



Cloud Platform

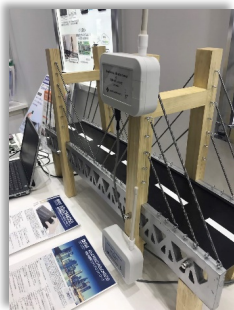
IoT Cloud

- Cloud Applications
- Data Analytics

*mtesNN's Apricot IoT-AI platform*

**apricot 利点 Benefits**

- 相互運用性 Interoperability**  
It can translate between objects of different protocols.
- 優れた設定可能機能 Configurability**  
It can be configured for use on end nodes, routers and gateways.
- 抽象化 Abstraction**  
It separates functionality from implementation of components.
- テスト容易性 Testability**  
It contains standards compliant components and debugging tools.
- 高い拡張性 Extensibility**  
It can be easily extended to add new frameworks and functionalities.
- 優れた移植性 Portability**  
It can work on different hardware and OS combinations.
- 優れたセキュリティ Security**  
It provides end to end security, from end node to cloud application.
- 管理が容易 Manageability**  
It allows devices to be provisioned, commissioned and remotely managed.
- アクセスが容易 Accessibility**  
It can work without internet (WAN) connection.



*AI structural health monitoring solution*



**Altium Innovations** is a software & product engineering services organization focused on helping you accelerate development of your IoT solutions and products. We provide specialized Engineering services across the entire IoT development cycle from consulting, device engineering, cloud and mobility application development, data analytics, and support & maintenance. Altium has developed an IoT Toolkit - BoxPwr™. BoxPwr is a production ready suite of software frameworks for sensor nodes & actuators, communication gateways, Edge computing & Cloud connectivity that helps accelerate IoT product & solution development.

At Altium, we offer multiple models for commercial engagement that can be tailored to meet your specific needs.

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