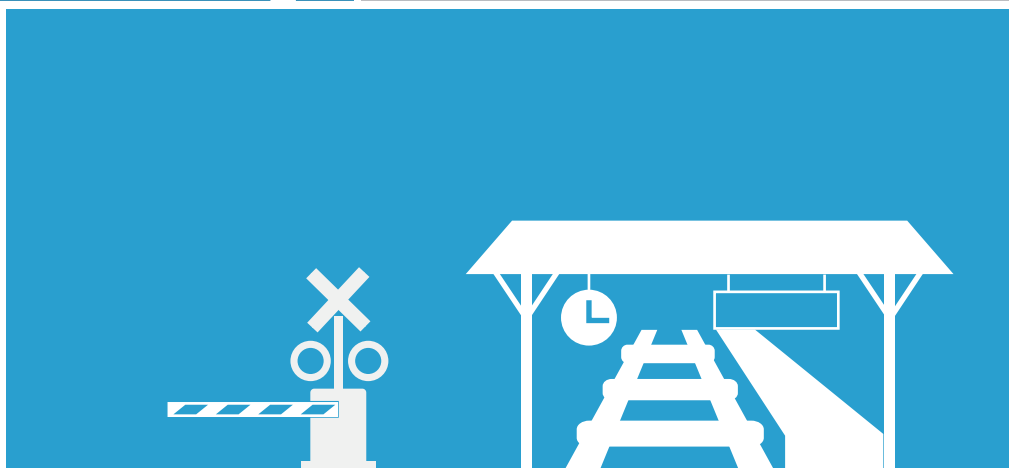
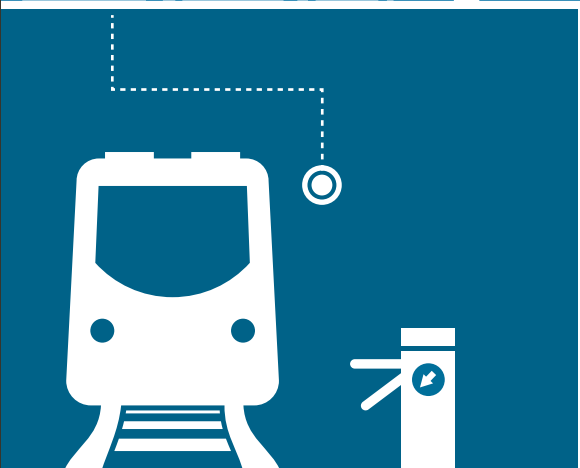


Ethernet Connectivity

for Wayside Communication

- ◆ Managed Ethernet Switches
- ◆ Hardened Media Converters
- ◆ Ethernet Extenders
- ◆ Surge Protectors



- Hardened Design for Critical Environments
- Field-proven Quality & Reliability
- High-speed Failure Recovery Network Redundancy

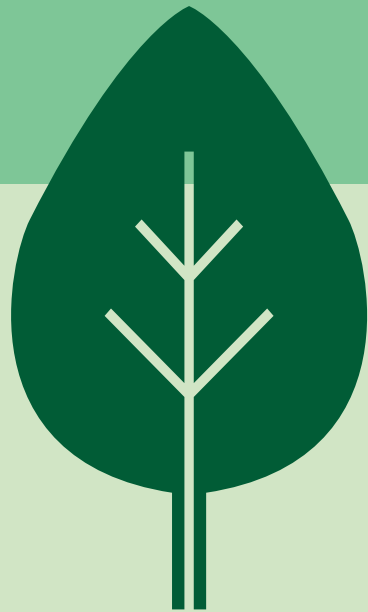
About EtherWAN

EtherWAN Systems, Inc. is a leading manufacturer of hardened Ethernet, PoE, and fiber connectivity products specifically designed for harsh and demanding environments. With a core focus on sustained connectivity in extreme environments, product reliability and quality are top priority. EtherWAN's product development, engineering, manufacturing and quality assurance processes are structured to push the limits of stated specifications, resulting in products that surpass expectations.

WHAT DO WE OFFER?

With U.S. headquarters in Anaheim, CA, and Pacific Rim headquarters and manufacturing facilities in Taipei, Taiwan, EtherWAN leverages marketing and engineering expertise on both sides of the Pacific Ocean. World class production lines allow EtherWAN to deliver the highest quality products with comprehensive professional support.

- NEMA TS2 for ITS and transportation
- IEC 61850-3 / IEEE 1613 for utility substations
- EN 50155 for railway and train applications
- IEC 61000 for industrial automation applications
- ISA 12.12.01 / ATEX for hazardous locations
- PoE for security & access control



Environmental Policy

EtherWAN Systems, Inc. accepts responsibility for the environmental effects of our operations both locally and globally. We are committed to reducing our environmental impact and to continuous improvement of our environmental performance. This commitment is an integral part of our business strategy and operating methods, and is subject to yearly review and assessment. We encourage our staff, suppliers, and business partners to join us in the effort of protecting the environment.



To safeguard human health and the environment, we obey RoHS regulations that control hazardous substances usages in electrical and electronic equipment, and formulate technical standards that strictly forbid our suppliers from using them. All products manufactured by EtherWAN Systems, Inc. are compliant with the RoHS Directive (2011/65/EU) of 8 June 2011.



The European Waste Electrical and Electronic Equipment (WEEE) Directive came into effect on 13th August 2005, and its recast Directive 2012/19/EU transposes into member state's law and regulations. The Directive focuses on the precautionary prevention of the impact of electronic waste, and in addition, the reuse, recycling and other forms of recovery of such waste.



EtherWAN adheres to an ISO 14000 certified environmental management system (EMS) in all production processes. We are dedicated to energy conservation, to the preservation of natural resources, and to minimizing negative impacts on the environment. The wastes generated by our production processes are disposed of by professional waste management partners.

What Makes Us Different

To say that EtherWAN places a high priority on product stability and reliability would be an understatement. When it comes to critical networks, we know that data must flow uninterrupted. Our rigorous conformance to industry standards, combined with comprehensive in-house quality assurance systems, ensures maximum performance and lifespan of every product.



Design rigor

- Our engineering team performs a comprehensive feasibility study before every project is launched. Feasibility is analyzed in consideration of hardware, software, and other facets.
- Reliability is achieved through adherence to rigorous component selection guidelines and systematic thermal design methodology.
- Extensive test coverage ranges from detailed signal integrity measurement to system environmental testing and standard compliance certification.



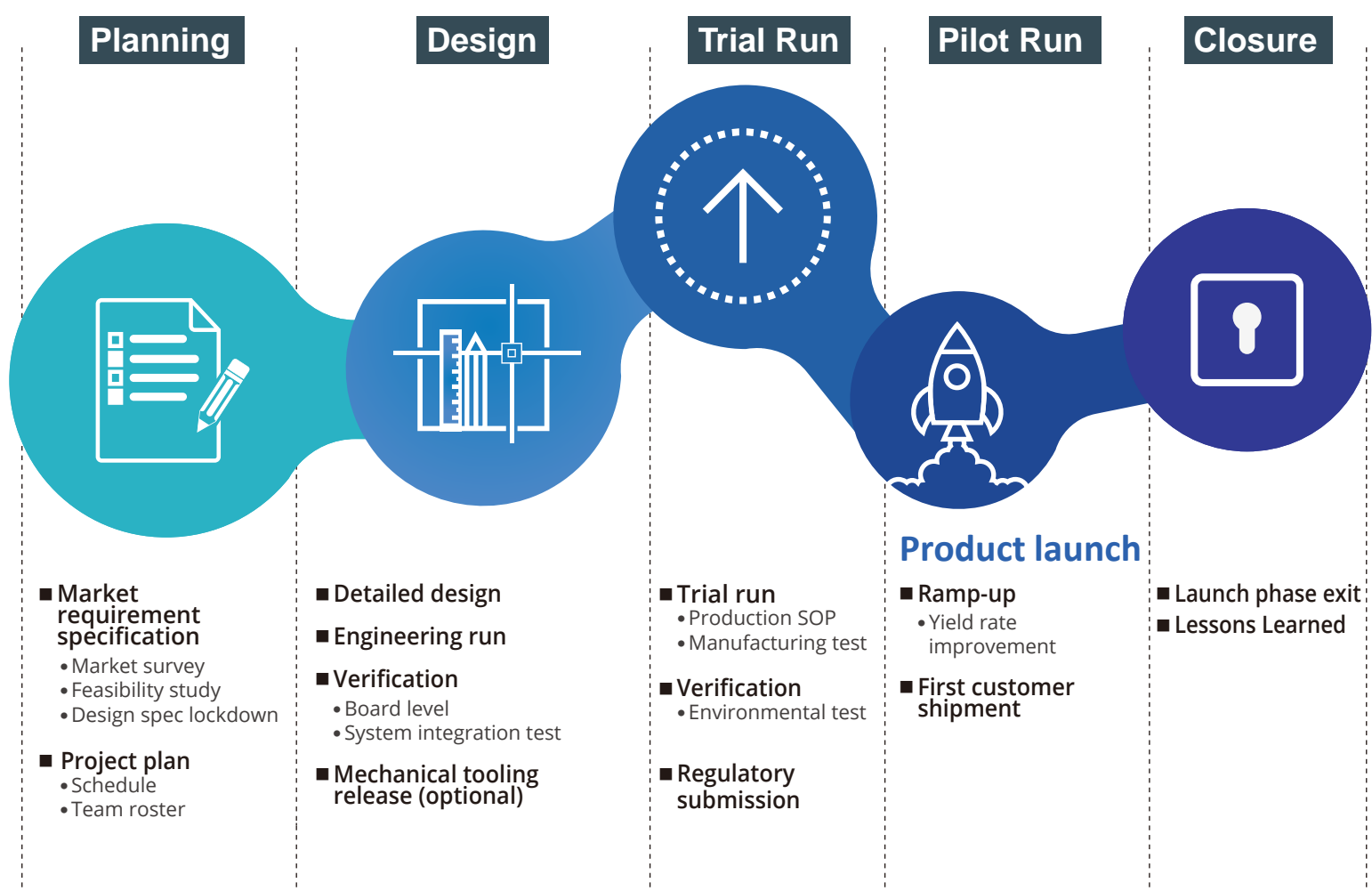
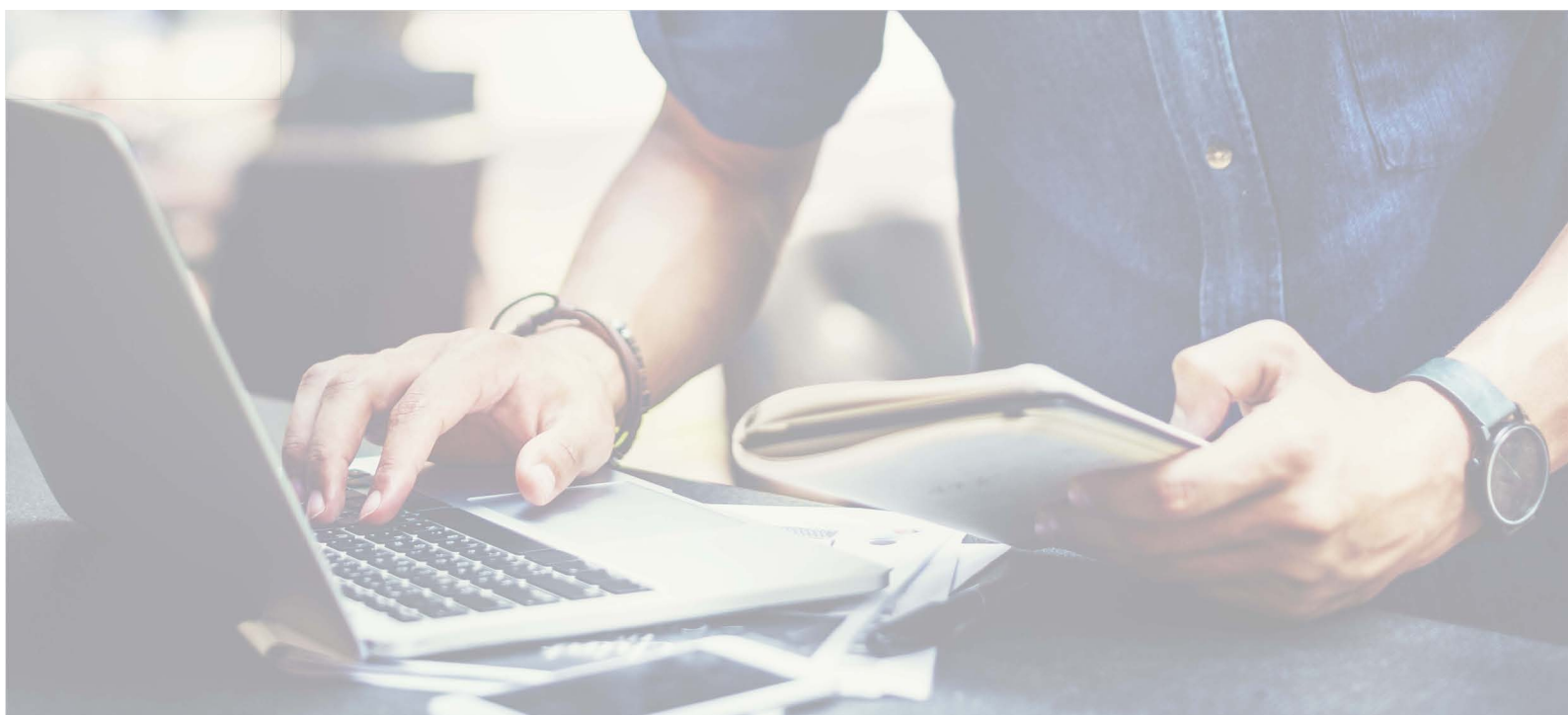
Total control of software releases

- EtherWAN specializes in custom network solutions for businesses and industries that require exceptional capabilities from both the firmware and the physical equipment. EtherWAN builds software expertise from the ground up, with complete understanding of every software module being integrated.
- Full access of the source code at the OS, middleware, and application layers: It is not uncommon that software engineers run into binary libraries at some point while tracing source code for issue analysis. With software releases built from the source code level, customers can ensure that field issues, if any, can be resolved with the clear root cause understood and analyzed.



Redundancy know-how

- It is critical that network systems stay up and running at all times. Various redundancy features are available within EtherWAN systems:
 - Dual firmware images prevent a system from crashing in the event of an error during upgrade.
 - Redundant power input design protects against single-point power failures.
- With the proven Alpha Ring (self-healing) and Alpha Chain technologies supporting failover of just 15 milliseconds, EtherWAN continues to develop network redundancy technologies to meet different application needs.



When Ethernet Connectivity is **Crucial**

Creating reliable, secure, and durable network solutions requires more than just manufacturing know-how and quality assurance. It requires an in-depth understanding of the requirements and constraints of a client's specific application. EtherWAN's engineering team services are customer-focused, ensuring that all parties involved in network design and implementation have the information necessary to make the best decision.

Network Consulting

With decades of experience in Ethernet connectivity for critical environments, EtherWAN has assisted many clients with the design, implementation, and maintenance of efficient networks in the fields of IP surveillance, intelligent transportation systems, renewable energy, oil and mining industrial applications, and factory automation.

Our network consultant service team can help you create a network from scratch. Or better yet, take an existing network and enhance or update existing components for improved flexibility, maximized utilization, and a more cost-effective configuration.

Product Consultation

Networks underlie all major information technology activities, and the hardware and protocols used to implement networks are crucial to long-term success.

A properly designed network protocol is the key to efficient and stable communication between network devices. Choosing the proper products and network protocols creates the most outstanding benefits from system integration. EtherWAN's product consultants provide advice and guidance on a full range of products and services to help clients realize the most appropriate solutions with maximized benefits. EtherWAN's Online Product Selector provides fast and efficient identification of the correct switch for a specific application.



Initiation

- Project Manager assigned
- Identify Requirements



Planning

- Topology outline
- Requirements and scope definition
- Benefits defined
- Simulation



Executing & Consulting

- Execution and issue analysis
- Executive summary



Identifying Challenges, Structuring Solutions

Striking the right balance between speed, cost and ease of installation, and widely compatible with almost all end devices and protocols, Ethernet remains as the ideal networking system for the vast majority of applications.

However, high temperatures, humidity, water leaks and bright light are all potentially harmful conditions that could damage network equipment. The key to avoiding debilitating network outages lies in the selection of the proper equipment, both when creating new networks, or upgrading existing infrastructures. With the right choices, network stability and performance can be maximized, while set up in such a way as to make future upgrades or expansions relatively trouble-free.

Advanced Training

At the end of the day, an organization's data has to flow smoothly. Networking projects require a unique combination of professional knowledge, planning, and technical skills, all of which EtherWAN is poised to provide.

EtherWAN offers customized training sessions, based on the specific needs of each client, to provide comprehensive understanding of the hardware and software aspects of networking, from basic topologies to wide-scale commercial and educational infrastructures. EtherWAN also provides specialized product training for specific product lines, which enhances product knowledge and applications for both small and wide-scale project executions.



Training

- Technical training
- Product training
- Implementation support



Closing & Maintenance

- Finalize review and close
- After sale service and maintenance

Wayside communication

A Wayside Network is part of a railway signaling system and it can be implemented by diversified industrial Ethernet solutions. The network consists mainly of the following equipment:

Interlocking Systems

that control trackside objects such as railroad switches and railway signals.

Wayside ATP Systems

that handle all communications between itself and trains within a zone.

ATS Systems

that are installed in a Control Center (All ATO and ATP are managed by ATS).



Passenger Help Points at New York Transit Stations

To enhance passenger safety and security, existing Customer Assistance Intercoms (CAI) were replaced with new Help Points Intercoms based on ridership for each station. Positioned for easy access and high visibility, the new Help Points are designed specifically for the subway environment. They are an easily recognizable communications tool for people needing to report an emergency or ask for directions. Passengers on subway platforms now have immediate access to the station booth and personnel at the Rail Control Center. The networked solution involved a large number of devices installed in conditions of limited space. Power was required for end devices such as IP Intercoms and IP Cameras, in locations with high temperature and excessive electromagnetic interference. To overcome these challenges, the EX78000 series was deployed due to its versatility of port configuration, compact size, and PoE capabilities. Additionally, the sophisticated management features of the EX78000 series ensure long-term availability and reliability.



PIS (Passenger Information Systems) of Malaysian Railway Stations

Built in the early 20th century, and nearly 2000 kilometers long, the Malaysia-Thailand Railway is a major international rail line. In a security upgrade, the existing CCTV system was equipped with PoE enabled IP cameras and VOIP intercoms. Collected information was sent to an electronic display board to be viewed by passengers. Factors that had to be considered in the network design included transmission stability over long distances, temperature inside switching cabinets, space constraints, and ease of maintenance. EtherWAN EX61000A and EX76000 series switches were selected for this project, and customized firmware was created to accommodate the system's special transmission requirements.

Wayside ATO Systems

that provide information such as destination or estimated dwell time to trains.

Video Control Systems

to enhance safety operations, and Passenger Information Systems (delivering information to passengers such as arrival or departure time of trains or any other event).



Signalling Management in Jaén Tramway Systems

The Jaén Tramway is a light rail system in Spain, and it required a railway signaling management system for the Barcelona region. A centralized set of Normal-Reserve interlocking PLCs execute signaling tasks with high level of availability and feasibility. Redundancy is the key technical requirement to make the interlocking mechanism communicate with Ethernet-based PLC remote input/output units installed in field cabinets and connected to field elements (signals, motors, etc.) without the risk of downtime. The EX71802 was selected, due to its being capable of providing multiple redundant networks through Alpha-Ring and Alpha-Chain technology. Furthermore, design compliance with EN50121-4 railway EMC standard makes ensure that the switches have strong resistance to electromagnetic interference.



Rail Track Safety in Xian, China

A railroad switch is a mechanical installation enabling railway trains to be guided from one track to another, such as at a railway junction or where a spur or siding branches off. The correct setting of switch points is fundamental to the safe running of a railway. A new subway line in Xi'an China required a signaling management system for improved safety. The deployment includes high resolution IP cameras near the railroad switches, allowing images to be transmitted back to the control center. The challenge was in transmitting captured data from the rail side back to the control center, which was located hundreds of meters away. High EMS sustainability was required. The ED3541 and PD3041 were selected, as both have been tested and proven with 2kV ESD protection and a constant transmission rate of 100Mbps over a 300 meter telephone wire (RJ-11). By connecting a PD3041 surge protector, the total ESD protection reached 4kV.

Broad Product Range

With a core focus on connectivity products for extreme environments, all EtherWAN products are tested exhaustively in order to meet the strictest requirements in terms of performance and lifespan.

1

Ethernet Switches

EtherWAN offers a full line of Unmanaged, Web-Smart and Managed switches with an emphasis on products designed for harsh environments. With a wide range of switches supporting PoE, EtherWAN products are ideal for Networks requiring a high level of reliability and remotely powered devices.

- Managed, web-smart, and unmanaged switches
- Hardened, Industrial, and Commercial grade
- PoE support with up to 60 Watts per port on select models
- Layer 2 and Layer 3 switches
- Gigabit Ethernet, 10G



2

Ethernet Extenders

EtherWAN's Ethernet Extenders remove the standard 100-meter limit of IEEE 802.3 Ethernet, and use existing cable infrastructure such as phone wire, twisted pair or coaxial cable to economically connect remote or separated networks.

- Proprietary Power over Link (PoL) Technology
- Ethernet Extender over Coaxial Cable
- Ethernet Extender over Copper Wires



3

Media Converters

Media converters serve as a bridge between fiber optic and copper media. Options include single mode, multi-mode, and WDM (Wavelength-division multiplexing) fiber optic and 10/100/1000 Mbps copper media, allowing for stable and high-speed connection of geographically distant LANs.

- Gigabit
- Fast Ethernet
- Multiple Channel



4

Surge Protectors

In today's network environment, a power surge is not limited to the power source coming from the wall outlet; there are also other factors to consider. Power surges coming through the Ethernet Cable can be fatal to valuable network equipment. Designed for harsh environments, EtherWAN's surge protection safeguards your valuable network equipment.

- Ethernet Port Surge Protector
- Copper Pairs Surge Protector



5

Accessories

EtherWAN provides a variety of accessory products to support our connectivity solutions.

- Network Interface Cards
- Industrial Power Supplies
- SFP Modules
- Mounting Kits
- TransRack



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