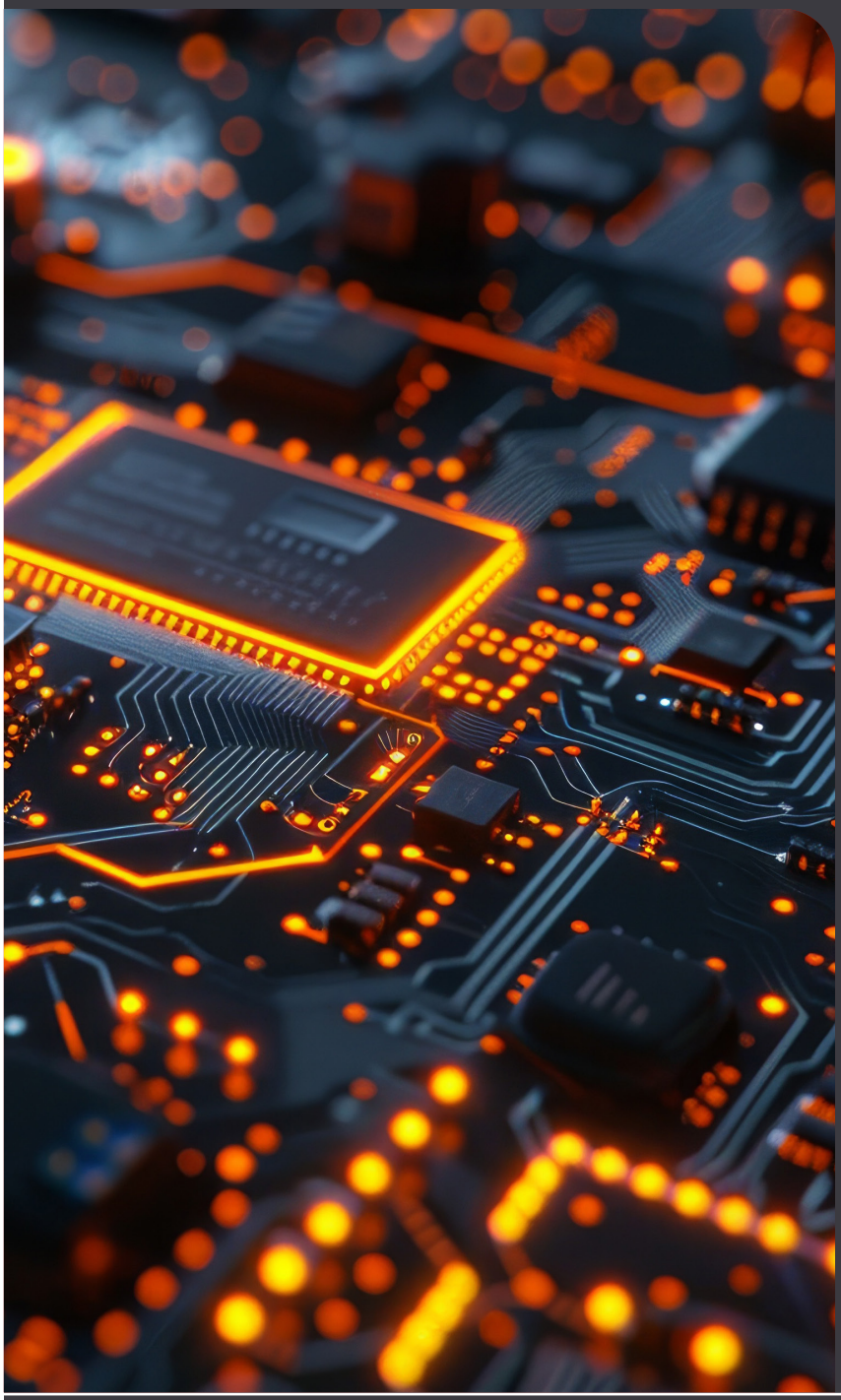
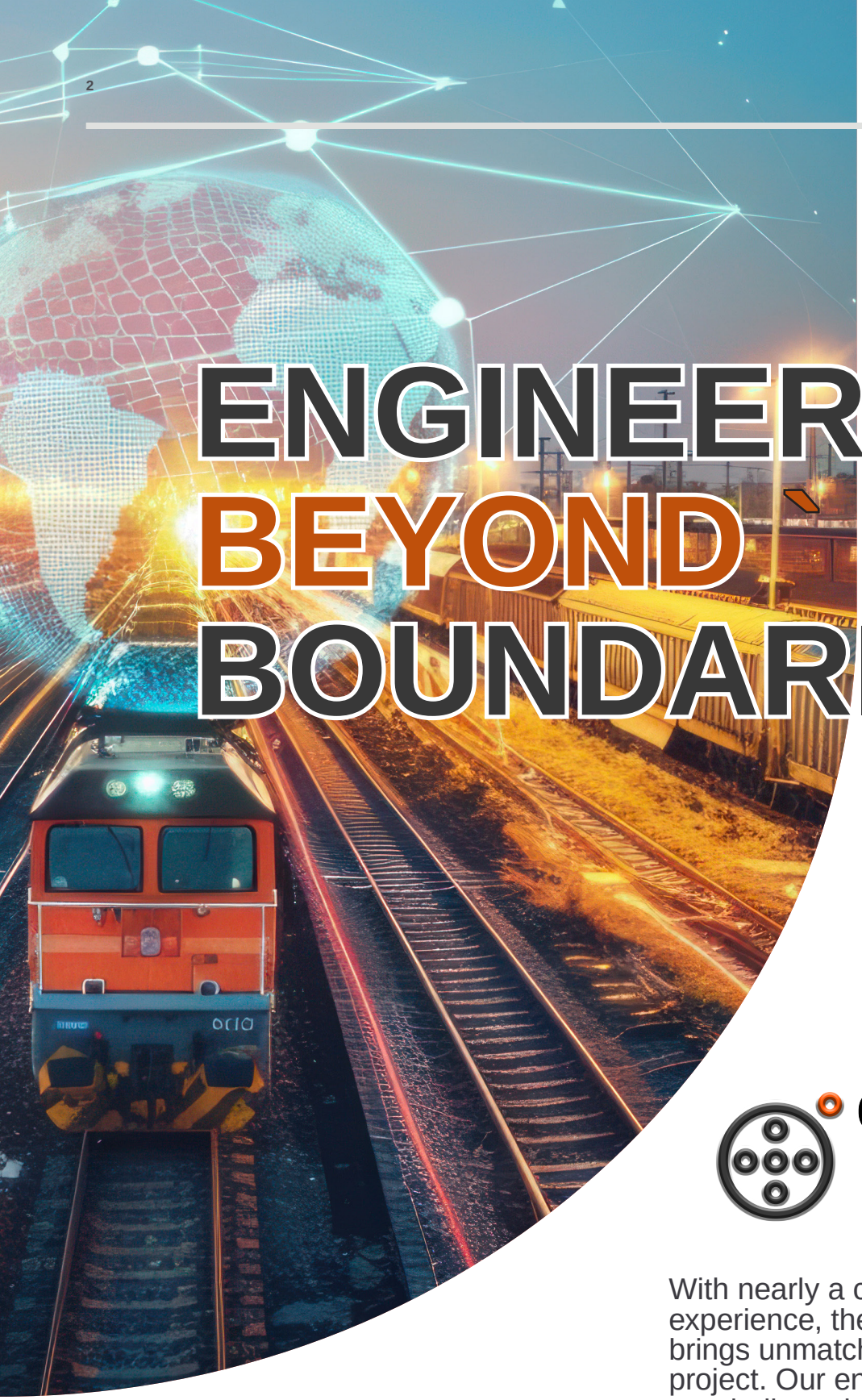
OUTLIER ENGINEERING GROUP



Capabilities Overview

EMPOWERING RAIL



ENGINEERING BEYOND BOUNDARIES

OUTLIER ENGINEERING GROUP

With nearly a century of collective rail experience, the Outlier Engineering team brings unmatched expertise to every project. Our engineers and developers are dedicated to crafting tailored solutions that meet the unique demands of rail operations, from advanced software to rugged, rail-ready hardware. When reliability, precision, and innovation are essential, Outlier Engineering is the partner you can trust to keep you on track.

Table of Contents

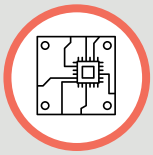
5. Our Capabilities
6. Successful Projects
7. Our Solutions
9. Next Generation
11. Our Process
13. Our Team

WE DO NOT THINK WE ARE A PERFECT FIT, WE KNOW WE ARE.

Our Story

Outlier Engineering Group was born from a vision to break the constraints holding the rail industry back. With nearly 100 years of combined experience working for some of the biggest names in rail, we saw firsthand how innovation was often sidelined by rigid processes and outdated systems. Johann Wolfgang von Goethe's words resonate deeply with us: "None are more hopelessly enslaved than those who falsely believe they are free." We founded Outlier to offer railroads true freedom through flexible, efficient, and lower-cost technology solutions. Our approach empowers railroads to break free from limitations, unlocking their full potential with the tools and insights to drive the future of rail forward.

Some of our Capabilities



Embedded HW SW Development

Extensive experience in the full product life cycle development projects creating rail spec bare metal and Linux based hardware software systems.

Siemens Product Interface

Our decades of experience desiging Safetran, Invensys, and Siemens Wayside products, makes us the optimal choice in implementing interfaces.

Alstom Product Interface

In depth knowledge of Alstom product communication protocols and device operations.

Customer On-Premise Back Office Development

Experience in the complexities of building and delivering customer operated software solutions that are stable and easy to manage.

Cloud Back Office Development

Expertise in utilizing serveless cloud and on-premise technology to create vendor hosted Back Offices with high availability and low operational cost.

Web Database Applications

Fully customized web apps that meet specific business needs. We can ensure excellent performance and reliability for any type of solution.

InCab + Wayside Systems

Our team is comprised of the R&D group behind many of the wayside, crossing, on-board, in-cab, and Back Office products develped by Safetran, Invensys, Quantum, and Siemens.

Edge Computing

We can analyze massive amounts of Real-Time data at the EDGE to preemptively identify issues and mitigate risk. We have diverse experience working with devices, sensors, and computers.

Wayside Intelligence

We transform raw data from rail devices into actionable insights and anticipate needs before they arise. Unlike the unfulfilled promises of others, we succeed by leveraging knowledge gained by field maintaners in addition to advanced analytics.

Successful Projects

ALSTOM ELECTROLOGIX / XP4 LIVE DATA DISPLAY

An advanced software module that integrates with Alstom's Electrologix XP4 system, extracting real-time RX and phase data from AC track circuits. This data is presented through an intuitive web interface, providing railroad service maintainers with live plots and graphs to monitor and troubleshoot track circuits in real-time.

SIEMENS GCP / SEAR LIVE DATA DISPLAY

An advanced software module that integrates with Siemens' GCP 4K and 5K systems, extracting real-time EZ and EX impedance and phase data from AC track circuits. This data is presented through an intuitive web interface, providing railroad service maintainers with live plots and graphs to monitor and troubleshoot track circuits in real-time.

EMBEDDED CHOICE UI

An Outlier designed framework, that allows for implementation of custom Web Frontend by embedded developers with no web developement expertise. Embedded developers are able to fully control content, flow, and user interactions with a simple MQTT API. Implemented targeting low power resource constrained microprocessors.

WWAYLINK BRIDGE

ALSTOM TO SIEMENS CAMS / WAMS BACKOFFICE CONNECTOR

An innovative software module bridging the gap in Siemens' Wayside Alarm Management System (WAMS) and the enhanced CAMS platform. By reverse-engineering the proprietary Siemens protocol, our solution enables alarms from any device to seamlessly integrate with WAMS or CAMS, providing real-time data for improved safety and responsiveness. Empowering rail service teams with comprehensive monitoring and alarm management, regardless of device manufacturer, for a more adaptable, resilient trackside infrastructure.

WWAYLINK CROSSINGVIEW

CROSSING BASED SOFT LCP

An innovative Soft LCP, part of the Wayside Watcher® platform, offers two versions: a web-based interface and a local touch LCD panel, both specifically designed for railroad crossings. This advanced system visualizes track circuits while providing real-time information on crossing statuses, DAX status, and adjacent crossing data. By enhancing situational awareness and safety, our Soft LCP empowers railway operators to make informed decisions, ensuring efficient and secure train operations.

RECO BATTERY CHARGER MONITORING

A docker container based software module that monitors RECO battery chargers for RECO configured anomalous battery and ground fault conditions and alarms.

Our Solutions

We work hand-in-hand with our customers to develop solutions that enable railroads to monitor their operations in Real Time, increasing employee and vehicle efficiency, lowering costs, increasing safety, and providing better service to their clients and customers.

Our teams extensive experience in developing custom hardware, software, and firmware systems, enables us to make optimal integrated solutions that typically require multiple teams.

PARTNERS

SIEMENS

CSX

INTERRAIL ENGINEERING · INC

PIVOTAL RAIL PRODUCTS

brightline

Portwell

AnMo Electronic Solutions

08-28-08
08-28-11
08-28-12
CORE2
CORE2

Next Generation

Our road map of current and future projects.

Skills

- WSDMM Applications
- DAU Applications
- Siemens/Safetran CDL
- Railspec Hardware
- Embedded Software
- Full Stack Web Application
- Desktop Application Development
- Cloud Computing
- Enterprise Software Development
- High Availability
- Data Analytics

Extensive Familiarity

- Siemens GCP
- Siemens SEAR & ARGUS
- Alstom Electrologix
- Alstom WSDMM & DAU
- Kubernetes
- Dockers
- Non-relational Databases
- Relational Databases
- Cache Databases
- Time Series Databases
- MQTT
- React
- AWS

Achievments

- HW and SW in Revenue Service on Class 1 Railroads
- Device Message Rates > 10000/second
- Databases with > 1 Trillion Records with Query Times under 10ms.
- Services that achived 5 9's Availability over 2 year period.
- Active - Active Multisite Redundancy
- Continuous Customer Back Office Integrations with Realtime Event Driven Feeds.
- Implementation of Tier 4 Datacenter
- Implementation of Cloud Native Enterprise Services

We are Agile

We are technology problem solvers, solution providers, advisors, and architects with deep expertise across a broad range of industries. We are Agile.

Initial Discussion and Planning

1 STEP

Let’s get together for their project

We start every project by sitting with the customer’s team and all necessary stakeholders to gather requirements, learn their processes, and fully understand their business needs.

Project Evaluation Conceptualiztion and Design

2 STEP

Architecting their solution

Using the knowledge we gained from interacting with your team we research existing solutions and evaluate their applicability. If we determine there is an existing technology that meets customer needs we will recommend it and assist them in its implementation. If there is nothing on the market that meets their needs we will architect a custom solution for them.

Programming Implementation

3 STEP

We implement their solutions

During this phase of a project we work tirelessly to develop and/or implement solutions that match customer needs. We keep in constant communication with their teams to insure that the results of our development keep pace with their current needs.

Testing and Customer Acceptance

4 STEP

We test it. They approve it!

Test it, trust it. Other than gathering requirements, no other stage is as vital to your project. We peform Unit Testing, Functional Testing, Integration Testing, System Testing, Performance Testing, and Onsite Customer Testing to ensure our solution meets customers needs.

Product Delivery

5 STEP

Working with their team to deploy the system

As we deploy solutions, whether on-site or in the cloud, we engage customers team at all levels from vehicle operators to executive management. We will ensure that each user of our solution is fully trained.

Maintinance Support

6 STEP

In person support when they need it

We have experience in providing full customer support for our solutions including email, phone, and in person support 24 hours a day 7 days a week when and where our customers needed it. We were there monitoring and managing their system preemptively fixing issues before they occurred.

READY!

... to succeed.

Our team of engineers has nearly 100 years of experience in Software and Hardware development. We specialize in creating cost effective solutions that meet our customers' needs. We are a team whose careers are our lives. We question norms and are always tinkering with new technology.

Simply put, we Love what we do.

James Barge

SENIOR SOFTWARE ENGINEER
SOFTWARE ARCHITECT
HARDWARE ENGINEER

15 Years of Industry Experience in embedded firmware & application development. Years of experience architecting optimized software solutions that meet requirements.

Jason Cobb

SENIOR HARDWARE ENGINEER
SENIOR SOFTWARE ENGINEER
SOLUTIONS ARCHITECT

25 Years of Industry Experience in hardware design, embedded, & enterprise application development. Proven track record of design solutions that meet customer needs.

David Meadows

SENIOR SOFTWARE ENGINEER
FULL STACK ENGINEER

15 Years of Experience in software systems design & application development. Proficient in full stack dev, cloud architecture, & DevOps. Experienced in validating application software.

Ngheip Thai

SENIOR SOFTWARE ENGINEER
SYSTEMS ENGINEER

30+ Years of Industry Experience in embedded & enterterprise database application development. Years of experience in ensuring designs meet customer and regulatory requirements.

Josette Cobb

OFFICE MANAGER

A seasoned executive assistant with over 25 years of experience, specializing in administrative, payroll, bookkeeping, project, and supply chain management.

Skilled OnDemand Labor

Should the need arise for non-embedded applications we have access to highly skilled low cost European software developers with similar cultures and work ethics.

Notes

Remarks

©2024 OUTLIER ENGINEERING GROUP LLC.
ALL RIGHTS RESERVED