



 Flow Labs Mead&Hunt

Driving the Future of Signal Optimization

 How Mead & Hunt are driving the future of Signal Optimization with the Flow Platform

A Ground-Level View into High-Impact Signal Engineering

Justin Effinger, PE, PTOE has spent the past 15 years building a reputation as one of the leading minds in traffic signal engineering. Beginning his career at the Wisconsin Department of Transportation, he acquired a hands-on understanding of agency operations—working directly in cabinets, analyzing live controller behavior, and managing complex hardware systems with over 17,000 adjustable parameters. This early exposure to the real constraints agencies face gave Justin a deep appreciation for practicality, precision, and process. Justin also worked for Lake County (Illinois), where he got more experience with advanced transportation management systems and technologies that promoted remote capabilities in the Lake County Traffic Management Center. This broadened Justin's horizons and got him into data analytics and started working on national efforts with the Federal Highway Administration.

After a period at a technology startup, where he explored AI-powered optimization strategies, Justin joined Mead & Hunt, a top-tier engineering consultancy serving state and local DOTs across the U.S. In his current role, he's focused on bridging the gap between emerging technologies and the everyday realities of public-sector traffic management. His work emphasizes not only deploying the right data tools but making them understandable, trustworthy, and valuable to the agencies that rely on them.

"I've always been fascinated with using data in traffic signal operations. With modern data, technology and data analytics, we shouldn't be basing 3–5 years of signal timings on one day of turning movement counts. Flow Labs enables continuous insights instead of limited snapshots."



Justin Effinger
Practice Leader,
TSMO: Arterial Management,
Mead & Hunt

Building Confidence Through Verified Data

Flow Labs supports the full signal engineering workflow—from initial data collection to optimization, validation, and post-deployment monitoring. But for consultants and agencies to use that data in decision-making, accuracy is essential.

During a signal optimization project with the Minnesota Department of Transportation (MnDOT), Justin Effinger used Flow Labs across 16 intersections across 7 different corridors. The project relied on probe-based turning movement counts (TMCs) and probe-based signal performance measures to identify performance issues and recommend timing changes. Before proceeding, Justin conducted validation techniques with already available existing data from MnDOT to compare Flow's TMC data with other data sources.

The comparison showed that Flow's estimates aligned closely with previously collected volumes, giving Justin the confidence to use the data in project analysis and agency communication. This reduced the need for new manual counts and allowed the team to move forward more efficiently and with more data, including weekends, which proved valuable in creating the time-of-day schedules.

For consultants, validation exercises like this are critical. In a competitive and often crowded vendor landscape, being able to verify data builds trust—not just in the platform, but in the recommendations built from it. Having validated the data himself, Justin was able to stand behind the results and integrate Flow into the rest of the project's workflow.

Accelerating Traffic Analysis Without Compromise

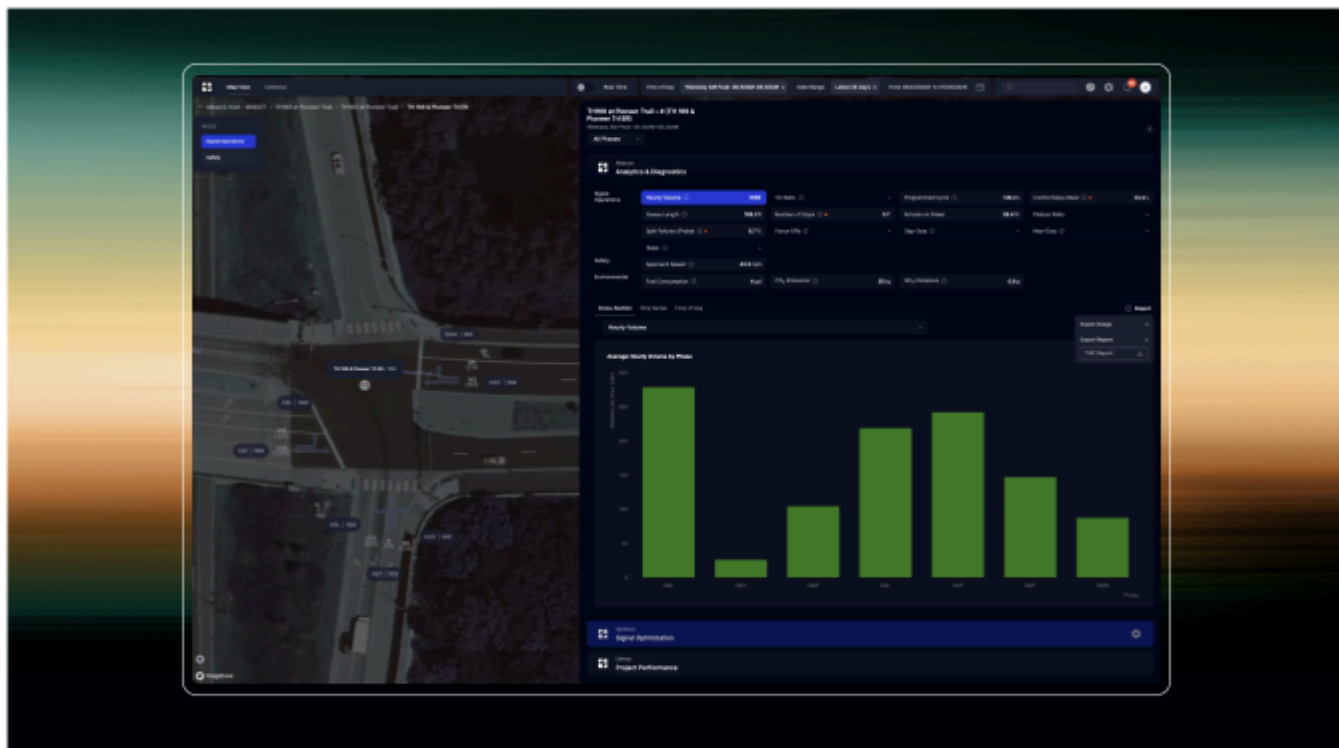
One of the most immediate benefits Justin sees from using the Flow Platform is the acceleration of traffic analysis workflows. As a consultant, he is often tasked with making data-driven recommendations under tight timelines and limited budgets. Traditional methods—such as conducting manual turning movement counts or using siloed simulation software—require extensive time in the field and hours of post-processing. With Flow Labs, Justin can access continuous, high-resolution data remotely and on demand, dramatically reducing the effort required to diagnose issues, validate signal performance, or prepare reports.

In practice, this has translated into meaningful time savings. For example, instead of coordinating field teams to gather data at multiple intersections, Justin uses Flow's platform to instantly pull a week or month's worth of signal performance data across entire corridors. These insights are not just quicker—they're richer and more representative of real-world conditions over time. This enables him to focus on analysis and strategy rather than data collection and cleanup.

By equipping engineers with ready-to-use data, Flow Labs allows consultants like Justin to deliver greater value without inflating project costs. This efficiency has allowed teams to reinvest time into more complex problem-solving, proactive recommendations, and more responsive communication with agencies.

Shaping the Platform Through Practitioner Feedback

In addition to accelerating analysis, Flow Labs stands out for how it evolves in partnership with its users. Rather than building features in a vacuum, the team actively listens to practitioners in the field—especially trusted super users like Justin—who offer insight into real-world needs and friction points.



Flow Labs partnered with Justin to develop a Turning Movement Count (TMC) report generation tool that allows him and other users to generate a full and accurate report in just a few clicks.

“That feature saved me hours. It seems small, but when you’re reporting to agencies, it’s huge. Flow Labs listened and delivered.”

One example of this collaboration emerged during the PBSPM deployment in Minnesota DOT. Justin identified a recurring challenge in his reporting workflow: exporting turning movement counts across multiple intersections required downloading and stitching together individual files, then reformatting the data to match agency templates. It was a repetitive and error-prone task, costing hours per project.

Justin raised the issue with the Flow Labs team, who worked with him to define the ideal export format. Within two months, Flow released a streamlined export feature that allowed him to pull all relevant data in one

step—already structured for agency submission. What seemed like a minor product tweak had a major impact on consultant efficiency - reducing reporting time by hours per corridor, per project - and client satisfaction.

This kind of feedback loop is a core part of Flow's product philosophy. Super users like Justin help surface high-impact improvements that benefit not just their own projects, but the broader engineering community. As a result, the platform continues to evolve in ways that reflect the actual workflows and priorities of the engineers and agencies it serves.

Outperforming the Status Quo: A Market in Need of Trusted Tools

Flow Labs' ability to differentiate itself from the competition isn't rooted in a single metric—it's the combination of accuracy, transparency, and partnership. The traffic engineering market is saturated with vendors offering partial solutions: some offer data without context, others offer tools without flexibility. Justin's experience with Flow contrasts sharply.

Too often, agencies make signal timing decisions based on studies conducted once every five years. These studies are expensive, inflexible, and quickly outdated. Justin is flipping the procurement model—helping agencies understand how integrating probe-based data platforms like Flow Labs into regular workflows can generate continuous, cost-effective insights without increasing project budgets. In this model, consultants can deliver traditional services alongside data-driven diagnostics, real-time performance dashboards, and ongoing optimization—all while staying within the original scope and budget.

"If we pitch Flow as part of a timing contract and don't increase the cost," Justin notes, "we're able to give agencies TMCs, PBSPMs, and more. That's flipping the script on procurement."

The Path Forward: Engineering + AI as the Foundation of Modern Traffic Management

As Justin looks ahead, he sees data not only as a source of insight, but as a tool for resilience. He's exploring how to use Flow Labs to manage arterial traffic more actively—whether it's weather events, road closures, or unexpected surges in demand. Traditional simulation tools fall short in these scenarios; Flow's real-time, AI-powered analytics fill that gap.

The ability to focus on times of day or corridors with the highest improvement potential—not just those historically studied—is a fundamental shift. It moves engineering away from reactive adjustments and toward proactive, system-wide optimization. That's where Justin sees the field going: toward a fusion of human expertise and artificial intelligence.

This future won't be delivered by software alone. It's built through the active partnership between engineering teams and platforms like Flow Labs. Consultants like Justin are not just using these tools—they are shaping

them. Their domain expertise, combined with responsive product teams, is creating an ecosystem where transportation agencies don't have to choose between cost and capability, or between innovation and trust.

At Flow Labs, we believe that engineering and AI are not separate disciplines, but complementary forces. Together, they are rewriting the rules of what's possible in traffic management. And with leaders like Justin Effinger paving the way, the future of the industry is in good hands.



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