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Cybersecurity, Information Technology, and Government Innovation

"Using Modern Tools to Counter Human Trafficking"

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Thank you, Chairwoman Mace, Ranking Member Brown, and members of the subcommittee, for inviting me to discuss how innovative technology empowers proactive safeguarding and advances victim-centered policing in the Digital Age.

At Marinus Analytics, our flagship software Traffic Jam equips frontline professionals with tools that transform the fight against exploitation. In my testimony today, I will share how we use Traffic Jam and its data, and how we constantly innovate to advance victim-centered policing and **proactive safeguarding.**

The Human Cost

Let me begin with an anonymized story of a victim trapped in a nightmare here in our country.

In 2019 in Oregon, federal agents recovered a victim confined to a small apartment with only a soiled mattress on the floor. This victim had no say in the customers, no control over her schedule, and no understanding of her rights. Language barriers and fear prevented her from asking for help.

Behind the scenes, the traffickers were running a sophisticated operation using databases and custom software to market and manage prostitution "dates." The resulting indictment revealed a staggering 30,000 unique customer bookings.

She and 27 other victims were brought to safety during a nationwide takedown. The Marinus Analytics Traffic Jam platform played a critical role, uncovering the network's online footprint and propelling the case of one very driven federal investigator from a local focus into an investigation across a dozen cities.

Turning Chaos into Clarity

The online marketplace for commercial sex is a vast ocean of data—but with the right technology, it doesn't have to be overwhelming.

Traffic Jam focuses on these platforms, where buyers connect with providers of sexual services. Hidden in plain sight among millions of ads are victims of sex trafficking.

Traffic Jam analyzes only publicly available online content and provides law enforcement with insights while upholding strict ethical and privacy standards. To date, Traffic Jam has indexed and analyzed over 1.3 billion records. In the post-Backpage era, we currently track more than 20 U.S. websites and another 100 platforms across 60 countries. In the United States, the online marketplace exceeds 75 million ads every year.

No human can keep up with this firehose of information—scrolling through endless pages, manually screening for exploitation, and piecing together clues. Traffic Jam changes that. By analyzing ads, image galleries, and buyer commentary, it extracts critical insights in seconds: locating victims, linking timelines, and expanding case intelligence.

Instead of drowning in data, investigators can redirect time and resources to what matters most—operations in the field and victim support.

Traffic Jam records serve as strong documentation in trafficking cases by providing corroborating information to support and strengthen a victim's testimony, making it more credible and complete in the eyes of fact finders. This helps build a case **around** the victim rather than **on** the victim, reducing the burden on them.

Traffic Jam turns overwhelming data into actionable intelligence, advancing public safety, and accelerating justice.

Proactive Safeguarding for Hidden Exploitation

Despite the under-reported nature of this crime type, we have a tremendous opportunity to apply technology for proactive safeguarding and protection of the most vulnerable.

One of the most profound innovations is using AI ethically to screen for missing persons for risk of trafficking. In just two years, analyzing **60,000 missing person records** from 20 public sources, we located **734 victims** between ages 13 and 25 being advertised for sexual services online. **95% were girls and young women. 84% were victims of color.**

Behind these numbers are heartbreaking stories. One missing girl, just 15, was detected as being advertised and those records and photos revealed a devastating timeline—she became pregnant during her months-long exploitation, and she continued to be exploited and publicly displayed on the adult service websites through late-term of her pregnancy.

This is an real example of “victims hiding in plain sight.” In the ocean of online records, her evidence of trafficking went unseen by public safety until we turned on this recent innovation in Traffic Jam to screen vulnerable people at scale and provide alerts to special victim units and trafficking investigative teams.

Systematic online sightings of missing persons trigger immediate responses from special victims units and trafficking investigators, transforming what otherwise may have been an inactive cold case or an invalid assumption of the victim as a “runaway”. Given the sheer number of missing children and vulnerable youth in foster care, screening-at-scale is one of the most impactful areas where the technology can improve protection against trafficking.

Tragically, many children were advertised online before their official disappearance dates—missed opportunities for intervention. We are advocating for these AI-driven screening methods for child welfare intervention in addition to law enforcement, enabling agencies to act faster, support victims sooner, and reduce harm to the next generation.

Uncovering Hidden Networks of Controlled Prostitution At-Risk of Trafficking

In the United Kingdom, Marinus Analytics has introduced a powerful new enhancement to Traffic Jam: **STAR**—an automated risk identification tool that combines network clustering, risk scoring of advertisements, and pattern analysis to detect vulnerability.

STAR brings hidden networks to the surface—controlled prostitution rings where individuals show risk factors for trafficking. By prioritizing and ranking these networks, STAR provides British police forces with a systematic way to monitor and respond to the most concerning online content, enabling proactive safeguarding at scale. STAR demonstrates how automated risk triage can systematically uncover hidden networks which is an approach that could similarly enhance U.S. detection efforts.

Advancing Victim-centered policing and evidence-based prosecutions.

One of the challenges in human trafficking screening is an over-reliance on the victim, especially children, to speak about their trauma. Technology can help bridge this gap by gathering evidence from breadcrumbs of data stitched together into its own story of how exploitation occurred. Traffic Jam records serve as strong documentation in trafficking cases by providing corroborating information to support and strengthen a victim’s testimony, making it more credible and complete. This helps build a case around the victim rather than on the victim, reducing the burden on them — especially child victims who may

be unable to provide a full statement or concrete evidence of the crime. This approach is known as evidence based prosecution.

I'd like to end by acknowledging the fact that human trafficking investigations remain among the most complex cases, with victims facing deeply layered needs. Prosecutions, for what is considered one of the largest crime types, are still far too low.

Yet, bright spots of disruption prove that progress is possible.

Proactive, technology-driven intelligence can trigger federal investigations even when victims cannot ask for help. It can link what initially seem to be small local cases to regional, national and even international networks. And it can strengthen a victim's story by supporting it with a footprint of online proof, advancing evidence-led prosecutions. Through this contribution, we are committed to amplifying the momentum of regional task forces and frontline champions in the field.

About Marinus Analytics & Traffic Jam

For over a decade, Marinus Analytics has developed and delivered Traffic Jam, a cutting-edge service that indexes and analyzes online marketplaces for sex work, enabling law enforcement to combat human trafficking at scale.

Traffic Jam originated from co-founder Emily Kennedy's 2010 undergraduate research thesis, *"Predictive Patterns of Sex Trafficking Online,"* and was first built as an academic tool at Carnegie Mellon University's Auton Lab within the Robotics Institute. Early collaboration with the Pittsburgh FBI underscored the critical role Traffic Jam could play in helping public safety agencies manage the overwhelming volume of online data.

In 2014, Marinus Analytics was founded to commercialize Traffic Jam for public safety use, supported by instrumental funding from the National Science Foundation (NSF). Today, under a subscription-based model, our work with Traffic Jam is fully sustainable through the more than 200 public safety agencies we serve across three continents, including multiple U.S. federal agencies such as the Department of Homeland Security (DHS). Intelligence analysts in 30 DHS field offices rely on Traffic Jam to support federal and regional trafficking investigations.

Our success in delivering purpose-built tools for victim-centered policing in the Digital Age would not have been possible without the funding and guidance early in our journey from the NSF's SBIR/STTR programs.

What began in Pittsburgh more than a decade ago now empowers a global community of investigators and victim-service organizations to harness online intelligence, save critical time, and mount proactive responses to this hidden form of exploitation.