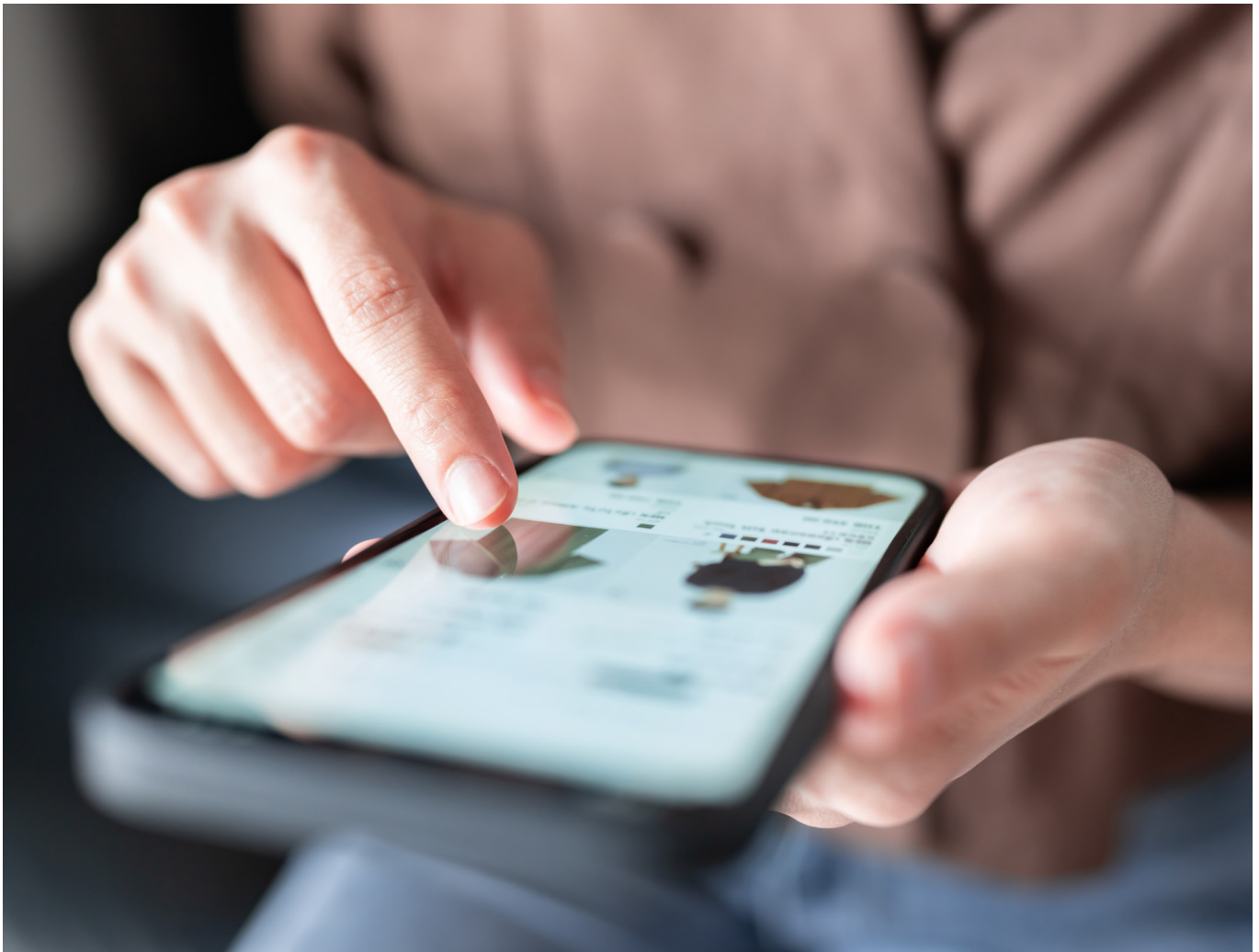# TransUnion® redefines user-based measurement with trusted execution environments and Google Cloud

March 2025

Enabling privacy-first collaboration has become a critical challenge in today's data-driven landscape. Organizations are increasingly required to work together with shared information while upholding strict privacy standards and complying with evolving regulations. Multi-touch attribution (MTA), a cornerstone for marketers seeking to understand and optimize the customer journey, has faced significant challenges due to its reliance on third-party cookies, pixels, and other tracking mechanisms. These traditional signals are disappearing under the pressure of privacy-first policies, driven by increasing regulations and browser updates. Many now question whether MTA can continue as a viable measurement approach in this new environment.

TransUnion® has addressed this challenge by implementing Trusted Execution Environments (TEEs), also known as secure enclaves, powered by Google Cloud Confidential Space, to pioneer a new approach to more secure data collaboration. This innovation ensures that data remains protected throughout its lifecycle, including during active processing, enabling partners to collaborate confidently without compromising confidentiality. By leveraging its proprietary TruAudience® platform in combination with TEEs, TransUnion enables marketers to distribute marketing attribution credit across touchpoints without reliance on deprecated signals like cookies.
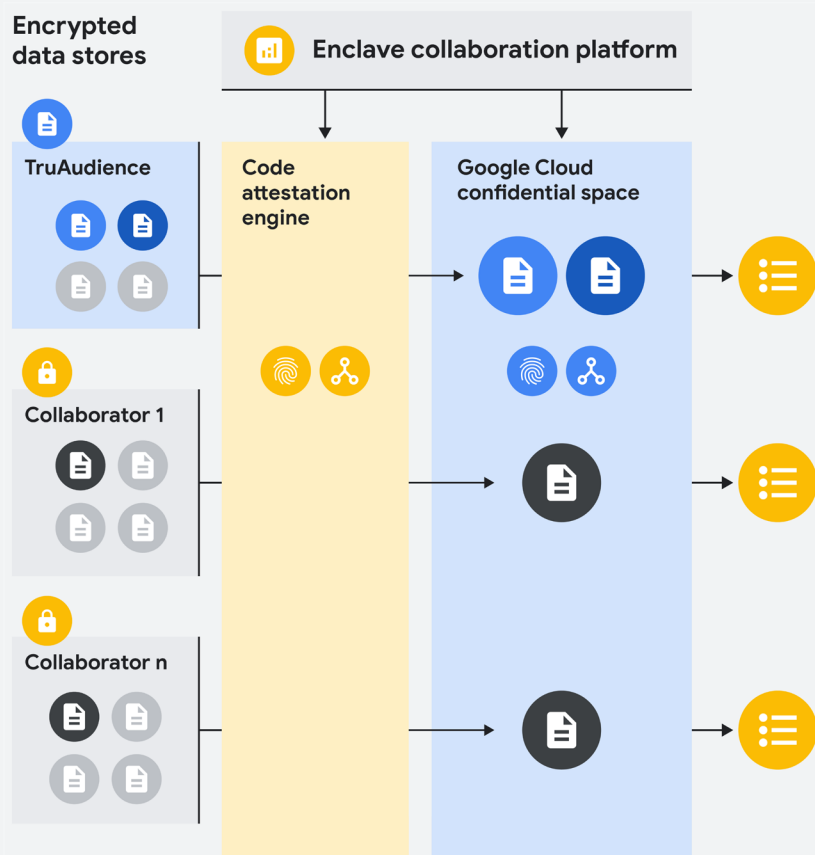
The TruAudience platform is uniquely positioned to manage identity at scale, combining sophisticated data assets with advanced technology to deliver actionable insights while maintaining powerful data privacy control for all parties involved. The innovative use of TEE technology ensures that sensitive partner data is protected during processing. TruAudience Enclave creates isolated environments where data can be analyzed without exposure to unauthorized parties, such that only verified and attested workloads are executed. The platform's identity resolution capabilities enhance this process by linking fragmented data into a unified view, enabling accurate attribution even in a post-cookie ecosystem. This user-based approach not only preserves the value of MTA but also enhances its accuracy and offers privacy protections.

The implementation of this solution within TruAudience Enclave is a technical achievement that blends cutting-edge hardware and cloud capabilities. TEEs serve as more secure areas within processors, protecting data and workloads during computation. Google Cloud Confidential Space, a key component of this ecosystem, provides a platform for multi-party collaboration while maintaining strict control over data access. Its seamless integration with the TruAudience platform allows TransUnion to leverage Google Cloud's robust encryption and containerization technologies, ensuring data security and process transparency. Containerized workloads, deployed as reproducible Docker images, enable cryptographic attestation, ensuring that only authorized code can execute within the environment. The process begins with each organization encrypting its datasets, which are then securely loaded into the TEE. Within Enclave, authorized code performs computations on the combined datasets, generating insights without exposing the raw data. Results are extracted with privacy-preserving constraints, and detailed logs document every operation, providing transparency and trust.

Private collaboration with TruAudience Enclave

Encrypted data stores

Enclave collaboration platform

TruAudience

Code attestation engine

Google Cloud confidential space

Collaborator 1

Collaborator n

01 Make encrypted data available in cloud storage

02 Author algorithm source code & set privacy budget

Code seeded to Attestation Engine

03 Review source code selected in the UI layer

All participants generate "code fingerprint"

04 Code seeded to Enclave, generate fingerprint

Compare Enclave fingerprint to Code Attestation fingerprint & permit encrypted data to be copied and analysis run

05 Output limited to results and privacy budget agreed to during Code Attestation step

In a proof-of-concept project, TransUnion collaborated with a leading publisher and innovator in privacy to demonstrate the potential of this solution for user-based measurement. By leveraging TEEs and TruAudience, with foundational support from Google Cloud Confidential Computing, the partnership enabled more secure exchange and analysis of log-level data. This eliminated the need for traditional tracking mechanisms while maintaining the accuracy and granularity of attribution. The project proved that MTA could not only survive but thrive in a privacy-first environment by utilizing identity-level data in secure circumstances. Enhanced privacy, improved transparency, and simplified data governance were all hallmarks of this collaboration.

The importance of Trusted Execution Environments extends beyond advertising measurement. TEEs are critical for enabling more secure data collaboration across industries, providing isolated environments where sensitive information can be processed without fear of unauthorized access, making them ideal for collaborative planning and audience activation as well. TEEs ensure that sensitive computations remain protected, enabling multi-party collaboration and advanced analytics while maintaining confidentiality. Additionally, by verifying the integrity of code running within the environment, TEEs prevent data misuse by malicious actors.

The impact of TransUnion's approach to solving the challenges of user-based measurement is significant. It enhances security by protecting confidential data during processing, reduces the risk of breaches, and provides controls to help meet data protection obligations, effectively expanding the channels, audiences, and partners within the scope of measurement. At the same time, it delivers operational efficiency, enabling seamless and scalable collaboration without compromising performance. Google Cloud's contributions to this ecosystem, through its Confidential Computing platform, amplify these benefits by providing a foundation of trust and security that complements TransUnion's advanced identity solutions. These advancements position TransUnion as a leader in privacy-enhancing technologies, with applications that extend beyond marketing analytics to areas like customer segmentation, audience creation, digital activation, and fraud prevention. By leveraging TEEs, Google Cloud Confidential Space, and the TruAudience platform, organizations can unlock new opportunities for collaboration while adhering to the highest standards of privacy and security.

To learn more about how the TransUnion TruAudience Platform and TruAudience Enclave solutions can transform your data collaboration and analytics efforts, visit transunion.com/solution/truaudience/analytics. By adopting these cutting-edge technologies, businesses can meet the demands of the modern data ecosystem, ensuring both innovation and compliance in a privacy-first world.

Google Cloud