Trusted Time for Critical Infrastructure

A unified service for verifiable timestamps, secure time synchronization, and unbiased randomness.

What Zurvan Is

Zurvan provides trusted, verifiable time for digital systems that cannot afford ambiguity. It powers an emerging class of infrastructure where *ordering*, *timing*, and *auditability* are mission-critical – government, telecom, finance, AI, and national security.

Zurvan commercializes **Stamp/Beacon Trees**, a next-generation cryptographic system designed by Peter Todd, transforming them into an enterprise-grade service that delivers:

- Guarantees about when events happened
- Confidence that clocks are correct and uncompromised
- Tamper-evident audit trails
- Unbiased, verifiable randomness
- Offline-verifiable proofs usable in courts, audits, and compliance environments

Why Trusted Time Matters Now

Every modern system relies on time, yet the world still depends on infrastructure built decades ago (NTP, ad-hoc log timestamping, unverified randomness sources). These older systems fail under modern adversaries, regulatory expectations, and distributed architectures.

Zurvan addresses problems that legacy approaches cannot:

- Logs that can be rewritten
- Clocks that can be spoofed or drift
- Financial systems that need provable trade ordering
- Telecom systems that require secure cross-network timing
- AI data centers coordinating workloads across regions
- Governments needing forensic-grade integrity for digital operations

Time is the root of digital trust—and today, it is not verifiable. Zurvan fixes that.

Core Capabilities

1. Precision Timestamping

Zurvan provides attested timestamps with defined accuracy bounds, ensuring organizations can prove *when* data existed or an action occurred.

Use cases:

- Government logs and evidence chains
- Regulatory compliance (finance, energy, health)
- Digital contracting and notarization
- Court-admissible event proofs

2. Secure Time Synchronization (NTP Replacement)

Zurvan offers a **secure, verifiable alternative to NTP**—resistant to manipulation, spoofing, and asymmetric network attacks.

Use cases:

- 5G/6G networks requiring precise radio timing
- Stock exchanges and high-frequency trading
- Distributed AI workloads
- National security and defense systems

3. Verifiable Randomness

Zurvan provides unbiased randomness with guaranteed secrecy until publication—essential for fairness, security, and transparency.

Use cases:

- Lotteries and public draws
- Gaming and digital fairness
- Scientific experiments
- Consensus protocols and system coordination

Who Uses Zurvan

Governments
For tamper-evident logs, digital forensics, elections, secure recordkeeping, transparency tools, and national time infrastructure.

Telecom & Network Operators
For authenticated timing required by 5G/6G, multi-site synchronization, and cross-provider trust.

Financial Institutions
For provable transaction ordering, regulatory compliance (MiFID II, CAT), audit trails, and settlement integrity.

AI & Data Centers
For distributed job coordination, multi-region task ordering, model training reproducibility, and verifiable system state.

Public Trust Systems
For lotteries, citizen transparency, fair protocols, and open verification.

Value Proposition

Zurvan provides trust where milliseconds matter and where logs, clocks, and randomness are legally and operationally important.

Organizations choose Zurvan because it is:

- Higher trust — verifiable, tamper-evident, audit-ready
- More precise — timestamps limited only by network latency
- More secure — resistant to MITM and manipulation
- Easier to adopt — drop-in APIs, deployable in any infrastructure
- More scalable — handles national or global workloads with low operational cost

Zurvan doesn't replace your systems—it makes them trustworthy. The offering Zurvan delivers:

- Managed Trusted Time Service
- National-scale timestamping and verification network
- Enterprise APIs and SDKs
- Audit/Compliance verification tools
- Deployment options: cloud, hybrid, or sovereign on-prem

All built around a simple, powerful promise:

If time matters to your system, Zurvan makes it trustworthy.