

DAMS

STRUCTURAL HEALTH MONITORING (SHM)

Keep dams safe, stable, and operational.

Real-time vibration, displacement, and hydro-structural insight—from crest to foundation—so operators act with evidence, not assumptions.

Why Digitex for Dams

- Digitize at the source + DigiSync®: clean, phase-aligned data for trends and event analytics.
- No gaps through outages: Store&Forward® and local logging with auto-backfill.
- Field-ready hardware: IP67 aluminum, quick mounting, flexible power (AC/PoE/solar).
- End-to-end suite: Voyager® (acquire), Observer (OMA), Nexus (redundant streaming), Vista (view), xAlarm (notify).

What you monitor

- Vibration & dynamic response: crest, galleries, abutments, foundation, free-field reference
- Displacement/tilt & strain: blocks, joints, spillway piers, buttresses
- Hydraulic variables: uplift and reservoir level, seepage/leakage, pore pressure, temperature and weather coupling
- Optional: geophones for micro-events; extensometers/inclinometers for galleries

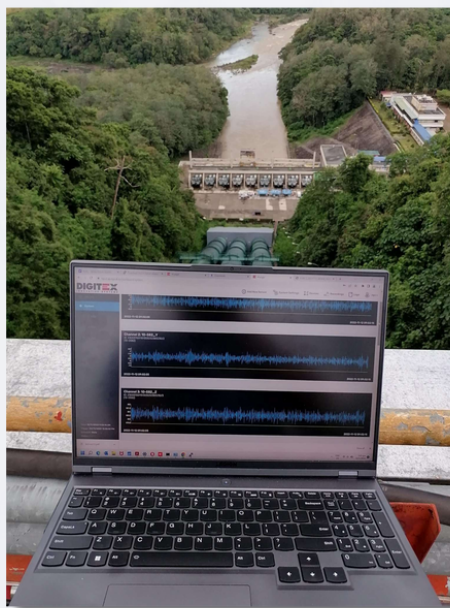
Impact at a glance

- Safety & compliance: earlier warnings, clearer evidence for regulators
- Operational continuity: targeted inspections, fewer unnecessary drawdowns
- Clarity: one synchronized dataset across owners, designers, and authorities

Dam SHM that scales with your reservoir and system

Instrument the points that matter—**crest, galleries, abutments, spillway, foundation, and a free-field station**—and **stream synchronized, high-fidelity data into a single workspace**. Start with a pilot (crest + gallery) and expand across blocks and galleries without changing architecture: the same **xDAS®** design supports dozens to hundreds of channels with **sub-ms** timing and **Store&Forward®** resilience.

Links adapt to terrain—**Ethernet, Wi-Fi, DigiMESH®, GSM**—and if connectivity drops, local recording continues and auto-backfills on reconnection. Engineers work with comparable datasets across seasons and pool levels, enabling **true trends, alarm thresholds** tied to performance criteria, and fast, defensible decisions after events.



Example: Concrete gravity dam with xDAS network: triaxial accelerometers at crest, gallery, and free-field; displacement/tilt at select blocks and spillway piers; piezo-level inputs for uplift and reservoir head; weather node for wind/temperature correlation. Streams to xPlorer/Voyager with Store&Forward® resilience.

Outcomes

- Faster modal insights and stability trending (pool-level, temperature effects)
- Clear pre-/post-event comparisons for rapid safety screening
- Confident thresholds/alerts tied to dam-specific criteria

Result: Faster modal insights and confident alarms without babysitting the network.

Your workflow with Digitex

- **Instrument** – mount/level sensors; auto-discover in Voyager
- **Acquire** – real-time streaming or local logging; sub-ms time sync
- **Analyze** – trends, spectra, OMA; correlate with hydraulic variables
- **Act** – thresholds/alerts, PDF summaries, share with stakeholders

SENTRY SYSTEM – ARCHITECTURE OVERVIEW

Sentry System® is Digitex Systems' end-to-end platform for Structural Health Monitoring. It digitizes at the sensor, time-synchronizes every channel (GPS/DigiSync®), and moves data reliably over Ethernet, Wi-Fi, DigiMESH®, or GSM/4G to a central xPlorer unit running Voyager®. This architecture eliminates analog noise and drift, keeps channels phase-aligned for serious analytics (spectra, modal, trending), and scales from pilots to large multi-asset networks.

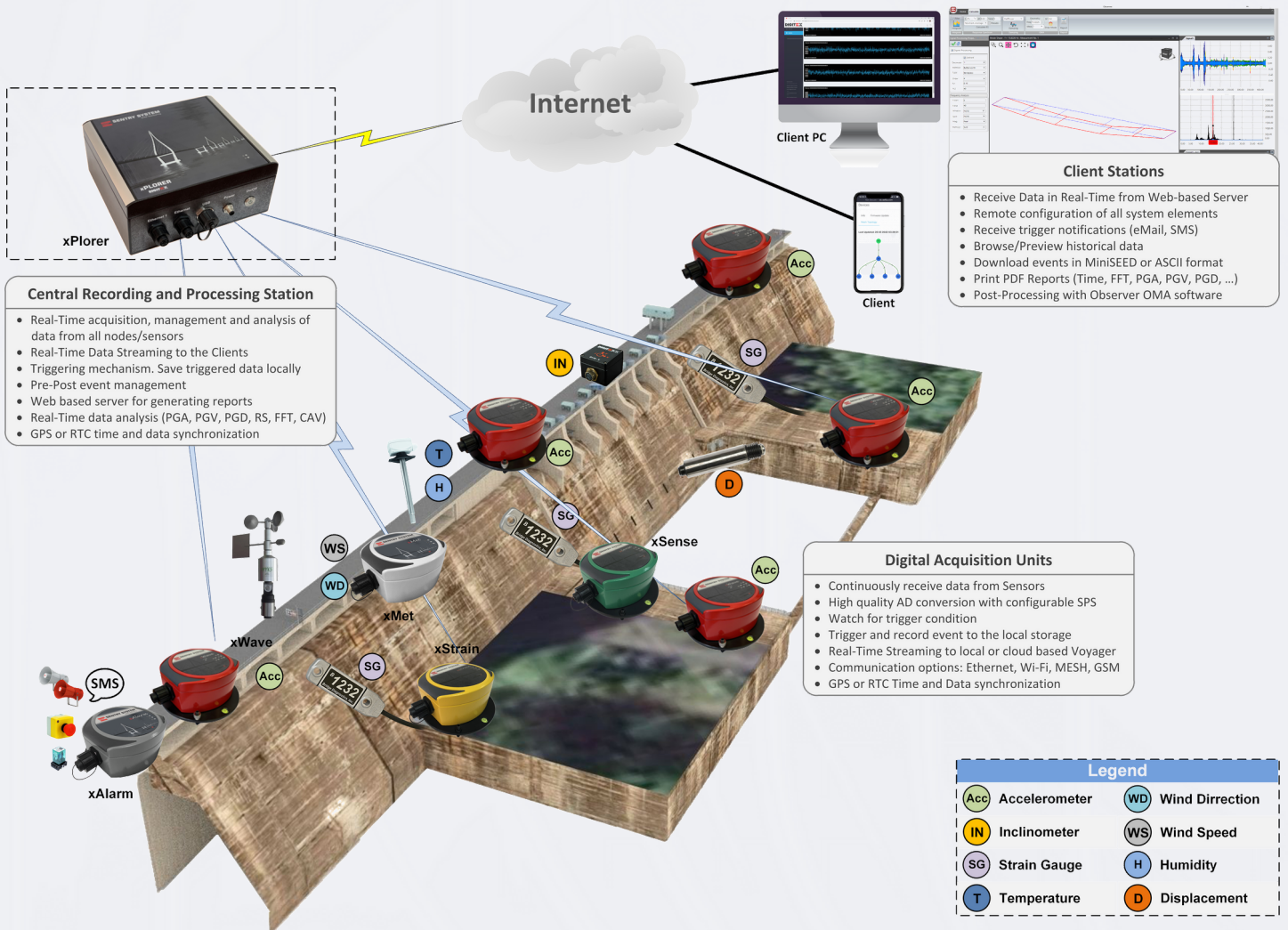
Each edge device records locally with Store&Forward® to survive link outages and auto-backfills the moment connectivity returns. Operators and engineers work in a single workspace: configuring devices, watching real-time streams, setting thresholds and alarms, and exporting reports. With Observer for OMA, Nexus for redundant streaming, Vista for viewing, and xAlarm for notifications, Sentry turns raw measurements into decisions—day-to-day and post-event.

SENTRY SYSTEM – FAMILIES YOU CAN CHOOSE

Distributed (xDAS) • Centralized (xCAS) • Standalone (xDSU) • Portable (xDAS Ambient) • Personal (pSHM) • Hybrid Architectures

SENTRY SYSTEM – DATA FLOW

Sense → **Digitize at source** ($\Delta\Sigma$ A/D) → **Sync** (GPS/DigiSync®) → **Transmit** (Ethernet / Wi-Fi / DigiMESH® / GSM) → **Core** (xPlorer + Voyager) → **Analyze** (Observer, Nexus, Vista) → **Act** (xAlarm, reports).



Sentry System - Real-time Monitoring

ABOUT DIGITEX

Digitex is a company specialized in design and development of real structural health monitoring systems for a variety of industries and applications including: bridges, tall buildings, campuses, windmills, oil rigs and more. Digitex's innovative solution for ambient vibration measurements and quick health assessment of structures is jointly developed and validated with our partners and advisors from the Universities. When properly configured, the Digitex system is capable of measuring and responding to both natural and man-made events such as: earthquakes, wind, explosions and accidental heavy impacts.