Project Capability

Bridges & Structures

*Stressed bridges and structures require monitoring during the construction and post construction stages to ensure proper performance against design. **MissionOS** with its real time capability to calculate derived structural parameters from instrumentation measurements and compare this to construction progress and prediction de-risks the construction and provides and powerful platform for long term structural health monitoring.*

Tsing Ma Bridge-Hong Kong – Maxwell GeoSystems numerically modelled the foundations for the east tower under typhoon load and the original cable anchorages. (Later replaced by gravity anchorage).

The MissionOS platforms takes instrumentation data outputs in real time from a variety of Digital Acquisition Units (DAUs) and performs automated pre-processing into time series data with accompanying metadata. This data is held in virtual cloud servers or in physical servers in highly efficient forms to facilitate rapid assimilation and dynamic monitoring of stressed structures under variable load.

The MissionOS is agnostic to the type of device used and is designed for API and bi-directional control so that the whole system can respond to changing environmental conditions and loading states.

The system has the ability to load file based & equation-based predictions for structural behaviours and have this compared with instrumentation results. This allows users to design models to design "normal" operational states.
The platform can also host CCTV monitoring and ambient weather data from sensors or web feeds.

The MissionOS is also ideal for managing the construction process including installation and QA/QC records and performance tests. The system is designed to be taken forwards as a platform for longer term maintenance monitoring and has built in blog based tools for managing events through established processes whether reactive or proactive and scheduled.

Key Capabilities Include:

- Real-time data dashboards.
- Built for distributed pre-processing (Edge computing).
- Time series with no DB structures.
- Built in closed form analytics for design feedback.
- Load design outputs from structural programs.
- Flexible and powerful data modelling, graphing, reporting.
- Alarm systems on any parameters linked to expected behaviours.
- Access to MissionOS construction platform to extend monitoring to construction stage temporary work conditions
- Bi-directional control ready with API connectivity to instrument controllers.

Summary:

The transparency in MissionOS gives assurance that systems are working, each step is understood and that data is accessible for analysis outside of the platform at any time.

MissionOS is currently protecting Londons heritage bridges as part the Thames Tideway super sewer construction.

Chelsea Bridge-London UK - one of many monitored as part of the Thames Tideway project

Category	Bridges & Structures	MissionOS System	Mission Monitor