Smart asset monitoring workshop
NPL footbridge update
29 November 2011, NPL

Smart asset management is only achieved if smart decisions are made. Sensor networks are used more and more to monitor system behaviour, e.g., structural health, energy usage, and environmental quality. The quality of the decision-making depends on how the sensor information is used. Extraction of information from the large-scale datasets for risk-aware decision-making remains the main challenge for all sensors networks.

This workshop is based on the NPL footbridge activities during 2011. The current NPL Bridge monitoring system contains hundreds of sensors and could be one of the best-instrumented structures in the UK using sensors and survey techniques from many SME's and university departments. This gives a unique opportunity to investigate fundamental interactions between a real 1960s structure and its environment. Accelerated damage / repair / strengthening testing program has been carried out for over two years. A vast amount of data has been collected during different stages of damage to explore how advanced numerical statistical methods can be applied to sensor data for extracting information relevant to asset management processes.

The workshop will be focused on understanding of the structures and addressing multidisciplinary nature of this subject by bringing together structural engineers, monitoring technology experts and specialists who manage maintenance schedules and risk assessment.

Introduction	**E Barton**, NPL
Structural aspects: Damage / Repair / Strengthening	**P Valerio**, Highway agency **L Canning**, Mouchel
Understanding of assets: global behaviour Vibration testing and modal analysis Statistical analysis	**C Middleton,** Vibration Engineering Section **K Worden**, Dynamics research group Sheffield University
Selected repair monitoring techniques Remote and wireless sensing Advanced Imaging / scanning	tba
Understanding of assets: local behaviour Concrete durability Corrosion	**R Scott**, Durham University **J Broomfield,** Broomfield Consultants **M Basheer**, Queen's University of Belfast
Advanced analysis competition	**E Barron**, NPL
Special interest group	tba

Advanced analysis competition
From data reach and knowledge poor monitoring to smart, cost effective asset management for sustainable future

We are inviting all interested parties to take part in a benchmarking exercise / competition.
A selected set of data covering different bridge conditions will be available for analysis using any numerical and analytical methods for feature extraction and pattern recognition. Researchers and practitioners will take advantage of unique access to bridge sensor data covering a well-documented history of events combined with 3D static and dynamic FE structural models of the bridge.
The success of this project will provide a new capability of extracting information from the monitored data. It will benefit not only the civil engineering community of the Transport and Energy sectors but also other areas deploying large scale sensor networks for measuring noise, air quality etc.

Call for case studies
Examples of experimental cases studies with particular interest in 'lessons learnt' are welcome from the delegates who are attending and the ones who are not available to join us on the 29th of November.
If you would like to submit a case study, please send two pages maximum in a .pdf file format. They will be presented to the delegates during poster sessions. Please indicate clearly contact details where delegates could get more information.

Co-sponsors

To register please follow the link https://ktn.innovateuk.org/web/smart-asset-monitoring-workshop/overview