



# CHECKS AND BALANCES

A simplified inspection app for gathering bridge data is being developed for use in the field

Existing software packages for collecting bridge inspection data in the field can provide highly accurate final data but for simple, cost-effective bridge inspections they may be too complex and time-consuming. Sitalia is developing a new app for all levels of inspectors, be they site workers or specialist engineers, and for all types of inspections, whether generic or specific.

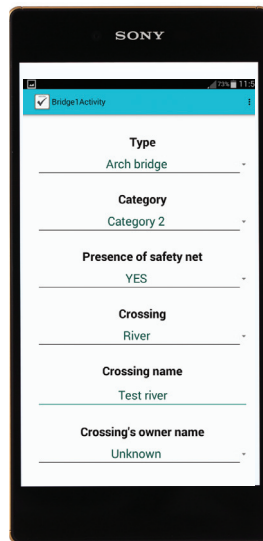
App Checklist has been created as a result of requests from technicians working out in the field and comprises a modular Android application intended to facilitate the management of elements in a cadastral map and enables GPS locations and photos to be added.

Within the basic module of the application, PDF or Excel outputs can be created for subsequent analysis in the

office. The full version, however, enables direct communication with Pkmaps V3, a software package that helps to evaluate and prioritise interventions for all elements in a cadastral map.

A specific App Checklist module for civil engineering allows users to inspect the conditions of structures such as bridges and tunnels. The module for bridge inspectors defines four parameters for each element of the bridge, subdivided in two main families: structural (piers, deck etc) and non-structural.

Using a pre-defined list of types of problems the user can define the severity of damage; the frequency of damage (whether it is widespread or localised); the extent of the damage (dimension of particular damage); and the trend or historical frequency defined for that bridge.



The comprehensive list of types of damage has been defined in collaboration with Centralabs, a company within the University of Cagliari in Italy.

The collaboration with Centralabs has also resulted in a formula in Pkmaps V3 software that can be used to prioritise all works. At its base is a matrix containing all the inspected elements in the road network that have been assigned a weighting as well as accompanying traffic data.

The formula is currently being implemented and upon completion it will be tested on bridge inspections in some areas of Sardinia, Italy by Sitalia and its research partners.

A typical application could entail the large-scale inspection of all the bridges in a predetermined area, where data is sent to the head office. There, the data would be imported into Pkmaps V3, which would then analyse each checklist and calculate a priority value for each bridge. The most damaged structures would be flagged for additional inspection with more specific equipment.

A number of other applications and tools are also under development for App Checklist. One such tool is the capability for the Pkmaps V3 system to send a 'ticket'

directly from head office to a maintenance inspector working in the field, including information from the database. Using the App Checklist navigation system, the inspector can even be guided to each of the elements that require inspection.

The ticket may also include historical data for each element so the inspection process can be better prioritised.

One feature that is currently in the test phase is the ability to integrate the visual evaluation of an object with technical data such as infrared thermography.

While a site worker may not have the technical expertise to inspect a crack in a concrete pier, the app will nevertheless provide the capability to report it to head office. There, a specialist technician can check the details of the alert and, if necessary, enter into the system additional information such as the static scheme or the identification of specific types of cracks.

The App Checklist aims to offer a solution to enable these inspection phases to be carried out in the shortest possible time while taking into consideration the level of expertise of the user. In the final step of the process, Pkmaps V3 will combine all the ensuing data gathered in the field with the estimated costs to carry out the work and the maintenance management plan of the road network ■

