Spatial Technology Limited

SDMS
Site Data Management System

Find A Solution.

Introduction

In the world of Civil Infrastructure, data is the most valuable yet complicated asset. It can be in the form of text, numbers or images. Traditionally, the large amount of data is managed by file-based system, which brings painful experience in searching for the data.

Spatial Technology Limited introduces the first in the market Site Data Management System (SDMS, previously named as Survey Database Management System), which includes Asset Management System (AMS), Progress Photograph Management System (PMS), Form Management System (FMS) and Deformation Management System (DMS), for systematic and sophisticated data management. SDMS is a 4D information solution integrating web GIS, RFID and database technologies. Based on a web-based collaboration platform, users can track every piece of equipment, site measurement or inspection record and progress photographs with respective date, time and place specified.

Thanks to the core technologies of SDMS, Autodesk Mapguide Enterprise and SQL database systems, users will be able to retrieve and manage different types of data on a standard web browser through four middleware modules:

Asset Management System (AMS)

AMS is designed to track inventory in real time in an electronic database, with the use of RFID, biometric authentication, database and web GIS technologies. The system streamlines daily workflow with electronic and automated systems. It not only minimizes human errors and filing time, but also provides historical tracking reports. Utilization of equipment can also be retrieved from the access log for project resources planning.

Deformation Management System (DMS)

DMS is designed to provide a collaborative overview on all deformation monitoring data in a construction project. Using a standard internet browser, all monitoring points will be geo-tagged and color-coded based on its monitoring status and alert level. Authorized users can access detailed graphical plots and photographs of each monitoring point by directly clicking on the web map. This module consolidates all the deformation data of an infrastructure project to facilitate decision-making process.

AMS

DMS

Site Data
Management System
SDMS

FMS

PMS

Form Management System (FMS)

FMS is an eForm solution with web GIS integrated for the Civil Infrastructure project. With just a standard internet browser, users can manage inspection forms record, including photographs, drawing, raw data, etc through a web interface with 4-Dimensional search options. This decision support platform eases the life of daily operations and facilitates the monitoring of projects.

Progress Photograph Management System (PMS)

PMS is designed to manage thousands of site photographs on a web-mapping GIS interface. Geo-referenced photographs could be searchable by date, time and place, and create a 4-Dimensional report of site progress and any site investigation reports.

Asset Management System

Challenges

Survey equipment is one of the most valuable assets in a construction site office. Loss of the equipment not only delays construction progress, but also incur significant cost. This equipment check-in and out process must be documented to ensure all the equipment is properly returned. However, these documents cannot report any non-returned equipment in a timely manner until it is being found out.

How Does AMS Work

Each prime equipment is tracked with RFID tag and only authorized persons are allowed to check-in and out the equipment from the secured store room with the use of fingerprint authentication system. All these transaction records are stored in a database with reference to the specific inspection request form to provide electronic records. Warning message will be sent to dedicated personnel in case of unauthorized check- out or late return. Web-based inventory reports can also be generated at any time when necessary.

Benefits

- **Streamline paperless workflow.** The check-in/out process is automated by changing traditional manual workflow to digital documentation. This reduces filing and administrative costs.

- **Avoid missing items.** Each transaction is stored and audited. This reduces the risk of missing item on field to the minimal.

- **Better management.** The usage of equipment is logged into a database and related usage report can be easily generated.

- **Better equipment security.** Equipment is tracked on a real time* basis. Warning message will be sent immediately in case of unauthorized check-out

*Only applicable in full version

Feature List

- Fingerprint authentication
- User Authorization
- Self-serviced in/out checking
- Equipment registration database
- Web-based automatic real-time* inventory monitoring
- Automatic loss report via email/SMS*
- Audit report for equipment usage

Inventory Management

Alarm System

Inventory Reporting

Deformation Management System

Challenges

Monitoring points exist in every infrastructure project, varying from monuments to piezometer. The monitoring measurements are usually recorded as individual text files and can be plotted to create Excel charts. However, it does not provide an overview of the deformation status of an area.

How Does DMS Work

Deformation monitoring records are entered into the system by authorized users through a web-based administration panel. DMS maps all the deformation measurement thematically on a web - map interface and generate warning message when reaching alert levels.

Only authorized users are allowed to access the time-series plot and statistical analysis of the historical measurements.

Benefits

- **Automatic Alerts.** Alarms will be sent to dedicated personnel while deformation reaches alert levels.

- **Automatic Coloring and Scaling.** The system is designed based on GIS technology, basemap and monitoring points will be dynamically scaled and colored.

- **Automatic Graphical Plot.** Statistical plots and analysis data are automatically generated to minimize manual errors.

- **Improved Collaboration.** Authorized personnel can access the deformation data any time through the intranet.

- **All at a Glance:** Daily dashboard is automatically generated to provide the lastest monitoring information.
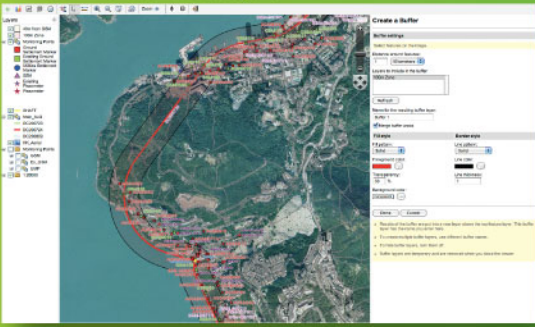
Feature List

- Automatic time-series plot

- Automatic online thematic mapping (e.g. Alert, Alarm, Action)

- Automatic Alert Email/SMS*

- Real time interference zone generation (Buffer zone analysis)

- Searching of monitoring information via user - specified criteria

- Daily Dashboard

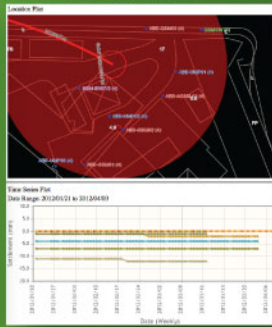- Self - service monitoring data retrieval
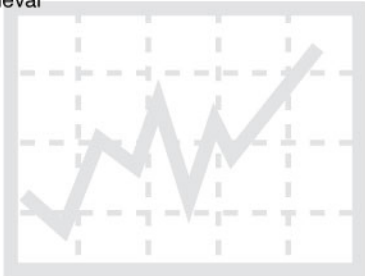
Zone of interference analysis

ADMS integration - Movement Vectors

Spatial Query Report
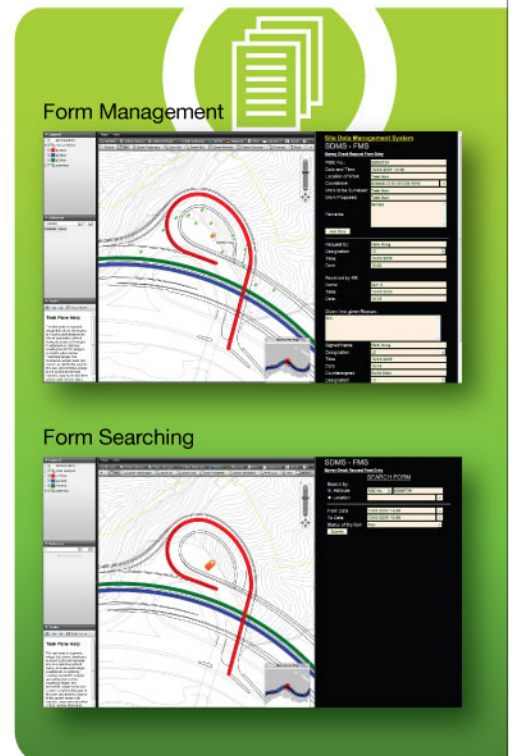
Form Management System

Challenges

Inspection record is one of the core documentation for works and claims. Traditionally, all the inspection forms are filed as hard copies while related data and photographs are filed separately in the project server. Hence, it is not an easy task to search for a complete set of records.

How Does FMS Work

Authorized users can enter the inspection records through a standard internet browser. Based on the default path specified in each inspection record, the system automatically files the related inspection record (including photographs, drawings and raw data in the central database). With a standard internet browser, data will be easily retrieved according to a variety of specified search criteria. All the data will be tabled and plotted on a web-map interface.

Benefits

- **Easy and Effective Search Function** All data stored in different physical locations are organized by date, time and location in a central database, locating inspection records is just a few clicks.

- **Improved Collaboration.** All inspection records are centralized and accessible by authorized users at any time.

- **Improved Manageability.** Inspection history can be easily tracked and traced.

Form Management

Form Searching

# Progress Photograph Management System

Challenges

For more than 10 year digital photograph has been used as one of the major evidence of work progress . However, since most of them are stored in a file-based system server, searching of a specific photograph of a particular type is almost a mission impossible.

How Does PMS Work

Progress photographs stored in the computers will be automatically uploaded to the core module of SDMS. They can be sorted by folder names and metadata information, in accordance with a set of search criteria, specified by users. The geo-tag photograph on the web GIS platform can also be printed and exported for retrieving progress reports.

Benefits

- **Easy Retrieval.** Progress photographs stored in different physical location are organized by date, time and location in a central database, locating photographs is just a few clicks' effort.

- **Improved Collaboration.** Remarks of photographs can be easily made through intranet by using standard internet browser. Alternation on the original copy is not required.

- **Improved Manageability.** Create a time-series plots of progress photographs with just a few clicks. Historical analysis report can be easily compiled.

- **Security Guaranteed.** With password protection, only authorized personnel are allowed to access the progress photographs data.

Progress Photo Report

Self-service Site Photographs Kiosk
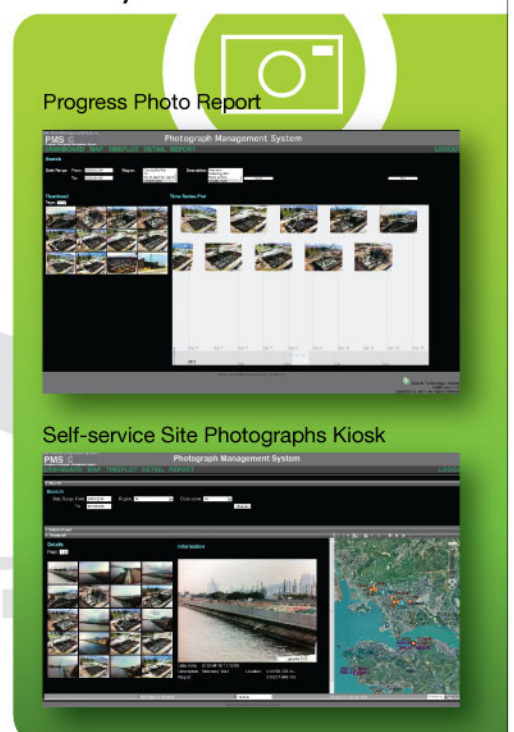
Spatial Technology Limited is one of the leading survey & engineering solution providers in Greater China Region, specializing in end-to-end Spatial Data Solutions for infrastructure development. We provide a blend of profound industry knowledge, technology innovation and technical excellence in delivering best-in-class BIM (Building Information Modeling) for Infrastructure Solution, supporting 3D modeling, visualization and geospatial data integration with Site Data Management System (SDMS), and offering professional training and support services. Our total turnkey platform solution can enable you to complete survey & engineering projects more effectively, efficiently with enhanced productivity.

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