



Bridges & Structures Solutions

## Bridges and Structures Asset Register

An accurate asset register is critical for effective management of bridges and structures. Insight provides a totally flexible map-based facility, with dynamic attribute definition and multi-media support for the storage of associated drawings and photographs. This flexibility guarantees the means to reflect requirements as they change and evolve. Specialised features enable effective management of all types of structures, including multiple span bridges, retaining walls, gantries and culverts. The asset register is fully integrated with all other Insight modules. Thus, every life-cycle event may be referenced to an individual asset unit, providing a comprehensive life history, accurate analysis of unit performance and costs, and improved strategic decision-making. Apart from maintenance activities, the Insight Asset Register can be used for many other purposes, such as the assessment and planning of abnormal load journeys.

Insight smoothes the tasks of maintaining the asset register in up-to-date form, and extracting the information required. Bulk updating facilities may be invoked automatically, or by user prompting with a sophisticated set of selection criteria. There are inbuilt options for quantifying and producing statistics from the data. In addition, user-selected data may be exported directly to embedded reporting functions, or to other office system products for further data manipulation and presentation. It is often necessary to operate these functions related to a specific geographic boundary, route or area. This is made easy using the unique multi-functional "area of interest" capability, which may be applied dynamically, even to data which already exists.



### Cyclic Activities

There are many examples of programmes which are operated on a cyclical basis, including inspections, cleaning and painting. A key benefit of the integrated solution is to automate the prompting of these actions. For routine maintenance tasks, bulk orders may be produced and completion data recorded with a minimum of administrative effort.

Inspections may be prompted in accordance with defined policy, and in route sequence if required. Where relevant, optimisation facilities are used to evaluate both cyclic and ad-hoc requirements and minimise the overall workload. As an alternative to printed lists, prompts may be downloaded to latest technology mobile devices. Results can then be recorded using sophisticated software with guaranteed central system compatibility, which also allows asset register updating at the same time. Satellite-based positioning, mapping display and plot functions, and digital photography may be employed. Web access is used to communicate with base whilst out in the field, at work or at home.

### Recording Faults and Work Requirements

The mobile device facilities for carrying out inspections, allow both general condition assessment data to be collected, and serious defects to be progressed to produce immediate job tickets and works orders.

Insight will accommodate all types of work, from routine faults to major schemes. Requirements are entered into specially tailored entry screens, mobile devices or sourced from a sophisticated front-desk Customer Service system. The integrated system ensures minimum risk of duplicate recording, whatever the source of the data. Full bill of quantity facilities are available for estimating and ordering complex schemes, which may be recorded in advance, then released and committed in accordance with an overall strategic programme.

### Integrated GIS

Advanced Windows ActiveX technology is used to provide sophisticated embedded mapping functionality, including the ability to plot bridge assets, works or any other items. Transfer between the database and the map, in context, is instantaneous, effected by a simple button-push, and all without the costs and overhead of providing a full GIS system on each user's computer.

## Works Order Management

Unlike many other systems, Insight handles the unique features of engineering contracts with ease. Routine maintenance may be on the basis of individual fault ordering within a term contract, or using a lump-sum performance contract with required service levels. The contract terms, including priorities, turn-round times, financial retentions, and penalties, are defined for each individual contract. Day-rate, schedule of rates and lump sum charging may be used in any combination. Increments to rates, such as cost index updating, are allowed at break points within a contract period.

Orders may be sent electronically to a contractor system, or printed in the required format using embedded "layout design" tools. Contractor claims may be matched with orders, and checked automatically for accuracy. Inbuilt exception reporting may be employed, based on specified tolerance levels, to hold selected claims for investigation. Claims for individual works may be reviewed, and at an appropriate time the approved amounts may be bulked into a single certified payment. Sample inspection facilities are also available.

## Performance Management

A key feature of Insight is the ease with which data can be extracted and analysed without technical assistance; the carefully crafted design of the database provides instantaneous output. A range of flexible, inbuilt enquiries and reports, ideal for the professional manager, provide instant access to information, and enable effective dynamic performance monitoring.

Reporting may be based on geographic areas. For example, an Area Supervisor can demand information such as "list all the recorded faults in my patch, which should have been done by last Friday, but are not yet recorded as complete". Producing this is as simple as entering the supervisor's identity and the date of "last Friday" into a standard enquiry facility.

Sophisticated processing provides condition indicators for bridges, retaining walls, gantries, and culverts. Standard bridge elements, defects, and severity descriptions, which are recorded during General and Principal Inspections, are used with asset register data to derive condition values for both individual structures and the overall stock. Inbuilt spreadsheet facilities allow for presentation of condition indicators using national standards or individual bespoke methodologies. The resultant condition evaluations, together with the asset register, provide all the information needed for asset valuation, statistical analysis, and the identification of trends.

## Financial Management

Insight provides instantaneous expenditure position statements. A three-level commitment system handles progression from initial allocation of funds through to works completion and approval, including automatic handling of retentions where required. Any changes resulting from work confirmation, variations or extras, are immediately calculated and reflected in the financial tables, and full audit trails are maintained throughout.

Automated year-end close down facilities including parallel phase-over of years, budget profiling and monitoring, and expenditure journals, are amongst the advanced features provided as standard. Expenditure code grouping facilities may be used to restrict access to expenditure codes, and financial authority levels may be set for individuals to ensure appropriate security. The production of electronic files for interfacing with Corporate Financial systems is also a standard facility.

## INSIGHT FOR STRUCTURES

Insight for Bridges and Structures is a computer system designed specifically to provide a solution for the management of bridges, retaining walls, culverts, gantries and other similar structures. It may be operated as a stand-alone system, or as part of an integrated highway asset management system.

Corresponding offerings from the Insight range are equally effective for other infrastructure assets, including Street Lighting, Property, and Grounds.



## Insight into Advanced Technologies

New technologies are not just implemented in the easiest possible way - that would simply be "technology for technology's sake". Symology carefully research and analyse the possibilities for maximising benefits. Performance, practicality and value for money, are ensured before applying the technology.

The system supports and utilises many leading edge technologies and standards, including ODBC, ActiveX, COM, CORBA, .NET, and XML. These technologies, embedded within the Insight product, provide phenomenally powerful and seamless facilities for GIS, mobile data collection, quality reporting, and document production. Integrated GIS is particularly important for all infrastructure asset management, and the embedded mapping functions, provided using ActiveX technology, are ideal. The "Service Orientated Architecture" of Insight also allows the power of the system to be leveraged for other uses, such as the provision of bespoke web-based information services.

Another example of applied technology is related to information extraction and analysis. On-line enquiry output may be displayed graphically in a grid, with dynamic selection of the precise columns required. The data may then be exported to Microsoft Word for automatic printing, or to Excel or other office product. An XML option also enables a style sheet to be generated so that the data can be viewed in any modern web browser. The embedded report layout designer provides seamless access to further filter the grid results, format the display, introduce graphics, produce totals and sub-totals, and collate/sort the data in any way required.

System-wide facilities are provided to store multimedia files such as video footage, digital photographs, and scanned documents. Interfaces are provided to produce rich text documents in Microsoft Word.

Insight is transferable (both technically and in licence terms) across all open platforms, both Microsoft and Unix/Linux systems, covering a full range of thick-client and thin-client (including browser-based) options.

# INSIGHT FOR STRUCTURES

## Functional Overview

### Asset Register

- Nationally compliant street gazetteer
- Gazetteer Import/Export
- Additional user-defined street data
- Bridges and Structures
- Street Lighting and Furniture
- Bollards and Signs
- Safety Barriers & Guardrails
- Asset-based life history

### Advanced Inventory Features

- User-defined Unit Types
- Hierarchical Inventory Structure
- Slick multi-span bridge handling
- User-defined attribute dictionary
- Attributes shared between spans
- Sophisticated bulk updating facilities
- Full historical audit trail
- Easy access to attached furniture items
- Daisy chained supply links
- Quantification & summarised reporting
- Auto updates from completed works
- Comprehensive analysis tools

### Location Referencing

- Textual location descriptions
- Gazetteer referencing
- Section referencing
- Map co-ordinates
- Chainage-based
- Cross-Sectional Positions

### Inspections

- General, Principal and Specialist
- Cyclic prompting and monitoring
- Condition Assessments
- Routine Safety Checks
- Statutory testing
- Customer Service requests
- Post-work quality checks

### Mobile devices

- Latest technologies
- Multi-function devices
- Map-based functions
- Satellite positioning
- Digital photography
- Remote Web Services connection
- Symology-developed software
- Automatic server compatibility

### Contract Management

- Tendering processes
- Tender response evaluation
- "Term" and "Special" Contracts
- Defining Contract Terms
- Monitoring Contract finances
- Penalty enforcement
- Retention Amounts
- Performance Indicators

### Works Management

- Job Ticket production
- Priority/date required options
- Resource requirement estimating
- Job Completion recording
- Electronic ordering

### Schedules of Rates

- Rates for multiple contractors
- Quantity-based rate banding
- Percentage add-ons
- Priority supplements
- Minimum callout charges
- Phase-over of price changes
- Cost Index updating

### Ad-hoc and Cyclic Works

- Ad-hoc fault recording
- Avoidance of duplicate orders
- Bulk ordering for minor works
- Painting programmes
- Cyclic order generation
- Completion monitoring

### Contractor Claims Processing

- Electronic claims processing
- Order/Invoice matching
- Automatic hold/approval tolerances
- Review and approval of invoice claims
- Certificate of payment production
- Supplementary invoice and credit notes
- Optional contract retentions
- Bulk and automated retention release
- Multiple orders/single claim option
- Unallocated claims processing
- Warranty claims

### Energy Usage Monitoring

- Inventory export in standard file format
- Annual burning hours calculations
- Energy bill checking

### Areas of Interest

- Polygon plotting on the map
- Geographic view/update security
- Work allocation areas
- Political boundaries
- Inspector Patches
- Divisional Office areas

### Financial Monitoring

- Automated expenditure code selection
- Expenditure code security
- Three-level commitment system
- Real-time Budget Statement updating
- Automatic on-line posting
- Individual authority levels
- Full audit trail
- Period expenditure profiling
- Expenditure journals
- Monitoring of variations
- Automatic contract retentions
- Year-end processes
- Interface with corporate system

### Customer Service

- Telephone/Letter/Web requests
- Avoids duplicate recording
- Action-tracking and monitoring
- Dynamic escalation process
- Direct Works module interface
- Direct Inspections interface
- Service/Action scheduling

### Universal Facilities

- Interactive map links
- Spatial Analysis
- Full module integration
- Load-and-go functionality
- Inbuilt customisation options
- Intuitive user dialogue
- Customisable data display
- Office Products interface
- Access security
- Simple system administration
- Historical audit trails
- Working Days Calendar
- Performance Indicators

### G.I.S

- Asset register maintenance
- "Area of Interest" definition
- Viewing/Plotting facilities
- Seamless "in context" interface

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