

innogistic

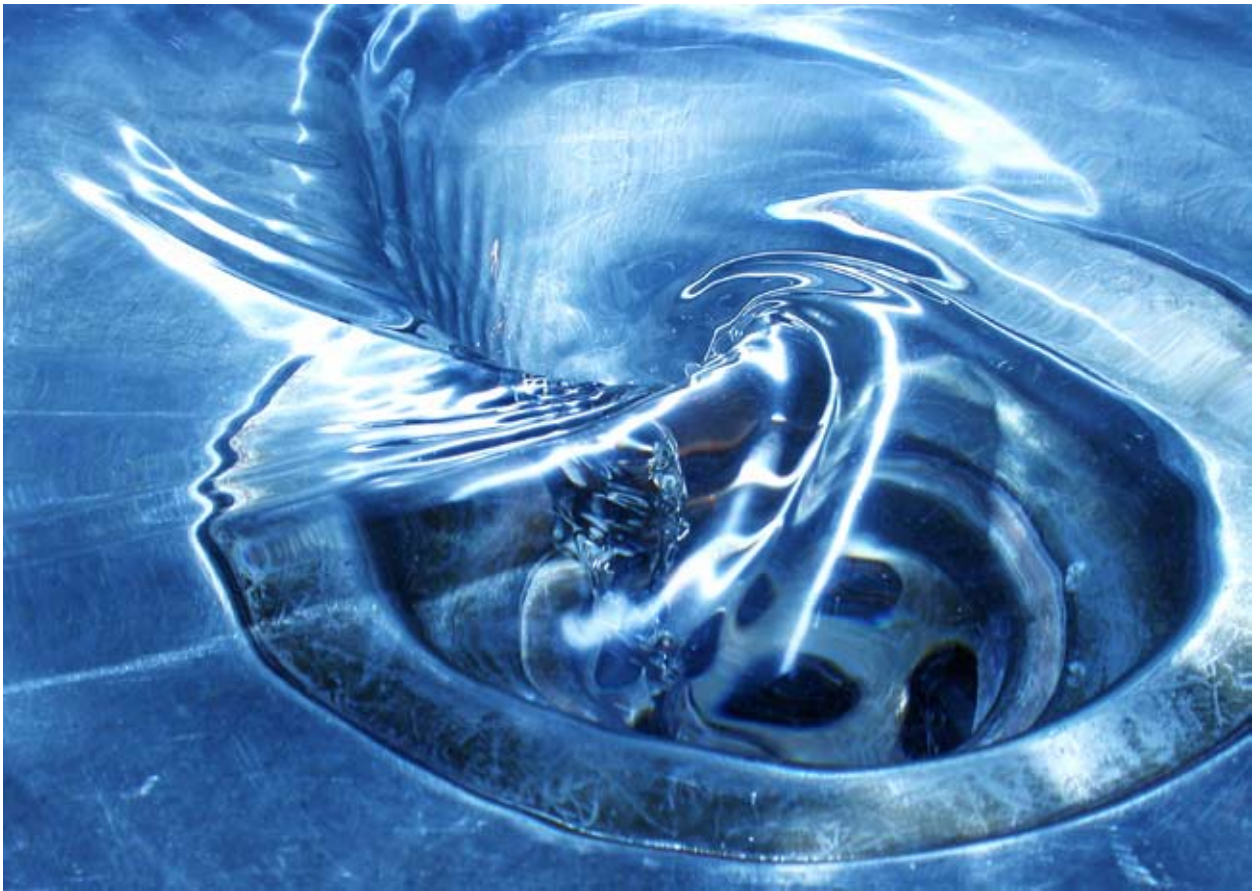
Case Study: Corporate GIS at Yorkshire Water

www.innogistic.co.uk



Corporate GIS at Yorkshire Water

Used by over 2000 staff and tightly integrated with other key IT systems, Yorkshire Water's Geographic Information System, is a truly corporate solution. In this case study we explore how GIS has helped Yorkshire Water improve customer service, deliver works management efficiencies, and take a proactive approach to environmental management..



Yorkshire Water and GIS

One of 10 major private water companies in the UK, Yorkshire Water manage the collection, treatment and distribution/disposal of clean and waste for around 4.5 million domestic customers and 150,000 industrial customers, in the county of Yorkshire. With over 60,000 km of mains and sewers, 50 water treatment plants and over 600 waste water works, the management and operation of its assets alone is a considerable task.

Like many utility companies, Yorkshire Water has invested considerably in GIS technology, in particular for the management of its below ground asset records. However, unlike many utilities companies, the use of GIS has proliferated across many aspects

of the organization at Yorkshire Water, breaking out of the engineering/works management 'silo' and into domains including customer relationship management, environmental management and non-regulated commercial activities.

A question of attitude

For those fortunate enough to visit Yorkshire Water's headquarters in Bradford, one thing is as clear as the water that flows from their taps, they take GIS very seriously. Yorkshire Water's GIS platform, known as "Odyssey", is available on over 3500 PC's and laptops and 600 mobile ToughBooks - so that in practice every member of staff may make use of GIS if it is applicable to their day-to-day job.

In the company, GIS is viewed as a fundamental component of the IT infrastructure, tightly integrated with the Customer Relationship Management and Work Management Systems which complete the picture. These three components (GIS/CRM/Work Management) together form the basis of the "Integrated Customers and Operations Management" system (ICOM).



Improving customer service

Ultimately, like all regulated utility companies, a fundamental business driver at Yorkshire Water is the continued improvement of customer service, which is where ICOM comes in. Calls received by the customer service centre are entered in to the CRM system, which, through ICOM's link with the GIS automatically geo-codes the source of the call.

Any calls of an operational (as opposed to financial) nature - for example a discolouration of water - is immediately displayed on the central control room GIS, where engineers overseeing operations of the network are able to visualise the development of an incident in real time. A single dot representing a single call, may in turn grow to a series of concentric circles, as additional calls come in. Through integration with the Works Management System control room staff are able to raise a job for investigation in the field dispatching the engineer to the correct zone in the network for investigative work. On some occasions however, the distribution of concentric circles, may even allow an individual water main or asset to be identified as the most likely culprit in the case of the fault before the field engineer has even arrived on the scene.



From the field engineer back to customer

Once in the field, engineers running the GIS on a mobile 'ToughBook' device, are able to visualise the relevant asset information including construction details, maintenance history, age etc., in situ, to assist in the timely identification of the likely cause and location of the problem. Once the fault has been detected, the GIS back at the control room is used to define the geographical extents of properties affected by the faulty asset, and update the relevant work record accordingly.

Crucially, due to the integration between GIS and CRM, additional in-bound calls at the customer service centre can be cross-checked against the geographical record of affected properties, allowing call agents to provide an informed response regarding the nature of the problem, its estimated resolution time, and close the call. This is one such example where the close integration between GIS, CRM and Work Management system results in improved customer satisfaction and service levels, which are key factors in the strongly regulated UK water Industry.

Managing the environment

Like any water company, Yorkshire Waters activities are by their very nature inextricably linked to the environment. Indeed a proactive approach to conserving and enhancing the environment forms a fundamental basis of Yorkshire Waters policy on corporate responsibility. Furthermore, with careful regulation of the environmental impacts of its operations by the Environment Agency, it is not an area which Yorkshire Water can afford to treat lightly.

The role of GIS in the proactive management of the environmental impact of its operations, is an area of increasing importance at Yorkshire Water. Relatively simple GIS operations, can be highly effective in planning targeted activities for environmental intervention.

For example, Yorkshire Water is one of the regions largest landowners, with estates amounting to some 72,000 acres in area. By combining GIS overlays of its own land ownership, and intersecting these with polygonal data from English Nature on Sites of Special Scientific Interest (SSSI) - In particular those which are in poor condition - Yorkshire Water has been able to target regeneration activities in areas of peat bogs and heather moorland, to maximum effect.

The use of GI techniques also has key role in reducing pollutants discharged accidentally from sewers, as indicated in a recent project undertaken at Yorkshire Water. Sewers which run close to trees are inevitably at risk of root infestations, which may result in either blockages or sewer failures. In the event of any accidental discharges, the cost of repair and clean up, added to fines levied by the



Environment Agency, can result in the financial cost of such events mounting up to around £15,000. These costs themselves though, are perhaps insignificant compared to the negative PR which surrounds such incidents, particularly if the pollutant ends up in a nearby water course.

Where an analysis of geographic information comes in, is in identifying those sewers which are potentially at most risk. Using polygons of woodland and water bodies extracted from Ordnance Survey MasterMap data (the most detailed digital data set available in Great Britain) Yorkshire Water has identified all sewers which pass through a woodland polygon and/or within 10 metres of a water polygon, and flag it as potentially at risk.

Combining this data with other attribute information on the age and construction materials of the sewer allows further targeted risk analysis, resulting in a prioritised list of high risk sewers suitable as candidates for investigation using a CCTV 'mole'. Visual inspections by CCTV may then highlight the need for engineering works, or give the sewer a clean bill of health.

The examples outlined above, are just a few of the environmental uses of GIS at Yorkshire Water. Additional projects underway are supporting the requirements of the Freshwater Fish directive, and Biodiversity Action Plan initiatives. (see separate case study)



Maintenance of accurate records

Key to all these uses of GIS at Yorkshire Water is the maintenance of accurate asset records. At present, information collected in the field by engineers is submitted to a centralised digitising & data maintenance team, responsible for updating the central data repository. In turn, toughbook devices used in the field are themselves updated on a periodic basis when returned to Yorkshire Waters' headquarters.

A solution to this which is currently under development by Innogistic, is to adopt the use of 'change only update' data exchange between the central repository and the mobile devices. This reduces lag between the field and office.

Using ToughBook devices, all clean and waste water network data is compressed into Geographic Markup Language (GML) format. Changes made on the device are recorded as change only updates, which are then uploaded at the end of each day to the central repository for modification of the central data store. By the same token, the latest change only updates submitted by other field devices are downloaded on to the field ToughBook, following the update to the central master record. Changes are updated within a 24 hour period.



Conclusions

The use of GIS technology at Yorkshire Water is fundamental to its operations. Through its use in the field by engineers, in the call centre by Call agents, in the back office by works management planners, and in non-regulated areas of the business, GI technology is being applied innovatively with tangible business benefits across the enterprise at Yorkshire Water. Due to the considerable vision of their GIS team and senior management, Yorkshire Water are leading the way in innovation of GIS in the utilities industry.

Innovative IT for a joined up world



Innogistic Software plc
 25 Marsh Street Bristol BS1 4AQ
 Call: +44 (0)870 060 6203 Fax +44 (0)117 904 6688
 Email: sales@innogistic.co.uk

