Mapping the future

BRENDAN PITTAWAY EXPLORES HOW WIDESPREAD TAKE-UP OF GEOGRAPHIC INFORMATION SYSTEMS IS ESSENTIAL IF POSTAL SERVICES ARE TO ENSURE FINANCIAL SUSTAINABILITY AND EFFICIENCY IN THE FUTURE

The past decade has arguably been the hardest ever for those charged with managing the more traditional operations of the modern postal service. The threat posed by greater competition from private firms as a result of liberalization has been compounded by the effects of a seemingly unstoppable drop in mail volumes – 4.7% in the 10 years to 2012, according to members of the UPU.

Decline has caused financial pressure, which has prompted drastic measures. For example, Canada Post's CEO, Deepak Chopra, recently announced that up to 8,000 jobs would go in order to effect "structural change" in the face of a forecasted further 50% drop in the volume of mail it carries over the next five years. The revelation came soon after the news of staff cuts by Royal Mail, which brought the total number of employees leaving the company since 2003 to 50,000.

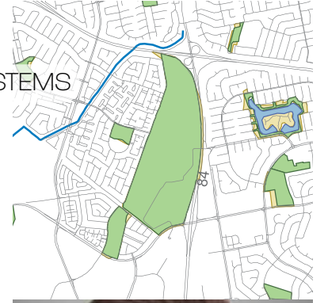
A growing number of postal operators believe that the key to efficiency lies in embracing digital solutions and the commercial exploitation of the data to which they have access. A study published earlier this year by consultant Accenture, entitled *Achieving High Performance in the Postal Industry*, provides some indication of how popular the vision is. It concluded that the use of analytical tools had trebled in the past five years. Furthermore, 68% of postal industry executives declared their commitment to using such methods in order to make their organizations more robust.

Target acquisition One of the main weapons in posts' technological arsenal is geographic information systems (GIS). In basic terms, GIS is a computer system that captures, stores, manages and analyzes all types of geographical data.

"These systems were first devised to assist with urban planning," says Terry Bills, global transportation industry director for Esri, a leading provider of GIS solutions. "However, the postal industry became convinced that they could not only help optimize routes taken by their delivery staff, but could also meet challenges posed to established parts of their businesses and even create new opportunities."

John Taylor, managing director of UK-based geographic information specialist Geoplan, likens GIS to a highly sophisticated overhead projection. "GIS uses a geographic map as a base to which information can be added from a variety of sources," he says. "They usually include postcodes and address points, but can

Postal operators can benefit from using GIS technology to support marketing initiatives, segment consumer data and manage delivery fleets



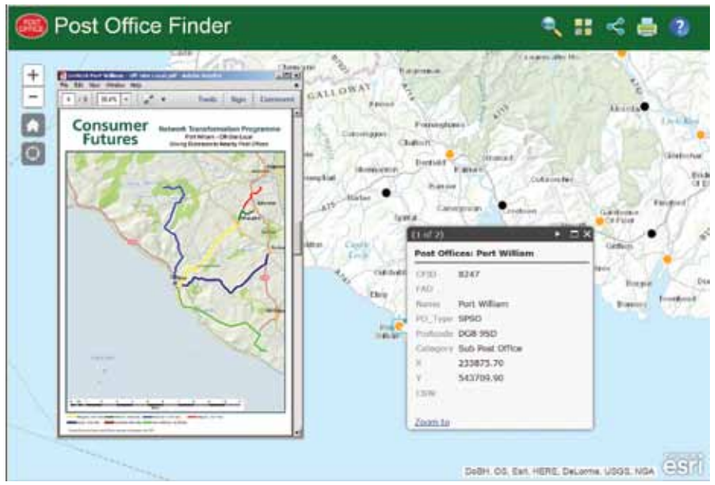
be demographic material from a national census, data about a company's own sales and operations, or those of its rivals and customers.

"All that can be used to work out optimal delivery routes; the best use of human, vehicular and physical resources, and to locate facilities near known generators of business. Posts can also help commercial clients identify groups of individuals who might be interested in particular goods or services, as well as where to site depots or hubs to make themselves more efficient," Taylor adds.

Esri's Bills agrees: "GIS enables postal authorities to overcome issues that many of them have had to confront relating to address management. In essence, those problems are about whether the information they hold centrally matches up with the situation on the ground. By employing GIS, they can match and manage addresses more effectively, and build a more thorough understanding of the people and the areas they are serving."

The UPU has endorsed GIS. Last October, it announced an initiative to produce a standard for the implementation and use of GIS by its members. The move underlined how some in the postal industry have been slow to react to the technology. Failure to capitalize on the momentum of GIS means possibly missing out on impressive results, according to Brody Buhler, global managing director of Accenture's postal industry group. "We calculated that using GIS to optimize the delivery route taken by an individual postman or postwoman could cut the mileage they cover by between 6% and 10%. Apply that to all the routes operated from a depot and those savings increase to about 15%. Across a network, the benefits increase still further to about 30%.

Above: Terry Bills, global transportation industry director, Esri
Below: GIS is used to keep track of changes made by the Post Office to its network



"Of course, to achieve that requires lots of very detailed information about the current delivery points and line of travel, as well as the use of proven GIS tools. It's an important topic because, even though posts have got better at managing in-office time, 'street time' remains a challenge. Employing GIS solves that and, as delivery is typically the biggest expense for a post, there is great potential for savings."

Percentage points The gains are not merely theoretical. With an eye firmly fixed on ensuring the financial sustainability and efficiency of the UK's universal postal service, the country's communications regulator, Ofcom, has published two consultancy papers it had commissioned on the topic. One paper (titled *Review of Postal Operator Efficiency*) compared six of Europe's postal operators. It found that three of those organizations – Deutsche Post, PostNL and Post Danmark – were "advanced" in their use of GIS, while La Poste planned to introduce such technology in the near future.

Perhaps La Poste hopes to reproduce the benefits seen by Deutsche Post, the continent's largest postal operator, which has used GIS to trim the number of delivery routes it managed by 36% since the turn of the century.

In a submission to Ofcom earlier this year, Royal Mail said that GIS was now "an integral part of our operation and is used on a daily basis for many activities, from walk revision planning to collections management".

Royal Mail partnered with UK GIS specialist Geoplan to transfer 1.8 million UK postcodes from paper form into a digital Postcode Address File (PAF), using a digital postal boundary file. The information is continually updated to take into account the changing boundaries and technologies used in mail deliveries. Royal Mail says the technology speeds up the estimated 3,000 changes required each day to the PAF, as well as streamlining deliveries and increasing commercial opportunities.

"We add further details to the PAF from postcodes created by the Royal Mail and the geographic coordinates in Address Point, which is produced by Ordnance Survey," explains Geoplan's Taylor. "From the broad

Above (L-R): Brody Buhler, global managing director, Accenture, and John Tuohy, CEO, Nightline

area and down through the layers of sector, district and unit, the postcode becomes more specific and is very useful for sophisticated marketing applications. However, postal boundaries are constantly changing with new building projects, demolitions or if Royal Mail decides to move some of its operations. As a result, we need to amend those boundary perimeters to enable Royal Mail to do its job."

Since beginning its work with Royal Mail, Geoplan has also undertaken GIS projects with other major delivery brands, including parcel carriers TNT and Hermes, and TNT Post.

In the course of the past three decades, Taylor has seen technology propel GIS forward spectacularly. "Our first digital file was so big that, at the time, it could only be used on a mainframe computer. Now, even though the processes involved are data-heavy, they can be made available on handheld devices.

"Just as firms can use mapping, postcode and sales data in their GIS, you can harvest material from Facebook, Twitter and mobiles. That's useful, of course, in working out where delivery staff and vehicles are at any time.

"It is worth remembering, though, that thanks to tablets, smartphones and satnavs, we are all both consumers and generators of geographic data, which is vital to those wishing to target specific goods or services at very specific groups of potential customers."

American express The United States Postal Service (USPS) seems eager to catch up with its European counterparts. In a document compiled to mark last year's 50th anniversary of the zip code, the USPS Inspector General recommended using GIS to create a more efficient system, with the Inspector General suggesting that "unforeseen value might be recognized" as a result. Despite admitting that USPS was "a slow and accidental innovator", the report suggested that GIS had an important role to play when revamping area codes to improve deliveries of post and parcels, as well as commercial opportunities.

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Although USPS is yet to realize the full potential of GIS on its zip codes, it has already pronounced itself more than satisfied with the system's ability to help law enforcement clamp down on money-laundering attempts involving the purchase of money orders by organized crime gangs.

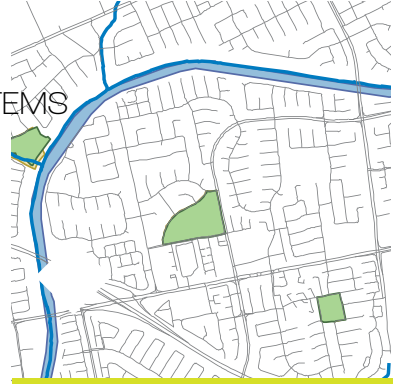
In the USA, orders up to the value of US$3,000 can be purchased without the need to provide personal identification and can be redeemed anywhere in the country. However, to comply with its obligations under the Bank Services Act, USPS began using GIS in 2006, feeding the system with transactional data from every post office. This helped identify post offices with high numbers of suspicious money order purchases, including those involving frequency or value, and cases in which orders might have been bought from various locations and cashed by a single individual.

The initiative has been viewed as being so successful that USPS is considering other applications, including the detection of fraudulent use of debit cards at post offices.

Why so slow? Despite arguments in favor of GIS, the uptake so far has been patchy. Terry Bills believes that there are a number of reasons: "The emphasis to date has been on responding to particular needs and individual parts of their business, rather than trying to take the fullest advantage of GIS across everything that they do. That may be due to the fact that these are often public sector organizations that have to adhere to procurement procedures administered by governments whose view is influenced by a number of IT project failures."

John Tuohy, CEO of Ireland's largest independent delivery company, Nightline, claims that GIS has been instrumental in the success that Parcel Motel, Nightline's nationwide network of parcel lockers, has had since being launched in July 2012.

"We use the Mosaic system developed by Experian, which has already compiled a vast database of everyone's lifestyles, wealth and so on. When we input the addresses of registered Parcel Motel users, Mosaic generates quite detailed maps showing hotspots of activity. We can see where the densest groups of users are



and can decide the areas in which we could site future Parcel Motel terminals before refining the desktop work by walking the ground to determine specific physical locations.

"GIS narrows down the search involved in positioning our terminals. The results have been outstanding. It is one reason why Parcel Motel now has more than 100,000 subscribers – 4% of Ireland's online shopping community.

"However, I recognize that posts are large organizations and to implement new technology across different divisions simply takes more time than for smaller companies, such as our own," Tuohy adds.

Other, non-corporate pressures cannot be overlooked either. Several industry experts have cited the vigilance of trade unions to processes and technologies that might, as in the case of Deutsche Post, result in the loss of postal rounds – and possibly the staff who work them.

Consumer groups also scrutinize proposals to ensure that there is no drop in service to the public. Some, like Citizens Advice in the UK, use GIS to keep track of changes made by the post office to its network.

Whereas government funding enabled Citizens Advice's predecessor to deploy an army of staff across the country to assess the effect of plans in 2007 to close 2,500 post offices, the lack of such support this time around makes GIS vital, as Andy Burrows, its head of post office policy, makes clear. "Instead of having boots on the ground, we can do desktop analyses to give us as full a picture as possible of the services for communities in which changes have been proposed.

"We can better appreciate the implications in edge-of-town locations and rural areas, which is where GIS comes into its own. As a result, 52% of proposals have seen modifications – either where changes did not go ahead, or where amendments to those proposals were made."

Burrows concedes that the challenges make for a relationship with the post office that is not always easy: "But we add value to the work it does and, I think, this helps provide the foundations of a stable and sustainable network for the future."

The next few years will determine if GIS lives up to others' great expectations. Research of the sort conducted by PricewaterhouseCoopers for Royal Mail stresses the importance of its success. It forecasts that 5.5 billion fewer items of mail will be processed by Royal Mail in 2023 than in 2012. A 6% increase in direct mail, it says, would match the decrease in transactional mail over the period in question.

Canada Post's Chopra is confident that despite his organization's predictions of deep decline, certain items will always need to be carried by mail – a view keenly supported by Nightline's Tuohy: "Postal routes are still very much a part of life and people will still need to have letters delivered. In spite of the many considerations they have, there are no real reasons why more national postal operators should not embrace GIS as a means of making delivery runs more efficient."

Esri's Bills believes growing momentum toward GIS should give posts plenty of cause for optimism. "I sense that they're really just scratching the surface of its potential," he says. "Decline naturally prompts a demand for efficiency and GIS can yield bigger results without the sort of investment required for machinery to increase automation.

"Many authorities are not yet doing what they are uniquely positioned to do, including geomarketing – the marketing undertaken by brands looking to engage with specific segments of the population.

"They are not unchallenged, though. There are lots of private delivery firms trying to take parts of their markets, so they know they have to do something constructive and dynamic or it will be difficult for them to survive."

GIS delivers in NZ

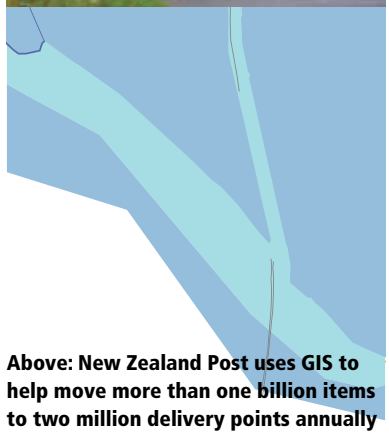
Every year New Zealand Post (NZ Post) moves upward of a billion items to two million delivery points. Its operations used to be complicated by inconsistent address management, forcing it to rely on manual mail sorting and inhibiting greater efficiency.

NZ Post began using GIS with the aim of improving the accuracy of address data. Along with the ability to optimize delivery routes, it recognized how GIS would enable sorting to be carried out automatically. In addition, having a comprehensive central database would enable the business to attract valuable extra revenue from commercial customers distributing direct mail.

A map-based data model based on reference points, including postal sort zones, postcodes and suburbs, was developed to provide a straightforward structure onto which the details captured could be applied. The process of inputting any changes and accessing the new system was also made simpler with using Microsoft's .NET framework.

Addresses can be modified, updated and tagged with relevant information on desktop computers – something of immense value to commercial clients. It also means that reports showing both the address and the surrounding environment – including street parcels, land parcels and topography – can be produced as PDFs.

The accuracy of the GIS application has enabled NZ Post to progress to fully automated sortation with technology that includes an address data management capability. Since postal liberalization in 1998 made efficiency an even more critical issue, having the means to deliver more accurate machine sorting has produced savings of 10% compared with the cost of processing standard letter items before converting to the merits of GIS.



Above: New Zealand Post uses GIS to help move more than one billion items to two million delivery points annually