

Case Study: Caerphilly County Borough Council



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in Infrastructure Asset
Management Solutions

Going Mobile? The advantages of mobility with Exor Solutions...

Performance improvements:

Increased efficiencies

- ◆ Improved job scheduling - type & location of work
- ◆ Automated updates of site records & validation of work
- ◆ Automated prioritization of tasks
- ◆ Color-coded 'count-down' to target date

Better management of information

- ◆ Remove time lag of data capture from days to minutes
- ◆ Audit trail of completed work in a real time environment
- ◆ Better inventory management and stock control
- ◆ Automated on site record of variation orders/changes

Improved workforce productivity

- ◆ Map location of service vehicles - ability to allocate jobs according to location of remote work teams and work loads
- ◆ Reduction in paper based transactions
- ◆ Less time in depots - more time onsite

Mark Rees-Williams Chief Engineer Caerphilly CBC:

"Our vision was to connect our existing Exor highways management solution to our field based staff in a real time fashion. This has been achieved and we're already seeing a real return on our investment and expect payback within twelve months."

Mobile IT Solutions are at the forefront of delivering pioneering communications

Worldwide all highways infrastructure maintenance service providers face common problems created by managing large, often remote areas and sizeable workforce teams that are reliant on depots for exchanges of information - via verbal and paper instructions. Mobile IT solutions are now at the forefront of delivering pioneering ways of communicating time sensitive information from field workers into centralized reporting and management operations.

As technology has evolved mobile computing solutions have become more affordable and dramatically easier to implement for public sector organizations. Caerphilly County Borough Council (CBC) has recognized the importance of mobile computing services and is one of the first UK Councils to exploit the technical innovation to implement new business practices, deliver groundbreaking services and address new business requirements for managing the council's highway network.

The removal of physical boundaries of the office environment

Caerphilly CBC is a typical UK Unitary Authority with six million square meters of carriageway to repair with ten dedicated remote 'patching' gangs. They have implemented an effective mobile data solution that has removed the physical boundaries and limitations of an office environment whilst empowering site teams to action defects electronically. This work has subsequently helped them comply with the coordination of network activities under new UK legislation with the forthcoming Traffic Management Act (TMA).

The combined expertise of Exor Corporation (global leaders in infrastructure asset management) and APD Communications (mobile information specialists) has collectively produced a mobile solution that has removed a performance management time lag of information from field workers to the central database from days to minutes and driven service improvement to levels previously not attainable. At the same time Caerphilly CBC has seen significant improvement in 'field gang' workflow productivity, competitiveness and gang earnings. In turn this has enhanced monitoring and validation of repairs from initial instruction through to job completion.

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Best value & cost-benefit

The cost benefit sought was to increase the productivity of response team units as measured through average weekly earnings (AWE). The reduction in payroll related paperwork has also been targeted in respect of a business overhead cost benefit. A relatively modest 10% increase in AWE was projected to offer a ROI of less than 12 months

Caerphilly's mobile vision

Mark Rees-Williams, Chief Engineer at Caerphilly CBC, says, "Our vision was to connect our existing Exor highways management solution to our field based staff in a real time fashion. This has been achieved and we're already seeing a real return on our investment and expect payback within twelve months. The field teams effectively have access to a whole array of applications that were once only available from a central office based location.

Caerphilly CBC inspectors identify 1500 safety defects each month with a response time ranging from two hours to eighteen days (dependent on emergency). This work is essential to the reputation of the Authority and its risk management policy against costly insurance claims. Performances of the remote teams are driven by piecework payments (measurable by work completed) with many amended instructions taking place via paper/mobile telephone communication.

The problem for Caerphilly CBC lay in getting quality and timely information to and from the management team and mobile workforce. Whilst the Exor management system provided an entire electronic back-office process, as soon as information left the Exor system to field based teams it reverted to paper.

A complete and true electronic communications link

With APD Communications mobile data technology the circle was complete and a true electronic communications link was established for the Highways management team and field based workers. This removed errors in paper based administration tasks and reporting. It is estimated the process of sharing information has now been reduced from a maximum of ten days to as little as thirty seconds, helping Caerphilly reach its 95% target for highway repairs.

Rees-Williams further adds, "A true paperless system had been a business objective of ours for some time. We'd wanted to achieve a 95% target for fixing all safety defects within a set timeframe; the reasons we weren't achieving this were the constraints of the paper-based system and problems being spotted too late [Caerphilly's performance leveled at around 70%]. We needed a real-time 'view' of all the teams working throughout the Authority. There also needed to be an element of recognizable benefit to the workforces themselves by working 'smarter'.

Operational cost savings are:

Staff	Daily Man Hour Savings	Weekly Man Hour Savings	Yearly Man Hour Savings
Ten Teams	31 hours per day	155 hours per week	8,060 hours per year
£ Saving based on £15.00 per hour – ten teams	£465 Per Day	£2,325 Per Week	£120,900 Per Year

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The project was also seen as a further significant element of Caerphilly CBC's equally innovative strategy to dealing with risk management and claim situations. Driving down the average times for repairing safety defects removes opportunity for claims and this can be measured directly by annual numbers of claims received. This in turn contributes a further indirect financial ROI with monies being returned back to service delivery

Improvements in productivity & decision-making

"As a result we're seeing the emergence of virtual teams, previously isolated but now joined by electronic communications. People in the field now have access to all office-based resources with the ability to report back almost live. This is improving productivity, management decision-making and has the tangible outcome of an increase in the pay packets of the teams. In turn this directly links to the business balance sheet and competitive edge. It is estimated the process of sharing information capture has now been reduced from as high as ten days to as little as thirty seconds."

Currently six of Caerphilly's maintenance vehicles have been fitted with the location devices, providing an audit trail to record all workflow patterns down to a five meter location point. INCA(tm) APD's Global Positioning Systems (GPS) allows management to select and allocate work according to location, priority and the skills of the individual team. The GPS audit trail is linked into geographical maps in the coordinator software so service vehicles, such as salt spreaders, can allocate and maintain more effective de-icing programs at known black spots.

Strategic information flows

The Application Program Interface (API) from APD's Mobile Information Platform (MIP) allows Caerphilly's field workers to access a two-way secure end-to-end interface with Exor's Maintenance Management system. Effectively allowing strategic information to flow to the field where mobile workers are able to verify and access real time information.

Route optimization & map confirmation

Eugene Clarke, Product Manager Mobile Information solutions, APD Communications adds. "Our Mobile Information Platform (MIP) provided the ideal mobile interface to Exor's highway management software. The combined solution provides real benefits to both management and users, by increasing process automation, improving productivity and reducing the amount of reactive work."

Staff 'buy in' has been a fundamental part of the education process of this technology deployment. Caerphilly CBC has achieved this by linking the Council's objective of better performance to better organization and packaging of work thus increasing the workforce's daily earning potential. Effective route optimization linked to map confirmation of vehicle location has increased productivity and increased the average weekly earnings of the employee. An added benefit has been the reduction of related paper work.

Management teams immediately aware

Rees-Williams, adds, "In the short time we've introduced the system we've seen a dramatic improvement in productivity from our crews as they are allocated jobs according to location and the stock amount they have onboard.

"A full detailed description of the reported problem can be sent to the field team who are able to respond accordingly. If a job is unable to be completed, because a parked car is blocking access to the area of work or it has an incorrect specification it can be logged and recorded and corrective action taken to redress the situation. A status report can be raised against it to explain why. The management teams immediately aware and able to respond accordingly."

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Benefits to the Industry and Society

Cost Efficiency/Competitive Edge

- ◆ Effective grouping of work types (bitumen/kerbing etc.) and effective 'auto routing' results ultimately in more work for the same money
- ◆ On screen top up of work projects and reassignment of work between field teams whilst onsite
- ◆ Non depot dependent for instructions for field gangs
- ◆ No downtime for paper record keeping for field gangs
- ◆ Proactive scheduling of work on screen in date order using visual colour coding (ease of use and prioritisation of projects)
- ◆ Confirm location by "you are here - the defect is there" function
- ◆ Creation of electronic link to payroll/wages systems (reduction in overheads projected)
- ◆ Reduction in fuel costs which supports environment protection strategy

Performance Management

- ◆ Removal of paper trail and its associated time lag for office based administration and reduction of errors

Risk Management

- ◆ Faster and more reliable safety defect highway repairs
- ◆ Protection for the public and the Local Authority public purse from costly claims

E-government

- ◆ Transactional web site and customer self-service monitoring of enquiry/action progress
- ◆ Meeting e-Government & Office of the Deputy Prime Minister electronic service targets

Asset Management

Traffic Management Act/Congestion Management

- ◆ Managing improvements in traffic management in line with government legislation

Local community benefit

- ◆ Better maintained road network infrastructure
- ◆ Value for money in terms of more effective use of public money and tax revenues

Empowering virtual teams

We're really delighted with the way the project has progressed." comments Lawrence Darke, Exor Product Director. "This has been a real opportunity to demonstrate the flexibility of our software through creative applications and deployment. One of the major requirements Caerphilly had was to move their network management systems out into the field, and through this partnership with Caerphilly, APD and ourselves we've provided one of the UK's first such mobile applications for road management providing a fully electronic medium of communication between field workers and the central management teams."

Caerphilly has implemented an effective mobile data solution that has removed the physical boundaries and limitations of an office environment whilst empowering virtual teams to capture, report and action defects electronically. With the mobile infrastructure in place Caerphilly CBC will create further productivity efficiencies that will drive a range of improvements to the general public. Additionally they have also created a leading mobile system other Council Directorates can and will benchmark.

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About Exor:

Exor Corporation was founded in 1995 and is the global leader in infrastructure asset management solutions for network centric industries. Exor established its operating base in highways management and is rapidly expanding into other strategic markets including rail, water, power distribution and oil & gas. Based on world-class Oracle technology Exor provides clients with a modular approach to their individual technology needs. Exor Corporation operates worldwide in Europe, North America and Asia/Pacific and in September 2005 was included in the Software 500 list of the world's foremost software and service providers. Exor systems manage 1,000,000 miles of roads with an asset value in excess of \$750 billion (USD).

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