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| Big data is talking, is anyone listening? 0

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Everyone is talking about ‘big data’ and how tech behemoths like Google are going to use it to change the world. But what does it mean for the rest of us – companies and organisations who do not have ninja-coders sitting on beanbags developing artificial intelligence apps during their company-subsidised gourmet lunch breaks?

In this article, David Kelly from [Atkins](#) looks at how non-tech organisations are overcoming technical challenges to make the most of their data.

In May of this year, The Economist declared that the world’s most valuable resource is no longer oil, but data. And with some saying that 90% of the world’s data was created in the past few years alone but that less than 1% of it is actually being used or analysed, it would appear that people are only just beginning to appreciate its worth.

For most organisations, the efficient management of data has the potential to reduce costs, control risks and improve whole life performance. However, in many cases, the challenge is in identifying what data to collect and how to collect it.

Almost all organisations have data which can be exploited to deliver valuable information to aid decision-making. However, the decision about what data to collect is often made without any reference to the strategic needs of the organisation. Many organisations tend to collect data which is easy to capture rather than that which is valuable to have.

In parallel with improvements in connectivity, the cost of storing data has dropped dramatically leading to a step change in attitudes to data storage. The traditional approach where only the most critical of data was stored for the minimum time necessary has been almost universally supplanted. Now data storage is more a matter of storing everything almost indefinitely just in case it might be needed it at some point in the future.

Here in Atkins, we're combining our engineering knowledge of infrastructure and asset management with leading technologies in different domains to help clients make sense of the data that their assets produce through an approach that we call Digital Asset Management (DAM).

One such project is with Transport Infrastructure Ireland (TII), where Atkins is providing technical and contract administration services to support the operation of 14 various PPP and road maintenance contracts on the Irish motorway network.



The scale and complexity of this commission is such that we must process an enormous amount of information which is received in a variety of forms and formats. All projects like this require extensive resources and even then, it is always possible to overlook an important detail and retrieval of specific information can be difficult. Moreover, anything but the most rudimentary of analysis is very time-consuming.

“We recognised early in the commission that a data-focused approach would ensure improved information flow and in turn better performance management” says Sean McDonnell, Associate Director, Atkins.

In collaboration with TII, we set about building a system for the management of data related to one aspect of the commission on a trial basis – incident response. This is the service provided by each of the contractors to attend to unplanned events which cause traffic disruption such as collisions, breakdowns and debris on the national road network.

We examined every stage in the data process – defining what data was needed, how we would collect it, ways to validate its accuracy, and how to analyse and distribute the data in order that end-users within the client organisation could interpret it easily.

In this instance, we opted to provide an interactive reporting dashboard which allows end-users to answer the majority of queries for themselves without any need for bespoke analysis. This approach reduces workload, improves accuracy and satisfies the information needs of a wider audience.

Since implementing this solution, we have expanded our work in this area to include data analytics of traffic flow and journey time data, and we're currently looking at other areas where a structured approach to managing data will bring benefits.

At present, we are reviewing the requirements for three motorway maintenance contracts which fall under our commission and for which the contract period is coming to an end. This is a very broad review of a wide variety of contract requirements and we are delighted that TII have requested that we include comprehensive provisions for data management under these future contracts.

The aim is that lengthy reports submitted by email will be replaced by data files to a prescribed format uploaded to a central cloud-based data repository. These will be validated automatically to uncover any inconsistencies and to highlight areas which merit closer attention.

These files will then comprise a data repository which will serve as a 'single source of truth'. They will be the origin from which we will automatically update dashboards, reports and other tools which will be used to deliver consistent and accurate information to the right people as soon as it is available.

Following our success with TII in this area, we are speaking to a variety other clients who also recognise the benefit of actively managing this valuable asset. And the types of organisations that can benefit from this approach really is very diverse. For example, we have just completed a project with Fáilte Ireland; we have recently secured a commission via our Denver Office with the Colorado Department of Transportation; and we are currently preparing a proposal for one of the UK water companies.



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Our experience has been that changing the way we think about data can bring big benefits to many of the projects that we do. We still don't have any beanbags in the canteen like some of our new competitors in this space do, but someday...maybe...

David Kelly is a Senior Project Manager with Atkins, a member of the SNC-Lavalin group, and is currently working on the Motorway Contacts Audit and Administration Commission for their client Transport Infrastructure Ireland. To find out more about their data management work with TII and others, contact

Fact box

What is 'big data'?

Big data is a loosely defined term which refers to the rapid growth in the collection, storage and use of data. The word 'big' refers not just to the volume but also to the level of complexity and the potential value of information that is produced by everything from mobile phones, computers and wearable technology, to smart connected devices like security and energy management systems, buildings and even cars. Almost anything that is powered by electricity has the potential to be connected to form an enormous data collection and exchange network which is called the Internet of Things.

How big is 'Big'?

Some estimates are that by 2020, there will be 50 billion smart connected devices in the world and that about 1.7 megabytes of new information will be created by every person every second. And about a third of all that data will pass through the cloud making more data available to more people.

And is bigger better?

In some cases, the sheer amount of data available is part of the problem. Finding the needle in the haystack of irrelevant data is often really challenging, but this is changing with improved analytics. Better tools which can transform complex data into useful information are more widely available and these allow users to interrogate their data interactively. This results in a positive feedback loop of improved accessibility, driving demand for more data.