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# MICROSOFT

## *Bringing Big Data To The Masses*

### **Background**

Microsoft have a strong track record for correctly predicting mainstream trends in computing. Just as they foresaw and cashed in on the rise of the personal computer, the graphical operating system and the Internet, they have been forecasting the growing importance of Big Data analytics for many years.

Critics may claim that innovation is not Microsoft's strong point, but they can't deny that packaging and selling it to the mainstream certainly is. Current CEO Satya Nadella has shown himself to be just as astute as his predecessors in this regard, steering the company in the direction of becoming a data-as-a-service infrastructure provider.

### **What Problem Is Big Data Helping To Solve?**

Big Data is really nothing new: data and analytics have existed for a long time and we've always combined them. What has changed, thanks to technology and ever-increasing connectedness, is the size and speed of the data, and the sophistication of the analytics.

However, one problem still looms large for anyone who hits on the idea of using data and analytics to solve problems. Data analytics, particularly Big Data analytics – which involves working with huge, constantly changing and highly complex datasets – is difficult.

Unless you are an accomplished statistician and computer programmer, it's likely, if you've conceived a valuable application of data analytics within your business, that you're going to need help putting it to work for you. Algorithms have to be written and a hardware framework needs to be built to store the data, run your analysis and report the results.

This gaping chasm between what people are capable of conceiving and what they are capable of building has led to the emergence of many businesses offering “data-as-a-service” (DAAS) or “software-as-a-service” (SAAS) solutions. Here, Microsoft are once again at the forefront, just as they were with offering operating systems like MS-DOS and then Windows, commercial productivity software such as their Office suite and Web browsers.

Additionally, Microsoft have shown that they have their sights on the increasingly competitive and lucrative online advertising market. Microsoft have seen their competitors, such as Google, Apple and Amazon, carve out their own highly profitable segments, and have been after their own for a while. Microsoft's search engine, Bing, while still some way behind, is gaining ground on market leader Google. And while many cheered the company's decision to make the latest version of Windows OS available as a free upgrade to existing users, they undoubtedly had less-than-altruistic, business-driven reasons for doing so.

Windows 10 heralds the rollout of their Advertiser ID protocol across their home OS business, meaning each user is assigned an individual, anonymous identifier to collect data that can be sold to help advertisers with their targeted marketing strategies.

## How Is Big Data Used In Practice?

Microsoft's enterprise software and DAAS packages offer everything to cloud-hosted versions of perennial favourites such as Word and Excel, to Hadoop-based analytics platforms and their own machine-learning algorithms aimed at serious Big Data projects.

Their Analytics Platform System is sold as a “Big Data in a box” solution that combines their SQL Server database system with their HDInsight Hadoop distribution. Similar to services offered by Amazon, IBM and Google, they supply cloud-based platforms, meaning there is no need for smaller companies to invest in their own data warehousing hardware, as well as cloud-based computing power to crunch through that data. They also offer consulting services to help businesses put them to proper use.

Microsoft Azure is another as-a-service framework specifically marketed towards Internet of Things (IoT) projects. Azure is built to handle “intelligent” machine-to-machine communications, enabling everyday industrial and consumer items to become smarter by communicating and even learning from each other. Executives, including Nadella, have made it clear that they believe the IoT is the future, and the latest version of Windows comes in a specially formulated version, created specifically to run on IoT devices. So expect to see Windows running on all manner of everyday devices in the near future.

Possibly eclipsing all of that, however, in terms of how it will speed up the encroachment of analytics into all areas of life, is Microsoft's Power BI toolset. With this, Microsoft are putting advanced, Big Data-driven analytics into the hands of the millions of users of their Office products by integrating advanced analytics functionality into Excel, the world's most widely used spreadsheet and data analysis

software. And why not? After all, Excel introduced basic data interrogation and reporting into the skillset of admin-level office workers around the world, so introducing them to Big Data is the logical next step.

Inside the home, Microsoft, in line with their competitors, are concentrating their strategy on gathering as much data as they possibly can about their users. This is done to serve two purposes: refining their products and services based on user feedback and gathering data to sell to advertisers.

The release of Windows 10 caused widespread concern over the amount of data the OS appears to collect and send back to Microsoft. Default settings allow it to monitor data about activities online, such as Web pages visited, as well as offline, such as from files stored on your computer's hard drive. Online security experts were quick to urge users to alter these settings as soon as possible.

In terms of refining their products, Microsoft can use data gathered in this way to understand what users do with their software, and how it could be made more useful. The development of features and options that are rarely used can be scaled back to concentrate resources on those that provide users with most value. In the pre-Big Data days, software vendors often only had one way of gauging user satisfaction: whether or not they upgraded to a new version of a product. Today, feedback on how an application, or operating system, is used, is available instantaneously in real-time.

## What Were The Results?

Microsoft have quickly risen to be one of the most prominent and successful sellers of cloud-based, software and DAAS platforms and infrastructure. Last year, they generated revenues of \$6.3 billion from cloud-based enterprise services, which they have forecasted to grow to \$20 billion by 2018.<sup>1</sup>

It seems fears over privacy and being spied on by our own computers did not put us off our free upgrades to Windows 10. Three weeks after the OS was released in July 2015, it had been downloaded 53 million times.

## **What Data Was Used?**

Within their own products, Microsoft collect data regarding who we are, based on our Web-surfing habits and social media “likes”, as well as how we use their software. Windows 10 can monitor how long we spend listening to music or watching videos through the inbuilt apps in the OS, as well as what hardware we are running them on and what other software is installed. If you use the Cortana voice-control features, it also records and stores what was said for analysis, to allow it to improve its own language ability.

It also collects “experience data” related to how you use your computer, and how it reacts. This includes the frequency of software crashes you experience, or the response time from clicking a particular button to performing the task you want it to do.

Microsoft are open in their terms and conditions about the data they collect in Windows 10.<sup>2</sup> However, the distinction about what data is used for internally improving the performance of software and what data is sold to advertisers is very blurry, as the policy document stands at the time of writing.

## **What Are The Technical Details?**

Microsoft claim that over 10 trillion objects (files) are now stored on their Azure cloud network, up from four trillion in 2012. In 2013, they announced they had reached one million servers spread across their more than 100 worldwide data centres, with the largest, in Chicago, containing a quarter of a million servers. As well as the Azure cloud infrastructure, these data centres provide storage and access to data

created by Microsoft's 200 online services including Bing, Outlook, Office365 as well as the Xbox Live gaming network.

### **Any Challenges That Had To Be Overcome?**

A lack of their own smartphone platform put Microsoft at a disadvantage next to their major competitors: Google and Apple. The company sought to overcome this with the purchase of Nokia in 2014, but so far have failed to achieve a major presence in that market. They will be hoping this year's launch of Windows 10 as a cross-platform OS – integrating a user's experience across their desktop, tablet and phone – will rectify this given time.

### **What Are The Key Learning Points And Takeaways?**

Microsoft clearly understand it is vital that the many businesses of all shapes and sizes around the globe which use their products can see the value of their latest, Big Data-driven services.

While big business and industry have enthusiastically adopted analytics across the board, smaller enterprise, with fewer resources, has been more cautious. Microsoft generated enormous revenues selling their enterprise OS and productivity software to small and medium-sized businesses. They clearly saw they had to achieve the same penetration with their Big Data services to retain their position as a major tech player.

A careful balance must be struck between gathering data to improve user experience and spying. Microsoft generated a fair bit of negative coverage over the default privacy settings in Windows 10, but that didn't stop more than 50 million people installing it in just a few weeks. The point at which that balance between privacy and utility should be set has not yet been established – companies are using that

to their huge advantage at the moment, but this could be a risky strategy in the long term. The potential fallout of getting it wrong could be disastrous, even for a giant like Microsoft.

## **REFERENCES AND FURTHER READING**

1. Noyes, N. (2015) Microsoft's Nadella sets lofty cloud goals, <http://www.computerworlduk.com/news/cloud-computing/microsofts-nadella-sets-lofty-cloud-goals-3610084/>, accessed 5 January 2016.
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