



# The Intelligent Enterprise - How becoming one is easier than you think

**The intelligent enterprise is where data generated at the front line is presented as information in the digital boardroom.**

**Albert Einstein said: 'The measure of intelligence is the ability to change.' Today, we operate in an environment where a change in the business landscape demands an action or a reaction. Change is happening at breakneck speed and getting faster every day.**

This is possibly because there are more 'things' that can change. More importantly though, there is data instantly available about the change. If you miss the opportunity to react to the change, it's likely your business will suffer.

## **Emerging technologies point the way forward**

As the demands that consumers and other users place on the IT team increase, the number of companies looking to the cloud to provide a platform for digital transformation is increasing.

Cloud services have become a key platform in enabling transformation strategies for many organizations, as they introduce several key capabilities:

Suddenly the latest emerging technologies spring to mind: predictive analytics, big data analytics, data mining, blockchain, machine learning, deep learning, virtual reality, augmented reality, even artificial intelligence. To date, emerging technologies such as artificial intelligence and machine learning have been utilized in many areas of business, from cybersecurity, advanced analytics, bots, smart cities and even self-driving

cars. A few examples: SAP announced they are creating a cloud-based blockchain platform to track items in a supply chain. IBM created an artificial intelligence solution to help small scale farmers test water and soil samples.

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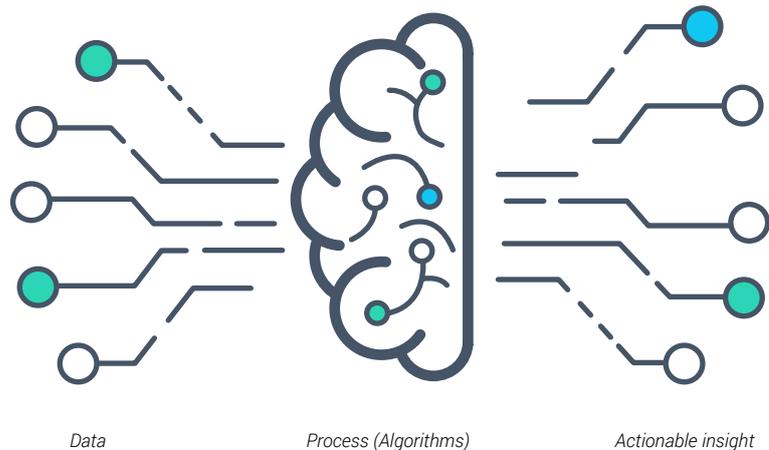
Organizations are using advanced analytics as talent intelligence to gain a competitive advantage in hiring. Accenture estimates 34% of backward-looking accounting tasks are currently automated with machine learning. Augmented reality has been found to increase efficiency through productivity gains, drop error rates, reduce injuries and reduce complexity. Mattress manufacturers harvest telemetric sleep data and automate responses with machine learning to alter the sleep experience.

Multiple factors have converged in an opportune way: the decreasing price of hardware, improved chip design, shrinking components, a rise in gathering data that, thanks to cloud and emerging technologies, can now be turned into business value.

Data of every kind, structured or unstructured, is being harvested and stored today. Thank goodness for infinite storage capability. Since 2015, AI has exploded, thanks in most part to the wide availability of graphics processing units (GPUs) that make parallel processing faster, cheaper, more powerful and the ready- to-tap data lakes created by storing images, text, transactions, mapping data and much more.

IBM launched new storage technology built to modernize cloud infrastructure and bring efficiency to multi-cloud heterogeneous storage. Data is then converted into information and used in other applications.

Still, enterprise resource planning (ERP) functions, used in day to day business critical operations to make decisions on operations, maintenance, procurement, sales, using emerging technologies is still in nappies. Most organizations today are still in the process of getting ready for smart ERP systems, let alone embracing emerging technologies. However, with the advancement of in-memory computing of SAP ERP applications, any organization can and should take advantage now.



### First step is to move to S/4 HANA.

Make no mistake, hybrid cloud is coming. Even though it's increasingly identified as the preferred model by IT teams - with the explosion in cloud offerings - responsibilities are blurring. Traditional IT involves the enterprise taking accountability for physically and logically securing applications, but this model blurs somewhat as we move into offerings such as IaaS. These new responsibilities require careful mapping into a cloud responsibility matrix.

The below diagram is an example of a matrix offered by the Cloud Security Alliance and can be relevant service-level agreements.

### Next steps

Everything starts from data science. The data science process starts with framing a problem, then proceeds to collecting data, cleaning data, performing exploratory analysis on data, building models and algorithms, performing in-depth analysis, visualizing results and creating the data product, i.e. information. The information spawned by data science is used as input for a multitude of emerging technologies and disciplines depicted in the figure below, which all rely on either data or information: predictive analytics, big data analytics, data mining, machine learning, deep learning, augmented reality, virtual reality and ultimately artificial intelligence (AI).

**1. Predictive analytics** is used to make predictions about unknown future events by using current data to identify patterns and then to highlight risks and opportunities.

**2. Big data analytics** examines large amounts of structured and unstructured data to uncover hidden patterns, correlations and other insights. With advances in technology, it's possible to analyse data and get answers almost immediately. Data mining is the activity of going through data sets to look for relevant or pertinent information.

<sup>2</sup><http://ieeexplore.ieee.org/document/47738/?reload=true>

<sup>3</sup> <http://www.theverge.com/2016/4/25/11492102/bill-gates-interview-education-software-artificial-intelligence>

**3. Machine learning** is an application of artificial intelligence (AI) that provides applications with the ability to learn and improve from experience without being explicitly programmed to do so.

**4. Machine learning** accesses data and uses it to learn from. The process of learning begins with observations of data, such as examples, direct experience, or instruction. It then looks for patterns in data and makes better decisions based on the examples provided. The primary aim is to allow the machine to learn without human intervention or assistance, and adjust actions accordingly.

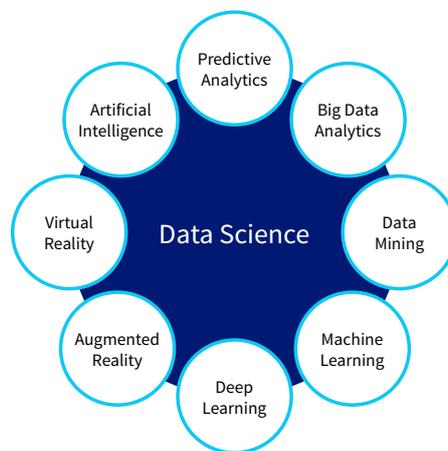
**5. Deep learning**, which is an advanced machine learning approach, applications learn from unlabeled data and image data such as pictures, videos and speech. Deep learning is a software model where billions of software-neurons and trillions of connections are trained, in parallel. Running DNN algorithms and learning from examples, the computer is essentially writing its own software.

**6. Augmented reality** is a digital layer superimposed on the physical world, integrating the physical, real environment with virtual details to enhance or 'augment' the real-world experience. AR is experienced with smartphones, tablets, or other head mounted devices. On the other hand, virtual reality creates an interactive, completely digital environment had provides a fully enclosed, synthetic experience, incorporating auditory and visual feedback. VR is also experienced using a head-mounted device.

**7. Artificial intelligence** is the ability to learn from experience. Deep learning has ventured somewhat into the domain of AI, as it can learn from pictures, videos and speech. Yet to date, no perfect AI exists in which learning evolves purely from experience. However, some examples of AI are used in everyday life where certain applications learn from usage.

## Now we have information, what next?

Recently Microsoft announced Azure DevOps, not only as a rebranding of Visual Studio Team Service but to adapt to the demanding changes in the DevOps space. Software development and delivery changed significantly in the last decade. Now tools such as infrastructure as code, immutable infrastructure, continuous integration, continuous deployment, continuous testing and continuous monitoring have changed application lifecycle management for good. Release cadence has shifted from once every few months, to many deployments per hour.



The software is shipped at a rapid pace. DevOps teams wanted tools to perform faster deployments that include manual and automated testing. With Xamarin (the application user interface uses native controls on each iOS or Android platform, creating apps that are indistinguishable from an application written in the source code), Github (a development platform to develop from open source to business projects where code can be hosted, reviewed, managed as projects and result in built software), VS Code (a code editor redefined and optimized for building and debugging modern web and cloud applications) and Azure (a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through a global network of Microsoft-managed data centers), Microsoft has some of the best tools to develop and deploy business projects.

Consuming, producing, and deriving meaning from data is where business value is generated; whether it be manufacturing, personalised medicine, product and services pricing, procurement decisions, shipment decisions, invoice verification, and many more.

