
Digital Vision: Cloud

UK&I opinion paper

Trusted partner for your **Digital Journey**



Atos



Contents

- 04** Foreword
- 06** Charting the rise of cloud
- 08** The partnership path to net zero carbon in the cloud
- 10** Devising the right hosting strategy: private, public or hybrid?
- 12** The importance of deepening and widening the use of cloud in the public sector
- 13** Optimising and managing the cost of cloud
- 14** Old systems, new world: how to make decisions about legacy
- 16** Devising and maintaining an effective data strategy for cloud
- 18** Productivity gains and more: the benefits of adopting DevOps
- 20** Guiding, safeguarding and accelerating the cloud journey
- 21** Competition data beamed around the world in less than a second
- 22** Internal capabilities for the cloud: creating an agile and resilient enterprise
- 24** Disruption breeds innovation; cloud makes it sustainable
- 26** COVID-19 crisis support in the cloud
- 28** Securing the cloud: how to address new security risks and future-proof operations post-COVID-19
- 30** Acknowledgements
- 31** Production team



“

Cloud technology can aid in transformation within organisations, but that is only possible with collaboration between multiple functions to help successful adoption. It is our responsibility to work well together, now more than ever, so that we can get the best value from the public purse while still building the best digital services for our users.

”

**Alison Pritchard (Director General, Government Digital Service)
and Gareth Rhys Williams (Government Chief Commercial Officer)**



Foreword



Clay Van Doren, CEO UK&I, Atos

Cloud: the catalyst for agile enterprise

The world is moving fast and in the public and private sectors alike, rigid or costly IT infrastructures, legacy systems and old ways of working can seriously hold organisations back. Many are therefore electing to move to cloud as a key modernisation and transformation catalyst.

Cloud resources flex up and down quickly and easily, so organisations only need to buy what they consume. Cloud offers significant savings and productivity gains, enabling new ways to develop and deliver applications through DevOps that mean organisations can innovate and respond faster to the needs of citizens and consumers. Cloud also helps to level the playing field for SMEs - who can offer comparable capabilities to their larger partners - and delivers access to an ecosystem of innovative technologies and skills that helps organisations create their own differentiation.

While the benefits of cloud are clear, designing the right roadmap for moving to cloud requires careful consideration of business

objectives, business buy-in, data requirements and appetite for change, with a nuanced approach to decision-making about each legacy and cloud-native application. Cloud alone is not a panacea; it's tempting, perhaps, to focus chiefly on optimising IT infrastructure costs. The real challenge, and opportunity, for any enterprise is to achieve true transformation by redesigning and optimising processes while addressing the cultural changes involved in cloud adoption and creating a new platform for business innovation. The cost savings and customer-intimacy advantages of cloud (private and public) provide the business value required to fund the transformation - but only if the transformation is well executed.

The process of cloudification is complex. Considerable domain, technological and financial engineering expertise is essential to make balanced decisions, then devise and deliver a coordinated programme of change that minimises disruption for users, optimises and accelerates the benefits, and builds the internal capabilities needed to embrace cloud.



This is an exciting and important journey for any enterprise to unlock its full potential. Cloud is undoubtedly a critical enabler; it is the engine for driving better, faster and cheaper citizen and customer services. It is also - in combination with other enablers such as automation, AI and edge computing - the means for organisations to remain sufficiently optimised and agile as technologies and society evolve.



Charting the rise of cloud

Cloud is increasingly a critical enabler for organisations of all kinds to accelerate their digital transformation journey and embrace new ways of thinking and working. Here are some key stats and facts that chart the rise of cloud in the UK and globally.

175 zettabytes

of data created worldwide by 2025, with 49% of it stored in public cloud environments¹

Two-thirds of organisations

will reduce vendor dependency through 2024 thanks to multicloud strategies⁶

84% reduction

in energy usage through cloud solutions, compared to on-premises infrastructure²

\$832.1 billion

The projected value of the global cloud computing market by 2025³

60%

of companies will use a cloud managed services provider by 2022 – double the percentage from 2018⁴

5 to 6 cloud platforms

The average company uses 5 to 6 cloud platforms and 300-3,000 cloud services⁵

¹<https://www.networkworld.com/article/3325397/idc-expect-175-zettabytes-of-data-worldwide-by-2025.html> IDC

²<https://aws.amazon.com/about-aws/sustainability/>

³<https://www.marketsandmarkets.com/Market-Reports/cloud-computing-market-234.html>

⁴<https://www.gartner.com/en/newsroom/press-releases/2019-11-13-gartner-forecasts-worldwide-public-cloud-revenue-to-grow-17-percent-in-2020>

⁵<https://atos.net/wp-content/uploads/2018/07/atos-wp-evolution-hybrid-cloud.pdf> Rightscale, SkyHigh Networks

⁶<https://www.gartner.com/smarterwithgartner/4-trends-impacting-cloud-adoption-in-2020/>





Rogue cloud usage

is often 10 times higher than IT estimates⁷

93%

of enterprises have a **multi-cloud** strategy; **87%** have a **hybrid cloud** strategy⁸

44%

of cloud decision-makers see difficulty **migrating legacy applications** as an obstacle to realising the full potential of cloud⁹

70%

of cloud decision-makers see cloud as an **enabler of AI initiatives**, but only **30%** believe their organisations are very effective at unlocking this potential¹⁰

59%

of organisations expect their **cloud usage to be higher** than initially planned as a result of **COVID-19**¹¹

Atos Cloud Solutions

68% of our top 100 customers use Atos Hybrid Cloud

Over **5,000** cloud experts, **30,000** application experts and **15,000** transformation experts worldwide

Atos is ranked by **Gartner**, **Everest** and **HfS** as a world leader in cloud services

⁷<https://atos.net/wp-content/uploads/2018/07/atos-wp-evolution-hybrid-cloud.pdf> SkyHigh Networks

⁸<https://www.flexera.com/blog/industry-trends/trend-of-cloud-computing-2020/>

⁹<https://atos.net/wp-content/uploads/2020/04/atos-forrester-thought-leadership-report.pdf> Forrester Consulting

¹⁰<https://atos.net/wp-content/uploads/2020/04/atos-forrester-thought-leadership-report.pdf> Forrester Consulting

¹¹<https://www.flexera.com/blog/industry-trends/trend-of-cloud-computing-2020/>

The partnership path to net zero carbon in the cloud

Digital transformation and the move to cloud offer organisations significant opportunity to decarbonise by leveraging net zero carbon IT services and data centre operations.

With the scientific consensus well established on the urgency of tackling climate change, and the drive towards a green economy increasingly cemented at the top of political and corporate agendas, a critical realisation is beginning to crystallise for public and private organisations. While specific local environmental initiatives such as recycling programmes have an important part to play, the levels of decarbonisation required to limit the increase in global average temperature to 1.5°C above pre-industrial levels – the central goal set by the UN Paris Agreement on Climate Change – cannot be met without much bolder action. Luckily for every modern enterprise, a powerful mechanism to boost decarbonisation efforts lies within arms' reach – inside their own cloud strategies.

When developing their cloud strategies, organisations are often encouraged to take into account factors such as the volume and nature of the data they need to store and access, the specific applications they will be hosting, and their choice of cloud infrastructure – underpinned by security and cost considerations. What many organisations are now realising is that their cloud strategies remain incomplete without careful scrutiny and understanding of their associated carbon emissions.

Green partnerships

Cloud partners can help unlock substantial sustainability gains for their customers by providing centralised energy efficient data centres that allow the sharing of physical infrastructure across multiple thousands of customers, while keeping applications and data securely protected. When these benefits are combined with automation and cloud-native features such as autoscaling, applications only use computing resources on demand rather than consuming them unnecessarily 24x7 in customer data centres.

The critical insight for organisations, however, is that the performance of their cloud partners could make or break their own sustainability strategies. The best cloud partners will ensure sustainability feeds deep into their own supply chains, assessing strategic suppliers for their corporate social responsibility performance and examining how procurement processes can embed sustainability at every stage.

Setting global standards

By incorporating these and other critical steps into its own ways of working, Atos has earned unparalleled sustainable credentials – having

been recognised as the most sustainable IT Services company in the world by the Dow Jones Sustainability Index (DJSI) for two years in a row. Most importantly, however, Atos supports clients to meet their own sustainability challenges through its fully carbon-compensated sustainable solutions and new technologies to reduce energy consumption. As a result, Atos can help its customers achieve their Sustainable Development Goals as defined by the United Nations – in fact, Atos's clients can report “zero” in their own carbon reporting for the solutions they host in Atos data centres.

Setting the highest decarbonisation standards for its industry, Atos has pledged to achieve net zero carbon emissions by 2035, 15 years ahead of the aim set by the Paris Agreement. Crucially, however, Atos's commitment applies not only to the emissions under its direct control but also across its entire value chain – a standard known as GHGP Scope 3. This will result in a reduction by half in the carbon footprint of everything we buy and the carbon resulting from the use of everything we sell. This hugely ambitious pledge also commits Atos to offset any residual emissions under its influence through carbon sequestration.

The green standard: a sustainable digital society

We now live in a digital society. Gone are the days of the internet as an ethereal and remote domain, a place frequented by “netizens” seeking to “surf” the “information super highway”; we are now immersed in a world of ubiquitous connectivity, enabled by cloud services and the continuous availability of digital infrastructure.

The citizens of our digital society are ever more attuned to the value of their own data. A more nuanced understanding of the cloud is quickly becoming the norm, and organisations – public and private – whose efforts fall short of achieving truly sustainable data management practices will pay with potentially irreversible loss of trust.

Looking even further into the future, organisations must recognise that digital transformation is only set to accelerate. Organisations will increasingly adopt data-fuelled services including real-time data orchestration, open platforms and intelligent automation, leveraging sustainable practices to drive client satisfaction and value creation. The path towards sustainable growth, however, will remain the same – solidly built on the credentials of trusted partners.



Devising the right hosting strategy: private, public or hybrid?

While the cloud comes in many flavours, essentially organisations have a choice between three basic types of cloud deployment: private, public and hybrid. The key question is: how do organisations decide which cloud fits their strategy best? Rather than thinking of this as a strategic infrastructure-based decision, they should look at it from an application perspective.

While cloud adoption is the right goal, the split between private and public cloud can be misunderstood. Private cloud is often an easier adoption route than public cloud for many applications, while public cloud is a better option either for relatively self-contained applications, cloud native applications (purpose-built for cloud) or transformed applications. A hybrid cloud is the typical landscape which combines the benefits of private and public cloud environments.

New versus legacy applications

When developing new applications for digital transformation, organisations need to consider where they want the application to be hosted. As these new applications will usually be developed with cloud hosting in mind, they can thrive in both public and private cloud environments. Generally speaking, the public cloud will bring all the key advantages offered by the cloud: ease of deployment, standardisation, agility, automatic scaling, and less concern around management and support.

Legacy applications, written in older languages or in the pre-cloud era, are an entirely different matter. They have almost all been developed without a cloud strategy in mind, and cloud deployment is therefore less obvious for these applications. Moving them to the cloud will require careful consideration of whether the advantages outweigh the inherent obstacles. As cloud technology continues to advance, more options will become available for legacy applications; so while a decision may not be viable today, it could be in 12 to 18 months.

Public cloud pros and cons

The true added value of the public cloud is in the applications written specifically for cloud environments or when using 'Platform as a Service' (PaaS) or 'Software as a Service' (SaaS) solutions. However, in the case of using the public cloud to host legacy applications in an 'Infrastructure as a Service' (IaaS) model, the public cloud offers no true value-add other than providing an evergreen and standardised environment.

Moving legacy to public cloud does not intrinsically change the application architecture. Or, to put it differently: the application is not

becoming digital because it is running on Infrastructure as a Service; one simply moves the existing legacy from a legacy environment to a new computing environment, without reaping any cloud benefits.

Managing legacy applications

If organisations want these legacy applications to benefit from the public cloud environment, they should first redevelop them into a microservice container-based solution. Alternatively, these applications can be deployed on a private cloud until they get phased out and replaced by a cloud-native solution, or until technology advances to accommodate real legacy.

The value-add of keeping the legacy applications on a private cloud infrastructure is that private clouds can be more flexible in meeting the requirements for hosting legacy applications than the public cloud can.

Making application-based decisions

It can be tempting to set public or hybrid cloud as the default infrastructure solution. In truth, however, cloud isn't right for everything; for example, while it expands and shrinks very quickly, it is not good for high input-output activity, which requires faster throughput. Mainframes, high performance computing and private cloud solutions may be best in these cases.

Application latency is also a key driver; if some applications go to the public cloud and some remain behind, but each are dependent on each other, then this latency is likely to become a major technical issue. Again, technology continues to improve – but without modernising at least some of these legacy applications, the applications will not be efficient.

Seamless user experience

Once applications are moved, users should have a seamless experience regardless of where their application is hosted. Providing that seamlessness experience while enabling a gradual migration of the legacy applications into cloud-native solutions is not an easy task. This gradual migration, or cloudification, can be a long journey and should be planned meticulously.



The most obvious conclusion can be summarised as follows: for the time being the best solution will always be some form of hybrid cloud, offering applications in the public cloud when advisable and keeping legacy applications in the private cloud until further notice.

Experience suggests that successful organisations adjust their transformation approach to place digital at the centre of their business agendas. Even where only a very high-level vision and strategy are established, and the Board relies as much on intuition as on empirical business cases, organisations can still embark on a successful transformation journey by hiring a trusted and experienced third party to accompany them. The most important decision is to get started.

About hybrid clouds and multi clouds

Note on the use of the term 'hybrid cloud': this term is sometimes used to refer to a hybrid cloud environment - where an enterprise uses both private and public clouds - and hybrid cloud platforms.

Multi-cloud refers to more than one cloud. Multi-cloud may be hybrid, all private, or all public. The terms are sometimes used interchangeably in the industry.

Depending on specific requirements and to provide the best-possible options for an optimised environment, Atos builds its own solutions based on a multi-cloud strategy.





The importance of deepening and widening the use of cloud in the public sector

Back in 2016, techUK published its Cloud 2020 Vision report.¹² We called for government departments and civil servants to utilise the full benefits of cloud computing, and for departments and industry to work together to make this happen. In particular, we called for greater engagement in the commissioning process and the promotion of case studies where the use of cloud has delivered business transformation.

Over the last four years, and long before the COVID-19 pandemic, engagement between public sector and the cloud industry has increased and we are seeing real-life examples of where cloud adoption is making a real difference. Given the many benefits cloud offers to public sector organisations as they continue the process of digital transformation (increased agility, reduction in IT complexity, lower capital expenditure costs), more action is still needed to encourage and enable departments to move more of their applications and operations to the cloud.

The good news is that the UK has a vibrant, open, competitive and ever-changing cloud market that is willing and able to help. One of the advantages of cloud is that it opens up opportunities for public sector organisations to engage with more SMEs as well as larger digital services providers, with the ability for all partners to access the same digital platforms. In addition, advancements in cloud computing since 2016 and the development of advanced technologies such as containerisation offer additional solutions to assist government bodies. So how do we move the UK Government into the next phase of cloud adoption and utilisation? How do we get this right and what is key to support public sector leaders' cloud strategy? Here we set forward three key areas.

Workload selection and governance

Public sector organisations should review their existing business applications to determine their suitability for a move to the cloud. Planning must include issues such as data security, privacy and governance processes, staff training needs, and procedures to ensure requirements are appropriate in the cloud; it should also consider the implications of moving applications that may be linked in the cloud. For example, increased costs can occur where applications are moved to the cloud that are constantly connected and can be 'chatty' with other cloud applications.

Managing cloud systems

As the range of cloud models and dedicated cloud services continues to grow and new technologies emerge, it is important that organisations establish ways to visualise, access and manage the different systems and applications available, for example by having real-time dashboards to monitor all cloud and on-premises services being used. In the case of hybrid cloud, issues to be addressed include identity management, access control and having appropriate information policies and cyber security processes in place. Getting the right balance between optimising security and business functionality will be key.

Making the right decisions about lifting and shifting

While moving to the cloud will bring about cost savings, getting the right architecture and design for cloud applications and making the right decisions about what applications to lift and shift to the cloud is essential. Looking into the future, organisations may want to move their cloud applications and data from one cloud provider to another. Thankfully, cloud customers in the UK have access to a spectrum of cloud services from which to choose based on their individual needs; this diverse cloud market not only enhances customer choice but also increases competition. In recent years we've seen an increase in the number of start-ups and scale-ups providing products and services to government, with these new services often supported and enabled by the wider cloud ecosystem. As a result, data portability and system interoperability issues have become a key part of the conversation between cloud users and service providers. Industry is here to help educate and inform customers to consider how using tools such as open source-based cloud solutions and common Platform-as-a-Service (PaaS) components in the build and design of cloud services could enable them to move their data more easily in the future.

It is clear that cloud computing has an important role to play in the next stage of the UK Government's digital transformation, as underlined by the recent publication of a range of guidance encouraging government organisations to adopt a more cross-functional approach to their cloud strategies.¹³ The cloud industry stands ready to help public sector leaders to overcome existing challenges in order to increase not only their adoption but utilisation of cloud computing in the future.

¹² <https://www.techuk.org/insights/news/item/8064-techuk-vision-for-keeping-the-uk-at-the-forefront-of-cloud-adoption>

¹³ <https://www.gov.uk/government/publications/cloud-guide-for-the-public-sector/cloud-guide-for-the-public-sector>



Optimising and managing the cost of cloud

Whilst moving to an enterprise-wide cloud deployment presents significant opportunities, it also comes with challenges on how to ensure cloud services are consumed efficiently and cost is carefully managed.

Cloud provides agility and operational effectiveness through automation and machine learning that cannot be replicated using traditional infrastructure. However, the most effective cost management may only be achieved by embedding cloud optimisation and management into the strategic plan for moving to cloud.

Our experience is that building robust, common deployment and management practices prior to and after deployment will reduce the risk of investing in inefficient services. Typically, the main areas for consideration are:

- **Make use of 'spare' cloud capacity** – these services are often priced competitively against those provided in an on-demand model
- **Automation** can make deployments fast, repeatable and standardised, and can also aid in reducing services quickly
- Use **scheduling** to only run services when the business actually requires them
- Consider **pre-ordering capacity** for the lifetime of a service, as these 'reserved' instances offer significant discounts
- **Manage and optimise** on a regular basis, perform routine housekeeping and usage analysis to identify waste
- Think about **re-architecting** applications to exploit more cost-efficient services available from cloud vendors.

By implementing these techniques and controls into any cloud deployment, critical insights will come into focus on how to drive additional efficiencies from the use of cloud, reduce carbon footprint and ultimately reduce costs.



Old systems, new world: how to make decisions about legacy

As organisations evolve, they need platforms and services that are resilient while being responsive to change. The simple reality is that most also have a huge legacy of data and applications running on old platforms. So, what should organisations do about their legacy estate on their journey to cloud?

Although many organisations are adopting digital by default and cloud-first strategies, it makes little sense to move the entirety of a legacy estate to the cloud. Firstly, not all applications are cloud-capable or cloud-ready. Secondly, simply moving current applications to the cloud can result in transferring and perpetuating old problems as well as creating new ones.

Cloud is not right for everything; taking cloud-first too literally can result in avoidable issues including increased operating costs, delays to digital transformation and under-investment in critical business functions served by legacy. The many benefits of cloud should always be assessed on a case-by-case or needs basis.

Locked-in value of legacy

The primary challenges around supporting and making safe and predictable changes to legacy systems are the cost and time resulting from manual build, deployment, test and integration methods. This latency also affects cyber security posture given the increased time taken to patch, upgrade and test.

In this context, it can be easy to fall into a mindset that legacy has no value when in reality, many legacy systems have considerable locked-in

value in terms of the data held, the functionality provided and the deep knowledge that surrounds them.

The question is therefore how best to manage and unlock this value so that it can be readily and rapidly exploited to support a wider digital transformation agenda, which often requires a shift in focus away from the application centricity of legacy towards a data-driven enterprise.

Nuanced approach

If the embedded value of legacy is not to be lost, dealing with legacy requires a balanced approach. Not all workloads can or need to be moved to the cloud, nor do they necessarily need to be moved in short shrift; legacy may be more easily and rapidly exploited in-situ and processes optimised through targeted intervention, thereby avoiding or delaying the need to move.

Fully understanding the role that legacy should play in digital transformation is key to success. If gaps in knowledge exist, then these should be closed through a programme of targeted discovery framed against a pre-defined digital vision and strategy. To avoid missed opportunity, the historical questions ‘what do we have?’; ‘do we still need it?’;

Legacy treatments

When considering legacy in the context of cloud, treatments traditionally fall into six main categories:

Retire	Decommission applications that are obsolete, redundant or will become so as a result of a planned replacement or policy/process change.
Retain	Leave the application as is, either as a result of other priorities, dependencies, levels of investment, or compatibility.
Migrate <i>Rehost</i>	Entry-level move to cloud IaaS (Infrastructure as a Service) with minimal change or ‘Lift and Shift’.
Modernise <i>Refactor/ rearchitect/ replatform/ encapsulate</i>	Mid-range move to cloud addressing some application component level concerns such as exploiting cloud PaaS (Platform as a Service) in addition to the underlying IaaS migration activity above.
Redevelop <i>Replace/ rearchitect/ refactor</i>	Re-instantiate on cloud using cloud-native technologies.
Standardise <i>Replace/ repurchase</i>	Simplification and standardisation to an industry-standard SaaS (Software as a Service).



'how long do we need it for?' need to be supplemented with 'does it make sense to re-use/exploit it?'; 'can we improve it?'; 'what role does it play in transformation?' and most importantly, a focus on the fastest way of delivering benefit as efficiently as possible.

Exploitative techniques such as data scraping to provide data-centric platforms; construction of Application Programming Interfaces (APIs) and microservices to open up legacy systems; application virtualisation and containerisation can all provide useful alternatives to rip and replace type approaches both in the short and long term. Where Redevelop or Retire is the preferred approach, protective measures for legacy as the System of Record may still need to be applied in the interim or during the transition.

Realistic targets

Cloud is a technology enabler, not a cure-all. Whilst it represents an important component of the overall cost base, it is far outweighed by the cost of people and processes. Redesigning fully automated processes around capabilities from the bottom up and underpinning these with cloud and other enabling technologies such as Edge and IoT is where efficiencies are truly realised. Migrating legacy to cloud is not a precursor to this, nor should it be, but the value in legacy and its exploitation is an input and often an accelerator along the way.

Making sustainable and proportionate decisions about legacy systems and data is not straightforward and setting the wrong targets can be detrimental to outcome. Targeting and measuring outcomes and progress based on business efficiency (cost, throughput of change, quality, availability) aligned to growth and innovation are the key to providing the freedom to make informed and balanced decisions on roadmaps and priorities. The evolution and exploitation of legacy and its associated data is fundamental to achieve these goals given that cost and timeline constraints will always restrict any wholesale transformation.



Devising and maintaining an effective data strategy for cloud

Cloud is the engine for transformation, enabling organisations to reinvent operating models to deliver better services, products and experiences. The fuel for that engine is fast-growing volumes of data that must be stored, processed and actioned in a secure, fast, sustainable, cost-efficient and resilient way.

The explosion in data volumes in recent years – in terms of unstructured, structured, real-time and other data – has been truly transformative. Innovators in every sector have revolutionised their markets by using data to precisely understand their customers and bring them ever more personalised and convenient services: think Uber, Amazon, Airbnb and Revolut.

Turning data into actionable insights

The one component that has enabled organisations to achieve this is the very thing that can hinder innovation: data. Organisations can have the most innovative ideas, but without the right data in the right place at the right time, their ambitions will be difficult or impossible to implement.

The management of data is therefore an imperative: not just managing the data needed to gain actionable insights, but also the data needed to action those insights. AI and machine learning technologies (working either at the centre or at the 'edge') are needed to process, analyse and deliver all the data needed for the digital services and apps of tomorrow. That requires end-to-end management of data across each business process while maintaining compliance with data security and privacy regulations such as GDPR.

Transcending organisational siloes

In the era of paper bureaucracies, it was simply not practical to share much of the data that organisations had available. Yet the reasons for the lack of data-sharing go much deeper. Even today, many organisations work in siloes that make data-sharing difficult; what's more, there may be legal constraints on sharing personal information.

However, these cultural norms are now looking out of date. This is where cloud solutions come into play as organisations must flex their computing and data storage needs over time to meet specific business requirements in a cost-effective way. In many instances, it is not efficient to store data that is rarely ever used on expensive on-premise infrastructure. In these cases, it is more appropriate to have a hybrid cloud strategy which enables organisations to cost-effectively manage where and when data is stored, while ensuring that storage is in line with security and regulatory constraints.

Data for reinventing the operating model

Having the right data in the wrong place at the wrong time may impact application performance. Public and private sector organisations may benefit from cloud as an option to cost effectively and efficiently manage their data assets.





In summary:

- **Without data management, successful innovation is impossible.** Paying attention to the subject of data at the outset of the transformation programme is key.
- **Cloud is an enabler for more economic delivery of new services.** By adopting cloud solutions, businesses don't need to build platforms for peak capacity; cloud resources expand and contract quickly, so businesses can buy only what they consume. This means cloud is ideal for expansions, since organisations can buy on demand according to desired business outcomes.

Today's citizens and customers increasingly expect to access services and information instantly, online, whenever and wherever they need them. The challenge and opportunity for organisations is in shifting away from merely digitising existing processes and, instead, reinventing their operating model to deliver truly personalised, fast, easy, joined-up digital services that make life better for the customers they serve.

“

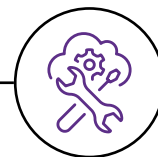
Organisations can have the most innovative ideas, but without the right data in the right place at the right time, their ambitions will be difficult or impossible to implement.

”

Key questions for devising a data strategy for cloud

To devise a data strategy for cloud, the first step is to pinpoint the business challenge or issue you want to address and define what you want to achieve. You must then examine what data is required to achieve that objective. Here are a few key questions to consider:

- **Do you have that data?** If not, can you access it?
- **Is the data you have available fit for purpose?** For example:
 - **Do you have sufficient data?** Substantial data sets are needed to train artificial intelligence and machine learning models
 - **Is the data of sufficient quality?** For example, is there any data missing?
- **How often will you need the data?** Once every few days/hours or in real time?
- **How frequently is the data updated?** Is that frequency suitable?
- **How will you collect and store data?**
- **When will the data be utilised?**
- **Where will the data be stored and processed?** For example, on-premise, cloud or through an edge device? Each of these options will entail different costs, latency constraints and performance requirements.



Productivity gains and more: the benefits of adopting DevOps

DevOps maximises organisations' leverage from cloud through the agile automation and integration of IT development and operations. Many organisations look at DevOps as a way to increase quality, reduce time to market and realise productivity gains; there are, however, much deeper impacts from embracing DevOps as a mindset.

Now more than ever, organisations are looking to adopt DevOps to create new products, fix bugs and design new features while consuming the technologies and services available from the Cloud and Open Source repositories. When organisations see DevOps simply as a toolset, a department or a specific process, they miss an important principle: DevOps is about a whole new culture. Approaching DevOps as a culture helps leaders to see their organisation in a new way; they structure their teams differently and they approach problems with a different mindset. They are more focused on products that are the result of teams who are used to working together, rather than people who are randomly assigned to projects.

Here are five important ways in which an organisation will rapidly see the benefits of fully adopting DevOps.

1. **Bringing down the walls to enable collaboration and accountability.** DevOps is about eliminating silos and taking end-to-end responsibility for what you build and ultimately deliver. While DevOps started with removing the wall between IT development and operations, it can go further; having removed that silo, organisations begin to remove others. This creates a pattern and collaboration spreads: why is there a wall between business and IT, for instance, or between marketing and sales? Hence the use of terms such as BizDevOps and DevSecOps.
2. **Customer focus and satisfaction.** Agile introduced sharper customer focus into IT development; now DevOps has the potential to bring this to the entire organisation. When you move to cross-functional teams who have end-to-end responsibility for their products, the operations people (who were in the back office) can see the impacts of their decisions and actions on the experience of the customer – and they can influence the design of products as full members of the product team. They build for performance and maintainability from the start, which in turn improves the customer experience. Organisations practising DevOps as a culture see customer feedback all the way to the 'server room' and can better understand the implications of each decision on everything they do.
3. **Strategic thinking: from projects to products.** Traditionally, developers have built products to a specification and, once completed, moved onto the next project; this implies that a project finishes when an application is launched. The reality is that applications have a longer

evolution; once customers start using them, they often need to be adapted and enhanced. By adopting a DevOps mindset and creating teams responsible for products, or groups of products, leaders can think more strategically to increase the quality of products and the customer experience.

4. **Creativity and motivation.** When organisations form a team driven by a DevOps mindset, developers and operations people are involved from the very beginning. It's inspiring and motivating for them to see the real business impacts of what they are building; they feel more fulfilled by knowing why they are building something. This creates a very different work environment that has an immediate benefit in terms of employee engagement and commitment.
5. **Inclusivity and diversity.** When you practise DevOps in an organisation, your goal is to break down silos and to democratise the development of your products by involving everyone end to end. That requires the ability to include different perspectives, encouraging organisations to be open and to listen to diverse ideas and opinions.

DevOps is just as much about culture as it is about process and technology, and it can produce benefits ranging from speed and productivity gains to the delivery of better products and customer experiences. Leaders who create the space for cross-functional structures and thinking, and who remove labels and departmental silos, set the example of how transformation can happen. DevOps shows that organisations can forge a new path by applying a different blend of processes and practices combined with the consumption of cloud and open source technologies.

DevOps in numbers

Efficiency is higher and costs are lower, with **35% less time needed per application**

Organisations can launch new services **3x faster**, with developer productivity increasing by **300%**

With DevOps, cloud upgrades are standardised and can be rolled out uniformly, removing compatibility concerns and **eliminating the 40% of software development time** previously spent fixing releases

“

An important reason for becoming a DevOps-driven organisation is to improve business value. The faster new features can be delivered, the better organisations will be able to attract and retain customers.

The key to success lies in the degree of collaboration and agility and the level of enablement via automation and standardised services like cloud. Therefore, the strength of DevOps can only be fully realised if the change is made together by business and technology partner, and not run as a technology project for the business.

**Jeroen Heikens, Distinguished Expert DevOps
(Atos Expert Community) / Head of Center
of Excellence DevOps, Atos**

”





Guiding, safeguarding and accelerating the cloud journey

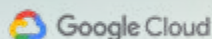
As each organisation embarks on its own cloud journey, it needs to take into account its existing infrastructure, application, data, processes and location of their customers and internal users. This requires a detailed analysis of current business and technical environments, identifying future business objectives and assessing thoroughly what is the best future for each asset.

To maximise the benefits of cloud, most organisations greatly benefit from the guidance of experienced business and IT partners who must be familiar with both legacy and current cloud environments. With a long track record of helping large enterprises in the public and private sectors to reap the benefits of cloud, Atos has strong credentials as a trusted partner.

This is the power of Atos: an experienced team of local experts, supported by a global specialist team, with both technical and business consultancy knowledge.

Working in partnership, Atos helps to unleash the potential of cloud to achieve its customers' strategic and operational goals. With long experience of large and complex environments, we provide skills, processes and technologies to transform our customers' business and technology landscapes with the move to cloud.

As an independent partner, we enable our customers to select and implement the right combination of cloud solutions and providers. Our experts devise cloud strategies and roadmaps for accelerated, end-to-end cloud orchestration and applications transformation with cyber security built in. We help our customers to leverage game-changing technologies such as robotic process automation, machine learning and AI, with the adoption of agile DevOps to ensure quick wins.



Google Cloud and Atos have a global alliance to jointly deliver secure hybrid cloud solutions for enterprise customers to accelerate digital transformation in key domains: data centre takeout, mainframe migration, data warehouse & analytics, SAP on GCP, Anthos, bare metal as a service and G Suite.



As a certified Azure Expert MSP and Gold Partner, we have led the market in the development of Microsoft Azure hybrid cloud solutions and through joint development of data centre takeout, SAP on Azure, mainframe migration, application transformation and data modernisation.



Atos has been an AWS Partner since 2013 and is a Strategic Global Systems Integrator Advanced Consulting Partner in the AWS Partner Network (APN). Atos maintains AWS-validated qualifications as an Authorized Solution Provider, audited Managed Service Provider, Migration Delivery Partner, Well Architected Partner and member of the Public Sector Partner and Channel programs. These designations recognise Atos's competence in providing enterprise services around the AWS platform, with particular focus on migrations including SAP on AWS and mainframe modernisation, as well as IoT, applications management and customer experience solutions.



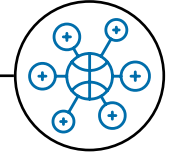
Our global alliance with VMware, a global leader in cloud infrastructure, jointly delivers hybrid cloud solutions with VMware private cloud and public cloud solutions using VMware on AWS, Azure and Google. Together with container platforms delivered by VMware Tanzu, these enable enterprises to adopt a cloud model that addresses their unique business challenges.



Atos has a global alliance with Red Hat to jointly delivery private cloud and multi-cloud solutions using OpenShift, Kubernetes Container Management Solution along with Ansible automation and a broad range of open source technologies.

Supporting the Home Office journey to cloud

Having helped the Home Office to transform and migrate the Points Based System for visa applications to the cloud, Atos is currently supporting the migration of its National Data Communications Service Case Management system and the UK Visa and Immigration MIDA system to cloud. Migrations have leveraged AWS cloud services, with use of automation and agile DevOps operating models to drive innovation, increase efficiency and accelerate times to market.



Competition data beamed around the world in less than a second

Atos has been an Information Technology Partner to the Olympic Movement since 1989 and became the Olympic Movement's Worldwide Information Technology Partner in 2001.

Over that time, the world and technologies have changed significantly. In response, while delivering an Olympic Games with a new host country every two years, Atos has continued to enable and accelerate the Olympic Games' innovation and digital transformation journey. This has included the migration of the IT infrastructure to the cloud and helping to continuously enhance the experience for fans and Olympic Games stakeholders, beaming competition results around the world in less than a second.

PyeongChang 2018 was the first time in the history of the Olympic Games that all critical applications were hosted 100% in the cloud for a Winter Olympic Games (including the systems for accreditation, team entries, sport qualification and workforce management), enabling more consistency, efficiency and effectiveness in delivery using the Atos Orchestrated Hybrid Cloud. This ensured that the results were delivered around the world in 0.3 second, while delivering a 30% reduction in operating costs.

Supporting the IOC in delivering the most sustainable solutions ever

By building its new permanent Central Technology Operations Centre in Barcelona, Spain, and using cloud technology to support the running of the IT backbone, Atos has achieved a paradigm shift for Olympic Games IT by replacing a 'build each time' model with a one-time build. This new delivery model, scalable for every future Olympic Games, has enabled significant reductions of:

- Carbon impact of people travelling to each host city
- Number of physical servers
- Power usage
- Square metres
- Heat emanation

Olympic and Paralympic Games Tokyo 2020

The Olympic Games Tokyo 2020 is Atos's tenth consecutive Olympic Games as Worldwide IT Partner to the International Olympic Committee. As well as being the first Summer Games edition in which all critical IT systems are delivered over the cloud, Tokyo 2020 is also the first Olympic Games in which cloud native applications will be used, completing a 100% cloud migration and bringing even more flexibility, agility and scalability; for example, the Olympic Diffusion System, which enables the distribution of results in real time, is now fully cloud native.

The International Olympic Committee and Atos are extending the partnership through to 2024, with Atos further supporting the digital transformation of the Olympic Games as the lead integrator for technology and fulfilling its role in securing the IT infrastructure for the Olympic & Paralympic Winter Games Beijing 2022 and Olympic & Paralympic Games Paris 2024.

“

The Olympic Games Tokyo 2020 is Atos's tenth consecutive Olympic Games as Worldwide IT Partner to the International Olympic Committee.

”

Internal capabilities for the cloud: creating an agile and resilient enterprise

While an enterprise-wide move to cloud presents major opportunities, it also entails fundamental challenges and uncertainties. It is critical, therefore, to pinpoint and resource the internal capabilities needed to navigate this complex journey.

Given that the decision to become cloud-based should be part of a wider digital transformation agenda, new skills and tools will be required by digital teams and frontline staff to ensure cloud adoption and drive the benefits of new ways of working.

In some organisations, this may be the first time widescale transformation is being developed and delivered using agile methodologies. The extra change management challenge, therefore, may be how to integrate iterative technology solutions into a large, naturally non-agile and potentially risk-averse culture and organisational structure.

Planning and managing migration

Our experience is that those leading digital transformation initiatives are usually skilled transformation executives. They already have a deep appreciation of the multiple dimensions of people, process and technology; they know how to deliver outcomes through strategic programmatic change; and they know what works within their prevailing culture. However, experience also suggests that successful organisations understand and act on the fact that digital is different from previous business agendas, and adapt their transformation approach accordingly.

A clear and strong vision, roadmap and goals must be articulated, evolved and communicated frequently to stakeholders. The migration journey itself will be complicated and likely to happen over a period of a few years. Significant technical skills and experience are required to map and plan in detail all the interdependencies to orchestrate widescale change while managing risks and impacts. Procuring external support to access specialist expertise and learning from other organisations and sectors while building a sustainable internal capability will accelerate the journey.

Managing the people aspects of change

A migration to cloud should involve changes to processes and ways of working, and will require new skills for frontline staff. Yet while the people-related issues can make or break the success of any change, it can be tempting for organisations to cut corners when they are under pressure; this will seriously risk the success of the programme.

Managing the change will require a detailed assessment of change impacts, with a skilled change management team to develop and deliver a programme of communication, training and support. Change, business and IT managers need a structured approach and robust tools for analysing the effects of changes, pre-empting the barriers and designing and implementing new practices to get the most from cloud. Two-way communications with user communities is vital to inform them of plans while involving change agents within the community to help minimise negative impacts and optimise benefits; this should include feedback from communities who have migrated to the cloud to learn, adapt and include in the next wave.

Addressing security concerns

For some, questions about the security of data in the cloud is a key inhibitor to adoption; concerns, myths and pre-conceptions need to be overcome. This requires a combination of listening and education to build confidence and inform users about security measures. Demonstrating compliance with global and local security frameworks such as the National Institute for Standards and Technology (NIST) Framework is, of course, key; there must also be clear understanding of how cloud providers meet security standards.

The journey to cloud starts with an assessment of the risk appetite of the organisation. This could involve starting to use the cloud for limited or sandbox innovation activities and then extending these to development/test and production teams as they become more confident.

Experiment, adapt and evolve

The journey to cloud demands a digital-era approach to change, continuously redefining the operating model to take advantage of cloud while having the flexible governance in place to promote and enable innovation. Internal IT organisations should act as a broker for cloud, enabling the security of cloud services and providing clarity on the costs and benefits; this kind of support will aid cloud adoption.



Success also depends on an ongoing willingness to experiment: to test and adapt fast and hard. Agile digital initiatives often return test data quickly to inform iterative designs and decision gates; sometimes the best approach is to bypass detailed planning and design phases and go straight to build and test. Proofs of Concept are critical to learn and experience how to use cloud for different requirements.

Continual, targeted stakeholder engagement and celebrating success will build confidence in new ways of operating and an evolving vision of future. For organisations in all sectors, instilling the internal capabilities to manage complex ongoing change will be critical to building a resilient and agile enterprise that is fit for the future.

“

Instilling the internal capabilities to manage complex ongoing change will be critical to building a resilient and agile enterprise that is fit for the future.

”



Disruption breeds innovation; cloud makes it sustainable

They say that “disruption breeds innovation”, but what happens when it becomes the new normal? Enter cloud computing, enabling innovation and a new business-as-usual.

Rapid shifts in consumer preferences and the accelerating evolution of technology are changing every aspect of our lives. These forces have inevitably accelerated digital transformation across many sectors, including how public services are delivered. Most recently, the COVID-19 pandemic has challenged us all to reimagine how we operate.

Take for example how manufacturers shifted production lines to make essential PPE instead of handbags or perfume. Or how healthcare organisations globally have been able to effectively track and manage resources to meet the scale of the COVID-19 pandemic. Or how governments have rolled out new digital services to citizens in record time. As a society, we have come up with some remarkable responses to meet this global challenge head on.

But, do we have to operate in ‘crisis-mode’ to ignite innovation? It is possible, as we all try to return to some normality, that sustaining these remarkable responses becomes an increasingly tough ask. Particularly when legacy infrastructure and old ways of working prevent even leading organisations from delivering the pace and agility required to power recovery.

With disruption becoming the status-quo, we need to be able to respond to ongoing and unpredictable change. Organisations need to drive agility into the core of how they operate. Those set up for success are those who can scale to meet overwhelming demand and spot the detail of one data-set or pattern; those who can scramble diverse teams to solve problems - even from home; those who have the technology infrastructure to allow them to pivot at pace, delivering new products and services in days - not months or years.

How do traditional organisations achieve that? Many find the answer in the form of a scalable and dynamic cloud platform.

During the pandemic, Google Cloud customers have been able to leverage data - at scale - to develop new and innovative technologies to provide support in these challenging times. What’s more, they have been able to respond while operating under significant constraints themselves, all the while maintaining the security of citizen and government data.

Consider some of their responses to these challenging times:

- **Supporting citizens with information to keep them safe is essential as the pandemic evolves.** The Australian Government Department of Health rapidly built a citizen facing application providing real-time information and advice to keep citizens up-to-date.
- **Developing a vaccine and other treatments to manage COVID-19 remains a top priority.** Research institutions like Harvard Medical School continue to benefit from free access to vital datasets to accelerate collaborative research into the disease. Google also deployed ‘Search’ technology to help research organisations interpret huge data volumes.
- **Creating solutions to contain the virus is crucial.** Governments and epidemiologists are monitoring the impact of lock-down policies and developing appropriate capacity and social distancing measures by tracking citizen movement in towns, stations, airports - even around the globe - through anonymised, aggregated data in real-time Community Mobility Reports.
- **Many countries are rapidly launching new services to support citizens.** New York State’s Dept of Labor received unprecedented spikes in unemployment benefits applications. By leveraging cloud technology to scale enquiry handling and data capture, they quickly implemented a streamlined, user-friendly process to manage demand and analyse key trends in real-time.

The common thread through these success stories is the organisation’s ability to rapidly absorb and analyse vast quantities of data. Artificial intelligence and machine learning tools deliver rapid insights from massive datasets - both in real time, and with the context of historical information to enable data-driven decision-making.

When citizens and consumers expect rapid responses and digital services, cloud reduces dependency on complex application development and systems integration projects. Most importantly though, it offers the security to be able to scale and flex to meet future challenges without skipping a beat.



The real magic is that cloud allows organisations to focus on agility and innovation by reducing focus on building and maintaining technology platforms. Teams are empowered to focus on delivering value and solving mission-critical issues - while highly automated and scalable cloud platforms manage the rest, and reduce the risk and cost of innovation initiatives.

The effective use of cloud computing will become ever more essential to help navigate the unknown. Cloud delivers a scalable environment that can readily adapt to new business operating models. With global trends in continuous flux, the innovation and agility that cloud enables will be vital; by helping organisations plan and build for a more certain future.

“

The real magic is that cloud allows organisations to focus on agility and innovation by reducing focus on building and maintaining technology platforms.

”



COVID-19 crisis support in the cloud

In the early weeks of the COVID-19 health crisis, volunteers played a critical role in the UK response. Hospitals and other healthcare organisations were pushed to their limits with a significant surge in patient numbers, requiring many to bring in volunteers to help.

Organisations responsible for managing large numbers of volunteers often face a substantial administrative burden. As any large event organiser or sports governing body knows, managing volunteers at scale can be a challenge.

Facing an unprecedented health and public safety emergency, healthcare organisations needed a tool for selecting, organising and communicating with volunteers – including a way to match each volunteer with a role based on their skillset and availability.

Managed Volunteer Portal

Atos has over 30 years' experience of working with organising committees for global sporting events, including the management of large numbers of volunteers. Originally developed for that purpose, the cloud-based Managed Volunteer Portal is scalable and ready for use by any organisation.

With time of the essence, Atos rapidly customised the Portal for the requirements of healthcare organisations, providing it at no cost to any lead health service or equivalent organisation with volunteers helping a national or regional health service.

Leveraging Microsoft Azure

With a cloud-first strategy for developing a scalable and agile solution, after carefully assessing the options, Atos chose Microsoft Azure as the cloud platform. Security was a top consideration in the design of the Portal; it is critical that all personal data is fully protected in compliance with international data protection regulations.

Not only does Microsoft Azure offer built-in, best-in-class security, it also offers localised data storage so that organisations can keep their data locally in numerous regions around the world and maintain regulatory compliance.

What the Portal does

Available in most languages, the Managed Volunteer Portal is intuitive and simple to use. Because service reliability is paramount, features include volunteer waiting rooms so that high volumes of traffic are supported and the service stays online even during peak usage.

Volunteers can self-register and manage their application status. They provide basic demographic and personal information including their interests, skillset, accreditations and availability, then the application automatically helps the sponsor organisation manage volunteers in large volumes and find the best volunteers for each role. Administrators can use it to communicate directly with individual volunteers or with large groups all at once.



“

Capitalising on our constructive partnership with Microsoft, we are thrilled to have found a creative way to repurpose an existing offering to drive meaningful change and make a positive contribution in the fight against COVID-19.

**Clive Grethe, Global Head of Hybrid Cloud -
Telecoms, Media and Technology, Atos**

”

Securing the cloud: how to address new security risks and future-proof operations post-COVID-19

How can organisations overcome today's cyber security challenges to protect systems and data within and across multiple cloud environments – and underpin new ways of working since COVID-19?

What started as a relatively simple extension of traditional security principles into 'the cloud' has become far more complex as cloud vendors introduce bolt-on security services, siloed in their native environments. COVID-19 has compelled enterprises to ramp up cloud-based working, which means data sets and applications are spread across generic public cloud, the so-called 'Secure Public Cloud' and private equivalent versions. The original vision of a move 'to the cloud' has evolved into today's world where organisations routinely use more than one cloud provider – a hybrid/multi-cloud approach. Things get confusing when contracts include security monitoring services delivered by different stakeholders 'baked in' to siloed systems. So how can Boards understand their overall security risk?

Every organisation must bring these environments, applications and datasets to a common standard and integrated security posture, rather than leave them as standalone pieces. As the threat landscape evolves, cyber security must be orchestrated to enable digital transformation.

Security in the post-COVID-19 era

Making sense of the new normal brought about by COVID-19 has profound implications for future modes of work. Many enterprises such as healthcare organisations have upended technology roadmaps, achieving lasting changes in weeks that would previously have taken years, including far-reaching deployment of Microsoft 365 with video consultations and digital workflows replacing wet signatures at pace.

While much of this is positive in the unprecedented context of the pandemic, to what extent must new working practices be re-validated with due diligence including security risk assessment? Digital investment complicates the security challenge since COVID-19 ways of working demand both scale and security to ensure organisations get the resilience they need to survive.

New security questions

Today, sensitive data is produced, collected and shared everywhere. How do Boards ensure that the right security is in place to protect that data and safeguard their reputation? The answer must be to enforce secure sharing

of sensitive data both within and between different cloud environments, in line with how the needs of the business have changed since COVID-19.

It's important to understand how an organisation has applied cloud-based ways of working. For example, what new responsibilities and functionalities have been given to both employees and customers? These aren't just security or even technology issues; COVID-19 has changed business decision-making on how all stakeholders get what they need from an organisation. Nowadays, customers, staff and shareholders expect to fully connect with their business digitally.

The National Cyber Security Centre's (NCSC) 10 Steps to Cyber Security and its 14 Cloud Security Principles offer organisations a methodology for investing in the right security controls in the right places quickly, while laying the foundations for future-proofing IT infrastructures as artificial intelligence technologies advance.

Digital solutions for cloud security

Orchestrating security across the true footprint of an organisation's digital operations. Boards must invest in security risk mitigation across all cloud environments, SaaS applications, internet access, mobile users and remote locations through a cloud-delivered model. This means being able to predict, prevent, detect and autonomously respond to security and compliance risks without disrupting how users, developers and network administrators perform their work.

Safeguarding how data moves across cloud environments between users and the services they access. Cloud Access Security Brokers (CASB) enable organisations to manage user access privileges, enforce data migration controls and gain insight into which cloud services are in use across the entire organisation. They show user activity and data-sharing over time, effectively establishing a baseline and alerting on what can then be identified as anomalous behaviour.

Rapid threat diagnosis and context-aware interpretation so that organisations can monitor, predict and pre-empt cyber threats as they emerge. As threat analytics becomes faster and more insightful by using



artificial intelligence to learn from each security alert and incident, Security Orchestration Automation and Response (SOAR) enables automated playbooks to take immediate action to reduce Mean Time to Respond (MTR) metrics. Human intervention and analyst tradecraft remain crucial so Boards should invest in tools to do the heavy lifting, thereby releasing expensive human resources to concentrate on issues that require human decision input, such as investigation and remediation tasks.

Cyber security ecosystem

Key to success is to create a cyber security ecosystem that operates end-to-end. This means not just integrating IT infrastructure, but also the contracts and business decision-making to align security strategy with policy, systems design and commercials associated with incident resolution. Organisations now have an important opportunity to review what has changed since COVID-19 began, to inform both their choices and risk appetite to prosper in the future.

Whatever partner and supplier arrangements Boards choose to make, security must be orchestrated around how the business operates, not just what the IT infrastructure looks like. In a post-COVID-19 world, security is baked into how risk and operational resilience are managed across the business, not a simple add-on to existing commitments.

“

In a post-COVID-19 world, security is baked into how risk and operational resilience are managed across the business, not a simple add-on to existing commitments.

”



Acknowledgements

We would like to thank the following contributors. If you wish to send feedback, please tweet using **#DVCloud** or email: **AtosDigitalVisions@atos.net**

In order of appearance

Clay Van Doren	CEO UK&I, Atos
Kulveer Ranger	Global Head of Strategy & Communications FS&I and SVP UK&I, Atos
Clive Grethe	Global Head of Hybrid Cloud - Telecoms, Media and Technology, Atos
Sue Daley	Associate Director, Technology & Innovation, techUK
Mark Walsham	Atos UK&I Head of Hybrid Cloud - Portfolio - CEO Office, and techUK Cloud Leadership Committee member
David Waite	Technology Leadership Team, Atos
Martin Allen	AI & Analytics Global Business Development Director, Atos
Valentin Yonchev	Head of Open Innovation Labs EMEA, Red Hat
Jeroen Heikens	Distinguished Expert DevOps (Atos Expert Community) / Head of Center of Excellence DevOps, Atos
Santi Ribas	Head of Cloud Enterprise Solutions in EMEA, Atos
Dorian Seabrook	Practice Lead Applications and Cloud Development, Atos
Mark Palmer	Head of Public Sector EMEA, Google Cloud
Phil Aitchison	Chief Operating Officer, Big Data & Security, UK&I, Atos

Production team



Editor: Kulveer Ranger

Production team: Felipe Hickmann, Sarah Waterman, Dan Mann

Design team: Atos Marcom Agency

Consultation: Clive Grethe, Mark Walsham, Mark Ross, Sandy Forrest, Greg Miles



About Atos

Atos is a global leader in digital transformation with 110,000 employees in 73 countries and annual revenue of € 12 billion. European number one in Cloud, Cybersecurity and High-Performance Computing, the Group provides end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions. The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos|Syntel, and Unify. Atos is a SE (Societas Europaea), listed on the CAC40 Paris stock index.

The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

Find out more about us

atos.net

atos.net/dvcloud

Let's start a discussion together



Atos, the Atos logo, Atos|Syntel, and Unify are registered trademarks of the Atos group. September 2020. © 2020 Atos. Confidential information owned by Atos, to be used by the recipient only. This document, or any part of it, may not be reproduced, copied, circulated and/or distributed nor quoted without prior written approval from Atos.

CT-200817-SKR-DIGITAL-VISION-CLOUD