



Application Evolution Managed Services – application operations for real added value

What the evolution of application management services means for digital transformation



Introduction

In almost all industries, enterprise applications have become increasingly intertwined with the value chain over the years. Quickly and effectively developing, operating and updating core applications to suit new circumstances is now a key competitive factor for companies – especially in light of new regulations such as the EU's Digital Operational Resilience Act (DORA) and the German Supply Chain Due Diligence Act (Lieferkettensorgfaltspflichtengesetz, or LkSG).

These regulations are also placing new demands on IT operations. Simply providing maintenance and support and making sure that applications run smoothly are no longer sufficient. The old paradigm of purely reactive support in response to tickets has had its day. The new world of application operations requires a much closer link between business, technology and business strategy.

New operating models such as DevOps or Site Reliability Engineering address this, but they are too costly for today's ERP environments in the long term: they require integrated development capacity and expertise to be maintained, regardless of utilisation.

This paradigm shift poses substantial challenges for IT teams in many organisations. Infrastructure in hybrid system environments is becoming increasingly complex, necessitating strategies such as FinOps to effectively manage costs. Additionally, new operating and provisioning models are introducing intricate operational and governance functions, making the operation of apps ever more demanding.

As well as the demands for scalability and flexibility, security requirements are also growing significantly. To avoid vendor lock-in, many organisations are adopting a multi-cloud approach. This however, results in decentralised management of disparate systems, exposing companies to a multitude of threat scenarios. These same companies often lack the necessary resources in their IT departments to operate these systems while simultaneously developing and efficiently integrating them in line with business requirements. The result of this is that the potential of many companies' enterprise architectures is not fully realised, and that their IT environments as a whole, are costly and unresponsive to demand.

Our Application Evolution Managed Services offer an effective solution for your organisation. As a managed service provider, we work closely with our clients to manage the development of their apps – from both an operational and a business-oriented perspective. Our integrated approach helps mitigate

bottlenecks, from development through to operations, and our services also include management of underlying business processes. This whitepaper explains the practical application of this principle, the underlying concepts, and the opportunities it provides for your organisation.



Efficient and innovation-driven Application Managed Services that go beyond traditional app operations represent a significant advantage for companies. They ensure that enterprise applications are continuously optimised and developed in a dynamic business environment to meet current business requirements.

Thorsten Schmidt,
Director at PwC Germany



Agile development, cloud and DevOps – application management is changing

From mainframe to cloud

The story of IT is one of rapid development, yet IT operations has often been dismissed as something that happens behind the scenes – necessary perhaps, but not really a priority. But operational infrastructure is more than this. It's the very thing that enables apps to realise their potential, much like the stage is crucial for a pop star: without it, you'll never get a good presence, experience or performance.

Weak infrastructure can impose major constraints, a fact which became evident to the British Government as long ago as the 1980s. The quality of the Government's IT services at the time was so poor that Government agencies launched a large-scale quality initiative

to achieve better and more cost-effective IT service management. This laid the foundation for the Information Technology Infrastructure Library (ITIL).

Both IT infrastructure and app development have experienced several paradigm shifts over the last few decades – from the breakthrough of the internet, the mobile revolution, virtualised resources in the cloud, and bridging development and operations with DevOps. But despite all these transformations, the underlying principle is the same today as it has always been: high-quality IT service management is essential for the reliable operation of enterprise applications.



ITIL – an example of how application management has developed over time

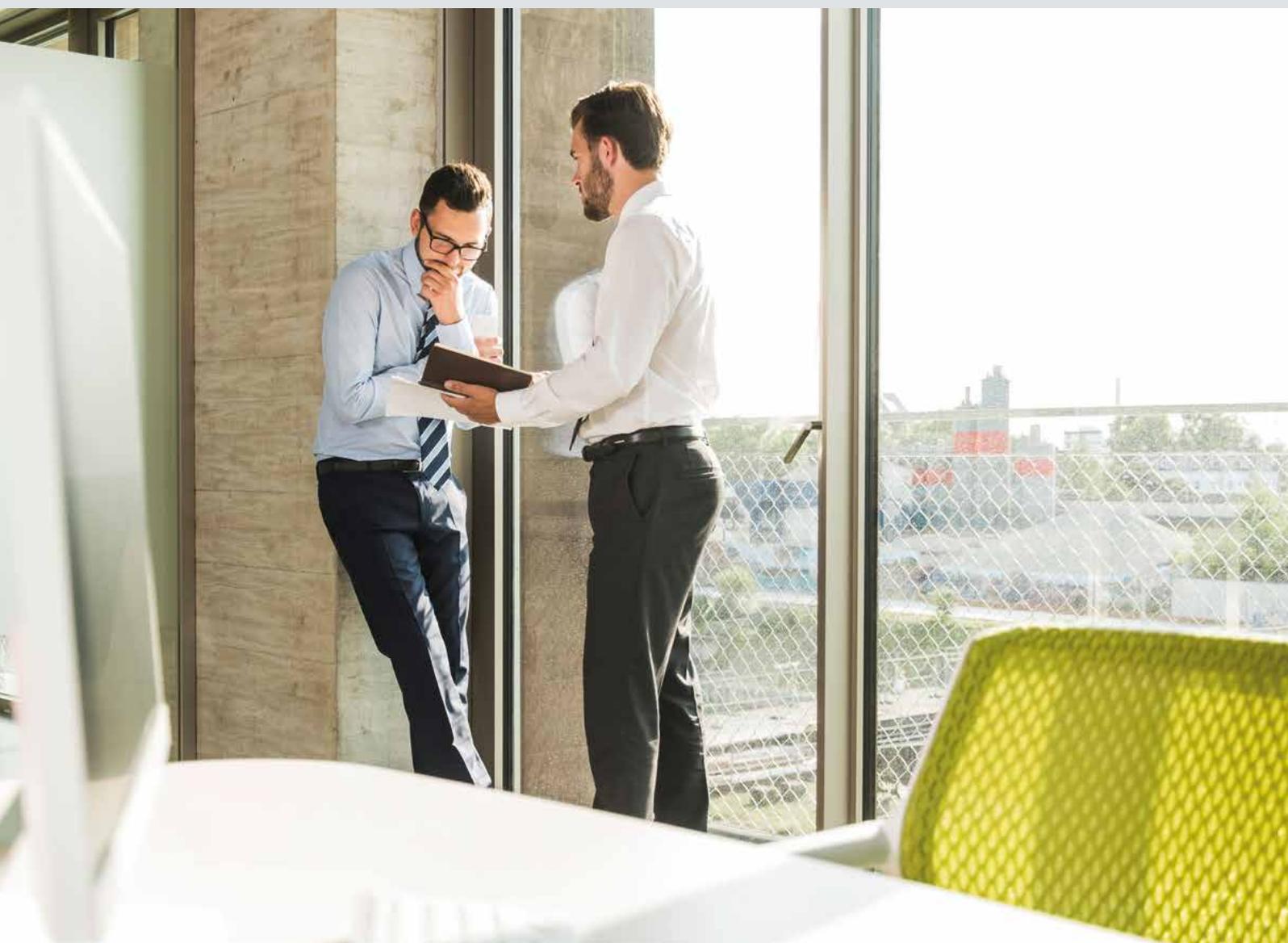
1980s: Poor-quality IT services prompted British Government agencies to develop a best-practice guide for IT service management: the Information Technology Infrastructure Library (ITIL).

1990s: Large companies and government agencies worldwide recognised the value of systematic IT service management and adopted the ITIL framework.

2001: ITIL 2 was launched. This converted the 48 documents of ITIL 1, which had been developed between 1989 and 1998, into a structured best-practice guide.

2007: ITIL 3 placed greater emphasis on creating added value. Instead of the service life cycle of previous versions, the focus was moved to the service value chain, taking a more holistic view of service management.

2019: ITIL 4, the library's latest release, addresses the current challenge of integrating various frameworks and approaches into service management operating models. It also takes modern approaches such as Agile, DevOps and Lean into account.





DevOps has transformed today's IT operations – but involves new challenges

Standardisation of operations through frameworks and standards such as ITIL has led to highly formalised processes. But at the same time, the development of IT infrastructure and software engineering is extremely dynamic.

In the realm of application development, the emergence of the DevOps movement, starting in 2007, has led to significant changes. Prior to DevOps, development and operations were largely separate. By connecting the two areas, it was intended for innovations in software to be efficiently developed and brought into use more quickly.

Today, the microservices approach is widespread, allowing applications to be divided into individual components. For delivering these functions, container and cluster technologies such as Kubernetes and Docker are used. These are indispensable for scalable, cloud-based operations, and they are bringing development and operations ever closer. This enables applications in containerised cluster environments

to be updated live, without any system downtime. But at the same time, the environment in which these applications operate has become significantly more complex and demanding. This poses persistent challenges for companies looking to manage app operations independently.

In theory, DevOps is a good idea, but is often not robust enough in practice. For relatively small and simple applications, a development team can take on certain tasks around deployment and achieve the desired outcomes during the development phase without much difficulty. But when it comes to a typical core application, with a lifespan of more than three years, this process leaves too many questions unanswered. DevOps alone is therefore not a sustainable operating model in the long run. The underlying principle of evolution, however, is very important – and this is why evolution is the foundation of our Application Evolution Managed Services.

From dealing with tickets to business-driven value creation

The role of IT in companies has also fundamentally changed over time. IT was once seen as little more than a cost centre, whereas now it is considered a strategic value driver. Business and IT work closely together, and are increasingly working with external providers as well. IT is gradually transforming into a hub, with a strong governance function and a clear service orientation.

Cloud transformation has led to application management services (AMS) providers performing an increasing range of tasks. Many applications are now provisioned by AMS providers themselves in the form of software as a service (SaaS), with operation being globally shared among several parties. The multi-cloud approach, which involves a heterogeneous architecture using cloud services from different providers, has been the norm for some time. As a result, tasks such as ensuring

integration and safeguarding specific business processes are becoming more important. For example, IT control tests help ensure that IT systems are secure, compliant and efficient.

This shift is also changing how companies work with external service providers. Simply incentivising service providers based on the number and priority of tickets resolved is no longer appropriate: such an approach may well lead to significant self-optimisation, but this comes at the expense of flexibility. By contrast, the new service-oriented approach, which places greater emphasis on business-driven outcomes, empowers external service providers to operate and develop applications more effectively.

The AMS sector has evolved accordingly. External service providers today offer comprehensive support in application development and operations within a dynamic and varied IT environment.

Key takeaways

- Application management rarely takes centre stage, but it plays a key role in reliable delivery of IT services.
- Cloud computing and DevOps are game changers for application management. Although DevOps is not a sustainable operating model in the long term, its concept of evolution remains groundbreaking.
- The transformation of IT to a service-oriented hub organisation opens up opportunities for new collaboration models with external service providers.

Liaison between business and IT – new challenges for IT operations

Business and IT: more closely integrated than ever before

IT systems are now indispensable across all areas of a company, whether in production, admin, or marketing and sales. They structure internal processes and are the foundation of many digital products and services. This close integration of IT and value creation has increased demands on IT operations for high-quality service delivery. This is also reflected in the new roles that have emerged in the IT and product management world:

- **Product owners** are responsible for the development and marketing of a product. They translate the product strategy into tasks and requirements for the development team, and interface with the product managers who conceptualise the product.
- **Service owners** are responsible for managing specific IT services. They ensure that the service meets customer needs and is delivered efficiently. This includes monitoring the entire service lifecycle and ensuring compliance with agreed and documented standards.

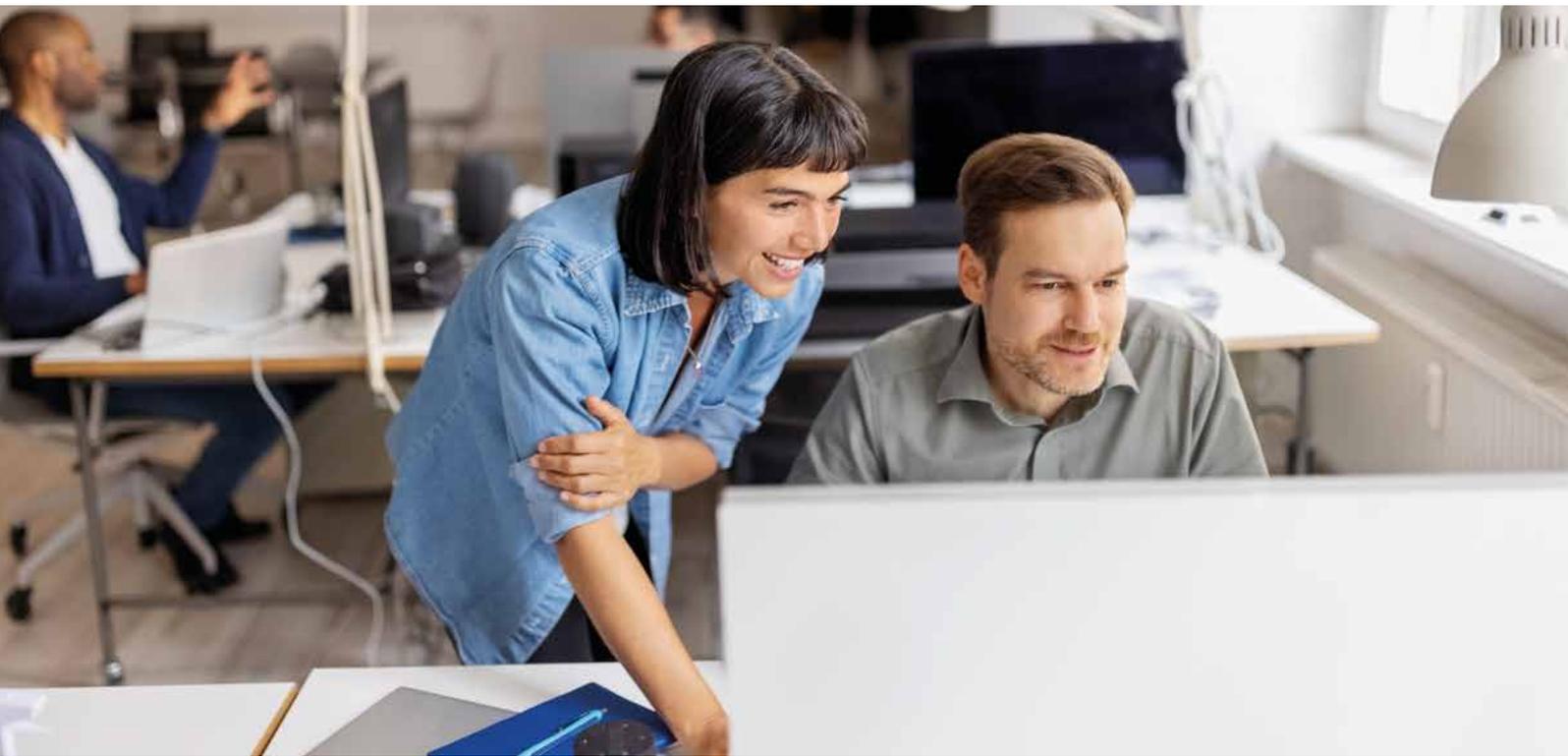
To establish quality standards, tried-and-tested tools such as **service-level agreements (SLAs)** and experience-level agreements (XLAs) are used. These are binding contracts which set out the quality and quantity of IT services that providers must deliver. SLAs and XLAs

help ensure that all parties involved have a clear understanding of the agreed services and that the interests of all parties are protected. Typical SLA/XLA metrics include uptime, response time to enquiries or problems, and the number of transactions or requests processed within a given period.

The ITIL standard has also evolved: ITIL 4, launched in 2019, includes modern approaches such as Agile and DevOps for service management. Agile and DevOps offer approaches and methods designed to make software development and delivery faster, more flexible and more efficient. Agile focuses on iterative development processes and continuous feedback to quickly respond to changes. DevOps aims to improve collaboration between development and operations teams and accelerate software delivery.

Integrating these modern approaches into traditional IT service management enables a more holistic and flexible approach:

1. The service value system (SVS) drives a focus on value creation.
2. Agile methods promote flexibility and adaptability.
3. DevOps principles foster better collaboration and communication.



IT operations – a technology platform

Increasing integration between business and IT has led to individual components and processes becoming heavily dependent on one another. Traditionally, the focus was on the process of IT operations – symbolised by the help desk ticket. Today's IT operations, meanwhile, resembles more of a technology platform, where processes, data and people intersect. For sustainable IT operations, robust integration of processes, data, automation and people is essential.

This manifestation of IT operations as a technology platform is evident. This enables impact analyses and creates transparency on the effects of individual actions. Configuration, monitoring and transaction data can thus be intelligently linked and evaluated using AI.

One possible starting point for this type of data usage is a configuration management database (CMDB),

which enables configuration elements for products, systems, processes and software to be managed, documented and linked. CMDBs thus provide strategic, cross-functional connections, helping with process management by storing information about process configuration and interdependence. They also act as a central repository for configuration data, store information about employees (e.g. roles, responsibilities, or assignments within the IT infrastructure) as needed, and provide a foundation for high-quality customer service.

At a higher level, integration of processes, data and people is common to nearly all areas of IT operations management (ITOM). ITOM aims to manage IT processes and efficiently deliver IT services, thus ensuring that IT applications and infrastructure remain available, performant and secure.

Internal IT teams are reaching their limits

With demands on IT teams having grown so much in recent years, it is becoming increasingly difficult for them to operate applications on their own in many companies. The evolution of IT operations into a technology platform requires the consideration of many different dimensions. In practice, this leads primarily to the following challenges:

- **Transition from build to executable application**

Modern microservice architectures and approaches such as cloud-native software increase the complexity of a software build. Extensive build and deployment pipelines are becoming indispensable, yet setting them up requires considerable experience and is a discipline in its own right.

- **Complexity due to interdependence and constant updates**

The highly dynamic nature of software development, which requires continuous adaptation to new business requirements, presents significant challenges when combined with increasingly complex architectures. Users must be closely involved in development and regularly informed about new features and updates, and change and release management needs to reflect this. It's also essential that each release is subject to sufficient testing to ensure that software updates deliver their promised benefits.

- **Cybersecurity**

Cybercrime has sharply increased in recent years, making it ever more challenging for IT operations functions to secure their applications. This challenge is being compounded by new regulations, such as the NIS2 Directive, which sets new minimum standards for cybersecurity across Europe. The German NIS2 Implementation Act (NIS-2-Umsetzungsgesetz, or NIS2UmsuCG), which transposes NIS2 into German law, came into force in October 2024 and affects approximately 30,000 companies nationwide.

- **Decommissioning**

As IT environments become increasingly complex and varied, maintaining oversight becomes increasingly difficult. This often means that apps which are no longer needed are not decommissioned, and they become “zombie” apps on company systems. To avoid this, IT teams must regularly assess what is really necessary, instead of just keeping apps in operation.

- **Lack of innovation**

In traditional operating models, budgets are typically tied to everyday tasks, and there's hardly any room to encourage innovation and change. However, collaboration with external service providers allows access to innovation, and opens up new opportunities for further development of the IT environment.

- **FinOps**

Companies are increasingly facing the challenge of maximising business value in hybrid and multi-cloud environments. The management practice of financial operations (FinOps) has the potential to help, combining the principles of financial management with cloud engineering and operational issues. In practice, however, internal IT teams do not always succeed in efficiently managing their cloud costs while also handling day-to-day operations.

Resources are also often insufficient when applications need to be integrated into adjacent systems, or adapted to suit changing demands. Doing this requires additional development capacity, which often pushes internal teams to their limits.

In light of all these challenges, companies are increasingly choosing to engage specialised service providers. This allows companies to minimise risks, increase standardisation and secure access to innovations.

- **AI**

Driven by rapid advances in the field of generative AI, many IT teams are coming under pressure to design use cases for this new technology and bring them into use. However, companies often lack the necessary experience, vision or understanding of technological interdependence.

Key takeaways

- IT is now more closely linked to value creation than ever before. High-quality service delivery is becoming increasingly important.
- Today, IT operations works like an IT platform, where processes, data and people converge.
- Demands placed on internal IT teams have massively increased – from build, change and release management to cybersecurity. This is making it more and more difficult for these teams to operate apps on their own.

Evolution instead of holding the line – the next level of app operation

From traditional AMS to self-optimising services

Traditional AMS primarily differs from advanced AMS in its approach and scope of services. Advanced, evolutionary AMS places a greater emphasis on supporting and optimising business processes.

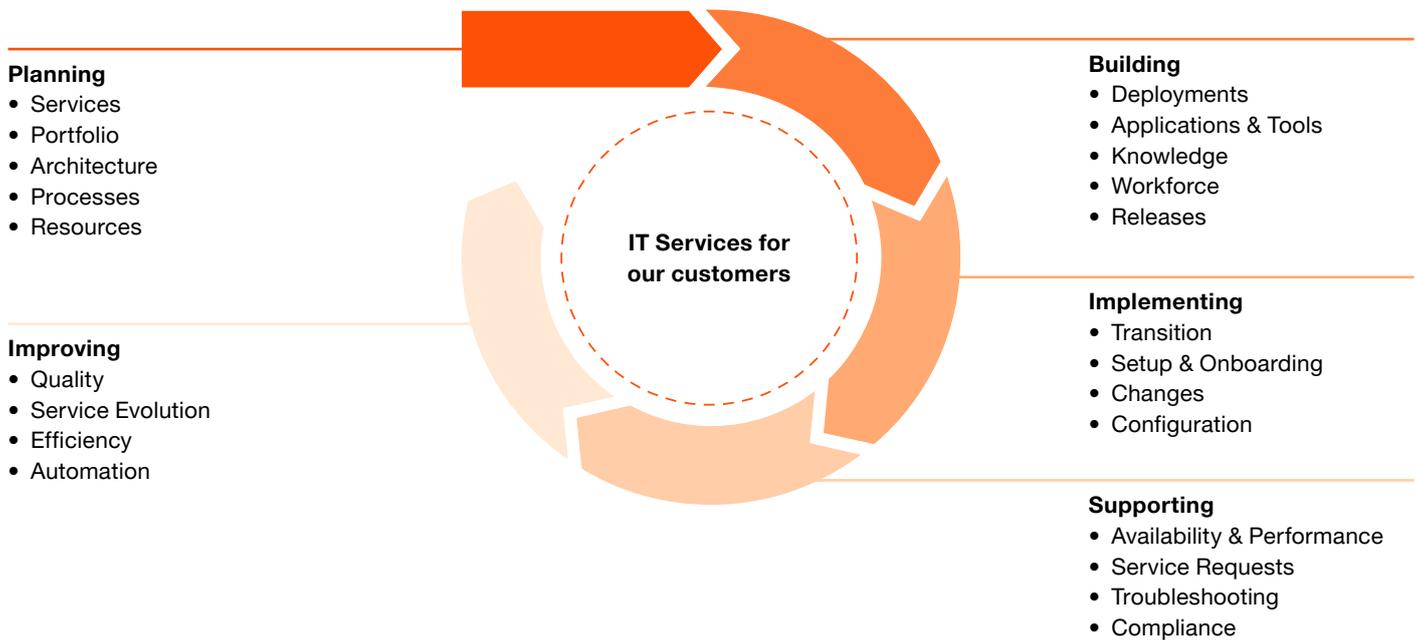
In traditional AMS, a third-party provider takes on responsibility for administering and maintaining a company's enterprise applications. This allows the company to focus on its core business activities while ensuring that applications run smoothly and efficiently. A traditional AMS provider hosts the applications on its own infrastructure, monitors them, and offers additional support as needed.

By contrast, evolutionary AMS goes further. Building on the foundation of traditional application management, evolutionary AMS focuses on proactive application management and optimisation – primarily facilitated through AI-driven analyses of operational processes and changes. This is a key difference from traditional IT support, which is largely reactive and

addresses just one process. Evolutionary AMS integrates processes, data, people, business and applications, bringing the following elements together:

- **Application management**
Highly automated processes reduce workload and provide a high level of security. Continuous monitoring is a key element of application management, enabling service providers to act quickly if disruption occurs.
- **Application evolution**
Digital transformation is not a project with a clear end point; applications never stop evolving. To address this, evolutionary AMS is set up as a holistic model, with the concept of evolution at its heart.
- **Expert support**
Continuous development of applications in alignment with the business is not just a technical task. As an evolutionary AMS provider, we apply our expertise to develop your IT solutions in a way that provides real value to your company.

Fig. 1 PwC's Application Evolution Managed Services



The core pillars of Application Evolution Managed Services

Our Application Evolution Managed Services are a prime example of modern, evolutionary AMS. These services are based on three pillars:

- **App optimisation and advancement**

This includes components such as optimisation, proactive innovation management and introduction of new functions. We attach great importance to understanding your applications on a technical level: without this knowledge, there's no way of truly understanding business-driven requirements and developing apps with your business units for their benefit.

- **App operation, maintenance and improvement**

This area includes traditional IT service management tasks, such as dealing with help desk tickets, but continuous improvement is also a cornerstone. We will also set up an overarching governance system to ensure clarity regarding your IT operations processes.

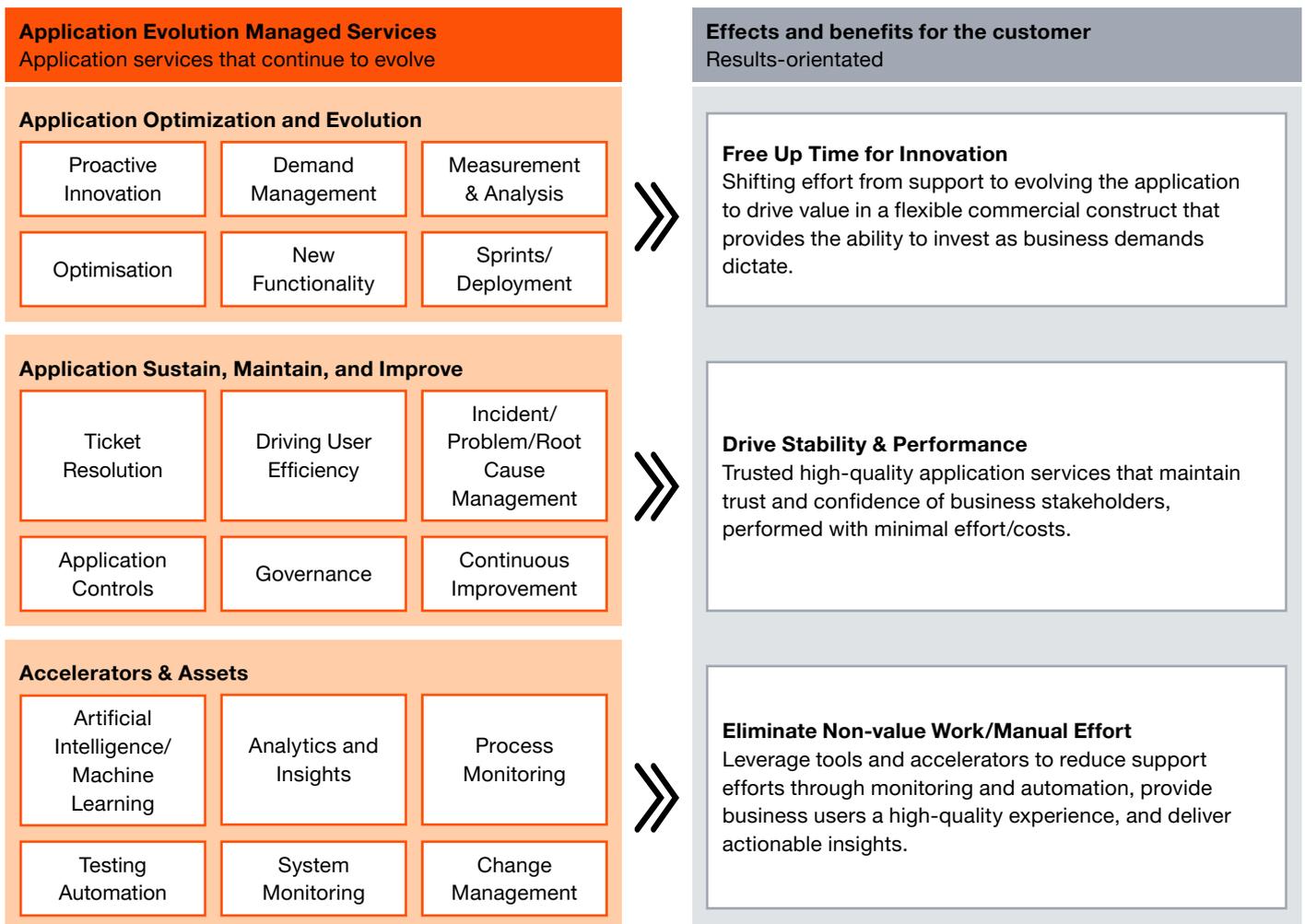
- **Supporting tools and additional assets**

This third pillar includes a range of tools and pre-configured templates that address typical IT operations challenges and enable quick implementation based on best practice, such as system monitoring or test automation. As well as easing the burden on your IT teams, these allow you to focus on delivering value to business users. For example, driving the use of analytics solutions provides vital information for better-informed decision-making.

Each of these pillars serves to improve processes, minimise workload and use resources as efficiently as possible. The better your IT systems run, the more effectively your IT budget can be used to drive value creation. A high level

of automation can slash repetitive manual tasks, allowing your people to be redeployed in places where they can create real value; and of course, a stable app environment ensures smooth and efficient operations.

Fig. 2 How the three pillars of our Application Evolution Managed Services can create value for you



Conclusion

Evolutionary application management services take AMS to the next level, addressing the IT needs of your business better than ever before. This new paradigm acknowledges the evolutionary nature of enterprise applications, which need to be continuously developed and updated in today's dynamic business environment.

Evolutionary AMS addresses today's platform-like IT operations paradigm by bringing processes, data, people, business and software together; acting

proactively rather than reactively; and using modern technologies such as AI to automate processes and apply innovations in the real world.

Working with diversified service providers such as PwC, offers you the opportunity to reliably outsource more than just the technical aspects of your IT operations. Partnering with our experts means that you get proactive support, allowing you to develop your enterprise applications in full alignment with your business and create real value.



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About us

Our clients face diverse challenges, strive to put new ideas into practice and seek expert advice. They turn to us for comprehensive support and practical solutions that deliver maximum value. Whether for a global player, a family business or a public institution, we leverage all of our assets: experience, industry knowledge, high standards of quality, commitment to innovation and the resources of our expert network in 149 countries. Building a trusting and cooperative relationship with our clients is particularly important to us – the better we know and understand our clients' needs, the more effectively we can support them.

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