eng

WP

WHITE PAPER
Cloud

Evolve, enable, expand your business with Cloud.

Authors

Giulio Franco

Offering Manager –
Cloud & Infrastructure,
Digitech

ENGINEERING

giulio.franco@eng.it
Giulio Franco

Ileana Pavia

Cloud Services Director –
CoE Cloud & Infrastructure,
Digitech

ENGINEERING

ileana.pavia@eng.it
Ileana Pavia

Massimiliano Panichi

Cloud Ops Services Lead –
CoE Cloud & Infrastructure,
Digitech

ENGINEERING

massimiliano.panichi@eng.it
Massimiliano Panichi

Andrea Vecchi

Product Owner Cloudesire
Platform – CoE Cloud
& Infrastructure, Digitech

ENGINEERING

andrea.vecchi@eng.it
Andrea Vecchi

Piero Corti

IT Research Director,
Engineering

ENGINEERING

piero.corti@eng.it

Paolo Fabriani

Cloud Computing R&D
Laboratory Director,
Engineering

ENGINEERING

paolo.fabriani@eng.it

Renato Bottini

Partners Business Manager
– Partnership
& Alliances, Digitech

ENGINEERING

renato.bottini@eng.it
Renato Bottini

Index

The Cloud's New Maturity opens up new Business

"

As the "Digital Transformation Company", Engineering is focused on evolving and organizing its skills around platforms and enabling technologies such as Cloud, Cybersecurity, AI & Advanced Analytics, Blockchain, IoT and Digital Ecosystem Platforms.

Cloud, in particular, is one of the most disruptive technologies of our time, capable of creating immense value being the basis for the digital transformation of Companies.

Accelerating to new levels of digital performance requires a profound transformation of entire organizations in order to truly enable new ways to compete, operate and serve customers.

We want to focus on helping our clients implement their Cloud transition strategy throughout the whole journey: from strategic and planning phases, to modernization through a safe and low-risk transition to platform operations and adoption of native development models.

We want to guide this path by sharing the objectives of our clients, such as the focus on value-added activities, enabling new business initiatives, the presence in new markets, retargeting of capital investment, simplification of processes and a new future of workforce flexibility.

Fabio Momola
Executive Vice President Digital Technology
Engineering

01
The Cloud's New Maturity Opens Up New Business

In Italy, many companies are migrating their applications to the cloud, but only one in three is seeing the expected benefits in terms of reduced IT costs, flexibility and innovation. Market research shows that adoption of the cloud has been driven to date both by external constraints, such as the growing push for digitalisation, and by a misplaced general expectation of return on investment in regards to benefits achievable with cloud migration - first and foremost, a reduction in IT costs - without any close analysis of the impacts deriving from this choice or the most appropriate methods and without considering the specific context of individual organisations through a well-defined cloud-adoption strategy, consistent with business objectives.

Companies have generally opted for a lift & shift approach, which consists of migrating application resources to public or private cloud platforms in "as a service" mode, without altering the code. The current scenario, on the other hand, signals a reversed trend in favour of migration strategies customised according to the specific context and increasingly aiming to combine technological benefits with business benefits expected from cloud adoption

(e.g. re-factoring and re-engineering). The cloud is no longer seen as a shortcut to digitalisation, but as a must-have to enable new business opportunities, **respond to the constant challenges of the market and remain competitive in the sectors involved**.

However, whilst, on the one hand, organisations are now approaching their Journey to Cloud with greater awareness, on the other, they also find themselves faced with the **growing complexity of cloud services**: just consider the proliferation of services, platforms and providers for the management and orchestration of cloud services.

One response to this new complexity lies in the creation and management of a **Cloud Ecosystem**, where multiple actors work together to make the cloud model adopted resilient to change and sustainable in the long term from an economic, organisational and environmental point of view.

02

Six Benefits Of The Cloud For Companies

Benefits

1
Reduced IT costs

The cloud allows you to use IT resources with a pay-per-use and "on-demand" model that relieves businesses of management costs and makes the cost flexible, based on actual usage.

2
Scalability, Flexibility, Speed

The cloud allows you to quickly scale resources to manage new services or enhance existing ones. In addition, cloud platforms and cloud-native methodologies make it possible to reduce the time to market of new services.

3
New Business Models

With services provided and managed in "everything as a service" (XaaS) mode, companies can enable new business opportunities as a potential source of alternative revenues or enhance existing services by integrating them with each other

4
Data Security By Default

Cloud providers' public or private cloud platforms offer secure and protected services by default, which also keeps them up-to-date in terms of security (patching), relieving organisations of this responsibility.

5
Organisational Agility

Cloud services enable new operating models that facilitate organisations' response to change, inside and outside the organisation, enabling the structure to adapt to the skills and business objectives sought.

6
Enabling Emerging Technologies

The cloud is also seen as a foundational technology capable of enabling modern technologies, such as Big Data, AI, and Cybersecurity, and developing them by supporting organisations' digital transformation over time.

03

Technologies And Platforms To Overcome Market Challenges

Technologies And Platforms To Overcome Market Challenges

Focusing on Business

In the era of Digital Transformation, companies will want to focus more and more on their business and less on technology, which will become pervasive and invisible, accessible to all business users in support of operational decisions and processes.

- **This process will be supported by the diffusion of cloud-based environments and tools for integrated and seamless management of available IT resources risorse IT disponibili.**

Increasingly data-intensive

The amount of data available increases exponentially, year on year, and the ability to retrieve and process it easily is a critical factor for successful business decisions. Data-driven management will become increasingly central to organisations for transparent performance monitoring and more effective and high-quality decision making.

- Cloud technologies allow you to quickly scale the resources needed to analyse big data, enable data analytics services, and ensure real-time visibility and integrity.

Fragmented application environments that are almost impossible to integrate

The existence of custom development and legacy systems that are difficult to maintain and evolve is a significant constraint to development for many organisations.

- Adopting pipeline, release-based cloud-native models with a Continuous Integration/Continuous Deployment approach simplifies application development and management, allowing companies to quickly take action on issues relating to releases and updates without having to tamper with code

Use the latest and most innovative technology releases available

The adoption of technologies and solutions that keep pace with the times helps organisations embrace and create new business models (e.g. XaaS solutions).

- Extensive, integrated, and "as a service", public, cloud platforms enable organisations to leverage provider industrialisation capabilities in order to quickly adapt to technological advances

Digital skills as a distinguishing factor

Organisations presently face unprecedented opportunities relating to new technologies and applications.

- The ability to access, operate and develop digital market platforms, leveraging the same frontier technologies as competitors, is crucial for success, along with the development of digital skills and specialised profiles on emerging cloud technologies (Analytics, Artificial Intelligence, IoT, etc.).

Technologies And Platforms To Overcome Market Challenges

Evolution towards a native, hybrid and transparent cloud

04

Evolution towards a Native, Hybrid and Transparent Cloud

Cloud provides a flexible and scalable environment for the adoption of new solutions

$1,1 trilion
GLOBAL PUBLIC CLOUD 2028 MARKET REVENUE

+300%
EU MARKET SIZE GROWTH BY 2027

67%
CLOUD SPEND OVER TOTAL IT EXPENDITURE BY 2027

50%
OF CORPORATE DATA IS STORED INTO CLOUD

35% SaaS
34% IaaS
23% PaaS

+85%
OF COMPANIES ARE ADOPTING HYBRID CLOUD

94%
OF LARGE ENTERPRISES HAVE ADOPTED MULTI-CLOUD ARCHITECTURES

47%
OF COMPANIES ADOPT DEVOPS METHOD FOR CLOUD-NATIVE SOFTWARE DEVELOPMENT

Top 3 Business Benefits

New business models & revenues flows

Governance, Automation & Sustainability

Innovation, Agility & Real-time scalability

The main challenges come from:
Security, privacy, governance, the evolution of new technology, skills shortage, and data visibility

Data displayed represents our elaboration of data coming from multiple sources

© engineering

The adoption of cloud strategies aimed at achieving business objectives and the search for a sustainable cloud ecosystem across different markets are both currently often hampered by several factors, such as:

⊕ **the increasing complexity of managing and optimising cloud ecosystems**

⊕ **sensitivity to data security in the cloud**

⊕ **high macroeconomic and geopolitical instability, combined with a general trend towards de-globalisation.**

Some more obvious trends can be identified arising from organisations' responses to these challenges.
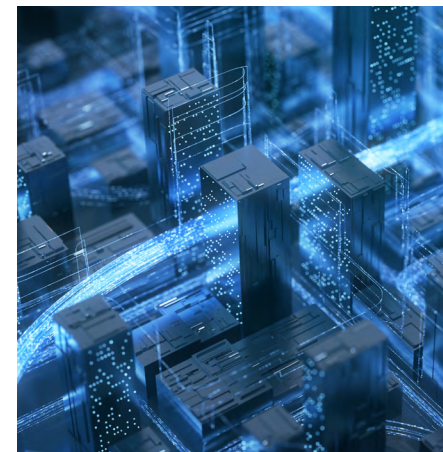
Public, Hybrid e multi Cloud

The **hybrid cloud** is the global reference model for companies that want to transform digitally. It combines the benefits of a private cloud, such as increased security and control of data, with those of a public cloud, such as flexibility and scalability. Larger organisations, open to cloud, are consolidating the use of multiple public and private cloud providers, resorting to **multi-cloud** models for greater dependency risk diversification.

However, despite the fact that hybrid clouds represent a consolidated cloud adoption model for businesses, the highest growth rate compared to past years is foreseen for adoption of **public cloud models**.

The ability of the main CSPs to integrate more and more XaaS-specific services on public platforms (e.g. AWS, Azure, GCP), will mean an increase in companies adopting **public cloud strategies based on a single reference provider**, where the entirety of their digitization needs can be managed through a single CSP platform. This phenomenon will be more accentuated for companies fairly new to cloud, which will prefer to leverage the capabilities of the chosen cloud provider to quickly extend

their cloud strategy, reducing the time it takes to achieve a return on investment.

Evolution towards a native, hybrid and transparent cloud

Evolution towards a native, hybrid and transparent cloud

The Paradigm Of Cloud-Native Development

So far, the adoption of Cloud in companies has been driven by "Re-Host" strategies to exploit **IaaS** models while keeping the application code unchanged, or, where security constraints or technical compatibility have prevented from migrating to cloud, "**Replace**" strategies through **SaaS** solutions have been chosen to replace them with equivalent applications However, companies are becoming more aware of the limitations of these strategies and are looking for alternatives that are more complex but have a greater impact for the business. "Re-platform" and "re-architect" strategies are becoming increasingly popular since these allow full advantage to be taken of the benefits of cloud platforms, while also ensuring regulatory compliance security and scalability. In addition, **cloud-native** development paradigms, are assuming an important role, enabling the adoption of Continuous Integration / Continuous

Deployment (CI/CD) approaches that improvethe time-to-market and deployment of application enhancements.
The new approach to cloud adoption, for a reduced time to market and greater flexibility and application integrability, requires cross-functional teams that can manage, in an integrated, effective and efficient manner, all the release phases of a software or application through the **DevSecOps Methodology**.

The set of **practices**, **cultural approaches** and **tools** that bring together software development (Dev), IT operations (Ops) and security (Sec) increase organisations' capacity to provide applications and services quickly and safely, monitoring and solving any application bugs or security threats in a short time.

DevSecOps requires strong integration of security into development and operational processes, starting from secure development cycles and so achieving intrinsic security in automated deployment processes.

One of the most popular cloud solutions to support this model is **platform engineering**, which is the adoption of a development platform (PaaS) shared between developers that simplifies and optimises the cognitive load by providing DevSecOps teams with a central platform equipped with automated software development and management tools, shared best practices, and workflows (called **Internal Development Platform**, **IDP**).

In this way, developers can use validated and structured tools, without having to build and maintain their own workflows.

Cloud Operating Model

DevSecOps and cloud-native paradigms are important for cloud adoption and application modernisation strategies and can help address the core challenges of cloud deployment. These challenges include the lack of cloud skills within organisations and the presence of siloed

organisational models that do not foster collaboration between different teams and roles. Companies wishing to adopt the cloud successfully should adopt a **product-centric** approach , one based on collective empowerment and the use of cross-functional teams.
This approach can foster greater competitiveness, tighter time to market, and effective cloud governance. In particular, to enhance the adoption of cloud throughout the organisation according to cloud-enabling models (e.g., **Cloud Operating Model**), it is appropriate to use iterative approaches, based on well-measurable business results, in which devops methods for application development are combined with well-distributed cloud skills in organisations, according to centralised/decentralised approaches.

These operating models centralise technology as a strategic aspect for the business and provide for the establishment of specific dedicated structures (e.g., **Cloud Centre of Excellence** or **Cloud Enablement Engines**) for the dissemination of cloud

culture and predisposition for the adoption of internal cloud services. These structures set up the redesign of the organisational architecture to support cloud adoption in a manner that is optimal for the strategic business objectives of the organisation.

Therefore, they always begin with a thorough study of business needs to define methods for the adoption and dissemination of cloud services among the different organisational structures, using an iterative and gradual approach to facilitate internal cultural change and the development of new Cloud skills.

Finance + Operations = FinOps

To date, the main priority of organisations has been the ability to obtain centralised, transparent and understandable management of the **expenditure and costs** incurred for **cloud services**. FinOps is emerging as a paradigm for delivering

value to cloud spending, enabling proper economic planning of projects, making cloud costs visible, understandable and manageable, and creating an organisation-wide, distributed culture of accountability for displayed costs. The model provides an iterative cycle of constant optimisation that can be divided into 3 main phases:

·   **01 / Inform:** after deciding on correct allocation of the cloud budget and an expenditure forecast, all categories of cloud costs are tracked, grouped according to product, technology or organisational logic

·   **02 / Optimise:** Once the cost categories that have exceeded budget have been identified, optimisation strategies are developed to make them more efficient.

·   **03 / Operate:** the defined strategies must be implemented through cloud-native approaches, monitoring the results and updating the forecasts of phase 1

The FinOps model calls for collaboration between the various organisational structures involved (IT, Finance, Operations and Procurement) and widespread empowerment in the use and related costs of cloud tools. The goal is to empower every department and business user, thus providing transparency and predictability of operating costs and spending management. In this context, dedicated structures, such as the **Cloud Economic Leadership Team** or the Cloud Optimisation Desk, can enable an operating model tailored to the needs of efficient cloud spending management. FinOps stimulates ongoing collaboration and dialogue between IT and other business departments, transforming cloud spending into an opportunity to reinvest and gain competitive advantage. In addition, for companies that adopt multi or hybrid-cloud models, specialised FinOps tools are available (e.g. Apptio, Flexera, Exivity) that allow you to orchestrate the costs related to services hosted on separate cloud platforms (e.g. AWS, Azure, GCP, VMware), at the same time enabling instant optimisation actions to cover all phases of FinOps. These tools

will soon become standard for effective and controlled cloud cost management.
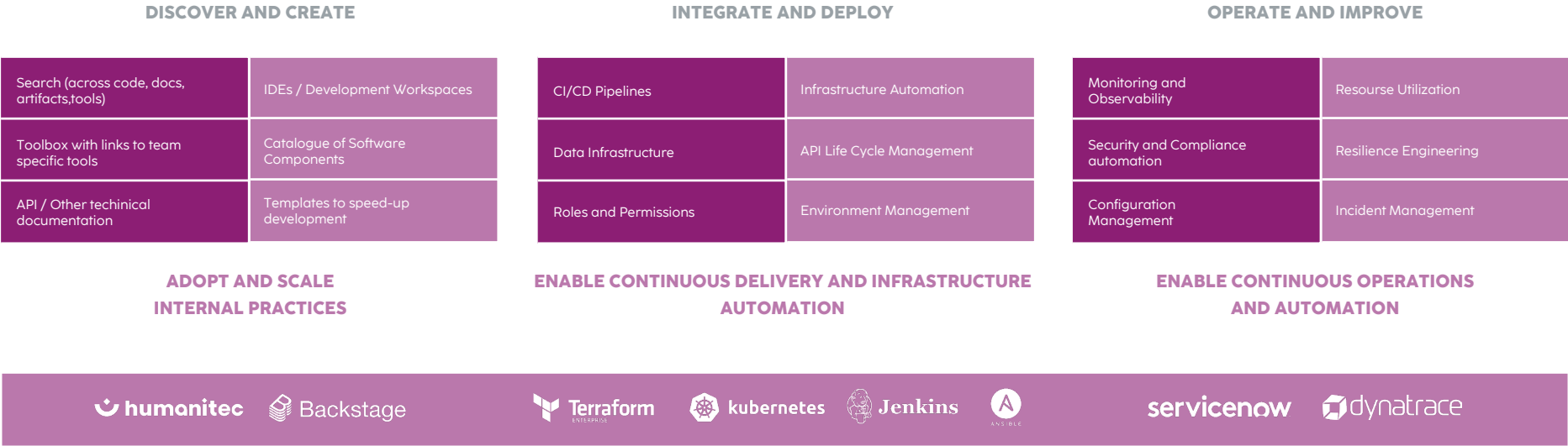
Evolution towards a native, hybrid and transparent cloud

DISCOVER AND CREATE

Search (across code, docs, artifacts,tools)	IDEs / Development Workspaces
Toolbox with links to team specific tools	Catalogue of Software Components
API / Other techinical documentation	Templates to speed-up development

ADOPT AND SCALE INTERNAL PRACTICES

INTEGRATE AND DEPLOY

CI/CD Pipelines	Infrastructure Automation
Data Infrastructure	API Life Cycle Management
Roles and Permissions	Environment Management

ENABLE CONTINUOUS DELIVERY AND INFRASTRUCTURE AUTOMATION

OPERATE AND IMPROVE

Monitoring and Observability	Resourse Utilization
Security and Compliance automation	Resilience Engineering
Configuration Management	Incident Management

ENABLE CONTINUOUS OPERATIONS AND AUTOMATION

humanitec Backstage   Terraform   kubernetes   Jenkins   A   servicenow   dynatrace

Figura 1. Internal Developer Platform Capabilities

05

A Modular And Composable Portfolio Can Guide Your Cloud Journey

A modular and composable portfolio can guide your Cloud journey

Evolving, Enabling, Extending Clients' business through Cloud.

We support the transition to cloud hyperscalers thanks to our balanced virtual private cloud approach.

500+
CLOUD
PROFESSIONALS

100+
CLIENTS

3
DATA CENTERS
1 TIER IV
CERTIFIED

1.000+
INDIVIDUAL
CERTIFICATIONS

GLOBAL
DELIVERY

8
KEY STRATEGIC
PARTNERSHIPS

Cloud services support organisations in defining the correct cloud adoption strategy, in migration and management of data and applications on public cloud provider platforms (IaaS and PaaS services) and in the development of cloud-native applications (PaaS and SaaS services). They are part of a broader modular and composable portfolio that also includes a broad range of professional and managed services on infrastructure IT assets, such as connectivity, data processing and storage (e.g. WAN/LAN networks, Data Centres, systems and servers, databases, middleware and applications) and multi-language and multi-channel, centralised, technical helpdesk services with dedicated on-site support, aimed at both IT administrators and end users for integrated and centralised management in full-outsourcing of applications and devices enabling individual workstations (so-called End User Services).
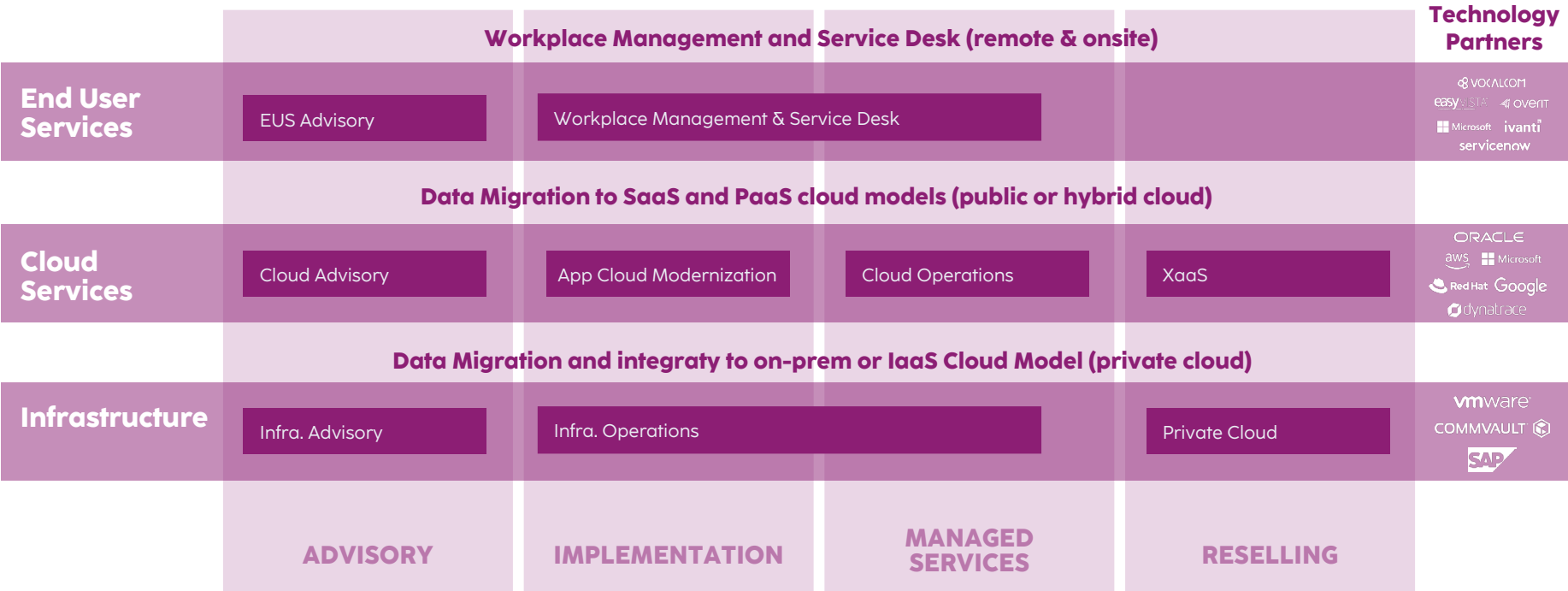
© engineering

Cloud & Infrastructure

	ADVISORY	IMPLEMENTATION	MANAGED SERVICES	RESELLING	Technology Partners
End User Services	EUS Advisory	Workplace Management & Service Desk			VOKALCOM, easyVISTA, overIT, Microsoft, ivanti, servicenow
Cloud Services	Cloud Advisory	App Cloud Modernization	Cloud Operations	XaaS	ORACLE, aws, Microsoft, Red Hat, Google, dynatrace
Infrastructure	Infra. Advisory	Infra. Operations		Private Cloud	vmware, COMMVAULT, SAP

Workplace Management and Service Desk (remote & onsite)

Data Migration to SaaS and PaaS cloud models (public or hybrid cloud)

Data Migration and integraty to on-prem or IaaS Cloud Model (private cloud)

Figure 2. Cloud & Infrastructure CoE manages the definition, implementation and operation of IT infrastructure, cloud services and workplace transformation projects across all industries for enterprise accounts.

A modular and composable portfolio can guide your Cloud journey

A modular and composable portfolio can guide your Cloud journey

Cloud Engineering services are therefore further enhanced by complementary services for continuous and secure outsourcing management of the client IT infrastructure, which allow sharing of specialised skills and advanced services for monitoring, security and constant optimisation (such as Service Desk and Control Room operating 24/7) of hardware, middleware and software in all possible deployment modes, from on-premise to private and hybrid cloud "hosted" on certified proprietary data centres, to the highest standards of security and reliability. Service desk services with multiple levels of support and with dedicated SLAs and centralised management of workstations for end users also make it possible to share technological skills and valuable assets for customers with the cloud services world. This integration between distinct service categories reflects a balanced approach to cloud that meets the specific needs of

customers and is based on an IT model and hybrid cloud adoption, to achieve the maximum return on IT and cloud investment for each customer.

> The Engineering approach aims to ensure hybrid IT, combining a multi-Cloud offer from the main hyperscalers, including AWS, Microsoft Azure, Google Cloud and Oracle Cloud, with the capabilities and services of proprietary Data Centres in Italy, thus responding to all customer needs over time.

© engineering

Cloud is at the heart of the digital transformation process

Engineering leverages a bimodal approach in providing dedicated IT services to facilitate companies in their Digital Transformation journey. We offer a comprehensive set of end-to-end IT services supporting businesses in initiating IT transformation, on one hand through advisory consulting services bringing to the adoption or implementation of new technologies. On the other hand, by assuming responsibility for and managing existing technologies at clients' premises, upon which evolutionary and integration strategies are built based on advisory and implementation services.

Engineering's offer therefore covers legacy infrastructure, virtualised private and shared platforms, as well as multi-Cloud implementation platforms on which to develop, integrate and evolve custom and packaged solutions for customers

The Hybrid IT Services Engineering framework integrates capabilities to:

- design, produce and deliver reliable IT, Cloud-native and digital services

- define customer-specific service catalogues by leveraging cloud technology building blocks and outsourcing options

- offer continuous or design-based, professional cloud services to design, deliver, execute, adapt and optimise customer-specific IT models over time, thus meeting the evolving needs of the business

Every company that embraces digital must have as a central element of its strategy the evolution of IT, supply and consumption models. **Due consideration of economic and market demands is essential to** ensure that companies know where to focus their attention, thus avoiding dispersion of investment and ensuring a clearer understanding of the benefits and return on investment. In order to protect their business, organisations must move to a procurement and operations service model that reduces capital investment and the related planning risks.

Engineering's experience in providing services that are natively managed end-to-end, developing and maintaining them, as well as IT outsourcing services, to companies of all sizes and in all market sectors, has allowed it to continue to grow and strengthen its fundamental values and commitment in serving customers, affirming Engineering **as a reference technological partner for IT service outsourcing**, combining the benefits of cloud projects with the flexibility to build ad hoc services to meet the requirements of customer companies.

Infrastructure services and private cloud solutions support Clients in all stages of the Journey to Cloud, up to the desired set up on target public cloud platforms

A modular and composable portfolio can guide your Cloud journey

CLOUDESIRE: OUR MULTI-CLOUD MARKETPLACE

Increasingly, IT and business are acting directly and synergistically in the acquisition, use and consumption of Cloud services. **IT must therefore evolve rapidly towards a role of governance and enabler of ready-to-use standards, products and practices**, on which business and applications can continuously compose and integrate services, with access to various sources of data available (internal and external to the company), and in a secure way "by design", putting together vertical application solutions.

While many customers prioritise one particular cloud provider, the transformative scenario will increasingly **require integration of multiple providers and deployment models**.It is therefore vital to adopt tools that provide an overview and allow cross-provider cost control.

Our Cloudesire platform is designed to integrate with any technology platform and Cloud service, enabling orchestration, consumption measurement and cloud cost billing, as well as the creation of custom cloud service catalogues. For the market, Cloudesire represents a cloud brokerage platform that allows customers to orchestrate and better govern their resource consumption.

Cloudesire increasingly becomes a distinctive offering element for the Engineering Group when developing proprietary software solutions, facilitating their evolution towards SaaS and subscription models.

Here are some use cases:

- **Cloud Marketplace Engineering**: as Engineering, we are the first to use Cloudesire as the engine of our Marketplace.

- **FinOps**: Cloudesire is evolving by providing a number of features to manage financial operations. It allows you to set up cost centres, budgets and spending thresholds, to control spending and apply cost-saving policies, and enables integration with existing financial systems via APIs (e.g. accounting, procurement and billing).

- **Integration with the Digital Enabler**, our ecosystem platform: it enables you to create solutions to combine the detection, collection and mash-up of data to generate new data, enrich them and make them available through APIs. Through Cloudesire, data can be published in a catalogue and made available on subscription: this synergy can steer your organisation into the new API economy, maximising the value of your data.

Discover more ⊕

Focus on

CLOUD SECURITY: SECURITY IN AND FOR THE CLOUD

Focus on

Strong acceleration in the use of Cloud services and their increasing distribution and deployment beyond the perimeters of network infrastructures and proprietary data centres (e.g., public cloud models) have combined to place Cybersecurity at the very heart of any and every cloud strategy.

The security of data and applications in the cloud can be guaranteed with adequate **cloud security** services.

Engineering offers **Web Application and API Protection (WAAP)** solutions, based on market-leading technologies, with which it ensures the timely detection of attacks on web applications and exposed APIs, and allows you to quickly identify and mitigate threats beyond the traditional firewall, protecting the entire, externally-visible, digital application heritage exposed to multidimensional attacks.

These services allow the adaptive defence of cloud applications aimed externally by feeding SecOps paradigms, and they also proactively provide information on the most-

targeted vulnerabilities by improving DevSec processes, useful for the secure development of applications. These solutions enable modern application development models from an integrated **DevSecOps** perspective.

At the same time, the security of cloud applications is integrated and enhanced by **Zero Trust Network Access (ZTNA)** solutions. Thanks to constant access control of users (internal and external) and devices (managed and unmanaged) to exposed services or open internet/SaaS hosted in the cloud, these introduce a level of abstraction that securely connects any user, from any device, from wherever they connect, not to the company network, but only to the application and to the data that the user in that specific context is entitled to access, with minimum privileges and with continuous control over the session.

A resilient cloud strategy for your business

- **We adopt a secure, balanced and business-driven approach to the cloud**: using cloud platforms and infrastructures on hybrid cloud or multi-cloud models, integrated with traditional on-premises systems or applications, to balance risks of discontinuity and business interruption with the expected benefits in terms of data security, accessibility, resilience, fair flexibility and scalability of resources.
All this aims at a gradual and sustainable long-term cloud adoption strategy, allowing organisations to enjoy ever greater benefits and keep the business as the centre of attention.

- **We make the cloud a liquid and invisible technology**: with a view to consolidating the spread of "**liquid and invisible**" technology, increasingly necessary to reduce the growing complexity of the cloud ecosystem, Engineering proposes solutions based on **centralised cloud platforms** (e.g. cloud management platforms) that exploit **AI algorithms or advanced automation tools** (e.g. IaC) to allow extensive integration between distinct services, a simple, immediate and automatically-scalable deployment of cloud resources (following the cloud-native paradigm), thus enabling decoupling from the technological complexity of business needs.

- **We disseminate cloud as a product-based model**: to adopt cloud successfully, correct technology implementation is not enough; organisations need to review their operating models to ensure they enable the cloud paradigm as fully as possible.
We help organisations adopt a modern, "product-centric", operating model, based on cloud-native application development methodologies (e.g. DevOps and Agile) and cloud competence centres that facilitate the transition to an internal cloud, quickly bringing tangible results.

Public cloud providers do not always offer a holistic approach, free from service choice constraints, based on customers' specific business needs. We want to curb the risk of lock-in technology by enhancing the "**Hybrid Multi Cloud**" mantra: we have always understood the value of the adoption and balanced integration of both public and private cloud platforms and services. Being "multi-Cloud" involves the integration and governance of multiple cloud platforms and technologies to enable freedom of choice and change. A **hybrid IT** approach, therefore, offers the option of combining traditional and cloud technologies to support a business model that takes into account the benefits of both environments (traditional and cloud).

06

Our Case Studies

Our Case Studies

CASE STUDY / SMART TRANSPORTATION
A full digital solution on Cloud AWS for Itabus

Itabus is a passenger road transport startup that has developed a technological HLD architecture, based on a "future-proof" strategic vision and IT choices such as cloud-native and digital omnichannel. Engineering has designed and implemented a full digital solution on the Cloud that guarantees continuity of services and enables performance evaluation of the various business areas.

The project has led to the creation of CRM, e-commerce and business intelligence platforms, integrated with other application platforms, to improve the functionality of services and ensure maximum efficiency of processes.

CASE STUDY / SMART GOVERNMENT
Cloud-Native application development for health monitoring

ARIA and Regione Lombardia asked Engineering to rapidly modernise an internal health application to manage the influx of Ukrainian refugees after the outbreak of the Russian-Ukrainian conflict. In just two weeks, Engineering implemented a solution based on IaaS services, hosted on the AWS public cloud platform. A web application and a portal for the collection, management and analysis of clinical data of refugees was created.

The solution enabled the creation of a health profile for each individual, the insertion of diagnostic data (e.g. Covid-19 tests) into digital medical records, and the visualisation and analysis of data from any device. The application has been rendered fully-enabled by scalable and flexible cloud infrastructure, leveraging cloud-native methodologies and architecture to accelerate feature releases and application testing.

CASE STUDY / DIGITAL INDUSTRY
SAP Cloud Modernisation on public cloud

Engineering supported a multinational leader in the laboratory diagnostics market in the migration and management of 53k SAP ECC instances (on 10VM Windows/Oracle) for a total of 6TB of data, to be made accessible to users in US locations. Engineering provided a **fully-managed service** that first provided for the migration of SAP ECC instances to SAP4HANA on AWS public cloud landing zones, including the re-platforming of the operating system from Windows to Linux, managed in 4 months. Engineering managed the entire public cloud adoption process for SAP and took over the **operations** of the deployed cloud environments, ensuring a scalable, pay-as-you-go, cloud model integrated with outsourced management services of IT infrastructure.

CASE STUDY / SMART TRANSPORTATION
Cloud Operations and FinOps on hybrid IT

Engineering supported a global cruise holding company in migrating applications to Azure, implementing a **hybrid environment** for deploying Kubernetes applications and managing them through Azure Arc, a **centralised IT management platform** with central datacentres in Azure and on-premises datacentres onboard ships.
The goal was to build a new approach to applications and infrastructure management in hybrid environments, evolving legacy architectures through IaC tools and microservices architectures.

Subsequently, an assessment was implemented on active cloud resources to optimise costs, with activities such as right-sizing and power scheduling of IaaS cloud infrastructure resources, which led to a saving of 30% compared to total cloud costs prior to the project.

CASE STUDY / SMART TRANSPORTATION
Re-architect of critical business applications

This project involved supporting the creation of IT infrastructure in the cloud, using AWS as the main provider, for an Italian holding company in the transport infrastructure sector. The customer needed to change the previous data centre service provider and move their business activities to an independent cloud platform, based on standardisation of application interfaces. Engineering guided this move and supported the creation of services, data migration, and integration of external SaaS services.

The main drivers of the project were cost optimisation, elasticity, time to market improvement, agility, database modernisation, software and application re-factoring and the adoption of an XaaS business model. Engineering also supported the adoption of networking, security and collaboration tools to facilitate cloud dissemination in the company.

CASE STUDY / SMART GOVERNMENT
Deployment Automation for Sports Entertainment Providers

For an important client whose mission is handling streaming and managing content related to sports events worldwide and athletes on various public portals, Engineering dealt with the deployment of infrastructure through Infrastructure as code (IaC) tools.

The customer was looking for a new partner to support the deployment and management of infrastructure in cloud-native mode and selected Engineering as a partner capable of using the most advanced services and technologies for the provisioning of infrastructure through Terraform and system configuration with Ansible. This made it possible for the customer to deliver an innovative broadcasting solution that operates entirely in the cloud and supports the extremely demanding workflows of content production and delivery for the benefit of fans, viewers and athletes.

Our Case Studies

07

The Cloud Ecosystem Evolves To Meet Organisations' New Sensitivities

Looking at the longer term challenges facing organisations as a result of the increasing rate of digitalization, the economic, social and geopolitical context subject to high instability, as well as regulatory and compliance and data security, we can outline the main vectors for the evolution of cloud computing in the long term, be they driven by emerging and enabling technologies, new business models or organisational and social change.

Cloud Computing's evolution from today until 5 years from now will feature the following aspects:

EDGE CLOUD

Edge Computing: organisations decentralise data management to access points (edges) close to users. Infrastructures evolve into branching ecosystems with data processing centres distributed throughout the territory (e.g. edge data centres). This will enable the deployment of services and use cases based on low latency and high performance, such as IoT and M2M.

Decentralised data security: The integration of Cloud services, from IaaS to SaaS, will lead to a continuous evolution of security control and management models, based on a strategy that combines network and security functions, increasingly integrated at every level.

ARTIFICIAL INTELLIGENCE E MACHINE LEARNING CLOUD

AI as a service: the spread of IoT, apps and wearables will lead to an increase of data and the use of artificial intelligence, with natural language interfaces that will replace keyboards and GUIs. Cognitive engines will help in the management of large amounts of data.

Accelerating the Cloud-Native Paradigm: adopting DevOps practices and Cloud-Native architectures will become central for companies wishing to remain competitive, with new models based on platform team and operation concepts and an approach focused on continuous development of products that can be used in a multi-disciplinary team.

COMMUNITY & INDUSTRY CLOUD

Establishment of Industry Cloud platforms: more and more providers are evolving their catalogue towards industry-specific solutions that best address the particularities of market sectors by providing ready-to-use tools and solutions to accelerate their application.
A set of advanced platforms and services will be set up that are increasingly focused on specific use-cases and vertical business solutions, to accelerate their adoption and

democratise their use by simplifying the access, creation and use of new digital services by all functions of companies, business and IT departments.

GREEN CLOUD

The new value from data and services is to be found in the way we will leverage them to create virtuous ecosystems around them. Organisations are increasingly focused on **environmental impact and sustainability**, and more companies are expected to leverage cloud efficiency (through resource aggregation) to achieve their sustainability goals.

On the other hand, cloud computing providers are constantly looking for ways to increase the efficiency of hardware and software and to reduce e-waste. Cloud is more efficient than on-premise and produces fewer emissions. Cloud service

providers now offer carbon calculators.

The sustainability sought is economic and environmental: supply and demand companies will have to work in partnership, facilitating increased transparency about service costs and consumption, creating long-term agreements that can cushion the turbulence of the macroeconomic context and building shared governance mechanisms.

DATA SOVEREIGNTY & CLOUD

Service portability and data decoupling: Users must be able to separate their content and data from web-based software and services. By making data and identities usable and portable through services, users regain control and innovative new services can be created.

Citizens and businesses can thus benefit not

only from the best applications, but also from the re-use of data, beyond the limits of applications.
Cloud market regulation has become indispensable to ensure data sovereignty and preserve geopolitical balance.

Initiatives such as the National Cloud in France, the Cloud Italia strategy with the birth of the PSN (National Strategic Pole), or initiatives such as GAIA-X and the European Alliance on Industrial Data, Edge and Cloud at European level, are therefore redesigning and influencing the market and the service development directions of global Cloud operators, redesigning the reference models and, to some extent, questioning the total supremacy of the main global market players.

The Cloud Ecosystem evolves to meet organisations' new sensitivities

GAIA-X, FOR A NEW, EUROPEAN, DATA ECONOMY

Focus On

Gaia-X is an initiative launched by Europe for Europe. Promoted by France and Germany, and involving 22 major European entities, today it has more than 340 associates. Representatives of the worlds of science, business and politics, from Europe and around the world, are working together to co-create an open and transparent digital infrastructure where data and services can be made available, collected and shared in a secure and controlled manner.

Already in 2018, Engineering became one of the first international members of the International Data Spaces Association (IDSA), a Day-1 Member of the Gaia-X Foundation and one of the Italian companies on the board of the European project with an active role in defining its governance. With the same prerogatives as the founding members, Engineering is therefore helping to design the Gaia-X architecture and to establish the basic principles on which the entire federated Cloud infrastructure will have to develop at European level

Discover more +

A DISTRIBUTED OPEN MARKETPLACE FOR EUROPE CLOUD AND EDGE SERVICES (DOME)

Focus On

The European Commission supports the adoption of cloud in Europe as part of its strategy, notably with a commitment to facilitate the creation of a cloud services marketplace for public and private sector users within the EU.

The DOME project, co-funded by the European Commission and coordinated by Engineering, begun in January 2023, aims to create this marketplace, providing the tools to access reliable Cloud and Edge services and more generally any software and data processing services created in the context of EU programmes, such as Digital Europe Programme, Horizon 2020 and Horizon Europe.

Building on Gaia-X concepts and adopting open standards for interoperability and service description, DOME will create a unique and reliable meeting point between customers and cloud and edge service providers.

DOME will take the form of a federation of marketplaces, linked to a shared digital catalogue. Each federated marketplace will be independent or linked to the offer of certain providers of IaaS or PaaS solutions specific to the integration of services and applications for a given domain, such as smart cities and smart farming, or for the integration of data analytics and artificial intelligence solutions.

Discover more ➕

KEY TAKEAWAYS

Our Cloud Fabric

Cloud Is The Cornerstone of Digital Transformation

Cloud enables digital transformation, thanks to increasingly integrated service management within a unique cloud ecosystem, where highly-automated and industrialised governance and management become fundamental.

Cloud Is The Basis For Enabling New, Emerging Technologies And Developing New Business Models

Cloud allows immediate access to computational resources and advanced, ready to use services and enables the management of huge amounts of data (Big Data) on which to develop new services, information or business models, such as Data Analytics, Artificial Intelligence (AI) and Cognitive Technologies, optimising their use according to specific needs and ensuring control and security at the same time.

Cloud Modernisation: The Answer Is The Cloud-Native Paradigm

Today, companies are moving towards alternative strategies, more complex but with a high impact on the business in terms of agility, time-to-market and rapid experimentation. For this reason, the design and development paradigms of "cloud-native" applications are assuming an increasingly relevant role, being based on modular and scalable, architectural components in cloud-native environments (e.g., Containers, Kubernetes, Serverless functions) that enable time-to-market benefits and rapid and continuous deployment of application enhancements (CI/CD).

keaways

Technology Is Nothing Without An Operating Model

evSecOps methodologies and, more generally, cloud-native paradigms are also serving as a reference paradigm to overcome the main challenges in successful cloud implementation, namely the lack of cloud skills disseminated internally in organisations and the presence of siloed organisational models, unsuitable for promoting the sharing of cloud skills and collaboration between different teams and roles, as actually required in DevOps models.

For smooth reception of new cloud tools and models, therefore, it is a priority for all companies in the process of adopting cloud to **take a product-centric approach**, based on collective empowerment and cross-functional teams, so as to enable greater competitiveness, stringent time to market and effective and efficient cloud governance. In particular, to enhance the adoption of cloud throughout the organisation according to cloud-enabling models (e.g., Cloud Operating Model), it is desirable to use iterative approaches, based on well-measurable business results, in which devops methods for application development are combined with well-distributed cloud skills in organisations, according to centralised/decentralised approaches.

Cloud As A Conscious Choice: Finops For Everyone

FinOps (the combination of Finance and DevOps) is emerging as a paradigm to deliver value to cloud spending, allowing for proper project budget planning. To date, due to the inflationary and destabilised economic context and to the adoption of a "myopic" cloud compared to the real benefits achievable, the highest priority of organisations has become the ability to have a centralised, transparent and understandable management of cloud services expenditure and costs incurred, at the expense of cloud security, for the first time in years. It is important to make cloud costs visible, understandable and manageable, and to create a culture across the organisation of accountability for costs incurred. All this can be guaranteed with the adoption of the modern FinOps model.

eng

@ www.eng.it

in Engineering Group

⊙ @LifeAtEngineering

𝕏 @EngineeringSpa