Leading our customers towards a new economy of digital ecosystems.



WHAT ARE WE DISCUSSING?

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A FEW WORDS

The development of our world has been always based on the value of knowledge, a pillar which today is facing an unprecedented transformation. New technologies are breaking the traditional knowledge systems which have trapped information within specific sectors, fields and socio-economic structures for so long. These technologies are freeing knowledge and making it a common good available to all. This change is the keystone for advancement in economic and social development at a level that is, perhaps, unprecedented.

Digital transformation is defining our era.

A new world is emerging, right now, and thanks to our contribution. A world which is reducing the differences between the physical and the digital world, allowing us to seize the opportunities offered by new technology, paving the way for new cognitive, economic and social paradigms, giving us better and faster, decision making capabilities.

A world that potentially holds all the answers, as long as we ask the right questions and we are ready to embrace change.

Like any change that creates a disconnect between the present and future, people's behaviour and attitudes will be different, reflecting a combination of risk appetite and change management and the desire to seize new opportunities in order to extend or maintain their competitive advantage. In any event, change is inevitable. This data-driven revolution will need not only the knowledge and skills of the new digital scientists and the technologies that underpin this transformation, but also security, solid infrastructure, open ecosystems and, above all, knowledge of the core processes that need to be transformed.

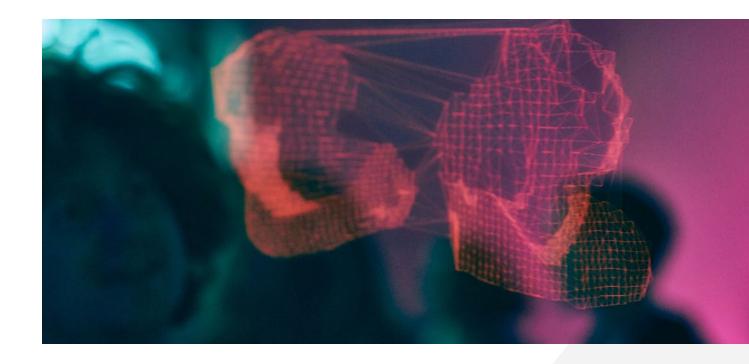
Digital Transformation when applied to noncore processes yields less valuable results, but when it is applied to core processes, vital for a business, the outcome is downright disruptive

The more fundamental the process, the more disruptive, and visible, the outcome of this transformation will be.

We will need partners who not only know how to provide solutions, but are also able to offer robust IT infrastructure, total security and advanced skills in domain and technology processes, coupled with the know how to manage the co-design of this transformation as well as being completely open to infinite external inputs. We will need all of this to steer companies and society through the uncharted waters of the new era. All of this needs to based on a solid understanding and knowledge of the "old world", to enable a complete revolution.

The incumbent (the partner most responsible of the current technologies and the most knowledge of core processes) has an ideal positioning to guide this transformation. It has a duty to lead this transformation.

Broaching this subject is harder than it looks, given that digital transformation is high on the agenda of every organisation. It is the present and the future and so cannot be avoided; it is not a challenge because it is not an option; it is not a trend, because each organization wishes to evolve in a different and unique manner.



TRANSFORMING THE PRESENT TO ENABLE THE FUTURE

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WHERE IS CHANGE TAKING PLACE?



The change we are witnessing is enveloping every organisation, starting from the actual pillars they are built on. The traditional models for analysing a company's competitive landscape have changed. We can categorically say that if Michael Porter rewrote his famous essay on the "Theory of Competitive Advantage" today, he would no doubt talk about process and product advantages, but also about the advantage that stems from having a digital presence and expertise.

The markets, competition and the concepts of attraction and perceived value have also been profoundly altered. Indeed, it is from this climate of change that the opportunity arises to combine and assemble an incredible variety of online information and components, boosting the creativity and aspirations of individuals, businesses and institutions as never before.

This principle also applies to end users, who can no longer be grouped into "clusters" with well-defined needs: individuals and groups are continually converging and separating, giving rise to new, latent needs which are significantly and continually changing.

As a result, the models we use to interact with customers, and how they use services and content, are evolving.

This is taking place in a wider context which is equally fluid: technology rapidly becomes obsolescent and the life cycles of applications, products and services, pressed for time, which is one of the decision-making criteria we use to react strategically to change, perhaps the most important one.

Knowing the correct course to plot within these new ecosystems therefore requires not only the ability to make the right strategic decisions, but also the availability of the appropriate evaluation and interpretation tools and the necessary skills to remain attractive in areas in which the company already operates, as well as in potential new ecosystems. These can be reached through unimagined and sometimes unexpected interrelationships, facilitated by the correlation between technologies, sectors and areas of activity. Countless opportunities are unfolding at the crossroads between the different "worlds" available to us. The end result might surprise us.

It is no longer possible to imagine a company that is not internet-native, structurally oriented towards predictive data (Advanced Analytics). There is no longer time for interpreting historical trends, inherently able to be presented and integrated with third parties through an agile ecosystem of public interfaces (Open Partner Ecosystem & API). This is able to update its processes, applications and infrastructure capabilities in a short space of time (DevOps), sensitive to micro-changes in

the system through pervasive monitoring tools (IoT). These tools generate an infinite amount of information that must be processed in real time (AI), in order to control services or critical functions for other operators required to make on the spot decisions (Augmented Reality) and whose source must be reliable and certified (Blockchain).

If only we could reinvent ourselves.
But since this is not that easy – certainly not for the many companies, public and financial institutions that have complex and ubiquitous processes – making the right choices to improve their digital "readiness" is the first building block of any Digital Transformation strategy.

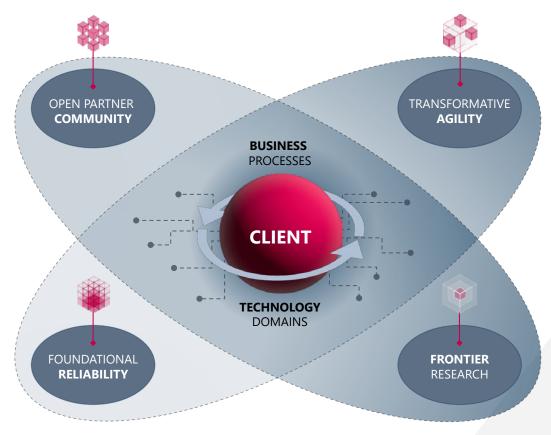




The aim of the Digital Transformation process is to create innovative solutions to assist and help individuals and organisations work consistently and coherently, providing them with solutions that improve their ability to recognise signals, process the information gathered and automate the tasks to be carried out.

It is a transformation process in which aspirations for change are reconciled with constraints, with the help of those who, like Engineering, have developed unique skills over the years based on knowledge of our customers' core processes. This is matched by unparalleled cutting-edge expertise in testing and predicting the models and systems of the future, the result of ongoing significant investment in research and innovation.

Engineering is therefore a "Knowledge Broker", tailoring the Digital Transformation process for individual companies and organisations. Just as a traditional broker helps the customer navigate oceans of risks and financial opportunities, we want to lead our customers towards "best fit" technology and market concepts, helping them build the often invisible but structural jigsaw puzzle that characterizes the Digital Economy.



Digital transformation is a theme debated everywhere. Internally, in the press, by our customers, everybody has his or her own interpretation. It is therefore important to have our own definition and define our approach to Digital Transformation. For us Digital Transformation is not the effect of adopting new so-called enabling technologies but a process guided by a strategy of revisiting and redesigning existing ways of working, business models, ways of communicating and living, in order to enable new digital paradigms - which are strictly linked to the use of data - and thus producing new revenues and new values to offer as well as improving the current way of working and the existing opportunities.

In addition, like everything else, Digital Transformation has varying degrees of maturity corresponding to different levels of complexity and feasibility. Every organisation must assess these carefully, still many of them, including key functions within companies still struggle to recognise them clearly. One example of this is the difference between the digitalisation of processes and the adoption of a Digital Transformation strategy. While this distinction seems fairly clear to anyone working with these issues on a daily basis, or to functions that are closely involved in innovation, many others - both individuals and organisations are still getting to grips with these subjects. It is therefore essential to continue investing in training by presenting scenarios, implications and opportunities in the form of realistic options.

It is therefore necessary to accelerate knowledge and confidence in the new digital paradigms and the huge opportunities they represent. Putting in place training tools aimed at transferring the skills acquired in the different business contexts that have already experimented with effective models and solutions; and focusing on facilitation, coaching and design thinking methodologies able to produce the full sharing of the innovation and digital transformation path.

This is a holistic and systemic approach we have been experimenting with for a long time, developing a step-by-step approach that we can use to explore different scenarios of transformation by interacting with various online ecosystems and then decide and start adopting the specific path of change.

We need experts in traditional technologies and services, applications and infrastructures, able to select and integrate the components necessary to guarantee reliability, safety, scalability and last but not least the management of the new technological platform on which the transformation is based - we could call it the deployment platform of digital transformation.

We need experts in the new so-called enabling technologies, the new Digital Scientists, capable of guiding and governing the rapid evolution linked to the continuous innovation of these technologies and the opportunities that this allows.

We need experts in core processes, able to correctly interpret the impact produced by the new enabling technologies and, therefore, to manage the redesign. In this field, our experience and expertise on core processes, gained in every industrial sector and economic / production segment, is an added value that we offer our partners.

These three elements are therefore the key ingredients needed to guide digital transformation and must coexist at every step of the way. We are increasingly moving towards a world of open and interconnected ecosystems and, in order to take full advantage of the opportunities, we must be ready to work with everyone, technology experts, domain experts, partners and customers. Our DNA as a System Integrator guarantees this skill.

The outcome of this approach will allow our customers to become part of the world of digital ecosystems by integrating and creating their own digital platforms.

Being therefore incumbent in the largest customers of each segment, with a deep knowledge of their core processes, reliable in the management of the existing and capable of designing the future, imposes a primary role in guiding the digital transformation.

But what is a digital platform?

We can define a digital platform as the collection of functionalities and technological

components through which it is possible to digitize processes or entire ecosystems thus developing new ways of using these and new services that give value to users starting from the data.

We divide the digital platforms into two categories.

There are "ecosystem" platforms that enable new business models linked to ecosystems, industrial, social or natural. Ecosystems are sets of data and features that combine to create a value. A city, for example, is an ecosystem of services for parking management, public transport, schools, airports, etc. The ecosystem economy is therefore linked to the marketability of the information that can be produced thanks to the integrated management of their data.

Then there are the "vertical" platforms that arise in the context of specific business areas. A platform for parking management or a platform for access to public transport are examples of individual vertical platforms (which can in turn be integrated into Ecosystem platforms).

The combination of these two types generates a new ecosystem of digital platforms.



ENABLING TECHNOLOGIES









Where Technology & Business Meet Evolution Happens



















Let us begin by saying that the effort to automate and streamline processes is and remains a primary objective to be prioritised in the wider context of efficiency gains. We are in talking about a basic situation of the digitalisation of processes where every manual process transposed in digital mode not only frees up time and resources, but also trains the mind to think increasingly with a view to continuous improvement – or "lean".



The digitalization of the real world enables us to process the information collected. IoT extends the capabilities of our 5 senses and allows the collected data to be stored permanently and reused. All is ables to immediately interpret this large amount of data helping us to classify, interpret and analyze it in a human manner, through the interpretation of texts, language, facial expressions in videos or photos.





IoT and AI where adopted, profoundly change the way we experience and use instruments and tools and, due to their widespread presence and integration, actually increase human potential.



The real world and the digital world interact through Augmented, Virtual and Mixed Reality technologies, which transport the digital within the physical space, modifying the interactions between people and also how they use these media. This creates a new user experience composed of simulated environments, in which man and the surrounding information join hands, interacting and collaborating to improve the quality of work and life.





The consequent decision to automate processes through the development of internal solutions versus the option of using external services is one of the foundations of a Digital Transformation strategy.

A practical illustration of this approach is, for example, the wide range of solutions currently available on the market in SaaS (Software as a Service) mode.

This range is continually expanding, not only for specific sectors such as human resources management, but also for entire operating segments such as administrative management, logistics and transport, employee training and development platforms and the full digitalisation of digital workplace and content management tools.



One of the common factors supporting and driving this model is without doubt the exponential increase in problems associated with the management of administrative compliance and security. For small and medium-sized organisations in particular, this involves managing the same issues as large companies, but with problems that are sometimes unsurmountable, relating to skills procurement and the breadth and complexity of the technical and regulatory aspects to be fulfilled.

SaaS and Digital Workplace solutions respond very well to these kinds of pressures. Through "Security by Design" concepts, they specifically address and resolve this type of problem.



There are also complex organisations which already operate in structured and pervasive contexts integrated with electronic markets and which have extensive skills and solutions managed directly by business units. The success of these market leaders increasingly stems from their ability to realign processes and their flexibility in integrating with the various stakeholders. By creating digital twins for its organisations, they can swiftly develop infinite scenarios to minimise errors and maximise the chances of real-world success.

Why certain objects, functions or services work better in the cloud

A growing number of new objects, services and functions will increasingly be "cloud-native", i.e. only available in the cloud, making traditional "download & install" models obsolete and even inappropriate. There are numerous reasons for this, ranging from increasing compliance (maintenance costs) and integrity and security (risk management) requirements, to more innovative trends dictated by knowledge management and the learning mechanisms of artificial intelligence bots. The most advanced "machine-learning" technologies are based on enhancing the correlation capabilities between events that are closely linked to the diversity of the observed sample. Even in different empirical contexts, we know that it is changing conditions that allow a system to evolve, whereas closed ecosystems tend to replicate recursive patterns and behaviours.

We can therefore say, by analogy, that predictive algorithms tend to become more effective in proportion to the level of differentiation of use. In this respect, it is clear that the cloud is a privileged ecosystem, given the impressive, wideranging context and diversification that IoT trends are ushering in.

25,000

Training Days

500+

Off-the-Shelf Training Courses 240+

Trainers

1.300+

Professional Certifications

9.900+

Web Classroom Participants

66

Specialized training activities, tailored to our professional needs and integrated with growth paths, represent a fundamental strategic investment today. The speed of scientific-technological changes determines the need for continuous enrichment and certification of the key competencies of all our employees.

Ferdinando Lo Re

Director, IT & Management Academy "E. della Valle", Engineering

Therefore what are the elements of innovation that organisations can use as a benchmark for devising targeted Digital Transformation strategies?

- The adoption of DevOps methodologies for developing the SW cycle, to create a continuum between SW components and infrastructure demand.
- The use of dynamic "on-demand" consumption units in IaaS and PaaS mode.
- The ability to present and integrate external services according to an API-based services organisation.

The combination of these three models is one of the most effective responses to operational requirements where speed and the capacity for dynamic reconfiguration are a primary source of competitive advantage. However, these are new paradigms that require an overall review, not only of software production methods, but also of how applications should be redesigned to respond effectively to these principles, thus becoming applications that can be described as "cloud-native".

However, in order to embrace the Digital Transformation, a phenomenon that involves ever-changing paradigms, technologies and business models, it is necessary to have human capital capable of being agile in adapting to change, thus having what the literature calls "Dynamic Capabilities". These are the capabilities that enable a company to act while in a permanent state of transformation and to deal promptly with the uncertainty resulting from technological and market disruption. Developing these skills will require the careful training of human resources and continued interaction with external inputs.



Yet there is one final and perhaps more interesting aspect of Digital Transformation which furthers its objectives by acting in contexts where processes are highly indeterminate (what if...). This is accompanied by a significant variability and volume of data, and systems or ecosystems in which information is created or passes through, enriched with meaning by interacting with structures or subjects external to the organisation. The interaction with these open contexts, which are essentially ecosystems that form, exist and evolve in the cloud, has a separate dynamic from predefined procedural models, ultimately questioning the very concept of process as a deterministic element. If we look at the constants that underpin these digital transformation processes, we find several fundamental and structural enablers that shape this phenomenon, namely: data centrality, real-time event interaction determined by an increasing IoT sensor base, the support of Artificial Intelligence agents to oversee in real time the decisions determined by such a large database.

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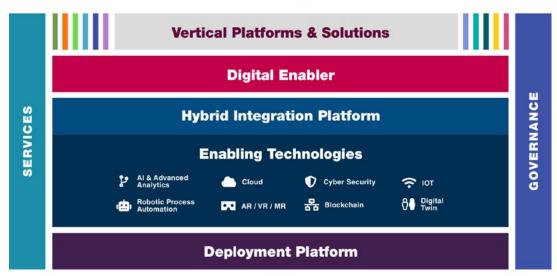
THE BASIC BUILDING BLOCKS OF DIGITAL TRANSFORMATION



In this context, one of the most uncertain challenges is to transition from a structured world organised by processes, to a "digital ecosystems" paradigm, without creating unsustainable rifts in terms of risk, complexity and change management, that will certainly arise. Yet it is plain to see that there is infinite opportunity and unexplored potential out there, both to attract new customers and partners, and to improve the quality of services for citizens by anticipating demand and devising new solutions for the latest generation of users and cloud-native services. All this translates as a better quality of services provided and quality of life for users in the customer experience paradigm.

The question that many organisations ponder is therefore the most obvious one: how to embark on an effective and sustainable Digital Transformation while minimising the risks caused by emotive and unsustainable "me too" initiatives.







For years, Engineering has been working on these issues and on the various disciplines that constitute the technological tools and competencies we define as "digital enablers". These are now the real accelerators of digitalisation processes: Cloud Infrastructure, DevOps, Cyber Security, IoT, Robotics, Artificial Intelligence, Augmented Reality and complex Digital Platforms where the various options can be tested and combined.

This approach is made possible by three structural elements of Engineering's proposition:

- The in-depth knowledge of core processes relating to the various vertical markets and public administration.
- The absolute leadership position that Engineering has built up over the years in bringing complex process-oriented solutions to the market in all economic sectors.

A pervasive research, management and innovation model.

This is enhanced and integrated in an openpartner ecosystem to ensure a technological best fit, an ubiquitous element of Engineering's DNA.

These hallmarks of excellence, combined with the ability to invest in sectors offering the highest level of innovation, such as Internet systems, new cloud platforms and enabling technologies, offer all organisations the opportunity to conduct a quick, practical and customised test of the potential to expand their presence in Internet ecosystems natively and securely, so as to ensure a unique and persuasive customer/user experience.



User Centricity is one of the key factors needed to succeed in a Digital Transformation process and a correct User Experience Design strategy is the means by which one can harmonize the needs of the individual with those of the organization, the objectives of the client with those of the business. The involvement of key figures and influencers in the activities of UX design helps to create consensus, increases the degree of acceptance of change and motivates people to adopt it with full awareness and quickly, making the advantages more evident. Service Design, User Centered Design, Participatory Design, Design Thinking are some of the approaches that Engineering adopts in Digital Transformation projects, combining them with digital communication services, targeted training and sentiment monitoring for a continuous evolution of services.

Massimo Mazzarini

Director, Engineering Interactive

How do we do it? It is essentially a case of helping to overcome perceived limitations or constraints so that they do not pose an obstacle to "potential" scenarios or legitimate expectations.

For us, the key is being open to the world and valuing all external inputs so that they can be in synergy with our core business and that of our customers. With our innovative projects carried out in association with partners of the highest level, we therefore act as enablers for Open Innovation, the paradigm theorised by Professor Henry Chesbrough, which has revolutionised the way we understand the role of the company within its ecosystem. The definition of this paradigm is "the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation".



For Engineering, research projects represent real laboratories for ongoing innovation in which a new innovation idea, project and solution represent the outcome of a sharing and co-creation process. This process actively involves the entire industry ecosystem, ensuring that the right mix of experience and skills necessary for the project to succeed is always available.

In specific cases, collaboration with the ecosystem becomes systemic as it transitions from the design stage to the strategic stage. This typically happens through our active participation in public-private partnerships and associations that, at a European and/ or national level, seek to define and implement shared innovation pathways among the major stakeholders in technology sectors with significant value added, such as Big Data, IoT, Future Internet, Industry 4.0, Physical and Cyber Security and 5G, etc.

This approach allows us to intercept at source the innovation stimuli from the markets, before launching research projects that involve users. It also enables us to develop solutions consistent with emerging demand.

Dario Avallone

R&D Director, Engineering

Our commitment is to foster creative interaction and empower the stakeholders involved to open their minds, imagining the infinite connections they could have between information generation points and users who could use that information to create value added.

We have held numerous sessions directly involving the management of various organisations, including enterprise and government, all united by the same unspoken questions of visibility and correlations between facts and events viewed as insurmountable expectations – demonstrating how quick and easy it is to show that most of what we are looking for already exists in the Internet's ecosystems and need only to be mined, so to speak, and shared.

Via the digital platforms we call "Digital Enablers," we can swiftly connect enterprise data with an infinite number of information sources that are already present on the Internet, but are invisible without the appropriate tools for discovery. The next step is to validate the quality of data sources, thus creating intelligent correlations which, in turn, generate new information relevant to the context and instantly usable in real time on different devices with very little human intervention. This latest generation of applications represents new content that can be redistributed and transmitted globally. or selectively if sensitive and relevant only to certain types of user.

This can all be done in a matter of days, rather than months, disrupting the traditional approach based on analysis, feasibility studies and developments with uncertain outcomes.

Engineering's "Digital Enablers" platforms are effective and "agile" digital accelerators for business. They even enhance the potential and value of proprietary vertical solutions seen as closed systems, by offering integration prospects based on open APIs – something that would have been unthinkable with a traditional approach.

In addition, these platforms include all the key tools we have defined as "enabling technologies" or digital accelerators, i.e. Al algorithm libraries, connectors for the integration of IoT devices, mash-up tools for data, mock-ups and rapid applications development, all orchestrated within a single platform. This brings enormous benefits for users, especially when introducing new methodologies, maintaining the focus on opportunities, expectations and results, rather than on individual technology tools.



CONCLUSION



The knock-on effects are surprising. In many cases, the problem that organisations face after experiencing at first hand the various features and options is how to manage innovation by inverting the image, refocusing on the governance of the process, which thus becomes a primary business process through discovery, pipeline management and prioritisation.

This approach also gives rise to the need to train new professionals capable of developing specific expertise relating to interaction on open ecosystems, with cross-cutting skills in innovative disciplines and a "creative" vision of new contexts and scenarios. With these skills, and by creating the right synergy from the interaction between professionals specialising in different areas, it is truly possible to create an environment conducive to the development of innovative digital solutions.

This is more than just an ideal scenario for us: Engineering is investing in training through the IT and Management School which the company founded in 2000. The school is nurturing future generations, preparing them for tomorrow's world and providing a valuable input for internal cross-fertilisation. This is because before we can "teach" Digital Transformation courses, we want to have the best minds and experts in this phenomenon.

Despite the key role played by technology, we see digital transformation as a people-centric phenomenon: human beings, who with their new skills and vision are the engine for change within the company, and who are at the same time the beneficiaries of that change.

Indeed, the digital transformation will revolutionise the interaction between humans and technology, optimising everyday tasks through increasingly intelligent tools that study us, understand our needs and interact directly with us.



We enable a "user centric" view of data, transforming vertical silos into digital ecosystems.

Lanfranco Marasso

Smart City Program Directot, Engineering



Engineering works alongside organisations that seek to embrace change, contributing ideas, people and solutions (as well as a deep knowledge of processes) to enable each organisation to embark on its own secure and sustainable path towards Digital Transformation, a world where one's presence is not optional and where having a unique and recognisable profile is the challenge we must win.

40 Mil€

Investments

450+

Data Scientists & Researchers

100+

Live Research Projects

25.000

Training days by our Academy

20+

Companies within the Group

11+

Cross-BU Competence Centres 3

Data Centers

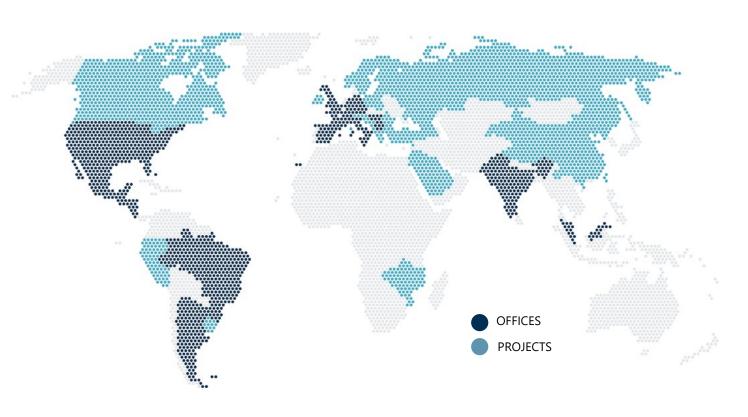
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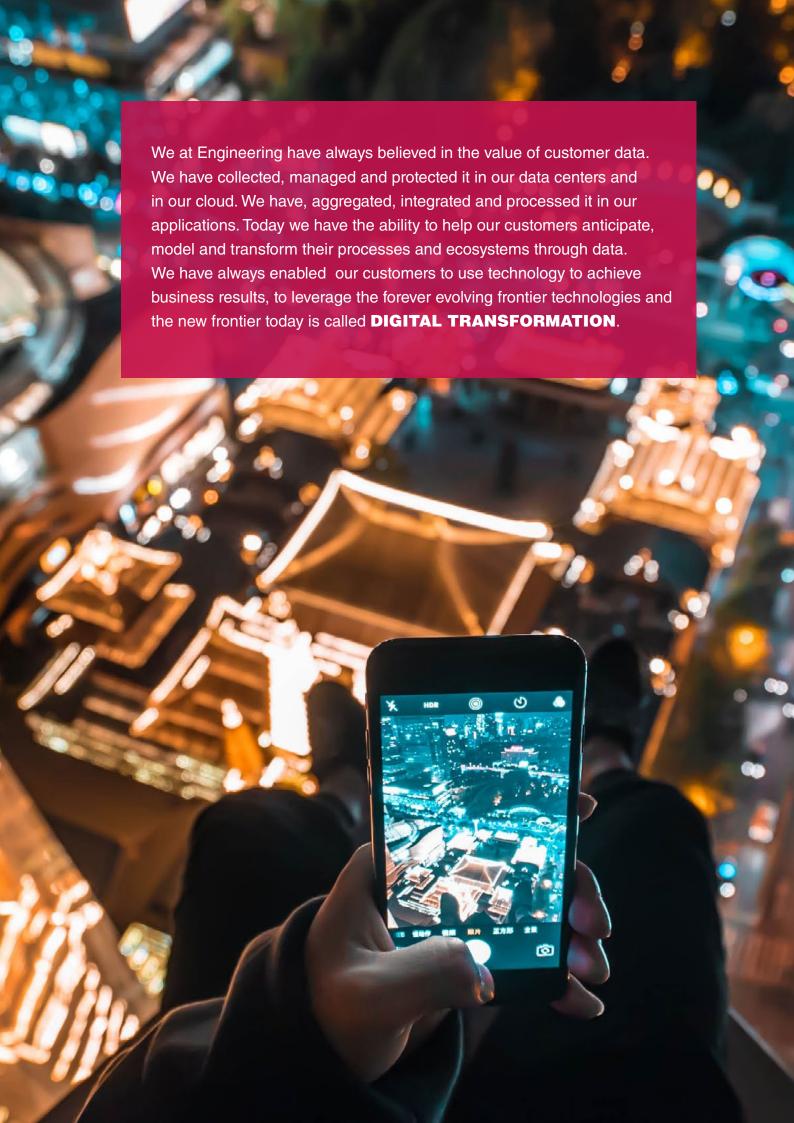
Servers managed

250,000

Workplaces managed

Tier IVCertification





ENABLING TECHNOLOGIES



Cloud

We build reliable, safe and scalable IT infrastructures that allow customers to support both traditional and new generation applications, collecting and managing, in total security, large amounts of data, thus developing their Cloud strategy, fundamental in the era of digital transformation.



XR (AR / VR / MR)

We make the real world and the digital world interact by creating new AR/VR/MR experiences and applications closely aligned to our customers' business processes, enabling them to fully exploit the digitally-enabled benefits of Augmented, Virtual and Mixed Reality.



Robot Process Automation

We leverage RPA solutions (or Advanced Process Automation) to free up economic, physical and human resources from working basic skill activities, enabling organisations to redirect resources towards value added domains thus enhancing the human dimension of work, improving final user satisfaction and optimizing the organization's performance.



IOT

We digitise our world by giving objects and space (as well as living beings) a digital voice, creating value from data, enabling better decision-making processes through real-time monitoring.



AI & Advanced Analytics

We digitise our world by giving objects and space (as well as living beings) a digital voice, creating value from data, enabling better decision-making processes through real-time monitoring.



Blockchain

We have created our own research lab called "HyperLab", allowing our customers to co-create innovative uses of this technology which guarantees a single point of truth, data integrity and accountability.



Cybersecurity

We ensure the security and protection of all organisational assets, including data, servers and data centres, by employing the best data security practices, methodologies and professional competencies.



Digital Twin

We allow our customers to create a digital copy of their businesses, enabling them to model them and run simulations before applying decisions to the real world, reducing risk, improving speed and quality of decision-making processes.

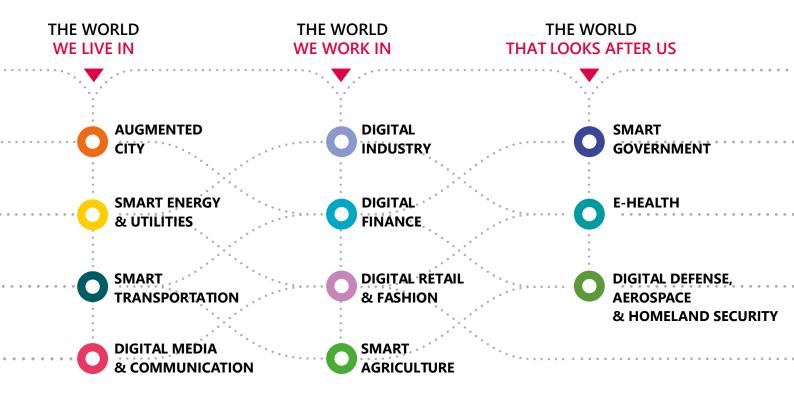
ENGINEERING

Engineering Group is the Digital Transformation Company, leader in Italy and expanding its global footprint, with around 12,000 associates and with over 60 offices.

The Engineering Group, consisting of over 20 companies in 12 countries, has been supporting the continuous evolution of companies and organizations for more than 40 years, thanks to a deep understanding of business processes in all market segments, fully leveraging the opportunities offered by advanced digital technologies and proprietary solutions.

It integrates best-of-breed market solutions, managed services, and continues to expand its expertise through M&As and partnerships with leading technology players. The Group strongly invests both in innovation, through its R&I division, and in human capital, with the internal IT & Management Academy. Engineering is a key player in the creation of digital ecosystems that bridge the gap between different markets, while developing composable solutions that ultimately foster a continuous Business transformation.

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