

# ENGINEERING INNOVATION

Delivering the power of  
Innovation triggered by ideas.



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# AUTHORS



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Chief Innovation Officer, Engineering

With over 25 years of experience in Innovation and Digital Transformation fields (including Research and Management Consulting positions) Massimo currently leads an internal team of over 200 innovators, used to spread innovation, to gather needs from all levels of the organization and to bring innovation activities to the market. Massimo is also a University and EMBA Professor, a public speaker and is an international selected expert for Innovation Management at ISO level.

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R&D Director, Engineering

Dario has spent over 30 years working in Engineering's R&D department, 20 of these as its Director. His mission has always been to further develop research whilst driving innovation into the Business. He has held significant international positions on relevant research initiatives, actively contributing to the research development of emerging ICT opportunities and trends.

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## Claudio Passadori

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In the IT world, more than any other sector, Innovation really consists of “giving shape to matter”, just like sculptors do with a piece of marble. The Evolution of technology, continuously provides an abundance of “raw material”, and innovators are called to use them to create solutions (Giving shape) that will improve both business processes and quality of life.

**Orazio Viele**

Group CTO and head of Research & Innovation, Engineering

1

**TO INNOVATE**





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Innovation is the process that creates value from ideas. There is no innovation if, at the end of the process, it does not generate concrete and tangible value for all the stakeholders involved in the process. This is why the end goal of our approach to innovation is the creation of value for our customer and consequently for the end customer, the real beneficiary of the added value we help to produce.

**Massimo Canducci**

Chief Innovation Officer, Engineering



When we talk about the “end customer”, we are actually describing ourselves: not only as consumers and customers of companies that sell products and services to the public, but also as citizens who have to interact in the best possible way with those involved in public administration.

End customers are not interested in the technology buzzwords behind production or distribution chains and government processes: they are interested in receiving a high-quality product at the right price as well as efficient and secure public services.

Technology buzzwords such as Industry 4.0, e-Government, e-Health, Blockchain, Artificial Intelligence, Big Data and IoT, which are often perceived as being linked to the concept of innovation, risk becoming meaningless if we fail to give them substance. We must also recognise that these issues affect us on a daily basis, in our professional and personal lives, in social interaction and in our dealings with public administration.

These terms represent entire technology universes, expertise and professionalism, as well as having the real potential to transform our lives; a potential that must be channelled and managed using skills and experience to make it worthwhile and prevent it from being squandered. Indeed, the value created at the end of the innovation process is not only financial – which is important – but it also influences other, typical areas of sustainability such as: social and environmental aspects.

# 2

## THE TRUE VALUE OF INNOVATION





Innovation is one of the most fascinating and hotly debated subjects of our time. It is often associated with positive concepts such as economic growth, social well-being, environmental sustainability and the kinds of good ideas that result in products and services that improve our everyday life, how we work and how we interact with people. It is a process that creates value from ideas.

For Engineering, innovation means precisely this: value creation for our customers, citizens and the world we live in.

The value we create is **to provide tools** that streamline government procedures and, wherever possible, to help citizens – as stakeholders in the process – resolve their problems without fuss.

**We support** large companies in their innovation processes – whether for a new product, process or business – so they can be increasingly more competitive in their target market and maintain their workforce, thereby safeguarding jobs.

**We design** complete IT systems that reduce waiting times in A&E or for specialist appointments, thus benefiting the public.



The value we create is **to propose, design, implement and market** tools that give citizens direct access to information or services, without actually having to go into a branch. Central to the process is data, rather than software. Data must be used to benefit people, not bureaucratic processes.

**We design and implement** digital platforms that move money securely and in compliance with international laws.

**We develop** billing solutions that are increasingly efficient, transparent and compliant with ever-changing regulations. We also provide completely secure and transparent solutions for purchasing travel tickets for trains, aeroplanes and ships electronically, through all available platforms, via PC, tablet and smartphone.

The value we create is to **improve the quality of life** of the elderly, providing them with automatic alarm devices that alert family members in the event of a fall or potential risk situation, monitoring vital signs and maintaining contact with family members and medical professionals

**We design and develop innovative technologies** to improve visitor experience at museums and national art galleries, an amazing resource which should be more widely used.

The Value of what we produce is **to allow disabled people to have access** to Government Platforms and Systems, on one side by helping define the international technical norms that regulate these disciplines, on the other by providing specialized consultants and an end to end methodology-based approach to processes and services.

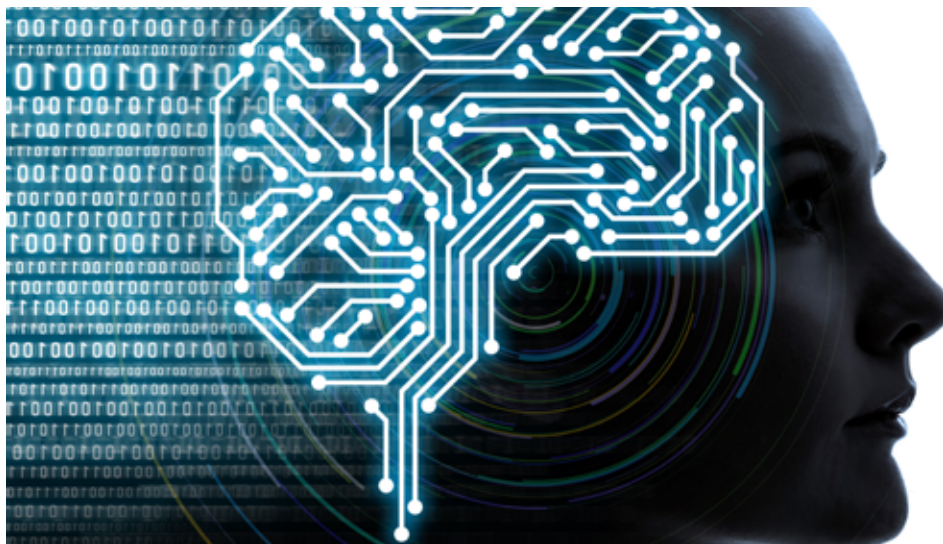
**We make** industrial production lines **more efficient** by incorporating analysis tools that can predict when equipment might fail, thereby reducing line stoppages and optimising production.



The value we create is **to reduce the number of workplace accidents**, by providing tools to optimise safety in potentially hazardous situations, thereby reducing critical incidents and saving taxpayer's money.

**We develop** field applications for the analysis and maintenance of overhead and underground cables, with the aim of facilitating the work of the employees concerned and minimising the risks associated with aerial work.

**We rethink** our customers' innovation processes, introducing new methodologies to support the various business lines and making innovation a systemic process embedded in the organisation's DNA.



The value we create is **to launch, establish and cultivate** strategic alliances and partnerships, working with Open Innovation to define new, more efficient methods that enable us to deliver effective and complete industrial innovation.

**We contribute** our experience to help draft national laws and international standards, with a view to improving them and making them more relevant and effective.

**We support** the training efforts of our most forward-looking customers, who recognise that they know a lot about their market, but a good deal less about future technology and innovation management methods.

**We train** young university students, transferring the know-how necessary to support the most experienced professionals in industrial innovation projects.

# 3

## **OUR APPROACH TO INNOVATION**



Engineering defines Innovation as the process by which we improve our clients business, citizen's quality of life and in general the world we live in. To make this happen we leverage our own methodology-based approach of Exploring, Managing and Offering new Digital Technologies and Paradigms.

Engineering's innovation approach is based on three key pillars: **research**, **innovation management** and **the offering**. Together these form a comprehensive process that can intercept new methods and technologies well in advance.

We apply these to our customers' business processes, creating value through the resulting transformation, delivering production efficiencies, improving the quality of processes and enhancing the user experience for the end customer.



# RESEARCH

**Research** is the first, fundamental step of this process. As a result of this, and with the help of many solid and highly skilled international partners, we can explore, in advance of their future industrial positioning, the innovative methodologies and emerging technologies that represent the technological solutions of tomorrow. Pre-empting these solutions not only means bringing them to the market more quickly, but more importantly, identifying which technologies will have a place in industry in the future, deciding on the correct time to market and embedding them within the most comprehensive technological ecosystems and digital platforms.



For a company like Engineering, investing in R&D means targeting continuous improvement by empowering the organisation to support and increase its competitive capacity and to fulfil the needs of a fluid, rapidly changing market.

By keeping abreast of the trends and priorities outlined in innovation roadmaps, at both EU and national level, the Engineering R&D laboratory is able to monitor emerging issues that are potentially of interest to the market. This enables us to develop innovative skills and solutions so that we can continue responding to and addressing new market challenges.

The Group currently invests around

**40 Mil €**

in research  
each year

**420**

researchers and  
data scientists

**80+**

ongoing research  
projects

**7**

development  
laboratories

Engineering is now one of the most active international research firms in Europe, attracting funding from various research programmes at a national and European level and achieving steady growth and results.



Engineering's strategic role within the software research community in Europe is also evidenced by its active participation in international initiatives designed to stimulate and promote innovation in different areas.

Engineering is: a core partner of EIT Digital (European Institute of Innovation & Technology), founder of the Big Data Value Association, member of EOS (European Organisation for Security), partner of ECSO (European Cyber Security Organisation), founder of the NESSI (Networked European Software and Service Initiative), partner of AIOTI (Alliance for the Internet of Things), and member of IDSA (Industrial Data Space Association).

Engineering, together with other leading European companies in the ICT sector, is a founding partner of the FIWARE Foundation, a non-profit legal entity set up to promote and

develop the FIWARE platform and expand its support community. The collective path undertaken with the FIWARE initiative is aimed at creating an open-source community which promotes and supports the development of open solutions for Smart Cities, Industry 4.0 and precision agriculture. The FIWARE community specifically seeks to integrate IoT, Cloud and Big Data technology, with the support of Open Data policies, to create the best conditions for the development of the digital economy.



Engineering's R&D laboratory has a dual role in the promotion of software research internationally and in the technology and methodology transfer to other actors in the cross-fertilisation ecosystem by sharing impacts and sustainability issues.

The laboratory is involved in activities such as research, open innovation and the study of fast-growing technologies set to become part of the Group's innovation offering.

These activities provide the ecosystem with accelerators, pilots and new products and services, facilitating technology and skills transfer to the rest of the organisation.

Engineering's research activities are focused mainly on these topics:

- Secure Societies: to make the world we live in safer.
- Public Services and Smart Cities: to build people-oriented cities.
- Health Systems: to improve healthcare systems as well as people's health.
- Smart Energy and Utilities: to increasingly utilize environmentally friendly energy.
- Industry 4.0 and Smart Manufacturing: to make industrial processes more efficient.
- Social Software and Smart Communities: to enable new ways of smart working.
- Smart Tourism and Culture: to preserve and give value to cultural assets and heritage.
- Smart Agriculture: to improve all agri-food processes and monitor the whole of the distribution chain.
- Smart Transportation and Infrastructure: To improve the efficiency and security of transportation and infrastructures.
- Digital Media: to improve digital communication and make it more efficient.
- Cloud, Big Data and Edge Computing: to create new and evolved IT architectures.



# INNOVATION MANAGEMENT

Innovative technology solutions, be they derived from industrial research or from new products or services that come to market, must be correctly incorporated within an **innovation management process** capable of using them as valid tools to leverage companies' business processes and create real value.

At Engineering, this stage entails a fully-fledged cross-fertilisation ecosystem, involving not only the best innovators within the organisation, but universities, research centres, start-ups, SMEs and industrial partners, all stakeholders who contribute with a view to forging and implementing first-class innovation initiatives.



# 200+

## innovators

**At the ecosystem's core is a network of more than 200 innovators, selected from within all Group companies and business units.**

At Engineering, value creation through technology and business issues is achieved through the use of innovation management processes. This is entrusted to a complex cross-fertilisation ecosystem tasked with transforming methodologies and technologies into value for our client and the end customer.

These are vertical specialists who work daily on frontier technology and methodology issues: from cloud computing to digital security, tackling the most innovative data-related topics (from big data to open data), to the Internet of

Things and the billions of objects around us that are increasingly connected, from physical and process robotics to artificial intelligence, deep learning and machine learning, from virtual, augmented and mixed reality to the industrial applications of distributed ledger and blockchain technology, and the development of end-to-end digital platforms that can enable new types of services.



This innovators network has the task of continually developing innovative technology solutions and making them available to the Group's markets and companies, ensuring that the innovation experience with one customer can be replicated not only for that particular segment, but for other markets, thereby potentially creating value for the Group's other customers.

**Massimo Canducci**

Chief Innovation Officer, Engineering

This is achieved by pooling not only high-profile technology experiences, but the methodological know-how with which we design the solution together with the customer. This often entails a thorough **co-design process** involving the latest idea generation, creativity, innovation management, system thinking and design thinking techniques.

The cross-fertilisation ecosystem includes numerous Italian and European universities, research centres and international consortia, Italian and European incubators and accelerators, a whole portfolio of start-ups, SMEs and a host of industrial partners that share Engineering's approach to innovation and the ability to contribute to the design and implementation of truly innovative solutions.

We actively participate in institutional, national and international panels and working groups on a wide range of frontier topics, both technical and methodological, such as artificial intelligence, distributed ledger technologies, open source, the internet of things and innovation management, thus contributing to the creation and improvement at a global level of those very technologies that are the building blocks of our innovation offering.



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The correct approach to innovation consists of redesigning processes together with the customer, taking into account all the methodologies and technologies currently available and those that will be available in the future, identifying different levels of maturity so as to have better, cheaper and more efficient business processes that add value to the organization.

**Massimo Canducci**

Chief Innovation Officer, Engineering



## OFFERING

Innovation initiatives that are research prototypes or created by the cross-fertilisation ecosystem are made available to the company and included within a portfolio of solutions offered to customers, alongside the group's traditional range of products and services.

It is therefore a particularly valuable **offering** to bring to market, given how these innovation initiatives are created, managed and nurtured, the high value added they represent in terms of business and technology, and the goals they pursue.

The starting point is not technology as an end in itself, with the aim of identifying an industrial application for this, nor is it an attempt to digitalise processes simply by applying a new technology to them.



The cross-fertilisation ecosystem, in its various forms, yields numerous innovation initiatives that, over time, are made available to the entire company and feature in a comprehensive portfolio offered to customers, together with the Group's traditional range of products and services.

Every technology – and therefore every innovation initiative – is incorporated within a structured, comprehensive maturity model which demonstrates its effective application over time from a technology, market, business and employee awareness point of view. This ensures that the market release and consequently the offering to our customers can be perfectly timed.

This is particularly important since the offering of innovation initiatives must be consistent and maintain synergy with the Group's traditional products and services. These innovation initiatives must also fulfil the customer's business needs, which are traditionally influenced by the correct time to market.

At the same time, we can anticipate within our portfolio, and regulated by our maturity models, frontier innovation initiatives which the market may not yet be ready for, but which will be decisive for our customers' business in the future.



ENGINEERING  
INNOVATION

4

**LET'S BUILD  
THE FUTURE  
TOGETHER**

We are an integral part of our customers' business services ecosystem. This has always been our unique selling proposition. To achieve this, we immerse ourselves in the frontier technologies and methodologies of the future. We commit numerous resources to developing these, working alongside the best international partners not only on the technological aspects, but also and above all on the methodological, business and design aspects of innovative, technology-enabled services.

Through cross-fertilisation ecosystems, we are able to share the best real-world applications of frontier technologies across all markets, creating digital platforms which enable digital transformation. Digital transformation is an integral part of our DNA, based on our vast experience in designing, implementing and managing the entire innovation process.

We work hand in hand with our customer, building synergy and pooling our resources in a partnership that delivers outstanding results in designing new digital services or redesigning existing services.

This is much more than simply designing an IT solution to solve a problem: it is true co-design, a structured methodological process which, through targeted events, dedicated workshops, simulations and immersive experiences, generates ideas and more importantly tells us the right questions – in other words, those we should be asking when designing innovation processes. This in turn provides the answers on how best to redesign processes and harness the best innovation technology applicable to that particular context.

To Achieve this, we work, with our clients, with a wide range of tools and methodologies that, within dedicated moments used to encourage creativity and innovation, enable us to deep dive into all aspects of technology and methodology, never forgetting that our end goal remains the improvement of our client's business. Through Idea Generation techniques we are able to gather a great quantity of ideas that will then be selected, by dedicated methodologies, with the objective to hone in on those that are best suited to solve a problem, harmonize a process and optimize a business model. All of this through a joint and co-designed innovation path.

Being a partner is crucial: this enables us to get the most out of all the stakeholders involved and to ensure that the innovation initiatives are a success, delivering value for our customer and, as a direct consequence, to the end customer and citizen. In all this, we strive to leave the world a better place than when we found it.

**420**

Researchers and  
data scientists

**80+**

International research

**7**

laboratories

**200+**

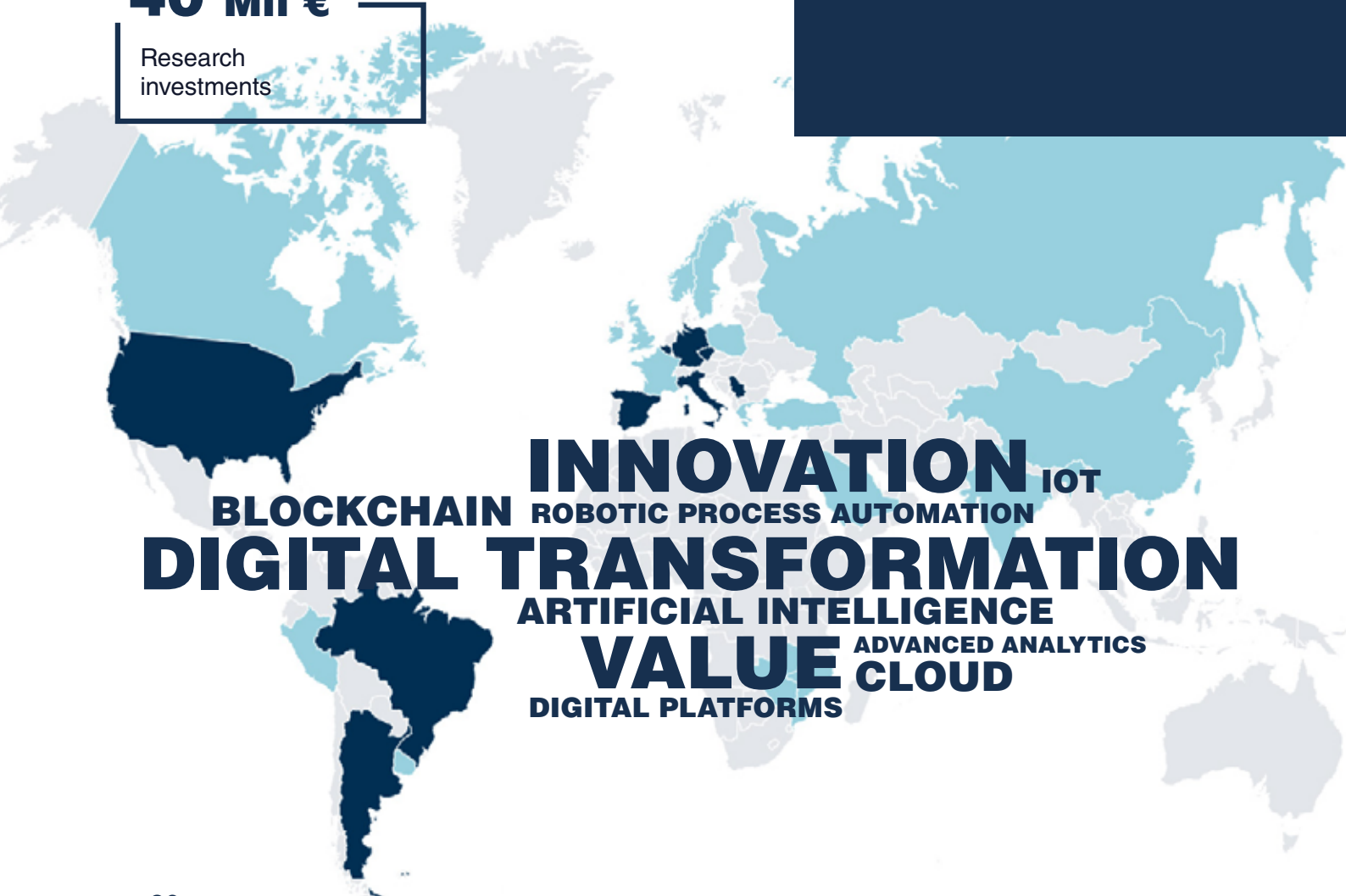
innovators

**40 Mil €**

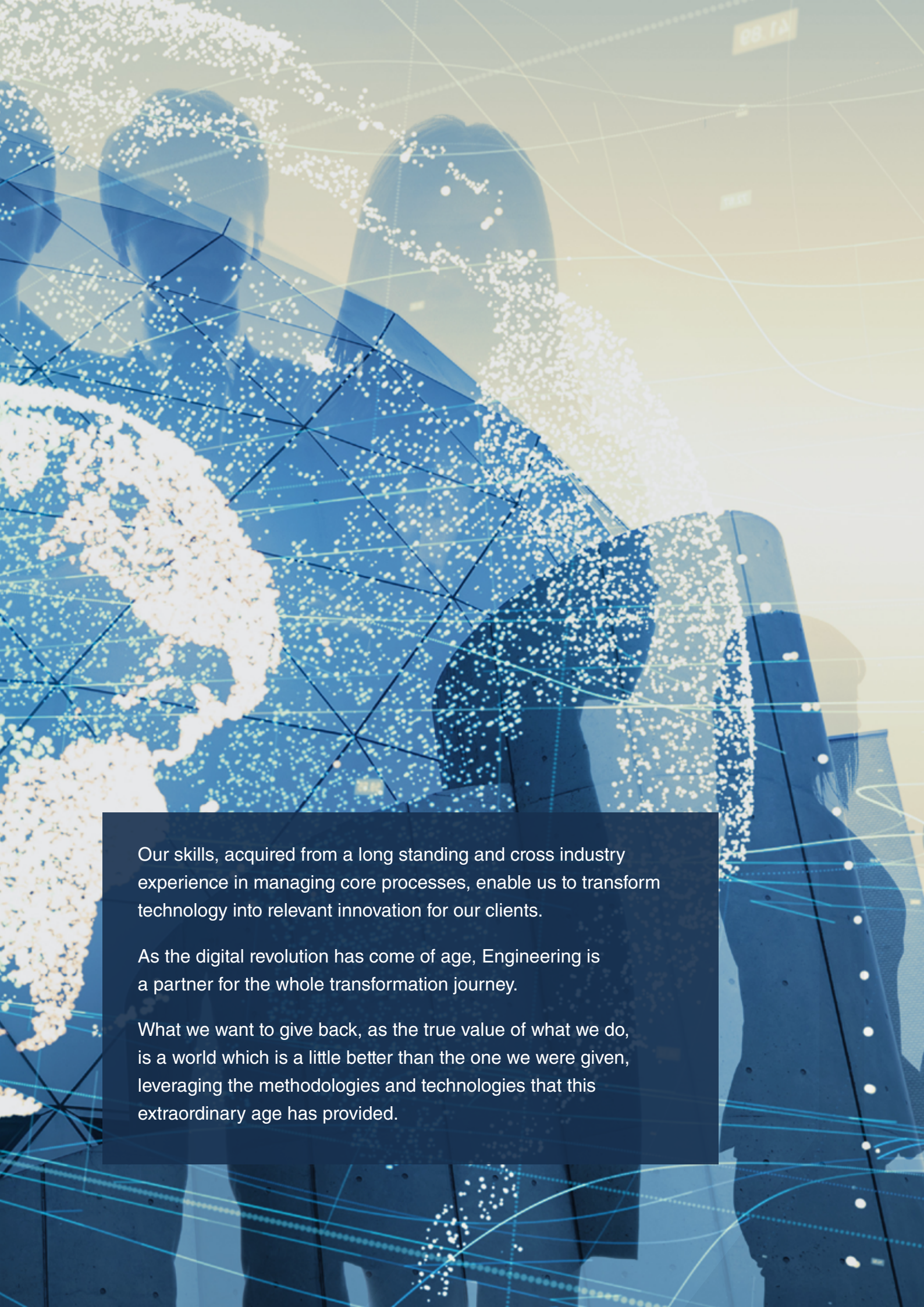
Research  
investments

**Established  
methodology  
based on three  
pillars:**

**Research  
Management  
Offering**



**INNOVATION** IOT  
BLOCKCHAIN ROBOTIC PROCESS AUTOMATION  
**DIGITAL TRANSFORMATION**  
ARTIFICIAL INTELLIGENCE  
**VALUE** ADVANCED ANALYTICS  
DIGITAL PLATFORMS CLOUD



Our skills, acquired from a long standing and cross industry experience in managing core processes, enable us to transform technology into relevant innovation for our clients.

As the digital revolution has come of age, Engineering is a partner for the whole transformation journey.

What we want to give back, as the true value of what we do, is a world which is a little better than the one we were given, leveraging the methodologies and technologies that this extraordinary age has provided.

# ENGINEERING

Engineering is one of the main players in the field of Digital Transformation of public and private companies and organizations, offering an innovative range of platforms for the main market segments.

With around 11,000 professionals in 65 locations (Italy, Belgium, Germany, Norway, Republic of Serbia, Spain, Sweden, Switzerland, Argentina, Brazil and the USA), the Engineering Group designs, develops and manages innovative solutions for the business areas where digitalization is having the biggest impact, including Digital Finance, Smart Government & E-Health, Augmented City, Digital Industry, Smart Energy & Utilities, Digital Telco & Multimedia.

Through its activities, the Group contributes to modernizing the world in which we live and work, combining specialist competences in next-generation technologies, technological infrastructures organized in a single hybrid multicloud and the capability to interpret new business models.

With significant investments in R&D, Engineering plays a leading role in research, by coordinating national and international projects thanks to its team of 420 researchers and data scientists and a network of academic partners and universities throughout Europe. One of the group's key strategic assets is its employees' know-how, to whose training it has dedicated a multidisciplinary School which has provided more than 21,000 days of training during the last year.

[www.eng.it/en](http://www.eng.it/en)





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