OUR POST-COVID VIEW ON E-HEALTH

An Appendix to Engineering The New Normal.





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Healthcare was the area most affected by the Covid-19 emergency: a transversal impact that required support for unexpected volumes of patients and the reorganisation, in almost real time, of most services. Doctors, nurses, service staff, central and local institutions committed to saving lives, to **reorganising systems, tools and behaviours, all with the common aim of fighting the pandemic**. They were our heroes and the whole community came together to support them.

The close collaboration between Healthcare and the Institutions, the new individual and public hygiene procedures, as well as behavioural restrictions – as social distancing, in primis - have been a determining factor for containing the pandemic and for the consequent stabilisation required to plan the restarting of our activities and to define the so-called <u>New Normal</u>. We have to listen to what the world communicates back to us following this unprecedented experience, we have to learn from the mistakes and to heal, to build a different normality that can keep the virus under control and can also re-programme and facilitate a real economic and social recovery.

The emergency has led to the acute acceleration and transformation of tools, areas and services, changing the existing rules and priorities in only a few weeks. Technology has been the window on the world which has allowed us to move forward and to stay in touch with people, services and with our surroundings in general. This transformation towards the digital world was driven by data – primarily health-related data – which has determined and will continue to determine the choices concerning the methods and timing for returning to our normal everyday lives.

New organisational and information needs have emerged within this context, with evolutionary interventions on applications and the development of new solutions, particularly on the data analysis front. The population's involvement and greater integration between all the various healthcare services available across the territory will play an equally important role.



OUR VISION OF THE MARKET

The digital realm has played an important role during Phase 1, albeit with a potential that is yet to be fully understood and realised. In fact, an IT maturity has emerged in relation to supporting the more traditional and vertical operational processes, although it is limited in terms of Data Governance, particularly that transversal to the entire emergency. On the privacy side, **a new balance between the protection of personal data and its use for public health** needs became necessary, while the use of remote care and of all the various technological tools capable of supporting medical services across the territory was, unfortunately, limited.

Healthcare facilities are now starting to "breathe" again and to have some time at their disposal to take in and analyse what has happened and the responses that have been given in terms of service and organisation. The virus has not yet been defeated and healthcare facilities must continue to operate in a state of attention.

What has happened over these past few months has further highlighted the **indispensability of the Digital Transformation** in the healthcare sector, a transformation that must be implemented in a structural and pervasive way in all areas of prevention, treatment, assistance and government.

In fact, only with such a specialized and widespread approach it is possible to consolidate an information capital that is suitable to satisfy the "information intensity" required by the new healthcare; be it to implement the new models of assistance and care, or to support clinicians in the diagnosis and choice of care, as well as to promptly manage health emergencies. In other words, make ensure that in every area, all the players of the Health System can easily have all the information useful to "take care" of the patient, that is, extracting "value from the data".



PORTFOLIO MAP E-Health

OUR POSITIONING AND SOLUTIONS

Engineering has built up a widespread presence in the healthcare sector over time. We were, in fact, immediately involved in supporting the needs of this sector, innovating and creating new tools for monitoring the pandemic, for connecting services across the territory and for gradually helping institutions return to a new normality decidedly different from the one they knew before. A new normality that we are already building today, thanks to our ability to imagine, design and innovate. This, in order to **redesign – with the indispensable ethical sense and responsibility that this area requires – today's and tomorrow's healthcare**: improving patient care, the quality of work of professionals and the overall sustainability of healthcare systems.

"Data" served as a key ally during the first phase of the pandemic. The immediate adoption of digital platforms capable of providing a real-time general view of the evolution of the epidemic and carrying out epidemiological simulations, allowed the institutions' task force to make the most correct and timely decisions in relation to containment measures. General practitioners, moreover, have been able to have a view of their patients, healthcare professionals to obtain clear indications, including geo-referenced indications to carry out molecular (so-called swabs) and serological tests, as well as to re-aggregate information in order to organise professionals and tools in a different manner and to monitor clusters at risk.



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Today, along these lines - but not just these - our focus is on implementing all the new and specific expertise gained in the field in recent months: consolidating it with our enabling technologies, in line with the ongoing reorientation of our application offer for the Healthcare sector, which is increasingly targeted towards digital health ecosystems targeted on data governance, specialisation and "full **digitisation**". In particular:

- Advanced Analytics, Big Data and Artificial Intelligence for clinical decisions, bio-surveillance, health governance and research
- Telehealth for remote assistance and care
- IoT for the acquisition of patients' clinical data and the behavioural data of the community
- Cyber Security and Privacy Management for the protection and use of personal data .
- Digital Collaboration for facilitating teamwork between professionals and specialisations
- Mobile Health for the inclusion of patients and caregivers in prevention, surveillance and treatment plans
- Risk Management Tools, for the reduction of clinical and biological risks
- Real-Time Analytics to measure clinical outcomes, resources used, etc.

First Steps in a Post Covid World



We outline below the first steps that can help us manage these areas and overcome the Covid-19 crisis. These steps will become the foundation for a renewal strategy that can guide us beyond the emergency and towards the so-called New Normal.

Ensure operational continuity, and evolve continuity of care

The challenge

Protect Productivity

To enable healthcare facilities to quickly implement new methods of treatment and care for emergency and non-emergency health needs, through new tools for care paths, clinical activities and collaboration even remote – for professionals.

Our offer

From the very onset of this emergency, we intervened to support customers with our expertise and solutions, ensuring the operational continuity of healthcare facilities. In the post-emergency phase, these and further solutions represent specialized tools to combine the continuity of services provided to the community with the continuity of assistance to people:

- ellipse: our new platform designed specifically for clinical-assistance activities. During services, optimising the use of available resources and limiting physical contact with healthcare facilities.
- reporting) for example, to work remotely.
- solutions.
- Change Management programmes designed to accompany healthcare organisations processes.
- operating in the field (transport, home care, etc.).
- Safe Eye: our solution, based on Artificial Intelligence, which makes it possible to monitor hospitalisation facilities).

Strengthened by the evolution of the ellipse platform (but not only), we will further extend the capabilities of active coaching to clinical activities and activation of Telehealth services, natively designed for the Digital Collaboration of healthcare professionals, patients and their caregivers.

this phase, ellipse enables operators to rapidly activate tele-assistance and tele-diagnosis

AREAS: our consolidated application platform for all healthcare-related processes, which enables administrative, as well as healthcare staff working in diagnostics (remote medical

Digital Workplace and remote collaboration tools, both readily available on the market (Microsoft Office 365) and proprietary products developed by us through the adoption of secure (LiveBox) and open source technologies, to enable innovative and effective working

towards New Normal, through methods and tools that redesign clinical and administrative

Smart Proximity: our integrated platform designed to monitor and predict the risk behaviour of staff, providing operators who exceed safety distances with real-time warning messages. The tool finds application with operators within healthcare facilities, as well as with those

and manage social distancing between people, also applicable in healthcare settings (e.g.

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Focus the work of professionals on care activities and on those with greater added value

The challenge

Freeing valuable professional healthcare resources from operations with little added value, both in the clinical-care and administrative fields, thus increasing the efficiency process even more indispensable in the emergency and post-emergency phases

Our offer

Being very much aware of the strategic nature of this type of intervention in the healthcare sector, we had already oriented our solutions in this direction in previous years, allowing our customers to automate and evolve clinical and administrative processes, at the same time also introducing Real-Time Analytics tools for managing the company resources used and available.

Our offer in this context centres on our healthcare platforms, which we are further evolving through our enabling technologies. With AREAS, for example, we automate the work carried out by analysis laboratories in the sample processing and reporting phases, making them faster and safer; we offer the same capabilities on the accounting-financial management, logistics and human resources fronts, for which we introduce Robotic Process Automation technologies to enable the automation of the most repetitive administrative tasks. With ellipse we are progressively focusing this efficiency also in the clinical and care setting, providing "digital assistants" not only to support care decisions, but also for the more repetitive administrative operations performed by doctors and nurses.



Manage Complexity

The challenge

Support healthcare organizations towards an increasingly oriented government action on the "predictive" (and prevention) dimension and away from the "reactive" one. This paradigm shift can only be implemented through a real "centrality and valorisation of data", which cannot prescind from the structural use of Data Integration platforms supplied by heterogeneous data sources and the adoption of Advanced Analytics tools.

Our offer

We have a wide portfolio of expertise and solutions for Data Integration & Analysis, both transversal (cross market) and specific for the Healthcare sector:

- specific pathologies).
- side to the clinical-care side
- efficiently manage the emergency.
- the development of Data Analysis strategies, models and platforms.

We are also introducing Real-Time & Advanced Analytics capabilities within the ellipse platform to quickly and proactively support individual clinical and management decisions.

Forecast and govern healthcare demand through Data Governance

 Digital Enabler: our platform, which enables companies to integrate, harmonise, and analyse data from different sources, with areas of application that can range from more strategic healthcare governance (e.g. Population Health Management) to more vertical processes (e.g.

Knowage: our Open Source suite for Business Analytics for a more complex and in-depth analysis, which can be applied in all healthcare areas, from the administrative-management

Eng-DE4Bios: our bio-surveillance solution that provides a tool for controlling the evolution of the epidemic. During the Covid-19 emergency, this tool allowed the Veneto Region to

Change Management programmes to support and guide healthcare organisations towards



Ensure the operational continuity of healthcare facilities and the protection of patient-citizens' personal data

The challenge

To secure the entire technological capability of healthcare organisations, together with their sensitive individual data assets, intervening from the single system to the entire infrastructure to support healthcare processes, including those carried out remotely, in Smart Working mode, or with the direct involvement of the patient. The healthcare sector is one of the sectors that has been experiencing an increasing number of cyber attacks in recent years, putting current services and the development of future innovation paths at risk.

Our offer

We guarantee a comprehensive coverage of business processes, thanks to our extensive knowledge of security management methodologies and policies necessary to face threats and manage vulnerabilities. From a technological point of view, we offer IT security services for applications, systems and services managed through platforms and technologies that enable the prompt detection of cyber threats and the activation of effective responses. Thanks to the integration of these transversal resources offered by Cybertech, a Group company specialised in Cybersecurity Services, with vertical skills in healthcare processes and models, we offer a set of services that meet the specific requirements of this area.

The issue of Cybersecurity naturally intersects that of privacy, which finds an equally natural amplification in the health data domain. In this regard, we provide a set of specific skills for the healthcare sector, oriented in particular towards a "by-design & by-default" approach, which we also implement from the application point of view with our Privacy Manager solution, specially designed for healthcare organisations.



Grow Business

especially those related to care and treatment

The challenge

The individual care decisions and the more strategic health governance decisions are increasingly united by the high "information intensity" on which they pivot, which can be satisfied only through clinical and management tools focused on the governance and enhancement of data. This requires a digitalization that is transversal to all processes, so as to build - in an organic and complete way - the information asset of the individual patient. The latter is indispensable to feed the digital tools that in a specialized, integrated and proactive way must support the diagnosis, the care choices, the assistance activities and government decisions.

Our offer

With ellipse we offer, firstly, application solutions that are natively designed for the increasing intensity and specific nature of hospital care, the desired greater extensibility and centrality of out-ofhospital care, the necessary and urgent integration between hospitals and territory, needs that this pandemic has further emphasised. With ellipse we support current needs of healthcare organizations, progressively seizing further growth opportunities offered by digital, among which Advanced Analytics, Artificial Intelligence and Big Data.



Digitalize healthcare processes in a complete and specialized fashion,

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Adopt Telehealth and Digital Collaboration between healthcare professionals in a stable, integrated and personalized way

The challenge

Introducing Telehealth guickly and widely - in all its specific forms - into the pathways of prevention, diagnosis, treatment, care. This objective cannot be separated from interpreting this which is now a necessity, as an organic and personalized extension of the company information system, from a design, process and application point of view; thus avoiding single and isolated applications (and processes) only communicating with "their" devices that risk to further fragment the informative completeness and integration of the patient.

Our offer

We respond immediately to this urgent need, in particular with a view to hospital-territory integration further confirmed by this health emergency, with a "project" offer that we build and customize with:

- ellipse: our new platform designed to provide a series of modular components of a functional (e.g. a specific tele-medicine folder) and technological (e.g. dialogue with devices) nature, serving as "bricks" with which to extend the information system towards the Telehealth innovation. In order to take into account the scope and the design-based approach, we are also activating specific collaborations with other partners (e.g. suppliers of specific devices or connectivity solutions) always within a systemic perspective with respect to the corporate information system.
- Change Management, Process Redesign, Digital Services, UX Redesign: that is, with profound skills in healthcare processes and innovative ways of digital use by users, which allow us to accompany the customized design of assistance and care services with the appropriate "mix" between direct contact and remote mode.

Looking at the subsequent stages of the New Normal in the healthcare domain, we are evolving our offer drawing from some of the most innovative technologies that are already part of the Group's asset portfolio and which can be used in the Telehealth sector, including:

- Internet of Things, for an increasingly evolving dialogue based on the growing number (communication, wellness, home automation, etc.)
- focus on the introduction of 5G
- or to facilitate the Virtual Collaboration of healthcare teams.



of devices, whether specific for the medical domain or belonging to other personal areas

Mobile, to interpret this realm, or rather to reinterpret it, based on even more innovative and efficient approaches, both in experiential and technological terms, while also placing a strong

Augmented / Mixed / Virtual Reality, to increase the level of "immersion and interaction" with the patient (e.g. virtual environments for rehabilitation or overlays with the patient's data)



Explore and Evolve \bigcirc

The challenge

Accompanying healthcare organisations towards models that constantly support the healthcarerelated needs and well-being of the citizen, preventively assist the person throughout their life and going beyond the single "reactive" performance after the single event or need. The current approach requires the construction of real health ecosystems built really around the person, such as to make health care increasingly personalized, preventive, participatory, without neglecting the further central theme related to Healthcare System's sustainability.

Our offer

The interventions required for this radical shift can only be realized through a complete, highly specialized and increasingly clinical-data focused digitalization, which is able to collect information on patient-citizens and automatically feed treatment and governance processes, whether individual or community-related. Such a wide and systemic approach required deep competences, both transversal and vertical, that we provide in an integrated fashion, in particular:

- related processes, administrative management, digital citizenship, etc.
- of data-driven ecosystems.

Re-orient healthcare towards "taking care of", as well as treating patients

 Change Management, Process Redesign and Digital Services to implement new service models, designed by means of co-design initiatives involving all the relevant healthcare professionals and citizens. Specialised expertise gained in different areas: clinical and care-

• ellipse, Digital Enabler and Knowage, our platforms that ensure the concrete development

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BUILDING THE NEW NORMAL

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There's no doubt the world has changed. New values, new rhythms, new models. Everyone is wondering how to rebuild and what direction to take. It is a time when the answer has to be found by asking the right questions. Questioning the status quo. The rules of the game have changed and perhaps the game itself will change. How to combine the definition of core values to generate ideas, how to learn from other markets, or how to capitalise quickly on technological developments.

New Normal will speed up the use of data to create value: these recent months have shown the power of data transversality and how, around them, we can create quickly services and virtuous ecosystems. **The walls between one vertical and the other will increasingly be mental barriers**, we must then give life to new partnerships, designing and creating digital ecosystems based on technologies transversal and enabled by vertical services. These are the most important challenges to face. And we at Engineering have the strategic vision and operational capacity to accompany our customers in this challenging journey. Every day, we experiment and measure the potential for change of the new enabling technologies coming out on the innovation scene. But we also know how to do this gradually and strategically, in order **to ensure the harmonious and sustainable evolution** of the complex system of skills, processes, infrastructures and services of the organisational context in which we operate.

It is with this strategic ecosystem-based approach that today, we can partner with our stakeholders to build a New Normal that follows the paradigms of Digital Transformation: a path that starts with the restoration of specific business values and continues up to the recognition and involvement of the various networks of relationships and transactions that define the internal organisational system and that relate to it externally. Directly (customers, suppliers, partners, etc.) and indirectly (physical, social, economic, environmental, technological, cultural/educational system, etc.).

An intervention – the one we have adopted – that invests in innovation and not in technology: because first and foremost it focusses on the ability of the organisational body to react to the crisis, to face and resolve all the pre-existing rigidities on the supply and demand side, to then proceed to build, based on unexpressed potential and on the new value proposition, its very own specific and solid construction of the new New Normal business model.





WITH THE COLLABORATION OF:



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Our toolbox consists of:

- A Co-design Framework, for the generation of ideas focussed on the innovation and transformation of the business model and for the joint design of prototypes of "ecosystem"based solutions and platforms;
- Change Management and Maturity Assessment processes, to assess the strengths and areas for improvement of the organisational system and its positioning with respect to the business context in which it operates;
- A Multi-Industrial Experience, for sharing the experience, skills, processes and solutions that our Group has matured in the specific business chains and which become transversal when they intersect and can enhance or condition the customer's new innovation model;
- An Ecosystem View, designed to offer integrated and coherent services models that enable "user-centred" views (e.g. Digital Citizenship, Mobility).

There is no perfect solution for overcoming this crisis and building the so-called New Normal. But there is that sought-after ability to imagine, to create and to develop the open "peer production" solution based on a collaborative, synergistic and iterative approach: always able to give the best answers to the new innovation questions.

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ENGINEERING

Engineering is one of the main players in the field of Digital Transformation of public and private companies and organizations, offering an innovative offer targeted at the main market segments. Together with its subsidiaries, the Engineering Group is committed to pushing the envelope as regards the application of emerging technologies. It also works in the area of system implementation and integration and on redefining processes in order to promote innovation for the benefit of businesses and Public Administrations.

> With around 12,000 professionals in 65 locations spread across Italy, Belgium, Germany, Norway, Republic of Serbia, Spain, Sweden, Switzerland, Argentina, Brazil and the USA, Engineering manages projects in over 20 countries, supporting customers in the business areas where digitalization is having the biggest impact. Its products and services cover all strategic sectors, including Digital Finance, Smart Government & E-Health, Augmented Cities, Digital Industry, Smart Energy & Utilities, Digital Media & Communication. The group aims to help change the way in which the world lives and works, by combining technological infrastructures organized in a single hybrid multicloud, the capability to interpret new business models and specialist competences in all next-generation technologies: AI & Advanced Analytics, Cybersecurity, RPA, Digital Twin, IoT, Blockchain. With significant investments in R&D, Engineering plays a leading role in research, by coordinating national and international projects thanks to its team of 450 researchers and data scientists and a network of academic partners and universities throughout Europe. One of the group's key strategic assets is its carefully considered staff training policy. Engineering, since 1999, has had its own dedicated multidisciplinary training academy, the "Enrico Della Valle" School of IT & Management. With 300 certified trainers and hundreds of courses, the School has delivered more than 19,000 days of technical, methodological and process training during the last year.

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