

INSTANT PAPER

Telemedicine

Let's redesign Primary Care for a healthcare system that puts people at its centre.





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The start of a new era



01

The start of a new era

Telemedicine enters a new era: it is transforming from an “emergency option”, for the provision of healthcare services during the Covid19 pandemic, into a strategic solution for a “more modern public healthcare that is closer to people”, as envisaged by the the Italian Recovery and Resilience Plan with Mission 6, where prevention and territorial care are finally balanced with hospital care.¹ The home is thus transformed into the first place of care/management for chronic pathologies, leaving the hospital as the place of reference for acute and more advanced clinical specialisations.

In this new era, **Telemedicine is called to reach a further evolutionary** stage whose distinctive and interconnected features are:

- **stable entry into the processes of prevention, care and treatment**
- **governance**

The investment envisaged by the **Italian Recovery and Resilience Plan** is geared to their concrete implementation. It is intended, on the one hand, to strengthen local telemedicine solutions (i.e. the software adopted in the Regional Health Services by the Health Authorities for the provision of remote clinical and care services) and, on the other hand, for the creation of the National Telemedicine Platform.



The stable entry of Telemedicine in prevention, care and treatment processes.

The urgent need to implement the new models of care and treatment, which Telemedicine enables and makes sustainable, has so far given impetus, at regional/local level, to initiatives that have laid the foundations for an increasingly widespread use of remote care, often beginning with the extension of virtuous initiatives that emerged during the Covid19 pandemic or experiments on contemporary models of dealing with specific pathologies.

All this has generated locally different service models and application solutions

with equally varied characterisations, as well as variation in the speeds at which the various Regional Health Services (RHS) deploy remote assistance.

The RHSs are currently engaged in defining the “Telemedicine Model” to be implemented in their respective territories, through the definition of the “Indications for the presentation of regional telemedicine projects” and the “Guidelines for Telemedicine services”² (in turn linked to The “Guidelines for Telemedicine services”³), which describe how to make Telemedicine a real strategic solution for the implementation of new models of care and treatment centred on primary care and, in particular, on home care.

In this scenario, the process **of dissemination and progressive maturity**

of Telemedicine must be marked by certain criteria:

- it must be “immersed” in the care and treatment processes, transforming them into “remote” modes, and interoperate with the information systems that are and will be used in them
- it must remotely support the provision of multiple services (telehealth, telemonitoring, teleassistance, etc.) in the context of different specialities (e.g. cardiology, pulmonology, endocrinology, etc.), without ever losing the overall view of the patient
- it must be used by healthcare professionals from all the many

disciplines present, especially in primary care (general practitioners, community nurses, etc.)

- it must be used by patients or their caregivers in an easy and intuitive way.

It is clear that these decisive criteria must necessarily be reflected in the selection/consolidation choices of the local Telemedicine application solutions in place at the regional level, as well as in the re-engineering of the care and treatment processes that must be designed and deployed through them.

¹ www.italiadomani.gov.it

² Ministry of Health, Decree 30 September 2022

³ Ministry of Health, Decree 21 September 2022



Governance

The National Telemedicine Platform (NTP) is the **pillar of Telemedicine governance**.

The NTP - which local application solutions will be called to feed in real time according to the logic of the new FSE - was created to have a **strategic view** of the Telemedicine phenomenon, **based on common standards** and on the availability of good clinical and organisational practices at national level.

The objective is to aggregate, within the NTP and starting from data made available by the company/regional Telemedicine solutions, all the information needed to analyse the diffusion and the characteristics (including clinical) of

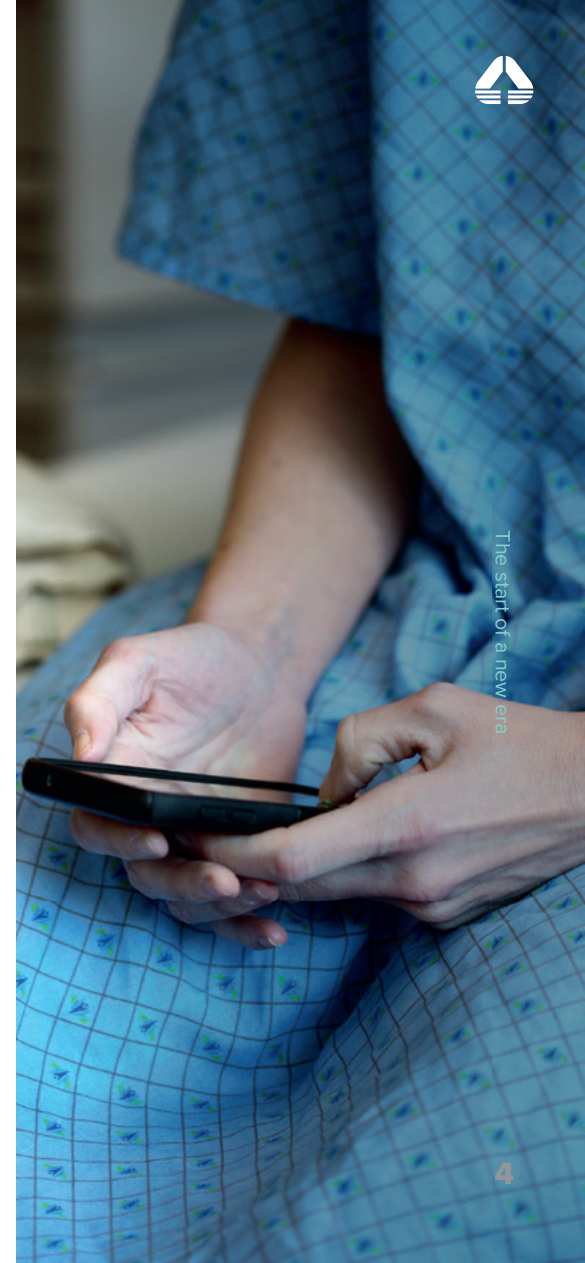
remote assistance, making it possible to construct retrospective and prospective/forecast views, partly also to monitor the achievement of the ambitious goals imposed by the **Italian Recovery and Resilience Plan**.

In this sense, the **NTP will represent the “near real-time analytics” of Telemedicine and will guide the choices of all levels of the national health service aimed at enhancing it and making it an increasingly central service.**


The common standards, which will give substance to the enormous task of achieving interoperability, which will aim to connect local Telemedicine solutions to the NTP, are the lexicon that will make it possible to aggregate and compare the information provided by local solutions,

ensuring that Telemedicine services and their implementation processes (as is already the case for other healthcare services, such as hospitalisation and outpatient services) will also be codified and have an unambiguous meaning at national level, while safeguarding local practices.

Good practices are the clinical-assistance reference guidelines for Telemedicine (appropriate telemonitoring plans for specific pathologies and patient cohorts) against which local practices “photographed” by the NTP can be compared, starting from the data generated by local Telemedicine solutions, and from which the latter may progressively be able to suggest increasingly virtuous models of remote care delivery.



The start of a new era



02

**Engineering's strategic
role in providing concrete
answers in the field of
“new Telemedicine”**



The governance action, which NTP is called upon to perform, calls for a clear strengthening of local Telemedicine initiatives. Works that will constitute an unavoidable goal in the setting up of the "Telemedicine projects" in which the RHSs are currently engaged.

To give a few examples:

- envisaging an interoperability architecture capable of real-time dialogue for feeding the NTP
- having a functional architecture capable of supporting the process/ service models which, for the various Telemedicine services, will underlie the NTP

- being characterised by an information architecture capable of feeding the "data model" for the governance of the Telemedicine of the NTP
- being based on a basic registry architecture that can tie in with the standards contained in the NTP.

At Engineering we are working to make the "characters" of the new Telemedicine a reality, with our new ellipse telemedicine solutions, equipped with an architecture that - in terms of interoperability, business/functional model and information richness designed together with clinicians - represents the most contemporary answer to concretely

support the stable entry of Telemedicine in the processes of prevention, assistance and care, as well as related governance.

Our organisational, functional, application-based and architectural knowledge on Telemedicine is the foundation on which **ellipse RemoteCare** has been designed and on which we have successfully put forward our candidature for the **NTP, which we will manage and implement as a leader of the Temporary Business Grouping.**

It is also the 'calling card' to accompany our customers towards the challenging pathways of Telemedicine deployment that they are called upon to undertake both in terms of the **Italian Recovery**

and Resilience Plan and the necessary adaptation required by the NTP.

Our implementation capacity and concreteness are crucial, so the time factor, which will be vital, is not an insurmountable obstacle.





ellipse RemoteCare

Our guiding principles

- Telemedicine must digitally transform care and treatment processes, not replicate them in virtual form or create new ones that are disconnected from the corporate operating ecosystem. At Engineering, we realise solutions and adopt design implementation approaches that seize all the opportunities for improvement that the remote mode offers for care and treatment processes.
- Telemedicine must be able to cover the different remote care modalities (telehealth, telemonitoring; etc.) by not considering them as watertight compartments. Our dedicated solutions for individual services can therefore be combined to manage complex Telemedicine pathways.
- Telemedicine must be integrated with the corporate information system, in order to be able to exchange patient data (o safeguard the clinical decisions that are taken on the basis of such data) and not replicate functions that have already been digitised. Our solutions are designed to be integrated into the corporate application ecosystem.
- Telemedicine must take into account the sensitive nature of the data processed and the special security requirements that apply to healthcare. Our approach fully realises 'healthcare data protection' in 'by design' and 'by default' logic.
- Telemedicine, depending on the type of clinical and care decisions it is called upon to support, may need to be supported by tools certified as medical devices. At Engineering, we have started a process to ensure that our solutions have the appropriate level of certification for use within clinical and care processes according to the new MDR 2017/745 regulation.
- Telemedicine must be able to make use of frontier technologies (such as Artificial Intelligence) capable of uniting the processes of care and treatment at a distance. At Engineering, we are smartly adopting such technologies for user support, decision-making, etc.
- Telemedicine has a crucial value in the acceptance of users, clinicians and patients. Therefore, we have based our solution design on service design approaches.



ellipse RemoteCare

The solutions

Our Telemedicine solutions belong to the **ellipse** ecosystem:

- they inherit its new framework based on the latest technologies and paradigms including: Cloud-ready, DB-independence, microservices architecture, privacy by design & by default, WSO2, HL7 FHIR, etc.
- they natively implement the most innovative technologies: AI & Advanced Analytics and Machine Learning for interpreting clinical parameters and suggesting the most appropriate actions; Internet of Things for advanced communication with devices; next-generation Cloud and Cybersecurity; etc.

In Telemedicine services that envisage it, the application architecture allows dialogue with any medical device equipped with the appropriate communication functions and technological features (industry standards, security, etc.). We are progressively expanding the types of medical devices with which we are able to integrate. In the case of telemonitoring, the patient is equipped with an App capable of communicating with medical devices (e.g. oximeter, digital thermometer) to automatically transmit parameters to the doctor or service centre.

- **ellipse RemoteCare for telemonitoring** supports the remote conduct of a medical check-up between doctor and patient/caregiver via video call
- **ellipse RemoteCare for telemonitoring** supports the performance, via a dedicated App and portal, of activities (e.g. taking vital parameters, administering treatments) by the patient for whom a telemonitoring plan has been formulated and the remote supervision of the plan's progress by healthcare professionals
- **ellipse RemoteCare for teleconsultation** supports remote consultation between two or more doctors in both synchronous and asynchronous mode
- **ellipse RemoteCare for teleconsultation** supports the carrying out of care activities by the patient (envisaged by an ad hoc teleconsultation plan) and dedicated sessions, via video call, between the healthcare professional and patient/caregiver.



National Telemedicine Platform

Engineering is managing the design and realisation, in RTI with Al maviva, of the new National Telemedicine Platform (NTP), which guarantees a strong orientation towards integration and interoperability, maintaining a marked independence, scalability and ease of integration with the current and future regional and national digital ecosystems involved.

The NTP is intended to offer **maximum interoperability with the central systems** deployed at national level, envisaged for the digital transition process of the services provided by the Public Administration, and will be implemented in full coherence with:

- the “National indications for the provision of services in Telemedicine”.
- the “Methodological indications for the perimeter of PPP proposals for the National Telemedicine Platform”
- the adoption of the “Guidelines for the implementation of the Electronic Health Record”
- the “Telemedicine Platform and ESF Ecosystem: points of contact and connection between the two projects”, a document prepared by the Ministry of Health, the Department for Digital Transformation and AGENAS

- The approval of the organisational guidelines containing the “Digital Model for the implementation of home care”, for the purposes of achieving EU Milestone M6C1-4, as set out in the Annex to the ECOFIN Council implementing decision of July 13 2021, approving the assessment of the Plan for Italy’s recovery and resilience
- the “Guidelines for telemedicine services - Functional requirements and service levels”.
- the HL7/FHIR standard, extended as appropriate, for clinical information sharing
- the ISO/IEEE 11073 SDC standard and the IHE profiles of the PCD domain, also introducing the HL7/FHIR parts, for technical integration with medical devices.

As of April 30th 2023, the design activity has been completed and the implementation phase has begun.

A teal-tinted photograph of a laboratory setting. In the foreground, a woman with glasses and a white lab coat is looking at a document held by a man, also in a white lab coat and glasses. The document shows two rows of waveforms, labeled '01' and '02'. In the background, another person is partially visible, and there are shelves with various items. The overall scene is professional and focused on research.

03

**Some of our research
and field experiences**



At Engineering, we have long since embarked on a path of realising Telemedicine solutions that naturally extend corporate information systems and **respond to the concrete and long-term needs of patients and professionals.**

In recent years we have capitalised on the experience gained through research, grafting it into an operational context to also allow the consolidation of specific technological and process-related skills.

ASL OF FOGGIA

Assistance during the Covid19 emergency

The ASL of Foggia coped with the Covid19 emergency and simultaneously guaranteed assistance for pathologies. In a short time, the 'Diomedee' project, which was set up to digitise the taking on of specific chronic conditions and their care, even remotely, was expanded and reconfigured, optimising available resources and limiting access to healthcare facilities. For each patient, a customised monitoring plan was defined with the specific vital parameters to be measured through medical devices and indications for home pharmacological therapy.



REHOME

The platform supporting rehabilitation services for the elderly

The system was developed with Cloud technologies. It is based on a distributed microservices architecture and includes a cognitive rehabilitation platform based on games in virtual environments, a motor rehabilitation platform based on exergames for motor assessment and rehabilitation of limbs, posture, balance and co-ordination, a sleep assessment platform, and a platform that allows the physician to monitor the patient's rehabilitation status.



HeReMo

Health Remote Monitoring

This Telemedicine service supports healthcare professionals and staff in remotely monitoring patients with chronic clinical conditions to ensure continuity of care.

The possibility of using satellite data then allows patients to be informed about the air quality in the area where they live, helping them to reduce the risk of exposure to air pollutants.





AMICO

Telemedicine at the side of patients

This solution consists of sensors installed in the home environment and worn by patients, a platform of telemedicine services, and a Robot made by SoftBank robotics, acting as a mediator between the person and the virtual environment. The infrastructure integrates clinical data and facial expression analysis, allowing the psycho-physical state of patients to be analysed in order to monitor them from home, measure their state of well-being, and ensure that they feel protected throughout their treatment.



Some of our research and field experiences

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