INSTANT PAPER

Telemedicine

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

Authors

Laura Calvanico
Functional & Business
Analysis Senior Manager
ENGINEERING
laura.calvanico@eng.it
in Laura Calvanico

Alessia Freda
Strategic Marketing &
Content Senior Manager
ENGINEERING
alessia.freda@eng.it
in Alessia Freda

Natalia Pianesi
Director
ENGINEERING
natalia.pianesi@eng.it

Giuseppe Sajeva
Director
ENGINEERING
giuseppe.sajeva@eng.it
in Giuseppe Sajeva

Sommario

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The start of a new era

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Telemedicine is in 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"[1], as envisaged by the the Italian Recovery and Resilience Plan with Mission 6, where prevention and territorial care are finally balanced with hospital care. 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.

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

The Regional Health Services (RHSs) have defined 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.

A process of dissemination and progressive maturity of Telemedicine based on 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.

[1] www.italiadomani.gov.it

[2] Ministero della Salute, Decreto 30 settembre 2022

[3] Ministero della Salute, Decreto 21 settembre 2022
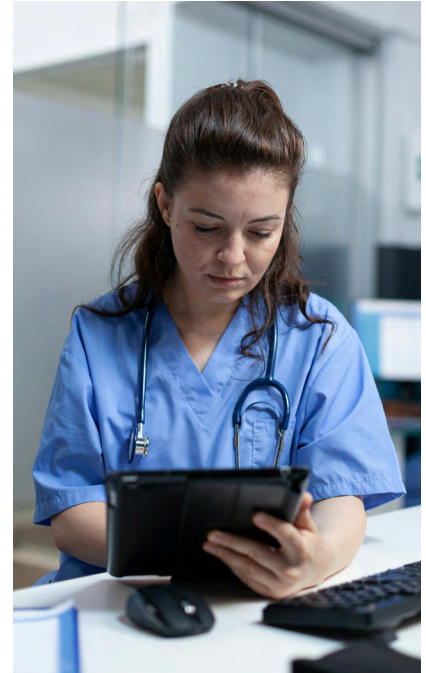
Governance

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 electronic health record - is designed to provide 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.
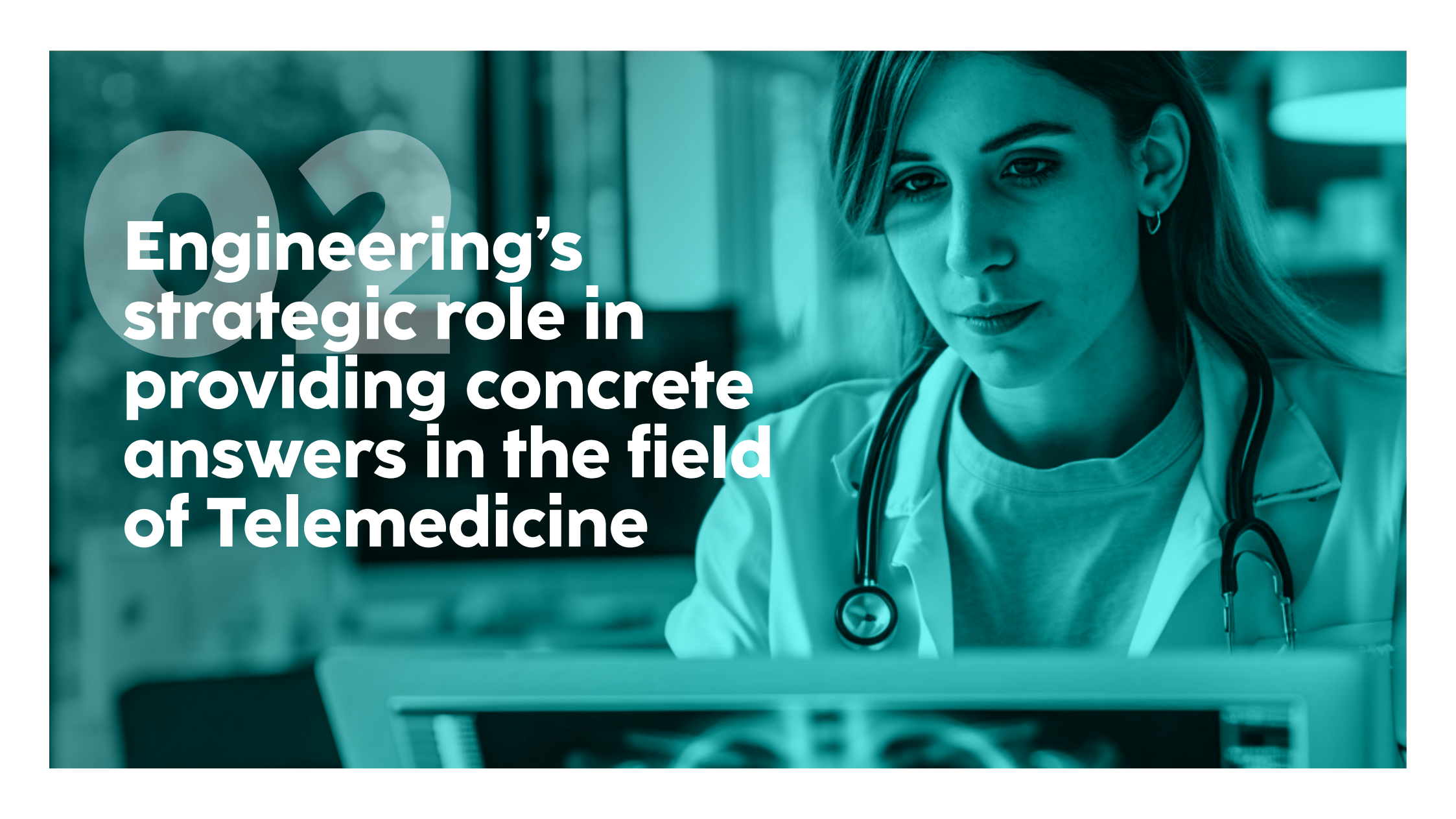
In this sense, **the NTP represents the "near real-time analytics" of Telemedicine, guiding the choices of all levels of the national health service aimed at enhancing it and making it an increasingly central service**.

Common standards are the lexicon that allows for the aggregation and comparison of information provided by local solutions, ensuring that

Telemedicine services and their implementation processes – as is already the case for other healthcare services (hospitalizations, outpatient services, etc.) – are codified and have a uniform meaning at the 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
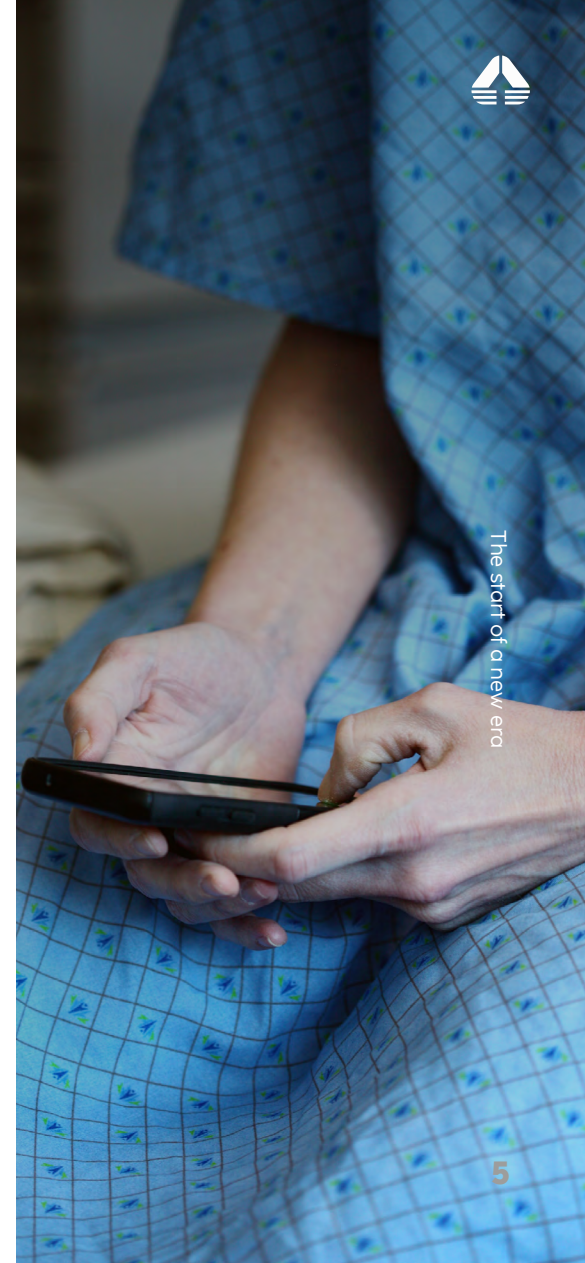
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Engineering's strategic role in providing concrete answers in the field of Telemedicine

The governance action, which NTP is called upon to perform, calls for a clear strengthening of local Telemedicine initiatives. Works that represent an unavoidable milestone in the setting up of the "Telemedicine projects" in which the RHSs are 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 Telemedicine a reality, with our ellipse telemedicine solution, 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 manage as leader of the Temporary Business Grouping**.

Moreover, within the framework agreement for Regional Telemedicine Infrastructure, we have ranked first (in a Temporary Business Association with Intellera and Arthur D. Little), and will therefore also be involved in the deployment of Telemedicine projects in several Italian regions.

Engineering's strategic role in providing concrete answers in the field of Telemedicine

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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 (telemonitoring, televisit, telecare, teleconsult) 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 (to 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 must leverage cutting-edge technologies (such as Artificial Intelligence) to assist in the execution of remote care and treatment processes. At Engineering, we smartly adopt these technologies to support users, enhance decision-making, and more.

- 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 solution belongs to the **ellipse** ecosystem and inherits its new framework based on the most current technologies and paradigms, including Cloud-ready, microservices architecture, privacy by design & by default, WSO2, HL7 FHIR, and more.

The architecture of the ellipse RemoteCare product allows it to interact with other medical devices equipped with the appropriate communication capabilities and technological features (industry standards, security, etc.), as outlined in the technical documentation.

In the case of telemonitoring, the patient is provided with an app capable of communicating with medical devices (e.g., pulse oximeters, digital thermometers) to automatically transmit parameters to the doctor or Service Center.

ellipse RemoteCare is a telemedicine software for delivering integrated services, which include:

- **Telemonitoring** service: to monitor the patient's care pathway with the processing and evaluation of relevant indicators

- **Teleassistance** service: to enable real-time interaction between healthcare personnel and the patient through video calls

- **Televisit** service: for video communication between healthcare operators and the patient

- **Teleconsultation** service: for conducting remote meetings between two or more doctors in synchronous or asynchronous mode

For the ellipse RemoteCare Telemedicine solution, Engineering has initiated the process of certifying the software as a medical device, in accordance with the new MDR 2017/745 regulation.

Engineering's strategic role in providing concrete answers in the field of Telemedicine

National Telemedicine Platform

Engineering, together with the partner Almaviva, is supporting Agenas in the management and development of the National Telemedicine Platform through the company PNT Italia.

Using cutting-edge technologies, the platform will ensure:

- the **homogeneous implementation** of telemedicine pathways across the entire national territory

- **greater integration** between regional health services and national platforms, to improve clinical quality and accessibility to healthcare services for patients regardless of where they live

- **advanced technological solutions** to facilitate the planning, governance, and development of digital healthcare.

The goal is to make local healthcare efficient and to transform Telemedicine into the driving force capable of bridging the health divide in our country.

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Some of our research and field experience

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.
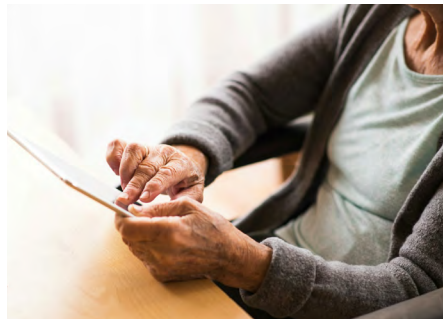
REHOME
The platform supporting rehabilitation services for the elderly

The system has been developed using 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 using exergames for the assessment and rehabilitation of limbs, posture, balance, and coordination, a sleep assessment platform, and a platform that allows the doctor to monitor the patient's rehabilitation status.

HeReMo
Health Remote Monitoring

Engineering has collaborated on a research project to develop an application aimed at monitoring personal well-being and environmental factors. The ability to leverage satellite data allows patients to be informed about the air quality in their area, thereby reducing the risk of exposure to air pollutants.
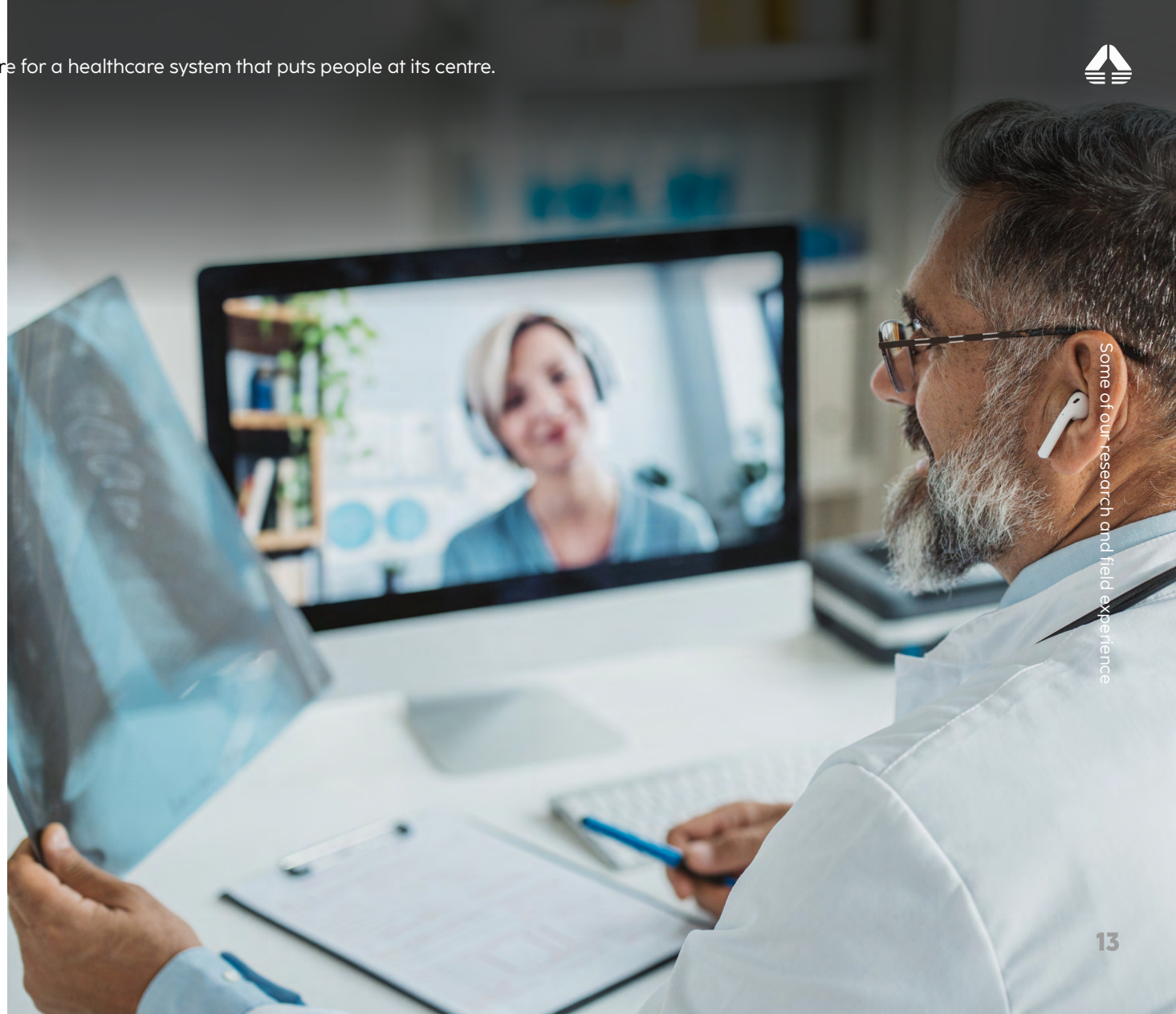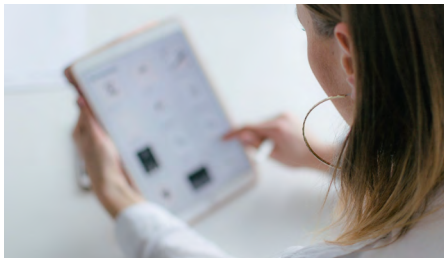
AMICO
A solution at the side of patients

Engineering participated in a project to develop an "Instrumented Environment" infrastructure aimed at monitoring patient behavior. The monitoring platform consists of a web app, a mobile app, and a robot created by SoftBank Robotics, which serves as an intermediary between the person and the virtual environment. The solution allows professionals to oversee sensor management and assess the instrumented environment within the patient's home. The infrastructure integrates data and facial expression analysis, enabling the evaluation of patients' well-being so they can be monitored from home and feel protected throughout their therapy.

Some of our research and field experience

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