



# DELIVERING A CONTINUUM OF CARE FOR PEOPLE WITH MULTIPLE CHRONIC CONDITIONS

## Results and experiences from the PICASO project

A Personalised Integrated Care Approach for Service Organisations and Care Models for Patients with Multi-Morbidity and Chronic Conditions





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# WELCOME TO PICASO

**This brochure presents an overview of the results of the PICASO research project.**

After more than three years of collaboration between technical and clinical teams and patients across Europe, we have been able to develop a successful ICT platform that gives both clinicians, informal caregivers and patient an improved overview of the patient's health situation.

The PICASO solution supports holistic, coordinated care of patients who have multiple, co-occurring chronic conditions that call upon different specialists and caregivers across organisational boundaries.

It enables the sharing of a patient's complete clinical pathway with tools to establish health status, predict risks, collaborate and adjust care.

The platform and its tools have been tested with patients at two pilot sites in Germany and Italy.

The evaluation results were incorporated into an iterative development process that demanded a close interaction between all the involved teams and this led to many positive synergies.

The project consortium is looking forward to future developments that can bring the results into sustainable deployments at clinics and hospitals all over Europe.



## CARE MANAGEMENT SOLUTION

- Access relevant information about a patient, including medication and treatment history, visits and appointments, home monitoring data, medication adherence and well-being assessments
- Browse available patient data that are shared between authorised care professionals
- Create and share care plans across multi-actor care spaces
- See risk scores based on patient profile and simulate results according to change of input
- Include the patients in the care management by giving them online access to their care plan.





## PICASO IMPACT

The two trials have demonstrated that the PICASO technology can be used to provide integrated care to patients with a chronic disease and multimorbidities, supporting patients, informal caregivers and clinicians in care plan management.

In the project, integrated care supported by the PICASO platform helped to improve the quality and efficiency of the provided healthcare as well as the quality of life for patients:

- ▶ Having access to existing patient data, medical and treatment guidelines, risk assessment data and data from the patient's self-monitoring helped clinicians to assess the patients' health status and the progress of their condition
- ▶ PICASO can notify clinicians of possible conflicts and overlaps in a patient's integrated care plan, enabling clinicians to assess the data and confer with other clinicians before updating the care plan
- ▶ Patients and informal caregivers found that sharing patient data with clinicians resulted in better personalised care
- ▶ PICASO facilitated patient adherence to care plans, preventing hospital admissions and suboptimal lab and scanning results
- ▶ Patients gained a better insight into their health status and became more involved in their own care through increased knowledge, engagement and management of their chronic disease and its associated multimorbidities.

# PICASO INNOVATIONS

## CARE MANAGEMENT AS A SERVICE

PICASO offers a comprehensive cloud solution enabling care organisations to benefit from scalability and software resource sharing without violating regulations on clinical data.

All access and use of clinical data are done in a secure and authorised way, without violating privacy of personal data in accordance with the General Data Protection Regulation (GDPR).

All software for care management and decision support is hosted in one public cloud while all clinical data reside inside the care organisations.



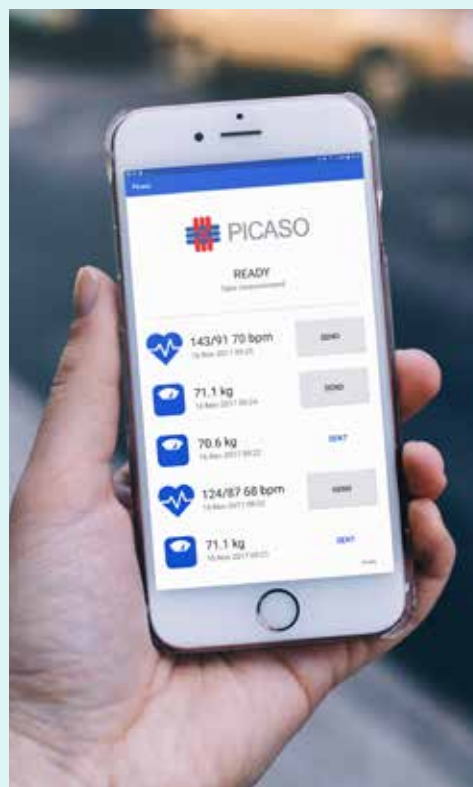
## PATIENT SELF-MONITORING AS A SERVICE

The Patient Self-Monitoring Solution is supported by the Patient Dashboard and the PICASO App. Unlike existing solutions, this service integrates all three types of monitoring schemes:

- Scheduled vital signs measurements with medical devices
- Continuous activity and behaviour monitoring using wearable sensors
- Patient self-assessment and medication recording.

All patient measurements are transferred in a secure way into the designated storage facility. This helps patients and clinicians to establish a complete view of vital health parameters and their fluctuations over time.

It also enables care organisations to take advantage of standardised off-the-self products for health to improve therapy of patients with multimorbidities.





## REFERENCE DATA SERVER

Built on the international standard HL7 FHIR® (Fast Healthcare Interoperability Resources), the server enables interoperability between different data sources coming from different health providers.

It uses a scalable NoSQL database that supports data analytics and clustering and offers a standard REST interface, supporting extended functionality for different target groups.

Within PICASO it is used to store standard and customised code systems and value sets, medications and templates that support the creation of services for patient care plans.

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## RISK MANAGER

The Risk Manager provides patient-specific risk estimates, merging standard charts with novel risk scores into one single tool.

These risk scores use machine learning to merge data from a patient's entire history into a single integrated risk score, including the effect of comorbidities as well as genetic, social and behavioural data.

An integrated simulation tool enables the clinician to explore with the patient what life-style changes will most likely improve the outcome.



## DATA RESOURCE BROWSER AND PATIENT DATA VIEWER

Clinicians can browse all available patient data in the Data Resource Browser.

Searching for relevant patient data is intuitive and quick with information being updated when the user clicks on the different items.

The Patient Data Viewer gives the user a full overview of existing patient data in the system, including data received by other clinicians.

Access to read specific patient data, such as measurements, intervention and care plans, requires authorisation.

## DISTRIBUTED VALIDATION AUTHORITY - DIVA

DIVA ensures that data are only shared if all policies and transaction specific privacy and security requirements are met.

DIVA combines an Access Manager, Identity Manager and Policy Manager which ensure the following:

- A secure connection to the PICASO Public Cloud as well as communication between Public and Local Clouds
- Identification and authentication of users
- Verification of data transactions as valid and compliant.





# PICASO

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**Project partners:**

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