Allegato 10. Scheda Spoke 1 e pilots

**Avviso pubblico per la presentazione di progetti per attività di ricerca industriale e sviluppo sperimentale indirizzato a organismi di ricerca e imprese, ‘bandi a cascata’ da finanziare nell’ambito del Piano nazionale per gli investimenti complementari al PNRR (PNC, istituito con il decreto-legge 6 maggio 2021, n. 59, convertito dalla legge n. 101 del 2021), iniziative di ricerca per tecnologie e percorsi innovativi in ambito Sanitario e Assistenziale (Decreto Direttoriale n. 931 del 06-06-2022), progetto PNC0000003 - Anthem - AdvaNced Technologies for Human-centrEd Medicine finanziato con il Decreto Direttoriale 9 dicembre 2022, prot. n. 0001983 - CUP B53C22006700001**

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| Spoke 1 – Data and technology driven diagnosis and therapies | | | |
| Leveraging data, software and hardware technologies for clinical decision support, personalised medicine solutions and diagnostic process re-engineering. | | | |
| **Leader** | **UNIBG** | **Affiliates** | **Università degli Studi della Campania-Vanvitelli, Università degli Studi di Milano Bicocca, Università degli Studi di Messina, Azienda Socio Sanitaria Territoriale Bergamo Est, Azienda Socio Sanitaria Territoriale Papa Giovanni XXIII, Azienda Socio Sanitaria Territoriale di Monza, Istituto di Ricerche Farmacologiche Mario Negri, Diapath SpA, Fondazione Europea Ricerca Biomedica Onlus** |
| **Pilot 1.1: Leveraging data for clinical decision support system and data management** (UNIBG, UNIMIB, NEGRI). Design and development of Artificial Intelligence (AI), machine learning (ML) and deep learning (DL) models for patient-specific decision making and personalised medicine (**Territorial/Pathology**) | | | |
| **Pilot 1.2: Digital Triage at the emergency room** (UNIBG, ASST BGEST, FERB). Design and development of an innovative digital triage solution for improving the responsiveness of acute care systems to the patients’ needs with a particular attention to socially frail patients (**Territorial**). | | | |
| **Pilot 1.3: AI based Artificial Pancreas for children** (UNIBG, ASST PG23). Design a personalised patient-centred real-time blood glucose (BGL) control algorithm for Artificial Pancreas exploiting the patient's personal data to understand and learn the specific BGL dynamics by the means of data mining and AI modelling. Unannounced meals detectors and their amount estimation should be integrated to the control loop, together with specific patients-  tailored hyper-/hypo-glycemia alarms (**Pathology**). | | | |
| **Pilot 1.4: Timely genomic diagnosis for children with rare diseases toward precision medicines** (UNIBG, ASST PG23, NEGRI). Development of new AI based tools to support the clinicians in activating the genomic diagnostic process of rare diseases. A new digital genomic infrastructure will allow the collaboration between partners and clinical teams and the sharing of available datasets (**Pathology**). | | | |
| **Pilot 1.5: Mass spectrometry for tissue biopsy investigation** (UNIMIB). Use of the 4-dimensional SpatialOMIx Mass Spectrometry imaging approach to investigate cytologic and tissue specimens for the precise diagnosis of several high-incidence diseases (e.g. thyroid lesions) through their “molecular signature”. AI tools will be exploited to identify markers in the cytological or bioptic tissue section (Pathology). | | | |
| **Pilot 1.6: Improved multi-source image-based diagnostic for early cancer** detection (UNICAMP, UNIMIB, ASST MONZA). Design of an “Intelligent” Territorial Screening of high-incidence cancers integrated by telemedicine and multisource diagnostic images improved by 3D rendering and enhancement, surgical endoscopic fluorescence images, clinical, pathological and “omics” data, powered by AI analysis. Improving cancer prevention by designing, optimising and commissioning a demo of TOF-PET insert for MRI powered by AI (Pathology). | | | |
| **Pilot 1.7: Genetic insights in neurodegenerative disease** (UNIME, ASST MONZA). Identification of the reasons for Parkinson’s Disease (PD) high risk in patients with Gaucher disease (GD) and their family using genomic approaches and exploiting the underlying pathways in pre-clinical models by imaging and molecular analysis (**Pathology**). | | | |
| **Pilot 1.8: MicroCT-based 3D digital histology** (UNIBG, UNIMIB, DIA, ASST MONZA, ASST PG23). Development of a new 3D digital diagnostic methodology (virtual histology) using X-ray micro-CT imaging analysis of tumour specimens for allowing a unique visualisation of the tissue’s microstructures and their segmentation to follow up the details over entire volumes without destroying the samples as in conventional histology workup (here used as validation benchmark) (**Pathology**). | | | |