CURRICULUM VITAE

Personal information:

Name /Surname	**ANTONIO NOVELLINO**
E-mail	antonio.novellino@dedagroup.it
Nationality	Italian

Study Titles: Data Scientists (2021), PhD Biotechnology and Bioengineering (2005), MSc Biomedical Engineering (2001)
Mother tongue: Italian
Other languages: English (C2/C2/C2)

Professional Experience:
2024/ongoing - Smart City Market Line Manager at ETT|Gruppo DEDA (https://www.deda.group/home)
2024/ongoing - Adjunct Professor at University of Genova – DISTAV (https://distav.unige.it/)
2010/ongoing - Research Manager at ETT (https://www.ettsolutions.com)
2020/ongoing - CEO at SINDBAD Scarl (www.consorzio-sindbad.it)
2023/2024 - CEO at GRISIS s.r.l.(https://www.grisis-srl.com/)
2021/2022 - CEO at MUST s.r.l.(https://www.mustsrl.com/)
2008/2010 - Senior Researcher, Institute for Health and Consumer Protection (IHCP) - Joint Research Centre (JRC), European Commission (https://joint-research-centre.ec.europa.eu)
2005/2008 - Engineer, Project Manager, ETT S.r.l.
2001/2005 - Jr. Engineer, Jr. Project Manager, Studio P&V

Education:
2002/2005 - Scholarship for the Ph.D. in Bioengineering and Bioelectronics (XVII cycle) University of Genova, Faculty of Engineering - Thesis Title: "BIDIRECTIONAL NEURAL INTERFACES: investigation of the adaptive properties of the network for robot control"
1996/2001 - MSc Biomedical Engineering, University of Genova, Faculty of Engineering
1991/1996 - Scientific High School A. Romita Campobassp (CB)

Expertise:
Certified Data Scientist (2021, University of Genova). Expertise spans marine observation systems, environmental data infrastructures, and information and communication technologies (ICT) applied to Earth and ocean sciences. His work focuses on the design, development, and coordination of complex data management systems for acquisition, integration, quality control, and dissemination of marine and environmental data. deeply involved in several European and international initiatives supporting operational oceanography—including contributions to the Copernicus Marine Service, EMODnet, EuroGOOS, SOOS, OceanPrediction DCC initiative, etc. —where he has promoted the adoption of data standards, quality assurance protocols, and interoperable information systems His scientific and technical interests include:
- Data management and standardization: design and implementation of integrated platforms for large-scale, heterogeneous environmental datasets.
- Marine technology and observation networks: development and harmonization of observing systems, sensors, and in situ data flows.
- ICT innovation and digital infrastructures: leadership in R&D projects involving cloud computing, IoT architectures, and big data processing for environmental monitoring.
- Governance and interoperability: participation in European working groups on data policy, metadata standards, and best practices for quality-controlled marine data.
- Training and teaching.

Publications:
Frontiers Loop - https://loop.frontiersin.org/people/577/publications
Research Gate - https://www.researchgate.net/profile/A-Novellino?ev=prf_overview
Google Scholar - https://scholar.google.com/citations?user=7V9Hy2EAAAAJ&hl

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Patents:
- TO2014A000235, 21/03/2014 – holographical and augmented reality device
- WO 2012110426 A1/EP2675888 A1, 17/02/2011 - Neuronal network-based biosensor
- TO2005A00368, 31/05/2005 – device for the hand fine movement analysis

Professional track records:

- **Data management – Ocean Science**

2011-2027. EMODnet Physics
EMODnet Physics is one of the European Marine Observation and Data network program thematic projects. It develops the European Hub for in situ observations on ocean physics that are made available (CC-BY) with high quality metadata built with common standards. The available parameters cover temperature, salinity and currents profiles, sea level trends, wave height and period, wind speed and direction, water turbidity (light attenuation), underwater noise, river flow, and sea-ice coverage.
The data products consist of collections of in-situ data (time series and profiles), reanalysis and trends of parameters, and space and time aggregated in situ data and model outputs.
Antonio Novellino (ETT) is the EMODnet Physics coordinator.
https://emodnet.ec.europa.eu/en/physics

2019-2027. EMODnet Chemistry
EMODnet Chemistry provides easy access to marine chemical data, standardised harmonized validated data collections and reliable data products, which are highly relevant to assessing ecosystem status according to the Marine Strategy Framework Directive, for all European marine regions. Numerous substances are considered; most of them are invisible to the naked eye and can only be detected and tracked using special sensors or by laboratory analysis. This evidence-based information is essential for understanding seawater chemistry and its natural and/or human-induced variations. It is also essential for identifying and taking action against spatio-temporal environmental changes that pose risks to marine ecosystems and human health.
Antonio Novellino (ETT) is team member.
https://emodnet.ec.europa.eu/en/chemistry

2016-2026. EMODnet Data Ingestion
EMODnet Data Ingestion portal aims at streamlining the data ingestion process so that data holders from public and private sectors that are not yet connected to the existing marine data management infrastructures can easily release their data for safekeeping and subsequent distribution through EMODnet. This will enrich the total offer for all types of users and conform to the EMODnet motto 'collect data once and use it many times
Antonio Novellino (ETT) is leading the WP on machine-to-machine interoperability and operational data ingestion workflows.
https://emodnet.ec.europa.eu/en/data-ingestion

2022-2025. RAISE. SPOKE3 Protezione e cura dell'ambiente
ROBOTICS AND AI FOR SOCIO-ECONOMIC EMPOWERMENT (RAISE) - SPOKE 3 develops innovative technological solutions to enhance the strategy and methodologies for monitoring and safeguarding the environment dedicated to the three environmental scenarios (water, air, soil) representative of the Ligurian territory. The main challenge of Spoke 3 is to create innovative robotic systems managed by artificial intelligence capable of making precise and widespread monitoring coupled and synergistic, increasing the efficiency of data collection and dissemination, the duration and energy savings of monitoring missions, and the quality and timing of various predictive systems (early warning systems) dedicated to the safeguarding and continuous monitoring of the environment (widespread, integrated, and dynamic-adaptive monitoring).
Antonio Novellino (ETT) is coordinating the data management across the 12 SPOKE3 projects, is co-leader of project 1, project 2, project 7 and project 11. He serves the RAISE Technology Transfer board
https://www.raiseliguria.it/

2017-2025. CMEMS Marine Data Store – Dissemination Unit
CMEMS Marine Data Store – Dissemination Unit. The Copernicus Marine Environment Monitoring Service (CMEMS) is a European Union program providing information and data related to the marine environment. The dissemination unit within CMEMS is responsible for the distribution and communication of the service's data, products, and information to various users and stakeholders. The primary role of the dissemination unit is to ensure that the wealth of marine data and services produced by CMEMS are made accessible, understandable, and usable by a wide range of users, including scientists, policymakers, businesses, and the

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general public. The CMEMS MDS DU operated the virtual cloud infrastructure at the heart of the CMEMS services. Antonio Novellino (ETT) is the coordinator-deputy, with a focus on service quality (accessibility and availability) monitoring and assessment, and metadata standards and quality. CMEMS DU is also leading the CMEMS Technical Working Group.

2024-2026. Ocean Best Practice DB
Standards and Best Practices in Ocean Observation (CINEA/EMFAF/2023/3.5.1) is a 3 years project to develop and test a comprehensive and user-friendly information system that facilitates the identification, access, and utilization of best practices and standards in the field of ocean observation. The system has to assist practitioners in locating and adopting recommended and/ or endorsed best practices and standards relevant to ocean observations and standards that could be accepted and adopted by all stakeholders and so enable a wider use of the collected in situ ocean observational data. Antonio Novellino (ETT) is the technical coordinator of the project.

2023-2024. SoundSignatureCatalogue
The project "constructing an open library containing a curated and continuously growing digital catalogue of individual sound signatures from the marine underwater soundscape in shallow sea" (CINEA/2022/OP/0019) focuses on building and testing an open library containing a curated and continuously growing digital catalogue of individual sound signatures from the marine underwater soundscape in shallow seas. Tools to determine the acoustic impact of human activities on marine life and ecosystems will inform and enable the implementation of measures for their management in a way that reduces their potential harm. An improved understanding of the different signatures of underwater sound sources is needed to successfully connect measured sounds to their emitting source(s) and further identify the abiotic sound pressure in an area.
Antonio Novellino (ETT) is the technical coordinator of the project.

2022-2023. AllOceanObservation
The project (CINEA/EMFAF) reviewed existing ocean observation reporting obligations and templates and to propose, test and seek stakeholder feedback on a new common template and online tool that could be used to better coordinate ocean observation campaign plans in EU Member States and across Europe, for the benefit of the Ocean Observation community.
Antonio Novellino (ETT) was in charge for WP designing the DB and the web tools to push and explore observational plans.

2022-2025. FRONTEX Ocean Data Visualization
FRONTEX/OP/234/2021/RS - Meteorological and Oceanic Services - Lot 2 - Oceanographic Data and Visualisation - The project is aimed at providing meteorological and oceanographic information services, encompassing ocean data delivery and visualization, in order to support FRONTEX operational activities.
Antonio Novellino (ETT) is leading the in-situ data management and provision, the service performance monitoring, service quality assurance.

2026-2029. CS MACH1
CS-MACH1 (HORIZON-MISS-2024-OCEAN-01-04 - Science for Community – Building the marine Citizen Science data network of the future to valorise data coming from the ocean and increase engagement) project develops a marine citizen science data network designed to overcome barriers to citizen science empowerment. Specifically, it aims to improve the recognition, trust, accessibility and sharing of marine citizen science data. It will also provide citizen science initiatives with improved access to data, cost-efficient equipment and technology, and connectivity with EU science data platforms.
https://cordis.europa.eu/project/id/101214613
Antonio Novellino (ETT) is leader of the Data Management and Data access work package

2026-2029. CodeBlue
CodeBlue (Sustainable Blue Economy Partnership – 2024) will address major knowledge gaps in the North-East Atlantic Ocean and Baltic Sea for eutrophication. It will apply an unique biogeochemical forcing to a multi-model approach and test nutrient scenarios under a changing climate. CodeBlue's main outcome is an open access dataset tailored by and available for regional sea conventions, EU's framework directives and beyond.
Antonio Novellino (ETT) is leader of the Data Management and Data access work package.

https://bluepartnership.eu/news/24-projects-recommended-funding-second-call-towards-sustainable-ocean-economy

2026-2029. DTO4OWE
Digital Twin of the Ocean for Offshore Wind Energy (Sustainable Blue Economy Partnership – 2024) aims at developing a federated digital twin platform to support decision-making in offshore wind energy by integrating various data sources and physics-based and AI/ML models. The goal is to create a customized, virtual replica of offshore wind scenarios, enabling operators to reduce uncertainties, predict impacts of extreme weather events, and support sustainable and reliable energy production.
Antonio Novellino (SINDBAD) is leader of the Data Management and Data access work package.
https://bluepartnership.eu/news/24-projects-recommended-funding-second-call-towards-sustainable-ocean-economy

2026-2029 SHARED4MED
SHAREd transition agenda FOR the MEDiterranean (SHARED4MED) – INTERREG NEXT MED. The project aims at developing Mission Ocean's goals on local territories. SHARED4MED brings together the Coalition of Mayors within EU Mission Ocean. The SHARE4MED project aims at consolidating and expanding this framework to EU and non-EU countries and in view of the green transition and climate neutrality.
Antonio Novellino (ETT) is coordinator of the project
https://www.interregnextmed.eu/project-page/share4med/about/

2025-2028 FOCCUS
Forecasting and observing the open-to-coastal ocean for Copernicus users. aims to enhance Copernicus Marine Service's coastal dimension by developing innovative products and integrating Copernicus with Member State services. It facilitates seamless ocean monitoring and forecasting across global, regional, and coastal scales, reinforcing Copernicus research for challenges like coastal protection and sustainable blue economy development. Antonio Novellino (SINDBAD/ETT) is supporting Colab+Atlantic and Heron in the Data Management activities.

2024-2025 EDITO
The European DTO will provide consistent high-resolution, multi-dimensional descriptions of the ocean. This includes its physical, chemical, biological, socio-ecological and economical dimensions, with forecasting periods ranging from seasons to multi-decades. To develop the core infrastructure of the EU DTO (EDITO), the European Commission has entrusted 2 main operators behind the CMEMS and EMODnet programmes, namely Mercator Ocean International and the Flanders Marine Institute, which coordinated the cascade involvement of Copernicus Marine Service and EMODnet thematic lots. Antonio Novellino (SINDBAD/ETT) coordinated the EMODnet Physics contribution to EDITO.

2024-2029. POLARIN
POLARIN: POLAR RESEARCH INFRASTRUCTURE NETWORK. POLARIN is Horizon Europe (HORIZON-INFRA-2023-SERV-01-01 project based on an international network of polar research infrastructures and their services. The project aims at addressing the scientific challenges of the polar regions that play a key role in the Earth's system. The network includes a wide array of complementary and interdisciplinary top level research infrastructures: Arctic and Antarctic research stations, research vessels and icebreakers operating at both poles, observatories, data infrastructures and ice and sediment core repositories. POLARIN is also building uptodate FAIR data access and training and exploitation tools for polar science research legacy.
Antonio Novellino (ETT) is co-leader of the Data Management and Data access work package
https://cordis.europa.eu/project/id/101130949

2024-2028. LandSeaLot
LandSeaLot (HORIZON-CL6-2023-GOVERNANCE-01) links in situ, model and earth observations (EO) together and connects related communities, citizens and initiatives such as Copernicus, ESA, EEA, GEOSS, EMODnet and the European Digital Twin of the Ocean. All engage in a gap analysis used to co-design a joint and common land-sea interface observation strategy and its implementation plan. LandSeaLot experts simultaneously work on improving: in situ and EO capabilities, models to reduce the model/observations gap and the integration of model, in situ and satellite data. Observation capacity is mainly increased through tested, improved and guided use of low-cost sensors by citizens, facilitated by the network of European marinas.
Antonio Novellino (ETT) is team member for data management and coordinating the procurement of the cost-effective solutions to be deployed into the demonstration sites.

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2024-2027. OBSSEA4CLIM

OBSSEA4CLIM (HORIZON-CL6-2023-CLIMATE-01-8). ObsSea4Clim focuses on refining the current global EOV/ECVs framework to address regional and national climate information needs. This framework will be refined and integrated within the Global Ocean Observing System (GOOS) and the Global Climate Observing System (GCOS).

Antonio Novellino (ETT) is the project Data Manager and responsible for the provision of FAIR EOVs and ECVs from in-situ observational data

https://obssea4clim.eu/

2024–2027. AquaBioSens

AquaBioSens (On-site biological sensing for aquatic pollutants and biohazards) is an EU Mission to "Restore our ocean and waters by 2030" (HORIZON-CL6-2023-ZEROPOLLUTION-01-6) project and aims to drive the decentralisation of tools for the measurement of aquatic hazards and pollution to support the Destination "Clean Environment and Zero Pollution", as well the Water Framework Directive and Marine Strategy Framework Directive. The project implements novel analytics based on cutting-edge techniques: i) immunoassays to measure organic contaminants, ii) isothermal environmental RNA quantification for harmful microalgae and fecal coliform bacteria, and iii) two novel whole cell biosensors based on genetically modified diatom microalgae and fish gill epithelia for multiplexed heavy metals quantification and toxicity assessment. These will be coupled with state-of-the art sensors such as acoustic biosensors, multichannel fluorimetry and organ-on-chip microfluidic devices. Low-cost fabrication strategies will ensure that the developed technologies are accessible to end-users, such as industry operators and government inspection agencies responsible for environmental monitoring. New digital real-time data feeds will enable seamless data flows from sensors to the web, including a dedicated live dashboard.

Antonio Novellino (ETT) is leading the Data Management work package.

2023-2026. OLAMUR

OLAMUR (Offshore Low-trophic Aquaculture in Multi-Use Scenario Realisation) brings together multi-use low-trophic aquaculture (MU-LTA) related key sectors, to demonstrate sustainable commercial solutions for both the North and the Baltic Sea. OLAMUR will establish three pilot demonstration sites where seaweed and blue mussels will be grown within windfarms or in the vicinity of a trout farm. The wind farm pilot sites are located in the German exclusive economic zone (EEZ) of the North Sea north of Helgoland, in the Danish EEZ of the Baltic Sea at Kriegers Flak and the third pilot demonstration site will be next to a trout farm in the Estonian Sea near the Port of Veere. All data, information, products and standards for establishing, operating and evaluating will be monitored, simulated, stored and customized as an "OLAMUR digital MU-LTA farm service". This will provide a solid basis for MU-LTA upscaling. Through a transdisciplinary holistic approach, OLAMUR will ensure severe contributions towards demonstrating and documenting the possibilities for low impact co-use of the marine space. A data-based service system will be developed for policymakers for knowledge-based decisions, and innovative governance/policy arrangements will be developed towards achieving a holistic, effective and sustainable solution for multiple uses. HORIZON-MISS-2021-OCEAN-04-01

Antonio Novellino (ETT) is leading the Data Management work package and data-based service system application development.

https://cordis.europa.eu/project/id/101094065

2023-2027.EFFECTIVE

EFFECTIVE (Enhancing social well-being and economic prosperity by reinforcing the eFFECTIVEness of protection and restoration management in Mediterranean MPAs) develops a comprehensive scientific knowledge base and practical guidance, combining science, technological nature-based solution, digitalization, and social implication for the application of the Ecosystem-Based management to the protection and restoration management of the EU's Mediterranean Blue Natural Capital. It developed the full pipeline from the assessment of current status in the selected 4 MPAs, the design of nature-based seabed protection and restoration solutions, to the implementation and assessment of the designed procedures. HORIZON-MISS-2022-OCEAN-01

Antonio Novellino (ETT) is team member in data management WP

https://effective-euproject.eu/

2023-2026.BlueCloud2026

Blue-Cloud 2026 is a Horizon 2020 (HORIZON-INFRA-2022-EOSC-01-03) project that builds upon the pilot Blue-Cloud project which established a pilot cyber platform, providing researchers access to multi-disciplinary datasets from observations, analytical services, and computing facilities essential for blue science. Core services delivered are the federated Data Discovery & Access Service (DD&AS), the Virtual Research Environment (VRE) and Virtual Labs. Blue-Cloud 2026 is developing core data services for the Digital Twin of the Ocean. Blue-Cloud infrastructure federates marine data infrastructure and builds new data processing chains for offering added value ocean products.

Antonio Novellino (ETT) is team member and being EMODnet Physics coordinator he acts as key stakeholder for the project.

https://cordis.europa.eu/project/id/101094227
https://blue-cloud.org/about-blue-cloud-2026

2022-2026.OCEAN:ICE

OCEAN:ICE (Ocean Cryosphere Exchanges in ANtarctica: Impacts on Climate and the Earth system) is a Horizon Europe project working on the impacts of key Antarctic Ice Sheet and Southern Ocean processes on Planet Earth, via their influence on sea level rise, deep water formation, ocean circulation and climate. An innovative and ambitious combination of observations and numerical models, including coupled ice sheet-climate model development, will be used to improve predictions of how changes in the Antarctic and Greenland ice sheets impact global climate. OCEAN:ICE will assess the potential for passing ice sheet 'tipping points' and their consequences for ocean circulation and climate and directly contribute to international climate assessments such as the Intergovernmental Panel on Climate Change and World Ocean Assessment. OCEAN:ICE is co-funded by the European Union, Horizon Europe Funding Programme for research and innovation under grant agreement Nr. 101060452 and by UK Research and Innovation

Antonio Novellino (ETT) is leading the Data Management work package
https://cordis.europa.eu/project/id/101060452
https://ocean-ice.eu/

2020-2024.NAUTILOS

NAUTILOS (New Approach to Underwater Technologies for Innovative, Low-cost Ocean observation) develops a new generation of cost-effective sensors and samplers for physical (salinity, temperature), chemical (inorganic carbon, nutrients, oxygen), and biological (phytoplankton, zooplankton, marine mammals) essential ocean variables, in addition to micro-/nano-plastics, to improve our understanding of environmental change and anthropogenic impacts related to aquaculture, fisheries, and marine litter. The final goal of the project is to fill in existing marine observation and modelling gaps to support EU marine directives and marine data infrastructures. BG-07-2019-2020.

Antonio Novellino (ETT) is the Data Management Officer and largely involved in different WPs activities
https://cordis.europa.eu/project/id/101000825

2020-2024. JERICO-S3

Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability - JERICO-S3 (H2020-INFRAIA-01-2018-2019) builds on JERICO NEXT project to establish the JERICO-RI: Joint European Research Infrastructure of Coastal Observatories – a system of systems strengthening the European network of coastal observatories providing a powerful and structured European Research Infrastructure (RI). JERICO-RI goals are to observe and monitor the complex marine coastal seas and to: (i) provide services for the delivery of high quality environmental data, (ii) access to solutions and facilities as services for researchers and users, (iii) create product prototypes for EU marine core services and users, (iv) support excellence in marine coastal research to better answer societal and policy needs.

Antonio Novellino (ETT) is team member in data management WP and being EMODnet Physics coordinator he acts as key stakeholder for the project.
https://cordis.europa.eu/project/id/871153

2020-2023. EMOD-PACE

EMOD-PACE (EMODnet PArtnership for China and Europe) is funded under the EU Partnership Instrument on 31 October 2019 (EuropeAid/139904/DH/SER/CN 'Strengthening international ocean data through the EU's ocean diplomacy with China'). It is a collaborative project with China aiming to promote international ocean governance and support the implementation of global commitments through closer collaboration between Europe and China. This will be achieved by developing new information products, improving the sharing of

marine observation data, marine expert knowledge and by establishing a close working relationship between the National Marine Data and Information Service of China (NMDIS) and the European Marine Observation Data Network (EMODnet). The collaboration will further our knowledge about the behaviour of the seas, assist those who are relying on high quality marine data and data products at global level and to protect and sustainably manage the marine environment.

Antonio Novellino (ETT) was team member with key role in operational data management and interoperability (WP2) and development of sea level products (WP5).

https://emodnet.ec.europa.eu/en/emod-pace

2019-2024. SO-CHIC

SO-CHIC (Southern Ocean Carbon and Heat Impact on Climate) is a Horizon 2020 (LC-CLA-08-2018) project aiming to understand and quantify variability of heat and carbon budgets in the Southern Ocean through an investigation of the key processes controlling exchanges between the atmosphere, ocean and sea ice using a combination of observational and modelling approaches. SO-CHIC considers the Atlantic sector of the Southern Ocean as a natural laboratory both because of its worldwide importance in water-mass formation and because of the strong European presence in this sector already established at national levels, which allow to best leverage existing expertise, infrastructure, and observation network, around one single coordinated overall objective. SO-CHIC also takes the opportunity of the recent re-appearance of the Atlantic Sector Weddell Polynya to unveil its dynamics and global impact on heat and carbon cycles.

Antonio Novellino (ETT) is leading the Data Management and data dissemination work package

https://cordis.europa.eu/project/id/821001

2019-2023. EuroSEA

EuroSea Improving and Integrating European Ocean Observing and Forecasting Systems for Sustainable use of the Oceans (H2020 - BG-07-2019-2020). EuroSea brings together key European actors of ocean observation and forecasting with key end users of ocean observations, responding to the Future of the Seas and Oceans Flagship Initiative. EuroSea worked to improve the European and international coordination; design of the observing system adapted to European needs; in situ observing networks; data delivery; integration of remote and in-situ data; and forecasting capability.

Antonio Novellino (ETT) is team member in data management WP and being EMODnet Physics coordinator he acts as key stakeholder for the project.

https://cordis.europa.eu/project/id/862626

2016-2021. SeaDataCloud

SeaDataCloud H2020-INFRAIA-2016 [G.A. 730960]. builds on the SeaDataNet pan-European infrastructure which federates NODCs and major research institutes from 34 countries. Over 100 marine data centres are connected and provide discovery and access to data resources for all European researchers. SeaDataCloud works on enhancing and improving marine data standards, tools and services to support European marine data integrators (e.g. Copernicus and EMODnet). SeaDataCloud aims at considerably advancing SeaDataNet services and increasing their usage, adopting cloud and HPC technology for better performance. More users will be engaged and for longer sessions by including advanced services in a Virtual Research Environment.

Antonio Novellino (ETT) is team member in data management WP and responsible for streamlining new data flows (ocean currents from HFR, glider missions etc).

https://cordis.europa.eu/project/id/730960

2015-2019. AtlantOS

AtlantOS (Optimizing and Enhancing the Integrated Atlantic Ocean Observing System) is a Horizon 2020 project (H2020-BG-2014-2) to achieve a transition from a loosely-coordinated set of existing ocean observing activities to a sustainable, efficient, and fit-for-purpose Integrated Atlantic Ocean Observing System (IAOOS), by defining requirements and systems design, improving the readiness of observing networks and data systems, and engaging stakeholders around the Atlantic; and leaving a legacy and strengthened contribution to the Global Ocean Observing System (GOOS) and the Global Earth Observation System of Systems (GEOSS). AtlantOS fills existing in-situ observing system gaps and will ensure that data are readily accessible and useable and complement remote sensing based applications. All AtlantOS work packages strength the trans-Atlantic collaboration, through close interaction with partner institutions from Canada, United States, and the South Atlantic region.

Antonio Novellino (ETT) is team member in data management WP, and being EMODnet Physics coordinator he acts as key stakeholder for the project.

https://cordis.europa.eu/project/id/633211

2015-2019. JERICO-NEXT

JERICO NEXT (Joint European Research Infrastructure network for Coastal Observatory – Novel European eXpertise for coastal observaTories) H2020-INFRAIA-2014-2015 sets up the foundations for implementing a Joint European Research Infrastructure of Coastal Observatories. More specifically it works on high quality standard procedures to be applied to coastal observatories observations and on data FAIRness.

Antonio Novellino (ETT) is team member in data management WP and FAIRness assessment.

https://cordis.europa.eu/project/id/654410

2015-2018. EMODnet Baltic Sea CP

EMODnet Baltic Sea CP - The Baltic Sea Checkpoint was a sea basin monitoring system assessment activity aiming to support sustainable growth in the Blue Economy by assessing the potential of current marine observation and data services to address targeted end-user applications. The project ran from 2015-2018. EMODnet BSCP data portal makes avaialble data products developed under the challenges as well as integrates data products from external sources.

Antonio Novellino (ETT) was leading the WP13 on data management and data presentation

https://emodnet.ec.europa.eu/en/checkpoint/baltic

2013-2017. SCHeMA

SCHeMA (INTEGRATED IN SITU CHEMICAL MAPPING PROBES) is a multi-disciplinary collaborative project (FP7-OCEAN 2013.2 [G.A. 614002]) aiming to provide an open and modular sensing solution for in situ high resolution mapping of a range of anthropogenic and natural chemical compounds. Key targets are chemicals that may adversely affect marine ecosystems, living resources and ultimately human health. SCHeMA focused on 1) chemical solid state miniaturized sensors functionalized using innovative analytical procedures to insure reliable and selective electrochemical and optical measurements of inorganic (micro-)nutrients/pollutants, VOCs, biotoxins, HABs, species relevant to the carbon cycle, as well as effective minimisation of chemical and physical interferences; 2) micro- and mini-analytical and mechanical fluidic systems; 3) miniaturized multichannel probes, incorporating the new sensors and fluidic systems, based on advanced hardware, firmware and wired/wireless interfaces allowing their plug-and-play integration to moored or free floating devices; 4) ad-hoc ICT solutions allowing remote control of data transfer and mapping system reconfiguration according to the OGC standard; 5) Web-based data information system for data storage, standardization, modelling and user-friendly accessibility by public authorities, scientists and existing observation/monitoring systems. Antonio Novellino (ETT) was leading the WP on data management and data presentation.

2022. ARICE

Arctic Research Infrastructure Consortium (ARICE) aim is to provide Europe with better capacities for marine-based research in the ice-covered Arctic Ocean. Through this programme, commercial vessels operating in the Arctic Ocean collect oceanic and atmospheric data on their cruises. At the same time, science and industry work together to explore new technologies, which can improve ship-based and autonomous measurements in the Arctic Ocean. ARICE also implements virtual and remote access of data via an innovative 3D Virtual Icebreaker, which provides anyone with real-time information from the Arctic.

Antonio Novellino (ETT) was subcontracted by CNR-ISP to support the development of a FAIR remote data access and consolidate the data interoperability towards the European Marine data Infrastructures.

https://cordis.europa.eu/project/id/730965

https://data.arice-h2020.eu/

2018-2020. LAMBDA

CMEMS SE LAMBDA - LAnd-Marine Boundary Development and Analysis project. The project studied the CMEMS MFCs thermohaline circulation in coastal areas by a better characterisation of the land-marine boundary conditions, with special regard to the salinity fields, through exploring the capacities of watershed numerical modelling and its coupling to mesoscale regional ocean models.

Antonio Novellino (ETT) team member was in charge of the data management backoffice and data dissemination infrastructures.

https://marine.copernicus.eu/about/research-development-projects/2018-2020/lambda

2016-2018. INCREASE

INCREASE CMEMS SE - "Innovation and Networking for the integration of Coastal Radars into European mArine Services" implemented the necessary developments towards the integration of the existing European HFR operational systems into the CMEMS. Based on INCREASE results, nowadays the HFR are available as part of the CMEMS In Situ TAC products.

Antonio Novellino (ETT) co-designed and co-developed the projects in cooperation and collaboration with AZTI (2016-2018).
https://marine.copernicus.eu/about/research-development-projects/2016-2018/increase

2018-2020.GEREMIA
GEREMIA - Waste Management for the Improvement of Port Waters, for the development of a Decision Support System in the context of port waters management. (II Notice of the Italy-France Maritime Cross-Border Cooperation Program 2014-2020). GEREMIA aims to reconcile the need for economic growth with the preservation of cultural and environmental heritage. The project translates into the implementation of a series of governance tools designed to prevent and contain pollution, improve water quality in the port area, and develop innovative systems for assessing the quality of port waters in the Italy-France cross-border area. GEREMIA not only provides an opportunity to propose management strategies but also allows for pilot actions to be implemented in various port realities of our territories (Genoa, Toulon, Olbia, and La Spezia) through the installation of both standard and innovative systems for effluent containment and bioremediation. The developed system, which includes a portal (http://geremia-dss.democontent.it/) and a DSS system developed for port realities and easily exportable to different contexts, involves monitoring port waters through sampling and analysis of various matrices (sediment, water, mussels, and fish), modeling the dynamics of effluents and pollutant dispersion, installation of effluent containment systems, and definition of an integrated index that characterizes the health status of the port marine environment. ETT has developed the DSS and associated training modules. Antonio Novellino (ETT) designed and coordinated the development of the DSS..
https://www.dss-geremia.it/

2019-2020.SINAPSI
SINAPSI is a climate change risk management project aimed at installing real-time monitoring and modeling systems for sea currents and waves near ports to enhance navigation safety. It addresses the need of port operators to access real-time data on both marine currents and wind. This initiative enhances the operators' ability to navigate and maneuver within ports safely. SINAPSI involves the installation of instruments for monitoring weather and marine conditions near and within the pilot ports of the project (Genoa, Toulon, Livorno, and Piombino). The collected data can be viewed in real-time and made available to port operators such as pilots, captains, port authorities, and maritime authorities. This provides a valuable tool to facilitate the entry and maneuvering of ships into ports under safe conditions. Moreover, the collected data are also utilized for the calibration, validation, and optimization of numerical modeling tools for predicting weather and marine conditions, both existing and developed within the SINAPSI project. Antonio Novellino (ETT) designed and coordinated the development of backend data management solutions and the information presentation portal.
https://s4sinapsi.it/home/

2018-2023. SINDBAD - Sicurezza della Navigazione da Diporto
SINDBAD - Navigation Safety for Recreational Boating is an advanced operational service supporting recreational and tourist navigation accessible via mobile devices. The system provides predictive data (weather and sea conditions) with the highest resolution for the Ligurian Sea. Additionally, it integrates new tools such as motion sickness index maps and comparison of predictions between different models. The SINDBAD computer platform operates in a highly integrated manner, ensuring the exchange of information with external sources. Users can access the platform through a web/app interface, allowing interaction with the cloud database, the central management and visualization module, the ground control unit interaction module, the onboard control unit interaction module, the data integrity management module, and the performance index processing module. Developed through two research projects (SINDBAD and SINDBAD2.0, funded by the Liguria Region POR FESR 2014-2020), the platform has given rise to an entrepreneurial project (SINDBAD Consortium) that develops and delivers the services.
Antonio Novellino (SINDBAD scarl) designed and coordinated the development of web solutions and is one of the administrators of the SINDBAD Consortium
https://www.consorzio-sindbad.com/

2018-2020. PIM
PIM - Integrated Platform for Monitoring the Ligurian Sea integrates and makes immediately accessible data on temperature, currents, waves, anthropogenic marine noise, rainfall, wind, etc., in the area of the Ligurian Sea. PIM also provides vertical products that meet the specific needs of activities in the coastal area. The system is integrated with a semantic engine that assists inexperienced users in interacting with the platform and identifying information and technical-scientific material. The project proposes the initial development of a

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coastal observation system and an information technology infrastructure for environmental monitoring and surveillance and security of the marine territory. Funded by POR FESR Liguria 2014-2020
https://www.liebertpub.com/doi/pdf/10.1089/aivt.2020.0020

2018-2020 @lgawarning
The project develops new methodologies for monitoring toxic microalgae. The data acquired in situ is correlated and validated through standard laboratory procedures for the recognition and classification of different algal species. Completing the methodology is a specific web platform for collecting, integrating, and storing data obtained from various analytical systems (in situ and in the laboratory). ETB 12th Call. Antonio Novellino (ETT) coordinated the project

2013-2015. META
META - Meteo Flash Floods Forecast and Analysis. (Regione Liguria POR FESR 2007-2013). The project aims to establish an innovative observatory for monitoring and controlling the safety of the marine environment using the latest technologies for aggregating, integrating, and analyzing distributed data. The ultimate goal is to create an integrated structure capable of acquiring and analyzing oceanographic, atmospheric, cartographic, hydro-geological, and environmental data related to the specific conditions characterizing the Ligurian Sea basin. This is intended to establish a tool and expertise of excellence and reference for the analysis and utilization of managed parameters, to support their dissemination, and as an innovative system for forecasting and managing territorial security during meteorological emergencies (such as heavy rainfall). 2013-2015.
Antonio Novellino (ETT) coordinated the project

2011-2013. eOsservatorio
eOsservatorio - Computer-based Observatory for Monitoring the Marine Environmental Heritage of Liguria, an early warning system for the remediation of disturbances in marine safety. Liguria Region POR FESR 2007-2013 (DLTM call). The project enabled the development of an innovative observatory for monitoring and controlling the safety of the marine environment based on the latest technologies for aggregating, integrating, and analyzing distributed data. The ultimate goal was to establish an integrated structure capable of acquiring and analyzing physical, chemical, and environmental data related to the specific conditions characterizing the Ligurian Sea basin. This structure serves as a center of excellence and reference for the analysis and utilization of the recorded and analyzed parameters, to support their dissemination, and as an innovative warning system for the conditions of the area under consideration.
Antonio Novellino (ETT) coordinated the project.

2011-2013. MARINE
MARINE - Management and Monitoring of processes in marine distributed environments (2011-2013). The objective of the project is to provide a comprehensive platform to support Operational Oceanography. Once industrialized, it should be capable of supporting the definition and efficiency of information collection processes and the integration of marine resources monitoring data. The innovative aspect lies in the ability to dynamically and flexibly control and manage the phases of data collection, aggregation, and transformation remotely. These functionalities will be built by linking different proprietary distributed information systems. Liguria Region - POR - FESR (2007 - 2013) - Action 1.2.2 "Industrial Research and Experimental Development" – DLTM. Antonio Novellino (ETT) was project team member

2013-2015. MAPS
MAPS - Marine Planning and Service Platform – progetto realizzato per FILSE S.p.A. nel programma Regione Liguria - POR - FESR (2007 - 2013) - Azione 1.2.2 "Ricerca Industriale e Sviluppo Sperimentale" – DLTM. The project designed innovative workflows to make data Findable Accessible Interoperable and Reusable. It contributed to facilitate access to crucial data for setting up marine spatial plans in Ligurian Sea. Antonio Novellino (ETT) was project team member

- **Data Management – Smart Cities**

2023-2026. CALECHE
CALECHE (Coherent, Acceptable, Low Emission Cultural Heritage Efficient Renovation)
Historic buildings represents a considerable share of the European building stock (around 25%). They contribute to the identity and uniqueness of many cities and will only survive if they are maintained as a living space. To preserve a living built heritage, it is necessary to find energy renovation approaches and solutions compatible with conservation rules. This means that the historical and aesthetic value of these properties must be preserved while increasing the comfort of these living spaces, and minimizing their energy consumption and their environmental impact. The project aims to establish new knowledge for the development of sustainable and efficient solutions for historic buildings in order to bring cultural heritage to life and make it open, accessible, inclusive, resilient and low-emission. It is part of the pursuit of various projects involving members of the CALECHE network concerning, for example, bio-sourced renovation or "custom" PV integration. The studied solutions will cover all stages of operation (prevention, monitoring, maintenance) and renovation (setting up the operation, design, works).
https://calecheproject.eu/

2024-2026. BAAS
Bus As A Service (Liguria Region POR FESR 2021-2026) develops a new model of public mobility. The bus becomes a hub supporting the city by collecting environmental data and information, service sentiment, service performance, and more. At the same time, it maps the needs and urban characteristics of the areas served by the vehicles, providing up-to-date information for inclusive and sustainable policy-making.
Antonio Novellino (ETT) contributes to the design of project solutions

2024-2026. NEXTWATERFRONT
NextWaterFront (Liguria Region POR FESR 2021-2026) expands the issues and areas studied in the DSH2030 project. The case study focuses on the extended area between Genoa's Porto Antico and the new Waterfront di Levante—a complex zone that combines tourism, production, commerce, socio-economic activities, and logistics within a limited space. The platform integrates data on environmental quality, seawater quality, structural maintenance status, safety, flows, energy and water consumption, energy production, and more. This allows for the characterization of reference scenarios, identification of best practices, and precise, adaptive management of the area's features to address the needs of various direct and indirect stakeholders who frequent the area

2022-2025. RAISE Spoke 1 – Robotics and AI for Socio-Econimics Empowerment – Urban Technologies
Spoke 1 focuses on the design and development of technologies, devices, and services that enable inclusive access to urban services and the broader environment. Spoke 1 elevates the concept of a Smart City by shaping urban spaces and services to meet citizens' needs, ensuring that the developed technologies effectively enhance perceived well-being in everyday city life. ETT is actively involved in various activities related to data collection, processing, and presentation.
Antonio Novellino (ETT) is part of the team developing the UDP platform, FAIR catalogs, and innovative solutions for urban environments.

2021-2023.DSH2030
Digital Sustainable Harbour 2030 (Liguria Region POR FESR 2014-2020) develops a new system for managing complex urban areas. DSH2030 represents an innovative model for the integrated management of complex assets. The project combines big data, digital twins, machine learning, and distributed intelligent sensors to meet the needs of facility management and the sustainable development of ever-evolving urban areas. The project's pilot case, currently focused on Genoa's Porto Antico, features a significant IoT technology trial. This includes systems for monitoring water and energy consumption, as well as the implementation of sensors and smart meters. The collected data is integrated and managed within a decision-support platform that provides synoptic views to address various facility management needs.
Antonio Novellino (ETT), in addition to contributing to the analysis and development of methodologies, designed and coordinated the web-based decision-support platform.
https://www.digitalsustainableharbour.it/
https://dashboard.digitalsustainableharbour.it/

2022-2023.MOBAS
The Sustainable Mobility in Basilicata 4.0 - MOBAS project (Basilicata Region POR FESR 2014-2020) researched and developed new technological solutions to enhance public and private sustainable mobility

services, ensuring greater competitiveness for the Lucanian production system. ETT participated in project activities through the TRAIN consortium (https://www.consorziotrain.org/).
Antonio Novellino (TRAIN, ETT) contributed to designing solutions for real-time data management and delivery for Mobility as a Service (MAAS) systems.https://progetto-mobas.it/
https://www.industriaitaliana.it/mobas-mobilita-sostenibile-michele-casino/
https://www.industriaitaliana.it/mobas-industrializzazione-bus-mobilita-sostenibile/

2023-2024.Casa Tecnologie Emergenti
The Casa delle Tecnologie Emergenti (CTE) in Genoa focuses on the application of emerging technologies in the cultural and creative industries sector. The project establishes an ecosystem to accelerate and catalyze new market opportunities for businesses in the cultural and creative supply chain, enabling them to develop and deliver Made in Italy solutions in terms of services, technologies, and products powered by 5G/6G infrastructures.The initiative enhances the offering, security, accessibility, and usability of indoor and outdoor artistic and cultural heritage, ensuring inclusivity for even the most vulnerable groups. CTE in Genoa develops a model of a dynamic, immersive, inclusive, attractive, and experiential distributed museum, addressing the needs of stakeholders in the sector, including museums, citizens, tourists, artists, designers, artisans, restorers, innovators, and public administration. The project aims to catalyze the creation and growth of businesses within this supply chain.
Antonio Novellino (ETT) contributes to the design and development of various elements of the demonstrators.
https://smart.comune.genova.it/comunicati-stampa-articoli/innovazione-genova-la-%E2%80%9Ccasa-delle-tecnologie-emergenti%E2%80%9D-sar%C3%A0-pra%E2%80%99-nell%E2%80%99ex

2020-2023. MISENO
M.I.S.E.N.O. - Multipurpose Ital-GovSatCom application Services for Emerging user Needs and Objectives falls within the framework of the Strategic Plan "Space Economy," specifically under the "Mirror GovSatCom" program. This initiative aims to create a geostationary satellite telecommunications system for institutional use, extended to civilian applications. MISENO's components are provided through a Service Center consisting of: A fixed infrastructure for collecting all remote sensing data and Earth Observation services. A mobile infrastructure for field surveys and logistical-operational support for active users. These resources support the management of emergencies and critical situations, focusing on scenarios of particular interest to the Campania Region.
Antonio Novellino (ETT) oversaw the design and development of the web-based Decision Support System (DSS) for data access and scenario analysis.
https://www.daccampania.com/it/miseno/

2019-2021. GRISIS
GRISIS - GESTIONE DEI RISCHI E SICUREZZA DELLE INFRASTRUTTURE A SCALA REGIONALE. Regione Campania POR FESR 2014-2020
GRISIS developed new methodologies and tools for managing and mitigating seismic risk in infrastructures and building networks, addressing both long-term (pre-event) and short-term (pre- and post-event) time scales. To achieve this goal, the project introduced innovative technological solutions for securing infrastructures, as well as methodologies and software applications for assessing seismic and hydrogeological risk scenarios on a regional scale, including damage forecasts to identify effective risk mitigation measures. The project also implemented real-time monitoring demonstrators on: The Circumflegrea metro network (Ente Autonomo Volturno) in Quarto, The NA-SA highway (Società Autostrade Meridionali) at San Pantaleone, The Federico II University IT network, Among the project's outcomes is the establishment of the spin-off GRISIS S.r.l. (2023).
Antonio Novellino (ETT) coordinated the design of the decision-support software tools for risk management and is a founding partner and (interim) CEO of GRISIS S.r.l..
https://progetto-grisis.it/
https://s4grisis.it/GrisisWeb/GrisisPortal/

2019-2023 SENTINEL
SENTINEL - Sistema di pEsatura diNamica inTelligente per la gestioNE deL traffico pesante
The project aims to develop and implement an integrated, intelligent dynamic vehicle weighing system that, by integrating with other systems, contributes to an intelligent and predictive management of heavy vehicle traffic. This system specifically addresses vehicles with actual load conditions incompatible with the road infrastructure's characteristics, enabling real-time rerouting to alternative routes. The project is part of the MIUR PNR 2015-2020 program. ETT participated through the TRAIN consortium. Antonio Novellino (TRAIN, ETT) contributed to designing solutions for real-time data management and delivery for the services

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developedhttps://www.stradeanas.it/it/anas-al-progetto-di-pesatura-dinamica-dei-mezzi-pesanti-monitoraggio-ponti-e-viadotti

2018-2020. BIM ReCulT.
BIM ReCulT: The BIM Method for the Recovery of Cultural Heritage (Campania Region POR FESR 2014-2020). The BIM ReCulT project applied the BIM methodology to monumental buildings, a method known as HBIM (Heritage Building Information Modeling), creating a dedicated platform to support all decision-making phases, including those related to maintenance, rehabilitation, and management of heritage sites.
The project achieved one of the first integrations in Italy between BIM tools and augmented reality (AR) and virtual reality (VR) design solutions.
Antonio Novellino (ETT) oversaw the design of software solutions for the integration of BIM with AR/VR technologies.
http://www.stress-scarl.com/it/innovazione/i-progetti-regionali/bim-recult.html

2018-2020. PLANNER
PLANNER-Piattaforma per LA GestioNe dei rischi Naturali in ambiEnti uRbanizzati
The project involves the creation of a prototype decision-support platform (Spatial Decision Support System - SDSS) based on WEB-GIS technology. This platform, using structured databases, integrates various data such as the environmental characteristics of the studied area (e.g., morphology, geology), the attributes of the built heritage (e.g., construction types, construction periods, maintenance status), and socio-economic context information.The system is designed to provide a comprehensive toolkit for urban planners and public administrations, helping them evaluate, manage, and mitigate environmental risks. This project is part of the Campania Region POR FESR 2014-2020 program.
Antonio Novellino (ETT) oversaw the development of the webGIS platform.

2018-2020. PROSIT
PROSIT- PROgettare in SostenibilITà: qualificazione e digitalizzazione in edilizia (Regione Campania POR FESR 2014-2020).
The project studied new methodologies and procedures for evaluating and quantifying sustainability in construction. It integrates techniques that assess the characteristics of materials based on their life cycle. An integral part of the project includes new VR training solutions and a permanent interactive exhibition titled "7 Steps to Sustainability" at the Città della Scienza in Naples. ETT was responsible for developing the training solutions. Antonio Novellino (ETT) coordinated the development of the VR training modules and participated in the design of the exhibition
https://www.progetto-prosit.it/index.php
http://www.cittadellascienza.it/notizie/7-passi-nella-sostenibilita-la-nuova-mostra-gioco-dal-12-dicembre/

2015-2018. Exploracity
Exploracity (MISE Digital Agenda) aims to develop a multifunctional structure characterized by strong dynamism, with both informational/exhibition elements and a strong promotional/communicative dimension. The project enables visitors to discover the territory in an engaging way, using new and purpose-developed tools. In particular, the project developed augmented reality techniques applied to the cultural experience of visiting museums, innovative multi-touchscreen systems, sensors and interactive controls, 3D reconstructions, multimedia stations, and interactive software. These tools, installed on mobile devices, will allow visitors to explore the territory and interactively access cultural content related to the places they visit.
Antonio Novellino (ETT) coordinated the project.
https://www.visitgenoa.it/fr/node/1826
https://www.mcc.it/primopiano/storie-di-successo/exploracity-genova-itinerari-turistici-tra-il-reale-e-il-virtuale/

2015-2018. METRICS
METRICS - Methodologies and Technologies for the Management and Redevelopment of Historic Centers and Heritage Buildings developed innovative methodologies and technologies to promote sustainability and safety in the historic centers of cities. ETT participated through the STRESS consortium in the creation of several project demonstrators: the monitoring system for Palazzo De Leo (Frigento, AV) - a distributed environmental sensor system (measuring temperature, surface temperature, humidity, CO_2, and lighting) in 12 rooms, managed remotely in real-time and accessible via a 3D webGIS mapping system (one of the first examples of web-based BIM). The "Technological Area" for enhancing the centrality of cultural heritage at the University Federico II Museums Center. A mobile platform for the participatory collection of reports on degradation/faults (MUST). Antonio Novellino (ETT) coordinated the technical implementation of demonstrators 1 and 3.

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http://www.stress-scarl.com/it/innovazione/i-progetti-nazionali/metrics.html

2015-2018 SMARTCASE

SMARTCASE - Innovative Multifunctional Solutions for Optimizing Primary Energy Consumption and Indoor Livability in Building Systems (PON 2007-2013) aimed to develop solutions for reducing energy consumption in the building-system interface, applicable to both new constructions and the redevelopment of existing buildings. The project was implemented in an area near the historic center of Benevento, with the demonstrator serving as one of the first examples of a near to Zero Emission Building (nZEB). It integrates an active monitoring system (with over 100 real-time sensors) and a Building Management System (BMS) for optimal management of energy sources, while ensuring thermo-hygrometric well-being conditions for occupants. ETT participated through the STRESS consortium in the development of the BMS. Antonio Novellino (ETT) designed and coordinated the development of the BMS.
http://www.stress-scarl.com/it/innovazione/i-progetti-nazionali/smart-case.html

2015-1016. Traveller's Support Platform

Traveller's Support Platform (TSP) - Campania Region POR FESR (2007-2013) - INNOVATION DESK CALL. The project developed an innovative ICT platform designed to provide a range of integrated services to tourists, enabling them to independently plan their itineraries, define their travel and movements, and search for tourist routes of interest, including both landscape and food-wine experiences. (2015-2016)

2014-2016. METROPOLIS

METROPOLIS - Integrated and Sustainable Methodologies and Technologies for the Adaptation and Safety of Urban Systems developed new methodologies and innovative, sustainable technologies for assessing and managing risks in urban environments. The goal was to guide mitigation strategies based on an integrated decision-support tool, employing a multidisciplinary approach that reflects the dynamic nature of urban developments, in line with the paradigm of secure and sustainable development. ETT participated through the STRESS consortium in the development of the demonstrators. This project was part of the PON 2007-2013 program. Antonio Novellino (ETT) coordinated the development of the webGIS platform for presenting the project outputs (maps).
http://www.stress-scarl.com/it/innovazione/i-progetti-nazionali/metropolis.html
http://webgis.progetto-metropolis.it/

2014-2015. PROVACI

The PROVACI Project - Technologies for Seismic Protection and Valorization of Cultural Heritage Complexes addressed the combined issue of seismic protection and the valorization of historic buildings. The project focused on developing integrated techniques and methodologies for the protection, sustainable redevelopment, and enhancement of historically and artistically significant sites. PROVACI was characterized by strong interregional collaboration, applying the developed solutions to key sites such as the Arena di Verona, Monastero di Sant'Angelo d'Ocre (AQ), Palazzo Penne in Naples, and the archaeological area of Cerreto Sannita (BN). ETT participated through the STRESS consortium in the development of the project demonstrators. This initiative was part of the PON 2007-2013 program.
Antonio Novellino (ETT) was involved in activities for the Cerreto Sannita and Palazzo Penne demonstrators
http://www.stress-scarl.com/it/innovazione/i-progetti-nazionali/provaci.html

2014-2015.STRIT

The STRIT Project - Tools and Technologies for the Management of Transport Infrastructure Risk was a research project presented under the National Operational Program "Research and Competitiveness 2007-2013 Convergence Regions - Area: Environment and Ecology, Transport and Logistics." The STRIT Project addressed the evaluation, management, and mitigation of environmental risks for large transport infrastructures, aiming to optimize maintenance and/or structural adjustment interventions for elements or works of art in a multi-scale and multi-level perspective. The focus was particularly on significant structural works (bridges, viaducts, tunnels) within road networks located in areas subject to significant environmental risks, particularly seismic ones. ETT participated through the STRESS consortium in the development of the project demonstrators.
Antonio Novellino (ETT) coordinated the development of the webGIS platform for accessing real-time monitoring data on the site in Apice (BN).

2014-2017. OPEN CITY PLATFORM

OCP is a "private cloud" platform designed to support the digitalization of the country and the delivery of cloud services by the Public Administration (PA) to citizens, businesses, and other PAs. The system allows public

administrations to set up a platform for providing services according to typical Cloud paradigms, either through external Infrastructure Service Providers or via autonomous on-premises and insourced service delivery, or a mix of both, to offer e-government services and typical Smart City services that fall under the institutional duties of cities to citizens and businesses (2014-2018). Antonio Novellino (ETT) participated in the activities related to requirements analysis and preliminary design of the platform.

2013-2015.CREEM
CREEM - Control Room per l'Efficienza Energetica e Manutentiva (2013-2015)
The project aims to improve the economic, energy, and environmental efficiency throughout the entire life cycle of buildings, starting with the management of energy systems and their related maintenance activities, leading to a reduction in energy consumption, CO_2 emissions, and maintenance and management costs.
A Decision Support System (DSS) was developed, which is connected to a network of sensors monitoring the status of systems and equipment. The system automatically or upon request provides insights to improve energy management and maintenance techniques for buildings, optimize the work of maintenance teams, identify the most suitable methods for increasing energy efficiency, and reduce environmental impacts globally. Antonio Novellino (ETT) participated in the project activities for the DSS system design.

2010-2015. SIFEG
The Sistema Integrato trasporto merci Ferro-Gomma project develops an information system designed to facilitate the aggregation of freight transport companies and the organization of transport, providing economic, social, and environmental benefits.The GEAAT (Gestione trasporto Associazioni AutoTrasporto) sub-system is an informational, decision-making, and management system aimed at supporting transport companies, consortia, and interport operators in their activities. It allows for the optimization of mission assignments and the utilization of vehicles through a web interface, facilitates document exchange between the company and drivers on board the vehicles, and enables the tracing and routing of vehicles involved in transport, ensuring security and traceability. Antonio Novellino (ETT) participated in the project activities through the TRAIN consortium, specifically in the design and implementation of the system's web interfaces.

2006-2010.INVIA
INVIA - Integrazione Virtuale del sistema dell'Autotrasporto is a project focused on studying innovative tools based on the application of ICT technologies. These tools aim to enhance the competitiveness of the national road transport system, and, by extension, the entire logistics system, which significantly impacts the competitiveness of the country as a whole. The project is supported by MIUR funding under Law 593/2000.
Antonio Novellino (ETT) was responsible for the analysis of needs and the design of the platform that facilitates the matching of supply and demand for telematics services in the transport sector and for intermodality.

2013-2015. AMICO
Automazione e Monitoraggio Intelligente dei Consumi is a project focused on developing an Information System for Decision Support (DSS) that provides relevant data for optimizing performance and reducing emissions in both onboard systems of ships and recreational boats. The system allows for data transfer from the ship's onboard system to the land-based system when the vessel is docked at port.
The DSS analyzes this data, along with additional information from other vessels in the fleet and land infrastructure (fleet planning, logistics systems, weather information, traffic), to optimize resource generation and usage for the next mission.
Antonio Novellino (ETT) contributed to the project activities as part of the TRAIN consortium, focusing on the design and implementation of the system

2006-2008. Interporto Virtuale
Interporto Virtuale (2006-2008) was a project focused on creating an information system equipped with a demand-supply matching algorithm to optimize the connection between transportation vehicles and cargo. The system aimed to improve logistics efficiency by facilitating better allocation of transport resources.
Antonio Novellino (ETT) was responsible for the needs analysis and the design of the demand-supply matching platform as part of the project.

- **Training and Educational tools**

2019-2023. STEP
STEP (SmarT Education Platform) is a software platform developed by ETT that integrates Industry 4.0 enabling technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) to provide innovative solutions for more interactive, engaging, and efficient training. This project, co-financed by the European Union under the National Operational Programme (PON) FESR "Enterprises and Competitiveness" 2014-2020 and the Regional Operational Programme (POR) Liguria FESR 2014-2020, is part of innovation agreements between the Ministry of Economic Development and the Region of Liguria.
Antonio Novellino (ETT) coordinated the project and participated in the design of the software solution.

2021-2023. REALTER
Realter is a simulator based on Augmented Reality (AR) designed to replicate different forms of low vision for training visual rehabilitation specialists. The project aims to provide an immersive experience where operators can simulate various low vision conditions to better understand how individuals with visual impairments perceive their surroundings. Due to the variety and subjectivity of symptoms and the challenge in fully understanding the perception of people with low vision, offering personalized guidance becomes difficult.
The project is co-financed by the Region of Liguria, POR FESR 2014-2020.
Antonio Novellino (ETT) was the technical coordinator responsible for the design and implementation of the solution

2017-2019.CULTMEDIA
CultMEDIA is a project focused on intelligent services based on machine learning for the retrieval of multimedia documents for video post-production at reduced costs, and cross-media storytelling for cultural heritage. The goal of the project is to facilitate the creation of new short-duration audio-video and transmedia narratives by optimizing costs and complexity in cultural production.
The project aims to leverage new machine learning technologies for semantic understanding of visual content, enabling natural language annotations of these materials, determining the "sentiment" embedded in them, and conducting automated searches to manage and reuse existing content from large archives, including 3D graphics, to produce new, high-quality media.
Antonio Novellino (ETT) participated in the project, contributing to the design and development of the machine learning-driven tools for content retrieval and media creation in the cultural context

2017-2018. InTEC - Interactive materioteca.
Regione Lombardia MPMI (FRIM FESR 2020). The project was developed with the goal of creating an interactive, inclusive, and intelligent multimedia material library to be applied in commercial contexts such as museums, retail, and tourism promotion points. The project aimed to enhance multimedia interaction between users and displayed objects through the innovative development of a smart recognition system. This system can also assess user characteristics, such as gender, age group, and nationality, allowing it to propose personalized content related to the object in question. The system adapts to the user's learning capabilities, enabling a more engaging and tailored interaction with the displayed items.
Antonio Novellino (ETT) participated in the project, contributing to the design and development of the smart recognition system and the personalization algorithms for enhancing user interaction with the displayed content.

2011-2014. Service provider for innovative Learning tools - Hippocrates Sintech
ETT was the technical partner of Hippocrates Sintech s.r.l. for the design and development of innovative training tools for Continuing Education in Medicine. Courses ranged from ophthalmology, cardiology, neurology, and oncology to other medical specialties. Antonio Novellino coordinated ETT's activities in support of Hippocrates Sintech.

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- **Data Management and Digital Health**

2020-2022. SMART&Touch-ID
The SMART&Touch-ID HUB is designed to serve citizens, healthcare institutions, local assistance associations, and technological innovators. With the help and expertise of each competence, SMART&Touch-ID aims to create a model for the development and testing of solutions that can effectively address the health and well-being needs specific to various fields of chronic conditions. Thanks to a FESR grant (POR FESR 2014-2020 Call HUB Research and Innovation Action I.1.b.1.3) provided by Regione Lombardia, the SMART&Touch-ID HUB focuses on strategies, services, and technologies to be applied to the rehabilitation processes of this category of patients, identifying solutions that are also economically sustainable for citizens, organizations, and businesses.
Antonio Novellino (ETT) contributed to the design of the SMART solutions
https://smart-touch-id.com/#/home
https://www.openinnovation.regione.lombardia.it/it/b/38399/smart-touch-id-l-hub-per-la-creazione-di-sistemi-riabilitativi-innovat

2018-2020. 4P Health
Liguria 4P Health (Predictive, Personalized, Preventive, Participatory) – Regione Liguria POR 2014-2020. This innovative personal/mobile healthcare solution integrates wearable sensors, processed through algorithms and artificial intelligence, to provide new tools for managing chronic conditions.
Antonio Novellino (ETT) contributed to the development of the project, with particular reference to wearable analysis tools (such as the sensorized glove) and the analysis protocol.
https://www.mdpi.com/1424-8220/22/1/199
https://journals.sagepub.com/doi/10.1177/15589447221075675

2018.2020. AI-MEMO
The AI-MEMO project aims to create an innovative system for monitoring cognitive frailty in elderly individuals by developing a tool that, without aiming for high specificity, can provide useful indications to identify the early onset of symptoms of various neurodegenerative diseases, including Alzheimer's Disease. This will facilitate early and targeted diagnostic interventions.
Regione Liguria POR FESR 2014-2020

2017-2018. GREAVAP
GREVAP - Integrated Platform of Virtual Reality Glove and App (Regione Lombardia POR FESR 2014-2020). The project proposes an innovative platform for neurorehabilitation to facilitate hand function recovery. The system utilizes an engineered glove capable of capturing fine finger movements, which are then used in rehabilitative games delivered either in standard mode via a PC or tablet, or in VR mode using specialized devices such as Samsung Gear VR. The use of virtual reality scenarios aims to enhance patient motivation during the task, leveraging the potential of a virtual environment compared to traditional therapeutic approaches.

2015-2017. In-HEALTH
In-HEALTH - Innovative High Throughput High Content Neurotoxicity Assay Based on Human Adipose Tissue-Derived Stem Cells. The main objectives of the project are: Development of a hardware system for high-throughput acquisition of electrophysiological data, including a wireless recording system on multi-well plates with microelectrodes, equipped with an automatic chemical administration system (partner: MCS). Development of dedicated software for managing and analyzing electrophysiological data. Design of an in vitro screening method for the evaluation of acute, delayed, and chronic neurotoxicity of selected chemicals, based on relevant neuronal endpoints (spontaneous electrophysiological activity) assessed on rodent cultures and human neurons derived from ADSCs. Development of appropriate protocols for differentiating human ADSCs into neuronal lineages, using reagents and materials that are entirely animal-free, as required by Directive 86/609/EEC.ETB - EuroTrans Bio 8th Call.
Antonio Novellino (ETT) coordinated the project and participated in the design of the hardware and software for analysis

2014-2016. DOREMI
The DOREMI project focuses on three main health aspects related to frailty in older people: unhealthy nutrition, sedentariness and cognitive decline. These aspects are the main items at the basis of the DOREMI environment: a context-aware and smart system able to learn and reason about older people, their intentions, preferences and aims. The system is able to provide feedback and propose solutions to improve their lifestyle.

Antonio Novellino

Antonio Novellino (Si4Life, ETT) participated to the design of the in-house system and the testing phase in Genova.
https://cordis.europa.eu/project/id/611650

2013-2015. ACIRAS
ACIRAS - Cybernetic Aids for the Diagnosis and Quantitative Evaluation of Motor Disability of the Upper Limb in Children and Adults (Regione Liguria PAR FAS 2007-2013). The project developed new tools and technologies for the assessment and rehabilitation of the upper limb, ranging from fine hand movements to the complex shoulder-elbow joint. The suite of solutions developed was tested both in experimental environments (IIT) and clinical settings (Gaslini).
Antonio Novellino (ETT) oversaw the development of movement analysis tools and took over the technical coordination of the project during the final year of development.

2013-2015. SMARTANGEL
Smart Angel Project developed an innovative tool designed to support the autonomy of disabled individuals during independent mobility along regular routes (e.g., home-work, home-rehabilitation center) and in daily living activities. The project focused on developing methodological models based on the use of cutting-edge ICT devices (e.g., tablets, touchscreen devices, virtual reality) for simulating movements in predefined environments with varying levels of difficulty and potential unforeseen challenges. Regione Liguria PAR FAS 2007-2013. Antonio Novellino contributed to the design and development of the project solutions.

2013-2015. NEUROKINETIC
NEUROKINETIC Project developed a multifunctional station for evaluating motor performance during the treatment and rehabilitation of patients with neurological conditions, supporting outpatient staff in offering more targeted services and care based on patient needs. The system is an integrated set of devices that provide healthcare professionals with objective, high-informative data to quantify the progression of the condition. A subset of the devices is designed for home use to support patients' therapy and rehabilitation and to assess their ability to benefit from the rehabilitation program.
Regione Abruzzo POR FESR 2007-2013
Antonio Novellino coordinated the project.

2012-2014 ETB NEUROTOX
The project extends the results of the regional project by integrating multiple in vitro models of primary cells obtained from various brain regions or human-derived cells, as well as new substances, to assess chemical toxicity on a simplified model of the mammalian nervous system. The system leads to the development of an electrophysiological methodology that, in a simplified form, represents the tissue responses in the presence of xenobiotics. The results contribute to the creation of a database of chemicals that will be of significant importance for potential predictions of in vivo toxicity. ETB - EuroTransBio 6th call.
Antonio Novellino coordinated the project.

2011-2013 NEUROTOX.DB
The project studies the toxic effects of pharmaceutical substances and chemical agents based on an in vitro model of the nervous system. The main objective is to consolidate a reference database of neuroactive effects for an extensive set of chemicals. These effects are evaluated based on alterations in the electrophysiological activity of neurons, accompanied by detailed information regarding the activation of specific biological and biophysical processes that lead to the alterations themselves. Regione Liguria POR FESR 2007-2013
Antonio Novellino coordinated the project.

2011-2013. PARKINSHOME
PARKINSHOME is a project focused on instrumental assessment in both outpatient and home settings for continuous and remote monitoring, as well as sensorimotor rehabilitation, of patients affected by Parkinson's disease. The project aims to develop innovative solutions for monitoring and supporting the rehabilitation of Parkinson's patients, integrating advanced technologies for remote care and therapy.Regione Liguria POR FESR 2007-2013.
Antonio Novellino coordinated the project.

2010-2012. ESSENCE
Embryonic Stem cell-derived progeny for in vitro Screening of Electrically active Neuronal Cell networks. The ESSENCE project aims to develop functional human-derived neuronal networks cultivated in vitro. These networks are designed to serve as a reductionist model of brain activity, providing a simplified representation

of the nervous system. The goal is to use this model for the screening of new pharmaceutical compounds, specifically focusing on their effects on electrically active neuronal networks.ETB - EuroTransBio 4th call Antonio Novellino coordinated the project.

2007-2010. ARTEMIS
ARTEMIS - In vitro neural tissue system for replacement of transgenic animals with memory/learning deficiencies. A project to develop an in vitro system of neural tissue made from the differentiation of embryonic stem cells inside biomaterials, that exhibits the neural tissue property of the memory acquisition/learning of electrical stimulus, and evaluate this system for two applications for the replacement of the use of animals. FP6 HEALTHLIFESCIENCE.
Antonio Novellino leaded the data management and data processing WP.

2007-2008. Disturbi del movimento
The project developed new methods and an integrated analysis system for the diagnosis and cognitive-functional rehabilitation of individuals with movement disorders. LIGURIA DOCUP (2000-2006).
It involved the design, development, and clinical validation of a prototype integrated system for cognitive-functional analysis of movement, aimed at diagnosis and rehabilitation.
Antonio Novellino coordinated the technical activities of ETT.

2004-2007.IDEA
Imaging Device for Electrophysiological Activity monitoring of neuronal cell cultures. IDEA – FP6 NEST.
Antonio Novellino participated to the research activities.

2002-2004. Atassie Vestibolari
Ministero della Salute – Supporto specifico alle attività di Ricerca – Objective: Development of an innovative tool (Mobile platform with two degrees of freedom) for diagnosis and rehabilitation of sensory and vestibular ataxia. Antonio Novellino supervised the development of the platform.

2001-2004. NEURObit
A bioartificial brain with an artificial body: training a cultured neural tissue to support the purposive behavior of an artificial body. FP6 IST FET 2001 33564.
Antonio Novellino developed his PhD program thesis on the NEURObit.