Research Program

For the activation within the PhD course in Industrial and Information Engineering of the following Research Program, using the resources referred to Ministerial Decree no. 351/2022, relating to the following Measure:

[x] **M4C1- Inv. 4.1** *"Estensione del numero di dottorati di ricerca e dottorati innovativi per la pubblica amministrazione e il patrimonio culturale" (Extension of the number of research doctorates and innovative doctorates for public administration and cultural heritage).* In particular:

[x] **Doctorates for the Public Administration**

[x] Area 09 – Industrial and information engineering

❖ **Title of the research program**: Innovative organizational models for conducting Seveso inspections in the context of the digital and energy transition

❖ **Description:**

The progressive and ever increasing digitization of all activities, which is part of the broader context of the 4.0 paradigm (among the primary objectives of the PNRR - *Piano Nazionale Ripresa Resilienza*- National Resilience Recovery Plan), together with the energy transition, will affect our life, in the coming years, with "unknown" phenomena and risk scenarios accompanied by significant potential impacts. With the advances in artificial intelligence and the dizzying increase in computing capacity, data-driven approaches have increasingly been identify as fundamental tools for recognizing patterns, merging and filtering lots of data. The data-driven approach aims to take into account signals inferable from objective data, available at the reference industrial reality (e.g. historical series or data from the field acquired through innovative sensor technologies and enabling digital solutions) or available through *Open Science* approaches or acquired through the design of experiments that allow to increase the knowledge of the phenomena that impact on safety.

In the context outlined above, the Seveso inspector (a figure defined in the public system of controls on industrial plants, amenable to the "Seveso" legislation, art. 27 of Legislative Decree 105/2015) carries out tasks such as technical control of integrity of critical equipment, certification and verification and management of various aspects, including the assessment of safety reports, verification of management systems for the prevention of major accidents, operational control and aging of equipment. This figure needs to enhance his own profile in order to adapt to the progressive digital transition and technological evolution. The main aspects on which he will have to acquire additional skills are the use of computer/mathematical tools for the management of big-data, knowledge on the impacts of the energy transition and on the interactions between new technologies and new and old plants construction materials. This professionalism is also envisaged by the INAIL reference framework, for which this strengthening assumes a significant depth.

This project proposal aims to promote the enhancement of research results accessible to inspectors (publications of original scientific research results, raw data and metadata, sources, graphic digital representations and images, scientific multimedia materials, guidelines, technical regulations, etc. .)

through the design of an innovative organizational approach and the creation of support, including the digital one, for the conduction of inspections in plants at major accident risk. This model will integrate the approaches for the management of emerging risks related to the digital and energy transition in a multidisciplinary perspective. The objective of the research proposal supports the reinterpretation of the continuous and rapid change of the public administrations.
The achievement of the project objectives will be reached through close collaboration with the *Istituto Nazionale Assicurazione contro gli Infortuni sul Lavoro* (National Institute for Insurance against Accidents at Wor, which for years has been carrying out research, study, experimentation and advanced training in the field of health and safety at work following the expansion of institutional functions as a result of the incorporation of Ispesl - *Istituto superiore per la prevenzione e la sicurezza del lavoro* (Higher Institute for Prevention and Safety at Work), as per Law Decree 78/2010 converted into Law No. 122 of 30 July 2010. Moreover, it will succeed taking advantage of the experience acquired in this field from the French *Institut national de l'environnement industriel et des risques*.

❖ **Period in companies, research centres and Public Administrations:**
The research program will be carried out in collaboration with the following subject:

Institution: Istituto Nazionale Assicurazione contro gli Infortuni sul Lavoro (INAIL)
Registered office: Piazzale Pastore 6, 00144 Roma
Institution legal representative: Franco Bettoni

The aforementioned institution will host the PhD student, beneficiary of the scholarship financed on Ministerial Decree 351/2022 for no. **6** months during the PhD program.

❖ **Period abroad::**
The research program provides for a period abroad of no. **6** months at the following institution:
Institut national de l'environnement industriel et des risques (Ineris), Verneuil-en-Halatte Parc Technologique ALATA, BP 2 Verneuil-en-Halatte, France

We also declare that this program complies with the principle "not to cause significant damage" (DHSH) pursuant to art. 17 of regulation (EU) 2020/852 in coherence with the technical guidelines prepared by the European Commission (Communication of the European Commission 2021/C58/01) and guarantees compliance with the horizontal principles of the PNRR (contribution to the climate and digital target so-called tagging, the principle of gender equality and the obligation to protect and enhance young people).