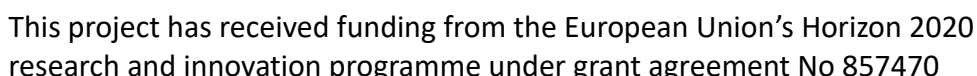




# NOMATEN: Centre of Excellence in Multifunctional Materials for Industrial and Medical Applications

# Grant Agreement 857470



## MS2 – Infrastructure Map Completed

Public version of Deliverable D4.1, Milestone: MS2

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PU	Public	x
RE	Restricted to a group specified by the partners of the NOMATEN project	
CO	Confidential, only for partners of the NOMATEN project	



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**General information about the project and Partner institution infrastructure:**

The overall aim of the project is to support the establishment in Poland of a world-class international Centre of Excellence (CoE) in Multifunctional Materials for Industrial and Medical Applications (NOMATEN) as a partnership between the National Centre for Nuclear Research of Poland (NCBJ) and two internationally-leading institutions with established reputations and outstanding scientific and innovation expertise: the French Alternative Energies and Atomic Energy Commission (CEA) and VTT Technical Research Centre of Finland Ltd. (VTT).

NCBJ, CEA and VTT are working together to build NOMATEN CoE, which main goal is to close the gap between nuclear and non-nuclear applications and tackle two major challenges: maintenance of Europe's long-term competitiveness in nuclear technologies and, importantly, the translation of cutting-edge knowledge from the nuclear sector to provide results important for general industry and healthcare. These goals are realized by sharing infrastructure, conducting challenging experiments together and ensuring knowledge transfer between interested parties. As a first step, map of available research infrastructure (divided into small, large and unique equipment) located at each partner location has been prepared. This information is included in D4.1 and will serve the purpose to establish common research programmes.

Goal of this Milestone is to give a brief information about each partner mission, capabilities and to briefly describe the unique equipment which is already existing at each partner locations and will be made available to NOMATEN CoE. This document has been created based on the confidential documents: Deliverable D4.1 „Map of NOMATEN partners infrastructure and Access Rules“ and D2.2 „Annual Report“. All informations placed in here are publicly available for any third party.

**NCBJ description:**

National Centre for Nuclear Research (NCBJ) came into existence on September 1, 2011 in effect of merging the former Institute of Atomic Energy POLATOM with the former Andrzej Sołtan Institute for Nuclear Studies. NCBJ fundamental/applied research profile combines nuclear power-related studies with various fields of sub-atomic physics (elementary particle physics, nuclear physics, hot plasma physics etc.). The Centre is strongly involved in developing nuclear technologies and promoting practical applications of nuclear physics methods. Major market products manufactured in the Centre include radiopharmaceuticals and a range of particle accelerators for science, various industry sectors and medicine. The Centre is an IT and R&D background infrastructure indispensable to provide expert support for decision-makers in the project to develop in the coming years nuclear power industry in Poland. National Centre for Nuclear Research is the largest research Institute in Poland. We are also the only Polish research institution operating a nuclear reactor (MARIA reactor). We are involved in studies of materials for Gen. III and IV reactors, power engineering, accelerators and fusion devices as well as in the studies of the use of nuclear-related technologies in material engineering.

In recent years, the research infrastructure of the institute is intensively expanding. In the near future it will consist, among others, of the Center for the Design and Synthesis of Molecularly





Targeted Radiopharmaceuticals "CERAD" which will be equipped with a 30/15 MeV cyclotron, Polish free-electron laser PoFEL, CENTRIX - industrial radiography center, and the newly established Center of Excellence in Multifunctional Materials for Industry and Medical Applications - NOMATEN.

**CEA description:**

The Alternative Energies and Atomic Energy Commission (CEA) is a key player in France in the field of research, development and innovation, in four main areas: defence and security, low carbon energies (nuclear and renewable), technological research for industry, fundamental research in the physical sciences and life sciences. CEA is established in nine research centers throughout France. It works in partnership with many other research bodies, local authorities and universities, in France, in Europe and outside Europe.

CEA provides the French public authorities and industry with the expertise and innovation needed to develop improved nuclear power generation systems. CEA was founded at the very beginning of the development of the French nuclear industry and, in association with EDF, they designed the first generation of reactors in France and most of the industrial-scale processes currently used in nuclear fuel cycle plants. CEA is responsible for research and innovation programmes in two key actions: supporting the French nuclear industry and developing future nuclear systems (Generation IV). CEA is also investigating thermonuclear fusion, in particular in the frame of the international project ITER.

Thanks to its long-standing activities in the nuclear area, CEA has also built up expertise in nuclear radiobiology and toxicology, aiming at accurately investigating the impact of nuclear activities on mankind and the environment. CEA radiobiology and toxicology research also contributes to the updating of standards on the radiation protection of workers in the nuclear industry and on the judicious use of medical radiotherapy. Additionally, CEA has also and since its creation investigated in the in vitro, ex vivo, and in vivo medical applications of radioactivity and particular radionuclides: i) direct applications, such as the development of short-lived, positron-emitting radiopharmaceuticals (e.g.  $^{11}\text{C}$ ,  $^{18}\text{F}$ ) for diagnostic purposes, and associated labelling methodologies and technologies, and ii) indirect applications, such as the labelling with long-lived, beta-emitting isotopes ( $^3\text{H}$ ,  $^{14}\text{C}$ ) of molecules for supporting drug development (PKPD for example).

**VTT description:**

VTT Technical Research Centre of Finland Ltd is a multitechnological research organisation, which has a large research infrastructure on materials research. The research infrastructure for both the irradiated and non-irradiated materials, as well as the research facilities for pharmaceuticals are presented in the following. There are two large research facilities on the energy materials: the Centre for Nuclear Safety (CNS) and the Research hall. The VTT Centre for Nuclear Safety is Finland's recent infrastructure to ensure safety and efficiency in nuclear power generation and radwaste management, including both experimental and computational R&D services. Unique set of sophisticated experimental facilities, analysis and modelling software can be used to cover research topics like new-built projects, operation and maintenance, decommissioning and waste management. VTT has facilities for antibody development on the radiopharmaceuticals research area. The research





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facilities for these studies are also introduced in the following. VTT quality management system is certified for ISO 9001:2000.

VTT has transformed from governmental, Finnish technical research organisation into a non-profit limited company to support innovation and technology development worldwide and tackle the global grand challenges. With VTT's strong experience on customer work, excellence in science, and commercial and EU level activities VTT supports NOMATEN CoE through the NOMATEN Teaming EU project.

**Detailed list of the available equipment can be accessed on Partner institution websites.**



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