INTRODUCTION TO THE SPECIAL ISSUE

Research Initiatives in Europe: Cooperation for the Blue Growth

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This special issue of the Journal contains selected contributions from cooperative research projects in the European area. All the contributors have participated in the MTS/IEEE Oceans'15 Genova Conference, either with thematic technical sessions or with prototype display and demonstration in the exhibit held in parallel to the technical program, or both. As a follow up of the conference, the project leaders were encouraged to provide a general view of their projects and of their main technical achievements for inclusion in this special issue. We thank all our colleagues that have answered the call, and have provided the material for this issue.

In browsing through the papers, the reader may be surprised by the involvement of so many partners from different European Countries, and by the mix of Academy, Research Centres

and Industries participating in the projects. But this is indeed no surprise if one looks at the history and development of European research in the past twenty and more years. In particular, the European Union , as the main source of research funding, has been the driver of a profound evolution of the whole European Research area, along two main converging directions. One is the creation of a community of researchers, where common languages, practice, research standards are established throughout Europe, not only by supporting trans-national cooperative projects but also through networking initiatives, students exchange, young researchers mobility. The second direction has been that of progressively emphasizing the involvement of industries, companies and end-users in the research itself, pushing the technological and scientific innovation toward societal needs. The current European Union research framework program, Horizon 2020, running 2014 – 2020, includes the Blue Growth strategy for marine science and technology: harness the huge potential of the world-wide oceans for jobs and growth in a sustainable, environmentally conscious, and responsible way. The papers in this special issue represent several specific developments and achievements toward the long term Blue Growth goal.

Another aspect of the European Union research policy is that of the subsidiarity principle: European Union funding will be assigned to research projects that have a European dimension, i.e., that cannot be tackled at National or Regional/trans-Regional level. This approach has encouraged and favored also the cooperation of research subjects at National level, and the creation and growth of strong local research communities. That is why in this special issue there is also space for National and Regional cooperative projects, since they are also part of the global European research space, and indeed they represent the foundation of the more ambitious projects funded at European level.

European dimension is a dynamic concept, that throughout the years has evolved as a consequence of the growth of the European research community itself, of the changes, sometime dramatic, in societal challenges, of the enlargement of the European Union, now comprising 28 Countries. The old-timers may remember the MAST – Marine Science and Technology research funding program of more than twenty years ago, in which the typical size of a European project consisted in a 3 – 5 partnership. The growth in European dimension and its current level, as well as the evolving societal needs, are well represented in the paper (Real-Arce et al.) in this issue, describing the efforts and achievements of the PERSEUS project: a joint effort of 32 partners (from 12 different European Countries) toward the development and demonstration at sea of innovative technologies for border protection and intelligent surveillance. Not all the cooperative European projects need to have the dimension and broadness of a project as PERSEUS, though. Focusing more on the scientific research trends, there is a clear emphasis toward the development of robotic systems at sea for the execution of complex operations in an autonomous way. The projects MORPH (Kalwa et al.) and WiMUST (Antonelli et al.) are examples of the use of heterogeneous Autonomous Underwater Vehicles (AUVs) in team for respectively scientific marine exploration and seismic surveys. The use of AUVs as an aid to divers operations is explored in the CADDY project (Miskovic et al.), while the enhancement of Remotely Operated Vehicles (ROVs) with on board intelligence is one of the topics of the DEXROV project (Di Lillo et al.), aiming at the execution of underwater intervention tasks in autonomous or semi-autonomous way. The efforts toward the creation of a more and more integrated European Research Area is well described through the EuRathlon project (Ferri et al.), describing the competition of mostly student teams Europe-wide in land, aerial and undersea robotics for the execution of search and rescue tasks in a disaster-like scenario.

EuRathlon core partnership consists in 7 units, and 16 teams from research establishments other than the core partners participated in the final event, for a total of 134 students involved and 40 different robots deployed in the field. Cooperation among the teams was encouraged through the scoring system, and it was achieved possibly even beyond expectations. On a more local level, MARIS (Casalino et al.) is an Italian national project exploring undersea autonomous intervention with two cooperating robots. Building up on previous experience in past or on-going European projects, MARIS is a good example of how the progress at European level does strengthen and enhance the national research communities, allowing in turn these communities to be present at European level for even more ambitious objectives. The same approach scales down at Regional level: the papers by (Bruno, Gallo et al.) and (Bruno, Lagudi et al.), respectively on the COMAS and VISAS projects, reports on research initiatives in Southern Italian Region focused on marine archaeology. Both projects reflect clearly specific interests and needs, and contribute to the growth of an on-site innovation community, including local Small and Medium Enterprises. Note however that the achievements of these projects can and are being transferred also toward broader National and International scenarios.

The baseline of the projects reported in this issue is not only marine technology, is also: cooperation. Cooperation among the various actors throughout Europe has been the key to the growth of the European Research throughout these years, in any sector, i.e., not only in marine technology developments. Integration within the European Union has been the leading process that allowed so many institutions and companies Europe-wide to grow together. This path has not always been smooth, several faux-pas possibly happened, and many criticism to the way the process has evolved are certainly justified. But the results have contributed to the longest period of economical well-being, cohesion and peace in

Europe ever seen in history. The very day we conclude these notes one of the leading European Countries has decided, by popular vote, to drop off from the European Union. We do not know what the consequences will be, and of which scale. It is our hope that, either in marine technology research and development, and in higher and broader fields, this will not be a step too far back.

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