

# TETHYS: Toward Emerging Technology for Harbour sYstems and Services

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“If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea.” *Antoine de Saint-Exupéry*

The third edition of Toward Emerging Technology for Harbour sYstems and Services (TETHYS) workshop was held as a special session in UBICOMM 2016, in Venice. We moved from Bari – which hosted the first two editions – to another city with ancient and noble maritime traditions. Historical ties link these two cities, since a Venetian community of sea traders established in Bari around one millennium ago. The goal of TETHYS is to project this secular seafaring experience and culture into the future. We adopt a strong “smart city” perspective and aim to exchange expertise on technological and organizational innovations in order to improve effectiveness and efficiency of harbor systems and to the infrastructures tying the harbor with the remainder of the city.

Ubiquitous communication and computation technologies, models and methods are the main focus of TETHYS, applied to all sea-related activities: multimodal transport systems for passengers and goods, smart Port Community Systems (PCS), yachting and maritime leisure, and more. In particular, monitoring of coasts and sea environment has been attracting increasing attention in latest years, due to the higher consciousness on global warming and public health.

Three contributions were accepted for the TETHYS special session. The work of A. Cinquepalmi and U. Straccia describes a prototypical framework for emotion detection for cruise passengers when viewing videos of safety procedures. From a technical standpoint, it is quite innovative, combining fuzzy logics learning and semantic matchmaking to overcome the limitations of traditional solutions. The overall technical framework is rather general and can be exported to other scenarios, but the selected application is by itself an interesting element of the work, as passenger engagement is important for maritime transport safety. Another general approach has been introduced by my research group, in order to enhance ubiquitous knowledge discovery. The Physical Web technical proposal by Google Inc. has been enhanced to create a Physical Semantic Web, in which objects can advertise semantically annotated resource descriptions in mobile ad-hoc networks through Bluetooth Low Energy. The proposed framework aims to enable autonomous machine-to-machine interactions in addition to the human-to-machine ones envisioned by the Physical Web. All Internet of Things scenarios can benefit from such an innovation, and in particular we deem sea monitoring can be enhanced by deploying multisensor nodes (*e.g.* on buoys), which advertise high-level descriptions of environmental conditions and relevant events to mobile sea drones patrolling an area. This can allow more cost-effective and timely control of large sea patches. Environmental monitoring is also the focus of the work by F. Scioscia *et al.*, who describe an integrated Information and Communication Technology (ICT) platform for supporting data collection and analysis from surveys in the Taranto Sea. Concern over pollution and population health in that area has grown in latest years. The presented ICT platform is part of a new requalification initiative involving scientists and engineers of multiple disciplines. Scalability, openness, security and support for pluggable data management tools are among the peculiarities of the described solution. Like the other works in this edition of TETHYS, this one can be easily generalized to other marine environment analysis contexts.

Before leaving the reader with the papers, I would like to thank the UBICOMM organization and editorial staff, who have provided very effective and timely support. I hope the contents of the TETHYS special session will be stimulating for readers as much as for the conference attendees.

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TETHYS: Organizer and Chair