



# UNWiS 2024

Padova (Italy) | 29 January - 2 February 2024  
 Department of Information Engineering (DEI)  
 University of Padova

## 2nd Winter School on Underwater Network Simulations

### Programme

|                         |                                | BASIC                                                                                              | ADVANCED                                                                                         |
|-------------------------|--------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Mon</b><br><b>29</b> | 9:00 - 9:30                    | Registration and welcome                                                                           |                                                                                                  |
|                         | 9:30 - 10:45                   | Network simulations: introduction, statistical analysis and the DESERT framework                   |                                                                                                  |
|                         | 10:45 - 12:30                  | Protocol stacks, simulation, emulation and sea trials                                              | DESERT setup and examples                                                                        |
|                         | 14:00 - 15:30<br>15:45 - 17:00 | Basics of GNU/Linux, the Shell and DESERT setup<br>First examples of simulation in DESERT          | Adaptivity an time-varying channels in simulations<br>Examples and exercises on time variability |
| <b>Tue</b><br><b>30</b> | 9:30 - 10:30                   | Multimodal communications in DESERT Underwater                                                     |                                                                                                  |
|                         | 10:45 - 12:30                  | Electro-magnetic and optical underwater channels modeling                                          | OFDM in underwater acoustics                                                                     |
|                         | 14:00 - 15:30<br>15:45 - 17:00 | Acoustic UW physical layers in DESERT<br>Examples on simulated physical layers                     | Markov Chains in UW channel modeling<br>Examples and exercises on Markovian modeling             |
|                         |                                |                                                                                                    |                                                                                                  |
| <b>Wed</b><br><b>31</b> | 9:30 - 10:30                   | EvoLogics: company and products presentation                                                       |                                                                                                  |
|                         | 10:45 - 12:30                  | Time scheduler and events management in DESERT                                                     | Cross-compiling DESERT for ARM architectures                                                     |
|                         | 14:00 - 15:30<br>15:45 - 17:00 | Real-time scheduler in DESERT<br>Connecting DESERT to real devices with DMACE                      | Developing a DESERT packer<br>Using DESERT in sea-trial                                          |
|                         |                                |                                                                                                    |                                                                                                  |
| <b>Thu</b><br><b>1</b>  | 9:30 - 10:30                   | OES Young Professionals and Women in Engineering                                                   |                                                                                                  |
|                         | 10:45 - 12:30                  | Structure of a DESERT layer module                                                                 | Experiment setup                                                                                 |
|                         | 14:00 - 15:30<br>15:45 - 17:00 | Developing a DESERT module: guidelines<br>Exercises on setting up a simple DESERT module           | In-field experiment in the river or DMACE-based<br>Data collection, data parsing and results     |
|                         |                                |                                                                                                    |                                                                                                  |
| <b>Fri</b><br><b>2</b>  | 9:30 - 10:30<br>10:45 - 12:30  | The GUWMANET protocol: advanced underwater standardization<br>Connecting DESERT to Neural Networks |                                                                                                  |
|                         | 14:00 - 15:30<br>15:45 - 17:00 | Introduction to the WOSS framework<br>Conclusion                                                   |                                                                                                  |
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