

ESIT 2018 Tutorials

# **FOUNDATIONS OF NETWORK LOCALIZATION AND NAVIGATION**

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## **Abstract**

The availability of positional information is of extreme importance in numerous wireless applications. The coming years will see the emergence of location-aware networks with sub-meter localization accuracy, minimal infrastructure, and high robustness in harsh (GPS challenged) environments. To reach this goal we advocate network localization and navigation, a new paradigm that exploits a combination of wideband transmission and spatiotemporal cooperation. Our work relies on statistical communication theory and has addressed this problem from three perspectives: theoretical framework, cooperative algorithms, and network experimentation. This tutorial will provide an overview of our recent research results in this exciting field.