



MED 2021

29th Mediterranean Conference on Control and Automation

JUNE 22 – 25 2021, BARI, ITALY, <http://med2021.poliba.it>

Workshop Session at MED 2021 on

Toward Industry 5.0: Sustainable and Regenerative Economy with Focus on Smart Small Towns

Abstract

This Workshop is driven by the increasing worldwide attention for a sustainable economy in virtually all industrial sectors, and is inspired by the Conference venue, which is the Region of Puglia in Southern Italy.

The major cities (provinces) in Puglia count less than 320.000 inhabitants¹ and, in addition, the limited extension of their territory makes them a representative example of “Smart Small Towns”, a definition that is somehow alternative to the concept of “Smart Cities”, but that reflects very well the status and the aspirations of a large fraction of populated areas worldwide. In fact, Europe barely counts 16 cities² with more than 1 million inhabitants, whereas the “rural” areas and communities in Europe are home to more than half of the EU population. Actually, among the priorities to be addressed in the Cork Declaration 2.0³, which sets out the expectations and aspirations of rural areas in Europe, there is a strong need to undertake actions for turning such rural villages into “Smart” Small Towns.

This Workshop aims at analysing the obstacles that citizens living in Small Towns cope with (reduced logistic connections, digital impairment, etc.), and at understanding if and how Robotics and Automation could help to deliver sustainable daily-life solutions to improve socio-economic welfare, well-being, and quality of life in medium-small towns and rural ecosystems, i.e., by assuring mobility, access to high quality services, affordable healthcare, safety, culture and more.

Novel economic paradigms will be considered during the presentations, with particular attention to those sectors which have been severely hit⁴ by the recent Covid-19 pandemic, such as health, tourism, agriculture, food and accommodation, etc., while dealing with the increasingly crucial issues of the digital transition and energy sustainability in the paradigm of “Industry 5.0”: which goes beyond Industry 4.0, through Industry 4.1 (AI-empowered Cyber-Physical Systems), to total Sustainability, including Circular Economy and Regeneration. This concept has been illustrated in the recent report⁵ of the European Commission on Industry 5.0, entitled “Towards a sustainable, human-centric and resilient European industry”.

In this framework, priority will be given to analysing different technological challenges and solutions for control and automation for Industry 5.0, in line with the principles of Circular Economy and accordingly, in a wide-range, to the European Green Deal⁶ for a Sustainable Future.

Among the many possible applications of Industry 5.0 to make “Smart Small Towns” possible, we have selected three: 1. Logistics 5.0: technologies and current trends; 2. Socio-economic issues in Port Cities Ecosystems; 3. Real-life scenarios.

¹ https://it.wikipedia.org/wiki/Demografia_della_Puglia

² https://it.wikipedia.org/wiki/Comuni_dell'Unione_europea_per_popolazione#Lista_di_comuni

³ https://enrd.ec.europa.eu/sites/enrd/files/cork-declaration_en.pdf

⁴ McKinsey & Company report:

<https://www.mckinsey.com/industries/public-and-social-sector/our-insights/us-small-business-recovery-after-the-covid-19-crisis>

⁵ <https://op.europa.eu/en/publication-detail/-/publication/468a892a-5097-11eb-b59f-01aa75ed71a1/>

⁶ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en



MED 2021

29th Mediterranean Conference on Control and Automation

JUNE 22 – 25 2021, BARI, ITALY, <http://med2021.poliba.it>

Date and duration

June 22, 2021

09:00 am – 1:20 pm CEST

Mode of presentation:

Fully online

Organizers

Paolo Dario, Professor
The BioRobotics Institute
Scuola Superiore Sant'Anna, Pisa, Italy
E-mail: paolo.dario@santannapisa.it

Barbara Bonciani, PhD
Livorno Municipality, Italy
Member of the Scientific Committee of RETE (Association for the Collaboration
of Ports and Cities)
Associate Researcher, CNR-IRCrES
E-mail: b.bonciani@comune.livorno.it

Rossella Raso, PhD
The BioRobotics Institute
Scuola Superiore Sant'Anna, Pisa, Italy
E-mail: rossella.raso@santannapisa.it



MED 2021

29th Mediterranean Conference on Control and Automation

JUNE 22 – 25 2021, BARI, ITALY, <http://med2021.poliba.it>

Workshop Program

June 22, 2021

9:00 am – 1:20 pm

Reference time zone: CEST

Chair of the Workshop Session: Paolo Dario

❖ 9:00 – 09:20 am

Welcome and Introduction

Paolo Dario, Professor, Scuola Superiore Sant'Anna, Italy. “*Setting the Stage. Introducing the Concept of Industry 5.0 and of Smart Small Towns*”.

❖ 09:20 – 10:00 am

Session 1. Logistics 5.0: Technologies and Trends

Moderator: Barbara Bonciani

Speakers (20' each):

1. **Vittorio Marzano**, Associate Professor, Università degli Studi di Napoli Federico II, Italy. “*Towards a sustainable, safe, and simple logistics: some trends and prospects*”
2. **Paolo Pagano**, Director of the Joint Laboratory CNIT (Italian Interuniversity Consortium for Telecommunications), Italy, and Port System Authority of the Northern Tyrrhenian Sea, Livorno (Italy). “*Port of the Future: Innovating ICT Services in the 5G Era*”

❖ 10:00 – 10:30 am

Q&A Discussion

❖ 10:30 – 11:10 am

Session 2. Socio-Economic Issues in Port Cities Ecosystems

Moderator: Vittorio Marzano

Speakers (20' each):

1. **Barbara Bonciani**, City councillor for port and city-port integration of Livorno Municipality, Italy, and Member of the Scientific Committee of RETE (Association for the Collaboration of Ports and Cities), Italy. “*The Impact of Ports Automation on Human Work-Force*”
2. **Massimo Clemente**, Director of CNR-IRISS (Research Institute for Developmental Innovation and Services), Naples (Italy), and Director of the Scientific Committee RETE Member of the Scientific Committee of RETE (Association for the Collaboration of Ports and Cities), Italy. “*Planning*”

❖ 11:10 am – 11:40 am

Q&A Discussion



MED 2021

29th Mediterranean Conference on Control and Automation

JUNE 22 – 25 2021, BARI, ITALY, <http://med2021.poliba.it>

❖ 11:40 – 12:20 am

Session 3. Real-life Scenarios

Moderator: Paolo Dario

Speakers (20' each):

1. **Gastone Ciuti**, Professor, Scuola Superiore Sant'Anna, Italy. "*Disassembly Processes for a Regenerative Economy*"
2. **Michelle Johnson**, Professor, University of Pennsylvania, USA. "*Low-cost Telemedicine for Small Towns. Robot-mediated Rehabilitation*" (pre-recorded video)

❖ 12:20 am – 12:50 am

Q&A Discussion

❖ 12:50 am – 1:20 pm

Conclusions

End of the Workshop