



46th Annual Conference
Italian Operations Research Society

Emerging Advances in Logistics Systems

Trieste, September 6-9 2016

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Programme Book

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Invited Lectures

Invited Lecture 1: Derivative-Free Constrained Global Optimization, with Applications

Gianni Di Pillo

Chair: Massimo Pappalardo

Tuesday, September 6th 2016, 14:15 - 15:15

Room Aula Magna

Invited Lecture 2: Challenging Optimization Problems in E-Commerce Logistics

Frédéric Semet

Chair: Daniele Vigo

Wednesday, September 7th 2016, 14:15 - 15:15

Room Tartini

Invited Lecture 3: Healthcare Logistics

Stefan Nickel

Chair: Domenico Conforti

Thursday, September 8th 2016, 14:15 - 15:15

Room Tartini

Tuesday, September 6th, 2016

Session TUA1: Routing and Logistics I (invited)

chair: Paolo Dell'Olmo **time:** 15:45-17:00 **room:** Aula Magna

1. Energetic shortest path problem
Carmine Cerrone, Giovanni Capobianco, Raffaele Cerulli, Giovanni Felici
 2. Recent advances of Bin Packing Problems in the field of Transportation and Logistics
Mauro Maria Baldi, Luca Gobbato, Guido Perboli, Roberto Tadei
 3. A mathematical programming approach for train calendar generation
Paolo Dell'Olmo, Lavinia Amorosi, Giovanni Luca Giacco
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Session TUA2: Operations Research for Health Care I (invited)

chair: Giorgio Romanin-Jacur **time:** 15:45-17:00 **room:** 21

1. Scheduling of working hours of nurses in hospital: The case of the University Hospital in Cagliari
Simone Zanda, Carla Seatzu, Paola Zuddas
 2. Models for the design of a primary care network
Roberto Aringhieri, Fabio Cerutti
 3. Rare diseases health care network: model and simulation
Giorgio Romanin-Jacur, Arturo Liguori
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Session TUA3: Logistics and Supply Chain

chair: Mauro Dell'Amico **time:** 15:45-17:00 **room:** 13

1. Temporary Depot Location-Routing in Humanitarian Relief Logistics
Wapee Manopiniwes, Takashi Irohara
 2. Optimization of obsolete part reusing: a case-study
Roberto Rosetti, Emanuele Frontoni, Fabrizio Marinelli, Primo Zingaretti
 3. Resolving Real World 3D Packing Problems
Andrea Bettinelli, Matteo Pozzi, Daniele Vigo
 4. Construction Consolidation Centers: a Stochastic Facility Location Approach
Stefano Novellani, Mauro Dell'Amico
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Session TUB: Sportello Matematico

Antonino Sgalambro **time:** 17:15-18:00 **room:** Aula Magna

Wednesday, September 7th, 2016

Session WEA1: Maritime Transport and Logistics I (invited)

chair: Raffaele Pesenti **time:** 9:00-10:30 **room:** Tartini

1. Modelling and solving the direct ship-to-ship container transshipment problem
Marcello Sammarra, M. Flavia Monaco
 2. Modeling and solving the multi-port container stowage planning in circular routes
Massimo Paolucci, Daniela Ambrosino, Anna Sciomachen
 3. Two-level heuristics for the all-colors shortest path problem
Andrea Raiconi, Francesco Carrabs, Raffaele Cerulli
 4. Managing the ship movements in the Port of Venice
Raffaele Pesenti, Elio Canestrelli, Marco Corazza, Giuseppe De Nadai
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Session WEA2: Decision Making Problems

chair: Maria Franca Norese **time:** 9:00-10:30 **room:** 21

1. Dynamic capabilities in new product development and its effects on firm performance
Mohammad Yasser Darvizeh, Jian-bo Yang, Steve Eldridge
 2. Evaluating The Criteria for Choosing The Best Pharmaceutical Warehouse as Supplier in Pharmaceutical Supply Chain by Using Fuzzy Type-2 Analytic Hierarchy Process
Betül Özkan, Hüseyin Başgil
 3. Multi-criteria decision aid processes from hundreds of indicators to structured models and applications
Maria Franca Norese, Antonino Scarelli
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Session WEA3: Trends in Aviation (invited)

chair: Guglielmo Lulli **time:** 9:00-10:30 **room:** 13

1. Flight Retiming in an Integrated Airline Scheduling Problem
Valentina Cacchiani, Juan-José Salazar-González
2. Air traffic distribution through the modulation of en-route charges
Lorenzo Castelli, Tatjana Bolić, Stefano Costanzo, Desirée Rigonat
3. Metaheuristics for efficient aircraft scheduling and re-routing at busy terminal control areas
Marcella Samà, Andrea D'Ariano, Dario Pacciarelli, Francesco Corman
4. A statistical analysis of flight routes in the European Airspace
Luigi De Giovanni, Giovanni Andreatta, Lorenzo Capanna, Guglielmo Lulli, Luca Righi, Konstantinos Zografos

Session WEB1: Scheduling

chair: Alessandro Agnetis **time:** 11:00-13:00 **room:** Tartini

1. Simulated Annealing for Discrete Lot-Sizing and Scheduling
Andrea Schaerf, Sara Ceschia, Luca Di Gaspero
 2. Improved time-indexed MILP formulation for the Resource-Constrained Project Scheduling Problem
Maxence Delorme, Jean François Côté, Manuel Iori, Silvano Martello
 3. The Shuffled Teams Round Robin Tournament Problem
Fabio Salassa, Federico Della Croce
 4. Open Pit Mine Planning
Davaa Baatar, Andreas Ernst, Dhananjay Thiruvady, Mohan Krishnamoorthy
 5. An Integrated Algorithm for Vehicle and Crew Scheduling Problems for Local Public Transport Companies
Claudio Ciano, Demetrio Laganà, Roberto Musmanno, Francesco Santoro
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Session WEB2: Path Problems

chair: Giovanni Felici **time:** 11:00-13:00 **room:** 21

1. An enhanced exact solution approach for the Constrained Shortest Path Tour Problem
Daniele Ferone, Paola Festa, Francesca Guerriero
 2. Reoptimizing shortest paths: from state of the art to new recent perspectives
Antonio Napoletano, Daniele Ferone, Paola Festa, Tommaso Pastore
 3. Named Entity Recognition: Resource Constrained Maximum Path
Elisabetta Fersini, Enza Messina, Luigi Di Puglia Pugliese, Francesca Guerriero
 4. A new GRASP metaheuristic for biclustering of gene expression data
Paola Festa, Angelo Facchiano, Daniele Ferone, Anna Marabotti
 5. A Compact Formulation for the Ordered Colored Longest Path Problem
Francesco Carrabs, Raffaele Cerulli, Giovanni Felici
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Session WEB3: Nonlinear Optimization I (invited)

chair: Stefano Lucidi **time:** 11:00-13:00 **room:** 13

1. A two-phase algorithm for singly linearly constrained quadratic programs subject to lower and upper bounds
Marco Viola, Daniela di Serafino, Gerardo Toraldo
2. On the unconstrained minimization of nonsmooth DC functions via DC piecewise-affine approximations
Giovanni Giallombardo, Adil Bagirov, Manlio Gaudioso, Giovanna Miglionico
3. Preconditioning techniques for nonlinear conjugate gradient methods based on quasi Newton updates
Massimo Roma, Andrea Caliciotti, Giovanni Fasano
4. A linesearch derivative-free method with adaptive precision function evaluations and application to bilevel minimization problems
Stefano Lucidi, Stefania Renzi

Session WEC1: Routing and Logistics II (invited)

chair: Claudia Archetti **time:** 15:45-17:15 **room:** Tartini

1. On a probabilistic selective routing problem
Carlo Filippi, Enrico Angelelli, Claudia Archetti, Michele Vindigni
 2. Speed Optimization for conflict free routing problem
Emanuela Guerriero, Gianpaolo Ghiani, Emanuele Manni, Tommaso Adamo, Tolga Bektas
 3. Minimizing the logistic ratio in the inventory routing problem
Claudia Archetti, Guy Desaulniers, M. Grazia Speranza
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Session WEC2: Operations Research for Health Care II (invited)

chair: Roberto Aringhieri **time:** 15:45-17:15 **room:** 21

1. Lean Thinking and Mathematical Optimization: Two Worlds Apart? A Case Study in Scheduling Chemotherapeutic Treatments
Alessandro Agnetis, Laura Tordini
 2. Dynamic patient admission scheduling and bed assignment problem
Rosita Guido, Maria Carmela Groccia, Domenico Conforti
 3. Multiple Classifiers approaches for improving Clinical Decision Support Systems
Maria Carmela Groccia, Rosita Guido, Domenico Conforti
 4. Evaluating online approaches for the Real Time Management of operating rooms
Davide Duma, Roberto Aringhieri
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Session WEC3: Optimization Techniques

chair: Paola Festa **time:** 15:45-17:15 **room:** 13

1. A Dynamic programming approach to solve multi-objective optimization problem under fuzzy rule constraints
Vishnu Pratap Singh, Debjani Chakraborty
2. A Bridge between Bilevel Programs and Nash Games
Lorenzo Lampariello, Simone Sagratella
3. A Modular Genetic Algorithm Specialized on Linear Constraints
Stefano Costanzo, Lorenzo Castelli, Alessandro Turco
4. A Nonmonotone GRASP
Paola Festa, Marianna De Santis, Giampaolo Liuzzi, Stefano Lucidi, Francesco Rinaldi

Session WED: AIRO Poster Session

time: 17:30-18:30 **room:** Tartini

- Neurorehabilitation treatment scheduling in a healthcare setting
De Cola Maria Cristina, Giovanni Felici, Placido Bramanti
- Finding the complete set of efficient solutions for the bi-objective integer minimum cost flow problem: state of the art and a new two-phases approach
Lavinia Amorosi
- Operations Research and Optimization for Transportation and Logistics
Mauro Maria Baldi
- Operations Research and Optimization for Transportation and Logistics
Alberto Santini, Stefan Ropke, Lars Magnus Hvattum
- Combining Mixed Integer and Constraint Programming
Sven Wiese
- Real Time Traffic Management in Railway Nodes
Alessandra Berto, Renzo Canepa, Stefano Foglietta, Simone Petralli
- Un ambiente di supporto alle decisioni per l'ottimizzazione della logistica nella gestione delle risorse umane
Simone Zanda, Massimo Di Francesco, Carla Seatzu, Paola Zuddas

Thursday, September 8th, 2016

Session THA1: Vehicle Routing (invited)

chair: Daniele Vigo **time:** 9:00-10:30 **room:** Tartini

1. A multi-trip drayage problem with heavy and light container loads
Simona Mancini, Massimo Di Francesco
 2. The Periodic Rural Postman Problem with Irregular Services
Demetrio Laganà, Enrique Benavent, Ángel Corberán, Francesca Vocaturo
 3. An Efficient Algorithm for Handling the Vehicle Routing Problem with Multiple Time Windows
Maaïke Hoogeboom, Wout Dullaert, David Lai, Daniele Vigo
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Session THA2: Nonlinear Optimization II (invited)

chair: Massimo Roma **time:** 9:00-10:30 **room:** 21

1. Global Optimization based on small dimensional feature spaces
Fabio Schoen, Francesco Bagattini
 2. A new inexact forward-backward algorithm with applications in image processing
Simone Rebegoldi, Silvia Bonettini, Ignace Loris, Federica Porta, Marco Prato
 3. Globally convergent decomposition algorithm for risk parity problem in portfolio selection
Guido Cocchi, Andrea Cassioli, Federico D'Amato, Marco Sciandrone
 4. Topology optimization for stress-constrained lightweight structures
Tommaso Pastore, Domenico Asprone, Ferdinando Auricchio, Paola Festa, Valentina Mercuri
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Session THA3: Innovative Applications

chair: Antonio Sforza **time:** 9:00-10:30 **room:** 13

1. A Branch-and-Price framework for the Pure Parsimony Haplotyping Problem
Veronica Dal Sasso, Luigi De Giovanni, Martine Labbé
2. Discrete Consensus for Asynchronous Distributed Task Assignment
Maria Pia Fanti, Agostino Marcello Mangini, Giovanni Pedroncelli, Walter Ukovich
3. The complexity of some pattern problems in the logical analysis of large genomic data sets
Giuseppe Lancia, Paolo Serafini
4. A variant of the generalized assignment problem for reliable allocation of sensor measurements in a diagnostic system
Claudio Sterle, Antonio Sforza

Session THB1: Routing Problems

chair: M. Grazia Speranza **time:** 11:00-13:00 **room:** Tartini

1. Models and algorithms for the traveling salesman problem with time-dependent service times
Carlos Contreras-Bolton, Valentina Cacchiani, Paolo Toth
 2. A matheuristic for the Asymmetric Capacitated Vehicle Routing Problem
Valeria Leggieri, Mohamed Haouari
 3. On the Green Vehicle Routing Problem
Ornella Pisacane, Maurizio Bruglieri, Simona Mancini, Ferdinando Pezzella
 4. Matheuristics in logistics systems: an application to a cruise liner network design problem
Giuseppe Stecca, Simona Mancini
 5. On the Collaboration Uncapacitated Arc Routing Problem
M. Grazia Speranza, Elena Fernández, Dario Fontana
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Session THB2: Decision Making Problems in Logistics (supported)

chair: Maria Pia Fanti **time:** 11:00-13:00 **room:** 21

1. Decision-making problems in eco-innovation transport and logistics applications
Andrea Condotta, Valentina Boschian
 2. Decision Support Systems for Logistics Management
Giorgio Iacobellis, Maria Pia Fanti, Massimiliano Nolich, Andrea Rusich, Walter Ukovich,
 3. Evaluation framework in cooperative intelligent transportation systems (C-ITS) for freight transport: the case of the Trieste intermodal transportation network
Andrea Rusich, Maria Pia Fanti, Giorgio Iacobellis, Walter Ukovich, Monica Clemente
 4. A Solution for the Multi-Day Container Drayage Problem
Gabriella Stecco, Monica Clemente, Maria Pia Fanti, Massimiliano Nolich, Walter Ukovich
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Session THB3: Exact and Heuristic Methods for Integrated Logistics Problems (invited)

chair: Demetrio Laganà **time:** 11:00-13:00 **room:** 13

1. A Periodic Inventory Routing Problem for lean production systems
Rosario Paradiso, Luca Bertazzi, Demetrio Laganà, Jeffrey W. Ohlmann
2. Solving the Multi-depot Inventory Routing Problem in a mega-city context
Annarita De Maio, Demetrio Laganà
3. CORE: a web platform for Infomobility Systems and sustainable Transport Services . An experience supported by Regione Calabria
Francesco Santoro, Antonio Violi, Roberto Musmanno, Demetrio Laganà, Ivano Selvaggi
4. Heuristic Approaches for the Resource Constrained Elementary Shortest Path Problem
Giusy Macrina, Francesca Guerriero, Luigi Di Puglia Pugliese
5. A stochastic approach for a Production and Inventory Routing Problem under uncertainty for agri-food products
Antonio Violi, Demetrio Laganà, Roberto Musmanno, Rosario Paradiso

Session THC1: Maritime Transport and Logistics II (invited)

chair: Anna Sciomachen **time:** 15:45-17:15 **room:** Tartini

1. Fair workload assignment to subcontractor companies at a container terminal
M. Flavia Monaco, Manlio Gaudio
 2. Set-Covering formulations for routing of heterogeneous trucks with container loads
Ali Ghezelsoufi, Massimo Di Francesco, Antonio Frangioni, Paola Zuddas
 3. The shipper planning problem in maritime urban areas
Massimo Di Francesco, Manlio Gaudio, Enrico Gorgone, Paola Zuddas
 4. Minimization of the truck service time in a container terminal via discrete event simulation
Daniela Ambrosino, Melina Pedalina, Anna Sciomachen
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Session THC2: Graph Optimization

chair: Raffaele Cerulli **time:** 15:45-17:15 **room:** 21

1. Graph-clustering to support resilience management in Critical Infrastructures
Francesco Archetti, Antonio Candelieri, Raul Sormani
 2. Lagrangian Approaches to Large Steiner Tree problems on the Unitary Hypercube
Enrico Gorgone, Antonio Frangioni, Martine Labbé
 3. Virtual network embedding with substrate network expansion
Edoardo Amaldi, Antonio Capone, Laura Nova
 4. A Genetic Algorithm for Minimum Spanning Tree Problem with Conflicting Edges
Rosa Pentangelo, Francesco Carrabs, Raffaele Cerulli
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Session THC3: Portfolio and Learning Methods

chair: Marida Bertocchi **time:** 15:45-17:15 **room:** 13

1. Optimal Mechanisms for Market Intermediation in Discrete Types Spaces by Linear Programming
Mustafa C. Pinar
2. Computing Pareto solutions that maximize the hypervolume in multiobjective problems: an application to portfolio optimization
Simone Sagratella, Lorenzo Lampariello
3. A Convergent and Fully Distributable SVMs Training Algorithm
Andrea Manno, Simone Sagratella, Lorenzo Livi
4. A novel optimal-control-based model of online learning from data
Marcello Sanguineti, Alberto Bemporad, Giorgio Gnecco, Marco Gori

Friday, September 9th, 2016

Session FRA1: OR Applications for Multimodal Transport

chair: Paola Zuddas **time:** 9:00-10:30 **room:** Tartini

1. Port operations under resource blocking, locking and other queuing phenomena
Rina Mary Mazza, Pasquale Legato
 2. Solving the train marshalling problem by inclusion-exclusion
Franca Rinaldi, Romeo Rizzi
 3. Towards Sustainable Urban Logistics: The Evolution of Digital Marketplace
Francesco Archetti, Iliaria Giordani, Raul Sormani
 4. An exact approach for the routing of trucks with single container load: the algebraic properties of the optimization model
Silvia Schirra, Massimo Di Francesco, Claudio Gentile, Giuseppe Stecca, Paola Zuddas
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Session FRA2: Stochastic Programming in Logistics (invited)

chair: Francesca Maggioni **time:** 9:00-10:30 **room:** 21

1. Optimizing time related performance measures in logistic problems under uncertainty
Maria Elena Bruni, Patrizia Beraldi, Sarah Khodaparasti
 2. A Solid Waste Management Problem with Stochastic Parameters at a Tactical Planning Level
Claudio Gambella, Francesca Maggioni, Daniele Vigo
 3. A two-stage stochastic programming model for a cost-based inventory problem
Matteo Cagnolari, Luca Bertazzi, Francesca Maggioni
 4. Worst-case Analysis of Rolling Horizon Approaches for a Stochastic Multistage Fixed Charge Transportation Problem
Francesca Maggioni, Luca Bertazzi
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Session FRA3: OR Applications for Smart and Green Cities

chair: Federico Della Croce **time:** 9:00-10:30 **room:** 13

1. Waste Flow Optimization with an Application in the Italian Context
Tiziano Parriani, Claudio Gambella, Matteo Pozzi
2. Optimizing wind farm cable routing considering power losses
Martina Fischetti, David Pisinger
3. A Natural Ventilation Control in Buildings Based on Co-Simulation Architecture and Particle Swarm Optimization
Ilario Precchiazzi, Maria Pia Fanti, Francesco Iannone, Agostino Marcello Mangini, Alessandro Rinaldi, Michele Roccotelli
4. Algorithms and solutions for a covering problem within the Internet of Things paradigm
Rosario Scatamacchia, Gero Costanza, Federico Della Croce, Dario Mana

Session FRB1: Optimization for Energy Smart Grids and Markets (invited)

chair: Antonio Violi **time:** 11:00-12:15 **room:** Tartini

1. Local electricity markets in smart grid framework
Nicola Sorrentino, Daniele Menniti, Anna Pinnarelli, Alessandro Burgio, Giovanni Brusco, Grazia Belli
 2. DOMUS: A community energy market based on IOT and Power Computing
Francesco Dellacorte, Carlo Mastroianni, Natale Arcuri, Salvatore Marano, Daniele Menniti, Anna Pinnarelli, Nicola Sorrentino, Francesco Cavallaro
 3. A rolling horizon stochastic programming approach for the short-term electricity procurement in smart grids
Gianluca Carrozzino, Antonio Violi, Roberto Musmanno
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Session FRB2: AIRO Prizes

chair: Walter Ukovich **time:** 11:00-12:15 **room:** 21

1. Real-time Delay Management in Local Public Transportation via Vehicle and Crew Re-scheduling: a Case Study
Emanuele Tresoldi, Federico Malucelli, Samuele Carosi
2. Improve social care services for minors and disabled people by using multiobjective programming
Simone Sagratella, Lorenzo Lampariello, Andrea Manno
3. An appointment scheduling framework to balance the production of blood bags from donation
Ettore Lanzarone, Seda Baş, Giuliana Carello, Semih Yalşındağ

AIRO 2016 - Trieste - Emerging Advances in Logistics Systems			
	Aula Magna / Tartini	Room 21	Room 13
Day 1 Tuesday, September 6th	9:00-14:00	Registration	
	14:00 - 14:15	<i>Aula Magna - Opening session</i>	
	14:15 - 15:15	<i>Aula Magna - Plenary lecture - Gianni Di Pillo - Derivative-free Constrained Global Optimization.</i>	
	15:15 - 15:45	Coffee break	
	15:45-17:00	Operations Research for Health Care I	Logistics and Supply Chain
Day 2 Wednesday, September 7th	17:00-17:15	Break	
	17:15-18:00	<i>Aula Magna - Sportella Matematico</i>	
	18:30-21:00	Social event: Touristic Tour to Trieste City Center and Welcome Party	
	9:00-10:30	Maritime Transport and Logistics I	Trends in Aviation
	10:30-11:00	Decision Making Problems	
Day 3 Thursday, September 8th	11:00-13:00	Coffee break	
		Scheduling	Nonlinear Optimization I
	13:00-14:15	Path Problems	
	14:15-15:15	Lunch time	
	15:15-15:45	<i>Aula Tartini - Plenary lecture - Frédéric Semet - Challenging Optimization Problems in E-Commerce Logistics</i>	
Day 4 Friday, September 9th	15:45-17:15	Operations Research for Health Care II	Optimization Techniques
	17:30-18:30	<i>Aula Tartini - Poster Session</i>	
	20:30	Social event: Concert at Conservatoire of Music Giuseppe Tartini	
	9:00-10:30	Vehicle Routing	Nonlinear Optimization II
	10:30 - 11:00	Innovative Applications	
Day 3 Thursday, September 8th	11:00 - 13:00	Coffee break	
		Decision Making Problems in Logistics	Exact and Heuristic Methods for Integrated Logistics Problems
	13:00-14:15	Lunch Time	
	14:15-15:15	<i>Aula Tartini - Plenary lecture - Stefan Nickel - Healthcare Logistics</i>	
	15:15-15:45	Coffee break	
Day 4 Friday, September 9th	15:45-17:15	Graph Optimization	Portfolio and Learning Methods
	17:15-17:30	Break	
	17:30-19:30	<i>Aula Tartini - General Assembly Meeting</i>	
	20:30	Social event: Social Dinner	
	9:00-10:30	Stochastic Programming in Logistics	OR Applications for Smart and Green Cities
Day 4 Friday, September 9th	10:30 - 11:00	OR Applications for Multimodal Transport	
		Coffee break	
	11:00 - 12:15	Optimization for Energy Smart Grids and Markets	AIRO Prizes
	12:30 - 13:15	<i>Aula Tartini - AIRO Prizes and Closing Session</i>	
	13:15 - 14:30	Lunch time	
Day 4 Friday, September 9th	14:30 - 16:30	Closing Social Event - Excursion to the New and Old Port of Trieste Areas and Visit to the Hydrodynamic Power Station	

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