ISM

The International Conference on Industry 4.0 and Smart Manufacturing

Program
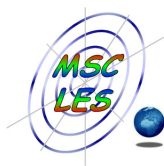
ISM 2019 Partners

The ISM 2019 Organization Committee thanks all the partners and institutions for their support to the event.

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Under the patronage of

ISM 2019 is held in collaboration with Smart Manufacturing Matchmaking 2019

This year the **International Conference on Industry 4.0 and Smart Manufacturing (ISM)** is held in collaboration with **Smart Manufacturing Matchmaking 2019** event, organised by University of Calabria, Enterprise Europe Network partners, SPIN, R&D Log, and jointly co-organized with several stakeholders for Industry 4.0.

Besides the ISM, the whole Smart Manufacturing Matchmaking 2019 event also includes:

- the *International Workshop on Innovation for Logistics (WINLOG)*, an initiative of the Pole of Innovation for Logistics ("SMART LOGISTICS") that includes Universities, Public and Private Research Centres and Companies working in the fields of Logistics. The workshop will include plenary and parallel sessions as well as panels that will focus on Innovations for Logistics.
- a *Brokerage Event*, organised by SPIN and the Enterprise European Network, which offers access to B2B meetings and access to specialised panels and workshops;
- the *invNET*, a SPIN/EEN action that aims to support companies and startups in projects, activities and visions with a strong economic and social impact, in the area of Smart Manufacturing and Industry 4.0.

For further info, you can visit the websites of the single events:

http://www.msc-les.org/conf/ism2019/index.html

http://www.innovazione-rdlog.it/winlog2019

https://smm2019.b2match.io

http://www.smm2019.eu/invnet/

ISM 2019

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ISM 2019

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ISM 2019

Registration and Information Desk

The registration and information desk is located at the Ariha Hotel Conference Center, Floor -1.

Opening Hours
Wednesday, November 20th – Friday, November 22nd
08:30 am – 12:30 pm
14:00 pm – 17:00 pm

ISM 2019

Demo Area

The demo area hosts booths and information desks of enterprises operating in the field of the Industry 4.0 and Smart Manufacturing as well as of research groups showing their latest scientific results and prototypes in the field. The demo area is located at the Ariha Hotel Conference Center, Floor -1.

Opening Hours
Wednesday, November 20th: 14:30 pm – 18:00 pm
Thursday, November 21st: 09:00 am – 18:00 pm
Friday, November 22nd: 09:00 am – 18:00 pm

ISM 2019

Activities and Sessions Details
Wednesday, November 20th

08:30 am – 09:45 am
Ariha Hotel Conference Center – Registration Desk
ISM Attendees Registration

09:45 am – 10:00 am
Bus transfer to University of Calabria – Aula Caldora
The meeting point is in front of the Ariha Hotel

10:00 am – 10:45 am
University of Calabria – Aula Caldora
ISM Welcome Ceremony
Chair: Agostino Bruzzone, DIME, University of Genoa

> Welcome Messages
Delegate of the Rector, University of Calabria
Fortunato Varone, Calabria Region Government
Leonardo Pagnotta, DIMEG, University of Calabria
Luigi Filice, University of Calabria & Digital Innovation Hub
Francesco Longo, ISM 2019 General Co-chair
Antonio Padovano, ISM 2019 Program Chair
Francesco De Bonis, WINLOG 2019 Chair of the Industrial Advisory Board
Paola Sabella, General Secretary, Crotone Chamber of Commerce
Bruno Calvetta, General Secretary, Vibo Valentia Chamber of Commerce
Michael Affenzeller, ISM 2020 General Co-chair

10:45 am – 11:15 am
University of Calabria – Aula Caldora
Networking Coffee Break

11:15 am – 12:45 pm
University of Calabria – Aula Caldora

ISM Plenary Session Speeches

> Enabling Strategic Decisions for the Industry of Tomorrow
  Agostino Bruzzone, University of Genoa

> The role of FESTO in the implementation and promotion of the Industry 4.0 platform
  Nicolò Nicolosi, FESTO C.T.E.

> I4.0 experience at the University of Calabria: a journey on digital transformation running toward society 5.0
  Luigi Filice, University of Calabria

13:00 pm – 14:30 pm
University of Calabria – Sala B – Centro Residenziale

Networking Lunch

14:30 pm – 16:00 pm
Plenary Room   **ISM**

Panel: "Shaping the Future of Industry 4.0 and Smart Manufacturing"
Co-Chairs: Francesco Longo, University of Calabria
*   Agostino Bruzzone, University of Genoa*
> Speakers
  Michael Affenzeller, Upper Austria University of Applied Sciences
  Nicolò Nicolosi, FESTO C.T.E.
  Federico Iozzelli, Baker Hughes
  Alfredo Garro, University of Calabria

14:30 pm – 16:00 pm
Expo Room 4   **ISM**

Digitization in Maritime Logistics: Shipping 4.0
Co-Chairs: Giuseppe Aiello, University of Palermo
*   Antonio Giallanza, University of Palermo*

> Towards Shipping 4.0. A Preliminary Gap Analysis (#6)
  Giuseppe Aiello, Antonio Giallanza, Giuseppe Mascarella

> Maritime 4.0 – Opportunities in Digitalization and Advanced Manufacturing for Vessel Development (#43)
  Brendan Sullivan, Shantanoo Desai, Jordi Sole, Monica Rossi, Lucia Ramundo, Sergio Terzi

> Calm-water Performance of a Boat with Two Swept steps at High-speeds:

Laboratory Measurements and Mathematical Modeling (#79)
Rasul Niazmand Bilandi, Luigi Vitiello, Simone Mancini, Vincenzo Nappo, Fatemeh Roshan, Sasan Tavakoli, Abbas Dashtimanesh

> Shipbuilding Supply Chain Framework and Digital Transformation: A Project Portfolios Risk Evaluation (#32)
Rafael Diaz, Katherine Smith, Rafael Landaeta, Antonio Padovano

14:30 pm – 16:00 pm
Expo Room 2 **WINLOG**

Special Session: The Calabrian Innovation Poles Network (Part I)
Chair: Francesco De Bonis, Innovation Pole for Logistics

> Topics
The Innovation Pole of Logistics
Calabria Region Initiatives for Innovation
The Innovation Poles Network

16:00 pm – 16:30 pm
Ariha Hotel – Main Hall

Networking Coffee Break

16:30 pm – 18:00 pm
Plenary Room **ISM**

Digitalization in Supply Chain: Challenges and Opportunities from a Managerial Perspective
Co-Chairs: Eleonora Bottani, University of Parma
Barbara Bigliardi, University of Parma

> A Control Strategy for Smart Energy Charging of Warehouse Material Handling Equipment (#84)
Raffaele Carli, Salvatore Digiesi, Mariagrazia Dotoli, Francesco Facchini

> Goods Relocation Management in City Fashion Retailers with an Incentive System (#30)
Bartolomeo Silvestri, Michele Roccotelli, Raffaello Pio Iavaniglio, Luigi Ranieri

> Supply Chain Risk Management: an Interactive Simulation Model in a Big Data Context (#26)
António Vieira, Luís Dias, Maribel Santos, Guilherme Pereira, José Oliveira

> Internet of things and industry 4.0 applied in the delivery system for the bicipuma bike-sharing system in UNAM-Mexico (#74) ®
Armando Moises Pérez Silva, Veronica Olvera Rodriguez, Carmen Angelina

García Cerrud, Francisca Irene Soler Anguiano, Idalia Flores de la Mota

> Designing Human Mistake-Free Machine: a Mexico City Public Transport Commuters' Approach (#69) ®
Adrielly Nahomee Ramos Alvarez, Francisca Irene Soler Anguiano, Idalia Flores de la Mota, Jessica López Moncada

16:30 pm – 18:00 pm
Expo Room 4 **ISM**

Towards Maintenance 4.0: Condition-based and Predictive Maintenance Applications
Chair: Salvatore Miranda, University of Salerno

> Assessing the Predictive Maintenance Readiness of Enterprises in West Bohemian Region (#72) ®
Peter Poor, Josef Basl, David Ženíšek

> Low-cost real-time monitoring of electric motors for the Industry 4.0 (#68)
Luis Magadán, Francisco J. Suárez, Juan C. Granda, Daniel F. García

> A Real-Time Condition Monitoring and Maintenance Management System for Low Voltage Industrial Motors Using Internet-of-Things (#76) ®
Konstantinos Mykoniatis

> A Hybrid Bond Graph Model-based – Data Driven Method for Failure Prognostics (#34)
Wolfgang Borutzky

> Predictive Model for the Degradation State of a Hydraulic System with Dimensionality Reduction (#86)
Elena Quatrini, Francesco Costantino, Cesare Pocci, Massimo Tronci

16:30 pm – 18:00 pm
Expo Room 2 **WINLOG**

Special Session: The Calabrian Innovation Poles Network (Part II)
Chair: Francesco De Bonis, Innovation Pole for Logistics

> Topics
The Innovation Pole of Logistics
Calabria Region Initiatives for Innovation
The Innovation Poles Network

ISM 2019

Activities and Sessions Details
Thursday, November 21st

09:00 am – 10:30 am
Plenary Room   **ISM**

Advanced Mobility Technologies: Fuel Cells and Innovative Propulsion Systems
Chair: Giuseppe Aiello, University of Palermo

> Insights for Industry 4.0 Applications into a Hydrogen Advanced Mobility (#42)
> *Petronilla Fragiacomo, Francesco Piraino, Matteo Genovese*

> Intermediate Temperature Solid Oxide Fuel Cell/Electrolyzer Towards Future Large-Scale Production (#45)
> *Petronilla Fragiacomo, Giuseppe De Lorenzo, Orlando Corigliano*

> Propulsion Monitoring System for Digitized Ship Management: Preliminary Results from a Case Study (#5)
> *Giuseppe Aiello, Antonio Giallanza, Salvatore Vacante, Stefano Fasoli, Giuseppe Mascarella*

> Study on the Evolution of Large Yacht Project and Construction as Consequence of Environmental Rules (#7)
> *Valerio Ruggiero*

09:00 am – 10:30 am
Expo Room 4   **ISM**

Digital Manufacturing: Towards Industry 5.0
Co-Chairs: Fabio De Felice, University of Cassino and Southern Lazio
*   Antonella Petrillo, University of Napoli "Parthenope"*

> Is a Digital Transformation Framework enough for Manufacturing Smart Products? The Case of Small and Medium Enterprises (#15)
> *Melissa Liborio Zapata, Lamia Berrah, Laurent Tabourot*

> IN2DIG – Implementation of a Digital Manufacturing System in a Production

Cell of the Metal Mold Industry: From Planning to Action (#20)
Fernando Piedade, Marcia Baptista, Paulo Chaves

> Digital Manufacturing Challenges through Open Innovation Perspective (#31)
> *Marta Travaglioni, Angela Ferazzoli, Antonella Petrillo, Raffaele Cioffi, Fabio De Felice, Giuseppina Piscitelli*

> Analysis of SMEs as a Target Group for Research Institute Services (#62)
> *Daniel Ranke, Andreas Aichele, David Görzig, Michael Luckert, Jörg Siegert, Thomas Bauernhansl*

> Metadata Management in a Big Data Infrastructure (#65)
> *Roxana-Maria Holom, Katharina Rafetseder, Stefanie Kritzinger, Harald Sehrschönb*

09:00 am – 10:30 am
Expo Room 2   **ISM-WINLOG**

Process Monitoring and Traceability in a 4.0 Perspective
Chair: Francesco Longo, University of Calabria

> Temperature Simulation and Control in Refrigerated Storage Chambers for Fruit (#8)
> *Honorato Ccalli Pacco*

> Blockchain and Agricultural Supply Chains Traceability: Research Trends and Future Challenges (#71)
> *Giovanni Mirabelli, Vittorio Solina*

> How to Increase the Sustainability of the Agri-food Supply Chain Through Innovations in 4.0 Perspective: a First Case Study Analysis (#57)
> *Stefano Saetta, Valentina Caldarelli*

> *A Decentralized Application for the Traceability Process in the Pharma Industry (#63)*
> *Ferdinando Chiacchio, Lucio Compagno, Diego D'Urso, Luca Velardita, Philipp Sandner*

10:30 am – 11:00 am
Ariha Hotel – Main Hall

Networking Coffee Break

11:00 am – 12:30 am
Plenary Room   **ISM**

New Methods and Approaches for Efficient Logistics Operations and Processes
Chair: António Vieira, University of Minho

> Machine Learning Methods to Improve the Operations of 3PL Logistics (#14)
> *Alessandro Tufano, Riccardo Accorsi, Riccardo Manzini*

> Open Interfaces for Connecting Automated Guided Vehicles to a Fleet Management System (#70)
> *Walter Quadrini, Elisa Negri, Luca Fumagalli*

> Performance, Quality, and Control in Steel Logistics 4.0 (#73)
> *Andreas Beham, Sebastian Raggl, Viktoria Hauder, Johannes Karder, Stefan Wagner, Michael Affenzeller*

> Minimization of the Logistic Costs in Healthcare Supply Chain: a Hybrid Model (#16)
> *Andrea Lucchese, Antonella Marino, Luigi Ranieri*

> Circular Economy Models in the Industry 4.0 Era: A Review of the Last Decade (#40)
> *Giuseppina Piscitelli, Angela Ferazzoli, Antonella Petrillo, Raffaele Cioffi, Adele Parmentola, Marta Travaglioni*

11:00 am – 12:30 am
Expo Room 4   **ISM**

Manufacturing of the Future
Chair: Giuseppina Ambrogio, University of Calabria

> An Integrated Approach for Power Transformer Modeling and Manufacturing (#60)
> *Christian Lettner, Michael Moser, Josef Pichler*

> An Externally Fired Micro Combined-Cycle, with Largely Adjustable Steam Turbine, in a CHP System (#89)
> *Silvio Barbarelli, Erminia Berardi, Mario Amelio, Nino Michele Scornaienchi*

> An Embedded Machine Vision System for an In-Line Quality Check of Assembly Processes (#37)
> *Fabio Frustaci, Stefania Perri, Giuseppe Cocorullo, Pasquale Corsonello*

> Lean Production as a Tool for Green Production: the Green Foundry Case Study (#83)
> *Stefano Saetta, Valentina Caldarelli*

11:00 am – 12:30 am
Expo Room 2   **WINLOG**

Parcels Delivery in Urban Areas: Recent Advances and Technologies
Chair: Luigi di Puglia Pugliese, University of Calabria

> The Effectiveness of Vendor Managed Inventory in the Last-Mile Delivery: an Industrial Application (#78)
> *Annarita De Maio, Demetrio Laganà*

> Managing Loading and Discharging Operations at Cross-Docking Terminals (#80)
> *M. Flavia Monaco, Marcello Sammarra*

> Crowd-shipping: a New Efficient and Eco-Friendly Delivery Strategy (#81)
> *Giusy Macrina, Luigi Di Puglia Pugliese, Francesca Guerriero*

> Using Drones for Parcels Delivery Process (#82)
> *Luigi Di Puglia Pugliese, Francesca Guerriero, Giusy Macrina*

12:30 pm – 14:00 pm
Ariha Hotel – Ristorante Il Senso della Calabria

Networking Lunch

14:00 pm – 15:30 pm
Plenary Room   **ISM**

Industrial Automation and Cyber-Physical Production Systems
Chair: Giuseppina Ambrogio, University of Calabria

> RMAS Architecture for Industrial Agents in IEC 61499 (#17)
> *Andrea Bonci, Sauro Longhi, Emanuele Lorenzoni, Massimiliano Pirani*

> Middleware-based Cyber-Physical Production System Modeling for Operators (#21)
> *Daniel Stock, Daniel Schel, Thomas Bauernhansl*

> Requirements and Concept for a Modular and State-Oriented Control Device Architecture (#49)
> *David Breunig, Daniel Stock, Thomas Bauernhansl*

> Smart Manufacturing Retrofit for Brownfield Systems (#56)
> *Dieter Etz, Hannes Brantner, Wolfgang Kastner*

> Bidirectional Transformation of MES Source Code and Ontologies (#35) ®
> *Badarinath Katti, Christiane Plociennik, Martin Ruskowski, Michael Schweitzer*

14:00 pm – 15:30 pm
Expo Room 4   **ISM**

Industrial Internet of Things: Real-World Applications
Chair: Maria Grazia Gnoni, University of Salento

> An RFID Application for the Process Mapping Automation (#4)
> *Orazio Urso, Ferdinando Chiacchio, Lucio Compagno, Diego D'Urso*

> Integrating IoT Technologies for an "Intelligent" Safety Management in the
> Process Industry (#85)
> *Maria Grazia Gnoni, Paolo Bragatto, Maria Francesca Milazzo, Roberto
> Setola*

> A Self-assessment Framework for Supporting Continuous Improvement
> Through IoT Integration (#59)
> *Jonas Nygaard, Michele Colli, Brian Vejrum Wæhrens*

> The Use of Marker-Based Augmented Reality in Space Measurement (#58)
> *Salin Boonbrahm, Poonpong Boonbrahm, Charlee Kaewrat*

14:00 pm – 15:30 pm
Expo Room 2   **WINLOG**

Special Session: R&D Projects with Applications in Industry and Logistics (Part I)
Chair: Francesco Longo, University of Calabria

> Projects
> *The GreenValues Project (University of Calabria and CAL-TEK)*
> *The SMART-TRAIN Project (CAL-TEK)*
> *The Zerok-IRS Project (University of Calabria)*
> *Picking Robot (AGE.S.P, Keplero, Noitech)*

15:30 pm – 16:00 pm
Ariha Hotel – Main Hall

Networking Coffee Break

16:00 pm – 17:30 pm
Plenary Room   **ISM**

Production Planning & Control in Industry 4.0
Chair: Wolfgang Borutzky, Bonn-Rhein-Sieg University of Applied Sciences

> Automating Production Planning and Control in Pallet Manufacturing – A
> Case Study (#23)
> *Matthias Kaltenbrunner, Maria Anna Huka, Manfred Gronalt*

> Assigning Dispatching Rules Using a Genetic Algorithm to Solve a Hybrid

Flow Shop Scheduling Problem (#75)
Benjamin Rolf, Tobias Reggelin, Abdulrahman Nahhas, Sebastian Lang, Marcel Müller

> Batch Energy Scheduling Problem with no-wait/blocking Constraints for the general Flow-shop Problem (#47)
Ivan Ferretti, Lucio Zavanella

> Job Shop Scheduling Model for a Sustainable Manufacturing (#90)
Giuseppina Ambrogio, Rosita Guido, Domenico Palaia, Luigino Filice

16:00 pm – 17:30 pm
Expo Room 4 **ISM**

The Role of Safety and Risk Management in the Factories of the Future
Chair: Antonella Petrillo, University of Napoli "Parthenope"

> Powder Bed Fusion/Sintering Machines: Safety at Workplaces (#64)
Alessandra Ferraro, Marco Pirozzi, Enrico Annacondia, Luciano Di Donato

> Possible Innovative Technical Measures for Risk Prevention During the Use of Mobile Machines with Remote Guide/Control (#77)
Marco Pirozzi, Luciano Di Donato, Laura Tomassini, Alessandra Ferraro

> Modelling of a Multi-agent Supply Chain Management System Using Coloured Petri Nets (#50) ®
Luis Fierro, Ruth Cano, José Garía

> Analysis and testing of an online solution to monitor and solve safety issues for industrial systems (#91)
Giovanni Paolo Tancredi, Letizia Tebaldi, Eleonora Bottani, Francesco Longo, Giuseppe Vignali

16:00 pm – 17:30 pm
Expo Room 2 **WINLOG**

Special Session: R&D Projects with Applications in Industry and Logistics (Part II)
Chair: Francesco Longo, University of Calabria

> Projects
R&D Project (CNR)
R&D Project (CALBATT)
R&D Project (IASSM – SETA)

18:15 pm – 18.45 pm

Bus transfer to Cosenza Planetarium
The meeting point is in front of the Ariha Hotel al 18:15.

19:00 pm – 19:45 pm
Cosenza Planetarium

ISM Social Activity

19:45 pm – 20:00 pm

Bus transfer to Le Cucine di Palazzo Salfi
The meeting point is in front of the Cosenza Planetarium at 19:45.

20:00 am – 22:30 am
Le Cucine di Palazzo Salfi

Gala Dinner & Award Ceremony

22:30 pm – 23:00 pm

Bus transfer to Ariha Hotel
The meeting point is in front of the "Le Cucine di Palazzo Salfi" at 22:30.

Activities and Sessions Details
Friday, November 22nd

09:00 am – 10:30 am
Expo Room 3   **ISM**

Towards Maintenance 4.0: Advances and Solutions
Chair: Tobias Reggelin, Otto von Guericke University Magdeburg

> An Ensemble-Learning Model for Failure Rate Prediction (#10)
> *Marcello Braglia, Davide Castellano, Marco Frosolini, Roberto Gabbrielli, Leonardo Marrazzini, Luca Padellini*

> Divide and Conquer Anomaly Detection: A Case Study Predicting Defective Engines (#13)
> *David Muhr, Shailesh Tripathi, Herbert Jodlbauer*

> XRepo - Towards an Information System for Prognostics and Health Management Analysis (#28)
> *Alfonso Ardila, Felipe Martinez, Kelly Garces, Giacomo Barbieri, David Sanchez-Londono, Andrea Caielli, Laura Cattaneo, Luca Fumagalli*

> Exoskeletons Towards Industrie 4.0: Benefits and Challenges of the IoT Communication Architecture (#12)
> *Enrique Bances, Urs Schneider, Jörg Siegert, Thomas Bauernhansl*

09:00 am – 10:30 am
Expo Room 4   **ISM**

Simulation and Process Modeling in the Industry 4.0 Framework
Chair: Salvatore Miranda, University of Salerno

> Digital Twin Models in Industrial Operations: A Systematic Literature Review (#46)
> *Tsega Yenew Melesse, Valentina Di Pasquale, Stefano Riemma*

> Simulation Techniques for Production Lines Performance Monitoring (#18)
> *Mario Caterino, Alessandro Greco, Sara D'Ambra, Pasquale Manco, Marcello*

Fera, Roberto Macchiaroli, Francesco Caputo

> Are Simulation Tools Ready for Big Data? Computational Experiments with Supply Chain Models Developed in SIMIO (#24)
> *António Vieira, Luís Dias, Maribel Santos, Guilherme Pereira, José Oliveira*

> Bypassing Data Issues of a Supply Chain Simulation Model in a Big Data Context (#25)
> *António Vieira, Luís Dias, Maribel Santos, Guilherme Pereira, José Oliveira*

> Energy Savings in Reheating Furnaces Through Process Modelling (#36)
> *Simone Zanoni, Ivan Ferretti, Lucio Zavanella*

09:00 am – 10:30 am
Expo Room 2   **ISM**

Artificial Intelligence Applications and Advances in Industry 4.0
Chair: Michael Affenzeller, Upper Austria University of Applied Sciences

> Explore the Application of Reinforced Learning to Support Decision Making during the Design Phase in the Construction Industry (#33)
> *Samer BuHamdan, Aladdin Alwisy, Ahmed Bouferguene*

> A Deep Neural Network as Surrogate Model for Forward Simulation of Borehole Resistivity Measurements (#41)
> *Mostafa Shahriari, David Pardo, Bernhard Moser, Florian Sobieczky*

> Imagery Creation based on Autonomic System for Finite Element by using Fully Convolutional Network (#66)
> *Gentaro Miyaki, Komei Tanaka, Hiroshi Hasegawa*

> A data transformation for the estimation of decay types of multivariate distributions (#87)
> *Florian Sobieczky, Mostafa Shahriari, Bernhard Freudenthaler*

> Smart Manufacturing and Continuous Improvement and Adaptation of Predictive Models (#88)
> *Gabriel Kronberger, Florian Bachinger, Michael Affenzeller*

10:30 am – 11:00 am
Ariha Hotel – Main Hall
Networking Coffee Break

11:00 am – 12:30 pm
Expo Room 3 **ISM**

Special Session: Software intellectual property: suggestions and hints for the protection of the inventions and applications developed in R&D projects
Speaker: Aleardo Furlani, CEO at INNOVA – Technology Transfer and Valorisation

11:00 am – 12:30 pm
Expo Room 4 **ISM**

Towards the Industrial Operator 4.0
Chair: Antonio Padovano, University of Calabria

> Automatic Ergonomic Postural Risk Monitoring on the Factory Shopfloor – the ErgoSentinel Tool (#19)
> *Vito Modesto Manghisi, Antonio Emmanuele Uva, Michele Fiorentino, Michele Gattullo, Antonio Boccaccio, Alessandro Evangelista*

> Bridging Human and Machine Learning for the Needs of Collective Intelligence Development (#52)
> *Mariia Gavriushenko, Olena Kaikova, Vagan Terziyan*

> Industry 4.0: The use of simulation for human reliability assessment (#51) ®
> *Anastasia Angelopoulou, Konstantinos Mykoniatis, Nithisha Reddy Boyapati*

> Designing Smart Operator 4.0 for Human Values: A Value Sensitive Design Approach (#38)
> *Lucia Gazzaneo, Antonio Padovano, Steven Umbrello*

> An Innovative Tool for Training of Workers in Confined Space And/Or Pollution Suspected (#44)
> *Luciano Di Donato, Francesco Longo, Alessandra Ferraro, Marco Pirozzi*

11:00 am – 12:30 pm
Expo Room 2 **ISM**

Extended Reality and Enabling Technologies for Industry 4.0
Co-Chairs: Michele Fiorentino, Politecnico di Bari
         Josef Wolfartsberger, Upper Austria University of Applied Science

> Enabling Technologies, Application Areas and Impact of Industry 4.0: a Bibliographic Analysis (#55)
> *Barbara Bigliardi, Eleonora Bottani, Giorgia Casella*

> Supporting Teamwork in Industrial Virtual Reality Applications (#3)
> *Josef Wolfartsberger, Jan Zenisek, Norbert Wild*

> Virtual Reality enriched Business Model Canvas Building Blocks for enhancing

Customer Retention (#29)
Manuel Brunner, Josef Wolfartsberger

> Effective Collaborative Design of Large Virtual 3D Model using Multiple AR Markers (#67)
Poonpong Boonbrahm, Charlee Kaewrat, Salin Boonbrahm

> Supporting companies in the process of digitization and acquisition of enabling technologies
Gaetana Claudia Rubino, Emanuela Salerno

12:30 pm – 14:00 pm
Ariha Hotel – Ristorante Il Senso della Calabria

Networking Lunch

ISM Proceedings Publication

The ISM proceedings will be published as part of the Elsevier Procedia Manufacturing. Procedia Manufacturing is an open access journal focusing entirely on all the important topics in the field of manufacturing engineering. Procedia Manufacturing enables fast dissemination of its content (the articles are Open Access and indexed in SCOPUS database) so that conference delegates can publish their papers online on ScienceDirect.

International Journal Special Issues

The authors of the best papers submitted and presented at ISM will be invited by direct email after the end of the conference to extend their work and contribute to International Journal Special Issues and Book Series dealing with the topics of Industry 4.0 and Smart Manufacturing.

International Journal of Simulation and Process Modeling
Special Issue on: "New Challenges and Solutions for Industry 4.0 and Smart Manufacturing"

Springer Series on Internet of Things
Special Issue on: "Industry 4.0 and Industrial Internet of Things"

IET Collaborative Intelligent Manufacturing
Special Issue on: "Collaborative & Intelligent Manufacturing in Smart Manufacturing and Industry 4.0"

ISM 2019 Awards

The ISM 2019 Awards will be delivered during the Gala Dinner.

The **ISM 2019 Best Paper Award** is assigned by the ISM 2019 Best Paper Award International Committee and selected among the top quality papers presented at ISM based on originality, scientific quality and impact on the manufacturing domain.

The **Industrial Award** is assigned by the ISM 2019 Industrial Partners Committee and selected among the top quality papers presented at ISM that have the greatest impact on industrial practice and provide relevant advances to manufacturing systems.

The **ISSIP-IBM Best Paper Award "Best Service Innovation Paper"** is assigned by ISSIP (International Society of Service Innovation Professionals) in collaboration with IBM to the best paper dealing with promoting service innovation for our interconnected world and in particular in industrial domain.

Brokerage Event

The brokerage event gives the participants (companies, research groups, institutions, etc.) the opportunity to make networking, to meet potential partners face-to-face, receive feedback from Industry 4.0 experts and practice pitch sessions. In order to register to the B2B sessions, to define the time slots when you are available for meetings during the event and to schedule a meeting with another participant, visit https://smm2019.b2match.io/ and complete the registration.

The registration to B2B session is **free**. For further information, please ask at the Information Desk.

ISM 2019

Social Activities

Named after Giovan Battista Amico, the astronomer born in the royal city of Cosenza at the beginning of the 16th century, the Planetarium is one of the biggest and most innovative in Italy. The audience will live a fascinating immersive experience, comfortably seated on swinging and tilting armchairs. They will be able to watch the simulated astronomical phenomena such as the movement of an earth revolution, the passage of an asteroid and countless other scenarios and the movements that occur in the Sky with the passing of hours, days, years, centuries and even millennia, all projected onto the hemispherical dome with a qualities that only a few planetariums in the world can guarantee. The technological apparatus that allows the projection, a Starmaster ZMP of Zeiss, unique in Italy and among the best in Europe, is composed of an optical and precision mechanical equipment for the representation of the starry sky (about 4000 stars). All the technological principles of the projection system have been conceived in order to reproduce in the best way the astronomical and physical laws of nature.
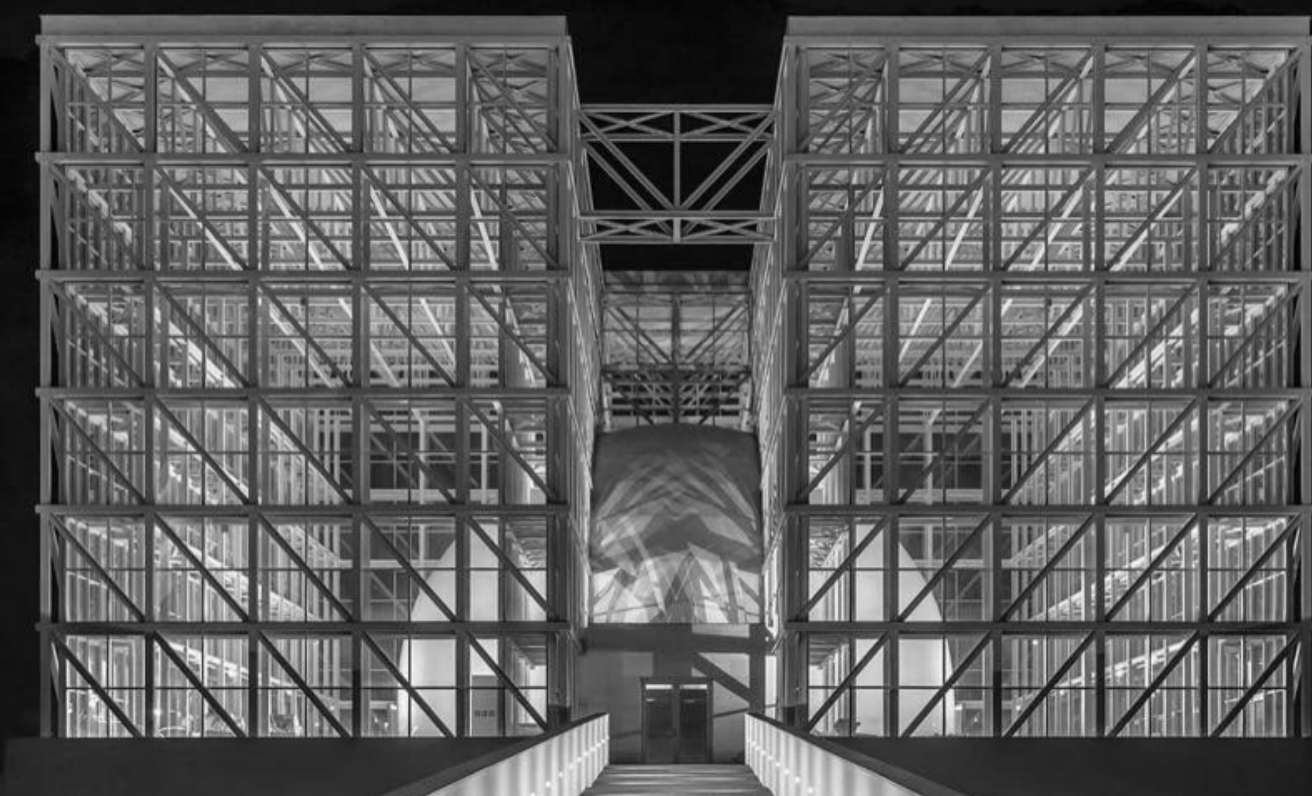
Maps and Directions

The University of Calabria (UNICAL) and the Ariha Hotel are located in the city of Rende (CS), which is 4 km from the city of Cosenza. The closest motorway exit is Rende-Cosenza Nord (Autostrada A2 del Mediterraneo - Salerno - Reggio Calabria), which is 1 km from the University and 400 mt from the Ariha Hotel. The closest train station is Castiglione Cosentino (CS), which is 1.5 km from the University of Calabria and 650 mt from the Ariha Hotel. The closest airport is the Lamezia Terme International Airport, which is 73 km from Rende.

Urban transportation
The Rende-Cosenza urban area is served by the Consorzio Autolinee TPL. Visit the website for information about the bus schedule and routes. You can now download the MyCicero App to look for the bus schedule, to buy your tickets and validate your tickets on board the bus with the QR code. For further info, visit http://www.consorzioautolineetpl.it/download/LocandinaMyCicero.pdf or http://www.consorzioautolineetpl.it/.

For further information, about maps and directions, please visit the ISM website, http://www.msc-les.org/conf/ism2019/index.html and download the Maps and Directions leaflet.

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87036 Rende (CS) Italy
Tel.: +39 0984 401010
Email: info@arihahotel.com
Website: http://www.arihahotel.com

Aula Caldora
Via Alberto Savinio
Centro Residenziale
Università della Calabria
87036 Arcavacata di Rende (CS)
Italy

University of Calabria Conference Center – Aula Caldora

Map - Walking pathways for ISM points of interest
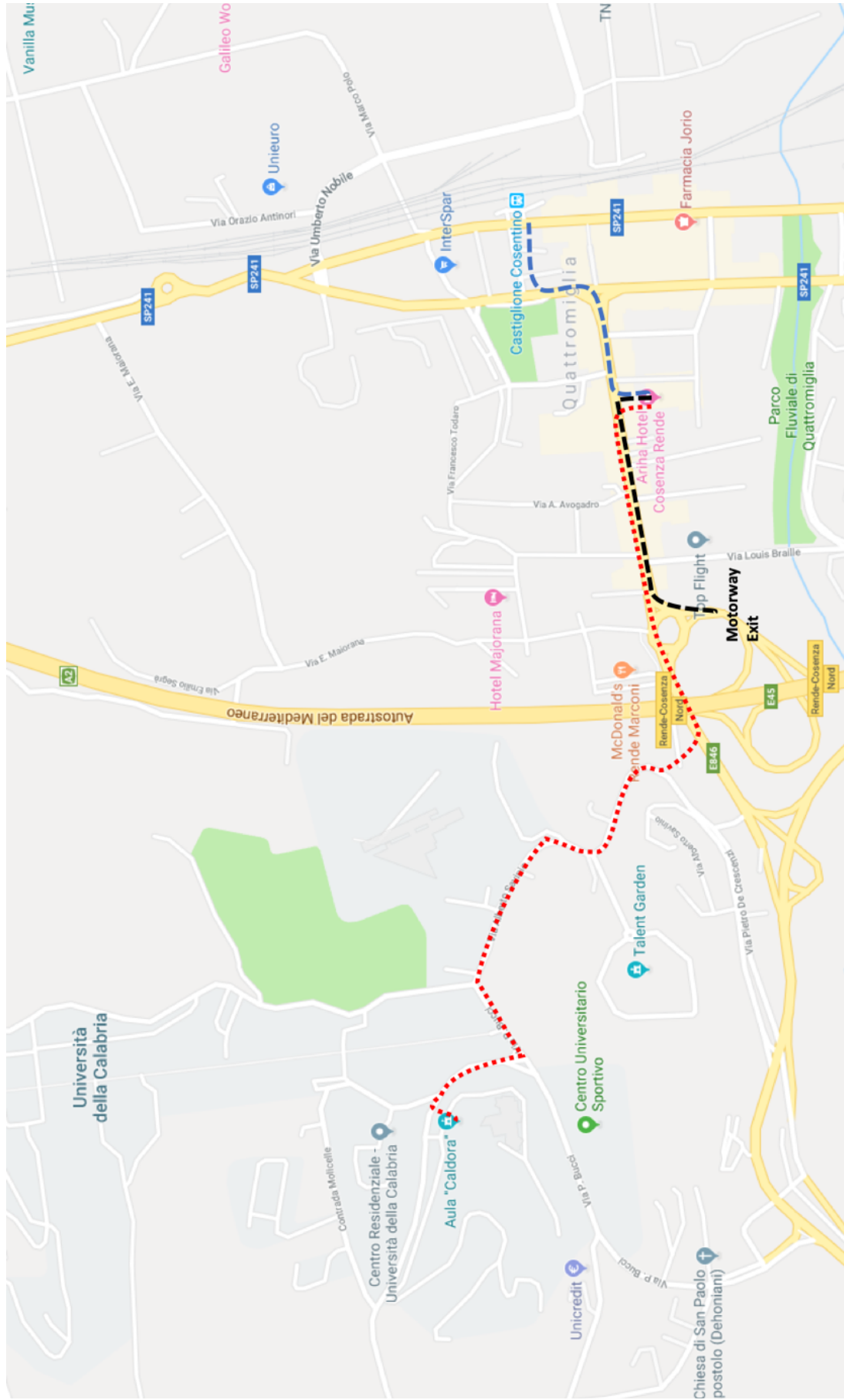
ISM 2020 | Hagenberg – Linz, Austria

Next year, ISM 2020 will be held in Hagenberg-Linz area, Austria, in collaboration with the Upper Austria University of Applied Sciences. Please consider to be active and to participate in this important event by attending by submitting a paper or by joining the International Program Committee. For further information please check the website www.mscles.org/conf/ism2020 or write to Francesco Longo, f.longo@unical.it or Antonio Padovano, antonio.padovano@unical.it.

ISM 2020 will be co-located with:
- WAMS 2020 (the International Workshop on Applied Modeling & Simulation). For further info, please check http://www.msc-les.org/conf/wams2020 or write to Marina Massei, marina.massei@liophant.org;
- WINLOG 2020 (the International Workshop on Innovation for Logistics). For further info, please check http://www.innovazione-rdlog.it/winlog2020/ or write to Sergio Scrivano, info@innovazione-rdlog.it.