UNIVERSITÀ
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Ph.D. Program in Electronics, Computer Science and Electrical Engineering

SEMINAR

From Model to Market: A DEVS Approach to Combinatorial Auctions in Additive Manufacturing

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Aula Seminari BLU, floor E of the Department

Abstract: This seminar presents the ABAMCA project *(Agent-Based Additive-Manufacturing Markets to Improve Business Competitiveness through Combinatorial Auctions)*, which uses combinatorial double auctions and agent-based simulation to support digital marketplaces for additive manufacturing. It traces the project's journey from a spreadsheet-based preliminary model, through a formal DEVS (Discrete Event System Specification) implementation that enabled the analysis of market dynamics and social welfare to the reuse of this modular architecture as the foundation of the prototype platform. This seminar could be of general interest to the students of this PhD program as it addresses the problem of efficiently coordinating production capacities in advanced manufacturing contexts, integrating market design, complex systems modeling, and decision support. In particular, the use of combinatorial auctions, agent-based simulation, and DEVS formalization makes it relevant for the study of sociotechnical architectures in which production, resource allocation, and system performance must be analyzed in an integrated manner. Finally, the transition from conceptual model to application prototype highlights an engineering and methodological value.

Bio: David Poza is an Associate Professor at the Department of Business Management and Market Research at the University of Valladolid, Spain. He received his PhD in Industrial Engineering in 2012. His research interests include agent-based simulation, project management and project scheduling and monitoring. He is currently the principal investigator of the ABAMCA Project, which investigates the use of combinatorial auctions to support digital marketplaces for additive manufacturing.

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