CURRICULUM VITAE OF PROF. L.F. ESCUDERO

CONTENTS

BIO

Laureano F. Escudero was born in Valladolid (Spain) in 1942. He received his PhD Degree in Economic Sciences from Universidad de Deusto, Bilbao, Spain, in 1974. Currently, he is full professor of Operations Research at the Universidad Rey Juan Carlos, Spain from 2007. In the period 2003-04 he was the President of EURO (Association of European Operational Research Societies) and holder of a Golden Pin in 2007. He has worked at IBM Research, Scientific and Development Canters in Madrid (Spain), Palo Alto (California), Sindelfingen (Germany) and Yorktown Heights (NY), 1972-1991. He taught Mathematical Optimization courses at the Mathematical Sciences School, Universidad Complutense de Madrid, 1992-2000 and Stochastic Optimization and Production Planning courses at the Universidad Miguel Hernandez de Elche (Alicante), Spain, 2000-2007. He has supervised 12 PhD theses. He is the holder of two patents.

He has held different positions at the IBERDROLA group (the biggest electric power c generation and distribution company in Spain), being in the period 1997-1999 the Manager of the Dept. of Decision Support Systems Engineering at IBERINCO (Iberdrola Ingeniería y Consultoría).

He is the author of 5 books and a co-author of another one. He has published more than 120 scientific papers in leading journals, such as European Journal of Operational Research, Mathematical Programming, SIAM Journal on Optimization, Computers and Operations Research, Operations Research Letters, Annals of Operations Research, Advanced Software Engineering, Pattern Recognition, TOP, Questiio, Revista de Investigación Operativa, etc. He he has also edited some books and written chapters of books edited by others. He has delivered more thant 400 talks in national and international congresses and conferences.

He has been Co-Editor-In-Chief of TOP, a journal of SEIO, the Spanish Statistics and Operations Research Society, 1993-2000, and member of the Editorial Board of the European Journal of Operational Research, 1977-2006. He is currently serving in the Editorial Board of the following journals: Revista de Matemáticas, TOP, Investigación Operacional, Computational Management Science, SORT (Statistics and Operations Research Transactions) and Rect@.

He is a member of the following scientific societies: INFORMS (Institute for Operations Research and the Management Sciences), MOS (Mathematical Optimization Society), SIAM (Society for Industrial and Applied Mathematics) and SEIO (Sociedad de Estadística e Investigación-Operativa).

Laureano F. Escudero is a member of ECCO (the EWG on Combinatorial Optimization), EUROPT (the EWG on Continuous Optimization), EWGLA (the EWG on Location Analysis) and EWGSP (the EWG on Stochastic Optimization) of EURO .

He has reviewed papers for the following scientific journals: Management Science, Operations Research, European Journal of Operational Research, Computers & Operations Research, Journal of Global Optimization, Mathematical Programming, Journal of Optimization Theory and Applications, Annals of Operations Research, Optimization and Engineering, SIAM Journal on Discrete Mathematics, OR Spectrum, Journal of Heuristics, International Transactions in Operational Research, IMA Journal of Management Mathematics, Applied Mathematical Modelling, etc.

CONTRIBUTIONS TO THE ADVANCE OF THEORY, ALGORITHMS AND APPLICATIONS OF MATHEMATICAL OPTIMIZATION

Four are the main mathematical optimization areas where Laureano F. Escudero has most contributed over the years.

First, his modeling activity for problem solving in the following application fields: Air traffic flow management, flight selection routes and aircraft collision detection and avoidance; pattern recognition; energy power generation planning and capacity expansion and sources location in centralized markets as well as in open ones; telecommunications and transport network design problems; strategic supply chain management (SCM) and tactical SCM planning, water resources management planning; land irrigation scheduling; cash management; capacitated delocation of redundant branches in bank restructuring, production planning, transportation and distribution planning, location facilities selection and customers assignment in static and dynamic environments; oil, hydrocarbon and chemical supplying; transformation and distribution logistics; sequencing and scheduling; product selection, plant location and sizing; vendor selection of key raw materials and market centers location in strategic Supply Chain Management (SCM); tactical SCM; Revenue Management; production planning dimensioning and location; road construction selection in forestry harvesting planning; designing connected rapid transit networks; tactical portfolio planning in the Natural Gas Supply Chain; prison facility site selection; cluster location in multi-period copper extraction planning in mining and difficult pure combinatorial problems as Set Packing Problem and p-Median Problem.

Prof. Laureano F. Escudero started his research activity by working in Queueing Theory, Simulation, Pattern Recognition, and in the application to the above application fields of deterministic mixed 0-1 optimization and continuous nonlinear optimization. Recently, he is given attention to the development of metheuristic algorithms for solving large-scale Mixed Integer Nonlinear Optimization problems. However, since more than twenty years ago, his research activity has been mainly centered on static, two-stage and multistage stochastic mixed integer linear modeling via scenario analysis.

The next contributions are presented in chronological order.

Second, at the same time his research has been directed to model tightening of integer and combinatorial programs. So, he has developed algorithms that identify violated constraints and appending then to the model. Another direction of his research, very lgotrtmuch related to the previous one, is the constraint reformulation by producing 0-1 equivalent models, such that the LP relaxation is closer to the convex hull of the model.

Third, model decomposition is one of the instruments for solving large-scale structured problems. The Fix-and-Relax metaheuristic algorithm for solving huge deterministic multistage problems is one of his contributions to the field. On the other hand, some of the algorithms for solving deterministic models that have been studied by Escudero are 0related to parallel computing for solving large-scale nonlinear network problems. Additionally, he has contributed to exactly solving separable nonlinear mixed 0-1 problems as well as developing a metaheuristic algorithm for producing (hopefully, good) feasible solutions for nonconvex nonlinear mixed integer optimization problems in very affordable computing time.

Forth, since more than twenty years ago Laureano F. Escudero has devoted much of his effort to the study of stochastic programming in the following flavors:

(1) Modeling continuous and mixed integer / combinatorial problems under uncertainty in the objective function coefficients, the right-hand-side and, at a lesser extent, the constraint matrix coefficients jointly with cross scenario constraints.

(2) Developing with two different teams the decomposition methodology so named Branch-and-Fix Coordination (BFC) for solving up to optimality large scale two-stage and multistage stochastic mixed 0-1 stochastic, and the metaheuristic methodology so named Fix-and-Relax Coordination(FRC) for heuristically solving huge multistage stochastic mixed 0-1 models.

(3) Developing with a different team the metaheuristic methodology so named Fix Stochastic Dynamic Programming (SDP) for heuristically solving huge multistage stochastic mixed 0-1 models where some types of risk averse measures are also used as oppose to the traditional risk neutral. The risk averse measures that are allowed are: Minmax regret, Value-and-Risk, Conditional Value-at-Risk, Mean-risk by Excess probabilities, Expected excess and ‘Expected shortfall related to a given threshold, and first and

second-order stochastic dominance constraints recourse-integer strategies.

(4) Developing with another team the so-called BFC-MSMIP (BFC – MultiStage Mixed Integer Programming) for solving up to optimality middle size multistage stochastic 0-1 stochastic models, where the uncertainty can also be represented by non-symmetric scenarios trees.

(5) Parallelizing the decomposition algorithms presented in the previous item, such that its applicability can be extended to solve up to optimality much bigger instances.

(6) Developing with a different team the algorithm Clustering Lagrangian Decomposition (CLD) for solving large-scale dynamic two-stage stochastic mixed 0-1 models as well as the stochastic version of some combinatorial problems as the Set Packing Problem and the p-Median Problem. It uses a scenario clustering approach for Lagrangian Decomposition by using sequentially the following Lagrange multipliers updating schemes; a renewed version of the Subgradient Method, the Volume Algorithm, the Progressive Hedging Algorithm and the Dynamically Constrained Cutting Plane method.

(7) Under developing with a different team a BFC modeling / algorithmic approach for solving multistage stochastic mixed 0-1 models with cross scenario constraints with the uncertainty will consist of a mixture of the exogenous one (where the decision maker cannot not influence it but he must hedge his decisions against future values of the uncertain parameters) and the endogenous uncertainty (where the decision maker actions can influence the future value of the some uncertain parameters), such that a new stochastic optimization modeling object is considered. The Risk Neutral strategy is allowed as the risk averse measures: Minmax regret, Value-and-Risk, Conditional Value-at-Risk, Excess probabilities, and first and second-order stochastic dominance constraints recourse-integer strategies.

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2. L.F .Escudero, A. Garín, M. Merino, G. Pérez, A BFC algorithm with risk averse stochastic dominance constraints recourse-integer for solving multistage stochastic mixed 0-1 problems.
3. L.F. Escudero, J.F. Monge, D. Romero-Morales, On Risk management for Supply Chain tactical planning under Uncertainty.
4. D. Ruiz-Hernández, D. Delgado-Gómez, L.F. Escudero, J. López-Pascual. A capacitated delocation model redundant branches in bank restructuring.
5. L.F. Escudero, M.A. Garín, M. Merino, G. Pérez. On multistage stochastic mixed 0-1 optimization under a mixture of Exogenous and Endogenous Uncertainty in a risk averse environment.

6. M.T. Vespucci, M. Bertocchi, L.F. Escudero, S. Zigrino. A risk averse multistage stochastic mixed 0-1 optimization model for power generation expansion planning in the long term.

RESEARCH CENTERS MEMBERSHIP

1. IBM Spain Scientific Center, Autonomopuns University of Madrid, 1972-1991.
2. IBM Palo Alto Scientific Center, Palo Alto (CA, USA), 1978- 1980.
3. IBM German Manufacturing Technology Center, Sindelfingen (Alemania), 1986- 1987.
4. IBM T.J. Watson Research Center, Yorktwon Heights (NY, USA), 988-1991.

SCHOLARSHIP

1. Profesor of Mathermatical Ststistics ands Decision Theory, Computer Sc ience School, Madrid Polytechnical University, Spain, 1971-1977.
2. Associate professor, Dept. of Statistics and Operations Research, Matheamtical School, Madrid Complutene Universityr, Spain, 1992-2000.
3. Full professor, Dept. of Statistics and Operations Research, Miguel Hernández University, Elche (Alicante), Spain, 2000-2007.
4. Full professor, Dept. of Statistics and Operations Research, Rey Juan Carlos University, Móstoles (Madrid), Spain.

PHD SUPERVISION

1. 1993. Co-supervisor, A. Garín thesis, "Nuevos métodos para la reducción del intervalo de integridad en programación con variables 0-1", Dpto. de Matemática Aplicada, Estadística e Investigación-Operativa Universidad del País Vasco, Leioa (Vizcaya), Spain.
2. 1995, Supervisors, T. Ortuño theis, "Metodología dual en el problema del ordenamiento secuencial", Dpto. de Estadística e Investigación-Operativa, Universidad Complutense de Madrid, Spain.
3. 1997, Supervisor, A. Alonso-Ayuso thesis, "Programación combinatoria estocástica", Dpto. de Estadística e Investigación-Operativa, Universidad Complutense de Madrid, Madrid.
4. 1998, Superevisor, P. Cristóbal thesis, "Técnicas de Descomposición en Programación Estocástica", Dpto. de Estadística e Investigación-Operativa, Universidad Complutense de Madrid, Madrid.
5. 1999, Supervisor C.E. Ramos thesis, "Cuestiones notables en optimización robusta sobre redes Estocásticas", Dpto. de Estadística,

Investigación-Operativa y Computación, Universidad de La Laguna (Tenerife), Spain..

6. 1999, Co-supervisor, J. Garrido thesis, “Sobre Estrategias Eficientes en el Mercado de Opciones y Futuros”, Dpto. de Economía Cuantitativa, Universidad Complutense de Madrid, Spain.
7. 1999, Co-supervisor, S. Muñoz thesis, “Sobre formulaciones fuertes en programación 0-1”, Dpto. de Estadística e Investigación-Operativa, Universidad Complutense de Madrid, Spain.
8. 2004, Supervisor, J.F. Monge thesis, “Diseño de redes de telecomunicciones y determinanción de tablas de enrutamiento con stocasticidad en el flujo origen-destino entre nodos, Dpto. de Estadística y Matemática Aplicada, Universidad Miguel Hernández, Elche (Alicante), Spain.
9. 2006, Co-supervisor, C. Pizarro thesis, “New algorithmic approaches in Stochastic Integer Programming”, Dpto. de Estadística e Investigación-Operativa, Universidad Rey Juan Carlos, Móstoles (Madrid), Spain.
10. 2009, Co-supervisor, Alex Rabasa thesis, “Data Mining. Reducción y Clasificación de Sistemas de Reglas”, Dpto. de Estadística, Matemática Aplicada e Informática, Universidad Miguel Hernández, Elche (Alicante), Spain.
11. 2010, Co-supervisor, Francisco Javier Martín Campo thesis, “The collision avoidance problems: Methods and algorithms”, Dpto. de Estadística e Investigación-Operativa, Universidad Rey Juan Carlos, Móstoles (Madrid).
12. 2011. Co-supervisor, Alcides Simbo thesis , “Mejoras al plan energético de Angola”, Dpto. de Estadística e Investigación-Operativa, Universidad Rey Juan Carlos, Fuenlabrada (Madrid).

PATENTS

1. Method and Apparatus for Discrete Activity Resource, Allocation Through Cardinality Constraint Generation. Docket YO990165, Januaryo 24th, 1991. Co-author: B.L. Dietrich.

2. WISCHE (Water Irrigation SCHEduling), Non-linear integer program for water irrigation scheduling, num. 09/2009/376, September 31st, 2009. Co-authors: E. Alarcón, M. Almiñana, L. Antón, M. Landete, J.F. Monge, A. Rabasa y J- Sánchez-Soriano.

NATIONAL PROJECTS

1. Principal Investigator, Project SADERYL, funded by the Spanish MInistry of Science and Technology, “Un sistema de ayuda a la toma de decisiones en problemas de rutas de vehículos y localización de

servicios", TIC2000-1750-C06-06, 2001-2003

2. Technical Director, Project AMEC, funded by the Spanish Ministry of Science and Technology, "Actuación en Mercados Eléctricos Competitivos",, SEC2002-00112, 2002-2004..
3. Principal Investigator, Project RIEGOS-0, funded by the Spanish Generalitat Valenciana, "Desarrollo de modelos y algoritmos de planificación de la gestión de recursos hídricos de uso agrícola", GV04B/655, 2004.
4. Principal Investigator, Project ORG , funded by the Spanish Generalitat Valenciana, "Operations Research and Games", GRUPOS04/79, 2004.
5. Principal Investigator, Project RIEGOS, funded by the Spanish Ministry of Education and Science, " Desarrollo de modelos y algoritmos de planificación de la gestión de recursos hídricos de uso agrícola", MTM2004-01095, 2005-2008
6. Investigator, Project, funded by the Spanish Comunidad de Madrid, "Mejoras de la programación entera y estocástica desde la optimización convexa. Aplicación a la movilidad sostenible", URJC-CM-2007-CET-1622, 2008-2009.
7. Investigator, Project ATLANTIDA, funded by the agency CDTI (within the Spanish Ministry of Industry) in the CENIT framework program and the private company GMVAerospace and Defence, "Optimizations of Air Traffic Management", 2008-2010.
8. Principal Investigator, Project, funded by the Spanish Comunidad de Madrid, ": Desarrollo de modelos y algoritmos de programación estocástica nolineal. Aplicación a la gestión de ingresos bajo incertidumbre", URJC-CM-2008-CET-3703, 2009.
9. Principal Investigator, Project PLANIN, funded by the Spanish Ministry of Science and Innovation, " Parallel Computing Optimization of Planning under Uncertainty", MTM2009-14087-C04-01, 2010-2012.
10. Investigatdor, Project RIESGO CM, fuinded by the Spanish Comunidad de Madrid, 2010-2012.
11. Investigator, Project PCDASO, fundecd by the Spanish Ministry of Economy and Competitivity , " Parallel Computing and Decomposition Algorithms in Stochastic mixed integer Optimization with applications", MTM2012-31514, 2013-2015.

INTERNATIONAL PROJECTS

Principal investigator in the folowing projects co-funded by the European Commission and the partner of the Consortia:

1. HChLOUSO (HydroChemical Logistics Optimization under Uncertainty via Stochastic Optimization), ESPRIT, PE24897, 1997-2000.
2. WARSYP (Water Resource Systems Planning), INCO-ENV PL950845, 1997-2000.
3. SCHUMANN (Supply Chain Uncertainty Managenent Network), ESPRIT PE26267, 1998-2000.

Investigator participting in the following projects co-financed by the European Commission and the partners of the Consortia:
1. SLOEGAT (Short-and-Long Optimization Energy Generation and Optimization), ESPRIT PE22695.
2. PARALIN (Parallel in Industry), INCO-DC 950845.
3. OMEGA (Open Market Energy Generation Allocation), IST- 1999-2000.
4. SECONOMICS (Socio-Economics meets Security), FP7-SEC-2011.634-1, 2012-2014.
5. ENRIMA (Energy Efficiency and Risk Mansgement in Public Buildings), FP7-2010-NMP-ENV-ENERGY-ICT-EeB, Grant agreement: 260041, 10/2010-3/2014.
6. European Comission funded COST Action TD1207 , Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks, member, Management Committee, 2013-2016.

Principal investigator on behalf the Universidad Rey Juan Carlos (URJC), Spain in the project (jointly with the Universidad del País Vasco, Spain and the Norges Teknisk Naturvitenskapelige Uuniversitet, Norway) "·Adaptation and design of the implementation of the BFC-MS algorithm for a natural gas network infrastructure model", 2010-2012.

Member of the Scientific Committee of the ALGODEC (Algorithm Decision Theory) network included by 12 leading European universities, 2011-2014.

MEMBER OF CONGRESS ORGANIZATION AND PROGRAM COMMITTIES

1. 1977. Member, Scientific Committee and Organziing Cmmitte, , Congreso Nacional de la Sociedad Española de Investigación-Operativa. Madrid (Spain).
2. 1977. Organizer, Seminario sobre Programación Matemática, PM'77, Madrid (Spain).
3. 1981. Organizer, Seminario sobre Programación Matemática, PM'81, Madrid (Spain).
4. 1982. Co-organizer, Seminario sobre Programación Matemática, PM'82, Barcelona (Spain).

5. 1984. Member, Scientifci Committee, Segundo Congreso de la Asociación Latino-Americana de Investigación-Operativa, II CLIO, Buenos Aires (Argentina).
6. 1984. Co-organizer, Seminario sobre Programación Matemática, PM'84, Barcelona (Spain).
7. 1985 . Co-organizer, Seminario sobre Programación Matemática, PM'85, Barcelona (Spain).
8. 1985. Member, Scientific Committee, Conference on OR models on Microcomputers, Lisbon (Portugal).
9. 1985. Member, Scientific Committee, Primera Reunión de Investigación Militar Operativa, Madrid (Spain).
10. 1986. Co-organizer, Seminario sobre Programación Matemática, PM'86, Zarautz (Guipúzcoa, Spain). .
11. 1987, Co-organizer, Seminario sobre Programación Matemática, PM'87, Madrid (Spain).
12. 1989, Co-organizer, Seminario sobre Programación Matemática, PM'89, Madrid (Spain)..
13. 1990. Member, International Program Committe, IFIP Conference on Advances in Production Management Systems, APMS'90, Espoo (Finland).
14. 1990. Member, Interrnational Program Committee, V Congreso Latino-Americano de Investigación-Operativa, V CLAIO, Rio de Janeiro (Brasil).
15. 1992. Member, International Program Committe, IFIP WG5.7 Working Conference on Integration in Production management Systems, Eindhoven (The Netherlands).
16. 1992. Member, Scientific Committee, XX Congreso Nacional de la Sociedad de Estadística e Investigación-Operativa, Cáceres.
17. 1993, Member, International Program Committe, IFIP WG5-7 Working Conference on Advances in Production Management, Athens (Grecce).
18. 1994, Member, Scientfic Committe, XX Reunión Nacional de la Sociedad de Estadística e Investigación-Operativa, Calella (Spain).
19. 1994. Member, International Program Committee, VII Congreso Latino-Americano de Investigación-Operativa, VII CLAIO, Santiago de Chile (Chile).
20. 1995. Member, Scientific Committee, 12th EURO Summer Institute -ESI XII on Location Analysis, Santa Cruz de Tenerife (Canary Islands, Spain).
21. 1996. Member, Program Committee, Fourth European Congress on Intelligent Techniques, EUFIT'96, Aachen (Germany).
22. 1996. Member, Program Committe, VIII Congreso Latino-Ibero Americano de Investigación de Operaciones, CLIO VIII, Río de

Janeiro (Brazil).

23. 1997. Member, Scientific Committee, Tenth meeting of the European Chapter on Combinatorial Optimization, ECCO X, Tenerife (Cnalry Islands, Spain).
24. 1997. Member, Organizing Committee, EURO/INFORMS International Conference, Barcelona (Spain).
25. 1998. Member, Scientific Commitrtee, Session cluster organizer, "Integer programming: computational and algorithmic development", Applied Mathematical Programming Modelling Conference, APMOD98, Lemassol (Cyprus).
26. 1998. Member, Scientific Committee, XXIV Congreso Nacional de la Sociedad de Estadística e Investigación-Operativa, SEIO’98, Almería (Spain).
27. 1998. Member, Program Committee, Processing in Operations Research Conference, PAREO98, Versailles (France).
28. 2000, Member, Scientific Committee, Applied Mathematical Programming Modelling Conference, APMOD2000, London (UK).
29. 2000, Member, Scientific Committee, X Congreso Latino-Ibero Americano de Investigación de Operaciones, X CLAIO, México City (México).
30. 2000, Member, Scientific Committe, XXV Congreso Nacional de la Sociedad de Estadística e Investigación Operativa, Vigo (Spain).
31. 2000, Member, Scientific Committe, Congreso sobre Técnicas de Ayuda a la Decisión en la Defensa, Ministerio de la Defensa, Madrid (Spain).
32. 2001, Session organizer, “ Some packing problems”, EURO XVIII, Rotterdam (The Nederlands).
33. 2001, Session organizer, ” Some recent deterministic and stochastic 0-1 program algorithmic developments”, INFORMS Conference, Miami (FL, USA).
34. 2002, Member, International Scientific Committee, APMOD02, Varena (Italy).
35. 2003, Member, Scientific Committe, XXVII Congreso de la SEIO, Sociedad de Estadística e Investigación-Operativa, Lleida (Spain).
36. 2004, President, Academic Committee, Primer Congreso Andino de Investigación de Operaciones y III Congreso Colombiano de Investigación de Operaciones, Cartagena de Indias (Colombia).
37. 2004, Member, International Scientific Committee, APMOD04, London (UK).
38. 2004, Member, International Scientific Committee, CLAIO XII, Habana (Cuba).

39. 2005, Member, Scientific Committe, EURO ORPPP, Operations Research Peripatetic Postgraduate Programme, Valencia (Spain) .
40. 2006, President, International Scientific Committee, APMOD06, Madrid (Spain).
41. 2006, Member, Scientific Committee, ORMMES06, Operational Research Models and Methods in the Energy Sector, Coimbra (Portugal).
42. 2006, Sesion Chair, “Energy Markets”, in, ORMMES06, Operational Research Models and Methods in the Energy Sector, Coimbra (Portugal).
43. 2006, Member, Scientific Committe, Conference on Routing and Logistics (CORAL06), Tenerife (Canary Islands, Spain).
44. 2006, Member, Program Committee, CLAIO XIII, Montevideo (Uruguay).
45. 2007, Member, Management Science Strategy Innovation Prize (MSSIP) Committe, EURO Conference, Praga (Check).
46. 2007, President, European Doctoral Dissertation Award (EDDA) Committee, EURO ConferencePrague (Czech).
47. 2007, Member, Program Committee, 11th Stochastic Programming Conference, Viena (Austria).
48. 2007, Chair session, “Stochastic Programming II”, EURO XXII, Praga (Czech).
49. 2008, Member, Program Committe, FLINS08, 8th International Conference on Computacional Inteligence in Decisión and Control, Madrid (Madrid).
50. 2008, Member, Committe, APMOD08, Bratislava (Slovakia).
51. 2008, Member, Organizing Committe, i-math Intensive School on Mathematical Programming and its Applications, Castro Urdiales (Cantabria, Spain).
52. 2008,Session Chair, “ Scheduling” , IFORS Trienal Conference, Sandton (South-Africa).
53. 2008, Session Chair, “Location 2”, GOM 2008 (Graphs and Optimization Meeting), Saint Maximin La Sainte Baume (France).
54. 2008, Member, Academic Committe, CLAIO XIV, Cartagena de Indias (Colombia).
55. 2008, Member, Academic Committee, European Working Group on Locational Analysis EWGLA meeting, Elche (Alicante, Spain).
56. 2008, Session Chair, European Working Group on Locational Analysis EWGLA meeting, Elche (Alicante, Spain).

57. 2009, Member, Organizing Committe, Jornadas de Experiencia en Transferencia de Tecnología Matemática, Bilbao.(Spain).

58. 2009, Sessin Chair, "Stochastic Integer programming Algorithms and Applications", 23rd EURO European Conference on Operational Research, Bonn. (Germany)

59. 2009, Member, Organbzing Commiitee, Advanced Course on Optimization: Theory, methods and applications (OPT2009), Centre de Recherca Matematica, Univeersidad Autónoma de Barcelona, Bellaterra (Barcelona, Spain).

60. 2009, Session Chair, Advanced Course on Optimization: Theory, methods and applications" (OPT2009), Centre de Recherca Matematica, Univeersidad Autónoma de Barcelona, Bellaterra (Barcelona, Spain).

61. 2009, Session Chair, "Stochastic Programming Models and Algorithms", 24th IFIP TC 7 Conference on System Modelling and Optimization, Buenos Aires (Argentina).

62. 2010. Member, Program Committee, International Conference on Uncertainty and Robustness in Planning and Decision Making, Coimbra (Portugal).

63. 2010. Member, Program Committee, XXIII Conference ECCO (EURO Working Group Chapter on Combinatorial Optimization, ECCOXXIII-CO2010, Málaga (Spain).

64. 2010. Member, Orgaanizing Committee, XXIII Conference ECCO (EURO Working Group Chapter on Combinatorial Optimization), ECCOXXII-CO2010, Málaga (Spain).

65. 2010, Session Chair, "Air Traffic Flow Manasgement", ECCOXXIII-CO2010, Malga (Spain).

66. 2010, Member, Program Committee, 12th International Conference on Stochastic Programming, 12th ICSP, Halifax (Canada).

67. 2010, Member, Progtram Committee, ALIO/INFORMS, Buenos Aires (Argentina)

68. 2010, Session Chair, "Location under Uncertainty", EURO XXIV, Lisboa (Portugal).

69. 2010, Co-organizer, Exploratory Workshop MINLP (Mixed Integer NonLinear Programming), Sevilla (Spain).

70. 2010, Session chair, "Stochastic mixed (0-1) problems", 12th International Conference on Stochastic Programming, 12th ICSP, Halifax (Canada).

71. 2010, Plenary Session Chair, 41st Annual Conference – Italian Operational Research Society (AIRO), Villa San Giovanni, Reggio Calabria (Italy).

72. 2010, Session Chair, “DEA y Estocástica”, XXXII Congreso Nacional de Estadística e Investigación-Operativa, A Coruña (Spain).

73. 2010, Session Chair, Workshop on Numerical Optimization and Applications in Engineering, Centre Ricerca Matematica, Universidad Autónoma de Barcelona, Bellaterra (Barcelona, Spain).

74. 2011, Member, Program Committee, IFORS Triennial Conference, Melbourne (Australia).

75. 2011, Member , Program Committee, IX Congreso del Instituto Chileno de Investigación-Operativa, OPTIMA 2011, Universidad de la Frontera, Lacustre de Pucón (Chile).

76.2012. Session chair,” Optimization and modelling”, APMOD12, Paderborn (Germany).

77.2012. Session chair,” Scenario Generation” , APMOD12, Paderborn (Germany) .

78.2012. Organizer, Seminar on Stochastic Optimization and Risk Managment, Universidad Rey Juan Carlos, Mostoles campus, Madrid (Spain), 21 May-11 June, 2012.

79.2011-12, Member, EURO Distinguished Service Medal (EDSM), Committee, EURO XXV Conference, Vilnius (Lituania).

80.2012 Session chair, “Stochastic Programming in Industry I”. EURO XXV C0nference, Vilnius (Lituania).

81.2012. Session chair, Multistage stochastic mixed 0-1 optimization: Algorithms and applications, 21th International Sympoisum on Mathematical Programming (ISMP), Berlin (Germany).

82.2012. Session chair, “Algorithms & Heuristics 1”, International Symposium on Combinatorial Optimization CO’2012, Oxford (UK).

83. 2012. Member, Program Committee. 2nd International Conference on Variable Neighborhood Search Metaheuristic, Herceg Novi (Montenegro).

84. 2012. Session chair. 2nd International Conference on Variable Neighborhood Search Metaheuristic, Herceg Novi (Montenegro).

85.2013. Member, Steering Committee, Computational Management Science CMS2013, Montreal (Canada).

KEYNOTE LECTURES IN CONGRESSES AND MAIN SEMINARS

1. 1991. Nuevos enfoques de la Programación Matemática, XIX Congreso Nacional de la Sociedad de Estadística e Investigación-Operativa, Segovia (Spain).
2. 1992. Programación robusta, XIX Congreso Nacional de la Sociedad de Estadística e Investigación-Operativa, Cáceres (Spain).

1993. L.F. Escudero, Computationally efficient methodology for integer A. AlonsoAyuso, L.F. Escudero, F.J. Martin-Canmpo. VNS based algorithm for solving a 0–1 nonlinear nonconvex model for the Collision Avoidance in Air Traffic Management. 2nd International Conference on Variable Neighborhood Search Metaheuristic, Herceg Novi (Montenegro).

3. programming, 18th German Symposium über Operations Research, Kolon, (Germany).
4. 01995. On production planning problems in FMS: Stage-of-the-art and new trends, Annual Conference of the Italian Association of Operations Research, AIRO'95, Azcona (Italy).
5. 1995. L.F. Escudero, Utilización de la I.-O. en Planificación de la Producción, XXII Congreso Nacional de Estadística e Investigación-Operativa, Sevilla (Spain).
6. 1998. An efficient framework for finding feasible solutions on large-scale instances of the sequential ordering problem, ECCO X, Tenerife (Canary Islands, Spain).
7. 1998. Utilización de programas estocásticos para la mejor explotación de recursos naturales: agua, gas y petróleo: Modelización y algoritmia, IX Congreso Latino-Americano de Investigación de Operaciones, X CLIO, Buenos Aires (Argentina).
8. 1998. Air traffic management under uncertainty: New trends in modeling and algoritmia, Annual Meeting of APDIO, Sociedad Portuguesa de Investigación-Operativa, Algarve (Portugal).
9. 2001. Planificación Estratégica de Cadenas de Suministro bajo Incertidumbre, Primer Congreso Colombiano de Investigación de Operaciones, SOCIO, Medellín (Colombia).
10. 2002. Beneficios de las aplicaciones de estadística e investigación-operativa en el sector industrial europeo, I Taller en Optimización de Logística y de Operaciones Industriales, Escuela Colombiana de Ingeniería, Bogotá (Colombia).
11. 2002. On production Planning and Scheduling (PPS) under uncertainty, II Congreso Colombiano – I Encuentro Andino de Investigación de Operaciones. Bogota (Colombia).
12. 2002. Conceptos y tendencias en Programación Combinatoria, II Taller en Tecnologías de Optimización", Escuela Colombiana de Ingeniería, Bogotá (Colombia)
13. 2003. Stochastic Programming and Supply Chain Management, V Congreso del Instituto Chileno de Investigacion de Operaciones, Valparaíso (Chile).
14. 2003. On supply chain management under uncertainty, II Seminario Nacional de Logística, Universidad la Sabana, Bogotá (Colombia).
15. 2004. Programación estocástica mixta 0-1, I Jornadas SEIO-RSME, Elche (Alicante, Spain).
16. 2004, On solving mixed 0-1 stochastic Programs, 35th Conference AIRO, Lecce, Italy.
17. 2004, Nuevas tendencias en programación estocástica 0-1 mixta, XII Jornadas ASEPUMA, Murcia (Spain).
18. 2007, Supply Chain Management under uncertainty, EURO Winter Institute, Estoril (Portugal).
19. 2007, On multistage stochastic integer programming, Curso de verano Progresos y retos de la matemática multidisciplinar, Universidad Complutense, El Escorial, Madrid (Spain).

20. 2008, Optimization and uncertainty. I-math Intensive School on Mathematical Programming and its Applications, Castro Urdiales (Cantabria, Spain).
21. 2008. An improved procedure for solving a modification of the extended rapid transit network design problem, XIV CLAIO (Congreso Latino-Americano de Investigación-Operativa), Cartagena de Indias (Colombia).
22. 2008. On solving large scale planning problems under uncertainty, VI ALIO/EURO Workshop on Applied Combinatorial Optimization, Buenos Aires (Argentina).
23. 2009. Branching and bounding strategies for multistage stochastic mixed integer programming, Advanced Course on Optimization: Theory, Methods and Applications (OPT2009), Centre Recerca Matematica, Universidad Autonoma de Barcelona, Bellaterra (Barcelona, Spain).
24. 2010, L.F. Escudero, , On solving large scale multi-stage mixed 0-1 stochastic problems, 4th Workshop on Optimization and Variational Analysis (uin honuor of Professor Marco A. López), Elche (Alicante, Spain).
25. 2010, L.F. Escudero, Air Traffic Flow Management. Part I: Deterministic case. On Air Traffic Flow decision making, Workshop on Numerical Optimization and Applications in Engineering, Centre Ricerca Matematica, Universidad Autónoma de Barcelona , Bellaterra(Barcelona,Spain).
26. 2011, L.F. Escudero, Risk averse strategies in Stochastic Optimzation. OLPT2011 international congress, Centre Ricerca Matematica, Universidad Autónoma de Barcelona (Spain).
27. 2011, L.F. Escudero, Risk management optimization: Models, algorithms and applications, XXXVIII SYMOPIS, Serbian congress, Zlatibor (Serbia)
28. 2011, L.F. Escudero, Risk management in some types of location problems under uncertainty: Exploratory Workshop on Location Analysis: Trends on Theory and Applications, IMUS, Universidad de Sevilla, Sevilla (Spain).
29. 2012, L.F. Escudero, La evolución de la I-O en España y perspectivas de futuro. Paraninfo de la Universiad Complutense de Madrid. 50th aniversary of the Spanish Sociedad de Estadística e Investigacion Operativa, Madrid (Spain).
30. 2012, L.F. Escudero, On risk averse modeling and solution for better decision making”. Seminars on Stochastic ptimization and Risk Management. Universidad Rey Juan Carlos, Móstoles campus, Madrid (Spain), 21 May-11 June, 2012.
31. 2012, L.F. Escudero. Challenges, opportunities and difficulties on treating endogenous uncertainty, Seminar on Stochastic Optimization

and Risk Management. Universidad Rey Juan Carlos, Móstoles campus, Madrid (Spain), 21 May-11 June, 2012.

32. 2012, L.F. Escudero, On risk averse strategies under exogenous uncertainty for better decision making. NTNU, Trondheim, Norway..
33. 2012, L.F. Escudero, M.A. Garin, M. Merino, G Pérez. On solving multistage stochastic mixed 0-1 problems with Risk Averse Stochastic Dominance Constraints strategies. NTNU, Trondheim, Norway.
34. 2012, L.F. Escudero. Challenges, opportunities and difficulties on treating endogenous uncertainty, Seminar on Stochastic Optimization and Risk Management. NTNU, Trondheim, Norway.

INVITED PAPERS IN ORGANIZED CONGRESS SESSIONS

1. 1989. N. Ascheuer, L.F. Escudero, M. Groetschel, M. Stoer, Computational performance of some cutting planes for the sequential ordering problem, Third ORSA/TIMS Joint National Meeting, New York (NY, USA).
2. 1989. B.L. Dietrich, L.F. Escudero, On solving a 0-1 model for workload allocation on parallel unrelated machines with setups. Third ORSA/TIMS Joint National Meeting, Nueva York (NY,USA).
3. 1989. B.L. Dietrich, L.F. Escudero, M. Guignard, H. Lee, K. Spielberg, A Lagrangean Decomposition approach for jobs allocation on parallel unrelated machines with setups, Third ORSA/TIMS Joint National Meeting, New York (NY, USA).
4. 1990. N. Ascheuer, L.F. Escudero, M. Groetschel, M. Stoer, On identifying in polynomial time violated subtoour elimination and precedence forcing constraints for the sequential ordering problem, Conference on Integer Programming and Combinatorial Optimization, IPCO-90, Waterloo (Ontario, Canada).
5. 1991. L.F. Escudero, A methodology for solving with PC's large-scale resource allocation problems in production planning, ICIAM'91, Second Intern. Conference on Industrial and Applied Mathematics, Washington D.F. (USA).
6. 1991. Ch. Dillenberger, L.F. Escudero, A. Wollensak, W. Zhang, On solving a broad set of large-scale resource allocation problem, EURO-XI, 11th European Congress on Operations Research, Aachen (Germny).
7. 1991. A. Sciomachen, L.F. Escudero, G. Frosi, M. Guignard, K. Malik, On using the SOP methodology on a card assembly line, EURO-XI, 11th European Congress on Operations Research, Aachen (Germny).
8. 1991. L.F. Escudero, P.V. Kamesam, A. Kings, R. J-B Wets, On solving a multi-stage stochastic model on production planning under uncertainty, EURO-XI, 11th European Congress on Operations Research, Aachen (Germany).

9. 1991. L.F. Escudero, M. Guignard, K. Malik, A. Sciomachen, The Sequential Ordering Problem, ORSA/TIMS meeting, Anaheim (CA, USA).
10. 1991. L.F. Escudero, P.V. Kamesam, A. King, R. J-B Wets, Aggregate production planning and sourcing decision, ORSA/TIMS meeting, Anaheim (CA, USA).
11. 1993. Ch. Dillenberger, L.F. Escudero, A. Wollensak, W. Zhang, Resource Allocation and Scheduling with Setups, IFORS-93, Lisboa (Portugal).
12. 1993. L.F. Escudero, P.V. Kamesam, Robust Optimization for Production Planning, IFORS-93, Lisboa (Portugal).
13. 1993. L.F. Escudero, Production planning for manufacturing networks, IFORS-93, Lisboa (Portugal).
14. 1995. L.F. Escudero, S. Martello, P. Toth, A framework for tightening 0-1 programs based on extensions of pure 0-1 KP and SSP programs, Integer Programming and Combinatorial Optimization, IPCO-95, Copenhagen (Denmark).
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18. 1997. L.F. Escudero, A. Felipe, S. Muñoz, On characterizing tighter formulations for 0-1 programs, EURO XV/INFORMS XXXIV Conference, Barcelona (Spain).
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Workshop on Integrated natural gas market and transportation systems, Trondheim (Norway).

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40.2003. A. Alonso-Ayuso, J.M. Amigó, L.F. Escudero, On risk managemen4t of portfolios of energy bilateral trading contracts, First Joint Meeting AMS-RSME, Sevilla (Spain).

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50.2007. L.F. Escudeero, Key areas of production, planning, assignment and scheduling in manufacturing under uncertainty", EURO International

Winter Institute on Location and Logistics , Estoril (Portugal).

51. 2007. L.F. Escudero, On multistage stochastic integer programming. The BFC approach: Theory and applications, Spring School on Stochastic Programming, Bergamo (Italy).

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62.2009, L:F. Escudero, S. Muñoz, A randomized method for solving the line design problem for connected rapid transit networks, 23rd EURO European Conference on Operational Research, Bonn (Germany).

63.2009, E.-M. Ortega, L.F. Escudero. Premium bounds for the cedent’s (reinsurer’s) total risk under reinsurance with dependent random retention levels, 23rd EURO European Conference on Operational Research, Bonn. (Germany).

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83. 2012, M. T. Vespucci, M. Bertocchi, L.F. Escudero, S. Zigino. A Multistage Stochastic Model for Determining the Electric Power Generation Capacity Expansion of a Price-taker. 9th Internatinal

Conference on Computational Management Science CMS2012, London (UK).

84. 2012, G. Pérez-Valdes, A. Pages-Bernaus, A. Tomasgard, M. Fodstad, L.F. Escudero, G. Pêrez. Parallel Computational Implementation of a Branch and Fix Coordination Algorithm. 9th Internatinal Conference on Computational Management Science CMS2012, Londons (UK).
85. 2012, L. Aranburu, L.F. Escudero, M. Araceli Garín, G. Pérez. Risk averse measures in stochastic mixed 0-1 optimization. EURO XXV congresss, Vilnius (Lituania).
86. 2012, A. Unzueta, L F. Escudero, M. Araceli Garín, G. Pérez. Scenario cluster portitioning in the Lagrangian based procedures. EURO XXV congresss, Vilnius (Lituania).
87. 2012, G. Pérez, L F. Escudero, M. Araceli Garín, M. Merino, U. Aldosoro. Parallel computing via break stage scenario clustering for multistage stochastic porogramming. EURO XXV congresss, Vilnius (Lituania).
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89. 2012, M.T. Vespucci, M. Bertocchi, L.F. Escudero, S. Zigrino. A multistage stochastic model for the electric power generation capacity expansión problem under uncertainty. EURO XXV congresss, Vilnius (Lituania).
90. 2012, D. Ruiz-Hernández, D. Delgado-Gómez, L.F. Escudero, J. López-Pascual. Delocation models for closing and resizing redundant branches during bank restructuring. EURO XXV congresss, Vilnius (Lituania).
91. 2012, L.F. Escudero, J.F. Monge , D. Romero-Morales. Stochastic Tactical Supply Chain Management under uncertainty. 21th International Symposium on Mathematical Programming (SMP), Berlin (Germany).
92. 2012, L.F. Escudero, M.A. Garín, G. Pérez, A. Unzueta. Scenario cluster decomposition and parallel computing for the Lagrange multipliers updating schemes in two-stage stochastic mixed 0-1 optimization. 21th International Symposium on Mathematical Programming (SMP), Berlin (Germnay).
93. 2012, L.F. Escudero, M.A. Garín, M. Merino, G. Pérez. A BFC-MS algorithm for solving multistage mixed 0-1 stochastic problems with risk averse stochastic dominance constraints, 21th International Symposium on Mathematical Programming (SMP), Berlin (Germanay).
94. 2012, G. Valdés-Perez,, L.F. Escudero, M. Fodstad, A. Pagés-Bernaus, G. Pérez, A. Tomasgard. Paralel computationañ implementation of a

Branch-and-Fix Coodination, 21th International Symposium on Mathematical Programming (SMP), Berlin (Germany).

OPERATIONS RESEARCH AWARDS

1. 1972. IBM Outstanding Contribution Award (Europe).
2. 1976. "Premio al mejor libro científico / técnico" awardedby the Agrupación Nacional de Ingenieros de España, Delegación de Bilbao, cvor the books " Aplicaciones de la Teoría de Colas", Ediciones Deusto, Bilbao (SPain), 1972 and "La Simulación en la Empresa", Ediciones Deusto, Bilbao (Spain), 1973.
3. 1976. IBM Outstanding Contribution Award (Europe).
4. 1986. Cruz al Mérito Aeronáutico con Distintivo Blanco, First Class, Spanish Mnistry of Defence (Spain).
5. 1987, Member, New York Academy of Sciences.
6. 1990-91. Member, IBM Academy of Technology (worldwide).
7. 2001, Second Prize, VII Premio de Investigación-Operativa "General Fernández Chicarro" awarded by the Spanish Ministry of Defence to the paper "Programación estocástica entera. Un sistema de apoyo a la minimización del impacto esperado en el tráfico aéreo civil debido a operaciones militares" by A. Alonso-Ayuso, L.F. Escudero, M.T. Ortuño (Spain)..
8. 2002, Laudatio lecturer, in ceremony bestowing Doctor Honoris Causa to prof. Egon Balas by Universidad Miguel Hernández , Elche (Alicante, Spain), September 25th.
9. 2007, Golden Pin of EURO (The Association of European Operational Research Societies).
10. 2008, International Workshop on Operations Research (IWOR) held in Madrid (Spian) in his honour, Vol. 17 (1) journal TOP.
11. 2008, Best Application Paper for IIE Transactions - Scheduling and Logistics: M. Almiñana, L.F. Escudero, M. Landete, J.F. Monge, A.Rabasa,y J. Sanchez Soriano, "On a mixed 0-1 separable nonlinear approach for water irrigation scheduling", IEE Transactions 40 (2008) 398-405.
12. 2012, Former EURO Presidents Award commemorating the 25th EURO Conferences.