

## **LUÍS VALADARES TAVARES**

**Full professor emeritus of Systems and Management of the University of Lisbon (IST - Instituto Superior Técnico), President of OPET - Portuguese Observatory of Technology Foresight ([www.opet.pt](http://www.opet.pt)), President of APMEP - Portuguese Society of Portuguese Markets ([www.apmep.pt](http://www.apmep.pt)), Chairman of the European Conferences on E-Public Procurement ([www.opet.pt](http://www.opet.pt)), Non-Executive Member of the Board of Martifer.**

1. Education: Born in Lisbon 28/3/1946, he completed his secondary education in Oporto (1963) being the best student of 1963 (Prize D.DINIS) and he obtained his Master Degree on Civil Engineering (Licenciatura, 6 years course) at IST with honors and all academic prizes: Mathematics - Mira Fernandes; Physics - Benevides; STET. He obtained his Master degree on Operational Research at the University of Lancaster (1970), his PHD (Honors) on Engineering Sciences (IST, 1973), and the title of Agregado (IST, 1977). He is full professor since 1980 and full professor emeritus since 2007.

2. Major Teaching Activities: He initiated on 1970 the first program on Operational Research (OR) taught in Portugal as an interdisciplinary subject at IST in Engineering courses and during more than forty years has been teaching Applied Statistical Models and OR also at the Faculty of Economic and Management Sciences of the Portuguese Catholic University at the graduation and Master level. He has been teaching for short periods or giving lectures as in many foreign institutions such as UNIVERSITY OF COLUMBIA (NY), RAND CORPORATION, UNIVERSITÉ de PARIS DAUPHINE, IESE (Madrid), MIDDLE EAST TECHNICAL UNIVERSITY (ANKARA), UNIVERSTÉ MOHAMED V (RABAT), INTER UNIVERSITY INSTITUTE of MACAU - IIUM - (MACAO – People's Republic of China), UNIVERSITY of TSING-HUA (BEIJING), FLORIDA ATLANTIC UNIVERSITY (Fort Meyers), PUC-CATHOLIC UNIVERITY OF RIO (RIO).He published textbooks to support his teaching. Director of the E-Learning Program on Management Sciences – DISLOGO of the Portuguese Catholic University (1996-2002)

3. Books: Luís Valadares Tavares is author of several textbooks, namely:

### **Optimization**

- *Tavares, L. Valadares, Nunes Correia, F., 1999, "Optimização Linear e Não Linear", Calouste Gulbenkian Foundation, Lisbon, 2nd Edition.*

### **Operational Research**

- *Tavares, L.V., Themido, I., Oliveira, R., Nunes Correia, F., 1996, "Investigação Operacional", McGraw-Hill.*

### **Project Management:**

- *Tavares, L. Valadares, 1998, Advanced Models on Project Management, Boston, Kluwer Academic Publishers.*

### **Applications of OR:**

- *Tavares, L. Valadares, Antunes, C.H., 2000, "Casos de Aplicação de Investigação Operacional", Mc Graw-Hill.*

### **Public Procurement**

- *Tavares, L. Valadares, 2008, "O Modelo e o Software SIAP 2008 para avaliação de propostas e candidaturas segundo o Código dos Contratos Públicos (DL18/2008)", OPET;*
- *Tavares, L. Valadares, 2008, "A Gestão das Aquisições Públicas, Guia de Aplicação do Código dos Contratos Públicos (DL 18/2008), Empreitadas, Bens e Serviços", OPET;*
- *Tavares, L. Valadares e M. Lopes Rocha, 2009, "O Guia da Contratação Electrónica", OPET, ISBN: 978-989-95697-5-1.*

## **4. Research and Scientific Achievements**

He is author of more than 20 books and 120 research papers and his key contributions have been developed in 6 major domains:

A – Stochastic Processes and Environmental Systems

B – Energy

C – Project Management and Scheduling

D – Decision Making and Conflict Management

E – Public Management

### **A – Stochastic Processes and Environmental Systems**

Luís Valadares Tavares developed new models for skewed stochastic processes and for their simulation particularly useful for environmental time series. See:

- *Wilkinson, J. C. e L. Valadares Tavares, 1972, "A Methodology for the synthesis of spatially distributed short-time-increment storm sequences" International Journal of Hydrology, 16, 307-315;*
- *Tavares, L. Valadares, 1975, "Continuous hydrological time-series discretization" Journal of the American Society of Civil Engineers (ASCE), 101, 49-63;*
- *Tavares, L. Valadares, 1977, "The exact distribution of extremes of a non-gaussian process", Stochastic Processes and Their Applications, 5, 151-156;*
- *Tavares, L. Valadares, 1977, "A reconsideration and a generalization of Lawrence and Fiering two-station models", International Journal of Hydrology, 33, 185-190;*
- *Tavares, L. Valadares, 1977, "Extremes of autocorrelated load model", Journal of the Engineering Mechanics Division, American Society of Civil Engineers, 103, nº EM4, Agosto, 717-723;*
- *Tavares, L. Valadares, 1980, "A non-gaussian markovian model to simulate hydrologic processes", International Journal of Hydrology, 46, 281-287.*

He deduced a new theorem for state compression to apply Dynamic Programming to optimize the control of water reservoirs:

- *Tavares, L. Valadares, 1978, "Firm outflow from multi-annual reservoirs with skew and autocorrelated inflows", International Journal of Hydrology, 88, 39-111;*
- *Tavares, L. Valadares, 1982, "Theoretical properties of the optimal release for a Multi-purpose Reservoir with Correlated Inflows", Journal of Hydrology, 58, 237-250.*

### **B. Energy**

He developed with Portuguese Electric Utility (EDP) an integrated model to optimize the management of the Portuguese power system including a network of thermal

stations and hydro-power stations, with and without reservoir. This model is still being under successive improvements (MAGIA) and has been generating substantial benefits.

See:

- *Tavares, L. Valadares, and R. C. Sousa, 1988, "A multiple distribution markovian model time-series", Stochastic Hydrology and Hydraulics, 2, 295-302 Springer Verlag;*
- *Tavares, L. Valadares, Vitor Vieira e P. Bárcia, 1985, "A Decision Support System for power generation", EJOR - European Journal of Operational Research (EJOR), 25, 373-394.*

### **C. Project Management and Scheduling**

He developed new models:

a) To assess and to manage the risk of a project:

- *Tavares, L. Valadares, J. A. Antunes Ferreira and J. Silva Coelho, 1997, "On the Optimal Management of Project Risk", European Journal of Operational Research, 107, 451-469.*

b) to optimize project scheduling:

- *Tavares, L. Valadares, 1998, Advanced Models on Project Management, Boston, Kluwer Academic Publishers and Tavares, L. Valadares, 1995, " A review on the contribution of Operational Research to Project Management", in R. Slowinski, 1995 "OR; towards intelligent decision support", 67 - 81, European Journal of Operational Research.*

c) to model stochastic project scheduling:

- *Tavares, L. Valadares, 1990, "A multi-stage non-deterministic model for project scheduling under resources constraints", European Journal of Operational Research, 49, 92-101;*

- Tavares, L. Valadares, 1994, "A stochastic model to control project duration and expenditure", *European Journal of Operational Research*, 78,262-266;
- Tavares, L. Valadares, J. A. Antunes Ferreira and J. S. Coelho, 1999, "The risk of delay of a project in terms of the morphology of its network", *European Journal of Operational Research*, 119, 510-537;
- Tavares, L. Valadares, S. E. Elmaghraby, J. Antunes Ferreira, 2000, "Optimal Start Times Under Stochastic Activity Durations", *International Journal of Production Economics*, 64, 153-164;
- Tavares, L. Valadares, 1987, "Optimal resource profiles for program scheduling", *EJOR*, 29, 83-90;
- Tavares, L.V., 2004, José Álvaro Antunes Ferreira, José S. Coelho, "A surrogate indicator of criticality for stochastic project networks", *International Transactions in Operational Research*, Vol.11, pp.193-202.

d) to generate project networks allowing simulation management models:

- Tavares, L. Valadares, J. Antunes Ferreira, J. Silva Coelho, 2001, "A General Generator of Project Networks in Terms of their Morphological Features", *Investigação Operacional*, Nº 21, 107-122;
- Tavares, L. Valadares, J. Antunes Ferreira, J. Silva Coelho, 2002, "A Comparative Morphologic analysis of Benchmark Sets of Project Networks", *International Journal of Project Management*, nº 20, 475-485;
- Tavares, L. Valadares, 2002, "A review of the contribution of Operational Research to Project Management", *European Journal of Operational Research*, Nº 136, 1-18;
- Vanhoucke, M., Coelho, J., Debels, D., Maenhout, B., Tavares, L., 2008, "An evaluation of the adequacy of project network generators with systematically sampled networks", *European Journal of Operational Research* Vol. 187, Nº 2, (511-524).

#### **D. Decision Making and Conflict Management**

He developed a multicriteria ranking model, TRIDENT, particularly useful for project and tender evaluation:

- Tavares, L. Valadares, 1986, "Multicriteria scheduling of a railway renewal program", *EJOR*, 25, 395-406.

Another model to elicitate criteria weights:

- *OPTIONCARDS*, Tavares, L.V. e Pedro Maia Graça, 2011, "OPTIONCARDS: An Interactive Approach to Elicit Qualification and Award Criteria Weights.

Luís Valadares Tavares developed a new relational system of preferences avoiding the less obvious axioms of pseudo-order obtaining a new transitivity condition: hyper-order. See:

- Tavares, L. Valadares, 1988, "Generalized transitivity and preferences modelling: the concept of hyper-order", *European Journal of Operational Research*, 36, 14-26.
- Tavares, L. Valadares, 1990, "Un nouveau systeme relationnel de préférences multi-critère a transivité généralisée: l'hyper-order", *INFOR*, 28, nº 2, 125-142.

Luís Valadares Tavares is author of a model to support conflict management:

- Tavares, L.V., 2004, "A Model to Support the Search for Consensus with Conflicting Rankings: Multitrident", *International Transactions in Operational Research*, Vol.11, nº.1, pp.107-115

and to support group decision making

- Tavares, L.V., 2011, "An acyclic outranking model to support group decision making within organizations", *OMEGA*. In this paper he also presents two new theorems on Public Choice Theory and on the majority rule published.

## **E. Public Management**

He is author of several essays on Public Management namely applied to:

Education:

- Tavares, L. Valadares, 1995, "On the development of educational policies", *European Journal of Operational Research*, 82, 409-421;
- Rafael, J. F. and L. V. Tavares, 1991, "Multi-attribute decision models contribution to Open Learning Systems: prototypes evaluation", *Delta Multimedia Journal*, 3, 51-74;

- Tavares, L. Valadares, 1993, "Educação na Europa Comunitária: prevalência do estado ou da sociedade civil", *Communio*, 10, 80-89;
- Tavares, L. Valadares, 1994, "The strategic development of human resources: the challenge of OR", 1, 463-477, *International Transactions of Operational Research*;
- Tavares, L. V., 2006, "A Procura do Ensino da Engenharia em Portugal", *Academia de Engenharia*, 136p, *Technology Foresight*;
- Tavares, L. Valadares, 2003, "Foresight and Governance: a problem-oriented methodology (GOVSIGHT)", *International Journal in Operational Research*, Nº 10, 169-190;
- Tavares, L. Valadares, "A Engenharia e a Tecnologia ao Serviço do Desenvolvimento de Portugal: Prospectiva e Estratégia 2000 – 2020", *Verbo*, 2000); *Training of Civil Servants*;
- Tavares, L. Valadares, 2004, "Un nuevo modelo de formación para directivos de la administración pública portuguesa", *RAP. Revista de Administración Pública*. - ISSN 0482-5209. -V.39, n.1 (Ene-Abr 2004), p.53-56;
- Tavares, L. Valadares, João Figueiredo, 2006, "Por uma carta latino-ibero-americana de competências comuns para dirigentes públicos: a proposta de Portugal", *Revista do Serviço Público*, vol. 57, nº1 Jan/Mar).

and on the process of management of change of public administration:

- Tavares, L.V., Manuel João Pereira et al, 2004, "Changing Cultural Paradigms and Mind-set of Employees in the Public Sector: the TAP - Air Portugal Case Study", *Colecção: Cadernos INA 16*, ISBN:972-922-44-4;
- Tavares, L.V., 2004, "O Novo Quadro Legal da Administração Pública: Inovação e Mudança Cultural", *Editado por INA - Instituto Nacional de Administração*, ISBN:972-9222-36-3;
- Tavares, L. Valadares, 2006, "Complexity and reform of public administration: the case of Portugal", *Comunicação apresentada na conferência anual do EGPA, "Public manager under pressure: between politics, professionalism and civil society"*, *Universidade de Bocconi, Milão*, 6 a 9 de Setembro;
- Tavares, L. Valadares, André Alves, 2006, "The Future of Portuguese Public Administration and a New Agenda for Public Administration Sciences in The 21st Century", *Public Administration Vol. 84, No. 2*, (389–406);

- Tavares, L. V., 2008, *O Financiamento do Sistema de Saúde” in Ana Escoval, Financiamento, Inovação e Sustentabilidade, APDH, ISBN: 978-989-95247-1-2.*

## **G – Electronic Public Procurement**

He is author of new models for e-public procurement:

- Grilo, A., Tavares, L.V., 2008, *“O Building Information Model e a Competitividade do Sector da Construção”, OPET, ISBN: 978-989-95697-3-7;*
- Tavares, L. Valadares, 2008, *“O Modelo e o Software SIAP 2008 para avaliação de propostas e candidaturas segundo o Código dos Contratos Públicos (DL18/2008)”, OPET;*
- Tavares, L. Valadares e M. Lopes Rocha, 2009, *“O Guia da Contratação Electrónica”, OPET, ISBN: 978-989-95697-5-1.*

and on the assessment of e-Public Procurement:

- Tavares, L.V., 2010, *“Public eTendering in European Union – Trust eVolution”, eVA – European Vortal Academy, April, pp.27;*
- Tavares, L. V., 2011, *“A strategy to reduce public expenditure based on e-tendering and Procurement Business intelligence: the case of Portugal”, eVA.*

He developed new models for collaborative design work using e-procurement and to study the dynamics of e-procurement networks:

- Tavares, L.V. e Aguiar Costa, 2012, *“Social e-business and the Satellite Network model: Innovative concepts to improve collaboration in construction” Automation in Construction 22 (2012) 387–397.*
- A. Aguiar Costa, L. Valadares Tavares, *“Advanced multicriteria models to promote quality and reputation in public construction e-marketplaces”, Automation in Construction, 2012.*  
URL: <http://dx.doi.org/10.1016/j.autcon.2012.11.029>

He chairs the European Conferences on e-Public Procurement. The first one took place in Barcelona, March 20, 2013, and the second one will be held in Lisbon, May 27, 2014.

5. Public Roles: LVT is devoting a good deal of his life to serve the public interest through a long list of offices performed in Portugal and in international institutions.



- General Director of the Gabinete de Estudos e Planeamento (GEP) of the portuguese Ministry of Education (1988-1992). This bureau is responsible for the investment budget of ME (in 1991, around 400 Millions ECUs), for statistical information system of the education sector and for the development of studies to monitor, to assess and to evaluate the educational system (until July 1992).
- Vice-President of the International Federation of Operational Research (IFORS), 1988 – 1991.
- President of the Program MINERVA (Information Technologies in Schools), 1989-1992. This program covers more than 1000 schools and it includes continuous training for 5000 teachers per year as well as the development of educational software and research projects.
- Head of program of Technological Education (World Bank, 4 Millions of ECUs), 1989-1992.
- Manager of PRODEP (Programa de Desenvolvimento da Educação para Portugal) supported by the European Community (Regional Development Fund and European Social Fund) including investment and training expenses of around 1000 Millions ECUs for the period 1990-1993 (1990-1992).
- President of the Education Committee of the **Council of the European Community** (1st. Semester of 1992).
- President of the Education Committee of **OECD** (1992-1993).
- President of the Department of Civil Engineering, IST (1995-1996).
- Director of the Open Distance Learning Program on Management Sciences, DISLOGO (1997 – 2005).
- Vice-President of the Inter-University Institute of Macau (1997-2000).
- Director of the Technology Foresight Project sponsored by the National Academy of Engineers, National Society of Engineers and Portuguese Industrial Association (AIP), “Engenharia e Tecnologia 2000”.
- Member of the Steering Committee of the Business School of the University of Newcastle (UK), 2002-2003.
- President of INA, Institute of National Administration (2003-2007).
- Co-author of the new Portuguese legal framework law on Public Procurement (DL 18/2008).

- Chairman of the International Federation of Automatic Control (**IFAC**) Working group on Environment and Natural Resources.
- President of the European Working Group on Project Management and Scheduling (**PMS**).
- Advisor of the **U.S. National Research Council** - Commission on Behavioural and Social Sciences and Education.
- Member of the Policy Review and Analysis Group (PRAG) of the **OECD** project on International Education Indicators.

6. Consulting and other activities: Luís Valadares Tavares has been consultant for an wide spectrum of national and international organizations, namely:

a) in Portugal: Ministries of Public Works, Finances and Environment

b) Portuguese Electric Utility (EDP); VORTAL and SPMS (Central Purchasing Body for the Health Sector).

b) in other countries: UNDP, WHO and European Commissions. He is the Client Ombudsman of EDP since 2009 dealing with about 1200 cases per year.

7. Political Change: He has been participating in several initiatives to fight political irrationality and stagnation:

- Tavares, L. Valadares, Mateus, Abel, Cabral, F. Sarsfield, 2002, "Reformar Portugal", co-editor with A. Mateus and F. Cabral, Oficina do Livro.
- Tavares, L. Valadares, Manuel João Pereira, 2005, "A Administração Pública da Finlândia", Cadernos INA, ISBN:972-9222-46-0, Nr. 18.
- Tavares, L. V., 2010, "Os erros do Estado Português", in "Portugal: e agora? que fazer?", bnomics, Lisboa, ISBN 978-989-8184-66-5, pp.127-128
- Tavares, L. V., 2008, "Portugal 1997-2007: A década do atraso em relação à EU in o Estado e a Crise, bnomics, Lisboa, ISBN 978-989-95247-1-2.
- Tavares, L.V., 2011, "A Melhoria da Contratação Pública e o Memorando de Entendimento: O Desafio da Competitividade", Revista do Tribunal de Contas nº 55/56.

8. Social Networking: He was founder and president of the following societies:

- APMEP: Portuguese society of public markets
- APDIO: Portuguese society of Operational Research
- CEP: Portuguese e-business society
- He was Vice-President of the International Federation Societies

9. Dissertation: He supervised many students to obtain the Master Degree and 17 to be awarded the awarded the Doctoral Degree

10. Distinctions:

Special Medal awarded by the Municipality of Oeiras (2005)

Innovation Distinction awarded by Delloitte (2006)

Distinguished Fellow of Public Procurement Research Center of FAU (USA, Florida)

Distinction (Louvor) awarded by the Minister of Finances (2007)

Senior Advisor of "Ordem dos Engenheiros" (2010)

"Grande Oficial da Ordem do Infante" awarded by the President of Republic (2009)

11. Personal Preferences: He lives in Lisbon and he is married with two children and 3 grandchildren.

He likes classic music (Baroque period), blue grass rock and traditional jazz.