

# Vojin Tošić



## **Dr Vojin Tošić**

Professor at Division of Airports and Air Traffic Safety (retired)

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## Education

- PhD in Engineering (Air Transport), 1973-75, University of California, Berkeley, thesis "Effects of Multiple Path Approach Procedures on Runway Landing Capacity" sponsored by NASA Ames Research Center.
- MSc (Transport), 1972-73, University of California, Berkeley.
- Air Traffic Controller, 1969, Federal Directorate of Civil Aviation, Belgrade.
- Dipl. ing. (B.S. in Air Transport Engineering), 1969, University of Belgrade, Faculty of Transport and Traffic Engineering.

## Employment History

- 1989 to date Professor, University of Belgrade, Faculty of Transport and Traffic Engineering, retired as of October 1, 2011 (legal requirement at the age of 65) Currently involved with the University, Division of Airports and Air Traffic Safety on a part-time basis (Principal investigator at the Division's project of the Ministry of Education and Science and other research projects).
- 1984 - 1989 Associate Professor, University of Belgrade, Faculty of Transport and Traffic Engineering
- 1977 - 1984 Assistant Professor, University of Belgrade, Faculty of Transport and Traffic Engineering
- 1975 – 1977 Teaching and Research Assistant, University of Belgrade, Faculty of Transport and Traffic Engineering
- 1972 – 1975 Teaching and Research Assistant, Institute of Transportation and Traffic Engineering, University of California, Berkeley, USA
- 1969 – 1972 Junior Teaching and Research Assistant, University of Belgrade, Faculty of Transport and Traffic Engineering

### Key Research Interests

- Airport Planning, Design and Operations
- Air Traffic Control/Management, Analysis and Modelling
- Air Transport Planning and Analysis
- Transport Systems Analysis

### Research Projects and Experience

- Research and management in more than 100 national and European consulting and research projects in the fields of airports and air traffic control/management design, planning, analysis and modelling.

### Professional Engagements

- SESARJU Scientific Committee (since 2009, reappointed 2012).
- Nominated Member of the Committee on Airfield and Airspace Capacity and Delay, Transportation Research Board (TRB), National Research Council, US National Academies, (since 1999).
- Licensed Engineer (Section of Designers) Serbian Chamber of Engineers, License 370 0038 03.
- Member of the Society of Transport and Traffic Engineers of Serbia (former Yugoslavia). Secretary of the Air Transport Division of the Society during 1976-78 period.
- Member of the American Society of Civil Engineers (ASCE), Air Transport Division. Former Member (now Friend) of the Planning Committee of the Air Transport Division.
- Nominated Member of the Committee on Airport Landside Operations, Transportation Research Board (TRB), National Research Council, US National Academies, 1991-1998 (now Friend).
- 1990/91 (nine months), 1997 (two months) and 1998 (two months), Visiting Research Engineer, The Institute of Transportation Studies, University of California at Berkeley in the NEXTOR (National Center of Excellence for Aviation Operations Research).
- 1990, Guest Lecturer (5 topics) at the course "Airport Traffic Operations Analysis", Loughborough University of Technology.
- 1988 (one month), Guest Professor at the Institute of Roads, Transport and Town Planning, The Technical University of Denmark, Lyngby.
- 1985, Guest lecturer (Airport Planning) at the Civil Aviation Training Centre, Singapore, Technical Assistance Bureau, ICAO (International Civil Aviation Organization), specialized UN agency.
- 1983, Airport Site Selection Expert, Brazilian Civil Aviation Authority, Rio de Janeiro, Technical Assistance Bureau, ICAO (International Civil Aviation Organization), specialized UN agency.

### Teaching

1977 to 2008: FTTE Engineering (Air Transport) program - Teaching:

- Airports (two semester undergraduate course)
- Air Traffic Control (two semester undergraduate course)
- Systems Analysis in Transportation (one semester graduate course)

2008 – 2010: FTTE Air Force Pilot program:

- Airports (two semester undergraduate course)

Since 2008: FTTE Engineering (Air Transport) program - Courses:

- Airports 1 (teaching, one trimester undergraduate course)

- Airports 2 (teaching, one trimester undergraduate course)
- Airports 3 (teaching, one trimester graduate course at MS level)
- Airports 4 (teaching, one semester graduate course at PhD level)

#### Selected Publications

##### Textbooks:

V.Tosic, "Aerodromes", Federal Directorate for Air Traffic Control. , Belgrade, 1978.  
 V.Tosic and B. Mirkovic, "Airports 1", University of Belgrade, Faculty of Transport and Traffic Engineering, 2011.  
 B.Mirkovic and V.Tosic "Airports 2", University of Belgrade, Faculty of Transport and Traffic Engineering, 2012.

##### Other teaching publications:

V.Tosic, "Instructions/handouts for annual project for course Airports", University of Belgrade, Faculty of Transport and Traffic Engineering, 1971/72.  
 V.Tosic, "Handouts for course Airports", University of Belgrade, Faculty of Transport and Traffic Engineering, 1976/77.  
 V.Tosic and O.Babic, "Handbook for annual project for course Airports", University of Belgrade, Faculty of Transport and Traffic Engineering, 1980.  
 B.Mirkovic, V.Tosic and O.Babic, "Airports – Practicum", University of Belgrade, Faculty of Transport and Traffic Engineering, 2010.

##### Papers:

Mirković, B., Tošić, V., Kanzler, P., Hoehenberger, M. (2014) *Airport Apron Roundabout – Operational Concept and Capacity Evaluation*. 6<sup>th</sup> International Conference on Research in Air Transportation, Proceedings ICRAT 2014, Istanbul Technical University, Istanbul, Turkey, May 26-31, 2014; Track: Airport Design.

R. Jovanović, V. Tošić, M. Čangalović, M. Stanojević, "Anticipatory modulation of air navigation charges to balance the use of airspace network capacities", *Transportation Research Part A: Policy and Practice*, Vol. 61, 2014, pp. 84-99.

Mirković, B., Tošić, V. (2014) *Airport Apron Capacity – Estimation, Representation and Flexibility*. *Journal of Advanced Transportation*, special issue: Methodological Advances in European Transport Research, 2014, Vol 48, pp. 97-118

F. Netjasov, A. Vidosavljevic, V. Tosic, H. Blom (2013), Development, Validation and Application of Stochastically and Dynamically Coloured Petri Net Model of ACAS Operations for Safety Assessment Purposes, *Transportation Research Part C*, Vol. 33, pp. 167-195.

V. Tošić, O. Babić, M. Čangalović, Đ. Hohlačov (1997), "A Model to Solve En Route Air Traffic Flow Management Problem – A Temporal and Spatial Case", *Proceedings of The 1<sup>st</sup> USA/Europe Air Traffic Management R&D Seminar*, Saclay, France, June 16-18, 1997.

V. Tošić, O. Babić, M. Čangalović, Đ. Hohlačov (1995), Some Models and Algorithms for En Route Air Traffic Flow Management, *Transportation Planning and Technology*, Vol. 19, No. 2, pp. 147-164.

V. Tošić (1992), Review of Airport Passenger Terminal Operations Analysis and Modelling, *Transportation Research*, Vol.26A, No.1, pp. 3-26.

V.Tošić, D.Teodorović, O.Babić (1985), Optimum Runway Exit Location, *Transportation Planning and Technology*, Vol.10, No.2, pp.135-145.

V. Tošić, O. Babić (1984), Quantitative Evaluation of Passenger Terminal Orientation, *Journal of Advanced Transportation*, Vol.18, No.3, pp. 297-295.

O. Babić, D. Teodorović, V. Tošić (1984), Aircraft Stand Assignment to Minimize Walking, *Journal of Transportation Engineering*, ASCE, Vol.110, No.1, pp. 55-66.

M.Janic, V.Tosic (1982), Terminal Airspace Capacity Model, *Transportation Research*, Vol.16A, No.4, pp.253-260.

V. Tošić, R. Horonjeff (1976), Effect of Multiple Approach Path Procedures on Runway Landing Capacity, *Transportation Research*, Vol.10, No.5, pp.319-329.

##### Conferences

Co-Chair, 2<sup>nd</sup> International Conference on Research in Air Transportation - ICRAT, organized by Eurocontrol; Faculty of Transport and Traffic Engineering, University Belgrade; European Commission and NASA, Belgrade, June 24-28, 2006. Now member of the Program Committee.

Program Committee Member and Rapporteur on Airspace Management at the 6<sup>th</sup> and 7<sup>th</sup> USA/Europe Seminar on Air Traffic Management Research and Development, organized by FAA and Eurocontrol, Baltimore, MD, June 27-30, 2005 and Barcelona, July 02-05, 2007.

Member of the EURO (The Association of the European Operational Research Societies within IFORS) Working Group on Transport – EWGT. Several times in last 20 years organizer and chairman of Air Transport sessions at the EURO/INFORMS and EWGT conferences:

Mini EURO (Operations Research Methods in Transport Planning and Traffic Control), Herceg Novi, Yugoslavia, 1987, Member of the Scientific Committee and chair of two sessions devoted to Air Transport.  
EURO X, Belgrade, 1989, chairman of the session “Scheduling in Airline Operations”.  
EURO XIII, Glasgow, 1994, invited to organize and chair two sessions “Air Transport Models”.  
EWGT, Poznan and Cracow, 1999, organizer and chairman of the session “Air Transportation”.  
EWGT, Rome, 2000, chairman of the session “Air Transportation”.

#### Research and Engineering Projects

Project manager, Principal Investigator, Researcher and Professional Engineer in more than 100 national and international research and consulting projects in the fields of airport planning, design and operations, and air traffic control and management.

Licensed Engineer (Section of Designers) Serbian Chamber of Engineers, License 370 0038 03.

Project manager of the following projects (selected):

#### **A support to sustainable development of the Republic of Serbia's air transport system (2011-2015 research programme in technological development, Project Number 36033),**

Institute of Faculty of Transport and Traffic Engineering, January 2011 - present.

Research grant: Ministry Education and of Science, Belgrade, Serbia.

#### **Methods for evaluation of development scenarios of the air transport system in Serbia (airlines, airports, ATC) - safety, efficiency, economic and environmental aspects** (as part of the Program for Research in Technology

Development in the period 2008-2011, Project Number 15023)

Institute of Faculty of Transport and Traffic Engineering, April 2008 – December 2010.

Research grant: Ministry of Science and Technological Development, Belgrade, Serbia

#### **Economic performance indicators in support of mathematical Air Traffic Control (ATC) simulations (EPISMAS),**

Institute of Faculty of Transport and Traffic Engineering, November 2007 – July 2009.

Client: EUROCONTROL CRDS, Budapest, Hungary

#### **RESET - Reduced Separation Minima,**

Faculty of Transport and Traffic Engineering as partner in the project which represents a joint effort of 14 European aviation institutions and the United States Federal Aviation Administration, led by AENA (Spain). October 2006 – July 2010.

Client: European Commission DG TREN, Brussels, Belgium under 6th Framework Programme

#### **Capacity Evaluation of Apron Taxilane Circle vs. Standard Apron Crossing,**

Institute of Faculty of Transport and Traffic Engineering, May 2006.

Client: Munich International Airport, Munich, Germany

#### **Fast Time Simulation for the Serbia and Montenegro Airspace - Phase I,**

Institute of Faculty of Transport and Traffic Engineering together with EUROCONTROL CRDS (CEATS Research, Development and Simulation Centre), Budapest, Hungary, September 2005 - March 2006.

Client: Serbia and Montenegro Air Traffic Services Agency

#### **Norway Fast Time Simulation Study,**

Institute of Faculty of Transport and Traffic Engineering together with EUROCONTROL CRDS (CEATS Research, Development and Simulation Centre), Budapest, Hungary and NAR Consulting, Oslo, Norway, November 2003 - June 2004.

Client: AVINOR (Norwegian Civil Aviation Authority), Oslo, Norway

#### **Nis Airport Reconstruction Project - Cooperation in Project Management,**

Institute of Faculty of Transport and Traffic Engineering, July 2002-September 2003.

Client: Nordic Aviation Resources (NAR), Oslo, Norway

#### **Flow Control Algorithms for En Route Air Traffic Control,**

Institute of the Faculty of Transport and Traffic Engineering, Belgrade, 1991-1995.

Three-year (1991-94) research grant from US-Yugoslav Joint Board for Scientific and Technological Cooperation. US sponsoring Agency: Department of Transportation (US DOT); US joint research partner: Massachusetts Institute of Technology (MIT).

## **New Technologies and Decision Support in Air Traffic Control, Part 1: Definition of the Planning and Management Process and Assessment of Decision Support Needs,**

Institute of the Faculty of Transport and Traffic Engineering, Belgrade, 1995.

Client: Federal Ministry of Science, Technology and Development, Belgrade, Yugoslavia

### Engagements in Professional Bodies (selected)

- Horizon 2020, Program Committee “Smart, green and integrated transport”, expert in Republic of Serbia Ministry of Education, Science and Technological Development delegation (nominated in 2014).
- SESARJU Scientific Committee (since 2009, reappointed 2012).
- Nominated Member of the Committee on Airfield and Airspace Capacity and Delay, Transportation Research Board (TRB), National Research Council, US National Academies, (1999-2010), now Friend.
- Member of the American Society of Civil Engineers (ASCE), Air Transport Division. Former Member (now Friend) of the Planning Committee of the Air Transport Division.
- Nominated Member of the Committee on Airport Landside Operations, Transportation Research Board (TRB), National Research Council, US National Academies, (1991-1998) now Friend.
- Member of the Society of Transport and Traffic Engineers of Serbia (former Yugoslavia). Secretary of the Air Transport Division of the Society during 1976-78 period.

### Visiting Research and Teaching (selected)

- Guest Lecturer, two 20 hours courses “Aircraft Operation in Airspace and Airfield” and “Airspace and Airfield Modelling & ATM Concepts”, GACA (General Authority of Civil Aviation), Kingdom of Saudi Arabia, Jeddah, March and June, 2014.
- Guest Lecturer, 15 hours course “Airport airside physical planning and design”, TAV Airports Holding, Istanbul, November 2011.
- Visiting Research Engineer, The Institute of Transportation Studies, University of California at Berkeley in the NEXTOR (National Center of Excellence for Aviation Operations Research) 1990/91 (nine months), 1997 (two months) and 1998 (two months),.
- Guest Lecturer (5 topics) at the course “Airport Traffic Operations Analysis”, Loughborough University of Technology, 1990.
- Guest Professor at the Institute of Roads, Transport and Town Planning, The Technical University of Denmark, Lyngby, 1988 (one month),.
- Guest lecturer (Airport Planning) at the Civil Aviation Training Centre, Singapore, Technical Assistance Bureau, ICAO (International Civil Aviation Organization), specialized UN agency, 1985,.
- Airport Site Selection Expert, Brazilian Civil Aviation Authority, Rio de Janeiro, Technical Assistance Bureau, ICAO (International Civil Aviation Organization), 1983.