

*Slobodan P. SIMONOVIĆ
Consulting , Ltd.*

Serving water resources engineering needs of Canada and the World since 1997.

Drawing upon our broad experience in all aspects of water resources, including evaluation, engineering, and capacity building, *Slobodan P. SIMONOVIĆ Consulting, Ltd.* constructs teams of water experts to work side-by-side with clients on large, complex projects in developing innovative solutions to meet specific client needs.

Company's primary strength is in the application of systems approach to, and development of the decision support tools for, management of complex water and environmental systems. Most of our work is related to the integration of risk, reliability, uncertainty, simulation and optimization in hydrology and water resources management. Second field of activities of *Slobodan P. SIMONOVIĆ Consulting, Ltd.* is water resources decision support. We have undertaken applied research projects that integrate the mathematical modelling, data-base management, geographic information systems and intelligent interface development into decision support tools for water resources decision makers.

Our mission:

Water for support of life.

Our commitments:

Respect; Integrity; Balance; Open communications.

Our expertise:

Subject Matter - Systems modeling; Risk and reliability; Water resources and environmental systems analysis; Computer-based decision support systems development; Water resources education and training.

Topical Area - Reservoirs; Flood control; Hydropower energy; Operational hydrology.

Partners:

Slobodan P. Simonovic,
Batchelor of Civil Engineering – Water Resources Engineering, University of Belgrade
Master of Interdisciplinary Studies – Water Resources Systems, University of Belgrade
PhD in Engineering – Water Resources Systems, University of California

Tanja Malisic-Simonovic,
Batchelor of Architecture, University of Belgrade
Master of Community Planning, University of California

Consulting experience

Water resources management

1.

Client INGEMA Consulting Engineers, Rabat, MOROCCO
Project Etude de gestion du complex El Akab
- modeling long term operation of the system under uncertainty
- short term system optimization study
Time May 1991 – May 1993

2.

Client National Water Research Center, El Qanatir, EGYPT
SNC-Lavalin, Inc., Montreal, CANADA
Project River Nile Protection and Development Project – Phase II
- development of the Nile Water Strategic Research Unit
- system dynamic simulation modeling of Egypt's water resources
Time November 1994 – June 1996

3.

Client UNESCO, Division of Water Sciences, Paris, FRANCE
Project Systems Analysis Techniques in Support of Water Conflict Resolution
- state-of-the-art review of the system analysis for water conflict resolution
- identification of representative case studies
- development of the report
- development of the decision support system prototype for water conflict resolution
Time July 2002 – October 2002

4.

Client UNESCO, Division of Water Sciences, Paris, FRANCE
Project Decision Support System for Water Conflict Resolution
- development of the methodology for water conflict resolution
- decision support system development
- development of training material for the use of the decision support system
Time October 2002 – December 2002

5.

Client UNESCO, Division of Water Sciences, Paris, FRANCE
Project Our Future Outlook on Global Water Resources and Water Related Risk Management
- preparation of report
Time June 2005 – December 2005

6.

Client UNESCO, Division of Water Sciences, Paris, FRANCE
Project Integrated Water Resources Management in Basins, Sub-basins and Aquifers
- preparation of the state-of-the art document

- provision of strategic directions recommendations
- preparation of the practice guidelines for IWRM implementation in basins, sub-basins and aquifers

Time May 2007 – December 2007

7.

**Client
Project**

Canadian Council of Professional Engineers, Ottawa, CANADA
Water Resources – Infrastructure Impacts, Vulnerabilities and Design Considerations for Future Climate Change

- preparation of engineering literature review
- preparation of a report
- preparation of a bibliography of references

Time October 2007 – January 2008

8.

**Client
Project**

Insurance Bureau of Canada, Toronto, CANADA
Municipal Risk Assessment Tool - MRAT

- provision of information, support, analyses and guidance in relation to the development of IBC's MRAT
- participation on the MRAT Scientific Advisory Committee

Time August 2010 - now

9.

**Client
Project**

Insurance Bureau of Canada, Toronto, CANADA
Development of future IDF curves for designated municipalities in conjunction with the MRAT project

- development of the methodology for update of IDF curves under the climate change
- implementation of the methodology for Moncton, Fredericton, Hamilton, London and Winnipeg
- preparation of the technical report

Time May 2012 – October 2012

Water resources system analysis

1.

Client E. Todini & Partners, Bologna, ITALY
ENEL-CRIS-Servizio Idrologico, Mester, ITALY
ISMES Spa – Monitoraggio Geoambientale, Bergamo, ITALY

Project Arne Model Calibration Dispute Expert Advisor

- development of calibration methodology
- development, testing and use of an expert system for calibration of the model

Time July 1993 – September 1993

2.

Client ISMES Spa, Bergamo, ITALY

Project Delimitation of Hydrographic Basins in Plain Areas

- development of the multi criteria methodology for delimitation of river basins
- implementation of the Compromise Programming multi criteria technique for the delimitation of the pilot Piave river basin

Time July 1993 – August 1993

3.

Client W-E-R Agra Ltd., Calgary, CANADA
Hubei Water Authority, Wuhan, CHINA

Project A Study of the Sihu Drainage Systems Optimal Operation – Phase I

- optimization modeling of flood and water logging control
- simulation of system effectiveness

Time July 1994 – May 1995

4.

Client W-E-R Agra Ltd., Calgary, CANADA
Dongting Lake Water Authority, Changxia, CHINA

Project Development of a Work Plan for the Dongting Lake Polder Drainage System Optimization Modeling

- assessment of the appropriate optimization tools
- data collection
- work plan development

Time July 1994

5.

Client W-E-R Agra Ltd., Calgary, CANADA
Hubei Water Authority, Wuhan, CHINA

Project Optimal Operation of the Sihu Drainage System – Phase II

- development and testing of nonlinear optimization tools for the optimal operation of the system
- selection of the technique, development of the code and assessment of the test results

Time August 1995 – February 1996

6.

Client Golder Associates, Calgary, CANADA

Project Hubei Water Authority, Wuhan, CHINA
Yangzte Basin Water Resources Project: Sihu Optimization Sub Project
– Phase IV

- development of the decision support (DSS) methodology
- integration of the optimization and simulation tools into a DSS
- development of the user interface
- assessment of the software development tools

Time November 1998 – December 1998

7.
Client KGS Group, Water Resources Services, Winnipeg, CANADA
Project Development of Operation Planning Model for Seine River Hydro System

- development of the optimization model
- assessment of optimization tools available
- optimization analyses

Time April 2000 – July 2000

8.
Client Halcrow China, Hongkong, CHINA
Project Draft Methodology: Prioritization Study for Hubei Environmental Projects

- review of the methodology
- recommendation for the follow up study

Time November 2001

9.
Client Golder Associates, Calgary, CANADA
Hubei Water Authority, Wuhan, CHINA
Project Planning Study for Further Infra-structural Development to Improve Water Management in the Sihu Area

- international experience in integrated lake management
- multi criteria analysis under uncertainty – Fuzzy Compromise Pograming
- multi criteria ranking of development options for the Sihu Basin

Time January 2002 - June 2002

10.
Client Water Stewardship Manitoba, Winnipeg, CANADA
Project Peer Review of Manitoba Hydro SPLASH Model

- review of the model description
- analysis of the model application
- participation in the review meeting

Time April – May 2005

11.
Client MOBEC Engineering, Toronto, CANADA
Project Soillway System Reliability Project Review

- review of the project approach
- review of the project documentation
- consultations with project participants
- preparation of recommendations and final report

Time

October 2012 – May 2013

Management of floods

1.

Client KGS Group, Winnipeg, CANADA
Project Flood Control Adequacy Review Study – Red River Basin, Manitoba
- study review
- recommendations for future work
Time January 1996

2.

Client International Joint Commission, Canadian Section, Ottawa, CANADA
Project Assessment of Social Impacts of Flooding for use in Flood Management in the Red River Basin
- conducting the survey 'The Psychosocial Impacts of the 1997 Red River Flood'
- report preparation
- recommendations to the International Red River Basin Task Force
Time July 1997 – December 1997

3.

Client International Joint Commission, Canadian Section, Ottawa, CANADA
Project International Red River Basin Task Force
- expert advice on the plan of study and guidance to Task Force activities
- Task Force meetings
- Review of the information, reports, contract proposals, hydraulic and hydrologic model results
Time January 1998 – March 1998
July 1999 – December 2000

4.

Client International Joint Commission, Canadian Section, Ottawa, CANADA
Project Functional Requirements, Design Plans and Implementation Strategy for the Red River Basin Decision Support System (RRBDSS)
- conceptual development of the Red River Basin decision support system
- assessment of software and hardware requirements
- report preparation
- prototype development and demonstration
Time November 1998

5.

Client International Joint Commission, Canadian Section, Ottawa, CANADA
Project International Red River Basin Task Force – Database Sub-group Leadership
- work plan development with the US co-leader
- liaison between the Task Force and the sub-group
- direct research to identify data and information required
- development and implementation of a DSS for the Red River Basin
Time May 1998 – June 1999

- 6.**
Client Science Applications International Corporation, San Diego, USA
Project The Global Disaster Information Network (GDIN): Red River Basin Disaster Information Network (RRBDIN)
- development of the disaster information network
- assessment of data needs
- assessment of software support
- promotion of the decision support system concept
Time May 1999 – April 2000
- 7.**
Client Emergency Preparedness Canada, Ottawa, CANADA
Project A Prototype Computer-based Behavioral Model for Emergency Planning
- development of the system dynamics simulation model for flood evacuation
- model calibration using data from the Red River Basin, Manitoba
- sensitivity analyses of model performance
- model documentation and report preparation
Time November 2000 – January 2001
- 8.**
Client Emergency Preparedness Canada, Ottawa, CANADA
Project Evaluation of the Effectiveness of Emergency Management Procedures: Red River Basin Case Study
- use of the system dynamics simulation model for evaluation of emergency management procedures in the Red River Basin, Manitoba, Canada
- report preparation
- workshop organization
Time January 2001 - March 2001
- 9.**
Client CTI Engineering Co., Ltd., Tokyo, JAPAN
Project Review of the Existing Real-time Flood Control Systems
- literature review
- identification of existing systems
- analyses of the effectiveness of existing systems
- report preparation
Time January 2001 – March 2001
- 10.**
Client World Meteorological Organization (WMO), Geneva, SWITZERLAND
Project Case Study on Flood Management in the Red River Basin, Canada
- preparation of the case study
- analyses of experience
- preparation of the text for the final report and WMO case study web site
Time December 2003 – May 2004
- 11.**
Client UNESCO, Division of Water Sciences, Paris, FRANCE
Project International Flood Initiative

- development of the International Flood Initiative concept
 - work plan
 - schedule of activities
 - draft report preparation
- Time** July 2004
- 12.**
- Client** Golder Associates, Calgary, CANADA
- Project** Decision Support System Application for Water Management and Flood Control
- literature search
 - development of the state-of-the-art report
 - selection of six case studies
 - development of the report describing the details of selected case studies
- Time** January 2005 - 2009
- 13.**
- Client** IFNet, Tokyo, Japan
- Project** Action Report Towards Flood Disaster Reduction
- development of the state-of-the-art review
 - review of the Red River decision support concept
 - development of the report
- Time** December 2005
- 14.**
- Client** Welland River Floodplain Association, Hamilton, CANADA
- Project** Flood Plain Expansion along the Welland River
- review of the technical documentation
 - provision of the technical assistance to the association
- Time** March 2012 - now
- 15.**
- Client** McKenzie Lake Lawyers, London, CANADA
- Project** Anderson et al vs. Province of Manitoba
- review of the available documentation
 - preparation of the list of needed data
 - preparation of the report
- Time** April 2012 - June
- 16.**
- Client** D'Arcy & Deacon LLP, London, CANADA
- Project** Review of the Technical Documentation Related to Assiniboine River Flooding, 2011
- review of the available documentation
 - critique of the technical elements
 - preparation of the report
- Time** May 2013 - June 2013

Climate change

1.

Client European Commission, Research Directorate General, Brussel, BELGIUM

Project Evaluation of Proposals Under Call FPG-2002-Global 1: Global Change and Ecosystems

- participation at the meetings of the evaluation team
- development of the evaluation methodology
- ranking of the proposals
- presentation of the final results

Time May 2003

2.

Client Golder Associates, Calgary, CANADA

Yellow River Conservancy Commission, CHINA

Project New Trends in Integrated Watershed Management

- development of the state-of-the-art review
- presentation of the trends
- discussion of potential application in the Yellow River Basin

Time August 2004

3.

Client Research Institute for Humanity and Nature (RIHN), Kyoto, JAPAN

Project Impact of Climate Changes on Agricultural Production System in the Arid Areas

- development of the methodology for assessment of climate change impacts on the management of water resources in arid region
- preparation of the report
- implementation of the methodology to assessment of climate change impacts in the pilot basin, Seyhan River, Turkey
- preparation of the report
- training

Time June 2004 – 2007

4.

Client Upper Thames River Conservation Authority, London, CANADA

Project Seasonal Flood Changes Under Climate Change in the Upper Thames River Watershed

- investigation of applicability of aerial reduction factors under climate change conditions
- development of basin wide seasonal design event conditions under climate change
- review of adequacy of current regulatory flood return period of 250 years
- analyses of impact of current flood protection infrastructure under the climate change
- investigation of adaptation strategies through watershed management
- preparation of recommendations and reports

Time August 2008 - 2010

5.
Client Project Insurance Bureau of Canada, Toronto, CANADA
Selection of Global Climate Models for use with Municipal Risk Assessment Tool (MRAT)
- comparative analysis of global climate models for use with MRAT project
- data analyses
- selection of models to be used across Canada
Time May – September 2011

6.
Client Project Insurance Bureau of Canada, Toronto, CANADA
Updated IDF curves for London, Hamilton, Moncton, Fredericton and Winnipeg for use with MRAT Project
- development of the IDF curves updating methodology
- data analyses
- development of updated curves
- preparation of the report
Time May – September 2012

7.
Client Project Insurance Bureau of Canada, Toronto, CANADA
Updated IDF curves for Bathurst, Coquitlam, St. John's and Halifax for use with MRAT Project
- development of the IDF curves updating methodology
- data analyses
- development of updated curves
- preparation of the report
Time May – September 2013

8.
Client Project Insurance Bureau of Canada, Toronto, CANADA
Development of the Municipal Risk Assessment Tool - MRAT
- consulting services on the development of MRAT tool
- risk assessment methodology
- use of MRAT under climate change
- communication with municipalities across Canada
Time September 2010 – now

9.
Client Project Delcan, Ottawa, CANADA
Central Thames Flood Risk Analysis - Risk to Infrastructure (Climate Change Adaptation Strategy Phase 2: Central Thames Subwatershed Study)
- development of the methodology for the climate change caused flooding risk assessment
- development of flood risk maps for various adaptation scenarios two climate change scenarios and two hydrologic scenarios
- data processing

- flood risk mapping
- preparation of the final report

Time September 2012 – September 2013

10.

**Client
Project**

Delcan, Ottawa, CANADA
Mud Creek Flood Risk Analysis - Risk to Infrastructure (Climate Change Adaptation Strategy Phase 2: Mud Creek Subwatershed Study Update)

- development of the methodology for the climate change caused flooding risk assessment
- development of flood risk maps for various adaptation scenarios two climate change scenarios and two hydrologic scenarios
- data processing
- flood risk mapping
- preparation of the final report

Time April 2013 – November 2013

11.

**Client
Project**

Delcan, Ottawa, CANADA
Dingman Creek Flood Risk Analysis - Risk to Infrastructure (Climate Change Adaptation Strategy Phase 2: Mud Creek Subwatershed Study Update)

- development of the methodology for the climate change caused flooding risk assessment
- development of flood risk maps for various adaptation scenarios two climate change scenarios and two hydrologic scenarios
- data processing
- flood risk mapping
- preparation of the final report

Time November 2013 – March 2014

12.

**Client
Project**

City of London, London, CANADA
Pottersburg Creek Flood Risk Analysis - Risk to Infrastructure (Climate Change Adaptation Strategy Phase 2: Mud Creek Subwatershed Study Update)

- development of the methodology for the climate change caused flooding risk assessment
- development of flood risk maps for various adaptation scenarios two climate change scenarios and two hydrologic scenarios
- data processing
- flood risk mapping
- preparation of the final report

Time December 2013 - now

Water resources education and training

1.

Client University of Natural Resources and Applied Life Sciences, Vienna, AUSTRIA

Course Expert Systems for Water Resources Engineers
- short course for researchers and graduate students
- 25 participants

Time May 1989

2.

Client Manitoba Hydro, Winnipeg, CANADA

Course Issues in Reservoir Management and Optimization
- short course for practicing engineers
- 28 participants

Time March 1992

3.

Client Manitoba Hydro, Winnipeg, CANADA

Course Systems Analysis for Planning Hydro-Power Production
- short course for practicing engineers
- 28 participants

Time April 1992

4.

Client Ministere de Travaux Publics de la Formation, Administrartion de L'hydraulique, Rabat, MOROCCO

Course Water Resources Multi-criteria Analysis
- short course for government officials
- 14 participants

Time April 1993

5.

Client ISMES Spa, Bergamo, ITALY

Course Water Resources Multi-criteria Analysis
- short course for practicing engineers
- development of joint case study application for delineation of river basins
- 7 participants

Time July 1993

6.

Client University of Bologna, Bologna, ITALY
E. Todini & Partners, Bologna, Italy

Course Expert Systems for Water Resources Management and Flood Risk Control
- short course for practicing engineers and government officials
- 25 participants

Time July 1993

- 7.**
Client University of São Paulo, São Paulo, BRAZIL
Course Expert Systems for Water Resources Engineering
- short course for practicing engineers and researchers
- 18 participants
Time May 1994
- 8.**
Client National Water Research Center, El Qanatir, EGYPT
SNC-Lavalin, Inc., Montreal, CANADA
Course Systems Approach to Sustainable Water Management
- short course for government officials
- 20 participants
Time November 1994
- 9.**
Client National Water Research Center, El Qanatir, EGYPT
SNC-Lavalin, Inc., Montreal, CANADA
Course A Systems Approach to Creative Water Resources Engineering:
Advanced Systems and Risk Analysis
- short course for government officials
- 18 participants
Time June 1995
- 10.**
Client National Water Research Center, El Qanatir, EGYPT
SNC-Lavalin, Inc., Montreal, CANADA
Course A Creative Approach to Dissemination of Water Resources Information
- short course for government officials
- introduction to Internet and HTML programming
- 15 participants
Time February 1996
- 11.**
Client Asian Institute of Technology, Bangkok, THAILAND
Danish Development Agency, DANIDA, Copenhagen, DENMARK
Course Water Resources Management
- graduate course
- 22 students
Time May – August 1996
- 12.**
Client National Water Research Center, El Qanatir, EGYPT
SNC-Lavalin, Inc., Montreal, CANADA
Course Expert Systems in Water Resources
- short course for government officials
- 18 participants
Time April 1997
- 13.**
Client Fundação Centro Tecnológico de Hidráulica, São Paulo, BRAZIL
Course A Systems Approach to Creative Water Resources Engineering

- short course for practicing engineers and researchers
 - 12 participants
- Time** April 1998
- 14.**
- Client** CATHALAC, Panama City, PANAMA
- Course** Achieving Sustainability in Water Resources Systems
- short course for government officials and practicing engineers
 - 20 participants
- Time** April 1999
- 15.**
- Client** University of Tokyo, Tokyo, JAPAN
- Course** System Dynamics: An Introduction
- short course for graduate students and researchers
 - 8 participants
- Time** January 2005
- 16.**
- Client** UNESCO, Division of Water Sciences, Paris, FRANCE
- Book** Water for Our Children: Systems Methods and Tools for Better Management of Water Resources
- text book preparation
- Time** May 2005 – December 2006
- 17.**
- Client** Institute for Catastrophic Loss Reduction, Toronto, Canada
- Book** Systems Approach for Management of Disasters (working title)
- text book preparation
- Time** September 2006 – April 2008
- 18.**
- Client** Consorzio Ferrara Richerche
- Lecture** Approvvigionamento e distribuzione idrica: Esperienza, Ricerca, Innovazione
- keynote lecture
- Time** June 2007
- 19.**
- Client** University of Belgrade, Belgrade, SERBIA
- Course** System Dynamics: An Introduction
- short course for graduate students and researchers
 - 25 participants
- Time** June 2009
- 20.**
- Client** Association of Professional Engineers and Geoscientists, British Columbia, CANADA
- Course** Climate Change and Water Resources Management
- training course for professional engineers and geoscientists
 - 21 participant
- Time** April 2010

- 21.**
Client CTI Engineering Co., Ltd., Tokyo, JAPAN
Course System Approach to Management of Disasters
- short course for CTI engineers
- 12 participants
Time September 2011
- 22.**
Client UNESCO, Division of Water Sciences, Paris, FRANCE
Book Floods in a Changing Climate
- coordination of the preparation of four textbooks
- text book preparation "Floods in a Changing Climate – Risk Management"
Time May 2009 – December 2011
- 23.**
Client UN University, Tokyo, JAPAN
Course System Dynamics: An Introduction
- course for graduate students
- 27 participants
Time September 2011
- 24.**
Client Association of Professional Engineers and Geoscientists, British Columbia, CANADA
Course Climate Change and Water Resources Management
- training course for professional engineers and geoscientists
- 14 participant
Time April 2012
- 25.**
Client GORE Mutual, Insurance Company, Toronto, CANADA
Course Climate Change and Water Resources Management
- winter retreat presentation
- 120 participant
Time January 2014

August 22, 2014