

**Paul D. Thompson** is an internationally recognized expert in management systems and engineering economics, including research, design, and development of analytical processes for managing transportation assets. Mr. Thompson is one of the world's leading authorities on life-cycle planning of infrastructure investments, including optimal funding and timing to keep roads and bridges in service at minimum cost. He has served as a consultant in this area to transportation agencies at the local, state, and national levels worldwide for 28 years.

He has been Manager and principal software architect of the multi-contract implementation program for Pontis, a management system for bridges. Pontis was the most successful transportation software joint development project ever undertaken, eventually receiving the support of 45 states. He has provided customization and implementation support services in connection with Pontis to more than half of the states and several other countries, and has continued his work for AASHTO in architectural design and project management for the next generation of bridge load rating and design software, Virtis and Opis. He has designed and/or managed development of more than a dozen other bridge management systems worldwide. Currently he is developing the analytical architecture for Pontis release 5.2, which will include a number of new innovations in the modeling of deterioration, costs, and risk.

Mr. Thompson continues to advance the state-of-the-art in bridge management systems. In National Highway Research Program Project 12-67 (published as Report 590), he developed a multi-objective optimization framework for network level and bridge level decision support. For Florida DOT he developed a new user cost model for bridge functional deficiencies, a new methodology for classifying and estimating bridge maintenance, repair, and rehabilitation (MR&R) costs, and a new methodology for risk analysis to estimate bridge element failure costs. He has designed and developed digital dashboards to provide engineers a quick picture of the economic health of any individual bridge, along with the condition and life cycle cost effects of scoping and timing of MR&R and improvement projects. He has also designed an original computational framework and digital dashboard for a network-level tradeoff analysis between bridge program funding and performance measures, for use in budgeting and asset management as part of the modified approach to the GASB 34 asset accounting standards.

Other information system development efforts which Mr. Thompson has directed include pavement management systems, transit facility management systems, capital needs inventories, project tracking systems, transportation and land-use planning, financial analysis systems, and marketing research analysis tools. Many of these projects have included significant improvements in the state-of-the-art by developing new optimization techniques or incorporating analytical techniques into user-friendly computer environments.

<b>Asset Management</b>	Final report author, FHWA Management System Integration Committee Consultant, NCHRP 20-24(11), Asset Management Guidelines for Transportation Agencies Consultant, NCHRP 08-69, Asset Management Volume 2: Focus on Implementation Consultant, NCHRP 20-74, Asset Management Plan for the Interstate Highway System Technical consultant, Asset Management Guidelines, Transport Association of Canada Technical consultant, NCHRP 20-64 - TransXML Co-author, NCHRP 363, Role of Highway Maintenance in Integrated Management Systems Project manager, Finland integrated bridge, pavement, and maintenance management systems Technical consultant, Michigan integrated management systems (9 systems) Technical consultant, Delaware integrated management systems (7 systems) Technical consultant, Puerto Rico integrated management systems (7 systems) Technical consultant, Nova Scotia integrated management systems (bridge, pavement, safety and traffic) Project manager, Boston Metropolitan District Commission integrated management systems (pavement, bridge, traffic signals, and street lighting) Technical consultant, asset costing and performance measures for New Jersey Transit Corporation and Massachusetts Bay Transportation Authority
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**BMS****Experience****Bridge Management Systems (BMS) – new development**

Project management, design, and modeling for NBIAS, FHWA's national-scale adaptation of the Pontis network-level models for US Congressional budgeting  
 Project management, design and development of the Pontis Bridge Management System for AASHTO and the US Federal Highway Administration  
 Co-project management and design of the Ontario Bridge Management System  
 Design of the Québec bridge management system  
 Project management, design, and development of Finland's integrated Bridge and Pavement Management Systems  
 Technical consultant for the Triborough Bridge & Tunnel Authority (NY) Bridge Management System  
 Project management, design, and development of integrated facility project evaluation tools (including bridge management) for the New Jersey Transit Corporation  
 Project management, design, and development of integrated pavement, bridge, sign, traffic signal, and lighting management system for the Metropolitan District Commission (Boston)  
 Design of the Massachusetts Bay Transportation Authority (Boston) Bridge Management System  
 Technical consultant for the Switzerland Bridge Management System  
 Technical consultant for the Sweden Bridge Management System  
 Technical and management consultant for the Ohio Bridge Management System  
 Technical and management consultant for the Michigan Bridge Management System  
 Technical consultant for the British Columbia Bridge Management System  
 Technical consultant for the Nova Scotia Bridge Management System

**Bridge Management Systems –Customization and training**

Peer reviewer, FHWA Bridge Management Information Systems Laboratory  
 Technical consultant, Pontis models for Alabama's Bridge Information Management System  
 Design of a Pontis migration strategy for Alabama DOT  
 Customization of Pontis for Colorado signs, mast arms, and high-mast light poles  
 Assistance with bridge management system implementation for Manitoba Infrastructure & Transp  
 Customization of the Florida Project Level Analysis Tool for Maine DOT  
 Project management, design, and development of customized versions of Pontis 2.0 for the states of Oregon, Colorado, Louisiana, Tennessee, and Minnesota  
 FHWA-sponsored Pontis workshops for the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, District of Columbia, Virginia, Georgia, Florida, Tennessee, Ohio, Indiana, Illinois, Michigan, Louisiana, Arkansas, Missouri, Iowa, Minnesota, Nebraska, Kansas, Oklahoma, Texas, Colorado, Wyoming, Montana, Idaho, Utah, Arizona, California, Oregon, Washington, and Hawaii  
 Locally-sponsored Pontis workshops and training courses for Rhode Island, Illinois, Ohio, Puerto Rico, Switzerland, Hungary, United Kingdom, Spain, Australia, Kuwait  
 Course designer and lead instructor for National Highway Institute Bridge Management Training Courses for South Carolina, Arizona, Washington, Louisiana, Oklahoma, Florida, Texas, Tennessee, and Michigan  
 Technical support of Pontis implementation for the City of Denver and the States of Maine, Florida, Tennessee, Ohio, Illinois, Michigan, Louisiana, Iowa, and Colorado.  
 Technical support of Ontario Bridge Management System implementation for the Provinces of Ontario, British Columbia, Saskatchewan, Québec, and Nova Scotia and the City of Hamilton, Ontario.

**Bridge Management Systems – Research**

Advisory Panelist and Technical Consultant, FHWA Long Term Bridge Performance Program  
 Consultant, Pennsylvania DOT Risk Management Strategy  
 Expert Peer reviewer, FHWA Bridge Management Information Systems Laboratory  
 Task Manager and principal researcher, enhancement of the National Bridge Investment Analysis System for the US Federal Highway Administration.  
 Consultant, NCHRP 14-15, Development of a national maintenance database for bridges.  
 Co-principal investigator, NCHRP 12-67, Multi-Objective Optimization for BMS  
 Principal investigator, development of user cost models for Florida DOT Pontis implementation

Co-principal investigator, development of Pontis agency cost models for Florida DOT  
Co-principal investigator, development of project-level bridge management models for Florida DOT  
Co-principal investigator, development of program management decision support for Florida DOT.  
Co-author, AASHTO Guidelines for Bridge Management Systems  
Co-author, NCHRP Synthesis 227, Collecting and Managing Cost Data for BMS  
Consultant, NCHRP 20-07, Bridge Performance Measures  
Consultant, NCHRP 12-50, Bridge Software Validation Guidelines and Examples  
Consultant, NCHRP 12-51, Effect of Truck Weight on Bridge Network Costs

**Other bridge-related software**

Software design services and member of the contractor management team for Virtis, the new AASHTO Bridge Load Rating System, and Opis, the new AASHTO Bridge Design System Task Manager, integration of AASHTO's BRIDGEWare bridge software suite (Pontis, Virtis, and Opis)

- Publications** NCHRP Report, National Database of Bridge Maintenance Actions  
NCHRP Report, Multi-Objective Optimization  
AASHTO Guidelines for Bridge Management Systems  
AASHTO Guidelines for Asset Management  
NCHRP Report, Role of Highway Maintenance in Integrated Management Systems  
NCHRP Report, Effect of Truck Weight on Bridge Network Costs  
NCHRP Synthesis, Collecting and Managing Cost Data for Bridge Management Systems  
Final Report, FHWA Management System Integration Committee  
Transport Association of Canada Asset Management Guidelines
- Committees** Editorial Board, American Society of Civil Engineers Journal of Bridge Engineering  
Advisory Board, Structures and Infrastructure Engineering Journal  
Chair, Transportation Research Board Subcommittee on Bridge Life Cycle Cost Analysis  
Transportation Research Board Committee on Bridge Maintenance  
Transportation Research Board Committee on Bridge Management  
FHWA Expert Technical Group on Bridge Costing  
FHWA Management System Integration Committee  
International Association for Bridge Maintenance and Safety, Bridge Management Committee
- Education** C.S.S., Administration and Management, Harvard University Extension (1987)  
M.S., Transportation, Massachusetts Institute of Technology (1982)  
B.S., Civil Engineering, University of Washington (1980)
- Formerly** Principal, Cambridge Systematics, Inc.  
Research Assistant, Massachusetts Institute of Technology  
Planning and Finance Depts., Tri-County Metropolitan Transportation District of Oregon  
Assistant Surveyor, City of Longview, Washington
- More info** For further information and a selection of useful reports, see [www.pdth.com](http://www.pdth.com).