

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 30 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 46 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 and design for Pontis release 5.2, which will include a number of new innovations in multi-objective optimization and 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, a new methodology for risk analysis to estimate bridge element failure costs, and a new method for developing deterioration models. 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.

Asset Management	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 20-74A, Service Levels for the Interstate Highway System Consultant, NCHRP 20-74, Asset Management Plan for the Interstate Highway System Consultant, NCHRP 08-71, Life Expectancies of Highway Assets Technical consultant, Asset Management Guidelines, Transport Association of Canada Consultant, FHWA Peer review panels for NBIAS, HERS, and TERM, systems for national infrastructure needs analysis for the US Congress. 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)
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Technical consultant, asset costing and performance measures for New Jersey Transit Corporation and Massachusetts Bay Transportation Authority

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
 Design of the Minnesota DOT Risk-Based Planning System for Bridges and Structures.
 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
 Customization of the Florida Project Level Analysis Tool for Maine DOT
 Assistance with bridge management system implementation for Manitoba Infrastructure & Transp
 Development of Pontis implementation plan for New Jersey 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 structure risk models for Florida DOT

Co-principal investigator, development of Pontis deterioration and 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)

Committees	<p>Editorial Board, American Society of Civil Engineers Journal of Bridge Engineering</p> <p>Advisory Board, Structures and Infrastructure Engineering Journal</p> <p>Chair, Transportation Research Board Subcommittee on Bridge Life Cycle Cost Analysis</p> <p>Transportation Research Board Committee on Bridge Maintenance</p> <p>Transportation Research Board Committee on Bridge Management</p> <p>FHWA Expert Technical Group on Bridge Costing</p> <p>FHWA Management System Integration Committee</p> <p>International Association for Bridge Maintenance and Safety, Bridge Management Committee</p>
Education	<p>C.S.S., Administration and Management, Harvard University Extension (1987)</p> <p>M.S., Transportation, Massachusetts Institute of Technology (1982)</p> <p>B.S., Civil Engineering, University of Washington (1980)</p>
Formerly	<p>Principal, Cambridge Systematics, Inc.</p> <p>Research Assistant, Massachusetts Institute of Technology</p> <p>Planning and Finance Depts., Tri-County Metropolitan Transportation District of Oregon</p> <p>Assistant Surveyor, City of Longview, Washington</p>
More info	<p>For further information and a selection of useful reports, see www.pdth.com.</p>