

## ERIC A. GRAY

Senior Database Architect



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### Educational Background

B.S., Computer Science, Sonoma State University

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### Professional Experience

Mr. Gray joined STI in 2000. His primary focuses are database design and development, project management, and software engineering. His special interests and expertise lie in systems analysis, data modeling, ETL (Extract Transform Load) systems, and scalable database architectures.

Mr. Gray has designed and implemented a number of software and database applications for STI. He is currently developing open source databases using PostgreSQL for two projects. The first project, the USFS/JFSP Fire Weather Forecast Accuracy system, involves the storage and querying of billions of observed and model forecast output meteorological data records for analysis. The second project implements a database to ingest sub minute, sub hourly, and other duration data and metadata for meteorological instruments such as radar wind profilers for graphical display on the web.

Mr. Gray's ongoing work involves enhancing the Data Management System (DMS) that processes air quality and meteorological data received from monitoring sites operated by the San Francisco Bay Area, Air Resources Board, South Coast Air Quality Management Districts, and the Shanghai, China, Environmental Monitoring Center. The system supports automated and manual quality control (QC) checks and uses real-time instrument reliability data to verify ambient pollution readings. The DMS also serves as the core of the AIRNow system which was reengineered for the U.S. Environmental Protection Agency (EPA) and AIRNow-International in 2009.

Mr. Gray also continues database support work for the EPA's AIRNow project. He designed and developed the system architecture, the system's Oracle database, and the automatic data processing and QC software. The system has been running since summer 2001 and has successfully processed hundreds of millions of data records. A major upgrade of AIRNow was completed in 2009 and involved the migration of the Oracle 10g-based system to SQL Server 2005 to take advantage of DMS development and to save significant costs in maintenance and licensing.

Mr. Gray's previous work at STI involved designing and developing the multi-billion record Air Quality Archive (AQA) Oracle database. The AQA supported multiple 2006–2008 EPA and other agency projects such as the EPA Multipollutant Trends Report; EPA, Southeast States Air Resources Managers (SESARM) and ABT Toxics Data Analysis Support; and the EPA Photochemical Assessment Monitoring Stations (PAMS) Network Assessment. The system provided extensive automatic quality control and checking and created a variety of summarized data sets to support data analysis.

Mr. Gray's other projects at STI include the Air Quality Exchange Challenge Grant (AQDE) program; in 2007–2009, Mr. Gray set up an Exchange Network Node at STI to process AQDE XML data from New York, New Jersey, and Delaware. In 2006 and 2007, Mr. Gray developed AIRNow Gateway, which provided text files and web services to the AIRNow community and air quality researchers. Since 2003, Mr. Gray has also provided extensive database and software support for STI's various ozone and particulate matter forecasting systems, including automated tools based on regression and Classification and Regression Trees (CARTs) for several cities.

Prior to joining STI, Mr. Gray worked at HealthVision, Inc., as a Project Manager for the Physician Assistant program, was Senior Software Engineer for Project Data System's U.S. Department of Housing and Urban Development (HUD) application software, and was a Consulting Software Engineer for Parker Hannifin Compumotor, Inc. He also trained staff in C++, OOP, and OOD techniques.

See <http://www.sonomatech.com/ResPub/EAGpub.pdf> for a list of publications.