SunGuide®:

Project Staffing Plan

SunGuideSMD-PSP-13.0.0 (Final)

Prepared for:

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	Tucker Brown	TJB	05/19/2014
	Tucker Brown	TJB	01/27/2015

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List of Acronyms

CM ....Configuration Management
DOT ....Department of Transportation
FDOT ....Florida Department of Transportation
ITS.............................Intelligent Transportation Systems
LOA ....Letter of Authorization
SP……………….....Staffing Plan
PM.............................Project Manager
PSP…………………Project Staffing Plan
QA.............................Quality Assurance
SPM...........................Software Project Manager
SwRI ....Southwest Research Institute
VSET………………..Vanus Senior Traffic Engineer
VTET………………..Vanus Traffic Engineer Tech

Revision History

Revision	Date	Changes
LOA001	July 15, 2010	Initial Release (DRAFT).
LOA001	July 19, 2010	Initial Release (FINAL)
3.0.0 Draft	September 15, 2010	Address comments from other process documents Update to reflect LOA002 Update to reflect LOA003 Update to add Valeriy Melnikov of Lucent Group
4.0.0 Draft	November 2, 2010	Update to reflect LOA004
5.0.0 Draft	November 10, 2010	Update to reflect LOA005
6.0.0 Draft	July 11, 2011	Update for LOA006 Replace QA representative Add support / development staff
6.0.0 Final	July 18, 2011	Revised in response to FDOT comments.
7.0.0 Draft	January 6, 2012	Update to reflect LOA007
7.0.0 Final	January 24, 2012	Revised in response to FDOT comments.
8.0.0 Draft	July 18, 2012	Updated to reflect LOA8
9.0.0		Omitted due to proximity of LOA009 and LOA010
10.0.0 Draft	July 8, 2013	Updated to adjust labor categories Updated to add staff Updated to reflect LOA009 Updated to reflect LOA010
11.0.0 Draft Unreleased	February 7, 2014	Removed all staff not actively billing to contract. Added new staff members. Updated staff resumes. Removed closed LOAs. Streamlined document
11.0.0 Draft	May 6, 2014	Promoted Tucker Brown to PM Promoted Roger Strain to SPM Moved Robert Heller to Advisor
12.0.0 Draft	May 28, 2014	Added Staff Members for Connected Vehicle Effort Updated to reflect LOA012
13.0.0 Draft	January 27, 2015	Updated to Reflect LOA013 and LOA014

1. Scope

1.1 Document Identification

This document serves as the Staffing Plan (SP) for the SunGuide®Support, Maintenance and Development contract and addresses the staffing necessary to support Letter of Authorization 012. Later revisions to this document will address subsequent Letters of Authorization.

1.1.1 Update Summary

The following changes have been made to this document.
- This document contains updates for two new scope items
    - LOA013 - FY2015 Support
    - LOA014 - 6.2 Release Enhancements
- Staffing Changes
    - Purser Surgeon was added to LOA013 Staffing

1.2 Project Overview

The Florida Department of Transportation (FDOT) SunGuide Support, Maintenance and Development Contract, contract number BDQ69, addresses the necessity of supporting, maintaining and performing enhancement development efforts to the SunGuide software. The SunGuide software was developed by the FDOT in a contract from October 2003 through June 2010. The SunGuide software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies and is deployed throughout the state of Florida. The SunGuide software is based on ITS software available from the state of Texas, with significant customization and development of new software modules to meet the needs of the FDOT.Figure 1provides a graphical view of the SunGuide software:
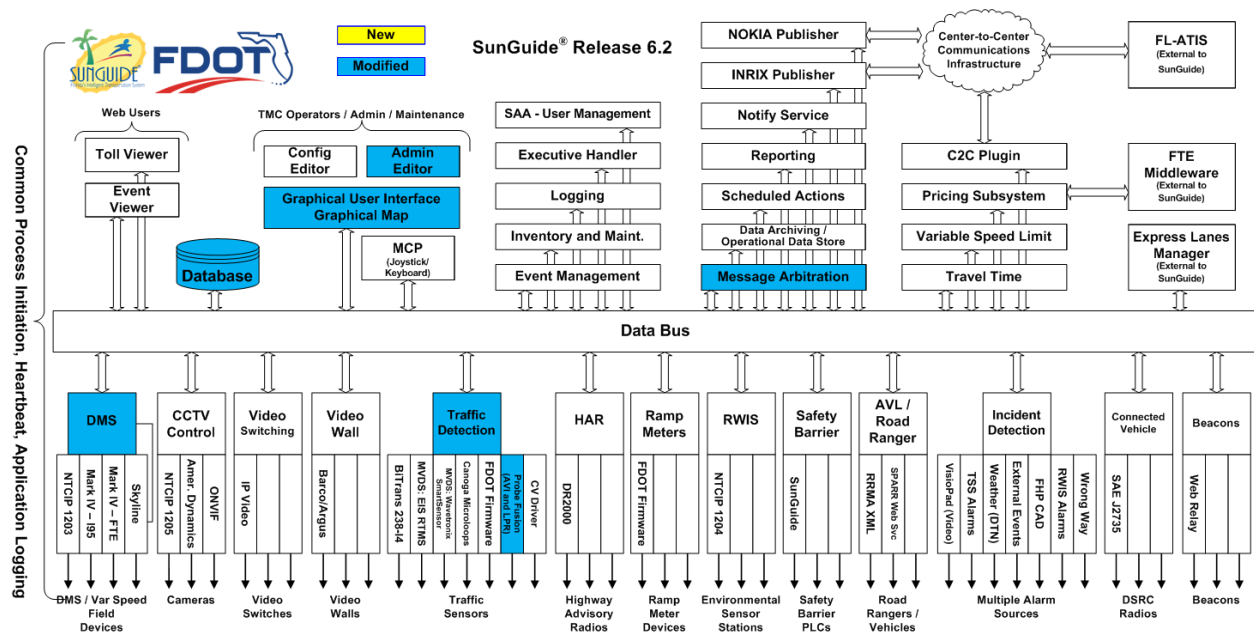

Figure 1–High-Level Architectural Design Diagram

1.3   Related Documents

Additional information regarding the SunGuide project can be found in the following documents and electronic publications:

- FDOT Scope of Services: *BDQ69,Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services.* July 1, 2010.

- Notice to Proceed: Letter to Southwest Research Institute® (SwRI®) for BDQ69, July 1, 2010
- Letter of Authorization 001: Letter to SwRI for BDQ69, July 1, 2010.
- Letter of Authorization 002: Letter to SwRI for BDQ69, August 3, 2010.
- Letter of Authorization 003: Letter to SwRI for BDQ69, August 19, 2010.
- Letter of Authorization 004: Letter to SwRI for BDQ69, October 20, 2010.
- Letter of Authorization 005: Letter to SwRI for BDQ69, November 9, 2010.
- Letter of Authorization 006: Letter to SwRI for BDQ69, June 28, 2011.
- Letter of Authorization007: Letter to SwRI for BDQ69, December 22, 2011.
- Letter of Authorization 008: Letter to SwRI for BDQ69, June 29, 2012.
- Letter of Authorization 009; Letter to SwRI for BDQ69, May 30, 2013.
- Letter of Authorization 010; Letter to SwRI for BDQ69, June 25, 2013.
- Letter of Authorization 011, Letter to SwRI for BDQ69, January 3, 2014
- Letter of Authorization 012, Letter to SwRI for BDQ69, May 19, 2014
- Letter of Authorization 013, Letter to SwRI for BDQ69, July 1, 2014
- Letter of Authorization 014, Letter to SwRI for BDQ69, January 22, 2015
- SunGuide Project website: http://sunguidesoftware.com.

1.4   Contacts

The following are contact persons for the SunGuide software project:

- Elizabeth Birriel, ITS Section, Traffic Engineering and Operations Office Central Office, elizabeth.birriel@dot.state.fl.us, 850-410-5606
- Derek Vollmer, ITS Section, Traffic Engineering and Operations Office Central Office, Derek.Vollmer@dot.state.fl.us, 850-410-5615
- Clay Packard, Atkins Project Manager, clay.packard@dot.state.fl.us, 850-410-5623
- David Chang, Atkins Project Advisor, david.chang@dot.state.fl.us, 850-410-5622
- Robert Heller, SwRI Project Advisor, rheller@swri.org, 210-522-3824
- Tucker Brown, SwRI Project Manager, tbrown@swri.com, 210-522-3035
- Roger Strain, SwRI Software Project Manager, rstrain@swri.org, 210-522-6295

2. Staffing Plan

Throughout the development of SunGuide software, SwRI has utilized our rigorous project management approach to ensure a quality product that is delivered within budget and schedule. To achieve this, roles have been established for key personnel.

Subsequent tables detailing staff assignments within the SwRI project staff contain the following information.

- Staff Member: name of the staff member; staff professional data sheets are contained in Appendix B (administrative support staff do not have professional data sheets).
- Labor Category: contract labor category descriptions are contained in Appendix A.
- Columns indicate what activities each staff member has been assigned to work on for support or development activities.
- Task assignments may be one of three forms:
  - o L – indicates a lead role in an activity
  - o C – indicates a contributing role for an activity
  - o O – indicates an oversight role for an activity
- All project staff members are available in consulting, review, and advising roles to other staff members. Thus, staff may work on tasks to which they are not directly assigned.

2.1 Project Management

The SwRI Project Management and Administrative Support staff organization is depicted below inFigure 2.
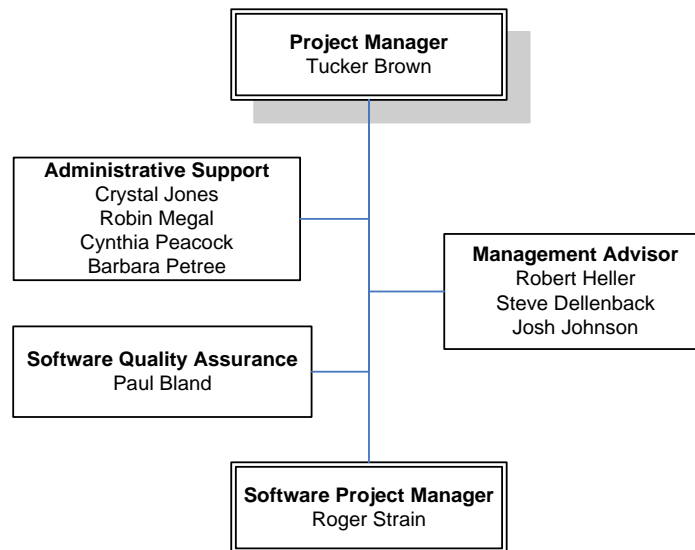

Figure 2–SwRI Project Management Organization

Table 1 shows labor category, commitment and assignments for project management staff.

Table 1–Project Management Staffing

	SG Labor Category	Project Management	Support	Deployment	Admin Support
Project Oversight:					
Tucker Brown	P3	**L**	**L**	**L**	
Roger Strain	D3	**C**	**C**	**C**	
Robert Heller	IS2	**C**	**C**	**C**	
Steve Dellenback	IS3	**O**			
Josh Johnson	A1	**O**			
Administrative Support:					
Robin Megel	AA				**C**
Cynthia Peacock	AA				**L**
Paul Bland	QAE				**C**
Barbara Petree	AA				**C**

2.2 Support Staffing Plan

The Support, Maintenance, and Development contract has placed additional emphasis on maintaining the software and issue response times. As such, SwRI has allocated the staff that can maintain the level of support that FDOT desires. There are three main functions of the support staff provide 24 hour per day, 7 days per week response to major failures[1] reported to the SunGuide support telephone line; provide on-site support to SunGuide deployments, and maintain the SunGuide software in response to issues entered into the Footprints database. Sections for each new support task contain organization charts for the support team.

Table 2– Support Staffing

	SG Labor Category	On-Call Support	Support
Brent Becker	T3	**C**	
Tucker Brown	P3	**LO**	**C**
Adam Hoffman	P1	**L**	**C**
Hector Iruegas	T2	**C**	**C**
Jose Perez	P1		**C**
Purser Sturgeon	P2		**C**

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[1]Critical failures, failures and external failures.

	SG Labor Category	On-Call Support	Support
Roger Strain	D3		**C**
Adam Dylla	P1		**C**
A.J. Skillern	P1		**C**

The following sections describe how the support functions will be implemented. The SwRI Project Manager is responsible for assuring that the support staff meets the contract specified support requirements. Support definitions, roles and responsibilities are described in the contract BDQ69 Exhibit A.

2.2.1 On-Call Support Staff

The on-call support staff are responsible for providing 24 hour per day, 7 days per week response to major failures reported to the SunGuide support telephone line. Brent Becker coordinates with the on-call staff to establish the schedule for after hours and weekend support; there is always an identified "primary" and backup to respond to support calls. In the event that one or both of the on-call staff are not available, other staff members are available to fill in. Those that fill in on a temporary basis include Tucker Brown and Jose Perez.

2.2.2 SwRI San Antonio Based Support

The SwRI Support Staff perform the following activities:

- Review new footprints issues as they are entered into the footprints database;
- Resolve footprints issues for latent software defects and enhancements approved by the FDOT.

2.3 Release 6.1 (LOA #009, LOA #011)

LOA #009 provides funding for the following 4 tasks:
- Phase 0 of SunGuide / Lonestar Unification
- Nokia compatibility
- ONVIF compatibility
- Installer enhancement
- Activu and support multiple walls

LOA #011 provides funding for the following task
- RWIS Enhancement for the Fog/Smoke Detection System

Table 3 contains the staff members assigned to the SunGuide Release 6.1 development.

Table 3– Release 6.1 Development Staffing

	SG Labor Category	LOA #009	LOA #011
Tucker Brown	P3	**OC**	**OC**

	SG Labor Category	LOA #009	LOA #011
Adam Dylla	P1	**C**	**C**
Michael Nootbaar	T3	**C**	
Jose Perez	P1	**C**	
Daniel Rossiter	T3	**C**	
A.J. Skillern	T3	**C**	**C**
Roger Strain	D3	**LC**	**LC**

2.4 Release 6.2 (LOA #014)

LOA #014 provides funding for the following 5 tasks:
- Response Plan Templates
- DMS Force Caps
- DMS Force Blank on Failure
- Dismiss Redundant TSS Alerts
- Arterial Probe Algorithm
  - Release 6.0
  - Port to 6.1
  - Port to 6.2
  - TSS Configuration in Operator Map

Table 4 contains the staff members assigned to the SunGuide Release 6.2 development.

Table 4– Release 6.2 Development Staffing

	SG Labor Category	LOA #014
Tucker Brown	P3	**OC**
Adam Dylla	P1	**C**
Adam Hoffman	P1	**C**
A.J. Skillern	T3	**C**
Roger Strain	D3	**LC**

Appendix A

Labor Category Descriptions

Title	Code	Brief Skill Level Description
Administrative	AA	High School diploma. Experience with data entry, technical writing, and/or clerical support to technical projects.
QA Engineer	QA	Member of SwRI Quality Assurance (QA) Department who is knowledgeable of SwRI CMMI process implementation and capable of providing independent oversight of the process.
Technician I	T1	High School diploma. Assists with technical activities associated with project performance, under the supervision of a programmer, analyst, designer or ITS Specialist.
Technician II	T2	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Assists with technical activities associated with project performance, under the supervision of a programmer, analyst, designer or ITS Specialist. Minimum of 3 years of experience past Bachelor's degree.
Technician III	T3	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Assists with advanced technical activities associated with project performance, under the supervision of a programmer, analyst, designer or ITS Specialist. Minimum of 7 years of experience past Bachelor's degree.
Programmer I	P1	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Entry level position in computer programming, network administration, or system support.
Programmer II	P2	Bachelor's level degree in Computer Science, Engineering or other related discipline. Experienced in computer programming, network administration, or system support. Minimum of 2 years of experience past Bachelor's degree.
Programmer III	P3	Bachelor's level degree in Computer Science, Engineering or other related discipline. Advanced level position in computer programming, network administration, or system support. Provides technical direction to less experienced programmers. Minimum of 4 years of experience past Bachelor's degree.
Programmer IV	P4	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in computer programming, network administration, or system support. Provides oversight and technical direction to less experienced programmers. Minimum of 6 years of experience past Bachelor's degree.

Title	Code	Brief Skill Level Description
Designer I	D1	Bachelor's level degree in Computer Science, Engineering or other related discipline. Demonstrated capability in the development of application software, including source code development, test and debug, as well as the preparation of required documentation. Minimum of 8 years of experience past Bachelor's degree.
Designer II	D2	Bachelor's level degree in Computer Science, Engineering or other related discipline. Demonstrated capability in the development of system level software and applications software, including source code development, test and debug, as well as the preparation of required documentation. Provides technical direction to less experienced designers and programmers. Minimum of 1 0 years of experience past Bachelor's degree.
Designer III	D3	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in the design and implementation of small systems and/or system components. Minimum of 12 years of experience past Bachelor's degree.
Designer IV	D4	Bachelor's level degree in Computer Science, Engineering or other related discipline. Demonstrated capability in systems analysis, design, implementation, integration and test. Minimum of 14 years of experience past Bachelor's degree
Analyst I	A1	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in the design and implementation of medium size systems. i Minimum of 16 years of experience past Bachelor's degree
Analyst II	A2	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in systems requirements analysis, studies and analysis, systems design, implementation, integration and test. Minimum of 18 years of experience past Bachelor's degree
Analyst III	A3	Bachelor's level degree (or higher) in Computer Science, Engineering, or other related discipline. Demonstrated capability in the design and development of systems architectures for large or complex systems. Minimum of 20 years of experience past Bachelor's degree
Analyst IV	A4	Bachelor's level degree (or higher) in Computer Science, Engineering, or other related discipline. Demonstrated capability in providing technical leadership in the design and development of systems architectures for large or complex systems. Minimum of 22 years of experience past Bachelor's degree

Title	Code	Brief Skill Level Description
ITS Specialist I	IS1	Bachelor's level degree (or higher) in Computer Science, Engineering, or other related discipline. Demonstrated capability in task management, systems engineering, planning, studies and analysis, systems design, implementation, integration and test. Minimum of 15 years of experience past Bachelor's degree
ITS Specialist II	IS2	Bachelor's level degree (or higher) in Computer Science, Engineering, or other related discipline. Demonstrated advanced capability in task management, systems engineering, planning, studies and analysis, systems design, implementation, integration and test. Minimum of 20 years of experience past Bachelor's degree
ITS Specialist III	IS3	Bachelor's level degree (or higher) in Computer Science, Engineering, or other related discipline. Demonstrated advanced capability in ITS standards, task management, systems engineering, planning, studies and analysis, systems design, implementation, integration and test. Minimum of 25 years of experience past Bachelor's degree
*On-site Programmer I	OP1	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Entry level position in computer programming, network administration, or system support.
*On-site Programmer II	OP2	Bachelor's level degree in Computer Science, Engineering or other related discipline. Experienced in computer programming, network administration, or system support. Minimum of 2 years of experience past Bachelor's degree.
*On-site Programmer III	OP3	Bachelor's level degree in Computer Science, Engineering or other related discipline. Advanced level position in computer programming, network administration, or system support. Provides technical direction to less experienced programmers. Minimum of 4 years of experience past Bachelor's degree.
*On-site Programmer IV	OP4	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in computer programming, network administration, or system support. Provides oversight and technical direction to less experienced programmers. Minimum of 6 years of experience past Bachelor's degree.
LGI Admin Assistant	LAA	High School diploma. Experience with data entry, technical writing, and/or clerical support to technical projects.
LGI On-site support staff I	LOS1	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Assists with advanced technical activities associated with project performance, under the supervision of a programmer, analyst, designer or ITS Specialist.

Title	Code	Brief Skill Level Description
LGI On-site support staff II	LOS2	Bachelor's level degree in Computer Science, Engineering or other related discipline, or some college/technical training together with computer industry experience. Entry level position in computer programming, network administration, or system support.
LGI On-site support staff III	LOS3	Bachelor's level degree in Computer Science, Engineering or other related discipline. Advanced level position in computer programming, network administration, or system support. Provides technical direction to less experienced programmers.
LGI Technician I	LT1	High School diploma. Assists with technical activities associated with project performance, under the supervision of a programmer, analyst, designer or ITS Specialist.
LGI Technician II	LT2	Bachelor's level degree in Computer Science, Engineering or other related discipline. Experienced in computer programming, network administration, system support or systems training development and delivery.
LGI Technician III	LT3	Bachelor's level degree in Computer Science, Engineering or other related discipline. Advanced level position in computer programming, network administration, or system support. Provides technical direction to less experienced technicians.
LGI Technician IV	LT4	Bachelor's level degree in Computer Science, Engineering, or other related discipline. Demonstrated capability in computer programming, network administration, or system support. Provides oversight and technical direction to less experienced technicians.
LGI ITS Specialist I	LS1	Bachelor's degree plus three years of IT/ITS Management/operations experience. In lieu of a Bachelor's degree, an additional three (3) years (for a total of six [6] years) experience in ITS operations and planning.
LGI ITS Specialist II	LS2	Bachelor's degree plus three years of IT/ITS Management/operations experience. In lieu of a Bachelor's degree, an additional three (3) years (for a total of six [6] years). Demonstrated advanced capability in task management, systems engineering, planning, network communications, studies and analysis, systems design, implementation, integration and test.
Cambridge Analyst I	CA1	Bachelor's level degree, expertise in the following areas: traffic engineering, transportation planning, performance measurement, data management, traffic operations analysis, and ITS planning and architecture studies.
Cambridge Analyst II	CA2	Bachelor's level degree, advanced expertise in the following areas: traffic engineering, transportation planning, performance measurement, data management, traffic operations analysis, and ITS planning and architecture studies.
Vanus Traffic Engineer Tech	VTET	Associates level degree, knowledge in traffic engineering, ITS systems and traffic signals.

Title	Code	Brief Skill Level Description
Vanus Senior Traffic Engineer	VSET	Bachelor's level degree, advanced knowledge in traffic engineering, ITS systems and traffic signals.

*For the SwRI labor rates marked as "on-site" to be applied to a staff member, a minimum of six months of full-time, continuous work needs to be approved by FOOT, and FOOT shall provide office space in FOOT facilities and access to FOOT equipment for these SwRI staff to perform their jobs.

Appendix B

SwRI StaffResumes

(Note: Administrative Support Staff Do Not Have Resumes)

ABELARDO ACEVEDO, Jr.
Technician
Intelligent Systems Department
Automation and Data Systems Division
A.E., Engineering, Northwest Vista College, 2006

Mr. Acevedo is a Technician in the Cooperative Systems Section in the Intelligent Systems Department (ISD) at Southwest Research Institute® (SwRI®). He has more than 5 years of experience as a Mechanical Technician and Electronics Technician, and is currently attending the University of Texas at San Antonio in pursuit of his Bachelors of Mechanical Engineering degree.

Mr. Acevedo has contributed to a diverse range of projects since joining the Institute in 2011, initially supporting the Intelligent Vehicle Systems (IVS) section. This section split into two groups in November, 2011, and then became sections in March, 2013, and Mr. Acevedo was instrumental in providing support on a growing number of vehicle programs during that time. This role required Mr. Acevedo to coordinate with a large team of engineers and software developers, Institute stock rooms and machine shops, as well as the commercial and DOD clients who have often been hosted at SwRI for periods of time.

Mr. Acevedo provided critical support for a large unmanned ground vehicle demonstration, ensuring readiness of the vehicles prior to shipment to the venue, as well as providing on-call support to engineering staff during the week of the demonstration. More recently, the Intelligent Systems Department was represented at the ITS America annual meeting, where Mr. Acevedo ensured the readiness of a SwRI-owned military version of an all-terrain vehicle.

Since joining the Cooperative Systems Section full time, Mr. Acevedo has expanded his responsibilities significantly. Mr. Acevedo has extensive knowledge of unmanned ground vehicle hardware integration, prototype development, manufacturing, and assembly, as well as third-party device testing and certification. He assisted a team of mechanical, electrical, and software engineers in the construction of three prototype culvert inspection systems for the Federal Highway Administration (FHWA). These prototypes were constructed using 3D printing techniques, but included support components manufactured from Aluminum.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: technician; 2011 – present.

June 2013

J. BRENT BECKER
Group Leader
Intelligent Systems Department
Automation and Data Systems Division
M.S., Physics, Dartmouth College, 2000
B.A., Physics, Swarthmore College, 1992

Currently, Mr. Becker is the Group Leader of the Sustainment Engineering (SE) Group in the Transportation Systems (TS) Section of the Intelligent Systems Department (ISD). This Group supports the installation, integration and test of software projects developed within the Intelligent Systems Department at multiple deployments in several states. Additionally, the SE Group aids promotional activities whose work includes these supporting tasks. Mr. Becker is part of the team that administers and maintains the Hardware Development Environment for these projects, including multiple server and disk storage systems and their related Ethernet and video networking.

Mr. Becker's current focus is on Intelligent Transportation Systems (ITS) communication engineering tasks for the state of Texas under the Texas Department of Transportation (TxDOT) Development, Integration, Implementation, and Maintenance Services (DIIMS) project. He is involved in the installation, integration and test of an Advanced Traffic Management System (ATMS) for TxDOT and has traveled throughout the state to deploy the system hardware and software in multiple configurations based on local District needs. As part of the installation and post-installation support, he has provided training to the local Operators, handled on-site and phone support for day to day software/hardware issues, and has worked to integrate and configure contractor-installed external hardware (CCTV cameras, Dynamic Message Signs, Radar Vehicle Detectors, etc.) with the system software. His recent experience has involved the transition to using IP encoded video with multicast distribution over Ethernet networks. Mr. Becker has also analyzed and prototyped wireless networks to support Intelligent Transportation Systems applications.

In addition, Mr. Becker is a member of 24/7 technical support teams for two projects based in Florida. For the Florida Department of Transportation's (FDOT) SunGuide® ATMS project he provides support and has also been involved in software installations, hardware deployments, and ITS device integration. Outside of the main SunGuide deployments for FDOT, he has promoted and managed projects involving the installation and training of the SunGuide software, as well as ITS device integration for smaller public and private entities.

He also provides 24/7 support for a system deployed for the Orlando Orange County Expressway Authority. This system collects, calculates and disseminates travel time information for Orlando and the surrounding area. He has worked with outside contractors in Florida to integrate and configure Automated Vehicle Identification readers and Dynamic Message Signs into this system.

Mr. Becker's background is in experimental physics, information technology, and computer networking. He has experience working with micro-electromechanical systems both in the design and the creation phases. He is also CompTIA A+ certified in computer systems.

PROFESSIONAL CHRONOLOGY: Dartmouth College, research assistant, 1994-2000; Sony Semiconductor, business development engineer, 2000-4; Southwest Research Institute, 2005-[assistant technical specialist, 2005-6; technical specialist, 2006-7; engineering technologist, 2007-8; acting group leader, 2008; group leader, 2008-present].

June 2013

PAUL R. BLAND
QA Scientist
Institute Quality Systems
M.B.A., General Business, Grambling State University,
1993 B.S., Computer Science, Grambling State University, 1990

Mr. Bland has experience in systems analysis; software development and maintenance; and testing processes including unit, integration, regression, and system testing. He has established proficiency in software configuration management, project management, and technical on-call support. He is an analyst who excels in working in a team environment to deliver systems and business solutions, and has experience managing and mentoring internal and third-party resources.

Before joining Southwest Research Institute®, Mr. Bland worked for USAA. Initially, as an associate programmer in utilities development, he participated in GUI design sessions, development of a dynamic help tool using C, and conducted focus group sessions for end users. As a programmer/analyst, he completed numerous projects using COBOL, JCL, Easytrieve, PL/I and REXX (including embedded DB2) and participated in 24/7 after hours support. He developed web pages following GUI design principles using FrontPage, HTML, and JAVA. Mr. Bland also engaged in university recruiting, hardware and software asset management, and development and maintenance of Disaster Recovery procedures. He prioritized and resourced projects and assisted domestic and international business partners in documenting requirements and data analysis. As a systems analyst in support of Capability Maturity Model (CMM) metrics, Mr. Bland oversaw the baseline function point counts for various application areas and was a member of the Property & Casualty, and Reporting & Analysis Function Point User's groups. With project lead duties, Mr. Bland developed and coordinated project schedules and budgets, ensured adherence to CMM processes and software process improvement (SPI) guidelines, and managed/mentored USAA and third-party resources on systems, procedures, and corporate culture.

Mr. Bland worked as a co-op with IBM in the Information Dial Network where he performed monitoring and proactive maintenance on the dial network and surveyed domestic and international customers for feedback to improve organization effectiveness. In the Systems Programming/Test Lab, Mr. Bland participated in testing the AIX operating system for the RISC System/6000. He also researched and categorized defects, and performed defect resolution. In the Programming Systems Division, he developed a tool to read and analyze system core dumps in support of the assembly programming service team.

As a co-op with Control Data Corporation, Mr. Bland prioritized and coded documents for the secured software library and provided technical editing/writing support for user manuals under development in the Software Service and Technology Division. He co-wrote an in-house accounting application for project schedule/budget tracking in the Aerospace Division using dBASE III and BRIEF text editor; and, in the Energy Management Division, he created database panel images/drivers for the Dispatcher Training Simulator using FORTRAN and Cyber Database Control System (CDCS).

At Southwest Research Institute, Mr. Bland assists selected divisions in adhering to CMMI, AS9100 and NASA software quality standards. He conducts surveillances, reviews, and training, and works with the project teams in all phases of the software lifecycle.

PROFESSIONAL CHRONOLOGY: Control Data Corporation: summer co-op technical support, 1987; summer co-op programmer, 1988-9; IBM: summer co-op Network Support, 1990; summer co-op tester, 1991; co-op programmer, 1992, summer co-op programmer/analyst, 1993; USAA: associate programmer, 1994; I/T programmer, 1995-7; I/T programmer/analyst, 1998-00, I/T systems analyst 2001-6; Southwest Research Institute: 2007-[software quality assurance scientist, 2007-present]

June 2013

MICHAEL A. BROWN, PMP
Staff Engineer
Intelligent Systems Department
Automation and Data Systems Division
M.S., Software Engineering, Southern Methodist University, 2003
B.S., Computer Engineering, IowaStateUniversity, 1997

Mr. Brown has provided full system lifecycle engineering support forintelligent systems for over sixteen years. He has managed projects of various size and complexity and has provided the architectural vision and developed a wide variety of intelligent systems software including device drivers, database access software, application server software, testing software, Center-to-Center software, on-board vehicle embedded software and Graphical User Interfaces for various operating systems and computer architectures.

Mr. Brown is actively working on multiple Connected Vehicle projects and related standards development. He recently managed and served as system architect for SwRI's role in the New York State Department of Transportation – Commercial Vehicle Infrastructure Integration Project for the I-95 Corridor Coalition. This project enables the exchange of information between commercial vehicles, other vehicles, and an infrastructure using low-latency, secure communications (5.9 GHz DSRC) to enable a variety of commercial vehicle safety applications (Commercial Vehicle Probe Data, Traveler Advisories, Commercial Driver's License Verification, Wireless Roadside Inspection, warning of Maintenance / Construction vehicles, unsafe-to-pass / unsafe-to-merge warnings, emergency brake warnings, blind spot detection, and railroad grade crossing warnings). As part of this project, Mr. Brown leveraged DSRC-based on-board software that he developed under SwRI research and development efforts to provide functionality for communications between a vehicle and an infrastructure and between vehicles. This software has also been utilized to enable cooperative vehicle behaviors such as vehicle platooning and cooperative convoys for Connected Vehicle and military applications and to provide Green Speed functionality to recommend the optimal speed to proceed through a traffic signal given the current phase and timing of the traffic signal as well as the vehicle's position and distance from the intersection.

Mr. Brown also managed and served as system architect for SwRI's role in OmniAir's project for Plans, Procedures, and Tools for Qualification and Certification Testingof Connected Vehicle Awareness Devices that are being used in USDOT's Safety Pilot. Under this program, he led the development of the System Engineering Plan, device test procedures, and the tools / scripts that automate much of the DSRC-based device testing and supported device testing activities. Mr. Brown is also leading SwRI's role in support of the Aftermarket Safety Device testing for the USDOT Safety Pilot. This testing is being performed at SwRI and will enable the Safety Pilot Test Conductor as well as other Connected Vehicle Affiliated Testbeds to utilize Aftermarket Safety Devices that are compliant with the USDOT's device requirements specification.

Mr. Brown serves on the Society of Automotive Engineers J2735 working group and helps define messages in the standard and serves on the Institute of Electrical and Electronics Engineers 1609 working group. He has utilized this knowledge to assist the Florida Department of Transportation in their integration of Connected Vehicle technology for the 2011 ITS World Congress demonstrations in Orlando, FL.

Mr. Brown is also currently the chair of the National Transportation Communications for ITS Protocols (NTCIP) Center-to-Center communications working group, where he has used his knowledge to help define the standard for Center-to-Center communications using XML (NTCIP 2306). Mr. Brown previouslyserved as the Systems Lead for the Texas Department of Transportation Development, Implementation, Integration, and Maintenance Services (DIIMS) project. In this capacity, he oversaw the design, development, deployment and maintenance of Intelligent Transportation Systems (ITS) to ensure consistency and reusability for the various ITS deployments in Texas.

PROFESSIONAL CHRONOLOGY: International Business Machines, Inc.: development programmer, 1995; Southwest Research Institute: 1997-[engineer, 1997; research engineer, 1999-2003; senior research engineer, 2003-4; group leader, 2004-7; principal engineer, 2007-2012; staff engineer, 2012-present].

MEMBERSHIPS: IEEE, SAE, PMI, ASTM, Tau Beta Pi, Golden Key.

June 2013

TUCKER J. BROWN
Research Engineer
Intelligent Systems Department
Automation and Data Systems Division
B.S., Electrical Engineering, and B.S., Computer Science, Texas Tech University, 2008

Since joining Southwest Research Institute® (SwRI®), Mr. Brown has served as a development team member and software project manager for developing Intelligent Transportation Systems software. He has worked on the Traffic Management System known as SunGuide® for the Florida Department of Transportation. He currently serves as the SunGuide software project manager, overseeing the development and system engineering process.

In the last year, he led the software conversion of SunGuide to support either Oracle or SQL Server as its primary database. He also led efforts to implement the NTCIP version 2 protocols for Dynamic Message Signs (DMS) as well as an enhanced scheduling module to support schedule tasks within SunGuide. In addition to leading those efforts, Mr. Brown also developed an interface to TrafficCast'sBlueTOAD system allowing collection and display of speed and travel time data as well as an interface to create and track origin/destination pairs within SunGuide to aid in management decisions on how to best divert traffic in congested areas.

Previously, Mr. Brown developed a set of test tools that allow a user to test the Center-to-Center (C2C) data being sent in and out of C2C infrastructure components. He has also designed several interfaces for the Incident Detection Subsystem (IDS) to allow data from third-party sources to be processed by SunGuide. Mr. Brown also contributed to the development of the Pricing Subsystem which allows operators the ability to control variable tolling on Florida's managed lanes. He has also contributed to the support plan for SunGuide by addressing bugs, failures, and enhancement requests from individual districts when needed. He has overseen projects to incorporate INRIX speed and travel time data into SunGuide as well as a SunGuide integrated smart-phone application for Florida's Road Rangers to use while assisting motorists. He managed the development of the Connected Vehicle Subsystem which is the first deployed system to use DSRC equipment and the J2735 standard to produce probe data for an ATMS system as well as send Traveler Advisory Messages to motorists. This technology was on display at the 2011 World Congress held in Orlando, Florida.

Additionally, Mr. Brown was a part of an internally funded research project which investigated alternative event management techniques. From this research, a graphical user interface prototype for event management was created that was found to be highly flexible and user friendly. Recently, he led and internally funded project to incorporate a traffic signals interface into SunGuide.

Mr. Brown is also involved in the research of Mobile Robotics. He has worked on an internal research project building a generic architecture for a robotics controller. Mr. Brown has done work in autonomous vehicles where he designed an application for communicating between manned and unmanned vehicles for vehicle convoy operations. He has also done work on smaller robotic platforms including fabrication new platforms, interfacing sensors to microcontrollers, design and implementation of intelligent autonomous algorithms, sensor and algorithm simulation, development of a rapid prototyping tool, and the development of a graphical user interface.

As an Electrical Engineering Intern at X-FAB Texas, Inc., Mr. Brown's responsibilities included operator interface development for the Wonderware SCADA Controls Interface. He conducted a facility-wide ground fault coordination power study, where he designed one-line diagrams and TCC.

Mr. Brown is skilled in the usage of C#, C++, C, Perl, UNIX, Assembly, XML, Orcad Suite, Eagle Layout Editor, MATLAB, Wonderware SCADA, SKM Power*Tools, Microsoft Word, Excel, PowerPoint, Project and SharePoint Designer. He is proficient in analog and digital electronics, ground fault coordination studies, automation and controls technologies, and systems engineering (hardware and software).

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: 2008-[engineer, 2008-2010; research engineer, 2010-present].

June 2013

STEVEN W. DELLENBACK, Ph.D., PMP
Director
Intelligent Systems Department
Automation and Data Systems Division
Ph.D., Computer Science, University of Kansas, 1985
M.S., Computer Science, University of Kansas, 1983
B.A., Computer Science, University of Texas at Austin, 1981

Dr. Dellenback has extensive experience in systems design/integration, computer graphics, operating systems, and programming languages. At the University of Kansas, his major areas of study included Computer Graphics, Operating Systems, Discrete Event Simulation, and Artificial Intelligence. His research work focused on graphics language design and implementation. As a research assistant, he headed an interactive graphics laboratory funded by the National Science Foundation for the study of human factors in interactive graphics environments.

At Southwest Research Institute® (SwRI®), Dr. Dellenback currently manages the Intelligent System Department which performs Research and Development (R&D) projects in the following domains: automated vehicles, cooperative vehicle systems, active safety systems, transportation systems, data analytics, and decision support systems. The Department performed in excess of $15M of R&D projects in the previous year; the staff exceeds 65 staff members with a majority of the staff holding advanced degrees in Computer Science, Mechanical Engineering, or Electrical Engineering. The Department has twice been independently assessed and currently operates as a Maturity Level 5 organization consistent with the Software Engineering Institute (SEI) Capability Maturity Model Integration® (CMMI®)[1] Version 1.2a DEV.

Dr. Dellenback is an experienced systems engineer who has actively participated in all aspects of the systems engineering life cycle. He has been involved in a wide variety of programs ranging from microprocessorassembly language-based development efforts, very large integrated factory floor automation efforts, and statewide integrated transportation systems to automated vehicles. He has managed over 75 programs for both commercial and government clients and has a history of delivering projects on time and within budget while often exceeding client expectations.

While at SwRI, Dr. Dellenback has been very active in SwRI's Internal Research and Development (IR&D) program. This program is designed to provide resources to allow the staff to creatively develop solutions to emerging technology challenges. Prior to his appointment as Director, he spent 9 years working with the group of senior staff who oversee the SwRI IR&D program. He personally has been involved in a number of IR&D projects and has been the principal investigator of 9 IR&D programs that developed core technology that has been utilized in client funded programs.

Dr. Dellenback was elected to ITS America's Board of Directors in May 2012 and also serves as chairperson of the Coordinating Council. He is chairman of theNational Transportation Communications for ITS Protocol (NTCIP) Test and Conformity Assessment Working Group and is a voting member on the NTCIP Joint Committee and the Traffic Management Data Dictionary (TMDD) Steering Committee. He has authored over 45 publications and has presented at numerous national and international conferences.

PROFESSIONAL CREDENTIALS: Project Management Professional (PMP)

PROFESSIONAL CHRONOLOGY: University of Kansas: instructor and research assistant, 1981-4; University of Texas at San Antonio: adjunct professor, 1985-9; St. Mary's University: adjunct professor, 1999-2003; Southwest Research Institute: 1984-[research scientist, 1985-8; senior research scientist, 1988-9; principal scientist, 1989-93; staff scientist, 1993-8; institute scientist, 1998-2006; director, 2006-present]

MEMBERSHIPS: Association for Computing Machinery, IEEE Senior Member, IEEE Computer Society, Sigma Xi, Upsilon Pi Epsilon, Project Management Institute

June 2013

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1 Capability Maturity Model Integration and CMMI are registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

ADAM W. DYLLA
Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, the University of Texas at San Antonio, 2012

Mr. Dylla is currently an Analyst in the Transportation Systems Section in the Intelligent Systems Department. He is a graduate of the University of Texas at San Antonio with a Bachelor's Degree in Computer Science with concentrations in both Computer and Information Security and in Software Engineering.

Mr. Dylla was initially hired as a student intern at Southwest Research Institute® while finishing his degree at UTSA. He was tasked with updating the Process Asset Library (PAL) internal site for the Automation and Data Systems Division. This site is used to support software process improvement activities. He succeeded in making the site both easy to use and to maintain without sacrificing functionality. He also assisted the System Engineering Process Group (SEPG) with various other tasks such as, but not limited to, metrics collection and the automation of metrics-collection tasks and addressing Engineering Change Requests (ECRs). He was also assigned to an administrative internal web-application to integrate metrics collection and report generation. The web-application involves domain authentication, multi-user roles, and entity-relationship model database integration.

Since becoming an Analyst, Mr. Dylla's primary role is a developer on the SunGuide® project for the Florida Department of Transport (FDOT). On the project he developed an integrated enhancement that archived traffic conditions, event, and field equipment data in real time to a remote FTP server. He also integrated a streaming video solution into the SunGuide® user interface. This solution includes drag-and-drop of live video streams, full camera controls, and features the ability to save and restore the user's layout. Mr. Dylla also updated the software that manages and controls Dynamic Message Signs (DMS). The update allows the user of the SunGuide software to send messages with color and graphics to signs that are capable of displaying colors and graphics. He also supports the team by testing and helping to fix any issues that might be found.

Prior to working at SwRI and while attending classes, Mr. Dylla worked at the UTSA University Career Center completely redesigning their website. He was integral in the organizing of the mass of online resources developed through the years and produced a website that enabled users to easily find relevant information. Mr. Dylla also worked as a tutor in the Computer Science lab at UTSA where he helped other students debug their programs.

Prior to attending UTSA, Mr. Dylla has worked as a Computer Technician in a hybrid Windows-MacOS environment and worked in the semiconductor manufacturing field for nine years.

Mr. Dylla has experience in a variety of programming and web development languages, including ASP.NET, ASP.NET MVC 3, C/C++/C#, HTML/CSS, Java, JavaScript, Perl, PHP and Lisp/Scheme. He is adept at using Microsoft environments (Windows Server, IIS, SQL Server) as well as MacOS and Linux environments (LAMP, etc.). He also is proficient using MS Office 2007, MS Visual Studio .NET 2008/2010, Adobe Dreamweaver and Photoshop. He is also skilled with many types of computer hardware.

PROFESSIONAL CHRONOLOGY: Motorola SPS/Freescale Semiconductor: manufacturing specialist, 1999-2008; East Central ISD: computer technician, 2008-9; UTSA University Career Center: web intern, 2010-11; Southwest Research Institute: 2011-[student analyst 2011-12, analyst 2012-present].

June 2013

RICHARD D. GARCIA, Ph.D.
Senior Research Engineer
Intelligent Systems Department
Automation and Data Systems Division
Ph.D., Computer Science Engineering, University of South Florida, 2008
M.S., Computer Science Engineering, University of South Florida, 2006
B.S., Computer Science Engineering, *Magna Cum Laude*, Texas Tech University, 2003

Dr. Garcia has over ten years of experience designing, implementing, and validating advanced unmanned systems. His areas of expertise focus on software development and system design. His experience includes both ground and air vehicles with a particular focus in heterogeneous coordination/collaboration and intelligent control. Dr. Garcia also has significant experience in connected and cooperating systems. This includes third-party evaluation and testing as well as software development of vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) devices.

Most recently, Dr. Garcia has been involved in numerous experimentation and validation tasks for Unmanned Ground Systems. These activities have included procedural development to validate the operational capabilities of advanced Unmanned Ground Systems as well as software tools designed to generate vehicle diagnostic data. Dr. Garcia is also involved in internal research projects focused on generating dynamic lane-resolution maps from standard connected vehicle messages and laser based mobile wireless power transfer.

Prior to joining SwRI, Dr. Garcia worked in various research capacities for, and in collaboration with, the Army Research Lab. This research included design and implementation of various autonomous testbeds including unmanned ground vehicles (Segway, Ackerman, and skid steered) and Unmanned Air Vehicles (fixed and rotary). Beyond system design and implementation, Dr. Garcia developed numerous autonomy algorithms spanning Artificial Intelligence (control, learning and decision making), multi-vehicle coordination (ground-to-ground and ground-to-air) and perception (increased situational awareness and failure identification with resolution).

In addition to his research responsibilities with ARL, Dr. Garcia was the research manager for several multi-disciplinary teams, concurrently totaling approximately twenty employees. In this role Dr. Garcia oversaw the completion of a multi-million dollar micro autonomous vehicle testing/demonstration facility. Dr. Garcia also acted as the primary investigator overseeing the research usage of the micro autonomous testing/demonstration facility. This included various academic and government experiments including the U.S. Army's Micro Autonomous Systems Technology (MAST) Consortium 2011 Program Review.

Prior to his full-time employment as a contractor to ARL, Dr. Garcia received his doctoral degree from the University of South Florida (USF) where he worked as a research assistant for both the Unmanned Systems Lab and the Center for Robot Assisted Search and Rescue (CRASAR). His dissertation research dealt with the development of an autonomous rotary wing aircraft testbed utilizing TagakiSugeno Fuzzy Logic as the control methodology. Also while at USF, Dr. Garcia designed and implemented a set of fourunmanned ground vehicles used in the design of formation control algorithms. Dr. Garcia also worked on a variety of search and rescue projects involving unmanned ground vehicles including automated real-time visual augmentation for increased operator awareness.

Dr. Garcia has authored/co-authored dozens of technical papers related to autonomous vehicle development and has presented this work both domestically and internationally. He is currently an editor for the Journal of Intelligent and Robotic Systems and has been an organizer and committee member for SAE's AeroTech Congress and Exhibition and the International Conference on Unmanned Aircraft Systems (ICUAS).

PROFESSIONAL CHRONOLOGY: Motile Robotics, Inc: Research Engineer / Operations Research Manager, 2008-2011; Southwest Research Institute: Senior Research Engineer, 2011-present.

MEMBERSHIPS: Institute of Electrical and Electronics Engineers (IEEE), SAE, IEEE Robotics and Automation (RAS), Association for Unmanned Vehicle Systems International (AUVSI)

June 2013

ROBERT W. HELLER, Ph.D.
Program Director
Intelligent Systems Department
Automation and Data Systems Division
Ph.D., Computer Science, Southern Methodist University, 1980
M.S., Computer Science, Southern Methodist University, 1977
B.A.S., Computer Science, Southern Methodist University, 1975

Dr. Heller is the Program Manager (PM) for the Florida Department of Transportation (FDOT) SunGuide® Software Program. SunGuide is an Advanced Traffic Management System (ATMS) that includes support for Connected Vehicles, Smartphone Application for Road Rangers, the 95EL managed lanes project in south Florida; dissemination of "fused" data for the statewide Florida ATMS, comprehensive Event Management, including Road Ranger management, tracking and logging through mobile devices, traffic detection device support including microwave, loop, tag readers and license plate readers, and other more common features. SunGuide is deployed in more than 15 Florida Traffic Management Centers (TMCs). Dr. Heller's responsibilities include software development, testing, deployment and support activities. Furthermore, he assists in coordination with all Florida based ATMS promotional, proposal, and contract efforts.

Dr. Heller currently leads the Software Engineering Process Group (SEPG) charged with improving the systems engineering and software development process in use. The SEPG maintains, refines and improves a set of processes assessed at Software Engineering Institute (SEI) Capability Maturity Model Integration® (CMMI®)[1] Level 5 rating.

Dr. Heller has conceptualized, initiated and managed several ITS related IR&D projects that have affected the capabilities of the ATMS software SwRI has produced. Most recently, he conceptualized an effort to develop an interface to traffic signal systems based on NTCIP standards. In another recent effort, SwRI developers, under Dr. Heller's direction, developed concepts and prototype software for displaying video from field cameras on the desktop of an ATMS operator. This eventually led to the FDOT funded effort of Video on Desktop within the Statewide ATMS. Other IR&D projects led by Dr. Heller include investigation of methods for parameterizing the complex SunGuide Event Management GUI to produce a GUI that can be tailored through configuration values to support different event management paradigms. Another project assessed the accuracy of historical trending for use in travel time predictions.

Other work at SwRI includes serving as Technical Coordinator and Software Project Manager for the DoD Health Affairs Theater Medical Information Program (TMIP) the goal of which was to push medical information technology to the battle field medic, management of reliability motivated technology insertion program for the A-10A Low Altitude Safety and Targeting Enhancement System; support to SA-ALC/LD acquisition for the F-15 Downsized Tester; software development for an ambulatory blood pressure monitor; project manager for data reduction and analysis software for T/A-37, T-38 and F-5 aircraft maneuver Spectra; Independent Verification and Validation of the USAF Standard Memory Loader Verifier; and development of the Support Equipment Acquisition Management System. Dr. Heller has participated in several USAF Modular Automatic Test Equipment (MATE) projects which included software development effort for a MATE Test Module Adaptor (TMA); project management of MATE Operating System (MOS) re-host studies and efforts; consulting to ensure MIL-STD-1750A computer compliance; and participation in client proposal reviews for major MATE acquisitions.

While an assistant professor at the University of Tennessee at Knoxville, Dr. Heller taught graduate and undergraduate courses in computer hardware, software and networks.

PROFESSIONAL CHRONOLOGY: Southern Methodist University: 1975-80 (graduate assistant, 1975-80; visiting industrial professor, 1980); University of Tennessee at Knoxville: assistant professor of computer science, 1980-4; Southwest Research Institute: 1984-[senior research scientist, 1984-91; principal scientist, 1991-3; manager [acting], 1993-4; manager, 1994-6; principal scientist, 1996-2001; staff scientist, 2001-9; program director, 2009-present].

MEMBERSHIPS: Association of Computing Machines

June 2013.

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ADAM HOFFMAN
Research Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, Azusa Pacific University, 2010

Mr. Hoffman is an Analyst in the Sustainment Engineering Group within the Intelligent Systems Department (ISD) at Southwest Research Institute® (SwRI®). He currently works on the SunGuide® project, a Traffic Management System for the Florida Department of Transportation. He is responsible for making modifications to the software in order to address the end user's requests or to correct a software issue. He has experience with systems engineering, software development, technical support, software installation, database administration and system administration.

As an Analyst on the SunGuide project, Mr. Hoffman works to resolve support tickets, especially those involving Oracle Data Guard environments. He has updated SunGuide to support SQL Server and performs onsite software upgrades as needed. Additionally, he wrote a Traffic Sensor Subsystem simulator that replicates the data SunGuide® expects from real traffic sensors. He has experience modifying multiple subsystems within SunGuide®, including Automatic Vehicle Location, Data Archive, Event Management, Message Arbitration System, Reporting Subsystem, Road Ranger XML Driver, Road Weather Information System, Safety Barrier, Traffic Sensor Subsystem, and Video Wall.

As a Systems Engineer for Lockheed Martin at Brooke Army Medical Center, Mr. Hoffman created and deployed software packages enterprise wide, designed and implemented a number of custom applications to fill various hospital needs, helped create and maintain the hospital's standard image and provided tier 3 support for any desktop related issues. As a manager at Azusa Pacific University's Information and Media Technology department, Mr. Hoffman created an employee disciplinary and commendation record tracking website from the ground up. He also designed an interactive frequently asked questions page where students could post questions and rank currently posted questions.

Mr. Hoffman has skills in a variety of programming languages including, C++, C#, PHP, SQL, HTML, VB, and JavaScript. He also has experience with numerous operating systems including Windows 98/ME/XP/Vista/7, Windows Server 2008, OSX, DOS, and UNIX. In addition Mr. Hoffman has received training on Oracle Data Guard, Microsoft SQL Server Administration, has received his CompTIA A+, Microsoft MCTS and CompTIA Security+ Certifications.

PROFESSIONAL CHRONOLOGY: JT3/Unisys: intern, 2005; Azusa Pacific University: student technician 2006-[student systems manager, 2008-10]; Lockheed Martin: systems engineer, 2010-11; Southwest Research Institute: analyst, 2011-present.

June 2013

HECTOR IRUEGAS
Engineering Technologist
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Information Systems, Chapman University, 2005
A.S., Science, Vincennes University, 2003

Mr. Iruegas is a member of the Sustainment Engineering Group in the Intelligent Systems Department (ISD) at Southwest Research Institute® (SwRI®). He has been with the Institute for 8 years as an experienced information systems technician, system administrator, and network manager.

Mr. Iruegas is currently involved with the Florida Department of Transportation (FDOT) SunGuide®, Orlando Orange County Expressway Authority (OOCEA), Texas Department of Transportation (TxDOT) Development, Integration, Implementation, and Maintenance Services (DIIMS), and I-595 Reversible Lanes projects. As a member of the SunGuide OOCEA and I-595 Reversible Lanes projects, Mr. Iruegas provides 24/7 technical support and has been involved in software installations, deployments, testing, and configuration. Further, he provides clients with network infrastructure and Server clustering guidance. He also provides Operator and Administrator training to clients, as well as setting up and performing demonstrations to current and potential clients. In addition, he assists in the proposal process by preparing installation, hardware and labor cost budgets for current and potential clients. As a software installation technician for the TxDOT DIIMS program, he is responsible for subsystem installation, configuration, and testing. Further, he is responsible for setting up TxDOT system demonstrations for current and potential clients.

Mr. Iruegas configures and maintains all project-related resources for project software development environments. This includes installation and maintenance of the department's Storage Area Networks (SANs), which includes a ReadyNAS3200, Virtual Server Hosts, configuration of Microsoft clustered servers, and replication of FDOT SunGuide deployed software systems. He has experience installing Oracle products such as Database 10g/11g, Client 10g/11g, Fail Safe 3.3.4, and Data Guard in both Windows 2003 and 2008 environments integrated with Microsoft cluster servers, as well as creation, backup and restoration of databases for the FDOT SunGuide project. Additionally, he has experience with Internet Information Services 6.0 and 7.5 for configuring client's websites; in addition to Acronis imaging software to replicate, backup and restore servers with minimum downtime.

Mr. Iruegas' prior work experience within the Information Technology industry has included positions as an Information Network Manager, Defense Messaging System (DMS) Administrator, and Information Systems Technician. These roles mandated managerial and leadership skills as well as extensive technical troubleshooting knowledge. He was responsible for writing disaster recovery plans, test plan documentation, and training manuals as a member of the United States Navy.

PROFESSIONAL CHRONOLOGY: U.S. Navy: 1997-2005 [information systems technician, 1997-2001; defense messaging system administrator, 2001-4; information network manager, 2004-5]; Southwest Research Institute: 2005-[engineering technologist, 2005-present].

June 2013

JOSHUA S. JOHNSON
Manager
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, University of Missouri–Rolla, 1999

Mr. Johnson is Manager of the Transportation Systems Section within the Intelligent Systems Department (ISD). He has over 14 years of experience with software development and ITS systems. He serves as the project manager and technical lead for both the SH130 Independent Technical Review (ITR) project and the Lyndon Baines Johnson (LJB) / North Tarrant Expressway (NTE) Technical Oversight Services project that perform Independent Verification and Validation (IV&V) for the toll collection, network, and ITS systems that are a part of the SH130 toll road in Austin, Texas and LBJ/NTE managed lanes segments in Dallas, Texas. In addition, he manages two deployments of the Texas Department of Transportation (TxDOT) Lonestar™ATMS system for the cities of San Antonio and Grand Prairie. He previously served as the project manager and lead technical integrator for the Orlando-Orange County Expressway Authority Data Server project, which gathers, fuses and disseminates Intelligent Transportation Systems (ITS) data including toll tag reads to calculate travel times, Dynamic Message Sign (DMS) and incident data. This aggregated ITS data is accessed using a web interface and distributed in the Orlando region using center-to-center infrastructure. The Data Server system has been operational since 2005.

In addition, Mr. Johnson also has served as the project manager for several ITS system engineering and professional services projects. He managed an effort to develop a driver for a Jupiter Systems video wall controller for the Florida Department of Transportation (FDOT) SunGuide® Advanced Traffic Management System (ATMS). He is currently managing the development of a SunGuide interface to share Broward County event management data with the statewide Advanced Traveler Information System (ATIS). Mr. Johnson also managed a project for the OmniAir Consortium to verify the test implementation of the Electronic Payment Services National Interoperability Specification that allows for payments to be processed between dissimilar toll collection systems and transaction clearing houses. Additionally, Mr. Johnson oversaw the Westwood One Traffic Systems Analysis and Product Gap Analysis Project to evaluate off-the-shelf products against Westwood One's needs for a nationwide traffic reporting system to automate broadcasting and traveler information services. He has also managed several other ATMS installation projects and ITS communication and system integration efforts. He is pursing international deployments of ITS to improve transportation and traveler information for upcoming large international event venues.

Mr. Johnson previously served as the Software Systems Engineering Lead for the TransGuide Software Systems Development and Integration (SSDI) Contract for TxDOT. The purpose of the contract was to support the TransGuide Traffic Management Center in San Antonio. He previously served as project manager for the San Antonio Integrated Corridor Management (ICM) project with TransGuide. San Antonio was one of eight pioneer sites selected by the U.S. Department of Transportation to promote ITS in a multi-modal approach of utilizing expressways, arterials and transit to improve transportation mobility and reliability. Mr. Johnson has served as a task leader for several work orders on the TransGuide SSDI contract. Previous work order tasks include implementing distributed incident management among operations staff; integrating police incidents and pump station alarms into the TransGuide system; adding automated paging; and integrating ATMS control into a single map user interface. He was also the task leader for integration of the National Transportation Communications for ITS Protocol (NTCIP) compliant DMS into the TransGuide ATMS system. Additionally, at TransGuide he performed many system administration tasks including network, backup, database, Solaris and Windows administration. Mr. Johnson also supported the Georgia State Tollway Authority with a contract to maintain and improve the deployment of the AVI software used to determine travel times using toll tag technology.

Mr. Johnson's work has exposed him to project management, design, development and maintenance on multiple ATMS systems. He has gained experience with a variety of scripting, query and programming languages including Java, C, C#, C++, Visual C++, PERL, HTML, SQL, PHP, FORTRAN, Pascal and Basic. He also has experience using Solaris, VMS, Windows and DOS operating systems.

PROFESSIONAL CHRONOLOGY: Electronic Data Systems: programmer, 1998; Southwest Research Institute: 1999-[analyst, 1999-2001, research analyst, 2001-4, senior research analyst, 2004-5, group leader, 2005-7, section manager, 2007-present].

June 2013

STEPHAN J. LEMMER
Engineer
Intelligent Systems Department
Automation and Data Systems Division
B.S., Mechanical Engineering, Rose-Hulman Institute of Technology, 2012

Mr. Lemmer joined Southwest Research Institute® as an Engineer in the Cooperative Systems Section in the Intelligent Systems Department of the Automation and Data Systems Division.

Mr. Lemmer has worked to place sensor arrays on multiple vehicles to facilitate autonomous operation. These placements were done with consideration of multiple factors, including field of view, operator comfort, and system integrity. In addition to designing custom mounting systems, Mr. Lemmer has helped analyze the hardware of several commercial drive-by-wire vehicle systems. Mr. Lemmer's participation in this analysis also included an evaluation of software and electrical systems.

Mr. Lemmer has participated in multiple software projects. As part of a four-way-stop intersection behavior system, he devised and implemented an algorithm for identifying situations in which a decrease in vehicle speed is necessary. This algorithm used basic sensor data to detect areas in which the vehicle's view was obscured, and combined it with the vehicle's known speed, as well as known vehicle specifications and road knowledge. He also created a database system for collection and storage of autonomous vehicle diagnostics, which was designed to work on a variety of vehicle platforms, with minimal setup.

Mr. Lemmer performed undergraduate research in the Collaborative Mechatronics Lab at the University of Denver in 2011. He was involved in the design, manufacture, and improvement of multiple robots for urban search and rescue, and explored alternate modes of locomotion and power transmission individually and in small groups. He has extensive software and programming skills in C++, PHP, Python, Java, and MySQL, particularly through Eclipse IDE based environments. Before joining the institute, Mr. Lemmer worked for National Instruments in Austin, Texas where he designed and built electromechanical systems to circulate media from multiple channels at high speeds. He also integrated pneumatic system to perform rejection operations on target media

Mr. Lemmer's areas of expertise include the conception, design, and implementation of mechanical systems. His specific work includes sensor integration, vehicle intelligence, data collection, unique transmission systems for holonomic and all-terrain robotic locomotion, as well as systems for high-bandwidth media processing.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: 2012-[engineer, 2012-present].

June 2013

CAMERON MOTT
Research Analyst
Intelligent Systems Department
Automation and Data Systems Division
M.S., Computer Science, New Mexico State University, 2005
B.S., Computer Science, DePauw University, 2000

Mr. Mott's areas of expertise include reusable software architecture, communication interfaces, distributed communication, system design, integration, verification, analysis, and simulation with particular focus on off-road vehicle communication. His specific experiences include the development of engineering solutions with a focus on reusable interfaces and modular design.

Before joining the Institute, Mr. Mott served as a software and system engineer for John Deere. In this role, he contributed to a variety of projects in semi-autonomous and autonomous vehicle systems. Mr. Mott was responsible for managing intra-vehicle communication to enable high-level autonomy on a wide range of vehicle platforms. In this role, he provided platform-agnostic control capabilities to high-level autonomy software packages, with a focus on reusability and production-capable software. He also held project management responsibility, with a focus on developing intelligent vehicle solutions that could be brought to market.

Over the course of his career, Mr. Mott has developed machine-to-machine software packages that have enabled a variety of applications from distributed intelligent power-line modules to off-road autonomous vehicles. He has experience across the autonomous vehicle software development domain including requirement definition, intra- and inter-vehicle communication, low-level drive-by-wire protocols, high-level behavior execution, sensor perception, software architecture definition, user interfaces, verification and validation testing, field testing and project management. As a technical contributor to multiple robotic systems, he has a system-level understanding of the technology to enable autonomous vehicles.

PROFESSIONAL CHRONOLOGY: John Deere: 2005-2014 (software developer, 2005-8; software engineer, 2008-10; systems engineer, 2010-14); Southwest Research Institute: research analyst, 2014-present.

April 2014

MICHAEL M. NOOTBAAR
Analyst
Decision Support Technologies Section
Intelligent Systems Department
Automation & Data Systems Division
B.S., Computer Science, Texas A&M University, 2012

Mr. Nootbaar began his career at Southwest Research Institute® (SwRI®) as a Student Analyst in 2011. He is currently a member of the Decision Support Technologies Section in the Intelligent Systems Department and is a project team member on the Texas Department of Transportation (TxDOT) Development, Integration, Implementation, and Maintenance Services (DIIMS) project. He is responsible for maintaining several components within the DIIMS project, including troubleshooting and developing new features as needed.

As an Analyst at SwRI, Mr. Nootbaar is assigned to the Texas Department of Transportation the LoneStar project where he is engaged in a variety of endeavors surrounding the development of the LoneStar application, including developing enhancements, trouble-shooting and resolving software issues with the application. His tasks have included working with the Bing Maps API and AJAX services to update the public LoneStar website. He also worked with traffic management devices to improve communication between the hardware and software for the LoneStar "subsystems."

As a Student Analyst at SwRI, Mr. Nootbaar was assigned to the Department of Veterans Affairs (VA) Pharmacy Re-engineering (PRE) project where he designed and implemented the graphical user interface for the data migration module of the system. He also assisted in the redesign of the existing user interfaces for several of the other modules. Mr. Nootbaar also performed an internship for Best Buy at their corporate headquarters in Minneapolis, MN where he was responsible for testing and troubleshooting a new social intranet website for the company.

He is proficient in a variety of programming languages including Java, C, C++, C#, Scala, sed, AWK, Perl, SQL, XML, and shell scripts using several different operating systems, specifically Linux, Mac OS, and Microsoft Windows. He has developed graphical user interfaces on several endeavors using Java and C#. He is also proficient in basic artificial intelligence algorithms, information retrieval algorithms, graphical algorithms, and image processing.

Mr. Nootbaar has worked on a number of academic projects, including his senior design project where he designed and implemented a partial skeleton tracking algorithm for the Microsoft Kinect device in order to create a user-defined gesture mapping program.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute, 2011-[student analyst, 2011-11; analyst, 2012-present].

MEMBERSHIPS: National Society of Collegiate Scholars.

June 2013

DARIN PARISH
Research Analyst
Intelligent Systems Department
Automation and Data Systems Division
M.A., English, Texas State University, 1998
B.S., Computer Science, ParkUniversity, 2007
B.A., German, University of North Texas, 1990

Mr. Parish is a member of the Intelligent Vehicle Systems Section of the Intelligent Systems Department. He is currently involved with the Alaska Commercial Vehicle Information Exchange Window (CVIEW) Data Exchange (AKCDE) project, the Texas CVIEW (TxCVIEW) project, the Alaska Bridge Analysis project, the Border Safety Inspection Facility (BSIF) program under the TxDOTStatewide Development Integrator (SDI) program, and the Retrofit Safety Device (RSD) project.He is also involved with development and maintenance of the Southwest Research Institute® (SwRI®)Safety and Fitness Electronic Records (SAFER) Data Exchange (SSDX) component, and is familiar with National Intelligent Transportation Systems (ITS) and Commercial Vehicle Information Systems and Network (CVISN) architectures.

For the Alaska CVIEW Data Exchange (AKCDE) and TxCVIEW projects, Mr. Parish is handling the development, testing and deployment of these XML-based systems to enable the sharing and processing of data between local systemsand the National SAFER/Performance and Registration Information Systems Management (PRISM) system. The localsystems validate XML transactions and forward them to the SAFER system for further processing. Downloaded XML transactions are received from both SAFER and PRISM systems at least daily and are validated and inserted/updated into the systemdatabase as appropriate. Selected SAFER transaction files are then forwarded to the appropriate Roadside Operations Computer (ROC) site.Mr. Parish was instrumental in successfully accomplishing SAFER Certification Testing for TxCVIEW. He also developed a web interface for the TxCVIEW system which allows authenticated users varied role-based levels of access to the CVIEW database and displays query results in a user friendly format.

For the Alaska Bridge Analysis project, Mr. Parish developed a system for use by Bridge Design engineers which analyzes the forces generated on a bridge by a specific truck load configuration. A user interface allows for multiple configurations to be analyzed for comparison before being saved to the system. The system is modular in design allowing for integration with other components such as automated routing and permitting systems.

For the BSIF program, Mr. Parish is assisting with software system development, installation, integration and testing. He is developing a configurable BSIF engine which enables runtime parsing of XML containing site-specific data and is responsible for investigating the impact of enhancing the existing BSIF electronic screening system for CVISN compliance.

For the Retrofit Safety Device project, Mr. Parish is assisting with the development, testing, and deployment of commercial vehicle retrofit safety devices that support connected vehicle safety applications such as hard-braking alerts, curve speed warnings, and forward collision warnings. He also developed the driver vehicle interface for the devices utilizing an Android tablet.

Mr. Parish is proficient in C#, Java, SQL, and XML. He also has experience in a variety of programming languages including C and C++. He is proficient in various web technologies such as HTML, CSS, JavaScript, JSP, Java Servlets, Apache and Tomcat. He is skilled at using both Windows and Linux operating systems and is proficient with SQL Server databases.

PROFESSIONAL CHRONOLOGY: San Antonio Independent School District: teacher, 1992-2007; Valero Energy: intern, 2005; Southwest Research Institute: 2007-[analyst, 2007-9, research analyst, 2009-present].

June 2013

JOSE L. PEREZ
Research Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, Texas A&M University - Corpus Christi, 2008

Mr. Perez is a member of the Transportation Systems Section in the Intelligent Systems Department. He currently works as a software developer and system engineer on SunGuide®, a Traffic Management System for the Florida Department of Transportation. He is responsible for tracking and correcting issues with the software; whether it was an issue in configuration, database administration, or within the general software itself.

On the SunGuide project, Mr. Perez has held various roles such as Task Lead and Support Lead. As the Task Lead for the SQL Server Conversion on SunGuide 6.0, he is responsible for ensuring the team is meeting schedule and budget for implementing support for Microsoft SQL Server. As the Support Lead on SunGuide, he is responsible for assigning tickets to the appropriate staff on the project and ensures that tickets get resolved as quickly as possible. He has experience developing modifications and maintaining multiple subsystems within SunGuide including, but not limited to, Automatic Vehicle Location, Closed Circuit TV, Dynamic Message Sign, Data Archive, Event Management, Highway Advisory Radio, Reporting, Safety Barrier, Traffic Sensor Subsystem, and Video Switching

Aside from managing software issues post release and during installation, Mr. Perez has also added functionality to the SunGuide system. Recently this included updating various subsystems to support both Oracle and SQL Server databases and removing all Oracle PL/SQL from the database and implementing the same logic in C#. Previously this included developing a new subsystem and driver which take data from roadside equipment devices for use in Travel Time calculations, modifications to the Event Management subsystem allowing event congestion to cross county lines, adding a traveler information incident severity field to an event to allow the transmission of that field over Center-to-Center (C2C), and adding a publish flag to field equipment information that is managed in the system. He also aids in the administration and maintenance of the development environment for multiple software development platforms.

Mr. Perez was also part of an Internal Research (IR) effort to develop a Traffic Controller system (TCS) to manage traffic controllers through SunGuide. While on this IR, he was responsible for developing the user interface dialogs to interact and display the data from the TCS module. Mr. Perez was also part of a different IR effort to investigate different video streaming technologies. While on this IR, he was responsible for making changes to the Closed Circuit TV system in SunGuide to add a URL field for every Camera in the system to be used by the user interface to correctly retrieve the Video Stream over the network.

While attending Texas A&M University at Corpus Christi, Mr. Perez served as a Computer Science Grader/Tutor for three years. He was responsible for reviewing student code to assure students' ability to solve logical problems assigned by the professor and aided students in understanding fundamental computing science concepts and data structures. As a student, he participated in the creation of numerous custom applications including a business tracking system, numerous small applications, file submission websites, and inventory databases. He was also responsible for keeping constant communication between clients and other group members.

Mr. Perez has experience in a variety of programming and web development languages, including C/C++, Java, Visual Basic .Net, C#, Perl/Perl TK, Python, PHP, JavaScript and Lisp/Scheme. He is skilled at using Windows, UNIX and Linux operating systems and has experience with Oracle, SQL Server 2008/2012, Crystal Reports, MS Office 2003, MS Visual Studio .Net 2003/2005/2008, IntelliJ IDEA, JCreator, Adobe Dreamweaver, Dev C++, mySql and IDLE.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: analyst, 2008-2010; research analyst, 2010-present.

June 2013

DANIEL S. ROSSITER
Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, the University of Texas at San Antonio, 2013

Mr. Rossiter is currently an Analyst in the Transportation Systems Section in the Intelligent Systems Department. He is a graduate of the University of Texas at San Antonio with a Bachelor's Degree in Computer Science. Mr. Rossiter completed this degree with a concentration in Computer and Information Security, following the Highest Honors track, as provided by the Honors College. Through this track, Mr. Rossiter undertook an Honors Thesis which was designed and completed under the advising of Dr. Kay Robbins. This thesis project, entitled "Developing a Platform-Independent Smartphone Application to Support Volunteer Efforts," involved integration with and enhancement of a pre-existing REST API to support a native application on multiple smartphone platforms. The final product allowed users to complete all basic functions that were previously available on the organization website, as well as add additional features such as automated contact and event synchronization with the user's phone.

During his undergraduate career, Mr. Rossiter was employed as a Web Specialist at Startech Foundation, a non-profit 501(c)(3), which advised technology startups on how best to seek government and private startup capital. In his position, Mr. Rossiter served as the Foundation's primary point of contact regarding all technological concerns, which ranged from basic IT support to developing new and innovative technological tools. One such project was a web-based document repository which allowed users to perform advanced searches on all indexed documents relating to the Small Business Innovation Research/Small Business Technology Transfer Program. This tool integrated with the Google Document Viewer to not only embed the documents, but also parse and store key information about a document such as plaintext and author information. This project required significant work to determine the Viewer API which has not been publically documented.

In addition to his employment and academic history, Mr. Rossiter has a rich background in making conference presentations, both nationally and locally. Mr. Rossiter has spoken both in group and individual presentations and has focused primarily on social media as it relates to successful University-related marketing strategies, but has also done a number of leadership-related presentations. Hosting conferences have included the National Collegiate Honors Council Annual Conference and the Council For Advancement and Support of Education Affiliated Student Advancement Programs Network Convention, as well as The University of Texas at San Antonio's *Leadership NOW!*.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: 2013-[analyst 2013-present].

May 2013

ANSLEY J. SKILLERN
Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, the University of Texas at San Antonio, 2013

Mr. Skillern is currently an Analyst in the Transportation Systems Section in the Intelligent Systems Department. He is a graduate of the University of Texas at San Antonio (UTSA) with a Bachelor's Degree in Computer Science with concentrations in both Computer and Information Security and in Software Engineering. Mr. Skillern is pursuing a doctoral degree from UTSA beginning in the fall semester of 2013.

While completing his undergraduate degree at UTSA, Mr. Skillern worked as student intern at the Institute. He was tasked to assist in several projects for the System Engineering Process Group (SEPG). He assisted in the Division's transition from a Capability Maturity Model Integration (CMMI) v1.2 to CMMI v1.3 in order to maintain a CMMI level five assessment. Mr. Skillern led the migration of information from proprietary software, utilizing a Microsoft SQL database, to a friendlier and more intuitive spreadsheet format. The project involved retrieving, sorting, updating, and converting information from the database and placement of the necessary data into the spreadsheet template. Mr. Skillern also facilitated the automatic collection and analysis of internal metrics concerning the tracking of Engineering Change Requests (ECRs), process feedback forms, and waiver requests. A final project of note was the construction of an electronic form for Project Startup and Project Closeout procedures. This electronic form allowed a centralized location for project status tracking and future analysis of metrics concerning this information. Mr. Skillern is being assigned to work on the SunGuide® project for the Florida Department of Transport (FDOT).

During his time as a student at UTSA, Mr. Skillern worked as a developer and research assistant for a professor in the Computer Science department, assisting in the professor's research project on Parametric Optimizations and Empirical Tuning (POET). His primary function during this period included following an Agile programming model to deliver a web-based interface for POET, a programming language-independent code optimization scripting language. Mr. Skillern also worked as a tutor in the Computer Science program at UTSA and assisted other students in better understanding material from courses and debugging coding assignments.

Mr. Skillern has a varied background in different programming and development languages, including C/C++, Java, HTML/CSS, JavaScript, Perl, PHP, and SQL. He has experience using Microsoft Windows development environments and Unix/Linux development environments.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute: 2012-[student analyst 2012-13, analyst 2013-present].

May 2013

ROGER L. STRAIN
Principal Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, Louisiana Tech University, 1999

Mr. Strain is experienced in various computer science areas, with special interest in user interface and Internet technology. He is currently working on SunGuide®, a set of Advanced Traffic Management System (ATMS) processes for the Florida Department of Transportation (FDOT). For this project, he is the lead Graphical User Interface (GUI) developer, designing user interfaces that display detailed graphical information in Windows applications and web browsers. The platform integrates Windows Presentation Foundation technologies with HTML and JavaScript to provide an advanced user interface to Intelligent Transportation System (ITS) devices and systems. In addition to his user interface work, Mr. Strain has also assisted with the design, development and maintenance of back-room server processes that make up the SunGuide system, including taking concepts developed in the user interface and implementing them in server processes to allow uniform communication between processes which act like clients. He has also been actively supporting efforts to expand the use of SunGuide software to other states which may benefit from the technologies developed in the project, including Texas.

Mr. Strain also was the primary developer for an Android mobile application for use by Road Ranger highway assistance drivers in Florida. This application allows a Road Ranger to receive event dispatch notifications in the field and review live data from the Traffic Management Center (TMC) about their assigned events. Additionally, it allows users in the field to report additional event details and create events when a Road Ranger discovers conditions not known by the TMC at that point. The application was designed with the special restrictions of a mobile environment in mind, including ease of use in a distracting environment and frequent loss of communication.

Mr. Strain has also managed software and system maintenance activities at TransGuide, the Texas Department of Transportation (TxDOT) ATMS in San Antonio. Before assuming the role of project manager, he performed a redesign of the TransGuide website, which included the addition of navigational graphics and aids, implementation of new functionality to view the status of the TransGuide system, and addition of a simple form for user feedback. Also for TransGuide, he developed a system to compute and display current travel times on Dynamic Message Signs (DMSs) throughout San Antonio. In addition to the DMS interface, he developed a web-accessible page to allow motorists to get the current travel times before leaving home. As part of the TransGuide project, he helped transition the center away from using only custom software towards using the Texas statewide ITS software to further facilitate interoperability between TMCs in Texas.

Mr. Strain has managed other projects at Southwest Research Institute (SwRI), including a company-confidential effort in conjunction with another SwRI division, and an internal research effort investigating technologies for monitoring and repairing complex software systems. This effort involved allowing software processes to report current status values related to each process and to define controls that can be invoked on them. This data was combined with information about the processes gathered from the operating system, then displayed together to give users a comprehensive view of the current state of the software system. If errors occurred in the system, the controls provided by managed processes could be invoked to correct the problems.

Mr. Strain has experience in a variety of traditional programming languages, including C/C++/C#, Java, PHP and JavaScript, as well as strong knowledge of web technologies such as HTML, XML and SVG, and mobile operating systems such as Android and iOS. He has performed development work on many operating systems, including MS DOS, MS Windows, Solaris/SunOS and Linux.

PROFESSIONAL CHRONOLOGY: Southwest Research Institute, 1999-[analyst, 1999-2001; research analyst, 2001-5; senior research analyst, 2005-2011; principal analyst 2011-present].

May2013

PURSER STURGEON II
Senior Research Analyst
Intelligent Systems Department
Automation and Data Systems Division
B.S., Computer Science, Second Major in Mathematics, University of Texas of the Permian Basin, 2004

Mr. Sturgeon is a member of the Cooperative Systems Section within the Intelligent Systems (ISD) Department. He is currently contributing to a statewide integrator program for the Texas Department of Transportation. Within this program, he is the technical lead and developer for a project to automate and manage commercial vehicle safety screening in facilities along the Texas-Mexico border. The project includes systems to control traffic signals and dynamic message signs (DMS), read traffic sensors including Radio Frequency Identification (RFID) readers and Video Imaging Vehicle Detection System (VIVDS) detection units, and integrates with a vendor-supplied commercial vehicle weighing system. Mr. Sturgeon is also the primary developer for the subsystem that monitors, controls and automates the operations of the systems and management of vehicles at the border facilities. Also under this program, he has helped develop an Extensible Markup Language (XML) interface testing application that allows more automated verification of internal and vendor-supplied systems to ensure that their external interface correctly conforms to the desired format developed for the respective system.

He has also contributed to multiple projects related to the Federal Highway Administration's Connected Vehicle program. These projects include integrating real-time, dynamic vehicle probe data into an advanced traffic management system from both standard light-duty vehicles and heavy-duty commercial vehicles, and include development on platforms ranging from standard PCs to PDAs to Linux-based Dedicated Short Range Communications (DSRC) radios. He has also developed the software for On-Board Equipment (OBE) and Road-Side Equipment (RSE) to enable vehicle-to-vehicle communications for a wireless adaptive cruise control system. The project provided a portable system that allows vehicles to form dynamic platoons on roadways to improve the safety and efficiency of the vehicles.

Mr. Sturgeon also led the software development and testing for a variety of Connected Vehicle applications for commercial vehicles for the New York State Department of Transportation. These applications include vehicle probe data, traveler information messages, driver credential verification and wireless roadside inspection, emergency vehicle alert detection and notification, blind spot detection and notification, safe/unsafe-to-pass and safe/unsafe-to-merge support, and railroad grade crossing communication.

He is currently the technical lead for a project to develop commercial vehicle retrofit safety devices that support several Connected Vehicle applications, including hard-braking alert and notification, forward collision warning, and curve speed warning. Mr. Sturgeon also led the development of an IR&D proposal to develop algorithms that are able to generate near real-time, lane-level models of roadways from multiple vehicles' GPS data. This proposal was awarded, and work began in January, 2013, and early results have already attracted interest from a variety of current and potential clients.

Mr. Sturgeon is proficient in several languages including C#, C/C++, Java, HTML, CSS, and XML. He also has experience with SQL, ASP.NET, OpenGL, DirectX, JavaScript, and PHP.

PROFESSIONAL CHRONOLOGY: University of Texas of the Permian Basin: research lab assistant, 2002-4; Foundations Unlimited, Inc.: 2004; Southwest Research Institute: 2005-[analyst, 2005–7; research analyst, 2007-2011, senior research analyst, 2011-present].

June 2013