ITE member Gary F. Duncan, Econolite’s senior vice president and chief technology officer, recently retired on December 31, 2017. He joined Econolite in 1973, and during his tenure was responsible for the development of many of Econolite’s technologies and products, as well as helping establish many of the industry’s standards, including the communications standards for connected vehicles. Gary will remain in an executive advisory role for the company, and recently shared his experiences with ITE Journal.

ITE Journal: How did you begin your career in the transportation industry, with a focus on intelligent transportation systems (ITS)?
Gary Duncan: After graduating from the University of California Los Angeles (UCLA) School of Engineering, I started my engineering career in the aerospace industry in 1970. My initial job was to work on the electrical sub-system of the B-1 Bomber. I quickly realized that I wanted to have a more hands-on engineering role than what I could find in aerospace, and I ended up taking a position at Econolite in their application engineering group. This allowed me to learn how all the elements of a traffic control cabinet worked together and taught me the basics of intersection control. After that work, I had the opportunity to join a team at Econolite that was developing the first microprocessor based traffic controller. This eventually led to my developing one of the first software-based coordinators integrated with a traffic controller. This experience allowed me to gain a better working knowledge of all of the aspects of traffic controllers and how they safely and efficiently control traffic at an intersection. Over my many years at Econolite, I have been able to be involved in many aspects of ITS, including: intelligent controllers, sensors, preemption and priority control systems, communication systems, LED displays, and of late, connected vehicles.

ITE Journal: How have you seen the ITS industry change over your 40-year career?
Gary Duncan: When I first started at Econolite, the industry was still using simple electromechanical fixed time and analog based traffic controllers. Digital controllers were being introduced to the industry by Econolite a few years before I started my career in ITS. By the mid-70s the microprocessor was enabling a new generation of controller that allowed more advanced capabilities yet proved easier to use and was less costly. The ITS industry has been quick to take advantage of advances being made in both hardware and software technology. Over my career I have seen more and more advanced controllers (NEMA TS1, TS2, 170, 2070, ATC); the introduction of advanced vehicle sensors using both video and radar technologies; sophisticated yet affordable traffic management and communication systems; the advent of cost effective adaptive systems; and low cost and power efficient display technologies.

Some of the key milestones in the arterial ITS industry include: advanced controllers; closed loop systems—bringing the capability of large expensive ATMS solutions to small and medium agencies; vehicle detection systems like video and radar with advanced capabilities; improved hardware, fiber, and wireless communications; widespread use of adaptive systems; and improved data collection and monitoring of traffic networks.

The industry is on the verge of a major disruptive change with the coming of connected and automated vehicles. The ability to share data between vehicles and the infrastructure will allow for a new generation of controllers and traffic control applications that will provide more efficient and safe intersection control. In some regards, it’s sad for me to be stepping away from the ITS Industry just as these changes are about to happen.

ITE Journal: How did you first become involved as a member of ITE, and what has your experience been like?
Gary Duncan: My initial involvement with ITE was at the industry level; supporting ITE’s activities, conferences, and exhibits. I became more actively involved with ITE when the National Electrical Manufacturers Association (NEMA) TS2 standard was being developed, helping to inform the ITE membership of what the TS2 standard consisted of and how it could benefit ITE members. My involvement with ITE increased with the advent of the joint standards development efforts supported by ITE, the American Association of State Highway and Transportation Officials, and NEMA. The first of these jointly developed standards were the National Transportation Communications for Intelligent Transportation System Protocol (NTCIP) family of standards and the Advanced Transportation Controller (ATC) standards. I had the privilege of being involved from the beginning on both the NTCIP and ATC Joint Committees that helped guide the direction of the standards developed together with being involved with helping develop the standards at a working group level.
Over the past 5 to 10 years I have enjoyed supporting ITE’s efforts in the area of ITS by serving as co-chair of the ATC Controller Working Group, helping form and co-chair the ITE Connected and Automated Vehicle Task Force, and serving as the co-chair of the Standards Working Group of the Vehicle to Infrastructure (V2I) Deployment Coalition. These co-chair positions have allowed me to help move the industry forward, represent ITE members’ interests, and keep the ITE members informed of important industry developments.

ITEJ: What have you been most proud of during your career?
GD: It’s hard for me to personalize some of these accomplishments, as most of the changes that have occurred are due the efforts of many individuals, not just my own. In addition to helping develop and launch the NEMA TS2 standard and being involved in the early development and deployment of the NTCIP family of standards, some efforts that I have been a part of that stand out to me include assisting in developing the framework for the first Every Day Counts effort that made the industry aware of the advantages of adaptive systems and led to their eventual widespread use; and working with a number of universities across the United States to help guide research and advise students in the hopes of guiding them to pursue careers in the ITS industry.

ITEJ: What advice do you have for young professionals interested in getting more involved in the ITS and transportation industry standards?
GD: It’s an exciting time to be involved with the ITS industry. The pace at which new technology is being introduced to the industry to help address the problems that our transportation infrastructure is facing is happening far faster than what we have seen in the past. It will be important for the next generation of ITS industry professionals to understand how best to apply these new technologies. This will require them to keep up-to-date on the emerging technology capabilities. One way to do this is to take an active role in the industry; learn about the new technologies and how to best apply them; and share that information with others in the industry. We have all learned from others that have taken the lead in the past. Sharing what we have learned from the use of a new technology is a way to give back to the rest of the industry. Becoming involved by helping develop the standards that allow the widespread adoption of newer technologies is another way to get involved; help give back; help others in the industry; and learn from our peers during the standards development process. itej

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