

The award was named for Albert E. Sperry, who was internationally recognized for his contributions to the advancement and development of instrumentation as an innovator, business executive and ISA leader. Sperry served as the first ISA President in 1946 and was elected an Honorary Member of ISA in 1956.

"I was thrilled to get the award," said Pister, who has played a key role in the ISA SP100.11a wireless technology standards effort. TSMP has been donated to ISA and is a foundational building block for the ISA100 standard and also is the foundational building block for the WirelessHART protocol.

Mesh network 'paths'

In a TSMP, full-mesh network, each wireless node has routing capabilities—a significant advantage over networks with nodes that do not have the same functioning capabilities or rely on special-purpose routers, base stations, or aggregators. Dust Networks' chip in each node is about the size of a nickel, and the chip is packaged in products about as small as a deck of cards.

Traditional wireless has been point-to-point, which can be adversely affected by RF interference, paths blocked by physical changes, and loss of individual nodes. If the points are not within line-of-sight, a distance as short as 50 meters cannot be guaranteed with a point-to-point system. However, with a TSMP network having multiple sensors—each having routing capabilities—a node can turn to another "friend"

node to re-direct the data.

"There are literally dozens of choices of paths," the Dust Networks co-founder said. This ability to self-configure, in effect, gives TSMP networks "self-healing" capabilities.

Pister and others foresee applications almost too numerous to imagine—beyond typical wireless sensor network applications including industrial process automation, commercial building climate control, and security alarming.

In process industries, TSMP networks can move data from sensors gathering real-time information about the health of equipment; process data such as pressure, temperature, level, and flow; as well as environmental measurements.

Pister sees a big market opportunity measuring vibration in smaller motors. "If a manufacturer has a 100 horsepower (HP) motor, hooking up vibration sensors is routine. But one- or two-horsepower pumps traditionally don't get monitored for vibration because it's too expensive. For Dust Networks, condition-based measurements is a huge market because manufacturers want to know whether their equipment is healthy" before a breakdown occurs.

Another "big market opportunity," he said, are instruments in remote locations, too far away to be monitored via traditional wiring, and checked infrequently because of labor costs and distance issues.

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