**Explain the challenges of connectors**

**Challenges for connector suppliers**

Several challenges are influencing the designs of next generation connectors. In separate presentations at the Fleck Connection Congress in December and Embedded Tech Trends 2013, Fleck Research, Intersil, Bishop & Associates, and TE Connectivity discussed similar challenges to the connector industry (Table 2). All three agree that bandwidth is the single biggest concern for connector suppliers. Followed closely by demand for smaller and lighter connectors for increasingly mobile platforms. All of this while still cognizant of cost sensitivity.

Matthew McAlonis, development engineering manager at TE Connectivity, mentioned the connector needs for critical systems from the connector supplier perspective. He listed several needs that his design teams address during the development of connectors. Many of these needs directly address the challenges; for instance, optimizing the weight of connectors has a direct impact on the SWaP requirements faced by system architects (Figure 2). Though the gain may be small, it is very additive with the use of many connectors in a typical platform. A few grams here and there add up very quickly in a large system.

"The most important design concern for connectors in critical embedded computing is always electrical performance Рthis could be signal integrity in a high-data-rate connector or conductivity in a power connector," commented Greg Powers, market development manager at TE Connectivity. "The immediate secondary concern is mechanical performance in the environment, including shock, vibration, temperature, durability, etc. Connectors are truly electro-mechanical systems"

