

EPC and ISO 18000-6

Confused about differences between the Auto-ID Center's Electronic Product Code and ISO 18000-6? Chris Turner offers some clarifications.

March 3, 2003 - There is much confusion about the differences between ISO 18000-6 and the Auto-ID Center's Electronic Product Code (EPC). I've been involved in the development of the ISO 18000 family since its inception and am in a position to shed some light on the subject.

ISO 18000-6 is the result of close collaboration between a number of existing RFID manufacturers, those at EAN-UCC working on the proposed GTAG standard and other interested parties (a complete list can be found at the bottom of the page). The Final Committee Draft standard is based on existing proven technology and is certainly not a dumbed-down compromise. (Incidentally, it was begun almost two years after the other parts of the ISO 18000 series and it is now only a few months behind.)

Many people assume that the EPC system is, of necessity, built around a particular tag or air interface technology. This is, in fact, not true. There are several parts to the EPC:

- * The EPC coding structure
- * The Object Naming Service together with the Savant support network
- * The tag (physical implementation) and
- * The air interface

The ISO 18000 series of standards deals with only the air interface protocol and is not concerned with data content or the physical implementation of the tags and readers. ISO 18000 standards do not specify the data content or its structure. Tags made according to ISO 18000-6 are simply data carriers and are therefore able to carry EPCs and provide the functionality desired by Auto-ID Center.

Because of the nature of the ISO standards development process, the 18000 family has not been "marketed". The capabilities and versatility of 18000-6, therefore, have not been appreciated by many people, and they have misunderstood its capabilities. It has been said that 18000-6 is heavily burdened by legacy requirements which make the tags unnecessarily complex and the communication structure cumbersome, resulting in high priced tags and slow communication. Nothing could be further from the truth. In fact, the air interface is extremely flexible and permits a wide range of functions and features whilst ensuring full interoperability between tags of very minimal complexity and those carrying large amounts of user data.

For example, with the 18000-6 type A protocol, you could produce a very basic one-time programmable tag that has 96 bits of user data. A reader can read tags at a rate of more than 200 per second without the need to first take a census of tags present in the field. This tag meets the needs of EPC and GTAG code structures. To read this tag only 2 commands are necessary. On the other hand, the current standard also provides for fully re-writable tags of up to 2048 bits of user memory and further allows for extensions of memory size to 64 kilobits of re-writable user memory; all using the same air interface protocol.

Importantly, 18000-6 has been designed to operate anywhere in the world and meets the current and proposed regulatory requirements in Europe without compromising performance in any way. The duration of

transmissions by the readers using this air interface has been minimized, to reduce the so called "reader collision problem" in which readers interfere with each other when in close proximity. In short, versatility is built into the ISO air interface without adding any unnecessary overhead.

Intellectual Property is a minefield for anyone developing a new standard or specification. In the case of ISO, the sponsors and collaborators have declared their IP and according to ISO rules must make it available on a reasonable and equitable basis to anyone wishing to implement the standard. This is not the case for non-ISO developments.

Because 18000-6 is a collaborative effort between many of the industry's major players, there is a commitment to supplying products that are fully interoperable. Indeed five separate and competing companies provided material for the artefact demonstration to ISO.

I have to ask: Why does the EPC need its own interface when an industry standard will do the job as well and at the same time offer the additional benefits of proven robustness and mutual non-interfering with other systems? It's entirely possible for users to adopt the Auto-ID Center EPC code structure and Object Naming Service and use tags having an ISO air interface. The tag complexity for a simple ISO tag is no greater than that required for an EPC tag. Therefore, the cost could be the same.

I think that the best way to reconcile ISO 18000-6 and the EPC would be for the Auto-ID Center to drop its insistence on having its own air interface and use the international standard. That would not only clear up some of the confusion, it would create interoperability with GTAG and benefit end users, not just in the US but all around the world.

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