Recommendations on Adopting and Implementing Microchip Technology that Adheres to the ISO Standards

Microchipping - A Technology in Transition

Walt Ingwersen DVM, DVSc, DACVIM
Chair, Canadian Veterinary Medical Association Microchip Committee,
Co-Chair, World Small Animal Veterinary Association Microchip Committee,
Delegate to International Standards Organization (ISO) TC23/SC19/WG3

The global microchip marketplace has seen unprecedented growth and evolution over the last few years, yet North America remains relatively undeveloped, despite the widespread belief in the tremendous benefits that this technology has to offer. With leadership and user group solidarity in North America, we can be the catalyst for similar marketplace evolution and broader technology implementation. This article is intended to provide an overview of current global microchip marketplace dynamics and the status of standardization efforts including the benefits that have and will accrue to those that embrace it. It will culminate in a suggested blueprint for change that is intended to spur discussion and eventual implementation of an action plan that will allow all of us to realize the full potential that this technology has to offer.

Compatibility and the International Standards Organization (ISO)

The ISO is a global association, headquartered in Geneva, Switzerland, with its principal purpose to facilitate an international industry process of technology standardization. In 1991, ISO established a committee designated ISO/TC23/SC19/WG3 (WG3 for short) that was given the mandate to derive standardization of microchip technology for animals. This was necessary as the current manufacturers were producing product that was incompatible (i.e., the reader of one could not identify the microchip of another and vice versa) and, despite the technological feasibility of resolving this incompatibility, it persisted due to patent protection and legal undertakings between manufacturers. Due to the acrimonious attitude between manufacturers, a distinct form of microchipping (from what was currently on the market) was used as the basis for standardization and two standards were derived and implemented in 1996: ISO 11784 (which defines the microchip information content structure) and ISO 11785 (which defines the communication protocol between microchip and reader). To protect the installed base of microchip users, universal readers were designated as an interim measure to allow the identification of both existing and ISO-standard technology to ensure product compatibility during the transition period. SC19, the parent committee that oversees WG3, reaffirmed support for these standards in a meeting held on March 22, 2000 in Frankfurt, Germany. This has provided both users and manufacturers/distributors with the heightened confidence to implement ISO-standard technology on a broader scale.
Current Global Market Dynamics

The result of ISO standardization is that Europe and Asia are essentially ISO-standard microchipping systems. South America and the African continent are poorly developed and not a market priority for most manufacturers/distributors (except for agricultural animal applications); however, this is changing. The US, despite being a large potential market, remains very poorly developed due to the continued production and distribution of incompatible technologies despite the fact that current manufacturers/distributors in the US and Canada have the ability to implement ISO-standard technology systems into North America (the same manufacturers are producing and distributing ISO-standard product in various other global markets). The result has been US market fragmentation into geographic technological domains with market share protection through continued, threatened or actual, patent infringement legal undertakings. A direct consequence has been lost user confidence and, with no one to champion the technology, consumer apathy. In Canada, early user group efforts have avoided compatibility problems through user group support of an interim User-Based Standard that was based on a single communication protocol. This allowed for greater market confidence and broader technology implementation. Although paving the way for easier transition to an ISO-standard system (as there are no legal issues to contend with as within the US), a transition phase strategy is still critical for a smooth transition period.

Why Move to ISO, What is Wrong With the Current System?

A system based on mutually incompatible technology with manufacturer reluctance to provide a broadly available universal reader solution, fails in its goal of providing effective animal identification and recovery. It also results in geographic technological domains that are marketplace protected through incompatibility and therefore effectively restricts viable competition. Even in places such as Canada, where these issues have been resolved by an interim User-Based Standard, a multi-technology approach will significantly hinder future applications of this technology. The evolution of microchip technology is based on a single, open communication protocol (i.e., ISO standard) and will allow for significant improvements in microchip data storage capacity (i.e., owner identification and contact information as well as medical records, etc.) and unique applications such as the microchip as a physiological sensor (i.e., temperature, glucose, etc.).

The Rest of the World is Moving Towards ISO Standard-Based Technology, Why Not North America?

As mentioned earlier, the manufacturers/distributors have the ability to implement an ISO standard-based microchip system. The one major impediment to broader technology implementation is the transition from current to ISO-standard product. For this to be done without any breach in system integrity and user confidence, the reader base must be upgraded to read both current and ISO-standard technology. This must occur prior to the introduction of ISO microchips. This represents a significant capital
investment when the entire recovery network from coast to coast is taken into account. The reasons that this hasn't happened to date are multi-factorial but center on:
1. An honest concern by both the manufacturers/distributors, as well as users, that the current installed base of microchips be protected (i.e., backward compatibility). Is this a justified concern? Yes, as recovery network integrity is paramount to the protection of microchipped animals and user confidence. Is this an insurmountable obstacle? No, especially if one considers that a large proportion of the readers in place within the recovery network (especially the shelters) are software upgradable. In otherwords, they are capable of reading ISO-standard technology - they just need to be "turned on".
2. Current manufacturers/distributors have invested significant capital to develop the recovery network systems currently in place and are reluctant to open their geographic domains to competition that hasn't shared in the start-up costs.
3. User group division and apathy principally in the US. In the US, the user community has failed to be proactive and take a more definitive leadership role. This is in large part, due to lack of user group solidarity (i.e., mutually acceptable and cooperative input by the veterinary, shelter, humane, kennel club, and retail pet market groups). This has been the single most significant reason that global markets have been able to be so progressive in their evolution. Initial fear centered on legal repercussions should a single technology be supported. With the development of global standards, this is no longer relevant.

A Call To Action - Blueprint For Change

If we all agree on the utility of microchip technology, that ISO-standard technology is the direction that the marketplace is taking, and have a desire to see its broader implementation, what approach will allow us to achieve this goal? At first glance, the problem appears daunting yet, as mentioned earlier, it is not insurmountable. Although there are never any perfect solutions, we can learn from the experiences of our colleagues in more microchip-developed countries. These same issues faced Europe two to three years ago and were addressed in a relatively short period through a mutually agreed upon transition period schedule that had the following components:

1. Recognize that our collective voice as a profession, especially in concert with other user groups (i.e., shelter and humane community, kennel clubs, and the retail pet market) is powerful. Our profession has been divided, silent, and apathetic on this issue for far too long. Beginning locally, state/provincially, and nationally, user groups need to cooperate in establishing what they want from this technology, the technology that they want to employ, and how to implement it. This cooperative approach is not only necessary for marketplace evolution, but it is essential in ensuring an effective recovery program. Concentrate on upgrading the reader base first, before the actual introduction of ISO standard-based microchips. Ensure that current, or future, manufacturers/distributors commit to only providing readers that are ISO standard enabled (i.e., "turned on") and backward compatible (i.e., able to read the technology available in your region). In the US, the current position of some manufacturers/distributors in legally protecting and restricting their technology may mean
that this approach is impossible to achieve with a single reader. This is less than ideal yet one that the manufacturers/distributors can solve - provide your voice to encouraging this solution. Despite this, ensure that the readers you will be employing will identify the presence of a microchip, regardless of manufacturer; however, it may mean a second scan with a manufacturer-dedicated reader may be required for specific microchip number identification. This is fortunately not the case in Canada where there are no legal restrictions for current or future readers to be backward compatible to the current technology in place. The shelter and humane community should be the initial focus of our efforts as they are the focal point of the recovery network. If you currently have a reader, call the manufacturer/distributor and determine if it is software upgradable. If it is, schedule the upgrade to be done (this usually involves interfacing your reader with a computer that has the appropriate software). If your reader is not software upgradable, incorporate the purchase of an ISO-standard and backward compatible reader into your budget. The veterinary community should negotiate their reader conversion with their supplier; most will agree to a low cost reader conversion based on microchip volume.

2. When the reader base evolution to ISO-standard compatibility is achieved (i.e., suggest 80% penetration in individual shelter/humane recovery regions), purchase and implementation of ISO-standard microchips can proceed and should be based on the following product awareness:

- All manufacturers of ISO standard-based technology have been provided with a manufacturer's code. This is a three-digit code that is usually displayed prior to the specific pet identification number. These have been allocated by the International Committee on Animal Recording (ICAR) in cooperation with ISO (full listing of allocated manufacturer codes). Ensure that:
  * The manufacturer's code is identified by the reader each time that the animal ID number is displayed. This will allow you to identify the manufacturer (especially if the microchip is coming through a distributor) as well as ensuring that the microchip is truly ISO-standard technology.
  * That the manufacturer's code corresponds with the stated product manufacturer.
  * Refuse any microchip showing a 999-manufacturer code. 999 is a default code used only for microchips undergoing testing. It prevents the identification of the manufacturer and is not intended to be used for microchips destined for the animal marketplace.
  * That the distributor commits to making the user groups aware of any changes to the product that they carry and the manufacturer's code that it bears.
  * That the manufacturer/distributor guarantees traceback capability. This means that should the animal/owner ID not be on an established database (for whatever reason), that the manufacturer/distributor can trace the ID number from manufacturer to point of sale. By identifying where the microchip was implanted, this becomes an alternate contact to identify the animal owner and improve the chance of the animal being returned to its owner.
3. Remember that a microchip recovery system is based on three integral components; the microchip, the reader, and the database. For the recovery network to work, all three components must be functioning - a failure in one has a dramatic impact on the system as a whole. Ensure that the database that supports the system you are purchasing, has a program of easy database registration, information updates, and database access in place. Ideally, the sale of a microchip should be bundled with database registration to improve on owner compliance of database registration.

4. Provide a safety net through the use of external (i.e., collar) identification. No system is foolproof and chances of pet identification and recovery will be improved by the use of as many forms of animal identification as possible.

**Finally - a commitment:** that the American Animal Hospital Association will be available as a resource to answer any questions that you may have pertaining to microchipping and its implementation as well as to keep AAHA’s members apprised of developments, especially in reader recovery network conversion, as they occur.