



GETTING STARTED WITH AIDC

The following eight-step approach may be helpful in getting started with AIDC.

Step 1: *Gain an appreciation of the basic principles and technologies of AIDC.*

Step 2: *Gain an appreciation of the scope and opportunities for applying AIDC*

Step 3: *Identify, through process assessment, opportunities within your company.*

Step 4: *Identify needs for open systems development and numbering, including attention to EAN.UCC numbering system and support standards for data carriers.*

Step 5: *Identify relevant standards that are necessary or can assist in defining effective solutions.*

Step 6: *Develop or acquire expertise within your company to prioritise opportunities and determine feasibility and economic justification for using AIDC.*

Step 7: *Select suppliers.*

Step 8: *Develop or acquire expertise to apply and use AIDC systems.*

Step 1: Gain an appreciation of the basic principles and technologies of AIDC.

The principles of AIDC are, in essence, quite simple - to acquire data for use in computer based processing, in ways that are automatic, accurate, fast and flexible and involve a degree of identification, be it of items, data or people. The foundations on which these principles are based are soundly rooted in information, coding and pattern recognition theory, but may be transparent to the potential user when seeking to gain a practical business perspective on the applicability and benefits to be gained from AIDC.

Where data encoding is being considered a variety of needs have to be specified as a basis for selecting appropriate technology. Such needs include:

- The type of data to be encoded - numeric, alphanumeric, ASCII, graphic, code-book etc.
- The quantity of data to be encoded, usually expressed in bytes, including indications of license plate or portable data file usage.
- The density of data, if required to be incorporated into an area of a component, product label, packaging etc.

- The structure of the data - fields of data required, numbering requirements and, as appropriate data and application identifiers.
- Numbering requirements for open and closed proposed applications.
- The needs for read-only or read/write capability.
- Longevity of data requirements and environment to be encountered by encoded data.
- Security and data integrity requirements.
- Necessary and useful standards, including numbering and coding standards.
- Reading requirements, including distance, speed and integrity.
- Cost constraints.

These needs will assist in selecting appropriate technology.

Where considerations focus upon applications wishing to obviate the use of encoded data the specification of needs relate to extracting features from a captured image or signal, with delivery in computer usable form to an information management system that can then be interpreted for identification and decision support purposes. The needs are largely defined by the source from which data is to be acquired and broadly divides into object, event or property sub-groups, which also categorises the feature extraction technologies. Technology determining needs will include:

- Source of features to be accommodated - object, individual, event or property.
- Nature and complexity of features to be obtained.
- The speed and integrity of features to be extracted.
- The manifest form of data to be achieved - presence or absence of an object, defects detection, verbal to computer usable data, human readable to computer usable data.
- Environment and time demands of data collection process.

Step 2 - Gain an appreciation of the scope and opportunities for applying AIDC.

The scope for applying AIDC is considerable with opportunities arising in virtually every sector of industry, commerce and services in which data is gathered for use in computer-based systems. Typically these areas of application include:

- Personal identification, security and access control
- Safety and personnel tracking
- Time and attendance
- Document tracking and control
- Financial services support
- Goods receiving management
- Inventory control, pick and place support and warehouse management
- Manufacturing work in progress, shop floor data collection and quality assurance
- Asset tracking, equipment, components and tool management
- Condition monitoring support
- Identification, distribution and security of traded goods

- Retail product management
- Continuous process manufacturing
- Library systems
- Hotel, Leisure and entertainment management

The list is not exhaustive and many innovative opportunities arise for applying AIDC in novel ways.

Step 3 - Identify, through process assessment, opportunities within your company.

Identifying opportunities within your own company requires consideration of existing and planned processes with a view to seeing how improvements can be achieved or radical changes introduced to exploit the benefits offered by AIDC. These actions require a profound knowledge of processes, their control and the ability to determine the implications of making a change through the introduction of new technology. There is also a requirement to assess the savings and improvements that can be achieved through applying new technology. In short it requires incisive ability to determine the feasibility and justification, both technically and economically, for exploiting new technology. Exploitation may also reside in new product development.

Step 4 - Identify needs for open systems development and numbering, including attention to EAN.UCC numbering system and support standards for data carriers.

Where needs and opportunities are identified for open systems applications it is likely to require consideration of numbering systems for the purposes of item identification. Some closed applications may also require similar consideration. In these situations it is important to consider the legally protected, standard approach to numbering. The international system of numbering enables any company, actively registered with EAN.UCC, to identify its products, services or locations with unique 13-digit numbers, that can be incorporated into data carriers such as bar codes, and read throughout the supply chain adopting the scheme. Bar codes, supported by EAN.UCC standards, have been used extensively in establishing supply chain strategies that cover consumer, traded units and shipment data needs, with benefits to manufacturers, distributors, wholesalers and retailers.

Step 5 - Identify relevant standards that are necessary or can assist in defining effective solutions.

In pursuing applications for AIDC it is important to establish whether standards exist that are relevant to the application and/or the technologies being considered. Where, for example, the EAN.UCC international numbering system is to be used with bar code carriers it would be sensible to use the EAN/UCC bar code standards, with the attendant advantages that they offer in respect of data and application identifiers. Where other data carriers are being considered, numbering systems may be readily applied, but the need exists to identify support standards for the carriers, such as AIM Symbology Specifications.

It should also be borne in mind that electronic data interchange (EDI) standards, such as EDIFACT may also have relevance to the application being considered and the role that AIDC has to play.

Step 6 - Develop or acquire expertise within your company to prioritize opportunities and determine feasibility and economic justification for using AIDC.

Despite the radical nature of AIDC and the expectation of fast return on investment it is imperative that judgments to invest are based upon sound technological and economic justifications. This stage requires a profound understanding of the process requirements and technology, together with sound proposals covering all aspects of systems application, including interface requirements, software, materials and ownership requirements, education and training needs, and maintenance commitments. Costs need to be considered against expected savings and benefits, where necessary expressed against discounted cash flows. Technological justification should consider the influence that change will have upon other system processes to which the improved or new process links and the operational issues, human and otherwise, that invariably arise when new technology is introduced.

Step 7 - Select Suppliers

In selecting AIDC suppliers or support services it is important to establish their capability to handle your requirements. A series of questions directed at a number of suppliers may help establish suitability. These questions may be structured to determine experience in handling particular technologies, systems solutions, software development (custom and modification), host connections and integration (PC-LAN, WIN NT, AS/400, UNIX, for example). You may also wish to know their experience of handling applications in your sector of industry, commerce or services and knowledge of your business. [Click here to go to the Solution Provider Evaluation Guide.](#)

Equipment may be obtained from a variety of suppliers and it is appropriate to determine and compare prices, performance and after-sale services appropriate to your needs. The Buyer's Guide can help you to locate manufacturers, suppliers, systems integrators and consultants specializing in AIDC.

Step 8 - Develop or acquire expertise to apply and use AIDC systems.

Applying AIDC effectively requires attention to the needs of implementation and use. While the expectation of trouble free operation may be realistic there are needs for ensuring effective integration into existing systems, quality assurance and maintenance. This requires appropriate understanding of systems, the assurance that those who implementing the system are able to do so effectively and that users have sufficient training to use and maintain the technology that is introduced. Pilot initiatives may help in gaining confidence in the use of AIDC. Within the confines of this short set of guidelines it is clearly impossible to provide comprehensive coverage of the important issues that demand attention in seeking to realize an effective bar code system, or indeed any AIDC facility. At best it is only possible to present a thought-provoking framework - to be pursued and built upon. The various support initiatives and organizations involved in AIDC can help in developing this expertise and exploitation of this important sector of IT. Welcome to this first step towards gaining the benefits of AIDC.

Depending upon familiarity and experience of AIDC, various sources of support and advice are available to assist newcomers in getting started, including training on applying and using AIDC technologies.