.aero
the domain of aviation

.aero

Innovative Internet-based services built on aviation naming and coding structures

An online world needs the right connections

Reservations, ticketing, itinerary/passenger tracking and baggage processing are increasingly online. But to be fully effective, these systems must deal with each other on an interline basis.

With increased sophistication of online technologies, the air transport community is accelerating its move to Internet-based applications. In this environment, the long-established two- and three-character airline and airport designator codes have been given new life as a means of communicating or accessing information – thanks to the development of the .aero top level Internet domain.

Sustaining a well-used convention

The .aero domain complements and builds on legacy air transport communications, particularly in the use of designator codes. With the help and guidance of the advisory Dot Aero Council (DAC), .aero is now helping the community build a naming structure and set of communication standards and technologies. These will introduce wide-ranging opportunities to enhance and simplify communications with customers and business partners.

Management of .aero – as well as all present and future resources – is under the control of the community, rather than of one organization. Through .aero, air transport has an alternative to the original public domain structure, which is a mass-market solution that can be inflexible, inconsistent and insecure.

The magic of the domain name system

Industry professionals know how to send a message to a baggage desk at a given location and airline. Through .aero, we want to achieve the same, but via the Internet.

The domain name system (DNS), a core part of the technology that underpins the Internet and that lies behind .aero, is an important part of the solution. And evolution of the DNS has important practical implications.

For example, one domain name (say gva.bag.lh.aero) can serve as a single unique identifier for different services/access methods. The holders of the domain can configure relevant information – how can people reach me people via VoIP, what is the e-mail address I use right now, the location of the name server, the URI for Web service or the public key required for sending an encrypted message. Armed with the DNS, there is no need to inform partners about changes in individual addresses (for example a new supplier) – they are automatically distributed by the DNS.

This is important: using domain names rather than IP addresses to locate services provides greater flexibility when switching suppliers of communication services (no need to reset the connections with others, just change the domain name records) and may eventually allow creation of dynamic virtual private networks (VPNs). A well-structured names space allows users and systems to locate other systems and services without even the small delay of using a search directory.

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Big or small – the advantages are the same

Using structured names in DNS offers a double benefit for any size of airline, airport or air transport entity. Typically, domain names can be setup simply and quickly at a highly affordable cost. Moreover, while you can use a sophisticated application to manage a sophisticated structure, you can also manage a node in DNS via an open source application and edit your data in a text file. So every node in DNS can determine the level of complexity for publishing its own entry in the DNS system.

How the pieces of the jigsaw fit together

There are a number of business applications that can benefit from DNS technology-driven structured domain names. For example:

- **VoIP** Domain name holders can configure a VoIP address associated with a given predictable name so that callers can use their VoIP application to place a call. For example gva.dcs.lh.aero zone could contain a VoIP address for Lufthansa's departure control at Geneva Airport.
- **Service identifiers** One domain name can identify an array of services, since multiple records of different types can be associated with one domain name. For example, gva.bag.lh.aero could be used by different systems to locate a phone number, fax number, e-mail address or web service URI relating to baggage processing at Geneva Airport.
- **E-ticketing** An e-ticketing application assumes that each airline has a database of all tickets and that each airline using the ticket at different stages updates the source database (held at large airlines or interconnected hubs). Application of a standard naming convention to access these applications can allow more airlines to use independent solution and change them as needed, while retaining the same "name" used by other systems.
- **Baggage management** DNS applications already "parse" RFID values to locate a system that supports data provided by the manufacturer. Baggage management systems can follow the same method of data processing as interline e-ticketing – storing data relating to a bag in the database of the originating airline. In this scenario, the industry application can parse bag identifiers (RFIDs or barcodes) to locate the database of the originating airline. The same logic can apply to any other identifiers.

Visionaries foresee a time when every kind of "identity" – whether an airline, airport, a RFID tag or phone number – will eventually converge into Domain Names. In .aero, the air transport industry already owns the development platform from which this can be achieved.

Use of the legacy two-and three-character codes, understood by insiders and passengers alike, have been reserved for the exclusive use of the relevant airports and airlines within the .aero domain resulting in an internet address that is predictable, flexible and designed to simplify communications.

Security is inherent in the structure

The Internet is no worse than a private network when it comes to reliability and security. But it does require users to employ a different approach.

On the Internet, the user must take responsibility for end-to-end authentication of messages and ensure that only certified messages pass through to the application. Cryptography based on public/private keys is the only 100 percent reliable technique, assuming the secret keys are properly managed.

The .aero domain is under the direct and permanent control of the air transport community. So it has the potential to deliver a degree of domain security and stability for airports and airlines that satisfies highly specific needs of the air transport community.

In the near future, the DNS can be used to distribute public keys between airline application systems, removing a complex and time-consuming exercise. Details were presented in a report by .aero to IATA's Information Management Council (IMC) in November 2004. A copy can be requested from aero.enquiries@sita.aero.

The .aero journey has only just begun

The future of the .aero domain will be even more exciting. Imagine what could be:

- Passengers completing transactions from any Web-enabled device related to a specific flight and date, including flight alteration and payment
- Passengers accessing and paying for services such as airport parking and duty free or indeed calling the airport via VoIP – simply by knowing the three-letter airport identifier and .aero suffix
- Airlines, airlines and airports administering issues such as lost luggage through use of predictable domain names
- Aircraft themselves becoming a network: an engine could have its own Internet address and communicate remotely with ground maintenance

The .aero domain started with simple coding and predictability for "normal" users. For example, try any airline code with the addition of the postfix .aero – and if the airline or airport uses the code, you will be directed to their site. If they are not yet using the code, you will be directed to a SITA website indicating the identity of the code user.

However, we are now developing innovative and advanced open standards-based Internet services using the .aero structure – with the objective of helping the industry reduce costs and enhance operational effectiveness.

This includes working with members of the community to develop DNS-based naming structures that acknowledge the wider context of industry communications standards and protocols – as well as the deployment of new technologies such as XML.

This is being done to develop a framework for intra-industry communications in the IP-enabled world, rather than as a push for greater use of DNS technology.

The logic of a community roadmap

"The intent behind .aero is to facilitate the community's transition from a single centralized network to a complete Internet environment – by developing a predictable naming structure through which industry systems can communicate with each other." **Marie Zitkova, .aero Business Manager**

For example, while most airlines have moved to an IP network environment, some still rely on legacy networks. From a community perspective, development or standardization of messaging formats, naming schemes or communication mechanisms taking advantage of the Internet should also provide for transition from and translation to legacy messaging.

At the same time, this level of future planning should avoid the expensive "two transitions" trap of simply migrating old formats and ways of doing things to the new environment, only to be faced with a later redesign to take advantage of the other special properties and strengths of the Internet.

This approach to deployment of the new technology and its related standards will help to close the technology gap that exists in some areas between small and big airlines and airports – to the benefit of all members of the community.

Get involved

The .aero domain is a community initiative – and as such depends on the talent and skills of its members. We need to bring together interested users to explore and develop .aero further, to shape the domain according to the community's needs.

If you would like to contribute to the future of the air transport community's own domain, this is your opportunity: send an e-mail to aero.enquiries@sita.aero or go to www.information.aero and press the "Contact us" button.

Find out more

For more information on future developments within .aero or to register your domain name visit www.information.aero.

The White Paper "Simplifying Internet communications for the air transport community", is available at www.information.aero/futuredirections.php.

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Community initiative

The .aero infrastructure and conventions have been developed and are monitored in co-operation with the Dot Aero Council (DAC). This advisory body includes representatives from ACI (Airports Council International), CANSO (Civil Air Navigation Services Organisation), FAGSA (Federation of Airline General Sales Agents), FAI (Fédération Aéronautique Internationale), IATA, ICAO and NBAA (National Business Aviation Association).

SITA, as sponsor and operator of the domain, promotes development of new services on a not-for-profit basis.

Individual airlines, airports and other members of the air transport sector are encouraged to contribute, support and develop the work of the DAC in shaping the domain according to community needs.

About SITA

SITA is the world's leading provider of integrated information and telecommunication solutions to the air transport industry. With more than 50 years' experience, SITA now has around 740 members and 1,800 customers – including airlines, airports, travel distribution and computer reservation systems, governmental organizations, aerospace and air-freight companies.