



DDS G-Cloud Suite for Government Directory of Business

Giving Government Departments a single point of access to their corporate information directories



Company Profile

Daemon Directory Services Ltd. (DDS) is an application service provider supplying cloud services to the UK Government community.

DDS specialises in secure collaboration applications that can be used across multiple government agencies.

The services include federated user identity management, departmental directories and multi-agency versions of collaboration software such as SharePoint and MS Dynamics CRM.

DDS products have been used in Government for more than 15 years, in which time most of the central Government agencies have used one of more of DDS' products or services.

DDS was a founder partner of the Savvis hosted pan-Government Government Wide Service network (GWS) and can supply SaaS services to all government agencies through the GWS (a Crown-wide framework contract).

The service is available either as a complete, ready-to-operate G-Cloud SaaS service or as an application package for operation from a customer's own environment.

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Executive Overview for UK Government

This paper introduces the Daemon Directory Services Ltd (DDS) Directory of Business (DOB); a computer system developed to meet the Government's need for a secure database of personal and organisational information that is easily searchable and quick to update. The DDS DOB is already in use in a number of large government organisations including the DWP and the Home Office.

The system allows an organisation to maintain its details through a combination of user self-service, designated team administrator updates and synchronised data imports. These update mechanisms combine to provide a comprehensive white and yellow pages directory service, that's been security accredited to operate at Government IL3 (RESTRICTED) level. The application can be installed to run from local customer servers, or is available to Government customers on a Software-as-a-Service (SaaS) basis through the GWS Crown Framework contract.

Any organisation is only as strong as the people within it and in order to understand it's strengths it is vital for its staff to be able to see how the organisation is structured and how they contribute to its overall running and success.

Almost every organisation will contain some form of 'people directory', like the Outlook Address List, that will allow staff to search for a colleagues name and contact details. However, these people directories don't include any organisational data and, as such, have serious limitations in enabling staff to find and contact the staff or resources they need in the course of their work.

For example, they may be able to answer the question:

- What is John Smith's telephone number?

But not the following:

- What is John in HR's telephone number?
- Now John is on leave, who else does he work with that I can contact?
- Who should I contact for advice about HR issues?
- Where is John in HR based and how do I get there?

Without an organisational directory, the answers to these questions are often only found through contact with colleagues resulting in a significant amount of time and productivity being lost across a group of staff.

A central people and organisational directory containing both staff details and team hierarchy, job title, building details and team structure would be able to answer these questions quickly and efficiently without causing unnecessary disruption to the staff member seeking the information and the others who end up involved in the search.

This is increasingly important at a time when the Civil Service is undergoing a significant period of change, linked to the Coalition Government's Spending Review, and staff are moving within the organisation and across government, to new roles on an unprecedented scale.

The DDS DOB is a database that holds the information necessary to make this a reality.

How this system works, and how it can be used to provide greater knowledge and productivity across an organisation is explained in the following pages of this document.

DDS Government Directory Suite

The DDS Directory of Business is part of a Organisational Directory suite of products that can be combined to provide a full directory service with SaaS product support creating authentication, integration, provisioning and procurement workflow processes that allow organisation to accurately use and manage Cloud applications.

Figure 1 (opposite) illustrates the structure of the DDS Organisational Directory Suite, with the **Directory of Business Component** being the core component of the system.

Core Component - Directory of Business

The Directory of Business core component provides the functional core for the suite, powering the different portals for managing the organisation directory information shown in Figure 1.

Information in each of the directory modules is combined and made searchable through the core directory functions. This enables the organisation to have an integrated view of the information it holds over different business areas across their own and partner organisations, letting users get consolidated answers to questions about people, jobs, roles, functions, offices, skills, application usage and application from a single point.

Security and user management function are also integral to the system and are embedded into the core building blocks for searching, storing and updating the data, This gives a system which is capable of passing the highest standards of security accreditation as needed by the Government.

The functionality of the additional system components shown in Figure 1 is as follows:

1. The Skills Directory Component

This adds enriched staff information to the Staff Directory creating a pool of knowledge on the organisations' corporate skills. The information covers each individuals' professional skills, experience, interests, qualifications and projects involved with.

2. The Application Provisioning Component

This provides a way for staff to browse a catalogue of Software-as-a-Service (SaaS) applications packages made available to them, allowing them to request access, open new sites, etc. All subsequent access is monitored so that usage can be metered and billed if required.

3. The SharePoint Integration Component

This gives users the ability to see the organisation's SharePoint team sites listed on directory. It shows the descriptive information and user members of the sites, and uses the Application Provisioning system inbuilt workflow facilities to

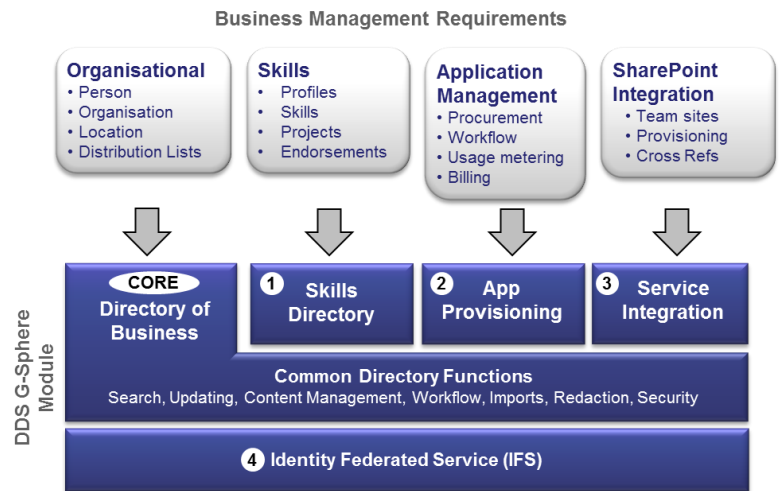


Figure 1 - DDS Organisational Directory Suite

allow users to request membership of the sites and/or request new sites. This facility works with any collaboration tool the organisation registers

4. The Federated Identity Component

This is a key part of the directory system, allowing users from partner networks to get seamless single sign on from their indigenous network to the directory, or any of the applications managed by the Application Provisioning system. Joining the identity federation partnership is straightforward and does not require major changes to the indigenous network.

Benefits

The benefit of having such a Directory of Business is the time users save being able to find answers about people, roles, functions and locations.

The DOB saves time answering such questions, for example, imagine a 10,000 user organisation where an average of 1 user in 10 has a question about the organisation once a day. If that involves 3 minutes of their time asking a colleague, and a similar amount of the time colleagues time responding; that's 1,000 * 3 * 2 minutes per day lost – or 100 hours a day. That's a modest estimate of the time that could be saved by having a good directory information source available.

The principle benefits of the DDS DOB can therefore be summed up as improved:

- Efficiency – saving wasted time searching for information or interrupting others
- Effectiveness – improving the staff's knowledge and understanding of the organisation they work in
- Economy – saving money by having a searchable directory that is automatically synchronised

DDS Government Directory of Business – Major Functions

The usefulness of the Government Directory of Business is only as good as the information it holds and the ease with which this information can be extracted. Therefore the system has to be easy to search and easy to update. The developers have built on their years of experience working with the public sector and have built into the system, tools and techniques that help both searching and updating. The most important of these functions are explained below.

Ease of Use

The system is accessible from any user's standard desktop web browser, and self-adapts to different browser capabilities, thus exploiting the latest browser technology whilst still working with early browsers back to IE6. The system is fast – with sub second responses to searches, due to the clever design of the system and extensive use of caching technology.

The system single sign-on-system recognises user identities automatically given them personalised access with a predefined role with permission levels defined on their account (e.g.: for team author, group manager or general user). After login users are routed to a personalised homepage from where there can quickly view any areas of the directory they may be responsible for. Amendments made to the content become immediately visible to the rest of the organisation once published

The service is accredited to be operated from a GSi visible platform, (i.e.: via the GWS Directory service), from where directory information is visible to users from any GSi connected organisation (albeit in a redacted form – see section on Redaction later for further information).

Searching

Searches are based on simple, Google-like logic that most users will already be familiar with. Experience shows users do not need training to use the Directory and quickly find it indispensable.

The DDS DOB combines 'white and yellow pages' information and allows users to search for staff and organisational information. This creates a richer data set which users can access to find information about individuals, groups of staff, teams, buildings and roles.

Most users will only need use simple searches but the Directory also provides menu facilities for users who need advanced searching capabilities. These include multi-field and Boolean (..and..or...not..type) searches, with an optional, in-built lookup of 'thesaurus' alias terms to ensure expansions of acronyms or equivalent terms aren't missed. Search output can be viewed as lists, team-views, org charts, or downloaded to spread-sheets, email distribution lists, label documents or the clipboard,. for access via the users' standard desktop.

Organisational Trees

Organisations are hierarchical – staff work in small teams, small teams are part of larger teams or directorates and so on up through the organisation. The DOB database echoes the organisational structures of the organisation, expressing these relationships as a 'directory tree' of teams, people and offices.

The directory tree can be browsed and 'drilled down' and the entire content can be searched using 'free text' keyword searches to identify content. These directory trees help to provide a visual representation of the organisation that staff can use to place the content they have searched for in context, to provide a better understanding of the organisation as a whole and how different areas interact.

Distribution Lists

Unlike the group option in address lists like Outlook, which rely on a single administrator knowing and maintaining the group to keep it accurate, the Distribution List on the DDS DOB allows staff to access a dynamically generated list including any updates made, either by staff using self-service or appointed authors updating team pages, to ensure a list that is as up to date as possible. Staff can save a search criteria as a distribution list and then run the search whenever they need the information to ensure that it is constantly based on the latest data.

Keeping the Data 'Fresh'

To maintain the accuracy of the directory it must be easy to keep the data fresh and up-to-date. This is done by a combination of approaches:

- Self-service; staff keep their own records up-to-date (with limited rights over what can be updated)
- Team Authors; who maintain the content of team pages and the structure of the organisational tree
- Local Administrators; who manage sub-trees and have rights to appoint other administrators and authors beneath them
- Automatic imports of content from other systems, e.g.: the HR and Email systems, with

- Data aging; there's an inbuilt workflow system that alerts users when the information they're responsible for hasn't been updated for a while, reminding them to update, or at least confirm their details. This is combined with innovative options for displaying aged data, visibly indicating that there is a lower confidence in these results.

When updates are made in the DOB, there's a neat synchronisation capability that can feed the updates to other systems in the organisation (e.g.: the Email and HR systems) so they can keep in step, either programmatically or manually.

Making Users Responsible

Every update made on the DDS Directory of Business is audited, leaving an electronic fingerprint so that it is possible to see exactly when updates were made and by whom. A history of activity is available and any inappropriate additions can always be traced, the user can be identified and appropriate warnings issued. The system includes guidelines for users to manage their content; as with other aspects of the directory, the guidelines can be tailored for each agency sharing the directory. Each team page on the Directory also stores information on when the last updates were made and by whom. This information can then be used by a central administrator to remind locally appointed authors to update the team pages they are responsible for to ensure that the organisational information is kept up to date. Reports can be generated to show any team pages that have not been updated within a set period of time to highlight any areas of the organisation that may not be being maintained.

Keeping Data Secure

Because the data held are personal records for a potentially large number of people any such database would need to comply with security conditions governing storage and access. The system is accredited to IL3 (RESTRICTED) level and conforms to necessary security criteria (e.g.: Data Protection Act, Government Impact Levels and the guidance for aggregated data outlined in the Hannigan Report of Nov. 2011). There are also issues around accessing the data within the organisation and ensuring that any details that are added to the Government Skills Directory are accurate and appropriate.

Protecting Privacy (Redaction)

Almost every organisation has teams or groups of staff that work in areas that are more sensitive and require a more restricted access. The DDS DOB is able to provide this through regulating which information staff see when they use the Directory. This ability, (called 'redaction') ensures that sensitive data will only be visible to staff who need to see it and not to all staff across the wider organisation. Therefore, it may be that only staff within a certain team or directorate are able to see information about teams or staff that have been redacted. Ensuring that these staff and teams are not generally visible should make staff feel more comfortable about adding information which will improve the quality of the data for the limited staff who do need access to these fields. It will also allow the DOB to contain accurate information across the entire organisation without risking areas with heightened security and ensure that even staff in those teams or areas receive the benefit of an up to date, personalised organisational directory.

Flexible & Extensible Data Structures

The data structures that represent information in the directory are highly flexible such that new fields of various types can be easily added by simple configuration changes. This means that new skills and knowledge fields can be added at any stage. Data is structured in the system by 'agency', meaning that different parts of the organisation can manage data according to need by varying sets of 'business rules' on a per-agency basis. The system takes care of normalising the information when cross-agency searches are carried out.

Linking to Other Systems

It is possible to restrict which fields are editable on the staff profile so that staff are unable to amend their grade or email address, for example. This will allow for organisations to choose to 'protect' certain sets of information that could then be imported in to the DOB from other systems or applications which would then be considered 'masters' of the data. This could include links to the Outlook or HR systems.

Support for other Applications

The DOB supports other systems that need directory information - It's commonly used by other Intranet systems to provide staff details for user personalisation, and for information on organisational teams and offices. All user level searches that are possible have equivalent web service interfaces that other applications can call. The system also acts as an LDAP v3 and Secure Token Server (STS SAML 2.0) server to allow it to participate as an Identity Provider in a SAML based integrated Federation solution.

Summary of DDS Government Directory of Business Features

The table below shows the main Business and System Features of the DDS Government Staff Directory:

Business Features

Easy to use	Highly intuitive 'Google-like' interface, staff can start working with no training needed
Searching	Google-like search has a scope that includes people, skills, organisational functions, team content, offices & buildings.
Advanced Searching with Thesaurus	Advanced searching focuses results by filtering on combinations of fields. Boolean (AND,OR,NOT) and proximity searches can be applied and an optional thesaurus function transparently expands acronyms, aliases and familiar names in searches to ensure nothing's missed
Search output	Search results can be output to screen, clipboard, org charts, or spread-sheet, with the option to build email distribution lists from searches
Trees and Org Charts	Organisational information is represented as a tree, echoing the organisation's natural structure, for optional display as web pages with embedded org charts
Distributed Management	Administrators can be appointed to manage any part of the tree, allowing a fully distributed directory management & authoring structure
Distribution lists	Administrators can use the system to maintain standard organisational distribution lists, typically set by roles, which automatically adjust as staff change roles
Comprehensive update system	Updates through staff self-service, distributed team authoring, and data synchronisation with Active Directory and other systems (e.g.: HR data)HR
Single sign on	Staff identities automatically recognised, allowing them to maintain personalised pages
Data Updating	The system is kept up to data through (a) staff managing their own profiles; (b) team authors managing team content, and (c) directory system synchronisation with authoritative systems such as the network Active Directory and HR systems
Keeping data 'fresh'	An innovative aging system alerts users and managers to aged data, and can visibly show a lessened confidence with aged data, thus encouraging staff to keep content up-to-date

System Features

Security	System is fully pen tested and UK Government accredited to IL3 level
Redaction	Redaction rules engine enforces different viewing permissions for users from different areas
Partnership Working	The database is partitioned to that partner agency directories can be linking in, providing a fully integrated directory capability across a partner group
Flexible metadata	Data fields can be easily redefined to accommodate new data requirements
Inbuilt Workflow engine	An inbuilt workflow system allows business processes to be set up between main actors in the directory system (e.g.: so users can request responses from team administrators)
Import and Reconciliation	Flexible Integration Engine supports importing from, and synchronising with, other directory systems, notably Active Directory, HR systems etc.
Federated Authentication	The Directory is 'Claims Aware' and works both as a server and a client of a SAML based federated identity system for seamlessly authenticating users who come from different organisations.
Procurable as SaaS	The system is procurable by government agencies as a Software-as-a-Service (SaaS) service through the G-Cloud Framework provided in partnership with an IL3 accredited hosting partner

What Next?

You may want to

- Contact the DDS Government Directory Team to ask for a demo, discuss the business implications or talk through the technical architecture
- Visit <http://www.daemon.co.uk> for more information
- For the technically minded see the DOB Technical Overview Paper at <http://www.daemon.co.uk/wp-files/technical-overviews/dob-tech-ovr.pdf>

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