

wwiteware™

Service Governance and Delivery Platform

Product Description



wwite P/L © 2008


wwiteware™
FUTURISE

Product Summary

There are new and increasingly demanding expectations of customers with their online services use that are not being met from existing software

In the last decade, the phenomenal uptake of social networking services has created a new paradigm and service standard for customer interaction with service providers and online communities. This paradigm places users at the centre of the interactions and in doing so creates a new set of requirements and online community standards for any service provider. At the core of the new and developing interaction model is customer centricity: all interactions with the service providers must be focused on *me, my needs* and *my world*. The emergence of this model has created a list of new requirements of the service delivery industry.

These requirements are:

- Me, my needs and my world
- Customer self care and single view by customers of what is delivered by this provider
- High degree of personalisation of services
- Secure identity and assignment of what is often very large numbers of entitlements, privileges and preferences including parental controls, copyright protections and the like
- Recognition of groups and relationships between members such as families, employee groups and guests
- Timely, easy and flexible opt in/opt out to services and pricing regimes
- Flexible product offerings including bundling and special offers enabling speed to market and new product agility
- On demand, Content and Present based services
- Location based services and expectations for full service for highly mobile customers
- Secure services, able to be assured to meet privacy requirements and provide audit trails
- Anytime, anywhere, any device access
- Reliable, quick service even in peak periods

Commercial services providers face new and emerging challenges to enhance their online strategies in order to satisfy these emerging requirements.

These requirements also present new commercial opportunities to the operator and the service delivery industry

Some examples are:

- Targeted, personalised advertising and promotion
- Up-sell and cross sell
- Parental controls as services
- Low churn through product and services bundling and personalised offers
- Precinct-wide services delivery based upon knowing where a customer is when they turn on their mobile phone and elect to be recognised and receive specified services in that precinct
- Emergency and crisis 'precinct' management

wwiteware is different from existing SDPs because:

It has greatly enhanced functionality.

wwiteware includes:

- Information management functions that cover the platform's technology components, build and test functions and user, device and entitlement functions.
A customisable, extensible set of platform management functions. These provide a click through, single view capability of the entire platform.
- A customisable system taxonomy of products and services for entitlements.
Generation of a user's entitlement from the platform's product, services and device taxonomies. A user's entitlements are represented in their personalised views.
- Customisable system taxonomies for devices, portals, infrastructure servers which are assigned into the directory engine. wwiteware is an overarching management platform that interconnects with the system delivery infrastructure so that service assignment and delivery can be achieved.
- Integrated internet services features. wwiteware provides web services, SIP/IMS function, DHCP and DNS and wireless device interfaces. This allows immediate demonstration of the user and management services being delivered.

Project costs are significantly less

- The risks of an IT project are reduced through the key features of wwiteware
wwiteware provides considerable SDP functionality 'out of the box'. This saves time and reduces risks in specification, framework design and modeling, code writing and software product adaptation and implementation.
wwiteware saves the cost and risk of tactically developed "glue" software needed to integrate fragmented system technology functions that use incompatible data formats and data management procedures.
wwiteware saves the cost and risk of tactically developed management tools and interfaces which, if dedicated to specific technologies, will make platform wide, click through and single view systems very complicated to implement.
- wwiteware supports non technical decision makers
Information specification and its engineering to meet customer service needs and the commercial opportunities of the business (or in government services to meet user and citizen needs and expectations and the secure, responsible and assured delivery of services and information by governments) needs to be explicit, tested and made visible to clients. wwiteware provides this visibility by giving clients and operators a simulation upfront of their customer/user/services delivery model. This serves to enhance the information design allowing collaboration between the wwiteware team and the client, enable tough design stage tests of customer use assumptions and reduce risks on project over runs and the significant risk of cost related reductions to project deliverables.
- wwiteware supports the technology evaluation and integration specification process
wwiteware provides a managed information model. System designers can use this functionality to develop the interface specifications to supporting applications such as billing and CRM . The platform can be used in the same way to evaluate server and infrastructure technology and

design interface specifications. These specifications can be used to assess the system's integration costs.

As a result of these breakthrough innovations in software design, we estimate we can reduce typical project costs by 50%, project times by 30% and ongoing operations and support costs significantly.

wwiteware provides the customer centric SDP for:

- Telecommunication companies
- Mobile phone companies
- Media companies
- Advertising and promotions companies
- Banks
- Secure identity management such as licensing and registration, government social service and secure environments such as military
- Emergency services and crisis management authorities

wwiteware provides the operational centric infrastructure management platform for:

- Telecommunication companies
- National broadband network companies
- Energy retailers
- Emergency and national security services

wwiteware is a new generation front of house SDP

- wwiteware has been developed over the last 7 years
- wwiteware is founded on 30 years of experience with large scale Identity Management and SDP systems
- wwiteware is in a "project ready state"
- wwiteware can be demonstrated on a laptop computer

The wwiteware™SDP

Introduction

SDPs provide a coherent services integration platform on which services are provisioned, controlled, delivered and billed to meet the customer’s personalised service requirements.

SDP’s are critical functions for an online business.

wwiteware is a SDP – it provides a services management function and acts as a system integration engine.

wwiteware interacts with four major components in a complete online services delivery environment:

- Customers access their products, services and self-care functions
- Product and services managers and operational support staff to administer the online service delivery systems.
- The back office applications and management systems such as CRM, service activation, billing and other OSS systems.
- wwiteware manages underlying IT and communications infrastructure functions from a services perspective and supports wireless device access technologies.

The following diagram depicts how wwiteware is applied to a typical enterprise system comprising customers, front office, back office and infrastructure.

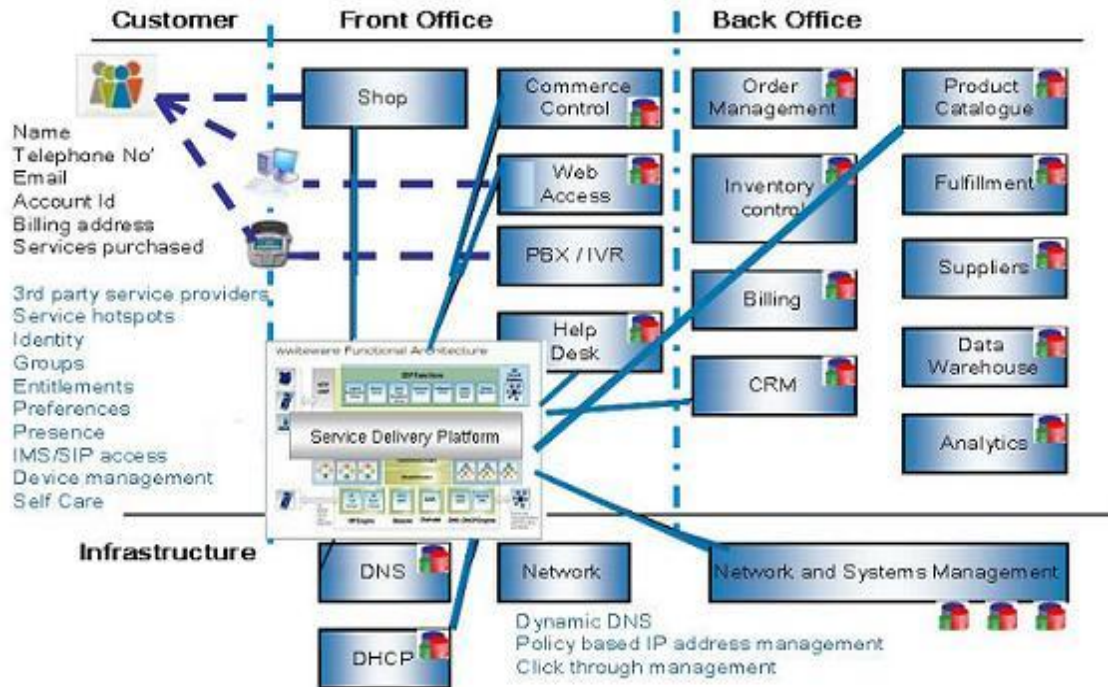


Figure 2: Where wwiteware fits in a typical enterprise architecture

wwiteware SDP incorporates business level identity engineering that defines an online user and their experience with your business.

To the left of this diagram we highlight the evolution of customer identity data from simply name, password and basic details to that of processing entitlements, preferences, presence, devices, locations and parental controls (self care). This “user information” evolution represents a shift from the common interpretation of identity management (IDM) as just relating to a user log on process and possibly an “identity server” to that of business level identity engineering that defines an online user and their business experience.

wwiteware Functional Description

wwiteware provides functions and capabilities to manage the customer’s preferences, entitlement information, identity and security and the diverse modality of accessing services, locations and self care. Furthermore, its customer identity and entitlement management capabilities provide the foundation for a truly customer focused online service delivery system.

The wwiteware SDP functional architecture consists of three major components:

- The wwiteware management and governance layer provides key functions to support customer access and the management of the SDP’s services.
- The wwiteware new generation directory engine applies information and identity engineering in order to coherently manage the customer centric and network infrastructure information model and deal with its system events.
- The wwiteware protocol convergence layer provides functions and capabilities to interact with customer’s devices and the underlying IT and networking technologies and infrastructure.

The following diagram depicts the overall functional architecture of wwiteware.

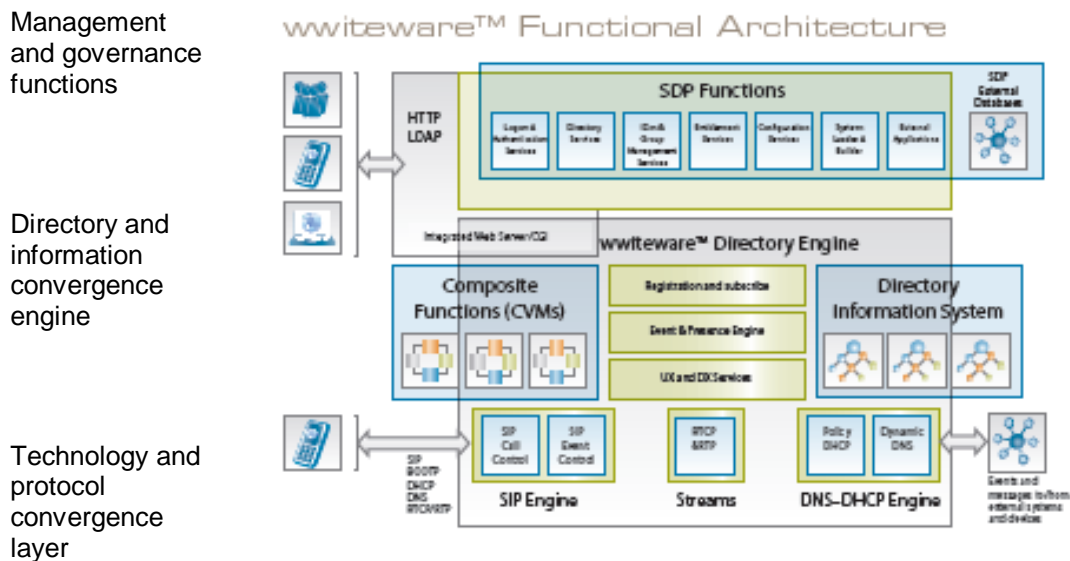


Figure 3: wwiteware functional architecture

At the core of wwiteware is information and identity engineering behind a configurable and flexible customer centric information model and a supporting processing engine.

Service delivery within an online system requires that information items representing real world entities and the events from them, are associated in sophisticated and dynamic relationships according to the business and commercial requirements.

Consistency of identity management throughout the system and its external applications and servers is necessary for single view functions and reduces the lines of software, numbers of databases, cost and improves service delivery outcomes.

A system design using identity engineering principles begins by defining the types and instances of the information items used with a system, understanding the quantities of these identified items (their may be 1 billion items), understanding how their names are used and managed and understanding the rates at which these information items are used by the users and the system in the real world (information performance engineering).

The typical identities in a customer centric system are

Account Data	Address Books	Applications	Buildings
Call Records	Connections	Content	Data Tables
Devices	Documents	Entitlements	Events
Files	Groups	Images	Locations
Mail Boxes	Modules	Network Addresses	Policies
Portals	Preferences	Products	Protocols
Rate Codes	Reports	Roles	Routers
Security Algorithms	Servers	Services	Sessions
Smart Cards	Subscribers	Switches	Telephone Numbers
Test Tools	Trouble Tickets	Usage Plans	Web Pages

These identified items are represented and processed in the wwiteware platform as either system entities or directory engine information objects.

Identity engineering associates information items and how they are named and used within the system with the real world entities they represent. This engineering process is fundamental for service delivery systems.

wwiteware Management Functions

wwiteware employs a fully object-oriented information paradigm. However, in order to deliver the functionality for a real operational platform, the information model and its processes must be managed at all levels by the entities that create and consume services.

wwiteware builds on its customer centric information model with a wide range of technical, operational and single view type management functions. These are shown as the top layer of the wwiteware architecture. **There are approximately 80 click through, customisable and extensible management categories provided with the platform.**

'Identity' represents the name applied to a user, device, service, location or content. 'Entitlement' represents what that user/device etc can receive in the way of services from the system. SDPs need to process entitlements in order to deliver services or control suspension and reactivation of such services. The real question of an SDP implementation is: how are its entitlements specified and derived from the operators product set or a customer's account status and what tools are provided with the SDP to simplify the process of their management.

Entitlements within the wwiteware platform were initially grouped for operational management, for product managers, for end users. During its creation, the wwiteware platform was demonstrated to a number of potential customers such as the US defence, telcos, airport owners, airlines and government. In order to prove wwiteware capability, specific entitlement regimes as well as wireless access services were rapidly created to support a realistic demonstration of their unique operational environment.

The wwiteware information model and its management features allows the production in only a matter of days, demonstrable prototype systems representing the organisation’s online services and their associated entitlements.

wwiteware Features and Capabilities

In most large IT systems, the major issues relate to convergence costs, evolving back office applications, identity and information engineering, data quality, system agility and security. Additionally there is further cost in developing and proving a converged services, business information model that customers and product managers can work with.

It is understood that many organisations spend tens if not hundreds of millions of dollars dealing with such organization wide data and information specification issues and experience has shown that IT projects may fail to deliver when trying to deal with this complexity.

Business Information Model and Management Functions

Online services delivery requires two views of the customer

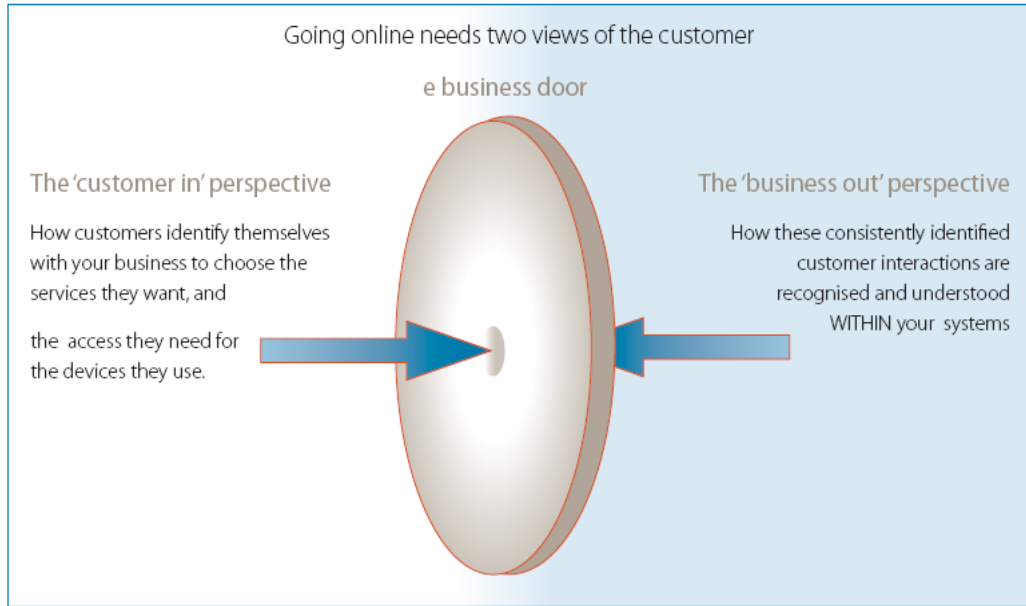


Figure 4: Looking in/Looking Out

Traditionally, IT systems evolve their design to end user services:

- Out from the back office processes and database applications to the customer via portals or voice communications
- Up from the networking and infrastructure technologies to the customer access systems.



Figure 5: Technology Up, Back Office Out

In the new customer centric, information paradigm the wwiteware service delivery platform specification uses the following:

- The customer centric, company wide information and service model and how that is supported in its respective information management systems, data stores and infrastructure servers.
- The entitlement based service management functions for the operator and customer alike.
- A composite engine to ensure coherency, agility, high throughputs, single view and real time performance.
- Specifications for the underlying technology functions and back office application interfaces.



Figure 6: Customer In, Information Engineering Down

Using wwiteware prototyping capability, you can demonstrate a single view, click through and entitlement management paradigm company wide information model. Thus wwiteware addresses the open ended costs and risks being encountered with some of the technology led SDP developments and system transformation and convergence programs.

New Generation Information Demands

The online user of today is identified in many ways and from many devices and under many business contexts and locations.

The major information management design issue is that users, devices and services have complex attributes sets, have multiple identity attributes, create messages, can be represented by and use web information pages, tables and forms and can pass at any time image, event, status, search and location data onto a system and from anywhere. In the traditional world we would transform these user interactions as transactions and data sets into application level processes and then apply that to one or more relational databases with transactional data models.

But, business cost structures, identity management, data quality issues, integration costs, self care, personalisation, broadband speeds, real time events, single view and click through facilities are putting considerable pressure on the designs of our traditional data oriented transactional systems.

The significant growth of data in a customer centric retail world is evidenced by the demand to process:

- Customer attributes, their properties and preferences,
- Groups, different types of accounts (secondary accounts, guest accounts, joint accounts, etc.) and relationships,
- Customers and their devices and the interactions between them,
- Customers entitlements and roles in the systems, and
- Customer presence, location, logon and account management.

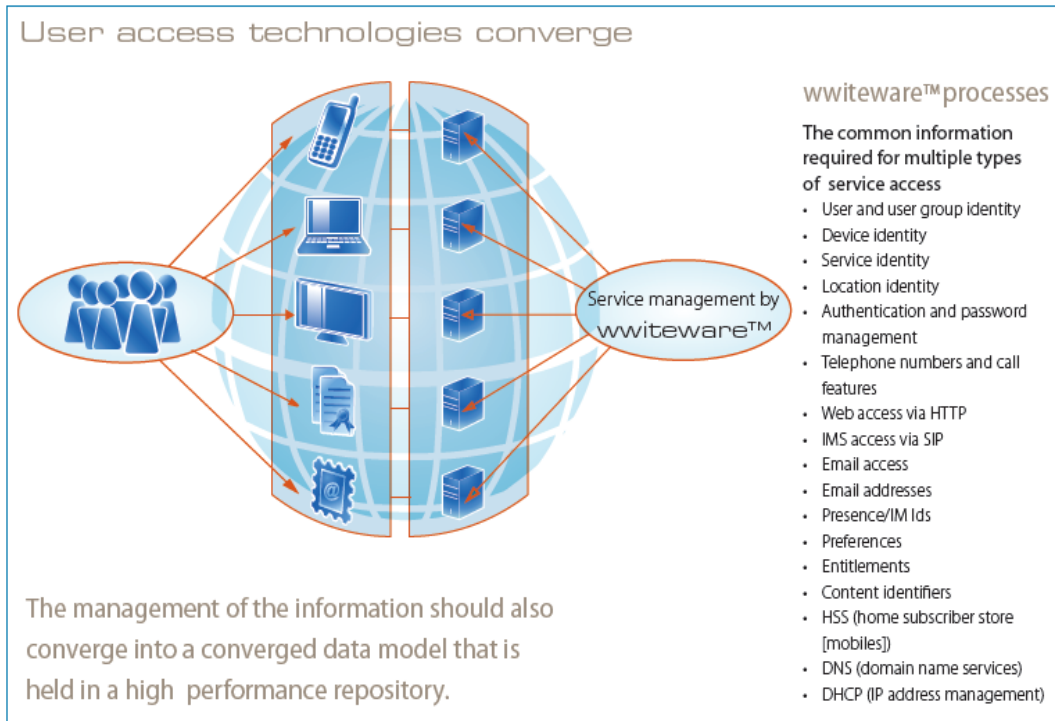
In a typical retail environment, the service providers can easily be in the situation where their SDP must handle tens of millions customers each with 1,000 access profile attributes and information sets with multiple relationships with other system entities. Furthermore, business level merger and acquisition activities in the online world lead to a huge and rapid growth of data and service profiles. Any SDP must be capable of handling this level of scalability and data growth.

Of note is the identity management, data and object management functions of the wwiteware engine are very different to that traditional transactional data base and data oriented directories.

New Generation User Access

A typical user access today is through a web server, a security /SSO server, possibly a role or entitlement server and a directory LDAP server or database. At this point in time a number of system interactions and protocol exchanges have occurred and a number of data stores have been accessed. If address book presence services are added to the scenario more interactions will occur depending on the size of the address book and the number of status events being delivered to interested users.

It follows that with the multiplicity of access methods and the richness of user environments, user access technologies need to be converged.



Taking a customer centric perspective of user access systems there are three major considerations.

- The customer has a complex service bundle which is governed by entitlement attributes. At log on the customer's preferences are processed in order to define language dependencies, location specific news requests, advert opt in and personalised layouts of their menus. The key system design issue is how many internal system interactions must be processed and how many data attributes need to be evaluated to deliver such services and where would the databases and servers be that hold this fragmented information?
- The customer then requires a single view of their services environment and that may include secondary account holders such as their children and their online status and where they are.
- While it is easy to describe a single instance of this user access process, real systems deal with the public at large. A final user access scenario is a few million users all requesting similar services at the same time. If the system falters under this load, revenue earning transactions are lost or the customers complain – at the operators cost.

Key access issues are: system information complexity, information performance engineering and the business productivity of the user's transactions.

The wwiteware engine contains a number of composite, customer centric virtual machines that deal with common identity and event management operations. For example a wwiteware composite function when activated by a single "directory" interaction can process a user's logon, provide single view information and send presence events to the intended recipients. Other composite functions can graphically map directory entries, register services and devices, process entitlements, display platform cache statistics.

New Generation System Information Agility

An implication of technically focused architectures is that once the system is assembled any adjustments to functions, data models or the introduction of new services means costly upgrades through an SI project.

The ability to change service specific data sets easily can be an issue for agile service environments as it means the system adopts a “constant reconstruction” mode of operation. Experience has shown that changing a single data attribute (and its supporting processes) in an operational system that comprises “data fragments” can take months and cost millions of dollars. There is also the risk that such programs when performed constantly may not have predictable outcomes.

Information agility is a key requirement of any large commercial online service operations, so is the predictability of the deployed systems to work properly. The information agility issue is complex though as it involves extensive audit trails and many management functions. However, some aspects of information agility can be solved. The ability to manage information agility in a service delivery system is a key benefit provided by wwiteware.

New Generation System Information Taxonomy

A common issue with a customer centric system is determining what the complete information taxonomy is that the customer and the business operations will use. This taxonomy needs to address products and services, user types, device types, server functions, portal types, locations, content, facilities, call features, roles, error codes, preferences and entitlements so that information objects or data tables can be coherently specified for the system’s management functions.

Experience has shown that each customer centric information object can have 100 attributes and each customer could have 50 objects in the commercial arrangement they have with online service providers. Thus each customer could have for complex service needs 5,000 attributes.

It is quite typical for front end systems of this nature which may service as few as one million customers to have 50 million objects and up to 5 billion attributes all of which must be accessed in random ways and in real time. This represents a formidable information engineering challenge to any online SDP solution providers.

The information taxonomy has been a difficult road for many organizations. Many organizations suffer from a multitude of customised and dedicated data models and dedicated application software. To achieve converged services these dedicated data models need to be realigned and migrated toward customer centric operations. wwiteware provides information design machinery to focus and validate such a task.

wwiteware includes rapid entitlement development functions based on product and service sets, provides device, server and portal type catalogues, provides a system entity model that operates over a top level the wwiteware directory information model. wwiteware also provides a range of system build tools so that all of the above can be loaded into an empty platform and demonstrated within minutes.

SDP Management Functions – Click Through and Single View

The wwiteware click through management functions are categorized into approximately 80 groups and can be customised and extended. The management functions permit the operator to see for example a dynamic information model of the business, view the infrastructure status, see the interface protocol statistics and check the memory buffer allocation profiles of the platform. The estimated code base for the wwiteware management system is about 500,000 lines of software.

SDP IMS and web Integration and Convergence

IMS and SIP (session initiation protocol) is the means by which existing mobile telephone based devices converge with internet devices and connect for multi media sessions. Unfortunately, IMS/SIP standards treat this system as a siloed application of internet technologies so convergence with web based services is yet another challenge for the technologists, operators and commercial organisations alike.

The theoretical architecture of IMS and SIP has been commented on widely including the comment that SIP might need to have over 100 protocol interchanges just to set up a call. This comment of course is based on the theoretical IMS architecture.

wwiteware includes functions for SIP and web convergence and can provide visibility of the IMS and web environments using its single view, virtual directory services. wwiteware uses the IMS/SIP design as the core of its registration and event processing system even for web based users.

wwiteware registers SIP devices and connects them. Approximately six protocol interchanges are used to set up a SIP call in the platform.

wwiteware provides new functions that consolidate user identity, user validation, PKI services, presence, service personalisation, service management, next generation DNS and SIP (IPv6,v4 and E.163) and G3 IMS (unified service) convergence.

Business Operations and Integration

SDP IMS and web Integration and Convergence

IT solution engineering approaches become risky if the legacy systems involved are complex or have poor data quality and management or the “new fragment “ (the solution) and its integration points are untested. wwiteware SDP breaks this fragment cycle by allowing existing products, services, users and infrastructure information to be tested against an operational reference model and applied to a free standing system (a simulator) as a key stage of the deployment methodology. Using this *business simulator*, the business management, user experience, data processing, integration and system transition requirements can be visualised and specified.

wwiteware Integration Interfaces

wwiteware applies a wide range of interfaces and formats and can support customisation via CGI or LDAP interface module developments. Most of these interfaces can be developed rapidly using the existing libraries, data preparation utilities, tools and scripts. These interfaces allow wwiteware to be integrated with other applications and infrastructure components. The wwiteware interface methods and mechanisms include:

- Browser-Web information access..
- CGI customised interface through web services.
- LDIF tool that permits multiple entries to be added, modified or deleted through file input.
- Click through builder tools that enable the complete platform and subscriber environments to be built.
- External application interfaces through customised CGI.
- External databases through virtual directory functions.
- File navigator utilities for platform file-directory information convergence.
- Content integration via the virtual directory interface.
- Server I/O event interface for down stream infrastructure servers
- Management module LDAP interfaces to subordinate (legacy) LDAP services.
- Wired and wireless device interface for down stream devices.
- Click through interface for platform management and console commands.
- Standard LDAP interface to add, read, modify and delete directory entries.

External Applications

Through the customised SDP modules and the virtual directory capabilities, interconnection can also be made to external applications and their databases. The interface can follow the trend of SOAs and the protocols used can be SOAP, XML message based, ODBC or SQL to suit the system concerned. These can be rapidly developed and tested using the prototype platform. In this development phase, the external data model can be emulated in the platform so that existing applications and database systems can remain unchanged until the specification is proven. Typical external database and applications include:

- Billing
- Asset management
- Telephone number management
- CRM
- Help desk
- Trouble ticketing
- Content management
- Audit and reporting
- Data warehouse
- IVR systems

Definitions

SOA – a service interface between two or more system entities. SOAs and service architectures have been a common system development methodology since the 1980s with (e.g.) OSI, LU 6.2, Remote Procedure Calls, Unix and Windows socket interfaces and web based systems. Most of the software APIs and web access systems used today would be considered as “service oriented”.

SCE – a service creation environment. System functionality to create, provision and manage services over an existing network infrastructure.

SDP – a service delivery platform. System functionality that contains product, service and user authentication and authorization (entitlement) information and management functions that enable the selection and delivery of services. A SDP may also contain functionality to manage the network infrastructure components.

Additional wwiteware information provided at www.wwite.com

Contact us

Susan Oliver tel: 61 408 070 071 email: susan.oliver@wwite.com
 Alan Lloyd tel: 61 418 536 749 email: alan.lloyd@wwite.com

wwite P/L © 2008



Disclaimer

The information provided in this document is for use of a general nature only and is not intended to be relied upon as, nor to be a substitute for, specific professional advice. No responsibility for loss occasioned to any persons acting on or refraining from action as a result of any material in this publication can be accepted.