

Delivering Unified Services A Business and Engineering Scenario for MSOs

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Executive Summary

The competitive agenda for on line business is increasingly focused on delivering competitive, differentiated customer products and services. This is true for multiple service operators (MSOs) – the telecommunication and media or converged services companies who in addition are challenged to meet customer expectations of converged services: services that are branded, bundled, personalized, contextual, always on, reliable, technology agnostic, device independent and attractively priced with the ability to define and control their on line relationship with the service provider. MSOs are also challenged to deliver the demands of true convergence – identity based services, presence based services, media based services, location based services and service uniformity.

This paper addresses the unified services agenda of MSOs. However the agenda is relevant to all companies providing on line services to customers, who are building linked or federated product sets, who need to identify and have a single view of their customers and where their customers need a single view of their relationship with the company. The need for a unified services agenda is increasingly relevant and apparent to utility companies, retailers, banks and financial services providers, governments and complex social and health systems

The IT solution to support this agenda must deliver whole-of-organisation and whole-of-customer view. It will also most likely require organisation and attitudinal transformation – an across-the-silos unified customers and products agenda. It can be difficult to gain and maintain political support within an organisation for the size and organisational change the transformation journey requires. Success requires vision, a senior level of decision making and a preparedness to champion and lead the project from that level.

Success also requires the understanding of the information and identity engineering with the appropriate capacity for the numbers of identified objects that sit within the business, the business rules and functions and its strategy to acquire and serve customers

We address the many reasons why the industry is having difficulties in delivering unified services, and propose a logical ten step approach to achieve a converged services platform:

1. Understand the competitive agenda for customers and products, dimension the many objects that prescribe the on line business and analyse the requirement for agility and the ability to scale

2. Normalise and converge customer and services information as identified objects in a repository used for the organisation's on line world –a big directory
3. Analyse the converged services demands on the directory system to be used as the information infrastructure.
4. Quantify the numbers of customers and products that will be applied to the on line business.
5. Identify the three major functions of the new system and enshrine these as the cornerstones of any IT project – a directory, a provisioning and product management function and customer access functions
6. Converge the user access to services and on line self management through the design of a unified services common access directory service
7. Adopt an approach to the new platform design that ensures integration with existing systems
8. Connect (over time) the major applications that provide the existing, disparate customer and service functions to a provisioning engine that manages the common “access” directory service
9. Retire redundant systems, converge product management and self-care with new company-wide applications and decision tools that support services
10. Assess and measure the qualitative aspects of the converged infrastructure

Critical in this process is directory service information (identity) engineering and convergence of the legacy systems and the provisioning and management of new services, through the application of a unified product and services provisioning system.

Introduction

There are many competitive customer/business, operational and technical drivers behind the need to deliver converged and unified IP services to customers.

First and foremost customer expectations are forcing the pace and extent of service delivery. There is a customer expectation that irrespective of the end user terminal, its geography (home, office or mobile office) or of the access medium (wired or wireless), converged voice, video, media and data services can be delivered and relied upon. The expectation is that such services are competitively priced, seamless between end user devices and self-managed with personal preferences.

The challenge faced by MSOs is to answer the question of how they converge their services for the customer and allow them to self manage. To respond to this challenge involves further questioning: How do complex organisations embark on the journey of business and systems transformation? How do they engineer such strategies and avoid IT project traps? How do they adjust the operational and management structures that surround a fragmented approach to IT services delivery? How do they clean-up their multiple, fragmented databases and server files that contain inconsistent data that inhibits a realistic single view of the customer?

This set of challenges is historical, organisational and cultural. The challenge is laid at the feet of the leaders of the MSO to embrace and lead a transformational approach. The challenges permeate the organisation from there. It requires middle management commitment, it requires an end to the incremental view of reaching the future and it demands that decision makers question overstated offers by vendors of traditional commercial off-the-shelf solutions. While this sounds as if we are recommending a high risk strategy, the reverse is true. Continuance of traditional incremental approaches to IT systems run the high risk of simply not achieving what customers want at a price that makes MSOs profitable. Incrementalism will not get there as it may add yet another isolated data set for a business fragment. Fundamental rethinking of customer numbers and acquisition, their

services preferences, the products they will pay for and the engineering that supports this, is the way forward.

This paper identifies the customer and commercial drivers being faced today by MSOs, the major issues of transformation and some critical technologies for a converged services platform in support of the service delivery and business goals.

The authors bring to this paper their thinking on competitive customer service strategies for MSOs and the engineering approaches that MSOs can deploy to realise these strategies. We will introduce engineering concepts in implementing the information technology platform to deliver fully converged services that are in advance of existing vendor offers and current implementations.

The Competitive Agenda and IT challenges

Commercial forces are driving an aggressive competitive customer acquisition agenda for MSOs. The challenges include:

- ❑ Customers want to access unified services using various devices, that they expect personalisation in products, entitlements and services, they expect to be rewarded for being a good customer, they want to be recognised when they enter our 'shop'.
- ❑ Competition for customers in the on line world is coming from non traditional competitors and that competition can be global – an overseas competitor establishing a presence in our market place or more insidiously, sending its tendrils from its home base into our on line marketplace
- ❑ Business growth is increasingly coming from merger and acquisition strategies which invariably result in quantum increases in customers and overlap in the customer base and the services or products they purchase
- ❑ The on line services delivery value proposition to customers has evolved from a device based commodity view of the world to the multi media, on demand and up-sell services world.

The traditional revenue base has often been established on selling hardware – the computer, the cable modem, the set top box. This was what we charged our customers for and how we established our commercial relationship with them. All we had to do was count the transactions. When the value in the hardware disappears, challenged as it will inevitably be in a highly competitive and converged world, how do you build and secure value for customers? We need to transition from engineering the technology to ensuring we can retail the products and service dimensions our customers want and provide the value that makes the customers, now footloose and faced with many good reasons to go elsewhere, want to stay with us now, tomorrow and the day after.

How widespread is the need for the competitive customer centric view of the world

For a Financial Institution a new on line service delivery model and customer identity agenda was needed for the integration of:

- ❑ Products and Services
- ❑ Fragmented and poorly protected customer data
- ❑ Cross product management
- ❑ On line access to services with preferences and entitlements and self-care

And the need to urgently address:

Risk mitigation	High volume low value (dispersed) accounts
Audit and compliance	Report and statement management variations
Anti fraud systems	Archive complexity and costs
Anti money laundering systems	Poor business measurement processes

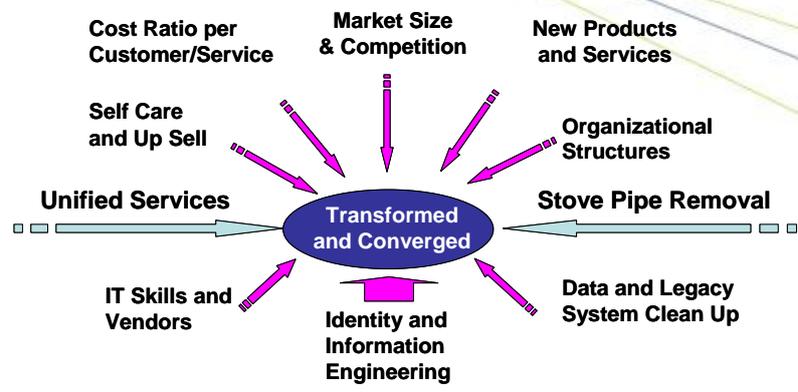
There are many instances where this thinking applies – a health fund that spreads its product offerings into complementary areas of personal risk management; a maintenance company that evolves its traditional service offering around the needs of customers and the need to provide an instant service response; the plethora of communication and information services to be provided to military personnel with different rights of access and security.

In the development of customer focused systems there are critical dimensions to consider.

What has changed is a realisation that to give the high performance required to support the capacity to deliver competitive customer acquisition strategies, the engineering and design of systems is critical. It is a new area of systems design and despite vendor promises, it is hard to achieve. These newly demanded project and engineering skills must address on line service convergence, information and legacy system consolidation, data clean-up issues and deal with information and identity engineering challenges.

Transformation and Convergence

The words "Transformation" and "Convergence" are widely used to address the task of removing the internal organisational and IT related stove-pipes and at the same time provide a single on line view of the company's goods and services. However, the task is not just pulling the two major concepts together. Other dimensions exist and are identified below.



What are key considerations? What does the system look like now and at completion of the transformation and convergence steps?

To be productive at removing stove-pipe operations and delivering a converged services platform the following points need highlighting:

- *Operators must be aware of the many dimensions of competition*
- *Operators must increase their “converged” product offering and grow market share*
- *Organisational structures and responsibilities will change and evolve*
- *IT strategies and vendors are challenged by the new engineering requirements and there is a tendency to resort to delivery of packaged products*
- *MSOs can benefit from clear guidelines on how to start the transformation and convergence journey*

Operators must be aware of the many dimensions of competition

- Because of global fibre and broadband systems unified or dedicated services can be supplied from anywhere to anywhere by anyone.
- Converged Internet voice and media services means that phones, PCs and TVs will provide a uniform service interface for world access as well as access to many other on line businesses.
- The customers' fixed costs (broadband access costs - modems and devices) will fall while voice, messaging, content, on-demand, preference and entitlement based services and on line up-sell will become the revenue base. However, managing five million modems is easier than managing tens of millions of users with hundreds of millions of pieces of discrete content and internet sessions.

Operators must increase their converged product offering and grow their market share

Customers expect services that are:

- Branded
- Bundled
- Personalised
- Contextual
- Always on
- Reliable
- Technology agnostic
- Device independent
- Attractively priced

Service Providers therefore must:

- Rapidly launch new and differentiated services
- Provide add-ons, upgrades, and offers to increase revenue per user and offset revenue decline
- Focus on the subscriber experience – more features, self-care, better customer service
- Simplify operational and support infrastructure to better adapt to change and improve efficiency and flexibility

Organisational structures and responsibilities will change and evolve

- A funded, board level sponsored, corporate level (non stove-pipe) management and IT strategy, design and implementation team is fundamental.
- IT management needs the authority to veto the incremental advantages of IT projects that represent a short term seemingly easy 'fix' but which retain and reaffirm the stove-pipe strategy.
- If the strategy is a corporate level, across the 'silos' transformation project, it could meet resistance and opposition so good education and awareness strategies are important
- Converged infrastructure for all subscribers and on-line products (services) will mean governance, roles and budgets need to be assigned to the transformation project and core team and away from the operational silos

- Core systems owners need reassurance that their systems are critical and will be given funding for upgrades to support the convergence.

IT strategies and vendors are challenged by the new engineering requirements and there is a tendency to resort to delivery of packaged products without stating the data management issues

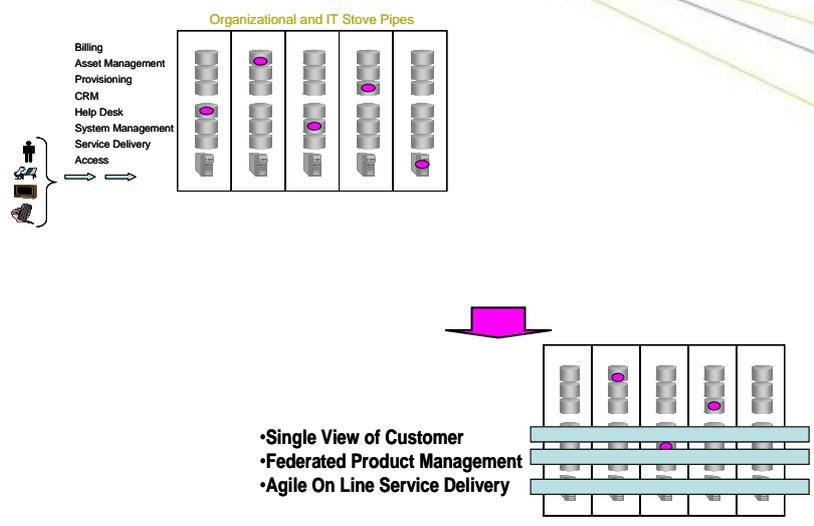
Solutions get designed by:

- Habits around network and server architecture and its application without consideration of users and services
- The traditional enterprise and commodity view of what IT can achieve
- Persuasion by vendors that familiar product names will achieve the required customer service dimensions: Convergence strategies will describe the service dimension, stove-pipe transformation, converged customer and services platform, federated product provisioning and management, on line identity . This is the senior management and board level strategic discussion required to build top level sponsorship of the project. The strategic discussion has no place for words such as “database”, “XML”, “server”, “LDAP”, tactical fix, middleware and vendor product names purporting to be the IT strategy
- Long term relationships within the organisation with the vendors or the existing Systems Integration expertise and solution approaches

MSOs can benefit from clear guidelines on how to start the transformation and convergence journey: there are two early considerations

The design and implementation of this evolution is critical, as the organisation will still need to be conducting its business on line regardless of the transformation project.

There is rarely a situation where legacy systems cannot be considered as part of the systems convergence design. Core systems will be evolving as the following diagram represents

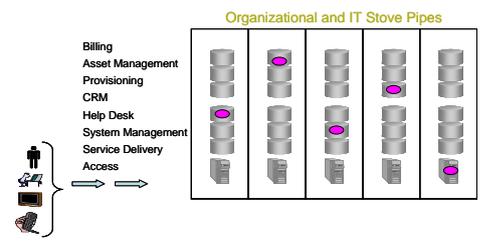


The simplest and safest solution may appear to be to minimise the ‘fix’ to a project within a stove-pipe, but it is not addressing the real issue

Understandably it is easier to argue the return on investment for an operation or business fragment improvement. The tactic can be to reduce risk by restricting the project vision.

Such ‘fixing’ does not address or specify any project and engineering that can be supported at corporate level to achieve:

- Converged services and products
- Uniformity in provisioning services to subscribers
- Standard definitions and the identity of subscribers
- A system with the capacity to deliver the converged on line agenda
- Cross system data integrity for use by the company and customer in support of its on line services



Let us start the converged platform journey

1. The first step is to understand the competitive agenda for customers and products, dimension the many objects that prescribe the on line business and analyse the requirement for agility and ability to scale

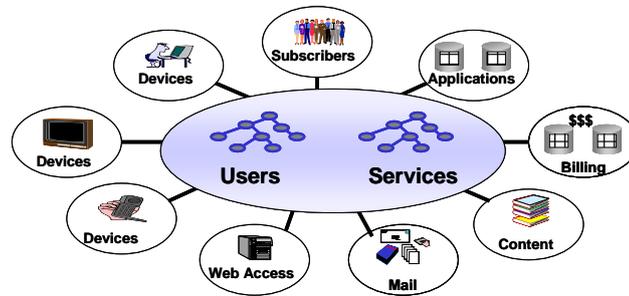
Senior management need to know and back the strategy and cost benefit argument on competitive strategies for product differentiation, customer acquisition and service delivery systems and how that is delivered by the IT system proposed. Senior management should debate how investments in systems development generate revenue, impact market demands and influence the dynamics of on line services. Questions of the on line business will be:

- How well do we know our customers? Do we know them at all or are we just account based and how many of them are there?
- Is it possible to add more information to our customer and product data that allows us to deal with whole-of-life services and relationships?
- How do our products get applied in the IT systems and provisioned – is it cost effective, coherent across the system and the organisation and with a single point of management?
- How agile and extensible is the machinery that delivers our products to our customers? Does it provide the flexibility and scalability for the future growth we anticipate and does it enable customer self-care and up-sell?
- What are the trends in on line service delivery and what are the competition doing to gain customers on line that we are not?
- Is our IT dollar addressing the changes we need in service delivery and market competitiveness or is it maintaining the status quo?

2. Normalise and converge customer and services information as identified objects in a repository used for the organisation's on line world –a big directory

When determining the IT strategy of an organisation or the way in which systems are converged, one selects the point of focus. Traditionally this might be the CRM or Billing system but selecting these functions leads the organisation to be internally process focused, not on line service focused from the customer perspective.

All online systems work to a consistent User to Service infrastructure



However, the Users are easier to define and engineer than a wide range of cost effective, agile, user selectable, on line services

In order to achieve the right strategy and to achieve convergence it is necessary to focus on two major "information sets" – *users and services*: how they are defined, related, implemented, used as the core of on line service delivery and maintained for the sake of the business.

In this process it is critical to use identity and information engineering techniques to develop the user-to-service information model.

Once this has been defined, all existing systems and new IT projects should converge on this information architecture. Implementation of the user-to- service architecture will normally result in a directory system (a large scale, high capacity directory system).

3. Analyse the converged services demands on the directory system to ensure it has the functionality and capacity to be used as the information infrastructure.

There five converged services demands:

- Identity based services
- Presence based services
- Media based services
- Location based services and service uniformity
- Single Customer View, Self-care, Up-sell and Product Management

As the need for more services increases particularly presence (instant messaging), location context and on-demand services (streamed media and games), the demands on the identity management

and directory infrastructure will increase. Not all directory products will have the extensibility or capacity to deal with these demands. Identity management is a new area and directories can be enhanced now their role in large IT infrastructures is consolidating. (Refer www.wwite.com for papers by these authors on next generation identity systems for MSOs)

4. Quantify the numbers of customers and products that will be applied to the on line business.

IT system designs must include the numbers of users and the numbers of services they get and how that happens. For instance:

A Subscriber has

Their entry, management entries, their address book and contacts, preferences, entitlements, buddy lists, devices and telephone numbers and voice/video mail boxes. Let us say a Subscriber might have 300 information objects to represent their on line needs.

A Product (Service) has

Its entry, service codes, profiles, the usage rights, catalogues, offers and the content. Let us say a VOIP or Media product might have 2-5 information objects to represent it in the system.

If we have 5 million customers and 20,000 VOIP and Media products we need a directory that will hold 1,500 million subscriber related objects and 100,000 product related objects.

These objects will be created and managed through a provisioning system as well as used by the subscriber access systems to log on and authorise the users, possibly millions of times a day.

Once these numbers have been calculated and the organisation made aware of the dimensions of the systems they need and the data they need to identify their customers and the services they want, it is a mistake to think "lets start small and grow the system". It is not possible and will surely result in numerous databases chasing the size required but adding cost, impeding service and sabotaging the corporate vision. Make sure the directory service you start with does not impede the rest of the convergence journey.

5. Identify the three major functions of the new system and enshrine these as the cornerstones of any IT project

A Directory

A Directory infrastructure that can scale to thousands of millions of objects that applies an identity - information design that represents the users and the services of the business **and can support the delivery of the services at the speed and capacity demanded.**

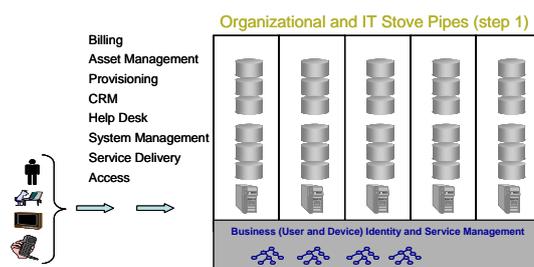
A Provisioning and Product Management Function

That places in the directory the objects that represent products, subscribers and devices and manages their attributes such as status and preferences according to billing and customer management systems.

The Customer Access Functions

Access servers (portals, mail, etc) that use the objects in the directory to deliver the services customers want and are willing to pay for (for example Mail, Web, VoIP, Presence, Address Books and Media delivery)

6. Converge the user access to services and on line self management through the design of a unified services common access directory service



This step is not just to select a directory service but to use information and identity engineering techniques to define the size and scale of the information in the directory that is to deliver the organisation's subscriber and service agenda. The information is not just subscriber entries and the organisation's services. It could be name management, entitlements, preferences, VOIP telephone numbers, message box parameters, email, IM address book, device, server, switch and licence information. The quantity of this information for five million customers may be one hundred million objects which could be accessed tens of millions of times a day. The directory service engineering and its capacity, extensibility, reliability and throughput actually become tightly aligned to the same properties of the on line services of the organisation. It would not serve to treat this design issue as a "server" with LDAP access. Such a "technology" approach would kill the on line business agenda.

Included in this step is the need to address the access systems (email and web servers) and how they use the directory information.

7. Adopt an approach to the new platform design that ensures integration with existing systems

Legacy Systems

Information Engineering – look at all the relevant databases (billing, CRM, product and asset management) and see how they evolve to support the converged platform through their interfaces and data models.

The Directory

Identity Engineering – look at all objects needed for your on line world, how many there are of them, how are they named and used and at what rates. Note: the directory represents all the items in the on line “shop” - the goods and services.

The Product Management and Provisioning System

Identity Engineering and Use Cases – look at the way products and services are represented in the existing systems and provisioned and how will they be converged from a management perspective, applied to the system, assigned to subscribers and controlled and supported.

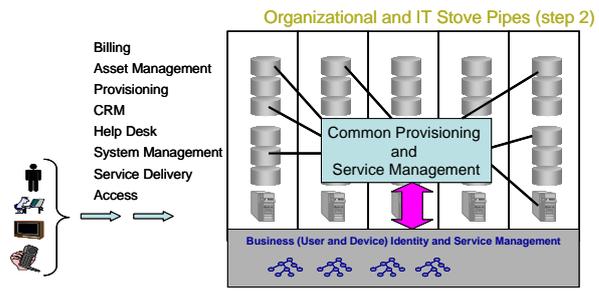
The Customer Access Systems

IP Service Delivery Systems - That use the objects in the directory to deliver the services the customer wants and pays for (for example Mail, Web, VoIP, Presence, Address Books and Media) through identification (name) and authorisation (password and entitlements).

Stop the “Fix Ups”

Transformation and Convergence – Understand that tactical IT projects or data base application centralisation (for example ERP and CRM) distract from the converged on line strategy.

8. Connect (over time) the major applications that provide the existing, disparate customer and service functions to a provisioning engine that manages the common “access” directory service



The demands being raised in this step are:

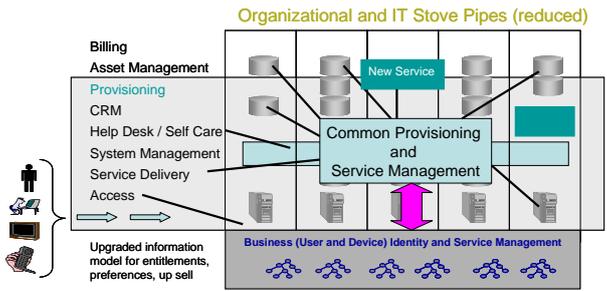
- ❑ I want to see the stove-pipe applications and databases qualified as to their role in the new system and what it takes to make them work or in some cases to be retired
- ❑ I want to see how our core applications are directed at the transformation process and the technology that interconnects them onto the converged identity platform. For example, this is

how our billing systems will deliver the same product to any subscriber, or this is how our two product databases contribute to a common product catalogue.

- ❑ I want to see how the stove-pipes are being removed using a system architecture design which is qualified with how the converged products are managed onto a common information set that represents the subscribers

At this stage the organisation is not adding a new application to a stove-pipe but adding a convergence, transactional engine that can take the critical and most effective product management and delivery applications onto a common information model. At the same time the project team is making sure that any new application that is being developed that is related to the user and service paradigm will use a common information model. Both the convergence engine and the directory model now become the focus of the organisation. With this engineering approach the organisation is now embarking on the true meaning of service convergence, single customer view and transformation (and stove-pipe activities will be on the decline).

9. Retire redundant systems, converge product management and self-care with new company-wide applications and decision tools that support services



The demands being raised in this step are:

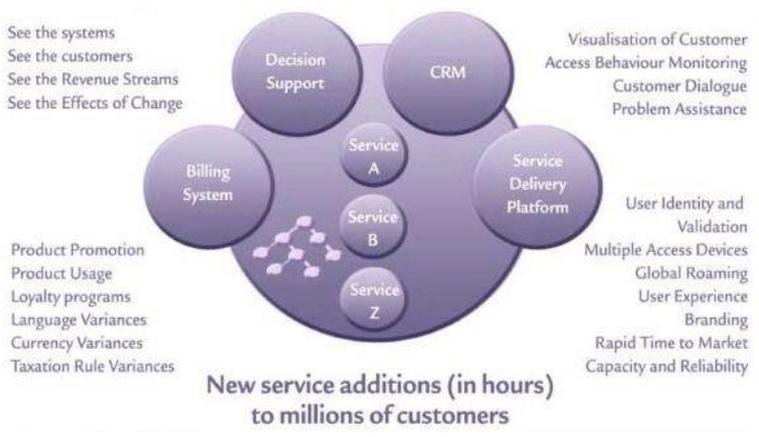
- ❑ As the transformation progresses I would like to see that we have common approaches to on line services and the removal of duplicated functions underway. I would also like to see that the system is attracting the rapid application of new services and that these can be engineered onto the platform very quickly for our growing customer base
- ❑ I would like to see a "single view of the customer" and a much more reliable single view of the on line business - as it evolves.
- ❑ I would like to see the screens that our customers use to select and define their preferences, select the products and services they want and use them with their entitlements

Once the basic strategy and implementation takes hold, new services and their management and convergence can be designed on top of the platform. New services can now be added in months. New functions can be added to use the directory services. These functions can be for the customer, the product managers, the decision support staff or the operational staff. The directory information becomes the representation of the information entities that support the on line business. That information is managed and available to users, staff and applications alike according to their roles and access rights.

Also in this process legacy systems that will not be required or won't make the grade with the new engineering approach should be retired.

10. Assess and measure the qualitative aspects of the converged infrastructure

The diagram below is the wwite e business model and identifies the major components of a converged on line infrastructure and the features that it should provide.



What is critical in this process?

The vision, governance, whole of organisation and whole of customer view is a requisite first stage in delivering unified services.

The next consideration is the engineering approach to deliver the scale, agility and service dimensions embodied in a competitive customer acquisition and product differentiation on line strategy.

The engineering approach requires:

- directory service information (identity) engineering. The directory represents the “CIO” of the on line service management.
- convergence of the legacy systems and the provisioning and management of new services through the application of unified product and services provisioning systems.

The two engineering parts are integral and their implementation within an organisation requires a newer style of “solution” thinking and skill set – a skill set that can traverse stove-pipes, apply provisioning and service delivery, achieve integration of customer and product strategies across the organisation through information and identity engineering – at real world service delivery paradigms and scale.

As we move forward with converged services then the demands on the directory services infrastructure increase and new approaches to service delivery, directories and identity management infrastructure are needed

As the need for more services increases, particularly presence (instant messaging), location, content and on-demand services (streamed media and games), the demands on the identity management and directory infrastructure will increase.

wwiteware is the next generation directory service oriented service delivery platform (SDP), designed by wwite to enhance identity management, service delivery, and customer self care operations

Refer www.wwite.com and white papers on next generation identity systems for MSOs and SDPs.

wwite p/l provide ebusiness strategic consulting services:

- defining customer–services and developing the customer-service competitive strategy for the organisation;
- developing the design and the engineering of the organisation’s on line business onto a directory platform, including legacy systems evolution;
- supporting project governance systems and
- providing key person training.

Alan Lloyd initiated and was a key designer of what is now the Etrust directory owned by Computer Associates. Alan is a long time player in the large scale directory, identity and information management area and is known internationally for his work with carriers, ISPs banking, government and allied defense forces worldwide. Alan is currently providing his expertise to a large MSO in the US through wwite P/L where he is using his large scale information engineering skills in designing the identity, presence, ISP/HSD, VOIP, VOD, entitlement, Vcom and customer self-care infrastructure platform which is using a large scale directory service and provisioning system. This significant project for the telecommunications industry is defining new ways of designing a service convergence platform for IP, identity and presence, provisioning and customer self-care through information engineering.

Susan Oliver has a background in business, technology strategy, project management, marketing strategy and entrepreneurship. She has been a manager in the public and private sectors and a consultant in strategy and technology with Andersen Consulting and with Vision Systems.

Susan is a Non-Executive Director of Transurban Group Ltd, a significant listed company in Australia, MBF Ltd Australia's second largest health fund, and Programmed Maintenance Services Ltd, in addition to several not-for-profit roles where she takes an active and influential role in committees and business growth.

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