

*Transflow*▷▷

## Composite Applications and SOA

The Foundations For 21st Century Businesses

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## I. Summary

This white paper addresses composite applications and their underlying components - portals, services and service oriented architectures (SOAs). It identifies the business requirement for them and some of the technology trends that have led to them.

The clamour surrounding these ideas is sometimes reminiscent of the early days of the data warehouse era when extremely extravagant claims were made. Now composite applications, portals and SOAs are slated as the new delivery mechanism for corporate information and services but they too could deliver the same disappointing results as many data warehouse implementations. A real danger is that rather than helping businesses they will exacerbate the already critical problems of information overload and underperforming, unreliable applications.

This white paper argues that composite applications are all about simplifying business processes by eliminating obstacles to getting the job done efficiently. They are about getting the right information (and only the right information) to the right people (and only the right people) and, based on that information, allowing them to execute business processes efficiently, with the minimum of manual intervention.

Businesses generally need to simplify the over-complex and inefficient manner in which technology mediated business transactions tend to take place, which means pretty much all business transactions. Any increase in the efficiency of these transactions will be reflected directly in a company's bottom line. The core principle is to use web technology's simple, and hugely successful, global publication model plus a service based architecture to implement composite applications. This simplifies the complex, and cumbersome, restricted access processing model in use at most businesses. Because this is very much a real world issue it involves existing mission critical software and therefore underlying the composite applications will be a hybrid of legacy, new, custom and packaged software.

Composite applications use web technology to simplify un-clutter and automate the interfaces that enterprise users have to contend with, be they employees, partners or customers. They make available a relevant subset of a corporation's information and application resources in a simple, structured fashion. By doing so they are laying the foundations for the creation of callable web services which will in turn be used to easily create additional composite applications.

## II. The Business Need

The key business objective of composite applications is to increase business efficiency and this is done by delivering only relevant information and functionality and by streamlining business collaborations between enterprise users, who may include employees, customers, partners and suppliers. This results in increased transaction flow, which is the lifeblood of all businesses. It is achieved through the application of one key principle 'simplify, simplify, simplify'. This principle is applied ruthlessly to the way in which enterprise users interact with their information resources (structured data, web content, applications and external interfaces). By simplifying these interactions the business is made more efficient.

This simplification is necessary because even though businesses today are totally dependent on their corporate information resources for transaction flow these are accessed via an obstacle course of bewildering proportions, causing major inefficiencies. Human users face a graphical interface that is likely to involve a far from intuitive sequence of desktop icons, menu choices, list choices, button presses, all taking place in a complex desktop environment which requires almost continual remedial care from the corporate PC support team. Slow and error-prone manual intervention is frequently needed to advance the business process. External users, such as business partners, who need to communicate via a messaging interface, face non-standard, or little-used, protocols and formats with serious integration implications. These various interfaces are locked in a chicken and egg deadly embrace with a tangled legacy of application silos, ranging from custom created mainframe systems to the ERP (Enterprise Resource Planning) and CRM (Customer Relationship Management) applications that were supposed to solve these problems not add to them.

Composite applications address these issues through two main techniques:

- Using a single browser based user interface.
- Automating manual business processes.

The first technique allows composite applications to apply the features that have made the web so successful as a global publishing medium to the distribution of corporate information and the application software that underlies business processes. The only (thin) client software required is a web browser, thus reducing the PC maintenance overhead. The most structured form of this interface is when a portal is used and resources appear to portal users as familiar style web content plus a set of business-oriented portlets.

The second technique involves linking together several distinct silo applications to form a single composite application and by doing so removing all the manual inter-silo processing steps. Frequently only specific functionality is required from a particular silo application, for example 'check credit rating', and such functionality is usually described as a service and the resulting software architecture as a service oriented architecture (SOA).

Thus composite applications deliver the key enterprise resources of information and application services in a simpler and more automated fashion than traditional monolithic silo applications. The results of this exercise in simplification are to unlock hidden business value, reduce costs and improve efficiency and productivity.

### **III. Composite Applications**

This section provides some terminology and background for understanding composite applications.

#### ***(A) User Interface***

The number of portal products in the marketplace has led to a recognisable 'portal style' of browser based user interface design and while composite applications are not always accessed via a portal their user interfaces frequently exhibit elements of this style.

The main principle behind the portal style is to help make business processes more efficient by simplifying the way in which collaborating enterprise users interact with their corporate resources.

#### ***(B) The Users***

Who are a composite application's users? They may be employees, customers or partners, and within each category further groupings can take place. The concept of a user community has come to mean a user group collaborating for specific business purposes.

#### ***(C) Corporate Resources***

What are the resources that the users are being given access to? In traditional terms they are corporate documents, corporate data (such as sales information, order processing data, etc. all probably held in a relational database, sometimes referred to as structured data) and the application software that manages that data (such as custom applications, for instance reservation systems, or packages supporting things like order processing, CRM, ERP, Supply Chain Management (SCM), etc.).

Using the web model of access to resources via URLs corporate resources can be divided into two categories, content and applications.

##### ***(i) Web Content***

This broadly means publishable web style graphically formatted information defined in HTML. It is accessed via a URL and presented via a browser, frequently without application program intervention. Of course it may include multi-media data, like audio or video, or pre-web content, such as business documents that are not correctly formatted for web publication, the phrase unstructured data/content is often used in this context.

##### ***(ii) Web Applications (& Services)***

These refer to the software applications that implement an enterprise's business processes but which now need to be accessible over the web. Although many new web applications have been developed almost without exception they are composite applications, i.e. a hybrid of new web

based software plus existing custom or packaged software. The general form of the architecture they exhibit is as below.

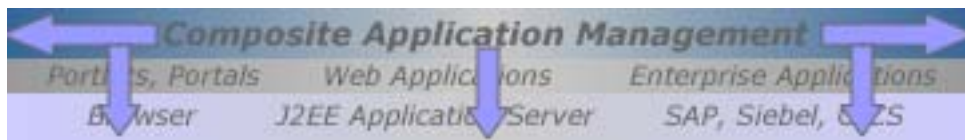


This architecture is the web enabled version of the classic 3-tier service oriented architecture (SOA) that has been around for over 30 years. It was first used on TPMs (Transaction Processing Monitors) such as IBM's CICS or BEA's Tuxedo and today on Application Servers (such as BEA's WebLogic and IBM's WebSphere). When a business has legacy applications based on an SOA their inclusion in composite applications is relatively straightforward but most businesses, at best, have applications that are only partially structured as services, so there are legacy issues to be resolved.

The web has given SOAs a huge boost (SOA is currently a very hot acronym) and has led to the idea of calling services over the Internet as 'web services'. This raises many issues including transactional integrity, security, load balancing, manageability and failure recovery. In the past these issues could be handled within a business by the TPM infrastructure software but when services are being offered, and used, over the web then they become much more complex. Key standards such as SOAP, UDDI and WSDL have already been established and standards organisations are busy working on many others.

**(D) Composite Application Management (CAM)**

The integration of services implemented by several silo applications into a single composite application is potentially the first step to presenting them as web services. These could then be linked together to form further composite applications. Such widely distributed composite applications will bring with them serious operational issues both in development and production. Already this has led to the appearance of composite application management (CAM) software which supports both the traditional silo application drill-down management features plus the end to end management features required by composite applications.



(The appendix to this white paper contains a data sheet describing Transflow's solution to the CAM problem.)

**(E) Platforms**

Composite applications require a software platform on which to be implemented and as composite applications based on web services become more common so this infrastructure will become more complex in order to handle issues like service publication and discovery, transaction support, recovery and resilience features. Java2 Enterprise Edition (J2EE) application servers are by far the most common platform in use at present.

## IV. Conclusions

Composite applications, and underlying technologies such as portals, web services and SOAs, are evolving rapidly as they move to centre stage in enterprise software architectures. As this happens a number of trends are discernible:

- Composite applications are helping to impose the web version of the classic Service Oriented Architecture (SOA) whereby in the future they will use (and offer) web services which can be called over the Internet.
- Standards are emerging and being established to deal with these new web-wide applications including standards for portlets, transaction integrity, security and performance management.
- Management of composite applications is becoming a major issue due to their widely distributed and heterogeneous nature and composite application management (CAM) products are now emerging.

Since composite applications are becoming critical to businesses the selection of the software platform on which they rest is very much a strategic decision, not a tactical one. Many software vendors now have platform products and currently the favoured platform on which to implement composite applications is a J2EE (Java2 Enterprise Edition) application server. The 2 market leaders in that space are IBM WebSphere and BEA WebLogic, though many other options, including open source alternatives, are available. In future the Microsoft .NET platform will certainly challenge J2EE and at that time both platforms will no doubt have their adherents and a shared market will be established.

## Appendix A – The Transflow Application Management System

Please find attached the data sheet for the Transflow Application Management System. Contact Transflow for further details.

## Transflow Application Management System (TAMS) 2.1.1

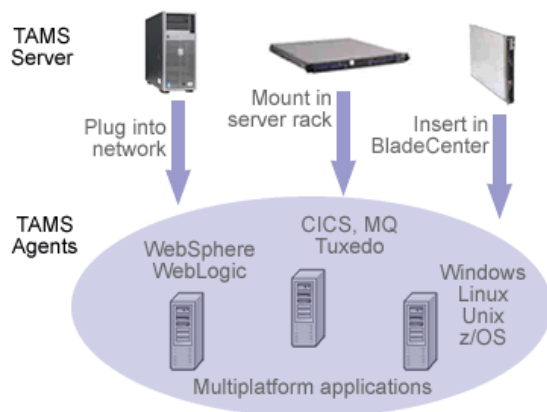
### Product Overview

Version 2.1.1 of the Transflow Application Management System provides full support for composite application management through its end to end and drill down features for application monitoring and analysis.



TAMS consists of a server and several agents with the product design maximising Return on Investment (ROI) and minimising Total Cost of Ownership (TCO).

- Installation is rapid and troublefree.
- Data collection can start immediately.
- Very little training needed.
- Minimal operational support required.



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Three preconfigured operational profiles come as part of the product to help get you up and running immediately in the mode most appropriate to your needs:

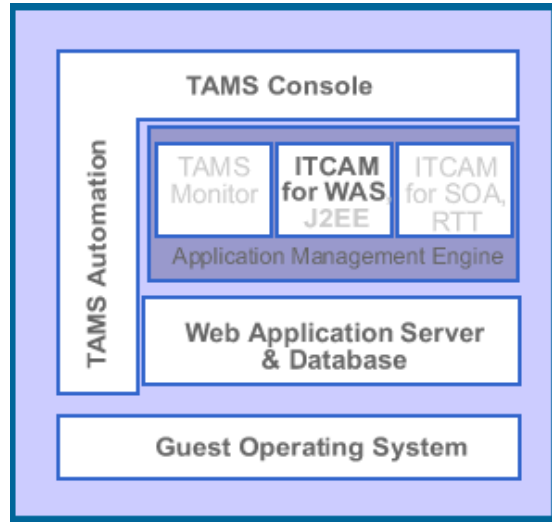
- Transaction Diagnosis.
- Integration & QA.
- Production Application Management.

The top priority for TAMS is to let you tackle your real issues as quickly as possible.

## Transflow Application Management System (TAMS) 2.1.1

### Product Features

The TAMS Server software is a black box module that comes preconfigured to meet your specific operational requirements.



### The TAMS Virtual Server

In the standard edition of TAMS 2.1.1 Tivoli's ITCAM for WebSphere 6.0 is enabled as the application management engine and provides a wide range of built-in features that include:

- Individual in-flight transaction monitoring.
- True J2EE/ICS/IMS transaction correlation (not gateway monitoring).
- Monitoring levels that are switchable in real time.
- Powerful built-in report writer.

For less demanding environments *TAMS Express* enables the TAMS Monitor as the engine.

The TAMS Console plus TAMS Automation supply ease of use features to the server:

- Consolidated monitoring display.
- Profile switching and management.
- Operational task automation.
- Performance database & audit logs maintenance.

For existing ITCAM users who wish to enhance their DB2 data management environment *TAMS for Data* provides those features as a standalone module.

More information on the features of TAMS 2.1.1 can be obtained by calling us at the number below or by emailing [sales@transflow.co.uk](mailto:sales@transflow.co.uk).

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## Transflow Application Management System (TAMS) 2.1.1

### Product Specification

#### **TAMS 2.1.1 Server**

The TAMS server is generally implemented on an x86 tower, rackmounted or blade server. For some purposes, such as transaction diagnosis in a development lab environment, it can be delivered on a laptop. Alternatively, for environments with spare hardware capacity, the TAMS black box software module can be installed on an existing server.

#### **TAMS 2.1.1 Agents**

Agents are available for the following environments.

AIX	AIX V5.2, V5.3 WebSphere Application Server V5.0, V5.1, V6.0
HP-UX	HP 11i V1 WebSphere Application Server V5.0, V5.1, V6.0 WebLogic Application Server V7 SP5, V8.1 SP3
Red Hat	Red Hat Linux V2.1, 3.0 (details vary for pLinux, xLinux, iLinux & zLinux) WebSphere Application Server V5.0, V5.1 WebLogic Application Server V7 SP5, V8.1 SP3
Solaris	Solaris V8 or Solaris V9 WebSphere Application Server V5.0, V5.1, V6.0 WebLogic Application Server V7 SP5, V8.1 SP3
MS Windows	Windows 2003 Server SE/EE WebSphere Application Server V5.0, V5.1, V6.0
SuseLinux	SuSE zLinux V8, 9 (details vary for pLinux, xLinux, iLinux & zLinux) WebSphere Application Server V5.0, 5.1, V6.0
OS/400	OS/400 5.2, 5.3 WebSphere Application Server V5.1, V6.0

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