

CBDIJournal

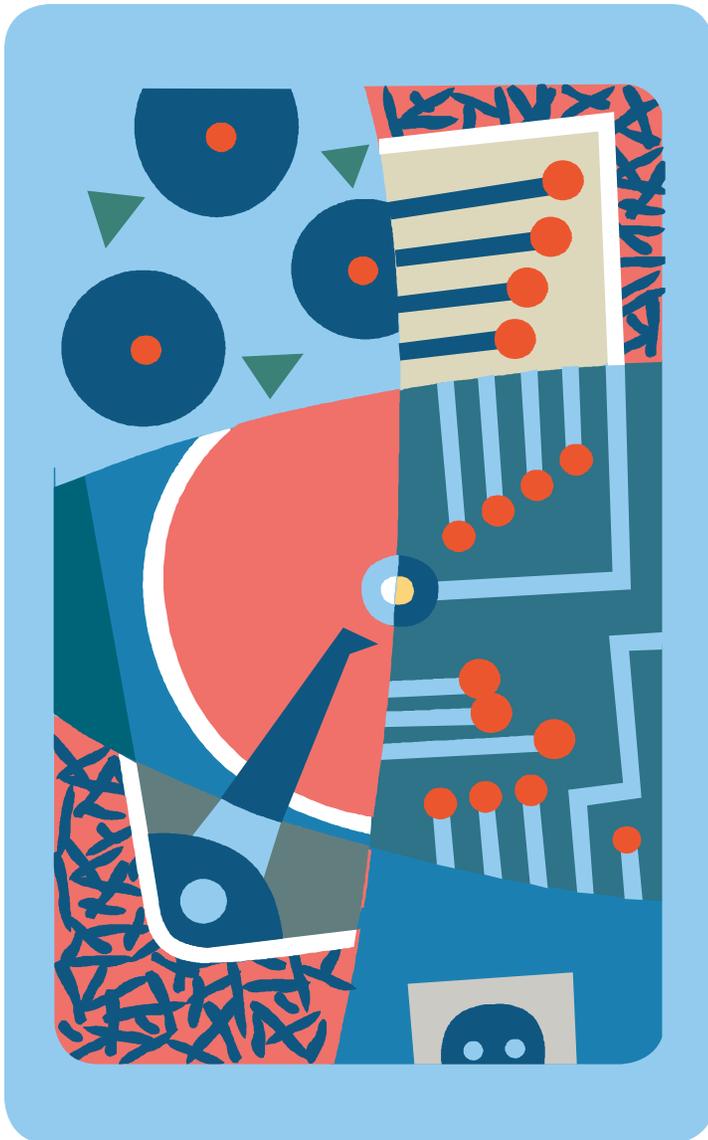
Reprint From APRIL 2005

Product Report

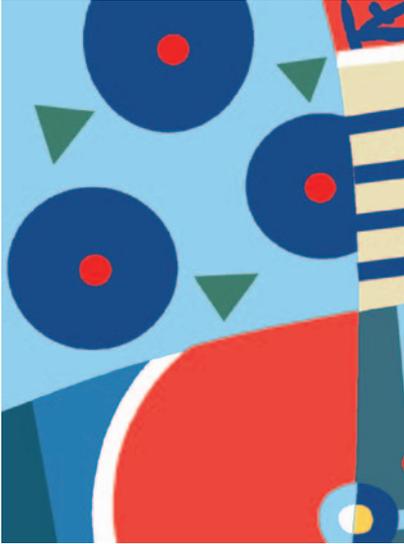
Improving SOA Governance with
the Systinet Business Service Registry

In this report on the Systinet Business Service Registry we look at how SOA governance can be improved through the provision of a set of lifecycle services.

By Lawrence Wilkes



Insight for Web Service & Software Component Practice



Improving SOA Governance with the Systinet Business Registry

By Lawrence Wilkes

The UDDI Discovery Standard was one of the original trio of Web Service protocols along with SOAP and WSDL. Now in Version 3, the UDDI specification might be expected to be relatively mature, however, there are still plenty of opportunities for a software vendor to integrate directory functionality into a more complete product that supports the requirements for an organization's own Service Registry. In this report on the Systinet Business Services Registry we look particularly at how SOA governance can be improved through the provision of a set of lifecycle applications and services.

Introduction

The UDDI (Universal, Description, Discovery and Integration) data model and protocol is one of the three original core Web Service specifications. It defines the implementation of a standards-based registry by which Service Providers can publish their Services and Consumers can discover them. Because UDDI APIs are based on Web Services, it is straightforward to integrate the registry into tools or portals. Today UDDI based registries and directories are widely used in private, in-house environments. The original vision of UDDI envisaged more dynamic business systems that could autonomously discover and consume new Services, and while little use is made of this capability today, we fully expect that as SOA becomes the de facto approach to systems deployment, dynamic discovery services will become increasingly important.

However, before UDDI is used in any revolutionary fashion in the future it must first overcome some challenges of today. These are largely issues of governance. For example,

- Quality of information. The publicly hosted UDDI registry – the UDDI Business Registry (UBR) – jointly operated by IBM, Microsoft, NTT Communications and SAP are exactly that – public. They are also unregulated, and as such there is little guarantee that any of the entries are valid, and a large amount of the information is out of date or contains broken links.
- Privacy and security. Many businesses have no desire to make their Services public. In addition, many have no real need at present to “discover” Services, as the Provider and their Services are already known to them via other routes that are part of existing commercial

arrangements. Hence they don't need to make the use of the public UDDI Business Registry.

- Lifecycle. There's no real lifecycle support built into the UDDI specification to manage the submission, approval and publication process.
- Non-functional requirements. Discovering Services by functionality leaves many questions unanswered, such as Quality of Service (QoS) or the commercial basis on which the Service is offered.

One way round this is to use an intermediary who hosts their own UDDI-based registry and exercises much greater control over the contents, or who front-ends the public version and filters the information more rigorously, such as BindingPoint¹ or Sal Central². Sometimes this is facilitated on a commercial basis between the Service provider and the intermediary who effectively acts as a commercial publisher.

Another alternative that is increasingly common is for organizations to implement their own private registry. This could be used for:

- The internal publication and discovery of Internal Services within the organization
- Internal publication of a filtered set of approved External Services
- With the right security in place, the sharing of the private UDDI registry across an ecosystem of business partners

Many find that the ad hoc Service Provision and Consumption within their organization leads to similar problems of governance. In a recent CBDI survey³ most respondents admitted they had little visibility of service-based activity across organizations. A registry by itself does not overcome this problem, however it can provide a focal point via which organizations can exercise greater governance over their SOA. To improve the overall scenario it would be useful to complement a UDDI-based registry with:

- Service Management tools from Web Service Management (WSM) or traditional Systems Management vendors that can sniff out Web Service activity on the network, so that their usage can start to be governed
- Service Management tools could also provide feedback to a UDDI registry on the historical service level of production Services.

- Asset Management tools. The visibility of internal assets across an enterprise is often weak, and hence compromises the ability of developers to discover and reuse those assets. Having a Service registry that could be linked into their tools and process, and categorized in ways that are meaningful to them provides a central controlling or coordination point. Linking a UDDI-based registry to asset management tools would provide a broader solution for the organization's overall asset management needs
- Integration with security and identity solutions, such as LDAP to enable permission based access and usage.

Systinet Business Services Registry

UDDI is a specification and whilst standards compliance drives a base of common functionality this still allows software vendors to provide their own unique implementation. Systinet is a vendor focused on Web Services and SOA governance, who are involved in the UDDI standards initiative and the OASIS UDDI Technical Committee⁴. Systinet provide a suite of products including

- Systinet Server for Java (formerly know as WASP Server) and Systinet Server for C++
- Systinet Developer for Eclipse
- Systinet Business Registry

Now at version 5.5, the Systinet Business Service Registry provides a platform independent implementation of UDDI V3 (and UDDI v2) as well as a number of value added capabilities. In terms of governance the key extension provided by the Systinet Business Services Registry is a set of life cycle applications and services. As illustrated in Figure 1, this is a useful approach as a registry can be active at many stages across the lifecycle, and does not necessarily play just a simple publish/discover role.

Classification

The Services registry provides a logically centralized source of information about services that is available to all participants in the life cycle. At the core of the registry implementation is the requirement to establish classification systems for the data types that provide a stable and consistent description system.

Systinet has recently announced the Governance Interoperability Framework (GIF). This initiative, supported

¹<http://www.bindingpoint.com/>

²<http://www.salcentral.com/>

³CBDI Market Trend Report: Web Services Management Market Trends Part 2. http://www.cbdiforum.com/secure/interact/2004-12/web_serv_manprt2.php

⁴http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=uddi-spec

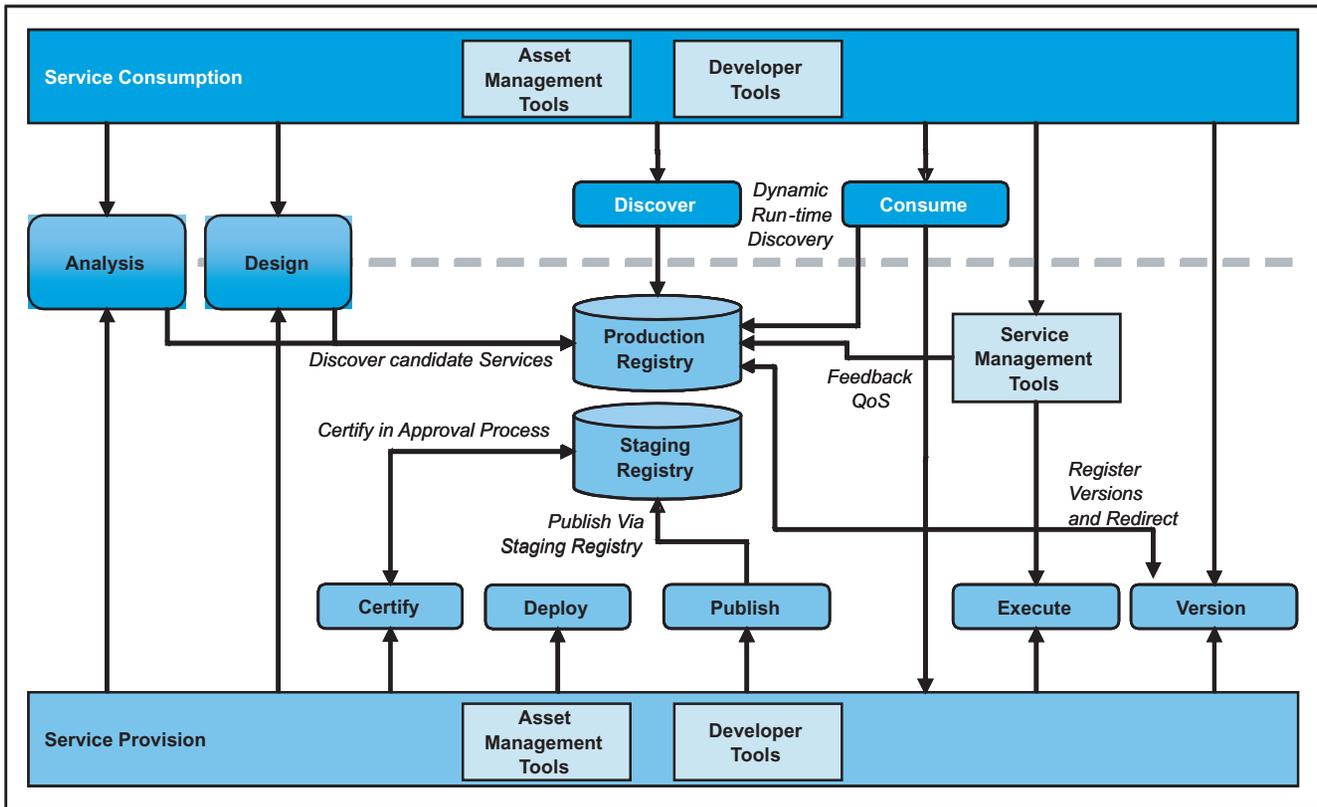


Figure 1: Role of Registry in the Service Lifecycle

by vendors⁵ such as HP, Amberpoint and Actional, is intended to provide a common approach to publishing and discovery of services metadata, with interoperability between the registry and other components of the SOA infrastructure such as Service Management, Security and Integration.

Based on WS-* standards, (WSDL, BPEL, WSRP, WS-Policy and WSDM) this initiative aims to establish interoperability specifications as well as use cases for mapping business service metadata and policies to the Business Service Registry. This should provide classification guidelines and recommended schemas that provide common approaches for the publication and discovery of Services based on the examples shown in Table 1.

Taxonomies	Service Type	Domain Business Area	QoS Response Times	Mapping Dependencies
Policies Capabilities and Constraints	Technical WS-I Security	SLA Availability Performance	Regulatory FDA Sarbanes Oxley	Corporate SLA Governance
Specifications	Transports HTTP JMS IIOP SMTP/POP	Security HTTP Digest X.509 Kerberos XML Sign	Interfaces WSDL XML Schema	Documents Functional Specification API reference Examples

Table 1: Business Service Registry Classification and Metadata Examples (Source Systinet)

⁵GIF Participants include AboveAll, Actional, AmberPoint, Composite Software, DataPower, Hewlett-Packard, Layer 7, MetaMatrix, Reactivity, Systinet, and Service Integrity

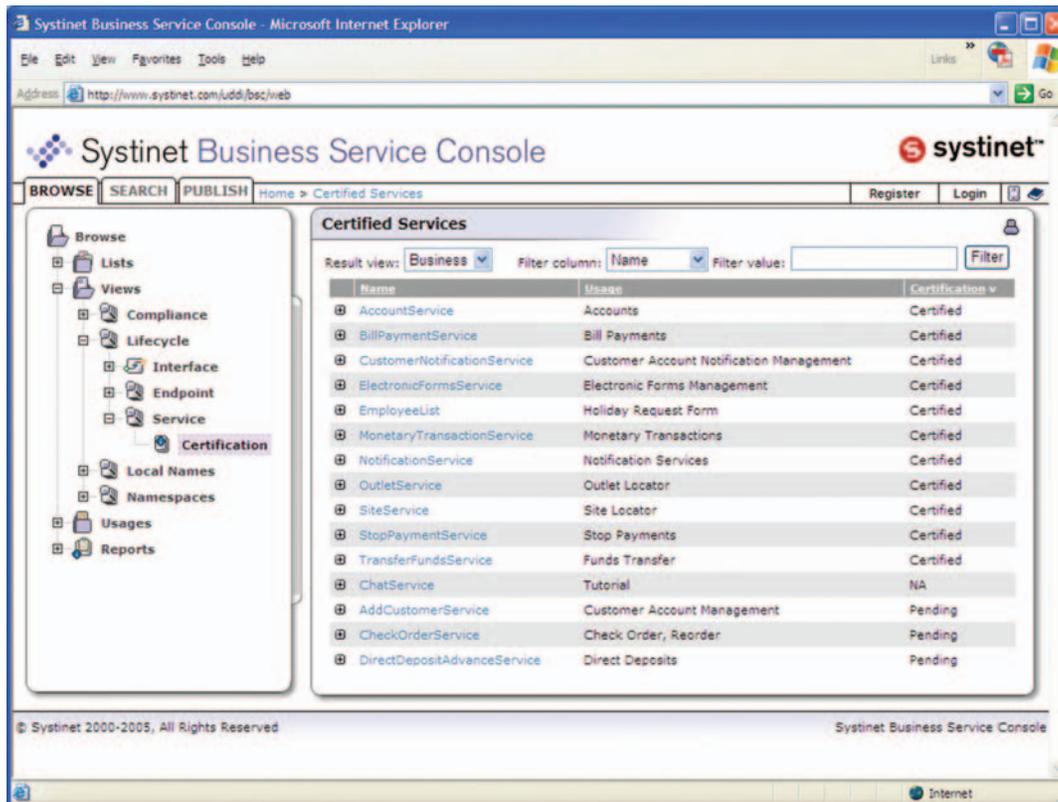


Figure 2: Business Service Console Showing Certification Status

A key benefit of this approach is that when combined with the lifecycle services provided, the Business Services Registry can provide the core audit of Service activity.

Approval and Publication

To ensure the validity of registry entries and overall quality of the metadata to promote reuse among other usages, the Systinet Business Service Registry provides an approval process. This is exposed both as self service via a browser and as a Web Service so that it can be integrated into tools and portals. The approval process can have various behaviors. For example the process could be:

- An automated one whereby the Service is validated and approved automatically against various criteria and policies.
- Or submitted via a role-based approval process, with submissions processed by someone designated with the role of approver.

The process provides a number of extensible validation steps, so users can add their own scripts, or invoke external services – which could for example be long running operations that run a battery of tests. Validation or certification could include policy compliance, protocol usage, or validation and enforcement of classification

including customer-defined taxonomies. One test not included by default at present is WS-I compliance, but this can be integrated into the process via the API.

To support approval and publication, Systinet provides both a staging and production registry with the approval process moving entries from one state to the other.

Discovery

Discovery takes place at many stages of the lifecycle, for example:

- Design-time Discovery. Early in the development process analysts and designers might search for candidate Services for possible use in their projects.
- Applications might search dynamically for new Services to use at run time in response to business change, or version changes.
- The runtime infrastructure might search for Services or Service locations for reasons of routing, scalability or backup.
- Service Management might look to discover Services to manage.

Whilst UDDI includes extensible categorization systems to aid Service Discovery, Web Service protocols such as WSDL are not rich enough to enable Service Consumers to fully understand the function and complete specification of a Service. This is perhaps more a requirement for analysts and designers rather than the runtime discovery of alternate Service locations. One of the useful roles of UDDI is therefore to provide links to other sources of information that provide further more comprehensive specifications.

Service Discovery is made against the production registry. The Systinet Business Service Registry provides rich support for business service classification, with configurable taxonomy support and a range of standard classifications systems built in such as North American Industry Classification System (NAICS), Standard Industrial Classification (SIC), Universal Standard Products and Services Codes (UNSPSC), Universal Standard Products and Services Codes (UNSPSC), ISO 3166 Geographic Taxonomy

Visibility

A configurable Business Services Console (BSC) and extended set of business service abstractions enables users to discover and understand Services from several perspectives, such as: business, technical, and organizational taxonomy, as illustrated in Figure 2. Standard views include taxonomy, whether a Service is managed (i.e recognized by the Service Management infrastructure), QoS, or lifecycle status such as development, QA, certified, production, deprecated. As well as supporting the discovery of Business Services based on business and technical classification the BSC enables users to look at published models such as WSDL, XML Schema and XSLT without having to understand how these are stored in the UDDI data structure, and provides links to further information sources that aid understanding such as UML models or test cases.

Feedback

An important factor in the Service discovery and consumption process is selecting Services not just on the basis of functionality, but also on non-functional issues such as QoS and other governance data. It is good practice for organizations to classify Services by Service Level, in terms of the agreement level under which they are offered. In addition it is useful to have actual QoS information based on actual performance.

With Service Management tools already collecting the relevant information required such as transaction volumes,

average response times or availability, it seems natural to use this to provide a feedback loop by which production Services can be observed and measured.

Systinet have worked with AmberPoint and HP to feed this information back into the Business Registry, enabling Service Consumers to discover Services by SLA and QoS. Work is also ongoing between the UDDI and WSDM Technical Committees (TC) at OASIS to publish a technical note for mapping of WSDM metrics into UDDI and for the registration of management endpoints. Note the comments on GIF in the classification section above.

Versioning and Change Notification

Web Services have no explicit versioning mechanism. Common practice is to assume that changes to a Service interface results in the publication of a new Service, so that existing Service Consumers are not impacted by the change. UDDI V3 implements a subscription mechanism supported by the Systinet Business Registry whereby Service Consumers can receive change notifications by registering their interest. This requires them to register the areas in which they are interested in receiving notifications of changes or new entries, and also implementing a Web Service by which they will then receive any notifications.

A more formal lifecycle approach to SOA becomes increasingly essential, and the lifecycle services provided by Systinet can play a pivotal role in achieving this.

Federation

Federation isn't a lifecycle stage as such, but it is useful to reflect how the Systinet Business Services Registry supports usage within a closed ecosystem of business partners, or perhaps just autonomous divisions of a global company that each independently maintain their own registry. UDDI was of course designed from the ground up to support federation recognizing the potential organizational separation of Service Providers and Consumers.

To keep multiple registries in synch, the Systinet Business Services Registry supports replication using the UDDI v3 Subscription mechanism rather than the use of proprietary database replication. Multiple registries can be federated by replicating information between registries, either using a top-down one way replication strategy when federating a hierarchy of registries, or a two-way replication between peer registries, such as between business partners or between divisions in the absence of an enterprise root registry.

The approval process can be put in place across any of the federated registries. For example, one participant could

publish Business Services to their own registry, which are then submitted to the approval process and only replicated into other participant's registries upon approval by them.

Conclusions

Systinet provide a leading-edge registry capability based on UDDI V3. This is perhaps not surprising given their level of participation in the UDDI initiative. At the same time, the Systinet Business Services Registry provides sufficient added value capabilities to differentiate it from the functionality common to other UDDI implementations.

With many other UDDI implementations coming from platform vendors, having a platform independent registry can be useful to a heterogeneous enterprise or ecosystem. Registry independence is also useful to ensure Service governance is independent of individual platforms and development tools. Whilst these might each have their own standard UDDI implementation, at the same time

they may also have incompatible approaches and lifecycle processes, which in turn could lead to inconsistent validation, certification and approvals.

With the use of Web Services and the transition to SOA growing steadily, at the same time so too does the pressure for improved business and IT governance. Introducing a more formal lifecycle approach to SOA therefore becomes increasingly essential, and the lifecycle services provided by the Systinet Business Services Registry can play a pivotal role in achieving this.

Links

Systinet – <http://www.systinet.com>

UDDI – <http://www.uddi.org>



Insight for Web Service & Software Component Practice

Subscribe to the CBDI Forum

The CBDI Journal is published monthly. In addition to the Journal, subscription includes electronic access to current and all back numbers that now represent a significant resource library. There are individual and corporate subscription schemes. Corporate subscription includes access to PowerPoint libraries and our workshop materials.

For more details and to subscribe see:
www.cbdiforum.com

Reprint from the CBDI Journal April 2005

Produced for Systinet

Systinet provides the leading foundation for SOA governance and lifecycle management. Founded in 2000, Systinet's award-winning, proven, and standards-based products enable IT organizations to rapidly leverage existing technology investments, provide interoperability between heterogeneous systems, and better align business processes with IT. Customers receive the benefits of a simpler, faster, standards-based way to dramatically improve IT responsiveness and technology asset reuse, while maximizing the ROI for SOA. Systinet's customer base of over 150 Global 2000 clients includes Amazon.com, BMC Software, Interwoven, JP Morgan, Motorola, Defense Information Systems Agency (DISA), and SAIC. Headquartered in Burlington, MA, Systinet is a privately held company with over 100 employees.

To find out how Systinet can help your business, visit

<http://www.systinet.com>, call
1.781.362.1300, or email us at
sales@systinet.com.

CBDI Raison d'être

We aim to provide unique insight on component and service oriented technologies and processes for the software industry and its customers. To provide high quality analysis and other information resources on best practice in business software creation, reuse and management. To maintain the highest level of independence.

Modus Operandi

The CBDI Forum has a number of channels:

- Subscription services – provision of continuous commentary and information.
- Workshops and seminars – providing indepth briefing and guidance on advanced architectures, processes and practices.
- Consulting – including related product management and marketing advice, application audit and guidance, technical and business evaluation for investment

How we compare with others

We are not a mass market, media oriented organization. All material published by the forum is unique. The majority of material is published by our own analysts, or commissioned from others, and under strict editorial control to ensure accuracy. We rigorously exclude spurious marketing.

We provide depth insight which covers a narrow topic footprint in a deeper way than the other analysts, and in particular cover not just the technology, but also the architectures, usage, practices and processes.

Also we are unusual as analysts; we do not simply echo what the vendors say, we are a think tank, identifying new ideas, opportunities and providing stimulus for thinking. We are thought leaders providing ideas generation and a rich source of conceptual thinking based on practical, real world feedback.

Who Reads the CBDI Journal

Technical leaders including Technical and Application Architects, Business Analysts, Consultants, CTO's, Designers, Product Strategists, Senior Developers, Project Managers, CIO's etc. Subscription is split roughly 40% USA and 50% Europe.

Contact Us

For further information on any of our services contact us at: info@cbdiforum.com or +353 28 38073 (international)

IMPORTANT NOTICE: The information available in CBDI publications and services, irrespective of delivery channel or media is given in good faith and is believed to be reliable. CBDI Forum Limited expressly excludes any representation or warranty (express or implied) about the suitability of materials for any particular purpose and excludes to the fullest extent possible any liability in contract, tort or howsoever for implementation of, or reliance upon, the information provided. All trademarks and copyrights are recognised and acknowledged.