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New Work Item Proposal

PROPOSAL FOR A NEW WORK ITEM

Date of presentation of proposal: **2009-09-24**	Proposer: National Body of China(SAC)
Secretariat: Natinal Body: ANSI	ISO/IEC JTC1 N ☐☐☐☐

1 **A proposal for a new body item** shall be submitted to the secretariat of the ISO/IEC joint technical committee concerned with a copy to the ISO Central Secretariat.

Presentation of the Proposal – to be completed by the purposer . .

Title (subject to be coverd and type of standard, e.g. terminology,method of test,performance requirements, etc.)Specification of Data Value Domain

General Specification of Service Oriented Architecture

Scope (and field of application)

This standard provides the basic technical reference model and general requirements of SOA, including functional requirements, performance requirements, develop requirements and deployment requirements.

This standard applies to software product development and system implementation which based on SOA.

This standard is the basis for SOA products standards, SOA engineering standards, SOA quality & testing standards.

Purpose and Justification—attach a separate page as annex,if necessary

In recent years, SOA has become a technology's hot spots which is recognized and respected in industry. Many companies around at home and abroad have developed a large number of SOA products, at the same time, an increasing number of applicable system started to try to use the SOA, the solutions based on SOA are also be implemented in many fields. But SOA's technical requirements of the specific norms and standards hasn't been established at present, existing products and projects are varied in methods and technology implementations. users are confused and have doubts about SOA. Therefore It is necessary to establish a unified and overall technical requirements of the SOA as the SOA's testing and certification standards of related products and projects, to upgrade standardization and quality levels of software production and industry's applicable items which based on SOA, promote the large-scale of SOA effectively.

Programme of work

If the proposed new work item is approved,which of the following document(s) is(are) expected to be developed?

__x_ a single International Standard

____ more than one International Standard(expected number…….)

___ a multi-part International Standard consisting of ……parts

____ an amendment for amendments to the following International Standard(s) ...…

____ a technical report,type……..

And which standard development track is recommended for the approved new work item?

__x_ a. Default Timeframe

____ b. Accelerated Timeframe

____ c. Extended Timeframe

Relevant documents to be considered

ISO/IEC 15288,
System life cycle processes,
ISO/IEC 12207,
Software life cycle processes,
ISO/IEC 42010 architecture description

Co-operation and liaison

WS-I

W3C

OMG

OASIS

JCP

DMTF

TOG

IEEE-SA Working Group on SOA and Web Services
JTC1 SC6,SC7

Preparatory work offered with target date(s)

The Republic of China is pleased to be the sponsoring member for this work item and proposes Ms.Yuan as the project leader/editor of this deliverable.

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Signature:

Will the service of a maintenance agency or registration authority be required?…No.…

If yes,have you identified a potential candidate?……No…

If yes,indicate name…….

Are there any known requirements for coding?……No.

If yes.please specity on a separate page

Does the proposed standard concern known patented items?……No…

- If yes,please provide full information in an annex.

Comments and recommendations of the JTC1 or SCXX Secretariat – attatch a separate page as an annex,if necessary

Comments with respect to the proposal in general, and recommendation thereon:

It is proposed to assign this new item to JTC1/SC XX

Vote on the proposal - Each P-member of the ISO/IEC joint technical committee has an obligation to vote within the time limites laid down(normally three months after the date of circulation).

Date of circulation:	**Cosing date for voting:**	**Signature of JTC1 Secretary:**
YYYY-MM-DD	**YYYY-MM-DD**	

NEW WORK ITEM PROPOSAL – PROJECT ACCEPTANCE CRETERIA		
Criteria	**Validity**	**Explanation**
A: Business Requirement		
A.1: Market Requirement	Essential X Desirable Supportable	
A.2: Regulatory Context	Essential Desirable Supportabl Not Relevant X	
B: Related Work		
B.1: Complete/Maintance of current standards	Yes No X	
B.2: Commitment to other organization	Yes No X	
B.3: Other Source of standards	Yes No X	
C: Technoical Status		
C.1: Mature technology	Yes No X	

C.2: Prospective Technology	Yes X No	
C.3: Models/Tools	Yes No X	
D: Comformity Assessment and Interoperability		
D.1: Conformity assessment	Yes No X	
D.2: Interoperability	Yes X No	
E: Cultural and Linguistic Adaptability	Yes No X	
F: Other Justifications		

NWIP from Chinese National Body

INTERNATIONAL STANDARD ISO/IEC XXXX
ITU-T RECOMMENDATION X.XXX

General Specification of Service Oriented Architecture

(Draft)

Summary
TBD

Keywords
SOA, Specification,

Introduction

SOA is the abbreviation of Service Oriented Architecture. Different from traditional technology, the business-oriented SOA takes ‘service’ as its basic element to constitute or integrate an information system suitable for varied application requirements of all trades by standardized technological methods, so as to improve the development efficiency of information system, fully integrate and re-use IT resources, and to realize the agile and rapid response of information system to ever-changing business needs.

This standard defines the basic technical requirements of SOA. This standard provides the basic technical reference model and general requirements of SOA, including functional requirements, performance requirements, develop requirements and deployment requirements.

This standard applies to software product development and system implementation which based on SOA.

This standard is the basis for SOA products standards, SOA engineering standards, SOA quality & testing standards.

Contents

1. Overview

This part is the first one of the standard which provides the general technical requirements of SOA software and application projects, including functional requirements, performance requirements, develop requirements and deployment requirements.

This standard applies to software products based on SOA projects and software design, development, operation and maintenance.

2. Normative References

3. Terminology & Definitions

The following terms and definitions apply to this standard.

3.1. SOA (service-oriented architecture)

A component model, the application of the different functional units (called services) through well-defined interfaces and contracts between these services linked. Interface defined by the use of a neutral, independent of the realization of services, hardware platforms, operating systems and programming languages.

3.2. Service-Oriented

3.3. Service-Oriented Analysis

3.4. Service Oriented Design

3.5. Web Services

Web Services are self-contained, modular application .It can be described, published, found and called in the network (usually the Web). Web services is a set of standards, it defines how Web applications to achieve interoperability.

3.6. Reliability

In the specified period of time and conditions, a set of attributes of software to maintain its level of ability of the nature .

3.7. Scalability

It is the ablity of software system which can running in different sizes,different grades of the operating enviromrnt.

4. Symbols & Abbreviations

5. General Technical Reference Model for SOA

Being the basis of constitution of SOA system, general technical reference model for SOA is from the perspective of system engineering, which specifies coverage and subjects of SOA factors from technical angle while enables technicians and users to gain an explicit knowledge of actual application situations and correlativity of SOA.

The general technical reference model for SOA is as follows:

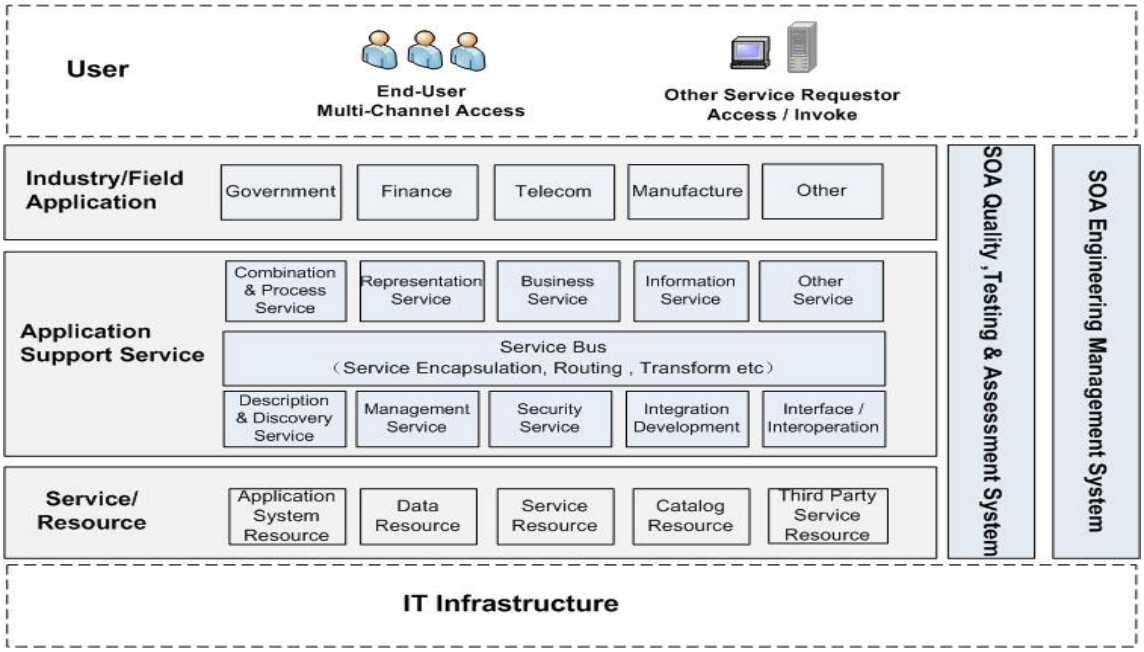

Figure 1- SOA General Technical Reference Model

NOTE-In the figure 1, the three horizontal rows and two vertical columns within the solid frame area are the core of the technical reference model for SOA system, and the contents that SOA technology need to cover and specify; the IT Infrastructure and Users in the dashed line frame are not what SOA technology need to specify but integral parts of the whole system. Detailed definitions of each part are as follows.

6. Feature Requirements

Clearly descript the functional requirements of the overall technical reference model for SOA, including the basic elements, the relationship and technical characteristics of each components element.

6.1. Services/Resources

Services/resources refer to the service, data, contents and application systems in business systems. Existing in enterprises, government offices and other organizations and bodies, such services/resources could be unitively discovered and described. They are usually stored in service resource pool, which provides services/resources business-level oriented view and facilitates registration, access, management, reuse of services/resources, so that interaction between business

and services/resources could be managed in a centralized way.

Services/resources consist of application system resource, data resource, service resource, contents resource and third-party service resource:

6.1.1. Application System Resources

Application system resource refers to business software operable in homogeneous or heterogeneous environment such as customer relation management system, email system, internal office system, financial software system and adaptor to connect legacy system. Application system provides standard interface, or adaptor integrated with external system or integrated access service.

6.1.2. Data Resources

Data resource means physical data information in business system (database table definition information), message format definition XSD/DTD/XML , other format document and data service definition that business system provided external parties with. Data resource provide standard interface for external system access.

6.1.3. Services Resources

Service resource is the function implementation that could be continually reused in different business processes. Implementation of service usually needs no specific language or tool. Service resource could be subcategorized into atomic business service and compound service (the service that provide new business functions by arranging atomic business service via programming flow). Service resource provides standard interface for external system access.

6.1.4. Contents Resources

Contents resource indicates data that could reflect sequence or layer structure. It is categorization of data and information. Examples of such resource are information resource cataloging in e-government, index cataloging of trade standards, and etc. Contents resource is usually integrated with business system for application.

6.1.5. Third-party Services Resources

This refers to service resources developed by third-party enterprises, organizations or institutes, such as product price service by suppliers, inventory service by distributors, settlement service by banks and payment service developed by third-parties (for example provided on SaaS mode basis) and etc. Such service resource could be integrated or applied into other business systems by sharing or purchase.

6.2. Application Support Services

Application support service provides basic technology and standards support for upper-level SOA application, such as service interface description and discovery, service combination and arrangement, service management, service agency (whose typical representative is service bus), security guarantee of service access, service registration and management, and relevant developing tools for service and SOA application. For existing service/resource, it also provides service encapsulation and access of resources to meet corresponding reuse demand on data information and business functions.

6.2.1. Description & Discovery Services

‘Service description and discovery’ consists of two parts: the first part is to describe service by defining standard information model and access interface, and the second is to discover and exploit service by specifying mechanism of service registration and access mechanism of service information. Currently the norms for service description and service registration discovery include WSDL and UDDI.

1) Action mode and functions

The action mode and functions of service description and discovery are mainly reflected in three aspects of development, operation and management.

During development course

During development course, based on standard mechanism and access interface of service discovery, and by unfied standard service interface description, a service could be registered, alternated, searched for and consumed through interaction with registration pool.

Service could be published to the service pool and services that meet certain requirements could be looked up from the pool. Description of service is based on standard information model description, from which protocol binding information could be get to establish binding with targeted service before the latter is combined with other premium service by means of interface matching for logic processing.

During operation course

To realize dynamic change of service consumption to meet requirements on business agility, service position and implementation shall be screened. Therefore, the common way is: when consumers need to consume a service provided by service providers, the service agent searches and retrieves the right service according to interfaces then route the request to the provider of this service. Though this mode of dynamic consumption during operation is quite agile, it is less efficient compared with direct consumption of service.

Management

Management of service is necessary when number of released services grows bigger. Service management covers the life circle of registration, verification, release, alternation, cancellation, authority administration, and in details consists of management of service itself, management of service meta data, service evaluation index and service quality property. In real SOA product systems, both service development and operation could involve management.

2) Relationship with other parts

Management service

The managing function of ‘description and discovery service’ is a part of overall management service. It could manage functions related to service administration, such as service metadata and service verification.

Safety service

‘Description and discovery service’ is an integral component of overall safety service, providing safety control over registration and access of service description information.

Integration development

Integration development tools rely on ‘description and discovery service’ to register description information of newly created service into service pool, and also rely on it to search for services users need and relate the service to service bus based on the description information of the service.

Interface/interoperation

The description information of service interface in the ‘description and discovery service’ shall conform to the definition of ‘interface/interoperation’.

Service bus

Relying on ‘description and discovery service’, new services created on service bus could be registered to service pool so that other application system could retrieve and use them. Meanwhile, required service could also be searched out from service pool with the ‘description and discovery service’.

Combination and process service/ business service/ information service

As these services conform to definition of ‘interface/interoperation’ of service, newly established service could be registered to service pool by ‘description and discovery service’ so that they could be used by other application system. The ‘description and discovery service’ also enables service pool to search out services that application system need.

6.2.2. Management Services

Management service provides operation status monitoring, configuration, historic system log authentication, and life cycle managemenet for all parts of application supporting service, services that have been deployed, integrated application system, business flow and the supporting operational infrastructure. Its focus lies in the management of service operation attributes, such as functionality, reliability, usage convenience, efficiency, maintenance, and transfer ability, and the optimization according to the QoS requirements.

1) Action mode and functions

The key of action mode of management service lies in the interaction pattern and the interface

between the service and managed object. From the angle of drive mode, there are two modes—push and pull. , respectively referring to management service accessing managed objects or managed objects report to the management service. From the angle of interface, by using standard service interface, both compatibility and responding speed of heterogeneous distributed infrastructures and supporting application service system could be improved to guarantee accuracy and timeliness in attaining management information and executing management operation.

Functions of management service include but are not limited to the following aspects:

Configuration, deploy, initiation, halt, time-triggered scheduling, deploying management of operation infrastructure and deployed SOA application;

Real-time supervision of operating status and service quality of the operation infrastructure and deployed SOA application, alarming, warning against abnormalities and carrying out management operation.

Statistics and identification analysis of historic operation data, log, alarm and error report of operation infrastructure and deployed SOA application in order to provide reference for system and process improvement.

Data management

Scope of data management covers: historic data maintenance, meta data management, configuration information change, management of shared data in database, and etc. Data management services include addition, deletion, modification, inquiry and statistics of data and other service operations.

2) Relation with other parts

As various service and operation entities and other parts of application support service could both be objects of management service, there are interactive access between each other. The loose coupling attribute of SOA and heterogeneousness and discrepancy in support service and basic

operation environment make management service especially important and crucial for high reliability, high usability, and guarantee of service quality and client experience.

6.2.3. Security Service

Security service provides security support and guarantee such as access monitoring, authority management and confidentiality for other services, application and relevant information resources. It mainly solves problems and issues of identity verification, resource authorization, access control, data confidentiality, data integrity, anti-repudiation, transfer security and etc. Its major functions cover basic security service, security token service, security strategy service, audit and log service, authentication service, role management service and role-mapping service. For distributive integrated system featured by loose coupling like SOA, security is of extreme importance.

1) Action mode and functions

Action mode of security service could be either in the form of independent operation entity or API for other service and application to access. Its action modes differ in light of different functions and levels of security service, for example, management of organizational structure is relatively independent while encryption and decryption service could be integrated as API into other services or applications.

Functions that security service offers include but are not limited to:

Organizational structure management, including multi-level management and control of users and roles within organization structure.

Resource authority management: to allocate access, operation and control rights of resources like service, data, and application to corresponding organizations, roles and users to supervise authorization of resources.

Access control identity verification and access control according to roles, users and applications over access requests from various service resources to prevent illegal users to access security-required resources.

Transmission security: security and prevention measurements are provides to prevent information from being falsified or divulged during transmission.

Information/data security: to provide services including encryption & decryption, e-signature, data integrity verification for information/data and other resources.

Privacy protection: provide security and preventive measurements for confidential information related to persons or organizations.

Audit: to provide operation track and historic records of accesses by users and applications to protected resources so as to track and detect problems in resource access or operation.

2) Relation with other parts

Any other parts with security demand could exploit security service and interact with it. Security service could be provided through service bus or directly called by other services as API.

6.2.4. Integration Development

Integration development mainly provides definition- and configuration-based methods for development of SOA application. It supports flexible and rapid establishment of application system and enables developers to expedite and optimize SOA application.

1) Action mode and functions

Action mode of integration development service is to provide developing and debugging tools for SOA application development via man-machine interface for developers or sales personnel. This man-machine interface could either be C/S structured client, or B/S-based Web page, or command-line-based console tools.

Following the developing process of SOA application, functions of integration development mainly

include:

Definition of service and data model

Service encapsulation of existing application system and common technology

Developing tools such as business logic, rules and data format transfer

Combination and integration of service

Arrangement and flow design of service

Operation debug

Environment definition capability

System compression and deploy

2) Relation with other parts

As a tool for development, integration development could use other service function in an integrated way and interact with them. Other services, such as security service, business service, information service, could be developed and combined with integration development tools to fulfill needs of new business services.

6.2.5. Interface/interaction

The function of interface/interaction is to solve the problem of inability in interconnection and interaction caused by different data formats and disunity in access interfaces during inter-access between different services or applications. It provides unified standard access interface and standard definition of data format for interoperation between different services and applications.

1) Action mode and functions

Its mode of action is to offer unified standard interface norms for interoperation between different services or applications, and to verify interoperability of interfaces and data formats of other services.

Based on the requirements of interoperation, the followings factors shall be taken into

consideration in ‘interface/interoperation’:

Data format

Data structure and corresponding format of required data interface could usually be manipulated by the document definition service--XML Schema Definition (XSD) to provide presentations of complicated data structure.

Message carrier

After data format is specified, message carrier is needed to enable message interaction between services. In most cases, SOAP-based protocol is used as the standard of message carrier.

Access interface

Definition of service operation interface is usually described by WSDL document in line with WSDL norms. Interoperation involving access capability and strategy (such as security, affairs) among services and applications could also be extended on basis of XML format.

2) Relation with other parts

When other component parts need interaction within non-unified technical frame and product system, it must be done in light of the specified norms of ‘interface/interoperation’. Besides, it could also be used as an embedded part of service bus to screen difference in services interaction.

6.2.6. Service Bus

Major purpose of service bus is to provide fundamental support for service access and communication among services. By using ‘service bus’, sporadic services could be rapidly connected to service bus and be bound with services already connected to the service bus, and message interaction and communication during call could be realized with the support from functions provided by service bus. Service bus also provide agent functions like protocol transfer, message format conversion, content-based route and relevant access strategy (such as security and affairs) for communication between service consumers and suppliers.

1) Action mode and functions

Under business system environment, most services have distributed operation and deploy positions. In SOA applications, relation between these distributed services always needs to alter flexibly in light of changes of operation logic. Service bus offers an integrated management means for such distributed services, and flexible adjustment of call relation among services.

In the cases where service bus is absent, though relation among services could still be adjusted agilely by means provided by ‘process service’, it could become very difficulty when any of the following situations (not completed enumeration) is encountered:

- Automatic protocol transfer is required between distributed systems where service operation is located.
- Vast amount of legacy infrastructure components need to be accessed and connected as service.
- Transparent support is expected for deployment position between service consumers and suppliers
- Unified security strategy support is expected for operation and access of service.
- Unified management is demanded on services within a system
- Therefore, to achieve excellent performance in actual application, ‘service bus’ shall be able to support functions as follows:
- Adaptor service or other access service
- Able to process the access of legacy IT infrastructure and connect it as a service to ‘service bus’.
- Service addressing

Major purpose of service addressing is to provide service with a service-bus-based service addressing mode in order to provide transparent support for service positions. By using service bus addressing, the address where external service operation environment is running could become totally transparent to other services on the service bus.

- Routing and forwarding of messages

When services interact via service bus, the interacting messages are routed and forwarded by ‘service bus’ to automatically conduct protocol transfer and message transformation between different systems.

- Service security support

To provide service access with unified security control mechanism via ‘service bus’.

- Unified management tools of ‘service bus’

To provide ‘service bus’ with management tools to control life cycle of services by unified means, and to manage supervision of service.

- Integrated development tool for ‘service bus’

To provide integrated development tool for users to use ‘service bus’. By exploiting integrated development tools, user are capable of: service-related development, including designing new business logic, creating new service, setting up connection with external service or infrastructure, controlling service deployment; definition of system operation environment for ‘service bus’; discovering/releasing service through service pool; and etc.

2) Relation with other parts

Description and discovery service

The development tool of ‘service bus’ relies on functions provided by ‘description and discover service’ to launch new services and to search for service which are required by users and connect it to ‘service bus’.

Management service

‘service bus’ shall provide management functions for registration & release, search and usage, operation supervision and service quality attributes of services during development and operation courses, all of which involve interaction with management service.

Security service

‘Service bus’ shall provide primary mechanism support for unified service access security control. This primary mechanism could be extended to support security service demanded by actual business.

Integrated development

‘Service bus’ provides integrated development tool to perform the function of integrated development

Interface/interoperation

Service provided by ‘service bus’ shall conform to the definition of ‘interface/interoperation’ when releasing services.

Combination and process service

‘Service bus’ shall offer process engine and service combination model to support ‘combination and process service’

Presentation service

Presentation service has to rely on the interface/interoperation-conformed service launched by ‘service bus’ to realize business logic.

Business service/ information service

Business service and information service could either be connected into ‘service bus’ as standard services or be directly re-launched, or released again after service combination and process arrangement as another interface/interoperation-conformed business or information service.

6.2.7. Combination of Services & Processes

Composition and process service is a service of bigger granularity based on encapsulation and combination of atomic services.

As single business service is limited in its capability, functions provided by other services have to be used to establish new business application or service to realize service reuse, the process of which is referred to as composition application development. Composition application development encapsulates existing application or data into new service (or newly realized service) to be called and combined into application so as to perform actual application function or to be formed into bigger-granulated service for other consumers in need to use. The logic structure chart of composition application development is shown in Chart 4.

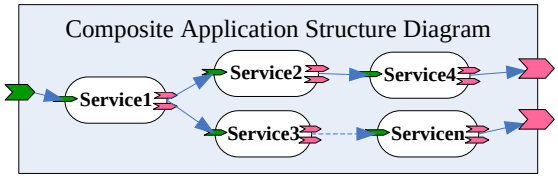

Figure 2- Logic Structure Chart of Combination Application Development

In SOA application, users not only want service units with special functions but also need such service units and other business service to be executed according to definition steps, so as to handle business flows both within and outside the organizations (including automatic business flow and human-interaction manual activities) and maintain normal business operation of organizations, the course of which is called application development of process type. Such type is one of the technical means demonstrating even more flexible SOA supports for business. Process type application development is a more complicated compound application development model at higher level, able to fit together various services, components and applications according to specified business rules and calling sequences and steps, and to support man-machine interaction, complicated handling branch, process calling, authorization strategy, and etc.

1) Action mode and functions

The action mode of composition and process service is to convert separate services, applications and personnel into larger-granulated business service that could satisfy business needs by means of composition or process arrangement. Therefore, functions it provides include but are not limited to the following aspects:

Service composition and arrangement tool with functions of service composition,

integration, process modeling, service arrangement and etc.

Service container to provide container environment for operation of compound application or service after composition.

Process execution engine to perform interpretation, execution, control, management and other functions for complicatedly deployed business flow scripts

Manual task management to perform management, authorization, control and other functions for tasks requiring man-machine interaction in the process.

2) Relation with other parts

Composition and process service is application at high-level depending on functions provided by corresponding services from other parts. During the course of operation and development, it could either use functions and environment provided by service bus or run independently.

6.2.8. Presentation Services

Presentation service mainly solves man-machine interaction issues in application development process. As difference (including otherness in technical implementation means) exists in application man-machine interactive interfaces of different types, differentiated presentation services are needed to solve such problems.

1) Action mode and functions

As a service requiring man-machine interaction, presentation service has two major actions modes: one is C/S structured client end, and the other is B/S-based web page.

Functions that presentation service provides mainly include interface service, report service and form service

Interface service

To convert interface document described in script language into service presentable at client end in

man-machine interactive interface of client end and browser.

Report form service

Report form service boasts of flexible and powerful user-defined designing function which encapsulates report form presentation function and report form calculation engine into general service component by XML standardizing designing of forms and data. When service providers save report forms created by report system at service pool and consumer subscribe report form service released at service pool, implementation personnel even with no professional knowledge of report form designing could use report form calculation engine service to create dynamic report and report form presentation service to download forms to get information they need.

Form service

Form-based service could quickly create Internet/Intranet-based data collection/release application and integrate it into existing business process and application system to facilitate presentation service and data processing service.

2) Relation with other parts

As presentation service provides man-machine interaction interface and operation interface for information service and process service, it is supplemental to other parts needing man-machine interaction.

6.2.9. Business Services

Business service is a service of bigger granularity to satisfy special business needs. It could be process service, composition service, or even atomic service developed by users according to business requirements.

As business service is related with business, it could exploit services, tools, interfaces and operation environment provided by other parts to fulfill development or operation management needs.

6.2.10. Information Services

Information service mainly provides users and application with information collection, cataloging, release and search services.

Information service is composed of persistence layer, logic layer and presentation layer: the persistence layer provides transparent data resource connection of structural and non-structural data; the logic layer represents cataloging, analysis and correlation of data information; the presentation layer is search-based release in three forms of contents, full-text retrieval and report form release.

6.2.11. Other Services

6.3. Industry/Domain Application

6.3.1. Telecommunication

Reorganization of telecommunication industry will lead to large-scaled business adjustment, giving rise to demand of consolidation of varied systems previously adopted. Telecommunication users have realized that the only way to effectively integrate heterogeneous systems and improve overall IT operation efficiency is to adopt SOA architecture. Meanwhile, from the perspective of telecommunication enterprises, adopting SOA technology could help them to diminish their dependency on ISV and SI and enhance their control over developers. Moreover, SOA architecture could also help clients to narrow the gap between IT and services, or even the gap between different services.

To constitute unified supervision management and improve utilization ratio of information system, integration of various heterogeneous systems and applications at different layers of information service, business service, presentation service and process service could be achieved by exploiting SOA concept and architecture on the basis of application support service layer.

The construction of SOA application in telecommunication industry shall follow relevant contents

of SOA engineering management system and be conducted in light of series standards such as application support service and service/resource to ensure interoperability among systems and realize the concept of ‘once developed, already integrated’.

6.3.2. Financial Industry

Using SOA concept and architecture as the foundation for the new generation of business systems in financial enterprises, SOA can connect different application systems within an enterprise and realize coordination among multiple systems at different levels. Within SOA architecture, information, business, presentation and process layers are based on service concept to define and establish a set of reusable standardized service.

SOA application in financial industry shall conform to relevant contents of SOA engineering management system and be established on basis of application support service, service/resource and other series standards to ensure inter-operability among application systems and realize the concept of ‘once developed, already integrated’.

6.3.3. Government

Application of SOA could effectively integrate information within industry systems so that software assets could play an active role in business operation to improve working efficiency in departments and elevate service level of government industries by fully exploiting integrated resources.

In the SOA standard technology system, the unification of the planning application system makes full use of information resources of various departments; led by local governments, inter-governmental structures of industry information integration platform, with the aim to achieve unification of local government’s external services, is one of the important means of an service-oriented government.

6.3.4. Manufacture

Typical applications in the manufacturing industries include: Process Control System (PCS), Manufacturing Execution System (MES), Enterprise Resource Planning System (ERP), Business Analysis and Decision-making System (BI), Cooperative OA (OA), Human Resources Management System (HR) and so on. Based on SOA ideas and structure, the goal is to be able to effectively integrate these different levels, different object-oriented applications, and for a more timely and accurate sharing of information in the manufacturing enterprise. Therefore, the application in the manufacturing industry should work under the guidance the SOA Management System, to be built on the services / resources and the application support services of SOA; at the same time, the mature services and resources will be retained and perfected for the end-user to access and use.

6.3.5. Others

In addition to the above typical industries or fields, the application of SOA in other sectors of information technology projects has been growing wider, in sectors such as logistics, tobacco, transportation, medical and public health, etc.

6.4. SOA Quality & Evaluation System

SOA quality and appraisal system is an important guarantee for construction of SOA system. Quality of SOA system consists of multiple elements, among which service quality standard is the foundation of SOA system quality, penetrating quality maintenance throughout the entire service life cycle and covering multiple factors such as usability, stability, maintainability and interoperability. Besides, standard conformity and interconnectionability of SOA products and tools need to be specified and unified as well to ensure quality of SOA system in the round.

6.5. SOA Project Management System

The purpose of SOA engineering management system is to keep engineering management on the entire development and implementation course of SOA project (including service planning, development, testing, integration, deployment, release and management). It mainly covers two

aspects: one is to set up implementation norms and methods for each stage of development and implementation of SOA projects to ensure controllability and manageability during their progress; the other aspect is to define rights, responsibilities and requirements of each implementation parties involved in SOA projects, specify appraisal index for implementation capability and evaluation methods for implementation results to lower risks and guarantee the implementation quality of SOA project.

6.6. IT Infrastructure

IT infrastructure consists of web/hardware and basic software (operation system, database and etc.), providing basic environment for SOA application systems to operate within. It creates a reliable and efficient operating environment and path for information transmission service, guarantees security and stability of SOA application system, and works as the final carrier of all kinds of application information.

6.7. Users

Users refer to people or multi-channeled equipment that uses SOA application, support equipment or related resources. Take the SOA application for development of upper line as an example, the interactive interfaces it provides include man-machine interaction interface, standard service development interface to be accessed by internet or the local, and ports for multi-channeled application or equipment (such as cell phone, email system, satellite communication, internet equipment and etc.), and the users of these interfaces consist of person, equipment and relevant application system.

Among ‘users’, person refers to developer, operator or administrator, interface users, and etc. The way they interact or communicate with SOA application system and its basic support equipment could be multi-channeled or multi-protocol, such as computer monitor, cell phone and other channels, and protocols like email SMTP/POP3 message (JMS) HTTP/HTTPS, FTP and etc. As users of SOA system architecture, ‘users’ not only keep direct relation with industry/domain application layer but also have relation of interface access and direct use with application support

service and service resources at lower layer.

7. Performance Requirements

Performance requirements of a clear description of the overall technical reference model for SOA elements should meet specific performance requirements, including reusability, loose coupling, interoperability, reliability, ease of use features such as quality.

7.1. Compound

Construction of IT systems based on services, services description separate from realization, independent to platform, follow the appropriate standards, have departmental level, organizational level, reusable capacity between organizations.

7.2. Loosely Coupled Natures

Services in SOA must to comply with loosely coupled services, including:

- Loosely coupled interface
- Loosely coupled technology
- Loosely coupled processes
-

7.3. Interoperability

In the SOA, need to comply with international technical standards (such as SOAP, WSDL, UDDI and WS-*), the data model and process model of the service layer also need to follow mature business or vertical industry standards in order to achieve interoperability between services.

7.4. Reliability

SOA system base on various types of loosely coupled services, but also have a need to ensure the achievement of technically predictable and stable system operation, including: to recover, and recoverability, controllability, non-disruptive, and predictable.

7.5. Ease of Use

Systems based on SOA provide many user-friendly interfaces, multi-channel services and the ability to personalize the interface.

8. Development Requirements

Here provides the specific product or project developing model, developing methodology, and the corresponding life cycle process based on SOA.

8.1. Development Model

Based on the development of models and methods which are currently used in software, provides the different requirements of development model of SOA after compared to the following three types of traditional methods:

- Falls type;
- Incremental type;
- The evolution type

8.2. Software Project Life Cycle Process

The provisions of the software and project life cycle process, including the activities of the various processes and tasks of SOA.

8.3. Development of Norms

In order to accord with SOA relevant international standards which for the development of categories, recommend software and project programming language, programming style and programming agreement of SOA.

9. Deployment requirements

The principles of specific provisions of product or deployment, environmental and technical requirements of the project which based on SOA are necessary to comply with.

10. Appendix A (Normative appendix)