

# **SOUTH AFRICAN REVENUE SERVICE**

## **BUSINESS REQUIREMENTS SPECIFICATION**

**RFP59/2018**

***PROVISION OF BESPOKE SOFTWARE DEVELOPMENT, MAINTENANCE AND  
SUPPORT SERVICES***

## Table of Contents

<b>1. Usage of Terms in this Document.....</b>	<b>5</b>
1.1. References to other Documents in the RFP Pack .....	5
1.2. Requirements and their Definitions .....	5
1.3. Glossary Table .....	5
1.4. Mandatory and Directory Requirements.....	5
<b>2. Background .....</b>	<b>6</b>
<b>3. Components of Scope .....</b>	<b>7</b>
3.1. Mandatory Bid Requirements .....	7
3.2. Technical Capability Requirements .....	7
3.3. Organizational Experience.....	7
<b>4. Mandatory Bid requirements .....</b>	<b>8</b>
The Main bidder must comply with the below listed Mandatory requirements.....	8
<b>5. Technical Capability Requirements.....</b>	<b>8</b>
5.1. Capability Area - Project Management .....	8
5.2. Capability Area – Analysis .....	9
5.3. Capability Area – Software Development .....	9
5.4. Capability Area – Implementation/Deployment.....	10
5.5. Capability Area – Maintenance and Support .....	10
5.6. Organizational Experience.....	11
<b>6. Technology Adherence.....</b>	<b>12</b>
<b>7. Compliance.....</b>	<b>13</b>
7.1. Performance standards .....	13
7.2. Service Levels .....	13
7.3. Service Coverage Periods .....	13
7.4. Measurement and Reporting of Service Levels.....	13
<b>8. Proof of Certification and Skills .....</b>	<b>13</b>
<b>9. Supporting Documents .....</b>	<b>14</b>
<b>10. SARS Requirements – Definitions .....</b>	<b>15</b>
10.1. Project Integration Management .....	15
10.2. Project Scope Management .....	15
10.3. Project Time Management .....	15
10.4. Project Cost Management .....	15

10.5.	Project Quality Management .....	16
10.6.	Project Human Resource Management .....	16
10.7.	Project Communications Management .....	16
10.8.	Project Risk Management.....	16
10.9.	Project Procurement Management .....	16
10.10.	Project Stakeholder Management.....	16
10.11.	Requirements Analysis .....	16
10.12.	Function Point Analysis (FPA) .....	17
10.13.	Functional Requirement Specification(s) .....	17
10.14.	Non-Functional Requirement(s) (NFR).....	17
10.15.	Solution Architecture (SA) .....	17
10.16.	Technical Specification .....	17
10.17.	Data Modelling .....	17
10.17.1.	Object Data Model .....	18
10.17.2.	Semantic Data Model .....	18
10.18.	Database Design .....	18
10.19.	User Interface / Forms design (UI) .....	18
10.20.	Software Blueprint .....	18
10.21.	.NET Framework.....	19
10.22.	Java (J2EE).....	19
10.23.	Python .....	19
10.24.	C++ .....	19
10.25.	XML/XSD .....	19
10.26.	SQL .....	19
10.27.	JSON .....	20
10.28.	SOAP .....	20
10.29.	HTML 5 .....	20
10.30.	JavaScript.....	20
10.31.	AJAX .....	20
10.32.	Node.JS.....	20
10.33.	GIT.....	20
10.34.	Unit Testing .....	21
10.35.	Integration Testing .....	21
10.36.	Regression Testing .....	21
10.37.	Performance Testing .....	21
10.38.	Security Testing.....	21

10.39.	Application Support .....	21
10.40.	Application Monitoring .....	22
10.41.	Service-Level Management.....	22
10.42.	Service Oriented Architecture (SOA) .....	22
10.43.	Business Rules Engine.....	22
10.44.	Mobile Application Development .....	22
10.45.	Biometrics.....	22
10.46.	Thick Client .....	23
10.47.	Interactive Voice Response (IVR) .....	23
10.48.	Workflow and Case Management System .....	23
10.49.	Telephony.....	23

## ***RFP 59/2018***

# **Business Requirements Specification**

## **1. USAGE OF TERMS IN THIS DOCUMENT**

### **1.1. References to other Documents in the RFP Pack**

The Bidder is referred to Section 7 of this document for a summary table of supporting technical documents and their descriptions.

### **1.2. Requirements and their Definitions**

For ease of use, the requirements are listed in tabular form with the respective definition of each referenced in Section 8 of this document.

### **1.3. Glossary Table**

<b>Term</b>	<b>Meaning</b>
SARS	South African Revenue Service
PFMA	Public Finance Management Act,
IT	Information Technology
RFP	Request for Proposal
SARS PPS&G	SARS Policies, Procedures, Standards and Guidelines
SOA	Service Oriented Architecture
ESB	Enterprise Service Bus
ICC	Integration Competency Centre
API	Application Programming Interface
GUI	Graphic User Interface
DIST	Digital, Information Services and Technology
ICT	Information and Communications Technology
EDI	Electronic Data Interchange
MSA	Master Services Agreement

### **1.4. Mandatory and Directory Requirements**

Bidders are advised to read the business requirements as set out in this document with care. Where SARS has specified a mandatory requirement, (i.e. where the business requirement, by the context; presence of verbs such as 'must'; 'will'; 'shall' etc.; or explicit

instruction indicating that it is mandatory) the Bidder must build and price its response accordingly. If a Proposal fails to meet or does not address a mandatory requirement, the Proposal may, at SARS' discretion, be disqualified during any stage of the evaluation process as being non-responsive.

Directory requirements (i.e. where the business requirement, by the context; presence of verbs such as 'may'; 'should'; 'can' etc.; or explicit instruction indicating that they are directory) are requirements that SARS does not regard as mandatory.

## **2. BACKGROUND**

SARS has engaged on a modernization journey to transform its ICT environment for enhanced productivity, efficiency, customer service delivery and monitoring. To that end, the SARS landscape is comprised of bespoke integrated enterprise-wide systems.

The journey to date has enabled various business capabilities delivered via process automation on a bespoke developed orchestration/workflow system. The result is a very consolidated and integrated systems landscape providing, but not limited to, the following:

- Automated and simplified return processing and filing
- Integrated case management and transaction processing via a cross-channel CRM system
- Fully integrated and virtual contact centre including bespoke peripheral features
- Branch front-end and back office service management
- Enhanced queue management and biometric-based authentication in branch offices
- Electronic channels and mobile channel offerings e.g., eFiling and Customs EDI
- Document scanning
- Interfaces to other external systems e.g., DHA, CIPC

As a requirement of the PFMA, it is necessary to revisit the continued maintenance of this bespoke environment by soliciting responses from the open market.

### **3. COMPONENTS OF SCOPE**

Below is a summary of the scope of services for which SARS requires bidder response:

#### **3.1. Mandatory Bid Requirements**

- Minimum B-BBEE level status 1 and 2.
- Minimum of three (3) years Previous Experience
- Compulsory Briefing Session
- Bidder must subcontract a minimum of 30% of the contract value to an EME or QSE which is at least 51% owned by black people

#### **3.2. Technical Capability Requirements**

- Project Management
- Analysis
- Development
- Implementation/Deployment
- Quality Assurance
- Maintenance and Support

#### **3.3. *Organizational Experience***

- Telephony
- Interactive Voice Response
- CRM/Case Management/Workflow
- Fat Client Development
- Biometric Integration
- SOA Integration and Orchestration
- Business Rules Engine
- Mobile Applications Development
- Previous Transitional Experience and Proposed Plan for a 12 moth transition

## 4. MANDATORY BID REQUIREMENTS

The Main bidder must comply with the below listed Mandatory requirements

- *The bidder(s) must have a Minimum B-BBEE level status 1 and 2.*
- *The bidder(s) must have a Minimum of three (3) years experience in bespoke software development, maintenance and support services.*
- *The bidder(s) must have attended the compulsory briefing session*
- *The bidder(s) must subcontract a minimum of 30% of the contract value to an EME or QSE which is at least 51% owned by black people*

## 5. TECHNICAL CAPABILITY REQUIREMENTS

The successful bidder is required to perform the following in accordance with industry best practice and SARS Standards. The bidders shall in their response provide clear evidence to justify their capability in each section and sub-section.

### 5.1. Capability Area - Project Management

The bidder is required to have an internal Project Management Capability to manage and deliver projects and services within their organisation. Additionally, they are required to participate in relevant projects led by the SARS Enterprise Project Management Office (EPMO). The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Definition (Number denotes the Definition Reference in Section 6)
Integration Management	10.1
Scope Management	10.2
Time Management	10.3
Cost Management	10.4
Quality Management	10.5
Human Resource Management	10.6
Communications Management	10.7
Risk Management	10.8
Procurement Management	10.9
Documentation Management	The successful bidder is required to keep all documentation up-to-date and current as part of the transition period.
Stakeholder Management	10.10
Change Management	The successful bidder is expected to have an internal change management process.



## 5.2. Capability Area – Analysis

It is required that the bidder have a very strong analysis capability to translate business requirements to the appropriate artefacts as listed below. The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Sub-Capability	Definition
Requirements Analysis	Requirement Analysis/Gathering	10.11
Requirements Analysis	Function Point Analysis	10.12
Requirements Analysis	Functional Specifications	10.13
Requirements Analysis	Non-Function Specifications	10.14
Design Analysis	Solution Architecture	10.15
Design Analysis	Technical Specification/ Software Blueprint	10.16 and 10.20
Design Analysis	Data Modelling	10.17
Design Analysis	Database design	10.18
Design Analysis	Integration Design	According to SARS API Specification document standards and patterns. See supporting documents.
Design Analysis	User Interface and Form Design	10.19

## 5.3. Capability Area – Software Development

The bidder is required to possess a strong bespoke software development capability aligned to the development languages and technologies listed below and to deliver the bespoke software according to agreed and approved specifications. The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Sub-Capability	Definition
Programming	.NET (C#)	10.21
Programming	Java	10.22
Programming	Python	10.23
Programming	C++	10.24
Programming	SQL (MS SQL/ DB2)	10.26
Programming	XML	10.25
Programming	JSON	10.27
Programming	SOAP	10.28
Programming	XSD	10.25
Programming	HTML 5	10.29
Programming	JavaScript	10.30

Programming	AJAX	10.31
Programming	Node.JS/Angular	10.32
Programming	GUI Development	10.32
Testing	Unit Testing	10.34
Testing	Integration Testing	10.35
Testing	Regression Testing	10.36
Testing	Performance Testing	10.37
Testing	Security Testing	10.38

#### 5.4. Capability Area – Implementation/Deployment

It is required that the bidder have their own integrated development environment (IDE) and ensure code is booked into the SARS managed GIT Source Version Control repository. Compiled software must be packaged and configured according to SARS standards. The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Sub-Capability	Definition
Source Control	GIT	10.33
Environments	Development environment	The successful bidder is required to maintain a separate development environment from SARS.
Environments	Common Build	Executables are to be generated from the GIT instance residing on SARS servers. See Git Usage Standard.

#### 5.5. Capability Area – Maintenance and Support

It is required that the bidder provide maintenance and support for developed and deployed bespoke software in accordance with the service levels to be provided e Master Services Agreement. The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Sub-Capability	Definition
------------------------	----------------	------------

Capability Requirement	Sub-Capability	Definition
Maintenance	Corrective Maintenance	Bidder to refer to the definition provided in the draft MSA.
Maintenance	Emergency Maintenance	Bidder to refer to the definition provided in the draft MSA.
Maintenance	Minor Enhancements	Bidder to refer to the definition provided in the draft MSA.
Support	Incident Management	Bidder to refer to the definition provided in the draft MSA.
Support	Root Cause Analysis	Bidder to refer to the definition provided in the draft MSA.
Support	Application Monitoring	10.40
Support	Reporting	Bidder to refer to the definition provided in the draft MSA.
Service level management	Service Level Management	10.41

## 5.6. Organizational Experience

It is advantageous if the bidder can demonstrate experience using the Technical Capabilities listed above in context of the system types referenced below. The bidders shall in their response provide clear evidence to justify this capability.

Capability Requirement	Definition
Telephony	10.49
Interactive Voice Response	10.47
CRM/Case Management/Workflow	10.48
Thick Client Development	10.46
Biometric Integration	10.45
SOA Integration and Orchestration	10.42
Business Rules Engine	10.42
Mobile Applications Development	10.44
Transitioning Experience	The bidder should demonstrate a prior ability to assist an organisation to transition from one bespoke application service provider to themselves. In the response the bidder should amongst other things include a Transition Methodology and any other evidence of how this was done. The bidder must also provide a draft transition plan and cost in terms of transitioning the services

Capability Requirement	Definition
	within a 12 month period based on the supporting information that will be made available during the briefing session and information to be made available within the secure SARS location. Bidders must indicate should they differ from the prescribed transition period.
OEM Relationship/Certification	It will be advantageous for the Bidders to have <b>the following Certifications ISO 9001; ISO 20000; ISO 27000; CMMI.</b>

## 6. TECHNOLOGY ADHERENCE

SARS is in a transformation period and the Service Provider appointed may be engaged, on a project basis, to provide services supporting the transformation. For clarity, business as usual expansion undertaken by SARS on a continuous basis is not considered a technical transformation.

In defining the scope of the MSA, reference is made to technologies and/or specific processes currently deployed within the SARS environment. Where a technology or process is specified in this Business Requirements Specification, the Bidder's Proposal must be designed to comply with the specific technology and/or process.

During the Term of any agreement arising from the award of this RFP, the use of alternative technologies and / or processes may be proposed by the Service Provider and/or requested by SARS. The required implementation thereof will not be considered out of scope of the award, provided that they effectively substitute or supplement technologies/processes contained in the Service Provider's original Proposal. No alternative technologies/processes may be implemented during the Term without SARS' approval.

## **7. COMPLIANCE**

The Bidder must note the obligation to adhere to SARS Policies, Procedures, Standards and Guidelines (PPS&G). The relevant SARS PPS&G can be made available on request to the Bidders during the bid preparation phase.

### **7.1. Performance standards**

The Service Provider is required to measure, monitor and report on delivery of the Services against specified Service Levels as defined within the provided draft MSA document. The bidder must construct and produce the required monthly reports on Service Level delivery. The information to be presented in the report and the format of the report will initially be agreed between the bidder and SARS during transition and will be continuously improved during the Term.

### **7.2. Service Levels**

The bidder shall conform to the agreed service levels as defined with section X of the provided draft agreement document.

### **7.3. Service Coverage Periods**

The bidder shall conform to the agreed coverage periods as defined in the provided MSA document and is required to attend to SARS matters at SARS Head Office in Pretoria.

### **7.4. Measurement and Reporting of Service Levels**

The bidder shall conform to the agreed reporting mechanisms and periods as defined in the MSA document.

## **8. PROOF OF CERTIFICATION AND SKILLS**

It is required that the bidder hold any of the listed organisational certifications that provide assurance that the bidder has due processes in place to ensure quality, understand service delivery and conform to information security standards.

The required certifications are: ISO 9001; ISO 20000; ISO 27000; and CMMI.

It is further advantageous for the bidder to ensure that they are skilled and certified at the appropriate level with the relevant Original Equipment Manufacturers (OEM) and other

technology providers with respect to the list of SARS development languages and technologies.

However, on awarding of the tender and as a matter of contractual terms and conditions for software maintenance and support the awarded vendor will be requested to demonstrate the number of specific skilled resources to be made available as well as their respective certification to support the systems assigned accordingly. Additionally, similar demonstration of skills and certifications for respective software will be required for assigned resources as and when required on a per work order basis for new development.

## 9. SUPPORTING DOCUMENTS

The following documents are available for bidder consumption and will be provided at the tender briefing session with SARS and further made available online during a specified period in a controlled secure environment.

Document Name	Description	Distribution Method
SARS System and Technical Overview	This document provides the potential Service Providers with context and scope. It lists the functional modules within an application boundary. It further describes the function and technology used in the bespoke development of the respective components. In addition, it provides details of the SARS Integration landscape, standards and source repository.	Provided during briefing session
SARS Respective Bespoke System Landscape	Stand-Alone Diagram of the application, components and functions as contained in the overview document	Provided during briefing session
Overview documents	Specific documents per application component as per the overview document	Provided during briefing session
ICC Channel API Specification	This document provides the interface specification for integrating applications across SARS and between SARS and its development partners following a Service Oriented Architecture (SOA) standard approach. The specification aims to eliminate point-to-point based integration in favour of a robust integration layer consisting of an Enterprise Service Bus (ESB), supported by reliable and traceable Communication Protocols and consistent Message Formats.	Provided during briefing session
SARS - ESB Conceptual View	Diagram of the various consumers and providers of the SARS Enterprise Service Bus	Provided during briefing session
Git Usage Standard	The purpose of this document is to provide the potential Service Providers with the standard for using the SARS' enterprise GIT repository. The document also guides the prospective Service Providers on the processes that govern the usage of GIT.	Provided during briefing session
Service Registry	SARS ESB Service Registry Extract	Provided during briefing session

Document Name	Description	Distribution Method
Source Code Line Summary	A compressed file that contains text file summaries of the lines of code per component categorised for language type	Provided during briefing session
Current System Functional Specifications	A collective of Functional Requirement documents providing the full scope of systems and the respective components and functions developed and introduced over a period of 11 years.	Made available for electronic viewing in a SARS-provided secure environment as governed by SARS Procurement.

## 10. SARS REQUIREMENTS – DEFINITIONS

### ***10.1. Project Integration Management***

This is the collection of processes required to ensure that the various elements of the projects are properly coordinated. It involves making trade-offs among competing objectives and alternatives to meet or exceed stakeholder needs and expectations.

### ***10.2. Project Scope Management***

Scope involves obtaining information required to start a project and determining the features of the product needed to meet its stakeholders' requirements. Project scope consists of the work to be accomplished to deliver a product, service, or result with the specified features and functions. It further involves controlling process groups and ultimately accepting the deliverables, not the specifications as laid out initially during planning phases.

### ***10.3. Project Time Management***

This is the process of organizing and planning how to divide available time between specific activities required to be performed by the bidder.

### ***10.4. Project Cost Management***

Budgeting and cost estimation are required for each task covering materials, equipment, and human resources. Additionally, inherent is the need to apprise the client and control cost through regular analysis of the variance between estimates and actual.

### ***10.5.Project Quality Management***

The controlling of the quality of all artefacts generated in the project life cycle is a necessity.

### ***10.6.Project Human Resource Management***

This consists of acquiring, scheduling and monitoring the human resources required by the project.

### ***10.7.Project Communications Management***

This involves establishing methods of engagement and continually keeping the team and stakeholders informed.

### ***10.8.Project Risk Management***

This consists of performing qualitative risk analysis by identifying, classifying by likelihood and impact, and prioritizing the greatest threats to project success.

### ***10.9.Project Procurement Management***

This requires determining external needs, hiring of subcontractors, and managing and controlling procurement processes via statements of work, terms of references, request for proposals and vendor selection.

### ***10.10. Project Stakeholder Management***

The validation of stakeholder satisfaction through managing of expectations and constant communication helps ensure on-going project alignment and anticipated delivery.

### ***10.11. Requirements Analysis***

This encompasses the respective tasks necessary in determining the needs or conditions to be met for a new or altered system or project, taking into consideration the possibly conflicting requirements of various stakeholders, analysing, documenting, validating and managing software or system requirements. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design.



#### **10.12.            *Function Point Analysis (FPA)***

FPA is a process or method to measures the size of a system application based on a functional view. The size is determined by counting the number of inputs, outputs, queries, internal files and external files in the system and adjusting that total for overall functional complexity.

#### **10.13.            *Functional Requirement Specification(s)***

Formal documentation is used to describe in detail for software developers a system's intended capabilities, appearance, and interactions with users and other systems using industry frameworks and standard modelling notations.

#### **10.14.            *Non-Functional Requirement(s) (NFR)***

This specifies criteria that can be used to judge the operation of a system, rather than specific behaviours. These criteria are contrasted with functional requirements that define specific behaviour or functions.

#### **10.15.            *Solution Architecture (SA)***

A SA provides an architectural description of a specific solution. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical) as well as from the enterprise solution architecture (ESA).

#### **10.16.            *Technical Specification***

A technical specification provides a set of requirements that a product or assembly must meet or exceed. A product or assembly that does not meet all of the specifically expressed requirements does not meet the specification, and often is referred to as being out of specification or "out of spec."

#### **10.17.            *Data Modelling***

This is the process of creating a data model for an information system by applying certain formal techniques.

#### **10.17.1. Object Data Model**

An object data model is a data model based on object-oriented programming, associating methods (procedures) with objects that can benefit from class hierarchies. Thus, “objects” are levels of abstraction that include attributes and behaviour. An object-oriented data model is one that extends the individual program space into the world of persistent object management and shareability.

#### **10.17.2. Semantic Data Model**

This is a method of organizing data that reflects the basic meaning of data items and the relationships among them. This organization structure makes it easier to develop application programs and to maintain the consistency of data when it is updated.

### **10.18. Database Design**

This is the organisation of data according to a database model. The designer determines what data must be stored and how the data elements interrelate. With this information, they can begin to fit the data to the database model. Database design involves classifying data and identifying interrelationships. This theoretical representation of the data is called ontology. The ontology is the theory behind the database's design.

### **10.19. User Interface / Forms design (UI)**

This is the design of user interfaces with a focus on maximizing usability, accessibility and the user experience. The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals (user-centred design).

### **10.20. Software Blueprint**

Software blueprinting relies on achieving a clean separation between logically orthogonal aspects of the software. Once that is achieved, it facilitates the localization of related logic and use of an optimal description medium for each of the logically independent components (for each blueprint).

#### **10.21. .NET Framework**

.Net is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large class library named Framework Class Library and provides language interoperability across several programming languages

#### **10.22. Java (J2EE)**

This is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible.

#### **10.23. Python**

This is an interpreted high-level programming language for general-purpose programming. Created by Guido van Rossum and first released in 1991, Python has a design philosophy that emphasizes code readability, notably using significant whitespace.

#### **10.24. C++**

C++ is a general-purpose object-oriented programming (OOP) language, developed by Bjarne Stroustrup, and is an extension of the C language.

#### **10.25. XML/XSD**

A recommendation of the World Wide Web Consortium (W3C) specifies how to formally describe the elements in an Extensible Mark-up Language document. It can be used by programmers to verify each piece of item content in a document.

#### **10.26. SQL**

SQL – (Structured Query Language) is a relational data language that provides a consistent, English keyword-oriented set of facilities for query, data definition, data manipulation and data control. It is a programmed interface to relational database management systems (RDBMSs).

### **10.27. JSON**

JavaScript Object Notation or JSON is an open-standard file format that uses human-readable text to transmit data objects consisting of attribute–value pairs and array data types.

### **10.28. SOAP**

This is a messaging protocol specification for exchanging structured information in the implementation of web services in computer networks. Its purpose is to induce extensibility, neutrality and independence.

### **10.29. HTML 5**

This is a mark-up language used for structuring and presenting content on the World Wide Web. It is the fifth and current major version of the HTML standard, and subsumes XHTML. It currently exists in two standardized forms.

### **10.30. JavaScript**

JavaScript is a high-level, interpreted programming language. It is a language that is also characterized as dynamic, weakly typed, prototype-based and multi-paradigm.

### **10.31. AJAX**

Asynchronous JavaScript And XML (AJAX) allows web pages to be updated asynchronously by exchanging data with a web server behind the scenes. This means that it is possible to update parts of a web page without reloading the whole page.

### **10.32. Node.JS**

This is an open source server environment is a platform independent, free, open source server environment that uses JavaScript on the server side.

### **10.33. GIT**

GIT is a source code version control system for tracking changes in computer files and coordinating work on those files among multiple people.

#### **10.34. Unit Testing**

This is a software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use.

#### **10.35. Integration Testing**

This is the phase in software testing in which individual software modules are combined and tested as a group.

#### **10.36. Regression Testing**

This is the process of testing changes to computer programs to make sure that the older programming still works with the new changes. Regression testing is a normal part of the program development process and, in larger companies, is generally implemented by code testing specialists.

#### **10.37. Performance Testing**

This is a testing practice undertaken to determine how a system performs in terms of responsiveness and stability under a particular workload.

#### **10.38. Security Testing**

Security testing of any system is undertaken to identify all possible loopholes and weaknesses of the system that might result in a loss of information at the hands of employees or outsiders to the organization.

#### **10.39. Application Support**

Application support delivers services to users within an organisation, enabling the required business processes needed for the business to be successful. By default, application support enables people to execute their responsibilities within their relevant business processes.

#### **10.40. Application Monitoring**

This is a process that ensures a software application processes and performs in an expected manner and scope. This technique routinely identifies, measures and evaluates the performance of an application and provides the means to isolate and rectify any abnormalities or shortcomings.

#### **10.41. Service-Level Management**

Service-level management provides for the monitoring and management of the quality of service (QoS) of an entity's key performance indicators (KPIs). The key performance indicators range from coarse-grained availability and usage statistics to fine-grained entity-contained per-interaction indicators. Service-level management involves comparing actual performance with pre-defined expectations, determining appropriate actions, and producing meaningful reports.

#### **10.42. Service Oriented Architecture (SOA)**

This is a style of software design where services are provided to the other components by application components, through a communication protocol over a network.

#### **10.43. Business Rules Engine**

A business rules engine (BRE) is a systems application or software that allows business decision processes, rules or logic based on e.g. policy, regulation, operational requirement, or procedure to be introduced and maintained in a business process management (BPM) system separately from application code.

#### **10.44. Mobile Application Development**

This is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs.

#### **10.45. Biometrics**

Biometrics are used to measure individuals' unique physical or behavioural characteristics in order to recognize or authenticate their identity. Common physical biometrics include

fingerprints; hand or palm geometry; and retina, iris, or facial characteristics. Behavioural characters include signature, voice, keystroke pattern, and gait.

#### **10.46. Thick Client**

A thick client is a computer (client), in client–server architecture or networks that typically provide rich functionality independent of the central server.

#### **10.47. Interactive Voice Response (IVR)**

This is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via a keypad.

#### **10.48. Workflow and Case Management System**

A workflow and case management system provide an infrastructure for the set-up, performance and monitoring of a defined sequence of tasks, arranged as a workflow application.

#### **10.49. Telephony**

This is the field of technology involving the development, application, and deployment of telecommunication services for the purpose of electronic transmission of voice, fax, or data, between distant parties.