E-GOVERNANCE

MISSION MODE PROJECT
(MMP)

CRIME AND CRIMINAL TRACKING NETWORK & SYSTEMS

RFP FOR SELECTION OF SYSTEM INTEGRATOR

ANNEXURE II
(Non functional requirement specifications)

RELEASED BY:

Delhi Police

Government of Delhi

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Annexure: Non- Functional Requirements

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1 Non Functional Requirements

Following is a list of Non Functional and Technical requirements that would be covered under CAS (State/Center) by the software development agency at the central level.

1.1 NFR CAS (State):

FRS No.	Business / Functional Requirement
3.1	**General Requirements**
3.1.1	As per SRS will provide standard modules at police stations for working online/office env.
3.1.2	Police station will be able to work on offline environment. They will also be able to post and synchronize the data at state level when internet connectivity will be available.
3.1.3	System should support multilingual interface.
3.1.4	System should support multilingual labels.
3.1.5	Will provide services to users in future
3.1.6	The system should ensure easy scalability and extensibility through minimum effort(this will vary based on the requirements)
3.1.7	The system should be designed in manner that operational data will never be lost until a manual intervention/hardware failure.
3.1.8	The system should run on multiple browsers (IE 6.0 and above, Firefox 2.0 and above, and Konqueror)
3.1.9	The system should be designed to have minimum satisfactory performance even in Police Stations connected on low-bandwidth (28 kbps).
3.1.10	The solution should be provided along with the product manuals, user manuals and functional specifications.
3.1.11	The solution should maintain a database of frequently asked questions (FAQ).
3.1.12	Will provide data dictionary for mandatory fields.
3.1.13	This solution will be customized at state level
3.1.14	The Solution will support following front end modifications.. 1.10.1. Look & Feel 1.10.2. Display languages(labels)
3.1.15	Solution should follow NIC website development guidelines and standard guidelines too.
3.1.16	The solution should ensure that data deletion is controlled centrally as per the defined policy or the person having right to do so.
3.1.17	The process for removing unnecessary code from the application after it is released should be documented.
3.1.18	Application code should not contain invalid references to network resources (Pathnames, URLs etc).
3.1.19	The solution should not display the entire path of URL in the browser based application. We will manage through app server and web servers.
3.1.20	Solution will prompt proper error messages.
3.1.21	All the exceptions will store at DB end and pass the same at state/centre label for further escalation
3.1.22	Application will not fail without manual intervention.
3.1.23	This will be a web based solution and no temporary object will be created.
3.1.24	The solution should support e-mail integration (SMS integration in not inducted in this phase). Upload and download multiple types of documents (e.g. ms-word, excel and image file formats)

FRS No.	Business / Functional Requirement
3.1.25	Application will maintain audit log for important data transactions like updating and deletion
3.1.26	Data model should be flexible to add more data fields as per changing business needs
3.1.27	Data should be entered at each police station and this will be synchronized at state level through net connectivity or manually using external devices (pen drive, CD etc.)
3.1.28	At state level, application will be built in common technology/platform to avoid any compatibility issues.
3.1.29	Application will provide facility to export data for further use.
3.1.30	Application will provide reporting option.
3.1.31	Will provide web services
3.1.32	Will provide standard security i.e. roll base, password policy
3.2	**System Availability, Performance, and Scalability**
3.2.1	Application will be up and running (at least 99%) if no other disturbances like power failure, LAN problem, any other infra-structure issue etc arises.
3.2.2	System will provide proper adequate response for accessing each of the modules.
3.2.3	System will show quick response in simple search and will take little bit more time for advance search and this will vary based on input conditions.
3.2.4	Application scalability at least 600 will confirm during load testing also.
3.2.5	Memory leakage Benchmarks: The memory leakage per request should be less than 1kb.
3.2.6	Application will work based on roles and rights
3.2.7	Application will run at secure platform.
3.2.8	Application will follow security standard guidelines.
3.2.9	Application will work smoothly
3.3	**Ease of Use**
3.3.1	All error messages produced by the System must be meaningful,
3.3.2	The System will employ a single set of user interface to provide a familiar and common look and feel for the application.
3.3.3	The System must be able to display several entities (cases, suspects) simultaneously.
3.3.4	The interfaces will be customizable or user-configurable to the extent possible (look and feel, logos).
3.3.5	The System user interface must be suitable for users with special needs; that is, compatible with specialist software that may be used and with appropriate interface guidelines
3.3.6	The System will provide role based access to the application's modules.
3.3.7	The System must allow persistent defaults for data entry where desirable.
3.3.8	Frequently-executed system transactions must be designed so that they can be completed with a small number of interactions (e.g. mouse clicks).
3.4	**Usability Guidelines**
3.4.1	We will follow standard guidelines for development and designing and will follow ISO 9241-20, ISO 9241-171, and ISO 9241-110 too.

1.2 Technical Specifications CAS (State)

FRS No.	Business / Functional Requirement
4.1	**General Architecture Requirements**
4.1.1	The solution will be configurable architecture as per state requirements and customization as well.
4.1.2	The solution should facilitate centralized deployment of the application.
4.1.3	The solution should be based on shared and reusable architectures, that is, applications, systems and infrastructure are characterized as service oriented, component-based and reusable.
4.1.4	The solution should result in low architectural diversity.
4.1.5	The solution should provide for multi-tiered architectures (at least 3-tiered with clear separation between the presentation logic, business logic, and data access logic).
4.1.6	The solution should provide application architectures that are highly granular and loosely coupled.
4.1.7	The solution architecture should be platform and vendor independent.
4.1.8	The solution should be interoperable in nature and design and development should be based on Service Oriented Architecture (SOA).
4.1.9	The solution will be easy to design for adding or removing modules when required.
4.1.10	The solution architecture should allow infrastructure simplicity and standardization.
4.1.11	Will provide log shipping to continue the operations.
4.1.12	The solution should ensure data safety and integrity in the event of communication channels operation failures.
4.1.13	The solution should employ a common user access and authentication service to ensure Single-Sign on for the end-user
4.1.14	The solution should support multi-tier authentication where required.
4.1.15	The solution will be role based and only assigned person for their respective roles can access their application modules.
4.1.16	The solution will always ask for user authentication before a user can enter the application and based on that user will able to use the application.
4.1.17	Application will provide an option to allow admin/super-admin to add/edit/delete users from the system
4.1.18	Solution will follow standard password policy.
4.1.19	The solution should provide Unique user ID along with their activation and deactivation option.
4.1.20	The solution should display an appropriate warning message upon user logon.
4.1.21	The solution should not store authentication credentials on client computers after a session terminates.
4.1.22	Credential will remain same and this will allow a user with one role to access more than one module as well.
4.1.23	NCRB is already providing SSO for authorization.
4.1.24	Will provide logout option to terminate the session.
4.1.25	All the credentials and sensitive data will always be stored in the Database
4.1.26	The system should be implemented using Service Oriented Architecture (SOA) and have a modular design.
4.1.27	Will provide Single –Sign for end users.
4.1.28	The system should be developed for a centralized deployment at the state level and maintenance.
4.1.29	The system should be designed to have an n-tier architecture.
4.1.30	Application access interface through PDA and mobiles will cover later on

FRS No.	Business / Functional Requirement
4.1.31	The system should adopt standardized formats and common metadata elements.
4.1.32	The solution will support multi tier authentication if required.
4.1.33	Application will use secure network.
4.1.34	The solution will provide standard security protocol.
4.1.35	The Solution will provide security for SQL injections and others as well.
4.1.36	Application will take care internally for data transfer between CAS and state only
4.1.37	Enabling of payment gateway will cover later on.
4.1.38	Data Base 1. Defined scheduling frequency 2. Disaster recovery at Centre level 3. Password encryption 4. Data encryption 5. Backup and restoration 6. Defined data archival policy

1.3 Additional NFR CAS- Delhi:

		Non – Functional Requirements
	1. General Requirements of CCTNS CAS(State) applications	
1	1.5	The solution should perform all functions with keyboard support (mouse is not mandatory)
2	2.2	The system should allow the following Multiple financial years processing capabilities To modify and reorganize all menus Multi-user logging in remote location The solution should support multi- time zone
	3. Modularity	
3	3.1	The solution will initially be required to cover a range of process modules mentioned above, but it should allow addition of more modules or more users in any module as and when required. The solution proposed should be able to integrate with solutions/products/applications on Open standards
	5. Data Model	
4	5.1	The solution should use a single unified data model hosted on the database
5	6.3	The solution should support traditional integration Event based non-invasive integration Business process Execution Language (BPEL) Business Messaging protocols like EDI, Metal-XML, Rosetta Net, ebXML, OASIS, AISI
6	6.5	Bulk Load of Flat Files Should support verification of data integrity before the data is loaded into the package tables In case of errors, it should provide a list of rows that have produced errors and should not load any rows from the flat file

7	6.6	Messaging based integration Should support guaranteed, delivery of messages Should use XML based messages Should support standard transport protocols like http, https, ftp, ftps, imap and smtp
	7. Data Migration	
8	7.1	The solution should have automatic way of migrating the data of existing database in case of data structure change during transfer to new versions
9	7.3	Should extract the crime, criminals, and other related data or updates from the previous extraction from States and UTs database at regular and pre-specified periods. The periodicity might differ from data group to data group.
	8. Data Validation	
10	8.1	It should have the ability to assign validation on specific fields based on entries in the data validation reference file
	9. Security	
11	9.2	The solution should be capable of providing Authorization by the transaction type, User Name, User Role
12	9.3	The solution should be capable of providing One user multiple roles and vice versa
13	9.4	The solution should be capable of providing automatic timeout for transaction entry
14	9.5	The solution should be capable of providing automatic timeout for user (log out)
15	9.6	The solution should be capable of providing Time restriction on transaction
16	9.8	The solution should be capable of providing terminal soft lock facility
17	9.9	Ability to allow definition of rules for password composition and password encryption as per Delhi Police's IT policy
18	9.1	System should support configurable password policies including Password expiry Password history and reuse policy
19	9.12	Ability to handle data updating/ deletion/ creation only through application layer
20	9.13	Session limits must exist for the application. For each session type, there must be limits on the number of sessions per user or process ID and the maximum time length of an idle session
21	9.14	System should allow proxy users. For example, an executive can designate an assistant as a proxy, allowing that assistant to create, edit or approve transactions on behalf of that executive. The audit thereafter should state that the action was performed by the proxy user on behalf of a particular user
22	9.15	The solution must not enable users to circumvent the intended user interface to access resources in its supporting infrastructure
23	9.16	Ability of system to display an appropriate warning message upon user logon. The warning message need not include the following four general elements verbatim but must convey the same meaning:- Use of application constitutes the user's consent to monitoring. Use of application is limited to official Login use only. Unauthorized use is subject to prosecution.

		Notice that this is a Login system
24	9.17	Ability to provide automatic time out for entry transaction
25	9.18	Should not require opening of any special protocols for connecting the user client to the web/ application server. All communication should be on HTTP or HTTPs
26	9.19	The database should be certified at EAL4 level for security
27	9.2	The database should support role based access control, user based privileges
28	9.22	The database should support the resource allocated to the per user session.
29	9.23	The database should support standalone / integrate with Operating system security.
30	9.24	The system should have the option to encrypt data before transferring over a network.
31	9.25	The system should have the option to encrypt the data stored in the database.
	10. Governance & Compliance	
32	10.1	The solution should have the ability to provide Segregation of Duties (SoD) rules
33	10.2	The solution should have the ability to identify risks across multiple applications
34	10.3	The solution should have the ability to provide capabilities for Rules Management
35	10.4	The solution should have the ability to provide audit controls for mitigation of risks
36	10.5	The solution should have the ability to enforce risk prevention
37	10.6	The solution should have the ability to provide automated remediation options when conflicts are found with integrated workflow
38	10.7	The solution should have the ability to provide the dynamic drill down capabilities to facilitate proactive analysis and problem resolution
39	10.8	The solution should have the ability to enable automation of identification of SOD conflicts at each user level
40	10.9	The solution should have the ability to provide risk and SoD analysis at user, role, transaction, and authorization object field value levels
41	10.1	The solution should have the ability to have the simulation facility before the introduction of a changed role against the current users of that role in order to identify hidden risks at the user level
42	10.11	The solution should have the ability of system to enable creation and management of roles
43	10.12	The solution should have the ability to enable documenting and managing changes to role definition over time including audit trail of all changes
44	10.13	The solution should have the ability to enable the user to select the appropriate Roles to be assigned to him from the valid Roles
45	10.14	The solution should have the ability to have the ability to analyze the selected Roles in a request against the SoD matrix in real time, to prevent any possibility of risk, fraud or violations
46	10.15	The solution should have the ability to provide secure and auditable privileged user access
47	10.16	The solution should have the ability to enable the privileged user access to be automatically monitored.
48	10.17	The solution should have the ability to not impact system performance while auditing and monitoring of usage of the solution

49	10.18	The solution should have the ability to provide dashboards that display information geared to the needs of different users, such as business process experts, auditors and IT
50	10.19	The solution should have the ability to generate and distribute reports detailing SoD conflicts and mark those that have an approved exception
51	10.2	Application role based access control should enforce separation of duties. Particular administrative and user functions should be restricted to certain roles.
52	10.21	The system should detect orphan accounts & rogue accounts which have violated the entitlement policy
	11. User Access Management	
53		Access to modules / functions within modules restricted to authorized users.
54		It should provide logging by user and terminal, the date and time of all transactions with details of creation, reading, updating, deletion or printing.
55		Access should be restricted to different levels as program, module, transaction, etc.
56		Notify security administrator of unauthorized access or attempted access and record in a log with reporting.
57		Multilevel security system at operator, supervisors, module owners, administrator level.
58	11.2	The solution should have a business role management solution integrated with the user management solution
59	11.3	The solution should have the ability to integrate with directory services for authentication and authorization and support the following features
60	11.4	Support of LDAP (Lightweight Directory Access Protocol) to allow systems access to the directory
61	11.5	The system should provide capabilities to receive inputs from Human resource management system with respect to user information: In order to get all the user data into the provisioning tool without manually recreating them, it must be possible to get the data and then the subsequent changes from a trusted data source. Most probably such a store with integrity will be the HRMS solution. Hence the provisioning tool must have an option to accept a feed from such systems
62	11.6	Ability to support role based access control
63	11.7	The system should provide capabilities to define “Time based Actions” so that enable, disable and delete actions can be driven by date attributes: In any organization a user might be need to play a designated role for a specific known period of time. In such scenarios the tool must provide capabilities for time based actions so that the user can be provisioned / de-provisioned based on date attributes
64	11.8	Ability to provide access level security for Entry forms at Field level - allow, Read only, Hide
65	11.9	Ability providing access level security for Entry forms at Transaction level - allow / deny
66	11.1	Allow providing access level security for reports at Field level - show / hide
67	11.11	Allow providing access level security for reports at Transaction level - allow / deny
68	11.12	Users should not be allowed to access the database directly
69	11.13	Ability to provide authorization by user name
70	11.14	Centralized repository of all identification and access control data
71	11.15	The solution should have the ability to support multi-tier authentication where required
72	11.16	The solution should have the ability to assign activities to roles, and map roles to users

73	11.17	The solution should have the ability to provide user and user group authorization administration tool to assign security levels to functions and data, and allow the access by users / by groups with valid security level only
74	11.19	The solution should have the ability to provide multi-level access management. The following should be provided:- User identification; Limitation of user rights to perform operations; Data confidentiality provision; User actions audit and protocols.
75	11.2	Ability of system to support the following under user account management Unique user IDs Disabling of inactive user IDs
	12. System Control and Audit	
76	12.2	It should enable audit trails on-line, tailor audit requirements by modules, call audit records to an archive based on date or other recorded audit details. The system should allow recovery of data in case of hardware failure and data corruption. It should be able to perform recovery to a point of time, to known backup database
77	12.3	The system shall ensure that the audit files are stored in un-editable formats
78	12.5	It should be possible to track database super user activity in operating system files
79	12.6	The solution should be capable of providing Audit Trail: Audit trail of Time Stamp & User ID stamp for the following Transactions Parameter Changes
80	12.7	All changes to data should be recorded in a separate table and should be stamped with the identity of the user/program and the time of the creation/change
81	12.8	Views should be available for reporting on data changes
82	12.9	It should be possible to audit users at the form level, user level, application module level and at the organizational role level
83	12.1	The system should provide reports on user activity based on the role and the application that was used
84	12.11	The system should support for auditing to track and monitor user behaviour with details about the level of detailing stored by the system and ability to reverse changes
85	12.12	Audit system should be centralized, secured and should provide detail insight in audit data (who did what, to what data and when)
86	12.13	Audit system should enforce separation of duties between auditors and administrator
87	12.14	Auditor's should have direct access to the audit system to view audit reports and should be able create custom reports
88	12.15	Should capture before / after values from transaction logs and raise alert on critical and suspicious activity
89	12.16	The system should have the ability to identify users that have exploited access privileges, identify root causes of conflicts and be capable of interrogating the security log
	13. Network	
90	13.1	The solution should support TCP/ IP, HTTP & HTTPs for all traffic between the user screens & the system

91	13.2	The solution should support the following network types LAN & WAN Leased Lines ASDL lines Satellite Networks Mobile data service network (GPRS) MPLS based networks VPNs
	14. Offline Solution	
92	14.2	The solution should have the ability to work on limited processes with limited data of last 15 days when the communication is down
93	14.4	The Offline Solution should support an Architecture of Local Client with a Selected Business Logic
94	14.5	The Offline Solution Should have Local Data on the offline client to carry out the Transactions
95	14.6	The Offline Solution should support an Architecture of Data Synchronization, Device Administration
96	14.7	The Offline Solution should support Selected Business Logic Copy from the Master System
97	14.8	The Offline Application should support the following : Local data encryption should be supported on the offline Device Encrypted data synchronization Password changes Remote wipe device data Non-repudiation Security incidents trigger actions e.g. lock device
	16. User Interface	
98	16.1	The solution should have unified, easy, flexible and user friendly interface enabling the following settings Personal User menu Personal User settings Field Placement on screen Field composition on screen
99	16.3	The application pages should be partially refreshed as against the entire page when a user performs certain actions/ changes
100	16.4	All modules should be homogenous with respect to keyboard use, screen layout and menu operations with Graphic User Interface (GUI) support
101	16.5	The GUI Form Administration should support the following without coding effort: Changing fields or tab labels Hiding fields or tabs. Changing the position or size of field or labels Adding restrictions like mandatory or not

		Setting default value in a field Changing list of value (LOV) contents
102	16.6	The solution should have the ability to provide UI suitable for non-technical business users and IT experts
103	16.7	There should be sufficient edit and validation checks in the system
104	16.8	Capability to setup logic to trap conditions to pop messages in response to conditions like logical data entry errors, certain conditions etc without coding effort, which does not require additional steps to be retained during an upgrade
105	16.9	It should provide safeguards to prevent damage to data from operator errors, simultaneous updates, module unavailability or system failures
106	16.1	It should have facility to display confirmation / warning windows for deletes, changes etc
107	16.11	The system should provide consistent screen layouts and access methods across all modules so that they look and behave the same
108	16.12	It should provide on-line error reporting and use a menu-based system with facilities to bypass menus by experienced operators
109	16.13	The system should provide drill down facility to next level of details and so on
110	16.16	When a user opens a form, the fields should be displayed according to user preferences and the data should be pre-populated with the relevant data subset
111	16.17	Users should be allowed to rearrange screen items as per their convenience
112	16.18	Users should be able to choose a search option (simple search or advanced search).Users should be provided an option to add additional filtering criteria to the search such as adding ‘AND’ and ‘OR’ conditions
113	16.19	Tailor column table titles without writing any code
114	16.2	Hide/ show columns without writing any code
115	16.21	Reorder columns without writing any code
116	16.22	Add data filters without writing any code
117	16.23	Change sorting orders without writing any code
118	16.24	Tailor text for labels, prompts and tip messages without writing any code
119	16.25	It should be possible to add more fields to the data input screens for capturing additional business specific information without having to write any code. These fields should be configured without creating additional tables or without the additional effort of referencing the new fields to the existing fields on the screen. The user should also be able to define the data type and the data length of the additional fields without having to write any code.
120	16.26	This functionality should be available to authorized business users to configure the screens appropriately
121	16.27	It should be possible to configure the additional fields to only pop-up when required based on the data entered in the form
122	16.28	It should be possible to configure the additional fields in a hierarchical dependency so that additional fields are exposed based on values chosen in earlier fields
	16. Up-gradation	
123	17.1	The upgrades should not affect the current version adversely
124	17.2	The solution architecture should be with minimum package modifications so as to preserve the package upgrade

125	17.3	The implementation procedure for the proposed solution must ensure that to the largest possible extent no changes are required to be incorporated in the base product's source code. This will ensure smooth migration to later versions of the base product
	17. Source Control	
126	18.1	The Solution should have built in source code control program or should support integration with any third party source code control program
	18. Connectivity	
127	19.1	The solution should support the connectivity to the database through ODBC, OLEDB, JDBC or through Native drivers
	19. Work Flow	
128	20.1	The workflow should be an integral part of the solution
129	20.2	The solution should have the ability to support automated workflow designed to address needs of business users
130	20.3	The solution should have the ability to support multiple workflow paths that are automatically selected based on request/user attributes, including escalation paths
131	20.4	The solution should support standard work flow languages
132	20.6	The workflow should have a rules engine that allows rules to be created to define approval hierarchies
133	20.7	The workflow should hold transactions in pending status and not commit them until all approvals are obtained
134	20.8	The workflow should be able to send notifications when manual intervention is required in a process
135	20.9	The workflow should provide a web based end user interface that can integrate with the portal
136	20.1	It should be possible to create workflow diagrams that can be shared with business users to verify the workflow
137	20.11	The workflow should allow the modelling of sophisticated business processes using the concept of drill downs where it should be possible to define a high level process where sub processes are represented by drill down icons
138	20.12	The workflow should provide a drag and drop GUI based single/ common design tool to define and alter business process across all modules of the Solution
139	20.13	It should be possible to define the process hierarchies top down or bottom up to support distributed workflow process definition
140	20.14	There should be no limit on the hierarchy levels that can be defined
141	20.15	A management console should be available to monitor workflow processes and to control processes that have errors in them
142	20.16	Ability of system to have workflow with the ability to define business rules without the need for programming, including alerts and triggers
143	20.17	The workflow should interface with email system supporting SMTP for sending out notifications and IMAP for receiving the notification responses
144	20.19	It should be possible to delegate certain notifications to another user for a certain period, without actually sharing the password
145	20.2	This should also support creation of secondary workflow by any user in the main workflow, during any stage of the parent workflow and keep track of the same along with the parent workflow

	20. Web Portal	
146	21.1	The solution portal should allow for multiple portlets to be displayed
147	21.2	The solution portal support personalization and role based access
148	21.3	The solution should provide a tool for content management
149	21.4	The solution portal should enable authentication of users
150	21.5	The solution should allow Single-sign on to other components possible through the portal
151	21.6	The solution should include automatic indexing and searching Portal
	21. Archival	
152	22.1	The system should be able to archive data, based on user specified parameters (i.e. data range) and restore archival data for on-line use when required
	22. Development Tools	
153	23.1	The solution should have built in tools and utilities, which will enable Raj Police to enhance the Solution for their requirement and maintain the software on their own
154	23.2	All development tools should be GUI based. The tools to be provided for Creating data entry screens Fixed format reporting User driven ad-hoc reports creation ETL for importing data from external systems
155	23.3	Development tools should not use proprietary languages for writing programs. Development Tools should be able to use Open standards based programming languages
	23. Testing Tools	
156	24.1	The Solution should provide integral load & stress testing tool
	24. Reporting Tools	
157	25.1	The solution should be capable of scheduling a report for execution / refresh and/or distribution and/or publish
158	25.2	The solution should be capable of distributing reports through email as Body or Attachment
159	25.3	The solution should permit viewing of reports through web
160	25.4	The solution should permit prioritizing reports during execution
161	25.5	The solution should be capable of publishing reports to a central store for access by different users
162	25.6	The solution should allow users to send report to specified user(s) at scheduled times
163	25.7	The solution should have interface to search and filter the data of the report
164	25.8	The solution should provide exception reporting mechanism
165	25.9	The solution should provide Senior Management Dashboards
166	25.1	The solution should be capable of drill down and drill up with the report tool
167	25.11	The solution should be capable of creating ad-hoc queries and reports for analysis
168	25.12	Should not require knowledge of SQL or database to create self service adhoc reports
169	25.14	The solution should be able to convert reports to MS-Excel, MS- Word & PDF format directly
170	25.15	The solution should provide the following display formats in the reports

		Sections Tables Pivots Charts
171	25.16	The solution should be capable of archiving reports and store them in Document Management System
172	25.17	The solution should allow reports to be sent directly to networked Printer
173	25.18	The solution should permit display of multiple result sets in the same document
174	25.19	The solution should permit the user to browse through metadata for detailed information on objects to build ad hoc reports
175	25.2	The solution should facilitate the user to create custom objects/formulas for repeated use in reporting tool
176	25.21	The solution should provide graphical interface for creating custom formulas
177	25.22	The solution should have a GUI tool with drag and drop features to build reports
178	25.23	The solution should permit conditional formatting, based on thresholds or data ranges for any cell in the report
179	25.24	The solution should use existing MS-Word/PDF document for report template directly
180	25.25	The solution should restrict access to data and report based on user responsibilities
	25. Data Warehousing & ETL Tool	
181	26.1	The solution should include an ETL tool that can be used to extract, transform and load data from disparate source systems and perform the necessary transformations to establish a common format
182	26.2	The solution should support batch data extraction, transformation and loading
183	26.3	The solution should have an user-friendly GUI for the users to handle ETL processes, such as: Modify data feeds Change of Business logic used for data ETL Modify ETL parameters Create, edit and execute a large number of transformation rules
184	26.4	The solution should support Import & export wizard and supporting connections with source and destination adapters including OLEDB, ADO .Net, Flat files, and XML formats
185	26.5	The solution should include a data mining tool that provides bottom-up, discovery-driven data analysis
186	26.6	The solution should provide data mining algorithms which help discover patterns and uncover business data to reveal hidden trends
187	26.7	The solution should support analysts by creating analytic starting pints including graphs, key performance indicators (KPIs), data grids and advanced visualizations like Decomposition Tree, Performance Map and Perspective View.
188	26.8	The solution should support What if analysis
189	26.9	The solution should support decision trees, Association rules, sequence clustering, Time series, Neural Networks, text Mining etc
190	26.1	The solution should support data mining tools (including Wizards, Editors, Query Builders, Lift Chart)

191	26.11	The solution should support Data mining Add-ins to empower end user to perform advanced analysis in MS Excel & MS Visio
192	26.12	The solution should include a Rule based Data Cleansing/Enhancement tool
193	26.13	The solution should have the ability to extract or refresh information directly from within the MS Office application (Excel, PowerPoint and Word) without the need to export from another existing report
194	26.14	The solution should have the ability to have Scheduling capabilities based on events, calendars, or specific points in time
195	26.16	The solution should have the ability so that users define/change any number of charts and tables with different permutation of the data via a graphical user interface during the course of analysis
196	26.17	The solution should have the ability to enable users to perform pivoting to change the permutation of any graph or table to view information in various perspectives during the course of analysis
197	26.18	The solution should have the ability to enable users to perform drill down on any graph or table to view the detail breakdown on any value during the course of analysis
198	26.21	The solution should have the ability to perform predictive analysis against scorecard data and generate predictions for the KPIs contained in the scorecards
199	26.23	The solution should have the ability to enable users to setup a schedule to print, export or email the report automatically
200	26.24	The solution should have the ability to enable users to combine personal data from Microsoft Excel, CSV and txt files and incorporate data into a single report, which can then be shared with other users through the platform
201	26.25	The System should allow users provided with the capability to define information about the report so that other users in the community understands what business questions the report answers, the meaning of the business terms used and the link to other related reports
202	26.26	The system to provide with the capability to key in notes to individual respective reports in the form of threaded messages for the purpose of discussion
203	26.27	The system to provide with the capability to map predefined reports to business processes to build relationships between people, process and information
204	26.28	The solution must allow the users to define the thresholds for each metric and to define the actions and alerts required when these thresholds are met
205	26.29	The business intelligence platform must be built on a modern technology based on a services-oriented architecture for flexibility and extensibility
206	26.3	The business intelligence platform must support for multiple platforms
207	26.31	The business intelligence platform must be able to integrate to our existing web portals easily via portal services and portlets
208	26.32	The tool must have the ability to access a broad range of technologies to cater for both the current environment and any new technologies that may be introduce in the future
209	26.33	The solution must provide the capability to perform data profiling, data flow design, data mapping routines and debugging within the same designer and graphical user interface
210	26.34	Ability of system to allow for any document or report be previewed before printing
211	26.35	Ability of system to provide utilities to automate report distribution process, so that user is notified after a report is generated to facilitate easy retrieval

212	26.36	Ability of system to provide functionality to users in generating reports on their own without involving technical programming
213	26.37	The reports should be available for time frames like weekly / daily / monthly / yearly
214	26.39	The system should provide for calculations, filters and exceptions during reporting
215	26.4	The reporting feature should support the reports to be scheduled to run in batch
216	26.41	The schedule to run the reports should be both event-based or time based
217	26.42	Ability of system to support the feature of delivering the reports to the online users through email, portal, and report server
218	26.43	Ability of system to provide for saving the report /queries for repetitive execution as and when required by the users
219	26.44	The proposed solution should provide for a role-based dashboard with graphical reporting capabilities with executive summary and detailed drill down reports for business process owners, users, auditors, IT security
220	26.45	Ability of system to provide graphics and charting capabilities
221	26.46	Solution should provide the technology to build a business semantic layer that translates data source technology terms to business terms to enable business users to define information requirements without understanding the data source technology
222	26.47	Ability of the business semantic layer to integrate with both relational database as well as OLAP server data sources
223	26.48	Ability of the business semantic layer to be used by business users to build reports and dashboards via the web browser
224	26.49	Ability of the Business semantic layer security to be managed within the solution for data restrictions
225	26.5	Ability of the business semantic layer to be designed using a graphical user interface with zero need for SQL statements or MDX programming
226	26.51	Ability to create flexible, highly formatted, pixel perfect and feature rich operational reports
227	26.52	Should have scheduling capabilities based on events, calendars or specific points in time
228	26.53	Should have User, group, object and folder security
229	26.54	Should have repository for reusing common report objects across multiple reports
230	26.55	Should have universal integration with other applications and portals
231	26.56	Should have dynamic and cascading prompts feature
232	26.57	Should have the ability to authenticate the user before any transaction to populate the model with data
233	26.58	Should provide the administrators the ability to capture user activities, user log in attempts, report requests and other activities through reports and dashboards
234	26.59	Should allow the administrator to define comprehensive security requirements easily with the ability to organize users into groups and inheriting user rights from groups
235	26.61	Should be able to integrate with other web portals via portal services and portlets
236	26.62	Should be able to search and explore the data warehouse and automatically generate analytical environment
237	26.63	Should be able to search the metadata
	26.General requirements of IT infrastructure	

238	27.1	The solution should be highly scalable and capable of delivering high performance as & when transaction volumes/ users increases without compromising on the response time
239	27.2	All components of the IT Infrastructure should be based on standards to avoid compatibility issues
240	27.3	The IT Infrastructure should have ability to withstand all single point of failure by providing clustering features
241	27.4	The IT Infrastructure should support the use of fault tolerant multiprocessor architecture & cluster processing
242	27.5	The IT Infrastructure should support auto-switching to available server in case of server failure
243	27.6	The IT Infrastructure should support distributed processing
244	27.7	The IT Infrastructure should support load balancing
245	27.8	It should be possible to configure data replication synchronously or asynchronously
246	27.9	The solution proposed should include servers with latest CPU architecture offered by the hardware provider
247	27.1	The solution shall be supported on client with Mobile Devices (PDA)
248	27.11	The IT infrastructure should support Windows Vista, Windows XP, Windows 2000, Windows NT, Windows 98 SE, and most common Linux and Unix Operating Systems.
249	27.12	The development infrastructure in the proposed solution will be needed to support ongoing development/upgrade needs during and post implementation.
250	27.13	The Quality Assurance infrastructure in the proposed solution will be needed for conducting tests and trainings during and post implementation
251	27.14	The system should be capable of providing Access control for System Administrators and certain select users using Biometric devices.