5.1 OVERVIEW

This chapter documents the functional and non-functional requirements for the PL-Analyser system. Functional requirements describe the functions that the PL-Analyser system is to perform. Non-functional requirements describe the technical and other non-functional requirements of the system so that the functional requirements can be developed.

5.2 PL-Analyser SYSTEM USE CASE

The PL-Analyser system use case describes the sequence of actions between users or actors and the PL-Analyser system. The use case will help to determine the sources of requirements for the system and help to get critical feedback early (Chonoles and Schardt, 2003).

The use case will also help the start of detailed design activities, which result in class, sequence and activity diagrams of the PL-Analyser system. These detailed diagrams are documented in Chapter 6.

The use case for the PL-Analyser system is illustrated in Figure 5.1.
The Surfing Information function allows users to access the PL-Analyser system and to surf for general information about the services, articles and external links provided. The functions on how a user registers, participates in surveys and views survey results are represented by the “Register,” “Take Survey” and “View Results” use cases, respectively. The “Provide Feedback” function allows users to provide feedback on the PL-Analyser system.

PL-Analyser administrators perform the function of “Create Company Access Key,” whereby access keys are generated for companies that want their employees to participate as employees and not as individuals during the personality traits and leadership styles surveys.
5.3 FUNCTIONAL REQUIREMENTS

The PL-Analyser system is made up of a number of functional requirements. These requirements define how a user’s inputs are processed and how outputs are presented.

The functional requirements for the PL-Analyser system are outlined in Table 5.1 to Table 5.4.

Table 5.1: General functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRGen001</td>
<td>General</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

PL-Analyser must deliver the following general requirements:
- View and browse general information relating to personality traits, leadership styles and career development.
- Register as a user, participate in survey and view survey results.
- Record feedback, manage broken links and contact development team for further information.
- Branch out to related sites, and learn about this system via a downloadable user manual.
- Change password and request a reset on a forgotten password.
- Report situations such as system downtime and login timeout.
- Provide “Help” features to help users learn and use the system.

**Input-Processing-Output (optional)**

**Input:** General data selection and input from users.

**Processing:** Data processing rules, explained further in the following sections.

**Output:** Success or failure messages, user ID creation and password reset information.

**Assumptions**

**Benefits**

Sets the high level functional expectations for the system.
Table 5.2: Data functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRData001</td>
<td>Data</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

The following data must be captured during the User Registration process:
- CompanyID, Company Name and Access Key for users who are part of a participating organisation.
- UserID and password information for each user.
- Gender, ethnic, nationality, age group, email, hobby, profession, institution of study, faculty, major, minor, ambition and education level for individual users.
- Years of service, department, position, industry, company name and education level for organisational users.

The following data must be captured during the survey process:
- UserID and SurveyID.
- 35 and 27 survey responses for personality traits and leadership styles surveys respectively.
- Calculate RIASEC, Big Five personality traits and Situational Leadership styles scores.
- Due to space limitations, the latest twelve survey data and reports will be made available to users.

The following data must be captured during the Survey Feedback process:
- Personality traits and leadership accuracy opinions from users.
- General system error messages.

**Input-Processing-Output (optional)**

**Input:** Input will be made possible via the User Registration, Survey and Survey Feedback processes.

**Processing:** User Registration, Survey and Survey Feedback areas will ensure the following rules are met before saving into the database:
- All mandatory fields must be filled in.
- Mandatory fields must be highlighted by a red ‘*’ symbol.
- Emails must follow a format similar to ‘xxx@xxx.com’.
- Password length must be between 4 and 8 characters.

Upon commit, users must receive either a success or failure message.

**Output:** User Registration will store user details and return user ID and password. Survey will store survey responses and return success or failure status. Survey Feedback will store survey feedback and return success or failure status.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic data will allow multi-dimensional analysis of survey response.</td>
<td>User details allow secure viewing of...</td>
</tr>
</tbody>
</table>
Table 5.3: Process functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRProcess001</td>
<td>Process</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following process requirements:
- Users must be able to browse general information without having to log in using a user ID and password.
- Users must only be able to participate in surveys and view results after logging into the system.
- User ID and passwords are only assigned to users after the User Registration process.
- Users must be able to change and reset passwords. Passwords reset are emailed to the email address specified during the User Registration process.
- Users can only provide feedback on accuracy after viewing survey results, and during general browsing via the feedback link.

**Input-Processing-Output (optional)**

**Input:** None.

**Processing:** User Registration, Survey, Survey Feedback and General Browsing.

**Output:** None.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provides a picture on what is the suitable system flow.</td>
</tr>
</tbody>
</table>
Table 5.4: Reporting functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRRrep001</td>
<td>Reporting</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following reporting requirements:

- Due to space limitations, the latest twelve survey data and reports will be made available to users.
- Reports must be categorised under a general category of Demographics, Individual and Organisational.
- Describe demographics of survey respondents from the perspectives of gender, ethnic group, nationality, age group, education level, years of service and position.
- Demographic reports to describe the properties of the sample data. Reports required are respondent statistics, statistics by demographics and respondents’ opinions on the accuracy of the theory.
- Individual reports are survey response results, traits and leadership styles movement, analysed by multiple dimensions.
- Organisational reports are statistics by demographics, scatter plot by aspect and personality traits and leadership styles scatter plot by demographics.
- Reports must be clearly colour coded and have header and legend information.
- Traits and styles data must be analysed by gender, ethnic group, nationality, age group, education level, years of service and position.

**Input-Processing-Output (optional)**

**Input:** Parameter selection depends on the report that a user wants to view.

**Processing:** Data retrieval, report generation and presentation.

**Output:** Report presentation.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scopes reporting requirements.</td>
</tr>
</tbody>
</table>

### 5.4 NON-FUNCTIONAL REQUIREMENTS

The non-functional requirements of the PL-Analyser system define how the infrastructure is to be set up in order for the system to perform to its optimum.

The non-functional requirements for the PL-Analyser system are outlined in Table 5.5 to Table 5.11.
Table 5.5: General non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRGen001</td>
<td>General</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following general non-functional requirements:
- Colour coding of interface and messages to denote information and errors.
- The system must be scalable, maintainable, and work under an acceptable response time window.
- Database, rules and front end tier backups must be in place.
- Operations, administration, installation and development guides must be available.

**Input-Processing-Output (optional)**

**Input:** None.
**Processing:** None.
**Output:** None.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the high level non-functional expectations for the system.</td>
</tr>
</tbody>
</table>

Table 5.6: Interface non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRInterface001</td>
<td>Interface</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following interface requirements:
- General pages must have a header, left menu and main information sections.
- Detailed pages must have a header and main information sections.
- Page headers must state date and time, system name and logos, and location of the system server.
- Each page must state copyright information as a fine print at the bottom.
- Every survey question must be laced with contrasting colours, which is blue and grey.
- Movement between interfaces must be recorded and displayed below the page header.
- Each section of User Registration, Survey and Survey Feedback must be completed by no more than five screens.

**Input-Processing-Output (optional)**

**Input:** None.
**Processing:** None.
**Output:** None.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5.7: Messages non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRMessages001</td>
<td>Messages</td>
<td>Medium</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following message requirements:
- All standard text must use Verdana, 12 points.
- All header text must use Verdana, 16 points.
- General information must be displayed in black fonts.
- Error messages must be displayed in red fonts.
- Success messages must be displayed in dark blue fonts.
- Section headers must be displayed in white fonts with a blue background.

**Input-Processing-Output (optional)**

**Input**: None.
**Processing**: None.
**Output**: None.

**Assumptions**

**Benefits**

Standardises the look and feel of the system.

Table 5.8: Response time non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRResp001</td>
<td>Response Time</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must fulfil the following response time requirements:
- User Registration screens must respond in less than 10 seconds.
- Survey screens must respond in less than 10 seconds.
- Survey feedback screens must respond in less than 10 seconds.
- Survey result screens must respond in less than 60 seconds.
- Each user session must time out after 10 minutes of continuous inactivity.
  
  User data does not need to be saved in the case of a session time out.
- Rules and front end tier backups must complete in less than 5 minutes.
- Database tier backups must complete between in less than 60 minutes.

**Input-Processing-Output (optional)**

**Input**: None.
**Processing**: None.
**Output**: None.

**Assumptions**

**Benefits**

Standardises the look and feel of the system.
Sets a foundation for System Level Agreements (SLAs).

Table 5.9: Availability non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRAvail001</td>
<td>Availability</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following availability requirements:
- Entire system must provide a minimum of 95% availability.
- Database, rules and front end tier backups must be performed online.

**Input-Processing-Output (optional)**

**Input:** None.

**Processing:** None.

**Output:** None.

**Assumptions**

System availability is measured based on the capabilities of the underlying server, operating system and customised software. Infrastructure issues are not part of this SLA.

**Benefits**

Sets a foundation for System Level Agreements (SLAs).

Table 5.10: Security non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRSec001</td>
<td>Security</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following security requirements:
- Rules tier must connect to the database via MS SQL Server’s Integrated Security (SSPI) architecture.
- Users must connect to the system via the front end using proprietary user ID and passwords assigned and managed in the MS SQL Server database.
- Survey results folder must be configured to allow Web-based connections to write information.
- Each survey diagrams must be generated based on the requesting session ID.
- Every user must only be able to view his or her survey results. Organisational users can view summary results of their respective organisation.

**Input-Processing-Output (optional)**

**Input:** None.

**Processing:** None.

**Output:** None.
<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensures security of sensitive data and survey outcome.</td>
</tr>
</tbody>
</table>

Table 5.11: Maintainability non-functional requirements

<table>
<thead>
<tr>
<th>ID #</th>
<th>Category</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRMaint001</td>
<td>Maintainability</td>
<td>High</td>
</tr>
</tbody>
</table>

**Requirements Description**

System must deliver the following maintainability requirements:
- Add new survey features without impacting existing personality traits and leadership styles surveys.
- Add more reports to the “View results” page.
- Increase the number of survey participations that can be stored for a user from the current limit of twelve.
- Add or remove links to articles and external sites.

**Input-Processing-Output (optional)**

**Input:** None.  
**Processing:** None.  
**Output:** None.

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensures that the system can be enhanced to include new features without having to impact existing functionality.</td>
</tr>
</tbody>
</table>

5.5 SUMMARY

This chapter describes the functional and non-functional requirements of the PL-Analyser system. The functional requirements describe how the PL-Analyser system will solicit user input, capture personality traits and leadership styles survey input and generate and display personality traits and leadership styles survey results. The non-functional requirements describe how the content in the PL-Analyser system will be laid out and how quickly the system is to respond to user input.