**3. System Design (Functional Design)**

**3.1 Introduction**

* System design is the process of defining the architecture,

Module interface and data for a system to satisfy specified requirements.

* The purpose of the design phase is to plan the solution of the problem

Specified by the requirements documents.

* This is the first step that moving from problem domain to the solution domain.
* The design of the system is essentially a blueprint or a plan for a solution for the system.

**3.2 Assumption and Constraints**

An assumption is a condition you think to be true and constraints is fixed limitations of project development.

* All the functional requirement collected from client are sufficient for the project life-cycle.
* All the Non functional and Specific requirement specified in SRS are well enough for the development of system.
* Time constraint.

**3.3 Functional decomposition**

Functional decomposition is the process of taking a complex process and breaking it down into its smaller, simpler parts. Using functional decomposition large or complex functionalities are more easily understood. It is mainly used during project analysis phase, so each phase can be viewed as software. So this has modular with some sub modules.

**3.3.1 System software architecture.**

CSV To TEXT

Extracting text from video

XLS To TEXT

**Digital File manipulation**

Text manipulation in an Image

Spread Sheet Manipulation

Video-Audio Manipulation

File Manipulation

Extracting text from Images

Extracting text from Region of interest

Highlighting text

XLS To CSV

Extracting audio from video

Extracting text from audio

PDF to TEXT

DOCX to TEXT

TEXT to PDF

Search Column

TEXT to DOCX

**3.3.2 System Technical Architecture**

USER

APPLICATION

DISK

**3.3.3 System Hardware Architecture**

Hard copy Device

Monitor

Computer

Standard input Device

Mass Storage

**3.3.4 External Interfaces**

Not applicable

**3.4 Description of the programs**

**3.4.1 Context flow Diagram**

In CFD entire system is considered as a single process. Context flow Diagram shows input and outputs of the system. It shows all the external entities that interact with the system and how the data flow between this external entities and system.

User

File

Manipulated Digital File

**3.4.2 Data Flow Diagram (DFD’s Level 1,Level 2,Level 3)**

**Data Flow Diagram(DFD)**

Data flow diagram shows the flow of the data through system. Data flow diagram also called the data flow graphs. It views a system as a function that transforms the inputs into desired outputs. It aims to capture the transformation that takes place within a system to the input data so that eventually the output data is produced.

|  |  |  |
| --- | --- | --- |
| **SYMBOLS** | **NAMES** | **DESCRIPTION** |
|  | Process | It performs transformation of the data from one state to another. |
|  | Source/Sink | It represents the external entity that may either source or sink. |
|  | Flow of data | It represents the flow of data from source to destination. |
|  | Data Source/Data | It is placed where data is stored. |

**Level 0 DFD**

File

Image File

Manipulated text

Xls or Csv File

Audio, Video File

Converted File

Manipulated File

Manipulated Audio and Video

**USER**

**Level 1 DFD**

Text Manipulation

Spread Sheet Manipulation

Audio and Video Manipulation

File Manipulation

**3.5** **Description of Components**

**3.5.1 Functional Component-1 Text Manipulation**

**3.5.1.1 Extracting Text From Images**

USER

SELECTED FILE

disk

3.5.1.1.1 Input

User Provide the Clear Images

3.5.1.1.2 Process Definition

Application retrieves the text in the image

3.5.1.1.3 Output

Application saves the text in Text file format.

3.5.1.1.4 Interface with other functional component

Independent module

3.5.1.1.5 Resource Allocation

System Internal Storage

3.5.1.1.6 User interface

Buttons ,Frames ,Entry box, Message box, Label.

**3.5.1.2 Extracting Text from Region of Interest**

USER

SELECTED FILE

disk

3.5.1.2.1 Input

User Provide the clear Image

3.5.1.2.2 Process Definition

Here user specifies the region in that image.

3.5.1.2.3 Output

Application Will retrieve the text in that Image

3.5.1.2.4 Interface with other functional component

Independent module

3.5.1.2.5 Resource Allocation

System Internal Storage

3.5.1.2.6 User interface

Button, Frames, Entry box, Message box, Label.

**3.5.1.3 Highlighting Text**

USER

SELECTED FILE

disk

3.5.1.3.1 Input

User Provide the clear Image and word or sentence.

3.5.1.3.2 Process Definition

Here user highlight the specified text in an Image.

3.5.1.3.3 Output

Application will return the image with highlighted text.

3.5.1.3.4 Interface with other functional component

Independent module

3.5.1.3.5 Resource Allocation

System Internal Storage.

3.5.1.3.6 User Interface

Button, Frames, Entry box, Message box, Label.

3.5.**2 Functional Component 2 Spread Sheet Manipulation**

**3.5.2.1 Csv To Text**

USER

SELECTED FILE

disk

3.5.2.1.1 Input

User Provides a Csv File using independent module.

3.5.2.1.2 Process Definition

Application process the Csv file and converts to Text file.

3.5.2.1.3 Output

Application will returns the text file and create the text file in original location.

3.5.2.1.4 Interface with other functional component

Independent module

3.5.2.1.5 Resource Allocation

System Internal Storage

3.5.2.1.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.2.2 Xls To Text**

USER

SELECTED FILE

disk

3.5.2.2.1 Input

User Provide the Xls file using independent module.

3.5.2.2.2 Process Definition

Application process the Xls file and convert to Text format.

3.5.2.2.3 Output

Application will returns the text file and create the text file

In the original location.

3.5.2.2.4 Interface with other functional component

Independent module

3.5.2.2.5 Resource Allocation

System Internal Storage

3.5.2.2.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.2.3 Xls To Csv**

USER

SELECTED FILE

disk

3.5.2.3.1 Input

User Provide the Xls file using independent module.

3.5.2.3.2 Process Definition

Application converts the Xls file to Csv file.

3.5.2.3.3 Output

Application return the Csv file and create the Csv file in original location.

3.5.2.3.4 Interface with other functional component

Independent module

3.5.2.3.5 Resource Allocation

System Internal Storage

3.5.2.3.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.2.4 Search column**

USER

SELECTED FILE

disk

3.5.2.3.1 Input

User Provide the Xls file using independent module.

3.5.2.3.2 Process Definition

Application process the xls file and search the columns..

3.5.2.3.3 Output

Application return the searched columns.

3.5.2.3.4 Interface with other functional component

Independent module

3.5.2.3.5 Resource Allocation

System Internal Storage

3.5.2.3.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.3 Functional Component3 Video and Audio Manipulation**

**3.5.3.1 Extracting the Text from Video**

USER

SELECTED FILE

disk

3.5.3.1.1 Input

User Provide the Video as input.

3.5.3.1.2 Process Definition

Application retrieves the words spoken in that video.

3.5.3.1.3 Output

Application will writes the text on a text file.

3.5.3.1.4 Interface with other functional component

Independent module

3.5.3.1.5 Resource Allocation

System Internal Storage

3.5.3.1.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.3.2 Extracting the Audio from Video**

USER

SELECTED FILE

disk

3.5.3.2.1 Input

User Provide the Video as input in this application.

3.5.3.2.2 Process Definition

Application will retrieves audio in the video.

3.5.3.2.3 Output

Application will produce the audio as output.

3.5.3.2.4 Interface with other functional component

Independent module

3.5.3.2.5 Resource Allocation

System Internal Storage

3.5.3.2.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.3.3 Extracting the Text from Audio**

USER

SELECTED FILE

disk

3.5.3.3.1 Input

User Provide the audio as input to this application.

3.5.3.3.2 Process Definition

Application retrieves the words spoken in the audio.

3.5.3.3.3 Output

Application will writes the text in text file.

3.5.3.3.4 Interface with other functional component

Independent module

3.5.3.3.5 Resource Allocation

System Internal Storage

3.5.3.3.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.4 Functional Componnet4 File Manipulation**

**3.5.4.1 PDF to TEXT**

USER

SELECTED FILE

disk

3.5.4.1.1 Input

User Provide the PDF file as input.

3.5.4.1.2 Process Definition

Application will converts into text file.

3.5.4.1.3 Output

Application will produce the text file as output and create a text file in particular folder.

3.5.4.1.4 Interface with other functional component

Independent module

3.5.4.1.5 Resource Allocation

System Internal Storage

3.5.4.1.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.4.2 DCOX to TEXT**

USER

SELECTED FILE

disk

Input

3.5.4.2.1 Input

User Provide the word file as input to this application.

3.5.4.2.2 Process Definition

Application process the word file and converts to text file format.

3.5.4.2.3 Output

Application will creates the text file in particular folder.

3.5.4.2.4 Interface with other functional component

Independent module

3.5.4.2.5 Resource Allocation

System Internal Storage

3.5.4.2.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.4.3 TEXT to PDF**

USER

SELECTED FILE

disk

3.5.4.3.1 Input

User Provide the text file as input.

3.5.4.3.2 Process Definition

Application converts into PDF format.

3.5.4.3.3 Output

Application will create the PDF file in particular folder.

3.5.4.3.4 Interface with other functional component

Independent module

3.5.4.3.5 Resource Allocation

System Internal Storage

3.5.4.3.6 User interface

Buttons , Frames ,Entry box, Message box, Label.

**3.5.4.3 TEXT to DOCX**

USER

SELECTED FILE

disk

3.5.4.3.1 Input

User Provide the text file as input.

3.5.4.3.2 Process Definition

Application converts into Dcox format.

3.5.4.3.3 Output

Application will create the Dcox file in particular folder.

3.5.4.3.4 Interface with other functional component

Independent module

3.5.4.3.5 Resource Allocation

System Internal Storage

3.5.4.3.6 User interface

Buttons , Frames ,Entry box, Message box, Label.