

# System Requirements Specification



**Batch Id – CS85/2006/022**

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## **Project Guide**

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# 1. Introduction

## 1.1 Purpose

The document provides the technical description of all software requirements of the project , **S.M.A.R.T Downloader**.

The document will not only define the product functions, user characteristics, constraints, and specific requirements of project but also serve as a basis for the **Software Design Document** that will be prepared according to IEEE Std 1016-1998.

This SRS is prepared to establish a communication between the acquirers (Department of Computer Science, PESIT), users, and the software development team.

## 1.2 Scope

. The **S.M.A.R.T Downloader** project aims to provide greater flexibility to end users in downloading any type of file.

There are several features incorporated into the project after considering future requirements .Those features are security, multibrowser compliance, agile , resilient nature , threaded-control etc. The other features we found out after consulting different end users that include media preview, zip preview, file versioning, uploading facilities.

## 1.3 Overview

The objective of the project is to design and implement a downloading tool that is compliant with multiple browsers and provides its users fine-grained control over downloading.

The **S.M.A.R.T Downloader** provides automatic file segmentation and multipart download in parallel for faster download and efficient channel utilization .Dynamic file segmentation is provided for user in case he does not have sufficient storage space in local system . Other additional facility is redirecting the file download to specific network location this makes our product unique.

The user interface design for **S.M.A.R.T Downloader** would be such that it is visually appealing and provides least surprise to users . The facilities like comprehensive error recovery and resume

capability to restart broken or interrupted downloads due to lost connections, network problems, computer shutdowns, or unexpected power outages are provided.

## 2. General Description

### 2.1 Product Functions

The ***S.M.A.R.T Downloader*** is a computer program designed to download files from the Internet, unlike a web browser, which is mainly intended to browse web pages on the World Wide Web (with file downloading being of secondary importance). The objective Of the product is to provide fine-grained control over downloading to its users.

### 2.2 Similar System Information

The ***S.M.A.R.T Downloader*** can be used as stand-alone download manager, or else used as a plug-in to with any of the existing browsers. An existing antivirus program can be integrated with this to perform security check on file ready to be downloaded. The ***S.M.A.R.T Downloader*** provides web search facility to locate files to be downloaded. This can be accomplished by using any of the existing Search Engines.

### 2.3 User Characteristics

Our product is usable for efficient downloading of any files over internet for different community of users which ranges from novices to experts.

## 2.4 User Problem Statement

There are several problems current users are facing with existing download manager that we seek to solve in this product. The following are the essential problems currently confronted by the user community.

- Inefficient usage of link bandwidth
- Failure of server during download
- Link failure or any network problems
- Virus attack
- Automatic updates being fired up and clogging up the bandwidth ,etc

## 2.5 User Objectives

The user objectives is to download a file from Internet as fast as possible ,without losing any information in any case .The other desirable characteristics are visually appealing user interface as well as fine grained control over downloading .The ***S.M.A.R.T Downloader*** includes feasible solutions that satisfies business objectives.

## 2.6 General Constraints

The ***S.M.A.R.T Downloader*** has to use multiple channels in parallel to achieve hi-speed download. The user should be able to integrate it with any of the existing web browser. It should work on different operating systems and different machines.

### 3. Functional Requirements

The ***S.M.A.R.T Downloader*** should provide all the basic functionalities of downloader as well as additional features in order to compete with other download managers .The list of functionalities provided is as follows

- Automatic file segmentation and multipart downloading for faster download.
- Multi-channelled file downloads
- Scheduled downloading – schedule download at a later time, optionally followed by auto-shutdown, etc.
- Comprehensive error recovery and resume capability to restart broken or interrupted downloads due to lost connections, network problems, computer shutdowns, or unexpected power outages.
- Queue downloads and assign priorities for “fine grained” control over downloading
- Stand-alone or can be used as a plug-in to the browser
- Graphical User Interface
- Download relevant file from multiple mirror sites
- Download control – support pausing, resuming etc.
- Statistics for each download

### 4. Interface Requirements

The ***S.M.A.R.T Downloader*** provide interface for different web browsers as well as for users input or output.

#### 4.1 User Interfaces

Different kinds of user interfaces are provided to add flexibility to users.

#### 4.1.1 GUI

The graphical user interface is visually appealing and have least surprises to user .Hence it is much more user friendly than graphical user interface of other existing download managers.The graphical user interface is developed using GDI+ libraries of .Net

#### 4.1.2 CLI

The command-line interface allows to use regular expressions (ERE,BRE,etc) for specifying files for download .

### 4.2 Plug-in Interfaces

The plug-in interface provided by ***S.M.A.R.T Downloader*** allows it work with multiple browsers.

## 5. Performance Requirements

The ***S.M.A.R.T Downloader*** is able to work with all link bandwidth specifications. Minimum memory requirement for any file download is dependent on size of file .

## 6. Non-Functional Attributes

This section specifies other non-functional attributes required by the system. These attributes allow the user to perform specialized downloading .

- **Site grabber feature** - download required files that are specified with filters
- Download relevant file from multiple **mirror sites**

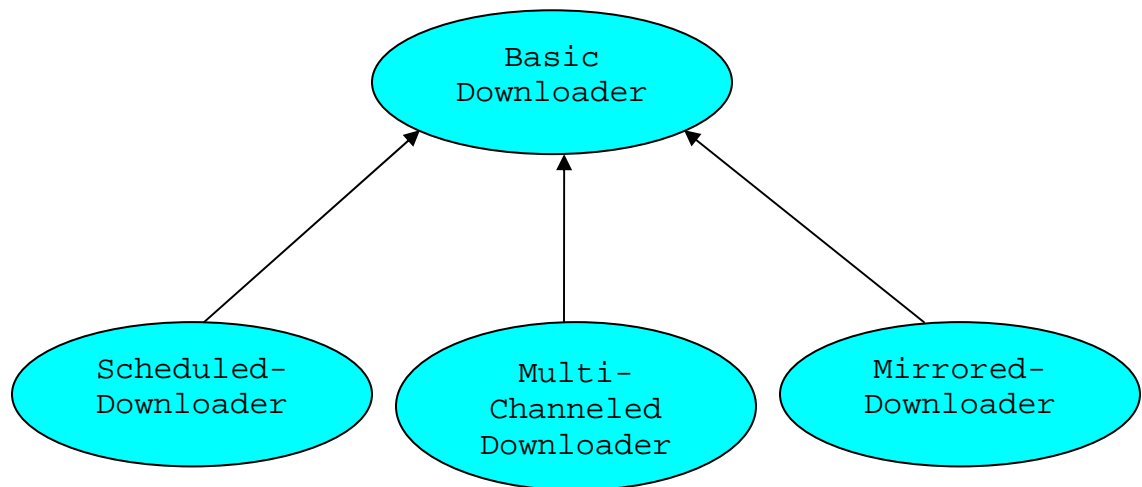
- **Zip Preview** - Preview the contents of 'zip' compressed files before to downloading them ,and to download selective files in zip file .
- **Upload** services.
- Support **proxy servers, authentication**
- Interoperate with **search engines**
- **Web services support** – locating and consuming web services
- **Built-in XML validator** - Validate xml files against its schema so that users can ignore 'invalid' files.
- **XML configuration** files which serve as **rcsripts** for the download manager
- **Redirection** – Download to a specified location / device.
- File **encryption and decryption** support
- FTP : Download **entire directory structure** as is from the server
- **Media Preview** – A thumb of the video files
- **User controlled threads** – users can create threads and assign jobs to them.
- **File system monitor** – which helps prevent automatic updates being fired up and clogging up the bandwidth.
- **Programming interface** – macros, pattern matching (ERE, TRE, BRE) for filtered downloading.
- **File Versioning** – when files with similar content are downloaded, only one copy is stored; others are retrieved by changing only those parts that differ from the single copy that is stored.

## 8. Preliminary Object-Oriented Domain Analysis

This section presents an overview of the fundamental objects that have been identified within the system to satisfy its requirements. The purpose is to provide an alternative, "structural" view on the requirements stated above and how they might be satisfied in the system.

### • 8.1 Inheritance Relationships

This section depicts the primary inheritance hierarchy for S.M.A.R.T Downloader





## • 8.2 Class descriptions

This section presents a more detailed description of each class identified during the Analysis phase.

- Basic Downloader - Performs basic download operations using HTTP.
- Scheduled Downloader – Supports scheduling downloads at a later time.
- MultiChanneled Downloader – Manages multiple channels for parallel download.
- Download Pipeline – Queues download requests and attempts to schedule downloads to maximize efficiency of bandwidth usage.
- Uploader – Provides file uploading services.
- XMLValidator – validates an xml document against its schema.
- RCScriptParser – Parses xml based configuration files to setup environment for S.M.A.R.T Downloader.
- RegularExpressionValidator – Performs pattern matching of files against regular expressions for fine-grained control over downloading.
- FTPHandler – Manages download from FTP sites.
- ZipPreviewHandler – Provides a preview of a zip archive without downloading it completely and enables the users to download selective parts from the archive.
- MediaPreviewHandler – Provides a quick preview of a media file before downloading it completely.

## 9. Appendices

## 9.1 Definitions, Acronyms, Abbreviations

**HD:** Hard Disk

**IEEE:** Institute of Electrics & Electronics Engineering

**Mbps:** Megabits per seconds

**OS:** Operating System

**PC:** Personal Computer

**SDD:** Software Design Document

**S.M.A.R.T:** Secure, Multi Browser compliant, Agile, Resilient, Threaded Control

**SRS:** Software Requirements Specification

**Acquirer:** specifies requirements for and accepts delivery of a new or modified software product and its documentation. In this document acquirers refer to Department of Computer Science, PESIT.

**User:** refers to end users, who interact with the software once it is released.

## 9.2 References

- [http://en.wikipedia.org/wiki/Download\\_manager](http://en.wikipedia.org/wiki/Download_manager)
- <http://www.internetdownloadmanager.com/features.html>