BSG-IDE User Manual

Beamer Slide Generator Integrated Development Environment

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Artificial Intelligence Research and Intelligent Systems (airis4D)
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1 Introduction

BSG-IDE (Beamer Slide Generator Integrated Development Environment) is a comprehensive tool designed to streamline the creation of Beamer presentations. It combines a user-friendly interface with powerful features for managing slides, media content, and presentation notes.

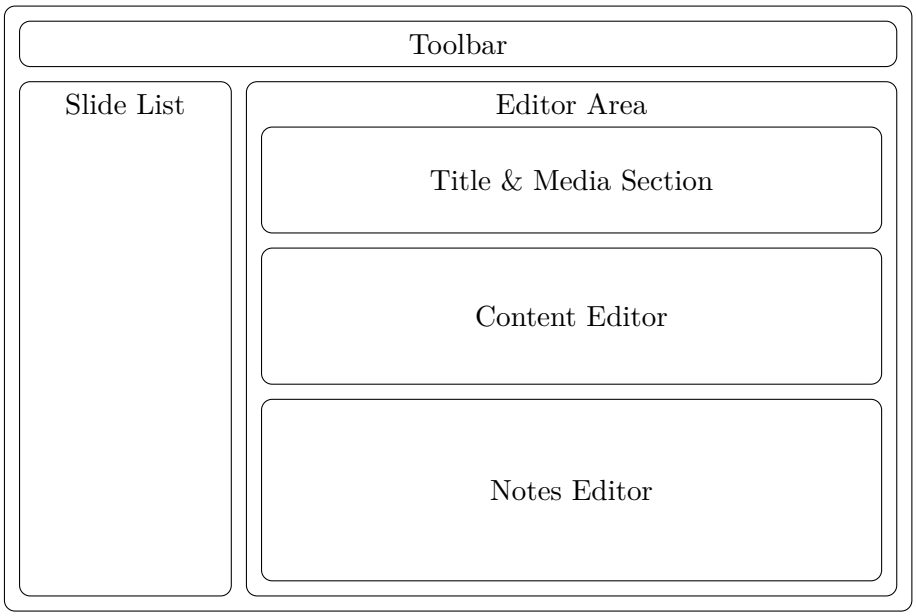

Figure 1.1: BSG-IDE Main Interface Layout

2 Installation

2.1 System Requirements

- Python 3.8 or higher
- LaTeX distribution (TeXLive or MiKTeX)
- Internet connection for initial setup
- Minimum 4GB RAM recommended
- 1GB free disk space

2.2 Installation Process

The installation process is automated and handles all dependencies:

Listing 1: Installation Command

```
python3 BSG-IDE.py --fix
```

This command:

- Creates a virtual Python environment
- Installs required packages
- Sets up desktop integration
- Creates necessary directories

Note

If you encounter any installation issues, you can rerun the installation with the –fix flag to repair the installation.

3 User Interface

3.1 Main Components

1. **Toolbar** - Contains primary actions:
   - New Presentation
   - Open
   - Save
   - Convert to TeX
   - Generate PDF
   - Preview
2. **Slide List** - Shows all slides with:
   - Slide titles
   - Current slide indicator
   - Drag-and-drop reordering
3. **Editor Area** - Three main sections:
   - Title and media section
   - Content editor
   - Notes editor

3.2 Editor Features

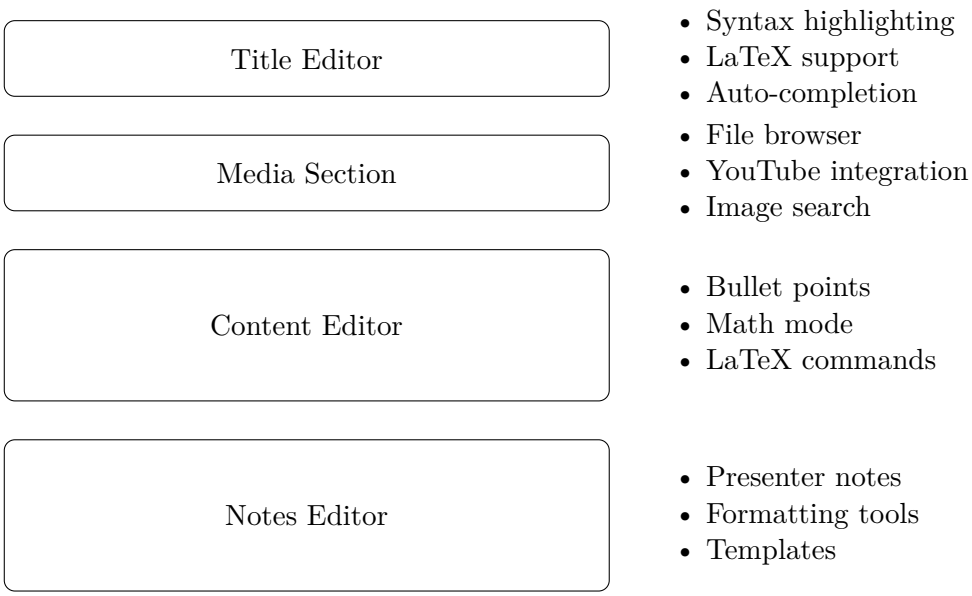

Figure 3.1: Editor Components and Features

4 Working with Media

4.1 Supported Media Types

- **Images:** PNG, JPG, JPEG, PDF
- **Videos:** MP4, AVI, MOV, WebM
- **Web Content:** YouTube videos, URLs
- **Vector Graphics:** SVG, EPS

4.2 Media Browser

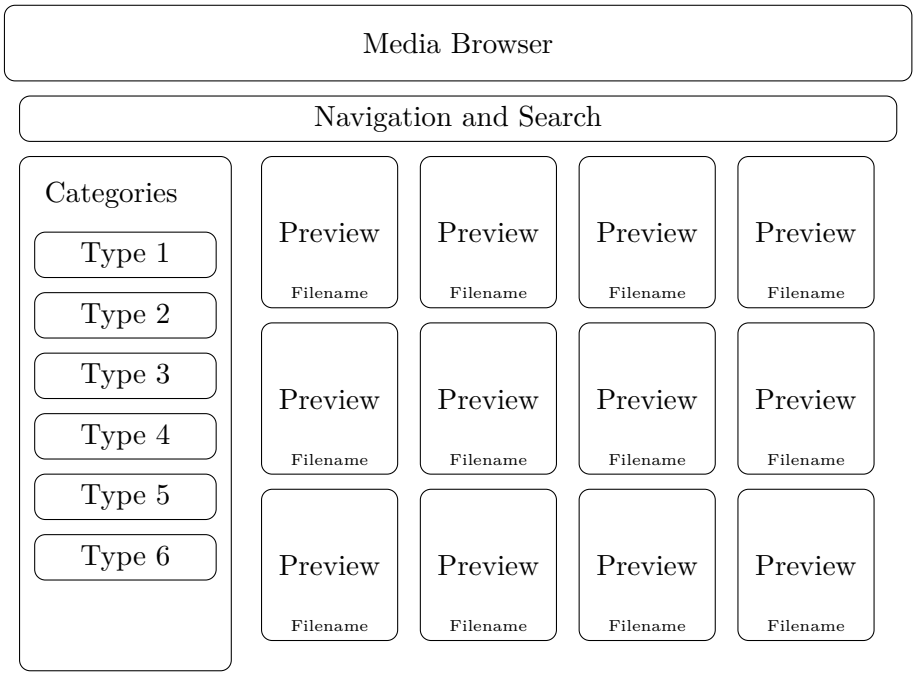

Figure 4.1: Media Browser Interface

4.3 Media Management Features

The integrated media browser provides:

- Real-time thumbnail generation
- Automatic file categorization
- Search and filter capabilities
- Drag-and-drop support
- Quick preview functionality
- File metadata display

5 Presentation Notes

5.1 Notes Functionality

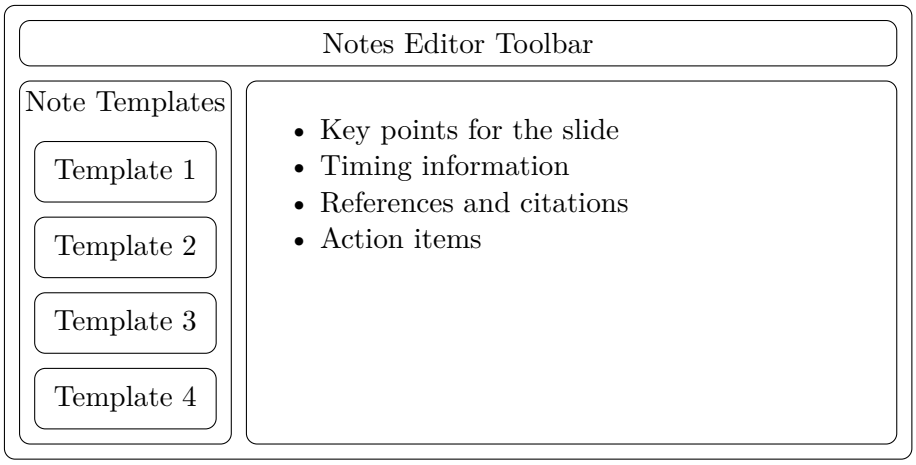

Figure 5.1: Notes Editor Interface

5.2 Note Types and Templates

The IDE supports various note templates:

- **Key Points** - Main talking points and highlights
- **Time Markers** - Presentation timing guidelines
- **Action Items** - Follow-up tasks and reminders
- **References** - Citations and source materials
- **Technical Notes** - Detailed technical information

6 Syntax Highlighting

6.1 Code Highlighting Features

```
\begin{frame}
\frametitle{Advanced Features}
\begin{itemize}
\item First point
\item Second point
\end{itemize}
% Note: Add more content here
\end{frame}
```

Commands Environment Content Comments

Figure 6.1: Syntax Highlighting Example

7 Advanced Features

7.1 Terminal Integration

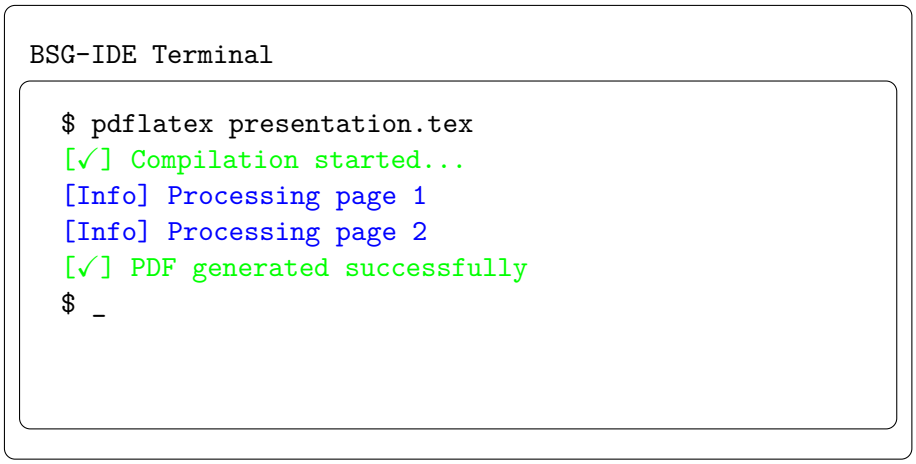

Figure 7.1: Integrated Terminal Interface

7.2 Real-time PDF Preview

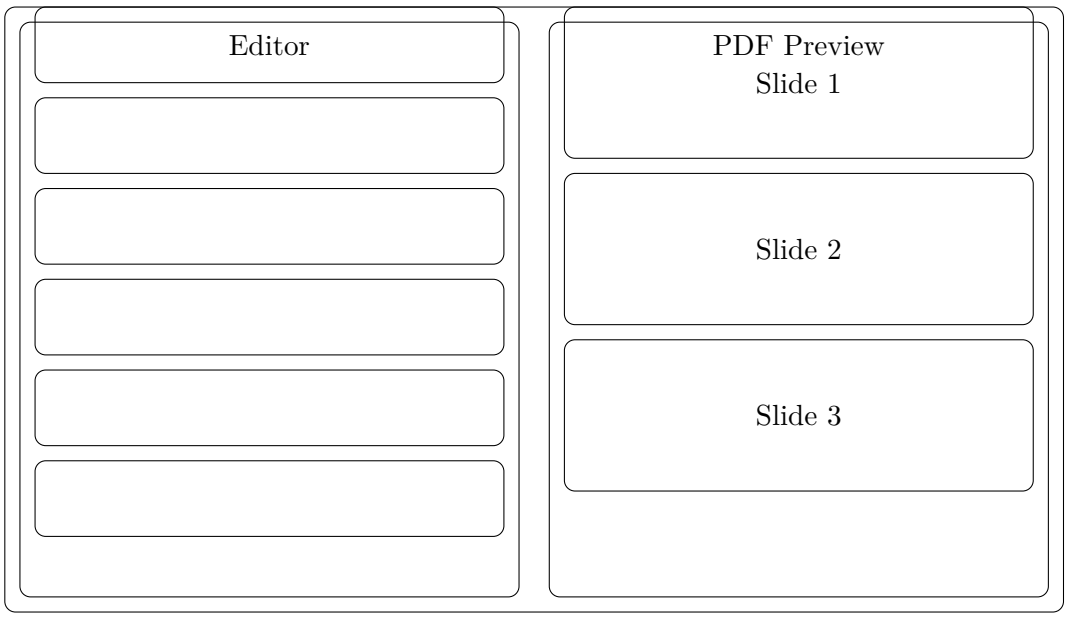

Figure 7.2: Real-time Preview Interface

8 Keyboard Shortcuts

Category	Shortcut	Action
File Operations	Ctrl+N	New slide
	Ctrl+S	Save presentation
	Ctrl+O	Open presentation
Slide Management	Ctrl+I	Insert slide below
	Ctrl+D	Duplicate slide
	Ctrl+Delete	Delete slide
Navigation	Up/Down	Navigate slides
	Ctrl+Page Up	Previous section
	Ctrl+Page Down	Next section
Media	Ctrl+M	Open media browser
	Ctrl+Y	Add YouTube video
	Ctrl+L	Add local media

Table 1: Common Keyboard Shortcuts

9 Customization

9.1 Presentation Settings

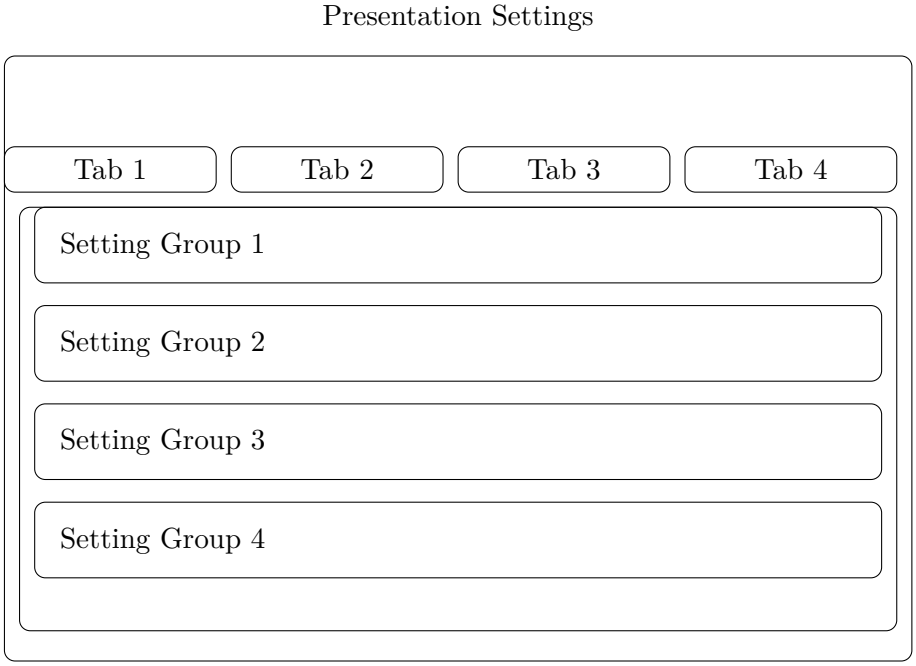

Figure 9.1: Settings Dialog

10 Error Handling and Recovery

10.1 Error Management System

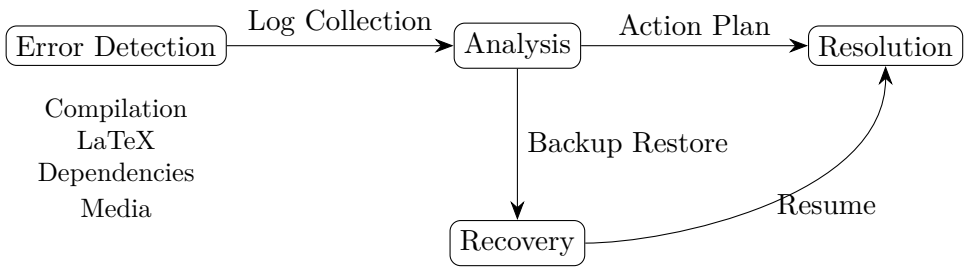

Figure 10.1: Error Handling Workflow

10.2 Recovery Features

Automatic Recovery System

- **Auto-save**: Periodic saving of work
- **Version Control**: Multiple backup points
- **Session Recovery**: State restoration
- **Media Verification**: File integrity checks

11 Integration Capabilities

11.1 External Tools Integration

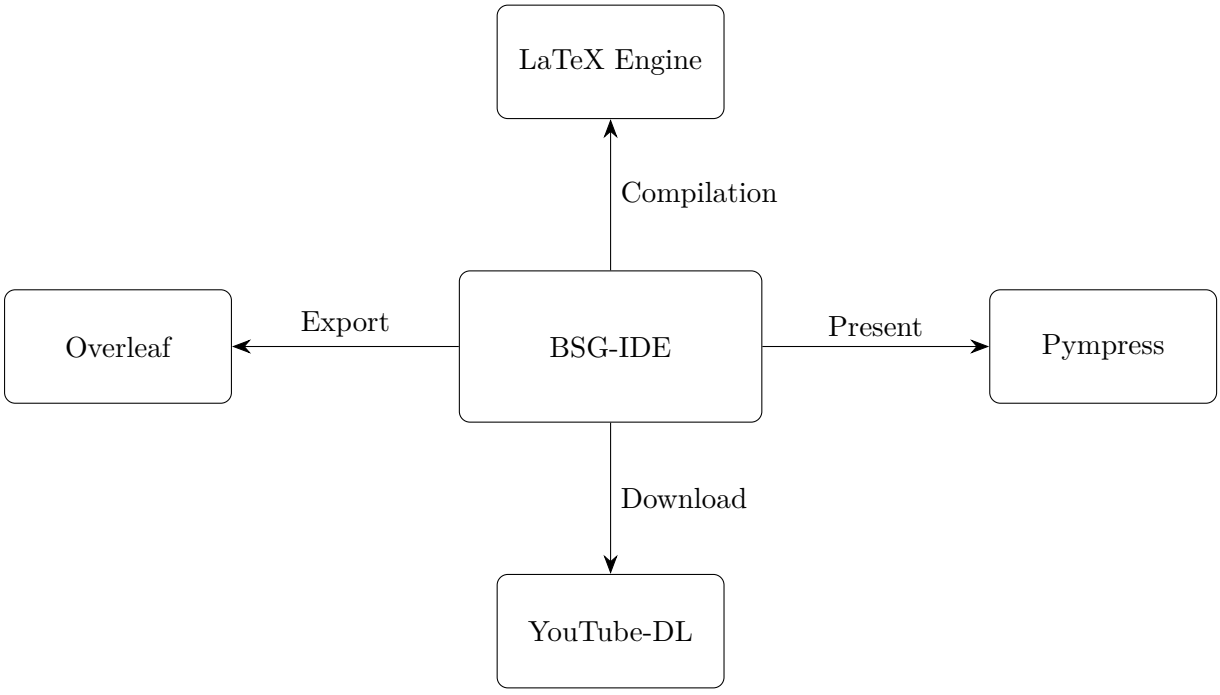

Figure 11.1: External Tool Integration Architecture

12 Performance Optimization

12.1 Resource Management

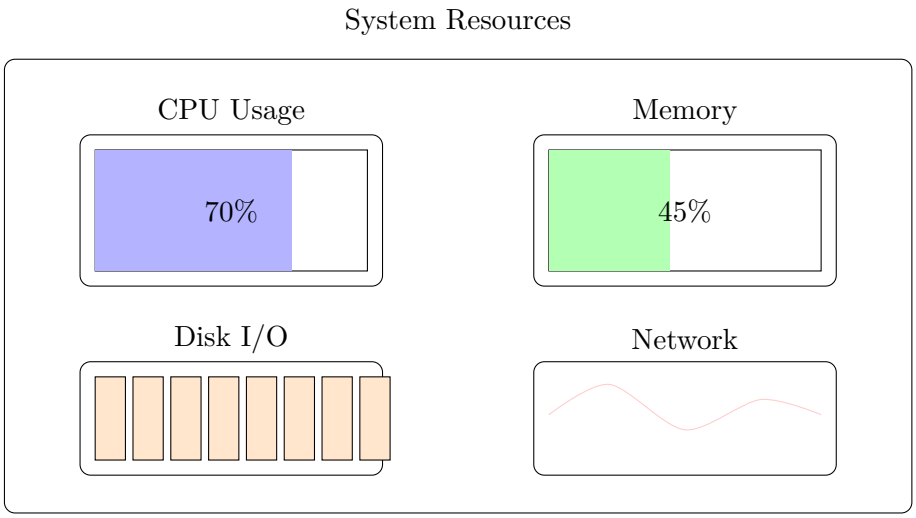

Figure 12.1: Resource Monitoring Dashboard

13 Collaborative Features

13.1 Project Sharing

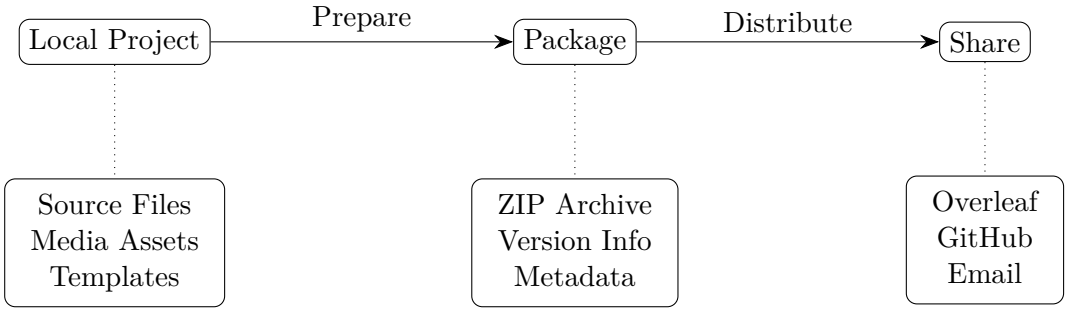

Figure 13.1: Project Sharing Workflow

14 Best Practices

14.1 Project Organization

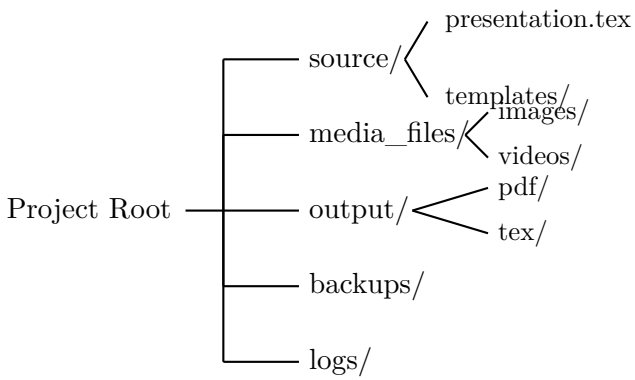

Figure 14.1: Recommended Project Structure

14.2 Performance Guidelines

Optimization Recommendations

- **Media Files**
  - Optimize image sizes before import
  - Use appropriate formats (JPEG for photos, PNG for diagrams)
  - Compress video files when possible
- **Project Management**
  - Regular cleanup of unused media
  - Periodic cache clearing
  - Systematic backup strategy
- **Resource Usage**
  - Close unused media previews
  - Limit concurrent compilations
  - Monitor memory usage

15 Development Roadmap

15.1 Future Features

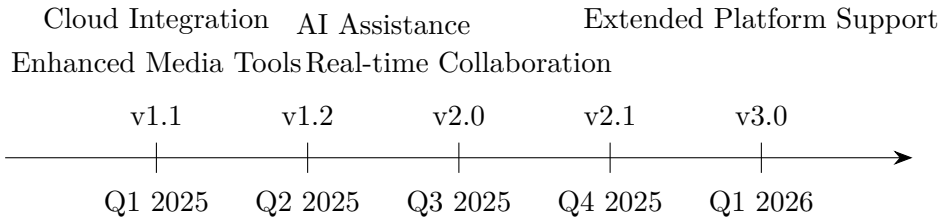

Figure 15.1: Development Timeline

16 Appendices

16.1 LaTeX Package Requirements

Required LaTeX Packages

```
% Core packages
\usepackage{beamer}
\usepackage{graphicx}
\usepackage{multimedia}
\usepackage{hyperref}

% Enhanced functionality
\usepackage{tikz}
\usepackage{pgfplots}
\usepackage{animate}

% Customization
\usepackage{tcolorbox}
\usepackage{geometry}
\usepackage{fancyhdr}
\usepackage{xcolor}

% Font and encoding
\usepackage[T1]{fontenc}
\usepackage{lmodern}
\usepackage[utf8]{inputenc}
```

16.2 Python Dependencies

Required Python Packages

```
# GUI Framework
customtkinter==5.2.2
tkinter
Pillow

# Media Processing
opencv-python
yt-dlp
screeninfo

# PDF Generation
PyMuPDF==1.23.7

# Utilities
requests
numpy
```

16.3 File Format Specifications

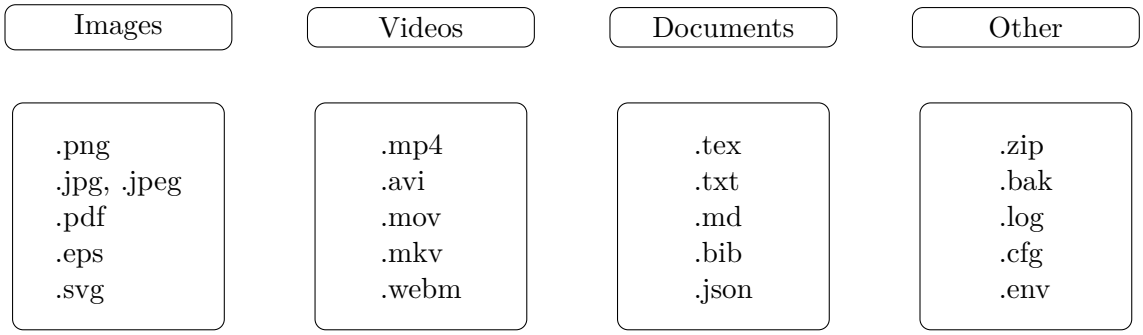

Figure 16.1: Supported File Formats

16.4 Configuration Reference

Sample Configuration File

```
# config.json
{
    "editor": {
        "theme": "dark",
        "font_size": 12,
        "auto_save": true,
        "save_interval": 300,
        "syntax_highlighting": true
    },
    "compilation": {
        "auto_compile": true,
        "compiler": "pdflatex",
        "bibtex_enabled": true,
        "clean_auxiliary": true
    },
    "media": {
        "thumbnail_size": [200, 200],
        "cache_enabled": true,
        "max_cache_size": 1024,
        "supported_formats": ["png", "jpg", "mp4", "pdf"]
    },
    "paths": {
        "output_dir": "./output",
        "media_dir": "./media_files",
        "backup_dir": "./backups",
        "temp_dir": "/tmp/bsg-ide"
    }
}
```

16.5 Troubleshooting Guide

Common Issues and Solutions

- **Installation Issues**
  - Run with –fix flag
  - Check system requirements
  - Verify Python version
  - Check LaTeX installation
- **Compilation Errors**
  - Verify LaTeX syntax
  - Check media file paths
  - Ensure all packages are installed
  - Review log files
- **Media Problems**
  - Verify file permissions
  - Check file formats
  - Ensure media directory exists
  - Review conversion settings
- **Performance Issues**
  - Clear cache
  - Optimize media files
  - Close unused previews
  - Monitor resource usage

16.6 Command Line Interface

CLI Commands

```
# Basic usage
bsg-ide                      # Launch GUI
bsg-ide --fix               # Repair installation
bsg-ide --help              # Show help

# Advanced options
bsg-ide --no-gui            # Terminal mode
bsg-ide --compile file.tex # Direct compilation
bsg-ide --clean             # Clean temporary files
bsg-ide --version           # Show version info
```

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