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Architecture

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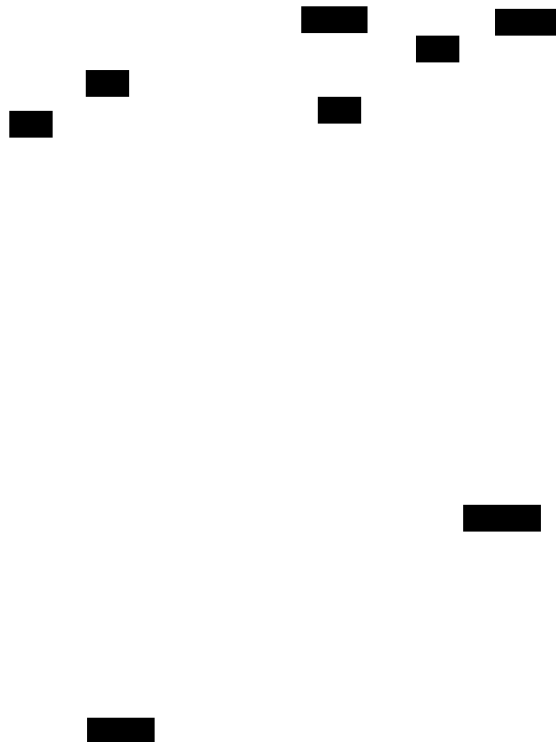
Anonymous · 09/09/2026

Architecture

This document provides an overview of the architecture and design principles behind Derafu Spreadsheet.

Core Components

Derafu Spreadsheet is built around several key components that work together to provide a unified approach to spreadsheet processing:



Key Components

1. Loader

- Handles loading spreadsheet data from files or strings.
- Uses Factory to create appropriate Format Handlers.
- Uses Caster to convert raw data to appropriate PHP types.

2. Dumper

- Handles saving spreadsheet data to files or strings.
- Uses Factory to create appropriate Format Handlers.
- Uses Caster to convert PHP types to format-appropriate representations.

3. Factory

- Creates and manages Format Handlers based on file extension or specified format.
- Allows registering custom Format Handlers.
- Provides format detection capabilities.

4. Caster

- Converts raw data values to appropriate PHP types when reading.
- Converts PHP types to appropriate string representations when writing.
- Handles intelligent date, boolean, numeric, and JSON detection.

5. Format Handlers

- Format-specific implementations that know how to read/write a particular format.
- All implement a common FormatHandlerInterface.
- Includes handlers for XLSX, XLS, CSV, ODS, JSON, XML, YAML, HTML, PDF.

6. Data Model

- **Spreadsheet:** Top-level container for all data.
- **Sheet:** Container for rows and cells with a name.
- Both implement interfaces for consistent interaction.

Design Principles

Derafu Spreadsheet was designed with several key principles in mind:

1. Unified API

- Consistent interface across all supported formats.
- Same code works regardless of source or target format.

2. Type Intelligence

- Automatic conversion between string values and appropriate PHP types.
- No manual type casting required in application code.

3. Separation of Concerns

- Format handling is separated from data model.
- Type conversion is separated from data loading/saving.
- Each component has a single, clear responsibility.

4. Interface-Based Design

- All components define and implement interfaces.
- Allows for custom implementations and extensions.

5. Minimal Dependencies

- Core functionality has minimal dependencies.
- Format-specific dependencies only required for formats you use.

Data Flow

When working with Derafu Spreadsheet, data flows through the components as follows:

Loading Process:

1. **Loader** receives a file or string.
2. **Factory** creates appropriate Format Handler based on format.
3. **Format Handler** reads raw data into internal Spreadsheet structure.
4. **Caster** converts raw values to appropriate PHP types.
5. Typed **Spreadsheet** object is returned to application.

Saving Process:

1. **Dumper** receives a Spreadsheet object and target format.
2. **Caster** converts PHP values to appropriate string representations.
3. **Factory** creates appropriate Format Handler for target format.
4. **Format Handler** writes structured data to file or string.
5. File path or string content is returned to application.

Extensibility

Derafu Spreadsheet is designed to be extensible:

- **Custom Format Handlers:** Create handlers for proprietary or custom formats.
- **Custom Casters:** Implement specialized type conversion logic.
- **HTTP Integration:** Generate responses with downloadable spreadsheets.
- **Framework Integration:** Easy to integrate with popular PHP frameworks.

Directory Structure

```
src/
├── Abstract/
│   └── AbstractPhpSpreadsheetFormatHandler.php
├── Contract/
│   ├── SpreadsheetCasterInterface.php
│   ├── SpreadsheetDumperInterface.php
│   ├── FactoryInterface.php
│   ├── FormatHandlerInterface.php
│   ├── SpreadsheetLoaderInterface.php
│   ├── SheetInterface.php
│   ├── SpreadsheetInterface.php
│   └── Http/
│       └── SpreadsheetHttpResponseGeneratorInterface.php
├── Exception/
│   ├── SpreadsheetDumpException.php
│   ├── SpreadsheetFileNotFoundException.php
│   ├── SpreadsheetFormatNotSupportedException.php
│   └── SpreadsheetLoadException.php
├── Format/
│   ├── CsvLeagueHandler.php
│   ├── CsvPhpSpreadsheetHandler.php
│   ├── HtmlHandler.php
│   ├── JsonHandler.php
│   ├── OdsHandler.php
│   ├── PdfHandler.php
│   ├── XlsHandler.php
│   ├── XlsxHandler.php
│   ├── XmlHandler.php
│   └── YamlHandler.php
├── Http/
│   └── NyholmSpreadsheetHttpResponseGenerator.php
├── Caster.php
├── Dumper.php
├── Factory.php
├── Loader.php
├── Sheet.php
└── Spreadsheet.php
```

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