

WEBREPORT

WebReport Scala 3

A high-performance analyzer for web content.



Project Overview

WebReport is a web content analysis tool built for Software Engineering education at HTWG.

Key Features

- **Web Content Download** - Fetch and analyze websites
- **Text Analysis** - Character/word count, top words, complexity scoring
- **Content Filtering** - Filter content by keywords
- **Undo/Redo** - Full command history support
- **Session Persistence** - Save/load sessions in XML or JSON
- **Dual Interface** - TUI (Terminal) + GUI (ScalaFX)



Development Timeline

Oct 2025 Project Initialization — Repository created

Nov 2025 Core Development — MVC Architecture setup

Dec 2025 Feature Implementation — TUI & GUI, Tests, Scoverage

Jan 2026 Final Sprint — Docker, Coverage optimization, GUI improvements

Activity Intensity

Oct

2025



Nov

2025



Dec

2025

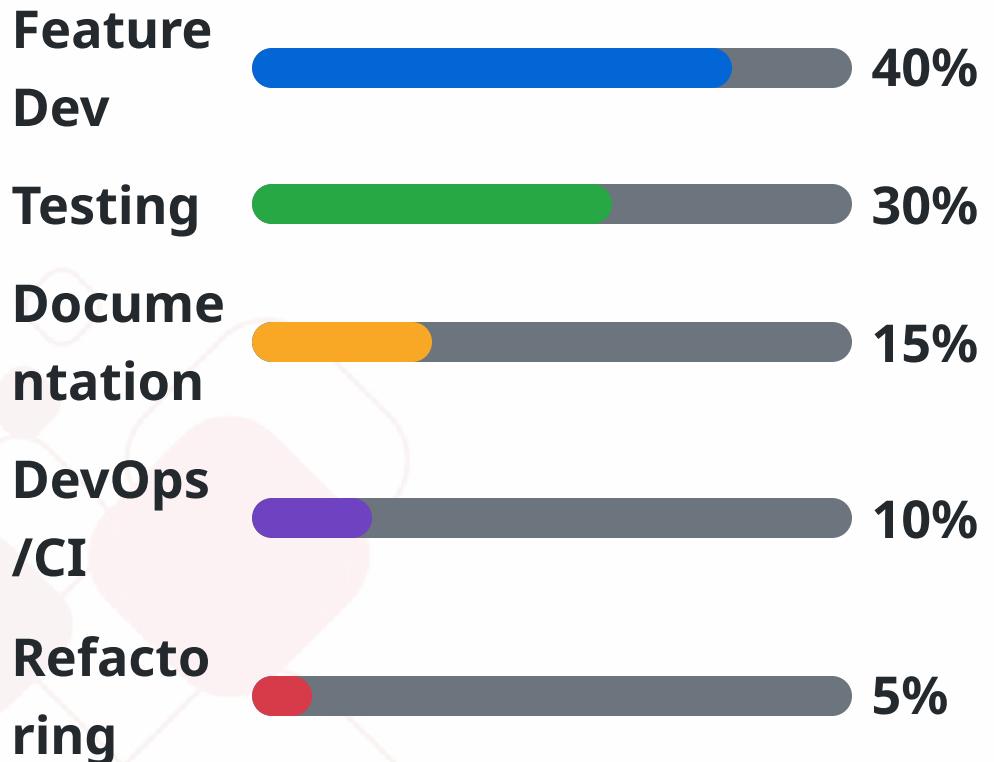


Jan 2026





Commit Activity Distribution



■ Feature Development ■ Testing & Coverage ■ Documentation

■ DevOps & CI/CD ■ Refactoring

Technology Stack

Component	Technology	Version
Language	Scala 3	3.4.2
Build Tool	SBT	latest
GUI Framework	ScalaFX	21.0.0-R32
DI Framework	Google Guice	7.0.0
Testing	ScalaTest	3.2.19
Coverage	Scoverage + Coveralls	2.1.0

src/main/scala/de/htwg/webreport/**aView/**  ~350 LOC

| └ Gui.scala

| └ Tui.scala

| └ TuiState.scala

| └ Renderer.scala

controller/  ~150 LOC

| └ sessionManager/

model/  ~250 LOC

| └ data/

| └ analyzer/

| └ webClient/

| └ fileio/

| └ util/  ~60 LOC

| └ Command.scala



Test Suite Overview

Test File	Purpose
WebReportSpec.scala	Integration tests
IntegrationSpec.scala	Full system tests
TuiSpec.scala	Terminal UI tests
TuiStateSpec.scala	State pattern tests
GuiSpec.scala	GUI component tests
RendererSpec.scala	Output rendering tests
DataSpec.scala	Data model tests
ObserverSpec.scala	Observer pattern tests

Coverage Exclusions: Main, Tui, TuiState, Renderer, Gui



Architecture Overview

VIEW LAYER

TUI (Terminal)

GUI (ScalaFX)

← *Observer Pattern*

CONTROLLER LAYER

SessionManager (Observable + Originator)

← *Command Pattern | Memento Pattern*

MODEL LAYER

Analyzer (Trait)

WebClient (Trait)

FileIO (XML/JSON)

Pattern	Purpose	Location
Observer	UI Synchronization	util/Observer.scala
Command	Operation Encapsulation	util/Command.scala
Memento	Undo/Redo Support	util/Command.scala
State	TUI Mode Switching	aview/TuiState.scala
Template Method	Report Structure	aview/Renderer.scala
Decorator	Feature Extensions	aview/Renderer.scala
Strategy	Interchangeable Serialization	model/fileio/
DI (Guice)	Loose Coupling	WebReportModule.scala



Dependencies

WebReport 1.0.0

```
├─ org.scala-lang » scala3-library 3.4.2
├─ org.scalafx » scalafx 21.0.0-R32
| └─ org.openjfx » javafx-* 21.0.2
├─ com.google.inject » guice 7.0.0
├─ org.scala-lang.modules » scala-xml 2.2.0
├─ com.typesafe.play » play-json 2.10.4
└─ [test]
    ├─ org.scalatest » scalatest 3.2.19
    └─ org.scalactic » scalactic 3.2.14
```

Plugins

```
├─ org.scoverage » sbt-scoverage 2.1.0
└─ org.scoverage » sbt-coveralls 1.3.15
```

Jan

17 Set title and dimensions for primary gui stage

Jan

16 Update coverage badge in README.md

Jan

16 Change run command to use Docker

Jan

16 Add docker support

Jan

16 Exclude Renderer from test coverage

Jan

16 Add more tests

Jan

15 Improve GUI UX and add GUI test cases

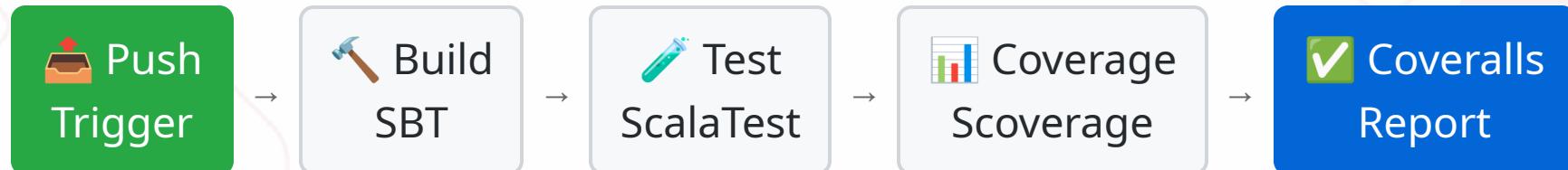
Jan

15 Add normalization to site complexity

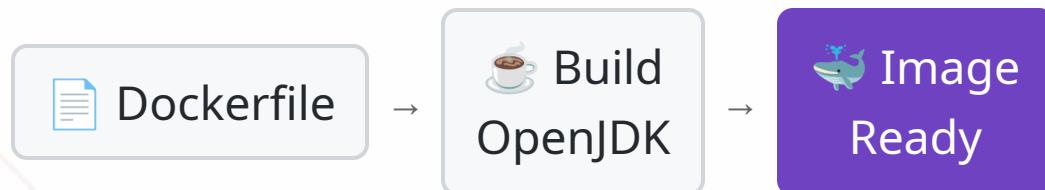
Jan

🔧 CI/CD Pipeline

GitHub Actions Workflow



Docker Build





Component Complexity

Session

Manage

r

Render

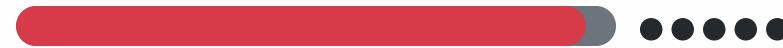
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Tui

Gui

Data

FileIO



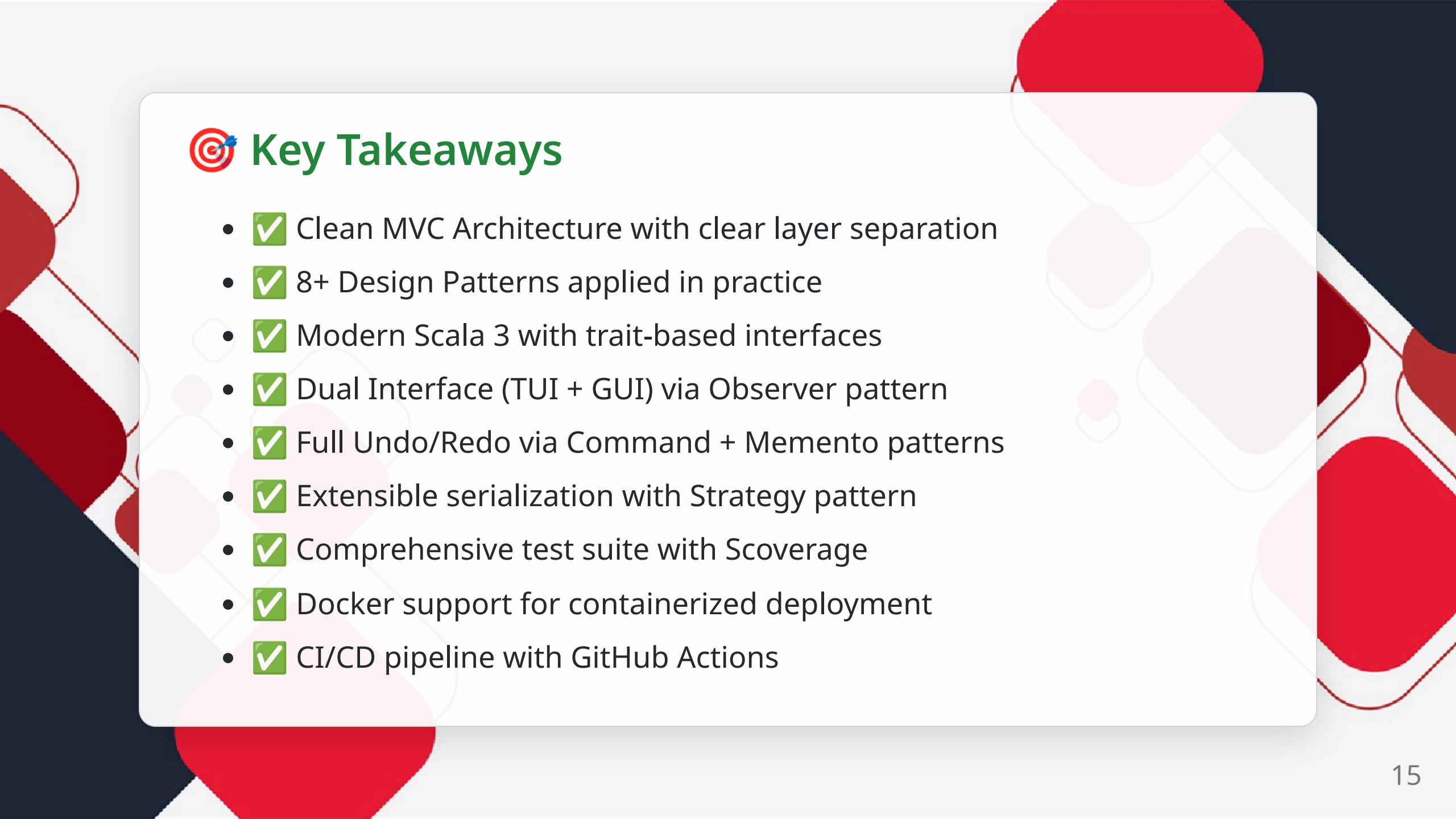
Low

High



Deployment Options

Method	Command	Description
Local Development	sbt run	Launches TUI + GUI simultaneously
Docker Container	./docker-run.sh	X11 forwarding for GUI support
Packaged JAR	sbt package	Standalone executable
Test Mode	sbt coverage test	Run tests with coverage report



Key Takeaways

-  Clean MVC Architecture with clear layer separation
-  8+ Design Patterns applied in practice
-  Modern Scala 3 with trait-based interfaces
-  Dual Interface (TUI + GUI) via Observer pattern
-  Full Undo/Redo via Command + Memento patterns
-  Extensible serialization with Strategy pattern
-  Comprehensive test suite with Scoverage
-  Docker support for containerized deployment
-  CI/CD pipeline with GitHub Actions

Project Resources

- GitHub Repository

github.com/Herbert-Haase/WebReport

- License

MIT License — Free for educational and commercial use.

- Documentation

Check the `README.md` for build instructions and Scoverage reports.

Thank you for your attention! Questions?