

# **Lab II - Product Specification Outline**

CS 411W Lab II

Prototype Product Specification  
For  
CLASH

Professor Janet Brunelle  
Professor Hill Price

Prepared by: Artem Fisan

Date: 03/25/15

# Table of Contents

1	Introduction.....	1
1.1	Purpose.....	1
1.2	Scope.....	1
1.3	Definitions, Acronyms, and Abbreviations .....	1
1.4	References.....	2
1.5	Overview.....	3
2	General Description .....	3
2.1	Prototype Architecture Description .....	3
2.2	Prototype Functional Description .....	4
	Appendix.....	5

# 1 Introduction

## 1.1 Purpose

CLASH is a Single Page Application (SPA) that contains 2 modules COLRS and SLASH. The COLRS module colors 7 Parts of Speech (POS) of a provided text using NLTK. The SLASH module inserts a “/” in between lexical bundles. Lexical bundles are 3 to 5 word group of words, representing one thought. Slash Handle displays lexical bundles one at the time with customizable speed. Targeted community of our product are English as Second Language Students (ESL).

## 1.2 Scope

The objectives are to increase English comprehension and reading speed. A SPA is an ideal platform for CLASH because it offers the abilities of a desktop application via web browser. Our goal is to provide most accurate slashing and coloring to increase English comprehension and reading speed. Prototype will contain multiple features: parsing, text modification, color capabilities, slashing capabilities, displaying lexical bundles in a single bundle form, exception list, login interface, administrative privileges, and print mode.

## 1.3 Definitions, Acronyms, and Abbreviations

CLASH - Color Lexical Analysis algorithm and Slash Handler

Client Side – The user-interface of CLASH

COLRS – Colored Organized Lexical Recognition Software

Document Processor – A Server Side component responsible for processing the text entered by an Instructor user type.

ELC – English Learning Center

ELL - English Language Learners

ESL – English as second language

GUI - Graphic User Interface

HTML - HyperText Markup Language

IBT – International Benchmark Test

Intensive English Program – A short and intensive English language training program offered by US colleges and universities to improve the English language skills of international students who did not meet the minimum TOEFL scores for typical enrollment.

JS – JavaScript

JSON – JavaScript Object Notation. A nested data structure commonly used to pass data between a server and a client.

Lexical Bundle – a group of words that occur repeatedly together within the same register

MFCD – Major Functional Component Diagram.

NLP – Natural Language Processing

NLTK – A suite of libraries and programs for symbolic and statistical natural language processing (NLP).

Node.js – an open source, cross-platform run-time environment for server-side and networking application.

POS – Parts of Speech

Server Side – The back-end of the CLASH system responsible text processing, the database, user-authentication, and web-hosting.

SLASH – Aspect of CLASH that displays slashed text

Slash Player – Aspect of CLASH that displays a text stream showing one lexical bundle, of three to five words, at a time with the feature of speed control for display time.

Software as a Service (SaaS) – Software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet.

Token: Text that has been processed into individual words by the Document Processor

SPA – single page application, is a highly responsive web application that fits on a single page and does not reload as the web page changes states.

Spreader – Speed reading tool; [www.spreader.com](http://www.spreader.com)

TOEFL – Test of English as a Foreign Language

Ubuntu – a Debian-based Linux operating system

VM – Virtual Machine

## 1.4 References

Lab 1\_v2

A Critical Study on the problems of ESL Students. (2013). (*IJITR*) *INTERNATIONAL*

*JOURNAL OF INNOVATIVE TECHNOLOGY AND RESEARCH*, Volume No.

1(Issue No. 1), 028-031. Retrieved February 27, 2015, from

<http://www.ijitr.com/index.php/ojs/article/viewFile/12/10>

Academics. (2015, February 9). Retrieved March 4, 2015, from

<http://www.odu.edu/academics>

English Language Learners. (2014, May 1). Retrieved March 3, 2015, from

[http://nces.ed.gov/programs/coe/indicator\\_cgf.asp](http://nces.ed.gov/programs/coe/indicator_cgf.asp)

English Proficiency. (2015, February 4). Retrieved March 4, 2015, from

<https://www.odu.edu/content/odu/admission/proficiency.html>

McKeon, D. (n.d.). Research Talking Points on English Language Learners. Retrieved

December 11, 2014.

Mikowski, M., & Powell, J. Single Page Applications. Manning Publications 2014.

Raver-Lampman, Greg. (2014. August). Personal Interview.

Tremblay, A., Derwing, B., Libben, G., & Westbury, C. (2011, January 15). Processing

Advantages of Lexical Bundles: Evidence From Self-Paced Reading and Sentence

Recall Tasks. Retrieved December 10, 2014.

## **1.5 Overview**

This product specification provides software configuration, capabilities and features of the Product CLASH prototype. The information provided in the remaining sections of this document includes a detailed description of the software, and external interface architecture of the CLASH prototype, as well as the key features of the prototype and the parameters that will be used to control or establish that feature.

## **2 General Description**

### **2.1 Prototype Architecture Description**

The CLASH prototype will be a Single Page Application that does not reload. CLASH will use a traditional database, and Node.js as the web and application server.

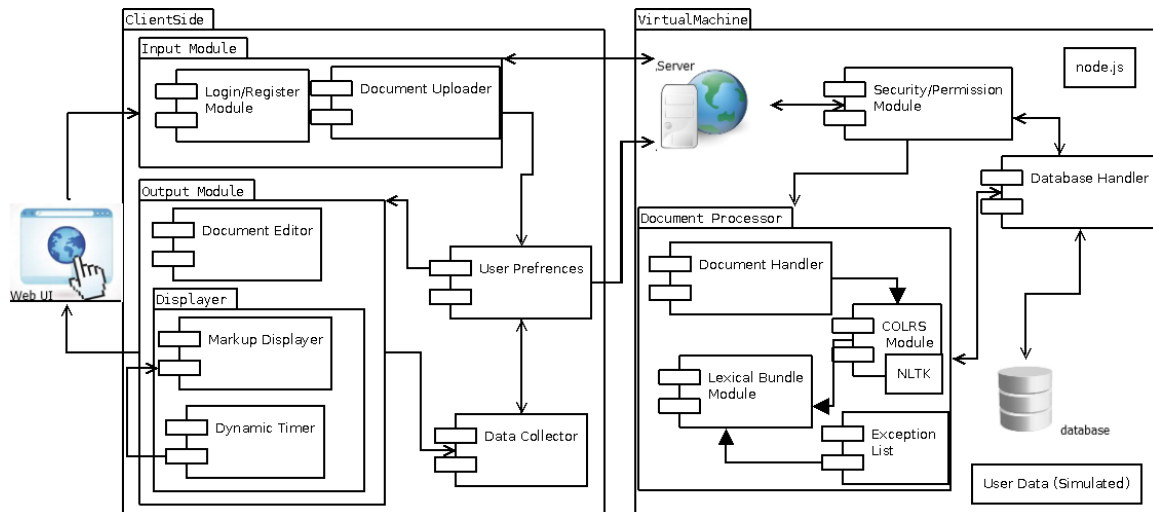
CLASH prototype contains the following major features:

- **Parsing:** Ability to parse text.
- **Text modification:** Ability to modify and store previously parsed text.
- **Color:** Ability to color chosen parts of speech using a JSON format and JavaScript functions.
- **Slashing:** Ability to identify lexical bundles through the insertion of slashes.
- **Slash Handler:** Displaying lexical bundles in a single bundle form with ability to speed up, slow down and pause lexical bundles being displayed.
- **Exception list:** List of commonly used expressions that would otherwise be incorrectly parsed and slashed
- **Login interface:** User authentication in a standalone environment.
- **Administrative privileges:** Administrators has full control of the system (edit/add/remove/etc.)

## 2.2 Prototype Functional Description

The hardware required for CLASH is an active server and database on the server end. The server will store the website and database as well as documents uploaded by users. The database will contain the document handler, SLASH Module, COLRS Module, Exception list, tracking data, user account information, and user credentials

**Figure 1. CLASH Prototype Major Function Component Diagram.**



## Appendix

- No additional equipment, software, and other materials required for the prototype to be functional.
-