

Writing and editing Arabictext in Adobe Animate cc

Yousef M. S. Almakhr and Ahmed A. S. Balhareth

Department of Computer Education, Aden University

DOI: <https://doi.org/10.47372/uajnas.2017.n2.a10>

Abstract

Adobe is a software development company established in 1982, and has developed a number of software applications for use in various fields. The program Animate cc (flash previously) is one of the most prominent products and is widely used in the design of programming and producing best animation websites.

Adobe has included in Flash software releases (**Adobe Flash Professional CS6, Adobe Flash Professional CS5.5, Adobe Flash Professional CS5 and previous releases**) a text-processing library called Text Layout Framework (TLF). This library supports Arabic-language writing from right to left and supports left-to-right writing of numbers and texts written from left to right such as Latin numbers and letters. However, the versions of **Animate cc** have not include the text-formatting library, which resulted in the inability of designers and programmers to produce interactive Arab applications.

In this research, we designed a component for writing in Arabic called Arabic Text component that contains a wide range of fonts, text control properties and the addition of aesthetic and artistic effects of Arabic characters that aren't included in the previous versions of Flash. The ArabicText component is included once in the flash program components, then it is used for writing by inserting it into stage.

Keywords: Writing Arabic text, editing Arabic text, Adobe Animate CC, Adobe Flash, Text Layout Framework, TLF.

1. Introduction:

Adobe is one of the leading companies in the production of multimedia design and production software such as Photoshop, Flash, Illustrator, InDesign, Flash Catalyst and Flash Builder etc. Photoshop is used to handle bitmaps, Illustrator is used to set up vector graphics, and In Design is a desktop publishing program used to design and publish books, magazines, publications, posters, and other forms of printing. Flash Catalyst is a design tool for rapidly creating expressive interfaces and interactive content without writing code. Flash Builder, formerly known as Flex Builder, is a code-centric environment geared toward developers rather than animators or designers to create interactive content[5].

Since its foundation in 1982, Adobe has released a number of Flash versions under different names. Flash is used to add animation and interactivity on web pages and to create content for Adobe, such as web applications, games, movies, and content for mobile phones and other mobile devices. Flash has a programming language called Action Script that is used primarily to develop websites and software by Adobe Flash Player. Each edition is characterized by advanced technologies that keep abreast of the evolution in the field of communications and information technology[12]. The Adobe Flash versions can be briefly reviewed in Table 1[14].

Table 1: Features of Adobe Flash versions

Versions	New features
Adobe Flash CS3 Professional	Integration with Adobe Photoshop, Illustrator, improved vector drawing tools, ActionScript 3.0, strongly typed variables with type safety, runtime errors, improved events, display list instead of "depth" system, Socket, ByteArray, Loader, RegExp, etc.) [10][11].
Adobe Flash CS4 Professional	Inverse kinematics, basic 3D object manipulation, object-based animation, a text engine.
Adobe Flash Professional CS5	Support for publishing iPhone applications [3], Flash-to-iPhone compiler, new text engine (TLF) ,and the code snippets panel [10].
Adobe Flash Professional CS5.5	Content scaling and stage resizing, copy and paste layers, sharing symbols across FLA files, symbol rasterization, incremental compilation, auto-save and file recovery, and integration with CS Live online services [11]
Adobe Flash Professional CS6	Supports for publishing files as HTML5 and generating sprite sheets [9][13].
Adobe Flash Professional CC	Changes include a native 64-bit scene rendering engine, minor performance improvements and bug fixes, and the removal of legacy features such as ActionScript 2 support. As part of the Creative Cloud suite, Flash CC also offers users the ability to synchronize settings or save files online.
Adobe Flash Professional CC 2014	Includes variable-width strokes, SVG export, and WebGL publishing for animations.
Adobe Flash Professional CC 2014.1	Featuring expanded WebGL publishing abilities, freedom to create custom brushes, and the ability to import external SWFs, software development kit (SDK)
Adobe Flash Professional CC 2015	Bone animation tool, H.264 videos with audio, export bitmaps, brush scaling with stage zoom, universal document type converter, improved audio workflows, improved Motion Editor, panel locking, faster saving of FLA files, auto-recovery optimizations, organize imported GIFs in library, library search by linkage name, invert selection, paste and overwrite frames. code snippet support for WebGL, improved Custom Platform Support SDK, Flash Player 17.0, AIR SDK (version 17.0) and CreateJS libraries.
Adobe Animate CC 2015.1	Shifts away from the "Flash" branding signifying the ability to animate content and publish to video, HTML5 and Flash. It includes tagged color swatches, Adobe Stock and Creative Cloud Libraries, vector art brushes, 360° rotatable stage, resizable stage, export video up to 4K resolution, HTML5 ,Canvas improvements (TypeKit support, text as outlines, custom templates) [9][15].
Adobe Animate CC 2017	Camera support (animating the stage), creating and managing paint brushes, export for animated GIF, component support for HTML5 canvas, integration of the latest Flash Player and AIR SDK and stage enhancements as transparent stage background support. Content in Animate can be created or imported it from other Adobe applications, Vector program, SWF files.

2. Flash Text Engine

The Adobe® Flash® Text Engine (FTE), available, starting with Flash Player 10 and Adobe® AIR™1.5, provides low-level support for sophisticated control of text metrics, formatting, and bi-directional text[1][2]. It offers an improved text flow and enhanced language support. While it can be used to create and manage simple text elements, the FTE is primarily designed as a foundation for developers to create text-handling components. As such, Flash Text Engine assumes a more advanced level of programming expertise. The Text Layout Framework, which includes a text-handling component based on the FTE, provides an easier way to use its advanced features. The Text Layout Framework is an extensible library built entirely in ActionScript 3.0[2][16].

3. Text Layout Framework

The Text Layout Framework (TLF) is an extensible ActionScript library[16]. The TLF is built on the text engine in Adobe® Flash® Player 10 and Adobe® AIR® 1.5. The TLF provides advanced typographic and text layout features for innovative typography on the web. The framework can be used with Adobe® Flex® or Adobe® Flash® Professional. Developers can use or extend existing components, or they can use the framework to create their own text components. The TLF includes the following capabilities[16]:

- Bidirectional text, vertical text, and over 30 writing scripts including Arabic, Hebrew, Chinese, Japanese, Korean, Thai, Lao, Vietnamese, and others
- Selection, editing, and flowing text across multiple columns and linked containers
- Vertical text, Tate-Chu-Yoko (horizontal within vertical text) and justifier for East Asian typography
- Rich typographical controls, including kerning, ligatures, typographic case, digit case, digit width, and discretionary hyphens
- Cut, copy, paste, undo, and standard keyboard and mouse gestures for editing•
- Rich developer APIs to manipulate text content, layout, and markup and create custom text components
- Robust list support including custom markers and numbering formats
- Inline images and positioning rules

The TLF is an ActionScript 3.0 library which is built on the Flash Text Engine (FTE) that is introduced in Flash Player 10[2]. FTE can be accessed through the `flash.text.engine` package, which is part of the Flash Player 10 Application Programming Interface (API).The Flash Player API, however, provides low-level access to the text engine, which means that some tasks can require a relatively large amount of code. The TLF encapsulates the low-level code into simpler APIs. The TLF also provides a conceptual architecture that organizes the basic building blocks defined by FTE into a system that is easier to use.

4. Complex script support Flash

The TLF provides complex script support. Complex script support includes the ability to display and edit right-to-left scripts. The TLF also provides the ability to display and edit a mixture of left-to-right and right-to-left scripts such as Arabic and Hebrew[17]. The framework not only supports vertical text layout for Chinese, Japanese, and Korean, but also supports tate-chu-yoko (TCY elements). TCY elements are blocks of horizontal text embedded into vertical runs of text.

5. Using the Text Layout Framework

The TLF is an ActionScript 3.0 library contained entirely within the `textLayout.swc` library. The TLF library contains about 100 ActionScript 3.0 classes and interfaces organized into ten packages. These packages are sub packages of the `flashx.textLayout` package.

5.1 Data structures and formatting classes: The main data structure of the TLF is the text flow hierarchy, which is defined in the elements package. The following packages contain the data structures and formatting classes for the TLF:

- flashx.textLayout.elements
- flashx.textLayout.formats
- flashx.textLayout.conversion

5.2 Rendering classes: The classes in these packages facilitate the rendering of text for display by Flash Player. The factory package provides a simple way to display static text. The container package includes classes and interfaces that define display containers for dynamic text. The compose package defines techniques for positioning and displaying dynamic text in containers. The following packages contain the rendering classes for the TLF:

- flashx.textLayout.factory
- flashx.textLayout.containe
- flashx.textLayout.compose

5.3 User interaction classes : The edit and operations packages define classes that you can use to allow editing of texts stored in the data structures. The events package contains event handling classes. The following packages contain the user interaction classes for the TLF:

- flashx.textLayout.edit
- flashx.textLayout.operations
- flashx.textLayout.events

6. Formatting text with TLF:

The flashx.textLayout.formats package contains interfaces and classes which assigne,formats to any FlowElement in the text flow hierarchy tree. There are two ways for the application of formatting :

1. A specific format can be assigned individually by you.
2. A group of formats can be simultaneously with a special formatting object.

The Itext Lay out Format interface contains all of the formats that can be applied to a FlowElement. Some formats are applied to an entire container or paragraph of text, but do not logically apply to individual characters. For example, formats,such as justification and tab stops,are applied to the whole paragraphs, but are not applicable to individual characters.

7. Problem writing in Arabic in Adobe Animate CC

Arabic is characterized by a variety of features that are unique to all other languages, including right-to-left writing supported by the text layout framework in Adobe Flash Professional CS5, Adobe Flash Professional CS5.5 and Adobe Flash Professional CS6. In some cases, the Arabic text may also contain data that are written in the opposite direction from left to right, such as Latin numbers and texts. In this case, the writing tool must provide the possibility of changing the direction of writing within the text when needed, which is called bi-directional support.

After developing and restructuring the Flash software by Adobe company from 32-bit to 64-bit, types of text in previous versions of Flash, such as static text and classic text, has been included except the text-format library (TLF) which hasn't been added in this new version and which has reflected negatively on the Arabic text that requires conversion from right-to-left writing direction, because of the style in writing Arabic texts.

8. Approaches used to solve the problem of writing in Arabic on Adobe Flash Professional CC 2014 - Adobe Animate CC 2017:

For writing in Arabic in Professional CC 2014 - Adobe Animate CC 2017, several ways are used including

1. Using the intermediate programs that support the Arabic language: The Arabic texts are transferred from the application to the Adobe Animate cc in the form of a vector graphic or bitmap matrix file and are pasted into the target application interface, but this method has a number of disadvantages, such as processing (zoom, choose the appropriate font type, etc.).It is treated as a graphic or bitmap. There is a wide range of programs and applications that support writing in Arabic, including:
 - Photoshop: Using any version of Photoshop program, where you can write in a file and save it in PSD and then import the file in Adobe Animate cc.
 - Illustrator: A vector-drawn program that can be written in Arabic and then copied and pasted into the target application interface.
2. Using the font type _sans: The first line in the list of fonts Adobe Animate cc, which supports the writing in Arabic, but the most prominent disadvantages of this type of line is that the characters appear disjointed and reversed when writing, and supports a limited set of lines, for example (اطلب العلم من المهد الى اللحد) appear in this type of line as following:

دحللا ىلا دهملا نم ملعلا بلطلا

9. The proposed method to solve the problem of writing in Arabic: In this research, we have designed ArabicTextcomponent which supports Arabic-language writing from right to left. It also allows the designer to change the direction of writing from left to right for left-to-right numbers and texts such as numbers and Latin letters. This component contains a rich set of properties that are used to edit and format text. The artistic and aesthetic touches of the Arabic script character were not previously available in Adobe Flash.

ArabicText component features an easy-to-use user interface with a clear menu of options that the designer can choose from and apply to the target text to get an organized and comfortable text to create and design distinct Arabic applications. These tools are illustrated in Figure(1).

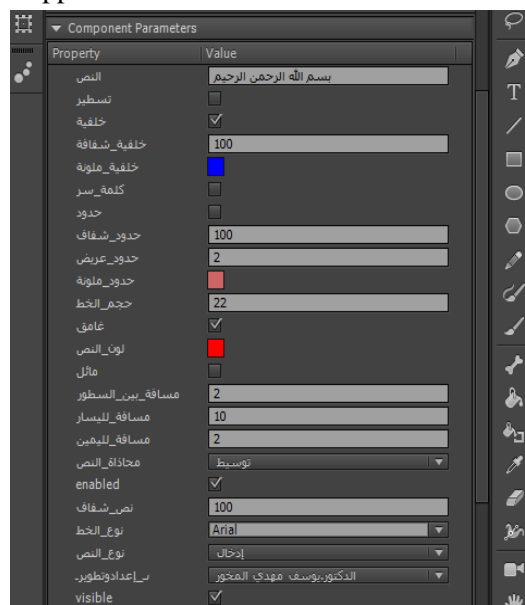


Figure 1: Component parameters

1. Text: Typing and editing text.
2. Underline: Underline the text or cancel it
3. Background: To activate the selection of colored background text or deactivate the selection of colored background for text
4. Transparent Background: Specify the background transparency value
5. Colored Background: Choose background text color
6. Password: Convert text to password
7. Limits: To activate the selection of transparent borders and broad borders or deactivate the selection of transparent borders and wide borders
8. Transparent border: Determines the value of frame transparency
9. Wide Boundary: Determines the value of the width of the frame
10. Color Border: Choose color frame
11. Font size: Character size
12. Bold: Choose font thickness
13. Text color: Character color
14. Italic: To type in italics or cancel typing in italics
15. Distance between lines: Specifies the distance between lines
16. Space to Left: Specifies the text alignment distance of the right margin
17. Right space: Specifies the text alignment distance for the left margin
18. Align text:
 - Adjust: Align text from both sides
 - Centering: Centering text
 - Align Right: Align the paragraph to the right margin
 - Align Left: Aligns the paragraph to the left margin
19. Transparent text: Refers the value of text transparency
20. Type_Line: Choose font type
21. Text type: Dynamic (non-editable text), Insert (editable text).

10.Steps for creating Arabic text component:

Step 1: New Actionscript3.0 :Create a new Flash AS3 file. Save it as TextArabic fla

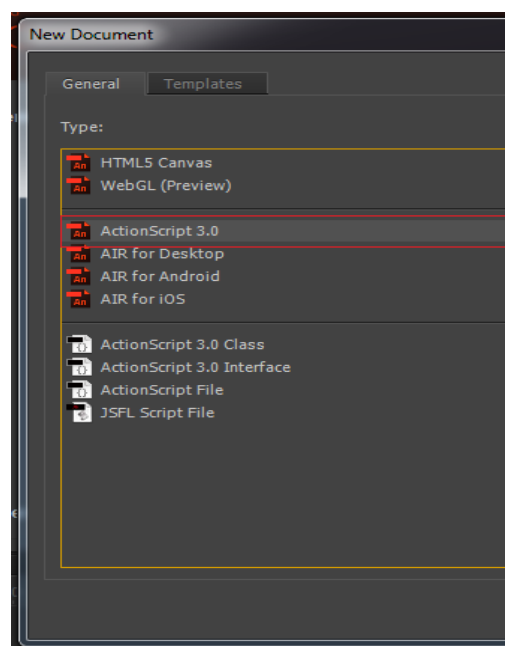


Figure 2: New document

Step 2: Configure Flash for UIComponent :UIComponent is the base class of all Flash components[4]. All User Interface components which are already in Flash (like the ColorPicker, the Checkbox and so on) extend the UIComponent (or extend some class that extends the UIComponent);

1. Go to File >ActionScript Settings...
2. Click "Source path", click the "+" button and add $\$(AppConfig)/Component$
Source/ActionScript 3.0/User Interface
3. Click OK until you've closed the Advanced ActionScript 3.0 Settings windows

Step 3: Create the TextArabicObject :

1. Click Insert > New Symbol. For the name: TextArabic; type: Movie Clip; linkage: check the options "Export for ActionScript" and "Export in frame 1"; for the class: TextArabic; base class: flash.display.MovieClip

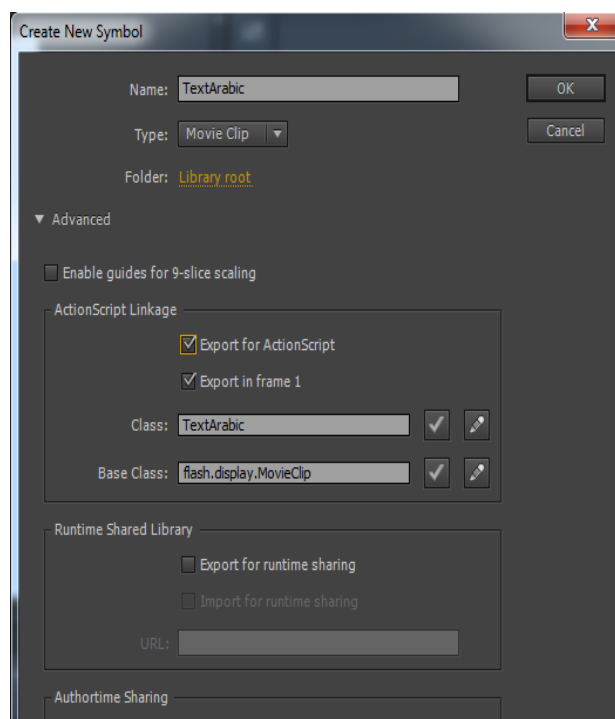


Figure 3: Creating new symbol

2. **Draw rectangle as text frame for writinginsideTextArabic.**

Step 4: Create the Class, extending the UIComponent Class

1. right-click on the TextArabic object
2. click "Edit class".
3. Import the necessary classes (see appendix 1).
4. Add variables and Methods (see appendix 1).
5. Save the class in folder where the TextArabic.

Step 5: Component Definition :

1. open the library
2. right-click on the TextArabic object
3. click "Component Definition".

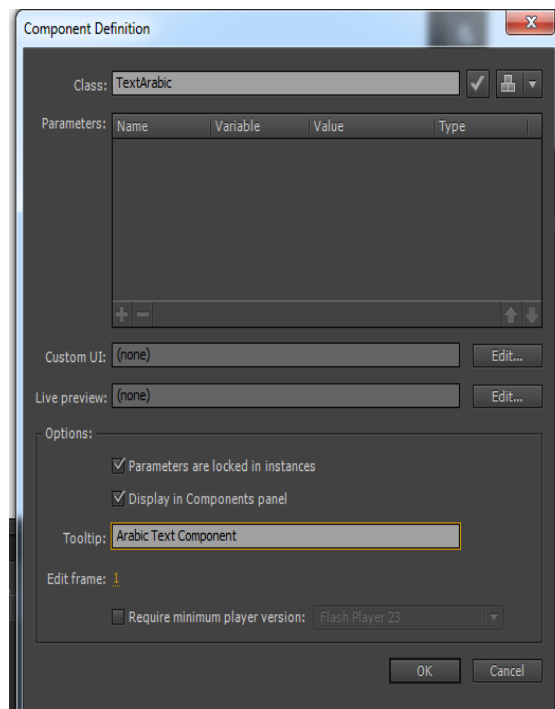


Figure 4: Component class definition

Step 6 :Live Preview

1. Right-click over the TextArabic component
2. Click "Export SWF" and export in the same folder of the TextArabic.fla file.

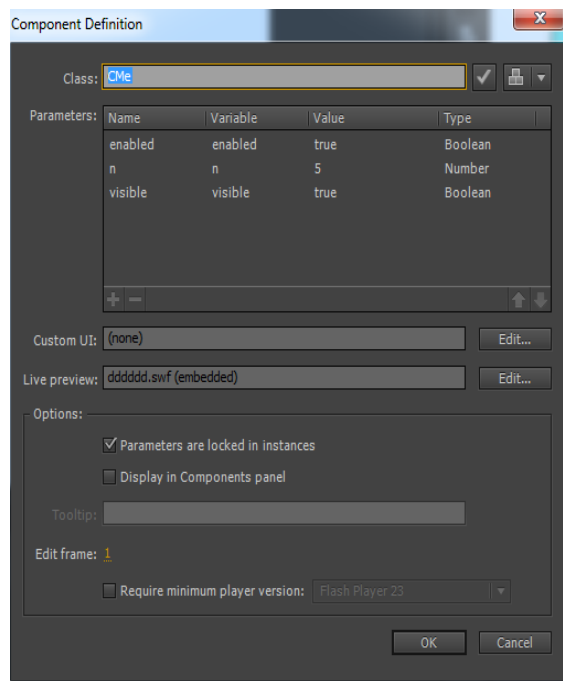


Figure 5: Component parameters definition

Step 7 :Implementing the Live Preview:

1. Right-click on the TextArabic component
2. Click the option "Component Definition"
3. Click the button "Set..." in the Live Preview section.
4. Select the option "Live preview with .swf embedded in .fla file"
5. Click Browse
6. Select TextArabic .swf file.

Step 8: Exporting SWC file :

1. Right-click over the TextArabic component
2. Click "Export SWC file"
3. Save it as TextArabic.swc in the any folder.

11. Steps using Arabic text component:

1. CopyTextArabic.swcfiletoC:\Program Files\Adobe\Adobe Animate CC 2017\Common\Configuration\Components.
2. Close Adobe Animate cc.
3. Again reopen AdobeAnimate cc to updating list components.
4. Create a new Actionscript 3.0 file and save it anywhere.
5. Go to Window > Components.
6. Drag the TextArabic component on to the stage.
7. Click "properties window".There, you can see the parameters of TextArabic component, so Type arabic text and change the parameters of the component and you will see the live preview update.

12. Results:In order to design unique Arabic applications using Adobe Animate cc, we designed ArabicText component that supports Arabic writing from right to left. It also allows the designer to change the direction of writing from left to right for numbers and texts written from left to right such as numbers and Latin characters. This component contains a set of properties that are used to edit and format text and to provide artistic and aesthetic touches to the character of which the Arabic text is composed of. These features were not previously found in any of the Adobe Flash versions.

13. Conclusion: The design and creation of the TextArabic component is a great addition to the Adobe Flash versions. The designer and programmer enriches the use of middleware for writing in Arabic because the texts written by intermediate programs are not capable of processing (zoom, select the appropriate font type, etc.) in the form of a graphic or a bitmap. The TextArabic component allows editing, formatting and controlling of text, and adding artistic and aesthetic touches through a set of properties.

References

1. Adobe (2016): Adobe Animate CC Help, p. 268-282.
2. Adobe (2015): ACTIONSCRIPT® 3.0 Developer's Guide, p.397-439.
3. Adobe(2010): Adobe Labs — Adobe Flash Professional CS5: Applications for iPhone, p.220.
4. Adobe(2011): Using ACTIONSCRIPT® 3.0 Components,p.4-92.
5. Adobe(2010) : Adobe Flash Professional CS5 Classroom in a Book,p.1-2.
6. Adobe (2016): Adobe Animate CC Help, p.477.
7. Adobe (2007): Adobe Flash CS3 Professional User Guide, p.519.
8. Adobe Developer Connection :Migrating from ActionScript 2 to ActionScript 3: Key concepts and changes, p.223.
9. Adobe(2012): Flash Professional CS6 Features.
10. Adobe(2010): New iPhone Developer Agreement Bans the Use of Adobe's Flash-to-iPhone Compiler.
11. Apple Inc. modified terms & conditions for developers in the app store. Adobe is developing again for iPhone and iPad CS5, p. 156.
12. Benjie Moss (2015): Flash is Dead, Long Live Adobe Animate CC, WebDesignerDepot, p.232.
13. Fred, G. Heald, J. Osborn(2012): Adobe® FlashProfessional CS6 Digital Classroom, John Wiley & Sons, Inc, p. 30-70.
14. Gay, Jonathan(2011):The History of Flash: The Dawn of Web Animation, Adobe Systems, p. 124.
15. Lardinois, Frederic (2016):Adobe Launches Animate CC, Previously Known As Flash Professional. TechCrunch, p.244.
16. O'REILLY (2011) : Developing Android Applications with Adobe AIR, VéroniqueBrossier, p. 251-253 .
17. Todd Perkins(2010): Flash® Professional CS5 Bible, Wiley Publishing, Inc, p. 3, p.263-268.

كتابة وتحرير النص العربي في برنامج Adobe Animate cc

يوسف مهدي صالح المخور وأحمد عبدالله سعيد بالحارث

قسم الحاسوب، كلية التربية – عدن جامعة عدن

DOI: <https://doi.org/10.47372/uajnas.2017.n2.a10>

الملخص

Adobe هي شركة متخصصة في تطوير البرمجيات انشئت عام 1982م, وقد طورت عددا من التطبيقات البرمجية لاستخدامها في مجالات مختلفة, ويعد برنامج Animate cc (الفاش سابقا) من ابرز منتجاتها ويحظى باستخدام واسع في مجال التصميم والبرمجة و انتاج المواقع الالكترونية المليئة بالحركة. ويتميز برنامج Animate cc بالعديد من المميزات التي جعلته من اكثر البرامج استخداما في تصميم صفحات الانترنت المتحركة والتفاعلية.

لقد ضمنت شركة Adobe في اصدارات برامج فاش CS6 و CS5.5 و CS5 والاصدارات السابقة مكتبة لتنسيق النصوص تسمى Text Layout Framework (TLF), وهذه المكتبة تدعم الكتابة باللغة العربية من اليمين الى اليسار كما انها تدعم الكتابة من اليسار الى اليمين للأعداد والنصوص التي تكتب من اليسار الى اليمين كالأرقام والحروف اللاتينية, الا ان اصدارات Animate cc لم تتضمن هذه المكتبة, مما نتج عن ذلك عدم قدرة المصممين والمبرمجين على انتاج تطبيقات عربية تفاعلية متميزة.

لقد قمنا في هذا البحث بتصميم مكون للكتابة باللغة العربية يحوي مجموعة كبيرة من الخطوط وخصائص التحكم بالنص وازافة المؤثرات الجمالية والفنية للحرف العربي لم تتضمنها اصدارات فاش السابقة. يتم ادراج مكون الكتابة باللغة العربية مرة واحدة ضمن مكونات برنامج الفاش, ومن ثم يستخدم للكتابة من خلال ادراجه الى مسرح العرض.

الكلمات المفتاحية: كتابة النص العربي, تحرير النص العربي, أدوبي فاش, أدوبي انيميت سي سي, مكتبة تنسيق النصوص.