tts performance suite

Authoring Guideline HTML5

Producing HTML5 content
with tts performance suite from Release 2022r2 onwards

Content

1 Goal

It has always been our goal to ensure that content produced with tts performance suite – especially e-learning content – can be played on as many of our customers' browsers as possible without having to install plug-ins or any additional programs. This is what motivates us to do our utmost to fully exploit the potential of HTML4, both in relation to the content produced and the authoring environment. Thanks to our determined effort down through the years, we have succeeded in ensuring that content has always remained 'runnable' regardless of the browser version used. All this, despite the fact that certain browsers have occasionally adopted a rather lax interpretation of web standards.

Due to the widespread popularity of smartphones and tablets, HTML5 – and its associated technologies – has become widely accepted as the logical next big thing after HTML4. HTML5 offers a state-of-the-art basis with a potential for technical innovation that far exceeds that of HTML4. Functions, whose implementation involved a huge effort back in the heyday of HTML4, have since become standard in HTML5, or at least much easier to realize.

Just like every technological leap, the transition from HTML4 to HTML5 was not instantaneous, but actually took several years. Even to this day, many companies still use a browser which is either fully incapable of supporting HTML5, or leaves a lot to desire, as their standard browser. Fully aware of this, tts performance suite has included an optional HTML5 export function since Release 2014 R2, thereby giving our customers the freedom to decide the technical format in which they wish to distribute their content. The big advantage of this is the fact that all previous HTML4 content still works in the usual reliable manner and that nothing has fundamentally changed in relation to the modus operandi.

Despite the fact that HTML5 provides a state-of-the-art basis, browser-specific differences are regrettably unavoidable, as was the case with HTML4. Browser manufacturers continue to offer their own unique interpretation (or extensions) of the HTML5 standard, as demonstrated by the varying depiction of content from one browser to another. This is why we intend to continue to officially support only those browsers that are explicitly listed in our system requirements. Therefore, please make sure to test your content against the specific browsers and devices which are being used for the content consumption.

The aim of this White Paper is to describe how to use the Document Editor in tts performance suite to produce content based on HTML5 for mobile devices. This will involve highlighting certain general requirements and demonstrating the procedure with the help of best practices. This will be based on Release 2017r2 of tts performance suite.

Should you have any questions that are not addressed in this document or require assistance in creating a configuration that has been optimized for HTML5, please don't hesitate to get in touch with your Professional Services Consultant.

Please note:

In conjunction with Release 2022r2, the Producer user interface has now been modified to gray out the buttons for functions that are not supported in HTML5 documents (example: parallel paths). This makes it easier to quickly identify the functions that can actually be used.

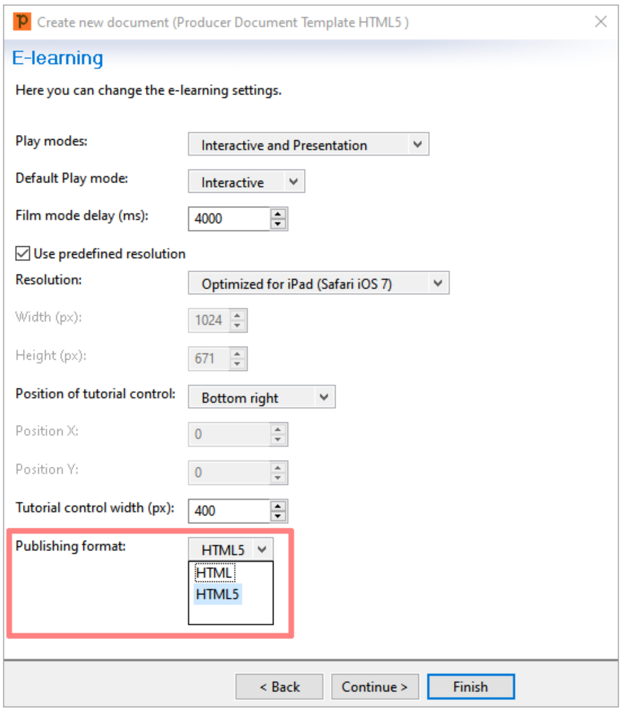
2 Introduction

We have great expectations regarding the potential of learning via mobile devices. The developments of the last few years have shown that the future of mobile learning will, to a large extent, be shaped by touch screen technology. In reacting to this technological shift, we also seized the opportunity to take a closer look at many functions and examine whether certain aspects could be implemented in a much simpler and more sustainable manner, thereby making life much easier for both authors and end users. Needless to say, HTML5 content is fully compatible with supported browsers on desktop systems. In some cases, this involves changes (some of which are only temporary) in the functional scope of HTML5 compared to the familiar HTML4 content creation procedure.

As already mentioned in the introduction, many of our customers continue to use browsers that do not support HTML5. This is why we are not in a position to fully concentrate on the production of HTML5 content and thereby fully doing away with the familiar HTML4 creation process. Therefore, so long as the majority of our customers have not yet made the technological leap to browsers fully compatible with HTML5, the HTML4-based Document Editor will continue to dominate the production process. This means that the WYSIWYG (What-you-see-is-what-you-get) view in the Document Editor will continue to display content in the HTML4 format. As long as authors pay attention to the constraints outlined in the following sections, they will not be surprised by the final HTML5 export, and HTML5 e-learning lessons will run like clockwork. During the transition phase from HTML4 to HMTL5, certain aspects of the authoring workflow will have to be adapted and you may even have to do without some of your favorite functions. The following sections are dedicated to the aspects to which you, as an author, have to pay particular attention.

2.1 First steps

HTML5 content can be created in the usual manner in the Document Editor. As soon as you have created a Producer document, you will have to decide on the export format. You can choose between standard HTML (i.e. HTML4) or HTML5:



Create new document (Producer Document Template HTML5)

E-learning

Here you can change the e-learning settings.

Play modes: Interactive and Presentation

Default Play mode: Interactive

Film mode delay (ms): 4000

☑ Use predefined resolution

Resolution: Optimized for iPad (Safari iOS 7)

Width (px): 1024

Height (px): 671

Position of tutorial control: Bottom right

Position X: 0

Position Y: 0

Tutorial control width (px): 400

Publishing format: HTML5

HTML
HTML5

However, it will still be possible to change the publishing format following the creation of content. But this may involve certain functional differences, as outlined in the following sections. One of the many benefits for users since the launch of Release 2022r2 is the fact that buttons for functions that are incompatible with the publishing format are grayed out.

Basically, templates or presentation objects can, for the most part, continue to be used in exactly the same manner. There is no need to create new templates (or modify existing ones) in order to avail of HTML5. However, in the event that e-learning lessons involve the use of the functions listed below, you will have to make changes to the templates prior to the production of content.

Since the Document Editor only shows the HTML4 view, it does not directly display the WYSIWYG view for HTML5. However, from version 2017 upwards, you can use the preview right from the document editor to get a glimpse of the HTML5 export.

2.2 Benefits of HTML5

Due to the cutting-edge technological basis of HTML5, it was possible (among other things) to streamline our code base, or, in other words, to redevelop it from scratch. The following benefits are therefore only available in the case of an HTML5 export:

- Significantly improved performance
- Modification of content to suit the size and orientation of the device's display, scalability on desktop systems
- Swipe gestures as a way of navigating through content

2.3 SmartComponents

Our decision in 2014 to introduce SmartComponents as an interface for programming new functions in tts performance suite led to the creation of a powerful new instrument that allows a quick and flexible reaction to customer-specific requirements. This made it possible to expand the range of functions in the Document Editor either through the customers' in-house developers, or as part of our own customization services – all this regardless of the fixed development cycles at tts.

In addition, SmartComponents also have the advantage of simplifying the creation of repetitive and complex interaction designs, while easy-to-use Wizards make it much easier for authors to avail of these functions.

In light of these many advantages, we have decided to include the SmartComponent concept as an integral part of the HTML5 export. The following sections will therefore repeatedly refer to SmartComponents which facilitate particular functions – especially in relation to the HTML5 export. Those SmartComponents are part of our standard SmartComponent library.

3 Triggers and animations

3.1 Entry animations

In the HTML5 export, all entrance animations can be used. Exceptions are the animations “Replace Comment” and “Append to Comment” which require the use of the programmatic HTML4 tutorial control (for an explanation see section ‘Tutorial Control’). The HTML5 export, on the other hand, only supports the template-based tutorial control. Additionally, the transition “After click/key” is not available yet.

When using qualified Feedbacks during test questions, the 'e-learning context' function in the trigger and animation properties is often used. This is no longer needed. The functionality is now provided by the SmartComponent “qualified feedback” as explained in the 'Test questions' section.

3.2 Exit animations

When designing the HTML5 export, we decided to rely on swipe gestures for navigating within e-learning content. If a step were to include page exit animations, it would not exactly be intuitive from the end users' perspective if they had to wait for the exit animations to finish after having already swiped to proceed to the next step. This explains why there are no exit animations in the HTML5 export.

3.3 Animation triggers

The support of animation triggers has been further improved with release 2017. Now, basically all trigger types are available except for the remainders “Upon keystroke / key combination”, and “With Flash event” (the latter has been discontinued due to obvious reasons).

3.4 Control triggers

The 'Tutorial control' section will explain 'control triggers' in greater detail.

4 Simulations

HTML5 is the future. In order to be able to produce future-proof e-learning content with tts performance suite, the HTML5 export functionalities have been greatly extended, especially in the area of software simulations. Starting with release 2017, it is possible to offer interactive software simulations for both desktop systems and mobile touchscreen devices with the same content by using the HTML5 option. In the past, only HTML4 supported interactive software simulations which, in turn, only supported PC systems. So, an author had to decide between engaging simulations versus mobile use cases. Nowadays, this decision is not necessary anymore – just choose HTML5 as the export format and the content will be compatible to all supported devices and platforms.

For usability reasons, the HTML5 player adapts to the different device types by identifying the appropriate input methods. Depending on whether the end user interacts with the content by mouse or finger, the interactions types will be triggered as follows:

Mouse interaction	Touch interaction
Left click (just press)	Tap
Left click (press and release)	Tap and leave
Double click	Double tap
Right click (just press)	Long tap
Right click (press and release)	Long tap and leave
Touch	Tap
Key (combination)	Automatic presentation mode
Input	Automatic presentation mode
Drag & Drop	Automatic presentation mode

Additionally, a few restrictions remain:

- Currently, the HTML5 export does not support image differences which have been created during the recording if the appropriate option has been selected
- Click and touch animations are currently not shown in the presentation mode
- The assessment mode for software simulations is not yet supported

5 Test questions

5.1 General information on test questions

From the end-user perspective, the biggest change in the HTML5 export is the fact that test questions can now only be answered once. All answers already given will be saved when moving on to the next step, and test questions can only be reset by reopening the e-learning lesson.

Swipe gestures will work as expected: If you swipe from one test question to another, either the answer given will be saved or the test question will still have to be answered.

The option of jumping from one test question to another without actually answering them already existed in the Assessment mode in the HTML4 export (via the 'Free browsing' setting). In the HTML5 export, the settings 'Free browsing' and "Question pool" are now available. The Assessment mode 'Drill and practice' (in all its variations) is no longer available. It will also no longer be possible to activate a time limit for either the Study or Assessment modes.

Finally, please be also aware that final evaluation of individual test questions is only calculated on the basis of the so-called “simple mode” (answers are either correct or wrong).

5.2 Creating test questions

As an experienced author, you will notice that the biggest changes involve the creation of test questions. The use of appropriate SmartComponents is now obligatory when creating test questions. It is no longer possible to create test questions via the familiar tools in the Document Editor, e.g. via the function “Create test question”. This may initially give the impression that your options have been considerably reduced due to the fact that the previous, highly generic creation process in the Editor allowed a great deal of flexibility. But when you take a closer look, you will see that the new procedure involving SmartComponents opens up a whole new world of opportunity, allowing you to compile test questions which are more attractive and innovative than ever before. What's more, the SmartComponents have been developed in such a way that allows you, the author, to change the appearance of checkboxes or radio buttons (for example) just as you please. Up to now, this could only be done via extensive customization on the part of tts, a service which was sometimes subject to a fee.

In practice, this means: Whenever you want to create e.g. a drag & drop test question, you need to use several SmartComponents to represent the drag elements and drop targets. And then – as has always been the case – you have to activate the Test Question mode for the step. The same applies to the creation of single-choice and multiple-choice test questions.

The set of ready-made SmartComponents for test questions will be continually evaluated and expanded as the need arises. Needless to say, it is still possible to develop individual SmartComponents to facilitate test questions based on crosswords, memory games, scrambled letters etc. – something which up to now has been impossible, or at least extremely complicated, using the standard Document Editor tools.

In addition to the creation of various test questions, SmartComponents are also necessary for the actual answering of test questions by end users. The 'Tutorial control' section will explain that the familiar programmatic tutorial control no longer exists in the HTML5 export. This means that standard fields for displaying the Comment and Feedback text, as well as the buttons for evaluating the answers, have been dropped. These functions now rely on SmartComponents as well, which are available in the SmartComponent library.

Furthermore, authors are able to use SmartComponents when creating qualified feedbacks. Qualified feedbacks facilitate displaying a context-specific reaction whenever a user gives a correct or wrong answer to a question. Up to now, this was controlled via the use of the so-called ‘e-learning context’ in combination with certain triggers and animations which were able to trigger the appearance of presentation objects in particular situations. The 'e-learning context' is not available anymore in the HTML5 mode. We believe that using this SmartComponent will make the creation of qualified feedback far easier than before.

5.3 Assessment evaluation

The assessment evaluation page is now also full of surprises. Granted, this was always quite a satisfactory feature back in the glory days of HTML4 – assuming that you used it in accordance with the way it was predefined during the creation of your configuration. But as soon as you attempted to modify it – by editing its template – you were confronted with a dizzying array of special functions that required an in-depth understanding of obscure mechanisms. Basically, modification was a bit of a nightmare. And what's more, it was impossible to easily create individual evaluations for single e-learning lessons.

In our drive to get rid of unnecessary conceptual and technological ballast, here we have also opted to rely on SmartComponents and decided to drop the old assessment evaluation page from the HTML5 export. You now have the choice of inserting the appropriate SmartComponents directly into the content or offering a new assessment evaluation page as a step template.

6 Tutorial control

6.1 General information

First and foremost, the tutorial control in tts performance suite answers the purpose of navigating in e-learning content and showing instruction texts. Basically, two different types of tutorial controls with different technical implementations exist in our software: A tutorial control which is deeply anchored in the e-learning player engine (called ‘programmatic tutorial control’) and a tutorial control which is based on regular trigger- and template functions that the author is used to (called ‘template-based tutorial control’).

This distinction is especially important for HTML5 content. Here, only the template-based tutorial control is supported. In contrast to the programmatic tutorial control, it is embedded into the individual steps themselves. Here, for instance, regular presentation objects can be defined as *next* or *previous* buttons by using the appropriate control trigger functionalities. Or, alternatively, you can create one or several object templates which bring along the desired functionalities of a tutorial control (hence the name). For the ease of maintainability, we recommend the latter approach.

The template-based tutorial control is more or less just another content object which does not really differ from any other object on the step. Therefore, please bear in mind that the document or step settings regarding certain properties of the programmatic tutorial control do not apply here. The author needs to e.g. change the position or width of the tutorial control individually if deviations from the default settings of the template are required (granted that the template designer has set the appropriate authorizations). But again, once you have designed you own tutorial control, you no longer have to worry about the distinction between HTML4 and HTML5 content: The template-based tutorial control is perfectly supported in HTML4 exports, too.

In the course of supporting interactive software simulations in HTML5, it was important to us that it is possible for authors to offer their users a tutorial control with the expected display of comment and feedback texts and navigational elements with ease. That is why we have substantially increased the functionalities of the template-based tutorial control in HTML5.

Of course, you can still pass on applying classic navigation controls in your HTML5 content and rely on modern swipe gestures as it has been part of our HTML5 export from the start. Starting with release 2017, however, you can decide on a step-by-step basis. With the step property “Proceed only via next button” you can turn off the possibility to use swipe to navigate to the next step.

6.2 Available Control triggers

In order to create a tutorial control with presentation objects (no matter if a template or not) you rely on control triggers. Please note that not all available control triggers can be used in the HTML5 export due to the fact that many of the triggers impact on functions in the programmatic tutorial control. You can use:

- Next/Previous
- Repeat
- Pause/Play
- Stop
- Activate/Deactivate sound
- Interactive mode
- Presentation mode
- Film mode
- Go to target step
- Close

To allow for a quick start in your endeavors in creating your own tutorial control, we have been providing a best practice HTML5 configuration since 2017. Just get in contact with your professional services consultant for more information.

6.3 Comment and Feedback text

The classic programmatic tutorial control of the HTML4 export also includes Comment and Feedback text in addition to the purely navigational aspect. This text would not be displayed in the absence of that tutorial control. This is why we also provide a suitable SmartComponent which dynamically inserts all comment and feedback texts. This is of particular importance for interactive software simulations (see section ‘Simulations’) and when creating test questions (section 'Test questions').

The classic tutorial control also includes buttons for the evaluation of answers and display of a sample answer in the case of test questions – buttons which would be missing in the HTML5 export. And yes, there are also special dedicated SmartComponents for this scenario. Our standard SmartComponent library therefore includes both a SmartComponent for displaying the automatically created – and possibly adapted – Comment and Feedback texts, as well as a SmartComponent button that triggers an evaluation and subsequently displays the sample answer.

6.4 Tutorial controls in software simulations

The HTML5 export now supports interactive software simulations and tts performance suite provides tools to create a fitting tutorial control for your needs. Long-time authors might ask: Do I now have to add that tutorial control individually on each step once I have completed a recording? The answer is: no!

An extension in tts performance suite 2017 allows to insert template objects automatically during the recording without the need for manual work: the so-called 'Recording Master'. In the configuration, this step template is defined as having a special property: It includes any object templates, such as a tutorial control object template at a specific position on the step. As soon as you start a new recording and set the new document property "E-learning extended → Apply Recording Master" on true, this 'Recording Master' along with its embedded tutorial control template will automatically be put on top of each simulation step, along with the comment text and all navigation elements.

Please be aware that this only works for new recordings. In order to migrate legacy content to HTML5, it would be necessary to insert a tutorial control object template onto each step, flip the switch to HTML5 in the document properties and you are done. (Pro-tip: The "Insert template into multiple steps" function on the "test questions" tab might speed up the process significantly.)

Please get in touch with your professional services consultant if a Recording Master has not yet been integrated in your configuration.

7 Additional details

7.1 Play modes

Three play modes are available as standard in the Document Editor: Interactive, Presentation and Film. These play modes are particularly important when e-learning content includes software simulations. Actually, the Interactive mode is only relevant to software simulations, as is the Presentation mode which could be useful to get simulation steps to play automatically when 'Next' is clicked. Starting with tts performance suite 2017r2, all play modes are supported by the HTML5 player.

7.2 Parallel paths

Highly complex e-learning lessons sometimes include parallel paths that provide optional additional information. However, our customers rarely avail of this function, except in a few isolated cases. This is why we have decided not to support parallel paths in the HTML5 export yet.

However, the behavior desired when using parallel paths can be achieved by using the SmartComponent "Mark as visited". Optional pages and sections within a learning unit can be marked as visited when a certain step is reached, without having to consider the actual visit of the page. In this way, optional steps can be implemented without negatively influencing the score in the case of a non-visit.

7.3 Videos

During the age of content production under HTML4, it has been possible to insert videos as objects directly into steps when creating content in the regular manner. However, these videos play automatically in the end-user view, without allowing navigation control or any other type of control. In light of these limitations, we have developed a SmartComponent that facilitates both navigation control and additional options.

The use of this SmartComponent is obligatory when you want to integrate videos into HTML5 content. So please remember to always insert the appropriate SmartComponent whenever you want to embed videos.

7.4 SmartObjects

In HTML4 content, with the so-called SmartObjects, it is possible to get access to specific HTML4-player functions (such as help button or sitemap) as well as to test evaluation information (like total score or score as bar). These SmartObjects are no longer supported in the HTML5 player. Instead, the most important functions are made available via SmartComponents. Some examples are the navigation buttons, which are natively used for the template-based tutorial control and the overall quiz result. If you are missing much needed functions, please get in contact with us.

7.5 “Pinch-to-zoom”

Many users of our e-learning content missed the opportunity to zoom into the content with the popular pinch gesture. In version 2017, this has been added to all HTML5 e-learnings. We do, however, still recommend creating content on a use case basis and to optimize for the appropriate devices. We do not believe in the concept of providing one content type for all devices. Whenever necessary, though, the capability to zoom on certain areas of the content enables the use of smartphones even for content which has been optimized for tablets.

Please be aware that it is not always possible to use e.g. drag & drop interactions or SmartComponents which in turn offer zoom functionalities on a zoomed-in step.

7.6 Dragging of elements

The object property "draggable" is currently not supported in HTML5 content. Drag and drop elements and questions can be implemented using the smart component described in Section 5.2.

7.7 Info regarding certain platforms and browsers

Some platforms (e.g. iOS) have security-related restrictions when it comes to playing media (sound or video). This means that it is not always possible to automatically play a video or sound directly in an e-learning step due to the fact that some browsers require the user to perform a particular manual action to play the video or sound. If such a situation arises, you can get around the problem by incorporating a button with triggers (for example) which triggers the playing of sound or video. To ensure that content is as compatible as possible with all platforms, we recommend doing this for all your HTML5 content.

7.8 Known Issues

7.8.1 Swiping on large trigger objects

Whenever you use large objects to trigger other objects your end-users might run into the problem that it is not possible for them to swipe to enter the next or previous step. This is caused by a collision between the navigational swipe and the trigger event to show the other objects. You can circumvent this by either avoiding large areas which serve as trigger objects, or by using smaller transparent objects as trigger objects. Or, alternatively, you can deactivate the swipe gesture altogether for the individual step and offer a different means for navigation.

7.8.2 Private or Incognito mode

Especially on mobile devices, standard browsers offer so-called private (Safari) or incognito modes (Chrome) which restrict certain functions of web pages. Unfortunately, HTML5 content created with tts performance suite requires certain functionalities these modes prevent. Therefore, content will not work in browsers with activated private or incognito modes.

8 Publishing your HTML5 content

There are many ways to distribute your HTML5 content to end users. Amongst these are Apps, exports to your Learning Management System(s), Deep Links, etc. However, there is one publication method which is the most straight-forward one: Let end users access the content from tts performance suite's built-in portal, the WebAccess. Now, your concrete needs might vary but if your end users access your content e.g. predominantly with their Smartphones, you might want to optimize your Web Publisher view to comply with this usage pattern. Certainly, our Professional Services team is gladly available to discuss a wide range of possibilities with you and will help you in implementing the best fitting solution.

9 Summary

The following table provides a general overview of the components that can be used in the Document Editor. Please note that this table does not include all the detailed information outlined in the earlier sections, which is why it is absolutely essential that you take the time to carefully read through all the preceding sections.

Component / function	HTML4	HTML5
Adapt to size of display	✗ (size is fixed)	✓

Component / function	HTML4	HTML5
Navigation via gestures	✗	✓
Presentation objects	✓	✓
Templates	✓	✓
Animations	✓	(✓) only entrance animations
Triggers	✓	(✓) only selected
Sound	✓	✓
Videos	(✓) without play control	✓ by using SmartComponents
Software simulations	✓	✓
Test questions	✓	(✓) by using SmartComponents
Assessment mode	✓	✓
SCORM-compatible	✓	✓
Tutorial control	✓	✓ template based
Play modes	✓	✓
Parallel paths	✓	(✓) by using SmartComponents
SmartObjects	✓	(✓) by using SmartComponents
Glossary linking when exporting from Curator	✓	✗