Questions to answer:

- How many tests are needed for this pattern?
- What tests are needed?
- What kind of tests are they?
- Can any of these tests be automated?

4.9.2 Enable APIs and Extensions (Pattern)

4.9.2.1 User Need

I need to use additional support features from **widgets** or **extensions**.

Related User Story: Extensions and **APIs**.

4.9.2.2 What to Do

APIs and extensions work with your content.

4.9.2.3 How it Helps

People with cognitive and learning disabilities are often using add-ons or extensions as assistive technology. For example:

- reading of the long form of acronyms,
- support for text-to-speech with synchronized highlighting of the phrase being read,
- content simplification,
- creating mind maps out of the heading structure,
- support for retaining content that has already been entered,
- password management,
- spell checking,
- changing the symbols or the interface,
- changing numbers from digits to words and words to digits,
- adding white space between lines, sentences, phrases, and chunks,
- alternative ways to input the content such as speech recognition,
- adding pictures.

However, sometimes a web site stops extensions and APIs from working. The result is that these users cannot use this web site.

If these add-ons and APIs are not supported, the author should provide support for all the functions of the add-ons used as assistive technology.

For example, a user with traumatic brain injury has executive function and memory impairments impacting their ability to remember details such as:

- the icons or symbols on a Web of Things (WoT) interface,
- their username and password,
- what an acronym stands for,
- a phone number, or
- the meaning of uncommon words.

Supporting the use of an add-on that simplifies content and gives support (such as the long form of acronyms, and a popup dictionary) enables them to understand most content.

Supporting password management tools enables users to successfully login and avoid being locked out of secure sites.

Storing non-sensitive information and auto complete helps them fill out a form. This suggests common information, like a person's phone number or address. It also helps them avoid making mistakes. It eliminates the need for accurately recalling this information from memory or having to copy and paste it, which is a task that often prevents them from successfully using a form.

When overwhelmed by textual content, they have an extension that inserts symbols that they are familiar with that helps them find the content they need.

Too many options may add to the complexity of interacting with IoT devices. Additional options should be easy to ignore and not require a lot of reading to understand that they are additional, as well as how to skip them.

Sometimes the Internet of Things (IoT) interfaces may confuse the user, such as a default "reading" on a meter being set to "2" and not "1." The user would then need to reset it to "1."

It is important in any proposed solution to make operational tasks, such as interacting with the IoT, as transparent as possible so that users can focus their attention on the functional aspects, such as relating to content.

4.9.2.4 More Details

People with cognitive and learning disabilities often use add-ons as assistive technology. It is essential that add-ons and similar tools work as expected, except when:

1. A security or safety requirement requires that these APIs need to be disabled. In this case they should be disabled only for the relevant field(s).
2. The add-on breaks the main function of the site, such as evaluation and testing applications.

When add-ons are automatically disabled by the code, the burden of supporting the extra functionality of the add-ons falls to the author.

4.9.2.5 Getting Started

Content can be used with APIs and extensions that support those with cognitive and learning disabilities.

Testing verified through the use of some of the APIs appropriate for the content. For example:

- Testing with spell checker and password storage apps or extensions.
- Test with an extension that adds to menu items (the right click options for desktops).
- Test with a toolbar that enables simplification or personalization and is designed for people with cognitive and learning disabilities.

4.9.2.6 Examples

Use:

1. Support for browser extensions and features, and personalization tool bars. Users are able to apply their settings from a personalization toolbar to improve the usability for them of the page.
2. Extension that adds options to the right click work as expected.
3. The page can be formatted and simplified from the user's preferences in the operating system or user agent.

Avoid:

1. Designs and code that stop browser extensions, settings and features, and personalization tool bars from working. For example:
    - Password storage applications do not work.
    - Distraction removing extensions do not work.
    - Spell checker extensions do not add options to the right click menu, or do not underline mistakes made by the user.
    - The correct symbols cannot be added by a simplification toolbar.
    - The page cannot be formatted or extra white space added.
    - The user cannot use their preferred font.