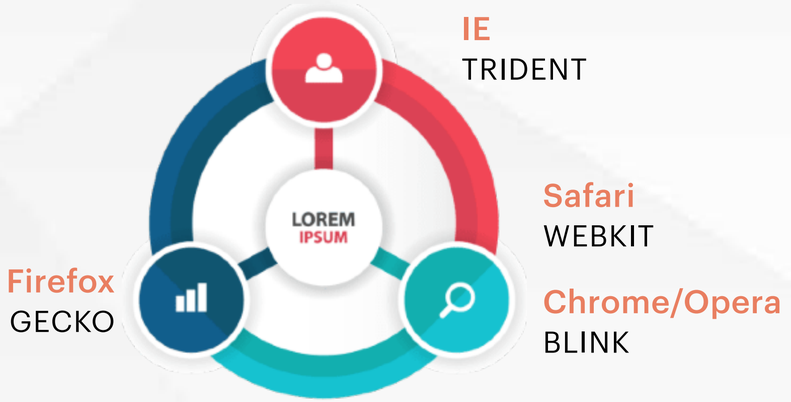
Basic Flow

BASIC FLOW OF THE RENDERING ENGINE:



MODERN RENDERING ENGINE

1. **Parse DOM Tree and CSSOM Tree to Render Tree**

   The rendering engine will start parsing the HTML document and convert elements to DOM nodes in a tree called the "content tree". The engine will parse the style data, both in external CSS files and in style elements. Styling information together with visual instructions in the HTML will be used to create another tree: the render tree.

2. **Render Tree with visual attributes**

   The render tree contains rectangles with visual attributes like color and dimensions. The rectangles are in the right order to be displayed on the screen.

3. **Layout and Painting**

   Layout means giving each node the exact coordinates where it should appear on the screen. Then painting——the render tree will be traversed and each node will be painted using the UI backend layer.

4. **A gradual process**

   The rendering engine will try to display contents on the screen as soon as possible for better user experience. It will not wait until all HTML is parsed before starting to build and layout the render tree. Parts of the content will be parsed and displayed, while the process continues with the rest of the contents that keeps coming from the network.

Main Flow

SOME TERMINOLOGY DIFFERENCE:

1. **Frame Tree and Render Tree**

   Gecko calls the tree of visually formatted elements a "Frame tree". Each element is a frame. WebKit uses the term "Render Tree" and it consists of "Render Objects".

2. **Layout and Reflow**

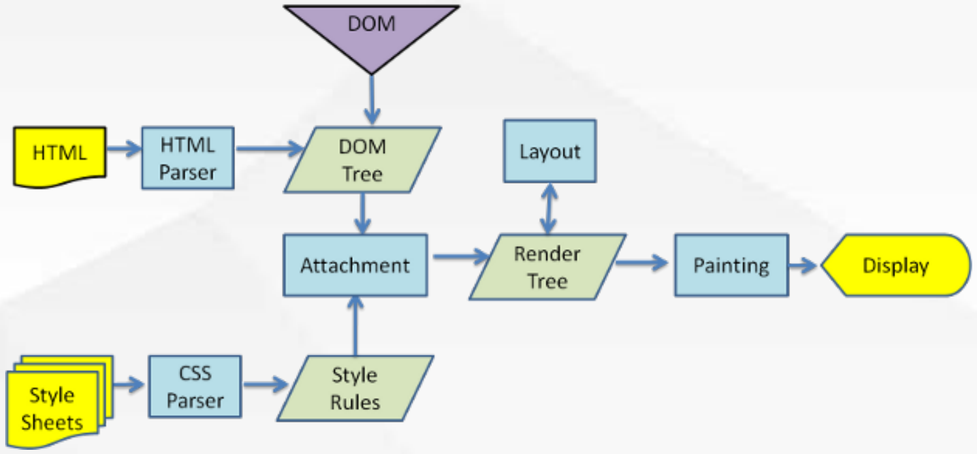
   WebKit uses the term "layout" for the placing of elements, while Gecko calls it "Reflow".

3. **Attachment**

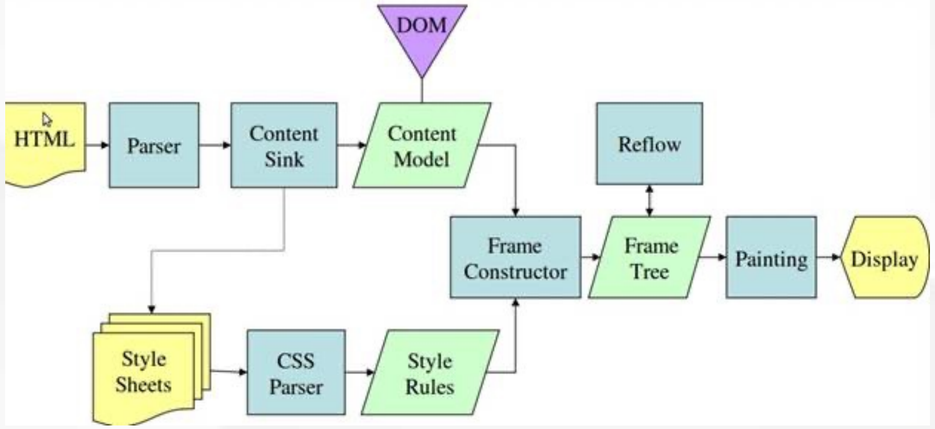
   "Attachment" is WebKit's term for connecting DOM nodes and visual information to create the render tree.

4. **content sink**

   Gecko has an extra layer between the HTML and the DOM tree. It is called the "content sink" and is a factory for making DOM elements.



WEBKIT MAIN FLOW



MOZILLA'S GECKO RENDERING ENGINE MAIN FLOW