# watch & summary 5 points

<https://www.youtube.com/watch?v=SmE4OwHztCc&ab_channel=JSConf>

How the browser actually constructs a webpage

* Components that make up a browser
  + Bindings – OS stuff, Network, use of APIs
  + Rendering - Parsing, layout, painting, etc. – Actually constructing a webpage when gets into it.
  + Platform – different OS
  + JS VM – JavaScript Virtual Machine
* HTML5 – implicitly add the missed out tags and head & html & body tags
* Parsing flow – tokenize->Parse tree -> DOM tree construction -> render tree
  + <script>,<link>,<style> - stops the HTML parsing & renders the file , better to add the <script tag at the bottom, so that it will not interrupt the parse & renders fast , Key words used is (defer, async)
  + Render/ frame tree – combines the DOM & CSSOM, non-visual elements (head, body) & display: none won’t be present in the render tree.
* Layout stage– it’s a recursive process, traverse the render tree and place nodes appropriately.
* Performance insight – Read once, write whatever is changed. Instead of reading it for each and every change – this is called preventing layout thrashing (most of the modern JS frameworks do this, eg: react).
* Paint stage – takes the render trees & creates the layers from render Objects
  + Bitmap is produced from each layer & uploaded to GPU and it is been put together as final output image on screen