

WEB Engineering



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Plan

- Un peu d'histoire
- JavaScript : le langage d'action du Web (mais pas que ...)
- Outilage
- TypeScript
- Utilisation de frameworks : Angular
- Utilisation de frameworks : VueJS
- Utilisation de frameworks : React
- Conclusion

Contexte historique

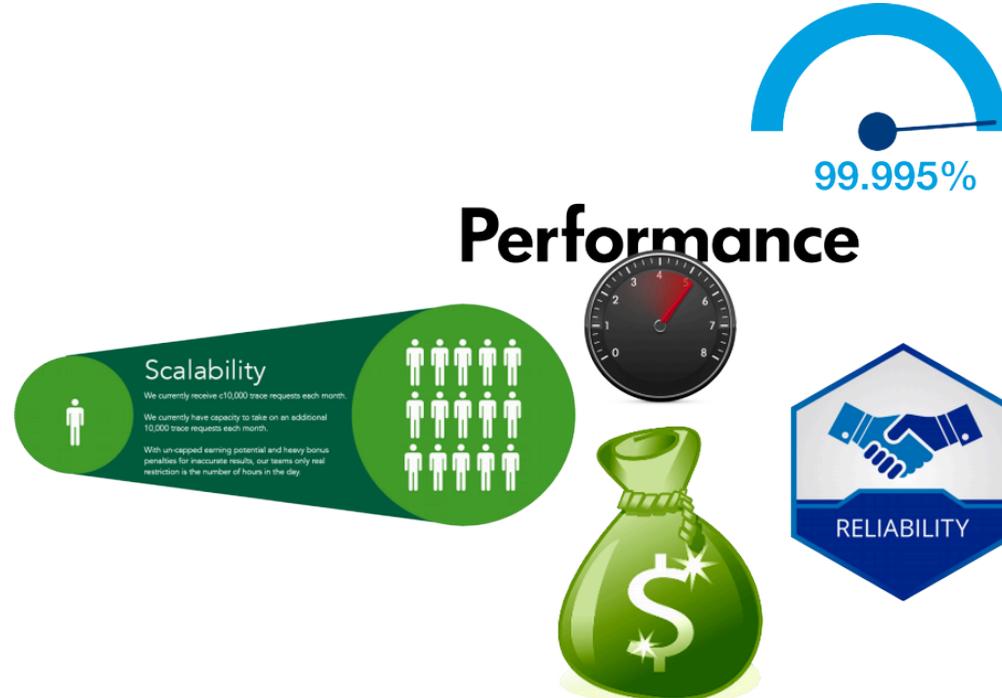
- Internet (~1980) et le Web (~1990)
- Repose sur Internet, TCP/IP, modèle OSI
- Un des services de l'Internet (port 80)
- 3 piliers : HTML, URI, HTTP
- Plusieurs évolutions
 - Séparation mise en forme (CSS), pages
 - Statiques vers interactions dynamiques
 - Cloud computing, Web sémantique, Web embarqué, systèmes pervasifs...
 - HTML5 (Conteneur d'applications complexes)

Évolutions du Web

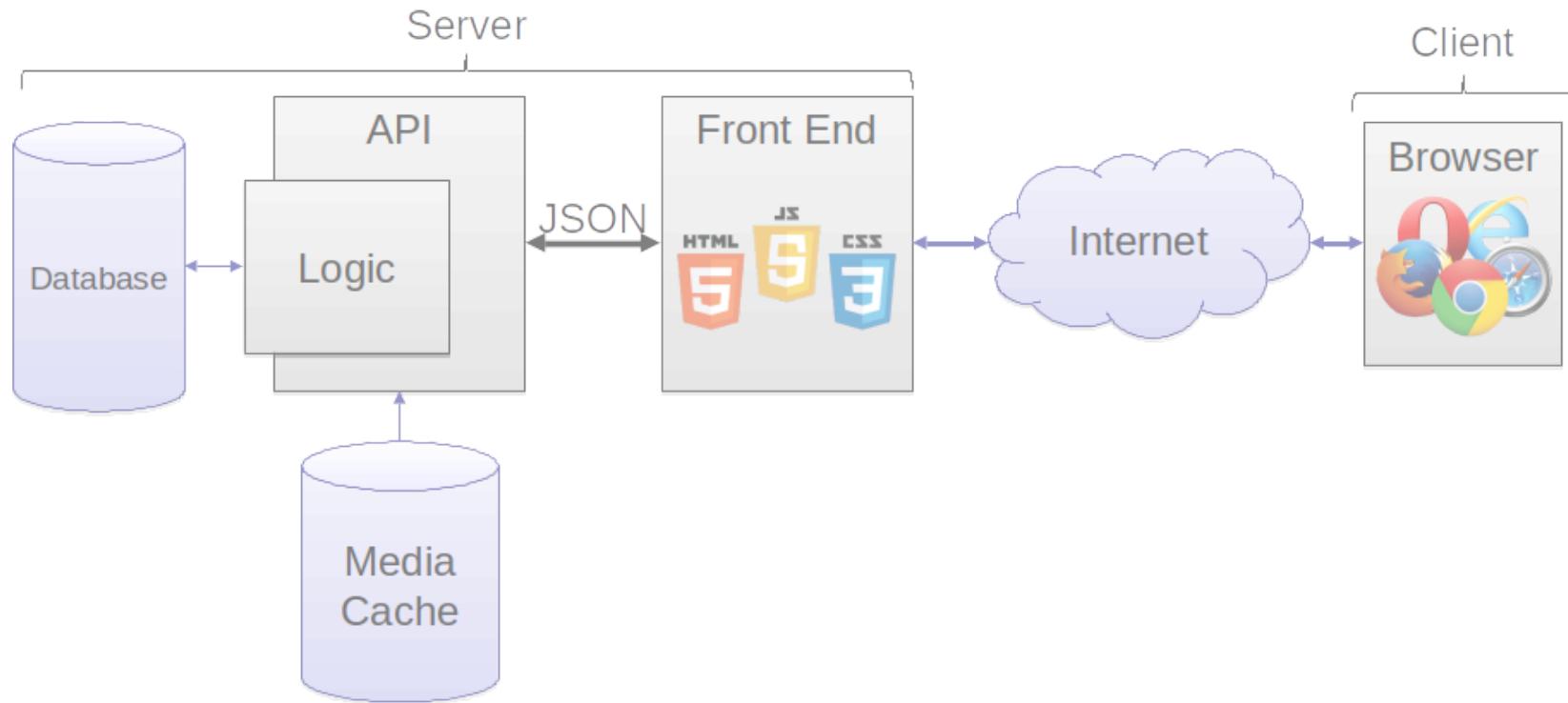
- Évolutions du Web => Web 2.0
 - Utilisateur proactif (wikipedia, blogs, etc.)
 - Interfaces riches, intégration d'applications
- Moyens techniques
 - Langage de scripts
 - côté serveur (PHP, ASP, C#...)
 - côté client (Javascript, flash...)
- Services Web (HTML => XML,JSON)
 - Échange de données entre applications

Ingénierie Web

- Availability
- Performance
- Reliability
- Scalability
- Manageability
- Cost



Element au coeur d'une application Web



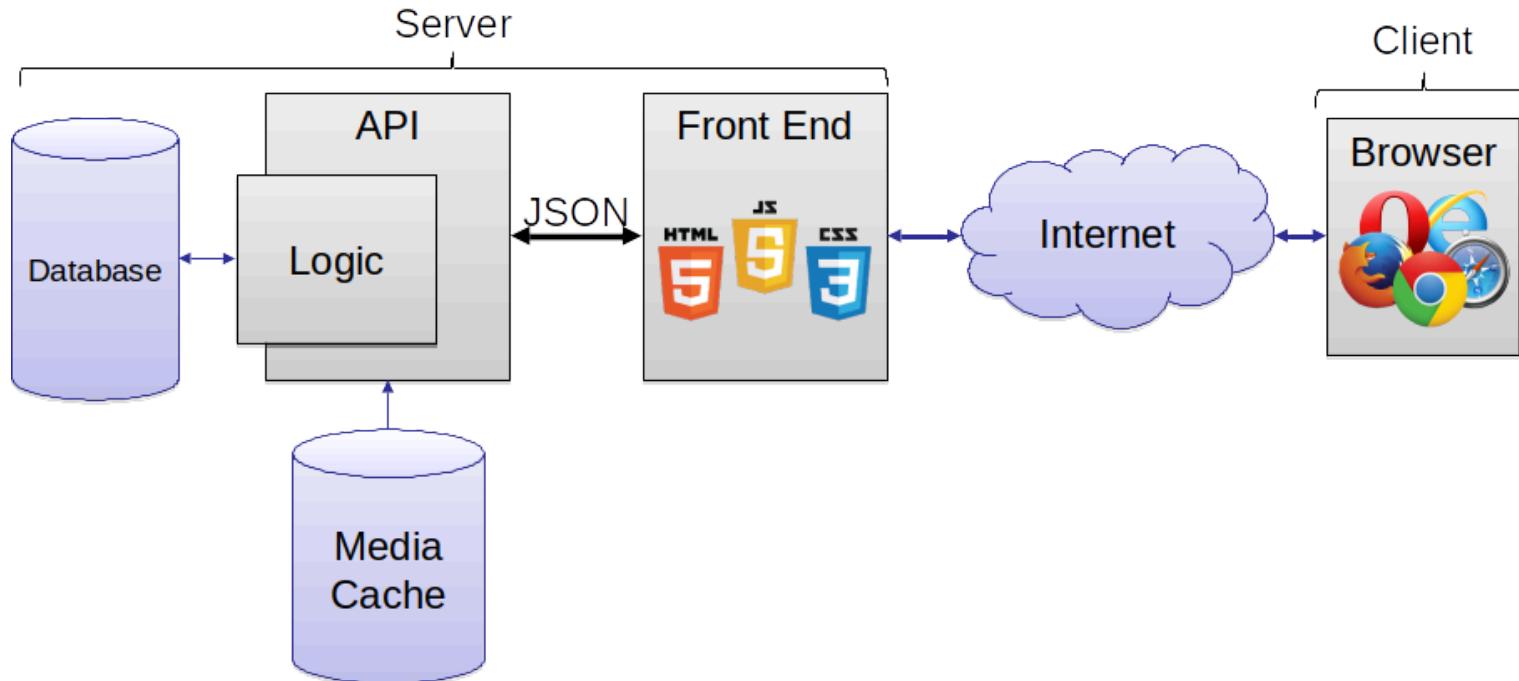
Use of Frameworks?

What is a Framework?

- Designed to reduce overhead in web development
- Types of Framework Architectures
 - Model-View-Controller (MVC)
 - **Push vs Pull** Based
 - Most MVC Frameworks user push-based architecture “action based” (Django, Ruby on Rails, Symfony)
 - Pull-based or “component based” (Vue, Angular2, React)
 - Three Tier Organization
 - Client (Browser running HTML/Javascript/CSS)
 - Application (Running the Business Logic) Database (Data Storage)

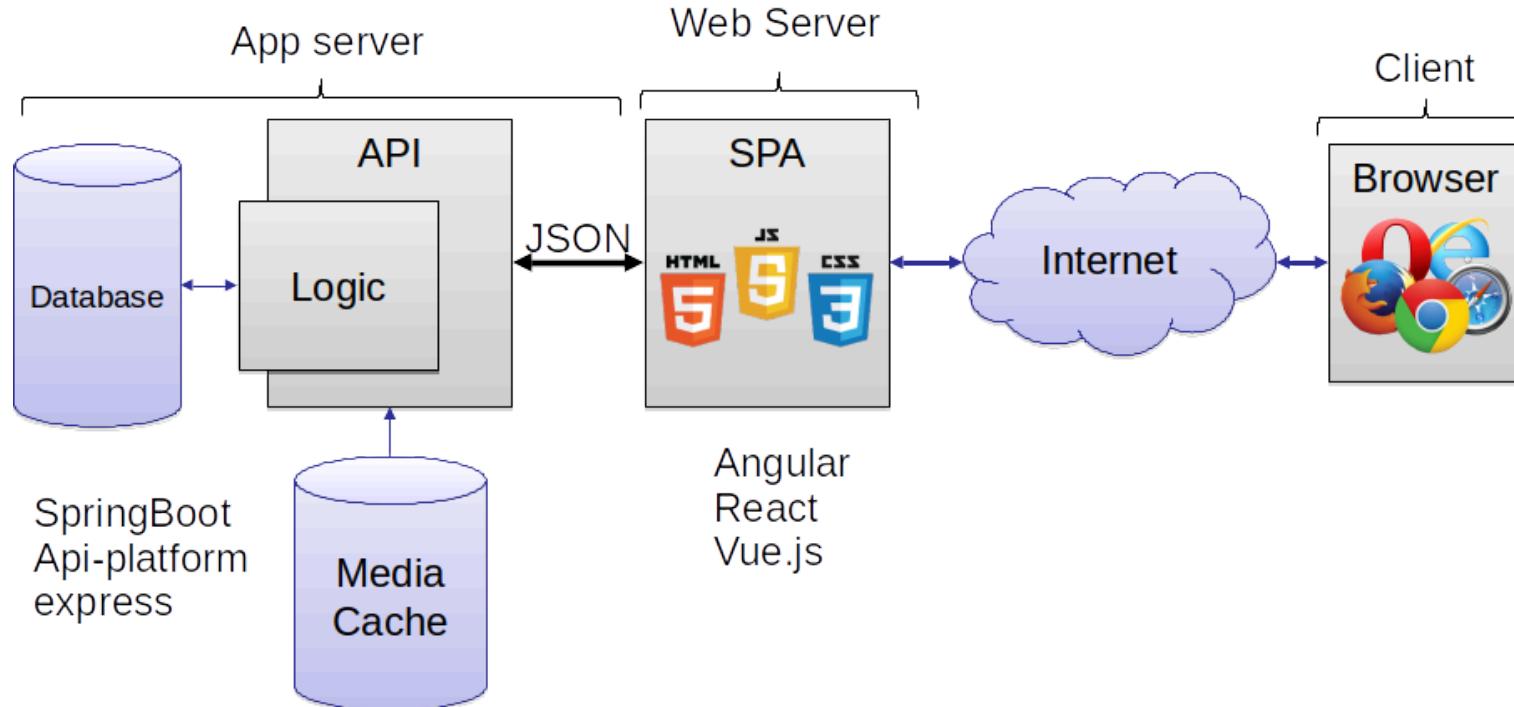
Types of Frameworks

- Server Side: Django, symfony, Ruby on Rails



Types of Frameworks and Single Page Application

- Server Side: Spring Boot, Express, api-platform
- Client Side: Angular, React, Vue



Frontend development

Front End Runtime Languages

- HTML/CSS
- Javascript

Javascript/HTML/CSS is the only real option for front-end native languages and is basically the standard. But there are many variations on JavaScript that are used.



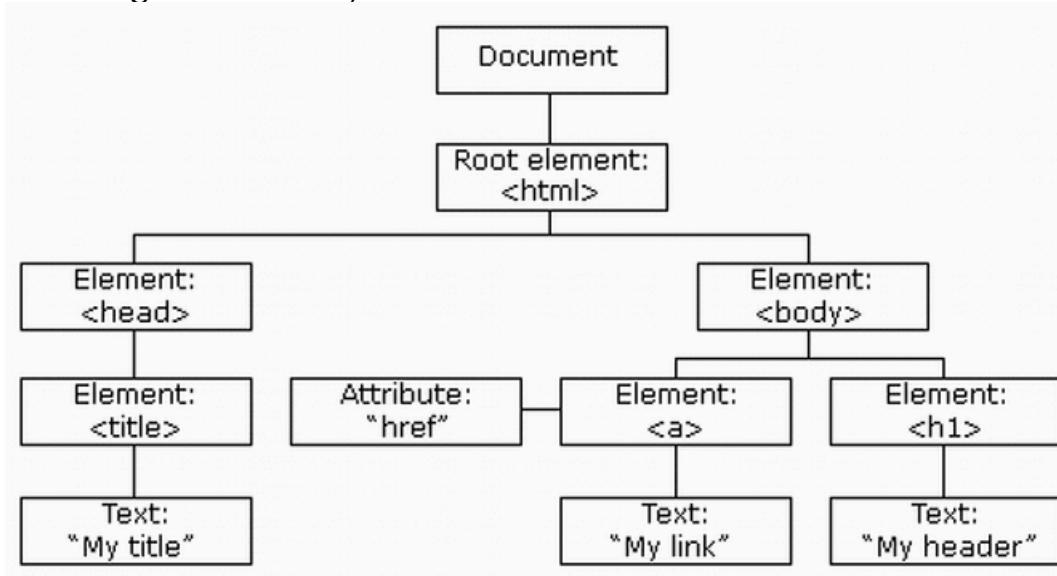
Emerging solutions

WebAssembly or wasm is a new portable, size- and load-time-efficient format suitable for compilation to the web.

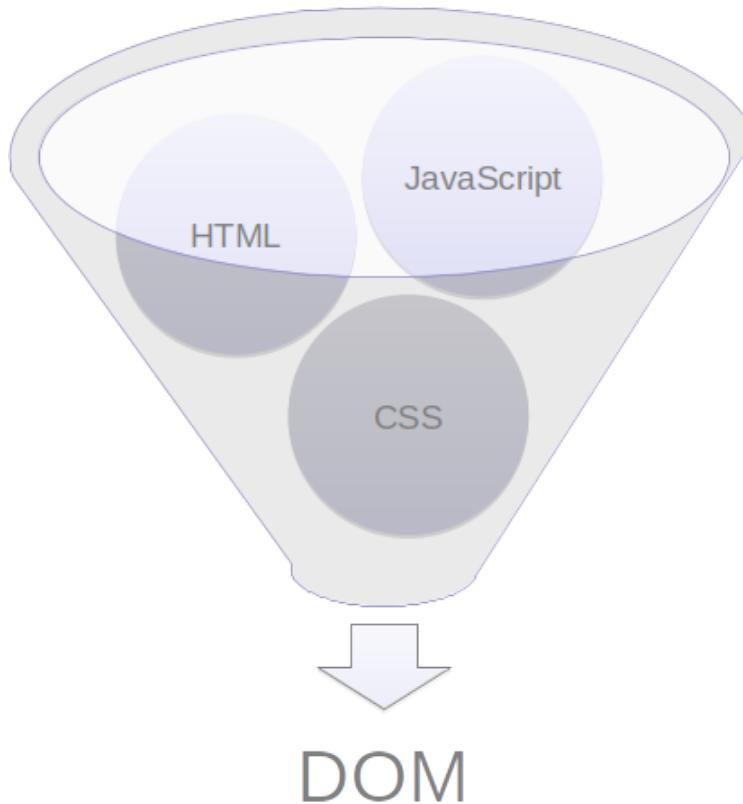
WebAssembly is currently being designed as an open standard by a W3C Community Group that includes representatives from all major browsers.

Runtime platform

- DOM (Document Object Model)
- Document Object Model makes every addressable item in a web application an Object that can be manipulated for color, transparency, position, sound and behaviors.
 - Every HTML Tag is a DOM object



DOM (Document Object Model)



How to create Web Applications

