

# INTRODUCTION TO LATEST TRENDS IN WEB APPLICATION ARCHITECTURES

Presented by: [Solmon R](#)

Date of Presentation: August 21st, 2020

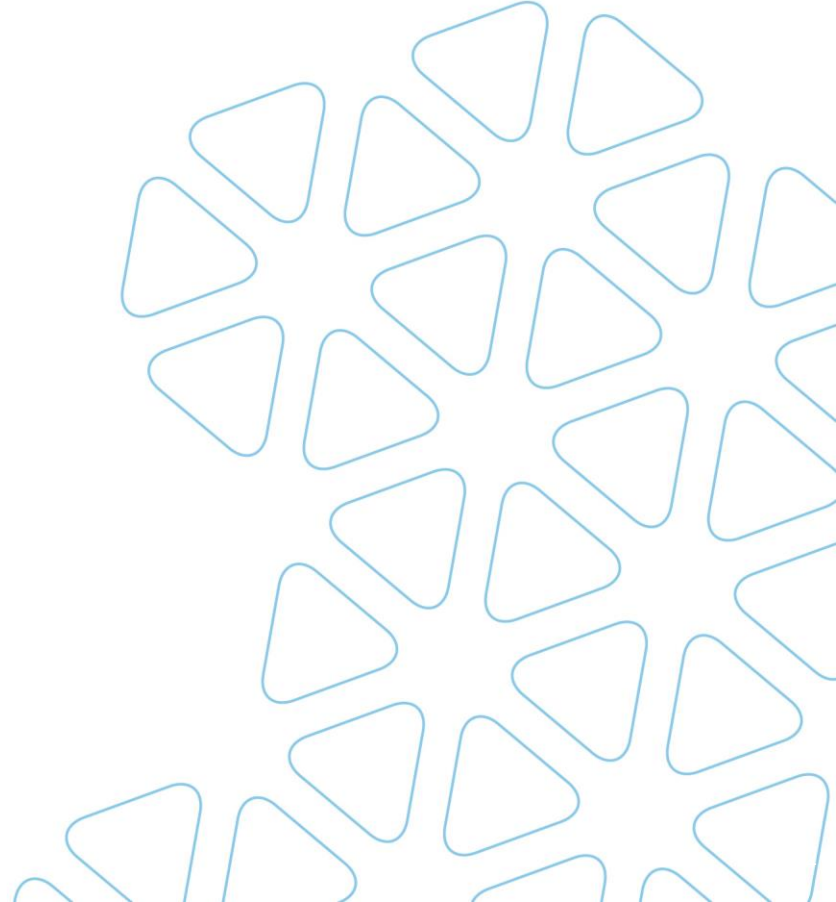




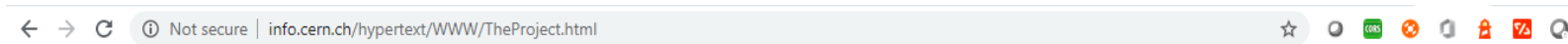
**TIM BERNERS-LEE CREATED THE  
FIRST WEB BROWSER AND WORLD  
WIDE WEB. WIKIPEDIA**

The first web page went live on August 6, 1991. It was dedicated to information on the World Wide Web project and was made by Tim Berners-Lee.

It ran on a NeXT computer at the European Organization for Nuclear Research, CERN



# First Web Page



## World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [Mailing lists](#), [Policy](#), November's [W3 news](#), [Frequently Asked Questions](#).

### [What's out there?](#)

Pointers to the world's online information, [subjects](#), [W3 servers](#), etc.

### [Help](#)

on the browser you are using

### [Software Products](#)

A list of W3 project components and their current state. (e.g. [Line Mode](#), [X11 Viola](#), [NeXTStep](#), [Servers](#), [Tools](#), [Mail robot](#), [Library](#).)

### [Technical](#)

Details of protocols, formats, program internals etc

### [Bibliography](#)

Paper documentation on W3 and references.

### [People](#)

A list of some people involved in the project.

### [History](#)

A summary of the history of the project.

### [How can I help?](#)

If you would like to support the web..

### [Getting code](#)

Getting the code by [anonymous FTP](#), etc.

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**Hearts in Atlantis**  
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**Hardcover** - 523 pages (September 14, 1999)  
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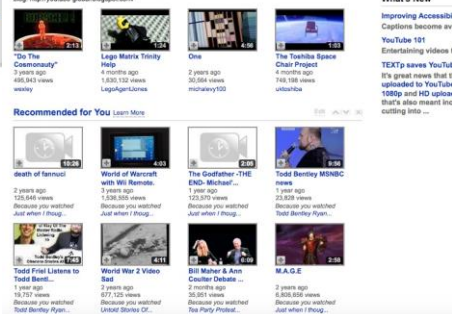
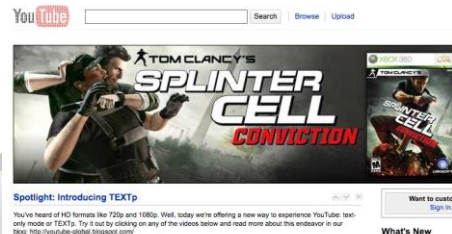
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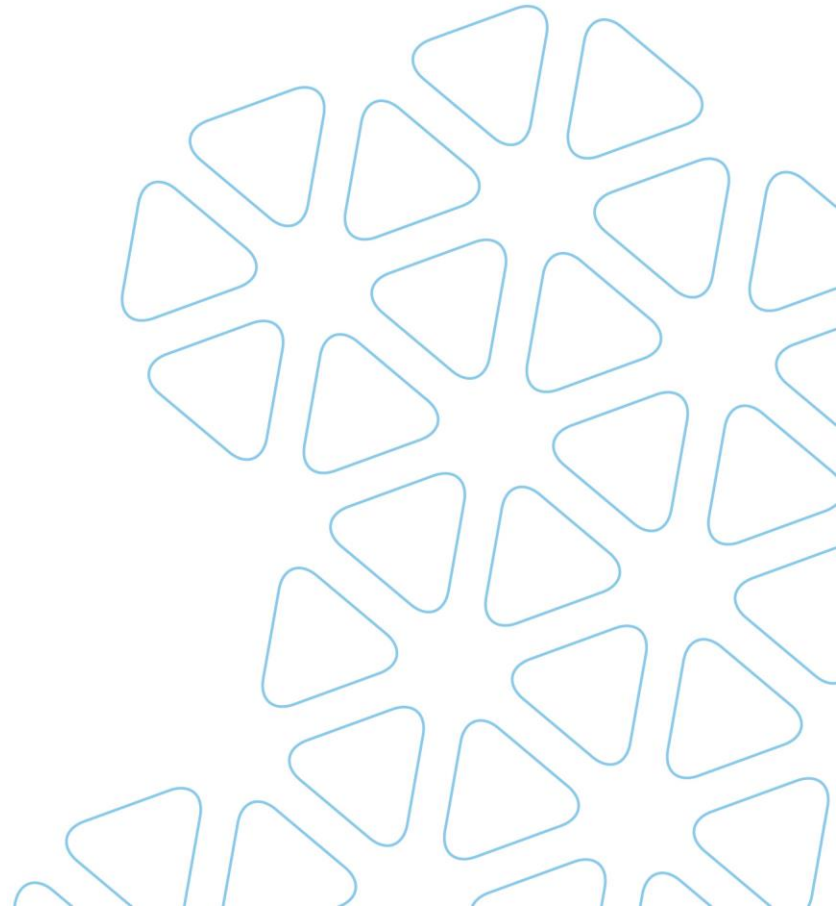


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# WEBGL

## Demo

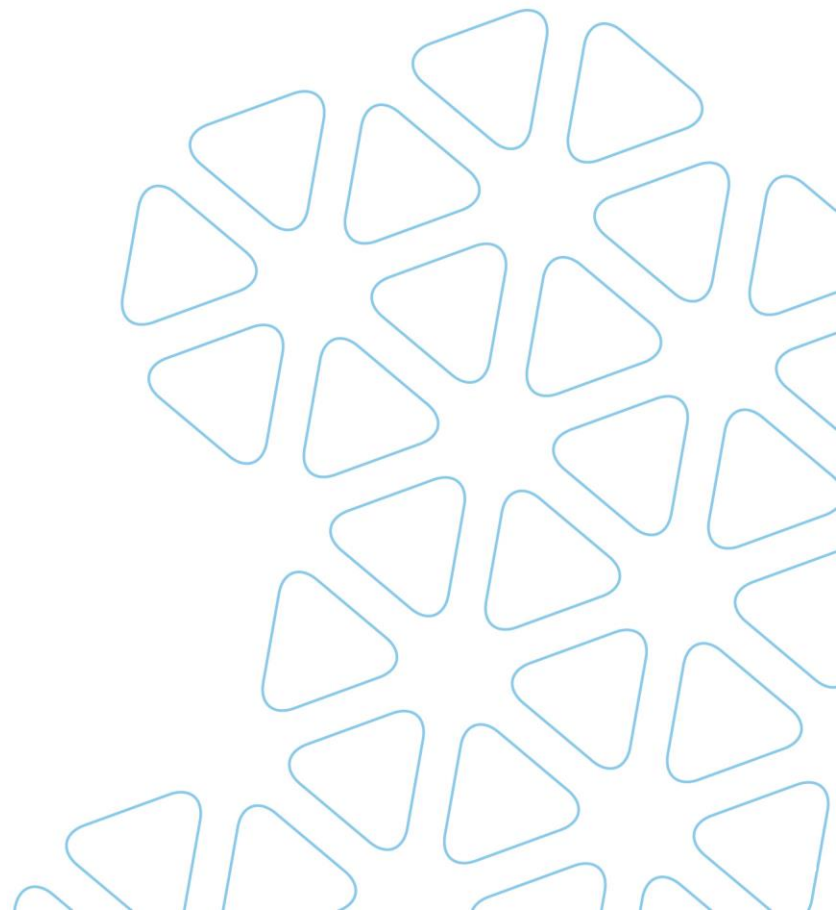
source: <http://madebyevan.com/webgl-water/>



# WEBGL2, UNITY & WEB ASSEMBLY

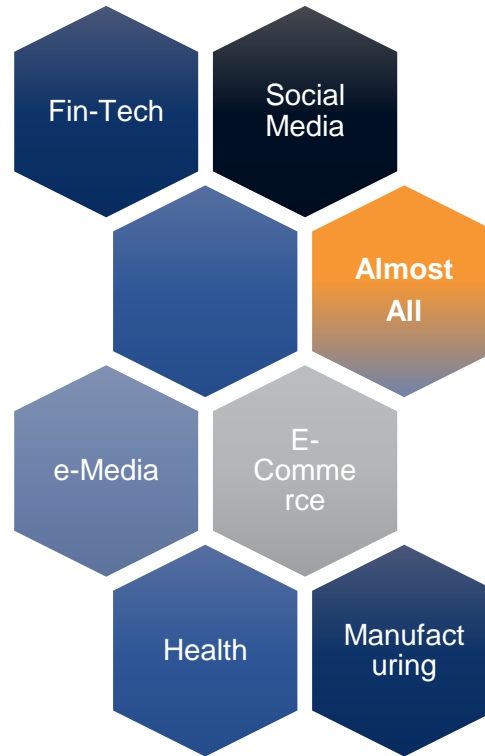
Demo

source: <https://beta.unity3d.com/jonas/AngryBots/>





# Landscape

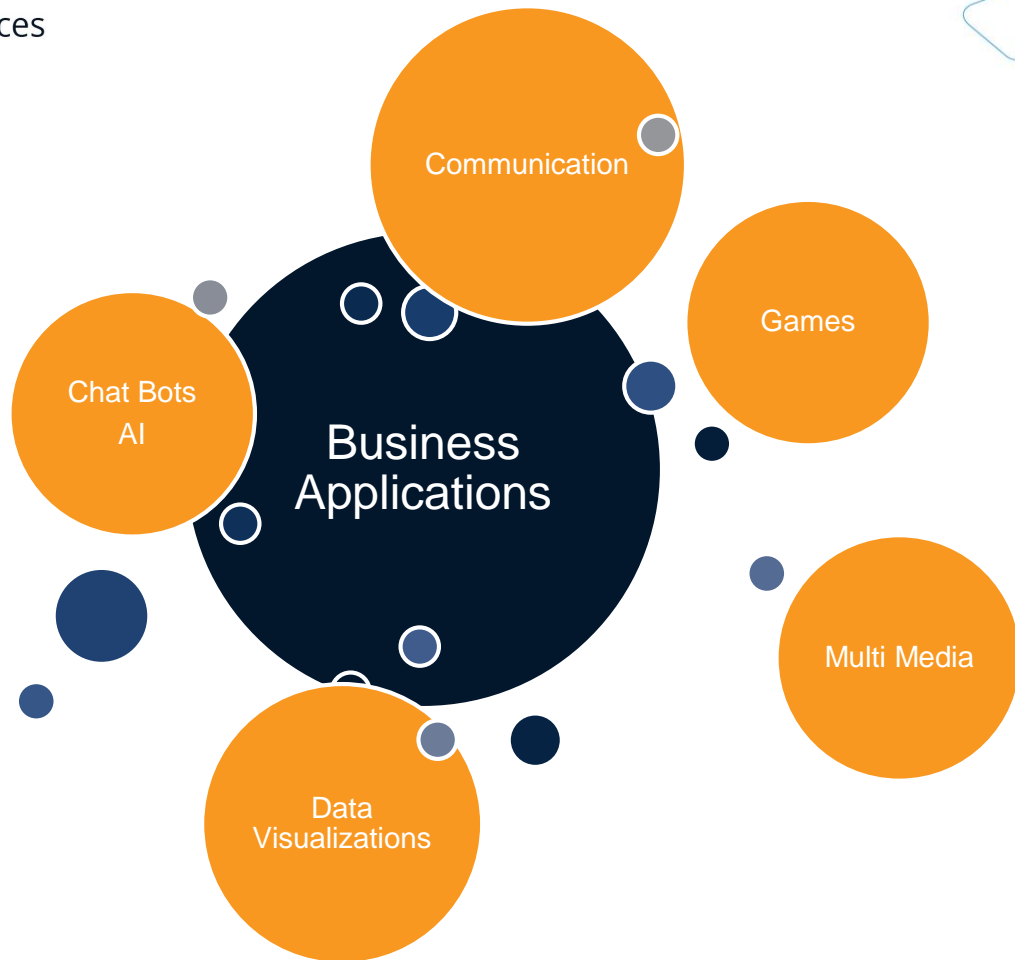




# Landscape

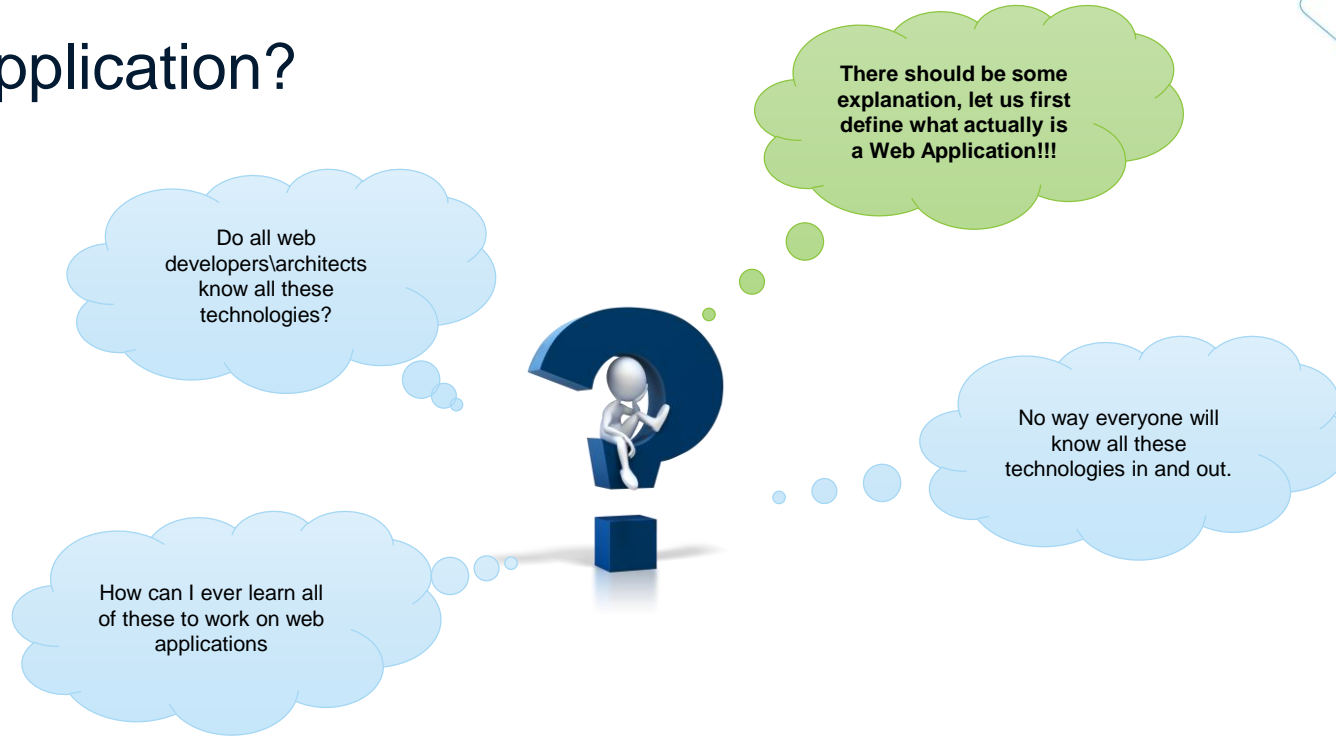


# Landscape



# Web Application?

What!!





# Definition

## Simplified – *Wikipedia (reference)*

A **web application** (or **web app**) is an [application software](#) that runs on a [web server](#), unlike computer-based software programs that are stored locally on the *Operating System* (OS) of the device. Web applications are accessed by the user through a web browser with an active internet connection. These applications are programmed using a [client–server](#) modeled structure—the user ("*client*") is provided *services* through an *off-site server* that is hosted by a third-party. Examples of commonly-used, web applications, include: [web-mail](#), [online retail sales](#), [online banking](#), and [online auctions](#).

## Front End



Browsers



Mobiles  
Tablets



TVS  
Wearables  
Smart Devices



**Web Server**

{ Internet }

## Back End

AI Engines  
ML Models  
Chat Bots



RDBMS  
NO-SQL Stores  
File Stores  
Mainframes



Connectors  
Streams  
Monitors....







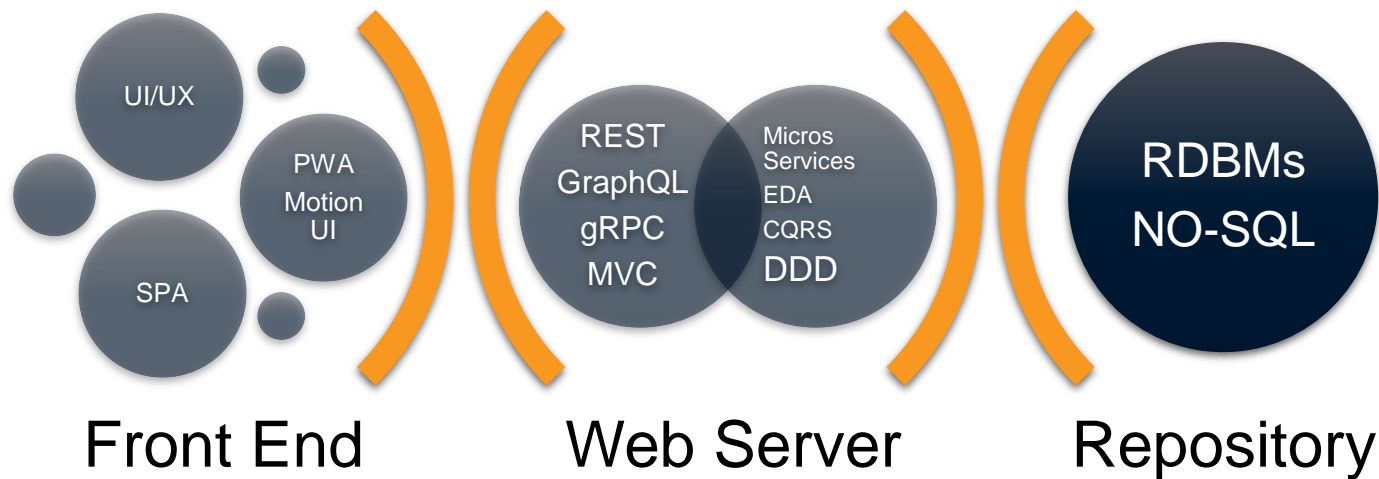
# A Jack of all trades

## Peek into Architecting/Designing of Web Applications

- The ideal Web application architect must in some sense be a 'jack of all trades. People who design Web applications must understand not only HTTP and HTML, but the other underlying Internet protocols as well. They must be familiar with JavaScript, XML, relational databases, graphic design and multimedia. They must be well versed in application server technology and have a strong background in information architecture.
- A knowledge of the core service that you are enabling it through web application, like AI, ML, Search Engines, ... and etc ... etc ...

# Most Used Pattern of Web Application

A typical full stack



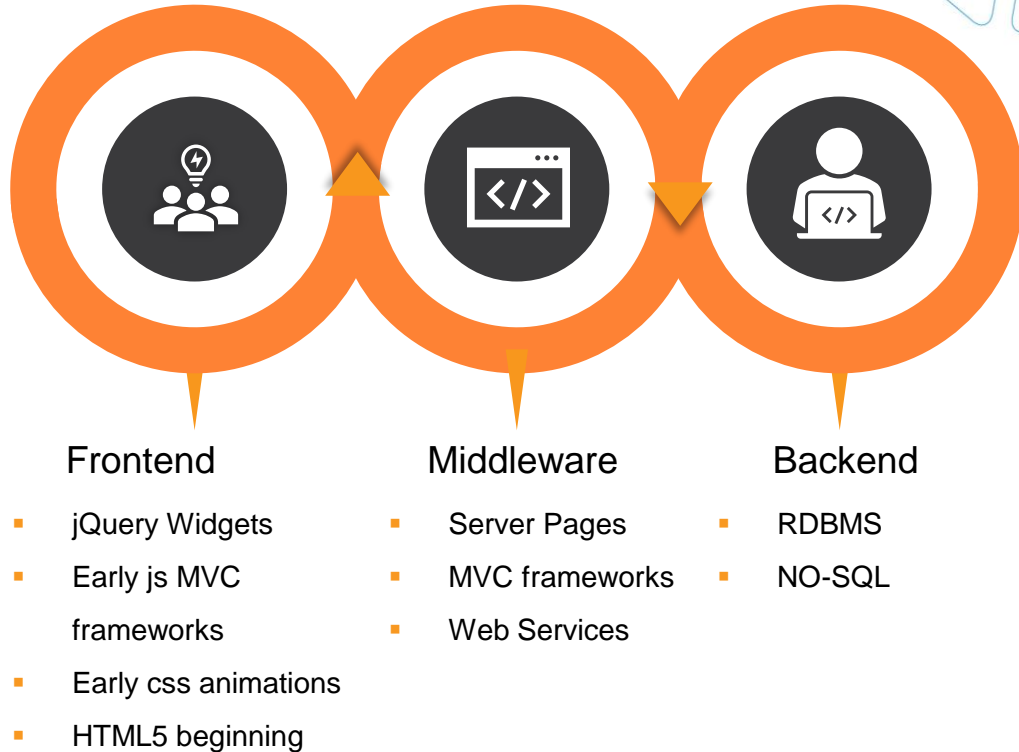


# Key Design Attributes

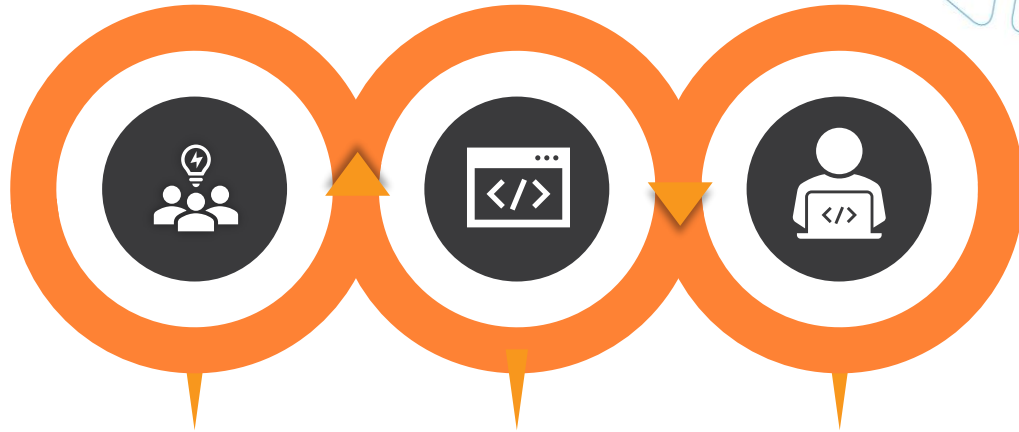
## Principles for creating a modern Web Application

- Usability
- Security
- Performance
- Scalability
- Flexibility
- Maintainability

# Web Architecture Trends – Recent Past, Past



# Web Architecture Trends – Recent Past, Past



## Frontend

- Angular1.x
- Reactjs
- Backbone
- Knockout
- jQuery
- Bootstrap

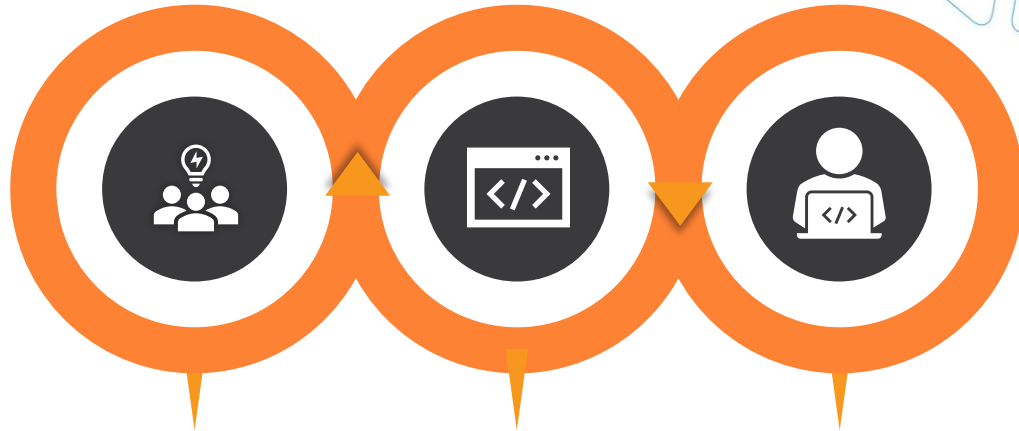
## Middleware

- Jsp
- struts
- ASP.net
- Php
- ColdFusion
- Django
- Rails

## Backend

- RDBMS
- NO-SQL

# Blockers, areas for Improvements



## Frontend

- None\semi structured
- Performance
- User Experience

## Middleware

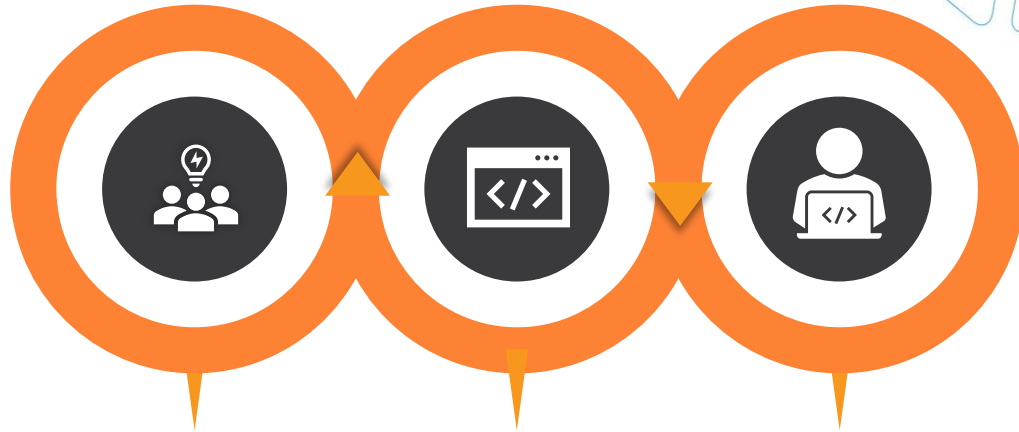
- Server Pages (Mixed bag)
- Monoliths
- Scalability
- Performance

## Backend

- RDBMS
- NO-SQL



# Web Architecture Trends – Recent Past, Current



## Frontend

- SPA
- PWA
- Responsive
- Mobile First

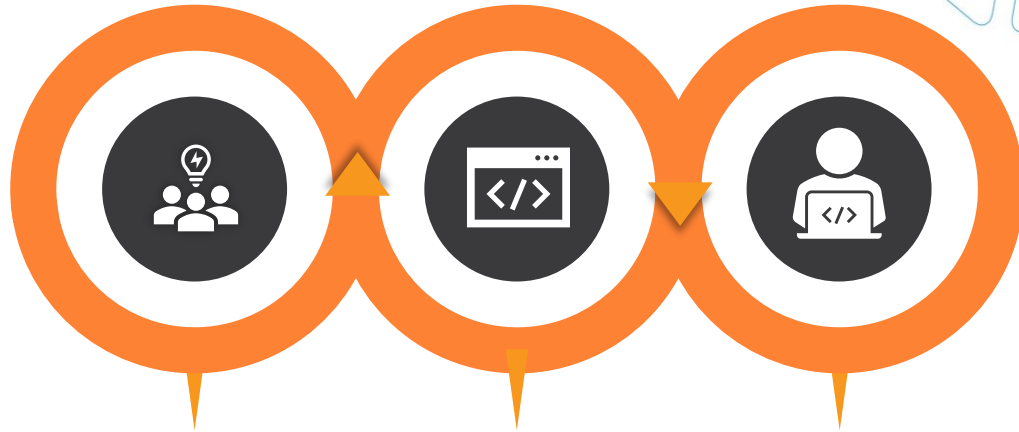
## Middleware

- Micro-Services
- EDA
- MVC
- REST
- GraphQL
- gRPC
- Serverless

## Backend

- RDBMS
- NO-SQL
- AI/ML
- Analytics
- BigData ...

# Web Architecture Trends – Recent Past, Current



## Frontend

- Angular
- React
- Vue
- Material

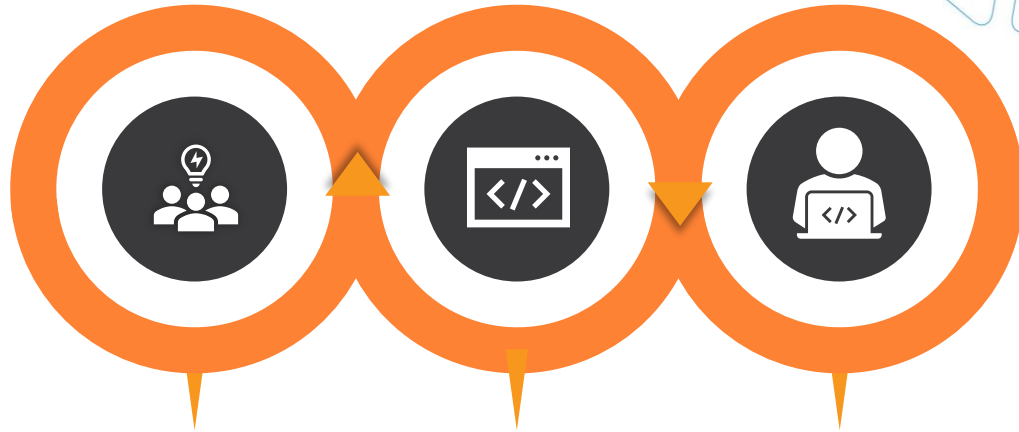
## Middleware

- Express.js
- ASP.Net Core
- Rails
- Spring MVC  
(Boot)
- Cloud Native

## Backend

- RDBMS
- NO-SQL
- AI/ML
- Analytics
- Big Data ...

# Web Architecture Trends – Recent Past, Current



## Frontend

- Bulky Applications
- Performance

## Middleware

- Do We really need Micro Services?
- Troubleshooting
- Complex DevOps

## Backend

# Current and Emerging Trends

01

- Micro Front Ends
- Motion UI
- Http3
- Web Assembly
- Artificial Intelligence
- ChatBots

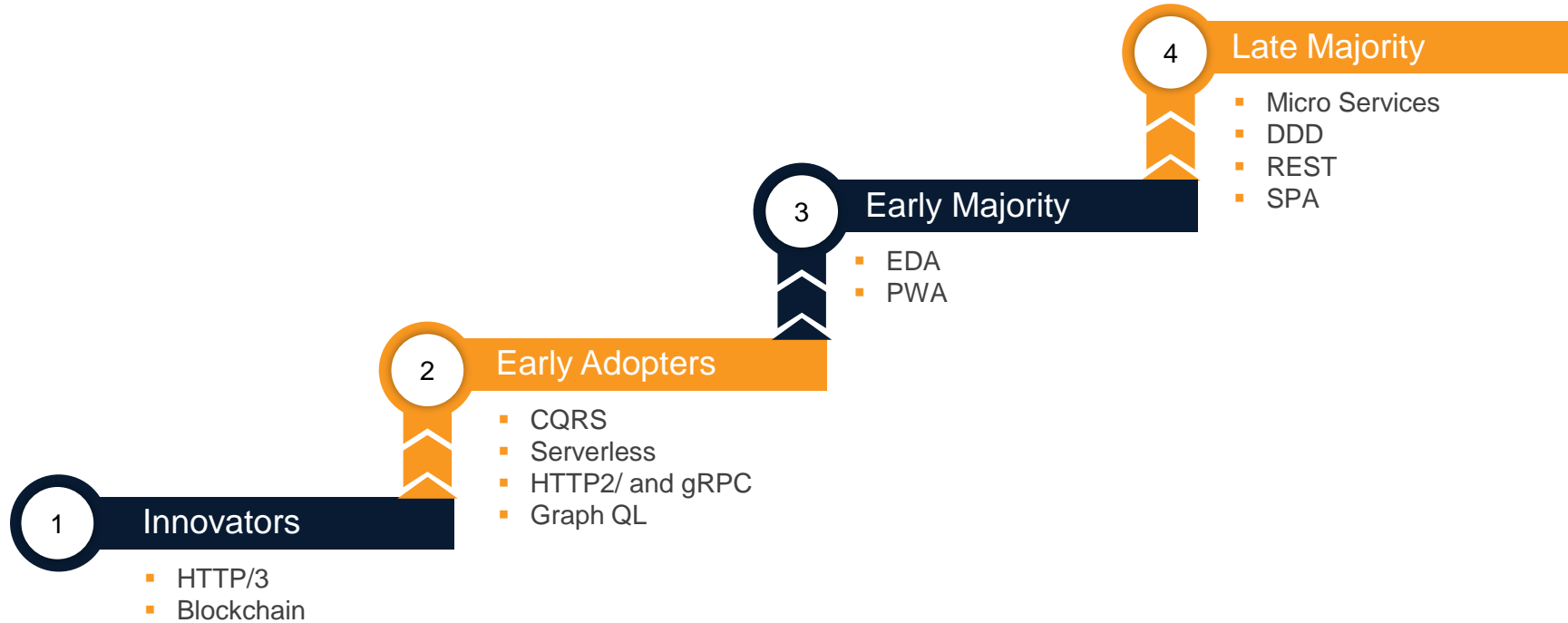
02

- Async API
- AI/ML
- Less Code\No Code
- GraphQL, gRPC

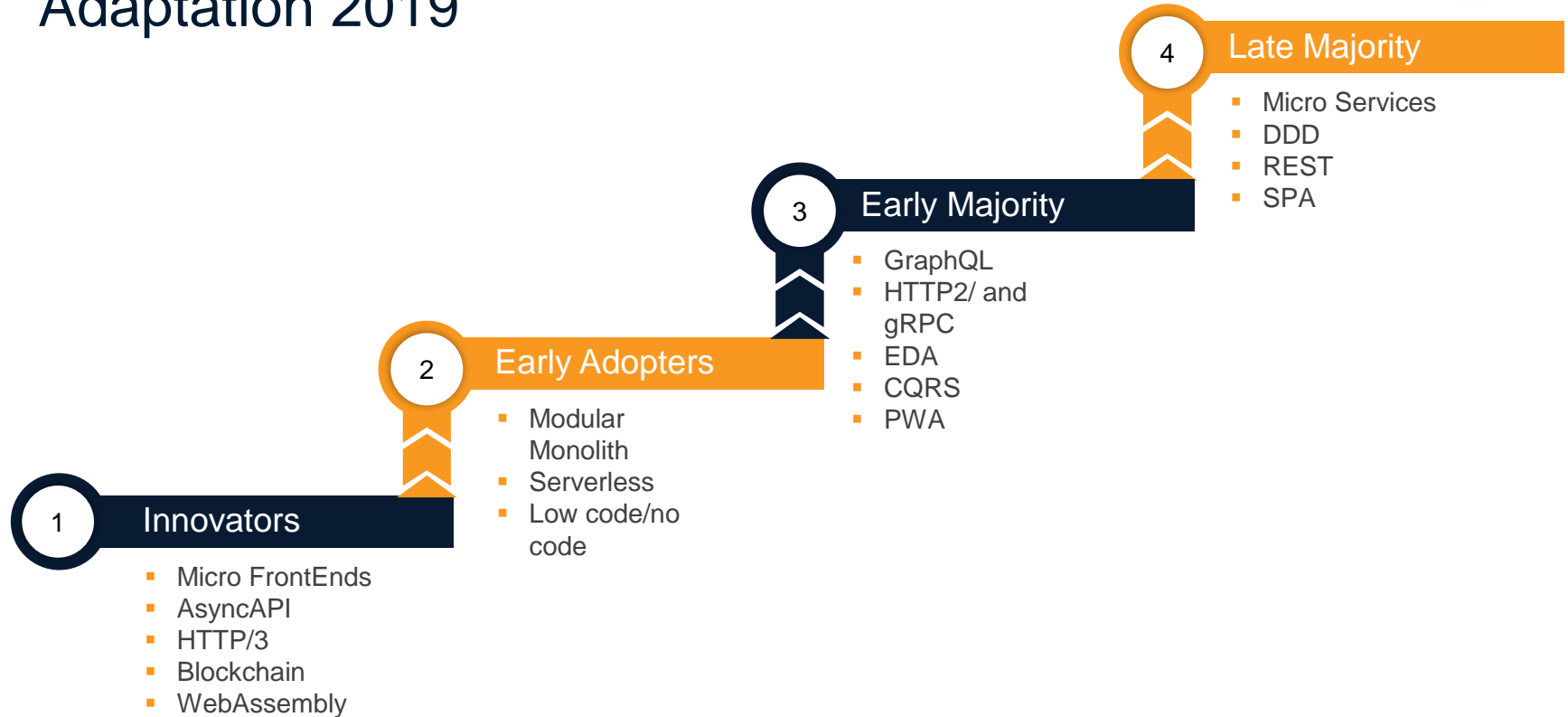
03

- Data Mesh
- AI/ML
- Big Data

# Adaptation 2019

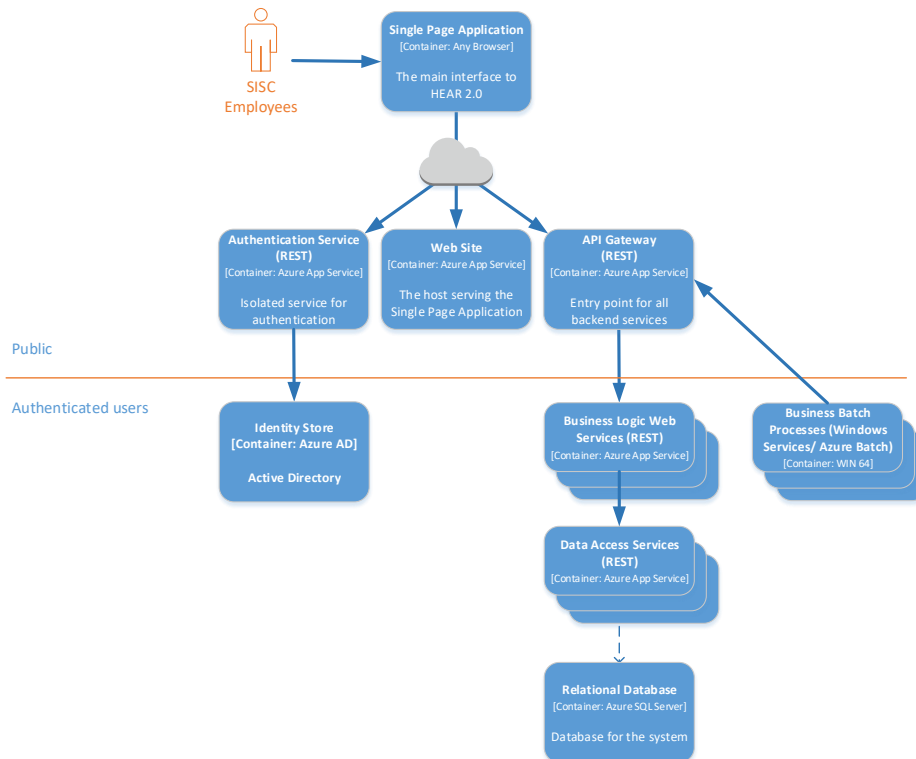


# Adaptation 2019



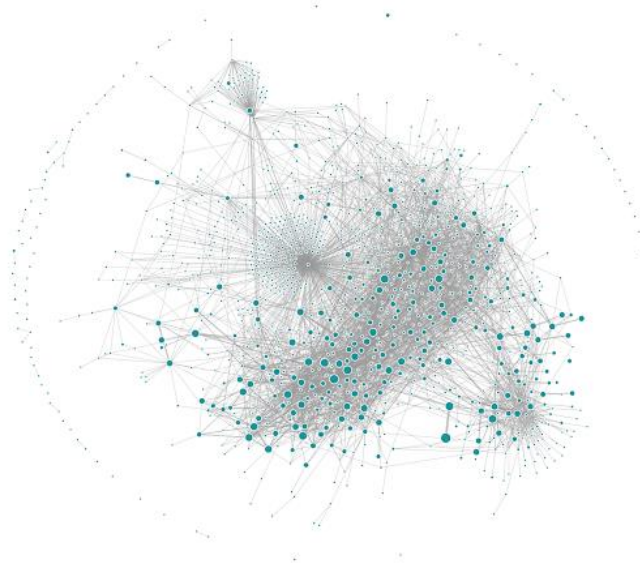


# Reference Architecture



# Reference Architecture

## Uber – Micro services



source: <https://eng.uber.com/microservice-architecture/>

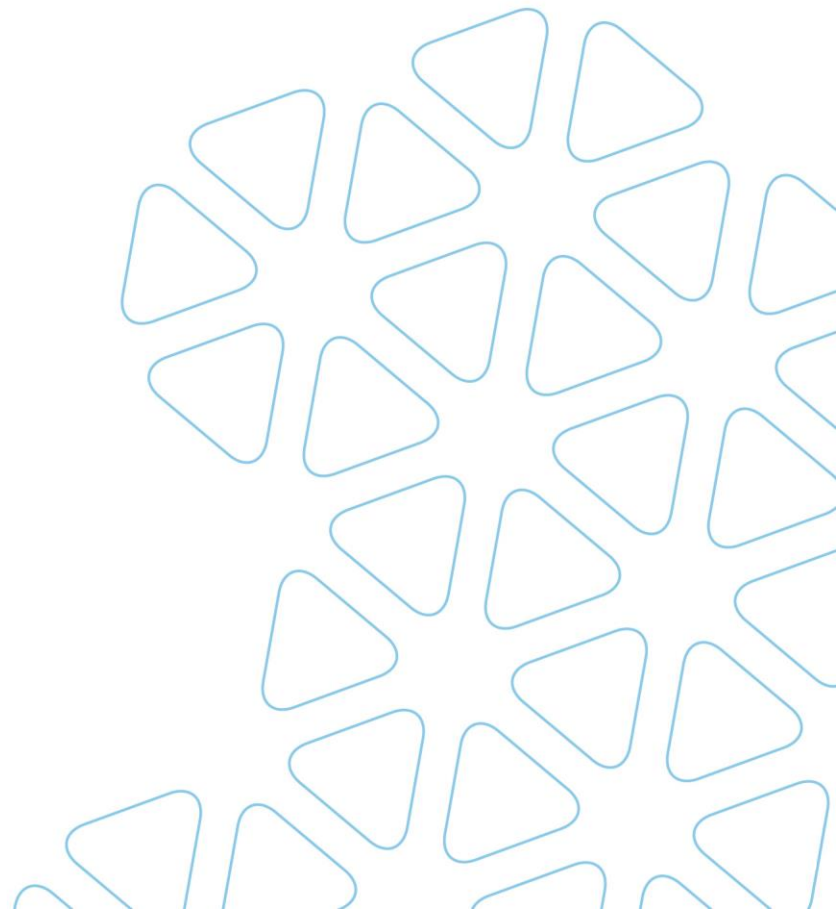
# Reference Architecture

## Netflix – Micro services



source: <https://aws.amazon.com/solutions/case-studies/netflix-case-study/>

# Q & A



# THANK YOU

