Motivations

Define an evaluation methodology for Web Navigation quality taking into account:
- Users’ characteristics: devices, profiles, browser, etc.
- Network performance: protocols (HTTP/2, QUIC), topology, Quality of Service, etc.
- Web servers design: complexity of web pages structure and compliance to implementation guidelines.

QUIC: Quick UDP Internet Connection

- New transport protocol promoted by Google,
- Built-in handshake mechanism,
- Built into user space over UDP.

Existing metrics

PLT: Page Load Time defined at W3C
Performance Timeline: Navigation, Resource and User Timing

- SpeedIndex: Monitor visual progress of visible page loading
- PageSpeed Insights: Web page ranking upon structure
- Frame Timing API: Frame timing data from browser’s event loop

Approach

- Link existing application level metrics to packet level measurements,
- Use active probing methods to characterize network’s topology and performance,
- Use machine learning techniques to infer QoE values from the above constructed metrics,
- Online identification and troubleshooting of QoE degradation.

Antoine SAVERIMOUTOU¹, Sandrine VATON¹, Bertrand MATHIEU²

¹IMT ATLANTIQUE Bretagne, France. (antoine.saverimoutou, sandrine.vaton)@imt-atlantique.fr
²Orange Labs Networks Lannion, France. bertrand2.mathieu@orange.com

Ref: https://www.w3.org/TR/navigation-timing-2/