***USABILITY ENGINEERING - JAKOB NIELSEN , 1993***

The basic advice regarding **response times** has been about the same for thirty years [Miller 1968; Card et al. 1991]:

**0.1 second** is about the limit for having the user feel that the system is **reacting instantaneously**, meaning that no special feedback is necessary except to display the result.

**1.0 second** is about the limit for the user's **flow of thought** to stay **uninterrupted**, even though the user will notice the delay. Normally, no special feedback is necessary during delays of more than 0.1 but less than 1.0 second, but the user does lose the feeling of operating directly on the data.

**10 seconds** is about the limit for keeping the user's **attention** **focused** on the dialogue. **For longer delays**, users will want to **perform other tasks while waiting** for the computer to finish, so they should be given feedback indicating when the computer expects to be done. Feedback during the delay is especially important if the response time is likely to be highly variable, since users will then not know what to expect.

***ACCEPTABLE WAIT TIMES***

<http://www.humanfactors.com/newsletters/response_times.asp>

One of the best recent series of studies was conducted by Anna Bouch (University College - London), Allan Kuchinsky and Nina Bhatti (Hewlett Packard Labs - Palo Alto). They attempted to identify how long users would wait for pages to load.

Users were presented with Web pages that had predetermined delays ranging from 2 to 73 seconds. While performing the task, users rated the latency (delay) for each page they accessed as high, average or poor. Latency was defined as the delay between a request for a Web page, and totally receiving that page.

They reported the following ratings

High (good): Up to 5 seconds

Average: From 6 to 10 seconds

Low (poor): Over 10 seconds

In a second study, when users experienced a page loading delay that was unacceptable, they pressed a button labeled "Increase Quality." The overall average time before pressing the "Increase Quality" button was 8.6 seconds.