DWTMIM 14
We Have Time Requirements

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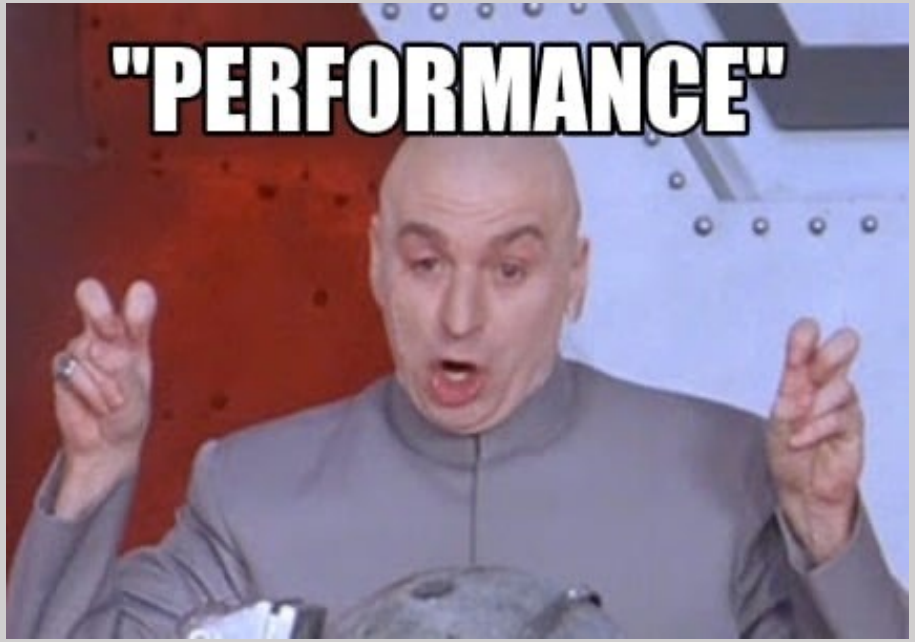
Responsiveness (what is it?)

- NOT performance

- Responsiveness is measured in terms of compliance with human time requirements and user satisfaction.



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What do responsive systems Do?

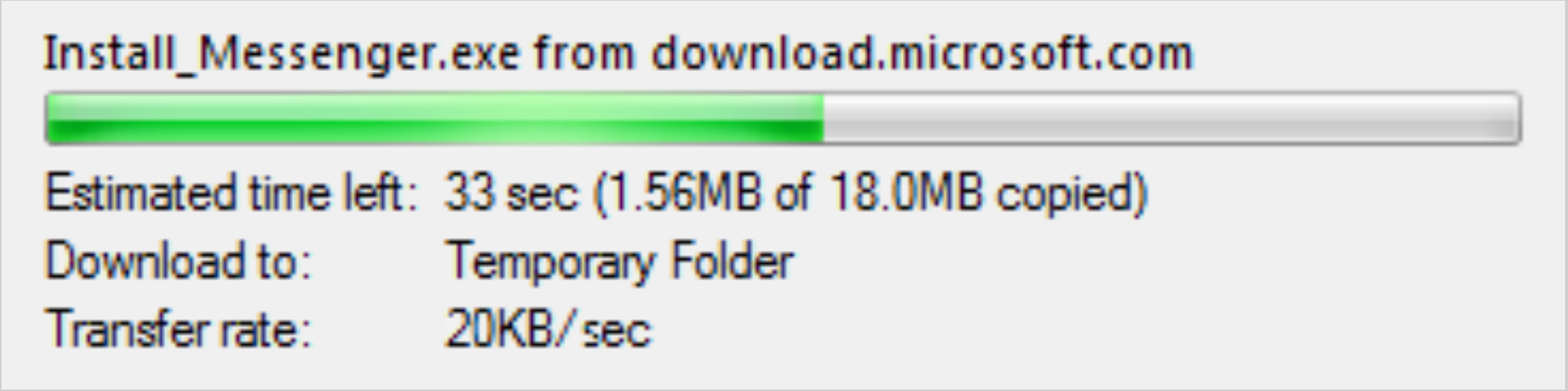
- Let you know immediately that your input was received.

- Can you tell when the user is clicking?

http://joseecarrier.ca/en/portfolio/button-click-effect/

What do responsive systems Do? (Part 2)

- Provide some indication of how long operations will take.

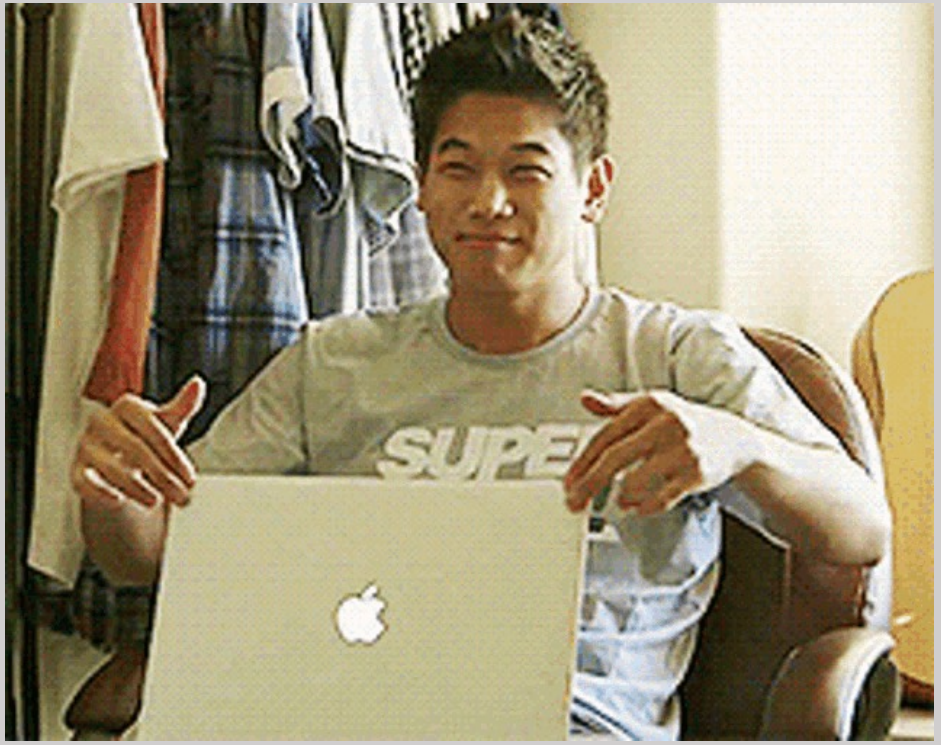


- "Only 33 seconds left? Oh, golly I'm so excited!"

https://learn.microsoft.com/en-us/windows/win32/uxguide/progress-bars

What do responsive systems Do? (Part 3)

- Free you to do other things while waiting.
  - Imagine If every time you pressed tried to open a program, Your computer froze the mouse until the program opened.
  - Alternatively, imagine if you couldn't browse the internet while downloading a game on steam.



https://tenor.com/view/i-did-not-see-it-i-do-not-like-it-rip-pc-throw-the-laptop-close-the-laptop-gif-15274415

What do responsive systems Do? (Part 4)

- Manage queued events intelligently.
- Perform housekeeping and low-priority tasks in the background.
- Anticipate your most common requests.

ironistic.com/insights/responsible-developers-and-responsive-design/

What NOT to do

- Delayed feedback for button presses, scrollbar movement, or object manipulations.
- Time-consuming operations that block other activity and cannot be aborted.
- Providing no clue how long lengthy operations will take.
- Jerky, hard-to-follow animations.
- Ignoring user input while performing “housekeeping” tasks users did not request.

Big Oof

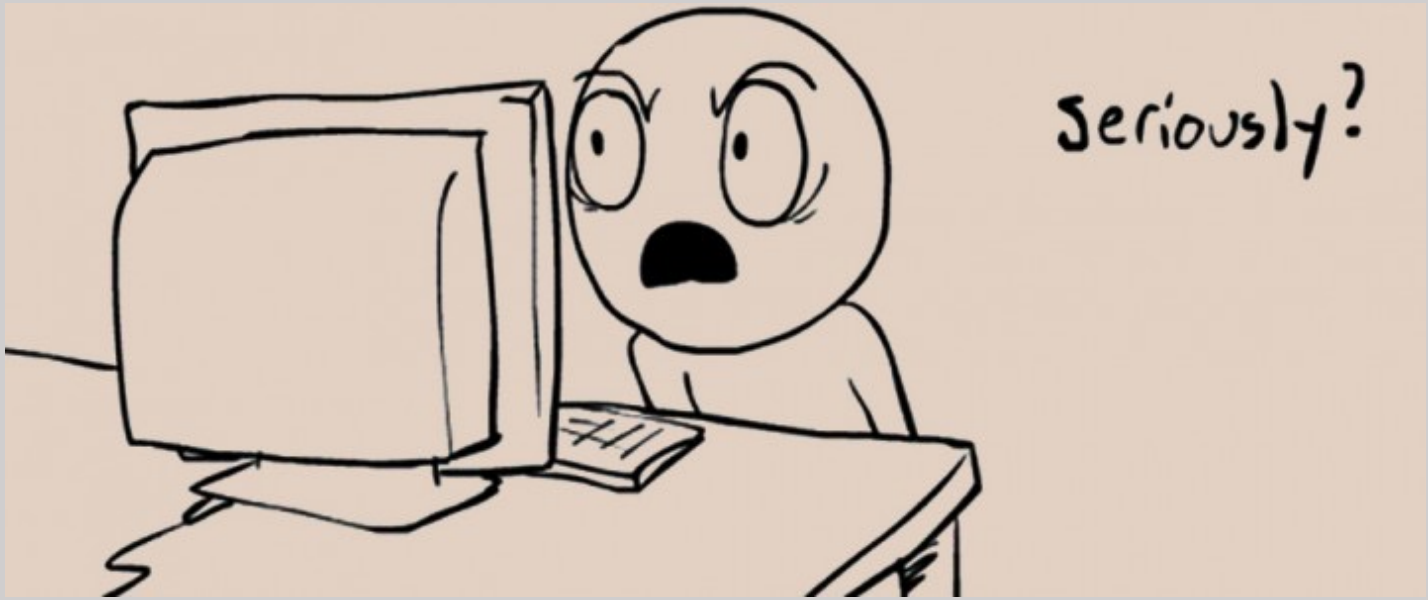
https://learning.oreilly.com/library/view/designing-with-the/9780124079144/xhtml/CHP014.html#CESECTITLE0025

Time to Talk Time

- Duration of unbroken attention to a single task (“unit task”): 6–30 seconds
  - Unit task- The smallest unit of sub-tasks (I.e. editing documents, entering checkbook transactions, designing electronic circuits, and maneuvering fighter jet planes in dogfights)
- Speed of flinch reflex (involuntary motor response to possible danger): 80 milliseconds (0.08 second)
- Threshold for perceptual “locking” of events and sounds: 100 milliseconds (0.1 second)
  - Any longer and our brain notices the delay
- Maximum interval between events for perception that one event caused another event: 140 milliseconds (0.14 second)
  - A delay of action and response greater than this can cause a disconnect.

What does all that mean for us.

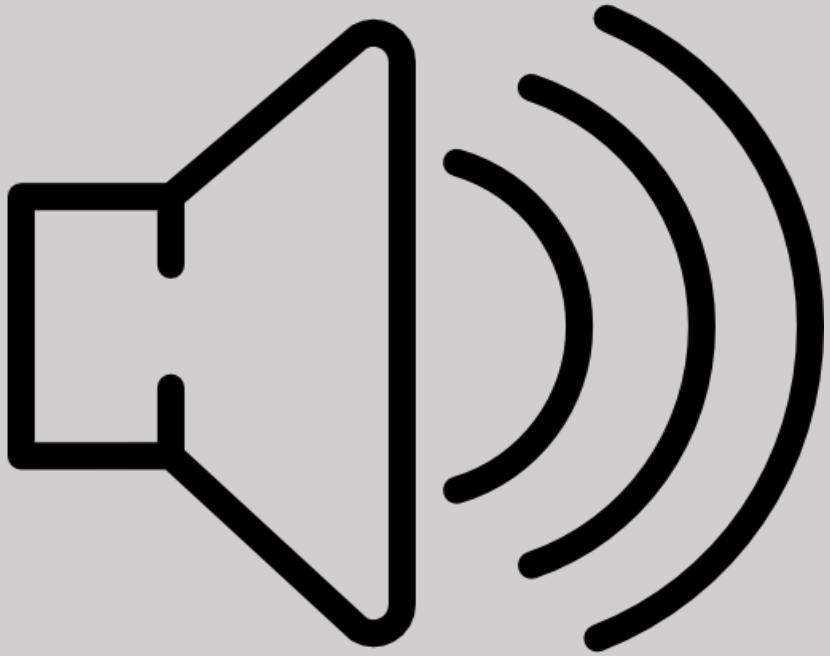
- For design purposes there are groups of durations around 10 milliseconds, 100 milliseconds, 1 second, 10 seconds, and 100 seconds. Above 100 seconds, we are beyond durations that most interaction designers care about.
  - So, we can focus of factors of 10 for pretty much all the design time requirements.



https://www.designmantic.com/blog/16-design-memes/

0.001 second (1 millisecond)

- Mostly, this time requirement is exclusively for sound. If something is using feedback sounds, It must have continuity within this time frame.
- Our sense of hearing is the most sensitive to pauses.



0.1 second (100 milliseconds)

- onscreen buttons have 0.1 second to show they've been clicked
  - If they take longer than this, the user's perception of cause and effect will be distorted and the user will probably try clicking again.
    - NOTE: They don't have to complete their function, only give feedback showing that they have been clicked.

- Any interactive system (like scrolling or moving tabs) should never be more than 0.1 second behind
    - If this can't be done, thenn the design should be changed to require less coordination.

- If an operation takes longer than this, it should display a small indicator that the system is working on it.

1 second

- Systems have about 1 second to either do what the user asked or indicate how long it will take.

- the approximate minimum time a user needs to respond intentionally to an unanticipated event.

    - So, when the system displays something, We can assume there is ATLEAST one second that we can use to work ahead.

10 seconds

- This is the approximate length of time that people usually break down their planning and execution of larger tasks into.
  - Systems should avoid making the user take much more than this to do simple unit tasks.
  - This is why most setup wizard pages only have about 10 second of work (ideally).

Designing to Meet Real-Time Human Interaction Deadlines

- Acknowledge user actions instantly, even if returning that the answer will take time; preserve users' perception of cause and effect.
- Let users know when the software is busy and when it isn't.
- Free users to do other things while waiting for a function to finish.
- Animate movement smoothly and clearly. No bouncy progress bars
- Allow users to abort (cancel) lengthy operations they don't want.
- Allow users to judge how much time lengthy operations will take.
- Do its best to let users set their own work pace.

https://makeameme.org/meme/good-design-b6rou0

How do we make our design more reponsive?

- Use busy indicators
- Use progress indicators

- Try to place heavy work that can cause delays in places that won't frustrate the user (between Unit-tasks).
  - Users tend to relax a little bit between unit tasks, so this is typically the best time for small delays because the user is not as focus on a specific goal.

- Display important information first
  - If you have something to show the user but the rest of the page isn't finished, show it anyways.
    - Search engines show results but continue searching

How do we make our design more responsive? (Part 2)

- Work ahead
  - If we have a good idea where a user is going next, we can start loading I before they get there.
- Process user input according to priority, not the order in which it was received.
  - If a user presses a button to start a process, they should be able to press *back* or *cancel* if they decide they dont want the process to continue
- Monitor time compliance; decrease the quality of work to keep up.
  - A good example of this is youtube video resolution

Thank You!