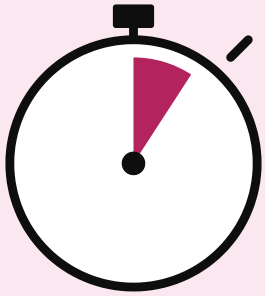
Concept

Doherty threshold

When a computer responds so quickly that neither it nor the person has to wait for the other, work moves much faster. A limit of about 400 ms is often cited.



In Spanish
Umbral de Doherty

Origin
Doherty and Thadhani (1982), IBM report; earlier, Miller (1968)

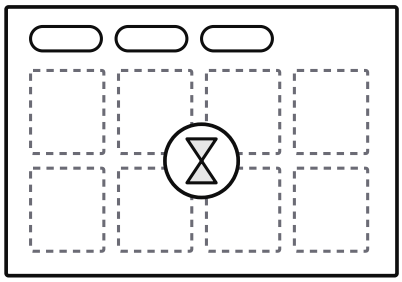
What problem it addresses

It challenged the idea that responding within a couple of seconds was enough. It reminds design that speed is part of the experience and that, if something takes time, it has to show it.

An example

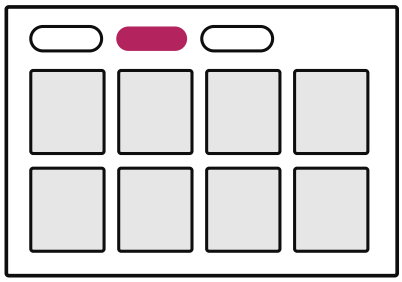
An illustrative example: an online store where you filter products by size and color.

Slow response



Each filter takes a few seconds to apply, with no signal at all. **You try fewer combinations.**

Immediate response



Results change almost as soon as you tap. **You try, adjust and move on.**

With fast responses you don't lose your train of thought. If something has to take time, showing progress makes the wait easier.

Why it happens

1

Every wait breaks the thread of what you were thinking.

2

Under one second, the conversation with the machine isn't interrupted.

3

Without breaks, you take more steps in the same time.

Applications in design

Use it like this

Respond to every action in under one second, even if only with a sign that something is happening.

Avoid

Leaving the person in front of a still screen, not knowing whether the system is working.

Don't fall for it

If something will take more than 10 seconds, show how much is left.

180 → 371



What the research says

Transactions per hour by a programmer with a 3-second response and with 0.3 seconds, according to IBM data (Doherty and Thadhani, 1982).

● ○ ○ **Single study.** It is a report by IBM itself, not a peer-reviewed study; the 400 ms figure is the one spread by Laws of UX (Yablonski, 2020). Nielsen (1993) gives three limits: 0.1 s feels instantaneous, 1 s doesn't break the flow of thought, and 10 s is the most before attention is lost.

Connections

Used in

- Interaction design

Related to

- Nielsen's usability heuristics
- Microinteractions

Authors and works

1968	**Robert B. Miller**	Analyzed how long a computer can take to respond without breaking the conversation with its user, and placed the limit at around 2 seconds.
1982	**Walter J. Doherty and Arvind J. Thadhani**	Gathered IBM data showing that productivity soars when response time drops below one second.
1993	**Jakob Nielsen**	Set three limits for response time: 0.1, 1 and 10 seconds.
2020	**Jon Yablonski**	Included it in Laws of UX under the name Doherty threshold and spread the 400 ms limit.

Sources

Original sources

- Doherty, W. J., & Thadhani, A. J. (1982). The economic value of rapid response time (GE20-0752-0). IBM. View source (https://archive.computerhistory.org/resources/access/text/2024/03/102751398-05-01-acc.pdf)
- Miller, R. B. (1968). Response time in man-computer conversational transactions. Proceedings of the AFIPS Fall Joint Computer Conference, 33, 267–277.
- Nielsen, J. (1993). Usability engineering. Academic Press.

Secondary sources

- Yablonski, J. (2020). Laws of UX: Using psychology to design better products & services. O'Reilly Media. View source (https://www.oreilly.com/library/view/laws-of-ux/9781492055303/)

Last reviewed: October 30, 2026

Atlas público de diseño, de Adriana Ojeda. Texto e ilustraciones bajo licencia CC BY 4.0.