DON'T MAKE ME WAIT! **USER PERCEPTION OF TIME & SOFTWARE SPEED**





1 INTRODUCTION

Topic importance and introductory content

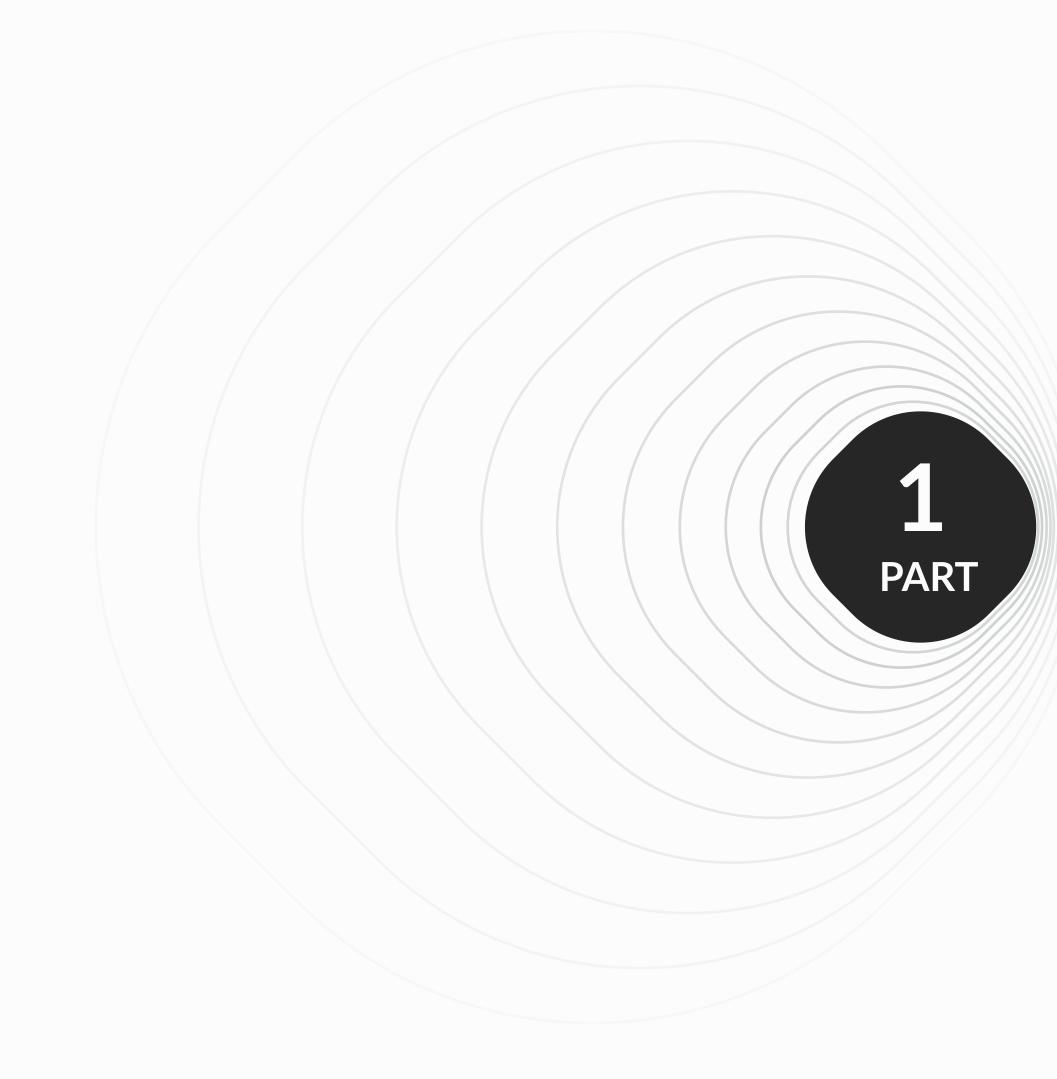
2 HUMANS & TIME

Psychology and the subjective nature in how we perceive time



3 PRACTICAL APPLICATIONS

Tips and techniques to mitigate wait times in software and service design



INTRODUCTION



CHRIS KIESS, MLS, MS PRINCIPAL UX DESIGNER @ WALGREENS









medium.com/@chris_kiess



Business Case

Long load and wait times may cost your business customers



Situational Dependance

Situations and devices can dictate how fast your software needs to be

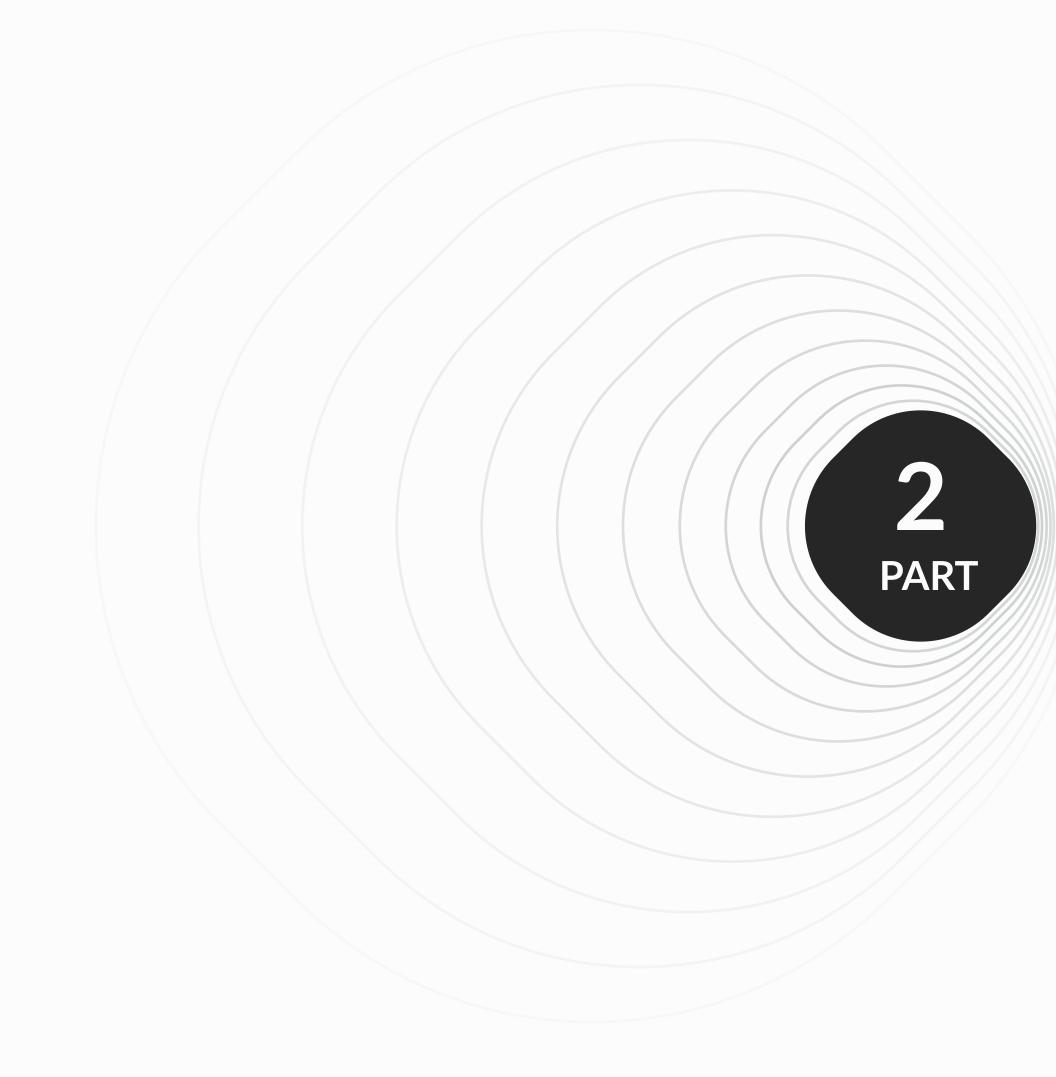
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Why Worry About Time?

Errors

Slow software can induce errors double submissions, clicking wrong item on slow page refresh etc.





HUMANS & TIME



Elevators have a long history in the relationship between humans and time

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ELEVATOR STORIES



Mirror, mirror on the wall

Mirrors used in the early 20th century to convert wait times to occupied time



The placebo button

Close door button is often deactivated at request of building owners

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The illusion of speed

Waiting button light turns off as elevator nears your floor (even though it is not there yet)

TIMEX

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Essentially states: Humans overestimate short durations and underestimate longer durations



Barnabus Effect

First time processes seem longer ("Oddball Effect")



Emotional States Our emotions can distort time

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Temporal Illusions

Interrupted Processes

Fragmented processes seem longer than equal processes combined





"When a man sits with a pretty girl for an hour, it seems like a minute. But let him sit on a hot stove for a minute – and it's longer than any hour. That's relativity."

~Albert Einstein





What are our expectations when interacting with our devices?

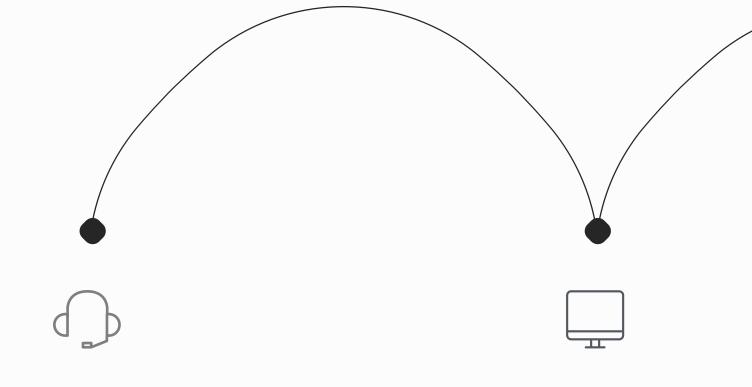
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Humans, Computers & Communication



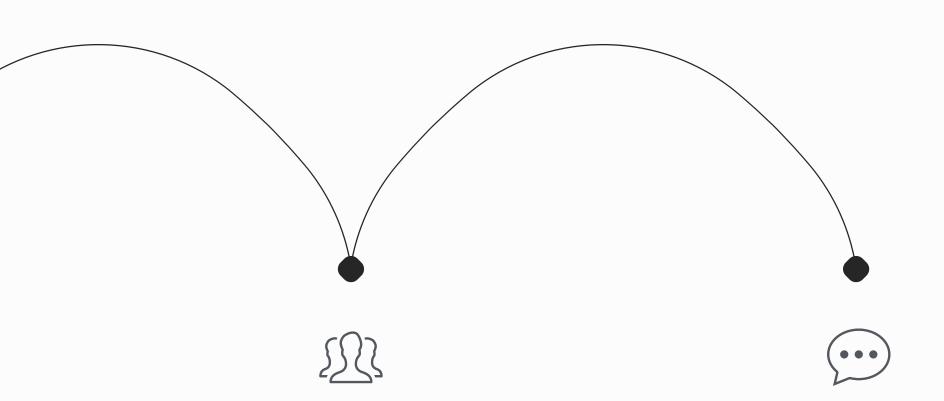
HCl is Communication

Iconography, labeling, etc. all forms of language

Devices Become Human-like

We ascribe personalities to our devices

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Our Expectations Change We begin to expect human-like behavior as a result

Communication Changes What if computers communicated like us?

Our expectations in computer interaction are similar to our expectations in human interaction

Acknowledge Input

Manage Tasks in Background

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HCI & Communication

Inform Us How Long it Will Take

Free Us for Other Tasks

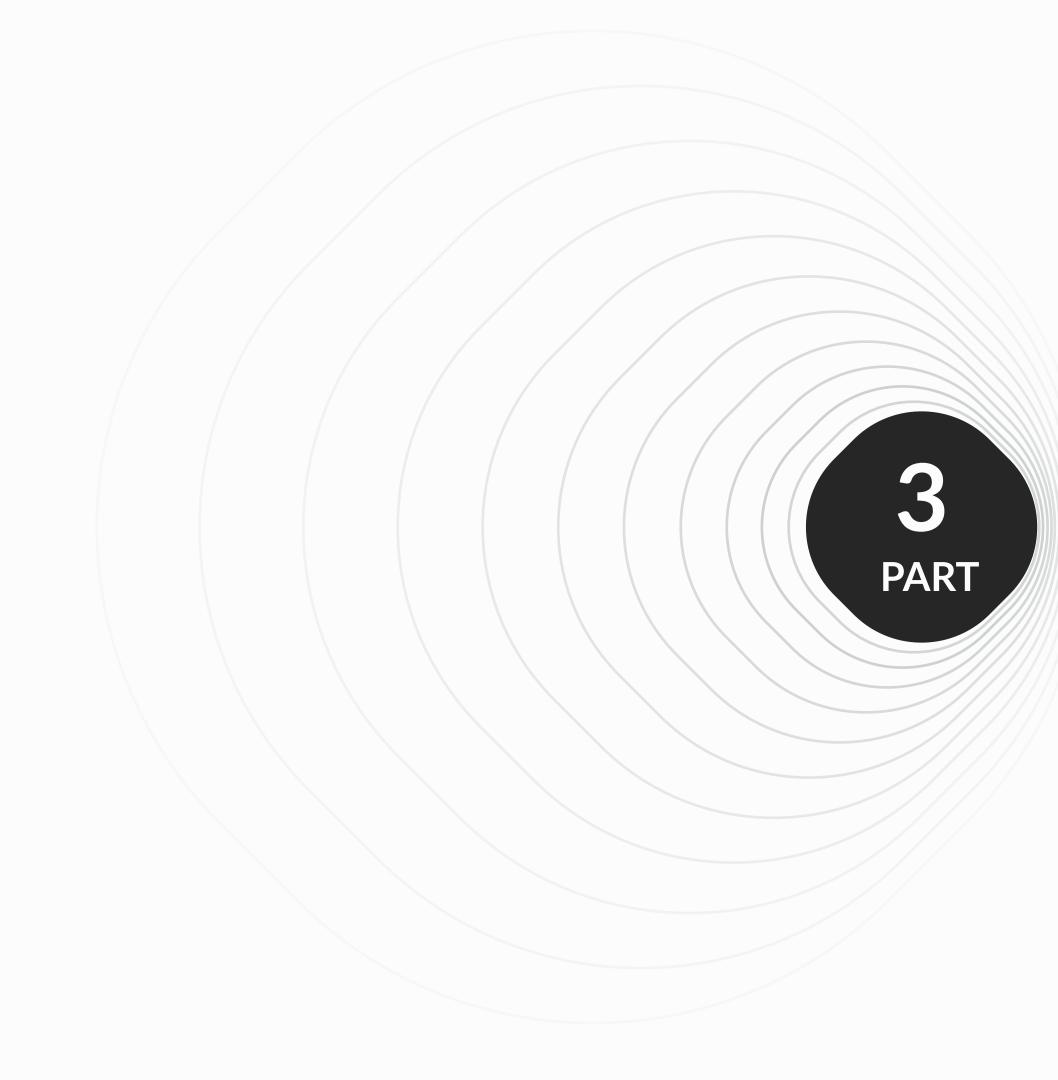


Respond & Reassure

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Anticipate Common Pathways





PRACTICAL APPLICATIONS





2 MAKE IT SEEM FASTER





Actually Make The Software Measurably Faster

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MAKE IT FASTER



TIMEX



R.B. Miller Guidelines (1968) Graphic response from light pen = .1 seconds

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TAFIM System Feedback = 15 seconds

ESO/MITRE

Moving cursor from one position to another = .5 seconds

MIL-STD 1472

From selection of command to response = 2.0 seconds

Industry Standards





Instantaneous = .1-.2 seconds



Continuous = 2-5 seconds

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Responsiveness **User Expectancy**

Immediate = .5-1 second

Unresponsive = 7-10 seconds

*Standards are relative because time is relative to us









Weber's Law or JND -(Just Noticeable Difference)

The perceived difference between two stimuli is defined by the contrast between those stimuli.



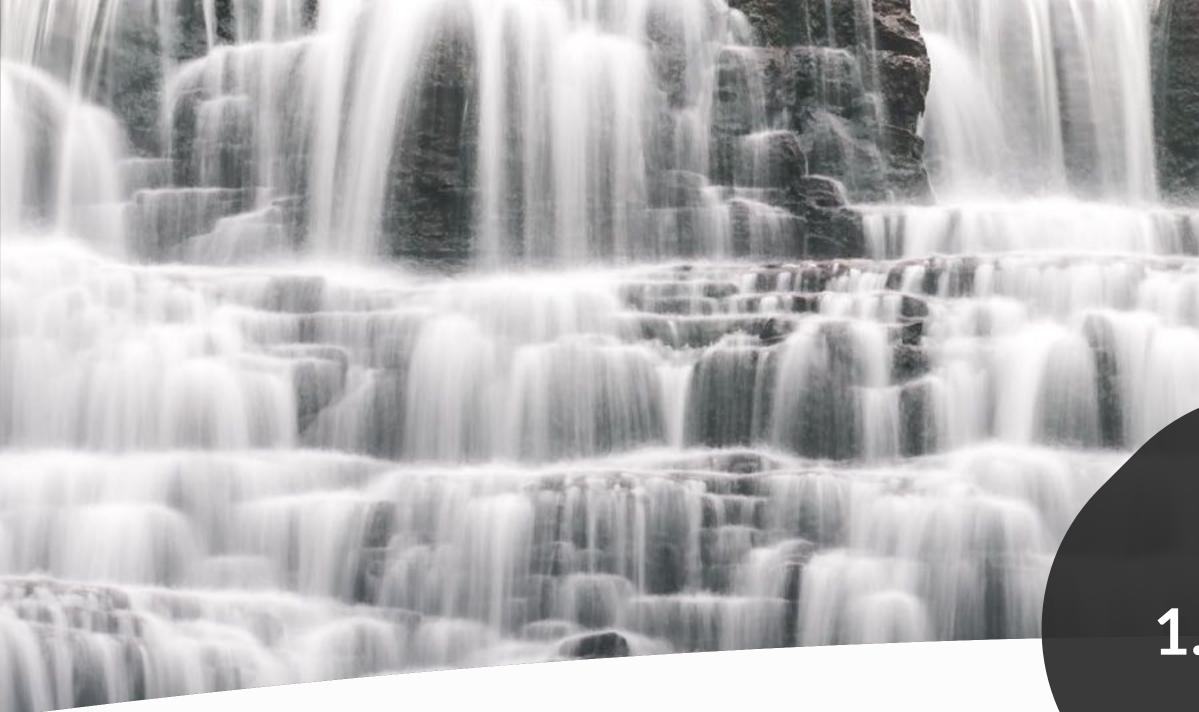


MAKE IT SEEM FASTER

Exploit our subjective perception of time to make durations seem

shorter





1 Challenge Users

Match users' skill levels (Challengeskills match)

Hick-Hyman Law 2

Avoid choice dilemmas (or slowing user down)

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1. FLOW

3 Clear Goals & Feedback

Prompt feedback, precise language, trim textual information



Control

Provide options, enable forgiveness, give escape hatches







"the flow experience is typically described as involving a sense of control – or more precisely as lacking the sense of worry about losing control."

~ Mihaly Csikszentmihalyi





Time Anchors use human language to appropriately represent time ranges

Cable company commitment: "Your technician should arrive between 11 and 5."

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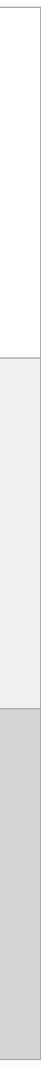


Time Anchor Matrix

- Use for seconds and minutes
- "5 10 seconds remaining"
- "Installation will be between 3 and 5 minutes"
- "The download will take about 30 seconds"

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1		
	2	3
5	10	15
10	20	30





Using Time Anchors

ranges

numbers)

Never skip over a number when representing

Use anchors for countdown units in timers

(Ranges prevent users from holding us to exact



3. REPRESENTING PROGRESS

Progress bars, animations and spinners... ...Oh my!



Time vs. Work Units Countdown vs. how much work has been done

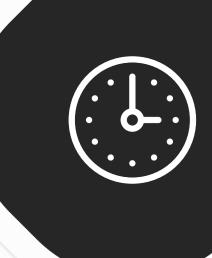
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Indeterminate vs Determinate

Determinate has a clear end point. Indeterminate does not.



0-2 sec = No indication needed



5-X sec = Progress indication

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Progress Indicator Guidelines

2-5 sec = Busy animation

10+ sec = Cancel Button

*General guidelines dictated by situation



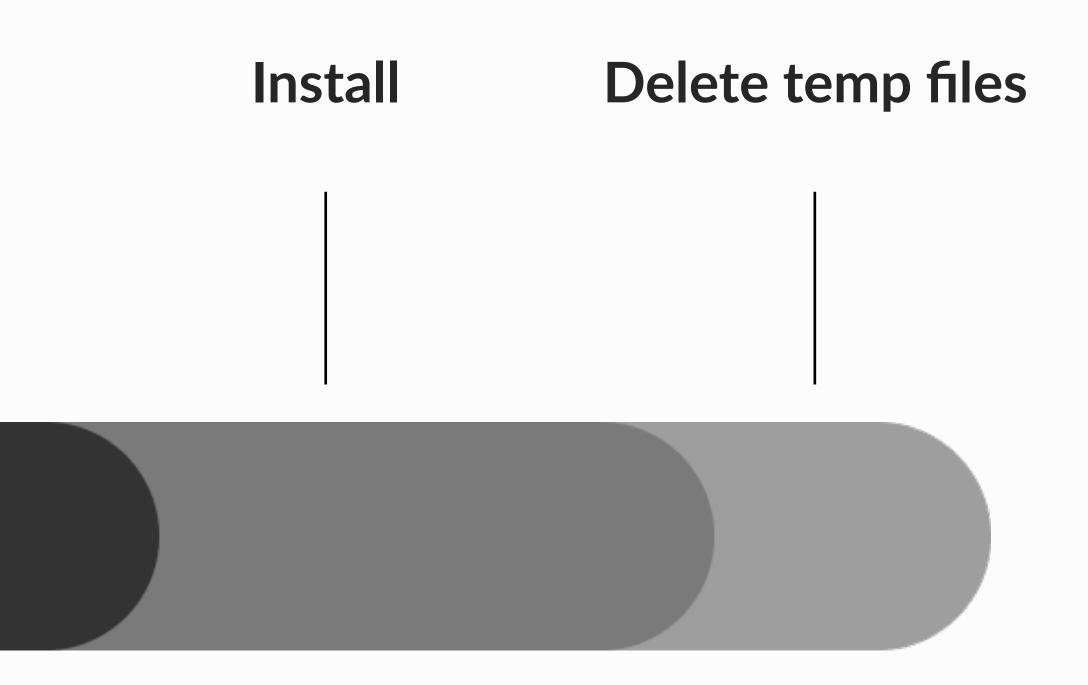


Non-Linear Progress Bars -**Descending Durations**

Copy files



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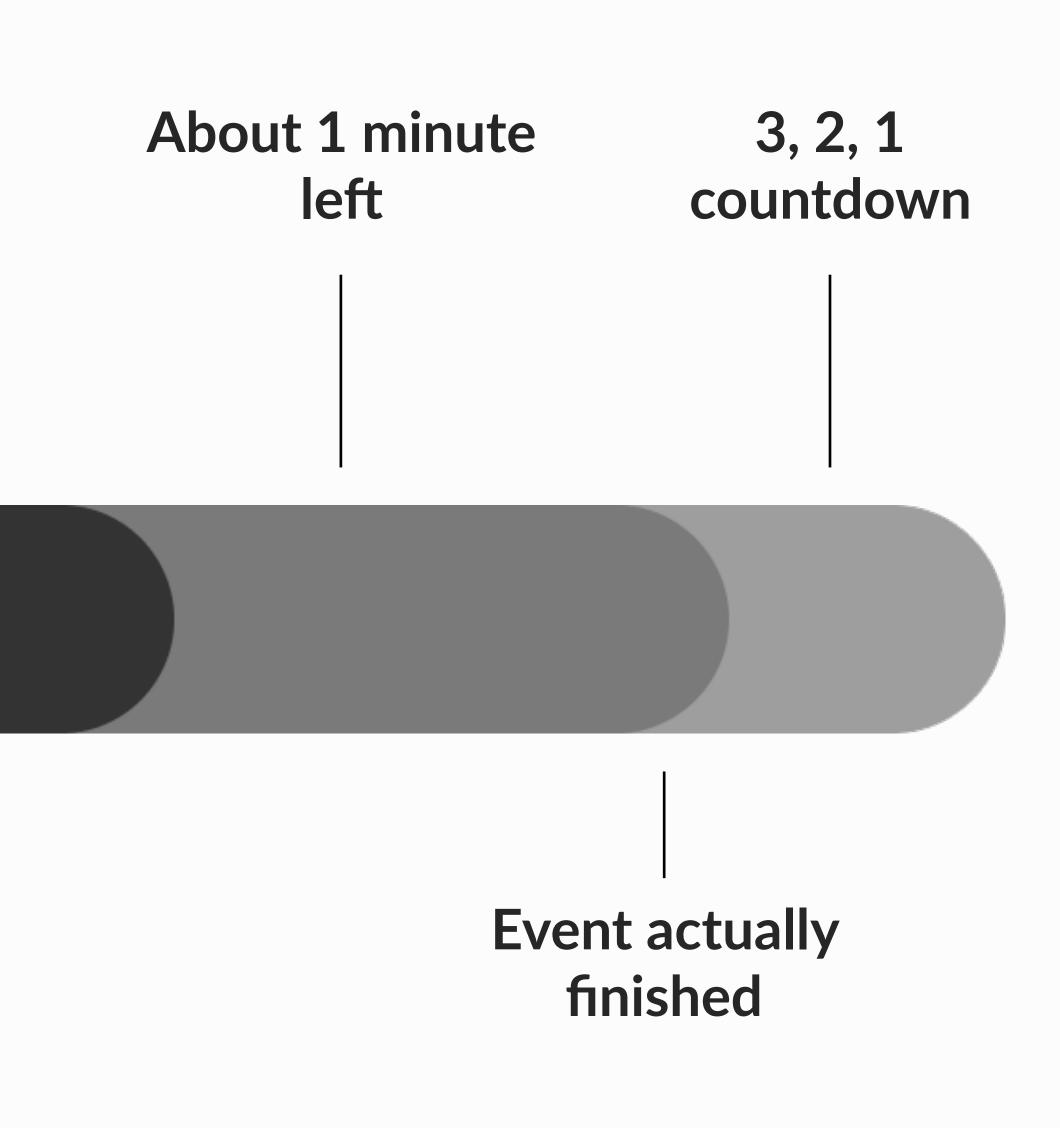


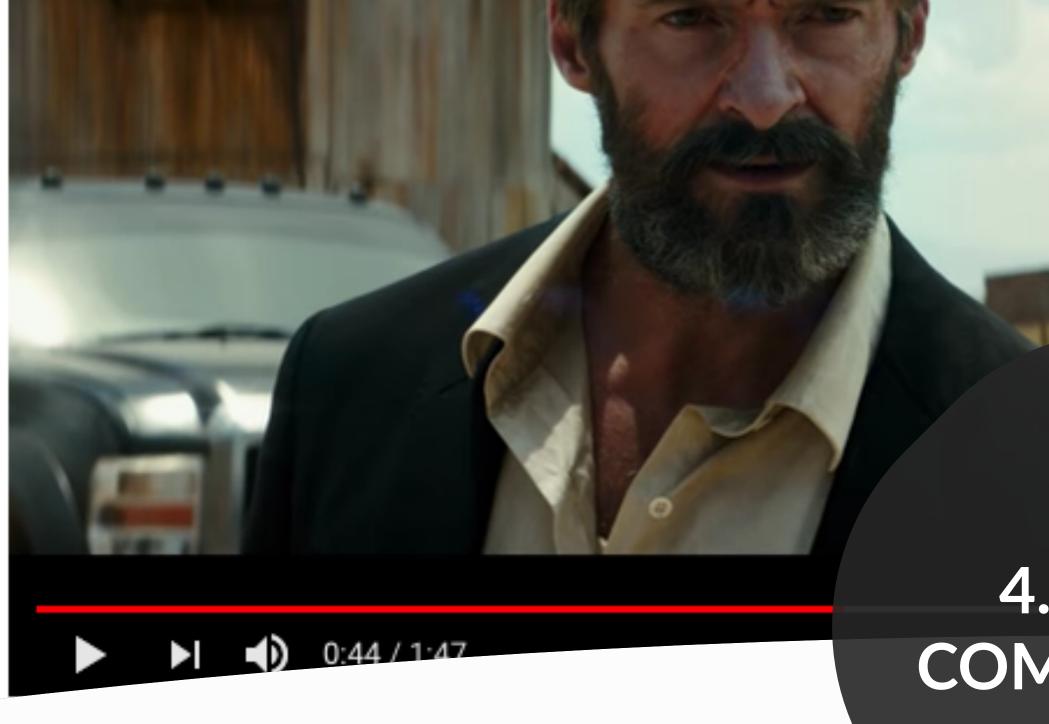
Final Countdown

About 3 minutes left



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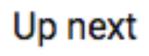




Start processes early and finish the final details in the background

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4. EARLY COMPLETION





When there is no clear start or end time, it is very difficult for humans to estimate a duration

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5. PREEMPTIVE START

5

Preloading Content

Amazon, Safari, Chrome will preload top hits in background [Preemptive Start]

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Resource Hints

Use html elements "prefetch" or "prerender" [Preemptive Start]

Skeleton Loading

Minimize passive wait times when loading pages [Early Completion]





Fragmented processes seem longer than continuous processes

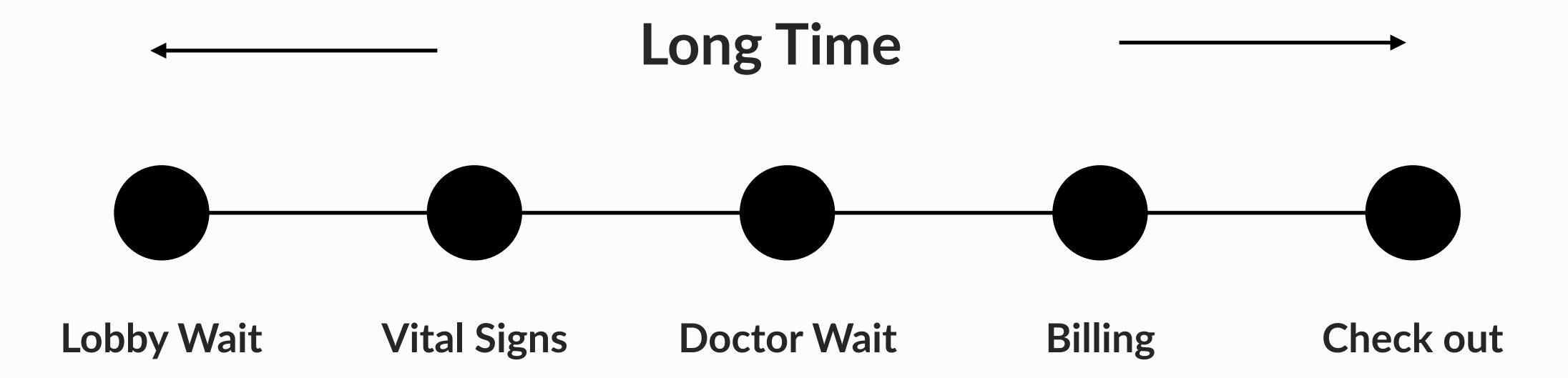
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6. CONTINUOUS DURATIONS

1 Commill





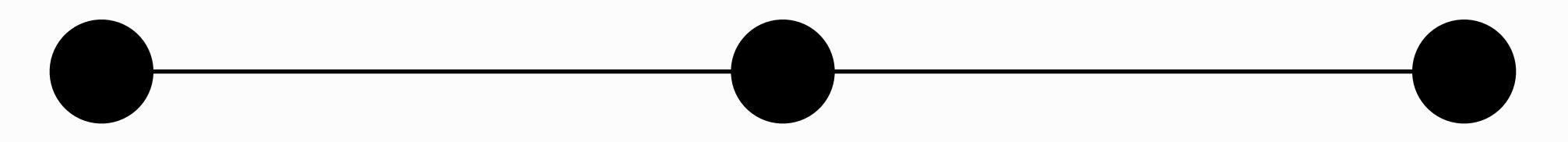




Continuous Duration









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Shorter Time

Doctor Wait

Check out



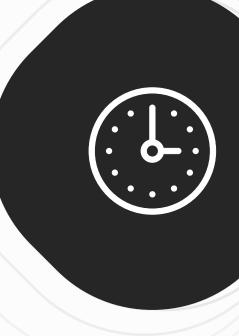
7. MEANINGFUL DIVERSIONS

Turn a wait time into occupied time



C28

Disney Fastpass Allows user to divert themselves

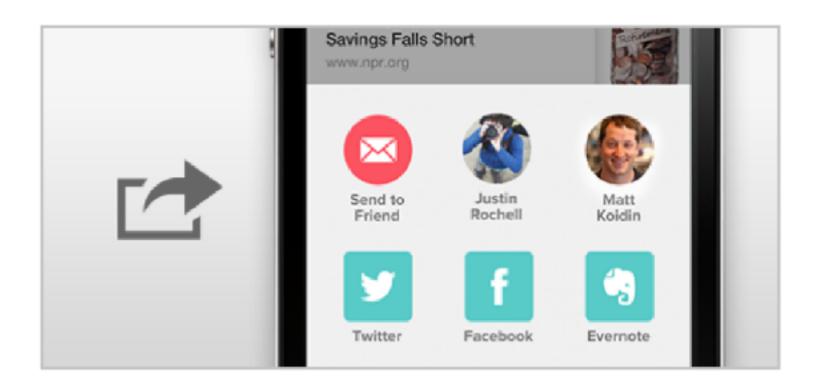


Don't Hold Users Captive Consider restaurant pagers

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Entertain The User TVs in elevators, gas pumps, taxis

What's New in Pocket

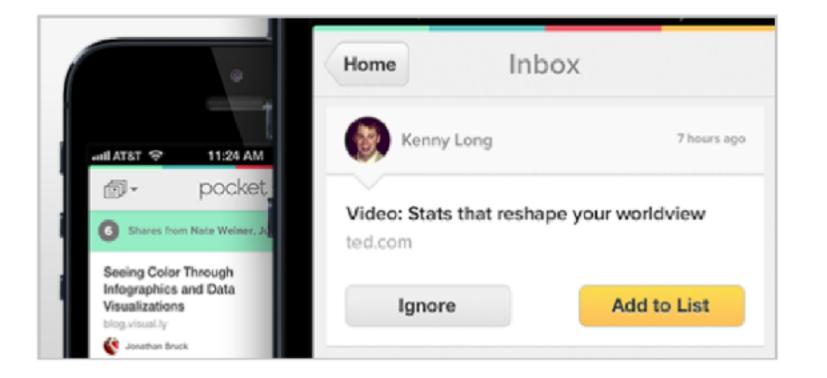


Sharing in Pocket just got a facelift.

The new Share Menu makes it even easier to share to your friends and favorite services.

Next

Shared to Your Pocket



When a friend shares something with you using Send to Friend, it will now appear right in your Pocket.

We just shared something with you so you can give it a try. Go to your list and tap the green bar.

View List

Previous



Sometimes a process cannot be any faster or made to seem faster

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MAKE IT TOLERABLE





Illustrate the value of a wait to the user ensuring their expectations are matched or exceeded

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8. WORTH THE WAIT



Popular Restaurants

Shake Shack, Edzos, Hot Doug's

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Apple Product Launches

The wait becomes part of the experience

Starbucks

Exceptional experience and product





Sometimes a wait cannot be alleviated but can be justified

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HANG TIGHT. I'M ABOUT TO TAKE FULL PRICE

IS NOW NEGOTIATING:

9. JUSTIFY THE WAIT

Restaurant Reviews

Rave reviews are often posted on the wall for viewing while waiting

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Transparency of Work

Be transparent concerning the amount of work being done on behalf of the user.

First & One Time Only

Inform users of longer durations that are a first-time process





SPECIAL 1002 DRY AGED NY STRIP ASPEN RIDGE

10. EXCEED EXPECTATIONS

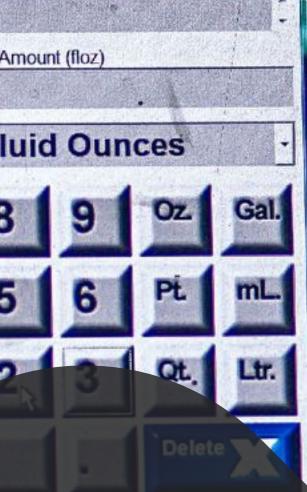
Underpromise and overdeliver on service and in time estimates



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DMD1690	CRS. ALUM.	10.1 •	60.7	
DX821	FLOP ADJUSTER	10.0	70.7	
DX995	MATT BASE	3.2	73.9 *	
DMD646	WEAK WHITE	2.1	76.0	
PRLX3	CRYSTAL GOLD PEAR	RL 0.9	76.9	
PRL96	RUSSET PRL	0.8	77.7	
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lt's not me. It's you.

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ONTEXTUAL EDBACK





Keep user psychology in mind when designing for time

Evaluate your design to 2 identify wait times

Use industry standards and 3 proven methods to mitigate wait times

Research Credits

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For more information about designing and engineering time, see <u>chriskiess.com/wait</u>