


Photo: http://goo.gl/WSLWvE

# illusion of Time

Denys Mishunov· @mishunov

“Waiting sucks”

—everybody




Photo: http://goo.gl/D3J4n9




# 36%

## OVERESTIMATION

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# 4.76

| Avg. Page Load Time (sec) | Avg. Redirection Time (sec) | Avg. Domain Lookup Time (sec) | Avg. Server Connection Time (sec) | Avg. Server Response Time (sec) | Avg. Page Download Time (sec) |
|---|---|---|---|---|---|
| 5.30 | 0.35 | 0.01 | 0.06 | 0.05 | 0.07 |



**Site Speed**

- Browser
- Country
- Page

| | Browser | Avg. Page Load Time (sec) |
|---|---|---|
| 1. | Firefox | 3.65 |
| 2. | Opera | 3.99 |
| 3. | Internet Explorer | 4.16 |
| 4. | Chrome | 5.57 |
| 5. | Android Browser | 9.23 |

view full report

| Avg. Page Load Time (sec) | Avg. Redirection Time (sec) | Avg. Domain Lookup Time (sec) | Avg. Server Connection Time (sec) | Avg. Server Response Time (sec) | Avg. Page Download Time (sec) |
|---|---|---|---|---|---|
| 5.30 | 0.35 | 0.01 | 0.06 | 0.05 | 0.07 |



**Site Speed**

- Browser
- Country
- Page

| Country | Avg. Page Load Time (sec) |
|---|---|
| 1. Denmark | 1.84 |
| 2. Sweden | 4.26 |
| 3. Italy | 4.86 |
| 4. Norway | 5.21 |
| 5. Slovakia | 6.33 |
| 6. United States | 7.17 |
| 7. United Kingdom | 11.30 |
| 8. India | 11.60 |

https://blog.kissmetrics.com/loading-time/



# HOW Loading Time AFFECTS YOUR Bottom Line



## EVERY SECOND COUNTS

Loading time is a major contributing factor to page abandonment. The average user has no patience for a page that takes too long to load, and justifiably so.

## MOBILE VS. DESKTOP

Mobile Internet users expect a web-browsing experience on their phone that's comparable to what they get on their desktop or laptop.




47% of consumers expect a web page to load in 2 seconds or less.




40% abandon a website that takes more than 3 seconds to load.

# 2011




47% of consumers expect a web page to load in 2 seconds or less.




50% abandon a website that takes more than 3 seconds to load.

# 2014

A 1 SECOND DELAY IN PAGE RESPONSE CAN RESULT IN A 7% REDUCTION IN CONVERSIONS.

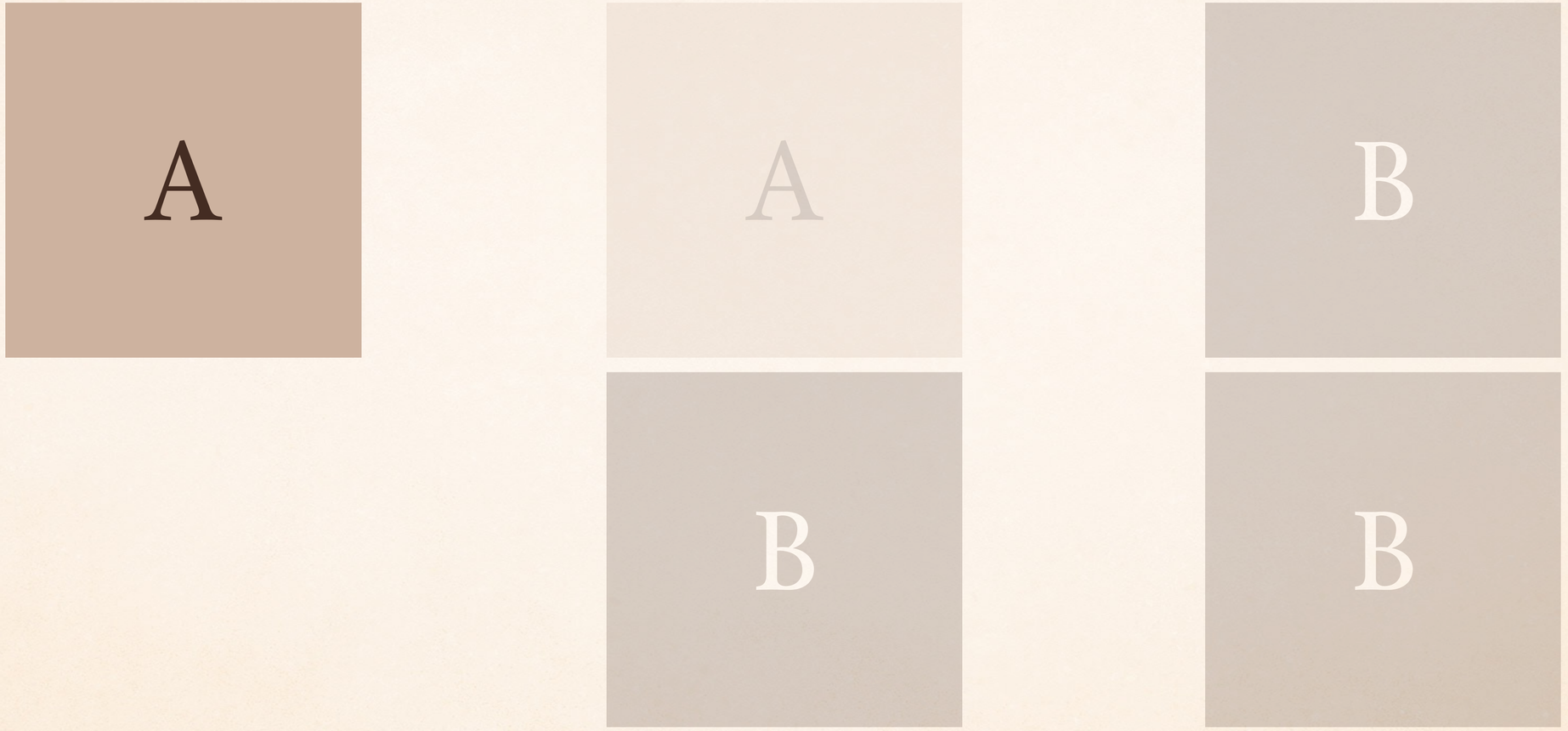


Alice: How long is forever?

White Rabbit: Sometimes, just one second.

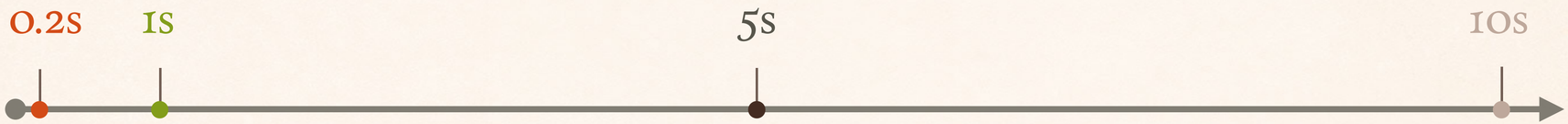
—Lewis Carroll, "Alice in Wonderland"

# CHOOSE THE RIGHT TIME




01 02

# WEB TIME LINE



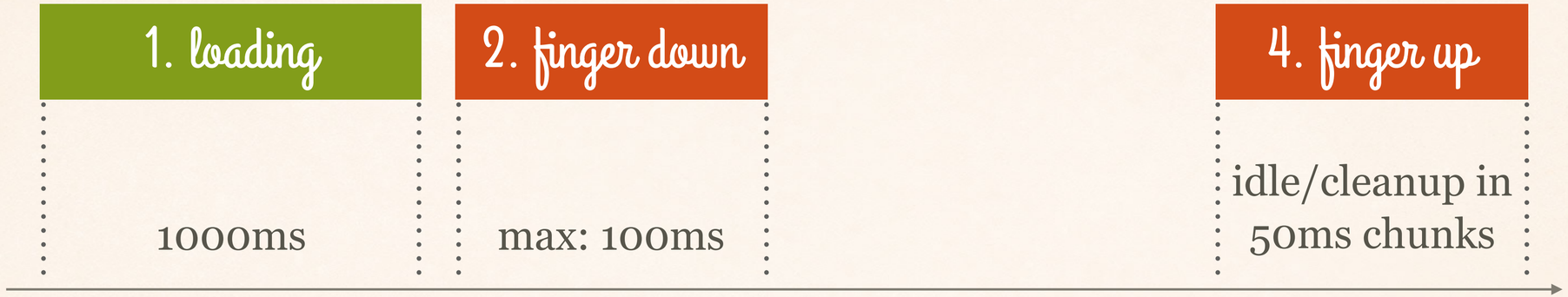

Instant (0,1-0,2s)

Immediate (0,5-1s)

User Flow (2-5s)

Attention Span (7-10s)

# PLATFORM SUCCESS MODEL





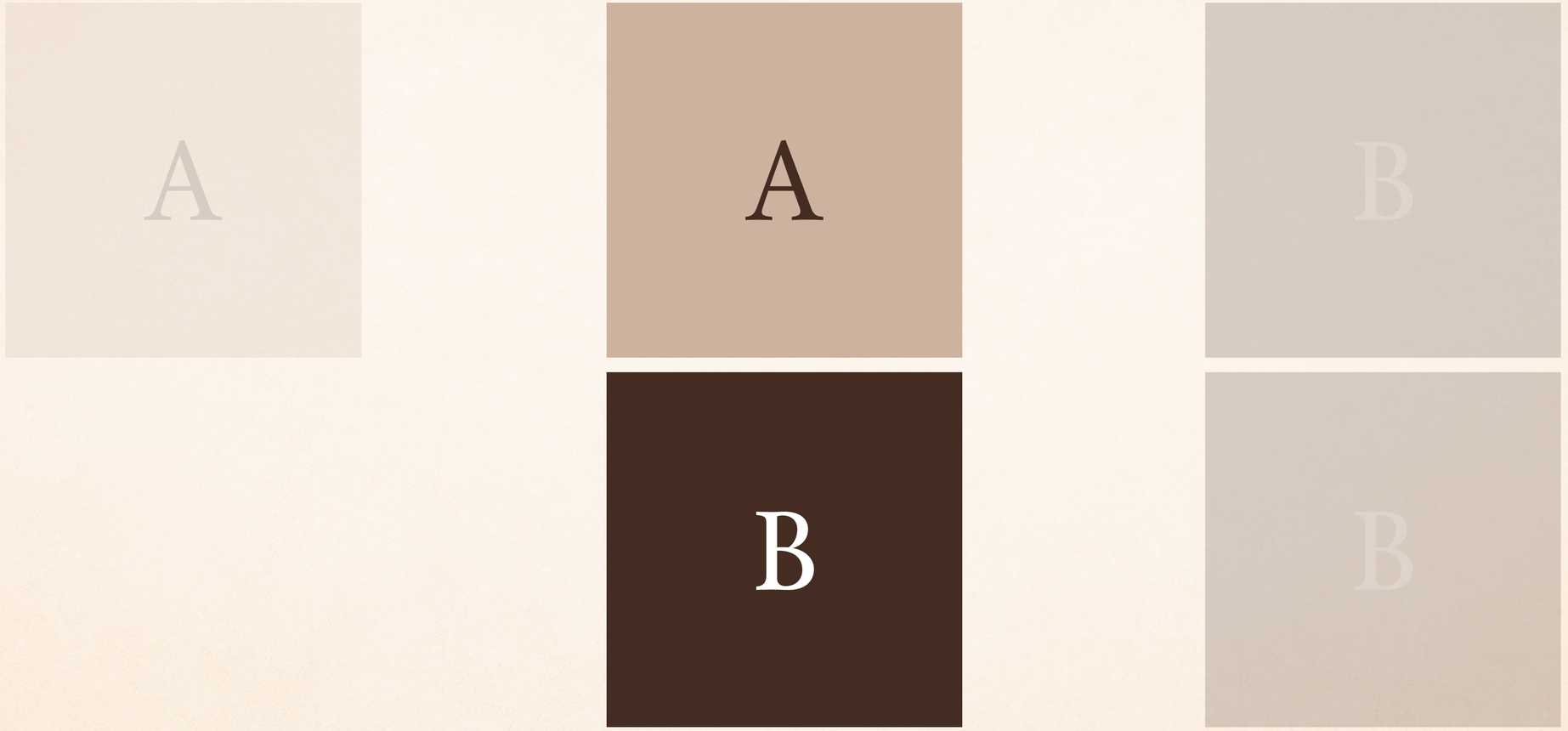

Immediate (0,5-1s)



Instant (0,1-0,2s)

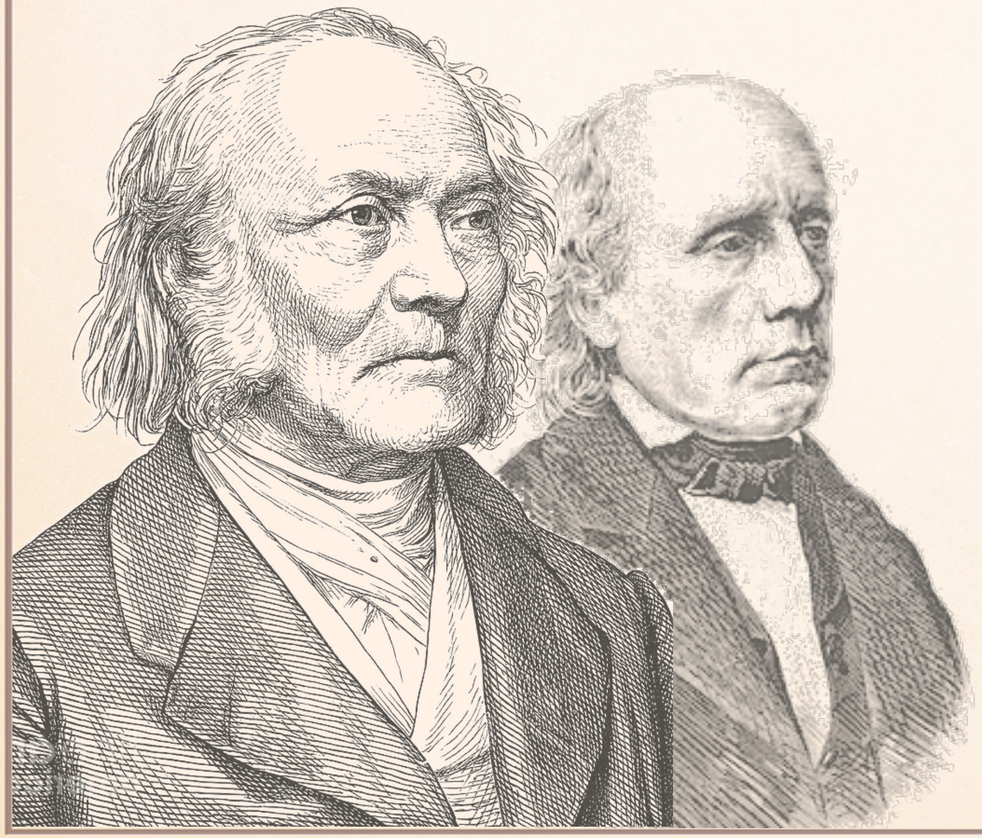
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# CHOOSE THE RIGHT TIME



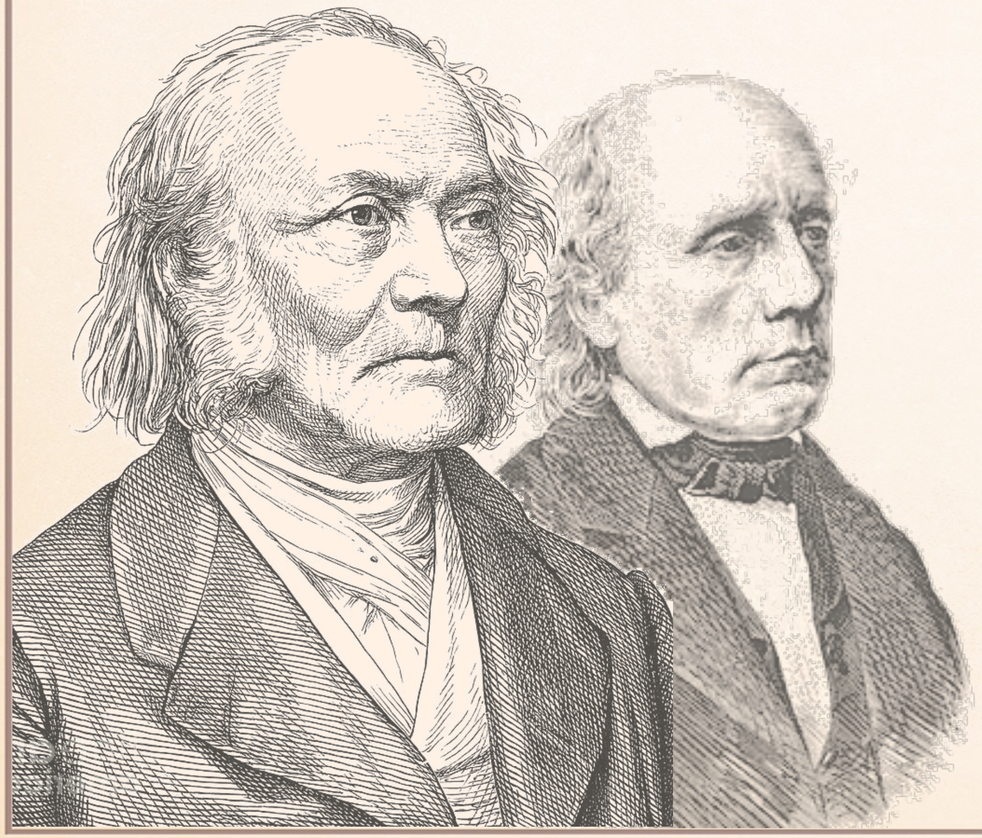

01 02

# WEBER-FECHNER LAW



"The just-noticeable difference between two stimuli is proportional to the magnitude of the stimuli"

# WEBER-FECHNER LAW



JND

# WEBER-FECHNER LAW

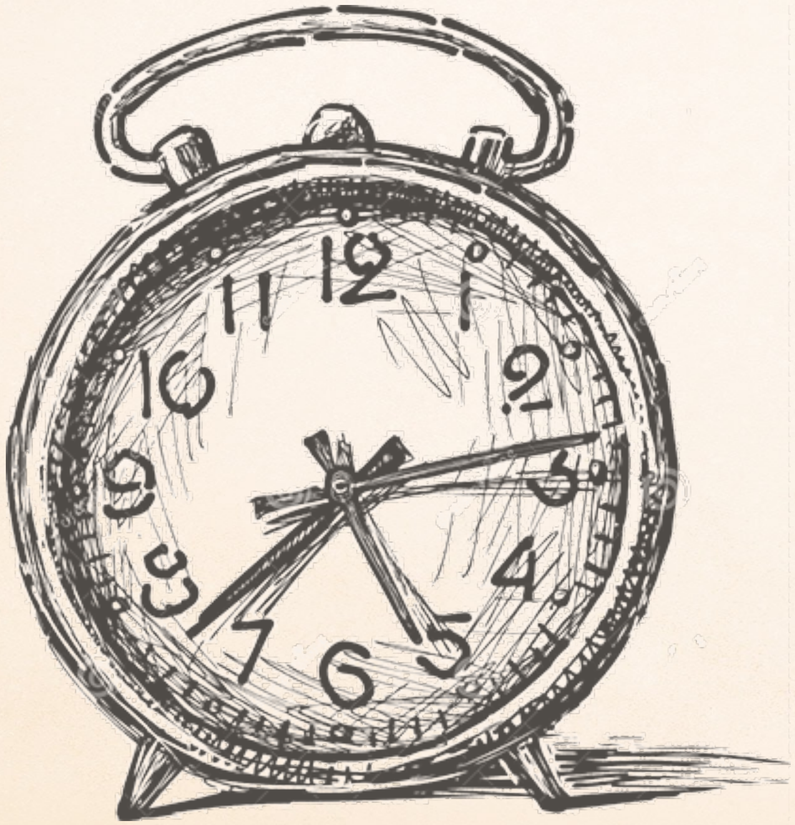
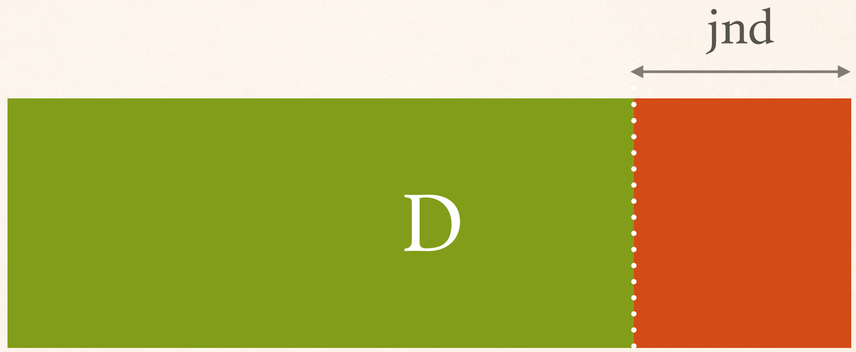


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jnd = k% of D

# 20% RULE

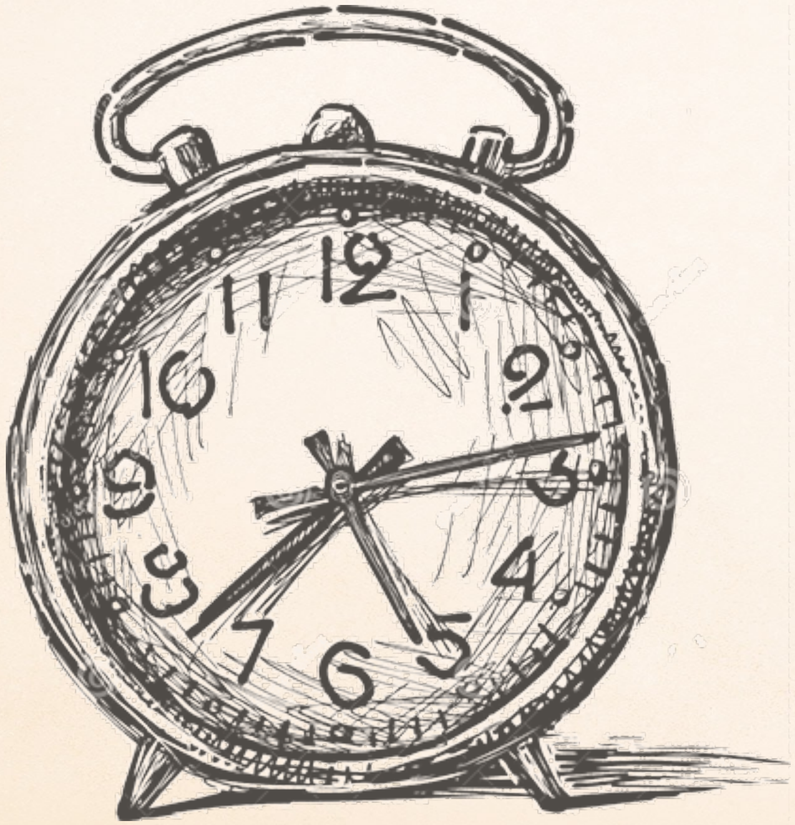


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jnd = 20% of D

# 20% Rule

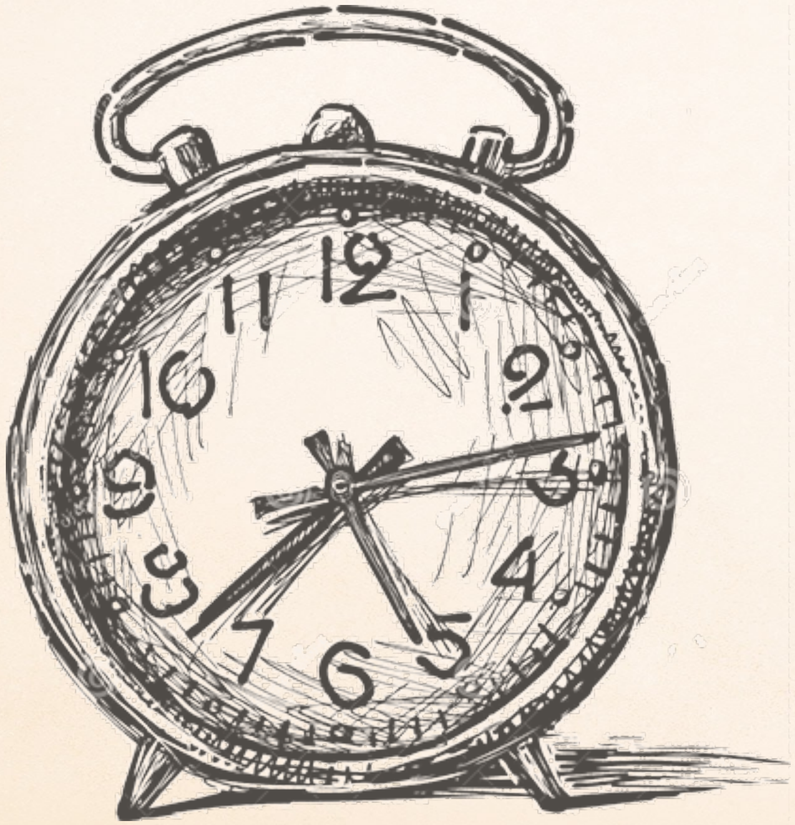
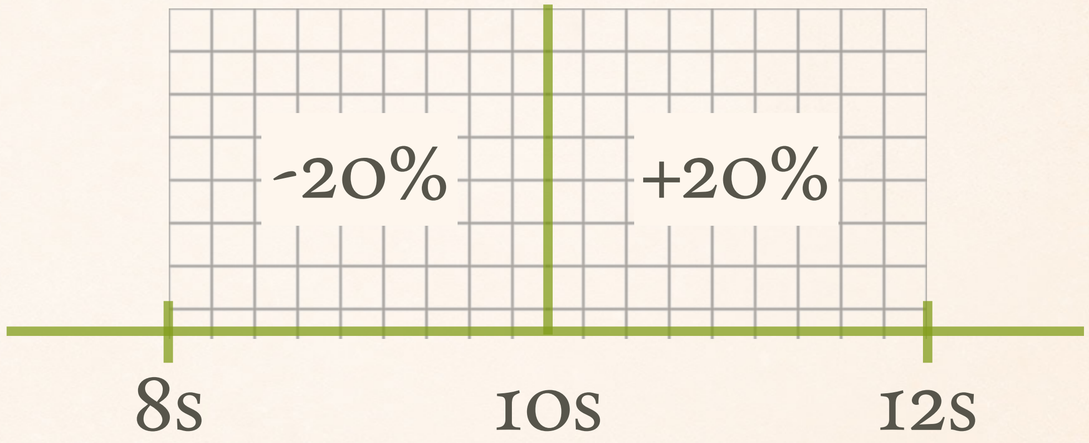


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jnd = 20% of D

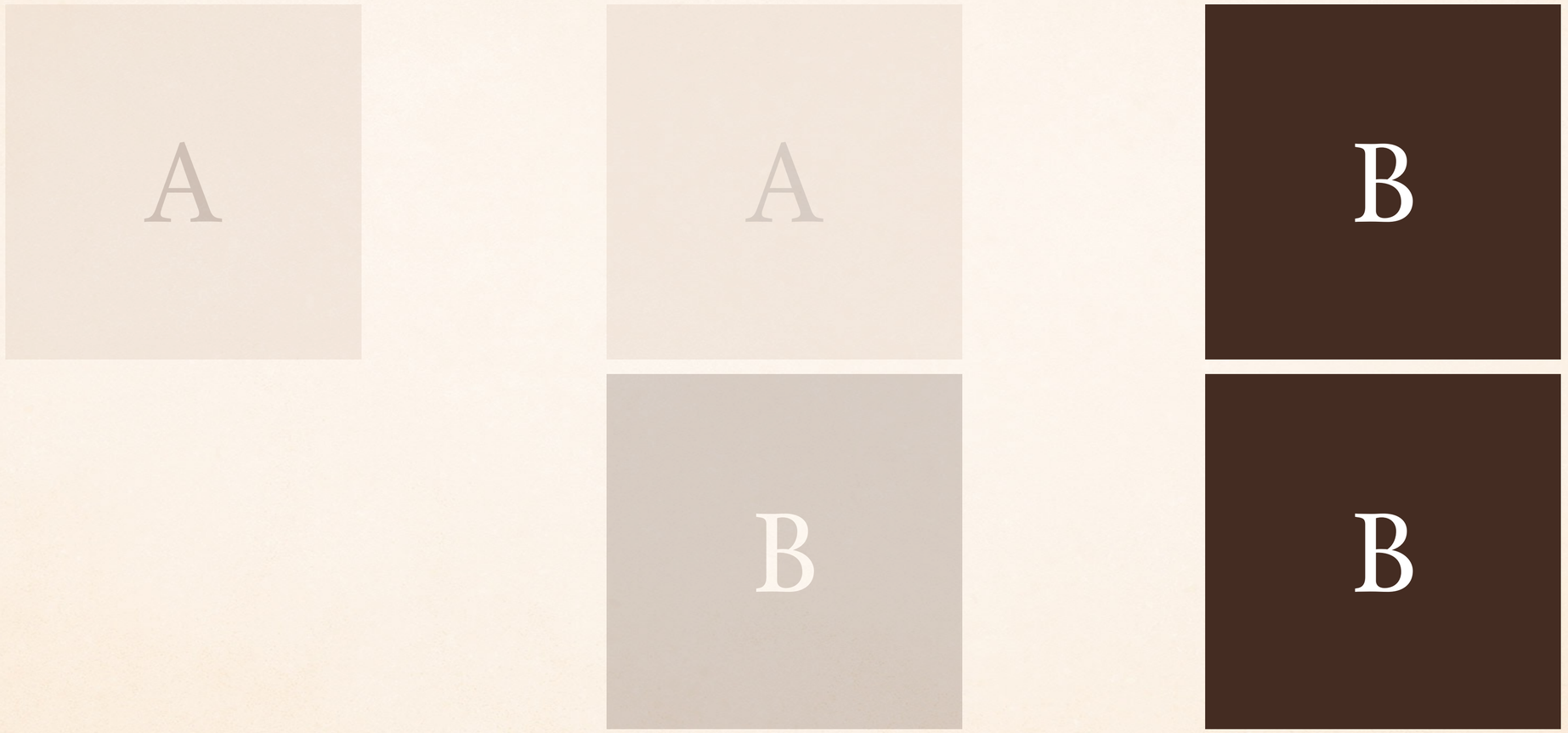
# 20% Rule

NOTICEABLE




MEANINGFUL

# CHOOSE THE RIGHT TIME



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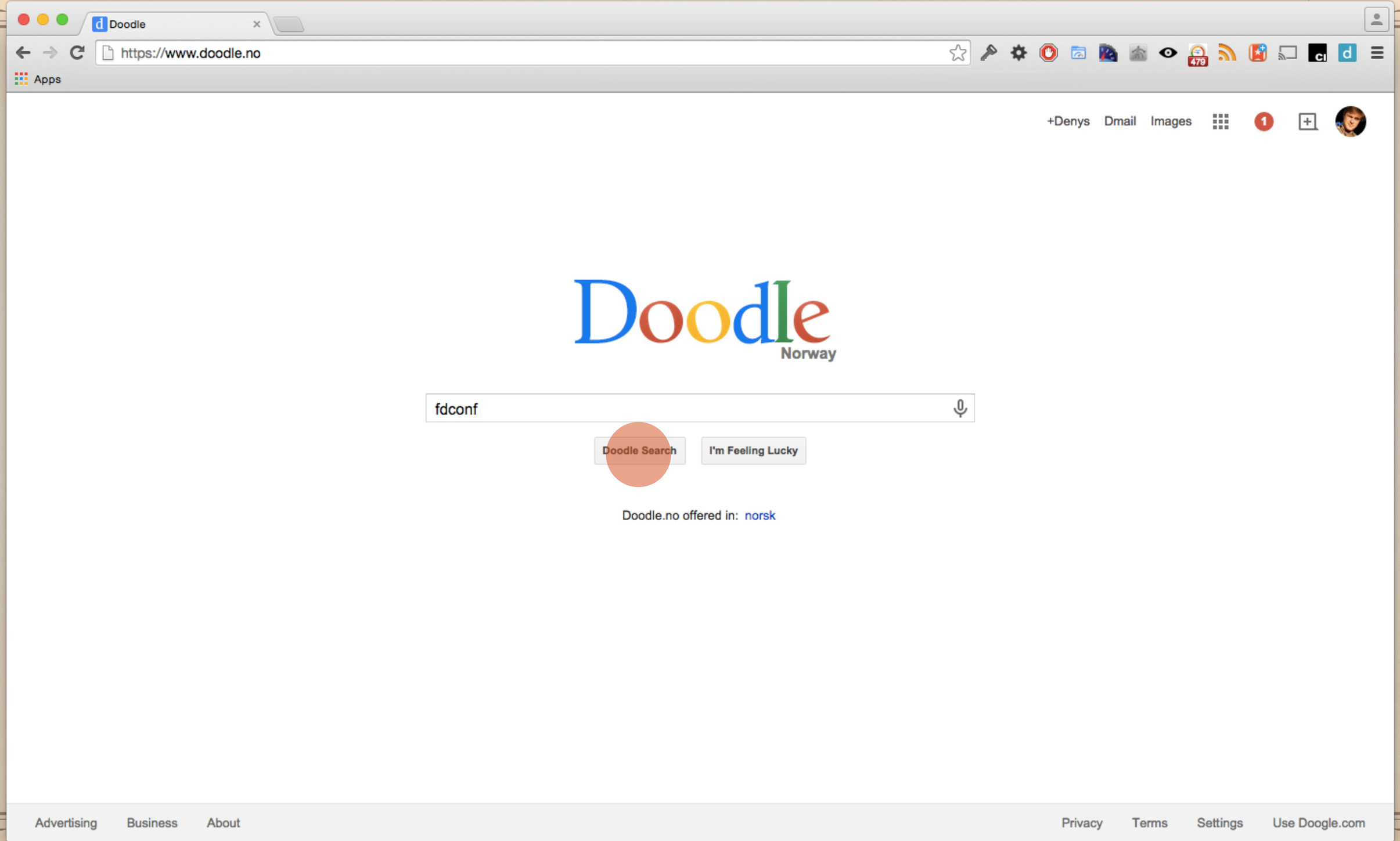
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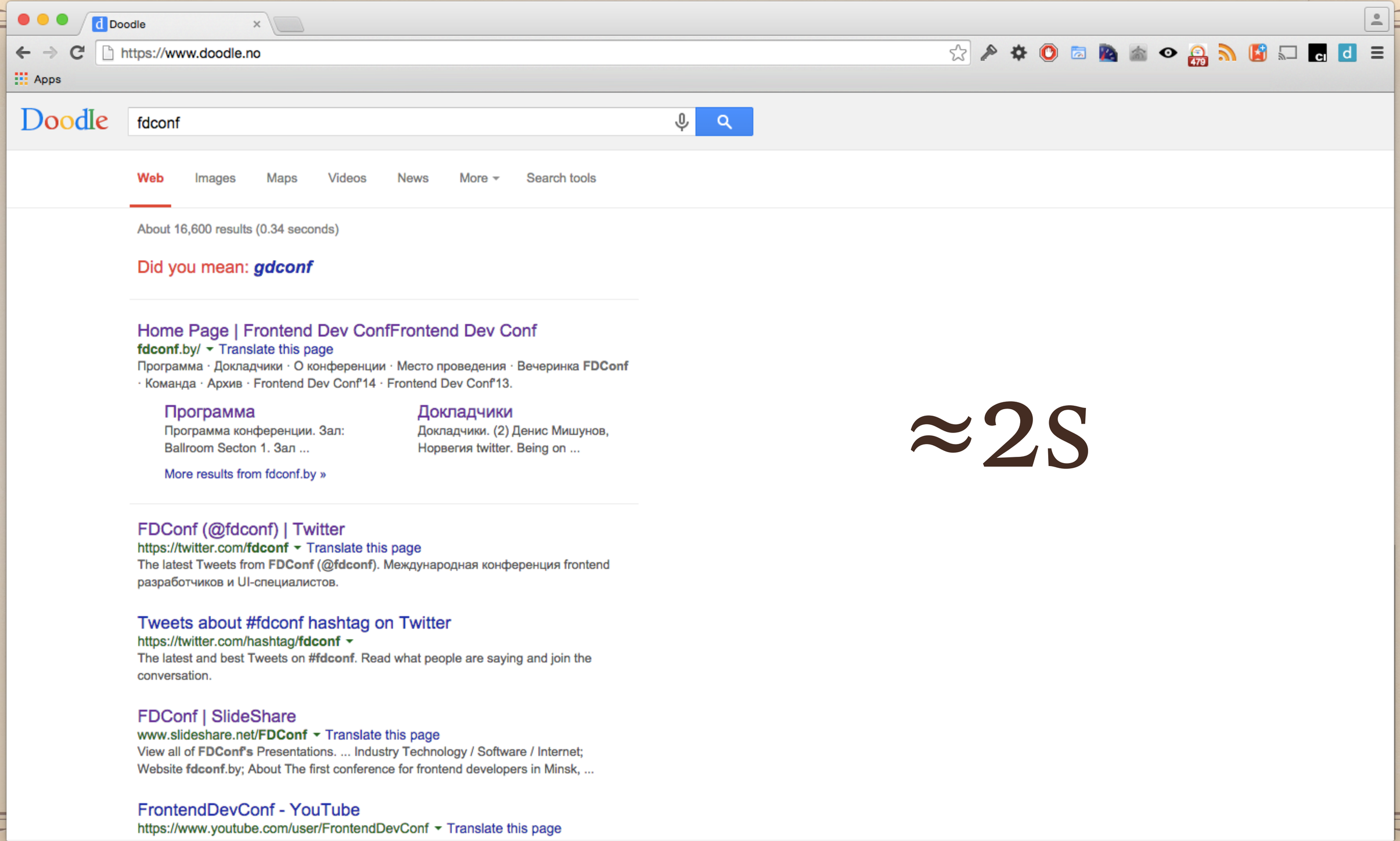
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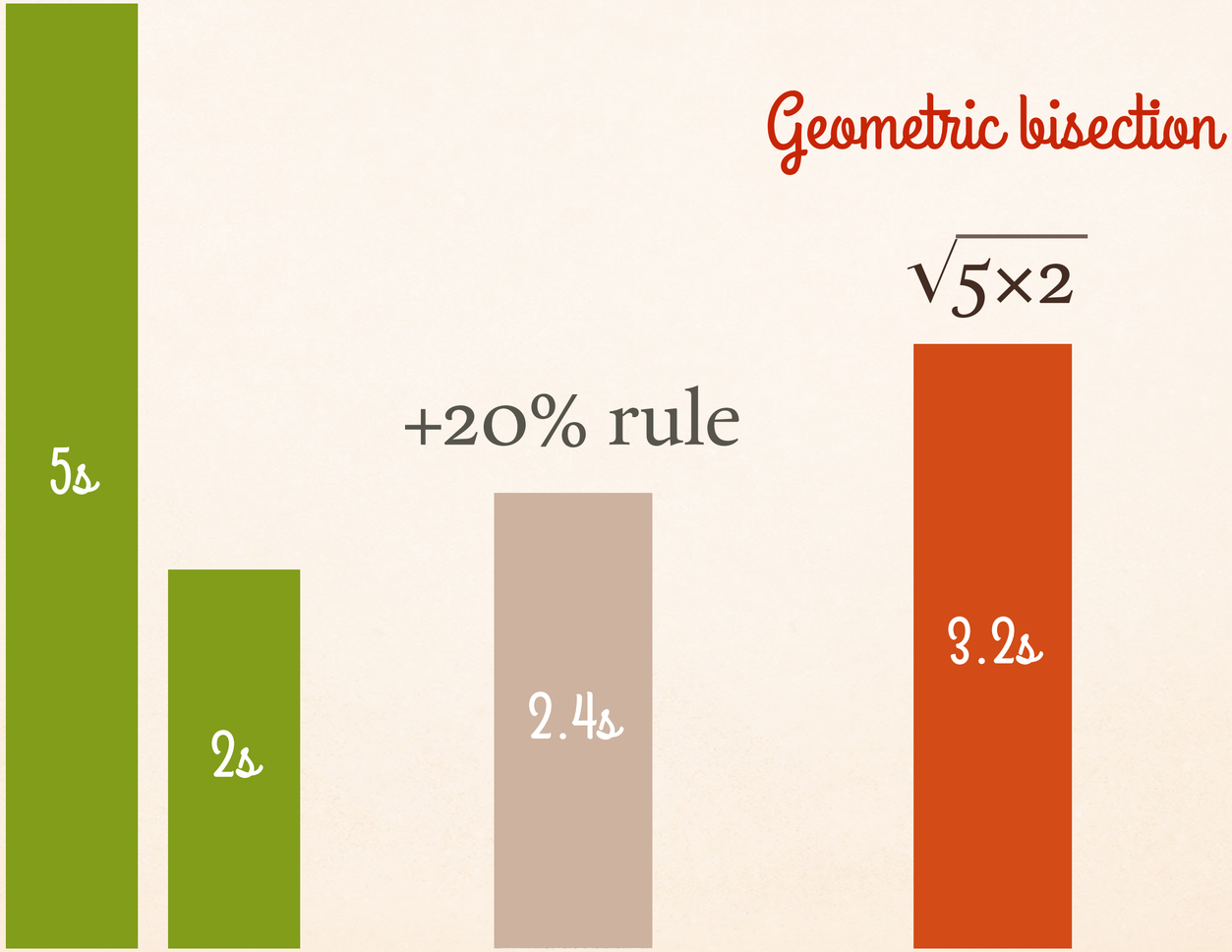
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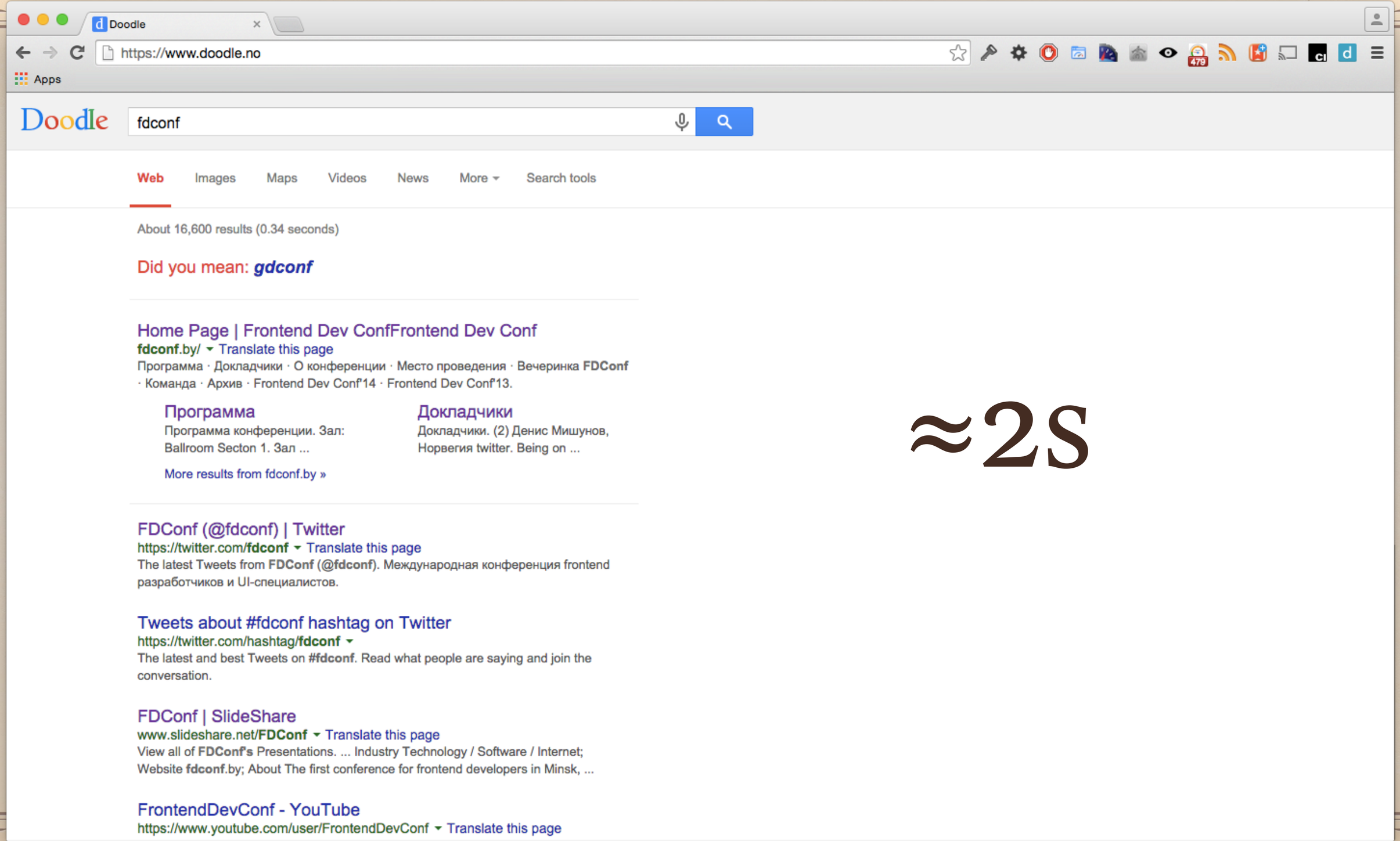

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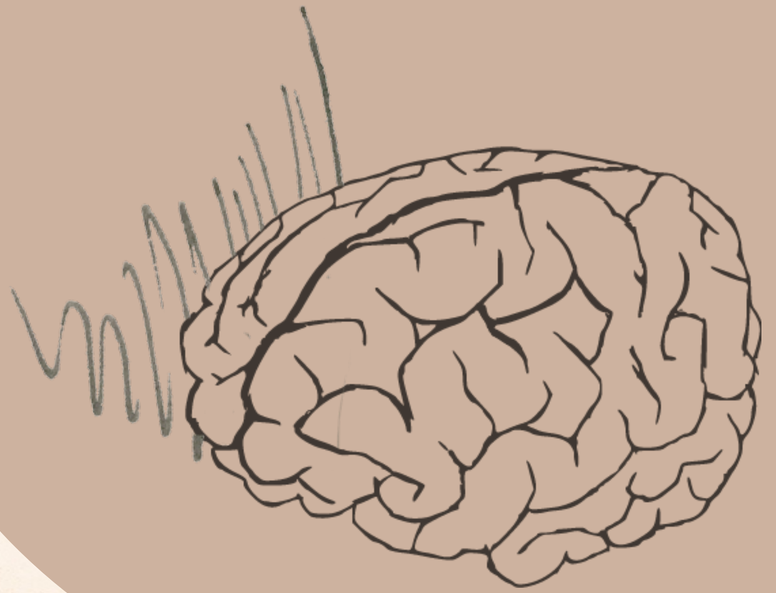
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# OBJECTIVE TIME



# SUBJECTIVE TIME



OBJECTIVE TIME

PERCEPTION

TOLERANCE

Operational Management

Perception Management

Tolerance Management

# TIME MANAGEMENT

Operational Management



# OPERATIONAL MANAGEMENT

real time

Operational Management



"My dear, here we must run as fast as we can, just to stay in place. And if you wish to go anywhere you must run twice as fast as that."

—Lewis Carroll, "Alice in Wonderland"

Operational Management

# FRONT END

HTML | CSS | Images | Javascript

## Minification & Concatination

Fewer HTTP requests

CDN

DNS prefetching

...

No CDN

Inline top-screen CSS

...

Sprites

Responsive sizes

Lo-Fi background JPG images

...

Delay blocking request (onLoad)

WebWorkers

AJAXify navigation

...

you-name-it

Operational Management

# BACK END

- CDN
- Caching
- Faster *
- mod_deflate/mod_gzip
- HTTP2/SPDY

"If everybody minded
their own business,
the world would go
around a great deal
faster than it does."

—Lewis Carroll, "Alice in Wonderland"



# LIMITATIONS

- Technical limitations
- Financial/time costs
- Users usually don't care about your objective time

# LIMITATIONS

Users don't care

“Performance is not just milliseconds, frames and megabytes. It’s also how these milliseconds, frames and megabytes translate to how the user perceives the application”

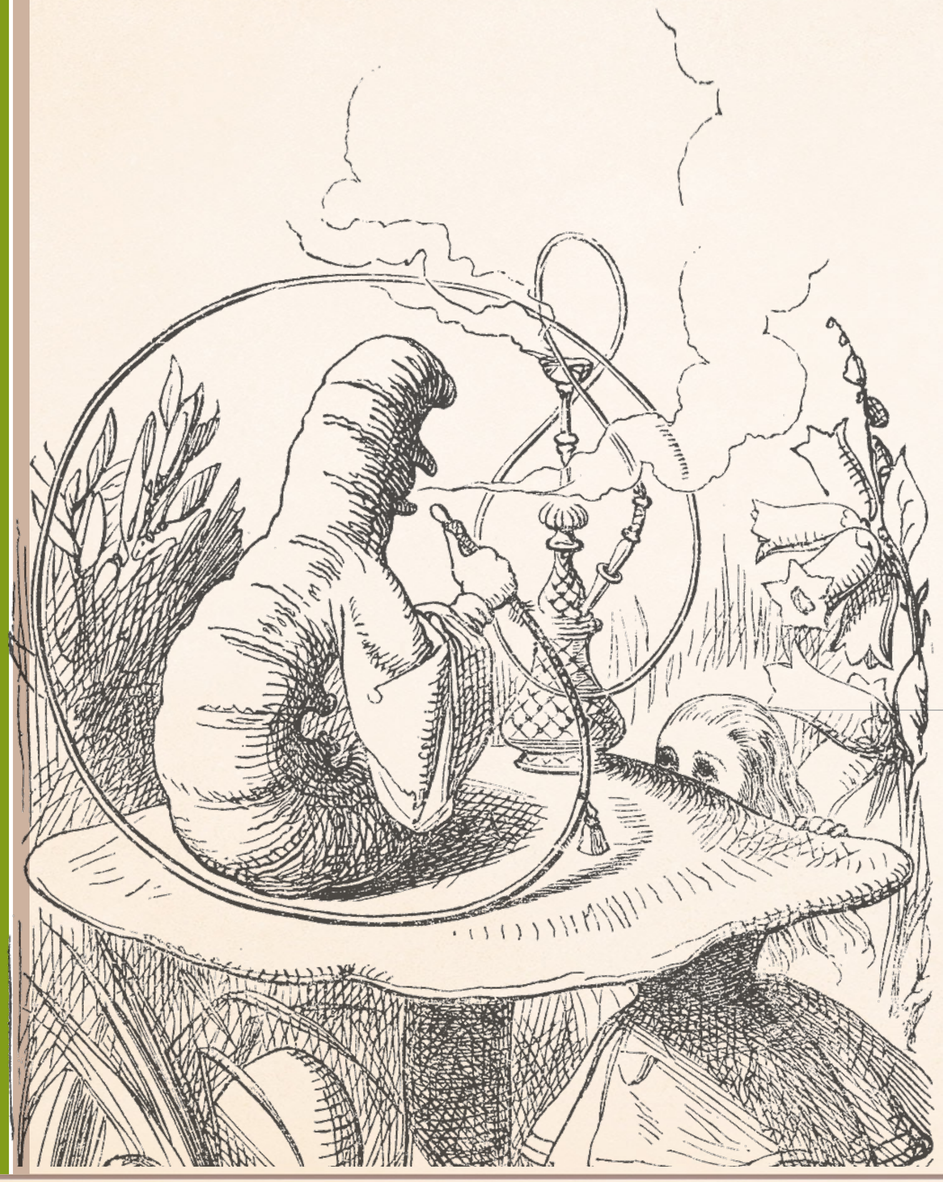
– Ilya Grigorik,
Web Performance Engineer, Google

Operational Management

Perception Management

Tolerance Management

# TIME MANAGEMENT



# PERCEPTION MANAGEMENT

psychological time

Perception Management

"...time persists merely as a consequence of the events taking place in it [space]"

–Martin Heidegger, German philosopher




http://goo.gl/9wXHL9

Perception Management

# EVENT MARKERS



Perception Management

# EVENT MARKERS

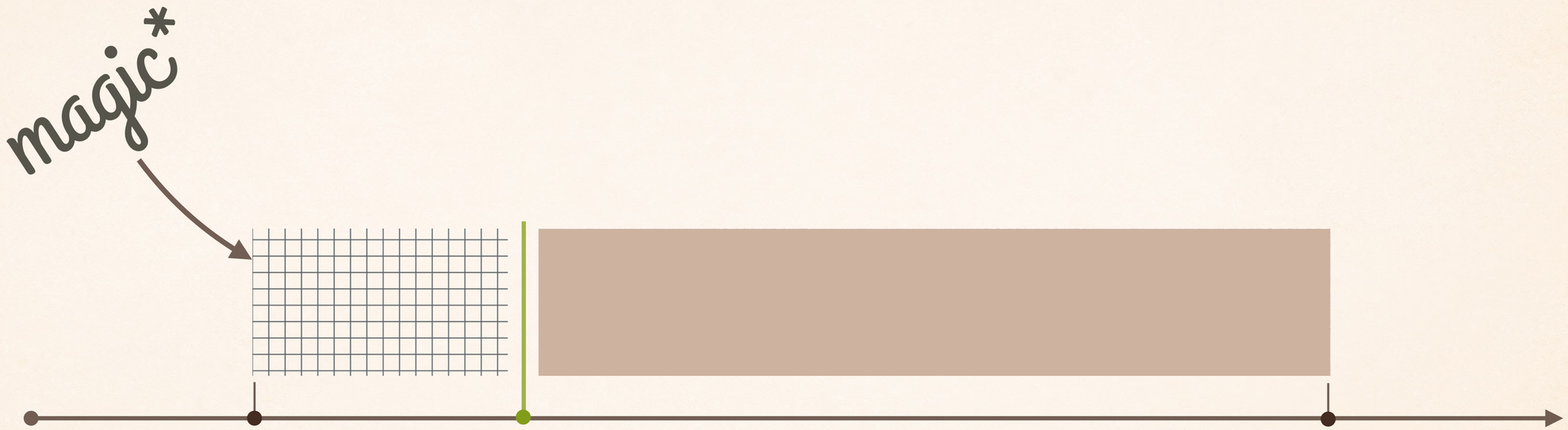


Perception Management

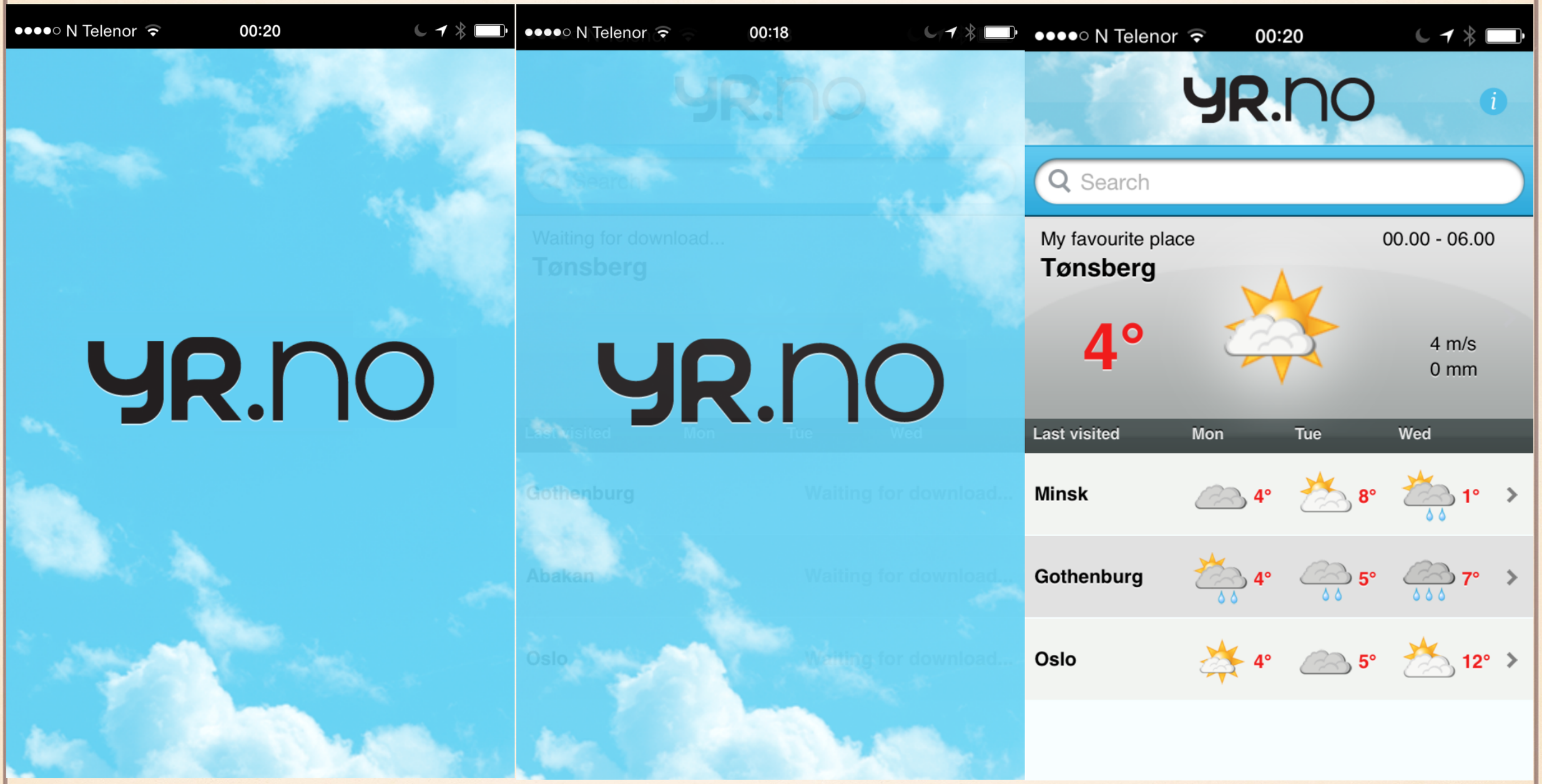
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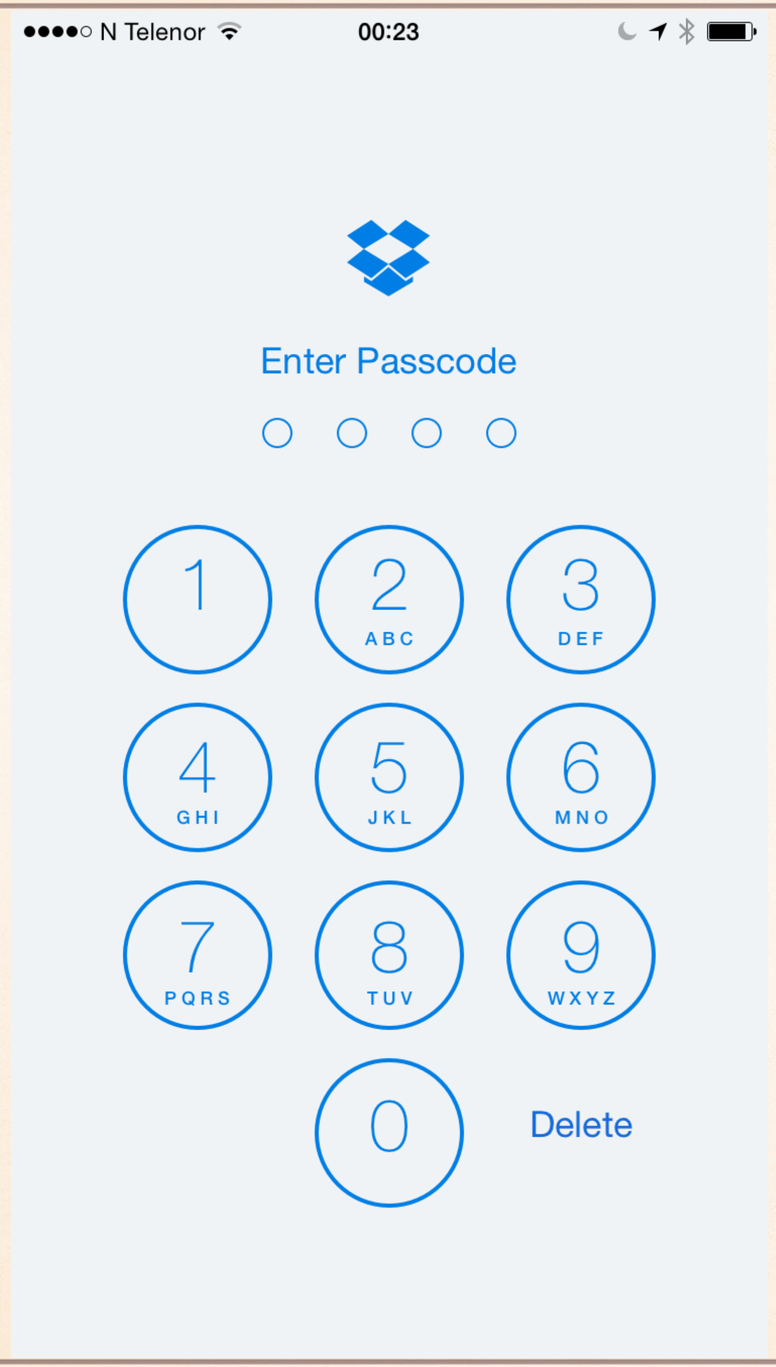
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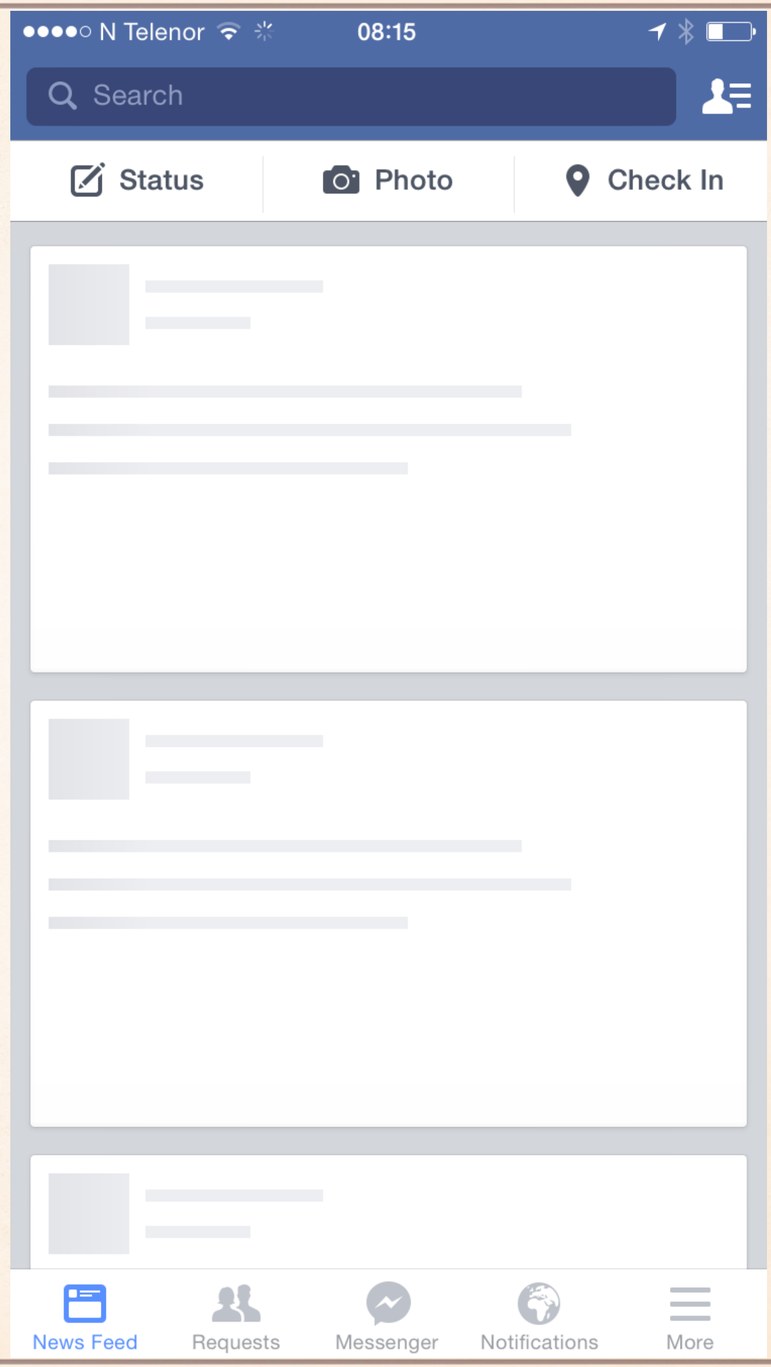
# PREEMPTIVE START




* – things user does not need to know about

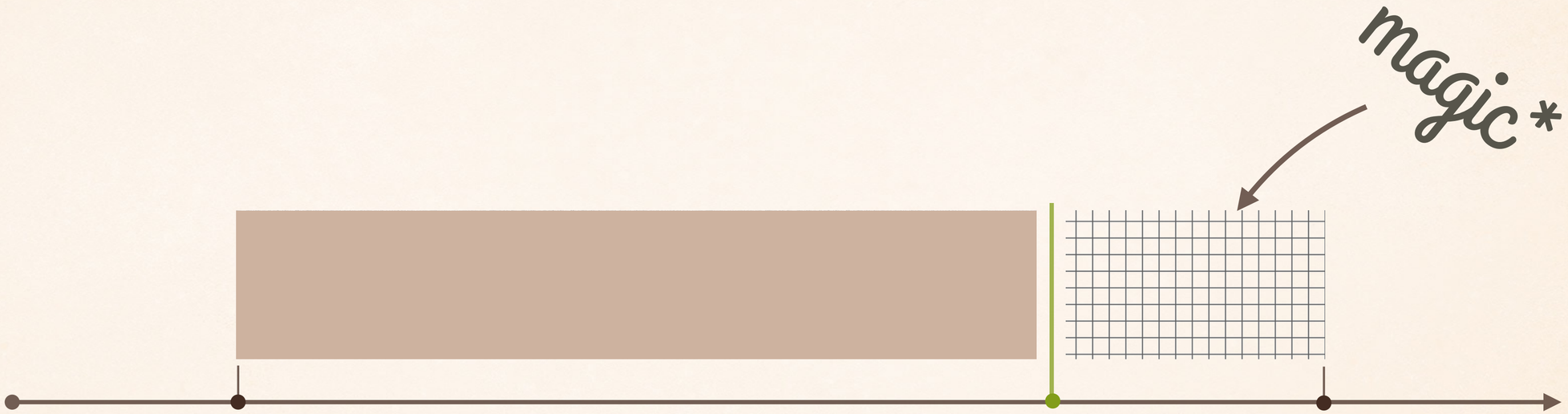

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Perception Management

# EARLY COMPLETION




* – things user does not need to know about

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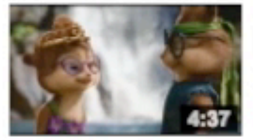

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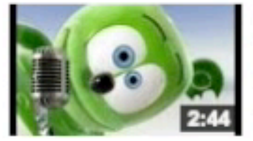

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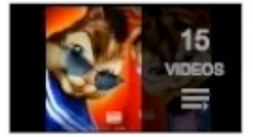

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by #TheChipmunks




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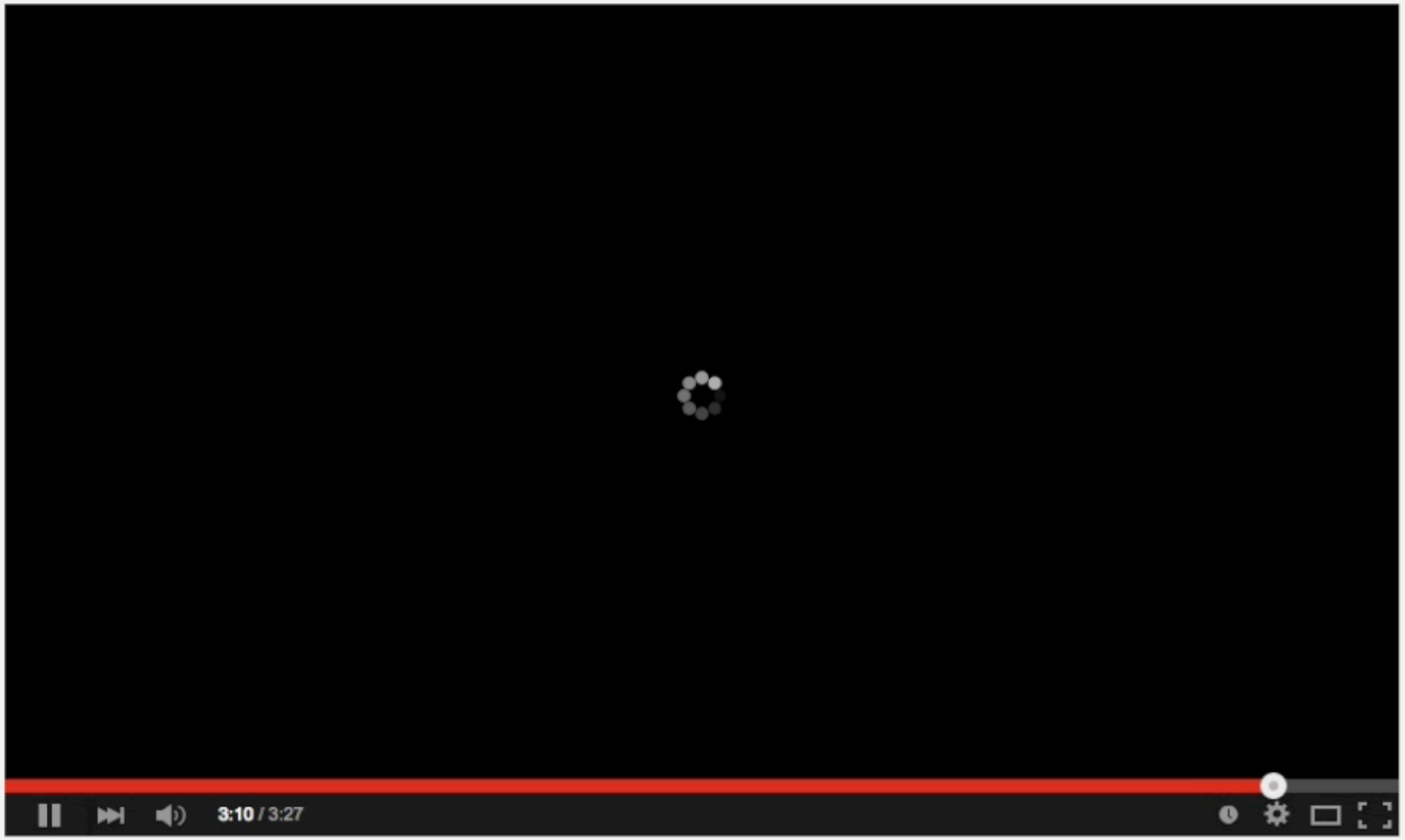



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Chipmunks & Chipettes - B/
Music Video
by Fox HomeEnt
30,106,907 views
4:37

Alvin et les Chipmunks 2 - b
dessinée en pleine français
by Booz Ronds
56,093 views
1:16:21

The Chipettes - Single Ladie
On It]
by RHINO
74,872,870 views
3:03

The Gummy Bear Song - Lo
Version
by icanrockyourworld
545,038,859 views
2:44

15 VIDEOS

Top Tracks for The Chipmu
by #TheChipmunks

Dead Or Alive - You Spin M
a Record)
by DeadOrAliveVEVO
16,449,028 views
3:17

5 Best Keynote Templates -
Creative Presentation Them
by Vigital Art
Recommended for you
46:55

YouTube NO




# You Spin Me Round (Like A Record) - Alvin and The Chipmunks

Cookie Fried

Subscribe 2,662

4,280,848

Up Next Autop

Chipmunks & Chipettes - B/ Music Video
by Fox HomeEnt
4:37 30,106,907 views

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46:55 Recommended for you

Perception Management

# LIMITATIONS

- When process is really long and there is no chance to make user think differently

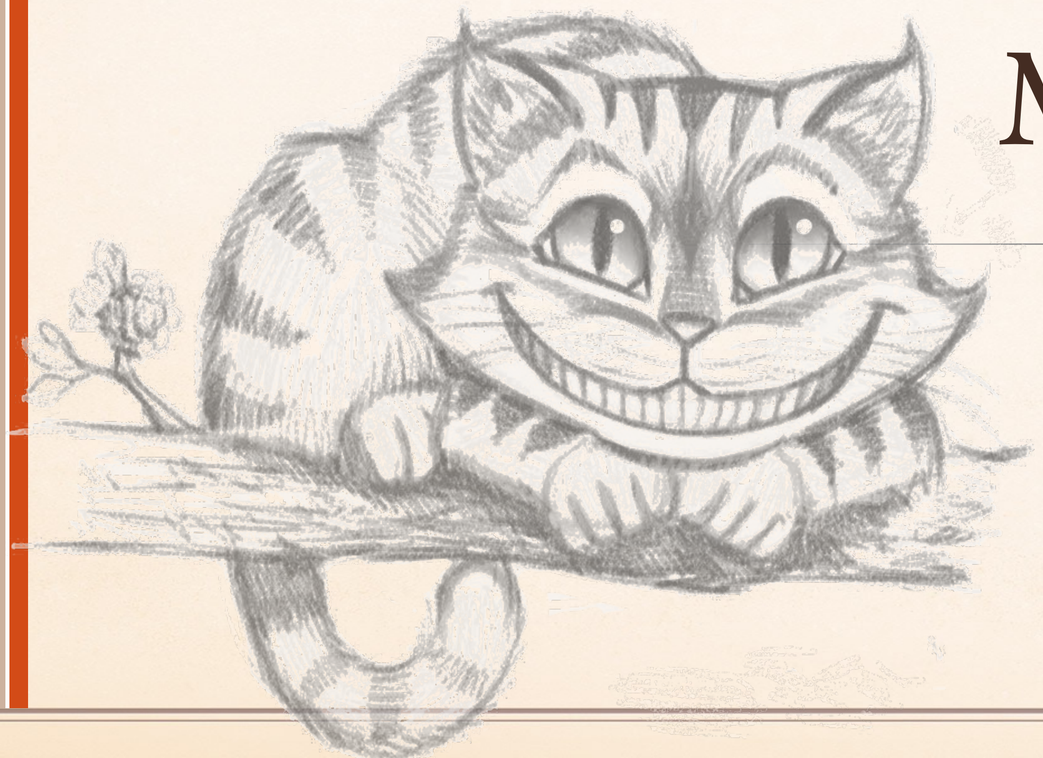
Operational Management

Perception Management

Tolerance Management

# TIME MANAGEMENT

Tolerance Management



# TOLERANCE MANAGEMENT

valued time


http://goo.gl/AkcpvU



**damedvedev** Подписаться

2 ч. назад · Дом Правительства РФ

По заявкам подписчиков, которых теперь 400 000. Спасибо!

romanova_sonya , mikarsenii , kazan_arbat and 38.3k others like this.

**inna_kirienkova**
;)

**karina_asanova**
Очень даже позитивное фото!!:)

**xenia_fadina**
Супер

**aleksan_d_r**
Смелое фото Дмитрий Анатолиевич ))□

**divaevajulia**
□□

**kenga11**
□□□

**elviratyaminova**
Что значит молодость и прогрессивный взгляд на вещи! Спасибо, что Вы такой!

**karina_2301**
Классный чувак□□□□□

Tolerance Management

"If you can not change the situation,

change the attitude"

–basic principle of psychology

Tolerance Management

# UNCERTAINTY

# Tolerance Management

## Dynamic

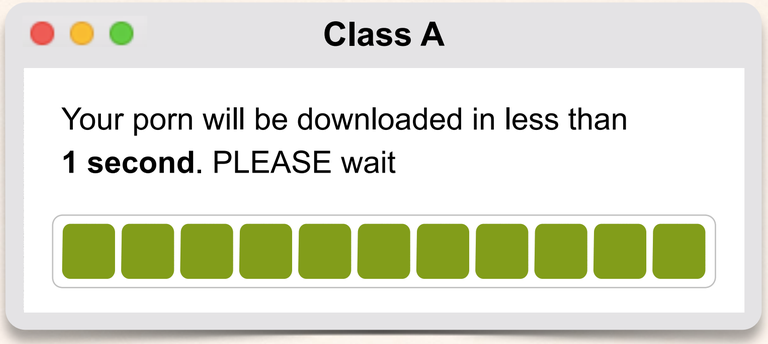
Provides periodic current status during mid-process

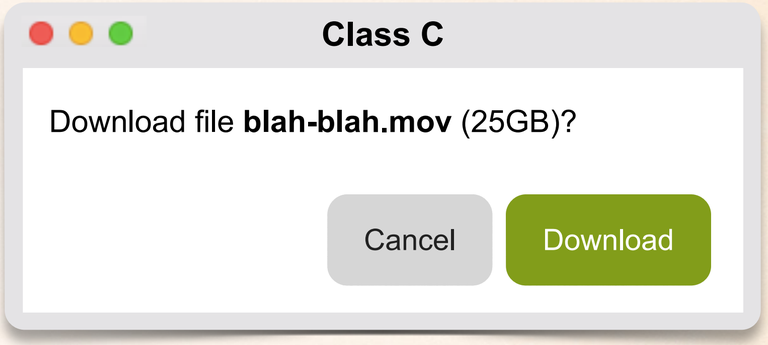
## Static

Does not provide any info during mid-process

## Determinate

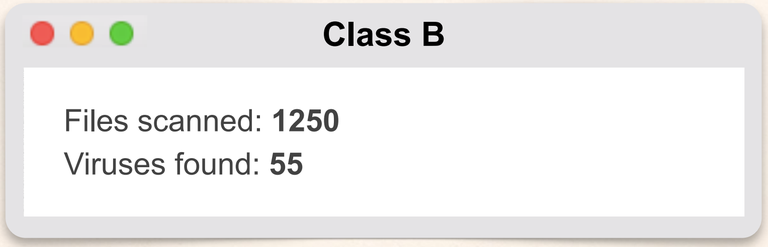
Projects completion by work units or time




## Indeterminate

Doesn't project completion

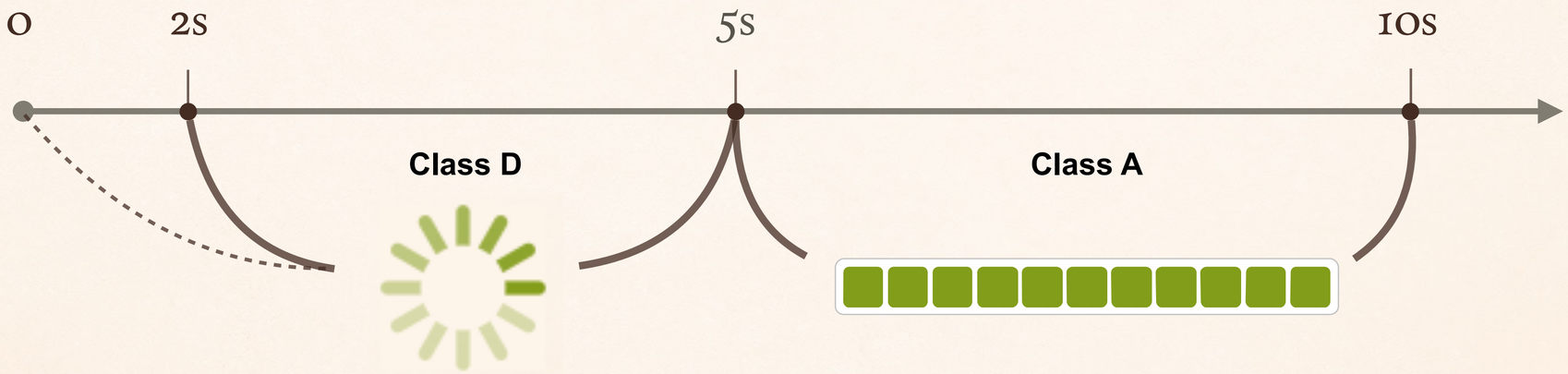






"Designing and Engineering Time", Steven C.Seow. © 2008 Pearson Education Inc.

# PROGRESS INDICATORS FOR WEB



Tolerance Management

# TIME ANCHORS MATRIX

| | | |
|---|---|---|
| 1 | 2 | 3 |
| 5 | 10 | 15 |
| 10 | 20 | 30 |

# Tolerance Management

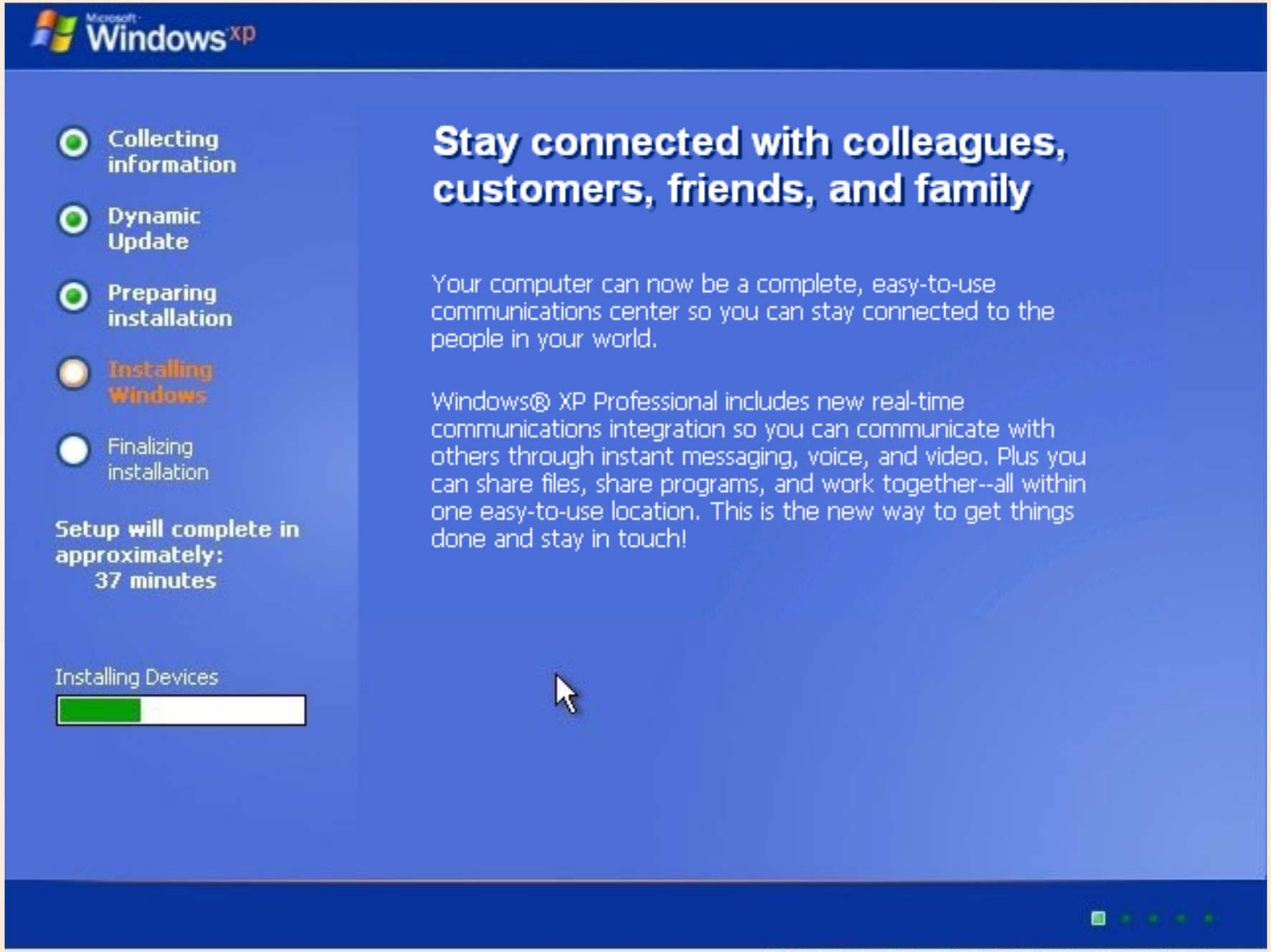



http://goo.gl/tn8TiG

Tolerance Management

# PURPOSE & VALUE

Tolerance Management



Tolerance Management

# WORTH THE WAIT


AEROFLOT
Russian Airlines
YOUR DISCOUNT
BUSINESS CLASS:
2 %
ECONOMY CLASS:
2 %




http://coub.com/view/2pgyb5js

# LIMITATIONS

- The sky is the limit?

# SUMMARY

Deliver objectively fast;

If not possible to deliver fast, make user think it is fast;

If it is really long process, make user want to wait.



# 0.43

| Avg. Page Load Time (sec) | Avg. Redirection Time (sec) | Avg. Domain Lookup Time (sec) | Avg. Server Connection Time (sec) | Avg. Server Response Time (sec) | Avg. Page Download Time (sec) |
|---|---|---|---|---|---|
| 1.26 | 0.38 | <0.01 | 0.11 | 0.04 | 0.29 |



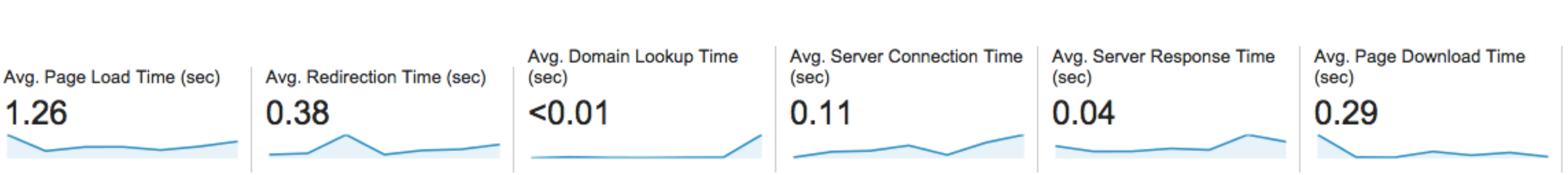
**Site Speed**

- Browser
- Country
- Page

| | Browser | Avg. Page Load Time (sec) |
|---|---|---|
| 1. | Safari | 0.51 |
| 2. | Opera | 0.77 |
| 3. | Firefox | 0.85 |
| 4. | Internet Explorer | 1.34 |
| 5. | Chrome | 1.45 |
| 6. | Android Browser | 3.18 |

view full report

| Avg. Page Load Time (sec) | Avg. Redirection Time (sec) | Avg. Domain Lookup Time (sec) | Avg. Server Connection Time (sec) | Avg. Server Response Time (sec) | Avg. Page Download Time (sec) |
|---|---|---|---|---|---|
| 1.26 | 0.38 | <0.01 | 0.11 | 0.04 | 0.29 |



**Site Speed**

- Browser
- Country
- Page

| | Country | Avg. Page Load Time (sec) |
|---|---|---|
| 1. | Norway | 1.07 |
| 2. | Netherlands | 1.17 |
| 3. | Japan | 2.31 |
| 4. | Spain | 4.07 |
| 5. | United States | 4.94 |

view full report

This report was generated on 4/15/15 at 12:58:27 PM - Refresh Report

# Web Page Performance Test for

https://www.fastname.no

**From:** Copenhagen, Denmark - **Chrome** - **Cable**
4/15/2015, 1:55:10 PM

Need help improving?

| A | A | A | N/A | C | X |
|---|---|---|---|---|---|
| First Byte Time | Keep-alive Enabled | Compress Transfer | Compress Images | Cache static content | Effective use of CDN |

**Summary** | **Details** | **Performance Review** | **Content Breakdown** | **Domains** | **Screen Shot**

Tester: PUBLICAGENT-PC-193.28.149.252
Test runs: **4**

Export HTTP Archive (.har)

| | | | | | | | Document Complete | | | Fully Loaded | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Time | First Byte | Start Render | Visually Complete | Speed Index | DOM Elements | Result (error code) | Time | Requests | Bytes In | Time | Requests | Bytes In |
| 0.870s | 0.323s | 1.006s | 2.100s | 1986 | 716 | 0 | 0.870s | 6 | 41 KB | 7.678s | 36 | 731 KB |

| RUM First Paint | domContentLoaded | loadEvent |
|---|---|---|
| 0.779s | .477s - 0.477s (0.000s) | 0.820s - 0.831s (0.011s) |

# Web Page Performance Test for

https://www.fastname.no

**From:** Stockholm, Sweden - **Chrome** - **Cable**
4/15/2015, 2:25:32 PM

Need help improving?

| A | A | A | N/A | C | X |
|---|---|---|---|---|---|
| First Byte Time | Keep-alive Enabled | Compress Transfer | Compress Images | Cache static content | Effective use of CDN |

**Summary** | **Details** | **Performance Review** | **Content Breakdown** | **Domains** | **Screen Shot**

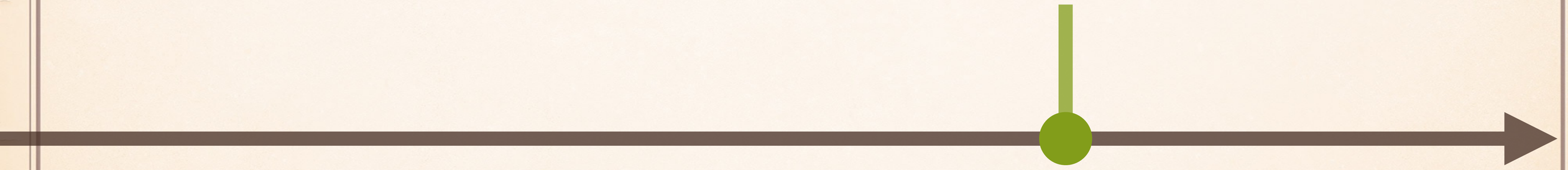
Tester: SESTNSWT01P-213.136.37.170
Test runs: **4**

Export HTTP Archive (.har)

| | | | | | | | Document Complete | | | Fully Loaded | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Time | First Byte | Start Render | Visually Complete | Speed Index | DOM Elements | Result (error code) | Time | Requests | Bytes In | Time | Requests | Bytes In |
| 0.651s | 0.210s | 0.786s | 1.900s | 1559 | 716 | 0 | 0.651s | 5 | 119 KB | 6.787s | 36 | 821 KB |

| RUM First Paint | domContentLoaded | loadEvent |
|---|---|---|
| 0.735s | .331s - 0.332s (0.001s) | 0.633s - 0.664s (0.031s) |

# THANK YOU



end
Event Marker